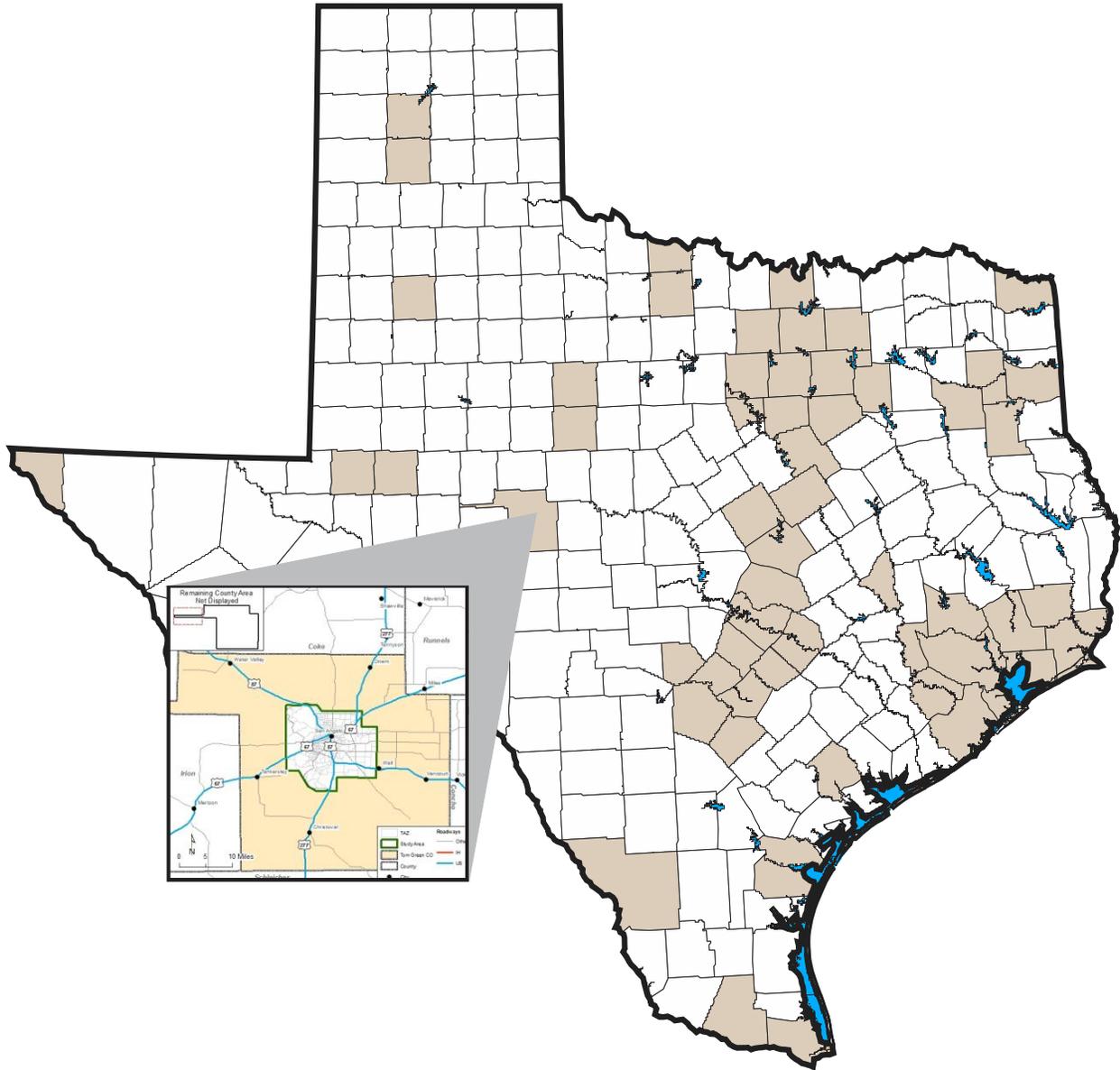


2014 San Angelo Commercial Vehicle Technical Summary



Prepared by the
Texas A&M Transportation Institute
February 2017

2014 San Angelo Commercial Vehicle Survey

TECHNICAL SUMMARY

Texas Department of Transportation Travel Survey Program

Prepared by

Stephen Farnsworth
Associate Research Scientist

of the
Texas A&M Transportation Institute

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TEXAS A&M TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

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INTRODUCTION

In 2014, the Texas Department of Transportation (TxDOT) funded a commercial vehicle survey in the San Angelo (TX) area. The purpose of this survey was to provide data that would enable TxDOT to forecast total commercial vehicle travel demand within the San Angelo urban area. The study area is located in west Texas, and as shown in Figure 1, is in Tom Green County. The San Angelo study area had a total population of approximately 93,200 people in the 2010 U.S. Census (American Fact Finder).

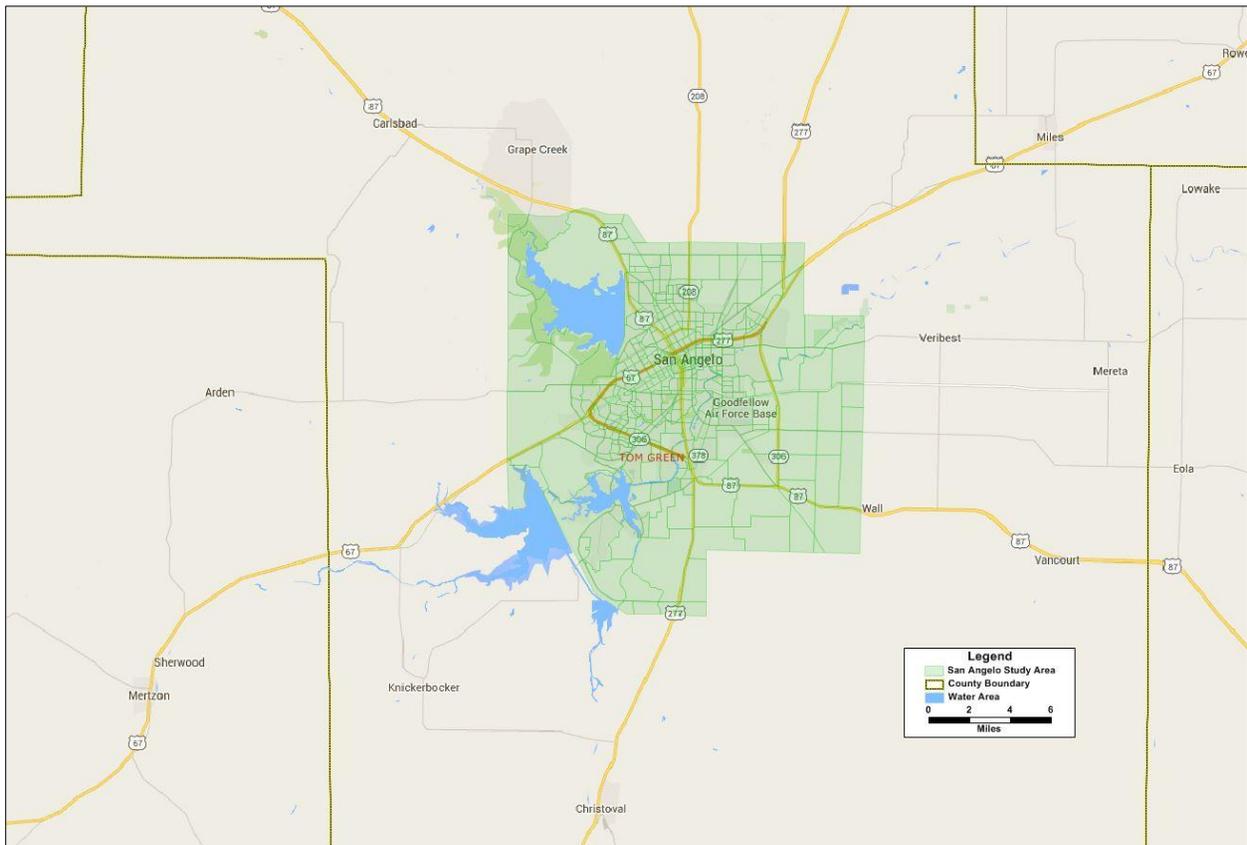


Figure 1. San Angelo Study Area.

This report presents a technical summary of the commercial vehicle travel survey conducted in 2014 in the San Angelo region and documents the data collected and the analysis of results for the study area. The forms used in the survey are included in the Appendix of this report.

SURVEY METHODOLOGY

The commercial vehicle surveys for the San Angelo study area were conducted during the period between October 2013 and April 2014. Alliance Transportation Group (ATG) was contracted by

TxDOT to conduct the commercial vehicle surveys for the study area, with technical assistance from the Texas A&M Transportation Institute (TTI). Prior to these surveys, a pilot study was conducted, which consisted of 27 commercial vehicles from seven businesses. Pilot survey data are typically included with the primary survey results. No changes were made to the survey instruments between the pilot survey and the primary survey.

The survey sample was randomly selected from a listing of all business individuals, companies, and public agencies that own, operate, or lease commercial vehicles within the study area. This list was purchased from InfoUSA and provided to TTI for categorization and randomizing. Selected businesses were contacted and requested to participate in the survey. Those who agreed to participate were provided survey packets and instructions on how the survey forms should be filled out. The drivers of the commercial vehicles were asked to keep a 24-hour diary of the locations of all trips made by each vehicle.

A total of 120 companies participated in the San Angelo commercial vehicle survey, from which a total of 314 commercial vehicle surveys were obtained. Data editing and review processes were performed by TTI to ensure that the survey data collected were complete and followed the guidelines set forth in TxDOT's bid specification for the project. A data check program was also used to examine the accuracy of geocoding of locations and logic of survey responses. The majority of data errors were expected to be corrected prior to final data submittals by the contractor (ATG). However, it was not unusual to find errors during actual data processing and analysis. In this study, survey responses with irreconcilable data were not included in the survey analysis. Additionally, inconsistent trip records were dropped from the survey analysis.

During the review process, it was noted that some of the business locations included in the survey were located outside of the MPO area. Therefore, those businesses and their accompanying surveys were removed from the analysis. Additionally, some vehicles reported no trips on the survey day and therefore were removed from the analysis. The results presented in this technical summary are therefore based on data from 268 surveyed commercial vehicles.

SURVEY RESULTS

Vehicle Characteristics

This section presents the characteristics of registered trucks and surveyed commercial vehicles to provide an overview of the type and condition of commercial vehicles operating within the San Angelo study area. Information on registered trucks includes the number of diesel-fueled, gasoline-fueled, and propane-fueled trucks by gross vehicle weight and by model year. Information on surveyed commercial vehicles includes the vehicle's make, model and year, odometer reading, gross vehicle weight, vehicle classification, and fuel use.

Registered Commercial Vehicles

Based on TxDOT's vehicle registration data, there were approximately 3,600 trucks registered in the Tom Green County in 2014. Table 1 shows the distribution of registered diesel trucks and gasoline trucks by gross vehicle weight. Over 82 percent of all trucks registered in the San Angelo study area are diesel-fueled vehicles. Sixty-eight percent of all registered trucks had a gross vehicle weight of less than 8,500 pounds.

Table 1. Gross Vehicle Weight of Registered Trucks in San Angelo (TX) Study Area.

Gross Vehicle Weight	Diesel Trucks		Gasoline Trucks		Total	
	Number of Vehicles	% of Diesel Trucks	Number of Vehicles	% of Gasoline Trucks	Number of Vehicles	% of Total Trucks
< 8500	2,056	68.4	415	66.1	2,471	68.1
> 10000	293	9.7	120	19.1	413	11.4
> 14000	74	2.5	17	2.7	91	2.5
> 16000	101	3.4	20	3.2	121	3.3
> 19500	196	6.5	29	4.6	225	6.2
> 26000	103	3.4	11	1.8	114	3.1
> 33000	149	5.0	12	1.9	161	4.4
> 60000	34	1.1	4	0.6	38	1.0
Total	3,006	100.0	628	100.0	3,634	100.0

Source: TxDOT 2014.

Figure 2 shows the distribution of registered diesel trucks and gasoline trucks by model year. Registered gasoline trucks were older relative to the diesel trucks. Approximately 75 percent of the diesel trucks were less than 10 years old, compared to 65 percent of the gasoline trucks

within that age range. Approximately 4 percent of the nearly 3,000 registered diesel trucks were 20 years or older, while 11 percent of the registered gasoline trucks were 20 years or older.

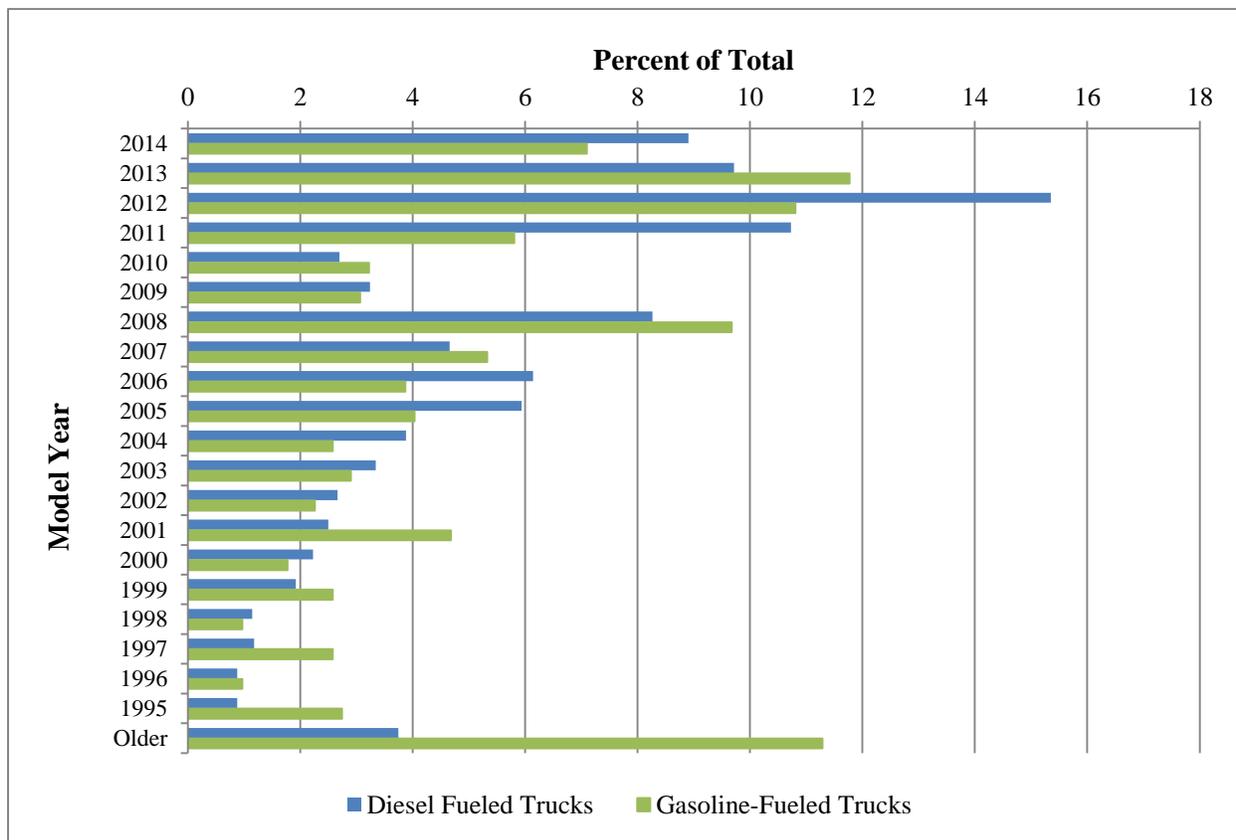


Figure 2. Model Year of Registered Trucks in the San Angelo (TX) Study Area.

