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Report No. SR89-06-01

Analysis of the 1982 Truck Inventory and Use Survey Data for California

prepared for:

State of California
Air Resources Board

June 1, 1989

prepared by:

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ANALYSIS OF THE 1982 TRUCK INVENTORY AND USE SURVEY DATA FOR CALIFORNIA

ARB Contract No. A6-065-32

prepared for:

California Air Resources Board

June 1, 1989

prepared by:

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ANALYSIS OF THE 1982 TRUCK INVENTORY AND USE SURVEY DATA FOR CALIFORNIA

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1. SUMMARY

Recent efforts to improve the California Air Resources Board's understanding of the emissions contributions of heavy-duty vehicles have relied on available surveys of the travel patterns of these vehicles in California. CALTRANS is the principal source of data for truck travel in California. Unfortunately, CALTRANS is primarily interested in the activity of trucks on the state highway system. The lack of detailed truck travel data for the remainder of the state road system has been further compounded by differences between the truck classification systems employed by ARB and CALTRANS. Recognizing these problems, the ARB issued a procurement to use the 1982 Truck Inventory and Use Survey (TIUS) to improve the accuracy of the relations used to translate the weight data available in CALTRANS surveys into ARB's heavy-duty vehicle classifications; and to develop independent estimates of travel for these vehicle categories by county, motive power and use category.

The 1982 TIUS collected data on the physical and operational characteristics of trucks from a statistically balanced sample of vehicle operators across the United States. This report summarizes the results of an effort to access the 1982 TIUS and related California data bases and integrate the information they contain to develop a better understanding of how heavy-duty trucks are operated on California's highways.

Three primary data files were used in this effort: the 1982 TIUS; a 1985 CALTRANS Weigh Station Survey; and a CALTRANS estimate of heavy-duty VMT for the state in 1982. To support the translation of CALTRANS to ARB heavy-duty vehicle classifications a method was developed to relate gross vehicle weight (GVW) classes to the laden and unladen weight of vehicles observed in the CALTRANS survey. The GVW classes were then translated into ARB's heavy-duty weight classes. Figures 1-1 and 1-2 provide a summary of the Weigh Station Survey results for California and non-California vehicles, using ARB's heavy-duty vehicle classification system.

Figure 1-1 shows that almost 90 percent of the California-based vehicles were Diesel-powered and that heavy heavy-duty Diesels were the dominant vehicle observed in the survey. The distribution of non-California vehicles was even more biased towards Diesels, with the heavy category representing virtually all of the vehicles observed. Out-of-state Diesels constitute a significant fraction, over 25 percent just for the heavy category, of the vehicles operating on California's highways.

Figure 1-1

Gasoline and Diesel Counts
From Caltrans' 1985 Weigh Station Survey
(California-Based Vehicles)

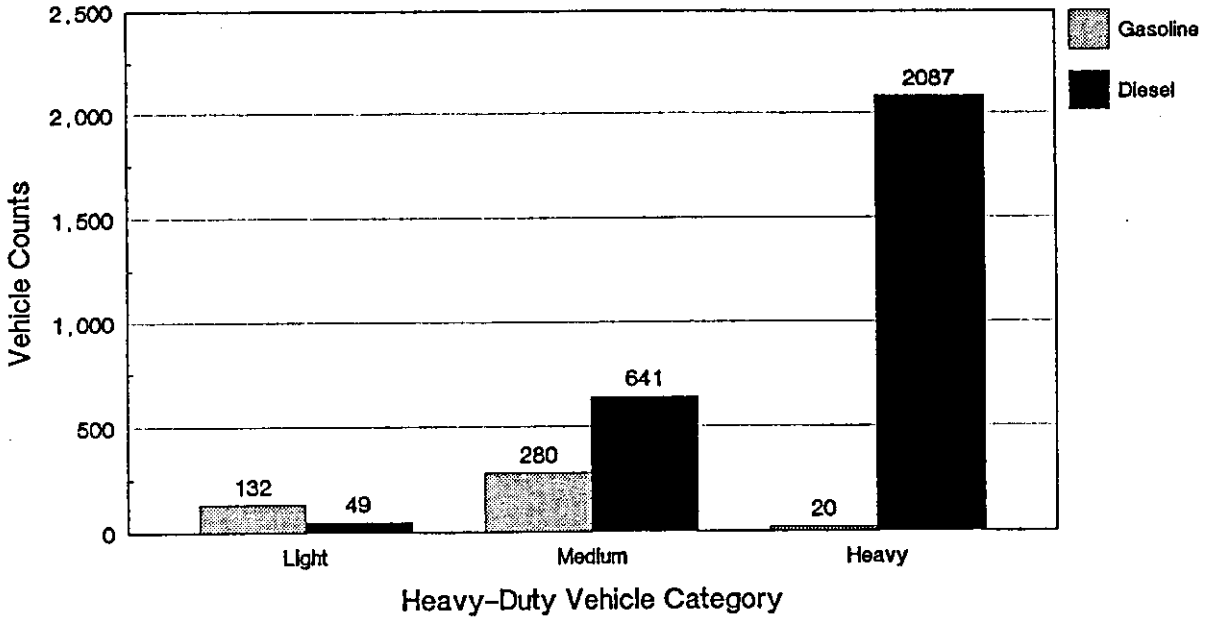
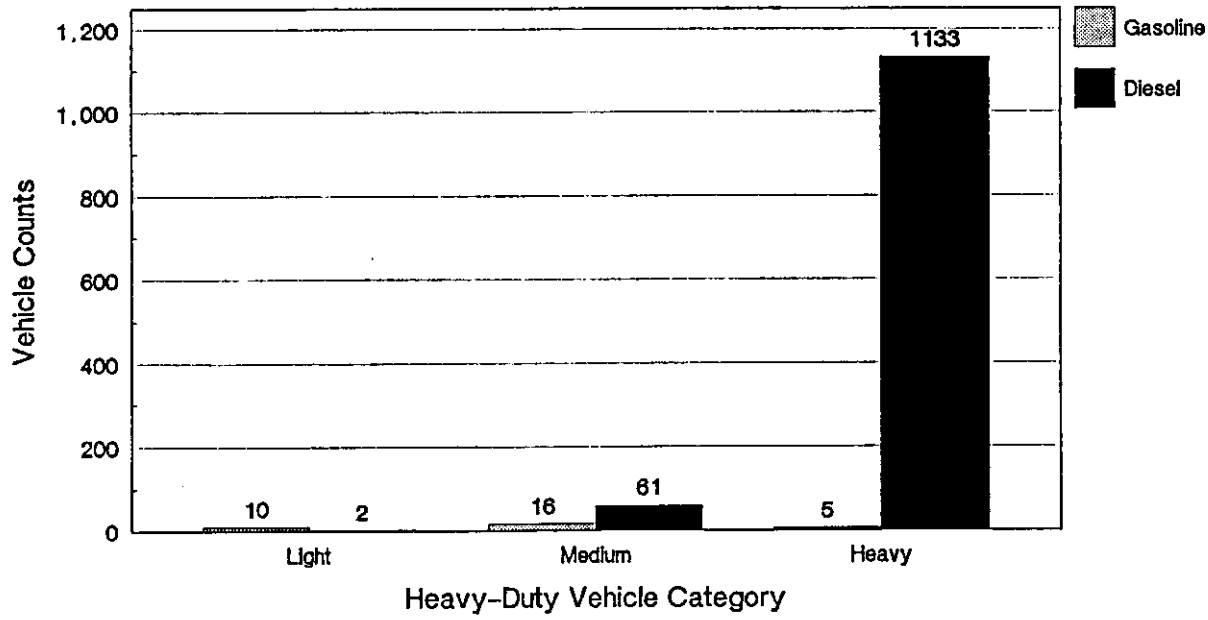


Figure 1-2

Gasoline and Diesel Counts
From Caltrans' 1985 Weigh Station Survey
(Non California-Based Vehicles)



The survey results, however, should be considered as the upper bound of Diesel activity because the survey tracks vehicles operating on the major roadways of the state. It is expected that the fraction of gasoline-powered vehicles would increase as lower capacity roads were incorporated into the survey.

Figures 1-3 and 1-4 provide an overview of the distribution of activity reported by TIUS respondents for separate areas of operation: off-road; local (usually within a 50 mile radius of the base); short range (usually within a 50 to 200 mile radius of the base); and long range (beyond a 200 mile radius). The data show a consistent pattern of activity for both California and non-California vehicles: a high fraction of gasoline travel within the local area; a uniform distribution of travel among local, short- and long-range areas for Diesel vehicles; and declining gasoline activity as the trip length increases. The most significant feature of the charts is that, on average, California and non-California vehicles appear to have very similar patterns of travel.

Estimates of travel were developed for the following categories of heavy-duty vehicles operating on California roads:

1 - California-registered and -based vehicles (vehicles registered in California but based outside of the state were excluded from the estimate);

2 - Non-California-registered vehicles based in California; and

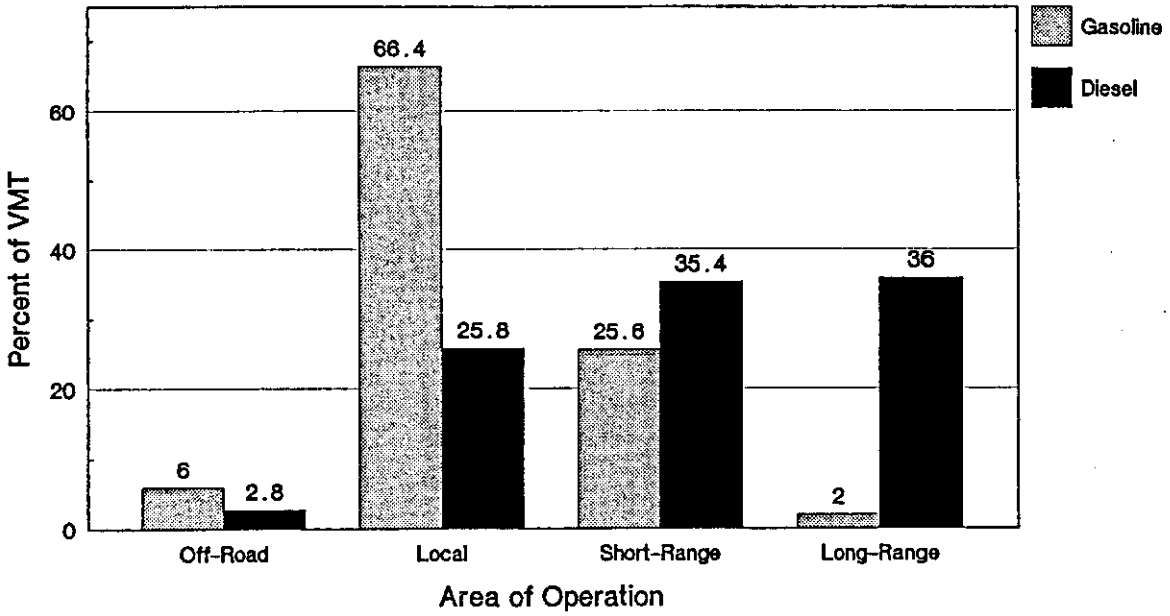
3 - Non-California-registered vehicles based out of California.

The TIUS data were used to directly estimate travel for the first two categories. Both were adjusted to account for the travel that occurred within California's boundaries. The CALTRANS survey data were used to determine the proportion of non-California-registered vehicles operating in California. The TIUS data were used to determine the proportions of these vehicles that were based in and out of California. Bounds on the range of travel that could be expected for these vehicles were developed from a analysis of the non-California-registered vehicles. This information was used to estimate the travel for the third vehicle category. The distribution of travel that results for the three vehicle categories is displayed in Figure 1-5. It shows that 22 percent of the heavy-duty vehicle travel in California is estimated to come from non-California-registered vehicles.

Using the TIUS and CALTRANS data Sierra estimated total daily heavy-duty truck travel on California roads to be approximately 21 million miles per day. In contrast ARB, through EMFAC/BURDEN, and a recent

Figure 1-3

Distribution of Travel By Area of Operation For Heavy-Duty Gasoline and Diesel Vehicles (California-Based Vehicles)



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey

Each fuel sums to 100 percent.

Figure 1-4

Distribution of Travel By Area of Operation For Heavy-Duty Gasoline and Diesel Vehicles (Non California-Based Vehicles)

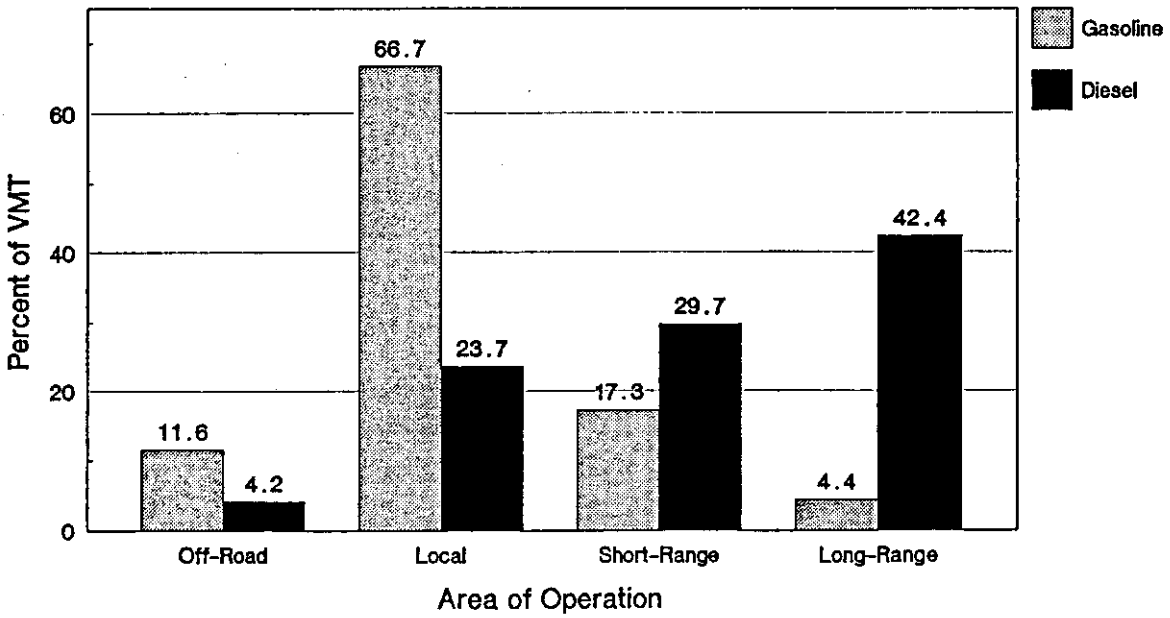
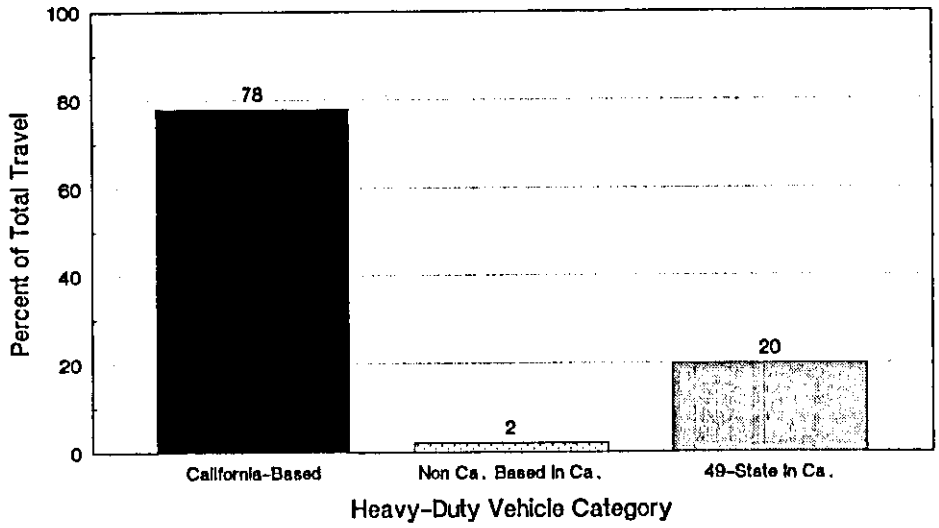


Figure 1-5

Distribution of Travel Estimated For Categories of Heavy-Duty Vehicles Operating On California Highways



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey.

contractor study for ARB*, estimated HDV travel to be approximately 34-36 million miles per day.

The TIUS-based estimate of total HDV travel is roughly 60 percent of the state HDV estimate produced in the PES study and a similar estimate produced by EMFAC/BURDEN. An analysis of the possible causes of this difference indicates that a substantial amount of travel data were lost in the process of cleaning the TIUS data and in developing the translation between the weight classification systems. It should be noted that the TIUS data are largely composed of owner responses to a questionnaire. While the Bureau of Census performed screening checks on that data, a more detailed analysis of the data found considerable inaccuracies in the information reported, particularly in the reported weights. To ensure that accurate translations between weight categories were developed and that the characteristics of individual vehicle classifications could be correctly reported, records with erroneous data were eliminated from the database.

The TIUS employs a system to extrapolate the representativeness of individual vehicles to their share of the total vehicle fleet through individual "expansion factors". It was not possible to reallocate the

* "Assessment of Heavy-Duty Gasoline and Diesel Vehicles In California: Population and Use Patterns", Pacific Environmental Services, July 1985.

travel of the discarded vehicles to the vehicles remaining in the cleaned data set. Thus, even when the expansion factors of the cleaned data set were renormalized, to account for the loss of erroneous records, the projected VMT of the vehicle fleet was significantly lower than found with the original dataset.

An analysis of differences in the projected travel levels (before and after the cleaning) showed that the largest loss occurred in the lower weight categories; however, significant differences were noted for several other weight categories. A large loss of travel should occur in the lowest weight class (Class II GVW, 6,001 - 10,000 pounds), because ARB considers only Class IIb (8,501 - 10,000) vehicles to be heavy-duty vehicles. TIUS, and all other surveys, do not distinguish between class IIa and IIb vehicles. Nevertheless, it is necessary to estimate the fraction of Class II vehicles that are IIb vehicles to estimate heavy-duty truck travel in California. The weights reported for the Class II and Class III vehicles in the TIUS survey were found to have a high incidence of erroneous data (outside the bounds of weights contained in manufacturer specifications for these vehicles). The effect of screening out the erroneous data was to increase the accuracy of the estimate of the proportion of Class II vehicles that weighed between 8,501 - 10,000 pounds, and the accuracy of the estimate of Class III vehicles; unfortunately it also significantly reduced the projected travel levels for the light and medium heavy-duty vehicle categories.

Given this background, the following conclusions can be drawn about the accuracy and the usefulness of the TIUS data to ARB.

- The large number of observations (over 3,500) for California registered vehicles and the broad distribution of vehicles participating in TIUS ensures that it provides an excellent independent estimate of overall truck travel and activity in California.

- However, because TIUS is based on owner responses to a questionnaire, it is necessary that special care be taken to check the data for errors and inaccuracies.

- Two methods are available to clean the erroneous data: eliminate it from the data base; and substitute reasonable estimates of expected values based on averages computed for like vehicles in the data base. If the first method is chosen to clean the data, it is not possible to produce accurate estimates of travel activity for all of the heavy-duty vehicle classifications. This is because too much explanatory power is lost from the vehicles eliminated from the data base. If the second method is chosen, a more reasonable estimate of travel activity can be estimated; however, the accuracy of the estimate will be unknown.

- An evaluation of the loss in projected travel levels due to the data cleaning procedures employed in the analysis indicates that TIUS provides poor estimates of truck travel for ARB's light- and medium-heavy duty vehicles, and that it provides a relatively accurate estimate of heavy-heavy duty truck travel.

- The CALTRANS truck count survey was not hampered by problems with owner responses; however, the range of data recorded in that survey was substantially more limited. Because that data was recorded at 16 locations focused on highway travel activity, it is likely that the results overrepresent the activity of the larger, heavier over-the-road trucks and underrepresent the activity of smaller, lighter Class IIb and III vehicles.

- For different reasons, both TIUS and the CALTRANS survey are weak in accurately characterizing the travel levels of light- and medium-heavy duty vehicles.

To better understand the travel patterns of light- and medium-heavy duty vehicles it is recommended that ARB consider the following efforts:

- Work with CALTRANS to collect additional information (e.g., vehicle identification numbers, etc.) in truck count surveys that would allow a more accurate determination of the observed vehicle, and increase the representativeness (from the perspective of the entire California road system) of the survey locations.

- Work with EPA to develop a data base that will allow an accurate distinction between Class IIa and Class IIb vehicles.

- Conduct a balanced survey of all truck travel and related activity levels in urban and rural areas across the state.

2. INTRODUCTION

Overview

Due to their great numbers, automobiles and light-duty trucks have been responsible for the bulk of motor vehicle emissions produced in California. For this reason, they have received the most attention from the state's motor vehicle emission control program. In recent years, however, as controls on these vehicles have become more effective, heavy-duty vehicles (HDV's) have become responsible for an increasing fraction of mobile source emissions. In contrast to light-duty vehicles (LDV's), HDV's encompass a broad range of weight categories and major use applications. This diversity complicates the task of determining where they operate and their contribution to the emissions inventory. As the Air Resources Board (ARB) has focused more attention on determining the travel patterns of HDV's, the following issues have been identified as limiting the accuracy of the emission estimates for these vehicles:

- The range of operation varies considerably and is not necessarily limited to either the county or the state in which the vehicle is registered.

- The actual weight of a vehicle depends on its business application and the cargo it is carrying. Thus, Department of Motor Vehicle (DMV) registration data which report "unladen weight" are not useful for determining the distribution of emission-sensitive weight classifications which the ARB uses to estimate HDV contributions to the emissions inventory.

- California is the terminus for numerous freight operations; therefore, out-of-state vehicles have disproportionately high levels of travel in-state. Because the out-of-state vehicles are certified to less stringent emission standards, their contribution to the emissions inventory is greater than their travel fraction. The vehicle miles traveled (VMT) by these vehicles, however, is thought to occur primarily on highways outside of urban areas; if true, this would mitigate their emissions impact. If, however, fleets base significant numbers of out-of-state vehicles at sites in California, a greater share of their VMT may be accumulated in urban areas; this would increase their impact on local emission inventories and the affected population.

The ARB is concerned about the combined effects of these issues on the accuracy of the HDV emission estimates that it produces for each of

the 58 counties and 14 air basins in the state. Therefore, it issued a procurement to analyze the 1982 Truck Inventory and Use Survey (TIUS) and related information sources. The purpose of that effort was to gain a better understanding of the travel behavior of all heavy-duty vehicles operating in California.

ARB divided the effort into three task areas and specified the following analyses:

Task 1 - Analyze the data base to provide information by HDV weight category for area of operation, annual miles traveled, fuel economy, type of fuel, and other vehicle characteristics. Screen all data to eliminate spurious information.

Task 2 - Disaggregate the 1982 TIUS data to provide urban/rural and county truck usage data by vehicle category and major business use. Compare this data with national data to note differences between the characteristics of urban-based trucks in California and in the rest of the country.

Task 3 - Using the TIUS and CALTRANS data, estimate HDV truck travel in California by truck weight category for vehicles registered outside of the state.

The information developed in these tasks will be used to confirm and update conversion factors and HDV travel estimates produced in an earlier report for the ARB by Pacific Environmental Services (PES)*.

Organization

Section 1 provides a summary of the major findings of the report. Section 2, this section, presents an overview of the work effort, a summary of the task assignments and the organization of the report.

The data bases selected for the analysis and the methodology used to clean and organize the information contained in each data base is presented in Section 3. Also in this section is a summary of the approach used to link the data in these files together.

Section 4 presents the results of the analysis. The presentation is divided into two categories: heavy-duty fleet characteristics; and county-level VMT estimates. The appendices contain detailed listings of the data generated in the analysis of the TIUS and CALTRANS data.

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* "Assessment of Heavy-Duty Gasoline and Diesel Vehicles in California: Population and Use Patterns", Pacific Environmental Services, July 1985

3. DATA SOURCES AND SCREENING TECHNIQUES

Information was selected from three primary data sources to support the analyses specified in the Scope of Work:

- 1982 TIUS;
- 1985 CALTRANS Truck Weight Study; and
- 1985 PES Report for ARB.

This section provides a brief review of the contents of those data files, and the criteria used to screen the data for errors and outliers.

TIUS

The Bureau of Census conducts a Census of Transportation once every five years. TIUS is one of the three surveys that form the Transportation Census. The most recently available data* from TIUS are based on a probability sample of private and commercial trucks registered or licensed by states to operate in 1982. Vehicles registered by government agencies (Federal, state and local), ambulances, buses, and motor homes were excluded from the survey.

The 1982 TIUS contains information from 84,334 respondents on a broad range of physical truck characteristics and operating behavior. No information is available on a possible nonresponse bias to the survey. However, the technical documentation for the survey notes that "ninety percent of the questionnaires were returned, with an item nonresponse rate of not more than one percent for most of the major questions. It also notes:

> "For some questions, a response was generated to complete a blank on the questionnaire. Engine characteristics and body characteristics were frequently determined through analysis of the vehicle identification number (VIN) and charts based on manufacturer's specifications. All missing annual miles data were imputed based on information available about the truck's

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* A 1987 TIUS was conducted; however, that data is not yet available for analysis, as the Bureau of Census is currently compiling the data collected in the survey.

lifetime miles, its age, its vehicle type, its number of axles, its engine type, its area of operation, and its major use. Any biases introduced by the imputation and correction procedures are thought to be small."

The Bureau of Census makes the data available through a public-use computer tape. Sierra chose not to access the tape directly, but instead to use the services of a transportation analyst familiar with the data structure, Mr. Anyant Vyas at Argonne National Laboratory. Mr. Vyas provided Sierra with a tape containing the records of vehicles registered in California. He also provided Sierra with all required 49-state analyses. Sierra was responsible for the analysis of California vehicles.

TIUS contains a wealth of information on trucking activity that can be used to evaluate the relative contribution of California and 49-state trucks to overall VMT levels in the state. Table 3-1 provides a summary of the primary variables selected for use in this analysis. It shows that variables describing numerous truck characteristics (e.g., size, fuel type, number of axles, etc.), operating behavior (e.g., annual VMT, average weight, area of operation, etc.) and registration (state in which it is registered versus state in which it is based) are available.

Two separate forms were employed in the survey, Appendix A contains copies of each form. Report form TC-9501 was mailed to individuals thought to own pickups and vans. Report form TC-9502 was mailed to individuals thought to own heavier vehicles. A review of the data, however, indicates that there was considerable overlap in the targeted audiences for these forms - light-duty owners received the heavy-duty form and vice-versa. This observation was confirmed in conversations with Census personnel responsible for TIUS.

For the purposes of this analysis, the differences between the forms are significant. The 9502 form requested information on the empty, average and maximum weight of the vehicle, whereas the 9501 form requested information on the average weight of the vehicle. The more detailed weight information on the 9502 form provides a basis for matching with the empty and average weight data recorded in CALTRANS survey data. It also provides a basis for distinguishing between gross vehicle weight (GVW) classifications of IIa and IIb vehicles.

The distinction between class IIa or 6,000-8,500 pound (GVW) and class IIb or 8,500-10,000 pound (GVW) vehicles was critical to the analysis, because the RFP specified an analysis of heavy-duty vehicles. In California that means vehicles weighing greater than 8,500 pounds (GVW). Information on GVW subclasses is rarely reported and TIUS only contains information on the primary GVW class of a vehicle. Thus, a method had to be found to determine which class II vehicles were considered heavy-duty vehicles in California.

Table 3-1

Summary of Information Selected from TIUS

Variable	Description
Vehicle Weight	Respondent estimate, either: Empty Average Maximum
R.L. Polk GVRW	Manufacturer Gross Vehicle Weight Rating for the vehicle
Area of Operation	The area in which the vehicle operates is usually classified as: Local - Mostly in the local area, i.e., in or around the city and suburbs, or within a 50-mile radius of the place where the vehicle is stationed. Short-range - Mostly over-the-road (beyond the local area), usually within a 50-200 mile radius of where the vehicle is stationed. Long-range - Mostly over-the-road, usually more than 200 miles to the most distant stop from where the vehicle is operated. Off-the road - Mostly off-the-road operation (usually associated with construction and farming).
Annual Miles	Estimated by respondent for 1982
Miles per Gallon	Estimated by respondent for 1982
Fuel Type	Gasoline or Diesel only
Model Year	Designated model year of the vehicle; 1973 and earlier, through model year 1983
State of Registration	State where the vehicle is registered
Base of Operation	State in which the vehicle is based
Expansion Factor	Factor used to project vehicle estimates of travel and fuel to overall state totals by sample type

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Table 3-1 (continued)

Summary of Information Selected from TIUS

Variable	Description
Sample Type	Strata used by census to develop expansion factors
Travel Outside of Base State	Respondent estimate of the percent of travel outside of the base state
Axle Recode	Indicates the vehicle configuration and number of axles for the entire vehicle

Census is bound by law not to provide any insight into the identity of survey participants. For this reason the VIN's of particpating vehicles are not reported. The only basis for determining whether class II vehicles had a GVW rating of greater than 8,500 pounds was from the weights reported by vehicle owners. The average weights reported in the 9501 survey form provided no insight into the maximum load carrying capacity of the vehicle, the basis of the GVW rating. The 9502 survey, however, reported data on the empty, average and maximum reported weights of the vehicles. The maximum reported weights could be used to distinguish which vehicles have a class IIb GVW rating. Therefore, the TIUS analysis focused exclusively on form 9502 survey respondents.

The impact of this assumption on the representativeness of the data is difficult to tell. The 9501 survey was designed for pickups, panels, vans, and utility type vehicles and was sent to owners of these vehicles "if they could be identifed at the time of sampling." The 9502 survey was designed for all other vehicles. Clearly the 9502 form was designed for heavier vehicles and therefore the exclusive use of this data for the analysis of heavy-duty vehicles should not introduce any bias into an analysis of class III-VIII vehicles. While the 9502 form was not intended for "pickup truck owners", Census personnel do not believe that there was any bias towards the heavy or commercial end of pickup owners that received the form. Instead they contend that pickup truck owners receiving the form (1) represented random error, or (2) could not be distinguished at the time of the sampling and therefore received the 9502 form. In summary, the results for the class IIb portion of ARB's light-heavy duty vehicle category should be viewed with some discretion; however it is impossible to determine the extent of any bias that might be included in the data for these vehicles.

The ARB employs three weight classifications for HDV's. Table 3-2 provides a summary of the relationship between the industry classifications and those employed by ARB. The TIUS data file

Table 3-2

Relation between GVW Classifications
and ARB Heavy-Duty Classes

FHwA Weight Class	Gross Vehicle Weight	ARB HDV Class	Gross Vehicle Weight
Class I	1- 6,000 lbs		
Class II	6,001-10,000 lbs		
Class III	10,001-14,000 lbs	Light HDV	8,501-14,000 lbs
Class IV	14,001-16,000 lbs		
Class V	16,001-19,500 lbs		
Class VI	19,501-26,000 lbs	Medium HDV	14,001-33,000 lbs
Class VII	26,001-33,000 lbs		
Class VIII	Over 33,000 lbs	Heavy HDV	over 33,000 lbs

contains two separate GVW classifications. The first or TIUS GVW classification is based on the average weight of the vehicle reported by the respondent. It should be noted that the survey form stated that "an estimate is acceptable." The second is a gross vehicle weight rating (GVWR) developed by the R.L. Polk Company for the Bureau of Census using the vehicle identification number (VIN) reported by respondents. The R.L. Polk GVWR is based on the empty weight of the vehicle plus the recommended load capacity assigned by the manufacturer to the vehicle.

Table 3-3 provides a comparison of the TIUS GVW and Polk GVWR ratings for vehicles registered in California. There is a substantial overlap between the two classification systems. For example, Polk-rated trucks of less than 6,000 pounds are shown to have average loads of greater than 33,000 pounds. Clearly this is not possible and represents either transcription errors (e.g., VIN's used by Polk to determine the GVWR, reported weight ratings, etc.) or problems with owner weight estimates.

The magnitude of the differences presented in Table 3-3 indicated that a method was needed to either eliminate spurious data or reclassify vehicles based on the information contained in the data base. Sierra reviewed the available options* and determined that the best method

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* In a similar analysis of national trends in truck activity for EPA, Energy and Environmental Analysis (EEA) chose to reclassify trucks by gross vehicle weight category based on an analysis of the consistency among several related record fields using criteria developed from a review of historical literature on the size, weight, and fuel type

(Footnote continues on next page)

Table 3-3

TIUS 1982 -- GROSS VEHICLE WEIGHT RATING CROSS TABULATION OF CALIFORNIA TRUCKS
AVERAGE WEIGHT RATING (CENSUS) V/S MANUFACTURER'S RATING
TRUCK COUNTS AND PERCENTAGES

Average Reported Weights	Polk Rating								
FREQUENCY PERCENT ROW PCT COL PCT	<6K	6.01-10K	10.01-14K	14.01-16K	16.01-19.5K	19.51-26K	26.01-33K	>33K	TOTAL
<6K	2046105 58.25 68.55 98.80	925496 26.35 31.01 80.28	7791 0.22 0.26 31.45	467 0.01 0.02 5.05	1487 0.04 0.05 6.52	2578 0.07 0.09 2.53	428 0.01 0.01 1.56	428 0.01 0.01 0.42	2984780 84.98
6.01-10K	16844 0.48 6.25 0.81	217810 6.20 80.81 18.89	7324 0.21 2.72 29.56	4220 0.12 1.57 45.59	7337 0.21 2.72 32.19	15394 0.44 5.71 15.11	285 0.01 0.11 1.04	311 0.01 0.12 0.30	269525 7.67
10.01-14K	312 0.01 0.88 0.02	5766 0.16 16.29 0.50	4052 0.12 11.45 16.35	2506 0.07 7.08 27.07	5505 0.16 15.56 24.15	16114 0.46 45.53 15.81	370 0.01 1.04 1.35	765 0.02 2.16 0.75	35389 1.01
14.01-16K	0 0.00 0.00 0.00	1870 0.05 7.55 0.16	2182 0.06 8.81 8.81	960 0.03 3.88 10.37	3597 0.10 14.52 15.78	14367 0.41 58.01 14.10	1083 0.03 4.37 3.95	707 0.02 2.85 0.69	24765 0.71
16.01-19.5K	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1247 0.04 5.51 5.03	552 0.02 2.44 5.96	1558 0.04 6.89 6.84	16451 0.47 72.70 16.15	2139 0.06 9.45 7.80	681 0.02 3.01 0.66	22628 0.64
19.51-26K	7225 0.21 14.50 0.35	1331 0.04 2.67 0.12	779 0.02 1.56 3.14	156 0.00 0.31 1.68	1967 0.06 3.95 8.63	24125 0.69 48.41 23.68	10769 0.31 21.61 39.28	3488 0.10 7.00 3.41	49839 1.42
26.01-33K	0 0.00 0.00 0.00	0 0.00 0.00 0.00	623 0.02 3.45 2.52	396 0.01 2.19 4.28	552 0.02 3.05 2.42	6381 0.18 35.32 6.26	5757 0.16 31.87 21.00	4357 0.12 24.12 4.25	18066 0.51
>33K	467 0.01 0.44 0.02	623 0.02 0.58 0.05	779 0.02 0.73 3.14	0 0.00 0.00 0.00	792 0.02 0.74 3.47	6483 0.18 6.03 6.36	6587 0.19 6.13 24.03	91702 2.61 85.36 89.52	107434 3.06
TOTAL	2070952 58.96	1152896 32.82	24777 0.71	9258 0.26	22794 0.65	101893 2.90	27418 0.78	102438 2.92	3512426 100.00

(Footnote continued from previous page)

specifications of truck bodies and engines marketed by engine and truck manufacturers in the U.S. "Analysis of the 1982 Truck Inventory and Use Survey", Final Report, prepared for U.S. Environmental Protection Agency, Energy and Environmental Analysis, December 1986.

for this analysis was to set weight classification limits for each Polk GVWR category. These ranges represent Sierra's best estimate of the empty and maximum loaded weights that vehicles with these ratings are capable of supporting. Table 3-4 lists the ranges that were developed from a review of manufacturer specifications for vehicles marketed in the U.S. All vehicles with either an empty or a maximum weight reported outside of the bounds listed in Table 3-4 were eliminated from the data base. This approach ensures that the scatter in reported weight and GVW classifications observed in Table 3-3 are eliminated and that relations developed between the CALTRANS and TIUS data files are based on weight estimates that conform to manufacturer specifications for the vehicles. It also ensures that the relations are based on survey responses and not on reclassified estimates of vehicle weights.

Table 3-4

Weight Range Used to Screen Outliers
on the Basis of Respondent Weight Estimates

Polk GVW*	Empty Weight	Maximum Weight
2	4,500 lbs	14,000 lbs
3	6,000 lbs	18,000 lbs
4	8,000 lbs	20,000 lbs
5	10,000 lbs	25,000 lbs
6	12,000 lbs	32,000 lbs
7	14,000 lbs	45,000 lbs
8	16,000 lbs	150,000 lbs

* All Polk Class I vehicles were eliminated from the analysis.

Several additional methods were used to screen obvious errors and outlier values from the TIUS data base. Records were eliminated if data were missing for the following variables:

- area of operation;
- fuel type;
- weight classifications (empty, average, maximum);
- Polk Classification;
- fuel economy; or
- number of axles (axle recode value).

A second method used to discriminate among the accuracy of the responses was to eliminate outlying data on annual mileage and fuel economy. Sierra reviewed the criteria that EEA used to screen these

variables* and determined that they were reasonable. Table 3-5 lists the mpg screening criteria for each of the weight categories. The annual VMT levels reported were screened to eliminate vehicles that reported travel levels of greater than 360,000 miles per year. EEA determined that no vehicle could "realistically travel more than 18 hours per day, 360 days/year at an average of speed of 55 mph."

