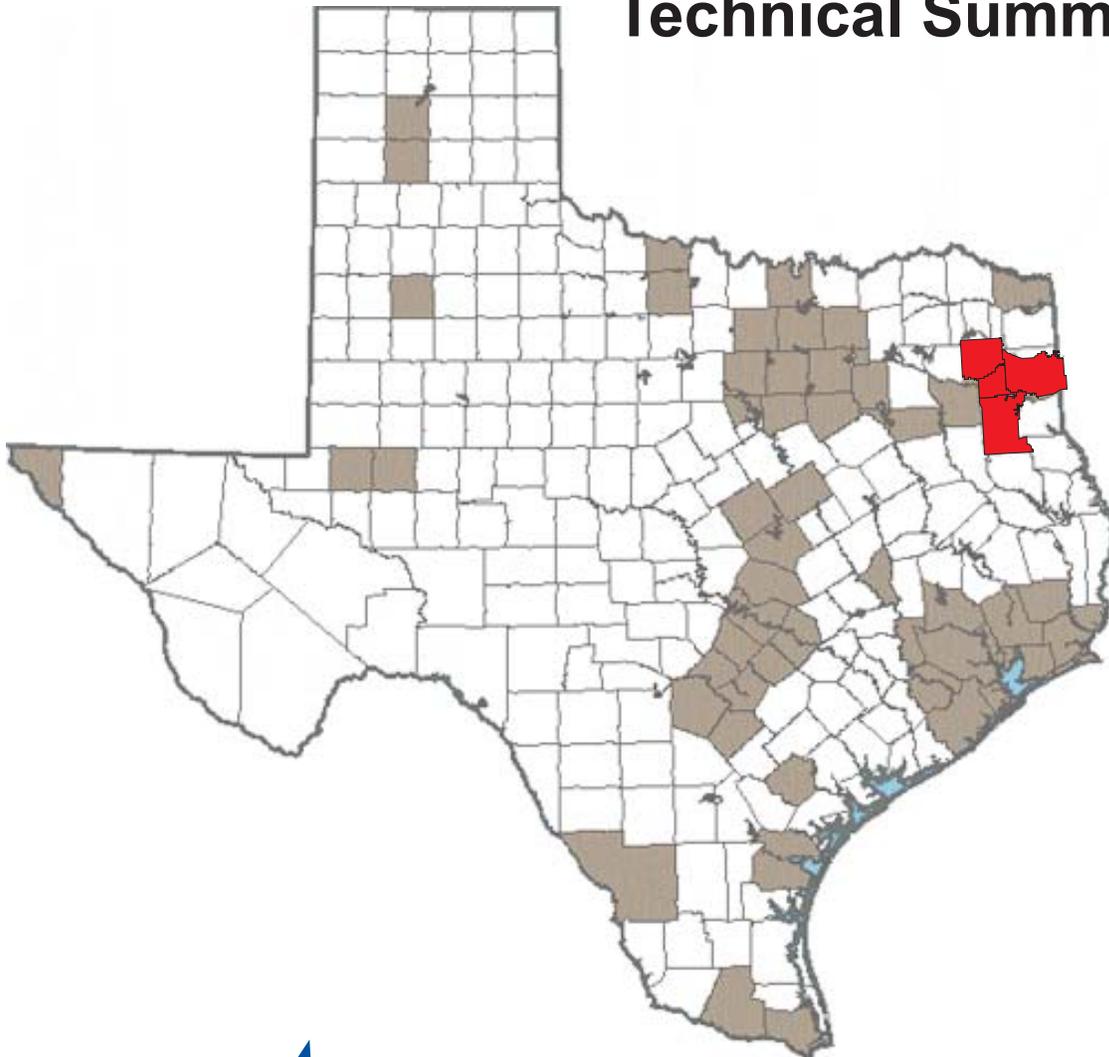


# 2004 Longview External Survey Technical Summary



Prepared by the  
Texas Transportation Institute  
April 2005



# **2004 Longview External Survey**

## **TECHNICAL SUMMARY**

**Texas Department of Transportation Travel Survey Program**

**Prepared by**

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**of the  
Texas Transportation Institute**

**April 2005**



## **Acknowledgements**

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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 Longview Metropolitan Planning Organization (MPO) study area. This survey measured and identified travel patterns into, within, and out of the Longview study area, which for purposes of this report is comprised of Gregg, Harrison, Rusk, and Upshur counties. This report presents a Technical Summary of the 2004 Longview External Station Survey and documents the data collected and the analysis results for the study area.

## **EXTERNAL STATION SURVEY**

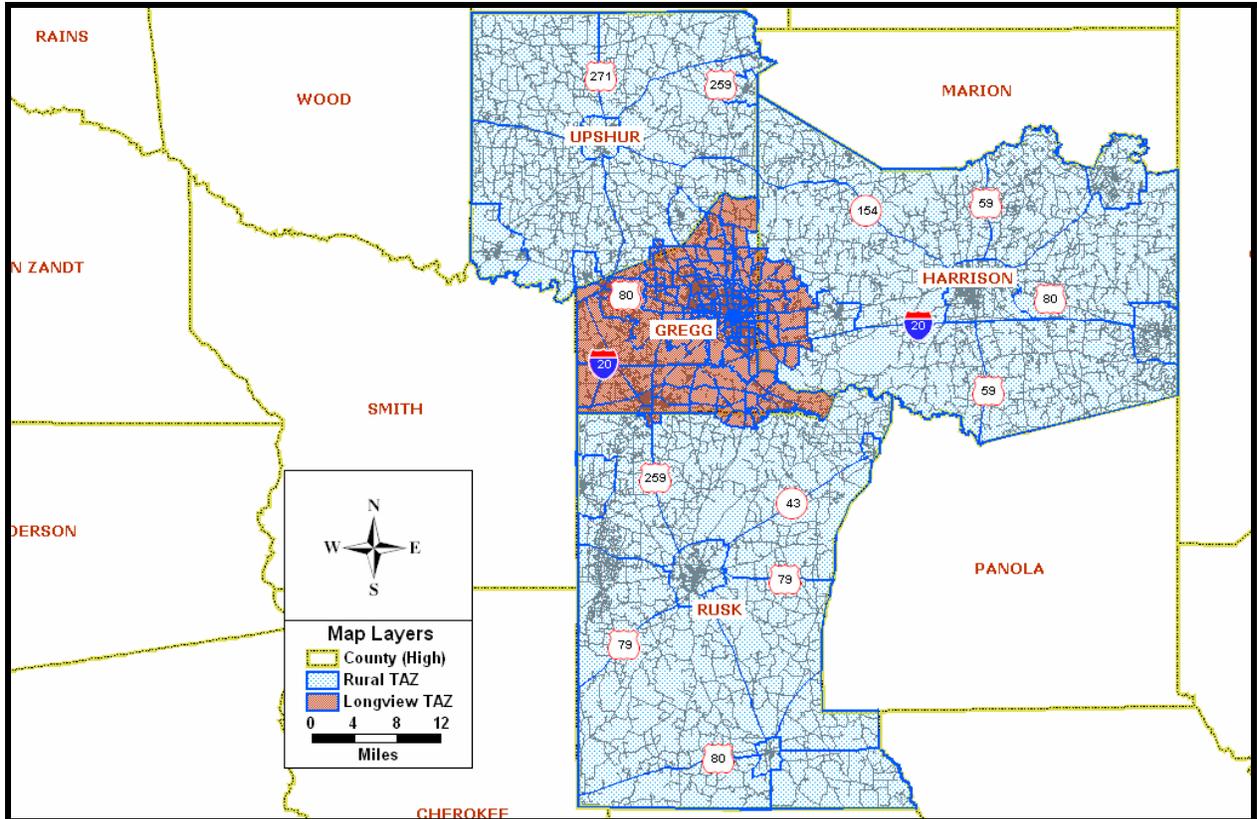
An external station survey collects data through personal interviews to measure and identify travel patterns of vehicles and/or pedestrians entering and exiting a particular study area. Surveys are conducted during daylight hours for one day at each designated location. Additionally, 24-hour vehicle 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.

## **LONGVIEW STUDY AREA**

The Longview Metropolitan Planning Organization (MPO) study area is contained primarily within Gregg County, Texas. However, smaller portions of the study area fall in Harrison, Rusk, and Upshur counties. According to the 2000 Census<sup>1</sup>, approximately 73,000 people live in the city of Longview. The U.S. Census Bureau also reports that over 250,000 people reside in the nearly 2,700 square mile, four-county area. Figure 1 provides a graphical illustration of the Longview MPO study area.

