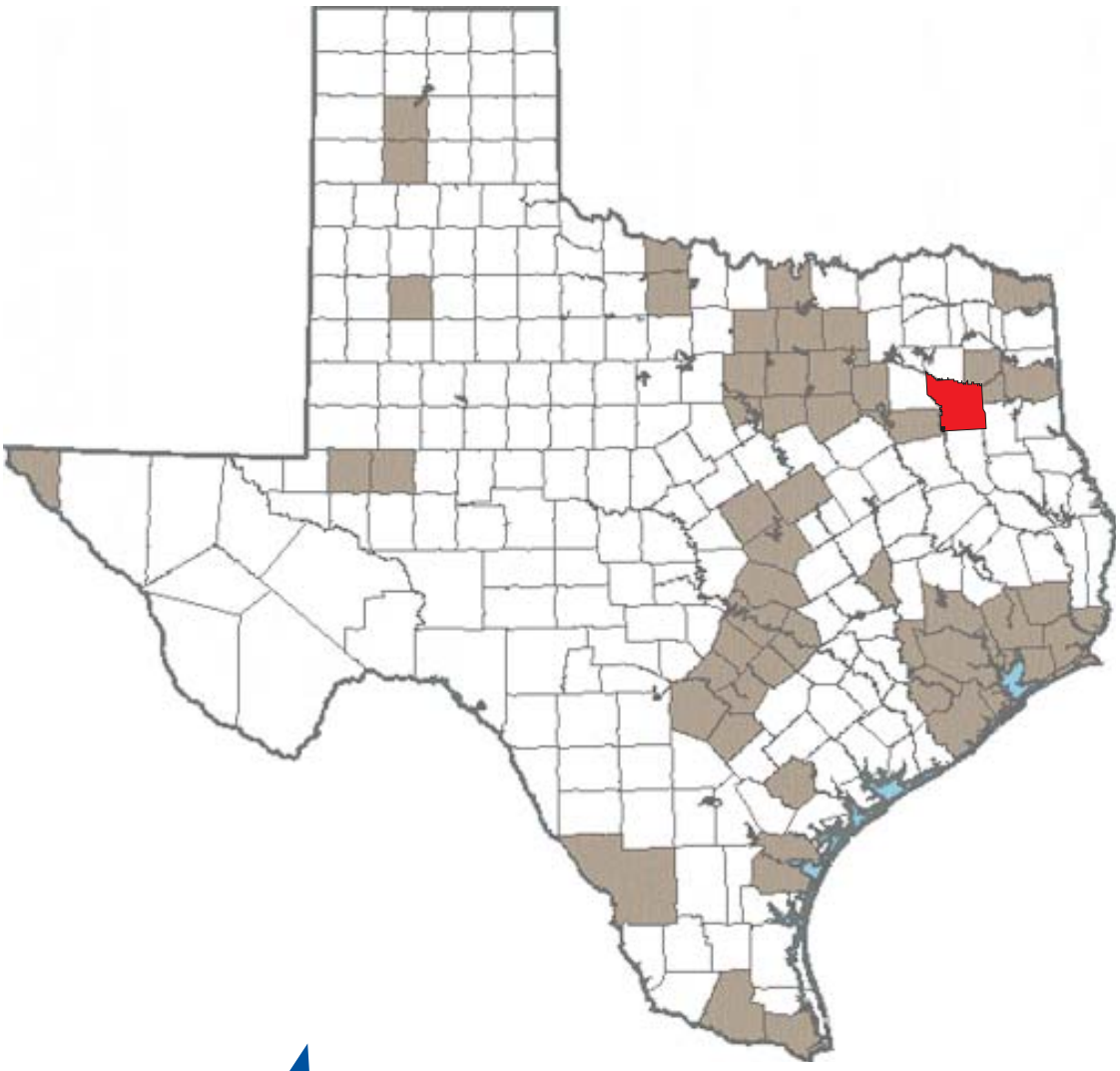
2004 Tyler External Survey
Technical Summary



Texas Department of Transportation

Prepared by the
Texas Transportation Institute
April 2005

2004 Tyler External Survey

TECHNICAL SUMMARY

Texas Department of Transportation Travel Survey Program

Prepared by

Stephen P. Farnsworth
Assistant Research Scientist

of the
Texas Transportation Institute

April 2005

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INTRODUCTION

In 2003 and 2004 the Transportation Planning and Programming (TPP) Division of the Texas Department of Transportation (TxDOT) funded an external station travel survey in the Tyler Metropolitan Planning Organization (MPO) study area. This survey measured and identified travel patterns into, within, and out of Tyler, which is in Smith County. This report presents a Technical Summary of the 2004 Tyler 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.

TYLER STUDY AREA

The study area, as shown in Figure 1, is located in Smith County in the eastern portion of Texas. Smith County has a land area of over 900 square miles and a population density of 188.2 persons per square mile. The population center of the county is comprised of the city of Tyler, which according to the 2000 census had a population of approximately 175,000 persons. The boundary established for the Tyler external survey was determined by the local MPO.

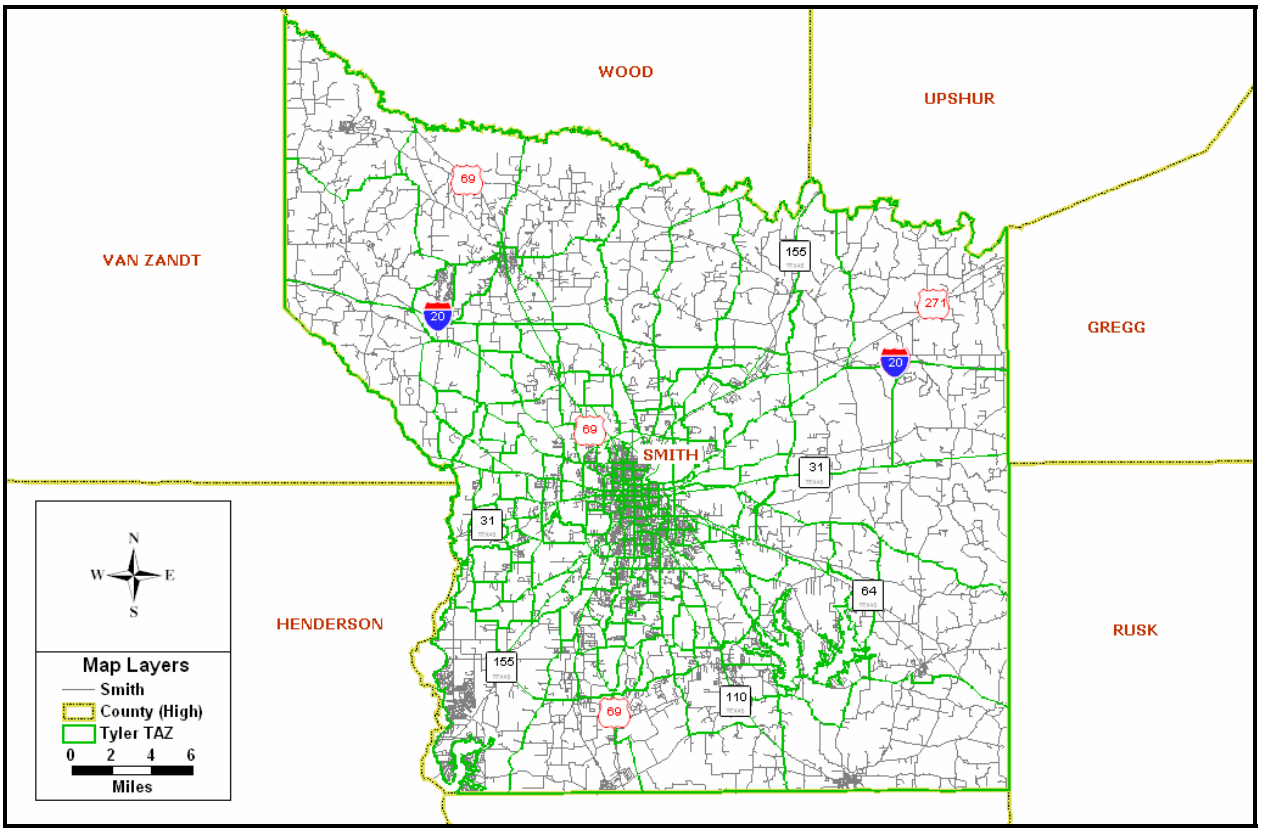

Figure 1. Tyler Study Area.

EXTERNAL STATIONS

There were 32 locations on the border of Tyler 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 32 locations, eighteen were selected for travel surveys. Seven of the eighteen surveyed locations bordered the Longview study area (Upshur, Gregg, and Rusk counties), and as a result, these locations were surveyed in both directions. Figure 2 shows the location of the external stations in Tyler 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.

