

Tennessee Roadside Truck Origin-Destination Surveys

draft

report

prepared for

Tennessee Department of Transportation

prepared by

Cambridge Systematics, Inc.

draft report

Tennessee Roadside Truck Origin-Destination Surveys

prepared for

Tennessee Department of Transportation

prepared by

Cambridge Systematics, Inc.
730 Peachtree Street, NE, Suite 1050
Atlanta, GA 30308

March 2010

Table of Contents

- 1.0 Introduction..... 1**
 - Study Background..... 1
 - Data Collection Effort 1
 - Report Organization..... 3

- 2.0 Key Findings..... 5**
 - Distribution of Origin-Destination Pairs..... 5
 - Origin-Destination Facility Types 6
 - Commodity Mix..... 6
 - Load Characteristics..... 7
 - Time of Day 8

- 3.0 Implications for Future Data Collection 13**

- Appendix A**
 - Tennessee Roadside Truck Intercept Survey Form

- Appendix B**
 - STCC Codes and Commodities

- Appendix C**
 - Summaries of Truck Origin-Destination Data for Each Location and Direction

List of Tables

| | |
|--|----|
| 1. Description of Data Collection Locations | 2 |
| 2. Distribution of O-D Pairs | 5 |
| 3. Daytime and Nighttime Origins and Destinations | 9 |
| 4. Daytime and Nighttime Facility Types at Trip Ends | 11 |

List of Figures

| | |
|--|----|
| 1. Truck Roadside O-D Survey Data Collection Locations | 2 |
| 2. Origin and Destination Facility Types | 6 |
| 3. Overall Commodity Mix | 7 |
| 4. Average Payload in Tons by Survey Site | 8 |
| 5. Commodity Mix by Time of Day | 9 |
| 6. Daytime and Nighttime Load Characteristics | 10 |

1.0 Introduction

■ Study Background

Truck origin-destination (O-D) survey data is a key metric for measuring truck freight activity in a region. While standard classification counts provide data regarding truck volumes at specific locations on the highway system, they do not provide information about where truck trips originate, where they are going, average payloads, or the commodities being carried. Such data is necessary to better understand truck travel patterns in an area and the relationship between freight and regional economies. O-D survey data is also useful for statewide corridor planning efforts since it provides a finer grain of detail than other sources of commodity flow information, such as the TRANSEARCH freight database.

In order to support freight planning efforts at Tennessee Metropolitan Planning Organizations (MPO) as well as Tennessee's statewide freight planning program, TDOT has commissioned this study to collect, summarize, and analyze truck O-D data through roadside surveys administered at predefined locations throughout the State. This data will be useful to MPOs when analyzing truck travel patterns within their regions and when developing truck components for regional travel demand models. TDOT will use the information to complement TRANSEARCH and to support Interstate corridor planning.

■ Data Collection Effort

The data for this study was collected by way of a survey instrument administered at 13 roadside weigh stations and inspection stations in Tennessee. The roadside intercept locations are shown in Figure 1 and described in Table 1. A copy of the survey instrument may be found in Appendix A.

Data were collected from December 7 through December 23, 2009 at various hours throughout the day (7:00 a.m. to 7:00 p.m.) and night (7:00 p.m. to 7:00 a.m.). Truckers were asked questions regarding the location of their last stop and next destination (including facility type, e.g., a factory), the commodities being carried and their weight, and the type and home base location of the carrier. They were also asked to rate the safety of Tennessee's Interstate system and the availability of truck parking in Tennessee, as well as how often they use the State's traveler information systems. Surveyors also collected information about the truck and trailer type, number of axles, and any hazardous materials (HAZMAT) being transported. This process yielded 2,312 usable survey forms.

Figure 1. Truck Roadside O-D Survey Data Collection Locations



Table 1. Description of Data Collection Locations

| Location | TDOT Region | Number of Surveys Collected | Time of Data Collection |
|-------------------------------|-------------|-----------------------------|-------------------------|
| I-40 Eastbound in Mt. Juliet | 3 | 65 | 7 a.m. to 4 p.m. |
| I-40 Westbound in Mt. Juliet | 3 | 92 | 8 a.m. to 4 p.m. |
| I-75 Northbound in Cleveland | 2 | 297 | 7 a.m. to 5 p.m. |
| I-81 Northbound in Morristown | 1 | 48 | 8 a.m. to 5 p.m. |
| I-81 Southbound in Morristown | 1 | 123 | 6 a.m. to 5 p.m. |
| I-24 Eastbound in Manchester | 2 | 324 | 24 hour |
| I-24 Westbound in Manchester | 2 | 239 | 24 hour |
| I-40 Eastbound in Brownsville | 4 | 155 | 24 hour |
| I-40 Westbound in Brownsville | 4 | 153 | 24 hour |
| I-65 Northbound in Portland | 3 | 167 | 24 hour |
| I-65 Southbound in Portland | 3 | 227 | 24 hour |
| I-40/I-75 EB/NB in Knoxville | 1 | 189 | 24 hour |
| I-40/I-75 WB/SB in Knoxville | 1 | 233 | 24 hour |
| Total | | 2,312 | |

Note: Data was not collected for I-75 Southbound in Cleveland due to construction at the site.

The completed surveys were entered into a Microsoft Excel spreadsheet. The data was then scrubbed to ensure completeness and internal consistency. Commodities were assigned a two-digit Standard Transportation Commodity Classification (STCC) code to make it easier to analyze commodity flow patterns, and to make the O-D data consistent with TRANSEARCH. A list of STCC codes and commodities is provided in Appendix B.

Origins and destinations were coded by location:

- Knoxville;
- Other TDOT Region 1;
- Chattanooga;
- Other TDOT Region 2;
- Nashville;
- Other TDOT Region 3;
- Memphis;
- Other TDOT Region 4;
- Outside State; and
- Unknown.

Origin and destination facility types were also standardized to correspond to the categories found in the survey instrument:

- Factory;
- Warehouse/Distribution Center;
- Truck Terminal;
- Rail Yard;
- Retail Outlet;
- Farm;
- Mine;
- Other; and
- Unknown.

Following data scrubbing, the finalized truck O-D data was analyzed for each site and direction. One-page summaries for each location and direction can be found in Appendix C.

■ Report Organization

The remainder of this report is organized as follows:

- Key findings;
- Implications for future freight data collection efforts; and
- Appendices.

2.0 Key Findings

This section presents some key findings from the truck O-D survey effort. The data are presented as overall findings from the total data set, as well as information that stands out for individual locations. Detailed summaries of O-D data by location may be found in Appendix C.

■ Distribution of Origin-Destination Pairs

Table 2 shows the overall distribution of O-D pairs for all 2,312 records. Two-thirds of all the trucks surveyed originated outside of Tennessee, and nearly 65 percent were destined for points outside of the State. This tends to support the notion that through truck trips are a major component of total truck movements at both the state and MPO level. Locations outside of Tennessee are the largest single component of origins and destinations at each survey location, although the proportions do vary considerably. For instance, at the Portland northbound location 98.2 percent of the trucks surveyed were heading to destinations outside of the State, while at the southbound location 98.1 percent originated outside of the State. This is to be expected since the site is adjacent to the Kentucky state line. Morristown and Manchester also reported a large number of trucks moving to or from areas outside of Tennessee.

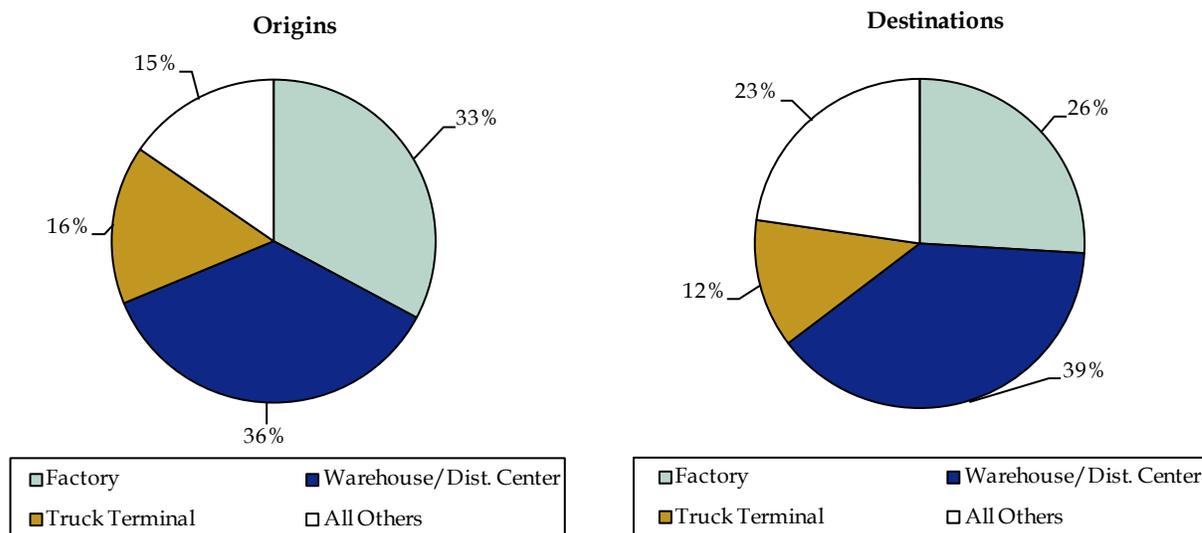
Table 2. Distribution of O-D Pairs

| | Origin | Destination |
|----------------|--------|-------------|
| Knoxville | 2.5% | 4.0% |
| Other Region 1 | 3.5% | 5.4% |
| Chattanooga | 4.1% | 2.9% |
| Other Region 2 | 3.9% | 5.4% |
| Nashville | 5.2% | 5.1% |
| Other Region 3 | 8.7% | 6.8% |
| Memphis | 3.2% | 3.7% |
| Other Region 4 | 2.2% | 1.8% |
| Outside State | 66.3% | 64.8% |
| Unknown | 0.3% | 0.1% |

■ Origin-Destination Facility Types

Warehouses and distribution centers were the most frequently visited facility types, followed by factories and truck terminals (Figure 2). All other facility types (including rail yards, retail stores, farms, mines, and “other”) made up a relatively small share of the total. Individual survey locations typically exhibited a similar pattern. Morristown appears to have a higher proportion of trucks accessing factories, especially in the southbound direction where 46 percent of surveyed trucks originated at a factory. This is not surprising as Morristown has a particularly high concentration of manufacturing activity. Manufacturing accounts for 35 percent of the area’s Gross Regional Product (GRP) and 72 percent of its goods-dependent industry output.

