

# Vehicle Inventory and Use Survey Program Documentation

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The Vehicle Inventory and Use Survey (VIUS) provides data on the physical and operational characteristics of the nation's truck population. Its primary goal is to produce national and state-level estimates of the total number of trucks.

The first survey was conducted in 1963. It was then conducted every five years beginning in 1967 and ending in 2002. Prior to 1997 the survey was known as the Truck Inventory and Use Survey (TIUS).

Public use microdata files are available for years 1977 and later. Publications are available for all years. Visit <http://www.census.gov/svsd/www/vius/products.html> to access these files and publications.

## **Purpose and Use:**

VIUS data are of considerable value to government, business, academia, and the general public. Data on the number and types of vehicles and how they are used are important in studying the future growth of transportation and are needed in calculating fees and cost allocations among highway users. The data also are important in evaluating safety risks to highway travelers and in assessing the energy efficiency and environmental impact of the nation's truck fleet. Businesses and others make use of these data in conducting market studies and evaluating market strategies; assessing the utility and cost of certain types of equipment; calculating the longevity of products; determining fuel demands; and linking to, and better utilizing, other datasets representing limited segments of the truck population.

## Vehicle Inventory and Use Survey Program Documentation

### Files:

Data (tab delimited text or SAS dataset): Each file contains:

	2002	1997	1992	1987	1982	1977
Records	98,682	104,545	123,641	104,606	84,334	96,494
Variables <sup>1</sup>	453	395	388 <sup>2</sup>	249 <sup>3</sup>	138	78

<sup>1</sup> Variables and valid responses for which there were no data present are not included in the data files.

<sup>2</sup> Data for anti-lock brakes were collected and published but are not available to include in the data files.

<sup>3</sup> The 1987 TIUS was originally released in three files. These files were combined, and include variables that were added after the original release (ADM\_GVWR and ADM\_REGWGHT) and record level revisions (ACCIDENT, ACCIDENT\_FATAL, ACCIDENT\_INJURY, ACCIDENT\_PROP, and OPERATE\_OUTSIDEHB).

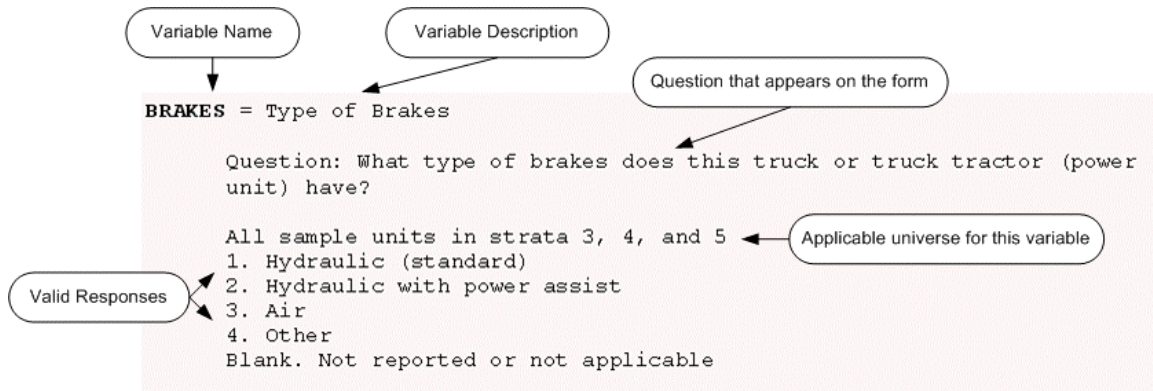
Please be aware of the following:

- Since the VIUS is a sample survey, **the use of an expansion factor is required when generating estimates**. Using TAB\_TRUCKS generates truck count estimates and using TAB\_MILES (1997 and 2002 only) generates truck mile estimates.
- Data users should take into account the magnitude of "Not Reported" categories when assessing estimates computed using data contained in these public use microdata files. Individuals who use the microdata to create estimates not published by the Census Bureau should cite the Census Bureau as the source of **only the microdata used**, not as the source of the new estimates.
- Caution should be exercised when tabulating data based on state of registration, as this is not necessarily an indicator of where a truck's activity is performed. For instance, a truck may be registered in one state but all of the truck's activities are performed in another state. There are a variety of reasons this may occur (one state may offer lower fees or taxes, a company operating in multiple states may consolidate registrations, etc.).

All files as originally released can be obtained by contacting the Administrative and Customer Services Division by calling 301-763-9587.

## Vehicle Inventory and Use Survey Program Documentation

Data Dictionary (PDF): Provides a listing of each variable, description of variable, question asked to obtain data (if appropriate), applicable universe, and valid responses. The following provides an example of the data dictionary layout:



Comparability (Excel): Provides comparability between each survey year by variable and valid responses.

Variables (Excel): Provides a list of each variable and field type (numeric or character) by year. Names were standardized, when possible, across the years. The file also serves as a crosswalk between the current variable names and those used when the data files were originally released.

Sample Size and Response Rate (Excel): Provides the sample size and response rate for the United States, each state, and the District of Columbia for each year. Limited documentation exists for some years.

## Vehicle Inventory and Use Survey Program Documentation

### Sample:

The Vehicle Inventory and Use Survey (VIUS) is a probability sample of all private and commercial trucks registered (or licensed) in the United States. The sample for each year was:

Year	Sample Size
2002	136,113
1997	131,083
1992	153,914
1987	135,290
1982	120,000
1977	116,400
1972	113,800
1967	≈120,000
1963	≈115,000

The VIUS excludes vehicles owned by Federal, state, or local governments; ambulances; buses; motor homes; farm tractors; and non-powered trailer units. Additionally, trucks that were included in the sample but reported to have been sold, junked, or wrecked prior to the survey year (date varies) were deemed out-of-scope.

The sampling frame was stratified by geography and truck characteristics. The 50 states and the District of Columbia made up the 51 geographic strata. Body type and gross vehicle weight (GVW) determined the following five truck strata:

1. Pickups;
2. Minivans, other light vans, and sport utilities;
3. Light single-unit trucks (GVW 26,000 lbs. or less);
4. Heavy single-unit trucks (GVW 26,001 lbs. or more); and
5. Truck-tractors.

Therefore, the sampling frame was partitioned into 255 geographic-by-truck strata. Within each stratum, a simple random sample of truck registrations was selected without replacement. Older surveys were stratified differently: for the 1963 – 1977 TIUS the survey was stratified by “small trucks” and “large trucks.”