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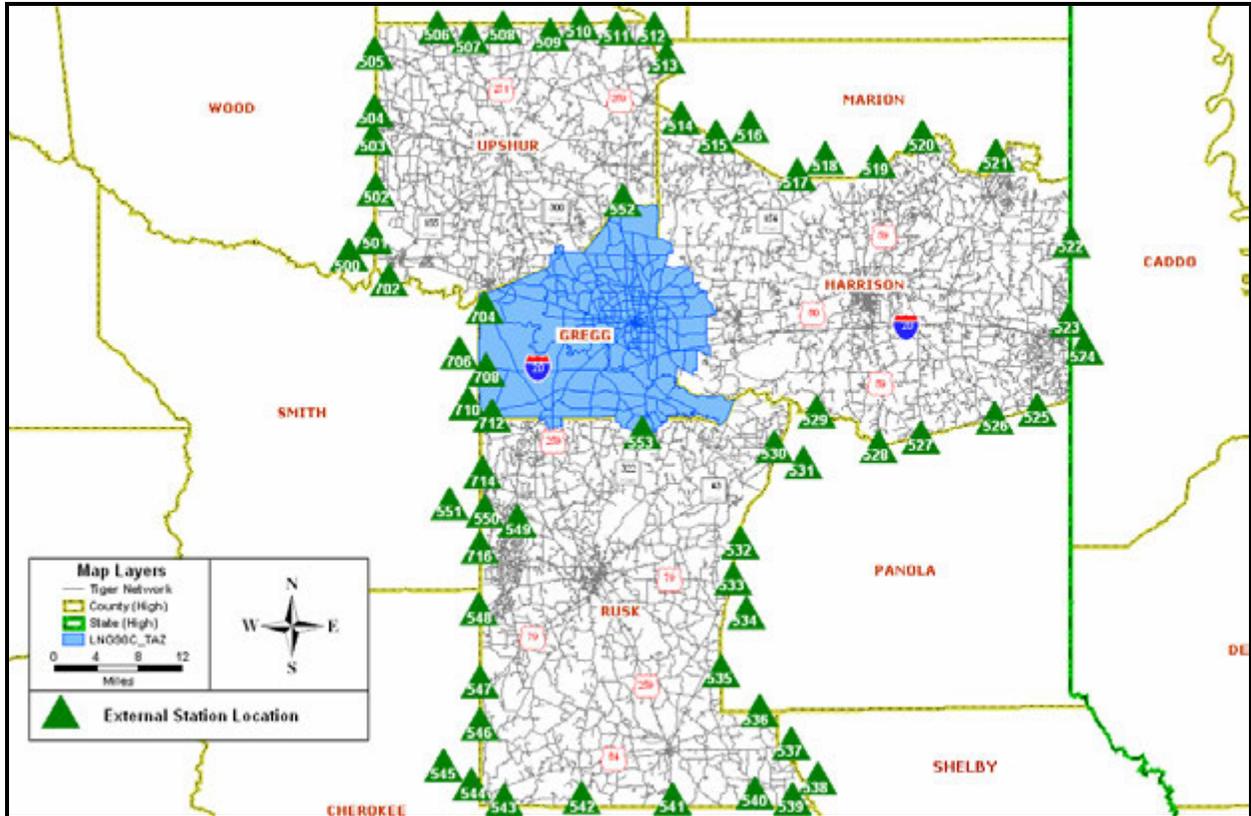
<sup>1</sup> <http://quickfacts.census.gov/qfd/states/48183.html>  
*Longview External Survey Technical Summary*



**Figure 1. Longview Study Area.**

## EXTERNAL STATIONS

There were 60 locations on the border of Longview 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 60 locations, thirty were selected for travel surveys. Seven of the thirty surveyed locations bordered the Tyler study area (Smith County), and as a result, these locations were surveyed in both directions. Figure 2 shows the location of the external stations in Longview 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. Longview External Station Locations.**

Two of the sixty locations were identified as high volume sites. These locations are IH 20 at the Louisiana border (external #524) and IH 20 at the Smith County line (external #708). 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. Longview External Stations.**

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
506	FM 556	at Camp County line	No	217	221	North
507	FM 2454	at Camp County line	No	309	280	
508	US 271	at Camp County line	Yes	2772	3457	
509	FM 993	at Camp County line	No	176	177	
510	FM 1975	at Camp County line	No	50	49	
511	FM 557	at Camp County line	No	278	301	
512	US 259	at Camp County line	Yes	3852	3737	
513	SH 155	at Marion County line	Yes	1942	2071	
514	SH 450	at Marion County line	No	420	435	
515	FM 726	at Marion County line	No	304	295	
516	FM 1968	at Marion County line	Yes	554	555	
517	FM 2208	at Marion County line	Yes	463	452	
518	FM 3001	at Marion County line	No	328	320	
519	US 59	at Marion County line	Yes	4977	3956	
520	FM 134	at Marion County line	No	349	327	
521	SH 43	at Marion County line	Yes	500	463	
522	FM 1999	at Louisiana border	No	372	383	East
523	US 80	at Louisiana border	Yes	959	890	
524	IH 20	at Louisiana border	No	12309	13869	
530	SH 43	at Panola County line	Yes	1085	1424	
531	SH 149	at Panola County line	Yes	2535	2771	
532	FM 1251	at Panola County line	No	263	256	
533	US 79	at Panola County line	Yes	1563	1590	
534	FM 348	at Panola County line	No	177	147	
535	SH 315	at Panola County line	Yes	520	709	
536	FM 1971	at Panola County line	No	222	221	
537	US 84	at Shelby County line	Yes	1009	843	
538	US 59	at Shelby County line	No	3623	3984	
525	FM 9	at Panola County line	Yes	698	747	South
526	FM 31	at Panola County line	Yes	605	639	
527	FM 1186	at Panola County line	No	415	441	
528	US 59	at Panola County line	Yes	3511	3253	
529	SH 43	at Panola County line	Yes	1313	1326	
539	US 59	at Nacogdoches County line	No	4216	3844	
540	FM 95	at Nacogdoches County line	Yes	508	362	
541	US 259	at Nacogdoches County line	Yes	3516	3753	
542	FM 225	at Nacogdoches County line	No	279	284	
543	SH 204	at Cherokee County line	No	707	705	

**Table 1. Longview External Stations (cont.)**

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group	
				Inbound	Outbound		
544	US 84	at Cherokee County line	Yes	707	710	West	
545	SH 204	at Cherokee County line	No	705	707		
546	FM 2420	at Cherokee County line	No	140	153		
547	US 79	at Cherokee County line	Yes	1931	2025		
548	FM 13	at Cherokee County line	No	648	607		
549	FM 2089	at Smith County line	No	167	179		
550	FM 838	at Smith County line	No	428	424		
551	SH 135	at Smith County line	No	2044	2028		
702	SH 155	at Smith County line	Yes	2582	2575		
704	US 271	at Smith County line	Yes	2868	2865		
706	FM 1252	at Smith County line	Yes	424	397		
708	IH 20	at Smith County line	No	14865	15150		
710	FM 2767	at Smith County line	Yes	629	601		
712	SH 31	at Smith County line	Yes	3079	2889		
714	FM 850	at Smith County line	Yes	491	437		
716	SH 64	at Smith County line	Yes	2372	2040		
500	US 80	at Wood County line	No	3181	2890		
501	FM 2911	at Wood County line	Yes	345	286		
502	FM 1795	at Wood County line	No	252	263		
503	FM 49	at Wood County line	No	260	236		
504	SH 154	at Wood County line	Yes	542	535		
505	FM 2088	at Wood County line	No	372	408		
Total				96,928	97,942		

## 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.

Two external stations in the Longview 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 Longview, the majority of vehicles surveyed were non-commercial. Nearly 86 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 29 percent of the non-commercial vehicles and 14 percent of the 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*
501	FM 2911	at Wood County line	125	165	2	13
504	SH 154	at Wood County line	146	325	19	66
508	US 271	at Camp County line	345	1,496	46	927
512	US 259	at Camp County line	400	2,241	90	515
513	SH 155	at Marion County line	317	1,013	45	453
516	FM 1968	at Marion County line	257	375	19	38
517	FM 2208	at Marion County line	182	268	14	45
519	US 59	at Marion County line	333	2,248	65	503
521	SH 43	at Marion County line	180	320	39	N/A
523	US 80	at Louisiana border	105	346	52	267
525	FM 9	at Panola County line	217	382	20	94
526	FM 31	at Panola County line	182	311	30	121
528	US 59	at Panola County line	283	1,310	64	871
529	SH 43	at Panola County line	287	679	44	230
530	SH 43	at Panola County line	311	690	51	248
531	SH 149	at Panola County line	347	1,537	54	418
533	US 79	at Panola County line	242	837	44	286
535	SH 315	at Panola County line	114	480	58	71
537	US 84	at Shelby County line	180	503	34	80
540	FM 95	at Nacogdoches County line	196	209	12	45
541	US 259	at Nacogdoches County line	286	1,573	80	840
544	US 84	at Cherokee County line	296	360	60	83
547	US 79	at Cherokee County line	302	984	63	306
702	SH 155	at Smith County line	310	1,289	56	375
704	US 271	at Smith County line	220	1,512	28	558
706	FM 1252	at Smith County line	131	233	4	30
710	FM 2767	at Smith County line	224	359	9	67
712	SH 31	at Smith County line	285	1,393	34	596
714	FM 850	at Smith County line	133	162	5	113
716	SH 64	at Smith County line	301	1,050	48	289
Total			7,237	24,650	1,189	8,548

\* 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 vehicle 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 83 percent of non-commercial vehicle trips and nearly 59 percent of commercial vehicle trips were local trips.