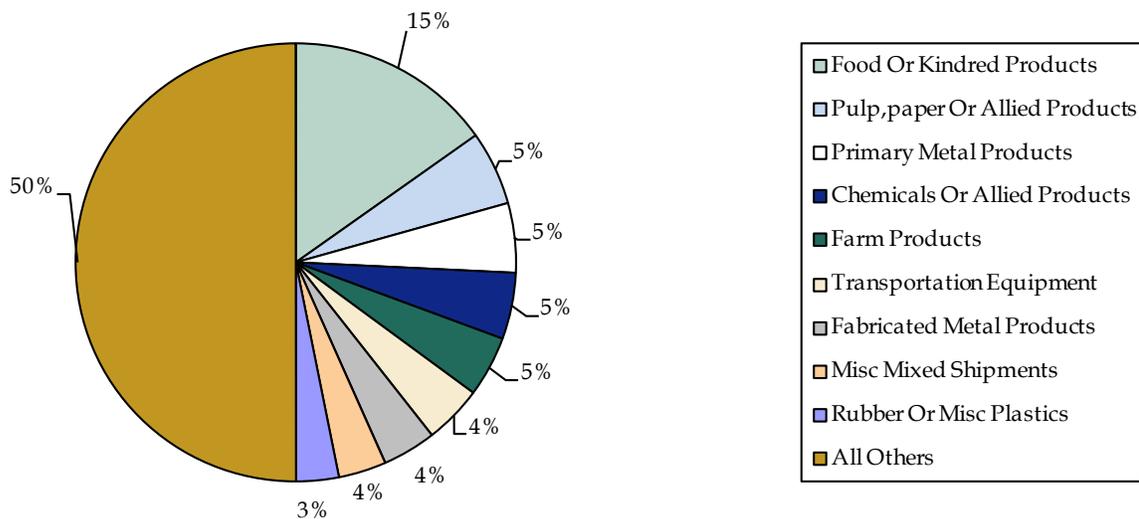
Figure 2. Origin and Destination Facility Types



■ Commodity Mix

The commodities carried by trucks were quite diverse, as shown in Figure 3. Food products were by far the most common cargo by weight, comprising 15 percent of total tonnage reported. All other commodities made up 5 percent or less of the total. These commodities reflect Tennessee’s economic base, of which manufacturing industries and retail trade are a significant part. Food products comprised the largest share of the commodity mix at almost every survey site, with the exception of Mt. Juliet westbound (fabricated metal products), Morristown southbound (machinery), and Portland northbound (primary metal products). Even at these locations, food products made up the second largest commodity group.

Figure 3. Overall Commodity Mix

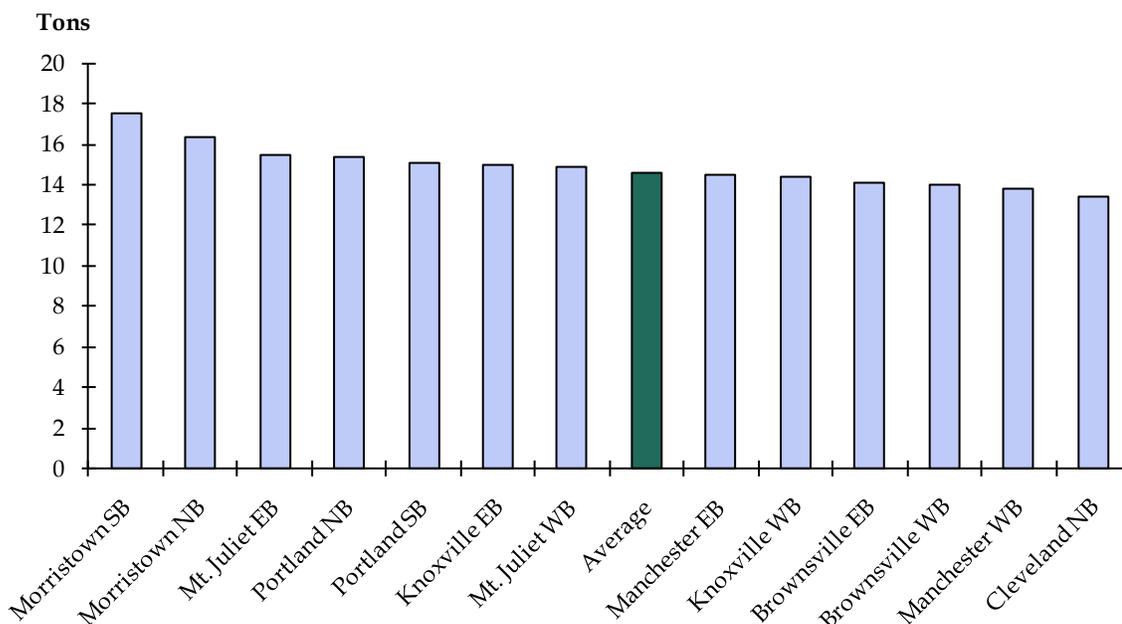


■ Load Characteristics

In terms of load characteristics, overall 63 percent of trucks captured in the roadside survey were fully loaded, 20 percent were partially loaded, and 17 percent were empty. The Cleveland northbound site exhibited the largest share of empty truck moves at 26 percent of the total. Mount Juliet westbound also had a relatively high proportion of empty trucks (24 percent of those captured at that site). Only 6 percent of trucks at Morristown northbound were empty, and 10 percent at Portland southbound. Empties made up between 15 and 20 percent of the total at all other sites.

The average payload of surveyed trucks was 14.6 tons (excluding empty trucks). Reported weights at most of the survey sites hovered around 14 to 15 tons (see Figure 4). Cleveland northbound and Manchester westbound were slightly below this average at 13.4 tons and 13.8 tons respectively. Locations with higher than normal average payloads include Mt. Juliet eastbound (15.5 tons), Morristown northbound (16.4 tons), and Morristown southbound (17.5 tons). These differences appear to stem from a higher proportion of fully loaded trucks; in Morristown three-quarters of the surveyed northbound trucks and 72 percent of the southbound trucks were fully loaded. There were also some particularly heavy loads moving southbound through Morristown, including two that were over 100,000 pounds.

Figure 4. Average Payload in Tons by Survey Site



■ Time of Day

On average, 71 percent of surveys were collected during daytime hours (defined as 7:00 a.m. to 7:00 p.m.), while the remaining 29 percent were gathered at night (7:00 p.m. to 7:00 a.m.). Data was collected exclusively during daytime hours at four locations – Cleveland northbound, Morrystown northbound, and both Mt. Juliet sites. The majority of data were collected during daytime hours at all locations except Portland northbound, where 60 percent of the surveys were taken at night.

Figure 5 compares commodity mixes by time of day.¹ Food and kindred products are the top commodity during both timeframes, but make up a higher share of the total during daytime hours (17 percent, compared to 12 percent). For the most part, the commodity mix is similar between daytime and nighttime, although more farm products and machinery appear to be moving during the day while more miscellaneous mixed shipments (consumer products) and mail/contract traffic move by night.

Table 3 compares origins and destinations during the day and at night. A slightly higher percentage of nighttime origins outside of the state (combined with similar proportions of nighttime destinations) implies that through traffic makes up a larger proportion of trucks

¹ For consistency, only those observations taken from 24-hour survey locations are included in the time of day analysis.

operating at night on Tennessee Interstates. Knoxville and Chattanooga exhibit slightly less truck activity at night, while the reverse is true for Nashville and Memphis.