Table 3-5

Fuel Economy Criteria Used for Excluding TIUS Records

Polk GVWR Class	Fuel Type	Range
0- 6,000 lbs	All	MPG < 2 or MPG > 40.0
6,001-10,000 lbs	All	MPG < 2 or MPG > 30.0
10,001-14,000 lbs	All	MPG < 2 or MPG > 20.0
14,001-16,000 lbs	All	MPG < 2 or MPG > 17.5
16,001-19,500 lbs	All	MPG < 2 or MPG > 16.0
19,501-26,000 lbs	All	MPG < 1 or MPG > 14.0
26,001-33,000 lbs	Gasoline	MPG < 1 or MPG > 12.5
26,001-33,000 lbs	Diesel	MPG < 1 or MPG > 14.0
33,001-50,000 lbs	Gasoline	MPG < 1 or MPG > 10.0
33,001-50,000 lbs	Diesel	MPG < 1 or MPG > 11.0
over 50,000 lbs	Gasoline	MPG < 1 or MPG > 9.0
over 50,000 lbs	Diesel	MPG < 1 or MPG > 9.5

TIUS contains two types of registration information, one identifying the state in which the vehicle is registered and the other identifying the state in which the vehicle is based. In most cases, the vehicle is based in the state in which it is registered. When this is not the case, it means that most of the VMT accrued by the vehicle will occur in the state in which it is based and not the state in which it is registered. Therefore, a final screening of the data base excluded vehicles registered in California but based in another state.

* "Analysis of the 1982 Truck Inventory and Use Survey", Final Report, prepared for the U.S. Environmental Protection Agency, Energy and Enviromental Analysis, December 1986.

Table 3-6 provides a summary of the effect of cleaning routines on each of the Polk GVWR classifications. It shows that the combined effects of the missing data, the outlier screening criteria and the base state criteria reduced the volume of usable records by almost 60 percent. Each GVW category lost a substantial fraction of the original records. The weight ranges used to screen empty and maximum weights reported by respondents were responsible for almost two-thirds of the eliminated records. Class VI vehicles were particularly sensitive to the weight screening criteria. On the other hand, only 28 California-registered vehicles were reported to be based outside of the state.

Table 3-6

Summary of Results of Data Screening Techniques
on TIUS Records for California Vehicles

Polk GVWR Classification Class	Weight	Number of Original TIUS Records	Revised TIUS Records
I	0- 6,000 lbs	372	43
II	6,001-10,000 lbs	818	349
III	10,001-14,000 lbs	159	40
IV	14,001-16,000 lbs	64	19
V	16,001-19,500 lbs	155	14
VI	19,501-26,000 lbs	703	102
VII	26,001-33,000 lbs	218	78
VIII	over 33,001 lbs	1,077	797
	Total	3,566	1,442

The data set summarized in Table 3-6 was further screened to eliminate light- and medium-duty-vehicle records (Class I and Class IIa vehicles). All Polk Class I vehicles were eliminated from the database. All Polk Class II vehicles with a maximum owner-reported weight of less than 8,500 pounds were also eliminated from the database. Applying these criteria eliminated an additional 238 records from the data base. Table 3-7 provides a summary of the resulting California TIUS data used in the analysis. It lists vehicle counts for the GVWR and ARB classifications.

Table 3-7

Summary of California TIUS Records Selected for Analysis

Polk GVWR Classification Class	Weight	Revised No. of TIUS Records	ARB HDV Class	No. of ARB Records
IIb	8,500-10,000* lbs	154		
III	10,000-14,000 lbs	40	Light HDV	194
IV	14,001-16,000 lbs	19		
V	16,001-19,500 lbs	14		
VI	19,501-26,000 lbs	102		
VII *	26,001-33,000 lbs	78	Medium HDV	213
VIIa*	33,001-50,000 lbs	149		
VIIb*	over 50,000 lbs	648	Heavy HDV	797
	Total	1,204		1,204

* Classifications were based on the maximum reported vehicle weights

The sample design of TIUS was based on a stratified probability sample of about 120,000 trucks drawn from an estimated universe of approximately 35 million registrations that were on file with the motor vehicle departments across the country. A stratified random sample based on body type was selected in each state. Each state was divided into five strata:

- pickup;
- van (panel trucks, vans, utilities, jeeps, and station wagons on truck chasis);
- single unit light (all other single unit trucks with a GVW of less than 26,000 pounds);
- single unit heavy (all remaining single unit trucks with a GVW of greater than 26,000 pounds); or
- truck tractor.

Part of the sample (two-thirds) was allocated to meet "minimum standards" of reliability for each stratum in each state. For each pickup stratum, a minimum sample size was determined for each state based on the percentage of pickups in that state (usually this stratum ranges between 40 to 75 percent). A constant minimum sample size was set for each of the remaining strata. The remainder of the sample (the other third) was allocated to the strata proportionately to the number of the trucks in the state to improve the overall U.S. estimates.

The Bureau of Census computed an expansion factor so that each respondent could be expanded to represent his or her share of the

overall vehicle population. The expansion factors are computed separately for the five sample strata by state. A review of the expansion factors from the prescreened database indicated that the values of the factors ranged from less than 100 to more than 7,000. Thus some respondents are projected to be considerably more representative of the vehicle population than others.

The substantial reduction in vehicle records necessitated a revision to the expansion factors. Conversations with Census personnel indicated that the following formula is appropriate for that calculation:

$$EF_R = (EF_1) \frac{STOCK_1}{STOCK_R}$$

where:

EF_R - revised expansion factor, which varies by sample category

EF_1 - original expansion factor

$STOCK_1$ - original number of records within each sample category (before data screening is applied)

$STOCK_R$ - revised number of records within each sample category after the data screening was applied

The effect of the above revision is dependent on how the distribution of expansion factors changes after the data cleaning process. If the distribution stays the same, the revised factors for the remaining vehicle fleet will be able to project a vehicle population and total VMT level equal to what the raw data would have projected. If the distribution changes - for example, if the percentage of vehicles with large expansion factors drops considerably - then the revised factors for the remaining vehicle fleet will project a smaller vehicle population and total VMT level than the original data set projected.

Sierra computed the expanded vehicle populations for each of the five Census strata before and after the data cleaning process to evaluate the representativeness of the cleaned data set. The results are as follows:

Strata	Percent of Projected Population Remaining After Data Cleaning
Pickup	3
Van	8
Single Unit (light)	70
Single Unit (heavy)	97
Truck Tractor	98

While the representativeness of the pickup and van categories appears to have been eliminated, it should be remembered that the original data set included all Class I and II vehicles and that the revised data set only included Class IIb vehicles. Thus, the revised data set for these vehicles should project a substantially smaller share of the original projection. With the exception of the single-unit-light stratum, the representativeness of the remaining vehicle categories was substantially unchanged. No method could be found to normalize the expansion factors to represent the exact original totals that did not violate the representativeness of the individual vehicles or require the use of records with incorrect data. Therefore, a decision was made to use the screened data with the revised expansion factors and recognize the limitations of the projected sample in the analysis of the results.

It is important to note the Census strata do not directly translate into ARB's heavy-duty vehicle categories; the effect of the data cleaning process should be most pronounced on ARB's light and medium-heavy-duty vehicles.

The fuel economy estimates provided by the respondents were harmonically averaged as opposed to arithmetically averaged to produce category-specific mpg estimates. The harmonic averaging procedure weights data on the basis of consumption (i.e. gallons per mile) to provide an accurate estimate of mpg from the perspective of fuel consumption. The annual VMT (in this case the annual miles times the expansion factor) of each vehicle must also be used in this calculation to determine the number of gallons that each vehicle consumes. The calculation employed is as follows:

$$\text{Mean MPG} = \frac{\text{Total VMT}}{\text{Gallons}} = \frac{\sum_{n} \text{AVMT} * \text{Expansion Factor}}{\sum_{n} (\text{AVMT} * \text{Expansion Factor})/\text{mpg}}$$

Mean MPG - travel weighted average fuel economy

Total VMT - total travel for the category of interest

n	-	number of records in category of interest
AVMT	-	the reported annual VMT of the vehicle
mpg	-	the reported fuel economy of the vehicle

CALTRANS

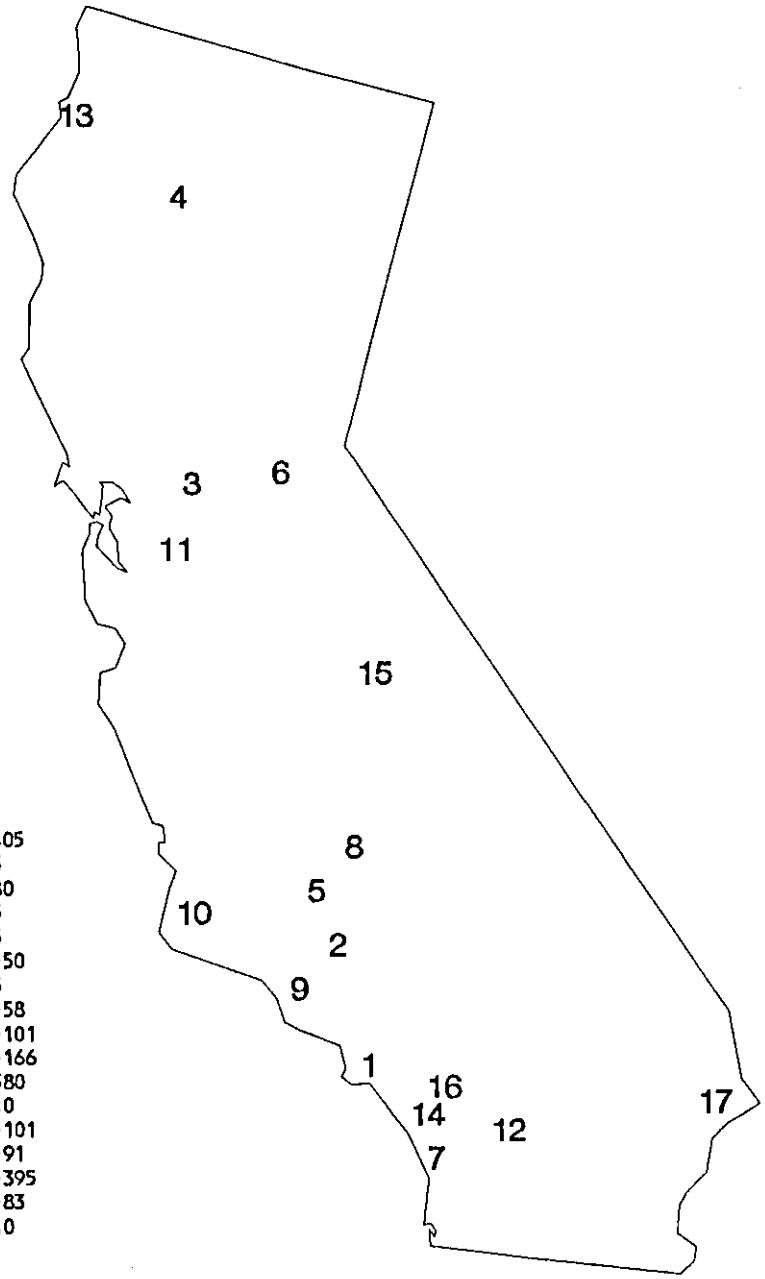
CALTRANS conducts a truck weight survey at selected weigh stations once every two years. The most recent survey was conducted in 1985 for 17 stations; the data from that survey only became available in the latter part of 1988. Figure 3-1 provides a summary of the weigh stations employed in the survey and their approximate locations across the state. During the survey all trucks entering the stations are weighed, the load for each axle is measured and additional information on vehicle characteristics is recorded. (A copy of the survey form may be found in Appendix B.) The following information collected in this survey is of particular value to this analysis:

- Vehicle type - provides information that can be used to distinguish between pickup trucks, vans and alternative vehicle classifications (e.g., truck and tractor, etc.);
- Weight - indicates the weight of the vehicle including the load;
- Empty or loaded - indicates whether the vehicle had a load or was empty;
- Fuel type - lists the fuel used by the engine;
- Number of axles - lists the load on each axle and the number of axles on the vehicle;
- Base state - indicates the vehicle's base state of operation.

A total of 6,057 records was available from the 1985 Truck Weight Study. The only criteria used to screen the data was to exclude vehicles with body types considered by CALTRANS as representative of light-duty vehicles. All 2-axle vehicles that were obviously not HDV's were eliminated from the data base. This had the effect of

Figure 3-1

Locations of 17 Weigh Stations Employed in 1985 Truck Weight Survey



1.	Carson	LA	I-405
2.	Castaic	LA	I-5
3.	Cordelia	Sol	I-80
4.	Cottonwood	Teh	I-5
5.	Wheeler Ridge	Ker	I-5
6.	Camino	ED	US-50
7.	San Onofre	SD	I-5
8.	Keene	Ker	SH-58
9.	Conejo	Ven	US-101
10.	Santa Maria	SB	SH-166
11.	Livermore	Ala	I-580
12.	Banning	Riv	I-10
13.	Little River	Hum	US-101
14.	Peralta	Ora	SH-91
15.	Big Pine	Iny	US-395
16.	Chino	SBd	SH-83
17.	Blythe	Riv	I-10

excluding 1,581 records from the data base. A summary of the available vehicle counts is provided below.

Fuel	California	49-State	Non-U.S.	Total
Gasoline	432	31	-	463
Diesel	2,777	1,172	24	3,973
Propane	38	1	-	39
Total	3,248	1,204	24	4,476

The California total includes one vehicle that was classified as "Turbine" under the fuel type category. For the sake of clarity, it was not listed in the above table.

The value of the CALTRANS data is that it provides insight into the distribution of in- and out-of-state vehicles operating on California's roads. It also provides a basis for determining the fraction of non-U.S. vehicles operating on California highways. All of the non-U.S. vehicles captured in the survey were based in Canada, no vehicles based in Mexico were observed in the survey. Conversations with CALTRANS representatives indicated that the range of non-U.S. vehicles observed in the survey was in line with other estimates of non-U.S. vehicular activity that they have developed.

The CALTRANS data also provides insight into the relationship between the number of axles and either the empty or loaded weight of the vehicle. Unfortunately, the CALTRANS data do not include an indication of the GVW rating (GVWR) of the vehicle. Care must taken in relating the unladen and laden weights reported to the appropriate GVWR categories. A detailed methodology was developed to use the CALTRANS and TIUS data to develop this relationship; it will be discussed in the next section.

PES Report to ARB

One of ARB's primary information sources on the recent travel behavior of HDV's is the 1985 PES "Assessment of Heavy-Duty Gasoline and Diesel Vehicles in California: Population and Use Patterns." That study combined numerous CALTRANS surveys and data bases with DMV registration data to produce estimates of vehicle activity in the state. Several critical relationships were developed in the study to link disparate data files to produce those estimates. ARB indicated that the TIUS data should be used, if possible, to update/confirm the following relationships:

- Axle to GVW conversion - This relationship is needed to translate the CALTRANS "Annual Average Daily Truck Traffic" (AADTT) data, which was disaggregated for 50 California

counties by axle class, into appropriate ARB HDV classifications.

- Correlation between unladen weight and GVW - Based on a survey of 12 owners or operators of HDV's, PES developed a correlation between unladen weight and GVW. ARB wanted Sierra to develop a better method of correlating unladen and gross vehicle weights.

- Federal HDV population and California VMT - PES developed an estimate of the federal HDV population and its contribution to total California VMT. ARB wanted Sierra to develop an independent estimate of the size of the federally certified fleet and its percent contribution to California's total HDV VMT.

The primary PES data source used in this analysis was the 1982 county-specific VMT estimate by axle class. A copy of that table is presented in Appendix C.

4. DATA ANALYSIS

The results of the data analyses are organized to provide an overview of the HDV fleet characteristics and estimates of county travel estimates. Where it is appropriate, the California and 49-state values are contrasted. To facilitate the presentation of the data, many of the comparisons are graphic. A detailed listing of the data is contained in the appendices.

As previously discussed, the relatively small sample of California data combined with the stringency of the screening techniques produced a data set that is inadequate for most GVW analyses. Therefore, almost all data comparisons are presented for either ARB weight class or fuel type.

Heavy-Duty Fleet Characteristics

Figure 4-1 summarizes the vehicle age distribution for gasoline-powered HDV's contained in TIUS for California and 49-state vehicles. It also displays the vehicle age distribution employed in EMFAC7D*, which was based on an analysis of 1975 R.L. Polk data for General Motors (heavy-duty gasoline) and 1975 R.L. Polk data for Diamond-Reo, Kenworth, Mack, Peterbuilt and White (heavy-duty Diesel). The age distributions generally track each other. The limited sample of California gasoline vehicles is evident in the irregular pattern of registrations; the larger sample of 49-state vehicles produces a smoother pattern over time. Neither of the TIUS distributions, however, indicate an increase in early year registrations that is employed by EMFAC. The difference in the early year estimates is believed to be due to the relatively low sales of HDV's in the early 1980's, particularly the recession year of 1982. In contrast, the sales during the early 1970's were quite strong. Thus, a comparison between the two data sets shows a relatively low fraction of early year vehicles for the 1982 TIUS in contrast to the 1975 Polk data.

A similar plot of vehicle age distributions for Diesel-powered HDV's is presented in Figure 4-2. The large sample sizes of the Diesel populations would be expected to produce a smoother distribution, but this is not the case. Both TIUS data sets indicate a steady increase in the fraction of vehicles up to age 4 before dropping off as vehicles age. This trend is in contrast to the EMFAC distribution for these vehicles. Again the differences between the two data sets is

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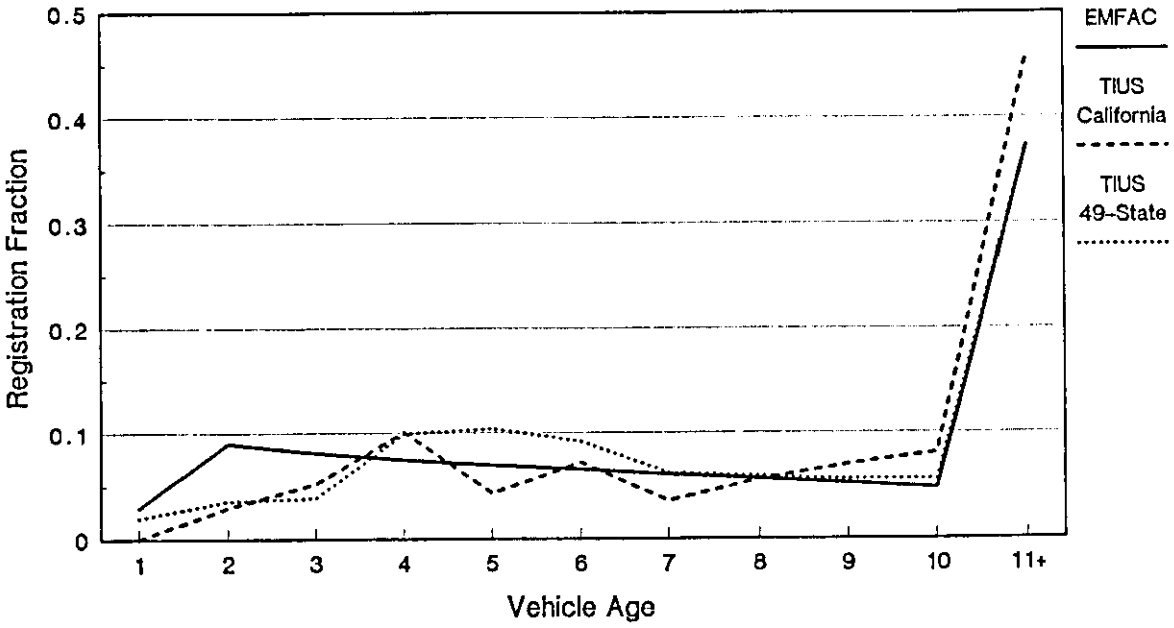
* "Draft Motor Vehicle Emission Factor Program - EMFAC7D", California Air Resources Board, January 20, 1988

Figure 4-1

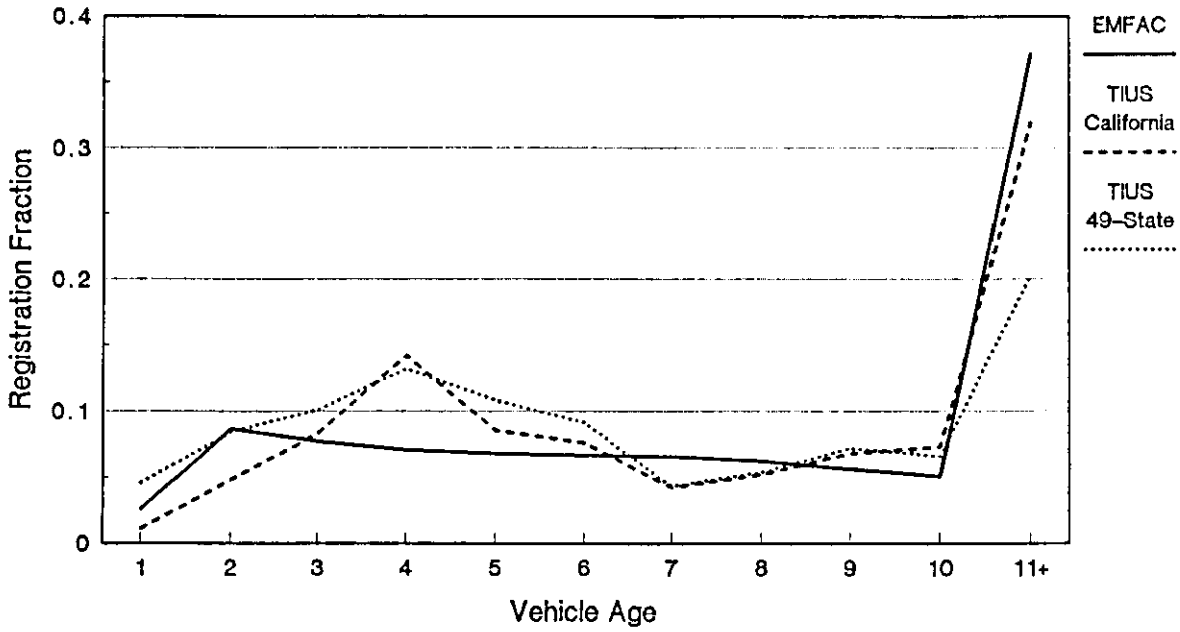
Comparison of Registration Distributions For Gasoline Powered Heavy-Duty Vehicles



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey.

Figure 4-2

Comparison of Registration Distributions For Diesel Powered Heavy-Duty Vehicles



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey.

believed to be caused by the economic conditions during the years preceding the surveys. During the late 1970's and early 1980's heavy-duty Diesel sales were rising in response to the rapid increase in fuel prices experienced during the late 70's.

Table 4-1 provides an overall summary of the TIUS fleet characteristics for California vehicles by fuel type, ARB weight class and vehicle age. TIUS provides information on vehicles 1-10 (1981 - 1973 MY) and 11+ (pre 1973 MY) years of age. Several of the model year groups had very small sample sizes. In general, the data show that fuel economy degrades as vehicles get heavier and that Diesel vehicles have higher annual travel levels than gasoline vehicles. The "FRACTION OF STOCK EQUIPPED WITH" columns display the following vehicle characteristics:

- radial tires;
- axles or drive ratio;
- road speed governor; and
- percentage of vehicles equipped with fuel conservation devices (e.g., wind shield, etc.).

Table 4-1

California Fleet Characteristics

LIGHT-HEAVY-DUTY GASOLINE

						--- FRACTION OF STOCK EQUIPPED WITH ---			
MDLYR	-SAMPLE SIZE-		ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
2	0.042	8	41,881	19,844	8.81	0.125	0.125	0.000	0.000
3	0.068	13	41,886	15,023	8.71	0.231	0.000	0.000	0.077
4	0.099	19	67,210	17,295	8.19	0.000	0.000	0.000	0.000
5	0.057	11	63,106	14,433	8.62	0.000	0.000	0.000	0.000
6	0.094	18	77,475	12,189	7.99	0.444	0.056	0.000	0.000
7	0.026	5	116,561	16,628	8.66	0.600	0.000	0.000	0.000
8	0.063	12	108,881	18,415	7.99	0.083	0.167	0.083	0.000
9	0.073	14	100,480	12,114	9.81	0.143	0.214	0.000	0.000
10	0.063	12	109,416	9,732	8.51	0.083	0.083	0.000	0.000
11	0.417	80	116,573	5,740	9.70	0.088	0.138	0.025	0.088

TOTAL VEHICLES = 192
FRACTION OF HEAVY-DUTY FLEET = 0.159

LIGHT-HEAVY-DUTY DIESEL

						--- FRACTION OF STOCK EQUIPPED WITH ---			
MDLYR	-SAMPLE SIZE-		ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
2	0.500	1	55,000	42,000	9.60	0.000	1.000	1.000	1.000
11	0.500	1	300,000	20,000	14.90	1.000	1.000	0.000	1.000

TOTAL VEHICLES = 2
FRACTION OF HEAVY-DUTY FLEET = 0.002

--- continued on next page ---

Table 4-1 (continued)

California Fleet Characteristics

MEDIUM-HEAVY-DUTY GASOLINE

						--- FRACTION OF STOCK EQUIPPED WITH ---		
MDLYR	-SAMPLE SIZE-	ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
2	0.020 3	21,016	8,054	5.07	0.000	0.000	0.667	0.000
3	0.040 6	31,752	9,725	5.00	0.333	0.167	0.167	0.000
4	0.106 16	50,974	12,240	5.36	0.438	0.125	0.500	0.063
5	0.026 4	68,662	17,599	5.90	0.500	0.500	0.500	0.000
6	0.053 8	76,767	9,580	6.20	0.375	0.125	0.250	0.000
7	0.053 8	93,563	13,302	5.13	0.375	0.250	0.000	0.000
8	0.040 6	117,469	12,189	4.95	0.500	0.500	0.333	0.167
9	0.060 9	97,112	11,537	5.42	0.222	0.000	0.333	0.000
10	0.093 14	103,187	10,262	5.65	0.357	0.429	0.357	0.000
11	0.510 77	154,306	9,405	6.42	0.299	0.182	0.390	0.026

TOTAL VEHICLES = 151
FRACTION OF HEAVY-DUTY FLEET = 0.125

MEDIUM-HEAVY-DUTY DIESEL

						--- FRACTION OF STOCK EQUIPPED WITH ---		
MDLYR	-SAMPLE SIZE-	ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
1	0.016 1	48,609	23,300	6.40	0.000	1.000	0.000	1.000
2	0.177 11	58,978	26,931	7.69	0.545	0.273	0.455	0.545
3	0.129 8	50,701	18,227	6.58	0.500	0.125	0.500	0.250
4	0.194 12	123,494	31,717	7.02	0.583	0.417	0.583	0.333
5	0.081 5	84,442	21,200	7.82	0.000	0.200	0.200	0.400
6	0.097 6	101,133	11,537	6.53	1.000	0.000	0.333	0.000
7	0.032 2	134,500	23,120	9.50	0.500	0.000	0.000	0.500
8	0.048 3	207,726	10,667	6.20	0.333	0.000	0.333	0.000
9	0.032 2	271,000	44,750	5.75	0.500	0.000	0.500	0.000
11	0.194 12	148,391	9,142	7.80	0.167	0.083	0.250	0.083

TOTAL VEHICLES = 62
FRACTION OF HEAVY-DUTY FLEET = 0.051

HEAVY-HEAVY-DUTY GASOLINE

						--- FRACTION OF STOCK EQUIPPED WITH ---		
MDLYR	-SAMPLE SIZE-	ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
4	0.030 1	38,000	9,500	3.10	0.000	0.000	0.000	0.000
5	0.030 1	288,000	60,000	4.90	0.000	0.000	0.000	0.000
8	0.121 4	151,750	13,315	3.85	0.250	0.000	0.500	0.000
9	0.061 2	151,351	17,500	3.65	0.500	0.000	0.500	0.000
10	0.091 3	113,003	11,667	6.33	0.667	0.000	0.333	0.000
11	0.667 22	256,260	10,621	4.75	0.091	0.136	0.364	0.000

TOTAL VEHICLES = 33
FRACTION OF HEAVY-DUTY FLEET = 0.027

HEAVY-HEAVY-DUTY DIESEL

						--- FRACTION OF STOCK EQUIPPED WITH ---		
MDLYR	-SAMPLE SIZE-	ODOMETER	ANNMIL	MPG	RADPCT	AXLDRPCT	GOVPCT	ECOENPCT
1	0.012 9	116,022	80,057	5.44	0.889	0.333	0.556	0.667
2	0.030 23	123,733	66,285	5.21	0.957	0.478	0.478	0.783
3	0.071 54	189,362	59,016	5.11	0.759	0.463	0.481	0.593
4	0.126 96	334,872	76,026	4.94	0.854	0.354	0.438	0.521
5	0.084 64	362,778	66,159	5.08	0.813	0.344	0.484	0.625
6	0.071 54	388,913	61,519	4.93	0.833	0.259	0.389	0.519
7	0.043 33	438,014	63,031	5.01	0.758	0.394	0.364	0.455
8	0.055 42	478,606	51,111	4.74	0.643	0.262	0.310	0.357
9	0.080 61	459,386	49,282	5.16	0.721	0.295	0.361	0.426
10	0.084 64	477,334	40,637	4.96	0.625	0.203	0.344	0.516
11	0.346 264	556,940	35,885	5.05	0.591	0.155	0.277	0.246

TOTAL VEHICLES = 764
FRACTION OF HEAVY-DUTY FLEET = 0.635

The small sample size of the cleaned data set makes it difficult to have any confidence in the information displayed except for the heavy-duty Diesel category. A similar set of statistics for federal vehicles is presented in Appendix D. The sample size of this data set is sufficient to provide valid trends in vehicle equipment for all vehicle categories.

Figure 4-3 presents a comparison of the average annual mileage accumulation rates for gasoline HDV's. Again, data are displayed for TIUS California and 49-state registrations, along with the values employed by the current version of EMFAC. It shows that the 49-state TIUS values track those of EMFAC, but that the California-only values have a relatively erratic pattern. The variance in the California data is a result of the small sample of the gasoline vehicles. A similar plot of Diesel HDV's is presented in Figure 4-4. It suggests that 49-state vehicles have a lower level of travel than either category of California vehicles.

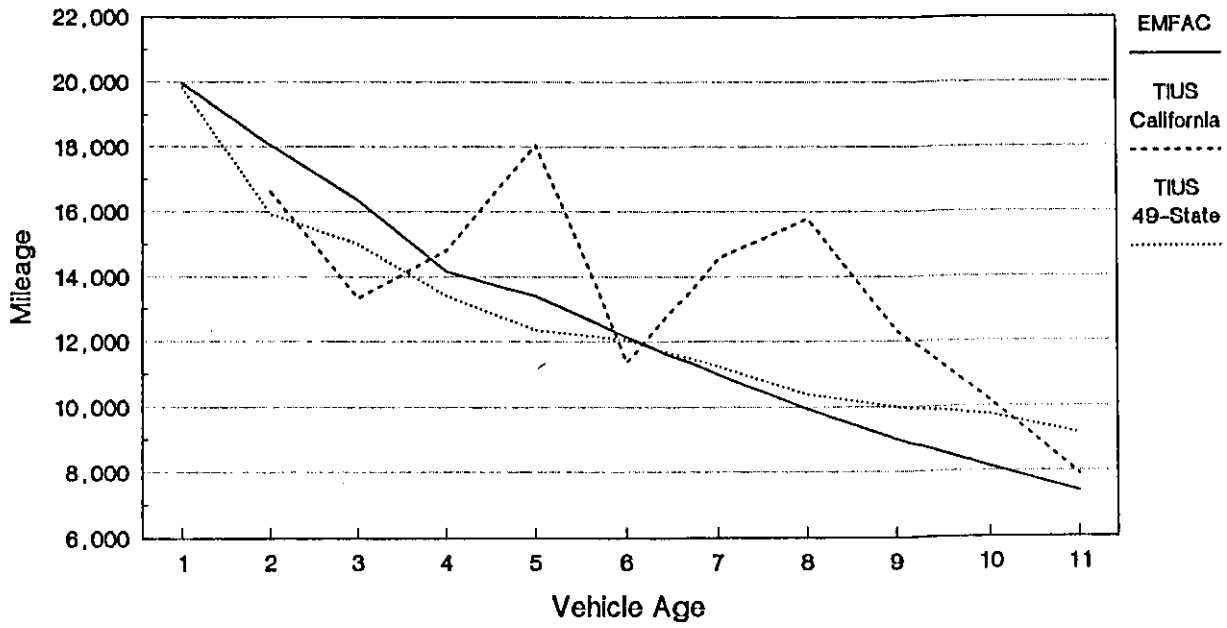
Figure 4-5 displays a summary of the average weights in the empty, average and maximum weight classes reported for each of the gasoline GVW categories. The uniform distribution of weights reported is a result of the screening criteria used to ensure that only vehicles with realistic weight data were used in the analysis. Figure 4-6 provides a similar plot of reported weights for each of the Diesel GVW categories. It also presents a uniform distribution of increasing weight with increasing GVW. The lack of entries in classes 2b through 5 reflects the limited presence of Diesel vehicles in these GVW classes at that time.

An overview of in- and out-of-state travel behavior for primary business activities is presented in Figures 4-7 and 4-8 for gasoline and Diesel vehicles, respectively. The travel fractions for each figure add to 100; tables of the data used to make the figures are contained in Appendix E. The gasoline data indicate that very little travel occurs out-of-state. In contrast, the Diesel chart shows that a very large fraction of travel is associated with "For Hire Transportation," and that a significant fraction of that travel occurs out-of-state.

Table 4-2 provides a listing of the level of travel that occurs by area of operation (i.e., off-road, local, short-range and long-range). A similar listing of federal data is included in Appendix F. To aid a comparison between the data sets, Figures 4-9 and 4-10 present summaries of where travel occurs by HDV fuel type. Figure 4-9 shows that, with the exception of off-road activity, Diesel travel is relatively evenly allocated among local, short- and long-range areas of operation. At first glance it might seem surprising that only one-third of the Diesel activity occurs outside of a 200-mile radius of the vehicle's base of operations. However, conversations with fleet operators (in contrast to owner operators) indicate that most travel is between terminals owned by the parent company and that distances between them usually do not exceed one day's travel time. Therefore, we believe that the estimated travel fraction in the long-range category is reasonable. In contrast, the primary area of

Figure 4-3

Comparison of Annual Mileage Accumulation Rates For Gasoline Powered Heavy-Duty Vehicles



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey.

Figure 4-4

Comparison of Annual Mileage Accumulation Rates For Diesel Powered Heavy-Duty Vehicles

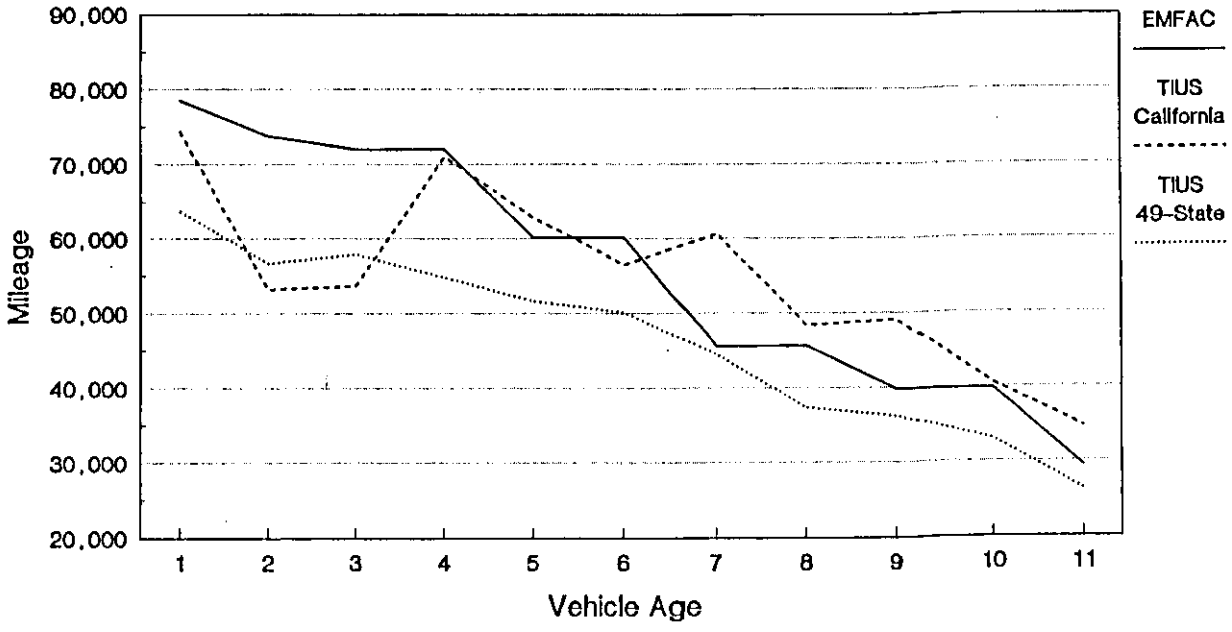
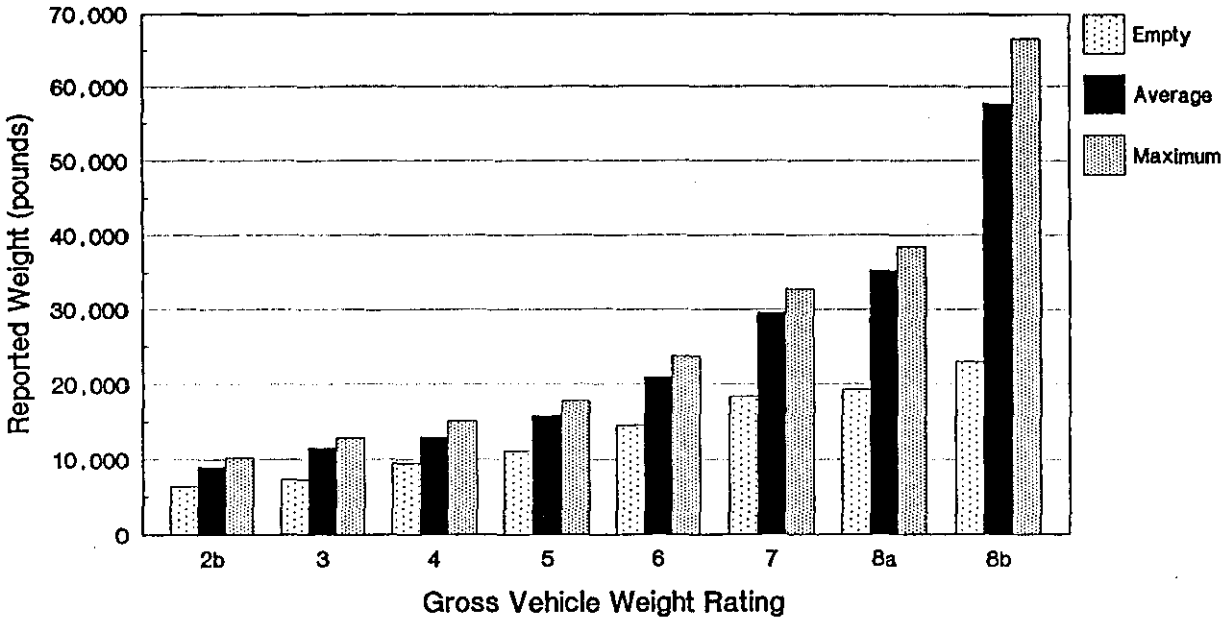


Figure 4-5

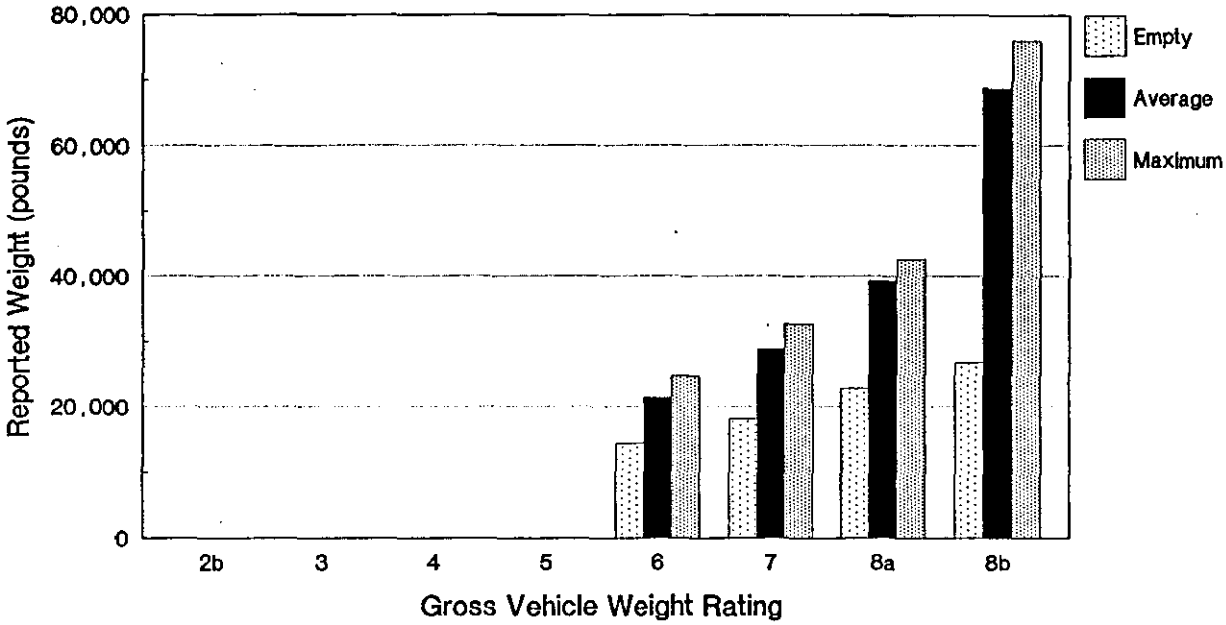
Comparison of Empty, Average and Maximum Weights Reported by GVWR for Heavy-Duty Gasoline Vehicles Registered and Based in California



Note: Based on analysis of the 1982 Truck Inventory and Use Survey.