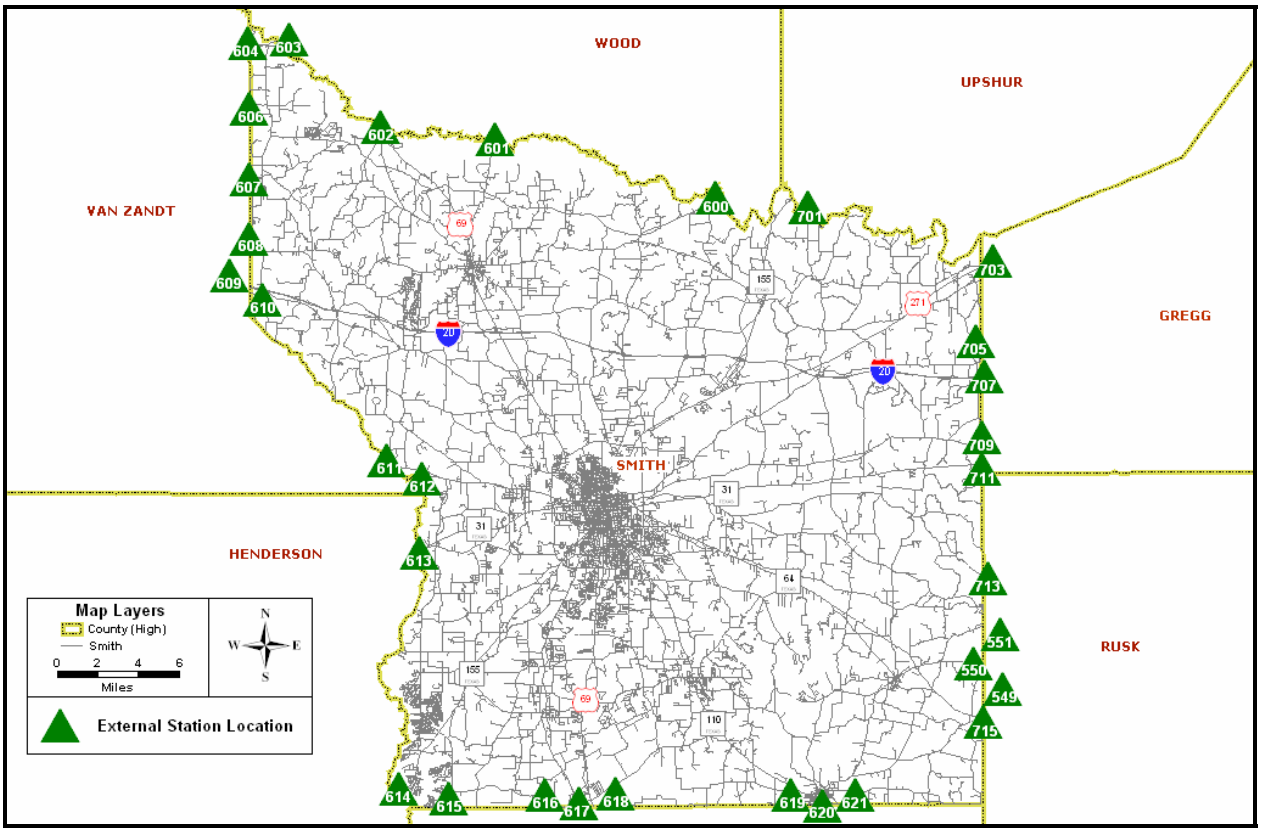

Figure 2. Tyler External Station Locations.

Three of the thirty-two locations were identified as high-volume sites. These locations are IH 20 at the Gregg County line, IH 20 at the Van Zandt County line, and SH 31 at the Henderson County Line. 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 rest areas, weigh stations, and truck stops using an intercept interview method. More detail on this methodology is provided later in the analysis.

Table 1. Tyler External Stations.

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
600	FM 14	at Wood Co. Line	Yes	2,145	1,654	North
601	FM 1804	at Wood Co. Line	Yes	439	318	
602	US 69 N	at Wood Co. Line	Yes	5,090	5,144	
603	US 80 E	at Wood Co. Line	No	3,017	2,758	
701	SH 155	at Upshur Co. Line	Yes	2,575	2,516	
549	FM 2089	at Rusk Co. Line	No	179	167	East
550	FM 838	at Rusk Co. Line	No	424	428	
551	SH 135	at Rusk Co. Line	No	2,028	2,044	
703	US 271 S	at Gregg Co. Line	Yes	2,865	2,841	
705	FM 1252	at Gregg Co. Line	Yes	397	410	
707	IH 20	at Gregg Co. Line	No	15,150	14,798	
709	FM 2767	at Gregg Co. Line	Yes	601	594	
711	SH 31	at Gregg Co. Line	Yes	2,889	2,719	
713	FM 850	at Rusk Co. Line	Yes	437	437	
715	SH 64	at Rusk Co. Line	Yes	2,040	2,345	
615	FM 346	at Cherokee Co. Line	Yes	1,387	1,345	South
616	FM 2137	at Cherokee Co. Line	No	364	544	
617	FM 2493	at Cherokee Co. Line	Yes	1,164	1,090	
618	US 69 S	at Cherokee Co. Line	Yes	5,795	6,021	
619	SH 135	at Cherokee Co. Line	Yes	465	401	
620	SH 110	at Cherokee Co. Line	No	884	1,033	
621	FM 13	at Cherokee Co. Line	Yes	630	639	
604	US 80 W	at Van Zandt Co. Line	No	3,071	3,261	West
606	FM 857	at Van Zandt Co. Line	No	172	165	
607	FM 1805	at Van Zandt Co. Line	No	409	415	
608	SH 110	at Van Zandt Co. Line	Yes	1,462	1,523	
609	IH 20	at Van Zandt Co. Line	No	13,160	13,122	
610	FM 1995	at Van Zandt Co. Line	No	413	488	
611	SH 64	at Van Zandt Co. Line	Yes	2,747	2,828	
612	FM 279	at Van Zandt Co. Line	No	1,460	972	
613	SH 31	at Henderson Co. Line	No	10,325	9,517	
614	SH 155	at Henderson Co. Line	Yes	4,870	4,952	
		Total		89,054	87,489	

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 rest areas, weigh stations, and truck stops using an intercept interview method. 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. 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 survey station at an external station.

Figure 3. Typical External Survey Station.

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

Three external stations in the Tyler survey 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 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, *Tyler/Longview 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 Tyler, the majority of vehicles surveyed were non-commercial. Nearly 90 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 20 percent of non-commercial vehicles and 15 percent of commercial vehicles that traveled through the external stations during survey hours were interviewed.

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

Station Number	Facility	Location	Non-Commercial		Commercial	
			Surveyed	Count*	Surveyed	Count*
600	FM 14	at Wood Co. Line	318	1,043	50	150
601	FM 1804	at Wood Co. Line	183	193	6	33
602	US 69 N	at Wood Co. Line	374	3,232	51	617
608	SH 110	at Van Zandt Co. Line	323	982	27	114
611	SH 64	at Van Zandt Co. Line	335	1,800	53	271
614	SH 155	at Henderson Co. Line	322	2,928	51	569
615	FM 346	at Cherokee Co. Line	283	867	14	89
617	FM 2493	at Cherokee Co. Line	231	588	24	150
618	US 69 S	at Cherokee Co. Line	328	3,674	50	149
619	SH 135	at Cherokee Co. Line	155	269	20	N/A
621	FM 13	at Cherokee Co. Line	211	351	28	83
701	SH 155	at Upshur Co. Line	316	1,454	51	336
703	US 271 S	at Gregg Co. Line	292	1,300	22	491
705	FM 1252	at Gregg Co. Line	104	221	4	22
709	FM 2767	at Gregg Co. Line	138	394	12	39
711	SH 31	at Gregg Co. Line	217	1,539	43	332
713	FM 850	at Rusk Co. Line	132	216	6	80
715	SH 64	at Rusk Co. Line	307	1,412	43	283
Total			4,569	22,463	555	3,808

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

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 surveys were dropped from the analysis.

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. Over 91

percent of non-commercial vehicle trips and nearly 77 percent of commercial vehicle trips were local trips.

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

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles		
		Local	Through	Total	Local	Through	Total
600	FM 14	296	22	318	32	18	50
601	FM 1804	174	9	183	5	1	6
602	US 69 N	350	24	374	29	22	51
608	SH 110	311	12	323	22	5	27
611	SH 64	320	15	335	44	9	53
614	SH 155	305	17	322	37	14	51
615	FM 346	275	8	283	14	0	14
617	FM 2493	219	12	231	18	6	24
618	US 69 S	310	18	328	44	6	50
619	SH 135	108	47	155	14	6	20
621	FM 13	208	3	211	26	2	28
701	SH 155	276	40	316	32	19	51
703	US 271 S	277	15	292	18	4	22
705	FM 1252	102	2	104	4	0	4
709	FM 2767	134	4	138	10	2	12
711	SH 31	63	154	217	38	5	43
713	FM 850	127	5	132	5	1	6
715	SH 64	295	12	307	33	10	43
Total		4150	419	4569	425	130	555

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 Tyler study area. A non-resident is a respondent that reported they lived outside of the Tyler 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 Tyler 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)
600	FM 14	318	114	35.85	204	64.15	2
601	FM 1804	183	57	31.15	126	68.85	12
602	US 69 N	374	124	33.16	250	66.84	40
608	SH 110	323	144	44.58	179	55.42	31
611	SH 64	335	122	36.42	213	63.58	30
614	SH 155	322	151	46.89	171	53.11	22
615	FM 346	283	196	69.26	87	30.74	43
617	FM 2493	231	110	47.62	121	52.38	6
618	US 69 S	328	131	39.94	197	60.06	26
619	SH 135	155	46	29.68	109	70.32	8
621	FM 13	211	112	53.08	99	46.92	2
701	SH 155	316	97	30.70	219	69.30	10
703	US 271 S	292	111	38.01	181	61.99	7
705	FM 1252	104	40	38.46	64	61.54	0
709	FM 2767	138	65	47.10	73	52.90	0
711	SH 31	217	96	44.24	121	55.76	0
713	FM 850	132	69	52.27	63	47.73	2
715	SH 64	307	126	41.04	181	58.96	22
Total		4569	1911	41.83	2658	58.17	263

The residency questions were only asked of respondents in non-commercial vehicles. Table 4 indicates that individuals who do not live in the study area make a sizeable proportion, 58 percent, of the non-commercial travel in and out of Tyler. The average number of internal trips made by those individuals is 0.10 trips per vehicle.

