2005 Dallas-Fort Worth
External Survey
Technical Summary

**Texas
Department
of Transportation**

**Prepared by the
Texas Transportation Institute
February 2009**

2005 Dallas-Fort Worth External Survey

TECHNICAL SUMMARY

Texas Department of Transportation Travel Survey Program

Prepared by

Timothy L. Forrest
Assistant Transportation Researcher

and

Stephen P. Farnsworth
Associate Research Scientist

of the
Texas Transportation Institute

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INTRODUCTION

In 2005, the Transportation Planning and Programming (TPP) Division of the Texas Department of Transportation (TxDOT) funded an external station travel survey in the Dallas-Fort Worth/Sherman-Denison region. The region is composed of thirteen counties containing two metropolitan planning organizations (MPO) – the North Central Texas Council of Governments (NCTCOG), and the Sherman-Denison MPO. For the purposes of external travel analysis, each of these two MPOs was treated as an individual study area. The survey measured and identified travel patterns into, within, and out of each study area. This report presents a technical summary of the NCTCOG portion of the survey, and documents the data collected and the analysis results for the Dallas-Fort Worth area and surrounding counties.

EXTERNAL STATION SURVEY

An external station survey collects data through personal interviews to measure and identify travel patterns of vehicles and/or pedestrians entering and exiting a particular study area. Surveys are conducted during daylight hours for one day at each designated location. Additionally, 24-hour vehicle classification counts are performed on the same day as the survey at each location. These counts provide a basis for expanding the survey data to represent the average weekday movements into, out of, and through the study area. Data are also collected on the movements of the vehicle during the survey day prior to the time the vehicle is surveyed. These data are used to estimate the amount of travel occurring in the study area by persons that do not live in the study area.

STUDY AREA

For this survey, the NCTCOG study area was composed of the following counties in Texas: Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise. The U.S Census Bureau[1] 2005 estimates that the combined population of these twelve counties was approximately 5,862,000 people. The 2005 estimates for the combined populations of Dallas and Tarrant counties, where Dallas and Fort Worth are located, was approximately

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[1] http://quickfacts.census.gov/qfd/states/48/48085.html, http://quickfacts.census.gov/qfd/states/48/48113.html, http://quickfacts.census.gov/qfd/states/48/48121.html, http://quickfacts.census.gov/qfd/states/48/48139.html, http://quickfacts.census.gov/qfd/states/48/48221.html, http://quickfacts.census.gov/qfd/states/48/48231.html, http://quickfacts.census.gov/qfd/states/48/48251.html, http://quickfacts.census.gov/qfd/states/48/48257.html, http://quickfacts.census.gov/qfd/states/48/48367.html, http://quickfacts.census.gov/qfd/states/48/48397.html, http://quickfacts.census.gov/qfd/states/48/48439.html, http://quickfacts.census.gov/qfd/states/48/48497.html

3,926,000 people. This represents two-thirds of the population for all twelve counties, and indicates that a majority of the people living in the study area live in one of these two counties. Figure 1 provides a graphical illustration of the entire region, as it relates to Texas.
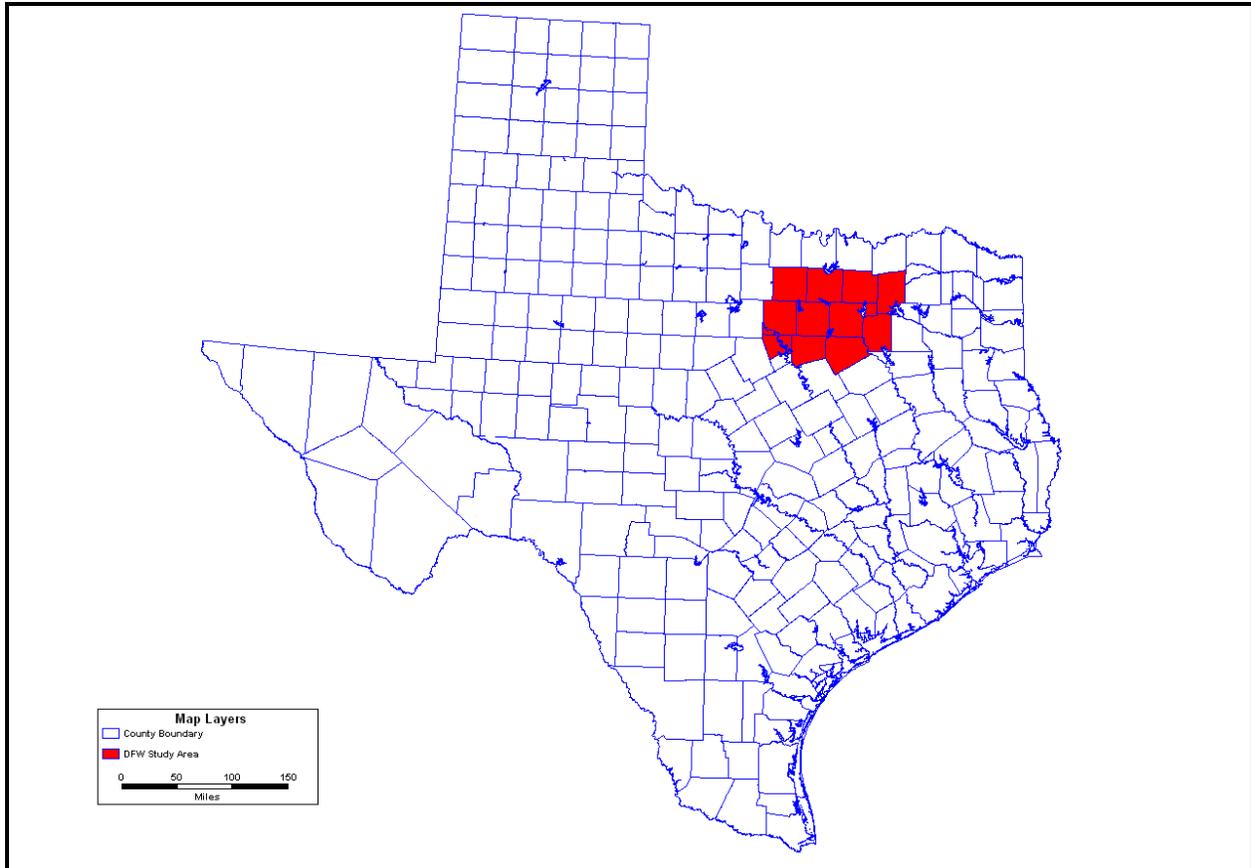

Figure 1. Dallas-Fort Worth Study Area.

EXTERNAL STATIONS

There were 92 locations in and around the region (all thirteen counties) identified as external stations. An external station is a transportation facility that crosses a study area boundary where travelers may enter and exit the study area. For the Dallas-Fort Worth study area, 79 external station locations were used (Figure 2 and Table 1), with the remaining 13 in Sherman-Denison. Of the 79 locations in the study area, 32 were selected for a roadside survey. For the remaining 47 sites, 39 were selected for a vehicle classification count only, and eight were considered high volume only, requiring a video license plate matching process to be used in lieu of a roadside survey. Additionally, of the 32 sites selected for a roadside survey, four were performed as a two-way survey at the Grayson County border between Dallas-Fort Worth and Sherman-Denison because these locations occurred on the shared border of the two study areas.

EXTERNAL STATIONS – DALLAS-FORT WORTH

Figure 2 shows the location of the 79 external stations established for Dallas-Fort Worth. Table 1 identifies the external surveys, their general location, whether or not on-site surveys were conducted, and the 24-hour traffic count at the location in both the inbound and outbound direction. The location group indicated in Table 1 is used to aggregate data as a way to present external local and through trip information later in the summary.
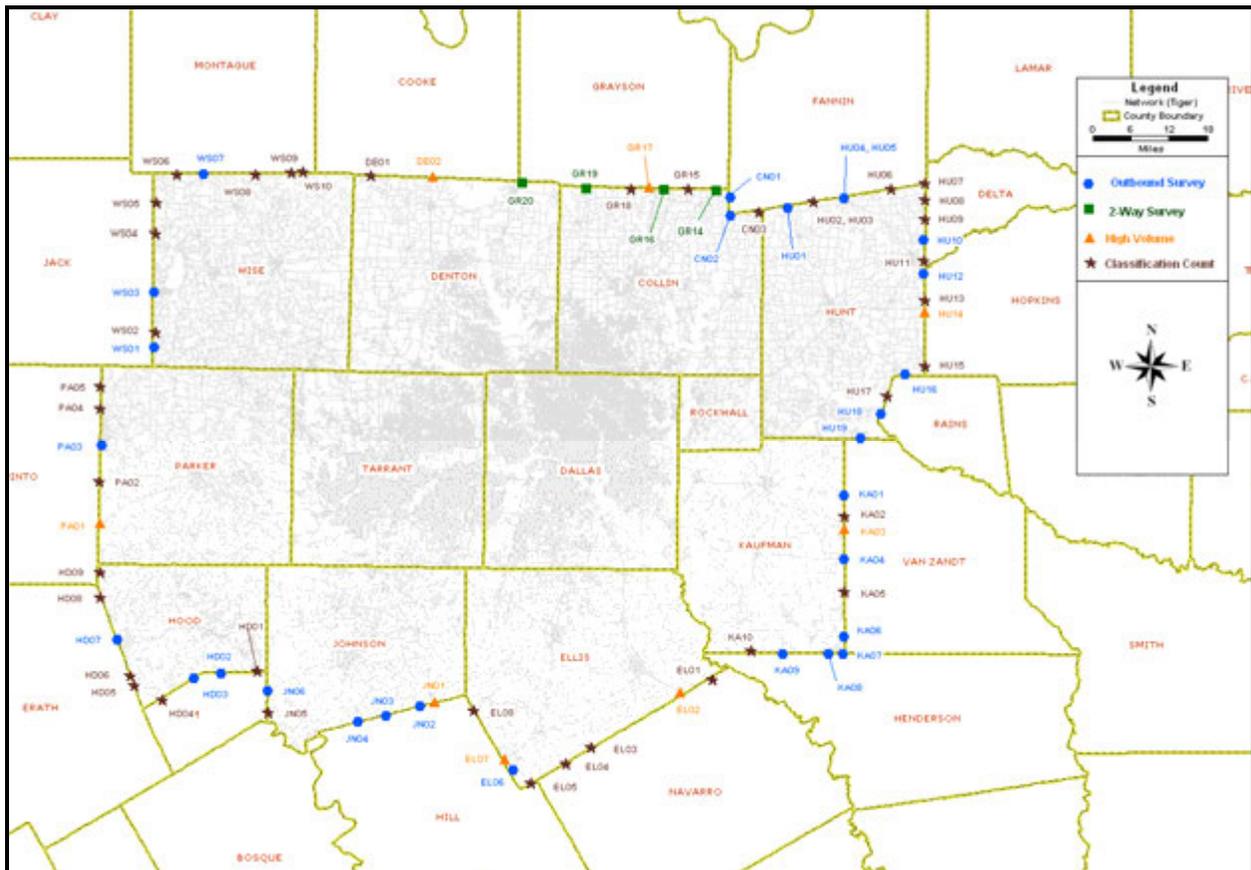
Figure 2. Dallas-Fort Worth External Station Locations.

Eight of the 79 locations in Dallas-Fort Worth were identified as high-volume sites. These locations were IH 35 N at the border of Denton and Cooke counties (station number DE02), US 75 N at the border of Collin and Grayson counties (station number GR17), IH 30 E at the border of Hunt and Hopkins counties (station number HU14), IH 20 E at the border of Kaufman and Van Zandt counties (station number KA03), IH 45 S at the border of Ellis and Navarro counties (station number EL02), IH 35 E (SB) at the border of Ellis and Hill counties (station number EL07), IH 35 W (SB) at the border of Johnson and Hill counties (station number JN01), and IH

20 W at the border of Parker and Palo Pinto counties (station number PA01). Non-commercial vehicles on high-volume roadways were not surveyed, but instead a license plate matching methodology was employed to estimate on the number of through and local trips. Commercial vehicles were surveyed at rest stops or truck stops adjacent to the high-volume facilities.

Table 1. Dallas-Fort Worth External Stations.

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
CNO1	SH 121	at Fannin Co. Line	Roadside	3,696	3,797	North
CN02	SH 78	at Fannin Co. Line	Roadside	965	946	
CN03	FM 981	at Fannin Co. Line	Count	235	248	
HU01	US 69	at Fannin Co. Line	Roadside	1,933	1,973	
HU02	FM 272	at Fannin Co. Line	Count	117	111	
HU03	FM 816	at Fannin Co. Line	Count	90	97	
HU04	SH 11	at Fannin Co. Line	Roadside	963	901	
HU05	SH 34	at Fannin Co. Line	Roadside	461	382	
HU06	SH 50	at Fannin Co. Line	Count	526	535	
WS06	SH 101	at Montague Co. Line	Count	1,366	1,291	
WS07	US 287/81	at Montague Co. Line	Roadside	7,631	8,443	
WS08	FM 1655	at Montague Co. Line	Count	250	268	
WS09	FM 730	at Montague Co. Line	Count	113	109	
WS10	FM 455	at Montague Co. Line	Count	351	375	
DE01	FM 51	at Cooke Co. Line	Count	985	967	
DE02	IH 35	at Cooke Co. Line	High Volume	17,601	18,747	
GR14	SH 160	at Collin Co. Line	Roadside (2-way)	1,777	1,680	
GR15	FM 3133	at Collin Co. Line	Count	330	337	
GR16	SH 5	at Collin Co. Line	Roadside (2-way)	1,503	1,555	
GR17	US 75	at Collin Co. Line	High Volume	15,735	16,164	
GR18	FM 3356	at Collin Co. Line	Count	225	232	
GR19	SH 289	at Collin Co. Line	Roadside (2-way)	2,203	2,196	
GR20	US 377	at Denton Co. Line	Roadside (2-way)	3,872	3,815	
HU07	FM 904	at Fannin Co. Line	Count	264	271	East
HU08	FM 1532	at Delta Co. Line	Count	31	27	
HU09	FM 2068	at Delta Co. Line	Count	90	81	
HU10	SH 24	at Delta Co. Line	Roadside	2,930	2,856	
HU11	FM 71	at Delta Co. Line	Count	360	266	
HU12	SH 11	at Hopkins Co. Line	Roadside	2,207	2,118	
HU13	FM 499	at Hopkins Co. Line	Count	321	391	
HU14	IH 30	at Hopkins Co. Line	High Volume	11,356	11,607	

Table 1. Dallas-Fort Worth External Stations. (cont.)

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
HU15	FM 1567	at Hopkins Co. Line	Count	284	279	East
HU16	US 69	at Rains Co. Line	Roadside	2,814	2,782	
HU17	FM 513	at Rains Co. Line	Count	981	922	
HU18	SH 276	at Rains Co. Line	Roadside	1,696	1,649	
HU19	FM 751	at Van Zandt Co. Line	Roadside	1,611	1,579	
KA01	US 80	at Van Zandt Co. Line	Roadside	4,732	4,517	
KA02	FM 2965	at Van Zandt Co. Line	Count	1,082	1,077	
KA03	IH 20	at Van Zandt Co. Line	High Volume	15,561	17,029	
KA04	SH 243	at Van Zandt Co. Line	Roadside	821	852	
KA05	FM 90	at Van Zandt Co. Line	Count	206	216	
KA06	SH 198	at Van Zandt Co. Line	Roadside	2,766	2,616	
KA07	US 175	at Henderson Co. Line	Roadside	3,896	3,875	South
KA08	SH 198	at Henderson Co. Line	Roadside	8,775	8,644	
KA09	SH 274	at Henderson Co. Line	Roadside	4,417	4,367	
KA10	FM 2613	at Henderson Co. Line	Count	442	429	
EL01	FM 85	at Navarro Co. Line	Count	987	954	
EL02	IH 45	at Navarro Co. Line	High Volume	16,459	16,387	
EL03	FM 55	at Navarro Co. Line	Count	61	54	
EL04	FM 667	at Navarro Co. Line	Count	749	709	
EL05	FM 308	at Navarro Co. Line	Count	255	258	
EL06	US 77	at Hill Co. Line	Roadside	847	873	
EL07	IH 35 E	at Hill Co. Line	High Volume	12,055	11,634	
EL08	FM 66	at Hill Co. Line	Count	271	286	
JN01	IH 35 W	at Hill Co. Line	High Volume	12,591	11,094	
JN02	SH 81	at Hill Co. Line	Roadside	757	753	
JN03	SH 171	at Hill Co. Line	Roadside	1,619	1,580	
JN04	SH 174	at Hill Co. Line	Roadside	2,748	2,508	
JN05	FM 200	at Somervell Co. Line	Count	97	97	
JN06	US 67	at Somervell Co. Line	Roadside	3,376	3,262	
HD01	FM 2174	at Somervell Co. Line	Count	299	279	
HD02	SH 144	at Somervell Co. Line	Roadside	2,973	2,888	
HD03	FM 56	at Somervell Co. Line	Roadside	1,297	1,375	
HD04	FM 51	at Somervell Co. Line	Count	175	162	
HD05	FM 205	at Erath Co. Line	Count	140	163	West
HD06	FM 2870	at Erath Co. Line	Count	75	89	
HD07	US 377	at Erath Co. Line	Roadside	3,065	2,809	
HD08	FM 1189	at Erath Co. Line	Count	168	172	
HD09	FM 4	at Palo Pinto Co. Line	Count	889	870	
PA01	IH 20	at Palo Pinto Co. Line	High Volume	9,580	9,211	
PA02	FM 3028	at Palo Pinto Co. Line	Count	1,537	1,572	
PA03	US 180	at Palo Pinto Co. Line	Roadside	6,070	6,074	
PA04	FM 1885	at Palo Pinto Co. Line	Count	671	558	
PA05	FM 52	at Palo Pinto Co. Line	Count	213	229	

Table 1. Dallas-Fort Worth External Stations. (cont.)