Surveyed Commercial Vehicles

Commercial vehicles that participated in the San Angelo commercial vehicle survey were distinguished based on the nine classification types listed in Table 2. These were further categorized by commercial type as either major cargo/freight transport or local service vehicles, simply referred to in this report as cargo vehicles and service vehicles, respectively.

Cargo vehicles were defined as vehicles mainly used to transport cargo or freight, which were typically bulk goods, materials, and cargo in large quantities for wholesale distribution. Service vehicles were defined as vehicles mainly used to perform services such as those used by building contractors, plumbers, electricians, cable and telephone services/repairs, and delivery vans/vehicles used by local retailers. These also included company fleet vehicles or fleets and maintenance vehicles of public agencies such as TxDOT, city, county, or school districts.

Table 2 shows the distribution of surveyed vehicles by vehicle classification type and commercial type. Of the total 268 vehicles surveyed, 129 were cargo vehicles and 139 were service vehicles. Among cargo vehicles, approximately 33 percent were pick-up trucks, another 23 percent were semi (tractor-trailers), and 18 percent were single unit 2-axle (6 wheel) trucks. Among service vehicles, approximately 62 percent were pick-up trucks, 14 percent were vans, and 9 percent were passenger cars.

Table 2. Vehicle Classification Type of Surveyed Commercial Vehicles.

Vehicle Classification	Cargo Vehicles		Service Vehicles		Total Vehicles	
	Number of Vehicles	Percent of Cargo	Number of Vehicles	Percent of Service	Number of Vehicles	Percent of Total
Passenger Car	3	2.3	12	8.6	15	5.6
Pick-Up Truck	42	32.6	86	61.9	128	47.7
Van (Passenger or Mini)	15	11.6	20	14.4	35	13.1
Sport Utility Vehicle	1	0.8	8	5.8	9	3.4
Single Unit 2-Axle (6 Wheels)	23	17.7	12	8.6	35	13.1
Single Unit 3-Axle (10 Wheels)	14	10.9	1	0.7	15	5.6
Single Unit 4-Axle (14 Wheels)	2	1.6	0	0.0	2	0.7
Semi (Tractor-Trailer)	29	22.5	0	0.0	29	10.8
Other	0	0.0	0	0.0	0	0.0
Total	129	100.0	139	100.0	268	100.0

Figure 3 shows the distribution of surveyed vehicles by fuel type. Approximately 52 percent of the surveyed vehicles used diesel and 48 percent used unleaded gasoline. Among cargo vehicles, 66 percent used diesel and 34 percent used gasoline. Among service vehicles, 79 percent used gasoline and 21 percent used diesel. There were three vehicles classified as a hybrid-fueled vehicle (two cars and one SUV).

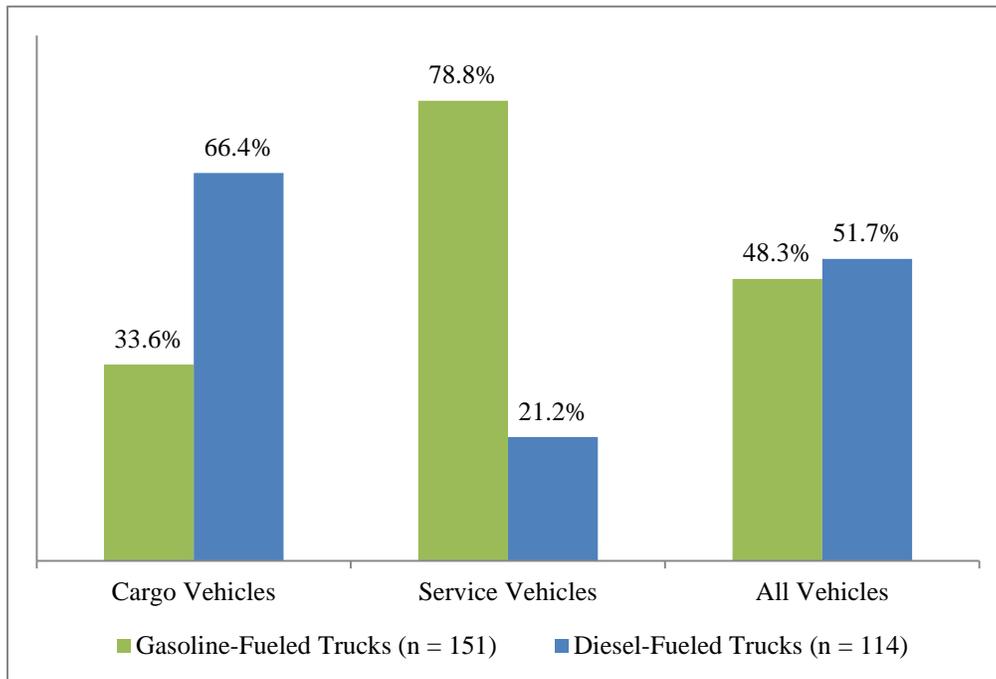


Figure 3. Type of Fuel Used by Surveyed Commercial Vehicles.

Table 3 shows the distribution of surveyed vehicles by gross vehicle weight. The survey included commercial vehicles with a gross vehicle weight of less than 10,000 pounds. Approximately 81 percent of the service vehicles belonged to this category, while approximately 50 percent of the cargo vehicles weighed more than 19,500 pounds.

Table 3. Gross Vehicle Weight.

Gross Vehicle Weight (lbs.)	Cargo		Service		Total	
	Number of Vehicles	% of Cargo Vehicles	Number of Vehicles	% of Service Vehicles	Number of Vehicles	% of Total Vehicles
< 10,000	37	28.6	113	81.3	150	56.0
> 10,000	13	10.1	9	6.5	22	8.2
> 14,000	6	4.7	2	1.4	8	3.0
> 16,000	9	7.0	2	1.4	11	4.1
> 19,500	14	10.9	3	2.2	17	6.3
> 26,000	9	7.0	6	4.3	15	5.6
> 33,000	27	20.8	4	2.9	31	11.6
> 60,000	14	10.9	0	0.0	14	5.2
Total	129	100.0	139	100.0	268	100.0

Figure 4 shows the distribution of surveyed vehicles by model year. Approximately 75 percent of cargo vehicles and 73 percent of the service vehicles were less than 10 years old. The average age for both cargo and service vehicles was 7.0 years (assuming 2014 as the base year).

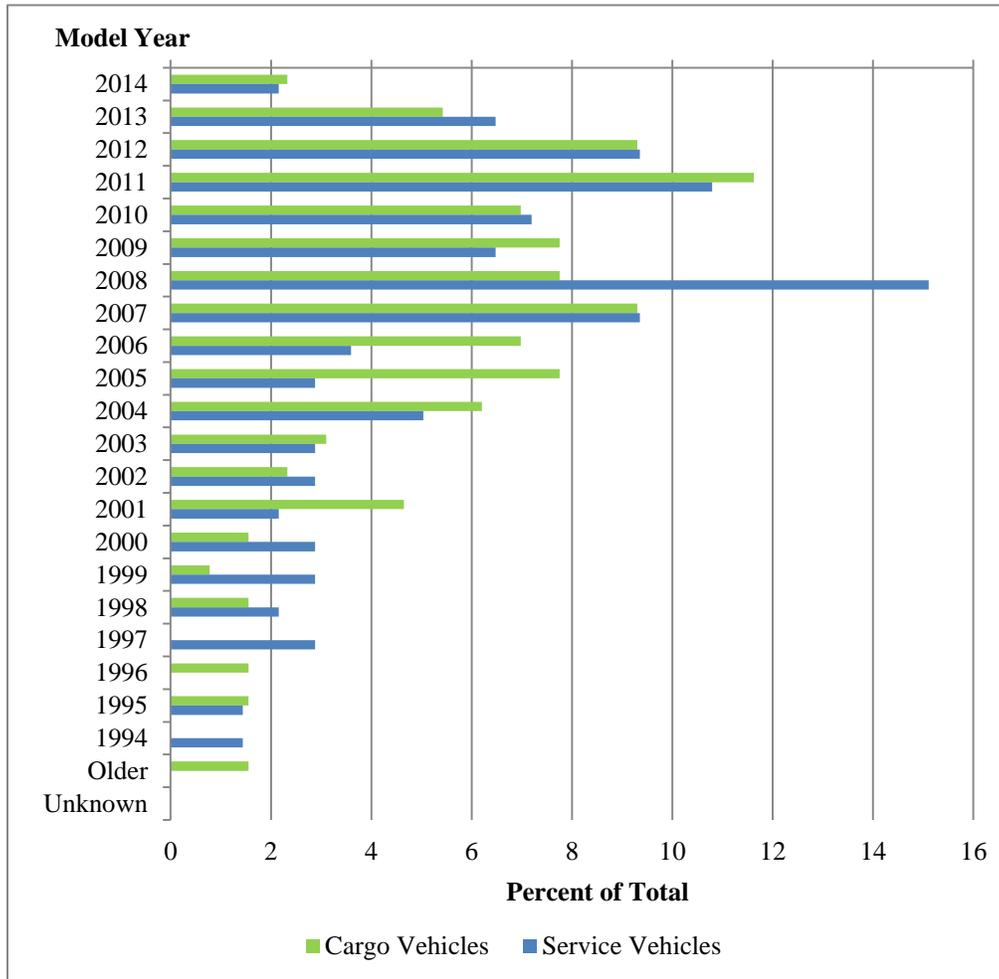


Figure 4. Vehicle Model Year.

Table 4 shows the average vehicle mileage by model year based on reported odometer readings from 268 surveyed vehicles at the beginning of their survey travel day. Cargo vehicles reported higher average odometer readings of over 209,100 miles compared to almost 99,600 miles for service vehicles.

Table 4. Average of Reported Odometer Readings by Model Year.

Model Year	Cargo Vehicles		Service Vehicles		Total Vehicles	
	Number of Vehicles	Avg. Odometer Reading	Number of Vehicles	Avg. Odometer Reading	Number of Vehicles	Avg. Odometer Reading
2014	3	29,921	3	7,335	6	18,628
2013	7	27,457	9	25,889	16	26,575
2012	12	107,162	13	44,448	25	74,551
2011	15	122,764	15	68,345	30	95,554
2010	9	104,739	10	49,894	19	75,873
2009	10	274,552	9	111,878	19	197,496
2008	10	156,772	21	98,647	31	117,397
2007	12	245,320	13	154,223	25	197,950
2006	9	308,509	5	114,653	14	239,275
2005	10	247,048	4	139,984	14	216,458
2004	8	347,443	7	169,671	15	264,483
2003	4	338,486	4	102,613	8	220,550
2002	3	217,620	4	104,605	7	153,040
2001	6	266,107	3	170,912	9	234,375
2000	2	87,114	4	100,256	6	95,875
1999	1	111,120	4	160,428	5	150,566
1998	2	510,487	3	153,680	5	296,403
1997	0	0	4	226,235	4	226,235
1996	2	85,809	0	0	2	85,809
1995	2	919,113	2	130,767	4	524,940
1994	0	0	2	33,036	2	33,036
Older	2	299,697	0	0	2	299,697
Total	129	209,171	139	99,562	268	152,322

Trip Frequency

The surveyed vehicles generated a total of 1,851 trips, of which 1,084 were internal trips and 767 were external trips. Internal trips were defined as those trips made within the San Angelo area. These trips were further distinguished by travel within or between zones. Inter-zonal trips were those trips made from one zone to another, while intra-zonal trips were made within the same zone. External trips were those trips made outside of the study area.

Figure 5 shows the distribution of inter-zonal, intra-zonal, and external trips, while Table 5 provides the breakdown of these trips. Cargo vehicles generated 956 trips, of which approximately 57 percent were external trips, 40 percent were inter-zonal trips, and 3 percent were intra-zonal trips. Service vehicles generated 895 trips, of which 71 percent were inter-zonal trips, 25 percent were external trips, and 4 percent were intra-zonal trips.

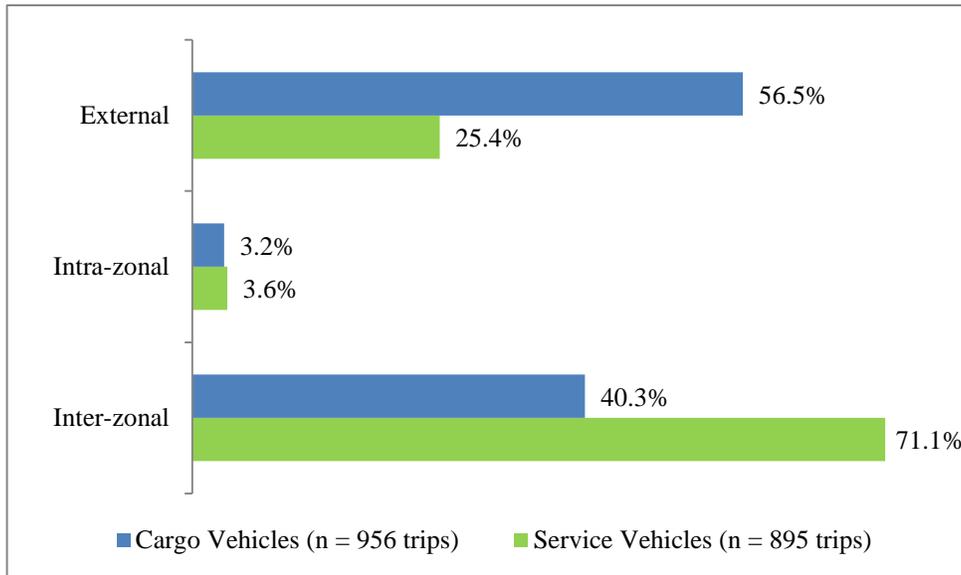


Figure 5. Inter-Zonal, Intra-Zonal, and External Trips.