Travel Purpose

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 fifteen 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	Other		
99	Refused/Do Not Know		

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

Category	Trip Purpose Codes (from Table 5)
Home	1
Work	2 and 3
School	4
Personal	5, 6, 10, and 11
Shop	7, 8, and 9
Other	12, 13, 14, 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. 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 (47 percent) began at home, while the most common non-resident trip origin purpose (39 percent) was work. For both groups combined, the most common origin purposes were work (33 percent), home (23 percent), and personal related (20 percent).

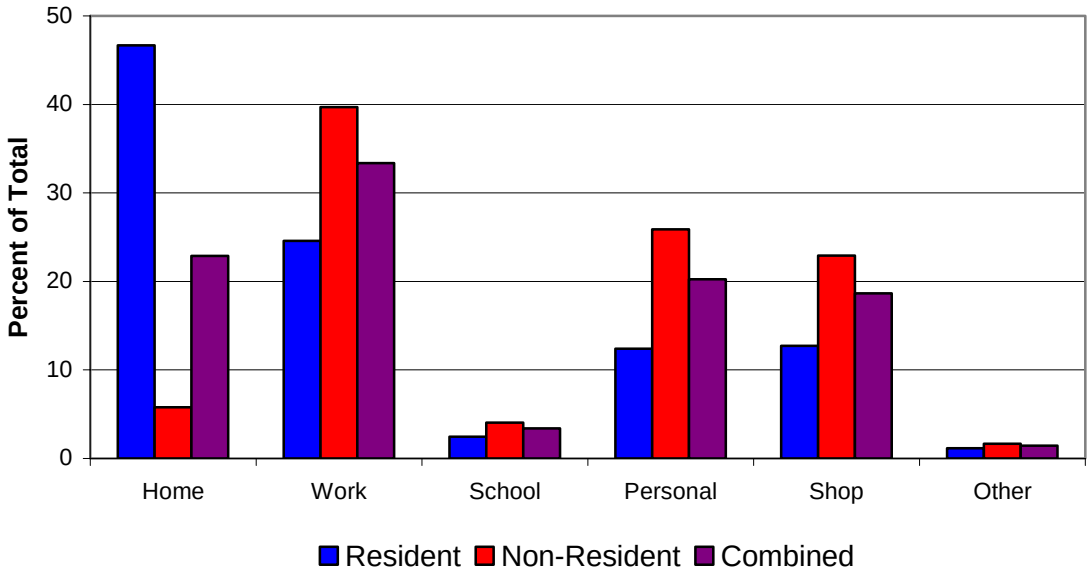

Figure 4. Trip Purpose at Origin for Non-Commercial Vehicles.

Figure 5 shows that the largest distribution of destination purpose for non-residents was home (61 percent). The trip purpose at the destination for residents was primarily comprised of work (40 percent) and personal (39 percent) trips. For both groups combined, home (38 percent), work (28 percent), and personal (25 percent) were the most common trip purposes.

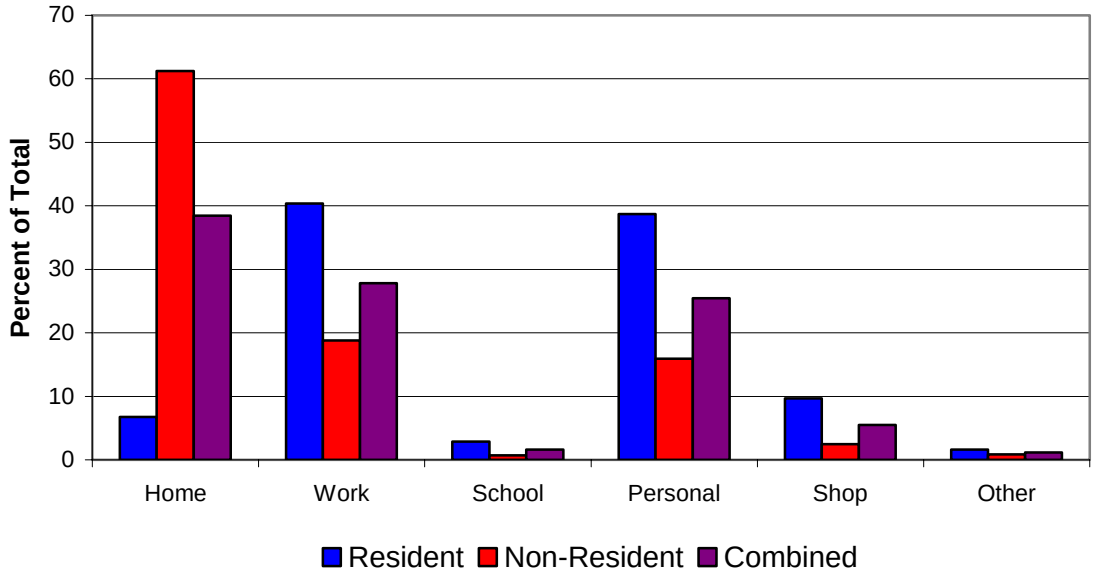

Figure 5. Trip Purpose to Destination for Non-Commercial Vehicles

Table 6 provides the data shown in Figures 4 and 5 in tabular form for comparative purposes. Nearly 40 percent of the non-resident trip purpose origins and 40 percent of the resident destinations were cited as work. Since the survey was conducted in the outbound direction, assumptions may be made that approximately 40 percent of the non-residents surveyed work within the Tyler study area and 40 percent of the residents work outside of the study area.

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

Trip Purpose	Origin			Destination		
	Resident	Non-Resident	Combined	Resident	Non-Resident	Combined
Home	46.68	5.79	22.89	6.75	61.21	38.43
Work	24.59	39.69	33.38	40.35	18.81	27.82
School	2.46	4.06	3.39	2.88	0.71	1.62
Personal	12.40	25.88	20.25	38.72	15.91	25.45
Shop	12.72	22.91	18.65	9.68	2.48	5.49
Other	1.15	1.66	1.44	1.62	0.87	1.18

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, over 47 percent of the trips were non-home based trips. For non-residents, home-based non-work trips accounted for nearly 40 percent of the trips. NHB trips were the most common trip purpose for residents and non-residents combined (39 percent). HBW, HBNW, and NHB trip percentages were fairly consistent among residents and non-residents, with the largest disparity being in NHB trips (47 percent versus 34 percent).

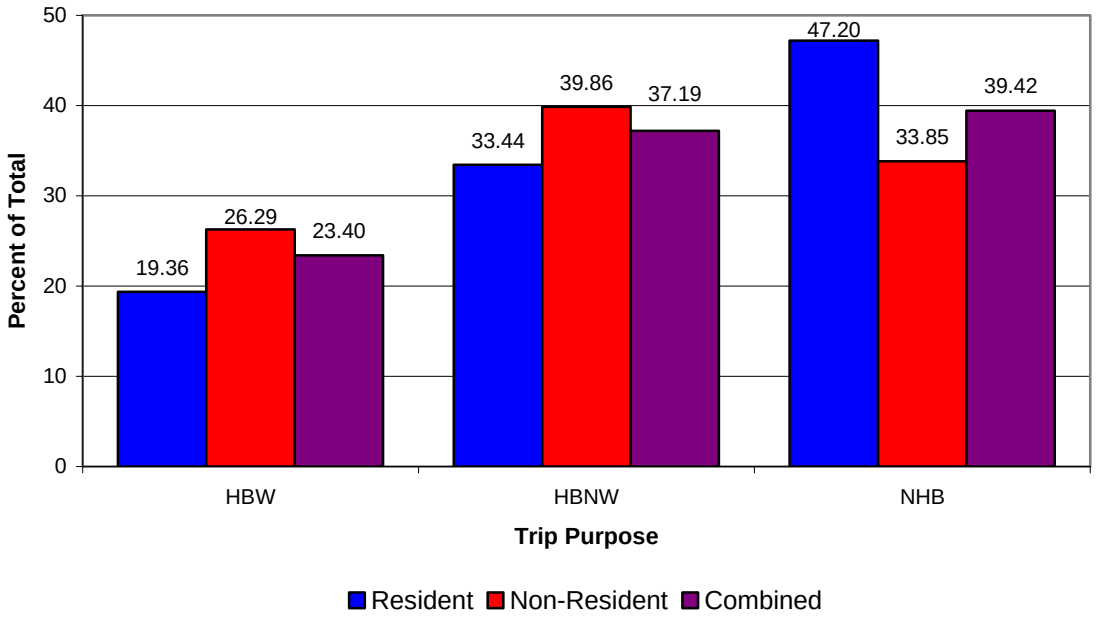

Figure 6. Distribution of Non-Commercial Vehicle Trips by Trip Purpose.

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 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, pick-up is the most common origin trip purpose (38%). Delivery (24%), support functions (18%), and base (18%) were the other most commonly cited trip purposes at the origin. The distribution for destination trip purpose shows that the majority of the surveyed vehicles, 58 percent, were destined for delivering cargo and another 24 percent were destined for picking up cargo. Only 8 percent of the trip destinations were for the base category and 7 percent of the destinations were for support functions.