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
WS01	SH 199	at Jack Co. Line	Roadside	1,334	1,298	West
WS02	FM 2210	at Jack Co. Line	Count	363	363	
WS03	US 380	at Jack Co. Line	Roadside	1,523	1,626	
WS04	FM 1810	at Jack Co. Line	Count	232	226	
WS05	FM 2127	at Jack Co. Line	Count	112	115	
		Total		214,159	214,147	

SURVEY METHODOLOGY

Two methodologies were employed in the conduct of the survey. For roadways with low-to-moderate traffic volumes, a roadside intercept interview method was used. For external stations on high-volume roadways, non-commercial vehicles were surveyed using a license plate match method. Commercial vehicles were surveyed at truck stops and rest stops adjacent to the high-volume facilities. For purposes of this study, roadways with traffic volumes in excess of 20,000 vehicles per day were considered high-volume.

For each external station surveyed using the roadside intercept interview method, traffic control plans were set up and vehicles in the outbound direction (i.e. leaving the study area) were directed into an area where trained survey personnel interviewed the drivers. Drivers of commercial and non-commercial vehicles were interviewed using different survey instruments and those forms are provided in Appendix A. The data file formats used to store the collected survey data are provided in Appendix B. Figure 3 shows a typical survey station at an external station.

Figure 3. Typical External Survey Station.

Eight external stations in Dallas-Fort Worth could not be surveyed using the intercept interview method because traffic volumes were too high to safely stop traffic and interview motorists. In lieu of intercept surveys at these locations, a license plate match method was used as a means to estimate the amount of non-commercial vehicles traveling through the study area on high-volume facilities.

DATA ANALYSIS

Data analysis for non-commercial and commercial vehicles is developed separately and presented in this section. Non-commercial vehicles are typically personal use passenger cars, trucks, vans, and motorcycles. Commercial vehicles are those used for commercial purposes and, in most cases, consist of heavy-duty trucks. The analysis is based on information obtained from completed interviews of motorists. In Dallas-Fort Worth, the majority of vehicles surveyed (85 percent) were non-commercial. The number of surveys for commercial and non-commercial vehicles by station, as well as the outbound traffic volume during the survey period, is presented

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in Table 2. At the sites where surveys were conducted, 14 percent of the non-commercial vehicles and 6 percent of the commercial vehicles that traveled through the external stations in the outbound direction) were interviewed. This does not include the stations where no roadside intercept survey was performed.

During the review of the data, there were a number of vehicles that indicated that the location where they entered the study area was the same location at which they were being surveyed. Since the survey is conducted in the outbound direction, it was assumed that the motorists misinterpreted the definition of a trip, and subsequently did not provide information on where they may have stopped within the study area. As a result, those non-commercial and commercial vehicle surveys were dropped from the analysis.

Table 2. Number of Non-Commercial and Commercial Vehicle Surveys.

Station Number	Facility	Location	Non-Commercial		Commercial	
			Surveyed	Count*	Surveyed	Count*
CN01	SH 121	at Fannin Co. Line	344	3,508	55	289
CN02	SH 78	at Fannin Co. Line	267	920	12	26
HU01	US 69	at Fannin Co. Line	295	1,689	53	284
HU04	SH 11	at Fannin Co. Line	216	795	35	106
HU05	SH 34	at Fannin Co. Line	167	365	15	17
HU10	SH 24	at Delta Co. Line	370	2,540	59	316
HU12	SH 11	at Hopkins Co. Line	337	2,012	27	106
HU14^	IH 30	at Hopkins Co. Line	N/A	N/A	18	3,314
HU16	US 69	at Rains Co. Line	350	2,462	46	320
HU18	SH 276	at Rains Co. Line	336	1,579	23	70
HU19	FM 751	at Van Zandt Co. Line	333	1,533	44	46
KA01	US 80	at Van Zandt Co. Line	406	4,272	40	245
KA03^	IH 20	at Van Zandt Co. Line	N/A	N/A	42	3,315
KA04	SH 243	at Van Zandt Co. Line	291	791	24	61
KA06	SH 198	at Van Zandt Co. Line	227	2,541	33	75
KA07	US 175	at Henderson Co. Line	438	3,414	98	461
KA08	SH 198	at Henderson Co. Line	365	8,470	57	174
KA09	SH 274	at Henderson Co. Line	378	4,172	42	195
EL02^	IH 45	at Navarro Co. Line	N/A	N/A	46	2,976
EL06	US 77	at Hill Co. Line	269	770	50	103
EL07^	IH 35 E	at Hill Co. Line	N/A	N/A	45	2,616
JN01^	IH 35 W	at Hill Co. Line	N/A	N/A	27	2,198
JN02	SH 81	at Hill Co. Line	267	718	24	35

Table 2. Number of Non-Commercial and Commercial Vehicle Surveys. (cont.)

Station Number	Facility	Location	Non-Commercial		Commercial	
			Surveyed	Count*	Surveyed	Count*
JN03	SH 171	at Hill Co. Line	357	1,379	58	201
JN04	SH 174	at Hill Co. Line	333	2,173	58	335
JN06	US 67	at Somervell Co. Line	367	2,711	68	551
HD02	SH 144	at Somervell Co. Line	427	2,714	53	174
HD03	FM 56	at Somervell Co. Line	339	1,320	37	55
HD07	US 377	at Erath Co. Line	446	2,640	57	169
PA01^	IH 20	at Palo Pinto Co. Line	N/A	N/A	47	2,441
PA03	US 180	at Palo Pinto Co. Line	539	5,576	71	498
WS01	SH 199	at Jack Co. Line	304	1,120	58	178
WS03	US 380	at Jack Co. Line	342	1,373	68	253
WS07	US 287/81	at Montague Co. Line	438	6,146	112	2,297
DE02^	IH 35	at Cooke Co. Line	N/A	N/A	64	2,940
GR14	SH 160	at Collin Co. Line	324	1,315	82	365
GR16	SH 5	at Collin Co. Line	346	1,486	37	69
GR17^	US 75	at Collin Co. Line	N/A	N/A	36	2,811
GR19	SH 289	at Collin Co. Line	453	2,056	53	140
GR20	US 377	at Denton Co. Line	371	3,618	51	197
Total			11,042	78,178	1,925	31,022

* Outbound volumes during approximate time of survey (7 a.m. to 6 p.m.)

^ High-volume location. Commercial Vehicle Surveys only.

Trip Types

There are two types of trips identified as part of an external survey - external-local trips and external-through trips. An external-local trip is one where either the origin or destination of the trip is in the study area and the other trip end is outside the study area. An external-through trip is one traveling through the study area without stopping. Table 3 presents the survey data for non-commercial and commercial vehicles in terms of trips identified as local or through movements. For Dallas-Fort Worth, almost 96 percent of non-commercial vehicle trips and over 85 percent of commercial vehicle trips were external-local trips. Figure 4 shows the number of external-local and external-through trips for each study area.

Table 3. Survey Results by Trip Type.

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles		
		Local	Through	Total	Local	Through	Total
CN01	SH 121	334	10	344	52	3	55
CN02	SH 78	244	23	267	9	3	12
HU01	US 69	249	46	295	33	20	53
HU04	SH 11	197	19	216	21	14	35
HU05	SH 34	151	16	167	12	3	15
HU10	SH 24	365	5	370	56	3	59
HU12	SH 11	310	27	337	20	7	27
HU14*	IH 30	N/A	N/A	N/A	13	5	18
HU16	US 69	321	29	350	31	15	46
HU18	SH 276	332	4	336	21	2	23
HU19	FM 751	330	3	333	37	7	44
KA01	US 80	405	1	406	37	3	40
KA03*	IH 20	N/A	N/A	N/A	21	21	42
KA04	SH 243	287	4	291	24	0	24
KA06	SH 198	173	54	227	19	14	33
KA07	US 175	430	8	438	90	8	98
KA08	SH 198	324	41	365	47	10	57
KA09	SH 274	376	2	378	37	5	42
EL02*	IH 45	N/A	N/A	N/A	42	4	46
EL06	US 77	268	1	269	44	6	50
EL07*	IH 35 E	N/A	N/A	N/A	33	12	45
JN01*	IH 35 W	N/A	N/A	N/A	27	0	27
JN02	SH 81	266	1	267	23	1	24
JN03	SH 171	344	13	357	51	7	58
JN04	SH 174	329	4	333	55	3	58
JN06	US 67	360	7	367	58	10	68
HD02	SH 144	419	8	427	50	3	53
HD03	FM 56	325	14	339	36	1	37
HD07	US 377	436	10	446	52	5	57
PA01*	IH 20	N/A	N/A	N/A	29	18	47
PA03	US 180	531	8	539	69	2	71
WS01	SH 199	300	4	304	54	4	58
WS03	US 380	332	10	342	63	5	68
WS07	US 287/81	406	32	438	96	16	112

Table 3. Survey Results by Trip Type. (cont.)

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles		
		Local	Through	Total	Local	Through	Total
DE02*	IH 35	N/A	N/A	N/A	40	24	64
GR14	SH 160	299	25	324	82	0	82
GR16	SH 5	343	3	346	31	6	37
GR17*	US 75	N/A	N/A	N/A	30	6	36
GR19	SH 289	451	2	453	53	0	53
GR20	US 377	366	5	371	48	3	51
Total		10,603	439	11,042	1,646	279	1,925

*High-volume location. Commercial vehicle surveys only.

The second type of trip identified in the survey is a sub-category of external-local trips. These are reported as resident and non-resident trips. A resident is a survey respondent that reported they lived in the study area. A non-resident is a respondent that reported they lived outside of the study area. Table 4 presents the survey data by residents and non-residents as well as the number of internal trips made by the non-residents within the study area prior to being surveyed. An important element of the trips reported by non-residents is the number of trips made prior to being surveyed. Based on the information provided in the survey, these trips are evaluated to estimate the number of internal trips, trips where both the origin and destination are within the study area, made by non-residents. By measuring the number of non-residents that travel in and out of the study areas and the number of internal trips they make, an estimate of the total internal trips within each study area attributable to non-residents can be developed.

The residency questions were only asked of respondents in non-commercial vehicles. Table 4 indicates that almost 58 percent of the non-commercial travel in and out of the Dallas-Fort Worth study area is made by persons that do not live in the area. The average number of internal trips made by those individuals is 0.14 trips per vehicle, indicating that approximately one in seven non-residents made an internal trip within the study area prior to exiting it. This value is lower that what might be expected, and brings into question the effectiveness of the survey in obtaining information about internal trips made. It is recommended that a review of the survey instrument and surveying process be done in order to correct trip reporting problems relating to internal trips taken prior to exiting the study area.

Table 4. Survey Results by Residency (Non-Commercial Vehicles Only).

Station Number	Facility	Number of Surveys	Residents	Percent	Non-Residents	Percent	Internal Trips (non-residents)
CN01	SH 121	344	150	43.60	194	56.40	19
CN02	SH 78	267	91	34.08	176	65.92	28
HU01	US 69	295	128	43.39	167	56.61	7
HU04	SH 11	216	87	40.28	129	59.72	17
HU05	SH 34	167	59	35.33	108	64.67	27
HU10	SH 24	370	97	26.22	273	73.78	21
HU12	SH 11	337	110	32.64	227	67.36	27
HU16	US 69	350	105	30.00	245	70.00	23
HU18	SH 276	336	121	36.01	215	63.99	30
HU19	FM 751	333	121	36.34	212	63.66	17
KA01	US 80	406	112	27.59	294	72.41	75
KA04	SH 243	291	112	38.49	179	61.51	17
KA06	SH 198	227	47	20.70	180	79.30	39
KA07	US 175	438	180	41.10	258	58.90	50
KA08	SH 198	365	152	41.64	213	58.36	57
KA09	SH 274	378	235	62.17	143	37.83	24
EL06	US 77	269	140	52.04	129	47.96	18
JN02	SH 81	267	112	41.95	155	58.05	33
JN03	SH 171	357	164	45.94	193	54.06	33
JN04	SH 174	333	116	34.83	217	65.17	63
JN06	US 67	367	181	49.32	186	50.68	23
HD02	SH 144	427	248	58.08	179	41.92	6
HD03	FM 56	339	174	51.33	165	48.67	14
HD07	US 377	446	250	56.05	196	43.95	11
PA03	US 180	539	277	51.39	262	48.61	17
WS01	SH 199	304	140	46.05	164	53.95	31
WS03	US 380	342	138	40.35	204	59.65	31
WS07	US 287/81	438	172	39.27	266	60.73	12
GR14	SH 160	324	116	35.80	208	64.20	23
GR16	SH 5	346	187	54.05	159	45.95	32
GR19	SH 289	453	184	40.62	269	59.38	58
GR20	US 377	371	164	44.20	207	55.80	22
Total		11,042	4,670	42.29	6,372	57.71	905

<u>Travel Purpose</u>

To understand the reasons people travel, the survey included questions about the driver's purpose for being at the location where the trip began (i.e., trip origin) and the purpose for traveling to their destination. There were seventeen different purposes included on the survey instrument for non-commercial vehicles and nine purposes on the commercial vehicle survey. Table 5 provides the trip purposes for each survey. For the purpose of presenting survey results, the trip purpose categories are combined into a fewer number to reflect the primary purposes of travel.

Table 5. Trip Purpose Categories.

Code	Non-Commercial Vehicle Trip Purpose	Code	Commercial Vehicle Trip Purpose
1	Home/Return Home	1	Base location/Return to Base location
2	Go/Return to Work	2	Delivery
3	Work Related	3	Pick Up
4	School	4	Maintenance
5	Vacation	5	Driver Needs (lunch, etc)
6	Visit Friends/Family	6	To Home
7	Eat Out	7	Buy Fuel
8	Shop	8	Other (specify)
9	Buy Gas	99	Unknown/Refused
10	Personal Business		
11	Pick Up/Drop Off Passenger		
12	Change Travel Mode		
13	Delivery		
14	Recreation		
15	Overnight stay/sleep		
16	Other (specify)		
99	Refused/Do Not Know		

For non-commercial vehicles, the trip purposes listed in Table 5 were combined into the following six categories:

<u>Category</u>	<u>Trip Purpose Codes</u> (from Table 5)
Home	1
Work	2 and 3
School	4
Personal	5, 6, 10, 11, 14, and 15
Shop	7, 8, and 9
Other	12, 13, 16, and 99

Figure 4 presents the distribution of non-commercial vehicles by reported trip purpose at the origin of the trip and Figure 5 shows the distribution of non-commercial vehicles at the destination of the trip. Table 6 provides the data shown in Figures 4 and 5 in tabular form for comparative purposes. The information is provided for residents, non-residents, and both groups combined. In Figure 4, the distribution for the origin purpose shows that the largest percentage of trips for residents (56 percent) began at their home, while the most common non-resident trip origin purpose (43 percent) was their work location.
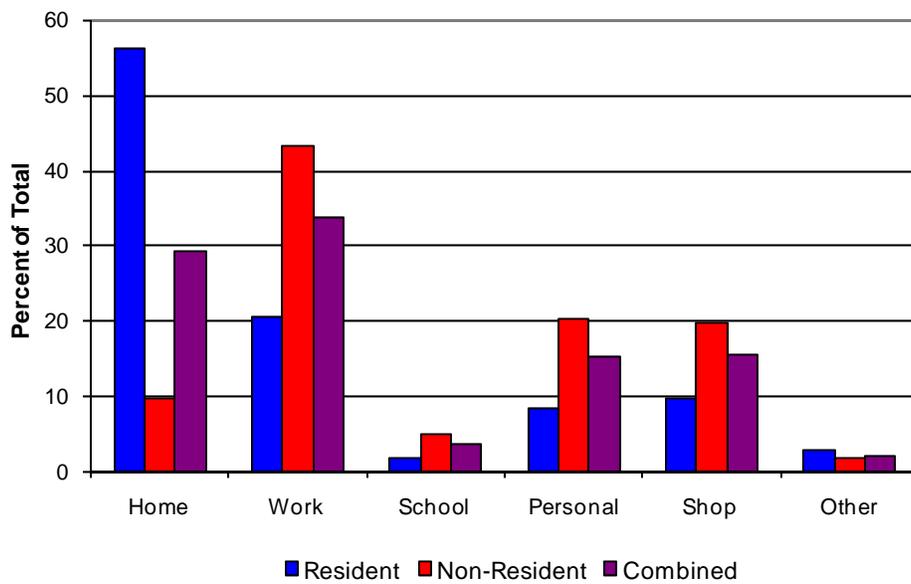
Figure 4. Trip Purpose at Origin for Non-Commercial Vehicles.

For Dallas-Fort Worth, Figure 5 shows that the largest distribution of destination purposes for residents were to work (42 percent) and personal-related (33 percent) locations. The trip purpose at the destination for non-residents was primarily comprised of home (67 percent) and work (17 percent).
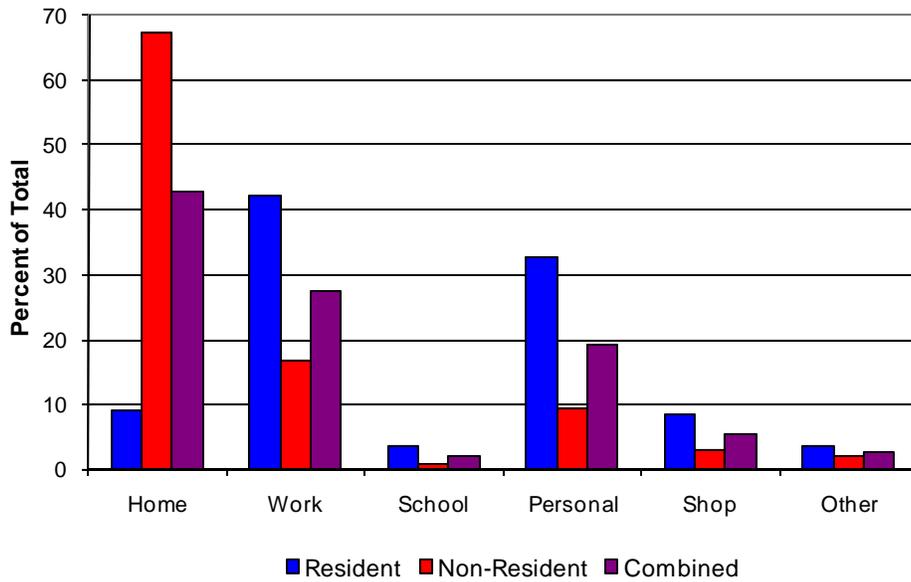
Figure 5. Trip Purpose at Destination for Non-Commercial Vehicles.