Table 5. Total Internal and External Trips.

Vehicle Type Trip Type	Cargo Vehicles		Service Vehicles		Total Vehicles	
	Number	% of Total	Number	% of Total	Number	% of Total
Inter-Zonal	385	40.3	636	71.0	1,021	55.2
Intra-Zonal	31	3.2	32	3.6	63	3.4
Total Internal	416	43.5	668	74.6	1,084	58.6
External	540	56.5	227	25.4	767	41.4
Total	956	100.0	895	100.0	1,851	100.0

Figure 6 shows the distribution of total trips (internal and external trips), which varied from one trip to 19 trips per service vehicle and per cargo vehicle on the survey day. The average number of total trips per day was 7.4 trips for cargo vehicles and 6.4 trips for service vehicles.

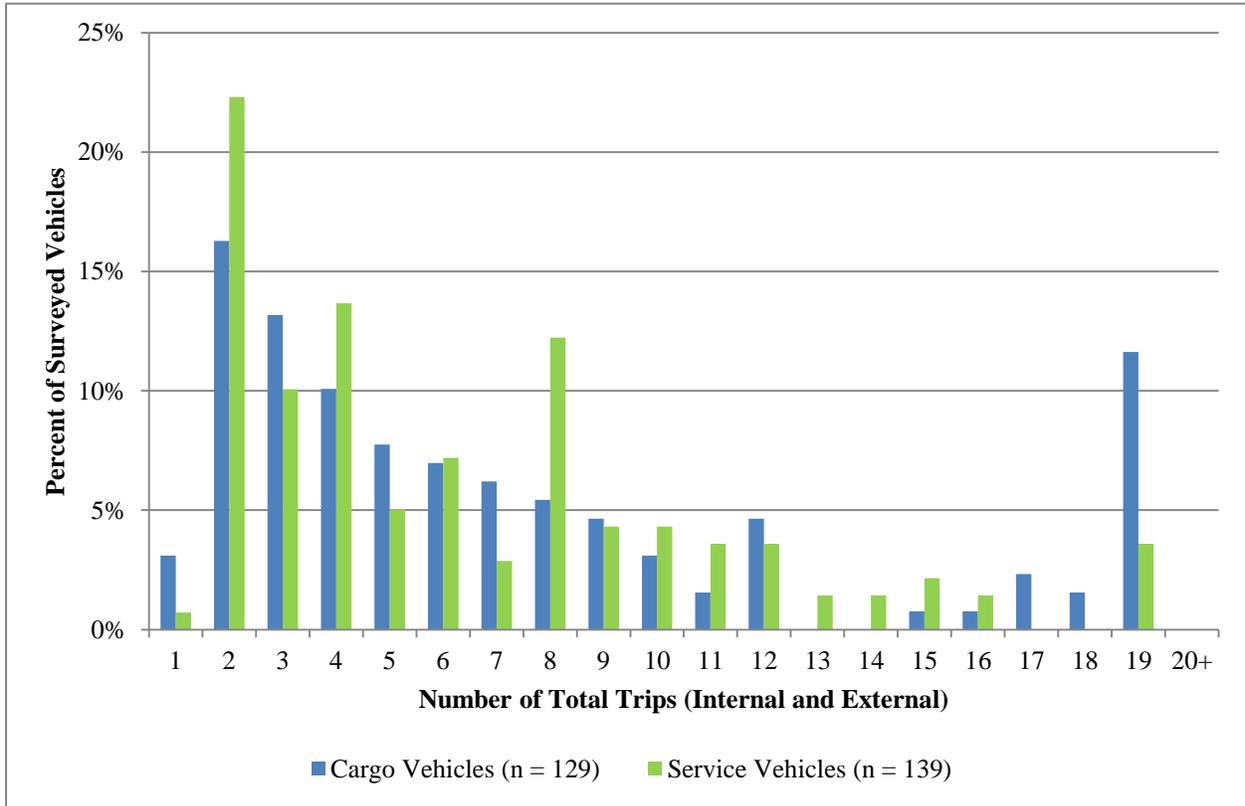


Figure 6. Total Trips per Vehicle.

Figure 7 shows the distribution of internal trips only by vehicle type. Approximately 47 percent of cargo vehicles and 18 percent of service vehicles made no internal trips on the survey day. Approximately 13 percent of cargo vehicles made only one internal trip; while 9 percent of service vehicles made only one internal trip. The average number of internal trips per day was 3.2 trips for cargo vehicles and 4.8 trips for service vehicles.

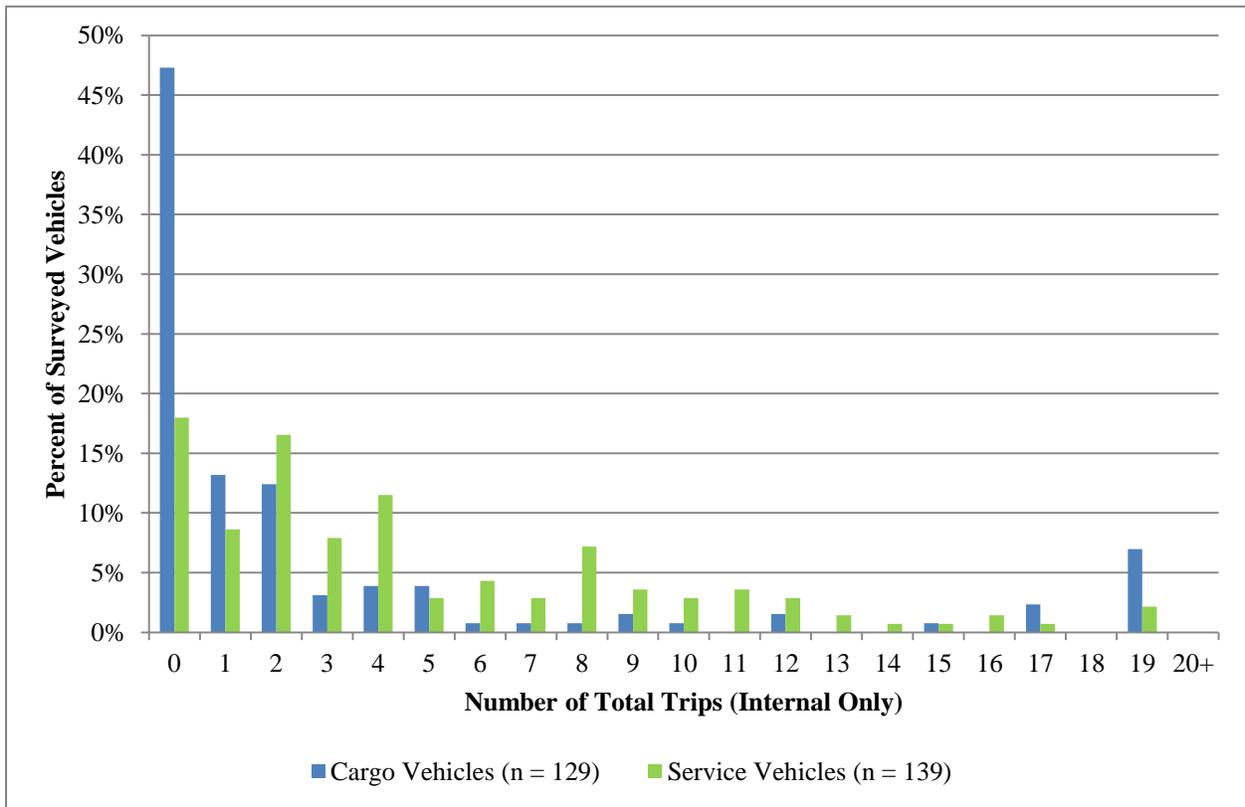


Figure 7. Total Internal Trips per Vehicle.

Trip Characteristics

Information on travel purpose and the type of land use activity where these trips occurred are important in estimating commercial vehicle trip patterns. The analysis of trips presented in this section is based solely on internal trips and does not include external trips.

Table 6 shows the distribution of internal trips by land use type at trip destinations. Approximately 28 percent of the trips made by cargo vehicles traveled to retail locations, followed by 18 percent to medical/hospital locations, and 14 percent to residential locations. For service vehicles, nearly 26 percent of the trips traveled to residential locations, followed by nearly 18 percent to government office locations, and 16 percent to retail locations.

Table 6. Distribution of Internal Trips by Land Use Type at Trip Destinations.

Land Use	Cargo		Service	
	Number	Percent of Cargo	Number	Percent of Service
Office Building (Non-Government)	30	7.2	100	15.0
Retail/Shopping	115	27.6	104	15.7
Industrial/Manufacturing	14	3.4	15	2.2
Medical/Hospital	76	18.3	23	3.4
Education (< 12th Grade)	4	1.0	15	2.2
Education (College, Trade)	2	0.5	48	7.2
Government Office/Building	13	3.1	122	18.4
Residential	56	13.5	171	25.7
Airport	0	0.0	0	0.0
Intermodal Facility	0	0.0	1	0.1
Warehouse	23	5.5	25	3.7
Distribution Center	40	9.6	11	1.6
Construction Site	13	3.1	19	2.8
Other	30	7.2	11	1.6
Refused/Unknown	0	0.0	3	0.4
Total Trips	416	100.0	668	100.0

Table 7 shows the distribution of internal trips by trip purposes at trip destinations. Approximately 36 percent of the cargo vehicle internal trips were for delivery, 22 percent were base, and 19 percent were classified as “pick-up and delivery.” For trips made by service vehicles, approximately 29 percent were classified as base, 23 percent were classified as service, and 16 percent were sales.

Table 7. Trip Purposes at Destination Locations.

Trip Purpose	Cargo		Service	
	Number	Percent of Cargo	Number	Percent of Service
Base	90	21.7	192	28.8
Maintenance	6	1.4	16	2.4
Driver Needs	12	2.9	41	6.1
Delivery	151	36.4	36	5.4
Pick-Up	52	12.5	9	1.3
Pick-Up and Delivery	80	19.2	0	0.0
Government	3	0.7	64	9.6
Service	18	4.3	150	22.5
Sales	2	0.5	105	15.7
Other	1	0.2	54	8.1
Unknown	1	0.2	1	0.1
Total Trips	416	100.0	668	100.0

Cargo Characteristics

Information on the type of cargo being delivered or picked up at each stop, the weight of cargo, and the type of land use where the cargo trip occurred was collected in the San Angelo commercial vehicle survey to examine the movement of commodities within and outside of the study area. The analyses presented in this section are for both internal and external trips made by surveyed cargo vehicles only, and do not include the trips made by service vehicles. The types of cargo in the survey were based on 23 classification types listed in Table 8.

The analysis of cargo trip data examined the types of cargo being transported at trip destinations, the trip purpose, the land use activity at each stop, and the estimated net weight of the cargo being picked-up and/or delivered for each trip. Several inconsistencies were observed during the processing and analysis of cargo trip data. There were some trips with full or partial cargo loads that did not report cargo weights, but actually reported the type of cargo being transported. There were some trips that indicated a delivery trip purpose but did not report any cargo weights at drop-off.

Table 8. Cargo Classification Types.

Cargo Type	Cargo Descriptions
1. Farm Products	Livestock, fertilizer, dirt, landscaping, etc.
2. Forest Products	Trees, sod, etc.
3. Marine Products	Fresh fish, seafood, etc.
4. Metals and Minerals	Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.
5. Food, Health, and Beauty Products	Assorted food products, cosmetics, etc.
6. Tobacco Products	Cigarettes, cigars, and chewing tobacco
7. Textiles	Clothing, linens, etc.
8. Wood Products	Lumber, paper, cardboard, wood pulp, etc.
9. Printed Matter	Newspapers, magazines, books, etc.
10. Chemical Products	Soaps, paints, household or industrial chemicals, etc.
11. Refined Petroleum or Coal Products	Gasoline, etc.
12. Rubber, Plastic, and Styrofoam Products	Finished products of rubber, plastic, or Styrofoam
13. Clay, Concrete, Glass, or Stone	Finished products of clay, concrete, glass, or stone
14. Manufactured Goods/Equipment	Miscellaneous products (machinery, appliances, furniture, etc.)
15. Wastes	Waste products including scrap and recyclable materials
16. Miscellaneous Shipments	U.S. mail, U.P.S., Federal Express, and other mixed cargo
17. Hazardous Materials	Hazardous chemicals and substances
18. Transportation	Automobiles and other transport vehicles
19. Empty	Empty (including empty shipping containers)
20. No Cargo Picked-Up or Delivered	
96. Other	
98. Unknown	
99. Driver Refused to Answer	

Table 9 shows the distribution of trips by cargo type. Approximately 19 percent of the total cargo vehicle trips cited “no cargo picked-up or delivered”. Additionally, 21 percent of the trips involved transporting manufactured goods and another 16 percent were transporting textiles.

Table 9. Distribution of Trips by Cargo Type at Destinations.

Cargo Type	Number of Trips	% of Total
Farm Products	52	5.4
Forest Products	8	0.8
Marine Products	0	0.0
Metals and Minerals	29	3.0
Food, Health, and Beauty Products	56	5.9
Tobacco Products	0	0.0
Textiles	157	16.4
Wood Products	22	2.3
Printed Matter	1	0.1
Chemical Products	18	1.9
Refined Petroleum or Coal Products	3	0.3
Rubber, Plastic, and Styrofoam Products	42	4.4
Clay, Concrete, Glass, or Stone	77	8.1
Manufactured Goods/Equipment	200	20.9
Wastes	13	1.4
Miscellaneous Shipments	58	6.1
Hazardous Materials	0	0.0
Transportation	38	4.0
No Cargo Picked-Up or Delivered	182	19.0
Other	0	0.0
Unknown	0	0.0
Driver Refused to Answer	0	0.0
Total Trips with Cargo	956	100.0
Empty	0	0.0
No Response	0	0.0
Total Cargo Vehicle Trips	956	100.0

The commodity grouping scheme used by TxDOT in its Texas Statewide Analysis Model (SAM) was used to simplify the cargo types into 10 commodity groups. The type of place option in the survey was categorized into seven land use categories. Table 10 shows the equivalency between SAM commodity groups and cargo classifications from the survey, while Table 11 shows the land use categories and their corresponding equivalents in the type of place options from the survey. Those items in italics did not have equivalents but were added or grouped together so as not to exclude any trips in the analysis.

