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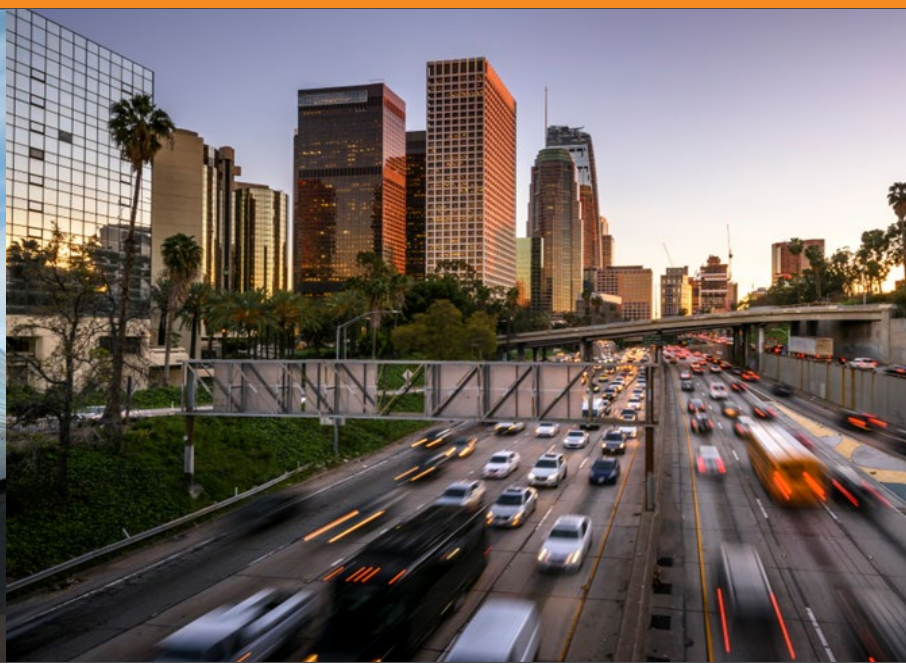
San Diego Association of Governments

FINAL SANDAG 2022 COMMERCIAL VEHICLE SURVEY APPENDIX

June 8, 2023



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1.0 APPENDIX A: COMMERCIAL VEHICLE SURVEY QUESTIONNAIRE AND SCREENSHOTS 6

1.1 ESTABLISHMENT SURVEY.....6

1.2 TRUCK DIARY SURVEY – VEHICLE SHEET.....10

1.3 TRUCK DIARY SURVEY – TRIP SHEET.....12

1.4 ESTABLISHMENT SURVEY SCREEN SHOTS.....17

1.5 DATA VARIABLES BY SURVEY TYPE.....22

2.0 APPENDIX B: TABULATIONS 26

2.1 CVS ESTABLISHMENT SURVEY.....26

2.2 CVS VEHICLE SURVEY.....36

2.3 CVS TRIP SURVEY.....38

2.4 TNC VEHICLE SURVEY.....44

2.5 TNC TRIP SURVEY.....45

3.0 APPENDIX C: DATA WEIGHTING AND EXPANSION MEMO..... 51

4.0 APPENDIX D: SURVEY COLLATERAL 73

5.0 DATA ANALYST .....ERROR! BOOKMARK NOT DEFINED.

LIST OF FIGURES

FIGURE 1: SURVEY SCREENSHOT---INTRODUCTION 1 17
FIGURE 2: SURVEY SCREENSHOT---INTRODUCTION 2 17
FIGURE 3: SURVEY SCREENSHOT---HOW WOULD YOU BEST DESCRIBE THE TYPE OF ACTIVITIES YOUR ORGANIZATION DOES AT THIS LOCATION? 18
FIGURE 4: SURVEY SCREENSHOT---NUMBER OF EMPLOYEES 18
FIGURE 5: SURVEY SCREENSHOT---USE TNC 18
FIGURE 6: SURVEY SCREENSHOT---HOW MANY VEHICLES OWNED OR LEASED BY YOUR ORGANIZATION ARE EQUIPPED WITH TOLL TRANSPONDERS? 18
FIGURE 7: SURVEY SCREENSHOT---HOW MANY VEHICLES DELIVERIES TO YOUR LOCATION 19
FIGURE 8: SURVEY SCREENSHOT---APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM EACH OF THE FOLLOWING TYPES OF FACILITIES? 19
FIGURE 9: SURVEY SCREENSHOT---HOW MANY VEHICLES DELIVERIES FROM YOUR LOCATION 19
FIGURE 10: SURVEY SCREENSHOT---APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO EACH OF THE FOLLOWING TYPES OF FACILITIES? 20
FIGURE 11: SURVEY SCREENSHOT---VEHICLE USAGE BY YOUR ORGANIZATION AND YOUR EMPLOYEES 20
FIGURE 12: SURVEY SCREENSHOT---DID YOU RECEIVE A PIN FOR THIS SURVEY? 20
FIGURE 13: SURVEY SCREENSHOT---IF YOU RECEIVED A PIN FOR THIS SURVEY 21
FIGURE 14: SURVEY SCREENSHOT---OPTIONAL TRAVEL DIARY 21
FIGURE 15:SURVEY SCREENSHOT---IF THE ORGANIZATION IS WILLING TO COMPLETE TRAVEL DIARY 21
FIGURE 16: SURVEY SCREENSHOT---THANK YOU PAGE 22
FIGURE 9: NUMBER OF DAILY TRIPS TO AND FROM ESTABLISHMENTS IN THE CVS SAMPLE (WITHIN 10 DAILY TRIPS) ..... ERROR! BOOKMARK NOT DEFINED.

LIST OF TABLES

TABLE 1: ESTABLISHMENT SURVEY VARIABLES 22
TABLE 2: VEHICLE SURVEY VARIABLES 24
TABLE 3: TRIP/TOUR DIARY VARIABLES 25
TABLE 1. HOW WOULD YOU BEST DESCRIBE THE TYPE OF ACTIVITIES YOUR ORGANIZATION DOES AT THIS LOCATION? 26
TABLE 2. HOW MANY FULL-TIME EMPLOYEES DO YOU HAVE AT THE LOCATION WHERE YOU WORK? 27
TABLE 3. HOW MANY PART-TIME EMPLOYEES DO YOU HAVE AT THE LOCATION WHERE YOU WORK? 27
TABLE 4. ON A TYPICAL WEEKDAY (MONDAY-FRIDAY), HOW MANY TOTAL EMPLOYEES (FULL & PART-TIME) DO YOU HAVE WORKING AT THIS LOCATION? 27
TABLE 5. APPROXIMATELY, HOW MANY OF YOUR EMPLOYEES WORK AT HOME AT LEAST 1 DAY PER WEEK? 27
TABLE 6. DOES YOUR ORGANIZATION USE TNC'S (TRANSPORT NETWORK COMPANIES) SUCH AS UBER, UBEREATS, LYFT, DOORDASH, ETC. TO DELIVER COMPANY GOODS AND SERVICES TO YOUR CUSTOMERS? 28
TABLE 7. HOW MANY VEHICLES OWNED OR LEASED BY YOUR COMPANY ARE EQUIPPED WITH TOLL TRANSPONDERS? 28
TABLE 8. HOW MANY VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 28
TABLE 9. HOW MANY PASSENGER CARS, SPORTS UTILITY VEHICLES, VANS, OR PICKUP TRUCKS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 28
TABLE 10. HOW MANY SINGLE UNIT VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 28
TABLE 11. HOW MANY COMBO UNITS (TRACTOR/TRAILERS) DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 29
TABLE 12. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM WAREHOUSES? 29
TABLE 13. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM PORTS/AIRPORTS/TERMINALS (INTERMODAL, TRUCK)? 29
TABLE 14. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM MANUFACTURING FACILITIES? 29
TABLE 15. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM RETAIL OUTLETS, INCLUDING RESTAURANTS? 29
TABLE 16. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM SERVICE BUSINESSES 30
TABLE 17. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM OTHER TYPES OF ORGANIZATIONS? 30
TABLE 18. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM UNKNOW TYPE OF ORGANIZATIONS? 30
TABLE 19. HOW MANY VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 30
TABLE 20. HOW MANY PASSENGER CARS, SPORTS UTILITY VEHICLES, VANS OR PICKUP TRUCKS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 30
TABLE 21. HOW MANY SINGLE UNITS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 31
TABLE 22. HOW MANY COMBO UNITS (TRACTOR/TRAILERS) DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY? 31
TABLE 23. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO WAREHOUSES? 31
TABLE 24. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO PORTS/AIRPORTS/TERMINALS (INTERMODAL, TRUCK) 31

TABLE 25. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO MANUFACTURING FACILITIES? 31
TABLE 26. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO RETAIL OUTLETS, INCLUDING RESTAURANTS? 32
TABLE 27. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO SERVICE BUSINESSES? 32
TABLE 28. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO OTHER TYPES OF ORGANIZATIONS? 32
TABLE 29. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO UNKNOW TYPE OF ORGANIZATIONS? 32
TABLE 30. DOES YOUR ORGANIZATION OWN OR LEASE ANY VEHICLES (CARS, VANS, TRUCKS, OR LARGE CARGO/FREIGHT VEHICLES)? 32
TABLE 31. DO ANY OF YOUR EMPLOYEES USE THEIR PERSONAL VEHICLE FOR WORK-RELATED BUSINESS WHILE WORKING FOR YOUR ORGANIZATION? 33
TABLE 32. TOTAL NUMBER OF VEHICLES OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK. 33
TABLE 33. NUMBER OF PASSENGER CAR OR SPORT UTILITY VEHICLES OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK 33
TABLE 34. NUMBER OF PICKUP TRUCKS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK. 33
TABLE 35. NUMBER OF VANS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK. 33
TABLE 36. NUMBER OF SINGLE UNIT VEHICLES AT THE ADDRESS WHERE I WORK 34
TABLE 37. NUMBER OF COMBO UNIT/TRACTOR-TRAILERS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK 34
TABLE 38. NUMBER OF CARGO VANS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK. 34
TABLE 39. TOTAL NUMBER OF OTHER VEHICLES (PERSONAL OR OTHER) YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY. 34
TABLE 40. NUMBER OF PASSENGER CAR OR SPORT UTILITY VEHICLES YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY. 34
TABLE 41. NUMBER OF PICKUP TRUCKS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY 35
TABLE 42. NUMBER OF VANS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY. 35
TABLE 43. NUMBER OF SINGLE UNIT VEHICLES YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY 35
TABLE 44. NUMBER OF COMBO UNIT/TRACTOR-TRAILERS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY 35
TABLE 45. NUMBER OF CARGO VANS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY 35
TABLE 46. VEHICLES BY INDUSTRY GROUP 36
TABLE 47. YEAR OF VEHICLE 36
TABLE 48. VEHICLE TYPE (PRIMARY USE) 36
TABLE 49. VEHICLE FUEL TYPE 36
TABLE 50. ESTIMATED VEHICLE MPG 37
TABLE 51. GROSS VEHICLE WEIGHT (INCLUDING TRAILER), IN POUNDS 37
TABLE 52. DOES THE VEHICLE HAS TOLL TRANSPONDER 37
TABLE 53. VEHICLE CLASSIFICATION 37
TABLE 54. VEHICLE TYPE 38
TABLE 55. ON WHICH DATE WAS THIS TRIP COMPLETED? 38
TABLE 56. WHAT WAS THE DAY OF WEEK? 38
TABLE 57. HOW WOULD YOU DESCRIBE THE TYPE OF PLACE WHERE THIS VEHICLE'S TRAVEL BEGAN TODAY? 39
TABLE 58. WHEN DID THIS VEHICLE INITIALLY DEPART ON ITS TRAVEL DAY? 39
TABLE 59. WHAT IS THE TYPE OF PLACE/INDUSTRY AT THIS LOCATION? 40
TABLE 60. WHAT TIME DID YOU ARRIVE THIS LOCATION? 40
TABLE 61. WHAT TIME DID YOU DEPART FROM THIS LOCATION? 41

TABLE 62. WHAT ACTIVITY ARE YOU DOING AT THIS LOCATION? 41
TABLE 63. IF PICKING UP CARGO, WHAT IS THE CARGO? 42
TABLE 64. WHAT IS THE WEIGHT OF PICKED UP CARGO 42
TABLE 65. IF DROPPING OFF CARGO, WHAT IS THE CARGO? 43
TABLE 66. WHAT IS THE WEIGHT OF DROPPED OFF CARGO 43
TABLE 67. YEAR OF MANUFACTURING OF THE VEHICLE, TNC SAMPLE 44
TABLE 68. VEHICLE TYPE (PRIMARY USE), TNC SAMPLE 44
TABLE 69. VEHICLE FUEL TYPE, TNC SAMPLE 44
TABLE 70. ESTIMATED VEHICLE MPG, TNC SAMPLE 44
TABLE 71. GROSS VEHICLE WEIGHT (INCLUDING TRAILER), IN POUNDS, TNC SAMPLE 45
TABLE 72. DOES THE VEHICLE HAVE A TOLL TRANSPONDER, TNC SAMPLE 45
TABLE 73. VEHICLE CLASSIFICATION, TNC SAMPLE 45
TABLE 74. ON WHICH DATE WAS TRAVEL COMPLETED? (TNC SAMPLE) 45
TABLE 75. WHAT WAS THE DAY OF WEEK? (TNC SAMPLE) 46
TABLE 76. HOW WOULD YOU DESCRIBE THE TYPE OF PLACE WHERE THIS VEHICLE'S TRAVEL BEGAN TODAY? (TNC SAMPLE) 46
TABLE 77. WHEN DID THIS VEHICLE INITIALLY DEPART ON ITS TRAVEL DAY? (TNC SAMPLE) 47
TABLE 78. WHAT IS THE TYPE OF PLACE/INDUSTRY AT THIS LOCATION? (TNC SAMPLE) 47
TABLE 79. WHAT TIME DID YOU ARRIVE THIS LOCATION? (TNC SAMPLE) 47
TABLE 80. WHAT TIME DID YOU DEPART FROM THIS LOCATION? (TNC SAMPLE) 48
TABLE 81. WHAT ACTIVITY ARE YOU DOING AT THIS LOCATION? (TNC SAMPLE) 48
TABLE 82. IF PICKING UP CARGO, WHAT IS THE CARGO? (TNC SAMPLE) 48
TABLE 83. WHAT IS THE WEIGHT OF PICKED UP CARGO (TNC SAMPLE) 49
TABLE 84. IF DROPPING OFF CARGO, WHAT IS THE CARGO? (TNC SAMPLE) 49
TABLE 85. WHAT IS THE WEIGHT OF DROPPED OFF CARGO (TNC SAMPLE) 50

1.0 APPENDIX A: COMMERCIAL VEHICLE SURVEY QUESTIONNAIRE AND SCREENSHOTS

1.1 ESTABLISHMENT SURVEY

SANDAG

The San Diego Association of Governments (SANDAG) has partnered with ETC Institute to conduct a transportation survey of employers in the San Diego area. Please takes 5 minutes to complete this survey. Your responses will remain anonymous. The information you provide will only be used to help SANDAG update transportation models that are used to predict future needs in the region.

You may complete the survey by returning it in the postage-paid envelope that was provided, or you can complete it on-line by going to <SurveyURLhere>. **Thank you in advance for your support of this important effort!**

PART 1: General Information About Your Organization

1. **How would you BEST describe the type of activities your organization does at this location?**
   - ____(01) Agriculture/Mining
   - ____(02) Manufacturing
   - ____(03) Industrial/Utilities
   - ____(04) Retail
   - ____(05) Wholesale
   - ____(06) Construction
   - ____(07) Transportation
   - ____(08) Information/Finance/Real Estate/ Professional services
   - ____(09) Education/Government/Other Public services
   - ____(10) Medical/Health Services
   - ____(11) Leisure/Accommodations and Food
   - ____(12) Other (please describe): _____

2. **How many FULL and PART-TIME employees do you have at the location where you work?** If your organization has multiple locations, just answer for the location where you work (or to which you are assigned if you work remotely). Enter "0" if none.
   How many FULL-TIME employees? _____
   How many PART-TIME employees? _____

3. **On a typical weekday (Monday-Friday), how many total employees (full & part-time) do you have working at this location?** _____ employees

4. **Approximately, how many of your employees work at home at least 1 day per week?** _____ employees

5. **Does your organization use TNC's (Transport Network Companies) such as Uber, UberEATS, Lyft, Doordash, etc. to deliver company goods and services to your customers?**
   ___(1) Yes: On a typical work day, how many deliveries are made by TNC's for your organization? _____
   ___(2) No

6. **How many vehicles owned or leased by your organization are equipped with toll transponders?** If your organization has multiple locations, just answer for the location where you work (or to which you are

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assigned if you work remotely)

Vehicles Owned/Leased by your organization with Toll Transponders: _____

PART 2: Deliveries TO Your Location

7. How many vehicles deliver cargo, packages, meals, or other services TO the location where your organization is located on an average weekday? This would include food deliveries (Uber Eats/DoorDash), Parcel deliveries (FedEx, UPS), U.S. postal deliveries, freight/cargo deliveries, etc. If your organization has multiple locations, just answer for the location where you work (or to which you are assigned if you work remotely). Enter "0" if none.

_____ vehicles

Answer Q7a-d only if your answer to Q7 was greater than "0".

7a. Of these, how many are passenger cars, sports utility vehicles, vans, or pickup trucks? _____

7b. Of these, how many are single unit vehicles? _____

7c. Of these, how many are combo units (tractor/trailers)? _____

7d. Approximately what percentage of these vehicles COME FROM each of the following types of facilities?

_____% from Warehouses

_____% from Ports/Airports/Terminals (intermodal, truck)

_____% from Manufacturing Facilities

_____% from Retail Outlets, including restaurants

_____% from Service Businesses

_____% from Parcel/Postal Delivery Businesses/Organizations

_____% Other types of organizations (please describe: _____)

_____ 100 % TOTAL (Please be sure the total equals 100%)

PART 3: Shipments FROM Your Location

8. How many vehicles deliver cargo, packages, meals, or other services FROM the location where your organization is located on an average weekday? This would include food deliveries, Parcel deliveries postal deliveries, freight/cargo deliveries, etc. If your organization has multiple locations, just answer for the location where you work (or to which you are assigned if you work remotely). Enter "0" is none.

_____ vehicles

Answer Q8a-d only if your answer to Q8 was greater than "0".

8a. Of these, how many are passenger cars, sports utility vehicles, vans or pickup trucks? _____

8b. Of these, how many are single unit vehicles? _____

8c. Of these, how many are combo units (tractor/trailers)? _____

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8d. Approximately what percentage of these vehicles Go To each of the following types of facilities?

_____% to Warehouses

_____% to Ports/Airports/Terminals (intermodal, truck)

_____% to Manufacturing Facilities

_____% to Retail Outlets, including restaurants

_____% to Service Businesses

_____% to Parcel/Postal Delivery Businesses/Organizations

_____% Other types of organizations (please describe: _____)

_____100% TOTAL (Please be sure the total equals 100%)

PART 4: Vehicle Usage by Your Organization and Your Employees

9. Does your organization own or lease any vehicles (cars, vans, trucks, or large cargo/freight vehicles)?
____(1) Yes ____(2) No

10. Do any of your employees use their personal vehicle for work-related business while working for your organization?
____(1) Yes ____(2) No

If you answered YES to Q9 or Q10, please answer the Q11 and Q12.
If you answered NO to both Q9 and Q10, go to Part 5, Q13.