Table 6. Non-Commercial Vehicle Trip Purpose at Origin.

Trip Purpose	Origin			Destination		
	Resident	Non-Resident	Combined	Resident	Non-Resident	Combined
Home	56.30	9.67	29.39	9.08	67.31	42.68
Work	20.70	43.47	33.84	42.27	16.92	27.64
School	1.95	4.94	3.68	3.70	1.05	2.17
Personal	8.50	20.48	15.41	32.79	9.59	19.40
Shop	9.72	19.71	15.49	8.52	3.14	5.42
Other	2.83	1.73	2.19	3.64	1.99	2.69

The trip purposes normally used in travel demand modeling are home-based work (HBW), home-based non-work (HBNW), and non-home based (NHB). HBW trips are those that have one end of the trip at home and the other end of the trip at work. Trips that begin at home and end at work or those that begin at work and end at home are HBW. A HBNW trip is one that one end of the trip is at home and the other trip end is any location other than work. A NHB trip is a trip that does not begin or end at home. The distribution of trips by trip purpose is provided in Figure 6. For residents, HBNW and NHB trips were the most common, at 37 percent. For non-residents, home-based non-work trips accounted for over 40 percent of the trips, and home-based work trips accounted for 34 percent.
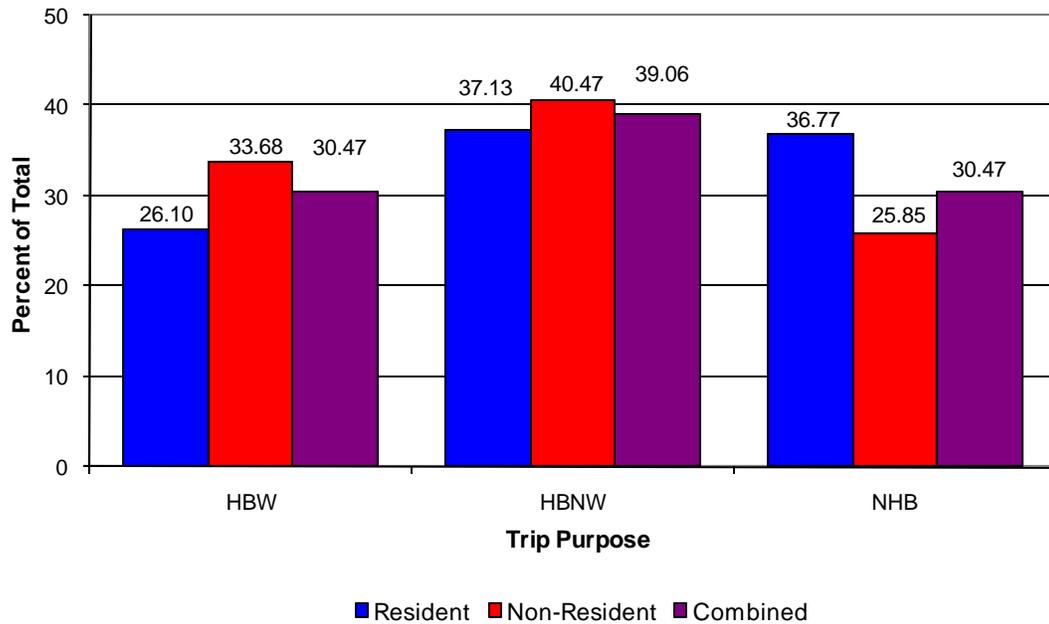
Figure 6. Distribution of Non-Commercial Vehicle Trips by Trip Purpose.

For commercial vehicles, the trip purposes shown in Table 5 were combined into the following five categories:

Category	Trip Purpose Codes
Base Location	1
Delivery	2
Pick Up	3
Support Functions	4, 5, 6, and 7
Other	8 and 99

Figures 7 and 8 shows the distribution of commercial vehicle trips by reported trip purpose at the origin and destination of the trip, respectively. At the origin, delivery and pick-up of cargo was the most common origin trip purpose, 34 percent each. The distribution for destination trip purpose shows that the majority of the surveyed vehicles, 57 percent, were destined for delivering cargo and another 24 percent were destined for picking up cargo.
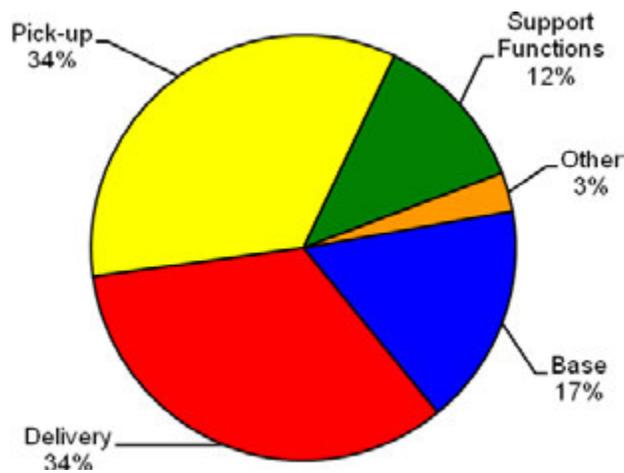
Figure 7. Trip Purpose at Origin for Commercial Vehicles.
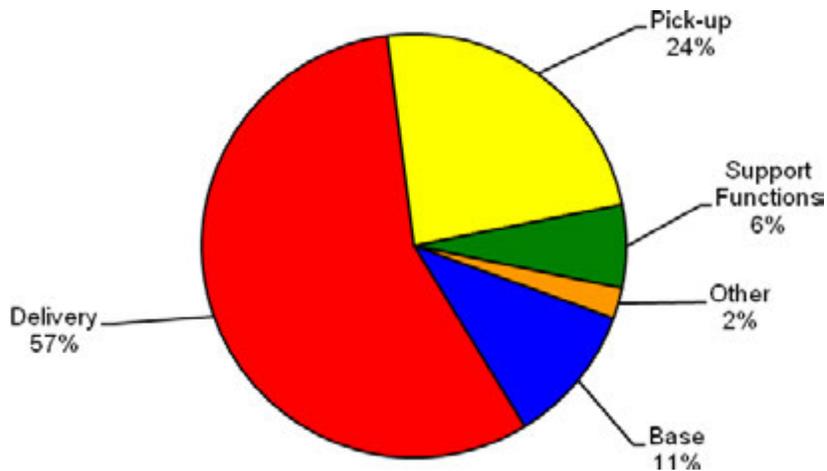
Figure 8. Trip Purpose at Destination for Commercial Vehicles.

In addition to obtaining information on the purpose of travel, questions were asked to identify the type of place associated with the origin of the trip. Table 7 provides the results of the responses provided for both commercial and non-commercial vehicles. For non-commercial vehicles, the largest percentage of respondents listed residential (38 percent) as the type of place at the origin.

An additional 18 percent of the non-commercial vehicles cited office building as the type of place. For commercial vehicles, the majority of the respondents (62 percent) listed industrial/manufacturing as the type of place at the origin. Retail/shopping/gas was the next largest percentage of type of place at the origin for commercial vehicles at nearly 13 percent.

Table 7. Type of Place at Trip Origin.

Type of Place	Non-Commercial Vehicles		Commercial Vehicles	
	Number	Percent	Number	Percent
Office Building	1,997	18.09	199	10.34
Retail/Shopping/Gas	1,936	17.53	244	12.68
Industrial/Manufacturing	799	7.24	1,200	62.34
Medical	462	4.18	15	0.78
Educational	584	5.29	5	0.26
Government	225	2.04	15	0.78
Residential	4,181	37.86	108	5.61
Airport	94	0.85	6	0.31
Eating Establishment	150	1.36	20	1.04
Hotel/Motel	89	0.81	17	0.88
Other	525	4.75	96	4.99
Total	11,042	100.00	1,925	100.00

Time-of-Day

Vehicle classification counts were conducted at each external survey location on the same day as the survey. These counts were for a 24-hour period and they include data by time-of-day and by direction. This information is primarily used for expansion of the survey data, but is also of interest to examine the distribution of vehicles by time-of-day. Figures 9 and 10 provide the distribution of non-commercial and commercial vehicles by time-of-day for all of the external locations by inbound and outbound direction, respectively.

For inbound vehicles (Figure 9), the morning peak occurs between 7 a.m. and 8 a.m. for non-commercial vehicles, with an afternoon peak period between 5 p.m. and 6 p.m. For outbound vehicles (Figure 10), the morning peak period also occurs between 7 a.m. and 8 a.m. and the afternoon peak between 5 p.m. and 6 p.m. Commercial vehicles, however, maintained a

consistent inbound and outbound volume from 9 a.m. to 3 p.m., and did not lower significantly until the late night and early morning hours.
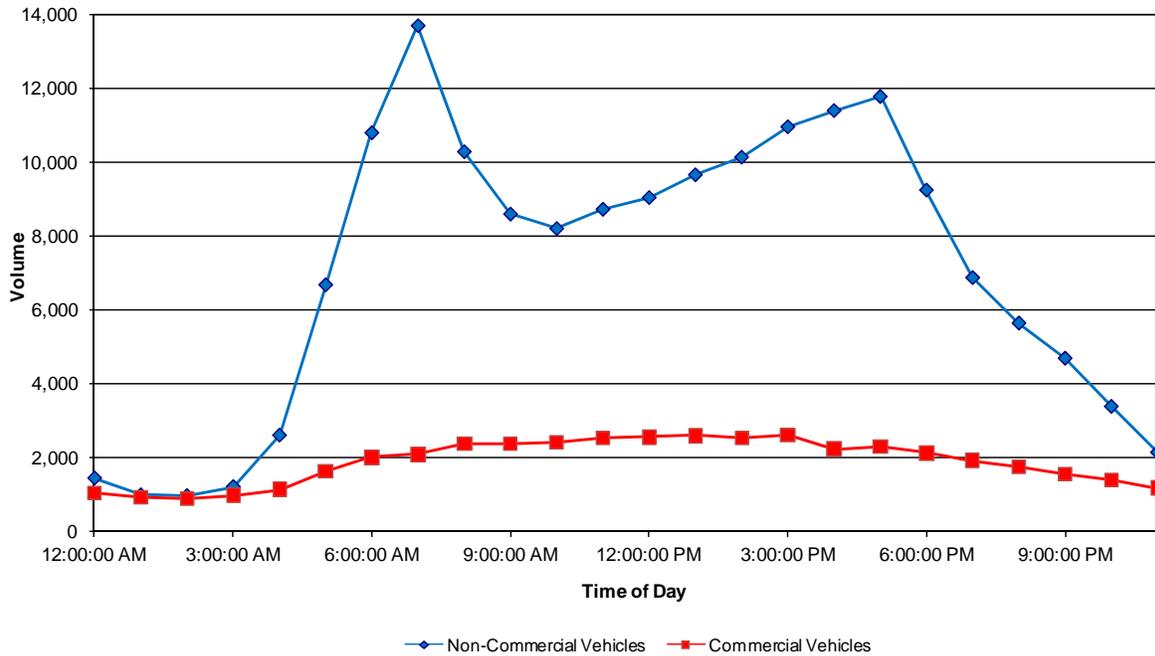

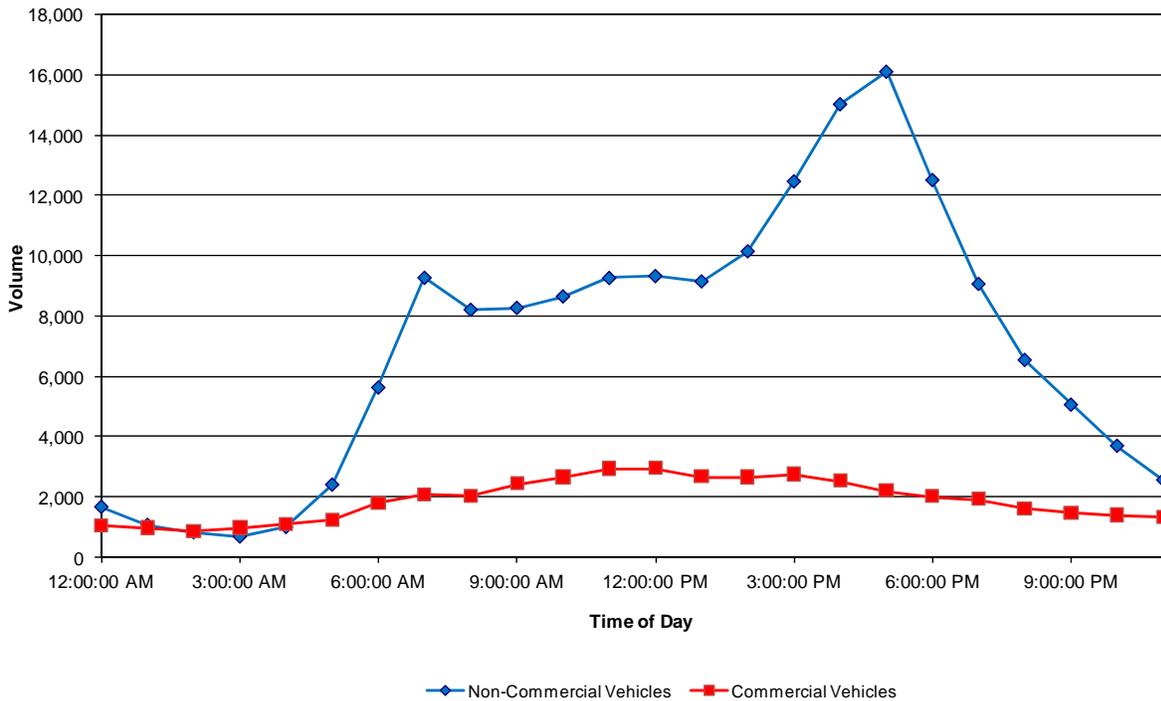**Figure 9. Distribution of Inbound Vehicles by Time-of-Day.**

Figure 10. Distribution of Outbound Vehicles by Time-of-Day.

An additional analysis was performed comparing the number of surveys by time of day for both non-commercial and commercial survey types. In this analysis, the number of vehicles surveyed in each hourly increment was determined for the time extent in which the survey was conducted. These results are provided in Figure 11.
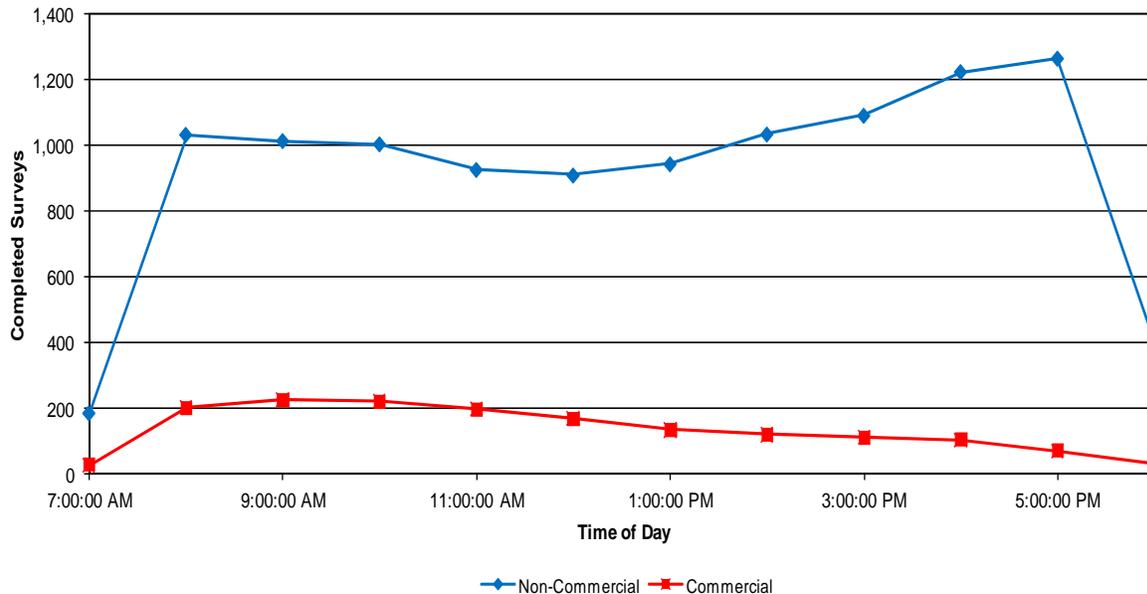
Figure 11. Distribution of Surveys by Time-of-Day.

For non-commercial vehicles, the number of surveys completed each hour was fairly constant throughout the day, with a slight peak during the late afternoon hours. There was a different trend among commercial vehicles. While the percent of vehicles counted was consistent throughout the day, the number of completed surveys peaked in the early morning, and then declined throughout the remainder of the day.