Figure 4-6

Comparison of Empty, Average and Maximum Weights Reported by GVWR for Heavy-Duty Diesel Vehicles Registered and Based in California

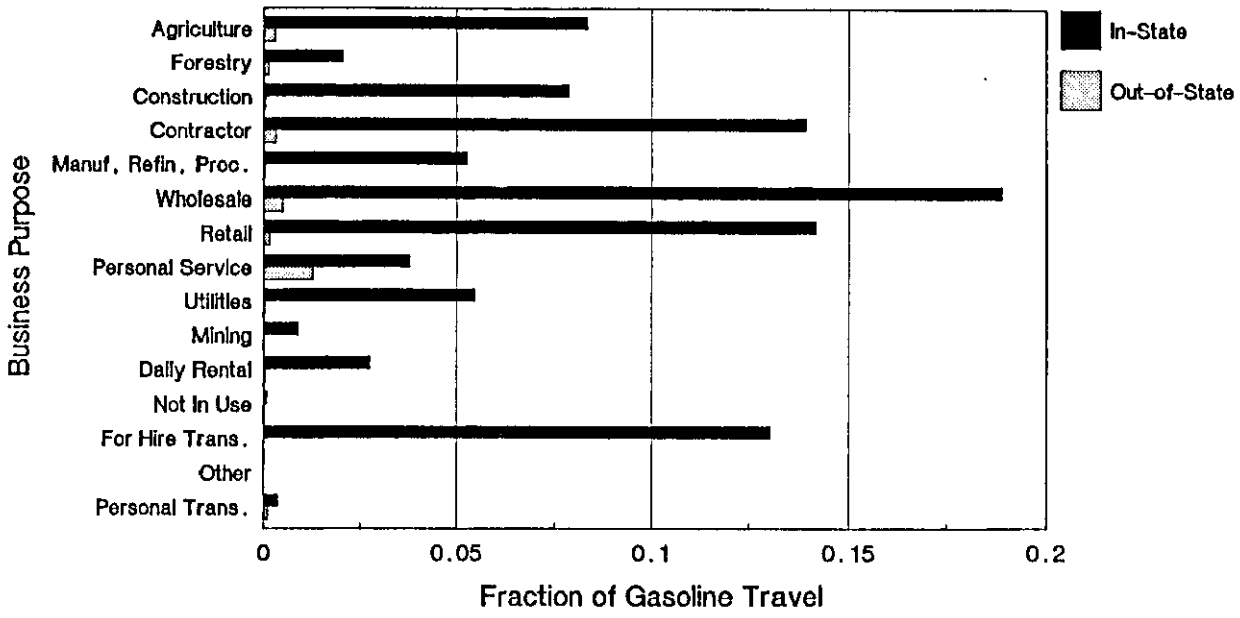


Note: Based on analysis of the 1982 Truck Inventory and Use Survey.

Due to insufficient sample size no data is reported for Classes 2b-5.

Figure 4-7

Distribution of Heavy-Duty Gasoline Travel For California Registered Vehicles By Major Use Category



Note: Based on an analysis of the 1982 Truck Inventory and Use Survey.

Figure 4-8

Distribution of Heavy-Duty Diesel Travel For California Registered Vehicles By Major Use Category

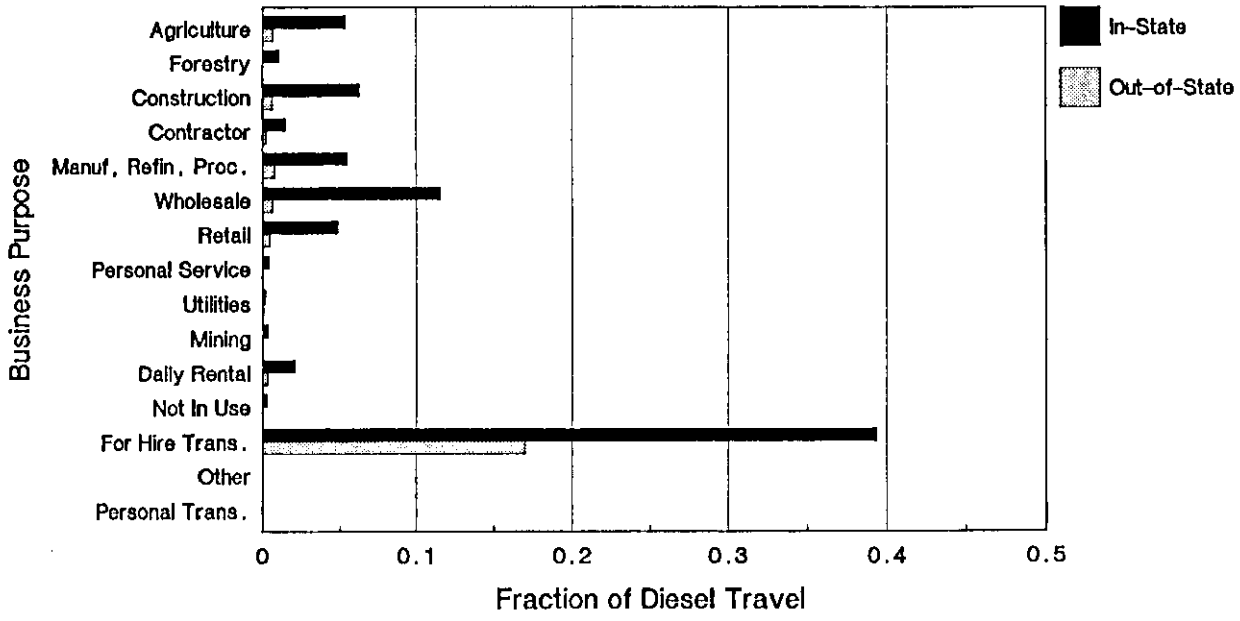


Table 4-2

Distribution of Travel by Area of Operation and ARB HDV Classification

LIGHT HEAVY-DUTY

MODEL YEAR	VEHICLE COUNTS GAS	DIESEL	DISTRIBUTION OF GAS AREA 1	AREA 2	AREA 3	AREA 4	DISTRIBUTION OF DIESEL AREA 1	AREA 2	AREA 3	AREA 4
2	81	22	0.0	89.3	10.7	0.0	0.0	0.0	100.0	0.0
3	99	-	0.3	92.1	7.5	0.1	-	-	-	-
4	164	-	10.9	55.3	32.7	1.1	-	-	-	-
5	80	-	10.2	63.2	24.6	1.9	-	-	-	-
6	109	-	3.2	79.1	17.6	0.2	-	-	-	-
7	42	-	18.1	77.8	3.7	0.4	-	-	-	-
8	113	-	0.8	64.5	29.6	5.0	-	-	-	-
9	86	-	1.0	60.6	38.1	0.2	-	-	-	-
10	74	-	4.9	82.2	12.7	0.2	-	-	-	-
11	242	10	9.9	61.4	25.1	3.6	25.0	75.0	0.0	0.0

MEDIUM HEAVY-DUTY

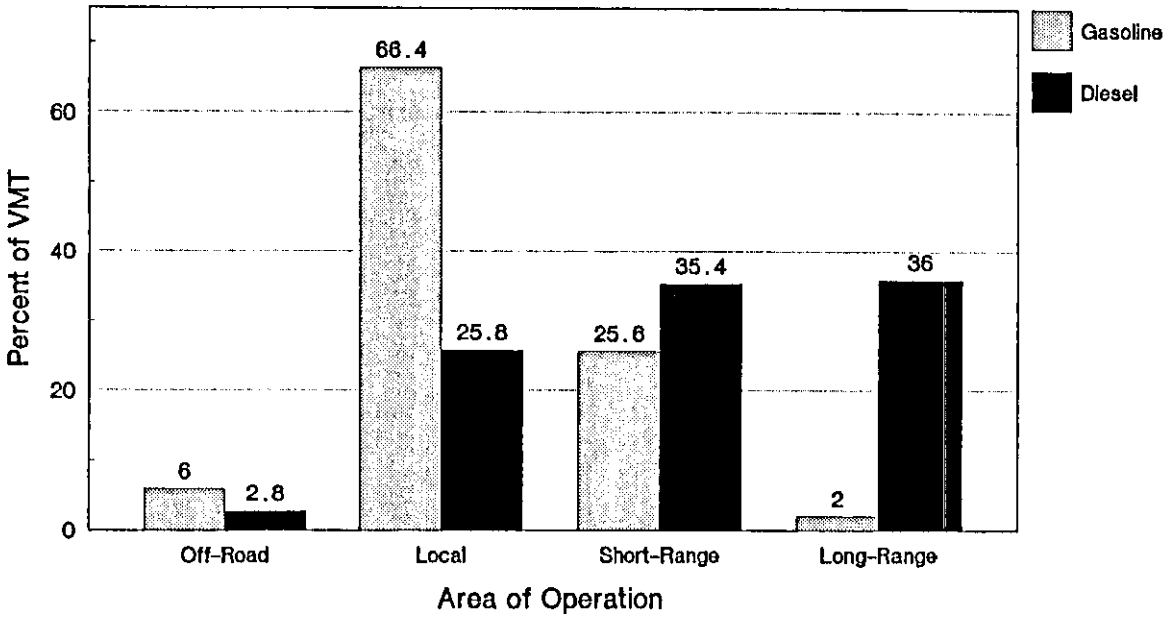
MODEL YEAR	VEHICLE COUNTS GAS	DIESEL	DISTRIBUTION OF GAS AREA 1	AREA 2	AREA 3	AREA 4	DISTRIBUTION OF DIESEL AREA 1	AREA 2	AREA 3	AREA 4
1	-	6	-	-	-	-	5.0	60.0	25.0	10.0
2	9	68	4.7	79.6	10.2	5.5	2.3	57.6	36.8	3.3
3	16	38	21.1	76.0	2.9	0.0	2.0	39.2	45.0	13.8
4	91	138	4.1	88.9	6.6	0.4	0.4	22.3	72.3	5.0
5	30	44	0.0	47.1	35.6	17.4	2.9	45.1	52.0	0.0
6	27	28	0.0	58.4	41.6	0.0	0.0	33.7	66.3	0.0
7	52	12	0.1	66.6	33.3	0.0	0.0	13.5	86.5	0.0
8	32	5	50.9	34.7	14.4	0.0	0.0	64.4	7.5	28.1
9	51	16	3.6	74.8	21.6	0.0	0.0	77.0	23.0	0.0
10	62	-	0.1	61.5	35.9	2.5	-	-	-	-
11	288	40	5.4	54.7	36.9	2.9	1.9	89.9	8.2	0.0

HEAVY HEAVY-DUTY

MODEL YEAR	VEHICLE COUNTS GAS	DIESEL	DISTRIBUTION OF GAS AREA 1	AREA 2	AREA 3	AREA 4	DISTRIBUTION OF DIESEL AREA 1	AREA 2	AREA 3	AREA 4
1	-	95	-	-	-	-	5.7	25.9	33.5	34.8
2	-	201	-	-	-	-	7.2	12.1	43.3	37.3
3	-	456	-	-	-	-	3.0	29.1	33.3	34.7
4	2	981	0.0	100.0	0.0	0.0	2.3	14.5	23.0	60.1
5	15	573	0.0	0.0	100.0	0.0	0.8	17.2	26.6	55.4
6	-	472	-	-	-	-	3.0	24.9	37.6	34.5
7	-	281	-	-	-	-	2.2	26.1	34.6	37.1
8	9	287	0.0	28.3	71.7	0.0	3.0	22.9	34.8	39.2
9	9	398	2.9	85.7	11.4	0.0	3.3	30.9	39.0	26.8
10	6	344	15.5	47.2	37.3	0.0	1.1	23.4	41.3	34.1
11	40	1,276	0.5	79.6	14.5	5.4	3.8	33.8	39.6	22.8

Figure 4-9

Distribution of Travel By Area of Operation For Heavy-Duty Gasoline and Diesel Vehicles (California-Based Vehicles)

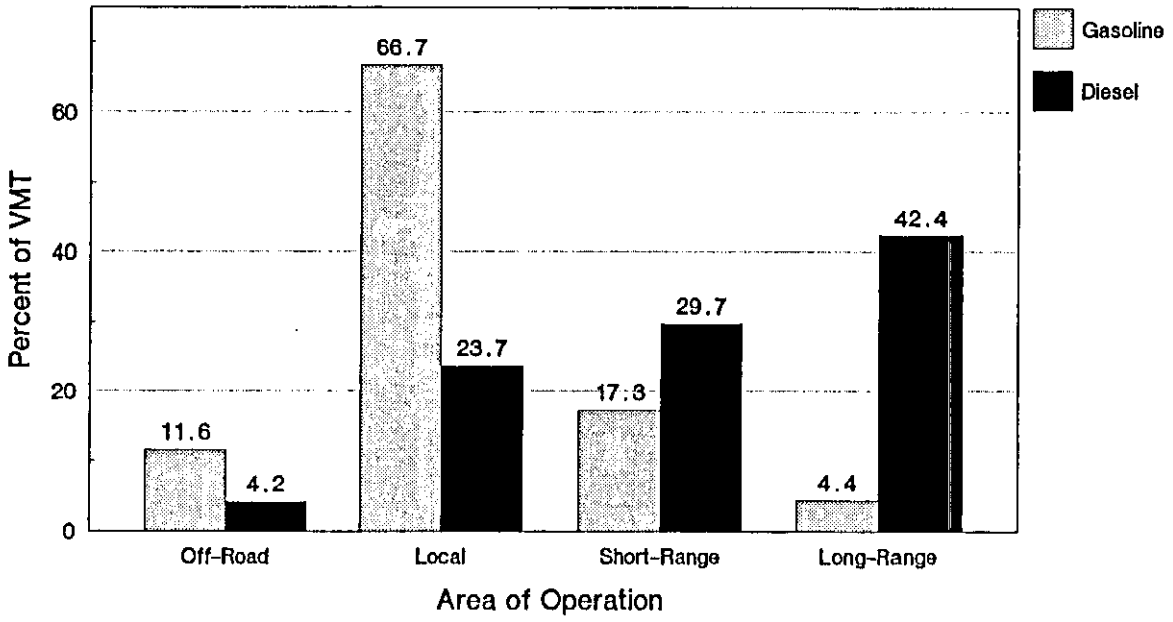


Note: Based on an analysis of the 1982 Truck Inventory and Use Survey

Each fuel sums to 100 percent.

Figure 4-10

Distribution of Travel By Area of Operation For Heavy-Duty Gasoline and Diesel Vehicles (Non California-Based Vehicles)



operation for gasoline vehicles is the local area. Gasoline vehicles are shown to have minimal long-range travel behavior. Figure 4-10 shows a very similar pattern of activity for 49-state vehicles.

Figure 4-11 displays a summary of the distribution of average daily VMT levels for HDV gasoline vehicles by ARB weight class. It shows that almost all of the gasoline travel occurs in-state and, as seen in the area of operation, essentially no long distance or out-of-state gasoline travel occurs for vehicles registered in California. In addition, it shows that light-HDVs are responsible for the bulk of the in-state heavy-duty travel. In contrast, Figure 4-12 shows that heavy-HDV's are responsible for almost all of Diesel travel, and that a significant fraction of that travel occurs out-of-state.

To provide a perspective on the distribution of California versus non-California-based vehicle activity in California, Figures 4-13 and 4-14 display the vehicle counts recorded in the 1985 CALTRANS' Weigh Station Survey. The data have been converted to the ARB weight classes on the basis of a method discussed in the next section. The figures show that Diesel vehicles dominate ARB's heavy-HDV class and that almost all out-of-state vehicles are heavy-HDV Diesels. The distribution of gasoline vehicles recorded in the survey is extremely small for all of the classes. This shows that Diesels are responsible for the bulk of the HDV VMT that is observed on roads subject to CALTRANS surveillance. However, the activity of gasoline vehicles operating within urban areas, as suggested in Figure 4-9, is not thought to be well represented in this data set.

County-Level VMT Estimates

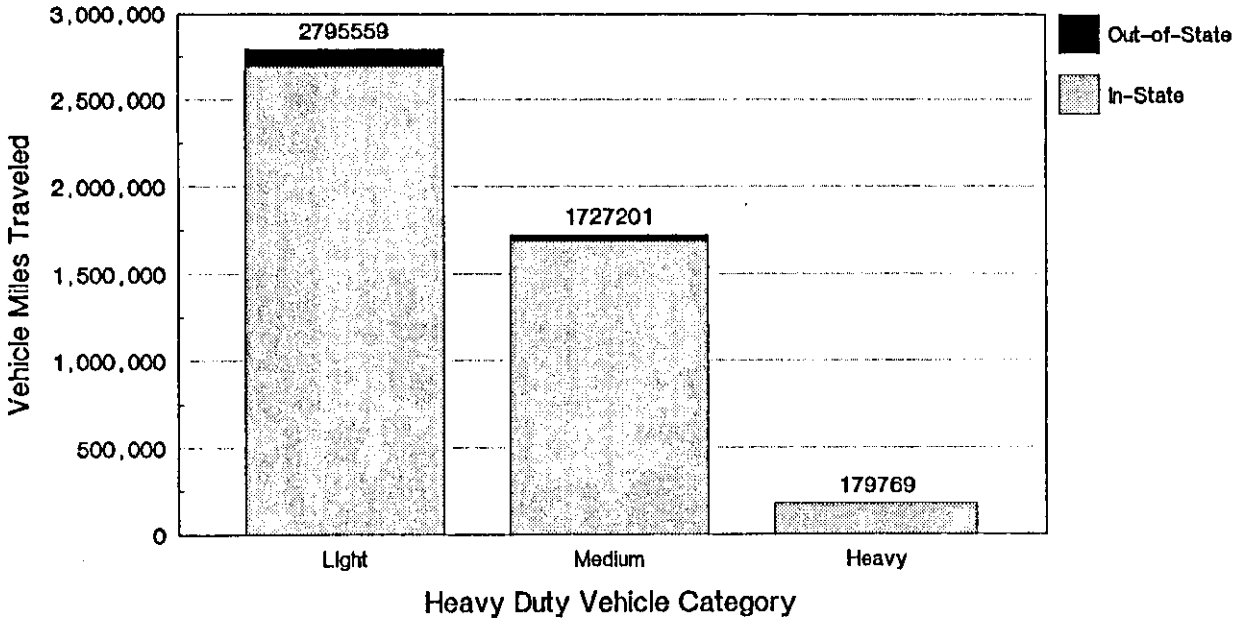
To estimate the level of travel occurring in each of the 58 counties in the state, the TIUS estimate of VMT for California-based vehicles was apportioned to each county. The PES study obtained a CALTRANS estimate of annual average daily VMT that trucks accrued by axle class in 1982, for 50 of the counties which belong to single CALTRANS districts. PES developed VMT estimates for the remaining eight counties that spanned more than one CALTRANS district. The resulting estimate of 1982 truck travel on the state highway system in each of the 58 counties provides an excellent basis of apportioning the TIUS travel estimates.

To use the county-specific estimates, however, a relation between GVW and axles is required to place the TIUS and CALTRANS estimates on a consistent basis. PES developed such a relation through an analysis of the 1981 CALTRANS weigh station survey. ARB requested that Sierra review the method used and update it with more recent information.

The CALTRANS weigh station survey recorded data on the number of axles, the weight, and an indication of load (whether it was loaded or

Figure 4-11

Comparison of In and Out-of-State Average Daily VMT Levels for Heavy-Duty Gasoline Vehicles Registered and Based In California



Note: Based on analysis of the 1982 Truck Inventory and Use Survey.

Figure 4-12

Comparison of In and Out-of-State Average Daily VMT Levels for Heavy-Duty Diesel Vehicles Registered and Based In California

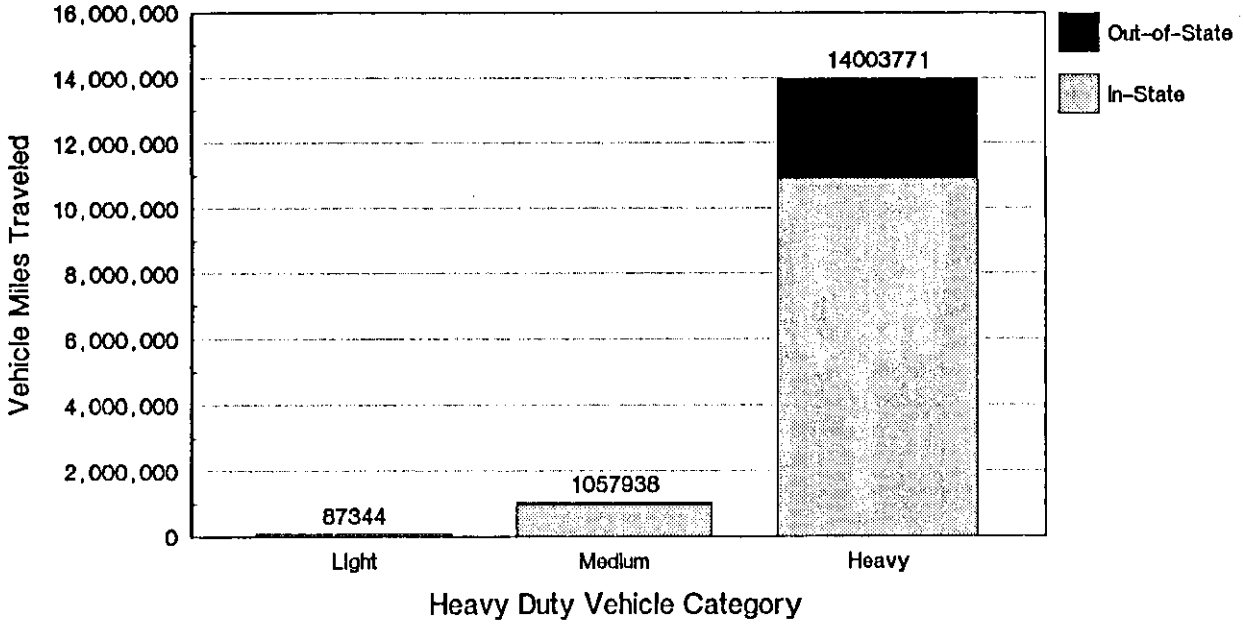


Figure 4-13

Gasoline and Diesel Counts
From Caltrans' 1985 Weigh Station Survey
(California-Based Vehicles)

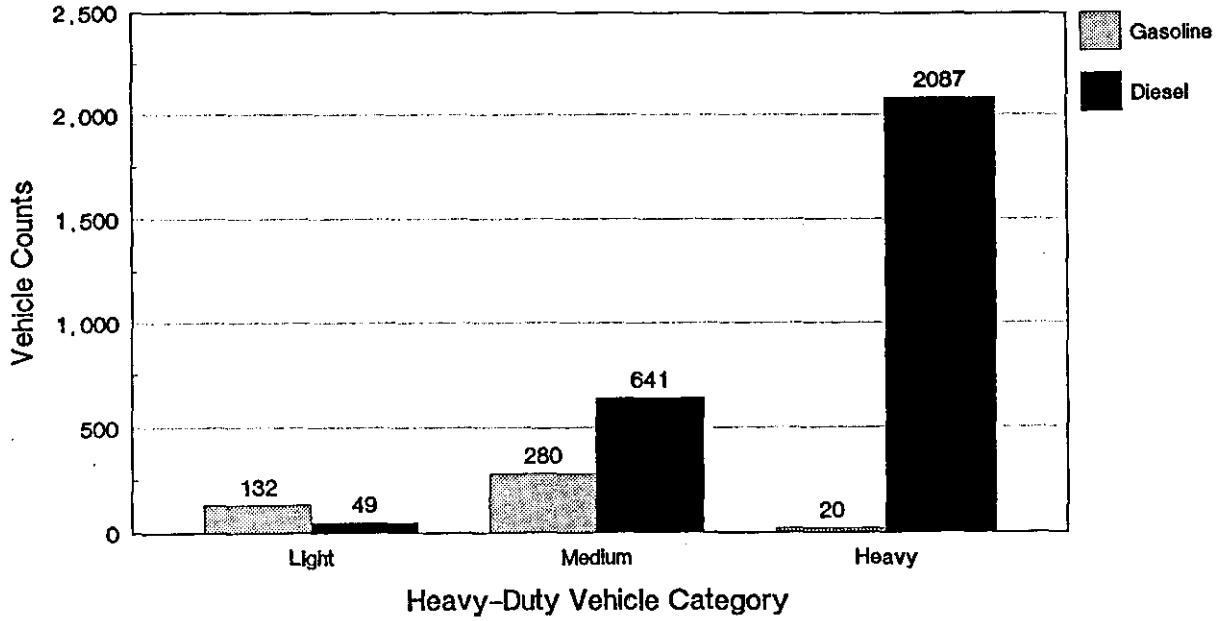
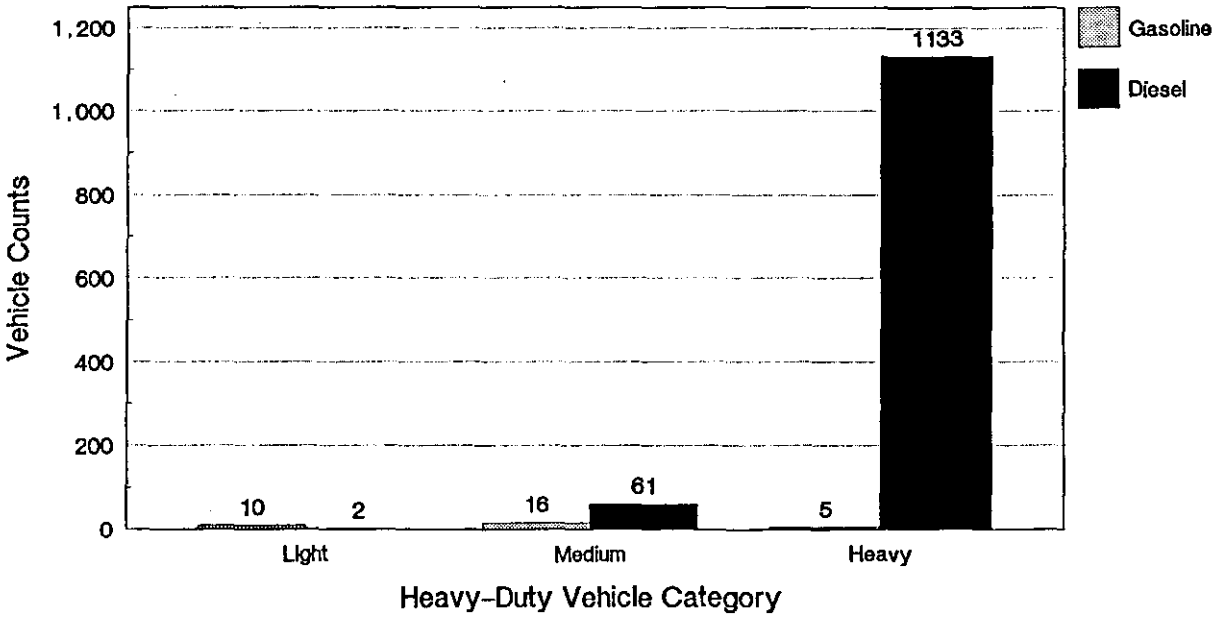


Figure 4-14

Gasoline and Diesel Counts
From Caltrans' 1985 Weigh Station Survey
(Non California-Based Vehicles)



empty) for each vehicle. Using the loaded truck data only, PES developed the following axle-to-ARB HDV weight class relation:

PES Factors For Converting Axles to ARB Weight Class

ARB Weight Class	2-Axle	3-Axle	4-Axle	5+Axle
Light-HDV	45%	-	-	-
Medium-HDV	55%	70%	33%	-
Heavy-HDV	-	30%	67%	100%

Sierra explored several options to develop axle-to-weight relations. One approach used the axle count and weight classifications contained in TIUS. Many axle counts are available in the data base; unfortunately, the axle count variable recommended by Bureau of Census personnel contained no indication of 2- or 3-axle vehicles. Therefore, a decision was made to use the data in TIUS to set GVW to laden and unladen weight ranges. As discussed in the data screening section, there is considerable overlap in the loads and weights reported for each of the GVW classes. To simplify the task of assigning vehicles to a particular GVW category, breakpoints between the classes were specified at the midpoints between the mean reported empty weights and between the mean reported average weights in TIUS. A summary of the resulting breakpoints is presented below.

	Empty Weight		Average Weight	
GVW Class	Minimum	Maximum	Minimum	Maximum
IIb	5,909	6,868	7,834	10,334
III	6,869	8,318	10,335	12,228
IV	8,319	10,213	12,229	14,311
V	10,214	12,785	14,312	18,479
VI	12,786	16,316	18,480	25,128
VII	16,317	20,233	25,129	33,906
VIIIa	20,234	24,995	33,907	53,669
VIIIb	24,996+		53,670+	

Vehicles in the CALTRANS weigh station survey were assigned to GVW classes on the basis of the preceding cutpoints. As discussed in the data preparation section, non-heavy-duty vehicles were eliminated from the CALTRANS survey on the basis of body type and number of axles. The remaining vehicles were then assigned to GVW classes on the basis of an indication of load (empty or loaded) and the cutpoints noted

above. The CALTRANS data were then aggregated into the ARB HDV weight classes on the basis of the indicated GVW. The distribution of axles occurring in each of the ARB classes was then determined and used to develop a new axle-to-ARB class relationship, listed below.

Sierra Factors For Converting Axles to ARB Weight Class

ARB Weight Class	2-Axle	3-Axle	4-Axle	5+Axle
Light-HDV	26%	-	-	-
Medium-HDV	74%	67%	40%	-
Heavy-HDV	-	33%	60%	100%

With the exception of the 2-axle category, the new ARB class-to-axle relation is quite similar to the PES relation. Based on a review of the vehicle configurations contained in the TIUS and CALTRANS data files, Sierra believes that the new factors showing an increase in the medium-HDV share of 2-axle vehicles are correct.

The new axle-to-weight-class relationship was next applied to the county-specific estimates of average annual daily VMT by axle class (Appendix C). The resulting estimates of VMT by ARB HDV weight class are presented in Table 4-3. It should be noted that the data contained in the table represents an estimate of HDV travel on the state highway system and that total HDV travel in California is estimated to be considerably higher. The PES report estimated total HDV travel to be roughly 36 million miles per day which is substantially above the 24 million miles per day that CALTRANS estimated for HDV's operating on the state highway system.

Sierra chose to use the CALTRANS data, because it was based on actual counts of activity, to allocate the TIUS estimate of travel (gasoline and Diesel combined), by weight class to each county. Table 4-4 presents a summary of the distribution of travel estimated from TIUS for vehicles registered and based in California (i.e., the values used to produce Figures 4-11 and 4-12).

The annual VMT estimates in TIUS were divided by 365 to produce average daily VMT estimates that are consistent with the units employed in the PES analysis and the CALTRANS survey. The table shows that Diesels are responsible for roughly two-thirds of the travel in the state and that almost 20 percent of the VMT accrued by HDV vehicles registered and based in California occurs outside of the state.

The in-state estimate of travel, produced by multiplying each respondent's annual VMT estimate by the estimate of the fraction of in-state travel, was allocated to each county in proportion to the distribution of travel listed in Table 4-3. Table 4-5 presents a listing of the TIUS travel estimates allocated to each county. It

Table 4-3

Caltrans/PES Estimate of Heavy-Duty Truck Travel (miles/day)
By County and ARB HDV Classification
On the California State Highway System in 1982

County	Light	Medium	Heavy	Total
Alameda	83,351	345,926	699,785	1,129,062
Alpine	484	1,685	1,564	3,733
Amador	3,452	13,741	15,080	32,273
Butte	9,441	34,982	39,626	84,050
Calaveras	3,349	12,571	12,137	28,057
Colusa	6,847	26,647	109,483	142,977
Contra Costa	37,563	152,277	303,606	493,446
Del Norte	3,355	14,343	21,752	38,450
El Dorado	11,734	45,597	35,748	93,079
Fresno	44,945	174,429	527,306	746,679
Glenn	5,664	22,928	92,561	121,154
Humbolt	12,582	64,984	94,862	172,428
Imperial	19,876	70,315	173,924	264,115
Inyo	11,418	40,920	44,682	97,020
Kern	86,237	326,872	1,224,254	1,637,362
King	7,963	30,826	124,700	163,489
Lake	6,345	22,600	11,690	40,635
Lassen	8,327	35,133	35,774	79,234
Los Angeles	715,715	2,566,747	2,129,817	5,412,279
Madera	15,136	56,166	188,381	259,683
Marin	15,122	55,229	52,954	123,305
Mariposa	1,458	4,672	1,379	7,509
Mendocino	14,943	65,458	81,694	162,095
Merced	22,400	90,373	326,370	439,143
Modoc	3,359	14,066	13,413	30,838
Mono	3,593	16,642	22,018	42,253
Monterey	30,351	115,565	176,414	322,330
Napa	6,760	25,349	21,995	54,104
Nevada	7,438	29,047	57,179	93,663
Orange	178,102	641,771	480,384	1,300,257
Placer	26,376	97,861	122,652	246,889
Plumas	2,714	12,383	16,927	32,024
Riverside	113,179	409,222	804,924	1,327,325
Sacramento	53,349	197,536	281,588	532,474
San Benito	7,841	28,502	36,184	70,327
San Bernardino	112,973	478,353	917,843	1,509,170
San Diego	154,005	536,056	353,693	1,043,754
San Francisco	21,102	73,157	31,706	125,965
San Joaquin	30,410	126,123	401,931	558,465
San Luis Obis	26,892	99,534	135,047	261,473
San Mateo	51,384	192,426	160,845	404,655
Santa Barbara	29,623	112,673	160,486	302,782
Santa Clara	65,716	265,428	446,176	777,320
Santa Cruz	12,874	48,143	45,310	106,328
Shasta	22,807	99,792	196,978	319,577
Sierra	2,119	9,414	10,736	22,269
Siskiyou	14,719	89,408	227,718	331,845
Solano	24,274	103,460	237,626	365,360
Sonoma	21,124	83,915	124,454	229,492
Stanislaus	14,766	60,011	164,234	239,010
Sutter	6,614	22,712	34,198	63,524
Tehama	11,011	45,319	128,711	185,041
Trinity	2,826	13,799	17,145	33,770
Tulare	32,704	122,222	459,059	613,986
Tuolumne	4,369	15,886	15,666	35,921
Ventura	60,942	209,519	138,194	408,655
Yolo	15,011	58,489	133,915	207,415
Yuba	5,389	18,672	21,629	45,689
Total	2,324,224	8,745,875	12,946,108	24,016,207

Table 4-4

Distribution of Travel for Heavy-Duty Vehicles
Registered and Based in California

Fuel Type	ARB Class	In-State Travel	Out-of-State Travel
Gasoline	Light	2,694,920	100,639
	Medium	1,687,808	39,393
	Heavy	179,742	27
	Total	4,562,470	140,059
Diesel	Light	87,344	0
	Medium	972,243	85,695
	Heavy	10,907,682	3,096,089
	Total	11,967,269	3,181,784
Other	Light	28,447	1,012
	Medium	28,079	1,258
	Heavy	117,036	31,139
	Total	173,562	33,409
	State Total	16,703,301	3,355,252

Table 4-5

TIUS Estimate of California Registered and Based Heavy-Duty Truck Travel (miles/day) By County and ARB HDV Classification on All California Roads in 1982

County	Light	Medium	Heavy	Total
Alameda	100,797	106,324	605,643	812,763
Alpine	585	518	1,354	2,457
Amador	4,175	4,224	13,051	21,449
Butte	11,418	10,752	34,295	56,465
Calaveras	4,050	3,864	10,505	18,418
Colusa	8,280	8,190	94,754	111,225
Contra Costa	45,425	46,804	262,761	354,991
Del Norte	4,057	4,408	18,826	27,292
El Dorado	14,190	14,015	30,939	59,144
Fresno	54,352	53,612	456,367	564,331
Glenn	5,850	7,047	80,109	94,006
Humboldt	15,216	19,973	82,100	117,289
Imperial	24,036	21,612	150,526	196,174
Inyo	13,807	12,577	38,671	65,056
Kern	104,287	100,487	1,059,554	1,264,308
King	9,630	8,475	107,924	127,029
Lake	7,873	6,946	10,118	24,736
Lassen	10,069	10,799	30,961	51,829
Los Angeles	865,523	788,915	1,843,292	3,497,729
Madera	18,304	17,263	163,038	198,605
Marin	18,287	16,975	45,830	81,093
Mariposa	1,763	1,436	1,193	4,392
Mendocino	18,071	20,119	70,703	108,893
Merced	27,089	27,777	282,463	337,329
Modoc	4,063	4,323	11,608	19,994
Mono	4,345	5,115	19,056	28,516
Monterey	36,704	35,520	152,681	224,905
Napa	8,175	7,791	19,036	35,002
Nevada	8,995	8,928	49,486	67,409
Orange	215,381	197,254	415,758	828,393
Placer	31,897	30,079	106,151	168,127
Plumas	3,282	3,806	14,650	21,738
Riverside	136,868	125,778	696,637	959,284
Sacramento	64,516	60,715	243,706	368,937
San Benito	9,240	8,146	31,316	48,702
San Bernardino	136,620	147,027	794,365	1,078,012
San Diego	186,240	164,762	306,110	657,112
San Francisco	25,519	22,485	27,440	75,445
San Joaquin	36,776	38,765	347,859	423,400
San Luis Obis	32,521	30,593	116,879	179,993
San Mateo	62,139	59,144	139,206	260,489
Santa Barbara	35,824	34,831	138,696	209,351
Santa Clara	79,471	81,582	386,152	547,205
Santa Cruz	15,569	14,797	39,215	69,581
Shasta	27,581	30,672	170,478	228,732
Sierra	2,563	2,893	9,292	14,748
Siskiyou	17,800	27,480	197,083	242,364
Solano	29,355	31,799	205,658	266,812
Sonoma	25,545	25,792	107,711	159,048
Stanislaus	17,856	18,445	142,139	178,440
Sutter	7,999	5,981	28,597	44,577
Tehama	13,316	13,929	111,395	138,641
Trinity	3,418	4,241	14,838	22,497
Tulare	39,550	37,566	397,302	474,418
Tuolumne	5,284	4,883	13,558	23,725
Ventura	73,697	64,398	119,603	257,698
Yolo	18,153	17,977	115,889	152,030
Yuba	6,517	5,739	18,719	30,975
Total	2,810,712	2,688,130	11,204,461	16,703,303

should be noted that the TIUS estimate of VMT represents only one of three categories of HDV travel in California:

- Vehicles registered in California and based in California;
- Non-California-registered vehicles based in California; and
- Non-California-registered and -based vehicles operated in California.