Trucks registered in a state other than the one listed on their mailing address were not included in the 1992 and earlier TIUS sampling frames. To include these trucks in the 1997 VIUS, a supplementary sample was selected. For more details, see the 1997 U.S. Summary report located at <http://www.census.gov/svsd/www/vius/1997.html>.

Visit <http://www.census.gov/svsd/www/vius/methods.html> for more details on the sample design, reliability of the estimates, and confidentiality and disclosure.

## Vehicle Inventory and Use Survey Program Documentation

### Comparability:

#### 2002 – 1997

Program changes that impacted comparability include the following:

- i. **Acquisition** – The 2002 VIUS only allowed “new” and “used” as response options. The 1997 VIUS included a response option for “leased or rented it from someone else.”

*Reason for change:* The 1997 VIUS response options were not mutually exclusive. If a respondent obtained a new vehicle through a lease there were two possible options to choose – “new” or “leased or rented it from someone else.” The 2002 VIUS separated acquisition and leasing information, thus reducing possible respondent confusion.

- ii. **Axle Configuration** – The 2002 VIUS broke out additional axle response options and collapsed “utility” and “full” trailer. Truck tractors were allowed to indicate no trailer (or trailer axles) in the 2002 VIUS, whereas in the 1997 VIUS truck tractors were required to have a trailer and trailer axles present.

*Reason for change:* The additional axle and utility/full trailer changes were done at the request of data users. The Census Bureau attempted to correct erroneous 1997 VIUS editing by allowing truck tractors not in use to not report a trailer (and trailer axles).

- iii. **Body/Trailer Type** – The 1997 VIUS asked respondents to classify their truck by selecting from a list of body types. If the vehicle was a truck tractor the respondent was asked to make their selection based on the trailer type most often pulled. The 2002 VIUS separated these, allowing single units to report both a body type and a trailer type (if applicable). Response options for both questions were modified.

*Reason for change:* Some body and trailer types are not interchangeable, so using separate questions reduced respondent error. The response option changes for both questions were based on data user input and questionnaire testing.

- iv. **Brakes** – Responses for “other” were reviewed and recoded to the other response options for the 2002 VIUS. If not enough information was present for recoding the response was blanked out. The 1997 VIUS kept all “other” responses as reported.

*Reason for change:* Review of write-ins for “other” in the 1997 VIUS indicated that most responses belonged in one of the other response options. When reviewing the write-ins in the 2002 VIUS there were no responses that the Census Bureau accepted for the “other” category.

## Vehicle Inventory and Use Survey Program Documentation

- v. **Business** – The 2002 VIUS response options were based on the North American Industry Classification System (NAICS), whereas 1997 VIUS response options were based on the SIC system. Even though some categories may appear similar, differences in the classification systems should be taken into account.

*Reason for change:* The NAICS replaced the outdated SIC system. This change occurred in all Economic Census surveys, and allows VIUS data to remain compatible.

- vi. **Cab** – The “other” response option for type of cab was deleted for the 2002 VIUS, and a question was added to indicate whether the cab had a sleeper.

*Reason for change:* Discussions with data users indicated that “other” was not necessary. The sleeper cab question was added at the request of data users.

- vii. **Cubic Inch Displacement** – There is limited comparability for this variable due to disclosure review and significant changes in the fuel categories.

*Reason for change:* The Census Bureau reviews the quantity and distribution of fuel type and cubic inch displacement values in determining what groupings pass confidentiality standards. Since the VIUS is a random sample, the outcome of this review may vary from year to year.

- viii. **Disposal** – The “repossessed” response option was added to the “how disposed” question for the 2002 VIUS, and the “traded it in” response option was separated from the 1997 VIUS response option of “sold, traded, or gave it away.”

*Reason for change:* These changes were made at the request of data users.

- ix. **Equipment** – The 2002 VIUS was the first year where the condition “permanently mounted” was applied to the equipment section. Equipment response options were modified, and a separate question on type of transmission was added.

*Reason for change:* Discussion was held with data users about portable/movable equipment and a decision was made to limit this question only to permanent equipment. The response option changes were done in consultation with data users to ensure data were being collected for relevant equipment categories. The transmission question was added at the request of data users.

- x. **Fleet Size** – The 2002 VIUS fleet size question was changed from the 1997 VIUS.

*Reason for change:* The question was changed at the request of data users.

Vehicle Inventory and Use Survey  
Program Documentation

- xi. **Fuel** – The 2002 VIUS allowed for fuel combinations, whereas the 1997 VIUS did not. Response options were modified in 2002.

*Reason for change:* Since the use of a fuel combination is possible, the change was intended to capture fuel use better. Response option changes were done in consultation with data users.

- xii. **Hauls** – A section for source of hauls and number of pick-ups/deliveries was added to the 2002 VIUS.

*Reason for change:* These questions were added at the request of data users.

- xiii. **Hazardous Materials** – The 2002 VIUS added a question asking for the overall percent of miles carrying a hazardous material(s). The detailed hazardous material categories were modified.

*Reason for change:* These changes were made at the request of data users.

- xiv. **Home Base** – The response options for the type of home base were changed in the 2002 VIUS.

*Reason for change:* These changes were made at the request of data users.

- xv. **Intermodal** – The 2002 VIUS dropped the intermodal question (railroad, maritime, or domestic containers; piggyback trailers; or conventional trailers).

*Reason for change:* The Census Bureau requested that questions be considered for deletion in order to make room for the questions being added to the 2002 VIUS. Data users agreed that this question was either of limited use or the quality was questionable.

- xvi. **Jurisdiction** – The 2002 VIUS expanded to cover mileage traveled in the home base state, outside the home base state, in Canada, and in Mexico. The change allowed two 1997 VIUS questions to be deleted: 1) Percent of mileage driven outside the home base state and 2) Jurisdiction served (interstate, intrastate, and local).

*Reason for change:* This change was done at the request of data users. Information from the deleted questions can now be inferred using data from the new jurisdiction and the range of operation questions.

- xvii. **Kind of Carrier** – The “exempt” response option was deleted for the 2002 VIUS.

*Reason for change:* Consultation with data users indicated that this response option was no longer valid.

## Vehicle Inventory and Use Survey Program Documentation

- xviii. **Leasing** – The 2002 VIUS collected information only pertaining to ownership leasing, whereas the 1997 VIUS pertained to leasing or renting. Additionally, the 1997 VIUS asked the lessee and lessor to complete separate sections asking the same questions. In 2002 this was collapsed into one section. Response options for the “how leased” and “provision of lease” questions were modified.