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 Longview study area. A non-resident is a respondent that reported they lived outside of the study area. Table 4 presents the survey data by residents and non-residents as well as the number of 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 Longview 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 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
501	FM 2911	123	2	125	2	0	2
504	SH 154	129	17	146	14	5	19
508	US 271	263	82	345	27	19	46
512	US 259	368	32	400	55	35	90
513	SH 155	289	28	317	28	17	45
516	FM 1968	248	9	257	14	5	19
517	FM 2208	175	7	182	14	0	14
519	US 59	257	76	333	34	31	65
521	SH 43	153	27	180	31	8	39
523	US 80	99	6	105	32	20	52
525	FM 9	208	9	217	17	3	20
526	FM 31	178	4	182	22	8	30
528	US 59	250	33	283	34	30	64
529	SH 43	219	68	287	16	28	44
530	SH 43	247	64	311	32	19	51
531	SH 149	324	23	347	42	12	54
533	US 79	164	78	242	28	16	44
535	SH 315	35	79	114	9	49	58
537	US 84	128	52	180	18	16	34
540	FM 95	157	39	196	8	4	12
541	US 259	238	48	286	50	30	80
544	US 84	125	171	296	7	53	60
547	US 79	234	68	302	44	19	63
702	SH 155	224	86	310	19	37	56
704	US 271	194	26	220	21	7	28
706	FM 1252	131	0	131	4	0	4
710	FM 2767	221	3	224	8	1	9
712	SH 31	270	15	285	32	2	34
714	FM 850	131	2	133	4	1	5
716	SH 64	236	65	301	30	18	48
Total		6018	1219	7237	696	493	1189

**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 2911	125	72	57.60	53	42.40	9
504	SH 154	146	65	44.52	81	55.48	0
508	US 271	345	96	27.83	249	72.17	15
512	US 259	400	156	39.00	244	61.00	11
513	SH 155	317	137	43.22	180	56.78	5
516	FM 1968	257	107	41.63	150	58.37	0
517	FM 2208	182	97	53.30	85	46.70	3
519	US 59	333	103	30.93	230	69.07	8
521	SH 43	180	35	19.44	145	80.56	4
523	US 80	105	72	68.57	33	31.43	0
525	FM 9	217	97	44.70	120	55.30	5
526	FM 31	182	67	36.81	115	63.19	10
528	US 59	283	113	39.93	170	60.07	22
529	SH 43	287	159	55.40	128	44.60	7
530	SH 43	311	154	49.52	157	50.48	9
531	SH 149	347	144	41.50	203	58.50	2
533	US 79	242	70	28.93	172	71.07	1
535	SH 315	114	23	20.18	91	79.82	0
537	US 84	180	56	31.11	124	68.89	0
540	FM 95	196	39	19.90	157	80.10	0
541	US 259	286	157	54.90	129	45.10	1
544	US 84	296	54	18.24	242	81.76	14
547	US 79	302	113	37.42	189	62.58	16
702	SH 155	310	124	40.00	186	60.00	3
704	US 271	220	125	56.82	95	43.18	2
706	FM 1252	131	78	59.54	53	40.46	2
710	FM 2767	224	119	53.13	105	46.88	0
712	SH 31	285	149	52.28	136	47.72	1
714	FM 850	133	71	53.38	62	46.62	4
716	SH 64	301	152	50.50	149	49.50	0
Total		7237	3004	41.51	4233	58.49	154

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 the Longview study area. The average number of internal trips made by those individuals is 0.04 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.

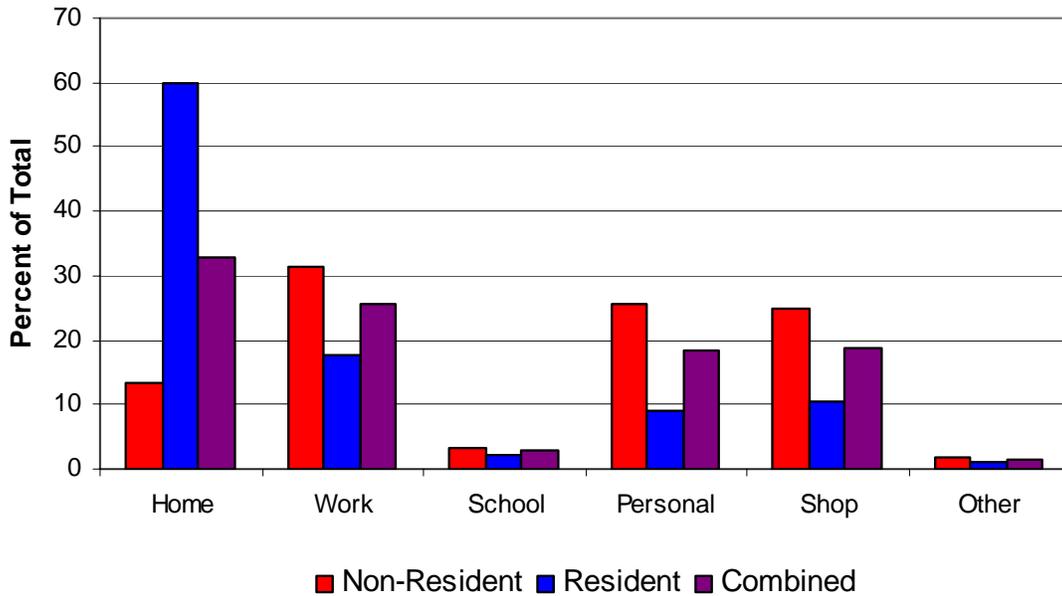
**Table 5. Trip Purpose Categories.**

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:

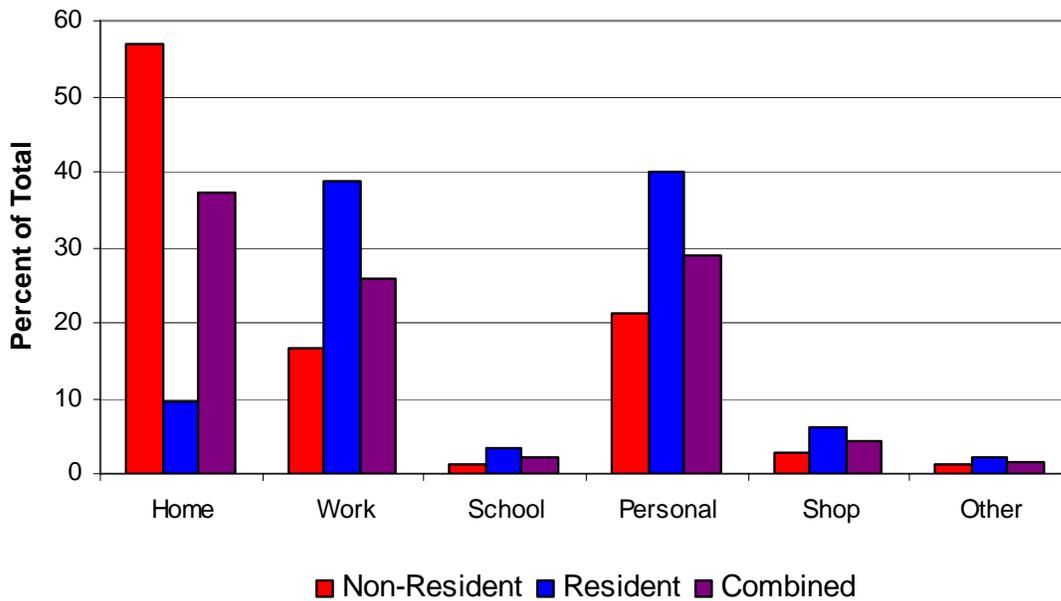
<u>Category</u>	<u>Trip Purpose Codes (from Table 5)</u>
Home	1
Work	2 and 3
School	4
Personal	5, 6, 10, and 11
Shop	7, 8, and 9
Other	12, 13, 14, and 99

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 of non-commercial vehicles 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 (31 percent) began at work, while the most common non-resident trip origin purpose (60 percent) was at home. For both groups combined, the most common origin purposes were home (32 percent), work (26 percent), and personal related (19 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 (57 percent). The trip purpose at the destination for residents was primarily comprised of personal related (40 percent) and work (39 percent). For both groups combined, home (37 percent), personal related (29 percent), and work (26 percent) were the most common trip purposes.



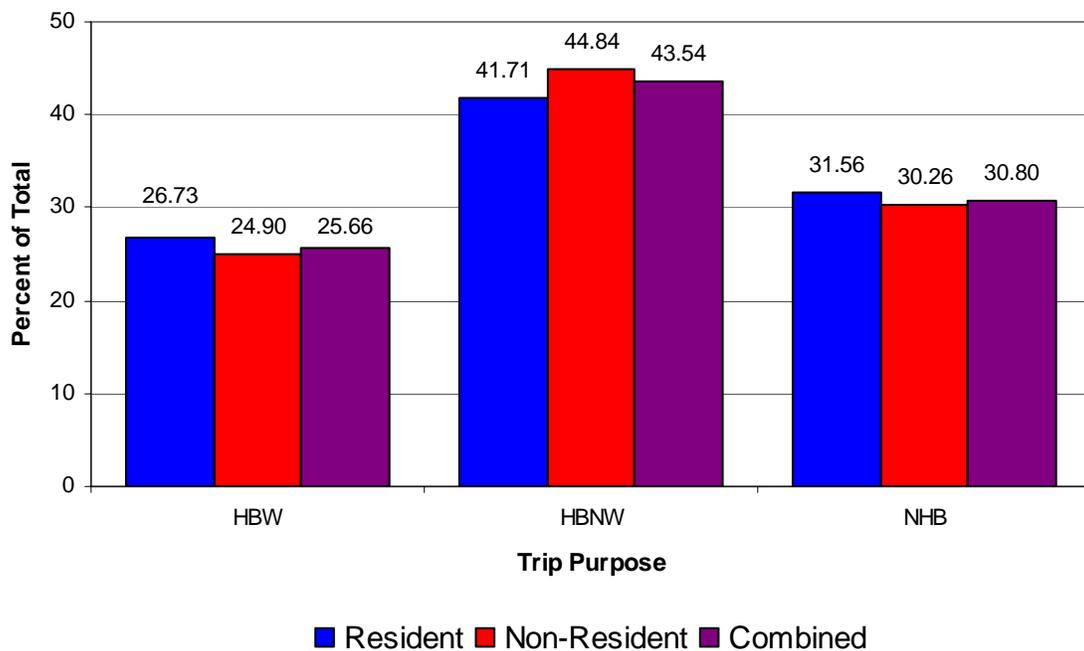
**Figure 5. Trip Purpose to Destination for Non-Commercial Vehicles**

Table 6 provides the data shown in Figures 4 and 5 in tabular form for comparative purposes. Approximately 31 percent of the non-resident trip purpose origins and 39 percent of the resident destinations were cited as work. Since this survey was conducted in the outbound direction, assumptions may be made that nearly one-third of the non-residents surveyed work within the Longview study area and approximately one-third 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	59.89	13.47	32.73	9.49	57.08	37.32
Work	17.58	31.28	25.59	38.68	16.51	25.72
School	2.13	3.33	2.83	3.46	1.23	2.16
Personal	8.85	25.44	18.56	40.01	21.17	28.99
Shop	10.35	24.83	18.82	6.23	2.69	4.16
Other	1.20	1.65	1.46	2.13	1.32	1.66

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 is provided in Figure 6. For residents, nearly 42 percent of the trips were home-based non-work trips. For non-residents, home-based non-work trips accounted for almost 45 percent of the trips. HBNW trips were the most common trip purpose for residents and non-residents combined (44 percent). HBW, HBNW, and NHB trip percentages were very consistent among residents and non-residents, with the largest disparity being in HBNW trips (45 percent versus 42 percent).