Sierra's subcontractor screened the TIUS data base to determine the number of non-California-registered vehicles that are based in California. Appendix F provides a summary of the characteristics of those vehicles. Surprisingly, only 80 respondents indicated that their non-California-registered vehicles were based in California. When the appropriate expansion factors were applied to these respondents, they were projected to operate only 5,630 vehicles in the state. The accuracy of this estimate is dependent on the representativeness of the fleet operators participating in the survey. It is believed that the bulk of non-California-registered vehicles based in California are operated by fleets. There is no reason to believe that respondents purposely misled Census about the state in which the vehicle was registered, because their anonymity is guaranteed. Thus, it is believed that this estimate is representative.

While almost half of non-California-registered vehicles were identified as gasoline-fueled Class IIb, two-thirds of the projected VMT was associated with the higher mileage heavy-HDV category. The estimated annual VMT of these vehicles was as follows:

Estimated Annual Travel of
Non-California-Registered Heavy-Duty Vehicles
Based in California

Fuel Type	Annual VMT
Gasoline	50,030,086
Diesel	103,373,583
Other	1,610,739
Total	153,403,669

When the above values are divided by 365 to provide average daily estimates and multiplied by the fraction of in-state travel, the level of travel decreased to 360,936 miles per day.

To produce an estimate of total HDV vehicle travel for the entire state, an estimate for one final category was required: non-California-registered and -based HDV's operated on California highways. There is no straightforward analytical method available to produce this estimate. No data source or combination of data sources provides a direct estimate of travel for this category of vehicles. At the beginning of this effort Sierra tried to access data on registration fees collected by the Department of Motor Vehicles (DMV) from out-of-state vehicles operated on California highways. All vehicles participating in the International Registration Plan (IRP) program are required to estimate the share of their travel that occurs in each state. Their registration fees are then distributed to each state in proportion to the percent of travel that occurs there. Unfortunately, contacts with DMV indicated that the desired information was not computerized and that after a brief storage period it had been discarded.

The CALTRANS survey provides an estimate of the distribution of California-based versus non-California-based vehicles traveling on the state's highways. However, there is no direct estimate of the VMT they accrue on the state's highways.

Based on the comparisons of California and 49-state vehicles presented above, it can be assumed that the non-California vehicles have similar levels of annual travel. The problem with this approach is that no estimate is available to determine the fraction of travel that occurs on California highways. Two assumptions are possible:

1. Out-of-state vehicles have the same level of travel on California highways as do California vehicles (i.e., the in-state fraction of travel would apply to the total estimate).

2. Out-of-state vehicles operated on California highways have travel levels that are at most equal to the out-of-state fraction of their total travel levels. A more likely estimate is that some portion (up to half possibly) of the out-of-state travel actually occurs on California highways.

Sierra believes that these assumptions bracket the level of travel that these vehicles experience on California roads and the actual level of travel that occurs is somewhere in between them. To determine the impact of these assumptions on the share of travel that these vehicles would accrue on California highways, the following calculations were performed.

The fraction of non-California-based vehicles noted in the CALTRANS survey was computed for each weight class and fuel type. The out-of-state vehicles were assumed to have the same level of travel as the in-state vehicles in each category. Thus, the travel for each class was proportional to its share of the CALTRANS class count and the VMT estimated for in-state vehicles from TIUS. The two assumptions noted above about the share of travel that might occur on the state's highways were then

imposed. The following travel estimates were produced under the two methods:

	Method 1	Method 2
California-based	16,703,301	16,703,301
49-State based in Ca.	360,936	360,936
49-State Operated in Ca.	4,291,932	556,561
Total	21,356,169	17,620,790

Using the first assumption (Method 1), out-of-state travel is responsible for 20 percent of the travel. Under the second assumption (Method 2), out-of-state travel is responsible for only 3 percent of the travel. Several independent statistics are available to interpret the reasonableness of these assumptions. First, the 1985 PES study estimated that the average daily VMT for all HDV's was 36,023,000 miles; it also estimated that out-of-state HDV's are responsible for roughly 15 percent of the HDV travel on California highways. Second, the recently completed "Highway Cost Allocation Study"* developed the following estimates of the percent of California travel due to out-of-state vehicles:

Single Unit 2 Axle	7.16%
Single Unit 3+ Axle	6.73%
Combination 3 Axle	4.38%
Combination 4 Axle	14.70%
Combination 5+ Axle	33.94%

The overall average computed from the estimated VMT levels of these vehicles was 20 percent.

To determine which method was appropriate for estimating the travel of out-of-state registered and based HDVs on California highways, Sierra reviewed the CALTRANS HDV survey. It contains the results of counts from 16 widely spaced locations across the state. The distribution of vehicles that it contains should be representative of not only the number of HDV's operating on the state's highways, but also the travel

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* "Highway Cost Allocation Study, Technical Report", Prepared for the California Department of Transportation, by Sydec, Inc., July 1987

that they experience on the state highways. Therefore, Sierra determined that the first method should be used to estimate the travel of out-of-state registered and based HDV's in California. Table 4-6 provides a summary of the distribution of travel for out-of-state registered vehicles by county. Table 4-7 presents an estimate of the distribution of total HDV travel by county in 1982. A summary of county level travel by fuel type and registration is presented in Appendix H.

The TIUS-based estimate of total HDV travel is roughly 60 percent of the state HDV estimate produced in the PES study and a similar estimate produced by EMFAC/BURDEN. The magnitude of the difference stimulated an analysis of potential sources of error in both the data and the methodology employed. That evaluation focused on the effect of the data screening techniques and the revisions to the expansion factors. The projected VMT levels, before and after the data screening, were then compared. This showed that the raw sample of TIUS data projected total truck VMT (light, medium and heavy-duty) to be approximately 121 million miles per day. Class I and II (GVW) vehicles accounted for approximately 100 million miles per day. While it is not clear what portion of the Class II vehicles are considered heavy-duty (without an analysis such as the one outlined in Section 3), EPA typically assumes that 15 percent of Class II vehicles are Class IIb. On this basis, the prescreened data would be expected to estimate a California-registered HDV daily VMT of approximately 26 million miles.

Assuming that the uncleaned California-registered VMT estimate is correct, the travel levels of the other two categories of vehicles would be expected to add another roughly 4.5 million miles per day (which is relatively close to the PES estimate of 5.3 million miles per day that out-of-state trucks travel in California) and produce a state total HDV daily travel estimate of between 30 and 31 million miles per day. This estimate would be significantly closer to the PES and ARB estimate, off by roughly 15 percent. If, however, the uncleaned California estimate is scaled back to account for inconsistencies in registrations and the amount of travel that California-registered vehicles experience out-of-state, the gap between the TIUS-based estimate and the ARB and PES estimate widens rapidly to roughly 10-12 million miles per day.

Sierra also reviewed the factors used by CALTRANS to extrapolate fleet performance from truck counts to see if they could be used to improve the TIUS travel estimates. That review showed that the CALTRANS factors are used to extraplolate six-hour counts to a 24-hour basis. Those numbers in turn are used to update average daily truck volumes at 2,500 locations around the state. The average daily truck volumes are then combined with highway mile data to estimate annual average daily VMT. It is clear that the methods used by CALTRANS and TIUS to estimate annual average daily travel are fundamentally different and that the CALTRANS expansion factors could not be used with the TIUS data. The CALTRANS approach merges daily counts with road mileage to estimate travel. The TIUS approach projects fleet performance from a representative sample of owner travel estimates.

In summary, the uncleaned TIUS data appears to produce a reasonable estimate of aggregate truck travel in California. There is, however, considerable error in the data detailing the characteristics of the vehicles that participated in the survey. It is necessary to clean that data in order to get an accurate estimate of the vehicle categories of interest to ARB. The process of cleaning the data eliminated a large fraction of lower weight vehicles and significantly diminished the representativeness of the data base. Because of TIUS's unique system of projecting fleet behavior from survey participants via expansion factors, it is not possible to accurately recapture the travel levels of those records eliminated in the course of cleaning the data.

Table 4-6

TIUS Estimate of Non-California Registered Heavy-Duty Truck Travel (miles/day) by County and ARB HDV Classification on All California Roads in 1982

County	Light	Medium	Heavy	Total
Alameda	7,646	7,899	229,184	244,730
Alpine	44	38	512	595
Amador	317	314	4,939	5,569
Butte	866	799	12,978	14,643
Calaveras	307	287	3,975	4,569
Colusa	628	608	35,856	37,093
Contra Costa	3,446	3,477	99,433	106,356
Del Norte	308	328	7,124	7,759
El Dorado	1,076	1,041	11,708	13,826
Fresno	4,123	3,983	172,696	180,802
Glenn	520	524	30,314	31,358
Humbolt	1,154	1,484	31,068	33,706
Imperial	1,823	1,606	56,961	60,390
Inyo	1,047	934	14,634	16,615
Kern	7,911	7,464	400,951	416,326
King	731	704	40,840	42,275
Lake	582	516	3,829	4,927
Lassen	764	802	11,716	13,282
Los Angeles	65,859	58,812	697,529	821,800
Madera	1,389	1,283	61,696	64,367
Marin	1,387	1,261	17,343	19,991
Mariposa	134	107	452	692
Mendocino	1,371	1,495	26,755	29,621
Merced	2,055	2,064	106,888	111,007
Modoc	308	321	4,393	5,022
Mono	330	380	7,211	7,921
Monterey	2,784	2,639	57,777	63,200
Napa	620	579	7,204	8,403
Nevada	682	663	18,728	20,072
Orange	16,339	14,655	157,329	188,323
Placer	2,420	2,235	40,169	44,824
Plumas	249	283	5,544	6,075
Riverside	10,383	9,345	263,618	283,345
Sacramento	4,894	4,511	92,222	101,627
San Benito	701	605	11,850	13,157
San Bernardino	10,364	10,923	300,600	321,887
San Diego	14,128	12,241	115,837	142,206
San Francisco	1,936	1,671	10,384	13,990
San Joaquin	2,790	2,880	131,635	137,305
San Luis Obis	2,467	2,273	44,229	48,969
San Mateo	4,714	4,394	52,678	61,786
Santa Barbara	2,718	2,573	52,560	57,851
Santa Clara	6,029	6,081	146,125	158,215
Santa Cruz	1,181	1,099	14,839	17,120
Shasta	2,092	2,279	64,511	68,883
Sierra	194	215	3,516	3,926
Siskiyou	1,350	2,042	74,579	77,971
Solano	2,227	2,363	77,824	82,413
Sonoma	1,938	1,916	40,759	44,613
Stanislaus	1,355	1,370	53,788	56,513
Sutter	607	519	11,200	12,325
Tehama	1,010	1,035	42,154	44,199
Trinity	259	315	5,615	6,189
Tulare	3,000	2,791	150,345	156,136
Tuolumne	401	363	5,131	5,894
Ventura	5,591	4,784	45,259	55,635
Yolo	1,377	1,336	43,858	46,571
Yuba	494	426	7,084	8,004
Total	213,222	199,714	4,239,933	4,652,869

Table 4-7

TIUS Estimate of All Heavy-Duty Truck Travel (miles/day)
By County and ARB HDV Classification on
All California Roads in 1982

County	Light	Medium	Heavy	Total
Alameda	108,443	114,223	834,827	1,057,493
Alpine	630	556	1,866	3,052
Amador	4,481	4,537	17,990	27,018
Butte	12,284	11,551	47,273	71,108
Calaveras	4,357	4,151	14,480	22,987
Colusa	8,908	8,799	130,611	148,318
Contra Costa	48,871	50,281	362,194	461,347
Del Norte	4,365	4,736	25,950	35,051
El Dorado	15,268	15,056	42,647	72,969
Fresno	58,475	57,596	629,063	745,134
Glenn	7,370	7,571	110,424	125,364
Humbolt	16,370	21,457	113,168	150,996
Imperial	25,859	23,218	207,488	256,565
Inyo	14,855	13,512	53,304	81,671
Kern	112,198	107,931	1,460,505	1,680,635
King	10,361	10,178	148,764	169,303
Lake	8,255	7,462	13,946	29,663
Lassen	10,833	11,601	42,678	65,112
Los Angeles	931,182	847,527	2,540,821	4,319,529
Madera	19,693	18,546	224,734	262,972
Marin	19,675	18,236	63,173	101,084
Mariposa	1,896	1,543	1,645	5,084
Mendocino	19,442	21,614	97,459	138,514
Merced	29,144	29,841	389,352	448,336
Modoc	4,371	4,644	16,001	25,016
Mono	4,674	5,495	26,267	36,436
Monterey	39,488	38,159	210,457	288,105
Napa	8,795	8,370	26,240	43,405
Nevada	9,677	9,591	68,213	87,481
Orange	231,720	211,909	573,087	1,016,716
Placer	34,317	32,313	146,320	212,950
Plumas	3,531	4,089	20,193	27,813
Riverside	147,251	135,123	960,255	1,242,629
Sacramento	69,410	65,226	335,928	470,564
San Benito	9,941	8,751	43,166	61,858
San Bernardino	146,984	157,950	1,094,965	1,399,899
San Diego	200,368	177,003	421,947	799,318
San Francisco	27,455	24,156	37,824	89,436
San Joaquin	39,565	41,645	479,495	560,705
San Luis Obis	34,988	32,866	161,108	228,962
San Mateo	66,853	63,538	191,884	322,275
Santa Barbara	38,541	37,204	191,456	267,201
Santa Clara	85,500	87,643	532,277	705,420
Santa Cruz	16,750	15,897	54,054	86,701
Shasta	29,674	32,951	234,990	297,614
Sierra	2,757	3,108	12,808	18,674
Siskiyou	19,151	29,522	271,662	320,335
Solano	31,582	34,162	283,482	349,226
Sonoma	27,483	27,708	148,470	203,662
Stanislaus	19,211	19,815	195,927	234,953
Sutter	8,606	7,499	40,797	56,902
Tehama	14,326	14,964	153,549	182,839
Trinity	3,677	4,556	20,453	28,686
Tulare	42,550	40,357	547,647	630,554
Tuolumne	5,685	5,245	18,689	29,619
Ventura	79,288	69,182	164,862	313,333
Yolo	19,531	19,313	159,757	198,600
Yuba	7,011	6,165	25,803	38,979
Total	3,023,934	2,887,844	15,444,394	21,356,172

APPENDIX A

1982 Census of Transportation
Survey Forms No. TC-9501 and No. TC-9502

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

TC-9501

1982 CENSUS OF TRANSPORTATION

TRUCK INVENTORY AND USE SURVEY

O.M.B. APPROVAL NO. 0607-0250; EXPIRES 12/'84

NOTICE – Response to this inquiry is required by law (title 13, U.S. Codes). By the same law, your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

Please complete this form and RETURN TO:
BUREAU OF THE CENSUS
1201 East Tenth Street
Jeffersonville, Indiana 47134

DUE DATE: 15 days after receipt of form

In correspondence pertaining to this report, please refer to this Census File Number (CFN)

Important — Please read

All questions on this form refer to the vehicle described below and its use during the past 12 months (or the last 12 months you operated it). If there are errors in the vehicle registration information, consult the instruction sheet before continuing with the questionnaire.

ESTIMATES ARE ACCEPTABLE.

Please correct errors in name, address, and ZIP code. ENTER street and number if not shown.

CENSUS USE	1	2	3	4	5	6	7

REGISTRATION INFORMATION

Make of vehicle	Year of model	State	License number	Vehicle identification number (VIN)
101	102	103	104	105

Item 1 – Is this vehicle still in your possession?
201 1 ☐ YES – Are you the – 202 1 ☐ Owner? 2 ☐ Lessee? } *SKIP to item 2 and continue with questionnaire*
2 ☐ NO – *Please continue with this questionnaire, answering each item according to how you used the vehicle during the last 12 months you owned (or leased) it. Continue with items 1a and b.*

a. When did you dispose of this vehicle? *Enter figures only* → | Month 203 | Year

b. How did you dispose of this vehicle?
204 1 ☐ Sold it (or gave it away)
2 ☐ Junked or scrapped it
3 ☐ Returned to leasing company

Item 2 – When did you obtain this vehicle? *Enter figures only* → | Month 205 | Year

Item 3 – How did you obtain this vehicle?
206 1 ☐ Purchased it new } *SKIP to item 4*
2 ☐ Purchased it used (or otherwise acquired) } *SKIP to item 4*
3 ☐ Leased or rented it from someone else – *Continue with items 3a and b*

a. How was this vehicle leased or rented?
207 1 ☐ Without a driver
2 ☐ With a driver
3 ☐ With an owner-operator as driver

b. Was this a long-term lease or rental agreement (12 months or more)?
208 1 ☐ YES – What type was it?
2 ☐ Financing (no maintenance)
3 ☐ Financing and full maintenance
4 ☐ Other
5 ☐ NO

Item 4 – Did you lease or rent out this vehicle to anyone else?
209 1 ☐ YES – *Continue with items 4a and b*
2 ☐ NO – *SKIP to item 5*

a. How was it leased or rented out?
210 1 ☐ Without a driver
2 ☐ With a driver
3 ☐ With an owner-operator as driver

b. Was this a long-term lease or rental agreement (12 months or more)?
211 1 ☐ YES – What type was it?
2 ☐ Financing (no maintenance)
3 ☐ Financing and full maintenance
4 ☐ Other
5 ☐ NO

Item 5 – What is the body type of this vehicle?
212
01 ☐ Pickup
02 ☐ Panel or compact van
03 ☐ Utility (For example: Bronco, Blazer, Jeep, CJ – 5, 7, etc.)
04 ☐ Station wagon built on truck chassis (For example: Suburban, Wagoneer, etc.)
05 ☐ Other – *If the above descriptions do not match the body type of this vehicle, please describe the body type in detail.*

Item 6 – What is the overall length of this vehicle *(distance from front bumper to rear of vehicle)?* | Feet 214 |

Item 7a – What was the average weight of this vehicle as it was most often operated? An estimate is acceptable. | Pounds 216 |

b. How often was this vehicle carrying payloads that filled –

	Percent
Less than half its maximum cargo size	217 %
Less than half its maximum cargo weight	218 %

Item 8 – During the past year, did you attach any trailers to this vehicle?
304 1 ☐ YES – *Continue with items 8a, b, and c below*
2 ☐ NO – *SKIP to item 9*

a. What percent of the time did this vehicle pull a trailer?	Percent 302 %
b. How many axles were on the trailer unit which you attached most frequently to the vehicle?	Number 307
c. What was the loaded weight of the trailer most often attached to the vehicle? An estimate is acceptable.	Pounds 319

Item 9 – What kind of fuel does this vehicle use?
321 1 ☐ Gasoline
2 ☐ Diesel
3 ☐ Liquefied petroleum gas (LPG)
4 ☐ Other – *Specify fuel* _____

Item 10 – How many cylinders does this vehicle have?
322 1 ☐ 4 cylinders
2 ☐ 6 cylinders
3 ☐ 8 cylinders
4 ☐ Other – *Specify unit* _____

Item 11 – What is the size (displacement) of your engine? *Enter cubic inches, cubic centimeters, or liters, whichever is applicable.*

Cubic inches (CI) 323	OR	Cubic centimeters (CC) 324	OR	Liters (L) 328

Item 12 – What is the horsepower rating of this vehicle's engine? | Horsepower 326 |

Item 13 – What kind of transmission does this vehicle have?
327 1 ☐ Manual
2 ☐ Automatic

Item 14 – Does this vehicle have any of the following? *Mark (X) as many as apply.*
329
09 ☐ Radial tires
08 ☐ Power steering
10 ☐ Air conditioning
12 ☐ 4-wheel drive
13 ☐ Front-wheel drive

Item 15 – Who performed the general maintenance and major overhauls on this vehicle? *Mark (X) as many as apply*

	General maintenance 330	Major overhauls 331
Yourself	1 ☐	1 ☐
Your company's own maintenance facilities	2 ☐	2 ☐
Dealership's service department	3 ☐	3 ☐
Leasing company	4 ☐	4 ☐
Independent garage or private mechanic	5 ☐	5 ☐
Component distributorship	6 ☐	6 ☐
Other – *Specify* _____	7 ☐	7 ☐

PENALTY FOR FAILURE TO REPORT

CONTINUE ON PAGE 2 →

Item 16 – How many miles was this vehicle driven during the past 12 months? An estimate is acceptable.

NOTE – If driven less than 12 months, please estimate mileage for a full year. → 332

Item 17 – How many miles has this vehicle been driven since it was new?

NOTE – If it is no longer in your possession, please estimate the total lifetime mileage at the time you last operated it.
If the odometer/speedometer is broken, please give your best estimate.
If the odometer has turned over (100,000 + miles), please enter the total figure. 333

Item 18 – How many miles-per-gallon (MPG) did this vehicle average during the last year? (Use tenths, if available.)

	Miles	Tenths
Example: 10.5 MPG should be entered as	10	5
Enter miles per gallon → 334		

Item 19 – Where was the home base of this vehicle?

335 City

351 County | 352 State | 353 ZIP Code

Item 20 – What percent of annual mileage was driven OUTSIDE the home base state? An estimate is acceptable. 354 Percent %

Item 21 – What PERCENTAGE of this vehicle's ANNUAL MILEAGE was accounted for by the type of trips listed below? (If all trips were within one range, enter 100%. If more than one range is applicable, be sure that percentages add up to 100%.)

	Percent
Trips off-the-road, little travel on public roads	360 %
Trips within a 50 mile radius of vehicle's home base	361 %
Trips within a 50–200 mile radius of vehicle's home base	362 %
Trips beyond a 200 mile radius of vehicle's home base	363 %
TOTAL – Should equal 100% →	100%

Item 22 – Which of the following best describes the primary way this vehicle was operated?

400 NEVER FOR HIRE
1 ☐ BUSINESS USE – Operated by and for a private business (including self-employed) or a company; used in related activities of that business (including transportation of personnel) ..... SKIP to item 23
2 ☐ PERSONAL TRANSPORTATION – Operated as a personal-use vehicle in place of an automobile for pleasure driving, travel to work, etc. (NO BUSINESS USE) ..... SKIP to item 24
3 ☐ MIXED – A mixture of both business use and personal transportation. Percent business ..... 403 % } SKIP to item 23

401 ALWAYS FOR HIRE – ICC regulated?
1 ☐ YES
2 ☐ NO

FOR HIRE – Indicate below the type of for hire operation (SEE INSTRUCTION SHEET FOR FURTHER INFORMATION.)

405 a. Operation type

406 b. Jurisdiction served

407 c. Kind of carrier

Item 23 – Which of the following best describes your business (or the part of your business in which the vehicle was used)? If vehicle was leased, indicate business of lessee.

410
01 ☐ AGRICULTURAL ACTIVITIES
02 ☐ FORESTRY OR LUMBERING ACTIVITIES
03 ☐ CONSTRUCTION WORK
04 ☐ CONTRACTOR ACTIVITIES OR SPECIAL TRADES (painting, plumbing, electrical work, masonry, carpentry, etc.)
05 ☐ MANUFACTURING, REFINING, OR PROCESSING ACTIVITIES
06 ☐ WHOLESALE TRADE
07 ☐ RETAIL TRADE
08 ☐ PERSONAL SERVICES – hotel operations, landscaping, repair (except plumbing, electrical work, etc. – see "Contractor Activities"), laundry, advertising, entertainment, etc.
09 ☐ UTILITIES – operations or service of public utilities (telephone, gas, electric, etc.)
10 ☐ MINING OR QUARRY ACTIVITIES – used to assist in the extraction of natural resources or in hauling to processors
11 ☐ DAILY RENTAL – rented out, without a driver, to someone else on a daily or short-term basis
12 ☐ GOVERNMENTAL OPERATIONS
13 ☐ NOT IN USE – vehicle idle, wrecked, awaiting repair, etc., for more than 90 days.
14 ☐ FOR HIRE TRANSPORTATION – includes small package delivery
15 ☐ OTHER – *Please describe in detail*

Item 24 – At any time during the past 12 months, was this vehicle (or combination) used to haul hazardous materials in quantities large enough to require a special placard placed on the vehicle due to the Code of Federal Regulations, title 49, Transportation?

430 1 ☐ YES – *Continue with items 24a and b*
2 ☐ NO – *SKIP to item 25*

a. **What type(s) of hazardous materials were carried by this vehicle?** *Mark (X) as many as apply.*

431
1 ☐ Flammables or combustibles
2 ☐ Acids, poisons, caustics, etc.
3 ☐ Explosives
4 ☐ Radioactive materials
5 ☐ Hazardous waste
6 ☐ Hazardous materials not listed above

b. **Approximately what percent of this vehicle's annual mileage was accounted for by carrying these hazardous materials?**

440 1 ☐ Below 25% 2 ☐ 25–49% 3 ☐ 50–74% 4 ☐ 75–100%

Item 25 – From the following list of products, materials, and equipment, indicate which item or items this vehicle carried. Write in the approximate percentage of the vehicle's annual mileage that was accounted for while carrying loads and while empty (backhauls, etc.). Be sure that percentages add up to 100%. (See instruction sheet for further explanation and examples.)

a. PRODUCTS, EQUIPMENT, MATERIALS, ETC.	Percentage of annual mileage
(1) Agricultural and Food Products	
(a) Live animals – cattle, horses, poultry, hogs, etc.	416 %
(b) Fresh farm products – grain, crops, flowers, nursery stock, raw milk, raw tobacco, etc.	418 %
(c) Processed foods – canned goods, prepared meats, frozen foods, beverages, dairy products, tobacco products, etc.	417 %
(2) Mining Products, Unrefined – crude oil, coal, metal ores	418 %
(3) Building Materials – gravel, sand, concrete, glass, etc. (except cut lumber – see "Lumber")	419 %
(4) Forestry, Wood, and Paper Products	
(a) Logs and forest products – except cut lumber and fabricated wood products (see below)	420 %
(b) Lumber and fabricated wood products – except furniture (see (7) below)	421 %
(c) Paper and paper products	422 %
(5) Chemicals, Petroleum, and Allied Products	
(a) Chemicals and/or drugs (including fertilizers, pesticides, cosmetics, paints, etc.)	423 %
(b) Petroleum and petroleum products	424 %
(c) Plastics and/or rubber products	425 %
(6) Metals and Metal Products	
(a) Primary metal products – pipes, ingots, billets, sheets, etc.	426 %
(b) Fabricated metal products – except machinery or transportation equipment (see below)	427 %
(c) Machinery – electrical or nonelectrical	428 %
(d) Transportation equipment and parts	429 %
(7) Other Manufactured Products	
(a) Furniture (wood and nonwood) and/or hardware – not involved in household moving	430 %
(b) Textiles and apparels – fibers, leather goods, carpets, clothing, etc.	431 %
(8) Miscellaneous	
(a) Moving of household and office furniture – from home, offices, etc., under contract	432 %
(b) Miscellaneous tools and/or parts for specialized use, as in a craftsman's vehicle – traveling workshop for plumbers, carpenters, road service crews, etc.	433 %
(c) Mixed cargo, general freight	434 %
(d) Scrap, garbage, trash	435 %
(9) Other (not elsewhere classified) – *Please describe in detail*	436 %
b. NO LOAD CARRIED – *Vehicle empty*	437 %
TOTAL – Should equal 100% →	100%

Item 26 – Please enter below the number of any additional trucks and/or trailers you own and/or operate at the same home base you listed in item 19.

	Number
Pickups, small vans	463
Straight trucks	464
Truck-tractors (power-units)	465
Trailers (semi- and/or full)	466
Converter dollies	467

Item 27 – REMARKS – *Please use this space for any explanations that may be essential in understanding your reported data.*

Item 28 – Person to contact regarding this report.
Does this person have records on (or knowledge of) the daily activities of driver (stops, weight of individual shipments, destinations of shipments, etc.)?
1 ☐ YES 2 ☐ NO

Name

Address (Number and street)

City | State | ZIP code

Daytime telephone number → | Area code | Number | Extension

If this vehicle has a fleet number, please enter it here →

FORM TC-5001

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
FORM

TC-9502

1982 CENSUS OF TRANSPORTATION

TRUCK INVENTORY AND USE SURVEY

O.M.B. APPROVAL NO. 0607-0390; EXPIRES 12/84

NOTICE – Response to this inquiry is required by law (title 13, U.S. Code). By the same law, your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

Please complete this form and RETURN TO:

BUREAU OF THE CENSUS
1201 East Tenth Street
Jeffersonville, Indiana 47134

DUE DATE: 15 days after receipt of form

In correspondence pertaining to this report, please refer to this Census File Number (CFN)

Please correct errors in name, address, and ZIP code. ENTER street and number if not shown.

CENSUS USE | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Important — Please read

All questions on this form refer to the vehicle described below and its use during **the past 12 months** (or the last 12 months you operated it). If there are errors in the vehicle registration information, consult the instruction sheet before continuing with the questionnaire.

ESTIMATES ARE ACCEPTABLE.

REGISTRATION INFORMATION

Make of vehicle	Year of model	State	License number	Vehicle identification number (VIN)
101	102	103	104	105

Item 1 – Is this vehicle still in your possession?

201 1 ☐ YES – Are you the – 202 1 ☐ Owner? 2 ☐ Lessee? } *SKIP to item 2 and continue with questionnaire*

2 ☐ NO – *Please continue with this questionnaire, answering each item according to how you used the vehicle during the last 12 months you owned (or leased) it. Continue with items 1a and b.*

a. When did you dispose of this vehicle? *Enter figures only* →

Month	Year
203	

b. How did you dispose of this vehicle?

204 1 ☐ Sold it (or gave it away)
2 ☐ Junked or scrapped it
3 ☐ Returned to leasing company

Item 2 – When did you obtain this vehicle? *Enter figures only* →

Month	Year
205	

Item 3 – How did you obtain this vehicle?

206 1 ☐ Purchased it new . . . . . } *SKIP to item 4*
2 ☐ Purchased it used (or otherwise acquired) . . . . . }
3 ☐ Leased or rented it from someone else – *Continue with items 3a and b*

a. How was this vehicle leased or rented?

207 1 ☐ Without a driver
2 ☐ With a driver
3 ☐ With an owner-operator as driver

b. Was this a long-term lease or rental agreement (12 months or more)?

208 1 ☐ YES – What type was it?
2 ☐ Financing (no maintenance)
3 ☐ Financing and full maintenance
4 ☐ Other
5 ☐ NO

Item 4 – Did you lease or rent out this vehicle to anyone else?

209 1 ☐ YES – *Continue with items 4a and b*
2 ☐ NO – *SKIP to item 5*

a. How was it leased or rented out?

210 1 ☐ Without a driver
2 ☐ With a driver
3 ☐ With an owner-operator as driver

b. Was this a long-term lease or rental agreement (12 months or more)?

211 1 ☐ YES – What type was it?
2 ☐ Financing (no maintenance)
3 ☐ Financing and full maintenance
4 ☐ Other
5 ☐ NO

Item 5 – How many axles are on this vehicle and how many of them are driving axles? (Do not include axles on any trailers pulled.)

a. Total number of axles on **truck or truck-tractor** (power unit):

300 1 ☐ Two axles (4 tires)
2 ☐ Two axles (6 tires)
3 ☐ Three axles
4 ☐ Four or more axles

How many, IF ANY, are liftable axles? → 301

b. Number of driving (powered) axles on truck or truck-tractor (power unit):

302 1 ☐ One driving axle
2 ☐ Two driving axles
3 ☐ Three or more driving axles

Item 6 – How would you best describe this vehicle as it was most often operated? (If the vehicle is a pickup, compact van, or panel truck, enter body type on the "Other" line.)

303 1 ☐ Straight truck
2 ☐ Straight truck pulling trailer(s)
3 ☐ Truck-tractor (power unit) pulling trailer(s)
4 ☐ Other – *Specify* _____

Item 7 – If you indicated in item 6 that you operated this vehicle with trailer(s) attached, indicate below the kind of trailer(s) you most often pulled. *Mark (X) one box only.*

a. One semi-trailer, used with truck-tractor (power unit).

307 1 ☐ One axle on trailer
2 ☐ Two axles on trailer
3 ☐ Three or more axles on trailer

How many, IF ANY, of the trailer's axles are liftable? → 304

b. Two trailers, one semi- and one full * used with truck-tractor (power unit):

308 1 ☐ Three axles on two trailers
2 ☐ Four axles on two trailers
3 ☐ Five axles on two trailers
4 ☐ Six or more axles on two trailers

How many, IF ANY, of the trailer's axles are liftable? → 306

c. Three trailers, one semi- and two full * used with truck-tractor (power unit):

309 1 ☐ Five axles on three trailers
2 ☐ Six axles on three trailers
3 ☐ Seven axles on three trailers
4 ☐ Eight or more axles on three trailers

How many, IF ANY, of the trailer's axles are liftable? → 308

d. One full trailer * used with straight truck:

310 1 ☐ Two axles on trailer
2 ☐ Three axles on trailer
3 ☐ Four or more axles on trailer

How many, IF ANY, of the trailer's axles are liftable? → 309

e. Other – *Please describe in detail the number of trailers and axles on those trailers. Also give number of any liftable axles on trailer(s).*

311

* or Semi-trailer with converter dolly

Item 8 – What type of cab does this vehicle have?

312 1 ☐ Cab forward of engine
2 ☐ Cab over engine
3 ☐ Short hood/nose conventional (less than 97 in. bumper to back of cab – BBC)
4 ☐ Medium hood/nose conventional (97–114 in. bumper to back of cab – BBC)
5 ☐ Long hood/nose conventional (more than 114 in. bumper to back of cab – BBC)
6 ☐ Cab beside engine
7 ☐ Other

PENALTY FOR FAILURE TO REPORT

CONTINUE ON PAGE 2 →

Item 9a – Please indicate the body type which most closely resembles this vehicle or, the trailer most often attached to it, if the power-unit is a truck-tractor.

313

PLATFORM TYPES

- 05 ☐ Low boy (gooseneck) – platform with depressed center
- 06 ☐ Basic platform – including flatbed, stake, etc.
- 04 ☐ Platform with devices permanently mounted on bed of truck – such as high lift, lift gate, hoist, etc.

VAN TYPES

- 12 ☐ Basic enclosed van (dry cargo)
- 10 ☐ Drop frame van – including furniture van, etc.
- 09 ☐ Insulated, non-refrigerated van
- 08 ☐ Insulated, refrigerated van
- 03 ☐ Multistop or step van
- 11 ☐ Open top van, including low-side grain, fruit

SPECIALIZED USE TRUCKS

- 19 ☐ Automobile transport
- 13 ☐ Beverage truck
- 28 ☐ Cargo container chassis
- 70 ☐ Concrete mixer
- 46 ☐ Dump truck
- 29 ☐ Grain bodies (hoppers)

SPECIALIZED USE TRUCKS – Con.

