2005 Wichita Falls External Survey
Technical Summary

Texas Department of Transportation

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TECHNICAL SUMMARY

Texas Department of Transportation Travel Survey Program

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Acknowledgements

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 Wichita Falls Metropolitan Planning Organization (MPO) study area. This survey measured and identified travel patterns into, within, and out of Wichita Falls, which is in Wichita County. This report presents a Technical Summary of the 2005 Wichita Falls External Station Survey and documents the data collected and the analysis results for the study area.

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 survey location. These counts provide a basis for expanding the survey data to represent the average weekday movements into and out of the study area. Data are also collected on the movements of the vehicle during the survey day prior to the point at which the vehicle is surveyed. This data provides a basis for estimating the amount of travel occurring in the study area prior to the time of the survey.

WICHITA FALLS STUDY AREA

The study area, as shown in Figure 1, is located in Wichita County, and it is northwest of the Dallas/Fort Worth metropolitan area along the Texas/Oklahoma border. Wichita County has a land area of nearly 630 square miles and a population density of approximately 210 persons per square mile. The population center of the county is the city of Wichita Falls, which according to the 2000 census had a population of approximately 104,200 persons. The boundary established for the Wichita Falls external survey was determined by the local MPO.
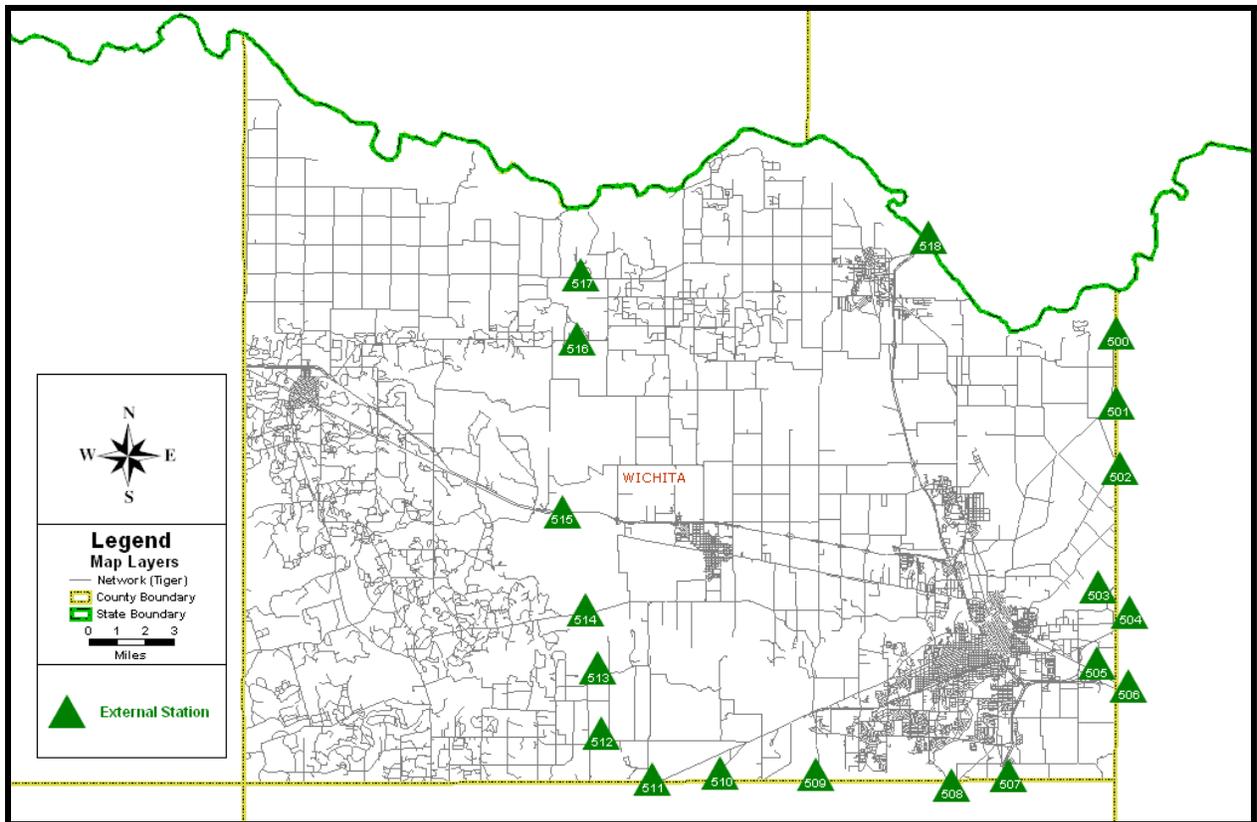
Figure 1. Wichita Falls Study Area.

EXTERNAL STATIONS

There are 19 locations on the border of the Wichita Falls study area identified as external stations. These locations are transportation facilities that cross the study area boundary and represent where travelers may enter and exit the study area. Of these 19 locations, 11 were selected for travel surveys. Figure 2 shows the location of the external stations in Wichita Falls, and Table 1 identifies the external surveys, their general location, whether or not surveys were conducted, and the 24-hour traffic count at the location. Additionally, Table 1 groups the external station locations by direction. The location group aggregated data will be utilized to present external local and through trip information later in the summary.

Figure 2. Wichita Falls External Station Locations.

In addition to the 11 survey sites, two other locations were identified as high-volume sites. Non-commercial vehicles on high-volume roadways were not surveyed, but instead a license plate matching methodology was employed to provide information on the number of through and local trips. Commercial vehicles were surveyed at weigh stations, rest areas, and truck stops using an intercept interview method. More details on this methodology is provided later in the analysis

Table 1. Wichita Falls External Stations.

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
518	IH 44	at OK Border	Yes	8,976	9,099	North
500	FM 1177	at Clay Co. Line	No	142	141	East
501	FM 171	at Clay Co. Line	Yes	229	241	
502	FM 1740	at Clay Co. Line	No	160	143	
503	FM 3393	at Clay Co. Line	No	231	221	
504	SH 79	at Clay Co. Line	Yes	2,322	2,370	
505	Bus. US 287	at Clay Co. Line	Yes	402	606	
506*	US 287/82	at Clay Co. Line	Yes	10,198	10,130	
507	US 281	at Archer Co. Line	Yes	3,208	3,797	South
508	SH 79	at Archer Co. Line	Yes	2,552	2,551	
509	FM 2650	at Archer Co. Line	Yes	676	643	
510	US 82/277	at Archer Co. Line	Yes	3,811	3,804	
511	FM 368	at Archer Co. Line	Yes	362	342	
512	SH 258	West of FM 368	Yes	758	793	West
513	FM 1206	West of FM 368	Yes	216	243	
514	FM 367	West of FM 368	No	206	218	
515*	US 287	West of Iowa Park	Yes	6,271	6,934	
516	FM 2345	West of FM 368	No	57	58	
517	SH 240	West of FM 1813	No	242	225	
		Total		41,019	42,559	

* High-volume location

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, and commercial vehicles were surveyed at weigh stations, rest areas, and truck stops using an intercept interview method. For the purpose 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. Those declining

were allowed to continue on their trip. Drivers of commercial and non-commercial vehicles were interviewed using different survey instruments and those forms are provided in the Appendix. Figure 3 shows a typical intercept interview survey at an external station.

Figure 3. Typical External Survey Station.

The intercept interview method was also used to conduct commercial vehicle surveys at weigh stations, rest areas, and truck stops located along high-volume facilities. The surveys were conducted by interviewing drivers of commercial vehicles when the driver stopped for gas, to eat, or other personal reasons. Since this method involved surveying the drivers off of the roadways, there was no traffic control required.

Two external stations in the Wichita Falls study area 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 two 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.

For a more detailed discussion and description of the survey methodology, see the report, *Wichita Falls External Station Travel Survey*, prepared by Gram Traffic Counting, Inc., the vendor selected to conduct the survey.

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 Wichita Falls, the majority of vehicles surveyed were non-commercial. Approximately 80 percent of the surveys were for non-commercial vehicles. The number of surveys for commercial and non-commercial vehicles by station as well as the outbound traffic volume during the survey period is provided in Table 2. Approximately 19 percent of non-commercial vehicles and 21 percent of commercial vehicles that traveled through the external stations during survey hours were interviewed.