Table 10. Equivalency between SAM Commodity Groups and Survey Classifications.

Commodity Group	Survey Cargo Classification
1. Agriculture	Farm Products, Forest Products, and Marine Products
2. Raw Materials	Metals and Minerals, Chemical Products, Refined Petroleum, or Coal Products
3. Food	Food, Health and Beauty Products, and Tobacco Products
4. Textiles	Textiles, Rubber, Plastic, and Styrofoam Products
5. Wood	Wood Products and Printed Matter
6. Building Materials	Clay, Concrete, Glass, or Stone Products
7. Machinery	Manufactured Goods/Equipment
8. Miscellaneous	Wastes, Miscellaneous Shipments
9. Secondary	Unclassified Cargo
10. Hazardous Materials	Hazardous Materials
--- <i>Transportation</i>	<i>Transportation</i>
--- <i>Empty</i>	<i>Empty</i>
--- <i>Unknown</i>	<i>Unknown to Driver, Driver Refused to Answer, Other</i>

Table 11. Equivalency between Land Use Category and Survey Type of Place.

Land Use Category	Type of Place
1. Office	Office Building
2. Retail	Retail/Shopping
3. Industrial	Industrial/Manufacturing
4. Medical	Medical/Hospital
5. Education	Educational (12th grade or less and college, trade, etc.)
6. Government	Government Office/Building
7. Residential	Residential
-- <i>Other</i>	<i>Airport, Inter-Modal Facility, Warehouse, Distribution Center, Construction Site, Other</i>
-- <i>Unknown</i>	<i>Land Use Category not Provided, Omitted, Driver Refused to Answer</i>

Table 12 shows the distribution of cargo trips by commodity group and land use type at trip destinations. Nearly 35 percent of the trips traveled to “other” land use types, which were mainly warehouses, distribution centers, and construction sites. By commodity group, approximately 21

percent of the trips were transporting textiles and another 21 percent were transporting machinery. There was no response provided for two cargo trips.

Table 12. Cargo Trips by Commodity Group and Land Use Destinations.

Commodity Group	Land Use								Total Trips	% of Total
	Office	Retail	Ind'l	Med	Edu	Gov't	Res	Othr		
Agriculture	5	16	2	6	1	2	15	12	59	6.2
Raw Materials	1	9	6	0	1	0	12	21	50	5.2
Food	4	18	0	16	2	3	11	2	56	5.9
Textiles	22	85	20	3	6	2	5	56	199	20.9
Wood	2	0	9	0	0	0	3	9	23	2.4
Building Materials	0	7	3	0	0	0	8	59	77	8.1
Machinery	5	59	31	0	0	6	25	74	200	21.0
Miscellaneous	5	0	4	52	0	2	4	4	71	7.4
Hazardous	0	0	0	0	0	0	0	0	0	0.0
Transportation	1	10	3	0	0	3	3	17	37	3.9
Unknown	18	44	12	1	1	2	20	84	182	19.0
Empty	0	0	0	0	0	0	0	0	0	0.0
Total*	63	248	90	78	11	20	106	338	954	100.0
Percent of Total	6.6	26.0	9.4	8.2	1.2	2.1	11.1	35.4	100.0	---

* No data/response provided for two trips.

Figure 8 shows the distribution of trips at destination locations by trip purpose, while Table 13 shows a detailed summary of trips by commodity group and trip purpose. Approximately 39 percent of the total cargo vehicle trips were delivery and 19 percent were base related. Approximately 3 percent of the total cargo vehicle trips were driver needs.

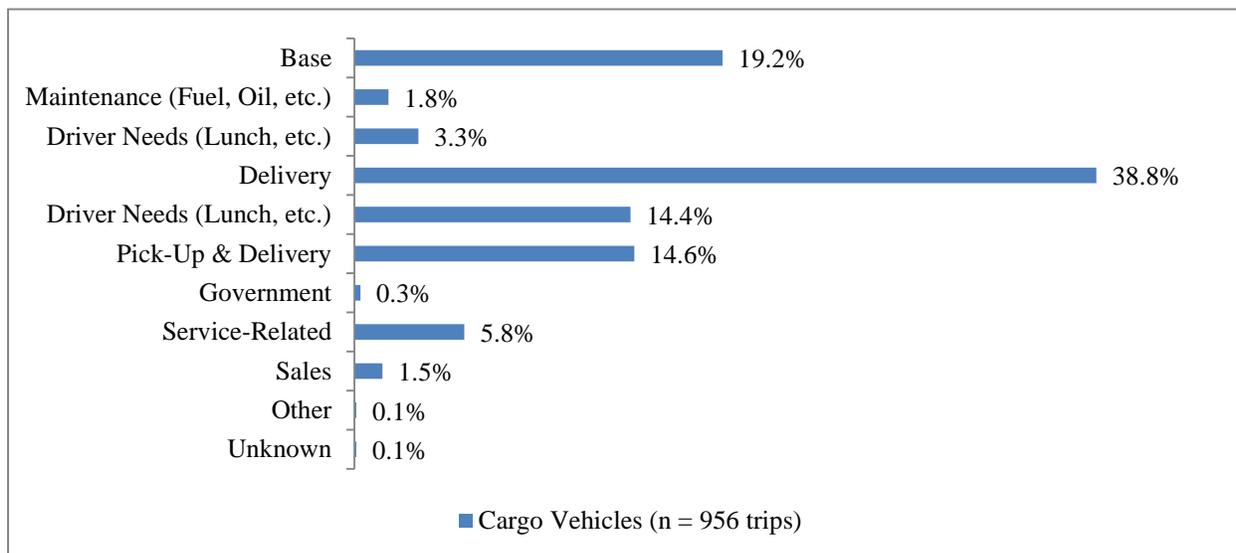


Figure 8. Cargo Trip Purposes at the Trip Destinations.

Table 13. Cargo Trips by Commodity Group and Trip Purpose at the Trip Destinations.

Commodity Group	Trip Purpose										Total Trips	% of Total
	Base	Maint	Driver Need	Deliv	Pick-Up	Pick-Up & Deliv	Govt	Srvc	Sales	Oth		
Agriculture	14	0	0	45	1	0	0	0	0	0	60	6.3
Raw Materials	15	0	0	26	9	0	0	0	0	0	50	5.2
Food	6	0	0	48	2	0	0	0	0	0	56	5.9
Textiles	18	0	0	49	33	99	0	0	0	0	199	20.8
Wood	6	0	0	9	1	4	0	3	0	0	23	2.4
Building Materials	12	0	0	34	30	1	0	0	0	0	77	8.1
Machinery	34	0	0	128	32	5	0	1	0	0	200	20.9
Miscellaneous	15	0	0	13	11	31	1	0	0	0	71	7.4
Hazardous	0	0	0	0	0	0	0	0	0	0	0	0.0
Transportation	1	1	0	17	19	0	0	0	0	0	38	4.0
Unknown	63	16	32	2	0	0	2	51	14	1	182	19.0
Empty	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	184	17	32	371	138	140	3	55	14	1	956	100.0
Percent of Total	19.3	1.8	3.3	38.9	14.4	14.6	0.3	5.8	1.5	0.1	100.0	---

The analysis of cargo weights by cargo type provides information on the volume and type of commodities being moved from the time the surveyed cargo vehicle left its base location, began its trip, continued making trips until it reached its destination(s), and returned to its base location. The net cargo weight for each trip was estimated based on the cargo weight being picked-up and/or being dropped-off, consistent with the reported trip purpose for each stop. There were

several cases when cargo types were changed between trips (i.e., reported as empty cargo or food type), even if the same cargo was being transported either for delivery or pick-up. For example, in some cases the driver of the surveyed cargo vehicle reported a different trip purpose during a particular stop (i.e., driver needs - lunch, etc.), which indicated that no cargo was delivered and/or picked-up but the cargo remained in transit. In such cases, the cargo weight from the trip origin should be the net cargo weight at that particular stop or trip destination with its corresponding cargo type. If a delivery occurred during that particular stop, the cargo weight for that particular drop-off should be deducted from the current weight load, and if cargo was picked-up, the cargo weight should be added to the current weight load, thus resulting in an estimated net cargo weight for that particular trip.

Table 14 shows the distribution of average net cargo weight per trip by commodity group and land use type at destination locations and Table 15 shows the distribution by commodity group and trip purpose. Raw materials being transported to education sites had the highest average net cargo weight by commodity group and land use at the trip destination. However, there was only one trip recorded for this commodity and land use combination. Wood materials being transported to pick-up and delivery locations had the highest average net cargo weight by commodity group and trip purpose at the trip destination.

Table 14. Average Net Cargo Weight by Commodity Group and Land Use at Trip Destinations.

Commodity Group	Land Use							
	Office	Retail	Ind'l	Med	Edu	Gov't	Res	Other
Agriculture	3	1	100	3	3	1	325	1,887
Raw Materials	0	0	23,250	0	60,000	0	13,345	2,865
Food	22	76	0	1	93	272	3	8
Textiles	404	55	290	23	28	10	68	254
Wood	3	0	881	0	0	0	200	17,039
Building Materials	0	57	0	0	0	0	7,688	11,879
Machinery	90	1,467	207	0	0	898	2,602	724
Miscellaneous	1	0	125	2	0	1	16,000	12,916
Hazardous	0	0	0	0	0	0	0	0
Transportation	0	1,983	1,733	0	0	0	0	5,168
Unknown	0	2	0	0	0	0	0	329

Table 15. Average Net Cargo Weight by Commodity Group and Trip Purpose at Trip Destinations.

Commodity Group	Trip Purpose						
	Base Location	Maintenance	Driver Needs	Delivery	Pick-Up	Pick-Up & Delivery	Service
Agriculture	0	0	0	643	0	0	0
Raw Materials	0	0	0	16,146	0	0	0
Food	0	0	0	53	0	0	0
Textiles	59	0	0	594	0	41	0
Wood	0	0	0	5,202	0	28,619	0
Building Materials	10,447	0	0	18,030	0	24,339	0
Machinery	110	0	0	1,556	0	2,890	0
Miscellaneous	1	0	0	8,937	0	2	0
Hazardous	0	0	0	0	0	0	0
Transportation	0	2,000	0	6,522	0	0	0
Unknown	0	0	0	13,884	0	0	0

Table 16 shows the distribution of cargo trips and net cargo weights at trip destinations by commodity group. Overall, the average net cargo weight (excluding trips with empty cargo) per trip was nearly 2,000 lbs. Of the classified commodity groups, building materials showed the highest average net cargo weight of over 9,900 lbs. per trip. Machinery was the most frequently transported of the known commodity groups, with average net cargo weights of nearly 1,100 lbs. per trip.

Table 16. Cargo Trips and Net Cargo Weight by Commodity Group at Trip Destinations.

Commodity Group	Total Cargo Trips	Total Net Cargo Weight (lbs.)	Number of Trips*	Average Net Cargo Weight (lbs.)*
Agriculture	59	27,771	59	471
Raw Materials	50	419,795	50	8,396
Food	56	2,526	56	45
Textiles	199	34,243	199	172
Wood	23	161,891	23	7,039
Building Materials	77	762,742	77	9,906
Machinery	200	217,410	200	1,087
Miscellaneous	71	116,259	71	1,637
Hazardous	0	0	0	0
Transportation	37	112,882	37	3,051
Unknown	182	27,768	182	153
Empty	0	0	0	0
No Response	2	-	2	-
Total	956	1,883,287	956	1,974

* Excluding trips with empty cargo.

Table 17 shows the number of trips and net cargo weights at trip destinations by land use type. Education land use sites showed the highest average net cargo weight of nearly 5,500 lbs. per trip, followed by ‘other’ sites with an average net cargo weight of nearly 3,500 lbs. per trip.

Table 17. Cargo Trips and Net Cargo Weights by Land Use at Trip Destinations.

Land Use	Total Cargo Trips	Total Net Cargo Weight (lbs.)	Number of Trips*	Average Net Cargo Weight (lbs.)*
Office	63	9,455	63	150
Retail	248	112,960	248	455
Industrial	90	165,544	90	1,839
Medical	78	198	78	3
Education	11	60,354	11	5,487
Government	20	6,226	20	311
Residential	106	356,550	106	3,364
Other	338	1,172,000	338	3,467
No Response	2	-	2	-
Total	956	1,883,287	956	1,974

* Excluding trips with empty cargo.

Table 18 shows the distribution of cargo trips and net cargo weights by trip purpose. Delivery trip purpose had the highest average net weight of nearly 4,300 lbs. per trip.

Table 18. Cargo Trips and Net Cargo Weights by Trip Purpose at Trip Destinations.

Trip Purpose	Total Cargo Trips	Total Net Cargo Weight (lbs.)	Number of Trips*	Average Net Cargo Weight (lbs.)*
Base	184	130,184	184	708
Maintenance	17	2,000	17	118
Driver Needs	32	0	32	0
Delivery	371	1,594,178	371	4,297
Pick-Up	138	0	138	0
Pick-Up & Delivery	140	157,400	140	1,124
Government	3	0	3	0
Service	55	0	55	0
Sales	14	0	14	0
Other	1	0	1	0
Unknown	0	0	0	0
No Response	1	-	1	-
Total	956	1,883,762	956	1,973

* Excluding trips with empty cargo.

Trip Length

Odometer readings at the beginning and end of the trip are useful in estimating travel distances for external and intra-zonal trips. The San Angelo commercial vehicle survey, however, only provided odometer mileage on each vehicle for the beginning of the trip and not for the end of the trip. Because this incomplete information makes odometer readings not particularly useful for trip length measurement in the analysis, network matrices available for the study area were used to estimate trip lengths. The network matrices provide travel distance and time estimates from one zone to all other zones in the San Angelo study area. Since each reported trip in the survey was coded with a traffic analysis zone (TAZ) number assigned to the study area, it was then possible to estimate the trip length based on the distance provided in the network matrix. Figure 9 shows the TAZ boundary and base locations of surveyed vehicles within the San Angelo study area, while Figure 10 shows the origin and destination locations of trips made by the surveyed vehicles. Any trip that had at least one trip outside of the San Angelo study area was considered an external trip.