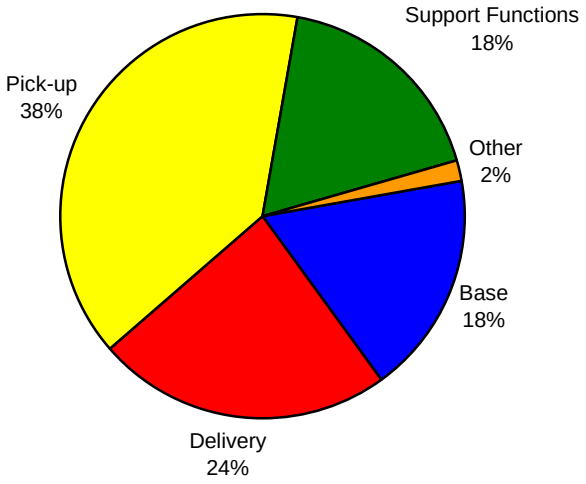

Figure 7. Trip Purpose at Origin for Commercial Vehicles.

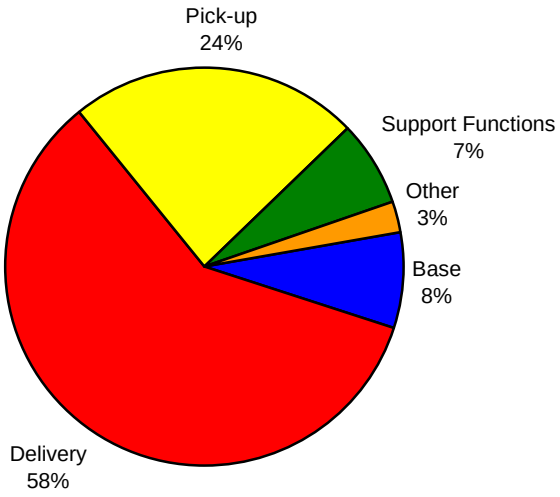

Figure 8. Trip Purpose to Destination for Commercial Vehicles.

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%) as the type of place at the origin. An additional 20 percent of the non-commercial vehicles cited retail/shopping/gas as the type of place. For commercial vehicles, the majority of the respondents (61%) 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 15 percent.

Table 7. Type of Place at Trip Origin.

Type of Place	Non-Commercial Vehicles		Commercial Vehicles	
	Number	Percent	Number	Percent
Office Building	745	16.31	70	12.61
Retail/Shopping/Gas	909	19.89	83	14.95
Industrial/Manufacturing	381	8.34	340	61.26
Medical	331	7.24	4	0.72
Educational	213	4.66	2	0.36
Government	92	2.01	1	0.18
Residential	1488	32.57	24	4.32
Airport	13	0.28	0	0.00
Eating Establishment	231	5.06	19	3.42
Hotel/Motel	40	0.88	7	1.26
Other	126	2.76	5	0.90
Total	4569	100.00	555	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 and commercial vehicles. There is an afternoon peak period for non-commercial vehicles between 5 p.m. and 6 p.m., while commercial vehicles remain fairly constant from the morning peak through 5 p.m. when the amount of commercial vehicles begins to decline. For outbound traffic (Figure 10), the morning peak period is less pronounced, but it also occurs between 7 a.m. and 8 a.m. Non-commercial vehicles have a significant afternoon peak between 5 p.m. and 6 p.m., while the percentage of commercial vehicles remains fairly constant from 9 a.m. through 5 p.m.

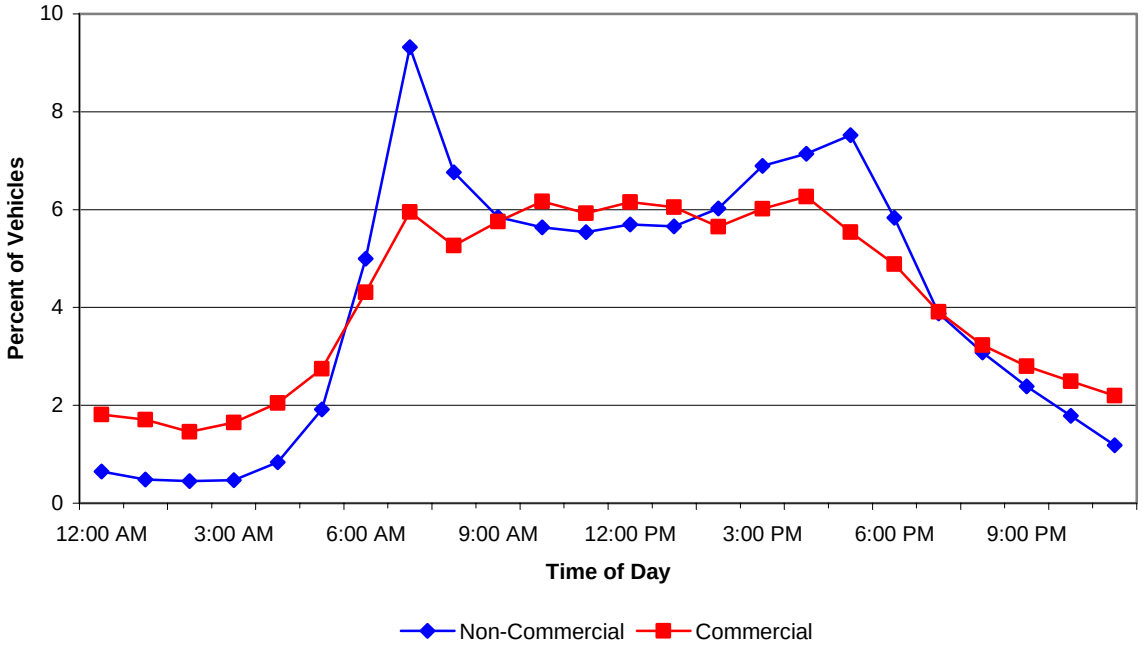

Figure 9. Distribution of Inbound Vehicles by Time-of-Day.

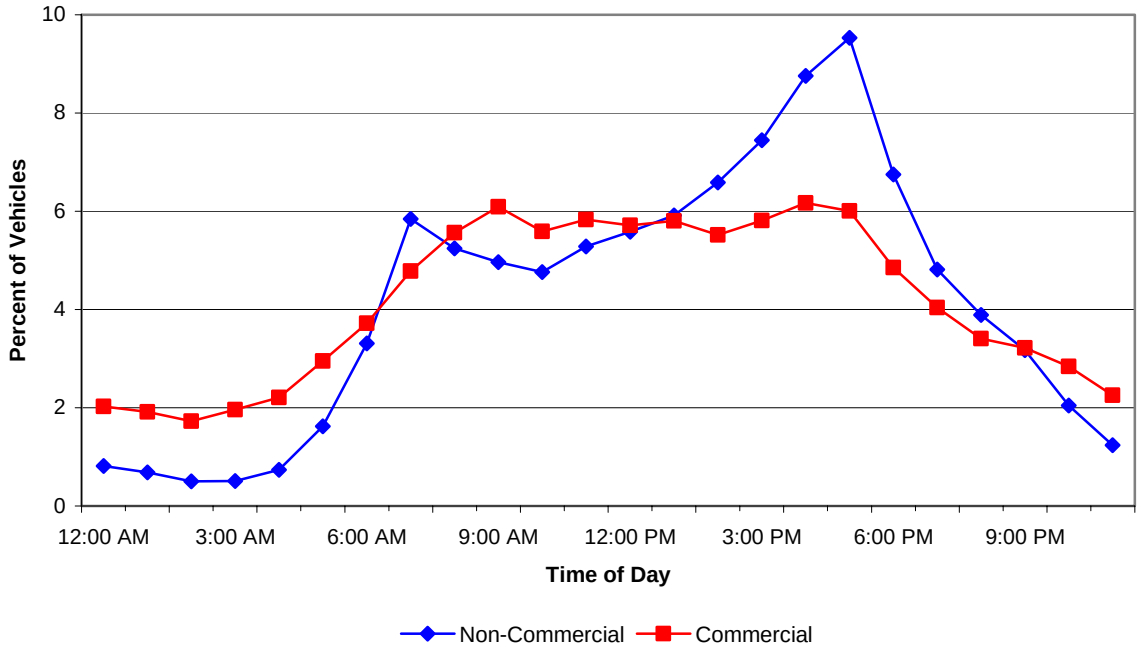

Figure 10. Distribution of Outbound Vehicles by Time-of-Day.

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 was fairly constant throughout the day, with a slight peak during the afternoon hours. The counts for these vehicles gradually increased throughout the day. Approximately 20 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 14 percent.