Trip Types

There are two types of trips identified as part of an external survey; external-local trips and external-through trips. A 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. A 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. Nearly 96 percent of non-commercial vehicle trips and nearly 52 percent of commercial vehicle trips were local trips. Approximately 75 percent of the commercial vehicle through trips were made on the two high-volume external sites.

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

Station Number	Facility	Location	Non-Commercial		Commercial	
			Surveyed	Count*	Surveyed	Count*
501	FM 171	at Clay Co. Line	105	160	1	11
504	SH 79	at Clay Co. Line	375	1,482	51	196
505	Bus. US 287	at Clay Co. Line	183	401	31	75
506^	US 287/82	at Clay Co. Line	N/A	N/A	157	654
507	US 281	at Archer Co. Line	380	2,508	50	164
508	SH 79	at Archer Co. Line	435	1,589	33	190
509	FM 2650	at Archer Co. Line	170	364	7	62
510	US 82/277	at Archer Co. Line	368	2,264	68	331
511	FM 368	at Archer Co. Line	156	228	10	43
512	SH 258	West of FM 368	196	458	7	60
513	FM 1206	West of FM 368	56	138	2	11
515^	US 287	West of Iowa Park	N/A	N/A	241	878
518	IH 44	at OK Border	359	5,122	50	646
Total			2,783	14,714	708	3,321

* Outbound volumes during approximate time of survey (8 a.m. to 7 p.m.)

^ High-volume location. Commercial surveys only (both directions)

Table 3. Survey Results by Trip Type (Non-Commercial and Commercial Vehicles).

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles		
		Local	Through	Total	Local	Through	Total
501	FM 171	101	4	105	1	0	1
504	SH 79	357	18	375	42	9	51
505	Bus. US 287	182	1	183	29	2	31
506*	US 287/82	N/A	N/A	N/A	63	94	157
507	US 281	363	17	380	36	14	50
508	SH 79	411	24	435	30	3	33
509	FM 2650	169	1	170	7	0	7
510	US 82/277	357	11	368	49	19	68
511	FM 368	153	3	156	10	0	10
512	SH 258	175	21	196	6	1	7
513	FM 1206	55	1	56	2	0	2
515*	US 287	N/A	N/A	N/A	57	184	241
518	IH 44	342	17	359	39	11	50
Total		2,665	118	2,783	371	337	708

*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 resided in the Wichita Falls study area. A non-resident is a respondent that reported they lived outside of the Wichita Falls study area. Table 4 presents the survey data by residents and non-residents as well as the number of trips made by non-residents within the study area. 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 Wichita Falls and the number of internal trips they make, an estimate of the total internal trips within the study area attributable to non-residents can be developed.

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)
501	FM 171	105	56	53.33	49	46.67	9
504	SH 79	375	171	45.60	204	54.40	97
505	Bus. US 287	183	116	63.39	67	36.61	16
507	US 281	380	184	48.42	196	51.58	117
508	SH 79	435	258	59.31	177	40.69	153
509	FM 2650	170	96	56.47	74	43.53	56
510	US 82/277	368	195	52.99	173	47.01	74
511	FM 368	156	104	66.67	52	33.33	10
512	SH 258	196	165	84.18	31	15.82	9
513	FM 1206	56	55	98.21	1	1.79	0
518	IH 44	359	284	79.11	75	20.89	29
Total		2,783	1,684	60.51	1,099	39.49	570

The residency questions were only asked of respondents in non-commercial vehicles. Table 4 illustrates that individuals who do not live in the study area make a sizeable proportion, 39 percent, of the non-commercial travel in and out of Wichita Falls. The average number of internal trips made by those individuals is 0.52 trips per vehicle.

<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 17 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	9	Unknown/Refused
10	Personal Business		
11	Pick Up/Drop Off Passenger		
12	Change Travel Mode		
13	Delivery		
14	Recreation		
15	Overnight Stay		
16	Other		
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, and 14
Shop	7, 8, and 9
Other	12, 13, 15, 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 at the destination of the trip. Additionally, 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. The distribution for the origin purpose shows that the largest percentage of trips for residents (38 percent) began at home, while the most common non-resident trip origin purpose (36 percent) was work. For both groups combined, the most common origin purposes were work (31 percent), shopping (27 percent), and home (25 percent).
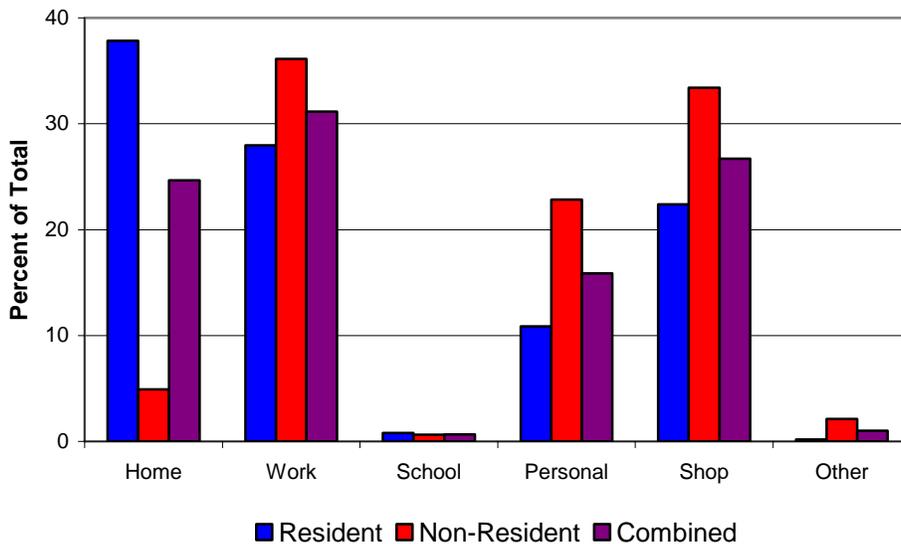
Figure 4. Trip Purpose at Origin for Non-Commercial Vehicles.

Figure 5 shows that the largest distribution of destination purpose for non-residents was home (70 percent). The trip purpose at the destination for residents was primarily comprised of work (40 percent) and personal (33 percent) trips. For both groups combined, home (42 percent), work (30 percent), and personal (25 percent) were the most common trip purposes.
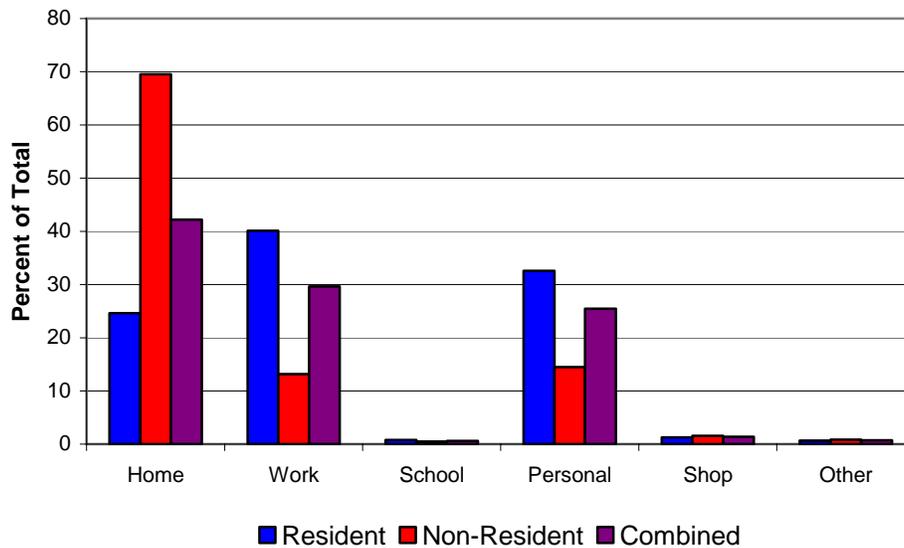
Figure 5. Trip Purpose to Destination for Non-Commercial Vehicles

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

Trip Purpose	Origin			Destination		
	Resident	Non-Resident	Combined	Resident	Non-Resident	Combined
Home	37.83	4.91	24.83	24.58	69.52	42.33
Work	27.97	36.12	31.19	40.14	13.19	29.50
School	0.77	0.64	0.72	0.77	0.45	0.65
Personal	10.87	22.84	15.59	32.60	14.47	25.44
Shop	22.39	33.39	26.73	1.25	1.55	1.37
Other	0.18	2.09	0.93	0.65	0.82	0.72

A detailed analysis of specific subsets of the survey data was performed. Approximately 38 percent of the surveyed study area residents began their trip at home. Of that group of respondents, approximately 55 percent of those home-based trips had a destination purpose that was work or work-related. Since the survey was conducted in the outbound direction, this would indicate that a significant percentage of Wichita Falls study area residents work outside of the Wichita Falls study area.