Vehicle Characteristics

As part of the survey, interviewers collected data on the year, make, odometer readings, and model of each vehicle surveyed. This provides an indication of the distribution of vehicles traveling through the external stations by type, age, and condition (as implied by the number of miles on the vehicle). Figure 12 presents the percent distribution of non-commercial and commercial vehicles by age as reported in the surveys. The average age was 6.7 years for non-commercial vehicles and 6.9 years for commercial vehicles. The median age for non-commercial vehicles was 2001, and for commercial vehicles it was 2000 years.
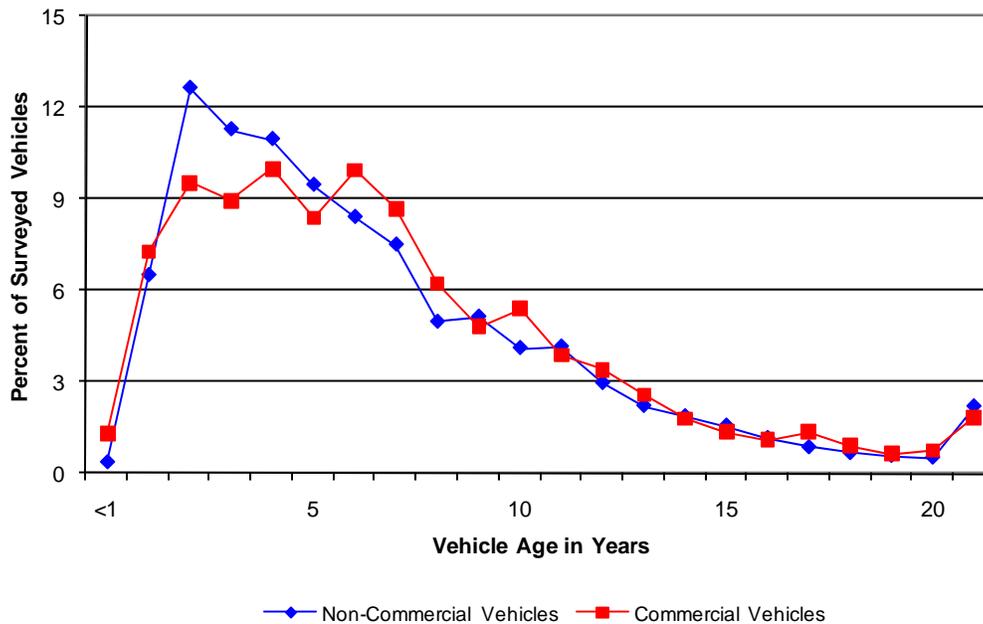
Figure 12. Distribution of Surveyed Vehicles by Age of Vehicle.

Figure 13 presents the average odometer reading for non-commercial and commercial vehicles by age. This data shows the difference in mileage accumulation rates of commercial vehicles as compared to non-commercial vehicles. From Figure 13, it can be seen that on the average, non-commercial vehicles took more than six years to reach the first 100,000 miles, but in an additional ten years, failed to reach the next 100,000 miles. Commercial vehicles reached an average odometer reading of 300,000 miles between seven and nine years. However, unlike non-commercial vehicles, the data for commercial vehicles do not show smooth trends, especially after ten years. This is due in part to the total number of observations in the non-commercial and commercial surveys (10,910 and 1,911, respectively).
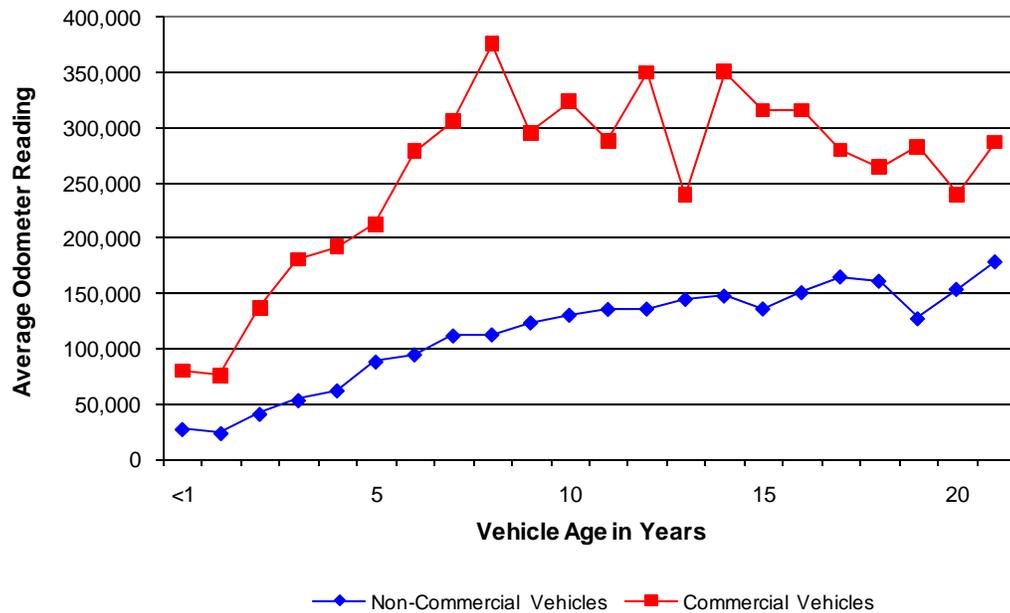
Figure 13. Average Odometer Readings for Vehicles by Age of Vehicle.

The average odometer reading for non-commercial vehicles was 89,330 and the average commercial vehicle odometer reading was 240,566. For more detailed information, Table 8 presents the numerical values for the non-commercial data plotted in Figures 13 and 14. Table 9 provides similar information for commercial vehicles. A total of 132 non-commercial vehicles and 14 commercial vehicles had no model year provided during the survey. As a result, these entries were not included in the analysis of age and odometer responses.

Table 8. Distribution of Non-Commercial Vehicles by Age and Average Odometer Reading.

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	39	0.36	0.36	27,213
1	709	6.50	6.86	23,572
2	1379	12.64	19.50	41,064
3	1231	11.28	30.78	53,487
4	1196	10.96	41.74	62,353
5	1032	9.46	51.20	88,527
6	917	8.41	59.61	95,023
7	818	7.50	67.10	112,253
8	542	4.97	72.07	113,148
9	560	5.13	77.20	124,011
10	448	4.11	81.31	131,015
11	453	4.15	85.46	136,235
12	323	2.96	88.42	136,609
13	241	2.21	90.63	145,387
14	204	1.87	92.50	148,401
15	170	1.56	94.06	136,693
16	126	1.15	95.22	151,441
17	93	0.85	96.07	165,709
18	72	0.66	96.73	161,860
19	62	0.57	97.30	127,772
20	56	0.51	97.81	154,426
>20	239	2.19	100.00	179,412
Total	10,910	100.00		

Table 9. Distribution of Commercial Vehicles by Age and Average Odometer Readings.

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	25	1.31	1.31	80,429
1	139	7.27	8.58	75,932
2	182	9.52	18.11	137,069
3	171	8.95	27.05	181,428
4	191	9.99	37.05	192,432
5	160	8.37	45.42	213,199
6	190	9.94	55.36	278,770
7	166	8.69	64.05	305,997
8	119	6.23	70.28	376,202
9	92	4.81	75.09	295,753
10	103	5.39	80.48	324,412
11	74	3.87	84.35	288,573
12	65	3.40	87.76	350,035
13	49	2.56	90.32	239,297
14	34	1.78	92.10	350,596
15	26	1.36	93.46	315,998
16	21	1.10	94.56	315,815
17	26	1.36	95.92	279,861
18	17	0.89	96.81	264,121
19	12	0.63	97.44	283,142
20	14	0.73	98.17	239,872
>20	35	1.83	100.00	286,929
Total	1,911	100.00		

Vehicle Occupancy

As vehicles were surveyed, one of the data items recorded was the class or type of vehicle and the number of persons in the vehicle. This information provides a means for estimating the number of persons traveling in and out of the Dallas-Fort Worth study area. Table 10 presents the number of observed non-commercial and commercial vehicles by class and the average occupancy of each. Nearly all of the non-commercial vehicles (99 percent) were classified as passenger vehicles. The greatest number of commercial vehicles (68 percent) was semi/tractor-trailer combinations. The overall average occupancy for non-commercial vehicles was 1.35 persons/vehicle and 1.13 persons/vehicle for commercial vehicles.

Table 10. Distribution of Vehicles by Class and Average Occupancy.

Non-Commercial Vehicles	Observed Vehicles	Average Occupancy	Commercial Vehicles	Observed Vehicles	Average Occupancy
Passenger Vehicle	10,876	1.35	Single Unit 2-axle (6 wheels)	294	1.28
Bus	114	1.42	Single Unit 3-axle (10 wheels)	175	1.23
Taxi/Paid Limo	1	2.00	Single Unit 4-axle (14 wheels)	153	1.15
School Bus	0	—	Semi (tractor-trailer)	1,303	1.08
Commercial Vehicle (over 1 ton)	9	1.22	Other	0	—
Motorcycle	27	1.11			
Recreational Vehicle	13	1.77			
Other	2	1.00			
Total	11,042	1.35	Total	1,925	1.13

COMMERCIAL VEHICLE CARGO CHARACTERISTICS

Commercial vehicles represent a major component of travel into, out of, and through most study areas. Specific questions were included in the commercial vehicle survey to obtain information on the cargo being transported, the type of facility where it was picked up and dropped off, and how the cargo was transferred to the vehicle. Table 11 presents data on the number of commercial vehicles surveyed by external station, the number and percent of vehicles not transporting any cargo, and whether or not their cargo was from Mexico. In Table 11, over 24 percent of the vehicles reported not carrying any cargo. Of those vehicles transporting cargo, only thirty-four of those vehicles was from or headed to Mexico.

Table 11. Commercial Vehicles with Cargo from Mexico.

Station Number	Facility	Surveyed Vehicles	Empty Vehicles	Percent Empty	Vehicles with Mexico Cargo	Vehicles without Mexico Cargo
CN01	SH 121	55	10	18.18	1	44
CN02	SH 78	12	2	16.67	0	10
HU01	US 69	53	12	22.64	0	41
HU04	SH 11	35	3	8.57	3	29
HU05	SH 34	15	3	20.00	1	11
HU10	SH 24	59	27	45.76	1	31
HU12	SH 11	27	2	7.41	0	25

Table 11. Commercial Vehicles with Cargo from Mexico. (cont.)

Station Number	Facility	Surveyed Vehicles	Empty Vehicles	Percent Empty	Vehicles with Mexico Cargo	Vehicles without Mexico Cargo
HU14	IH 30	18	0	0.00	0	18
HU16	US 69	46	10	21.74	0	36
HU18	SH 276	23	1	4.35	0	22
HU19	FM 751	44	11	25.00	0	33
KA01	US 80	40	4	10.00	0	36
KA03	IH 20	42	5	11.90	1	36
KA04	SH 243	24	9	37.50	0	15
KA06	SH 198	33	6	18.18	1	26
KA07	US 175	98	25	25.51	1	72
KA08	SH 198	57	9	15.79	3	45
KA09	SH 274	42	4	9.52	2	36
EL02	IH 45	46	19	41.30	0	27
EL06	US 77	50	19	38.00	0	31
EL07	IH 35 E	45	3	6.67	1	41
JN01	IH 35 W	27	0	0.00	1	26
JN02	SH 81	24	4	16.67	0	20
JN03	SH 171	58	8	13.79	1	49
JN04	SH 174	58	23	39.66	0	35
JN06	US 67	68	19	27.94	4	45
HD02	SH 144	53	20	37.74	3	30
HD03	FM 56	37	4	10.81	1	32
HD07	US 377	57	12	21.05	0	45
PA01	IH 20	47	8	17.02	0	39
PA03	US 180	71	11	15.49	0	60
WS01	SH 199	58	12	20.69	4	42
WS03	US 380	68	16	23.53	1	51
WS07	US 287/81	112	21	18.75	0	91
DE02	IH 35	64	15	23.44	2	47
GR14	SH 160	82	61	74.39	0	21
GR16	SH 5	37	4	10.81	2	31
GR17	US 75	36	6	16.67	0	30
GR19	SH 289	53	25	47.17	0	28
GR20	US 377	51	12	23.53	0	39
Total		1,925	465	24.16	34	1426

A detailed summary of cargo types reported for commercial vehicles is provided in Table 12. Empty vehicles comprised nearly one quarter of the vehicles surveyed (24 percent). It was found that ten percent reported that their cargo was food/ health/beauty products, and metals/minerals, manufactured goods, and miscellaneous shipments each accounted for nine percent of the cargo types.

Table 12. Distribution of Commercial Vehicles by Type of Cargo.

		Cargo Description	Number of Vehicles	Percent of Vehicles
1	—	Farm Products	124	6.44
2	—	Forest Products	46	2.39
3	—	Marine Products	15	0.78
4	—	Metals and Minerals	180	9.35
5	—	Food, Health, and Beauty Products	185	9.61
6	—	Tobacco Products	8	0.42
7	—	Textiles	36	1.87
8	—	Wood Products	79	4.10
9	—	Printer Matter	27	1.40
10	—	Chemical Products	67	3.48
11	—	Refined Petroleum or Coal Products	43	2.23
12	—	Rubber, Plastic, and Styrofoam Products	40	2.08
13	—	Clay, Concrete, Glass, or Stone	136	7.06
14	—	Manufactured Goods/Equipment	173	8.99
15	—	Wastes	33	1.71
16	—	Miscellaneous Shipments	178	9.25
17	—	Hazardous Materials	16	0.83
18	—	Transportation	31	1.61
19	—	Unclassified Cargo	7	0.36
20	—	Driver Refused to Answer	18	0.94
21	—	Unknown to Driver	18	0.94
22	—	Empty	465	24.16
		Total	1,925	100.00

Figures 14 and 15 present the distribution of surveyed commercial vehicles by the type of transfer for their cargo at the origin (point of pick up), and at their destination (point of delivery). Warehouse-to-truck and truck-to-truck accounted for the majority of cargo transfers at both the origin and destination. At the origin, 47 percent of the transfers were warehouse-to-truck and 34

percent were truck-to-truck. At the destination, 44 percent of the transfers were truck-to-warehouse and 36 percent were truck-to-truck.
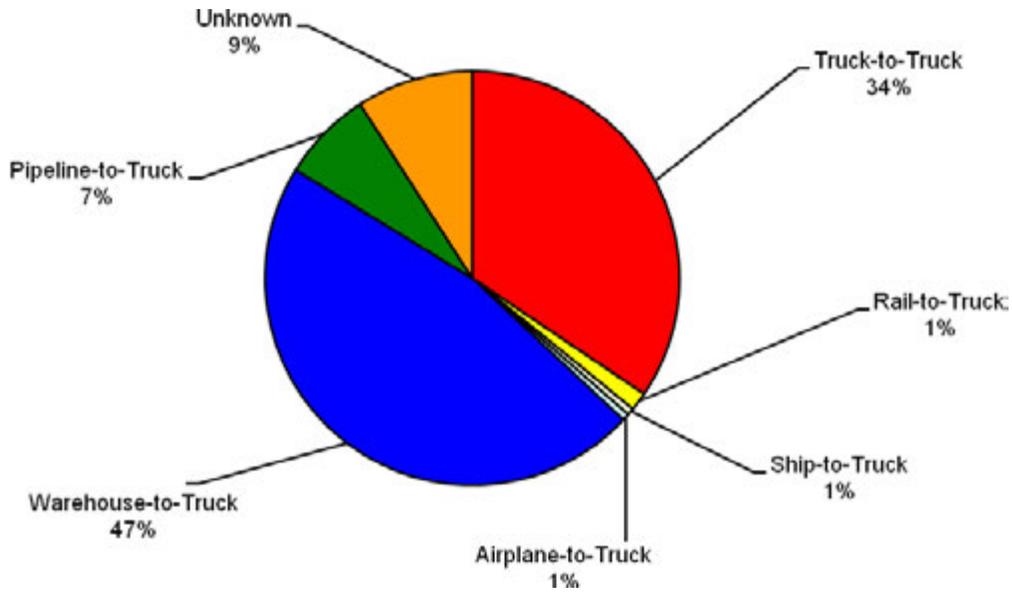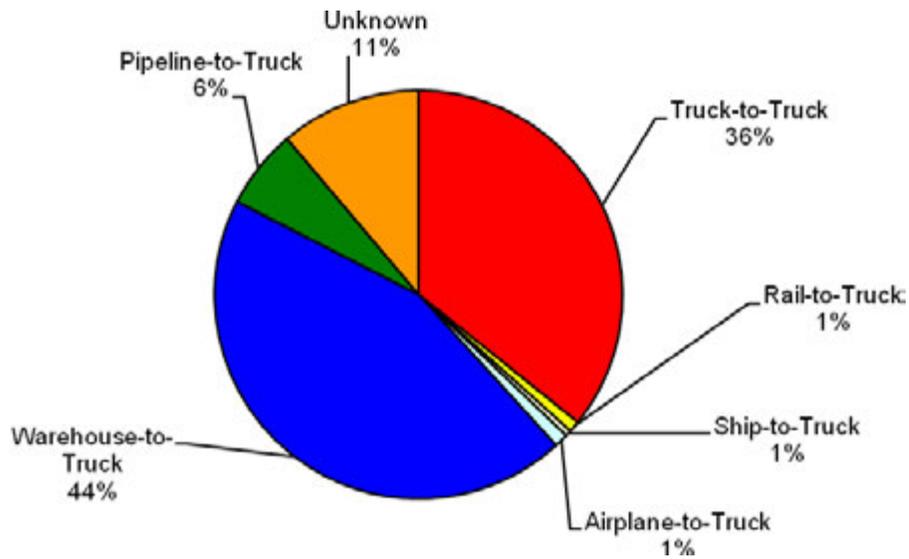

Figure 14. Cargo Transfer at Point of Pick-Up.

Figure 15. Cargo Transfer at Point of Drop-Off.

HIGH VOLUME LICENSE PLATE MATCH SURVEYS

There were eight locations in the Dallas-Fort Worth area with traffic volumes that were too high to safely stop traffic and interview motorists. For these locations, a license plate match method was used as a means to estimate the number of external-local and external-through non-commercial trips. The license plate matching survey was conducted using high-speed digital cameras which recorded license plates of non-commercial vehicles entering and exiting the study area at each high-volume location. As previously mentioned, for the purpose of this study, any roadway that had more than 20,000 vehicles per day was considered high-volume. The license plate information for all locations was gathered on the same day. After the plate information was recorded, it was processed through a computer program that determined the number of license plate matches between each license plate survey location. The high-volume locations, the number of license plates recorded by direction, and the 24-hour traffic counts for these locations are provided in Table 13.