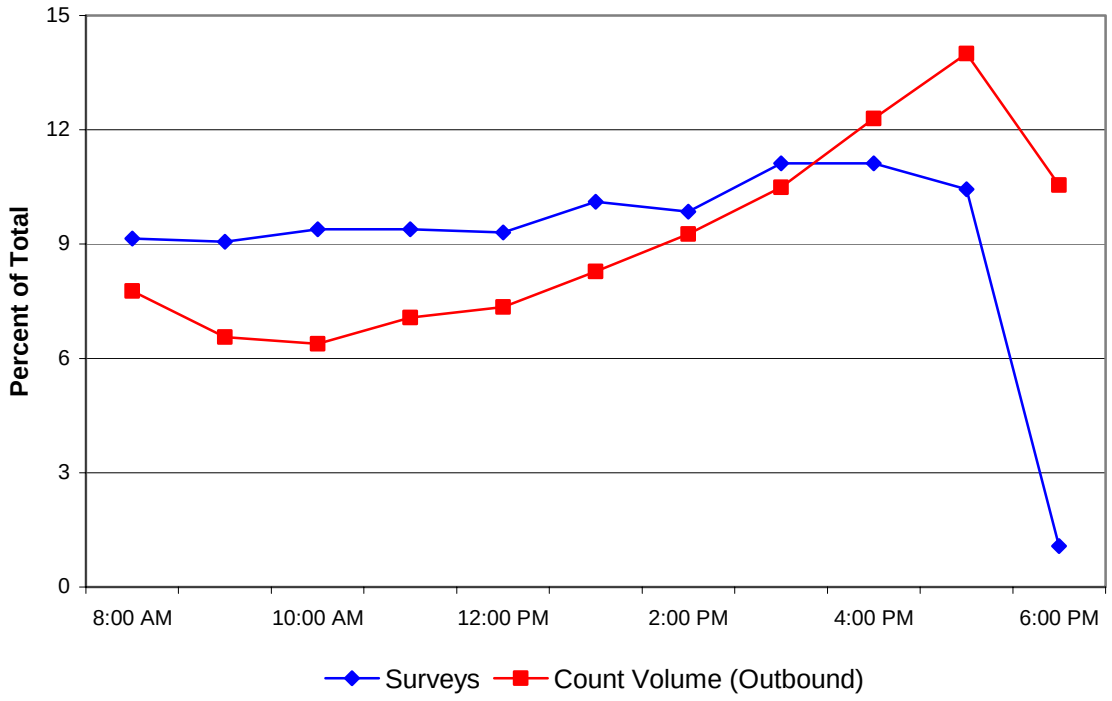

Figure 11. Distribution of Surveys and Non-Commercial Vehicles by Time-of-Day.

There was a noticeably different trend among commercial vehicles. While the percent of vehicles counted was consistent throughout the day, the percent of completed surveys peaked around 9 a.m. and then declined throughout the day. Overall, 13 percent of the commercial vehicles that were counted during the survey period were interviewed. For the 24-hour period, 9 percent of the commercial vehicles were surveyed.

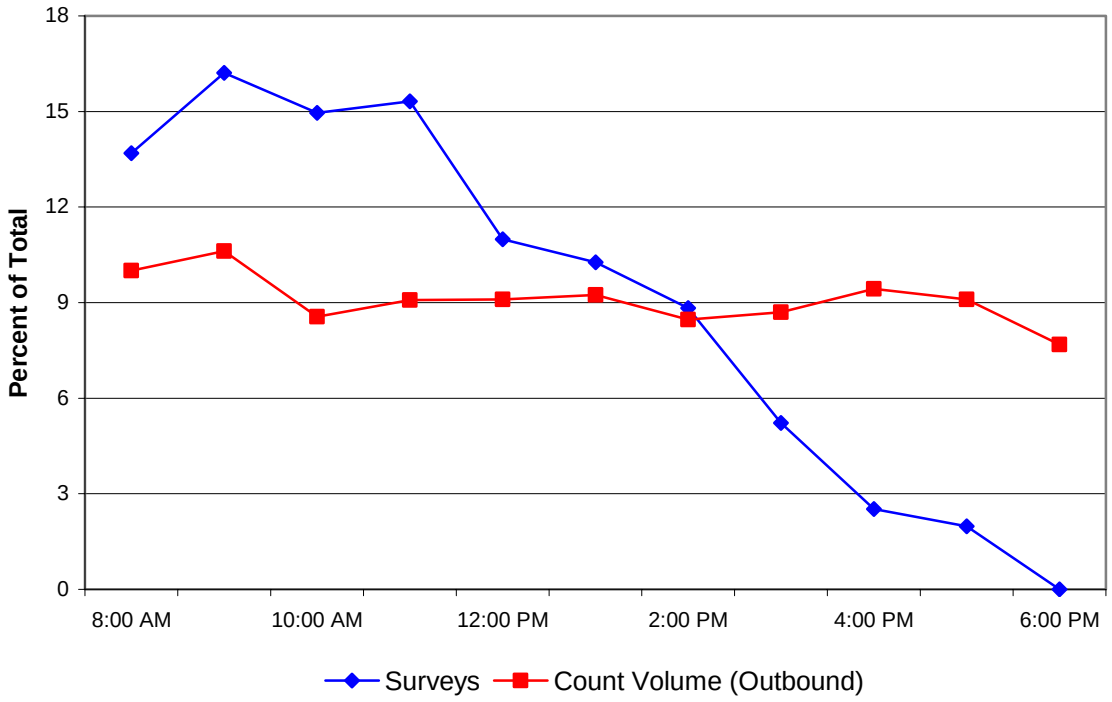

Figure 12. Distribution of Surveys and Commercial Vehicles by Time-of-Day.

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. A larger percentage of non-commercial than commercial vehicles were surveyed throughout the day, but the trend lines mirror one another closely. 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.

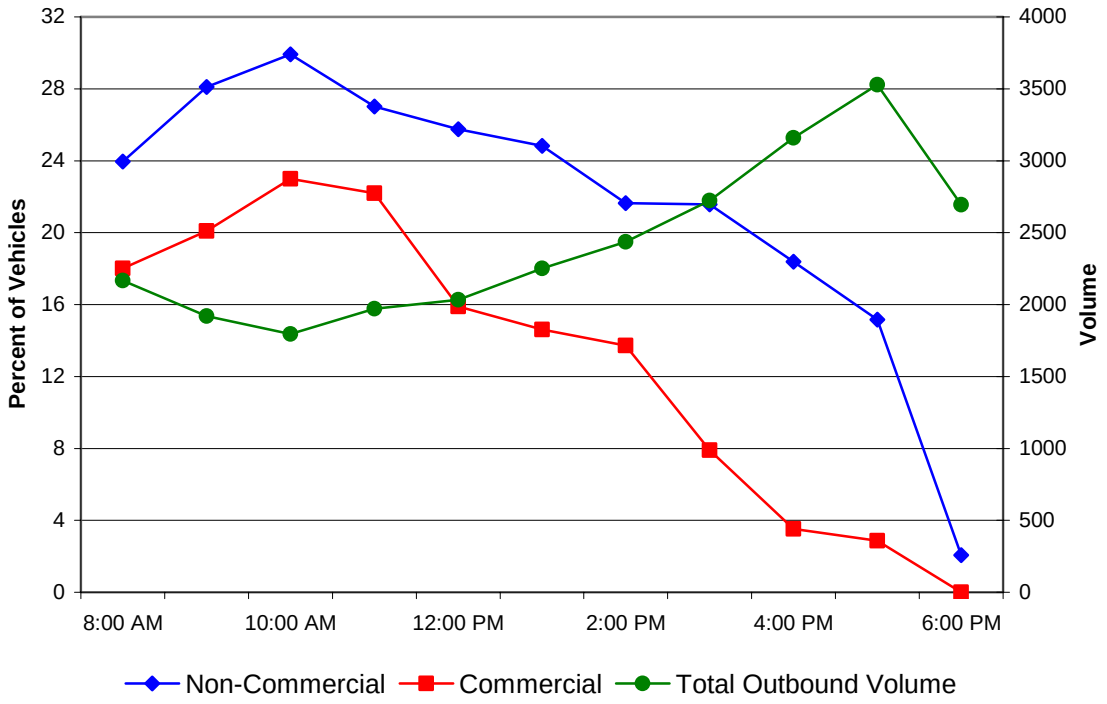

Figure 13. Distribution of Counted Vehicles That Were Surveyed.

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 surveyed vehicles was 6 years for both non-commercial and commercial vehicles. The median age (5 years) was also the same 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. This is due in part to the total number of observations in the non-commercial and commercial surveys (4569 and 555, respectively). For example, for vehicles

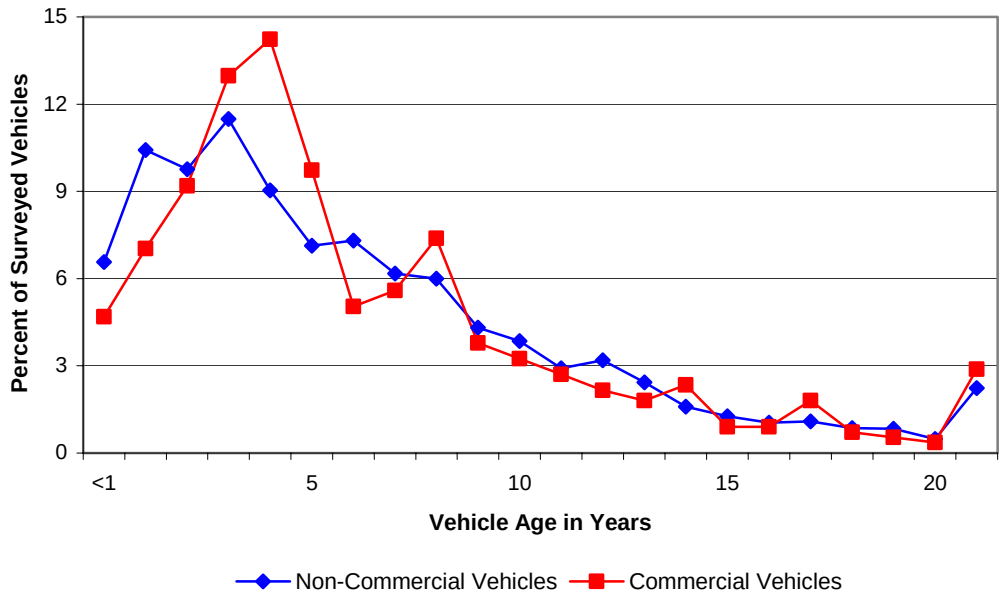

Figure 14. Distribution of Surveyed Vehicles by Age of Vehicle.

nineteen years old, there were 38 observations for non-commercial vehicles and only 3 for commercial vehicles. One of those three commercial vehicle surveyed had an odometer reading of less than 80,000 miles, and as a result, the average for the group is lower than a trend would indicate.

