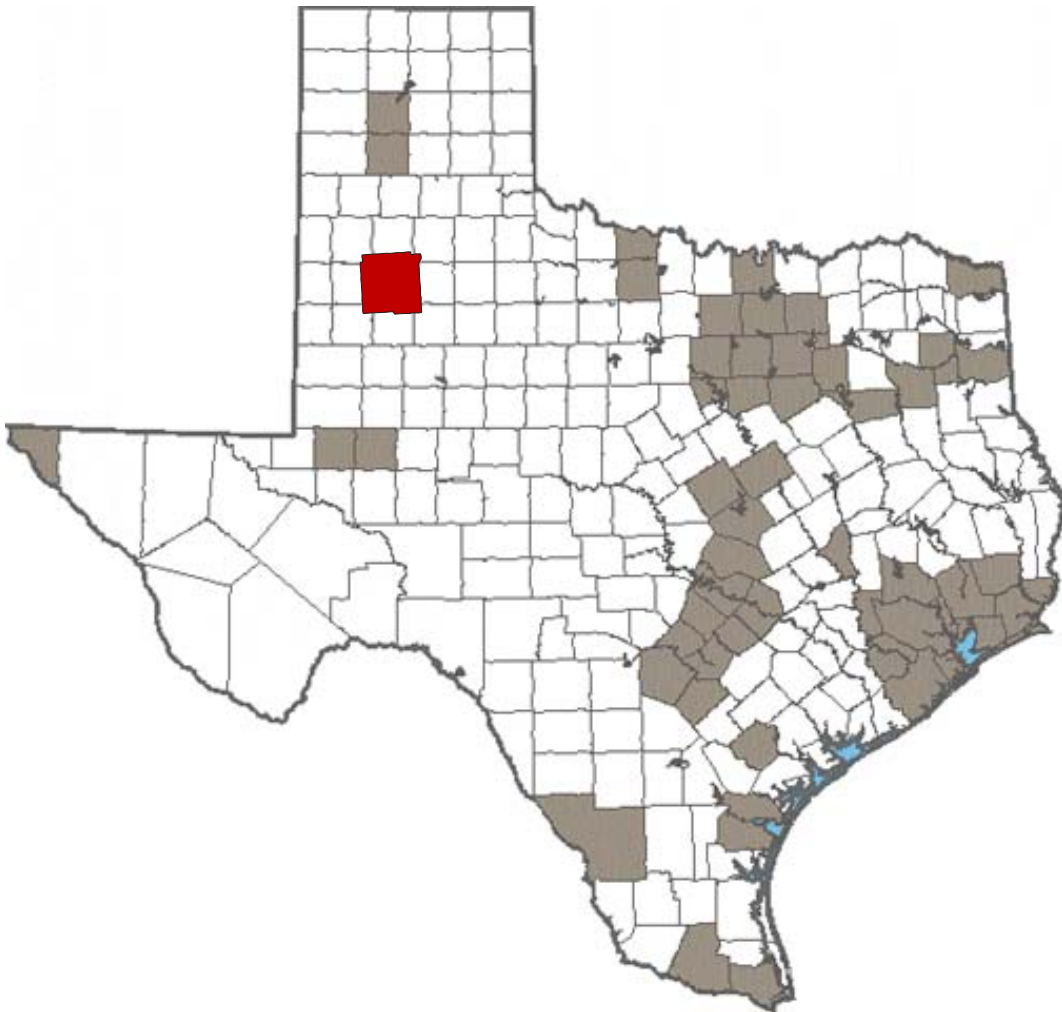


# 2005 Lubbock External Survey Technical Summary



Prepared by the  
Texas Transportation Institute  
April 2006



# **2005 Lubbock External Survey**

## **TECHNICAL SUMMARY**

**Texas Department of Transportation Travel Survey Program**

**Prepared by**

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**of the  
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**April 2006**



## **Acknowledgements**

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## **INTRODUCTION**

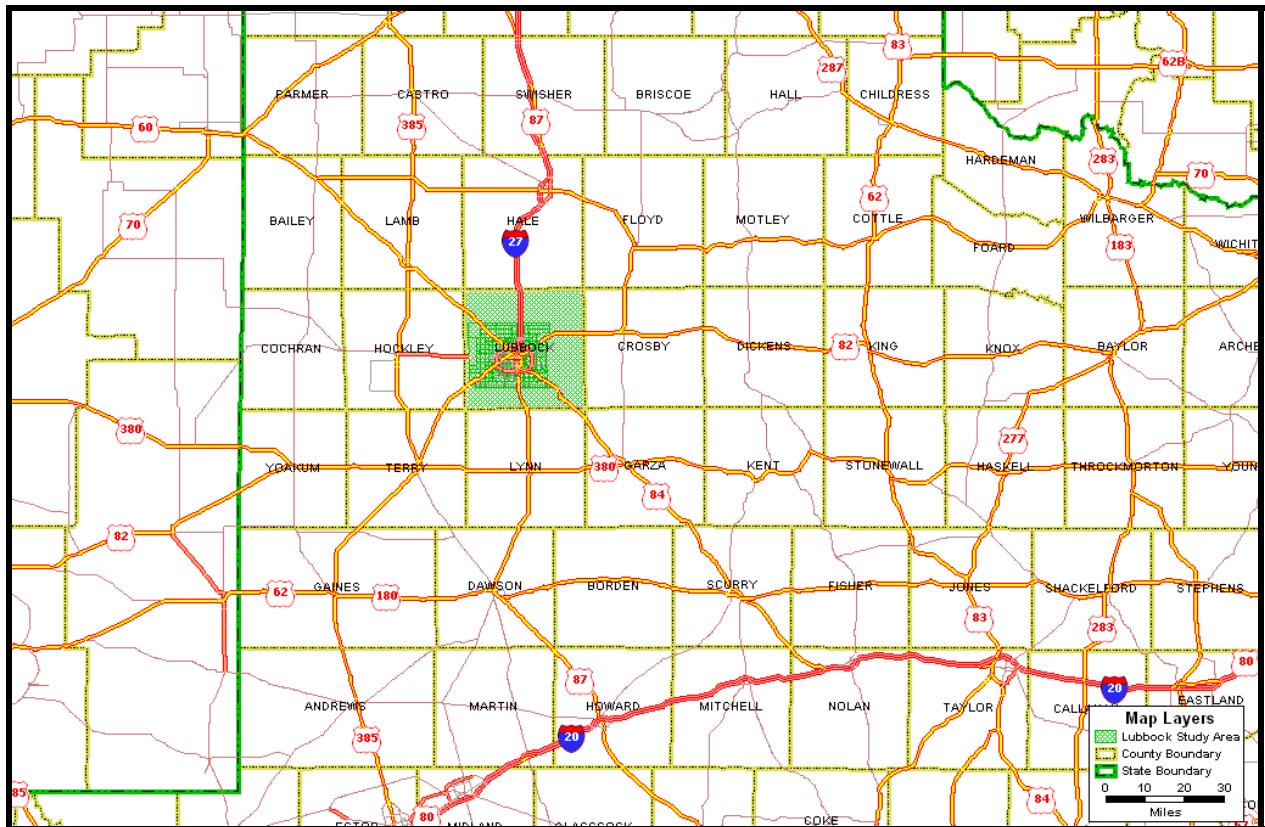
In 2005, the Transportation Planning and Programming (TPP) Division of the Texas Department of Transportation (TxDOT) funded an external station travel survey in the Lubbock Metropolitan Planning Organization (MPO) study area. This survey measured and identified travel patterns into, within, and out of Lubbock, which is in Lubbock County. This report presents a Technical Summary of the 2005 Lubbock 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.

## **LUBBOCK STUDY AREA**

The study area, as shown in Figure 1, is located in Lubbock County in the panhandle area of Texas. Lubbock County has a land area of nearly 900 square miles and a population density of approximately 270 persons per square mile. The population center of the county is the city of Lubbock, which according to the 2000 census had a population of approximately 199,600 persons. The boundary established for the Lubbock external survey was determined by the local MPO.