Table 13. High-Volume Locations.

Station Number	Facility	Location	License Plates Recorded		24-Hour Vehicle Count	
			Inbound	Outbound	Inbound	Outbound
HU14	IH 30	at Hopkins Co. line	3,918	4,317	6,441	6,486
KA03	IH 20	at Van Zandt Co. line	6,858	7,749	10,598	11,745
EL02	IH 45	at Navarro Co. line	7,956	8,653	11,545	11,805
EL07	IH 35 E	at Hill Co. line	5,257	5,600	7,723	7,272
JN01	IH 35 W	at Hill Co. line	5,464	5,441	8,562	7,457
PA01	IH 20	at Palo Pinto Co. line	3,264	3,645	5,182	5,247
DE02	IH 35	at Cooke Co. line	8,418	9,444	13,411	14,066
GR17	US 75	at Grayson Co. line	8,619	8,819	12,143	11,934

Only matches meeting specified criteria that occurred within acceptable time limits between each survey location were considered valid matches. One criterion for license plate data was that at least five of the six characters (in consecutive order) match in order for the plate to be considered valid. Additionally, travel time runs were made for the peak and off-peak periods in order to establish reasonable time limits for an external-through vehicle to travel between license plate survey stations. The travel times were then increased by 25 percent for both peak and off-peak periods to account for variation in travel speeds among motorists. Table 14 provides the travel times utilized for the analysis of license plate data.

Table 14. High-Volume Travel Times.

From Location	To Location	Travel Time (minutes)	
		Peak	Off-Peak
IH 30 at Hopkins Co. line	IH 20 at Van Zandt Co. line	149	139
	IH 45 at Navarro Co. line	161	138
	IH 35 E at Hill Co. line	138	135
	IH 35 W at Hill Co. line	148	145
	IH 20 at Palo Pinto Co. line	199	154
	IH 35 at Cooke Co. line	156	133
	SH 75 at Grayson Co. line	118	96
IH 20 at Van Zandt Co. line	IH 30 at Hopkins Co. line	101	163
	IH 45 at Navarro Co. line	99	106
	IH 35 E at Hill Co. line	94	101
	IH 35 W at Hill Co. line	115	103
	IH 20 at Palo Pinto Co. line	240	138
	IH 35 at Cooke Co. line	149	125
	SH 75 at Grayson Co. line	121	94
IH 45 at Navarro Co. line	IH 30 at Hopkins Co. line	123	119
	IH 20 at Van Zandt Co. line	88	108
	IH 35 E at Hill Co. line	100	93
	IH 35 W at Hill Co. line	106	131
	IH 20 at Palo Pinto Co. line	130	134
	IH 35 at Cooke Co. line	150	109
	SH 75 at Grayson Co. line	115	108
IH 35 E at Hill Co. line	IH 30 at Hopkins Co. line	188	143
	IH 20 at Van Zandt Co. line	204	96
	IH 45 at Navarro Co. line	81	74
	IH 35 W at Hill Co. line	21	23
	IH 20 at Palo Pinto Co. line	114	113
	IH 35 at Cooke Co. line	138	119
	SH 75 at Grayson Co. line	180	110
IH 35 W at Hill Co. line	IH 30 at Hopkins Co. line	144	154
	IH 20 at Van Zandt Co. line	106	105
	IH 45 at Navarro Co. line	150	90
	IH 35 E at Hill Co. line	25	28
	IH 20 at Palo Pinto Co. line	103	101
	IH 35 at Cooke Co. line	115	94
	SH 75 at Grayson Co. line	149	121
IH 20 at Palo Pinto Co. line	IH 30 at Hopkins Co. line	219	181
	IH 20 at Van Zandt Co. line	206	133
	IH 45 at Navarro Co. line	101	139
	IH 35 E at Hill Co. line	130	138
	IH 35 W at Hill Co. line	109	111
	IH 35 at Cooke Co. line	105	100
	SH 75 at Grayson Co. line	200	141

Table 14. High-Volume Travel Times. (cont.)

| From Location | To Location | Travel Time (minutes) | |
		Peak	Off-Peak
IH 35 at Cooke Co. line	IH 30 at Hopkins Co. line	125	129
	IH 20 at Van Zandt Co. line	159	173
	IH 45 at Navarro Co. line	150	148
	IH 35 E at Hill Co. line	141	150
	IH 35 W at Hill Co. line	116	125
	IH 20 at Palo Pinto Co. line	114	136
	SH 75 at Grayson Co. line	138	144
SH 75 at Grayson Co. line	IH 30 at Hopkins Co. line	88	95
	IH 20 at Van Zandt Co. line	125	144
	IH 45 at Navarro Co. line	156	108
	IH 35 E at Hill Co. line	144	126
	IH 35 W at Hill Co. line	165	150
	IH 20 at Palo Pinto Co. line	210	141
	IH 35 at Cooke Co. line	85	84

Using the travel time estimates provided in Table 14, the total number of license plates determined to be traveling between the high-volume locations was ascertained. The results of this analysis are provided in Table 15. The number of expanded through trips was determined by obtaining the percentage of recorded vehicles for a location that were matched at another location. This percentage was then multiplied by the total inbound volume for the recording location.

Table 15. Results of License Plate Matching for High-Volume Locations.

| From Location | To Location | License Plates Recorded | | Expanded Total | |
		Recorded	Matches	Inbound Volume	Through Trips
IH 30 at Hopkins Co. line	IH 20 at Van Zandt Co. line	3,918	32	6,441	53
	IH 45 at Navarro Co. line		20		33
	IH 35 E at Hill Co. line		138		22
	IH 35 W at Hill Co. line		16		26
	IH 20 at Palo Pinto Co. line		55		90
	IH 35 at Cooke Co. line		21		35
	SH 75 at Grayson Co. line		18		30
IH 20 at Van Zandt Co. line	IH 30 at Hopkins Co. line	6,858	33	10,598	51
	IH 45 at Navarro Co. line		46		71
	IH 35 E at Hill Co. line		74		114
	IH 35 W at Hill Co. line		21		33
	IH 20 at Palo Pinto Co. line		127		196
	IH 35 at Cooke Co. line		122		189
	SH 75 at Grayson Co. line		51		78

Table 15. Results of License Plate Matching for High-Volume Locations. (cont.)

From Location	To Location	License Plates Recorded		Expanded Total	
		Recorded	Matches	Inbound Volume	Through Trips
IH 45 at Navarro Co. line	IH 30 at Hopkins Co. line	7,956	45	11,545	65
	IH 20 at Van Zandt Co. line		43		62
	IH 35 E at Hill Co. line		44		64
	IH 35 W at Hill Co. line		28		40
	IH 20 at Palo Pinto Co. line		35		51
	IH 35 at Cooke Co. line		186		270
	SH 75 at Grayson Co. line		144		209
IH 35 E at Hill Co. line	IH 30 at Hopkins Co. line	5,257	228	7,723	335
	IH 20 at Van Zandt Co. line		88		129
	IH 45 at Navarro Co. line		40		59
	IH 35 W at Hill Co. line		70		103
	IH 20 at Palo Pinto Co. line		13		19
	IH 35 at Cooke Co. line		75		110
	SH 75 at Grayson Co. line		166		244
IH 35 W at Hill Co. line	IH 30 at Hopkins Co. line	5,464	19	8,562	30
	IH 20 at Van Zandt Co. line		34		53
	IH 45 at Navarro Co. line		36		57
	IH 35 E at Hill Co. line		75		117
	IH 20 at Palo Pinto Co. line		37		58
	IH 35 at Cooke Co. line		412		646
	SH 75 at Grayson Co. line		20		32
IH 20 at Palo Pinto Co. line	IH 30 at Hopkins Co. line	3,264	48	5,182	76
	IH 20 at Van Zandt Co. line		105		167
	IH 45 at Navarro Co. line		48		76
	IH 35 E at Hill Co. line		11		18
	IH 35 W at Hill Co. line		20		32
	IH 35 at Cooke Co. line		43		68
	SH 75 at Grayson Co. line		21		33
IH 35 at Cooke Co. line	IH 30 at Hopkins Co. line	8,418	31	13,411	50
	IH 20 at Van Zandt Co. line		67		107
	IH 45 at Navarro Co. line		77		122
	IH 35 E at Hill Co. line		24		39
	IH 35 W at Hill Co. line		120		192
	IH 20 at Palo Pinto Co. line		37		59
	SH 75 at Grayson Co. line		81		129
SH 75 at Grayson Co. line	IH 30 at Hopkins Co. line	8,619	22	12,143	32
	IH 20 at Van Zandt Co. line		50		79
	IH 45 at Navarro Co. line		127		179
	IH 35 E at Hill Co. line		121		170
	IH 35 W at Hill Co. line		17		24
	IH 20 at Palo Pinto Co. line		34		47
	IH 35 at Cooke Co. line		127		179

SURVEY DATA EXPANSION

The vehicle survey data were expanded based on the 24-hour directional vehicle classification counts conducted at each survey site on the day the site was surveyed. The assumption was made that the traffic in the non-surveyed direction was a mirror image of the traffic in the surveyed direction. For example, if 10 percent of the surveyed outbound traffic was through trips, it was assumed that 10 percent of the inbound traffic would be through trips. It was also assumed that the surveyed vehicles are a representative sample of the vehicles at each site for a 24-hour period.

Table 16 presents the expanded estimates of external-local and external-through trips for non-commercial and commercial vehicles by site as well as the estimates of trips by residents and visitors (non-residents). It should be noted that estimates are included in Table 16 for the non-surveyed sites. Additionally, the number of residents and visitors for the non-surveyed sites was determined using the percentage of residents and visitors from a proximal surveyed site. For example, the percentage of residents determined from the survey for SH 78 (station number CN02) was applied to the total number of trips for FM 981 (station number CN03) which was a non-surveyed location.

The expanded survey data were used to develop zone-to-zone estimates of non-commercial and commercial vehicle trips based on the geocoded origins and destinations for the surveyed trips. Trips for the non-surveyed sites were distributed to the destination zones observed from the surveyed sites on a proportional basis. It is assumed that the surveyed sites are representative of the most likely destination zones for the non-surveyed sites. Since the volume of vehicle trips at the non-surveyed sites is typically low, the amount of error that may be generated by that assumption is believed to be small. For the high volume locations, a license plate match was used to identify and estimate the number of through trips made by non-commercial vehicles.

Table 16. Expanded Survey Results by Station.

Station Number	Facility	Non-Commercial Vehicles			Residents	Visitors	Commercial Vehicles		
		Local	Through	Total			Local	Through	Total
CN01	SH 121	6,719	176	6,895	2,930	3,789	492	106	598
CN02	SH 78	1,786	87	1,873	609	1,177	31	7	38
CN03	FM 981	476	0	476	162	314	7	0	7
HU01	US 69	2,957	399	3,356	1,283	1,674	320	230	550
HU02	FM 272	226	2	228	98	128	0	0	0
HU03	FM 816	182	0	182	79	103	5	0	5
HU04	SH 11	1,533	126	1,659	618	916	155	50	205
HU05	SH 34	631	177	808	223	408	28	7	35
HU06	SH 50	1,035	0	1,035	365	670	26	0	26
HU07	FM 904	517	0	517	183	334	18	0	18
HU08	FM 1532	57	0	57	15	42	1	0	1
HU09	FM 2068	167	0	167	44	123	4	0	4
HU10	SH 24	4,985	93	5,078	1,307	3,678	688	20	708
HU11	FM 71	602	0	602	196	406	24	0	24
HU12	SH 11	3,956	168	4,124	1,291	2,665	35	166	201
HU13	FM 499	684	0	684	223	461	28	0	28
HU14	IH 30	11,710	1,217	12,927	4,953	6,757	7,753	2,283	10,036
HU15	FM 1567	548	0	548	164	384	15	0	15
HU16	US 69	4,734	259	4,993	1,420	3,314	390	213	603
HU17	FM 513	1,857	0	1,857	669	1,188	46	0	46
HU18	SH 276	3,146	65	3,211	1,133	2,013	111	23	134
HU19	FM 751	3,056	14	3,070	1,111	1,946	113	7	120
KA01	US 80	8,712	11	8,723	2,403	6,309	498	28	526
KA02	FM 2965	2,120	0	2,120	585	1,535	39	0	39
KA03	IH 20	20,332	2,011	22,343	8,600	11,731	6,801	3,446	10,247
KA04	SH 243	1,552	11	1,563	597	955	93	17	110
KA05	FM 90	416	0	416	160	256	6	0	6
KA06	SH 198	4,522	694	5,216	936	3,586	126	40	166
KA07	US 175	6,176	612	6,788	2,538	3,638	765	218	983
KA08	SH 198	15,692	1,369	17,061	6,535	9,157	304	54	358
KA09	SH 274	8,253	63	8,316	5,131	3,122	415	53	468
KA10	FM 2613	831	0	831	517	314	40	0	40

Table 16. Expanded Survey Results by Station. (cont.)

Station Number	Facility	Non-Commercial Vehicles			Residents	Visitors	Commercial Vehicles		
		Local	Through	Total			Local	Through	Total
EL01	FM 85	1,551	0	1,551	965	586	390	0	390
EL02	IH 45	21,786	1,564	23,350	9,215	12,570	7,955	1,541	9,496
EL03	FM 55	110	0	110	57	53	5	0	5
EL04	FM 667	1,409	0	1,409	733	676	47	2	49
EL05	FM 308	471	0	471	245	226	42	0	42
EL06	US 77	1,483	37	1,520	772	711	91	109	200
EL07	IH 35 E	12,960	2,035	14,995	5,482	7,478	6,842	1,852	8,694
EL08	FM 66	523	0	523	219	304	34	0	34
JN01	IH 35 W	14,566	1,453	16,019	6,162	8,405	6,897	769	7,666
JN02	SH 81	1,443	3	1,446	605	838	63	1	64
JN03	SH 171	2,761	64	2,825	1,268	1,493	350	24	374
JN04	SH 174	4,562	35	4,597	1,589	2,973	610	49	659
JN05	FM 200	190	0	190	94	96	4	0	4
JN06	US 67	5,502	57	5,559	2,713	2,788	998	81	1,079
HD01	FM 2174	238	0	238	117	121	340	0	340
HD02	SH 144	5,413	90	5,503	3,144	2,269	348	10	358
HD03	FM 56	2,457	109	2,566	1,261	1,196	55	51	106
HD04	FM 51	327	0	327	168	159	10	0	10
HD05	FM 205	293	0	293	164	129	10	0	10
HD06	FM 2870	150	0	150	84	66	14	0	14
HD07	US 377	5,401	90	5,491	3,027	2,373	206	177	383
HD08	FM 1189	321	0	321	180	141	19	0	19
HD09	FM 4	1,677	0	1,677	941	736	82	0	82
PA01	IH 20	9,290	1,139	10,429	3,930	5,360	4,796	3,566	8,362
PA02	FM 3028	3,005	0	3,005	1,545	1,460	89	15	104
PA03	US 180	10,879	135	11,014	5,591	5,288	848	282	1,130
PA04	FM 1885	1,162	0	1,162	597	565	67	0	67
PA05	FM 52	426	0	426	219	207	16	0	16
WS01	SH 199	2,294	15	2,309	1,057	1,238	311	12	323
WS02	FM 2210	586	0	586	270	316	140	0	140
WS03	US 380	2,552	79	2,631	1,030	1,522	456	62	518
WS04	FM 1810	390	0	390	158	232	68	0	68

Table 16. Expanded Survey Results by Station. (cont.)

Station Number	Facility	Non-Commercial Vehicles			Residents	Visitors	Commercial Vehicles		
		Local	Through	Total			Local	Through	Total
WS05	FM 2127	217	0	217	88	129	10	0	10
WS06	SH 101	2,089	0	2,089	821	1,268	568	0	568
WS07	US 287/81	11,281	498	11,779	4,430	6,851	3,947	348	4,295
WS08	FM 1655	454	0	454	178	276	64	0	64
WS09	FM 730	200	0	200	79	121	22	0	22
WS10	FM 455	616	0	616	242	374	110	0	110
DE01	FM 51	1,588	0	1,588	569	1,019	364	0	364
DE02	IH 35	25,141	2,336	27,477	10,635	14,506	5,901	2,970	8,871
GR14	SH 160	2,528	189	2,717	905	1,623	730	10	740
GR15	FM 3133	604	38	642	216	388	25	0	25
GR16	SH 5	2,905	23	2,928	1,570	1,335	113	17	130
GR17	US 75	22,546	1,531	24,077	9,537	13,009	6,168	1,654	7,822
GR18	FM 3356	446	0	446	181	265	11	0	11
GR19	SH 289	4,095	9	4,104	1,663	2,432	295	0	295
GR20	US 377	7,225	59	7,284	3,194	4,031	365	38	403
Total		318,286	19,139	337,425	134,988	183,298	70,272	20,609	90,881

Figure 16 shows the estimates of external-local trip movements by direction and location group. The South group had the largest number of external-local trip movements, with over 135,000 total daily trips. The North group had the second highest estimated number of external-local trip movements with nearly 117,000 daily trips.
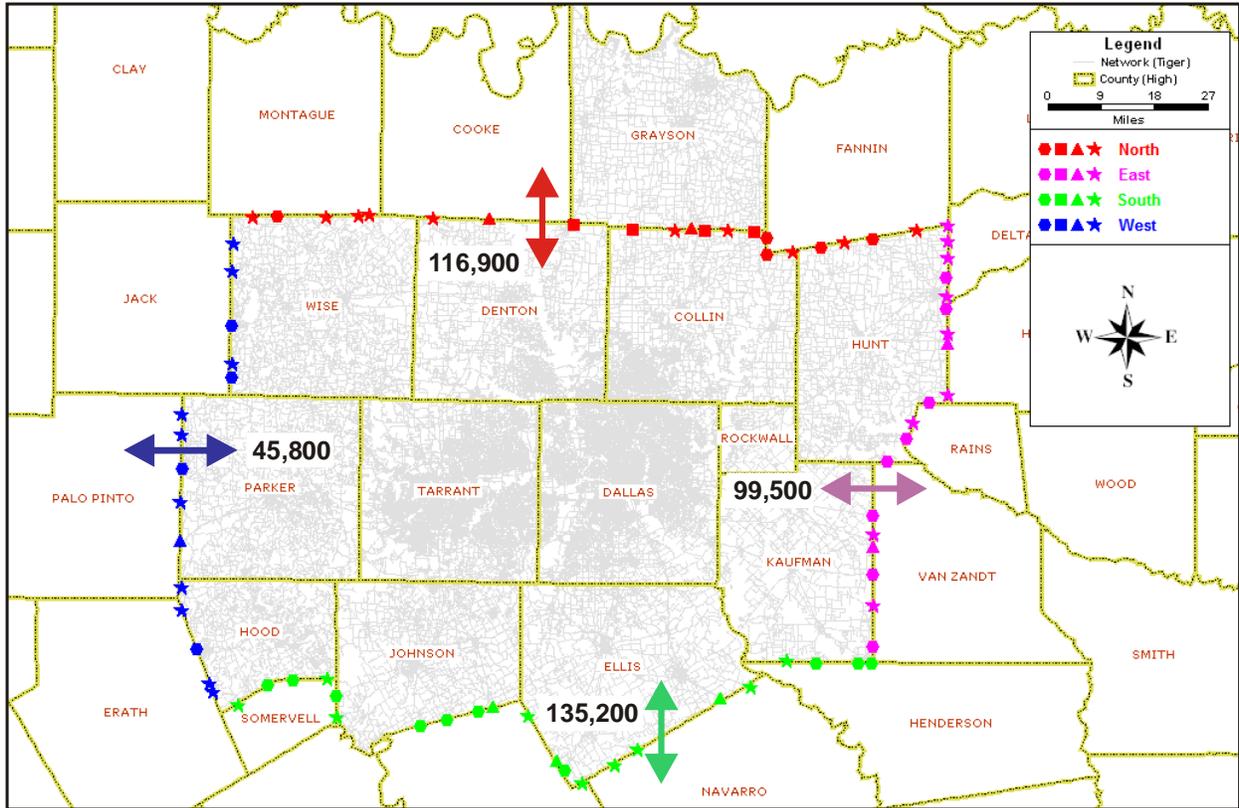
Figure 16. Estimates of External-Local Trip Movements by Location Group.