*Reason for change:* Through questionnaire testing it was determined that renting was not what was intended. Collapsing the similar questions for lessor and lessees was intended to simplify the questionnaires and reduce respondent burden. The response option changes were done in consultation with data users.

- xix. **Length** – The 2002 VIUS added the total length question to the small truck form (TC-9501). The Census Bureau inserted a length of 16.0 feet for all small trucks in the 1997 VIUS. The 2002 VIUS added an additional response option on the large truck form (TC-9502).

*Reason for change:* The change on the small truck form was deemed as an improvement over the method used in the 1997 VIUS. The change on the large truck form was done at the request of data users.

- xx. **Liftable Axles** – The 2002 VIUS added two questions – one for the liftable axle location and one for the number of liftable axles that are also braking axles. The 2002 VIUS also collected the total number of liftable axles in a checkbox format, whereas the 1997 VIUS was via write-in.

*Reason for change:* The questions were added at the request of data users. The method of collection for the total number of liftable axles was done to match the method used for collecting total axles and driving axles.

- xxi. **Maintenance and Repairs** – While it was intended to collect the same data, the terminology used in 2002 (extensive repairs) changed from 1997 (major overhauls). The response option for “component distributorship” was deleted from the general maintenance question. Responses for “other” were reviewed and recoded to the other response options for the 2002 VIUS. If not enough information was present for recoding the response was blanked out. The 1997 VIUS kept all “other” responses as reported.

*Reason for change:* The terminology change was intended to clarify the difference between general maintenance and extensive repairs (major overhauls). Dropping “component distributorship” from general maintenance was done in consultation with data users. Review of write-ins for “other” in the 1997 VIUS indicated that most responses belonged in one of the other response options. When reviewing the write-ins in the 2002 VIUS there were no responses that the Census Bureau accepted for the “other” category.

Vehicle Inventory and Use Survey  
Program Documentation

- xxii. **Make** – Comparability is limited.

*Reason for change:* The Census Bureau reviews the quantity and distribution of makes in determining which specific makes pass confidentiality standards. Makes that do not pass this review are grouped into the “other domestic” or “other foreign” categories. Since the VIUS is a random sample, the outcome of this review may vary from year to year. **Caution:** Since the makes that are grouped together in the “other” categories can vary from year to year the data is of limited comparability.

- xxiii. **Maximum Weight** – The 2002 VIUS deleted the question asking for the maximum weight at which the truck operated.

*Reason for change:* The Census Bureau requested that questions be considered for deletion in order to make room for the questions being added to the 2002 VIUS. Data users agreed that this question was either of limited use or the quality was questionable.

- xxiv. **Metropolitan Statistical Area (MSA) Indicator** – Different approaches were taken when a home based was indicated and no home base location was provided. The 2002 VIUS left the MSA indicator as “unknown” and the 1997 VIUS used the registration data (city and state) to determine if a record was in/out of a MSA.

*Reason for change:* Registration data is not necessarily indicative of where a truck is based.

- xxv. **Mileage** – Both annual and lifetime mileage values were adjusted if a vehicle was owned for a partial year. In addition to providing variables for both annual and lifetime miles that include these adjustments (MILES\_ANNL and MILES\_LIFE), variables that exclude these adjustments were added to the 2002 VIUS (MILES\_ANNLNOIMP and MILES\_LIFENOIMP).

*Reason for change:* Added variables at the request of a data user.

- xxvi. **Miles-per-Gallon** – The 2002 VIUS only used written responses, whereas the 1997 VIUS used a combination of checkbox options (TC-9501) and written responses (TC-9502). The checkbox options contained no decimal points; for publication purposes, no rounding occurred when combined with the written responses (i.e., a value of 6.9 mpg was tabulated with the “5 to 6 mpg” checkbox option).

*Reason for change:* Eliminated the need to tabulate data using two separate variables.

## Vehicle Inventory and Use Survey Program Documentation

- xxvii. **Operator Classification** – There is limited comparability for this section due to significant changes in the categories and definitions. The “operator classification” and “operation type” sections from the 1997 VIUS were collapsed in the 2002 VIUS.

*Reason for change:* This change was done in consultation with data users and was intended to simplify the questionnaires, reduce respondent burden, and improve quality of data.

- xxviii. **Products Carried** – These data are not comparable for two reasons:

1. Products in the 2002 VIUS were classified by the Standard Classification of Transported Goods (SCTG). Products in the 1997 VIUS were loosely classified by the Standard Industrial Classification (SIC) system.
2. The percentages reported in the 2002 VIUS were allowed to total more than 100 percent if multiple products were carried at the same time. The 1997 VIUS required all products carried to total 100 percent.

*Reason for change:* The change to SCTG was intended to make VIUS data comparable with other datasets, such as the Commodity Flow Survey. Allowing values to total more than 100 percent was deemed a more accurate method given the fact that multiple products can be carried at the same time. This method also matches how hazardous materials have been collected.

- xxix. **Range of Operation** – These data are not comparable due to the ambiguously defined upper and lower bounds of the ranges used for the 1997 VIUS. For example, a value of 100 could fall in the “between 50 and 100” range or the “between 100 and 200” range. The 2002 VIUS changed the categories by eliminating this overlap.

*Reason for change:* Alleviated reporting confusion stemming from ambiguous wording.

- xxx. **Refueling Location** – The 2002 VIUS response options for this question were modified from the 1997 VIUS.

*Reason for change:* Changes were done in consultation with data users.

- xxxi. **Time Not In Operation** – The 2002 VIUS added a question on the reasons a vehicle was not in operation for periods of 90 consecutive days or more.

*Reason for change:* Question was added at the request of data users.

Vehicle Inventory and Use Survey  
Program Documentation

- xxxii. **Time Operated** – The 2002 VIUS collected responses based on monthly intervals, whereas the 1997 VIUS collected this information based on weekly intervals.

*Reason for change:* Intended to decrease respondent burden by reducing the number of response options available.

- xxxiii. **Trailer Width** – The 2002 VIUS asks for the trailer width of all trailers pulled in the vehicle/trailer configuration “most often” used. The 1997 VIUS asks for only one trailer width, regardless of the number of trailers included in the vehicle/trailer configuration.

*Reason for change:* Added value by collecting width of all trailers in the “most often” used configuration.

- xxxiv. **Vehicle Configuration** – The 2002 VIUS collected percent of mileage for each vehicle configuration category (no trailer, single trailer, double trailers, or triple trailers). The 1997 VIUS collected this data via checkbox.