11. How many vehicles are owned or leased by your organization at the address where you work? If your organization has multiple locations, just answer for the location where you work (or to which you are assigned if you work remotely)

 # Vehicles Owned/Leased by my company at the address where I work: _____ vehicles

11a. Of these, how many vehicles are:

#_____ Passenger cars or sport utility vehicles

#_____ Pickup trucks

#_____ Vans

#_____ Single unit vehicles

#_____ Combo unit/tractor-trailers

#_____ Other vehicles used for service or other business purposes

12. How many other vehicles (personal or other) does your company use for business-related purposes that are

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NOT owned or leased by your company? This would include personal vehicles used by employees for business-related purposes.

 # Vehicles NOT Owned/Leased by my company at the address where I work: _____ vehicles

12a. Of these, how many vehicles are:

#_____ Passenger cars or sport utility vehicles

#_____ Pickup trucks

#_____ Vans

#_____ Single unit vehicles

#_____ Combo unit/tractor-trailers

#_____ Other vehicles used for service or other business purposes

PART 5: Address Confirmation

13. To help us ensure we have good representation from all areas of San Diego County, please provide the name of your employer and address of the location for which you answered the questions in this survey.

Organization Name: _____

Address: _____

City: _____ State: CA Zip: _____

OPTIONAL TRAVEL DIARY

If your organization uses vehicles for commercial purposes that are owned by your company or its employees, we'd like you to consider participating in a follow-up survey that would involve providing travel information for one or more of these vehicles for 24-hour period.

The effort is easy, and ETC Institute will compensate you and other vehicle drivers up to $50 for participating. I If you'd be willing to participate and are interested in learning more, please provide your contact information below.

Your name: _____ **Phone:**_____
E-mail: _____ **Best time of day to contact you:** _____

This concludes the survey. Thank you for your time!

Please return your completed survey in the enclosed postage paid envelope addressed to:
ETC Institute, 725 W. Frontier Circle, Olathe, KS 66061

Your responses will remain completely confidential. The address information printed to the right will ONLY be used to help identify areas with special interests.

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1.2 TRUCK DIARY SURVEY – VEHICLE SHEET

SANDAG 2022 COMMERCIAL VEHICLE SURVEY
PART 1: VEHICLE INFORMATION

Vehicle # _____ of _____ Participating

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

Official Use	Vehicle ID #: _____	GPS#:_____	Location/Zone: _____	NAICS Code: _____	# Stops on Travel Day ____

Travel Day: _____ **Total # Vehicles Owned/Available at this location:** _____
Month / Day / Year

Company or Name of Owner (name on registration):

_____

Address where this vehicle is normally garaged (or parked):

_____
(Street Address or Names of Nearest Intersecting Streets)

_____
City State Zip Code

How would you describe the type of place where this company is located? (See "**PLACE OPTIONS**" codes below):_____

PLACE OPTIONS (CODES MATCH TRAVEL DIARY)		
1) Office Building (Non Government)	8) Airport	(15) Construction Site
(2) Government Office Building	(9) Intermodal Facility-Railroad	(16) Agriculture
(3) Retail / Shopping / Store	(10) Warehouse	(17) Mining
(4) Industrial / Manufacturing	(11) Truck Distribution Center	(18) Other (specify): _____
(5) Medical / Hospital / Dental	(12) Gas station	(99) Don't Know
(6) Education (K-12, College, Pre-K)	(13) Truck stop	
(7) Residential / Home	(14) Restaurant	

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

Was this vehicle rescheduled for another travel day because it did not go anywhere on the date it was originally scheduled? If the vehicle was rescheduled for any other reason than the lack of travel on the travel date originally assigned (e.g., someone forgot to do it), answer NO.
1) ☐YES 2) ☐ NO

Was this vehicle used for commercial/business purposes on the day its travel diary was completed?
1) ☐YES 2) ☐ NO

IF YES: What Was The Primary Use for Vehicle:

1) ☐Cargo/Freight Transport Vehicle (used PRIMARILY to transport cargo - if majority of trips on travel day have cargo)
2) ☐Commercial Service Vehicle (PRIMARILY for non-cargo purposes – if majority of trips on travel day have zero cargo)
3) ☐Commercial Service and Cargo Delivery Vehicle (used for both service and cargo)

Vehicle Fuel Type:1) ☐Gasoline 2) ☐ Diesel 3) ☐ Propane 4) ☐Natural Gas
5) ☐ Electric 6) ☐ Gas/Electric Hybrid 9) ☐Other (specify)_____

Estimated Vehicle MPG:_____ (If Vehicle FUEL TYPE = 1, 2, 3, 4)

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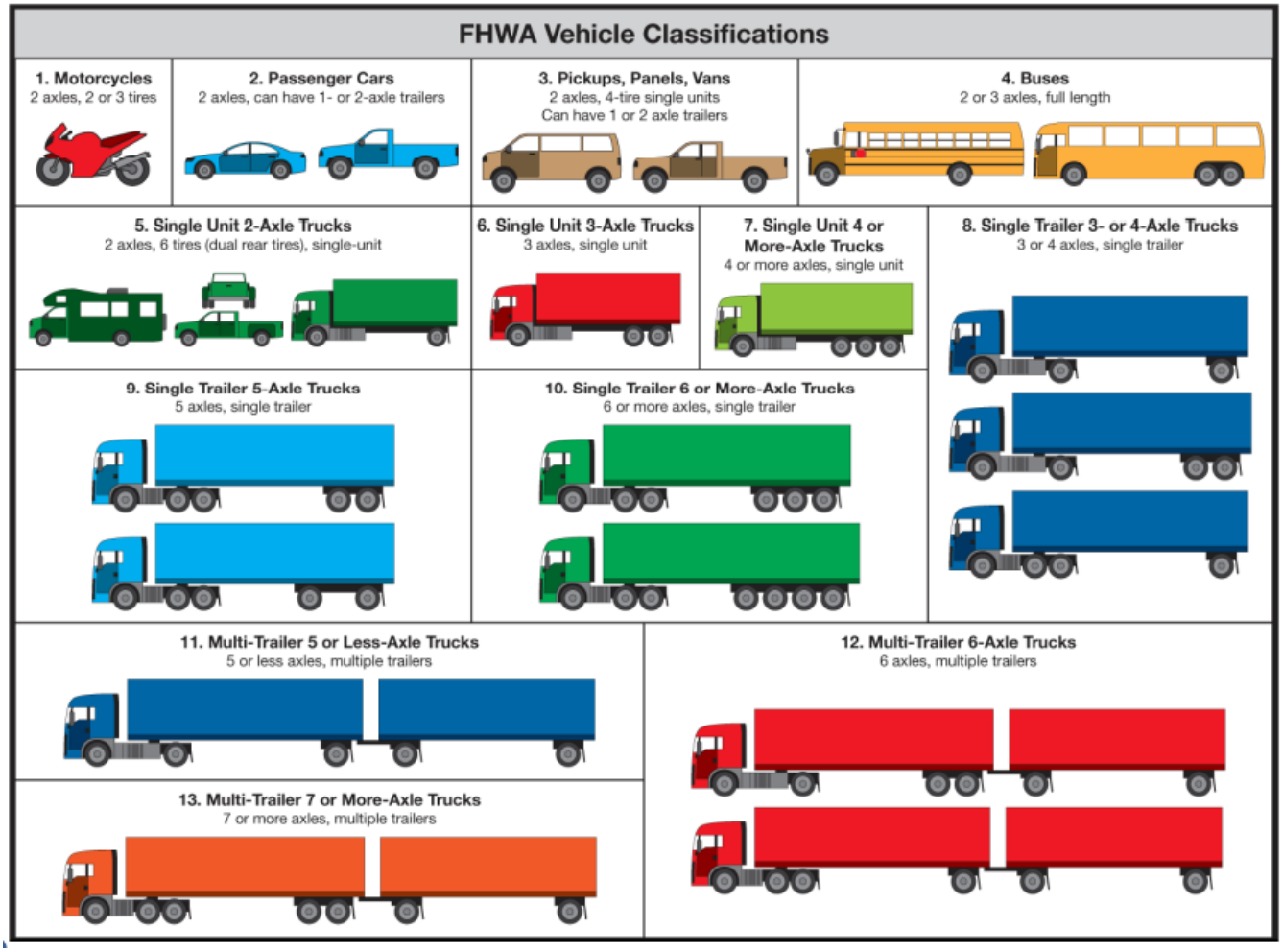
Estimated Miles per Electric Charge:_____ (If Vehicle FUEL TYPE = 5)

Gross Vehicle Weight (including trailer): _____ pounds

Vehicle Toll Transponder: 1) ☐Yes 2) ☐No 3) ☐Not Sure

Vehicle Classification:

1) ☐ Passenger Car or Motorcycle (1/2 below)
2) ☐ Pick-up Truck (4 wheels) (2 below)
3) ☐ Van (Cargo/Minivan) (4 wheels)(3 below)
4) ☐ Buses (4 below)
5) ☐ Single Unit 2-axle (6 wheels) (5 below)
6) ☐ Single Unit 3-axle (10 wheels) (6 below)
7) ☐ Single Unit 4-axle (14 wheels) (7 below)
8) ☐ Semi (all Tractor-Trailer combinations) (8-12 below)
9) ☐ Other _____



POST PROCESSING INSTRUCTIONS

ADD A NEW CLASS CODE (CLASS_SAMPLE GROUP_FINAL) TO THE DATABASE BASED ON THE VALUE REPORTED IN "VEHICLE CLASS" ABOVE

Vehicle Classification SAMPLE GROUP:

1) ☐ Light (if 1-3 selected in "vehicle class above")
2) ☐ Medium (if 4-7 selected in "vehicle class above") includes bus
3) ☐ Heavy (if 8-12 selected in "vehicle class above")

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1.3 TRUCK DIARY SURVEY – TRIP SHEET

SANDAG 2022 COMMERCIAL VEHICLE SURVEY TRIP INFORMATION WORKSHEET

PART 1: DATE AND STARTING LOCATION FOR THIS VEHICLE'S TRAVEL DAY

1. On which date was travel completed (month/date/year)? _____ **2. What was the day of week?** Mon Tues Wed Thurs

3. Was the place where this vehicle began travel today: ☐ Work / Base Location (Company address) ☐ Other Location – [answer 3a & 3b]

3a. How would you describe the type of place where this vehicle's travel began today? (See "**PLACE OPTIONS**" codes below):_____

3b. What is the address where this vehicle's travel began today?_____
(Street Address or Names of Nearest Intersecting Streets)
_____

Where did you go? (Record location name & address, including city, state, zip) see EXAMPLE below. **If address unknown** record nearest intersection, city, & state. **If returning to base** of operations write "BASE"	Is this the Work/Base location for this vehicle?	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? (See **Cargo Classifications** below) **If HAZMAT** also enter placard #	**If transporting cargo**, record Cargo Weight (Pounds)
EXAMPLE: Scripps Mercy Hospital (will be hand printed) 4077 5th Ave San Diego, CA 92103	☐ - Yes ☑ - No	5	Arrive: 8:24 (am)/pm Depart: 9:00 (am)/pm	10	17 #1219	100 in pounds
PLACE 1	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ in pounds
PLACE 2	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____ am/pm			_____ in pounds

PLACE OPTIONS (How would you describe this location ?)

(1) Office Building (Non-Government)
(2) Government Office Building
(3) Military Base/Building
(4) Grocery Store
(5) Restaurant
(6) Retail / Shopping
(7) Industrial / Manufacturing
(8) Medical / Hospital / Dental
(9) College/University
(10) Education (K-12, Daycare, Pre-K)
(11) Residential / Home
(12) Airport
(13) Intermodal Facility-Railroad
(14) Warehouse
(15) Truck Distribution Center
(16) Gas station
(17) Vehicle Charging Term.
(18) Truck stop
(19) Construction Site
(20) Agriculture
(21) Other (specify): _____
(99) Don't Know

ACTIVITY OPTIONS (What were you doing at this location?)

(1) Returning to Base Location
(2) Vehicle Maintenance (fuel/charging, etc)
(3) Driver Needs (lunch, restroom, etc)
(4) Deadhead/Drop Trailer/Bobtail
(5) Delivering cargo - (including grocery and restaurant deliveries)
(6) Picking up cargo-(including grocery and restaurant pickups)
(7) Getting Government Related Services
(8) Providing Installation / Maintenance / Repair Services
(9) Making a sales call
(10) Providing professional services (legal, medical, financial)
(11) Shopping for Business (i.e. business/office supplies, etc)
(88) Other Activity (specify):_____

(City, State, Zip Code)

4. WHEN DID THIS VEHICLE INITIALLY DEPART ON ITS TRAVEL DAY? TIME: _____ am / pm

5. WHERE DID THIS VEHICLE GO DURING ITS TRAVEL DAY? (Record every place this vehicle goes, including brief stops like trips to the gas station or food breaks)

SANDAG 2022 COMMERCIAL VEHICLE SURVEY TRIP INFORMATION WORKSHEET (Continued)

5. WHERE DID THIS VEHICLE GO DURING ITS TRAVEL DAY? (Record every place this vehicle goes, including brief stops like trips to the gas station or food breaks)

Where did you go? (Record location name & address, including city, state, zip) see EXAMPLE below **If address unknown** record nearest intersection, city, & state **If returning to base** of operations write "BASE"	Is this the Work/Base location for this vehicle?	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? (See **Cargo Classifications** below) **IF HAZMAT** also enter placard #	**IF transporting cargo**, record Cargo Weight (Pounds)
PLACE 3	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 4	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 5	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 6	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds

Cargo Classifications

(01) Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.
(02) Trees, sod, etc
(03) Fresh fish, seafood, etc.
(04) Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.
(05) Assorted food products, etc.
(06) Restaurant prepared meals
specify:_____
(07) Clothing, linens, etc.
(08) Lumber, paper, cardboard, wood pulp, etc.
(09) Newspapers, magazines, books, etc.
(10) Soaps, paints, household or industrial chemicals, etc.
(11) Gasoline, etc.
(12) Finished products of rubber, plastic or Styrofoam
(13) Finished products of clay, concrete, glass or stone
(14) Misc. products, such as machinery, appliances, furniture, etc.
(15) Waste products including scrap and recyclable materials
(16) U.S. mail, U.P.S., Federal Express, and other mixed cargo
(17) Hazardous chemicals and substances
(18) Automobiles and other transport vehicles
(19) Medical supplies
(20) Empty (including empty shipping containers)
(21) No cargo picked up or delivered
(88) Cargo not falling within one of the above categories-
(98) Prefer not to answer
(99) Don't know

PLACE OPTIONS (How would you describe this location?) | **ACTIVITY OPTIONS (What were you doing at this location?)**

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(1) Office Building (Non-Government)
(2) Government Office Building
(3) Military Base/Building
(4) Grocery Store
(5) Restaurant
(6) Retail / Shopping
(7) Industrial / Manufacturing
(8) Medical / Hospital / Dental
(9) College/University
(10) Education (K-12, Daycare, Pre-K)
(11) Residential / Home
(12) Airport
(13) Intermodal Facility-Railroad
(14) Warehouse
(15) Truck Distribution Center
(16) Gas station
(17) Vehicle Charging Term.
(18) Truck stop
(19) Construction Site
(20) Agriculture
(21) Other (specify):
_____
(99) Don't Know

(1) Returning to Base Location
(2) Vehicle Maintenance (fuel/charging, etc
(3) Driver Needs (lunch, restroom, etc)
(4) Deadhead/Drop Trailer/Bobtail
(5) Delivering cargo - (including grocery and restaurant deliveries)
(6) Picking up cargo-(including grocery and restaurant pickups)
(7) Getting Government Related Services
(8) Providing Installation / Maintenance / Repair Services
(9) Making a sales call
(10) Providing professional services (legal, medical, financial)
(11) Shopping for Business (i.e. business/office supplies, etc)
(88) Other Activity (specify):_____

Cargo Classifications

(01) Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.
(02) Trees, sod, etc
(03) Fresh fish, seafood, etc.
(04) Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.
(05) Assorted food products, etc.
(06) Restaurant prepared meals
specify:_____
(07) Clothing, linens, etc.
(09) Newspapers, magazines, books, etc.
(10) Soaps, paints, household or industrial chemicals, etc.
(11) Gasoline, etc.
(12) Finished products of rubber, plastic or Styrofoam
(13) Finished products of clay, concrete, glass or stone
(14) Misc. products, such as machinery, appliances, furniture, etc.
(15) Waste products including scrap and recyclable materials
(17) Hazardous chemicals and substances
(18) Automobiles and other transport vehicles
(19) Medical supplies
(20) Empty (including empty shipping containers)
(21) No cargo picked up or delivered
(88) Cargo not falling within one of the above categories-
(98) Prefer not to answer

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SANDAG 2022 COMMERCIAL VEHICLE SURVEY TRIP INFORMATION WORKSHEET (Continued)

5. WHERE DID THIS VEHICLE GO DURING ITS TRAVEL DAY? (Record every place this vehicle goes, including brief stops like trips to the gas station or food breaks)

Where did you go? (Record location name & address, including city, state, zip) see EXAMPLE below **If address unknown** record nearest intersection, city, & state **If returning to base** of operations write "BASE"	Is this the Work/Base location for this vehicle?	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? (See **Cargo Classifications** below) **If HAZMAT** also enter placard #	**If transporting cargo**, record Cargo Weight (Pounds)
PLACE 9	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 10	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 11	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 12	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 13	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 14	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds

PLACE OPTIONS (How would you describe this location?)

(1) Office Building (Non-Government)
(2) Government Office Building
(3) Military Base/Building
(4) Grocery Store
(5) Restaurant
(6) Retail / Shopping
(7) Industrial / Manufacturing
(8) Medical / Hospital / Dental
(9) College/University
(10) Education (K-12, Daycare, Pre-K)
(11) Residential / Home
(12) Airport
(13) Intermodal Facility-Railroad
(14) Warehouse
(15) Truck Distribution Center
(16) Gas station
(17) Vehicle Charging Term.
(18) Truck stop
(19) Construction Site
(20) Agriculture
(21) Other (specify): _____
(99) Don't Know

ACTIVITY OPTIONS (What were you doing at this location?)

(1) Returning to Base Location
(2) Vehicle Maintenance (fuel/charging, etc
(3) Driver Needs (lunch, restroom, etc)
(4) Deadhead/Drop Trailer/Bobtail
(5) Delivering cargo - (including grocery and restaurant deliveries)
(6) Picking up cargo-(including grocery and restaurant pickups)
(7) Getting Government Related Services
(8) Providing Installation / Maintenance / Repair Services
(9) Making a sales call
(10) Providing professional services (legal, medical, financial)
(11) Shopping for Business (i.e. business/office supplies, etc)
(88) Other Activity (specify):_____

Cargo Classifications

(01) Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.
(02) Trees, sod, etc
(03) Fresh fish, seafood, etc.
(04) Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.
(05) Assorted food products, etc.
(06) Restaurant prepared meals
(07) Clothing, linens, etc.
(09) Newspapers, magazines, books, etc.
(10) Soaps, paints, household or industrial chemicals, etc.
(11) Gasoline, etc.
(12) Finished products of rubber, plastic or Styrofoam
(13) Finished products of clay, concrete, glass or stone
(14) Misc. products, such as machinery, appliances, furniture, etc.
(15) Waste products including scrap and recyclable materials
(17) Hazardous chemicals and substances
(18) Automobiles and other transport vehicles
(19) Medical supplies
(20) Empty (including empty shipping containers)
(21) No cargo picked up or delivered
(88) Cargo not falling within one of the above categories-specify:_____
(98) Prefer not to answer

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SANDAG 2022 COMMERCIAL VEHICLE SURVEY TRIP INFORMATION WORKSHEET (Continued)

5. WHERE DID THIS VEHICLE GO DURING ITS TRAVEL DAY? (Record every place this vehicle goes, including brief stops like trips to the gas station or food breaks)

Where did you go? (Record location name & address, including city, state, zip) see EXAMPLE below **If address unknown** record nearest intersection, city, & state **If returning to base** of operations write "BASE"	Is this the Work/Base location for this vehicle?	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? (See **Cargo Classifications** below) **If HAZMAT** also enter placard #	**If transporting cargo**, record Cargo Weight (Pounds)
PLACE 15	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 16	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 17	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 18	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 19	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds
PLACE 20	☐ - Yes ☐ - No		Arrive: _____ am/pm Depart: _____am/pm			_____ in pounds

PLACE OPTIONS (How would you describe this location?)