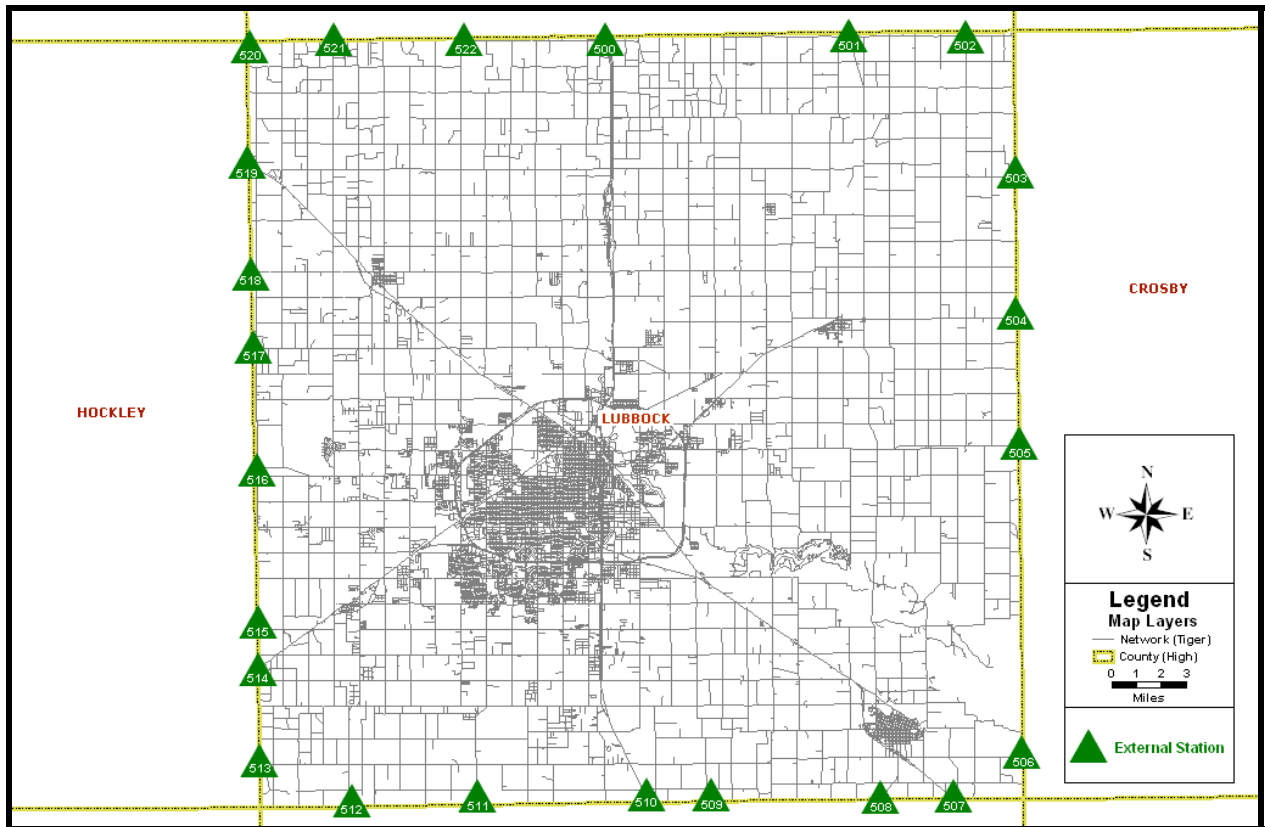


**Figure 1. Lubbock Study Area.**

## **EXTERNAL STATIONS**

There are 23 locations on the border of the Lubbock 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 23 locations, 14 were selected for travel surveys. Figure 2 shows the location of the external stations in Lubbock, 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. Lubbock External Station Locations.**

**Table 1. Lubbock External Stations.**

Station Number	Facility	Location	Surveyed	24-Hour Vehicle Count		Location Group
				Inbound	Outbound	
521	FM 179	at Hale Co. line	Yes	115	112	North
522	FM 2528	at Hale Co. line	No	159	139	
500	IH 27	at Hale Co. line	Yes	7,066	6,666	
501	FM 400	at Hale Co. line	Yes	316	316	
502	FM 789	at Hale Co. line	No	897	545	
503	FM 1527	at Crosby Co. line	No	53	62	East
504	US 82/62	at Crosby Co. line	Yes	3,438	3,042	
505	FM 40	at Crosby Co. line	Yes	235	299	
506	FM 2150	at Crosby Co. line	No	298	263	
507	US 84	at Lynn Co. line	Yes	4,183	4,340	South
508	FM 400	at Lynn Co. line	Yes	520	456	
509	FM 2192	at Lynn Co. line	No	109	121	
510	US 87	at Lynn Co. line	Yes	3,447	3,818	
511	FM 1730	at Lynn Co. line	Yes	400	429	
512	FM 179	at Lynn Co. line	No	134	158	
513	FM 41	at Hockley Co. line	No	250	293	West
514	US 82/62	at Hockley Co. line	Yes	4,434	3,677	
515	FM 1585	at Hockley Co. line	Yes	783	767	
516	SH 114	at Hockley Co. line	Yes	5,719	5,573	
517	FM 2641	at Hockley Co. line	Yes	198	217	
518	FM 1294	at Hockley Co. line	No	157	160	
519	US 84	at Hockley Co. line	Yes	3,944	4,266	
520	FM 597	at Hockley Co. line	No	128	142	
		Total		36,983	35,861	

**SURVEY METHODOLOGY**

Surveys were conducted using a roadside intercept interview method. For each external station surveyed, traffic control plans were set up and vehicles in the outbound direction (i.e. leaving the study area) were directed into an area where trained survey personnel interviewed the drivers. Those declining were allowed to continue on their trip. Drivers of commercial and non-commercial vehicles were interviewed using different survey instruments and those forms are provided in the Appendix. Figure 3 shows a typical intercept interview survey at an external station.



**Figure 3. Typical External Survey Station.**

For a more detailed discussion and description of the survey methodology, see the report, *Lubbock 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 Lubbock, the majority of vehicles surveyed were non-commercial. Approximately 85 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 17 percent of non-commercial vehicles and 17 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*
500	IH 27	at Hale Co. line	414	4,110	61	679
501	FM 400	at Hale Co. line	85	194	47	61
504	US 82/62	at Crosby Co. line	334	1,873	59	367
505	FM 40	at Crosby Co. line	91	187	31	46
507	US 84	at Lynn Co. line	325	2,411	71	591
508	FM 400	at Lynn Co. line	164	254	18	81
510	US 87	at Lynn Co. line	409	2,132	62	460
511	FM 1730	at Lynn Co. line	172	259	11	17
514	US 82/62	at Hockley Co. line	349	1,831	53	584
515	FM 1585	at Hockley Co. line	233	489	31	34
516	SH 114	at Hockley Co. line	373	3,710	60	135
517	FM 2641	at Hockley Co. line	51	122	22	30
519	US 84	at Hockley Co. line	335	2,535	56	420
521	FM 179	at Hale Co. line	60	73	11	N/A
Total			3,395	20,180	593	3,505

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

### Trip Types

There are two types of trips identified as part of an external survey; external-local trips and external-through trips. A local trip is one where either the origin or destination of the trip is in the study area and the other trip end is outside the study area. A through trip is one traveling through the study area without stopping. Table 3 presents the survey data for non-commercial and commercial vehicles in terms of trips identified as local or through movements. Nearly 96 percent of non-commercial vehicle trips and nearly 84 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
500	IH 27	399	15	414	51	10	61
501	FM 400	76	9	85	40	7	47
504	US 82/62	319	15	334	46	13	59
505	FM 40	90	1	91	28	3	31
507	US 84	300	25	325	51	20	71
508	FM 400	161	3	164	17	1	18
510	US 87	377	32	409	52	10	62
511	FM 1730	168	4	172	11	0	11
514	US 82/62	341	8	349	41	12	53
515	FM 1585	228	5	233	29	2	31
516	SH 114	370	3	373	54	6	60
517	FM 2641	50	1	51	22	0	22
519	US 84	325	10	335	49	7	56
521	FM 179	47	13	60	7	4	11
Total		3,251	144	3,395	498	95	593

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 Lubbock study area. A non-resident is a respondent that reported they lived outside of the Lubbock 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 Lubbock 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)
500	IH 27	414	196	47.34	218	52.66	186
501	FM 400	85	41	48.24	44	51.76	10
504	US 82/62	334	151	45.21	183	54.79	80
505	FM 40	91	46	50.55	45	49.45	24
507	US 84	325	139	42.77	186	57.23	86
508	FM 400	164	43	26.22	121	73.78	54
510	US 87	409	159	38.88	250	61.12	111
511	FM 1730	172	57	33.14	115	66.86	58
514	US 82/62	349	146	41.83	203	58.17	112
515	FM 1585	233	120	51.50	113	48.50	56
516	SH 114	373	171	45.84	202	54.16	99
517	FM 2641	51	17	33.33	34	66.67	23
519	US 84	335	133	39.70	202	60.30	138
521	FM 179	60	20	33.33	40	66.67	24
Total		3,395	1,439	42.39	1,956	57.61	1,061

The residency questions were only asked of respondents in non-commercial vehicles. Table 4 illustrates that individuals who do not live in the study area make a sizeable proportion, 58 percent, of the non-commercial travel in and out of Lubbock. The average number of internal trips made by those individuals is 0.54 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 17 different purposes included on the survey instrument for non-commercial vehicles and nine purposes on the commercial vehicle survey. Table 5 provides the trip purposes for each survey. For the purpose of presenting survey results, the trip purpose categories are combined into a fewer number to reflect the primary purposes of travel.