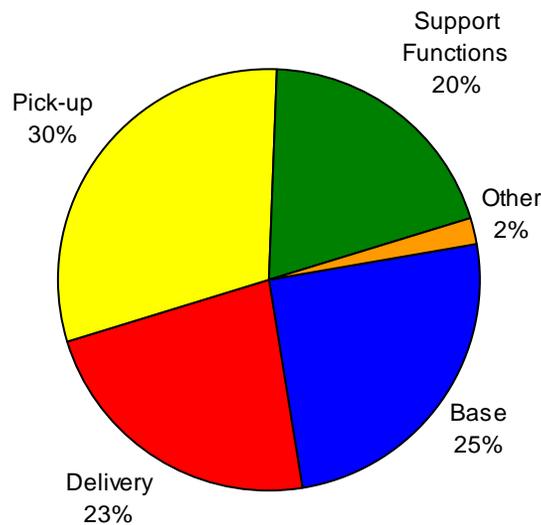


**Figure 6. Distribution of Non-Commercial Vehicle Trips by Trip Purpose.**

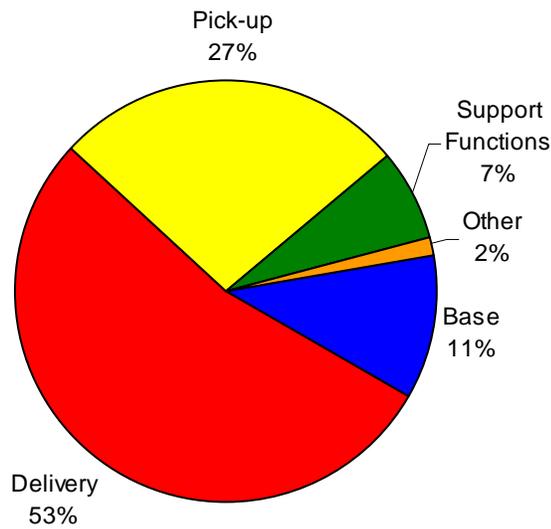
For commercial vehicles, the trip purposes shown in Table 5 were combined into the following five categories:

<u>Category</u>	<u>Trip Purpose Codes</u>
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 (30%). Base (25%), delivery (23%), and support functions (20%) 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, 53 percent, were destined for delivering cargo and another 27 percent were destined for picking up cargo. Only 11 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 (44%) as the type of place at the origin. An additional 19 percent of the non-commercial vehicles cited retail/shopping/gas as the type of place. For commercial vehicles, the majority of the respondents (66%) 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 16 percent.

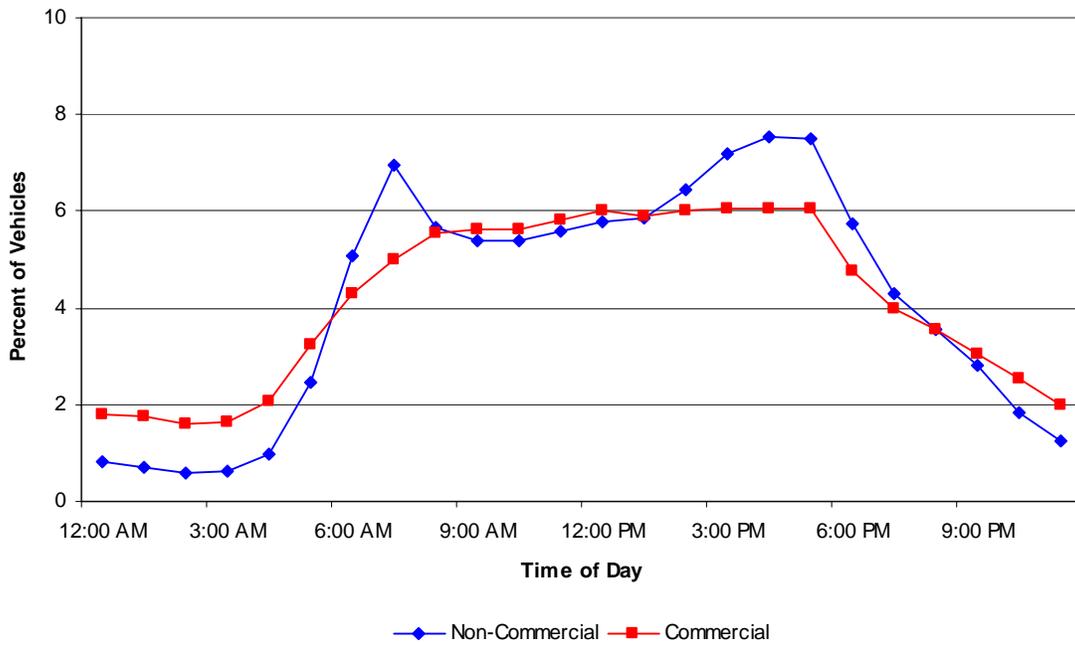
**Table 7. Type of Place at Trip Origin.**

Type of Place	Non-Commercial Vehicles		Commercial Vehicles	
	Number	Percent	Number	Percent
Office Building	788	10.89	74	6.22
Retail/Shopping/Gas	1385	19.14	194	16.32
Industrial/Manufacturing	653	9.02	784	65.94
Medical	326	4.50	4	0.34
Educational	296	4.09	2	0.17
Government	122	1.69	2	0.17
Residential	3204	44.27	65	5.47
Airport	12	0.17	0	0.00
Eating Establishment	218	3.01	33	2.78
Hotel/Motel	95	1.31	18	1.51
Other	138	1.91	13	1.09
Total	7237	100.00	1189	100.00

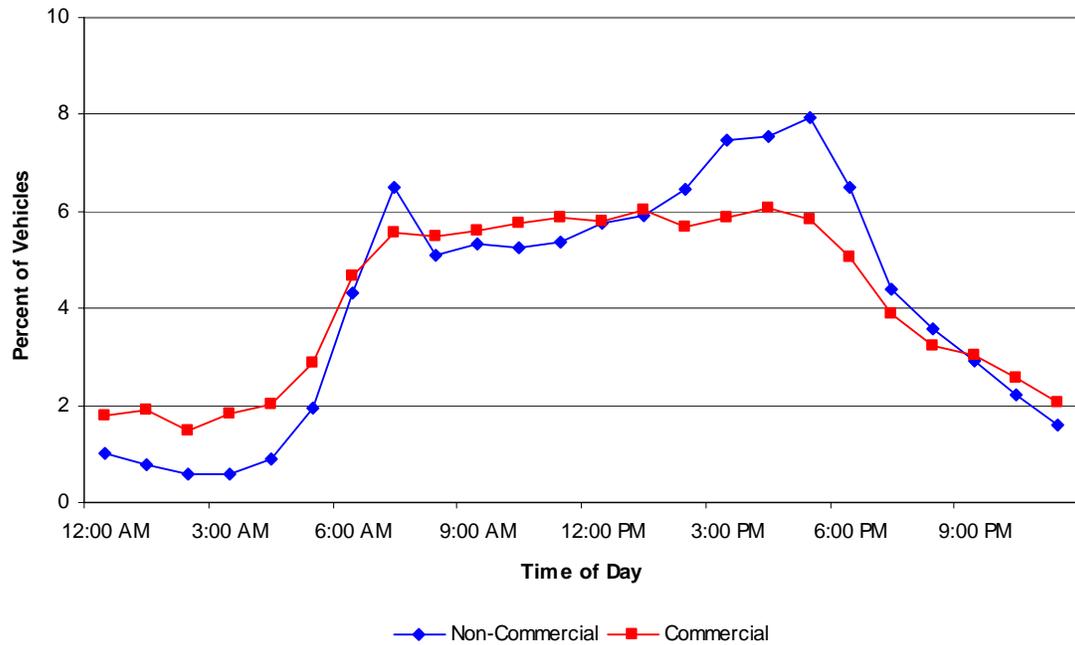
### Time-of-Day

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 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.