- 30 ☐ Garbage truck
- 07 ☐ Livestock truck, including livestock drop frame
- 27 ☐ Oilfield truck – service equipment permanently mounted on vehicle
- 17 ☐ Pole, logging, or pipe truck
- 22 ☐ Service truck or "craftsman's vehicle" – body equipped for mobile repair and service
- 60 ☐ Tank truck for dry bulk
- 50 ☐ Tank truck for liquids or gases
- 14 ☐ Utility truck – used in public utility operations (telephone line truck, etc.), body equipped for major repair (may have aerial lift, derrick, etc.)
- 15 ☐ Winch or crane truck – lifting equipment (including roll on, roll off) permanently mounted on vehicle
- 16 ☐ Wrecker – for motor vehicle towing or lifting
- 23 ☐ Yard tractor – cab and chassis ONLY, used to spot trailers

NOTE – If none of the above descriptions match the body type of this vehicle, or the trailer usually attached to it, mark the "Other" box below and describe.

- 00 ☐ Other – *Specify* _____

b. What is the overall length of this vehicle or combination (distance from front bumper to rear of truck or rear of the last trailer attached)? — Feet: 314

Item 10 – What is the weight of this vehicle or vehicle/trailer combination when empty? — Pounds: 315
An estimate is acceptable.

Item 11 – What was the average weight of the vehicle or vehicle/trailer combination when carrying a typical payload during the past year? — Pounds: 316
An estimate is acceptable.

Item 12 – What was the maximum gross weight (MGW) at which this vehicle or vehicle/trailer combination was operated? — Pounds: 320
An estimate is acceptable.

Item 13 – What kind of fuel does this vehicle use?

321
- 1 ☐ Gasoline
- 2 ☐ Diesel
- 3 ☐ Liquefied petroleum gas (LPG)
- 4 ☐ Other – *Specify fuel* _____

Item 14 – How many cylinders does this vehicle have?

322
- 1 ☐ 4 cylinders
- 2 ☐ 6 cylinders
- 3 ☐ 8 cylinders
- 4 ☐ Other – *Specify unit* _____

Item 15 – What is the size (displacement) of your engine? *Enter cubic inches, cubic centimeters, or liters, whichever is applicable.*

Cubic inches (CI)		Cubic centimeters (CC)		Liters (L)
323	OR	324	OR	325

Item 16 – What is the horsepower rating of this vehicle's engine? — Horsepower: 326

Item 17 – What kind of transmission does this vehicle have?

327
- 1 ☐ Manual
- 2 ☐ Automatic

Item 18 – What type of brakes does the power unit (truck or truck-tractor) have?

328
- 1 ☐ Hydraulic (standard)
- 2 ☐ Hydraulic with power assist
- 3 ☐ Air

Item 19 – Does this vehicle have any of the following equipment? *Mark (X) as many as apply.*

328
- 01 ☐ Aerodynamic features
- 02 ☐ Axle or drive ratio to maximize fuel efficiency
- 03 ☐ Fuel economy engine with low RPM, high torque rise, turbo-charge, etc.
- 04 ☐ Reflective materials (in addition to those required by law)
- 05 ☐ Radial tires
- 06 ☐ Road speed governor
- 07 ☐ Variable fan drives
- 08 ☐ Other fuel conservation features
- 09 ☐ Power steering
- 10 ☐ Air conditioning in cab
- 11 ☐ Engine retarder

Item 20 – Who performed the general maintenance and major overhauls on this vehicle? *Mark (X) as many as apply.*

	General maintenance (330)	Major overhauls (331)
Yourself	1 ☐	1 ☐
Your company's own maintenance facilities	2 ☐	2 ☐
Dealership's service department	3 ☐	3 ☐
Leasing company	4 ☐	4 ☐
Independent garage or private mechanic	5 ☐	5 ☐
Component distributorship	6 ☐	6 ☐
Other – *Specify* _____	7 ☐	7 ☐

Item 21 – How many miles was this vehicle driven during the past 12 months?
An estimate is acceptable.
NOTE – If driven less than 12 months, please estimate mileage for a full year. — 332

Item 22 – How many miles has this vehicle been driven since it was new?
NOTE – If it is no longer in your possession, please estimate the total lifetime mileage at the time you last operated it.
If the odometer speedometer is broken, please give your best estimate.
If the odometer has turned over (100,000 + miles), please enter the total figure. — 333

Item 23 – How many miles-per-gallon (MPG) did this vehicle average during the last year? (Use tenths, if available.)

	Miles	Tenths
Example: 10.5 MPG should be entered as	10	5
Enter miles per gallon →	334	

Item 24 – Where was the home base of this vehicle?

350 City

351 County | 352 State | 353 ZIP code

Item 25 – What percent of annual mileage was driven OUTSIDE the home base state? — Percent: 354
An estimate is acceptable.

Item 26 – What PERCENTAGE of this vehicle's ANNUAL MILEAGE was accounted for by the type of trips listed below? (If all trips were within one range, enter 100%. If more than one range is applicable, be sure that percentages add up to 100%.)

	Percent
Trips off-the-road, little travel on public roads	355 %
Trips within a 50 mile radius of vehicle's home base	356 %
Trips within a 50–200 mile radius of vehicle's home base	357 %
Trips beyond a 200 mile radius of vehicle's home base	358 %
TOTAL – Should equal 100%	100%

Item 27a – Which of the following best describes the primary way this vehicle was operated?

401

NEVER FOR HIRE

- 1 ☐ BUSINESS USE – Operated by and for a private business (including self-employed) or a company; used in related activities of that business (including transportation of personnel) . . . . . *SKIP to item 28*
- 2 ☐ PERSONAL TRANSPORTATION – Operated as a personal-use vehicle in place of an automobile for pleasure driving, travel to work, etc. (NO BUSINESS USE) . . . . . *SKIP to item 30*
- 3 ☐ MIXED – A mixture of both business use and personal transportation
  - Percent personal transportation — 402 %
  - Percent business — 403 %
  - } *SKIP to item 28*

ALWAYS FOR HIRE – ICC regulated?

411
- 1 ☐ YES
- 2 ☐ NO

- 4 ☐ MOTOR CARRIER – Operated by a company whose primary business is to provide transportation services, carrying freight belonging to others . . . . . } *Complete items 27b and c below.*
- 5 ☐ OWNER OPERATOR – Operated by an independent trucker who drives vehicle for himself or on lease to a company . . . . . } *Complete items 27b and c below.*
- 6 ☐ MIXED – A mixture of private carriage and common and/or contract carriage
  - Percent not for hire (private) — 404 %
  - Percent for hire — 405 %
  - } *Complete items 27b and c below.*
- 7 ☐ DAILY RENTAL OR SHORT TERM LEASE – Rented or leased out to various operators and for various activities, under daily or short term rental or lease agreements . . . . . *SKIP to item 28*

b. What was the FOR HIRE jurisdiction in which vehicle operated?

406
- 1 ☐ Interstate
- 2 ☐ Intrastate
- 3 ☐ Local – in a single municipality, contiguous municipalities or a municipality and its suburban area; in commercial zones

c. In what type of carrier service was the vehicle involved? *Enter percentage of mileage.*

	Percent
407 1 ☐ Contract – offered transportation service to certain shippers under specific contracts	408 %
2 ☐ Common – offered transportation service to the general public over regular or irregular routes	409 %
3 ☐ Exempt – transported commodities or provided types of services that were exempt from Federal regulation; operated within exempt commercial zones	410 %

FORM FC-5502

CONTINUE ON PAGE 3 →

Item 28 – Which of the following best describes your business or the part of your business in which the vehicle was used? If the vehicle was leased, indicate business of lessee.

414
- 01 ☐ AGRICULTURAL ACTIVITIES
- 02 ☐ FORESTRY OR LUMBERING ACTIVITIES
- 03 ☐ CONSTRUCTION WORK – buildings, homes, roads, structures, etc.
- 04 ☐ CONTRACTOR ACTIVITIES OR SPECIAL TRADES – painting, plumbing, electrical work, masonry, carpentry, etc.
- 05 ☐ MANUFACTURING, REFINING, OR PROCESSING ACTIVITIES
- 06 ☐ WHOLESALE TRADE
- 07 ☐ RETAIL TRADE
- 08 ☐ PERSONAL SERVICES – used to assist in such services as lodging operations, landscaping, repair (except plumbing, electrical work, etc., – see "Contractor Activities"), laundry, advertising, entertainment, etc.
- 09 ☐ UTILITIES – used to assist in operation or service of public utilities (telephone, gas, electric, etc.)
- 10 ☐ MINING OR QUARRY ACTIVITIES – used to assist in the extraction of natural resources
- 11 ☐ DAILY RENTAL – rented out, without a driver, to someone else on a daily or short-term basis
- 12 ☐ GOVERNMENTAL OPERATIONS
- 13 ☐ NOT IN USE – vehicle idle, wrecked, awaiting repair, etc., for more than 90 days
- 14 ☐ FOR HIRE TRANSPORTATION – including small package delivery
- 15 ☐ Other – *Please describe in detail*

_____

Item 29 – From the following list of products, materials, and equipment, indicate which item or items this vehicle carried. Write in the approximate percentage of the vehicle's annual mileage that was accounted for while carrying loads and while empty (backhauls, etc.). Be sure that percentages add up to 100%. (See instruction sheet for further explanation and examples.)

a. PRODUCTS, EQUIPMENT, MATERIALS, ETC.	Percentage of annual mileage
(1) Agricultural and Food Products	
(a) Live animals – cattle, horses, poultry, hogs, etc.	415 %
(b) Fresh farm products – grain, crops, flowers, nursery stock, raw milk, raw tobacco, etc.	416 %
(c) Processed foods – canned goods, prepared meats, frozen foods, beverages, dairy products, tobacco products, etc.	417 %
(2) Mining Products, Unrefined – crude oil, coal, metal ores	418 %
(3) Building Materials – gravel, sand, concrete, glass, etc. (except cut lumber – see "Lumber")	419 %
(4) Forestry, Wood, and Paper Products	
(a) Logs and forest products – except cut lumber and fabricated wood products (see below)	420 %
(b) Lumber and fabricated wood products – except furniture (see (7) below)	421 %
(c) Paper and paper products	422 %
(5) Chemicals, Petroleum, and Allied Products	
(a) Chemicals and/or drugs (including fertilizers, pesticides, cosmetics, paints, etc.)	423 %
(b) Petroleum and petroleum products	424 %
(c) Plastics and/or rubber products	425 %
(6) Metals and Metal Products	
(a) Primary metal products – pipes, ingots, billets, sheets, etc.	426 %
(b) Fabricated metal products – except machinery or transportation equipment (see below)	427 %
(c) Machinery – electrical or nonelectrical	428 %
(d) Transportation equipment (including complete vehicles) and parts	429 %
(7) Other Manufactured Products	
(a) Furniture (wood and nonwood) and/or hardware – not involved in household moving	430 %
(b) Textiles and apparels – fibers, leather goods, carpets, clothing, etc.	431 %
(8) Miscellaneous	
(a) Moving of household and office furniture – from home, offices, etc., under contract	432 %
(b) Miscellaneous tools and/or parts for specialized use, as in a craftsman's vehicle – traveling workshop for plumbers, carpenters, road service crews, etc.	433 %
(c) Mixed cargo, general freight	434 %
(d) Scrap, garbage, trash	435 %
(9) Other (not elsewhere classified) – *Please describe in detail*	
_____	
_____	
_____	436 %
b. NO LOAD CARRIED – *Vehicle empty*	437 %
TOTAL – Should equal 100% →	100%

Item 30 – At any time during the past 12 months, was this vehicle (or combination) used to haul hazardous materials in quantities large enough to require a special placard placed on the vehicle due to the Code of Federal Regulations, title 49, Transportation?

438 1 ☐ YES – *Continue with items a and b*
2 ☐ NO – *Go to item 31*

a. What type(s) of hazardous materials were carried by this vehicle? *Mark (X) as many as apply.*

439
- 1 ☐ Flammables or combustibles
- 2 ☐ Acids, poisons, caustics, etc.
- 3 ☐ Explosives
- 4 ☐ Radioactive materials
- 5 ☐ Hazardous waste
- 6 ☐ Hazardous materials not listed above

b. Approximately what percent of this vehicle's annual mileage was accounted for by carrying these hazardous materials?

440
- 1 ☐ Below 25%
- 2 ☐ 25–49%
- 3 ☐ 50–74%
- 4 ☐ 75–100%

Item 31 – Please enter below the number of any ADDITIONAL trucks and/or trailers you own and/or operate at the same home base you listed in item 24.

	Number
Pickups, small vans	443
Straight trucks	444
Truck-tractors (power units)	445
Trailers (semi- and/or full)	446
Converter dollies	447

Item 32 – REMARKS – Please use this space for any explanations that may be essential in understanding your reported data.

Item 33 – Person to contact regarding this report
Does this person have records on (or knowledge of) the daily activities of driver (stops, weight of individual shipments, destinations of shipments, etc.)?

1 ☐ YES 2 ☐ NO

Name

Address *(Number and street)*

City	State	ZIP code

Daytime telephone number →	Area code	Number	Extension, if any

If this vehicle has a fleet number, please enter it here →

FORM TC-9002

APPENDIX B

CalTrans Truck Weight Study
Interview Form

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRUCK WEIGHT STUDY INTERVIEW FORM

Highway System ____ [4][5]
Station Number ____ [6][7][8]
Direction ____ [9]
Date ____ [10][11] YEAR [12][13] MO. [14][15] DAY

INTERVIEWER _____

1. Hour Beginning ____ [16][17]
2. Vehicle Type ____ [18][19][20][21] [22][23]
3. Body Type ____ [24][25]
4. Fuel Type: Gas=1, Diesel=2, Propane=3, Other=4 ____ [26]
5. Class of Operation: Pvt.=1, ICC=2, OFH=3, Not Determined=9 ____ [35]
6. Commodity ____ [36][37][38][39][40]
7. Empty or Loaded: Empty=0, Loaded=1, Non Product=2 ____ [41]
8. Total Weight (Office) ____ [42][43][44][45]
9. Axle Weight (100 pounds) ____

	A	B	C	D	E
(a)					
(b)					
(c)	[46][47][48]	[49][50][51]	[52][53][54]	[55][56][57]	[58][59][60]

10. Axle Space-Cummulative (Feet + Tenths) ____

	A-B	B-C	C-D	D-E
(Office) - Intervening Distance ____	[61][62][63]	[64][65][66]	[67][68][69]	[70][71][72]

11. Wheelbase (Office) ____ [73][74][75][76]
12. Card Serial Number [77][78][79]
13. Distance From Kingpin to Center of Rear Axle (Feet + Tenths) [80][81][82]

	BASE STATE	LICENSE NO.
14. Power Unit ____	[83][84]	[85][86][87][88][89][90][91]
15. Trailer No. 1-Dolly ____	[92][93]	[94][95][96][97][98][99][100]
16. -Trailer ____	[101][102]	[103][104][105][106][107][108][109]
17. Trailer No. 2-Dolly ____	[110][111]	[112][113][114][115][116][117][118]
18. -Trailer ____	[119][120]	[121][122][123][124][125][126][127]

19. Axle Weight

	F	G	H	J	I
(a)					
(b)					
(c)	[128][129][130]	[131][132][133]	[134][135][136]	[137][138][139]	[140][141][142]

20. Axle Space

	F	G	H	I	J
Cummulative					
	E-F	F-G	G-H	H-I	I-J
Intervening Distance	[143][144][145]	[146][147][148]	[149][150][151]	[152][153][154]	[155][156][157]

DMO-T-140(5/85)

APPENDIX C

Average Daily Truck VMT by Axle Class
for the State Highway System (1982 Values)

Average Daily Truck VMT by Axle Class
For The State Highway System
(1982 Values)

County	2-axles	3-axles	4-axles	5+axles
Alameda	320579	132651	49554	626278
Alpine	1862	433	42	1396
Amador	13277	5690	260	13046
Butte	36313	10305	3016	34416
Calaveras	12880	4372	276	10529
Colusa	26335	7607	5155	103880
Contra Costa	144473	56777	18317	273879
Del Norte	12904	6462	1160	18924
El Dorado	45130	16648	2616	28685
Fresno	172864	48472	35083	490260
Glenn	21786	7276	4829	87263
Humbolt	48393	39981	5964	78090
Imperial	76445	15213	8882	163575
Inyo	43914	8818	6290	37998
Kern	331679	82361	65619	1157703
King	30628	8634	5940	118287
Lake	24402	5564	2037	8632
Lasssen	32025	13805	5464	27940
Los Angeles	2752750	627742	272811	1758976
Madera	58216	14161	8996	178310
Marin	58162	16269	3222	45652
Mariposa	5606	726	94	1083
Mendicino	57473	29549	7826	67247
Merced	86154	29766	16689	306534
Modoc	12921	5410	2199	10308
Mono	13818	5873	6205	16357
Monterey	116735	33572	16720	155303
Napa	25999	8050	1791	18264
Nevada	28607	10023	2905	52128
Orange	685008	152160	82294	380795
Placer	101447	29194	8076	108172
Plumas	10439	5702	2095	13788
Riverside	435302	93370	61352	737301
Sacramento	205190	55614	21086	250584
San Benito	29388	5495	2684	32760
San Bernardino	434513	167562	111368	795727
San Diego	592326	115530	50825	285073
San Francisco	81163	16396	5277	23129
San Joaquin	116963	46522	21002	373978
San Luis Obis	103432	26182	13630	118229
San Mateo	197630	58026	18257	130742
Santa Barbara	113935	33154	15369	140324
Santa Clara	252753	97751	32244	394572
Santa Cruz	49516	15837	2227	38748
Shasta	87721	40626	19147	172083
Sierra	8150	4445	1011	8663
Siskiyou	56613	60699	17114	197419
Solano	93362	41815	15890	214293
Sonoma	81246	32258	5449	110539
Stanislaus	56791	22014	8090	152115
Sutter	25440	4303	2508	31273
Tehama	42351	16536	7250	118904
Trinity	10870	8007	977	13916
Tulare	125786	33511	16721	437968
Tuolumne	16805	5004	244	13868
Ventuyra	234391	44451	15719	114094
Yolo	57736	18663	8150	122866
Yuba	20726	4207	1289	19467
Total	8939323	2507244	1127307	11442333

APPENDIX D

Distribution of Travel and Conservation Devices for Non-California Heavy-Duty Vehicles

SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, AREA OF OPERATION, AND ENGINE FUEL TYPE (CLASSES 2B THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =0

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
--ALL--	--ALL--	--ALL--	69,787	4,932,873	96,111,071,745	19,484	16,052,440,697	3,254	6.0	6.6	42.0	24.2	25.9	1.3

SUMMARY LEVEL =1

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
--ALL--	--ALL--	N/R	429	23,762	278,528,872	11,722	47,644,758	2,005	5.8	6.9	57.5	9.2	4.9	21.5
--ALL--	--ALL--	GASOLINE	41,911	3,647,786	40,714,621,832	11,161	5,264,772,431	1,443	7.7	11.4	65.4	16.9	4.3	2.0
--ALL--	--ALL--	DIESEL	26,615	1,204,104	54,174,819,971	44,992	10,558,267,416	8,769	5.1	3.0	23.8	29.9	42.6	0.7
--ALL--	--ALL--	LPG&OTHER	832	57,221	943,101,069	16,482	181,756,093	3,176	5.2	9.4	69.3	16.1	3.9	1.3

SUMMARY LEVEL =2

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
--ALL--	OFF ROAD	--ALL--	7,891	542,764	6,219,396,283	11,459	968,409,431	1,784	6.4	75.8	17.8	4.6	1.8	0.0
--ALL--	< 50 MILES	--ALL--	41,849	3,255,666	42,562,503,048	13,073	6,274,964,636	1,927	6.8	3.0	87.0	8.1	1.9	0.0
--ALL--	50-200 MILES	--ALL--	11,417	690,819	21,223,504,968	30,722	3,730,741,526	5,400	5.7	1.4	7.3	81.8	9.5	0.0
--ALL--	> 200 MILES	--ALL--	7,286	362,429	24,840,550,605	68,539	4,872,234,930	13,443	5.1	0.4	2.5	8.7	88.3	0.0
--ALL--	N/R OR 1-WAY	--ALL--	1,344	81,195	1,265,116,841	15,581	206,090,175	2,538	6.1	0.0	0.0	0.1	0.7	99.2

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
--ALL--	OFF ROAD	N/R	38	2,592	18,914,670	7,297	2,849,854	1,099	6.6	81.6	16.1	2.2	0.1	0.0
--ALL--	OFF ROAD	GASOLINE	6,178	465,634	4,679,128,893	10,049	661,888,885	1,421	7.1	76.7	17.9	3.8	1.6	0.0
--ALL--	OFF ROAD	DIESEL	1,598	68,708	1,449,403,429	21,095	290,181,018	4,223	5.0	72.8	17.6	7.1	2.5	0.0
--ALL--	OFF ROAD	LPG&OTHER	77	5,830	71,949,291	12,342	13,489,674	2,314	5.3	78.2	18.7	2.9	0.3	0.0
--ALL--	< 50 MILES	N/R	309	16,842	166,880,247	9,909	28,110,617	1,669	5.9	2.1	93.5	4.3	0.1	0.0
--ALL--	< 50 MILES	GASOLINE	29,760	2,669,261	28,529,103,385	10,688	3,625,418,643	1,358	7.9	3.1	88.1	6.8	2.0	0.0
--ALL--	< 50 MILES	DIESEL	11,148	525,707	13,161,112,232	25,035	2,490,306,018	4,737	5.3	2.7	84.6	10.9	1.9	0.0
--ALL--	< 50 MILES	LPG&OTHER	632	43,856	705,407,185	16,085	131,129,357	2,990	5.4	4.2	89.6	5.4	0.8	0.0
--ALL--	50-200 MILES	N/R	14	525	19,370,895	36,906	3,445,305	6,564	5.6	1.0	5.5	88.2	5.3	0.0
--ALL--	50-200 MILES	GASOLINE	4,151	367,292	5,509,714,142	15,001	711,176,356	1,936	7.7	2.5	9.1	83.5	4.9	0.0
--ALL--	50-200 MILES	DIESEL	7,150	317,341	15,569,734,626	49,063	2,985,125,512	9,407	5.2	1.0	6.7	81.2	11.2	0.0
--ALL--	50-200 MILES	LPG&OTHER	102	5,661	124,685,304	22,024	30,994,354	5,475	4.0	1.1	5.8	87.7	5.4	0.0
--ALL--	> 200 MILES	N/R	6	313	13,396,928	42,841	2,679,386	8,568	5.0	0.0	0.0	7.0	93.0	0.0
--ALL--	> 200 MILES	GASOLINE	736	77,862	1,180,966,978	15,168	145,195,542	1,865	8.1	2.6	12.3	14.0	71.1	0.0
--ALL--	> 200 MILES	DIESEL	6,531	283,245	23,617,078,631	83,380	4,719,646,472	16,663	5.0	0.3	2.0	8.5	89.2	0.0

SUMMARY BY MANUFACTURER'S GROSS VEHICLE HEIGHT RATING, AREA OF OPERATION, AND ENGINE FUEL TYPE (CLASSES 2B THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
--ALL--	> 200 MILES	LPG&OTHER	13	1,010	29,108,068	28,818	4,713,530	4,667	6.2	2.0	3.7	9.2	85.1	0.0
--ALL--	N/R OR 1-WAY	N/R	62	3,490	59,966,131	17,183	10,559,595	3,026	5.7	0.0	0.0	0.0	0.0	100.0
--ALL--	N/R OR 1-WAY	GASOLINE	1,086	67,738	815,708,434	12,042	121,093,004	1,788	6.7	0.0	0.0	0.0	0.0	99.9
--ALL--	N/R OR 1-WAY	DIESEL	188	9,103	377,491,054	41,469	73,008,397	8,020	5.2	0.0	0.0	0.4	2.2	97.4
--ALL--	N/R OR 1-WAY	LPG&OTHER	8	864	11,951,222	13,829	1,429,179	1,654	8.4	0.0	0.0	0.0	0.0	100.0

SUMMARY LEVEL =4

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
8.5-10K LBS	--ALL--	--ALL--	16,462	1,724,525	20,477,858,183	11,874	1,861,866,822	1,080	11.0	7:6	66.5	19.2	6.2	0.5
10-14K LBS	--ALL--	--ALL--	961	76,753	851,763,523	11,097	108,691,009	1,416	7.8	20.9	56.5	15.2	3.5	3.9
14-16K LBS	--ALL--	--ALL--	1,121	86,814	805,526,453	9,279	107,633,826	1,240	7.5	14.4	67.4	12.6	1.8	3.8
16-19.5K LBS	--ALL--	--ALL--	4,145	358,668	2,756,423,779	7,685	394,659,817	1,100	7.0	16.8	63.9	12.6	2.7	4.0
19.5-26K LBS	--ALL--	--ALL--	15,460	1,265,300	13,820,573,847	10,923	2,250,164,611	1,778	6.1	11.0	64.5	18.4	4.0	2.2
26-33K LBS	--ALL--	--ALL--	7,060	347,790	6,809,746,180	19,580	1,196,936,663	3,442	5.7	6.4	52.6	28.1	10.1	2.7
>33K LBS	--ALL--	--ALL--	24,578	1,073,023	50,589,179,781	47,146	10,132,487,949	9,443	5.0	4.1	22.6	28.3	44.0	1.0

SUMMARY LEVEL =5

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
8.5-10K LBS	--ALL--	N/R	91	2,298	25,773,220	11,214	2,341,306	1,019	11.0	2.5	89.6	3.3	0.1	4.6
8.5-10K LBS	--ALL--	GASOLINE	15,988	1,697,338	19,975,489,704	11,769	1,813,479,508	1,068	11.0	7.6	66.6	19.3	6.0	0.5
8.5-10K LBS	--ALL--	DIESEL	174	10,567	230,231,624	21,788	17,232,666	1,631	13.4	4.1	49.7	18.7	25.4	2.1
8.5-10K LBS	--ALL--	LPG&OTHER	209	14,321	246,363,635	17,203	28,813,341	2,012	8.6	11.4	70.8	11.6	4.2	2.0
10-14K LBS	--ALL--	N/R	13	1,089	9,653,496	8,867	1,234,408	1,134	7.8	6.4	47.5	29.1	0.0	17.0
10-14K LBS	--ALL--	GASOLINE	889	70,469	698,479,275	9,912	85,336,072	1,211	8.2	24.0	59.9	11.0	0.9	4.2
10-14K LBS	--ALL--	DIESEL	46	4,195	127,294,412	30,345	19,509,303	4,651	6.5	4.9	37.8	38.6	18.1	0.5
10-14K LBS	--ALL--	LPG&OTHER	13	1,001	16,336,340	16,325	2,611,226	2,609	6.3	19.6	61.9	3.4	1.5	13.6
14-16K LBS	--ALL--	N/R	13	1,278	9,760,168	7,637	1,461,278	1,143	6.7	2.1	32.0	0.0	0.0	65.9
14-16K LBS	--ALL--	GASOLINE	1,081	83,354	743,323,163	8,918	95,881,549	1,150	7.8	15.4	69.2	11.2	0.9	3.3
14-16K LBS	--ALL--	DIESEL	22	1,719	46,490,024	27,052	9,326,349	5,427	5.0	3.0	46.2	34.2	16.5	0.0
14-16K LBS	--ALL--	LPG&OTHER	5	464	5,953,098	12,843	964,650	2,081	6.2	0.0	58.9	41.1	0.0	0.0
16-19.5K LBS	--ALL--	N/R	41	3,517	21,646,018	6,155	3,066,919	872	7.1	16.2	73.8	0.2	0.0	9.8
16-19.5K LBS	--ALL--	GASOLINE	4,017	348,438	2,598,196,377	7,457	370,077,682	1,062	7.0	17.3	65.1	11.5	1.8	4.2
16-19.5K LBS	--ALL--	DIESEL	52	3,973	98,544,196	24,803	15,336,148	3,860	6.4	4.8	29.9	39.2	25.8	0.3
16-19.5K LBS	--ALL--	LPG&OTHER	35	2,741	38,037,188	13,878	6,179,068	2,254	6.2	10.2	64.9	21.9	3.0	0.0
19.5-26K LBS	--ALL--	N/R	127	9,985	101,969,161	10,212	16,852,856	1,688	6.1	10.7	60.4	13.2	0.5	15.3
19.5-26K LBS	--ALL--	GASOLINE	14,020	1,155,792	11,719,020,712	10,139	1,921,699,913	1,663	6.1	11.9	66.4	16.4	2.9	2.4
19.5-26K LBS	--ALL--	DIESEL	958	70,985	1,573,760,228	22,170	222,166,380	3,130	7.1	4.6	48.9	33.4	12.8	0.4
19.5-26K LBS	--ALL--	LPG&OTHER	355	28,539	425,823,745	14,921	89,445,462	3,134	4.8	8.5	70.5	18.2	2.6	0.3
26-33K LBS	--ALL--	N/R	49	1,868	29,081,528	15,571	6,384,937	3,419	4.6	8.6	59.6	2.2	11.5	18.1

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND SHARE OF VMT BY AREA OF OPERATION FOR NON-CALIFORNIA HEAVY-DUTY TRUCKS 5
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, AREA OF OPERATION, AND ENGINE FUEL TYPE (CLASSES 2B THROUGH 8 ONLY)
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VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =5

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
26-33K LBS	--ALL--	GASOLINE	3,439	175,741	2,471,842,225	14,065	470,995,420	2,680	5.2	12.6	60.5	17.2	3.3	6.5
26-33K LBS	--ALL--	DIESEL	3,398	162,119	4,142,775,820	25,554	675,494,450	4,167	6.1	2.9	46.8	35.4	14.5	0.5
26-33K LBS	--ALL--	LPG&OTHER	174	8,062	166,046,607	20,595	44,061,856	5,465	3.8	3.7	78.1	15.0	2.3	0.9
>33K LBS	--ALL--	N/R	95	3,727	80,645,280	21,639	16,303,052	4,374	4.9	0.9	42.7	9.8	12.1	34.4
>33K LBS	--ALL--	GASOLINE	2,477	116,655	2,508,270,376	21,502	507,302,286	4,349	4.9	27.1	56.2	9.1	2.8	4.9
>33K LBS	--ALL--	DIESEL	21,965	950,547	47,955,723,668	50,451	9,599,202,120	10,099	5.0	2.9	20.8	29.3	46.3	0.7
>33K LBS	--ALL--	LPG&OTHER	41	2,094	44,540,457	21,270	9,680,491	4,623	4.6	24.2	25.4	22.0	24.2	4.2

SUMMARY LEVEL =6

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
8.5-10K LBS	OFF ROAD	--ALL--	1,580	131,062	1,397,566,677	10,663	132,090,989	1,008	10.6	69.8	17.9	8.6	3.7	0.0
8.5-10K LBS	< 50 MILES	--ALL--	12,275	1,331,356	15,306,503,311	11,497	1,393,169,967	1,046	11.0	3.2	84.6	8.9	3.4	0.0
8.5-10K LBS	50-200 MILES	--ALL--	1,864	198,998	2,869,379,780	14,419	257,289,201	1,293	11.2	2.8	10.2	81.3	5.6	0.0
8.5-10K LBS	> 200 MILES	--ALL--	395	53,841	800,850,189	14,874	68,989,493	1,281	11.6	2.8	14.9	14.5	67.8	0.0
8.5-10K LBS	N/R OR 1-WAY	--ALL--	348	9,267	103,558,227	11,175	10,327,173	1,114	10.0	0.0	0.2	0.0	0.0	99.8
10-14K LBS	OFF ROAD	--ALL--	222	18,291	189,479,246	10,359	23,467,865	1,283	8.1	84.0	15.0	0.7	0.4	0.0
10-14K LBS	< 50 MILES	--ALL--	609	48,591	480,270,551	9,884	60,183,914	1,239	8.0	3.3	92.4	3.7	0.6	0.0
10-14K LBS	50-200 MILES	--ALL--	78	6,344	127,948,226	20,167	16,878,135	2,660	7.6	2.3	7.0	86.0	4.7	0.0
10-14K LBS	> 200 MILES	--ALL--	10	648	20,452,826	31,565	3,707,338	5,722	5.5	0.9	0.5	2.2	96.4	0.0
10-14K LBS	N/R OR 1-WAY	--ALL--	42	2,879	33,612,673	11,676	4,453,757	1,547	7.5	0.0	0.0	0.0	0.0	100.0
14-16K LBS	OFF ROAD	--ALL--	200	16,221	120,856,188	7,451	15,567,214	960	7.8	85.3	14.1	0.5	0.1	0.0
14-16K LBS	< 50 MILES	--ALL--	791	61,088	560,478,922	9,175	75,463,927	1,235	7.4	2.0	93.2	4.5	0.2	0.0
14-16K LBS	50-200 MILES	--ALL--	85	5,773	74,496,353	12,905	9,093,134	1,575	8.2	1.9	4.0	92.4	1.8	0.0
14-16K LBS	> 200 MILES	--ALL--	8	455	18,937,609	41,644	3,563,313	7,836	5.3	0.8	1.4	34.6	63.2	0.0
14-16K LBS	N/R OR 1-WAY	--ALL--	37	3,278	30,757,381	9,382	3,946,238	1,204	7.8	0.0	0.0	0.0	0.0	100.0
16-19.5K LBS	OFF ROAD	--ALL--	886	77,091	500,426,822	6,491	71,083,436	922	7.0	79.9	18.1	1.2	0.8	0.0
16-19.5K LBS	< 50 MILES	--ALL--	2,770	237,879	1,765,809,758	7,423	252,466,997	1,061	7.0	3.2	93.1	3.3	0.4	0.0
16-19.5K LBS	50-200 MILES	--ALL--	267	24,025	320,481,221	13,339	48,824,436	2,032	6.6	1.8	7.7	87.1	3.4	0.0
16-19.5K LBS	> 200 MILES	--ALL--	42	3,246	58,114,896	17,904	8,697,333	2,679	6.7	0.5	4.2	4.2	91.2	0.0
16-19.5K LBS	N/R OR 1-WAY	--ALL--	180	16,428	111,591,082	6,793	13,587,616	827	8.2	0.0	0.0	0.0	0.0	100.0
19.5-26K LBS	OFF ROAD	--ALL--	2,408	185,477	1,580,949,770	8,524	243,769,869	1,314	6.5	76.6	19.6	2.7	1.1	0.0
19.5-26K LBS	< 50 MILES	--ALL--	10,748	898,444	9,239,004,102	10,283	1,517,653,423	1,689	6.1	2.8	90.8	5.6	0.7	0.0
19.5-26K LBS	50-200 MILES	--ALL--	1,635	128,647	2,247,396,661	17,469	372,762,906	2,898	6.0	1.7	8.1	85.5	4.7	0.0
19.5-26K LBS	> 200 MILES	--ALL--	275	21,933	452,808,547	20,645	72,083,304	3,286	6.3	1.7	6.9	12.5	78.9	0.0
19.5-26K LBS	N/R OR 1-WAY	--ALL--	394	30,799	300,414,766	9,754	43,895,108	1,425	6.8	0.1	0.0	0.0	0.0	99.9
26-33K LBS	OFF ROAD	--ALL--	711	33,818	442,239,033	13,077	78,641,939	2,325	5.6	78.4	17.2	3.2	1.2	0.0
26-33K LBS	< 50 MILES	--ALL--	4,676	231,595	3,737,462,722	16,138	664,597,032	2,870	5.6	2.0	89.4	7.8	0.8	0.0
26-33K LBS	50-200 MILES	--ALL--	1,258	60,257	1,792,510,295	29,748	305,272,141	5,066	5.9	0.9	7.7	85.4	6.1	0.0
26-33K LBS	> 200 MILES	--ALL--	294	13,922	651,942,153	46,827	116,167,419	8,344	5.6	0.5	4.3	11.9	83.3	0.0
26-33K LBS	N/R OR 1-WAY	--ALL--	121	8,197	185,591,977	22,641	32,258,131	3,935	5.8	0.0	0.0	0.0	0.0	100.0
>33K LBS	OFF ROAD	--ALL--	1,884	80,804	1,987,878,547	24,601	403,788,119	4,997	4.9	76.6	16.9	4.8	1.7	0.0
>33K LBS	< 50 MILES	--ALL--	9,980	446,715	11,472,973,681	25,683	2,311,429,376	5,174	5.0	3.2	85.1	10.1	1.6	0.0
>33K LBS	50-200 MILES	--ALL--	6,230	266,774	13,791,292,432	51,697	2,720,621,573	10,198	5.1	1.0	6.5	80.7	11.8	0.0
>33K LBS	> 200 MILES	--ALL--	6,262	268,384	22,837,444,385	85,092	4,599,026,729	17,136	5.0	0.3	1.9	8.4	89.4	0.0

SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, AREA OF OPERATION, AND ENGINE FUEL TYPE (CLASSES 2B THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =6

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
>33K LBS	N/R OR 1-WAY	--ALL--	222	10,346	499,590,736	48,288	97,622,152	9,436	5.1	0.0	0.0	0.3	1.7	98.0