(1) Office Building (Non-Government)
(2) Government Office Building
(3) Military Base/Building
(4) Grocery Store
(5) Restaurant
(6) Retail / Shopping
(7) Industrial / Manufacturing
(8) Medical / Hospital / Dental
(9) College/University
(10) Education (K-12, Daycare, Pre-K)
(11) Residential / Home
(12) Airport
(13) Intermodal Facility-Railroad
(14) Warehouse
(15) Truck Distribution Center
(16) Gas station
(17) Vehicle Charging Term.
(18) Truck stop
(19) Construction Site
(20) Agriculture
(21) Other (specify): _____
(99) Don't Know

ACTIVITY OPTIONS (What were you doing at this location?)

(1) Returning to Base Location
(2) Vehicle Maintenance (fuel/charging, etc)
(3) Driver Needs (lunch, restroom, etc)
(4) Deadhead/Drop Trailer/Bobtail
(5) Delivering cargo - (including grocery and restaurant deliveries)
(6) Picking up cargo-(including grocery and restaurant pickups)
(7) Getting Government Related Services
(8) Providing Installation / Maintenance / Repair Services
(9) Making a sales call
(10) Providing professional services (legal, medical, financial)
(11) Shopping for Business (i.e. business/office supplies, etc)
(88) Other Activity (specify):_____

Cargo Classifications

(01) Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.
(02) Trees, sod, etc
(03) Fresh fish, seafood, etc.
(04) Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.
(05) Assorted food products, etc.
(06) Restaurant prepared meals
specify:_____
(07) Clothing, linens, etc.
(08) Lumber, paper, cardboard, wood pulp, etc.
(09) Newspapers, magazines, books, etc.
(10) Soaps, paints, household or industrial chemicals, etc.
(11) Gasoline, etc.
(12) Finished products of rubber, plastic or Styrofoam
(13) Finished products of clay, concrete, glass or stone
(14) Misc. products, such as machinery, appliances, furniture, etc.
(15) Waste products including scrap and recyclable materials
(16) U.S. mail, U.P.S., Federal Express, and other mixed cargo
(17) Hazardous chemicals and substances
(18) Automobiles and other transport vehicles
(19) Medical supplies
(20) Empty (including empty shipping containers)
(21) No cargo picked up or delivered
(88) Cargo not falling within one of the above categories-
(98) Prefer not to answer
(99) Don't know

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1.4 ESTABLISHMENT SURVEY SCREEN SHOTS

FIGURE 1: SURVEY SCREENSHOT---INTRODUCTION 1

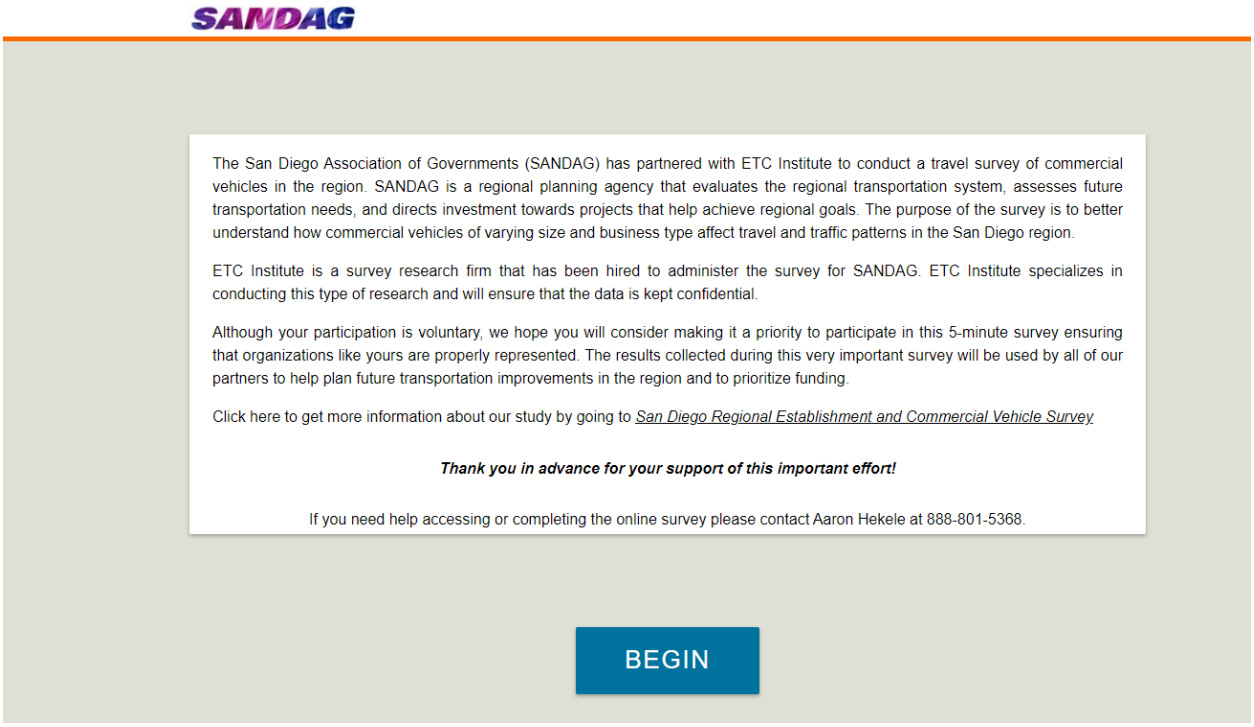


FIGURE 2: SURVEY SCREENSHOT---INTRODUCTION 2

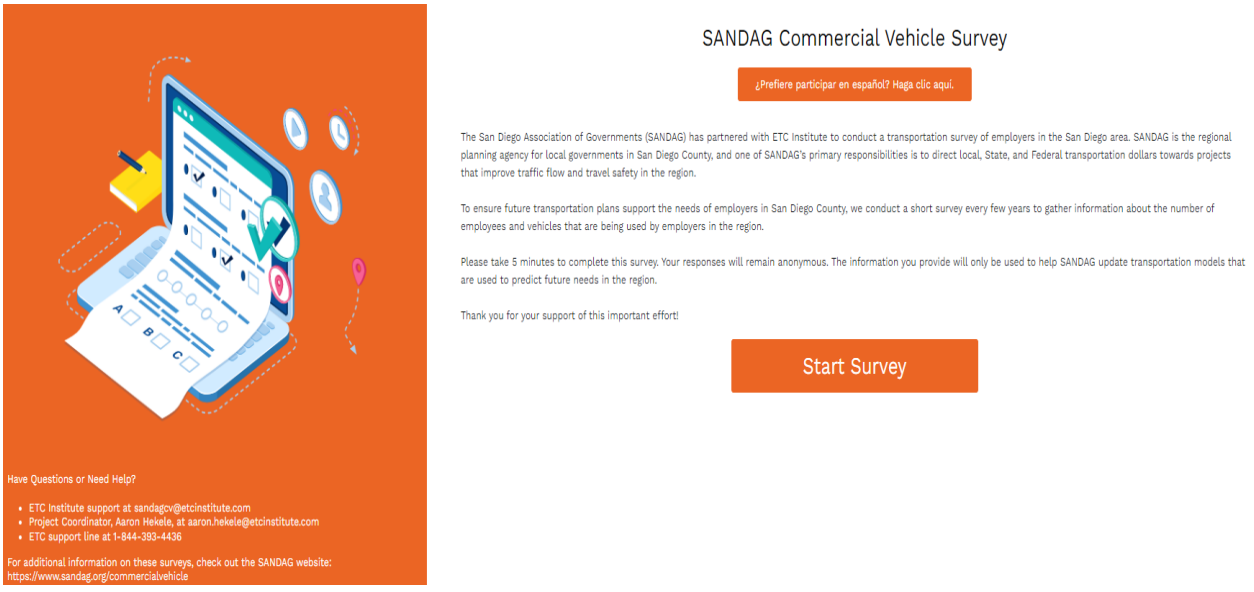


FIGURE 3: SURVEY SCREENSHOT---HOW WOULD YOU BEST DESCRIBE THE TYPE OF ACTIVITIES YOUR ORGANIZATION DOES AT THIS LOCATION?

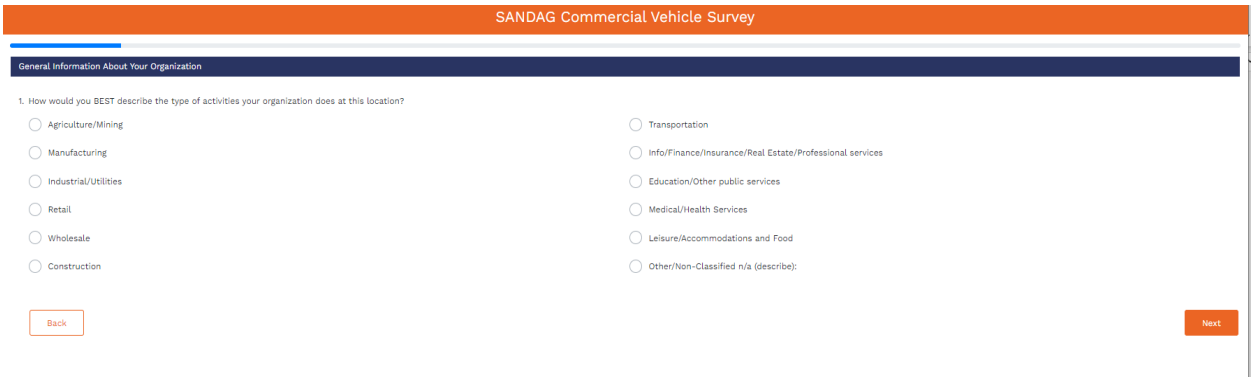


FIGURE 4: SURVEY SCREENSHOT---NUMBER OF EMPLOYEES

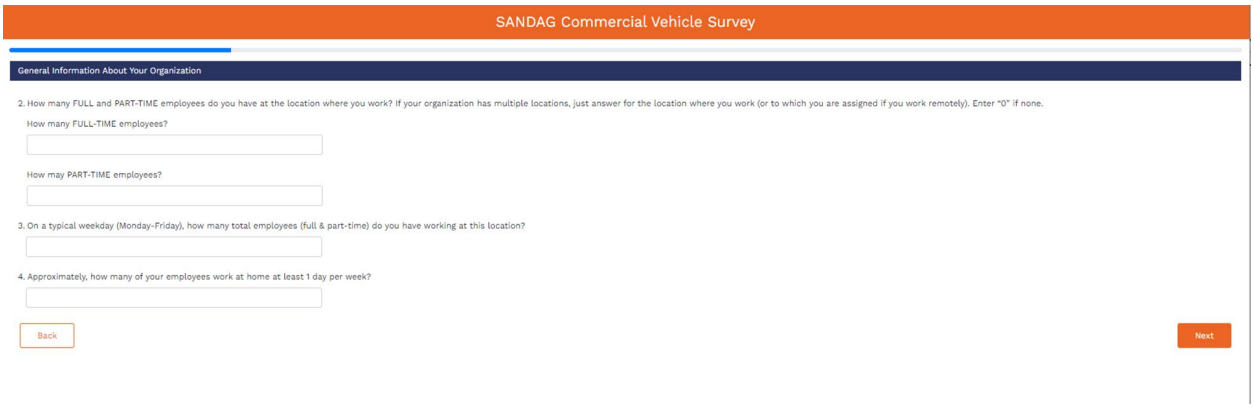


FIGURE 5: SURVEY SCREENSHOT---USE TNC

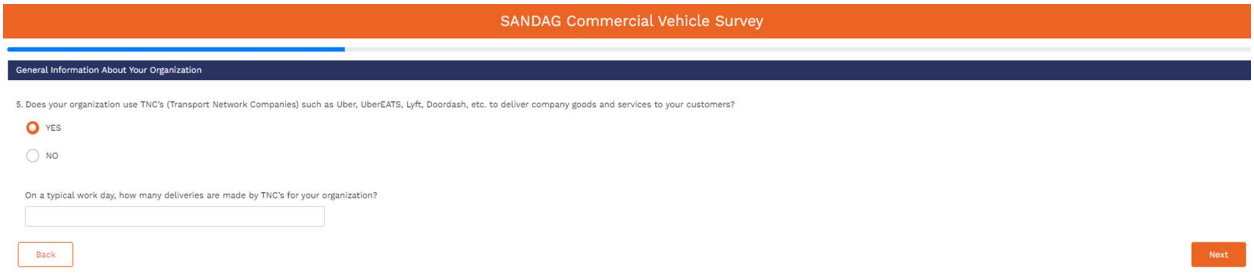


FIGURE 6: SURVEY SCREENSHOT---HOW MANY VEHICLES OWNED OR LEASED BY YOUR ORGANIZATION ARE EQUIPPED WITH TOLL TRANSPONDERS?

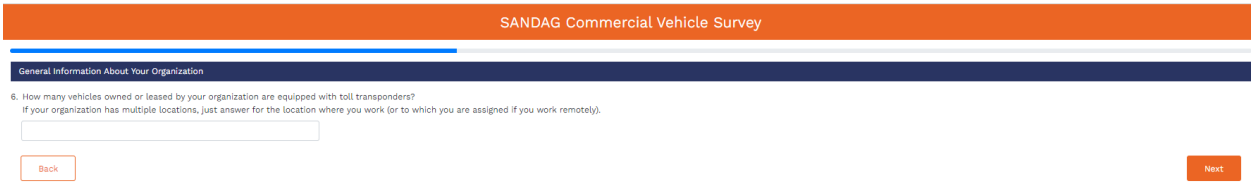


FIGURE 7: SURVEY SCREENSHOT---HOW MANY VEHICLES DELIVERIES TO YOUR LOCATION

FIGURE 8: SURVEY SCREENSHOT---APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM EACH OF THE FOLLOWING TYPES OF FACILITIES?

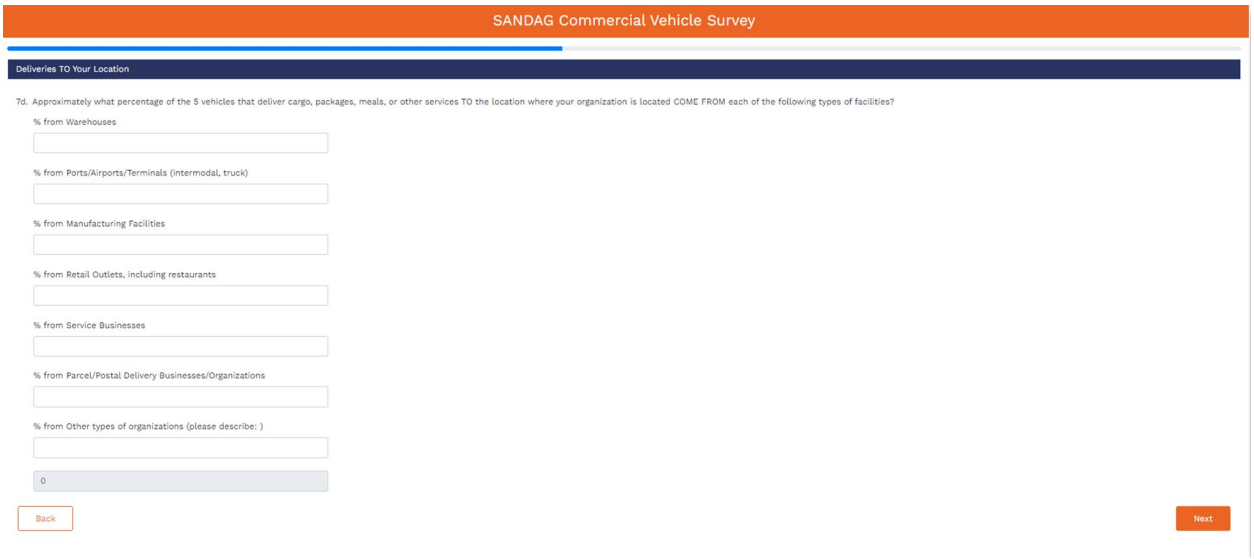


FIGURE 9: SURVEY SCREENSHOT---HOW MANY VEHICLES DELIVERIES FROM YOUR LOCATION

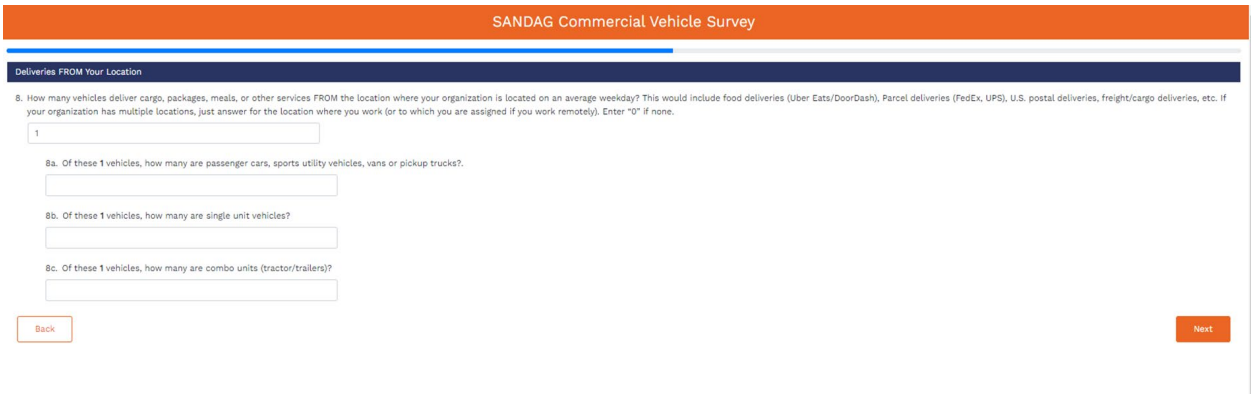


FIGURE 10: SURVEY SCREENSHOT---APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO EACH OF THE FOLLOWING TYPES OF FACILITIES?

