Comprehensive Traffic & Toll Revenue Study

ARTERS

North Texas Tollway Authority System

September 2020

CDM Smith.



This page intentionally left blank.





September 1, 2020

Mr. Horatio Porter CFO/Assistant Executive Director of Finance North Texas Tollway Authority 5900 West Plano Parkway, Suite 100 Plano, TX 75093

Re: North Texas Tollway Authority System Comprehensive Traffic and Toll Revenue Study

Dear Mr. Porter:

CDM Smith is pleased to submit this North Texas Tollway Authority System Comprehensive Traffic and Toll Revenue (T&R) Study report. The report summarizes the results of the study, which includes T&R estimates for a fifty-year period. The purpose of this study was to conduct a comprehensive T&R evaluation for the current NTTA System. The NTTA facilities for which T&R estimates are included in this report are the Dallas North Tollway (DNT), President George Bush Turnpike (PGBT), President George Bush Turnpike Eastern Extension (PGBT EE), Sam Rayburn Tollway (SRT), President George Bush Turnpike Western Extension (PGBT WE), Chisholm Trail Parkway (CTP), Addison Airport Toll Tunnel (AATT), Mountain Creek Lake Bridge (MCLB) and Lewisville Lake Toll Bridge (LLTB).

Our project team, including Michael Copeland, Justin Winn, Kunal Singh, Naveen Mokkapati, Gustavo Baez (Baez Consulting), Paul Winkelblech (Research and Demographic Solutions), and others, gratefully acknowledge the assistance and cooperation received from NTTA as well as others contacted during the course of the study. CDM Smith sincerely appreciates the opportunity to have participated in this important project.

Respectfully submitted,

Kamran A. Khan Senior Vice President CDM Smith Inc.

G

This page intentionally left blank.



Table of Contents

Disclaimer	DS-1
Executive Summary	ES-1
Section 1 Introduction	1-1
1.1. Background and Authority for Study	
1.2. Objective and Scope of Study	
Section 2 – NTTA System Traffic Trends and Characteristics	
Section 3 – Impacts of COVID-19 on the NTTA System	
Section 4 – Dallas-Fort Worth Area Transportation Characteristics	
Section 5 – Regional Demographic and Economic Trends	1-3
Section 6 – Travel Demand Model Development	
Section 7 – Estimated Traffic and Revenue	
Section 2 NTTA System Traffic Trends and Characteristics	
2.1. NTTA System Facilities in Operation	
2.1.1. Dallas North Tollway	
2.1.2. President George Bush Turnpike (Including Eastern Extension)	
2.1.3. Sam Rayburn Tollway	
2.1.4. Addison Airport Toll Tunnel	
2.1.5. Mountain Creek Lake Bridge	
2.1.6. Lewisville Lake Toll Bridge	
2.1.7. President George Bush Turnpike Western Extension (PGBT-WE)	
2.1.8. Chisnoim Trail Parkway	
2.2.1 Toll collection System and Rates	
2.2.1. TollTag Program	
2.2.2. Elpeasiti rogram	
2.2.4 Comparison of Per-Mile Toll Rates	2-12
2.3. Annual Transaction Trends	
2.3.1. Trends in Average Daily Transactions	2-14
2.3.2. Trends in Monthly Transactions: NTTA System	2-15
2.4. AVI Utilization Trends	2-19
2.5. Traffic Count Program	2-20
2.6. Average Weekday Transactions by Location	2-25
2.7. Travel Time Characteristics	2-35
2.8. Origin-Destination Data	2-41
2.9. Stated Preference Survey	2-42
2.9.1. Final Recommendations	2-42
Section 3 Impacts of COVID-19 on the NTTA System	
3.1. COVID-19 Overview	
3.1.1. COVID-19	
3.1.2. Current Infection Rates	
3.2. Traffic Impacts	
3.2.1. Historical Events	
3.3. Conclusion	3-10
Section 4 Dallas-Fort Worth Area Transportation Characteristics	4-1
4.1. Traffic Congestion Trends	



4.2. Freeway and Tollway System	
4.3. Rail Transit System	4-7
Section 5 Regional Demographic and Economic Trends	
5.1. NCTCOG Demographic Forecast Process	
5.2. Historical and Future Regional Growth	
5.3. Historical Regional Population Trends	5-4
5.4. Future Regional Population Growth	5-5
5.5. Historical Regional Employment Trends	5-7
5.6. Future Regional Employment Growth	5-7
5.7. Regional Median Household Income Trends	
5.8. Socioeconomic Indicators	5-13
5.8.1. Major Employment Establishments	5-13
5.8.2. Consumer Price Index	5-14
5.8.3. Trends in Building Permits	5-14
5.8.4. Regional Home Sales	5-16
5.8.5. Gasoline Prices	5-18
5.8.6. Independent Demographic Review	5-18
5.8.7. Future Population and Employment along NTTA System Corridors	5-19
5.8.8. Population Growth Estimates	5-19
5.8.9. Employment Growth Estimates	5-19
5.8.10. Comparison of Official and Revised Demographics	5-19
Section 6 Travel Demand Model Development	6-1
6.1. NCTCOG Information	6-1
6.2. Highway Network Update	6-1
6.3. Model Validation	6-3
6.4. Modeling Methodology	6-8
6.4.1. Time Cost and Vehicle Operating Costs	6-8
6.4.2. Value of Time	6-9
6.4.3. Vehicle Operating Costs	6-9
6.4.4. Revised Demographics and Trip Tables	6-10
6.5. General Assumptions	6-10
Section 7 Estimated Traffic and Revenue	
7.1 Traffic and Toll Revenue Estimation Assumptions	7-1
7.1.1 Toll Rate Assumptions	7-1
7.1.2. Truck Traffic Shares/Truck Toll Assumptions	
7.1.3. AVI/ZipCash Transaction Shares	
7.1.4. Annual Revenue Davs	
7.1.5. Revenue Recovery Assumptions	
7.1.6. Traffic Growth Assumptions Bevond 2045	
7.2. NTTA Toll Collection Concept and Toll Structure	7-7
7.3. Toll Sensitivity Analysis	
7.4. Estimated Average Weekday Traffic	
7.4.1. Model Adjustments to Include Impact of COVID-19	
7.4.2. Adjusted Average Weekday Transactions	
7.5. Estimated Annual NTTA System Toll Revenue	
7.6. Sensitivity Tests of Key Input Variables	
7.6.1. Impacts of Value of Time	7-27
7.6.2. Impacts of Severe Demographic Growth Stagnation	7-27



7.6.3.	Impacts of AVI Share and Revenue Recovery Assumptions	7-28
7.6.4.	Impacts of Truck Traffic Shares	7-29
7.6.5.	Impacts of Revenue Days	7-29

List of Figures

Figure 1-1. North Texas Tollway Authority System 1	L -	2	
--	-----	---	--

Figure 2-1. The NTTA System and 360 Tollway	2-2
Figure 2-2. Current (2020) DNT Toll Collection System and Passenger Car Toll Rates	2-7
Figure 2-3. Current (2020) PGBT (Excluding PGBT EE) Toll Collection System and Passenger Car	
Toll Rates	2-8
Figure 2-4. Current (2020) PGBT EE Toll Collection System and Passenger Car Toll Rates	2-8
Figure 2-5. Current (2020) SRT Toll Collection System and Passenger Car Toll Rates	2-9
Figure 2-6. Current (2020) PGBT WE Toll Collection System and Passenger Car Toll Rates	2-10
Figure 2-7. Current (2020) CTP Toll Collection System and Passenger Car Toll Rates	2-11
Figure 2-8. Per Mile AVI Toll Rate Comparison to Other Toll Facilities	2-13
Figure 2-8. Recent NTTA System Average Monthly AVI Share	2-19
Figure 2-9. TollTag Utilization by ZIP Code	2-20
Figure 2-10. DNT/PGBT/SRT Traffic Count Screenlines	2-22
Figure 2-11. PGBT-WE Traffic Count Screenlines	2-23
Figure 2-12. CTP Traffic Count Screenlines	2-24
Figure 2-13. DNT Traffic Volume Profile	2-26
Figure 2-14. PGBT (Including PGBT-EE) Traffic Volume Profile	2-27
Figure 2-15. SRT Traffic Volume Profile	2-28
Figure 2-16. PGBT WE Traffic Volume Profile	2-29
Figure 2-17. CTP Traffic Volume Profile	2-30
Figure 2-18. DNT 2019 Average Weekday Transactions by Tolling Location	2-31
Figure 2-19. PGBT 2019 Average Weekday Transactions by Tolling Location	2-32
Figure 2-20. PGBT EE, AATT, MCLB and LLTB 2019 Average Weekday Transactions by Tolling	
Location	2-32
Figure 2-21. SRT 2019 Average Weekday Transactions by Tolling Location	2-33
Figure 2-22. PGBT WE 2019 Average Weekday Transactions by Tolling Location	2-33
Figure 2-23. CTP 2019 Average Weekday Transactions by Tolling Location	2-34
Figure 2-24. DNT/PGBT/SRT Area Travel Speed Data Collection Locations (Highways)	2-35
Figure 2-25. DNT/PGBT/SRT Area Travel Speed Data Collection Locations (Arterials)	2-36
Figure 2-26. Travel Time Results: AM Peak Period (Highways)	2-37
Figure 2-27. Travel Time Results: PM Peak Period (Highways)	2-38
Figure 2-28. Travel Time Results: AM Peak Period (Arterials)	2-39
Figure 2-29. Travel Time Results: PM Peak Period (Arterials)	2-40
Figure 2-30. Origin-Destination Zones	2-41
Figure 3-1 COVID-19 Infections and Mobility Data Comparison	3-4
Figure 3-2 Seven-Day Moving Average Transactions – Comparison of 2019 and 2020 Transaction	ms 3-5
Figure 3-3 Percent-impact on PC Transactions for each facility against first week of March	3-6
Figure 3-4 Percent impact on CV Transactions for each facility against first week of March	3-7
Figure 3-5 AVI Transaction Trends for NTTA Facilities	3-8
Figure 3-6. Historic Annual Transaction trends for NTTA System	



Figure 4-2, 2045 Major Roadway Recommendations	4-3
Figure 4-3. NTTA's Planned Roadway Projects	
Figure 4-4. Expected Completion Years of Planned Projects in the NTTA System Area	4-6
Figure 4-5. Current DART Rail System	4-8
Figure 4-6. 2045 Project Implementation: Passenger Rail	4-9
State for realized and state of the state of	
Figure 5-1. NCTCOG Forecast Process	5-2
Figure 5-2. DFW Metropolitan Planning Area	5-4
Figure 5-3. Historical Unemployment Rates	5-10
Figure 5-4. Historical Employment Growth	5-10
Figure 5-5. NTTA System - Median Household Income (in Real 2018 Dollars)	5-12
Figure 5-6. Major Employment Establishments near NTTA System Facilities	5-13
Figure 5-7. Trends in Single Family Building Permits in Dallas-Fort Worth	5-16
Figure 5-8. Median Home Sale Prices	5-17
Figure 5-9. Dallas Fort Worth MSA Area Home Sales	5-17
Figure 5-10. Average Weekly Gasoline Prices in Texas	5-18
Figure 5-11. Average Annual Population Growth: 2020-2045	5-20
Figure 5-12. Average Annual Employment Growth: 2020-2045	5-20
Figure 5-13. 2020 Population Comparison: Revised vs. NCTCOG Official	5-22
Figure 5-14. 2028 Population Comparison: Revised vs. NCTCOG Official	5-22
Figure 5-15. 2037 Population Comparison: Revised vs. NCTCOG Official	5-23
Figure 5-16. 2045 Population Comparison: Revised vs. NCTCOG Official	5-23
Figure 5-17. 2020 Employment Comparison: Revised vs. NCTCOG Official	5-24
Figure 5-18. 2028 Employment Comparison: Revised vs. NCTCOG Official	5-24
Figure 5-19. 2037 Employment Comparison: Revised vs. NCTCOG Official	5-25
Figure 5-20. 2045 Employment Comparison: Revised vs. NCTCOG Official	5-25
Figure 6-1. NTTA System – Travel Demand Forecasting Process	6-2
Figure 6-2. NTTA System Screenlines (DNT, PGBT, SRT)	6-4
Figure 6-3. NTTA System Screenlines (PGBT WE, 360 Tollway)	6-5
Figure 6-4. NTTA System Screenlines (CTP)	6-6
Figure 6-5. NTTA System - Screenline Traffic Validation	6-8
Figure 7-1. Monthly Truck Share Trends	7-3
Figure 7-2. Weekly TollTag and ZipCash transactions trends	7-5
Figure 7-3. Monthly average weekday and weekend transactions trends	7-6
Figure 7-4. Current (2020) DNT Toll Collection System and Passenger Car Toll Rates	7-8
Figure 7-5. 2045 DNT Toll Configuration and Rates	7-8
Figure 7-6. Current (2020) PGBT (Excluding PGBT EE) Toll Collection System and Passenger Car Toll	
Rates	7-9
Figure 7-7. 2045 PGBT Toll Configuration and Rates	7-9
Figure 7-8. Current (2020) SRT Toll Collection System and Passenger Car Toll Rates	7-10
Figure 7-9. 2045 SRT Toll Configuration and Rates	7-10
Figure 7-10. Current (2020) PGBT EE Toll Collection System and Passenger Car Toll Rates	7-11
Figure 7-11. 2045 PGBT EE, AATT, MCLB and LLTB Toll Configuration and Rates	7-11
Figure 7-12. Current (2020) PGBT WE Toll Collection System and Passenger Car Toll Rates	7-11
Figure 7-13. 2045 PGBT WE Toll Configuration and Rates	7-12
Figure 7-14. Current (2020) CTP Toll Collection System and Passenger Car Toll Rates	7-12
Figure 7-15. 2045 CTP Toll Configuration and Rates	7-13
Figure 7-16. Toll Sensitivity Curves – DNT	7-14
Figure 7-17. Toll Sensitivity Curves – PGBT	7-14
Figure 7-18. Toll Sensitivity Curves – SRT	7-15
Figure 7-19. Toll Sensitivity Curves – PGBT EE	7-15
Figure 7-20. Toll Sensitivity Curves – PGBT WE	7-16



Figure 7-21. Toll Sensitivity Curves – CTP	7-16
Figure 7-22. Toll Sensitivity Curves – NTTA System	7-17
Figure 7-23. Recovery timeline for NTTA System- Base scenario	7-20
Figure 7-24. Estimated 2020 and 2045 Average Weekday Traffic Volumes – DNT	7-21
Figure 7-25. Estimated 2020 and 2045 Average Weekday Traffic Volumes – PGBT	7-21
Figure 7-26. Estimated 2020 and 2045 Average Weekday Traffic Volumes – SRT	7-22
Figure 7-27. Estimated 2020 and 2045 Average Weekday Traffic Volumes – PGBT EE, AATT, MCLB ar	ıd
LLTB	7-22
Figure 7-28. Estimated 2020 and 2045 Average Weekday Traffic Volumes – PGBT WE	7-23
Figure 7-29. Estimated 2020 and 2045 Average Weekday Traffic Volumes – CTP	7-23
Figure 7-30. NTTA System Estimated Annual Revenue by Facility	7-26

List of Tables

Table 2-1. Opening Sequence of DNT	2-2
Table 2-2. Opening Sequence of PGBT (Including Eastern Extension)	2-3
Table 2-3. Opening Sequence of SRT	2-4
Table 2-4. Opening Sequence of PGBT WE	2-4
Table 2-5. Existing NTTA System Toll Rates for Two-Axle Vehicles	2-12
Table 2-6. NTTA System Annual Average Daily Transactions (thousands)	2-15
Table 2-7. Monthly Transaction Trends – Dallas North Tollway (millions)	2-16
Table 2-8. Monthly Transaction Trends – President George Bush Turnpike (millions)	2-16
Table 2-9. Monthly Transaction Trends – Sam Rayburn Tollway (millions)	2-16
Table 2-10. Monthly Transaction Trends – Chisholm Trail Parkway (millions)	2-17
Table 2-11. Monthly Transaction Trends – NTTA System (millions)	2-18
Table 2-12. NTTA System Monthly Transaction Index in 2019	2-19
Table 2-13. Screenline Traffic Summary	2-21
Table 3-1. Chronology of Events	
Table 3-2. Recent Monthly Transaction Impacts – by Mainlane Plazas	
Table 4-1. Capital Improvement Plan projects: Approved as of June 2020	4-7
Table 5-1. Population and Employment Forecast Totals	5-3
Table 5-2. Countywide Population Trends and Projections (US Census Bureau and NCTCOG	
Forecast)	5-6
Table 5-3. Countywide Employment Trends and Projections (NCTCOG Forecast)	5-9
Table 5-4. Median Household Income (in Real 2018 Dollars)	5-11
Table 5-5. Consumer Price Index for All Urban Consumers (CPI-U: 1982-84 = 100)	5-15
Table 5-6. Population Forecast Comparisons	5-21
Table 5-7. Employment Forecast Comparisons	5-21
Table 6-1. Comparison of Traffic Counts and Model Output: Daily Total	6-7
Table 6-2. Value of Time by Counties (2019 \$/Hour)	6-9
Table 6-3. Vehicle Operating Costs (\$/mile)	6-10
Table 7-1. Truck Shares – 2019 Annual Summary	7-3
Table 7-2. Truck Toll Factors – 2019	7-4
Table 7-3. AVI Share – 2019	7-4
Table 7-4. Annual Revenue Days – 2019	7-5
Table 7-5. ZipCash Assumptions	7-6



Table 7-6. Annual Traffic Growth Rate Assumptions (2046 Onwards)	7-7
Table 7-7. NTTA System Estimated Annual Toll Revenue (millions)	7-25
Table 7-8. NTTA System Transactions and Revenue Annual Growth	
Table 7-9. Impacts of Value of Time	
Table 7-10. Impacts of Severe Demographic Growth Stagnation	
Table 7-11. Impacts of AVI Participation	
Table 7-12. Impacts of ZipCash Revenue Recovery	7-29
Table 7-13. Impacts of Truck Traffic Shares	7-29
Table 7-14. Impacts of Revenue Days	7-29

Appendices

Appendix A-1 NTTA System Wide 2019 Value of Time Update Appendix A-2 NTTA System-Wide Stated/Revealed Preference Travel Survey Appendix A-3 Chisholm Trail Parkway Stated Preference Survey Appendix B NTTA System Demographic Review and Update



Disclaimer

CDM Smith used currently-accepted professional practices and procedures in the development of traffic and revenue estimates. However, as with any forecast, differences between forecasted and actual results may occur, as caused by events and circumstances beyond the control of the forecasters. In formulating the estimates, CDM Smith reasonably relied upon the accuracy and completeness of information provided (both written and oral) by North Texas Tollway Authority (NTTA). CDM Smith also relied upon the reasonable assurances of independent parties and is not aware of any material facts that would make such information misleading.

CDM Smith made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue estimates that must be considered as a whole; therefore, selecting portions of any individual result without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. CDM Smith gives no opinion as to the value or merit of partial information extracted from this report.

All estimates and projections reported herein are based on CDM Smith's experience and judgment and on a review of information obtained from multiple agencies, including NTTA. These estimates and projections may not be indicative of actual or future values and are therefore subject to substantial uncertainty. Certain variables such as future developments, economic cycles, global pandemics, and impacts related to advances in automotive technology cannot be predicted with certainty and may affect the estimates or projections expressed in this report, such that CDM Smith does not specifically guarantee or warrant any estimate or projection contained within this report.

While CDM Smith believes that the projections and other forward-looking statements contained within the report are based on reasonable assumptions as of the date of the report, such forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from the results predicted. Therefore, following the date of this report, CDM Smith will take no responsibility or assume any obligation to advise of changes that may affect its assumptions contained within the report, as they pertain to socioeconomic and demographic forecasts, proposed residential or commercial land use development projects and/or potential improvements to the regional transportation network.

CDM Smith is not, and has not been, a municipal advisor as defined in Federal law (the Dodd Frank Bill) to by NTTA and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to NTTA with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to the NTTA. The NTTA should discuss the information and material contained in this report with any and all internal and external advisors that it deems appropriate before acting on this information.



This page intentionally left blank.



The North Texas Tollway Authority (NTTA) Comprehensive Traffic and Revenue (T&R) report includes a system-wide review of toll transactions and revenue, traffic data collection, independent socioeconomic forecasts, review of the latest transportation improvement plan, travel demand model updates, and development of long-term traffic and revenue estimates for the NTTA System. This study builds upon previous T&R studies, the most recent of which is the NTTA System Comprehensive Traffic and Toll Revenue Study, prepared by CDM Smith in September 2017 (the "September 2017 Study"). The September 2017 Study focused primarily on the PGBT WE and CTP, which were part of a separate system at the time (the Special Projects System). The results of the September 2017 Study supported the incorporation of PGBT WE and CTP into the NTTA System and dissolution of the Special Projects System. After completion of the September 2017 Study, a letter update and bringdown letter were prepared in 2018 and 2019, respectively. The current study is the first full comprehensive traffic and revenue study completed for the newly expanded NTTA System.

The NTTA System includes the following facilities:

- Dallas North Tollway (DNT)
 - Limits: IH 35E in Dallas to US 380 in Frisco
 - Length: Approximately 31 miles
- President George Bush Turnpike (PGBT), excluding Eastern and Western Extensions
 - Limits: Belt Line Road in Irving to SH 78 in Garland
 - Length: Approximately 30 miles
- President George Bush Turnpike Eastern Extension (PGBT EE)
 - Limits: SH 78 in Garland to IH 30 in Garland
 - Length: Approximately 10 miles
- President George Bush Turnpike Western Extension (PGBT WE)
 - Limits: IH 20 in Grand Prairie to SH 183 in Irving
 - Length: Approximately 10 miles
- Sam Rayburn Tollway (SRT)
 - Limits: Business 121 in Coppell to US 75 in McKinney
 - Length: Approximately 26 miles
- Chisholm Trail Parkway (CTP)
 - Limits: US 67 in Cleburne to IH 30 in Fort Worth
 - Length: Approximately 28 miles
- Addison Airport Toll Tunnel (AATT)
- Lewisville Lake Toll Bridge (LLTB)
- Mountain Creek Lake Bridge (MCLB)



Based on the traffic forecast at each toll gantry, annual forecasts for each NTTA System facility were prepared through 2069. The projections extend from 2020 through 2069 and include the revenue forecasts for DNT, PGBT, PGBT EE, PGBT WE, SRT, CTP, AATT, MCLB, and LLTB. In each case, forecasts for each of the facilities are based on modeled traffic estimates at each toll collection location, through the year 2045. These modeled estimates were refined, using post-model adjustments, reflecting validation factors used to match observed 2019 traffic data, the baseline model year, at each toll gantry location and the COVID-19 recovery trends and the short- and long-term (recessionary) impact assumptions.

The average toll at each location was based on the current mix of passenger car and commercial vehicle traffic and the current average tolls, modified in future years to reflect changing assumptions in the proportion of AVI and ZipCash transaction shares. As presented in **Section 6**, passenger cars/commercial vehicles traffic shares have varied during the pandemic. Suitable assumptions have been made to account for the variance in the short- and long-term impacts of the change in shares. Further, toll rates for ZipCash transactions are 50 percent higher than the rates for AVI transactions (with a minimum differential of \$0.26 in 2019 dollars) in each case, as noted previously.

Estimates beyond year 2045 are based on nominal assumptions regarding future traffic growth as shown in **Table ES-1**, with assumed toll rate increases as noted previously. As shown in **Table ES-1**, the estimated annual revenue on the DNT is expected to increase from \$205.18 million in 2020 to \$326.4 million by 2025 and \$499.94 million by 2035. Revenue on the PGBT is expected to be \$176.01 million in 2020, increasing to \$294.18 million by 2025 and \$457.08 million by 2035. Revenue on the SRT is expected to be \$149.57 million in 2020, increasing to \$239.88 million by 2025 and \$382.20 million by 2035. As 2058 is the end of the fifty-year operational agreement of the SRT between NTTA and TxDOT, revenue from SRT is estimated through August 31, 2058, while the other facilities are assumed to generate revenue for NTTA in perpetuity. The PGBT EE toll revenue shown is NTTA's share of the toll revenue. Total revenue on the PGBT EE is expected to be \$32.18 million in 2020, increasing to \$205.11 million by 2025 and \$91.3 million by 2035. Together, the DNT, PGBT and SRT account for the majority of revenue generated by the NTTA System.

The estimated annual revenue on PGBT WE is expected to increase from \$46.8 million in 2020 to \$86.59 million by 2025 and \$136.52 million by 2035. Revenue on the CTP is expected to be \$46.87 million in 2020, increasing to \$75.3 million by 2025 and \$139.7 million by 2035. Revenue from the AATT, MCLB and LLTB are expected to be about \$10.11 million, combined, in 2020. By 2025 this is estimated to reach a combined \$14.75 million, still a very small share of total NTTA System revenue.

Total revenue on the existing NTTA System, is expected to increase from about \$666.73 million in 2020 to \$1.08 billion in 2025 and \$1.72 billion in 2035. Driven by nominal traffic growth and continued programmed adjustments in toll rates, revenue on the NTTA System is expected to reach more than \$3 billion per year by 2049.

Future traffic growth on the NTTA System facilities is constrained to reflect available capacity, although the widening of DNT from SRT to US 380 and the widening of PGBT from six to eight lanes between IH 35E and north of Belt Line Road are assumed, and the widening of the mainlanes of SRT from six to eight lanes is also assumed.



	Table ES-1. NTTA System Estimated Annual Ton Revenue (Innitons)							
Year	DNT	PGBT	SRT	PGBT-EE	PGBT-WE	СТР	Toll	NTTA
				1	1		Bridges	System
2020	\$205.1	\$176.0	\$149.6	\$32.2	\$46.8	\$46.9	\$10.1	\$666.7
2021	239.7	206.6	175.8	36.0	53.1	53.8	11.1	776.1
2022	270.4	239.4	199.8	40.6	63.5	60.7	12.2	886.6
2023	294.8	263.4	216.5	44.7	72.7	66.2	13.2	971.6
2024	312.1	280.4	228.7	48.3	81.2	70.7	14.1	1,035.6
2025	326.4	294.2	239.9	51.1	86.6	75.3	14.8	1,088.2
2026	341.7	308.8	251.7	54.0	92.1	80.3	15.4	1,144.0
2027	357.4	323.0	263.5	56.9	93.5	85.5	16.1	1,196.0
2028	371.6	338.4	276.1	60.0	95.8	91.1	16.8	1,249.8
2029	388.2	354.3	289.2	63.2	101.1	97.1	17.5	1,310.6
2030	406.7	371.5	303.1	66.7	107.3	103.6	18.4	1,377.1
2031	425.6	388.8	318.0	70.4	113.5	110.8	19.1	1,446.3
2032	444.0	405.1	333.0	74.0	118.9	117.4	20.0	1,512.4
2033	461.8	421.5	348.5	82.5	124.6	124.4	20.8	1,584.1
2034	480.8	439.1	364.9	86.9	130.6	132.0	21.8	1,656.1
2035	499.9	457.1	382.2	91.3	136.5	139.7	22.7	1,729.5
2036	520.6	476.5	400.5	95.9	142.8	148.1	23.8	1,808.2
2037	541.4	494.6	417.8	100.5	149.1	157.8	24.8	1,886.1
2038	561.3	513.7	435.9	104.8	155.9	166.9	25.9	1,964.3
2039	581.4	533.2	454.6	109.2	162.8	176.1	27.1	2,044.3
2040	602.8	554.0	474.0	113.7	170.1	186.0	28.3	2,128.9
2041	623.6	574.5	494.6	118.4	177.5	196.2	29.6	2,214.4
2042	645.9	596.4	516.2	123.3	185.4	207.1	31.0	2,305.2
2043	668.7	618.8	539.4	128.4	193.9	218.7	32.3	2,400.2
2044	693.3	642.7	563.8	133.8	203.0	231.2	33.7	2,501.5
2045	717.8	667.1	587.6	139.5	211.9	243.8	35.2	2,602.8
2046	742.6	693.1	612.4	144.9	220.0	254.6	36.7	2,704.2
2047	767.3	719.2	638.7	150.5	228.4	265.4	38.2	2,807.7
2048	793.6	746.9	666.3	156.1	237.4	276.9	39.8	2,917.1
2049	819.8	775.4	694.8	162.1	245.9	288.5	41.4	3,027.8
2050	847.7	805.9	724.5	168.2	254.9	301.0	43.1	3,145.2
2051	875.7	835.2	753.4	174.7	264.4	312.1	44.7	3,260.2
2052	905.3	866.1	783.4	181.3	274.6	323.9	46.4	3,381.0
2053	935.6	897.1	815.7	188.2	285.0	336.0	48.1	3,505.6
2054	967.9	930.0	849.4	195.3	296.0	349.0	49.8	3,637.5
2055	999.7	963.7	883.2	202.9	307.1	362.0	51.7	3,770.3
2056	1,033.6	999.5	918.4	210.7	318.9	375.9	53.7	3,910.7
2057	1,067.7	1,035.4	955.4	218.7	330.7	389.9	55.6	4,053.4
2058	1,104.1	1,073.8	658.5	227.1	343.3	405.1	57.6	3,869.2
2059	1,141.0	1,112.6	-	235.6	356.4	419.9	59.8	3,325.3
2060	1,180.3	1,153.9	-	244.4	370.3	435.9	62.0	3,446.8
2061	1.219.4	1.195.8	-	253.8	383.8	452.2	64.3	3.569.2
2062	1,260.6	1,239.9	-	263.4	398.1	469.8	66.6	3,698.2
2063	1,301.6	1,284.4	-	273.4	412.9	487.0	69.0	3,828.3
2064	1.342.4	1,331.6	-	283.7	428.7	505.6	71.6	3,963.6
2065	1.382.9	1,379.6	-	294.7	444.9	524.4	74.2	4.100.6
2066	1.426.0	1.430.4	-	305.9	462.0	544.6	76.9	4.245.8
2067	1,469.3	1.482.1	-	317.7	479.1	564.9	79.8	4.392.8
2068	1.514.7	1.536.1	-	329.6	497.1	586.6	82.8	4.546.8
2069	1,560.6	1,591.6	-	342.0	515.7	608.5	85.8	4,704.0

able ES-1. NTTA System Estimated Annual Toll Revenue (millions)

Table ES-2 shows the projected annual transaction and revenue growth rates on the NTTA System. Annual transaction and revenue growth rates from 2020 through 2030 are projected to be 4.8 percent and 7.5 percent, respectively. During this period, the growth in transactions is driven mainly by the growth in the demographics along the NTTA System corridors, the assumed opening of SH 190/East Branch toll road that connects to the south end of PGBT EE in



2027, the assumed opening of DNT Phase 4A in 2023 and the assumed expansion of the PGBT, SRT and PGBT-WE mainlanes in 2021.

The transaction growth rates progressively decrease to 1.5 percent between 2030 and 2040, and to 1.1 percent between 2040 and 2050. The corresponding growth rates in revenue are 4.5 percent and 4.0 percent, respectively, which incorporate the traffic growth and the assumed toll rate increases.

Period Transactions Annual Growth (%)		Revenue Annual Growth (%)
2020-2030	4.8%	7.5%
2030-2040	1.5%	4.5%
2040-2050	1.1%	4.0%

Table ES-2. NTTA System Transactions and Revenue Annual Growth

Figure ES-1 graphically displays the annual revenue forecasts shown previously in **Table ES-1** by facility. It is expected that the DNT, PGBT and SRT will continue to generate the vast majority of revenue on the NTTA System throughout the forecast period. The DNT will provide about 31 percent of all NTTA System revenue in 2020; this proportion decreases to 28 percent in 2045 as the SRT and CTP continue to mature. The PGBT (including EE and WE) will provide approximately 39 percent of all NTTA System revenue through 2045. The SRT will provide about 22 percent of all NTTA System revenue in 2020 as well as 2045. The AATT, MCLB, and LLTB will contribute less than two percent of revenue through 2045. This is still a relatively small share and demonstrates the importance of the DNT, PGBT, SRT and CTP to the NTTA System revenue and mobility in the region.



Figure ES-1. NTTA System Estimated Annual Revenue by Facility Note: PGBT-EE toll revenue shown is the NTTA's share of the toll revenue



Section 1 Introduction

At the request of the North Texas Tollway Authority (NTTA), CDM Smith prepared a Comprehensive Traffic and Revenue (T&R). The study included a system-wide review of toll transactions and revenue, traffic data collection, independent socioeconomic forecasts, review of the latest transportation improvement plan, travel demand model updates, and development of long-term traffic and revenue estimates for the NTTA System.

Figure 1-1 illustrates the NTTA System, which includes the following:

- Dallas North Tollway (DNT)
 - Limits: IH 35E in Dallas to US 380 in Frisco
 - Length: Approximately 31 miles
- President George Bush Turnpike (PGBT), Excluding Eastern and Western Extensions
 - Limits: Belt Line Road in Irving to SH 78 in Garland
 - Length: Approximately 30 miles
- President George Bush Turnpike Eastern Extension (PGBT EE)
 - Limits: SH 78 in Garland to IH 30 in Garland
 - Length: Approximately 10 miles
 - President George Bush Turnpike Western Extension (PGBT WE)
 - Limits: IH 20 in Grand Prairie to SH 183 in Irving
 - Length: Approximately 10 miles
- Sam Rayburn Tollway (SRT)
 - Limits: Business 121 in Coppell to US 75 in McKinney
 - Length: Approximately 26 miles
- Chisholm Trail Parkway (CTP)
 - Limits: US 67 in Cleburne to IH 30 in Fort Worth
 - Length: Approximately 28 miles
- Addison Airport Toll Tunnel (AATT)
- Lewisville Lake Toll Bridge (LLTB)
- Mountain Creek Lake Bridge (MCLB)





Figure 1-1. North Texas Tollway Authority System 1.1. Background and Authority for Study

This study builds upon previous T&R studies, the most recent of which is the NTTA System Comprehensive Traffic and Toll Revenue Study, prepared by CDM Smith in September 2017 (the "September 2017 Study"). The September 2017 Study focused primarily on the PGBT WE and CTP, which were part of a separate system at the time (the Special Projects System). The results of the September 2017 Study supported the incorporation of PGBT WE and CTP into the NTTA System and dissolution of the Special Projects System. After completion of the September 2017 Study, a letter update and bringdown letter were prepared in 2018 and 2019, respectively. The current study is the first full comprehensive traffic and revenue study completed for the newly expanded NTTA System.

Since the completion of the previous study, the North Central Texas Council of Governments (NCTCOG) release a new MTP called Mobility 2045, which was formally adopted by the Regional Transportation Council in June 2018. The updated travel demand networks of the new MTP have been incorporated in this new NTTA System comprehensive traffic and revenue study. This study includes an independent assessment of current economic conditions and other key factors influencing forecasted traffic and revenue on NTTA System facilities. In addition, see Section 3 "Impacts of COVID-19 on the NTTA System". This study included an independent review of the



Mobility 2045 demographics along the NTTA System corridors as well as comprehensive traffic count and travel time data collection. In addition, observed transaction and revenue trends since the completion of the September 2017 Study are incorporated into this analysis.

1.2. Objective and Scope of Study

The purpose of this study is to develop T&R forecasts for the NTTA System (see **Figure 1-1**). The following outlines the general structure of the report:

Section 2 – NTTA System Traffic Trends and Characteristics

This section provides background information regarding the characteristics of NTTA's roadways and the highway infrastructure near NTTA System corridors. The information in this section provides a historical overview of traffic in the vicinity of the corridors, which was used as input when developing the T&R forecasts. CDM Smith collected traffic data to feed into and to calibrate the travel demand model. Data summarized in this chapter includes: historic traffic and revenue data for the system (through December 2019), traffic counts on competing routes and non-tolled ramps along NTTA facilities, travel time data on the NTTA System facilities and other roadways along the NTTA System corridors, and origin-destination data.

Section 3 – Impacts of COVID-19 on the NTTA System

This section provides an overview of the COVID-19 pandemic and its effect on the economic factors influencing travel. Additionally, this section includes a discussion on the observed impacts of the COVID-19 pandemic on the traffic trends across the NTTA System and the expected recovery of traffic on the NTTA System corridors is projected by examining data from other historical nationwide catastrophic events.

Section 4 – Dallas-Fort Worth Area Transportation Characteristics

This section contains a broad overview of the transportation system in the Dallas-Fort Worth (DFW) region and outlines the region-wide characteristics that may impact the NTTA System. The Mobility 2045 transportation commitments are described in this section.

Section 5 – Regional Demographic and Economic Trends

This section provides a description of the NCTCOG forecast process used to generate the base demographics and details the historical and expected future growth in the DFW region. The historical and expected future growth of the individual counties within the study area is also investigated followed by a description of the demographic characteristics along NTTA System corridors. Research and Demographic Solutions Group (RDS) performed an independent review of the official demographic datasets from NCTCOG. RDS's demographic review report is included as **Appendix A** at the end of this report. Their findings included the identification of necessary modifications to the regional growth projections within their study focus area. These modified growth projections were incorporated into the NCTCOG travel demand model resulting in an alternate set of trip tables. This alternate set of trip tables is referred to as the "revised" trip tables which were used for traffic forecasting and revenue estimation.



Section 6 – Travel Demand Model Development

This section describes the databases utilized as part of the analysis and highlights the methodologies implemented to calibrate and validate the travel demand model. The CDM Smith model is used to forecast future traffic on toll facilities and is calibrated to ensure it is capable of replicating current traffic conditions along NTTA System corridors.

Section 7 – Estimated Traffic and Revenue

This section provides the updated traffic forecasts and revenue estimates for the NTTA System based on the inputs described in previous sections. The toll sensitivity analyses performed as part of the study are described in detail in this section, including several sensitivity tests to measure impacts of changes to key input variables to the base T&R forecasts. Also presented are the average weekday transactions and annual toll revenues anticipated on the NTTA System, including the COVID impact/recovery assumptions as well as a description of the various other assumptions used in the forecasting process.



Section 2 NTTA System Traffic Trends and Characteristics

This section provides background information regarding the characteristics of NTTA System facilities and the highway infrastructure near the NTTA System. The information in this section provides a historical overview of traffic in the vicinity of the NTTA System, which was used as input when developing the traffic and toll revenue forecasts. CDM Smith undertook a comprehensive exercise of collecting traffic data to feed into the travel demand model, discussed in **section 6**. Data summaries in this section include: historical traffic and revenue data for the NTTA System (though December 2019), traffic counts on competing routes and non-tolled segments along NTTA facilities, travel time data on the NTTA System facilities and other roadways along the NTTA System corridors, and origin-destination data. It should be noted that the data collection exercise was carried out in 2019, i.e. before the start of the COVID-19 pandemic.

This section focuses on the data that was used as an input to the travel demand model (as described later in **Section 6**), to create a baseline assuming no COVID-19 impacts on the System. **Section 3** will describe the COVID-19 impacts on the NTTA System and the resulting updates to the model based upon the data summarized in that section. **Section 6** contains a detailed explanation of the methodology employed to develop the long-range T&R forecasts.

2.1. NTTA System Facilities in Operation

The NTTA System facilities currently in operation are the Dallas North Tollway (DNT), President George Bush Turnpike (PGBT), President George Bush Turnpike Eastern Extension (PGBT EE), Sam Rayburn Tollway (SRT), Addison Airport Toll Tunnel (AATT), Mountain Creek Lake Bridge (MCLB), Lewisville Lake Toll Bridge (LLTB), President George Bush Turnpike Western Extension (PGBT WE), and Chisholm Trail Parkway (CTP).





Figure 2-1. The NTTA System and 360 Tollway

2.1.1. Dallas North Tollway

The DNT, shown in **Figure 2-1**, is a limited-access, high-speed toll facility which extends northward from the junction with Stemmons Freeway (IH 35E) north of downtown Dallas through the Dallas suburbs to US 380 in Frisco. The existing DNT covers a distance of approximately 31 miles and traverses 41 interchanges. The original DNT, which extended from its current southern terminus to IH 635, was constructed and opened to traffic in its entirety in June 1968. It was extended to Frankford Road in June 1987 and to Legacy Road in Plano in September 1994. In April 2004, with the completion of the grade-separated multi-level interchange with SRT, the DNT was extended north to just south of Gaylord Parkway in Frisco. Extension Phase 3 extended the DNT from Gaylord Parkway to US 380 and opened to traffic on September 28, 2007. The opening sequence for the DNT is shown in **Table 2-1**. The existing DNT utilizes a "closed" toll collection system. Each of the four major sections of the facility have one mainlane toll gantry at which tolls are collected in both directions, with toll gantries positioned at selected ramps to prohibit toll-free movements on the facility. The sections of the DNT north of IH 635 are flanked by continuous city- or county-maintained service roads.

Project Phasing	Segment	Completion Date
Phase 1	IH 35E to IH 635	June 1968
Phase 1 Extension	IH 635 to Frankford Road	June 1987
Phase 2	Frankford Road to Legacy Road	September 1994

Table 2-1. Opening Sequence of DNT



Project Phasing	Segment	Completion Date			
Phase 2 Extension	Legacy Road to Gaylord Parkway	April 2004			
Phase 3 Extension	Gaylord Parkway to US 380	September 2007			

2.1.2. President George Bush Turnpike (Including Eastern Extension)

As illustrated in **Figure 2-1**, the PGBT (including Eastern Extension) currently extends from the junction with IH 30 at its eastern end, traversing the communities of Rowlett, Garland and Richardson to a junction with US 75. The PGBT continues westward through the cities of Plano and Dallas to an interchange with the DNT. The facility then continues in a southwesterly direction through Carrollton to the interchange with IH 35E. At this point from IH 35E, the PGBT turns due south, along the section referred to as Segment IV, to the interchange with IH 635. From IH 635, the PGBT section referred to as Segment V continues southwesterly through the city of Irving to the northern terminus of the existing SH 161 in the vicinity of Belt Line Road just east of the DFW International Airport. The entire PGBT, from IH 30 to Belt Line Road covers a total distance of approximately 40 miles and traverses 47 interchanges. The opening sequence of the PGBT facility is shown in **Table 2-2**.

Project Phasing	Segment	Completion Date
Segment I A	Midway Road to Preston Road	November 1998
Segment I B	Preston Road to Coit Road	June 1999
Segment I C	Coit Road to US 75	December 1999
Segment II A	US 75 to Campbell Road	December 1999
Segment II B	Campbell Road to SH 78	April 2000
Segment III	Midway Road to IH 35E	July 2001
Segment IV	IH 35E to IH 635	September 2005
Segment V	IH 635 to Beltline Road	December 2001
Eastern Extension	SH 78 to IH 30	December 2011

Table 2-2. Opening Sequence of PGBT (Including Eastern Extension)

The PGBT utilizes a "semi-closed" system of toll collection. The PGBT has six mainlane gantries positioned along the entire length of the facility with ramp gantries located on selected ramps along the project.

2.1.3. Sam Rayburn Tollway

The SRT corridor is approximately 26 miles in length and runs in a northeast/southwest direction between the interchange of US 75 in McKinney and Denton Tap Road near the bridge over Denton Creek in Coppell. In its 26 miles stretch, the SRT corridor traverses 29 interchanges and has a total of three mainlane gantries. First of the three mainlane gantries is located at the western terminus of the corridor, to the east of Denton Tap road. Second mainlane gantry is between Standridge and Josey lane interchanges. Whereas, the third mainlane gantry is located between Custer Road and Exchange Parkway. The corridor is crossed by several arterial streets as well as the DNT and IH 35E. The opening sequence for the SRT is shown in **Table 2-3**. The SRT currently utilizes a "semiclosed" system of toll collection. Toll-free sections are currently located near the interchanges with IH 35E and the DNT.



Project Phasing	Segment	Completion Date		
Phase 1	Denton Tap Road to Old Denton Road	July 2006		
Phase 2	Old Denton Road to Coit Road	August 2008		
Phase 3	Coit Road to Hardin Boulevard	September 2009		
Phase 4A	Hardin Boulevard to US 75	December 2010		
Phase 4B	Interchange at US 75	March 2011*		
Phase 5	Interchange at DNT	December 2011		

Table 2-3. (Opening	Sequence	of SRT
--------------	---------	----------	--------

*Four major direct connectors at this interchange were opened in December 2010

2.1.4. Addison Airport Toll Tunnel

The AATT is located in the town of Addison to the west of the DNT between IH 635 and the PGBT as shown in **Figure 2-1**. The AATT is a connector for Keller Springs Road and covers a distance of approximately 3,700 feet from Midway Road to Addison Road with the actual tunnel length being 1,600 feet long traveling under the Addison Airport runway. The AATT is a two-lane facility and is served by a single two-way toll gantry located at the western terminus. The AATT opened to traffic in February 1999.

2.1.5. Mountain Creek Lake Bridge

The MCLB is located in southwest Dallas and crosses Mountain Creek Lake and connects to Spur 303 on either side. The total length of the MCLB including approach roads is approximately two miles. The MCLB is a two-lane facility served by a single two-way toll gantry located at its western terminus. The MCLB was opened to traffic on April 30, 1979. Western terminus of the toll bridge connects to the President George Bush Turnpike Western Extension (PGBT-WE)

2.1.6. Lewisville Lake Toll Bridge

The LLTB is a 1.7-mile four-lane bridge in Denton County that is served by a single two-way toll gantry located at its western terminus. The western and eastern ends of the bridge lie in the cities of Lake Dallas and Little Elm, respectively. The LLTB is part of a corridor that runs from IH 35E in Lake Dallas to the Dallas North Tollway in Frisco and was opened to traffic on August 1, 2009.

2.1.7. President George Bush Turnpike Western Extension (PGBT-WE)

The PGBT-WE toll facility is approximately 11.5 miles long and runs from IH 20 in Grand Prairie to SH 183 in Irving. The corridor traverses 21 interchanges, including IH 20, SH 180 (Main Street), IH 30, and SH 183. Spur 303/Pioneer Parkway, which connects directly to the Mountain Creek Lake Toll Bridge, also crosses the PGBT-WE corridor. There are two mainlane plazas along the PGBT-WE, one to the south of Lower Tarrant parkway and the other to the south of Pioneer parkway. PGBT-WE was opened in phases, and the opening sequence of the facility is summarized in **Table 2-4**.

Project Phasing	Segment	Completion Date
Phase 1	SH 183 to Conflans Road	August 2009
Phase 2	Conflans Road to Egyptian Way	August 2009
Phase 3	Conflans Road to Egyptian Way (additional mainlanes)	April 2010
Phase 4	Egyptian Way to IH 20	October 2012

Table 2-4. Opening Sequence of PGBT WE



2.1.8. Chisholm Trail Parkway

The CTP is approximately 27.6 miles long and extends from US 67 in the City of Cleburne to IH 30 in the City of Fort Worth. The corridor crosses FM 1187, SH 183, and IH 20, as well as several east/west arterial routes including Vickery Boulevard, Berry Street, Seminary Drive, Altamesa Boulevard, and Sycamore School Road. The CTP was opened to traffic on May 2014.

2.2. Toll Collection System and Rates

The following section provides a summary of the existing NTTA System toll collection configuration and toll rates. Also included is a comparison of DNT, PGBT, SRT, PGBT WE and CTP per mile toll rates with other similar toll facilities throughout the United States. A brief description of the NTTA TollTag and ZipCash systems is also provided.

2.2.1. TollTag Program

In July 1989, a voluntary subscription electronic toll collection (ETC) system based on automatic vehicle identification (AVI) was installed on DNT. Prior to August 1, 1999 the program, known as TollTag, charged patrons a slightly higher toll and a monthly service fee. Subsequent to August 1, 1999, TollTag and cash patrons were assessed tolls under the revised cash differential, \$0.60/\$0.75 toll rate scenario. On January 1, 2002, this same \$0.60/\$0.75 toll rate concept was implemented on the PGBT. Since its introduction, the TollTag program has gained substantial popularity by assisting in the reduction of patron delay at toll gantries. Approximately 15,000 TollTags were in circulation in 1989, which more than doubled to approximately 32,000 by the end of 1990 and reached the milestone of one million in November 2005. According to NTTA, there are currently more than 5.6 million TollTags in circulation in 2020.

2.2.2. ZipCash Program

Between 2007 and 2010, the NTTA replaced its cash toll collection system with an all-electronic toll collection (AET) system that includes the ZipCash program. The ZipCash system allows travelers to use NTTA facilities without a TollTag. When a motorist without a TollTag drives through tolling points, high-speed cameras take digital images of the license plate, and the tolls are billed to the registered owner of the vehicle. ZipCash toll rates are typically 50 percent higher than TollTag rates, reflecting the higher costs of collection. This surcharge is added to each toll to cover the costs of processing.

NTTA completed the conversion of all its existing toll roads, bridges and tunnels to AET in December 2010. The SRT and LLTB were opened to traffic in 2008 and 2009 with an AET system and never offered a cash option. DNT's mainlane gantry near Wycliff Avenue was the first toll collection location that was converted to ZipCash in early 2007, and the first NTTA full facility to be converted from cash to AET was the PGBT in July 2009. Conversions of the rest of the DNT, AATT and MCLB followed in December 2010. The NTTA facilities that opened after December 2010 - PGBT-WE, PGBT-EE, and CTP - were opened as AET facilities.

2.2.3. NTTA System Toll Rates

On July 1, 2009, a new toll policy went into effect on the NTTA System. Under the new toll rate policy, the base toll rate for AVI users on DNT, PGBT, SRT and PGBT WE was set at \$0.145 per mile (in 2009 dollars). On CTP, the per mile rate (in 2009 dollars) was set at \$0.185 for the segment



between IH 30 and Altamesa Boulevard and \$0.145 per mile for the segment between Altamesa Boulevard and US 67. The per mile rates are to be adjusted every two years at an annual growth rate of 2.75 percent on all facilities. This toll policy was amended in late 2011, prior to the opening of the Eastern Extension of the PGBT, which includes changes to the toll escalation rate on the PGBT EE and toll revenue sharing terms with the TxDOT. The most recent toll rate adjustment under this new policy was applied on July 1, 2019. The updated per mile AVI rate on NTTA System facilities for two-axle vehicles is approximately \$0.19 per mile. This rate applies to users with TollTags as well as other tags supported by the NTTA's various interoperability agreements.

NTTA uses an axle-based vehicle classification system for determining the toll that each vehicle pays. For example, tolls charged to vehicles with five axles are four times the toll charged to vehicles with two axles. Currently, all NTTA System facilities operate under cashless (ZipCash) toll collection system, where the license plates of vehicles without valid transponders using these facilities are photographed and are invoiced at a higher toll than the AVI toll.

Dallas North Tollway

As shown in **Figure 2-2**, the southernmost Mainlane Gantry 1 (MLP 1) is located between Wycliff Avenue and Cedar Springs Road. Ramp toll collection facilities within the original portion of the DNT are located at Mockingbird Lane, Northwest Highway and Royal Lane to and from the north only. On Extension Phase 1, the MLP 2 is located between Keller Springs Road and Trinity Mills Road. Ramp toll collection facilities within the Extension Phase 1 are located at Spring Valley Road, Belt Line Road and Keller Springs Road to and from the south, and at Frankford Road to and from the north.

The MLP 3 on Extension Phase 2 is located between Chapel Hill Boulevard and Parker Road. Ramp toll collection facilities within Extension Phase 2 are located to and from the south at West Park Boulevard, and to and from the north at Parker Road and Spring Creek Parkway. In addition, with completion of the SRT/DNT interchange ramp toll collection facilities are located to and from the south on the ramps just north of SRT.

On the Extension Phase 3, the MLP 4 is located between Main Street and Eldorado Parkway. Ramp toll collection facilities within Extension Phase 3 are located to and from the south of John Hickman, Stonebrook Parkway, and Cotton Gin Road. Additional ramp toll collection facilities are located to and from the north of Eldorado Parkway.





Figure 2-2. Current (2020) DNT Toll Collection System and Passenger Car Toll Rates

President George Bush Turnpike (Including PGBT EE)

The collection system for the PGBT is presented in **Figures 2-3** and **2-4**. There are six mainlane gantries between IH 30 in the city of Garland and Belt Line Road in the city of Irving. MLP 5 is located near Merritt Road; MLP 6 is positioned between Shiloh Road and Renner Road; MLP 7 is located between Coit Road and Hillcrest Road; MLP 8 is placed between Frankford Road and Kelly Boulevard; MLP 9 is set between Sandy Lake Road and Belt Line Road in Carrollton/Farmers Branch; and MLP 10 is located between Gateway Road and Belt Line Road in Irving.

When traveling eastbound on the PGBT, the on-ramp toll gantries are located west of Gateway Road, east of Royal Lane, east of Marsh Lane, east of Midway Road, east of Coit Road, west of Custer Drive, east of Shiloh Road, east of Campbell Road, east of Garland Avenue, east of Merritt Road, east of Main Street and east of Miller Road. Off-ramp toll gantries are located west of Belt Line Road, west of Josey Lane, west of Kelly Boulevard, west of Preston Road, east of Jupiter Road, east of Renner Road, west of Crist Road, west of Firewheel Parkway and west of Miles Road.

When traveling westbound on the PGBT the on-ramp toll gantries are located west of Miles Road, west of Firewheel Parkway, west of Crist Road, east of Renner Road, east of Jupiter Road, west of Preston Road, west of Kelly Boulevard, west of Josey Lane and west of Belt Line Road, while the offramp toll gantries are located east of Miller Road, east of Main Street, east of Merritt Road, east of Garland Avenue, east of Campbell Road, east of Shiloh Road, west of Custer Drive, east of Coit Road, east of Midway Road, east of Marsh Lane, east of Royal Lane and west of Gateway Road.





Figure 2-3. Current (2020) PGBT (Excluding PGBT EE) Toll Collection System and Passenger Car Toll Rates



Current (2020) PGBT EE Toll Collection System and Passenger Car Toll Rates

Sam Rayburn Tollway

Tolls are currently collected on the SRT at three mainlane gantries and forty ramp gantries as shown in **Figure 2-5**. The mainlane gantries are located near Denton Tap Road, Josey Lane and



Custer Road. The ramp gantries are located at MacArthur Boulevard, Carrollton Parkway, Parker Road, FM 2281, Standridge Drive, Josey Lane, Plano Parkway, Spring Creek Parkway, Preston Road, Ohio Drive, Coit Road, Independence Parkway, Custer Road, Alma Drive, Stacy Road, Lake Forest Drive and Hardin Boulevard.



Figure 2-5. Current (2020) SRT Toll Collection System and Passenger Car Toll Rates

President George Bush Turnpike Western Extension

Tolls are currently collected on the PGBT WE at two mainlane gantries and eighteen ramp gantries as shown in **Figure 2-6**. The mainlane gantries are located near Lower Tarrant Road and Arkansas Lane. The ramp gantries are located at Conflans Road, Shady Grove Road, Lower Tarrant Road, Dalworth Street, Marshall Drive, Pioneer Parkway, Arkansas Lane and Mayfield Road.





Figure 2-6. Current (2020) PGBT WE Toll Collection System and Passenger Car Toll Rates

Chisholm Trail Parkway

Tolls are currently collected on the CTP at three mainlane gantries and twenty-four ramp gantries as shown in **Figure 2-7**. The mainlane gantries are located near Hulen Street, FM 1187 and CR 904. The ramp gantries are located at Edwards Ranch Road, Arborlawn Drive, Oakmont Boulevard, Altamesa Boulevard, Sycamore School Road, McPherson Boulevard, FM 1187, CR 920, CR 913, FM 917, CR 904 and Sparks Drive.

AATT, MCLB and LLTB

As stated previously, the AATT, MCLB and LLTB are each served by a single mainlane toll gantry. The mainlane gantry for the AATT is positioned at the western terminus of the tunnel. The mainlane gantry for the MCLB is located at the bridge's western terminus. The LLTB's mainlane gantry is located at the western end of the bridge in Lake Dallas.

The current toll rates (effective through June 30, 2021) on various NTTA gantries are shown in **Table 2-5**.





Figure 2-7. Current (2020) CTP Toll Collection System and Passenger Car Toll Rates



	Table 2-5. Existing NITA System Toll Rates for Two-Axle Vehicles									
DNT	TT	ZC	PGBT	TT	ZC	СТР	TT	ZC		
MLG 1 (Wycliff)	\$1.65	\$2.48	Miller Road	\$0.47	\$0.74	MLG 1 (Montgomery)	\$1.51	\$2.27		
Mockingbird Lane	\$1.20	\$1.80	Main Street	\$0.63	\$0.95	Edwards Ranch Road	\$0.64	\$0.96		
Northwest Highway	\$0.82	\$1.23	Merritt Road	\$1.00	\$1.50	Arborlawn Drive	\$0.37	\$0.64		
Royal Lane	\$0.43	\$0.70	MLG 5 (Merritt)	\$1.89	\$2.84	Oakmont Boulevard	\$0.53	\$0.80		
Spring Valley Road	\$0.29	\$0.56	Miles Road	\$0.40	\$0.67	Altamesa Boulevard	\$0.83	\$1.25		
Belt Line Road	\$0.38	\$0.65	Firewheel Parkway	\$0.29	\$0.56	Sycamore School Road	\$0.87	\$1.31		
Keller Springs Road	\$0.57	\$0.86	Crist Road	\$0.29	\$0.56	McPherson Boulevard	\$1.17	\$1.76		
MLG 2 (Trinity Mills)	\$1.18	\$1.77	North Garland Avenue	\$0.33	\$0.60	MLG 2 (Stewart Feltz)	\$2.45	\$3.68		
Frankford Road	\$0.29	\$0.56	Campbell Road	\$0.54	\$0.81	FM 1187	\$0.67	\$1.01		
FM 544	\$0.29	\$0.56	East Renner Road	\$0.87	\$1.31	CR 920	\$0.40	\$0.67		
MLG 3 (Parker)	\$1.05	\$1.58	MLG 6 (Shiloh)	\$1.31	\$1.97	CR 913	\$0.41	\$0.68		
Parker Road	\$0.63	\$0.95	Shiloh Road	\$0.67	\$1.01	FM 917	\$0.74	\$1.11		
Windhaven Parkway	\$0.50	\$0.77	West Renner Road	\$0.44	\$0.71	CR 904	\$1.11	\$1.67		
Spring Creek Parkway	\$0.35	\$0.62	Independence Parkway	\$0.45	\$0.72	MLG 3 (Sparks)	\$1.83	\$2.75		
Gaylord Parkway	\$0.29	\$0.56	Coit Road	\$0.68	\$1.02	Sparks Road	\$0.32	\$0.59		
Legacy Drive	\$0.29	\$0.56	MLG 7 (Coit)	\$1.41	\$2.12					
Headquarters Drive	\$0.29	\$0.56	Preston Road	\$0.38	\$0.65					
Lebanon Road	\$0.43	\$0.70	Midway Road	\$0.29	\$0.56					
Stone Brook Parkway	\$0.55	\$0.83	Marsh Lane	\$0.38	\$0.65					
Cotton Gin Rd./Main S	\$0.89	\$1.34	MLG 8 (Frankford)	\$1.31	\$1.97					
MLG 4 (Eldorado)	\$1.85	\$2.78	Kelly Boulevard	\$0.69	\$1.04					
Eldorado Parkway	\$0.67	\$1.01	Josey Lane	\$0.45	\$0.72					
			MLG 9 (Sandy Lake)	\$1.04	\$1.56					
				91.04	φ±.00					
SRT	TT	ZC	Belt Line Road North	\$0.62	\$0.93					
SRT MLG 1 (Denton Tap)	TT \$0.63	ZC \$0.95	Belt Line Road North Royal Lane	\$0.62 \$0.31	\$0.93 \$0.58					
SRT MLG 1 (Denton Tap) MacArthur Boulevard	TT \$0.63 \$0.29	ZC \$0.95 \$0.56	Belt Line Road North Royal Lane Belt Line Road South	\$0.62 \$0.31 \$0.60	\$0.93 \$0.58 \$0.90					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway	TT \$0.63 \$0.29 \$0.29	ZC \$0.95 \$0.56 \$0.56	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line)	\$0.62 \$0.31 \$0.60 \$0.60	\$0.93 \$0.58 \$0.90 \$0.90					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road	TT \$0.63 \$0.29 \$0.29 \$0.41	ZC \$0.95 \$0.56 \$0.56 \$0.68	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road	TT \$0.63 \$0.29 \$0.29 \$0.41 \$0.47	2C \$0.95 \$0.56 \$0.56 \$0.68 \$0.74	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29 \$0.49	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West	TT \$0.63 \$0.29 \$0.29 \$0.41 \$0.47 \$0.71	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29 \$0.49 \$0.51	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West	TT \$0.63 \$0.29 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant)	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey)	TT \$0.63 \$0.29 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.91	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East	TT \$0.63 \$0.29 \$0.21 \$0.71 \$0.86 \$1.62 \$0.91	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive	\$0.62 \$0.31 \$0.60 \$0.60 \$0.29 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.29	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway	\$0.63 \$0.29 \$0.41 \$0.47 \$0.86 \$1.62 \$0.91 \$0.76	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway	\$0.62 \$0.31 \$0.60 \$0.29 \$0.29 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.30	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas)	\$0.62 \$0.31 \$0.60 \$0.29 \$0.29 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70 \$1.16	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road	\$0.63 \$0.29 \$0.41 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.30 \$0.29	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane	\$0.62 \$0.31 \$0.60 \$0.29 \$0.29 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05 \$1.05					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road	\$0.63 \$0.29 \$0.41 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.30 \$0.29 \$0.30	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road	\$0.62 \$0.31 \$0.60 \$0.29 \$0.29 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29	\$0.93 \$0.58 \$0.90 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.60 \$0.30 \$0.29 \$0.30 \$0.66	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.99	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$0.56 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05 \$1.05 \$1.05					
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.76 \$0.60 \$0.30 \$0.29 \$0.30 \$0.66 \$0.87	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.29 \$0.29 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$0.56 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05 \$1.74 \$0.68 \$0.56	TollTag Ra	te			
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.76 \$0.60 \$0.30 \$0.29 \$0.30 \$0.66 \$0.87 \$1.08	2C \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29 \$0.41 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05 \$1.74 \$0.68 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.05 \$1.05 \$0.58	TollTag Ra \$0.19 per m	te nile			
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road MLG 3 (Custer)	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.91 \$0.60 \$0.30 \$0.29 \$0.30 \$0.66 \$1.08 \$2.24	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62 \$3.36	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29 \$0.41 \$0.29 \$0.55	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56	TollTag Ra \$0.19 per m	te nile			
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road MLG 3 (Custer) Exchange Parkway	FT \$0.63 \$0.29 \$0.41 \$0.71 \$0.86 \$1.62 \$0.91 \$0.60 \$0.30 \$0.29 \$0.30 \$0.66 \$1.08 \$2.24 \$1.16	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62 \$3.36 \$1.74	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry Mountain Creek Lake Bri	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29 \$0.41 \$0.29 \$1.16 \$0.41 \$0.29 \$1.16 \$0.41 \$0.29	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56	TollTag Ra \$0.19 per m ZipCash Ra	te nile ite			
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road MLG 3 (Custer) Exchange Parkway Alma Drive	FT \$0.63 \$0.29 \$0.41 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.30 \$0.29 \$0.30 \$0.66 \$1.08 \$2.24 \$1.16 \$0.85	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62 \$3.36 \$1.74 \$1.28	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry Mountain Creek Lake Bri Mainlane Gantry	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29 \$0.41 \$0.29 \$0.41 \$0.66	\$0.93 \$0.90 \$0.90 \$0.56 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56	TollTag Ra \$0.19 per m ZipCash Ra TollTag rate + 50% sur	te nile te	\$0.26		
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road MLG 3 (Custer) Exchange Parkway Alma Drive Stacy Road	\$0.63 \$0.29 \$0.41 \$0.71 \$0.86 \$1.62 \$0.76 \$0.60 \$0.30 \$0.66 \$0.30 \$0.66 \$0.87 \$1.08 \$2.24 \$1.16 \$0.85	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62 \$3.36 \$1.74 \$1.28 \$1.01	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry Mountain Creek Lake Bri Mainlane Gantry	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.29 \$0.41 \$0.29 \$1.16 \$0.41 \$0.66	\$0.93 \$0.58 \$0.90 \$0.56 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56	TollTag Ra \$0.19 per m ZipCash Ra TollTag rate + 50% sur minimum	te hile te charge (\$0.26		
SRT MLG 1 (Denton Tap) MacArthur Boulevard Carrollton Parkway Parker Road Old Denton Road Standridge Drive West Josey Lane West MLG 2 (Josey) Standridge Drive East Josey Lane East Plano Parkway Spring Creek Parkway Preston Road Hillcrest Road Coit Road Independence Parkway Custer Road MLG 3 (Custer) Exchange Parkway Alma Drive Stacy Road Lake Forest Drive	TT \$0.63 \$0.29 \$0.41 \$0.47 \$0.71 \$0.86 \$1.62 \$0.91 \$0.76 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.29 \$0.30 \$0.66 \$0.87 \$1.08 \$2.24 \$1.16 \$0.85 \$0.67 \$0.52	ZC \$0.95 \$0.56 \$0.68 \$0.74 \$1.07 \$1.29 \$2.43 \$1.37 \$1.14 \$0.90 \$0.57 \$0.56 \$0.57 \$0.56 \$0.57 \$0.99 \$1.31 \$1.62 \$3.36 \$1.74 \$1.28 \$1.01 \$0.79	Belt Line Road North Royal Lane Belt Line Road South MLG 10 (Belt Line) Conflans Road Shady Grove Road Lower Tarrant North MLG 11 (Lower Tarrant) Lower Tarrant South Dalworth Street Marshall Drive Pioneer Parkway MLG 12 (Arkansas) Arkansas Lane Mayfield Road Addison Airport Toll Tun Mainlane Gantry Mountain Creek Lake Bri Mainlane Gantry	\$0.62 \$0.31 \$0.60 \$0.29 \$0.49 \$0.51 \$1.10 \$0.29 \$0.55 \$0.70 \$1.16 \$0.41 \$0.66 \$1.16 \$0.66 \$1.16 \$0.66	\$0.93 \$0.90 \$0.56 \$0.76 \$0.76 \$0.76 \$0.78 \$1.65 \$0.56 \$0.56 \$0.56 \$0.56 \$0.83 \$1.05 \$1.74 \$0.68 \$0.56 \$0.74 \$0.68 \$0.56 \$0.79 \$1.74 \$0.68 \$0.56 \$0.99	TollTag Ra \$0.19 per m ZipCash Ra TollTag rate + 50% sur minimum Minimum T	te nile te charge (1) oll:	\$0.26		

Note: Tolls for vehicles with more than two axles are calculated using the (N-1) multiplier.

2.2.4. Comparison of Per-Mile Toll Rates

The average per-mile toll rates for passenger cars on the NTTA System are compared with other representative urban toll facilities throughout the United States in Figure 2-8. In general, toll rates on the NTTA System fall within the range of rates on other urban toll facilities. Currently, the



average per-mile toll rate for two-axle vehicles is approximately \$0.19 per mile on all NTTA facilities for TollTag/AVI users, while ZipCash users are charged \$0.19 per mile plus a 50 percent surcharge with a minimum surcharge of \$0.26 per transaction. All the NTTA facilities employ "N-1" factor multiplier method to determine commercial vehicle (CV) toll rates. As per this method, the toll rate for a vehicle is computed as (N-1)*(two-axle toll rate), where "N" is the number of axles on the vehicle, including any connected trailers. It should be noted that for most of the agencies using this method, a two-axle commercial truck, such as a delivery service or moving truck, is charged same as a two-axle passenger car.



Figure 2-8. Per Mile AVI Toll Rate Comparison to Other Toll Facilities

2.3. Annual Transaction Trends

CDM Smith evaluated transaction trends on the NTTA System from January 1, 2007 through December 31, 2019. This evaluation was used to provide a general understanding of the current, as well as historical, performance of the NTTA System facilities. The analysis provided useful insight into the effect that major toll configuration changes, such as the addition of extension projects, toll increases, the economic downturn between 2007 and 2010 have had on NTTA System growth trends.



2.3.1. Trends in Average Daily Transactions

Trends in annual average daily transactions from January 2007 to December 2019 for the NTTA System facilities are presented in **Table 2-6** and are based on unaudited transaction data from NTTA. Since 2008, the average daily transaction for NTTA System has been growing at an annual rate ranging between 1.5 percent and 17.2 percent.

In 2019, daily transactions averaged approximately 763,700 on the DNT. Annual average daily transactions have grown by 4.1 percent since 2018, despite construction along the corridor. With the exception of 2009, transactions on DNT have experienced consistent positive growth over the last ten years showing strong growth. As the facility grows, expansions of the roadway are completed and economic development expands northward, transactions and revenues will likely remain robust. However, the facility had a small dip of 0.9 percent in 2017 attributable to the effects of reduced capacity and speeds while it was under construction for addition of fourth lane between IH 635 in Dallas and SRT in Frisco.

As shown in **Table 2-6**, the opening of segments of the SRT in 2008 and 2009, as well as the economic downturn, had a negative impact on the PGBT's annual growth. Transactions on the PGBT declined by 1.5 percent between 2007 and 2008 and decreased by an additional 2.7 percent between 2008 and 2009. Between 2009 and 2016, transactions on the PGBT have seen a consistent positive growth trajectory. However, in 2017, this trend reversed with a 0.02 percent dip in the transactions. Since 2017, transactions on the PGBT have again shown consistent positive growth, increasing 0.4 percent and 0.8 percent in 2018 and 2019, respectively. Since 2014, the transactions increased from 636,500 daily transactions to 677,400 transactions in 2019. The PGBT EE, which opened in late December 2011, saw average daily transaction growth of 3.5 percent in 2019.

Transactions on the SRT increased in 2009 and 2010 by 21.0 and 28.5 percent, respectively, due to ramp up and the opening of new segments of the facility. The transaction growth has continued to be strong on the SRT as the facility has matured. SRT transactions grew by 5.2 percent in 2018 and by 1.1 percent in 2019.

As indicated in **Table 2-6**, there was a consistent decrease in transactions on the AATT between 2007 and 2010 which could be partially attributed to the opening of the Arapaho Road Bridge in January 2006, which created a toll-free competing alternative parallel route for east-west traffic along the AATT corridor. AATT saw consistent positive transaction growth between 2011 and 2015 but is on a declining trend since 2016.

Since its opening in November 1979, the MCLB has been subject to alternative periods of both positive and negative transactions and toll revenue growth, as is evident in Table 2-6. However, in recent years, except for 2019, transactions on the MCLB have typically seen positive growth.

Transactions on the LLTB has seen consistent positive transaction growth since its opening in 2009, and growth in transactions jumped noticeably since 2016 following the completion of the Eldorado Parkway corridor through Little Elm and Frisco.



Table 2-0. NTTA System Annual Average Daily Transactions (thousands)										
Year	DNT	PGBT	PGBTEE	PGBTWE	SRT	СТР	AATT	MCLB	LLTB	NTTA System
2007	535.3	501.6					5.8	8.4		1,051.1
2008	566.4	493.9			157.3		5.6	8.3		1,231.5
Change	5.8%	-1.5%					-3.8%	-1.2%		17.2%
2009	562.1	480.5		16.9	190.2		5.0	8.2	6.9	1,270.0
Change	-0.8%	-2.7%			21.0%		-10.5%	-0.5%		3.1%
2010	563.8	497.4		26.4	244.4		4.8	7.3	8.2	1,352.3
Change	0.3%	3.5%		55.6%	28.5%		-4.8%	-11.7%	19.3%	6.5%
2011	590.5	524.8	21.0	32.1	272.0		5.3	6.7	9.7	1,462.3
Change	4.7%	5.5%		21.8%	11.3%		11.1%	-7.6%	18.7%	8.1%
2012	629.3	581.3	67.4	46.5	304.9		5.5	6.9	10.7	1,652.4
Change	6.6%	10.7%	220.7%	44.9%	12.1%		3.4%	2.3%	10.0%	13.0%
2013	638.9	611.1	76.3	109.8	328.6		5.8	6.5	11.1	1,788.0
Change	1.5%	5.1%	13.2%	135.9%	7.8%		4.7%	-6.1%	3.7%	8.2%
2014	668.3	636.5	82.7	131.4	360.5	40.1	6.3	6.6	12.0	1,944.2
Change	4.6%	4.2%	8.4%	19.7%	9.7%		9.0%	1.6%	8.0%	8.7%
2015	702.2	652.2	90.7	149.4	388.2	66.5	6.7	7.0	12.7	2,075.6
Change	5.1%	2.5%	9.7%	13.8%	7.7%	66.1%	6.4%	5.8%	6.0%	6.8%
2016	714.5	669.5	99.1	167.1	416.4	81.5	6.3	7.4	15.1	2,176.9
Change	1.8%	2.7%	9.3%	11.8%	7.3%	22.5%	-5.6%	5.8%	18.4%	4.9%
2017	707.8	669.4	100.7	170.0	436.7	94.2	5.9	7.3	17.4	2,209.4
Change	-0.9%	-0.02%	1.6%	1.7%	4.9%	15.6%	-6.8%	-1.2%	15.7%	1.5%
2018	733.6	671.8	101.2	173.9	459.4	104.0	5.5	7.4	19.3	2,276.2
Change	3.6%	0.4%	0.5%	2.3%	5.2%	10.4%	-5.8%	2.2%	10.8%	3.0%
2019	763.7	677.4	104.8	176.2	464.7	110.5	5.2	7.1	21.5	2,331.1
Change	4.1%	0.8%	3.5%	1.4%	1.1%	6.2%	-5.7%	-4.2%	11.0%	2.4%

Table 2-6. NTTA System Annual Average Daily Transactions (thousands)

Source: Unaudited NTTA Transaction Data

2.3.2. Trends in Monthly Transactions: NTTA System

Tables 2-7 through **2-11** show the monthly transactions for each facility from January 2010 through December 2019. As can be seen from these tables, transactions on NTTA facilities have increased from 2010 through 2019.

There was a drop in transactions between 2016 and 2017 for DNT due to expansion of the facility to four lanes, per direction. Upon the completion of the fourth lane expansion, DNT observed growth in transactions.



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	14.7	14.7	16.7	16.0	16.8	16.1	16.1	16.9	15.7	17.9	16.8	17.0	195.4
2008	17.1	16.8	17.3	17.8	17.9	17.2	17.4	17.4	16.8	18.1	16.2	17.3	207.3
Change	16.3%	14.0%	3.9%	10.7%	6.7%	6.9%	8.4%	2.8%	7.2%	1.2%	-3.4%	1.4%	6.1%
2009	16.5	16.2	17.5	17.6	17.7	17.6	17.5	17.5	16.5	17.5	16.2	17.0	205.1
Change	-3.9%	-3.7%	1.0%	-1.0%	-1.1%	2.6%	0.2%	0.6%	-1.8%	-3.7%	-0.3%	-1.4%	-1.0%
2010	16.2	15.4	17.8	17.6	17.5	17.4	17.2	17.5	16.8	17.8	16.6	17.9	205.8
Change	-1.5%	-5.0%	1.6%	0.2%	-1.0%	-1.0%	-1.5%	0.2%	2.1%	2.0%	2.9%	5.0%	0.3%
2011	16.8	14.6	18.8	18.4	18.5	18.3	17.6	18.6	18.1	18.8	18.2	19.0	215.6
Change	3.2%	-4.8%	6.0%	4.7%	5.5%	4.9%	2.3%	6.0%	7.4%	5.6%	9.3%	6.2%	4.8%
2012	18.9	18.4	19.7	19.2	20.0	19.4	19.1	19.8	18.3	20.0	18.6	18.8	230.3
Change	13.0%	26.2%	4.8%	3.9%	8.3%	6.0%	8.4%	6.6%	1.5%	6.2%	2.5%	-1.1%	6.8%
2013	18.9	18.1	20.0	19.8	20.4	19.6	19.6	20.5	19.2	20.6	18.7	17.8	233.2
Change	-0.3%	-2.0%	1.1%	3.1%	2.0%	0.9%	2.5%	3.5%	4.7%	3.3%	0.6%	-5.0%	1.2%
2014	19.7	18.1	20.2	20.6	21.1	20.4	20.6	20.9	20.3	21.7	19.4	21.0	244.0
Change	4.1%	-0.2%	1.1%	4.3%	3.5%	4.3%	5.5%	1.9%	5.7%	5.0%	3.7%	17.7%	4.6%
2015	20.5	18.0	21.6	21.8	22.0	22.1	22.1	22.1	21.4	22.3	20.4	22.0	256.4
Change	4.2%	-0.1%	6.8%	5.8%	4.3%	8.6%	7.1%	5.9%	5.7%	2.9%	5.0%	4.8%	5.1%
2016	21.4	21.0	22.5	22.1	22.4	21.6	21.6	22.3	21.5	22.2	20.9	21.8	261.5
Change	4.4%	16.7%	4.6%	1.5%	1.5%	-2.4%	-2.4%	1.0%	0.5%	-0.3%	2.4%	-0.8%	2.0%
2017	21.2	20.2	22.8	21.5	22.8	21.7	21.5	21.7	21.0	22.0	21.0	21.0	258.4
Change	-1.0%	-4.0%	1.3%	-3.0%	1.9%	0.5%	-0.3%	-2.8%	-2.5%	-1.3%	0.6%	-3.7%	-1.2%
2018	21.2	19.6	22.8	22.3	23.5	23.0	22.4	23.5	21.5	23.3	22.1	22.4	267.7
Change	0.2%	-2.9%	0.0%	3.9%	2.9%	6.1%	4.2%	8.2%	2.5%	6.0%	5.4%	6.7%	3.6%
2019	22.5	21.1	23.6	23.3	24.1	23.4	23.6	24.2	22.9	24.2	22.6	23.4	278.8
Change	6.2%	7.4%	3.2%	4.4%	2.7%	1.3%	5.1%	2.8%	6.5%	4.2%	1.9%	4.4%	4.1%

Table 2-7. Monthly Transaction Trends – Dallas North Tollway (millions)

Source: Unaudited NTTA Transaction Data

Table 2-8. Monthly Transaction Trends – President George Bush Turnpike (millions)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	13.9	13.8	15.7	15.3	16.1	15.6	15.5	16.5	15.1	16.0	14.9	14.7	183.1
2008	15.1	14.8	15.2	15.8	15.8	15.2	15.4	15.3	14.6	15.4	13.7	14.4	180.7
Change	8.2%	7.4%	-3.0%	3.3%	-1.4%	-2.3%	-0.9%	-7.8%	-3.1%	-3.8%	-8.0%	-1.9%	- 1.3%
2009	13.8	13.5	14.8	14.8	14.9	15.1	15.0	15.6	15.0	15.8	14.7	15.0	177.9
Change	-8.4%	-8.8%	-2.9%	-5.9%	-5.8%	-0.9%	-3.0%	2.3%	2.5%	2.3%	7.1%	4.2%	-1.5%
2010	14.4	13.8	16.2	16.2	16.4	16.4	16.2	16.7	16.1	16.9	15.8	16.2	191.2
Change	4.7%	1.8%	9.5%	9.5%	9.8%	8.3%	8.6%	7.1%	7.4%	7.1%	7.5%	7.6%	7.5%
2011	15.6	13.2	17.4	17.1	17.4	17.8	17.1	18.1	17.5	18.1	17.0	17.9	204.1
Change	8.0%	-3.7%	7.4%	5.2%	6.2%	8.7%	5.5%	8.3%	8.6%	7.0%	7.3%	10.8%	6.7%
2012	19.4	19.3	20.9	20.6	22.0	21.5	21.1	21.9	20.3	22.9	22.2	22.1	254.1
Change	24.6%	45.7%	20.5%	20.5%	26.2%	20.7%	23.0%	21.1%	16.1%	26.6%	30.8%	23.6%	24.5%
2013	22.4	21.7	24.2	24.4	25.8	24.7	24.9	26.0	24.4	26.2	24.1	21.9	290.9
Change	15.0%	12.4%	15.6%	18.7%	17.4%	15.2%	18.5%	18.6%	20.3%	14.8%	8.8%	-0.8%	14.5%
2014	24.4	22.7	25.6	26.5	27.2	26.4	26.7	26.7	26.0	27.6	24.7	26.1	310.5
Change	8.9%	4.5%	5.7%	8.3%	5.7%	6.7%	6.9%	2.7%	6.5%	5.1%	2.4%	19.1%	6.7%
2015	25.5	22.5	27.0	27.8	28.0	28.6	28.6	28.1	27.6	28.5	26.1	27.7	325.9
Change	4.7%	-0.9%	5.6%	5.1%	2.6%	8.2%	7.1%	5.2%	6.1%	3.4%	5.5%	6.0%	4.9%
2016	26.9	26.9	29.0	28.8	29.4	29.4	28.7	29.7	28.7	29.4	27.6	28.0	342.4
Change	5.4%	20.0%	7.1%	3.6%	5.1%	2.9%	0.3%	5.7%	4.2%	2.9%	5.8%	1.2%	5.1%
2017	27.1	26.1	30.0	28.6	30.2	29.6	28.6	29.8	28.2	29.7	28.0	27.2	343.1
Change	0.9%	-3.1%	3.5%	-0.8%	2.9%	0.7%	-0.1%	0.3%	-1.8%	1.1%	1.4%	-2.9%	0.2%
2018	27.1	25.6	30.0	29.0	30.7	29.8	29.3	30.7	27.7	29.7	28.4	27.7	345.6
Change	0.0%	-2.1%	-0.1%	1.5%	1.4%	0.8%	2.2%	3.0%	-1.9%	0.1%	1.4%	2.0%	0.7%
2019	27.9	26.6	29.8	29.4	30.4	29.5	29.7	30.5	28.8	30.8	28.0	28.5	349.8
Change	2.9%	3.9%	-0.5%	1.4%	-0.7%	-1.1%	1.5%	-0.8%	4.1%	3.4%	-1.2%	2.8%	1.2%

Source: Unaudited NTTA Transaction Data


	Table 2-3. Wonting Transaction Trends – Sam Rayburn Tonway (minions)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2008									4.6	4.9	4.7	5.0	19.2
2009	4.7	4.6	5.2	5.4	5.6	5.8	6.0	5.9	6.0	6.7	6.6	6.9	69.5
Change									30.2%	35.2%	42.2%	38.4%	262.0%
2010	6.5	6.1	7.3	7.3	7.7	7.7	7.8	7.9	7.5	7.9	7.5	8.1	89.3
Change	37.2%	32.1%	38.5%	35.3%	38.3%	32.5%	30.5%	33.8%	23.9%	18.8%	13.8%	17.0%	28.5%
2011	7.5	6.5	8.3	8.2	8.6	8.7	8.5	8.7	8.3	8.6	8.4	8.9	99.4
Change	16.7%	5.5%	14.9%	11.8%	11.8%	12.8%	9.4%	10.1%	11.3%	9.0%	11.7%	11.0%	11.3%
2012	8.6	8.5	9.2	9.1	9.7	9.7	9.5	9.8	9.1	9.8	9.3	9.3	111.6
Change	14.4%	30.9%	10.2%	11.7%	13.3%	11.4%	11.2%	12.4%	9.2%	13.1%	10.1%	4.4%	12.3%
2013	9.2	8.8	9.9	9.9	10.4	10.3	10.4	10.8	10.1	10.7	10.0	9.4	120.0
Change	6.4%	4.1%	7.7%	8.6%	6.9%	6.4%	9.2%	10.3%	10.8%	9.9%	8.2%	1.0%	7.5%
2014	10.3	9.4	10.7	11.0	11.5	11.3	11.4	11.5	11.0	11.7	10.6	11.3	131.6
Change	11.6%	6.6%	8.0%	10.6%	10.9%	9.7%	9.8%	6.7%	9.2%	8.9%	5.5%	19.9%	9.7%
2015	10.8	9.5	11.6	11.8	12.2	12.5	12.7	12.5	12.0	12.3	11.5	12.4	141.8
Change	5.6%	0.6%	8.1%	7.9%	5.9%	11.0%	11.1%	8.3%	9.1%	5.7%	9.1%	9.2%	7.7%
2016	11.8	11.7	12.7	12.6	13.1	13.1	13.1	13.2	12.6	13.1	12.4	12.9	152.4
Change	9.1%	23.5%	10.1%	6.6%	7.4%	4.9%	3.3%	5.7%	5.2%	6.2%	7.9%	4.2%	7.5%
2017	12.3	11.7	13.5	13.2	14.1	13.8	13.5	13.9	13.1	13.8	13.2	13.3	159.4
Change	3.8%	0.6%	6.4%	4.4%	7.4%	5.1%	3.1%	5.3%	4.0%	4.9%	6.3%	3.5%	4.6%
2018	13.0	12.0	14.4	13.9	14.8	14.7	14.4	14.9	13.5	14.4	14.0	13.9	167.7
Change	6.1%	2.2%	6.3%	5.3%	5.1%	6.3%	6.6%	7.1%	2.8%	4.6%	5.6%	4.0%	5.2%
2019	13.6	12.7	14.4	14.2	14.9	14.4	14.7	14.7	13.8	14.6	13.6	14.0	169.6
Change	4.2%	5.9%	-0.2%	2.1%	0.9%	-1.7%	2.1%	-1.1%	2.4%	1.6%	-2.5%	1.2%	1.1%

Table 2-9. Monthly Transaction Trends – Sam Rayburn Tollway (millions)

Source: Unaudited NTTA Transaction Data

Table 2-10. Monthly Transaction Trends – Chisholm Trail Parkway (millions)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2014					0.6	0.9	1.0	1.2	1.3	1.4	1.4	1.6	9.5
2015	1.7	1.5	1.8	2.0	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.3	24.3
Change					269.2%	122.9%	102.4%	79.5%	70.3%	60.9%	46.7%	40.9%	154.7%
2016	2.2	2.3	2.4	2.4	2.5	2.4	2.4	2.5	2.6	2.7	2.6	2.7	29.8
Change	34.1%	50.8%	33.7%	23.7%	20.8%	17.3%	13.7%	18.7%	17.6%	16.8%	21.9%	16.2%	22.7%
2017	2.6	2.5	2.9	2.8	3.0	2.9	2.7	3.0	2.9	3.1	2.9	2.9	34.4
Change	17.3%	12.5%	20.7%	16.6%	20.6%	16.6%	14.0%	16.5%	11.8%	14.2%	13.7%	10.0%	15.3%
2018	2.9	2.7	3.2	3.2	3.4	3.2	3.1	3.3	3.1	3.4	3.2	3.2	38.0
Change	12.0%	7.9%	10.0%	11.2%	11.7%	10.7%	12.3%	11.6%	7.2%	9.9%	10.1%	10.2%	10.4%
2019	3.2	3.1	3.4	3.4	3.5	3.2	3.3	3.4	3.3	3.6	3.3	3.4	40.3
Change	9.9%	11.4%	5.1%	8.9%	4.1%	2.7%	6.6%	4.1%	8.2%	6.5%	2.7%	5.9%	6.2%

Source: Unaudited NTTA Transaction Data



			-		<u> </u>					<u> </u>	/		
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	29.1	28.9	32.9	31.8	33.3	32.1	32.1	33.9	31.1	34.4	32.1	32.1	383.7
2008	32.6	32.0	33.0	34.0	34.2	32.8	33.3	33.1	36.5	38.9	35.0	37.0	412.3
Change	12.1%	10.6%	0.3%	6.9%	2.6%	2.2%	3.7%	-2.4%	17.1%	13.3%	9.1%	15.5%	7.5%
2009	35.4	34.7	37.9	38.3	38.6	38.9	38.8	39.6	38.1	40.5	38.1	39.5	458.4
Change	8.6%	8.5%	15.1%	12.7%	12.9%	18.6%	16.7%	19.8%	4.4%	4.0%	8.8%	6.6%	11.2%
2010	37.7	35.8	41.8	41.8	42.2	42.1	41.9	42.8	41.0	43.3	40.6	42.7	493.7
Change	6.5%	3.1%	10.3%	9.2%	9.3%	8.1%	7.9%	8.0%	7.7%	6.9%	6.6%	8.2%	7.7%
2011	40.5	34.9	45.3	44.4	45.2	45.4	43.9	46.1	44.5	46.2	44.2	46.5	527.1
Change	7.4%	-2.6%	8.2%	6.2%	7.0%	7.9%	4.9%	7.6%	8.6%	6.8%	8.9%	8.8%	6.8%
2012	47.7	46.9	50.6	49.6	52.5	51.2	50.3	52.3	48.4	53.3	50.8	50.9	604.5
Change	17.7%	34.5%	11.8%	11.7%	16.1%	12.8%	14.6%	13.4%	8.7%	15.4%	14.9%	9.5%	14.7%
2013	51.1	49.3	54.8	54.8	57.4	55.3	55.6	58.1	54.4	58.4	53.6	49.8	652.5
Change	7.1%	5.0%	8.3%	10.6%	9.3%	7.9%	10.5%	11.1%	12.4%	9.5%	5.6%	-2.0%	7.9%
2014	55.0	50.8	57.2	58.8	61.3	59.8	60.5	61.1	59.3	63.2	56.9	60.8	704.7
Change	7.6%	3.1%	4.4%	7.2%	6.8%	8.1%	8.8%	5.3%	9.1%	8.3%	6.2%	22.0%	8.0%
2015	59.2	52.1	62.8	64.2	65.1	66.1	66.3	65.7	64.1	66.4	60.9	65.1	758.0
Change	7.7%	2.6%	9.7%	9.2%	6.2%	10.6%	9.5%	7.5%	7.9%	5.0%	7.0%	7.1%	7.6%
2016	63.1	62.7	67.6	66.9	68.3	67.4	66.6	68.7	66.4	68.4	64.4	66.2	796.7
Change	6.5%	20.4%	7.6%	4.1%	4.9%	2.0%	0.5%	4.6%	3.6%	3.0%	5.7%	1.7%	5.1%
2017	64.0	61.4	70.3	67.0	71.1	68.9	67.3	69.4	66.2	69.5	66.1	65.4	806.5
Change	1.5%	-2.1%	4.0%	0.2%	4.2%	2.1%	1.0%	1.0%	-0.3%	1.7%	2.6%	-1.3%	1.2%
2018	65.2	60.8	71.4	69.3	73.4	71.6	70.1	73.5	66.8	71.8	68.7	68.2	830.8
Change	1.8%	-1.0%	1.7%	3.5%	3.1%	4.0%	4.2%	5.9%	0.9%	3.4%	4.0%	4.3%	3.0%
2019	68.1	64.3	72.1	71.3	74.1	71.5	72.3	73.9	70.0	74.3	68.5	70.4	850.9
Change	4.6%	5.7%	1.0%	2.9%	1.0%	-0.2%	3.1%	0.6%	4.8%	3.5%	-0.2%	3.2%	2.4%

Table 2-11. Monthly Transaction Trends – NTTA System (millions)

Source: Unaudited NTTA Transaction Data

Average monthly transaction variations on the NTTA System facilities for 2019 are presented as an index of the monthly transactions, as illustrated in **Table 2-12**.

The peak travel months on the DNT in 2019 were March through August, while the lightest travel months on the DNT were February and November. Traffic volumes were below the 2019 average in January, February, September and November (monthly variations for these months ranged from one to nine percent below the average). Traffic variations were one to four percent greater than the average in the remaining months.

The PGBT experienced above average transactions from March through August in 2019. The PGBT saw its lowest number of transactions in February. On the PGBT EE, travel peaked in May at six percent above the monthly average for the year. The SRT saw its peak month in May, with transactions at six percent higher than the annual average. Both the SRT and PGBT EE were at their lowest traffic levels in February, dropping ten to eleven percent below the annual average.

Peak travel on the PGBT WE in 2019 occurred August and October, during which transactions were five and seven percent above the annual average, respectively. The lowest traveled month on PGBT WE in 2019 was February. The CTP experienced its lowest traffic in February and the highest transactions of the year in October. Both the AATT and LLTB experienced their highest traffic volumes in the summer months, while the MCLB experience its highest level of demand in October.



rusic E IEI iti in oystelli montiny fruisuedon muck in 2015									
Month	DNT	SRT	PGBT	PGBT EE	PGBT WE	СТР	AATT	MCLB	LLTB
January	97	96	96	94	94	96	101	97	91
February	91	90	91	89	91	91	94	87	86
March	101	102	102	101	103	101	102	95	97
April	100	100	101	100	101	102	102	106	100
May	104	106	104	106	104	105	105	107	105
June	101	102	101	100	101	97	100	95	101
July	102	104	102	101	103	97	102	95	104
August	104	104	104	104	105	103	101	103	107
September	99	98	99	99	99	100	98	106	104
October	104	103	105	105	107	108	106	110	109
November	97	96	96	97	96	99	93	101	98
December	101	99	98	102	96	102	95	97	99
Average	100	100	100	100	100	100	100	100	100

Table 2-12. NTTA System Monthly Transaction Index in 2019

2.4. AVI Utilization Trends

As mentioned previously, the TollTag program has been successful in terms of increased participation since its introduction in July 1989. Current levels of AVI transaction shares for NTTA System facilities are presented in **Figure 2-8**. The AVI transaction shares shown represent the levels by month beginning in January 2013, and include VToll transactions with an assumed 90-day lag. As shown in **Figure 2-8**, the average AVI share (including VToll) across all NTTA System facilities has been increasing consistently by 14 to 16 point higher as compared to the AVI share (excluding VToll) percent since 2015.



Figure 2-8. Recent NTTA System Average Monthly AVI Share



Figure 2-9 shows the spatial distribution of active TollTags across the Dallas-Fort Worth region from data in 2017. ZIP codes along the SRT and northern-most sections of the DNT have the highest concentration of the TollTags. Also, higher TollTag participation is seen in ZIP codes along the existing NTTA System corridors compared to the other parts of the region.



Figure 2-9. TollTag Utilization by ZIP Code

2.5. Traffic Count Program

CDM Smith embarked on a comprehensive traffic count program in the NTTA System area. This included counts along all NTTA System corridors. In addition, the traffic count program included a series of screenlines. The locations of the traffic count screenlines can be seen in **Figures 2-10** through **2-12**. Traffic counts from the transaction data were obtained from NTTA staff for all the existing mainlane gantries and each of the tolled ramp gantries on all NTTA facilities. In addition, traffic counts were collected at strategic locations along NTTA System corridors, such as the adjacent frontage roads to assist with the base year model calibration.

To collect data for non-NTTA facilities along the screenlines and for the non-tolled ramps on NTTA facilities, CDM Smith engaged GRAM Traffic NTX, a Dallas-based firm. All the counts at non-tolled locations and on the screenlines were conducted for a continuous 48-hour period on interior weekdays only (Tuesday, Wednesday and Thursday). By combining the ramp transaction data and the counts on the non-tolled ramps, CDM Smith was able to build an average weekday traffic profile



for the NTTA System area. The results of the traffic count program were then used to calibrate the travel demand model. A summary of the screenline traffic volumes is presented in **Table 2-13**.

Screenline ID 2019 Counts†		Screenline ID	2019 Counts†			
Dallas Nort	n Tollway	PGBT Western Extension				
Screenline 1	838,400	Screenline W2	332,600			
Screenline 2	702,200	Screenline W3	366,600			
Screenline 3	394,000	Sam Raybur	n Tollway			
Screenline 4	Screenline 4 282,400		273,100			
President George	Bush Tunrpike	Screenline S2	360,800			
Screenline 5	200,800	Screenline S3	472,800			
Screenline 6	349,200	Chisholm Trail Parkway				
Screenline 7	761,500	Screenline C1	359,900			
Screenline 8	304,800	Screenline C2	320,600			
Screenline 9	346,500	Screenline C3	58,500			
Screenline 10	348,900	Screenline C4	147,400			
PGBT Wester	n Extension	Screenline C5	74,400			
Screenline W1	298.900					

Table 2-13. Screenline Traffic Summary

+2019 Counts were seasonally adjusted to represent 2019 Average Daily Traffic





Figure 2-10. DNT/PGBT/SRT Traffic Count Screenlines





Figure 2-11. PGBT-WE Traffic Count Screenlines





Figure 2-12. CTP Traffic Count Screenlines

Figures 2-13 through **2-17** present the traffic profile for both travel directions on the DNT, PGBT, SRT, PGBT WE, and CTP for the AM, PM, and off-peak (OP) time periods. The AM peak period is from 6:30 to 9:00 AM (2.5 hours), PM peak period is from 3:00 to 6:30 PM (3.5 hours), and the off-peak (OP) represents the remainder of the day (18 hours).

Dallas North Tollway

The northbound traffic during the PM peak period is higher than that in the AM peak and reflects the movement of traffic in the employment centers located along the southern and central portions of the DNT to the residential suburbs located along the northern segments of the DNT. During the PM peak, the highest volumes of traffic occur in the sections between MLP 2 and Legacy Drive. During the off-peak periods, highest volumes are seen between IH 635/LBJ and MLP 3. In the southbound direction, AM and PM peak traffic volumes seem to be similar south of Windhaven Parkway. The highest levels of traffic are experienced between IH 635/LBJ and MLP 3.



President George Bush Turnpike

In the eastbound travel direction, the PM peak period is generally higher than the AM peak period for the PGBT. This would also be expected because of the movements between employment centers along the DNT and the growing residential areas of Collin County. As a result, the highest volumes in both directions on PGBT were recorded between US 75 and the DNT.

Sam Rayburn Tollway

The eastbound travel direction indicates the PM peak period is higher than the AM peak period. In the westbound direction, the AM peak period is higher than the PM peak period for the section between DNT and Stacy Road. There is a noticeable spike in both directions for all time periods between Hebron Parkway and IH 35E. This spike is due to the fact that this section of the SRT is toll-free.

President George Bush Turnpike – Western Extension

On PGBT WE, travel in both the northbound and southbound directions is much heavier for the segment north of IH 30. Throughout the day, volumes on PGBT WE north of IH 30 are generally about twenty-five percent higher north of IH 30 than south of IH 30. The highest volumes on PGBT WE occur near Oakdale Road.

Chisholm Trail Parkway

Traffic on CTP is much higher in both directions at the northern end of the facility than the southern end. The highest volumes occur near MLG #1, while the lowest volumes occur near MLG #3. Generally, volumes decline consistently further south on the facility. The highest volumes at the northern end of the facility are approximately five times as high as the lowest volumes at the southern end of the facility.





DNT Traffic Volume Profile





CDM Smith



SRT Traffic Volume Profile







Figure 2-16. PGBT WE Traffic Volume Profile





Figure 2-17. CTP Traffic Volume Profile



2.6. Average Weekday Transactions by Location

Figures 2-18 through **2-23** show the estimated average weekday transactions in 2019 at each tolling location on the DNT, PGBT, PGBT EE, SRT, AATT, MCLB, LLTB, PGBT WE, and CTP. As would be expected, the mainlane gantries generated the highest number of transactions on each facility. Among the ramp tolling locations, the Mockingbird Lane ramps generated the most transactions on the DNT, while the Midway Road ramps and Firewheel Parkway ramps generated the most transactions on the PGBT and PGBT EE, respectively. On the SRT, the highest number of ramp transactions was generated at the Custer Road ramps. On PGBT WE and CTP, the highest number of ramp transactions were generated and Lower Tarrant Road and Oakmont Boulevard, respectively.



Figure 2-18. DNT 2019 Average Weekday Transactions by Tolling Location





Figure 2-19. PGBT 2019 Average Weekday Transactions by Tolling Location



Figure 2-20. PGBT EE, AATT, MCLB and LLTB 2019 Average Weekday Transactions by Tolling Location





Figure 2-21. SRT 2019 Average Weekday Transactions by Tolling Location





Figure 2-22. PGBT WE 2019 Average Weekday Transactions by Tolling Location



Figure 2-23. CTP 2019 Average Weekday Transactions by Tolling Location

2.7. Travel Time Characteristics

The evaluation of a toll facility's future traffic and revenue requires knowledge of the current travel time characteristics of the major roadways in the project area. For the current study, the historical travel time data was collected from INRIX, Inc., a traffic data company based in Washington State that maintains an archive of travel speed data for thousands of roadways across the United States accumulated from GPS-enabled devices along the highway network. INRIX monitors traffic flow along approximately 260,000 miles of major freeways, highways, urban and rural arterials, and side streets in the United States. This data provides historical as well as real-time traffic data seven days a week, 24 hours a day in as little as one-minute increments for all metro areas with a population of more than one million. They were engaged to provide a series of travel speed data for several roadways within the proposed study area.

INRIX obtains travel speed information from various probes; including anonymous cell phones/smartphones and vehicles equipped with GPS devices (trucks, delivery vans, transit vehicles, etc.). The collected data is then processed in real-time to create travel speed information along most of the major roadways. The real-time travel speed data is normalized to account for



parameters that affect traffic flow conditions, such as weather forecasts, school schedules, special events, accidents, seasonal variation, and road construction.

In addition to NTTA's toll facilities, travel time analysis was also conducted on several freeways, local arterials and frontage roads that compete directly with NTTA System facilities. Several highway and arterial routes were selected for analysis to provide a profile of the fluctuation in operating speed throughout the corridor and the relationship between demand and congestion levels. For all the routes specified in the study area, INRIX data was summarized for March to May 2019. It should be however, note that data summarized includes travel speeds for Tuesday through Thursday. Hence, the summary represents typical weekday summary by excluding weekends and potentially atypical characteristics traffic on Mondays and Fridays. **Figures 2-24** through **2-25** show the locations for which travel time data was obtained.

The results are presented graphically in **Figures 2-26** through **2-29**. The figures illustrate the typical peak period speeds in each direction on various facilities. As expected, the DNT routes exhibit their slowest speeds in the southbound AM and northbound PM directions. The PGBT routes exhibit their slowest speeds in the westbound AM and eastbound PM directions. Similar to the PGBT, the SRT show slower speeds in the westbound direction in the AM peak and in the eastbound during the PM peak period. In the PGBT WE, CTP, and 360 Tollway corridors, slower speeds are experienced in the northbound direction during the AM peak period and in the southbound direction during the PM peak period.





Figure 2-24. DNT/PGBT/SRT Area Travel Speed Data Collection Locations (Highways)





Figure 2-25. DNT/PGBT/SRT Area Travel Speed Data Collection Locations (Arterials)





Figure 2-26. Travel Time Results: AM Peak Period (Highways)





Figure 2-27. Travel Time Results: PM Peak Period (Highways)





Figure 2-28. Travel Time Results: AM Peak Period (Arterials)





Figure 2-29. Travel Time Results: PM Peak Period (Arterials)

2.8. Origin-Destination Data

The origin-destination (O-D) characteristics of the project area was analyzed to understand the travel patterns. The data was obtained from Streetlight Data, Inc, a traffic data company that maintains travel data and delivers unique insights into travel patterns across the country. The O-D data analyzed represents data collected between January 2018 and January 2019. **Figure 2-30** shows the locations of O-D zones. A total of 51 zones were identified that were in the area of influence of the NTTA System corridors; area of influence is defined as the buffer area around a corridor that attracts traffic onto the corridor. The summarized O-D data from the Streetlight was then compared with the 2018 trip table matrix received from NCTCOG. A total of 5,386 traffic survey zones (TSZ) in the NCTCOG trip table matrix, out of which 4,037 were in the area of influence, were aggregated into 51 zones, as identified in the Streetlight data.

The Streetlight data was then used to adjust the trip table matrix received from NCTCOG. Five percent absolute delta was established as a threshold for updating the trip table matrix; only if the absolute value of delta between the data collected and the O-D data from trip table varied by more than five percent, then O-D data was updated. **Figure 2-30** includes arrows that indicate trip adjustments between an O-D trip pair; arrow-end represents the origin zone and the arrowhead represents the destination zone. Out of the entire 2,550 interzonal trip pairs only 0.8 percent of the



interzonal trip pairs varied by more than five percent (absolute threshold figure), and hence were updated. This exercise was helpful in ensuring the validity of trip patterns to reflect the empirical data (2018-19).



Figure 2-30. Origin-Destination Zones

2.9. Stated Preference Survey

CDM Smith engaged Resource Systems Group (RSG), independent economist, to conduct NTTA System stated preference (SP) surveys between March and April 2011 (included as **Appendix A-2** of this report). Additionally, RSG was engaged by NTTA to conduct a CTP SP Survey during fall of 2014 (included as **Appendix A-3** of this report). These SP surveys focus on travel preferences as they relate to the cost and reasons for selecting or not selecting toll roads. This type of survey is used to determine travelers' willingness to pay to use toll facilities.

2.9.1. Final Recommendations

RSG prepared a memorandum in January 2020 (included as **Appendix A-1** of this report) indicating that the values of time that were estimated for potential travelers on tolled NTTA facilities (2011) and CTP facility (2014) should be adjusted to reflect the changes in the CPI from 2011\$ and 2014\$ to 2019\$.



RSG recommends adjusting the 2014 values of time for CTP by 9.3% to reflect CPI growth in the region, for an overall adjustment factor of 1.093. Whereas, for NTTA facilities, RSG recommends adjusting the values of time by 0.3% to reflect changes in real income and 15.9% to reflect CPI growth, for a total adjustment factor of 1.162.

Included in the RSG report are the following appendices:

- Appendix A contains a detailed description of the survey questionnaire and survey logic
- Appendix B includes screenshots of the online survey
- Appendix C contains a detailed set of comments received from the survey respondents
- Appendix D includes detailed tabulations of the survey results

The data collected through these surveys and the results were crucial inputs to the estimation of traffic and revenue on NTTA System facilities.



This page intentionally left blank.



Section 3 Impacts of COVID-19 on the NTTA System

3.1. COVID-19 Overview

COVID-19 has not only impacted the national economy leading to extensive job losses, but this global pandemic has also taken the lives of many Americans and people across the world. COVID-19 has impacted almost every aspect of our way of life, including travel demand in the DFW area and the use of the NTTA System roadways. The events surrounding the pandemic have been highly unusual, completely unprecedented and unique in modern experience. As a result, there is a higher than normal degree of uncertainty in projecting traffic and the associated toll revenue. CDM Smith has been monitoring traffic impacts across the country, and on the nation's toll roads, through this pandemic period. We have also been closely monitoring traffic levels in the DFW area along with key economic parameters such as unemployment claims while monitoring reports on the progression of the COVID-19 virus.

Since the primary recommendation for combating and reducing the spread of COVID-19 has been social distancing, daily activities that were considered normal have been significantly altered. For example, we have seen the closings of schools, restaurants, malls, sporting events and public places leading to elimination of travel related to those destinations. One of the results of these changes in behavior is that many people have lost their jobs further impacting travel demand. There has also been a noticeable increase in the number of people working from home as employers opted for a virtual working environment rather than in-person specifically as a health and safety precautionary measure. This has further resulted in a dramatic effect on people's daily travel behavior, leading to an overall significant reduction in travel. Given NTTA's roadways are tolled facilities, they are perceived asless-congested alternatives. Hence, the NTTA roadways have a higher likelihood of experiencing a greater negative impact as compared to other non-tolled roadways.

Federal, state, and local governments have responded to COVID-19 with advice, recommendations, and specific orders as the spread of the virus progressed. **Table 3-1** contains a chronology of events most relevant to Texas and the DFW region. The following is a summary of key events:

- March 13, 2020 Governor Greg Abbott issued a proclamation declaring a public health disaster for all of Texas
- March 13, 2020 Governor Abbott issued Executive Order No. GA-08 establishing guidance for non-essential activities aimed at reducing the transmission of COVID-19
- April 27, 2020 Governor Abbott issued Executive Order No. GA-18 expanding reopening of services under the defined Phase I parameters
- May 18, 2020 Governor Abbott issued Executive Order No. GA-23 further expanding reopening under the defined Phase II parameters
- June 3, 2020 Governor Abbott issued Executive Order No. GA-26 further expanding reopening under the defined Phase III parameters



• June 26, 2020 – Governor Abbott issued Executive Order No. GA-28 scaling back the reopening to further address the increase in the spread of COVID-19.