SUMMARY LEVEL =7

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
8.5-10K LBS	OFF ROAD	N/R	7	97	511,881	5,277	43,998	454	11.6	85.4	7.2	3.7	3.7	0.0
8.5-10K LBS	OFF ROAD	GASOLINE	1,554	129,146	1,378,540,487	10,674	130,133,219	1,008	10.6	69.7	17.9	8.7	3.7	0.0
8.5-10K LBS	OFF ROAD	DIESEL	6	151	2,205,500	14,579	183,920	1,216	12.0	57.5	17.8	14.8	10.0	0.0
8.5-10K LBS	OFF ROAD	LPG&OTHER	13	1,668	16,308,809	9,779	1,729,852	1,037	9.4	83.0	16.9	0.0	0.0	0.0
8.5-10K LBS	< 50 MILES	N/R	72	2,049	23,182,507	11,313	2,108,085	1,029	11.0	0.7	98.8	0.4	0.0	0.0
8.5-10K LBS	< 50 MILES	GASOLINE	11,938	1,310,707	14,932,042,196	11,392	1,356,831,595	1,035	11.0	3.1	84.7	8.9	3.3	0.0
8.5-10K LBS	< 50 MILES	DIESEL	107	7,734	151,793,474	19,626	10,375,763	1,342	14.6	4.6	69.7	14.3	11.4	0.0
8.5-10K LBS	< 50 MILES	LPG&OTHER	158	10,865	199,485,134	18,360	23,854,523	2,195	8.4	7.1	85.5	5.5	2.0	0.0
8.5-10K LBS	50-200 MILES	N/R	4	53	899,856	16,969	82,043	1,547	11.0	3.6	14.8	81.6	0.0	0.0
8.5-10K LBS	50-200 MILES	GASOLINE	1,788	197,128	2,825,996,402	14,336	253,017,925	1,284	11.2	2.9	10.3	81.3	5.5	0.0
8.5-10K LBS	50-200 MILES	DIESEL	38	894	22,375,720	25,039	1,757,380	1,967	12.7	0.2	14.0	79.2	6.6	0.0
8.5-10K LBS	50-200 MILES	LPG&OTHER	34	923	20,107,802	21,777	2,431,852	2,634	8.3	0.6	2.9	81.8	14.7	0.0
8.5-10K LBS	> 200 MILES	GASOLINE	371	52,016	746,366,613	14,349	64,940,630	1,248	11.5	2.9	15.2	14.9	67.0	0.0
8.5-10K LBS	> 200 MILES	DIESEL	21	1,379	48,995,299	35,539	3,680,509	2,670	13.3	2.2	10.5	6.8	80.5	0.0
8.5-10K LBS	> 200 MILES	LPG&OTHER	3	446	5,488,276	12,310	368,354	826	14.9	4.6	10.5	24.4	60.4	0.0
8.5-10K LBS	N/R OR 1-WAY	N/R	8	99	1,178,976	11,884	107,180	1,080	11.0	0.0	0.0	0.0	0.0	100.0
8.5-10K LBS	N/R OR 1-WAY	GASOLINE	337	8,340	92,544,007	11,096	8,556,140	1,026	10.8	0.0	0.2	0.0	0.0	99.8
8.5-10K LBS	N/R OR 1-WAY	DIESEL	2	409	4,861,631	11,884	1,235,094	3,019	3.9	0.0	0.0	0.0	0.0	100.0
8.5-10K LBS	N/R OR 1-WAY	LPG&OTHER	1	419	4,973,614	11,884	428,760	1,024	11.6	0.0	0.0	0.0	0.0	100.0
10-14K LBS	OFF ROAD	N/R	1	102	1,186,344	11,582	118,634	1,158	10.0	50.0	50.0	0.0	0.0	0.0
10-14K LBS	OFF ROAD	GASOLINE	212	17,351	179,012,222	10,317	21,396,603	1,233	8.4	83.6	15.3	0.7	0.4	0.0
10-14K LBS	OFF ROAD	DIESEL	7	618	6,079,021	9,831	1,358,117	2,196	4.5	93.0	6.4	0.7	0.0	0.0
10-14K LBS	OFF ROAD	LPG&OTHER	2	219	3,201,659	14,631	594,510	2,717	5.4	100.0	0.0	0.0	0.0	0.0
10-14K LBS	< 50 MILES	N/R	9	782	3,706,368	4,739	481,002	615	7.7	0.6	99.4	0.0	0.0	0.0
10-14K LBS	< 50 MILES	GASOLINE	568	45,248	413,669,872	9,142	50,753,188	1,122	8.2	3.8	93.4	2.4	0.4	0.0
10-14K LBS	< 50 MILES	DIESEL	23	1,970	51,977,120	26,379	7,228,673	3,669	7.2	0.0	84.0	13.6	2.4	0.0
10-14K LBS	< 50 MILES	LPG&OTHER	9	590	10,917,192	18,491	1,721,050	2,915	6.3	0.0	92.6	5.1	2.3	0.0
10-14K LBS	50-200 MILES	N/R	1	62	3,119,499	50,000	415,933	6,667	7.5	0.0	10.0	90.0	0.0	0.0
10-14K LBS	50-200 MILES	GASOLINE	65	4,907	72,316,169	14,737	8,810,908	1,796	8.2	3.3	6.3	90.3	0.1	0.0
10-14K LBS	50-200 MILES	DIESEL	12	1,375	52,512,558	38,189	7,651,294	5,564	6.9	1.1	7.8	79.8	11.3	0.0
10-14K LBS	> 200 MILES	GASOLINE	8	476	4,413,231	9,268	505,762	1,062	8.7	4.1	1.7	5.9	88.3	0.0
10-14K LBS	> 200 MILES	DIESEL	2	172	16,039,595	93,378	3,201,576	18,639	5.0	0.0	0.2	1.2	98.6	0.0
10-14K LBS	N/R OR 1-WAY	N/R	2	142	1,641,285	11,582	218,838	1,544	7.5	0.0	0.0	0.0	0.0	100.0
10-14K LBS	N/R OR 1-WAY	GASOLINE	36	2,486	29,067,782	11,691	3,869,612	1,556	7.5	0.0	0.0	0.0	0.0	100.0
10-14K LBS	N/R OR 1-WAY	DIESEL	2	59	686,118	11,582	69,642	1,176	9.9	0.0	0.0	0.0	0.0	100.0
10-14K LBS	N/R OR 1-WAY	LPG&OTHER	2	191	2,217,489	11,582	295,665	1,544	7.5	0.0	0.0	0.0	0.0	100.0
14-16K LBS	OFF ROAD	N/R	1	107	245,242	2,286	34,061	318	7.2	85.0	15.0	0.0	0.0	0.0
14-16K LBS	OFF ROAD	GASOLINE	194	15,908	119,271,656	7,497	15,249,498	959	7.8	85.5	13.9	0.5	0.1	0.0
14-16K LBS	OFF ROAD	DIESEL	5	206	1,339,290	6,515	283,654	1,380	4.7	69.4	30.6	0.0	0.0	0.0
14-16K LBS	< 50 MILES	N/R	5	485	3,083,941	6,355	534,025	1,100	5.8	0.0	100.0	0.0	0.0	0.0

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND SHARE OF VMT BY AREA OF OPERATION FOR NON-CALIFORNIA HEAVY-DUTY TRUCKS 7
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, AREA OF OPERATION, AND ENGINE FUEL TYPE (CLASSES 2B THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

---------- SUMMARY LEVEL =7 ----------

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
14-16K LBS	< 50 MILES	GASOLINE	770	59,217	525,878,301	8,881	68,695,814	1,160	7.7	2.1	94.1	3.6	0.2	0.0
14-16K LBS	< 50 MILES	DIESEL	12	1,029	27,694,981	26,925	5,643,368	5,487	4.9	1.7	75.7	21.5	1.2	0.0
14-16K LBS	< 50 MILES	LPG&OTHER	4	357	3,821,699	10,707	590,720	1,655	6.5	0.0	91.8	8.2	0.0	0.0
14-16K LBS	50-200 MILES	GASOLINE	80	5,326	67,167,900	12,612	8,170,738	1,534	8.2	2.1	4.2	91.7	2.0	0.0
14-16K LBS	50-200 MILES	DIESEL	4	340	5,197,054	15,276	548,466	1,612	9.5	0.0	2.7	97.3	0.0	0.0
14-16K LBS	50-200 MILES	LPG&OTHER	1	107	2,131,399	20,000	373,930	3,509	5.7	0.0	0.0	100.0	0.0	0.0
14-16K LBS	> 200 MILES	GASOLINE	7	311	6,678,911	21,508	712,452	2,294	9.4	2.3	3.9	24.7	69.1	0.0
14-16K LBS	> 200 MILES	DIESEL	1	144	12,258,698	85,000	2,850,861	19,767	4.3	0.0	0.0	40.0	60.0	0.0
14-16K LBS	N/R OR 1-WAY	N/R	7	685	6,430,985	9,382	893,192	1,303	7.2	0.0	0.0	0.0	0.0	100.0
14-16K LBS	N/R OR 1-WAY	GASOLINE	30	2,593	24,326,396	9,382	3,053,046	1,177	8.0	0.0	0.0	0.0	0.0	100.0
16-19.5K LBS	OFF ROAD	N/R	7	660	3,682,888	5,583	487,805	740	7.5	90.8	9.2	0.0	0.0	0.0
16-19.5K LBS	OFF ROAD	GASOLINE	861	75,343	486,862,309	6,462	68,969,961	915	7.1	79.7	18.4	1.2	0.8	0.0
16-19.5K LBS	OFF ROAD	DIESEL	11	568	6,022,440	10,607	1,037,556	1,827	5.8	75.5	14.6	7.4	2.5	0.0
16-19.5K LBS	OFF ROAD	LPG&OTHER	7	520	3,859,185	7,418	588,114	1,131	6.6	96.9	2.5	0.5	0.1	0.0
16-19.5K LBS	< 50 MILES	N/R	31	2,585	15,844,714	6,130	2,272,098	879	7.0	1.1	98.7	0.2	0.0	0.0
16-19.5K LBS	< 50 MILES	GASOLINE	2,687	231,311	1,694,148,788	7,324	241,620,514	1,045	7.0	3.3	93.1	3.2	0.4	0.0
16-19.5K LBS	< 50 MILES	DIESEL	29	2,204	31,751,797	14,406	4,270,262	1,937	7.4	0.6	85.8	13.5	0.0	0.0
16-19.5K LBS	< 50 MILES	LPG&OTHER	23	1,779	24,064,459	13,527	4,304,123	2,420	5.6	0.6	96.0	3.1	0.3	0.0
16-19.5K LBS	50-200 MILES	GASOLINE	255	22,856	277,364,817	12,135	42,151,279	1,844	6.6	2.0	8.2	85.9	3.8	0.0
16-19.5K LBS	50-200 MILES	DIESEL	8	777	33,603,819	43,238	5,519,872	7,102	6.1	0.0	1.4	98.6	0.0	0.0
16-19.5K LBS	50-200 MILES	LPG&OTHER	4	392	9,512,585	24,290	1,153,285	2,945	8.2	0.0	15.4	79.5	5.1	0.0
16-19.5K LBS	> 200 MILES	GASOLINE	38	2,808	30,632,540	10,907	4,096,007	1,458	7.5	0.9	5.2	5.3	88.6	0.0
16-19.5K LBS	> 200 MILES	DIESEL	3	387	26,881,396	69,389	4,467,780	11,533	6.0	0.0	3.0	3.0	93.9	0.0
16-19.5K LBS	> 200 MILES	LPG&OTHER	1	50	600,960	12,000	133,547	2,667	4.5	0.0	0.0	0.0	100.0	0.0
16-19.5K LBS	N/R OR 1-WAY	N/R	3	272	2,118,416	7,782	307,017	1,128	6.9	0.0	0.0	0.0	0.0	100.0
16-19.5K LBS	N/R OR 1-WAY	GASOLINE	176	16,119	109,187,923	6,774	13,239,921	821	8.2	0.0	0.0	0.0	0.0	100.0
16-19.5K LBS	N/R OR 1-WAY	DIESEL	1	37	284,743	7,782	40,678	1,112	7.0	0.0	0.0	0.0	0.0	100.0
19.5-26K LBS	OFF ROAD	N/R	16	1,375	9,891,170	7,191	1,564,695	1,138	6.3	80.8	19.2	0.0	0.0	0.0
19.5-26K LBS	OFF ROAD	GASOLINE	2,278	175,755	1,465,958,542	8,341	224,825,413	1,279	6.5	76.7	19.7	2.6	1.0	0.0
19.5-26K LBS	OFF ROAD	DIESEL	83	5,933	74,288,416	12,521	10,730,585	1,809	6.9	75.6	16.5	5.9	2.1	0.0
19.5-26K LBS	OFF ROAD	LPG&OTHER	31	2,413	30,811,642	12,766	6,649,176	2,755	4.6	68.7	26.0	5.2	0.2	0.0
19.5-26K LBS	< 50 MILES	N/R	88	7,043	67,510,146	9,585	11,235,868	1,595	6.0	4.3	88.3	7.3	0.0	0.0
19.5-26K LBS	< 50 MILES	GASOLINE	9,793	825,527	8,041,638,255	9,741	1,326,404,106	1,607	6.1	2.9	91.2	5.3	0.6	0.0
19.5-26K LBS	< 50 MILES	DIESEL	586	43,256	810,446,216	18,736	111,635,633	2,581	7.3	1.3	87.3	9.1	2.3	0.0
19.5-26K LBS	< 50 MILES	LPG&OTHER	281	22,617	319,409,485	14,122	68,377,817	3,023	4.7	4.2	90.5	5.1	0.2	0.0
19.5-26K LBS	50-200 MILES	N/R	2	120	9,012,889	75,245	1,497,923	12,506	6.0	0.0	0.0	95.0	5.0	0.0
19.5-26K LBS	50-200 MILES	GASOLINE	1,366	108,267	1,676,187,566	15,482	286,867,041	2,650	5.8	2.0	8.3	85.3	4.4	0.0
19.5-26K LBS	50-200 MILES	DIESEL	229	17,158	497,559,963	28,999	71,409,822	4,162	7.0	0.8	8.0	85.2	6.0	0.0
19.5-26K LBS	50-200 MILES	LPG&OTHER	38	3,102	64,636,244	20,836	12,988,120	4,187	5.0	1.9	3.9	91.5	2.6	0.0
19.5-26K LBS	> 200 MILES	GASOLINE	219	17,527	257,682,292	14,702	43,333,893	2,472	5.9	2.3	8.0	12.9	76.8	0.0
19.5-26K LBS	> 200 MILES	DIESEL	53	4,132	185,597,217	44,919	27,476,929	6,650	6.8	0.8	5.5	12.4	81.3	0.0
19.5-26K LBS	> 200 MILES	LPG&OTHER	3	274	9,529,038	34,745	1,272,482	4,640	7.5	3.4	3.4	3.4	89.8	0.0
19.5-26K LBS	N/R OR 1-WAY	N/R	21	1,447	15,554,956	10,753	2,554,370	1,766	6.1	0.0	0.0	0.0	0.0	100.0
19.5-26K LBS	N/R OR 1-WAY	GASOLINE	364	28,715	277,554,057	9,666	40,269,460	1,402	6.9	0.1	0.0	0.0	0.0	99.9
19.5-26K LBS	N/R OR 1-WAY	DIESEL	7	506	5,868,416	11,594	913,411	1,805	6.4	0.0	0.0	0.0	0.0	100.0
19.5-26K LBS	N/R OR 1-WAY	LPG&OTHER	2	132	1,437,337	10,927	157,866	1,200	9.1	0.0	0.0	0.0	0.0	100.0
26-33K LBS	OFF ROAD	N/R	3	125	2,339,124	18,646	410,373	3,271	5.7	99.3	0.7	0.0	0.0	0.0
26-33K LBS	OFF ROAD	GASOLINE	506	25,045	318,270,148	12,708	57,163,618	2,282	5.6	79.9	17.3	1.8	0.9	0.0
26-33K LBS	OFF ROAD	DIESEL	187	8,113	115,573,824	14,246	20,012,498	2,467	5.8	74.4	16.6	7.1	1.9	0.0

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND SHARE OF VMT BY AREA OF OPERATION FOR NON-CALIFORNIA HEAVY-DUTY TRUCKS
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VMT PERCENTAGE BY AREA OF OPERATION REPRESENT ROW % 13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =7

MANUFACTURER GVW RATING	AREA OF OPERATION	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	TOTAL VMT	VMT PER TRUCK	FUEL USED GALLONS	GALLNS /TRUCK	AVG MPG	% VMT OFF-ROAD	% VMT LOCAL <50	% VMT SHORT 50-200	% VMT LONG >200	% VMT N/R 1-WAY
26-33K LBS	OFF ROAD	LPG&OTHER	15	535	6,055,937	11,316	1,055,451	1,972	5.7	66.3	24.6	7.1	2.0	0.0
26-33K LBS	< 50 MILES	N/R	37	1,388	18,100,781	13,043	4,377,277	3,154	4.1	0.9	95.6	3.2	0.3	0.0
26-33K LBS	< 50 MILES	GASOLINE	2,382	121,138	1,536,021,924	12,680	299,062,400	2,469	5.1	3.0	91.7	4.9	0.4	0.0
26-33K LBS	< 50 MILES	DIESEL	2,120	102,448	2,045,666,031	19,968	331,118,296	3,232	6.2	1.2	87.4	10.2	1.2	0.0
26-33K LBS	< 50 MILES	LPG&OTHER	137	6,621	137,673,986	20,794	30,039,059	4,537	4.6	1.6	91.7	6.4	0.3	0.0
26-33K LBS	50-200 MILES	N/R	1	37	95,134	2,600	17,297	473	5.5	5.0	31.0	64.0	0.0	0.0
26-33K LBS	50-200 MILES	GASOLINE	406	19,773	395,130,966	19,983	74,600,708	3,773	5.3	2.1	6.6	85.5	5.8	0.0
26-33K LBS	50-200 MILES	DIESEL	833	39,672	1,378,537,034	34,748	218,372,493	5,504	6.3	0.5	7.9	85.4	6.1	0.0
26-33K LBS	50-200 MILES	LPG&OTHER	18	776	18,747,161	24,167	12,281,643	15,833	1.5	0.0	10.8	83.2	5.9	0.0
26-33K LBS	> 200 MILES	N/R	1	50	3,281,849	65,000	656,370	13,000	5.0	0.0	0.0	0.0	100.0	0.0
26-33K LBS	> 200 MILES	GASOLINE	48	2,860	62,547,431	21,871	12,272,158	4,291	5.1	2.8	9.9	8.9	78.4	0.0
26-33K LBS	> 200 MILES	DIESEL	243	10,956	584,016,875	53,306	102,769,851	9,380	5.7	0.2	3.8	12.3	83.7	0.0
26-33K LBS	> 200 MILES	LPG&OTHER	2	56	2,095,999	37,455	469,040	8,382	4.5	0.0	0.0	0.0	100.0	0.0
26-33K LBS	N/R OR 1-WAY	N/R	7	267	5,264,640	19,689	923,621	3,454	5.7	0.0	0.0	0.0	0.0	100.0
26-33K LBS	N/R OR 1-WAY	GASOLINE	97	6,925	159,871,757	23,087	27,896,536	4,028	5.7	0.0	0.0	0.0	0.0	100.0
26-33K LBS	N/R OR 1-WAY	DIESEL	15	930	18,982,056	20,406	3,221,311	3,463	5.9	0.0	0.0	0.0	0.0	100.0
26-33K LBS	N/R OR 1-WAY	LPG&OTHER	2	75	1,473,524	19,689	216,663	2,895	6.8	0.0	0.0	0.0	0.0	100.0
>33K LBS	OFF ROAD	N/R	3	125	1,058,020	8,472	190,288	1,524	5.6	50.0	11.6	38.4	0.0	0.0
>33K LBS	OFF ROAD	GASOLINE	573	27,085	731,213,530	26,997	144,150,573	5,322	5.1	83.5	15.4	0.8	0.3	0.0
>33K LBS	OFF ROAD	DIESEL	1,299	53,119	1,243,894,937	23,417	256,574,687	4,830	4.8	72.4	17.8	7.2	2.5	0.0
>33K LBS	OFF ROAD	LPG&OTHER	9	474	11,712,060	24,696	2,872,572	6,057	4.1	90.5	9.3	0.2	0.0	0.0
>33K LBS	< 50 MILES	N/R	67	2,509	35,451,790	14,127	7,102,263	2,830	5.0	0.2	95.2	4.6	0.0	0.0
>33K LBS	< 50 MILES	GASOLINE	1,622	76,113	1,385,704,050	18,206	282,051,027	3,706	4.9	4.3	92.4	3.1	0.2	0.0
>33K LBS	< 50 MILES	DIESEL	8,271	367,066	10,041,782,611	27,357	2,020,034,022	5,503	5.0	3.0	84.0	11.1	1.8	0.0
>33K LBS	< 50 MILES	LPG&OTHER	20	1,026	10,035,231	9,780	2,242,064	2,185	4.5	1.7	94.4	3.1	0.8	0.0
>33K LBS	50-200 MILES	N/R	6	253	6,243,517	24,670	1,432,109	5,659	4.4	2.5	9.4	78.9	9.3	0.0
>33K LBS	50-200 MILES	GASOLINE	191	9,034	195,550,323	21,646	37,557,756	4,157	5.2	3.7	7.1	85.2	4.0	0.0
>33K LBS	50-200 MILES	DIESEL	6,026	257,125	13,579,948,479	52,815	2,679,866,184	10,422	5.1	1.0	6.5	80.6	11.9	0.0
>33K LBS	50-200 MILES	LPG&OTHER	7	362	9,550,113	26,387	1,765,524	4,878	5.4	0.0	6.3	88.4	5.4	0.0
>33K LBS	> 200 MILES	N/R	5	262	10,115,079	38,575	2,023,016	7,715	5.0	0.0	0.0	9.2	90.8	0.0
>33K LBS	> 200 MILES	GASOLINE	45	1,863	72,645,960	38,991	19,334,640	10,377	3.8	2.1	3.4	16.6	77.9	0.0
>33K LBS	> 200 MILES	DIESEL	6,208	266,075	22,743,289,551	85,477	4,575,198,966	17,195	5.0	0.3	1.9	8.3	89.4	0.0
>33K LBS	> 200 MILES	LPG&OTHER	4	184	11,393,795	61,946	2,470,107	13,430	4.6	0.1	1.4	8.9	89.6	0.0
>33K LBS	N/R OR 1-WAY	N/R	14	577	27,776,874	48,121	5,555,376	9,624	5.0	0.0	0.0	0.0	0.0	100.0
>33K LBS	N/R OR 1-WAY	GASOLINE	46	2,559	123,156,514	48,121	24,208,290	9,459	5.1	0.0	0.0	0.0	0.0	100.0
>33K LBS	N/R OR 1-WAY	DIESEL	161	7,162	346,808,090	48,425	67,528,261	9,429	5.1	0.0	0.0	0.4	2.4	97.2
>33K LBS	N/R OR 1-WAY	LPG&OTHER	1	48	1,849,258	38,647	330,225	6,901	5.6	0.0	0.0	0.0	0.0	100.0

APPENDIX E

Distribution of Travel for Non-California Heavy-Duty Vehicles by Area of Operation, Fuel Type and GVW

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY)
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =0

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
--ALL--	--ALL--	--ALL--	69,787	4,932,873	100.0	100.0	19,484	100.0	132,040	100.0	3,254	6.0	28.2	12.7	18.4	10.9

SUMMARY LEVEL =1

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
--ALL--	--ALL--	82 & 83	1,818	133,504	2.7	5.3	38,305	0.9	42,919	5.1	6,090	6.3	62.3	22.0	20.0	25.2
--ALL--	--ALL--	81	3,566	237,482	4.8	8.2	33,285	2.4	67,073	7.9	5,329	6.2	57.1	20.1	23.0	25.3
--ALL--	--ALL--	80	4,422	270,594	5.5	9.7	34,359	4.2	100,943	10.0	5,910	5.8	52.1	21.6	25.3	26.7
--ALL--	--ALL--	79	6,869	531,169	10.8	14.4	25,985	8.4	102,693	14.2	4,284	6.1	44.0	14.2	17.7	16.5
--ALL--	--ALL--	78	5,714	516,244	10.5	12.0	22,293	8.9	112,144	11.5	3,581	6.2	40.3	11.4	15.9	12.7
--ALL--	--ALL--	77	5,025	452,517	9.2	10.1	21,410	9.2	132,668	10.0	3,554	6.0	36.9	10.6	15.4	11.0
--ALL--	--ALL--	76	3,256	283,671	5.8	5.1	17,444	5.5	126,044	5.0	2,823	6.2	29.6	9.8	16.3	8.0
--ALL--	--ALL--	75	3,992	286,022	5.8	4.9	16,613	6.2	140,727	5.2	2,940	5.7	24.7	12.7	22.9	8.7
--ALL--	--ALL--	74	4,706	295,870	6.0	5.4	17,654	7.8	171,159	6.0	3,265	5.4	21.4	11.2	21.8	8.5
--ALL--	--ALL--	73	4,590	288,534	5.8	4.9	16,204	7.9	177,355	5.3	2,947	5.5	18.5	12.4	22.9	8.4
--ALL--	--ALL--	PRE 73	25,829	1,637,265	33.2	20.0	11,725	38.7	153,958	19.8	1,945	6.0	9.2	10.8	16.4	4.3

SUMMARY LEVEL =2

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
--ALL--	N/R	--ALL--	429	23,762	0.5	0.3	11,722	0.5	128,384	0.3	2,005	5.8	2.7	3.4	3.1	1.5
--ALL--	GASOLINE	--ALL--	41,911	3,647,786	73.9	42.4	11,161	48.4	86,490	32.8	1,443	7.7	20.5	8.1	12.0	1.7
--ALL--	DIESEL	--ALL--	26,615	1,204,104	24.4	56.4	44,992	50.3	271,956	65.8	8,769	5.1	51.7	26.8	37.7	39.3
--ALL--	LPG&OTHER	--ALL--	832	57,221	1.2	1.0	16,482	0.8	93,116	1.1	3,176	5.2	30.3	13.8	24.7	1.3

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
--ALL--	N/R	81	4	131	0.0	0.0	36,558	0.0	70,062	0.0	5,285	6.9	57.8	0.0	0.0	0.0
--ALL--	N/R	80	12	481	0.0	0.0	25,647	0.0	69,702	0.0	4,625	5.5	0.0	0.0	0.0	0.0
--ALL--	N/R	79	25	1,089	0.0	0.0	27,933	0.0	106,601	0.0	5,413	5.2	10.7	0.0	0.0	6.7
--ALL--	N/R	78	13	536	0.0	0.0	23,734	0.0	134,901	0.0	4,342	5.5	0.0	0.0	0.0	0.0
--ALL--	N/R	77	20	897	0.0	0.0	24,820	0.0	143,301	0.0	4,234	5.9	17.6	1.6	16.4	5.9
--ALL--	N/R	76	15	1,149	0.0	0.0	15,812	0.0	110,689	0.0	2,044	7.7	0.0	0.0	0.3	0.0
--ALL--	N/R	75	16	975	0.0	0.0	16,370	0.0	141,266	0.0	2,563	6.4	2.6	2.6	2.6	0.0
--ALL--	N/R	74	20	1,202	0.0	0.0	11,662	0.0	131,173	0.0	2,020	5.8	0.0	0.0	0.0	0.0
--ALL--	N/R	73	27	1,088	0.0	0.0	10,739	0.0	121,559	0.0	1,735	6.2	0.0	9.7	11.0	9.7

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 2
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
--ALL--	N/R	PRE 73	277	16,215	0.3	0.1	8,400	0.3	131,750	0.1	1,452	5.8	1.6	4.1	2.7	0.7
--ALL--	GASOLINE	82 & 83	675	74,595	1.5	1.5	19,833	0.2	21,319	0.9	2,032	9.8	57.1	5.3	5.4	1.4
--ALL--	GASOLINE	81	1,277	131,554	2.7	2.2	15,930	0.7	32,310	1.3	1,636	9.7	53.6	3.9	6.7	0.8
--ALL--	GASOLINE	80	1,632	143,608	2.9	2.2	15,012	1.0	44,764	1.6	1,761	8.5	42.7	5.0	10.5	1.1
--ALL--	GASOLINE	79	3,190	362,401	7.3	5.1	13,422	2.9	52,968	3.5	1,545	8.7	36.9	5.0	8.1	0.8
--ALL--	GASOLINE	78	2,925	380,942	7.7	4.9	12,365	3.7	63,580	3.2	1,346	9.2	34.3	4.3	7.9	1.0
--ALL--	GASOLINE	77	2,637	335,991	6.8	4.2	12,052	4.0	76,759	2.9	1,388	8.7	29.9	4.7	8.0	0.7
--ALL--	GASOLINE	76	2,058	225,904	4.6	2.6	11,255	2.8	81,078	2.0	1,445	7.8	23.8	6.5	11.6	1.1
--ALL--	GASOLINE	75	2,493	215,443	4.4	2.3	10,391	2.8	86,129	2.0	1,516	6.9	17.8	11.7	19.3	3.6
--ALL--	GASOLINE	74	2,795	205,447	4.2	2.1	10,005	2.9	91,769	2.0	1,529	6.5	11.6	8.5	16.3	1.9
--ALL--	GASOLINE	73	2,728	205,004	4.2	2.1	9,761	3.2	102,166	1.9	1,486	6.6	10.0	11.5	18.2	3.7
--ALL--	GASOLINE	PRE 73	19,501	1,366,897	27.7	13.0	9,161	24.2	115,115	11.4	1,342	6.8	5.4	10.9	13.6	2.1
--ALL--	DIESEL	82 & 83	1,109	55,819	1.1	3.7	63,727	0.6	72,718	4.0	11,588	5.5	68.6	44.7	39.1	58.0
--ALL--	DIESEL	81	2,214	100,835	2.0	6.0	56,757	1.8	114,215	6.5	10,282	5.5	62.1	41.3	44.5	58.4
--ALL--	DIESEL	80	2,688	121,111	2.5	7.3	57,961	3.1	169,177	8.2	10,877	5.3	63.9	41.5	42.8	58.1
--ALL--	DIESEL	79	3,541	159,340	3.2	9.1	54,796	5.3	216,616	10.5	10,551	5.2	60.3	35.0	39.2	53.3
--ALL--	DIESEL	78	2,702	129,661	2.6	7.0	51,658	5.1	255,683	8.2	10,154	5.1	58.0	32.2	39.2	47.7
--ALL--	DIESEL	77	2,298	109,987	2.2	5.7	50,153	5.1	304,809	7.0	10,182	4.9	58.9	29.2	37.3	42.9
--ALL--	DIESEL	76	1,125	52,218	1.1	2.4	44,570	2.6	322,915	2.9	8,859	5.0	56.3	24.1	36.8	38.6
--ALL--	DIESEL	75	1,422	65,293	1.3	2.5	37,349	3.2	323,524	3.1	7,664	4.9	48.2	16.7	35.0	26.4
--ALL--	DIESEL	74	1,849	86,199	1.7	3.2	36,171	4.8	363,580	4.0	7,459	4.8	45.3	18.2	35.1	24.8
--ALL--	DIESEL	73	1,785	79,399	1.6	2.7	33,054	4.6	374,229	3.3	6,769	4.9	40.7	14.7	35.3	20.9
--ALL--	DIESEL	PRE 73	5,882	244,243	5.0	6.7	26,290	14.0	373,258	8.1	5,308	5.0	30.9	10.5	32.9	17.1
--ALL--	LPG&OTHER	82 & 83	34	3,091	0.1	0.1	25,012	0.0	26,074	0.1	4,727	5.3	76.5	17.8	26.7	5.9
--ALL--	LPG&OTHER	81	71	4,962	0.1	0.1	16,374	0.0	30,631	0.1	2,579	6.3	47.4	18.6	21.6	0.0
--ALL--	LPG&OTHER	80	90	5,395	0.1	0.1	20,318	0.1	67,355	0.2	4,993	4.1	38.4	21.3	29.9	4.2
--ALL--	LPG&OTHER	79	113	8,339	0.2	0.2	21,174	0.1	86,328	0.2	3,437	6.2	43.3	18.6	27.4	0.0
--ALL--	LPG&OTHER	78	74	5,105	0.1	0.1	17,125	0.1	87,915	0.1	3,311	5.2	38.4	15.3	29.7	0.0
--ALL--	LPG&OTHER	77	70	5,642	0.1	0.1	17,816	0.1	104,682	0.1	3,185	5.6	26.6	5.5	27.5	1.1
--ALL--	LPG&OTHER	76	58	4,401	0.1	0.1	13,716	0.1	102,343	0.1	2,193	6.3	13.3	9.5	18.9	0.0
--ALL--	LPG&OTHER	75	61	4,312	0.1	0.1	13,522	0.1	100,533	0.1	2,673	5.1	20.6	8.3	20.5	0.0
--ALL--	LPG&OTHER	74	42	3,022	0.1	0.0	11,813	0.0	95,681	0.0	2,222	5.3	14.7	6.7	29.4	0.0
--ALL--	LPG&OTHER	73	50	3,044	0.1	0.0	12,566	0.1	125,806	0.0	2,125	5.9	20.3	9.9	20.7	0.0
--ALL--	LPG&OTHER	PRE 73	169	9,911	0.2	0.1	11,891	0.2	142,989	0.2	2,980	4.0	9.7	13.7	20.8	2.6

SUMMARY LEVEL =4

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
8.5-10K LBS	--ALL--	--ALL--	16,462	1,724,525	35.0	21.3	11,874	19.2	72,596	11.6	1,080	11.0	35.1	0.6	0.5	0.3
10-14K LBS	--ALL--	--ALL--	961	76,753	1.6	0.9	11,097	1.4	116,196	0.7	1,416	7.8	9.7	11.0	8.9	4.6
14-16K LBS	--ALL--	--ALL--	1,121	86,814	1.8	0.8	9,279	1.7	128,238	0.7	1,240	7.5	10.0	9.5	9.9	1.7
16-19.5K LBS	--ALL--	--ALL--	4,145	358,668	7.3	2.9	7,685	5.6	101,814	2.5	1,100	7.0	5.9	16.1	15.6	5.1
19.5-26K LBS	--ALL--	--ALL--	15,460	1,265,300	25.7	14.4	10,923	18.3	93,993	14.0	1,778	6.1	9.2	16.0	24.8	3.9
26-33K LBS	--ALL--	--ALL--	7,060	347,790	7.1	7.1	19,580	6.8	128,145	7.5	3,442	5.7	24.6	17.2	34.0	13.6
>33K LBS	--ALL--	--ALL--	24,578	1,073,023	21.8	52.6	47,146	47.0	285,250	63.1	9,443	5.0	50.8	26.2	36.7	38.3

SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =5

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
8.5-10K LBS	--ALL--	82 & 83	517	65,158	1.3	1.3	19,679	0.2	20,264	0.7	1,611	12.2	69.6	0.7	0.4	0.4
8.5-10K LBS	--ALL--	81	914	108,224	2.2	1.8	16,181	0.5	32,816	0.9	1,391	11.6	62.5	0.9	0.6	0.5
8.5-10K LBS	--ALL--	80	968	101,631	2.1	1.6	14,935	0.7	43,870	0.9	1,358	11.0	54.6	0.8	0.4	0.3
8.5-10K LBS	--ALL--	79	1,914	271,610	5.5	3.7	13,181	2.2	52,863	2.0	1,207	10.9	45.4	0.6	0.5	0.4
8.5-10K LBS	--ALL--	78	1,908	298,765	6.1	3.7	11,874	2.9	62,370	1.9	1,031	11.5	40.8	0.4	0.4	0.3
8.5-10K LBS	--ALL--	77	1,575	245,949	5.0	3.0	11,722	2.8	75,277	1.6	1,062	11.0	36.0	0.4	0.4	0.2
8.5-10K LBS	--ALL--	76	988	140,784	2.9	1.6	10,837	1.7	80,347	0.9	990	10.9	30.4	0.3	0.4	0.1
8.5-10K LBS	--ALL--	75	822	88,441	1.8	0.9	9,626	1.2	88,771	0.5	920	10.5	27.1	0.3	0.2	0.1
8.5-10K LBS	--ALL--	74	1,040	76,259	1.5	0.7	9,003	1.0	88,024	0.4	912	9.9	13.3	0.6	0.5	0.2
8.5-10K LBS	--ALL--	73	880	63,833	1.3	0.6	9,049	1.1	107,781	0.3	872	10.4	9.5	0.6	0.7	0.0
8.5-10K LBS	--ALL--	PRE 73	4,936	263,869	5.3	2.4	8,620	4.9	119,761	1.4	855	10.1	7.5	1.0	1.1	0.3
10-14K LBS	--ALL--	82 & 83	16	1,653	0.0	0.0	23,663	0.0	20,723	0.0	2,163	10.9	32.4	11.7	6.2	9.0
10-14K LBS	--ALL--	81	29	2,346	0.0	0.0	18,795	0.0	39,468	0.0	2,383	7.9	35.2	26.3	29.1	18.6
10-14K LBS	--ALL--	80	29	2,280	0.0	0.0	18,706	0.0	62,651	0.0	2,927	6.4	15.8	3.3	16.1	12.7
10-14K LBS	--ALL--	79	49	4,131	0.1	0.1	20,066	0.0	71,146	0.1	3,027	6.6	10.6	13.2	17.9	13.1
10-14K LBS	--ALL--	78	20	1,717	0.0	0.0	15,987	0.0	84,316	0.0	1,817	8.8	19.8	27.3	21.2	1.5
10-14K LBS	--ALL--	77	29	2,064	0.0	0.0	14,715	0.0	86,410	0.0	2,022	7.3	69.9	42.5	25.3	27.3
10-14K LBS	--ALL--	76	5	337	0.0	0.0	8,172	0.0	81,445	0.0	1,019	8.0	14.9	0.0	14.9	0.0
10-14K LBS	--ALL--	75	11	831	0.0	0.0	14,530	0.0	110,088	0.0	2,241	6.5	45.6	31.2	40.0	0.0
10-14K LBS	--ALL--	74	12	990	0.0	0.0	9,485	0.0	93,303	0.0	1,358	7.0	9.4	9.4	27.5	0.0
10-14K LBS	--ALL--	73	10	740	0.0	0.0	7,046	0.0	90,230	0.0	996	7.1	40.7	36.7	20.8	20.8
10-14K LBS	--ALL--	PRE 73	751	59,664	1.2	0.6	9,315	1.2	129,954	0.4	1,153	8.1	4.5	8.4	5.4	2.2
14-16K LBS	--ALL--	82 & 83	2	164	0.0	0.0	15,202	0.0	10,870	0.0	1,423	10.7	65.0	0.0	0.0	0.0
14-16K LBS	--ALL--	81	10	1,075	0.0	0.0	17,573	0.0	34,454	0.0	1,957	9.0	44.1	13.4	18.8	0.0
14-16K LBS	--ALL--	80	1	107	0.0	0.0	12,000	0.0	36,000	0.0	800	15.0	100.0	0.0	0.0	0.0
14-16K LBS	--ALL--	79	1	144	0.0	0.0	50,000	0.0	250,000	0.0	9,615	5.2	100.0	100.0	100.0	100.0
14-16K LBS	--ALL--	78	3	398	0.0	0.0	40,875	0.0	205,499	0.0	9,033	4.5	36.2	36.2	36.2	36.2
14-16K LBS	--ALL--	76	3	108	0.0	0.0	12,275	0.0	75,004	0.0	1,590	7.7	22.9	0.0	22.9	0.0
14-16K LBS	--ALL--	75	25	1,477	0.0	0.0	12,410	0.0	93,603	0.0	1,593	7.8	4.9	11.7	17.6	1.0
14-16K LBS	--ALL--	74	27	1,364	0.0	0.0	14,755	0.0	72,391	0.0	1,568	9.4	20.4	3.1	13.6	0.0
14-16K LBS	--ALL--	73	34	1,857	0.0	0.0	8,389	0.0	85,974	0.0	1,161	7.2	14.5	3.0	12.0	0.8
14-16K LBS	--ALL--	PRE 73	1,015	80,121	1.6	0.7	8,787	1.6	131,897	0.6	1,166	7.5	8.8	9.4	9.2	1.5
16-19.5K LBS	--ALL--	82 & 83	10	1,021	0.0	0.0	19,549	0.0	24,787	0.0	3,848	5.1	65.0	49.0	20.3	0.0
16-19.5K LBS	--ALL--	81	14	1,363	0.0	0.0	23,228	0.0	43,662	0.0	2,798	8.3	57.7	45.6	30.1	19.7
16-19.5K LBS	--ALL--	80	26	1,692	0.0	0.0	19,077	0.0	55,059	0.0	3,521	5.4	21.7	17.1	21.9	21.7
16-19.5K LBS	--ALL--	79	44	2,442	0.0	0.0	16,945	0.0	59,158	0.0	2,532	6.7	24.5	16.7	17.8	8.8
16-19.5K LBS	--ALL--	78	31	3,094	0.1	0.1	15,897	0.0	69,637	0.0	2,127	7.5	8.8	8.3	11.6	4.8
16-19.5K LBS	--ALL--	77	42	3,424	0.1	0.1	17,023	0.1	96,279	0.1	2,913	5.8	31.8	20.3	14.0	11.7
16-19.5K LBS	--ALL--	76	78	6,775	0.1	0.1	12,955	0.1	94,088	0.1	1,839	7.0	23.4	19.6	18.1	9.7
16-19.5K LBS	--ALL--	75	91	7,170	0.1	0.1	11,755	0.1	101,321	0.1	1,830	6.4	26.2	21.3	20.3	5.8
16-19.5K LBS	--ALL--	74	116	9,327	0.2	0.1	10,118	0.1	98,825	0.1	1,419	7.1	21.4	11.5	17.8	2.9
16-19.5K LBS	--ALL--	73	149	12,452	0.3	0.1	10,521	0.2	107,921	0.1	1,573	6.7	31.1	19.2	12.6	7.3
16-19.5K LBS	--ALL--	PRE 73	3,544	309,907	6.3	2.2	6,861	4.9	103,322	1.9	967	7.1	2.5	15.7	15.4	4.8
19.5-26K LBS	--ALL--	82 & 83	112	9,781	0.2	0.2	21,651	0.0	30,020	0.2	2,990	7.2	23.1	33.0	30.5	16.6
19.5-26K LBS	--ALL--	81	213	18,722	0.4	0.4	18,984	0.1	36,650	0.3	2,747	6.9	21.4	24.6	37.9	17.7
19.5-26K LBS	--ALL--	80	387	32,961	0.7	0.6	18,377	0.3	55,993	0.6	2,896	6.3	18.5	16.7	37.3	10.4
19.5-26K LBS	--ALL--	79	1,078	88,104	1.8	1.5	15,844	0.8	62,767	1.4	2,614	6.1	16.5	18.7	31.2	5.8
19.5-26K LBS	--ALL--	78	883	78,092	1.6	1.2	15,162	0.9	74,101	1.2	2,549	5.9	13.3	18.4	34.7	5.1
19.5-26K LBS	--ALL--	77	902	84,475	1.7	1.2	13,697	1.1	84,720	1.2	2,299	6.0	12.2	15.7	28.8	2.8