Nearly 70 percent of the surveyed non-residents cited home as the trip purpose for traveling to their destination. Of that group of non-residents, nearly 59 percent of the trip origins were for

personal business or shopping purposes. Only 39 percent of non-residents traveling home cited an origin purpose that was work or work-related. This indicates that a majority of non-residents traveling within the Wichita Falls study area are making trips for either non-work purposes or people are making personal or shopping trips after leaving work and prior to going home.

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. A distribution of trips by trip purpose for residents, non-residents, and both groups combined is provided in Figure 6. For residents, the trips were fairly equally distributed among the three trip purposes, with NHB having the largest percentage (38 percent). For non-residents, HBNW trips accounted for nearly half (45 percent) of the trips. HBNW trips were the most common trip purpose for residents and non-residents combined (36 percent).
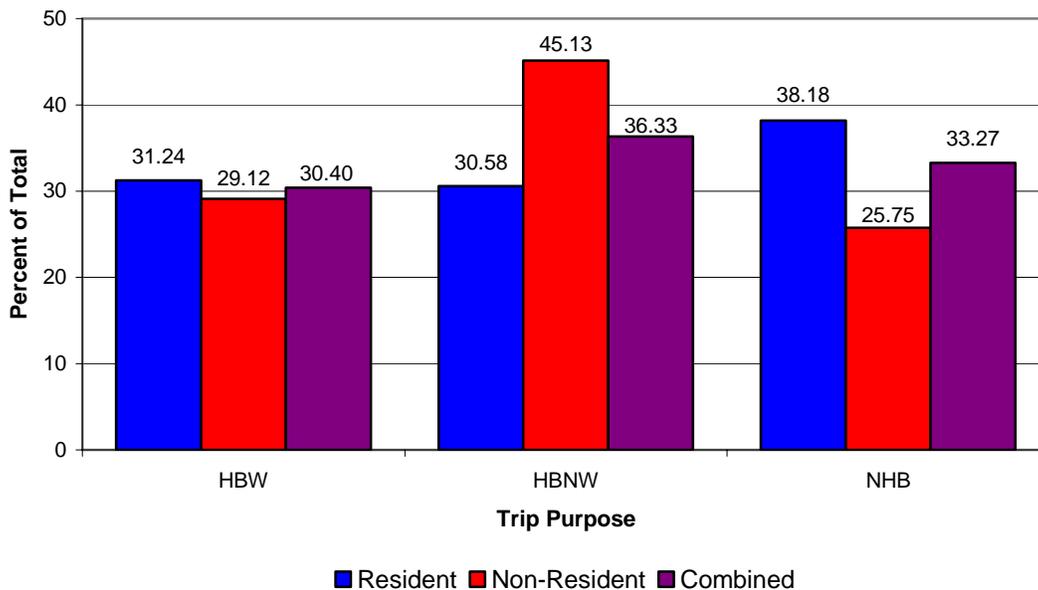
Figure 6. Distribution of Non-Commercial Vehicle Trips by Trip Purpose.

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 9

Figures 7 and 8 present the distribution of commercial vehicle trips by reported trip purpose at the origin and destination of the trip. At the origin, support functions were the most common origin trip purpose (40 percent). Pick-up (24 percent), delivery (23 percent), and base (11 percent) were the other most commonly cited trip purposes at the origin. The distribution for destination trip purpose shows that 50 percent of the trips were destined for delivering cargo and another 18 percent were destined for picking up cargo. Only 21 percent of the trip destinations were for support functions and 10 percent of the destinations were for base operations.
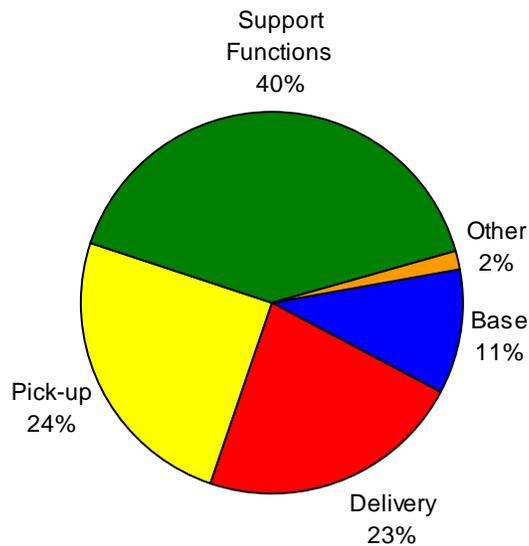
Figure 7. Trip Purpose at Origin for Commercial Vehicles.
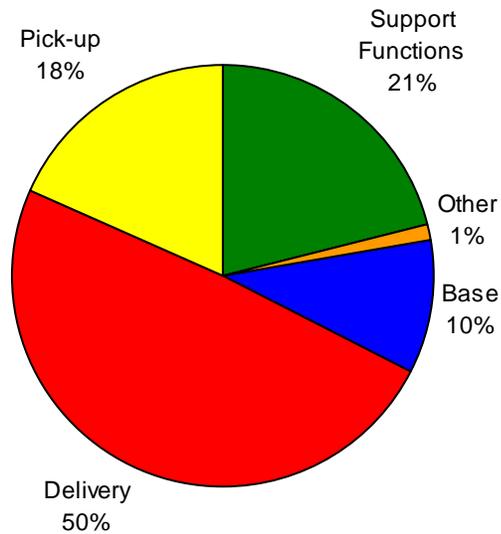
Figure 8. Trip Purpose to Destination for Commercial Vehicles.

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 (33 percent) as the type of place at the origin. An additional 27 percent of the non-commercial vehicles cited retail/shopping/gas as the type of place. For commercial vehicles, nearly half of the respondents (49 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 30 percent.

Table 7. Type of Place at Trip Origin.

Type of Place	Non-Commercial Vehicles		Commercial Vehicles	
	Number	Percent	Number	Percent
Office Building	345	12.40	15	2.12
Retail/Shopping/Gas	749	26.91	212	29.94
Industrial/Manufacturing	236	8.48	347	49.01
Medical	139	4.99	1	0.14
Educational	69	2.48	0	0.00
Government	97	3.49	0	0.00
Residential	922	33.13	44	6.21
Airport	3	0.11	1	0.14
Eating Establishment	168	6.04	24	3.39
Hotel/Motel	30	1.08	37	5.23
Other	25	0.90	27	3.81
Total	2,783	100.00	708	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 7:30 a.m. and 8:30 a.m. for non-commercial vehicles. There is an afternoon peak period for non-commercial vehicles between 5 p.m. and 6 p.m. Inbound commercial vehicle levels remain fairly constant from the morning peak (7:30 a.m.) through 5 p.m. when the amount of commercial vehicles begins to decline. For outbound traffic (Figure 10), the morning peak period for non-commercial vehicles is not as significant as the peak for the inbound direction, and it occurs between 7:30 a.m. and 8:30 a.m. The afternoon peak for non-commercial vehicles traveling outbound is larger and longer than the inbound afternoon peak. For outbound commercial vehicles, there appears to be