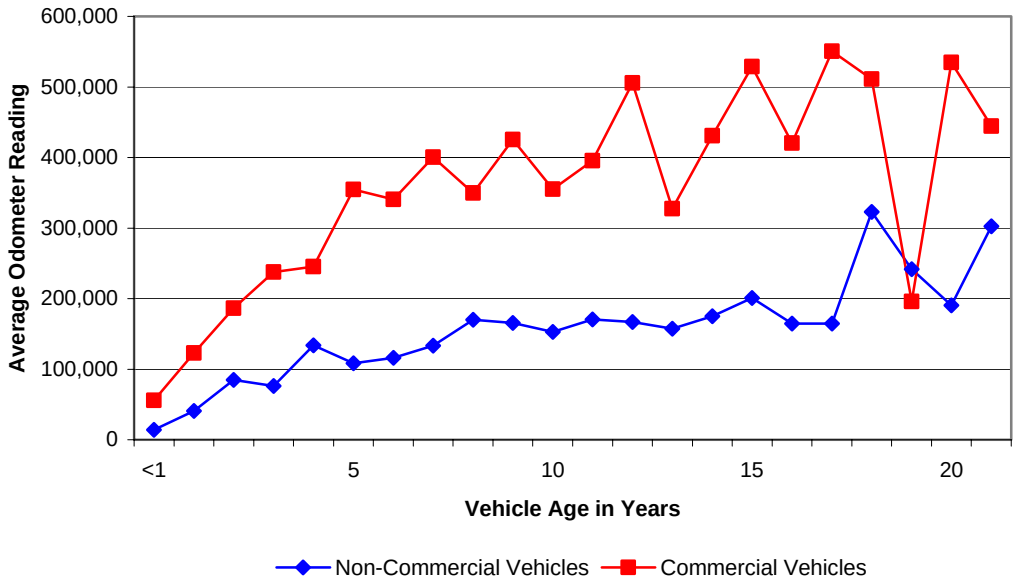

Figure 15. Average Odometer Readings for Vehicles by Age of Vehicle.

The average odometer reading for non-commercial vehicles was 117,423 and the average commercial vehicle odometer reading was 297,209. This information indicates that commercial vehicles accumulated mileage at twice 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 Readings.

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	300	6.57	6.57	14,116
1	476	10.42	16.98	40,807
2	446	9.76	26.75	84,692
3	525	11.49	38.24	76,334
4	413	9.04	47.28	133,962
5	326	7.14	54.41	108,403
6	334	7.31	61.72	115,907
7	282	6.17	67.89	133,420
8	274	6.00	73.89	170,093
9	197	4.31	78.20	165,458
10	176	3.85	82.05	152,686
11	133	2.91	84.96	170,619
12	146	3.20	88.16	166,917
13	111	2.43	90.59	157,426
14	73	1.60	92.19	175,264
15	58	1.27	93.46	200,685
16	48	1.05	94.51	164,805
17	50	1.09	95.60	164,501
18	39	0.85	96.45	322,992
19	38	0.83	97.29	241,604
20	22	0.48	97.77	190,660
>20	102	2.23	100.00	302,399
Total	4569	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	26	4.68	4.68	55,732
1	39	7.03	11.71	122,915
2	51	9.19	20.90	186,502
3	72	12.97	33.87	237,697
4	79	14.23	48.11	245,285
5	54	9.73	57.84	354,739
6	28	5.05	62.88	340,620
7	31	5.59	68.47	400,248
8	41	7.39	75.86	349,853
9	21	3.78	79.64	425,287
10	18	3.24	82.88	355,004
11	15	2.70	85.59	395,452
12	12	2.16	87.75	505,863
13	10	1.80	89.55	327,304
14	13	2.34	91.89	430,841
15	5	0.90	92.79	528,609
16	5	0.90	93.69	420,322
17	10	1.80	95.50	550,659
18	4	0.72	96.22	510,923
19	3	0.54	96.76	196,018
20	2	0.36	97.12	534,547
>20	16	2.88	100.00	444,436
Total	555	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 Tyler 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%) were classified as passenger vehicles. The majority of commercial vehicles (53%) were semi/tractor-trailer combinations. The overall average occupancy for non-commercial vehicles was 1.31 and 1.06 for commercial vehicles.

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

Non-Commercial Vehicles	Observered Vehicles	Average Occupancy	Commercial Vehicles	Observered Vehicles	Average Occupancy
Passenger Vehicle	4535	1.30	Single Unit 2-axle (6 wheels)	127	1.17
Bus	22	2.14	Single Unit 3-axle (10 wheels)	69	1.06
Taxi/Paid Limo	0	—	Single Unit 4-axle (14 wheels)	42	1.10
School Bus	0	—	Semi (tractor-trailer)	293	1.02
Commercial Vehicle (over 1 ton)	8	1.00	Other	24	1.00
Motorcycle	2	1.00			
Recreational Vehicle	2	1.50			
Other	0	—			
Total	4569	1.31	Total	555	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 thirty percent of the vehicles (33%) reported not carrying any cargo. Of those vehicles transporting cargo, 98 percent of those cargos were not from or headed to Mexico. Only eight vehicles indicated that their cargo was from or destined to Mexico. For those vehicles carrying a cargo, only 11 percent reported picking their cargo up at an intermodal facility and 10 percent indicated that they would be dropping their cargo off at an intermodal facility. An intermodal facility is a site 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
600	FM 14	50	24	48.00	2	24
601	FM 1804	6	2	33.33	0	4
602	US 69 N	51	12	23.53	0	39
608	SH 110	27	12	44.44	0	15
611	SH 64	53	19	35.85	0	34
614	SH 155	51	12	23.53	0	39
615	FM 346	14	1	7.14	0	13
617	FM 2493	24	4	16.67	2	18
618	US 69 S	50	12	24.00	0	38
619	SH 135	20	7	35.00	0	13
621	FM 13	28	6	21.43	2	20
701	SH 155	51	26	50.98	1	24
703	US 271 S	22	4	18.18	0	18
705	FM 1252	4	3	75.00	0	1
709	FM 2767	12	2	16.67	0	10
711	SH 31	43	24	55.81	0	19
713	FM 850	6	2	33.33	0	4
715	SH 64	43	9	20.93	1	33
Total		555	181	32.61	8	366

A detailed summary of cargo types reported for commercial vehicles is provided in Table 12. Empty vehicles comprised 33 percent of those surveyed. For vehicles with identified cargo types, 15 percent reported that their cargo as manufactured goods/equipment, 7 percent reported a cargo of wood products, and unclassified cargo and food, health, and beauty products each accounted for an additional 6 percent of the cargos.

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

Cargo Description			Number of Vehicles	Percent of Vehicles
1	—	Farm Products	27	4.86
2	—	Forest Products	1	0.18
3	—	Marine Products	0	0.00
4	—	Metals and Minerals	21	3.78
5	—	Food, Health, and Beauty Products	32	5.77
6	—	Tobacco Products	0	0.00
7	—	Textiles	9	1.62
8	—	Wood Products	41	7.39
9	—	Printer Matter	1	0.18
10	—	Chemical Products	14	2.52
11	—	Refined Petroleum or Coal Products	20	3.60
12	—	Rubber, Plastic, and Styrofoam Products	24	4.32
13	—	Clay, Concrete, Glass, or Stone	23	4.14
14	—	Manufactured Goods/Equipment	82	14.77
15	—	Wastes	10	1.80
16	—	Miscellaneous Shipments	9	1.62
17	—	Hazardous Materials	5	0.90
18	—	Transportation	20	3.60
19	—	Unclassified Cargo	33	5.95
20	—	Driver Refused to Answer	2	0.36
21	—	Unknown to Driver	0	0.00
22	—	Empty	181	32.61
Total			555	100.00

Figures 16 and 17 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, 44 percent of the transfers were warehouse-to-truck and 41 percent were truck-to-truck. At the destination, warehouse-to-truck and truck-to-truck transfers each accounted for 43 percent. There were no ship-to-truck transfers reported.

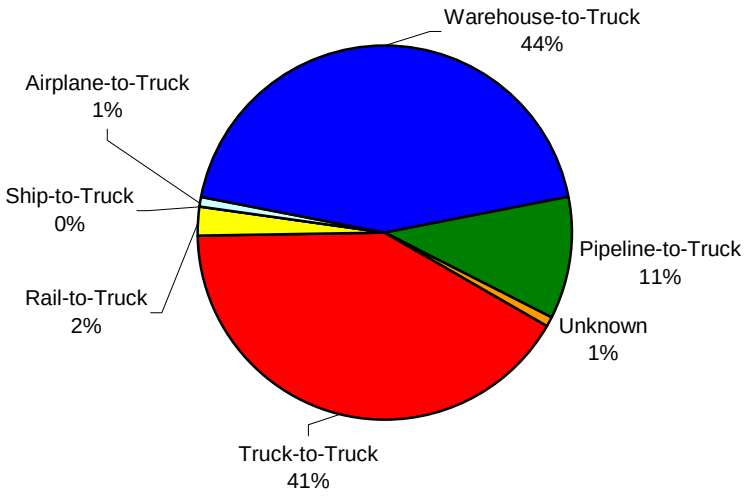

Figure 16. Cargo Transfer at Point of Pick-Up.