*Reason for change:* This change was proposed by the Census Bureau for questionnaire redesign purposes and accepted by data users.

- xxxv. **Vehicles Not in Use** – The 2002 VIUS identified “not in use” vehicles in a different question than in the 1997 VIUS.

*Reason for change:* A “not in use” vehicle in the 1997 VIUS was asked to answer many questions that were not really applicable. Moving this indicator from the “business” question to the “time operated” question was a better logical fit. The result was reduced respondent burden.

- xxxvi. **Weight** – The 2002 VIUS included an additional empty and average weight ccheckbox option (TC-9501) by breaking out the option “8,501 to 10,000 lbs.”

*Reason for change:* This change was made at the request of data users.

Additional comparability information can be found in the 2002 U.S. Summary report located at: <http://www.census.gov/svsd/www/vius/2002.html>. Comparability between variables and valid responses can be found in the Excel spreadsheet titled “Comparability.”

Vehicle Inventory and Use Survey  
Program Documentation

1997 – 1992

Program changes that impacted comparability include the following:

- i. **Axle Configuration** – The 1992 TIUS had no responses of “blank.”

*Reason for change:* Analysts manually coded values when insufficient criteria were present to do so automatically.

- ii. **Business** – The 1997 VIUS had no responses of “other” to this question.

*Reason for change:* Analysts recoded all responses of “other” to applicable checkbox options, which were based on the SIC system.

- iii. **Cubic Inch Displacement** – There is limited comparability for this variable due to disclosure review and significant changes in the fuel categories.

*Reason for change:* The Census Bureau reviews the quantity and distribution of fuel type and cubic inch displacement values in determining what groupings pass confidentiality standards. Since the VIUS is a random sample, the outcome of this review may vary from year to year.

- iv. **Driving Axles** – The 1997 VIUS had no blank responses to this question.

*Reason for change:* Administrative data were used in cases where respondents failed to provide data for this question.

- v. **Equipment** – The 1997 VIUS added the “airbag(s)” response option. While not new to the questionnaires, the “antilock brakes” response option does not appear in the 1992 TIUS microdata.

*Reason for change:* The “airbag(s)” response option was added at the request of data users.

- vi. **Home Base** – The variable indicating if a vehicle operates from a home base was added to the 1997 VIUS microdata file, even though the data was collected in both years.

*Reason for change:* No documentation exists explaining why this variable was not included in the 1992 TIUS microdata file.

- vii. **How Acquired** – The 1997 VIUS deleted the response option “other.”

*Reason for change:* The response option “other” was not needed since the remaining options seemed collectively exhaustive.

Vehicle Inventory and Use Survey  
Program Documentation

- viii. **How Disposed** – The 1997 VIUS deleted the response option “other.”

*Reason for change:* The response option “other” was not needed since the remaining options seemed collectively exhaustive.

- ix. **ICC Authority** – The 1997 VIUS deleted the question asking whether the vehicle operated under ICC authority.

*Reason for change:* No documentation exists explaining why this variable was dropped.

- x. **Length** – The 1997 VIUS allowed blank values to exist.

*Reason for change:* Any blank values were the result of an error.

- xi. **Make** – Comparability is limited.

*Reason for change:* The Census Bureau reviews the quantity and distribution of makes in determining which specific makes pass confidentiality standards. Makes that do not pass this review are grouped into the “other domestic” or “other foreign” categories. Since the VIUS is a random sample, the outcome of this review may vary from year to year. **Caution:** Since the makes that are grouped together in the “other” categories can vary from year to year the data is of limited comparability.

- xii. **Mileage Expansion Factor** – The 1997 VIUS microdata file included a new variable used to generate truck mile estimates.

*Reason for change:* Allowed data users to generate both truck and truck mile estimates published by the Census Bureau.

- xiii. **Trailer Length** – There is limited comparability due to the change in the ranges used to collect data.

*Reason for change:* The Census Bureau reviews the quantity and distribution of trailer length responses in determining what groupings pass confidentiality standards. Since the VIUS is a random sample, the outcome of this review may vary from year to year.

Additional comparability information can be found in the 1992 U.S. Summary report located at: <http://www.census.gov/svsd/www/vius/1992.html>. Comparability between variables and valid responses can be found in the Excel spreadsheet titled “Comparability.”

## Vehicle Inventory and Use Survey Program Documentation

### 1992 – 1987

Limited documentation exists explaining the reason for any of these changes affecting comparability.

- i. **Accidents** – The 1992 TIUS deleted the questions asking whether the vehicle was involved in an accident and whether the accident involved a fatality, bodily injury, or property damage of \$4,200 or more.
- ii. **Acquisition** – The “other” response option for how the vehicle was acquired was added to the 1992 TIUS. While not a new item on the questionnaires, the month during which the vehicle was acquired was added into the microdata file for the 1992 TIUS.

*Reason for change:* The “other” option was added to allow other legitimate types of acquisition not listed.

- iii. **Axle Configuration** – The 1992 TIUS did not allow blank values to exist. Records that had missing axle or trailer data used to code the configuration were assigned one manually.
- iv. **Brakes** – The “other” response option was added for the 1992 TIUS.

*Reason for change:* The “other” option was added to allow other legitimate types of brakes not listed.

- v. **Business** – The “governmental operations” response option was deleted for the 1992 TIUS.
- vi. **Cargo** – The 1992 TIUS deleted the questions asking the percent of miles driven carrying payloads that either filled the maximum cargo capacity or met the maximum cargo weight.
- vii. **Cubic Inch Displacement** – The 1992 TIUS collected this information through administrative sources, whereas the 1987 TIUS collected this information from the respondent. The 1992 TIUS no longer grouped the “not reported” category with “gasoline, liquefied gas, and other.”

*Reason for change:* The Census Bureau reviews the quantity and distribution of fuel type and cubic inch displacement values in determining what groupings pass confidentiality standards. Since the TIUS is a random sample, the outcome of this review may vary from year to year.

Vehicle Inventory and Use Survey  
Program Documentation

- viii. **Disposal** – The “other” response option for how the vehicle was disposed was added to the 1992 TIUS. The 1992 TIUS asked respondents that disposed a vehicle between July 1, 1991, and December 31, 1991, to report for calendar year 1991. The 1987 TIUS asked such respondents to report for the “last 12 months use.”

*Reason for change:* The “other” option was added to allow other legitimate types of disposal not listed.

- xiv. **Equipment** – The “vehicle control aids for handicapped drivers,” “wheelchair lift,” and “electronic vehicle management system” response options were added to the TC-9501 form for the 1992 TIUS. The 1992 TIUS added the “antilock brakes” response option, though it does not appear in the microdata.