no significant peak. The traffic levels remain fairly constant between 8:00 a.m. and 5:30 p.m., with the biggest peak occurring around noon.
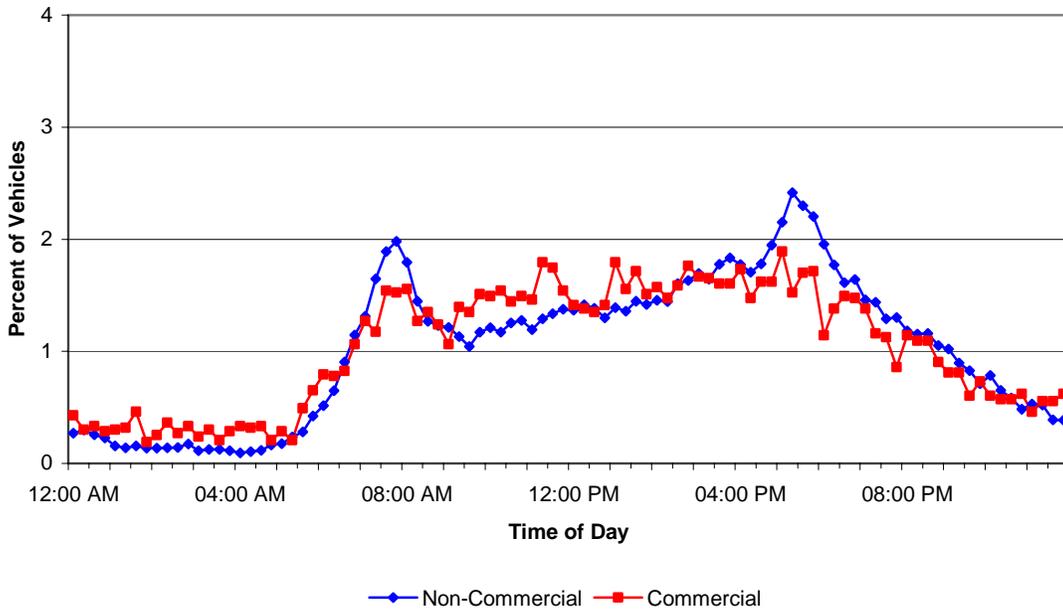

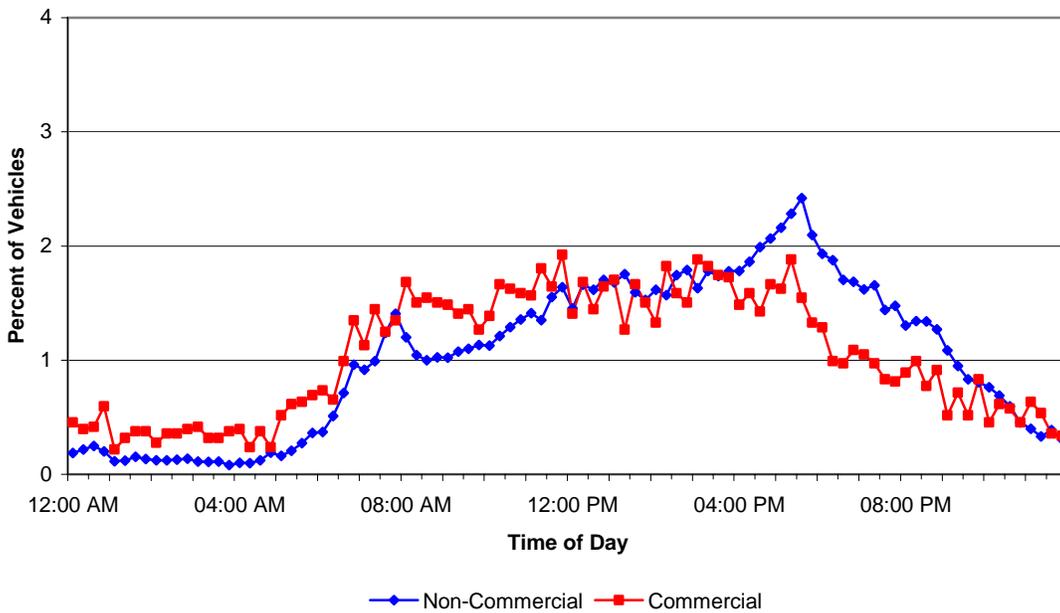**Figure 9. Distribution of Inbound Vehicles by Time-of-Day.**

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

An additional analysis that compared the number of surveys and vehicle counts by time of day was conducted. In this analysis, the percent of vehicles surveyed and the percent of outbound vehicles counted were grouped in hourly increments during the time period in which the survey was conducted. The results for non-commercial vehicles are provided in Figure 11 and commercial vehicles are shown in Figure 12.

For non-commercial vehicles, the percent of surveys completed each hour had peaks in the morning (around 8 a.m.), at mid-day (1 p.m.), and in the afternoon (between 5 p.m. and 6 p.m.). The significance of the peaks increased during the course of the day. The counts for non-commercial vehicles gradually increased throughout the day. Approximately 19 percent of the non-commercial vehicles that were traveling out of the study area (at surveyed external stations) were successfully interviewed during survey hours. For the 24-hour period, that number was 13 percent.
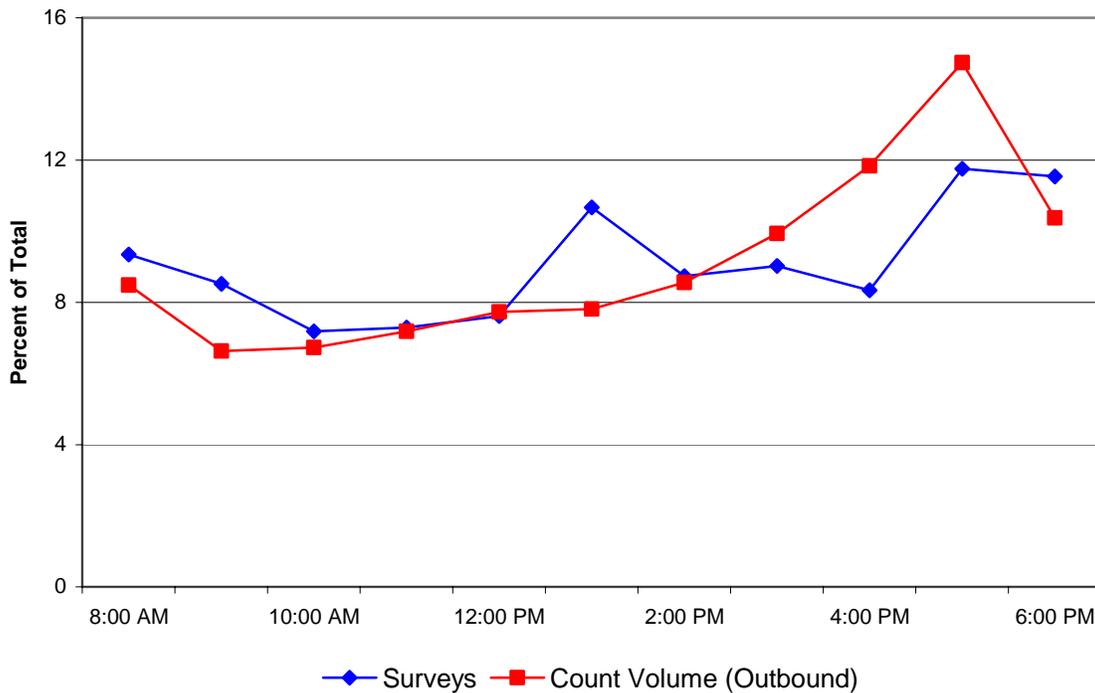
Figure 11. Distribution of Non-Commercial Vehicles and Surveys by Time-of-Day.