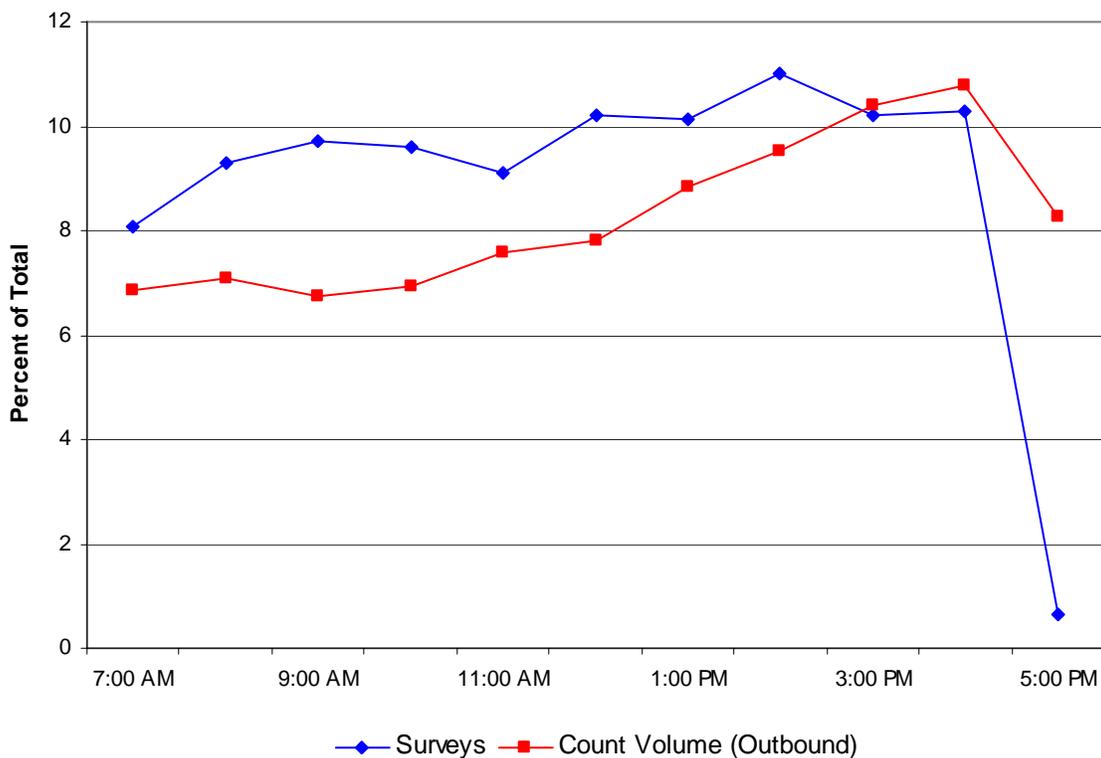
**Figure 9. Distribution of Inbound Vehicles by Time-of-Day.**



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

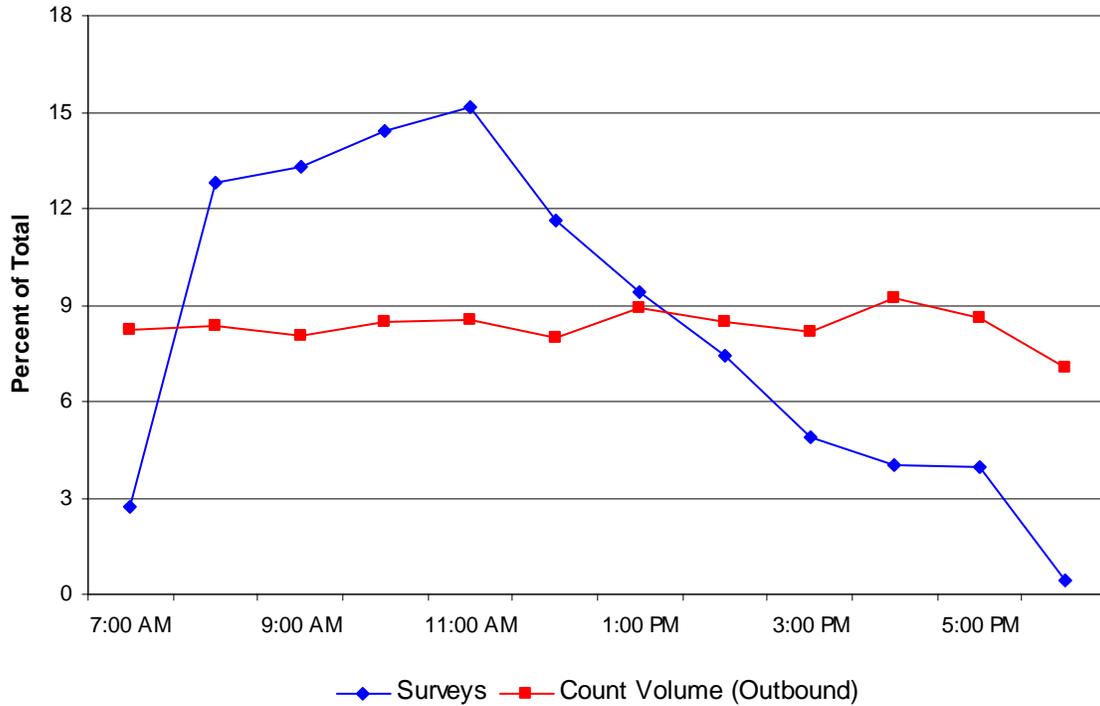
An additional analysis that compared the number of surveys and vehicle counts by time of day was conducted. In this analysis, the percent of vehicles surveyed and the percent of outbound vehicles counted were grouped in hourly increments during the time period in which the survey was conducted. The results 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 27 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 20 percent.



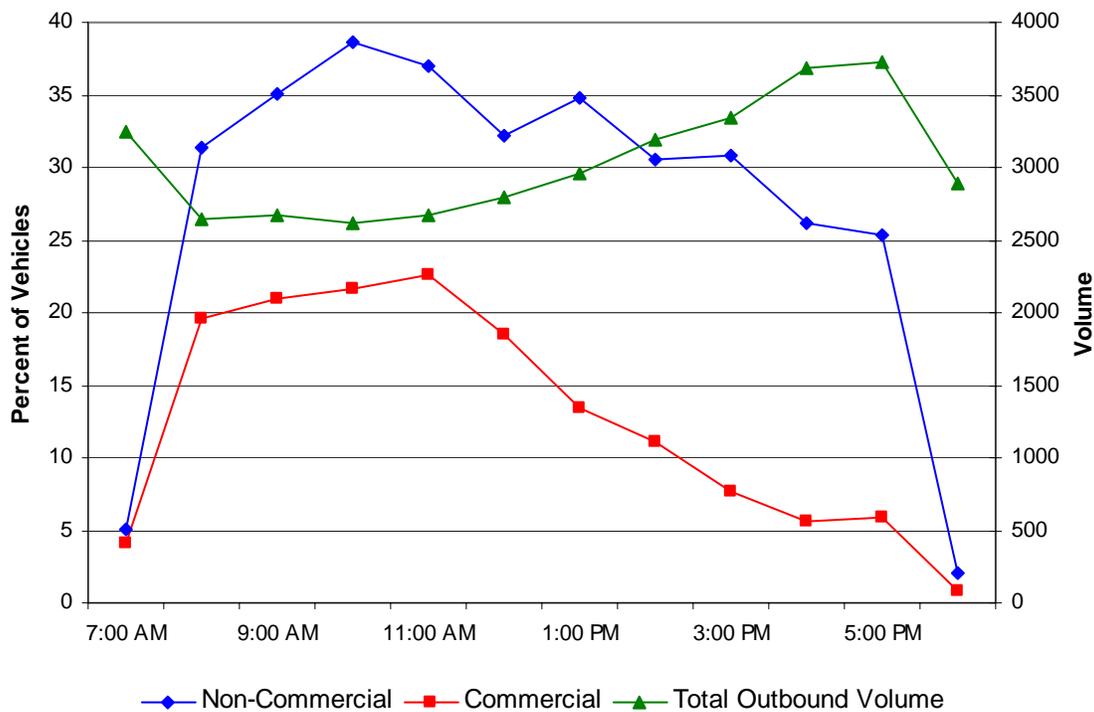
**Figure 11. Distribution of Surveys and Non-Commercial Vehicles by Time-of-Day.**

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 noon and then declined throughout the afternoon. 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.**

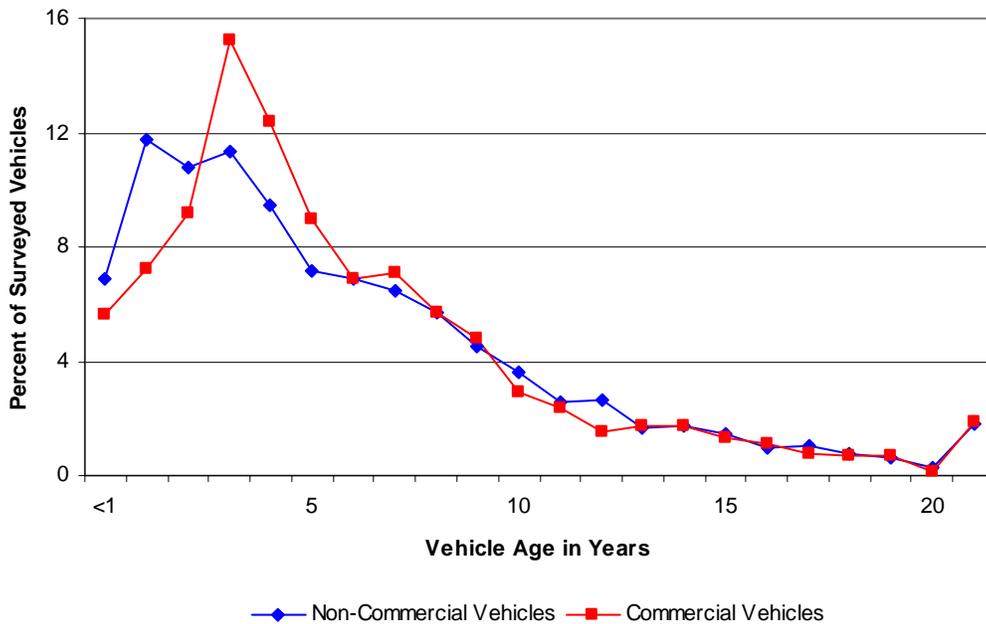
A final comparison of the survey and count totals for the survey locations was conducted. In this analysis, the percent of counted vehicles that were surveyed per hour was determined for both non-commercial and commercial vehicles. This data was compared against the total count volumes for the survey 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 are similar in their general shape. 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.**