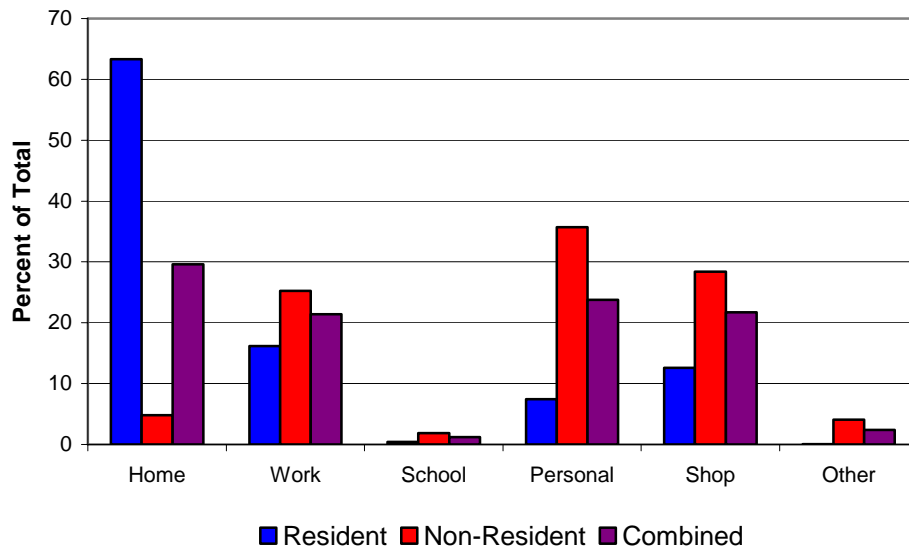
**Table 5. Trip Purpose Categories.**

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

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

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

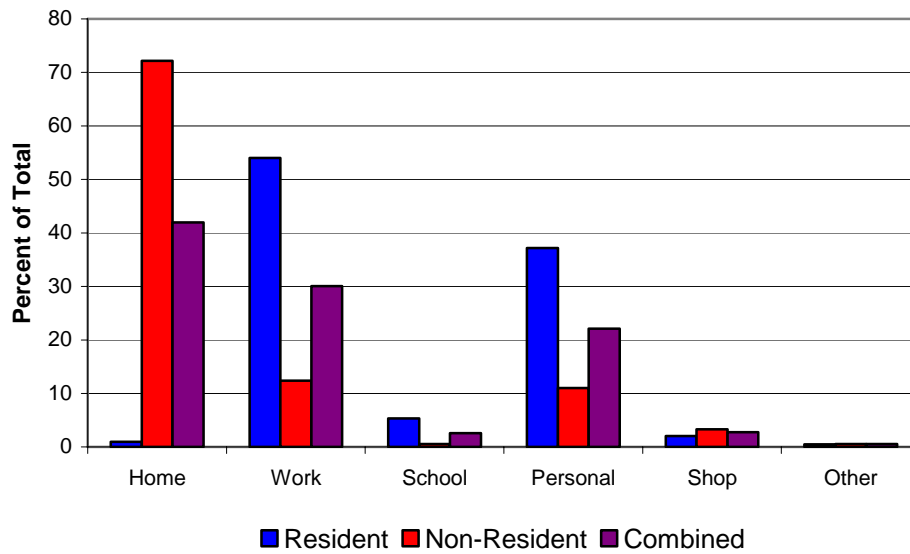
Figure 4 presents the distribution of non-commercial vehicles by reported trip purpose at the origin of the trip and Figure 5 shows the distribution at the destination of the trip. Additionally, Table 6 provides the data shown in Figures 4 and 5 in tabular form for comparative purposes. The information is provided for residents, non-residents, and both groups combined. The distribution for the origin purpose shows that the largest percentage of trips for residents (63 percent) began at home, while the most common non-resident trip origin purpose (36 percent) was personal. For both groups combined, the most common origin purposes were home (30 percent), personal (24 percent), and shopping (22 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 (72 percent). The trip purpose at the destination for residents was primarily comprised of work (54 percent) and personal (37 percent) trips. For both groups combined, home (42 percent), work (30 percent), and personal (22 percent) were the most common trip purposes.





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

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

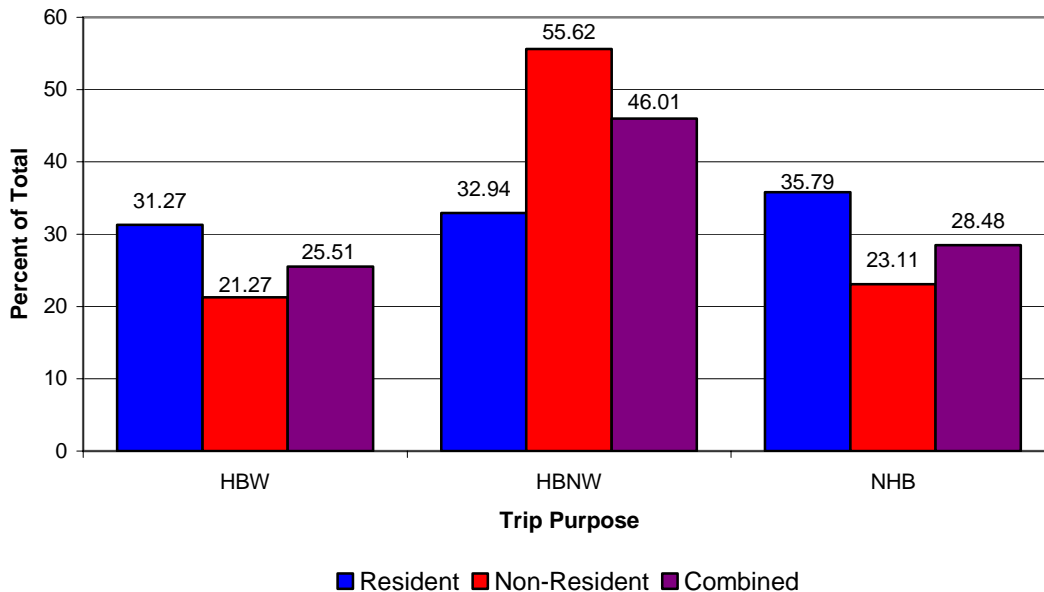
Trip Purpose	Origin			Destination		
	Resident	Non-Resident	Combined	Resident	Non-Resident	Combined
Home	63.31	4.81	29.60	0.97	72.14	41.97
Work	16.19	25.20	21.38	54.00	12.42	30.04
School	0.42	1.84	1.24	5.35	0.56	2.59
Personal	7.44	35.74	23.74	37.18	10.99	22.09
Shop	12.58	28.37	21.68	2.02	3.32	2.77
Other	0.07	4.04	2.36	0.49	0.56	0.53

A detailed analysis of specific subsets of the survey data was performed. Approximately 63 percent of the surveyed study area residents began their trip at home. Of that group of respondents, approximately 50 percent of those home-based trips had a destination purpose that was work or work-related. Since the survey was conducted in the outbound direction, this would indicate that a significant percentage of Lubbock study area residents work outside of the Lubbock study area.

Over 72 percent of the surveyed non-residents cited home as the trip purpose for traveling to their destination. Of that group of non-residents, nearly 69 percent of the trip origins were for

personal business or shopping purposes. Only 27 percent of non-residents traveling home cited an origin purpose that was work or work-related. This indicates that a majority of non-residents traveling within the Lubbock study area are making trips for either non-work purposes or people are making personal or shopping trips after leaving work and prior to going home.

The trip purposes normally used in travel demand modeling are home-based work (HBW), home-based non-work (HBNW), and non-home based (NHB). HBW trips are those that have one end of the trip at home and the other end of the trip at work. Trips that begin at home and end at work or those that begin at work and end at home are HBW. A HBNW trip is one that one end of the trip is at home and the other trip end is any location other than work. A NHB trip is a trip that does not begin or end at home. A distribution of trips by trip purpose for residents, non-residents, and both groups combined is provided in Figure 6. For residents, the trips were fairly equally distributed among the three trip purposes, with NHB having the largest percentage (36 percent). For non-residents, HBNW trips accounted for over half (56 percent) of the trips. HBNW trips were the most common trip purpose for residents and non-residents combined (46 percent).

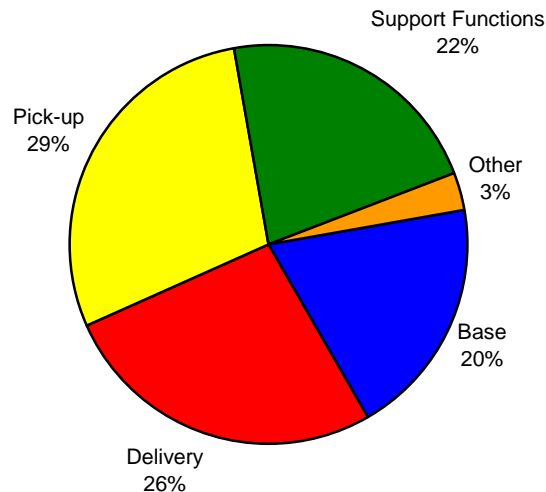


**Figure 6. Distribution of Non-Commercial Vehicle Trips by Trip Purpose.**

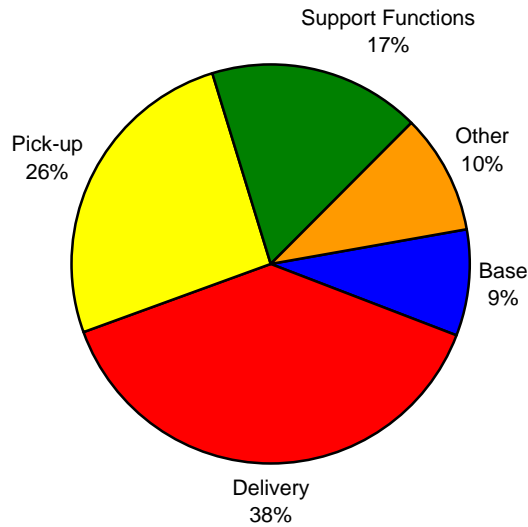
For commercial vehicles, the trip purposes shown in Table 5 were combined into the following five categories:

<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 was the most common origin trip purpose (29 percent). Delivery (26 percent), support functions (22 percent), and base (20 percent) were the other most commonly cited trip purposes at the origin. The distribution for destination trip purpose shows that 38 percent of the trips were destined for delivering cargo and another 26 percent were destined for picking up cargo. Only 17 percent of the trip destinations were for support functions and 10 percent of the destinations were for other purposes.



**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 (40 percent) as the type of place at the origin. An additional 21 percent of the non-commercial vehicles cited retail/shopping/gas as the type of place. For commercial vehicles, the majority of the respondents (65 percent) listed industrial/manufacturing as the type of place at the origin. Retail/shopping/gas was the next largest percentage of type of place at the origin for commercial vehicles at 18 percent.