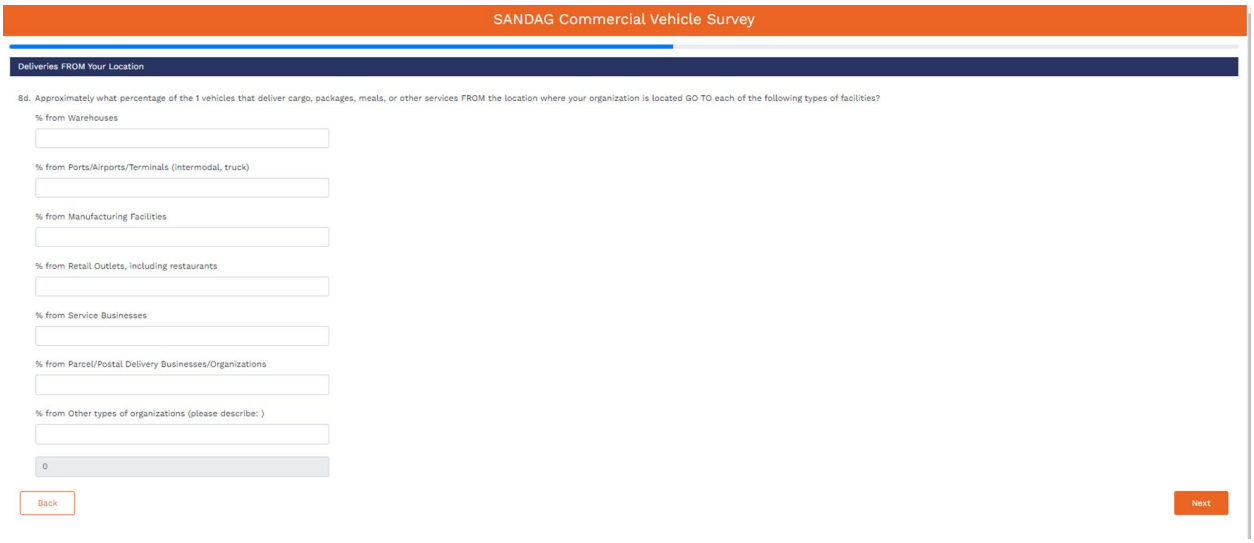


FIGURE 11: SURVEY SCREENSHOT---VEHICLE USAGE BY YOUR ORGANIZATION AND YOUR EMPLOYEES

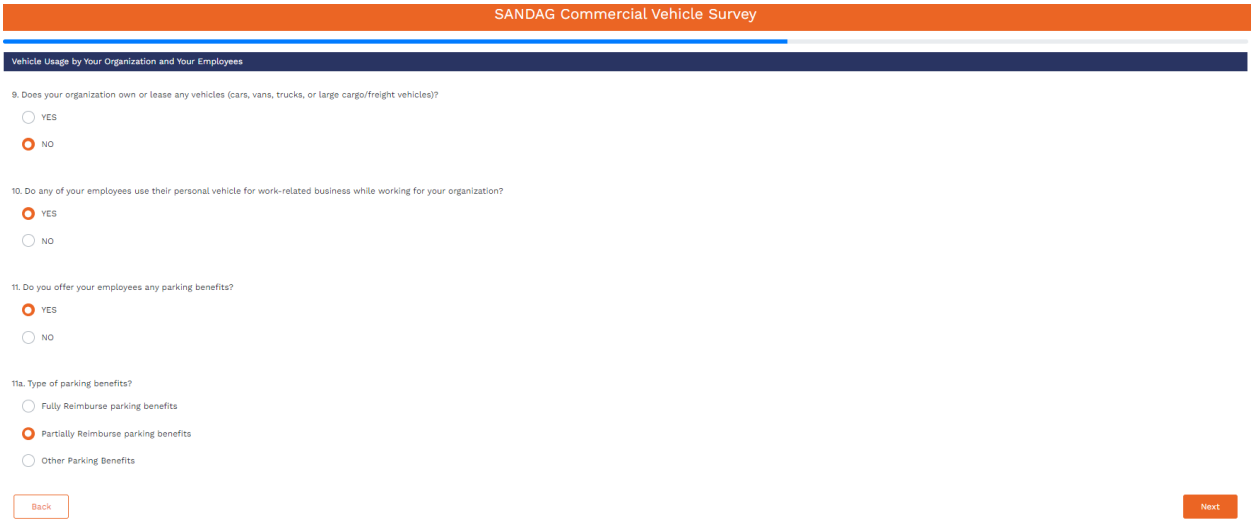


FIGURE 12: SURVEY SCREENSHOT---DID YOU RECEIVE A PIN FOR THIS SURVEY?

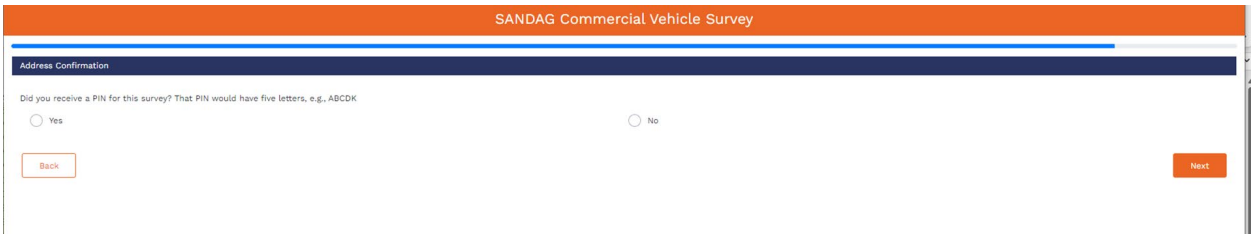


FIGURE 13: SURVEY SCREENSHOT---IF YOU RECEIVED A PIN FOR THIS SURVEY

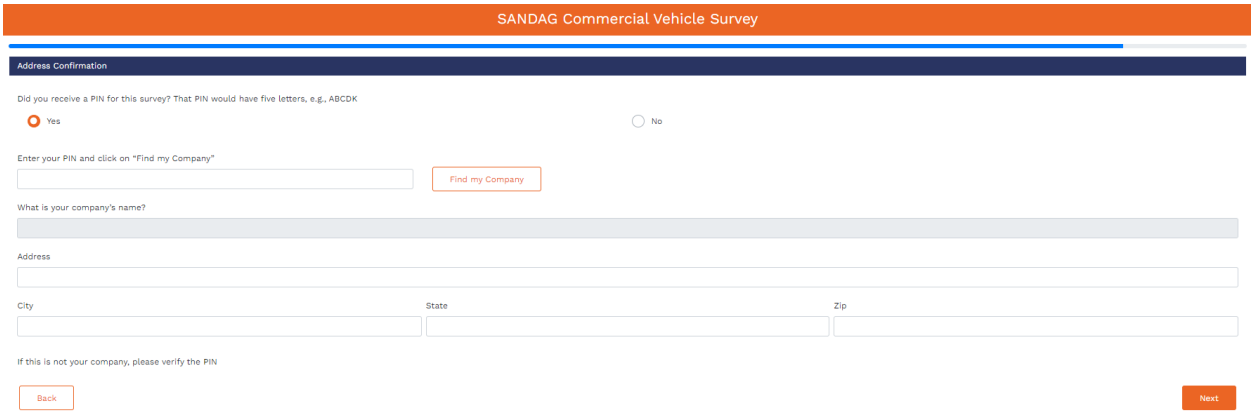


FIGURE 14: SURVEY SCREENSHOT---OPTIONAL TRAVEL DIARY

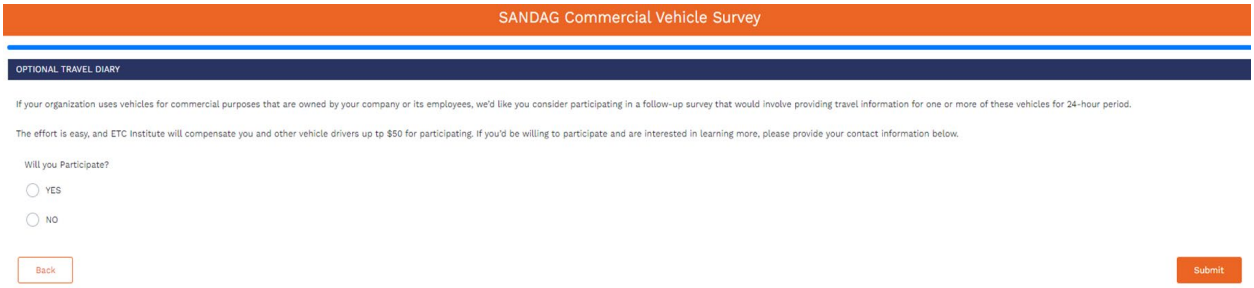
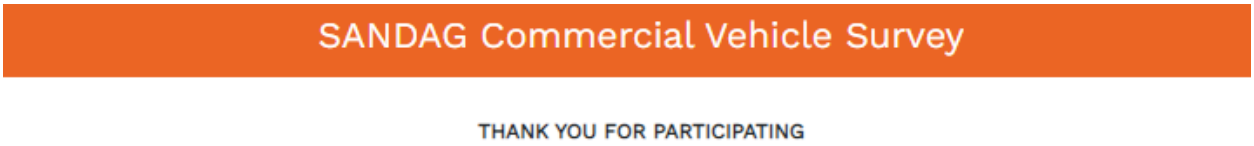


FIGURE 15:SURVEY SCREENSHOT---IF THE ORGANIZATION IS WILLING TO COMPLETE TRAVEL DIARY

FIGURE 16: SURVEY SCREENSHOT---THANK YOU PAGE



1.5 DATA VARIABLES BY SURVEY TYPE

This section documents each of the questions posed and data collected in the Establishment and Travel Diary Surveys. The tables show the type of survey, variables associated with each survey type, as well as a brief description of each variable. Table 1 shows a description of each variable collected in the Establishment Survey. Table 2 shows a description of each variable collected in the in the vehicle details portion of the Truck Travel Diary. Table 3 shows the trip diary variables from Truck Travel Diary Survey.

TABLE 1: ESTABLISHMENT SURVEY VARIABLES

Field Name	Description
company_id	Unique ID for Organization
company_name	Name of Organization
base_location_type	How would you BEST describe the type of activities your organization does at this location?
company_location_address	Organization Street Address
company_location_city	Organization Address City
company_location_state	Organization Address State
company_location_zipcode	Organization Address Zipcode
company_location_latitude	Organization Address Latitude
company_location_longitude	Organization Address Longitude
employees_fulltime_count	How many full-time personnel are employed at your site?
employees_parttime_count	How many part time personnel are employed at your site?
no_of_emp_work	On a typical weekday, how many employees (full & part-time) do you have working at this location?
total_telecommute_from_home	Approximately, how many of your employees work at home at least 1 day per week?
is_use_tnc	Does your company utilize TNC's (Transport Network Companies) such as Uber, UberEATS, Lyft, Doordash, etc. to deliver company goods customers?
no_of_deliveries	How many vehicles deliver cargo or services TO THIS LOCATION on an average weekday?
no_of_deliveries_pcsuvpu	How many of these {} vehicles are: passenger cars, sports utility vehicles or pickup trucks
no_of_deliveries_su	How many of these {} vehicles are: single unit vehicles
no_of_deliveries_cu	How many of these {} vehicles are: combo units (tractor/trailers)
per_of_deliveries_warehouse	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location

Field Name	Description
	where your organization is located COME FROM each of the following types of facilities? Warehouse %
per_of_deliveries_airport	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Port/Airport/Terminal (intermodal, truck) %
per_of_deliveries_manufacture	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Manufacturing Facility %
per_of_deliveries_retail	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Retail Outlet %
per_of_deliveries_service	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Service Business %
per_of_deliveries_parcel	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Parcel/Postal Delivery Businesses/Organizations %
per_of_deliveries_other	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services TO the location where your organization is located COME FROM each of the following types of facilities? Other %
per_of_deliveries_text_other	Other response
no_of_from_deliveries	How many vehicles deliver cargo or services FROM THIS LOCATION on an average weekday?
no_of_from_deliveries_pcsuvpu	How many of these {} vehicles are: passenger cars, sports utility vehicles or pickup trucks
no_of_from_deliveries_su	How many of these {} vehicles are: single unit vehicles
no_of_from_deliveries_cu	How many of these {} vehicles are: combo units (tractor/trailers)
per_of_from_deliveries_warehouse	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Warehouse %
per_of_from_deliveries_airport	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Port/Airport/Terminal (intermodal, truck) %
per_of_from_deliveries_manufacture	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Manufacturing Facility %
per_of_from_deliveries_retail	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Retail Outlet %
per_of_from_deliveries_service	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location

Field Name	Description
	where your organization is located GO TO each of the following types of facilities? Service Business %
per_of_from_deliveries_parcel	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Parcel/Postal Delivery Businesses/Organizations %
per_of_from_deliveries_other	Approximately what percentage of these vehicles that deliver cargo, packages, meals, or other services FROM the location where your organization is located GO TO each of the following types of facilities? Other %
per_of_from_deliveries_text_other	Other response
has_vehicles	Does your company own or lease any vehicles (cars, vans, trucks, or large vehicles) as part of your business?
vehicle_count_total	How many vehicles are owned or leased by your company for business at the address you provided at the beginning of this survey?
vehicle_su_count	Of these, how many are: Single unit vehicles
vehicle_cu_count	Of these, how many are: Combo unit/tractor-trailers
vehicle_pcsuvpu_count	Of these, how many are: Passenger car or sport Utility Vehicles
vehicle_pickuptrucks_count	Of these, how many are: Pickup trucks
vehicle_vans_count	Of these, how many are: Vans
vehicle_other_count	Of these, how many are: Other vehicles
use_personal_vehicle	Does anyone in your company use personal vehicles for company business?
vehicle_other_count_total	How many other vehicles (personal or other) does your company use for business purposes that are NOT owned or leased by your company?
vehicle_other_su_count	Of these, how many are: Single unit vehicles
vehicle_other_cu_count	Of these, how many are: Combo unit/tractor-trailers
vehicle_other_pcsuvpu_count	Of these, how many are: Passenger car or sport Utility Vehicles
vehicle_other_pickuptrucks_count	Of these, how many are: Pickup trucks
vehicle_other_vans_count	Of these, how many are: Vans
vehicle_other_other_count	Of these, how many are: Other vehicles
vehicle_toll_trans_count	How many vehicles owned or leased by your company are equipped with toll transponders?

TABLE 2: VEHICLE SURVEY VARIABLES

Field Name	Description
id	Unique Vehicle ID number
company_id	ID of the Company
veh_make_other	Make of the Vehicle
vehicle_model	Model of the Vehicle
vehicle_year	Year of manufacturing of the Vehicle
vehicle_type	Vehicle Type (Primary Use)
vehicle_fuel_type	Fuel Your Vehicle Uses
vehicle_miles_per_gallon	Estimated Vehicle MPG

has_vehicle_transponder	Does the vehicle have toll transponders
vehicle_classification	Vehicle Classification (Heavy duty power units/tractors that sometimes travel without a trailer, should be classified as “Semi (all tractor-trailer combinations)”, not “Single Unit” truck.)
vehicle_weight	Gross Vehicle Weight in Pounds (including trailer, if applicable) Empty weight of the vehicle (including the empty trailer, if applicable, pounds)

TABLE 3: TRIP/TOUR DIARY VARIABLES

FIELD NAME	DESCRIPTION
id	Unique record ID
company_id	Unique Company ID
vehicle_id	Unique Id of the Vehicle
driver_id	Unique Id of the Driver
trip_number	Unique Id of the Trip
trip_load_status	On departure, was your vehicle.
trip_load_weight	Loaded weight of the Vehicle
activity_type	Type of Activity of the Trip
activity_type_other	Description of Other Activity Type
placetype	Which of the following best describes the type of place/industry at this location?
placetype_other	Description of Other Place Type
location_placename	Location Name
location_address	Location Address
location_city	Location City
location_state	Location State
location_zip	Location Zip
location_latitude	Location Latitude
location_longitude	Location Longitude
cargo_pickup	Select the cargo type
cargo_pickup_other	Description of Cargo Pickup Other
cargo_delivery	Select the cargo type
cargo_other_delivery	Description of Cargo Delivery Other
cargo_pu_weight	Weight of picked up cargo
cargo_do_weight	Weight of dropped off cargo
travel_date	Date of Travel
arrival_time	Time of Arrival
departure_time	What time did you leave?
used_other_vehicle	Did you use another vehicle?
participation_type	How respondent participated

2.0 APPENDIX B: TABULATIONS

This section contains tabulations for each question posed in the 2020 SANDAG commercial vehicle survey. The tabulations are grouped by questionnaire section:

1. CVS establishment survey: An Establishment survey that was designed to understand the number and type of commercial vehicles that are operated by business establishments in the region. During the data collection effort for this project 2,697 establishments provided information about their business and vehicle fleet operations.
2. CVS vehicles: The vehicle survey contains one record for each vehicle that participated in the truck diary survey and includes information about the vehicle and aggregate statistics about the vehicle's travel during the survey day. This set of questions was posed to respondents in the first section of the Truck Travel Diary Survey.
3. CVS trip information survey: The trip database contains a record for each stop reported in the truck diary survey, totaling 12,261 records from 1,543 vehicles that reported travel. Trip data were collected in the Truck Travel Diary Survey.
4. TNC vehicle survey: Same survey as CVS vehicles survey. A total of 411 TNC vehicles information was collected.
5. TNC trip survey: Same survey as CVS trip survey, totaling 5,664 records from 411 TNC vehicles.

The tabulations presented in the appendix are unweighted and unexpanded.

2.1 CVS ESTABLISHMENT SURVEY

TABLE 4. HOW WOULD YOU BEST DESCRIBE THE TYPE OF ACTIVITIES YOUR ORGANIZATION DOES AT THIS LOCATION?

	Percent	Count
Agriculture/Mining	3.6%	96
Manufacturing	9.2%	248
Industrial/Utilities	1.6%	42
Retail	10.2%	275
Wholesale	8.5%	229
Construction	9.4%	254
Transportation	4.9%	132
Info/Finance/Insurance/Real Estate/Professional services	15.8%	427
Education/Other public services	12.8%	344
Medical/Health Services	14.4%	388
Leisure/Accommodations and Food	9.7%	262
Total	**100.0%**	**2697**

TABLE 5. HOW MANY FULL-TIME EMPLOYEES DO YOU HAVE AT THE LOCATION WHERE YOU WORK?

	Percent	Count
0	2.7%	72
1-5	48.4%	1306
6-10	19.2%	517
More than 10	29.7%	802
Total	**100.0%**	**2697**

TABLE 6. HOW MANY PART-TIME EMPLOYEES DO YOU HAVE AT THE LOCATION WHERE YOU WORK?

	Percent	Count
0	55.7%	1502
1-5	30.7%	828
6-10	5.3%	142
More than 10	8.3%	225
Total	**100.0%**	**2697**

TABLE 7. ON A TYPICAL WEEKDAY (MONDAY-FRIDAY), HOW MANY TOTAL EMPLOYEES (FULL & PART-TIME) DO YOU HAVE WORKING AT THIS LOCATION?

	Percent	Count
0	0.0%	0
1-5	41.2%	1112
6-10	21.9%	590
More than 10	36.9%	995
Total	**100.0%**	**2697**

TABLE 8. APPROXIMATELY, HOW MANY OF YOUR EMPLOYEES WORK AT HOME AT LEAST 1 DAY PER WEEK?

	Percent	Count
0	77.0%	2077
1-5	17.8%	481
6-10	2.0%	53
More than 10	3.2%	86
Total	**100.0%**	**2697**

TABLE 9. DOES YOUR ORGANIZATION USE TNC'S (TRANSPORT NETWORK COMPANIES) SUCH AS UBER, UBEREATS, LYFT, DOORDASH, ETC. TO DELIVER COMPANY GOODS AND SERVICES TO YOUR CUSTOMERS?

	Percent	Count
Yes	6.0%	161
No	94.0%	2536
Total	**100.0%**	**2697**

TABLE 10. HOW MANY VEHICLES OWNED OR LEASED BY YOUR COMPANY ARE EQUIPPED WITH TOLL TRANSPONDERS?

	Percent	Count
0	88.2%	2379
1-5	9.0%	243
More than 5	2.8%	75
Total	**100.0%**	**2697**

TABLE 11. HOW MANY VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	19.2%	517
1-5	72.2%	1947
More than 5	8.6%	233
Total	**100.0%**	**2697**

TABLE 12. HOW MANY PASSENGER CARS, SPORTS UTILITY VEHICLES, VANS, OR PICKUP TRUCKS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	68.4%	1846
1-5	29.5%	795
More than 5	2.1%	56
Total	**100.0%**	**2697**

TABLE 13. HOW MANY SINGLE UNIT VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	37.7%	1018
1-5	59.3%	1600
More than 5	2.9%	79
Total	**100.0%**	**2697**

TABLE 14. HOW MANY COMBO UNITS (TRACTOR/TRAILERS) DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES TO THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	84.8%	2288
1-5	13.8%	372
More than 5	1.4%	37
Total	**100.0%**	**2697**

TABLE 15. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM WAREHOUSES?