Figure 5. Commodity Mix by Time of Day

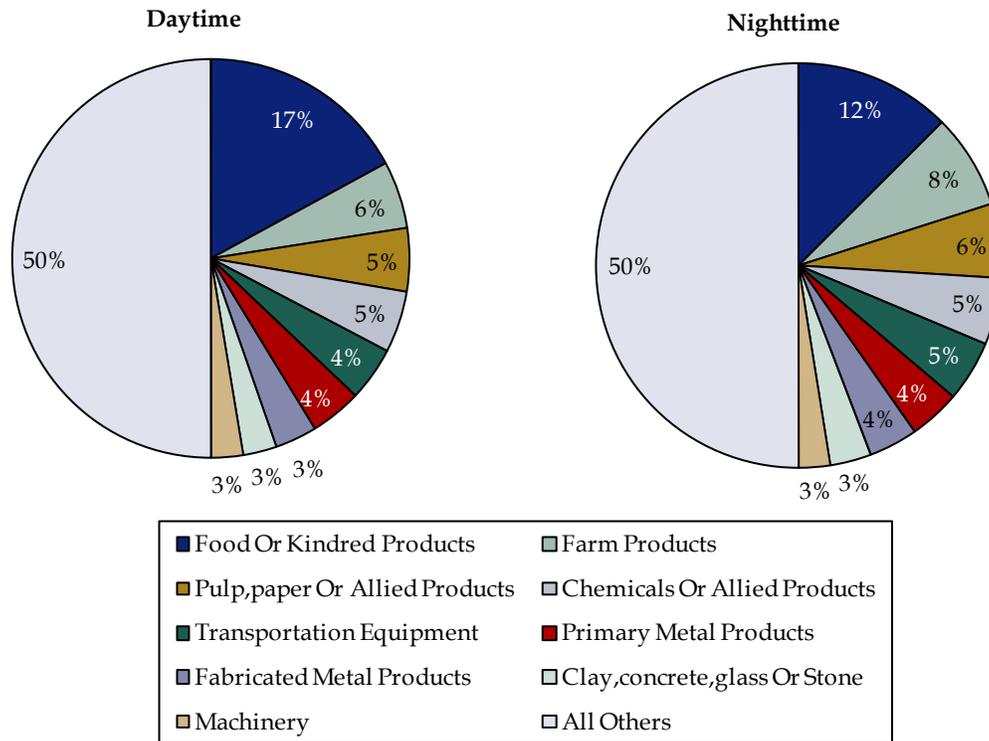


Table 3. Daytime and Nighttime Origins and Destinations

| | Origins | | Destinations | |
|----------------|---------|-----------|--------------|-----------|
| | Daytime | Nighttime | Daytime | Nighttime |
| Knoxville | 3.0% | 1.5% | 2.1% | 2.2% |
| Other Region 1 | 3.3% | 2.1% | 3.1% | 3.1% |
| Chattanooga | 2.7% | 1.9% | 4.4% | 2.4% |
| Other Region 2 | 3.2% | 1.3% | 4.4% | 2.5% |
| Nashville | 6.8% | 6.0% | 4.6% | 7.4% |
| Other Region 3 | 9.4% | 10.4% | 7.7% | 6.7% |
| Memphis | 3.1% | 5.4% | 3.8% | 5.8% |
| Other Region 4 | 3.1% | 2.5% | 1.8% | 2.8% |
| Outside State | 65.2% | 68.6% | 67.8% | 67.0% |
| Unknown | 0.2% | 0.3% | 2.1% | 0.0% |

Figure 6 shows the proportion of trucks that were fully loaded, partially loaded, or empty during daylight and nighttime hours. Interestingly, a larger proportion of empties appear to be traveling during the day, with more fully loaded trucks moving at night. This may be the result of loaded trucks taking advantage of uncongested nighttime hours to maximize productivity or meet tight delivery windows. Partially loaded trucks also operate more frequently during the day.

Figure 6. Daytime and Nighttime Load Characteristics

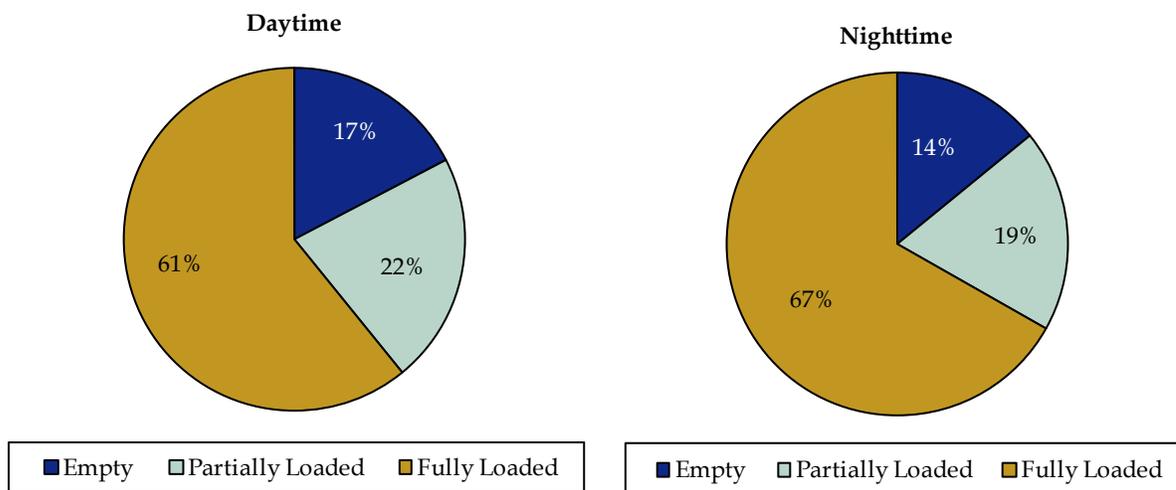


Table 4 compares origin and destination facility types at trip ends between daytime and nighttime hours. Overall, a substantial share of trucks are originating at factories during the day (35 percent) and at warehouses or distribution centers at night (40 percent). Warehouses and distribution centers were also a common daytime origination point (35 percent of the total). Additionally, a greater share of trucks are coming from truck terminals at night than during the day (19 percent versus 13 percent). This is also the case with destinations. Unsurprisingly, more trucks are destined for retail outlets during the day than at night. This suggests that some trucks are picking up goods at distribution centers or truck terminals at night for delivery to retail establishments during normal business hours.

Table 4. Daytime and Nighttime Facility Types at Trip Ends

| Facility Type | Daytime | | Nighttime | |
|------------------------|-----------|-----------|-----------|-----------|
| | Last Stop | Next Stop | Last Stop | Next Stop |
| Factory | 35% | 26% | 28% | 25% |
| Warehouse/Dist. Center | 35% | 40% | 40% | 42% |
| Truck Terminal | 13% | 11% | 19% | 17% |
| Rail Yard | 1% | 1% | 1% | 0% |
| Retail Outlet | 6% | 10% | 4% | 7% |
| Farm | 2% | 1% | 1% | 1% |
| Mine | 0% | 0% | 0% | 0% |
| Other | 7% | 10% | 7% | 7% |
| Unknown | 0% | 1% | 0% | 1% |

3.0 Implications for Future Data Collection

The data collection process and analysis conducted suggests a few implications for future freight data survey efforts. These are discussed below.

- **Survey Locations.** While this initial survey effort obtained usable data from locations throughout Tennessee, examination of Figure 1 reveals that there are some strategic links of Interstate highway that were not captured. For instance, no data was collected on I-75 between Knoxville and the Kentucky state line or on I-65 between Nashville and the Alabama state line. Such information would provide a more comprehensive picture of truck travel patterns in Tennessee. It may be useful for TDOT to address these gaps as resources allow. Specific links to explore for further data collection include:²
 - I-24 between Nashville and the Kentucky state line;
 - I-75 between Knoxville and the Kentucky state line;
 - I-65 between Nashville and the Alabama state line;
 - I-26 from the Kentucky state line to the Virginia state line; and
 - I-40 from I-81 to the Virginia state line.
- **Times of Day.** Most of the surveys were collected during daytime hours. While this is when the majority of trucks are operating – and many of the sites have adequate representation of nighttime trucks – some locations have no nighttime data at all, such as Cleveland northbound, Morristown northbound, and Mt. Juliet in both directions. It could be useful to know the nighttime operating characteristics at these locations (and others), and whether the types of trucks or commodities carried differ in any meaningful way from those moving during the day.
- **Survey Type/Survey Instrument.** The survey instrument used for this study was only designed to gather data on freight-related stops made by trucks (U.S. origins and destinations are described in terms of the pickup or delivery of freight). As such, it cannot obtain data on trip chaining activity, including stops made for nonfreight-related purposes such as a truck stop (for refueling) or a hotel (for driver rest). This sort of truck tour information – particularly the number of stops, the average impedance between

² Certain facilities were considered for the present study but rejected because of a lack of easy places to conduct an intercept survey (such as a rest area or weigh station).

stops (e.g., time), and the nature of the land use at each stop on the tour – historically could only be established through expensive surveys. This is still the most common method of gathering such data, but GPS technology is emerging as a viable alternative, especially since many commercial truck fleets already use these devices to track fleet productivity and help minimize maintenance costs.³ Both methods remain expensive (and the use of GPS data can be complicated by privacy concerns or the unwillingness of firms to participate), but TDOT may wish to explore these options in future to complement its freight data portfolio.

³ These devices also frequently offer other data that may be useful in transportation planning, such as fuel use/fuel economy, which could be used for estimating emissions.

Appendix A

Tennessee Roadside Truck Intercept Survey Form

Tennessee Roadside Truck Intercept Survey Form

For surveyor use only

Survey ID _____ Surveyor _____ Date: _____ Time _____ Location _____

Truck Type: Single-Unit Single-Unit with Trailer Tractor-Only Tractor-Trailer
 Multiple Trailers Other

Trailer Type: Chassis-Only Van Container Flatbed Tanker Hopper
 Open-Trailer Specialized / Other

Number of Axles: _____ HazMat Placard: Yes / No State of Registration (if visible): _____

Trucking Company Name: _____

Interview Questions:

Last Stop Location Information (Pick-Up/Delivery Stop Only)

1. City/State: _____
2. Type of Place/ Factory Warehouse/Dist. Center Truck Terminal (where no goods are stored)
 Facility Rail Yard Retail Outlet Farm Mine Other (specify) _____
3. Activity: Pickup Delivery Other (specify) _____

Routing (from Last Stop to Survey Location)

4. Which major routes did you use (check all that apply):
 I-24 I-40 I-65 I-75 I-81 I-26 I-55 Other (specify): _____

Next Stop Location Information (Pick-Up/Delivery Stop Only)

5. City/State: _____
6. Type of Place/ Factory Warehouse/Dist. Center Truck Terminal (where no goods are stored)
 Facility Rail Yard Retail Outlet Farm Mine Other (specify) _____
7. Activity: Pickup Delivery Other (specify) _____

Routing (from Survey Location to Next Stop)

8. Which major routes will you use (check all that apply):
 I-24 I-40 I-65 I-75 I-81 I-26 I-55 Other (specify): _____

Cargo Information

9. Is this truck (check one): Empty Fully Loaded Partially Loaded
 If selected "Empty", go to Question 15
10. What is the cargo (payload) weight: _____ lbs
11. Is this truck loaded with (check one): Single Commodity Mixed Goods
12. If single commodity, describe: _____
13. If mixed, what is the primary commodity: _____
14. Is the commodity (primary if mixed) you are currently carrying classified as HAZMAT? Yes No
15. If empty, what is the most common commodity carried by this truck: _____