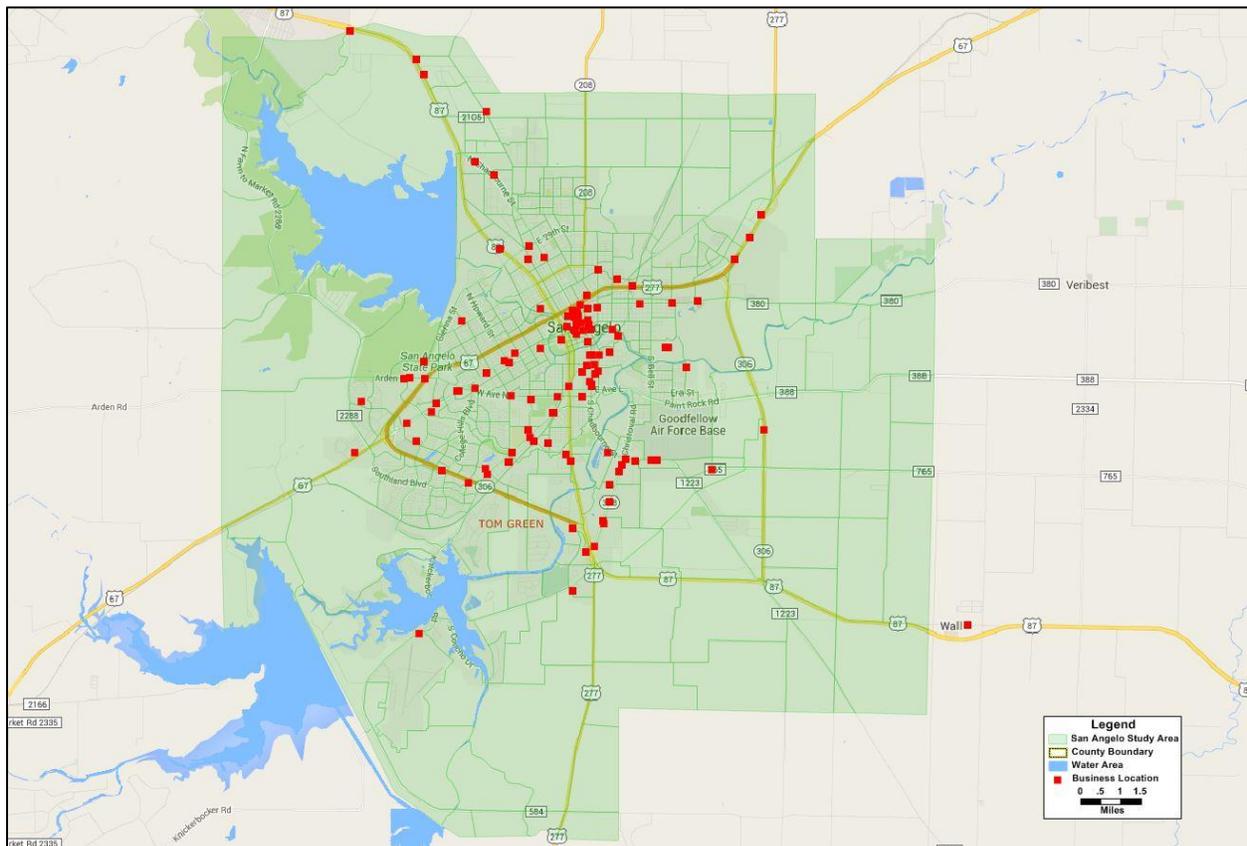


Figure 9. TAZ Boundary and Base Locations of Surveyed Commercial Vehicles.

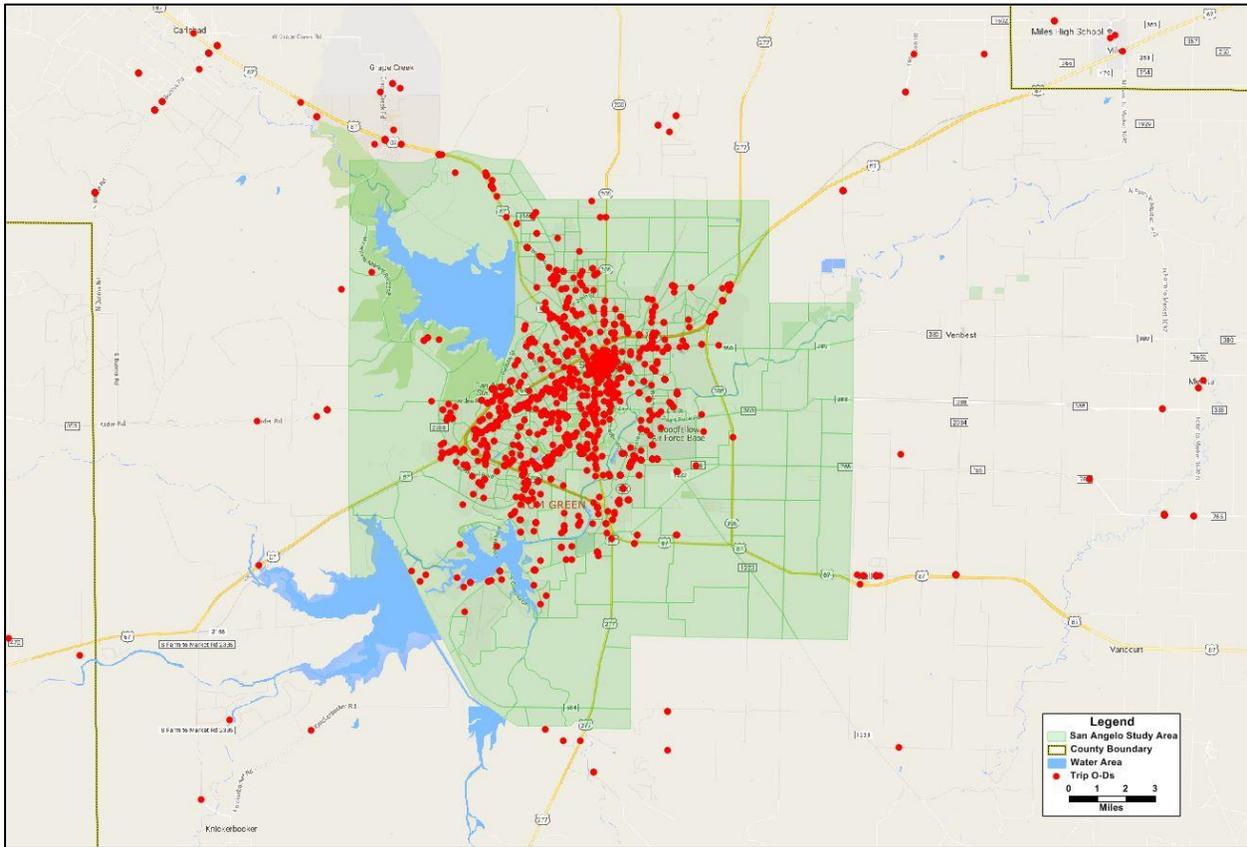


Figure 10. Trip Origins and Destinations of Surveyed Commercial Vehicles.

The results presented in this section pertain to trip length characteristics for 903 inter-zonal trips only. Table 19 shows the trip length frequency distribution (TLFD), grouped at five-mile intervals, while Figure 11 and Table 20 show the ungrouped TLFD. Approximately 83 percent of the cargo vehicles and 79 percent of the service vehicle trips had trip lengths of less than five miles. Additionally, 16 percent of the cargo vehicle trips and 20 percent of the service vehicles had trip lengths between six miles and 10 miles. The longest trip lengths reported by cargo and service vehicles were 19 miles and 12 miles, respectively.

Table 19. Trip Length Frequency Distribution (Grouped Interval).

Trip Length (miles)	Cargo		Service		All Vehicles	
	# of Trips	% of Total	# of Trips	% of Total	# of Trips	% of Total
Less than 5	320	83.1	499	78.4	819	80.2
6 to 10	62	16.1	125	19.7	187	18.3
11 to 15	1	0.3	12	1.9	13	1.3
16 to 20	2	0.5	0	0.0	2	0.2
21 to 25	0	0.0	0	0.0	0	0.0
26 to 30	0	0.0	0	0.0	0	0.0
31 to 35	0	0.0	0	0.0	0	0.0
More than 35	0	0.0	0	0.0	0	0.0
Total	385	100.0	636	100.0	1,021	100.0

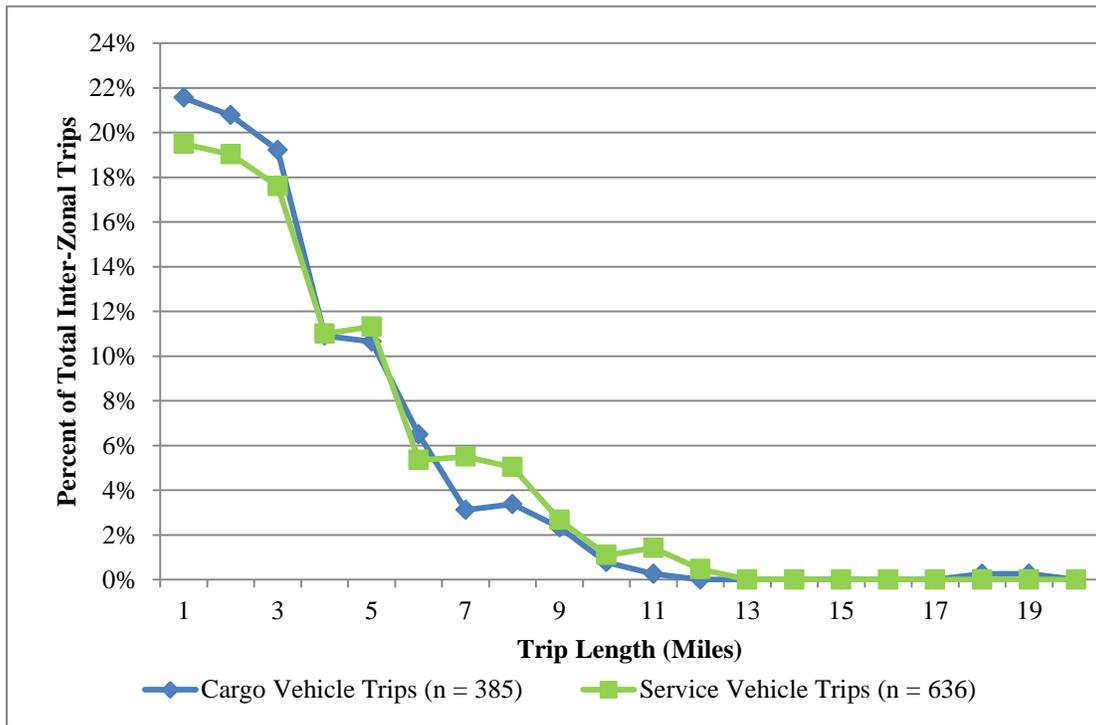


Figure 11. Surveyed Commercial Vehicle Trips TLFD.

Table 20. Trip Length Frequency Distribution (Ungrouped).

Trip Length (miles)	Cargo Vehicles		Service Vehicles		All Vehicles	
	# of Trips	% of Total	# of Trips	% of Total	# of Trips	% of Total
1	83	21.5	124	19.5	207	20.2
2	80	20.8	121	19.1	201	19.7
3	74	19.2	112	17.6	186	18.2
4	42	10.9	70	11.0	112	11.0
5	41	10.6	72	11.3	113	11.1
6	25	6.5	34	5.3	59	5.8
7	12	3.1	35	5.5	47	4.6
8	13	3.4	32	5.0	45	4.4
9	9	2.3	17	2.7	26	2.5
10	3	0.8	7	1.1	10	1.0
11	1	0.3	9	1.4	10	1.0
12	0	0.0	3	0.5	3	0.3
13	0	0.0	0	0.0	0	0.0
14	0	0.0	0	0.0	0	0.0
15	0	0.0	0	0.0	0	0.0
16	0	0.0	0	0.0	0	0.0
17	0	0.0	0	0.0	0	0.0
18	1	0.3	0	0.0	1	0.1
19	1	0.3	0	0.0	1	0.1
20	0	0.0	0	0.0	0	0.0
Total	385	100.0	636	100.0	1,021	100.0

Table 21 shows the average trip length to destinations by land use type for cargo and service vehicle trips. Overall, the average distance per trip traveled by the surveyed vehicles was 3.1 miles, with cargo vehicles and service vehicles averaging 2.9 miles and 3.2 miles, respectively. The most number of trips by cargo vehicles occurred at retail land use types, with an average trip length of 2.1 miles, followed by “other” sites with average trip length of 2.9 miles. For service vehicles, the highest frequency of trips occurred at residential land use types, with an average trip length of 3.6 miles. Slightly less than half (42 percent) of the trips made by service vehicles occurred at either retail or residential land use sites.

Table 21. Average Trip Length to Destinations by Land Use Type.

Land Use	Cargo			Service			All Vehicles		
	Number of Trips	Total Trip Length (miles)	Avg. Trip Length (miles)	Number of Trips	Total Trip Length (miles)	Avg. Trip Length (miles)	Number of Trips	Total Trip Length (miles)	Avg. Trip Length (miles)
Office	28	89	3.2	98	355	3.6	126	444	3.5
Retail	105	219	2.1	101	310	3.1	206	529	2.6
Industrial	14	69	4.9	15	68	4.5	29	137	4.7
Medical	67	160	2.4	20	58	2.9	87	218	2.5
Education	5	16	3.2	56	108	1.9	61	124	2.0
Government	11	46	4.2	113	358	3.2	124	404	3.3
Residential	55	234	4.3	165	590	3.6	220	824	3.7
Other	100	289	2.9	65	209	3.2	165	498	3.0
Total	385	1,122	2.9	633	2,056	3.2	1,018	3,178	3.1

Table 22 shows the average trip length to destinations by commodity group for trips made by cargo vehicles only. Approximately 25 percent of the trips cited the commodity group “textiles” with an average trip length of 2.3 miles per trip. The “unknown” commodity group was the next most frequently transported commodity group, with an average trip length of 3.4 miles per trip. The overall average trip length for cargo vehicles was 2.9 miles.