	Percent	Count
0	64.3%	1735
1% - 50%	20.4%	550
51% - 100%	15.3%	412
Total	**100.0%**	**2697**

TABLE 16. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM PORTS/AIRPORTS/TERMINALS (INTERMODAL, TRUCK)?

	Percent	Count
0	97.5%	2630
1% - 50%	2.1%	56
51% - 100%	0.4%	11
Total	**100.0%**	**2697**

TABLE 17. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM MANUFACTURING FACILITIES?

	Percent	Count
0	88.3%	2381
1% - 50%	10.0%	270
51% - 100%	1.7%	46
Total	**100.0%**	**2697**

TABLE 18. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM RETAIL OUTLETS, INCLUDING RESTAURANTS?

	Percent	Count
0	92.1%	2483
1% - 50%	7.2%	195
51% - 100%	0.7%	19
Total	**100.0%**	**2697**

TABLE 19. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM SERVICE BUSINESSES

	Percent	Count
0	90.0%	2427
1% - 50%	8.6%	232
51% - 100%	1.4%	38
Total	**100.0%**	**2697**

TABLE 20. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM OTHER TYPES OF ORGANIZATIONS?

	Percent	Count
0	39.6%	1068
1% - 50%	20.9%	565
51% - 100%	39.5%	1064
Total	**100.0%**	**2697**

TABLE 21. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES COME FROM UNKNOW TYPE OF ORGANIZATIONS?

	Percent	Count
0	98.1%	2647
1% - 50%	0.8%	22
51% - 100%	1.0%	28
Total	**100.0%**	**2697**

TABLE 22. HOW MANY VEHICLES DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	60.4%	1630
1 - 5	33.9%	915
More than 5	5.6%	152
Total	**100.0%**	**2697**

TABLE 23. HOW MANY PASSENGER CARS, SPORTS UTILITY VEHICLES, VANS OR PICKUP TRUCKS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	80.7%	2176
1 - 5	16.6%	447
More than 5	2.7%	74
Total	**100.0%**	**2697**

TABLE 24. HOW MANY SINGLE UNITS DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	78.5%	2118
1 - 5	19.7%	532
More than 5	1.7%	47
Total	**100.0%**	**2697**

TABLE 25. HOW MANY COMBO UNITS (TRACTOR/TRAILERS) DELIVER CARGO, PACKAGES, MEALS, OR OTHER SERVICES FROM THE LOCATION WHERE YOUR ORGANIZATION IS LOCATED ON AN AVERAGE WEEKDAY?

	Percent	Count
0	94.8%	2557
1 - 5	4.2%	112
More than 5	1.0%	28
Total	**100.0%**	**2697**

TABLE 26. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO WAREHOUSES?

	Percent	Count
0	92.3%	2490
1% - 50%	5.4%	145
51% - 100%	2.3%	62
Total	**100.0%**	**2697**

TABLE 27. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO PORTS/AIRPORTS/TERMINALS (INTERMODAL, TRUCK)

	Percent	Count
0	98.0%	2642
1% - 50%	1.8%	48
51% - 100%	0.3%	7
Total	**100.0%**	**2697**

TABLE 28. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO MANUFACTURING FACILITIES?

	Percent	Count
0	94.4%	2547
1% - 50%	4.4%	119
51% - 100%	1.1%	31
Total	**100.0%**	**2697**

TABLE 29. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO RETAIL OUTLETS, INCLUDING RESTAURANTS?

	Percent	Count
0	93.7%	2527
1% - 50%	5.0%	136
51% - 100%	1.3%	34
Total	**100.0%**	**2697**

TABLE 30. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO SERVICE BUSINESSES?

	Percent	Count
0	87.8%	2368
1% - 50%	7.6%	205
51% - 100%	4.6%	124
Total	**100.0%**	**2697**

TABLE 31. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO OTHER TYPES OF ORGANIZATIONS?

	Percent	Count
0	84.0%	2265
1% - 50%	3.3%	89
51% - 100%	12.7%	343
Total	**100.0%**	**2697**

TABLE 32. APPROXIMATELY WHAT PERCENTAGE OF THESE VEHICLES GO TO UNKNOW TYPE OF ORGANIZATIONS?

	Percent	Count
0	87.8%	2369
1% - 50%	4.6%	123
51% - 100%	7.6%	205
Total	**100.0%**	**2697**

TABLE 33. DOES YOUR ORGANIZATION OWN OR LEASE ANY VEHICLES (CARS, VANS, TRUCKS, OR LARGE CARGO/FREIGHT VEHICLES)?

	Percent	Count
Yes	39.3%	1059
No	60.7%	1638
Total	**100.0%**	**2697**

TABLE 34. DO ANY OF YOUR EMPLOYEES USE THEIR PERSONAL VEHICLE FOR WORK-RELATED BUSINESS WHILE WORKING FOR YOUR ORGANIZATION?

	Percent	Count
Yes	23.1%	624
No	76.9%	2073
Total	**100.0%**	**2697**

TABLE 35. TOTAL NUMBER OF VEHICLES OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	60.9%	1643
1 - 5	28.8%	777
More than 5	10.3%	277
Total	**100.0%**	**2697**

TABLE 36. NUMBER OF PASSENGER CAR OR SPORT UTILITY VEHICLES OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	87.6%	2362
1 - 5	10.6%	286
More than 5	1.8%	49
Total	**100.0%**	**2697**

TABLE 37. NUMBER OF PICKUP TRUCKS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	87.1%	2348
1 - 5	10.2%	276
More than 5	2.7%	73
Total	**100.0%**	**2697**

TABLE 38. NUMBER OF VANS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	98.6%	2658
1 - 5	1.3%	34
More than 5	0.2%	5
Total	**100.0%**	**2697**

TABLE 39. NUMBER OF SINGLE UNIT VEHICLES AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	88.5%	2386
1 - 5	9.6%	258
More than 5	2.0%	53
Total	**100.0%**	**2697**

TABLE 40. NUMBER OF COMBO UNIT/TRACTOR-TRAILERS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	88.5%	2388
1 - 5	9.2%	248
More than 5	2.3%	61
Total	**100.0%**	**2697**

TABLE 41. NUMBER OF CARGO VANS OWNED/LEASED BY MY COMPANY AT THE ADDRESS WHERE I WORK.

	Percent	Count
0	92.0%	2480
1 - 5	6.5%	176
More than 5	1.5%	41
Total	**100.0%**	**2697**

TABLE 42. TOTAL NUMBER OF OTHER VEHICLES (PERSONAL OR OTHER) YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	77.3%	2084
1 - 5	20.9%	563
More than 5	1.9%	50
Total	**100.0%**	**2697**

TABLE 43. NUMBER OF PASSENGER CAR OR SPORT UTILITY VEHICLES YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	87.6%	2362
1 - 5	11.3%	305
More than 5	1.1%	30
Total	**100.0%**	**2697**

TABLE 44. NUMBER OF PICKUP TRUCKS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	97.1%	2618
1 - 5	2.8%	75
More than 5	0.1%	4
Total	**100.0%**	**2697**

TABLE 45. NUMBER OF VANS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	100.0%	2696
1 - 5	0.0%	1
Total	**100.0%**	**2697**

TABLE 46. NUMBER OF SINGLE UNIT VEHICLES YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	92.7%	2500
1 - 5	6.9%	185
More than 5	0.4%	12
Total	**100.0%**	**2697**

TABLE 47. NUMBER OF COMBO UNIT/TRACTOR-TRAILERS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	98.0%	2642
1 - 5	2.0%	54
More than 5	0.0%	1
Total	**100.0%**	**2697**

TABLE 48. NUMBER OF CARGO VANS YOUR COMPANY USE FOR BUSINESS-RELATED PURPOSES THAT ARE NOT OWNED OR LEASED BY YOUR COMPANY.

	Percent	Count
0	99.2%	2676
1 - 5	0.7%	20
More than 5	0.0%	1
Total	**100.0%**	**2697**

2.2 CVS VEHICLE SURVEY

TABLE 49. VEHICLES BY INDUSTRY GROUP

	Percent	Count
Agriculture/Mining	2.9%	51
Manufacturing	6.9%	120
Industrial/Utilities	4.9%	85
Retail	8.3%	145
Wholesale	9.0%	157
Construction	16.3%	285
Transportation	12.4%	217
Info/Finance/Insurance/Real Estate/Professional services	13.9%	244
Education/Other public services	12.5%	219
Medical/Health Services	8.2%	144
Leisure/Accommodations and Food	4.8%	84
Total	**100.0%**	**1751**

TABLE 50. YEAR OF VEHICLE

	Percent	Count
1977 - 2010	17.1%	300
2011 - 2015	22.7%	397
2016 - 2020	52.5%	919
2021 - 2023	7.7%	135
Total	**100.0%**	**1751**

TABLE 51. VEHICLE TYPE (PRIMARY USE)

	Percent	Count
Cargo/Freight Transport Vehicle	16.1%	282
Commercial Service Vehicle	41.2%	722
Commercial Service and Cargo Delivery Vehicle	42.0%	735
Other(specify)	0.7%	12
Total	**100.0%**	**1751**

TABLE 52. VEHICLE FUEL TYPE

	Percent	Count
Gasoline	78.1%	1367
Diesel	18.4%	323
Electric	1.4%	24
Gas/Electric Hybrid	2.1%	37
Total	**100.0%**	**1751**

TABLE 53. ESTIMATED VEHICLE MPG

(Only if Vehicle fuel type = Gasoline, Diesel, Propane, Natural Gas)

	Percent	Count
1 - 25	51.4%	868
26 - 50	44.1%	745
More than 50	0.2%	4
Unknown	4.3%	73
Total	**100.0%**	**1690**

TABLE 54. GROSS VEHICLE WEIGHT (INCLUDING TRAILER), IN POUNDS

	Percent	Count
0 - 2500	0.4%	7
2501 - 5000	26.8%	469
5001 - 10000	40.9%	717
More than 10000	25.6%	448
Unknown	6.3%	110
Total	**100.0%**	**1751**

TABLE 55. DOES THE VEHICLE HAS TOLL TRANSPONDER

	Percent	Count
Yes	5.5%	97
No	94.3%	1651
Unknow	2.0%	3
Total	**100.0%**	**1751**

TABLE 56. VEHICLE CLASSIFICATION

	Percent	Count
Passenger Car or Motorcycle	35.8%	626
Pick-up Truck (4 wheels)	22.6%	395
Van (Cargo/Minivan) (4 wheels)	16.1%	282
Buses	1.8%	32
Single Unit 2-axle	9.5%	166
Single Unit 3-axle	1.4%	25
Single Unit 4-axle	0.3%	5
Semi (all Tractor-Trailer combinations)	12.6%	220
Total	**100.0%**	**1751**

TABLE 57. VEHICLE TYPE

	Percent	Count
Light	74.4%	1303
Medium	12.6%	220
Heavy	13.0%	228
Total	**100.0%**	**1751**

2.3 CVS TRIP SURVEY

TABLE 58. ON WHICH DATE WAS THIS TRIP COMPLETED?

	Percent	Count
June 2022	2.0%	245
July 2022	14.6%	1792
August 2022	49.7%	6090
September 2022	17.0%	2082
October 2022	16.7%	2052
Total	**100.0%**	**12261**

TABLE 59. WHAT WAS THE DAY OF WEEK?

	Percent	Count
Monday	7.1%	870
Tuesday	28.4%	3482
Wednesday	34.4%	4225
Thursday	17.6%	2153
Friday	11.4%	1400
Saturday	0.6%	68
Sunday	0.5%	63
Total	**100.0%**	**12261**

TABLE 60. HOW WOULD YOU DESCRIBE THE TYPE OF PLACE WHERE THIS VEHICLE'S TRAVEL BEGAN TODAY?

	Percent	Count
Office Building (Non-Government)	56.8%	894
Government Office Building	2.2%	34
Military Base/Building	0.5%	8
Grocery Store	0.3%	4
Restaurant	3.0%	47
Retail / Shopping	4.4%	70
Industrial / Manufacturing	1.1%	17
Medical / Hospital / Dental	1.0%	15
College/University	0.3%	4
Education (K-12, Daycare, Pre-K)	5.2%	82
Residential / Home	12.7%	200
Airport	0.2%	3
Warehouse	7.0%	110
Gas station	0.9%	14
Truck stop	0.1%	1
Construction Site	0.2%	3
Agriculture	0.6%	9
Other (specify)	3.7%	58
Don't Know	0.1%	1
Total	**100.0%**	**1574**

TABLE 61. WHEN DID THIS VEHICLE INITIALLY DEPART ON ITS TRAVEL DAY?

	Percent	Count
Early AM: 3:00am-5:59am	5.5%	87
AM Peak: 6:00am-8:59am	44.5%	701
Midday: 9:00am-3:29pm	43.6%	686
PM Peak: 3:30pm-6:59pm	3.7%	59
Evening: 7:00pm-2:59am	2.6%	41
Total	**100.0%**	**1574**

TABLE 62. WHAT IS THE TYPE OF PLACE/INDUSTRY AT THIS LOCATION?

	Percent	Count
Office Building (Non-Government)	21.3%	2607
Government Office Building	2.6%	317
Military Base/Building	0.3%	41
Grocery Store	0.3%	40
Restaurant	3.8%	470
Retail / Shopping	7.9%	972
Industrial / Manufacturing	3.8%	460
Medical / Hospital / Dental	2.4%	293
College/University	0.5%	61
Education (K-12, Daycare, Pre-K)	2.3%	276
Residential / Home	27.2%	3335
Airport	0.3%	42
Intermodal Facility-Railroad	0.1%	12
Warehouse	9.6%	1179
Truck Distribution Center	0.2%	22
Gas station	4.7%	578
Vehicle Charging Term	0.0%	2
Truck stop	0.2%	21
Construction Site	1.4%	177
Agriculture	1.1%	135
Other (specify)	9.6%	1175
Don't Know	0.4%	46
Total	**100.0%**	**12261**

TABLE 63. WHAT TIME DID YOU ARRIVE THIS LOCATION?

(1574 origin locations have no arrival time)

	Percent	Count
Early AM: 3:00am-5:59am	1.3%	143
AM Peak: 6:00am-8:59am	14.7%	1569
Midday: 9:00am-3:29pm	68.7%	7347
PM Peak: 3:30pm-6:59pm	11.9%	1274
Evening: 7:00pm-2:59am	3.3%	354
Total	**100.0%**	**10687**

TABLE 64. WHAT TIME DID YOU DEPART FROM THIS LOCATION?

(1574 last locations have no departure time)

	Percent	Count
Early AM: 3:00am-5:59am	1.7%	184
AM Peak: 6:00am-8:59am	16.7%	1785
Midday: 9:00am-3:29pm	67.7%	7237
PM Peak: 3:30pm-6:59pm	10.8%	1154
Evening: 7:00pm-2:59am	3.1%	327
Total	**100.0%**	**10687**

TABLE 65. WHAT ACTIVITY ARE YOU DOING AT THIS LOCATION?

	Percent	Count
Returning to Base Location	22.6%	2766
Vehicle Maintenance (fuel/charging, etc)	4.8%	589
Driver Needs (lunch, restroom, etc)	5.4%	663
Deadhead/Drop Trailer/Bobtail	0.0%	4
Delivering cargo - (including grocery and restaurant deliveries)	15.9%	1948
Picking up cargo-(including grocery and restaurant pickups)	1.8%	226
Getting Government Related Services	0.1%	18
Providing Installation / Maintenance / Repair Services	9.6%	1181
Making a sales call	0.3%	33
Providing professional services (legal, medical, financial)	25.0%	3066
Shopping for Business (i.e. business/office supplies, etc)	1.6%	191
Return to base location/Pick up Cargo	0.4%	50
Return to base location/Drop off Cargo	0.4%	54
Home	4.3%	531
Other Activity	7.7%	941
Total	**100.0%**	**12261**

TABLE 66. IF PICKING UP CARGO, WHAT IS THE CARGO?

(Only if picking up cargo)

	Percent	Count
Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.	18.5%	51
Trees, sod, etc	6.2%	17
Fresh fish, seafood, etc.	0.7%	2
Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.	2.5%	7
Assorted food products, etc.	12.0%	33
Restaurant prepared meals	1.4%	4
Clothing, linens, etc.	2.9%	8
Lumber, paper, cardboard, wood pulp, etc.	10.9%	30
Newspapers, magazines, books, etc.	0.7%	2
Gasoline, etc.	9.8%	27
Finished products of rubber, plastic or Styrofoam	4.3%	12
Finished products of clay, concrete, glass or stone	4.7%	13
Misc. products, such as machinery, appliances, furniture, etc.	11.6%	32
Waste products including scrap and recyclable materials	0.4%	1
U.S. mail, U.P.S., Federal Express, and other mixed cargo	0.4%	1
Automobiles and other transport vehicles	5.1%	14
Medical supplies	2.2%	6
Empty (including empty shipping containers)	1.1%	3
No cargo picked up or delivered	0.7%	2
Cargo not falling within one of the above categories-specify	2.9%	8
Prefer not to answer	1.1%	3
Total	**100.0%**	**276**

TABLE 67. WHAT IS THE WEIGHT OF PICKED UP CARGO

(Only if picking up cargo)

	Percent	Count
0 - 500 Pounds	47.5%	131
501 - 1000 Pounds	6.9%	19
1001 - 1500 Pounds	1.4%	4
1501 - 2000 Pounds	1.8%	5
More than 2000 Pounds	40.2%	111
Unknow	2.2%	6
Total	**100.0%**	**276**

TABLE 68. IF DROPPING OFF CARGO, WHAT IS THE CARGO?