Figure 17 shows the estimates of external-through trip movements by direction and location group. For the study area, the most common external-through movements were between the North and South groups. Over 11,000 external-through trips are estimated to be made on a daily basis between the North and South sides of the study area.
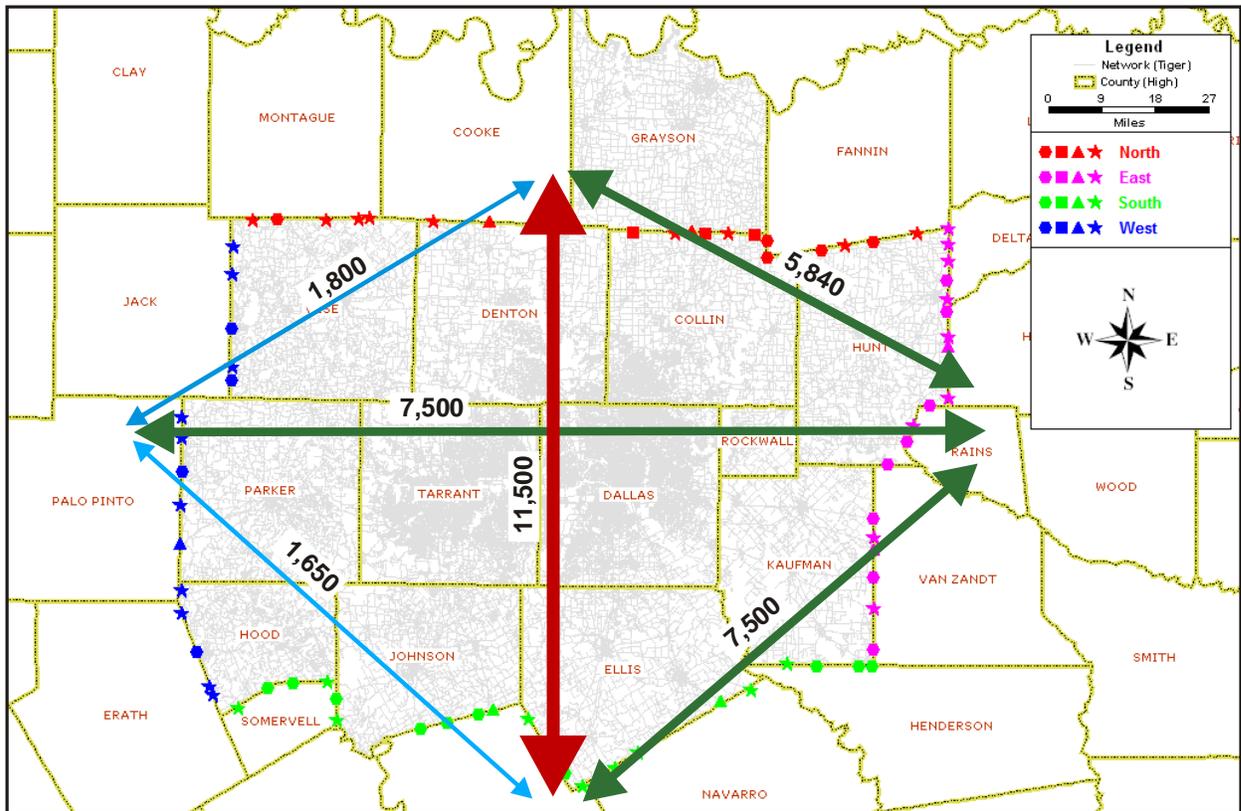
Figure 17. Estimates of External-Through Trip Movements by Location Group.

The final analysis performed involved ascertaining the vehicle miles of travel (VMT) for all external related trips. Using the expanded trip data and lengths provided in the transportation network travel distance matrix, the total amount of VMT attributable to commercial and non-commercial vehicles was determined. The results are provided in Table 17. The overall average trip length was 35.76 miles per trip.

Table 17. Summary of VMT.

Vehicle Type	Trip Type	Number of Trips	VMT	Average Trip Length
Non-Commercial	External Thru	9,569	701,970	73.36
	External Local	318,283	9,845,052	30.93
Commercial	External Thru	10,444	1,060,529	101.54
	External Local	70,038	2,994,153	42.75
Total		408,334	14,601,704	35.76

SURVEY SUMMARY

More than 425,000 vehicles enter and leave the study area daily. Approximately 21 percent are commercial vehicles. Nearly 6 percent of the approximate 425,000 vehicles are making through trips. Based on the average vehicle occupancy observed in the survey, an estimated 455,000 persons are entering and leaving the study area daily by non-commercial vehicle and nearly 103,000 persons are entering and leaving by commercial vehicle. The estimated number of non-residents (persons that do not live in the study area) in non-commercial vehicles that enter the study area daily is over 183,000.

For residents, 56 percent of non-commercial trip origins were leaving home and 42 percent of non-commercial trip destinations were work or work-related. For non-residents, 43 percent of non-commercial trip origins were work or work-related and 67 percent of non-commercial trip destinations were to home. HBNW trips accounted for 39 percent of the non-commercial trips. The percentage of trips that were NHB and HBW were 31 percent and 30 percent, respectively.

Commercial vehicle drivers reported varied trip purposes at the origin and destination ends of their trip. Approximately 34 percent of the trip origin purposes were reported to be for delivery. Picking up cargo accounted for an additional 34 percent of trip origins. Delivering cargo was the stated purpose for 57 percent of the destination trips, while picking up cargo accounted for 24 percent of the destinations. Leaving base operations accounted for 11 percent of the destination trips.

The percent distribution of non-commercial and commercial vehicles by time-of-day was similar between inbound and outbound directions for all the sites combined. The outbound volumes "mirrored" the inbound volumes, which is the expected result. The largest "spike" in the inbound direction occurred during the morning peak period (as people entered the study area to work, shop, etc.), and the spike for the outbound direction was in the afternoon peak period.

The median vehicle year for non-commercial vehicles was 2001 and for commercial vehicles it was 2000. The average vehicle age was 6.7 years for non-commercial vehicles and 6.9 years for commercial vehicles. The average odometer reading for commercial vehicles was approximately three times higher than that for non-commercial vehicles. Average vehicle occupancy for non-commercial vehicles was 1.35, or nearly 20 percent greater than the 1.13 reported for commercial vehicles.

Commercial vehicles represented 21 percent of the vehicles traveling into and out of the study area daily. Nearly one quarter (24 percent) of the commercial vehicles were carrying no cargo. Of those commercial vehicles transporting a cargo, two percent were carrying cargo from or destined to Mexico.

**Appendix A
Travel Survey Forms**

NON-COMMERCIAL VEHICLE SURVEY   FORM - A

(Outbound Direction)

Station # _____   Survey Date _____

Station Name/Location _____   Interviewer _____

For each vehicle you collect	Vehicle 1	Vehicle 2	Vehicle 3
Time	_____a.m. _____p.m.	_____a.m. _____p.m.	_____a.m. _____p.m.
Number of people in vehicle			
Vehicle Type			

Vehicle Type options: 1) Passenger (car/truck/van)   2) Bus   3) Taxi/Paid Limo   4) School Bus
5) Commercial Vehicle (over 1 ton) 6) Motorcycle   7) Recreational Vehicle   8) Other (specify in block)   99) Refused/Unknown

QUESTIONS:	Vehicle 1	Vehicle 2	Vehicle 3
1. What year, make, and model is this vehicle? Gas (leaded, unleaded), diesel, propane or other fuel?	_____ Year _____ Make _____ Model Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	_____ Year _____ Make _____ Model Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	_____ Year _____ Make _____ Model Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____
2. What is the mileage on your odometer?			
3. What county do you live in? (If other, go to 4)	☐Collin ☐Dallas ☐Denton ☐Ellis ☐Hood ☐Hunt ☐Johnson ☐Kaufman ☐Parker ☐Rockwall ☐Tarrant ☐Wise ☐Grayson ☐ Other	☐Collin ☐Dallas ☐Denton ☐Ellis ☐Hood ☐Hunt ☐Johnson ☐Kaufman ☐Parker ☐Rockwall ☐Tarrant ☐Wise ☐Grayson ☐ Other	☐Collin ☐Dallas ☐Denton ☐Ellis ☐Hood ☐Hunt ☐Johnson ☐Kaufman ☐Parker ☐Rockwall ☐Tarrant ☐Wise ☐Grayson ☐ Other
3a. What city do you live in?	 (go to 5)	 (go to 5)	 (go to 5)
4. What city and state to you live in?	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused
4a. Did you stay overnight as part of your travel?	☐ Yes ☐ Refused ☐ No (go to 4d)	☐ Yes ☐ Refused ☐ No (go to 4d)	☐ Yes ☐ Refused ☐ No (go to 4d)
4b. Where did you stay?	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused
4c . How many nights have you stayed?			
4d. Did you enter Texas today?	☐ Yes ☐ Refused ☐ No (go to 5)	☐ Yes ☐ Refused ☐ No (go to 5)	☐ Yes ☐ Refused ☐ No (go to 5)

4e. Where outside of Texas did you travel from?	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused	_____ _____ (city / state in US or Mexico) ☐ Refused
4f. What road or highway did you use to enter Texas?			
5. Where was the *last* place you got into your vehicle (place/address or nearest intersection/city)			
5a. What time did you leave that place?	_____a.m. _____p.m.	_____a.m. _____p.m.	_____a.m. _____p.m.
5b. What type of place was that? (choose from type of place options)			
5c. What was your purpose for being at your last location? (Choose from trip purpose options)			
5d. Was that location in the study area? (see Question 3 for study area counties)	☐ Yes ☐ No ☐ Refused (Yes go to 6)	☐ Yes ☐ No ☐ Refused (Yes go to 6)	☐ Yes ☐ No ☐ Refused (Yes go to 6)
5e What road did you use to enter the study area? (see Question 3 for study area counties)			

Type of Place Options:
1) Office building 2) Retail Shopping/Gas 3) Industrial/Manufacturing/Warehouse
4) Medical 5) Educational (12th grade or lower) 6) Educational (college, trade, etc.)
7) Government 8) Residential 9) Airport 10) Eating Establishment
11) Hotel / Motel 12) Other (specify) 99) Refused/Unknown

Trip Purpose Options:
1) Home/Return Home 2) Go/Return to work 3) Work-related 4) School
5) Vacation 6) Visit Family/Friends 7) Eat out 8) Shop
9) Buy gas 10) Personal business 11) Pick-up/Drop off Passenger
12) Change Travel Mode 13) Delivery 14) Recreation 15) Overnight stay/sleep
16) Other (specify) 99) Unknown/Refused

6. Where is your next destination? (place/address or nearest intersection/city)			
6a. What is your purpose for traveling to this destination? (Choose from trip purpose options)			
7. Are you going to a location out of Texas?	☐ Yes ☐ Refused ☐ No (go to 7d)	☐ Yes ☐ Refused ☐ No (go to 7d)	☐ Yes ☐ Refused ☐ No (go to 7d)
If Yes: 7a. What city and state are you going to?			
7b. What road / bridge will you use to leave Texas?			
7c. How many more days will you be in Texas?			
If No 7d. What city / county in Texas are you going to?			

To measure the amount of travel you made today, we need to know the number of places you have gone today. Would you please tell us:

8. Where did your first trip today begin? (city/county/landmark))			
9. Where did you go from there? (city/county/landmark)			

10. Where did you go next? (city/county/landmark)			
11. Where did you go next? (city/county/landmark)			*45*
12. Where did you go next? (city/county/landmark)			
13. How many more places did you stop today?			

DALLAS-FORT WORTH / SHERMAN-DENISON EXTERNAL STATION
COMMERCIAL VEHICLE SURVEY   FORM B
(Outbound Direction)

Station # _____   Survey Date _____

Station Name/Location _____   Interviewer _____

For each vehicle you collect:	Vehicle 1	Vehicle 2	Vehicle 3
1. Time	_____a.m. _____p.m.	_____a.m. _____p.m.	_____a.m. _____p.m.
2. Number of people in vehicle			
3. Vehicle Classification			
4. What is the cargo ? (choose from vehicle cargo codes)	_____ ☐ Empty (no cargo)		
4a. If empty, what was the last cargo you delivered?	(go to 12)		
….4b. Is your load full or partial? * **determine 4a and 4b by observation** *	☐ Full ☐ Partial		
4c. Is cargo being hauled using an multi-modal container/trailer or TEU?	☐ Yes ☐ No (go to 5)		
If Yes 4d Is the container a Reefer or Dry Box?	☐ Reefer ☐ Dry Box		
5. Did your cargo come from or is it going to Mexico?	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown
6. Where did you pick up your load? (place/address or nearest intersection and city)			
7. Was that location an inter-modal transfer or custom brokerage site?	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown
8. How was your load transferred at that site (choose from transfer codes)?			
9. Where will you drop your cargo off? (place/address or nearest intersection and city)			
10. Is that location an inter-modal transfer or custom brokerage site?	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown	☐ Yes ☐ No ☐ Refused / Unknown
11. How will the cargo be transferred at that site (choose from transfer codes)?			

Vehicle Classification Options: 1) Single Unit 2-axle (6 wheels)   2) Single Unit 3-axle (10 wheels)   3) Single Unit 4-axle (14 wheels)   4) Semi (all tractor-trailer combinations)   5) Other (specify)   99) Refused / Unknown

Cargo Transfer Options: 1) Truck-to/from-Truck   2) Rail-to/from-Truck   3) Ship-to/from-Truck   4) Airplane-to/from-Truck   5) Warehouse-to/from-Truck   6) Pipeline-to/from-Truck   99) Unknown / Refused

NOTE: All cargo transfer options are both ways (i.e., Truck-to-Warehouse should be coded same as Warehouse-to-Truck).

QUESTIONS:

12. What is the year and gross weight rating of this vehicle ?	Year Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	Year Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	Year Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____
Gas (leaded, unleaded), diesel, propane or other fuel?			
13. What is the mileage on your odometer?			

14. Where are you coming from? (city / state in US or Mexico)			
14a. Is that location in Texas?	☐ Yes (go to 14d) ☐ No	☐ Yes (go to 14d) ☐ No	☐ Yes (go to 14d) ☐ No
14b. (*If not in Texas*) Did you enter Texas today?	☐ Yes ☐ No (go to 14d)	☐ Yes ☐ No (go to 14d)	☐ Yes ☐ No (go to 14d)
14c. What road or highway did you use to enter Texas?			
14d. Did you stay overnight as part of your travel?	☐ Yes ☐ No (go to 15)	☐ Yes ☐ No (go to 15)	☐ Yes ☐ No (go to 15)
14e. If yes, where did you stay? (city/county/state)			
14f. How many nights have you stayed?			
15. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
15a. What time did you leave that place?	_____a.m. _____p.m.	_____a.m. _____p.m.	_____a.m. _____p.m.
15b. What type of place was this? **(choose from type of place options).**			
15c. What was your purpose for being at your last location?			
15d. Was that location in the study area?	☐ Yes (Go to 16) ☐ No ☐ Refused	☐ Yes (Go to 16) ☐ No ☐ Refused	☐ Yes (Go to 16) ☐ No ☐ Refused
15e. What road did you use to enter the study area?			
16. Where is your next destination? **(place/address or nearest intersection/city)**			
16a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)			
17. Are you going to a location outside of Texas?	☐ Yes (Go to 17a) ☐ No (go to 17d) ☐ Refused	☐ Yes (Go to 17a) ☐ No (go to 17d) ☐ Refused	☐ Yes (Go to 17a) ☐ No (go to 17d) ☐ Refused
If Yes 17a. What city and state are you going to?			
17b. What road or highway will you use to leave Texas?			
17c. How many more days will you be in Texas?			
If No 17d. What city / county in Texas are you going to?			