Carrier Information

16. Is your company (check one): Truckload Less-than-truckload (LTL)
 Private Fleet Owner-Operator
17. Are you utilizing PrePass on this trip (Y/N)? _____
18. What is the location of this truck's home base? City/State _____

Transportation System Input

19. How would you rate the safety of TN's interstate system (1=extremely unsafe, 10=extremely safe)? _____
20. How often do you use TN's traveler information systems (511, Smartway website)? _____
21. How would you rate the availability of interstate truck parking in Tennessee (1=rarely available, 10=always available)? _____

Appendix B

STCC Codes and Commodities

Appendix B

Table B.1 STCC Codes and Commodities

| | |
|-----------|---|
| 1 | Agriculture Production and Livestock <i>Cotton, grain, oil kernels/nuts/seeds, field seeds, miscellaneous field crops, fresh fruits and vegetables, livestock, dairy farm products, animal fibers, live poultry, poultry eggs, horticultural specialties, animal specialties, farm products not elsewhere classified</i> |
| 8 | Forest Products <i>Crude barks or gums, miscellaneous forest products</i> |
| 9 | Fresh Fish or Marine Products <i>Fresh fish or whale products, marine products, fish hatcheries</i> |
| 10 | Metallic Ores <i>Iron ores, copper ores, lead ores, zinc ores, lead and zinc ores combined, gold ore, silver ore, bauxite or other aluminum ores, manganese ores, tungsten ores, chromium ores, miscellaneous metal ores</i> |
| 11 | Coal <i>Anthracite, bituminous coal, lignite</i> |
| 13 | Crude Petroleum or Natural Gas <i>Crude petroleum, natural gas, natural gasoline</i> |
| 14 | Nonmetallic Minerals <i>Dimension stone (quarry), broken stone or riprap, gravel or sand, clay ceramic or refracted minerals, chemical or fertilizer mineral crude, miscellaneous nonmetallic minerals not elsewhere classified, water</i> |
| 19 | Ordnance or Accessories <i>Guns/howitzers/mortars, guided missiles or space vehicles, ammunition or related parts not elsewhere classified, tracked combat vehicles or parts, military fire control equipment, small arms, small arms ammunition, miscellaneous ordnance or accessories</i> |
| 20 | Food or Kindred Products <i>Fresh or chilled meat, fresh frozen meat, meat products, inedible animal byproducts, fresh or frozen dressed poultry, processed poultry or eggs, creamery butter, condensed/evaporated/dry milk, ice cream/frozen desserts, cheese or special dairy products, processed milk, canned or cured sea foods, canned specialties, canned fruits/vegetables, dehydrated or dried fruits/vegetables, pickled fruits/vegetables, processed fish products, frozen fruit/vegetables/juice, frozen specialties, canned food, flour, prepared or canned feed, milled rice/flour/meal, cereal preparations, wet corn milling or milo, dog/cat/pet food, bread or other bakery products, biscuits/crackers/pretzels, sugar/sugar mill products or byproducts, candy/confectionery, malt liquors, malt, wine/brandy/brandy spirit, distilled/blended liquors, soft drinks/mineral water, miscellaneous flavoring extracts, cottonseed/soybean/nut/vegetable oils or byproducts, marine fats or oils, coffee, margarine/shortening, ice, macaroni/spaghetti, miscellaneous food preparations not elsewhere classified</i> |
| 21 | Tobacco Products <i>Cigarettes, cigars, chewing or smoking tobacco, stemmed or redried tobacco</i> |

Table B.1 STCC Codes and Commodities (continued)

| | |
|-----------|---|
| 22 | Textile Mill Products <i>Cotton broad-woven fabrics, manmade or glass woven fiber, silk-woven fabrics, wool broad-woven fabrics, narrow fabrics, knit fabrics, carpets/mats/rugs, yarn, thread, felt goods, lace goods, padding/upholstery fill, processed textile waste, coated or imprinted fabric, industrial cord or fabrics, wool/mohair, cordage/twine, textile goods not elsewhere classified</i> |
| 23 | Apparel or Related Products <i>Men's/boys/women's/children's clothing, millinery, caps or hats or hat bodies, fur goods, gloves/mittens/linings, robes or dressing gowns, raincoats or other rain wear, leather clothing, belts, apparel not elsewhere classified, curtains or draperies, textile house furnishings, textile bags, canvas products, pleated textile products, apparel findings, miscellaneous fabricated textile products</i> |
| 24 | Lumber or Wood Products <i>Primary forest materials, lumber or dimension stock, miscellaneous sawmill or planing mill, millwork or cabinet-work, plywood or veneer, prefabricated wood buildings, wood kitchen cabinets, structural wood products, wood containers or box shooks, treated wood products, rattan or bamboo ware, lasts or related products, cork products, hand tool handles, scaffolding equipment or ladders, wooden ware or flatware, wood products not elsewhere classified, miscellaneous wood products</i> |
| 25 | Furniture or Fixtures <i>Benches/chairs/stools, tables or desks, sofas/couches, buffets/china closets, bedsprings/mattresses, beds/dressers/chests, cabinets or cases, children's furniture, household or office furniture, public building or related furniture, wood or metal lockers/partitions, venetian blinds or shades, furniture or fixtures not elsewhere classified</i> |
| 26 | Pulp, Paper, or Allied Products <i>Pulp or pulp mill products, paper, fiber/paper/pulp board, envelopes, paper bags, wallpaper, die-cut paper or pulp board products, pressed or molded pulp goods, sanitary paper products, miscellaneous converted paper products, paper containers or boxes, sanitary food containers, fiber cans/drums/tubes, paper or building board</i> |
| 27 | Printed Matter <i>Newspapers, periodicals, books, miscellaneous printed matter, manifold business forms, greeting cards/seals, loose leaf binder/blank book, service industries for print trades</i> |
| 28 | Chemicals or Allied Products <i>Industrial/inorganic/organic chemicals, potassium or sodium compound, industrial gases, crude products of coal/gas/petroleum, cyclic intermediates or dyes, inorganic pigments, plastic matter/synthetic fibers, drugs, soap, cleaning preparations, surface active agents, cosmetics, paints/lacquers, gum or wood chemicals, fertilizers, miscellaneous agricultural chemicals, adhesives, explosives, printing ink, chemical preparations not elsewhere classified</i> |
| 29 | Petroleum or Coal Products <i>Petroleum refining products, coal or petroleum liquefied gases, asphalt paving blocks or mix, asphalt coatings or felt, miscellaneous coal or petroleum products</i> |
| 30 | Rubber or Miscellaneous Plastics <i>Tires/inner tubes, rubber/plastic footwear, reclaimed rubber, rubber or plastic hose or belting, miscellaneous fabricated products, miscellaneous plastic products</i> |
| 31 | Leather or Leather Products <i>Leather, industrial leather belting, boot or shoe cut stock, leather footwear/slippers/gloves/mittens/luggage/handbags, leather goods not elsewhere classified</i> |
| 32 | Clay, Concrete, Glass, or Stone <i>Flat glass, laminated safety glass, glass containers, miscellaneous blown or pressed glassware, Portland cement, clay brick or tile, ceramic floor or wall tile, refractories, miscellaneous structural clay products, vitreous china, porcelain, pottery, concrete, lime, gypsum, cut stone, abrasive products, asbestos products, gaskets/packing, processed nonmetal minerals, mineral wool, miscellaneous nonmetallic minerals</i> |

Table B.1 STCC Codes and Commodities (continued)

| | |
|-----------|---|
| 33 | Primary Metal Products <i>Blast furnace/coke, primary iron or steel products, electrometallurgical products, steel wire/nails/spikes, cold finishing of steel shapes, iron or steel castings, copper/lead/zinc/other nonferrous smelter products, copper/aluminum/other nonferrous basic shapes, nonferrous wire, aluminum/copper/other nonferrous castings, iron/steel/nonferrous metal forgings, primary metal products not elsewhere classified</i> |
| 34 | Fabricated Metal Products <i>Metal cans, cutlery, edge or hand tools, hand saws or saw blades, builders or cabinet hardware, miscellaneous hardware, metal sanitary ware, plumbing fixtures, nonelectrical heating equipment, structural metal products, metal doors/sash, fabricated plate products, sheet metal products, architectural metal work, miscellaneous metal work, bolts/nuts/screws, metal stampings, miscellaneous fabricated wire products, shipping containers, metal safes or vaults, steel springs, valves or pipe fittings, fabricated metal products not elsewhere classified</i> |
| 35 | Machinery <i>Steam engines/turbines, internal combustion engines, farm machinery, lawn or garden equipment, construction machinery, mining machinery, oil field machinery, elevators or escalators, conveyors or parts, hoists/cranes, industrial trucks, machine tools, dies/tools/jigs, machine tool accessories, metalworking machinery, food products machinery, textile machinery, woodworking machinery, paper industries machinery, printing trades machinery, special industry machinery, pumps, bearings, ventilating equipment, mechanical power transmission equipment, industrial furnaces, miscellaneous general industrial, typewriters, electronic data processing equipment, accounting or calculating equipment, scales or balances, office machines, merchandising machines, commercial laundry equipment, refrigeration machinery, service industry machinery, carburetors/pistons, miscellaneous machinery or parts</i> |
| 36 | Electrical Equipment <i>Measuring instruments, transformers, switchboards, motors or generators, industrial controls or parts, welding apparatus, carbon products for electrical uses, miscellaneous electrical industrial equipment, household cooking equipment/refrigerators/laundry equipment, electric house wares or fans, vacuum cleaners, sewing machines, household appliances, lamps, lighting fixtures, wiring equipment, noncurrent wiring devices, radio or TV receiving sets, phonograph records, telephone or telegraph equipment, radio or TV transmitting equipment, electronic tubes, solid state semiconductors, miscellaneous electronic components, storage batteries or plates, primary batteries, X-ray equipment, electric equipment for internal combustion engines, electrical equipment not elsewhere classified</i> |
| 37 | Transportation Equipment <i>Motor vehicles, motor car/truck/bus bodies, motor vehicle parts or accessories, truck trailers, aircraft, aircraft or missile engines, aircraft propellers or parts, miscellaneous aircraft parts, ships or boats, locomotives, railroad cars, motorcycles or bicycles, missile or space vehicle parts, trailer coaches, transportation equipment not elsewhere classified</i> |
| 38 | Instruments, Photo Equipment, and Optical Equipment <i>Scientific equipment, mechanical measuring or control equipment, automatic temperature controls, optical instruments, medical instruments, orthopedic or prosthetic supplies, dental equipment or supplies, ophthalmic or opticians goods, photographic equipment or supplies, watches/clocks</i> |
| 39 | Miscellaneous Manufacturing Products <i>Jewelry/precious metals, silverware or plated ware, musical instruments, games or toys, sporting goods, pens, pencils/crayons/artists materials, marking devices, carbon paper or inked ribbons, costume jewelry, feathers/plumes, buttons, apparel fasteners, brooms/brushes, linoleum or other coverings, signs or advertising displays, morticians goods, matches, dressed or dyed furs, manufactured products not elsewhere classified</i> |
| 40 | Waste or Scrap Materials <i>Ashes, metal scrap, textile scrap, wood scrap, paper waste, chemical or petroleum waste, rubber or plastic scrap, stone/clay/glass scrap, leather scrap, miscellaneous waste or scrap</i> |
| 41 | Miscellaneous Freight Shipments <i>Special commodities, miscellaneous freight shipments</i> |