There trend among commercial vehicles was slightly different than the trend for non-commercial vehicles. The percent of vehicles counted was fairly constant throughout the day, as was the percent of completed surveys. The largest peak of surveys completed occurred between 3 p.m. and 4 p.m. Overall, 21 percent of the commercial vehicles that were counted during the survey period were interviewed. For the 24-hour period, 14 percent of the commercial vehicles were surveyed.
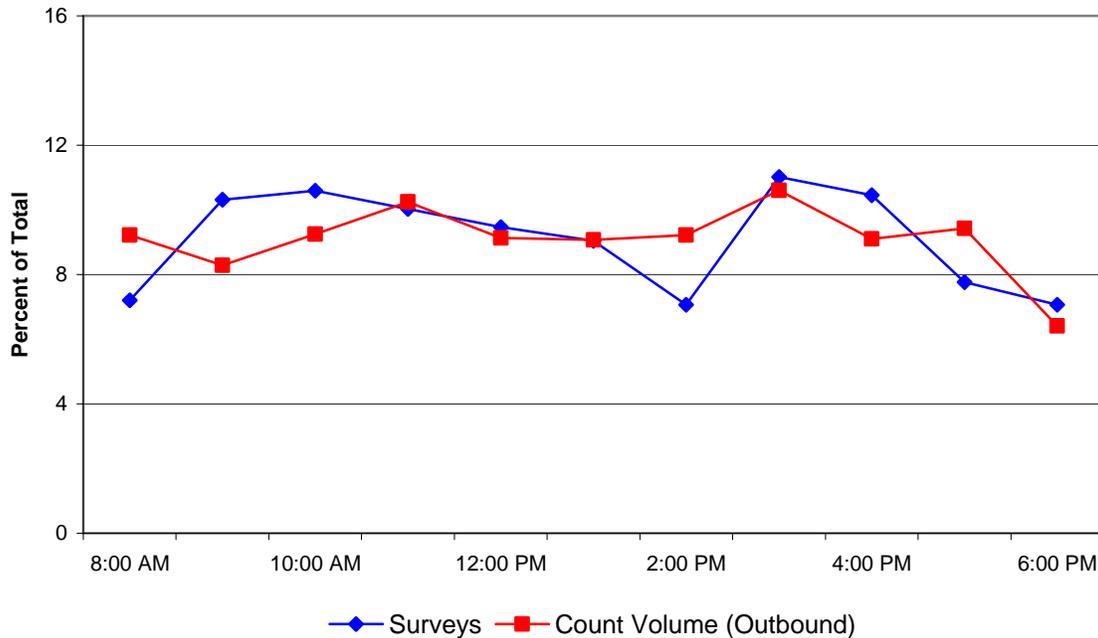

Figure 12. Distribution of Commercial Vehicles and Surveys by Time-of-Day.

A final comparison of the survey and count totals for the survey locations was conducted. In this analysis, the percent of counted vehicles that were surveyed per hour was determined for both non-commercial and commercial vehicles. This data was compared against the total count volumes for the survey period, and the results are provided in Figure 13. Generally, a larger percentage of commercial vehicles than non-commercial vehicles were surveyed throughout the course of the day. These trend lines compared against the total volumes illustrate that as the count volumes increase, the percentage of surveyed vehicles decrease. This is logical since the number of surveyors was constant during the survey period.
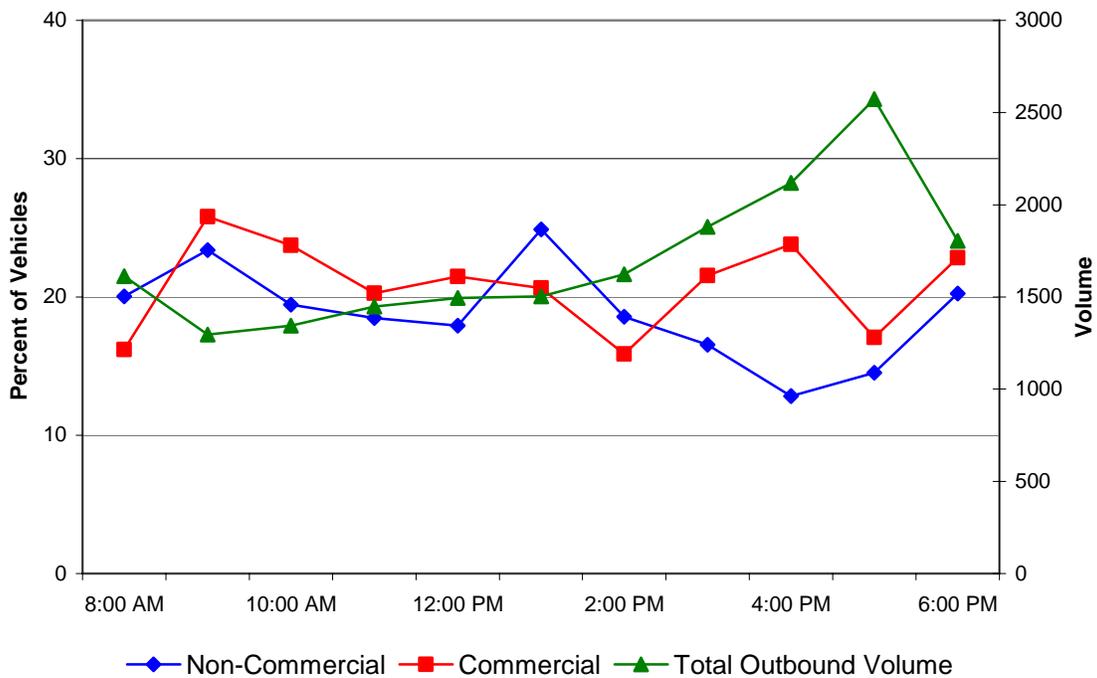
Figure 13. Distribution of Counted Vehicles That Were Surveyed.

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 14 represents the percent distribution of non-commercial and commercial vehicles by age as reported in the surveys. The average age for surveyed vehicles was approximately 5.2 years for non-commercial vehicles and 4.9 years for commercial vehicles. The median vehicle model year was 2001 for both non-commercial and commercial vehicles.

Figure 15 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. Unlike non-commercial vehicles, the data for commercial vehicles do not show smooth trends, especially for vehicles that are more than 12 years old. This is due in part to the total number of observations in the non-commercial and commercial surveys

(2,783 and 706, respectively). Two commercial vehicles were excluded from the analysis of age and odometer readings due to invalid responses that were provided by the survey respondents.
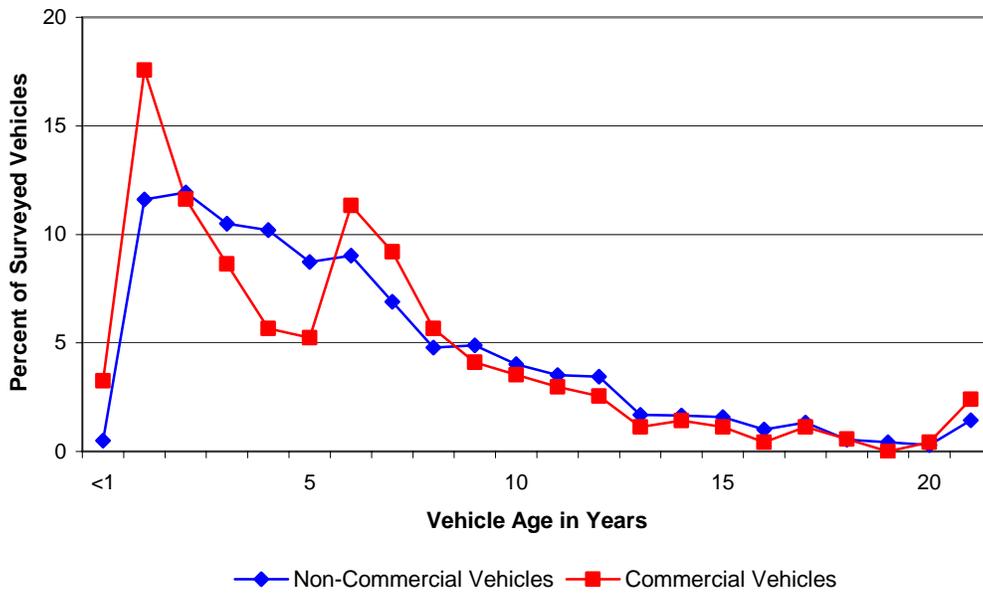