Table 22. Average Trip Length to Destinations by Commodity Group.

Commodity Group	Cargo Vehicles		
	Number of Trips	Total Trip Length (miles)	Average Trip Length (miles)
Agriculture	43	95	2.2
Raw Materials	21	56	2.7
Food	43	159	3.7
Textiles	103	232	2.3
Wood	6	21	3.5
Building Materials	8	21	2.6
Machinery	45	174	3.9
Miscellaneous	56	160	2.9
Hazardous	0	0	0.0
Transportation	0	0	0.0
Unknown	60	204	3.4
Empty	0	0	0.0
Total	385	1,122	2.9

Travel Time and Speed

The San Angelo commercial vehicle survey provided travel logs on the arrival and departure times for each trip made by the surveyed commercial vehicles. The travel logs can be compared with the network travel time matrix table available for the study area. However, some of the reported travel logs had missing departure or arrival times, which rendered them unreliable in generating accurate estimates. Hence, as has been done in the estimation of trip lengths, travel time estimates were generated from the network travel time matrix table available for the San Angelo study area, and travel speed estimates were derived from the estimated trip lengths.

Table 23 shows the travel time frequency distribution of inter-zonal trips, grouped at five-mile intervals, while Figure 12 and Table 24 show the ungrouped TLFD. Approximately 52 percent of the trips made by cargo vehicles were less than 5 minutes, 33 percent were between 6-and-10 minutes, and 14 percent were between 11-and-15 minutes. For service vehicles, approximately 46 percent of the trips were less than 5 minutes, 37 percent were between 6-and-10 minutes, and 14 percent were between 11-and-15 minutes. The longest duration of travel time for cargo vehicles was 29 minutes, while the longest travel duration for service vehicles was 20 minutes.

Table 23. Travel Time Frequency Distribution (Grouped Interval).

Travel Time (minutes)	Cargo		Service		All Vehicles	
	# of Trips	% of Total	# of Trips	% of Total	# of Trips	% of Total
Less than 5	200	51.9	294	46.3	494	48.3
6 to 10	128	33.3	233	36.6	361	35.4
11 to 15	52	13.5	89	14.0	141	13.8
16 to 20	3	0.8	20	3.1	23	2.3
21 to 25	0	0.0	0	0.0	0	0.0
More than 25	2	0.5	0	0.0	2	0.2
Total	385	100.0	636	100.0	1,021	100.0

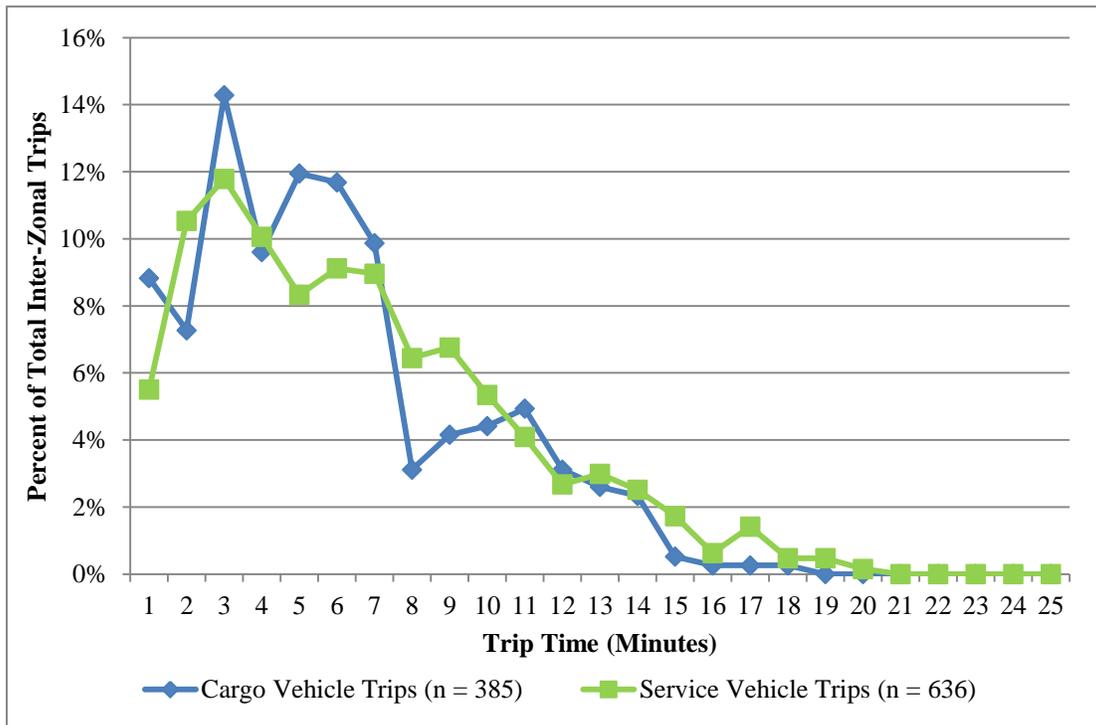


Figure 12. Surveyed Commercial Vehicle Trips Travel Time.

Table 24. Travel Time Frequency Distribution (Ungrouped).

Travel Time (minutes)	Cargo Vehicles		Service Vehicles		All Vehicles	
	# of Trips	% of Total	# of Trips	% of Total	# of Trips	% of Total
1	34	8.8	35	5.5	69	6.8
2	28	7.3	67	10.5	95	9.3
3	55	14.3	75	11.8	130	12.7
4	37	9.6	64	10.1	101	9.9
5	46	11.9	53	8.3	99	9.7
6	45	11.7	58	9.1	103	10.1
7	38	9.9	57	9.0	95	9.3
8	12	3.1	41	6.4	53	5.2
9	16	4.2	43	6.8	59	5.8
10	17	4.4	34	5.3	51	5.0
11	19	4.9	26	4.1	45	4.4
12	12	3.1	17	2.7	29	2.8
13	10	2.6	19	3.0	29	2.8
14	9	2.3	16	2.5	25	2.4
15	2	0.5	11	1.7	13	1.3
16	1	0.3	4	0.6	5	0.5
17	1	0.3	9	1.4	10	1.0
18	1	0.3	3	0.5	4	0.4
19	0	0.0	3	0.5	3	0.3
20	0	0.0	1	0.2	1	0.1
21	0	0.0	0	0.0	0	0.0
22	0	0.0	0	0.0	0	0.0
23	0	0.0	0	0.0	0	0.0
24	0	0.0	0	0.0	0	0.0
25+	2	0.5	0	0.0	2	0.2
Total	385	100.0	636	100.0	1,021	100.0

Table 25 shows the average travel time and speed to destinations by land use for cargo and service vehicles. Overall, the average travel time for all surveyed vehicles was 5.9 minutes, with cargo vehicles averaging 5.5 minutes and service vehicles averaging 6.1 minutes. By land use types, trips made by cargo vehicles to industrial sites have the longest average travel duration of 8.0 minutes, with an average travel speed of 36.8 mph. For service vehicles, trips to industrial land use types also had the highest average travel time of 7.5 minutes and an average travel speed of 36.0 mph.

Table 25. Average Travel Time and Speed to Destinations by Land Use Type.

Land Use	Cargo			Service			All Vehicles		
	Number of Trips	Avg. Travel Time (min)	Avg. Travel Speed (mph)	Number of Trips	Avg. Travel Time (min)	Avg. Travel Speed (mph)	Number of Trips	Avg. Travel Time (min)	Avg. Travel Speed (mph)
Office	28	5.4	35.2	98	6.6	32.7	126	6.4	33.2
Retail	105	4.3	29.2	101	5.6	33.0	206	4.9	31.3
Industrial	14	8.0	36.8	15	7.5	36.0	29	7.8	36.4
Medical	67	4.6	30.9	20	5.5	31.3	87	4.8	31.0
Education	5	6.6	29.4	56	4.1	28.3	61	4.3	28.4
Government	11	7.8	32.2	113	6.1	31.1	124	6.3	31.2
Residential	55	7.6	33.7	165	6.6	32.3	220	6.9	32.7
Other	100	5.7	30.6	65	6.0	32.0	165	5.8	31.2
Unknown	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Total	385	5.5	31.7	633	6.1	32.1	1,018	5.9	31.9

Table 26 shows the average travel time and speed to destinations by commodity group for trips made by cargo vehicles only. Trips transporting machinery products had the longest average trip duration of 7.1 minutes, with an average travel speed of 32.5 mph. Of the known commodity groups, textile products had the highest number of trips, with an average travel time of 4.7 minutes and an average travel speed of 29.1 mph.

Table 26. Average Travel Time and Speed to Destinations by Commodity Group.

Commodity Group	Cargo Vehicles		
	Number of Trips	Average Travel Time (minutes)	Average Travel Speed (mph)
Agriculture	43	4.5	29.7
Raw Materials	21	5.4	30.1
Food	43	6.7	33.2
Textiles	103	4.7	29.1
Wood	6	6.1	34.0
Building Materials	8	5.1	30.4
Machinery	45	7.1	32.5
Miscellaneous	56	5.2	33.2
Hazardous	0	0.0	0.0
Transportation	0	0.0	0.0
Unknown	60	6.2	33.2
Empty	0	0.0	0.0
Total	385	5.5	31.7

Trip Tours

The analyses of trip tours show the amount of circuitous travel undertaken by commercial vehicles in the study area. Trip tours are defined as a combination (or chaining) of trips in which a vehicle leaves and returns to a common point, typically its base location. However, those cases where a vehicle did not report a base location (i.e., all of the reported trips were non-base) were considered on a case-by-case basis. In cases where the beginning and ending non-base zone were the same, a tour was considered to be made. In a handful of cases where only non-base trips were reported, the trip tour was determined to have an open start or end, with a trip tour occurring as well.

To accurately analyze trip tours, external trips had to be included in the analysis. This is done because it is possible for trip tours to begin within the study area, then travel outside the study area, and then end or return to the study area. Therefore, to exclude external trips in the analysis could result in not capturing those trips that occur outside the study area that occur within the trip tour.

There were 1,851 trips observed in the San Angelo commercial vehicle survey area. Each trip in the survey provided information on whether or not the origin of the trip was the vehicle's base location. This served as the basis for determining if the trip was a base trip or a non-base trip. A base trip was defined as when either trip ends (origin or destination) began or ended at the base location. If neither trip end was at the base location, then the trip was considered as a non-base trip. Such instances were treated separately from those vehicles with at least one trip involving a base, in determining whether the trip tour could be considered "all open," "completely closed," "before a closed tour," or "after a closed tour." Rather than simply labeling such trips as "all open," each case was considered individually. If the trips began or ended in the same zone number, the trips for this vehicle were classified as "completely closed." Similar logic was used in determining if a "trip before the tour" or a "trip after the tour" had occurred.

As Table 27 shows, approximately 62 percent of the total trips generated by cargo vehicles were non-base trips and 38 percent were base trips. For trips made by service vehicles, 51 percent were base trips and 49 percent were non-base trips.

Table 27. Base and Non-Base Trips.

Trip Type	Cargo Vehicles		Service Vehicles		All Vehicles	
	Number of Trips	Percent of Total	Number of Trips	Percent of Total	Number of Trips	Percent of Total
Base	360	37.7	456	51.0	816	44.1
Non-Base	596	62.3	439	49.0	1,035	55.9
Total	956	100.0	895	100.0	1,851	100.0

Table 28 shows the distribution of trip tours for cargo and service vehicles. There were 355 trip tours generated by 209 vehicles making at least one trip tour. Cargo vehicles made 160 tours and service vehicles produced 195 tours. The number of tours varied from 1-to-7 tours for cargo vehicles, and 1-to-6 tours for service vehicles. Approximately 62 percent of the cargo vehicles and 65 percent of the service vehicles (that made trip tours) made only one trip tour. For those cargo and service vehicles making only one trip tour, they averaged 5.0 trips and 4.5 trips within the tour, respectively. For all vehicles combined, the average number of tours per vehicle was 1.7 and the average number of trips per tour was 3.6.

Table 28. Trip Tours per Vehicle.

Cargo Vehicles				
Total Number of Trip Tours	Number of Vehicles	Number of Tours	Number of Trips	Average Trips per Tour
1	55	55	274	5.0
2	15	30	94	3.1
3	7	21	74	3.5
4	8	32	91	2.8
5	3	15	35	2.3
6	0	0	0	0.0
7	1	7	17	2.4
Cargo Total	89	160	585	3.7
Service Vehicles				
Total Number of Trip Tours	Number of Vehicles	Number of Tours	Number of Trips	Average Trips per Tour
1	78	78	349	4.5
2	24	48	174	3.6
3	8	24	77	3.2
4	6	24	56	2.3
5	3	15	39	2.6
6	1	6	12	2.0
Service Total	120	195	707	3.6
Grand Total	209	355	1,292	3.64

The analyses of trip tours also involved counting the number of non-base trips, external trips, inter-zonal trips, and intra-zonal trips within trip tours to determine the total amount and types of travel that occur during the course of the tour. There were 1,292 trips observed within the total 355 trip tours. For all vehicles, 547 were external trips (42 percent), 708 were inter-zonal trips (55 percent), and 37 were intra-zonal trips (3 percent). Table 29 shows the distribution of these trips for cargo and service vehicles.

Table 29. External, Inter-Zonal, and Intra-Zonal Trips within Trip Tours.

No. of Trip Tours	External		Inter-Zonal		Intra-Zonal		Total Trips	
	Cargo Vehicles	Service Vehicles						
1	205	111	62	227	7	11	274	349
2	66	31	28	140	0	3	94	174
3	15	25	56	49	3	3	74	77
4	57	0	32	51	2	5	91	56
5	27	10	8	26	0	3	35	39
6	0	0	0	12	0	0	0	12
7	0	0	17	0	0	0	17	0
Total	370	177	203	505	12	25	585	707

Table 30 shows the number of non-base trips within trip tours separately since non-base trips are not mutually exclusive of the other trip types (i.e., a non-base trip may also be an inter-zonal or external trip).

Table 30. Non-Base Trips within Trip Tours.