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

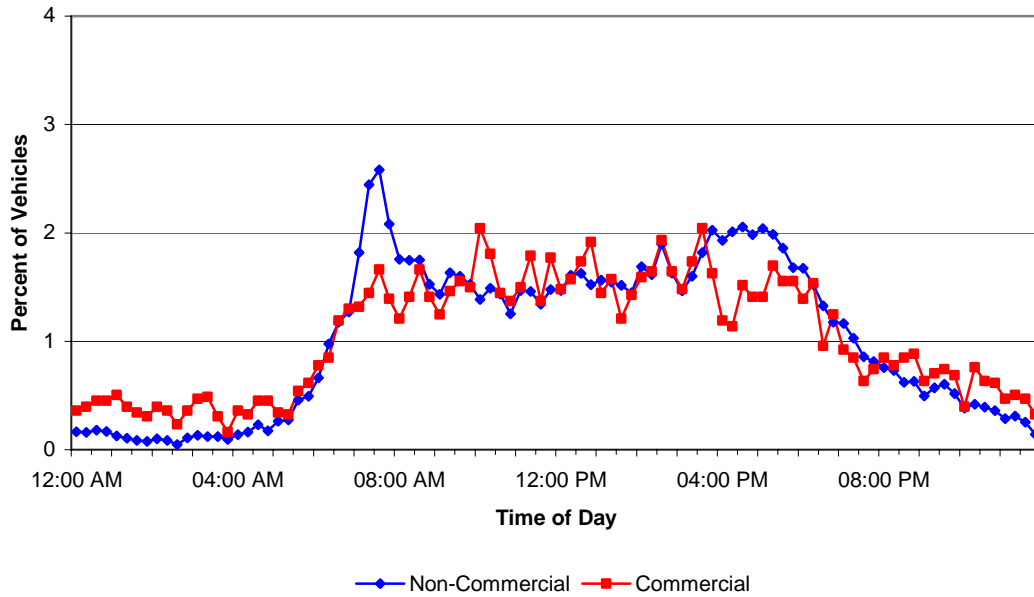
Type of Place	Non-Commercial Vehicles		Commercial Vehicles	
	Number	Percent	Number	Percent
Office Building	496	14.61	20	3.37
Retail/Shopping/Gas	719	21.18	107	18.04
Industrial/Manufacturing	216	6.36	384	64.76
Medical	240	7.07	1	0.17
Educational	65	1.91	1	0.17
Government	26	0.77	1	0.17
Residential	1,363	40.15	36	6.07
Airport	15	0.44	0	0.00
Eating Establishment	168	4.95	21	3.54
Hotel/Motel	69	2.03	5	0.84
Other	18	0.53	17	2.87
Total	3,395	100.00	593	100.00

### Time-of-Day

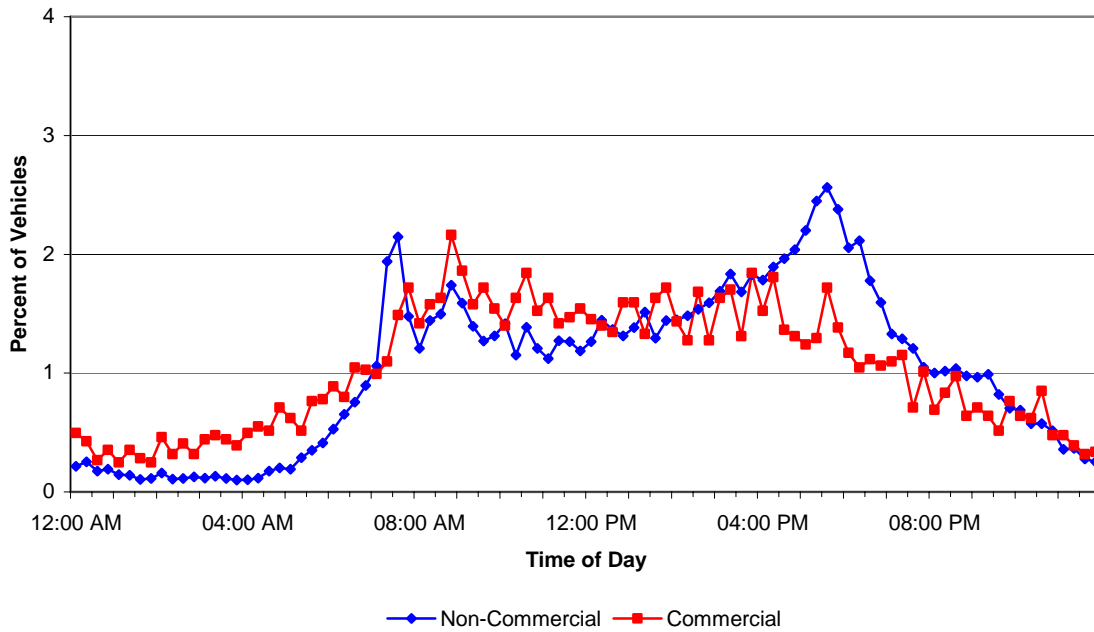
Vehicle classification counts were conducted at each external survey location on the same day as the survey. These counts were for a 24-hour period and they include data by time-of-day and by direction. This information is primarily used for expansion of the survey data, but is also of interest to examine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

For inbound vehicles (Figure 9), the morning peak occurs between 7 a.m. and 8 a.m. for non-commercial vehicles. There is an afternoon peak period for non-commercial vehicles between 4 p.m. and 5 p.m. Inbound commercial vehicle levels remain fairly constant from the morning peak through 4 p.m. when the amount of commercial vehicles begins to decline. For outbound traffic (Figure 10), the morning peak period for non-commercial vehicles is not as significant as the peak for the inbound direction, but it also occurs between 7 a.m. and 8 a.m. The afternoon peak for non-commercial vehicles traveling outbound is larger and longer than the inbound afternoon peak. For outbound commercial vehicles, there appears to be no significant peak. The traffic

levels remain fairly constant between 8:00 a.m. and 5:30 p.m., with the biggest peak occurring around 9:00 a.m.



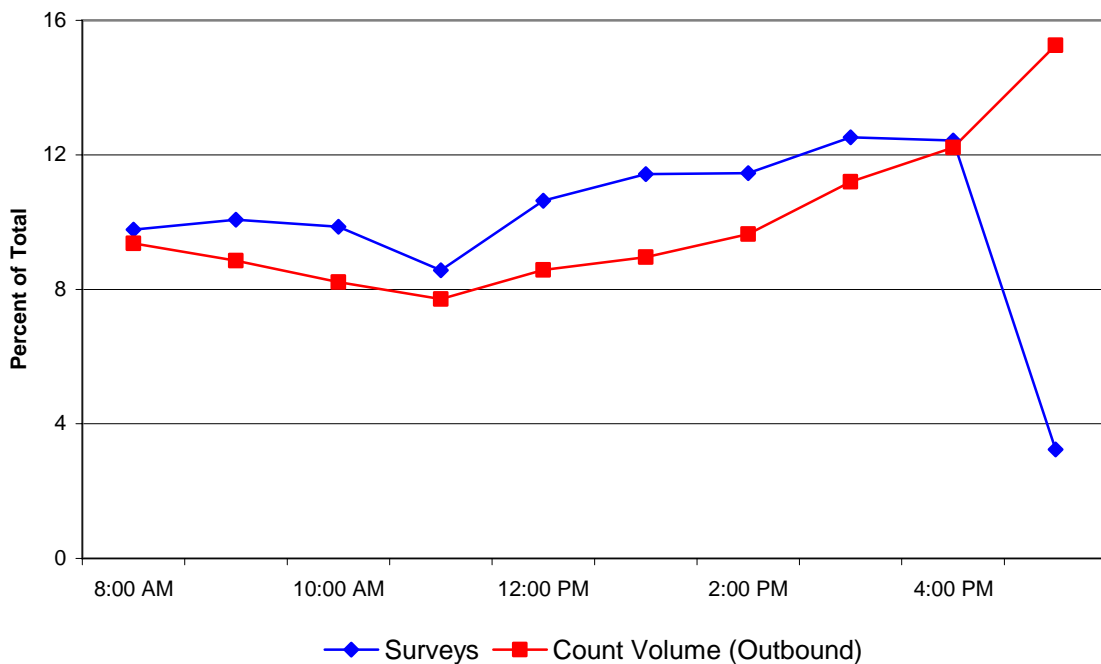
**Figure 9. Distribution of Inbound Vehicles by Time-of-Day.**