Date	Event/Action	Additional Comments
30-Jan-20	US recorded first person-to-person Transmission	
31-Jan-20	US Department of Health & Human Services Declares National Health Emergency	
31-Jan-20	Suspension of Entry as Immigrants and Nonimmigrants of Certain Additional Persons Who Pose a Risk of Transmitting Coronavirus	
9-Mar-20	DFW announces its first COVID-19 Case	
11-Mar-20	WHO declares COVID-19 a global pandemic	
13-Mar-20	President Trump Declares National Emergency	
19-Mar-20	Texas Gov. Greg Abbott issued a public health disaster declaration	
19-Mar-20	Governor Abbott Issues Executive Orders in Accordance with Federal Guidelines to Mitigate Spread of COVID-19 in Texas	 Avoiding Social Gathering; Avoid going to Bars, Restaurants, Gyms, etc. However, using pick-up or delivery options are highly encouraged People shall not visit nursing homes or retirement or long-term care facilities unless to provide critical assistance. Schools shall temporarily close
26-Mar-20	Executive Order Mandating 14-Day Quarantine for Travelers Arriving From New York Tri-State Area, New Orleans	
27-Apr-20	Governor Abbott Announces Phase I to Open Texas, Establishes Statewide Minimum Standard Health Protocols	All retail stores, restaurants, movie theaters, museums, libraries, and malls are permitted to reopen on Friday, May 1. These services must limit their capacity to 25% of their listed occupancy.
18-May-20	Governor Abbott Announces Phase II to Open Texas	Restaurants may increase their occupancy to 50% and additional services and activities that remained closed under Phase I may open with restricted occupancy levels. Additionally, Child Care Centers and several recreation centers are allowed to reopen with strict social distancing guidelines.
3-Jun-20	Governor Abbott Announces Phase III to Open Texas	Effective June 3: All businesses currently operating at 25% capacity can expand their occupancy to 50% with certain exceptions. Effective June 12:Restaurants may expand their occupancy levels to 75%. Effective June 19: Amusement parks and carnivals in counties with more than 1,000 confirmed positive cases of COVID-19 may open at 50% capacity.
26- Jun-20	Temporary Pause of Additional Reopening Phases	Bars with more than 51% of their gross receipts from the sale of alcoholic beverages are required to close Restaurants may remain open for dine-in service, but at a capacity not to exceed 50% of total listed indoor occupancy Outdoor gatherings of 100 or more people must be approved by local governments, with certain exceptions. Rafting and tubing businesses must close.
2-Jul-20	Mandatory use of Face Coverings	Every person in Texas shall wear a face covering over the nose and mouth when inside a commercial entity or other building or space open to the public, or when in an outdoor public space, wherever it is not feasible to maintain six feet of social distancing from another person not in the same household;

Table 3-1: Chronology of Events



3.1.1. COVID-19

The coronavirus disease is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first reported in China in December 2019, hence the name COVID-19. Since then the disease has spread across the world. The World Health Organization (WHO) declared the outbreak a global pandemic on March 11, 2020. In the majority of cases the symptoms are mild. In some cases, however, the symptoms advance to pneumonia, organ failure and death. More recently, COVID-19 has been reported as the cause of deaths from both heart failure and stroke. The mortality rates are higher with elderly people and people with pre-existing conditions such as cardiovascular disease and diabetes.

3.1.2. Current Infection Rates

Figure 3-1 presents the daily cases in Texas and DFW region along with the timeline of policy change announcements as well as a measure of impacts on mobility as reported by Google. It can be inferred from the figure that there is a direct relationship between DFW regional traffic levels and the policy changes announcing a relaxation of activity restrictions. After hitting a low point in early April, traffic has been steadily increasing as residents increase their activity levels and as the phased re-opening was rolled out. However, during the last two weeks of June daily COVID-19 infections spiked considerably. In response to the increase in infections, Texas Governor Greg Abbott announced additional restrictions in the phased opening, as shown in **Table 3-1**.





Figure 3-1. COVID-19 Infections and Mobility Data Comparison

Source: COVID-19 Positive Infections - Texas Department of State Health Services Google LLC "Google COVID-19 Community Mobility Reports". https://www.google.com/covid19/mobility/Accessed: 2020-08-13.

<u>Note(†)</u>: The baseline is the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020.

The Centers for Disease Control and Prevention (CDC) continues to receive the national and state level forecasts of deaths and infections to help public health decision making. These forecasts are based on statistical or mathematical models with the primary aim to predict changes in nationaland state-level cumulative reported COVID-19 infections and deaths. A variety of modeling techniques were used for developing forecasts for COVID-19 infections trends, a majority of them included SEIR model (Susceptible, Exposure, Infections, and Recovery). The SEIR-based model assumes people carry lifelong immunity to a disease upon recovery.



The Institute of Health Metrics and Evaluation (IHME) developed COVID-19 projections to determine forecast COVID-19 infections and deaths using the SEIR modeling technique. As per IHME's projection, there is a shortage in the available hospital resources (ICU beds). Despite the announcement of restrictions in the phased relaxation of social-distancing policies in the state, IHME projects an increase in the demand for ICU beds by the end of summer. This suggests that much stricter guidelines are expected to be announced to further contain the spread of the deadly virus. Social distancing policies, including the stay-home/shelter-in-place order, are policies that are expected to keep evolving through the course of the battle against the pandemic.

Moreover, with the growing concern of the rise in daily cases in the DFW region (**Figure 3-1**), there is a high probability of a resurgence in infections, which would further discourage travel. Hence, in the upcoming month it is expected that transactions would decline as people adhere to the stricter social-distancing guidelines.

3.2. Traffic Impacts

Recent events, specifically the COVID-19 global pandemic, have had a catastrophic impact on almost all business sectors. Unemployment claims have reached record high numbers, and the travel industry has been particularly affected due to social distancing guidelines, work-from-home initiatives, and travel restrictions. Numerous employers requested their employees to avoid travelling to work, with a motive to contain the spread of the virus. This has severely impacted DFW region's overall travel demand and, more specifically, toll road traffic. As shown in **Figure 3-**2, NTTA System traffic, as of July 31, 2020, has dropped by around 23 percent from its early March levels and it continues to remain well below the 2019 traffic levels.



Note: Updated through July 31, 2020



As seen in **Figure 3-2**, the traffic on NTTA System was observed to recover at a rate of 107 thousand more vehicles onto the system, per week, between the week of Texas Phase I re-opening (April 18, 2020) and the week of Texas Phase III re-opening (June 3, 2020). However, by mid-June, as the daily COVID-19 infections started to climb, daily NTTA System traffic started to decline through the Independence Day weekend. Thereafter, the NTTA system traffic has been growing at a moderate pace of 47,000 vehicles per week, between the week of July 4th and the week of July 31st.

Although the trajectory of recovery of the individual NTTA facilities are similar to the overall System traffic trends, the recovery magnitude of each facility varies greatly. The magnitude of recovery in transaction trends varies by facility (based on the geographic location), type of vehicle using the facility, and toll payment mode. **Figures 3-3 and 3-4** present percent change in weekly transactions as compared to the first week March, for each facility, by passenger car (PC) and commercial vehicle (CV) transactions. These trends indicate that PCs have been impacted much more severely than CVs.





The DNT, PGBT, PGBT-WE, and SRT were observed to have the highest reduction in PC traffic among all NTTA facilities. All of the NTTA facilities have significant non-tolled alternatives, which add to the impact on the toll traffic. Also, there are certain trip types that have been more heavily impacted due to recent trends. For example, the trips to and from the airport have experienced a large decline in demand, and facilities supporting those trips have suffered additional impacts. As a result, both SRT and PGBT have been negatively impacted. This impact is in addition to overall decline in work trips as a result of "shelter-in-place" announcements (to contain COVID-19 infections) and later with the rise of work-from-home options for employees. This change in work trips has negatively impacted almost all the NTTA corridors. However, CV transactions have been



less affected than PC transactions. Similar trends have been observed in other urban areas across the country indicating the differences between passenger car travel purposes and freight transport or "supply chain" demand.



Figure 3-4. Percent impact on CV Transactions for each facility against first week of March

Figure 3-5 compares percent change in weekly average Automatic Vehicle Identification (AVI) transactions as compared with the first week of March for all NTTA facilities. The minimum and maximum levels, of the NTTA facilities, are indicative of the variability in the trends of individual facilities.





AVI Transaction Trends for NTTA Facilities

Table 3-2 shows twelve-month percent change in monthly mainlane transactions for all NTTA facilities. Total transactions in April were the lowest reported mainlane traffic (variances range from -62% to -31%). After April, as social gathering restrictions were eased, the traffic stabilized and began increasing steadily until the last week in June, after which the traffic was observed to decline following new restrictions (**Table 3-1**). PGBT, SRT, and DNT mainlane gantries positioned near the heavy employment zones have been the worst impacted with respect to traffic.

Facility	Mainlane Gantry	March	April	May	June	July
SRT	Custer	-31%	-56%	-39%	-23%	-23%
SRT	Josey	-32%	-60%	-45%	-31%	-31%
SRT	Denton Tap	-31%	-60%	-46%	-31%	-33%
PGBTWE	Lower Tarrant	-29%	-56%	-43%	-28%	-27%
PGBTWE	Arkansas	-27%	-53%	-39%	-20%	-20%
PGBT	Sandy Lake	-33%	-62%	-51%	-40%	-38%
PGBT	Frankford	-28%	-59%	-44%	-31%	-31%
PGBT	Coit	-29%	-59%	-44%	-30%	-30%
PGBT	Shiloh	-26%	-52%	-34%	-18%	-19%
PGBT	Belt Line	-28%	-54%	-40%	-28%	-25%
PGBT	Merritt	-26%	-53%	-34%	-17%	-17%
DNT	Eldorado	-26%	-50%	-31%	-15%	-15%
DNT	Parker	-29%	-58%	-40%	-26%	-27%
DNT	Trinity Mills	-30%	-58%	-40%	-27%	-27%
DNT	Wycliff	-34%	-66%	-51%	-37%	-37%
СТР	CR 904-Sparks Rd	-17%	-40%	-20%	-6%	-8%

able 3-2: Recent Mon	hly Transaction Impact	s – by Mainlane Plazas
----------------------	------------------------	------------------------


Facility	Mainlane Gantry	March	April	May	June	July
СТР	Stewart Feltz	-19%	-45%	-25%	-7%	-9%
СТР	Montgomery	-28%	-58%	-39%	-22%	-23%

3.2.1. Historical Events

The NTTA system has been subjected to various short-term and long-term events over the course of its fifty-two-year history. **Figure 3-6** contains a graph summarizing annual systemwide transactions, beginning with 1968. This graphic identifies major socio-economic events that influenced T&R.

Several major global or national events that had longer-lasting impacts on the NTTA System transactions, as discussed below:

- <u>Dot-com bubble burst</u> the two-year period, between the start 2002 and end of 2003, was when the growth in transactions plateaued because of the increase in unemployment rate in the DFW region after the dot-com bubble burst.
- <u>Global Recession</u> Transactions began to decline rapidly in 2008-09 across all the NTTA facilities that were in operation before 2007, however, due to opening of DNT Phase 3 Extension, PGBT-WE Phase 2 and LLTB, between 2008 and 2009, the overall NTTA transactions increased despite slow-down in economy.
- <u>Corporate Relocations</u> In the past decade, particularly the first half, there have been several major employers who have moved into the region, sparking a boom in employment- further resulting in increase in the demand of the NTTA system toll roads (discussed in **Section 5**).





Figure 3-6. Historic Annual Transaction trends for NTTA System

3.3. Conclusion

In the light of recent events, as discussed earlier in this section, a glimpse of the impacts to traffic associated with these historical events was part of the analysis in determining the potential the short- and long-term impacts on travel demand attributable to the current crisis. The recovery trends observed during previous major economic events may provide some indication about the expected regional recovery following the current COVID-19 pandemic.

Further, CDM Smith developed a recovery timeline or "impact curve," as discussed in **Section 7**, based on the COVID-19 infections trend included in this section and adjusted (lagged) socioeconomic forecasts discussed in **Section 4** and **Appendix B**. The impact curve was constructed based upon current recovery trajectory (as discussed in this section) and assumptions about the depth, duration and recovery from the COVID-19 global pandemic (discussed in **Section 7**).



Section 4 Dallas-Fort Worth Area Transportation Characteristics

The purpose of this section is to provide a background of the existing and future transportation characteristics surrounding NTTA roadways in the DFW Metropolitan Area (DFWMA). To maintain consistency with regional transportation planning efforts, planned and programmed transportation improvements contained within Mobility 2045, the current Metropolitan Transportation Plan (MTP) for the DFWMA, are assumed as the regional foundation. The MTP is developed by the North Central Texas Council of Governments (NCTCOG) and adopted by the Regional Transportation Council (RTC), the metropolitan planning organization (MPO) policy body for the DFWMA. Information described in this section draws from the current MTP. As the MPO, NCTCOG is primarily responsible for conducting the multimodal long-range regional transportation planning process for the DFWMA. More information about NCTCOG and RTC and the MTP process is provided in **Section 5**.

The MTP for the DFWMA serves as a guideline for the region's planned investment in the transportation infrastructure and services through 2045. It is a federal requirement that the MTP must be financially constrained and balanced to the region's anticipated revenue streams over a minimum time horizon of twenty years. Mobility 2045 was adopted by the RTC in June 2018, and an air quality conformity determination was received from FHWA in November 2018. The Mobility 2045 plan includes \$136.4 billion in major expenditures on recommended transportation improvement projects and programs expected to be implemented between now and the planning horizon year of 2045. The MTP outlines a \$53.6 billion investment in North Texas roadway infrastructure expansion, system improvements, and new roadway capacity. Of that amount, \$40.6 billion is designated for the construction of controlled access transportation infrastructure such as freeways, tollways, express lanes and managed lanes, with the remaining \$13.0 billion designated for the regional arterial system.

According to US Census, DFWMA is the fourth largest metropolitan area in the nation with a population of 7.6 million in 2019 and is projected to grow to 11.2 million residents by 2045. This growth represents a 75 percent increase in the population of North Texas over the next 25 years. Total employment is expected to increase 74 percent from 4.03 million in 2019 to 7.02 million by 2045. The DFWMA has one of the largest regional economies in Texas and is larger in population than thirty-four states. **Section 5** provides detailed information regarding the demographic growth characteristics of the region.

4.1. Traffic Congestion Trends

Figure 4-1 provides an estimate of the 2045 congestion levels with both the currently planned transportation infrastructure and under a no-build scenario without any transportation improvements. As seen in **Figure 4-1**, by 2045 moderate to severe congestion will affect much of the area surrounding NTTA's roadways.



Mobility 2045 estimated that the region-wide annual cost of congestion in 2018 was \$12.1 billion and could possibly reach about \$27.3 billion by 2045 with planned infrastructure improvements in place and \$47.9 billion with no transportation improvements. In 2018, the region experienced peak period travel times that were more than 40 percent above free-flow conditions due to congestion, and it is expected that this will increase to over 59 percent in 2045 even after implementation of all planned improvements.



2045 No-Build Levels of Congestion/Delay

2045 Levels of Congestion/Delay Source: North Central Texas Council of Governments Mobility 2045 Metropolitan Transportation Plan



4.2. Freeway and Tollway System

Figure 4-2 provides an illustration of the funded roadway improvement recommendations included in the Mobility 2045 Plan, focusing on freeways, tollways, HOV/managed lanes, frontage roads and selected regionally significant arterials. The identification of these facilities is very important to this study because additional freeway and arterial improvements could materially impact NTTA System traffic and toll revenue. Facilities providing improved accessibility to NTTA System facilities could provide positive impacts to the NTTA System while competing/alternative routes could dampen its traffic and revenue potential.



Major Roadway Recommendations

Figure 4-2. 2045 Major Roadway Recommendations

Source: North Central Texas Council of Governments Mobility 2045 Metropolitan Transportation Plan

Additionally, the following is a list of major freeways and managed lanes in the DFW region and their associated capacity expansions which are planned through 2045 as shown in **Figure 4-2**:

• **IH 35E** – Ultimate configuration for IH 35E between IH 35E/IH 35W interchange in Denton and SH 183 in Dallas will be completed by 2045; ultimate configuration includes expansion of the general-purpose lanes and managed toll lanes, and conversion from current reversible managed toll lanes to concurrent managed toll lanes.



- US 75 Improvements to US 75 between Grayson County line and Sam Rayburn Tollway, in northern Collin County, includes the expansion of general-purpose lane and is estimated to be completed by 2028.
- North Tarrant Express Segment 1 will expand the general-purpose lanes from four lanes to six lanes by 2027. Segment 2W will expand four managed toll lanes to six managed toll lanes by 2027. Segment 3A along IH 35W between IH 820 and IH 30 will construct new managed toll lanes by 2027 and general-purpose lanes expansion by 2037. Segment 3B will expand general purpose lanes between US 81/US 287 and IH 820 by 2037. Segment 3C along IH 35W between Eagle Parkway and US 81/US 287 will include construction of the concurrent managed toll lanes and expansion of general-purpose lanes by 2027.
- **IH 35W** IH 35W South will be widened with additional general-purpose lanes between IH 30 and US 67 by 2037. IH 35W North between IH 35E and Eagle Parkway will be widened from four lanes to six general purpose lanes by 2045.
- **SH 360** SH 360 between IH 30 and IH 20 will be widened from six lanes to eight general purpose lanes by 2028.
- **US 287** US 287 between Lone Star Rd and FM 661 will be reconstructed to full freeway standards by 2037.
- Midtown Express –SH 183 from SH 121 to IH 35E will add two concurrent managed toll lanes by 2020. The SH 183 final configuration will include additional general-purpose lanes and managed lanes expansion by 2045. Loop 12 between IH 35E and SH 183 will add two managed lanes by 2020 and the ultimate configuration will include widening of generalpurpose lanes and two reversible managed lanes between SH 183 and Spur 408 by 2045. SH 114 at the ultimate configuration will include additional general-purpose lanes and concurrent managed lanes between SH 183 and SH 121.

Mobility 2045 includes several changes to planned projects from what was included in prior MTPs. Following is the list of major roadway changes introduced in the current MPT:

- 360 Tollway 360 Tollway between US 67 and US 287 is added in MTP 2045 for the year 2045
- **360 Tollway** Expansion of 360 Tollway between Sublett road and US 287 from four lanes to six/eight lanes is delayed from 2037 to 2045 in MTP 2045
- **Trinity Parkway** Trinity Parkway is removed from MTP 2045 completely
- DNT Phase 4B DNT Phase 4B is added in MTP 2045 for the year 2037
- IH 35E IH 35E between IH 635 and Denton managed lane expansion is delayed from 2037 to 2045 in MTP 2045
- **IH 35E** Addition of two managed lanes , instead of addition of two freeways lanes (in MTP 2040), between IH 35E between IH 635 and Downtown in 2037 (MTP 2045)



Additional NTTA toll roads planned for the region through 2045 include (shown in **Figure 4-3**):

- SH 190 SH 190 East Branch, from IH 30 to IH 20
- **360 Tollway and PGBT-WE Connector (the "Elbow"):** 360T/PGBT WE toll connector is planned to be completed by 2028.
- **DNT Phase 4A**: Construction of the DNT northern extension, from US 380 to FM 428 is planned to be completed by 2028.
- **DNT Phase 4B:** Construction of the DNT northern extension, from FM 428 to the Grayson County is planned to be completed by 2030.



Figure 4-3. NTTA's Planned Roadway Projects





Figure 4-4. Expected Completion Years of Planned Projects in the NTTA System Area Source: North Central Texas Council of Governments (Mobility 2045 Metropolitan Transportation Plan) and North Texas Tollway Authority

NTTA provided CDM Smith a list of NTTA project improvements, along with the project completion schedule for each of the improvements. **Table 4-1** contains the list of approved future NTTA roadway improvement.



Project	Current Assumptions
DNT: Panther Creek Parkway Toll Ramps	31-Dec-22
DNT: Extension from US 380 to First Street	31-Dec-22
DNT: Fourth Lane Expansion (SRT to US 380)	31-Jul-25
PGBT: Fourth Lane Expansion (IH 35E to Belt Line Road)	31-Dec-21
SRT: Fourth Lane Expansion (Denton Creek to DNT)	31-Dec-21
SRT: Fourth Lane Expansion (DNT to US 75)	31-Dec-21
DNT 4A: Mainlane Extension from US 380 to FM 428	31-Jul-28
DNT 4B: Southbound Frontage Road (FM 428 to Grayson/Denton County line)	31-Dec-22
DNT 4B: Mainlane Extension from FM 428 to Grayson County	31-Dec-30
PGBT/360 "Elbow": connection from PGBT-WE to SH 360	31-Dec-28
PGBT-WE: Expansion to Four Lanes Per Direction (SH 183 to IH 30)	31-Jul-22
PGBT-WE: Expansion to Four Lanes Per Direction (IH 30 to IH 20)	31-Jul-22
CTP: Expansion from "super 2" to 4 lanes from FM 1187 to US 67	31-Dec-30
East branch: Six lane tollway between IH 30/PGBT EE and IH 20/Loop 9	31-Dec-32
DNT/SRT Interchange Improvements	31-Dec-21

4.3. Rail Transit System

Transit service in the DFWMA is provided primarily by Dallas Area Rapid Transit (DART), Trinity Metro (formerly known as the Fort Worth Transportation Authority or The T) and the Denton County Transportation Authority (DCTA). The existing DART light-rail system consists of four lines: The Red, Blue, Green and Orange lines. The Red Line begins in South Dallas near Westmoreland Avenue and ends at the Parker Road station in Plano; the Blue Line extends from University Hills Blvd in South Dallas to Downtown Rowlett; the Orange Line goes from Airport Station to Parker Road and the Green Line runs from southeast Dallas to north Carrollton. Additionally, for selected weekday trips the Orange Line runs parallel to the Red Line. A map of the current DART rail system is shown in **Figure 4-5**.





Figure 4-5. Current DART Rail System Source: Dallas Area Rapid Transit (<u>http://www.dart.org</u>)

Trinity Metro is the operator of the bus system of the city of Fort Worth and the TEXRail running from downtown Fort Worth to the DFW Airport. Trinity Metro also partners with DART on the Trinity Railway Express (TRE), which offers commuter rail service between downtown Fort Worth and downtown Dallas with "rubber tire" connections to DFW Airport.

The Denton County Transportation Authority (DCTA) is the transit authority that operates in Denton County, which is located northwest of Dallas County. Along with operating bus service in three cities within Denton County, DCTA runs the A-Train commuter rail, a regional rail line parallel to IH 35E that connects with the DART system at the Trinity Mills Station in Carrollton.



Figure 4-6 illustrates the proposed rail system as developed by NCTCOG in cooperation with the transit agencies. As can be observed in **Figure 4-6**, there are proposed transit alignments included in Mobility 2045 which could potentially compete directly with NTTA System facilities.



Transit Corridor Projects

Figure 4-6. 2045 Project Implementation: Passenger Rail Source: North Central Texas Council of Governments Mobility 2045 Metropolitan Transportation Plan

To summarize, the transportation system defined in the Mobility 2045 and described above is reflected in the trip tables used to estimate the traffic and toll revenue for the NTTA System. The trip tables and networks were obtained from NCTCOG to reflect all the planned transportation infrastructure development included in Mobility 2045.



This page intentionally left blank.



Section 5 Regional Demographic and Economic Trends

As part of this NTTA System Comprehensive Traffic and Toll Revenue Study, historical and projected demographic characteristics used by the North Central Texas Council of Governments (NCTCOG) were reviewed to develop travel demand modeling trip tables. This section describes the major socioeconomic characteristics of the Dallas-Fort Worth Metropolitan Area (DFWMA), including both regional and specific trends near the NTTA System.

In June 2018, NCTCOG's Executive Board adopted new demographic forecasts for the region. The forecasts were developed for the twelve counties that comprise the DFWMA: Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise. In June 2018, the Regional Transportation Council (RTC), the policy body for the DFWMA, adopted Mobility 2045: The Metropolitan Transportation Plan for North Central Texas. The demographic datasets from Mobility 2045 were used as the baseline to generate future trip patterns in the DFWMA. The traffic and revenue estimates included in this report utilized the databases included in the Mobility 2045 Plan.

This section first provides a description of the NCTCOG forecast process used to generate the base demographics followed by a discussion of the regional historical and future growth in the twelvecounty area. This section also discusses the independent economic review, which was conducted by Research and Demographic Solutions (RDS), independent economist.

The demographic information presented in this section forms the foundation used to develop the potential demand for NTTA System facilities. The demographic information is used by the trip generation model to estimate total trips for the travel demand model.

5.1. NCTCOG Demographic Forecast Process

As required by federal legislation, NCTCOG periodically develops future demographics based on county and regional control totals created by the Texas State Data Center (TSDC) and other independent consultants. The TSDC is part of the State Data Center System, a national network of 52 centers (all 50 states, Puerto Rico and the Virgin Islands) in charge of disseminating demographic information. The demographics adopted by NCTCOG are considered official demographics to support the metropolitan planning process and travel demand modeling within the Dallas-Fort Worth (DFW) region.

The demographic forecast and trip table development process implemented by NCTCOG is divided into six steps as illustrated in **Figure 5-1**. In the first step, regional control totals of population and employment were developed in five-year increments from a base year (2005) through the forecast horizon year (2045). These regional totals were obtained from the TSDC and were combined with forecasts developed by independent economists at the Perryman Group. The forecasts were developed in a coordinated effort between NCTCOG's Research and Information Services and Transportation departments.



The TSDC population forecast process is a cohort-component forecast method which involves determination of several elements including fertility, mortality, and migration rates. The migration rate for 2010-2015 was used throughout the projection period.





Table 5-1 shows the control totals that were considered during the forecasting process. The population totals adopted by NCTCOG for the region are shown in bold in **Table 5-1**.

Employment control totals were generated by NCTCOG with input from their Employment Estimates program, which monitors non-construction job counts by place of work for municipalities in the DFWMA. The employment totals seen in **Table 5-1** show that the total employment of the DFWMA is anticipated to increase from four million in 2010 to seven million by 2045.

The second step in the forecasting process involves allocating the DFWMA regional control totals to 242 forecast districts for each five-year interval. The Gravity Land Use Model (G-LUM) was used for this process. In the third step, the district level information was disaggregated to the Transportation Analysis Process (TAP) zone level using a disaggregation model developed by NCTCOG. There are 5,252 TAP zones in the DFWMA area. The critical variables used in this process are district level household change, acres of vacant land, density of future residential development, and proximity to transportation infrastructure. Output from this process was closely reviewed by the member cities and approved by the Regional Demographic Task Force before being presented and approved by the NCTCOG Executive Board.

The fourth step involves performing trip generation using regression curves. This process estimates the total number of trips generated by and attracted to each Traffic Survey Zone (TSZ). In the fifth step, trip distribution is performed using the gravity model. In the sixth and final step, mode choice analysis is performed and subsequently trip tables are created for the single occupant vehicle (SOV), high occupancy vehicle (HOV), truck and transit modes. These final official tables were provided to CDM Smith by NCTCOG.

Forecast	2010	2018	2020	2028	2037	2045	
TSDC Population	6,417,724	7,466,410	7,747,382	8,989,277	10,594,252	12,173,807	
Mobility 2045 Population	6,335,881**	7,429,723	7,680,766	8,722,529	10,188,220	11,246,531	
Mobility 2045 Employment	4,020,484**	4,793,363	4,917,395	5,455,956	6,382,301	7,024,227	
** Estimated from 2005 and 2017 NCTCOG estimated value							
		· - • • •			·		

Table 5-1. Population and Employment Forecast Totals

Source: North Central Texas Council of Governments, Texas State Data Center, 2018 Population Projections

5.2. Historical and Future Regional Growth

The sixteen counties served by NCTCOG include Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise. **Figure 5-2** illustrates the spatial relationship of these counties and highlights the twelve counties which cover the DFWMA travel demand model area. NTTA's facilities, which lie in five of the counties, are also represented on the map. The analysis of historical and future demographic growth from a regional perspective is based on information pertaining to population, employment, and income for these twelve counties.





Figure 5-2. DFW Metropolitan Planning Area

5.3. Historical Regional Population Trends

Table 5-2 shows the historical population trends for the twelve counties in the DFWMA travel demand model area as well as Texas and the United States. The total population in the twelvecounty area has increased at a compounded annual rate of 2.5 percent from 1980 to 2010, resulting in 3.4 million additional residents. This regional population growth trend exceeded the state and national growth trends between 1980 and 2010 which were 1.9 percent and 1.0 percent per year, respectively.

Dallas County is the largest county in the region in terms of population with approximately 2.4 million people in 2010. Its population increased at an average annual rate of 1.4 percent between 1980 and 2010, adding a total of 811,720 people during the same period. Dallas County's population in 2010 represented approximately 36.9 percent of the total population of the twelve-county area.

Collin County and Rockwall County were the fastest growing counties in the area between 1980 and 2010. The Collin County population increased from 144,576 in 1980 to 782,341 in 2010, corresponding to an average annual growth rate of 5.8 percent over the thirty-year period. The Collin County population growth rate from 1980 to 2010 has been significantly higher than the population increase experienced by the state of Texas and the United States, respectively.



The population in Denton County increased from 143,126 in 1980 to 662,614 in 2010, corresponding to an average annual growth rate of 5.2 percent. Its growth rate was 2.7 and 5.2 times the growth rate experienced by the state and the nation, respectively, during that period. Tarrant County is the second largest county in the region in terms of population with approximately 1.8 million people in 2010. Its population increased at an average annual rate of 2.5 percent between 1980 and 2010, adding a total of 948,154 people during the same period. Rockwall County experienced a significant growth rate of 5.8 percent between 1980 and 2010, gaining 63,809 residents.

The majority of the population in the DFWMA is concentrated within the four core NTTA member counties (Collin, Dallas, Denton and Tarrant). In 2010, Collin, Dallas, Denton and Tarrant Counties contained over 83 percent of the total population of the twelve-county area, as shown in **Table 5-2**.

An increase in migration to the state beginning in the 1990s has helped to boost the Texas economy. Since 2006, the state has led the nation in domestic migration from states such as California and New York. According to the U.S Census Bureau, one in six people living in Texas is an immigrant. Approximately 18 percent of DFW population is foreign born. The population of the DFW region grew more than any other metropolitan area in the country between 2010 and 2019, according to the U.S Census Bureau. The DFW region added 1.2 million people during that period.

5.4. Future Regional Population Growth

Also included in **Table 5-2** is NCTCOG's population forecast from the Mobility 2045. Population in the twelve-county area is expected to increase from 6.4 million in 2010 to approximately 11.2 million by 2045, corresponding to a compounded annual growth rate of 1.6 percent. This annual growth rate for the twelve-county area is anticipated to be higher than the annual growth rate for both the state and the nation, which are expected to be 1.4 percent and 0.7 percent, respectively.

Dallas County's population is expected to grow by a compounded annual growth rate of 1.2 percent between 2010 and 2045, from 2.4 million in 2010 to 3.4 million by 2045. The additional 1.0 million residents expected in Dallas County by 2045 would represent the second highest number of additional residents for any county in the twelve-county area during that period. Only Tarrant County is expected to add more residents by 2045.

Collin County population is expected to grow between 2010 and 2045 at a compounded annual rate of 2.2 percent, from about 782,341 in 2010 to 1.7 million by 2045. Rockwall County population is expected to grow between 2010 and 2045 at a compounded annual rate of 2.4 percent, from 78,337 in 2010 to 181,560 by 2045.

The year 2045 population distributions for each of the counties in the twelve-county area are also presented in **Table 5-2**. As in 2010, Dallas and Tarrant Counties would continue to comprise the largest population centers in the twelve-county area. Most of the growth is expected to be in the core counties of Dallas, Tarrant, Collin and Denton.



County		US Censu	NCTCOG Demographic Forecast		
	Year	Year	Year	Year	Year
	1980	1990	2000	2010	2045
Collin	144,576	264,036	491,675	782,341	1,689,168
Dallas	1,556,419	1,852,810	2,218,899	2,368,139	3,445,204
Denton	143,126	273,525	432,976	662,614	1,346,316
Ellis	59,743	85,167	111,360	149,610	300,954
Hood	17,714	28,981	41,100	51,182	85,738
Hunt	55,248	64,343	76,596	86,129	134,291
Johnson	67,649	97,165	126,811	150,934	262,865
Kaufman	39,015	52,220	71,313	103,350	224,203
Parker	44,609	64,785	88,495	116,927	206,813
Rockwall	14,528	25,604	43,080	78,337	181,560
Tarrant	860,880	1,170,103	1,446,219	1,809,034	3,263,622
Wise	26,575	34,679	48,793	59,127	105,797
Twelve-County Area	3,030,082	4,013,418	5,197,317	6,417,724	11,246,531
State of Texas	14,337,820	16,986,510	20,851,818	25,145,561	-
United States	227,225,620	248,709,873	281,424,602	308,745,538	-
			Percent P	opulation	
County	Annual	Growth	Distril	bution	Share of New Growth
county			By Co	ounty	(2010-2045)
	1980-2010	2010-2045	2010	20/15	
Collin			2010	2045	
	5.8%	2.2%	12.2%	15.0%	18.8%
Dallas	5.8% 1.4%	2.2% 1.1%	12.2% 36.9%	15.0% 30.6%	18.8% 22.3%
Dallas Denton	5.8% 1.4% 5.2%	2.2% 1.1% 2.0%	12.2% 36.9% 10.3%	15.0% 30.6% 12.0%	18.8% 22.3% 14.2%
Dallas Denton Ellis	5.8% 1.4% 5.2% 3.1%	2.2% 1.1% 2.0% 2.0%	12.2% 36.9% 10.3% 2.3%	15.0% 30.6% 12.0% 2.7%	18.8% 22.3% 14.2% 3.1%
Dallas Denton Ellis Hood	5.8% 1.4% 5.2% 3.1% 3.6%	2.2% 1.1% 2.0% 2.0% 1.5%	12.2% 36.9% 10.3% 2.3% 0.8%	15.0% 30.6% 12.0% 2.7% 0.8%	18.8% 22.3% 14.2% 3.1% 0.7%
Dallas Denton Ellis Hood Hunt	5.8% 1.4% 5.2% 3.1% 3.6% 1.5%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0%
Dallas Denton Ellis Hood Hunt Johnson	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3%
Dallas Denton Ellis Hood Hunt Johnson Kaufman	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 3.3%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 1.6%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 3.3% 5.8%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2% 1.6% 2.4%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8% 1.2%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8% 1.6%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9% 2.1%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 3.3% 5.8% 2.5%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2% 1.6% 2.4% 1.7%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8% 1.2% 28.2%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8% 1.6% 29.0%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9% 2.1% 30.1%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 3.3% 5.8% 2.5% 2.7%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2% 1.6% 2.4% 1.7% 1.7%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8% 1.2% 28.2% 0.9%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8% 1.6% 29.0% 0.9%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9% 2.1% 30.1% 1.0%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise Twelve-County Area	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 5.8% 2.5% 2.7% 2.5%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2% 1.6% 2.4% 1.7% 1.7% 1.7%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8% 1.2% 28.2% 0.9%	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8% 1.6% 29.0% 0.9%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9% 2.1% 30.1% 1.0%
Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise Twelve-County Area State of Texas	5.8% 1.4% 5.2% 3.1% 3.6% 1.5% 2.7% 3.3% 3.3% 5.8% 2.5% 2.7% 2.5% 1.9%	2.2% 1.1% 2.0% 2.0% 1.5% 1.3% 1.6% 2.2% 1.6% 2.4% 1.7% 1.7% 1.7%	12.2% 36.9% 10.3% 2.3% 0.8% 1.3% 2.4% 1.6% 1.8% 1.2% 28.2% 0.9% 100% N/A	15.0% 30.6% 12.0% 2.7% 0.8% 1.2% 2.3% 2.0% 1.8% 1.6% 29.0% 0.9% 100%	18.8% 22.3% 14.2% 3.1% 0.7% 1.0% 2.3% 2.5% 1.9% 2.1% 30.1% 1.0% 100%

Table 5-2. Countywide Population Trends and Projections (US Census Bureau and NCTCOG Forecast)



5.5. Historical Regional Employment Trends

Employment statistics are used as relative indicators of trip attractions to an area. Intense employment growth in an area indicates the potential for an increase in the demand for transportation infrastructure. The countywide historical employment trends in the DFWMA are shown in **Table 5-3**. Between 1990 and 2010, employment in the twelve-county area increased at an annual rate of 3.3 percent, which was higher than the employment growth rate of both the state and nation. Dallas County is the most prominent employment center in the twelve-county area and is home to many industrial and medical institutions such as AT&T, Bank of America, Southwest Airlines, Texas Instruments, Baylor University Medical Center and Texas Health Presbyterian Hospital. According to figures presented by NCTCOG, Dallas County added 695,053 new jobs between 1990 and 2010 at a compounded annual growth rate of 2.2 percent. In 2010, jobs in Dallas County represented 48.5 percent of the total employment in the twelve-county area.

Approximately 342,261 new jobs were added to Collin County between 1990 and 2010 which corresponds to a compounded annual growth rate of 8.0 percent. Fourteen percent of the total jobs produced in the region from 1990 to 2010 were added to Collin County. Its employment growth rate was the highest in the DFWMA during that period. Denton County experienced strong employment growth between 1990 and 2010; employment grew from 75,817 in 1990 to 244,358 in 2010, corresponding to an additional 168,541 jobs at an average annual growth rate of 5.5 percent. Tarrant County employment increased from 586,058 in 1990 to 1.05 million, equivalent to approximately 465,469 new jobs. During 2010, the total employment in Tarrant County represented 26 percent of the total employment in the DFWMA.

Employment distributions by county are also shown in **Table 5-3**. Dallas and Tarrant Counties incorporate the bulk of the employment centers in the DFWMA, encompassing 74.7 percent of the region's total employment in 2010. **Figures 5-3** and **5-4** show historical unemployment and employment growth rates for DFW and the US. As can be seen, the DFW area has been performing better than the rest of the nation in terms of unemployment rates and employment growth since 2008. There has been a noticeable uptick in the unemployment rate in the past four months due to economic slowdown in the event of COVID-19 pandemic, as discussed in **Appendix B**.

5.6. Future Regional Employment Growth

Table 5-3 also shows the NCTCOG employment forecast for the year 2010 and 2045. Dallas County will continue to be the major employment center in the region and is expected to add an additional 1.35 million jobs by 2045. Dallas County employment is expected to increase from 1.95 million in 2010 to 3.3 million in 2040 at an annual growth rate of 1.5 percent. Dallas County is expected to house 44.9 percent of the total additional jobs in the twelve-county area.

Collin County's employment is projected to increase from 435,990 in 2010 to 835,990 in 2045 at an average annual growth rate of 1.9 percent. Collin County is expected to gain 13.3 percent of the total regional employment growth. Denton County's employment is projected to increase from 244,358 in 2010 to 479,619 in 2045 at an average annual growth rate of 1.9 percent. Denton County is expected to gain 7.8 percent of the total regional employment growth.

Employment in Tarrant County is expected to reach 1.83 million in 2045, a 0.78 million increase from the 2010 employment of 1.05 million. This represents an average annual growth of 1.6 percent between 2010 and 2045. Tarrant County is expected to account for 25.8 percent of the total additional jobs in the twelve-county area. Between 2010 and 2045, 3.0 million additional jobs



are expected to be added in the twelve-county area, at an annual average growth rate of 1.6 percent. Expected annual growth rates for employment in Texas and nation between 2010 and 2045 are 1.3 and 1.0 percent respectively-**Table 5-3** also presents year 2045 employment distributions for the twelve-county area. The major employment concentrations are expected to continue to be located in Dallas and Tarrant Counties. However, the projections anticipate the migration of jobs from the major city centers to the suburban areas throughout the DFWMA.

However, since COVID-19 pandemic has evolved and spread in the U.S., the recent (2020) employment figures have been severely impacted across the nation. **Appendix B** includes a summary prepared by Research and Demographic Solutions (RDS), an independent demographer, that includes assessment of the impact employers in the DFW-Arlington region have witnessed through the course of the pandemic.

	Historical Employment			NCTCOG Forecast	
County	Year	Year	Yea	ır	Year
	1990	2000	201	0	2045
Collin	93,729	204,057	435,9	90	835,342
Dallas	1,254,974	1,745,109	1,950,027		3,298,213
Denton	75,817	152,818	244,3	58	479,619
Ellis	27,789	49,071	59,9	74	102,692
Hood	N/A	N/A	18,6	32	31,723
Hunt	N/A	N/A	41,7	66	72,658
Johnson	26,214	45,071	66,0	46	111,301
Kaufman	17,174	31,027	39,9	18	68,285
Parker	16,173	29,816	52,0	95	86,890
Rockwall	7,492	17,025	30,6	30	58,611
Tarrant	586,058	864,360	1,051,	527	1,827,385
Wise	N/A	19,848	29,5	21	51,508
Twelve-County Area*	2,105,420	3,138,354	4,020,	484	7,024,227
State of Texas	9,242,902	12,151,379	14,508	,221	
United States	138,331,022	165,370,978	174,062	2,641	
	Annual	Growth	Employ	ment	Percentage of
County	Annual	Growth	Employ Distrib	ment ution	Percentage of New Employment
County	Annual 1990-2010	Growth 2010-2045	Employ Distribu 2010	ment ution 2045	Percentage of New Employment (2010-2045)
County	Annual 1990-2010 8.0%	Growth 2010-2045 1.9%	Employ Distribu 2010 10.8%	ment ution 2045 11.9%	Percentage of New Employment (2010-2045) 13.3%
County Collin Dallas	Annual 1990-2010 8.0% 2.2%	Growth 2010-2045 1.9% 1.5%	Employ Distribu 2010 10.8% 48.5%	ment ution 2045 11.9% 47.0%	Percentage of New Employment (2010-2045) 13.3% 44.9%
County Collin Dallas Denton	Annual 1990-2010 8.0% 2.2% 6.0%	Growth 2010-2045 1.9% 1.5% 1.9%	Employ Distribu 2010 10.8% 48.5% 6.1%	ment ution 2045 11.9% 47.0% 6.8%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8%
County Collin Dallas Denton Ellis	Annual 1990-2010 8.0% 2.2% 6.0% 3.9%	Growth 2010-2045 1.9% 1.5% 1.9% 1.5%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5%	ment ution 2045 11.9% 47.0% 6.8% 1.5%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4%
County Collin Dallas Denton Ellis Hood	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A	Growth 2010-2045 1.9% 1.5% 1.5% 1.5%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4%
County Collin Dallas Denton Ellis Hood Hunt	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.6%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0%	ment ution 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0%
County Collin Dallas Denton Ellis Hood Hunt Johnson	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7%	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.6% 1.5%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.5%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3%	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.6% 1.5% 1.5%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.5% 0.9%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0%	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.6% 1.5% 1.5%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.5% 0.9% 1.2%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0% 7.3%	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3% 0.8%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2% 0.8%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.5% 0.9%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0% 7.3% 3.0%	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.9% 1.6%	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3% 0.8% 26.2%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2% 0.8% 26.0%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.5% 0.9% 1.2% 0.9% 25.8%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0% 7.3% 3.0% N/A	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3% 0.8% 26.2% 0.7%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2% 0.8% 26.0% 0.7%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.0% 1.5% 0.9% 1.2% 0.9% 25.8% 0.7%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise Twelve-County Area*	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0% 7.3% 3.0% N/A 3.0% N/A	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3% 0.8% 26.2% 0.7% 100%	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2% 0.8% 26.0% 0.7% 100%	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.0% 1.0% 25.8% 0.7% 100%
County Collin Dallas Denton Ellis Hood Hunt Johnson Kaufman Parker Rockwall Tarrant Wise Twelve-County Area* State of Texas	Annual 1990-2010 8.0% 2.2% 6.0% 3.9% N/A N/A 4.7% 4.3% 6.0% 7.3% 3.0% N/A 3.0% N/A	Growth 2010-2045 1.9% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5	Employ Distribu 2010 10.8% 48.5% 6.1% 1.5% 0.5% 1.0% 1.6% 1.0% 1.3% 0.8% 26.2% 0.7% 100% N/A	ment ation 2045 11.9% 47.0% 6.8% 1.5% 0.5% 1.0% 1.6% 1.0% 1.2% 0.8% 26.0% 0.7% 100% N/A	Percentage of New Employment (2010-2045) 13.3% 44.9% 7.8% 1.4% 0.4% 1.0% 1.0% 1.5% 0.9% 25.8% 0.7% 100%

Table 5-3. Countywide Employment Trends and Projections (NCTCOG Forecast)





Source: Texas Workforce Commission (Data Updated through – June 2020)



Figure 5-4. Historical Employment Growth

Source: Texas Workforce Commission (Data Updated through – June 2020)



5.7. Regional Median Household Income Trends

Travel demand, and specifically demand for toll roads, is sensitive to the amount of disposable income available within a household. A reliable indicator of a household's propensity for tripmaking, and specifically a motorist's willingness to pay a toll, is median household income. Generally, households with higher incomes have a propensity to make more automobile trips than those with lower incomes due to their greater levels of disposable income. Value of time, a key factor in motorists' willingness to pay tolls, also tends to be higher in households with higher incomes.

A comparison of median household income for the twelve-county area is provided in **Table 5-4**. The most recent median household income data estimated by the U.S. Census Bureau for 2018 are provided for the twelve-county area, the state, and the nation. The median household income data presented in **Table 5-4** indicates that when reported in real 2018 dollars, income in the region, the state and the nation grew moderately between 1989 and 2000 but had declined somewhat between 2000 and 2018. The 2018 median household income in Dallas County was lower than those of the state and nation. However, several of the surrounding counties have median incomes much higher than the state and nation.

In 2000, median household incomes ranged from 1.98 times that of the state for Collin County to 0.94 times that of the entire state for Hunt County. Similarly, median income within the DFWMA ranged from 1.84 times the national median household income for Collin County to 0.87 times the national median household income for Hunt County.

Figure 5-5 represents the median household income from the 2018 American Community Survey Five-Year Estimates at the TAP zone level for the NTTA System area presented in constant 2018 dollars. The majority of the zones with the highest median household incomes are located in Collin County and Denton County near the PGBT, SRT and north DNT corridors.

	Voar	Vear	Vear		Year		Average	Annual Gro	wth Rate	
County	1989 ¹	2000 ¹	2010 ²	Year 2015 ³	2018	(1989- 2000)	(1989- 2010)	(1989- 2015)	(1989- 2018)	(2010- 2018)
Collin County	\$93 <i>,</i> 489	\$109,261	\$92,947	\$92,277	\$96,936	1.4%	0.0%	-0.1%	3.7%	4.3%
Dallas County	\$59,551	\$61,553	\$55 <i>,</i> 390	\$55,440	\$59 <i>,</i> 838	0.3%	-0.3%	-0.3%	0.5%	8.0%
Denton County	\$72,774	\$86,757	\$81,538	\$80,966	\$88,384	1.6%	0.5%	0.4%	21.4%	8.4%
Ellis County	\$55,116	\$71,111	\$70,286	\$72,881	\$76,792	2.3%	1.2%	1.1%	39.3%	9.3%
Hood County	\$61,216	\$63,281	\$63,364	\$49,285	\$60,917	0.3%	0.2%	-0.8%	-0.5%	-3.9%
Hunt County	\$47,401	\$51,867	\$49,763	\$62,888	\$53 <i>,</i> 360	0.8%	0.2%	1.1%	12.6%	7.2%
Johnson County	\$57,456	\$62,716	\$63,448	\$62,228	\$62,635	0.8%	0.5%	0.3%	9.0%	-1.3%
Kaufman County	\$48,997	\$62,319	\$67,606	\$71,722	\$67,434	2.2%	1.5%	1.5%	37.6%	-0.3%
Parker County	\$59 <i>,</i> 083	\$65,918	\$70,821	\$97,332	\$73,718	1.0%	0.9%	1.9%	24.8%	4.1%
Rockwall County	\$79,783	\$94,635	\$90,093	\$65,006	\$102,858	1.6%	0.6%	-0.8%	28.9%	14.2%
Tarrant County	\$62,817	\$68,512	\$63 <i>,</i> 855	\$47,148	\$66,059	0.8%	0.1%	-1.1%	5.2%	3.5%
Wise County	\$52,020	\$61,072	\$63,740	\$60,941	\$66 <i>,</i> 387	1.5%	1.0%	0.6%	27.6%	4.2%
State of Texas	\$50,909	\$55,250	\$56,129	\$59,565	\$60,632	0.7%	0.5%	0.6%	19.1%	8.0%
United States	\$56 309	\$59 349	\$57 782	\$59 695	\$63 179	0.5%	0.1%	0.2%	12.2%	9.3%

Table 5-4.	Median	Household	Income (ir	n Real 2	2018 C) Ollars)





Figure 5-5. NTTA System - Median Household Income (in Real 2018 Dollars)



5.8. Socioeconomic Indicators

5.8.1. Major Employment Establishments

NCTCOG maintains a comprehensive list of major employment establishments in the DFW region. There are over 350 establishments in the NTTA System area that have moved to DFW region between 2010 and 2018. The locations of those establishments are shown in **Figure 5-6**. Additionally, there are several employment locations near NTTA System corridors that have over 2,000 employees, and those locations have significant potential for generating traffic on the NTTA System. Many of these employment establishments are medical institutions including Parkland Health and Hospital System, Baylor University Medical Center, Children's Medical Center, UT Southwestern Medical Center and Texas Health Presbyterian Hospital. Other major companies located near the NTTA System include AT&T, Verizon, American Airlines, Southwest Airlines, Nebraska Furniture Mart, FedEx, JC Penney, Toyota, and Bank of America.



Figure 5-6. Major Employment Establishments near NTTA System Facilities



5.8.2. Consumer Price Index

The consumer price index for all urban consumers (CPI-U) is the most widely used measure of inflation and serves as an economic indicator. The CPI-U determines the aggregate price level of a specific market basket of goods and services that are consumed by typical urban households. This is done by calculating the average going price of each item in the market basket. Food, clothing, housing, transportation (including tolls) and entertainment are all included in the basket. Income taxes and investment items such as stocks and bonds are not included. The Bureau of Labor and Statistics of the U.S. Department of Labor calculates the CPI-U every month.

The consumer price index for the base time frame (1982-1984) is 100. Inflation is determined by finding the percentage change in the CPI-U from one year to the next. **Table 5-5** gives the historical trends for CPI-U from 1985-2017 for DFW, the Southern Region (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington D.C., and West Virginia), and the United States. As indicated in **Table 5-5**, the CPI-U in DFW has continually increased at a similar rate to the CPI-U for both the Southern Region and the United States. This indicates that the inflation rate in DFW is consistent with the rate of inflation seen nationwide. Between 1989 and 2019, the CPI-U in DFW region has grown at an average annual rate of 2.3 percent per year, which is a similar rate of growth experienced by the Southern Region and the nation during that time. Between 2009 and 2019, CPI-U grew at an average annual rate of 1.7 percent for both DFW and the Southern Region, and at a compounded annual rate of 1.8 percent for the United States. It should also be noted that the CPI-U sharply increased between 2007 and 2008 and decreased between 2008 and 2009.

5.8.3. Trends in Building Permits

The housing industry accounts for a large percentage of investment spending. Building permits are leading economic indicators as they help predict where the economy is headed in the near future. Sustained declines in building permits slow the economy and can be indicative of a potential recession. Likewise, increases in this leading indicator can potentially indicate or trigger economic growth. The trends in single family residential building permits for the DFW region are presented in **Figure 5-7**. Single family building permits have generally continued to grow from year to year with some exceptions. Between 1988 and 2006, the total number of single-family building permits increased at average annual rate of 6.6 percent in DFW. However, due to the recession, the number of building permits issued since 2006 has dropped significantly in DFW. Between 2006 and 2009, the number of single family building permits decreased at an average annual rate of more than 30 percent, and there has been growth in building permits since 2011.



	Delles Fort		Countly and		Linter of Charters	
Year	Worth	Growth	Region	Growth	City Average	Growth
1984	104.3		103.8		103.9	
1985	108.2	3.7%	107.1	3.2%	107.6	3.5%
1986	109.9	1.6%	108.9	1.7%	109.6	1.9%
1987	112.9	2.7%	112.4	3.2%	113.6	3.7%
1988	116.1	2.8%	116.4	3.6%	118.3	4.1%
1989	119.5	2.9%	121.5	4.4%	124.0	4.8%
1990	125.1	4.7%	127.9	5.3%	130.7	5.4%
1991	130.8	4.6%	132.9	3.9%	136.2	4.2%
1992	133.9	2.4%	136.5	2.7%	140.3	3.0%
1993	137.3	2.5%	140.8	3.2%	144.5	3.0%
1994	141.2	2.8%	144.7	2.8%	148.2	2.6%
1995	144.9	2.6%	149	3.0%	152.4	2.8%
1996	148.8	2.7%	153.6	3.1%	156.9	2.9%
1997	151.4	1.7%	156.9	2.1%	160.5	2.3%
1998	153.6	1.5%	158.9	1.3%	163.0	1.6%
1999	158	2.9%	162	2.0%	166.6	2.2%
2000	164.7	4.2%	167.2	3.2%	172.2	3.4%
2001	170.4	3.5%	171.1	2.3%	177.1	2.8%
2002	172.7	1.3%	173.3	1.3%	179.9	1.6%
2003	176.2	2.0%	177.3	2.3%	184.0	2.3%
2004	178.7	1.4%	181.8	2.5%	188.9	2.7%
2005	184.7	3.4%	188.3	3.6%	195.3	3.4%
2006	190.1	2.9%	194.7	3.4%	201.6	3.2%
2007	193.2	1.7%	200.4	2.9%	207.3	2.9%
2008	201.8	4.4%	208.7	4.2%	215.3	3.8%
2009	200.5	-0.6%	207.8	-0.4%	214.5	-0.4%
2010	201.6	0.5%	211.3	1.7%	218.1	1.6%
2011	207.9	3.1%	218.6	3.4%	224.9	3.2%
2012	212.2	2.1%	223.2	2.1%	229.6	2.1%
2013	216.0	1.8%	226.7	1.6%	233.0	1.5%
2014	218.4	1.1%	230.6	1.7%	236.7	1.6%
2015	217.5	-0.4%	230.1	-0.2%	237.0	0.1%
2016	220.7	1.5%	232.7	1.1%	240.0	1.3%
2017	226.1	2.5%	237.5	2.0%	245.1	2.1%
2018	232.8	3.0%	242.7	2.2%	251.1	2.4%
2019	237.7	2.1%	246.3	1.5%	255.7	1.8%
2020	238.5	0.3%	247.5	0.5%	257.8	0.8%
Compounded An	nual Growth	· · · · · ·		1	1	
(1989-2019)	-	2.3%	-	2.4%	-	2.4%
(2009-2019)	-	1.7%	-	1.7%	-	1.8%
(2019-2020*)	-	0.3%	-	0.5%	-	0.8%

Table 5-5. Consumer Price Index for All Urban Consumers (CPI-U: 1982-84 = 100)

*Data updated through July 2020





Trends in Single Family Building Permits in Dallas-Fort Worth

5.8.4. Regional Home Sales

Trends in home sale prices and the number of sales can serve as a good indicator of the state of a local economy. Growth in the median sale price of area homes is presented for the Dallas multiple listing service (MLS), Collin County MLS, Denton County MLS and the state of Texas in **Figure 5-8**. The median price of homes sold has been steadily increasing in the DFW region and throughout the state since 2011. According to the latest Standard & Poor's Case-Shiller report, home prices in Dallas-Fort Worth have recovered more since recession than in any other U.S. market. In 2017, Dallas area home prices were ten percent higher than in 2016. However, the growth rate plateaued trend between 2017 and 2019. **Figure 5-9** shows the total number of homes sold in the Dallas Fort Worth MSA region annually since 2000. Home sales began dropping significantly in 2007 and reached a ten-year low in 2010. However, as of 2019 home sales have risen above pre-recession levels and have been steadily increasing.

While 2019 regional home sales figures depicted an improvement since the start of this decade, the same trend is not expected to continue into 2020 due the adverse effects COVID-19 pandemic has had on the regional economy. As per the RDS report, included in **Appendix B**, the housing inventory in Texas and DFW region has stayed low to about 3 months and 2.5 months, respectively, in June 2020.





Source: Texas A&M Real Estate Center



5.8.5. Gasoline Prices

Figure 5-10 shows the average weekly gasoline price in Texas over the past seven years. Trends in gasoline prices in Texas fell sharply during the second half of 2014 and dropped below \$2.00 per gallon for the first time since early 2012. Prices in during the month of April 2020 also depicted a sharp decline due to the negative WTI oil futures in the crude oil market in tandem to the decline in oil demand due to COVID-19 travel restrictions. Throughout the early part of 2020, gasoline prices have stayed low, with a minimum of \$1.51 in May 2020.



Figure 5-10. Average Weekly Gasoline Prices in Texas Source: US Energy Information Administration

5.8.6. Independent Demographic Review

The Dallas/Fort Worth area is a dynamic and rapidly growing economic region of Texas. Given the high demographic growth in the DFW region, an independent demographic review was necessary for a more micro level review of the demographics along NTTA System facility corridors. To get a better estimate of the future employment and population within the study area, CDM Smith engaged Research and Demographic Solutions (RDS) in 2019 to perform an independent demographic review and development updates along NTTA System corridors. The findings of the demographic review are included in **Appendix B**. The appendix includes the recent impacts of COVID-19 pandemic on the demographics of the DFW region. The qualifier "official" refers to the NCTCOG demographics datasets, which were prepared by NCTCOG as part of Mobility 2045. The "probable" population and employment forecasts made by RDS to update the NCTCOG official demographics datasets along NTTA System corridors are referred to as the "revised" demographic datasets.



As per RDS, the future year estimates for demographics beyond 2028 would not be impacted by the current 2020 COVID recession. There is expected to be a slow growth for the next two to five years, but thereafter the demographics would catch-up the pre-COVID forecast levels (**Appendix B**). Hence, for the future year traffic forecast, CDM Smith has used the pre-COVID forecasts. However, RDS expresses the uncertainty about the use of demographic forecasts if the pandemic were to extend beyond 2021, in the event of a second resurgence of infections in Texas.

5.8.7. Future Population and Employment along NTTA System Corridors

The revised population and employment growth between 2020 and 2045 for the NTTA System area of influence disaggregated at the TAP zone level is highlighted in **Figure 5-11** and **Figure 5-12**.

5.8.8. Population Growth Estimates

Figure 5-11 identifies the annual compounded growth rates for population in the revised demographic forecasts. Many of the zones in the NTTA System area show anticipated annual population growth rates of less than 3.0 percent between 2020 and 2045. However, although several zones are expected to generate small population growth by 2045, many of the zones with large forecasted growth in population are located directly adjacent to NTTA System facilities. As seen in **Figure 5-11**, there are several high population growth zones along the PGBT, DNT, SRT and CTP corridors.

5.8.9. Employment Growth Estimates

Figure 5-12 identifies the average annual growth rates for employment in the NTTA System area. Many of the zones show anticipated annual employment growth rates of less than 3.0 percent between 2020 and 2045. Zones with higher projected employment growth are more concentrated in Collin County, Denton County, southwestern Dallas County and southern Tarrant County.

5.8.10. Comparison of Official and Revised Demographics

Tables 5-6 and **5-7** show a comparison of the official and revised demographics (population and total employment) projections for Collin County, Dallas County, Denton County, Rockwall County and Tarrant County for years 2020, 2028, 2037, and 2045. In 2020, the revised population estimates are higher than NCTCOG official demographics for every county except Tarrant. The revised 2045 revised population forecast is higher for Collin County, Denton County, Johnson County and Rockwall County and is lower for Dallas and Tarrant County in comparison to the official forecast. The revised employment forecast in 2045 is lower for Dallas County in comparison to the official employment forecast (see **Table 5-7**).

Figures 5-13 through **5-16** show a comparison of NCTCOG's official population and the revised population forecast near the NTTA System for the years 2020, 2028, 2037 and 2045. The revised population forecast is generally higher than the NCTCOG forecast through the NTTA System area, with some reasonably large increases in Collin County and Denton County. **Figures 5-17** through **5-20** show a comparison of NCTCOG's official employment and the revised employment forecast near the NTTA System for the years 2020, 2028, 2037 and 2045. As shown in the figures, the revised employment is general lower than the official NCTCOG forecast across much of the study area, with the exception of some significant increases in Collin County and Denton County, many of which lie along NTTA corridors.





Figure 5-11. Average Annual Population Growth: 2020-2045



Figure 5-12. Average Annual Employment Growth: 2020-2045



		2020		2028			
County	Official (000's)	Revised (000's)	Change (%)	Official (000's)	Revised (000's)	Change (%)	
Collin	1038	1122	0.08	1232	1407	0.14	
Dallas	2470	2530	0.02	2628	2703	0.03	
Denton	743	736	-0.01	806	882	0.10	
Johnson	126	128	0.02	150	154	0.03	
Rockwall	106	110	0.05	130	145	0.12	
Tarrant	1484	1434	-0.03	1690	1647	-0.02	
		2037		2045			
	Official	Revised	Change	Official (000's)	Revised	Change	
County	(000's)	(000's)	(%)		(000's)	(%)	
Collin	1478	1734	0.17	1689	1989	0.18	
Dallas	2971	2926	-0.02	3167	3102	-0.02	
Dallas Denton	2971 927	2926 1046	- 0.02 0.13	3167 1048	3102 1206	-0.02 0.15	
Dallas Denton Johnson	2971 927 178	2926 1046 185	-0.02 0.13 0.04	3167 1048 195	3102 1206 206	- 0.02 0.15 0.05	
Dallas Denton Johnson Rockwall	2971 927 178 157	2926 1046 185 179	-0.02 0.13 0.04 0.14	3167 1048 195 182	3102 1206 206 202	-0.02 0.15 0.05 0.11	

Table 5-6. Population Forecast Comparisons

Table 5-7. Employment Forecast Comparisons

		2020		2028			
County	Official (000's)	Revised (000's)	Change (%)	Official (000's)	Revised (000's)	Change (%)	
Collin	583	640	0.10	619	731	0.18	
Dallas	2248	2308	0.03	2519	2562	0.02	
Denton	270	281	0.04	283	316	0.12	
Johnson	63	57	-0.10	66	71	0.08	
Rockwall	42	46	0.07	44	53	0.21	
Tarrant	1003	1031	0.03	1106	1206	0.09	
		2037		2045			
	Official	Revised	Change	Official	Revised	Change	
County	(000's)	(000's)	(%)	(000's)	(000's)	(%)	
Collin	727	853	0.17	835	974	0.17	
Dallas	2937	2842	-0.03	3168	3111	-0.02	
Denton	332	373	0.13	370	413	0.12	
Johnson	76	83	0.09	83	89	0.07	
Rockwall	F1	62	0.24	59	73	0.24	
	51	05	0.24	55	, 0	0.2.1	





Figure 5-13. 2020 Population Comparison: Revised vs. NCTCOG Official



2028 Population Comparison: Revised vs. NCTCOG Official





Figure 5-16. 2045 Population Comparison: Revised vs. NCTCOG Official





Figure 5-18. 2028 Employment Comparison: Revised vs. NCTCOG Official





Figure 5-19. 2037 Employment Comparison: Revised vs. NCTCOG Official



2045 Employment Comparison: Revised vs. NCTCOG Official


Section 6 Travel Demand Model Development

This section describes the travel demand model validation process, including database modifications and updates to the TransCAD network and socio-economic characteristics in the vicinity of NTTA System roadways. **Figure 6-1** illustrates the travel demand process used by CDM Smith for developing the traffic and toll revenue forecasts. This methodology ensures that results are consistent with previous analyses done for NTTA by CDM Smith for toll facilities in the Dallas/Fort Worth (DFW) area.

6.1. NCTCOG Information

For this study, the latest travel demand model information was obtained from NCTCOG. This includes the latest official demographics used in the Mobility 2045 Plan. The data includes:

- NCTCOG 5,386-zone TransCAD network structure
- Highway network characteristics for the years 2018, 2020, 2028, 2037 and 2045 in TransCAD format
- Socioeconomic information at the 5,386-zone Transportation Analysis Process (TAP) level for the years 2018, 2020, 2028, 2037 and 2045
- Trip tables (zone to zone matrices) for single occupant vehicles (SOV), high-occupancy vehicles (HOV), and trucks for years 2018, 2020, 2028, 2037 and 2045. These trip tables were provided for the AM peak (6:30 to 9:00 AM), PM peak (3:00 to 6:30 PM), and off-peak (9:00 AM to 3:00 PM and 6:30 PM to 6:30 AM) periods.

6.2. Highway Network Update

NCTCOG's DFW highway model networks reflect the latest regional transportation improvements recommended in Mobility 2045. The networks incorporate all existing NTTA and TxDOT toll facilities and numerous other planned facilities in the DFWMA. Existing toll facilities were coded to reflect all current ramp and main lane toll charges.

The 2018, 2020, 2028, 2037 and 2045 networks provided by NCTCOG were reviewed for consistency and fine-tuned based on the travel time characteristics and traffic counts collected within the NTTA System corridors as described in **Section 2** of this report. This is the model network calibration process. The calibrated networks were then used to develop the forecasted NTTA System traffic and toll revenue streams. The 2018 network was used as the base year for model validation purposes.

The travel time data collected were used to adjust the free-flow speeds along NTTA System facilities and competing/parallel roadways. These adjustments accounted for geometric and operational characteristics of the major facilities that are typically not captured or reflected as part of a regional NCTCOG validation process of travel time attributes. Some typical factors that can influence traffic



flow in the corridor are intersection design constraints, traffic signal and stop sign impedances, narrow median design, and multiple entry point characteristics.



NTTA System – Travel Demand Forecasting Process



6.3. Model Validation

The model validation process involved comparing the 2018 traffic assignment output volumes based on the revised demographics (**Section 5**) against traffic counts obtained for this study (**Sections 2.5 and 2.6**) and toll transactions at all existing NTTA ramp and mainlane toll gantries (**Section 2.3**). Output travel times and speeds from the travel demand model were also compared to the actual travel time information (**Section 2.7**). This process was performed for each of the time periods modeled (AM peak, PM peak, and off-peak).

CDM Smith combined traffic count data collected in 2019, which was adjusted downwards to represent 2018 traffic levels, alongside the NTTA toll transaction data to validate the model and adjust the network characteristics where needed. Twenty-one screenlines were developed along the NTTA System corridors and at several strategic locations to analyze the total corridor traffic distribution and to ensure that the base model outputs reflect current traffic characteristics within those corridors. Screenlines 1 through 4 analyzed traffic in the northbound and southbound directions running parallel to the DNT at each of its four mainlane gantries. Screenlines 5 through 10 analyzed traffic corresponding to the six mainlane gantries on the PGBT (including PGBT EE). Screenlines S1 through S3 correspond to the three mainlane gantries on the SRT in addition to the two-mile existing toll-free section of SRT northeast of the IH 35E/SRT interchange. On PGBT WE, three screenlines were analyzed (W1, W2 and W3), and five screenlines across the Chisholm Trail Parkway were used for the validation effort (C1, C2, C3, C4 and C5). The locations of the 21 screenlines are shown in **Figures 6-2, 6-3** and **6-4**.

As part of the validation process, trips between select origin/destination pairs included in the revised trip tables were adjusted using Streetlight OD data (**Section 2.8**) to better reflect observed traffic. **Table 6-1** shows a comparison of the model output volumes based on the revised demographics and the daily traffic count volumes for each of the 21 screenlines. The model output daily volumes matched the traffic count volumes closely. Additionally, the average speeds from the model output were compared to the observed speeds collected as part of the travel time runs, included in **Section 2.7**, to ensure that the model accurately reflects existing traffic conditions.

Travel demand modeling practitioners in the United States use "NCHRP 255: Highway Traffic Data for Urbanized Area Project Planning and Design," published by the Transportation Research Board to check the reasonableness of model validation. As shown in **Figure 6-5**, the percentage difference between the model volumes and traffic is within the acceptable range for each of all 21 screenlines according to this widely accepted model validation standard.





Figure 6-2. NTTA System Screenlines (DNT, PGBT, SRT)





Figure 6-3. NTTA System Screenlines (PGBT WE)





Figure 6-4. NTTA System Screenlines (CTP)



Screenline	Screenline Totals				
Location	2018 Counts†	2018 Model	Comparison		
Dallas North Tollway					
Screenline 1	797,200	795,400	-0.2%		
Screenline 2	671,200	726,900	8.3%		
Screenline 3	666,400	693,700	4.1%		
Screenline 4	270,700	277,200	2.4%		
President George B	ush Turnpike				
Screenline 5	196,200	165,400	-15.7%		
Screenline 6	343,100	382,300	11.4%		
Screenline 7	747,400	757,000	1.3%		
Screenline 8	548,500	584,500	6.6%		
Screenline 9	340,900	340,700	-0.1%		
Screenline 10	343,300	360,300	4.9%		
PGBT Western Extension					
Screenline W1	350,400	383,800	9.5%		
Screenline W2	326,000	307,900	-5.5%		
Screenline W3	281,200	252,900	-10.1%		
Sam Rayburn Tollw	ay		L		
Screenline S1	263,100	286,600	8.9%		
Screenline S2	346,600	310,800	-10.3%		
Screenline S3	450,000	402,500	-10.6%		
Chisholm Trail Park	way				
Screenline C1	352,700	310,800	-11.9%		
Screenline C2	313,900	302,400	-3.7%		
Screenline C3	57,600	59,100	2.6%		
Screenline C4	144,400	136,700	-5.3%		
Screenline C5	72.900	70.500	-3.3%		

Table 6-1. Comparison of Traffic Counts and Model Output: Daily Total

+ 2019 Traffic Counts were factored to estimate the 2018 counts for comparison with 2018 model.





Figure 6-5. NTTA System - Screenline Traffic Validation

6.4. Modeling Methodology

State-of-the-practice professional procedures were used in the development of the traffic and revenue forecasts for the NTTA System. The CDM Smith market share diversion routines designed specifically to emulate motorists' willingness to pay tolls at different toll levels and congestion conditions were used to test the toll sensitivities within the corridor for the base year, 2018, and two of the future model years 2028 and 2045.

The toll diversion traffic assignments were run using an equilibrium diversion technique to evaluate the toll traffic potential of the NTTA System facilities. In the traffic assignment process, the travel model builds two paths between each pair of zones: one that includes toll road mainlane links and another path that excludes toll road mainlane links. The travel cost associated with using both travel paths is computed, and the volume of trips using the toll facility is then estimated based on travel time savings between the two paths. This technique simulates the driver's decision to use a toll or toll-free route, which depends to a large extent on marginal differences in time and cost between the routes.

6.4.1. Time Cost and Vehicle Operating Costs

In addition to tolls, two other end-user costs are considered when calculating the total cost of a trip on the NTTA System: time cost and vehicle operating costs. The motorists' time cost is calculated using value of time estimates that are integrated into the modeling process. How travelers value their travel time helps them determine which route to use for a particular trip. The value of time



parameter provides a measure to convert travel time into an equivalent monetary cost for inclusion in the toll diversion process. Vehicle operating costs include a multitude of additional costs to travelers such as wear and tear, maintenance, tires, oil, fuel and other variable costs.

6.4.2. Value of Time

The values of time used for this study were derived from the stated preference (SP) survey conducted by Resource Systems Group (RSG) as part of the October 2011 Study (included as **Appendix A-2** of this report). Additionally, RSG was engaged by NTTA to conduct a CTP SP Survey during fall of 2014 (included as **Appendix A-3** of this report). The results of these surveys were used to calculate values of time in the NTTA System study area and surrounding counties.

CDM Smith requested from RSG an assessment of current values of time in an update letter. RSG recommends (**Appendix A-1**) adjusting the 2014 values of time for CTP by 9.3% to reflect CPI growth in the region, for an overall adjustment factor of 1.093. Whereas, for NTTA facilities, RSG recommends adjusting the values of time by 0.3% to reflect changes in real income and 15.9% to reflect CPI growth, for a total adjustment factor of 1.162. Values of time were assumed to inflate at an average annual rate of 1.5 percent between 2020 and 2024, and at a rate of 2.0 percent from 2025 onward. The average peak period and off-peak period values of time for the twelve counties in the model area are shown in **Table 6-2**.

County	Peak	Off-Peak	County	Peak	Off-Peak
Collin	\$15.01	\$15.01	Johnson	\$14.86	\$13.06
Dallas	\$14.29	\$14.29	Kaufman	\$14.45	\$14.45
Denton	\$14.83	\$14.83	Parker	\$15.57	\$10.44
Ellis	\$14.53	\$14.53	Rockwall	\$15.18	\$15.18
Hood	\$14.70	\$9.75	Tarrant	\$14.61	\$12.02
Hunt	\$14.27	\$14.27	Wise	\$15.23	\$10.10

Table 6-2. Value of Time by Counties (2019 \$/Hour)

6.4.3. Vehicle Operating Costs

The vehicle operating cost used in the analysis was calculated by taking into account the average per-mile costs of gasoline and oil and, to a lesser extent, the costs of ongoing maintenance for vehicles in the area. It was also assumed that fuel efficiency of vehicles will improve in future years. The average fuel efficiency of passenger cars was assumed to increase from approximately 39.1 miles per gallon in 2017 to 43.7 miles per gallon in 2020 based on Corporate Average Fuel Economy (CAFÉ) standards as defined in Federal Register /Vol. 83 No. 165 (Table I-1). Beyond 2020, the fuel efficiency is assumed to improve at a slower rate. Future gasoline prices are assumed to increase to \$3.00 (in 2014 dollars) by year 2030. The resulting vehicle operating costs adopted for this study are shown in **Table 6-3**.



Year	Passenger Cars	Commercial Vehicles
2016	\$0.16	\$0.86
2020	\$0.18	\$0.92
2025	\$0.19	\$1.01
2035	\$0.23	\$1.21
2040	\$0.24	\$1.27
2045	\$0.25	\$1.34

Table 6-3. Vehicle Operating Costs (\$/mile)

6.4.4. Revised Demographics and Trip Tables

Traffic and revenue estimates along NTTA System corridors that are presented in **Section 7** of this report are based on the revised demographic datasets developed by Research and Demographic Solutions (RDS), as described in **Section 5**. The updated demographic datasets were used as an input to the NCTCOG DFW Regional Travel Model (DFWRTM) to generate an alternate set of trip tables and are referred to as the "revised" trip tables. These revised trip tables, with adjustments to trips applied as part of the base year validation process, were used to estimate the traffic and revenue along the NTTA System corridors.

6.5. General Assumptions

The forecasted traffic volumes and estimated toll revenues from this study are based on the following general assumptions, which CDM Smith believes are reasonable for the purposes of this study (a more detailed description of revenue estimation assumptions can be found in **Section 7**):

- 1. By December 31, 2021, expansion of PGBT from three lanes to four lanes in both directions between IH 35E and north of Beltline road is assumed to be completed.
- 2. By December 31, 2021, capacity improvements on SRT (DNT to US 75) from three lanes to four lanes per direction are assumed to be completed.
- 3. By July 31, 2022, PGBT-WE mainlanes from north of Egyptian Way to IH 20 are assumed to be expanded from two to three mainlanes in each direction and PGBT-WE mainlanes from Conflans to north of Egyptian Way will be widened to four main lanes in each direction
- 4. By December 31, 2022, tolled ramps (northbound entrance from Panther Creek Parkway and southbound exit to Panther Creek Parkway) will be open to traffic.
- 5. By December 31, 2022, DNT mainlanes over US 380 and the First Street ramps north of US 380 will be open to traffic.
- 6. By December 31, 2022, DNT Phase 4B southbound frontage road from FM 428 to the Greyson/Denton County line will be open to traffic. The frontage road will open as a two lane two direction county road.
- 7. By July 31, 2025, expansion of DNT from three lanes to four lanes, in both directions, between SRT and US 380 is assumed to be completed



- 8. By January 1, 2028, the ultimate configuration of SRT interchange at South Colony boulevard is assumed to be completed.
- 9. By July 31, 2028, DNT Extension Phase 4A (US 380 to FM 428) is assumed to open to traffic.
- 10. By December 31, 2030, DNT 4B mainlanes six-lane tollway from FM 428 to Grayson County is assumed to open to traffic
- 11. By December 31, 2030, CTP between FM 1187 and US 67 will be expanded from two to four lanes.
- 12. By December 31, 2032, SH 190/East Branch, a proposed six-lane tollway from IH 30/PGBT EE to IH 20/Loop 9, is assumed to open to traffic.
- 13. It is assumed that construction required as part of the capacity improvements along NTTA facilities over the next several years will cause minimal disruptions to traffic on NTTA facilities (with weekend or overnight closures of lanes/ramps).
- 14. Alignment of all NTTA System facilities is to be as described in **Section 7** of this report.
- 15. Improvements to the present highway system in the vicinity of the NTTA System facilities are limited to those currently included in the Mobility 2045 Plan. No additional competing limited-access highways will be constructed near the NTTA System corridors at any time during the forecast period. Opening dates of the regional transportation projects are assumed to be consistent with the assumptions in the Mobility 2045 Plan, except as noted above.
- 16. No improvements to the DFW regional passenger rail network are assumed beyond those included in the Mobility 2045 Plan.
- 17. Fully electronic toll collection system, and toll collection policies and rates for the NTTA System will be adopted as shown in **Section 7** of this report and toll rates are consistent with NTTA's current toll rate policy.
- 18. Toll rates on other regional toll roads are consistent with RTC's current toll policy.
- 19. In accordance with the existing practice of the NTTA, all NTTA System facilities will be well-maintained, efficiently operated, and effectively signed to encourage maximum usage.
- 20. Economic growth along NTTA System corridors will follow the forecasts described in **Section 5**.
- 21. Growth in vehicle operating costs (which include fuel, maintenance, and tires) will not significantly deviate from the assumed inflation rate.
- 22. No local, regional, or national emergency will arise which would abnormally restrict the use of motor vehicles.



This page intentionally left blank.



Section 7 Estimated Traffic and Revenue

This section presents the traffic and revenue (T&R) estimates for the North Texas Tollway Authority System (NTTA System) through 2069. The NTTA System facilities currently in operation are the Dallas North Tollway (DNT), President George Bush Turnpike (PGBT), President George Bush Turnpike Eastern Extension (PGBT EE), Sam Rayburn Tollway (SRT), Addison Airport Toll Tunnel (AATT), Mountain Creek Lake Bridge (MCLB), Lewisville Lake Toll Bridge (LLTB), President George Bush Turnpike (PGBT WE) and Chisholm Trail Parkway (CTP). The long-term T&R forecasts are based on the modeling methodologies and background assumptions described in **Section 6** and other assumptions, including COVID-19 related adjustment assumptions, presented in this section. In addition, this section delineates the toll sensitivity analyses that were performed to estimate the revenue maximization toll rates and presents the results of various sensitivity tests to assess impacts on the T&R of key input variables. Finally, this section provides estimated average weekday traffic for model years 2020 and 2045 and the resulting estimates of transactions and toll revenue through 2069.

7.1. Traffic and Toll Revenue Estimation Assumptions

The traffic forecasts and toll revenue estimates for NTTA System facilities are predicated on the following assumptions, which are consistent with observed trends and are considered reasonable for the purposes of this study.

7.1.1. Toll Rate Assumptions

This subsection discusses the assumptions for future toll rate estimation.

DNT and PGBT

- Automatic Vehicle Identification (AVI) toll for two-axle vehicles: \$0.19/mile starting July 1, 2019 with adjustments every two years at 2.75 percent per year, compounded.
- Video toll surcharge is the maximum of, a) 50 percent of the AVI rate or b) \$0.20 per transaction on July 1, 2009 inflated by 2.75 percent per year.
- Minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the next highest penny.

PGBT EE

- AVI toll for two-axle vehicles: \$0.19/mile on July 1, 2019 with adjustments every two years at 2.75 percent per year. This is the "unified toll", which is the publicly announced toll, as defined in the PGBT EE Project Agreement between NTTA and the Texas Department of Transportation (TxDOT). The ratio between the NTTA toll and the unified toll remains constant at 80 percent.
- Video toll surcharge is the maximum of, a) 50 percent of the AVI rate or b) \$0.20 per transaction on July 1, 2009 inflated by 2.75 percent per year. This portion of the video toll constitutes the property and revenues of the NTTA only, and not of TxDOT.



- Minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the next highest penny.

SRT and PGBT WE

- AVI maximum base toll (MBT) for two-axle vehicles: \$0.19/mile starting July 1, 2019 with adjustments every two years at 2.75 percent per year.
- Video toll surcharge is the maximum of, a) 50 percent of the AVI rate or b) \$0.20 per transaction on July 1, 2009 inflated by 2.75 percent per year.
- Minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the next highest penny.
- MBT rounded to \$0.001/mile.

СТР

- Automatic Vehicle Identification (AVI) toll for two-axle vehicles: \$0.24/mile (IH 30 to Altamesa) and \$0.19/mile (Altamesa to US 67) starting July 1, 2019 with adjustments every two years at 2.75 percent per year.
- Video toll surcharge is the maximum of, a) 50 percent of the AVI rate or b) \$0.20 per transaction on July 1, 2009 inflated by 2.75 percent per year.
- Minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the next highest penny.

AATT and MCLB:

- AVI toll for two-axle vehicles: \$0.66 starting July 1, 2019 with adjustments every two years at 2.75 percent per year.
- Video toll surcharge is 50 percent of the AVI rate.
- Tolls charged to users are rounded to the next highest penny.

LLTB:

- AVI toll for two-axle vehicles: \$1.32 starting July 1, 2019 with adjustments every two years at 2.75 percent per year.
- Video toll surcharge is 50 percent of the AVI rate.
- Tolls charged to users are rounded to the next highest penny.

7.1.2. Truck Traffic Shares/Truck Toll Assumptions

This subsection discusses the assumptions for truck share and truck toll factors - two inputs for revenue estimation.

Truck Share

Truck traffic (vehicles with greater than two axles) shares are applied on a gantry by gantry basis and the averages assumed for each facility are shown in **Table 7-1** below:



Facility	Truck Share	Facility	Truck Share
DNT	1.6%	MCLB	1.8%
PGBT	3.1%	LLTB	3.0%
SRT	3.7%	PGBT WE	6.8%
PGBT EE	3.2%	СТР	3.5%
AATT	1.1%	NTTA System	3.0%

Table 7-1. Truck Shares -	- 2019 Annual Summary
---------------------------	-----------------------

Truck traffic, as noted in **Section 6**, has been observed to sustain negligible impacts from the travel restrictions associated to the COVID-19 pandemic. In contrast to passenger car (PC) traffic, truck traffic in the first four months (through July) of the announcement of shelter-in-place in Texas, was observed to be consistent with the pre-COVID truck traffic levels. Hence, observed 2019 truck shares, as presented in **Table 7-1**, were lower than the observed 2020 truck share; also, during the course of the pandemic, the number of passenger cars declined on the NTTA system while the number of trucks has remained at the same levels, resulting in increased truck share (**Figure 7-1**.)

Hence, by 2023, PC traffic share is assumed to catch up to its pre-COVID-19 levels, as it is assumed travel restrictions will be lifted and the DFW economy moves along its projected recovery trajectory (**Appendix B**). Therefore, the truck shares for each facility are assumed to return to their pre-COVID levels (**Table 7-1**) by 2023.



Figure 7-1. Monthly Truck Share Trends



Truck Toll Factor

Tolls for vehicles with more than two axles are calculated based on "N-1" weighting, where "N" is the number of axles. For example, the toll paid by a five-axle vehicle would be four times the toll paid by a two-axle vehicle. Average truck toll factor is a ratio of the weighted average of the truck tolls charged to vehicles with greater than two-axles to the tolls charged to two-axle vehicles. For example, a high truck toll factor would mean a higher proportion of multi-axle vehicles on a toll facility. The average truck toll factor assumed for various facilities on the NTTA System are shown in **Table 7-2**.

Facility	Truck Toll Factor	Facility	Truck Toll Factor
DNT	3.04	MCLB	3.38
PGBT	3.24	LLTB	2.99
SRT	3.28	PGBT WE	3.44
PGBT EE	3.14	СТР	3.34
AATT	2.93	NTTA System	3.25

Table 7-2	Truck	Toll	Factors -	- 2019
Table /-2.	TIUCK	101	I actors -	2013

During the first four months of the COVID-19 pandemic (March – June), there has been little change to the distribution of trucks by axle class. Also, there has been negligible changes in truck traffic observed during that same period. Additionally, the truck toll factors have varied very little in the last decade across all NTTA System facilities. Therefore, CDM Smith assumed no changes in the truck toll factors as presented in **Table 7-2** throughout its forecast period.

7.1.3. AVI/ZipCash Transaction Shares

AVI transaction shares are applied on a gantry by gantry basis and averages assumed in 2019 for each facility are shown below in **Table 7-3**.

Facility	AVI Share	Facility	AVI Share
DNT	82.6%	MCLB	68.1%
PGBT	80.9%	LLTB	80.3%
SRT	83.1%	PGBTWE	73.1%
PGBT EE	80.9%	СТР	80.3%
AATT	81.2%	NTTA System	81.2%

Table 7-5. AVI 511dl e - 2015	Table	7-3.	AVI	Share –	2019
-------------------------------	-------	------	-----	---------	------

The above AVI transaction shares also include all transactions initially recorded as ZipCash transactions that may be later identified and reclassified as AVI transactions. These transactions are called "VToll" transactions. **Figure 7-2** compares transactions by payment mode, i.e. AVI and ZipCash, from March through July, with 2019 as the baseline. As seen in the figure, the impact on ZipCash transactions is approximately five percent lower than the impact on AVI transactions (**Figure 7-2**). To account for the differences in the AVI transactions, CDM Smith assumed the AVI shares for 2020 and 2021 to be five points lower than the observed 2019 levels, across all the NTTA





corridors. Further, over time, the AVI transaction shares are assumed to follow a logistic function, asymptotically increasing to an NTTA System average maximum of 85 percent.

Figure 7-2. Weekly TollTag and ZipCash transactions trends

7.1.4. Annual Revenue Days

"Annual revenue days" is a parameter used in the revenue estimation to convert the weekday transactions/revenue to annual transactions/revenue. Observed ratios of the weekend to weekday traffic on NTTA System facilities are used to estimate the annual revenue days. Annual revenue days are applied on a gantry by gantry basis and averages for each facility are shown below in **Table 7-4**.

NTTA Facility	Annual Revenue Days	NTTA Facility	Annual Revenue Days
DNT	332	MCLB	336
PGBT	323	LLTB	330
PGBT EE	337	PGBT WE	320
SRT	334	СТР	323
AATT	307	NTTA System	334

Table 7-4.	Annual	Revenue	Davs	- 2019

Figure 7-3 presents a comparison of impacts on weekdays and weekends, with February 2020 as the baseline. As seen in the figure, during the start of the pandemic, weekends were impacted more than the weekdays, however, July trends suggests both weekends and weekdays to have a similar impact.







That said, CDM Smith assumes no change in annual revenue days due to COVID-19. Further, annual revenue days have been kept same as the observed revenue days trends in 2019, as shown in **Table 7-4**.

7.1.5. Revenue Recovery Assumptions

The revenue recovery rate for AVI transactions/revenue was assumed to be 99.5 percent for all years. **Table 7-5** describes the assumptions used for ZipCash transactions/revenue recovery. These assumptions are for ZipCash transactions and exclude VTolls, which are transactions captured by the ZipCash system whose license plate numbers are later matched to active transponder accounts. These recovery assumptions have been developed based on guidance from the NTTA staff regarding the NTTA's goals with respect to the non-pursuable and uncollectable ZipCash transactions.

Category*	2020
ZipCash Revenue Recovered (After 3 months)	24.3%
ZipCash Revenue Recovered (After 12 months)	36.3%
ZipCash Revenue Recovered (After 24 months)	45.8%





7.1.6. Traffic Growth Assumptions Beyond 2045

Between 2041 and 2045, traffic is estimated to increase at an average annual rate equivalent to that projected between 2037 and 2040. Annual traffic growth rates from 2046 onwards are shown in **Table 7-6**.

Year	Facility/	Growth
	Segment	Rate
2046-2050	DNT Phase 3 (SRT to US 380)	1.00%
	DNT (South of SRT)	0.50%
	PGBT	1.00%
	PGBT EE	1.00%
	AATT	0.20%
	MCLB	0.40%
	LLTB	1.50%
	SRT	1.50%
	PGBTWE	1.00%
	СТР	1.50%
Beyond 2051	DNT Phase 3 (SRT to US 380)	1.00%
	DNT (South of SRT)	0.50%
	PGBT (Belt Line to DNT, US 75 to SH 78)	1.00%
	PGBT (US 75 to DNT)	0.50%
	PGBT EE	1.00%
	AATT	0.20%
	MCLB	0.40%
	LLTB	1.00%
	SRT	1.30%
	PGBTWE	1.00%
	СТР	1.00%

Table 7-6. Annual Traffic Growth Rate Assumptions (2046 Onwards)

7.2. NTTA Toll Collection Concept and Toll Structure

As described in **Section 2**, the NTTA System currently utilizes a mixed toll collection system that includes AVI and video tolling (known as "ZipCash"). Under ZipCash, users without transponders are identified through the license plate number and invoiced for the toll charge incurred. The ZipCash patrons are charged more than AVI customers per transaction. A majority of the VToll transactions, as described earlier, are charged the AVI rate, however, NTTA charges ZipCash rates for certain VToll transactions to recover the additional collection costs of VToll transactions and to discourage customer behavior related causes of VToll transactions. Tolls are collected at fixed tolling points at rates determined generally upon the influence distance using a per mile toll rate. Toll rates for ZipCash transactions are 50 percent higher than the rates for AVI transactions (with a minimum differential of \$0.26 in 2019 dollars). **Figures 7-4** through **7-15** show the 2020 and 2045 AVI (TollTag) and ZipCash rates charged at the toll gantries on all NTTA facilities.





Figure 7-4. Current (2020) DNT Toll Collection System and Passenger Car Toll Rates



Figure 7-5. 2045 DNT Toll Configuration and Rates





Current (2020) PGBT (Excluding PGBT EE) Toll Collection System and Passenger Car Toll Rates



Figure 7-7. 2045 PGBT Toll Configuration and Rates





Figure 7-8. Current (2020) SRT Toll Collection System and Passenger Car Toll Rates



Figure 7-9. 2045 SRT Toll Configuration and Rates





Figure 7-10.

Current (2020) PGBT EE Toll Collection System and Passenger Car Toll Rates



Figure 7-11. 2045 PGBT EE, AATT, MCLB and LLTB Toll Configuration and Rates



Figure 7-12. Current (2020) PGBT WE Toll Collection System and Passenger Car Toll Rates





Figure 7-13. 2045 PGBT WE Toll Configuration and Rates



Figure 7-14. Current (2020) CTP Toll Collection System and Passenger Car Toll Rates





Figure 7-15. 2045 CTP Toll Configuration and Rates

7.3. Toll Sensitivity Analysis

The toll sensitivity analysis was performed to test the impacts of changes to toll rates on the transactions and revenue from each of the NTTA System facilities and the NTTA System as a whole. It is advisable that the proposed toll rates on the NTTA System facilities be less than that required to maximize revenue as determined by the toll sensitivity analysis. Future flexibility should be maintained to increase tolls, if necessary, to generate additional revenue. Future year toll sensitivity curves are based on changes in traffic characteristics along the NTTA System such as congestion levels, values of time and attractiveness of competing facilities. These curves are essential in estimating the viability of future toll rate increases. In general, the toll sensitivity curve suggests that when the toll rate increases, a portion of travelers will leave the toll facility and choose other routes. Therefore, as toll rate increases until it reaches the highest revenue point where an additional toll rate increased toll reduce transactions enough to result in decreased toll revenue.

Toll sensitivity analyses were conducted for the NTTA System for the years 2018, 2028 and 2045. **Figures 7-16** through **7-21** illustrate the daily toll sensitivity curves for the DNT, PGBT, SRT, PGBT EE, PGBT WE, CTP and NTTA System as a whole. The curves were developed using the revised trip tables that incorporate base year calibration related adjustments, as described in **Section 6**, using toll rates ranging between \$0.10 per mile and \$0.50 per mile. The planned average two-axle vehicle AVI toll rates are included on each of the toll sensitivity curves for reference. The results indicate that the planned toll rates are below the revenue maximization points, demonstrating that, if needed, there is potential for revenue enhancement through toll increases above those assumed for traffic and revenue forecasting purposes.





Toll Sensitivity Curves – PGBT





\$0.180 per mile 20 30 40 Average Toll per Mile (Cents) Figure 7-19.

Toll Sensitivity Curves – PGBT EE



0 10

50





Figure 7-21. Toll Sensitivity Curves – CTP





Figure 7-22. Toll Sensitivity Curves – NTTA System

7.4. Estimated Average Weekday Traffic

An equilibrium diversion technique was used to carry out traffic assignment runs for three periods, AM peak, PM peak, and off-peak. The model runs were conducted for the years 2018, 2020, 2021, 2022, 2023, 2025, 2028, 2029, 2031, 2033, 2037 and 2045. Traffic volumes were estimated by using the revised demographics trip tables, which were adjusted based on the base year model validation process, as described in **Section 6**. The model outputs were then modified to include the impacts of COVID-19 in the DFW region.

7.4.1. Model Adjustments to Include Impact of COVID-19

The model validation process discussed in **Section 6**, was used to obtain the travel demand model for NCTCOG's base year 2018 and other model years. The base year model was validated using the revised demographics for 2018, traffic counts and toll transactions data for 2018, and travel time profiles for 2018.

Because the 2018 model includes traffic trends for the pre-COVID-19 timeframe, it would not be representative of both short-term and long-term impacts of COVID-19 on the NTTA system and. Hence, the impacts to travel demand attributable to the COVID-19 global pandemic were derived and the resulting impacts were then applied to all the models reflecting the expected immediate, short-term effects on the Dallas Fort-Worth (DFW) regional economy and transportation system.

CDM Smith developed a recovery timeline or "impact curve," as shown in **Figure 7-23**, based on the infections trend included in **Section 3** and adjusted (lagged) socio-economic forecasts discussed in **Section 4** and **Appendix B**. This impact curve was constructed based upon assumptions about the depth, duration and recovery from the COVID-19 global pandemic.



The recovery period is defined as the time it takes for NTTA's T&R to return to prior conditions, allowing for the presence of certain longer-lasting effects. The date when an effective vaccine becomes universally available is obviously another critical moment in the recovery. The pace at which the economy recovers is also uncertain. Some employment sectors have been lightly affected and have the prospect of a quick and nearly complete recovery. Whereas, the recovery in hospitality, tourism or recreational employment sectors would largely depend on the perceived safety among the customers.

Apart from the recovery effect, which is mostly short term, there are several types of longer-lasting effects associated with the current COVID-19 impacts. The trend toward increased telecommuting has accelerated as has the availability of increased opportunities for distance learning. COVID-19 has impacted travel behavior in many ways. Some of these listed below will be short-term in effect, while others will have more long-term consequences:

- Remote working: Many employees, particularly those providing professional services have quickly transitioned work activities from an office to a home environment. Advances in technology, internet bandwidth, personal computing, secure networks, access to cloud-based data-files, telephone and video conference capabilities have enabled companies and employees to maintain productivity while working from home. For both employers and employees, this experience will provide more options in establishing new work protocols. Employers can view this as an opportunity to reduce office footprints, while employees may consider more flexible working options reducing the frequency of commuting trips into the office. However, it is essential to note that the American Community Survey reported that the share of telecommuters nationwide is still relatively low at around 5.2 percent, as of 2017, of total employees. It is likely that this may grow in the future and may reduce travel demand but will be constrained by the number of occupations for which this practice works effectively. Prior studies on telecommuting suggest employees prefer office environments for reasons of social engagement, creative thinking and career advancement opportunities.
- **Remote learning at all levels:** With many schools and universities switching to online education due to the current travel restrictions, the related travel has substantially decreased. Even though there might be an increased transition and reliance on online education in the short-term, we believe it is unlikely to see this change as a sustained long-term trend affecting travel.
- **Reduced usage of shared modes of transportation:** Due to concerns over close contact with other travelers, there has been and will continue to be a negative impact on transit, shared mobility rides services such as Uber and Lyft, and a potential reduction in the formation of High Occupancy Vehicle (HOV) carpools and vanpools. As of June 2020, Dallas Area Rapid Transit (DART) reported a 55 percent drop in monthly transit ridership as compared to its ridership in early March 2020. It is likely in the near-term that we may see a distributional shift towards Single Occupant Vehicles (SOV), potentially changing the demand characteristics of managed/express lanes and general-purpose lanes.
- **Retail Impacts:** There has been a long-term trend towards online shopping, which has been accelerated during the pandemic. We anticipate continued growth in warehousing distribution centers around major interstates and thoroughfares with increased light truck and heavy trucking movements supporting just-in-time delivery to customers at home.



- Change in housing and employment locations: The changes as mentioned above in shopping behavior could mean corresponding shifts in employment locations. The urge to decrease close contact and decrease the usage of mass transit, shared mobility options could also result in a decrease in urban density. This may reduce market demand for in-fill housing and increase demand for suburban and exurban housing. These changes could, in turn, result in a shift in regional travel patterns.
- Reduced discretionary travel: Due to the current travel restrictions, there is overwhelming evidence that there is a lower frequency of travel, increased trip chaining and lower discretionary travel. More moderate discretionary and leisure travel is leading to lower usage of roads in general. This results in reduced congestion along toll-free options resulting in even lower traffic along tolled roads and managed lanes in off-peak periods, weekends and holidays. Much of this decrease in discretionary travel is related to the "stay-at-home" orders, cancellation of large gatherings or sporting events, and closure or restricted opening of shopping centers/malls. However, when the restrictive orders are lifted, the intra-city and inter-city travel might see a surge in the short-term. We expect that the discretionary travel's recovery will lag the recovery in the work-related travel, as it is tied to several other external factors that won't return to pre-COVID-19 levels until these large gatherings/events take place and attract pre-COVID level attendance.

Based on this assessment, a review of historical traffic trends and a review of economic forecasts and estimates available from rating agencies and other financial institutions, monthly impacts were derived to develop the revised projections. These impacts, which are illustrated in **Figure 7-23**, were intended to account for both the short-term impacts of the COVID-19 stay-at-home orders and other closures, as well as the long-term structural economic impacts that would occur as a result of the crisis. Varied impacts are assumed for passenger cars and commercial vehicles, based on actual observations through June. From August through December 2020, the PC transactions are assumed to have a gradual recovery from -35.0 to -25.0 percent impact in 2020 transactions, as compared to 2019 transactions. Whereas, CV transactions are expected to have little impact due to the pandemic. By December 2021, the PC traffic is expected to recover gradually to -10 percent impact. Thereafter, beyond the 2021, economic impacts are assumed to account for the longer-term effects of the crisis, including potential recessionary impacts through 2020-21, increases in telecommuting, and reductions in tourism and other recreational trips.

The T&R projections presented in the remainder of this report therefore recognize not only the forecasted assumptions previously detailed in this section, but also the short-term and long-term estimated impacts of the COVID-19 crisis.





Figure 7-23. Recovery timeline for NTTA System- Base scenario

7.4.2. Adjusted Average Weekday Transactions

As the NTTA System currently employs an AVI/ZipCash toll collection system, two separate traffic assignments, one with AVI toll charges and the other with ZipCash charges, were conducted for each model year. The traffic volumes obtained by the AVI toll charge assignment were factored by the assumed AVI transaction shares to get the AVI volumes and the traffic volumes obtained by the ZipCash toll charge assignment run were factored by the ZipCash transaction shares to get the AVI and ZipCash volumes provided the total traffic using the NTTA System. In this manner volume totals on the NTTA System facilities were estimated for each model year.

All other years were interpolated or extrapolated between or beyond the modeled years to obtain the yearly traffic and revenue estimates. The traffic assignment results at each of the analysis years were reviewed for reasonableness and post-model adjustments were made as necessary. This included adjustments to reflect model validation results along the NTTA System corridors. **Figures 7-24** through **7-29** illustrate average 2020 and 2045 weekday volumes on each of the NTTA System facilities.





Figure 7-24. Estimated 2020 and 2045 Average Weekday Traffic Volumes – DNT



Figure 7-25. Estimated 2020 and 2045 Average Weekday Traffic Volumes – PGBT





Figure 7-26. Estimated 2020 and 2045 Average Weekday Traffic Volumes – SRT



Estimated 2020 and 2045 Average Weekday Traffic Volumes – PGBT EE, AATT, MCLB and LLTB







Figure 7-29. Estimated 2020 and 2045 Average Weekday Traffic Volumes – CTP 7.5. Estimated Annual NTTA System Toll Revenue

Based on the traffic forecast at each toll gantry location, annual forecasts for each facility of the NTTA System were prepared through 2069. The projections extend from 2020 through 2069 and include the revenue forecasts for DNT, PGBT, AATT, MCLB, LLTB, PGBT EE, SRT, PGBT WE and CTP. In each case, forecasts for each of the facilities are based on modeled traffic estimates at each toll collection location, through the year 2045. These modeled estimates were refined, using post-model adjustments, reflecting validation factors used to match observed 2019 traffic data, the baseline model year, at each toll gantry location and the COVID-19 recovery trends and the short-and long-term (recessionary) impact assumptions.



The average toll at each location was based on the current mix of passenger car and commercial vehicle traffic and the current average tolls, modified in future years to reflect changing assumptions in the proportion of AVI and ZipCash transaction shares. As presented in **Section 6**, passenger cars/commercial vehicles traffic shares have varied during the pandemic. Reasonable assumptions have been made to account for the variance in the short- and long-term impacts of the change in the shares. Further, toll rates for ZipCash transactions are 50 percent higher than the rates for AVI transactions (with a minimum differential of \$0.26 in 2019 dollars) in each case, as noted previously.

Estimates beyond year 2045 are based on nominal assumptions regarding future traffic growth as shown in **Table 7-6**, with assumed toll rate increases as noted previously. As shown in **Table 7-7**, the estimated annual revenue on the DNT is expected to increase from \$205.18 million in 2020 to \$326.4 million by 2025 and \$499.94 million by 2035. Revenue on the PGBT is expected to be \$176.01 million in 2020, increasing to \$294.18 million by 2025 and \$457.08 million by 2035. Revenue on the SRT is expected to be \$149.57 million in 2020, increasing to \$239.88 million by 2025 and \$382.20 million by 2035. As 2058 is the end of the fifty-year operational agreement of the SRT between NTTA and TxDOT, revenue from SRT is estimated through August 31, 2058, while the other facilities are assumed to generate revenue for NTTA in perpetuity. The PGBT EE toll revenue shown is NTTA's share of the toll revenue. Total revenue on the PGBT EE is expected to be \$32.18 million in 2020, increasing to \$51.1 million by 2025 and \$91.3 million by 2035. Together, the DNT, PGBT and SRT account for the majority of revenue generated by the NTTA System.

The estimated annual revenue on PGBT WE is expected to increase from \$46.8 million in 2020 to \$86.59 million by 2025 and \$136.52 million by 2035. Revenue on the CTP is expected to be \$46.87 million in 2020, increasing to \$75.3 million by 2025 and \$139.7 million by 2035. Revenue from the AATT, MCLB and LLTB are expected to be about \$10.11 million, combined, in 2020. By 2025 this is estimated to reach a combined \$14.75 million, still a very small share of total NTTA System revenue.

Total revenue on the existing NTTA System, is expected to increase from about \$666.73 million in 2020 to \$1.08 billion in 2025 and \$1.72 billion in 2035. Driven by nominal traffic growth and continued programmed adjustments in toll rates, revenue on the NTTA System is expected to reach more than \$3 billion per year by 2049.

Future traffic growth on the NTTA System facilities is constrained to reflect available capacity, although the widening of DNT from SRT to US 380 and the widening of PGBT from six to eight lanes between IH 35E and north of Belt Line Road are assumed, and the widening of the mainlanes of SRT from six to eight lanes is also assumed.


							Tell	
Year	DNT	PGBT	SRT	PGBT-EE	PGBT-WE	СТР	I OII Duideas	NITA
	4005.10	4170.01	A. 10 57	400.10	410.00	446.07	Bridges	System
2020	\$205.18	\$1/6.01	\$149.57	\$32.18	\$46.80	\$46.87	\$10.11	\$666.73
2021	239.7	206.6	175.8	36.0	53.1	53.8	11.1	//6.1
2022	270.4	239.4	199.8	40.6	63.5	60.7	12.2	886.6
2023	294.8	263.4	216.5	44.7	/2./	66.2	13.2	9/1.6
2024	312.1	280.4	228.7	48.3	81.2	70.7	14.1	1,035.6
2025	326.4	294.2	239.9	51.1	86.6	75.3	14.8	1,088.2
2026	341.7	308.8	251.7	54.0	92.1	80.3	15.4	1,144.0
2027	357.4	323.0	263.5	56.9	93.5	85.5	16.1	1,196.0
2028	371.6	338.4	276.1	60.0	95.8	91.1	16.8	1,249.8
2029	388.2	354.3	289.2	63.2	101.1	97.1	17.5	1,310.6
2030	406.7	371.5	303.1	66.7	107.3	103.6	18.4	1,377.1
2031	425.6	388.8	318.0	70.4	113.5	110.8	19.1	1,446.3
2032	444.0	405.1	333.0	74.0	118.9	117.4	20.0	1,512.4
2033	461.8	421.5	348.5	82.5	124.6	124.4	20.8	1,584.1
2034	480.8	439.1	364.9	86.9	130.6	132.0	21.8	1,656.1
2035	499.9	457.1	382.2	91.3	136.5	139.7	22.7	1,729.5
2036	520.6	476.5	400.5	95.9	142.8	148.1	23.8	1,808.2
2037	541.4	494.6	417.8	100.5	149.1	157.8	24.8	1,886.1
2038	561.3	513.7	435.9	104.8	155.9	166.9	25.9	1,964.3
2039	581.4	533.2	454.6	109.2	162.8	176.1	27.1	2,044.3
2040	602.8	554.0	474.0	113.7	170.1	186.0	28.3	2,128.9
2041	623.6	574.5	494.6	118.4	177.5	196.2	29.6	2,214.4
2042	645.9	596.4	516.2	123.3	185.4	207.1	31.0	2,305.2
2043	668.7	618.8	539.4	128.4	193.9	218.7	32.3	2,400.2
2044	693.3	642.7	563.8	133.8	203.0	231.2	33.7	2,501.5
2045	717.8	667.1	587.6	139.5	211.9	243.8	35.2	2,602.8
2046	742.6	693.1	612.4	144.9	220.0	254.6	36.7	2,704.2
2047	767.3	719.2	638.7	150.5	228.4	265.4	38.2	2,807.7
2048	793.6	746.9	666.3	156.1	237.4	276.9	39.8	2,917.1
2049	819.8	775.4	694.8	162.1	245.9	288.5	41.4	3,027.8
2050	847.7	805.9	724.5	168.2	254.9	301.0	43.1	3,145.2
2051	875.7	835.2	753.4	174.7	264.4	312.1	44.7	3.260.2
2052	905.3	866.1	783.4	181.3	274.6	323.9	46.4	3,381.0
2053	935.6	897.1	815.7	188.2	285.0	336.0	48.1	3.505.6
2054	967.9	930.0	849.4	195.3	296.0	349.0	49.8	3.637.5
2055	999.7	963.7	883.2	202.9	307.1	362.0	51.7	3.770.3
2056	1.033.6	999.5	918.4	210.7	318.9	375.9	53.7	3.910.7
2057	1.067.7	1.035.4	955.4	218.7	330.7	389.9	55.6	4.053.4
2058	1.104.1	1.073.8	658.5	227.1	343.3	405.1	57.6	3.869.2
2059	1.141.0	1.112.6	-	235.6	356.4	419.9	59.8	3.325.3
2060	1,180.3	1,153,9	-	244.4	370.3	435.9	62.0	3.446.8
2061	1.219.4	1.195.8	-	253.8	383.8	452.2	64.3	3.569.2
2062	1 260 6	1 239 9	_	263.4	398.1	469.8	66.6	3 698 2
2062	1 301 6	1 284 4	_	203.4	412 9	487.0	69.0	3 878 3
2003	1 342 4	1 331 6	_	273.4	428.7	505.6	71.6	3 963 6
2004	1 3 2 2 0	1 370 6	-	203.7	1/1 0	521 1	7/ 2	<i>3,303.0</i> <i>4</i> 100 6
2005	1 / 26 0	1 / 20 /	-	305 0	462.0	54.4	76.0	7,100.0 1 2/15 Q
2000	1 /60 2	1/127 1	-	303.9	402.0	56/ 0	70.9	4,240.0 1 207 2
2007	1 51/1 7	1 526 1	_	329.6	4,9.1 407 1	586.6	87 g	-,592.0 4 5/6 8
2069	1,560.6	1,591.6	-	342.0	515 7	608 5	85.8	4,704.0

Table 7-7. NTTA System Estimated Annual Toll Revenue (millions)

Table 7-8 shows the projected annual transaction and revenue growth rates on the NTTA System. Annual transaction and revenue growth rates from 2020 through 2030 are projected to be 4.8



percent and 7.5 percent, respectively. During this period, the growth in transactions is driven mainly by the growth in the demographics along the NTTA System corridors, the assumed opening of SH 190/East Branch toll road that connects to the south end of PGBT EE in 2027, the assumed opening of DNT Phase 4A in 2023 and the assumed expansion of the PGBT, SRT and PGBT-WE mainlanes in 2021.