(Only if dropping off cargo)

	Percent	Count
Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.	6.0%	121
Trees, sod, etc	4.7%	95
Fresh fish, seafood, etc.	0.3%	6
Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.	0.7%	14
Assorted food products, etc.	41.6%	832
Restaurant prepared meals	3.0%	61
Clothing, linens, etc.	0.5%	10
Lumber, paper, cardboard, wood pulp, etc.	1.0%	21
Newspapers, magazines, books, etc.	1.0%	21
Soaps, paints, household or industrial chemicals, etc.	0.3%	6
Gasoline, etc.	1.5%	31
Finished products of rubber, plastic or Styrofoam	1.4%	29
Finished products of clay, concrete, glass or stone	1.0%	21
Misc. products, such as machinery, appliances, furniture, etc.	3.3%	66
Waste products including scrap and recyclable materials	0.1%	3
U.S. mail, U.P.S., Federal Express, and other mixed cargo	26.9%	539
Automobiles and other transport vehicles	0.8%	17
Medical supplies	2.8%	57
Empty (including empty shipping containers)	0.0%	1
Cargo not falling within one of the above categories-specify	1.0%	21
Prefer not to answer	0.3%	6
Don’t know	1.2%	24
Total	**100.0%**	**2002**

TABLE 69. WHAT IS THE WEIGHT OF DROPPED OFF CARGO

(Only if dropping off cargo)

	Percent	Count
0 - 500 Pounds	86.1%	1723
501 - 1000 Pounds	1.7%	35
1001 - 1500 Pounds	0.4%	8
1501 - 2000 Pounds	1.0%	21
More than 2000 Pounds	9.6%	193
Unknow	1.1%	22
Total	**100.0%**	**2002**

2.4 TNC VEHICLE SURVEY

TABLE 70. YEAR OF MANUFACTURING OF THE VEHICLE, TNC SAMPLE

	Percent	Count
1977 - 2010	23.6%	97
2011 - 2015	27.0%	111
2016 - 2020	38.0%	156
2021 - 2023	11.4%	47
Total	**100.0%**	**411**

TABLE 71. VEHICLE TYPE (PRIMARY USE), TNC SAMPLE

	Percent	Count
Cargo/Freight Transport Vehicle	7.5%	31
Commercial Service Vehicle	12.7%	52
Commercial Service and Cargo Delivery Vehicle	79.6%	327
Refuse to answer	0.2%	1
Total	**100.0%**	**411**

TABLE 72. VEHICLE FUEL TYPE, TNC SAMPLE

	Percent	Count
Gasoline	83.9%	345
Diesel	1.7%	7
Propane	0.2%	1
Natural Gas	5.1%	21
Electric	1.0%	4
Gas/Electric Hybrid	7.5%	31
Other (specify)	0.2%	1
Unknown/Missing	0.2%	1
Total	**100.0%**	**411**

TABLE 73. ESTIMATED VEHICLE MPG, TNC SAMPLE

(Only if Vehicle fuel type = Gasoline, Diesel, Propane, Natural Gas)

	Percent	Count
1 - 25	2.1%	8
26 - 50	97.1%	364
More than 50	0.0%	0
Unknown/Missing	0.8%	3
Total	**100.0%**	**375**

TABLE 74. GROSS VEHICLE WEIGHT (INCLUDING TRAILER), IN POUNDS, TNC SAMPLE

	Percent	Count
0 - 2500	2.7%	11
2501 - 5000	81.0%	333
5001 - 10000	16.3%	67
More than 10000	0.0%	0
Total	**100.0%**	**411**

TABLE 75. DOES THE VEHICLE HAVE A TOLL TRANSPONDER, TNC SAMPLE

	Percent	Count
Yes	0	0
No	97.3%	400
Unknown/Missing	2.7%	11
Total	**100.0%**	**411**

TABLE 76. VEHICLE CLASSIFICATION, TNC SAMPLE

	Percent	Count
Passenger Car or Motorcycle	88.1%	362
Pick-up Truck (4 wheels)	3.9%	16
Van (Cargo/Minivan) (4 wheels)	4.6%	19
Buses	3.4%	14
Total	**100.0%**	**411**

2.5 TNC TRIP SURVEY

TABLE 77. ON WHICH DATE WAS TRAVEL COMPLETED? (TNC SAMPLE)

	Percent	Count
August 2022	0.5%	30
September 2022	5.7%	325
October 2022	13.5%	762
November 2022	34.1%	1931
December 2022	46.2%	2616
Total	**100.0%**	**5664**

TABLE 78. WHAT WAS THE DAY OF WEEK? (TNC SAMPLE)

	Percent	Count
Monday	16.8%	950
Tuesday	19.3%	1092
Wednesday	20.0%	1135
Thursday	19.5%	1105
Friday	23.4%	1328
Saturday	0.6%	32
Sunday	0.4%	22
Total	**100.0%**	**5664**

TABLE 79. HOW WOULD YOU DESCRIBE THE TYPE OF PLACE WHERE THIS VEHICLE'S TRAVEL BEGAN TODAY? (TNC SAMPLE)

	Percent	Count
Residential / Home	58.9%	242
Retail / Shopping	14.6%	60
Restaurant	9.2%	38
Warehouse	6.3%	26
Office Building (Non-Government)	2.9%	12
Other (specify)	1.9%	8
Grocery Store	1.2%	5
Government Office Building	1.0%	4
Gas station	1.0%	4
Education (K-12, Daycare, Pre-K)	0.7%	3
Military Base/Building	0.5%	2
Intermodal Facility-Railroad	0.5%	2
Medical / Hospital / Dental	0.2%	1
Airport	0.2%	1
Truck Distribution Center	0.2%	1
Agriculture	0.2%	1
Don't Know	0.2%	1
Industrial / Manufacturing	0.0%	0
College/University	0.0%	0
Truck stop	0.0%	0
Construction Site	0.0%	0
Total	**100.0%**	**411**

TABLE 80. WHEN DID THIS VEHICLE INITIALLY DEPART ON ITS TRAVEL DAY? (TNC SAMPLE)

	Percent	Count
Early AM: 3:00am-5:59am	1.5%	6
AM Peak: 6:00am-8:59am	12.9%	53
Midday: 9:00am-3:29pm	60.1%	247
PM Peak: 3:30pm-6:59pm	19.0%	78
Evening: 7:00pm-2:59am	6.6%	27
Total	**100.0%**	**411**

TABLE 81. WHAT IS THE TYPE OF PLACE/INDUSTRY AT THIS LOCATION? (TNC SAMPLE)

	Percent	Count
Office Building (Non-Government)	5.2%	296
Government Office Building	0.5%	26
Military Base/Building	0.4%	22
Grocery Store	3.6%	205
Restaurant	13.0%	737
Retail / Shopping	12.8%	726
Industrial / Manufacturing	2.5%	142
Medical / Hospital / Dental	1.2%	70
College/University	0.3%	16
Education (K-12, Daycare, Pre-K)	0.4%	23
Residential / Home	50.4%	2852
Airport	0.3%	18
Intermodal Facility-Railroad	0.1%	5
Warehouse	3.7%	207
Truck Distribution Center	0.3%	15
Gas station	3.2%	181
Vehicle Charging Term	0.0%	2
Truck stop	0.1%	5
Construction Site	0.0%	2
Agriculture	0.0%	2
Other (specify)	1.9%	107
Don’t Know	0.1%	5
Total	**100.0%**	**5664**

TABLE 82. WHAT TIME DID YOU ARRIVE THIS LOCATION? (TNC SAMPLE)

(411 origin locations have no arrival time)

	Percent	Count
Early AM: 3:00am-5:59am	0.3%	15
AM Peak: 6:00am-8:59am	3.6%	191
Midday: 9:00am-3:29pm	41.2%	2164
PM Peak: 3:30pm-6:59pm	30.1%	1583
Evening: 7:00pm-2:59am	24.7%	1300
Total	**100.0%**	**5253**

TABLE 83. WHAT TIME DID YOU DEPART FROM THIS LOCATION? (TNC SAMPLE)

(411 the last locations have no departure time)

	Percent	Count
Early AM: 3:00am-5:59am	0.3%	16
AM Peak: 6:00am-8:59am	3.9%	203
Midday: 9:00am-3:29pm	42.5%	2232
PM Peak: 3:30pm-6:59pm	30.1%	1579
Evening: 7:00pm-2:59am	23.3%	1223
Total	**100.0%**	**5253**

TABLE 84. WHAT ACTIVITY ARE YOU DOING AT THIS LOCATION? (TNC SAMPLE)

	Percent	Count
Returning to Base Location	6.2%	353
Vehicle Maintenance (fuel/charging, etc.)	2.5%	143
Driver Needs (lunch, restroom, etc.)	14.0%	795
Delivering cargo - (including grocery and restaurant deliveries)	46.9%	2656
Picking up cargo- (including grocery and restaurant pickups)	18.6%	1053
Getting Government Related Services	0.1%	5
Providing Installation / Maintenance / Repair Services	0.2%	11
Making a sales call	0.2%	11
Providing professional services (legal, medical, financial)	3.1%	174
Shopping for Business (i.e., business/office supplies, etc.)	0.2%	10
Return to base location/Pick up Cargo	0.0%	1
Return to base location/Drop off Cargo	0.1%	7
Home	4.1%	235
Other Activity	3.7%	210
Total	**100.0%**	**5664**

TABLE 85. IF PICKING UP CARGO, WHAT IS THE CARGO? (TNC SAMPLE)

(Only if picking up cargo)

	Percent	Count
Restaurant prepared meals	50.5%	532
Assorted food products, etc.	26.7%	281
Misc. products, such as machinery, appliances, furniture, etc.	8.0%	84
U.S. mail, U.P.S., Federal Express, and other mixed cargo	5.0%	53
Medical supplies	3.1%	33
Clothing, linens, etc.	1.8%	19
Cargo not falling within one of the above categories-specify	1.7%	18
Soaps, paints, household or industrial chemicals, etc.	0.7%	7
Prefer not to answer	0.4%	4
Don't know	0.4%	4
Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.	0.3%	3
Fresh fish, seafood, etc.	0.3%	3
Lumber, paper, cardboard, wood pulp, etc.	0.3%	3
Newspapers, magazines, books, etc.	0.3%	3
Finished products of rubber, plastic or Styrofoam	0.3%	3
No cargo picked up or delivered	0.2%	2
Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.	0.1%	1
Automobiles and other transport vehicles	0.1%	1
Total	**100.0%**	**1054**

TABLE 86. WHAT IS THE WEIGHT OF PICKED UP CARGO (TNC SAMPLE)

(Only if picking up cargo)

	Percent	Count
0 - 25 pounds	83.2%	877
26 - 50 pounds	11.2%	118
More than 50 pounds	5.6%	59
Total	**100.0%**	**1054**

TABLE 87. IF DROPPING OFF CARGO, WHAT IS THE CARGO? (TNC SAMPLE)

(Only if dropping off cargo)

	Percent	Count
U.S. mail, U.P.S., Federal Express, and other mixed cargo	42.7%	1136
Restaurant prepared meals	25.6%	683
Assorted food products, etc.	13.8%	367
Misc. products, such as machinery, appliances, furniture, etc.	9.4%	251
Medical supplies	2.1%	55
Clothing, linens, etc.	1.7%	44
Cargo not falling within one of the above categories-specify	1.2%	32
Prefer not to answer	0.6%	17
Don’t know	0.5%	13
Soaps, paints, household or industrial chemicals, etc.	0.5%	12
Agriculture/Produce, Livestock, fertilizer, dirt, landscaping, etc.	0.3%	9
mail	0.3%	9
Fresh fish, seafood, etc.	0.2%	6
document pouches	0.2%	6
Newspapers, magazines, books, etc.	0.2%	5
Finished products of rubber, plastic or Styrofoam	0.2%	5
Lumber, paper, cardboard, wood pulp, etc.	0.2%	4
food	0.1%	3
boxes	0.1%	2
Trees, sod, etc	0.0%	1
Crude petroleum, natural gas, propane, metals, gypsum, ores, etc.	0.0%	1
Automobiles and other transport vehicles	0.0%	1
misc	0.0%	1
Total	**100.0%**	**2663**

TABLE 88. WHAT IS THE WEIGHT OF DROPPED OFF CARGO (TNC SAMPLE)

(Only if dropping off cargo)

	Percent	Count
0 - 25 pounds	93.3%	2485
26 - 50 pounds	4.0%	106
51 - 100 pounds	1.2%	31
More than 100 pounds	1.5%	41
Total	**100.0%**	**2663**

3.0 APPENDIX C: DATA WEIGHTING AND EXPANSION MEMO

Feb 22, 2023

Subject: Technical Memorandum Documenting the Data Expansion/Weighting Plan for the SANDAG 2022 Commercial Vehicle Travel Diary (Revision 4) February 22, 2023

This memorandum is being submitted to document the process the ETC Institute Team used to develop the weight factors that were used to expand the data from SANDAG's 2022 Commercial Vehicle Survey.

Step 1: Gathering Data About the Number of Establishments in the SANDAG Region

ETC Institute gathered establishment data from two sources to estimate the number of establishments in the SANDAG region. The **first data source**, which was considered the most reliable, was the San Diego County Business Pattern data from 20219. San Diego County estimated that there were a total of 92,564 establishments in the County. Table 1a below shows the estimated number of establishments by industry and size according to San Diego County's estimates.

Table 1a: Estimated Number of Commercial Establishments in the SANDAG Region Based on Data Provided By San Diego County

Totals Are from County Business Pattern survey data for San Diego County in 2019

		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	152	22	174
2. Manufacturing	31-33	3,243	2,036	5,279
3. Industrial/Utilities	22	80	37	117
4. Retail	44, 45	8,006	3,906	11,912
5. Wholesale	42	3,291	1,040	4,331
6. Construction	23	5,972	1,550	7,522
7. Transportation	48, 49	1,491	574	2,065
8. Info/FIRE/Professional services	51-55	24,119	4,476	28,595
9. Education/Public/Other services	Only 56, 61, 81	10,109	3,013	13,122
10. Medical/Health Services	62	7,561	2,501	10,062
11. Leisure/Accommodations and Food	71, 72	4,450	4,935	9,385
	Total	68,474	24,090	92,564

ETC Institute also acquired information from the California Economic Development Department (CA EDD). The estimates from the CA EDD are shown below. Excluding "non-classified" records, the CA EDD estimated that there were 115,679 establishments in the SANDAG planning area in 2020 as shown in Table 1b below.

Table 1b: Estimated Number of Commercial Establishments in the SANDAG Region Based on Data Provided By the California Economic Development Department

Totals are from data provided by CA EDD (California Economic Development Department) vintage 2020

		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	515	153	668
2. Manufacturing	31-33	2,203	1,291	3,494
3. Industrial/Utilities	22	149	116	265
4. Retail	44, 45	6,242	2,637	8,879
5. Wholesale	42	3,419	939	4,358
6. Construction	23	6,352	1,622	7,974
7. Transportation	48, 49	1,250	418	1,668
8. Info/FIRE/Professional services	51-55	24,958	4,144	29,102
9. Education/Public/Other services	56, 61, 81, 92	12,722	3,453	16,175
10. Medical/Health Services	62	31,706	2,307	34,013
11. Leisure/Accommodations and Food	71, 72	5,034	4,049	9,083
	Total	94,550	21,129	115,679

Since there were significant differences in the estimates between the two sources, ETC Institute created a "Most Likely" based on the average of the two estimates. For industries that were only included in the CA EDD database, ETC Institute used the CA EDD data. The "most likely" distribution of commercial establishments in the SANDAG Region is shown in the table 1c below.

Table 1c: Most Likely Estimate for the Number of Commercial Establishments in the SANDAG Region (average of data in Tables 1a and 1b)

		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	334	88	421
2. Manufacturing	31-33	2,723	1,664	4,387
3. Industrial/Utilities	22	115	77	191
4. Retail	44, 45	7,124	3,272	10,396
5. Wholesale	42	3,355	990	4,345
6. Construction	23	6,162	1,586	7,748
7. Transportation	48, 49	1,371	496	1,867
8. Info/FIRE/Professional services	51-55	24,539	4,310	28,849
9. Education/Public/Other services	56, 61, 81, 92	11,416	3,233	14,649
10. Medical/Health Services	62	19,634	2,404	22,038
11. Leisure/Accommodations and Food	71, 72	4,742	4,492	9,234
	Total	81,512	22,610	104,122

Step 2: Calculating the Mean Number of Vehicles Per Establishment by Industry, Size and Vehicle Type

The next step in the process involved calculating the mean number of vehicles per establishment based on the industry and size of the establishments for three vehicle types.

ETC Institute administered an establishment survey to 2,697 commercial establishments in the SANDAG region between June 2022 and October 2022. As part of the survey, a representative from each establishment was asked to provide information about all vehicles owned or leased by the establishment along with all vehicles that were not owned/leased that were used by the establishment, such as personally owned vehicles that may be used by employees in lieu of a company provided vehicle to do their job (e.g., a pizza delivery driver might use a personally owned car to deliver pizzas for a pizza restaurant). This establishment survey is the source that ETC Institute used to estimate the average number of vehicles per commercial establishment in the region.

The distribution of the completed establishment surveys by size and industry is provided in Table 2 below. ETC Institute's goal was to obtain a statistically representative sample from at least 30 establishments in each cell of the sampling plan. This was accomplished, with the exception of Group 3 (Industrial/Utilities, NAICS 22). Although ETC Institute did not complete 30 surveys with Group 3, ETC Institute completed surveys with 42 of the 191 Industrial/Utility companies in Group 3 or 22% of the establishments from this industry in the region. For this reason, ETC did not aggregate data in any of the cells shown below for the purposes of assessing the number of vehicles per establishment.

Table 2: Number of Completed Establishment Surveys By Industry and Type

		NUMBER OF EMPLOYEES			
GROUP	NAICS	0-9 Employees	10+ Employees	Total	% of industry Group Surveyed
1. Agriculture/Mining	11, 21	61	35	96	22.8%
2. Manufacturing	31-33	122	126	248	7.7%
3. Industrial/Utilities	22	16	26	42	22.0%
4. Retail	44, 45	147	128	275	3.0%
5. Wholesale	42	138	91	229	5.3%
6. Construction	23	146	108	254	3.3%
7. Transportation	48, 49	81	51	132	7.6%
8. Info/FIRE/Professional services	51-55	302	125	427	1.5%
9. Education/Public/Other services	56, 61, 81, 92	224	120	344	2.1%
10. Medical/Health Services	62	223	165	388	1.8%
11. Leisure/Accommodations and Food	71, 72	134	128	262	2.8%
	Total	1,594	1,103	2,697	2.6%

The mean (or average) number of vehicles per establishment are provided for three types of vehicles on the following pages:

- Light Commercial Vehicles (LCV) – cars, pickups, vans
- Single Unit Trucks (SUT) – large trucks that are not towing other vehicles, including buses
- Muti Unit Trucks (MUT) – tractor-trailers and other large trucks that two other vehicles

Step 3a: Estimating the Mean Number of LCVs (Light Commercial Vehicles) Per Establishment in the SANDAG Region.

Initial Estimate for the Mean Number of LCVs Per Establishment. Based on the results of the 2,697 organizations that completed the establishment survey, ETC Institute was able to estimate the mean number of LCVs by industry type and size. The number of completed surveys for these estimates ranged from a low of 16 respondents from Group 3 as noted previously (Table 2) to a high of 302 respondents from Group 8 (Info/FIRE/Professional Services). The mean number of LCVs per establishment is shown in the table below. Industrial/utility companies (Group 3) with 10 or more employees had the most LCVs per establishment. Retail companies (Group 4) with less than 10 employees had the least LCVs per establishment.

Table 3a-1: Mean Number of LCVs by Size and Industry (N=2,697 establishment surveys)

		Mean # of LCVs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.80	2.14	1.29
2. Manufacturing	31-33	0.58	1.72	1.16
3. Industrial/Utilities	22	1.06	10.62	6.98
4. Retail	44, 45	0.45	0.88	0.65
5. Wholesale	42	0.88	3.26	1.83
6. Construction	23	1.46	4.90	2.92
7. Transportation	48, 49	1.22	9.02	4.23
8. Info/FIRE/Professional services	51-55	0.67	4.22	1.71
9. Education/Public/Other services	56, 61, 81, 92	0.73	10.18	4.03
10. Medical/Health Services	62	0.74	2.96	1.69
11. Leisure/Accommodations and Food	71, 72	0.69	1.23	0.95

Revised Estimate for Mean LCVs Per Establishment. In order to ensure that outliers did not cause ETC Institute to over- or under-estimate the number of vehicles in any given cell, ETC Institute recalculated the mean rating excluding the outliers in each cell. Outliers were excluded if the quantity of vehicles reported was more than two standard deviations from the mean, which ensures the Revised Mean shown in Table 3a-2 below is based on records that were all within 95% of the mean.