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 4
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =5

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
19.5-26K LBS	--ALL--	76	921	78,954	1.6	1.0	12,058	1.0	84,371	1.0	2,077	5.8	12.4	16.5	30.1	3.1
19.5-26K LBS	--ALL--	75	1,316	108,618	2.2	1.2	10,855	1.4	83,824	1.3	1,852	5.9	9.8	20.1	31.5	6.7
19.5-26K LBS	--ALL--	74	1,307	105,313	2.1	1.1	10,187	1.5	91,647	1.1	1,734	5.9	9.8	14.4	25.4	3.1
19.5-26K LBS	--ALL--	73	1,362	112,679	2.3	1.1	9,403	1.7	97,792	1.1	1,565	6.0	7.3	17.2	27.1	5.9
19.5-26K LBS	--ALL--	PRE 73	6,979	547,600	11.1	4.8	8,487	9.4	111,748	4.5	1,326	6.4	5.4	13.9	17.9	1.9
26-33K LBS	--ALL--	82 & 83	324	17,598	0.4	0.5	27,123	0.1	31,101	0.5	4,437	6.1	28.3	22.4	41.2	22.9
26-33K LBS	--ALL--	81	742	37,029	0.8	0.9	23,474	0.3	45,047	0.8	3,615	6.5	32.3	24.1	42.3	25.4
26-33K LBS	--ALL--	80	875	41,596	0.8	0.9	21,833	0.4	62,938	0.9	3,533	6.2	33.4	23.9	39.7	21.7
26-33K LBS	--ALL--	79	715	33,458	0.7	0.8	21,904	0.4	80,997	0.8	3,681	6.0	31.4	22.7	36.9	22.8
26-33K LBS	--ALL--	78	502	26,748	0.5	0.7	23,380	0.5	111,953	0.7	4,121	5.7	36.8	23.2	39.8	22.0
26-33K LBS	--ALL--	77	441	21,897	0.4	0.5	23,935	0.5	138,514	0.6	4,472	5.4	35.9	15.6	37.2	13.3
26-33K LBS	--ALL--	76	217	9,884	0.2	0.2	23,359	0.3	180,095	0.3	4,581	5.1	31.6	17.5	36.8	11.7
26-33K LBS	--ALL--	75	286	14,423	0.3	0.3	17,512	0.3	150,662	0.3	3,404	5.1	26.8	15.1	36.1	5.7
26-33K LBS	--ALL--	74	332	16,700	0.3	0.3	17,816	0.5	187,216	0.4	3,509	5.1	22.2	10.6	29.3	8.8
26-33K LBS	--ALL--	73	442	21,382	0.4	0.4	18,413	0.7	209,341	0.5	3,497	5.3	23.3	13.7	30.4	5.0
26-33K LBS	--ALL--	PRE 73	2,184	107,073	2.2	1.6	13,991	3.0	181,565	1.7	2,606	5.4	10.1	10.4	25.6	3.7
>33K LBS	--ALL--	82 & 83	837	38,129	0.8	3.2	80,805	0.5	91,983	3.7	15,553	5.2	76.9	55.4	41.6	72.3
>33K LBS	--ALL--	81	1,644	68,722	1.4	5.0	70,344	1.5	143,093	5.7	13,361	5.3	72.5	46.5	43.6	67.0
>33K LBS	--ALL--	80	2,136	90,328	1.8	6.4	68,522	2.8	200,964	7.5	13,353	5.1	71.4	46.5	42.8	65.1
>33K LBS	--ALL--	79	3,068	131,279	2.7	8.3	60,649	4.8	239,755	9.8	11,993	5.1	64.0	37.2	39.5	55.8
>33K LBS	--ALL--	78	2,367	107,428	2.2	6.3	56,397	4.6	279,591	7.6	11,338	5.0	60.4	33.6	39.6	50.5
>33K LBS	--ALL--	77	2,036	94,708	1.9	5.2	53,169	4.7	325,448	6.5	10,987	4.8	60.6	30.6	37.3	45.3
>33K LBS	--ALL--	76	1,044	46,828	0.9	2.2	45,869	2.4	327,345	2.7	9,381	4.9	56.7	24.1	36.5	38.8
>33K LBS	--ALL--	75	1,441	65,062	1.3	2.4	36,181	3.1	309,947	3.1	7,561	4.8	45.9	15.7	36.4	25.0
>33K LBS	--ALL--	74	1,872	85,917	1.7	3.2	35,411	4.6	349,606	4.0	7,433	4.8	42.9	17.0	35.4	23.3
>33K LBS	--ALL--	73	1,713	75,591	1.5	2.6	32,976	4.2	360,195	3.2	6,894	4.8	39.1	13.7	35.2	20.3
>33K LBS	--ALL--	PRE 73	6,420	269,031	5.5	7.7	27,474	13.7	332,650	9.3	5,542	5.0	26.9	9.4	30.4	14.1

SUMMARY LEVEL =6

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
8.5-10K LBS	N/R	--ALL--	91	2,298	0.0	0.0	11,214	0.0	123,271	0.0	1,019	11.0	1.2	1.2	0.7	0.0
8.5-10K LBS	GASOLINE	--ALL--	15,988	1,697,338	34.4	20.8	11,769	18.9	72,540	11.3	1,068	11.0	34.8	0.6	0.5	0.3
8.5-10K LBS	DIESEL	--ALL--	174	10,567	0.2	0.2	21,788	0.1	65,418	0.1	1,631	13.4	65.7	2.2	4.8	3.3
8.5-10K LBS	LPG&OTHER	--ALL--	209	14,321	0.3	0.3	17,203	0.2	76,394	0.2	2,012	8.6	56.9	1.4	1.7	0.1
10-14K LBS	N/R	--ALL--	13	1,089	0.0	0.0	8,867	0.0	128,422	0.0	1,134	7.8	15.4	0.0	0.0	0.0
10-14K LBS	GASOLINE	--ALL--	889	70,469	1.4	0.7	9,912	1.2	113,597	0.5	1,211	8.2	8.0	10.9	6.7	3.3
10-14K LBS	DIESEL	--ALL--	46	4,195	0.1	0.1	30,345	0.1	161,902	0.1	4,651	6.5	32.4	13.7	42.9	27.3
10-14K LBS	LPG&OTHER	--ALL--	13	1,001	0.0	0.0	16,325	0.0	94,299	0.0	2,609	6.3	32.2	14.8	28.0	0.0
14-16K LBS	N/R	--ALL--	13	1,278	0.0	0.0	7,637	0.0	134,284	0.0	1,143	6.7	0.0	0.0	0.0	0.0
14-16K LBS	GASOLINE	--ALL--	1,081	83,354	1.7	0.8	8,918	1.6	124,121	0.6	1,150	7.8	9.7	9.2	9.0	1.3
14-16K LBS	DIESEL	--ALL--	22	1,719	0.0	0.0	27,052	0.1	315,016	0.1	5,427	5.0	35.9	36.7	62.3	22.9
14-16K LBS	LPG&OTHER	--ALL--	5	464	0.0	0.0	12,843	0.0	159,491	0.0	2,081	6.2	0.0	0.0	0.0	0.0
16-19.5K LBS	N/R	--ALL--	41	3,517	0.1	0.0	6,155	0.1	131,374	0.0	872	7.1	0.0	6.0	0.0	0.0
16-19.5K LBS	GASOLINE	--ALL--	4,017	348,438	7.1	2.7	7,457	5.4	100,284	2.3	1,062	7.0	5.7	16.2	15.5	5.0

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 5
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =6

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
16-19.5K LBS	DIESEL	--ALL--	52	3,973	0.1	0.1	24,803	0.1	183,634	0.1	3,860	6.4	28.8	24.4	40.9	25.1
16-19.5K LBS	LPG&OTHER	--ALL--	35	2,741	0.1	0.0	13,878	0.1	139,725	0.0	2,254	6.2	5.9	9.2	18.4	1.7
19.5-26K LBS	N/R	--ALL--	127	9,985	0.2	0.1	10,212	0.2	116,163	0.1	1,688	6.1	2.5	4.9	4.7	2.2
19.5-26K LBS	GASOLINE	--ALL--	14,020	1,155,792	23.4	12.2	10,139	16.4	92,314	12.0	1,663	6.1	7.8	15.9	24.0	2.8
19.5-26K LBS	DIESEL	--ALL--	958	70,985	1.4	1.6	22,170	1.3	117,760	1.4	3,130	7.1	28.5	18.9	38.0	23.3
19.5-26K LBS	LPG&OTHER	--ALL--	355	28,539	0.6	0.4	14,921	0.4	95,101	0.6	3,134	4.8	20.7	18.7	32.6	1.4
26-33K LBS	N/R	--ALL--	49	1,868	0.0	0.0	15,571	0.0	137,003	0.0	3,419	4.6	1.4	3.4	8.1	0.0
26-33K LBS	GASOLINE	--ALL--	3,439	175,741	3.6	2.6	14,065	2.7	100,173	2.9	2,680	5.2	11.6	12.4	29.3	1.7
26-33K LBS	DIESEL	--ALL--	3,398	162,119	3.3	4.3	25,554	4.0	160,733	4.2	4,167	6.1	38.6	22.3	39.1	27.3
26-33K LBS	LPG&OTHER	--ALL--	174	8,062	0.2	0.2	20,595	0.1	80,550	0.3	5,465	3.8	30.1	21.9	40.7	2.2
>33K LBS	N/R	--ALL--	95	3,727	0.1	0.1	21,639	0.1	155,108	0.1	4,374	4.9	4.5	0.5	2.5	3.5
>33K LBS	GASOLINE	--ALL--	2,477	116,655	2.4	2.6	21,502	2.3	126,677	3.2	4,349	4.9	13.3	8.2	29.8	1.1
>33K LBS	DIESEL	--ALL--	21,965	950,547	19.3	49.9	50,451	44.6	305,513	59.8	10,099	5.0	55.7	28.5	37.7	43.0
>33K LBS	LPG&OTHER	--ALL--	41	2,094	0.0	0.0	21,270	0.0	152,539	0.1	4,623	4.6	18.7	8.7	25.6	4.5

SUMMARY LEVEL =7

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
8.5-10K LBS	N/R	81	1	13	0.0	0.0	24,310	0.0	42,785	0.0	1,870	13.0	100.0	0.0	0.0	0.0
8.5-10K LBS	N/R	80	2	24	0.0	0.0	23,180	0.0	72,321	0.0	2,107	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	79	6	62	0.0	0.0	21,525	0.0	91,303	0.0	1,957	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	78	3	45	0.0	0.0	22,069	0.0	121,820	0.0	2,006	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	77	3	31	0.0	0.0	14,492	0.0	103,054	0.0	1,317	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	76	7	619	0.0	0.0	16,043	0.0	132,040	0.0	1,460	11.0	0.0	0.0	0.5	0.0
8.5-10K LBS	N/R	75	3	229	0.0	0.0	16,015	0.0	152,341	0.0	1,456	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	74	3	48	0.0	0.0	10,642	0.0	117,985	0.0	1,065	10.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	73	6	72	0.0	0.0	10,215	0.0	127,483	0.0	929	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	N/R	PRE 73	57	1,155	0.0	0.0	6,298	0.0	117,027	0.0	570	11.0	1.1	2.5	1.1	0.0
8.5-10K LBS	GASOLINE	82 & 83	436	57,762	1.2	1.2	19,262	0.2	20,177	0.6	1,587	12.1	68.4	0.6	0.3	0.3
8.5-10K LBS	GASOLINE	81	870	105,373	2.1	1.8	15,991	0.5	32,662	0.9	1,379	11.6	61.8	0.8	0.6	0.4
8.5-10K LBS	GASOLINE	80	940	99,808	2.0	1.6	14,953	0.7	43,641	0.8	1,357	11.0	54.8	0.7	0.4	0.3
8.5-10K LBS	GASOLINE	79	1,857	267,205	5.4	3.6	12,986	2.1	51,732	2.0	1,175	11.1	45.3	0.6	0.5	0.3
8.5-10K LBS	GASOLINE	78	1,877	296,474	6.0	3.7	11,868	2.8	62,234	1.9	1,032	11.5	40.5	0.4	0.4	0.3
8.5-10K LBS	GASOLINE	77	1,545	243,944	4.9	3.0	11,710	2.8	75,131	1.6	1,056	11.1	36.0	0.4	0.3	0.2
8.5-10K LBS	GASOLINE	76	959	138,627	2.8	1.6	10,794	1.7	79,855	0.9	986	10.9	30.6	0.3	0.4	0.1
8.5-10K LBS	GASOLINE	75	806	87,308	1.8	0.9	9,597	1.2	88,431	0.5	913	10.5	27.1	0.2	0.2	0.1
8.5-10K LBS	GASOLINE	74	1,023	75,625	1.5	0.7	8,977	1.0	87,912	0.4	910	9.9	13.3	0.6	0.5	0.2
8.5-10K LBS	GASOLINE	73	853	63,290	1.3	0.6	9,027	1.0	107,283	0.3	868	10.4	9.3	0.5	0.6	0.1
8.5-10K LBS	GASOLINE	PRE 73	4,822	261,922	5.3	2.3	8,613	4.8	119,620	1.4	853	10.1	7.5	0.9	0.9	0.3
8.5-10K LBS	DIESEL	82 & 83	69	5,838	0.1	0.1	23,066	0.0	20,100	0.1	1,390	16.6	75.0	1.0	1.4	1.7
8.5-10K LBS	DIESEL	81	19	1,091	0.0	0.0	40,559	0.0	72,616	0.0	2,744	14.8	92.2	4.1	4.4	3.2
8.5-10K LBS	DIESEL	80	5	206	0.0	0.0	17,937	0.0	63,304	0.0	2,423	7.4	9.6	0.0	5.8	5.8
8.5-10K LBS	DIESEL	79	13	1,318	0.0	0.0	16,351	0.0	164,888	0.0	2,352	7.0	28.6	0.0	3.3	4.5
8.5-10K LBS	DIESEL	78	8	1,127	0.0	0.0	11,716	0.0	73,719	0.0	709	16.5	78.8	2.8	2.0	3.4
8.5-10K LBS	DIESEL	77	7	79	0.0	0.0	25,005	0.0	171,087	0.0	3,957	6.3	0.0	0.0	48.4	38.9

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 6
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

---------- SUMMARY LEVEL =7 ----------

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
8.5-10K LBS	DIESEL	76	4	199	0.0	0.0	7,984	0.0	117,474	0.0	658	12.1	86.2	0.0	1.6	0.0
8.5-10K LBS	DIESEL	75	4	53	0.0	0.0	11,992	0.0	160,792	0.0	2,245	5.3	0.0	17.5	0.0	17.5
8.5-10K LBS	DIESEL	74	7	98	0.0	0.0	15,448	0.0	216,324	0.0	2,110	7.3	41.6	0.0	16.4	16.4
8.5-10K LBS	DIESEL	73	6	109	0.0	0.0	8,660	0.0	298,872	0.0	1,317	6.6	32.3	20.3	52.7	0.0
8.5-10K LBS	DIESEL	PRE 73	32	449	0.0	0.0	13,862	0.0	182,740	0.0	1,809	7.7	6.0	13.8	41.9	12.0
8.5-10K LBS	LPG&OTHER	82 & 83	12	1,558	0.0	0.0	22,474	0.0	24,110	0.0	3,312	6.8	94.9	0.2	0.2	0.0
8.5-10K LBS	LPG&OTHER	81	24	1,747	0.0	0.0	12,395	0.0	17,231	0.0	1,243	10.0	85.9	3.3	0.0	0.0
8.5-10K LBS	LPG&OTHER	80	21	1,595	0.0	0.0	13,294	0.0	55,260	0.0	1,245	10.7	49.0	2.1	0.7	0.7
8.5-10K LBS	LPG&OTHER	79	38	3,025	0.1	0.1	28,842	0.0	103,155	0.1	3,524	8.2	60.3	1.3	0.5	0.0
8.5-10K LBS	LPG&OTHER	78	20	1,119	0.0	0.0	13,270	0.0	84,612	0.0	1,019	13.0	90.2	1.1	0.0	0.0
8.5-10K LBS	LPG&OTHER	77	20	1,896	0.0	0.0	12,730	0.0	89,651	0.0	1,690	7.5	46.7	0.0	2.5	0.0
8.5-10K LBS	LPG&OTHER	76	18	1,338	0.0	0.0	13,270	0.0	101,879	0.0	1,225	10.8	14.7	0.0	1.2	0.0
8.5-10K LBS	LPG&OTHER	75	9	850	0.0	0.0	10,714	0.0	101,994	0.0	1,435	7.5	28.4	0.0	0.0	0.0
8.5-10K LBS	LPG&OTHER	74	7	488	0.0	0.0	11,504	0.0	76,692	0.0	1,042	11.0	0.0	0.0	0.0	0.0
8.5-10K LBS	LPG&OTHER	73	15	362	0.0	0.0	12,802	0.0	133,394	0.0	1,286	10.0	46.5	4.5	9.0	0.0
8.5-10K LBS	LPG&OTHER	PRE 73	25	343	0.0	0.0	15,007	0.0	153,939	0.0	1,913	7.8	17.5	13.6	33.5	0.0
10-14K LBS	N/R	81	1	62	0.0	0.0	50,000	0.0	100,000	0.0	6,667	7.5	100.0	0.0	0.0	0.0
10-14K LBS	N/R	PRE 73	12	1,026	0.0	0.0	6,367	0.0	130,150	0.0	798	8.0	10.3	0.0	0.0	0.0
10-14K LBS	GASOLINE	82 & 83	11	1,175	0.0	0.0	21,416	0.0	15,018	0.0	2,012	10.6	18.8	16.4	1.3	12.6
10-14K LBS	GASOLINE	81	17	1,339	0.0	0.0	13,596	0.0	34,856	0.0	1,728	7.9	18.5	26.6	11.0	0.0
10-14K LBS	GASOLINE	80	21	1,511	0.0	0.0	10,778	0.0	30,008	0.0	1,501	7.2	11.7	5.0	2.0	0.0
10-14K LBS	GASOLINE	79	43	3,390	0.1	0.1	14,765	0.0	54,529	0.0	2,034	7.3	10.6	16.0	13.4	6.9
10-14K LBS	GASOLINE	78	17	1,360	0.0	0.0	13,950	0.0	80,604	0.0	1,782	7.8	17.0	26.5	8.4	1.8
10-14K LBS	GASOLINE	77	28	2,014	0.0	0.0	12,594	0.0	73,637	0.0	1,689	7.5	69.1	41.0	23.5	25.5
10-14K LBS	GASOLINE	76	4	295	0.0	0.0	8,846	0.0	70,960	0.0	1,103	8.0	17.0	0.0	17.0	0.0
10-14K LBS	GASOLINE	75	9	741	0.0	0.0	11,583	0.0	96,625	0.0	1,724	6.7	51.2	35.0	41.1	0.0
10-14K LBS	GASOLINE	74	10	743	0.0	0.0	10,095	0.0	81,665	0.0	1,129	8.9	0.0	0.0	3.4	0.0
10-14K LBS	GASOLINE	73	10	740	0.0	0.0	7,046	0.0	90,230	0.0	996	7.1	40.7	36.7	20.8	20.8
10-14K LBS	GASOLINE	PRE 73	719	57,162	1.2	0.5	9,106	1.1	126,530	0.4	1,093	8.3	3.9	8.4	5.2	2.2
10-14K LBS	DIESEL	82 & 83	4	389	0.0	0.0	25,375	0.0	37,424	0.0	1,452	17.5	58.4	0.0	0.0	0.0
10-14K LBS	DIESEL	81	6	643	0.0	0.0	27,432	0.0	43,364	0.0	3,033	9.0	56.1	40.5	83.4	67.9
10-14K LBS	DIESEL	80	8	769	0.0	0.0	34,295	0.0	126,839	0.0	5,731	6.0	23.8	0.0	43.8	37.5
10-14K LBS	DIESEL	79	5	662	0.0	0.0	46,031	0.0	151,606	0.0	7,915	5.8	0.0	0.0	31.3	46.4
10-14K LBS	DIESEL	78	3	358	0.0	0.0	23,729	0.0	98,427	0.0	1,952	12.2	30.3	30.3	69.7	0.0
10-14K LBS	DIESEL	77	1	50	0.0	0.0	100,000	0.0	600,000	0.0	15,385	6.5	100.0	100.0	100.0	100.0
10-14K LBS	DIESEL	75	2	90	0.0	0.0	38,796	0.0	220,943	0.0	6,499	6.0	0.0	0.0	30.6	0.0
10-14K LBS	DIESEL	74	2	247	0.0	0.0	7,647	0.0	128,360	0.0	2,048	3.7	37.8	37.8	100.0	0.0
10-14K LBS	DIESEL	PRE 73	15	988	0.0	0.0	24,380	0.0	326,077	0.0	4,851	5.0	34.1	6.3	14.6	6.3
10-14K LBS	LPG&OTHER	82 & 83	1	88	0.0	0.0	46,000	0.0	23,000	0.0	7,302	6.3	100.0	0.0	100.0	0.0
10-14K LBS	LPG&OTHER	81	5	302	0.0	0.0	17,013	0.0	39,119	0.0	3,021	5.6	51.0	0.0	0.0	0.0
10-14K LBS	LPG&OTHER	79	1	79	0.0	0.0	30,000	0.0	110,000	0.0	4,688	6.4	100.0	0.0	100.0	0.0
10-14K LBS	LPG&OTHER	76	1	43	0.0	0.0	3,500	0.0	154,117	0.0	438	8.0	0.0	0.0	0.0	0.0
10-14K LBS	LPG&OTHER	PRE 73	5	488	0.0	0.0	9,422	0.0	133,615	0.0	1,357	6.9	0.0	30.3	23.0	0.0
14-16K LBS	N/R	78	1	100	0.0	0.0	9,382	0.0	121,820	0.0	1,303	7.2	0.0	0.0	0.0	0.0
14-16K LBS	N/R	PRE 73	12	1,178	0.0	0.0	7,488	0.0	135,346	0.0	1,130	6.6	0.0	0.0	0.0	0.0
14-16K LBS	GASOLINE	82 & 83	2	164	0.0	0.0	15,202	0.0	10,870	0.0	1,423	10.7	65.0	0.0	0.0	0.0
14-16K LBS	GASOLINE	81	9	931	0.0	0.0	14,321	0.0	32,687	0.0	1,674	8.6	35.4	0.0	6.2	0.0
14-16K LBS	GASOLINE	80	1	107	0.0	0.0	12,000	0.0	36,000	0.0	800	15.0	100.0	0.0	0.0	0.0
14-16K LBS	GASOLINE	78	1	154	0.0	0.0	20,000	0.0	100,000	0.0	4,000	5.0	0.0	0.0	0.0	0.0

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY)
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =7

MANUFACTURER GVH RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
14-16K LBS	GASOLINE	76	3	108	0.0	0.0	12,275	0.0	75,004	0.0	1,590	7.7	22.9	0.0	22.9	0.0
14-16K LBS	GASOLINE	75	24	1,462	0.0	0.0	12,440	0.0	84,435	0.0	1,582	7.9	4.0	11.8	16.8	0.0
14-16K LBS	GASOLINE	74	26	1,251	0.0	0.0	15,237	0.0	74,397	0.0	1,625	9.4	22.2	3.4	14.9	0.0
14-16K LBS	GASOLINE	73	32	1,780	0.0	0.0	8,570	0.0	87,275	0.0	1,181	7.3	11.7	3.1	8.2	0.0
14-16K LBS	GASOLINE	PRE 73	983	77,398	1.6	0.7	8,648	1.5	128,099	0.5	1,121	7.7	9.0	9.5	8.8	1.4
14-16K LBS	DIESEL	81	1	144	0.0	0.0	38,558	0.0	45,855	0.0	3,780	10.2	100.0	100.0	100.0	0.0
14-16K LBS	DIESEL	79	1	144	0.0	0.0	50,000	0.0	250,000	0.0	9,615	5.2	100.0	100.0	100.0	100.0
14-16K LBS	DIESEL	78	1	144	0.0	0.0	85,000	0.0	376,000	0.0	19,767	4.3	100.0	100.0	100.0	100.0
14-16K LBS	DIESEL	75	1	15	0.0	0.0	9,382	0.0	1000000	0.0	2,681	3.5	100.0	0.0	100.0	100.0
14-16K LBS	DIESEL	73	2	78	0.0	0.0	4,253	0.0	56,160	0.0	712	6.0	80.4	0.0	100.0	19.6
14-16K LBS	DIESEL	PRE 73	16	1,193	0.0	0.0	17,588	0.1	356,377	0.0	3,727	4.7	9.0	16.7	45.8	6.4
14-16K LBS	LPG&OTHER	74	1	112	0.0	0.0	9,382	0.0	50,000	0.0	938	10.0	0.0	0.0	0.0	0.0
14-16K LBS	LPG&OTHER	PRE 73	4	351	0.0	0.0	13,948	0.0	194,434	0.0	2,446	5.7	0.0	0.0	0.0	0.0
16-19.5K LBS	N/R	75	1	62	0.0	0.0	16,228	0.0	154,166	0.0	2,352	6.9	0.0	0.0	0.0	0.0
16-19.5K LBS	N/R	74	1	106	0.0	0.0	10,215	0.0	114,203	0.0	1,480	6.9	0.0	0.0	0.0	0.0
16-19.5K LBS	N/R	73	2	131	0.0	0.0	10,215	0.0	127,483	0.0	1,480	6.9	0.0	0.0	0.0	0.0
16-19.5K LBS	N/R	PRE 73	37	3,218	0.1	0.0	5,662	0.1	131,654	0.0	799	7.1	0.0	6.6	0.0	0.0
16-19.5K LBS	GASOLINE	82 & 83	10	1,021	0.0	0.0	19,549	0.0	24,787	0.0	3,848	5.1	65.0	49.0	20.3	0.0
16-19.5K LBS	GASOLINE	81	10	996	0.0	0.0	15,777	0.0	34,100	0.0	2,366	6.7	52.1	35.5	4.3	0.0
16-19.5K LBS	GASOLINE	80	20	1,191	0.0	0.0	11,044	0.0	35,439	0.0	1,796	6.1	0.0	0.0	12.4	0.0
16-19.5K LBS	GASOLINE	79	41	2,097	0.0	0.0	13,974	0.0	51,594	0.0	1,889	7.4	21.6	12.5	20.8	3.4
16-19.5K LBS	GASOLINE	78	30	3,037	0.1	0.1	16,157	0.0	70,725	0.0	2,162	7.5	9.0	6.6	11.9	4.9
16-19.5K LBS	GASOLINE	77	40	3,204	0.1	0.0	13,986	0.0	83,252	0.0	2,314	6.0	34.0	14.8	8.0	12.5
16-19.5K LBS	GASOLINE	76	68	6,040	0.1	0.1	11,868	0.1	85,761	0.1	1,766	6.7	26.3	22.0	17.7	10.9
16-19.5K LBS	GASOLINE	75	86	6,862	0.1	0.1	11,236	0.1	97,736	0.1	1,735	6.5	27.4	22.3	21.2	6.1
16-19.5K LBS	GASOLINE	74	110	8,992	0.2	0.1	9,749	0.1	95,686	0.1	1,346	7.2	21.8	12.0	17.3	3.0
16-19.5K LBS	GASOLINE	73	143	11,873	0.2	0.1	9,861	0.2	101,020	0.1	1,520	6.5	31.7	20.1	11.3	7.6
16-19.5K LBS	GASOLINE	PRE 73	3,459	303,124	6.1	2.2	6,838	4.8	102,279	1.8	960	7.1	2.5	15.9	15.5	4.8
16-19.5K LBS	DIESEL	81	4	368	0.0	0.0	43,404	0.0	69,556	0.0	3,969	10.9	72.9	72.9	100.0	72.9
16-19.5K LBS	DIESEL	80	4	393	0.0	0.0	43,514	0.0	117,229	0.0	8,515	5.1	93.6	73.4	56.9	93.6
16-19.5K LBS	DIESEL	79	2	237	0.0	0.0	44,516	0.0	133,732	0.0	8,206	5.4	60.8	60.8	0.0	60.8
16-19.5K LBS	DIESEL	77	1	144	0.0	0.0	73,320	0.0	310,000	0.0	14,664	5.0	0.0	100.0	100.0	0.0
16-19.5K LBS	DIESEL	76	8	568	0.0	0.0	22,168	0.0	155,182	0.0	2,116	10.5	0.0	0.0	17.6	0.0
16-19.5K LBS	DIESEL	75	2	166	0.0	0.0	27,882	0.0	228,927	0.0	4,882	5.7	0.0	0.0	0.0	0.0
16-19.5K LBS	DIESEL	74	2	40	0.0	0.0	47,036	0.0	538,656	0.0	10,238	4.6	100.0	0.0	63.1	0.0
16-19.5K LBS	DIESEL	73	2	232	0.0	0.0	27,136	0.0	301,236	0.0	3,103	8.7	50.4	0.0	50.4	0.0
16-19.5K LBS	DIESEL	PRE 73	27	1,825	0.0	0.0	10,385	0.1	199,443	0.0	1,822	5.7	11.3	6.9	35.5	12.0
16-19.5K LBS	LPG&OTHER	80	2	108	0.0	0.0	18,739	0.0	45,164	0.0	4,370	4.3	0.0	0.0	0.0	0.0
16-19.5K LBS	LPG&OTHER	79	1	107	0.0	0.0	14,000	0.0	42,000	0.0	2,545	5.5	0.0	0.0	0.0	0.0
16-19.5K LBS	LPG&OTHER	78	1	57	0.0	0.0	2,083	0.0	12,000	0.0	260	8.0	0.0	100.0	0.0	0.0
16-19.5K LBS	LPG&OTHER	77	1	76	0.0	0.0	38,200	0.0	240,000	0.0	5,877	6.5	0.0	100.0	100.0	0.0
16-19.5K LBS	LPG&OTHER	76	2	167	0.0	0.0	20,938	0.0	187,565	0.0	3,500	6.0	0.0	0.0	31.2	0.0
16-19.5K LBS	LPG&OTHER	75	2	79	0.0	0.0	19,449	0.0	102,475	0.0	3,258	6.0	0.0	0.0	0.0	0.0
16-19.5K LBS	LPG&OTHER	74	3	190	0.0	0.0	19,795	0.0	146,245	0.0	2,940	6.7	0.0	0.0	42.9	0.0
16-19.5K LBS	LPG&OTHER	73	2	217	0.0	0.0	29,125	0.0	267,500	0.0	2,929	9.9	0.0	0.0	50.0	0.0
16-19.5K LBS	LPG&OTHER	PRE 73	21	1,740	0.0	0.0	9,421	0.0	131,892	0.0	1,689	5.6	9.2	6.8	10.7	2.7
19.5-26K LBS	N/R	80	2	129	0.0	0.0	15,669	0.0	72,321	0.0	2,612	6.0	0.0	0.0	0.0	0.0
19.5-26K LBS	N/R	79	4	411	0.0	0.0	16,183	0.0	70,951	0.0	2,717	6.0	0.0	0.0	0.0	0.0
19.5-26K LBS	N/R	78	1	79	0.0	0.0	22,069	0.0	121,820	0.0	3,678	6.0	0.0	0.0	0.0	0.0

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 8
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