Table B.1 STCC Codes and Commodities (continued)

| | |
|-----------|--|
| 42 | Shipping Containers <i>Shipping containers, semitrailers returned empty, empty equipment (reverse route)</i> |
| 43 | Mail or Contract Traffic <i>Mail and express traffic, other contract traffic</i> |
| 44 | Freight Forwarder Traffic <i>Freight Forwarder Traffic</i> |
| 45 | Shipper Association Traffic <i>Shipper Association Traffic</i> |
| 46 | Miscellaneous Mixed Shipments <i>Fak shipments, multi-STCC mixed shipments</i> |
| 47 | Small Packaged Freight Shipments <i>Small packaged freight shipments</i> |
| 48 | Waste Hazardous Materials <i>Waste compressed gases, waste flammable/combustible liquids, waste flammable/combustible solids, waste oxidizing materials, waste organic poison, waste poisonous materials, waste etiologic agents, waste radioactive materials, waste corrosive materials, waste other regulated materials, waste miscellaneous hazardous materials, other regulated waste stream</i> |
| 49 | Hazardous Materials <i>Ammunition, explosives, nonflammable compressed gases, flammable/combustible liquids, flammable/combustible solids, oxidizing materials, organic peroxides, organic/inorganic poisons, etiologic agents, radioactive materials, corrosive materials, other regulated materials, environmentally hazardous materials</i> |
| 50 | Secondary Traffic <i>Rail intermodal drayage to/from ramp, air freight drayage to/from airport</i> |

Appendix C

*Summaries of Truck Origin-Destination Data for
Each Location and Direction*

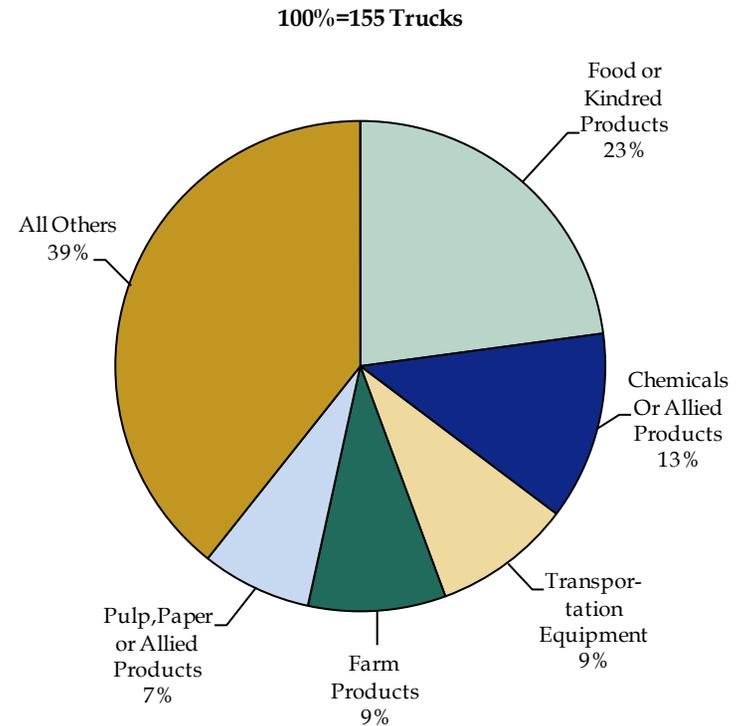
I-40 Brownsville Eastbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.6% | 34.2% | 2.6% | 61.9% | 0.0% |
| Destination | 1.9% | 1.3% | 1.3% | 1.3% | 9.7% | 16.8% | 0.6% | 14.2% | 52.9% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 32% | 25% |
| Warehouse/Dist. Center | 39% | 45% |
| Truck Terminal | 16% | 16% |
| Rail Yard | 1% | 1% |
| Retail Outlet | 2% | 4% |
| Farm | 1% | 0% |
| Mine | 0% | 0% |
| Other | 8% | 8% |
| Unknown | 1% | 1% |

| | |
|---|------|
| Empty | 19% |
| Partially Loaded | 17% |
| Fully Loaded | 64% |
| Average Payload in Tons (excl. empties) | 14.1 |

| | | |
|--------------|------------|-------------|
| Daytime | 80 | 52% |
| Nighttime | 75 | 48% |
| Total | 155 | 100% |



Note: Total may not sum to 100% due to unreported data.

I-40 Brownsville Westbound

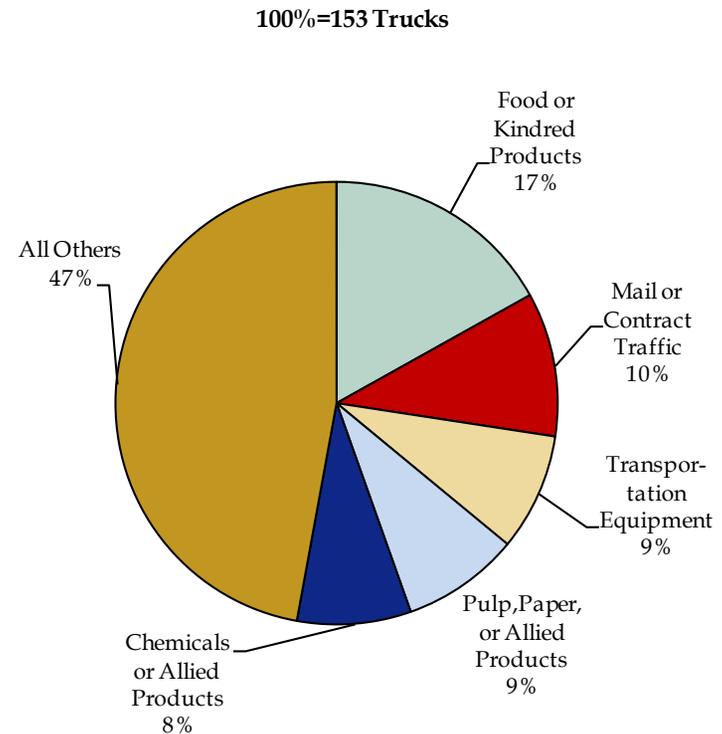
| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 2.0% | 3.3% | 0.0% | 2.0% | 7.2% | 13.1% | 0.7% | 18.3% | 52.9% | 0.7% |
| Destination | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.7% | 39.2% | 2.6% | 56.9% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 31% | 22% |
| Warehouse/Dist. Center | 43% | 39% |
| Truck Terminal | 14% | 16% |
| Rail Yard | 4% | 5% |
| Retail Outlet | 2% | 5% |
| Farm | 0% | 0% |
| Mine | 0% | 0% |
| Other | 5% | 14% |
| Unknown | 1% | 1% |

| | |
|---|------|
| Empty | 19% |
| Partially Loaded | 23% |
| Fully Loaded | 58% |
| Average Payload in Tons (excl. empties) | 14.0 |

| | | |
|--------------|------------|-------------|
| Daytime | 88 | 58% |
| Nighttime | 65 | 42% |
| Total | 153 | 100% |

Note: Total may not sum to 100% due to unreported data.