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

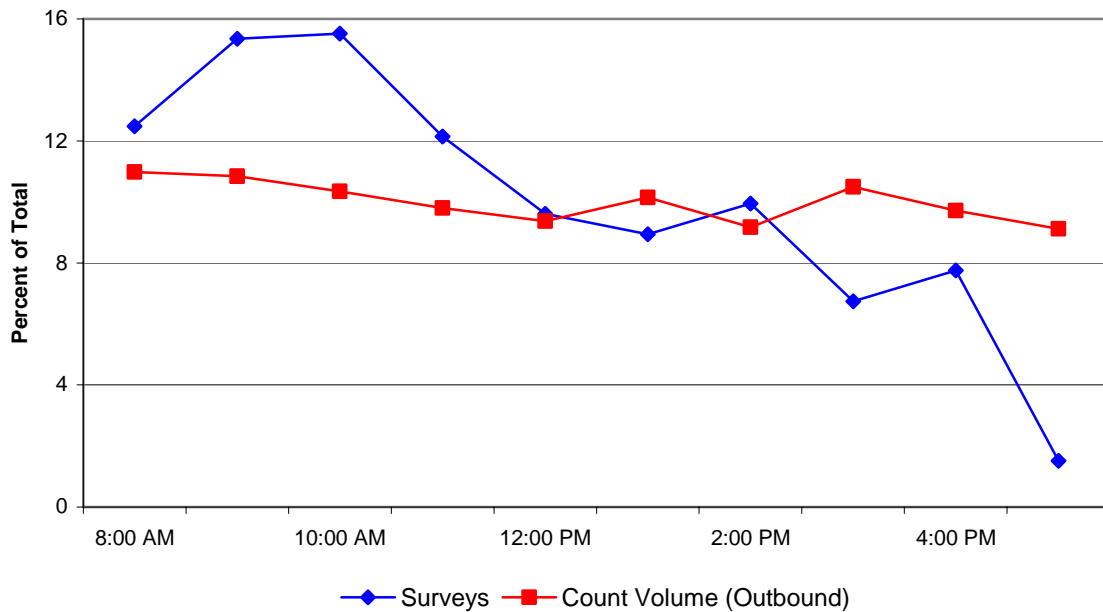
An additional analysis that compared the number of surveys and vehicle counts by time of day was conducted. In this analysis, the percent of vehicles surveyed and the percent of outbound vehicles counted were grouped in hourly increments during the time period in which the survey was conducted. The results 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 generally increased throughout the day, with a peak between 3 p.m. and 5 p.m. The counts for non-commercial vehicles also gradually increased throughout the day. Approximately 17 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 12 percent.



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

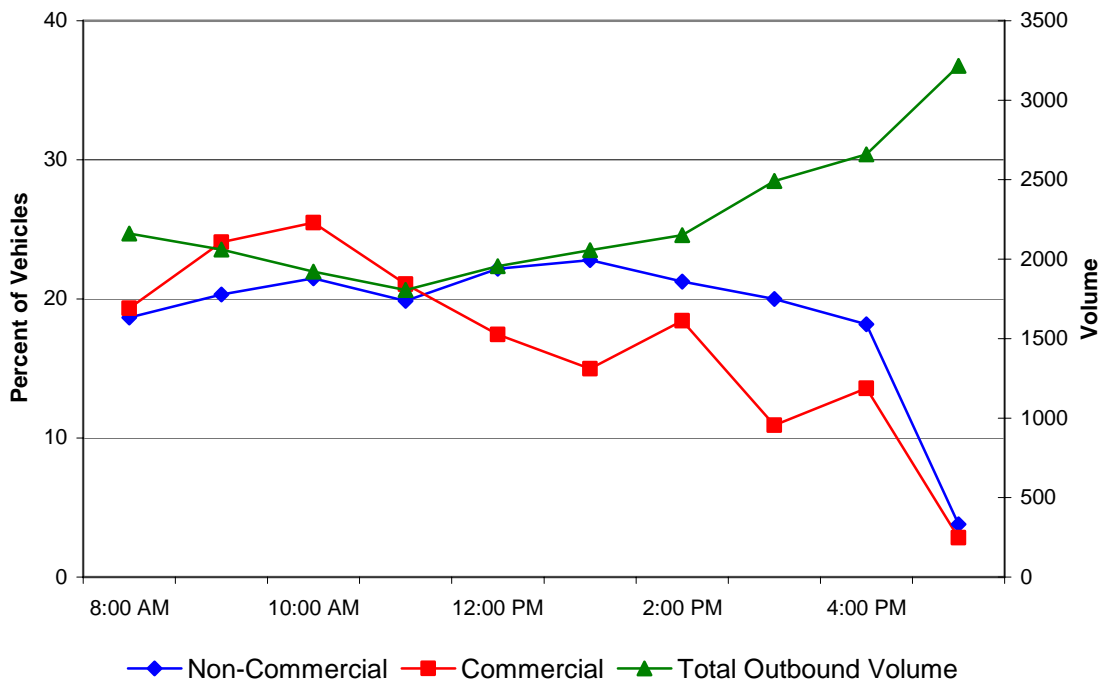
There was a noticeably different trend among commercial vehicles. While the percent of vehicles counted was fairly constant throughout the day, the percent of completed surveys peaked between 9 a.m. and 11 a.m. and then declined throughout the day. Overall, 17 percent of the commercial vehicles that were counted during the survey period were interviewed. For the 24-hour period, 11 percent of the commercial vehicles were surveyed.



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

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



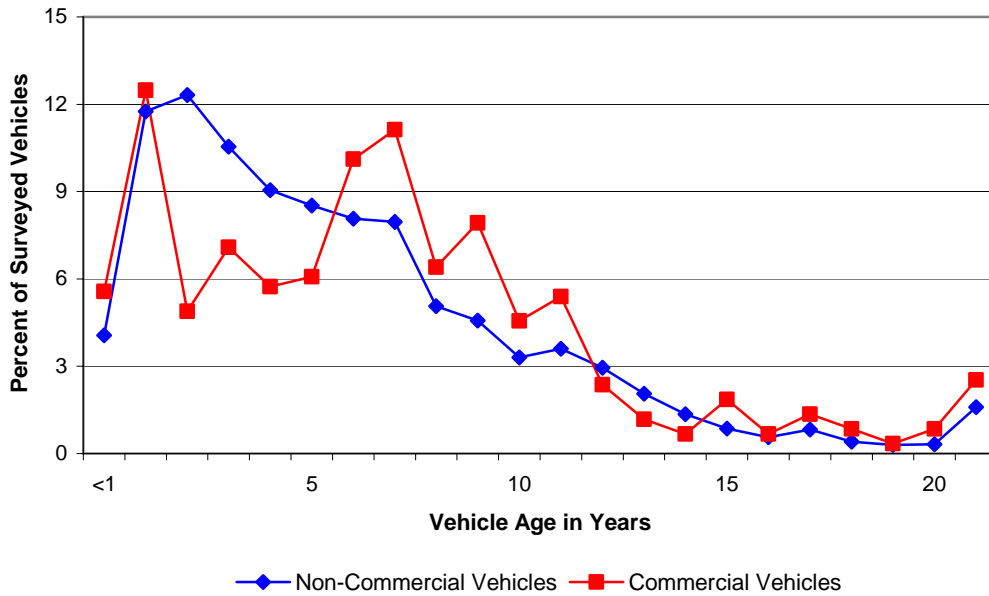


**Figure 13. Distribution of Counted Vehicles That Were Surveyed.**

### Vehicle Characteristics

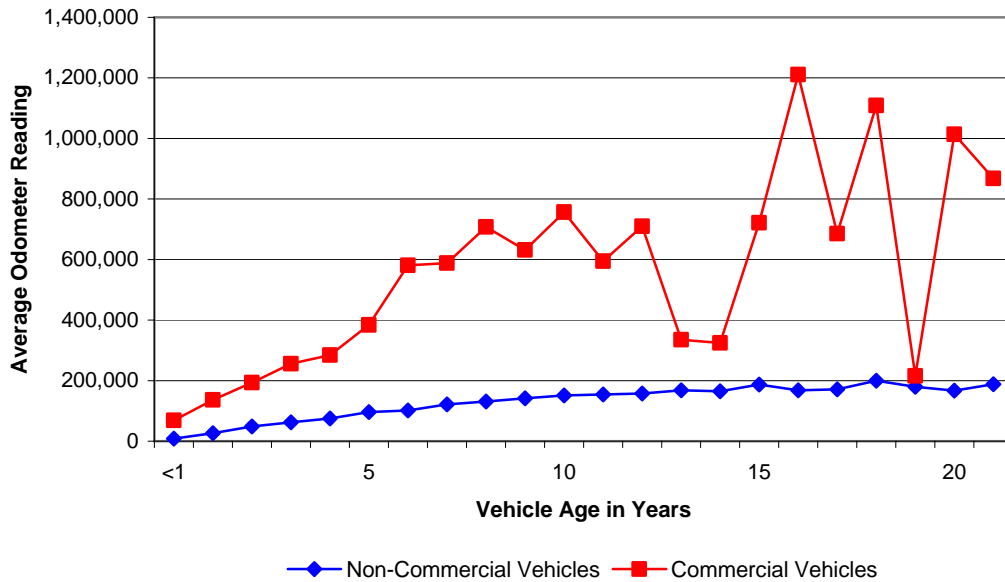
As part of the survey, interviewers collected data on the year, make, odometer readings, and model of each vehicle surveyed. This provides an indication of the distribution of vehicles traveling through the external stations by type, age, and condition (as implied by the number of miles on the vehicle). Figure 14 represents the percent distribution of non-commercial and commercial vehicles by age as reported in the surveys. The average age for surveyed vehicles was approximately 4.8 years for non-commercial vehicles and 5.7 years for commercial vehicles. The median vehicle model year was 2001 for non-commercial and 2000 for 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 (3,395 and 593, respectively).



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

For example, for vehicles 14 years old, there were 46 observations for non-commercial vehicles and only 4 for commercial vehicles. One of those four commercial vehicle surveyed had an odometer reading of 92,000 miles. As a result, the average for the group is lower than would be expected.



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

The average odometer reading for non-commercial vehicles was 91,878 and the average commercial vehicle odometer reading was 468,661. This information indicates that commercial vehicles accumulated mileage at nearly five times the rate of non-commercial vehicles. For more detailed information, Table 8 presents the numerical values for the non-commercial data plotted in Figures 13 and 14. Table 9 provides similar information for commercial vehicles.