No. of Trip Tours	Non-Base Trips within Trip Tours			Total Trips within Trip Tours					
	Cargo Vehicles	Service Vehicles	All Vehicles	Cargo Vehicles	Percent of Total	Service Vehicles	Percent of Total	All Vehicles	Percent of Total
1	162	188	350	274	46.8	349	49.4	623	48.3
2	34	75	109	94	16.1	174	24.6	268	20.7
3	31	28	59	74	12.6	77	10.9	151	11.7
4	28	8	36	91	15.6	56	7.9	147	11.4
5	5	7	12	35	6.0	39	5.5	74	5.7
6	0	0	0	0	0.0	12	1.7	12	0.9
7	3	0	3	17	2.9	0	0.0	17	1.3
Total	263	306	569	585	100.0	707	100.0	1,292	100.0

Figure 13 and Figure 14 show the percentage distribution of non-base trips, external trips, inter-zonal trips, and intra-zonal trips within trip tours for cargo vehicles and service vehicles, respectively.

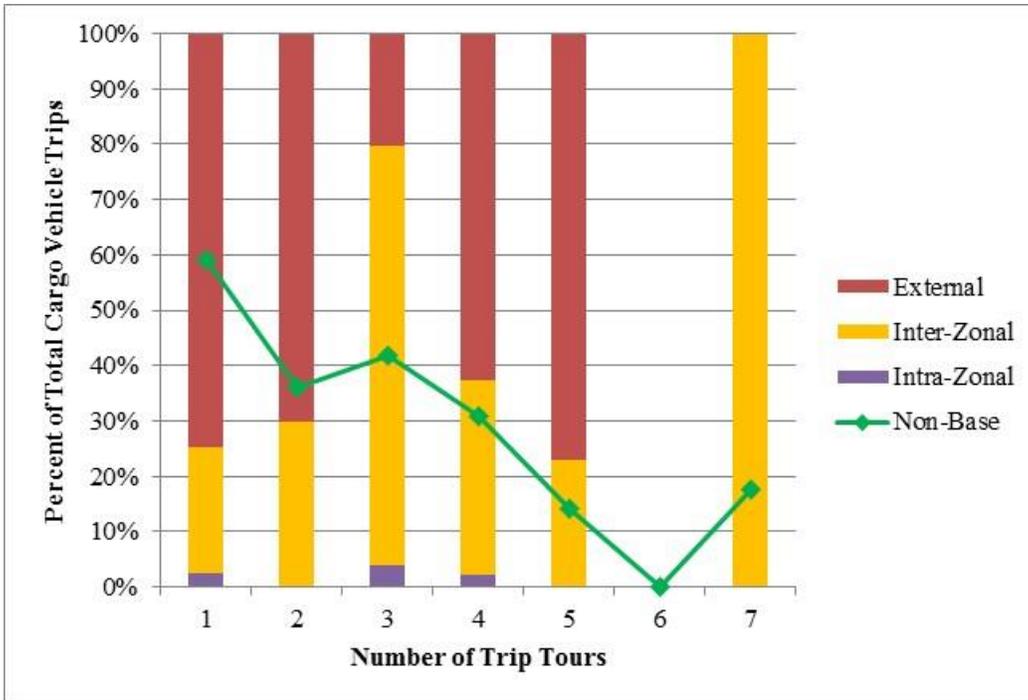


Figure 13. Cargo Vehicle Trips within Trip Tours by Trip Type.

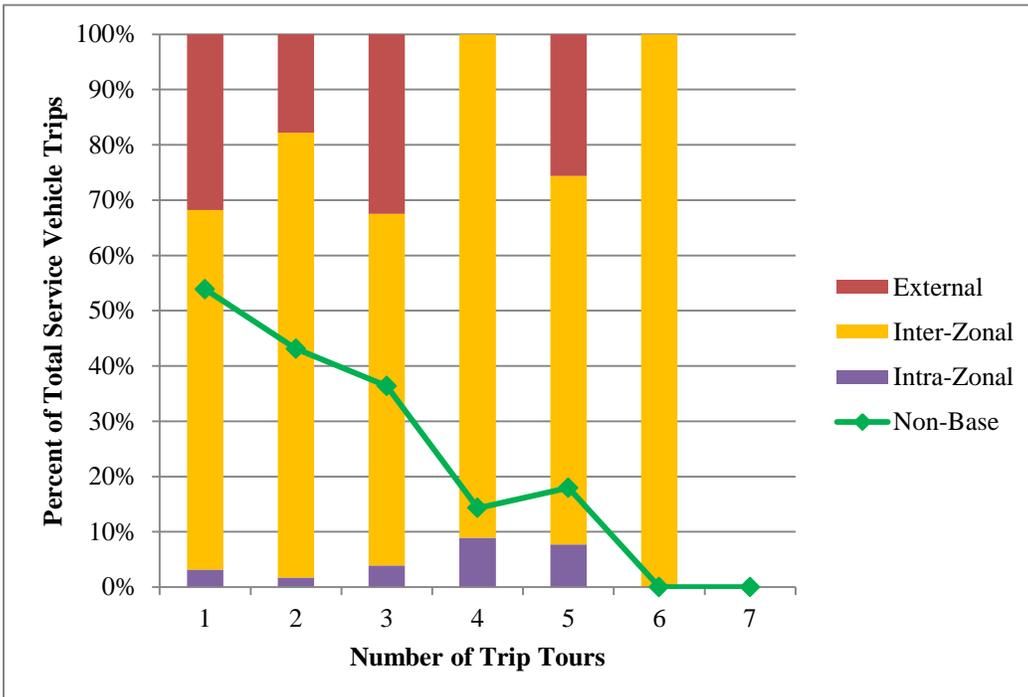


Figure 14. Service Vehicle Trips within Trip Tours by Trip Type.

The analyses of trip tours involved counting all the trips that began at the base location until the vehicle returned to its base location. Those trip chains that did not begin and/or end at their base location, as well as those that only went to the base one time on the survey day, were considered

open tours (except in the case of all non-base trips). In the case of non-base trips, if the trips were determined to contain completely closed tours under the criteria described previously, they were labeled as completely closed tours. Due to the number of trips that were made in open tours, a review of when these trips occurred was performed. Table 31 provides an overview of when trips that are not part of tours were made relative to trip tours. Slightly over 5 percent of the trips made in an open tour (that contained a tour) by cargo and service vehicles combined were before the first trip tour or after the last completed trip tour.

Table 31. Summary of Open Tour Trips.

Trip Type	Cargo		Service		All Vehicles	
	# of Trips	% of Total	# of Trips	% of Total	# of Trips	% of Total
Before Start of First Tour	13	1.4	20	2.2	33	1.8
After End of Last Tour	21	2.2	41	4.6	62	3.3
Only Open	337	35.2	120	13.4	457	24.7
Within Closed	585	61.2	714	79.8	1,299	70.2
Total*	956	100.0	895	100.0	1,851	100.0
No Tours	40	4.2	16	1.8	56	3.0

*Total does not include the “No Tours” category.

Survey Expansion

The expansion of commercial vehicle survey data is conducted in an indirect manner. In typical travel surveys, an estimate of the population being sampled is known and data are then expanded to represent that population. In the case of commercial vehicle surveys, the population of vehicles operating in the study area is unknown. Vehicle registration data are not considered a viable basis to estimate the number of commercial vehicles in the study area because other vehicles operating in the area may be registered in neighboring counties. However, in the San Angelo commercial vehicle survey analysis, information on registered trucks has been included to show how the survey data compare with existing vehicle registration data.

The methodology currently used to expand commercial vehicle survey data is based on vehicle miles of travel (VMT) estimates from the Highway Performance Monitoring System (HPMS), and vehicle classification counts by functional classification for the study area. In essence, an estimate of the commercial VMT is developed from the HPMS data and is then used to expand

the VMT observed from sampled commercial vehicles. HPMS data contain annual average daily traffic (AADT) estimates of the total VMT by functionally-classified facilities such as freeways, arterials, collectors, and local roadways. Since AADT includes weekend traffic, a correction factor is applied to the data to obtain average weekday VMT by functional classification. Table 32 provides the adjusted 2013 HPMS VMT estimates for the San Angelo study area.

Table 32. 2013 HPMS Estimates of Weekday VMT in the San Angelo Study Area.

Functional Classification	Total Weekday VMT
Freeway	451,879
Arterial	645,195
Collector	309,564
Local	438,844
Total	1,845,482

The percentages of commercial and non-commercial vehicles by functional classification were determined by using vehicle classification counts for the San Angelo area obtained from TxDOT. The percentage of commercial vehicles for internal sites for each functional classification were combined with the corresponding percentage for external sites based on the percentage of regional VMT estimated as external travel.

Table 33 provides the internal, external, and weighted percentages of commercial and non-commercial vehicles by functional classification. The weighted percentages were applied to the HPMS estimated weekday VMT shown in Table 32 to estimate the total commercial and non-commercial VMT. Table 34 shows the estimated VMT for commercial and non-commercial vehicles.

Table 33. Percentage of Commercial and Non-Commercial Vehicles by Functional Classification.

Functional Classification	Percent of Commercial Vehicles			Percent of Non-Commercial Vehicles		
	Internal Sites (75%)	External Sites (25%)	Weighted Average	Internal Sites (75%)	External Sites (25%)	Weighted Average
Freeway	11	11	11	89	89	89
Arterial	9	15	10	91	85	90
Collector	7	14	9	93	86	91
Local	4	12	6	96	88	94

Table 34. Estimated VMT for Commercial and Non-Commercial Vehicles.

Functional Classification	Commercial VMT	Non-Commercial VMT	Total VMT
Freeway	50,102	401,777	451,879
Arterial	65,765	579,431	645,195
Collector	26,971	282,593	309,564
Local	26,825	412,019	438,844
Total	169,663	1,675,819	1,845,482

The total commercial VMT of 169,663 miles represents all commercial vehicles that traveled within the San Angelo study area. To properly expand the survey data and determine the total internal commercial vehicle trips generated in the study area, external VMT estimates had to be subtracted from the total commercial VMT. The external commercial VMT was estimated to be 24,989 miles. Therefore, the internal commercial VMT estimate was 144,673 miles.

The total internal VMT observed from the commercial vehicle survey was 4,251 miles, of which 1,771 miles were cargo VMT and 2,480 miles were service VMT. This estimate was based on 1,021 inter-zonal trips (385 cargo vehicle trips and 636 service vehicle trips), multiplied by the average trip length (4.6 miles for cargo and 3.9 miles for service vehicles). The total internal commercial VMT (144,673 miles) represented all commercial vehicles and is not distinguished by cargo or service vehicles. Based on the vehicle classification counts conducted in the study area, approximately 18 percent of the commercial vehicles belonged to Class 5 (two-axle, six-tire, single unit trailers) through Class 13 (seven or more axle multi-trailers) and were assumed as cargo transport vehicles. Approximately 82 percent of the commercial vehicles belonged to Class 3 (pick-up, van, or two-axle, four-tire, single unit trailers) and Class 4 (buses)

and were assumed to be service vehicles. Therefore, to establish the VMT estimates by commercial cargo and service types, it was deemed reasonable to apply these percentages to the total internal commercial VMT. The resulting VMT estimates were 25,412 miles for cargo vehicles and 119,262 miles for service vehicles.

An expansion factor was developed based on the quotient between total internal VMT and observed internal VMT (from the survey) for each commercial vehicle type. The expansion factors (14.35 for cargo vehicles and 48.08 for service vehicles) were then multiplied by the observed number of inter-zonal trips to estimate the total vehicle trips. The resulting inter-zonal trip estimates were approximately 5,524 cargo vehicle trips and 30,580 service vehicle trips. Additionally, 1,983 intra-zonal trips (445 cargo trips and 1,538 service trips) were made, bringing the total number of internal commercial vehicle trips to 38,088. Based on the average number of inter-zonal trips per day of 2.98 trips for cargo vehicles and 4.58 trips for service vehicles, 9,020 commercial vehicles (2,000 cargo vehicles and 7,020 service vehicles) were estimated to be operating within the San Angelo study area on a daily basis. Table 35 provides a summary of key results from the San Angelo commercial vehicle survey and data expansion.

Table 35. Key Survey Results and Expanded Trip and VMT Data.

Indicator	Cargo Vehicles	Service Vehicles	All Vehicles
Sample Size	129	139	268
Total Inter-Zonal Trips	385	636	1,021
Total Intra-Zonal Trips	31	32	63
Total Internal Trips	416	668	1,084
Total External Trips	540	227	767
Total Internal and External Trips	956	895	1,851
Average Total Trips per Vehicle	7.4	6.4	6.9
Average Total Internal Trips per Vehicle*	3.2	4.8	4.0
Average Trip Length	4.6	3.9	4.2
Observed Internal VMT	1,771	2,480	4,251
Total Internal Commercial VMT	25,412	119,261	144,673
Survey Expansion Factor	14.35	48.08	34.03
Total Expanded Inter-Zonal Commercial Vehicle Trips	5,524	30,580	36,104
Total Expanded Intra-Zonal Commercial Vehicle Trips	445	1,538	1,983
Total Expanded Commercial Vehicle Trips	5,969	32,118	38,087
Number of Commercial Vehicles Operating on a Daily Basis	2,000	7,020	9,020
Attraction Rate to Households	--	--	0.256

*Based on internal trips of 268 surveyed commercial vehicles (129 cargo vehicles and 139 service vehicles).

One final calculation was the determination of the commercial vehicle attraction rate to households. In the survey, approximately 25 percent of the trips went to residential land use types. This percentage was applied to the total, expanded commercial vehicle trips within the study area to obtain an estimated 9,884 trips to residential locations. The residential trip estimate was divided by the estimated number of households in the San Angelo area (38,667) to obtain an attraction rate of 0.256.

SURVEY SUMMARY

This section provides a summary of vehicle and trip characteristics of 268 commercial vehicles that participated in the 2014 San Angelo commercial vehicle survey. Based on the results from the survey, significant differences as well as similarities on travel characteristics were observed between cargo vehicles and service vehicles.

The average vehicle age for cargo and service vehicles was 7.0 years. The odometer readings reported by cargo vehicles indicated an average mileage of 209,100 miles, while service vehicles had a reported average mileage of 99,600 miles. In terms of fuel use, around 66 percent of cargo vehicles used diesel and 34 percent used unleaded gasoline, while 79 percent of service vehicles used unleaded gasoline and 21 percent used diesel.