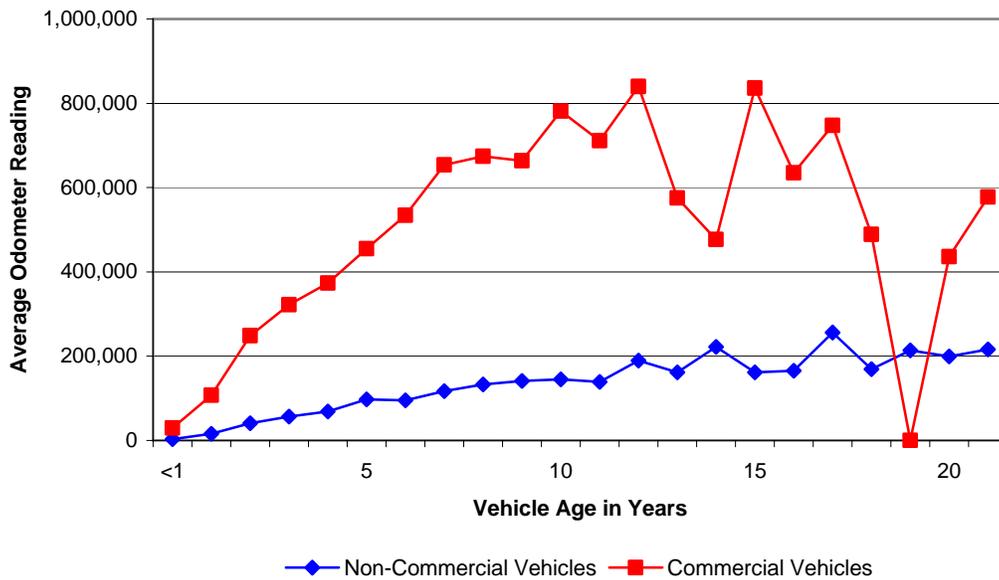**Figure 14. Distribution of Surveyed Vehicles by Age of Vehicle.**

Figure 15. Average Odometer Readings for Vehicles by Age of Vehicle.

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The average odometer reading for non-commercial vehicles was 94,915 and the average commercial vehicle odometer reading was 430,397. This information indicates that commercial vehicles accumulated mileage at nearly five times the rate of non-commercial vehicles. 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.

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	14	0.50	0.50	3,042
1	323	11.61	12.11	15,562
2	332	11.93	24.04	40,638
3	292	10.49	34.53	56,610
4	284	10.20	44.74	69,152
5	243	8.73	53.47	97,362
6	251	9.02	62.49	95,038
7	192	6.90	69.39	117,352
8	133	4.78	74.16	132,695
9	136	4.89	79.05	141,526
10	112	4.02	83.08	145,081
11	98	3.52	86.60	139,241
12	96	3.45	90.05	189,365
13	47	1.69	91.74	162,042
14	46	1.65	93.39	222,117
15	44	1.58	94.97	161,381
16	28	1.01	95.98	165,419
17	37	1.33	97.31	256,313
18	15	0.54	97.84	169,165
19	12	0.43	98.28	213,906
20	8	0.29	98.56	199,386
>20	40	1.44	100.00	216,349
Total	2783	100.00		

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

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	23	3.26	3.26	29,798
1	124	17.56	20.82	107,230
2	82	11.61	32.44	248,583
3	61	8.64	41.08	322,141
4	40	5.67	46.74	373,080
5	37	5.24	51.98	455,317
6	80	11.33	63.31	534,528
7	65	9.21	72.52	653,625
8	40	5.67	78.19	674,326
9	29	4.11	82.29	663,868
10	25	3.54	85.84	781,335
11	21	2.97	88.81	711,196
12	18	2.55	91.36	839,778
13	8	1.13	92.49	575,354
14	10	1.42	93.91	476,762
15	8	1.13	95.04	835,674
16	3	0.42	95.47	635,095
17	8	1.13	96.60	747,182
18	4	0.57	97.17	488,899
19	0	0.00	97.17	0
20	3	0.42	97.59	435,778
>20	17	2.41	100.00	577,334
Total	706	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 into and out of the Wichita Falls study area. Table 10 presents the number of observed non-commercial and commercial vehicles by class and average occupancy. Nearly all of the non-commercial vehicles (99 percent) were classified as passenger vehicles. The majority of commercial vehicles (82 percent) were semi/tractor-trailer combinations. The overall average occupancy for non-commercial vehicles was 1.22 and 1.06 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	2755	1.22	Single Unit 2-axle (6 wheels)	42	1.00
Bus	0	—	Single Unit 3-axle (10 wheels)	56	1.07
Taxi/Paid Limo	0	—	Single Unit 4-axle (14 wheels)	27	1.07
School Bus	0	—	Semi (tractor-trailer)	583	1.06
Commercial Vehicle (over 1 ton)	0	—	Other	0	—
Motorcycle	27	1.00			
Recreational Vehicle	1	1.00			
Other	0	—			
Total	2783	1.22	Total	708	1.06

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 transported 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.

Over one-third of the vehicles (34 percent) reported not carrying any cargo. Of those vehicles transporting cargo, 99 percent of those cargos were not from or headed to Mexico. Only four vehicles indicated that their cargo was from or destined to Mexico. For those vehicles carrying a cargo, only 6 percent reported picking their cargo up at an interposal transfer or custom brokerage facility and 6 percent indicated that they would be dropping their cargo off at the same type of facility. Interposal transfer or custom brokerage facilities are sites where cargo may be transferred between several different modes (e.g. rail to truck, ship to truck, etc.).

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
501	FM 171	1	1	100.00	0	0
504	SH 79	51	20	39.22	1	30
505	Bus. US 287	31	24	77.42	0	7
506	US 287/82	157	60	38.22	0	97
507	US 281	50	14	28.00	0	36
508	SH 79	33	13	39.39	0	20
509	FM 2650	7	2	28.57	0	5
510	US 82/277	68	21	30.88	2	45
511	FM 368	10	6	60.00	0	4
512	SH 258	7	0	0.00	0	7
513	FM 1206	2	1	50.00	0	1
515	US 287	241	57	23.65	1	183
518	IH 44	50	21	42.00	0	29
Total		708	240	33.90	4	464

A detailed summary of cargo types reported for commercial vehicles is provided in Table 12. Empty vehicles comprised 34 percent of those surveyed. For vehicles with identified cargo types, 18 percent reported that their cargo as food, health, and beauty products, 9 percent reported a cargo of manufactured goods/equipment, and 7 percent reported a cargo of miscellaneous shipment.

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

		Cargo Description	Number of Vehicles	Percent of Vehicles
1	—	Farm Products	44	6.21
2	—	Forest Products	0	0.00
3	—	Marine Products	0	0.00
4	—	Metals and Minerals	26	3.67
5	—	Food, Health, and Beauty Products	125	17.66
6	—	Tobacco Products	0	0.00
7	—	Textiles	6	0.85
8	—	Wood Products	28	3.95
9	—	Printer Matter	2	0.28
10	—	Chemical Products	16	2.26
11	—	Refined Petroleum or Coal Products	15	2.12
12	—	Rubber, Plastic, and Styrofoam Products	20	2.82
13	—	Clay, Concrete, Glass, or Stone	20	2.82
14	—	Manufactured Goods/Equipment	67	9.46
15	—	Wastes	12	1.69
16	—	Miscellaneous Shipments	46	6.50
17	—	Hazardous Materials	10	1.41
18	—	Transportation	23	3.25
19	—	Unclassified Cargo	2	0.28
20	—	Driver Refused to Answer	2	0.28
21	—	Unknown to Driver	4	0.56
22	—	Empty	240	33.90
		Total	708	100.00