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

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	138	4.06	4.06	8,311
1	399	11.75	15.82	26,984
2	418	12.31	28.13	48,685
3	358	10.54	38.67	62,629
4	307	9.04	47.72	75,212
5	289	8.51	56.23	95,904
6	274	8.07	64.30	102,064
7	270	7.95	72.25	121,716
8	172	5.07	77.32	131,403
9	155	4.57	81.89	141,870
10	112	3.30	85.18	151,115
11	122	3.59	88.78	154,820
12	100	2.95	91.72	157,277
13	70	2.06	93.78	168,739
14	46	1.35	95.14	165,604
15	29	0.85	95.99	186,823
16	19	0.56	96.55	168,528
17	28	0.82	97.38	171,181
18	14	0.41	97.79	199,965
19	10	0.29	98.09	180,243
20	11	0.32	98.41	166,983
>20	54	1.59	100.00	188,757
Total	3,395	100.00		

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

Age	Number of Vehicles	Percent of Total	Cumulative Percent of Total	Average Reported Odometer Value
<1	33	5.56	5.56	69,271
1	74	12.48	18.04	136,027
2	29	4.89	22.93	193,878
3	42	7.08	30.02	256,117
4	34	5.73	35.75	285,035
5	36	6.07	41.82	383,715
6	60	10.12	51.94	580,484
7	66	11.13	63.07	588,563
8	38	6.41	69.48	708,321
9	47	7.93	77.40	631,830
10	27	4.55	81.96	756,639
11	32	5.40	87.35	595,204
12	14	2.36	89.71	709,776
13	7	1.18	90.89	335,796
14	4	0.67	91.57	325,290
15	11	1.85	93.42	721,999
16	4	0.67	94.10	1,210,451
17	8	1.35	95.45	685,500
18	5	0.84	96.29	1,109,360
19	2	0.34	96.63	215,533
20	5	0.84	97.47	1,014,019
>20	15	2.53	100.00	867,542
Total	593	100.00		

### Vehicle Occupancy

As vehicles were surveyed, one of the data items recorded was the class or type of vehicle and the number of persons in the vehicle. This information provides a means for estimating the number of persons traveling into and out of the Lubbock study area. Table 10 presents the number of observed non-commercial and commercial vehicles by class and average occupancy. Nearly all of the non-commercial vehicles (99 percent) were classified as passenger vehicles. The majority of commercial vehicles (63 percent) were semi/tractor-trailer combinations. The overall average occupancy for non-commercial vehicles was 1.34 and 1.09 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	3,359	1.34	Passenger Vehicle (car/van/light truck)	62	1.14
Bus	0	—	Passenger Vehicle with Trailer	16	1.13
Taxi/Paid Limo	0	—	Single Unit 2-axle (6 wheels)	40	1.13
School Bus	0	—	Single Unit 2-axle (6 wheels) with Trailer	39	1.05
Commercial Vehicle (over 1 ton)	16	1.88	Single Unit 3-axle (10 wheels)	32	1.19
Motorcycle	11	1.36	Single Unit 4-axle (14 wheels)	30	1.2
Recreational Vehicle	3	1.67	Semi (tractor-trailer)	374	1.06
Other	6	1.00	Other	0	—
Total	3,395	1.34	Total	593	1.09

### COMMERCIAL VEHICLE CARGO CHARACTERISTICS

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

Over one-third of the vehicles (36 percent) reported not carrying any cargo. Of those vehicles transporting cargo, 98 percent of those cargos were not from or headed to Mexico. Only six vehicles indicated that their cargo was from or destined to Mexico. For those vehicles carrying a cargo, only 3 percent reported picking their cargo up at an interpositional transfer or custom brokerage facility and 2 percent indicated that they would be dropping their cargo off at the same type of facility. Interpositional transfer or custom brokerage facilities are sites where cargo may be transferred between several different modes (e.g. rail to truck, ship to truck, etc.).

**Table 11. Commercial Vehicles with Cargo from Mexico.**

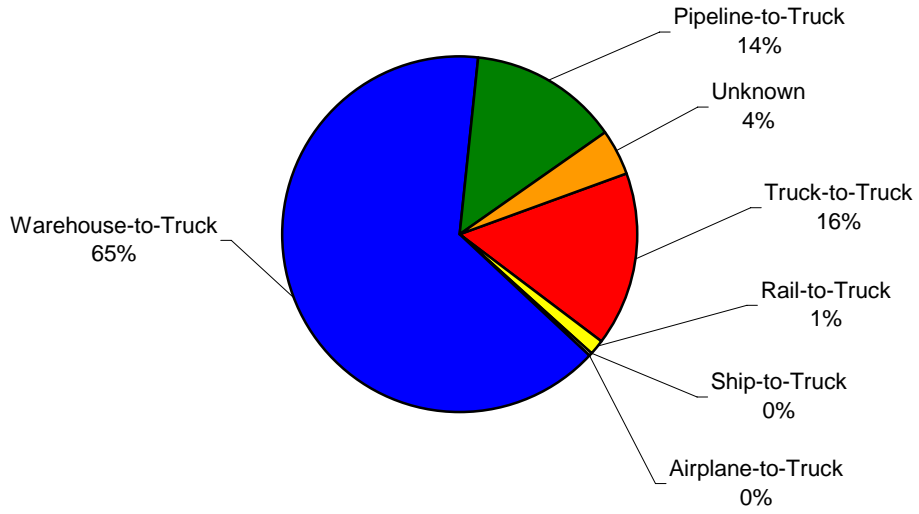
Station Number	Facility	Surveyed Vehicles	Empty Vehicles	Percent Empty	Vehicles with Mexico Cargo	Vehicles without Mexico Cargo
500	IH 27	61	30	49.18	3	28
501	FM 400	47	14	29.79	1	32
504	US 82/62	59	26	44.07	0	33
505	FM 40	31	10	32.26	0	21
507	US 84	71	17	23.94	1	53
508	FM 400	18	10	55.56	0	8
510	US 87	62	24	38.71	0	38
511	FM 1730	11	5	45.45	0	6
514	US 82/62	53	22	41.51	0	31
515	FM 1585	31	11	35.48	0	20
516	SH 114	60	18	30.00	0	42
517	FM 2641	22	4	18.18	0	18
519	US 84	56	23	41.07	1	32
521	FM 179	11	2	18.18	0	9
Total		593	216	36.42	6	371

A detailed summary of cargo types reported for commercial vehicles is provided in Table 12. Empty vehicles comprised 36 percent of those surveyed. For vehicles with identified cargo types, 18 percent reported that their cargo as farm products, 9 percent reported a cargo of health, and beauty products, and 6 percent reported a cargo of manufactured goods/equipment. Unusual amounts (17 percent) of the cargos being transported were unidentified or unknown to the driver.

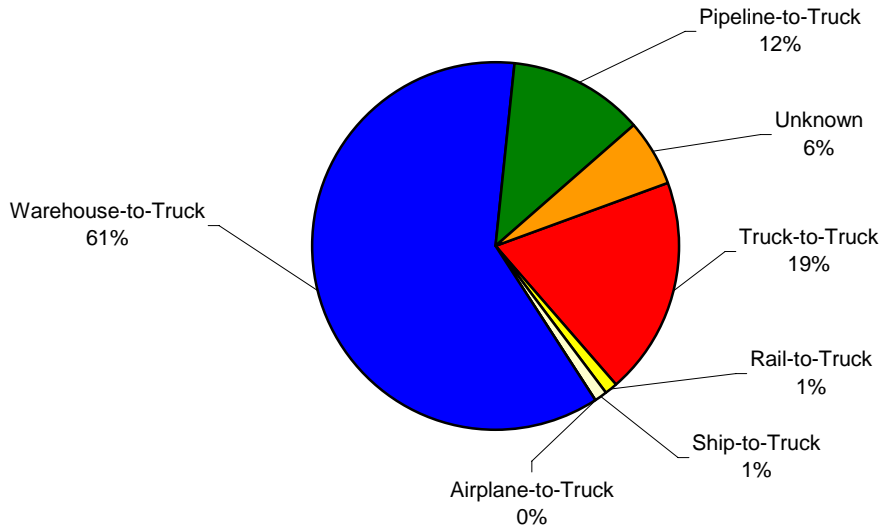
**Table 12. Distribution of Commercial Vehicles by Type of Cargo.**

Cargo Description		Number of Vehicles	Percent of Vehicles
1	— Farm Products	109	18.38
2	— Forest Products	1	0.17
3	— Marine Products	0	0.00
4	— Metals and Minerals	14	2.36
5	— Food, Health, and Beauty Products	51	8.60
6	— Tobacco Products	0	0.00
7	— Textiles	0	0.00
8	— Wood Products	3	0.51
9	— Printer Matter	0	0.00
10	— Chemical Products	3	0.51
11	— Refined Petroleum or Coal Products	13	2.19
12	— Rubber, Plastic, and Styrofoam Products	4	0.67
13	— Clay, Concrete, Glass, or Stone	4	0.67
14	— Manufactured Goods/Equipment	41	6.91
15	— Wastes	5	0.84
16	— Miscellaneous Shipments	18	3.04
17	— Hazardous Materials	3	0.51
18	— Transportation	10	1.69
19	— Unclassified Cargo	0	0.00
20	— Driver Refused to Answer	0	0.00
21	— Unknown to Driver	98	16.53
22	— Empty	216	36.42
Total		593	100.00

Figures 16 and 17 present the distribution of surveyed commercial vehicles by the type of cargo transfer at the origin (point of pick-up) and at the destination (point of delivery). Warehouse-to-truck and truck-to-truck accounted for the majority of cargo transfers at both the origin and destination. At the origin, 65 percent of the transfers were warehouse-to-truck and 16 percent were truck-to-truck. At the destination, warehouse-to-truck (61 percent) and truck-to-truck (19 percent) transfers accounted for the majority of the transfers.