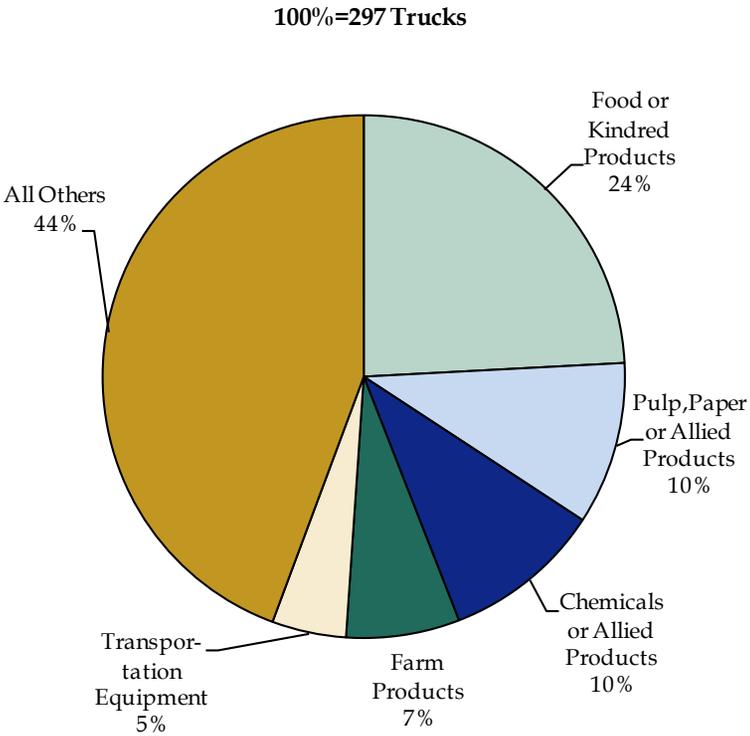
I-75 Cleveland Northbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 1.0% | 18.2% | 11.4% | 0.3% | 0.7% | 0.3% | 0.0% | 67.7% | 0.3% |
| Destination | 15.5% | 16.5% | 0.3% | 16.8% | 0.3% | 1.3% | 0.0% | 0.3% | 48.8% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 31% | 27% |
| Warehouse/Dist. Center | 33% | 31% |
| Truck Terminal | 19% | 11% |
| Rail Yard | 3% | 1% |
| Retail Outlet | 4% | 11% |
| Farm | 1% | 1% |
| Mine | 0% | 0% |
| Other | 8% | 12% |
| Unknown | 1% | 4% |

| | |
|---|------|
| Empty | 26% |
| Partially Loaded | 20% |
| Fully Loaded | 54% |
| Average Payload in Tons (excl. empties) | 13.4 |

| | | |
|--------------|------------|-------------|
| Daytime | 297 | 100% |
| Nighttime | 0 | 0% |
| Total | 297 | 100% |



Note: Total may not sum to 100% due to unreported data.

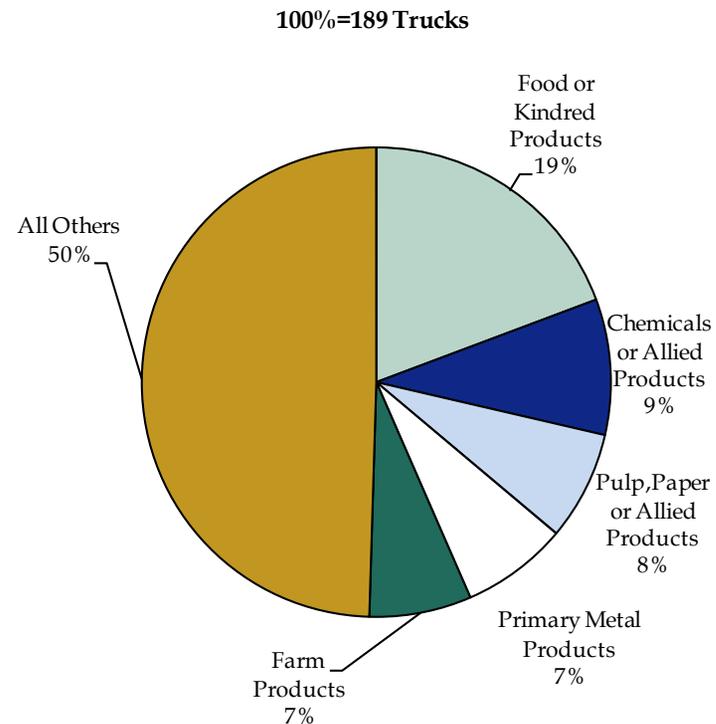
I-40/I-75 Knoxville Eastbound/Northbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 1.1% | 7.9% | 4.8% | 6.3% | 5.8% | 6.9% | 1.1% | 1.6% | 64.6% | 0.0% |
| Destination | 14.8% | 16.4% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 68.3% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 32% | 23% |
| Warehouse/Dist. Center | 38% | 41% |
| Truck Terminal | 18% | 13% |
| Rail Yard | 1% | 1% |
| Retail Outlet | 3% | 11% |
| Farm | 2% | 1% |
| Mine | 0% | 0% |
| Other | 6% | 10% |
| Unknown | 0% | 0% |

| | |
|---|------|
| Empty | 15% |
| Partially Loaded | 17% |
| Fully Loaded | 68% |
| Average Payload in Tons (excl. empties) | 15.0 |

| | | |
|--------------|------------|-------------|
| Daytime | 125 | 66% |
| Nighttime | 64 | 34% |
| Total | 189 | 100% |



Note: Total may not sum to 100% due to unreported data.

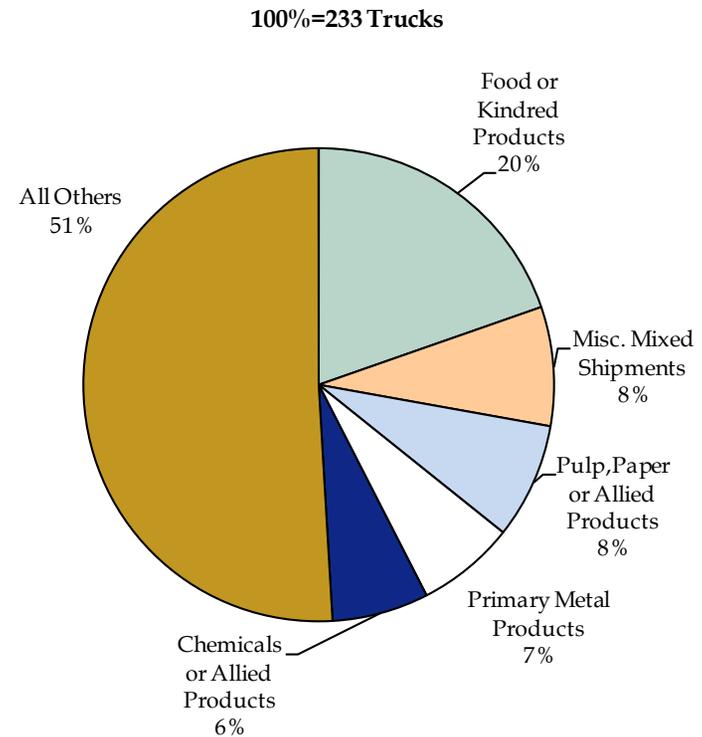
I-40/I-75 Knoxville Westbound/Southbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 15.0% | 11.6% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 73.0% | 0.0% |
| Destination | 1.3% | 7.3% | 5.2% | 9.9% | 4.3% | 5.6% | 2.1% | 1.7% | 62.7% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 28% | 20% |
| Warehouse/Dist. Center | 42% | 47% |
| Truck Terminal | 16% | 13% |
| Rail Yard | 0% | 1% |
| Retail Outlet | 7% | 9% |
| Farm | 1% | 1% |
| Mine | 0% | 0% |
| Other | 5% | 8% |
| Unknown | 0% | 0% |

| | |
|---|------|
| Empty | 17% |
| Partially Loaded | 23% |
| Fully Loaded | 61% |
| Average Payload in Tons (excl. empties) | 14.4 |

| | | |
|--------------|------------|-------------|
| Daytime | 147 | 63% |
| Nighttime | 86 | 37% |
| Total | 233 | 100% |



Note: Total may not sum to 100% due to unreported data.

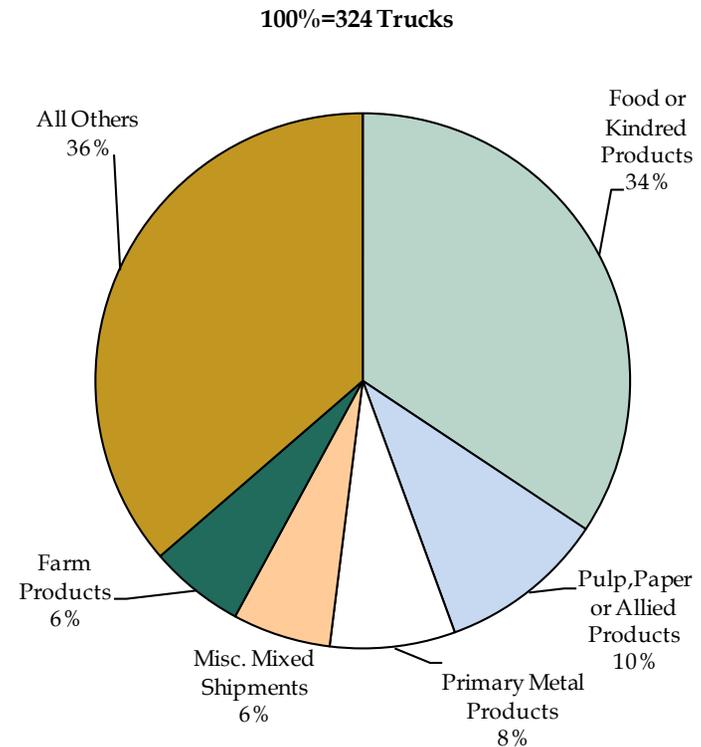
I-24 Manchester Eastbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.0% | 0.0% | 2.8% | 17.6% | 28.7% | 0.9% | 3.4% | 46.6% | 0.0% |
| Destination | 0.0% | 0.0% | 13.6% | 8.6% | 0.0% | 0.3% | 0.0% | 0.6% | 76.9% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 32% | 30% |
| Warehouse/Dist. Center | 32% | 36% |
| Truck Terminal | 19% | 15% |
| Rail Yard | 1% | 1% |
| Retail Outlet | 6% | 10% |
| Farm | 2% | 1% |
| Mine | 0% | 0% |
| Other | 10% | 8% |
| Unknown | 0% | 1% |

| | |
|---|------|
| Empty | 16% |
| Partially Loaded | 24% |
| Fully Loaded | 59% |
| Average Payload in Tons (excl. empties) | 14.5 |

| | | |
|--------------|------------|-------------|
| Daytime | 239 | 74% |
| Nighttime | 85 | 26% |
| Total | 324 | 100% |



Note: Total may not sum to 100% due to unreported data.