Figures 16 and 17 present the distribution of surveyed commercial vehicles by the type of cargo transfer at the origin (point of pick-up) and at the 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, 68 percent of the transfers were warehouse-to-truck and 19 percent were truck-to-truck. At the destination, warehouse-to-truck (71 percent) and truck-to-truck (18 percent) transfers accounted for the majority of the transfers.
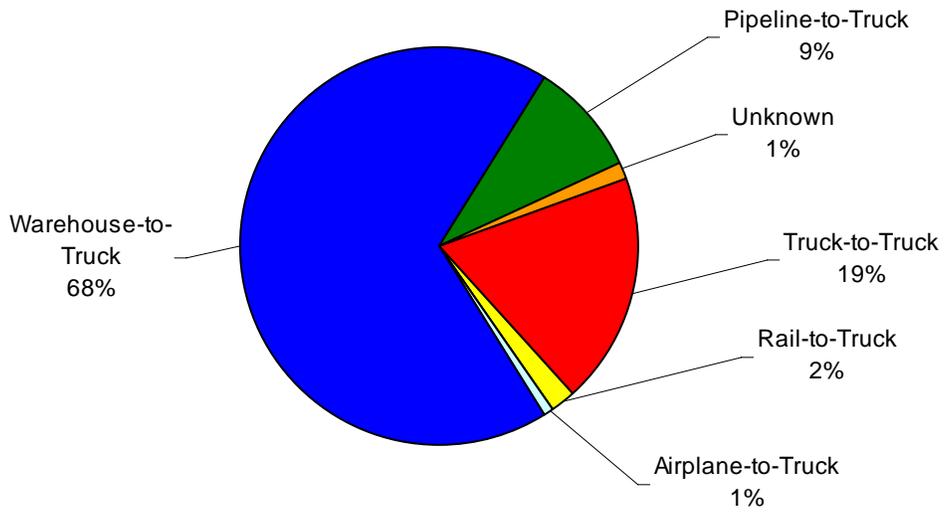
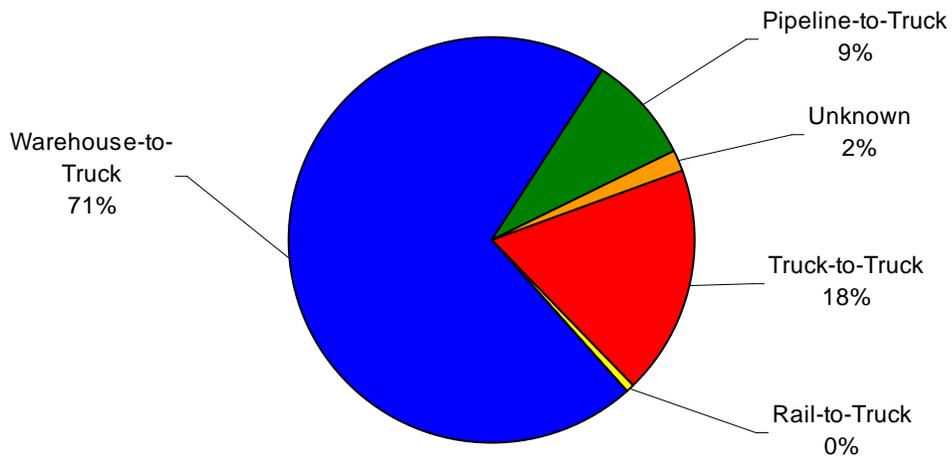**Figure 16. Cargo Transfer at Point of Pick-Up.**

Figure 17. Cargo Transfer at Point of Drop-Off.

HIGH VOLUME LICENSE PLATE MATCH SURVEYS

Two locations in the Wichita Falls study area had 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. The license plate matching survey was conducted using high-speed digital cameras which recorded license plates of commercial and 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 both 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 Wichita Falls high-volume locations, the number of license plates matches by direction, and the 24-hour traffic counts for these locations are provided in Table 13.

Table 13. Wichita Falls High-Volume Locations.

Non-Commercial Vehicles						
Station Number	Facility	Location	License Plates Recorded		24-Hour Vehicle Count	
			Inbound	Outbound	Inbound	Outbound
506	US 287/82	at Clay Co. Line	4,136	3,686	9,414	9,344
515	US 287	West of Iowa Park	2,430	2,267	4,965	5,748
Commercial Vehicles						
Station Number	Facility	Location	License Plates Recorded		24-Hour Vehicle Count	
			Inbound	Outbound	Inbound	Outbound
506	US 287/82	at Clay Co. Line	958	854	784	786
515	US 287	West of Iowa Park	675	588	1,306	1,186

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 20 percent for peak periods and 10

percent for 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.

Movement	Travel Time in Minutes	
	Peak	Off-Peak
Westbound US 287/82 (506) to US 287 (515)	28	23
Eastbound US 287 (515) to US 287/82 (506)	29	20

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 below.

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

Vehicle Type	License Recorded Route		Through Trips (Matched Licenses)	Local Trips (Unmatched Licenses)	Total Trips
	From	To			
Non-Commercial	US 287 (506)	US 287 (515)	431	3,705	4,136
	US 287 (515)	US 287 (506)	439	1,991	2,430
Commercial	US 287 (506)	US 287 (515)	196	762	958
	US 287 (515)	US 287 (506)	206	469	675

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 is made that the traffic in the non-surveyed direction is a mirror image of the traffic in the surveyed direction. For example, if 10 percent of the surveyed outbound traffic was through trips, it is assumed that 10 percent of the inbound traffic will be through trips. It is 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. For non-surveyed sites, it was assumed that all trips made were local trips.

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 as determined from the survey for FM 171 (station number 501) was applied to the total number of trips for FM 1740 (station number 502), which was a non-surveyed location.

Table 16. Expanded Survey Results by Station.

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles			Residents	Visitors
		Local	Through	Total	Local	Through	Total		
500	FM 1177	258	0	258	25	0	25	138	120
501	FM 171	416	8	424	46	0	46	222	194
502	FM 1740	248	0	248	55	0	55	132	116
503	FM 3393	399	0	399	53	0	53	213	186
504	SH 79	4,312	122	4,434	207	51	258	1,966	2,346
505	Bus. US 287	825	4	829	172	7	179	523	302
506	US 287/82	16,047	2,078	18,125	1,062	1,141	2,203	7,767	8,280
507	US 281	6,369	169	6,538	328	139	467	3,084	3,285
508	SH 79	4,602	281	4,883	198	22	220	2,729	1,872
509	FM 2650	1,195	3	1,198	121	0	121	675	520
510	US 82/277	6,541	271	6,812	562	242	804	3,466	3,075
511	FM 368	557	49	606	98	0	98	371	186
512	SH 258	1,272	76	1,348	191	12	203	1,071	201
513	FM 1206	423	4	427	32	0	32	415	8
514	FM 367	372	0	372	52	0	52	365	7
515	US 287	8,121	1,757	9,878	2,371	956	3,327	6,424	1,697
516	FM 2345	94	0	94	21	0	21	92	2
517	SH 240	376	0	376	91	0	91	369	7
518	IH 44	16,234	615	16,849	732	493	1,225	12,842	3,391
Total		68,661	5,437	74,098	6,417	3,063	9,480	42,864	25,795

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.

Figure 18 shows the estimates of external-local trip movements by direction and location group. The East group had the largest estimated number of external-local trip movements, with over 24,000 total daily trips. The South group had the second highest estimated number of external-local trip movements with nearly 20,600 daily trips.
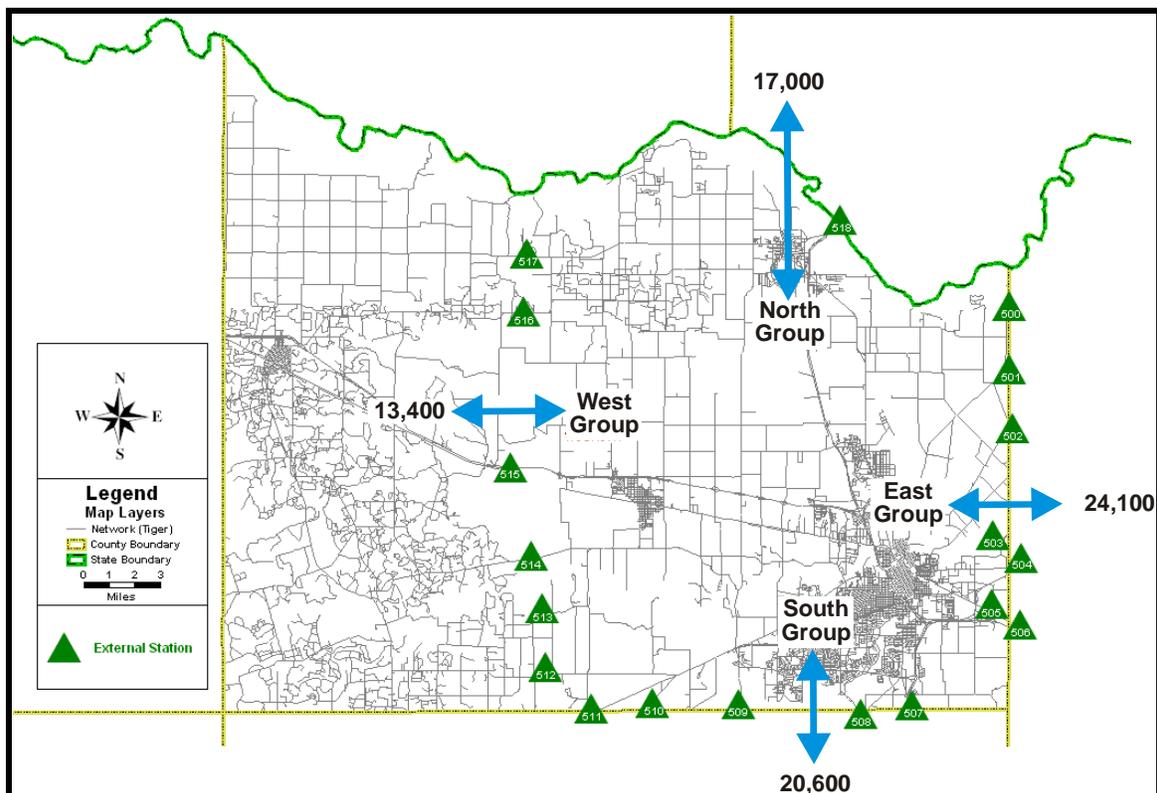