The transaction growth rates progressively decrease to 1.5 percent between 2030 and 2040, and to 1.1 percent between 2040 and 2050. The corresponding growth rates in revenue are 4.5 percent and 4.0 percent, respectively, which incorporate the traffic growth and the assumed toll rate increases.

Period	Transactions Annual Growth (%)	Revenue Annual Growth (%)
2020-2030	4.8%	7.5%
2030-2040	1.5%	4.5%
2040-2050	1.1%	4.0%

Table 7-8. NTTA System Transactions and Revenue Annual Growth

Figure 7-30 graphically displays the annual revenue forecasts shown previously in **Table 7-7** by facility. It is expected that the DNT, PGBT and SRT will continue to generate the vast majority of revenue on the NTTA System throughout the forecast period. The DNT will provide about 31 percent of all NTTA System revenue in 2020; this proportion decreases to 28 percent in 2045 as the SRT and CTP continue to mature. The PGBT (including EE and WE) will provide approximately 39 percent of all NTTA System revenue through 2045. The SRT will provide about 22 percent of all NTTA System revenue through 2045. The AATT, MCLB, and LLTB will contribute less than two percent of revenue through 2045. This is still a relatively small share and demonstrates the importance of the DNT, PGBT, SRT and CTP to the NTTA System revenue and mobility in the region.







7.6. Sensitivity Tests of Key Input Variables

The base case forecasts for the NTTA System shown above are based on several assumptions, as described previously. As any forecast of the future is subject to considerable uncertainty, most traffic and revenue forecasts to be used in support of project financing typically include sensitivity tests. In general, these are intended to provide a general measure of the potential impact on the revenue forecasts associated with hypothetical changes in certain basic assumptions. These sensitivity tests provide a comparison with the previously presented base case toll revenue forecasts. Each sensitivity test is described in more detail below.

7.6.1. Impacts of Value of Time

Values of time (VOT) assumed to produce the traffic and revenue forecast on the NTTA System are shown in **Table 7-9**. Three alternative scenarios with low VOT, high VOT and VOT inflated at two percent were created to test the sensitivity of the traffic and revenue forecasts to the VOT. The first two alternative VOTs were created by assuming a 15 percent decrease and increase for the low and high VOT scenarios, respectively. The scenarios were tested for years 2018 and 2045, and the traffic forecast and revenue comparison is shown in **Table 7-9**.

As shown in **Table 7-9**, for a 15 percent decrease in VOT in year 2018, revenue is expected to decrease by approximately 7.0 percent and transactions are expected to drop by 6.8 percent. In 2045, using a 15 percent decrease in VOT, revenue is expected to drop by 7.3 percent and transactions will decrease by 7.2 percent. In 2018, using a 15 percent increase in VOT, revenue is expected to increase by 5.9 percent and transactions will increase by 5.8 percent. In 2045, using a 15 percent increase in VOT, transactions and revenue are expected to increase by 5.3 and 5.5 percent, respectively.

	Revenue (In Thousands)				Revenue Index		
Year	Base	0.85	1.15	Base	0.85	1.15	
	VOT	VOT	VOT	VOT	VOT	VOT	
2018	\$846,369,800	\$787,123,900	\$896,305,600	100.0	93.0	105.9	
2045	\$2,602,831,400	\$2,412,824,700	\$2,745,987,100	100.0	92.7	105.5	
		Transactions		Tran	sactions I	ndex	
Year	Base	0.85	1.15	Base	0.85	1.15	
	VOT	VOT	VOT	VOT	VOT	VOT	
2018	832,889,600	776,253,100	881,197,200	100.0	93.2	105.8	
2045	1,225,652,200	1,137,405,200	1,290,611,800	100.0	92.8	105.3	

Table 7-9. Impacts of Value of Time

7.6.2. Impacts of Severe Demographic Growth Stagnation

Traffic and revenue forecasts were tested under severe demographic growth stagnation scenarios. Demographic growth was assumed to lag by five and ten years behind the revised demographics used in the base forecast. For each alternative, the traffic and revenue estimates were evaluated for forecast year 2045. As can be seen in **Table 7-10**, the five-year lag demographics/trip tables result in a revenue and transactions decrease of 7.8 and 8.1 percent, respectively. In the case of a ten-year lag in demographic growth, revenue in 2045 would be 16.1 percent lower, and transactions would be 16.0 percent lower.



Voor	2045 R	evenue	2045 Revenue Index	
Tear	Base	Alternative	Base	Alternative
Five Year Lag in Demographics	\$2,602,831,400	\$2,392,002,100	100.0	91.9
Ten Year Lag in Demographics	\$2,602,831,400	\$2,183,775,500	100.0	83.9
Veet	2045 Tra	nsactions	2045 R	evenue Index
Year	2045 Tra Base	nsactions Alternative	2045 R Base	evenue Index Alternative
Year Five Year Lag in Demographics	2045 Tra Base 1,225,652,200	nsactions Alternative 1,130,051,300	2045 R Base 100.0	evenue Index Alternative 92.2

Table 7-10. Impacts of Severe Demographic Growth Stagnation

7.6.3. Impacts of AVI Share and Revenue Recovery Assumptions

The impacts on the revenue forecasts due to the current AVI share and revenue recovery assumption changes were tested for multiple years. For this test, it was assumed that there would be no change in the total transactions. As can be seen in **Table 7-11**, the estimated revenue would be approximately one percent lower by 2040 if the alternate AVI share assumptions (under which the AVI share peaks at 80 percent) are used.

As shown in **Table 7-12**, if the ZipCash revenue recovery is assumed to be 10 percent lower than the base case in all forecast years, the revenue would be 1.7 percent lower in 2020 and 1.2 percent lower in 2045. If the ZipCash revenue recovery is assumed to be 10 percent higher than the base case in all forecast years, the revenue would be 1.7 percent higher in 2020 and 1.2 percent higher in 2045.

	Revenue				Revenue Index	
Year	Base TollTag Share	Base Revenue	Alternate Toll Tag Share	Alternate Revenue	Base TollTag Share	Alternate Toll Tag Share
2030	79.8%	\$1,377,100,600	77.9%	\$1,366,932,700	100.0	99.3
2040	82.0%	\$2,128,876,900	78.8%	\$2,104,485,100	100.0	98.9
2050	83.2%	\$3,145,223,700	79.3%	\$3,101,889,600	100.0	98.6
2060	83.9%	\$3,446,790,300	79.5%	\$3,393,630,800	100.0	98.5
2020-2069		\$129,297,568,500		\$127,587,067,900	100.0	98.7

Table 7-11. Impacts of AVI Participation



		Revenue Index				
Year		Zip Cash Recovery				
	Base	0.9	1.1	Base	0.9	1.1
2020	\$666,732,100	\$655,413,300	\$678,051,000	100.0	98.3	101.7
2045	\$2,602,831,400	\$2,572,168,100	\$2,633,494,300	100.0	98.8	101.2

Table 7-12. Impacts of ZipCash Revenue Recovery

7.6.4. Impacts of Truck Traffic Shares

The impacts of lower truck traffic shares on NTTA System revenue are shown in **Table 7-13**. In this test, the total number of the transactions is assumed to remain the same as the base forecast. As shown, 2020 NTTA System revenue would be 3.3 percent lower when the truck traffic share is reduced by 50 percent at all the toll gantries. In year 2045, the revenue would be 3.4 percent lower under a lower truck transaction share assumption.

Table 7-15. Impacts of Truck frame shares					
	Reve	enue	Revenue Index		
Year	Base	50% Drop in Truck Traffic Shares	Base	50% Drop in Truck Traffi Shares	
2020	\$666,732,100	\$644,921,800	100.0	96.7	

100.0

96.6

\$2,602,831,400 \$2,514,230,200

Table 7-13. Impacts of Truck Traffic Shares

7.6.5. Impacts of Revenue Days

2045

The impacts of revenue days on NTTA System revenue are shown in **Table 7-14**. In this test, the number of revenue days is decreased by twelve, which translates to a reduction of ten percent in the weekend to weekday traffic ratio. As shown in **Table 7-14**, NTTA System revenue would be approximately 2.2 to 2.4 percent lower throughout the forecast period with the weekend to weekday traffic ratio reduced by 10 percent.

Table 7-14	Impacts	of Revenue	Days
------------	---------	------------	------

	Reve	enue	Revenue Index		
Year	Base 10% Drop in Revenue Days		Base	10% Drop in Revenue Days	
2020	\$666,732,100	\$652,210,400	100	97.8	
2030	\$1,377,100,600	\$1,344,157,400	100	97.6	
2040	\$2,128,876,900	\$2,077,976,600	100	97.6	
2050	\$3,145,223,700	\$3,070,151,100	100	97.6	
2060	\$3,446,790,300	\$3,365,874,300	100	97.7	
2020-2069	\$129,297,568,500	\$126,227,210,500	100	97.6	



This page intentionally left blank.



Appendix A-1

NTTA System Wide 2019 Value of Time Update



This page intentionally left blank.





MEMO

TO:	Justin Winn, CDM Smith
FROM:	Mark Fowler, RSG
CC:	Tristan Cherry & Lauren Cater, RSG
DATE:	January 15, 2020
SUBJECT:	NTTA System Wide 2019 Draft Value of Time Update

RSG conducted two separate stated preference (SP) surveys for automobile drivers making trips within the Dallas–Fort Worth area, one in 2011 and the other 2014. Drivers who used any of seven regional facilities were surveyed to measure their value of travel time savings or VOT. The facilities studied, the study name, and the year each study was conducted is shown in Table 1.

Facility	Survey	Year Conducted
Chisholm Trail Parkway	Chisholm Trail Parkway Stated Preference Survey	2014
Addison Airport Toll Tunnel	NTTA System Wide	2011
Dallas North Tollway	Stated Preference Survey	
Lewisville Lake Toll Bridge	, , , , , , , , , , , , , , , , , , ,	
Mountain Creek Lake Bridge		
President George Bush Turnpike		
Sam Rayburn Tollway		

TABLE 1: NTTA STUDY AND FACILITY SUMMARY

VOT for the aggregate sample and the VOTs for the different income-based market segments for the Chisholm Parkway Trail Stated Preference Survey are shown Table 2. VOT is reported in \$2014, the time period in which the data was collected. Work trips are defined as those trips with a commute or work-related primary purpose. Non-work trips are trips with any other primary purpose. A trip



was classified as home-based if it originated at home or ended at home, whereas a trip was classified as non-home-based if it originated and ended at a place other than home.

Model/Segment	VOT
Aggregate	\$14.34
Home-Based Work – Income Group 1 (Up to \$49,999)	\$11.48
Home-Based Work – Income Group 2 (\$50,000 to \$99,999)	\$13.12
Home-Based Work – Income Group 3 (\$100,000 or more)	\$14.05
Home-Based Non-Work	\$14.50
Non-Home-Based	\$15.92

TABLE 2: VALUES OF TIME - 2014 CHISHOLM TRAIL SP SURVEY

Source: Chisholm Trail Stated Preference Survey Final Report - 2014

VOT estimated for the NTTA System Wide Stated Preference Survey is shown in Table 3. In addition to the MNL models, respondents were asked to provide an estimate of their value of time directly. The various values of time for the two modeling segments presented in the final report are also summarized. The MNL values of time are reported at the segment median income, and in \$2011, the time period in which the data was collected. The Peak segment included respondents reporting a departure time between 6:30am and 9:00am or between 3:00pm and 6:30pm. Off-Peak included trips that started at any other time.

TABLE 3: VALUES	OF TIME - 201	1 NTTA SYSTEM	WIDE SP SURVEY
INDEE 0. VALUEG			

			Method	
Segment	Reporte	ed VOT	MNL	MNL
	Mean	Median	(with reliability)	(without reliability)
Off-Peak	\$10.86	\$7.06	\$12.96	\$13.13
Peak	\$10.92	\$7.50	\$12.93	\$13.14

Source: NTTA System Wide Stated Preference Survey Final Report - 2011

In the years that have elapsed since those original data collection efforts, it is possible the estimates of VOT shown in Table 2 and Table 3 may need updating to reflect any socioeconomic changes in the region. In general, VOTs in a corridor or region can be affected by several factors, including:

- 1. The types of trips being made (e.g., trip purposes, trip lengths),
- 2. The general travel conditions (e.g., congestion levels on existing roads)
- 3. The characteristics of the households making trips (e.g., household incomes) and
- 4. Economic conditions

While there may have been some changes in trip types and travel conditions in the corridor, they are likely to have been small and their effects mixed. The factors that are more likely to affect values of



time overt the 8 and 5-year period, respectively, are the characteristics of the households traveling in the corridor and the prevailing economic conditions in the region.

The behavioral models developed by RSG using the data collected in 2011 for six of the facilities included an interaction with household income, as research has shown that values of time increase as household incomes rise, though at a rate that is less than linear. If income levels have changed significantly in the region, it is likely that values of time have also changed.

In addition to the effect of household income on VOT, two economic effects can have an impact on values of time. First, inflation directly affects the net value of a given income level. Since the surveys were conducted in 2011 and 2014, both the values of time and the income levels are measured in the nominal dollars of the year the data was collected. Over the period from March of 2011 and September of 2014, when the respective surveys were administered, to September 2019, when the latest data is available, the consumer price index (CPI) has risen approximately 15.9% and 9.3%, respectively, according to Bureau of Labor Statistics (BLS) data for the Dallas–Fort Worth area. All else equal, the nominal value of time should be increased by 15.9% for the facilities studied as part of the 2011 Systemwide effort and 9.3% in the case of the Chisholm Trail Parkway to reflect current 2019-dollar values. Figure 1 shows CPI growth normalized to the 2011 and 2014 base years. Table 4Table 5 show bi-monthly CPI values for the Dallas–Fort Worth region where CPI has been renormalized to 1.0 for the month of March 2011 and September 2014, corresponding to the approximate dates the surveys were fielded.





Reference Year for CPI - 2014 - 2011

Source: Bureau of Labor Statistics

Year	Jan	Mar	May	July	Sept	Nov
2011		1.000	1.009	1.008	1.011	1.011
2012	1.011	1.027	1.025	1.021	1.034	1.029
2013	1.033	1.046	1.042	1.048	1.049	1.041
2014	1.045	1.057	1.061	1.061	1.060	1.049
2015	1.038	1.051	1.056	1.057	1.051	1.049
2016	1.049	1.058	1.066	1.070	1.072	1.074
2017	1.078	1.081	1.088	1.090	1.107	1.108
2018	1.107	1.113	1.131	1.129	1.133	1.133
2019	1.130	1.143	1.147	1.154	1.159	

TABLE 4: DALLAS-FORT WORTH CPI GROWTH - 03/2011 REFERENCE

Source: Bureau of Labor Statistics

Year	Jan	Mar	May	July	Sept	Nov
2014					1.000	0.990
2015	0.980	0.991	0.996	0.997	0.991	0.990
2016	0.990	0.998	1.006	1.010	1.012	1.013
2017	1.017	1.020	1.027	1.028	1.044	1.045
2018	1.044	1.050	1.067	1.065	1.069	1.069
2019	1.066	1.078	1.083	1.089	1.093	

TABLE 5: DALLAS-FORT WORTH CPI GROWTH - 09/2014 REFERENCE

Source: Bureau of Labor Statistics

The second potential economic effect that can influence travelers' willingness to pay is changes in discretionary spending. Consumer expenditures data are reported by the BLS at the regional level in calendar year intervals and at the MSA level for select areas in two-year intervals. The most recent data for overall expenditures is available at the MSA level for the Dallas–Fort Worth region. For the purposes of this analysis, the most recently published data for the two-year interval 2017-2018 is compared against total expenditures from 2011-2012 and from 2014-2015. Average household spending in the region increased by 15.9% between 2011-2012 and 2017-2018 and by 3.6% between 2014-2015 and 2017-2018. Total spending on transportation items in the Dallas-Fort Worth region increased by approximately 4.6% since 2011 but has decreased by 1.4% since 2014, while non-inflation adjusted spending on gasoline has decreased overall. In other words, consumers in the region were spending less of their income on fuel in 2018 than they were in both 2011 and 2014. Instead, much of the spending growth in transportation costs can be attributed to growth in vehicle expenses, which have grown 13.8% since 2011.

Incomes in the region have also changed since 2011 and 2014. Table 6 shows average weekly wages for the Dallas-Fort Worth MSA between with the first quarter of 2011 and the fourth quarter of 2014 highlighted. According to quarterly wage data from the BLS:

• Between 2011, when the Systemwide survey was conducted, and 2019, average weekly wages in the Dallas–Fort Worth area grew by approximately 18.3%, outpacing inflation by 2.4%.



• Between 2014, when the Chisholm Trail survey was conducted, and 2018, average weekly wages in the Dallas–Fort Worth area grew by approximately 10.1%, roughly keeping pace with inflation.

This overall wage increase means there has been a slight growth in real inflation-adjusted income in the Dallas–Fort Worth region between 2011 and 2018, but wage growth has largely tracked CPI growth from 2014 onward.

Year	Q01	Q02	Q03	Q04	Annual
2011	\$1,020	\$972	\$1,007	\$1,038	\$1,009
2012	\$1,086	\$982	\$996	\$1,093	\$1,039
2013	\$1,087	\$1,004	\$1,012	\$1,085	\$1,047
2014	\$1,139	\$1,031	\$1,042	\$1,125	\$1,084
2015	\$1,161	\$1,057	\$1,061	\$1,178	\$1,114
2016	\$1,151	\$1,077	\$1,130	\$1,155	\$1,128
2017	\$1,224	\$1,108	\$1,109	\$1,194	\$1,159
2018	\$1,268	\$1,142	\$1,140	\$1,226	\$1,194
2019	\$1,298				

TABLE 6: DALLAS-FORT WORTH AVERAGE WEEKLY WAGES

Source: Bureau of Labor Statistics

CONCLUSIONS

Based on our review of the available data, we believe the values of time that we estimated for potential travelers on tolled NTTA facilities should be adjusted to reflect the changes in the CPI from 2011\$ and 2014\$ to 2019\$. Additional adjustments can be made to reflect the modest increase in real income since 2011.

The discrete choice models estimated as part of the Chisholm Trail Parkway study included no interaction between household income and VOT, and real income only increased by approximately 0.8% since 2014. All else equal, RSG recommends adjusting the 2014 estimated values of time by 9.3% to reflect CPI growth in the region, for an overall adjustment factor of 1.093.

In the case of 2011 System Wide effort, income growth has slightly outpaced inflation, resulting in a growth in real incomes of about 2.4%. As a result, VOT may slightly exceed CPI growth over the same period and VOTs should be adjusted to match. The income elasticity estimated as part of the discrete choice models in the 2011 study can be used to calculate the impact that this growth in real income has on VOT. At the sample median income of \$87,500, 2.4% growth in real income results in a growth in VOT of approximately 0.3%. Our recommendation is therefore to adjust the values of time by 0.3% to reflect changes in real income and 15.9% to reflect CPI growth, for a total adjustment factor of 1.162.



TABLE 7: RECOMMENDED VALUE OF TIME ADJUSTMENT FACTORS

Study	Year	Recommended VOT Adjustment Factor
Systemwide Study	2011	1.162
Chisholm Trail Parkway Study	2014	1.093

MARK FOWLER

Director



Appendix A-2

NTTA System Wide Stated/Revealed Preference Travel Survey



This page intentionally left blank.









NTTA System-Wide Stated/Revealed Preference Travel Survey

DRAFT Report

July 2011

DATA ANALYSIS SOLUTIONS

TABLE OF CONTENTS

1.0		4
2.0	QUESTIONNAIRE	5
2.1	Origin-Destination Survey	.5
2.1	.1 Trip Details	.5
2.2	Stated Preference/Revealed Preference Survey	.9
2.2	2.1 Trip Details	.9
2.2	2.2 Games	10
2.2	2.3 Opinions	12
2.2	2.4 Traveler Information	13
3.0	Administration1	.3
3.1	Overview of Approach	13
3.2	Survey Pilot	14
3.3	Administration Methods	15
3.3	8.1 NTTA Website Link	15
3.3	2.2 TollTag E-Newsletter	15
3.3	2.3 Online Research Panel	16
3.3	8.4 Business Recruiting	16
3.3	8.5 Postcard Distribution by NTTA	17
3.3	8.6 NTTA Press Release	17
4.0	RESULTS	.7
4.1	Trip Information	17
4.2	Games	21
4.3	Opinions	21
4.4	Traveler Information	23
5.0	MODEL ESTIMATION	24
5.1	Methodology and Alternatives	24
5.2	Identification of Outliers (SP)	25
5.3	Identification of Outliers (RP)	25
5.4	Segmentation	26
5.5	Model Specification	26
5.6	Model Coefficients	27
6.0	VALUE OF TIME ANALYSIS	31
6.1	MNL Value of Time	31
6.1	.1 Value of Expected Delay	32
6.2	Reported Value of Time	32



7.0	CONCLUSIONS	34
-----	-------------	----

LIST OF FIGURES

Figure 1.1: Study Region	4
Figure 2.1: Survey Organization	5
Figure 2.2: Trip Details	6
Figure 2.3: Traditional Mapping Interface	7
Figure 2.4: Interactive Mapping Interface	8
Figure 2.5: Reported Value of Time (Version A)	
Figure 2.6: Reported Value of Time (Version B)	
Figure 2.7: Example Stated Preference Scenario	
Figure 3.1: Surveys Completed by Data Source and Date	14
Figure 3.2: The NTTA Website Banner	15
Figure 3.3: Monthly E-Newsletter: "NTTA: Driving Forward"	
Figure 4.1: Distribution of Trips by Time of Day	
Figure 4.2: Trip Origins	19
Figure 4.3: Trip Destinations	20
Figure 4.4: Occupancy by Time of Day (NTTA users)	21
Figure 4.5: Occupancy by Time of Day (NTTA non-users)	21
Figure 4.6: Important Considerations in Route Decision	22
Figure 4.7: Behavioral Changes Due to Gas Prices	23
Figure 6.1: Distribution of Reported Values of Time	
Figure 6.2: Mean Reported Value of Time by Question Version	

LIST OF TABLES

Table 3.1: Data Source (how people were recruited to the survey)	14
Table 4.1: Trip Purpose by Facility User	17
Table 4.2: Modeling Segments	18
Table 4.3: Distribution of Respondent Age	23
Table 4.4: Distribution of Respondent Household Income	24
Table 5.1: Model Segment Definitions	26
Table 5.2: Travel Time and Expected Value of Delay, an Example	27
Table 5.3: MNL Model Coefficients – Two Peak Periods (with Expected Delay)	28
Table 5.4: MNL Model Coefficients – Two Peak Periods (without Expected Delay)	29
Table 5.5: MNL Model Coefficients – Single Peak Period (with Expected Delay)	30
Table 5.6: MNL Model Coefficients – Single Peak Period (without Expected Delay)	31
Table 6.1: MNL – Values of Time by Segment and Income Level	32
Table 6.2: MNL - Values of Expected Delay by Segment	32
Table 6.3: Reported Value of Time by Segment	33
Table 6.4: Difference of Mean Reported Values of Time	34



able 7.1: Value of Time Summary35



1.0 INTRODUCTION

This report describes the stated and revealed preference survey work that Resource Systems Group, Inc. (RSG) performed between February 2011 and June 2011 for the North Texas Tollway Authority (NTTA) System-Wide Travel Study. RSG was contracted by Wilbur Smith Associates (WSA) to conduct survey data collection and analysis. Baez Consulting provided additional assistance with survey development and model estimation review.

The purpose of the NTTA System-Wide Travel Study was to estimate the toll sensitivity, or value of time (VOT), and value of reliability of travelers in the Dallas/Fort Worth area who use or could reasonably use an existing NTTA facility. These values will be used by NTTA and WSA to update the regional travel demand model. In addition, the survey sought to identify factors other than travel time and cost that influence travelers' route choice decisions in the region.

RSG developed and administered a stated preference/revealed preference (SP/RP) questionnaire in conjunction with an origin-destination (OD) survey. The OD questionnaire sought to provide updated and refined estimates of travel patterns and trip types in the study region, while the SP/RP questionnaire was designed to collect sufficient information to estimate traveler sensitivities to key attributes such as travel time, toll cost, and travel time reliability. The survey collected information about respondents' most recent automobile trip within the study region (Figure 1.1). This information was used to build potential alternatives for making their trip in the future. These alternatives were presented during a series of stated preference scenarios to collect choice data used to estimate travelers' VOT and propensity to use a toll route.

The survey approach employed a computer-assisted self-interview (CASI) technique developed by RSG. The stated preference survey instrument was customized for each respondent by presenting questions and modifying wording based on respondents' previous



answers. These dynamic survey features provide an accurate and efficient means of data collection and allow presentation of realistic travel alternatives that correspond with the respondents' reported experiences. The customized, proprietary software was programmed for online administration to targeted audiences.

Statistical analyses and discrete choice model estimation were carried out on the stated preference survey data using a conventional maximum likelihood procedure that estimated a set of coefficients for different traveler segments. The coefficients provide information about travelers' sensitivities to travel time, toll cost, expected delay and shifting departure time.

This report documents the development and administration of the NTTA System-Wide Travel Survey, presents the results of the survey and summarizes the discrete choice model estimation methodology and findings. Appendices containing the questionnaire text, sample computer screens, survey comments and question cross-tabulations are included separately as part of this report.



2.0 QUESTIONNAIRE

A questionnaire was developed for administration to automobile travelers in the Dallas/Fort Worth, TX area. The questionnaire required approximately 15 to 20 minutes to complete and was customized based on respondents' answers. Respondents were incentivized with a sweepstakes for a number of Apple iPad2[™] and iPod nano[™] devices.

Respondents who preferred to take the survey in Spanish were given the opportunity to do so at the beginning of the survey. All respondents were then presented with an introduction which described the survey's purpose, provided information regarding the sweepstakes incentive and instructions on how to navigate the computer-based instrument.

The questionnaire featured two distinct surveys: an origin-destination (OD) survey and a stated preference/revealed preference (SP/RP) survey. Respondents completed the OD survey first, where they were asked to describe the details of their most recent one-way trip made within the study corridor. After successfully completing the OD survey, all respondents were given the option of continuing on to the SP/RP survey or concluding by answering a few demographic questions.

If the respondent wished to continue the survey and the trip described in the OD survey did not qualify, they were asked to describe an eligible trip. Respondents who continued to the SP/RP survey provided additional information about their trip and a potential alternative route before participating in a set of eight stated preference trade-off exercises, answering debrief questions regarding their choices and providing demographic information. While navigating through the survey, respondents were shown their approximate progress via a dynamic header (Figure 2.1).

Figure 2.1: Survey Organization



The complete questionnaire text and survey logic chart are included in Appendix A. Example survey screenshots are included in Appendix B.

2.1 Origin-Destination Survey

2.1.1 Trip Details

The origin-destination (OD) survey began with a trip details page where respondents were asked to think of their most recent one-way weekday trip in the North Texas area (Figure 2.2). They provided the following information about their trip:

- Day of week
- Start time
- Beginning and ending locations type (home or work)
- Type of vehicle
- Vehicle occupancy
- Purpose
- Major roadways used

Respondents who were not the driver of the vehicle were thanked for their participation and then terminated.



Figure 2.2: Trip Details

15								
Tri	p Details	Ga						
Please think of In the No On a we During the We would like	of your most recent orth Texas area (se ekday (Monday – F ne past two weeks e to ask you about	t one-way a re map) riday) the details o	nutomobile tri f this trip.	p that was i	nade:	Click		
						CIICK	o enlarge	
1. Wh	at day of the wee Please Specify 🔻	k did you m	ake your me	ost recent v	veekday tri	p in the No	orth Texas area?	
2. Wh	at time did you be	egin your tri	p?					
	1	began my t	rip at: Pleas	e slide the	blue box to	select a v	value.	
		6:00 am	9:00 am	noon	3:00 pm	6:00 pr	n	
01010	your crip begin ut							
4 Wh	Please Specify) were vou d	rivina?					
4. Wh	Please Specify	were you d	riving?		•			
4. Wh 5. Inc	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify	were you d ow many pe	riving? cople were i	n your vehi	▼ cle?			
4. Wh 5. Inc	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify	were you d ow many pe	riving? eople were i	n your vehi	▼ cle?			
4. Wh 5. Inc 6. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p	were you d ow many pe • urpose of y	riving? cople were i our trip?	n your vehi	▼ cle?	_		
4. Wh 5. Inc 6. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify	were you d ow many pe - urpose of y	riving? cople were i our trip?	n your vehi	▼ cle?	•		
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway	were you d bw many pe vurpose of y (s) did you	riving? cople were i our trip? use as part	n your vehi of this trip	• cle?	•		
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway Please list up to th	were you d bw many pe - urpose of y (s) did you pree major re	riving? cople were in our trip? use as part	n your vehi of this trip Main Stree	• cle? t, Preston R	▼ oad, 1H635	and Luna Road)	
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway Please list up to th A.	were you d bw many pe vurpose of y (s) did you	riving? cople were i our trip? use as part padways (ex. *Re	n your vehi of this trip Main Stree quired	<pre> cle? t, Preston R </pre>	▼ oad, 1H635	and Luna Road)	
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway Please list up to th A. B.	were you d bw many pe - urpose of y (s) did you bree major re	riving? cople were in our trip? use as part padways (ex. *Re	n your vehi of this trip Main Stree quired	▼ cle? t, Preston R	▼ oad, IH635	and Luna Road)	
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway Please list up to th A. B. C.	were you d bw many pe vurpose of y (s) did you	riving? cople were in our trip? use as part padways (ex. *Re	n your vehi of this trip Main Stree quired	▼ cle? t, Preston R	▼ oad, IH635	and Luna Road)	
4. Wh 5. Inc 6. Wh 7. Wh	Please Specify at type of vehicle Please Specify luding yourself, he Please Specify at was the main p Please Specify at major roadway Please list up to th A. B. C.	were you d	riving? cople were in our trip? use as part padways (ex. *Re	n your vehi of this trip Main Stree quired	▼ cle?	▼ oad, IH635	and Luna Road)	

After providing this information, respondents were asked to report the specific beginning and ending locations of their one-way trip. Respondents could identify the specific location of their origin and destination by entering a business name, a street intersection or a full address (Figure 2.3). Addresses entered by the



respondents were compared to a database of known addresses to identify potential matches. Respondents were then presented with the list of potential address matches and were asked to choose the correct one.

Alternatively, respondents were given the option of selecting the location by using an interactive map (Figure 2.4). Respondents were required to zoom in to a pre-determined resolution to confirm that their selected location was accurate.

Trip Details						
Where did your trip	begin?*					
Please enter a busing If you do not know t use a map."	ess name, an addre his information or y se a map	ss (with street ou would prefer	number), or	the nearest into location on a m	ersectio ap, ple	on in the boxes below. ase select "I would rather
Find a Business (op	otional)					
Address or Interse	ction					
		1 - 12				
(Examples: 2301 Flora S	St, or Flora St and Pea	rl St)				

Figure 2.3: Traditional Mapping Interface



Figure 2.4: Interactive Mapping Interface

Trip Details	G				
Where did your trip <mark>begin</mark>	?*				
I would rather use a ma	ip				
To use the map:					
1. Click on the map to zo	oom in on your	location			
2. Keep clicking to zoom	on the locatio	n until a marker	P appears		
3. Continue to drag the r	map and click	on the location (until the marke	r is in the right p	ace (the street number
4. Click "Next Ouestion"	exact) to proceed				
Es anbury Cresson Cresson	Justin 5500 Flower Mounc Keller Gra North Bedfor Iand Hills Hurst tt Worth Arlin Eorest Hill Rendon Burleson Mansfie Ia Keene Alvarado	village The Colory Lewisville apevine Carr Farmers Branch Irving Duncanville Duncanville d Desote Genn Heights Waxaha	Plano v Sachs ollton Garland Dallas Mesqui Balch Springs 20 Sea Action Red Oak Ferris Red Oak Ferris	s Caddo Mill Vylie e Royse City Rowlett Corder Lake Heath te Forney Terrel Taity goville Crandall Kaufman Combine Oak Grove Scurry K	Gun Mahank

This location information was geocoded using a Google Maps[™] application programming interface to provide a latitude and longitude for both the trip origin and destination. The latitude and longitude coordinates were used to assign each location to a traffic analysis zone (TAZ). Estimates of the total trip distance and travel time were also calculated.

This information was used in the SP/RP survey to verify that the trip occurred within the study region and, later, to validate respondents' reported travel times. If the locations suggested an invalid trip, respondents were reminded to describe only the one-way portion of the trip and were asked if they needed to change the beginning or ending locations. Respondents who did not change their origin or destination location were thanked and terminated from the survey.



Upon successfully entering origin and destination locations, respondents were asked how often they make the same type of trip on weekdays and weekends, and whether they own an electronic toll collection (ETC) transponder such as TollTag.

2.2 Stated Preference/Revealed Preference Survey

After completing the OD survey, each respondent's trip was analyzed to determine if it qualified for the SP/RP survey. A respondent's trip qualified for the SP/RP survey if the trip:

- Was made inside or passed through the NTTA System region
- Took at least 15 minutes

Respondents who reported eligible trips in the OD survey were given the option of continuing on to complete the SP/RP survey. Respondents who reported a trip that did not meet the SP/RP survey criteria were asked to either report a different trip that did qualify, or to answer demographic questions before completing the survey.

2.2.1 Trip Details

The SP/RP survey asked respondents to provide additional details about their qualifying trip. First, respondents were asked to enter the time they spent traveling, door-to-door, between their origin and destination. Reported travel times were compared to the travel times calculated during the mapping exercises. These travel times were calculated using a Google Maps[™] driving directions algorithm, an online map service created and maintained by Google[™]. Respondents who entered comparably long or short travel times were asked to confirm or correct their trip duration.

Next, respondents were asked if they experienced any delay due to traffic congestion on their trip. If they did experience delay, they were asked to estimate the travel time for their trip if there was no delay due to congestion. If an individual began their trip outside of the peak period (6:30 to 9:00AM or 3:00 to 6:30PM), they were asked if they chose to travel in the off-peak to avoid peak period traffic congestion. Respondents who indicated they were traveling in the off-peak to avoid congestion were asked what time they would have preferred to depart for their trip if there were no congestion. Respondents then indicated how much earlier and later they could have made their trip, ranging from "Not at all earlier (or later)" to "More than 2 hours earlier (or later)."

A list of existing NTTA facilities was provided and respondents indicated which, if any, facilities they used to make their trip. The facilities listed were:

- Addison Airport Toll Tunnel (AATT)
- Dallas North Tollway (DNT)
- Lewisville Lake Toll Bridge (LLTB)
- Mountain Creek Lake Bridge (MCLB)
- President George Bush Turnpike (PGBT)
- PGBT Western Extension (PGBT WE) or formerly SH 161
- Sam Rayburn Tollway (SRT) or formerly SH121

Respondents who used at least one of the above facilities on their trip were classified as "NTTA toll users" with the rest being classified as "non-NTTA toll users."

The NTTA toll users were asked which facility they used first and last (if applicable), which cross streets they used to access and egress each facility, how much they paid in tolls and who paid for the toll.



Several questions were asked of both the NTTA toll users and non-NTTA toll users to understand respondents' "revealed" route choice. NTTA toll users were asked to estimate their travel time using the next best non-tolled route if their current route was unavailable.

The non-NTTA users were asked to indicate which NTTA facility would be their next best toll route if their current non-toll route were unavailable. Non-NTTA users also indicated the cross streets they would have used to access and egress each facility and provided a travel time estimate for using this alternate route to make their trip. These responses comprise the revealed choice or revealed preference (RP) data for each respondent.

Before moving on, respondents who did not use an NTTA facility on their trip reported the primary reason for not using an NTTA facility. All respondents then answered questions about the different sources of information used to make their travel plans and decisions, and how this information changed their travel plans, if at all.

2.2.2 Games

The stated preference games (scenarios) were designed as quantitative exercises to estimate respondents' travel preferences and behavioral response under hypothetical conditions. Respondents answered a set of eight trade-off scenarios where they were asked to choose their preferred travel alternative from a set of alternatives described by independently varying attributes.

In addition to the set of eight stated preference scenarios, respondents were asked to provide their value of travel time savings directly. Half of respondents were asked to report this before the stated preference tradeoff games, while the remaining respondents answered this question after the games. The question was presented in two forms, version A and version B, with equal probability, as seen in Figure 2.5 and Figure 2.6. Version A asked respondents for the maximum amount they would be willing to pay to save a certain amount of travel time, while Version B asked respondents for the minimum amount of travel time savings they would expect from a certain toll cost. The travel time savings and toll cost amounts varied across respondents.

roughout this survey	y, you have be	en focusing on	a recent one-	way trip with t	the following details:
Trip Details					
Purpose: Compa	ny Business				
Day of week: Tuesda	IV.				
buy of meen ruesdu					
Travel time: 1 hour	and 10 minute	5			
Travel time: 1 hour	and 10 minute	5			
Travel time: 1 hour	and 10 minutes	s ould be willing	to pay to save	16 minutes o	n your trip?
Travel time: 1 hour	and 10 minutes amount you w would pay: Plea	s ould be willing use slide the bl	to pay to save ue box to selec	16 minutes o t a value.	n your trip?
Travel time: 1 hour	and 10 minute amount you w would pay: Plea	s ould be willing ise slide the bl	to pay to save ue box to selec	16 minutes o :t a value.	n your trip?

Figure 2.5: Reported Value of Time (Version A)





Trip Details				
Purpose	: Work			
Day of week	: Wednesday			
Travel time	e: 1 hour and 5 min	utes		
nat is the m	ninimum amount of	travel time you would	expect to save from §	4.00 in tolls?
			where the collection working	
_	I expect to save:	: Please slide the blue b	lox to select a value.	

Respondents then reviewed detailed instructions on how to complete the set of eight stated preference scenarios. The details of each respondent's trip were used to build a set of eight scenarios that included two or three travel options for making their trip. Respondents traveling during the peak period (6:30 to 9:00AM or 3:00 to 6:30PM) were presented with the following three travel alternatives:

- Current route during the peak
- Alternate toll route during the peak
- Alternate toll route before or after the peak

Respondents traveling during the off-peak were presented with two alternatives:

- Current route during the off-peak
- Alternate toll route during the off-peak

For peak period travelers, each alternative was described by a total of four attributes: travel time, travel time reliability, toll cost and departure time. For travelers making trips in the off-peak, departure time was assumed to be fixed across alternatives; therefore it was not displayed as an attribute.

The current route alternative was based on the revealed trip reported by the respondent earlier in the survey. The alternate toll route alternative offered travel time savings over their current route and had an associated toll cost. The alternate toll route with a departure time shift alternative offered travel time savings and improved reliability with an associated toll cost under the stipulation that the trip would need to be made outside of the peak period. The reliability attribute was quantified as the likelihood and amount of travel delay.

In order to avoid potential bias associated with the layout of the alternatives, the order of the alternatives was randomized for each respondent. Figure 2.7 shows an example of a stated preference scenario for a peak period traveler. Additional examples of stated preference scenarios can be found in Appendix B.







The values of the attributes in each scenario varied around a base value according to an experimental design, where the base values were customized using the information from each respondent's reported trip. The specific values assigned in each stated preference scenario were determined by an orthogonal experimental design, which ensured information was collected from respondents in a statistically efficient manner. This technique is commonly used in constructing experimental plans. The experimental design for this survey contained 128 scenarios, which were divided into 16 blocks of eight. One of the 16 blocks was chosen for each respondent and the eight scenarios from the chosen block were shown to the respondent in a random order.

The base values for the attributes were varied by multiplying, adding or subtracting one of several factors to give the level required by the experimental design for that particular scenario. By varying the travel times, travel costs, reliability and time shift (if applicable) in each scenario, respondents could demonstrate their travel preferences across a range of conditions. Additional details about the levels used in the stated preference scenarios can be found in Appendix A.

2.2.3 Opinions

After completing the eight stated preference scenarios, respondents answered a series of questions meant to assess underlying rationales and attitudes for each individual's choices in the eight SP scenarios.

Those who never selected an alternate toll route were asked to indicate the main reason for their selections. Respondents who selected an alternate toll route at least once and do not own an ETC transponder device were asked about their likelihood of obtaining a transponder given a 50% surcharge for not using an ETC device. Additionally, respondents who selected the alternate toll route with time shift option at least once were asked if they would make their trip before or after the peak period.



Next, respondents shared their opinions regarding various statements concerning toll roads, paying tolls, travel delay, gas prices, and their experience with the survey instrument.

2.2.4 Traveler Information

To conclude the survey, several demographic questions were asked to classify respondents, identify differences in responses among traveler segments, and to verify that the sample contained a diverse cross-section of the traveling population in the Dallas/Fort Worth area. The following information was collected:

- Gender
- Age
- Employment status
- Household size
- Vehicle ownership
- Annual household income
- ZIP code

Upon completing the demographic questions, respondents were presented with the opportunity to provide their contact information necessary to enter into the sweepstakes. Respondents were assured their responses would be kept confidential and that any personal information they provided would not be shared or sold to a third-party. Before exiting the survey, all respondents were given the opportunity to leave any comments about the survey. These open-ended comments are provided in Appendix C.

3.0 ADMINISTRATION

RSG worked closely with the project team to design an administration plan to sample a wide range of travelers throughout the study region in an efficient, timely, and cost-effective way. The sampling plan was designed to include a sufficient range of travelers and trip types to support the statistical estimation of coefficients of a choice model. By collecting data from a range of travelers and trip types, it is possible to identify the ways in which different characteristics affect route choice behavior. These differences can then be reflected in the structure and coefficients of the resulting choice model. The survey sample that supports choice model estimation does not need to be perfectly representative of the population as long as:

- 1. Any behavioral differences are properly represented in the model, and
- 2. The model is applied for forecasting using the correct population proportions and/or sample weights.

3.1 Overview of Approach

The survey instrument was administered online through RSG's rsgsurvey.com website from March 18 until April 29, 2011. For travelers who either lacked Internet access or preferred not to complete the survey online, a toll-free number was made available so that respondents could complete the survey over the phone. The call center was available 24 hours per day and was staffed by bilingual (English and Spanish) operators trained to use the online survey instrument. Operators verbally asked the respondent questions and entered their answer into the online survey.

Respondents were recruited to the survey website using a variety of different methods, which are shown in Table 3.1. As an incentive for completing the survey, respondents were informed that they would have the option of entering a sweepstakes for an Apple device. Completing the OD survey qualified respondents to



enter a drawing for one of five iPod Nano[™] devices, whereas finishing the entire SP/RP survey qualified respondents to enter a drawing for one of 10 iPad2[™] devices.

Table 3.1: Data Source	(how people	e were recruited to	the survey)
------------------------	-------------	---------------------	-------------

Data Source				
	Count	Percent		
NTTA Website link	2,323	39.6%		
TollTag e-newsletter	1,411	24.1%		
Online research panel	1,139	19.4%		
Business recruit	877	15.0%		
Postcard distribution by NTTA (including ZipCash invoices)	72	1.2%		
Press release issued by NTTA	40	0.7%		
Total	5,862	100.0%		

The number of completed surveys described in this section reflects the total number of travelers to complete the SP/RP survey (5,862) on or before April 29. As described later in Section 5.2 (Identification of Outliers (SP)), the data cleaning process eliminated 1,738 respondents yielding a final dataset of 4,124 respondents used for analysis and modeling purposes.

Survey activity rose on different days throughout the survey administration because survey invitations were staggered (Figure 3.1). For example, the e-newsletter first reached respondents' inboxes on March 20, while the link on the NTTA website saw more traffic in the beginning of April.





3.2 Survey Pilot

The survey instrument was piloted to members of an online research panel before the full administration was conducted to ensure the survey was running smoothly and to assess the survey's functionality, format and ease of use. Preliminary models were developed using the pilot data to ensure that the stated preference



scenarios would adequately capture the choice behavior in the main market segments. Satisfied with the functionality of the survey instrument and the preliminary models, RSG proceeded with the full administration after making minor changes to the survey instrument. Respondents who participated in the survey pilot, and for whom adequate data were recorded, were included in the dataset used during analysis and model estimation.

3.3 Administration Methods

3.3.1 NTTA Website Link

A total of 2,323 respondents completed the survey by accessing the online instrument through the NTTA website (<u>www.ntta.org</u>). A banner at the top of the landing page provided a brief description of the project (Figure 3.2). Website visitors could either click on the banner or type the URL into their web browser to access the survey.

Figure 3.2: The NTTA Website Banner



3.3.2 TollTag E-Newsletter

NTTA included an invitation to the online survey in its monthly "Driving Forward" e-newsletter, which is sent out to all TollTag owners (Figure 3.3). The survey links were first included in the e-newsletter that was sent out on March 18. One month later, the invitation was again included in the e-newsletter to remind people to participate in the survey. A total of 1,411 TollTag owners completed the survey via this method.



Figure 3.3: Monthly E-Newsletter: "NTTA: Driving Forward"



3.3.3 Online Research Panel

In order to recruit travelers who were more likely to have not used an NTTA tollway on their most recent trip, RSG contracted with online market research panel Luth Research (<u>www.luthresearch.com</u>) to provide more than 1,000 respondents. Panel members living in five Dallas-area counties – Dallas County, Tarrant County, Denton County, Collin County and Rockwall County – were sent an email invitation to the stated preference survey that contained a link with a unique identifier. Respondents completed the survey on RSG's website before being redirected back to the panel provider's website. The online sample was collected from March 17 to April 14 and yielded a total of 1,139 complete surveys.

3.3.4 Business Recruiting

RSG contacted a number of businesses and organizations in the study area with the goal of recruiting employees to participate in the survey. Organizations included colleges, universities, private businesses, local towns and Chambers of Commerce. This method yielded a total of 877 completes from fifteen area organizations. Information about the number of respondents who completed the survey from each participating organization can be seen in Appendix D.



3.3.5 Postcard Distribution by NTTA

NTTA distributed postcards with a description of the project and a link to the survey at the TollTag Customer Service Center, the TollTag Store, and on the Tag Wagon. A similar postcard was also included in the invoices sent to ZipCash customers. In total, 72 respondents completed the survey though the link on a postcard.

3.3.6 NTTA Press Release

Forty completes came as a result of public outreach by NTTA. On March 18, NTTA distributed a press release with a description of the project and invitation to complete the survey online.

4.0 RESULTS

A total of 5,862 respondents completed the SP/RP survey, while 6,678 respondents completed the OD survey. The OD survey data was packaged and provided to Wilbur Smith Associates for further analysis. The number of useable SP/RP records was reduced to 4,124 after completing data checks and outlier analysis during the model estimation work. This cleaning process is described later in Section 5.2 (Identification of Outliers) of this report. The descriptive analysis of the data presented in this section of the report is based on the 4,124 respondents who completed the full SP/RP survey and is provided in four sections: trip information, games, opinion and traveler information. A complete set of cross-tabulations of survey questions by the final modeling segments is available in Appendix D.

4.1 Trip Information

Respondents began the survey by reporting the details of the most recent trip they made in the study area, which is referred to as their revealed trip. Commute and company business trips accounted for over 52% of all reported trips as seen in Table 4.1. The PM peak segment had the highest share (38%) of leisure trips (social/recreational and shopping trips), while such trips made up just 8% and 27% of the AM peak and offpeak segment trips, respectively.

	NITT					Tatal
	IN LLF	a users	NITAD	on-users		Totar
	Count	Percent	Count	Percent	Count	Percent
Go to/from work (commute to/from regular workplace)	1,099	43.5%	667	65.1%	1,766	42.8%
Personal business (medical appointment, etc.)	498	19.7%	325	12.8%	823	20.0%
Social/recreational (go to the movies, visit a friend, sport event, etc.)	315	12.5%	196	4.9%	511	12.4%
Company business (go to a meeting, sales call, etc.)	266	10.5%	123	8.2%	389	9.4%
Shopping	183	7.2%	147	4.4%	330	8.0%
Go to/from an airport	100	4.0%	67	1.4%	167	4.0%
Go to/from school (to attend class, or pickup/drop-off a student)	67	2.7%	71	3.3%	138	3.3%
Total	2,528	100.0%	1,596	100.0%	4,124	100.0%

Table 4.1: Trip Purpose by Facility User

Trip departure times were clustered around the morning peak traffic hours, fell to lower levels in the early afternoon and then rose again during the evening peak traffic hours. The distribution of reported trips by time of day can be seen in Figure 4.1.



Figure 4.1: Distribution of Trips by Time of Day

Respondents were grouped by trip departure time into three segments – AM peak, PM peak and off-peak. These three time-of-day segments were used for analysis and modeling purposes. The AM peak segment included respondents reporting a departure time between 6:30am and 9:00am, while the PM peak segment included trips between 3:00pm and 6:30pm. Respondents who traveled outside these peak periods, but who would have preferred to have made their trip during one of the peak periods, were included in the appropriate segment. All other trips were classified as off-peak. Table 4.2 shows how the sample was distributed among the three groups. Further details of how this segment variable is defined can be found in Section 5.4 (Segmentation) of this report.

Table 4.2: Modeling Segments

	Count	Percent
AM peak	1,846	44.8%
PM peak	765	18.5%
Off-peak	1,513	36.7%
Total	4,124	100.0%

Respondents traveling in the peak periods experienced delay due to traffic congestion more frequently, with 54% of AM peak and 51% of PM peak respondents reporting at least some amount of delay, compared to 23% of the off-peak segment.

Trip origins and destinations were located throughout the Dallas region, but generally concentrated in the areas north and northwest of downtown Dallas. Respondents' trip origin and destination locations are plotted in Figure 4.2 and Figure 4.3, respectively.



Figure 4.2: Trip Origins








More than two-thirds (69%) of all trips were made in single occupancy vehicles (SOV), while 21% of all trips were made with two people in the vehicle. The remaining 10% of trips were made with three or more people. The AM peak segment had the highest share of SOV trips. Figure 4.4 and Figure 4.5 depict the vehicle occupancy by time of day for both NTTA facility users and non-users.







Figure 4.5: Occupancy by Time of Day (NTTA non-users)



4.2 Games

After completing the trip details section of the survey respondents moved on to the set of eight stated preference games. Over 80% of respondents varied their choice over the set of eight stated preference scenarios. The remaining respondents always chose the same option in all eight games. The majority (83%) of the non-trading respondents chose their current route each time, while the rest were split between the alternate toll route (12%) and the alternate toll route with a departure time shift (5%). Further details regarding the stated preference questions will be discussed in the Model Estimation section of this report.

4.3 Opinions

Upon completing the stated preference scenarios, respondents were asked to answer a series of debrief questions to understand the underlying reasons for their choices in the Games section of the survey.

If a respondent never chose one of the tolled alternatives, they were asked the primary reason for why they did not do so. The option that was selected most frequently across all segments was that the time savings



presented in the scenarios were not high enough to justify the cost. The second most reported reason was that the tolls are too high in general.

Respondents that chose a tolled alternative at least once during the games, and who did not also own an Electronic Toll Collection (ETC) transponder, were presented an additional question regarding their likely method of payment. Respondents were shown the toll associated with the selection they made, and were asked how likely they would be to set up and use a TollTag account if there was a 50% surcharge added to the toll for not having an ETC device. Over 63% of respondents who answered this question were at least somewhat likely to acquire the ETC transponder. Of the remaining respondents who indicated that they would not be likely to acquire a transponder, the reason most commonly cited for not acquiring a transponder was that they would not use the toll road often enough.

Respondents also reported the items they consider in making their route choice for their trip. The three modeling segments reported similar reasons, and were not significantly different. The aggregate responses are presented in Figure 4.6.



Figure 4.6: Important Considerations in Route Decision

Respondents were asked how their travel has changed, if at all, due to gas prices. Making fewer trips and combining trips were the two most frequently cited changes made, with over half the sample making each change. Using a more fuel efficient vehicle or alternate modes of transportation was less common.



Figure 4.7: Behavioral Changes Due to Gas Prices



4.4 Traveler Information

Of the 4,124 total respondents, 2,002 were male (49%) and 2,122 were female (51%). The distribution of respondent age is shown below in Table 4.3.

	Count	Percent
16-17	4	0.1%
18-24	273	6.6%
25-34	815	19.8%
35-44	884	21.4%
45-54	1,020	24.7%
55-64	822	19.9%
65-74	259	6.3%
75 or older	47	1.1%
Total	4,124	100.0%

Table 4.3: Distribution of Respondent Age

A significant majority of NTTA users (70%) are employed full-time, while 6% reported self-employment. Similar statistics are seen for respondents who did not use an NTTA facility (63% and 7% respectively). A large number of respondents live in households of two people (38%), with the next greatest percentage of respondents living in three person households (19%). Only 9% of respondents live in households with five or more people. A plurality of respondents (49%) live in households with two vehicles, whereas only 2% have either zero or greater than five vehicles.

Table 4.4 presents the distribution of the sample's household income. The median and average incomes fall in the range of \$75,000 to \$99,999.



	Ν	NTTA users	NTTA	non-users		Total
	Count	Percent	Count	Percent	Count	Percent
Less than \$25,000	135	5.3%	143	9.0%	278	6.7%
\$25,000–\$49,999	389	15.4%	327	20.5%	716	17.4%
\$50,000-\$74,999	469	18.6%	333	20.9%	802	19.4%
\$75,000–\$99,999	469	18.6%	260	16.3%	729	17.7%
\$100,000-\$124,999	442	17.5%	214	13.4%	656	15.9%
\$125,000-\$149,999	229	9.1%	128	8.0%	357	8.7%
\$150,000-\$174,999	131	5.2%	66	4.1%	197	4.8%
\$175,000-\$199,999	98	3.9%	40	2.5%	138	3.3%
\$200,000-\$249,999	86	3.4%	47	2.9%	133	3.2%
\$250,000 or more	80	3.2%	38	2.4%	118	2.9%
Total	2,528	100.0%	1,596	100.0%	4,124	100.0%

Table 4.4: Distribution of Respondent Household Income

5.0 MODEL ESTIMATION

Statistical analysis and discrete choice model estimation were carried out using the stated preference survey data. Responses from the stated preference scenarios were expanded into a dataset containing eight observations for each respondent, for a total of 32,992 observations.

These eight SP observations were then combined with a revealed choice observation based on the respondents' revealed trips, yielding a dataset with up to 9 observations per respondent. This joint SP/RP dataset was used to statistically estimate coefficients of choice models for area travelers.

5.1 Methodology and Alternatives

The model development and statistical estimation work was completed using a conventional maximum likelihood procedure that estimated a set of coefficients for a multinomial logit model¹ for three market segments. The model coefficients provide information about the respondents' sensitivities to the attributes tested in the SP scenarios. These coefficient values and the resulting values of time will be used by NTTA and WSA to update the system-wide travel demand model.

Each stated preference experiment presented respondents with up to three alternatives for making their trip, depending on the time of day that the trip was made:

- Current route
- Alternative toll route
- Alternative toll route with a departure time shift (if peak period trip)

The current route alternative reflected the respondent's revealed trip, and either had an associated cost or was toll-free, depending on the respondent's answers to the toll questions in the trip details section of the

¹The multinomial logit model has the general form $p(i) = \frac{e^{U_i}}{\sum_{u \in V_i \in \mathcal{U}_i} e^{U_j}}$, where p(i) is the probability that mode i will be chosen and U_i is

the "utility" of mode i, a function of service and other variables. See, for example, M. E. Ben-Akiva and S. R. Lerman, *Discrete Choice Analysis*, MIT Press, 1985 for details on the model structure and statistical estimations procedures.



survey. The alternative toll route was always a different toll route regardless of whether the respondent's current route was tolled or a non-toll route. This option always presented respondents with additional travel time savings for a higher toll than their current route alternative. The third alternative presented respondents with the same alternative toll route but traveling at a different time of day at a reduced toll level. Only respondents who traveled in the peak period, or who indicated that they would prefer to travel in the peak period, were presented with this alternative. Respondents were asked to choose the option they preferred the most under the conditions presented. The alternatives presented to each respondent are described in more detail in Section 2.2.2 (Games).

5.2 Identification of Outliers (SP)

The SP choice data were screened to ensure that all observations included in the model estimation represented realistic trips and reasonable trade-offs in the scenarios. Information used for screening purposes included the amount of time each respondent took to complete the full survey, time taken in the Games section, consistency in the choice behavior as well as the consistency of the trip information provided by the respondent.

After reviewing these variables and the effects that extreme values had on the models, it was determined that respondents who met the following conditions should be excluded from the final analysis:²

- Respondents who disagreed or strongly disagreed with any of the survey engagement questions. These responses indicated that these respondents either did not understand the SP scenarios, did not behave how they would in real life or did not think the alternatives shown were realistic (905 individuals, 7,240 choice observations).
- Respondents who chose the alternate toll route with a departure time shift when they had reported they were unable to adjust their departure time (870 individuals, 6,960 choice observations).
- Respondents who completed the SP scenarios in less than 45 seconds (94 individuals, 752 choice observations).
- Respondents who completed the entire survey in less than six minutes (fastest 1%; 57 individuals, 456 choice observations).
- Respondents who reported a travel time of "3 hours or more." Without knowing a precise travel time, any choice scenarios constructed would not be applicable to a respondent's reported trip (53 individuals, 424 choice observations).
- Respondents who reported a trip longer than 200 miles (38 individuals, 304 choice observations).
- Respondents whose implied average speed for their trip was greater than 90 mph or less than 5 mph (40 individuals, 320 choice observations).
- Respondents demonstrating inconsistent choice behavior in the stated preference scenarios. For
 example, respondents who established a certain dollar amount for willingness to pay for time savings
 and then rejected paying less for equal or more time savings in addition to all other attributes being
 just as favorable, or more favorable (4 individuals, 32 choice observations).

Based on this outlier analysis, a total of 32,992 SP observations (4,124 respondents) were used in conjunction with the RP observations to estimate the models presented in this report.

5.3 Identification of Outliers (RP)

The RP choice data were similarly screened to ensure that all observations modeled represented realistic trips and reasonable trade-offs. Respondents whose answers indicated that they had no alternate route to

² These exclusions are not mutually exclusive; respondents were often excluded for two or more reasons.

make their trip were removed from the RP data set (1,282 individuals). Additionally, respondents who met the following conditions were excluded from the final analysis:²

- NTTA toll users who reported a next best non-tolled route that was faster than their current toll route (490 individuals).
- Respondents who used an NTTA facility but reported not paying any tolls (83 individuals).
- Respondents who did not use an NTTA facility and could not have reasonably used at least a tolled portion of a facility (60 individuals).

Based on this outlier analysis, a total of 3,976 RP observations (3,976 respondents) were used in conjunction with the SP observations to estimate the models presented in this report.

5.4 Segmentation

The final models were estimated for three market segments based on the reported trip departure time: offpeak travelers, AM peak travelers and PM peak travelers. Off-peak travelers who traveled outside of peak hours to avoid traffic congestion and would have preferred to have traveled during the peak were included in the appropriate segment (Table 5.1). This final segmentation was chosen based on the behavioral differences observed between the segments, expected application of the choice models and the reasonableness and intuitiveness of the segmented results. A combined specification including separate coefficients for the three segments was used in the final models.

Segment (sample size)	Departure Time	Departure Time Preference
AM peak (1,846)	Between 6:30-9:00am	Travelled in the off-peak in order to avoid traffic congestion, but would have preferred to travel during AM peak hours.
PM peak (765)	Between 3:00-6:30pm	Travelled in the off-peak in order to avoid traffic congestion, but would have preferred to travel during PM peak hours.
Off-peak (1,513)	Outside of 6:30-9:00am and 3:00-6:30pm	Did not travel in the off-peak to avoid traffic congestion.

Table 5.1: Model Segment Definitions

5.5 Model Specification

Several utility equation structures were tested using the variables included in the RP and SP scenarios, as well as trip characteristics, attitudinal indicators and demographic variables. The general structure of these specifications was similar to the final specifications used; however, other variables were introduced, one at a time, to test potential interactions with the toll cost, travel time and reliability coefficients. These model specifications were developed to determine whether other characteristics of the respondents' trips or demographic information significantly influenced their choices in the stated preference scenarios.

Variables for travel time and toll cost were both included in the final models. Travel time, as it was modeled, represents non-delayed travel time. Travel time reliability – when it was included in the final model structure – took the form of expected value of delay. For example, an alternative that presented a 4 in 10 chance of being delayed by 10 minutes would yield an expected delay of 4 minutes (0.40 * 10 minutes). Table 5.2 compares how travel time and travel time reliability were presented to respondents in the choice scenarios to how they were modeled.



As Presented in Choi	ce Scenario	Modelled: With Reliability		Modelled: Without Reliability	
Travel time:	36 mins.	Non-delayed travel time:	32 mins	Non-delayed travel time:	32 mins
Reliability: On average	e 4 in 10 trips take an extra 10 mins.	Expected value of delay:	4 minutes	Expected value of delay:	N/A
Toll Cost:	\$2.00	Toll Cost:	\$2.00	Toll Cost:	\$2.00

The toll cost variable was divided by the natural log of household income in \$10's. This transformation captures the relationship between increasing household income and decreasing sensitivity to toll cost, and resulted in an improved model fit.

To remove potential bias of the time and cost coefficients from respondents who are opposed to toll roads or tolling in general, separate coefficients for travel time and toll cost were estimated for those respondents who disagreed with the statement "I will use a toll route if the tolls are reasonable and I save time."

For peak period respondents, variables were included in the model for departure time shift. These represented the amount of time (in minutes) required to shift outside of the peak period by departing earlier or later.

Finally, constants were included on the non-current route alternatives. The constants capture preference for each alternative that cannot be attributed to the other variables in the model.

The RP and SP observations were estimated jointly in order to more accurately capture the respondents' sensitivities. The hypothetical SP choices were, in effect, scaled by the true choice (the revealed choice). A scale factor to capture this effect was also estimated. The coefficients presented below account for the scale effect of the revealed choice observations.

5.6 Model Coefficients

The results of the final model specification are presented below, and include coefficients for the three time-ofday segments – AM peak, PM peak and off-peak. An additional model was estimated for a single combined peak period to allow for greater flexibility in the model application. The coefficient values, robust standard errors, robust t-statistics and general model statistics are presented in Table 5.3 through Table 5.6.

The first model of each set includes the reliability variable in the estimation while the second model does not. The statistics included for each model are the number of observations, the number of estimated parameters³, the initial Log Likelihood, the Log Likelihood at convergence, Rho-Squared (model fit measure) and adjusted Rho-Squared (another model fit measure that accounts for the number of estimated parameters).

³ Separate time and cost coefficients were estimated, but not reported, for respondents who were identified by the strategic bias analysis. These separate coefficients extracted any influence these respondents had on the reported time and cost coefficients. See Section 5.2.2 (Identification of Outliers (SP)).



		Coefficient Values		
Coefficient	Units	Value	Robust Std. Error	Robust T-test
Off-Peak Free-Flow Travel Time	Minutes	-0.0698	0.00571	-12.22
AM Peak Free-Flow Travel Time	Minutes	-0.0561	0.00459	-12.23
PM Peak Free-Flow Travel Time	Minutes	-0.0563	0.00482	-11.69
Off-Peak Cost⁴	Dollars	-2.93	0.222	-13.22
AM Peak Cost ⁴	Dollars	-2.45	0.178	-13.73
PM Peak Cost ⁴	Dollars	-2.2	0.168	-13.11
Off-Peak Expected Delay	Minutes	-0.113	0.00856	-13.19
AM Peak Expected Delay	Minutes	-0.0759	0.00547	-13.88
PM Peak Expected Delay	Minutes	-0.0651	0.00509	-12.79
AM Peak Earlier Time Shift	Minutes	-0.0094	0.000892	-10.54
PM Peak Earlier Time Shift	Minutes	-0.00672	0.000756	-8.88
AM Peak Later Time Shift	Minutes	-0.0106	0.000912	-11.6
PM Peak Later Time Shift	Minutes	-0.00504	0.000621	-8.12
Alternate Toll Route - Constant	N/A	-0.348	0.0254	-13.69
Alternate Toll Route with Earlier Time Shift - Constant	N/A	-0.81	0.0646	-12.54
Alternate Toll Route with Later Time Shift - Constant	N/A	-0.713	0.0574	-12.43
RP Observation Scale	N/A	1	fixed	
SP Observation Scale	N/A	2.18	0.155	7.65
Model Statistics				

36968

Table 5.3: MNL Model Coefficients – Two Peak Periods (with Expected Delay)

Mouel Statistics
Number of observations:
Number of estimated parameters:
Initial log-likelihood:

Number of estimated parameters:	23
Initial log-likelihood:	-34418.9
Final log-likelihood:	-26725.3
Rho-square:	0.224
Adjusted rho-square:	0.223



			Coefficient Values		
Coefficient	Units	Value	Robust Std. Error	Robust T-test	
Off-Peak Travel Time	Minutes	-0.09	0.00577	-15.6	
AM Peak Travel Time	Minutes	-0.0748	0.00472	-15.83	
PM Peak Travel Time	Minutes	-0.0719	0.00487	-14.78	
Off-Peak Cost ⁵	Dollars	-3.74	0.226	-16.56	
AM Peak Cost ⁵	Dollars	-3.16	0.18	-17.57	
PM Peak Cost ⁵	Dollars	-2.87	0.176	-16.29	
AM Peak Earlier Time Shift	Minutes	-0.0119	0.001	-11.92	
PM Peak Earlier Time Shift	Minutes	-0.00883	0.0009	-9.81	
AM Peak Later Time Shift	Minutes	-0.0134	0.000987	-13.59	
PM Peak Later Time Shift	Minutes	-0.00667	0.00075	-8.89	
Alternate Toll Route - Constant	N/A	-0.357	0.0242	-14.75	
Alternate Toll Route with Earlier Time Shift - Constant	N/A	-0.931	0.0652	-14.27	
Alternate Toll Route with Later Time Shift - Constant	N/A	-0.81	0.0579	-13.99	
RP Observation Scale	N/A	1	1fixed		
SP Observation Scale	N/A	1.71	0.093	7.55	

Table 5.4: MNL Model Coefficients – Two Peak Periods (without Expected Delay)

Model Statistics

Number of observations:	36968
Number of estimated parameters:	20
Initial log-likelihood:	-34418.9
Final log-likelihood:	-26703.6
Rho-square:	0.224
Adjusted rho-square:	0.224



Page 29

			Coefficient Values		
Coefficient	Units	Value	Robust Std. Error	Robust T-test	
Off-Peak Free-Flow Travel Time	Minutes	-0.0695	0.0057	-12.18	
Peak Free-Flow Travel Time	Minutes	-0.0558	0.00454	-12.28	
Off-Peak Cost ⁶	Dollars	-2.92	0.221	-13.18	
Peak Cost ⁶	Dollars	-2.35	0.169	-13.94	
Off-Peak Expected Delay	Minutes	-0.113	0.00856	-13.17	
Peak Expected Delay	Minutes	-0.0722	0.00513	-14.06	
Peak Earlier Time Shift	Minutes	-0.00821	0.000768	-10.69	
Peak Later Time Shift	Minutes	-0.00872	0.000752	-11.59	
Alternate Toll Route - Constant	N/A	-0.347	0.0255	-13.64	
Alternate Toll Route with Earlier Time Shift - Constant	N/A	-0.816	0.0651	-12.53	
Alternate Toll Route with Later Time Shift - Constant	N/A	-0.71	0.0572	-12.4	
RP Observation Scale	N/A	1	fixed		
SP Observation Scale	N/A	2.2	0.156	7.66	
Model Statistics					

Number of observations:	36968
Number of estimated parameters:	16
Initial log-likelihood:	-34418.9
Final log-likelihood:	-26784.5
Rho-square:	0.222
Adjusted rho-square:	0.221



		Coefficient Values			
Coefficient	Units	Value	Robust Std. Error	Robust T-test	
Off-Peak Travel Time	Minutes	-0.0899	0.00576	-15.61	
Peak Travel Time	Minutes	-0.0736	0.0046	-16.01	
Off-Peak Cost ⁷	Dollars	-3.73	0.225	-16.57	
Peak Cost ⁷	Dollars	-3.05	0.169	-18.06	
Peak Earlier Time Shift	Minutes	-0.0106	0.000865	-12.2	
Peak Later Time Shift	Minutes	-0.0112	0.000825	-13.62	
Alternate Toll Route - Constant	N/A	-0.358	0.0242	-14.77	
Alternate Toll Route with Earlier Time Shift - Constant	N/A	-0.941	0.0656	-14.35	
Alternate Toll Route with Later Time Shift - Constant	N/A	-0.804	0.0574	-14	
RP Observation Scale	N/A	1	fixed		
SP Observation Scale	N/A	1.71	0.0936	7.58	
Model Statistics					
Number of observations:	36968				
Number of estimated parameters:	14				
Initial log-likelihood:	-34418.9				

Table 5.6: MNL Model Coefficients – Single Peak Period (without Expected Delay)

-26757.2 Final log-likelihood: Rho-square: Adjusted rho-square:

6.0 VALUE OF TIME ANALYSIS

Values of time were estimated from the survey data using two different methods:

- 1. Using the coefficients from the multinomial logit model
- 2. Using responses to the questions that asked respondents to estimate their value of time directly

0.223

0.222

6.1 **MNL** Value of Time

The marginal rate of substitution of the travel time and toll cost coefficients from the MNL models provides the implied value that travelers place on their time in terms of their willingness to pay a toll for travel time savings. Table 6.1 presents the values of time at different household income levels for the peak and off-peak traveler segments. These values of time are calculated using the model coefficients presented in Table 5.5 and Table 5.6 above. In general, there is no significant difference in the values of time between the two segments.



July 2011

	Including Reliability		Including Reliability Excluding		Excluding	Reliability
Segment Median Income	Off-Peak \$87,500	Peak \$87,500	Off-Peak \$87,500	Peak \$87,500		
At segment median income	\$12.96	\$12.93	\$13.13	\$13.14		
\$15,000	\$10.44	\$10.42	\$10.58	\$10.59		
\$30,000	\$11.43	\$11.41	\$11.58	\$11.59		
\$45,000	\$12.01	\$11.98	\$12.16	\$12.18		
\$60,000	\$12.42	\$12.39	\$12.58	\$12.60		
\$75,000	\$12.74	\$12.71	\$12.90	\$12.92		
\$90,000	\$13.00	\$12.97	\$13.17	\$13.18		
\$105,000	\$13.22	\$13.19	\$13.39	\$13.41		
\$120,000	\$13.41	\$13.38	\$13.58	\$13.60		
\$135,000	\$13.58	\$13.55	\$13.75	\$13.77		
\$150,000	\$13.73	\$13.70	\$13.91	\$13.92		
\$165,000	\$13.87	\$13.84	\$14.04	\$14.06		
\$180,000	\$13.99	\$13.96	\$14.17	\$14.19		
\$195,000	\$14.11	\$14.07	\$14.28	\$14.30		
\$210,000	\$14.21	\$14.18	\$14.39	\$14.41		
\$225,000	\$14.31	\$14.28	\$14.49	\$14.51		

Table 6.1: MNL – Values of Time by Segment and Income Level

6.1.1 Value of Expected Delay

The marginal rate of substitution of the travel time reliability (expected value of delay) and toll cost coefficients from the MNL models provides the implied value that travelers place on their time in terms of their willingness to pay a toll for less delay. The implied values of expected delay for the two segments are displayed in Table 6.2 at the associated median income (\$87,500 for both segments).

Table 6.2: MNL - Values of Expected Delay by Segment

Segment	Value of Expected Delay
Off-peak	\$21.08
Peak	\$16.73

The value of delay is higher for off-peak travelers than for peak travelers, indicating that off-peak travelers are willing to pay more than peak travelers to avoid unforeseen delays due to traffic congestion. While it is difficult to know with absolute certainty why this is the case, it may be because peak period travelers are more accustomed to delay (as they experience delay with more frequency) and therefore are less willing to pay to avoid it.

6.2 Reported Value of Time

As described in the questionnaire section of this report, respondents were asked to estimate their value of time directly. The NTTA Travel Survey included this question in two forms:

- What is the maximum amount you would be willing to pay to save *x* minutes on your trip? (Version A)
- What is the minimum amount of travel time you would expect to save from *y* in tolls? (Version B)



Where *x* is a fraction of the respondent's reported travel time and *y* is a toll between \$1.00 and \$4.00. Each respondent answered one version of this question, with equal probability. The question also appeared, with equal probability, before or after the SP scenarios in order to capture any sort of "learning" effect the SP scenarios may have had on the calculated VOT.

This is a simple way of getting at value of time, but also susceptible to bias. In addition, unlike with a multinomial logit model, it is not possible to estimate sensitivities to travel time, toll cost or other variables using this method. The values of time presented in this section are independent of the outlier analysis performed for the choice modeling work. However, respondents who entered the minimum or maximum amounts for the reported value of time question were excluded from this analysis (i.e. "\$6.00 or more" or "1 minute or less") for a total of 4,837 observations.

The distribution of the calculated VOTs for both question versions is displayed in Figure 6.1, with the mean and median VOT depicted in red and green respectively. The VOT was calculated for each modeling segment as well (Table 6.3).



Figure 6.1: Distribution of Reported Values of Time

Table 6.3: Reported Value of Time by Segment

	Mean VOT	Median VOT	Count
Off-peak	\$10.86	\$7.06	1,508
Peak	\$10.92	\$7.50	3,329
Total			4,837

Figure 6.2 demonstrates the "learning" effect the SP scenarios had on the mean reported value of time. Fewer respondents were removed for entering a maximum or minimum value for both question versions when the question was asked after the SP scenarios, implying that respondents were more likely to enter a value within the tested range after having seen the eight games. The direction of this effect is observed to be reversed between question types and Version A reveals significantly higher values of time. Table 6.4 displays the results of a multiple means comparison test, where an "X" indicates a significant difference in the mean VOT at the 0.05 level.







	Version A (Before)	Version A (After)	Version B (Before)	Version B (After)
Version A (Before)	-		х	х
Version A (After)		-	х	х
Version B (Before)	х	х	-	х
Version B (After)	х	х	х	-

7.0 CONCLUSIONS

RSG successfully developed and implemented a stated preference survey questionnaire that gathered information from 4,124 automobile travelers in the Dallas/Fort Worth area. The questionnaire collected data on current travel behaviors, their next best alternate routes and engaged the travelers in a series of stated preference scenarios.

Multinomial logit (MNL) choice models were developed using the revealed and stated preference survey data to produce estimates of value of time (VOT) for the two distinct traveler segments: off-peak and peak. Two models were estimated that combined the two peak segments to allow for flexibility in the application of the model results:

- 1. Multinomial logit model with reliability estimated
- 2. Multinomial logit model without reliability

In addition to the MNL models, respondents were asked to provide an estimate of their value of time directly. The various values of time for the two modeling segments presented in this report are summarized below in Table 7.1. The MNL values of time are reported at the segment median income.



Table 7.1: Value of Time Summary

	Method				
Segment	Reported VOT		MNL	MNL	
	Mean	Median	(with reliability)	(without reliability)	
Off-Peak	\$10.86	\$7.06	\$12.96	\$13.13	
Peak	\$10.92	\$7.50	\$12.93	\$13.14	

The values of time varied by time of day and household income, and ranged from a low of approximately \$10 per hour to high of \$15 per hour. The survey and choice model results indicate that travel time savings, tolls and travel time reliability have a significant impact on travel behavior. These results will allow NTTA and Wilbur Smith Associates to review and update the regional travel demand model for the NTTA system.







NTTA System-Wide Stated/Revealed Preference Travel Survey

Appendix A – Questionnaire

July 2011

DATA ANALYSIS SOLUTIONS

TABLE OF CONTENTS

1.0	QUESTIONNAIRE GUIDE
1.1	Recruitment Methodology and Sample Size:1
1.2	Instructions for Reviewers:1
2.0	SURVEY TEXT
2.1	Origin-Destination Survey
2.1	1 Introduction and Instructions
2.1	2 Trip Details
2.2	Stated Preference Survey Qualification7
2.3	Stated Preference Survey
2.3	1 Trip Details
2.3	2 Games
2.3	3 Opinions14
2.3	4 Traveler Information
3.0	EXPERIMENTAL DESIGN
4.0	SURVEY LOGIC CHART



1.0 QUESTIONNAIRE GUIDE

1.1 Recruitment Methodology and Sample Size:

- Sample size minimum: 2,000 stated preference (SP) respondents
- Screening criteria:
 - Origin-Destination (OD) Survey: Automobile drivers reporting a trip in the Dallas/Fort Worth Metroplex region will qualify for the OD survey.
 - SP: Automobile drivers reporting a trip in the existing NTTA System area that took at least 15 minutes will qualify for the SP survey.
- Respondents were recruited using the following methods:
 - Email invitations to registered TollTag account holders
 - Online research panel
 - Public outreach effort conducted by NTTA using local media outlets
 - Targeted business recruits along the study corridor
 - Telephone survey
 - Spanish language survey
 - Survey stations at other high traffic locations

1.2 Instructions for Reviewers:

- Text in [] square brackets appearing before a question indicates a question that will not be seen by all respondents and the logic for the respondents who will see that question. For example: "[If a transit user] How much did it cost to ride the metro on your trip?"
- Text in [] square brackets of the form [page.question] appearing after a question indicates the online survey page and variable name for that question, where "page" is the name of the survey page and "question" is the variable name. This is a useful reference point for navigating the survey logic chart. For example: "What is your age? [demographics.age]". For simplicity, the ".question" may be omitted if a page does not have a question or if there is only one question on that page.
- Text in < > angle brackets within the text of a question is dynamically inserted based on each respondent's answers to previous questions. For example: "In the questions that follow, please continue to think about your one-way <trip purpose> trip."
- Underlined text is emphasized text and is displayed in orange in the online survey.



2.0 SURVEY TEXT

2.1 Origin-Destination Survey

2.1.1 Introduction and Instructions

1. Would you like to take this survey in English or Spanish?

¿Le gustaría tomar esta encuesta en español o en inglés?

- English / Inglés
- Spanish / Español

Project Information [intro]

Did you know that your travel habits help shape transportation planning decisions in your area? It's true. The North Texas Tollway Authority (NTTA) is looking for ways to improve mobility and offer better services to travelers in the North Texas region. Your responses to this survey will be used to improve transportation in the region.

Survey Information

The first section of this survey will ask you some questions about a recent trip you've made in the area and takes about 5 minutes to complete. After completing this section, you will have the opportunity to enter a sweepstakes for an Apple iPod nano[™]*, or answer some additional questions and be entered into a sweepstakes for an Apple iPad 2[™]*. This second section of the survey takes about 15 more minutes to complete.

Survey Instructions

Please use the "Next Question" button in the lower left corner of the screen to go forward. If you back up to change an answer, please be sure to click "Next Question" to continue forward. It is important that you do NOT use your web browser's "forward" button because your new answers will not be recorded.

To review a previous question, use the browser's "back" button, which is the left-pointing arrow in the upper left corner of the screen.

Please click "Next Question" to begin.

*Note: This promotion is governed by Vermont law and is void where prohibited by the laws of any other state. Employees, consultants, and family members of the NTTA or the NTTA System Wide Travel Study are not eligible for the sweepstakes.

The answers provided in this questionnaire will never be linked back to you. This information will be kept confidential and only used for the purpose of this drawing.



2.1.2 Trip Details

- 2. Please think of your most recent <u>one-way</u> automobile trip in the North Texas area that you made:
 - In the North Texas area (see map)
 - On a weekday (Monday Friday)
 - During the past two weeks

We would like to ask you about the details of this trip. [tripdetails]

What day of the week did you make your most recent weekday trip in the North Texas area? [tripdetails.dow]

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- 3. What time did you begin your trip? [tripdetails.begMAM]

I began my trip at: Please slide the blue box to select a value.

6:00 am	9:00 am	noon	3:00 pm	6:00 pm

- 4. Did your trip begin at home? [tripdetails.begloc]
 - Yes
 - No
- 5. [If no] Did your trip end at home? [tripdetails.endloc]
 - Yes
 - No
- 6. What type of vehicle were you driving? [tripdetails.vehtype]
 - Personal vehicle (car, pickup truck, SUV, or minivan)
 - Commercial truck with more than 2 axles ("18-wheeler")
 - Motorcycle
 - I was not driving on this trip [Terminate]
- 7. Including yourself, how many people were in your vehicle? [tripdetails.occ]
 - 1 (I traveled alone)
 - 2 people
 - 3 people
 - 4 people
 - 5 people
 - 6 or more people



- 8. What was the main purpose of your trip? [tripdetails.purp]
 - Go to/from work (commute to/from regular workplace)
 - Company business (go to a meeting, sales call, etc.)
 - Personal business (medical appointment, etc.)
 - Go to/from school (to attend class, or pickup/drop-off a student)
 - Shopping
 - Social/recreational (go to the movies, sport event, etc.)
 - Go to/from an airport
- 9. What major roadway(s) did you use as part of this trip? [tripdetails.mroad]

Please list up to three major roadways (ex. Main Street, Preston Road, IH635 and Luna Road) [Respondents enter up to three routes in the available open end boxes.]

<You said you <u>began your trip at home</u>. Where is this located?*/Where did your trip <u>begin</u>?*> [geo0]
 [If trip began at home]

Please enter an address (with street number), or the nearest intersection in the boxes below.

[If trip did not begin at home]

Please enter a business name, an address (with street number), or the nearest intersection in the boxes below.

If you do not know this information or you would prefer to find the location on a map, please select "I would rather use a map."

_____ Search

(Examples: 401 North Munger Blvd, or North Pearl St and Cedar Springs Rd)

- 1. Click on the map to zoom in on your location
- 2. Keep zooming until a marker **?** appears
- 3. Continue to drag the map and click on the location until the marker is in the right place (the street number does not have to be exact)
- 4. Click "Next Question" to proceed

[Clickable map of study area shown]

*Note: Your information will be kept strictly confidential and will only be used for this survey. Your responses will never be linked back to your personal information.



<You said you <u>ended your trip at home</u>. Where is that located?*/Where did your trip <u>end</u>?*> [geoD]
 [If trip ended at home]

Please enter an address (with street number), or the nearest intersection in the boxes below.

[If trip did not end at home]

Please enter a business name, an address (with street number), or the nearest intersection in the boxes below.

If you do not know this information or you would prefer to find the location on a map, please select "I would rather use a map."

___ Search

(Examples: Dallas Convention Center, or 401 North Munger Blvd, or North Pearl St and Cedar Springs Rd)

- 1. Click on the map to zoom in on your location
- 2. Keep zooming until a marker \P appears
- 3. Continue to drag the map and click on the location until the marker is in the right place (the street number does not have to be exact)
- 4. Click "Next Question" to proceed

*Note: Your information will be kept strictly confidential and will only be used for this survey. Your responses will never be linked back to your personal information.

12. [If respondent's beginning and ending locations are the same] Based on the locations you provided, the trip you are describing appears to be a round-trip.

Remember, we are asking about the <u>one-way</u> part of your most recent trip.

Do you need to change the beginning or ending location of your trip? [locwarn]

- Yes
- No

[Note: If "Yes" is selected, send respondent back to Question 10 to modify locations.] [Note: If "No" is selected, send respondent back to Question 2 to describe a new trip.]

- 13. Based on your answers, it looks like your trip started at the **Y** marker and ended at the **Y** maker. Are these starting and ending locations correct? [tripconfirm]
 - Yes, these locations are correct
 - No, I need to change my starting or ending location [Send respondent back to Question 10.]
- 14. [If respondent is describing their second trip and does not meet the SP requirements]The trip you are describing does not meet the study requirements:
 - Occurred in the past two weeks
 - Took at least 15 minutes
 - Began in, ended in, and/or traveled through the highlighted area shown on the map below.

Can you describe a trip that meets the requirements above? [eligtrip]

- Yes [Send respondent back to Question 2.]
- No [Terminate]



- 15. How often do you make this same trip in this direction on <u>weekdays only</u>? [freqwkd.freqkwkd]
 - 6 or more times per week
 - 4-5 times per week
 - 2-3 times per week
 - 1 time per week
 - 2-3 times per month
 - 1 time per month
 - Less than 1 time per month

16. How often do you make this same trip in this same direction on <u>weekends</u>? [freqwkd.freqwkn]

- 6 or more times per weekend
- 4-5 times per weekend
- 2-3 times per weekend
- 1 time per weekend
- 2-3 times per month
- 1 time per month
- Less than 1 time per month
- Never
- 17. [If this is the respondent's first time through the trip details section] Do you currently have a TollTag (Dallas/Fort Worth), TxTag, EZ TAG (Houston), or other type of transponder* in your car for electronic toll collection (ETC)? [etc]
 - Yes, I have a TollTag
 - Yes, I have a TxTag
 - Yes, I have an EZ TAG
 - Yes, I have another type of transponder, please specify:
 - No, I do not currently have any type of transponder

*Note: An electronic toll payment device is a sticker or plastic box type electronic device that is mounted inside the windshield of your vehicle. When your vehicle passes through a highway toll plaza/gantry, an antenna at the toll plaza/gantry reads the account information contained in the device. The appropriate toll is then deducted from your prepaid account.



2.2 Stated Preference Survey Qualification

- An eligible trip for the SP survey must be:
 - Inside or passes through the NTTA System region
 - At least 15 minutes in length
- Respondents who describe a trip in Section 2.1 (Origin-Destination Survey) that meets the SP criteria
 are given the option to continue.
 - Those who continue will proceed with the SP survey. Section 2.3 (Stated Preference Survey).
 - Those who do not wish to continue will be branched to Section 2.3.4 (Traveler Information) before ending the survey.
- Respondents who describe a trip in the OD survey that does NOT meet the criteria will be asked if they can describe an eligible trip and if they wish to continue with the survey.
 - Those who continue will complete Section 2.1.2 (Trip Details) again with their eligible SP trip in mind before continuing to the SP survey.
 - Those who do not wish to continue will be branched to Section 2.3.4 (Traveler Information) before ending the survey.

2.3 Stated Preference Survey

2.3.1 Trip Details

- 18. [If respondent's first trip does not qualify for the SP] Thank you for your answers so far. You now have two options: [continue]
 - Continue the survey and enter a sweepstakes for an iPad 2[™] device by answering some questions about another recent trip you've made in the North Texas area. <u>Takes about 15 minutes</u>
 - Answer just a few more Traveler Information questions and enter a sweepstakes for an iPod nano[™]. <u>Takes about 2 minutes</u>

[If OD trip qualifies]Thank you for your answers so far. You now have two options:

- Continue the survey and enter a sweepstakes for an iPad 2[™] device by answering some questions about the trip you just described. <u>Takes about 15 minutes</u>
- Answer just a few more Traveler Information questions and enter a sweepstakes for an iPod nano[™]. <u>Takes about 2 minutes</u>

Would you like to continue the survey and have the chance to win an iPad 2^{TM} ?

- Yes, continue the survey
- No, bring me to the Traveler Information section [Send respondent to Section 2.3.4 (Traveler Information)]
- 19. [If yes] Thank you for telling us about your most recent trip. For the next part of the survey, we are looking for a slightly different trip in the North Texas area. Specifically, have you made a trip that:
 - Occurred in the past two weeks
 - Took at least 15 minutes
 - Began in, ended in, and/or traveled through the highlighted area shown below on the map
 - Yes [Send respondent to Section 2.1.2 (Trip)]
 - No [Send respondent to Section 2.3.4 (Traveler Information)]



20. [If respondent's first trip qualified for the SP] Thank you for continuing the survey, your answers are very valuable to us! Please continue to think about your most recent weekday trip in the North Texas area.

Approximately how long did it take you, door-to-door, to drive from where your trip began to where your trip ended? [travtime]

Please include only the time you spent driving and not the time you spent at any stops you may have made along the way.



		_			
30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	

21. [If beginning and ending locations are inconsistent with reported time] Based on the locations you provided earlier, it appears that your time of travel time> is significantly clonger/shorter> than what we estimate it should take to make your trip.

Remember, we are just asking about your trip in <u>one direction only</u>.

Do you need to change your reported time? [timewarn]

- Yes
- No
- 22. [If yes] Please tell us how long your trip took, door-to-door, in <u>one direction only</u>. [travtime2]

Door-to-door, my trip took: Please slide the blue box to select a value.

30 minutes 1 hour 1.5 hours 2 hours 2.5 hours

- 23. Did you encounter any delay due to traffic during your trip? [delay.delay]
 - Yes
 - No
- 24. [If yes] You reported your trip took <<u>travel time></u> with some delay due to congestion. If there were <u>no delays</u> due to congestion, how long would this trip have taken you? [delay.nodelaytime]

[Travel time without delay is validated against travel time with delay.]

With no delay, my trip would take: Please slide the blue box to select a value.

30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	

- 25. [If trip is during the off-peak] Earlier, you reported that you began this trip at

 <u>begtime></u>. Did you choose to leave for this trip at

 <u>begtime></u>, which was outside of rush hours (6:30 9:00 AM or 3:00 6:30 PM), to avoid delays due to traffic conditions? [prefpeak.prefpeak]
 - Yes, I made my trip outside of rush hour to avoid traffic congestion
 - No, I would have made my trip outside of rush hour regardless of traffic



26. [If yes] If there was no traffic congestion at any time during the day, what time would you have most preferred to make this trip? [prefpeak.prefbegMAM]

I would have preferred to leave at: Please slide the blue box to select a value.

6:00 am 9:00 am noon 3:00 pm 6:00 pm

27. Instructions

For these questions, keep in mind any constraints you have, such as employer policies, coordination with family members, and your personal preference.

You reported leaving for your <purpose> trip at <<u>begin time></u>. If road and traffic conditions were not a factor, how much <u>earlier</u> could you have made your trip? [earlier.earlier]

- Not at all earlier
- Up to 15 minutes earlier
- Up to 30 minutes earlier
- Up to 1 hour earlier
- Up to 2 hours earlier
- More than 2 hours earlier
- 28. If road and traffic conditions were not a factor, how much <u>later</u> could you have made your trip? [earlier.later]
 - Not at all later
 - Up to 15 minutes later
 - Up to 30 minutes later
 - Up to 1 hour later
 - Up to 2 hours later
 - More than 2 hours later
- 29. Please continue to think about the <u>one-</u>way trip you have been describing. When making this trip, did you use any of the following roads? [route]

Please select all that apply.

- Addison Airport Toll Tunnel
- Dallas North Tollway
- Lewisville Lake Toll Bridge
- Mountain Creek Lake Toll Bridge
- President George Bush Turnpike (PGBT)
- PGBT Western Extension (SH 161)
- Sam Rayburn Tollway (SH 121)
- I did not use any of these roads on the trip I'm describing [Send respondent to Question 34.]



- 30. [If used more than one NTTA facility] Which tollway did you get on <u>first</u>? [firstroad][Only the selected routes are shown]
 - Addison Airport Toll Tunnel
 - Dallas North Tollway
 - Lewisville Lake Toll Bridge
 - Mountain Creek Lake Toll Bridge
 - President George Bush Turnpike (PGBT)
 - PGBT Western Extension (SH 161)
 - Sam Rayburn Tollway (SH 121)
- [If used more than two NTTA facilities] On this same trip, which tollway did you use <u>last</u>? [lastroad]
 [Show only study routes used]
 - Addison Airport Toll Tunnel
 - Dallas North Tollway
 - Lewisville Lake Toll Bridge
 - Mountain Creek Lake Toll Bridge
 - President George Bush Turnpike (PGBT)
 - PGBT Western Extension (SH 161)
 - Sam Rayburn Tollway (SH 121)
- 32. [For each facility used] At which cross street did you get on and off the <NTTA facility>? [onramp] I got on at: [drop-down list of interchanges for facility]
 - I got off at: [drop-down list of interchanges for facility]
- 33. [If used an NTTA facility] Imagine the NTTA <routes you used were/route you used was> <u>unavailable</u> for your trip and you had to use the next best <u>non-toll</u> route.

How long do you think it would take to make your same trip using the next best <u>non-toll</u> route? Please think of a route that does not include any toll roads, bridges or tunnels. Using the next best non-tolled road... [nextbest]

This trip would take: Please slide the blue box to select a value.

30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	

[Continue to Question 38.]



- 34. [If did not use an NTTA facility] Imagine your current route was <u>unavailable</u> for your trip and you had to use one or more of the following toll roads. If you did not have to pay a toll, which road(s) would be the best option for your trip? [besttoll]
 - Addison Airport Toll Tunnel
 - Dallas North Tollway
 - Lewisville Lake Toll Bridge
 - Mountain Creek Lake Toll Bridge
 - President George Bush Turnpike
 - Sam Rayburn Tollway
 - PGBT Western Extension
 - Don't know
 - None of the above
- 35. [If could have used an NTTA facility] If you were to use the NTTA <route/routes> below to make this trip you just described, how much total time do you estimate it would take, door-to-door, to make your one-way trip? [tolltime]

You said your trip could have used:

[List of NTTA routes used]

This trip would take: Please slide the blue box to select a value.

30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	

36. [For each NTTA facility could have used] At which cross street would you get on and off the <NTTA facility>, if you used it for your trip? [altramp]

I would get on at: [drop-down list of interchanges for facility]

I would get off at: [drop-down list of interchanges for facility]

- 37. [If did not use an NTTA facility] What is the main reason why you did not use any NTTA facilities on your trip? [ynontta]
 - It is too congested
 - Current route is more convenient
 - Did not want to pay toll
 - Tolls are too high
 - Had to make intermediate stops
 - Current route is more reliable
 - Toll route is a longer route
 - There is no NTTA toll road available for my trip

[Note: Answers are shown in random order.]

 [If used an NTTA facility] Still thinking about the <u>one-way</u> part of the trip you made on <day of week>...

Did you pay any tolls? [toll.toll]

- Yes
- No



39. [If paid a toll] How much did you pay in tolls? [toll.amt]



- 40. [If paid a toll] Who paid the toll for this trip? [toll.reimb]
 - I paid the toll
 - I paid the toll, but it will be reimbursed
 - Someone else paid the toll
- 41. [If the respondent's first trip did not qualify for the SP] How often do you make this same trip in this direction on <u>weekdays only</u>? [freqwkd.freqwkd]
 - 6 or more times per week
 - 4-5 times per week
 - 2-3 times per week
 - 1 time per week
 - 2-3 times per month
 - 1 time per month
 - Less than 1 time per month
- 42. [If the respondent's first trip did not qualify for the SP] How often do you make this same trip in this same direction on <u>weekends</u>? [freqwkd.freqwkn]
 - 6 or more times per weekend
 - 4-5 times per weekend
 - 2-3 times per weekend
 - 1 time per weekend
 - 2-3 times per month
 - 1 time per month
 - Less than 1 time per month
 - Never
- 43. Which of the following resources did you consult for information about traffic conditions <u>before</u> your trip? [infobefore]

Please select all that apply.

- TV
- Internet (Google Maps, Map Quest, news station website, etc.)
- Radio
- Cell phone (text message or other phone service)
- Word of mouth (talking to a friend, colleague, etc. on the phone)
- GPS unit
- Other, please specify
- None of the above



44. [If used an information source before trip] After getting information about traffic conditions, in what way, if any, did you change your travel plans? [infochange]

Please select all that apply.

- Used a different road/route than originally planned
- Began my trip at a new time
- Changed where I was going (went to a different location)
- Decided to carpool instead of drive alone
- The information about traffic conditions did not affect my travel plans
- [Note: Answers are shown in random order.]
- 45. Which of the following resources, if any, did you consult for information about traffic conditions <u>during</u> your trip? [infoafter]

Please select all that apply.

- Radio
- Cell phone (text message or other phone service)
- Word of mouth (talking to a friend, colleague, etc. on the phone)
- Electronic message signs along the roadway
- GPS unit
- Other, please specify
- None of the above

2.3.2 Games

46. Throughout this survey, you have been focusing on a recent one-way trip with the following details:

Trip Details [wtp]

Purpose: <purpose>

Day of week: <day of week>

Travel time: <travel time>

[Version A] What is the maximum amount you would be willing to pay to save <u><XX> minutes</u> on your trip?



[Version B] What is the minimum amount of travel time you would expect to save from an additional <<u>\$XX></u> in tolls?





[Note: The initial starting position of the slider box is random.]

[Note: Half of respondents will answer this question before the stated preference experiments and the rest will answer after the stated preference experiments. Respondents will also see either Version A or Version B with equal probability.]



- 47. Now we would like to play a set of eight games with you. Each game will show you a pair of hypothetical travel options for making a one-way trip similar to the trip you previously described. For each game, choose the travel option for how you would most prefer to make your trip. [slide1] When making your decision, please assume that:
 - The situation and alternatives shown on each screen are hypothetical
 - The options shown are the only options available to you, even if they are different than the options that are available to you now.
 - All other costs associated with your trip will remain the same as they are now.

The travel times, amount of delay, and toll with change with each game.

Please look at the values closely and choose the option that you most prefer if these options were available for your trip.

Please click "Next Question" to continue.

48. Imagine these were the only options available to you for your trip. [cbc]

How would you travel?

[For first game] <u>Highlighted</u> information will vary from screen to screen.

[For subsequent games] Note: <u>Highlighted</u> Information may have changed.

Example:



[Note: Experiments are constructed using an experimental design which ensures information is collected in a statistically efficient manner. The time shift attribute is only seen by respondents that described a trip during the peak. The alternatives are shown in random order.]

2.3.3 Opinions

- 49. [If never chose the tolled option] What is the main reason why you never selected the toll route? [ynotoll]
 - It is too congested
 - Tolls are too high
 - Not enough time savings
 - Time savings not worth the toll cost
 - [If not NTTA user] Opposed to toll roads in general
 - [If not NTTA user] Opposed to paying tolls
 - Other, please specify

[Note: Answers are shown in random order.]



- 50. [If selected at least one time shift option] In at least one of the games you chose to travel during the off-peak period. Would you be more likely to travel <u>before</u> <peak start time> or <u>after</u> <peak end time>? [shftdir]
 - Travel before <peak start time>
 - Travel after <peak end time>
- 51. [If no ETC and selected at least one tolled option] Earlier you said you would use the toll route if your trip took <<u>travel time from experiment</u>> and cost <<u>toll from experiment></u>. [getetc]

Two methods would be available for paying the toll:

- **Using a TollTag transponder:** TollTag customers pay tolls electronically from a pre-paid account by placing a TollTag transponder sticker on their vehicles' windshields. Each time the TollTag passes through a toll lane, the toll is deducted from the account.
- **Using ZipCash:** When a vehicle without a TollTag drives through tolling points, high-speed cameras take digital images of the license plate, and the toll bill is mailed to the registered owner of the vehicle. ZipCash customers pay toll rates that are 50% higher than TollTag customers. A premium is added to each toll to cover the costs of processing.

If the toll for your trip using an ETC transponder (TollTag, TxTag, EZ TAG, etc.) was <u><toll from</u> <u>experiment></u>, but <u><toll + 50% surcharge></u> if you paid using ZipCash, how would you pay the toll?

- Very likely to get a TollTag account to pay the toll
- Somewhat likely to get a TollTag account to pay the toll
- Not sure
- Somewhat likely to pay with ZipCash
- Very likely to pay with ZipCash
- 52. [If not somewhat or very likely to pay the toll with TollTag] What is the main reason why you are not likely to get a TollTag transponder? [ynoetc]
 - Do not know enough about electronic toll collection
 - Won't use the toll road often enough
 - Do not want a transponder in my car
 - Do not want to prepay tolls
 - Too expensive to get a TollTag
 - Concerned about privacy of a TollTag account
 - Too difficult to maintain TollTag account
 - Other, please specify:

[Note: Answers are shown in random order.]



- 53. In addition to toll cost, travel time, and the possibility of delay, which of the following are important to you when deciding which route to take when making your <purpose> trip? [reasons] Please select all that apply.
 - Roads are well maintained
 - Roads are well lit at night
 - There are the fewest number of traffic lights and stop signs on my route
 - It is the easiest route for me to drive
 - The route is the most direct way between my starting and ending locations
 - I feel safe while driving on my route
 - There are signs providing real-time information on traffic conditions
 - The maximum speed limit
 - None of the above

[Note: Answers are shown in random order.]

54. [If more than one reason selected] Of the options you selected on the previous screen, which is the <u>most important</u> to you when deciding which route to take when making your <purpose> trip? [primreason]

[Reasons selected in the previous question shown.]

- 55. How strongly do you agree or disagree with each of the following statements? [delayatt]
 - I would be willing to pay a toll if it guarantees a reliable travel time for my trip every day
 - It bothers me when traffic congestion adds 15 or 20 minutes to my trip
 - I regularly change my driving schedule in order to avoid traffic congestion
 - I regularly change my route in order to avoid traffic congestion
 - Traffic congestion is just a way of life in the Dallas/Fort Worth area and something you learn to live with

[Note: Statements are shown in random order.]

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

[Note: The orders of the attitudinal responses are random across respondents.]

- 56. How strongly do you agree or disagree with each of the following statements? [tollatt]
 - I will use a toll route if the tolls are reasonable and I save time
 - I support using tolls to pay for highway improvements that relieve congestion
 - I can generally afford to pay tolls

[Note: Statements are shown in random order.]

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly agree

[Note: The orders of the attitudinal responses are random across respondents.]



- 57. How has your travel changed, if at all, because of increases in gasoline prices? [gas] Please select all that apply.
 - Make shorter trips
 - Make fewer trips
 - Eliminate certain trips
 - Use more direct routes
 - Use less congested routes
 - Combine trips (shopping on the way home from work)
 - Carpool or share rides with friends, family, or coworkers
 - Use transit more
 - Walk or bike more
 - Use a more fuel efficient vehicle
 - Other, please specify:
 - Travel has not changed because of gas prices
- 58. Remember back to when you played those 8 games about travel options. How strongly do you agree or disagree with each of the following statements? [surveng]
 - The travel options I was presented with were realistic
 - I was able to fully understand how to choose a travel option
 - The choices made during the games are how I would behave in real life

[Note: Statements will be shown in random order.]

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly agree

[Note: The orders of the attitudinal responses are random across respondents.]

2.3.4 Traveler Information

59. You're almost done! Before we conclude the survey, we would like to have some general information about you.* [demographics]

*Note: The answers provided in this questionnaire will never be linked back to you. This information is only used to understand if we have received a representative sample of the region's population.

- 60. What is your gender? [demographics.gender]
 - Female
 - Male



- 61. What is your age? [demographics.age]
 - 16-17
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65-74
 - 75 or older
- 62. What is your employment status? [demographics.employ]
 - Employed full-time
 - Employed part-time
 - Self-employed
 - Student
 - Student and employed
 - Homemaker
 - Retired
 - Not currently employed
- 63. How many people live in your household? [demographics.hhsize]
 - 1 (I live alone)
 - 2 people
 - 3 people
 - 4 people
 - 5 or more people
- 64. How many vehicles are there in your household? [demographics.numveh]

Please include all cars, pickup trucks, minivans, and motorcycles that you own or lease.

- 0 (no vehicles)
- 1 vehicle
- 2 vehicles
- 3 vehicles
- 4 vehicles
- 5 or more vehicles


- 65. What is your annual household income? [demographics.income]
 - Less than \$25,000
 - \$25,000-\$49,999
 - \$50,000-\$74,999
 - \$75,000-\$99,999
 - \$100,000-\$124,999
 - \$125,000-\$149,999
 - \$150,000-\$174,999
 - \$175,000-\$199,999
 - \$200,000-\$249,999
 - \$250,000 or more
- 66. What is your home ZIP code? [zip]
- 67. Thank you for your answers. You now have the opportunity to enter a sweepstakes for one of several <iPads[™]/iPod nanos[™]>.

Would you like to be entered in the sweepstakes for an <iPad[™]/iPod nano[™]>?* [drawing]

- Yes
- No
- 68. [If yes] Contact Information*: [drawing.name/addr/etc.]

Name:
Address 1:
Address 2:
City/Town:
State:
ZIP code:
Email address:

*Note: This promotion is governed by Vermont law and is void where prohibited by the laws of any other state. Employees, consultants, and family members of the NTTA or the NTTA System Wide Travel Study are not eligible for the sweepstakes.

The answers provided in this questionnaire will never be linked back to you. This information will be kept confidential and only used for the purpose of this drawing.

69. Thank you for your input. If you have any additional comments please enter them in the box below and click "End Survey". [comment]

Otherwise, click "End Survey" to exit the survey.

70. Thank you for taking the time to complete this survey. All of your responses have been saved, so you may now exit your browser. [end]

This survey is conducted by:

Resource Systems Group, Inc. (<u>http://www.rsginc.com/</u>)

For Wilbur Smith Associates (<u>http://www.wilbursmith.com/</u>)

With help from Baez Consulting (<u>http://baezconsulting.com/</u>)

On behalf of: The North Texas Tollway Authority (<u>http://www.ntta.org/</u>)



3.0 EXPERIMENTAL DESIGN

The experiments seen in the Games section of the survey were constructed according to an orthogonal experimental design, which ensured that the information was collected from respondents in a statistically efficient manner. The values of the attributes for each alternative seen were varied around a based value according to this design. These base value inputs were either directly reported by the respondent, or inferred from their responses to questions in the Trip Details section of the survey.

The inputs to the stated preference scenarios were:

- Travel time directly reported by the respondent
- Highway distance inferred from the respondent's cross-street selections
- Current toll directly reported by the respondent
- Time of day (peak/off-peak trip) inferred from the respondent's departure time
- Type of facility used inferred from the respondent's facility selection(s)

The experimental design varied these inputs by applying a level, or series of levels to the inputs. These levels can be seen in Table 1. To help construct realistic scenarios, a separate set of levels was developed for respondents who only used – or only would have used – NTTA bridges or tunnels on their reported trip (Table 2). Also, the value for the travel time attribute of an alternative was never allowed to fall below 7 minutes. Similarly, the cost attribute was bounded between \$0.25 and \$10.00. Separate levels were also developed for trips occurring during the peak and off-peak periods, and are displayed in parentheses in the following tables.