Type of Place Options: **1)** Office building   **2)** Retail Shopping/Gas   **3)** Industrial/Manufacturing/Warehouse
4) Medical   **5)** Educational (12th grade or lower)   **6)** Educational (college, trade, etc.)
7) Government   **8)** Residential   **9)** Airport   **10)** Eating Establishment
11) Hotel/Motel   **12)** Other (specify)   **99)** Refused/Unknown

Trip Purpose Options: 1) Base location/return to base location   2) Delivery   3) Pick-up
4) Maintenance   5) Driver needs (lunch, etc.)   6) To Home   7) Buy fuel
8) Other (specify)   99) Refused/Unknown

To measure the amount of travel you made today, we need to know the places you have gone today. Would you please tell us:

18. Where did your first trip today begin? (city/county/landmark)			
19. Where did you go from there? (city/county/landmark)			
20. Where did you go next? (city/county/landmark)			
21. Where did you go next? (city/county/landmark)			
22. Where did you go next? (city/county/landmark)			
23. Where did you go next? (city/county/landmark)			
24. Where did you go next? (city/county/landmark)			
25. How many more places did you stop today?			

Vehicle Cargo Codes

1 – Farm Products	Livestock, fertilizer, dirt, landscaping, etc.
2 – Forest Products	Trees, sod, etc.
3 – Marine Products	Fresh fish, seafood, etc.
4 – Metals and Minerals	Crude petroleum, natural gas, propane, metals, gypsum, etc.
5 – Food, Health, Beauty Products	Assorted food products, cosmetics, etc.
6 – Tobacco Products	Cigarettes, cigars, and chewing tobacco
7 – Textiles	Clothing, lines, etc
8 – Wood Products	Lumber, paper, cardboard, wood pulp, etc
9 – Printed Matter	Newspapers, magazines, books, etc.
10 – Chemical Products	Soaps, paints, household or industrial chemicals, etc
11 – Refined Petroleum or Coal Products	Gasoline, etc.
12 – Rubber, Plastic, Styrofoam Products	Finished products of rubber, plastic, or Styrofoam
13 – Clay, Concrete, Glass, or Stone	Finished products of clay, concrete, glass, or stone
14 – Manufactured Goods/Equipment	Miscellaneous products such as machinery, appliances, etc
15 – Wastes	Waste products, including scrap and recyclable materials
16 – Miscellaneous Shipments	U.S. Mail, U.P.S., Federal Express, and other mixed cargo
17 – Hazardous Materials	Hazardous chemicals and substances
18 – Transportation	Automobiles, Heavy Equipment, etc.
19 – Unclassified Cargo (specify)	Cargo not falling within one of the above categories
20 – Driver Refused to Answer	Driver refused to answer
21 – Unknown to Driver	Unknown to driver
22 - Empty	Empty

**Appendix B
Data File Formats**

Dallas-Fort Worth and Sherman-Denison External Station Non-Commercial Travel Survey
Form A Data File Format

This file will co ntain the survey data collected using Form A in the Dallas-Fort Worth and Sherman-Denison External Station survey . The data should be in an ASCII data file.

Item	Begin	End	Type	Field Columns Format	Description
1. Record Type	1	2	Alphanum LJ	A2	Code which indicates the type of record, here it should be A.
2. Month	3	4	Numeric RJ	I2	Month station is being surveyed.
3. Day	5	6	Numeric RJ	I2	Day of the month survey is being conducted.
4. Station Number	7	10	Alphanum LJ	A4	Site number of the station being surveyed as described in Attachment A.
5. Station	11	40	Alphanum. LJ	A30	Name of station/facility being surveyed.
6. Longitude	41	50	Numeric RJ	F10.6	Longitude of location being surveyed.
7. Latitude	51	60	Numeric RJ	F10.6	Latitude of location being surveyed.
8. Vehicle Number	61	61	Numeric RJ	I1	Vehicle number surveyed (column number on survey form).
9. Arrival Hour	62	63	Numeric RJ	I2	Hour vehicle arrived at location. Must be in military time.
10. Arrival Minute	64	65	Numeric RJ	I2	Minute vehicle arrived at location.
11. Occupancy	66	67	Numeric RJ	I2	Number of people in vehicle.
12. Vehicle Class.	68	69	Numeric RJ	I2	Code indicating the classification of the vehicle. See below for code descriptions.
13. Vehicle Class. Other	70	79	Alphanum. LJ	A10	If vehicle type is coded as other, this is the description of the vehicle type.
14. Year of Vehicle	80	83	Numeric RJ	I4	Year vehicle was manufactured. 9999 should be coded for unknown / refused.
15. Vehicle Make	84	113	Alphanum. LJ	A30	Make of vehicle.
16. Vehicle Model	114	143	Alphanum. LJ	A30	Model of vehicle.
17. Vehicle Fuel Type	144	145	Numeric RJ	I2	Type of fuel used by vehicle. 1 - Leaded Gas; 2 - Unleaded Gas; 3 - Diesel; 4 - Propane; 5 - Other.
18. Fuel Type Other	146	155	Alphanum. LJ	A10	If type of fuel is coded as "other", this is the description of the type of fuel. Otherwise it is blank.
19. Odometer	156	162	Numeric RJ	I7	Odometer mileage on vehicle. 9999999 should be coded for unknown / refused.
20. Residence Status	163	164	Numeric RJ	I2	Code indicating if person lives in the study area. 1 – Collin; 2 – Dallas; 3 – Denton; 4 – Ellis; 5 – Hood; 6 – Hunt; 7 – Johnson; 8 – Kaufmann; 9 – Parker; 10 – Rockwall; 11 – Tarrant; 12 – Wise; 13 – Grayson; 14– Other; 99 – Unknown / Refused.
21. Resident Home Location	165	194	Alphanum. LJ	A30	This field contains the city and state of their home. This field is blank if item 20 is coded as 14.
22. Home Location (Non-Resident)	195	224	Numeric RJ	A30	For persons not living in the study area, this field contains the city and state where they reside. This field is blank if item 20 is coded 1 through 13.
23. Stayed Overnight (Non-Resident)	225	226	Numeric RJ	I2	For persons not living in study area, this field contains code indicating if person stayed overnight in study area. 1 – Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 20 is coded 1 through 13.
24. Stay-over Location (Non-Resident)	227	256	Alphanum LJ	A30	For persons not living in study area who indicated they stayed overnight in item 23, this field contains the name and location of where they stayed. This field is blank if item 20 is coded 1 through 13 or if item 23 is coded as 2.
25. Number of Nights (Non-Resident)	257	258	Numeric RJ	I2	This field should contain the number of nights non-resident stayed overnight in the study area. This field is blank if item 20 is coded 1 through 13.
26. Enter Texas (Non-Resident)	259	260	Numeric RJ	I2	For persons not living in the study area, this field contains the code indicating if person entered Texas on the survey date. 1- Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 20 is coded 1 through 13.
27. Travel Origin (Non-Resident)	261	290	Alphanum. LJ	A30	For persons not living in the study area, this field contains the travel origin for persons who entered Texas on the survey day. This field is blank if item 20 is coded 1 through 13 or if item 26 is coded as 2.
28. Texas Entry Point (Non-Resident)	291	320	Alphanum. LJ	A30	For persons not living in the study area who entered Texas on the travel day, this field should state the name of the road or highway they used to enter Texas. This field is blank if item 20 is coded 1 through 13 or if item 26 is coded as 2.
29. Texas Entry Zone (Non-Resident)	321	325	Numeric RJ	I5	This field contains the external station zone number of the entry or exit point listed in item 28. This field is blank if item 20 is coded 1 through 13 or if item 26 is coded as 2. If this is a SAM zone number, column 321 should be coded with a 1.
30. Origin Field 1	326	355	Alphanum. LJ	A30	This is the address of the last place person got into their vehicle or the name of the nearest intersecting streets to that place.

Item	Begin	End	Type	Field Columns Format	Description
31. Origin Field 2	356	385	Alphanum. LJ	A30	This is the second street name of the nearest intersecting streets to the last place person got into their vehicle or a continuation of the address in item 30.
32. Origin Longitude	386	395	Numeric RJ	F10.6	This is the longitude of the origin address. Unknown / Refused origins within the study area should be coded as 888.8888. Unknown external origins outside of the study are but within Texas should be coded as 666.6666. Unknown Mexico external origins should be coded as 777.7777. Unknown out-of-state external origins (non-Mexico) should be coded as 999.9999.
33. Origin Latitude	396	405	Numeric RJ	F10.6	This is the latitude of the origin address. Unknown / Refused origins within the study area should be coded as 888.8888. Unknown external origins outside of the study are but within Texas should be coded as 666.6666. Unknown Mexico external origins should be coded as 777.7777. Unknown out-of-state external origins (non-Mexico) should be coded as 999.9999.
34. Study Area ID	406	406	Numeric RJ	I1	Study area ID of the origin zone. Zones in the Dallas/Ft.Worth study area should be coded as a D. Zones in the Sherman-Denison study area should be coded with an S.
35. Origin Zone	407	411	Numeric RJ	I5	If the trip origin is within the study area, this is the zone number where the origin is located. Unknown / refused internal locations within the study area should be coded as 8888. If the trip began outside of the study area but within Texas, it should be coded using the statewide zone system (SAM) and preceded by the number 1 in column 407. Unknown / refused external locations within Texas should be coded as 16666. If the origin is in Mexico, this should be the zone number for the international border crossing used to enter Texas. Unknown / refused border crossings from Mexico should be coded as 7777. If the origin is outside of Texas (non-Mexico), this should be the SAM zone number for the highway used to enter the state. Unknown / refused external locations outside of Texas (non-Mexico) should be coded as 9999.
36. Departure Hour	412	413	Numeric RJ	I2	This is the hour the vehicle departed from the origin location. This should be in military time.
37. Departure Minute	414	415	Numeric RJ	I2	This is the minute the vehicle departed from the origin location.
38. Origin Type	416	417	Numeric RJ	I2	Code indicating the type of place from which the trip originated. See code definitions below.
39. Origin Type Other	418	437	Alphanum. LJ	A20	If the origin type is coded as "other", this is the description of the type of place. Otherwise it is blank.
40. Origin Purpose	438	439	Numeric RJ	I2	This is the driver's purpose for being at that location. See code definitions below.
41. Origin Purpose Other	440	459	Alphanum. LJ	A20	If the origin purpose is coded as "other", this is the description of the purpose. Otherwise it is blank.
42. Trip Indicator	460	461	Numeric RJ	I2	Code indicating if the origin address is within the study area. 1 - Yes, 2 – No, 99 – Unknown / Refused.
43. Entry Point	462	491	Alphanum. LJ	A30	If the trip origin is outside the study area (i.e., indicated by a 2 in item 42), this field should state the name of the external highway / bridge at which the vehicle entered the study area. This field is blank if item 42 is coded as 1.
44. Entry Zone	492	496	Numeric RJ	I5	If the trip origin is outside the study area (i.e., indicated by a 2 in item 42), this field contains the external station number of the entry point listed in item 43. Unknown should be coded as 99999. This field is blank if item 42 is coded as 1.
45. Destination Field 1	497	526	Alphanum. LJ	A30	This is the address of the destination for the person or the name of the nearest intersecting streets to that destination.
46. Destination Field 2	527	556	Alphanum. LJ	A30	This is the second street name of the nearest intersecting streets to the destination of the person or a continuation of the address in item 45.
47. Destination Longitude	557	566	Numeric RJ	F10.6	This is the longitude of the destination address. Unknown / Refused internal destinations should be coded as 888.8888. Unknown external destinations within Texas should be coded as 666.6666. Unknown Mexico external destinations should be coded as 777.7777. Unknown out-of-state external destinations (non-Mexico) should be coded as 999.9999.

Item	Begin	End	Type	Field Columns Format	Description
48. Destination Latitude	567	576	Numeric RJ	F10.6	This is the latitude of the destination address. Unknown / Refused internal destinations should be coded as 888.8888. Unknown external destinations within Texas should be coded as 666.6666. Unknown Mexico external destinations should be coded as 777.7777. Unknown out-of-state external destinations (non-Mexico) should be coded as 999.9999.
49 Study Area ID	577	577	Alphanum	A1	Study area ID of the destination zone. Zones in the Dallas/Ft.Worth study area should be coded as a D. Zones in the Sherman-Denison study area should be coded with an S.
50. Destination Zone	578	582	Numeric RJ	I5	If the trip destination is within the study area, this is the zone number where the destination is located. Unknown / refused internal locations within the study area should be coded as 8888. If the trip ends outside of the study area but within Texas, it should be coded using the statewide zone system (SAM) and preceded by the number 1 in column 578. Unknown / refused external locations within Texas should be coded as 16666. If the destination is in Mexico, this should be the zone number for the international border crossing used to exit Texas. Unknown / refused border crossings to Mexico should be coded as 7777. If the destination is outside of Texas (non-Mexico), this should be the SAM zone number for the highway used to exit the state. Unknown / refused external locations outside of Texas (non-Mexico) should be coded as 9999.
51. Trip Purpose	583	584	Numeric RJ	I2	Code indicating purpose of trip to destination. See code definitions below.
52. Trip Purpose Other	585	604	Alphanum. LJ	A20	If trip purpose is coded as "other", this field should contain the description of that other trip purpose.
53. Destination Indicator	605	606	Numeric RJ	I2	Code indicating if the destination location is outside of Texas. 1 - Yes, 2 – No, 99 – Unknown / Refused.
54. Destination Location	607	656	Alphanum. LJ	A50	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 53), this field should contain the city / state to which the person is traveling. This field is blank if item 53 is coded as 2.
55. Exit Location	657	706	Alphanum. LJ	A50	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 53), this field should state the name of the road or highway where the vehicle will exit this state. This field is blank if item 53 is coded as 2.
56. Exit Zone	707	711	Numeric RJ	I5	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 53), this field contains the external station zone number of the exit point listed in item 55. Unknown should be coded as 99999. This field is blank if item 53 is coded as 2.
57. Days Remaining	712	713	Numeric RJ	I2	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 53), this field should contain the number of days the person will remain in this state. This field is blank if item 53 is coded as 2.
58. Destination Texas	714	763	Alphanum. LJ	A50	If person is traveling to a location within Texas (i.e., indicated by a 2 in item 53), this field should contain the city / county to which the person is traveling. This field is blank if item 53 is coded as 1.
59. Beginning Location	764	788	Alphanum. LJ	A25	Location where person's first trip began on day of survey. This can be a description or a zone number if location has been geocoded.
60. First Destination	789	813	Alphanum. LJ	A25	Location of first place person went.
61. Second Destination	814	838	Alphanum. LJ	A25	Location of second place person went.
62. Third Destination	839	863	Alphanum. LJ	A25	Location of third place person went.
63. Fourth Destination	864	888	Alphanum LJ	A25	Location of fourth place person went.
64. Additional Trips	889	892	Numeric RJ	I4	Number of additional trips/stops person made on day of survey up to the time they were surveyed.
65. Form	893	899	Numeric RJ	I7	Number of survey form where data was recorded.

Dallas-Fort Worth and Sherman-Denison External Station Travel Survey, Form A Format (continued)

Vehicle Classification Codes

1 – Passenger Vehicle (car/truck/van)
2 – Bus
3 – Taxi/Paid Limo
4 – School Bus
5 – Commercial Vehicle (Over 1 Ton)
6 – Motorcycle
7 – Recreational Vehicle
8 – Other
99 – Unknown/Refused

Trip Purpose Options

1 – Home/Return Home
2 – Go/Return to Work
3 – Work Related
4 – School
5 – Vacation
6 – Visit Friends/Family
7 – Eat Out
8 – Shop
9 – Buy Gas
10 – Personal Business
11 – Pick Up/Drop Off Passenger
12 – Change Travel Mode
13 – Delivery
14 – Recreation
15 – Overnight stay / sleep
16 - Other
99 – Refused/Do Not Know

Type of Place Options

1 – Office Building
2 – Retail/Shopping/Gas
3 – Industrial/Manufacturing/Warehouse
4 – Medical
5 – Educational (12th grade or lower)
6 – Educational (college, trade. Etc)
7 – Government
8 – Residential
9 – Airport
10 – Eating Establishment
11 – Hotel/Motel)
12 – Other (specify)
99 – Refused/Unknown

Dallas-Fort Worth and Sherman-Denison External Station Commercial Vehicle Survey
Form B Data File Format

This file will contain the survey data collected using Form B in the Dallas-Fort Worth and Sherman-Denison External Station Commercial Vehicle survey. The data should be in an ASCII data file.