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



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



## **SURVEY DATA EXPANSION**

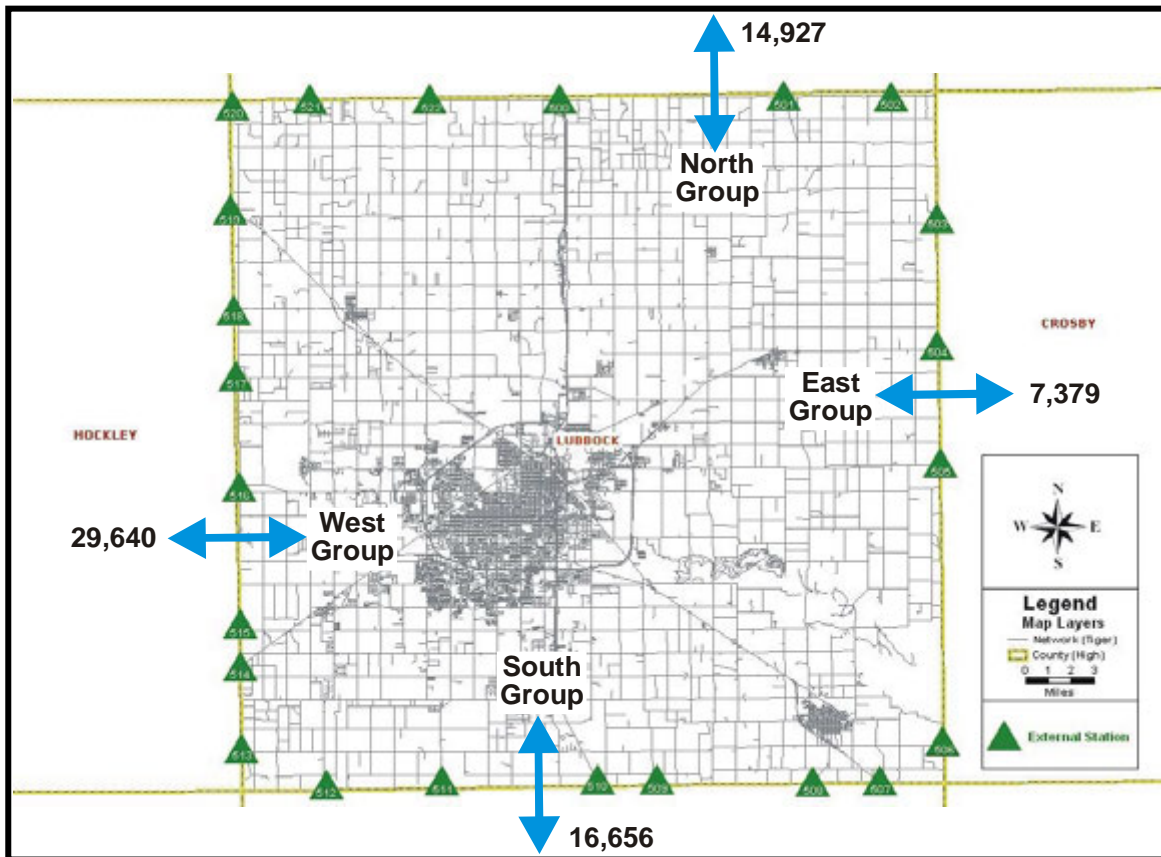
The vehicle survey data were expanded based on the 24-hour directional vehicle classification counts conducted at each survey site on the day the site was surveyed. The assumption is made that the traffic in the non-surveyed direction is a mirror image of the traffic in the surveyed direction. For example, 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 13 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 13 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 400 (station number 501) was applied to the total number of trips for FM 789 (station number 502), 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 13. Expanded Survey Results by Station.**

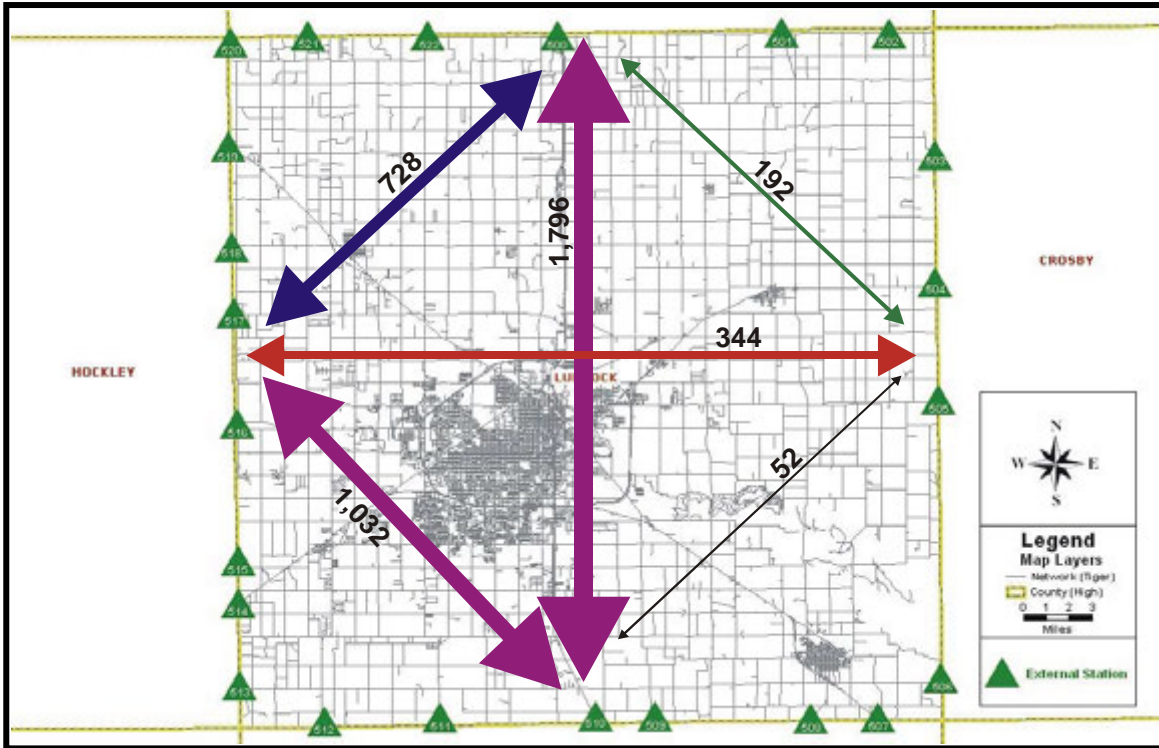
Station Number	Facility	Non-Commercial Vehicles			Commercial Vehicles			Residents	Visitors
		Local	Through	Total	Local	Through	Total		
500	IH 27	11,007	672	11,679	1,395	658	2,053	5,211	5,796
501	FM 400	439	35	474	143	15	158	212	227
502	FM 789	1,373	0	1,373	69	0	69	662	711
503	FM 1527	110	0	110	5	0	5	53	57
504	US 82/62	5,448	182	5,630	728	122	850	2,463	2,985
505	FM 40	413	3	416	114	4	118	209	204
506	FM 2150	160	0	160	401	0	401	81	79
507	US 84	6,071	461	6,532	1,540	451	1,991	2,597	3,475
508	FM 400	801	6	807	163	6	169	210	591
509	FM 2192	204	2	206	24	0	24	53	150
510	US 87	5,178	320	5,498	1,564	203	1,767	2,013	3,165
511	FM 1730	784	10	794	35	0	35	260	524
512	FM 179	246	0	246	46	0	46	81	165
513	FM 41	471	0	471	72	0	72	156	315
514	US 82/62	6,790	116	6,906	952	253	1,205	2,841	3,950
515	FM 1585	1,267	16	1,283	265	2	267	653	615
516	SH 114	10,732	159	10,891	357	44	401	4,920	5,812
517	FM 2641	356	4	360	55	0	55	119	238
518	FM 1294	301	0	301	16	0	16	100	201
519	US 84	6,586	235	6,821	1,149	240	1,389	2,615	3,971
520	FM 597	188	0	188	82	0	82	63	125
521	FM 179	180	21	201	23	3	26	60	120
522	FM 2528	260	0	260	38	0	38	87	173
Total		59,367	2,240	61,607	9,236	2,001	11,237	25,717	33,650

Figure 18 shows the estimates of external-local trip movements by direction and location group. The West group had the largest estimated number of external-local trip movements, with nearly 30,000 total daily trips. The South group had the second highest estimated number of external-local trip movements with nearly 17,000 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 North and South groups. Nearly 1,800 external-through trips are estimated to be made on a daily basis between the north and south sides of the study area. This is logical due to US 87 / IH 27 running North-South through the study area. West-South external-through trips were the second most common movement.



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

**SURVEY SUMMARY**

Nearly 73,000 vehicles enter and leave the Lubbock study area daily. Nearly 15 percent are commercial vehicles. Approximately 6 percent of the nearly 73,000 vehicles make through trips. Approximately 19 percent of the non-commercial and commercial vehicles enter or leave the Lubbock study area via IH 27. Based on the average vehicle occupancy observed in the survey, an estimated 82,500 persons are entering and leaving the study area daily by non-commercial vehicle and nearly 12,300 persons are entering and leaving by commercial vehicle. The estimated number of non-residents (persons that do not live in the two-county study area) in non-commercial vehicles that enter the study area daily is approximately 45,000. Non-residents account for approximately 19,300 internal trips within the study area.