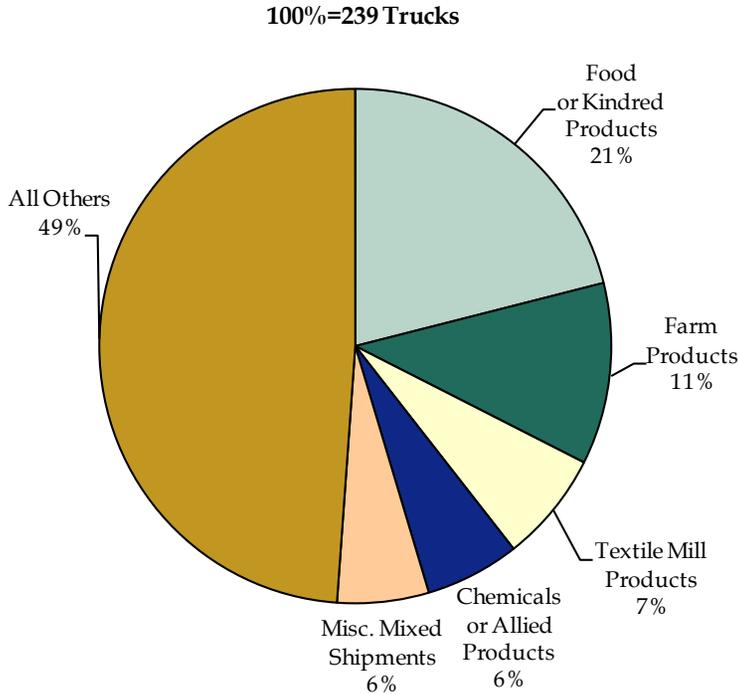
I-24 Manchester Westbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.0% | 10.9% | 5.9% | 0.0% | 0.8% | 0.0% | 0.0% | 81.6% | 0.8% |
| Destination | 0.0% | 0.4% | 0.0% | 0.8% | 18.4% | 18.4% | 0.8% | 1.3% | 59.4% | 0.4% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 34% | 26% |
| Warehouse/Dist. Center | 39% | 42% |
| Truck Terminal | 12% | 11% |
| Rail Yard | 1% | 0% |
| Retail Outlet | 4% | 9% |
| Farm | 3% | 2% |
| Mine | 0% | 0% |
| Other | 8% | 8% |
| Unknown | 0% | 2% |

| | |
|---|------|
| Empty | 18% |
| Partially Loaded | 18% |
| Fully Loaded | 64% |
| Average Payload in Tons (excl. empties) | 13.8 |

| | | |
|--------------|------------|-------------|
| Daytime | 150 | 63% |
| Nighttime | 89 | 37% |
| Total | 239 | 100% |



Note: Total may not sum to 100% due to unreported data.

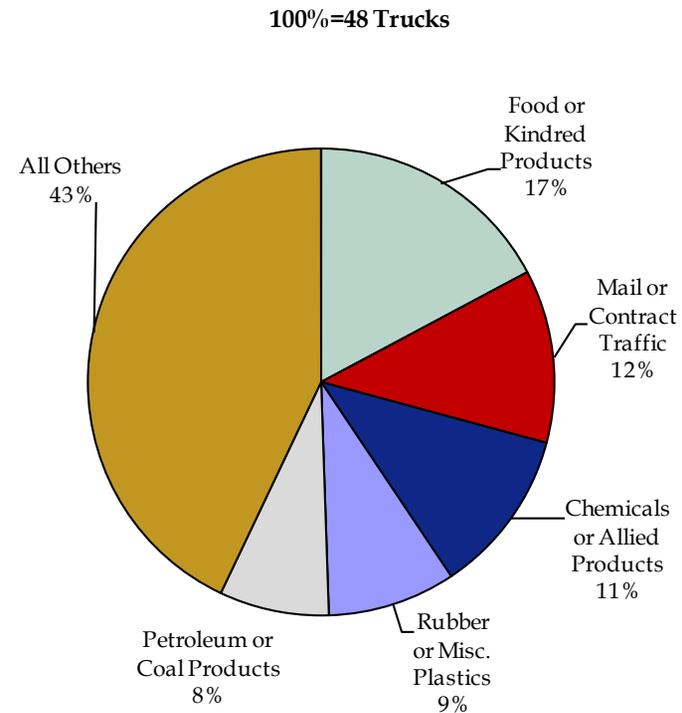
I-81 Morristown Northbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 20.8% | 18.8% | 0.0% | 2.1% | 0.0% | 4.2% | 2.1% | 2.1% | 50.0% | 0.0% |
| Destination | 0.0% | 10.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 89.6% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 35% | 23% |
| Warehouse/Dist. Center | 27% | 42% |
| Truck Terminal | 21% | 15% |
| Rail Yard | 0% | 0% |
| Retail Outlet | 8% | 6% |
| Farm | 0% | 0% |
| Mine | 2% | 0% |
| Other | 6% | 15% |
| Unknown | 0% | 0% |

| | |
|---|------|
| Empty | 6% |
| Partially Loaded | 19% |
| Fully Loaded | 75% |
| Average Payload in Tons (excl. empties) | 16.4 |

| | | |
|--------------|-----------|-------------|
| Daytime | 48 | 100% |
| Nighttime | 0 | 0% |
| Total | 48 | 100% |



Note: Total may not sum to 100% due to unreported data.

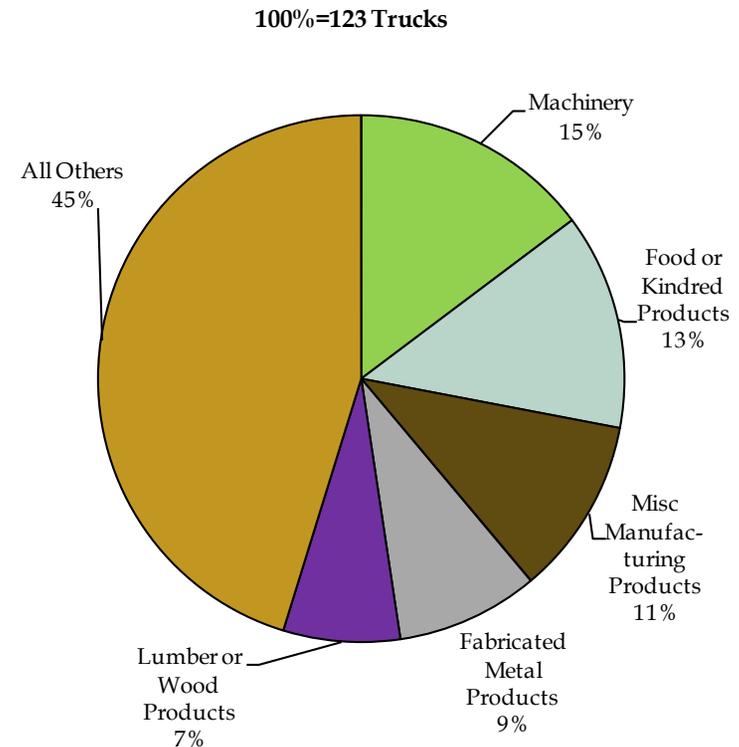
I-81 Morristown Southbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 12.2% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 87.0% | 0.0% |
| Destination | 6.5% | 11.4% | 3.3% | 5.7% | 4.1% | 1.6% | 1.6% | 1.6% | 64.2% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 46% | 31% |
| Warehouse/Dist. Center | 24% | 25% |
| Truck Terminal | 15% | 14% |
| Rail Yard | 0% | 0% |
| Retail Outlet | 7% | 11% |
| Farm | 2% | 3% |
| Mine | 0% | 1% |
| Other | 7% | 12% |
| Unknown | 0% | 3% |

| | |
|---|------|
| Empty | 15% |
| Partially Loaded | 13% |
| Fully Loaded | 72% |
| Average Payload in Tons (excl. empties) | 17.5 |

| | | |
|--------------|------------|-------------|
| Daytime | 122 | 99% |
| Nighttime | 1 | 1% |
| Total | 123 | 100% |



Note: Total may not sum to 100% due to unreported data.

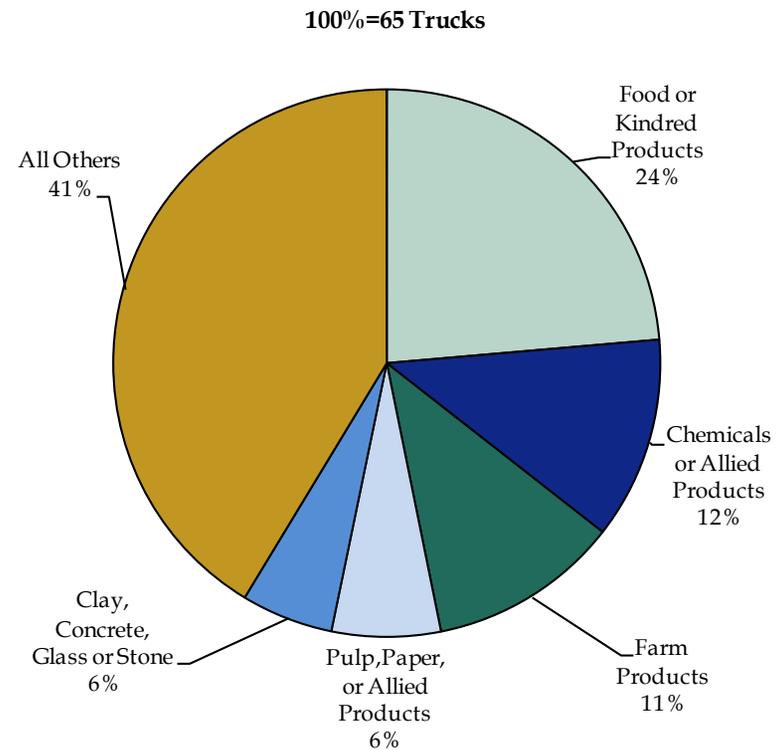
I-40 Mt. Juliet Eastbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.0% | 0.0% | 0.0% | 15.4% | 13.8% | 7.7% | 3.1% | 60.0% | 0.0% |
| Destination | 3.1% | 4.6% | 0.0% | 10.8% | 0.0% | 20.0% | 0.0% | 0.0% | 61.5% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 34% | 31% |
| Warehouse/Dist. Center | 38% | 45% |
| Truck Terminal | 14% | 5% |
| Rail Yard | 2% | 0% |
| Retail Outlet | 5% | 8% |
| Farm | 3% | 0% |
| Mine | 0% | 0% |
| Other | 3% | 9% |
| Unknown | 2% | 3% |

| | |
|---|------|
| Empty | 20% |
| Partially Loaded | 14% |
| Fully Loaded | 65% |
| Average Payload in Tons (excl. empties) | 15.5 |

| | | |
|--------------|-----------|-------------|
| Daytime | 65 | 100% |
| Nighttime | 0 | 0% |
| Total | 65 | 100% |



Note: Total may not sum to 100% due to unreported data.