- ix. **Fleet Size** – The 1992 TIUS asked how many vehicles were owned and/or operated by the respondent or company, whereas the 1987 TIUS asked how many vehicles were owned and/or operated at the home base location.

- x. **Fuel Type** – The 1987 TIUS “gasoline” response option was split for the 1992 TIUS – “unleaded gasoline” and “leaded gasoline.”

*Reason for change:* The separate categories were developed to determine fuel use by type of engine.

- xi. **Hazardous Materials** – There is limited comparability for this section due to significant changes in the categories and mode of collection. Additionally, the 1992 TIUS deleted all hazardous material questions from the TC-9501 form.
- xii. **Home Base** – The 1992 TIUS added the question asking the type of home base.
- xiii. **Horsepower** – The 1992 TIUS deleted the question asking the horsepower of the vehicle.
- xiv. **ICC Authority** – The 1992 TIUS deleted from the TC-9501 form the question asking if the vehicle operated under ICC authority.
- xv. **Jurisdiction**– The 1992 TIUS deleted from the TC-9501 form the question asking jurisdiction served (interstate, intrastate, local).
- xvi. **Kind of Carrier** – The 1992 TIUS deleted from the TC-9501 form the question asking kind of carrier (contract, common, exempt).
- xvii. **Kind of Service** – The 1992 TIUS added to the TC-9502 form the question asking kind of service (truckload, less-than-truckload).

## Vehicle Inventory and Use Survey Program Documentation

- xviii. **Leasing** – The 1992 TIUS deleted from the TC-9501 form the questions asking how the vehicle was leased and the length and provisions of the lease.
- xix. **Length** – The 1992 TIUS collected this information in ranges via checkbox options, whereas the 1987 TIUS collected this information via a written response.
- xx. **Liftable Trailer Axles** – The 1992 TIUS deleted the question asking the number of liftable axles on the trailer unit(s) most often pulled by the vehicle.
- xxi. **Make** – Comparability is limited.
- Reason for change:* The Census Bureau reviews the quantity and distribution of makes in determining which specific makes pass confidentiality standards. Makes that do not pass this review are grouped into the “other domestic” or “other foreign” categories. Since the TIUS is a random sample, the outcome of this review may vary from year to year. **Caution:** Since the makes that are grouped together in the “other” categories can vary from year to year the data is of limited comparability.
- xxii. **Miles-per-Gallon** – The 1992 TIUS used a combination of checkbox options (TC-9501) and written responses (TC-9502), whereas the 1987 TIUS only used written responses. The checkbox options contained no decimal points; for publication purposes, no rounding occurred when combined with the written responses (i.e., a value of 6.9 mpg was tabulated with the “5 to 6 mpg” checkbox option).
- xxiii. **Operator Classification** – The “daily rental” response option was deleted from the TC-9501 form for the 1992 TIUS.
- xxiv. **Products Carried** – The “personal transportation” and “not in use” categories were derived in the 1987 TIUS, and no longer appear in the 1992 TIUS. The “animal feed” and “recyclable products” response options were added for the 1992 TIUS. The 1987 TIUS “hazardous waste” response option was split for the 1992 TIUS – “EPA manifest” and “non-EPA manifest.” The “passengers” response option was added to the TC-9501 form for the 1992 TIUS.
- xxv. **Range of Operation** – The 1987 TIUS “50 to 200 miles” response option was split for the 1992 TIUS – “50 to 100 miles” and “100 to 200 miles.” Similarly, the 1987 TIUS “200 or more miles” response option was split for the 1992 TIUS – “200 to 500 miles” and “500 or more miles.”
- xxvi. **Refueling Location** – The 1992 TIUS added the question asking the type of location for refueling.

Vehicle Inventory and Use Survey  
Program Documentation

- xxvii. **Time Operated** – The 1992 TIUS added the question asking how long the vehicle was in operation.
- xxviii. **Trailer Length** – The 1992 TIUS added the question asking the exterior length(s) of trailer(s) pulled.
- xxix. **Trailer Width** – The 1992 TIUS deleted from the TC-9501 form the question asking the width of the trailer most often attached to the vehicle. The 1992 TIUS collected trailer width on the TC-9502 form via checkbox options, whereas the 1987 TIUS collected this information via a written response.
- xxx. **Type of Operation** – The 1992 TIUS deleted from the TC-9501 form the question asking type of operation (motor carrier, owner operator, private fleet). The “private business – private carrier” and “private business – for-hire carrier” response options were added to the TC-9502 form for the 1992 TIUS.
- xxxii. **Vehicle Configuration** – The 1992 TIUS deleted from the TC-9501 form the question asking percent of miles driven with a trailer pulled, and replaced it with a checkbox question asking if the trailer was pulled for more than 50% of annual miles. The 1992 TIUS added to the TC-9502 form the questions asking for the percent of miles driven with no trailer pulled, the percent of miles hauling conventional trailers, and the percent of miles driven for the trailer/axle configuration most often pulled.
- xxxiii. **Weight** – The 1992 TIUS collected average weight on the TC-9501 form via checkbox options, whereas the 1987 TIUS collected this information via a written response. The 1992 TIUS added to the TC-9501 form the question asking empty weight. The 1992 TIUS deleted from the TC-9502 form the question asking the loaded weight of the trailer.

Additional comparability information can be found in the 1992 U.S. Summary report located at: <http://www.census.gov/svsd/www/vius/1992.html>. Comparability between variables and valid responses can be found in the Excel spreadsheet titled “Comparability.”

## Vehicle Inventory and Use Survey Program Documentation

### 1987 – 1982

Limited documentation exists explaining the reason for any of these changes affecting comparability.

- i. **Accidents** – The 1987 TIUS added the questions asking whether the vehicle was involved in an accident and whether the accident involved a fatality, bodily injury, or property damage of \$4,200 or more.
- ii. **Axles:**
  - a. **Configuration** – This version of the 1982 TIUS microdata includes revised values for axle configuration. The file, as originally released, contained categories that were not mutually exclusive between single-unit trucks and truck tractors. Limited comparability exists due to the 1982 TIUS allowing single-unit trucks and truck tractors to report axle information for the wrong truck type.
  - b. **Driving** – The 1987 TIUS added to the TC-9501 form the question asking the number of driving axles on the power unit.
  - c. **Total** – The 1987 TIUS added to the TC-9501 form the question asking the total number of axles on the power unit.
- iii. **Body/Trailer Type** – The 1982 TIUS “panel or compact van” response option was split for the 1987 TIUS – “light van other than minivan” and “minivan.” The “cargo container chassis” response option was deleted for the 1987 TIUS.