Attribute	Alternative	Levels		
		Travel time * 1.00		
	Current Douto	Travel time * 1.05		
	Current Route	Travel time * 1.10		
Travel Time		Travel time * 1.15		
		Travel time – Highway Distance * 0.25		
	Altornata Tall Douto	Travel time – Highway Distance * 0.45		
(minutes)	Alternate Toll Route	Travel time – Highway Distance * 0.65		
		Travel time – Highway Distance * 0.85		
	Alternate Toll Route with Departure Time Shift	Alternative Toll Route Travel Time – 0		
		Alternative Toll Route Travel Time – 3		
		Alternative Toll Route Travel Time – 6		
		Alternative Toll Route Travel Time – 9		
		10% (10%)		
		20% (30%)		
Reliability	Current Route	30% (50%)		
(inequency)		40% (70%)		
	Alternate Toll Route	10%		

Table 1: Attribute Levels



		20%			
		10%			
		20%			
		10%			
	Alternate Toll Route	20%			
	with Departure Time Shift	10%			
		20%			
		5 (10)			
		8 (15)			
	Current Route	11 (20)			
		14 (25)			
		2			
Reliability		4			
in minutes)	Alternate Toll Route	6			
		8			
	Alternate Toll Route with Departure Time Shift	1			
		2			
		3			
		4			
	Current Route	Current Toll			
		Current Toll + Highway Distance * 0.025			
		Current Toll + Highway Distance * 0.075			
		Current Toll + Highway Distance * 0.125			
		Current Toll + Highway Distance * 0.175			
	Alternate Ton Route	Current Toll + Highway Distance * 0.225			
Cost (dollars)		Current Toll + Highway Distance * 0.275			
(000000)		Current Toll + Highway Distance * 0.325			
		Current Toll + Highway Distance * 0.375			
		Alternative Toll Route Cost * 0.4			
	Alternate Toll Route	Alternative Toll Route Cost * 0.6			
	with Departure Time Shift	Alternative Toll Route Cost * 0.8			
		Alternative Toll Route Cost * 1.0			
		-			

Table 2: Attribute levels – Bridge- and Tunnel-Only Users

Attribute	Alternative	Levels
		Travel time + Number of Bridges * 1
Travel Time (minutes)	Current Route	Travel time + Number of Bridges * 2
(Travel time + Number of Bridges * 3



		Travel time + Number of Bridges * 4			
		Travel time – Number of Bridges * 2			
	Alternate Toll Route	Travel time – Number of Bridges * 4			
		Travel time – Number of Bridges * 6			
		Travel time – Number of Bridges * 8			
		Alternative Toll Poute Travel Time – Number of Bridges * 1			
	Alternate Toll Route	Alternative Toll Notice Havel Time – Number of Bridges * 2			
		Alternative foil Route Travel Time – Number of Bridges * 2			
	with Departure Time Shift	Alternative Toll Route Travel Time – Number of Bridges * 1			
		Alternative Toll Route Travel Time – Number of Bridges * 2			
		10% (10%)			
	Current Pouto	20% (30%)			
	Current Route	30% (50%)			
		40% (70%)			
		10%			
Reliability	Alternate Toll Route	20%			
(frequency)		10%			
		20%			
	Alternate Toll Route with Departure Time Shift	10%			
		20%			
		10%			
		20%			
		3 (5)			
	Current Route	6 (10)			
	Guirent Route	9 (15)			
		12 (20)			
Deliebility		2			
(amount of delay	Alternate Toll Route	4			
in minutes)		6			
		8			
		1			
	Alternate Toll Route	2			
	with Departure Time Shift	<u>з</u>			
	Current Route	Current Toll			
Cost		Current Toll + Number of Bridges * 0.25			
(dollars)	Alternate Toll Route	Current Toll + Number of Bridges * 0.50			
	Internate Fon Route	current for a runnber of bridges 0.50			



		Current Toll + Number of Bridges * 1.00
		Current Toll + Number of Bridges * 1.25
		Current Toll + Number of Bridges * 1.50
		Current Toll + Number of Bridges * 1.75
		Current Toll + Number of Bridges * 2.00
		Alternative Toll Route Cost * 0.4
	Alternate Toll Route	Alternative Toll Route Cost * 0.6
	with Departure Time Shift	Alternative Toll Route Cost * 0.8
		Alternative Toll Route Cost * 1.0

4.0 SURVEY LOGIC CHART

Provided with this appendix is a logic chart outlining the branching logic structure of the NTTA System-Wide Travel Survey. It is a useful reference for reviewing the potential "paths" a respondent could take through the survey.

If the first trip described by the respondent did not qualify for the SP survey they were asked to describe a second, eligible trip. Respondents then answered the Trip Details questions again. To reflect this potential repeat in questions, the survey logic chart prepends "od_" to the page and variable name of the questions that are potentially repeated.



























NTTA System-Wide Stated/Revealed Preference Travel Survey

Appendix B – Screenshots

July 2011

DATA ANALYSIS SOLUTIONS

TABLE OF CONTENTS

1.0	SURVEY ENTRY	1
2.0	ENGLISH SURVEY	2
2.1	Trip Details	2
2.2	Games/Stated Preference Experiments	20
2.3	Opinions	28
2.4	Traveler Information	33
3.0	Spanish Survey	
3.1	Trip Details	36
3.2	Games/Stated Preference Experiments	54
3.3	Opinions	63
3.4	Traveler Information	69



1.0 SURVEY ENTRY

All survey pages included a North Texas Tollway Authority (NTTA) header as seen in *Language*, but have been omitted in other screen captures for simplicity.





2.0 ENGLISH SURVEY

2.1 Trip Details

Project Information and Instructions

Project Information
Did you know that your travel habits help shape transportation planning decisions in your area?
It's true. The North Texas Tollway Authority (NTTA) is looking for ways to improve mobility and offer better services to travelers in the North Texas region. Your responses to this survey will be used to improve transportation in the region.
Survey Information
The first section of this survey will ask you some questions about a recent trip you've made in the area and takes about 5 minutes to complete. After completing this section, you will have the opportunity to enter a sweepstakes for an Apple iPod nano™*, or answer some additional questions and be entered into a sweepstakes for an Apple iPad 2™*. This second section of the survey takes about 15 more minutes to complete.
Survey Instructions
Please use the "Next Question" button in the lower left corner of the screen to go forward. If you back up to change an answer, please be sure to click "Next Question" to continue forward. It is important that you do NOT use your web browser's "forward" button because your new answers will not be recorded.
To review a previous question, use the browser's "back" button, which is the left-pointing arrow in the upper left œrner of the screen.
Please dick "Next Question" to begin.
*Note: This promotion is governed by Vermont law and is void where prohibited by the laws of any other state. Employees, consultants, and family members of the NTTA or the NTTA System Wide Travel Study are not eligible for the sweepstakes.
The answers provided in this questionnaire will never be linked back to you. This information will be kept confidential and only used for the purpose of this drawing.
Next Question



Trip Details

ase think of your	most recent one	way automobi	ile trin that w	as made:	the second se
In the North Te	exas area (see map	b)		as made.	
On a weekday	(Monday – Friday)				
During the past	t two weeks				
would like to as	k you about the de	etails of this tri	p.		1 + 1 + M
					Click to enlarge
1. What day	of the week did	you make you	ır most rece	nt weekday trip	in the North Texas area?
Pleas	se Specify 👻				
2. What tim	e did you begin y	our trip?			
	I bega	in my trip at: P	lease slide t	he blue box to :	select a value.
	6:0	00 am 9:00	am noo	n 3:00 pm	6:00 pm
3. Did vour	trip begin at hom	e?			
Dian	Charify -				
Pleas	se specify •				
	A CONTRACTOR OF A CONTRACTOR A				
4. What typ	e of vehicle were	you driving?			
4. What typ	e of vehicle were se Specify	you driving?		•	
4. What typ Pleas	e of vehicle were se Specify yourself, how m	you driving?	ere in vour v	•	
4. What typ Pleas 5. Including Pleas	e of vehicle were se Specify yourself, how m	e you driving? any people we	ere in your v	▼ ehicle?	
4. What typ Pleas 5. Including Pleas	e of vehicle were se Specify yourself, how m se Specify 🗸	any people we	ere in your v	• ehicle?	
4. What typ Pleas 5. Including Pleas 6. What was	e of vehicle were se Specify yourself, how m se Specify the main purpo	e you driving? any people we se of your trip	ere in your v ?	▼ ehicle?	
4. What typ Pleas 5. Including Pleas 6. What was Pleas	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify	e you driving? any people we se of your trip	ere in your v ?	• ehicle?	-
4. What typ Pleas 5. Including Pleas 6. What was Pleas	e of vehicle were se Specify yourself, how m se Specify s the main purpose se Specify	e you driving? any people we se of your trip	ere in your v ?	• ehicle?	T
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What mag	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify jor roadway(5) d	any people we se of your trip id you use as	ere in your v ? part of this t	• ehicle? rip?	-
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What ma	e of vehicle were se Specify yourself, how m se Specify s the main purpose se Specify jor roadway(s) d e list up to three m	any people we se of your trip id you use as najor roadways	ere in your v ? part of this t s (ex. Main St	• ehicle? rrip? rreet, Preston Ro	▼ ad, 1H635 and Luna Road)
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What may Please A.	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify jor roadway(s) d e list up to three m	any people we se of your trip id you use as najor roadways	ere in your v ? part of this t s (ex. Main St *Required	■ ■<	• ad, IH635 and Luna Road)
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What may Please A. B.	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify jor roadway(s) d e list up to three m	e you driving? any people we se of your trip id you use as najor roadways	ere in your v ? part of this t s (ex. Main St *Required	• ehicle? rip? reet, Preston Ro	• ad, IH635 and Luna Road)
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What ma Pleas A. B. C.	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify jor roadway(s) d e list up to three m	e you driving? any people we se of your trip id you use as najor roadways	ere in your v ? part of this t s (ex. Main St *Required	• ehicle? rip? reet, Preston Ro	• ad, IH635 and Luna Road)
4. What typ Pleas 5. Including Pleas 6. What was Pleas 7. What may Pleas A. B. C.	e of vehicle were se Specify yourself, how m se Specify the main purpose se Specify jor roadway(s) d e list up to three m	e you driving? any people wo se of your trip id you use as najor roadways	ere in your v ? part of this t s (ex. Main St *Required	• ehicle? rip? reet, Preston Ro	• ad, IH635 and Luna Road)



Trip Origin Address

Trip Details					
Where did your trip be	egin?*				
Please enter a busines below.	s name, ai	n address (with stre	et numb	er), or the neare	est intersection in the boxes
If you do not know this rather use a map."	informatio	on or you would pre	fer to fin	d the location on	a map, please select "I would
📃 I would rather use	a map				
Find a Business (option	nal)				
Address or Intersection	on				
(Examples: 2301 Flora St	, or Flora St	and Pearl St)			
City		State Zip Code			
Search	in formatio	n will be kent strict	y confide	antist and will only	who used for this survey. Your
*Note: Your	Informatio	n will be kept strict	y confide	ential and will onl	y be used for this survey. Your



Trip Origin Interactive Map





Trip Destination Address

The Details				
/here did your trip <mark>end</mark> ?*				
lease enter a business name, a ou do not know this informatior se a map."	n address (with street n or you would prefer t	number), o find the	or the nearest int location on a map	ersection in the boxes below. If , please select "I would rather
I would rather use a map				
ind a Business (optional)				
ddress or Intersection				
xamples: 2301 Flora St, or Flora St	and Pearl St)			
ity	State Zip Code			
Search				
*Noto: Your information	n will be kept strictly c	onfidentia	al and will only be u	ised for this survey. Your



Trip Destination Interactive Map



If Describing a Round-Trip – Location Warning





Trip Confirmation

Trip Details						
ased on your answers, it looks like yo	ur trip started	at the 🖗 mark	ker and end	led at the	marker.	
re these starting and ending location	ns correct?					
Yes, these locations are correct		Park		280	(190)	T P
No, I need to change my starting o	or ending	190		209		(190)
10040011		2 m m	Airport		15	
		Carrol	Iton Addis	on 289)	Richardson	Ruckpa
		Farmers Branch			Buckingham	Creeks de
			Lyndon B J	ohnson Fwy		Village
		5773		Pres	Audelia Fo	rest Ln Ga
		I IIII	Preston	ton Rd	635 AI	meta, Bonite
			Hollow	75		S Bella Vista
			Call to	University Park	(244)	78 6
		SP 8	Dallas	Highland		
			ove Field			
		The sea of	emmons A	Dalla	s	30
		1	my [77	3	67 ERL Thornton	FWY Hi-po
		Google		30	Map dat	12011 Goog
Next Question						



Trip Frequency

How	often do you make this same tri	p in this direc	tion on <mark>we</mark>	ekdays only?	
6	or more times per week				
4	-5 times per week				
2.	-3 times per week				
0 1	time per week				
2-	-3 times per month				
0 1	time per month				
C Le	ess than 1 time per month				
How	often do you make this same tri	p in this direc	tion on <mark>w</mark> e	ekends?	
M	1ore than 3 times per weekend				
2.	-3 times per weekend				
1	time per weekend				
2	-3 times per month				
1	time per month				
C Le	ess than 1 time per month				
0 N	lever				
Nex	ext Question 📦				

o you a anspon	urrently have a TollTa der* in your car for el	g (Dallas/Fort Worth ectronic toll collectio	n), TxTag, EZ on (ETC)?	TAG (Houston)	, or other type of
Yes, I	have a TollTag				
) Yes, I	have a TxTag				
) Yes, I	have an EZ TAG				
) Yes, I	have another type of t	ransponder, please s	pecify:]
No,I	do not currently have a	ny type of transpond	er		
•	Note: An electronic toll of your vehicle. W the account inform	payment device is a sticke hen your vehicle passes th nation contained in the devi	r or plastic box t rough a highway ice. The appropr	ype electronic device toll plaza/gantry, an a iate toll is then deduc	e that is mounted inside the windshiel antenna at the toll plaza/gantry reads ted from your prepaid account.



Survey Continuation

Trip Details				
Thank you for your answers so fa	r. You now have two	options:		
 Continue the survey and en trip you just described. Take 	ter a sweepstakes for a sweepstakes for a sweepstakes for a solut 15 minutes	or an iPad	2™ device by an	swering some questions about the
2. Answer just a few more Trav Takes about 2 minutes	veler Information que	estions an	id enter a sweep:	stakes for an iPod nano™.
Would you like to continue the s	urvey and have the	e chance t	o win an iPad 2"	M?
Yes, continue the survey				
No, bring me to the Traveler I	nformation section			
Next Question				



If Trip Described Is Not Eligible – Stated & Revealed Preference Trip Eligibility





Travel Time

Trip Details					
Approximately how le ended?	ong did it take	e you, door-to-do	oor, to drive fr	om w here you	r trip began to where your trip
lease include only the he way.	e time you spe	ent driving and no	t the time you	spentatany s	tops you may have made along
Door-to-door, my	y trip took: Ple	ease slide the blu	e box to selec	ta value.	
30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	

If Travel Time Is Too Long/Short – Travel Time Warning

Based on the locations you provided earlier, it appears that your time of 2 hours and 50 minutes is significantly longer than what we estimate it should take to make your trip. Remember, we are just asking about your trip in one direction only. Do you need to change your reported time? Yes No	Trip Details				
Remember, we are just asking about your trip in one direction only. Do you need to change your reported time? Yes No	Based on the locations you prov longer than what we estimate it	ided earlier, it appear should take to make	rs that your 9 your trip.	time of 2 hours	s and 50 minutes is significantly
Do you need to change your reported time? Yes No	Remember, we are just asking a	bout your trip in <mark>one</mark>	direction o	nly.	
 Yes No 	Do you need to change your re	ported time?			
◎ No	Yes				
	O No				

If Respondents Needs to Change Reported Travel Time – Travel Time (Revised)

Trip Details					
ease tell us how lor	n <mark>g your trip</mark> to	ook, door-to-doo	r in one direct	ion only.	
Door-to-door, my	trip took:Ple	ase slide the blu	le box to selec	t a value.	
30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	
Next Question 📦					



Delay

id you e	encounter any delay d	ue to traffic during y	our trip?	
Yes				
No				

If Experienced Delay – Travel Time without Delay

id you encounter an	y delay due t	o traffic during y	our trip?			
Yes						
) No						
ou reported your trip	took 40 minut	es with some dela	av due to cona	estion.		
there were no delay	ve due to con	aestion how lon	a would this t	rin havo takor	VOU2	
there were no dela	ys due to con	gestion, how lon	g would this t	rip have taken	you?	
there were no dela Nith no delay, my trip	ys due to con would take: P	gestion, how lon lease slide the b	g would this t lue box to sel	rip have taken ect a value.	you?	
i there were no dela With no delay, my trip 30 minutes	ys due to con would take: P 1 hour	gestion, how lon lease slide the b 1.5 hours	g would this t lue box to sel 2 hours	rip have taken ect a value. 2.5 hours	ı you?	
With no delay, my trip	ys due to con would take: P 1 hour	gestion, how lon lease slide the b	g would this t lue box to selv 2 hours	rip have taken ect a value. 2.5 hours	ı you?	

Avoiding Delay





If Traveled Outside the Peak to Avoid Congestion – Optimal Trip Time

arlier, you /hich was o	reported that yo outside of rush h	ou began thi ours (6:30 -	s trip at 5 9:00 AM c	55 AM. Did	you choose to lea 0 PM), to avoid d	ave for this trip at 5:55 AM, lelays due to traffic conditions
) Yes, I ma	ide my trip outsid	e of rush hou	r to avoid	traffic conge	stion	
) No, I wou	ıld have made my	trip outside	of rush hou	ır regardless	of traffic	
there was the this tr	no traffic conge ip?	stion at any	time duri	ng the day,	what time would	you have most preferred to
would have	preferred to leav	re at: Please	slide the	Dive box to	select a value.	
would have	preferred to leav 6:00 am	9:00 am	noon	3:00 pm	6:00 pm	

Amount Earlier/Later Could Have Started Trip

	nstructions
	or these questions, keep in mind any constraints you have, such as employer policies, coordination with family iembers, and your personal preference.
Yo	reported leaving for your company business trip at 5:55 AM. If road and traffic conditions were not a tor, how much earlier could you have made your trip?
0	Not at all earlier
0	Up to 15 minutes earlier
0	Up to 30 minutes earlier
0	Up to 1 hour earlier
0	Up to 2 hours earlier
0	More than 2 hours earlier
ſf	bad and traffic conditions were not a factor, how much later could you have made your trip?
0	Not at all later
0	Up to 15 minutes later
0	Up to 30 minutes later
0	Up to 1 hour later
0	Up to 2 hours later
~	More than 2 hours later



NTTA Facilities Used

Please co	ntinue to think about following roads?	the one-way trip yo	u have bee	n describing. WI	hen making this trip, did you us
Please sele	ect all that apply.				
📃 Addiso	on Airport Toll Tunnel				
📃 Dallas	North Tollway				
Lewisy	ville Lake Toll Bridge				
Mount	ain Creek Lake Toll Bri	dge			
Presid	ent George Bush Turn	pike (PGBT)			
	Western Extension (SH	H 161)			
Sam R	ayburn Tollway (SH 12	21)			
	ot use any of these re	ade on the trip I'm d	escribing		

If Used More Than One NTTA Facility – First Road

Trip Details		
Which tollway did you get on first?		
🖱 Addison Airport Toll Tunnel		
🗇 Dallas North Tollway		
🕤 Lewisville Lake Toll Bridge		
🔘 Mountain Creek Lake Toll Bridge		







If Used A Toll Road – Onramp and Offramp

which cross stre	et did you get on and off the Dal	las North Tollway?	
I got on at:	Please Specify	•	
I got off at:	Please Specify	-	

Travel Time Using Next Best Non-Toll Route

Trip Details					
Imagine the NTTA rout How long do you thin	es you used v k it would tak	vere <mark>unavailable</mark> se to make your s	for your trip a	nd you had to i g the next bes	use the next best non-toll route. t non-toll route?
Please think of a route Using the next best n This trip w	that does not i on-tolled road ould take: Ple	ndude any toll roa 1 ase slide the blu	ads, toll bridges ie box to selec	or toll tunnels. t a value.	
30 minutes	1 hour	1.5 hours	2 hours	2.5 hours	
Next Question 📦					

If Used an NTTA Facility – Tolls

Trip Details			Traveler Information
Still thinking about the one-way p	part of the trip you	ı made on Tuesday	
Did you pay any tolls?			
Yes			
No			
Next Question			



If Paid Tolls on Trip – Toll Amount and Reimbursement

Trip Details					
Still thinking about th	ie one-way pa	rt of the trip yo	u made on Mon	day	
Did you pay any tolls	?				
• Yes • No					
How much did you pa	y in tolls?				
If you are unsure, pleas	se give your be	st estimate as to	how much you p	paid in tolls.	
	I paid: Ple	ase slide the blu	e box to select	a value.	
\$1.00	\$2.00	\$3.00	\$4.00	\$5.00	
Who paid the toll for	this trip?				
I paid the toll					
I paid the toll, but	it will be reimb	ursed			
Someone else paio	d the toll				
Next Question					

If Did Not Use an NTTA Route – Alternate Toll Route

	Trip Details					
Imagi roads.	ne your current route . If you did not have t	e was <mark>un</mark> to pay a	available for yo toll, which road	ur trip and (s) would	l you had to use o you use to make	one or more of the following toll your trip?
Ad	ldison Airport Toll Tunr	nel			-	
🔳 Da	allas North Tollway					
📃 Le	wisville Lake Toll Bridg	je				
Mo	ountain Creek Lake To	ll Bridge				
Pre	esident George Bush ⁻	Turnpike	(PGBT)			
PG	GBT Western Extensior	n (SH 16:	1)			
📃 Sa	m Rayburn Tollway (S	H 121)				
Do	on't know					
	ne of the above					



If Has an Alternate Toll Route – Alternate Toll Route Travel Time

Trip Detail:	s he NTTA route:	Games s below to make	this trip you j	Opinions ust described,	Traveler Inform	mation do you
Your said your trip Addison Airport To Dallas North Tollw Lewisville Lake To	p could have u pll Tunnel vay pll Bridge	sed:	one way ap			
This trip v	would take: Ple	ase slide the blu	e box to selec	t a value.		
30 minutes	1 hour	1.5 hours	2 hours	2,5 hours		
Next Question)					

If Has an Alternate Toll Route – Alternate Toll Route Onramp and Offramp

hich cross street wo	ould you get on and	off the Sam Ra	yburn Tollway (SH	121), if you used it for your t
I would get on at:	Please Specify	•		
I would get off at:	Please Specify	-		

If Did Not Use an NTTA Route – Reasons Why

Trip Details		Games		Opinions	Traveler Information
What is the main reas	on why you	did not use any l	III A facili	ties on your trip	2
Ourrent route is mo	ore reliable				
Toll route is a longe	er route				
🔘 Did not want to pa	y toll				
🔵 There is no NTTA to	ll road availa	able for my trip			
🔵 Current route is mo	ore convenier	nt			
🖱 Had to make intern	nediate stops	5			
🔵 It is too congested					
Tolls are too high					
Next Question					



Sources of Information before Trip

	Trip Details					
Which trip?	n of the following re	sources, i	f any, did you co	nsult for i	nformation abou	t traffic conditions <mark>before</mark> your
Please	select all that apply.					
🔳 тv						
🗐 Int	ternet (Google Maps	, Map Que	st, news station	website, e	tc.)	
📃 Ra	dio					
Ce	ell phone (text messa	ge or oth	er phone service))		
🖻 W	ord of mouth (talking	to a frien	d, colleague, etc.	on the ph	ione)	
GP	'S unit					
🔳 ot	ther, please specify:					
	and of the shows					

If Used Sources of Information before Trip – Changes to Travel Plans

Trip Details	Games			
After getting information abo	ut traffic conditions, i	n what wa	ıy, if any, did you	change your travel plans?
Please select all that apply.				
📕 Began my trip at a new tim	ie			
📕 Changed where I was goir	ng (went to a different	location)		
Decided to carpool instead	of drive alone			
🔲 Used a different road/rout	e than originally planne	ed		
The information about traf	fic conditions did not af	fect my tra	volplane	



Sources of Information Used During Trip

Which trip?	n of the following resour	ces, if any, did you	ı consult for iı	nformation about	traffic conditions durin	g your
Please	e select all that apply.					
Ra	adio					
Ce	ell phone (text message o	r other phone serv	ice)			
w	ord of mouth (talking to a	friend, colleague,	etc. on the ph	one)		
Ele	ectronic message signs al	ong the roadway				
🗐 GP	2S unit					
🔳 ot	ther, please specify:					
	and of the above					

2.2 Games/Stated Preference Experiments

Willingness to Pay – Version A

Trip Details					
Purpose: Compa	ny Business	1			
Day of week: Tuesda	av				
Travel time: 1 hour	and 10 minutes				
Travel time: 1 hour	and 10 minutes				
Travel time: 1 hour	and 10 minutes amount you wou	ıld be willing	to pay to save	16 minutes on	ı your trip?
Travel time: 1 hour	and 10 minutes amount you wou would pay: Please	IId be willing	to pay to save ue box to selec	16 minutes on	ı your trip?
Travel time: 1 hour	and 10 minutes amount you wou would pay: Please	ld be willing a slide the bl	to pay to save ue box to selec	16 minutes on t a value.	ı your trip?



Willingness to Pay – Version B

rip Details					
Purpose: Wo	rk				
ay of week: We	dnesday				
Travel time: 1 h	our and 5 minut	tes			
at is the minim u I e	Im amount of the save: F	ravel time you would Please slide the blue	expect to save from	\$4.00 in tolls?	
at is the minimu I e	Im amount of t	ravel time you would Please slide the blue	expect to save from	\$4.00 in tolls?	

Stated Preference Instructions

Now we would like to pl	lav a set of eig	ht games with	vou Ead	ame will sho	wyouar	air of hypotheti	ical
travel options for makin the travel option that ye	g a one-way to ou prefer the n	rip similar to the nost under the	ne trip you condition	previously des s that are pres	cribed. Fo ented.	or each game, d	hoose
When making your decis	sion, please as	sume that:					
• The situation and a	Iternatives sho	wn on each s	creen are	hypo the tical			
 The options shown are available to you 	are the only o now.	ptions availat	ole to you,	even if they are	e differen	t than the optio	ns that
 All other costs asso 	ciated with yo	ur trip will rem	ain the sa	me as they are	now.		
The <mark>travel times, amou</mark>	i <mark>nt of delay</mark> , ar	nd <mark>toll</mark> will cha	nge with e	ach game.			
Please look at the value for your trip.	es closely and o	choose the op	tion that y	ou most prefer	if these o	options were av	ailable


















	Imagine these were the only optio How would y	ons available to yo /ou travel?	ou for your trip.
Your	current toll route	A	o screen. \lternate toll route
Travel time:	1 hr. 6 mins.	Travel time:	40 mins
Reliability: C)n average <mark>1</mark> in 10 trips take an extra <mark>11 mins.</mark>	Reliability:	On average <mark>1</mark> in 10 trips take ar extra <mark>6 mins</mark>
Toll Cost:	\$2.00	Toll Cost:	\$2.60
) I prefer this option) I prefer this option
			Question 1 of 8

	Note: Highlighted informa	tion may have cha	nged.
Your current	toll route	AI	lternate toll route
Travel time:	1 hr.	Travel time:	40 min:
Reliability: On averag	e 4 in 10 trips take an extra <mark>5 mins.</mark>	Reliability:	On average <mark>2</mark> in 10 trips take a extra <mark>4 min</mark>
Toll Cost:	\$2.00	Toll Cost:	\$3.8
🔘 I pre	efer this option) I prefer this option



Off-Peak Trip Experiment II

Off-Peak Trip Experiment III

	How would y Note: <mark>Highlighted</mark> informa	ou travel? tion may have chang	ged.	
You	r current toll route	Alto	ernate toll route	
Travel time:	1 hr. 9 mins.	Travel time:	44 mins	
Reliability:	On average <mark>4</mark> in 10 trips take an extra <mark>8 mins.</mark>	Reliability:	On average 2 in 10 trips take a extra 4 mins	
Toll Cost:	\$2.00	Toll Cost:	\$6.2	
	\bigcirc I prefer this option) I prefer this option		

	How would y Note: <mark>Highlighted</mark> informa	ou travel? tion may have cha	anged.
Your cu	rent toll route	A	lternate toll route
Travel time:	1 hr. 3 mins.	Travel time:	44 mins
Reliability: On a	verage <mark>1</mark> in 10 trips take an extra <mark>14 mins.</mark>	Reliability:	On average <mark>1</mark> in 10 trips take a extra <mark>6 mins</mark>
Toll Cost:	\$2.00	Toll Cost:	\$5.0
e) I prefer this option) I prefer this option



Resource Systems Group, Inc. July 2011

Off-Peak Trip Experiment IV

2.3 Opinions

If Never Chose the Alternate Toll Route – Reasons Why Not

 If Pletails
 Games
 Opinions
 Traveler Information

 What is the main reason why you never selected the alternate toll route in any of the eight games?
 Not enough time savings

 Not enough time savings
 Time savings not worth the toll cost

 Tolls are too high
 It is too congested

 Other, please specify:
 Next Question

If Chose the Time Shift Alternative – Travel Before or After the Peak

1		$> \checkmark$			Opinions	Traveler Information
In at lea	ast one of the gam 5:30 AM or <mark>after</mark> 8	nes you chos 3:30 AM?	e to travel o	during the of	f-peak period. W	ould you be more likely to travel
Trav	el before 6:30 AM					
🔘 Trav	el after 8:30 AM					
Next	Question 📦					



ŀ	f Does Not have an	FTC Device and	Chose the Alternate	Toll Route - Likelihoo	d of Pavina by ETC
IJ	j Does Not have an	I LIC Device unu	Chose the Alternute	TOIL NOULE - LIKEIIIIOO	I OJ PUVILIG DY ETC

Earlier you said you would use the toll route if your trip took 42 minutes and cost \$1.40.
Two methods would be available for paying the toll:
 Using a TollTag transponder: TollTag customers pay tolls electronically from a pre-paid account by placing a TollTag transponder sticker on their vehicles' windshields. Each time the TollTag passes through a toll lane, the toll is deducted from the account.
 Using ZipCash: When a vehicle without a TollTag drives through tolling points, high-speed cameras take digital images of the license plate, and the toll bill is mailed to the registered owner of the vehicle. ZipCash customers pay toll rates that are 50% higher than TollTag customers. A premium is added to each toll to cover the costs of processing.
If the toll for your trip using an ETC transponder (TollTag, TxTag, EZ TAG, etc.) was \$1.40, but \$2.10 if you paid using ZipCash, how would you pay the toll?
Very likely to get a TollTag account to pay the toll
Somewhat likely to get a TollTag account to pay the toll
Notsure
Somewhat likely to pay with ZipCash
Very likely to pay with ZipCash
Next Question

If Not Likely to Pay by ETC – Reasons Why Not

Whatis	the main reason	why you a	re not likely to	get a TollT	ag transponder?	
Dor	notknow enough a	about elect	ronic toll collect	ion		
🗇 W or	n't use the toll road	d often eno	ugh			
Dor	notwanta transpo	onder in my	car			
Dor	not want to prepay	y tolls				
Too	expensive to get	a TollTag				
Con	cerned about priva	acy of a Tol	Tag account			
🗇 Too	difficult to maintai	n TollTag a	count			
a oth	er, please specify:					



Reasons Considered When Choosing a Route

 Please select all that apply. There are signs providing real-time information on traffic conditions The maximum speed limit Roads are well maintained The route is the most direct way between my starting and ending locations It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	In addi when d	tion to toll cost, tr eciding which rou	avel time, a te to take w	nd the possib hen making y	ility of dela our person	ay, which of the f nal business trip?	ollowing are important to you
 There are signs providing real-time information on traffic conditions The maximum speed limit Roads are well maintained The route is the most direct way between my starting and ending locations It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	Please s	elect all that apply.					
 The maximum speed limit Roads are well maintained The route is the most direct way between my starting and ending locations It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	The	re are signs provid	ing real-time	information o	n traffic co	nditions	
 Roads are well maintained The route is the most direct way between my starting and ending locations It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	The	maximum speed li	mit				
 The route is the most direct way between my starting and ending locations It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	📃 Roa	ds are well mainta	ined				
 It is the easiest route for me to drive Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	The	route is the most	direct way be	etween myst	arting and e	ending locations	
 Roads are well lit at night There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	📃 It is	the easiest route	for me to dri	ve			
 There are the fewest number of traffic lights and stop signs on my route I feel safe while driving on my route None of the above 	Roa	ds are well lit at ni	ght				
I feel safe while driving on my route None of the above	The	re are the fewest i	number of tra	affic lights and	stop signs	on my route	
None of the above	📃 I fe	el safe while drivin	g on my rout	е			
	Nor	e of the above					
	Next	Question 📄					

If Selected More Than One Reason – Primary Reason

of the options you se route to take when m	elected on the previous making your personal bu	screen, which is the <mark>most import</mark> Isiness trip?	ant to you when deciding which
There are signs pr	oviding real-time inform	ation on traffic conditions	
🔵 The maximum spe	ed limit		



Attitudes toward Delay

	Strongly disagree	trongly Disagree Neutral			Strongly agree
	1	2	3	4	5
I regularly change my route in order to avoid traffic congestion	0	0	0	0	0
Traffic congestion is just a way of life in the Dallas/Fort Worth area and something you learn to live with	O	O	0	0	O
It bothers me when traffic congestion adds 15 or 20 minutes to my trip	0	0	0	0	0
I would be willing to pay a toll if it guarantees a reliable travel time for my trip every day	0	0	0	0	0
I regularly change my driving schedule in order to avoid traffic congestion	0	0	O	0	0

Attitudes toward Tolls

	Strongly disagree	Disagree	Agree	Strongly agree	
	1	2	3	4	5
I can generally afford to pay tolls	0	0	0	0	0
I will use a toll route if the tolls are reasonable and I save time	O	O	0	0	O
I support using tolls to pay for highway improvements that relieve congestion	0	0	0	0	0



Travel Changes Due to Gas Prices

How ha	s your travel changed,	if at all, because o	f recent increases	in gasoline pri	ces?
Please s	elect all that apply.			_	
🗐 W all	k or bike more				
Elim	inate certain trips				
📃 Use	less congested routes				
Com	bine trips (shopping on	the way home from	work)		
Mak	e shorter trips				
🗾 Use	more direct routes				
🔲 Use	transit more				
Mak	e fewer trips				
Carp	pool or share rides with	friends, family, or co	oworkers		
🔳 Use	a more fuel efficient veh	ide			
C Oth	er, please specify:				
Trav	vel has not changed beca	use of gas prices			
Next	Question 📦				

Survey Engagement

Remember back to when you played those 8 games ab lisagree with each of the following statements?	outtravel	options. How	w strongly o	lo you agre	e or
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
The choices made during the games are how I would behave in real life	0	0	0	0	0
I was able to fully understand how to choose a travel option	0	Ø	0	0	O
The travel options I was presented with were realistic	0	0	0	0	0



2.4 Traveler Information

Demographics

1. What is	our gender?				
Plea	se Specify 👻				
2. What is	our age?				
Plea	se Specify 👻				
3. What is	our employment statu	us?			
Plea	se Specify 🔹				
4. How man	y people live in your l	household?			
Plea	se Specify 👻				
6. What is	se Specify v our annual household	income?		ou own of rease.	
*Note:	he answers provided in this of we have received a represent	questionnaire will ntative sample of t	never belinked backtoyo he region's population.	ou. This information is on	ly used to understa
ext Question					



Next Question 📦

Sweepstakes

ould you like to be	entered in the				
		sweepstakes for	an iPad 2™?*		
Yes					
No					
*Note: swe	promotion is gove sultants, and famile epstakes.	erned by Vermont law a y members of the NTTA	nd is void where pro or the NTTA Systen	hibited by the laws on Wide Travel Study	of any other state. Employees, are not eligible for the
The	answers provided only used for the	in this questionnaire wi purpose of this drawing	l never be linked ba	ack to you. This info	rmation will be kept confidential

Contact Information

Trip De	etails 🗸 🗸	Games	Opinions	Traveler Information
Would vou like t	o be entered in the	sweepstakes for a	an iPad 2™?*	ines for one of several in au 25 .
O Yos				
No.				
Contact Informa	tion*:			
Name:				
Address 1:				
Address 2:				
City/Town:				
State:				
ZIP code:				
mail address:				
*Note:	This promotion is govern consultants, and family n sweepstakes.	ed by Vermont law and nembers of the NTTA o	is void where prohibited by the r the NTTA System Wide Trave	a laws of any other state. Employees, al Study are not eligible for the
	The answers provided in only used for the purpose	this questionnaire will of this drawing.	never be linked back to you. Th	is information will be kept confidential and
Next Question				



Comments



End Survey





3.0 SPANISH SURVEY

3.1 Trip Details

Project Information and Instructions

Información sobre el proyecto

¿Sabía que sus hábitos de viaje ayudan a forjar las decisiones sobre la planificación del transporte en su área?

Es verdad. North Texas Tollway Authority (NTTA) está tratando de aumentar la movilidad y de ofrecer mejores servicios para la gente que realiza viajes en el área del norte de Texas. Las respuestas de esta encuesta serán utilizadas para mejorar el transporte en esta región.

Información sobre la encuesta

La primera sección de la encuesta tomará unos 5 minutos y en ésta se le harán algunas preguntas acerca de un reciente viaje que haya realizado en la área. Después de completar esta sección, usted tendrá la oportunidad de participar del sorteo de un Apple iPod nano™*, ó puede responder algunas preguntas adicionales y participar del sorteo de un Apple iPad 2™*. Esta segunda sección de la encuesta tomará aproximadamente 15 minutos más.

Instrucciones de la encuesta

Por favor, para avanzar use el pulsador "Siguiente" ubicado en la esquina inferior izquierda. Si retrocede para cambiar una respuesta, por favor, asegúrese de hacer clic en "Siguiente" para continuar. Es importante que NO utilice el pulsador "Adelante" del navegador, porque si no las respuestas nuevas no serán registradas.

Para revisar una respuesta previa, utilice el pulsador "Atrás" del navegador, que es la flecha apuntando hacia la izquierda ubicada en la esquina superior izquierda de la pantalla.

Por favor, haga dic en "Siguiente" para comenzar.





Trip Details

	del Viaje				
7					
or favor, piense vehículo:	e en su viaje más rec	ciente <mark>en una s</mark>	ola dirección d	que realizó en su	
• En el área d	el norte de Texas (v	rea el mapa)			
• Durante la s	emana (lunes a vien	nes)			
• Durante las	últimas dos semanas	5			
los gustaría pre	guntarle sobre los de	etalles de este	viaje.		
	-				Haga clic para ampliar
1. ¿Qué c	lía de la semana re	ealizó su más i	reciente viaje	en el área del n	orte de Texas?
P	or favor especifique	•			
2. ¿A qué	hora comenzó el	viaje?			
	Empecé	mi viaje a las: I	Deslicé la caja	azul para selec	cionar un valor.
			-		
	6	:00 am 9:00) am mediodía	3:00 pm	6:00 pm
4 :0::::	ino do vohículo co	•			
4. 2Que 1	ipo de veniculo co	naujo:			
Pe	or favor especifique				•
5. Incluy	éndose usted, ¿cu	ántas persona	s viajaban en	el vehículo?	
5. Incluy	éndose usted, ¿cu or favor especifique	ántas persona 🔻	s viajaban en	el vehículo?	
5. Incluy	éndose usted, ¿cua or favor especifique	ántas persona 🔻	s viajaban en	el vehículo?	
5. Incluy Pe 6. ¿Cuál f	éndose usted, ¿cua or favor especifique fue la razón princip	ántas persona 🔻 pal de este via	s viajaban en je?	el vehículo?	
5. Incluy Po 6. ¿Cuál i Po	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique	ántas persona ▼ pal de este via	s viajaban en je?	el vehículo?	•
5. Incluy Pe 6. ¿Cuál f Pe	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique	ántas persona al de este via	s viajaban en je?	el vehículo?	.
5. Incluy Pr 6. ¿Cuál f Pr 7. ¿Qué c	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e	ántas persona al de este via s) utilizó come	s viajaban en je? o parte de este	el vehículo? e viaje?	
5. Incluy Pe 6. ¿Cuál f Pe 7. ¿Qué c Po	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó come sta tres calles p	s viajaban en je? o parte de este principales (ejer	el vehículo? • viaje? nplo: Main Stree	▼ t, Preston Road, IH635 y Luna Road
5. Incluy Po 6. ¿Cuál f Po 7. ¿Qué c Po A.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó come sta tres calles p	je? o parte de este principales (ejen *Información	el vehículo? • viaje? nplo: Main Stree necesaria	▼ t, Preston Road, IH635 y Luna Road
5. Incluy Pi 6. ¿Cuál f Po 7. ¿Qué c Po A. B.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó como sta tres calles p	je? o parte de este <i>principales (ejen</i> *Información	el vehículo? • viaje? nplo: Main Stree necesaria	▼ t, Preston Road, IH635 y Luna Road
5. Incluy Pi 6. ¿Cuál f Pi 7. ¿Qué c Poi A. B. C.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó come sta tres calles p	je? o parte de este orincipales (ejen *Información	el vehículo? • viaje? nplo: Main Stree necesaria	▼ t, Preston Road, IH635 y Luna Road
5. Incluy P 6. ¿Cuál f P 7. ¿Qué c Po A. B. C.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó come sta tres calles p	je? o parte de este orincipales (ejen *Información	el vehículo? • viaje? nplo: Main Stree necesaria	▼ t, Preston Road, IH635 y Luna Road
5. Incluy P 6. ¿Cuál f P 7. ¿Qué c Po A. B. C.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona al de este via s) utilizó come sta tres calles p	je? o parte de este orincipales (ejer *Información	el vehículo? • viaje? nplo: Main Streen necesaria	▼ t, Preston Road, IH635 y Luna Road
5. Incluy P 6. ¿Cuál f P 7. ¿Qué c Po A. B. C.	éndose usted, ¿cua or favor especifique fue la razón princip or favor especifique calle(s) principal(e r favor enumere has	ántas persona ▼ al de este via s) utilizó come sta tres calles p	je? o parte de este orincipales (ejer *Información	el vehículo? • viaje? nplo: Main Streen necesaria	▼ t, Preston Road, IH635 y Luna Road



Trip Origin Address

Detalles del Viaje					
¿Dónde <mark>empezó</mark> su viaj	e?*				
Por favor, ingrese el non œrcana en el recuadro a Si no conoce esta inform utilizar un mapa."	nbre de un a continuac ación o pre	negocio, un dom ión. efiere encontrar (nicilio (con este lugar	el número de la o en un mapa, por	calle) ó la intersección más favor seleccione "Preferiría
📃 Preferiría utilizar un i	mapa				
Encuentre un negocio (opcional)				
Domicilio o intersecció	n				
(Examples: 2301 Flora St, - Ciudad	or Flora St a	nd Pearl St) Stado ZIP			
Buscar					
Note: Su info inspec	ormación s cción. Sus r	erá mantenida e: espuestas nunc:	strictamer a serán lig	nte confidencial y adas atrás a su ir	sólo será utilizada para esta nformación personal.



Trip Origin Interactive Map





Trip Destination Address

Detalles del Viaje	Juegos			
¿Dónde <mark>finalizó</mark> su viaje?*				
Por favor, ingrese el nombre o en el recuadro a continuación seleccione "Preferiría utilizar u	de un negocio, un domi .Si no conoce esta info in mapa."	cilio (con e ormación o	l número de la calle) prefiere encontrar e	ó la intersección más cercana ste lugar en un mapa, por favor
🔲 Preferiría utilizar un mapa				
Encuentre un negocio (onci	onal)			
cheacharc an negocio (oper	and y			
Domicilio o intersección				
(Examples: 2301 Flora St, or Flora	St and Pearl St)			
Ciudad	Estado ZIP			
Buscar				
*Note: Su informació	ón será mantenida estri	ctamente o	confidencial y sólo s	erá utilizada para esta



Trip Destination Interactive Map



If Describing a Round-Trip – Location Warning

Detalles del Viaje				
De acuerdo con los domicilios que vuelta.	e nos proporcionó	, el viaje q	ue está describie	ndo parece ser un viaje de ida y
Recuerde, estamos preguntando :	sobre la porción <mark>o</mark>	<mark>le ida</mark> de su	ı más reciente vi	aje.
¿Necesita cambiar el lugar de con	nienzo o fin de su	viaje?		
Sí				
No No				
Siguiente				



Resource Systems Group, Inc. July 2011

Trip Confirmation

Detalles del Viaje Juegos	
e acuerdo con sus respuestas, parece ser que su v arcador.	iaje comenzó en el 🎙 marcador y finalizó en el 🖗
on estos lugares de comienzo y final del viaje corre	ectos?
 Sí, estos lugares son correctos No, necesito cambiar mi lugar de comienzo ó final 	Lake Dallas The Colony Wurphy Wurphy Hebron Murphy Hebron Murphy Hebron Murphy Hebron Murphy Hebron Murphy Hebron Carrollton Highland Parker Sachse Sachse Farmers Branch Highland Parker Sachse Garland Parker Sachse Sac



Trip Frequency

Detalles del Viaje				
¿Con qué frecuencia realiza este viaj solamente?	je en esta direo	ción durant	e los días de sema	na (de lunes a viernes)
🔘 6 omás veces por semana				
4-5 veces por semana				
2-3 veces por semana				
🔘 1 vez por semana				
2-3 veces por mes				
1 vez por mes				
🔘 Menos de 1 vez por mes				
¿Con qué frecuencia realiza este viaj	je en est a direo	ción durant	<mark>e los f ines de se</mark> m	ana?
🔘 Más de 3 veces por fin de sema	na			
2-3 veces por fin de semana				
1 vez por mes				
2-3 veces por mes				
1 vez por mes				
🔘 Menos de 1 vez por mes				
🔘 Nunca				
Siguiente				

ETC Ownership

Detalles (Actualmente, ¿t	del Viaje iene en su vehículo para colección elé	Juegos o un TollTag (Dal	las/Fort W	Opiniones (orth), TxTag, EZ	Información del Viajero TAG (Houston) u otro tipo de
) Sí, tenao un	TollTag	seti onicu ue peuj	e (Erc).		
) Sí, tengo un	TxTag				
) Sí, tengo un	EZ TAG				
🔵 Sí, tengo otr	o tipo de transpond	ledor, por favor e	specifique:		
🔵 No, actualme	ente no tengo ningú	in tipo de transpo	ndedor		
*Note:	Un dispositivo de pag monta en el interior de carretera, una antena del peaje se deduce d	o electrónico de peaje Il parabrisas del vehíc ubicada en la caseta/g e una cuenta prepagad	es una calcor ulo. Cuando e pórtico lee la i la.	manía o un aparato ele I vehículo pasa a trav nformación de la cuer	ectrónico de plástico cuadrado que se és de una caseta/pórtico de peaje en la nta que figura en el dispositivo. El monto
Siguiente	-				



Survey Continuation

Detalles del Viaje				
Gracias por las respuestas que	nos ha brindado has	ta aquí. Ah	nora tiene dos opci	ones:
 Continuar la encuesta y pa acerca de otro reciente via 15 minutos 	articipar en un sorteo je que haya realizado	para gana o en la zor	ar un iPad 2™ resp na norte de Texas.	ondiendo algunas preguntas E <mark>sto tomará aproximadamente</mark>
 Contestar unas pocas preg iPod nanos™. Esto tomará aproximadan 	guntas más sobre "In <mark>nente 2 minutos.</mark>	form ación	del Viajero" y part	icipar de un sorteo para ganar un
¿Le gustaría continuar la encu	esta y poder particip	ar en el s	orteo de un iPad 2	2™?
🔘 Sí, continuar la encuesta				
🔘 No, ir a la sección de "Inform	nación del Viajero"			
Siguiente				









Travel Time

Detalles del Via	ije				
Aproximadamente, ¿o finalizó su viaje?	uánto tiemp	o tardo para cond	lucir, de cor	nienzo a fin, de	sde donde comenzó hasta donde
Por favor, induya solan alguna parada a lo larg	nente el tien 30 del camin	npo que estuvo co o.	nduciendo e	l vehículo y no e	el tiempo que haya pasado en
De comienzo a fi	n, mi viaje duró: D	eslicé la caja azul	para selec	cionar un valor.	
30 minutos	1 hora	1 hora y media	2 horas	2 horas y media	
Siguiente 📦					

If Travel Time Is Too Long/Short – Travel Time Warning

Detalles del Viaje				
De acuerdo a los domicilios que nos minutes es significativamente más	s proporcionó ante <mark>Targa</mark> que lo que e	riormente, estimamos	pareœ ser que l debería durar es	la duración de 2 hours and 55 te viaje.
Recuerde, estamos preguntando so	obre su viaje en un	na direcció	n solamente.	
¿Necesita cambiar la duración del	viaje que reportó	ò?		
Sí				
No No				
Siguiente				

If Respondents Needs to Change Reported Travel Time – Travel Time (Revised)

Detalles del Via	je				
Por favor, díganos cuá	nto duró s	u viaje, de comien	zo a fin en u	ına dirección so	plamente.
De comienzo a fin	, mi viaje D	eslicé la caja azul	para seleco	ionar un valor.	
	duro:				
30 minutos	1 hora	1 hora y media	2 horas	2 horas y media	
Siguiente 📦					



Delay

Detalles del Via	ije				Información del Viajero
¿Encontró algún retra	so debido a prot	olemas de tráfic	o durante	su viaje?	
Sí					
No					
Siguiente					

If Experienced Delay – Travel Time without Delay

incontró algún retra	so debido a	problemas de tra	fico durante	su viaje?	
Sí					
No					
sted nos dijo que su	viaje duró 1	hour and 10 minu	ites con algi	ún retraso debido	a congestión de tráfico.
sted nos dijo que su	viaje duró 1	hour and 10 minu	i <mark>tes</mark> con algu	ún retraso debido	a congestión de tráfico. mpo hubiera durado este via
sted nos dijo que su no hubiera habido	viaje duró 1 ningún retra	hour and 10 minu	utes con algu estión de trá	ún retraso debido ifico, ¿cuánto tie	a congestión de tráfico. mpo hubiera durado este via
sted nos dijo que su no hubiera habido Sin retrasos, mi viaj	viaje duró 1 ningún retra je duraría: De	hour and 10 minu so debido a conge eslicé la caja azul	utes con algu estión de trá para selecc	ún retraso debido ifico, ¿cuánto tie cionar un valor.	a congestión de tráfico. mpo hubiera durado este via
sted nos dijo que su no hubiera habido Sin retrasos, mi viaj	viaje duró 1 ningún retra je duraría: De	hour and 10 minu so debido a conge eslicé la caja azul	ites con algu estión de trá para selecc	ún retraso debido ifico, ¿cuánto tien cionar un valor.	a congestión de tráfico. mpo hubiera durado este via
sted nos dijo que su no hubiera habido Sin retrasos, mi viaj 30 minutos	viaje duró 1 ningún retra e duraría: Do 1 hora	hour and 10 minu so debido a conge eslicé la caja azul 1 hora y media	ites con algu estión de trá para selecco 2 horas	ún retraso debido ifico, ¿cuánto tien cionar un valor. 2 horas y media	a congestión de tráfico. mpo hubiera durado este via
sted nos dijo que su i no hubiera habido Sin retrasos, mi viaj 30 minutos	viaje duró 1 ningún retra ie duraría: D 1 hora	hour and 10 minu so debido a conge eslicé la caja azul 1 hora y media	utes con algu estión de trá para selecco 2 horas	ún retraso debido ifico, ¿cuánto tier cionar un valor. 2 horas y media	a congestión de tráfico. mpo hubiera durado este via

Avoiding Delay

Detalles del Viaje				Información del Viajero
Anteriormente, nos dijo que com es un horario fuera de las horas p las condiciones del tráfico?	enzó su viaje a las ico (6:30 – 9:00 A	5 11:00 AM M o 3:00 -	I. ¿Eligió comenz · 6:30 PM), para e	ar este viaje a as 11:00 AM, que evitar retrasos ocasionados por
Sí, realicé este viaje fuera de las	s horas pico para ev	vitar conge	stión de tráfico	
🔘 No, yo hubiese realizado este via	aje fuera de las hora	as pico inde	ependientemente d	lel tráfico
Siguiente				



If Traveled Outside the Peak to Avoid Congestion – Optimal Trip Time

iteriormente,	nos dijo que	comenzó s	su viaje a la ico (6:30 –	9:00 AM o	. ¿Eligió comenz 3:00 – 6:30 PM	ar este viaje a las 12:40 PM, para evitar retrasos
casionados po	r las condicio	ones del tra	áfico?	5100 141 0		
Sí, realicé es	ste viaje fuera	de las hor	as pico para	a evitar cong	estión de tráfico	
No, yo hubie	ese realizado	este viaje f	fuera de las	horas pico i	ndependienteme	nte del tráfico
no hubiera c	ongestión de	tráfico en	ningún mor	mento del di	a.¿a qué hora pr	eferiría realizar este viaie?
no hubiera c	ongestión de	tráfico en	ningún mor	mento del dí	a,¿a qué hora pr	eferiría realizar este viaje?
no hubiera c Hubiese prefe	ongestión de rido salir a la	tráfico en (s): <mark>Deslicé</mark>	ningún mor Ia caja azu	mento del dí ul para selec	a,¿a qué hora pr ccionar un valor.	eferiría realizar este viaje?

Amount Earlier/Later Could Have Started Trip

	strucciones
F	ara contestar estas preguntas, tenga en cuenta todas las limitaciones, tales como las reglas para los npleados de su lugar de trabajo, la coordinación con miembros de su familia y sus preferencias personales.
Ust	ed dijo haber comenzado su viaje de asuntos de negocios a las 12:40 PM. Si las condiciones de las eteras y el tráfico no hubiesen sido un factor, ¿qué tanto más temprano podría haber realizado este viaje
0	Para nada más temprano
0	Hasta 15 minutos más temprano
0	Hasta 30 minutos más temprano
0	Hasta 1 hora más temprano
0	lasta 2 horas más temprano
0	Más de 2 horas más temprano
Si l rea	is condiciones de las carreteras y el tráfico no hubiesen sido un factor, ¿qué tanto <mark>más tarde</mark> podría habe izado este viaje?
0	Para nada más tarde
0	Hasta 15 minutos más tarde
0	-lasta 30 minutos más tarde
0	Hasta 1 hora más tarde
0	Hasta 2 horas más tarde
0	Nás de 2 horas más tarde



NTTA Facilities Used

Por favor, continúe pensa	ndo sobre	el viaie en una	dirección	que ha estado de	escribiendo. Cuando realizó este
viaje, ¿utilizó alguna de la	s siguien	tes carreteras?			
Por favor seleccione todas la	s opciones	que corresponda	an.		
Addison Airport Toll Tur	nel				
📃 Dallas North Tollway					
📃 Lewisville Lake Toll Brid	lge				
Mountain Creek Lake T	oll Bridge				
📄 President George Bush	Turnpike	(PGBT)			
🔲 PGBT Western Extensio	on (SH 161	.)			
📃 Sam Rayburn Tollway (5H 121)				
			que estov	describiendo	

If Used More Than One NTTA Facility – First Road

3	Detalles del Viaje			
Que	é carretera de peaje utilizó <mark>pri</mark>	mero?		
	ddison Airport Toll Tunnel			
D	allas North Tollway			
L	ewisville Lake Toll Bridge			
N	Iountain Creek Lake Toll Bridge			







If Used A Toll Road – Onramp and Offramp

qué intersecció	n ingresó y egresó del Dallas North	Tollway?	
Ingresé en:	Por favor especifique	•	
Egresé en:	Por favor especifique	-	

Travel Time Using Next Best Non-Toll Route

Detalles del Via	je				
Imagine que las carrete tenido que seleccionar	eras NTTA qu la siguiente	ue utilizó no hubie mejor ruta <mark>sin pe</mark>	sen estado (<mark>aje</mark> .	disponible/s par	a su viaje y que usted haya
¿Cuánto cree que hubi	era durado	el mismo viaje ut	tilizando la s	iguiente mejor i	ruta sin peaje?
Por favor, piense en una	ruta que no	induya ninguna ca	arretera, puel	nte o túnel con pe	eaje.
Utilizando la siguiente	mejor ruta	sin peaje			
Este viaje	e duraría : <mark>D</mark>	eslicé la caja azul	para seleco	cionar un valor.	
0					
30 minutos	1 hora	1 hora y media	2 horas	2 horas y media	
Siguiente 📦					

If Used an NTTA Facility – Tolls

Detalles del Viaje			Información del Viajero
Pensando todavía sobre el viaje	e en una dirección d	que realizó el Martes	
¿Pagó algún peaje?			
🔘 Sí			
No			
Siguiente			



If Paid Tolls on Trip – Toll Amount and Reimbursement

Detalles del Via	je				
Pensando todavía sob	re el viaje <mark>en</mark>	una dirección q	jue realizó el M	artes	
¿Pagó algún peaje?					
Sí No					
¿Cuánto pago por pea	jes?				
Si no está seguro/a, po	favor denos s	u mejor estimado	o de cuánto pagó	por peajes.	
	Pagué: Des	slicé la caja azul	para seleccion	ar un valor.	
\$1.00	\$2.00	\$3.00	\$4.00	\$5.00	
¿Quién pagó por el pe	aje de este v	iaje?			
🔵 Pagué peaje					
🔘 Pagué peaje, pero	seré reembol	sado			
🔘 Otra persona pagó	el peaje				
Siguiente 📦					

If Did Not Use an NTTA Route – Alternate Toll Route

Detalles del Viaj					
Imagine que la ruta que	e utiliza act	ualmente <mark>no est</mark>	ıviera dis	ponible para su v	iaje y tuviera que utilizar una o
mas de las sigurentes d	arreteras c	on peaje. Si no u	uviera qu	e pagar peaje, cq	ue carretera utilizaria?
Addison Airport Toll	unnel				
📃 Dallas North Tollway					
📃 Lewisville Lake Tol B	ridge				
Mountain Creek Lake	Toll Bridge				
📃 President George Bu	sh Turnpike	(PGBT)			
📃 PGBT Western Exten	sion (SH 16	1)			
Sam Rayburn Tollwa	(SH 121)				
📃 No sé					
📃 Ninguna de las meno	ionadas an	teriorm en te			
Siguiente 📄					



If Has an Alternate Toll Route – Alternate Toll Route Travel Time

i hubiese usado la c	arretera NT	TA a continuación	para realiza	ar este viaje que	acaba de describir, ¿cuánto
empo total más esti	ma que hubi	iese durado, de co	mienzo a fir	n, este viaje en u	na sola dirección?
Usted dijo que para	el viaje po	dría haber usado:			
Addison Airport To	I Tunnel				
Dallas North Tollwa	ay				
Lewisville Lake To Mountain Creek La	li Bridge ke Toll Brid	ne			
TEste via	je duraría: D	eslicé la caja azul	para seleco	ionar un valor.	
	1 hora	1 hora y media	2 horas	2 horas y media	
30 minutos					

If Has an Alternate Toll Route – Alternate Toll Route Onramp and Offramp

n qué intersección	se subiría o se bajaría del Dallas Nor	th Tollway, si la utilizará para su v	viaje?
Ingresaría:	Por favor especifique	•	
Egresaría:	Por favor especifique	~	

If Did Not Use an NTTA Route – Reasons Why

Detalles del Viaje				
¿Cuál es la razón principal por la	que no utilizó nin	guna insta	lación del NTTA e	en su viaje?
🔘 Los peajes son muy caros				
La ruta actual es más confiable	Э			
💿 Está muy congestionada				
💿 La ruta con peaje es más larga	а			
🔘 No hay carreteras con peaje N	TTA en mi viaje			
🖱 Tuve que haœr paradas intern	nedias			
🔘 La ruta actual es más convenie	ente			
💿 No quise pagar peaje				
Siguiente				



Sources of Information before Trip

 ¿Cuál de las siguientes fuentes de información, si acaso utilizó alguna, consultó para enterarse de las condiciones del tráfico antes de su viaje? Por favor seleccione todas las opciones que correspondan. Televisión Internet (Google Maps, Map Quest, sitios web de estaciones de noticias, etc.) Radio Teléfono celular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	Detalles del Viaje				
Por favor seleccione todas las opciones que correspondan. Televisión Internet (Google Maps, Map Quest, sitios web de estaciones de noticias, etc.) Radio Teléfono œlular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente	¿Cuál de las siguientes fuentes d condiciones del tráfico antes de s	le información, si a su viaje?	caso utili	zó alguna, consul	tó para enterarse de las
 Televisión Internet (Google Maps, Map Quest, sitios web de estaciones de noticias, etc.) Radio Teléfono œlular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	Por favor seleccione todas las opcior	nes que corresponda	n.		
 Internet (Google Maps, Map Quest, sitios web de estaciones de noticias, etc.) Radio Teléfono œlular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	Televisión				
 Radio Teléfono œlular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	🔲 Internet (Google Maps, Map Q	uest, sitios web de	estacione	s de noticias, etc.)
 Teléfono œlular (mensajes de texto u otro servicio telefónico) Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	🔲 Radio				
 Difusión de boca a boca (hablando por teléfono con un amigo, colega, etc.) Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	🔲 Teléfono œlular (mensajes de	texto u otro servici	o telefóni	:0)	
 Dispositivo GPS Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	📃 Difusión de boca a boca (habla	ando por teléfono co	on un ami	go, colega, etc.)	
 Otros, por favor especifique: Ninguna de las mencionadas anteriormente 	🔲 Dispositivo GPS				
📃 Ninguna de las mencionadas anteriormente	Otros, por favor especifique:				
	📃 Ninguna de las mencionadas a	an teriorm en te			
	Siguiente 📦				
Siguiente 🔿					

If Used Sources of Information before Trip – Changes to Travel Plans

Luego de haberse informado acerca o medio, ¿cambió sus planes de viaje?	le las condiciones del t	tráfico, si acaso obt	uvo información por algún
			are mornadon por argan
Por favor seleccione todas las opciones q	ue correspondan.		
🔲 Utilicé una calle/ruta diferente de la	a que había planificado	originalmente	
🔲 Cambié el rumbo (fui a un lugar dis	tinto)		
Decidí compartir el vehículo en vez	de manejar solo/a		
🔲 Comencé mi viaje a una hora difere	nte		
📃 La información sobre las condicione	s del tráfico no afectó r	mis planes de viaje	



Sources of Information Used During Trip

Detalles del Viaje					
Cuál de las siguientes fu ondiciones del tráfico <mark>du</mark>	entes, si rante su	acaso utilizó algu viaje?	na, consu	ltó para obtener i	nformación sobre las
or favor seleccione todas la	s opcione	s que correspondar			
Radio					
Teléfono œlular (mensa	ajes de te	exto u otro servicio	telefónio	o)	
Difusión de boca a boca	a (hablan	do por teléfono co	n un amig	io, colega, etc.)	
🛛 Carteles con mensajes	electróni	icos en la carretera	1		
Dispositivo GPS					
🛛 Otros, por favor especi	fique:				
	and ac an	tariarm an ta			

3.2 Games/Stated Preference Experiments

Willingness to Pay – Version A

largo de esta encu	iesta, usted s	e ha enfocado e	en un reciente	viaje en una se	ola dirección con los siguie
etalles del viaje					
Propósito: A	suntos de Ne	gocios			
lía de la semana: M	lartes	minutos			
dradon del viaje. 1	nour and 10	hindles			
ál sería la cantidad	l máxima que	estaría dispues	ito/a a pagar	para ahorrar 1	9 mins. en su viaje?
ál sería la cantidad	l máxima que Pagaría : <mark>Des</mark>	estaría dispues licé la caja azul	ito/a a pagar j para seleccio	para ahorrar 1 nar un valor.	9 mins. en su viaje?
ál sería la cantidad	l máxima que Pagaría: <mark>Des</mark>	estaría dispues licé la caja azul	sto/a a pagar para seleccio	para ahorrar 1 nar un valor.	9 mins. en su viaje?
ál sería la cantidad \$1.00	I máxima que Pagaría: Des \$2.00	estaría dispues licé la caja azul s3.00	sto/a a pagar j para seleccio \$4.00	para ahorrar 1 nar un valor. \$5.00	9 mins. en su viaje?



Willingness to Pay – Version B

lo largo de esta encuesta, uste atos:	ed se ha enfocado en u	n reciente viaje en una	a sola dirección con los siguiente
Detalles del viaje			
Propósito: Asuntos Per	sonales		
Día de la semana: Martes			
Duración del viaie: 1 hour and 1	0 minutos		
bardelen der Hajer 1 nour und 1	U minutes		
	to minutes		
Cuál sería la menor cantidad de	e tiempo que esperaría	ahorrar de un peaje d	e \$3.00?
Cuál sería la menor cantidad de Esperaría ahorrar:	tiempo que esperaría Deslicé la caja azul pa	ahorrar de un peaje d ra seleccionar un valo	e \$3.00? r.
Cuál sería la menor cantidad de Esperaría ahorrar:	e tiempo que esperaría Deslicé la caja azul pa 30 minutos	ahorrar de un peaje d ra seleccionar un valo 45 minutos	e \$3.00? r.

Stated Preference Instructions

📣 etalles del Viaje	Juegos	Opiniones	
Instructions			
Ahora nos gustaría jugar una se hipotéticas para realizar un viaje cada juego, elija la opción de via	rie de ocho juegos con en una sola dirección je que usted prefiera n	usted. Cada juego le r similar al que usted ha nás teniendo en cuent:	mostrará un par de opciones descrito anteriormente. Para a las condiciones presentadas.
Cuando tome su decisión, por fa	vor tenga en cuenta qu	ue:	
 La situación y las alternativa 	s mostradas en cada p	oantalla son hipotéticas	5
 Las opciones mostradas son opciones de viajes que está 	las <mark>únicas</mark> opciones d n disponibles para uste	isponibles para usted, ed ahora.	indusive si son diferentes a las
 Todos los otros costos asoci 	ados con su viaje perm	nanecerán iguales que	ahora.
La duración del viaje, la demor	a, y <mark>costo del peaj</mark> e ca	mbiarán con cada jueg	0.
Por favor, observe los valores de disponibles para su viaje.	tenidamente y elija la	opción que más preferi	iría, si estas opciones estuvieran
Por favor, haga dic en "Siguiente	″para continuar.		
Siguiente 📦			







Imagine que	e éstas fueran la únicas onciónes n	ara su viaje	
indgine qui	¿Cómo viajaría?		
Nota: La in	formación destacada puede haber	cambiado.	
Ruta alterna de peaje <u>antes</u>	Su ruta actual del peaje	La ruta alterna del peaje	
o <u>después</u> el pico	durante el pico	durante el pico	
Viaje cualquiera <u>antes</u>	Viaje entre 6:30 AM	Viaje entre 6:30 AM	
6:30 AM o <u>después</u> 8:30 AM	y 8:30 AM	y 8:30 AM	
Duración del 25 mins.	Duración del 37 mins.	Duración del 34 mins.	
viaje:	viaje:	viaje:	
Confiabilidad: En promedio 1	Confiabilidad: En promedio 3	Confiabilidad: En promedio 1	
en 10 viajes	en 10 viajes	en 10 viajes	
tardan alrededor	tardan alrededor	tardan alrededor	
2 mins.	20 mins.	2 mins.	
adicionales	adicionales	adicionales	
Costo del \$1.25	Costo del \$0.75	Costo del \$2.10	
peaje:	peaje:	peaje:	
⊖ ^{Prefiero} esta	Prefiero esta	Prefiero esta	
opción	opción	opción	
		Drogunta 3 do 8	





Pregunta 3 de 8



Siguiente

Peak Trip Experiment III







•			
Ima	igine que éstas fueran la ú	nicas opciónes para su viaje.	
	¿Cómo v	iajaría?	
La i	nformación destacada cam	ibiará de pantalla en pantalla	
Su ruta actual de peaje		Ruta alterna de peaje	
Duración del	27 mins.	Duración del	17 min
viaje:		viaje:	
Confiabilidad: En promedio 1 en 10 viajes tardan alrededor 9 mins. adicionales		Confiabilidad: En promedio 1 en 10 viajes tarda alrededor <mark>6 mins. adicionale</mark>	
Costo del	\$0.50	Costo del	\$0.7
peaje:		peaje:	
🔘 Prefiero esta opción		🔘 Prefiero esta opción	
			Pregunta 1 de


Instal	vina que ástas fueran la ú	aleze enclénec para cu i	data
Imag	jine que estas lueran la u	nicas opciones para su v	naje.
	2Como v	lajaria <i>:</i>	4
NOT	a: La información destaca	ada puede naber cambia	
Su ruta actua	I de peaje	Ruta al	terna de peaje
Duración del viaje:	28 mins.	Duración del viaje:	23 min
Confiabilidad: En promedio alrededo	2 en 10 viajes tardan 9 <mark>mins. adicionales</mark>	Confiabilidad: En pr ali	omedio 1 en 10 viajes tarda rededor 2 mins. adicionale
Costo del peaje:	\$0.50	Costo del peaje:	\$2.0
	ero esta opción) Prefiero esta opción
💛 Prefi			



Turner	lan ann à tra farma la á		
Imag	ine que estas rueran la u	nicas opciones para su viaje.	
Not	a: La información destaca	ada puede haber cambiado.	
Su ruta actua	l de peaje	Ruta alterna	a de peaje
Duración del viaje:	29 mins.	Duración del viaje:	17 min:
Confiabilidad: En promedio alrededor	4 en 10 viajes tardan 3 mins. adicionales	Confiabilidad: En promedi alrededo	o 2 en 10 viajes tarda or 4 mins. adicionale
Costo del peaje:	\$0.50	Costo del peaje:	\$1.0
O Prefi	ero esta opción	O Pre	fiero esta opción
			Pregunta 3 de



Imagino quo	óctac fuoran la ú	nicas onciónos nara su viaio	
Inagine que		inicas opciones para su viaje	
Nota: La ini	formación destaca	iajaria:	
Nota. La m	ionnación destact	du puede nuber cumbiado.	
Su ruta actual de pe	eaje	Ruta alterr	ia de peaje
Duración del	26 mins.	Duración del	19 mins
Confiabilidad: En promedio 4 en 10 alrededor 6 mins	viajes tardan . adicionales	Confiabilidad: En promeo alredeo	lio 2 en 10 viajes tardar lor 4 mins. adicionale s
Costo del peaje:	\$0.50	Costo del peaje:	\$1.50
O Prefiero esta	opción) Pr	afiero esta opción
			Progunto E do (

3.3 Opinions

If Never Chose the Alternate Toll Route – Reasons Why Not





If Chose the Time Shift Alternative – Travel Before or After the Peak



If Does Not have an ETC Device and Chose the Alternate Toll Route – Likelihood of Paying by ETC

 \$5.00. Habría dos métodos disponibles para pagar el peaje: Usando un transpondedor TollTag: Los clientes de TollTag pagan los peajes electrónicamente desde una cuenta prepaga colocando una calcomanía transmisora TollTag en el parabrisas de sus vehículos. Cada vez que el TollTag pasa a través de un carril de peaje, el costo de éste es descontado de la cuenta. Usando ZipCash: Cuando un vehículo sin TollTag conduce a través de un punto de peaje, cámaras de alta velocidad toman fotos digitales de la matrícula y la cuenta del peaje es enviada por correo al dueño del vehículo. Los clientes de ZipCash pagan tarifas de hasta un 50% más caras que los dientes de TollTag, ya que al costo del peaje se le añaden los gastos de procesamiento. Si el peaje para el viaje usando un transpondedor ETC costara \$5.00, pero \$7.50 si pagara utilizando ZipCash, ¿cómo elegiría pagar el peaje? Es muy probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash 	nteriormente nos dijo q	ue usted utilizaría un	a carretera con p	eaje si el viaje d	durara <mark>59 mins.</mark> y costara
 Habría dos métodos disponibles para pagar el peaje: Usando un transpondedor TollTag: Los clientes de TollTag pagan los peajes electrónicamente desde una cuenta prepaga colocando una calcomanía transmisora TollTag en el parabrisas de sus vehículos. Cada vez que el TollTag pasa a través de un carril de peaje, el costo de éste es descontado de la cuenta. Usando ZipCash: Cuando un vehículo sin TollTag conduce a través de un punto de peaje, cámaras de alta velocidad toman fotos digitales de la matrícula y la cuenta del peaje es enviada por correo al dueño del vehículo. Los clientes de ZipCash pagan tarifas de hasta un 50% más caras que los dientes de TollTag, ya que al costo del peaje se le añaden los gastos de procesamiento. Si el peaje para el viaje usando un transpondedor ETC costara \$5.00, pero \$7.50 si pagara utilizando ZipCash, ¿cómo elegiría pagar el peaje? Es muy probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash 	5.00.				
 Usando un transpondedor TollTag: Los clientes de TollTag pagan los peajes electrónicamente desde una cuenta prepaga colocando una calcomanía transmisora TollTag en el parabrisas de sus vehículos. Cada vez que el TollTag pasa a través de un carril de peaje, el costo de éste es descontado de la cuenta. Usando ZipCash: Cuando un vehículo sin TollTag conduce a través de un punto de peaje, cámaras de alta velocidad toman fotos digitales de la matrícula y la cuenta del peaje es enviada por correo al dueño del vehículo. Los clientes de ZipCash pagan tarifas de hasta un 50% más caras que los dientes de TollTag, ya que al costo del peaje se le añaden los gastos de procesamiento. Si el peaje para el viaje usando un transpondedor ETC costara \$5.00, pero \$7.50 si pagara utilizando ZipCash, ¿cómo elegiría pagar el peaje? Es muy probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash 	abría dos métodos dispo	onibles para pagar el	peaje:		
 Si el peaje para el viaje usando un transpondedor ETC costara \$5.00, pero \$7.50 si pagara utilizando ZipCash, ¿cómo elegiría pagar el peaje? Es muy probable que abriera una cuenta TollTag para pagar el peaje Es algo probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash 	 Usando un transpond cuenta prepaga coloca que el TollTag pasa a Usando ZipCash: Cua velocidad toman fotos vehículo. Los clientes al costo del peaje se l 	ledor TollTag: Los clie ando una calcomanía t través de un carril de ndo un vehículo sin To digitales de la matrícu de ZipCash pagan tari e añaden los gastos c	ntes de TollTag pa transmisora TollTa peaje, el costo de ollTag conduce a tr ula y la cuenta del ifas de hasta un 5 de procesamiento.	agan los peajes g en el parabrisa e éste es descont ravés de un punt l peaje es enviad 0% más caras qu	electrónicamente desde una as de sus vehículos. Cada vez tado de la cuenta. to de peaje, cámaras de alta la por correo al dueño del ue los dientes de TollTag, ya que
 Es muy probable que abriera una cuenta TollTag para pagar el peaje Es algo probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash 	i el peaje para el viaje u ipCash, ¿cómo elegiría p	usando un transponde bagar el peaje?	edor ETC costara	\$5.00, pero \$7.	50 si pagara utilizando
 Es algo probable que abriera una cuenta TollTag para pagar el peaje No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash) Es muy probable que a	abriera una cuenta Tol	ITag para pagar e	Ipeaje	
 No estoy seguro/a Es algo probable que pagara con ZipCash Es muy probable que pagara con ZipCash) Es algo probable que a	abriera una cuenta Tol	ITag para pagar e	Ipeaje	
💿 Es algo probable que pagara con ZipCash 💿 Es muy probable que pagara con ZipCash	No estoy seguro/a				
🔵 Es muy probable que pagara con ZipCash) Es algo probable que p	oagara con ZipCash			
	Es muy probable que p	agara con ZipCash			



If Not Likely to Pay by ETC – Reasons Why Not

C	uál es la razón principal por la cual no es probable que adquiera un transpondedor TollTag?
D	No conozco lo suficiente sobre colección electrónica de peaje
D	No voy a usar la carretera de peaje con suficiente frecuencia
D	No quiero un transpondedor en mi vehículo
Ð	No quiero pagar por el peaje antes de usarlo
0	Adquirir un TollTag es muy caro
Ð	Me preocupa el tema de la privacidad de la cuenta TollTag
D	Mantener la cuenta de TollTag es muy complicado
8	Otros, por favor especifique:

Reasons Considered When Choosing a Route

detalles del Viaje Además del costo de peaj son importantes para uste pegocios?	e, la duració ed al momen	Juegos ón del viaje y nto de decidi	y la posibili r qué camin	Opiniones dad de retraso, ¿c no tomar para rea	Información del Viajero cuál de los siguientes elementos lizar este viaje de asuntos de
Por favor seleccione todas la	s opciones q	ue correspond	ian.		
📃 Las calles están bien ilu	uminadas de	noche			
📃 Esta ruta es el camino i	más directo	entre los lug	ares de con	nienzo y fin de mi v	iaje
🔲 Hay menos cantidad de	semáforos	y señales de	tráfico en r	ni ruta	
🔲 Hay señales que propo	rcionan info	rmación en ti	empo real s	obre las condicion	es del tráfico
📃 El límite de velocidad m	áxima				
🔲 Las carreteras están bi	ien mantenio	las			
📃 Me siento seguro/a con	iduaiendo er	n mi ruta			
📃 Para mí es la ruta más	fácil para co	nduair			
🔲 Ninguna de las mencior	nadas anteri	ormente			
Siguiente 📦					



If Selected More Than One Reason – Primary Reason



Attitudes toward Delay

	Totalmente En en desacuerdo		Neutral	D e ac uerdo	Total mente de acuerdo
	1	2	3	4	5
Cambio mi plan de viaje regularmente para evitar la congestión de tráfico	0	0	۲	0	0
Cambio mi ruta de viaje regularmente para evitar la congestión de tráfico	0	0	0	0	0
Me molesta cuando la congestión del tráfico agrega 15 ó 20 minutos a mi viaje	0	0	0	0	0
Estaría dispuesto/a a pagar peaje si esto garantizará una duración de viaje confiable para viajar todos los días	O	O	Ø	0	0
La congestión del tráfico es una forma de vida en el área de Dallas / Fort Worth y es algo con lo que se aprender a vivir	0	0	0	0	0



Attitudes toward Tolls

Que tan de acuerdo o en desacuerdo está con cada	una de las sig	guientes arii	madones	f	
	Totalmente en desacuerdo	En desacuerdo	Neutral	D e acuerdo	Total mente de acuerdo
	1	2	3	4	5
Utilizaría una carretera de peaje si las tarifas fueran razonables y si me ahorrará tiempo	Ø	0	0	0	0
Generalmente puedo pagar peajes	O	0	0	0	O
Estoy a favor de usar los peajes para pagar por mejoras en las carreteras que ayuden a aliviar la congestión del tráfico	0	0	0	©	0

Travel Changes Due to Gas Prices

🗸 Detalles del Viaje 🗸 Juegos Opiniones Información del Viajero
¿Debido a los recientes aumentos del precio de la gasolina, indíquenos como ha cambiado su ruta?
Por favor seleccione todas las opciones que correspondan.
🔲 Usar transporte público más a menudo
🔲 Usar rutas menos congestionadas
Hacer menos viajes
🔲 Usar un vehículo que use menos combustible
🔲 Compartir el vehículo con amigos, familiares o compañeros de trabajo
🔲 Caminar o andar en bicicleta más a menudo
Eliminar ciertos viajes
🔲 Hacer viajes más cortos
🔲 Usar rutas más directas
📃 Combinar viajes (ir de compras en el camino al hogar desde el trabajo)
Otros, por favor especifique:
📃 El viaje no ha cambiado debido al precio de la gasolina
Siguiente 📦



Survey Engagement

Recuerde los 8 juegos sobre las opciones de viaje. ¿Qu las siguientes afirmaciones?	ué tan de a	cuerdo o en	desacuero	do está con o	cada una d
	Totalmente en desacuerdo	En des ac uerdo	Neutral	D e ac uerdo	Totalmente de acuerdo
	1	2	3	4	5
Las decisiones que tomé durante los juegos reflejan mi comportamiento en la vida real	0	0	0	0	0
Comprendí completamente cómo elegir una opción de viaje	O	O	O	O	O
Las opciones de viaje que me presentaron fueron realistas	O	0	O	O	0



3.4 Traveler Information

Demographics

Der fruer ennerif aus	
Por lavor espectilique	a 🖵
2. ¿Qué edad tiene?	
Por lavor espectinque	
3. ¿Cuál es su situación labo	ral?
Por favor especifique	2 🗸
4. ¿Cuántas personas viven e	en su hogar?
Por favor especifique	2 •
5. ¿Cuántos vehículos tienen	en su hogar?
Por favor incluya todos los a arrendando.	automóviles, camiones/camionetas, furgonetas y motocicletas que posea o que
Por favor especifique	a 🗣
6. ¿Cuál es su ingreso familia	ar anual?
Por lavor espectrique	
*Note: Las respuestas obtenida: asegurarnos de que hemi	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.
*Note: Las respuestas obterida: asegurarnos de que herm	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.
*Note: Las respuestas obterida: asegurarnos de que herno	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.
*Note: Las respuestas obterida: asegurarnos de que herm Siguiente	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.
*Note: Las respuestas obterida: asegurarnos de que herm Siguiente	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.
*Note: Las respuestas obteridas asegurarnos de que herno Siguiente	s de esta encuesta jamás serán vinculadas nuevamente a usted. Esta información solamente la utilizamos p os recibido respuestas de una muestra representativa de la población de la región.



Sweepstakes

racias por sus re s™.	spuestas, ahor	a tiene la oportu	nidad de partici	ipar de un sorteo	para ganar uno de los varios iPad
.e gustaría par	ticipar del sor	teo de un iPad 2	2™?*		
Sí					
No					
*Note:	Esta promoción e otro estado. Los participar del sor	está regida por las l empleados, consul rteo.	eyes de Vermont ; tores y/o familiare	y no es válida en luga s del NTTA o del NTT.	ares donde esté prohibida por las leyes de A System Wide Travel Study no pueden
	Las respuestas o	obtenidas de esta e	ncuesta jamás ser	án vinculadas nuevar	nente a usted. Esta información será

Contact Information

ad 25 ^m ,				
e gustaria participar del sorteo de	eun iPad 2™?*	¢.		
) Sí				
) No				
formación de contacto*:				
Nombre:				
Domicilio 1:				
Domicilio 2:				
Ciudad/Pueblo:				
Estado:				
Código Postal:				
rección de correo electrónico:				
*Note:	a por las leyes de ve /o familiares del NTT/	A o del NTTA Syste	m Wide Travel Study no p	vonidida por las leyes de otro estado, Los weden participar del sorteo,
Las respuestas obtenidas	de esta encuesta jarr	nás serán vinculada	as nuevamente a usted. E	sta información será mantenida en forma



Comments



End Survey









NTTA System-Wide Stated/Revealed Preference Travel Survey

Appendix C – Survey Comments

July 2011

1.0 SURVEY COMMENTS

Before clicking the "End Survey" button on the last page of the survey, respondents had the opportunity to leave open-ended comments. These comments about the project and the survey itself are included in this Appendix.

- Tolls are already way too high. There is no way I would pay \$5+ for a one-way commute on a regular basis. I like that Dallas toll roads are generally well-maintained and have lower congestion, but I don't like it *that* much.
- The toll prices are getting too expensive. I avoid taking tollways more now. I rather wait in traffic or drive at alternative times than traffic times.
- There was construction on the on rap of 161 today and it would have been nice to have notice before turning left off of sandy lake. It made my trip a lot longer!
- For the annual household income question, please add an option of "prefer not to answer." Thanks
- Excellent survey that I feel gave important and helpful information.
- Gas taxes are high enough and should be adequate to pay for roads. Toll roads are a rip off. Tolls are used to pay for jobs that are not needed.
- Please pave Mockingbird Lane between the airport and highway 183. It is horrible to drive.
- Hard to slide blue buttons on ipad
- This was a fun and interesting survey dealing with a topic that is quite important to me.
- I moved here from Houston and am not at all happy by the slow pace of road construction on toll ways. I never see anyone working on two areas where I pay tolls and the lanes are narrowed or partially closed. In Houston, if a lane is closed, it is worked on 24/7 to get it open. Why not in Dallas? get with it Dallas!
- We are excited about the Southwest Parkway tollway coming to our area. Wish it could be finished sooner than 2013! Thank you for all your hard work.
- I really like the fact that you can kind of forget about paying your toll bill when having it automatically drafted out of your bank account. It's one less thing I have to think about.
- Do NOT share my contact information with any third party OR for any marketing purposes. The information provided is for the sole purpose of the NTTA Travel Survey completed on March 18, 2011.
- It would be fantastic if you could do some pothole maintenance in the left lane, northbound between Frankford & 190. It''s gotten really bad.
- I love NTTA!
- NONE
- I always try to take a route that covers all my stops and provides for the easiest travel across the greatest distance. I often use the tollways in order to make the of my most time while avoiding the normal congestive routes.
- This is a strange, vague question: "What is the minimum amount of travel time you would expect to save from an additional \$2.00 in tolls?"
- Can you make a closer connection from US75 to HWY121? Driving all the way out to Allen is ridiculous to get to Plano.



- I think we pay enough in tolls and no hikes are needed. I do how ever think the 4th entry exit lanes need to be removed or shorten them to prevent drivers from using them to jump ahead and cause traffic slow downs. Also the use of timing lights for high volume entry to tollway use to spread out merging
- I use the tollway when I dont have the time, but if I have time to get to a location, I will use the tollway for part of the trip, then use the side streets...I do this in order to save on the tolls.
- The link to this survey in the recent email "NTTA: Driving Forward April 2011" didn"t work correctly. It took me to the same starting page for the survey, but when I clicked the first Next button, it said it didn"t need any more information because of my previous answers (even though I hadn"t answered any yet). I got the correct link from the Facebook page.
- Even though the new "cashless" devices are up all along the way now, why do people slow down for no apparant reason going northbound on the DNT just north of LBJ? There are no obstructions, no stalled cars, no accidents, just people freaking due to curves in the road and the people ahead of them?
- I think that toll roads are a ridiculous excuse for not using our tax dollars wisely. I will protest any effort to implement time-based tolling our North Texas roads.
- I work near Beltline and the Dallas North Tollway in Addison and out of all the tollways, I avoid the Dallas North Tollway because I dont like paying tolls to sit in traffic. I would spend the money to use the tollway, if their was less traffic.
- Thank you for the billing by mail. It is truly a help for us as we travel the toll roads in TX.
- The main back ups during my travel are overhead ramps at GWB and NDT and 121/I35 and GWB/I35 its a mess
- I believe the Toll should be reduced when the cost of the roads are paid, paying for maintenance only.
- "games" presented a route that had no toll roads available on my route
- I use the tollway to reduce my drive time and avoid traffic congestion. If there is traffic congestion, tolls should be free or greatly reduced.
- I was very disappointed that NTTA didn't effectively clean/sweep the roads after the February severe weather. For weeks the remaining sand would hit cars while driving and scratch, damage. NTTA put the sand there and should have removed to prevent damage. I pay to use the NTTA, I shouldn't pay to have my car damaged when it would be avoidable if NTTA cleaned up.
- Please do not allow defunct work trucks on our tollways. More signage about conditions.
- please do not raise the toll rates any higher!
- Much of the traffic I encounter is due to the construction on 114. the DFW connector
- We should use the taxes we already pay to support public roads not a new transportation tax (i.e. more tolls).
- It's nice to know you''re thinking of your customers by asking their opinions!
- I am very pleased with the construction. I live right by the tollway on parker road. The construction/deconstruction done by the old toll plaza has been done in a way to cause very little negative impact to motorists on and off the tollway.
- Thanks!
- I would like to see more notification on road lane/closures at 121 & North Dallas Tollway. Most of the time you are not made aware of any issues until you are caught up in the traffic.
 - End Survey



- it makes it easier for me to get to my fc dallas games since i cant afford to live in frisco.
- I frequently travel Bush and the North Dallas Tollway and generally find them to be easy to use except at the major intersections of one tollway with another. Even though I live only 1/2 mile from Sam Rayburn, I rarely use it and try to find an alternate route due to the construction still going on at 75 and the North Dallas ramps.
- I disagree with the premise that my taxes pay for the roads, and then I have to pay tolls to use the roads (the only major roads available along my route).
- Tolls are a lot less annoying since I got my toll tag
- ordinarily it would not have taken this long for the trip, but sunglasses were in front of the gas gauge
 - we failed to check the guage; therefore on the 35E to 190E flyover, we ran out of gas. Our motor
 service provided gas for us and we were on our way -- BUT with a delay! Surprised the Highway
 patrol that passed us did not stop to help warn others. All the help we had was our car''s warning
 blinkers, the cell phone and motor service program that brought us gas.
- Get rid of HOV lanes. They are a nuisance and make traffic worse instead of better.
- The survey doesn't take into consideration about RECENT construction that delays not only time but adds more to congestion...
- I should state that I only took that route Thursday as I was leaving work early, in a hurry, and knew congestion should not have been a problem as during rush hour. My preferred option is to drive Midway for the majority of my travel as the time is guaranteed to be a bit more than an hour & I don''t pay any tolls. If I have 10 possible trips on the Dallas tollway each week to/from work, I may use it once but only if I stop to see friends after work and there is no congestion or a special circumstance (i.e. appt).
- i would like to comment on the HOV it is too hard to get on and not enough get on places, other states have it that you can get on anytime, i would suggest that you work on this and it would be used more, gloria
- Before the Dallas Tollway was completed to US 380 and the Tollway extended to Celina, We had to travel through Frisco on US 287 when going to my mother's home in Corsicana. It took us at least 45 more minutes and had to hit several traffic lights during the trip. Now I only hit one traffic light before getting on the tollway and don't hit another one until I get to Corsicana. It has vastly improved my trip.
- We drive a hybrid. I would prefer to pay for light rail options than tolls.
- The raise in tollcharges are extremely high. I'm paying \$40 a week. With a family of 6, that really puts a huge dent in our family budget.
- When going through the airport I was told that ntta does not work with airport toll. I am a bit confused. So I ended up paying with my credit card to go through. Education for employees and customers would be helpful.
- I would love to see NTTA provide a map of Dallas roads and tollroads, updated with new roads, tollbooths etc, that I could download easily like a pdf file and print on a letter size piece of paper. I have multiple maps in my car in case I have to change routes and do not have a current tollroad map. Tollroads are being added and Dallas maps are not current. Would greatly appreciate it. Thanks!
- I wonder what we would do without the tollways. It would be a nightmare.
- I choose the Dallas North Tollway in general (and the George Bush Turnpike) because no matter what time of day, there are less cars on those roads.
- Thank you for building the Lewisville Toll Bridge, I love using it and would use it more if traffic wasn't so bad on I-35 southbound (I know you guys dont have control over that). I do use the bridge



more during holidays and summer break due to I-35 traffic not being as bad during those times.

- TOLL ROADS ARE RIDICULOUS. I PAY TAXES SO THAT THE GOV''T WILL CREATE ROADS. IT PARTICULARLY GALLS ME THAT PGBT @ FRANKFORD HAS BEEN MESSED UP FOR OVER A YEAR AND NOT BEEN FIXED, OR EVEN ADDRESSED SINCE THE INCIDENT HAPPENED, AND THE PROBLEM WAS DUE TO ERRONEOUS PLANNING/CONSTRUCTION! THE COURTESY PATROL ROCKS, HOWEVER! THOSE FOLKS ARE WONDERFUL.
- This was not realistic in my case, since there are no toll roads in this direction. I would be glad to carpool if it were reasonable, but I work in a small suburb and have no one to carpool with.
- Higher taxes on gas and larger vehicles are more just than tolls because the taxes relate to style of life and use of vehicle and fuel.
- I am very concerned that the focus of the NTTA is cosmetic verse functional. Why do we need new cashless toll booths on the Dallas North Tollway when the old ones functioned. I am actively seeking ways to place political pressure on the board to respond in a responsible cost effective way. It concerns me greatly that a public utility is trying to maximize revenue rather than provide a quality product at a reasonable price.
- We already pay a lot of taxes for road improvements and developments.. Toll roads are a robbery. We should not be paying more for something we are already paying for.
- I did NOT enjoy at all to see to have my dailty toll cost been multiplied by ~2 when the new
 automatic toll has been erected between frankfort and keller spring (90c vs 47c at keller spring).
- Sitting in heavy traffic everyday is frustrating and I think conditions can be improved through incentives to drive at alternate times and bypass roads around heavily traveled zones.
- Thankfully, my job situation allows me to avoid tollways. However, if they changed, I might reconsider more frequent use. However, toll rates are a bit high, for what you get. Also, I don''t see where any tollway will be paid off to revert to FREE.
- It's very frustrating when the road sign gives information about a completely different freeway no where near close to what I'm on and doesn't give me any real time info on the road I am on. This happened this morning when 35 had info on 114.
- travelers in fast lane are remaining in that lane and slowing down traffic....Cars will not move over..Motorcycles are doing wheelies and weaving in between cars, also driving down the white lines between cars
- The time to travel was very confusing in the way it was stated.
- I thought the survey was interesting, as it did point out a bit how I think when I choose my route.
- During the games one thing that may not have been considered; I get reimbursed for my tolls so cost is not important to me, but my time is. So I don't care the cost just which option gets me home more quickly. For individuals that have to pay out of pocket cost would be much more of an issue.
- love your roads! i drive 550 miles a week. my business would not be possible without your toll roads.
- I do not like the ides of turning the HOV lane into a toll lane that charges different rates per hour of use. I use the HOV lane now and don;t feel that I should be charged for using it for its intended use. If the people who illegally cross the double white lines to enter and exit the HOV and all of the numerous single occupancy vehicles were fined the appropriate fines, there would be enough fees to fix the roads. Too seldom are these people caught, and they know exactly when they can get away with cheating, day after day after day. Same people, same cars. No monitoring, even when they say they are cracking down.
 - In general, if there is a significant increase in tolls, I will use non-toll options to get to my destination



even if it takes me longer to get there.

- Tolls are high on SRT. I enter at stacy and exit at preston over 6 miles and the toll is \$1.71. That''s like \$0.30 per mile. Your policy says it''s supposed to be \$0.145 per mile. you are cheating with your wording of toll policy.
- Good work on 114 with very limited slow down of traffic...looking forward to finished product!
- Please fix the DNT/121 interchange ASAP!!! It is the single leading cause for me to select an alternate route.
- I don''t mind paying tolls until road is paid for. I find it unfair that all new highways have been tollroads. I live off 121 and hate I will never have the option of traveling for free. I realize there are high costs to build highways, but think it''s unfair to pay a toll for eternity instead of when road paid for.
- I do believe that toll charges have been increasing. I feel that it's not fair to charge for an additional axel. ie. Trailers b
- I would pay the toll at the Renner entrance on my morning route and have been -but the light has been changed. I take Clear Springs to Renner Road and turn right. At Renner Road the green left arrow lights now before I get a green to cross under the tollway so I have to wait through 2 lights. So, I am now choosing to turn left on Renner, then right on Jupiter and left onto the frontage road at the Jupiter road entrance and you do not get any money from me this way! If you could have the City of Richardson change that green arrow situation back to the way it was at Renner I would once again pay the toll each morning. Thanks - I have been wanting to share this with you!
- The roads in Dallas are in terrible shape.
- Tollway is nice.
- if more roads were built and maintained like the Dallas Toll-way then there would be a lot less frustration by the motorist. This is the most efficient road i have traveled on and many years.
- Construction at GWB and Josey is dragging on too long. Repair for retaining wall.
- Consider making US 380 a tollway
- I do use and appreciate the tollways. But it depends on where I''m going and the time of day as to whether or not I utilized them.
- Keep the tolls low so more drivers will use the toll roads and increase the income for NTTA to provide more expansions. Thank you.
- All toll roads shoud be abolished.
- Our roads should be paid through the tax on gasoline and we should not have toll roads. Howevre, with our very weak governemnt, tolls are a option that is being utilized, but highways should still mainly be free unless it is to some very under utilized area.
- Thanks!
- I travel the gb n gbext alot and find them to be very useful, time saving and maintained extremely well.
- There seems to be more congestion northbound on the Dallas North Tollway from Northwest Hwy to Beltline in the past 6 months. Also, the concrete barriers for the single lane exits at Keller Springs (northbound) and Mockingbird Lane (southbound) are extremely constricting and make me feel very unsafe when exiting. I hope these are not permanent.
- Goerge W Bush at 114 has a horrible dip that i scraped the bottom of my truck when going over. can that be smoothed out?



- Interesting survey, will we hear about any results?
- When you build Tollways, You SHOULD build a Transit System in the center of the road. That would help EVERYONE.
- Would appreciate knowing the results of survey and the consequences of the results.
- We spent over \$2000 last year in tolls and have done our best this year to eliminate toll roads on our routes to work and play.
- get rid of the income statement or make it NA. my income is none of your business and I believe any survey that requires that is just stupid.
- None
- The toll roads cost to much
- I got lost with your "games". It seemed like it was repeating the same thing over and over.
- I do not choose my time of travel based on traffic. If a tollway is available I will generally take it because it is faster than surface roads.
- Thank you.
- I like the 121 tollway. Proper speed, lighting, width.
- I''m looking forward to the completion of Southwest/Chisholm Trail Parkway!
- Thank you for taking special time and interest in ensuring that the toll roads in the metroplex are safe, well lit and maintained to the fullest extent. The only improvement I would suggest is to remove the narrow barriers in entering and exiting toll roads and to remove the large roads dividers that are white and cuase a large movement of my front suspension system. I have had to have two realingments of my front end by use of the Frankford on and off ramps. Removal of the lanes identifiers would be a large factor among a number of people I associate with in m y church and at work. Thank you
- I do intend to get a tolltag one of these days, but I don''t need it for driving to work.
- overall I feel that toll fees seem to be increasing at a rapid rate
- Toll prices shouldn''t go up any amount for any reason with the price of gas as high as it is. Support our teachers!
- I love using the Dallas tollway. It gets us to mid- and downtown areas quickly when we have the need to go. Our need will increase greatly next year as one of our children will attend school midtown next year. We have used the George Bush as well and it is a great alternate route to the airport...much easier than the old way. Thank you for the great tollroad system we have in the Dallas area!
- Why should I pay any tolls? Ridiculous! The roads are paid for by my state and federal tax contributions (and yours, too). I also feel VERY STRONGLY that the current tolls are far too expensive--for anyone. When it takes me \$7.00 to make a round trip, well, I won''t do it very much.
- Southwest Parkway will be a good alternate route once open.
- I am very happy with the improving Nort Texas roadways. The new 121 Chisholm Trail extension in SW Fort Worth will greatly improve my travel routing.
- I use the toll if it benefits me time wise and is affordable.
- I have cut through the airport rather than wait through construction even though I know it adds a substantial toll charge. This is usually a Friday night thing as I just want to get home.
 - I am looking forward to using the Southwest Parkway.



- If I travel during regular hours--8am-9pm I use my iPhone to find traffic info and modify my driving route accordingly. I wish we had better traffic information here similar to Seattle and WADOT.
- With gas prices going up, it would be nice to see the tolls go back down to a more reasonable cost for TOLL TAG users.
- I enjoy the nice smooth roads on 121 and the Dallas Tollway.
- Tolls are rather high.
- I believe in toll roads... as long as they are well maintained.
- Correction I went shopping not to school! I was also going 75 north into Oklahoma. I make this
 trip usually every five weeks by car. I'm very pleased about the Sam Rayburn road as the George
 Bush was way too busy especially getting off at McKinney. Thank You
- It would be a good thing to have a lower toll charge during off hours and weekends. Getting rid of the tool booths in the middle of the lanes. Suggest tag readers only at all enterance and exit lanes to more realistically charge the driving public.
- YAY!! For NTTA!! Makes it easier for drivers to get where they need to be!
- It would be a good idea to see if there can be a route from Denton to the lower DFW area (ex: I-35E to I-20)... or possibly work together with Dart Rail or Trinity Railway Express to offer more GREEN traveling options (Rail + Road would make it easier to travel and make more money for NTTA)
- Yes, I hate that I pay \$10 a day in tolls and MOST days my traffic is delayed 20 to 45 minutes.....if I leave later than 8:30 which isn''t always feasible ---I can make it in 35 minutes..... any other route might take as long, but would not be as direct
- I would like to say that my return trip from work often takes longer... unless I leave a little early or a bit late. Traffic going from the Southbound Tollway from SPring Creek is TERRIBLE until you pass the exit for the PGBT. It would be much better if you had two exit lanes, instead of one.
- I think the NTTA does an outstanding job of improving traffic congestion in the DFW area and I am looking forward to the completion of the SH161 extension to IH20!
- The tolls on 121 are excessive!!! I won''t use it when it costs near \$2 to drive just a few miles. I stay on the access road.
- Speed up 820/183 project to get done ASAP
- Enforce White line patrol... to may white line jumpers. speeding is not a issue, let us get out and run down then road. Put in a system of lane speed. fast lane up to a 80 miles an hour. next lanes slower. slow traffic stay right on road or at home.... pass flash training for stupid drivers hogging the fast lane. Put up sign slower traffic stay right... German autobahn style lane speeds.
- HERE''S A CRAZY IDEA, NOW THAT THE TOLL ROADS BUILT STOP RAISING THE TOLL JUST FOR SHEAR GREED AND BECAUSE YOU CAN. YOU USE CHEAP LABOR TO BUILD THE ROADS CHARGE RISING TOLLS,GOING DIGITAL MEANS NO TOLL TAKERS....... STOP RAISING THE TOLL....I CAN CHANGE MY TIME TO LEAVE SO THAT I DON''T NEED TO TAKE THE TOLL ROADS ...THE MONEY I PAY IN TOLLS CAN BE USE TO BUY FOOD FOR MY FAMILY AND TO HELP GOD''S CHILDREN....SORRY FOR BEING SO BLUNT, I''M JUST SICK OF BIG CORPORATIONS DOING WHAT THEY MAY WITH THERE CUSTOMERS
- I love the speediness of the cashless tolls!
- I hope you open the PGBT Western Extension early!
- It would be great to have a bus stop at W. Spring Creek and the Tollway.
- I am a civil engineer and I''m impressed with how fast the SRT/75 construction has gone. There have been minimal traffic congestion due to the construction and I am pleased with the progress.



- Just hurry up and get 161 all the way to I-20!!!
- also go to my daughters wich leaves off pather
- Thanks for the opportunity! It would really be a blessing.
- I was very impressed with the maintenance of the roads during the recent freezes. Thank you for taking such wonderful care of the roads and keeping us safe.
- Patiently waiting for 190 to make it south to I-30!
- I always notice debris on the tollways and roadways that slows down traffic almost every time I travel. Please look into this problem. I must say, so far the NTTA is doing an outstanding job and it would be better if we could contact someone to report what problems we see in real time for debris or anything else.
- Cashless Tolling is awesome! (no tollbooth lines)
- Can a study be conducted to evaluate the benefits of opening the second lane at the 114 exit off of PGBT. Congestion in the morning and cars stopping at the toll both have caused unsafe conditions and delays.
- Improving traffic flow southbound north dallas tollway has to be fixed (especially at the Bush interchange)
- SH 161 will be a tremendouse time saver for me in my commute to work when completed. However, why is the I-30 connectors taking priority over a overpass over the Railroad tracks in Grand Prairie? Having to work my way around the Railroad tracks is what tracks the most amount of time and it seems ridiculous to leave it until last to do.
- When will I receive my new iPad? :-)
- lower the tolls!
- I generally leave work at 6:30 PM to avoid traffic delays because my time is valuable to me. Spending it sitting it traffic is not an efficient use of time. I''d also like to note that there is construction at the I-35 and President George Bush Turnpike interchange where no work appears to be happening, period. I''d like you to apply some some simple logic with statistics that are not verified however it proves the point. Due to the lane closures lets say each traveler is delayed 10 minutes between 7 and 9 am and 4 and 6 pm. Thats a total of 4 hours, now lets assume during these peak times 2000 vehicles, 1 driver each passes through the construction interchange per hour. Thats 20,000 minutes delayed per hour, so 80,000 minutes per day. That is 55.5 DAYS of people''s time wasted every single day that the road is closed and nobody is working on it. Now I understand you can''t be working on it all day everyday, its just not going to happen due to weather factors as well as other factors. However when weeks go by where the weather is beautiful and no work is done, it makes commuters unhappy, especially when they are paying a toll to use the roadway. As a result I often do not use the tollway when it may be faster for fear of construction delays. The point is, don''t close the road until the construction is ready to be performed, then perform the construction as quickly and efficiently as possible, and open the roadway.
- Traffic in the DFW Metroplex is horrible. The roads have not at all kept up with the increase in population. It's very difficult and trying to have to deal with this on a daily basis. Dallas seems to get all of the attention for whatever reason I cannot understand what about Fort Worth we have one of the worst congested areas in the state.
- The DFW area really needs to work on it's signage to better identify and prepare drivers to make decisions with more notice. I see a lot of accidents caused because of people trying to make snap last second decisions that could have been avoided with better or earlier notice.
- I think tolls for motorcycles should be less. That eliminate congestion and do not do as much damage to the roadway due to weight



- I don't think toll roads are appropriate for areas where there is no other reasonable alternative i.e. if there were no service road for someone to travel on who does not want to pay tolls and would require someone to go more than 5 miles out of there to reach the alternative road.
- Please, please, please acquire the 3mi strip of 161 from 183 north to PGBT. The lack of lanes, their poor quality, and the amount of "free riders" hopping on and off the freeway to avoid the main toll gantry @ Belt Line significantly increases congestion and travel time. Thanks for listening!
- I love the President George Bush because it has wide lanes. I think the DNT in the Beltline area is very narrow, which makes me nervous. People on their cell phones tend to drift lanes...
- Other than the trip we make to see family once or so a month we don''t use any toll roads. We tend to go up the service rds on Bush because we don''t have a toll tag and have issues getting mail with a po box and are afraid we won''t get a bill from you and then get one for thousands of dollars! We used Bush when you had the pay as you go system.
- For the games, you should include a map to allow us to see where we''re really going. Will going from A to B require us to go out of our way to save a few minutes and use the toll? Will going from A to B be next to the tollway in both locations?
- thank goodness for tollways!
- If it takes more toll roads, better access around Fort Worth and I-35W North is needed now.
- 1) Why is a survey for North Texas travel controlled under Vermont law?!
 2) Why charge full price at 2:00 AM?! Please look into "congestive pricing" to encourage alternate commute times, thus reducing congestion and pollution. It was profitable in Los Angeles (until the state elliminated it).
- Todays one way travel was extrodinarily light traffic and very unusual I wish I could have responded with my usual trip info.
- thank you!
- We feel that driving the toll roads saves gas because there is not as much stopping and starting. It probably does not save money, but it is much more convenient.
- love, love sam rayburn 121 tollroad. will usually take the tollroads for convenience. tend to stay away from dallas north tollway during day due to congestion. great road to take after evening rush hour though.
- We moved from Plano (Dallas North Tollway and and George Bush) and traveled to downtown FW on mostly toll roads. Would love to have toll road from downtown Fort Worth, I-35W to Highway 114 Texas Motor Speedway)! Also, would love for 114 to be expanded west of I-35W. Thanks.
- Would like to see ntta website improved so historical toll data can be sorted and totalled more and so users can update fields like drivers license etc easiear.
- I am willing to pay a little more tax or tolls to see the roads/streets cleaner. When I moved from Brazil to Houston in 1996 the road conditions were always clean and well kept. My frist trip to Dallas was around 1998 and still considere the roads cleaner than nowdays. I guess our economic situaion is also forcing the transportation dept. to prioritize its budget. Overall, I would like to see the roads/strees cleaner. Put the good prisioners to work on our behalf so we can get some of the benefit for paying taxes to support them. Regards, Sandra
- My concern is that are free highways have turned into paid highways more for convenience and profit. Once they are in place they will never be a free highway again. Economically I don't see how below income households are going to survive. Please consider households that are economically challenged when making the decision of toll price exits. Thank you.
- Speed should be lower (55-60) on the ND Tollway between Plano Parkway and 635. Tolls are already too high. I do not understand why anyone would pay a toll to use the ND Tollway during



rush hour when you can usually save time using an alternate route.