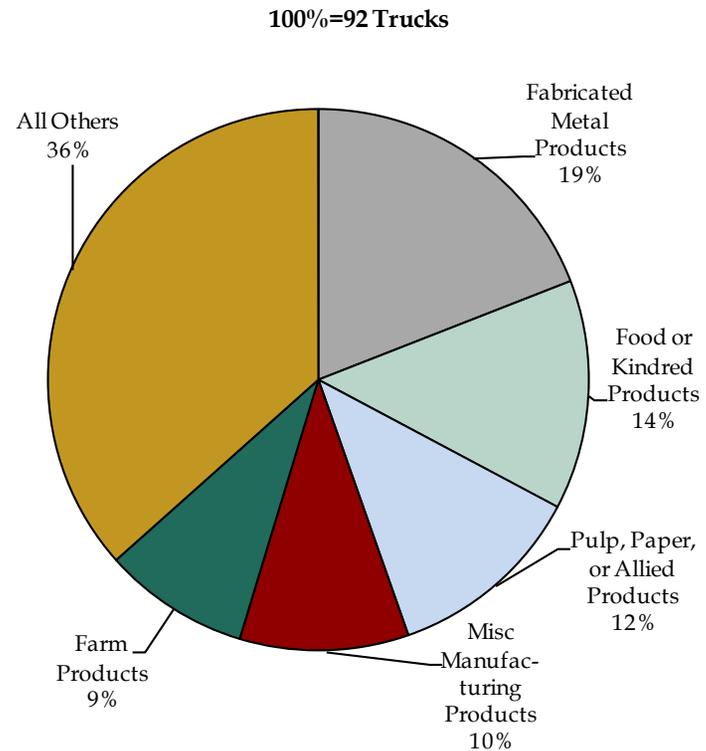
I-40 Mt. Juliet Westbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 8.7% | 7.6% | 0.0% | 14.1% | 0.0% | 25.0% | 0.0% | 0.0% | 43.5% | 1.1% |
| Destination | 0.0% | 1.1% | 0.0% | 0.0% | 18.5% | 16.3% | 5.4% | 1.1% | 57.6% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 26% | 24% |
| Warehouse/Dist. Center | 42% | 36% |
| Truck Terminal | 8% | 11% |
| Rail Yard | 2% | 1% |
| Retail Outlet | 9% | 7% |
| Farm | 1% | 1% |
| Mine | 0% | 1% |
| Other | 12% | 15% |
| Unknown | 0% | 4% |

| | |
|---|------|
| Empty | 24% |
| Partially Loaded | 14% |
| Fully Loaded | 62% |
| Average Payload in Tons (excl. empties) | 14.8 |

| | | |
|--------------|-----------|-------------|
| Daytime | 92 | 100% |
| Nighttime | 0 | 0% |
| Total | 92 | 100% |



Note: Total may not sum to 100% due to unreported data.

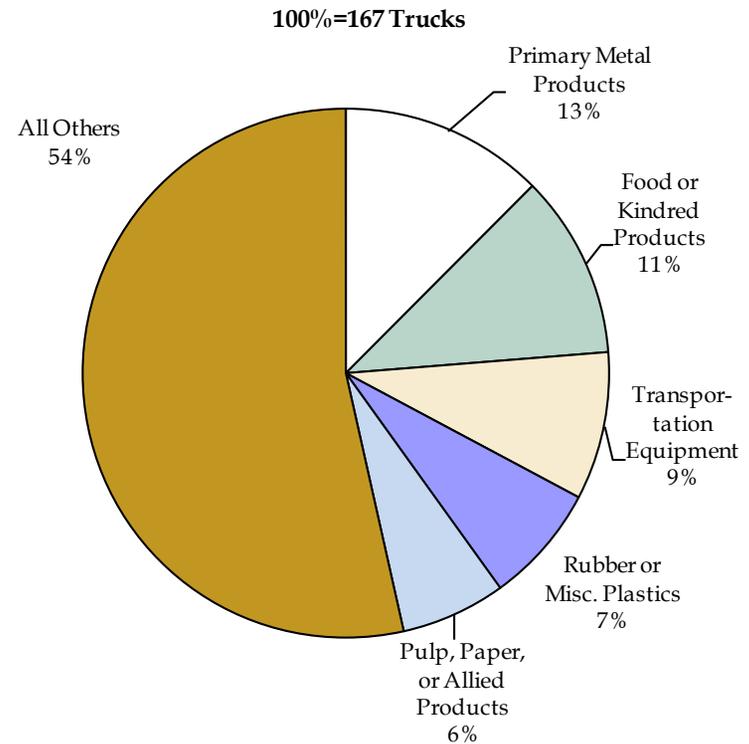
I-65 Portland Northbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.6% | 3.0% | 1.8% | 18.0% | 19.8% | 4.8% | 1.8% | 49.7% | 0.6% |
| Destination | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 98.2% | 0.0% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 38% | 33% |
| Warehouse/Dist. Center | 26% | 37% |
| Truck Terminal | 25% | 11% |
| Rail Yard | 1% | 0% |
| Retail Outlet | 5% | 11% |
| Farm | 1% | 2% |
| Mine | 0% | 0% |
| Other | 2% | 4% |
| Unknown | 1% | 1% |

| | |
|---|------|
| Empty | 15% |
| Partially Loaded | 23% |
| Fully Loaded | 62% |
| Average Payload in Tons (excl. empties) | 15.4 |

| | | |
|--------------|------------|-------------|
| Daytime | 66 | 40% |
| Nighttime | 101 | 60% |
| Total | 167 | 100% |



Note: Total may not sum to 100% due to unreported data.

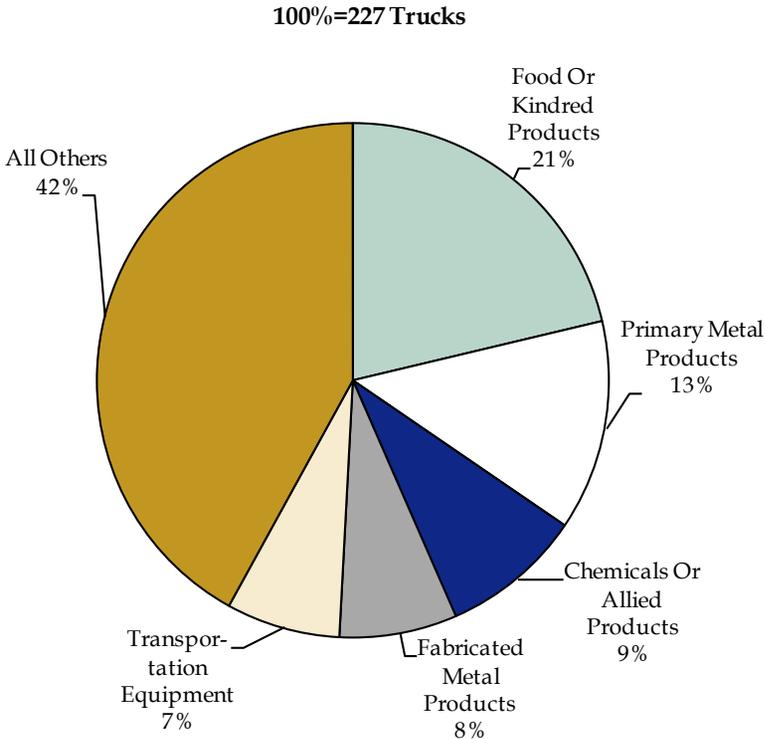
I-65 Portland Southbound

| | Knoxville | Other TDOT Region 1 | Chattanooga | Other TDOT Region 2 | Nashville | Other TDOT Region 3 | Memphis | Other TDOT Region 4 | Outside State | Unknown |
|-------------|-----------|---------------------|-------------|---------------------|-----------|---------------------|---------|---------------------|---------------|---------|
| Origin | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 98.1% | 0.0% |
| Destination | 0.9% | 0.4% | 1.3% | 2.6% | 11.9% | 15.4% | 4.4% | 0.9% | 61.7% | 0.4% |

| Facility Type | Last Stop | Next Stop |
|------------------------|-----------|-----------|
| Factory | 35% | 26% |
| Warehouse/Dist. Center | 42% | 43% |
| Truck Terminal | 10% | 10% |
| Rail Yard | 1% | 1% |
| Retail Outlet | 4% | 7% |
| Farm | 2% | 1% |
| Mine | 0% | 0% |
| Other | 5% | 11% |
| Unknown | 0% | 0% |

| | |
|---|------|
| Empty | 10% |
| Partially Loaded | 20% |
| Fully Loaded | 70% |
| Average Payload in Tons (excl. empties) | 15.0 |

| | | |
|--------------|------------|-------------|
| Daytime | 121 | 53% |
| Nighttime | 106 | 47% |
| Total | 227 | 100% |



Note: Total may not sum to 100% due to unreported data.