Figure 18. Estimates of External-Local Trip Movements by Location Group.

Figure 19 shows the estimates of external-through trip movements by direction and location group. The most common external-through movements were between the East and West groups. Nearly 5,100 external-through trips are estimated to be made on a daily basis between the east and west sides of the study area. This is logical due to US 287 / US 82 running East-West through the study area. North-South external-through trips were the second most common movement.
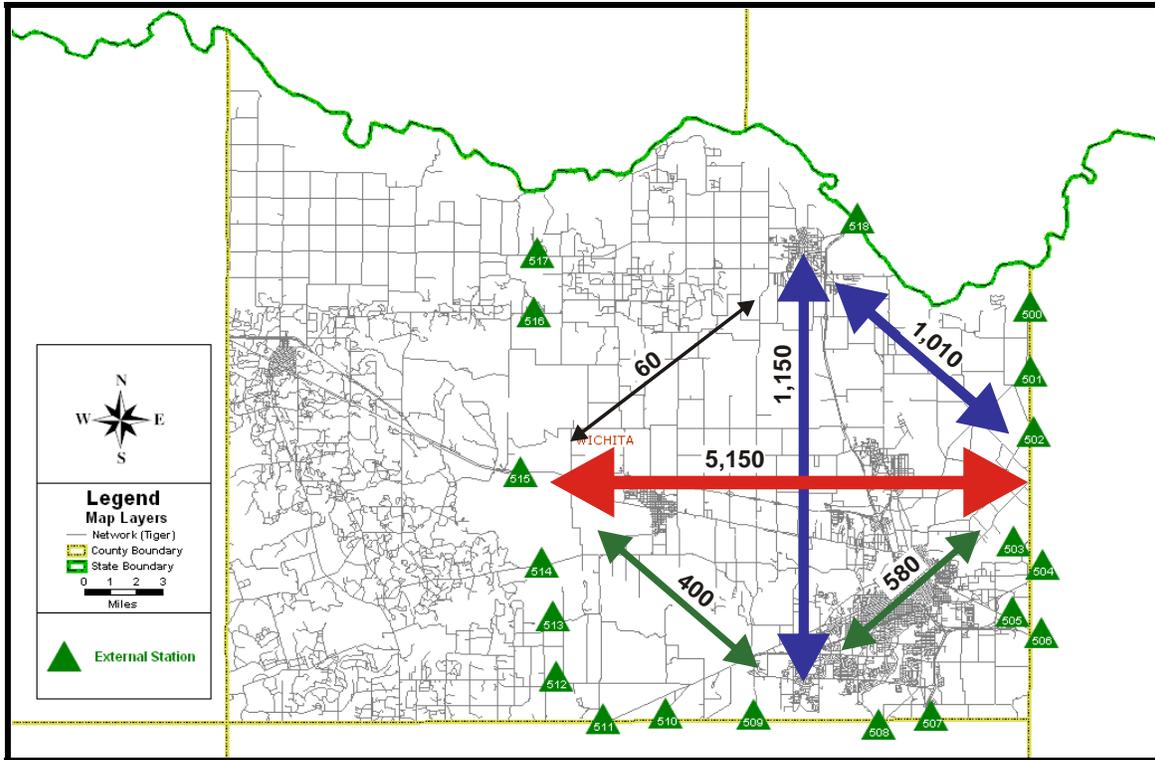
Figure 19. Estimates of External-Through Trip Movements by Location Group.

SURVEY SUMMARY

Nearly 84,000 vehicles enter and leave the Wichita Falls study area daily. Nearly 11 percent are commercial vehicles. Approximately 10 percent of the nearly 84,000 vehicles make through trips. Approximately 40 percent of the non-commercial and commercial vehicles enter or leave the Wichita Falls study area via US 287 / US 82. Based on the average vehicle occupancy observed in the survey, an estimated 92,200 persons are entering and leaving the study area daily by non-commercial vehicle and nearly 8,500 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 approximately 25,800. Non-residents account for approximately 13,300 internal trips within the study area.

Approximately 25 percent of non-commercial trip origins were leaving home and 42 percent of non-commercial trip destinations were returning to home. HBNW trips accounted for nearly 36

percent of the non-commercial trips. The percentage of trips that were NHB and HBW were 33 percent and 31 percent, respectively.

Commercial vehicle drivers reported varied trip purposes at the origin and destination ends of their trip. Approximately 25 percent of the trip origin purposes were reported to be picking up cargo. Delivering cargo accounted for an additional 23 percent of trip origins. Delivering cargo was the stated purpose for 49 percent of the destination trips, while picking up cargo accounted for 18 percent of the destinations. Leaving/returning to base operations accounted for 11 percent of the commercial vehicle trip origins and 10 percent of the trip destinations.

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 largest "spike" for non-commercial vehicles occurred during the afternoon peak for both the inbound direction and outbound directions. Commercial vehicle travel peaked in the middle of the day (around noon) for both the inbound and the outbound directions.

The median vehicle year for non-commercial and commercial vehicles was 2001. The average vehicle age for commercial vehicles was 4.9 years and for non-commercial vehicles it was 5.2 years. The average odometer reading for commercial vehicles was approximately five times higher than that for non-commercial vehicles. Average vehicle occupancy for non-commercial vehicles was 1.22, or nearly 15 percent greater than the 1.06 reported for commercial vehicles.

Commercial vehicles represent approximately 11 percent of the vehicles traveling into and out of the Wichita Falls study area on a daily basis. Nearly 34 percent of the commercial vehicles are carrying no cargo. Of the commercial vehicles carrying cargo, 99 percent are carrying cargo that is not from or destined to Mexico.

APPENDIX

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) 3a. What city do you live in?	☐ Wichita ☐ Other (go to 5)	☐ Wichita ☐ Other (go to 5)	☐ Wichita ☐ Other (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)			
12. Where did you go next? (city/county/landmark)			
13. How many more places did you stop today?			

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) 4a. If empty, what was the last cargo you delivered?	_____ ☐ Empty (no cargo)	_____ ☐ Empty (no cargo)	_____ ☐ Empty (no cargo)
4b. (To be completed by surveyor) Is vehicle type cargo/freight transport or for service/delivery? 4c. What is the weight of your cargo? ** determine 4d and 4e by observation **	☐ Cargo Transport ☐ Service (lbs)	☐ Cargo Transport ☐ Service (lbs)	☐ Cargo Transport ☐ Service (lbs)
4d. Is cargo being hauled using an multi-modal container/trailer or TEU? *If Yes*	☐ Yes ☐ No (go to 5)	☐ Yes ☐ No (go to 5)	☐ Yes ☐ No (go to 5)
4e Is the container a Reefer or Dry Box?	☐ Reefer ☐ Dry Box	☐ Reefer ☐ Dry Box	☐ Reefer ☐ Dry Box
4f. Record the hazardous material placard (if applicable)			
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 ? Gas (leaded, unleaded), diesel, propane or other fuel?	Year ──────── Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ ──────	Year ──────── Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ ──────	Year ──────── Gross Weight Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ ──────

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