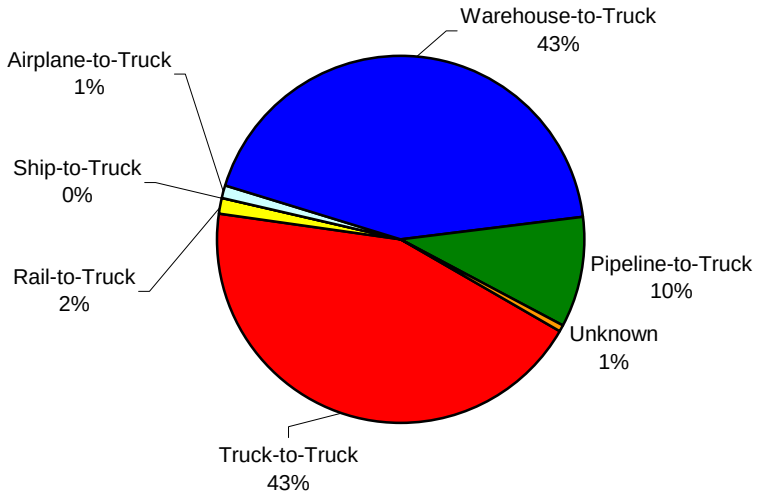

Figure 17. Cargo Transfer at Point of Drop-Off.

HIGH VOLUME LICENSE PLATE MATCH SURVEYS

Three locations in the Tyler 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 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 three 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 Tyler 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. Tyler High-Volume Locations.

Station Number	Facility	Location	License Plates Recorded		24-Hour Vehicle Count	
			Inbound	Outbound	Inbound	Outbound
609	IH 20	at Van Zandt Co. Line	7,134	6,796	8,673	8,461
613	SH 31	at Henderson Co. Line	6,303	5,984	8,747	8,283
707	IH 20	at Gregg Co. Line	6,845	6,861	10,480	10,195

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 A.M. peak, off-peak, and P.M. 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		
	AM Peak	Off-Peak	PM Peak
IH 20 West (609) to SH 31 (613)	41	34	38
IH 20 West (609) to IH 20 East (707)	62	53	60
IH 20 East (707) to IH 20 West (609)	58	54	58
IH 20 East (707) to SH 31 (613)	60	77	66
SH 31 (613) to IH 20 West (609)	40	46	49
SH 31 (613) to IH 20 East (707)	61	76	59

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. IH 20 East (station 707) had the largest percentage of through trips at 33 percent, followed by IH 20 West (station 609) with 28 percent. Only 2 percent of the inbound trips at station 613 (SH 31) were through.

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

License Recorded Route		Through Trips (Matched Licenses)	Local Trips (Unmatched Licenses)
From	To		
IH 20 West (609), 7,134 inbound licenses recorded	SH 31 (613)	4	5,171
	IH 20 East (707)	1,959	
SH 31 (613), 6,303 inbound licenses recorded	IH 20 West (609)	10	6,179
	IH 20 East (707)	114	
IH 20 East (707), 6,845 inbound licenses recorded	IH 20 West (609)	2,153	4,564
	SH 31 (613)	128	

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 SH 110 (station number 608) was applied to the total number of trips for FM 1805 (station number 607) 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.

Table 16. Expanded Survey Results by Station.

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles			Residents	Visitors
		Local	Through	Total	Local	Through	Total		
549	FM 2089	315	0	315	31	0	31	165	150
550	FM 838	760	6	766	86	0	86	397	363
551	SH 135	3,264	210	3,474	574	24	598	1,338	1,926
600	FM 14	3,020	110	3,130	583	86	669	1,083	1,937
601	FM 1804	654	14	668	65	24	89	204	450
602	US 69 N	7,864	516	8,380	1,348	506	1,854	2,607	5,257
603*	US 80 E	0	5,238	5,238	0	537	537	0	5,238
604*	US 80 W	0	5,730	5,730	0	602	602	0	5,730
606	FM 857	314	0	314	23	0	23	140	174
607	FM 1805	765	0	765	59	0	59	341	424
608	SH 110	2,649	52	2,701	246	38	284	1,181	1,468
609	IH 20	11,116	6,018	17,134	5,948	3,200	9,148	4,546	6,570
610	FM 1995	794	0	794	107	0	107	354	440
611	SH 64	4,677	120	4,797	700	78	778	1,703	2,974
612	FM 279	2,288	0	2,288	144	0	144	1,020	1,268
613	SH 31	14,824	2,206	17,030	2,572	240	2,812	6,063	8,761
614	SH 155	7,528	296	7,824	1,640	358	1,998	3,530	3,998
615	FM 346	2,487	34	2,521	211	0	211	1,722	765
616	FM 2137	766	0	766	142	0	142	228	538
617	FM 2493	1,791	46	1,837	369	48	417	853	938
618	US 69 S	9,396	426	9,822	1,658	336	1,994	3,753	5,643
619	SH 135	721	118	839	23	4	27	214	507
620	SH 110	1,410	4	1,414	495	8	503	749	661
621	FM 13	1,020	20	1,040	225	4	229	541	479
701	SH 155	3,687	348	4,035	724	332	1,056	1,132	2,555
703	US 271 S	4,037	124	4,161	1,235	310	1,545	1,535	2,502
705	FM 1252	721	8	729	78	0	78	277	444
707	IH 20	14,387	6,288	20,675	6,223	3,050	9,273	5,884	8,503
709	FM 2767	1,040	16	1,056	131	8	139	490	550
711	SH 31	2,698	1,652	4,350	1,182	76	1,258	1,194	1,504
713	FM 850	568	26	594	262	18	280	297	271
715	SH 64	3,468	126	3,594	583	208	791	1,423	2,045
Total		109,029	29,752	138,781	27,667	10,095	37,762	44,964	75,033

*****Sites not included in expansion and external-through analysis.

Figure 18 shows the estimates of external-local trip movements by direction and location group. The West group had the largest estimated number of trip movements, with over 56,000 total daily trips. The East group had the second highest estimated number of trip movements with over 41,000 daily trips.

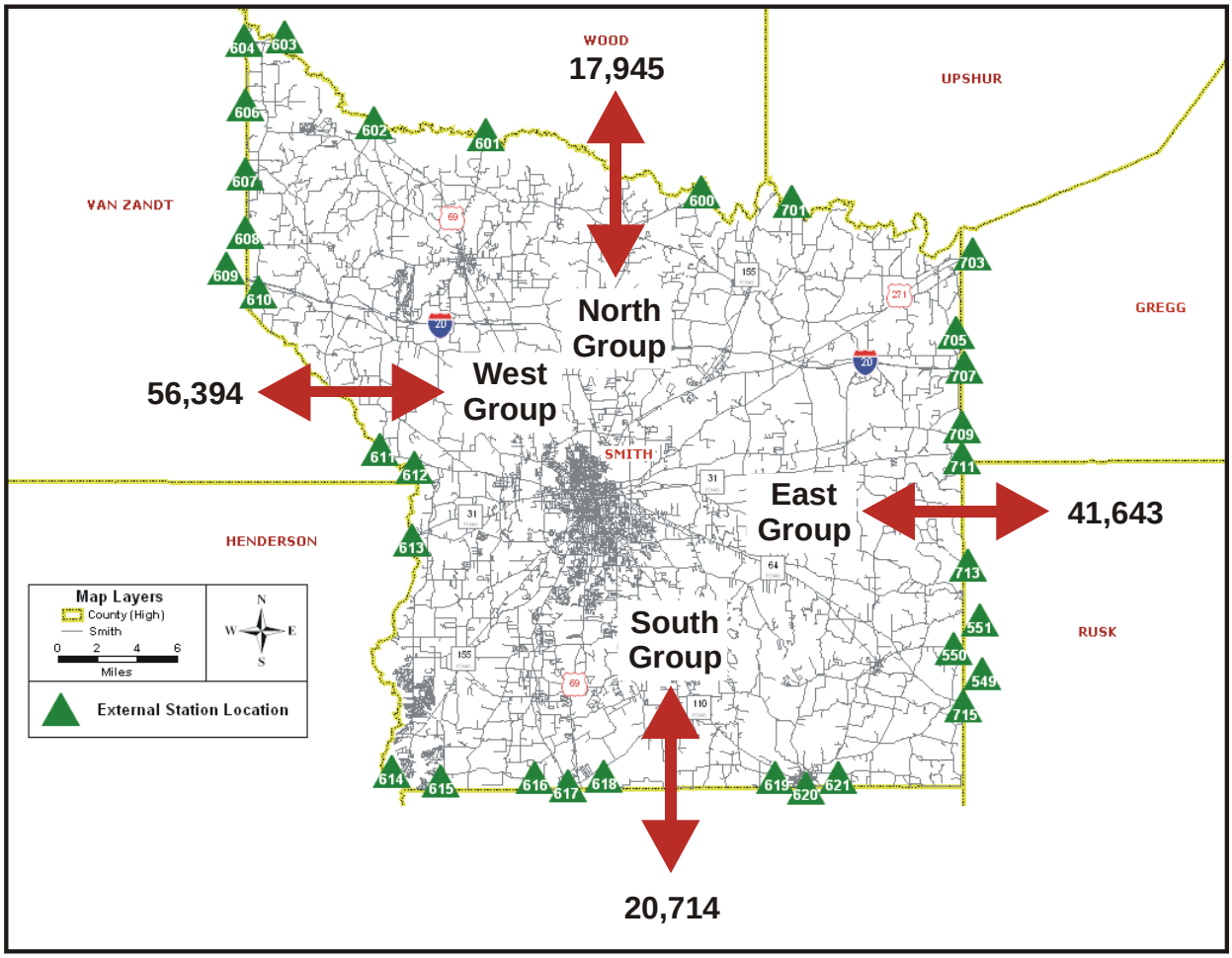

Figure 18. Estimates of External-Local Trip Movements by Location Group.