The analyses of trip characteristics included an in-depth examination of trip frequency, trip type, average trip length, trip purpose, and land use activity at trip destinations by commercial vehicle type. Surveyed cargo vehicles made an average of 7.4 total trips per day, compared to 6.4 trips per day for service vehicles. Excluding the trips made outside of the study area (external trips), cargo vehicles produced 3.2 internal trips per day, with average travel distance of 2.9 miles, compared to service vehicles, which made 4.8 internal trips per day, with average trip length of 3.2 miles. The average travel time per trip for cargo vehicles was 5.5 minutes and for service vehicles the average travel time per trip was 6.1 minutes.

In terms of trip purpose at trip destinations, approximately 36 percent of the cargo vehicle trips were for delivery, 22 percent were base related, and 19 percent were classified as “pick-up and delivery.” For trips made by service vehicles, approximately 29 percent were base related, 23 percent were service, and 16 percent were for sales.

In terms of land use activity, approximately 28 percent of the trips made by cargo vehicles traveled to retail locations, followed by 18 percent to medical/hospital locations, and 14 percent to residential locations. For service vehicles, nearly 26 percent of the trips traveled to residential locations, followed by 18 percent to government office sites, and 16 percent to retail locations.

The analyses of cargo characteristics were exclusive to trips made by cargo vehicles only and involved examining the types of cargo/commodities being transported at trip destinations, the trip purposes, the land use activity at each stop, and the net weight of cargo being picked-up and/or dropped-off for each trip. Overall, the average net cargo weight per trip was approximately 2,000 lbs. Building materials products showed the highest average net cargo weight of approximately 9,900 lbs. per trip, but the most frequently transported commodity was machinery products with an average net cargo weight of nearly 1,100 lbs. per trip. The land use

category “education” showed the highest average net cargo weight of approximately 5,500 lbs. per trip. The delivery trip purpose had the highest average net cargo weight of nearly 4,300 lbs. per trip.

The analyses of trip tours involved examining the amount of circuitous travel performed by the commercial vehicles in the study area. It also involved counting the number of non-base trips, external trips, inter-zonal trips, and intra-zonal trips within trip tours to determine the total amount and types of travel that occur during the course of the tour. A total of 355 trip tours were generated by the surveyed vehicles, with cargo vehicles making 160 tours and service vehicles producing 195 tours. The number of trip tours per vehicle varied from 1-to-7 tours for cargo vehicles and 1-to-6 tours for service vehicles. The average number of trips tours for all vehicles was 1.7 and the average number of trips per tour was 3.6. Trips made as part of trip tours accounted for 1,292 trips (585 trips by cargo vehicles and 707 trips by service vehicles). Within the trip tours, approximately 55 percent were inter-zonal trips, 42 percent were external trips, and the remaining 3 percent were intra-zonal trips. Non-base trips (which were not mutually-exclusive of the other trip types) comprised approximately 44 percent of the trips within the tours.

Lastly, the expansion of commercial vehicle survey data were based on VMT estimates and vehicle classification counts for the San Angelo study area. The commercial VMT estimates represented all commercial vehicles and do not distinguish by cargo and service vehicle types. Therefore, the estimation of VMT and volume of cargo and service vehicles operating within the study area were mainly based on key findings from the survey, such as the total number of internal cargo and service vehicle trips, the average number of trips per cargo and service vehicle, and the average trip lengths per cargo and service vehicle. Based on these findings, approximately 9,000 commercial vehicles (2,000 cargo vehicles and 7,000 service vehicles) were estimated to be operating within the San Angelo study area on a daily basis.

APPENDIX

COMMERCIAL TRAVEL SURVEY PART 1: VEHICLE INFORMATION

(Please fill out this form, even if the information requested has been provided elsewhere.)

Official Use	Vehicle ID #: _____	NAICS Code: _____
---------------------	---------------------	-------------------

Travel Day: _____ Vehicle License Plate #: _____
 Month / Day / Year

Company or Name of Owner (name on registration): _____

Company Address: _____

 (Street Address or Names of Nearest Intersecting Streets)

City _____ State _____ Zip Code _____

Company - Type of Place (see options below): _____

Vehicle Info: Make: _____ Model: _____ Year: _____

- Vehicle Type (Primary Use)
- 1) Cargo / Freight Transport Vehicle
 - 2) Service Vehicle (vehicle used PRIMARILY for non-cargo transport purposes)
 - 3) Cargo Delivery and Commercial Service Vehicle

- Vehicle Fuel:
- 1) Unleaded Gas 2) Diesel 3) Propane 4) Natural Gas (LNG or CNG)
 - 5) Electric 6) Gas/Electric 96) Other (specify) _____

What is the average Miles Per Gallon (MPG) of the vehicle? _____

- Vehicle Classification:
- 1) Passenger Car
 - 5) Single Unit 2-axle (6 wheels)
 - 2) Pick-Up Truck
 - 6) Single Unit 3-axle (10 wheels)
 - 3) Van (Cargo or Minivan)
 - 7) Single Unit 4-axle (14 wheels)
 - 4) Sport Utility Vehicle (SUV)
 - 8) Semi (all Tractor-Trailer combinations)
 - 96) Other _____

Gross Vehicle Weight (including trailer): _____ pounds

Odometer Reading at beginning of travel day: _____ Total Number of Stops on travel day: _____

PLACE OPTIONS		
(1) Office Building (non-government)	(6) Education (college, trade, etc.)	(11) Warehouse
(2) Retail / Shopping	(7) Government Office / Building	(12) Distribution Center
(3) Industrial / Manufacturing	(8) Residential	(13) Construction Site
(4) Medical / Hospital	(9) Airport	(96) Other (specify)
(5) Education (12 th grade or less)	(10) Intermodal Facility	

COMMERCIAL TRAVEL SURVEY PART 2: TRIP INFORMATION

Vehicle Plate #: _____

The place my travel began today was:

- Work / Base Location (Company address) Other Location (Please describe): _____

Type of Place (Specify Type of Place 1-13 or 96 using the Place options below): _____

_____ TRAVEL DATE: _____
(Street Address or Names of Nearest Intersecting Streets) Month / Day / Year

_____ DEPARTURE TIME: _____ am/pm
(City, State, Zip Code)

When you left the above location was your vehicle: Fully Loaded Partially Loaded Empty Not Applicable (Service Vehicle)

If loaded, what is the total weight in pounds of the cargo being transported? (Please provide an estimate if unsure of exact weight): _____ pounds

RECORD EVERY PLACE YOU GO, INCLUDING BRIEF STOPS

	Record the following information about each place. Location: Address including City, State, and Zip Code or Names of Nearest Intersecting Streets or Landmark	Is this the Work/Base Location for this vehicle? <input type="checkbox"/> - Yes <input type="checkbox"/> - No	What Type of Place is this? (See Place Options below)	What Time did you Arrive and Depart this location? (Record exact times)	What Activity are you doing at this location? (See Activity Options below)	If transporting cargo, what is the Cargo? (If HAZMAT also enter Placard #)	If transporting cargo, enter Cargo Weight (Pounds)
PLACE 1		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 2		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 3		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up

PLACE OPTIONS	ACTIVITY OPTIONS																														
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">(1) Office Building (non government)</td> <td style="width: 33%;">(6) Education (college, trade, etc.)</td> <td style="width: 33%;">(11) Warehouse</td> </tr> <tr> <td>(2) Retail / Shopping</td> <td>(7) Government Office / Building</td> <td>(12) Distribution Center</td> </tr> <tr> <td>(3) Industrial / Manufacturing</td> <td>(8) Residential</td> <td>(13) Construction Site</td> </tr> <tr> <td>(4) Medical / Hospital</td> <td>(9) Airport</td> <td>(96) Other (specify)</td> </tr> <tr> <td>(5) Education (12th grade or less)</td> <td>(10) Intermodal Facility</td> <td></td> </tr> </table>	(1) Office Building (non government)	(6) Education (college, trade, etc.)	(11) Warehouse	(2) Retail / Shopping	(7) Government Office / Building	(12) Distribution Center	(3) Industrial / Manufacturing	(8) Residential	(13) Construction Site	(4) Medical / Hospital	(9) Airport	(96) Other (specify)	(5) Education (12 th grade or less)	(10) Intermodal Facility		<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">(1) Base Location / Return to Base Location</td> <td style="width: 33%;">(4) Deliver Cargo</td> <td style="width: 33%;">(7) Government Related Service</td> </tr> <tr> <td>(2) Vehicle Maintenance (fuel, oil, etc.)</td> <td>(5) Pick up Cargo</td> <td>(8) Installation / Maintenance / Repair Service</td> </tr> <tr> <td>(3) Driver Needs (lunch, restroom, etc.)</td> <td>(6) Deliver and Pick-Up Cargo</td> <td>(9) Sales / Professional Service</td> </tr> <tr> <td></td> <td></td> <td>(10) Shopping for Business</td> </tr> <tr> <td></td> <td></td> <td>(96) Other Activity (specify)</td> </tr> </table>	(1) Base Location / Return to Base Location	(4) Deliver Cargo	(7) Government Related Service	(2) Vehicle Maintenance (fuel, oil, etc.)	(5) Pick up Cargo	(8) Installation / Maintenance / Repair Service	(3) Driver Needs (lunch, restroom, etc.)	(6) Deliver and Pick-Up Cargo	(9) Sales / Professional Service			(10) Shopping for Business			(96) Other Activity (specify)
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		(10) Shopping for Business																													
		(96) Other Activity (specify)																													

Record 21

Commercial Travel Survey – Trip Information (continued)

Vehicle Plate #: _____

	Record the following information about each place. Location: Address including City, State, and Zip Code or Names of Nearest Intersecting Streets or Landmark	Is this the Work/Base Location for this vehicle? <input type="checkbox"/> - Yes <input type="checkbox"/> - No	What Type of Place is this? (See Place Options below)	What Time did you Arrive and Depart this location? (Record exact times)	What Activity are you doing at this location? (See Activity Options below)	If transporting cargo, what is the Cargo? (If HAZMAT also enter Placard #)	If transporting cargo, enter Cargo Weight (Pounds)
PLACE 4		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 5		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 6		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 7		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 8		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 9		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up

PLACE OPTIONS	ACTIVITY OPTIONS																														
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;">(1) Office Building (non government)</td> <td style="width: 33%; border: none;">(6) Education (college, trade, etc.)</td> <td style="width: 33%; border: none;">(11) Warehouse</td> </tr> <tr> <td style="border: none;">(2) Retail / Shopping</td> <td style="border: none;">(7) Government Office / Building</td> <td style="border: none;">(12) Distribution Center</td> </tr> <tr> <td style="border: none;">(3) Industrial / Manufacturing</td> <td style="border: none;">(8) Residential</td> <td style="border: none;">(13) Construction Site</td> </tr> <tr> <td style="border: none;">(4) Medical / Hospital</td> <td style="border: none;">(9) Airport</td> <td style="border: none;">(96) Other (specify)</td> </tr> <tr> <td style="border: none;">(5) Education (12th grade or less)</td> <td style="border: none;">(10) Intermodal Facility</td> <td></td> </tr> </table>	(1) Office Building (non government)	(6) Education (college, trade, etc.)	(11) Warehouse	(2) Retail / Shopping	(7) Government Office / Building	(12) Distribution Center	(3) Industrial / Manufacturing	(8) Residential	(13) Construction Site	(4) Medical / Hospital	(9) Airport	(96) Other (specify)	(5) Education (12 th grade or less)	(10) Intermodal Facility		<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;">(1) Base Location / Return to Base Location</td> <td style="width: 33%; border: none;">(4) Deliver Cargo</td> <td style="width: 33%; border: none;">(7) Government Related Service</td> </tr> <tr> <td style="border: none;">(2) Vehicle Maintenance (fuel, oil, etc.)</td> <td style="border: none;">(5) Pick up Cargo</td> <td style="border: none;">(8) Installation / Maintenance / Repair Service</td> </tr> <tr> <td style="border: none;">(3) Driver Needs (lunch, restroom, etc.)</td> <td style="border: none;">(6) Deliver and Pick-Up Cargo</td> <td style="border: none;">(9) Sales / Professional Service</td> </tr> <tr> <td></td> <td></td> <td style="border: none;">(10) Shopping for Business</td> </tr> <tr> <td></td> <td></td> <td style="border: none;">(96) Other Activity (specify)</td> </tr> </table>	(1) Base Location / Return to Base Location	(4) Deliver Cargo	(7) Government Related Service	(2) Vehicle Maintenance (fuel, oil, etc.)	(5) Pick up Cargo	(8) Installation / Maintenance / Repair Service	(3) Driver Needs (lunch, restroom, etc.)	(6) Deliver and Pick-Up Cargo	(9) Sales / Professional Service			(10) Shopping for Business			(96) Other Activity (specify)
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		(96) Other Activity (specify)																													

Commercial Travel Survey – Trip Information

Vehicle Plate #: _____

(continued)

	Record the following information about each place. Location: Address including City, State, and Zip Code or Names of Nearest Intersecting Streets or Landmark	Is this the Work/Base Location for this vehicle? <input type="checkbox"/> - Yes <input type="checkbox"/> - No	What Type of Place is this? (See Place Options below)	What Time did you Arrive and Depart this location? (Record exact times)	What Activity are you doing at this location? (See Activity Options below)	If transporting cargo, what is the Cargo? (If HAZMAT also enter Placard #)	If transporting cargo, enter Cargo Weight (Pounds)
PLACE 10		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 11		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 12		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 13		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up
PLACE 14		<input type="checkbox"/> - Yes <input type="checkbox"/> - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ Delivered _____ Picked Up

PLACE OPTIONS			ACTIVITY OPTIONS		
(1) Office Building (non government)	(6) Education (college, trade, etc.)	(11) Warehouse	(1) Base Location / Return to Base Location	(4) Deliver Cargo	(7) Government Related Service
(2) Retail / Shopping	(7) Government Office / Building	(12) Distribution Center	(2) Vehicle Maintenance (fuel, oil, etc.)	(5) Pick up Cargo	(8) Installation / Maintenance / Repair Service
(3) Industrial / Manufacturing	(8) Residential	(13) Construction Site	(3) Driver Needs (lunch, restroom, etc.)	(6) Deliver and Pick-Up Cargo	(9) Sales / Professional Service
(4) Medical / Hospital	(9) Airport	(96) Other (specify)			(10) Shopping for Business
(5) Education (12 th grade or less)	(10) Intermodal Facility				(96) Other Activity (specify)