Approximately 30 percent of non-commercial trip origins were leaving home and 42 percent of non-commercial trip destinations were returning to home. HBNW trips accounted for nearly 46

percent of the non-commercial trips. The percentage of trips that were NHB and HBW were 28 percent and 26 percent, respectively.

Commercial vehicle drivers reported varied trip purposes at the origin and destination ends of their trip. Approximately 29 percent of the trip origin purposes were reported to be picking up cargo. Delivering cargo accounted for an additional 26 percent of trip origins. Delivering cargo was the stated purpose for 38 percent of the destination trips, while picking up cargo accounted for 26 percent of the destinations. Leaving/returning to base operations accounted for 20 percent of the commercial vehicle trip origins and only 9 percent of the trip destinations.

The percent distribution of non-commercial and commercial vehicles by time-of-day was similar between inbound and outbound directions for all the sites combined. The largest “spike” for non-commercial vehicles occurred during the morning peak for the inbound direction and during the afternoon peak for the outbound direction. Commercial vehicle travel peaked in the mid-morning (around 9 a.m.) for both the inbound and the outbound directions.

The median vehicle year for non-commercial vehicles was 2001 and for commercial vehicles it was 2000. The average vehicle age for commercial vehicles was 5.7 years and for non-commercial vehicles it was 4.8 years. The average odometer reading for commercial vehicles was approximately five times higher than that for non-commercial vehicles. Average vehicle occupancy for non-commercial vehicles was 1.34, or nearly 25 percent greater than the 1.09 reported for commercial vehicles.

Commercial vehicles represent approximately 15 percent of the vehicles traveling into and out of the Lubbock study area on a daily basis. Nearly 36 percent of the commercial vehicles are carrying no cargo. Of the commercial vehicles carrying cargo, 98 percent are carrying cargo that is not from or destined to Mexico.



## **APPENDIX**





**LUBBOCK EXTERNAL STATION**

**NON-COMMERCIAL VEHICLE SURVEY FORM - A**

(Outbound Direction)

Station # \_\_\_\_\_ Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_ Interviewer \_\_\_\_\_

For each vehicle you collect	Vehicle 1	Vehicle 2	Vehicle 3
Survey Begin Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Survey End Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Number of people in vehicle			
Vehicle Type			

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

QUESTIONS:	Vehicle 1	Vehicle 2	Vehicle 3
1. What year, make, and model is this vehicle?  Gas (leaded, unleaded), diesel, propane or other fuel?	_____ Year _____ Make _____ Model Leaded <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? (If other, go to 4)	<input type="checkbox"/> Lubbock <input type="checkbox"/> Other	<input type="checkbox"/> Lubbock <input type="checkbox"/> Other	<input type="checkbox"/> Lubbock <input type="checkbox"/> Other
3a. What city do you live in?	(go to 5)	(go to 5)	(go to 5)
4. What city and state to you live in?	_____ _____ (city / state in US or Mexico) <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 of your travel?	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 4d)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 4d)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 4d)
4b. 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"/> Refused <input type="checkbox"/> No (go to 5)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 5)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 5)

4e. Where outside of Texas did you travel from?	_____	_____	_____
	(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. Was that location in the study area? (see Question 3 for study area counties)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (Yes go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (Yes go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused (Yes go to 6)
5e. What road did you use to enter the study area? (see Question 3 for study area counties)			

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

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

6. Where is your next destination? (place/address or nearest intersection/city)			
6a. What is your purpose for traveling to this destination? (Choose from trip purpose options)			
7. Are you going to a location out of Texas?	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 7d)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> No (go to 7d)	<input type="checkbox"/> Yes <input type="checkbox"/> Refused <input type="checkbox"/> 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. How many more places did you stop today?			

**LUBBOCK EXTERNAL STATION  
COMMERCIAL VEHICLE SURVEY FORM B**  
(Outbound Direction)

Station # \_\_\_\_\_

Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_

Interviewer \_\_\_\_\_

**For each vehicle you collect:**

	Vehicle 1	Vehicle 2	Vehicle 3
1. Survey Times.			
1a. Survey Begin Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
1b. Survey End Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
2. Number of people in vehicle			
3. Vehicle Classification			
4. Vehicle Type	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (go to 13)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (go to 13)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (go to 13)
5. What is the cargo ? (choose from vehicle cargo codes)	_____ <input type="checkbox"/> Empty (no cargo)	_____ <input type="checkbox"/> Empty (no cargo)	_____ <input type="checkbox"/> Empty (no cargo)
5a. If empty, what was the last cargo you delivered?			
5b. What is the weight of your cargo?	_____ (lbs)	_____ (lbs)	_____ (lbs)
* <i>determine 5a and 5b by observation</i> *			
5c. Is cargo being hauled using an multi-modal container/trailer or TEU?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6)
<i>If Yes</i>			
5d. Is the container a Reefer or Dry Box?	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box
5e. Record the hazardous material placard (if applicable)			
6. 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
7. Where did you pick up your load? (place/address or nearest intersection and city)			
8. Was that location an inter-modal transfer or custom brokerage site?	<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
9. How was your load transferred at that site (choose from transfer codes)?			
10. Where will you drop your cargo off? (place/address or nearest intersection and city)			
11. Is that location an inter-modal transfer or custom brokerage site?	<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
12. How will the cargo be transferred at that site (choose from transfer codes)?			

**Vehicle Classification Options**

- |  |                                    |                                    |
|--|------------------------------------|------------------------------------|
| 1.) Passenger Vehicle (car/van/light truck)    | 2.) Passenger Vehicle with trailer | 3) Single Unit 2-axle (6 wheels)   |
| 4.) Single Unit 2-axle (6 wheels) with trailer | 5.) Single Unit 3-axle (10 wheels) | 6.) Single Unit 4-axle (14 wheels) |
| 7) Semi (all tractor-trailer combinations)     | 8) 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:**

<p>13. What is the year and gross weight rating of this vehicle ?</p> <p>Gas (leaded, unleaded), diesel, propane or other fuel?</p>	<p>_____</p> <p>Year</p> <hr/> <p>Gross Weight</p> <p>Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/></p> <p>Diesel <input type="checkbox"/> Propane <input type="checkbox"/></p> <p>Other <input type="checkbox"/> _____</p>	<p>_____</p> <p>Year</p> <hr/> <p>Gross Weight</p> <p>Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/></p> <p>Diesel <input type="checkbox"/> Propane <input type="checkbox"/></p> <p>Other <input type="checkbox"/> _____</p>	<p>_____</p> <p>Year</p> <hr/> <p>Gross Weight</p> <p>Leaded <input type="checkbox"/> Unleaded <input type="checkbox"/></p> <p>Diesel <input type="checkbox"/> Propane <input type="checkbox"/></p> <p>Other <input type="checkbox"/> _____</p>
<p>14. What is the mileage on your odometer?</p>			
<p>15. Where are you coming from? (city / state in US or Mexico)</p> <p>15a. Is that location in Texas?</p> <p>15b. (If not in Texas) Did you enter Texas today?</p> <p>15c. What road or highway did you use to enter Texas?</p> <p>15d. Did you stay overnight as part of your travel?</p> <p>15e. If yes, where did you stay? (city/county/state)</p> <p>15f. How many nights have you stayed?</p>	<p></p> <p><input type="checkbox"/> Yes (go to 15d) <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 15d)</p> <p></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 16)</p> <p></p> <p></p>	<p></p> <p><input type="checkbox"/> Yes (go to 15d) <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 15d)</p> <p></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 16)</p> <p></p> <p></p>	<p></p> <p><input type="checkbox"/> Yes ( go to 15d) <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 15d)</p> <p></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (go to 16)</p> <p></p> <p></p>
<p>16. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)</p> <p>16a. What time did you leave that place?</p> <p>16b. What type of place was this? <b>(choose from type of place options).</b></p> <p>16c. What was your purpose for being at your last location?</p> <p>16d. Was that location in the study area?</p> <p>16e. What road did you use to enter the study area?</p>	<p></p> <p>_____ a.m. _____ p.m.</p> <p></p> <p></p> <p><input type="checkbox"/> Yes (Go to 17) <input type="checkbox"/> No <input type="checkbox"/> Refused</p> <p></p>	<p></p> <p>_____ a.m. _____ p.m.</p> <p></p> <p></p> <p><input type="checkbox"/> Yes (Go to 17) <input type="checkbox"/> No <input type="checkbox"/> Refused</p> <p></p>	<p></p> <p>_____ a.m. _____ p.m.</p> <p></p> <p></p> <p><input type="checkbox"/> Yes (Go to 17) <input type="checkbox"/> No <input type="checkbox"/> Refused</p> <p></p>
<p>17. Where is your next destination? <b>(place/address or nearest intersection/city)</b></p> <p>17a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)</p>			

18. Are you going to a location outside of Texas?	<input type="checkbox"/> Yes (Go to 18a) <input type="checkbox"/> No (go to 18d) <input type="checkbox"/> Refused	<input type="checkbox"/> Yes (Go to 18a) <input type="checkbox"/> No (go to 18d) <input type="checkbox"/> Refused	<input type="checkbox"/> Yes (Go to 18a) <input type="checkbox"/> No (go to 18d) <input type="checkbox"/> Refused
<i>If Yes</i> 18a. What city and state are you going to?			
18b. What road or highway will you use to leave Texas?			
18c. How many more days will you be in Texas?			
<i>If No</i> 18d. What city / county in Texas are you going to?			

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

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

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

#### Vehicle Cargo Codes

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