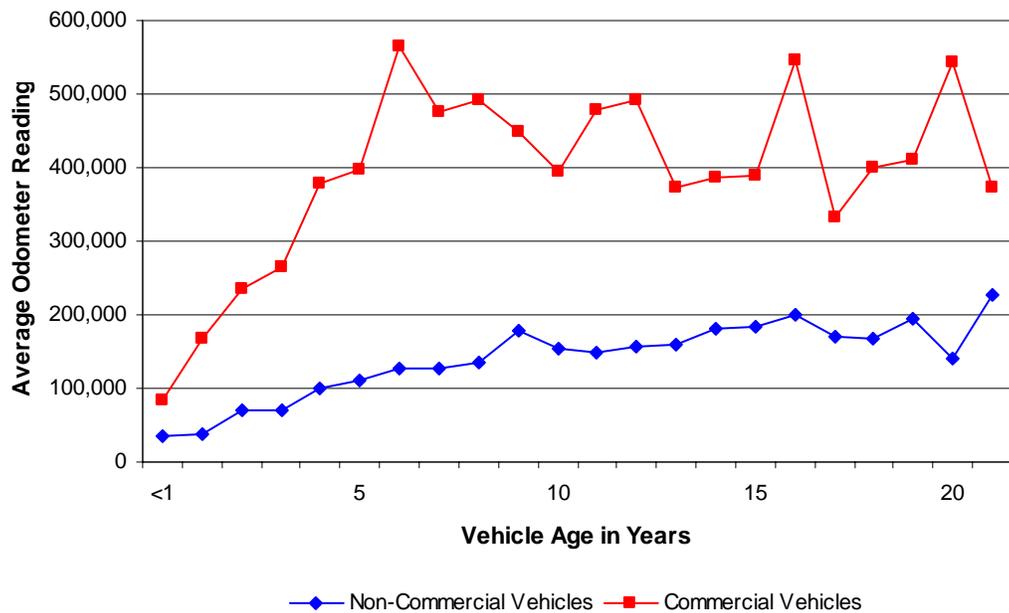
Vehicle Characteristics

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 5.9 years for both non-commercial and commercial vehicles. The median age for non-commercial vehicles was 4 years and for commercial vehicles it was 5 years.



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

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 (7,237 and 1,189, respectively). For example, for vehicles seventeen years old, there were 74 observations for non-commercial vehicles and only 9 for commercial vehicles. Three of those nine commercial vehicle surveyed had an odometer reading of less than 90,000 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 105,033 and the average commercial vehicle odometer reading was 354,250. This information indicates that commercial vehicles accumulated mileage at three 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 14 and 15. 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	499	6.90	6.90	35,028
1	850	11.75	18.64	38,266
2	778	10.75	29.39	71,182
3	819	11.32	40.71	69,982
4	684	9.45	50.16	100,821
5	518	7.16	57.32	109,646
6	499	6.90	64.21	125,788
7	468	6.47	70.68	126,273
8	415	5.73	76.41	135,074
9	328	4.53	80.95	177,100
10	260	3.59	84.54	154,242
11	184	2.54	87.08	149,714
12	190	2.63	89.71	157,500
13	123	1.70	91.41	160,786
14	124	1.71	93.12	179,804
15	107	1.48	94.60	183,686
16	68	0.94	95.54	199,348
17	74	1.02	96.56	170,721
18	55	0.76	97.32	167,334
19	43	0.59	97.91	194,642
20	20	0.28	98.19	141,463
>20	131	1.81	100.00	227,188
Total	7237	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	67	5.63	5.63	83,194
1	86	7.23	12.87	166,403
2	109	9.17	22.04	234,840
3	181	15.22	37.26	266,188
4	147	12.36	49.62	378,071
5	107	9.00	58.62	398,457
6	82	6.90	65.52	565,285
7	84	7.06	72.58	475,387
8	68	5.72	78.30	491,044
9	57	4.79	83.10	449,476
10	35	2.94	86.04	393,789
11	28	2.35	88.39	478,809
12	18	1.51	89.91	491,072
13	21	1.77	91.67	372,479
14	21	1.77	93.44	386,579
15	16	1.35	94.79	389,000
16	13	1.09	95.88	545,386
17	9	0.76	96.64	332,298
18	8	0.67	97.31	399,674
19	8	0.67	97.98	411,742
20	2	0.17	98.15	544,500
>20	22	1.85	100.00	371,746
Total	1189	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 Longview 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 (68%) were semi/tractor-trailer combinations. The overall average occupancy for non-commercial vehicles was 1.36 and 1.08 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	7184	1.35	Single Unit 2-axle (6 wheels)	225	1.20
Bus	14	1.64	Single Unit 3-axle (10 wheels)	80	1.21
Taxi/Paid Limo	2	1.00	Single Unit 4-axle (14 wheels)	58	1.10
School Bus	0	—	Semi (tractor-trailer)	813	1.03
Commercial Vehicle (over 1 ton)	4	1.75	Other	13	1.23
Motorcycle	14	1.07			
Recreational Vehicle	19	1.58			
Other	0	—			
Total	7237	1.36	Total	1189	1.08

### 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.

Nearly forty-one percent of the vehicles reported not carrying any cargo. Of those vehicles transporting cargo, 92 percent of those cargos were not from or headed to Mexico. For those vehicles carrying a cargo, only 19 percent reported picking their cargo up at an intermodal facility and 18 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.**

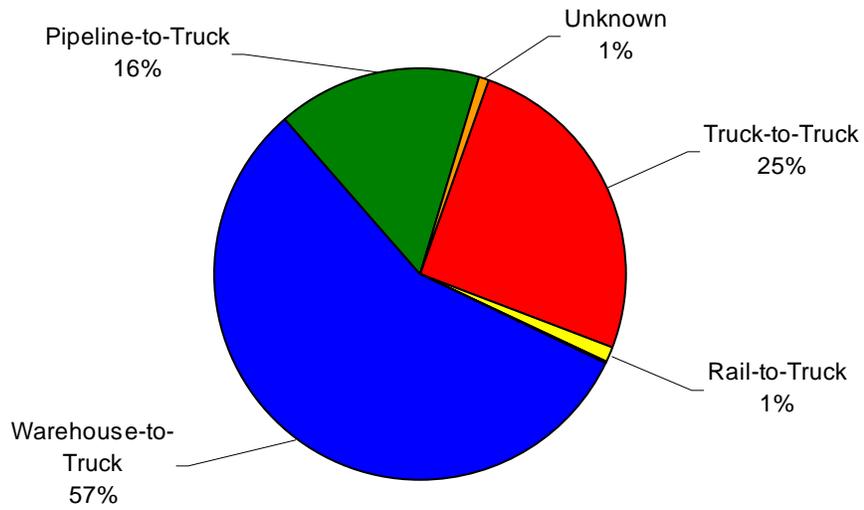
Station Number	Facility	Surveyed Vehicles	Empty Vehicles	Percent Empty	Vehicles with Mexico Cargo	Vehicles without Mexico Cargo
501	FM 2911	2	0	0.00	0	2
504	SH 154	19	11	57.89	0	19
508	US 271	46	26	56.52	0	46
512	US 259	90	46	51.11	2	88
513	SH 155	45	15	33.33	5	40
516	FM 1968	19	8	42.11	1	18
517	FM 2208	14	4	28.57	0	14
519	US 59	65	22	33.85	0	65
521	SH 43	39	10	25.64	6	33
523	US 80	52	13	25.00	9	43
525	FM 9	20	8	40.00	0	20
526	FM 31	30	7	23.33	2	28
528	US 59	64	29	45.31	0	64
529	SH 43	44	12	27.27	3	41
530	SH 43	51	23	45.10	0	51
531	SH 149	54	19	35.19	1	53
533	US 79	44	24	54.55	0	44
535	SH 315	58	20	34.48	6	52
537	US 84	34	19	55.88	0	34
540	FM 95	12	4	33.33	1	11
541	US 259	80	36	45.00	6	74
544	US 84	60	32	53.33	0	60
547	US 79	63	28	44.44	0	63
702	SH 155	56	22	39.29	3	53
704	US 271	28	10	35.71	0	28
706	FM 1252	4	0	0.00	1	3
710	FM 2767	9	6	66.67	0	9
712	SH 31	34	7	20.59	0	34
714	FM 850	5	1	20.00	1	4
716	SH 64	48	24	50.00	7	41
Total		1,189	486	40.87	54	1135

A detailed summary of cargo types reported for commercial vehicles is provided in Table 12. Empty vehicles comprised 41 percent of those surveyed. For vehicles with identified cargo types, 12 percent reported that their cargo wood products, 11 percent reported a cargo of manufactured goods/equipment, and food, health, and beauty products accounted for an additional 7 percent of the cargos.

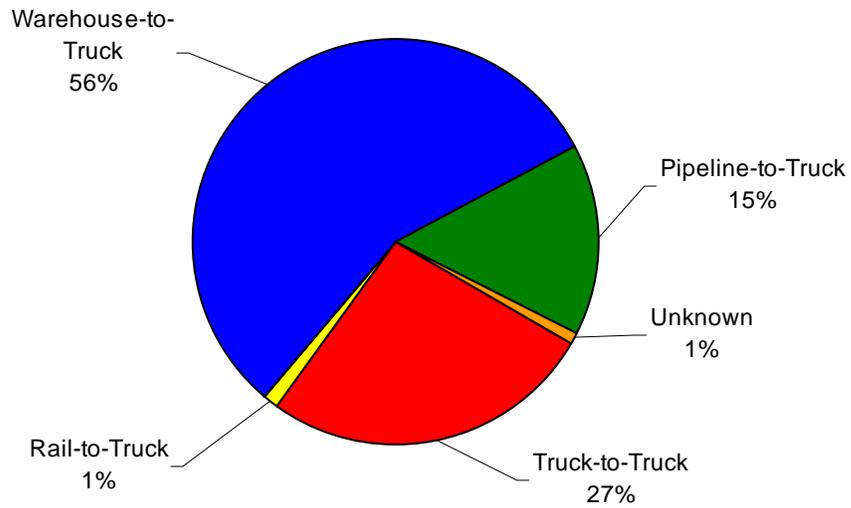
**Table 12. Distribution of Commercial Vehicles by Type of Cargo.**