---------- SUMMARY LEVEL =7 ----------

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
19.5-26K LBS	N/R	77	5	397	0.0	0.0	34,377	0.0	182,772	0.0	5,606	6.1	26.5	0.0	20.0	0.0
19.5-26K LBS	N/R	76	5	374	0.0	0.0	11,214	0.0	65,629	0.0	1,744	6.4	0.0	0.0	0.0	0.0
19.5-26K LBS	N/R	75	5	436	0.0	0.0	13,414	0.0	128,395	0.0	2,236	6.0	0.0	0.0	0.0	0.0
19.5-26K LBS	N/R	74	9	734	0.0	0.0	10,471	0.0	112,161	0.0	1,745	6.0	0.0	0.0	0.0	0.0
19.5-26K LBS	N/R	73	6	413	0.0	0.0	9,133	0.0	102,060	0.0	1,312	7.0	0.0	25.4	25.4	25.4
19.5-26K LBS	N/R	PRE 73	90	7,012	0.1	0.1	8,043	0.1	118,973	0.1	1,345	6.0	2.1	5.4	4.1	1.6
19.5-26K LBS	GASOLINE	82 & 83	70	6,352	0.1	0.1	20,181	0.0	30,384	0.1	2,784	7.2	13.5	28.8	22.1	8.0
19.5-26K LBS	GASOLINE	81	112	9,645	0.2	0.1	14,499	0.0	28,970	0.1	2,265	6.4	17.6	20.8	33.9	4.9
19.5-26K LBS	GASOLINE	80	236	21,542	0.4	0.3	14,754	0.2	47,786	0.3	2,433	6.1	10.4	16.0	33.8	2.5
19.5-26K LBS	GASOLINE	79	837	70,744	1.4	1.0	14,033	0.6	56,310	1.1	2,421	5.8	12.2	18.1	29.7	1.6
19.5-26K LBS	GASOLINE	78	752	66,885	1.4	1.0	14,061	0.7	68,604	1.0	2,389	5.9	11.5	18.3	33.8	3.1
19.5-26K LBS	GASOLINE	77	798	75,632	1.5	1.0	12,621	0.9	79,465	1.0	2,146	5.9	10.6	15.7	27.6	1.3
19.5-26K LBS	GASOLINE	76	833	72,132	1.5	0.9	11,421	0.9	80,419	0.9	1,985	5.8	11.3	16.6	29.9	2.2
19.5-26K LBS	GASOLINE	75	1,235	102,628	2.1	1.1	10,482	1.3	81,120	1.1	1,786	5.9	9.0	20.5	32.0	6.8
19.5-26K LBS	GASOLINE	74	1,246	100,258	2.0	1.0	9,802	1.4	89,057	1.0	1,666	5.9	9.0	14.6	25.2	3.3
19.5-26K LBS	GASOLINE	73	1,300	108,132	2.2	1.0	9,279	1.6	96,128	1.0	1,538	6.0	6.8	17.2	27.2	5.7
19.5-26K LBS	GASOLINE	PRE 73	6,601	521,842	10.6	4.5	8,355	8.8	109,541	4.2	1,297	6.4	5.1	14.0	17.6	1.7
19.5-26K LBS	DIESEL	82 & 83	38	3,066	0.1	0.1	24,374	0.0	29,699	0.1	3,163	7.7	38.9	35.0	48.1	36.4
19.5-26K LBS	DIESEL	81	90	7,966	0.2	0.2	25,069	0.1	47,373	0.2	3,318	7.6	25.6	28.4	44.1	35.7
19.5-26K LBS	DIESEL	80	128	9,560	0.2	0.3	26,582	0.1	72,397	0.2	3,251	8.2	34.8	14.2	44.8	28.5
19.5-26K LBS	DIESEL	79	191	12,786	0.3	0.3	25,315	0.2	95,516	0.3	3,393	7.5	35.7	19.8	35.1	30.8
19.5-26K LBS	DIESEL	78	91	7,834	0.2	0.2	23,168	0.1	112,556	0.2	3,277	7.1	24.3	19.5	39.8	25.0
19.5-26K LBS	DIESEL	77	65	5,511	0.1	0.1	24,495	0.1	140,458	0.1	3,563	6.9	31.3	20.5	40.8	24.6
19.5-26K LBS	DIESEL	76	50	3,787	0.1	0.1	23,132	0.1	155,609	0.1	3,534	6.5	32.8	15.6	38.6	24.0
19.5-26K LBS	DIESEL	75	35	2,501	0.1	0.1	21,081	0.1	168,384	0.0	2,968	7.1	37.1	19.3	23.9	12.2
19.5-26K LBS	DIESEL	74	30	2,569	0.1	0.1	24,387	0.1	180,769	0.1	3,878	6.3	35.6	12.2	34.9	0.8
19.5-26K LBS	DIESEL	73	29	1,968	0.0	0.0	15,308	0.1	183,832	0.0	2,579	5.9	30.0	23.8	34.9	16.0
19.5-26K LBS	DIESEL	PRE 73	211	13,436	0.3	0.2	12,797	0.4	184,936	0.2	2,264	5.7	13.6	12.5	31.1	7.8
19.5-26K LBS	LPG&OTHER	82 & 83	4	363	0.0	0.0	24,387	0.0	26,367	0.0	5,135	4.7	58.3	87.7	28.4	0.0
19.5-26K LBS	LPG&OTHER	81	11	1,112	0.0	0.0	14,307	0.0	26,454	0.0	2,842	5.0	24.8	30.7	27.9	0.0
19.5-26K LBS	LPG&OTHER	80	21	1,729	0.0	0.0	18,366	0.0	66,328	0.1	6,720	2.7	30.8	39.1	41.7	9.5
19.5-26K LBS	LPG&OTHER	79	46	4,163	0.1	0.1	17,504	0.0	71,104	0.1	3,489	5.0	33.3	28.9	47.4	0.0
19.5-26K LBS	LPG&OTHER	78	39	3,294	0.1	0.1	18,303	0.0	93,125	0.1	4,029	4.5	24.7	18.8	40.9	0.0
19.5-26K LBS	LPG&OTHER	77	34	2,935	0.1	0.1	18,368	0.0	102,215	0.1	3,437	5.3	13.7	6.3	37.2	0.7
19.5-26K LBS	LPG&OTHER	76	33	2,661	0.1	0.0	13,697	0.0	92,760	0.0	2,544	5.4	14.6	15.7	26.0	0.0
19.5-26K LBS	LPG&OTHER	75	41	3,053	0.1	0.0	14,625	0.0	99,112	0.1	3,104	4.7	18.9	10.7	26.4	0.0
19.5-26K LBS	LPG&OTHER	74	22	1,753	0.0	0.0	11,295	0.0	100,628	0.0	2,463	4.6	19.5	10.5	35.6	0.0
19.5-26K LBS	LPG&OTHER	73	27	2,166	0.0	0.0	10,285	0.0	101,862	0.0	2,065	5.0	12.0	9.5	16.3	0.0
19.5-26K LBS	LPG&OTHER	PRE 73	77	5,310	0.1	0.1	11,125	0.1	133,934	0.1	1,862	6.0	13.5	16.4	24.3	4.0
26-33K LBS	N/R	81	1	30	0.0	0.0	24,310	0.0	42,785	0.0	4,265	5.7	0.0	0.0	0.0	0.0
26-33K LBS	N/R	80	4	157	0.0	0.0	23,180	0.0	72,321	0.0	4,067	5.7	0.0	0.0	0.0	0.0
26-33K LBS	N/R	79	4	125	0.0	0.0	18,056	0.0	76,599	0.0	3,168	5.7	0.0	0.0	0.0	0.0
26-33K LBS	N/R	78	1	40	0.0	0.0	27,000	0.0	139,974	0.0	4,655	5.8	0.0	0.0	0.0	0.0
26-33K LBS	N/R	77	3	99	0.0	0.0	16,228	0.0	113,596	0.0	2,847	5.7	0.0	0.0	0.0	0.0
26-33K LBS	N/R	76	1	38	0.0	0.0	16,228	0.0	133,881	0.0	2,847	5.7	0.0	0.0	0.0	0.0
26-33K LBS	N/R	75	2	70	0.0	0.0	14,835	0.0	140,936	0.0	2,373	6.3	36.7	36.7	36.7	0.0
26-33K LBS	N/R	73	6	225	0.0	0.0	15,005	0.0	148,861	0.0	2,632	5.7	0.0	0.0	6.4	0.0
26-33K LBS	N/R	PRE 73	27	1,084	0.0	0.0	13,607	0.0	155,343	0.0	3,588	3.8	0.0	3.5	10.2	0.0
26-33K LBS	GASOLINE	82 & 83	134	7,426	0.2	0.2	24,518	0.0	24,077	0.2	4,513	5.4	11.2	13.4	28.1	3.5

SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

SUMMARY LEVEL =7

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
26-33K LBS	GASOLINE	81	226	11,449	0.2	0.2	16,142	0.1	30,000	0.2	3,023	5.3	19.2	13.2	38.0	0.7
26-33K LBS	GASOLINE	80	361	17,091	0.3	0.3	16,104	0.1	48,997	0.3	3,055	5.3	20.6	15.6	37.2	3.6
26-33K LBS	GASOLINE	79	282	13,256	0.3	0.2	16,257	0.1	54,543	0.3	3,163	5.1	14.4	17.5	32.3	3.3
26-33K LBS	GASOLINE	78	155	8,669	0.2	0.1	12,677	0.1	63,530	0.1	2,600	4.9	17.8	20.5	42.2	4.2
26-33K LBS	GASOLINE	77	150	7,401	0.2	0.1	15,723	0.1	85,087	0.2	3,342	4.7	22.1	11.6	43.2	0.2
26-33K LBS	GASOLINE	76	96	4,444	0.1	0.1	14,713	0.1	109,397	0.1	3,249	4.5	18.3	14.4	33.3	0.6
26-33K LBS	GASOLINE	75	146	7,598	0.2	0.1	12,767	0.1	107,381	0.1	2,699	4.7	20.8	13.4	39.7	1.4
26-33K LBS	GASOLINE	74	167	9,133	0.2	0.1	12,090	0.2	121,101	0.1	2,604	4.6	11.9	6.3	28.8	0.5
26-33K LBS	GASOLINE	73	214	10,691	0.2	0.1	13,129	0.2	127,491	0.2	2,816	4.7	7.9	12.9	29.1	2.0
26-33K LBS	GASOLINE	PRE 73	1,508	78,583	1.6	1.0	12,405	1.6	134,510	1.1	2,197	5.6	5.7	10.2	22.0	1.0
26-33K LBS	DIESEL	82 & 83	175	9,245	0.2	0.3	29,452	0.1	37,522	0.2	4,189	7.0	39.3	30.1	49.9	39.7
26-33K LBS	DIESEL	81	484	23,750	0.5	0.7	27,164	0.2	52,323	0.6	3,898	7.0	39.4	29.0	44.5	39.3
26-33K LBS	DIESEL	80	469	22,595	0.5	0.6	25,658	0.2	71,999	0.5	3,647	7.0	42.7	30.3	41.0	37.0
26-33K LBS	DIESEL	79	404	19,254	0.4	0.5	26,173	0.3	99,844	0.5	4,065	6.4	43.0	25.8	40.8	37.4
26-33K LBS	DIESEL	78	334	17,494	0.4	0.5	28,830	0.4	137,107	0.5	4,883	5.9	47.0	24.8	39.3	31.6
26-33K LBS	DIESEL	77	276	13,806	0.3	0.4	28,675	0.4	169,482	0.4	5,115	5.6	44.7	18.1	33.4	20.8
26-33K LBS	DIESEL	76	117	5,285	0.1	0.2	30,838	0.2	240,134	0.2	5,729	5.4	43.7	20.6	39.6	21.4
26-33K LBS	DIESEL	75	131	6,480	0.1	0.2	23,455	0.2	202,671	0.2	4,314	5.4	33.8	17.1	32.9	11.1
26-33K LBS	DIESEL	74	159	7,307	0.1	0.2	25,158	0.3	272,967	0.2	4,679	5.4	35.0	16.2	30.9	19.4
26-33K LBS	DIESEL	73	217	10,174	0.2	0.3	24,084	0.5	297,306	0.3	4,245	5.7	38.8	14.4	31.9	8.5
26-33K LBS	DIESEL	PRE 73	632	26,728	0.5	0.5	18,616	1.3	320,965	0.6	3,437	5.4	23.7	11.2	36.9	11.9
26-33K LBS	LPG&OTHER	82 & 83	15	928	0.0	0.0	24,761	0.0	23,343	0.0	6,287	3.9	55.2	16.9	59.4	11.7
26-33K LBS	LPG&OTHER	81	31	1,801	0.0	0.0	21,403	0.0	44,787	0.0	3,638	5.9	23.5	29.1	42.2	0.0
26-33K LBS	LPG&OTHER	80	41	1,753	0.0	0.1	28,264	0.0	81,227	0.1	6,665	4.2	41.1	23.1	50.3	1.7
26-33K LBS	LPG&OTHER	79	25	822	0.0	0.0	13,544	0.0	66,857	0.0	3,110	4.4	38.7	38.1	26.3	0.0
26-33K LBS	LPG&OTHER	78	12	545	0.0	0.0	18,425	0.0	72,718	0.0	3,810	4.8	13.5	16.6	19.7	0.0
26-33K LBS	LPG&OTHER	77	12	590	0.0	0.0	17,346	0.0	88,295	0.0	3,872	4.5	11.5	8.2	57.1	6.7
26-33K LBS	LPG&OTHER	76	3	118	0.0	0.0	16,285	0.0	168,258	0.0	3,845	4.2	0.0	0.0	59.4	0.0
26-33K LBS	LPG&OTHER	75	7	275	0.0	0.0	9,240	0.0	123,394	0.0	1,703	5.4	25.1	10.3	10.0	0.0
26-33K LBS	LPG&OTHER	74	6	261	0.0	0.0	12,621	0.0	99,917	0.0	2,392	5.3	20.2	6.4	6.4	0.0
26-33K LBS	LPG&OTHER	73	5	292	0.0	0.0	16,866	0.0	187,841	0.0	3,006	5.6	64.6	27.4	45.8	0.0
26-33K LBS	LPG&OTHER	PRE 73	17	678	0.0	0.0	16,081	0.0	181,892	0.1	15,716	1.0	0.0	15.0	26.4	0.0
>33K LBS	N/R	81	1	26	0.0	0.0	24,310	0.0	42,785	0.0	4,862	5.0	0.0	0.0	0.0	0.0
>33K LBS	N/R	80	4	171	0.0	0.0	35,787	0.0	64,960	0.0	7,006	5.1	0.0	0.0	0.0	0.0
>33K LBS	N/R	79	11	490	0.0	0.0	41,131	0.0	146,123	0.0	8,688	4.7	23.8	0.0	0.0	14.9
>33K LBS	N/R	78	7	271	0.0	0.0	29,324	0.0	144,982	0.0	6,000	4.9	0.0	0.0	0.0	0.0
>33K LBS	N/R	77	9	370	0.0	0.0	17,730	0.0	112,262	0.0	3,375	5.3	14.3	3.9	18.2	14.3
>33K LBS	N/R	76	2	118	0.0	0.0	29,021	0.0	133,881	0.0	5,804	5.0	0.0	0.0	0.0	0.0
>33K LBS	N/R	75	5	177	0.0	0.0	24,749	0.0	154,166	0.0	4,950	5.0	0.0	0.0	0.0	0.0
>33K LBS	N/R	74	7	314	0.0	0.0	15,083	0.0	183,281	0.0	2,988	5.0	0.0	0.0	0.0	0.0
>33K LBS	N/R	73	7	247	0.0	0.0	9,971	0.0	124,436	0.0	1,994	5.0	0.0	0.0	0.0	0.0
>33K LBS	N/R	PRE 73	42	1,542	0.0	0.0	15,697	0.0	182,814	0.0	3,145	5.0	0.0	0.4	1.8	0.4
>33K LBS	GASOLINE	82 & 83	12	695	0.0	0.0	12,950	0.0	11,937	0.0	3,093	4.2	51.8	3.9	19.2	0.0
>33K LBS	GASOLINE	81	33	1,822	0.0	0.0	21,251	0.0	41,101	0.0	3,969	5.4	21.0	6.4	16.2	3.7
>33K LBS	GASOLINE	80	53	2,358	0.0	0.0	16,808	0.0	48,585	0.1	3,504	4.8	25.1	9.9	39.6	4.4
>33K LBS	GASOLINE	79	130	5,709	0.1	0.1	18,658	0.1	65,352	0.1	3,861	4.8	24.0	13.4	35.0	1.8
>33K LBS	GASOLINE	78	93	4,363	0.1	0.1	16,135	0.0	66,545	0.1	3,418	4.7	20.3	11.4	48.4	0.8
>33K LBS	GASOLINE	77	76	3,796	0.1	0.1	13,677	0.1	107,446	0.1	2,892	4.7	11.9	17.4	34.4	0.0
>33K LBS	GASOLINE	76	95	4,257	0.1	0.1	19,113	0.1	96,710	0.1	4,890	3.9	21.3	8.1	35.8	1.5

TIUS 1982 -- TRUCKS, VMT, FUEL USE, AND USE OF SOME CONSERVATION MEASURES (NON-CALIFORNIA TRUCKS ONLY) 10
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING, ENGINE FUEL TYPE, AND MODEL YEAR (CLASS 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS)
PERCENTAGE FOR TRUCKS, VMT, LIFE TIME VMT, AND FUEL ARE BASED ON GRAND TOTALS FOR EACH. ALL OTHER PERCENTAGES ARE ROW %
17:49 FRIDAY, AUGUST 28, 1987

---------- SUMMARY LEVEL =7 ----------

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	MODEL YEAR	RECORD COUNT	TRUCKS	% OF TRUCKS	% OF VMT	VMT PER TRUCK	% LIFE TIME VMT	LIFE TIME VMT/TRUCK	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	% WITH RADIAL TIRES	% WITH AXL/DRV RATIO	% WITH SPEED GOVRNR	% WITH ECON ENGINE
>33K LBS	GASOLINE	75	187	8,843	0.2	0.1	14,033	0.1	93,674	0.2	3,113	4.5	16.8	9.8	40.0	0.9
>33K LBS	GASOLINE	74	213	9,445	0.2	0.2	17,922	0.2	122,448	0.2	4,176	4.3	15.1	5.4	36.3	1.1
>33K LBS	GASOLINE	73	176	8,499	0.2	0.2	17,461	0.1	114,784	0.2	3,806	4.6	23.6	8.1	32.6	0.0
>33K LBS	GASOLINE	PRE 73	1,409	66,867	1.4	1.7	24,959	1.6	151,588	2.0	4,809	5.2	8.5	7.3	25.0	1.1
>33K LBS	DIESEL	82 & 83	823	37,280	0.8	3.2	82,231	0.5	93,592	3.7	15,819	5.2	77.5	56.4	42.0	73.8
>33K LBS	DIESEL	81	1,610	66,874	1.4	5.0	71,700	1.5	145,911	5.7	13,620	5.3	73.9	47.6	44.4	68.8
>33K LBS	DIESEL	80	2,074	87,588	1.8	6.4	70,085	2.8	205,663	7.4	13,649	5.1	72.9	47.6	43.1	66.9
>33K LBS	DIESEL	79	2,925	124,939	2.5	8.2	62,701	4.8	248,014	9.6	12,389	5.1	66.1	38.5	39.9	58.5
>33K LBS	DIESEL	78	2,265	102,704	2.1	6.2	58,208	4.6	289,173	7.5	11,695	5.0	62.3	34.6	39.3	52.8
>33K LBS	DIESEL	77	1,948	90,396	1.8	5.2	54,955	4.7	335,443	6.4	11,354	4.8	62.8	31.3	37.5	47.4
>33K LBS	DIESEL	76	946	42,378	0.9	2.1	48,670	2.3	351,403	2.6	9,854	4.9	60.5	25.8	36.7	42.7
>33K LBS	DIESEL	75	1,247	55,987	1.1	2.3	39,742	3.0	344,865	2.9	8,278	4.8	50.6	16.7	35.9	28.9
>33K LBS	DIESEL	74	1,649	75,939	1.5	3.0	37,743	4.4	379,344	3.7	7,870	4.8	46.6	18.5	35.3	26.2
>33K LBS	DIESEL	73	1,529	66,838	1.4	2.4	35,036	4.0	392,291	3.0	7,305	4.8	41.2	14.5	35.6	23.0
>33K LBS	DIESEL	PRE 73	4,949	199,623	4.0	5.9	28,461	12.1	395,288	7.2	5,815	4.9	33.4	10.2	32.5	18.7
>33K LBS	LPG&OTHER	82 & 83	2	153	0.0	0.0	41,684	0.0	63,585	0.0	7,220	5.8	47.6	47.6	52.4	47.6
>33K LBS	LPG&OTHER	80	5	210	0.0	0.0	24,212	0.0	63,271	0.0	5,583	4.3	17.9	17.9	0.0	9.9
>33K LBS	LPG&OTHER	79	2	141	0.0	0.0	10,072	0.0	308,015	0.0	1,890	5.3	0.0	0.0	0.0	0.0
>33K LBS	LPG&OTHER	78	2	89	0.0	0.0	23,677	0.0	78,663	0.0	4,458	5.3	69.3	0.0	69.3	0.0
>33K LBS	LPG&OTHER	77	3	146	0.0	0.0	64,078	0.0	345,440	0.0	13,348	4.8	100.0	0.0	0.0	0.0
>33K LBS	LPG&OTHER	76	1	75	0.0	0.0	8,000	0.0	128,000	0.0	2,500	3.2	0.0	0.0	0.0	0.0
>33K LBS	LPG&OTHER	75	2	54	0.0	0.0	8,602	0.0	38,942	0.0	1,885	4.6	0.0	0.0	89.0	0.0
>33K LBS	LPG&OTHER	74	3	219	0.0	0.0	10,012	0.0	72,893	0.0	2,764	3.6	21.9	0.0	75.8	0.0
>33K LBS	LPG&OTHER	73	1	6	0.0	0.0	13,228	0.0	165,085	0.0	2,646	5.0	0.0	0.0	0.0	0.0
>33K LBS	LPG&OTHER	PRE 73	20	1,000	0.0	0.0	16,830	0.0	166,768	0.0	3,876	4.3	2.6	7.1	18.0	0.0

APPENDIX F

Distribution of Travel for Non-California Vehicles Based in California, by Fuel Type and GVW

TIUS 1982 -- TRUCKS, VMT, AND FUEL USE FOR NON-CALIFORNIA HEAVY-DUTY TRUCKS

SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING AND ENGINE FUEL TYPE (CLASSES 2 THROUGH 8 ONLY)

(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
PERCENTAGE FOR TRUCKS, VMT, AND FUEL ARE BASED ON GRAND TOTALS. PERCENT OF TRUCKS BASED IN CALIFORNIA REPRESENT ROW %

13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =0

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	% OF TRUCKS	TOTAL VMT	% OF VMT	VMT PER TRUCK	FUEL USED GALLONS	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	TRUCKS BASED IN CALIFORNIA	ROW % CAL TRKS
--ALL--	--ALL--	69,787	4,932,873	100.0	96,111,071,745	100.0	19,484	16,052,440,697	100.0	3,254	6.0	5,630	0.11

SUMMARY LEVEL =1

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	% OF TRUCKS	TOTAL VMT	% OF VMT	VMT PER TRUCK	FUEL USED GALLONS	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	TRUCKS BASED IN CALIFORNIA	ROW % CAL TRKS
--ALL--	N/R	429	23,762	0.5	278,528,872	0.3	11,722	47,644,758	0.3	2,005	5.8	47	0.20
--ALL--	GASOLINE	41,911	3,647,786	73.9	40,714,621,832	42.4	11,161	5,264,772,431	32.8	1,443	7.7	3,648	0.10
--ALL--	DIESEL	26,615	1,204,104	24.4	54,174,819,971	56.4	44,992	10,558,267,416	65.8	8,769	5.1	1,897	0.16
--ALL--	LPG&OTHER	832	57,221	1.2	943,101,069	1.0	16,482	181,756,093	1.1	3,176	5.2	38	0.07

SUMMARY LEVEL =2

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	% OF TRUCKS	TOTAL VMT	% OF VMT	VMT PER TRUCK	FUEL USED GALLONS	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	TRUCKS BASED IN CALIFORNIA	ROW % CAL TRKS
8.5-10K LBS	--ALL--	16,462	1,724,525	35.0	20,477,858,183	21.3	11,874	1,861,866,822	11.6	1,080	11.0	2,545	0.15
10-14K LBS	--ALL--	961	76,753	1.6	851,763,523	0.9	11,097	108,691,009	0.7	1,416	7.8	128	0.17
14-16K LBS	--ALL--	1,121	86,814	1.8	805,526,453	0.8	9,279	107,633,826	0.7	1,240	7.5	219	0.25
16-19.5K LBS	--ALL--	4,145	358,668	7.3	2,756,423,779	2.9	7,685	394,659,817	2.5	1,100	7.0	21	0.01
19.5-26K LBS	--ALL--	15,460	1,265,300	25.7	13,820,573,847	14.4	10,923	2,250,164,611	14.0	1,778	6.1	602	0.05
26-33K LBS	--ALL--	7,060	347,790	7.1	6,809,746,180	7.1	19,580	1,196,936,663	7.5	3,442	5.7	481	0.14
>33K LBS	--ALL--	24,578	1,073,023	21.8	50,589,179,781	52.6	47,146	10,132,487,949	63.1	9,443	5.0	1,634	0.15

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	% OF TRUCKS	TOTAL VMT	% OF VMT	VMT PER TRUCK	FUEL USED GALLONS	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	TRUCKS BASED IN CALIFORNIA	ROW % CAL TRKS
8.5-10K LBS	N/R	91	2,298	0.0	25,773,220	0.0	11,214	2,341,306	0.0	1,019	11.0	0	0.00
8.5-10K LBS	GASOLINE	15,988	1,697,338	34.4	19,975,489,704	20.8	11,769	1,813,479,508	11.3	1,068	11.0	2,545	0.15
8.5-10K LBS	DIESEL	174	10,567	0.2	230,231,624	0.2	21,788	17,232,666	0.1	1,631	13.4	0	0.00
8.5-10K LBS	LPG&OTHER	209	14,321	0.3	246,363,635	0.3	17,203	28,813,341	0.2	2,012	8.6	0	0.00
10-14K LBS	N/R	13	1,089	0.0	9,653,496	0.0	8,867	1,234,408	0.0	1,134	7.8	0	0.00
10-14K LBS	GASOLINE	889	70,469	1.4	698,479,275	0.7	9,912	85,336,072	0.5	1,211	8.2	128	0.18
10-14K LBS	DIESEL	46	4,195	0.1	127,294,412	0.1	30,345	19,509,303	0.1	4,651	6.5	0	0.00
10-14K LBS	LPG&OTHER	13	1,001	0.0	16,336,340	0.0	16,325	2,611,226	0.0	2,609	6.3	0	0.00
14-16K LBS	N/R	13	1,278	0.0	9,760,168	0.0	7,637	1,461,278	0.0	1,143	6.7	0	0.00
14-16K LBS	GASOLINE	1,081	83,354	1.7	743,323,163	0.8	8,918	95,881,549	0.6	1,150	7.8	219	0.26
14-16K LBS	DIESEL	22	1,719	0.0	46,490,024	0.0	27,052	9,326,349	0.1	5,427	5.0	0	0.00
14-16K LBS	LPG&OTHER	5	464	0.0	5,953,098	0.0	12,843	964,650	0.0	2,081	6.2	0	0.00
16-19.5K LBS	N/R	41	3,517	0.1	21,646,018	0.0	6,155	3,066,919	0.0	872	7.1	0	0.00

TIUS 1982 -- TRUCKS, VMT, AND FUEL USE FOR NON-CALIFORNIA HEAVY-DUTY TRUCKS
SUMMARY BY MANUFACTURER'S GROSS VEHICLE WEIGHT RATING AND ENGINE FUEL TYPE (CLASSES 2 THROUGH 8 ONLY)
(EXTREME VALUES OF VMT AND ZERO MPG ARE ASSIGNED AVERAGES FOR THE SIZE CLASS. TRUCKS IN SIZE CLASS 2B ARE ESTIMATED AS 15% OF CLASS
PERCENTAGE FOR TRUCKS, VMT, AND FUEL ARE BASED ON GRAND TOTALS. PERCENT OF TRUCKS BASED IN CALIFORNIA REPRESENT ROH %
13:49 WEDNESDAY, DECEMBER 28, 1988

SUMMARY LEVEL =3

MANUFACTURER GVW RATING	ENGINE FUEL TYPE	RECORD COUNT	TRUCKS	% OF TRUCKS	TOTAL VMT	% OF VMT	VMT PER TRUCK	FUEL USED GALLONS	% OF FUEL USED	GALLNS /TRUCK	AVG MPG	TRUCKS BASED IN CALIFORNIA	ROH % CAL TRKS
16-19.5K LBS	GASOLINE	4,017	348,438	7.1	2,598,196,377	2.7	7,457	370,077,682	2.3	1,062	7.0	21	0.01
16-19.5K LBS	DIESEL	52	3,973	0.1	98,544,196	0.1	24,803	15,336,148	0.1	3,860	6.4	0	0.00
16-19.5K LBS	LPG&OTHER	35	2,741	0.1	38,037,188	0.0	13,878	6,179,068	0.0	2,254	6.2	0	0.00
19.5-26K LBS	N/R	127	9,985	0.2	101,969,161	0.1	10,212	16,852,856	0.1	1,688	6.1	0	0.00
19.5-26K LBS	GASOLINE	14,020	1,155,792	23.4	11,719,020,712	12.2	10,139	1,921,699,913	12.0	1,663	6.1	559	0.05
19.5-26K LBS	DIESEL	958	70,985	1.4	1,573,760,228	1.6	22,170	222,166,380	1.4	3,130	7.1	21	0.03
19.5-26K LBS	LPG&OTHER	355	28,539	0.6	425,823,745	0.4	14,921	89,445,462	0.6	3,134	4.8	21	0.07
26-33K LBS	N/R	49	1,868	0.0	29,081,528	0.0	15,571	6,384,937	0.0	3,419	4.6	0	0.00
26-33K LBS	GASOLINE	3,439	175,741	3.6	2,471,842,225	2.6	14,065	470,995,420	2.9	2,680	5.2	176	0.10
26-33K LBS	DIESEL	3,398	162,119	3.3	4,142,775,820	4.3	25,554	675,494,450	4.2	4,167	6.1	288	0.18
26-33K LBS	LPG&OTHER	174	8,062	0.2	166,046,607	0.2	20,595	44,061,856	0.3	5,465	3.8	17	0.21
>33K LBS	N/R	95	3,727	0.1	80,645,280	0.1	21,639	16,303,052	0.1	4,374	4.9	47	1.27
>33K LBS	GASOLINE	2,477	116,655	2.4	2,508,270,376	2.6	21,502	507,302,286	3.2	4,349	4.9	0	0.00
>33K LBS	DIESEL	21,965	950,547	19.3	47,955,723,668	49.9	50,451	9,599,202,120	59.8	10,099	5.0	1,587	0.17
>33K LBS	LPG&OTHER	41	2,094	0.0	44,540,457	0.0	21,270	9,680,491	0.1	4,623	4.6	0	0.00

APPENDIX G

Distribution of Heavy-Duty Travel For California Registered Vehicles

Distribution of Heavy-Duty Diesel Travel
For California Registered Vehicles
By Major Use Category

Business Purpose	% In-State	% Out-of-State
Agriculture	5.37%	0.70%
Forestry	1.11%	0.00%
Construction	6.28%	0.66%
Contractor	1.51%	0.25%
Manuf, Refin, Proc.	5.48%	0.79%
Wholesale	11.55%	0.66%
Retail	4.88%	0.50%
Personal Service	0.47%	0.02%
Utilities	0.19%	0.04%
Mining	0.36%	0.00%
Daily Rental	2.11%	0.37%
Not in Use	0.30%	0.00%
For Hire Trans.	39.37%	17.00%
Other	0.00%	0.00%
Personal Trans.	0.00%	0.00%
Total	79.00%	21.00%

Distribution of Heavy-Duty Gasoline Travel
For California Registered Vehicles
By Major Use Category

Business Purpose	In-State	Out-of-State
Agriculture	8.37%	0.30%
Forestry	2.06%	0.14%
Construction	7.90%	0.04%
Contractor	13.96%	0.03%
Manuf, Refin, Proc.	5.29%	0.05%
Wholesale	18.98%	0.50%
Retail	14.22%	0.17%
Personal Service	3.83%	1.27%
Utilities	5.49%	0.03%
Mining	0.90%	0.00%
Daily Rental	2.77%	0.06%
Not in Use	0.09%	0.00%
For Hire Trans.	13.07%	0.01%
Other	0.00%	0.00%
Personal Trans.	0.38%	0.11%
Total	97.31%	2.69%

APPENDIX H

Distribution of Travel by Fuel Type

Table H-1

TIUS Estimate of California Registered and Based Heavy-Duty Truck Travel (miles/day) by County and Fuel Type On All California Roads in 1982

County	Gasoline	Diesel	Other	Total
Alameda	167,571	500,973	8,764	675,308
Alpine	676	1,621	25	2,321
Amador	5,840	13,129	214	19,183
Butte	30,375	69,036	1,107	100,518
Calaveras	5,163	12,611	194	17,968
Colusa	10,196	70,929	605	81,730
Contra Costa	88,634	230,138	3,370	322,142
Del Norte	5,337	17,789	231	23,356
El Dorado	20,597	44,220	729	65,546
Fresno	109,421	409,850	4,733	524,004
Glenn	8,472	62,800	522	71,793
Humbolt	26,115	83,110	1,156	110,381
Imperial	30,638	124,480	1,360	156,478
Inyo	12,471	35,918	489	48,875
Kern	139,713	795,587	7,389	942,699
King	19,453	100,807	983	121,242
Lake	8,398	15,365	285	24,049
Lassen	15,633	40,216	619	56,468
Los Angeles	1,361,864	2,532,447	46,186	3,940,497
Madera	18,849	113,658	1,019	133,525
Marin	31,765	62,680	1,101	95,546
Mariposa	2,184	3,197	67	5,448
Mendocino	24,836	71,682	1,030	97,548
Merced	35,965	218,224	2,002	256,192
Modoc	5,321	13,506	208	19,035
Mono	4,648	14,098	199	18,944
Monterey	61,898	174,952	2,426	239,274
Napa	14,031	29,052	497	43,580
Nevada	15,902	52,153	654	68,709
Orange	373,976	666,331	12,541	1,052,847
Placer	35,931	122,231	1,535	159,698
Plumas	6,433	17,646	257	24,336
Riverside	205,965	670,252	8,424	885,641
Sacramento	137,434	335,961	5,106	478,501
San Benito	9,842	29,474	385	39,701
San Bernardino	208,576	732,992	9,064	950,632
San Diego	317,041	535,012	10,431	862,484
San Francisco	53,214	80,596	1,720	135,531
San Joaquin	72,382	310,912	3,382	386,675
San Luis Obis	41,652	117,671	1,625	160,948
San Mateo	86,091	166,851	2,995	255,938
Santa Barbara	51,878	140,822	2,007	194,707
Santa Clara	205,530	492,461	7,658	705,649
Santa Cruz	27,621	56,052	971	84,644
Shasta	39,717	148,200	1,791	189,709
Sierra	2,483	10,555	125	13,163
Siskiyou	28,310	154,462	1,628	184,400
Solano	44,023	171,684	1,994	217,701
Sonoma	47,829	127,179	1,850	176,858
Stanislaus	43,774	142,001	1,807	187,582
Sutter	11,078	34,002	442	45,522
Tehama	17,916	88,075	900	106,890
Trinity	4,102	13,065	184	17,350
Tulare	61,188	321,571	3,086	385,845
Tuolumne	8,109	19,002	300	27,410
Ventura	102,507	207,800	3,614	313,922
Yolo	26,010	115,997	1,226	143,233
Yuba	8,897	24,185	343	33,425
Total	4,562,470	11,967,269	173,562	16,703,301

Table H-2

TIUS Estimate of Non-California Registered Heavy-Duty Truck Travel (miles/day) by County and Fuel Type On All California Roads in 1982

County	Gasoline	Diesel	Other	Total
Alameda	13,148	185,108	2,013	200,269
Alpine	49	562	7	617
Amador	425	4,370	54	4,849
Butte	2,208	23,218	282	25,707
Calaveras	383	4,352	51	4,786
Colusa	1,109	30,764	277	32,150
Contra Costa	6,663	81,546	931	89,140
Del Norte	437	6,706	72	7,214
El Dorado	1,471	14,593	180	16,245
Fresno	9,169	161,590	1,626	172,385
Glenn	951	27,423	245	28,619
Humbolt	2,136	30,450	336	32,922
Imperial	2,634	50,082	492	53,189
Inyo	963	13,204	145	14,311
Kern	13,820	337,043	3,114	353,977
King	1,848	42,121	396	44,365
Lake	580	4,655	64	5,298
Lassen	1,188	13,926	164	15,278
Los Angeles	94,224	777,419	10,450	882,094
Madera	1,907	48,624	444	50,974
Marin	2,229	19,808	258	22,295
Mariposa	143	860	13	1,015
Mendocino	1,953	25,779	291	28,023
Merced	3,681	92,877	854	97,412
Modoc	402	4,665	55	5,122
Mono	373	5,119	57	5,549
Monterey	4,765	63,761	704	69,230
Napa	998	9,358	119	10,476
Nevada	1,277	19,889	208	21,383
Orange	25,650	199,488	2,759	227,897
Placer	2,941	46,681	488	50,110
Plumas	495	6,293	72	6,860
Riverside	16,524	255,322	2,675	274,521
Sacramento	10,160	116,578	1,363	128,101
San Benito	765	11,031	118	11,914
San Bernardino	17,276	281,861	2,927	302,084
San Diego	21,481	155,328	2,223	179,032
San Francisco	3,544	21,492	339	25,374
San Joaquin	8,406	125,446	1,229	133,082
San Luis Obis	3,201	42,952	474	46,627
San Mateo	6,035	51,947	688	58,670
Santa Barbara	3,950	50,631	568	55,148
Santa Clara	15,161	168,801	2,003	185,965
Santa Cruz	1,954	17,898	231	20,083
Shasta	3,370	57,585	591	61,547
Sierra	224	4,155	42	4,422
Siskiyou	2,848	63,343	612	66,802
Solano	3,776	67,681	682	72,140
Sonoma	3,629	45,262	515	49,405
Stanislaus	3,511	53,865	568	57,945
Sutter	870	12,759	136	13,765
Tehama	1,676	36,313	347	38,336
Trinity	337	4,767	53	5,157
Tulare	5,832	134,932	1,261	142,024
Tuolumne	595	6,455	77	7,127
Ventura	7,258	66,210	854	74,322
Yolo	2,329	47,240	458	50,027
Yuba	877	8,710	98	9,485
Total	343,613	4,260,908	48,347	4,652,868

Table H-3

TIUS Estimate of All Heavy-Duty Truck Travel (miles/day) By County and Fuel Type On All California Roads in 1982

County	Gasoline	Diesel	Other	Total
Alameda	180,720	686,080	8,777	875,577
Alpine	725	2,183	31	2,939
Amador	6,265	17,499	268	24,032
Butte	32,583	92,254	1,388	126,225
Calaveras	5,545	16,963	245	22,754
Colusa	11,305	101,693	882	113,879
Contra Costa	95,297	311,684	4,300	411,282
Del Norte	5,774	24,494	303	30,571
El Dorado	22,069	58,813	909	81,791
Fresno	118,590	571,440	6,360	696,389
Glenn	9,423	90,224	766	100,413
Humbolt	28,250	113,561	1,493	143,304
Imperial	33,273	174,543	1,852	209,667
Inyo	13,434	49,119	633	63,186
Kern	153,533	1,132,630	10,513	1,296,676
King	21,301	142,928	1,378	165,607
Lake	8,978	20,020	349	29,347
Lassen	15,822	54,142	782	71,746
Los Angeles	1,456,088	3,309,866	56,636	4,822,591
Madera	20,755	162,282	1,462	184,499
Marin	33,994	82,488	1,358	117,841
Mariposa	2,326	4,057	80	6,463
Mendocino	26,789	97,461	1,320	125,571
Merced	39,646	311,101	2,856	353,604
Modoc	5,724	18,171	263	24,158
Mono	5,020	19,217	256	24,493
Monterey	66,661	238,713	3,130	308,504
Napa	15,029	38,411	616	54,056
Nevada	17,179	72,052	862	90,092
Orange	399,626	865,819	15,300	1,280,745
Placer	38,673	168,912	2,024	209,808
Plumas	6,928	23,939	328	31,196
Riverside	223,489	925,573	11,099	1,160,162
Sacramento	147,595	452,539	6,469	606,602
San Benito	10,607	40,505	503	51,615
San Bernardino	225,852	1,014,873	11,991	1,252,716
San Diego	338,522	690,341	12,653	1,041,516
San Francisco	56,758	102,088	2,059	160,905
San Joaquin	78,788	436,358	4,611	519,757
San Luis Obis	44,854	160,623	2,099	207,575
San Mateo	92,126	218,798	3,684	314,608
Santa Barbara	55,827	191,453	2,574	249,855
Santa Clara	220,691	661,263	9,660	891,614
Santa Cruz	29,575	73,950	1,202	104,727
Shasta	43,087	205,786	2,382	251,255
Sierra	2,708	14,710	167	17,584
Siskiyou	31,158	217,805	2,239	251,202
Solano	47,799	239,365	2,677	289,841
Sonoma	51,458	172,440	2,365	226,263
Stanislaus	47,286	195,866	2,375	245,526
Sutter	11,948	46,762	578	59,287
Tehama	19,592	124,388	1,246	145,226
Trinity	4,436	17,832	237	22,507
Tulare	67,019	456,503	4,347	527,869
Tuolumne	8,704	25,456	377	34,537
Ventura	109,765	274,011	4,468	388,244
Yolo	28,339	163,237	1,684	193,260
Yuba	9,574	32,895	441	42,910
Total	4,906,083	16,228,177	221,910	21,356,170