*Reason for change:* Differentiate minivans from other light vans.
- iv. **Business** – The 1982 TIUS “daily rental” response option was split for the 1987 TIUS – “daily rental” and “one-way rental.”

*Reason for change:* Differentiate one-way rental from daily rental.
- v. **Cab** – The 1982 TIUS “short hood/nose conventional,” “medium hood/nose conventional,” and “long hood/nose conventional” were combined for the 1987 TIUS – “conventional cab.”
- vi. **Cargo** – The 1987 TIUS deleted the questions asking how often the vehicle carried payloads that filled less than half its maximum cargo size or filled less than half its maximum cargo weight. The 1987 TIUS added the questions asking the percent of miles driven carrying payloads that either filled the maximum cargo capacity or met the maximum cargo weight.

Vehicle Inventory and Use Survey  
Program Documentation

- vii. **Cubic Inch Displacement** – There is limited comparability for this variable due to disclosure review.

*Reason for change:* The Census Bureau reviews the quantity and distribution of fuel type and cubic inch displacement values in determining what groupings pass confidentiality standards. Since the TIUS is a random sample, the outcome of this review may vary from year to year.

- viii. **Cylinders** - The 1987 TIUS collected this information through administrative sources, whereas the 1982 TIUS collected this information from the respondent.

- ix. **Response Indicator Variables** – Response indicator variables are included for the 1987 TIUS. These variables indicate the source of the data (as reported, analyst corrected, imputed, etc.). The 1982 TIUS microdata, as originally released, contained variables referred to as “imputation flags,” but the documentation seems to indicate the variables actually represented edits performed on the data. These variables do not provide value to the dataset, so they were excluded from the revised 1982 TIUS microdata.

- x. **Equipment** – The “electronic vehicle identification device,” “electronic vehicle management system,” “navigation system,” and “trip recorder/on-board computer,” response options were added to the 1987 TIUS. The “four-wheel drive” response option was deleted for the 1987 TIUS.

- xi. **Hazardous Materials** – The 1982 TIUS “below 25%” response option was split for the 1987 TIUS – “below 10%” and “10-24%.” In addition, there is limited comparability due to significant changes in the categories.

*Reason for change:* A very large percentage of trucks that reported carrying hazardous material carried them less than 25% of annual miles for the 1982 TIUS, so breaking out this category further was seen as an improvement over the method used in the 1982 TIUS.

- xii. **Home Base** – The 1987 TIUS asked respondents to report the home base of the vehicle on July 1, 1987, rather than “for the last 12 months.”

- xiii. **Horsepower** – There is limited comparability for this variable. The 1987 TIUS cross-tabulated horsepower by fuel type, whereas the 1982 TIUS tabulated horsepower as reported.

## Vehicle Inventory and Use Survey Program Documentation

- xiv. **Jurisdiction**– There is limited comparability for this variable (interstate, intrastate, local) for the TC-9501 form due to significant changes in the questionnaires. The 1987 TIUS asked respondents of the TC-9501 form to report the percent of miles operated under interstate, intrastate, and local jurisdictions, whereas the 1982 TIUS asked respondents of the TC-9501 form to provide a written description with no percent of miles asked.
- xv. **Kind of Carrier** – There is limited comparability for these variable (common, contract, exempt) for the TC-9501 form due to significant changes in the questionnaires. The 1987 TIUS asked respondents of the TC-9501 form to report the percent of miles operated as common, contract, and exempt carriers, whereas the 1982 TIUS asked respondents of the TC-9501 form to provide a written description with no percent of miles asked.
- xvi. **Lease Provisions** – There is limited comparability for these variables due to significant changes in the questionnaires.
- xvii. **Maintenance and Repairs** – The “no one” response option was added for the 1987 TIUS.
- xviii. **Make** – Comparability is limited.

*Reason for change:* The Census Bureau reviews the quantity and distribution of makes in determining which specific makes pass confidentiality standards. Makes that do not pass this review are grouped into the “other domestic” or “other foreign” categories. Since the TIUS is a random sample, the outcome of this review may vary from year to year. **Caution:** Since the makes that are grouped together in the “other” categories can vary from year to year the data is of limited comparability.

- xix. **Metropolitan Statistical Area (MSA) Indicator** – The 1987 TIUS added a variable, derived from home base information, identifying whether the home base of the vehicle was located within an MSA.
- xx. **Mileage** – The 1987 TIUS was the first time respondents were asked to report annual miles for the calendar year. For those vehicles sold during 1987, the Census Bureau adjusted the mileage upwards to reflect a full year’s operation. The 1982 TIUS asked respondents to report for the past 12 months, and if driven less than 12 months to estimate the mileage for a full year.

Vehicle Inventory and Use Survey  
Program Documentation

- xxi. **Operator Classification:**
  - a. The 1987 TIUS added to the TC-9501 form the “for hire” and “daily rental” categories.
  - b. The 1987 TIUS added to the TC-9501 form the breakouts for percent of miles driven as “for-hire” and “personal transportation” when operator classification was marked “mixed.”
  - c. The 1987 TIUS added to the TC-9502 form the “for hire” category.
  - d. The 1982 TIUS “motor carrier” and “owner operator” categories were moved to a separate “operation type” question for the 1987 TIUS.
  - e. The 1982 TIUS had two separate “mixed” categories. The 1987 TIUS had only one “mixed” category, and the “for-hire private” breakout was eliminated.
- xxii. **Products Carried** – The “glass products,” “miscellaneous products of manufacturing,” “industrial ‘waste’ water,” and “hazardous waste” categories were added for the 1987 TIUS.
- xxiii. **Sample Stratum** – The 1987 TIUS added a variable indicating sample stratum to the microdata file.
- xxiv. **Trailer:**
  - a. **Axles** – The file, as originally released, contained categories that were not mutually exclusive between single-unit trucks and truck tractors. Limited comparability exists due to the 1982 TIUS allowing single-unit trucks and truck tractors to report axle information for the wrong truck type.
  - b. **Type** – The 1987 TIUS added to the TC-9502 form questions asking the type of trailer pulled (railroad, ocean-going, or similar containers; and piggyback).
  - c. **Width** – The 1987 TIUS added the question asking the width of the trailer most often pulled.
- xxv. **Transmission** – The 1987 TIUS deleted the question asking type of transmission.