Cargo Description			Number of Vehicles	Percent of Vehicles
1	—	Farm Products	30	2.52
2	—	Forest Products	5	0.42
3	—	Marine Products	3	0.25
4	—	Metals and Minerals	37	3.11
5	—	Food, Health, and Beauty Products	78	6.56
6	—	Tobacco Products	1	0.08
7	—	Textiles	9	0.76
8	—	Wood Products	142	11.94
9	—	Printer Matter	1	0.08
10	—	Chemical Products	27	2.27
11	—	Refined Petroleum or Coal Products	28	2.35
12	—	Rubber, Plastic, and Styrofoam Products	40	3.36
13	—	Clay, Concrete, Glass, or Stone	41	3.45
14	—	Manufactured Goods/Equipment	128	10.77
15	—	Wastes	13	1.09
16	—	Miscellaneous Shipments	19	1.60
17	—	Hazardous Materials	3	0.25
18	—	Transportation	46	3.87
19	—	Unclassified Cargo	51	4.29
20	—	Driver Refused to Answer	0	0.00
21	—	Unknown to Driver	1	0.08
22	—	Empty	486	40.87
Total			1189	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, 57 percent of the transfers were warehouse-to-truck and 25 percent were truck-to-truck. At the destination, 56 percent of the transfers were warehouse-to-truck and 27 percent were truck-to-truck. 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

Two locations in the Longview 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 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 Longview 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. Longview High-Volume Locations.**

Station Number	Facility	Location	License Plates Recorded		24-Hour Vehicle Count	
			Inbound	Outbound	Inbound	Outbound
524	IH 20	at Louisiana Border	5,678	6,427	8,471	9,655
708	IH 20	at Smith Co. Line	6,921	6,651	10,195	10,480

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 (708) to IH 20 East (524)	41	59	34
IH 20 East (524) to IH 20 West (708)	34	29	38

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 West (station 708) had the larger percentage of through trips at 21 percent. Approximately 18 percent of the vehicles entering the study area at station 524 (IH 20 East) made through trips.

**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 (708), 6,921 inbound licenses recorded	IH 20 East (524)	1,219	5,702
IH 20 East (524), 5,678 inbound licenses recorded	IH 20 West (708)	1,022	4,656

### **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 1968 (station number 516) were applied to the total number of trips for FM 726 (station number 515) which was a non-surveyed location.

The expanded survey data were used to develop zone-to-zone estimates of non-commercial and commercial vehicle trips based on the geocoded origins and destinations for the surveyed trips. Trips for the non-surveyed sites were distributed to the destination zones observed from the surveyed sites on a proportional basis. It is assumed that the surveyed sites are representative of the most likely destination zones for the non-surveyed sites. Since the volume of vehicle trips at the non-surveyed sites is typically low, the amount of error that may be generated by that assumption is believed to be small. For the high volume locations, a license plate match was used to record the number of through trips made by non-commercial vehicles. Survey data obtained from commercial vehicles at several locations along the IH 20 corridor were used to develop the estimated number of through and local trips for commercial vehicles.

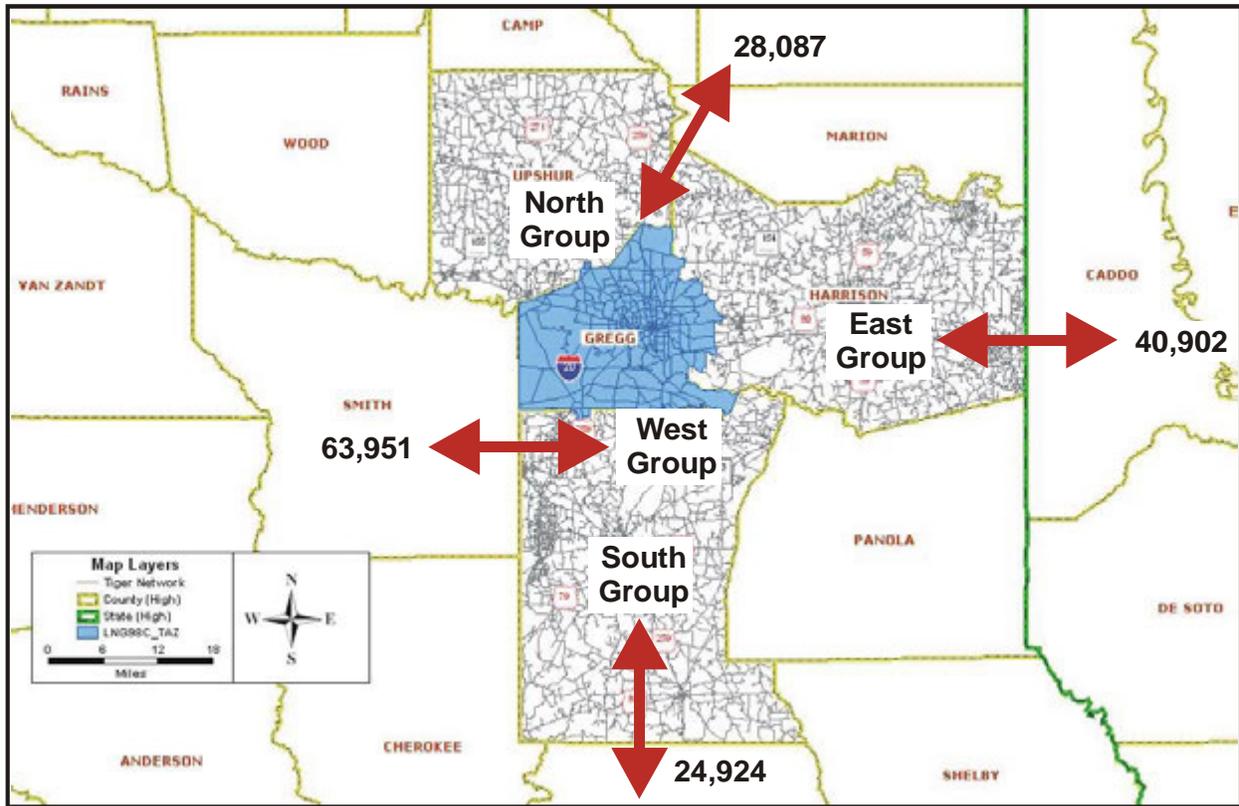
**Table 16. Expanded Survey Results by Station.**

Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles			Residents	Visitors
		Local	Through	Total	Local	Through	Total		
500	US 80	5,569	122	5,691	308	72	380	2,228	3,341
501	FM 2911	582	4	586	45	0	45	335	247
502	FM 1795	458	0	458	57	0	57	204	254
503	FM 49	456	0	456	40	0	40	203	253
504	SH 154	794	72	866	187	24	211	353	441
505	FM 2088	701	0	701	79	0	79	312	389
506	FM 556	376	0	376	62	0	62	167	209
507	FM 2454	529	0	529	60	0	60	235	294
508	US 271	3,135	996	4,131	1,032	1,066	2,098	872	2,263
509	FM 993	327	0	327	26	0	26	174	153
510	FM 1975	95	0	95	4	0	4	51	44
511	FM 557	520	24	544	35	0	35	277	243
512	US 259	5,883	390	6,273	874	442	1,316	2,294	3,589
513	SH 155	2,783	286	3,069	646	298	944	1,203	1,580
514	SH 450	776	0	776	79	0	79	414	362
515	FM 726	528	2	530	69	0	69	281	247
516	FM 1968	956	18	974	123	12	135	398	558
517	FM 2208	783	18	801	114	0	114	417	366
518	FM 3001	602	0	602	46	0	46	321	281
519	US 59	5,361	1,166	6,527	720	1,686	2,406	1,658	3,703
520	FM 134	567	0	567	109	0	109	302	265
521	SH 43	858	66	924	9	30	39	167	691
522	FM 1999	642	0	642	113	0	113	125	517
523	US 80	809	100	909	772	168	940	555	254
524	IH 20	12,824	5,302	18,126	5,862	2,190	8,052	5,425	7,399
525	FM 9	1,179	26	1,205	220	20	240	527	652
526	FM 31	900	10	910	286	48	334	331	569
527	FM 1186	764	0	764	92	0	92	281	483
528	US 59	4,796	252	5,048	332	1,384	1,716	1,915	2,881
529	SH 43	1,648	242	1,890	523	226	749	913	735
530	SH 43	1,373	218	1,591	782	136	918	680	693
531	SH 149	3,963	164	4,127	1,029	150	1,179	1,645	2,318
532	FM 1251	468	0	468	51	0	51	95	373
533	US 79	1,411	862	2,273	508	372	880	408	1,003
534	FM 348	224	4	228	96	0	96	45	179
535	SH 315	437	594	1,031	108	90	198	88	349
536	FM 1971	354	2	356	87	0	87	72	282
537	US 84	1,344	358	1,702	38	112	150	418	926
538	US 59	6,044	0	6,044	1,563	0	1,563	3,318	2,726
539	US 59	6,007	504	6,511	1,501	48	1,549	3,298	2,709