- I enjoy the news letter and the email updates on the road work in my area. Thank you.
- Appreciated the ability to provide input.
- Thank you, We appreciate NTAA very much.
- I would have answered more questions, but I don't want an iPad. iPod Nan is still useful as a gift.
- glad this survey is happening and i hope it can help future plans
- the quicker the better, the more tollways the better....get where I''m going quicker is worth the reasonable cost of tollways!
- would be great if there was a NTTA office closer to Grapevine
- While the Tollways are convenient, taking them daily to and from just doesn"t work for me. It"s over \$1 each way. That"s a minimum of \$40-50/month. Throw in weekend use and all of sudden I"m spending \$80-100/month just to use the roads. I live right at the intersection of George Bush and the North Tollway. I initially leave early so I can stay off the tolls whenever possible. They are just too expensive in this economy.
- I''m so pleased with the new Sam Rayburn Toll Road at Central Expressway. I think the NTTA has done a grand job of keeping us informed about the progress and any road changes. I really didn''t notice much delay to traffic throughout the construction. Great job!
- This was based on One-way. My trip home is horrible compared to my trip to work due to traffic at PGB and I-35 and in six months, I have seen people working there once. I have been through there at 6:00 AM, 11:00 AM, noon, 3:00 PM, 7:00 PM and 9:30 PM and there is no work yet we sit in traffic delays due to construction every day. I would be curious tio hear an explanation for this. My 45 minute commute to work is over an hour going home.
- The route I take is typically pretty clear at the time I drive it.
- Have enjoyed the fast 121 route west. Makes the shopping movies restaurants and other activities much more doable since we can get there so quickly now. Also airport travel time much much faster with no lights or stopping. Thanks!
- I do enjoy riding on the NTTA roadways. I also occassionally drive from Plano to Bass Pro in Grapevine. 121 is the ONLY way people should go.
- I would be very happy to pay a toll for a road that got me quickly from south of I-20 to north of I-30 in Arlington. Highway 360 is wonderful during off-hours, but it's completely unreasonable and unusable during peak hours. I've tried every alternate route available, and it's nearly impossible to get from south Arlington to north Arlington in less than an hour during peak times especially from 4pm to 8pm.
- I try to stay off of toll roads if he traffic is moving on other roads. I do listen to krld if I am going to
 use a hwy. Also if I m in a hurry or having a pd bt the hour employee in te car I will jump on the hwy.
 Going from 75?campbell to keller springs/tollway on Fri. I almost always jump on Gb and then N
 tollway. I drive about 30,000 miles/yr.
- I hate the way the new entrance ramp is from Hwy 78 on to George Bush!!!!
- You should consider investing in native vegetation (i.e. native shrubs and trees) for open areas, opposed to sod. Many people utilize toll-ways and highways, not just because they are convienient, but because of the scenery.
- You should have a write in option for the reason for the trip taken in the initial section of the survey. I was leaving work attending a committee meeting with Boy Scouts of America a voluntary



commitment. There was no option for such an entry on the questionaire.

- It would be nice if the NTTA charged motorcycles half of the toll that they charge 4 wheeled vehicles because they do not put that much wear and tear as compared to an SUV!!!
- Love the toll, but sometimes the prices deter me from using it, especially if I have to go somewhere like McKinney TX or in that area.
- Many of my trips are time constrained through work commitments or family schedules, so travelling at other times is not an option.
- I use Toll Roads as much as possible to get to any destination
- I35W through Ft. Worth needs an overhaul NOW!
- I would like to know on-time and delay information regarding Projects currently underway on the NTTA system. Future plans and how they may affect travel is required.
- I do believe the tolls are too expensive and also believe they should only be used to cover the cost of the road itself. Many tolls have been around for years and have been paid for many times over. People shouldnt have to continue to pay more for something when the toll companies have already made an exceedingly large amount of profits.
- thank you
- If you had an option to pay someone and get chnage for tolls, especially for people who come to visit it would not be so bad. But when out of towners come, they get huge bills in the mail and they did not have a choice to pay the toll while using it like other states do. WHAT A SHAME. I was also forced to buy a toll tag in order to pay less since I could not longer pay by cash
- In the games section, there were options in the 4, 5 or 6 \$ range. I would not ever consider taking a toll for one of those totals. I would always choose the alternate non-toll route in that circumstance. Thank you, April Samford
- Please open up HOV lanes to 1 person for additional toll.
- Thanks for the opportunity to provide feedback!
- None.
- I feel that tolls, altho they help with improvements, are merely another way for the county/city/state to get more money. To me there should be more realistic tolls, such as pay according to the distance you go: ie. 40 cents for going 2 exits, \$1.00 for going about 5 exits or according to distance in miles. BUt this 40 cents every few feet is a RIP OFF!! And when the roads that you''re building are paid off, are you going to stop or decrease the tolls? I doubt it. Now it seems the majority of roads are toll in the DFW area and I think it''s ridiculous! I avoid them at ALL costs!
- Stop raising tolls so often! Gasoline goes up too! Before you know it, I''ll have to carpool in a clown car to get to work. ha! Road conditions are great. I like that I don''t have to worry about too many pot holes. Thanks!
- all questions on survey were fine...EXCEPT--SALARY....HAVE A SPOT WHERE YOU DO NOT HAVE TO ANSWER......
- I said my answers are not how I would act in real life because in real life I would not take the cost of tolls into account. The tolls are automatically billed to my TollTag, so I''m not aware, day to day, how much I''m spending on tolls. I just choose the route I think will get me where I''m going in the least time, because I''m always leaving later than I should have.
- I have had a tolltag since way, way, back there, shortly after they became available, not because I used our single toll road which ended at I 635, very much, but it was cool to have when I did need it.



- I have traveled on North Dallas Tollway frequently. Is there some way, I can know if there are traffice problems on this road before I get on it?
- It would be great if an individual could purchase a toll tag for use in rental cars !!
- DFW traffic is horrid, expand 820 north loop. and no one uses their freaking turn signals. cops need to ticket it.
- Thanks!
- Toll roads can have different speed limits for different lanes, and a minimum limit for speed in certain lanes. Whenever constructions / similar planned maintenance are in place an alternative way that can take the whole traffic is highly desirable.
- The questions did not allow for me to say that my route for latest trip was dictated by visiting other recreational sites along the way. Nor did it allow me to say that I regularly use George Bush Turnpike twice a month on weekends and it is the only option I would consider for a trip between Rockwall and Decatur.
- Would like to see more speed limit signs
- I particularly appreciate the tollroad that takes me "around" Austin! It cuts off a lot of travel time and traffic congestion.
- I generally do not use toll roads because I have not noticed a significant distance/time savings. Maybe it is just me. In the 8 scenarios, the cost of the tolls at any level did not offset the time savings, i.e., \$1 to save 5 minutes is not great enough to make me interested. By the same token, \$1 for 30+minutes, may get my interest.
- Please find a way to reduce the cost of the tolls resulting in free use for all tollways.
- I make 2 trips to the airport EVERY week and am VERY cranky that there are no longer "Tolltag Only" lanes entering the airport on the north side. I have a tag so I don't have to wait behind those that don't
- Please make me a winner!
- I would definitely use toll roads if the most direct and shortest route and especially if the toll was an affordable and reasonable amount.
- Would feel beter about the toll roads if they eventually paid for themselves and then became tollfree, or if some of the money went to education.
- I hope I win an Ipad or ipod
- We have two places of residence. One in Corinth and the other in Lakewood Village. This trip was made from the Lakewood Village property. Our primary place of residence is in Corinth. That may seem like my answers are confusing.
- It is important to keep the surface and shoulders in excellent condition and the length of the entrances and exits long enough to safely handle peak traffic. I really appreciate the "No Stopping" entrances and exits.
- Areas of Trinity Mills between Marsh and Old Denton Road are buckling. Has anything been done ref area from McCoy to Old Denton? Exit Ramps from George Bush to Tollway and George Bush to N Central are dangerous requiring merge on a bridge into another merge onto the next freeway--lots of congestion and Near Misses because of poor visibility of oncoming vehicles and no clear indication of which route has right of way. At 70 mph some drivers fail to slow down to make the curve speed limits and tend to "tail-gate" and whip out before the solic white line ends in getting onto the new roadway route. Always a mess in bad weather on these bridge ramps.



- There was one question I found confusing: I selected "did not pay toll" because I have a tolltag -- so I did not stop to pay a toll or get a bill in the mail. That question is completely unclear -- maybe I should have selected YES, since I paid via tolltag.
- keep up the good work and plz keep the prices low
- I''m going to win! Thanks
- I don't agree with the new system because it deprive people the opportunity to pay right there and then and if the vehicle is borrowed it leave the owner with the bill and many times the owner has no idea of the bill. If the borrower have had the opportunity to pay like the old system, then that wouldn't have happened. Give an opotion to pay. I am using the NO TOLLWAY option on my GPS to avoid those roads as much as possible. Only by mistake I have taken them. ==== Another situation I dislike is the zipchash? system where prices are too high. Obligating people to buy in order to save is just plain bad business, lack of empathy and aims at manipulation. Just too bad.
- Just waiting for the extension to IH30...
- I drive a hybrid already but I drive more carefully to get the very best gas mileage. I would like to see hybrid cars able to use HOV lanes with only one person or toll lanes at a discount.
- toll roads should have a minimum speed limit as well.
- Congestion at 35 and George Bush is extremely infuriating. George Bush is the most reasonable route for me to take back to my home near Firewheel in Garland, but I am not getting what I pay for when I am sitting in traffic for 30 mins. I pay nearly \$10 PER DAY to take George Bush to work in Las Colinas and back, and it makes me very frustrated.
- I like having the toll road option when travling.
- VERMONT? Why would Vermont have anything to do with these sweepstakes? Is this just another thing that has left Texas? I am confused.
- I believe that congestion in the DFW area is greatly exacerbated by the presence of HOV lanes, which are counterproductive and cost more in lives lost and property damage due to the accidents that they encourage than they could ever save in fuel costs. DFW is not a highly dense hub-and-spoke city like New York, and politically fashionable "solutions" like carpooling just aren't realistic. Releasing HOV lanes to general traffic would reduce traffic congestion and consequently improve air quality, not to mention improving convenience for the general public. I realize that this is not a priority with the bureaucratic functionaries of the NTTA and their demagogue political masters, who would rather posture in public than actually solve real-world problems, but the truth is the truth.
- since speed limits raised & cashless system, traffic on DNT, traffic has flowed unbelievably better especially on downtown Dallas end. This is said from a lifelong north Texas resident!!
- Here''s the key for me: I do not mind paying a toll to get where I want quickly; I DO mind paying a toll to sit in traffic! I use the tollways frequently when I think there is likely to be no traffic. I would also LOVE a way to tell from my phone what the traffic is like, for instance on the Dallas Tollway, to help decide whether to get on.
- It would be very helpful if the traffic lights were timed better to help save on gas.
- Please end the construction at DNT and 121. Its ridiculous for users to PAY to use a toll road that is always backed up!
- I look forward to the 35E completion with toll lane.
- I avoid driving in North Dallas, but when I do, I find the tollways save *much* more time than 10-15 minutes.
- Besides costing me 80 dollars a month, ramp closures, and the traffic congestion during rush hour, I rather enjoy using the North Toll.



- I don't think it's fair that we have to pay for toll and we already pay taxes to improve our current roads and isn't the North Dallas Tollway supposed to be free now?
- Getting to the airport is a mess
- i dont mind paying tolls to take a shorter, better route. i think the toll prices right now are outrageous, and i avoid using the tollway and use the access road if my trip is 20 mins or less. however, my husband has to take the tollway to work, it is the only highway near us. we are paying \$200/ month between the 2 of us and the is from frisco to addison. i think that is ridiculous, and i wish we lied near 75 where those commuters drive for free with the same amount of congestion. this is a factor i where we choose our next home. if we can save \$200 a month, that is \$200 towards a better home.....
- the speed limit in the curving areas between PGB tollway and 635 on the North Dallas Tollway seem a bit high for the tightness of the curves
- On the return trip from my shopping at Grapevine Mills, we took the Sam Rayburn tollway to Allen. That saved quite a bit of time and gas.
- I can't wait until the tollway is extended past HWY 380 we travel to Lake Texoma for business and pleaseure. It is convenient and safe on the tollway from our residence near downtown all the way to HWY 380. I look forward someday to see the tollway go all the way to HWY 82 in Sherman, Texas.
- Your Service pepole on the phones are always great and very helpful with billing issues and or violations.
- stop texting while driving!!!!!
- 190 is great and fast way to get from NE area to north Dallas.
- I think some of your questions about traffic delays should pertain to construction delays. Most of the delays that slow me down are construction delays.
- tolls are way too high already. i drive an extra 2 miles on the service road, thru traffic & stop lights to
 avoid paying just to get onto the road. i cannot avoid the \$1.71 charge ON the toll road, and i cannot
 avoid the \$.43 charge to exit. if tolls CONTINUE to go up i will be forced to change route to avoid
 paying. ridiculous to charge citizens to drive on roads.
- When are you going to take down the toll booth lanes and open them up to toll tags?
- I appreciate the clean and well-maintained toll roads, and don''t mind paying a toll to use them as long as the cost does not continue to rise. I like the design of on-ramps on 121 in the 75 to NDT area, with a angled approach instead of a long parallel merging lane. During high traffic on NDT, too many aggressive drivers use the merge lanes as a passing lane, which is frustrating. I no longer drive 190 on a daily basis, but when I did, the extra length of merge lane after an exit (e.g. east bound 190 at Preston) was a very frustrating feature, as many aggressive drivers use that as a passing lane. Thank you for eliminating the toll plazas.
- I honestly think that toll roads are OK but the toll rates are WAY too high. I object to being double
 and triple taxed. I already pay tax to drive on the highways and streets and the toll is another tax on
 top of that. Instead of the NTTA spending money on lush off site meetings and stuff you should be
 more conservative and try to keep the toll rates low. Most people I know are like me. They try to
 minimize tollway usage because it is too expensive. Sorry I had to be honest.
- I like the new thin toll tags!
- Tolls should be variable based on time.
- I love how well maintained the tollway is!



.

- Please fix the entrance to the Tollway southbound at Parker Rd asap. It is dangerous!
- N.A
- I like not having toll booths. I think they always caused a slow down. I am on 161 6 days a week round trip going to the dance studio. Right now, the tolls are priced fair. Once it goes all the way to I-20, I will use it to take my kids to their private school which will cut about 10 minutes off the trip.
- I''d really like to see a mobile app that would clearly list the delays and in which direction they are going. Having just moved here, I do not understand where/what it means when it says "delay on Tollway at Frakford". Does that mean going South? North?
- We anxiously await the GBT to be complete to Rowlett.
- very intuitive survey. Thank you for sending to me.
- When will the George Bush be complete in Garland thru Rowlett?
- Please start work on repairing the wall on George Bush in Carrollton. The lanes need to be back to
 normal and around the curve in the road it''s not very safe due to their (the lanes) temporary status. I
 don''t need to see clean up crews every day. GB is almost too clean, have you seen 75 or 635 lately?
 Mess everywhere!
- Getting rid of the toll booths was brilliant. It dramatically reduced travel time and congestion at the toll booth locations. Jail those who keep ignoring the requirement to pay tolls. It's theft of service. A few examples might stop those crooks.
- Texas tollways are TOO EXPENSIVE. I don't understand how / why they are able to continue charge very high tolls long after the roads have been completed this is illegal.
- Speeding is a problem on the tollroad. I haven''t noticed coverage especially North/South. I'm going the speed limit and people are passing me like I'm standing still. Beef up that route.
- Please finish construction at George Bush and I-35!!
- Ready for 190 to be open all the way to I30!!!!
- I am a big fan of tollroads.
- :)
- More toll roads! And definitely no change lanes I love the new Zip cash option it keeps traffic flowing much better. Great idea!
- It really does bother me that a 30 min commute to work with minimal traffic from Plano to downtown Dallas using the DNT increases to 1 hr 10 mins during the morning and evening commute. I am going to try alternate routes to see if I can cut down my commute time.
- The portion of the tollway between Oak Lawn and LBJ have been paid for a long time. I disagree that we should continue to pay tolls on this route to pay for other routes that we don''t use. Once the old turnpike (I-30) was paid for they quit charging tolls.
- Remove the toll booths when the construction of roads are paid for. Use taxes for upkeep and maintenance.
- POS Data VIVA LA FAMILIA Y UNFUTURO MEJOR
- Do not give out my information to any other company or person. I do not want any promotional emails or contact. I did not want to give my financial numbers and I would appreciate if you would respect my privacy.
- More signs on roadway telling traffic conditions ahead. Conjestion problem solved at Frankford was a welcome relief.



- I rarely use the tollway but do like the convenience of the roadways. Looking forward to the Collin/Grayson County extension project.
- Tolls should reflect the cost to build & maintain the toll road they are collected on. Once the road is paid for, the tolls should be reduced to cover operating expenses for that road only. I.E. Tolls collected on Hwy121 should not be used to extend the Dallas North tollway or maintain any other roads.
- there should be some kind of cash back rewards, like earning a dollar back or something like that if you use your toll tag on the weekends as well.
- One suggestion from Hwy 5 exit off 75 and going to Medical City Drive, with the amount of traffic during rush hour that travels Hwy 5 up to Eldorado Parkway, why would you go from two lanes for thru traffic and a turn lane for 5 south down to 1 lane with a turn lane. You have a major blockage past the stop light at Medical Center Drive thru the turn. Doesn't make much sense. It was so nice to have those 2 lanes plus the turn lane. Traffic is bunched now at the hospital.
- All of your game options involved a toll-only option. I bet you would get completely different answers if you mixed in some non toll routes.
- There is always a variable. If I'm running late, I pay the tolls. If I'm listening to good Sirius Satellite, I don''t mind sitting in my car an extra 10 minutes. If I plan ahead of time or it''s ritual, I go on autopilot and drive the same course. And, I rarely take the tollway IN to work, but I almost always take the Tollway HOME! If that had been my last scenario, my answers would have been very different.
- I really wish something could be done about congestion in the same places everyday, with/without rush hour traffic...those that I am referring to are: Keller Springs, Trinity Mills, LBJ, Plano Pkwy-Parker Rd. I really thought that the removal of the tollbooths would help, however, I have not seen much change.
- Why is it people in Carrollton Can Enter and exit the Toll Roads after driving in some instances for over 2 miles and I have to pay for every inch I travel on your roads. Seems if your charging everyone by the mile you need to add tolls in the carrollton area. It is unfair and only ads to the congestion when some people get to enter and exit the toll roads for free at some of the busiest highway junctions.
- My biggest concern with the NTTA is construction costs. I just don't understand how it costs 1 billion dollars for 9.9 miles of road. This is regarding the Eastern Extension of PGBT for US78 to IH30. Also the 50 year finance I think is way too long. And, finally, it upsets me that a road that has been payed off, like the lower DNT, still requires tolls. Tolls should be used to finance the construction of a road only and once paid for, the maintenance should be through regular taxes.
- I enjoy taking the Toll Road, it makes driving safe, enjoyable, and a pleasure. Now with the no toll booths it makes driving even quicker.
- I think Dallas has done a great job with the toll system. They do make it convenient, it is well maintained, and I like the looks of their work.
- Collecting tolls to pay for the highway, road and improvements that are being used is fair. Once those highways, roads and improvements are completed and paid for the tolls should no longer exsit especially when they offer no solution to travel times when it is most important...rush hour. The people of Dallas already pay their taxes and taxing them again for something that is paid for and is inefficient is not right. IF, and only if, the current toll roads saved travel times than they would be worth the toll, however the Dalls North Tollway is one of the worst congested highways in the city at rush hour. The new interchange from 78 South to PGBT West has caused more problems than solved. The PGBT overpass of 75 is a nightmare during morning rush hour. If the toll roads solved problems then the tolls would be justified, but they rarely do. Since the public PAYS to drive the toll roads, these roads should be maintained during snow. If the public pays for the service of a tollroad than that service should exist at ALL times, and should be one of the first roads plowed during snow,



since we are paying customers. The differentiation between Dallas highways and NTTA tollways is minimal besides paint color. As tolls rise I will alternate my route, as will countless others in Dallas. Either I can sit in traffic on Bush and pay for it, or sit in traffic on 635 for the same amount of time and not pay. The tolls should go to DART to expand their rail lines rather than NTTA to create more rush hour parking lots.

- Who ever decided not to connect 121 and the NDT ??? look at more efficient traffic light times/patterns, sit WAY to long at lights, and they are poorly synchronized, there is so much the traffic engineers could do better.
- go for it
- Thank You!
- I expect NTTA to take a more agressive approach to toll skippers.
- Sam Rayburn tollway is great to use now that there are no toll booths. Roadways are great and the time to arrival signs are fantastic. I only started using this hwy in the last year, but have always found it safe, well maintained and a pleasure to drive. Probably the best hwy in the DFW metroplex.
- My evening commute takes from 45 minutes to 1.5 hours, leaving at 4:30 p.m. from Dallas (75231) to my home in Frisco (75034). Ridiculous amount of time in the car. Seriously considering moving to Dallas to avoid all tolls and tollways. My husband and I area spending \$350 \$400 a month in tolls and his commute averages 3 3.5 hours a day round trip. Saving time would be great, but I am not willing to double my cost to do it. Thank you.
- Toll roads are important and inevitable. But since I'm still paying highway taxes, replacing free roads with tolls is distasteful to me. With these two considerations, I am very careful to assess the amount of toll I'd pay as I plan my trip. Sometimes its worth paying it, and sometimes I take the free alternatives. Just being prudent. If you keep your tolls reasonable, I'm much more likely to use your roads.
- Sometimes around construction areas the lanes are too narrow and that scares me. I understand the need for construction, but the temporary lane narrowing is worrisome to maneuver especially if there is merging traffic.
- I believe that the state is losing money on their tollways cause they don't have pay booths. We have many out of state people travel the tollways and get no money from them at all. I think that was a bad decision not to have one pay booth on the tollways.
- On the 8 games, it took me a few minutes to figure out how to actually determine what you wanted me to answer. Once I did the first one, seeing the second game with variations made it clear.
- List the Tollway EXITS in alphabetical order.
- Two comments: despite my aversion to being stopped by police, lately driving on George Bush has become nightmarish because of the speed freaks who tailgate and weave in and out to go faster. They are a menace to the roads; I think there needs to be more of a presence on the tollways because these people go far beyond the speed limit and are a danger even if one is driving in the middle lane. Also: toll roads are a necessity in Dallas where there isn''t sufficient decent public transit and everyone is driving a vehicle, the savings in gas and time are worth paying for: but to a limit. Costs have become astronomical for the average Joe like myself, I can''t write mileage and tolls off for work. So I do support toll roads, but don''t think it''s the ultimate answer to managing traffic congestion. NTTA keeps the toll roads safe and well cared for, so kudos to you for this.



- This survey does not take into consideration emotional considerations, weekly additional commuting habits or needs (gasoline stops, grocery or shopping) or other habits that determine when I choose to use a tollroad. FYI I will not use a tollroad on weekends I use that money to shop with!
- Bush tollway is the closest intersection to my home and is always the best option. However, we often do not use it because of price, and because of the difficult circular-to-merging intersection at DNT (south) and 635 (east). Also, my route to work is identical mileage via EB Bush/DNT/635 versus WB Bush/I35/635, but I found I35 to usually move more quickly than the DNT southbound from Bush to 635. I haven''t tried it since the toll booths were removed, but now I don''t want the expensive habit.
- raise speed limit on lake lewisville toll bridge please :)
- We reallly need traffic signs on the southern portion of the Dallas North Tollway near downtown. There are NONE.
- end
- I generally don't use toll roads for to and from work. On weekends when I travel to more northerly areas I generally use toll roads.
- •
- I wish we had more public transporation options from McKinney to Dallas, DFW, and Fort Worth. My husband and I would choose a rail line daily if it were an option. I also wish Collin County weren''t bearing the burden of toll rolls. You cannot get in and out of the area without paying tolls, it is grossly unfair compared to other suburban areas like Arlington, Southlake, and Denton. We are considering leaving Dallas over lack of transportation and high cost to commute for a good school district.
- I want to thank NTTA for the hard work in making nice roads.
- I would pay more for additional lanes on PGB between 635 and 183. It's now as slow as taking 141.
- please put signs for slower traffic must be on the right side or signs left side is for passing only on the toll road.
- I would be strongly opposed to raising tolls during peak hours. I am very much in favor of removing tolls once a road has been paid for.
- I strongly disagreed, and still disagree, with turning 121 into a toll road after we had already paid taxes to construct it. I moved from The Colony in small part to avoid driving 121 every day!
- With the economy the way it is, the government is not giving money for new roads, so I am totally in favor of tollroads to build new highways. Let's get George Bush (190) all the way to Highway 80 and Interstate 20 in Mesquite.
- I travel GBush every day, btwn Sandy Lake & Trinity Mills ,there is an area on the road that is raised & at 70 miles ph in the passing lane it takes a pretty big hit, and throws my car out of alignment. You can move over 1 lane & it is better , however there is construction going on right there and the lanes are narrowed down while entering that area from Sandy Lake & it is really difficult to slow down & change lanes to avoid the bump. The pavement is truly unlevel in that area & right after that there is another like frost heave bump as well.. Wld like to see that area fixed.
- Why is there not a train from the N Dallas / Collin county suburbs to DFW?
- I belive since has been built & develop the Tollways, have became more easy to commute and travel through Dallas/FWD, maken us to get less stress to our daily life, at least when they are not accidents, caused by crazy, mad & insane drivers.
- It bothers me that tolls are required because highway finds are highjacked for other boondoggles. It bothers me tremendously that foreign ownership of Texas tollways is even considered. Keep the jobs and money in Texas.



- Easy Survey! Thanks!
- I think that NTTA does a good job, and as texas'' budget deficits increase, we will need more toll roads.
- It was a business trip, not a school trip...
- I would prefer ntta to do managed lanes over foreign companies, ie: nte, dfw
- end survey
- I have recently had to change routes from my normal North Dallas Tollway to save money. The cost of gas and some morning congestion make it hard for me to need to pay for the tollway. IH-35 takes about 15 minutes longer, and its dirty, but saves me about 180.00 dollars a month now. If the gas prices go down, i might continue my old route. Thanks.
- I kinda got frustrated with placing the end point on the trip map for this survey. My fire station is addressed as 5610 Lakeridge Parkway and the cross street in front of our station has NOT been named Mansfield Road for quite some time. Google Maps (and most other map apps) have never been updated to accurately reflect most of the streets within our district.
- I don''t mind paying extra to take the tollway when time is important to me, but if time is not a factor (@50% of the time) then I will do what I can to save money.
- As fuel costs increase, using the toll roads frequently feels like another utility bill. Lowering the costs, even if only temporarily, demonstrates concern for what consumers are dealing with and could potentially increase travel on the toll roads because the costs would balance out. Meaning the cost of fuel versus the cost of tolls.
- I use, appreciate and enjoy all the toll roads in Texas. Worth every cent and more!
- I would use George Bush Tollroad more if the tolls were cheaper.
- I completely agree that congestion is something to avoid, even at some cost... but the tollroads in the Frisco/Plano area are quite numerous and wind up being pretty costly if you must use them for work every day.
- I like the toll way but with the economy it is hard to pay the toll but the alternative to my work commute is to use a route that definitely takes more time and probably more gas. I wish there was a greater discount for toll tags. Also, the toll tags arent very good lately. I keep getting ziptag bills when I have a toll tag. It seems hit or miss whether it reads my tag.
- Can anyone do anything about the morons who slow down traffic because they are too busy texting and leave a quarter mile between them and the car in front of them?
- I believe that NTTA is doing a great job in the Dallas area. It provides excellent toll roads at reasonable cost. The various toll roads has helped me save a lot of time when traveling across the area.
- I love the 161 Tollway (connected to I30 in Arlington). It has made our trip to see our grandson so much easier. Keep up the good work.
- I was a child when their was a tollroad between Fort Worth & Dallas. When the road was paid for the boths where removed. I think all tollroad should be that way, because the more monie you recieve the more the system be come coruped and wastful. So yes I don't believe in tollroads.
- The current reliability of the NTTA system with regard to travel times is NOT good enough to warrant the tolls which are charged.
- Information requested was not delivered over a secure site! You used "http" rather than "https" and no other security icon was displayed.



- I am tied to DFW due to divorce and sharing kids/visitation. When my kids are old enough, I would gladly move away from DFW. One major reason is that I have to pay toll almost everywhere I go. I dislike that once a road is paid for, the toll doesn't discontinue so I am paying for roads that benefit someone else at some point or making someone rich. NTTA should have to open their books for the public where we can see how much income is derived from tolls, what is done with that money and we should be able to vote to approve it or not. I don't buy that it is for the purpose of building roads and believe some people are just getting rich by legally stealing money from hard working American''s.
- I do not drive the toll roads because the costs continually go up and there is as much traffic congestion on the toll roads as a side road. Why should I pay to sit in traffic on the toll road if I'm going to sit in traffic on a side road for free?
- -
- My drive on the George Bush and the Sam Rayburn have always been pleasant!
- In the game section, I would have chosen a different option of taking my entire route via non-toll roads if the congestion were significant and the tolls were over \$1.50.
- Stop raising tolls. The more it is raised the less i want to use it.
- If I am running late for work, I will take the toll roads. Otherwise I take Preston all the way to 121.
- thanks you hope i win the ipad
- Looking forward to the new Extension of the George Bush in Rowlett
- Several of the toll amounts in the games exceed my comfort level for a one-way trip. Ten dollars for ONE WAY?!?!? Way too much to ask. Many people could not afford it.
- I do have toll tags on both my vehicles and it saves money on each trip, I would like to see additional discounts for seniors 65 and older.
- N/A
- I would be ok with a toll road in the HEB area only if the tolls are reasonable. I have previously heard rumors about 183/121 being a toll road and the toll from Hurst to Euless being over \$1.00. That would make for some expensive travel each week when I am not sure you can "guarantee" no delays.
- End Survey
- Frisco is surrounded by toll roads, it is not fair for any funds from these roads to be used elsewhere.
- Loved it:)
- send me the Ipad 2
- Please complete the Trinity Toll Soon.
- Lower the costs of tolls.
- You built a new ramp for northbound N. Central Exp to westbound 121 Sam Rayburn. Why the hell did you not put a ramp to exit to Hardin Blvd?!?! I would have paid \$0.20 at the end of my day to avoid the dang clover leaf interchange!!!!!!!!
- I always use the toll roads when I can. The Dallas North Tollway extension has been a great addition for our travel. I wish the extension was further north. The Highway 121 completion has been another great asset for my travel. Keep up the good work
- Once the 190 extention to Rowlett (66) is completed I might use 190 more often, if the rates aren''t raised too much higher. I currently only use 190 when I am running late for work and only on the way to work. Paying \$6.30 per day for a round trip that saves me 5-10 mins each way is not worth the fees, especially once you add the extra tolls from the current end point of 78/Firewheel mall to



Hwy 66.

- I would like to see improvements to I-35E from Lewisville to Denton I would like for the road to be finished from Lake Dallas across the lake and into FM 121 to Frisco.
- Your tolls are expensive therefore I expect a clear, fast, direct route with as many lanes as required to achieve this goal. On days with major accidents, causing delays over 10-15 minutes, you should credit everyone''s toll tag account for that day''s tolls.
- While I am in support of using available dollars to fund mass transit options, (light rail, etc.)I am not in favor of using tolling to build more roads/highways.
- Thanks for this opportunity.
- Travel determines who I am employed by as I do not want to sit in traffic every day. You learn what roadways are stacked with traffic and what an accident does to your drive time. Weather also affects your drive time.
- pick me
- Need more timely construction closures information around the 121 and North Dallas interchange.
- Please don't raise toll fees! It's already hard enough money wise with the gas prices the way they are.
- Your "game" appears to be a way to gather information on if people are willing to pay more in tolls. While I fully support NTTA & the use of tolled roadways, I will not support increasing roadway toll fees. I think your last vote of increasing tolls since usage was down was the wrong route to take. Perhaps try lowing tolls to increase usage, just my thoughts. :-)
- The trip we took that I described in this survey followed the future eastern extension of the George Bush Highway. We mentioned at the start of the trip that in less than a year we would have used that option.
- tolls are outrageously expensive and are too frequent. i moved to dallas from chicago and in chicago the tolls are discounted more for toll tag(i-pass) users and are further apart from one another.
- I think using a toll road saves me money in the end by not having all the stopping and starting with wear on my car.
- I only use the toll roads once per day as the cost is too high to use daily.
- It is ridiculous that all road options from one area are under construction at the same time for instance 423, 720, Eldorado Parkway, Toll way (condensed to two lanes). The toll way has too much traffic on it when it's three lanes why in the world would you condense it to two lanes? When there is a wreck on the toll way why don't you close the entrance ramps between the beginning and the end of the wreck?
- I really enjoy driving the TollWay and think the elimination of the cash lanes has really sped things up!
- Come on PGBT Eastern Extension!
- Toll rates have increased too significantly especially on the DNT and 121. With the new cashless tolling my trip costs have also increased significantly leading me to take other routes whenever I can.
- I answered conditions of road on a previous question but speed limit is also a factor. Thank you for recently raising them all.



- i am from europe and when i compare the quality of streets i hardly can believe the condition they are in. I reject 100% the idea of paying toll within a city (other than city limits) on a mile basis. an annual fee, preferably subsidised would be the best option. It's sad for a government if it needs to go to private businesses to be able to provide excellent infrastructure (roadways) but also gives it the opportunity to charge for its use. In my opinion roads should be paid through 100% tax money and people who earn more, pay higher taxes. It''s not my fault that I luckily have a job (that just pays enough to provide for my family) but in order to get to my workplace I have to pay hundreds of dollars in toll.
- My Toll charges run \$40 per month, that is too much.
- I hate to pay tolls when the roads are a parking lot! Need to figure out how to keep traffic moving!
- I really like the higher speed limits on the toll roads.
- I think we should make sure that both toll and non-toll options are available since tolls could be a real hardship for many people.
- My most recent trip that I used for your questions, was delayed some because of the construction on the 121/North Dallas tollway connecting ramps. On another day, I was delayed about 20 minutes just waiting at that light on the service road heading east so I''m trying to avoid that intersection.
- I think you are all doing a outstanding job providing us with safe, reliable, and beautiful roads to drive on. Thank You! Gerald
- It would be great if a traffic advisory sign could be installed at the two (North, South) DFW Airport exits to advise of delays on NTTA toll roads.
- na
- Would love to see the tollway expand to south of my home as one time planned. This would allow me to go north much easier than traveling out of my way to connect to the tollway using 635.
- Every time I turn around NTTA is raising their rates. I wish you would leave it alone. Look at the waste now that you are tearing down the old lanes and stations! Tons of money wasted and yet those of us with tags, pay for your poor business decisions.
- Tolls are unfairly priced. I even heard they go to a for-profit company outside of the US, not even to
 improve other roads. Prices that high should do a few other things too a) have ice trucks b) not
 charge when you are forced to exit yes with all the construction on 121 you sometimes are forced to
 exit at a later, more expensive, toll. c) when traffic is backed up, it feels like one is being gyped out of
 paying an expensive toll, toll rates should go down when congested.
- I have a very high opinion of the NTTA. The website is great, there''s lots of information available, the updates are often, and in general it feels like a well run organization that values information and transparency. On top of that, it is an organization for the cities it serves, hiring people in those same cities, improving travel in those cities, and giving back to those same cities. It's exactly how I would want my highway department to be. Add to that the fact that is uses state-of-the-art technology and keeps the roads looking great, it's just about perfect. I'm lucky in that I can afford to pay the tolls without even thinking about it. I'm sure that other people find the tolls excessive or cost-prohibitive. But, I still think its better to try to use tolls to maintain great, efficient highways that give back to the community they server than revert to only free highways. You guys are doing a great job as far as I can tell. Keep it up!
- On the 1st page where I chose agree/disagree on a scale I clicked the wrong boxes. The answers I gave should be reversed.
- Interesting survey.
- It is dispicable to convert roads paid for with taxes to toll roads or to continue to operate roads as toll roads after they have been paid for or to collect tolls on one road to pay for roads in another area of



town.

- nothing i can think of
- I DO GET ON A TOLL ROAD 130 I THINK OF OF i 35 AND EXIT OFF AT THE ROUND ROCK/TAYLOR EXIT AND IT IS WONDERFUL-- I HAVE NO IDEA WHAT IT COST ME BUT IT IS GREAT! MBE
- I was ecstatic when the Sam Rayburn tollway opened up- well worth the money to get to work faster and safely!
- The option to choose "next question" was not available at the first page was not available, making it confusing to continue the survey. Many people may have quit at that point. "Search" was not a logical choice for my own home address.
- i like the tollway because it is a faster route. The thing is tollways are used to payoff the road that the tolls are on, and I am pretty sure that 3 out of 4 of the toll roads are payed off and the NTTA is just a business. Good Job!
- End Survey
- I wish NTTA would not allow gravel trucks and large trucks on the tollway. The safety of citizens is important to me and others and safety is a main reason we pay to drive the tollway
- Toll roads only work if the consumer can do better than break even.
- I am blessed to have the opportunity to work from home so most of my travel time is after 4pm during the weekdays.
- When will the airport area construction be done???!
- My trip from home to work is 17 miles door to door. Given the distance, unless speed limits doubled it''s not likely that 9 or more minutes could be cut from my commute time. I support toll roads, but would also support rail if it was more convenient to my start/stop locations.
- Keep up the good work love the tollways.
- Billing is sometimes not easy to understand. I will get a bill with dates, time, location of toll charge, then I will get another bill that has a date that should have been listed in previous month's bill.
 Makes me have to pull out previous bill to determine if you all are over charging me.
- NTTA has outlived its purpose. Another entity within system which is not REQUIRED, govt has enough slow moving parts.
- We use the Tollway often, it's just that to use it going to work is not efficient nor is it cost effective. Thank you.
- I need the cost of the toll tag to go down so I could use one.
- every morning on radio regardless of wreck or not, announcer always says you can expect daylsy from 121 to Keller Springs. The tollway is the only road that gets a consistent delay statment everyday. The road must be made wider, add a 2nd layer or put a tram right down the middle of it. Frisco & everything northward is only getting bigger with more people. This road had got to keep up with the demand of people using it. I am considering moving so that I can avoid using this road all together. Going to spend more on house payment but going to save myself time & money (and sanity)
- Congestion on DNT btwn 121 and 190 is regularly bad enough to add 10-20 minutes to my trip. I support implementation of congestion charges to encourage people to vary their trip times more.
- Disagree with NTTA''s video toll methodology (i.e. legal tolltag payers pay while 40% uncollected tollroad users aren''t persued). Questions in survey assume that I''ll continue to use the toll road. Another 10% rise in rates will put my vehicles back on the local roads.



- I would use the toll roads more often if the prices were more reasonable. I think more people would use them if the prices were lower which could make up the difference in revenue.
- •
- How can you charge a toll for a roadway that was already paid for through taxes?
- I am really looking forward to the extension of 190 opening. It will make the current commute much more tolerable.
- Interesting survey... thanks !
- Look at Seattle''s SmarterHighway system. Pretty awesome and it would help on North Texas congestion.
- I try to avoid all toll roads as much as possible due to the high cost of the tolls. However in my area all the highways are toll roads so sometimes its unavoidable.
- the NTTA system is quite good but the cost of the tolls are relatively expensive. As a result, I have cut back on exposore to tollways and now seek alternative free routes.
- The addition of tollways, especially the Dallas North Tollway and George Bush, have tremendously helped with the travel time for me. However, there are times I do leave earlier for an appointment just to save money on tolls. Some of the tolls are so high it is not worth the time you save, particularly in this economy with ever increasing gas prices. The toll on the North Dallas Tollway for exiting Eldorado instead of Main has a huge difference, so often I'll exit early at Main to save money even though I may be in traffic a little longer. The big jump in tolls for one mile traveled is not a good value.
- Get rid of those HOV lanes on North and South bound 75. Wouldn't toll lanes relieve more congestion? Besides, those little white poles get destroyed quickly and look unsightly...
- I commute to work on my bike once a week during mild weather seasons.
- When will U.S. Highway 380 be enhanced/expanded to become a toll road? If within 20 years, then the governing cities should be contacted so that they can begin reserving ROW and what not. Your website should also publicize when certain portions of the toll road expire (aka when do they transition into free roads).
- I would like there to be more public information about how to access the new DART rail if I go to Love Field. I know it's there somewhere, but have no idea how to get to it, or get from it to the terminal.
- The construction for the intersection of North Dallas Tollway and Sam Rayburn Tollway should have been designed and built at the time Sam Rayburn Tollway was being constructed. This is the type of poor planning and execution that seriously damages NTTA''s favorability.
- Really like that there are no toll booths and no cars stopping to pick up change.
- What I really need is a way to eliminate the evening trip. That is picking up my visually impaired sister from work. There is no mass transit way for her to get to or from work between Plano and Frisco. I realize you are the tollway not DART but if you two could play nice and do things in an intelligent manner there would be DART rail lines running down the center of the tollways like there are in other major cities in this country.
- I don''t mind paying tolls in order to pay for the roads. I DO mind paying tolls simply so someone can benefit from a drive that I have to make for work. People should not profit from tolls they should only be used to relieve taxes.
- You may want to include questions that require you to talk about your car trips that take 30 minutes to 1 hour since you are questioning tolls. I work in Plano and live in Plano but when I travel to Dallas or Irving, I use the tollways more.


- I think I definitely pay more in tolls since the toll tag. If I had to find cash every time I went through a toll booth, I would probably avoid them more. The toll tag makes it so easy.
- Get rid of HOV lanes and add a lane to the road.
- The users of the tollways drive like fighter piolots and are more of a problem than the tolls, enforcement would change some of my opinions.
- I cannot wait until East PGBT is opened up to rowlett and I-30!!
- Thanks for caring!
- Toll roads make travel in congested urban areas easier. However, they are generally only available in the cities. I would very much like to see a toll road between cities that provided high speed, limited exit access between geographically dispersed locations.
- Thank you... I hope one day I can ride easy through the Metroplex
- I feel in general that NTTA toll prices are too high. I used to travel much more frequently on the PGBT until the main toll plaza I use more than doubled in price over the period of just a few years.
- I feel that the amount of toll roads going in are getting ridiculous. It seems that in certain areas, you have no choice but a toll road if you want to get on the highway. It seems that the real life questions are exploring rate increases, and I refuse to pay five more dollars to save ten minutes- especially if the toll roads are just as crowded as the free ones!
- Often road maintenance could often be scheduled at night and on weekends during slow traffic times to prevent inconveniencing many thousands of drivers during normal rush-hour traffic.
- Travel time would be less if speed on toll bridge was increased to 55 mph; gas consumption would increase, but maybe less time on the road would compensate for the increase. When I travel on the bridge after 6 PM 1 AM, there is never more than 10 vehicles, and I realize I travel after peak use hours.
- This was interesting, thank you. I''m curious to see the results when they are available how people prioritize money/time.
- Please discontinue the practice of performing construction during rush hour traffic. The construction on PGBT and 35E has been ongoing for 3 months and is a major disruption on thousands of people each day. This should be done during overnight hours so as not to be such a disruption. Dozens of others I"ve talked to feel strongly about this as do I.
- Can"t wait until the PGBT Eastern Extension is open...I will certainly use it daily!
- You need a "prefer not to answer" on the income question.
- Sure be glad when 190 is finished through Rowlett
- I probably would not be opposed to tolls if I believed that the money was used to actually repair Texas highways. Problem is that I suspect that this road is foreign owned.
- Life in Rowlett will be immensly better when PGBT is finished. The current construction is a pain and I frequently change my route to avoid the construction congestion, but when it is finished I plan to use the toll road to avoid local street congestion.
- THERE ARE WAY TOO MANY TOLL ROADS IN NORTH TX. I WILL NOT VOTE FOR RICK PERRY BECAUSE OF HIS STANCE ON TOLL ROADS. NEW CONSTRUCTION SHOULD NOT BE DESIGNATED AS A TOLL ROAD AND TOLLS SHOULD NOT BE INCREASED BECAUSE OF LOST REVENUE AS PEOPLE ARE AVOIDING TOLL ROADS DUE TO THE ECONOMY/UNEMPLOYMENT.
- I think NTTA does an awesome job with their budjet and quality of construction. Keep up the good work.



- We would love to move to Richardson, TX in order to short my daily commute
- Lower tolls when you have ongoing construction in an area; e.g. PBT Eastbound at 35.
- Keep Up the great work...
- Very interesting and helpful.
- Excellent survey!
- The tolls in this area are way too high. Tolls used to be levied to pay for the road, but not any more. It is just one more way to tax people and not call it a tax. Our state government needs to do something about it instead of the governor trying to sell toll roads to froeign entities. I often follow routes that avoid tolls because I am retired and not usually on a time schedule. I also have better ability to avoid rush hours.
- The issues that seem to occur on my drive home (southbound on tollway): 1. One lane exit to George Bush and Galleria cause traffic jams around those exits. 2. When daylight savings changes to get dark earlier, traffic moves slower. Need better lighting. 3. There's a HUGE bird infestation between about George Bush/tollway and Frankford/tollway. This causes drivers to slow and down and look at these thousands of birds that are sitting on the wires. Need to install some sort of bird deterrant.
- Some of your questions are strangely worded...that is, the way you worded some questions and the multiple choice answers that were provided for it, made it impossible to give you an accurate answer.
- Better way to pay as you go. I have a daughter that had a toll tag, then it deplenished. She justs runs the toll now that she has no choice and is afraid to contact NTTA because the bills are so high. Also save on paper by sending one bill only.
- If taxes pay for any part of a road. To charge taxpayers for their use is just wrong.
- good info
- I didnt like the map component when determining the beginning start point of the trip and the end point.
- Getting from point A to point B quickly is important to me.
- I love toll roads and wish there was one running N/S between Dallas and Mckinney so I could avoid Hwy 75, which is ALWAYS congested, no matter the day or time. I avoid going into Dallas as much as possible because of congestion on 75, but there are so many activities there for my kids to enjoy.
- to safe time i would nearly always take a tollway.
- I use toll road only when time is critical. Late for airport, appointment, etc. or the other road option results in significant time loss.
- NTTA tolls are too high and are increasing yearly or bi-yearly making the roadway use unacceptable and not worth the cost. To continue with these type decisions will totally end my use of Highway 190

 I have limited my use of Highway 190 at this present time because of the toll charge increases.
- very relative and interesting
- It's important for Toll way's to differintiate themselves for every other roadway. If I am paying to drive on a road then I expect traffic to be lighter than alternatives, through more logical intersections that keep traffic flowing, tollroad EE's to help stranded cars get out of the roadway, etc.
- The survey did not include mid-point stops made every day, like taking kids to school which adds many miles to my trip every day. If you just looked at starting point and final ending point - it did not look realistic timewise.
- none



- I own a Chevrolet Volt (electric automobile) and am not concerned with gas prices or polutants in the air. I will consider volunteering my time and vehicle to demonstrate that others should consider this mode of transportation.
- I wasn''t sure of the names of the tollways.
- still not sure about how the options questions worked
- Tolls from the people who drive the Dallas North Tollway within the City of Dallas should not be used to fund road construction in far north Collin county and beyond.
- Stop raising tolls because the economy is going down the drain. Use money that the government is hoarding for useless, unecessary repairs, etc. *Show the people of this state that NTTA and the gov''t CARE. And that your not just fueled by GREED.
- The transition from toll booths to no toll booths on the DNT was a huge hassle because no one was informed, and I was at least an hour late to my appt.
- none
- I wish that yall would have waited to open the lewisville lake toll bridge until the roads leading up to it were completed. yall have caused huge major delays and crashes to the little 2 lane road way that runs thru little elm. its all about the money and no concern at all the residents of little elm that were signifigantly impacted by the huge increase in traffic.
- My use of toll roads is need based. If I am running late or need to get home quickly, I will use the toll roads available to me. It is a helpful benefit to have the toll road available as option (especially 161 part south of Hwy 183). The completion of the 161 connnect from 183 to I-20 will benefit me and many other travellers. I estimate that the completion will reduce my commute by 15-20 minutes each way. This tilts the cost-benefit equation in favor of using the toll road upon it's completion.
- Excellent survey!
- If you can't keep traffic moving on the tollway at a reasonable pace in the PM peak, than the tolls should be refunded.
- This was a very informative survey and I hope you take everything into consideration and lower toll fees with the economy as it is today
- There isn''t a convenient toll to get me from home to work. It''s just not direct enough for me. Moreover, I don''t think it would save that much time.
- Ready to use the new road.
- NTTA is doing an outstanding job for the citizens as far as I can tell.
- I do not travel where there is a tollway available for me to get on and I would not be able to afford a toll if they were very high due to the gas prices.
- I DELIBERATELY BOUGHT A HOME NEAR MY EMPLOYMENT TO REDUCE COMMUTING TIME, COST AND POLLUTION. I WISH EVERYONE WOULD CONSIDER THIS IN MAKING THAT KIND OF DECISION.
- I love traveling on 161, but will enjoy it much more when it is complete in Grand Prairie. Thank you for asking for my input concerning my travels in the Metroplex.
- I really don't like the idea of a different country having the contract to build and maintain US toll roads. I believe that responsibility and profit should stay in the US.
- As a matter of public policy, I support the use of toll roads to finance the construction of a specific road, but the tolls will be terminable upon completion of the road and achievement of a certain rate of return on investment.



- George Bush/161 has substantially improved my commute. The fees are reasonable. I would like to see more prompt attention and work done on the PGB/I35 corridor as I never see anyone working on that area under construction and has placed a 15-20 minute delay in the afternoon commute if I leave any later than 4:30. I now exit at Luna to avoid tollsand sitting in congestion all the way back to Sandy Lake toll booth curve. I have to take side roads all the way into North Carrollton. It has been this way for the last 6 months or so with no improvement.
- i do not like tolls where they send you the bill in the mail because if you do not get it or they do not receive the payment that is mailed they can put out a warrant for arrest. My payment got lost in the mail or something but luckily they finally got it on time. I tried to pay online on more than one occassion & it would never accept the id number to let me log in to pay. It is a very complicated system & is like a thorn in the side.
- We avoid toll lanes....It may take a little longer to get where we need to go (but we have found that there was not that much differance) so we make adjustments to schedules. A little patience saves money!!!
- The survey didn't allow for travel on the Southern end of 161/PGBTR between Irving and Grand Prairie which I use frequently with my toll tag
- Kindly do something about the exit from I35 onto George Bush near FrankFord. Making the entrance onto George Bush smaller was not a good idea. Congestion is frustrating.
- There should not be a toll for any roadways. If the txes we are paying are used properly and it not
 enough then raise the taxes and let everybody drive on the road they choose at no additional cost.
- great survey about my area! 121 has helped traffic flow!
- Regular sweeping/cleaning of the tollways to prevent all the dust and rock chips would be wonderful
 and worth a few extra cents on the tolls!
- I hate the way westboud SH 161 gets congested starting at 4:00 p.m. every weekday. There should be more police enforcing the speed limit on SH 161 as well as all the other freeways in the Dallas area. The speed limit on SH 161 is 70 mph, but people drive 80-85 mph on a regular basis.
- While I agree to using tolls to fund roadways, I do not agree to continuing to charge a toll on a road that has completely paid for itself many times over.
- If a toll road is going to be conjested like the Dallas North Tollway during heavy traffic hours, it isn''t worth paying for. Speed limits need to be agressively enforced the reckless speeders slow us all down when they cause accidents. Create better roads with less traffic and accidents and I''ll pay to use them. Otherwise, I''ll use what my tax dollars paid for.
- HONOR GOD, KEEP THE MONEY IN COLLIN COUNTY, ENGLISH ONLY, AMERICAN OWNED AND BOOT THE IDIOT OBAMA.
- Since I live only 2 miles from home & don't usually need the freeway to commute, my answers were based on one possible scenario. It doesn't feel like a fair depiction of my real life.
- Tolltags should eliminate HALF the cost of Zipcash.
- I rarely take any highway, tolled or not. I rely on walking, biking and transit first. If those are not available, the car as a last resort. I firmly believe in tolling roads in order to have motorists pay for what they use.
- Toll Tags make life much easier for my family to get around the Metroplex
- Please don't keep raised the toll price. \$4 a day, actually is a lot. If NTTA keep adding the toll price, we will just quit using it.
- Very easy survey, user friendly



- Tolls are reasonable in Texas I do hope we don't follow the Oklahoma model and have every highway a toll road! Toll tags do make it painless and not as likely to track toll expenses!
- I would not pay a toll over \$1.00 each way daily. Too much...
- I think toll roads are a good way to pay for good, new roads, but after the roads have been paid for through tolls, I think the charges should be decreased such that they just pay for upkeep.
- It would be nice to have a traffic info sign on DNT south of 635 LBJ.
- Great survey!
- My daily trip includes passing through the construction of the Eastern Extension of PGBT (190) where it connects to I-30. When finished I will probably continue to travel I-30 under the PGBT because of my ultimate destination. Only for misc. travel to other parts of the metroplex would I use PGBT and consider tolls. Bus, train or light rail will not get me to my location either. Too bad. Even the I-30 HOV lane (W/toll for single drivers) would not work because of where I get on/off.
- I like the situations where toll amounts were minimized. I think they are too high, particularly with gas prices higher.
- I enjoyed the survey, and look forward to paying an affordable toll to make driving on the road easier and arrive to destinations earlier. Would you consider having buses for who live in the surburban areas?
- I don't trust NTTA to bill me correctly and don't use toll roads enough to justify buying a toll tag. I never use toll roads since they have eliminated toll booths to take money.
- Thank You so much for the NTTA Roads. Very exciting times. No toll both. Easy billing. Toll Tags are all great.
- The urgency of reaching my destination and toll fees determine whether or not to use toll roads. I feel we pay too many fees & taxes already and do not use or care too much for toll roads.
- Tje survey was enjoyable. I would definite use a toll if it was offer for my route to work.
- Overall I would prefer to take the DNT, however, things have been getting so bad on it I''m getting tired of paying tolls for what essentially is a parking lot. I had hoped eliminating the toll plaza''s would have helped but it doesn't seem to have any effect at all. If I didn't have a job where I travel from client to client during the day I would love to use mass transit. As it is I''m doomed to sit in traffic as I won't qualify for HOV lanes since I''m always alone.
- there are certain exits that are on the Dallas North Tollway going North, that aren't on the Dallas North Tollway going South-example Forest Ln.; this is really annoying
- no
- QUIERO TRABAJAR PARA NTTA
- I am a big supporter of toll roads. There are probably opportunities for partnerships in the public and private sectors to accomplish their construction and maintenance. We must find a way to relieve the congestion on Metroplex roads.
- It is possible that the hypothetical answers given during the "games" are not quite the same as how I would behave in real life. I tried to be as accurate as possible, however.
- I would be agreeable if there was some sort of tollway from the Weatherford area to close to downtown Fort Worth to facilitate/ease my daily commute to TCU
- Thank you for working to improve the congestion problems here in North Texas. I would like to see more transit options to help as well.



- I live in Plano, we are covered on 3 sides by toll roads. I use them regularly when traveling thru
 DFW. I use George Bush/190/161 3-4 times month to go to friends in Ft Worth or to the Airport. I
 use North Dallas Tollway to go to Love Field probably once a month and I use Sam Rayburn toll road
 probably 5-6 times a month to go to Frisco and Denton to see friends. As disapointed as I am that the
 cost of tolls has gone up, these 3 toll roads save me a lot of time when moving around DFW.
- I object to toll roads, especially since where I live there are no legitimate alternatives.
- Employment and recreational opportunities are limited as a result of the traffic congestion on the north loop 820 and 183. Individuals who live in the northwest sector of the county spend a lot of time and money traveling to the east side of the county and make employment decisions based on this. Also, shopping and recreation decisions are based on the time it takes to travel these roads.
- Tarrant County has largely been neglected when I think of traffic congestion being relieved. I believe developers should share in the cost of building roads.
- Ever thought about text message notification the actively shows the toll you just paid and your balance?
- To help rush hour congestion, I think consideration should be given to limiting lane for large trucks. Also, I believe effective programming and maintenance of automated signal lights could ease congestion. Too often I see signal lights that "max out" on one approach when there are no vehicle "calls" on that approach. Meanwhile the cars at the opposing approaches are sitting idle.
- generally the route i take is well maintained. It would be nice to remove the signs that say "cash 45mph" now that the toll booths have been removed on the DNT.
- what about the ipod nano? ..thought both Ipad2 and ipod nano
- The biggest advantage to toll roads is the lack of congestion, that would have been my answer if it was available.
- I fully support paying to build a toll-road but the tolls should come down when the road is completed. We pay enough in taxes for maintenance.
- Time savings is important occasionally, but the cost of a trip on the toll road is of more importance if my route reguired use of the tollroad every day. I am okay with taking free roads instead of the tolled roads, even though they take longer if I have allowed in advance for the extra time. It's not as convenient, but I would rather spend my money on other things than tolls if I have a choice.
- I really do like driving on the Dallas Toll Rd. Well maintained, wide lanes, and usually polite drivers.
- Thanks
- I am looking forward with anticipation of the completion of Western expansion/access to the tollway from I20.
- Anytime we drive south past McKinney, we use the toll roads, and we also use them in Austin and houston. Any road that is less congested I am happy with paying some for.
- Always take PGBT from work to home due to hwy 75 downtown congestion. Need improvement on 161 none toll area by airport. Always backed up at 4:30 but not as bad as 75
- Thank you and I appreciate your services!
- The Dallas North Tollway from the George Bush north is not too bad, but from there south ranges from aggravating to really scary. I avoid that section when I can. The George Bush is, for the most part, good, and I''m glad it continues to be extended.
- When the tollway is congested it is very frustrating because you cannot exit and are not moving. If I am paying to travel I would like for accidents and incidents to be moved quicker in order to get traffic flowing faster. Also, tolls are way too high and I often decide to take the highway instead.



- I used the Dallas Tollway for many years to get to work. It did not save me time. It was congested many times. Also, the tolls were expensive. Our regular taxes should be prioritized for maintaining infrastructure. There is no reason that we should have to pay tolls for something we already paid for. thank you
- I would be willing to support a toll on 820 to 21. We do not go to the NRH mall very few times because of the congestion.
- None
- The "games" were not totally realistic since the routes in question have no realistic alternatives.
- Thanks :)
- gsdfsdgsdg
- SPEED LIMIT VARIATIONS ON NORTH TEXAS FWYS ARE RIDICULOUS. FOR EXAMPLE, 60MPH ON I35E N, SOUTH OF I-30....THIS IS 5-10MPH SLOWER THAN NATURAL TRAFFIC FLOW FOR A ROADWAY OF THIS TYPE.
- You should give a small discount to people who use at least \$5/day in tolls
- The North Dallas Tollway has saved my a** more than once when trying to get from Uptown area to Far North Dallas and Plano. A real life and time-saver. Keep up the good work!
- I would use the toll roads more if I didn't get "dinged" because I am changing from the DNT to Pres. GB tollway. In other words, for a similar mileage, I pay more in tolls because I have to "turn the corner" on my trip instead of drive one-way. I realize that the interchange is expensive, but actually it sucks and that causes congestion. Right before the exit from DNT going south that connects to Pres GB (East and West) you have an on-ramp for DNT. There is a horrible merging disaster right there and it makes things back up for a couple miles sometimes. There is another congestion issue when merging from Pres GB going west onto DNT going North, except here it is due to two on-ramps that merge into one another and then when you get onto the DNT there isn't enough time to merge at highway (60-70mph) speed. So its a bottle neck. It is dangerous too because the other people are driving at 70mph and you are going slower. In fact, I hate the on-ramp to the DNT at Legacy where I start my trip for the same reason. It is really hard to get up to 70mph and safely merge in the very short space you gave us. Maybe there should be different speed limits in the right hand lane, although practically this isn''t feasible. Finally, I want to say I thoroughly enjoy the Sam Rayburn and the Pres GB in general, Thanks!, but the DNT is more crowded and MUCH narrower, (even the lanes are narrower), and less straight, which makes it feel less safe to me. I appreciate the cashless toll booths, they are a great improvement. Thanks for asking us to take the survey too, it makes me feel that my voice is heard. Thanks and have a nice day!
- we pay taxes to fix roads and now we have to pay a toll and they wasted so much money on 190 spent money to open toll booths then closed them down keep change the on ramps and off ramps at highway 78 cant make their minds up so you have wasted more money and we are paying for it with high cost of tolls
- Some parts of 121 need to be re-striped, reflectors added and better lit. Mainly the stretch between Los Colinas & Carrollton-Farmers Branch section of the toll road. It is very difficult to tell which lane you are in at sunset and after dark.
- Tolls and Gas are having an effect on my finances. I have considered moving closer to work to avoid the extra cost.
- Many times throughout the survey, especially during the "games" section, I found myself saying that
 my choice would depend on where I was going, and if time was an issue. If I was going somewhere
 that time wasn't really a factor, I would save every bit of money I could and would not take the toll
 road. If I'm running late for something important and I had the money, I feel like I would be forced
 into taking the toll road.



- NTTA needs to put more effort and funding into clearing ice from the tollways. I pay ~\$600 a year on tolls and and would like to see that money put to use during icy conditions. The roadways were extremely unsafe during the last ice storm in the Dallas area.
- had fun
- Increasing the toll rates, while gas prices continue to increase will cause me not to use the toll roads, but instead take more alternate methods of travel to save money. Our toll tag bills for the family can add up to alomst a car payment.
- End Survey
- None at this time.
- None at this time.
- Survey was confusing. Yes my travel started at my office. We went to the Legacy and North Dallas Tollroad area for Dinner (Social). Then our travel ended back at home in McKinney. So sorry for the confusing answers but by the time I realized that I had not answered as you needed it seemed too late. But I use the toll roads in the DFW area ever day.
- You need to ask if a person drives at the beginning of the survey.
- I THINK THEY NEED TO WORK ON THE ROADS AT NIGHT, LESS TRAFFIC, MORE TO GET DONE LIKE ON THE HIGH 5...
- PLEASE HURRY AND BUILD MORE ROADS IN NORTH TEXAS, BY WHATEVER MEANS POSSIBLE. THE TRAFFIC CONGESTION IS HORRID!
- On the entrance to Pres. George Bush Turnpike, from IH 183, I notice such a back up of traffic on the overpass, but enough room on Tx161 for at least one more lane of traffice to flow through. Why not give the travelers from 183 a clear lane to drive into then merge properly onto 161? Instead, you have created a spot for congestion and made it more of a possibility of accidents. If my tolls help with maintaining the turnpike, why are there so many humps in the road that I feel like I am on a roller coaster?
- good info
- good info
- this survey was fun
- no other comments
- very interesting & informative
- If time is of the essence, and toll roads lead to my destination, I certainly use tolls. Otherwise, as time isn''t usually imperative, I use least congested routes, even if slower.
- The tollroad was very nice but \$9.58 seems a little excessive for one day--there and back--for shopping. I don''t mind paying a toll but this is too expensive. It is also annoying not to be able to pay the toll as you go.
- Don''t open more tollways To many taxes already.
- Might want to consider using wx conditions in your survey.
- in these tough economic time for our state, public private partnerships make real sense and should continue.
- The congestion at George Bush Expressway/190 and Central Expressway/75 must be relieved ASAP. It is constantly backed up at all hours of the day. I am seriously considering the option of stop using George Bush/190 all together because I'm tired of paying high toll fees only to be forced to sit in traffic.



- We have 4 tolltags and are now semi-retired so we are not generally concerned with travel time, mainly toll fees. Could not accurately address costs of tolls since we always use tolltags.
- I think everything should be done first to reduce overhead costs at the NTTA before raising tolls again. I don''t see why the board has to take lavish trips, etc. Please try to keep toll costs down, especially with gas prices so high.
- I like having the convenience of the tolls roads available, but I seldom use them because of the additional cost.
- I do not like having to pay tolls, I only use the toll road to go to the air port and for long distance (20 miles or more) trips
- Language option at beginning is offensive
- This survey was as screwy as everything else that the NTTA does. Ya''ll truly are pathetic.
- I wish there were better exits and entrances on Hwy 121 at I 35
- The traffic congestion at Frankford Rd and the Tollway needs to be addressed. The exiting traffic merging with those already on the service road creates a traffic nightmare every morning without fail.
- I use tollway everyday. Because save time, less stress, arrive right on time, save gas. Thank you for your hard work for us.
- good and simple survey
- This was a fun survey and I enjoyed giving my input on a subject that has a huge effect for me.
- A good question would have been why I don''t have a toll tag. The answer is that out of town people don''t know how to obtain one.
- Good survey
- I love the toll tag
- There are already too many tollways in North Dallas. We need to decrease the tolls.
- The entrances to the Tollways on the Dallas North Tollway need improved. It seems to take forever to fix them.
- I feel it would be appropriate to use a toll road if it saves more than 30 minutes, 5 or 10 minutes doesn't seem to be long enough to pay a toll.
- I am eager for the North Tarrant Expressway to be built.
- One of the questions about the time of the one way trip was confusing because it was like asking how long you were on the roads in the shaded area. My whole trip from Wichita Ks. To Garland, Tx was about 5 1/2 hrs. The total on Texas highways was about 2 hrs. We had a toll tag that is why I said we didn''t pay toll. The questions were kinda confusing sometimes. But I would love to always do this type but with understanding questions Thanks
- tollways for where i go are unrealistic if they werent might use if they werent so high
- Thanks! Hope I win!!
- The Survey was longer then 5 min...
- I''m a pilot. About 3 times per month I travel one-way to DFW and then after a few days travel one-way back home. I do not have as much time flexibility to avoid peak travel times, so the games seemed out of context to my situation. Based on when I need to be at DFW I leave my house from 1 hour to 1 hour and 15 minutes. My fastest commute leaving McKinney before 6:45 is 45 Minutes and if I leave between 7am and 8:30am I take about 1 hour to 1hour 15 minutes to get to work. Driving



home is typically 1 hour to 1 hour 20 all the time.

- Removing the pay booths has really improved the traffic flow on my work route and made the drive much less frustrating.
- While I appreciate the idea of a convenient toll road, I generally am not willing to pay for the possibility that the toll road will be just as congested as the main roads.
- n/a
- Cost is important, I would not pay over \$4 a day to drive to work. I pay too much right now but only drive to work 2 days a week. If I have to go in each day, I drive the side roads and do not pay the tolls.
- End Survey
- I do not think tolls should be allowed beond the period of time to retire the bonds on each segment of road. In general I think we pay road taxes and the total of that revenue should be applied to roads only.
- Band any 18 wheel trucks on the NTTA Tollways they are dangerous and because there are few is one of the reasons I choose NTTA instead of the Interstate Highways system
- Can"t wait till the remaider of the toll near Hwy 66 is complete. Thanks for making the toll roads look so nice.
- Always bad traffic in Mckinney. Cant wait till construction is finished.
- The toll roads have become a little too expensive. I don''t get on them much due to that
- I like 161. it takes off a great deal of time to go to the gallaria. cuts the time in half. thank you
- I do not like to pay tolls. I pay taxes when I buy gasoline for that.
- WILL NOT EVER PAY 3.00 FOR A ROAD.
- The tollway is ridiculous expensive nowadays making it non-affordable!! I''d rather use an alternate route and save all the money I WAS spending on tolls! I only use the tollway if I''m running late as it saves me 10 minutes of travel time to work.
- Please finish the southern end of Hwy 161 soon--I hop off at Egyptian Way and wind my way through to Great Southwest, because the traffic is so congested beyond Egyptian Way.
- None
- I get on at huffines and get off at 35e north. Wasn''t an option.
- Put in a progress bar.
- This was a fantastic survey! I will say this is probably the most meaningful survey I"ve ever taken-no longer can I complain "they never asked me about the roads in north Texas!"
- The Merritt Road/Liberty Grove back up under construction takes on average 27 minuets to get through. Your constuction vehicles in the back up would eliminate the backup and fuel waste on both parts if they were not present during peak hours.
- Give users opportunity to provide feedback on games immediately after finishing. Would get more feedback.
- intersting.



- I like the fact that there is no stopping to pay tolls, although the toll prices are too high.
- Toll roads are good, and I believe necessary, but they also must be used responsibly. There should always be a comparable pathway for travelers within the metroplex to access all major destinations. However, I've really enjoyed using toll-roads, as they are less populated and (normally) less congested.
- Thanks!
- I do not drive on the freeways. I don't think they are safe.
- I truly enjoy having a Toll Tag and have recommended it to all of my friends because it saves time and money at the same time! Thanks NTTA for inventing this wonderful device to enhance our driving experiences in the Dallas-Fort Worth Area!!
- I think I live in the United States / we speak english and I'm tired of stating whether or not I want English or spanish / to be unified as a nation and have commonality lets all speak the same. We then become a team that actually works together.
- Pres. George Bush Turnpike in N. Dallas has several areas that have been under construction or half demolished for over a year now (around Josey Lane and also around Old Denton Rd). Considering that I am paying \$4/day in tolls, and some people I know pay even more, it seems inexcusable that these areas are not being worked on.
- fun survey!
- It is aggrevating utilizing a toll road and having a traffic jam. I assume that is the whole reason for paying a toll.
- I use the North Dallas Tollway all the time sometimes not thinking about toll (not even a few minutes savings) just because it is so convenient to my location and everything I need to get to shopping, Doctors etc...I also give plenty of time to get to my "time specific" destinations because of the "Dallas traffic" so delays are already factored in.
- I could tell this survey was setup to gather info so you could raise tolls again. STOP raising tolls. Stop raising tolls on existing roadways to pay for future roads, they will pay for themselves with tolls after you open them, and to pay your Board of Directors their inflated salaries and bonuses. As soon as DART finishes the rail to Irving I will stop using the tollway to get to and from work. it will take about 75 minutes compared to the average of 45 now, but will be a LOT cheaper. Not only will I stop toll fees but I will save on gas costs also. Currently I spend about 14.00 per day for gas and tolls, on the rail it will be around 5.00. I can live with an extra hour of transit per day for that savings! The only way you are reducing transit delays is by pricing people out of using your roadways so they are not congested then using it for a reason to raise tolls again by saying "look how fast we can get you where you need to go"
- Toll roads are a fact of life. The one thing I hate is when the traffic lights on roads running along the toll roads are artificially adjusted to make you go extra slow. Why can't the lights on the road running along DNT behave almost like Preston Rd lights ?
- I actually enjoyed this survey :D thanks!
- nothing
- I personal like my route that i take when traveling to dallas. thanks and have a blest day.
- Traffic is a way of life in North Texas, and toll roads will never eliminate the traffic. You have to
 adjust where you live or work to compensate. Also, toll increases are a way of life in North Texas. I
 have changed the distance I travel on the toll road to adjust because I have a TollTag budget. I am
 comfortable spending about \$40/month, and I will use non-toll roads or drive less on the toll road to
 stay within my budget (as the tolls continue to increase). I plan on moving closer to downtown Dallas
 (where I work) to reduce gas costs and drive times.



- The time sliders did not work well for me in IE9. I couldn''t slide them at all and had to click multiple times to get the time I wanted to be selected. I'm not sure if they truly slide in other browser versions, but it was quite annoying when completing this survey in IE9.
- I hate to drive on the Dallas North tollway because I hate to pay to drive on a road where the cars are not moving. I love to drive on that road when it is not rush hour but yall need to make another highway in the same direction or one above that one so relieve traffic it has been an issue for 20 + years.
- End Survey
- Toll roads are just another way for companies to make money and I doubt much of the money made will be used for road improvements.
- If I have to loop thru Arlington to avoid paying a toll between ANY two places I''d rather do that. You need to take care of the roads you have now, not build new ones. Rapid transit (like Atlanta) is really the way you should go.
- I do wonder why the construction on pgbt heading north near 35?
- You could prevent many accidents if you put barricades separating the HOV lane from the left lane on IH635 between US 75 and I35. When I listen to traffic on the radio 90% of the accidents are on that stretch and I believe it is because drivers are crossing the double white stripe that supposedly separates these two lanes. There are barricades on other parts of LBJ why not this stretch?
- I''m willing to pay tolls for roads, but I would not pay for managed lanes. I think instead of charging premium for managed lanes the toll should be lower and distributed across everyone who uses the road. Also, HOV lanes are a waste of concrete. Congestion could be eased if those lanes were opened up to general use.
- A guarantee of decreased or faster performance of necessary roadworks would also encourage me to ride tollways. The roadworks at 121 and DNT have been going on for way TOO long.
- need better clearing of snow and ice on toll roads. need to finish retaining wall in pgbtp
- I would like to mention that I do not live in the Dallas-area. I was merely there for the holiday weekend. In your survey, there are never any choices for people who are unfamiliar with the area or live out of town. My trip took a long time because I missed my exit and since I''m unfamiliar with the area, it took me about 40 minutes to realize I needed to turn back around!
- Great Survey !
- great
- NTTA is getting too large. Not all people can afford tolls. We are being directed to a completely toll
 roadway system owned by foreign principles. Use tolls to pay for the road then turn it over to the
 state not a private entity. You fraud people out of money by exorbidant fines for minimal amounts
 owed. People should pay, but not a fine for each tollbooth pass. Too much profit not going back to
 system, but deep pockets.
- I am very unhappy that we pay taxes to build our roads and then they are turned over to NTTA or others to take more of our money to pay for roads we have already paid for. Why are the tolls continued after a road has been paid for? I am also very upset that we the tax paying American public don''t have the option to vote on whether we have toll roads or not.
- I am very happy with the toll roads, but in some areas, the speed limit is too high. Once the toll booths are taken down, travel should be smoother. I think this is the best way to pay for Texas highways given the only other way is to increse taxes.
- It forced me to always choose a toll route, but in reality for some "games" I would not choose any toll option, but would simply take a different (non-toll) route...that is almost as fast.



- thanks
- Gasoline Taxes are supposed to maintain our roads. I am STRONGLY against Toll Roads, especially if they are "farmed out" to companies outside of Texas and even more if they are "farmed out" to foreign entities. Additionally, if a toll MUST be charged to build the road, the toll fee should be discontinued once the initial cost of the road construction has been paid for.
- gud
- No Comments
- Toll for DNT exit @ El Dorado vs Main is way too high. Also, El Dorado exit doesn''t have capacity for rush hour. Lastly, PGBT (west) to DNT (north) needs exapnsion. 1 lane is NOT enough; you''re making the same mistake on the SRT to DNT interchange now. Tolls are TOO expensive!
- very impressed with the us75/121 intersection project. All in all, it seems to have been done quickly and for the most part, fairly free of serious commuting problems
- It is very obvious where you are trying to go with this survey. Texans are totally against toll roads that do not ever pay out and you won''t let them. The fact that you are using a Vermont company for this survey is even more objectionable to me.
- I am glad you are doing survey''s on this. Hopefully it will make our lives easier. :)
- Late fees on tolls are absurd. I try to rarely drive the toll road anymore.
- raise taxes on businesses that use the roads and eliminate tolls
- thank you
- Get more trains and light rail systems started and mixed with toll roads.
- Use road tax money that has been diverted for roads and raise the gas tax to build and maintain our highways
- na na
- Where I live tolls have become a way of life and neccesity. With all of the heavy surburban sprawl congestion we could never wait for traditional tax payer funded roads systems to be built. My only hope is that someday the road is paid off and turned into free ways. Hey one can always dream:)
- Tolls on fully funded road like 121 are completely rediculous.
- I am not so sure it is the current road systems as it might be more that the area drives need to learn how to drive better - merge, lane changing, etc. It seems most of the problems I have encountered are more from bad aggressive driving and the lack of basic road courtesy than it is the roads themselves. I think the metroplex is doing its best to keep the roads current. . .there are exceptions however.
- I have begun thinking about not taking the tollways any more. The rates have gotten to where I am paying around \$150 a month. I don''t like that and if they go up any more I will change my driving habits.
- toll tag didn"t register at the airport gate and we had to stop and pay toll
- Please finish the 121/DNT connection soon!
- For many drivers who must travel major Dallas area toll and other roads to earn a living or to get an education, and especially those who travel all over the metroplex 4-8+ times within one day, the imposition of tolls, especially on multiple toll roads, will be a financial hardship. Perhaps such workers should be given special, lower rate toll tags after giving proof of their special needs.



- This is the United States of America, and to become a citizen of this country, a basic command of the English language is a requirement. So why, at the beginning of this survey, is there an option to take it in a language other than English? If a person can't understand the English language, that means they are not a citizen, and therefore should not have a say in how our country operates....including our highway system. Period.
- The NTTA is not a great idea if people have to be displaced from their homes.
- I am a frequent visitor to the Dallas area. I entered the starting address and zip code of the person I stay with in the area.
- another reason I choose the routes I do is the scenery
- The blue box that was to be slid to the trip start time early in the survey did not work. vWe left home at 4am on that trip.
- I would take the toll road if the prices were not so expensive and they didn"t keep changing them all the time. I am also opposed to the state taking roads that were not toll roads and making them toll roads
- I work three days per week in Grand Prairie, and it does not make sens to use toll facilities on those trips. In fact, I am lucky enough to be able to commute by bicycle some of the time (even though the route is not very safe for a bike). However, two days per week, I comute to North Plano (121 and 161). On those days I use the 161 tollway as it is the fastest and most convenient way to travel.
- I travel to the Plano area for several months a year in my motorhome. We visit our children and grandchildren while in Plano and stay in Melissa.
- Please widen the SH 161 area between SH 183 and SH 114. This bottleneck is the primary reason I do not use the PGBT Western Extension.
- Great survey
- I actually travel routes that are closer to the toll ways most days. I try to avoid tolls when possible, but use the tollways when timing is tight; however, I do not use them enough to warrant buying a toll tag at this point.
- You asked where I exited the GBWE when traveling from I-30. The only option you gave was Hwy183. I traveled on the George Bush to Valley View in Carrollton. You should offer more exit options.
- On the question about how much paid in tolls as a toll tag holder, I don't know how much total trip is without looking it up!
- I am actually not opposed to temporary tolls that are established to pay for a specific improvement. I am opposed to all private industry involvement in toll roads. I support mass transit improvements and mandatory work from home to resolve congestion.
- love NTTA and the reiability fo the road service and proffessionalism of the office staff
- Having a toll tag has made it convenient for us and a lot of people in TEXAS roads to travel on all toll roads covered by NTTA. Those without it are billed by mail. I''m not sure but somehow I think money/s are being lost daily from those transients/tourists/runners who uses our road on occasional visits. Wouldn't it make sense to have one chute opened and manned by a person at least on major exits and entrances for those occasional users? Budget wise it not only provide additional employment but also contribute to the economy of Texas which right now is going thru budget crises instead of providing unemployment benefits which also comes from hard earned \$ of our residents..... Just a thought. Thank you for the opportunity.
- I would take toll roads if there were still people there to receive or a toll coinage drop. Receiving double fees a month later which turn into four times the cost is unethical when the only alternative is



to purchase a card you may or may not use frequently.

- Great Job on raising tollway speed limit!!!!!!!! THANK YOU!!!!!!!!!!
- I use a Tolltag, PikePass, and EZPass. I look forward to the day when there is just one national toll pass.
- Love what the NTTA is doing to the roads up here. I wish construction didn''t take quite as long, but building highways isn''t easy. Keep up the good work.
- I have a tolltag ONLY for convenience but it is SAD when I have to PAY to sit in traffic jams !!
- the ntta needs to stop abusing motorists and treat motorists alot better I dont think it is right for you
 to take advantage of me becasue i lost my job with you extra charges
- I love the new Zip Pass.
- Not sure if the survey included time allowances/considerations for HOV lanes. I regularly use the HOV lane on roads I would not otherwise travel. I would use the toll road instead if the HOV lane was not available.
- I may be changing my destination from Dallas to Fort Worth soon, and would like tollway options and travel plans to avoid rush hour congestion.
- It would be helpful if my Tooltag working on Oklahoma Toll Roads!!!!!
- I love the George Bush Tollway. It is a time and a life saver. My whole family uses this tollway-some daily. We are so privileged to have this built in such a convenient location and so well maintained. Thank you,
- I avoid the section of 161 from 183 to Northgate in my morning commute due to terrible congestion.
- I appreciate the NTTA.
- the tollways are better roadways than other state highways or US interstate
- I would be willing to pay tolls if the prices are reasonable and reduced my travel time by more than just a few minutes; I''m not going to pay a few dollars or more to shave only a few minutes off my trip.
- very easy to use survey!
- It would be nice to have a no-speed limit (or high speed limit (150mph)) connection between the major TX cities (DFW, Houston, Austin, SanAntonio). Alternative a highspeed train connection or a car carrier train (comparable to the Euro-Tunnel from UK to France)
- Didnt like Dallas Tollroad. Roads too curvey felt afraid was going to be hit by other drivers.
- A fairly length survey. And it is related to life.
- Enjoyed the survey. It was good to feel like I had an actual job to go to.
- I would like the NTTA to work on better ways to make repair construction. The intersections of George Bush and IH 35 has increased commute time eastbound at night an additional 30 minutes.
- Very nice survey
- HOV lanes are fantastic!
- hi
- end



- On April 1st I contacted the customer service center and waited aproximatley 25 minutes before my call was answered. Nothing on the recording about the average hold time or "we apologize for the delay" only hold music. I explained to the agent that I was having trouble logging in online and requested my password be emailed to me. She asked for the current email address which I provided to her. On April 3rd, I had still not received an email from NTTA regarding my password. I then went online and used the "forgot password link which did email the password almost immediately. I received much better service from the online system than from the agent who answered the phone. I've always had great service from the NTTA customer service center in the past put not this time. Perhaps additional training may be necessary for the telephone agents. Thank you.
- Once the tollroads have been paid for, the tolls should drop to no more than 0,03\$US per toll route (start-to-finish). There is an overproliferation of Toll roads in North Texas and the ones that are already there cost too much to use regularly especially since they were paid for within 30 days of opening. A previous car that I had had broken down on the tollway and the only tow company that could pick me up cost me 100\$ more than if it had been on the side roads in the same area. I am becoming less satisfied with the service even though these tollroads are becoming necessary because of the way that they are being implemented. Instead of sculpting the greenery, just let the native plants grow up naturally. Even less watering would be needed. Improve lighting by using LEDs to light the path instead of the higher-wattage-use bulbs currently in use.
- Please do something about the 190 and 75 Central Exwy interchange. It is extremely dangerous on both south and northbound sides
- My preferred route includes the Mountain Creek Toll Bridge and I have no issue in paying that toll. As long as we are assured this money is going to road improvement, paying that toll fee is valid.
- When I get delayed during a trip, it is usually more than an hour, not a few minutes.
- Use toll roads several times a week.
- Roads are good, Please don''t make the to expensive. Thanks.
- It would be nice if you could communicate how the PGBT Eastern Extension will be opened up in the coming months (i.e. one section at a time vs multiple sections simultaneously, etc.).
- I really wish your toll rates were cheaper. I now pay approximately over \$100.00 per month just to go to work. I am finding it hard to justify that expense.
- All citizens should be able to use all public roads without having to pay an additional fee. Toll roads essentially allow the rich to purchase convenience, leaving the poor to suffer without.
- DO SOMETHING TO RELIEVE THE HIGHWAY PARKING LOTS IN FORT WORTH!!!!
- We in Frisco are pinned in by tollways. I already spend \$130/mo on toll fees, and \$300/mo on gas. I''d rather move than pay higher or more tolls.
- Since toll prices raised 80% I have curtailed my use of toll roads significanly.
- Keep up the great work!! You would never see this kind of interest in customer input here in Illinois.
- n/a
- It would be excellent if the managed HOV lane between Arlington and Dallas on I3o (1) went all the way into a useful interchange to access downtown Dallas and avoid the I30 I35 bottleneck and (2) cold be used by paying a toll when I am in a hurry and travelling alone.
- This is really a fun survey. It makes me think about building an app on an Ipad like that.
- Toll roads are OK for NEW roads. Existing such as Loop 820 should NEVER be toll roads. Need a major East West Toll road North of Hwy 183



- our tax dollars pay for the hwys we do not need to pay toll so the hwys can be fixed you allready get too much money from us working people, take your money from the rich people leave us poor people alone, we have a hard enough time just feeding ourselves.
- We have two toll tags... howerver, people that don't are often not billed for using tollways.. fix it!!
- Better signage w/construction of toll rds. Whoever decides how to direct traffic flow by temporary
 road signs needs to actually drive the roads to see how to manuever the route. Dangerous when not
 properly marked!! Confusing at the least. 121 from Plano to McKinney has been a nightmare at times!
- n/a
- I am totally opposed to time based/peak toll prices. Keep it as it is.
- Get the DNT, 121 bypass completed faster.
- I think that there could be a more efficient system for collecting past due tolls. To receive a bill for over \$1000 for a toll is ridiculous. Ridiculous. I use pgbt every day, please be reasonable with the people who travel YOUR road, we do not have to do so.
- Interesting survey.
- I really like driving the tollway but often see vehicles travelling at speeds which seem to be 10-20 mph above the posted limit. I hope you can detect them and if not stop them at least send them a ticket.
- NTTA NEEDS TO CHARGE ALL USERS A TOLL. THERE SHOULD BE NO FREE TRIPS FOE ANY PUBLIC OFFICIAL OR NTTA EMPLOYEE OD BOARD MEBMER. ONLY FIRE, POLICE, AMBULANCES NEED TO TRAVEL WITHOUT PAYING A TOLL.
- Very frustrating to pay a toll and be stuck in traffic which happens regualary in the Metroplex.
- Sometimes, I think the distance traveled does not justify how much you are charging. I pay \$1.08 to travel from Marsh to Old Denton Rd and I think the slow down where the construction is right before Josey should make the trip LESS expensive. It's dangerous and expensive, therefore I do not take it unless I am running late. You would get my business more if tolls were not so expensive.
- The North Dallas Tollway needs to be able to accommodate the new traffic from Frisco and north. Also, I love the Autopay system now without toll booths!
- Thanks for making it short and sweet, please offer more of these to IMVU with more credit rewards and I''d be willing to do more of your surveys :D
- Most of us who do not have a high income are opposed to tolls. If I personally can find a route that avoids them I will. However, those who have to travel certain roads with tolls would much rather some form of savings. With gas prices high and food prices high; people are looking to save everywhere they can. Thank you for letting me take this informative survey. i enjoyed it.
- The toll charges are too high. With the increase in gas prices, any increase in tolls will cause me to relinquish my toll tags and cease use of the toll roads. Having a home, vehicle, etc is more important than driving convenience.
- The extra \$99 service charges per over due toll is the stupidest thing I have ever seen in my life. A .99cent over due is \$99.99. I can't believe you think you can get away with it. I work my ass off and the NTTA thinks they can get over \$2000.00 out of me for service charges. I am never going to use your hallways again and am going to get all of my friends and relatives to quit using it also. There should be laws again what you are trying to do to poor people.
- I will use the 161 extension more, when it is completed, commuting to/from work.
- Thank you for keeping we travelers informed as you dig!!



- I drive a company vehical with a refrigeration company use tolls sometimes 3 or 4 times a day different directions different times just gave you the longest trip that I take
- NTTA does a great job. Roadways are well maintained and safe. You have responded well to safety
 issues such as wrong way drivers, median crossing issues on PGBT, and tollbooth elimination. i use
 the tollway due to lack of congetion. i do stay away during rush hour. i would like to see something
 done about non paying drivers. keep up the good work.
- Experiencing delays at N Toll road during construction- both service road and Sam Rayburn.
- I do alot of traveling around the US and incounter many Tollways but understand that Tolltags are not Universal WHY NOT I understand that Texas should not have to pay for other states roadways but surely we can come to a deal to use the same Tags somehow
- There seems to be a lot of construction on the Tollway and the Turnpike. Does the board or management keep changing their mind about how to build the roads?
- The road construction on 121 and 114 last week was not planned out to the best logistics. It took me 2 hours and 15 minutes to get to work, when it usually takes 20 minutes.
- NTTA is really doing a great job! Opening 121 to Highway 5 has saved me time getting my child to school and back to work on time! I can't believe how wonderful and quickly everything has gone. Love being informed via email on the status as well as being able to check the website.
- I hate the toll roads they started the original toll road 30 years ago. The toll was supposed to drop when it was paid for YOU PEOPLE LIE and LIE and LIE you just keep gouging people who travel to work, to spend money at the shopping areas, to get to doctors and hospitals, for school and to be with family. It has to STOP somewhere STOP WITH THE DAMNED TOLLS
- Dallas tollway and George bush Hwy intersection until keller springs/Spring valley road need some improvements during the peak hours. Same for US 75 and George Bush Hwy
- Here's the deal: when I am going to work, I always use George Bush to get there. That is because I . can get to work in about 16 minutes obeying the speed laws. You did not ask that. I use tolls going to work, but not going home, so your survey did not account for that. However, when there is an accident or some other problem on the GBT, that is a problem cause it can slow us down up to 50 minutes depending on where the thing happened. There are too few exits on GBT or the Tollway. When those slowdowns happen and I miss the escape exit for that problem, I am stuck and stuck for a long time. It is a pain in the butt. You also do not have enough signs up to describe problems. Most of the time, when I see the sign, it is too late. I also do not listen to the radio for traffic reports because I listen to audio books when I travel. It is one of the things that keeps me calm when a motorcycle passes me at 100 mph and their are no troopers to corral him. That holds true for the other fools on the road who think that it is acceptable to go 20 mph over the posted speed limit sgns and weave in and out of traffic. There is too little enforcement. Besides wanting to save money on tolls, I take to the regular streets because I rather get hit by a guy doing 50 than 90, and I know that you have put up cement dividers to prevent the headons we used to have on GBT, but a mistake at high speed is still a mistake even if all the vehicles are traveling in only one direction.
- If the tolls were to go up, it would be inexcusable I''d switch to non-toll rds. I''m already job hunting to escape this situation. Now, when there''s a fiasco like the mess at 190 with I-35, if you reimbursed customers for our wasted time, then I might be impressed.
- Would like to see a "national" toll tag good on all toll roads in the USA.
- Suggest a variable toll based on time of day where traveling during less congested times is less expensive.
- please hurry with the GBT eastbound.... and continue it to I- 20



- Toll Costs are expensive and factor into my daily decision about how and when I choose a route that involves Tolls. This coupled with high gasoline prices enter into my daily decisions about driving.
- I would favor higher tolls if it would reduce the congestion on the toll roads.
- I just hope with the price of gas and the economy that they aren"t planning on toll ways around here.
 I thought that"s what our taxes were for, road improvement.
- I would like to say that I appreciate the timeliness of putting in the cashless tolls. I take the tollway every day to/from work as does my wife. Although cashless tolls have made a minimal difference in my travel time home, I personally think that his is due to the driving habits of the Dallas area residents and not what your company has done to relieve congestion.
- My trip described is to get to the DART Addison Transit Center where we ride the #205 bus on the Dallas North Tollway to and from Downtown Dallas 5 days every week. I am and have been a TollTag user for several years.
- Thanks for putting this survey up. It shows you care about your customers :).
- Excellent job eveyone is doing on getting the toll roads finished ahead of schedule.
- During March I made 3 trips from home in Denton to Dallas off Lemon, to Northpark Mall, and to Rockwall. Everytime I came home there were nuerouse places the Hwy lights were out. This is very hard on the drivers. Espically on the Tollway. My family lives in Rockwall and this has been the case for at least 6 wks now. G.Bush is bad,too.
- Think I should just move closer to work...that would solve most of these issues.
- My trip on one day also included using 75 South to reach Northwest Highway, attend choir practice, and then return home using the Tollway.
- Lately the toll on 161 has been as congested as the non-toll & that is not good.
- I like driving on the George Bush Tollway because it is well maintained, has a 70 mph speed limit, and has less traffic than IH635, which would be my alternate route.
- Tolls are too high!
- I use the Tollway a lot and I like it just not to work because it's longer to go that route.
- Thank you NTTA for providing safe and reliable tollways for us. Also, the service team is great help when something unexpected happens. Keep up the good work.
- I would not support raising tolls to make road changes that would improve traffic congestion.
- I want you guys to make an app for the iPhone and Android phones that links to your toll account so that you know when your balance is low. Now that we''ve gone cashless and don''t use the toll plazas which used lights as notifications; it''s easy to run your account down too low. I don''t always remember to check my balance before I get on the road and that would make my life easier. Besides, that is an app I''d pay for because it would help me avoid a charge hitting my bank account at an inconvenient time and save me money. With everyone going the way of the smart phone this would be a good move for you guys. Plus, I''m ever so generously giving you my idea since I don''t have the know how to make it so. =D Please consider this; I know my friends would use this too!
- good survey
- I take the Dallas North Tollway from work to home in the afternoons and do not think the removal of the toll booths has helped ease congestion. I think it has gotten worse. I hope that over time it will get better for now it's horrible.
- I use toll roads more often when traveling outside of the metroplex (e.g. visiting my kids in Corpus Christ). Because my work/living/leisure is spent mosty on the west side of Ft Worth; toll roads are not that accessible for everyday travel.



- The game part when you had to select the preferred travel times and options...I didn"t feel like any of them were really an ideal solution but I answered tham as well as I could. I live on a limited salary and work irregular hours and varying work hours due to riding the light rail is difficult.
- I like the DFW toll roads in general, look forward to them extending to Denton, etc. Please keep the tolls affordable!
- bring dart our way we would use it
- I think NTTA should allow more options to pay off Toll Violations and should reconsider the fees for late invoices. Also, NTTA should advertise the fact that Toll Tag customers have a better chance of avoiding these outlandish fees. Even though Politicians seem to believe the economy is doing so much better I know it is not and a lot of people have been laid off due to downsizing or business closings. This makes it hard for good people to pay tolls and then they end up with a warrant and possible jail time.
- The road work at Frankford road is taking too long.
- I think the "game" questions were trying to simulate if one would pay more in tolls to possibly shave time off their commute, or the toll charges differ depending on the time of day. No one likes traffic, but I wouldn"t pay more to possibly avoid it. if you live in an area where traveling on tollroads are almost a necessity, keeping costs low is the priority, second is maintaining consistent travel times.
- I dont think that asking particpates about their annual income is important to taking this survey and many live in the household. It's should stay focus on the travel time, route...etc.
- Love the "cashless" tollways, but higher tolls are hard to pay with 2 people lving on 1 income.
- Keep tolls reasonable!
- The most important criterion for route selection was not presented...i.e., fewest school zones.
- Survey had odd questions and situations that I did not feel relevant to uncovering traffic usage on toll roads. Most people enjoy the convenience of the toll roads, but hate the cost of them. I for one, feel slighted on my return trip north on SRT. Pass the SRT 3 gantry at Custer, and have to pay the full charge regardless of where I exit. There is no proration for Stacy, Alma, Lake Forest, Hardin exits. It''s a rip off, and yes I don''t mind paying a fair toll, but this is not fair.
- Don"t ask about income. It"s none of your business.
- Rasie speed limit to 75mph
- Traffic congestion in DFW has gotten so bad, I would not recommend people to come here to raise a family. Driving in this area takes too much time and there are currently NO reasonable alternatives for most situations.
- I think there should be additional discounts given to people who are pretty much forced to drive on Toll roads in order to get home. For me there are no other alternatives if I want to travel on a freeway on the way home. Same thing to get to places like Frisco. If tolls were more reasonable, i would definitely use them more often.
- I purchased a toll tag the day NTTA stopped charging a surcharge if you used one. I worked in Oak Lawn for over 15 years and drove the DNT twice a day 5 days a week. the toll tag made the drive a lot easier. I would not choose an alternate route just to save money on the tolls.
- I think the tolls on the NTTA are excessive, especially since there are no toll booth operators to pay.
- The car pool lanes are great but not always realistic- can I pay to travel on the car pool lanes Wish companies would alternative times of business hours to avoid rush hour traffic.
- NTTA''s Billing program really stinks. It is not accurate and I keep getting bills for tolls I have already paid.



- I do not support the idea we need to create toll roads in Texas to get teh traffinc under control. The current toll roads should be eliminated as soon as the road construction is paid for. The toll should not be used as an added permanent tax.
- Tolls are getting so high I already drive surface roads longer to get on and off tollway to save money! I don't mind paying a reasonable toll to save time but...it's getting ridiculous.
- I use the toll roads for longer distances but not for short ones.
- you should restrict semis, vehicles towing boats, etc. to the far right lane. They slow down traffic during rush hour when they are allowed to use the other lanes.
- One of the biggest variables in travel time is the enforcement of the HOV lane. When the DART cops are checking for people using the HOV lane incorrectly in Richardson it adds 10 minutes to my drive time because traffic backs up on 75.
- I''d like to see a section of 75 or parallel road converted into toll road so that drivers have the option to take one or the other depending on situation.
- I recently applied for a position with NTTA. I had a telephone interview, then not a word. Not even the courtesy of a negative response. The organization communicates well with it's customer, but it does have communication issues within the organization.
- Please stop raising the tolls especially now that you no longer have people working in toll booths. it is costing me 160 dollars a month to go to work.
- The congestion on our highways keeps getting worse. I would prefer higher gas taxes versus tolls.
- I appreciate the improvements you are making to the tag system by having no booths.
- I was not able to choose the "leave before x or leave after y" in the game section due to work/family constraints.
- this survey really gave me good informations
- WHY is it taking a year to fix land slide at Kelly and GBTW? No activity for 10 months.
- SH161/PGBT going south from 635 to 183 is horrible in the afternoon.
- There should DEFINITELY be tolls in Texas to maintain roads. I''m from Chicago, and tolls are just a part of getting around.
- I take DART rail to work >95% of the time so few of these questions are a concern. A fast even cheap tollway between home and work would still require more gas than DART does.
- There are no positive answers when people have to pay tolls on state highways that were originally paid for using state taxes.
- had to pay a bill from 2009 that is sorry barely to inform me now.
- If the traffic is not heavy on the service roads, I will not take the Tollway for a trip under 5 miles. My trips on the weekday are determined by my work hours....not on traffic congrestion. I did not think your game took work hours into account. It seemed to think I can travel at anytime I choose.
- The huge increase in prices have affected the amount I use the tollways. It is hard to justify some trips due to the costs. I simply don't go north unless I must.
- It's not realistic to ask people to travel before 7 a.m. or afer 9 a.m. during the work week to save money. Most have jobs that start at 8:30 a.m. and charging them more to travel when they NEED to travel is unfair.
- I would like to see more Department of Public Safety patrol officers monitoring the roads as I believe many drivers drive recklessly on the Toll Road! That is why I answered that I do not feel safe driving the Dallas North Toll Road, the Sam Rayburn Toll Road, and the George Bush Toll Road.



- It is rediculous that the tolls keep going up, and the traffic is getting worse. Especially near the I30 and old denton road area. I might be forced to stop taking the toll if prices get too high.
- Dallas North Tollway is too congested & is too expensive for not having less traffic than other routes.
- Need a website which shows toll "booth" locations and the toll charge for a planned trip.
- I am consistently annoyed that I pay a toll on PGBT yet am in standstill traffic at the old Belt Line toll plaza. Cashless tolling forces traffic to two lanes and has increased my commute by at least five minutes. An exit lane for Walnut Hill that utilizes existing pavement thru the Belt Line toll plaza would ease congestion (as long as people don''t exit and try to get right back on the freeway).
- Coit Rd exit is unsafe. Other off-ramps from 121 provide a separte "merge" lane. The Coit exit merges directly into the traffic on the frontage road and the traffic on the frontage road NEVER yields to the traffic coming off 121 on the ramp. As far as I have been able to tell this is the ONLY off-ramp from the toll road that does not provide a separate merge lane and it is UNSAFE.
- Just moved from Chicago area and have to say the roads and traffic in Dallas Metroplex and drivers are worse than any other place in the country! AND I thought NYC was bad.
- It was a nice survey.
- Please build more toll roads in North Texas. I found much value in toll roads
- I think it's wrong to make traveling on the best roads an unaffordable luxury item. NTTA does a poor job of keeping their lane closure information up to date; likewise with their estimates of when the work will be completed. I expect more when I'm paying daily for the trip.
- I love the updated designs of the tollbooth replacements.
- I am not impressed with the DNT in any regard. If I was able to go another way then I would. Its insane that we have to pay to sit in a parking lot every day. We have rerouted our schedules and still sit daily while paying an absurb amount. I could understand if it was cleaner and ran smoother but its the worse part of our commute and the MOST EXPENSIVE
- I asked NTTA to help recover a DFW parking receipt that hit my tolltag the service was very prompt! Excellent customer service.
- Sometimes using the NTTA roads on the way to work actually adds time to my travel and I have to pay but coming home in the evening it is worth the price to get home earlier and spend time with my family. :)
- thanks for the short and easy surveyt
- We are very enthusiastic about the construction of the Southwest Parkway in Fort Worth. It will make travelling to work and to downtown Fort Worth so much easier from this far southwest location. We will use it often.
- None
- i like using the toll.
- fine
- Baffled why Cashless Tolling has not alleviated traffic on North Dallas Tollway. Wonder about choices of placement of Overhead Scans like the one just before Trinity Mills, Northbound on North Dallas Tollway - creates a narrowing and right-skew of lanes.
- I appreciate the tollways being well maintained clean and user friendly!
- Thanks for all the improvements in the system over the years. Keep up the good work.
- If and when the TX 121 tollway comes to Cleburne, I anticipate using in regularly with frequent trips to and from Fort Worth.



- It was not on the map, but 35W from N Tarrant Parkway to Fort Worth is terrible and 820 from 35W to 121. I would be willing to pay tolls travelling these roads.
- none
- I will use the tollway more when the east end construction is completed. Right now it is a mess to travel anywhere from my home.
- Expedite the underpass under the train tracks on 161 !!!!
- Thank for the safe road
- none
- Toll roads are Ok if the money is made is put back into the improvement of roads only! Also, existing roads should not become toll roads!
- Dallas North Tollway and 190 makes travel to north texas area much faster and convenient. We have been taking road trips from Texas to Orlando several times now. Traffic condition in Texas is more advanced and convenient compared to other cities.
- There is major congestion when freeways merge into the Dallas North Tollway. Why can't access lanes be added for entering and exiting the freeways so that merging is kept to a minimum?
- Enjoyed the survey very much1
- GET THE 161 LINK TO I-20 FINISHED!
- There was no option for my exit from 190 to 183 so I chose Trinity Blvd. I really go Keller Springs/Whitlock/Sandy Lake/SB 190/161/WB 183 to Amon Carter Blvd.
- I won''t use a toll road unless the time saved is 20+ minutes from the alternative routes.
- I enjoyed this survey. It was quick and easy and you were able to "play" by sliding the bar.
- None.
- Something that you should consider would be giving the customer more ways to analysis his travel so that he could make better choices. You should be able to give us our travel times and costs on the tollway. We could then decide if we are saving enough time to make the cost worth it. I can imagine some charts, graphs and other filtering we could do on the data.
- The amount of the tolls in the "games" were not a good value to me. If they were lower, I would probably have chosen more of the toll options. I have been paying taxes at the gas pump for many years and feel strongly that good roads should not be exclusive to those having additional disposable income to enable them to pay tolls. I DO have toll tags and use them on occaision for personal purposes or where they are reimbursed to me by a 3rd party for business reasons. I do not support paying tolls on one toll road where the proceeds from the tolls are used to finance other toll projects. When a road has been paid for through tolls, they should be converted to free public access or tolls lowered to provide only for maintenance of that specific road. However, since I am not empowered to make those decisions, I must deal with whatever gets decided. I do not feel that I have any voice in the issue.
- Traveling in DFW area all my life, I appreciate the tollway system and how it works. It is a huge job.
- end survey
- have a great day
- The lake dallas area where LLTB dumps out prior to 35 is a freakin nightmare and adds 10-15 minutes of commute time
- I purchased a TollTag on March 05, and still have not received it in the mail. I wish there were more details on "date of receipt" of your TollTag when these tags are ordered.



- Once money from a toll road has paid for what it was intended to pay for, the road should be moved from toll status to FREE. Example, the DNT has long since paid for itself, yet continues to charge tolls.
- Work on providing a more reliable mass transit option in the metroplex area rather than more roads..
- I tried to answer the survey as best I could. I do not come into the Dallas/Ft. Worth area much at all anymore.
- The Toll Roads help me to open up my horizons to journey more places in my area. Takes less time and feel safe.
- Can"t wait for Chisholm Trail Toll Road to be finished...hate the traffic on I-35, it"s ALWAYS BUMPER TO BUMPER no matter which direction you go and time of day doesn"t seem to matter either.
- HOV lanes on Hwy75 should be made available to other cars. Please consider removing cones or establishing a pay for use.
- Please open the left lane on 161 south of 114. It is used as a breakdown lane and could be opened fairly cheaply. The traffic is getting worse there.
- I considered travel times when purchasing my last home. I consider gas mileage when purchasing my last vehicle in 2001.
- Toll roads are a plague upon Texas. The NTTA is incompetent and has the worst possible customer service attitude. I can''t wait until Texans finally have enough and the legislature steps in to start regulating and fining toll authorities for their obvious scamming of the public.
- I disagree with the use of lane separators for HOV lanes on 75/635. Think they should be normal "diamond" lane with easier entry/exit rather than controlled access. Thanks.
- The gates at the entrances and exit ramps of the tollway are too narrow. This is evident in the amount of scrap marks and damage to the concrete barriers which are inches away from your vehicle as you pass through the gate.
- Congestion is getting out of control we are considering moving just to avoid traffic hassels. Anything to make a smoother commute would be appreciated.
- I would like an NTTA iPhone app that can give me up to the minute traffic conditions and access to the tollway cameras to get an idea of the conditions.
- I strongly DO NOT support use of tolls to finance highway improvement. That is what gasoline taxes are for and should be sufficient if the monies are handled / spent efficiently.
- Seems that toll roads are set up to help pay for the roads but the toll seldom disappears. I don't want
 to see more toll roads in the Dallas area.
- In the list of factors I consider when picking a route a very important one is school zones. My route and the time of departure are tuned to avoid active school zones. Having a school for every square mile (Plano) may be unavoidable, but it surely impacts traffic VERY negatively.
- I use NTTA roads but feel that these roads should have been paid for with increased gas taxes.
- I''m too much of a lady to type out how I really feel about the NTTA and the never ending highways that were paid for years ago.
- Since the tollways have been paid off for a few years the prices of tolls could at least be lowered or eliminated. Construction on tollways is too slow
- :)
- The toll roads do save much time but if I had to travel everyday it would b cost prohibitive, for me. Getting from Trophy Club to 75 is a breeze with the tollway.



- I''m not opposed to VERY (emphasis on very) low cost toll charges. A trip of 15-20 miles shouldn''t cost more than \$1.50.
- Tolls on 161 are excessive and we avoid use of the road at every opportunity. If the tolls were more reasonable, we would use the road a lot more often.
- Enjoyed using the tollway system. It shortens the trip and also is an easier and less congested roadway to travel to go to and from our daughter''s family in Frisco
- I incorrectly entered I-35W instead of I-35E in the 3 main roads used for the trip
- At the moment, I do not live near nor use a NTTA road except for trips to relatives in Oklahoma via the North Dallas Tollway 3-4 times/year. However, when I receive the ZipCash bill, my tollway experience is ruined due to the extremely high bill simply from one round trip using the tollway. ZipCash is WAY too expensive...and a toll tag is not practical for me, either.
- I think that the citizens are taxed twice with toll roads and use them only if there is no other way to get from point A to Point B. Even if it takes me more time, I will not take a toll road.
- On a recent trip I planned to use two seperate toll roads to get to my destination. After paying the tolls, it turned out that the roads were completely shut down due to construction preventing commuters from using either tollway. There were no signs posted to indicate that the roadway was closed. This is unacceptable and just another reason I avoid toll roads. I've been on some nice toll roads in other states and they have many more ammenities for a lower toll cost than the toll roads around DFW.
- I think the "other" considerations (besides price/time) are a big consideration. To tell the truth, it's just "nice" to drive on the 190 Tollway. I do avoid it sometimes to save the money, but it is a nice place to drive.
- Low cost of tolls is the biggest factor in determining if I take the toll road or not.
- cool survey
- Toll roads where I get a bill in the mail are inconvenient and more expensive. I pay my tolls on time and get a late notice with very threatening language about paying my toll on time. I am opposed to any toll roads and if the state of Texas would use the Gas Tax money for what it is intended instead of stealing it for other purposes we would not need toll roads
- Don''t ask the salary question.
- I don''t mind paying tolls as long as when the roads paid the tolls stop
- Toll Roads are not the only answer to congestion.
- Well it was dumb
- Right now to save money, I try to drive the non-toll roads most of the time. BUT, when I am short on time and/or if traffic reports on radio sound bad, I will choose a route which is either part toll road or all toll road. Frequently, I will drive most of my route on non-toll roads and then toward the end use about 2 miles of toll road just to skip a few lights.
- I am open to pay for tollroads to help ease congestion for my own well being but i am not willing to pay much more than what I am already paying on 161, especially since it continues to be backed up almost as bad as driving on 360 every day.
- I am looking foreward to the grapevine funnel being completed and the new toll rode built as a part of that project
- May not be an NTTA issue but someone needs to get rid of the HOV lane on U.S. 75 to relieve congestion on that road, or enforce the HOV restrictions so it does not enrage those of us who obey the law.