Vehicle Inventory and Use Survey  
Program Documentation

- xxvi. **Type of Operation:**
- a. The 1987 TIUS asked respondents of the TC-9501 form to report the percent of miles operated as motor carrier and owner operator, whereas the 1982 TIUS asked respondents of the TC-9501 form to provide a written description with no percent of miles asked.
  - b. The 1987 TIUS “motor carrier” and “owner operator” categories were moved from the 1982 TIUS “operator classification” question.
- xxvii. **Vehicle Type** – This information was collected for all trucks for the 1987 TIUS. For the 1982 TIUS, this information was not collected for small trucks (TC-9501 form), but values were assigned for tabulation purposes.
- xxviii. **Weight** – The 1987 TIUS added weight from state registration files in the microdata file.

Additional comparability information can be found in the 1987 U.S. Summary report located at: <http://www.census.gov/svsd/www/vius/1987.html>. Comparability between variables and valid responses can be found in the Excel spreadsheet titled “Comparability.”

## Vehicle Inventory and Use Survey Program Documentation

### 1982 – 1977

Limited documentation exists explaining the reason for any of these changes affecting comparability.

- i. **Acquisition** – The 1982 TIUS microdata does not include the month the vehicle was acquired, whereas the 1977 TIUS microdata does.
- ii. **Axles:**
  - a. **Configuration** – The 1977 TIUS did not allow single-unit trucks to report pulling a trailer, whereas the 1982 TIUS did. Therefore, there is limited comparability for number of axles on a trailer and axle configuration. Additionally, this version of the 1982 TIUS microdata includes revised values for axle configuration. The file, as originally released, contained categories that were not mutually exclusive between single-unit trucks and truck tractors.
  - b. **Driving** – The 1977 TIUS asked all vehicles to report driving axles, whereas the 1982 TIUS was only asked on the TC-9502 form. The 1982 TIUS modified the “three axle” and “four axle” response options to “three axles or more.”
  - c. **Liftable Axles** – The 1982 TIUS added the question asking the number of liftable axles on the power unit. The 1982 TIUS added the question asking the number of liftable axles on the trailer unit(s) most often pulled by the vehicle.
  - d. **Pictures** – The 1982 TIUS removed pictures of trailer configuration and only provided descriptions for common axle configurations for each trailer type.  
  
*Reason for change:* Remove any bias pictures may have caused in the 1977 TIUS.
  - e. **Total** – The 1977 TIUS “Two axles” response option was split for the 1982 TIUS – “Two axles (each axle has 2 tire)” and “Two axles (front axle has 2 tires, rear axle has 4 tires).” The “four axles or more” response option was added for the 1982 TIUS.

Vehicle Inventory and Use Survey  
Program Documentation

- iii. **Body/Trailer Type:**
  - a. **Additions** – The “basic enclosed van,” “cargo container chassis,” “drop frame,” “grain bodies,” “oil field truck,” “service truck or ‘craftsman’s vehicle’,” “sport utility,” “station wagon,” and “yard tractor” response options were added to the 1982 TIUS.
  - b. **Combinations** - The 1977 TIUS “garbage or refuse hauler,” “garbage or refuse hauler; front loader,” “garbage or refuse hauler; rear loader packer,” and “garbage or refuse hauler; roll off” response options were combined for the 1982 TIUS – “garbage truck.” The 1977 TIUS “concrete mixer,” “concrete mixer; front discharger,” and “concrete mixer; rear discharger” were combined for the 1982 TIUS – “concrete mixer.”
  - c. **Deletions** – The “all other enclosed vans,” “boat transport,” “furniture van,” and “mobile home pullers” response options were deleted for the 1982 TIUS.
- iv. **Body Size** – See “Length.”
- v. **Brakes** – The 1977 TIUS asked all vehicles to report type of brakes, whereas the 1982 TIUS was only asked on the TC-9502 form. The 1977 TIUS “hydraulic” response option was split for the 1982 TIUS – “hydraulic (standard)” and “hydraulic with power assist.”
- vi. **Business** – The “contractor activities” and “governmental operations” response options were added to the 1982 TIUS
- vii. **Cab** - The 1977 TIUS asked all vehicles to report type of cab, whereas the 1982 TIUS was only asked on the TC-9502 form. The “cab beside engine” response option was added to the 1982 TIUS. The 1982 TIUS deleted the question asking whether the cab contained a sleeper unit.
- viii. **Cargo** – The 1982 TIUS added the questions asking how often the vehicle carried payloads that filled less than half its maximum cargo size or filled less than half its maximum cargo weight.
- ix. **Cubic Inch Displacement** – There is limited comparability for this variable. The 1982 TIUS cross-tabulated cubic inch displacement by fuel type, whereas the 1977 TIUS tabulated cubic inch displacement as reported.
- x. **Disposal** – The 1982 TIUS added the question asking how the vehicle was disposed.

Vehicle Inventory and Use Survey  
Program Documentation

- xi. **Equipment:**
  - a. **Additions** – The “aerodynamic features,” “engine retarder/brake” “front-wheel drive,” “other fuel conservation features,” “reflective materials,” and “road speed governor” response options were added to the 1982 TIUS.
  - b. **Deletions** – The “anti-wheel lock device,” “camper equipment,” and “drag reduction device” response options were deleted for the 1982 TIUS. The “semi-automatic” response option was deleted from the question asking type of transmission for the 1982 TIUS.
  - c. **Sampled Universe** – The 1977 TIUS asked all vehicles to report “axle or drive ratio,” “four-wheel drive,” “fuel economy engine,” and “variable fan drives,” whereas the 1982 TIUS only asked these on the TC-9502 form.
- xii. **Fleet Size** – The 1982 TIUS published a total (all categories combined) via ranges, whereas the 1977 TIUS published individual responses for each category asked.
- xiii. **Fuel** – The 1977 TIUS “LPG and other” response option was split for the 1982 TIUS – “liquefied petroleum gas” and “other.”
- xiv. **Gross Vehicle Weight Rating** – The 1982 TIUS added a variable to the dataset for the gross vehicle weight rating. This variable originated from the state registration files.
- xv. **Hazardous Materials** – The 1982 TIUS added the question asking for the type(s) of hazardous material(s) carried.
- xvi. **Home Base** – The 1982 TIUS added a question asking the percent of miles driven outside the home base state. The 1982 TIUS deleted the question asking miles driven within the home base state. The 1977 TIUS, as originally released, included county code by state, but this information is not included in the revised file.
- xvii. **ICC Authority** – The 1982 TIUS added the question asking whether the vehicle operated under ICC authority.
- xviii. **Impute Flag** – The 1977 TIUS microdata includes a variable noting actions performed to impute missing values.
- xix. **Jurisdiction** – The 1982 TIUS added the questions asking type of jurisdiction served (interstate, intrastate, local).
- xx. **Kind of Carrier** – The 1982 TIUS added the questions asking type, and percent of miles driven as, a for-hire carrier (common, contract, exempt).