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 11,000 external-through trips are estimated to be made on a daily basis. This is logical due to IH 20 running East-West through the study area. North-West external-through trips were the second most common movement. External sites 603 and 604 (US 80) were not included in these totals since they did not influence internal travel.

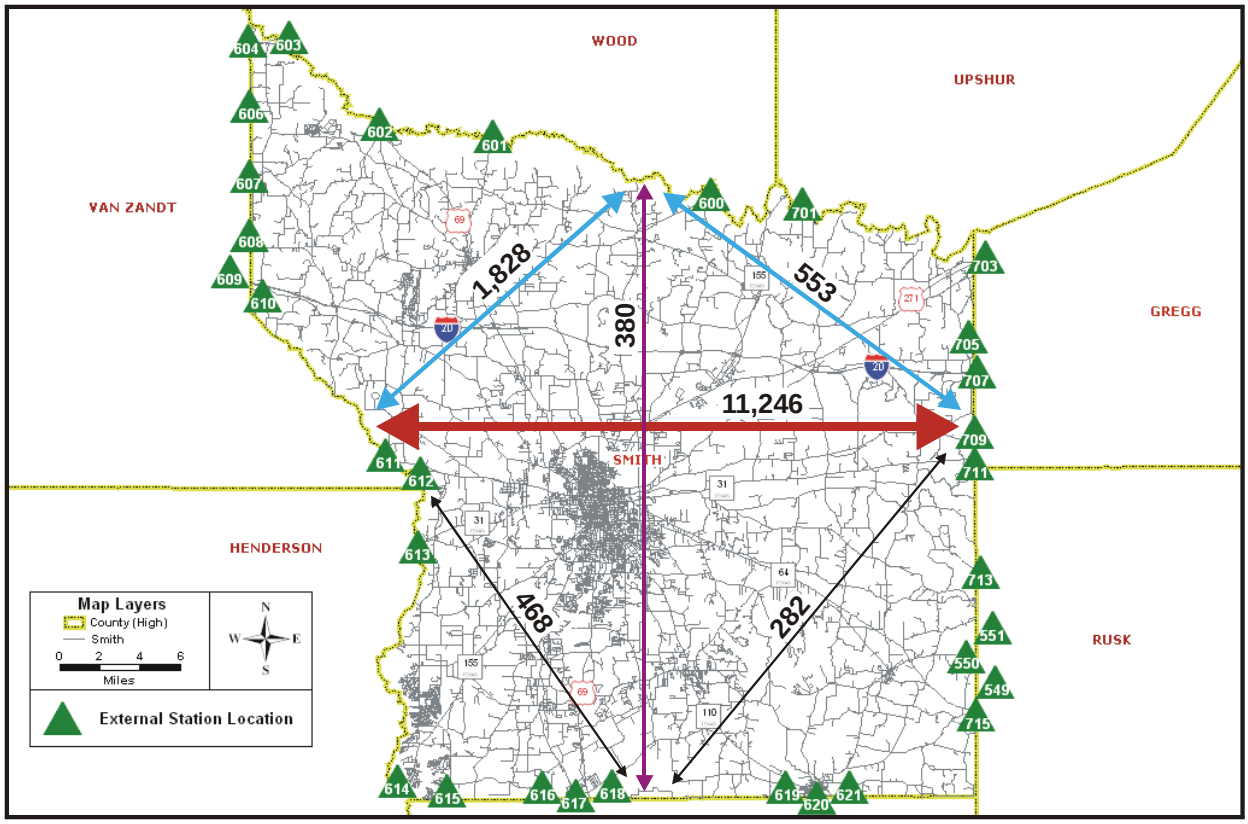

Figure 19. Estimates of External-Through Trip Movements by Location Group.

SURVEY SUMMARY

More than 176,000 vehicles enter and leave the Smith County daily. Over 21 percent are commercial vehicles. Nearly 23 percent of the approximate 176,000 vehicles make through trips. Over 56,000 vehicles, nearly one third of the non-commercial and commercial vehicles, enter or leave Tyler via IH 20. Based on the average vehicle occupancy observed in the survey, an estimated 181,800 persons are entering and leaving Smith County daily by non-commercial vehicle and nearly 40,000 persons are entering and leaving by commercial vehicle. The estimated number of non-residents (persons that do not live in Smith County) in non-commercial vehicles that enter the study area daily is nearly 75,000. Non-residents account for approximately 6,700 internal trips within the study area.

Approximately 34 percent of non-commercial trip origins were leaving home and 39 percent of non-commercial trip destinations were returning to home. NHB trips accounted for nearly 40

percent of the non-commercial trips. The percentage of trips that were HBNW and HBW were 37 percent and 23 percent, respectively.

Commercial vehicle drivers reported varied trip purposes at the origin and destination ends of their trip. Approximately 38 percent of the trip origin purposes were reported to be for picking up. Delivery of cargo accounted for an additional 24 percent of trip origins. Delivering cargo was the stated purpose for 58 percent of the destination trips, while picking up cargo accounted for 24 percent of the destinations. Leaving base operations accounted for 18 percent of the commercial vehicle trip origins and only 8 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 2000 and for commercial vehicles it was 1999. The average vehicle age for both commercial and non-commercial vehicles was 6.3 years and the median model year was 1998. The average odometer reading for commercial vehicles was approximately two and a half times higher than that for non-commercial vehicles. Average vehicle occupancy for non-commercial vehicles was 1.31, or nearly 25 percent greater than the 1.06 reported for commercial vehicles.

Commercial vehicles represent 21 percent of the vehicles traveling into and out of Smith County area daily. A third of the commercial vehicles are carrying no cargo. Of those carrying cargo, 98 percent are carrying cargo not of Mexico origin/destination.

APPENDIX

TYLER/LONGVIEW EXTERNAL STATION
NON-COMMERCIAL VEHICLE SURVEY FORM - A
(Outbound Direction from Tyler/Longview Study Areas)

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) Unknown/Refused

QUESTIONS:	Vehicle 1	Vehicle 2	Vehicle 3
1. What year, make, and model is this vehicle?	_____ Year _____ Make _____ Model	_____ Year _____ Make _____ Model	_____ Year _____ Make _____ Model
Gas (leaded, unleaded), diesel, propane or other fuel?	Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____	Leaded ☐ Unleaded ☐ Diesel ☐ Propane ☐ Other ☐ _____
2. What is the mileage on your odometer?			
3. What county do you live in?	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other / Refused (go to 4)	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other / Refused (go to 4)	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other / Refused (go to 4)
3a. What city is your home located in? (go to 5)			
4. What city and state do 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 as your travel?	☐ Yes ☐ No (go to 4d)	☐ Yes ☐ No (go to 4d)	☐ Yes ☐ No (go to 4d)
4b. If yes, 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 ☐ No (go to 5)	☐ Yes ☐ No (go to 5)	☐ Yes ☐ No (go to 5)

4e. Where outside of Texas did you travel from? (city, county, state)	_____ _____ (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. What county was that location in?	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other	☐ Smith County ☐ Harrison County ☐ Gregg County ☐ RuskCounty ☐ Upshur County ☐ Other
5e *If not in one of those counties*, what road or highway did you use to enter the Tyler, Longview, Marshall region?			

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

6. Where is your next destination? (place/address or nearest intersection/city/state)			
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 ☐ No ☐ Refused (if no, go to 7d)	☐ Yes ☐ No ☐ Refused (if no, go to 7d)	☐ Yes ☐ No ☐ Refused (if 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. Where did you go next? (city/county/landmark)			
14. How many more places did you stop today?			

TYLER/LONGVIEW EXTERNAL STATION
COMMERCIAL VEHICLE SURVEY FORM B
(Outbound Direction from Tyler/Longview Study Areas)

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, if empty go to 12)			
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 or Unknown	☐ Yes ☐ No ☐ Refused or Unknown	☐ Yes ☐ No ☐ Refused or 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 or Unknown	☐ Yes ☐ No ☐ Refused or Unknown	☐ Yes ☐ No ☐ Refused or 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-axel (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. What county was that location in?	☐ Smith County (go to 16) ☐ Harrison Cty. (go to 16) ☐ Gregg County (go to 16) ☐ Rusk County (go to 16) ☐ Upshur County (go to 16) ☐ Other	☐ Smith Cty. (go to 16) ☐ Harrison Cty. (go to 16) ☐ Gregg Cty. (go to 16) ☐ Rusk County (go to 16) ☐ Upshur Cty. (go to 16) ☐ Other	☐ Smith County (go to 16) ☐ Harrison Cty. (go to 16) ☐ Gregg County (go to 16) ☐ Rusk County (go to 16) ☐ Upshur Cty. (go to 16) ☐ Other
15e *(If other)* What road or highway did you use to enter Tyler, Longview, Marshall region?			
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 ☐ No (If no go to 17d) ☐ Refused	☐ Yes ☐ No (If no go to 17d) ☐ Refused	☐ Yes ☐ No (If 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 (non-government) 2) Retail/Shopping 3) Industrial/Manufacturing
4) Medical 5) Educational (12th grade or lower) 6) Educational (college, trade, etc) 7) Office Building (Government)
8) Residential 9) Airport 10) Eating Establishment 11) 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. 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	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