- End Survey
- There is no toll road option in our city
- Thank you for attempting to make travel in North Texas better.
- Change the gas tax from a fixed amount per gallon to a percentage of the price per gallon, and get rid of toll roads! The overhead of toll collection is still too high, even though people are no longer needed to man toll booths. Have heard too many horror stories of a \$1 toll unfairly becoming something like a \$250 bill. And of conniving on the part of toll road operators to make tolls and fines more likely. Toll road operators are not trustworthy. Cities are also not to be trusted, and are prone to ideas such as red light camera enforcement. If toll road cheats are allowed, cities might think they can get away with installing photo enforcement and shorten yellow lights. An example of the cheating that toll road operators do is the connection for Business 121 on the east side of Lewisville. Southbound is free. But northbound is over a bridge, and is NOT free. It should be free. Have to turn right at F.M. 544 and go through 3 more lights to avoid that toll. Another bad thing is the closing of existing routes. Blair Oaks used to connect to both directions of 121, now it only connects to the southbound service road. That''s not too bad, thanks to the nearby U turn at 423. But Morningstar, and all the residents of the Colony to the east of Plano Parkway got shafted hard. Morningstar didn't have to have an interchange, just a tunnel or bridge to the northbound service road. But you didn"t put any such thing in, and now they have to go all the way to Paige, 1 mile away, to make the U turn. You lengthened all eastbound trips by 2 miles!! Finally, the designs of the intersections are horrible. Left turns are done 1 direction at a time. There is a type of intersection called "Continuous-Flow", where left turn lanes are moved clear to the opposite side. I would like to see a less radical version of that, where the left turn lanes of opposing directions are swapped. At the under/overpass, the lanes of a N/S road, from west to east, would be s,s,s,n left, n left, s left, n, n, n, instead of the conventional s,s,s, s left, s left, n left, n, n, n. A similar technique can allow the E and W service roads to turn left at the same time, using the same left turn lanes in the same directions as the N/S traffic. The last bit of bad design is an intersection like South Colony at the southbound service road of 121. There is only one direction traffic can come from-- east. Yet the street is a sharp right turn. and there is no right turn lane. This could be a much more gradual turn.
- Our system pretty much is trying to deplete the consumers pocket it seems.
- toll roads are a waste of time and when u pay for tags that money should be used for highway maintenance
- Why do people in Vermont run the NORTH TEXAS Tollway Authority? Just curious. :)
- I didn''t appreciate having to put our income salary you should have box saying "prefer not to answer" - violates our rights.
- good info
- I take a lot of consumer surveys & this one was well done easy to understand and fun to take. I regularly take the Sam Rayburn Tollway it has saved me much time since opening and I generally feel it is worth the fees.
- this survey was informative
- The survey screen is skewed to the right which prevented me from being able to check the "strongly disagree" radio button. Also, some of the words on the far right hand of the screen are not visible to the survey taker. You might want to hire a new web designer or have your current web designer fix the design mistake which causes the survey screen to be skewed to the right. These design errors made it troublesome to complete this survey. Two thumbs down people.
- THE NTTA, SHOULD THOUGHT ABOUT REMOVING THE "CASH" TOOL BOOTHS ALONE TIME AGO..BETTER FLOW OF TRAFFIS,,IN SOME PARTS.
- Toolroads are Increasingly to High!!!



- I would use toll road 161 from Carrier Parkway if it connected completely to Hwy 183. As it is now, it is too confusing and not a direct route for part of the way. I also think TX 360 should be completed as a toll from Green Oaks to Hwy 287 to relieve the congestion when having to exit and use the frontage road for the rest of the way home.
- It would be appreciated if you would build roads that minimize congestion. Example Dallas North Tollroad Park freeway entrance is just at 190 exit.
- Need a tollway from southwest Fort Worth to northeast Fort Worth
- I love the convenience of the tollroads. Use them everyday.
- Thank you for timely and monthly updates.
- because there are 3 of us in my family with a tolltag tied to my account, I have instructed my family to use the service road and NOT the tollroad unless they are going to be late for work or an appointment ... as the tolls add up so very quickly!
- I don''t use the toll due to the congestion and the cost of driving on a road. I have to past too many tolls from where i live and gas is already ridiculous. i take 75 exit legacy to the toll svc rd then gaylord, which will take the same amount time minus the toll cost, congestion and accidents. if in a hurry then i will use the toll, maybe once a month if that.
- Foi bom este survey, espero que tenha mais desses ;)
- Thank god for SRT. You did a GREAT job at building the intersection at HWY 75.
- I dont mind paying toll if it only for the cost of the road. Like if there was an end in sight like what hapend with I-30 years ago. I think that we should be able to pay the road of and take down the toll booths over time. most of the time i ride the service road right next to the tollway and the congestion that happens on side street because of toll ways is bad.
- Never, Never, Never consider putting HOV lanes on a toll road. They are useless and dangerous during peak driving.
- I don't enjoy paying tolls when there is traffic which is the case always on the tollway going North after harvest hill and George Bush going west after Preston
- Please push TXDOT to finish the highway on either/both sides of the Lewisville Lake Toll Bridge. The
 reason our tolls are higher is because of that nonsense. Make "em pay! They agreed to it! PUSH "EM!
- great survey, made me realize how crazy i think
- please make a toll road on the north side of loop 820. I WILL PAY TO USE IT!!!
- This was very informative. Thanks so much!
- To many stinkin tolls
- Thanks!
- hope the dcta train(?) will allow more trips into the area with not much cost
- One other factor I would think will matter: i there is some decent scenery would you still take the TollRoad at the higher speeds? My answer would be no tothe Toll road.
- get rid off the toll. i pay enough taxes for the roads out of my personal check
- I''m happy to do this thing
- Please do not assume my answers mean I am willing to more in tolls to just save time. Your game options gave me no real choice but to choose the higher toll.
- no thanks



- I think that tolls are not being used for improvements and don"t end or go down when improvements are paid off.
- End Survey
- I donot support private for foreign managed toll roads and would vote against any politician supportting them.
- 161 SB, at afternoon rush hour, is atrocious. I hope that an expansion to 3 lanes is in the works to
 relieve this congestion, or a redesign of the ramp coming off of Beltline. I cannot stand paying a toll to
 you, for sitting in traffic. Otherwise, I am pleased with my drive on this tollroad. Thank you for
 listening, if you are.
- Obrigado!
- This survey was somewhat difficult to navigate, in the beginning there was only weekday options, which through off the entire survey for me.
- on the question regarding my trip "how much earlier could I have left" and How much later could I have left...since I was just shopping this question didn"t apply since I could have left anytime I wanted to leave. That was not an option in the answers given.
- I use the toll roads only if it is necessary.
- I don''t think I should have to pay tolls for a road that the taxpayers have already paid for just because the government has squandered the money. I am willing to pay for new, unpaid for roads if they get me there faster and help me save gas on the trip.
- I will be especially excited when the tollroads come through Forney!!!
- I feel that the tolls have increased to much and the ones for 121 are excessive.
- Obrigado!
- The toll tag options are confusing. We accidentally got the TXTAG which means we need to stop at the toll booth going out of the airport. We now have "new" car and we are putting yours on this car since it's the one that most frequently goes to and from the airport.
- Thank you.. that was an enjoyable survey.
- Gogogogo!
- Vlw, o mais facil e melhor ;)
- If tolls increase again anytime soon I will choose an alternate route even if it adds time to my travel.
- you should lower the tolls when construction adds significant traffic and travel time. this is most notable on east-bound 190 near denton tap where teh right lanes are closed. this adds at least 15 minutes to my commute in the evening
- NTTA customer service is ace.
- vlw
- fdsfds
- SHE REALLY APPRECIATES HIGHWAY 161
- vlw
- I travel to the DFW airport quite frequently. The part of the tollway just east of 35E is very rough considering the age of the tollway.
- End Survey



- some pages did not transition to next page by the described manner & initially were confusing. Your survey is a good idea. Toll roads are anti-democratic and represent an abrogation of "promote the general welfare" because not all can afford them. My major association with Orlando FL is not Disney World but the city"s hideous addiction to toll roads. Thanks for asking.
- this survey was very well presented
- vlw
- ytgfgdg
- With \$96.24 of MY MONEY on account, I was REFUSED entrance via Toll Tag to the DFW Airport!! My credit card is NOT expired but I don''t see why that makes any difference anyway if it was because you''ve got almost \$100.00 of MY money. So, what''s the deal?
- I don''t appreciate 85 to 90 mph drivers on tolway north of Hwy121on n.Dallas twy
- I would have liked to click back (I did not choose to use the web browser back function in fear it would jam your program). I realized that I did not consider the central game option to be non-rush hours, and would have responded differently, after the first option (just lost focus on the middle block times). Might have chosed No-Toll more often if I paid Toll daily x 5 days a week to get to work.
- Yes...construction on 121 at North Dallas Tollway --- NTTA should figure out a better way to alert traffic that the ENTIRE tollroad is shut down....I suggest this be posted at I35 and US 75...that way someone has a chance to get off on another major highway instead of taking 30 minutes to get through traffic lights....
- I would get on 161 from MacArthur & Exit 1-20 to get to the credit union once the toll is completed. I think it will eliminate time because of the speed limit & without so much congested traffic but I think I still may have to go that route before 4 or 5 on a weekday.
- thanks for the opportunity to participate
- ganhei
- gogogo
- Toll roads are a scam. The NTTA should be defunded and desolved.
- Tollways are the greatest!
- Thanks for allowing me to participate in this survey. I hope gas prices go back down sooner than later.
- lool
- googgo
- hhghfgh
- I worked for 4 months in Flower Mound and used Sam Rayburn every day. It was the only reasonable way to make the trip. Sometimes used the service roads, but more often used the turnpike.
- Speed on the tollways need to be under the watchful eyes of our Patrol Officers as some drivers literally blow you off the roads plus change lanes with no regards for safety. And motorcycles are really bad when they showoff with their stupid trick riding stunts. Gets people killed, even innocent people. Thank you for letting me respond.
- fdsfsasdf
- tghg



- instead of choking the ones that choose to take the toll roads to pay for the majority of your new construction for roads that they dont travel, why not develop a way to institute toll charges to the people that travel in the area that you are intending to develop new roadways? i only take a small 1/2 mile tollway, and was paying 1.50 per day, sometimes twice a day, when there was no damn construction anywhere in the area at all. it makes me sick to think about how much money they are racking up and there is no improvements or maintenance needed on mt creek lake toll bridge. i am sure that the toll bridge is still going to be a toll bridge long after the costs of building the toll bridge have been paid in full. eitherway, charge the people that are responsible for the demand. not the people on the opposite side of town that are just trying to live comfortably. charge the people that use the routes where you are planning to build and improve.
- I think it is wrong to pay for toll roads when tax dollars have already paid for the roads.. That is certainly the case with selling Texas land to a foreign country to allow them to build a toll road here!! That borders on corruption!!
- 2
- I wish it wasn''t taking so long to complete the entrance ramps on the North Dallas Tollway, specifically at Frankford going North. I also wish something would be done to relieve the congestion at the Frandford exit during afternoon rush hour going South.
- great survey
- I am currently unemployed and looking for a position in the DFW area. Have trouble justifing driving too far, because of the gas prices and also because of the time sitting in traffic congestion.
- we dont have toll road in springtown tx
- NTTA does good job.
- I take alot of surveys but I really enjoyed this one. Its put me in a real life situation, where I had to mentally recall certain things. I could picture this in my mind.
- good
- 123123123
- gogoo
- wffdssd
- In the games section, the majority of the polls were ridiculously high, and hardly saved anytime. Who would pay those?
- Please bulid a tollway as efficient as the North Dallas Tollway going from southeast to northwest and continue the North dallas tollway to continue through downtown dallas to avoid the heavy congestion at the major interchange. Thanks
- I do not agree to pay to drive on a road that is already being paid for by taxes as well as gas tax and city tax!!!
- There are not Toll roads on my way to work.
- Would like reasoning behind holding some tolls for years before sending notice and other times send out violations within 2 months and expect the higher fee to be paid by the consumers.
- ALL Westbound options from Dallas and/or Las Colinas to mid-cities and West Fort Worth need drastic improvement to relieve congestion during rush hour. Would be willing to pay a reasonable toll (and pay one 3-5 times per week now), but paying that toll should provide shorter commutes and it currently doesn't.
- I very much appreciate the signs giving advance notice of construction or lane changes/exit closures. This allows me to change my route to avoid congestion and take alternate action to travel.



- If a toll road was available connecting north Tarrant County and the current Dallas/Collin County toll road system, I would use it.
- Do more to discourage motorists from using an eventual "exit only" lane to zoom ahead of those patiently waiting in line during high traffic congestion.
- none
- ADFGHB
- If the Tolls continue to climb along with gas prices, then I may reconsider my place of employment to avoid them altogether.
- Great survey.
- I have been living with my daughter since my husband passed away in October. my home is in Tuskahoma Ok. and I go up there to keep an eye on my place. at least twice a month.
- gogogo!
- tretrfdgdfg
- hrtgdfdsdf
- HURRY UP AND BUILD SH360!!!!!!!
- I would rather have more public transportation (rail) available, reaching more metroplex areas, rather than building more roads-toll or otherwise. I do appreciate NTTA''s use of native plants in the medians and shoulders on PGBT to minimize irrigation and maintenance. It looks beautiful!
- porfavor meu nx
- gjh
- MEU NX PORFAVOR
- gogo
- meu nx
- ljkhuyk
- Please provide a tolltag and associated agreements to allow me to travel anywhere in the country over toll roads.
- I can't wait for the Eastern PGBT extension to be finished!
- I do use a toll road on my daily commute, but it was not listed. I cut through the DFW airport using my toll tag on a daily basis twice a day to save on time and traffic.
- The roads are so congested on 75, a non paying toll road and also just as congested on 121 and the Dallas Tollway that I don't have an answer truly regarding tolls as the DFW Area needs alternative train transportation to handle all of the traffic in the area at this time.
- The only thing I would like to add is that there are no toll roads along my commute. If there were I would strongly consider taking one in order to improve my commute time and save on fuel instead of sitting in traffic.
- I use the President George Bush when I have to go to destinations it goes easily. It is very fast. I do not like leaving an appointment between 4:30-6:00 and use the turnpike. It is safer and faster to use roads through town because of the congestion.
- 190 eastern extension came about 10 years+ too late. The commute became a living nightmare so we sold our dream home to move closer to the city.



- When I say that traffic congestion is not a way of life in the DFW Metroplex, that it should not be something we simply settle for or lie down and take, I believe that wholeheartedly. I think we can do better! I drive the route I do because HWY 360 is such a nightmare! It is ridiculous! It doesn''t have to be this way. Think of how many fewer emissions problems we would have if that traffic would simply move instead of crawling along like one big block of congestion!
- gogo
- Since the toll road has done away with manned booths I think they can afford to lower the cost of the toll.
- Please post construction updates on the George Bush/I35 construction. It has been in the process for over 10 months. It adds a minimum of 20-25 minutes to my commute home. Have considered not paying tolls until it is completed!
- I expect to travel 190 more and more as time goes by. I love this highway, but I have one suggestion that might save you money. It looks like the plantings you have made along the road are about twice what should be planted in those areas. If you are not using those areas as staging for new plantings, you should cut back on the number of plants by about half.
- cool
- Can we please get Hwy 161 widened between Hwy 183 and I-635? It should never have been built with only 2 lanes, but I guess it's better than nothing. It is SO congested and SOOO bumpy.
- Dallas has terrible roads. Tarrant county seems like their roads are better.
- I know the toll price is displayed, but I never know how much Im spending while going through multiple pay points. I went from 78 to I 35 and have no idea how much it costs. I will look it up online and determine if it costs me too much to use the turnpike everyday.
- Drove to north Carrollton rail station and rode DART rail remainder of trip.
- Not enough law enforcement patrols on PGB Freeway (IH190) People consistantly well over 70MPH
- I don''t know if it exists, but would like an iphone traffic alert/update for my daily route.
- ,vgmgfghhfgh
- In my opinion, the tolls are excessively high. It costs me about \$118.00/mo. (3.67 one way) to travel from my home to my gym, a distance of about 12 miles on the toll road, for 16 days a month. I only did that for one month...until I realized the expense. It used to cost me less to travel 190 miles on the Florida turnpike from Fort Lauderdale to Orlando. I do not use the Dallas North Tollway anymore.
- Tolls are entirely too high on PGBT.
- I don't like toll roads. They are not maintained any better than any other roads and our taxes should pay for road construction. Period.
- n/a
- I cant wait to see after the mess it is taking to have the 190 Bush connector through Rowlett finished.
 I like to see how things are done, but it takes so long to re-direct traffic etc.
- We also make the same trip on wekends to visit family who live within a mile of the address we used for the survey.
- I''m not a fan of tolls because I grew up in Oklahoma and saw how it limited potential growth in communities. In my humble opinion, it has had a huge impact on the low average wage in Oklahoma because folks couldn''t afford to travel longer distances for better wages. If you are going to toll then don''t use taxes for those roads, and keep them repaired (hello! H.E. Bailey Turnpike). It is well known that tolling has had a huge impact on Oklahoma''s tourism and economy for years. Drivers avoid the state.



- Cost of using the tollway is important to me not convience.
- I suggest you look at the NTTA online response time to customers regarding their account. I have used this service in the past and the response time was great! However, I used it on April 11, made a request that I had forgotten my password. When I sent the request a notification stated would be a few moments and I would receive my response. However, it took approximatly 3 hrs before I received the email that they were working on my request. Today at 8:43 am I receive an email requesting my drivers license, which I gave in my initial request online. I responded to this email at 1:14 pm and I received a response that they had reset my password and that if I do not receive a login information to check my junk mail. I really do not understand the last email and will have to call. I should have done this all along! I suggest you look into this response time issue. Thank you for giviny me the opportunity to comment.
- tsrtdffdfsd
- I love the Turnpike!! From Fort Worth to Plano in 40 minutes!! sweet!
- If you raise tolls at all I will almost certainly not drive on them. They''re already too high. I would go further on PBGT right now if the tolls went back down to their previous rates because I would get to work quicker.
- i should not have to pay to use a highway.):
- no evert thing was good
- Please upgrade your system to put simple queries to determine the tolltag status of your customer. It makes no sense for me to get a zip cash bill during a rental or in my own car when the scanner does not recognize my car, even when you are taking picture of my license plate so you have confirmation of who I am.
- Get rid of the tolls once the roads are paid for!
- Interesting survey, I would like to know the outcome or end result in findings once concluded.
- I think this survey should be conducted on a secured site especially since asking for name and address.
- I love the tollways! especially the Sam Rayburn or 121 tollway. I can get somewhere far away so quickly because I can go 70 mph. :)
- These answers were based on a company trip, meaning my employer would reimburse me for any tolls. If I were paying, I would select a non-tolled route. Also, while I opted in the game not to pay a higher toll for a quicker route, I would pay that higher toll if I were running late and my meeting was important enough that I couldn"t miss it and my employer were paying for the tolls.
- price is always a concern and the monthly cost of tolls is costly. Hopefully with the more automated toll booths instead of manned booths the cost of tolls will not increase.
- I will be happy once all the Toll Gates are gone. And I will be elated once the DNT and 121 interchange is done. REALLY HAPPY!
- I will never be willing to pay the high tolls suggested in your eight scenarios. I''m already altering my route in order to avoid using my toll tag, especially if I don''t think it will save me any time. Having to sit stuck in traffic is aggravating enough without having to pay a toll for the privilege. I already drive off-peak as much as possible.
- This is obviously one way of a two way trip. If tolls were reduced in both directions for off peak, for example before 6:30 am and before 4pm, I would travel earlier. As a Frisco resident tolls are virtually unavoidable for me, when I travel for work. Outside of work hours I virtually always avoid the tollway to avoid the costs.



- My trip to CC Young was excruciatingly long because of the roadblocks along Northwest Hwy and W Lawther Drive. It is a complete mess over there and the DETOUR signs should be visible down Loop 12 as well as on Mockingbird. There should be WARNING SIGNS in a radius around that site rather than a happenstance three orange signs off Mockingbird Lane. This trip was the most frustrating drive I've had in a few years. And to be directed, by GPS, to the neighborhoods around the Young center without a way end just "took the cake". Ugggggggggggl! Arrrrrrgh! What a waste of time, gasoline, nerves, and civility between my passenger and me.
- Some of my answers are based on time and money. If paying a toll is going to save me less than 10-15 minutes, I WON''T pay it. Paying a toll for me is efficient when it saves significant amount of time then it is feasible to me. The toll highways are not exempt from traffic congestion, so why pay all these extra money to sit in a congested toll way, when I can go use back roads take the same amount of time and pay nothing? I choose NOT to pay it. Toll highways are convenient in off peak times and when one is running late. Other than that, sitting in the toll way, after you pay, and feel like you are right there in IH635, what''s the point? Enter PGB toll way through McArthur, 114 or beltline (or go to Dallas North Tollway and 635 all the way to Plano) and see the amount of traffic at a stand still between 4PM and almost 7 PM. Why would I want to pay a toll tag, if I can go down the service road and it would take me the same amount of time as using the toll highway, and not pay anything? (believe me I''ve measured the time!) Whenever I get on the toll way, I do like the feeling of being in a new clean road and while I don''t have a toll tag, I do like the convinience of the zip cash and not having to stop and pay a toll. Thanks for reading this
- You raised toll rates in September 2009 due to low traffic and the need for revenue to cover debt obligations. In 2010, your revenue was up 33% to over \$400MM with a significant operating profit. I want my toll rates lowered. It's not fair to raise them when the going gets tough and then make that a permanent part of the base when the going gets good again. Lower my Tolls!
- I pay a lot in tolls as it is and really don"t want to add anymore tolls to my monthly bills!
- The games *appear* to be attempting to determine a price point that will cause a shift in driving time or route. Many of the toll increases (as a percentage) in those examples were extremely high. I would be interested in how you would justify a toll increase of that magnitude even during "normal" economic times. A large toll increase will change my driving behavior so that I avoid all toll roads even if it means leaving earlier. This was not an option in the examples as they all had a "toll cost" element. Even if you cause a shift in driving patterns and ease congestion while charging more during peak hours, eventually, as more people move to the area, the congestion will return. So at that point would you then LOWER the tolls? What I'm getting at is this: if you are looking at raising tolls (consumer cost) in order to reduce congestion (consumer benefit), what are you going to do when the benefit erodes?...Reduce the tolls? If the answer is "yes" then great, what are your plans on how you would do/measure that? Have you ever considered reducing tolls temporarily while performing construction and lanes are closed thus causing more congestion? Certainly there''s a price point at which the tolls can be lowered and not cause an increase in tollway usage - a slightly lower cost with similar congestion levels. Thanks for the survey! BTW - I like the higher speed limits even if I can only reach them at limited times due to congestion.
- twetertre
- Tolls between Grand Prairie and Plano, TX are entirely too high. It cost over \$8 a day to go to work and come home. I know there are alternate routes but it takes too long. Wish there was something



you could do to lower the tolls some.

- Sadly the greatest problems have been due to political decisions made in the past that have brought even greater problems to us in the present.
- gfdgd
- hdfgdfgfd
- Quick and easy
- Something needs to be done about severe trafic on 121 between richland hills, 820, 121, 183 to DFW.
 Takes too long and always congested. Same with North Loop 820 in Fort Worth.
- The biggest problem I have with ntta is the amount of time it takes to complete repairs. The construction on 161 between north toll way and 35 has taken WAY too long
- sddsfsdfds
- The cost of the toll is a determining factor in route choice. My answers to the 8 game questions factored in the truth that once the toll amount is set by the NTTA, it does not fluctuate with the economy. Therefore, my preferred choices for the lower toll cost when I am able to save at least 50% of travel time.
- I have been very impressed with the activity level of the DFW Connector project and look forward to using the new roadways ... toll or otherwise!
- I would like to say that the NTTA website is terrible. everytime I try to input my info, it says it's wrong and it's hard to navigate.
- dfsdfds
- the economy sucks and the government has been milking us for every dime...the tollways just arent woth the effort most of the time
- I have an NTTA tolltag, but I actively avoid tollroads because your phone customer service is abysmal and offensive and your fees are nonsensical. It took me weeks to sign up for a tolltag because every time I tried, the website was not working with no error messages. When I did, I was overcharged for my existing tolls. When I called, I was told that I would have to pay full price for existing trips. When I said that I had a letter from NTTA saying I could "Sign up now and save \$x.xx", the phone support person got defensive and said "We aren"t supposed to do that but I'll do it for you this once." Multiple friends have told me they received the angry "we aren"t supposed to do that but I'll do it this once" line as well. I remember friends as far back as 2003 who were charged ridiculous fees with no notice when NTTA made errors pulling a credit card payment. There's no two ways around it, your reputation is horrible and everyone I've talked to has a horror story about you.
- I want to thank the Toll Authority for the great work they have been doing for the Metroplex. I would like to see, in the future, the use of electronic speed signs that would raise/lower speed limits as traffic dictates. This would not only help with congestion, but also reduce the stop-and-go traffic and emissions.
- The questions that required you to slide the bar did not work though I tried numerous times. So, the times you wanted for those questions are incorrect.
- There were several web developer issues that popped up during the survey. Someone should look at that. Have a nice day.
- THERE IS A PORTION OF THE SAM "TOLLWAY" THAT YOU CAN NOT GET ON THE ACCESS AND HAD TO GET ON AND OFF THE TOLLWAY. SHE HAS TO PAY A TOLL TO GO JUST A FEW FEET ON THIS ROAD AND DOES NOT FEEL THAT THERE SHOULD BE A FEE



- gogo
- gogogo
- It infuriates me that it is taking so long for whatever construction you are doing at I35 exit on PGBT. When we are paying a toll, work should be done at night or very quickly. This work has taken months! You could figure a way to open up the shoulder or something to move traffic. The whole reason I wanted to do this survey is so I could tell you this.
- I don't feel like tolls should keep going up. If it's to pay for the road, why do they keep going up when there's not enough work to justify it? I've just seen the toll plaza near my home double in the last year or so, and the one in Plano increase as well. There are so many toll roads in the Dallas area now, that they shouldn't have to increase to pay for construction, especially with the amount of traffic that travels on them. They shouldn't be paying for non-tolled roads either, in my opinion. It's the only way for me to get to work in a reasonable time, and I spend more than I'd like, especially with gas prices up more than \$1 per gallon in the last month or so.
- the tolls are way too expensive for me to use daily even if I had a toll tag. Roads were not maintained properly during the storms in Feb in Collin County during the birth of my daughter.
- Your survey does not ask if the customer / survey taker has the option to use mass transit to get to / from work or other destinations. I use DART to get to / from work everyday and therefore limit my driving to 15 20 minutes to the park and ride each way. DART is a MUCH cheaper option, I have been using it for years. I do use the tollways on the weekends if it saves me time and reduces traffic hassels.
- I would love a Dart Rail option to get us from Denison/Sherman to Dallas/Ft. Worth locations like airport, sport venues, downtown and park/cultural venues
- End Survey
- Please widen the section of George Bush from Valley View to Northgate in Irving. This is a traffic nightmare every day at rush hour. I do enjoy using the tollroad.
- I didn''t understand the game portion and probably didn''t answer the questions correctly. Also, I don''t know how much I pay every day in tolls. When I put in the two addresses and the routes I used you should calculate that for me. So I know I also answered that incorrectly.
- The DNT is a absolute nighmare heading south from Cotton Gin/Main St after 7:15 AM. Something really needs to be done to relieve this congestion.
- I''ve been watching the progress on the Bush Extension to I-30 with anticipation. I expect to make signicant use of this segment.
- The tolls are getting ridiculously expensive, with gas prices rising as well I will be using the toll roads less and less. Tolls need to drop in price.
- I think that the tollway was should not be governed by state or city police. If these roads are public roads it should be available to all of the public. To place a toll on a public road and limit access to those who cannot pay is unconstitutional. It is either the tollways are are private roads and governed by the NTTA and not the state or city police. Or these roads should be available to all of the public regardless of income and be governed by the state police and city police. At which point it will truly be a public road.
- •
- The costs of tolls in conjunction with the amount of traffic congestion makes the tollway a nonoption. This includes 161, 121 and the Dallas North.
- I sent email looking for help on an invoice fine i received which told me i could a discounted rate would be accepted the phone system would not except that amount and so i asked for help and the


email i received back did not help at all!!!!!

- I would be willing to pay a bicycle toll if it meant a more direct and safer route to work.
- Love the EZ Toll Tag. Due to my traveling on business the auto pay is great.
- Answers may have been different if the journeys described had been longer and the differences in time more significant. I won''t pay much to save 2 minutes, but if it saved me 10 or 15, that would make a difference. Also, I avoid the N Dallas Tollway during rush hour as I hate to pay to sit in slow moving or stationary traffic.
- i did not know that there was a difference in fares for zip cash vs a toll tag. i know the toll booths are no longer availabe but they used to post the fares. and i notice the fares are no longer posted. any signs do not reflect these differences in prices.
- I understand how people like tollways because they are quicker and less congested BUT I dont understand why tolls keep rising. With as many people driving them daily you certainly make more than enough money to pay for construction and upkeep for the tollways so WHY are tolls so expensive????
- My trip is to attend a Toastmasters meeting; I usually take it once a week. Weather permitting, I ride my Harley on this trip. (My Harley has a Tolltag.)
- I would like to mention that my income severely inhibits my preferred behavior in any situation. Making less than 25K forces me into that option. the lower price will ALWAYS be the option I choose unless you can somehow make my trip from Richardson to Frisco 10 minutes (in other words, paying twice the normal toll to save 10 minutes off of a 45 minutes trip is not a valuable trade off for me). Then, and only then, would I consider paying any toll over \$7.
- I won''t have went to this web sight because got a bill for a truck I do not own and don''t know how I got an account # when I never go to Dallas
- You left out using my toll tag to go through DFW airport. I do this twice a day as a regular part of my route. I think there are many other people that do the same thing. It is the quickest way to get from Flower Mound, Lewisville, Highland Village etc to the mid-cities.
- I would like to receive an email alert when my account is near the cutoff BEFORE you debit out \$40. I am not usually expecting it when it occurs.
- Please lower tolls. People are struggling just to make ends meet, and you raising tolls over and over (such as when NTTA took over management of 121 from the state of TX) is unreasonable.
- Fuel is also important to me. I own a Geo Metro, so it gets good mileage. When it's time for a new car, I will take that into consideration then, too. Fuel doesn't affect my choice in routes too much since I have a fuel efficient car and don't make a large number of long trips.
- I do not think toll roads are the way to go. I''ve heard so much in the news about the cost of the toll road on 121 to 183. I cannot afford to pay the ridulous prices that I''ve heard. When the new toll road is open, I''ll like need to look for a new job! NTTA you''ll likely take away a job I love. I personally would like to see NTTA go by the wayside. I pay enough in gas tax and other taxes. I should not have to pay for the roads with a toll!
- Appears that not stopping to pay tolls, makes highway and driving much safer.
- Sent email to customer service to find out how to get toll tag.
- There should be digital signs with real time trip time estimates at each tollway entrance to help you decide if it's worth taking the toll road.
- Costs on SH121 for short one-way trips are TOO EXPENSIVE. Nearly \$1.50 for a 2 mile trip is unnecessary and unfair. I support better pay-per-mile tolling, now that nearly everyone has TollTags



that can register entry and exit points.

- toll roads during peak times seem more congested than regular streets. i would rather pay a
 reasonable tax increase for road maintenance than pay tolls.
- i would prefer a train, but only with minimal walking distance
- I don't understand how I can get fined when I have a tolltag......PLEASE COULD SOMEONE EXPLAIN THIS????
- I just follow the GPS when trying to get somewhere.
- If I was not reimbursed by my company, I would use tollways less. However, I would still use it.
- continued epansion of toll roads must be limited
- Tolls are too high. There is too much traffic entering and exiting the tollway at George Bush & I 35 South. Why is money being collected but construction is not finished? Why are roads uneven and rerouted around construction sites and there are NEVER workers actively working on these sites? NTTA sucks and takes money for roads our tax dollars should pay for.
- The big problem is that Preston and the Tollway have construction happening at the same time, and 423 is only a two lane road. My options are really limited to how I can travel to downtown Dallas.
- The toll's are overpriced.
- I dont understand why we have tolls at some exits, and entrances, and not others. it only makes sense that every person pays for the miles they drive, and its not like that now.
- I would hope I win!!!
- •
- Much of the congestion is due to construction.
- Please make repairs on the President George Bush Tollway more expeditiously.
- all of the lanes at DFW airport should be toll tag enabled. Should be a faster process for toll tags going into and out of the airport
- It seems like toll prices increase without notice. Also, I wish I could order a tolltag online w/o having to go to a store.
- During the game simulation at times the webpage was cutoff and not fully visible. I could make out the question and the figures but it required some extrapolation.
- I am paying tolls now because it is a little easier to get to work but not much. When the DFW Connector Project is over I will be able to get to work without paying tolls at all. And that is the option I will choose when the time comes. I think Texas needs to go back to funding highways with the gas tax like it used to. And existing roads should NEVER be turned into toll roads for any reason.
- thanks for all i like made the diference for a best road
- I would like to see a toll charge per the amount of highway you drive. Sometimes if you only need to drive a couple exits it costs the full price in some areas and a lot less in other areas even though I only spent a few miles on the toll road. They would need to add sensor on the entrance and exit and then they can charge per mile.
- Please add HOV lanes on Hwy 161 and add lanes. I have been carpooling for over 20 years and there
 are very few HOV lanes.
- I think the temporary exit ramp from SB 161 onto WB I-30 is scarry and looks like it's going to collapse!



- will survey results be published?
- The toll roads are nice because the congestion is not as severe as a freeway. However, some of the toll rates are incredibly high and in times like these, where gas prices are soaring, paying a high toll is just not reasonable. My husband and I both must drive on the NTTA roads to get to and from work at a decent hour and every THREE DAYS our toll account is being refilled and my bank account is automatically debting 40.00. It has gotten to the point where we are having to drive an hour to and from work, just to avoid the tolls and that is not very convenient at all. We have started carpooling a couple days a week to save on tolls and gas, but I wish the NTTA would realize that their tolls are TOO high in some areas. A round trip for two people driving to two seperate places is costing like 16.00 per day and that is insane.
- We are moving from Gun Barrel to Oak Point. This is the reason for making all DNT trips. We will probably use it only when necessary once we have finished moving.
- Some of the tolls are way too high for the small time savings. Ridiculous. AND congesting the roads to build them for years, just to charge us to use them afterwards. Does not make sense.
- The city should do a better job with synchronizing the lights so you dont miss them all
- I have lived in this area since the 60"s from N.C. When the NTTA began building toll roads,travel became easier in Dallas Co. etal. meanwhile Tarrant Co. got LEFT BEHIND and grossly congested....we need you over here too !
- YOUR ORGANIZATION PROVIDES GREAT CUSTOMER SUPPORT -- THANKS
- I cancelled my TollTag because I was against the increase in toll prices. Gasoline prices and unemployment have forced me to send less, and another reason for cancelling the tag was I thought it encouraged more tollroad driving. Thank you for the opportunity to share my thoughts.
- The ntta sucks.
- We enjoy the beautiful landscaping along the George Bush tollway.
- NTTA has the best customer service of anyone I have to deal with. Thank you!
- NTTA billing policies and procedures are flawed. NTTA customer service representatives are not helpful and need better training.
- I''m irritated w the zip cash invoice I rec''d for my car when i have a tolltag and personalized plates. Not a big fan of these types of clerical errors. Why did my tag not pick it up and why did the ntta system not recognize that there is a tolltag tied to my plates???
- traveling from 75 Northbound, exiting 121... the first exit should be free. Otherwise, we have to exit Ridgeview or El Dorado & travel back up to 121 service road.
- I have lived in Weatherford for 1 year before I lived in zip code 76133 which is in southwest Fort Worth ... I'm sure that would use the Southwest Toll road alot ...
- Your violation fess scare the crap out of everyone I know, they are afraid to use the Zip cash because we always hear of your bad track record when it comes to billing tolls on time. When we think a smal 4.00 tol could turn into 600.00 very quickly, we very quickly avoid the toll road. Alot of us started going down 121 to the airport and after one or two billing mishaps, like receiving the bill post marked after the due date, we now go 75 to 635 to DFW
- My issue with toll roads is that our tax dollars should already be applied to any road that is created for the city and toll roads should be eliminated altogether. With the price of gas in this economy today and added toll collections, it is getting to the point that people cannot afford to even go to work. It defeats the purpose.
- Add maps to the 8 questions, for better examples. Can use a regular route I take.



- I disagree with the idea of tolls increasing during peak travel times. If tolls had to adjust dynamically, they should be based on average speed. Longer travel times would yield lower tolls. Also, spending local toll money to fund roads in other areas and on fancy landscaping it ludacris. It is also time to complete the repairs on the PGBTP that affect the original lane design. Currently, certain areas are dangerous on the PGBTP.
- I have had difficulty finding NTTA road closure information on the website.
- please hurry with the pgbt extension to i-30!
- I would not be happy with a large increase in toll prices.
- I think that tolls on Bush or NDT should be the same at all exits\entries. Some tolls are \$1.00, then it jumps to \$1.08 or down to \$.68. What is the meaning behind all of that? Doesn''t make sense, keep it consistant in my opinion.
- send me an ipad
- Please keep up the good work completing SH-161 from I-30 to I-20. I really need it. I sorta HATE HWY360!
- It does cost me quite a bit to drive tollroad but I now have option to take train and I always could drive I-35 or I-75. Tollroad is a time saver and now without toll boths it is a breeze to commute downtown and back North every day. That has cut at least another 10 mins off my time. I love it but I am blessed that I can afford to pay the tolls otherwise I would be forced the other options and probably not be very happy about it. I do wonder though about all the other people who are using the tollway and just not paying the bill for it. I don't think NTTA goes after them enough and my toll goes up because NTTA isn't enforcing a way to get those people off the tollway and letting them get away with not paying the bill. Those of us who do pay it would appreciate NTTA doing a better job in that area.
- The interchange at PGBT and DNT are terrible. I travel southbound in afternoon and there is a one lane entry onto DNT combined with a one lane exit to go eastbound on PGBT. It is a terribly designed interchange. An additional lane to exit and/or closing the entrance should help a bit.
- In the work commute, I will take the PGBT if there is an accident on 635 indicated on the large billboard signs or if I need to get home by a certain time I will take the PGBT
- I think road crews should stay off the toll way during peak hours, they tend to slow traffice just because of the flashing lights. i hate the fact that construction work trucks now have the blue lights this was a very dangerous decision the state of texas made
- I think it's riduculous to have to pay MORE when driving during peak times. Some people commute every day via the tollway. How about discounts for everyday users?
- One question that may be a factor is if I am reimbursed for tolls and mileage for business purposes versus personal travel.
- I realize road construction is a hassle, but in the end will make the driving commute easier and faster.
- Please hurry with the Parkwood exit closure on 121. Also Northbound exit from 75 to hwy 121 is marked only as "Sam Rayburn Tollway", no mention of 121. confusing.
- Keep up the good work. Can"t wait until the PGBT Eastern Extension is done in Rowlett
- I love the route i take... GB at 635 to I 35 to 121 to North Tollway to 380.. great route for me and speed is perfect, but i am ready for you all to complete the 121 north tollway on ramp going north and south...
- I love the SRT. It costs a little more than I think it should but the convenience is worth it!
- Excellent survey! Very easy to correct mistakes & complete. Great job to NTTA



- have fun
- I have lived in the HEB all my life, and I have seen the population growth continue over the last 15 years, and it is unbelievable that the transportation sector has left out improving the HEB 121 corridor for many years now. I would pay for a toll each, and every day, if it opened the roads and improved our traffic flow, but please don"t hit us with high tolls for using 2 parts of the tollroad every day. People should be given a break on paying enormous toll fees every day, week after week and month after month it gets very expensive. thank you!
- I believe your survey should include an option "other" and beable to pug in an alternative answer. Your most traveled toll charges should be lowered due to congestion. I have having to pay tolls when our speed is 0 to 10 mph....that is not right.
- Games section was pointless
- I would like for serious consideration be given to the widening of E. Loop 820. It does not handle the number of vehicles and is almost always backed up due to an accident.
- I wish there were more tollroads!
- The "game" questions were based on a short trip I made recently. Most of my trips are much longer, which would affect the outcome some, but not much.
- I''m LIVID about the billing process. Why does the invoice say I can pay a certain reduced amount and then when I go to pay it online it gives me a completely different reduced amount that is HIGHER than what the invoice says?? When I try to call about it...no one is available. I better NOT have to pay more late fees because the NTTA system is messed up!
- Maybe if you started treating customers like customers instead of criminals you would get more usage. When you rape us with \$10.50 in tolls for \$185.50 in penalties, you build no customer loyalty, and only contempt for NTTA. You should go after the people who owe you thousands instead of killing the little person. You people are criminal in your practices, no wonder no one likes you.
- 121 is an excellent toll road, well lit, great speed limit and never congested when I drive it.
- I am so frustrated with traffic congestion at Hwy 121 tollway and the DNT, I want to change my route but every other route I could take is under construction and has its own set of delays. I hate paying tolls when it is stop & go traffic on the tollway. It should be smooth sailing like it was a year ago.
- Nice road need more
- For my scenario, most of this stuff amounted to questions and answers about how to improve the commute between McKinney/Frisco area and Irving. If a spur were added that linked SRT to PGBT west of I-35 for a reasonable toll (\$1), I''d use it instead of I-35.
- toll roads are crooks especially ntta it cost more to build and is much more expensive to use as a driver vs a small tax increase any intelligent person can see its strictly to line the pockets of the already too wealthy i avoid toll roads at all cost and hope one day honest people will bring you down THIEFS!
- Looking forward to the Eastern extension of the PGHB tollroad
- Tired of tolls. between gas and tolls, it costs m appr \$460 a month to get to work. We have no discretionary income left with the increased gas costs and we cannot handle more than the almost \$200 in tolls I have been paying lately.
- I support toll roads but the tolls appear to be extremely high. What happened to charging tolls until a road is paid for and then eliminating them? When did toll roads become a "for profit" business?
- Observing it every day, the landscape installation seems to very wasteful. I would rather see lower tolls instead.



- I hope the change to 2 lanes as you go over HWY 121 isn"t permanent. This creates a nightmare bottle neck. Also the slow movement through the traffic light at 121 is creating a dangerous back up onto the toll road. Please lengthen the light to allow more people through quicker.
- the new roads near allen, and south on 75 look good, and are alot easier to use than in the past 6 months.
- Cash is also accepted
- I''m excited for the east extension to Lake Ray Hubbard to be complete at year end. It will make my life so much easier!
- End Survey
- The "game" really didn"t any options that I would take. I think I pay way too much in tolls as it is. I wouldn"t dream of travelling out of the window as I am on my way to work. I work 4-midnight. I am NOT going to work any earlier than I have to and I obviously cannot show up late! I spend a lot of money on the toll road because I live in Frisco and work downtown. I am not interested in ANY change that would make what I have to pay in tolls result in an increase in the amount that I have to pay to get to work and home...
- The North Texas Tollway tolls in Frisco are excessive.
- I think it is great that there are safety vehicles on the 121 Tollway during peak hours during the work week.
- This was a good survey.
- Iower the tolls!!!!!
- thank you
- The games were fun :)
- I regularly take 190 instead of 635 to avoid traffic congestion, even when the drive is a little longer.
 Higer speeds less traffic is wonderful... especially going to the airport
- The game options should have a longer option such as a 40 minute trip to save 10 minutes. Saving small travel times is unrealistic as getting to the tollway for a short trip is not convenient
- I really think there needs to be a tollway connecting 121 and the George Bush. All of my travel congestion occurs when getting onto 35.
- I would like to be able to access the project updates directly on your wensite, rather than having to sign up for a newsletter and wait for it.
- Tolls are too high. I will not drive NTTA with tolls at the current rates. You have lost me as a customer.
- When initially using the new quicker lanes ever once did not result in a significantly shorter trip, I would be VERY upset over being charged an additional toll.
- The construction going westbound at 135 is absolutely stupid. Why not just repaint the lines and use the shoulder so we don''t have to go down to 2 lanes. Why am I paying all this money for tolls if you guys are going to do stupid stuff like unnecessarily closing lanes when the shoulder is available for just the cost of some paint?
- We cannot wait until the 190 Tollway reaches I-30 E.
- I really appreciate the widening and improvements of Hwy75 in McKinney. I use Hwy 121 and Dallas North Tollway quite a bit going to UTSW medical facilities. I think you are doing a very good job on making our travel to Dallas more accessible, pleasant and quicker. I appreciate all the improvements.
 - Invoices for zip cash should be sent promptly and not bundled with several months that increases



the fees.

- It asked very good questions that make me re-evaluate toll roads
- less cost the better
- I had to drive the same route 5 days per week for apprx 8 weeks for treatment. The roads were super. It would have taken a lot longer to use other routes.
- While I understand the economics behind raising the tolls to reduce volume at peak hours, I''m not so much in support of this approach. My experience is that the on and off-ramps in particular are poorly planned, contributing significantly to the backups on the Tollway. I would rather experience additional construction delays to improve the ramps on and off the Tollway, especially at PGBT, Trinity Mills, and 635. Paying more because of poor design doesn't excite me.
- great survey...hope you all get some valuable conclusions
- It seems there are no tickets given for tailgating, only speeding. I can be going 70mph, and a car is 20" behind me, a police officer doesn"t even pull them over. They just pass them by! This makes the toll road feel very unsafe to me. I wish steps would be taken to stop this!
- We love the toll roads as they provide a much quicker way to reach our destinations. I also think they are safer as there is not "stop and go" traffic and cars coming from different directions.
- Keep Building!
- The tolls in TX are so extremely high its an outrage. I''d rather you raise the gas tax by \$1 a gallon than pay 14cents a mile in toll roads.
- WE NEED CLEAR EXACT NAME AND NUMBER EXIT AND DIRECTION ROAD SIGNAGE POSTED 2 MILES BEFORE at ONE MILE AND 500 FEET WITH LARGE ARROWS SHOWING THE FOLLOW LANE---- AT THE 70 MILE PH AND UP SPEEDS SAFE DISTANCES REQUIRE IT. WE NEED TRUCKS TO BE RELAGATED TO THE RIGHT LANE ONLY --- AND ENFORCED--- MANY ENTRANCE LANES ARE REDICULOUS DISSAPEARING AND NOT LONG ENOUGH --- WE ALL KNOW THAT HIGHER SPEEDS DO NOT CLEAR TRAFFIC--- IT CAUSES SLOW ENTRANCE FEEDS TO BACK UP AND HIGHWAY FEEDS TO CRAWL.????
- NTTA should eliminate high cost of landscape maintenance and focus on lowering toll fees
- Having driven the DFW metroplex road system since 1975, I have seen numerous road • improvements ranging from expanding existing roads to toll road conversions. As much as I hate to admit it, I find it very difficult to believe that congestion can be alleviated by raising tolls. The basic problem exists between the ears of the drivers on these roads. Texas drivers (those driving on Texas roads) refuse to abide by the traffice merge (courtesy?) model. I have found that if you signal with your blinker - in advance, another foreign mode of operation - that action in turn causes not a moderation of current speed but an implosive burst of speed by other drivers to prevent you from merging (on or off). In conjunction with the current placement of off and on ramps that I see daily with the 190 extension @ Hwy 78 and beyond, I only see my travel times increasing tremendously once this extension is completed. The cars exiting 78 North and South off 190 will undoubtedly lead to stop and go traffic during rush hours. I'm hoping for the best but "been there done that". То the pay higher tolls for less congestion plan, if I should pay higher tolls for less congestion and I encounter regular congestion on these routes, would I expect to get a refund on my higher tolls paid for those trips? If congestion on higher paying toll roads increases exponentially, what portion of all those monies collected will be earmarked specifically for the route that doesn't offer more bang for my buck? Gonna have to show me how this can work before I get behind it.
- n/a
- Please consider that the tolls are high. Otherwise, I might take the PGBT more regularly
 - None



- They tolls have gone up so much that it makes it very hard to have that convenience. With gases prices so high right now I do not have the extra money to spend on tolls so i am using the regular streets. thanks so much.
- I lived in Chicago, IL for 22 years and they only had a single toll road, toll cost about the same. Why does TX have so many toll road and every new road they build is toll. Don''t get it. Make mass transit available instead of building so many toll roads
- The current Toll prices are high enough, especially with the gas prices, that if they were raised much more I would take the time and stay off the toll roads.
- I do love using tollroads, but I do think the price per mile is too high right now. I do not want TX to end up like FL where every major road is a TOLLRD.
- Thanks for the quick reply to my request for assistance via Email.
- Maybe you avoided it on purpose, but I think about tolls in a cost per month basis. If I start seeing those \$40 charges more frequently on my credit card bill, it makes me want to start to using the alternative routes more often.
- Overall, my experience utilizing toll roads to travel has been a good one. I am constantly encouraging my friends and relatives to get a tolltag.
- No comments
- None
- The toll rules, and charges, need to apply to everyone, equally. It is not fair to those of us who pay our tolls, to subsidize abusers that do not pay theirs. NTTA needs to stop letting offenders off the hook.
- Need to create a new game scenario. North Dallas Toll Road (Dallas to Frisco) is a nightmare in the afternoon. At \$3.00 each way, 25 min to Dallas at 7 AM and 85 minutes at 5 PM. In the case of the later, I take alternate route given there is no cost for the same amount of time.
- I am on a fixed disability income & generally cannot afford to take tollroads.
- Thank you for providing a "choice"-appreciate it!
- the trip i selected was one in which my travel time more than doubled because of accident the 8game questions were therefore not that pertinent to daily travel. Question would have been better framed, "think about your typical travel in north texas"????
- None
- I"m Excited about the new extension and cant wait till it opens!!!!
- I use tollways regularly when they are one of the most direct and fastest travel options; Generally use Dallas North Tollway, President George Bush, and Sam Rayburn.
- I believe toll roads are important to allow future growth in population in the DFW area.
- If prices get to high there are other alternatives like Preston rd and coit, but time would lengthen
- toll ways are good, as long as there are free service roads.
- construction that closes down lanes and cloggs up George Bush turnpike could be better planned out. at George Bush and I-35, there was one lane closed for several months. that made my communte home every day a nightmare. Luckily the construction is now over and things are running smoothly again. Some notice to drivers or an alternative route would have been helpful.
- I will be glad when all the construction/tear down of toll booths is done. The roads do not seem safe around those areas.
 - I support toll ways being built, but I do not support turning non toll roads into toll roads



- Please find a way to lower the cost!
- One of my challenges traveling westbound 190 is between markers 190 and 195 where the upheaval in the north retaining wall required narrowing of the three lanes. While the road is reasonably smooth, the pseudo bottle neck (no shoulders) clearly poses challenges for some drivers. In that, it would be nice to know when/if the condition of this section of road will be repaired.
- It is not fair or equitable to continue to increase tolls on roads that are paid for in order to use the money to build new toll roads. This means the same people continue to pay for the roads that they will never use.
- I DO NOT LIKE THE 45 MPH SPEED LIMIT ON THE LEWISVILLE TOLL BRIDGE, IT IS RIDICULAS.
- Good information. Thanks for asking.
- It would be so nice to pay a monthly toll fee depending on what type of vehicle you drive instead of every/entrance. Sometimes, I avoid the tollway simply because some toll fees are ridiculous.
- I could not go back and correct I do not leave home at 5:05 I leave at 6:00. I may not use PGBT in the AM but always use it if going straight home in the PM
- Great survey. Well designed and asked most of the right questions. Please keep up the good work.
- Although I do not use the toll roads as much as I used to before I retired, I look forward to the convenience of having a toll tag instead of stopping to pay tolls.
- NTTA has the only decent roads in North Texas. TXDOT is horrible.
- Having the toll tag make it easy to get around in the greater dallas area as well as DFW
- I use my toll tag for entering and exiting the DFW airport.
- Extend DART to DFW and Love Field
- The "games" were a bit confusing in regards to the best way to choose an option. There was no real commonality between the 3 options; no constant to say "these things being equal, which would you choose". Good otherwise. Thanks!
- Question Why is the speed limit on the toll way north of 380 just 45 miles per hour and no passing?
- Thanks!
- Thank you for keeping your roadways safe and maintained.
- There must be a better way to control the roads at a lower cost.
- Have an option to use freeway but safety& efficiency is more impt to me as long as tolls remain reasonable for lesser income bracket like me. Thank u.
- Raise speed limit on all tollroads to 75mph. Eliminate all non-DPS traffic enforcement. Lower toll charges.
- If you are going to fire everyone that is running the toll booths you should not also have to double the prices of the tolls to line the pockets of the wealthy while picking the pockets of the poor. I am not one of those poor, but it is painfully obvious. Feel free to send that iPad. ;)
- I do hate when you enter a toll road half way down and get charged back to the previous gantry. When entering Sam Rayburn off of Exchange, you get tolled all the way back to US-75 as you entering the toll road. This is very unfair.
- Travel on the toll roads were great. Not too much traffic at the time we traveled.
- Do not give my information to "anyone" including Govt Agencies.



- I have been hearing about the outrageous toll charges for the new changes on 635. If I drove that way to work I would not use the toll lanes if the fees are going to be that high.
- I am new to DFW area and have limited experience with toll roads. It would be nice to have more information about the roads how they work, where to buy tags etc.
- With gasoline prices on the rise, and the tolls as well, people are traveling the more congested, and free roads, rather than take the toll roads. I try to limit taking the toll roads, unless absolutely necessary. I can't afford to take them every day.
- I USE A TOLL TAG HIGHWAY WHENEVER POSSIBLE. IT IS DEFINITELY A QUICKER ROUTE TO GO AND WORTH THE MONEY SPENT. I PARTICULARLY USE THE 121 TOLL ROAD.....MY DAUGHTER AND GRANDCHILDREN LIVE IN HIGHLAND VILLAGE AND I TRAVEL THERE QUITE A FEW TIMES A WEEK. THANKS FOR THE SURVEY!
- The Dallas North Tollway has always been a well maintained, well run operation. But the recent planning behind removing the toll booths was terrible. It appeared that little thinking was done as to how to keep traffic moving in the first few months after demolition. There was no reason that traffic should have been delayed as much as it has. Debris should have been removed. Visual sight lines for drivers should have been set to keep traffic moving. They really let us down.
- I AM PLEASED TO SEE A BEAUTIFUL ROADWAY THAT IS WELL MAINTAINED. I NOTICED ON MY LAST TRIP MEN PLANTING PLANTS AND FLOWERS. KEEPING THE ROADWAY BEAUTIFUL. GOOD FOR TEXAS!!!!!!!!
- I love my toll tag. It makes travel and airport parking very convenient
- I love the toll free booth roads. Great job
- Hurry up with the new extension from Firewheel to I30! Can"t wait for it to open!
- I have been in Baylor Rehab and the toll road really saved me time in getting to my appointments.
- The recent toll gate movement from Beltline Rd in Addison to Keller Springs was unfair. The stretch
 between that and the Downtown Tollgate is too much. Our daily toll went up drastically and the same
 is not compensated by our pay. Please be mindful of that and not use the survey in this game to
 increase the toll. Some of us are at your mercy as we have kids to pick from daycare before being
 slammed by late fees for delay in reaching on time for pick of our children.
- I am ready for the Eastern portion of the George Bush Turnpike to be completed!! I will then be using it quite frequently!
- To make signs exiting N. Dallas Toll Rd SB in Frisco onto Sam Rayburn toll road clearer.
- Thank you for the opportunity to share my views and thoughts.
- I and several people I know have slowed down on using the Lake Lewisville Toll Bridge. Lake Dallas Police have set up speed traps constantly and the NTTA''s 40mph speed limit on that bridge is embarrasing. Follow that up with a 3-4 mile stretch on the east side at 40mph with no major intersections or stop lights has made it inconvient. When I received a ticket from the Lake Dallas police I was shocked to see that even Channel 5 news had picked up the trend. I lovethe bridge but the 1950''s era speed limits must go...
- The one major problem I have right now is with all the construction that is causing all the congestion issues and yet no breaks on the amount of the tolls charged. I would think that if you are causing the problem the customer would get a break on the amount of the tolls charged.
- I don't mind paying tolls but when traffic doesn't move it's not worth it! Toll roads are supposed to get you where you need to go faster; that's the reason for the tolls!
- I answered didn''t pay toll because I use a toll tag. Wasn''t quite sure how to answer that one. Really I did pay the toll.



- The toll roads have made the most significant change in my travel plans since moving here in 1976
- CREATE A WEBSITE THAT WORKS IN SAFARI!!!!!!!
- It is somewhat disconcerting that my drive time has not decreased due to the removal of the toll plazas. I have never understood why in a huge metropolitan area that there are only three lanes of traffic each direction. It seems that I pay to be in traffic. Yes, I do save time over the ridiculously long stoplight routes, but I pay alot to do it. Basically, my tolls are a pay decrease for me over my last job in LA. More options were available to get cars off of the road. If there were a commuter bus, I would be on it in a minute. I hate commuting but it is the only way I can get to work that is reasonable. The dart is just too far away from home. Thanks for listening.
- Love my tolltag and love the Dallas North Tollway!
- I appreciate the convienence of using the DFW toll roads. they are clean, well maintained, and easy to navigate.
- The toll ways are kept up beautifully. they make getting to dfw and the metroplex so easy. I hardly ever have to use 75. or 635..that is a blessing and worth the price of the toll. a great job was also done back during the winter ice storms THANKS for making life easier.
- I used to live in Carrollton where I used my TollTag frequently. Now I live in Ennis, but I still use my TollTag on occassion. I always use my TollTag when parking at the airport, which is very convenient. I look forward to seeing Loop 9 in my area. We need toll roads in the southern counties.
- I love the GB toll road open to Arlington...
- I think tolls on roads should cease once the original construction price of the road is paid in full. The roads are maintained by the state or federal funding even though the NTTA would provide the maintenance. There is no need to make a profit on a tollroad with citizens pay taxes to provide roads.
- I like that there are always "toll police" or "emergency vehicles" or whatever they are called, that patrol and can help one if its needed. I like the sence of security on the toll roads that is not present on regular roads.
- I think tollways can be helpful, but not when there is as much congestion on them as a regular road without toll. I don't like paying more for traffic! Most tollways are very nice, and very well groomed. Thanks!
- Tolling state highways should be banned in the Texas constitution.
- I love using toll roads because they afford me to save time on my trips around Dallas.
- No toll roads used for this route, but do use them to go to DFW
- Overnight road construction would be a great way to cut down on traffic issues during the workweek!
- None
- Survey a bit to long.
- In the game scenarios the dollar differential was in most cases too great. Not enough value to justify the costs shown
- I make this trip to check on my Mom who is 95 years old and is in bad health. The time I save on the toll roads are very important to me because I have to get to my mom asap when I am called in an emergency.
- Especially in the route selection phase, there should be a "go back" option, in case the freeway you picked wasn't the right one. I selected 161 and meant north of 183.. The questions related to south of 183.



- I travel almost every weekend to Frisco and am really looking forward to the George Bush extention to I-30 being completed. Can"t happen soon enough.
- I didn''t pay the tolls in the 18 wheeler I was driving but it does have a Toll Tag. I didn''t quite understand the question as to paid the toll.
- I do feel that the tolls in TX are high. I pay about \$2.10 for go about 12 miles from Lewisville to Plano. In other states the rates are much lower. In OK the road between OK City and Tulsa (100 miles?) is only \$4 and in PA a 20 mile stretch was driven for under \$2. These rates are high and the state knows that it does save time, hassles and the speed is higher. I also find it annoying that the toll roads in Dallas are all in the north end of town.
- Looking forward to George Bush being completed all the way to I-30
- I would like to see increased enforcement of speed limits and safe driving practices on the Dallas North Tollway. (I feel that driving on the Tollway is less safe due to speeders and unsafe drivers.)
- Driving the tollway increases my fuel economy. My route home is on Southbound US 75. Since that's opened up, I'm getting about one more mile per gallon. I go to work at 4am thus no car-pooling, traffic problems.
- I think toll roads should not be going to for profit foreign countries. Toll Roads should not be a for profit enterprise and money to pay for a road and maintenance of a road should only be used on that road. If there are not enough projected tolls for a road then it just should not be built. Don''t use 121 tolls to pay for Southwest Parkway for example.
- I wish NTTA had an iPhone app to check for congestion and lane closures. The new website design helps, but information should be easy to access from smart phones.
- I hope the construction on the toll booth removals is done quickly; it is causing serious traffic tie-ups and is extremely dangerous when having to stop on DNT, waiting to exit.
- I would like to see follow-up or completion of repair projects, i.e. the repaired retaining walls near MacArthur and Las Colinas have not been painted, or the light poles near the Main toll both just south of Beltline that have been down and out of service for months.
- I heard zip cash could not read some licenses. Stop cheaters and fraud. Then plant flowers.....
- Toll roads should be abolished. People already pay taxes for roads, and should not have to pay to drive on roads they have already paid for. In addition the NTTA website is extremely user unfriendly. It seriously needs to be changed.
- TOLLS ARE TOO EXPENSIVE YOU ARE CRIMINALS
- Blue slider was hard to slide may have caused some in accurate reportings also no question about stops between
- During the snow/slit weather season could all the roads be cleared. During the last snow/slit storm I had difficulty driving through most of PGBT and part of the Tollway. After crossing 635 on the tollway the road was GREAT. But the previous roads it was HORRIBLE! So it would be nice if all the roads are pretreated and not just some areas
- NTTA is awesome. :)
- If 190 through Rowlett had been completed I would have hopped on 190 from I30 to 190. I''m looking forward to the completion. I''m sure by then there will be a lot of people who travel I635 that will change to George Bush Freeway from South Garland, Rowlett, & Rockwall... Change is GOOD, Thanks!
- I do not think Toll Roads are the way to fund roads. The state has stolen gas taxes from us for years. Stop with the "fees" and raise taxes. I do not mind paying taxes. The extra infrastructure required by NTTA is crazy.



- The times in which school zones are active have a strong effect on the route I choose.
- The I35/121 intersection proves to be the most significant point of delay in my trip from Lewisville to Richardson. I''m not sure where the source of the delay is created but it seems there are enough lanes that there shouldn''t be a delay at all.
- As a web program developer the survey was well created.
- Tollways save time but most of the time, they are not where I need to go.
- I drive a tiny hatchback, and I still find the onramps in the construction zones (particularly Belt Line and Mockingbird) to be frighteningly, dangerously narrow. For the NTTA to have RAISED tolls while moving to all-electronic collection in order to save money and increase collections is shameful.
- My main goal at this point is cost savings. PGBT is very convenient, but if it doesn't save fuel to use it, I won't typically use it.
- I use Dallas North Tollway for 3 minutes going to work and use GBT from Kelly Road to SH114 going home. I use the tollway going home because my commute home never varies more than 5 minutes or so. Very much worth the toll, as compared to the alternative of taking LBJ from the Tollway to 114, which would make the commute variable up to an hour. And if you''re wondering, I don''t take the GBT both ways because of the expense. I don''t mind "paying" to get home at a consistant time, but would rather pay less when going to work.
- Interesting and timely survey. I can't wait until the PGBT is extended to I30/I635. I wish it was already completed.
- I wish the tolls weren''t so expensive.
- I love the wonderful landscaping on the toll roads.
- It would be very helpful if the tolls for toll tag users were less. Because of the high cost of gas.
- good survey
- Survey seemed well designed and easy to follow. Tollroads are a good alternative for replacing deteriorated roadways or those roadways that are overused.
- Please post more information about closings or announce on the news.
- I only occasionally use toll roads, but it is so much easier now that I have a toll tag.
- If at all possible PLEASE address Loop 820 between Hwy 183 & I35W. This has to be the most congested stretch of highway in the state and has been so for many years. How about a double-decker highway that goes straight through from I35W to Hwy 183 with NO EXITS??? Just a thought.
- We need a toll road on I35W going north to Gainesville. I35W is too congested.
- I use the toll rd. to save time and avoid heavy traffic and as many stops as possible. I hope the traffic does not increase more than currently exists. Wishful thinking, I know.
- Will use tollways to get to work and back when they are not congested. In my commute, North Dallas Tollway southbound, in the morning, and Northbound, in the afternoon, are main reasons I do not use the tollways during my commute. Bush is fine. My overall impression of NTTA is positive. Bush/161 in particular makes the drive to visit my family a positive experience. It's also very helpful to get me to and from work when I am dogsitting to make extra money. Saves me a lot of time and stress.
- I like to use the toll roads because they are well-maintained and they usually make my trip quicker...HOWEVER, the tolls are getting way too high, and the fines that are added to the tolls when they are late are ridiculous. I have opted to avoid toll roads now and that is really a shame.



- The main reason I didn"t "agree" with the statement that I"m willing to support toll roads because they fund highway improvements (or however it was worded) is that I"m too cynical to actually believe that. The lottery was supposed to SUPPLEMENT education funding, not REPLACE it, but look what happened.
- re: game portion departure and corresponding arrival time are most important common aspect of decision. If I have to be on campus at 8, I''m not going to choose a choice that has me departing at 630 (arriving an hour early) or 8 (arriving 30 min late) when I have an alternative that allows me to arrive basically when i need to.
- TROLL roads suck
- We pay taxes already to build roads. Why should I have to pay more to drive on roads built for convenience and to relieve traffic congestion? We should be building these anyway. The traffic in DFW has seriously made me consider moving to a different state that has a better public transportation system such as Mass. or NY. DFW needs a more walkable infrastructure and more available public transit. Our traffic problems and the lack of our ability to fix it make our region an embarassmen.
- it was a easy and well put together survey. I did not mind taking it.
- CAR TYPE. I have not changed my driving habits with higher gas prices in part because I drive a fuelefficient vehicle.
- I believe that once a highway has been paid for, the tolls should be taken down. I disagree with keeping them and using the money to build other roads, since I rarely use them.
- I do not feel safe on the freeways or toll ways. People are inconsiderate drivers, and I feel traffic laws could be better enforced. I avoid highways, tolls, etc whenever possible because I simply do not feel safe.
- As I am single, it is hard to pay for my bills so I can''t really afford the money each month. There are so many tolls between going to work and then to church, it costs too much.
- I do not agree with tolls when the profit goes to countries overseas -- such as Spain. It has been reported that the money does not profit the Texas highways. I do not agree with making other countries wealthier...when we have state budget issues that effect state employees.
- I did use the tollroad on a regular basis. Traffice between FM 3040 and PGBT was so heavy it is quicker to take I35 HOV lane to I635 to Beltline.
- I used to drive tollways. I like their directness. But we do not like that all people pay taxes, which pay
 for these roads, and then only those with extra money can pay to drive on them. I would have no
 objection if taxes did not pay for these roads (and, if I am wrong here, I''d love a correction e-mail,
 and I will drive them again). Also, there are no good highways/interstates north of I-635. This
 makes travel in North Dallas very difficult and time-consuming if one can not, or will not, pay for
 tollways. This seems unfair to the general public.
- Just an FYI, the most "recent" trip I made isn't necessarily the most reflective of my use of the roads. Now gimmie my iPad! :) (kidding...)
- Web site was too slow
- answered the survey for today when i took a half day. most days i take the tollway in the morning to work but avoid the tollway home due to traffic. thanks
- I find 75, 30 and (especially) 635 terrifying to drive on, and avoid them when at all possible.
- I resent paying tolls to use roads that my tax money originally financed.
- The "games" were kind of confusing with the times. And the extra minutes with travel.



- It's not always clear how much I will be paying for my trip when I enter a tollway and that sometimes causes me to avoid using the tollways.
- My current commute does not require using a toll route. Taking the toll roads increases my travel time, therefore the scenarios in this survey were not realistic for me.
- I love not paying tolls where i get on and off for work and back.... THanks!
- I think special deals should be afforded to college students or others in similar situations that would make driving on tolls easier.
- i want to win
- This survey needs to address what people think about the COST of tolls. I will definitely take toll
 roads more if the rates were more reasonable (and weren''t going up every or every other year only
 to pay for electronic toll booths). I would rather pay more in gas and drive a more "congested"
 route, then to pay out the wazoo to "support" the NTTA as the rates have gotten out of control.
- It is a pity the government has abdicated its primary role of providing infrastructure from general tax revenues and adopted a private pay model separating have and have-nots. Worse, it is now raising private capital by bartering its taxing authority in some cases (LBJ expansion). I can still remember the days when responsible government built an entire interstate highway system without tolls. What happened?
- I refuse to use all toll roads on principle after Highway 121 was stolen from the people and illegally converted to a toll road.
- PLEASE MAKE THE TOLLS COST LESS!!!!! WAY TOO EXPENSIVE! MOST OF MY PAYCHECK GOES TO GAS AND TOLLS! PLEASE HELP!
- There are car accidents every day, which is the major reason of traffic jam. Please consider some methods to solve the accidents quicker.
- You asked for the most recent trip rather than an optional most "typical" trip. Therefore my answers applied to 3 out 20 or more trips I make each month across North Texas.
- Tolls are getting more and more expensive and it looks as though the only major new projects are tollroads. I really have a problem with paying taxes that are supposed to build new roads only to have the state hand that responsibility off to NTTA who is then able to make a profit off of what should have been a natural function of our government. This is not to say the NTTA is not doing a good job, as they are. But if there is the ability for money to be made doing a function of government, then why is the government not performing those functions and saving the tax payers from paying into a private firm''s profits? Stepping down from my soapbox... NTTA does a great job with the Bush Turnpike. It is usually free of congestion and very well maintained. My wife drives on DNT and can not say the same about her commute. She often feels frustrated at the thought of spending money to merely sit in traffic. Itd be nice to see a refund system set up where you don''t have your account docked for a commute that takes over a preset amount of time. Just a thought.
- I think you left out an important factor in the Tollway world... multiple people in a household, driving the tollway EVERYDAY. My husband drives to downtown from where we are at, and he probably spends upwards of \$160 a month just to drive in traffic. I don't know what you guys are doing with this survey, but if you are trying to see if people would pay MORE to make the tollway a more "exclusive" route, then you are completely crazy. It is not normal for two people to collectively rack up \$230 a month to sit in traffic. And even if the traffic was cut in half, there is no way in heck I would pay \$460 a month for that. That''s more than my car payment dude. Think about it. If anything with gas the way it is, you should give us a break. You''re already taxing us twice.
- Providing more illustrations would help respondents understand the "8 games" better



- I have taken the Dallas North Tollway multiple times. The majority of times there was congestion, and it took just as long as Hwy 75 but I was paying for it! I have jumped onto the Public Transportation bandwagon and strongly encourage DFW metroplex to invest in it.
- Please hurry and finish the eastbound extension on Bush!
- Get bent.
- As you can see by my answers I am more than willing to spend money to get somewhere quicker. Last year I spent \$1000 on tolls. It truly annoys me, when I sit in bumper to bumper traffic on the toll ways. The price of tolls went up and the traffic has gotten worse. I will be using the toll way less this year, and sitting in traffic on another road for free.
- I don''t mind paying a toll -- \$120/month is too high on top of the high price of gasoline.
- I used to take the George Bush on a regular basis, but it simply became too unreliable due to the amount of traffic congestion, particularly around 75. The tolls were raised, but, if anything, traffic got worse.
- I often change my route to and from school depending on how I interpret the traffic conditions on the road.
- While I enjoy driving on president George bush turnpike, the major caveat is the traffic lights leadin up to this drive and once I exit. It often seems as though the time I ace is then wasted sitting at several traffic lights. The stops have little to do with traffic but instead terrible timing or sensitivity. I do appreciate when I drive in traffic in the evenings that the turnpike is hardly clogged. There are more cars on the road but I am not set back until exiting the turnpike.
- I marked on the last question that I don"t necessarily think that the scenarios presented were accurate. To explain, I normally commute on Renner road, and have only once in a very long while, over the past 3.5 yrs that I"ve been commuting on this route, experienced a delay of 15 or 20 minutes due to traffic, but in the games, the survey makes it sound as if this "toll-free" route might often experience significant delays. I also occasionally have reason to take George Bush, from Jupiter, headed west during rush hour traffic, and have found that this route takes more time, because of the congestion trying to enter George Bush, than just commuting in on Renner Road.
- Can I get a discount for NTTA toll tag, for educational or gov"t. job? I am employed full time at Univ. of Tex at Dallas. My tolls run \$120.00 each month.
- I take toll roads mainly to get to work on time. I only take them in the mornings so I''m not late for work. The other route available to me take about twice as long. In the evenings, I take non-toll roads to save money. I already spend \$600 yearly on tolls, and I would not be able to afford \$1200 yearly to travel roundtrip to/from work on toll roads. The recent (about a year ago) increases in tolls hurt my pocketbook quite a lot.
- I like being able to give feedback on this. Thanks.
- very well presented survey, really easy to take
- I used the tollways until I found that my travel time was only reduced by approximately five minutes by using them. The exchanges are very congested.
- The only thing I would like to see is the toll booth at the MacArthur exit off of Sam Rayburn 121 be removed. It is one of the only situations I can think of where you have to pay for the very first exit on a tollroad from a non toll road.
- please do something to alliviate traffic morning and evenings.
- The NTTA needs to extend the Dart to Collin County.
- I would use the tolltag if it was a bit cheaper. around \$20 \$25 range.



- I did not like having to enter my household income and almost exited out as a result. "Prefer not to answer" should always be an option.
- Please go after those that regularly cheat the toll tag cashless system....for MANY years I have seen so
 many people with "fake" license plates, or covered ones or no toll tags on their windshield use the
 tollways.....causing us honest people to have to pay more. It is very frustrating to read about the
 NTTA not going after EVERY cheater!
- I don't use toll roads to get to work because it makes no sense. I use toll roads to travel to my
 daughter's house in Coppell and for going to locations where toll roads make sense (the airport, out
 of town trips, etc.)
- The tolls are already very high. I take a different route in the morning to avoid tolls even though it takes me 30 minutes longer.
- Free traffic jam is better than tolled traffic jam that''s why I avoid PGBT. Otherwise it would be a great option!
- The design of the interchange between Central Expressway and 190 needs to be redesigned. To get past CE (over bridge, traveling west) and then exit at Custer requires that you cross 2 lanes of traffic that wants to continue west on 190. Nobody wants to let you over to exit. The design is really bad.
- cheaper tolls please, we are already getting boned from gas prices, soon it will never be worth driving.
- Rarely go places that use tollways. But will use it to go to Denton or Ft Worth.
- Some tolltag do not work at DFW airport. Hope that will change so that I can use my tag.
- Hoping I win just 1 of the ipad2!!! ;) Hope my answers help... Thanks
- I misunderstood the tolls question about my trip, I do pay tolls on the route I take, they hit my toll tag and get automatically deducted from my account.
- My return trip using the same route was 5:30pm and had a great deal of work traffic on Preston but was not too bad in PGBT.
- The speed limit on highways should be increased by at least 5 mph.
- Put up signs "Slower traffic keep right". Biggest problem is trucks staying in the Center lane and everyone having to pass on the right and left to keep traffic moving. I believe it's illegal to drive slower than the traffic flow in a left lane. In some cases they drive 15 MPH below the speed limit. They are accidents waiting to happen due to this.
- This was a well designed survey
- Please repair coit road between Campbell and frankford
- I hate tollways. I was scammed: charged for late fees although I didn''t receive a statement. My fees went from about \$25 to over \$300. I discovered that this was a common practice. Recently, I was charged even though I had not driven on a toll road. I''ll drive an extra hour if I have to, in order to avoid tollways.
- feel should only have to pay toll once a day or a max yearly fee thx
- my husehold income is none of your business
- If the speed limit was increased to 80 then that would be great for me an I would be willing to pay up to 3.50 for main lane tolls and up to 2.00 for entering or exiting.







NTTA System-Wide Stated/Revealed Preference Travel Survey

Appendix D – Tabulations

July 2011

DATA ANALYSIS SOLUTIONS

TABLE OF CONTENTS

1.0	TRIP DETAILS	.1
2.0	GAMES	38
3.0	OPINIONS	39
4.0	TRAVELER INFORMATION	47



1.0 TRIP DETAILS

	Data Source									
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
NTTA Website link	584	38.6%	754	40.8%	309	40.4%	1,647	39.9%		
TollTag e-newsletter	378	25.0%	469	25.4%	187	24.4%	1,034	25.1%		
Online research panel	360	23.8%	235	12.7%	173	22.6%	768	18.6%		
University of Texas at Dallas	58	3.8%	94	5.1%	17	2.2%	169	4.1%		
Texas Instruments	13	0.9%	68	3.7%	12	1.6%	93	2.3%		
City of Plano	35	2.3%	47	2.5%	11	1.4%	93	2.3%		
Irving Independent School District	13	0.9%	61	3.3%	15	2.0%	89	2.2%		
City of Grand Prairie	18	1.2%	36	2.0%	8	1.0%	62	1.5%		
Postcard distribution by NTTA (including ZipCash invoices)	20	1.3%	20	1.1%	15	2.0%	55	1.3%		
Press release issued by NTTA	10	0.7%	14	0.8%	3	0.4%	27	0.7%		
Fort Worth Chamber of Commerce	9	0.6%	13	0.7%	4	0.5%	26	0.6%		
Town of Little Elm	8	0.5%	9	0.5%	4	0.5%	21	0.5%		
City of McKinney	2	0.1%	9	0.5%	3	0.4%	14	0.3%		
Frisco Chamber of Commerce	2	0.1%	7	0.4%	3	0.4%	12	0.3%		
University of Dallas (Irving Campus)	1	0.1%	7	0.4%	0	0.0%	8	0.2%		
Frisco Economic Development Corporation	0	0.0%	2	0.1%	0	0.0%	2	0.0%		
Open link	0	0.0%	1	0.1%	0	0.0%	1	0.0%		
Call center	1	0.1%	0	0.0%	0	0.0%	1	0.0%		
Greater Irving-Las Colinas Chamber of Commerce	1	0.1%	0	0.0%	0	0.0%	1	0.0%		
Metrocrest Chamber of Commerce	0	0.0%	0	0.0%	1	0.1%	1	0.0%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		



Language											
		Off-peak		AM peak		PM peak					
	Count	Percent	Count	Percent	Count	Percent	Count	Percent			
English	1,506	99.5%	1,842	99.8%	761	99.5%	4,109	99.6%			
Spanish	7	0.5%	4	0.2%	4	0.5%	15	0.4%			
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%			

	ETC ownership											
		Off-peak		AM peak		PM peak		Total				
	Count	Percent	Count	Percent	Count	Percent	Count	Percent				
Yes, I have a TollTag	1,087	71.8%	1,451	78.6%	554	72.4%	3,092	75.0%				
Yes, I have a TxTag	38	2.5%	53	2.9%	21	2.7%	112	2.7%				
Yes, I have an EZ TAG	17	1.1%	27	1.5%	9	1.2%	53	1.3%				
Yes, I have another type of transponder	5	0.3%	1	0.1%	1	0.1%	7	0.2%				
No, I do not currently have any type of transponder	366	24.2%	314	17.0%	180	23.5%	860	20.9%				
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%				

Trip day of week

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Monday	344	22.7%	530	28.7%	136	17.8%	1,010	24.5%
Tuesday	247	16.3%	347	18.8%	114	14.9%	708	17.2%
Wednesday	225	14.9%	321	17.4%	103	13.5%	649	15.7%
Thursday	260	17.2%	224	12.1%	128	16.7%	612	14.8%
Friday	437	28.9%	424	23.0%	284	37.1%	1,145	27.8%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak ¹		PM peak ¹		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
12:00 AM to 12:59 AM	4	0.3%	0	0.0%	1	0.1%	5	0.1%
1:00 AM to 1:59 AM	1	0.1%	0	0.0%	0	0.0%	1	0.0%
2:00 AM to 2:59 AM	2	0.1%	1	0.1%	0	0.0%	3	0.1%
3:00 AM to 3:59 AM	6	0.4%	2	0.1%	1	0.1%	9	0.2%
4:00 AM to 4:59 AM	18	1.2%	0	0.0%	2	0.3%	20	0.5%
5:00 AM to 5:59 AM	117	7.7%	43	2.3%	1	0.1%	161	3.9%
6:00 AM to 6:59 AM	103	6.8%	343	18.6%	0	0.0%	446	10.8%
7:00 AM to 7:59 AM	0	0.0%	609	33.0%	0	0.0%	609	14.8%
8:00 AM to 8:59 AM	0	0.0%	445	24.1%	0	0.0%	445	10.8%
9:00 AM to 9:59 AM	178	11.8%	253	13.7%	3	0.4%	434	10.5%
10:00 AM to 10:59 AM	232	15.3%	71	3.8%	6	0.8%	309	7.5%
11:00 AM to 11:59 AM	217	14.3%	41	2.2%	11	1.4%	269	6.5%
12:00 PM to 12:59 PM	185	12.2%	17	0.9%	16	2.1%	218	5.3%
1:00 PM to 1:59 PM	157	10.4%	14	0.8%	14	1.8%	185	4.5%
2:00 PM to 2:59 PM	151	10.0%	7	0.4%	37	4.8%	195	4.7%
3:00 PM to 3:59 PM	0	0.0%	0	0.0%	146	19.1%	146	3.5%
4:00 PM to 4:59 PM	0	0.0%	0	0.0%	153	20.0%	153	3.7%
5:00 PM to 5:59 PM	0	0.0%	0	0.0%	219	28.6%	219	5.3%
6:00 PM to 6:59 PM	25	1.7%	0	0.0%	123	16.1%	148	3.6%
7:00 PM to 7:59 PM	45	3.0%	0	0.0%	22	2.9%	67	1.6%
8:00 PM to 8:59 PM	30	2.0%	0	0.0%	8	1.0%	38	0.9%
9:00 PM to 9:59 PM	17	1.1%	0	0.0%	1	0.1%	18	0.4%
10:00 PM to 10:59 PM	19	1.3%	0	0.0%	0	0.0%	19	0.5%
11:00 PM to 11:59 PM	6	0.4%	0	0.0%	1	0.1%	7	0.2%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Trip departure time

Trip began at home

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes	1,203	79.5%	1,784	96.6%	448	58.6%	3,435	83.3%
No	310	20.5%	62	3.4%	317	41.4%	689	16.7%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

¹ Off-peak travelers who traveled outside of peak hours to avoid traffic congestion and would have preferred to have traveled during the peak were included in the appropriate peak segment



Trip ended at home											
		Off-peak		AM peak		PM peak		Total			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent			
Yes	137	44.2%	20	32.3%	229	72.2%	386	56.0%			
No	173	55.8%	42	67.7%	88	27.8%	303	44.0%			
Subtotal	310	100.0%	62	100.0%	317	100.0%	689	100.0%			
No, trip began at home	1,203	0.0%	1,784	0.0%	448	0.0%	3,435	0.0%			
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%			

		I	/ehicle ty	ре				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Personal vehicle (car, pickup truck, SUV, or minivan)	1,502	99.3%	1,830	99.1%	760	99.3%	4,092	99.2%
Motorcycle	5	0.3%	12	0.7%	3	0.4%	20	0.5%
Commercial truck with more than 2 axles (18- wheeler)	6	0.4%	4	0.2%	2	0.3%	12	0.3%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Including yourself, number of vehicle occupants (NTTA users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
1 person (I traveled alone)	588	64.2%	903	81.2%	317	63.4%	1,808	71.5%
2 people	238	26.0%	147	13.2%	117	23.4%	502	19.9%
3 people	48	5.2%	37	3.3%	36	7.2%	121	4.8%
4 people	27	2.9%	17	1.5%	22	4.4%	66	2.6%
5 people	11	1.2%	4	0.4%	7	1.4%	22	0.9%
6 or more people	4	0.4%	4	0.4%	1	0.2%	9	0.4%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
1 person (I traveled alone)	360	60.3%	536	73.0%	144	54.3%	1,040	65.2%
2 people	161	27.0%	136	18.5%	77	29.1%	374	23.4%
3 people	37	6.2%	46	6.3%	24	9.1%	107	6.7%
4 people	29	4.9%	11	1.5%	11	4.2%	51	3.2%
5 people	6	1.0%	3	0.4%	7	2.6%	16	1.0%
6 or more people	4	0.7%	2	0.3%	2	0.8%	8	0.5%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%

Including yourself, number of vehicle occupants (NTTA non-users)

Primary purpose of trip (NTTA users)											
		Off-peak		AM peak		PM peak		Total			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent			
Go to/from work (commute to/from regular workplace)	219	23.9%	737	66.3%	143	28.6%	1,099	43.5%			
Personal business (medical appointment, etc.)	255	27.8%	140	12.6%	103	20.6%	498	19.7%			
Social/recreational (go to the movies, visit a friend, sport event, etc.)	141	15.4%	44	4.0%	130	26.0%	315	12.5%			
Company business (go to a meeting, sales call, etc.)	114	12.4%	116	10.4%	36	7.2%	266	10.5%			
Shopping	104	11.4%	32	2.9%	47	9.4%	183	7.2%			
Go to/from an airport	64	7.0%	18	1.6%	18	3.6%	100	4.0%			
Go to/from school (to attend class, or pickup/drop-off a student)	19	2.1%	25	2.2%	23	4.6%	67	2.7%			
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%			



Primary purpose of trip (NTTA non-users)										
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Go to/from work (commute to/from regular workplace)	140	23.5%	478	65.1%	49	18.5%	667	41.8%		
Personal business (medical appointment, etc.)	173	29.0%	94	12.8%	58	21.9%	325	20.4%		
Social/recreational (go to the movies, visit a friend, sport event, etc.)	82	13.7%	36	4.9%	78	29.4%	196	12.3%		
Shopping	79	13.2%	32	4.4%	36	13.6%	147	9.2%		
Company business (go to a meeting, sales call, etc.)	49	8.2%	60	8.2%	14	5.3%	123	7.7%		
Go to/from school (to attend class, or pickup/drop-off a student)	34	5.7%	24	3.3%	13	4.9%	71	4.4%		
Go to/from an airport	40	6.7%	10	1.4%	17	6.4%	67	4.2%		
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%		

Calculated trip distance									
	Off-peak AM peak PM peak						Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	
Less than 5 miles	37	2.4%	19	1.0%	16	2.1%	72	1.7%	
5 to 9.99 miles	228	15.1%	187	10.1%	84	11.0%	499	12.1%	
10 to 14.99 miles	247	16.3%	320	17.3%	127	16.6%	694	16.8%	
15 to 19.99 miles	253	16.7%	343	18.6%	128	16.7%	724	17.6%	
20 to 29.99 miles	364	24.1%	496	26.9%	194	25.4%	1,054	25.6%	
30 to 39.99 miles	161	10.6%	252	13.7%	96	12.5%	509	12.3%	
40 to 49.99 miles	85	5.6%	104	5.6%	64	8.4%	253	6.1%	
50 miles or more	138	9.1%	125	6.8%	56	7.3%	319	7.7%	
Total	1.513	100.0%	1.846	100.0%	765	100.0%	4.124	100.0%	

\approx

Calculated travel time									
		Off-peak		AM peak		PM peak			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	
Less than 15 minutes	155	10.2%	114	6.2%	66	8.6%	335	8.1%	
15 to 19 minutes	222	14.7%	250	13.5%	100	13.1%	572	13.9%	
20 to 29 minutes	472	31.2%	610	33.0%	225	29.4%	1,307	31.7%	
30 to 39 minutes	304	20.1%	437	23.7%	164	21.4%	905	21.9%	
40 to 49 minutes	140	9.3%	217	11.8%	97	12.7%	454	11.0%	
50 to 59 minutes	85	5.6%	92	5.0%	56	7.3%	233	5.6%	
60 minutes or more	135	8.9%	126	6.8%	57	7.5%	318	7.7%	
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%	

Reported travel time									
		Off-peak		AM peak		PM peak		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	
Less than 15 minutes	15	1.0%	8	0.4%	5	0.7%	28	0.7%	
15 to 19 minutes	102	6.7%	69	3.7%	33	4.3%	204	4.9%	
20 to 24 minutes	175	11.6%	158	8.6%	72	9.4%	405	9.8%	
25 to 29 minutes	211	13.9%	213	11.5%	60	7.8%	484	11.7%	
30 to 39 minutes	314	20.8%	335	18.1%	143	18.7%	792	19.2%	
40 to 49 minutes	283	18.7%	428	23.2%	163	21.3%	874	21.2%	
50 to 59 minutes	122	8.1%	236	12.8%	81	10.6%	439	10.6%	
60 minutes or more	291	19.2%	399	21.6%	208	27.2%	898	21.8%	
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%	

Encountered delay due to traffic

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes	354	23.4%	989	53.6%	390	51.0%	1,733	42.0%
No	1,159	76.6%	857	46.4%	375	49.0%	2,391	58.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



	спрене									
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Less than 15 minutes	26	7.3%	39	3.9%	14	3.6%	79	4.6%		
15 to 19 minutes	38	10.7%	115	11.6%	31	7.9%	184	10.6%		
20 to 24 minutes	45	12.7%	133	13.4%	60	15.4%	238	13.7%		
25 to 29 minutes	43	12.1%	138	14.0%	59	15.1%	240	13.8%		
30 to 39 minutes	68	19.2%	242	24.5%	90	23.1%	400	23.1%		
40 to 49 minutes	57	16.1%	174	17.6%	59	15.1%	290	16.7%		
50 to 59 minutes	24	6.8%	65	6.6%	31	7.9%	120	6.9%		
60 minutes or more	53	15.0%	83	8.4%	46	11.8%	182	10.5%		
Subtotal	354	100.0%	989	100.0%	390	100.0%	1,733	100.0%		
Did not experience delay	1,159	0.0%	857	0.0%	375	0.0%	2,391	0.0%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		

If experienced delay, expected free-flow travel time

Trip outside of the modeling area

		-		-				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes, trip origin or destination is outside the modeling area	131	8.7%	116	6.3%	46	6.0%	293	7.1%
No, trip is entirely inside the modeling area	1,382	91.3%	1,730	93.7%	719	94.0%	3,831	92.9%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Traveled off-peak to avoid traffic congestion

		Off poak		AM pool		DM pople		Total
		оп-реак		Ам реак		г м реак		TOtal
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes	350	23.1%	375	100.0%	134	100.0%	859	42.5%
No	1,163	76.9%	0	0.0%	0	0.0%	1,163	57.5%
Subtotal	1,513	100.0%	375	100.0%	134	100.0%	2,022	100.0%
Did not travel in the off- peak	0	0.0%	1,471	0.0%	631	0.0%	2,102	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



Preferred time to begin trip										
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
12:00 AM to 12:59 AM	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
1:00 AM to 1:59 AM	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
2:00 AM to 2:59 AM	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
3:00 AM to 3:59 AM	1	0.3%	0	0.0%	0	0.0%	1	0.1%		
4:00 AM to 4:59 AM	4	1.1%	0	0.0%	0	0.0%	4	0.5%		
5:00 AM to 5:59 AM	16	4.6%	0	0.0%	0	0.0%	16	1.9%		
6:00 AM to 6:59 AM	42	12.0%	61	16.3%	0	0.0%	103	12.0%		
7:00 AM to 7:59 AM	0	0.0%	106	28.3%	0	0.0%	106	12.3%		
8:00 AM to 8:59 AM	0	0.0%	154	41.1%	0	0.0%	154	17.9%		
9:00 AM to 9:59 AM	51	14.6%	54	14.4%	0	0.0%	105	12.2%		
10:00 AM to 10:59 AM	65	18.6%	0	0.0%	0	0.0%	65	7.6%		
11:00 AM to 11:59 AM	45	12.9%	0	0.0%	0	0.0%	45	5.2%		
12:00 PM to 12:59 PM	51	14.6%	0	0.0%	0	0.0%	51	5.9%		
1:00 PM to 1:59 PM	36	10.3%	0	0.0%	0	0.0%	36	4.2%		
2:00 PM to 2:59 PM	30	8.6%	0	0.0%	0	0.0%	30	3.5%		
3:00 PM to 3:59 PM	0	0.0%	0	0.0%	40	29.9%	40	4.7%		
4:00 PM to 4:59 PM	0	0.0%	0	0.0%	37	27.6%	37	4.3%		
5:00 PM to 5:59 PM	0	0.0%	0	0.0%	39	29.1%	39	4.5%		
6:00 PM to 6:59 PM	2	0.6%	0	0.0%	18	13.4%	20	2.3%		
7:00 PM to 7:59 PM	3	0.9%	0	0.0%	0	0.0%	3	0.3%		
8:00 PM to 8:59 PM	2	0.6%	0	0.0%	0	0.0%	2	0.2%		
9:00 PM to 9:59 PM	1	0.3%	0	0.0%	0	0.0%	1	0.1%		
10:00 PM to 10:59 PM	1	0.3%	0	0.0%	0	0.0%	1	0.1%		
11:00 PM to 11:59 PM	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
Subtotal	350	100.0%	375	100.0%	134	100.0%	859	100.0%		
Did not travel in the off- peak	0	0.0%	1,471	0.0%	631	0.0%	2,102	0.0%		
Did not travel in the off- peak to avoid traffic conditions	1,163	0.0%	0	0.0%	0	0.0%	1,163	0.0%		
Total	1.513	100.0%	1.846	100.0%	765	100.0%	4.124	100.0%		





Amount earner could have made trip										
		Off-peak		AM peak		PM peak	. Tota			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Not at all earlier	946	62.5%	808	43.8%	411	53.7%	2,165	52.5%		
Up to 15 minutes earlier	227	15.0%	526	28.5%	175	22.9%	928	22.5%		
Up to 30 minutes earlier	128	8.5%	221	12.0%	94	12.3%	443	10.7%		
Up to 1 hour earlier	104	6.9%	143	7.7%	41	5.4%	288	7.0%		
Up to 2 hours earlier	51	3.4%	79	4.3%	23	3.0%	153	3.7%		
More than 2 hours earlier	57	3.8%	69	3.7%	21	2.7%	147	3.6%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		

nt earlier could have made tri

Amount later could have made trip

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Not at all later	830	54.9%	641	34.7%	212	27.7%	1,683	40.8%
Up to 15 minutes later	261	17.3%	609	33.0%	205	26.8%	1,075	26.1%
Up to 30 minutes later	149	9.8%	344	18.6%	140	18.3%	633	15.3%
Up to 1 hour later	123	8.1%	156	8.5%	99	12.9%	378	9.2%
Up to 2 hours later	73	4.8%	44	2.4%	57	7.5%	174	4.2%
More than 2 hours later	77	5.1%	52	2.8%	52	6.8%	181	4.4%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

NTTA facilities used on trip (select all that apply)

	Off-peak			AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
President George Bush Turnpike (PGBT)	445	29.4%	575	31.1%	248	32.4%	1,268	30.7%
Dallas North Tollway	408	27.0%	498	27.0%	235	30.7%	1,141	27.7%
Sam Rayburn Tollway (SRT)	211	13.9%	225	12.2%	112	14.6%	548	13.3%
PGBT Western Extension (PGBT WE)	57	3.8%	85	4.6%	36	4.7%	178	4.3%
Lewisville Lake Toll Bridge	15	1.0%	13	0.7%	7	0.9%	35	0.8%
Addison Airport Toll Tunnel	9	0.6%	11	0.6%	1	0.1%	21	0.5%
Mountain Creek Lake Toll Bridge	4	0.3%	4	0.2%	3	0.4%	11	0.3%
I did not use any of these roads on the trip I am describing	597	39.5%	734	39.8%	265	34.6%	1,596	38.7%



	First NTA Toute used on trip									
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
President George Bush Turnpike (PGBT)	374	40.8%	465	41.8%	198	39.6%	1,037	41.0%		
Dallas North Tollway	305	33.3%	377	33.9%	182	36.4%	864	34.2%		
Sam Rayburn Tollway (SRT)	178	19.4%	197	17.7%	84	16.8%	459	18.2%		
PGBT Western Extension (PGBT WE)	38	4.1%	52	4.7%	26	5.2%	116	4.6%		
Lewisville Lake Toll Bridge	13	1.4%	11	1.0%	6	1.2%	30	1.2%		
Addison Airport Toll Tunnel	4	0.4%	6	0.5%	1	0.2%	11	0.4%		
Mountain Creek Lake Toll Bridge	4	0.4%	4	0.4%	3	0.6%	11	0.4%		
Subtotal	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%		
Did not use an NTTA facility	597	0.0%	734	0.0%	265	0.0%	1,596	0.0%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		

First NTTA route used on trip

If used more than one NTTA route, last route used on trip

				,				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Dallas North Tollway	98	45.4%	113	42.0%	49	39.8%	260	42.8%
President George Bush Turnpike (PGBT)	64	29.6%	100	37.2%	43	35.0%	207	34.0%
Sam Rayburn Tollway (SRT)	32	14.8%	23	8.6%	22	17.9%	77	12.7%
PGBT Western Extension (PGBT WE)	17	7.9%	29	10.8%	8	6.5%	54	8.9%
Addison Airport Toll Tunnel	3	1.4%	4	1.5%	0	0.0%	7	1.2%
Lewisville Lake Toll Bridge	2	0.9%	0	0.0%	1	0.8%	3	0.5%
Subtotal	216	100.0%	269	100.0%	123	100.0%	608	100.0%
Did not use an NTTA facility	597	0.0%	734	0.0%	265	0.0%	1,596	0.0%
Did not use more than one NTTA facility	700	0.0%	843	0.0%	377	0.0%	1,920	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		On ramp: l	Dallas No	rth Tollway	y			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
IH 35 E / Harry Hines / McKinnon / Oaklawn	33	8.1%	32	6.4%	25	10.6%	90	7.9%
Wycliff Ave	11	2.7%	7	1.4%	6	2.6%	24	2.1%
Lemmon Ave	3	0.7%	3	0.6%	3	1.3%	9	0.8%
Mockingbird Ln	15	3.7%	6	1.2%	4	1.7%	25	2.2%
Lovers Ln	1	0.2%	1	0.2%	1	0.4%	3	0.3%
Northwest Hwy	9	2.2%	15	3.0%	6	2.6%	30	2.6%
Walnut Hill Ln	3	0.7%	2	0.4%	1	0.4%	6	0.5%
Royal Ln	6	1.5%	9	1.8%	4	1.7%	19	1.7%
Forest Ln	6	1.5%	3	0.6%	3	1.3%	12	1.1%
Harvest Hill RdInwood Rd	1	0.2%	2	0.4%	1	0.4%	4	0.4%
LBJ Freeway (IH 635)	55	13.5%	51	10.2%	35	14.9%	141	12.4%
Alpha Rd	3	0.7%	4	0.8%	2	0.9%	9	0.8%
Spring Valley Rd	7	1.7%	5	1.0%	5	2.1%	17	1.5%
Belt Line Rd/Arapaho Rd	12	2.9%	14	2.8%	8	3.4%	34	3.0%
Keller Springs Rd	12	2.9%	13	2.6%	3	1.3%	28	2.5%
Frankford Rd/Trinity Mills Rd	18	4.4%	22	4.4%	10	4.3%	50	4.4%
President George Bush Turnpike (PGBT/SH 190)	69	16.9%	68	13.7%	36	15.3%	173	15.2%
Plano Pkwy	7	1.7%	7	1.4%	4	1.7%	18	1.6%
Park Blvd	7	1.7%	16	3.2%	6	2.6%	29	2.5%
Parker Rd	16	3.9%	13	2.6%	7	3.0%	36	3.2%
Spring Creek Pkwy\Windhaven Pkwy	10	2.5%	12	2.4%	11	4.7%	33	2.9%
Legacy Dr	18	4.4%	21	4.2%	13	5.5%	52	4.6%
Headquarters Dr	0	0.0%	4	0.8%	1	0.4%	5	0.4%
Sam Rayburn Tollway (SRT)	22	5.4%	35	7.0%	13	5.5%	70	6.1%
Gaylord Pkwy	2	0.5%	7	1.4%	2	0.9%	11	1.0%
Warren Pkwy	1	0.2%	3	0.6%	1	0.4%	5	0.4%
John Hickman	0	0.0%	0	0.0%	2	0.9%	2	0.2%
Lebanon Rd	5	1.2%	12	2.4%	5	2.1%	22	1.9%
Stonebrook Pkwy	9	2.2%	8	1.6%	2	0.9%	19	1.7%
Cotton Gin Rd/Main St	15	3.7%	28	5.6%	2	0.9%	45	3.9%
Eldorado Pkwy (FM 2934)	9	2.2%	32	6.4%	5	2.1%	46	4.0%
Panther Creek Pkwy	3	0.7%	7	1.4%	0	0.0%	10	0.9%
US 380	12	2.9%	26	5.2%	6	2.6%	44	3.9%



North of US 380/Dallas Pkwy	8	2.0%	10	2.0%	2	0.9%	20	1.8%
Subtotal	408	100.0%	498	100.0%	235	100.0%	1,141	100.0%
Did not use this NTTA facility	1,105	0.0%	1,348	0.0%	530	0.0%	2,983	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

		Off ramp: I	Dallas No	rth Tollway	y			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
IH 35 E / Harry Hines / McKinnon / Oaklawn	26	6.4%	50	10.0%	23	9.8%	99	8.7%
Wycliff Ave	8	2.0%	19	3.8%	5	2.1%	32	2.8%
Lemmon Ave	2	0.5%	1	0.2%	1	0.4%	4	0.4%
Mockingbird Ln	28	6.9%	30	6.0%	6	2.6%	64	5.6%
Lovers Ln	5	1.2%	1	0.2%	1	0.4%	7	0.6%
Northwest Hwy	10	2.5%	10	2.0%	9	3.8%	29	2.5%
Walnut Hill Ln	3	0.7%	3	0.6%	2	0.9%	8	0.7%
Royal Ln	6	1.5%	3	0.6%	5	2.1%	14	1.2%
Forest Ln	3	0.7%	4	0.8%	2	0.9%	9	0.8%
Harvest Hill RdInwood Rd	1	0.2%	2	0.4%	1	0.4%	4	0.4%
LBJ Freeway (IH 635)	30	7.4%	42	8.4%	14	6.0%	86	7.5%
Alpha Rd	14	3.4%	16	3.2%	2	0.9%	32	2.8%
Spring Valley Rd	10	2.5%	18	3.6%	3	1.3%	31	2.7%
Belt Line Rd/Arapaho Rd	27	6.6%	37	7.4%	12	5.1%	76	6.7%
Keller Springs Rd	17	4.2%	15	3.0%	4	1.7%	36	3.2%
Frankford Rd/Trinity Mills Rd	15	3.7%	24	4.8%	10	4.3%	49	4.3%
President George Bush Turnpike (PGBT/SH 190)	40	9.8%	65	13.1%	26	11.1%	131	11.5%
Plano Pkwy	10	2.5%	15	3.0%	11	4.7%	36	3.2%
Park Blvd	18	4.4%	14	2.8%	12	5.1%	44	3.9%
Parker Rd	24	5.9%	17	3.4%	7	3.0%	48	4.2%
Spring Creek Pkwy\Windhaven Pkwy	15	3.7%	19	3.8%	8	3.4%	42	3.7%
Legacy Dr	12	2.9%	19	3.8%	10	4.3%	41	3.6%
Headquarters Dr	10	2.5%	18	3.6%	3	1.3%	31	2.7%
Sam Rayburn Tollway (SRT)	19	4.7%	17	3.4%	14	6.0%	50	4.4%
Gaylord Pkwy	12	2.9%	5	1.0%	8	3.4%	25	2.2%
Warren Pkwy	6	1.5%	16	3.2%	2	0.9%	24	2.1%
John Hickman	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lebanon Rd	8	2.0%	1	0.2%	7	3.0%	16	1.4%



Stonebrook Pkwy	1	0.2%	1	0.2%	2	0.9%	4	0.4%
Cotton Gin Rd/Main St	9	2.2%	6	1.2%	9	3.8%	24	2.1%
Eldorado Pkwy (FM 2934)	9	2.2%	3	0.6%	5	2.1%	17	1.5%
Panther Creek Pkwy	1	0.2%	0	0.0%	0	0.0%	1	0.1%
US 380	5	1.2%	5	1.0%	7	3.0%	17	1.5%
North of US 380/Dallas Pkwy	4	1.0%	2	0.4%	4	1.7%	10	0.9%
Subtotal	408	100.0%	498	100.0%	235	100.0%	1,141	100.0%
Did not use this NTTA facility	1,105	0.0%	1,348	0.0%	530	0.0%	2,983	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

On ramp: President George Bush Turnpike (PGBT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SH 183 (Airport Fwy)/PGBT Western Extension	51	11.5%	50	8.7%	28	11.3%	129	10.2%
Rochelle Road	0	0.0%	1	0.2%	1	0.4%	2	0.2%
Northgate Drive	3	0.7%	5	0.9%	2	0.8%	10	0.8%
Walnut Hill Lane	2	0.4%	6	1.0%	2	0.8%	10	0.8%
North Belt Line Road	3	0.7%	7	1.2%	1	0.4%	11	0.9%
Gateway Drive	0	0.0%	0	0.0%	1	0.4%	1	0.1%
SH 114/Royal Lane	8	1.8%	6	1.0%	7	2.8%	21	1.7%
Macarthur Boulevard	7	1.6%	2	0.3%	7	2.8%	16	1.3%
Las Colinas Boulevard	4	0.9%	4	0.7%	4	1.6%	12	0.9%
LBJ Freeway (IH 635)	17	3.8%	13	2.3%	16	6.5%	46	3.6%
Valley View Lane	2	0.4%	5	0.9%	3	1.2%	10	0.8%
W Belt Line Road/Luna Road	5	1.1%	2	0.3%	4	1.6%	11	0.9%
Sandy Lake Road	8	1.8%	13	2.3%	3	1.2%	24	1.9%
IH 35E (Stemmons Fwy)	41	9.2%	53	9.2%	25	10.1%	119	9.4%
Old Denton Road	3	0.7%	15	2.6%	5	2.0%	23	1.8%
Josey Lane	10	2.2%	6	1.0%	3	1.2%	19	1.5%
Kelly Boulevard	0	0.0%	5	0.9%	2	0.8%	7	0.6%
Frankford Road/Marsh Lane	10	2.2%	14	2.4%	3	1.2%	27	2.1%
Rosemeade Parkway/Midway Road	16	3.6%	13	2.3%	5	2.0%	34	2.7%
Dallas North Tollway (DNT)	40	9.0%	62	10.8%	26	10.5%	128	10.1%
Preston Road	14	3.1%	21	3.7%	6	2.4%	41	3.2%
Coit Road	10	2.2%	11	1.9%	10	4.0%	31	2.4%



Independence Parkway/Waterview	14	3.1%	12	2.1%	5	2.0%	31	2.4%
Parkway Custer Parkway	11	2.5%	13	2 3%	3	1 2%	27	21%
Alma Drive	4	0.9%	6	1.0%	3	1.2%	13	1.0%
US 75 (Central Expy)	52	11.7%	60	10.4%	26	10.5%	138	10.9%
Plano Road/K Avenue	5	1.1%	1	0.2%	1	0.4%	7	0.6%
Jupiter Road	18	4.0%	16	2.8%	12	4.8%	46	3.6%
Renner Road	14	3.1%	15	2.6%	2	0.8%	31	2.4%
Blackburn Road/Shiloh Road/Lookout Drive	4	0.9%	9	1.6%	2	0.8%	15	1.2%
Campbell Road	1	0.2%	3	0.5%	1	0.4%	5	0.4%
Holford Road	1	0.2%	0	0.0%	0	0.0%	1	0.1%
North Garland Ave	10	2.2%	13	2.3%	3	1.2%	26	2.1%
Brand Road	1	0.2%	3	0.5%	1	0.4%	5	0.4%
SH 78 (Lavon Drive)/Firewheel Pkwy	56	12.6%	110	19.1%	25	10.1%	191	15.1%
Subtotal	445	100.0%	575	100.0%	248	100.0%	1,268	100.0%
Did not use this NTTA facility	1,068	0.0%	1,271	0.0%	517	0.0%	2,856	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Off ramp: President George Bush Turnpike (PGBT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SH 183 (Airport Fwy)/PGBT Western Extension	26	5.8%	50	8.7%	26	10.5%	102	8.0%
Rochelle Road	3	0.7%	2	0.3%	0	0.0%	5	0.4%
Northgate Drive	2	0.4%	6	1.0%	0	0.0%	8	0.6%
Walnut Hill Lane	5	1.1%	9	1.6%	2	0.8%	16	1.3%
North Belt Line Road	4	0.9%	5	0.9%	4	1.6%	13	1.0%
Gateway Drive	1	0.2%	6	1.0%	0	0.0%	7	0.6%
SH 114/Royal Lane	6	1.3%	16	2.8%	5	2.0%	27	2.1%
Macarthur Boulevard	10	2.2%	16	2.8%	4	1.6%	30	2.4%
Las Colinas Boulevard	4	0.9%	9	1.6%	0	0.0%	13	1.0%
LBJ Freeway (IH 635)	32	7.2%	37	6.4%	15	6.0%	84	6.6%
Valley View Lane	1	0.2%	11	1.9%	3	1.2%	15	1.2%
W Belt Line Road/Luna Road	10	2.2%	4	0.7%	1	0.4%	15	1.2%
Sandy Lake Road	4	0.9%	4	0.7%	0	0.0%	8	0.6%
IH 35E (Stemmons Fwy)	36	8.1%	41	7.1%	22	8.9%	99	7.8%
Old Denton Road	10	2.2%	7	1.2%	4	1.6%	21	1.7%