Table 3a-2: REVISED Mean Number of LCVs by Size and Industry (N=2,498 establishment surveys; a total of 199 outliers were excluded)

		Mean # of LCVs by Size (excluding outlies with 95% around mean)		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.60	2.14	1.00
2. Manufacturing	31-33	0.38	1.15	0.63
3. Industrial/Utilities	22	0.79	7.68	4.00
4. Retail	44, 45	0.38	0.46	0.40
5. Wholesale	42	0.55	1.65	0.93
6. Construction	23	1.16	3.67	2.07
7. Transportation	48, 49	0.79	5.36	2.47
8. Info/FIRE/Professional services	51-55	0.51	2.86	0.95
9. Education/Public/Other services	56, 61, 81, 92	0.51	5.25	1.91
10. Medical/Health Services	62	0.41	1.88	0.80
11. Leisure/Accommodations and Food	71, 72	0.55	0.49	0.58

The biggest change in the mean after the outliers were excluded involved the decrease in the mean number of LCV vehicles estimated for Group 9 (Education and Public Services). The mean number of LCVs dropped from 10.18 before the outliers were excluded (see Table 3a-1) to 5.25 after they were excluded (see Table 3a-2). The primary reason for the decrease was the exclusion of 3 establishments in this group that reported more than 100 LCVs.

Step 3b: Estimating the Mean Number of SUTs (Single Unit Trucks) Per Establishment in the SANDAG Region.

Initial Estimate for the Mean Number of SUTs Per Establishment. Based on the results of the 2,697 organizations that completed the establishment survey, ETC Institute was able to estimate the mean number of SUTs by industry type and size. The mean number of SUT's per establishment is shown in the table below. Education/Public Service organizations (Group 9) with 10 or more employees had the most SUTs per establishment. Industrial/Utility companies (Group 3) with less than 10 employees had the least SUTs per establishment.

Table 3b-1: Mean Number of SUTs by Size and Industry (N=2,697 establishment surveys)

GROUP	NAICS	Mean # of SUTs by Size 0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.13	0.69	0.33
2. Manufacturing	31-33	0.35	0.72	0.54
3. Industrial/Utilities	22	0.06	2.69	1.69
4. Retail	44, 45	0.50	0.63	0.56
5. Wholesale	42	0.49	0.80	0.62
6. Construction	23	0.40	1.77	0.98
7. Transportation	48, 49	0.41	2.84	1.35
8. Info/FIRE/Professional services	51-55	0.47	2.17	0.96
9. Education/Public/Other services	56, 61, 81, 92	0.20	5.68	2.11
10. Medical/Health Services	62	0.22	0.39	0.29
11. Leisure/Accommodations and Food	71, 72	0.10	0.20	0.15

Revised Estimate for Mean SUTs Per Establishment. In order to ensure that outliers did not cause ETC Institute to over- or under-estimate the number of vehicles in any given cell, ETC Institute recalculated the mean rating excluding the outliers in each cell. Outliers were excluded if the quantity of vehicles reported was more than two standard deviations from the mean, which ensures the Revised Mean shown in Table 3b-2 on the following page is based on records that were all within 95% of the mean.

Table 3b-2: REVISED Mean Number of SUTs by Size and Industry (N=2,549 establishment surveys; a total of 148 outliers were excluded)

GROUP	Mean # of SUTs by Size (excluding outlies with 90% around mean) NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.13	0.53	0.23
2. Manufacturing	31-33	0.19	0.43	0.27
3. Industrial/Utilities	22	0.06	1.27	0.76
4. Retail	44, 45	0.31	0.23	0.30
5. Wholesale	42	0.31	0.42	0.42
6. Construction	23	0.19	1.06	0.56
7. Transportation	48, 49	0.22	1.24	0.50
8. Info/FIRE/Professional services	51-55	0.27	0.63	0.43
9. Education/Public/Other services	56, 61, 81, 92	0.05	1.56	0.66
10. Medical/Health Services	62	0.06	0.18	0.08
11. Leisure/Accommodations and Food	71, 72	0.07	0.05	0.08

The biggest change in the mean after the outliers were excluded involved the decrease in the mean number of SUTs estimated for Group 9 (Education and Public Services) with 10 or more employees. Two of the 120 organizations in this cell reported 400 and 100 SUTs, respectively. The next largest number of SUTs reported among the 120 respondents in this cell was 30, which is the reason the 100 and 400 counts were excluded as outliers.

Step 3c: Estimating the Mean Number of MUTs (Multi Unit Trucks) Per Establishment in the SANDAG Region.

Initial Estimate for the Mean Number of MUTs Per Establishment. Based on the results of the 2,697 organizations that completed the establishment survey, ETC Institute was able to estimate the mean number of MUTs by industry type and size. The mean number of SUTs per establishment is shown in the table at the top of the following page. Transportation organizations (Group 7) with 10 or more employees had the most MUTs per establishment. Medical/Health service organizations (Group 10) with less than 10 employees had the least MUTs per establishment.

Table 3c-1: Mean Number of MUTs by Size and Industry (N=2,697 establishment surveys)				
		Mean # of MUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.08	0.74	0.32
2. Manufacturing	31-33	0.21	0.37	0.29
3. Industrial/Utilities	22	0.44	1.92	1.36
4. Retail	44, 45	0.27	0.37	0.32
5. Wholesale	42	0.30	0.99	0.57
6. Construction	23	1.01	3.87	2.23
7. Transportation	48, 49	0.27	5.69	2.36
8. Info/FIRE/Professional services	51-55	0.08	0.71	0.26
9. Education/Public/Other services	56, 61, 81, 92	0.06	2.29	0.84
10. Medical/Health Services	62	0.00	0.02	0.01
11. Leisure/Accommodations and Food	71, 72	0.01	0.03	0.02

Revised Estimate for Mean MUTs Per Establishment. In order to ensure that outliers did not cause ETC Institute to over- or under-estimate the number of vehicles in any given cell, ETC Institute recalculated the mean rating excluding the outliers in each cell. Outliers were excluded if the quantity of vehicles reported was more than two standard deviations from the mean, which ensures the Revised Mean shown in Table 3c-2 below is based on records that were all within 95% of the mean.

Table 3c-2: REVISED Mean Number of MUTs by Size and Industry (N=2,572 establishment surveys; a total of 125 outliers were excluded)				
		Mean # of MUTs by Size (excluding outlies with 90% around mean)		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.08	0.52	0.18
2. Manufacturing	31-33	0.13	0.24	0.14
3. Industrial/Utilities	22	0.29	1.18	0.72
4. Retail	44, 45	0.14	0.12	0.13
5. Wholesale	42	0.08	0.53	0.24
6. Construction	23	0.72	3.00	1.64
7. Transportation	48, 49	0.08	3.84	0.84
8. Info/FIRE/Professional services	51-55	0.04	0.11	0.08
9. Education/Public/Other services	56, 61, 81, 92	0.02	0.36	0.12
10. Medical/Health Services	62	0.00	0.01	0.01
11. Leisure/Accommodations and Food	71, 72	0.01	0.02	0.01

The biggest change in the mean after the outliers were excluded involved the decrease in the mean number of MUTs estimated for Group 7 (Transportation) with 10 or more employees. Just one organization in this cell reported more than 100 MUTs. The next largest number of MUTs reported among the 132 respondents in this cell was 30, which is the reason the one record was excluded as an outlier.

Step 4: Estimating the Number of Commercial Vehicles in the Region

Since accurate data regarding the number of commercial establishments in the SANDAG region was difficult to acquire and the data from 2020 is likely to contain anomalies that were caused by the Pandemic, ETC Institute developed an Upper, Most Likely, and Lower estimate for each of the three types of vehicles (LCVs, SUTs, and MUTs) for which sampling goals were established for the survey. The methodology used to develop these estimates is described below.

Upper Estimate Methodology: The UPPER estimate for the number of commercial vehicles in the region used the largest of the two estimates that were obtained for the number of establishments in the region. In other words, if the estimate from San Diego County (Table 1a) for the number of establishments in one or more cells of the sampling plan was greater than the number estimated by the CA EDD (Table 1b), the San Diego County estimate was used. If the estimate from the CA EDD was larger, the estimate from the CA EDD was used. Table 4a-1 shows the number of establishments by industry and size that was used for the Upper estimate. This Upper estimate is 122,407 establishments in the region.

Table 4a-1: UPPER Estimate for the # of Commercial Establishments in the SANDAG Region

The counts in this worksheet use the estimate that was highest for each cell based the data from San Diego County (Table 1a) or the CA EDD (Table 1b)

Cells in Blue Use Data from CA EDD		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	515	153	668
2. Manufacturing	31-33	3,243	2,036	5,279
3. Industrial/Utilities	22	149	116	265
4. Retail	44, 45	8,006	3,906	11,912
5. Wholesale	42	3,419	1,040	4,459
6. Construction	23	6,352	1,622	7,974
7. Transportation	48, 49	1491	574	2,065
8. Info/FIRE/Professional services	51-55	24,958	4,476	29,434
9. Education/Public/Other services	56, 61, 81, 92	12,722	3,453	16,175
10. Medical/Health Services	62	31,706	2,501	34,207
11. Leisure/Accommodations and Food	71, 72	5,034	4,935	9,969
	Total	97,595	24,812	122,407

In addition to using the larger estimate for the number of establishments in the region, the Upper Estimate for the Number of Vehicles in the region did NOT exclude outliers. So, the UPPER estimates that are shown on the following pages for the number LCVs, SUTs, and MUTs include outliers in the calculation of the mean number of vehicles per establishment.

Most Likely Estimate Methodology. The MOST LIKELY estimate was previously described on page 2 and the distribution is shown in Table 1-c. The MOST LIKELY estimate is 104,122 establishments in the region. In the Most Likely Estimate for the Number of Vehicles in the region uses the mean number of vehicles per establishment as described in Step 3 of this memorandum (outliers were NOT excluded). To avoid confusion based on the sequential number of the tables, Table 4a-2 has also been provided. It contains the same information that is provided in Table 1-c, but it is being provided again so the numbering of tables stays in sequence with the data in Tables 4a-1 (Upper Estimate) and 4a-3 (Lower Estimate) on the following page.

Table 4a-2: MOST LIKELY Estimate for the # of Commercial Establishments in the SANDAG Region				
These counts are the same as the ones shown in Table 1c		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	334	88	421
2. Manufacturing	31-33	2,723	1,664	4,387
3. Industrial/Utilities	22	115	77	191
4. Retail	44, 45	7,124	3,272	10,396
5. Wholesale	42	3,355	990	4,345
6. Construction	23	6,162	1,586	7,748
7. Transportation	48, 49	1,371	496	1,867
8. Info/FIRE/Professional services	51-55	24,539	4,310	28,849
9. Education/Public/Other services	56, 61, 81, 92	11,416	3,233	14,649
10. Medical/Health Services	62	19,634	2,404	22,038
11. Leisure/Accommodations and Food	71, 72	4,742	4,492	9,234
	Total	81,512	22,610	104,122

Lower Estimate Methodology: The LOWER estimate for the number of commercial vehicles in the region used the smallest of the two estimates that were obtained for the number of establishments in the region. In other words, if the estimate from San Diego County (Table 1a) for the number of establishments in one or more cells of the sampling plan was less than the number estimated by the CA EDD (Table 1b), the San Diego County estimate was used. If the estimate from the CA EDD was smaller, the estimate from the CA EDD was used. Table 4a-3 shows the number of establishments by industry and size that was used for the Lower estimate. This Lower estimate is 85,836 establishments in the region.

Table 4a-3: LOWER Estimate for the # of Commercial Establishments in the SANDAG Region				
The counts in this worksheet use the estimate that was highest for each cell based the data from San Diego County (Table 1a) or				
Cells in Blue Use Data from CA EDD		NUMBER OF EMPLOYEES		
GROUP	NAICS	0-9 Employees	10+ Employees	Total
1. Agriculture/Mining	11, 21	152	22	174
2. Manufacturing	31-33	2203	1291	3,494
3. Industrial/Utilities	22	80	37	117
4. Retail	44, 45	6242	2637	8,879
5. Wholesale	42	3291	939	4,230
6. Construction	23	5972	1550	7,522
7. Transportation	48, 49	1250	418	1,668
8. Info/FIRE/Professional services	51-55	24119	4144	28,263
9. Education/Public/Other services	56, 61, 81, 92	10109	3013	13,122
10. Medical/Health Services	62	7561	2,307	9,868
11. Leisure/Accommodations and Food	71, 72	4450	4,049	8,499
	Total	65,429	20,407	85,836

In addition to using the smallest estimate for the number of establishments in the region, the Lower Estimate for the Number of Vehicles in the region used the REVISED mean number of vehicles per establishment as described in Step 3 of this memorandum. As described in Step 3, outliers were excluded in the calculation of the REVISED mean.

NOTE ABOUT TABLE NUMBERING:

A set of 4b, 5b, and 6b series tables are included in the Excel file that contains the commercial vehicle survey data. This is the reason the numbering of the Tables jumps from 4a-1 to 4c-1, 5a-1 to 5c-1, and 6a-1 to 6c-1. The 4b, 5b, and 6b series tables do not add to the analysis presented in this document, but the numbering on the tables was not change so that someone reading this document can easily find the tables in this report in the commercial vehicle database.]

This also applies to the "e" series tables provided later in the report, which is the reason the table numbers jumps from 4-d-1, 5-d-1, and 6-d-1 to an "f" series of tables. The "e" series of table do not add to the analysis in this document, but they provide placeholders in the Excel file that will help someone reviewing the expansion better understand the steps that were completed to expand the data.

Step 4a: Estimating the Number of LCVs in the Region

The estimated number of Light Commercial Vehicles (LCVs) in the SANDAG Region is shown in the following tables. Table 4c-1 shows the UPPER estimate for LCVs. These estimates are based on the mean number of vehicles per establishment shown in Table 3a-1 for which outliers are not excluded, multiplied by the upper estimate for the number of establishments in the region shown in Table 4a-1. For example, the mean number of LCVs for establishments with fewer than 10 employees in Group 1 (Agricultural/Mining) in Table 3a-1 was 0.80328 (rounded to 0.80 in the table). When this value is multiplied by the upper estimate of 515 establishments shown in Table 4a-1) the result was 413.6892 (rounded to 414 in the Table 4c-1 on the following page).

The Most Likely estimate in the following table uses the number of establishments in Table 1-c multiplied by the mean estimate for LCVs shown in Table 3a-1 (for which outliers were NOT excluded). The Lower Estimate uses the number of establishments in Table 4a-3 multiplied by the REVISED mean estimate for LCVs (for which outliers were excluded) shown in Table 3a-2.

Table 4c-1: UPPER Estimate of the Number of LCVs in the SANDAG REGION

		Mean # of LCVs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	414	328	742
2. Manufacturing	31-33	1,887	3,506	5,394
3. Industrial/Utilities	22	158	1,231	1,390
4. Retail	44, 45	3,595	3,418	7,012
5. Wholesale	42	2,998	3,394	6,392
6. Construction	23	9,267	7,945	17,212
7. Transportation	48, 49	1,822	5,177	7,000
8. Info/FIRE/Professional services	51-55	16,694	18,871	35,565
9. Education/Public/Other services	56, 61, 81, 92	9,314	35,134	44,449
10. Medical/Health Services	62	23,460	7,412	30,872
11. Leisure/Accommodations and Food	71, 72	3,494	6,053	9,547
	Total	73,102	92,470	165,572

Table 4c-2: MOST LIKELY Estimate of the Number of LCVs in the SANDAG REGION

		Mean # of LCVs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	268	188	455
2. Manufacturing	31-33	1,585	2,865	4,450
3. Industrial/Utilities	22	122	812	934
4. Retail	44, 45	3,199	2,863	6,061
5. Wholesale	42	2,942	3,229	6,171
6. Construction	23	8,990	7,768	16,758
7. Transportation	48, 49	1,675	4,474	6,149
8. Info/FIRE/Professional services	51-55	16,413	18,171	34,584
9. Education/Public/Other services	56, 61, 81, 92	8,358	32,896	41,254
10. Medical/Health Services	62	14,527	7,125	21,652
11. Leisure/Accommodations and Food	71, 72	3,291	5,510	8,801
	Total	61,368	85,900	147,268

Table 4c-3: LOWER Estimate of the Number of LCVs in the SANDAG REGION

		Mean # of LCVs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	91	47	138
2. Manufacturing	31-33	846	1,487	2,333
3. Industrial/Utilities	22	63	284	347
4. Retail	44, 45	2,380	1,205	3,585
5. Wholesale	42	1,795	1,550	3,345
6. Construction	23	6,922	5,689	12,611
7. Transportation	48, 49	986	2,239	3,225
8. Info/FIRE/Professional services	51-55	12,404	11,855	24,260
9. Education/Public/Other services	56, 61, 81, 92	5,156	15,832	20,988
10. Medical/Health Services	62	3,130	4,335	7,465
11. Leisure/Accommodations and Food	71, 72	2,448	1,988	4,436
	Total	36,220	46,511	82,731

Step 4b: Estimating the Number of SUTs in the Region

The estimated number of Single Unit Trucks (SUTs) in the SANDAG Region is shown in the following tables. Table 5c-1 shows the UPPER estimate for SUTs. These estimates are based on the mean number of vehicles per establishment shown in Table 3b-1 (for which outliers are not excluded) multiplied by the upper estimate for the number of establishments in the region shown in Table 4a-1. For example, the mean number of SUTs for establishments with fewer than 10 employees in Group 1 (Agricultural/Mining) in Table 3b-1 was 0.13115 (rounded to 0.13 in the table). When this value is applied to the upper estimate of 515 establishments in this same cell shown in Table 4a-1, the result was 67.54225 (rounded to 68 in Table 5c-1 below)

The Most Likely estimate in the following table uses the number of establishments in Table 1-c multiplied by the mean estimate for SUTs shown in Table 3b-1 (for which outliers are NOT excluded). The Lower Estimate uses the number of establishments in Table 4a-3 multiplied by the REVISED mean estimate for SUTs shown in Table 3b-2 (for which outliers were excluded).

Table 5b-1: Mean Number of SUTs by Size and Industry (N=2,697 establishment surveys)

These counts are the same as the ones shown in Table 3b-1		Mean # of SUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.13	0.69	0.33
2. Manufacturing	31-33	0.35	0.72	0.54
3. Industrial/Utilities	22	0.06	2.69	1.69
4. Retail	44, 45	0.50	0.63	0.56
5. Wholesale	42	0.49	0.80	0.62
6. Construction	23	0.40	1.77	0.98
7. Transportation	48, 49	0.41	2.84	1.35
8. Info/FIRE/Professional services	51-55	0.47	2.17	0.96
9. Education/Public/Other services	56, 61, 81, 92	0.20	5.68	2.11
10. Medical/Health Services	62	0.22	0.39	0.29
11. Leisure/Accommodations and Food	71, 72	0.10	0.20	0.15

Table 5b-2: REVISED Mean Number of SUTs by Size and Industry (N=2,498 establishment surveys; a

These counts are the same as the ones shown in Table 3b-1		Mean # of SUTs by Size (excluding outlies with 95% around mean)		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.13	0.69	0.33
2. Manufacturing	31-33	0.35	0.72	0.54
3. Industrial/Utilities	22	0.06	2.69	1.69
4. Retail	44, 45	0.50	0.63	0.56
5. Wholesale	42	0.49	0.80	0.62
6. Construction	23	0.40	1.77	0.98
7. Transportation	48, 49	0.41	2.84	1.35
8. Info/FIRE/Professional services	51-55	0.47	2.17	0.96
9. Education/Public/Other services	56, 61, 81, 92	0.20	5.68	2.11
10. Medical/Health Services	62	0.22	0.39	0.29
11. Leisure/Accommodations and Food	71, 72	0.10	0.20	0.15

Table 5b-3: REVISED Mean Number of SUTs by Size and Industry (N=2,498 establishment surveys; a				
These counts are the same as the ones shown in Table 3b-2				
		Mean # of SUTs by Size (excluding outlies with 95% around mean)		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0.13	0.53	0.23
2. Manufacturing	31-33	0.19	0.43	0.27
3. Industrial/Utilities	22	0.06	1.27	0.76
4. Retail	44, 45	0.31	0.23	0.30
5. Wholesale	42	0.31	0.42	0.42
6. Construction	23	0.19	1.06	0.56
7. Transportation	48, 49	0.22	1.24	0.50
8. Info/FIRE/Professional services	51-55	0.27	0.63	0.43
9. Education/Public/Other services	56, 61, 81, 92	0.05	1.56	0.66
10. Medical/Health Services	62	0.06	0.18	0.08
11. Leisure/Accommodations and Food	71, 72	0.07	0.05	0.08

Step 4c: Estimating the Number of MUTs in the Region

The estimated number of Multi Unit Trucks (MUTs) in the SANDAG Region is shown in the following tables. Table 6c-1 (on the following page) shows the UPPER estimate for SUTs. These estimates are based on the mean number of vehicles per establishment shown in Table 3c-1 (for which outliers are not excluded) multiplied by the upper estimate for the number of establishments in the region shown in Table 4a-1. For example, the mean number of MUTs for establishments with fewer than 10 employees in Group 1 (Agricultural/Mining) in Table 3c-1 was 0.08197 (rounded to 0.08 in the table). When this value is applied to the upper estimate of 515 establishments in this same cell shown in Table 6a-1, the result was 42.2145 (rounded to 42 in the table).