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

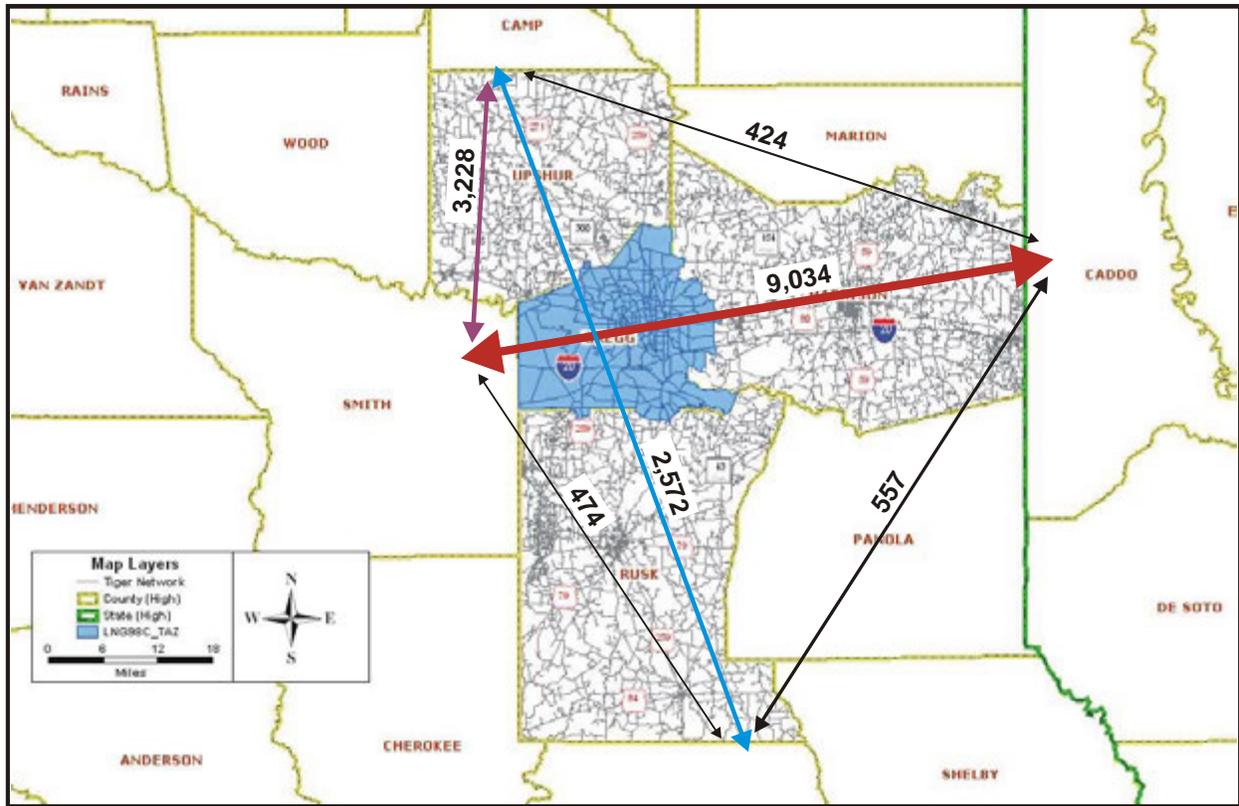
Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles			Residents	Visitors
		Local	Through	Total	Local	Through	Total		
540	FM 95	654	66	720	128	22	150	130	524
541	US 259	3,238	1,078	4,316	2,103	850	2,953	1,778	1,460
542	FM 225	489	10	499	64	0	64	89	400
543	SH 204	0	0	0	0	0	0	0	0
544	US 84	574	504	1,078	211	128	339	105	469
545	SH 204	1240	0	1,240	172	0	172	226	1,014
546	FM 2420	265	0	265	28	0	28	48	217
547	US 79	1699	672	2,371	1,131	454	1,585	636	1,063
548	FM 13	1057	18	1,075	180	0	180	395	662
549	FM 2089	315	0	315	31	0	31	118	197
550	FM 838	766	0	766	86	0	86	286	480
551	SH 135	3468	6	3,474	576	22	598	1,297	2,171
702	SH 155	2901	1134	4,035	320	802	1,122	1,160	1,741
704	US 271	3827	334	4,161	1148	424	1,572	2,174	1,653
706	FM 1252	729	0	729	92	0	92	434	295
708	IH 20	15505	5170	20,675	7250	2090	9,340	6,559	8,946
710	FM 2767	1042	14	1,056	164	10	174	554	488
712	SH 31	4230	120	4,350	1468	150	1,618	2,211	2,019
714	FM 850	584	10	594	300	34	334	312	272
716	SH 64	2882	712	3,594	434	384	818	1,455	1,427
Total		123,291	21,650	144,941	34,573	13,944	48,517	52,973	70,318

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 nearly 64,000 total daily trips. The East group had the second highest estimated number of trip movements with nearly 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. Over 9,000 external-through trips are estimated to be made on a daily basis between the east and west boundaries of the study area. 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 with over 2,500 trips.



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

## SURVEY SUMMARY

More than 193,000 vehicles enter and leave the four-county study area daily. Over 21 percent are commercial vehicles. Nearly 18 percent of the approximate 193,000 vehicles make through trips. Over 56,000 vehicles, nearly thirty percent of the non-commercial and commercial vehicles, enter or leave the study area via IH 20. Based on the average vehicle occupancy observed in the survey, an estimated 197,000 persons are entering and leaving the study area daily by non-commercial vehicle and nearly 52,000 persons are entering and leaving by commercial vehicle. The estimated number of non-residents (persons that do not live in the four-county study area) in non-commercial vehicles that enter the study area daily is nearly 70,000. Non-residents account for approximately 2,600 internal trips within the study area.

Approximately 32 percent of non-commercial trip origins were leaving home and 37 percent of non-commercial trip destinations were returning to home. HBNW trips accounted for nearly 43

percent of the non-commercial trips. The percentage of trips that were NHB and HBW were 31 percent and 26 percent, respectively.

Commercial vehicle drivers reported varied trip purposes at the origin and destination ends of their trip. Approximately 30 percent of the trip origin purposes were reported to be for picking up. Delivery of cargo accounted for an additional 23 percent of trip origins. Delivering cargo was the stated purpose for 53 percent of the destination trips, while picking up cargo accounted for 27 percent of the destinations. Leaving base operations accounted for 25 percent of the commercial vehicle trip origins and only 11 percent of the destination trips.

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

The median vehicle year for non-commercial vehicles was 1999 and for commercial vehicles it was 1998. The average vehicle age for both commercial and non-commercial vehicles was 5.9 years. The average odometer reading for commercial vehicles was approximately three and a half times higher than that for non-commercial vehicles. Average vehicle occupancy for non-commercial vehicles was 1.36, or nearly 25 percent greater than the 1.08 reported for commercial vehicles.

Commercial vehicles represent 25 percent of the vehicles traveling into and out of the study area daily. Over 40 percent of the commercial vehicles are carrying no cargo. Of those carrying cargo, 92 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?  Gas (leaded, unleaded), diesel, propane or other fuel?	_____ Year _____ Make _____ Model Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year _____ Make _____ Model Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year _____ Make _____ Model Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
2. What is the mileage on your odometer?			
3. What county do you live in?	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> Other / Refused (go to 4)	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> Other / Refused (go to 4)	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> 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) <input type="checkbox"/> Refused	_____ _____ (city / state in US or Mexico) <input type="checkbox"/> Refused	_____ _____ (city / state in US or Mexico) <input type="checkbox"/> Refused
4a. Did you stay overnight as part as your travel?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 4d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 4d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 4d)
4b. If yes, where did you stay?	_____ _____ (city / state in US or Mexico) <input type="checkbox"/> Refused	_____ _____ (city / state in US or Mexico) <input type="checkbox"/> Refused	_____ _____ (city / state in US or Mexico) <input type="checkbox"/> Refused
4c. How many nights have you stayed?			
4d. Did you enter Texas today?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 5)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 5)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 5)

4e. Where outside of Texas did you travel from? (city, county, state)	_____	_____	_____
	(city / state in US or Mexico)	(city / state in US or Mexico)	(city / state in US or Mexico)
	<input type="checkbox"/> Refused	<input type="checkbox"/> Refused	<input type="checkbox"/> Refused
4f. What road or highway did you use to enter Texas?			

5. Where was the <i>last</i> 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?	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> Other	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> Other	<input type="checkbox"/> Smith County <input type="checkbox"/> Harrison County <input type="checkbox"/> Gregg County <input type="checkbox"/> Rusk County <input type="checkbox"/> Upshur County <input type="checkbox"/> Other
5e. <i>If not in one of those counties</i> , 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 (12<sup>th</sup> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (if no, go to 7d)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (if no, go to 7d)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (if no, go to 7d)
<i>If Yes:</i> 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?			
<i>If No</i> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused or Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused or Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused or Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused or Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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 <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year _____ Gross Weight Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year _____ Gross Weight Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
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?	<input type="checkbox"/> Yes (go to 14d) <input type="checkbox"/> No	<input type="checkbox"/> Yes (go to 14d) <input type="checkbox"/> No	<input type="checkbox"/> Yes ( go to 14d) <input type="checkbox"/> No
14b. If not in Texas, did you enter Texas today?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 14d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 14d)	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 15)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 15)	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Smith County (go to 16) <input type="checkbox"/> Harrison Cty. (go to 16) <input type="checkbox"/> Gregg County (go to 16) <input type="checkbox"/> Rusk County (go to 16) <input type="checkbox"/> Upshur County (go to 16)  <input type="checkbox"/> Other	<input type="checkbox"/> Smith Cty. (go to 16) <input type="checkbox"/> Harrison Cty. (go to 16) <input type="checkbox"/> Gregg Cty. (go to 16) <input type="checkbox"/> Rusk County (go to 16) <input type="checkbox"/> Upshur Cty. (go to 16)  <input type="checkbox"/> Other	<input type="checkbox"/> Smith County (go to 16) <input type="checkbox"/> Harrison Cty. (go to 16) <input type="checkbox"/> Gregg County (go to 16) <input type="checkbox"/> Rusk County (go to 16) <input type="checkbox"/> Upshur Cty. (go to 16)  <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If no go to 17d) <input type="checkbox"/> Refused	<input type="checkbox"/> Yes <input type="checkbox"/> No (If no go to 17d) <input type="checkbox"/> Refused	<input type="checkbox"/> Yes <input type="checkbox"/> No (If no go to 17d) <input type="checkbox"/> 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? <i>If No</i>			
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 (12<sup>th</sup> 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   |