Josey Lane	8	1.8%	5	0.9%	9	3.6%	22	1.7%
Kelly Boulevard	4	0.9%	6	1.0%	4	1.6%	14	1.1%
Frankford Road/Marsh Lane	8	1.8%	10	1.7%	3	1.2%	21	1.7%
Rosemeade Parkway/Midway Road	8	1.8%	17	3.0%	6	2.4%	31	2.4%
Dallas North Tollway (DNT)	72	16.2%	73	12.7%	31	12.5%	176	13.9%
Preston Road	31	7.0%	37	6.4%	16	6.5%	84	6.6%
Coit Road	19	4.3%	32	5.6%	12	4.8%	63	5.0%
Independence Parkway/Waterview Parkway	10	2.2%	21	3.7%	3	1.2%	34	2.7%
Custer Parkway	15	3.4%	15	2.6%	5	2.0%	35	2.8%
Alma Drive	3	0.7%	5	0.9%	6	2.4%	14	1.1%
US 75 (Central Expy)	53	11.9%	74	12.9%	25	10.1%	152	12.0%
Plano Road/K Avenue	3	0.7%	8	1.4%	3	1.2%	14	1.1%
Jupiter Road	11	2.5%	15	2.6%	10	4.0%	36	2.8%
Renner Road	4	0.9%	9	1.6%	4	1.6%	17	1.3%
Blackburn Road/Shiloh Road/Lookout Drive	5	1.1%	1	0.2%	2	0.8%	8	0.6%
Campbell Road	5	1.1%	7	1.2%	3	1.2%	15	1.2%
Holford Road	0	0.0%	0	0.0%	0	0.0%	0	0.0%
North Garland Ave	10	2.2%	3	0.5%	4	1.6%	17	1.3%
Brand Road	3	0.7%	2	0.3%	1	0.4%	6	0.5%
SH 78 (Lavon Drive)/Firewheel Pkwy	19	4.3%	12	2.1%	15	6.0%	46	3.6%
Subtotal	445	100.0%	575	100.0%	248	100.0%	1,268	100.0%
Did not use this NTTA facility	1,068	0.0%	1,271	0.0%	517	0.0%	2,856	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak	- ,	PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SRT/Denton Tap	47	22.3%	33	14.7%	21	18.8%	101	18.4%
Macarthur	8	3.8%	9	4.0%	6	5.4%	23	4.2%
Lake Vista	0	0.0%	2	0.9%	2	1.8%	4	0.7%
IH 35E/Huffines/Hebron	25	11.8%	12	5.3%	16	14.3%	53	9.7%
Carrollton Pkwy	2	0.9%	3	1.3%	0	0.0%	5	0.9%
FM 544	0	0.0%	1	0.4%	0	0.0%	1	0.2%
FM 2281	2	0.9%	1	0.4%	0	0.0%	3	0.5%
Standridge	0	0.0%	3	1.3%	2	1.8%	5	0.9%
Josey	9	4.3%	5	2.2%	5	4.5%	19	3.5%
Plano Pkwy	3	1.4%	3	1.3%	2	1.8%	8	1.5%
Spring Creek	3	1.4%	2	0.9%	4	3.6%	9	1.6%
Legacy	11	5.2%	13	5.8%	5	4.5%	29	5.3%
DNT/Parkwood	14	6.6%	12	5.3%	14	12.5%	40	7.3%
Preston	11	5.2%	3	1.3%	8	7.1%	22	4.0%
Ohio	4	1.9%	2	0.9%	1	0.9%	7	1.3%
Hillcrest	1	0.5%	4	1.8%	0	0.0%	5	0.9%
Coit	6	2.8%	9	4.0%	1	0.9%	16	2.9%
Independence	10	4.7%	16	7.1%	3	2.7%	29	5.3%
Custer	15	7.1%	10	4.4%	4	3.6%	29	5.3%
Exchange	2	0.9%	2	0.9%	0	0.0%	4	0.7%
Alma	1	0.5%	6	2.7%	2	1.8%	9	1.6%
Stacy	4	1.9%	6	2.7%	2	1.8%	12	2.2%
Lake Forest	6	2.8%	14	6.2%	4	3.6%	24	4.4%
Hardin	4	1.9%	5	2.2%	0	0.0%	9	1.6%
US 75	23	10.9%	49	21.8%	10	8.9%	82	15.0%
Subtotal	211	100.0%	225	100.0%	112	100.0%	548	100.0%
Did not use this NTTA facility	1,302	0.0%	1,621	0.0%	653	0.0%	3,576	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%




		Off-peak	<u>y</u>	AM peak	,	PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SRT/Denton Tap	40	19.0%	29	12.9%	18	16.1%	87	15.9%
Macarthur	10	4.7%	11	4.9%	1	0.9%	22	4.0%
Lake Vista	1	0.5%	1	0.4%	0	0.0%	2	0.4%
IH 35E/Huffines/Hebron	19	9.0%	34	15.1%	7	6.3%	60	10.9%
Carrollton Pkwy	5	2.4%	3	1.3%	4	3.6%	12	2.2%
FM 544	2	0.9%	3	1.3%	0	0.0%	5	0.9%
FM 2281	2	0.9%	1	0.4%	2	1.8%	5	0.9%
Standridge	4	1.9%	2	0.9%	1	0.9%	7	1.3%
Josey	5	2.4%	7	3.1%	7	6.3%	19	3.5%
Plano Pkwy	7	3.3%	5	2.2%	2	1.8%	14	2.6%
Spring Creek	3	1.4%	6	2.7%	2	1.8%	11	2.0%
Legacy	11	5.2%	6	2.7%	5	4.5%	22	4.0%
DNT/Parkwood	24	11.4%	49	21.8%	8	7.1%	81	14.8%
Preston	16	7.6%	18	8.0%	13	11.6%	47	8.6%
Ohio	1	0.5%	1	0.4%	1	0.9%	3	0.5%
Hillcrest	1	0.5%	2	0.9%	1	0.9%	4	0.7%
Coit	5	2.4%	5	2.2%	4	3.6%	14	2.6%
Independence	3	1.4%	3	1.3%	3	2.7%	9	1.6%
Custer	8	3.8%	10	4.4%	5	4.5%	23	4.2%
Exchange	3	1.4%	0	0.0%	6	5.4%	9	1.6%
Alma	3	1.4%	4	1.8%	2	1.8%	9	1.6%
Stacy	4	1.9%	4	1.8%	5	4.5%	13	2.4%
Lake Forest	5	2.4%	2	0.9%	1	0.9%	8	1.5%
Hardin	2	0.9%	2	0.9%	1	0.9%	5	0.9%
US 75	27	12.8%	17	7.6%	13	11.6%	57	10.4%
Subtotal	211	100.0%	225	100.0%	112	100.0%	548	100.0%
Did not use this NTTA facility	1,302	0.0%	1,621	0.0%	653	0.0%	3,576	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%





	On rum	pii ubi ii	COLUMN IA		db1 mbj			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
South of IH 30/PGBT WE Frontage	3	5.3%	21	24.7%	8	22.2%	32	18.0%
IH 30	12	21.1%	12	14.1%	6	16.7%	30	16.9%
Egyptian Way	2	3.5%	10	11.8%	0	0.0%	12	6.7%
Carrier Parkway	4	7.0%	4	4.7%	1	2.8%	9	5.1%
Lower Tarrant Road	0	0.0%	2	2.4%	0	0.0%	2	1.1%
Oakdale Road	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Trinity Boulevard	1	1.8%	1	1.2%	2	5.6%	4	2.2%
Shady Grove Road	3	5.3%	2	2.4%	1	2.8%	6	3.4%
Rock Island Road	0	0.0%	0	0.0%	1	2.8%	1	0.6%
Conflans Road	3	5.3%	1	1.2%	3	8.3%	7	3.9%
SH 183 (Airport Fwy)/President George Bush Turnpike	29	50.9%	32	37.6%	14	38.9%	75	42.1%
Subtotal	57	100.0%	85	100.0%	36	100.0%	178	100.0%
Did not use this NTTA facility	1,456	0.0%	1,761	0.0%	729	0.0%	3,946	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

On ramp: PGBT Western Extension (PGBT WE)

Off ramp: PGBT Western Extension (PGBT WE)

	Off-peak			AM peak		PM peak	Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	
South of IH 30/PGBT WE Frontage	12	21.1%	10	11.8%	7	19.4%	29	16.3%	
IH 30	6	10.5%	11	12.9%	7	19.4%	24	13.5%	
Egyptian Way	3	5.3%	5	5.9%	1	2.8%	9	5.1%	
Carrier Parkway	4	7.0%	5	5.9%	1	2.8%	10	5.6%	
Lower Tarrant Road	2	3.5%	4	4.7%	1	2.8%	7	3.9%	
Oakdale Road	0	0.0%	2	2.4%	0	0.0%	2	1.1%	
Trinity Boulevard	2	3.5%	4	4.7%	0	0.0%	6	3.4%	
Shady Grove Road	2	3.5%	1	1.2%	1	2.8%	4	2.2%	
Rock Island Road	3	5.3%	1	1.2%	1	2.8%	5	2.8%	
Conflans Road	4	7.0%	6	7.1%	2	5.6%	12	6.7%	
SH 183 (Airport Fwy)/President George Bush Turnpike	19	33.3%	36	42.4%	15	41.7%	70	39.3%	
Subtotal	57	100.0%	85	100.0%	36	100.0%	178	100.0%	
Did not use this NTTA facility	1,456	0.0%	1,761	0.0%	729	0.0%	3,946	0.0%	
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%	



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 10 minutes	2	0.1%	1	0.1%	1	0.1%	4	0.1%
10 to 14 minutes	5	0.3%	4	0.2%	2	0.3%	11	0.3%
15 to 19 minutes	12	0.8%	8	0.4%	6	0.8%	26	0.6%
20 to 29 minutes	70	4.6%	48	2.6%	21	2.7%	139	3.4%
30 to 39 minutes	140	9.3%	113	6.1%	56	7.3%	309	7.5%
40 to 49 minutes	151	10.0%	191	10.3%	71	9.3%	413	10.0%
50 to 59 minutes	110	7.3%	146	7.9%	54	7.1%	310	7.5%
60 minutes or more	426	28.2%	601	32.6%	289	37.8%	1,316	31.9%
Subtotal	916	60.5%	1,112	60.2%	500	65.4%	2,528	61.3%
Did not use an NTTA facility	597	39.5%	734	39.8%	265	34.6%	1,596	38.7%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate toll-free route travel time

Distance traveled on: Dallas North Tollway

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	152	37.3%	137	27.5%	72	30.6%	361	31.6%
5 to 9.99 miles	124	30.4%	150	30.1%	78	33.2%	352	30.9%
10 to 14.99 miles	73	17.9%	117	23.5%	43	18.3%	233	20.4%
15 to 19.99 miles	40	9.8%	66	13.3%	27	11.5%	133	11.7%
20 to 24.99 miles	13	3.2%	19	3.8%	13	5.5%	45	3.9%
25 miles or more	6	1.5%	9	1.8%	2	0.9%	17	1.5%
Subtotal	408	100.0%	498	100.0%	235	100.0%	1,141	100.0%
Did not use this NTTA facility	1,105	0.0%	1,348	0.0%	530	0.0%	2,983	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	117	26.3%	121	21.0%	60	24.2%	298	23.5%
5 to 9.99 miles	154	34.6%	203	35.3%	87	35.1%	444	35.0%
10 to 14.99 miles	82	18.4%	111	19.3%	48	19.4%	241	19.0%
15 to 19.99 miles	41	9.2%	62	10.8%	22	8.9%	125	9.9%
20 to 24.99 miles	29	6.5%	44	7.7%	14	5.6%	87	6.9%
25 miles or more	22	4.9%	34	5.9%	17	6.9%	73	5.8%
Subtotal	445	100.0%	575	100.0%	248	100.0%	1,268	100.0%
Did not use this NTTA facility	1,068	0.0%	1,271	0.0%	517	0.0%	2,856	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Distance traveled on: Sam Rayburn Tollway (SRT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	59	28.0%	67	29.8%	32	28.6%	158	28.8%
5 to 9.99 miles	51	24.2%	64	28.4%	26	23.2%	141	25.7%
10 to 14.99 miles	55	26.1%	55	24.4%	33	29.5%	143	26.1%
15 to 19.99 miles	25	11.8%	15	6.7%	10	8.9%	50	9.1%
20 to 24.99 miles	21	10.0%	24	10.7%	11	9.8%	56	10.2%
Subtotal	211	100.0%	225	100.0%	112	100.0%	548	100.0%
Did not use this NTTA facility	1,302	0.0%	1,621	0.0%	653	0.0%	3,576	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Distance traveled on: PGBT Western Extension (PGBT WE)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	29	50.9%	39	45.9%	16	44.4%	84	47.2%
5 to 9.99 miles	28	49.1%	46	54.1%	20	55.6%	94	52.8%
Subtotal	57	100.0%	85	100.0%	36	100.0%	178	100.0%
Did not use this NTTA facility	1,456	0.0%	1,761	0.0%	729	0.0%	3,946	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
President George Bush Turnpike (PGBT)	112	18.8%	171	23.3%	52	19.6%	335	21.0%
Dallas North Tollway	90	15.1%	135	18.4%	37	14.0%	262	16.4%
Don't know	96	16.1%	87	11.9%	56	21.1%	239	15.0%
Sam Rayburn Tollway (SRT)	39	6.5%	53	7.2%	22	8.3%	114	7.1%
PGBT Western Extension (PGBT WE)	22	3.7%	40	5.4%	12	4.5%	74	4.6%
Mountain Creek Lake Toll Bridge	5	0.8%	8	1.1%	2	0.8%	15	0.9%
Lewisville Lake Toll Bridge	4	0.7%	5	0.7%	1	0.4%	10	0.6%
Addison Airport Toll Tunnel	3	0.5%	2	0.3%	2	0.8%	7	0.4%
None of the above	276	46.2%	320	43.6%	105	39.6%	701	43.9%

Best alternate toll route(s) for trip (select all that apply)

Travel time on alternate toll route

		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Less than 10 minutes	1	0.4%	0	0.0%	1	1.0%	2	0.3%		
10 to 14 minutes	4	1.8%	6	1.8%	7	6.7%	17	2.6%		
15 to 19 minutes	28	12.4%	19	5.8%	11	10.6%	58	8.8%		
20 to 29 minutes	47	20.9%	58	17.7%	17	16.3%	122	18.6%		
30 to 39 minutes	43	19.1%	65	19.9%	16	15.4%	124	18.9%		
40 to 49 minutes	36	16.0%	66	20.2%	16	15.4%	118	18.0%		
50 to 59 minutes	18	8.0%	49	15.0%	10	9.6%	77	11.7%		
60 minutes or more	48	21.3%	64	19.6%	26	25.0%	138	21.0%		
Subtotal	225	100.0%	327	100.0%	104	100.0%	656	100.0%		
Already use an NTTA facility	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%		
Did not have an alternate toll route available	276	0.0%	320	0.0%	105	0.0%	701	0.0%		
Did not know the alternate toll route they would use	96	0.0%	87	0.0%	56	0.0%	239	0.0%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
IH 35E/Harry Hines/McKinnon/Oaklawn	8	8.9%	11	8.1%	9	24.3%	28	10.7%
Wycliff Ave	4	4.4%	2	1.5%	2	5.4%	8	3.1%
Lemmon Ave	1	1.1%	2	1.5%	1	2.7%	4	1.5%
Mockingbird Ln	7	7.8%	6	4.4%	1	2.7%	14	5.3%
Lovers Ln	1	1.1%	2	1.5%	0	0.0%	3	1.1%
Northwest Hwy	4	4.4%	9	6.7%	0	0.0%	13	5.0%
Walnut Hill Ln	1	1.1%	2	1.5%	0	0.0%	3	1.1%
Royal Ln	1	1.1%	2	1.5%	0	0.0%	3	1.1%
Forest Ln	0	0.0%	1	0.7%	0	0.0%	1	0.4%
Harvest Hill Rd/Inwood Rd	1	1.1%	0	0.0%	0	0.0%	1	0.4%
LBJ Freeway (IH 635)	11	12.2%	16	11.9%	6	16.2%	33	12.6%
Alpha Rd	3	3.3%	2	1.5%	0	0.0%	5	1.9%
Spring Valley Rd	2	2.2%	2	1.5%	1	2.7%	5	1.9%
Belt Line Rd/Arapaho Rd	4	4.4%	5	3.7%	1	2.7%	10	3.8%
Keller Springs Rd	3	3.3%	2	1.5%	1	2.7%	6	2.3%
Frankford Rd/Trinity Mills Rd	3	3.3%	5	3.7%	1	2.7%	9	3.4%
President George Bush Turnpike (PGBT/SH 190)	10	11.1%	26	19.3%	8	21.6%	44	16.8%
Plano Pkwy	4	4.4%	2	1.5%	0	0.0%	6	2.3%
Park Blvd	2	2.2%	2	1.5%	1	2.7%	5	1.9%
Parker Rd	0	0.0%	1	0.7%	0	0.0%	1	0.4%
Spring Creek Pkwy/Windhaven Pkwy	2	2.2%	4	3.0%	0	0.0%	6	2.3%
Legacy Dr	2	2.2%	1	0.7%	1	2.7%	4	1.5%
Headquarters Dr	0	0.0%	1	0.7%	0	0.0%	1	0.4%
Sam Rayburn Tollway (SRT)	4	4.4%	16	11.9%	0	0.0%	20	7.6%
Gaylord Pkwy	2	2.2%	1	0.7%	0	0.0%	3	1.1%
Lebanon Rd	0	0.0%	1	0.7%	1	2.7%	2	0.8%
Stonebrook Pkwy	1	1.1%	3	2.2%	1	2.7%	5	1.9%
Cotton Gin Rd/Main St	4	4.4%	3	2.2%	1	2.7%	8	3.1%
Eldorado Pkwy (FM 2934)	1	1.1%	1	0.7%	0	0.0%	2	0.8%
US 380	1	1.1%	3	2.2%	1	2.7%	5	1.9%
North of US 380/Dallas Pkwy	3	3.3%	1	0.7%	0	0.0%	4	1.5%

90 100.0% 135 100.0%

Alternate route on ramp: Dallas North Tollway



Subtotal

262 100.0%

37 100.0%

Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	507	0.0%	599	0.0%	228	0.0%	1,334	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

	/ meer mu	te i oute oi	r rump: D		Tonway			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
IH 35E/Harry Hines/McKinnon/Oaklawn	8	8.9%	13	9.6%	4	10.8%	25	9.5%
Wycliff Ave	1	1.1%	6	4.4%	2	5.4%	9	3.4%
Lemmon Ave	0	0.0%	3	2.2%	0	0.0%	3	1.1%
Mockingbird Ln	6	6.7%	6	4.4%	0	0.0%	12	4.6%
Lovers Ln	1	1.1%	1	0.7%	1	2.7%	3	1.1%
Northwest Hwy	3	3.3%	6	4.4%	2	5.4%	11	4.2%
Walnut Hill Ln	2	2.2%	1	0.7%	0	0.0%	3	1.1%
Royal Ln	1	1.1%	1	0.7%	1	2.7%	3	1.1%
Forest Ln	4	4.4%	3	2.2%	0	0.0%	7	2.7%
Harvest Hill Rd/Inwood Rd	0	0.0%	0	0.0%	1	2.7%	1	0.4%
LBJ Freeway (IH 635)	12	13.3%	24	17.8%	1	2.7%	37	14.1%
Alpha Rd	2	2.2%	5	3.7%	1	2.7%	8	3.1%
Spring Valley Rd	4	4.4%	7	5.2%	1	2.7%	12	4.6%
Belt Line Rd/Arapaho Rd	3	3.3%	8	5.9%	4	10.8%	15	5.7%
Keller Springs Rd	3	3.3%	4	3.0%	1	2.7%	8	3.1%
Frankford Rd/Trinity Mills Rd	0	0.0%	3	2.2%	1	2.7%	4	1.5%
President George Bush Turnpike (PGBT/SH 190)	17	18.9%	22	16.3%	5	13.5%	44	16.8%
Plano Pkwy	4	4.4%	2	1.5%	1	2.7%	7	2.7%
Park Blvd	5	5.6%	1	0.7%	1	2.7%	7	2.7%
Parker Rd	2	2.2%	2	1.5%	0	0.0%	4	1.5%
Spring Creek Pkwy/Windhaven Pkwy	1	1.1%	2	1.5%	0	0.0%	3	1.1%
Legacy Dr	3	3.3%	4	3.0%	2	5.4%	9	3.4%
Headquarters Dr	0	0.0%	3	2.2%	1	2.7%	4	1.5%
Sam Rayburn Tollway (SRT)	2	2.2%	4	3.0%	5	13.5%	11	4.2%
Gaylord Pkwy	0	0.0%	1	0.7%	0	0.0%	1	0.4%
Lebanon Rd	1	1.1%	2	1.5%	0	0.0%	3	1.1%
Cotton Gin Rd/Main St	0	0.0%	0	0.0%	1	2.7%	1	0.4%
Eldorado Pkwy (FM 2934)	1	1.1%	0	0.0%	0	0.0%	1	0.4%
US 380	3	3.3%	1	0.7%	0	0.0%	4	1.5%

Alternate route off ramp: Dallas North Tollway



NTTA System Wide Study Page D24

North of US 380/Dallas Pkwy	1	1.1%	0	0.0%	1	2.7%	2	0.8%
Subtotal	90	100.0%	135	100.0%	37	100.0%	262	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	507	0.0%	599	0.0%	228	0.0%	1,334	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route on ramp: President George Bush Turnpike (PGBT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SH 183 (Airport Fwy)/PGBT Western Extension	9	8.0%	13	7.6%	15	28.8%	37	11.0%
Walnut Hill Lane	1	0.9%	3	1.8%	0	0.0%	4	1.2%
North Belt Line Road	2	1.8%	2	1.2%	3	5.8%	7	2.1%
SH 114/Royal Lane	1	0.9%	2	1.2%	1	1.9%	4	1.2%
Macarthur Boulevard	5	4.5%	2	1.2%	1	1.9%	8	2.4%
Las Colinas Boulevard	0	0.0%	2	1.2%	0	0.0%	2	0.6%
LBJ Freeway (IH 635)	3	2.7%	6	3.5%	1	1.9%	10	3.0%
Valley View Lane	0	0.0%	0	0.0%	1	1.9%	1	0.3%
W Belt Line Road/Luna Road	5	4.5%	1	0.6%	0	0.0%	6	1.8%
Sandy Lake Road	0	0.0%	4	2.3%	0	0.0%	4	1.2%
IH 35E (Stemmons Fwy)	6	5.4%	16	9.4%	6	11.5%	28	8.4%
Old Denton Road	1	0.9%	3	1.8%	0	0.0%	4	1.2%
Josey Lane	0	0.0%	4	2.3%	0	0.0%	4	1.2%
Kelly Boulevard	1	0.9%	0	0.0%	0	0.0%	1	0.3%
Frankford Road/Marsh Lane	1	0.9%	6	3.5%	0	0.0%	7	2.1%
Rosemeade Parkway/Midway Road	3	2.7%	4	2.3%	1	1.9%	8	2.4%
Dallas North Tollway (DNT)	16	14.3%	21	12.3%	4	7.7%	41	12.2%
Preston Road	3	2.7%	5	2.9%	0	0.0%	8	2.4%
Coit Road	3	2.7%	8	4.7%	3	5.8%	14	4.2%
Independence Parkway/Waterview Parkway	2	1.8%	4	2.3%	2	3.8%	8	2.4%
Custer Parkway	3	2.7%	6	3.5%	1	1.9%	10	3.0%
Alma Drive	1	0.9%	0	0.0%	0	0.0%	1	0.3%
US 75 (Central Expy)	13	11.6%	19	11.1%	9	17.3%	41	12.2%
Plano Road/K Avenue	0	0.0%	1	0.6%	0	0.0%	1	0.3%
Jupiter Road	7	6.3%	10	5.8%	2	3.8%	19	5.7%



NTTA System Wide Study Page D25

Renner Road	3	2.7%	3	1.8%	0	0.0%	6	1.8%
Blackburn Road/Shiloh Road/Lookout Drive	2	1.8%	2	1.2%	0	0.0%	4	1.2%
Campbell Road	0	0.0%	2	1.2%	0	0.0%	2	0.6%
North Garland Ave	4	3.6%	1	0.6%	0	0.0%	5	1.5%
Brand Road	1	0.9%	1	0.6%	0	0.0%	2	0.6%
SH 78 (Lavon Drive)/Firewheel Pkwy	16	14.3%	20	11.7%	2	3.8%	38	11.3%
Subtotal	112	100.0%	171	100.0%	52	100.0%	335	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	485	0.0%	563	0.0%	213	0.0%	1,261	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route off ramp: President George Bush Turnpike (PGBT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SH 183 (Airport Fwy)/PGBT Western Extension	2	1.8%	12	7.0%	1	1.9%	15	4.5%
Rochelle Road	1	0.9%	0	0.0%	1	1.9%	2	0.6%
Northgate Drive	0	0.0%	0	0.0%	1	1.9%	1	0.3%
Walnut Hill Lane	1	0.9%	3	1.8%	0	0.0%	4	1.2%
North Belt Line Road	3	2.7%	4	2.3%	2	3.8%	9	2.7%
Gateway Drive	0	0.0%	3	1.8%	0	0.0%	3	0.9%
SH 114/Royal Lane	4	3.6%	3	1.8%	0	0.0%	7	2.1%
Macarthur Boulevard	2	1.8%	4	2.3%	4	7.7%	10	3.0%
Las Colinas Boulevard	2	1.8%	3	1.8%	1	1.9%	6	1.8%
LBJ Freeway (IH 635)	8	7.1%	12	7.0%	2	3.8%	22	6.6%
Valley View Lane	3	2.7%	0	0.0%	0	0.0%	3	0.9%
W Belt Line Road/Luna Road	0	0.0%	5	2.9%	0	0.0%	5	1.5%
IH 35E (Stemmons Fwy)	10	8.9%	13	7.6%	4	7.7%	27	8.1%
Old Denton Road	0	0.0%	2	1.2%	1	1.9%	3	0.9%
Josey Lane	3	2.7%	1	0.6%	1	1.9%	5	1.5%
Frankford Road/Marsh Lane	2	1.8%	1	0.6%	1	1.9%	4	1.2%
Rosemeade Parkway/Midway Road	1	0.9%	2	1.2%	0	0.0%	3	0.9%
Dallas North Tollway (DNT)	11	9.8%	26	15.2%	9	17.3%	46	13.7%
Preston Road	3	2.7%	4	2.3%	4	7.7%	11	3.3%
Coit Road	5	4.5%	9	5.3%	0	0.0%	14	4.2%



Independence								
Parkway/Waterview	8	7.1%	15	8.8%	1	1.9%	24	7.2%
Parkway								
Custer Parkway	5	4.5%	2	1.2%	0	0.0%	7	2.1%
Alma Drive	1	0.9%	0	0.0%	0	0.0%	1	0.3%
US 75 (Central Expy)	26	23.2%	30	17.5%	8	15.4%	64	19.1%
Plano Road/K Avenue	0	0.0%	4	2.3%	0	0.0%	4	1.2%
Jupiter Road	2	1.8%	5	2.9%	3	5.8%	10	3.0%
Renner Road	2	1.8%	1	0.6%	0	0.0%	3	0.9%
Campbell Road	1	0.9%	0	0.0%	1	1.9%	2	0.6%
North Garland Ave	1	0.9%	3	1.8%	2	3.8%	6	1.8%
SH 78 (Lavon Drive)/Firewheel Pkwy	5	4.5%	4	2.3%	5	9.6%	14	4.2%
Subtotal	112	100.0%	171	100.0%	52	100.0%	335	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	485	0.0%	563	0.0%	213	0.0%	1,261	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SRT/Denton Tap	4	10.3%	7	13.2%	1	4.5%	12	10.5%
Lake Vista	0	0.0%	0	0.0%	1	4.5%	1	0.9%
IH 35E/Huffines/Hebron	7	17.9%	4	7.5%	4	18.2%	15	13.2%
FM 544	1	2.6%	0	0.0%	0	0.0%	1	0.9%
FM 2281	0	0.0%	0	0.0%	1	4.5%	1	0.9%
Standridge	0	0.0%	1	1.9%	0	0.0%	1	0.9%
Josey	4	10.3%	1	1.9%	0	0.0%	5	4.4%
Plano Pkwy	3	7.7%	1	1.9%	1	4.5%	5	4.4%
Spring Creek	0	0.0%	1	1.9%	0	0.0%	1	0.9%
DNT/Parkwood	1	2.6%	3	5.7%	4	18.2%	8	7.0%
Preston	2	5.1%	0	0.0%	0	0.0%	2	1.8%
Ohio	1	2.6%	0	0.0%	0	0.0%	1	0.9%
Hillcrest	0	0.0%	1	1.9%	0	0.0%	1	0.9%
Coit	0	0.0%	6	11.3%	1	4.5%	7	6.1%
Independence	0	0.0%	2	3.8%	2	9.1%	4	3.5%
Custer	4	10.3%	7	13.2%	1	4.5%	12	10.5%
Exchange	1	2.6%	1	1.9%	0	0.0%	2	1.8%
Alma	2	5.1%	0	0.0%	0	0.0%	2	1.8%
Stacy	1	2.6%	1	1.9%	1	4.5%	3	2.6%
Lake Forest	0	0.0%	3	5.7%	1	4.5%	4	3.5%
Hardin	0	0.0%	3	5.7%	0	0.0%	3	2.6%
US 75	8	20.5%	11	20.8%	4	18.2%	23	20.2%
Subtotal	39	100.0%	53	100.0%	22	100.0%	114	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	558	0.0%	681	0.0%	243	0.0%	1,482	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route on ramp: Sam Rayburn Tollway (SRT)



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
SRT/Denton Tap	4	10.3%	4	7.5%	3	13.6%	11	9.6%
Macarthur	3	7.7%	4	7.5%	0	0.0%	7	6.1%
IH 35E/Huffines/Hebron	11	28.2%	5	9.4%	3	13.6%	19	16.7%
FM 2281	1	2.6%	0	0.0%	1	4.5%	2	1.8%
Standridge	1	2.6%	0	0.0%	2	9.1%	3	2.6%
Josey	0	0.0%	3	5.7%	0	0.0%	3	2.6%
Plano Pkwy	3	7.7%	1	1.9%	0	0.0%	4	3.5%
Spring Creek	1	2.6%	1	1.9%	0	0.0%	2	1.8%
Legacy	1	2.6%	1	1.9%	0	0.0%	2	1.8%
DNT/Parkwood	3	7.7%	17	32.1%	1	4.5%	21	18.4%
Preston	3	7.7%	2	3.8%	1	4.5%	6	5.3%
Ohio	1	2.6%	0	0.0%	1	4.5%	2	1.8%
Coit	1	2.6%	1	1.9%	0	0.0%	2	1.8%
Independence	0	0.0%	3	5.7%	1	4.5%	4	3.5%
Custer	1	2.6%	1	1.9%	0	0.0%	2	1.8%
Alma	0	0.0%	2	3.8%	1	4.5%	3	2.6%
Stacy	0	0.0%	1	1.9%	1	4.5%	2	1.8%
Lake Forest	1	2.6%	1	1.9%	2	9.1%	4	3.5%
Hardin	0	0.0%	0	0.0%	1	4.5%	1	0.9%
US 75	4	10.3%	6	11.3%	4	18.2%	14	12.3%
Subtotal	39	100.0%	53	100.0%	22	100.0%	114	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	558	0.0%	681	0.0%	243	0.0%	1,482	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route off ramp: Sam Rayburn Tollway (SRT)



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
South of IH 30/PGBT WE Frontage	10	45.5%	7	17.5%	5	41.7%	22	29.7%
IH 30	3	13.6%	6	15.0%	2	16.7%	11	14.9%
Egyptian Way	0	0.0%	2	5.0%	0	0.0%	2	2.7%
Carrier Parkway	2	9.1%	8	20.0%	0	0.0%	10	13.5%
Lower Tarrant Road	0	0.0%	0	0.0%	1	8.3%	1	1.4%
Oakdale Road	0	0.0%	1	2.5%	0	0.0%	1	1.4%
Trinity Boulevard	0	0.0%	1	2.5%	0	0.0%	1	1.4%
Shady Grove Road	0	0.0%	2	5.0%	0	0.0%	2	2.7%
Conflans Road	0	0.0%	0	0.0%	1	8.3%	1	1.4%
SH 183 (Airport Fwy)/President George Bush Turnpike	7	31.8%	13	32.5%	3	25.0%	23	31.1%
Subtotal	22	100.0%	40	100.0%	12	100.0%	74	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	575	0.0%	694	0.0%	253	0.0%	1,522	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route on ramp: PGBT Western Extension (PGBT WE)



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
South of IH 30/PGBT WE Frontage	2	9.1%	3	7.5%	1	8.3%	6	8.1%
IH 30	5	22.7%	7	17.5%	0	0.0%	12	16.2%
Egyptian Way	0	0.0%	2	5.0%	3	25.0%	5	6.8%
Carrier Parkway	0	0.0%	3	7.5%	0	0.0%	3	4.1%
Lower Tarrant Road	2	9.1%	1	2.5%	1	8.3%	4	5.4%
Trinity Boulevard	2	9.1%	1	2.5%	1	8.3%	4	5.4%
Shady Grove Road	0	0.0%	4	10.0%	0	0.0%	4	5.4%
Rock Island Road	0	0.0%	4	10.0%	0	0.0%	4	5.4%
Conflans Road	1	4.5%	2	5.0%	0	0.0%	3	4.1%
SH 183 (Airport Fwy)/President George Bush Turnpike	10	45.5%	13	32.5%	6	50.0%	29	39.2%
Subtotal	22	100.0%	40	100.0%	12	100.0%	74	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Could not have used this NTTA facility	575	0.0%	694	0.0%	253	0.0%	1,522	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route off ramp: PGBT Western Extension (PGBT WE)

Alternate route distance: Dallas North Tollway

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	30	33.3%	42	31.1%	13	35.1%	85	32.4%
5 to 9.99 miles	32	35.6%	55	40.7%	12	32.4%	99	37.8%
10 to 14.99 miles	18	20.0%	26	19.3%	8	21.6%	52	19.8%
15 to 19.99 miles	5	5.6%	7	5.2%	2	5.4%	14	5.3%
20 to 24.99 miles	3	3.3%	4	3.0%	0	0.0%	7	2.7%
25 miles or more	2	2.2%	1	0.7%	2	5.4%	5	1.9%
Subtotal	90	100.0%	135	100.0%	37	100.0%	262	100.0%
Already use an NTTA facility	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Did not select this facility as an alternate route	507	0.0%	599	0.0%	228	0.0%	1,334	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	33	29.5%	43	25.1%	13	25.0%	89	26.6%
5 to 9.99 miles	54	48.2%	72	42.1%	26	50.0%	152	45.4%
10 to 14.99 miles	12	10.7%	23	13.5%	6	11.5%	41	12.2%
15 to 19.99 miles	3	2.7%	12	7.0%	1	1.9%	16	4.8%
20 to 24.99 miles	7	6.3%	11	6.4%	4	7.7%	22	6.6%
25 miles or more	3	2.7%	10	5.8%	2	3.8%	15	4.5%
Subtotal	112	100.0%	171	100.0%	52	100.0%	335	100.0%
Already use an NTTA facility	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Did not select this facility as an alternate route	485	0.0%	563	0.0%	213	0.0%	1,261	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route distance: President George Bush Turnpike (PGBT)

Alternate route distance: Sam Rayburn Tollway (SRT)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	19	48.7%	23	43.4%	12	54.5%	54	47.4%
5 to 9.99 miles	10	25.6%	19	35.8%	6	27.3%	35	30.7%
10 to 14.99 miles	5	12.8%	9	17.0%	4	18.2%	18	15.8%
15 to 19.99 miles	1	2.6%	1	1.9%	0	0.0%	2	1.8%
20 to 24.99 miles	4	10.3%	1	1.9%	0	0.0%	5	4.4%
Subtotal	39	100.0%	53	100.0%	22	100.0%	114	100.0%
Already use an NTTA facility	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Did not select this facility as an alternate route	558	0.0%	681	0.0%	243	0.0%	1,482	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Alternate route distance: PGBT Western Extension (PGBT WE)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than 5 miles	9	40.9%	26	65.0%	5	41.7%	40	54.1%
5 to 9.99 miles	13	59.1%	14	35.0%	7	58.3%	34	45.9%
Subtotal	22	100.0%	40	100.0%	12	100.0%	74	100.0%
Already use an NTTA facility	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Did not select this facility as an alternate route	575	0.0%	694	0.0%	253	0.0%	1,522	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
There is no NTTA toll road available for my trip	203	34.0%	232	31.6%	92	34.7%	527	33.0%
Current route is more convenient	173	29.0%	169	23.0%	58	21.9%	400	25.1%
Did not want to pay toll	86	14.4%	99	13.5%	39	14.7%	224	14.0%
Toll route is a longer route	56	9.4%	90	12.3%	37	14.0%	183	11.5%
Tolls are too high	30	5.0%	63	8.6%	14	5.3%	107	6.7%
Current route is more reliable	31	5.2%	39	5.3%	13	4.9%	83	5.2%
Had to make intermediate stops	14	2.3%	21	2.9%	7	2.6%	42	2.6%
It is too congested	4	0.7%	21	2.9%	5	1.9%	30	1.9%
Subtotal	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%
Already an NTTA facility user	916	0.0%	1,112	0.0%	500	0.0%	2,528	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Reason for not using an NTTA facility

Paid toll on trip

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes	721	78.7%	960	86.3%	400	80.0%	2,081	82.3%
No	195	21.3%	152	13.7%	100	20.0%	447	17.7%
Subtotal	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%
Did not use an NTTA facility	597	0.0%	734	0.0%	265	0.0%	1,596	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than \$1.00	90	12.5%	106	11.0%	51	12.8%	247	11.9%
\$1.00 to \$1.99	223	30.9%	278	29.0%	101	25.3%	602	28.9%
\$2.00 to \$2.99	203	28.2%	272	28.3%	116	29.0%	591	28.4%
\$3.00 to \$3.99	130	18.0%	178	18.5%	87	21.8%	395	19.0%
\$4.00 to \$4.99	48	6.7%	82	8.5%	23	5.8%	153	7.4%
\$5.00 to \$5.99	18	2.5%	32	3.3%	13	3.3%	63	3.0%
\$6.00 or more	9	1.2%	12	1.3%	9	2.3%	30	1.4%
Subtotal	721	100.0%	960	100.0%	400	100.0%	2,081	100.0%
Did not use an NTTA facility	597	0.0%	734	0.0%	265	0.0%	1,596	0.0%
Did not pay a toll	195	0.0%	152	0.0%	100	0.0%	447	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Toll amount paid

Payer of toll										
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
I paid the toll	656	91.0%	901	93.9%	375	93.8%	1,932	92.8%		
I paid the toll, but it will be reimbursed	39	5.4%	41	4.3%	12	3.0%	92	4.4%		
Someone else paid the toll	26	3.6%	18	1.9%	13	3.3%	57	2.7%		
Subtotal	721	100.0%	960	100.0%	400	100.0%	2,081	100.0%		
Did not use an NTTA facility	597	0.0%	734	0.0%	265	0.0%	1,596	0.0%		
Did not pay a toll	195	0.0%	152	0.0%	100	0.0%	447	0.0%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		



	Off-peak Al			AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
6 or more times per week	21	2.3%	76	6.8%	14	2.8%	111	4.4%
4-5 times per week	167	18.2%	609	54.8%	111	22.2%	887	35.1%
2-3 times per week	105	11.5%	106	9.5%	65	13.0%	276	10.9%
1 time per week	82	9.0%	53	4.8%	52	10.4%	187	7.4%
2-3 times per month	146	15.9%	72	6.5%	82	16.4%	300	11.9%
1 time per month	102	11.1%	61	5.5%	41	8.2%	204	8.1%
Less than 1 time per month	293	32.0%	135	12.1%	135	27.0%	563	22.3%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%

Weekday trip frequency (NTTA users)

Weekday trip frequency (NTTA non-users)

		Off-peak		AM peak		PM peak	Tota	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
6 or more times per week	17	2.8%	37	5.0%	2	0.8%	56	3.5%
4-5 times per week	117	19.6%	420	57.2%	54	20.4%	591	37.0%
2-3 times per week	72	12.1%	62	8.4%	27	10.2%	161	10.1%
1 time per week	49	8.2%	38	5.2%	31	11.7%	118	7.4%
2-3 times per month	84	14.1%	43	5.9%	51	19.2%	178	11.2%
1 time per month	62	10.4%	38	5.2%	28	10.6%	128	8.0%
Less than 1 time per month	196	32.8%	96	13.1%	72	27.2%	364	22.8%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%



	Weekend trip frequency (NTTA users)									
		Off-peak		AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
More than 3 times per weekend	6	0.7%	11	1.0%	4	0.8%	21	0.8%		
2-3 times per weekend	68	7.4%	53	4.8%	48	9.6%	169	6.7%		
1 time per weekend	92	10.0%	102	9.2%	51	10.2%	245	9.7%		
2-3 times per month	130	14.2%	219	19.7%	95	19.0%	444	17.6%		
1 time per month	109	11.9%	154	13.8%	71	14.2%	334	13.2%		
Less than 1 time per month	257	28.1%	321	28.9%	139	27.8%	717	28.4%		
Never	254	27.7%	252	22.7%	92	18.4%	598	23.7%		
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%		

Weekend trip frequency (NTTA non-users)

			• •	•				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
More than 3 times per weekend	5	0.8%	8	1.1%	0	0.0%	13	0.8%
2-3 times per weekend	32	5.4%	30	4.1%	21	7.9%	83	5.2%
1 time per weekend	75	12.6%	73	9.9%	34	12.8%	182	11.4%
2-3 times per month	84	14.1%	134	18.3%	58	21.9%	276	17.3%
1 time per month	69	11.6%	117	15.9%	34	12.8%	220	13.8%
Less than 1 time per month	175	29.3%	218	29.7%	74	27.9%	467	29.3%
Never	157	26.3%	154	21.0%	44	16.6%	355	22.2%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%

Sources of information before trip (select all that apply)

					-			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Radio	235	15.5%	633	34.3%	147	19.2%	1,015	24.6%
TV	154	10.2%	474	25.7%	56	7.3%	684	16.6%
Internet (Google Maps, Map Quest, news station website, etc.) CPS unit	183	12.1%	205	11.1%	119	15.6%	507	12.3%
GPS unit	141	9.3%	164	8.9%	84	11.0%	389	9.4%
Cell phone (text message or other phone service)	82	5.4%	105	5.7%	57	7.5%	244	5.9%
Word of mouth (talking to a friend, colleague, etc. on the phone)	42	2.8%	48	2.6%	29	3.8%	119	2.9%
Other	17	1.1%	14	0.8%	14	1.8%	45	1.1%
None of the above	925	61.1%	686	37.2%	394	51.5%	2,005	48.6%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
The information about traffic conditions did not affect my travel plans	412	70.1%	762	65.7%	240	64.7%	1,414	66.7%
Used a different road/route than originally planned	106	18.0%	253	21.8%	74	19.9%	433	20.4%
Began my trip at a new time	78	13.3%	190	16.4%	58	15.6%	326	15.4%
Changed where I was going (went to a different location)	14	2.4%	15	1.3%	7	1.9%	36	1.7%
Decided to carpool instead of drive alone	7	1.2%	12	1.0%	4	1.1%	23	1.1%

How did trip change because of information (select all that apply)

Sources of information during trip (select all that apply)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Radio	395	26.1%	976	52.9%	257	33.6%	1,628	39.5%
GPS unit	156	10.3%	179	9.7%	86	11.2%	421	10.2%
Cell phone (text message or other phone service)	88	5.8%	118	6.4%	61	8.0%	267	6.5%
Electronic message signs along the roadway	62	4.1%	85	4.6%	46	6.0%	193	4.7%
Word of mouth (talking to a friend, colleague, etc. on the phone)	27	1.8%	41	2.2%	17	2.2%	85	2.1%
Other	10	0.7%	16	0.9%	9	1.2%	35	0.8%
None of the above	888	58.7%	658	35.6%	371	48.5%	1,917	46.5%



2.0 GAMES

	Num	ber of time	es alterna	tive 1 was	chosen			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0	36	2.4%	131	7.1%	62	8.1%	229	5.6%
1	30	2.0%	114	6.2%	67	8.8%	211	5.1%
2	69	4.6%	149	8.1%	66	8.6%	284	6.9%
3	124	8.2%	183	9.9%	86	11.2%	393	9.5%
4	188	12.4%	237	12.8%	91	11.9%	516	12.5%
5	223	14.7%	266	14.4%	112	14.6%	601	14.6%
6	260	17.2%	269	14.6%	93	12.2%	622	15.1%
7	275	18.2%	231	12.5%	82	10.7%	588	14.3%
8	308	20.4%	266	14.4%	106	13.9%	680	16.5%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Number of times alternative 2 was chosen

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0	308	20.4%	545	29.5%	269	35.2%	1,122	27.2%
1	275	18.2%	329	17.8%	134	17.5%	738	17.9%
2	260	17.2%	289	15.7%	104	13.6%	653	15.8%
3	223	14.7%	231	12.5%	84	11.0%	538	13.0%
4	188	12.4%	177	9.6%	62	8.1%	427	10.4%
5	124	8.2%	116	6.3%	52	6.8%	292	7.1%
6	69	4.6%	76	4.1%	25	3.3%	170	4.1%
7	30	2.0%	41	2.2%	17	2.2%	88	2.1%
8	36	2.4%	42	2.3%	18	2.4%	96	2.3%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



	Num	ber of thin	es altel lla	uve 5 was	schosen			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0	1,513	100.0%	1,285	69.6%	451	59.0%	3,249	78.8%
1	0	0.0%	76	4.1%	41	5.4%	117	2.8%
2	0	0.0%	90	4.9%	48	6.3%	138	3.3%
3	0	0.0%	92	5.0%	49	6.4%	141	3.4%
4	0	0.0%	87	4.7%	49	6.4%	136	3.3%
5	0	0.0%	80	4.3%	51	6.7%	131	3.2%
6	0	0.0%	60	3.3%	37	4.8%	97	2.4%
7	0	0.0%	45	2.4%	25	3.3%	70	1.7%
8	0	0.0%	31	1.7%	14	1.8%	45	1.1%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Number of times alternative 3 was chosen

Variance during SP experiments

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Traded off	1,169	77.3%	1,507	81.6%	627	82.0%	3,303	80.1%
Invariant on current route	308	20.4%	266	14.4%	106	13.9%	680	16.5%
Invariant on alternate tolled route	36	2.4%	42	2.3%	18	2.4%	96	2.3%
Invariant on alternate tolled route with departure time shift	0	0.0%	31	1.7%	14	1.8%	45	1.1%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

3.0 **OPINIONS**

Direction willing to shift trip time								
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Travel after the peak	0	0.0%	274	48.8%	209	66.6%	483	55.2%
Travel before the peak	0	0.0%	287	51.2%	105	33.4%	392	44.8%
Subtotal	0	0.0%	561	100.0%	314	100.0%	875	100.0%
Did not see the time shift alternative	1,513	0.0%	765 ²	0.0%	260 ²	0.0%	2,538	0.0%
Did not choose the time shift alternative	0	0.0%	520	0.0%	191	0.0%	711	0.0%
Total	1,513	0.0%	1,846	100.0%	765	100.0%	4,124	100.0%

² For the purposes of the stated preference experiments, the time shift alternative was only presented to respondents that reported a departure time between 6:45am and 8:45am or 3:15pm and 6:15pm.



Resource Systems Group, Inc. July 2011

	Reason	of nevel 3	electing t	ne antei na				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Time savings not worth the toll cost	141	45.8%	99	37.2%	38	35.8%	278	40.9%
Tolls are too high	81	26.3%	89	33.5%	34	32.1%	204	30.0%
Opposed to paying tolls	18	5.8%	30	11.3%	13	12.3%	61	9.0%
Opposed to toll roads in general	21	6.8%	14	5.3%	8	7.5%	43	6.3%
Not enough time savings	21	6.8%	12	4.5%	6	5.7%	39	5.7%
It is too congested	3	1.0%	3	1.1%	2	1.9%	8	1.2%
Other	23	7.5%	19	7.1%	5	4.7%	47	6.9%
Subtotal	308	100.0%	266	100.0%	106	100.0%	680	100.0%
Selected a toll route at least once	1,205	0.0%	1,580	0.0%	659	0.0%	3,444	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Reason for never selecting the alternate toll route

If does not own an ETC, payment method likelihood

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Very likely to get a TollTag account to pay the toll	98	40.2%	126	52.7%	46	34.3%	270	43.8%
Somewhat likely to get a TollTag account to pay the toll	45	18.4%	43	18.0%	31	23.1%	119	19.3%
Not sure	51	20.9%	34	14.2%	28	20.9%	113	18.3%
Somewhat likely to pay with ZipCash	17	7.0%	14	5.9%	13	9.7%	44	7.1%
Very likely to pay with ZipCash	33	13.5%	22	9.2%	16	11.9%	71	11.5%
Subtotal	244	100.0%	239	100.0%	134	100.0%	617	100.0%
Already has an ETC transponder device or was invariant on their current route	1,269	0.0%	1,607	0.0%	631	0.0%	3,507	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



			0 ,	0	0	1		
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Won't use the toll road often enough	68	67.3%	39	55.7%	39	68.4%	146	64.0%
Do not want to prepay tolls	10	9.9%	6	8.6%	3	5.3%	19	8.3%
Do not know enough about electronic toll collection	12	11.9%	5	7.1%	3	5.3%	20	8.8%
Too expensive to get a TollTag	3	3.0%	5	7.1%	6	10.5%	14	6.1%
Too difficult to maintain TollTag account	4	4.0%	4	5.7%	1	1.8%	9	3.9%
Concerned about privacy of a TollTag account	1	1.0%	3	4.3%	0	0.0%	4	1.8%
Do not want a transponder in my car	0	0.0%	2	2.9%	1	1.8%	3	1.3%
Other	3	3.0%	6	8.6%	4	7.0%	13	5.7%
Subtotal	101	100.0%	70	100.0%	57	100.0%	228	100.0%
Already has an ETC transponder device or was invariant on their current route	1,269	0.0%	1,607	0.0%	631	0.0%	3,507	0.0%
Would be likely to get a TolLTag account	143	0.0%	169	0.0%	77	0.0%	389	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Main reason for not being likely to get a TollTag transponder



Important reasons in route decision (se	elect all that apply)
---	-----------------------

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
The route is the most direct way between my starting and ending locations	1,056	69.8%	1,252	67.8%	500	65.4%	2,808	68.1%
There are the fewest number of traffic lights and stop signs on my route	912	60.3%	1,144	62.0%	466	60.9%	2,522	61.2%
Roads are well maintained	864	57.1%	1,042	56.4%	444	58.0%	2,350	57.0%
It is the easiest route for me to drive	847	56.0%	1,014	54.9%	383	50.1%	2,244	54.4%
The maximum speed limit	659	43.6%	858	46.5%	356	46.5%	1,873	45.4%
I feel safe while driving on my route	687	45.4%	799	43.3%	359	46.9%	1,845	44.7%
Roads are well lit at night	542	35.8%	568	30.8%	283	37.0%	1,393	33.8%
There are signs providing real-time information on traffic conditions	341	22.5%	450	24.4%	180	23.5%	971	23.5%
None of the above	28	1.9%	31	1.7%	15	2.0%	74	1.8%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
The route is the most direct way between my starting and ending locations	567	38.2%	636	35.0%	265	35.3%	1,468	36.2%
There are the fewest number of traffic lights and stop signs on my route	266	17.9%	355	19.6%	149	19.9%	770	19.0%
It is the easiest route for me to drive	265	17.8%	340	18.7%	116	15.5%	721	17.8%
I feel safe while driving on my route	159	10.7%	179	9.9%	79	10.5%	417	10.3%
The maximum speed limit	112	7.5%	150	8.3%	60	8.0%	322	8.0%
Roads are well maintained	82	5.5%	106	5.8%	54	7.2%	242	6.0%
Roads are well lit at night	21	1.4%	22	1.2%	16	2.1%	59	1.5%
There are signs providing real-time information on traffic conditions	13	0.9%	27	1.5%	11	1.5%	51	1.3%
Subtotal	1,485	100.0%	1,815	100.0%	750	100.0%	4,050	100.0%
None of the above	28	0.0%	31	0.0%	15	0.0%	74	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Most important factor in route decision

I would be willing to pay a toll if it guarantees a reliable travel time for my trip every day

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	306	20.2%	392	21.2%	164	21.4%	862	20.9%
Agree	617	40.8%	817	44.3%	308	40.3%	1,742	42.2%
Neutral	357	23.6%	361	19.6%	167	21.8%	885	21.5%
Disagree	149	9.8%	175	9.5%	81	10.6%	405	9.8%
Strongly disagree	84	5.6%	101	5.5%	45	5.9%	230	5.6%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	709	46.9%	980	53.1%	358	46.8%	2,047	49.6%
Agree	578	38.2%	660	35.8%	306	40.0%	1,544	37.4%
Neutral	156	10.3%	141	7.6%	78	10.2%	375	9.1%
Disagree	53	3.5%	40	2.2%	18	2.4%	111	2.7%
Strongly disagree	17	1.1%	25	1.4%	5	0.7%	47	1.1%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

It bothers me when traffic congestion adds 15 or 20 minutes to my trip

I regularly change my driving schedule in order to avoid traffic congestion

	Off-peak			AM peak		PM peak		Total		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent		
Strongly agree	220	14.5%	300	16.3%	140	18.3%	660	16.0%		
Agree	508	33.6%	554	30.0%	274	35.8%	1,336	32.4%		
Neutral	352	23.3%	391	21.2%	158	20.7%	901	21.8%		
Disagree	326	21.5%	436	23.6%	149	19.5%	911	22.1%		
Strongly disagree	107	7.1%	165	8.9%	44	5.8%	316	7.7%		
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%		

I regularly change my route in order to avoid traffic congestion

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	258	17.1%	336	18.2%	174	22.7%	768	18.6%
Agree	572	37.8%	662	35.9%	311	40.7%	1,545	37.5%
Neutral	344	22.7%	379	20.5%	143	18.7%	866	21.0%
Disagree	260	17.2%	337	18.3%	105	13.7%	702	17.0%
Strongly disagree	79	5.2%	132	7.2%	32	4.2%	243	5.9%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

Traffic congestion is just a way of life in the Dallas/Fort Worth area and something you learn to live with

	Off-peak			AM peak		PM peak		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	182	12.0%	227	12.3%	92	12.0%	501	12.1%
Agree	714	47.2%	872	47.2%	349	45.6%	1,935	46.9%
Neutral	309	20.4%	344	18.6%	174	22.7%	827	20.1%
Disagree	243	16.1%	295	16.0%	106	13.9%	644	15.6%
Strongly disagree	65	4.3%	108	5.9%	44	5.8%	217	5.3%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	574	37.9%	699	37.9%	276	36.1%	1,549	37.6%
Agree	708	46.8%	902	48.9%	363	47.5%	1,973	47.8%
Neutral	152	10.0%	163	8.8%	76	9.9%	391	9.5%
Disagree	46	3.0%	41	2.2%	25	3.3%	112	2.7%
Strongly disagree	33	2.2%	41	2.2%	25	3.3%	99	2.4%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

I will use a toll route if the tolls are reasonable and I save time

I support using tolls to pay for highway improvements that relieve congestion

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	310	20.5%	380	20.6%	155	20.3%	845	20.5%
Agree	628	41.5%	781	42.3%	327	42.7%	1,736	42.1%
Neutral	336	22.2%	400	21.7%	165	21.6%	901	21.8%
Disagree	143	9.5%	169	9.2%	64	8.4%	376	9.1%
Strongly disagree	96	6.3%	116	6.3%	54	7.1%	266	6.5%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

I can generally afford to pay tolls

	Off-peak			AM peak		PM peak		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	298	19.7%	354	19.2%	152	19.9%	804	19.5%
Agree	711	47.0%	879	47.6%	372	48.6%	1,962	47.6%
Neutral	274	18.1%	325	17.6%	143	18.7%	742	18.0%
Disagree	155	10.2%	224	12.1%	63	8.2%	442	10.7%
Strongly disagree	75	5.0%	64	3.5%	35	4.6%	174	4.2%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Make fewer trips	788	52.1%	925	50.1%	424	55.4%	2,137	51.8%
Combine trips	754	49.8%	953	51.6%	376	49.2%	2,083	50.5%
Eliminate certain trips	565	37.3%	705	38.2%	290	37.9%	1,560	37.8%
Use more direct routes	372	24.6%	461	25.0%	193	25.2%	1,026	24.9%
Travel has not changed because of gas prices	356	23.5%	419	22.7%	153	20.0%	928	22.5%
Make shorter trips	276	18.2%	297	16.1%	140	18.3%	713	17.3%
Use a more fuel efficient vehicle	203	13.4%	295	16.0%	129	16.9%	627	15.2%
Use less congested routes	206	13.6%	252	13.7%	118	15.4%	576	14.0%
Carpool or share rides with friends, family, or coworkers	152	10.0%	186	10.1%	84	11.0%	422	10.2%
Walk or bike more	85	5.6%	74	4.0%	45	5.9%	204	4.9%
Use transit more	49	3.2%	71	3.8%	30	3.9%	150	3.6%
Other	26	1.7%	56	3.0%	16	2.1%	98	2.4%

How has travel changed due to gas prices (select all that apply)

The travel options I was presented with were realistic

	Off-peak			AM peak		PM peak		
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	319	21.1%	323	17.5%	134	17.5%	776	18.8%
Agree	804	53.1%	1,045	56.6%	444	58.0%	2,293	55.6%
Neutral	390	25.8%	478	25.9%	187	24.4%	1,055	25.6%
Disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Strongly disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

I was able to fully understand how to choose a travel option

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	631	41.7%	712	38.6%	296	38.7%	1,639	39.7%
Agree	770	50.9%	997	54.0%	389	50.8%	2,156	52.3%
Neutral	112	7.4%	137	7.4%	80	10.5%	329	8.0%
Disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Strongly disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly agree	565	37.3%	632	34.2%	250	32.7%	1,447	35.1%
Agree	799	52.8%	1,057	57.3%	433	56.6%	2,289	55.5%
Neutral	149	9.8%	157	8.5%	82	10.7%	388	9.4%
Disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Strongly disagree	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

The choices made during the games are how I would behave in real life

4.0 TRAVELER INFORMATION

			Gende	r				
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Female	776	51.3%	949	51.4%	397	51.9%	2,122	51.5%
Male	737	48.7%	897	48.6%	368	48.1%	2,002	48.5%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%

			Age					
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
16-17	1	0.1%	1	0.1%	2	0.3%	4	0.1%
18-24	123	8.1%	79	4.3%	71	9.3%	273	6.6%
25–34	267	17.6%	387	21.0%	161	21.0%	815	19.8%
35-44	283	18.7%	452	24.5%	149	19.5%	884	21.4%
45–54	345	22.8%	483	26.2%	192	25.1%	1,020	24.7%
55-64	321	21.2%	356	19.3%	145	19.0%	822	19.9%
65-74	145	9.6%	74	4.0%	40	5.2%	259	6.3%
75 or older	28	1.9%	14	0.8%	5	0.7%	47	1.1%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



		Етпріоутіє	ent status	(NTTA use	215)			
		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Employed full-time	531	58.0%	865	77.8%	365	73.0%	1,761	69.7%
Retired	124	13.5%	57	5.1%	29	5.8%	210	8.3%
Self-employed	72	7.9%	60	5.4%	25	5.0%	157	6.2%
Employed part-time	61	6.7%	51	4.6%	17	3.4%	129	5.1%
Homemaker	42	4.6%	24	2.2%	24	4.8%	90	3.6%
Not currently employed	36	3.9%	20	1.8%	12	2.4%	68	2.7%
Student and employed	25	2.7%	24	2.2%	10	2.0%	59	2.3%
Student	25	2.7%	11	1.0%	18	3.6%	54	2.1%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%

Employment status (NTTA users)

Employment status (NTTA non-users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Employed full-time	298	49.9%	542	73.8%	160	60.4%	1,000	62.7%
Retired	76	12.7%	38	5.2%	13	4.9%	127	8.0%
Homemaker	69	11.6%	37	5.0%	16	6.0%	122	7.6%
Self-employed	45	7.5%	40	5.4%	19	7.2%	104	6.5%
Employed part-time	28	4.7%	31	4.2%	22	8.3%	81	5.1%
Not currently employed	37	6.2%	22	3.0%	14	5.3%	73	4.6%
Student	26	4.4%	10	1.4%	13	4.9%	49	3.1%
Student and employed	18	3.0%	14	1.9%	8	3.0%	40	2.5%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%

Household size (NTTA users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
1 (I live alone)	146	15.9%	175	15.7%	89	17.8%	410	16.2%
2 people	369	40.3%	415	37.3%	192	38.4%	976	38.6%
3 people	171	18.7%	212	19.1%	95	19.0%	478	18.9%
4 people	151	16.5%	212	19.1%	86	17.2%	449	17.8%
5 or more people	79	8.6%	98	8.8%	38	7.6%	215	8.5%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%



Total
Percent
16.2%
37.2%
19.2%
18.2%
9.2%
100.0%

Household size (NTTA non-users)

Household vehicles (NTTA users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0 (no vehicles)	0	0.0%	0	0.0%	0	0.0%	0	0.0%
1 vehicle	183	20.0%	210	18.9%	113	22.6%	506	20.0%
2 vehicles	451	49.2%	590	53.1%	231	46.2%	1,272	50.3%
3 vehicles	191	20.9%	221	19.9%	102	20.4%	514	20.3%
4 vehicles	70	7.6%	74	6.7%	42	8.4%	186	7.4%
5 or more vehicles	21	2.3%	17	1.5%	12	2.4%	50	2.0%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%

Household vehicles (NTTA non-users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0 (no vehicles)	0	0.0%	0	0.0%	2	0.8%	2	0.1%
1 vehicle	141	23.6%	178	24.3%	78	29.4%	397	24.9%
2 vehicles	296	49.6%	346	47.1%	121	45.7%	763	47.8%
3 vehicles	98	16.4%	149	20.3%	48	18.1%	295	18.5%
4 vehicles	42	7.0%	45	6.1%	12	4.5%	99	6.2%
5 or more vehicles	20	3.4%	16	2.2%	4	1.5%	40	2.5%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%



		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than \$25,000	66	7.2%	38	3.4%	31	6.2%	135	5.3%
\$25,000-\$49,999	158	17.2%	154	13.8%	77	15.4%	389	15.4%
\$50,000-\$74,999	188	20.5%	192	17.3%	89	17.8%	469	18.6%
\$75,000-\$99,999	162	17.7%	211	19.0%	96	19.2%	469	18.6%
\$100,000-\$124,999	158	17.2%	194	17.4%	90	18.0%	442	17.5%
\$125,000-\$149,999	79	8.6%	115	10.3%	35	7.0%	229	9.1%
\$150,000-\$174,999	34	3.7%	73	6.6%	24	4.8%	131	5.2%
\$175,000-\$199,999	20	2.2%	53	4.8%	25	5.0%	98	3.9%
\$200,000-\$249,999	24	2.6%	43	3.9%	19	3.8%	86	3.4%
\$250,000 or more	27	2.9%	39	3.5%	14	2.8%	80	3.2%
Total	916	100.0%	1,112	100.0%	500	100.0%	2,528	100.0%

Annual household income (NTTA users)

Annual household income (NTTA non-users)

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Less than \$25,000	64	10.7%	47	6.4%	32	12.1%	143	9.0%
\$25,000-\$49,999	146	24.5%	124	16.9%	57	21.5%	327	20.5%
\$50,000-\$74,999	133	22.3%	141	19.2%	59	22.3%	333	20.9%
\$75,000-\$99,999	92	15.4%	122	16.6%	46	17.4%	260	16.3%
\$100,000-\$124,999	60	10.1%	117	15.9%	37	14.0%	214	13.4%
\$125,000-\$149,999	42	7.0%	70	9.5%	16	6.0%	128	8.0%
\$150,000-\$174,999	19	3.2%	40	5.4%	7	2.6%	66	4.1%
\$175,000-\$199,999	14	2.3%	24	3.3%	2	0.8%	40	2.5%
\$200,000-\$249,999	16	2.7%	28	3.8%	3	1.1%	47	2.9%
\$250,000 or more	11	1.8%	21	2.9%	6	2.3%	38	2.4%
Total	597	100.0%	734	100.0%	265	100.0%	1,596	100.0%

Wish to enter in the sweepstakes

		Off-peak		AM peak		PM peak		Total
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Yes	1,125	74.4%	1,563	84.7%	578	75.6%	3,266	79.2%
Not eligible	360	23.8%	235	12.7%	173	22.6%	768	18.6%
No	28	1.9%	48	2.6%	14	1.8%	90	2.2%
Total	1,513	100.0%	1,846	100.0%	765	100.0%	4,124	100.0%



This page intentionally left blank.



Appendix A-3

Chisholm Trail Parkway Stated Preference Travel Survey



This page intentionally left blank.


DRAFT REPORT

CHISHOLM TRAIL PARKWAY STATED PREFERENCE SURVEY







PREPARED FOR: NORTH TEXAS TOLLWAY AUTHORITY

SUBMITTED BY: RSG

55 Railroad Row White River Junction, VT 05001 802.295.4999 www.rsginc.com C&M ASSOCIATES

IN COOPERATION WITH:

CHISHOLM TRAIL PARKWAY STATED PREFERENCE SURVEY



PREPARED FOR: NORTH TEXAS TOLLWAY AUTHORITY

CONTENTS

1.0	INTRODUCTION	1
2.0	SURVEY QUESTIONNAIRE	2
	2.1 Introduction and Trip Qualification Questions	2
	2.2 Trip Characteristic Questions	5
	2.3 Stated Preference Questions	8
	2.4 Debrief Questions	2
	2.5 Demographic Questions	3
3.0	SURVEY ADMINISTRATION	3
	3.1 Email Distribution to Tolltag Customers	4
	3.2 Email Distribution to Market Research Panel Members	4
4.0	SURVEY RESULTS	5
	4.1 Trip Characteristic Questions	5
	4.2 Stated Preference Questions	2
	4.3 Debrief Questions	4
	4.4 Demographic Questions	5
5.0	MODEL ESTIMATION	6
	5.1 Methodology and Alternatives	6
	5.2 Identification of Outliers	7
	5.3 Model Specification	7
	5.4 Values of Time	2
6.0	CONCLUSIONS	2

List of Figures

FIGURE 1-1: STUDY AREA MAP	1
FIGURE 2-1: SAMPLE SURVEY SCREEN: TRIP QUALIFICATION I	4
FIGURE 2-2: SAMPLE SURVEY SCREEN: TRIP QUALIFICATION II	4
FIGURE 2-3: SAMPLE SURVEY SCREEN: ROAD(S) USED	6
FIGURE 2-4: SAMPLE SURVEY SCREEN: TRIP ORIGIN LOCATION	7
FIGURE 2-5: SAMPLE SURVEY SCREEN: TRAVEL TIME WITHOUT DELAY	8
FIGURE 2-6: SAMPLE SURVEY SCREEN: PROJECT INFORMATION	9
FIGURE 2-7: SAMPLE SURVEY SCREEN: PAYMENT INFORMATION	9
FIGURE 2-8: SAMPLE SURVEY SCREEN: STATED PREFERENCE QUESTION	. 10
FIGURE 2-9: SAMPLE SURVEY SCREEN: TOLL ATTITUDE STATEMENTS	. 13
FIGURE 4-1: TRIP PURPOSE	. 16
FIGURE 4-2: TRIP ORIGINS BY DISTANCE TRAVELED	. 18
FIGURE 4-3: TRIP DESTINATIONS BY DISTANCE TRAVELED	. 19
FIGURE 4-4: ON/OFF RAMPS	. 20
FIGURE 4-5: VEHICLE OCCUPANY	. 21
FIGURE 4-6: FREQUENCY BY TRIP PURPOSE	. 21
FIGURE 4-7: ETC OWNERSHIP BY USER TYPE	. 22
FIGURE 4-8: TOLL ALTERNATIVE SELECTION BY TOLL COST	. 23
FIGURE 4-9: TOLL ALTERNATIVE SELECTION BY TIME SAVINGS	. 24
FIGURE 4-10: REASON FOR NEVER CHOOSING TOLL ALTERNATIVE	. 25
FIGURE 4-11: ATTITUDE STATEMENTS ABOUT TOLLS AND CONGESTION	. 25
FIGURE 4-12: ANNUAL HOUSEHOLD INCOME	. 26

List of Tables

TABLE 2-1: ATTRIBUTE LEVELS FOR CHISHOLM TRAIL PARKWAY UERS	. 11
TABLE 2-2: ATTRIBUTE LEVELS FOR POTENTIAL CHISHOLM TRAIL PARKWAY USERS	. 12
TABLE 3-1: COMPLETE SURVEYS BY SURVEY OUTREACH METHOD	. 14
TABLE 4-1: NUMBER OF COMPLETE SURVEYS BY TRAVELER TYPE	. 15
TABLE 4-2: NUMBER OF REPORTED TRIPS BY TRIP PURPOSE AND TRIP LOCATION	. 16
TABLE 4-3: ORIGIN AND DESTINATION LOCATIONS	. 17
TABLE 4-4: REPORTED TRAVEL TIME AND CALCULATED TRIP DISTANCE BY PURPOSE	. 20
TABLE 4-5: STATED PREFERENCE CHOICE BY ALTERNATIVE AVAILABILITY	. 22
TABLE 5-1: MODEL COEFFICIENTS: AGGREGATE MODEL	. 29
TABLE 5-2: MODEL COEFFICIENTS: HOME-BASED WORK TRIPS	. 30
TABLE 5-3: MODEL COEFFICIENTS: HOME-BASED NON-WORK TRIPS	. 31
TABLE 5-4: MODEL COEFFICIENTS: NON-HOME-BASED TRIPS	. 31
TABLE 5-5: VALUES OF TIME	. 32

1.0 INTRODUCTION

The North Texas Tollway Authority (NTTA), in collaboration with C&M Associates, is evaluating the traffic and revenue potential of the Chisholm Trail Parkway, a north-south corridor connecting downtown Fort Worth, TX in the north to Cleburne, TX in the south. The Parkway is a 27.6 mile controlled-access toll road in Tarrant and Johnson counties along the extension of SH 121 as shown in **Figure 1-1**. This relatively new corridor was open to traffic and tolling in May of 2014. In the fall of 2014, Resource Systems Group, Inc. (RSG) conducted a stated preference (SP) survey for drivers who use or could potentially use the Chisholm Trail Parkway. The primary purpose of the survey was to estimate the willingness to pay for travel time savings, or value of time (VOT), of drivers who travel in the Chisholm Trail Parkway corridor. The estimated values of time will be incorporated into the regional travel demand model by C&M Associates to support base and future year estimates of traffic and toll revenue.



FIGURE 1-1: STUDY AREA MAP

RSG developed and implemented a stated preference survey questionnaire that gathered information from automobile travelers who recently made a trip in the region served by the Chisholm Trail Parkway. The questionnaire collected data on respondents' current travel behaviors (also referred to as "revealed preferences"), presented respondents with information about the Chisholm Trail Parkway, and used stated preference experiments to collect data that were used to estimate travelers' VOT under a range of possible travel times and toll costs.

The survey approach employed a computer-assisted self-interview technique developed by RSG. The stated preference survey instrument was customized for each respondent by presenting questions with modified wording based on each respondent's previous answers. These dynamic survey features provide an accurate and efficient means of data collection and allow for the presentation of realistic future conditions that correspond with each respondent's reported trip details.

The survey was administered over the internet to travelers using the following two recruitment methods:

- E-mail distribution to TollTag customers who recently used the Chisholm Trail Parkway
- E-mail invitation to members of an online market research panel residing in Tarrant and Johnson counties.

The survey was administered online between September and October of 2014 to 2,680 respondents in the targeted study area. Data from the stated preference survey were analyzed using accepted statistical techniques to estimate the coefficients of multinomial logit (MNL) models for the aggregate sample and across different traveler market segments. The coefficients of the MNL models were used to estimate travelers' value of time.

This report documents the development and administration of the survey questionnaire, presents survey results, and summarizes the discrete choice model estimation methodology and findings. A complete record of survey screen captures, response tabulations, and respondents' comments about the project are included as appendices.

2.0 SURVEY QUESTIONNAIRE

RSG worked closely with C&M Associates and NTTA staff to develop a questionnaire to meet the primary objectives of this study.

The survey asked respondents to focus on their most recent trip in the corridor while they answered a series of questions that were grouped into five main sections:

- 1. Introduction and trip qualification questions
- 2. Trip characteristic questions
- 3. Stated preference questions
- 4. Debrief questions
- 5. Demographic questions

The complete set of survey questions as they appeared to respondents on-screen is included in **Appendix A**.

2.1 | INTRODUCTION AND TRIP QUALIFICATION QUESTIONS

At the beginning of the survey questionnaire, respondents were presented with an introduction to the purpose of the survey, the estimated time required to complete the questionnaire, and instructions for how to navigate the computer-based instrument. A

project e-mail address was included on this and all subsequent screens to provide respondents with a way to contact the research team with any technical questions about the survey.

After the survey introduction, respondents answered a set of qualification questions. The qualification questions were designed to classify respondents into one of two groups:

- 1. Respondents who made a trip within, through, or into the study area and **used the Chisholm Trail Parkway** for that trip (Parkway Users)
- Respondents who made a trip within, through, or into the study area and could have potentially used, but did not use, the Chisholm Trail Parkway for that trip (Potential Parkway Users)

The first qualification question asked whether the respondent has made a qualifying trip that met all of the following conditions:

- Traveled within, through or into the study region in Tarrant and Johnson Counties (Figure 2-1): This ensured that the sample only included trips that were made within the Chisholm Trail Parkway Corridor and could potentially use the facility.
- Was made within the past 30 days: This timeframe was selected to allow the sample to include respondents who make less frequent trips while ensuring that the trip was recent enough for the respondent to recall the specific trip details.
- Took at least 10 minutes in travel time: The 10-minute minimum travel time ensured that an appropriate amount of travel time savings could be shown in the stated preference choice experiments for the proposed corridor.
- Was made in a personal vehicle (e.g. car, pickup truck, or minivan): The forecasting model focused primarily on passenger vehicle travel.

3

Draft Report North Texas Tollway Authority Chisholm Trail Parkway Stated Preference Survey



FIGURE 2-1: SAMPLE SURVEY SCREEN: TRIP QUALIFICATION I

Respondents who indicated that they had made a trip that met these criteria were asked if they used the Chisholm Trail Parkway on any qualifying trips (**Figure 2-2**). On the other hand, respondents who indicated that they had not made a trip within or through the study area were terminated from the survey.



FIGURE 2-2: SAMPLE SURVEY SCREEN: TRIP QUALIFICATION II

Respondents who had made a trip in the study area and used the Chisholm Trail Parkway were asked to focus on their most recent trip that met all of the criteria as they continued through the survey.

Respondents who had made a trip in the study area but did not use the Chisholm Trail Parkway were asked the reason for not using the Chisholm Trail Parkway. The following reasons were presented to these respondents:

- 1. Could have potentially used the Chisholm Trail Parkway but did not want to pay a toll
- 2. Could have potentially used the Chisholm Trail Parkway but the toll on that road is not worth travel time savings
- 3. The Chisholm Trail Parkway was not convenient for any of those trips
- 4. My trips' beginning and ending locations did not require me to travel on the Chisholm Trail Parkway
- 5. Other

Respondents who indicated they 'could have potentially used the Chisholm Trail Parkway but did not want to pay a toll', or 'the toll on that road is not worth travel time savings' (criterion 1 or criterion 2) were asked to focus on their most recent trip that could have used the Chisholm Trail Parkway as they continued through the survey. Respondents who selected any of the last three options stated above (criterion 3 through 5) were terminated from the survey.

2.2 | TRIP CHARACTERISTIC QUESTIONS

Respondents who qualified for the survey proceeded to answer a series of questions about their most recent qualifying trip in the study area. This most recent trip, referred to as the respondent's reference trip, formed the basis for the rest of the questions in this section of the survey. Respondents were specifically asked to think about their most recent trip and not a typical or average trip they might make to ensure that the sample included a diverse range of trip types and travel characteristics. This most recent trip also provided a frame of reference for respondents when completing the stated preference exercises in the next section of the survey.

Respondents were instructed to think of the one-way portion of their trip, rather than their entire round-trip, and were asked a series of questions regarding the specific details of their reference trip, including:

- Day of week
- Roads used in the study area (if did not use Chisholm Trail Parkway but could have used it)
- Trip purpose
- Beginning and ending locations
- Specific origin and destination locations
- On/Off ramps (if used Chisholm Trail Parkway)
- Trip start time

5

- Travel time
- Travel delays due to traffic congestion
- Number of vehicle occupants
- Trip frequency
- Electronic toll collection (ETC such as TollTag) device ownership

These questions were asked before the stated preference exercises to: 1) focus respondents on a specific, recent trip they made in the corridor, and 2) collect detailed information about that trip to use for constructing the stated preference exercises. The specifics of these questions are described in detail below.

First, respondents were asked to select the day of the week they made their trip. Respondents who did not use the Chisholm Trail Parkway but could have potentially used it were then provided with a list of major roads in the study area and asked to select the roads they used on their trip (**Figure 2-3**).



FIGURE 2-3: SAMPLE SURVEY SCREEN: ROAD(S) USED

Next, respondents were asked to indicate the primary purpose for making their reference trip. Focusing on their trip in one direction only, respondents were asked to report where their trip began and ended, and then to identify the specific trip origin and destination using a Google Maps-based geocoder developed by RSG. Respondents were provided with the option of entering a business name, a street intersection, a full street address, or by using an interactive map (**Figure 2-4**) to complete this portion of the survey.



FIGURE 2-4: SAMPLE SURVEY SCREEN: TRIP ORIGIN LOCATION

The reported origin and destination locations for each respondent were converted to latitude and longitude coordinates using the Google Maps application programming interface (API). The Google Maps API also provided estimates of trip distances and travel times to compare to the travel times provided by the respondent. If a respondent's start and end locations indicated a round trip, they were reminded to focus only on the one-way portion of their trip and asked if they needed to change either their beginning or ending location. Respondents who did not change their origin or destination were terminated from the survey.

The users of the Chisholm Trail Parkway were asked to identify the interchanges they used to access and egress the Chisholm Trail Parkway. Next, respondents entered their trip departure time and the time they spent traveling, door-to-door, between their origin and destination. Additionally, travel time without delay was reported if delay was encountered on the trip (**Figure 2-5**). Reported travel times were compared to travel times obtained from the Google Maps route-planning algorithm. Respondents who reported excessively long (2.5 times longer) or unrealistically short (0.75 times shorter) times compared to the Google-estimate travel time were asked to confirm or correct their travel time. Finally, the respondents were asked if they paid any tolls for their reference trip in addition to the Chisholm Trail Parkway.



FIGURE 2-5: SAMPLE SURVEY SCREEN: TRAVEL TIME WITHOUT DELAY

To conclude this section, respondents were asked details about the number of passengers in the vehicle, how often they make the same trip for the same purpose, and to indicate whether they owned a transponder such as TollTag for electronic toll collection.

2.3 | STATED PREFERENCE QUESTIONS

Before the stated preference (SP) questions were administered, respondents were provided with details about the Chisholm Trail Parkway, including payment information (**Figure 2-6** and **Figure 2-7**). Respondents also received brief instructions about the stated preference questions.

The stated preference questions were designed to construct quantitative experiments to estimate respondents' travel preferences and behavioral responses under hypothetical future conditions. The details of each respondent's reference trip were used to build a set of ten stated preference scenarios that included two travel alternatives for making their trip in the future. Parkway Users were presented with the following two alternatives:

- 1. Make your trip using the Chisholm Trail Parkway
- 2. Make your trip using an alternate route

Potential Parkway Users were presented with the following two alternatives:

- 1. Make your trip using the Chisholm Trail Parkway
- 2. Make your trip using your current route

Project Information Tolls are being collected on the Chisholm Trail Parkway to pay for the construction, operation, and maintenance of the new road. The aim of this study is to understand travel behavior of drivers who use or could potentially use the Chisholm Trail Parkway. The next several questions will ask how you might respond to potential changes in travel conditions and toll rates as a result of possible improvements on the Chisholm Trail Parkway. Please click "Next" to continue.	Willow Park 20 30 Benbrook Fort Worth 20 50 Fort Worth 20 Fort Worth 20 Fort Worth 20 Forest Hill Kennedale 20 T70 Forest Hill Surfason T73 Jashua Crowley Burlason Crowley Burlason Crowley Burlason Crowley Burlason Crowley Burlason Crowley Burlason Crowley Burlason Crowley Conto Co
« Previous Next.»	

FIGURE 2-6: SAMPLE SURVEY SCREEN: PROJECT INFORMATION

CHISHOLM TRAIL PARKWAY					
Pricing Information					
Tolls are collected on the Chisholm Trail Parkway using the following two methods:					
TollTag: A TollTag transponder can be mounted inside your vehicle's windshield and tolls are automatically deducted from your pre-paid account each time you use the road.					
ZipCash: ZipCash offers a pay-by-mail option at higher rates for customers who do not have a TollTag. TollTag customers receive the lowest toll rates on North Texas Tollway Authority (NTTA) roads. ZipCash customers receive bills on a monthly basis.					
Cash payments are not accepted.					
Please click "Next" to continue.					
« Previous Next.»					

FIGURE 2-7: SAMPLE SURVEY SCREEN: PAYMENT INFORMATION

Each travel alternative presented in the stated preference questions was described by two attributes: travel time and toll cost. The values of the attributes varied across the ten questions and respondents were asked to select the alternative they preferred the most under the conditions that were presented. **Figure 2-8** shows an example stated preference scenario with varying attribute values. In order to avoid potential bias associated with the layout of the alternatives, the order of these alternatives was randomized for each respondent. Additional examples of the stated preference exercises are located in **Appendix B**.

Below are 2 different travel options for making your work commute your trip between home and your end location.						
Imagine the options below were the only options available for making your trip, even if they are not currently available. Which option would you most prefer?						
Highlighted information will vary from screen to screen.						
Use the Chisholm Trail Parkway Use an Alternate Route						
Travel Time: 45 min	Travel Time: 71 min					
Toll Cost: \$2.00	Toll Cost: \$0.00					
I prefer this option	I prefer this option					
0	©					
	(1, (10))					



The attribute values presented in each question varied around a set of base values. To ensure that the scenarios were realistic, the trip characteristics of each respondent's reference trip were used to calculate the base value for each attribute. The base values for the attributes were varied by multiplying or adding one of several factors to give the level required by the experimental design for that particular scenario. By varying the travel time and toll cost, the respondent was faced with different time savings for different costs, allowing them to demonstrate their travel preferences across a range of values of time.

Two different sets of attribute levels were used for the study based on whether the respondent used the Chisholm Trail Parkway or could have used the Chisholm Trail Parkway, and the distance traveled on the Chisholm Trail Parkway. The levels for short distance trips (i.e. a Chisholm Trail Parkway distance of less than 10 miles) had lower travel time savings and lower toll costs as compared to medium and long distance trips. **Table 2-1** and **Table 2-2** detail the formulae that were used to calculate the attribute values.

		AL ⁻ ALTE	TERNAT RNATE	IVE 1: ROUTE		ALTERNATIVE 2: CHISHOLM TRAIL PARKWAY			
ATTRIBUTE	LEVEL	EVEL		m Trail F way Dist	arkway ance		Chishol High	m Trail P way Dista	arkway ance
			<=10 miles	11-20 miles	> 20 miles		<=10 miles	11-20 miles	> 20 miles
	1		3	5	7		-1	-1	-1
	2	Current	5	7	9	Current Travel Time + Level	-3	-3	-3
Travel Time (in minutes)	3	Travel Time + Level	7	9	11		-5	-5	-5
()	4		9	11	13		-7	-7	-7
	5		11	13	15		-9	-9	-9
	1						\$1.00	\$2.00	\$2.50
	2						\$1.50	\$2.50	\$3.00
	3						\$2.00	\$3.00	\$3.50
	4						\$2.50	\$3.50	\$4.00
Tell Cost	5						\$3.00	\$4.00	\$4.50
TOILCOST	6	None Level \$3.50 \$			\$4.50	\$5.00			
	7						\$4.00	\$5.50	\$6.00
	8						\$4.50	\$6.50	\$7.00
	9						\$5.00	\$7.50	\$8.00
	10						\$5.50	\$8.50	\$9.00

TABLE 2-1: ATTRIBUTE LEVELS FOR CHISHOLM TRAIL PARKWAY UERS

		ALTERNA	TIVE 1: ALTERNATE ROUTE			ALTERNATIVE 2: CHISHOLM TRAIL PARKWAY			
ATTRIBUTE	LEVEL		Chisholm Trail Parkway Highway Distance				Chishol High	m Trail P way Dista	arkway ance
			<=10 miles	11-20 miles	> 20 miles		<=10 miles	11-20 miles	> 20 miles
	1		1	3	5	Current Travel Time + Level	-3	-5	-7
	2	Current	3	5	7		-5	-7	-9
Travel Time	3	Travel Time + Level	5	7	9		-7	-9	-11
	4		7	9	11		-9	-11	-13
	5		9	11	13		-11	-13	-15
	1						\$1.00	\$2.00	\$2.50
	2		None			Level	\$1.50	\$2.50	\$3.00
	3						\$2.00	\$3.00	\$3.50
	4						\$2.50	\$3.50	\$4.00
Toll Cost	5						\$3.00	\$4.00	\$4.50
1011 0031	6						\$3.50	\$4.50	\$5.00
	7						\$4.00	\$5.50	\$6.00
	8						\$4.50	\$6.50	\$7.00
	9						\$5.00	\$7.50	\$8.00
	10						\$5.50	\$8.50	\$9.00

TABLE 2-2: ATTRIBUTE LEVELS FOR POTENTIAL CHISHOLM TRAIL PARKWAY USERS

The specific levels used in each stated preference experiment were determined by using an orthogonal experimental design, which ensured that information was collected from respondents in a statistically efficient manner while maintaining the independence of each attribute. This technique is commonly used in constructing experimental plans. The experimental design for this survey contained 100 experiments, which were divided into ten groups of ten. One of the ten groups was randomly chosen for each respondent and the ten experiments were shown to the respondent in a randomized order.

2.4 | DEBRIEF QUESTIONS

After completing the ten stated preference scenarios, respondents answered a series of questions to assess the underlying rationale for their choices and to identify any potential strategic bias in their responses. Respondents who never selected the Chisholm Trail Parkway were asked to indicate the primary reason for their choices. A series of attitudinal statements regarding tolls were presented and respondents were then asked the degree to which they agreed or disagreed with each statement (**Figure 2-9**).

How strongly do you agree or disagree with each of the following statements?							
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree		
I will use a toll route if it guarantees my trip travel time is reliable	O	\bigcirc	O	0	O		
I support using tolls or fees to pay for highway improvements that relieve congestion	O		0	0	O		
I will use a toll route if the tolls are reasonable and I will save time	O	O	O	O	O		
I support increased or new taxes to pay for highway improvements that relieve congestion	0	\odot	O	0	0		

FIGURE 2-9: SAMPLE SURVEY SCREEN: TOLL ATTITUDE STATEMENTS

2.5 | DEMOGRAPHIC QUESTIONS

The survey concluded with a series of demographic questions to classify respondents, identify differences in responses among traveler segments, and confirm that the sample contained a diverse cross-section of the traveling population in the Chisholm Trail Parkway corridor.

All respondents were asked to provide the following information:

- Home zip code
- Gender
- Age
- Employment status
- Household size
- Vehicle ownership
- Annual household income

Before finishing the survey, respondents were given the opportunity to leave comments about the survey and/or the Chisholm Trail Parkway. These open-ended comments are provided in **Appendix C**.

3.0 SURVEY ADMINISTRATION

RSG worked closely with the project team to design an administration plan to produce a sample of drivers in the study region who travel in the Chisholm Trail Parkway corridor, including current users of the Chisholm Trail Parkway and travelers who do not use, but could use the Parkway. The sampling plan was designed to include a sufficient range of travelers and trip types to support the statistical estimation of the coefficients of a discrete choice model. By collecting data from a range of travelers and trip types, it is possible to identify the ways in which different characteristics affect route choice behavior. These



differences can then be reflected in the structure and coefficients of the resulting choice model.

The survey instrument was administered entirely online through RSG's rsgsurvey.com website. Survey administration began on September 24, 2014 and concluded on October 17, 2014. A total of 2,680 respondents completed the survey during this time.

Respondents were recruited to participate in the survey using two invitation methods:

- 1. Email invitations distributed to TollTag customers who reside within a 5-mile radius of the Chisholm Trail Parkway
- 2. Email invitations distributed to members of an online market research panel residing in Tarrant and Johnson counties

The numbers of completed surveys by recruitment method are presented in **Table 3-1**. Each recruitment methodology is explained in greater detail below.

TABLE 3-1: COMPLETE SURVEYS BY SURVEY OUTREACH METHOD

OUTREACH METHOD	COMPLETE SURVEYS
TollTag Outreach	2,211
Online Market Research Panel	469
Total	2,680

3.1 | EMAIL DISTRIBUTION TO TOLLTAG CUSTOMERS

The North Texas Tollway Authority sent email invitations to approximately 65,000 TollTag account holders who reside within 5-mile radius of the corridor. TollTag is the transponderbased electronic toll collection system used on the Chisholm Trail Parkway and other NTTA facilities. Each email invitation contained a brief introduction to the survey and a direct link to the survey website. This survey outreach method resulted in 2,211 completed questionnaires, indicating a response rate of approximately 3.4%.

3.2 | EMAIL DISTRIBUTION TO MARKET RESEARCH PANEL MEMBERS

Additional responses were obtained through email invitations to a selection of Texas residents using an online market research panel. RSG contracted Research Now, an online market research panel, to provide a suitable sample of individuals who met the basic criteria to take part in the survey research. Panel members were targeted who resided in Tarrant and Johnson counties in Texas.

Qualifying members were sent an email invitation to the survey that contained a link with a unique identifier that allowed RSG to track respondents recruited from the panel provider. Respondents completed the survey on RSG's server before being redirected back to the

panel provider's website. A total of 469 respondents were recruited using Research Now's market research panel.

4.0 SURVEY RESULTS

A total of 2,680 respondents completed the survey between September 24, 2014 and October 17, 2014. The number of useable survey records was reduced to 2,536 after completing data checks and outlier analysis during the model estimation work, which is described in more detail in **Section 5 (Model Estimation)** of this report. The descriptive analysis of the data presented below is based on the 2,536 respondents who were included in the final model estimation. The results are provided in four sections: trip characteristic questions, stated preference questions, debrief and opinion questions, and demographic questions. A complete set of tabulations of the survey questions is shown in **Appendix B**.

4.1 | TRIP CHARACTERISTIC QUESTIONS

Of the 2,536 total trips in the survey sample, 2,364 trips were made using the Chisholm Trail Parkway and 172 trips used an alternate route but could have used the Chisholm Trail Parkway (**Table 4-1**.) Eighty-four percent of respondents who used the Chisholm Trail Parkway on their reference trip were recruited via e-mails sent to TollTag customers and the remaining 16% were recruited via the market research panel.

TRAVELER TYPE	COUNT	PERCENT
Parkway Users	2,364	93.2%
Potential Parkway Users	172	6.8%
Total	2,536	100%

TABLE 4-1: NUMBER OF COMPLETE SURVEYS BY TRAVELER TYPE

Table 4-2 shows the number of trips by trip purpose and beginning or ending location. For the purposes of this report, work trips include both commute and business-related trips, while non-work trip segments include all other purposes. A trip was classified as home-based if it originated at home or ended at home, whereas a trip was classified as non-home-based if it originated and ended at a place other than home.

SEGMENT	RESPONDENTS	TRIP PURPOSE
Home-Based Work Trips	779	 Go to/from work Business related travel
Home Based Non-Work Trips	1,413	 Go to/from school Go to/from the airport Shop Social/Recreational Other personal business
Non-Home-Based Trips	344	- All purposes

TABLE 4-2: NUMBER OF REPORTED TRIPS BY TRIP PURPOSE AND TRIP LOCATION

Reported trip purposes for travelers are shown in **Figure 4-1**. The most commonly reported trip was for social or recreational purposes (30%), followed by commute trips to or from work (26%). Work trips, which are defined as trips commuting to or from work as well as business-related travel, comprised of 36% of the sample. Overall, non-work related trips were reported more frequently than work trips, which—in addition to the high incidence of social and recreational trips—implies that the corridor is commonly used for infrequent travel.



FIGURE 4-1: TRIP PURPOSE

Potential Parkway Users were asked to indicate which other major roads in and around the study area they used on their reference trip. The most commonly selected road was IH 35W (56%) closely followed by IH 30 (40%). Bryan Irvin Road, Hulen Street, SH 174, SH 121 were also frequently selected. A significant majority of trips (67%) began at home. The most commonly reported trip originated at home and ended at a place other than home or work (48%). This is consistent with social/recreation trips making up the largest proportion of the sample. All other beginning and end combinations make up the remaining 52% of trips. **Table 4-3** summarizes the distribution of beginning and ending locations for respondents.

TABLE 4-3: ORIGIN AND DESTINATION LOCATIONS

		DESTINATION					
		My home	My regular workplace	Another place	Total		
ORIGIN	My home	3%	16%	48%	67%		
	My regular workplace	8%	0%	6%	14%		
	Another place	11%	2%	6%	19%		
	Total	22%	18%	60%	100%		

Trip origins and destinations, stratified by distance, are displayed in **Figure 4-2** and **Figure 4-3**. **Figure 4-2** shows respondents' trip origins are scattered along the study corridor with most short distance trips (i.e. up to 15 miles) originating from southwest parts of Fort Worth. Many of the trips originating within the Cleburne area tended to be a little longer (31–60 miles) in distance. **Figure 4-3** shows that trip destinations are less scattered with many trips ending within the Fort Worth metropolitan area or along the Chisholm Trail Parkway corridor.



FIGURE 4-2: TRIP ORIGINS BY DISTANCE TRAVELED



FIGURE 4-3: TRIP DESTINATIONS BY DISTANCE TRAVELED

The latitude and longitude coordinates for each trip's origin-destination pair were used to estimate the trip distance using a Google Maps route-planning algorithm. The average calculated distance traveled for all respondents was 27 miles and the median was 18 miles. The average reported travel time for all respondents was 38 minutes and the median was 30 minutes. **Table 4-4** shows mean and median calculated trip distances and reported travel times by trip purpose. Social or recreational trips were the longest by both measures.

	DISTAN	CE (MILES)	TIME (MINUTES)		
TRIP PURPOSE	Mean	Median	Mean	Median	
Commute and work-related	26	19	37	30	
Social or Recreational	36	23	47	35	
Other	20	15	31	25	

TABLE 4-4: REPORTED TRAVEL TIME AND CALCULATED TRIP DISTANCE BY PURPOSE

The distribution of reported on-ramps and off-ramps for current Parkway travelers is presented in **Figure 4-4**. About 64% of Chisholm Trail Parkway travelers reported entering or exiting the study corridor using Montgomery St/University Drive in the north or US 67 in the south. Among the intermediate ramps, I-30/US 377, Oakmont Boulevard, and FM 1187 – Crowley Plover Road are more frequently used than other ramps.



FIGURE 4-4: ON/OFF RAMPS

The large majority of surveyed travelers did not report any delay due to traffic congestion on their reference trip. Overall, only about 7% of respondents reported at least some delay on the Chisholm Trail Parkway or on any other alternate toll-free routes implying that traffic

congestion is not considered to be a major problem for most respondents in the study area. Reported vehicle occupancy by trip purpose and trip location segments is shown in **Figure 4-5**. Eighty-eight percent of home-based work trips were made in single occupant vehicles (SOV), while only 40% of home-based non-work trips were conducted in a SOV. Overall, the mean occupancy was 1.61 people per vehicle.



FIGURE 4-5: VEHICLE OCCUPANY

Respondents also reported the frequency per month that they make the same trip for the same purpose. As shown in **Figure 4-6**, work and work-related trips were made the most frequently. Social and recreational trips were made far less frequently.



FIGURE 4-6: FREQUENCY BY TRIP PURPOSE

Ninety-one percent of the current Parkway users and 56% of potential Parkway travelers reported owning a TollTag account or another type of transponder (**Figure 4-7**). It should be noted that the high proportion of respondents with an ETC transponder for the users

segment could be partly attributed to the fact that a large number of respondents were recruited through the email distribution to TollTag customers.



FIGURE 4-7: ETC OWNERSHIP BY USER TYPE

4.2 | STATED PREFERENCE QUESTIONS

After completing the trip information portion of the survey, respondents answered ten stated preference tradeoff exercises, each tailored to their reported trip. Respondents chose the toll-free alternative in approximately half of stated preference scenarios, and the Chisholm Trail Parkway alternative in the other half (**Table 4-5**).

TABLE 4-5: STATED PREFERENCE CHOICE BY ALTERNATIVE AVAILABILITY

ALTERNATIVE	NUMBER OF EXPERIMENTS SHOWN	NUMBER OF EXPERIMENTS SELECTED	PERCENT SELECTED
Alternative 1: Toll Free Route	25,360	12,792	50.4%
Alternative 2: Chisholm Trail	25,360	12,568	49.6%
Parkway			

Respondents were less likely to choose the Chisholm Trail Parkway alternative as the toll cost increased. **Figure 4-8** shows the percentage of time the toll alternative was chosen in the stated preference experiments at different toll costs. The first bar on the left in **Figure 4-8** shows that when the presented toll costs were less than \$1, the tolled option was selected 90% of the time. In general, **Figure 4-8** shows that the likelihood of respondents choosing the toll option decreased considerably as the toll amount increased. Since each respondent was presented with ten questions, the total number of choice observations is 25,360.



FIGURE 4-8: TOLL ALTERNATIVE SELECTION BY TOLL COST

Figure 4-9 shows the percent of time the tolled option was selected at different increments of time savings presented in the 25,360 stated preference experiments. In general, respondents were more likely to select the toll alternative at higher amounts of time savings. In experiments where the presented time savings for using the Chisholm Trail Parkway was less than 5 minutes, respondents selected this alternative 10% of the time. If the time savings for using was 20 minutes or more, the toll alternative was selected in 60% of experiments. Overall, **Figure 4-8** and **Figure 4-9** show that respondents behaved rationally in the stated preference experiments. Analysis of the stated preference data will be described in more detail in the Model Estimation section of this report.



FIGURE 4-9: TOLL ALTERNATIVE SELECTION BY TIME SAVINGS

4.3 | DEBRIEF QUESTIONS

Upon completing the stated preference experiments, respondents were asked to answer a series of debrief questions to understand the underlying reasons for their choices in the ten stated preference questions. If a respondent never chose to use the Chisholm Trail Parkway alternative in the stated preference scenarios, they were asked to select the primary reason why they had not done so. Out of the 130 respondents (only 5% of the sample) who never chose the toll road alternative, the most frequently cited reason (35%) was "Opposed to paying tolls." A slightly smaller number of respondents (30%) selected "Time savings not worth the toll cost". **Figure 4-10** shows the distribution of the reasons cited for never selecting the toll alternative in the stated preference scenarios.



FIGURE 4-10: REASON FOR NEVER CHOOSING TOLL ALTERNATIVE

Respondents were presented with a series of statements regarding their attitudes about tolls and were asked to indicate the level to which they agree or disagree with the statements on a five-point scale. **Figure 4-11** presents the responses to these statements. Ninety-two percent of respondents agreed with the statement "I will use a toll route if the tolls are reasonable and I save time," while about 4% were neutral, indicating that a large majority of respondents are open to the idea of using toll roads. Mixed responses were obtained when respondents were asked about their attitude towards the statement "I support increased or new taxes to pay for highway improvements," with about 49% of the respondents agreeing.



FIGURE 4-11: ATTITUDE STATEMENTS ABOUT TOLLS AND CONGESTION

4.4 | DEMOGRAPHIC QUESTIONS

Respondents were asked to report various demographic characteristics to conclude the survey. For each question, respondents were given the option of selecting "Prefer not to answer." The proportion of people selecting this option varied between 2% to 5% for the most part except for the household income question where 19% of the respondents selected

Draft Report North Texas Tollway Authority Chisholm Trail Parkway Stated Preference Survey

"Prefer not to answer." Of the valid responses for each question, slightly over half were female (54%), and the median age of the sample fell in the 45-54 year-old category. Forty-five percent of respondents live in a two-person household and 49% of respondents have two household vehicles. Most respondents (61%) were employed full-time, and 14% of respondents were employed part-time or self-employed. The median household income of respondents was in the \$75,000 - \$99,999 income category, with a distribution as shown below in **Figure 4-12**.



FIGURE 4-12: ANNUAL HOUSEHOLD INCOME

5.0 MODEL ESTIMATION

Statistical analysis and discrete choice model estimation were carried out using the stated preference survey data. Responses from the stated preference scenarios were expanded into a dataset containing eight observations for each respondent, for a total of 25,360 choice observations.

5.1 | METHODOLOGY AND ALTERNATIVES

The statistical estimation and specification testing were completed using a conventional maximum likelihood procedure that estimated a set of coefficients for a multinomial logit (MNL) model for the sample. The model coefficients provide information about the respondents' sensitivities to time and cost which were tested in the tradeoff scenarios. The sensitivities will serve as inputs into the travel demand model to support updated traffic and revenue forecasts for the Chisholm Trail Parkway corridor.

In each stated preference experiment, respondents who used the Chisholm Trail Parkway for their reference trip were presented with the following two alternatives:

- 1. Make your trip using the Chisholm Trail Parkway
- 2. Make your trip using an alternate route

Respondents who could have used the Chisholm Trail Parkway were presented with the following two alternatives:

- 1. Make your trip using the Chisholm Trail Parkway
- 2. Make your trip using your current route

Respondents were asked to choose the option they preferred the most under the conditions that were presented. The alternatives presented to each respondent are described in more detail in **Section 2** above.

5.2 | IDENTIFICATION OF OUTLIERS

The choice data were screened to ensure that all observations included in the model estimation represented realistic trips and reasonable trade-offs in the stated preference exercises. Several variables were used for screening purposes, including an examination of the geographical coordinates of the reported trip, total survey duration, and inconsistent or irrational choice behavior.

After reviewing these variables and the effects that extreme values had on the models, it was determined that respondents who met the following conditions should be excluded from the final analysis (the categories are not mutually exclusive; some respondents were included in more than one category):

- Respondents whose trip could not have reasonably used the Chisholm Trail Parkway for any portion of their trip based on their origin and destination coordinates (50 respondents, 500 choice observations).
- Respondents who completed the survey in less than five minutes (5 respondents, 50 choice observations).
- Respondents whose trip was greater than 1,000 miles or shorter than 2 miles in length (22 respondents, 220 choice observations).
- Respondents whose implied speed (60 * estimated trip distance/reported travel time) for their trip was greater than 100 mph or less than 3 mph (23 respondents, 230 choice observations).
- Respondents whose reported amount of delay during their trip was 80% or more of their entire trip time (5 respondents, 50 choice observations).
- Respondents demonstrating inconsistent or irrational choice behavior in the stated preference exercises. For example, respondents who established a certain dollar amount for willingness to pay for time savings and then rejected paying less money for equal or more time savings (65 respondents, 650 choice observations).

Based on this outlier analysis, data from 2,536 respondents were used to estimate the models presented in this report.

5.3 | MODEL SPECIFICATION

The multinomial logit model estimates a choice probability for each alternative presented in the stated preference tradeoff exercises. The alternatives are represented in the model by observed utility equations of the form:



 $U_1=\beta_1X_1+\beta_2X_2+...+\beta_nX_n$

Where each 'X' represents a variable specified by the researcher and each ' β ' is a coefficient estimated by the model that represents the sensitivity of the respondents in the sample to the corresponding variable.

Several utility equation structures were tested using the variables included in the stated preference scenarios, as well as trip characteristics and demographic variables. The models presented in this section are final model specifications and only include the variables that proved statistically significant in informing choice. The variables that were tested included:

- Beginning and ending locations
- Trip purpose
- Time of day
- County of residence
- Household income
- ETC ownership
- Delay experienced

After reviewing the significance of each variable, the final model specifications were chosen based on model fit, the intuitiveness and reasonableness of the model coefficients, and the expected application of the model results. Different model specifications are presented below. The first is an aggregate, non-segmented model with all respondents. The aggregate model also contains an alternative-specific constant and a dummy variable for ETC ownership on the toll alternative.

In addition to the aggregate model, individual models were estimated for the following three different traveler groups based on trip purpose and beginning and ending location:

- 1. Home-Based Work Trips
- 2. Home-Based Non-Work Trips
- 3. Non-Home-Based Trips

Work trips are defined as those trips with a commute or work-related primary purpose. Non-work trips are trips with any other primary purpose. A trip was classified as homebased if it originated at home or ended at home, whereas a trip was classified as non-homebased if it originated and ended at a place other than home. The home-based work trip model was further segmented by household income (**Table 5-2**). Separate travel time and cost coefficients were estimated for the following three income groups for this model:

- Income Group 1 \$0 to \$49,999
- Income Group 2 \$50,000 to \$99,999
- Income Group 3 \$100,000 or more

The coefficient values, robust standard errors, robust t-statistics, and general model statistics for the aggregate and segmented models are presented in **Table 5-1** through **Table 5-4**. The coefficient values provide estimates of the true, unknown population coefficients. The robust standard error is a measure of error around the mean estimate, adjusted to reflect the panelized structure of the data (ten choice observations per respondent). The robust t-

statistic is simply the coefficient estimate divided by the robust standard error. The 95 percent confidence threshold was used to determine statistical significance in the model estimation. A robust t-statistic greater/less than ± 1.96 indicates there is at least a 95 percent chance that the coefficient estimate is statistically different from zero. The model fit statistics included are the number of observations, the number of individuals, the Log Likelihood at zero, at constants only and at convergence, the number of estimated parameters, Rho-Squared (a model fit measure), and adjusted Rho-Squared (another model fit measure that incorporates the number of estimated parameters).