Item	Begin	End	Type	Field Columns Format	Description
1. Record Type	1	2	Alphanum LJ	A2	Code which indicates the type of record, here it should be B.
2. Month	3	4	Numeric RJ	I2	Month station is being surveyed.
3. Day	5	6	Numeric RJ	I2	Day of the month station is being surveyed.
4. Station Number	7	10	Alphanum LJ	A4	Site number of the station being surveyed as described in Attachment A.
5. Station	11	40	Alphanum. LJ	A30	Name of station / facility being surveyed.
6. Longitude	41	50	Numeric RJ	F10.6	Longitude of location being surveyed.
7. Latitude	51	60	Numeric RJ	F10.6	Latitude of location being surveyed.
8. Truck Number	61	61	Numeric RJ	I1	Truck number surveyed (column number on survey form).
9. Arrival Hour	62	63	Numeric RJ	I2	Hour vehicle arrived at location. Must be in military time.
10. Arrival Minute	64	65	Numeric RJ	I2	Minute vehicle arrived at location.
11. Occupancy	66	67	Numeric RJ	I2	Number of people in vehicle.
12. Vehicle Class.	68	69	Numeric RJ	I2	Code indicating the classification of the vehicle. See below for code descriptions.
13. Vehicle Class. Other	70	79	Alphanum. LJ	A10	If vehicle classification is coded as "other", this is the description of the type of fuel. Otherwise it is blank.
14. Vehicle Cargo	80	81	Numeric RJ	I2	This is a code number indicating the type of cargo being carried by the vehicle. See code definitions.
15. Vehicle Cargo Other	82	111	Alphanum RJ	A30	If the cargo type in Item 14 is coded as 19 "Unclassified Cargo"., this is the description of the Cargo. Otherwise it is blank.
16. Empty Cargo Indicator	112	112	Numeric RJ	I1	Code indicating if vehicle is empty and has no cargo. If vehicle cargo is empty this field should be coded as 1, otherwise it should be left blank
17. Last Cargo	113	114	Numeric RJ	I2	If cargo is empty indicated by a 1 in item 15, this is the code number indicating the type of cargo that was last delivered by the vehicle, prior to it being empty. See code definitions.
18. Last Cargo Other	115	144	Alphanum RJ	A30	If the last cargo type in Item 17 is coded as 19 "Unclassified Cargo"., this is the description of the last cargo. Otherwise it is blank.
19. Load Capacity	145	146	Numeric RJ	I2	Code indicating if the vehicle is carrying a full or partial load. 1-Full, 2-Partial, 3 – Refused/Unknown.
20. Multimodal container	147	147	Numeric RJ	I1	Code indicating if cargo is being hauled by a multimodal container/trailor or a TEU. 1-Yes, 2-No.
21. Container type	148	148	Numeric RJ	I1	If item 20 is coded as 1, this field indicated the type of container is a reefer or a dry box. 1-reefer, 2-dry box, 3-neither. Field should be left blank if item 20 is not 1.
22. Mexico Cargo	149	150	Numeric RJ	I2	Code indicating if cargo came from or is going to Mexico. 1 – Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 14 is coded as 22.
23. Pick up Address	151	200	Alphanum. LJ	A50	Address of location where cargo was picked up. This field is blank if item 14 is coded as 22.
24. Pick up Intermodal	201	202	Numeric RJ	I2	Code indicating if location where cargo was picked up was an interposal transfer or custom brokerage facility. 1 – Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 14 is coded as 22.
25. Cargo Transfer Type	203	205	Numeric RJ	I3	Code indicating how cargo was transferred. See below for code descriptions. This field is blank if item 14 is coded as 22.
26. Drop off Address	206	255	Alphanum. LJ	A50	Address of location where cargo will be dropped off. This field is blank if item 14 is coded as 22.
27. Drop off Intermodal	256	257	Numeric RJ	I2	Code indicating if location where cargo will be dropped off is an interposal transfer or custom brokerage facility. 1 – Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 14 is coded as 22.
28. Cargo Transfer Type	258	260	Numeric RJ	I3	Code indicating how cargo will be transferred at drop off site. See below for code descriptions. This field is blank if item 14 is coded as 22.
29. Year of Vehicle	261	264	Numeric RJ	I4	Year vehicle was manufactured. 9999 should be coded for Unknown / Refused.
30. Gross Weight Rating	265	270	Numeric RJ	I6	Gross weight rating of the vehicle or of the truck/trailer combination.
31. Vehicle Fuel Type	271	272	Numeric RJ	I2	Type of fuel used by vehicle. 1 – Leaded Gas; 2 – Unleaded Gas; 3 – Diesel; 4 – Propane; 5 – Other.

| | | | | Field Columns | |
Item	Begin	End	Type	Format	Description
32. Fuel Type Other	273	282	Alphanum. LJ	A10	If type of fuel is coded as "other", this is the description of the type of fuel. Otherwise it is blank.
33. Odometer	283	289	Numeric RJ	I7	Odometer mileage on the vehicle. Unknown or refused should be coded as 9999999.
34. General Origin	290	339	Alphanum LJ	A50	This is the city / state where the vehicle is coming from. City / State information is required for locations in Mexico.
35. Texas Origin	340	341	Numeric RJ	I2	Code indicating if the location listed in item 34 is located in Texas. 1 – Yes; 2 – No; 99 – Unknown / Refused.
36. Enter Texas	342	343	Numeric RJ	I2	If general origin was not in Texas (indicated by a 2 in item 35), this field contains the code indicating if the person entered / left Texas on the survey date. 1- Yes; 2 – No; 99 – Unknown / Refused. This field is blank if item 35 is coded as 1.
37. Entry Point	344	373	Alphanum. LJ	A30	If general origin was not in Texas, this field should state the name of the road or highway at which the person entered or exited Texas. This field is blank if item 35 is coded as 1 or item 36 is coded as 2.
38. Entry Zone	374	378	Numeric RJ	I5	This field contains the external station zone number of the entry or exit point listed in item 37. This field is blank if item 35 is coded as 1 or if item 36 is coded as 2.
39. Stayed Overnight	379	380	Numeric RJ	I2	This field contains the code indicating if person stayed overnight as part of his/her travel. 1 – Yes; 2 – No; 99 – Unknown / Refused.
40. Stay-Over Location	381	410	Alphanum LJ	A30	For persons who indicated they stayed overnight as part of travel (indicated by a 1 in item 39), this field contains the name and location of where they stayed overnight. This field is blank if item 39 is coded as 2.
41. Number of Nights	411	412	Numeric RJ	I2	If person stayed overnight (i.e., indicated by a 1 in item 39) this field should contain the number of nights the person stayed overnight. This field is blank if item 39 is coded as 2.
42. Origin Field 1	413	462	Alphanum. LJ	A50	This is the address of the last place person got into the vehicle or the first street name of the nearest intersecting streets to that location.
43. Origin Field 2	463	512	Alphanum. LJ	A50	This is the second street name of the nearest intersecting streets to the originating point or a continuation of the address in item 42.
44. Origin Longitude	513	522	Numeric RJ	F10.6	This is the longitude of the origin address. Unknown / Refused origins within the study area should be coded as 888.8888. Unknown external origins outside of the study area but within Texas should be coded as 666.6666. Unknown Mexico external origins should be coded as 777.7777. Unknown out-of-state external origins (non-Mexico) should be coded as 999.9999.
45. Origin Latitude	523	532	Numeric RJ	F10.6	This is the latitude of the origin address. Unknown / Refused origins within the study area should be coded as 888.8888. Unknown external origins outside of the study area but within Texas should be coded as 666.6666. Unknown Mexico external origins should be coded as 777.7777. Unknown out-of-state external origins (non-Mexico) should be coded as 999.9999.
46. Origin Zone Identifier	533	533	Alphanum	A1	This field identifies the MPO study in which the origin zone in item 47 is located. TAZ zones in the DFW/NCTGOG study area should be coded as 'D', zones in the Sherman–Denison MPO study area should be coded as 'S'.
47. Origin Zone	534	538	Numeric RJ	I5	If the trip origin is within the study area, this is the TAZ number where the origin is located. Unknown / refused locations within the study area should be coded as 8888. If the trip began outside of the study area but within Texas, it should be coded using the statewide zone system (SAM) and preceded by the number 1 in column 534. Unknown / refused external locations within Texas should be coded as 16666. If the origin is in Mexico, this should be the zone number for the international border crossing used to enter Texas. Unknown / refused border crossings from Mexico should be coded as 7777. If the origin is outside of Texas (non-Mexico), this should be the SAM zone number for the highway used to enter the state. Unknown / refused external locations outside of Texas (non-Mexico) should be coded as 9999.
48. Departure Hour	539	540	Numeric RJ	I2	This is the hour the vehicle departed from the location listed as "Origin". This should be in military time.
49. Departure Minute	541	542	Numeric RJ	I2	This is the minute the vehicle departed from the location listed as "Origin".
50. Origin Type	543	544	Numeric RJ	I2	Code indicating the type of place from which the trip originated. See code descriptions below.

Field Columns

Item	Begin	End	Type	Format	Description
51. Origin Type Other	545	564	Alphanum. LJ	A20	If the origin type in item 50 is coded as 'other', this is the description of the type of place. Otherwise it is blank.
52. Origin Purpose	565	566	Numeric RJ	I2	This is the driver's purpose for being at that location. See below for code descriptions.
53. Origin Purpose Other	567	586	Alphanum. LJ	A20	If trip purpose in item 52 is coded as 'other', this field should contain the description of that other trip purpose.
54. Trip Indicator	587	588	Numeric RJ	I2	Code indicating if trip origin is inside the study area. 1 – Yes; 2 – No; 99 – Unknown / Refused.
55. Origin Entry Point	589	618	Alphanum. LJ	A30	If the trip origin is outside the study area (i.e., indicated by a 2 in item 54), this field should state the name of the road or highway at which the vehicle entered the study area. This field is blank if item 54 is coded as 1.
56. Origin Entry Zone	619	623	Numeric RJ	I5	If the trip origin is outside the study area (i.e., indicated by a 2 in item 54), this field contains the external station number of the entry point listed in item 55. Unknown should be coded as 99999. This field is blank if item 54 is coded as 1.
57. Destination Field 1	624	673	Alphanum. LJ	A50	This is the address of the destination for the person or the first street name of the nearest intersecting streets to that location. (place / address or nearest intersection / city).
58. Destination Field 2	674	723	Alphanum. LJ	A50	This is the second street name of the nearest intersecting streets to the destination of the person or a continuation of the address in item 57
59.Destination Longitude	724	733	Numeric RJ	F10.6	This is the longitude of the destination address. Unknown / Refused internal destinations should be coded as 888.8888. Unknown external destinations within Texas should be coded as 666.6666. Unknown Mexico external destinations should be coded as 777.7777. Unknown out-of-state external destinations (non-Mexico) should be coded as 999.9999.
60. Destination Latitude	734	743	Numeric RJ	F10.6	This is the latitude of the destination address. Unknown / Refused internal destinations should be coded as 888.8888. Unknown external destinations within Texas should be coded as 666.6666. Unknown Mexico external destinations should be coded as 777.7777. Unknown out-of-state external destinations (non-Mexico) should be coded as 999.9999.
61. Destination Zone Identifier	744	744	Alphanum	A1	This field identifies the MPO study in which the destination zone in item 62 is located. TAZ zones in the DFW / NCTCOG study area should be coded as 'D', zones in the Sherman – Denison MPO study area should be coded as 'S'.
62. Destination Zone	745	749	Numeric RJ	I5	If the trip destination is within the study area, this is the TAZ number where the destination is located. Unknown / refused locations within the study area should be coded as 8888. If the trip ends outside of the study area but within Texas, it should be coded using the statewide zone system (SAM) and preceded by the number 1 in column 745. Unknown / refused external locations within Texas should be coded as 16666. If the destination is in Mexico, this should be the zone number for the international border crossing used to exit Texas. Unknown / refused border crossings to Mexico should be coded as 7777. If the destination is outside of Texas (non-Mexico), this should be the SAM zone number for the highway used to exit the state. Unknown / refused external locations outside of Texas (non-Mexico) should be coded as 9999.
63. Trip Purpose	750	751	Numeric RJ	I2	Code indicating purpose of trip to destination. See code definitions below.
64. Trip Purpose Other	752	771	Alphanum. LJ	A20	If trip purpose in item 63 is coded as "other", this field should contain the description of that other trip purpose.
65. Destination Indicator	772	773	Numeric RJ	I2	Code indicating if the destination location is outside of Texas. 1 - Yes, 2 – No, 99 – Unknown / Refused.
66. Destination Location	774	823	Alphanum. LJ	A50	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 65), this field should contain the city / state to which the person is traveling. This field is blank if item 56 is coded as 2.
67. Exit Location	824	873	Alphanum. LJ	A50	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 65), this field should state the name of the road or highway where the vehicle will exit Texas. This field is blank if item 65 is coded as 2.

				Field Columns	
Item	Begin	End	Type	Format	Description
68. Exit Zone	874	878	Numeric RJ	I5	This field contains the external station zone number of the exit point listed in item 67. Unknown should be coded as 99999. This field is blank if item 65 is coded as 2.
69. Days Remaining	879	880	Numeric RJ	I2	If person is traveling to a location outside of Texas (i.e., indicated by a 1 in item 65), this field should contain the number of days the person will remain in Texas. This field is blank if item 65 is coded as 2.
70. Destination Texas	881	930	Alphanum. LJ	A50	If person is traveling to a location inside Texas (i.e., indicated by a 2 in item 65), this field should contain the city / county in Texas to which the person is traveling. This field is blank if item 65 is coded as 1.
71. Beginning Location	931	980	Alphanum. LJ	A50	Location where person first trip began on day of survey. This can be a description or a zone number if location has been geocoded.
72. First Destination	981	1030	Alphanum. LJ	A50	Location of first place person went.
73. Second Destination	1031	1080	Alphanum. LJ	A50	Location of second place person went.
74. Third Destination	1081	1130	Alphanum. LJ	A50	Location of third place person went.
75. Fourth Destination	1131	1180	Alphanum. LJ	A50	Location of fourth place person went.
76. Fifth Destination	1181	1230	Alphanum. LJ	A50	Location of fifth place person went.
77. Sixth Destination	1231	1280	Alphanum. LJ	A50	Location of sixth place person went.
78. Additional Trips	1281	1284	Numeric RJ	I4	Number of additional trips/stops person made on day of survey up to the time they were surveyed.
79. Form	1285	1291	Numeric RJ	I7	Number of survey form where data was recorded.

Vehicle Classification Codes

1 - Single Unit 2-axle (6 wheels)
2 - Single Unit 3-axle (10 wheels)
3 - Single Unit 4-axle (14 wheels)
4 - Semi (all Tractor-Trailer Combinations)
5 – Other (specify)
99 - Unknown

Trip Purpose Options

1 - Base location/Return to Base location
2 – Delivery
3 - Pick Up
4 – Maintenance
5 - Driver Needs (lunch, etc)
6 - To Home
7 - Buy Fuel
8 – Other (specify)
99 - Refused/unknown

Cargo Transfer Codes

1 – Truck-to/from-Truck
2 – Rail-to/from-Truck
3 – Ship-to/from-Truck
4- Airplane-to/from-Truck
5 – Warehouse-to/from-Truck
6 – Pipeline-to/from-Tuck
7 – Unknown
99 - Refused

Type of Place Options

1 – Office Building
2 – Retail/Shopping/Gas
3 – Industrial/Manufacturing/Warehouse
4 – Medical
5 – Educational (12th grade or lower)
6 – Educational (college, trade. Etc)
7 – Government
8 – Residential
9 – Airport
10. – Eating Establishment
11 – Hotel / Motel
11 – Other (specify)
99 – Refused/Unknown

Vehicle Cargo Codes

#		Category	Description
1	-	Farm Products	Livestock, fertilizer, dirt, landscaping, etc.
2	-	Forest Products	Trees, sod, etc.
3	-	Marine Products	Fresh fish, seafood, etc.
4	-	Metals and Minerals	Crude petroleum, natural gas, propane, Metals, gypsum, ores, etc.
5	-	Food, Health, and Beauty Products	Assorted food products, cosmetics, etc.
6	-	Tobacco Products	Cigarettes, cigars, and chewing tobacco
7	-	Textiles	Clothing, linens, etc.
8	-	Wood Products	Lumber, paper, cardboard, wood pulp, etc.
9	-	Printed Matter	Newspapers, magazines, books, etc.
10	-	Chemical Products	Soaps, paints, household or industrial chemicals, etc.
11	-	Refined Petroleum or Coal Products	Gasoline, etc.
12	-	Rubber, Plastic, and Styrofoam Products	Finished products of rubber, plastic, or Styrofoam
13	-	Clay, Concrete, Glass, or Stone	Finished products of clay, concrete, glass, or stone
14	-	Manufactured Goods/Equip.	Miscellaneous products, such as machinery, appliances, furniture, etc.
15	-	Wastes	Waste products including scrap and recyclable materials
16	-	Miscellaneous Shipments	U.S. mail, U.P.S., Federal Express, and other mixed cargo
17	-	Hazardous Materials	Hazardous chemicals and substances
18	-	Transportation	Automobiles, Heavy Equipment, etc.
19	-	Unclassified Cargo (specify)	Cargo not falling within one of the above categories
20	-	Driver Refused to Answer	Driver refused to answer
21	-	Unknown to Driver	Unknown to driver
22	-	Empty	Empty (including empty shipping containers)

Dallas-Fort Worth and Sherman-Denison High Volume External Station ASCII Data File Format

This file will contain the data collected as part of the Dallas-Fort Worth and Sherman-Denison high volume external station survey. The data should be in an ASCII data file.

Item	Begin	End	Type	Field Columns Format	Description
1. Record Type	1	2	Alphanum LJ	A2	Code which indicates the type of record, here it should be C.
2. Month	3	4	Numeric RJ	I2	Month station is being surveyed.
3. Day	5	6	Numeric RJ	I2	Day of the month station is being surveyed.
4. Station Number	7	10	Alphanum LJ	A4	Site number of the station being surveyed as described in Attachment A.
5. Station	11	40	Alphanum. LJ	A30	Name of station / facility being surveyed.
6. Longitude	41	50	Numeric RJ	I10	Longitude of location being surveyed.
7. Latitude	51	60	Numeric RJ	I10	Latitude of location being surveyed.
8. Direction	61	61	Numeric RJ	I1	Code indicating the direction of travel. 0 – North; 1 – Northeast; 2 – East; 3 – Southeast; 4 – South; 5 – Southwest; 6 – West; 7 – Northwest.
9. Dealer Plate	62	62	Numeric RJ	I1	Code indicating if vehicle has a dealer/temporary license plate. 1 – Yes; 2 – No.
10. State	63	64	Alphanum LJ	A2	This field contains the State shown on the vehicle license plate. The entry should be abbreviated using all capital letters. This field is left blank if item 9 is coded as 1.
11. License Number	65	74	Alphanum LJ	A10	This field contains the license plate number of the vehicle. Use all capital letters. For partial license plates, a unique symbol shall be used in the position that the letter/number could not be read. This field is left blank if item 9 is coded as 1.
12. Hour	75	76	Numeric RJ	I2	Hour that the vehicle was observed. Must be in military time.
13. Minute	77	78	Numeric RJ	I2	Minute that the vehicle was observed.