The Most Likely estimate in the following table uses the number of establishments in Table 1-c multiplied by the mean estimate for MUTs shown in Table 3c-1 (for which outliers are NOT excluded). The Lower Estimate uses the number of establishments in Table 4a-3 multiplied by the REVISED mean estimate for MUTs shown in Table 3c-2 (for which outliers were excluded).

Table 6c-1: UPPER Estimate of the Number of MUTs in the SANDAG REGION

		Mean # of MUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	42	114	156
2. Manufacturing	31-33	691	743	1,434
3. Industrial/Utilities	22	65	223	288
4. Retail	44, 45	2,179	1,434	3,613
5. Wholesale	42	1,016	1,029	2,044
6. Construction	23	6,439	6,278	12,717
7. Transportation	48, 49	405	3,264	3,669
8. Info/FIRE/Professional services	51-55	1,983	3,187	5,170
9. Education/Public/Other services	56, 61, 81, 92	795	7,913	8,708
10. Medical/Health Services	62	142	45	188
11. Leisure/Accommodations and Food	71, 72	38	154	192
	Total	13,795	24,384	38,179

Table 6c-2: MOST LIKELY Estimate of the Number of MUTs in the SANDAG REGION

		Mean # of MUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	27	65	92
2. Manufacturing	31-33	580	607	1,188
3. Industrial/Utilities	22	50	147	197
4. Retail	44, 45	1,939	1,201	3,140
5. Wholesale	42	997	979	1,975
6. Construction	23	6,246	6,138	12,385
7. Transportation	48, 49	372	2,820	3,193
8. Info/FIRE/Professional services	51-55	1,950	3,069	5,019
9. Education/Public/Other services	56, 61, 81, 92	713	7,409	8,122
10. Medical/Health Services	62	88	44	132
11. Leisure/Accommodations and Food	71, 72	35	140	176
	Total	12,999	22,620	35,619

Table 6c-3: LOWER Estimate of the Number of MUTs in the SANDAG REGION

		Mean # of MUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	12	11	24
2. Manufacturing	31-33	290	312	602
3. Industrial/Utilities	22	23	44	67
4. Retail	44, 45	885	318	1,204
5. Wholesale	42	255	498	754
6. Construction	23	4,292	4,650	8,942
7. Transportation	48, 49	106	1,604	1,709
8. Info/FIRE/Professional services	51-55	915	460	1,375
9. Education/Public/Other services	56, 61, 81, 92	185	1,084	1,269
10. Medical/Health Services	62	34	14	48
11. Leisure/Accommodations and Food	71, 72	33	64	97
	Total	7,031	9,060	16,091

Step 5: Determining the Expansion Factors

The last step in the process was to develop the weighting factors for the commercial vehicles that participated in the survey. A weighting factor indicates how many vehicles each vehicle in the survey database represents among all commercial vehicles in the SANDAG Region. For example, a weighting factor of 70 would indicate that the vehicle that was surveyed represents 70 vehicles in the region.

Given the uncertainty about the number of commercial establishments in the SANDAG region, ETC Institute developed three weighting factors that have been applied to the vehicle and trip records in the commercial vehicle survey database:

- An UPPER weighting factor
- A MOST LIKELY weighting factor
- A LOWER weighting factor

Although three estimates are provided, **ETC Institute strongly recommends using the MOST LIKELY ESTIMATE as the primary data expansion weight factor.** The only reason SANDAG should use weight factors from the LOWER or UPPER estimates would be if new information becomes available that suggests the actual number of vehicles in a particular industry is greater or less than the number estimated in the MOST LIKELY ESTIMATE.

Step 5a: Aggregating Cells for Data Expansion

A total of 1,751 vehicles participated in the commercial diary/travel app portion of the commercial vehicle survey, which involved having the vehicle's driver(s) track all the locations and activities for the vehicle for at least one 24-hour period. A total of 1,303 LCVs, 228 SUTs, and 220 MUTs participated in the commercial vehicle travel survey. The tables below show the number of vehicles that participated by type of vehicle, industry type, and industry size for each of the cells in the sampling plan. Values in highlighted cells were aggregated for the development of weight factors. For example, for LCVs, all cells shown in Table 4d-1 had at least 15 vehicles complete the commercial vehicle travel survey with the exception of establishments with less than 10 employees in Group 3. For this reason, the cells highlighted in Yellow were combined for the purpose of creating statistically significant weight factors.

Table 4d-1: Number of Completed Commerical Vehicle Survey With LCVs by Industry Type and Size				
		# of LCVs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	18	20	38
2. Manufacturing	31-33	34	49	83
3. Industrial/Utilities	22	5	59	64
4. Retail	44, 45	43	54	97
5. Wholesale	42	45	64	109
6. Construction	23	77	126	203
7. Transportation	48, 49	31	70	101
8. Info/FIRE/Professional services	51-55	112	108	220
9. Education/Public/Other services	56, 61, 81, 92	47	137	184
10. Medical/Health Services	62	51	71	122
11. Leisure/Accommodations and Food	71, 72	42	40	82
	Total	505	798	1,303

Table 5d-1 shows the distribution of completed SUT commercial vehicle travel surveys. The cells with the same color shading were combined for the purpose of creating weighting factors. Although ETC Institute had originally planned to collapse the cells more aggressively, this was not required. The robustness of the establishment survey (which generated very accurate estimates of the mean number of vehicles per establishment) along with distribution of the completed commercial vehicles surveys by industry limited the amount of collapsing that was required.

Table 5d-1: Number of Completed Commerical Vehicle Survey With SUTs by Industry Type and Size				
		# of SUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining	11, 21	0	8	8
2. Manufacturing	31-33	5	10	15
3. Industrial/Utilities	22	0	15	15
4. Retail - merged with Group 11	44, 45	11	6	17
5. Wholesale	42	9	15	24
6. Construction	23	9	23	32
7. Transportation	48, 49	12	30	42
8. Info/FIRE/Professional services - merged with Group 10	51-55	4	17	21
9. Education/Public/Other services	56, 61, 81, 92	7	23	30
10. Medical/Health Services - Merged with Group 8	62	13	9	22
11. Leisure/Accommodations and Food - merged w. Group 4	71, 72	2	0	2
	Total	72	156	228

Table 6d-1 shows the distribution of completed MUT commercial vehicle travel surveys. The cells with the same color shading were combined for the purpose of creating weighting factors. Since MUTs are not widely used by all industries, more aggregation was need for the development of weighting factors for MUTs. The Construction (Group 6) and Transportation (Group 7) industries were not combined with other industries.

Table 6d-1: Number of Completed Commerical Vehicle Survey With MUTs by Industry Type and Size				
		# of MUTs by Size		
GROUP	NAICS	0-9 Employees	10+ Employees	All Sizes
1. Agriculture/Mining - combined with groups 2, 3, 8, 9	11, 21	2	3	5
2. Manufacturing - combined with groups 1, 3, 8, 9	31-33	0	22	22
3. Industrial/Utilities - combined with groups 1, 2, 8, 9	22	0	6	6
4. Retail - combined with groups 5, 10, 11	44, 45	5	26	31
5. Wholesale - combined with groups 4, 10, 11	42	12	12	24
6. Construction	23	30	20	50
7. Transportation	48, 49	3	71	74
8. Info/FIRE/Professional services comb w/groups 1, 2, 3, 9	51-55	3	0	3
9. Education/Public/Other serv comb w/groups 1, 2, 3, 8	56, 61, 81, 92	5	0	5
10. Medical/Health Services - combined with groups 4, 5, 11	62	0	0	0
11. Leisure/Accommodations & Food - w/groups 4, 5, 10	71, 72	0	0	0
	Total	60	160	220

Step 5b: Calculating LCV Expansion Factors

The expansion factors for LCVs were calculated by dividing the estimated number of LCVs from the UPPER, MOST LIKLEY, and LOWER estimates by the number of commercial vehicle travel surveys that were completed in each cell of the sampling plan after aggregating that was described in Step 5a. The weight factors for LCVs in the survey database are shown below.

Table 4f-1: UPPER Estimate for LCV Weight Factors by Industry Type and Size			
		# of LCVs by Size	
GROUP	NAICS	0-9 Employees	10+ Employees
1. Agriculture/Mining	11, 21	22.98	16.39
2. Manufacturing	31-33	55.51	71.56
3. Industrial/Utilities	22	21.71	
4. Retail	44, 45	83.59	63.29
5. Wholesale	42	66.62	53.04
6. Construction	23	120.35	63.05
7. Transportation	48, 49	58.78	73.96
8. Info/FIRE/Professional services	51-55	149.05	174.73
9. Education/Public/Other services	56, 61, 81, 92	198.18	256.45
10. Medical/Health Services	62	459.99	104.40
11. Leisure/Accommodations and Food	71, 72	83.18	151.33

Table 4f-2: MOST LIKELY Value for LCV Weight Factors by Industry Type and Size

GROUP	NAICS	# of LCVs by Size 0-9 Employees	10+ Employees
1. Agriculture/Mining	11, 21	14.88	9.38
2. Manufacturing	31-33	46.61	58.47
3. Industrial/Utilities	22	14.59	
4. Retail	44, 45	74.38	53.01
5. Wholesale	42	65.37	50.46
6. Construction	23	116.75	61.65
7. Transportation	48, 49	54.03	63.91
8. Info/FIRE/Professional services	51-55	146.55	168.25
9. Education/Public/Other services	56, 61, 81, 92	177.83	240.12
10. Medical/Health Services	62	284.84	100.35
11. Leisure/Accommodations and Food	71, 72	78.36	137.74

Table 4f-3: LOWER Estimate for LCV Weight Factors by Industry Type and Size

GROUP	NAICS	Mean # of LCVs by Size 0-9 Employees	10+ Employees
1. Agriculture/Mining	11, 21	5.07	2.36
2. Manufacturing	31-33	24.88	30.35
3. Industrial/Utilities	22	5.42	
4. Retail	44, 45	55.35	22.31
5. Wholesale	42	39.89	24.22
6. Construction	23	89.90	45.15
7. Transportation	48, 49	31.80	31.98
8. Info/FIRE/Professional services	51-55	110.75	109.77
9. Education/Public/Other services	56, 61, 81, 92	109.69	115.56
10. Medical/Health Services	62	61.37	61.06
11. Leisure/Accommodations and Food	71, 72	58.27	49.71

Step 5c: Calculating SUT Expansion Factors

The expansion factors for SUTs were calculated by dividing the estimated number of SUTs from the UPPER, MOST LIKLEY, and LOWER estimates by the number of commercial vehicle travel surveys that were completed in each cell of the sampling plan after aggregating that was described in Step 5a. The weight factors for SUTs in the survey database are shown below.

Table 5f-1: UPPER Estimate for SUT Weight Factors by Industry Type and Size

GROUP	NAICS	# of SUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining	11, 21	21.56
2. Manufacturing	31-33	174.23
3. Industrial/Utilities	22	21.44
4. Retail - merged with Group 11	44, 45	414.17
5. Wholesale	42	104.96
6. Construction	23	169.86
7. Transportation	48, 49	53.32
8. Info/FIRE/Professional services - merged with Group 10	51-55	677.94
9. Education/Public/Other services	56, 61, 81, 92	738.38
10. Medical/Health Services - Merged with Group 8	62	677.94
11. Leisure/Accommodations and Food - merged w. Group 4	71, 72	414.17

Table 5f-2: MOST LIKELY Value for SUT Weight Factors by Industry Type and Size

GROUP	NAICS	# of SUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining	11, 21	12.97
2. Manufacturing	31-33	144.08
3. Industrial/Utilities	22	14.21
4. Retail - merged with Group 11	44, 45	364.20
5. Wholesale	42	101.96
6. Construction	23	165.47
7. Transportation	48, 49	46.87
8. Info/FIRE/Professional services - merged with Group 10	51-55	603.70
9. Education/Public/Other services	56, 61, 81, 92	688.02
10. Medical/Health Services - Merged with Group 8	62	603.70
11. Leisure/Accommodations and Food - merged w. Group 4	71, 72	364.20

Table 5f-3: LOWER Estimate for SUT Weight Factors by Industry Type and Size

GROUP	NAICS	Mean # of SUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining	11, 21	3.95
2. Manufacturing	31-33	65.14
3. Industrial/Utilities	22	3.47
4. Retail - merged with Group 11	44, 45	159.67
5. Wholesale	42	59.05
6. Construction	23	87.68
7. Transportation	48, 49	18.91
8. Info/FIRE/Professional services - merged with Group 10	51-55	232.03
9. Education/Public/Other services	56, 61, 81, 92	174.53
10. Medical/Health Services - Merged with Group 8	62	232.03
11. Leisure/Accommodations and Food - merged w. Group 4	71, 72	159.67

Step 5d: Calculating MUT Expansion Factors

The expansion factors for MUTs were calculated by dividing the estimated number of MUTs from the UPPER, MOST LIKLEY, and LOWER estimates by the number of commercial vehicle travel surveys that were completed in each cell of the sampling plan after aggregating that was described in Step 5a. The weight factors for MUTs in the survey database are shown on the following page.

Table 6f-1: UPPER Estimate for MUT Weight Factors by Industry Type and Size

GROUP	NAICS	# of MUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining - combined with groups 2, 3, 8, 9	11, 21	384.32
2. Manufacturing - combined with groups 1, 3, 8, 9	31-33	
3. Industrial/Utilities - combined with groups 1, 2, 8, 9	22	
4. Retail - combined with groups 5, 10, 11	44, 45	109.76
5. Wholesale - combined with groups 4, 10, 11	42	
6. Construction	23	254.34
7. Transportation	48, 49	49.58
8. Info/FIRE/Professional services comb w/groups 1, 2, 3, 9	51-55	384.32
9. Education/Public/Other serv comb w/groups 1, 2, 3, 8	56, 61, 81, 92	384.32
10. Medical/Health Services - combined with groups 4, 5, 11	62	109.76
11. Leisure/Accommodations & Food - w/groups 4, 5, 10	71, 72	109.76

Table 6f-2: MOST LIKELY Value for MUT Weight Factors by Industry Type and Size

GROUP	NAICS	# of MUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining - combined with groups 2, 3, 8, 9	11, 21	356.55
2. Manufacturing - combined with groups 1, 3, 8, 9	31-33	
3. Industrial/Utilities - combined with groups 1, 2, 8, 9	22	
4. Retail - combined with groups 5, 10, 11	44, 45	98.59
5. Wholesale - combined with groups 4, 10, 11	42	
6. Construction	23	247.70
7. Transportation	48, 49	43.14
8. Info/FIRE/Professional services comb w/groups 1, 2, 3, 9	51-55	356.55
9. Education/Public/Other serv comb w/groups 1, 2, 3, 8	56, 61, 81, 92	356.55
10. Medical/Health Services - combined with groups 4, 5, 11	62	98.59
11. Leisure/Accommodations & Food - w/groups 4, 5, 10	71, 72	98.59

Table 6f-3: LOWER Estimate for MUT Weight Factors by Industry Type and Size

GROUP	NAICS	Mean # of MUTs by Size ALL SIZES COMBINED
1. Agriculture/Mining - combined with groups 2, 3, 8, 9	11, 21	81.38
2. Manufacturing - combined with groups 1, 3, 8, 9	31-33	
3. Industrial/Utilities - combined with groups 1, 2, 8, 9	22	
4. Retail - combined with groups 5, 10, 11	44, 45	38.24
5. Wholesale - combined with groups 4, 10, 11	42	
6. Construction	23	178.85
7. Transportation	48, 49	23.10
8. Info/FIRE/Professional services comb w/groups 1, 2, 3, 9	51-55	81.38
9. Education/Public/Other serv comb w/groups 1, 2, 3, 8	56, 61, 81, 92	81.38
10. Medical/Health Services - combined with groups 4, 5, 11	62	38.24
11. Leisure/Accommodations & Food - w/groups 4, 5, 10	71, 72	38.24

Final Notes:

Use the Most Likely Weight Factor: Although ETC Institute developed three weight factors, SANDAG is encouraged to use the MOST LIKELY estimate for data analysis. The lower and upper estimates have been provided to give SANDAG a range in which to work that is reasonable given the current availability of data regarding the number of commercial vehicles in the region. If new (and perhaps more reliable) information becomes available, the weighting process can be redone in about two days using Tables 1-8 that ETC Institute has included as an addendum to the primary database.

Impact of Aggregating Cells for Weighting: The benefit of aggregating data for expansion is that is reduces the potential negative impact that unreasonably high expansion factors can have on the analysis of the data. The negative impact of aggregating cells is that it can cause shifts in the distribution of the sample toward industries that were over or under-represented. For example, industry Groups 4 (Retail) and 11 (Accommodations) were combined for the expansion of SUTs. This was done because only 2 SUTs were obtained from Industry Group 11. By combining Group 4 with Group 11 the number of SUTs represented in the survey database using the Most Likely Expansion Factor from Group 4 (retail establishments) increased by 230 and the number of vehicles represented in the database for Group 11 (Accommodations) decreased by the same amount.

Since industries with similar characteristics were combined, the overall impact of the aggregations should be limited, but the users of the data should be aware that the weighting could be responsible for unusual findings that could be industry specific.

If you have any questions, feel free to contact me any time.

Sincerely,

Christopher Tatham
CEO and Project Manager
913-669-6053
Chris.Tatham@etcinstitute.com

4.0 APPENDIX D: SURVEY COLLATERAL

The San Diego Association of Governments (SANDAG) has partnered with ETC Institute to conduct a travel survey of commercial vehicles in the region. SANDAG is a regional planning agency that evaluates the regional transportation system, assesses future transportation needs, and directs investment towards projects that help achieve regional goals. The purpose of the survey is to better understand how commercial vehicles of varying size and business type affect travel and traffic patterns in the San Diego region.

ETC Institute is a survey research firm that has been hired to administer the survey for SANDAG. ETC Institute specializes in conducting this type of research and will ensure that the data is kept confidential.

Although your participation is voluntary, we hope you will consider making it a priority to participate in this 5-minute survey ensuring that organizations like yours are properly represented. The results collected during this very important survey will be used by all of our partners to help plan future transportation improvements in the region and to prioritize funding.

You may complete the survey by returning it in the postage-paid envelope that was provided, or you can complete it on-line by going to https://SurveyURLhere.org or by scanning the QR Code on the next page. **Thank you in advance for your support of this important effort!**

You can get more information about our study by going to SANDAG.org/Plans-for-the-Region/Transportation/Freight. Thank you in advance for your participation.

Sincerely,

Dr. Cynthia Burke
Senior Director, Data Science