COEFFICIENTS		A	LTERNATIVES COEFFICIENT VA			LUES	
Coefficient Name	Description	Units	Alternate Route	Chisholm Trail	Value	Rob. Std. Error	Rob. T- test
β_Time	Travel time	Minutes	Х	Х	-0.179	0.0055	-32.420
β_Cost	Toll cost	\$	Х	Х	-0.749	0.0164	-45.690
β_ΕΤC	Dummy variable for respondents who owned an ETC	1,0		Х	-0.875	0.1230	-7.100
β_ASC	Alternative-specific constant applied to the toll alternative	1,0		Х	0.987	0.1040	9.450
	Model Statistics						
Number of p	arameters	4					
Number of o	bservations	25360					
Number of in	ndividuals	2536					
Initial log-likelihood		-17578.2					
Final log-likelihood		-13034.5					
Rho-square		0.258					
Adjusted rho	o-square	0.258					

TABLE 5-1: MODEL COEFFICIENTS: AGGREGATE MODEL

TABLE 5-2: MODEL COEFFICIENTS: HOME-BASED WORK TRIPS

C	AL	TERNATIVES COEFFICIENT VALUES					
Name	Description	Units	Alternate Route	Chisholm Trail	Value	Rob. Std. Error	Rob. T- test
β_Time - Income Group 1	Travel time for Home Based Work Trips - Income 1	Minutes	Х	Х	-0.151	0.0179	-8.46
β_Time - Income Group 2	Travel time for Home Based Work Trips - Income 2	Minutes	Х	Х	-0.173	0.015	-11.6
β_Time - Income Group 3	Travel time for Home Based Work Trips - Income 3	Minutes	Х	Х	-0.184	0.0125	-14.7
β_Cost - Income Group 1	Toll Cost for Drive Alone Home Based Work Trips - Income 1	\$	Х	Х	-0.789	0.108	-7.32
β_Cost - Income Group 2	Toll Cost for Drive Alone Home Based Work Trips - Income 2	\$	Х	Х	-0.791	0.0589	-13.43
β_Cost - Income Group 3	Toll Cost for Drive Alone Home Based Work Trips - Income 3	\$	Х	Х	-0.786	0.0386	-20.38
β_ΕΤC	Dummy variable for respondents who owned an ETC	1,0		Х	0.728	0.215	3.3900
β_ASC	Alternative-specific constant applied to the toll alternative	1,0		Х	-0.539	0.236	-2.28
	Model Statistics						
Number of parameter	ers	8					
Number of observat	7790						
Number of individua	779						
Initial log-likelihood	-5399.62						
Final log-likelihood	-3962.21						
Rho-square		0.266					
Adjusted rho-square	0.265						

TABLE 5-3: MODE	COEFFICIENTS: I	HOME-BASED	NON-WORK	TRIPS
-----------------	-----------------	------------	----------	-------

COEFFICIENTS		Al	TERNATIVES COEFFICIENT VALU			LUES	
Coefficient Name	Description	Units	Alternate Route	Chisholm Trail	Value	Rob. Std. Error	Rob. T- test
β_Time	Travel time	Minutes	Х	Х	-0.181	0.0074	-24.570
β_Cost	Toll cost	\$	Х	Х	-0.749	0.0217	-34.540
β_ΕΤC	Dummy variable for respondents who owned an ETC	1,0		Х	-0.931	0.1600	-5.830
β_ASC	Alternative-specific constant applied to the toll alternative	1,0		Х	1.030	0.1310	7.850
	Model Statistics						
Number of p	parameters	4					
Number of c	observations	14130					
Number of i	ndividuals	1413					
Initial log-likelihood		-9794.17					
Final log-likelihood		-7222.14					
Rho-square		0.263					
Adjusted rho-square		0.262					

TABLE 5-4: MODEL COEFFICIENTS: NON-HOME-BASED TRIPS

COEFFICIENTS		AI	TERNATIVES COEFFICIENT VAL			LUES	
Coefficient Name	Description	Units	Alternate Route	Chisholm Trail	Value	Rob. Std. Error	Rob. T- test
β_Time	Travel time	Minutes	Х	Х	-0.181	0.0144	-12.580
β_Cost	Toll cost	\$	Х	Х	-0.682	0.0410	-16.620
β_ΕΤC	Dummy variable for respondents who owned an ETC	1,0		Х	-1.180	0.3380	-3.500
β_ASC	Alternative-specific constant applied to the toll alternative	1,0		Х	1.160	0.2930	3.940
	Model Statistics						
Number of p	parameters	4					
Number of c	observations	3440					
Number of i	ndividuals	344					
Initial log-likelihood		-2384.43					
Final log-likelihood		-1819.88					
Rho-square		0.237					
Adjusted rh	o-square	0.235					

5.4 | VALUES OF TIME

One way to evaluate the sensitivities that are estimated in the MNL models is to calculate the marginal rates of substitution for different attributes of interest. In basic economic theory, the marginal rate of substitution is the amount of one good (e.g., money) that a person would exchange for a second good (e.g., travel time), while maintaining the same level of utility, or satisfaction. In this analysis, the marginal rate of substitution of the travel time and toll cost coefficients provides the implied toll value that travelers would be willing to pay for a given amount of travel time savings offered by using the Chisholm Trail Parkway compared to an alternate toll-free route.

The willingness to pay for travel time savings, or value of time (VOT), can be calculated by dividing the travel time coefficient by the toll cost coefficient and multiplying the product by 60 to convert this into the more commonly cited units of dollars per hour:

$$VOT = 60 \times \frac{\beta_Time}{\beta_Cost}$$

Where β _Time is the value of the travel time coefficient (with units of 1/min), and β _Cost is the value of the toll cost coefficient (with units of 1/\$).

VOT for the aggregate sample and the VOTs for the different market segments are shown below in **Table 5-5**.

MODEL/SEGMENT	VOT (\$/HOUR)
Aggregate	\$14.34
Home-Based Work – Income Group 1 (Up to \$49,999)	\$11.48
Home-Based Work – Income Group 2 (\$50,000 to \$99,999)	\$13.12
Home-Based Work – Income Group 3 (\$100,000 or more)	\$14.05
Home-Based Non-Work	\$14.50
Non-Home-Based	\$15.92

TABLE 5-5: VALUES OF TIME

6.0 CONCLUSIONS

RSG successfully developed and implemented a stated preference survey questionnaire that gathered information from 2,536 automobile travelers in the Chisholm Trail Parkway corridor. The purpose of the survey was to measure the value of time of travelers who make trips within the corridor. The questionnaire collected data on current travel behavior, presented respondents with information about potential Chisholm Trail Parkway improvements, and engaged the travelers in a series of stated preference experiments to
measure their propensity to use the Chisholm Trail Parkway under a variety of travel time and toll cost conditions.

Multinomial logit choice models were developed to provide estimates of value of time (VOT) for travelers in the corridor. The aggregate estimated VOT was \$14.34 per hour. The segmented VOTs for Home-Based Work trips for different income groups vary from \$11.48 per hour to \$14.05 per hour. The aggregate estimated VOT for Home-Based Non-Work trips and Non-Home-Based trips were \$14.50 per hour and \$15.92 per hour, respectively.

These estimates of values of time and propensity to use the Chisholm Trail Parkway will be incorporated into the travel demand model to support estimates of traffic and toll revenue for the corridor.

This page intentionally left blank.



Appendix B

NTTA System Demographic Review and Update



This page intentionally left blank.





Prepared for: CDM Smith 12400 Coit Rd. Suite 400 Dallas, TX 75251

NTTA System Demographic Review and Update

A, u, g, u, s, t, 2, 0, 2, 0,



DRAFT 1

Table of Contents

Introduction and Purpose	р. 5
NTTA System Demographic Review Area of Interest	р. б
Population Trends and Projections	p. 7-18
Employment Trends and Projections	p. 19-23
Real Estate Trends	p. 24-31
RDS Forecast Review Methodology & Results	p. 32-38
COVID-19 Update	p. 39-44

Appendices

Α.	Special Generators	р. 45-47
В.	Estimated Square Feet Per Employee	p. 48
C.	North Platinum Corridor	p. 49-58
D.	US380 Residential Development	p. 59-64
E.	Chisholm Trail Parkway	p. 65-70

Tables

1.	Texas Population Projections (in Millions)	р. 7
2.	Historical Population for Select Counties in the Dallas-Fort Worth MSA, 1960-2019	р. 9
3.	Largest Metropolitan Areas in the United States, 2000-2019	р. 10
4.	Fastest Growing Metropolitan Areas in the United States, 2000-2019	р. 11
5.	Recent Population Trends for Select Counties in the Dallas-Fort Worth MSA, 2000-2019	p. 12
6.	Comparison of Recent Population Growth in Northern and Southern Suburban Counties	р. 13
7.	Population Projections for the Dallas-Fort Worth MSA, 2010-2050	р. 14
8.	Population Projections for Select Counties in the Dallas-Fort Worth MSA, 2010-2050	p. 15
9.	Comparison of Population Projections for Northern Suburban Counties to Southern Suburban Counties 2010-2050	р. 16
10.	Historical City Population 1970-2019	р. 16-18
11.	Total Employment in Largest Texas MSAs, 2008 to Third Quarter 2019	p. 22
12.	Overview of the Dallas-Fort Worth Apartment Market during the Third Quarter 2019	p. 27-28
13.	Overview of the Dallas Area Office Market during the Fourth Quarter 2019	p. 28-29
14.	Overview of the Fort Worth Area Office Market during the Fourth Quarter 2019	р. 29
15.	Overview of the Dallas-Fort Worth Industrial Market during the Fourth Quarter 2019	p. 30
16.	Industrial Under Construction - Dallas Fort-Worth Metro Fourth Quarter 2019	p. 30
17.	Overview of the Dallas-Fort Worth Retail Market 2013-2019	p. 31
18.	RDS and NCTCOG Area of Interest Statistics	р. 36
19.	NTTA System Review AOI Basic, Service and Retail Employment Shares NCTCOG and RDS (2018 – 2045)	p. 36
20.	Dallas-Fort Worth-Arlington MSA Labor Force Data	p. 39
21.	Employment Losses by Metropolitan Statistical Area	p. 40
22.	Dallas-Fort Worth-Arlington MSA Non-Farm Wage and Salary Employment	p.41-42

Figures

1.	Area of Interest Map	р. б
2.	State of Texas Total Population 1970 - 2019	р. 7
3.	Dallas-Fort Worth-Arlington MSA Population 1970 - 2019	p. 8
4.	Total Employment in the Dallas-Fort Worth MSA, Jan 2007 - Dec 2019	р. 19
5.	Month-on-Month Employment Change for Dallas-Fort Worth MSA, January 2000 to January 2020	p. 20
6.	Year-on-Year Employment Change for the United States, Texas, and the Dallas-Fort Worth MSA, January 2001 to January 2020	p. 21
7.	Unemployment Rate of Dallas-Fort Worth MSA, Texas, and the United States, January 2000 to January 2020	p. 23
8.	New Private Housing Units Authorized by Building Permits, 1-unit Structures in Dallas-Fort Worth-Arlington MSA January 1990 to January 2020	p. 25
9.	Single-Family Building Permits Issued in Dallas, Tarrant, Collin and Denton Counties January 2000 to January 2020	p. 25
10.	Multifamily Units Permitted in Dallas, Tarrant, Collin, and Denton Counties 2000 - 2019	p. 26
11.	Sample Development Monitoring Map	p. 33
12.	RDS vs. NCTCOG Forecast Households	p. 34
13.	RDS vs. NCTCOG Forecast Population	p. 35
14.	RDS vs. NCTCOG Forecast Employment	p. 35
15.	RDS Household Growth 2018-2045	p. 37
16.	RDS Employment Growth 2018-2045	p. 38

INTRODUCTION AND PURPOSE

Research and Demographic Solutions Group (RDS) was commissioned by CDM Smith to perform an independent socioeconomic analysis concerning household, population, and employment forecasts along the North Texas Toll-way Authority (NTTA) System roadways. The NTTA System is defined as eight toll roads: the Dallas North Tollway (DNT), the President George Bush Turnpike (PGBT), the Sam Rayburn Tollway (SRT), the Chisholm Trail Parkway (CTP), the Addison Airport Toll Tunnel (AATT), the Mountain Creek Lake Bridge (MCLB) and the Lewisville Lake Toll Bridge (LLTB) and the 360 Tollway. This report provides an independent socioeconomic analysis of selected areas in proximity of the NTTA System roadways in light of the North Central Texas Council of Government's (NCTCOG) Metropolitan Transportation Plan, "Mobility 2045", which was adopted by the Regional Transportation Council in June 2018.

RDS evaluated the latest socioeconomic forecasts (prepared by NCTCOG), for accuracy and reasonableness, detailed to the level of Traffic Analysis Process, or TAP zones. Focus was narrowed to 4,038 TAP zones directly affecting portions of the NTTA System. The RDS evaluation was completed for the years of 2018, 2020, 2028, 2037, and 2045.

RDS also identified and calculated major emerging economic trends which directly impact the level and distribution of future socioeconomic growth in the Dallas-Fort Worth Metropolitan Statistical Area (DFW MSA). Such trends include patterns in land use, transportation improvements, and major planned developments. RDS evaluated any factors that will likely change economic growth potential or the overall distribution of economic growth. Examples include, but are not limited to future rail stations and rail line extensions, infrastructure expansions and airport development.

Appendices C, D, and E are examinations of three specific development hotspots in the region that will continue to have a significant impact on future demographic projections in the region. Utilizing aerial photgraphy from Sky-Stream Aerial, development databases and Geographic Information Systems (GIS), RDS reviewed the North Platinum Corridor in Collin County, residential development along US 380 in Collin and Denton Counties, and the Chisholm Trail Parkway in southern Tarrant County.

Original RDS review of the TAP zone-level forecast demographics was completed in February 2020. In July 2020, a COVID-19 Chapter was added to discuss the current and possible future impacts of the pandemic on the region's household and employment projections.

Full citations are provided for methodologies, sources of development trends and projections, and narratives defining and detailing important issues affecting future socioeconomic growth in proximity of the NTTA System roadways.

NTTA System Demographic Review Area of Interest Map

The Area of Interest (AOI) for this study includes all of Collin and Rockwall Counties, as well as portions of Dallas, Denton, Johnson, Kaufman and Tarrant Counties in proximity to the NTTA System facilities as shown in Figure 1. CDM Smith and RDS identified 4,039 TAP zones for initial review. Criteria were then developed to help select the most active TAP zones for review.





State of Texas

Texas continues to be one of the fastest growing states in the US. After the decennial census, the Census Bureau reported that Texas added nearly 4.3 million persons between 2000 and 2010, a 20.6 percent increase in total population. Since 2010, the trend has continued, mainly due to the state's high Hispanic migration and their accompanying birth rates.¹ As of 2019, the Hispanic population makes up approximately 40.4 percent of Texas' overall population and has risen over by 1.9 million persons since 2010. Figure 2 shows the trend in Texas population from 1970 through 2019.



Figure 2: Texas Total Population 1970 - 2019

Source: US Census Bureau, 2019 Population Estimates

Texas' population growth is expected to be strong going forward. The state's relatively low cost of living, attractive business climate, low tax rates, and diversified economy all should contribute to sizable future population gains. Utilizing rates of migration and natural increase from 2010 to 2015, the Texas Demographic Center (TDC) estimates that 47.3 million people will live in the state by 2050. Woods and Poole and the Texas Water Development Board forecast a robust 41 and 42.3 million 2050 Texas population respectively.

Scenarios	2010	2020	2030	2040	2050	2010-2050 Growth	Compound Annual Growth Rate 2010-2050				
TDC 2010-2015	25.1	29.7	34.9	40.7	47.3	22.2	1.60%				
Woods & Poole	25.2	29.4	33.1	36.7	41.0	15.8	1.22%				
Texas Water Development Board	25.1	29.5	33.6	37.7	41.9	16.8	1.29%				

Table 1: Texas Population Projections (in Millions)

Source: 2018 Texas Demographic Center, 2019 Woods & Poole, 2021 Texas State Water Plan Population Projections

1. "Texas population tops 25 million in 2010 Census" Fort Worth Star Telegram, 21 December, 2010.

DFW Metropolitan Statistical Area

Between 2010 and 2019, the Dallas-Fort Worth-Arlington Metropolitan Statistical Area² (DFW MSA) experienced the largest MSA population gain in the country and now has almost 7.57 million residents, as shown in Figure 3. Overall, the MSA has added over 2.4 million persons since 2000. To put this in perspective, the DFW MSA has added the to-tal current population of the Austin-Round Rock-Georgetown MSA from 2000 to 2019. Furthermore, the DFW MSA growth is averaging almost 18,000 more people per year from 2010-2019 than in the 2000-2010 period.





Source: US Census Bureau 2019

Even though residential construction has slowed in many areas of the country, all forecasting agencies including the NCTCOG, the Texas Demographic Center, Woods & Poole, and the Texas Water Development Board agree that the region will continue to see very strong household and population growth through 2050. There are a myriad of attributes that contribute to the overall regional projections. These include a recent history of strong growth, affordable and available land with no limiting geographic boundaries such as an ocean or foreign border, the relatively low cost of doing business in the state and region, central geographic location in the U.S., favorable weather and amenities, etc.

Historical Population Trends

Table 2 shows the historical populations of Dallas, Tarrant, Collin, Denton, Rockwall, Ellis, and Johnson Counties during the past 59 years. Collectively, the population of these seven counties grew from 1.7 million residents in 1960 to more than 7.1 million residents during 2019. Almost two-thirds of that population growth occurred in Dallas and Tarrant Counties. However, Collin County experienced the most rapid rate of growth with a CAGR of 5.6 percent between 1960 and 2019, from 41,247 to 1,034,730 residents. The CAGR's of Denton and Rockwall Counties increased by over 5 percent, respectively, during this same period. The population in the region's southern suburban counties grew more slowly, with Ellis County growing by 2.49 percent and Johnson County increasing by 2.79.

2. The DFWA MSA is comprised of Collin, Dallas, Delta, Denton, Ellis, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise Counties.

Table 2: Historical Population for Select Counties in the Dallas-Fort Worth MSA, 1960-2019

	Collin County	Dallas County	Denton County	Ellis County	Johnson County	Rockwall County	Tarrant County	Total
1960	41,247	951,527	47,432	43,395	34,720	5,878	538,495	1,662,694
1970	66,920	1,327,321	75,633	46,638	45,769	7,046	716,317	2,285,644
1980	144,576	1,556,390	143,126	59,743	67,649	14,528	860,880	2,846,892
1990	264,036	1,852,810	273,525	85,167	97,165	25,604	1,170,103	3,768,410
2000	491,272	2,216,808	433,065	111,415	126,622	43,023	1,449,290	4,871,495
2010	782,341	2,368,139	662,614	149,610	150,934	78,337	1,809,034	6,001,009
2019	1,034,730	2,635,516	887,207	184,826	175,817	104,915	2,102,515	7,125,526

Total Population

Total Population Change

	Collin County	Dallas County	Denton County	Ellis County	Johnson County	Rockwall County	Tarrant County	Total
1960-1970	25,673	375,794	28,201	3,243	11,049	1,168	177,822	622,950
1970-1980	77,656	229,069	67,493	13,105	21,880	7,482	144,563	561,248
1980-1990	119,460	296,420	130,399	25,424	29,516	11,076	309,223	921,518
1990-2000	227,236	363,998	159,540	26,248	29,457	17,419	279,187	1,103,085
2000-2010	291,069	151,331	229,549	38,195	24,312	35,314	359,744	1,129,514
2010-2019	252,389	267,377	224,593	35,216	24,883	26,578	293,481	1,124,517
1960-2019	993,483	1,683,989	839,775	141,431	141,097	99,037	1,564,020	5,462,832

Compound Annual Growth Rate

	Collin County	Dallas County	Denton County	Ellis County	Johnson County	Rockwall County	Tarrant County	Total
1960-1970	4.96%	3.38%	4.78%	0.72%	2.80%	1.83%	2.89%	3.23%
1970-1980	8.01%	1.60%	6.59%	2.51%	3.98%	7.50%	1.86%	2.22%
1980-1990	6.21%	1.76%	6.69%	3.61%	3.69%	5.83%	3.12%	2.84%
1990-2000	6.41%	1.81%	4.70%	2.72%	2.68%	5.33%	2.16%	2.60%
2000-2010	4.76%	0.66%	4.34%	2.99%	1.77%	6.18%	2.24%	2.11%
2010-2019	3.16%	1.20%	3.30%	2.38%	1.71%	3.30%	1.68%	1.93%
1960-2019	5.61%	1.74%	5.09%	2.49%	2.79%	5.01%	2.34%	2.50%

Source: U.S. Census Bureau, 2019

Recent Population Trends

Table 3 shows the populations of the ten largest metropolitan statistical areas (MSAs) in the United States. The largest MSAs in the United States during the U.S. Census Bureau's 2019 population estimates were the New York-Newark-Jersey City, NY MSA (19.2 million residents), the Los Angeles-Long Beach-Anaheim, CA MSA (13.2 million residents), and the Chicago-Naperville-Elgin, IL MSA (9.5 million residents). The Dallas-Fort Worth-Arlington, TX MSA (hereafter referred to as the Dallas-Fort Worth MSA) was ranked as the fourth largest MSA in the United States during the 2010 Census and in the U.S. Census Bureau's 2019 population estimates. During 2019, the estimated population of the Dallas-Fort Worth MSA was 7.6 million residents, which was an increase of almost 2.4 million new residents since the 2000 decennial U.S. Census.

		TOTAL POPULATION			TOTAL AVERAGE CHANGE CHANGE			CAGR		
RANK	MSA	2000	2010	2019	2000 to 2019	2000 to 2010	2010 to 2019	2000 to 2010	2010 to 2019	
1	New York-Newark-Jersey City, NY-NJ-PA MSA	18,323,002	18,897,109	19,216,182	893,180	57,411	35,453	0.31%	0.19%	
2	Los Angeles-Long Beach-Anaheim, CA MSA	12,365,627	12,828,837	13,214,799	849,172	46,321	42,885	0.37%	0.33%	
3	Chicago-Naperville-Elgin, IL-IN-WI MSA	9,098,316	9,461,105	9,458,539	360,223	36,279	-285	0.39%	0.00%	
4	Dallas-Fort Worth-Arling- ton, TX MSA	5,204,126	6,366,542	7,573,136	2,369,010	116,242	134,066	2.04%	1.95%	
5	Houston-The Wood- lands-Sugar Land, TX MSA	4,693,161	5,920,416	7,066,141	2,372,980	122,726	127,303	2.35%	1.99%	
6	Washington-Arlington-Al- exandria, DC-VA-MD-WV MSA	4,837,428	5,649,540	6,280,487	1,443,059	81,211	70,105	1.56%	1.18%	
7	Miami-Fort Lauder- dale-West Palm Beach, FL MSA	5,007,564	5,564,635	6,166,488	1,158,924	55,707	66,873	1.06%	1.15%	
8	Philadelphia-Cam- den-Wilmington, PA-NJ- DE-MD MSA	5,687,147	5,965,343	6,102,434	415,287	27,820	15,232	0.48%	0.25%	
9	Atlanta-Sandy Springs-Roswell, GA MSA	4,263,438	5,286,728	6,020,364	1,756,926	102,329	81,515	2.17%	1.45%	
10	Phoenix-Mesa-Chandler, AZ MSA	3,251,876	4,192,887	4,948,203	1,696,327	94,101	83,924	2.57%	1.86%	

Table 3: Largest Metropolitan Statistical Areas in the United States, 2000-2019

Source: U.S. Census Bureau, 2010 and 2019

Since 2010, Texas has led the way with population growth of it's two largest Metropolitan Statistical Areas. On an average annualized basis, both the Dallas-Fort Worth and Houston-The Woodlands-Sugar Land, TX MSAs grew by approximately 127,000 residents each year between 2010 and 2019. When ordered by total population change between the 2000 decennial U.S. Census and the U.S. Census Bureau's 2019 population estimates, the DFW MSA was estimated to have had the largest overall population growth of 2.41 million while the Houston MSA added 2.35 million. Third in 2000 to 2019 growth, Atlanta-Sandy Springs-Alpharetta, GA MSA gained 1.77 million new residents. Another Texas MSA, Austin-Round Rock-Georgetown, added almost one million new residents from 2000 to 2019 making it the eighth MSA in total population growth during this time frame.

		TOTAL POPULATION			TOTAL CHANGE	AVEF ANN CHA	RAGE IUAL NGE	CAGR	
RANK	MSA	2000	2010	2019	2000 to 2019	2000 to 2010	2010 to 2019	2000 to 2010	2010 to 2019
1	Dallas-Fort Worth-Arlington, TX MSA	5,161,544	6,426,214	7,573,136	2,411,592	126,467	127,436	2.22%	1.84%
2	Houston-The Wood- lands-Sugar Land, TX MSA	4,715,407	5,920,416	7,066,141	2,350,734	120,501	127,303	2.30%	1.99%
3	Phoenix-Mesa-Chandler, AZ MSA	3,251,876	4,192,887	4,948,203	1,696,327	94,101	83,924	2.57%	1.86%
4	Atlanta-Sandy Springs-Al- pharetta, GA MSA	4,247,981	5,286,728	6,020,364	1,772,383	103,875	81,515	2.21%	1.45%
5	Washington-Arlington-Alex- andria, DC-VA-MD-WV MSA	4,796,183	5,636,232	6,247,841	1,451,658	84,005	67,957	1.63%	1.15%
6	Riverside-San Bernardi- no-Ontario, CA Metro Area	3,254,821	4,224,851	4,650,631	1,395,810	97,003	47,309	2.64%	1.07%
7	Miami-Fort Lauderdale-Pom- pano Beach, FL MSA	5,007,564	5,564,635	6,166,488	1,158,924	55,707	66,873	1.06%	1.15%
8	Austin-Round Rock-George- town, TX MSA	1,249,763	1,716,289	2,227,083	977,320	46,653	56,755	3.22%	2.94%
9	Orlando-Kissimmee-Sanford, FL MSA	1,644,561	2,134,411	2,608,147	963,586	48,985	52,637	2.64%	2.25%
10	Seattle-Tacoma-Bellevue, WA MSA	3,043,878	3,439,809	3,979,845	935,967	39,593	60,004	1.23%	1.63%

Table 4: Fastest Growing Metropolitan Statistical Areas in the United States, 2000-2019

Source: U.S. Census Bureau, 2010 and 2019

Table 5 provides population counts from the 2000 and 2010 decennial U.S. Censuses, as well as the U.S. Census Bureau's 2019 population estimates. These data show that the population of counties in the DFW region grew very strongly between 2000 and 2019. The largest population growth occurred in Tarrant County, with an estimated 653,225 new residents since 2000. Collin County also grew robustly during this same period increasing by 543,458 new residents. However, since the 2010 U.S. Census, the compounded rate of population growth has slowed in all of the counties, with the exception of Dallas County. Dallas County's population growth accelerated from a CAGR of 0.66 percent between 2000 and 2010 to an estimated CAGR of 1.2 percent between 2010 and 2019. Most dramatically, Rockwall County's population growth slowed from a 6.17 percent CAGR between 2000 and 2010 to 3.3 percent from 2010 to 2019.

	тот	AL POPULAT	ION	TOTAL CHANGE	AVEF ANNUAL	RAGE CHANGE	CAGR		
COUNTY	2000 2010		2019	2000-19	2000-10	2010-19	2000-10	2010-19	
Collin	491,272	782,459	1,034,730	543,458	29,119	28,030	4.76%	3.15%	
Dallas	2,216,808	2,366,672	2,635,516	418,708	14,986	29,872	0.66%	1.20%	
Denton	433,065	662,387	887,207	454,142	22,932	24,980	4.34%	3.30%	
Ellis	111,415	149,597	184,826	73,411	3,818	3,914	2.99%	2.38%	
Johnson	126,622	150,944	175,817	49,195	2,432	2,764	1.77%	1.71%	
Rockwall	43,023	78,326	104,915	61,892	3,530	2,954	6.17%	3.30%	
Tarrant	1,449,290	1,810,614	2,102,515	653,225	36,132	32,433	2.25%	1.67%	

Table 5: Recent Population Trends for Select Counties in the Dallas-Fort Worth MSA, 2000-2019

Source: U.S. Census Bureau, 2010 and 2019

Table 6 shows a comparison of the population growth in the northern and southern suburban counties of the Dallas-Fort Worth region between 2000 and 2019. Dallas and Tarrant Counties are considered the core urban counties of the region, while Collin, Denton, Rockwall, Ellis, and Johnson are considered suburban counties. During this 19-year period, the population in the northern suburban counties of Collin, Denton, and Rockwall was estimated to have increased by 1,029,908 residents compared to 122,606 in the southern counties of Ellis and Johnson. In addition to the total growth of the northern counties' population being over eight times greater than the southern counties', the CAGR of the northern counties was almost twice the CAGR of the southern.

COUNTY	ΤΟΤΑΙ	POPULATI	ON	TOTAL CHANGE	CAGR
COUNTY	2000	2010	2019	2000-2019	2000-2019
Northern Suburban Counties					
Collin	491,272	782,459	1,005,146	513,874	3.84%
Denton	433,065	662,387	887,207	454,142	3.85%
Rockwall	43,023	78,326	104,915	61,892	4.80%
Total	967,360	1,523,172	1,997,268	1,029,908	3.89%
Southern Suburban Counties					
Ellis	111,415	149,597	184,826	73,411	2.70%
Johnson	126,622	150,944	175,817	49,195	1.74%
Total	238,037	300,541	360,643	122,606	2.21%

Source: U.S. Census Bureau, 2010 and 2019

Population Projections

Table 7 shows three population projection scenarios from the Texas Demographic Center (TDC), Woods and Poole, and the Texas Water Development Board (TWDB) for the Dallas-Fort Worth MSA. These entities project MSA population to be between almost 11 million and 13.1 million residents by 2050. The most conservative scenario is the latest data from Woods and Poole, a firm that specializes in long-term county demographic projections. The Texas Water Development Board's population projections are created to assist in determining water demand for counties and other user groups throughout Texas. TWDB's 2050 total of just over 11 million is very similar to Woods and Poole's. The Texas Demographic Center's 13.2 million total is easily the most optimistic scenario. These projections implement the latest migration rates during that 5-year span. The historical growth rate of the population for the Dallas-Fort Worth MSA implies that the region's population will likely grow at a rate between the TWDB's and the 2010-15 migration scenarios.

Total Population								
Year	TDC 2010-15 Scenario	Woods and Poole Scenario	TWDB					
2010	6,366,542	6,392,073	6,366,542					
2015	7,007,291	7,037,088	6,866,675					
2020	7,689,051	7,644,282	7,344,976					
2025	8,438,307	8,178,167	7,920,373					
2030	9,264,580	8,723,943	8,495,770					
2035	10,152,883	9,271,826	9,128,103					
2040	11,092,356	9,816,195	9,760,436					
2045	12,088,874	10,370,417	10,422,137					
2050	13,173,646	10,954,449	11,083,837					

Table 7: Population Projections for the Dallas-Fort Worth MSA, 2010-2050

Average Annual Growth								
Year	TDC 2010-15 Scenario	Woods and Poole Scenario	TWDB					
2010-2015	128,150	129,003	100,027					
2015-2020	136,352	121,439	95,660					
2020-2025	149,851	106,777	115,079					
2025-2030	165,255	109,155	115,079					
2030-2035	177,661	109,577	126,467					
2035-2040	187,895	108,874	126,467					
2040-2045	199,304	110,844	132,340					
2045-2050	216,954	116,806	132,340					

Compounded Annual Growth Rate								
Year	TDC 2010-15 Scenario	Woods and Poole Scenario	TWDB					
2010-2015	1.94%	1.94%	1.52%					
2015-2020	1.87%	1.67%	1.36%					
2020-2025	1.88%	1.36%	1.52%					
2025-2030	1.89%	1.30%	1.41%					
2030-2035	1.85%	1.23%	1.45%					
2035-2040	1.79%	1.15%	1.35%					
2040-2045	1.74%	1.10%	1.32%					
2045-2050	1.73%	1.10%	1.24%					

Source: Texas Demographic Center 2018, Woods and Poole 2019, Texas Water Development Board 2020

Table 8 illustrates population projections for the seven most populous counties in the Dallas-Fort Worth MSA. This local data supports the conclusions that most of the State's growth from 2010 to 2050 is projected to take place in the large urban core counties along with the surrounding suburban ring counties. The urban core of Dallas and Tarrant Counties will see significant continued population growth while the suburban counties of Collin and Denton are projected to grow at the fastest rates during this period.

	Texas Demographic Center 2010-2015 Migration Scenario								
	Collin County	Dallas County	Denton County	Ellis County	Johnson County	Rockwall County	Tarrant County		
2010	782,341	2,368,139	662,614	149,610	150,934	78,337	1,809,034		
2015	904,421	2,551,029	771,688	163,301	161,209	89,731	1,973,526		
2020	1,039,369	2,734,111	897,953	177,721	171,701	102,243	2,143,755		
2025	1,199,276	2,920,069	1,048,765	193,386	182,787	116,952	2,322,418		
2030	1,391,461	3,106,298	1,234,110	209,581	194,098	134,114	2,507,170		
2035	1,615,166	3,291,862	1,454,915	225,187	204,870	152,805	2,689,000		
2040	1,866,586	3,481,006	1,708,302	239,960	215,366	171,936	2,862,672		
2045	2,144,545	3,674,038	1,996,378	254,173	226,440	191,380	3,030,318		
2050	2,456,914	3,869,605	2,332,629	268,580	238,332	211,966	3,196,603		
Woods and Poole Scenario									
	Collin	Dallas	Denton	Ellis	Johnson	Rockwall	Tarrant		
	County	County	County	County	County	County	County		
2010	788,442	2,372,257	666,750	150,364	151,248	78,904	1,817,417		
2015	914,578	2,554,233	779,572	163,285	159,390	90,121	1,983,642		
2020	1,042,190	2,680,689	895,754	181,786	173,076	104,717	2,132,678		
2025	1,172,110	2,780,353	1,001,714	195,703	182,627	119,400	2,263,251		
2030	1,312,751	2,871,747	1,115,557	209,810	191,906	136.143	2,391,845		
2035	1,462,896	2,951,273	1,236,108	223,806	200,645	155,233	2,515,069		
2040	1,621,698	3,017,158	1,362,532	237,488	208,685	177,000	2,630,828		
2045	1,791,548	3,073,892	1,496,715	251,140	216,301	201,819	2,742,439		
2050	1,976,489	3,127,423	1,641,870	265,214	223,889	230,118	2,854,887		
	Texas Water Development Board Scenario								
	Collin	Dallas	Denton	Ellis	Johnson	Rockwall	Tarrant		
	County	County	County	County	County	County	County		
2010	790,648	2,512,352	674,322	169,514	159,451	89,144	1,800,069		
2015	873,682	2,539,243	787,984	176,664	166,643	97,016	1,903,271		

187,204

200,573

214,367

228,160

243,287

258,414

121,096

137,304

149,111

160,918

179,599

198,279

2,144,070

2,281,666

2,430,610

2,579,553

2,688,307

2,797,060

Table 8: Population Projections for Select Counties in the Dallas-Fort Worth MSA, 2010-2050

Source: Texas Demographic Center 2018, Woods and Poole 2019, Texas Water Development Board 2020

2,694,472

2,822,809

2,965,175

3,107,541

3,231,540

3,355,539

Note: Table 8 only provides population projections for 7 of the 13 counties in the Dallas-Fort Worth MSA.

1,018,521

1,135,397

1,241,834

1,348,271

1,462,348

1,576,424

203,907

224,000

250,466

276,931

319,800

362,668

2025

2030

2035

2040

2045

2050

1,036,773

1,116,830

1,240,030

1,363,229

1,504,946

1,646,663

Table 9 compares the three population projection totals of the northern suburban counties to the southern suburban counties from 2010 to 2050. Depending upon the scenario, the population of the northern counties in 2050 varies widely between 5 and 10 times the population of the southern counties. While the TDC's 2010-15 scenario suggests that in 2050, the total population of the three northern counties would be 4.5 million larger than the southern counties while the Water Development Board projects the lowest future growth in the northern counties, highest in the southern and forecasts only a 2.8 million difference between the two.

	2010-15 Scenario		Woods a	nd Poole	TWDB		
Year	Northern	Southern	Northern	Southern	Northern	Southern	
2010	1,523,292	300,544	1,534,096	301,612	1,554,114	328,965	
2020	2,039,565	349,422	2,042,661	354,862	1,963,248	357,649	
2030	2,759,685	403,679	2,428,444	401,716	2,389,531	424,573	
2040	3,746,824	455,326	3,161,230	446,173	2,872,418	505,091	
2050	5,001,509	506,912	3,848,477	489,103	3,421,366	621,082	

Table 9: Comparison of Population Projectionsfor Northern Suburban Counties to Southern Suburban Counties 2010-2050

Source: Texas Demographic Center 2018, Woods and Poole 2019, Texas Water Development Board 2020

NTTA System Demographic Review City-Level Population Trends

Many cities within the NTTA System Demographic Review's AOI have seen tremendous growth over the past forty-nine years, but the "second ring" suburbs have seen the fastest growth since 2000. Overall, the City of Fort Worth saw the most absolute growth by adding almost 516,000 residents from 1970 to 2019. Dallas' population boom saw it grow by 499,000 persons, though 69 percent of this growth was from 1970 to 2000. In Rockwall County, the city of Fate has been the fastest-growing city since 2000, averaging a CAGR of 20 percent. Collin County contains many suburbs that have averaged double-digit CAGR's since 2000, including Anna, Celina, Melissa, and Prosper. Also in Collin County, both Frisco and McKinney now have close to 200,000 persons each, adding over 166 and 144 thousand since 2000 respectively.

City	1970	1980	1990	2000	2010	2019	Compound Annual Growth Rate 1970-2000	Compound Annual Growth Rate 2000-2019
Addison	593	5,553	8,783	14,166	13,056	16,263	11.16%	0.73%
Allen	1,940	8,314	18,309	43,554	84,246	105,623	10.93%	4.77%
Anna	736	855	904	1,225	8,249	15,000	1.71%	14.09%
Arlington	90,643	160,113	261,721	332,969	365,438	398,854	4.43%	0.95%

Table 10: Historical City Population 1970 - 20	2019
--	------

City	1970	1980	1990	2000	2010	2019	Compound Annual Growth Rate 1970-2000	Compound Annual Growth Rate 2000-2019
Balch Springs	10,464	13,746	17,406	19,375	23,728	25,007	2.07%	1.35%
Bedford	10,049	20,821	43,762	47,152	46,979	49,049	5.29%	0.21%
Benbrook	8,169	13,579	19,564	20,208	21,234	23,502	3.07%	0.80%
Burleson	7,713	11,734	16,113	20,976	36,690	48,225	3.39%	4.48%
Carrollton	13,855	40,595	82,169	109,576	119,097	139,248	7.14%	1.27%
Celina	1,272	1,520	1,737	1,861	6,028	16,299	1.28%	12.10%
Cleburne	16,015	19,218	22,205	26,005	29,337	31,295	1.63%	0.98%
Cockrell Hill	3,515	3,262	3,746	4,443	4,193	4,618	0.78%	0.20%
Colleyville	3,342	6,700	12,724	19,636	22,807	27,091	6.08%	1.71%
Coppell	1,728	3,826	16,881	35,958	38,659	41,421	10.65%	0.75%
Corinth	461	1,264	3,944	11,325	19,935	22,099	11.26%	3.58%
Crowley	2,662	5,852	6,974	7,467	12,838	16,460	3.50%	4.25%
Dallas	844,401	904,078	1,006,877	1,188,580	1,197,816	1,343,573	1.15%	0.65%
Duncanville	14,105	27,781	35,748	36,081	38,524	38,751	3.18%	0.38%
Euless	19,316	24,002	38,149	46,005	51,277	57,346	2.93%	1.17%
Fairview	463	893	1,554	2,644	7,248	9,141	5.98%	6.75%
Farmers Branch	27,492	24,863	24,250	27,508	28,616	48,158	0.00%	2.99%
Fate	329	263	475	497	6,357	15,603	1.38%	19.89%
Flower Mound	1,685	4,402	15,527	50,702	64,669	79,135	12.02%	2.37%
Forney	1,745	2,483	4,070	5,588	14,661	27,236	3.96%	8.69%
Fort Worth	393,476	385,164	447,619	534,697	741,206	909,585	1.03%	2.84%
Frisco	1,845	3,420	6,138	33,714	116,989	200,490	10.17%	9.84%
Garland	81,437	138,857	180,650	215,768	226,876	239,928	3.30%	0.56%
Grand Prairie	50,904	71,462	99,616	127,427	175,396	194,543	3.11%	2.25%
Grapevine	7,049	11,801	29,202	42,059	46,334	55,281	6.13%	1.45%
Haltom City	28,127	29,014	32,856	39,018	42,409	43,874	1.10%	0.62%
Hickory Creek	218	1,422	1,893	2,078	3,247	4,918	7.81%	4.64%
Highland Park	10,133	8,909	8,739	8,842	8,564	9,083	-0.45%	0.14%
Highland Village	516	3,246	7,027	12,173	15,056	16,668	11.11%	1.67%
Hurst	27,215	31,420	33,574	36,273	37,337	38,655	0.96%	0.34%

City	1970	1980	1990	2000	2010	2019	Compound Annual Growth Rate 1970-2000	Compound Annual Growth Rate 2000-2019
Irving	97,260	109,943	155,037	191,615	216,290	239,798	2.29%	1.19%
Joshua	924	1,470	3,821	5,031	6,088	8,101	5.81%	2.54%
Lake Dallas	1,431	3,177	3,656	6,166	7,105	8,063	4.99%	1.42%
Lewisville	9,264	24,273	46,521	77,737	95,290	109,212	7.35%	1.81%
Little Elm	363	926	1,255	3,646	25,898	53,126	7.99%	15.14%
Lucas	540	1,371	2,205	2,890	5,166	8,553	5.75%	5.88%
Mansfield	3,658	8,102	15,607	28,031	56,368	72,419	7.02%	5.12%
McKinney	15,193	16,249	21,283	54,369	131,117	199,177	4.34%	7.07%
Melissa	504	604	557	1,350	4,695	12,117	3.34%	12.24%
Mesquite	55,131	67,053	101,484	124,523	139,824	140,937	2.75%	0.65%
Murphy	261	1,150	1,547	3,099	17,708	20,500	8.60%	10.46%
North Richland Hills	16,514	30,592	45,895	55,635	63,343	70,670	4.13%	1.27%
Plano	17,872	72,331	128,713	222,030	259,841	287,677	8.76%	1.37%
Princeton	1,105	3,408	2,321	3,477	6,807	13,894	3.90%	7.56%
Prosper	501	675	1,018	2,097	9,423	24,579	4.89%	13.83%
Richardson	48,405	72,496	74,840	91,802	99,223	121,323	2.16%	1.48%
Richland Hills	8,865	7,977	7,978	8,132	7,801	7,953	-0.29%	-0.12%
River Oaks	8,193	6,890	6,580	6,985	7,427	7,630	-0.53%	0.47%
Rockwall	3,121	5,939	10,486	17,976	37,490	45,888	6.01%	5.06%
Rowlett	2,243	7,522	23,260	44,503	56,199	67,339	10.47%	2.20%
Royse City	1,535	1,566	2,206	2,957	9,349	14,702	2.21%	8.81%
Sachse	777	1,640	5,346	9,751	20,329	26,046	8.80%	5.31%
Seagoville	4,390	7,304	8,969	10,823	14,835	16,861	3.05%	2.36%
Southlake	2,031	2,808	7,065	21,519	26,575	32,376	8.19%	2.17%
Sunnyvale	995	1,404	2,228	2,693	5,130	6,841	3.37%	5.03%
Terrell	14,182	13,169	12,490	13,606	15,816	18,869	-0.14%	1.74%
The Colony	N/A	11,586	22,113	26,531	36,328	44,438	N/A	2.75%
University Park	23,498	22,254	22,259	23,324	23,068	24,985	-0.02%	0.36%
Wylie	2,675	3,152	8,716	15,132	41,427	53,067	5.95%	6.83%

Source: U.S. Census Bureau, 2010 and 2019

EMPLOYMENT TRENDS AND PROJECTIONS

Regional and County

In the past, a downturn in the oil industry meant a downturn in the Dallas-Fort Worth job market. Recently, the diversity of the region's economy has helped it weather these downturns due to well-represented job strength in the service industries - specifically professional and business services, education and health services and leisure and hospitality. Prior to the region's steady employment growth, the workforce in the Dallas-Fort Worth MSA fared comparatively well during the 2008-2009 national recession. While there were substantial job losses, over the past decade, those losses have been replaced with new jobs and the local economy had more workers at the end of 2012 than it did before the recession began. This accomplishment eluded the national economy. Figure 4 shows the total employment in the Dallas-Fort Worth MSA between 2008 and 2018 based upon the Texas Workforce Commission's Quarterly Census of Employment and Wages (QCEW) data. The overall trend for the region has been positive, although not consistently so. The region had approximately 2.88 million jobs in January 2008, growing to a peak of 2.95 million jobs in June later that year. After that point, the region's employment began to slowly decline with a sharp contraction occurring in December 2008. During that month, employment in the Dallas-Fort Worth MSA dropped by almost 100,000 jobs. While a decline in the number of workers between December and January is typical, since it is a period of seasonal employment, the lack of recovery during subsequent months demonstrates that these job cuts were indeed permanent. The region's total employment fell to its lowest level during January 2010, when it reached 2.74 million jobs. Since then, barring seasonal fluctuations, total employment has steadily risen in the Dallas-Fort Worth MSA topping out in December 2019 at 3.72 million jobs.



Figure 4: Total Employment in the Dallas-Fort Worth MSA, Jan 2007 - Dec 2019

EMPLOYMENT TRENDS AND PROJECTIONS

Figure 5 shows a longer period of employment data using the Texas Workforce Commission's Current Employment Estimates (CES) data. The CES data differ from the QCEW data, since they are based upon surveys of employers rather than the actual count of employees, as the QCEW data are. Nonetheless, the discrepancies between the actual and estimated employment numbers tend to be relatively consistent, so the CES data can provide a reasonable surrogate for understanding employment trends when longer term QCEW data are not available. The data in Figure 5 show the percentage month-on-month employment change between January 2000 and December 2018. The unadjusted employment change shows considerable volatility, due to seasonal and academic employment. However, by adding a trend line showing the 12-month moving average, this volatility can be smoothed and the trends can be discerned. The 12-month moving average trend line shows that the Dallas-Fort Worth region suffered a prolonged period of job loss between 2001 and 2003, due to the downturn in the computer and telecommunications industries, in addition to the recessionary effects of the September 11, 2001 terrorist attacks. The region's economy recovered by early 2004 and enjoyed a period of sustained employment growth until 2008, when the national recession took hold. Although the job loss of the 2008-2009 Great Recession occurred over a briefer period than the previous recession, the job losses were steeper. Since mid-2010, the Dallas-Fort Worth MSA has experienced another sustained period of employment growth longer than the consistent period seen in the mid-2000s.



Figure 5: Month-on-Month Employment Change for Dallas-Fort Worth MSA, January 2000 to January 2020

Note: Figure based upon Current Employment Statistics (CES) data. Source: Texas Workforce Commission, 2020

EMPLOYMENT TRENDS AND PROJECTIONS

Figure 6 shows the year-on-year employment change for the United States, Texas, and the Dallas-Fort Worth MSA. These data show that the recession which began in 2001 had a more significant effect on the Dallas-Fort Worth region, than it did on the United States or Texas. After recovering, the region's employment grew more quickly through the mid-2000s than it did in the nation overall, with a rate of growth that was very similar to Texas'. In fact, employment change in the Dallas-Fort Worth region has outperformed the overall rate for the United States through January 2020, even during periods when total employment was contracting. Although it did not decouple from the Texas economy, the region underperformed against the Texas economy, starting in early 2007, and continued to do so until early 2011. More recently, the Dallas-Fort Worth MSA had outperformed the State since November 2012, but in August through November 2018, Texas' employment grew faster than the MSA.



Figure 6: Year-on-Year Employment Change for the United States, Texas, and the Dallas-Fort Worth MSA, January 2001 to January 2020

Note: Figure based upon Current Employment Statistics (CES) data. Source: Texas Workforce Commission, 2020

Table 11 shows more detailed employment data for the four largest MSAs in Texas during the period between 2008 through the third quarter of 2019. During this time, the Dallas-Fort Worth MSA had a net employment increase of 676,405 jobs, which was the highest overall job growth of the four MSAs. However, when compared against the other three largest MSAs in the state, the Dallas-Fort Worth MSA has the second-slowest CAGR at 1.89 percent. The Houston MSA had the second largest overall job growth among the MSAs with 455,541 new jobs between 2008 and 3Q2019, but the Austin MSA had the highest CAGR at 2.98 percent, adding 293,015 new jobs. While the Dallas-Fort Worth region has had very robust population growth over the past decade overall employment growth has lagged other regions of the state.

Year	Austin MSA	Dallas-Fort Worth MSA	Houston MSA	San Antonio MSA
2008	767,722	2,954,502	2,571,444	838,108
2009	744,782	2,820,173	2,470,741	820,416
2010	767,528	2,867,212	2,513,465	833,983
2011	792,923	2,932,936	2,584,208	850,062
2012	831,321	3,027,456	2,693,259	876,824
2013	863,890	3,116,426	2,784,378	899,892
2014	899,669	3,234,913	2,894,354	935,712
2015	943,403	3,342,633	2,906,566	962,917
2016	971,576	3,430,316	2,889,071	991,870
2017	1,002,676	3,515,646	2,938,534	1,008,294
2018	1,040,779	3,592,891	3,013,874	1,028,409
3Q2019	1,060,737	3,630,907	3,026,985	1,035,343

TOTAL EMPLOYMENT

TOTAL EMPLOYMENT CHANGE

Year	Austin MSA	Dallas-Fort Worth MSA	Houston MSA	San Antonio MSA
2008-2009	-22,940	-134,329	-100,703	-17,692
2009-2010	22,746	47,039	42,724	13,567
2010-2011	25,395	65,724	70,743	16,079
2011-2012	38,398	94,520	109,051	26,762
2012-2013	32,569	88,970	91,119	23,068
2013-2014	35,779	118,487	109,976	35,820
2014-2015	43,734	107,720	12,212	27,205
2015-2016	28,173	87,683	-17,495	28,953
2016-2017	31,100	85,330	49,463	16,424
2017-2018	38,103	77,245	75,340	20,115
2018-3Q2019	19,958	38,016	13,111	6,934
TOTAL	293,015	676,405	455,541	197,235

COMPOUNDED ANNUAL GROWTH RATE

Year	Austin MSA	Dallas-Fort Worth MSA	Houston MSA	San Antonio MSA
2008-2009	-2.99%	-4.55%	-3.92%	-2.11%
2009-2010	3.05%	1.67%	1.73%	1.65%
2010-2011	3.31%	2.29%	2.81%	1.93%
2011-2012	4.84%	3.22%	4.22%	3.15%
2012-2013	3.92%	2.94%	3.38%	2.63%
2013-2014	4.14%	3.80%	3.95%	3.98%
2014-2015	4.86%	3.33%	0.42%	2.91%
2015-2016	2.99%	2.62%	-0.60%	3.01%
2016-2017	3.20%	2.49%	1.71%	1.66%
2017-2018	3.80%	2.20%	2.56%	1.99%
2018-3Q2019	1.92%	1.06%	0.44%	0.67%
2008-3Q2019	2.98%	1.89%	1.49%	1.94%

Note: Table based upon QCEW data. Source: Texas Workforce Commission, February 2020

Page 22 Research and Demographic Solutions Group

Unemployment

Figure 7 shows the unemployment rates for the United States, Texas, and the Dallas-Fort Worth MSA. These data show the unemployment rate in the region has closely tracked the overall unemployment rate in Texas during most of the period between January 2000 and December 2018. The Dallas-Fort Worth MSA experienced its lowest unemployment rate during December 2000, when it fell to 3.0 percent. During the recession that began in 2001, the regional unemployment rate peaked at 7.5 percent in June 2003. As the regional and national economy recovered and employment expanded during the mid-2000s, the regional unemployment rate fell to approximately 4.0 percent before increasing rapidly during 2008 and 2009. During the 2008-2009 Recession, the regional unemployment rate reached 8.5 percent in June 2009 and sustained that general level for the next two years. From 2011 to 2018, the regional unemployment rate has followed a downward trend until December 2014, and since it has averaged 3.8 percent. The most recent data from January 2020 report a 3.3 percent unemployment rate for the DFW MSA.



Figure 7: Unemployment Rate of Dallas-Fort Worth MSA, Texas, and the United States, January 2000 to January 2020

Note: The unemployment rate data in Figure 7 are based upon seasonally unadjusted unemployment rates. The unadjusted figures were used to maintain consistency between the three geographies of the United States, Texas, and the Dallas Fort-Worth MSA. While seasonally adjusted data are available from the Texas Workforce Commission for the United States and Texas, they are not available for Texas's MSAs.

Source: Texas Workforce Commission, 2020

Relocations of over 130 major corporate headquarters since 2010 has spurred an strong growth in both residential and commercial construction throughout the Dallas-Fort Worth region. Domestic and international investment in DFW remains strong and will likely assure supply increases in almost all facets of the real estate markets for some time to come. Like almost every metropolitan area in the United States, the 2008-2009 Recession had a profound impact on the regional housing market, as well as commercial real estate. The near collapse of the nation's financial system and the severe curtailment of demand due to the subsequent recession led to a sharp reduction in the number of new single-family homes built after 2006. Multifamily construction was also severely impacted by the recession, although it later benefited because fewer households were able to secure the financing to purchase new homes. Similarly, all aspects of commercial real estate were affected by the recession, either due to tight credit markets or financially stressed tenants. Fortunately, the nation's commercial real estate market did not experience the same collapse as the residential market (a real and significant threat at the time) and it has steadily become one of the strongest in the U.S. over the past decade.

Residential Trends

Figure 8 shows the U.S. Census Bureau's single-family building permit data from Real Estate Center at Texas A&M University, which reports the number of monthly single-family building permits issued in the Dallas-Fort Worth-Arlington MSA based upon 2015 U.S. Census MSA boundaries. In this 30-year time frame, historical single family building permit activity in the Metroplex showed relatively steady growth after the stock market crash in 1988 until the housing bubble burst in Fall of 2006. After bottoming out in January 2009, the region has seen - barring a few seasonal hiccups - steady, sustained single-family growth. From January 2015 to the most current January 2020 figures, the region has, on average, issued 82 single family building permits per day. In December 2018, only 1,734 permits were issued, the lowest monthly total since December 2015. The region quickly rebounded and has remained over 2,000 permits every month since. Low interest rates, job growth, pent-up demand and low supply will likely result in the region's single family construction rates to continue to remain substantial in the foreseeable future, but attention to new data will be essential to determine if the market may be leveling off.

Figure 9 illustrates the number of single-family building permits issued in Collin, Dallas, Denton and Tarrant Counties. The data show that building permit activity was especially robust in Tarrant County through 2006, reaching almost 2,000 permits during October 2005, then dropped sharply thereafter to less than 500 single-family permits per month through April 2013. Denton County, on the other hand, was a less active market throughout this period and the number of single-family building permits issued actually began declining during 2002. Overall, monthly building permit activity during 2012 and early 2013 was lower than that in early 2000. Since January 2013, all counties have experienced a significant upswing in residential construction. December 2018 saw the lowest monthly totals for the year in all four counties, though often the winter months are the slowest for single family home sales.



Figure 8: New Private Housing Units Authorized by Building Permits: 1-Unit Structures for Dallas-Fort Worth-Arlington, TX MSA 1990-2020

Figure 9: Single-Family Building Permits Issued in Dallas, Tarrant, Collin and Denton Counties January 2000 to January 2020



Sources: Texas A&M Real Estate Center, March 2020

Page 25 Research and Demographic Solutions Group

As shown in Figure 10, the number of permitted multifamily units in Dallas, Tarrant, Collin, and Denton Counties has varied substantially between 2000 and 2019. The number of permitted units was higher during the region's downturn from 2001 to 2003. As the single-family housing market began to grow, apartment construction slowed during 2004 before increasing again in 2005 and continued through 2008. However, during 2009, the number of units permitted fell by roughly two-thirds to 5,256 units and the number of permits issued during 2010 was even lower. However, as the region's population has continued to grow strongly and single-family homes became difficult for some segments of the population to purchase, the number of permitted multifamily units has increased dramatically. 2012 through 2014 saw 16,000 or more permits issued for the four counties, while in 2015 a historic 27,106 permits were confirmed, over 16,000 of these in Dallas County alone. In the five-year span from 2015 to 2019, the four core counties have added 130,000 new units, an average of almost 26,000 per year.





Source: Texas A&M Real Estate Center, 2018

Table 12 shows the conditions of multifamily housing market within the various submarkets in the Dallas-Fort Worth region during 3Q2018 and 3Q2019. According to the real estate research firm Berkadia, the region had an overall occupancy rate of 95.2 percent during 3Q2019, up from 94.9 percent a year ago. Rents have increased slightly in every submarket except two, for an overall regional increase of 2.8 percent from \$1,128 to \$1,160 per unit. The most recent data show the highest multifamily occupancy rates are in the rural Ellis and Kaufman County submarkets and the highest effective monthly rent is in the Intown Dallas submarket at \$1,735.

	Occupancy			Average Monthly Rent			Delivered Units		
Submarket	3Q18	3Q19	Change	3Q18	3Q19	Change	3Q19	Annual	
Addison/Bent Tree	95.3%	95.6%	0.3%	\$1,176	\$1,204	\$28	139	481	
Allen/McKinney	94.7%	94.6%	-0.1%	\$1,197	\$1,223	\$26	486	1,587	
Burleson/Johnson County	96.9%	95.9%	-1.0%	\$967	\$1,008	\$41	0	249	
Carrollton/Farmers Branch	96.1%	95.2%	-0.9%	\$1,134	\$1,159	\$25	390	1,865	
Central Arlington	96.1%	95.7%	-0.4%	\$963	\$996	\$33	0	0	
Central/East Plano	94.7%	95.0%	0.3%	\$1,187	\$1,233	\$46	247	247	
Denton	96.0%	96.0%	0.0%	\$1,053	\$1,079	\$26	582	1,148	
East Dallas	95.1%	94.4%	-0.7%	\$1,328	\$1,363	\$35	190	619	
East Fort Worth	94.2%	93.4%	-0.8%	\$854	\$885	\$31	0	0	
Ellis County	97.9%	97.1%	-0.8%	\$1,010	\$1,034	\$24	127	514	
Far East Dallas	94.9%	94.5%	-0.4%	\$891	\$939	\$48	39	39	
Far North Dallas	95.1%	95.2%	0.1%	\$1,028	\$1,054	\$26	0	0	
Frisco	94.5%	93.9%	-0.6%	\$1,312	\$1,314	\$2	467	2,684	
Garland	96.3%	96.1%	-0.2%	\$1,002	\$1,042	\$40	237	455	
Grand Prairie	95.9%	95.4%	-0.5%	\$1,070	\$1,102	\$32	496	1,153	
Grapevine/Southlake	95.2%	95.6%	0.4%	\$1,325	\$1,353	\$28	0	226	
Haltom City/Meacham	95.5%	94.3%	-1.2%	\$936	\$997	\$61	90	833	
Hunt County	97.3%	94.3%	-3.0%	\$791	\$822	\$31	0	0	
Hurst/Euless/Bedford	95.9%	95.4%	-0.5%	\$1,043	\$1,071	\$28	0	793	
Intown Dallas	94.3%	94.2%	-0.1%	\$1,735	\$1,724	-\$11	703	1,500	
Intown Fort Worth/University	93.4%	91.9%	-1.5%	\$1,383	\$1,389	\$6	631	3,140	
Kaufman County	96.7%	96.8%	0.1%	\$1,032	\$1,072	\$40	0	0	
Las Colinas/Coppell	94.5%	95.4%	0.9%	\$1,328	\$1,354	\$26	377	888	
Lewisville/Flower Mound	95.2%	95.4%	0.2%	\$1,147	\$1,177	\$30	83	508	
Love Field/Medical District	94.1%	94.5%	0.4%	\$1,270	\$1,287	\$17	0	222	
Mesquite	95.9%	95.4%	-0.5%	\$954	\$982	\$28	0	0	
North Arlington	95.3%	95.1%	-0.2%	\$959	\$985	\$26	0	0	
North Dallas	93.8%	94.5%	0.7%	\$1,119	\$1,136	\$17	0	0	
North Fort Worth/Keller	95.7%	95.1%	-0.6%	\$1,289	\$1,328	\$39	78	382	
North Irving	94.5%	93.9%	-0.6%	\$1,047	\$1,074	\$27	0	0	
North Oak Cliff/West Dallas	94.6%	94.5%	-0.1%	\$1,141	\$1,179	\$38	162	1,280	
Northeast Dallas	94.7%	93.8%	-0.9%	\$967	\$995	\$28	0	0	
Northeast Fort Worth/NRH	95.9%	95.2%	-0.7%	\$1,104	\$1,151	\$47	114	336	
Northwest Dallas	96.8%	96.2%	-0.6%	\$934	\$974	\$40	143	425	
Oak Lawn/Park Cities	93.3%	94.1%	0.8%	\$1,608	\$1,597	-\$11	190	597	
Richardson	94.3%	94.9%	0.6%	\$1,290	\$1,318	\$28	148	1,528	
Rockwall/Rowlett/Wylie	95.0%	94.7%	-0.3%	\$1,255	\$1,268	\$13	170	1,414	
South Arlington/Mansfield	95.3%	95.8%	0.5%	\$1,120	\$1,171	\$51	0	0	
South Fort Worth	95.2%	95.1%	-0.1%	\$819	\$846	\$27	0	0	

Table 12: Overview of the Dallas-Fort Worth Apartment Market during the Third Quarter 2019

	Occupancy			Average Monthly Rent			Delivered Units	
Submarket	3Q18	3Q19	Change	3Q18	3Q19	Change	3Q19	Annual
South Irving	96.2%	96.3%	0.1%	\$934	\$969	\$35	0	0
Southeast Dallas	94.8%	94.1%	-0.7%	\$825	\$859	\$34	0	0
Southern Dallas County	96.0%	95.9%	-0.1%	\$1,014	\$1,054	\$40	0	0
Southwest Dallas	96.8%	95.3%	-1.5%	\$874	\$936	\$62	49	49
Southwest Fort Worth	94.9%	94.8%	-0.1%	\$916	\$943	\$27	0	0
The Colony/Far North Carrollton	94.7%	94.9%	0.2%	\$1,318	\$1,357	\$39	381	381
West Fort Worth/Parker County	95.8%	95.5%	-0.3%	\$987	\$1,008	\$21	68	68
West Plano	94.9%	95.4%	0.5%	\$1,273	\$1,300	\$27	328	480
Zang Triangle/Cedars/Fair Park	94.9%	94.0%	-0.9%	\$1,113	\$1,153	\$40	0	0
Totals	95.2%	94.9%	-0.3%	\$1,128	\$1,160	\$32	7,115	26,091

Table 12: Overview of the Dallas-Fort Worth Apartment Market during the Third Quarter 2019 (continued)

Source: Berkadia DFW Multifamily Report, 3Q2019

Office Trends

Due to the influx of corporate headquarters to the region, the formation of new businesses and the growth of pre-existing ones, the office market in Dallas-Fort Worth continued to be strong with over 6.6 million square feet (MSF) under construction during 4Q19. According to the real estate firm Transwestern, the Dallas area office market had an overall vacancy rate of 17.9 percent during the fourth quarter of 2019, while the Fort Worth area office market had a vacancy rate of 12.4 percent. Overall, the Dallas area market contained 246 MSF of rentable space while the Fort Worth area market had 45 MSF. Geographically, the largest concentrations of office space in the Dallas-Fort Worth region are in the Dallas Central Business District, the Upper Tollway/Legacy area and the Lower Tollway submarkets, which together account for almost 85 MSF with 1.725 MSF of office currently under construction. The highest vacancy rates during the fourth quarter of 2019 were found in the Grand Prairie area (44.7 percent) and the Plano area (30 percent). The Dallas CBD, with a vacancy rate of 22.6 percent, is slowly improving, but is challenged by the popularity of uptown office properties.

SUBMARKET	INVENTORY	TOTAL VACANCY SF	OVERALL VACANCY	UNDER CONSTRUCTION	GROSS RENTS
Uptown/Turtle Creek	13,708,171	1,985,324	14.5%	656,774	\$39.78
Dallas CBD	32,609,273	7,358,847	22.6%	259,230	\$25.62
Stemmons Freeway	12,632,114	2,988,256	23.7%	200,000	\$17.92
Preston Center	5,471,007	571,909	10.5%	297,000	\$40.41
Central Expressway	12,047,848	1,575,522	13.1%	30,252	\$30.19
Deep Ellum/East Dallas	2,137,437	423,325	19.8%	372,582	\$33.04
West LBJ Freeway	4,317,749	907,276	21.0%		\$18.53
East LBJ Freeway	16,459,748	3,600,635	21.9%		\$23.43
Lower Tollway	21,978,753	4,774,161	21.7%	48,000	\$26.46
Upper Tollway/ Legacy	30,174,194	4,567,948	15.1%	1,419,785	\$32.16
Frisco/The Colony	5,438,334	921,137	16.9%	634,756	\$33.02

Table 13: Overview of the Dallas Area Office Market during the Fourth Quarter 2019

SUBMARKET	INVENTORY	TOTAL VACANCY SF	OVERALL VACANCY	UNDER CONSTRUCTION	GROSS RENTS
Richardson	20,485,899	3,387,700	16.5%		\$22.83
Plano	6,789,323	2,039,988	30.0%	352,091	\$25.03
Allen/McKinney	5,359,668	452,478	8.4%	300,000	\$22.96
Las Colinas/Urban Center	9,560,841	1,489,248	15.6%		\$30.20
Las Colinas/Office Center	16,823,648	2,273,959	13.5%		\$23.79
DFW Freeport	14,222,253	1,643,529	11.6%	983,806	\$23.23
South Irving	1,406,664	161,833	11.5%		\$16.26
Lewisville	4,459,612	658,618	14.8%	244,000	\$22.14
Denton	1,641,773	54,375	3.3%		\$22.14
Garland	1,210,742	98,264	8.1%		\$13.04
Rockwall	500,134	18,557	3.7%		\$28.13
Mesquite/Terrell/Forney	580,511	69,099	11.9%		\$20.93
Southeast Dallas	522,277	30,582	5.9%		\$16.70
Oak Cliff	2,678,594	455,853	17.0%		\$20.90
Grand Prairie	3,722,516	1,664,272	44.7%		\$19.32
TOTAL - DALLAS	246,939,083	44,172,695	17.9%	5,798,276	\$26.46

 Table 13: Overview of the Dallas Area Office Market during the Fourth Quarter 2019 (continued)

Source: Transwestern DFW Office Market Report, 4Q 2019

Table 14: Overv	view of the Fort V	North Area Office	e Market during th	e Fourth Quarter 2	2019

SUBMARKET	INVENTORY	TOTAL VACANCY SF	OVERALL VACANCY	UNDER CONSTRUCTION	GROSS RENTS
Fort Worth CBD	9,661,379	1,568,537	16.2%		\$27.56
Northeast Fort Worth	3,583,525	502,041	14.0%		\$23.56
Northwest Fort Worth	545,864	34,225	6.3%		\$18.48
Alliance	2,894,580	100,728	3.5%		\$25.43
Westlake/Grapevine	7,397,806	1,240,321	16.8%	746,258	\$29.89
Mid-Cities	5,715,125	576,634	10.1%	22,000	\$18.58
Arlington/Mansfield	7,076,919	662,478	9.4%		\$20.59
Southeast Fort Worth	1,026,796	78,151	7.6%		\$16.89
Southwest Fort Worth	7,328,289	851,497	11.6%	43,291	\$24.00
TOTAL – FORT WORTH	45,230,283	5,614,612	12.4%	811,549	\$24.94

Source: Transwestern DFW Office Market Report, 4Q 2018

Industrial/Warehousing Trends

As one of the primary distribution centers in the United States, the Dallas-Fort Worth region has an enormous amount of industrial/warehouse inventory totaling 781 million square feet as of the fourth quarter of 2019 (See Table 15). Warehouse distribution accounts for almost 77 percent of the total industrial market and with 28.6 MSF currently under construction, accounts for 97 percent of DFW's construction. In 4Q2019, 10.5 MSF of deliveries to the region pushed the industrial/warehousing vacancy rate up slightly to 7.0 percent. Strong demand helped generate 20.6 MSF in net absorption during 2019 and more than 15 MSF is expected to deliver during the first half of 2019.

Table 16 illustrates that almost 30 MSF of industrial properties are under construction in Dallas-Fort Worth at the end of 2019. Three submarkets, North Fort Worth, DFW Airport, and Great Southwest, account for 61 percent of the total construction in the region.

SUBMARKET	INVENTORY	SF AVAILABLE IMMEDIATELY	TOTAL VACANCY RATE 4Q2019	UNDER CONSTRUCTION	12 MONTH TOTAL NET ABSORPTION
Flex/High-Tech	98,082,307	6,026,764	6.1%	245,783	1,103,415
Manufacturing	82,030,359	1,726,252	2.1%	748,520	1,954,467
Warehouse Distribution	601,148,516	46,917,860	7.8%	28,568,931	17,499,251
TOTAL - DFW METROPLEX	781,261,182	54,670,876	7.0%	29,563,234	20,557,133

Table 15: Overview of the Dallas-Fort Worth Industrial Market during the Fourth Quarter 2019

Source: Transwestern 4Q DFW Industrial Market Report, 2019

Table 16: Industrial Under Construction - Dallas-Fort Worth Metro Fourth Quarter 2019

SUBMARKET	SQFT
North Fort Worth	10,776,528
DFW Airport	4,269,907
Great Southwest	3,046,210
South Dallas	2,885,942
South Stemmons	2,688,822
Northeast Dallas	2,381,039
South Fort Worth	1,487,422
East Dallas	1,200,000
Northwest Dallas	827,364
Total DFW	29,563,234

Source: Transwestern 4Q DFW Industrial Market Report, 2019

Retail Trends

Even with many retail brick and mortar store closings due to the rise in e-commerce, occupancy rates remained near all-time high levels in the Dallas-Fort Worth retail market during 2019. According to CBRE's 4Q2019 Marketview report, the DFW retail market now contains almost 300 million square feet. Regionally, total absorption was up considerably during 2019, with 3.6 MSF compared to 1.5 MSF during 2018. The top three submarkets, the Mid-Cities, West Dallas, and North Central Dallas submarkets, delivered almost 1.1 MSF during 2019. Occupancy rates for retail were slightly higher in the Dallas area (94.6 percent) than in Fort Worth (94.2 percent).

MARKET	2013	2014	2015	2016	2017	2018	2019		
Dallas Total									
Absorption	1,618,615	2,389,167	4,022,612	5,703,153	3,114,680	1,165,413	2,095,695		
Delivered Construction	927,046	1,033,553	2,017,656	2,974,655	2,683,370	1,427,163	1,128,430		
Rentable Building Area	178,202,213	177,535,528	181,192,999	188,204,340	191,031,109	194,074,656	194,902,258		
Occupancy Rate	91.6%	92.0%	93.6%	94.2%	94.6%	94.4%	94.6%		
Fort Worth Tot	Fort Worth Total								
Absorption	1,409,667	2,206,396	2,695,558	2,885,492	958,637	302,895	1,509,629		
Delivered Construction	838,057	1,089,605	1,914,914	1,468,513	1,005,725	932,137	670,471		
Rentable Building Area	95,225,567	95,875,460	97,955,117	98,754,515	102,006,739	104,173,420	104,593,444		
Occupancy Rate	91.8%	92.7%	93.4%	94.6%	94.8%	94.4%	94.2%		
DFW Market To	otal								
Absorption	3,028,282	4,595,563	6,718,170	8,588,645	4,073,317	1,468,308	3,605,324		
Delivered Construction	1,765,103	2,123,158	3,932,570	3,689,095	3,689,095	2,359,300	1,798,901		
Rentable Building Area	273,427,780	273,410,988	279,148,116	293,037,848	293,037,848	298,248,076	299,495,702		
Occupancy Rate	91.7%	92.2%	92.7%	94.3%	94.6%	94.4%	94.5%		

Table 17: Overview of the Dallas-Fort Worth Retail Market 2013 - 2019

Source: CBRE Marketview, 4Q2019

RDS Forecast Review and Results

RDS FORECAST REVIEW AND RESULTS

RDS was retained to review the latest socioeconomic forecasts for the NTTA System Demographic Review AOI for accuracy and reasonableness. For the purpose of this study, CDM Smith provided RDS with households, population, and employment data from the demographic data that were used to develop Mobility 2045 at the TAP zone level. The data was provided by NCTCOG in four intervals, 2018, 2020, 2028, 2037, and 2045.

Passed in October 2017 by the Regional Transportation Council, the NCTCOG 2045 Demographic Forecast stands as the official demographic projection for the 2045 Metropolitan Plan. In simple terms, the new 2045 Forecast is the 2040 Forecast with an additional iteration of 2045 added using similar forecasting methodology to derive new supplemental totals.

These projection processes started with the establishment of regional household and employment control totals for the forecast years. The control totals were based on projections purchased from Dr. Ray Perryman, who has developed models for forecasting economic and demographic factors. The control totals were allocated to forecast districts using the Gravity Land Use Model (G-LUM). This specialized model was developed by Dr. Kara Kockelman at the University of Texas at Austin and further improved by NCTCOG staff in cooperation with UT Austin. The forecasts at the district level were then disaggregated to TAP zones using a disaggregation model developed at NCTCOG. TAP zone demographics were then sent to the respective cities for review and comment.

GIS Review: RDS relied heavily on geographic information system (GIS) technology during the comprehensive review process. RDS gathered multiple years of aerial photography, zoning and future land use maps, parcel boundaries and development databases for GIS analysis. Using GIS, RDS determined TAP zones where new development was likely to occur. RDS also acquired current housing data information from Metrostudy, one of the nation's leading new home research consultants. This data was also converted to a GIS dataset and mapped during the review process. Through the use of GIS, multiple datasets were displayed side-by-side. This allowed staff to review all model years of the NCTCOG Forecast simultaneously.

Households/Population: Original data from NCTCOG was provided to RDS by CDM Smith for the AOI for the years 2018, 2020, 2028, 2037, and 2045. After accounting for growth discrepancies between 2018 and 2028 in the original data, specific attention was given to areas that were projected to see significant household growth. The housing data was plotted and future and vacant lot inventories were reviewed for inclusion. The development dataset also included residential projects and was mapped and reviewed along with Metrostudy data (See Figure 11 for a sample map). Specific attention was also given to areas with the greatest potential of redevelopment. For example, the City of Plano provided RDS a future land use shapefile that included their "Transit Village" designation. These villages are small geographic areas zoned for dense, multi-use development that is mass-transit and pedestrian friendly. Specific attention was given to areas like these, as well as future potential commuter rail stations or other land use or zoning areas that cities place focus on for future development.


Figure 11: Sample Development Monitoring Map

Employment: RDS staff reviewed the data with specific attention to zones that showed significant growth during the forecast years. The development database was very important, as many of the points of interest included building square footages and future projects. RDS also used consistent employees per square footage data (see Appendix B) for estimating job potential. The future year review also used data and information gathered from many of the cities within the AOI, as well as NCTCOG's Development Monitoring database that contains information concerning commercial developments that were under construction, future, or conceptual. Employment clusters around current and future rail stations and highway frontage were also reviewed for potential growth or redevelopment.

Initial NCTCOG Data Adjustments: During preliminary analysis of NCTCOG's 2045 demographic data, RDS discovered that 1,700 of the 4,038 TAP zones in the NTTA System Review AOI showed decreases in households from 2018 to 2020, as did 1,726 TAP zones between 2020 and 2028. Similarly, NCTCOG's data showed decreases in employment in 1,144 zones from 2018 to 2020 and 1,100 from 2020 to 2028 . RDS reached out to NCTCOG's modeling team and was told that their 2018 and 2020 data was derived using a different methodology than their 2028, 2037 and 2045 totals.

RDS FORECAST REVIEW AND RESULTS

The team explained that 2018 data are based on observed data and will be naturally jagged in small geographies while the later data assume a smooth transition from one year to another.

In order for RDS to derive baseline 2018 and 2020 TAP zone household data that was, in most cases, less than NCT-COG's 2028 totals, RDS used 2010 Census data and NCTCOG's 2028 households to interpolate new 2018 household figures. Each TAP zone was then reviewed for accuracy.

Establishing 2018 and 2020 zonal totals where NCTCOG's employment figures decreased between 2018 and 2028 was more problematic because of the lack of an independent "official" count, especially at a small geography. Therefore, RDS used previous data from recent projects where 2017 and 2027 iterations were established and interpolated new totals from there. Longitudinal Employer-Household Dynamics (LEHD) TAP zone totals were used as a guide during review as well. As with households, all TAP zones in the AOI were reviewed by RDS Staff for accuracy.

RDS 2018-2045 Review: Using GIS, Census data, new home reports, commercial development datasets and current year Appraisal District data for each individual TAP zone, iterations for 2018, 2020, 2028, 2037 and 2045 were reviewed for growth and reasonableness. RDS staff established their own totals for each. Household sizes were calculated using sizes established by the NCTCOG data to calculate population. Figures 12, 13, and 14 illustrate this growth from 2018 to 2045 and compare them by absolute and percentage growth as well as compound annual growth rate (CAGR) seen in RDS' and NCTCOG's forecasts.







Figure 13: RDS vs. NCTCOG Forecast Population (AOI only)

Figure 14: RDS vs. NCTCOG Forecast Employment (AOI only)





Table 18 illustrates NCTCOG's adopted and RDS' post-review Area of Interest totals for households, population and employment for all forecast years.

		2018			2020		
	нн	РОР	EMP	нн	РОР	EMP	
RDS	2,736,414	7,542,595	4,900,352	2,843,304	7,838,708	5,119,708	
NCTCOG	2,661,787	7,464,176	4,809,096	2,750,764	7,715,977	4,933,400	

Table 18: RDS and NCTCOG AOI Statistics

	2028			2037			2045		
	нн	РОР	EMP	нн	РОР	EMP	нн	РОР	EMP
RDS	3,264,456	9,114,410	5,889,743	3,699,665	10,558,840	6,733,270	4,091,039	11,744,952	7,445,920
NCTCOG	3,114,886	8,760,882	5,473,097	3,588,362	10,230,890	6,401,374	3,940,931	11,293,468	7,045,207

For review of each model year's basic, service, and retail employment breakdowns, RDS used each iteration's shares provided by NCTCOG. RDS staff then reviewed these totals and adjusted the data over time using quantitative theory and professional judgment. Overall, RDS' recommended shares are very close to the shares proposed by NCTCOG, as shown in Table 19. Looking forward, the service sector is expected to gain in overall share of total employment, while the basic sector will see a slow decline. Retail sector change will remain relatively flat.

Percentage of Employment by Sector in AOI							
	RDS				NCTCOG	_	
Year	Basic	Retail	Service	Basic	Retail	Service	
2018	24.5%	9.4%	66.1%	24.3%	9.5%	66.2%	
2020	23.6%	9.7%	66.7%	23.7%	9.7%	66.6%	
2028	21.8%	10.1%	68.0%	21.1%	9.2%	69.6%	
2037	20.6%	10.2%	69.1%	20.0%	9.1%	70.9%	
2045	20.2%	10.4%	69.4%	19.6%	9.2%	71.2%	

Table 19: NTTA System Review AOI Basic, Service and Retail Employment SharesNCTCOG and RDS (2018–2045)

Figures 15 and 16 illustrate total household and employment growth by TAP zone in the NTTA System Review AOI from 2018 to 2045.



Figure 15: RDS Household Growth 2018-2045



Page 38 Research and Demographic Solutions Group

COVID-19 Update

RDS' NTTA System demographic review was completed and submitted to CDM Smith in February 2020, before the coronavirus had begun to adversely affect the DFW economy. Within a few months, all commercial and residential markets have been touched by the initial wave of the virus. Currently, in July 2020, COVID-19 cases are on the rise throughout Texas and decisions are quickly being made that will determine the depth of the economic downturn, as well as the potential speed of DFW's recovery.

This chapter aims to address topics that could possibly affect RDS' future-year household, population and employment forecasts due to the fiscal impacts of the COVID-19 pandemic.

Pre-COVID-19 DFW Economy

As RDS illustrated earlier in this report, prior to the pandemic, the regional economy had been growing steadily since the Great Recession of 2008 across most economic sectors. The DFW MSA added more new residents, over 1.2 million, than any other in the country from 2010 to 2019. In 2018 and 2019, the region also led the country in total employment growth.

Employment During COVID-19

With COVID-related shutdowns and furloughs beginning in March, the national unemployment rate grew to 4.4 percent and then to 14.7 percent in April. As illustrated in the table below, the Dallas-Fort Worth-Arlington MSA saw an

	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020
Civilian Labor Force	4,023.70	4,047.20	3,962.00	3,694.70	3,830.90
Employment	3,891.00	3,918.40	3,778.10	3,223.50	3,361.30
Unemployment	132.7	128.8	183.9	471.2	469.6
Unemployment Rate	3.3	3.2	4.6	12.8	12.3

Table 20: Dallas Fort Worth-Arlington MSA Labor Force Data

Source: US Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), July 2020

While the Dallas-Fort Worth-Arlington MSA lost over 226,000 jobs from May 2019 to May 2020, as seen in the following table, it has weathered COVID-19's adverse economic shocks relatively well compared to the other largest MSA's in the US. The DFW MSA added 56,200 jobs between the low point in April and May when the region began to reopen. The variety of industries in the region likely helped to temper losses.

MSA	Net Change YOY-end Apr 2020	Net Change YOY-end May 2020	YOY-end May 2020 Percent Change
Atlanta-Sandy Springs-Alpharetta, GA MSA	-267,200	-260,700	-9.2
Boston-Cambridge-Newton, MA-NH MSA	-467,700	-456,800	-16.2
Chicago-Naperville-Elgin, IL-IN-WI MSA	-610,900	-576,700	-12.1
Dallas-Fort Worth-Arlington, TX MSA	-283,000	-226,800	-6.0
Denver-Aurora-Lakewood, CO MSA	-150,700	-134,400	-8.8
Houston-The Woodlands-Sugar Land, TX MSA	-265,700	-228,100	-7.2
Las Vegas-Henderson-Paradise, NV Metro Area	-213,700	-220,300	-21.3
Los Angeles-Long Beach-Anaheim, CA MSA	-916,200	-859,000	-13.8
Miami-Fort Lauderdale-Pompano Beach, FL MSA	-358,100	-291,800	-10.7
New York-Newark-Jersey City, NY-NJ-PA MSA	-1,949,600	-1,811,400	-18.1
Phoenix-Mesa-Chandler, AZ MSA	-164,000	-111,000	-5.1
San Francisco-Oakland-Hayward, CA MSA	-349,700	-348,500	-14.1
Seattle-Tacoma-Bellevue, WA MSA	-301,600	-246,600	-11.8
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	-301,000	-317,000	-9.5

Table 21: Employment Losses by Metropolitan Statistical Area

Source: US Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), July 2020

As illustrated below, some specific Dallas-Fort Worth Arlington employment sectors were impacted more than others, with service-oriented industries being hit the hardest by COVID-19-related job losses.

The Leisure and Hospitality sector, which includes service industries such as hotels, restaurants and bars, and sporting and entertainment venues, saw the largest one-month drop in employment with over 147,000 jobs lost between March and April 2020. As the region has reopened, this sector has moderately rebounded, adding over 94,000 jobs in May and June combined. Despite this, the June 2020 sector totals are 18 percent less than June 2019.

Following Leisure and Hospitality, the Education and Health and Professional and Business Services industries saw the next largest decreases, losing over 54,000 and 59,000 jobs respectively between March and April. Between June 2019 and June 2020, Education and Health Services employment dropped 6.9 percent and Professional and Business Services was down 1.6 percent.

Other sectors have handled the pandemic much better. The largest employment sector in the region, Trade, Trans-

COVID-19 UPDATE

portation and Utilities, with over 788,000 jobs as of June, lost only 36,000 jobs in April. The industry added back 26,800 jobs in May and June, resulting in a loss of only about 7,900 jobs since COVID-19 hit the region in March. It is interesting to note that DFW Airport, one of the region's primary employment generators, has been hit less hard

Non-Farm Wage and Salary Employment	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020*
Total Nonfarm Employment	3,818,600	3,845,100	3,816,600	3,463,400	3,542,700	3,646,600
Employment change from previous month		26,500	-28,500	-353,200	79,300	103,900
12-month % change	3.3	3.3	2.3	-7.5	-6	-3.7
Mining, Logging, and Con- struction	232,300	235,700	232,900	222,800	223,900	229,500
Employment change from previous month		3,400	-2,800	-10,100	1,100	5,600
12-month % change	5.5	6.2	4.4	-0.5	-0.7	0.2
Manufacturing	288,100	288,700	288,100	277,700	278,400	279,200
Employment change from previous month		600	-600	-10,400	700	800
12-month % change	1.4	0.7	0.4	-3.3	-3.3	-4.1
Trade, Transportation, and Utilities	803,100	796,500	798,600	761,800	764,400	788,600
Employment change from previous month		-6,600	2,100	-36,800	2,600	24,200
12-month % change	1.9	2	2.5	-2.3	-2.3	0
Information	83,700	83,100	82,500	80,000	80,000	79,800
Employment change from previous month		-600	-600	-2,500	0	-200
12-month % change	3.1	2	1.5	-2	-2.1	-3.0
Financial Activities	323,800	326,600	326,600	322,400	324,500	328,000
Employment change from previous month		2,800	0	-4,200	2,100	3,500
12-month % change	4.5	4.5	4.1	2.5	2.7	2.6
Professional and Business Services	644,300	653,100	651,600	597,400	608,800	627,300
Employment change from previous month		8,800	-1,500	-54,200	11,400	18,500
12-month % change	3.7	4.2	4.4	-5.5	-4.1	-1.6

Table 22: Dallas-Fort Worth-Arlington MSA Non-Farm Wage and Salary Employment

Non-Farm Wage and Salary Employment	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020*
Education and Health Services	471,800	475,600	467,300	408,200	426,700	428,600
Employment change from previous month		3,800	-8,300	-59,100	18,500	1,900
12-month % change	4	3.7	1.8	-11.4	-7.8	-6.9
Leisure and Hospitality	397,800	402,100	385,300	238,100	284,600	332,300
Employment change from previous month		4,300	-16,800	-147,200	46,500	47,700
12-month % change	5	4.6	-1.1	-39.3	-28.6	-18.0
Other Services	127,200	129,700	126,900	111,200	115,400	121,900
Employment change from previous month		2,500	-2,800	-15,700	4,200	6,500
12-month % change	3.6	4.2	0.8	-12.2	-10.3	-7.1
Government	446,500	454,000	456,800	443,800	436,000	431,400
Employment change from previous month		7,500	2,800	-13,000	-7,800	-4,600
12-month % change	2.1	2.1	2.1	-0.6	3.0	2.7

Source: US Bureau of Labor Statistics, Current Employment Statistics (CES), July 2020 *Preliminary data

Housing During COVID-19

Single Family Housing

Strong job growth is often correlated to the vitality of the housing market. As employment has suffered across the nation, the Dallas-Fort Worth housing market has taken a hit with June 2020 home sales down 6.9 percent year-overyear. That said, national June home sales saw a nearly 37 percent gain over May 2020, returning to near seasonal levels.

The Dallas-Fort Worth-Arlington MSA is also experiencing noteworthy behaviors. After a slow May, existing home sales in June jumped 38 percent and new home sales rose 3 percent over the same period. Interestingly, June 2020 home sales in DFW are 9.3 percent higher than June 2019, representing the third highest regional gain in the nation.

According to the Real Estate Center at Texas A&M, in June 2020, the Dallas-Fort Worth-Arlington MSA had only 2.5 months of housing inventory. Housing markets are considered balanced when approximately 6 months of inventory is available. The issue is not just local, as the State of Texas' inventory is down to a historically low 3.0 months. With COVID-19 infections hopefully decreasing, it will be interesting to see if housing demand will quickly outstrip supply

COVID-19 UPDATE

or if the market will cool, allowing builders to catch up throughout Texas and DFW. Consequently, neither scenario will support housing and population growth reaching the pre-COVID-19 levels and caution should be exercised when forecasting in the short-term.

Multi-family Housing

Relative to the Dallas-Fort Worth single family market, the multi-family outlook is even more uncertain. Approximately 40 percent of North Texans rent their homes and a recent report by Marcus & Millichap states that the local underlying dynamics of rental housing remain strong, considering COVID-19. Rent collections in Dallas-Fort Worth have remained over 80 percent and young professionals will likely return to the region if jobs remain available. However, tenant preferences may swing toward suburban locations instead of densely populated areas due to the increased ability to work-from-home.

Recent Dallas-Fort Worth multi-family vacancy rates have been hovering around 91 percent per Berkadia's 2020 2nd Quarter Multifamily Report . However, the moratorium on evictions put in place by the CARES Act ended on July 25th. Without more federal assistance, rental vacancy rates may see a steep increase in the short term and may contribute to reduced future demand. As for supply, almost 20,000 new multi-family units have become available over the past year. These factors point to a possible slowdown in future development and growth in the DFW multi-family market, but additional government aid could soften the blow in the short term.

Conclusion

There is still significant uncertainty related to how long COVID-19 will impact our economy and to what degree. Analysts across industries agree that we are in uncharted territory, continue to monitor data, and recognize that the repercussions from the pandemic will continue to show themselves during the second half of 2020 and beyond. The Dallas-Fort Worth region is well positioned to recover more easily and quickly than other areas of the country, but, at least in the near-term, we can still expect to see lingering impacts in our growth rates.

Considering the data, the first wave of the virus may spur a re-evaluation of the demographic projections previously submitted by RDS in February. With the instabilities created by a pandemic, an economy in recession, and the looming Presidential election, it is difficult to gauge when the employment and housing markets in Dallas-Fort Worth may stabilize. Currently, many national experts are estimating a two to five-year lag in projected demographics. RDS believes that due to its strengths, Dallas-Fort Worth will be one of the first major metropolitan areas to rebound, but this cannot begin until COVID-19 is controlled, hopefully during the next year. In the meantime, NTTA System forecasts may need to be scaled back 10 to 20 percent in the short-term to account for the effects from regional employment losses, which could likely lead to future housing slowdowns.

A troubling second wave of the virus is possible and could result in a repeat of the closures that took place from March to May. Another mandated shutdown would likely drive the national economy further into recession that would pull Dallas-Fort Worth's economy down with it. If this were to happen, the validity of the 2028 demographics as well as all future iterations becomes questionable. There would likely be lasting job and housing losses that would take years to recover.

COVID-19 UPDATE

Additionally, it may be necessary to re-examine the basic, retail, and service breakdowns for the TAZ-level employment forecasts, due to the impacts of the virus on the service and retail industries.

Several trends may emerge as part of the "new normal". The necessity, as well as the new flexibility of working from home, could influence people's location decisions. A recent theory suggests that housing development will slow in the urban areas and spread to the suburbs and exurbs where people can work from home in a more spacious, comfortable environment. According to a July interview with John Chang, National Director of Research Services for Marcus & Millichap, people are already beginning to relocate to states that tend to have more space such as Texas, Colorado, Florida, and parts of the Carolinas. In future reviews of household and population demographics, RDS will investigate these new trends and their impact on the region's demographic projections.

Developing new projections at this time is precarious, however, once the virus in under control and the region has fully recovered, it would be wise to analyze the new, emerging demographic trends in the region and how they compare to the pre-COVID-19 DFW region.

¹ Bill Hethcock, "DFW new, existing home Sales rebound, but new home prices fall for Fourth Straight Month" Dallas Business Journal, July 21, 2020.

² Marcus & Millichap, "Beyond the Global Health Crisis", Regional Report for Texas and Oklahoma, Summer 2020. Berkadia 2020 2nd Quarter Multifamily Report. www.berkadia.com.

³ Berkadia 2020 2nd Quarter Multifamily Report. www.berkadia.com.

APPENDIX A - SPECIAL GENERATORS

Special generators are employers with unique traffic patterns that generate high traffic volumes on a consistent or event-driven basis. Most of these special generators are universities, hospitals, and malls. NCTCOG examines each of these to ensure correct geographical location and then assigns each an accurate employment total. Here is a list of special generators located within the AOI. Each of these was taken into account when TAP zone totals were calculated to ensure proper traffic volumes.

Special Generator	Туре
DFW Airport	Airport
Love Field Airport	Airport
Walls Regional Hospital	Hospital
Medical Center of Lewisville	Hospital
Trinity Medical Center	Hospital
Presybyterian Hospital of Plano	Hospital
Baylor Regional Medical Center at Plano	Hospital
Medical Center of Plano	Hospital
Kindred Hospital Fort Worth (Southwest)	Hospital
Harris Methodist Southwest Hospital	Hospital
John Peter Smith Hospital	Hospital
UNT Health Science Center	Hospital
Osteopathic Med. Ctr. Of Texas	Hospital
Plaza Medical Center	Hospital
Baylor All Saints Episcopal Hospital	Hospital
Harris Methodist Fort Worth & Cook Chil	Hospital
D/FW Medical Center	Hospital
Northeast Community Hospital	Hospital
Harris Methodist HEB Hospital	Hospital
North Hills Hospital	Hospital
Baylor University Medical Center at Gra	Hospital
Denton Community Hospital	Hospital
Doctors Hospital	Hospital
Richardson Regional Medical Center	Hospital
Plano Rehabilitation Hospital	Hospital
Veterans Admin. Medical Center	Hospital
Methodist Medical Center	Hospital
Las Colinas Medical Center	Hospital
RHD Memorial Medical Center	Hospital
Healthsouth Medical Center	Hospital
St. Paul Medical Center	Hospital
Baylor Health Center at Irving	Hospital
UT SW MedCtr & Children's MedCtr of Dal	Hospital
Texas Scottish Rite Hospital	Hospital
Texas A&M HSC/Baylor Collg Dent	Hospital
Baylor Institute for Rehabilitation	Hospital
Baylor University Medical Center	Hospital
Presybyterian Hospital (in Dallas)	Hospital

Special Generator	Туре
Medical City Dallas Hospital	Hospital
Garland Community Hospital	Hospital
The Medical Center of Mesquite	Hospital
Lake Pointe Medical Center	Hospital
Mesquite Community Hospital	Hospital
Baylor Medical Center of Garland	Hospital
Medical Center of Mckinney	Hospital
Columbia Medical Center of Mckinney	Hospital
Vista Ridge Mall	Regional Shopping Mall
Irving Mall	Regional Shopping Mall
The Shops at Willowbend	Regional Shopping Mall
Hulen Mall	Regional Shopping Mall
Ridgmar Mall	Regional Shopping Mall
La Gran Plaza De Fort Worth	Regional Shopping Mall
Festival Discount Mall-Closed	Regional Shopping Mall
Six Flags Mall	Regional Shopping Mall
Northeast Mall	Regional Shopping Mall
Grapevine Mills Mall	Regional Shopping Mall
Golden Triangle Mall	Regional Shopping Mall
Collin Creek Mall	Regional Shopping Mall
Southwest Center	Regional Shopping Mall
Northpark Center	Regional Shopping Mall
Valley View Mall-Closed	Regional Shopping Mall
Prestonwood Town Center-Closed	Regional Shopping Mall
Galleria Mall	Regional Shopping Mall
Fire Wheel Mall	Regional Shopping Mall
Town East Mall	Regional Shopping Mall
Richardson Square Mall	Regional Shopping Mall
Stonebriar Mall	Regional Shopping Mall
Texas Christian University	University/College
Texas Woman's University	University/College
University Of North Texas	University/College
Southern Methodist University	University/College
Spring Creek Campus	University/College
Southwest Baptist Theological Sem.	University/College
TCCSouth Campus	University/College
Texas Wesleyan University	University/College
TCCNorthwest Campus	University/College
TCCSoutheast Campus	University/College
TCCNortheast Campus	University/College
Univ. of Texas at Dallas	University/College
Richland College	University/College
Dallas Baptist University	University/College
Mountain View College	University/College

Special Generator	Туре
University of Dallas	University/College
North Lake Junior College	University/College
El Centro College	University/College
Brookhaven Junior College	University/College
Eastfield College	University/College
The Mesquite Metroplex Center	University/College
CCCC - Preston Ridge Campus	University/College
CCCC - Central Park Campus	University/College

The following chart represents employee coefficients that were used as a guide when reviewing and estimating employment.

Land Use Category	Estimated Square Feet per Employee
Office	275
Retail	300
Hotel/Motel	.75 Emp per Room
Institutional	800
Industrial	1250

The Frisco "North Platinum Corridor", which includes the "Five Billion Dollar Mile", is a ten-mile stretch along the Dallas North Tollway (DNT) from the Sam Rayburn Tollway (SH 121) on the south to Highway 380 on the north. It contains a multitude of projects that will directly impact population and employment numbers in the region. Key projects of interest are briefly described on the following pages.



1. Hall Office Park

Hall Office Park in Frisco is a 162-acre development that includes 17 completed buildings with 10,000 employees. It contains more than 2.5 million square feet of Class-A office space and has plans for additional residential, commercial and office space as well as a new performing arts center.



2. Frisco Bridges Place

Frisco Bridges is a 6-story building containing 163,923 SF Class A Office space. It is located at the southeast corner of the Dallas North Tollway and Gaylord Pkwy.



3. The Star in Frisco

The Star in Frisco is the name for the Dallas Cowboys World Headquarters and practice facility which opened in August 2016. Spread across 91 acres, it includes 411,000 square feet of Class A office space, 180,000 square feet of retail/ restaurant space, a 60,000 square foot gym, the Omni Frisco Hotel and the Tostitos Plaza for outdoor events. The Ford Center, also located at The Star, is a 12,000 seat multi-use event center and indoor stadium.



4. Twelve at The Star in Frisco

Completed in 2019, Twelve at The Star in Frisco is a 17-story luxury residential high-rise with 160 rental units that range from 860 to 3,600 square feet. It contains commercial and retail on the first floor and an underground parking garage. The project is located at the southeast corner of Gaylord Parkway and Cowboys Way and overlooks the 91-acre campus of The Star.



5. Frisco Station

Frisco Station is a \$1.8 billion 242-acre mixed-use development located at the northwest corner of the Dallas North Tollway and Warren Parkway, adjacent to The Star at Frisco. It features a mixed-use community with 5 million square feet of luxury office space, 1 million square feet of medical office, 250,000 square feet of retail, 75,000 square feet of restaurants, 600 hotel rooms, 120 single family units and 24,000 multi-family units. When completed the development will house more than 3,000 residents and provide over 10,000 future daytime employment opportunities.



6. Baylor Scott and White Sports Therapy & Research

The Baylor Scott and White Sports Therapy & Research, which opened in 2018, is \$100 million, 9-story building with 300,000 sf medical office building containing a surgery center, pharmacy, outpatient imaging and urgent care. It also contains an indoor/outdoor sports performance center.



7. The Gate

The Gate is a \$1 billion mixed-use development located on 41 acres at the northwest corner of the Dallas North Tollway and John Hickman Parkway. When completed, it will have 2.3 million square feet of development with up to 876,000 square feet of Class A office, a 150-room hotel, 980 units of urban living and 100,000 square feet of restaurants and retail. No completion date is available at this time, but a new 28 story building with a luxury hotel and condos is scheduled to open 2024.



8. Wade Park

Wade Park is a 175-acre property that sits at the southeast corner of Dallas Parkway and Lebanon Road. that is planned for future development. While the previous developer was unable to complete the project, the property has recently changed hands and hopes for a mixed-use development are renewed.





Page 53 Research and Demographic Solutions Group

9. Scottish Rite Hospital

Texas Scottish Rite Hospital for Children – North Campus, which opened in October 2018, sits on 40 acres of land and contains a 345,000 square feet sports medicine facility, a conference center and 30 acres of parks and sports fields.



10. Stonebrook Business Park

The Stonebrook Business Park contains 480,000 square feet of Class A office space, 38,000 square feet of retail/restaurant space, 2 parking garages with 1350 spaces, two 300-room hotels, a conference center, and 210,000 square feet of space in two spec office buildings.



11. Grand Park

Grand Park is a planned regional park that has been in the works for more than a decade. The 350-acre amenity will be located west of the Dallas North Tollway between Stonebrook Parkway and Cotton Gin Road. There is potential for the park to expand to include a total of 600 acres. It is expected the City will finally see movement on the Park in 2020.



12. The Tower at Frisco Square

The Tower at Frisco Square is located at 5757 Main Street, just east of the Dallas North Tollway within the 147-acre Frisco Square mixed-use development. The Tower is a 5-story building containing 175,157 square feet of Class A office space with a 5-story parking garage.



13. Railhead

Railhead is an 80-acre mixed used development north of Main Street along the west side of the Dallas North Tollway, just south of Wakeland Highschool. The development, valued at \$1.5 billion, will contain 12,000 apartment units and a 10-story, 250,000 square foot Class A office tower once completed.



14. Texas Health Hospital

Texas Health Hospital is a 20-acre site located on the east side of the Dallas North Tollway, just north of W. Eldorado Parkway. It contains 325,000 square feet inside an 8-story hospital, a 120,000 square foot medical office building and a 4-story parking garage. The development opened in early 2020.



15. Frisco Fields

The Frisco Fields development, previously the Fields family ranch, will be a 2,544-acrea mixed-use development containing up to 5,000 single-family units, 1,000 student housing units and 8,500 multifamily units. 2,000 of the multifamily units will be allowed by right, with the remaining units earned once other requirements are met. The project will also contain office, retail, commercial and industrial uses. The development will be located on Frisco's north side, near the PGA Headquarters, just south of SH 380 and spanning across the DNT.



16. PGA of American Headquarters

This 600-acre site will be home to a \$520 million mixed-use development, containing 50 acres of commercial space and 550 acres of public facilities. The development will include Class AA office space, a 500-room Omni resort and 127,000 square foot conference center as well as two championship golf courses, a short course and practice areas. The golf courses are hoped to open by summer 2022. The hotel and other development were delayed by the pandemic, but are planned to open in early 2023.



17. Lesso Mall

The Lesso Mall development, located on 78 acres west of the DNT and south of Hwy 380, will include a multi-level shopping center with a parking garage as well as additional retail, office and hotel. There will also be an 18-story urban-living residential tower. Completion is estimated for 2022.



Source: Frisco Economic Development Deprtment - Frisco Development Update, February 5, 2019

The hottest residential market in the Dallas-Fort Worth-Arlington MSA is along the US380 corridor, west of the Dallas North Tollway through Prosper, Frisco, Little Elm, Aubrey and eastern Denton County. With the construction of tens of thousands of new homes along the corridor, it will continue to expand over the next twenty-five years. Many of these developments are covered below in more detail from east to west.

- 1. Star Trail
- 2. Artesia
- 3. Frisco Fields
- 4. Windsong Ranch
- 5. Grayhawk

- 6. Sunset Pointe
- 7. Savannah
- 8. Arrowhead, Winn Ridge, Sandbrooke
- 9. Union Park
- 10. Paloma Creek South



1. Star Trails (Prosper)

The Star Trails development is a master-planned community with homes from the \$300's to \$800's. This subdivision has been developed by Blue Star Land LP, a company owned by the Dallas Cowboys' Jones family.



2. Artesia (Prosper)

Artesia is a large community located in Prosper, Texas, just north of the Dallas North Tollway and Highway 380. Artesia opened in 2006 and will have about 1,700 homes upon completion. It is located in TAP zone 40873 where RDS forecasts 10,000 dwelling units in this zone by 2045.



3. Frisco Fields Development

The Frisco Fields development, previously the Fields family ranch, will be a 2,544-acrea mixed-use development containing up to 5,000 single-family units, 1,000 student housing units and 8,500 multifamily units. 2,000 of the multifamily units will be allowed by right, with the remaining units earned once other requirements are met. The project will also contain office, retail, commercial and industrial uses. The development will be located on Frisco's north side, near the PGA Headquarters, just south of SH 380 and spanning across the DNT.



4. Windsong

At over 2,000 acres, including 600 acres of open space, Windsong Ranch is one of the largest master-planned communities in North Texas. Located in Prosper, the community will ultimately include up to 3,500 single-family homes. Currently, the development has over 800 occupied homes and 200 closings over the past year.



5. Grayhawk (Fricso)

Grayhawk is located in northwest Frisco just off Eldorado Parkway. The development contains 1,950 finished single family homes.



6. Sunset Pointe (Little Elm)

Sunset Pointe is a 2,250 single family residential development that was completed in 2018.



7. Savannah (Eastern Denton County)

Savannah is a census-designated place in eastern Denton County. This completed Huffines community is a 575-acre, 2,500 unit development. Including Savannah, RDS has forecasted 12,000 total households within TAP zone 2061.



8. Arrowbrooke, Winn Ridge, and Sandbrook Ranch (Aubrey)

These three single family developments are in Aubrey on the westside of FM1835 between Union Park Blvd. and Bonar Rd. In total, these three communities will account for 6,000 homes when completed. Currently, over 1,000 of these are occupied and 225 are under construction.



9. Union Park (Aubrey)

Union Park is a 1,100-acre single family development that sits along U.S. Highway 380 in Little Elm between the Dallas North Tollway and Highway 377. Currently, approximately 600 homes are occupied out of 3,300 at completion.



10. Paloma Creek South (Little Elm)

Paloma Creek South is 4,300 home master-planned community just north of Lake Lewisville, south of US380. This development is close to build-out with over 4,000 homes constructed.



APPENDIX E - CHISHOLM TRAIL PARKWAY

The CTP Corridor is a mix of new residential and commercial development in proximity to the facility. Specifically, this area just east of Benbrook Lake in Tarrant County has seen a surge in development in the past five years and will continue to see significant household and employment growth throughout the 2045 time frame. Some new developments from south to north include:

- 1. Tarleton State University
- 2. Rocky Creek Ranch
- 3. Chisholm Trail West
- 4. Shops at Chisholm Trail Ranch
- 5. Chisholm Trail East

- 6. Llano Springs
- 7. Summer Creek South
- 8. Villages of Sunset Pointe
- 9. The Dylan
- 10. Tavolo Park



Page 65 Research and Demographic Solutions Group

APPENDIX E - CHISHOLM TRAIL PARKWAY

1. Tarleton State University Campus

In 2014, Tarleton State University was offered a donation of an 80-acre parcel of land located west of the Chisholm Trail Parkway in south Fort Worth. The new campus, which was completed in 2019 will serve as a new location for the University's Fort Worth-based academic programs. Administration expects 7,000 students by 2030.



2. Rocky Creek Ranch Single family development

Rocky Creek Ranch is an 1,800-acre single family development located 2.5 miles off of the Chisholm Trail Parkway. The subdivision contains 90 households on 10 to 50-acre lots.



3. Chisholm Trail West

Chisholm Trail Ranch is a 625-acre multi-use property along the CTP. The first phase will include over 1,200 new single family homes, 1,000 west and 220 east of the tollway facility. Chisholm Trail West will also have 1,500 multi-family residences at completion.



4. Shops at Chisholm Trail Ranch

The Shops at Chisholm Trail Ranch is a 35-acre retail development located along the east side of Chisholm Trail Parkway with 210,000 SF of retail, entertainment, and restaurants. Tenants include Marshall's, Studio Movie Grill, Old Navy, Famous Footwear, Ulta, Tuesday Morning and others.



5. Chisholm Trail East

The Chisholm Trail East development will contain 600 multi-family units, as well as over 200 single family residences when completed.



6. Llano Springs

Llano Springs is a master-planned, 1,200 single family home development along the Chisholm Trail Parkway.


7. Summer Creek South

Summer Creek South is a completed, 512 single family unit development just east of the Chisholm Trail Parkway.



8. Villages of Sunset Pointe

The Villages of Sunset Pointe is an occupied, 167 single family unit subdivision.



9. The Dylan

The Dylan apartments will have 800 total units at completion. 227 units pf Phase I are finished and Phase II will add 575 units.



10. Tavolo Park

Currently under construction, Tavolo Park will contain 887 single family units at completion.





Research and Demographic Solutions Group 8628 Beetle Nut Lane North Richland Hills, TX 76180

www.rdsplanning.com

This page intentionally left blank.



This page intentionally left blank.