Vehicle Inventory and Use Survey  
Program Documentation

- xxi. **Leasing:**
- a. **Arrangement** – For the 1982 TIUS, the “with driver (or as owner operator)” response option was deleted from the question pertaining to how the vehicle was leased. The “with a driver” and “with an owner-operator as driver” response options were added. Additionally, the response options for the question asking the length of the lease agreement were collapsed for the 1982 TIUS.
  - b. **Lessee/Lessor** – The 1982 TIUS added questions related to whether the vehicle was leased or rented to anyone else, whereas the 1977 TIUS asked questions relating only to whether the vehicle was leased from someone else. The 1982 TIUS deleted the question asking type of lessee.
  - c. **Provisions** – The “procurement and sale” and “maintenance” response options were deleted for the 1982 TIUS. The “financing (no maintenance)” and “financing and full maintenance” response options were added for the 1982 TIUS.
- xxii. **Length** – The 1982 TIUS asked respondents to report overall length of the vehicle or vehicle/trailer combination rather than load space or capacity.
- xxiii. **Maintenance/Repair** – The 1982 TIUS added the question asking who performed general maintenance (and kept the question asking who performed major maintenance) on the vehicle during the survey year. The response options for the 1982 TIUS differed by deleting “factory branch” and adding “company-owned facility” and “component distributorship.” The 1982 TIUS also deleted the question asking the type(s) of equipment on which major maintenance was performed.
- xxiv. **Make** – Comparability is limited. The 1977 TIUS does not define all valid values.
- Reason for change:* The Census Bureau reviews the quantity and distribution of makes in determining which specific makes pass confidentiality standards. The 1982 TIUS makes that did not pass this review were grouped – “other domestic” and “other foreign.” Since the TIUS is a random sample, the outcome of this review may vary from year to year. **Caution:** Since the makes that are grouped together in the “other” categories can vary from year to year the data is of limited comparability.
- xxv. **Mileage** – The 1982 TIUS asked respondents to report annual mileage for calendar year 1982, while the 1977 TIUS asked respondents to report mileage for the past 12 months.

Vehicle Inventory and Use Survey  
Program Documentation

- xxvi. **Miles-per-Gallon** – The 1982 TIUS deleted the question asking from whence the response (estimated or measured) for “miles-per-gallon” came.
- xxvii. **Operator Classification:**
- a. **Categories** – The “private” category was deleted for the 1982 TIUS. The “business use,” “motor carrier,” “owner operator,” and “personal transportation” categories were added for the 1982 TIUS. The 1982 TIUS added the “mixed” category for both the not-for-hire and for-hire operations.  
  
*Reason for change:* Changes to the 1982 TIUS categories were made in response to the Motor Carrier Act of 1980.
  - b. **Mode of Collection** – The 1977 TIUS “for hire” categories were collected under the “kind of carrier” questions. The 1982 TIUS asked respondents to report the percent of miles traveled among multiple operator classifications; the primary operator classification was determined using the value corresponding to the highest percent.
- xxviii. **Products Carried:**
- a. **Arrangement** – The 1982 TIUS deleted the question asking the secondary product carried. The 1982 TIUS added the question asking the percent of miles driven when empty.
  - b. **Categories** – The “lumber and fabricated wood products,” “no load carried,” “not in use,” “plastics and/or rubber,” and “other products” categories were added to the 1982 TIUS. The “special equipment” and “other” categories were deleted for the 1982 TIUS. The 1977 TIUS “machinery, except electrical” and “electrical machinery, equipment, household appliances” categories were combined for the 1982 TIUS – “machinery.”
  - c. **Mode of Collection** – The 1982 TIUS asked respondents to report the percent of miles driven carrying each product rather than selecting the product most often carried.
- xxix. **Range of Operation** – Comparability is limited due to significant changes in the response categories.
- xxx. **Report Forms** – The 1982 TIUS used two report forms: Form TC-9501 for pickups, panels, vans, and utility vehicles; and Form TC-9502 for all other trucks. The 1977 TIUS used only one report form.

Vehicle Inventory and Use Survey  
Program Documentation

- xxxi. **Sample**
- a. **Identification** – The 1977 TIUS added a variable that served as a unique identifier for each record. As originally released, it contained a “Census number” variable that was not unique for each record.
  - b. **Stratification** – The 1982 TIUS stratified the sample based on body type rather than “small trucks” and “large trucks” as in the 1977 TIUS.
- xxxii. **Vehicle Type** – The 1982 TIUS allowed single-unit trucks to pull a trailer, whereas the 1977 TIUS did not. In addition, the 1977 TIUS categories were based on the total number of axles on the power unit.
- xxxiii. **VIN** – The 1977 TIUS includes an excerpt of the vehicle identification number, whereas the 1982 TIUS does not.
- xxxiv. **Weight** – The 1982 TIUS asked respondents to report average weight. The 1982 TIUS also asked respondents of the TC-9502 form to report the vehicle’s empty weight and maximum weight as well as the loaded weight of the trailer most often pulled. The 1982 TIUS did not include weight from state registration files in the microdata file.

Additional comparability information can be found in the 1982 U.S. Summary report located at: <http://www.census.gov/svsd/www/vius/1982.html>. Comparability between variables and valid responses can be found in the Excel spreadsheet titled “Comparability.”

## Vehicle Inventory and Use Survey Program Documentation

### 1977 – 1972

While microdata files were released for both years, no decodable copies of the 1972 file are known to exist. Limited documentation exists regarding the comparability between these survey years. Refer to the publication text that appears in any of the published state or U.S. reports located at <http://www.census.gov/svsd/www/vius/1977.html>.

### 1972 – 1967

While microdata files were released for both years, no copies of the files are known to exist. Limited documentation exists regarding the comparability between these survey years. Refer to the publication text that appears in any of the published state or U.S. reports located at <http://www.census.gov/svsd/www/vius/1972.html>.

### 1967 – 1963

While microdata files were released for both years, no copies of the files are known to exist. Limited documentation exists regarding the comparability between these survey years. Refer to the publication text that appears in any of the published state or U.S. reports located at <http://www.census.gov/svsd/www/vius/1967.html>.