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Development of Truck Payload Equivalent Factor (TPEF)

Final Report

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Development of Truck Payload Equivalent Factor (TPEF)

1.0 Background

The transportation of freight in the United States is predominantly an Interstate phenomenon. There is growing concern regarding the ability of the highway infrastructure to handle increasing traffic resulting in congestion on major trade corridors and metropolitan areas. Truck traffic contributes to worsening highway congestion at a faster rate than passenger traffic. In addition to capacity, the ageing infrastructure and limited funding for the transportation system requires sufficient and detailed knowledge of physical and operating characteristics of trucks in order to develop and implement strategies and policies directed at efficiency of the transportation system. In order to identify and develop appropriate strategies to address highway congestion and capacity deficiencies, it is important to understand the nature and characteristics of freight movement on the highway system.

For the purpose of highway capacity analysis, truck and passenger trips are assigned to the highway network. This requires conversion of commodity flow data in tons of freight to truck trips based on average truck weights. The procedures and algorithms to convert the commodity flow measured in tons of units and carried by trucks to the number of trucks rely on information from the Vehicle Inventory and Use Survey (VIUS). The VIUS provides data on the physical and operating characteristics of the nation's truck population. It provides national and state-level estimates of the total number by type of truck. These data are gathered through surveys conducted every five years as part of the economic census. They are not based on direct field measurement of trucks weights.

The Vehicle Traveler Information System (VTRIS), on the other hand, is a database management system designed for vehicle classification and truck weight data from weigh-in-motion (WIM) installations. Presently, 36 states submit truck WIM data to the FHWA for inclusion into the VTRIS program on an annual basis.

The goal of this project is to develop payload characteristics and distribution by eight gross vehicle weight classes for all 50 states and the District of Columbia using the VIUS and VTRIS WIM data (where available) for the subsequent development of truck payload equivalent factor (TPEF) for the entire United States.

2.0 Objective

The objective of this project is to develop average payload databases by Gross Vehicle Weight (GVW) group, FHWA vehicle class, and various commodity groups for all 50 states using 2002 VIUS and 2006 FHWA VTRIS data. For VTRIS, analyses are limited to states that participated in the 2006 FHWA VTRIS data collection program.

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Development of Truck Payload Equivalent Factor (TPEF)

3.0 Data Sources

Analysis of payload distribution is based on two data sources, namely VIUS and VTRIS. A brief detail of the data sources are described below.

3.1 VIUS (Vehicle Inventory and Use Survey)

The VIUS database was created as a result of the vehicle inventory survey. The survey is normally conducted every five years as part of the economic census. The latest VIUS data is for the year 2002. The survey sample is drawn from each state's registration records and the process involves formatting a questionnaire to compile all required information. The questionnaire, with the vehicle registration number, is sent to the appropriate owner to furnish details of the vehicle whose registration is imprinted. The responses are computer-edited thoroughly and corrected if necessary.

VIUS provides physical and operational characteristic data of nationwide private and commercial truck fleet. The physical characteristic data include weight, number of axles, overall length, body type, etc. for medium and heavy trucks. The operational characteristic data include commodities handled, distance traveled, mileage, etc.

3.2 VTRIS (Vehicle Traveler Information System)

WIM is used by many states to process vehicle classification and truck weight data using the VTRIS software. The data collected by WIM are reported to VTRIS via an online data source maintained by FHWA. The WIM data reported for VTRIS are checked for accuracy and validated with the assistance of the VTRIS software before inclusion of the data into the database. The details of an error can be viewed and corrected – it is optional to include the data error in the database. The VTRIS system validates, edits, summarizes, and generates reports on vehicle characteristics.

The VTRIS summary provides an option to summarize the data for the required station or functional class in various data output formats called "W" form. The system also allows the user to generate reports W-2 to W-7 for a selected station or functional class. The ADT can be averaged hourly, monthly, or annually. W-tables are designed to provide a standard format of the outcome of the vehicle weighing and classification efforts. The report consists of the station numbers, functional class, method of averaging, name of the state, and year for all the tables from W-2 to W-7. The following describes the contents of the W-tables:

- W-2 – Contains a summary of the vehicles counted and the vehicles weighed
- W-3 – Reports weight data and is used for payload distribution analysis
- W-4 – Contains equivalency factors by direction report including information on truck axle loading and their effect on flexible and rigid pavement based on ESAL
- W-5 – Reports weight data and is used for payload distribution analysis
- W-6 – Contains overweight vehicle reports
- W-7 – Reports the distribution of overweight vehicles

4.0 Technical Approach

The VIUS database is used for the analysis of truck payload distribution based on various categories; for example, commodity handled, travel distance, and body type, for all 50 states including the District of Columbia. For VTRIS, only "Estimated Average Carried Load" and gross vehicle weight (GVW) distribution by FHWA vehicle

class were carried. These data are reported in the VTRIS W-3 and W-5 tables. The payload analysis conducted is based on the VIUS GVW vehicle group. The VTRIS FHWA vehicle groups are described next.

4.1 Gross Vehicle Weight Groups

The gross vehicle weight (GVW) groups are listed under the VIUS variable ADM_GVWR. The eight GVW groups include:

- Group 1 – Less than 6,000 lbs.
- Group 2 – 6,001 to 10,000 lbs.
- Group 3 – 10,001 to 14,000 lbs.
- Group 4 – 14,001 to 16,000 lbs.
- Group 5 – 16,001 to 19,500 lbs.
- Group 6 – 19,501 to 26,000 lbs.
- Group 7 – 26,001 to 33,000 lbs.
- Group 8 – More than 33,000 lbs.

The average payload for each GVW group is calculated by subtracting the empty weight of the truck as reported under the VIUS variable WEIGHT EMPTY from the truck average weight as reported under the VIUS variable WEIGHT AVG. A new database consisting of only the fields required for the analysis is created from the VIUS data in the Statistical Analysis Software (SAS). Also, the records with missing values for the VIUS variable WEIGHT AVG and WEIGHT EMPTY were considered invalid and excluded to maintain the accuracy of the results.

4.2 FHWA Vehicle Groups

FHWA vehicle groups in the VTRIS database are different from the VIUS vehicle groups. VTRIS data are available only for 36 states and the analysis is carried only for those states. The payload distribution is based on the nine FHWA vehicle classes listed below:

- Class 1 – Single Unit: 2-axle
- Class 2 – Single Unit: 3-axle
- Class 3 – Single Unit: 4-axle or more
- Class 4 – Truck/Tractor Trailers: 4-axle or less
- Class 5 – Truck/Tractor Trailers: 5-axle
- Class 6 – Truck/Tractor Trailers: 6-axle or more
- Class 7 – Combination Trucks: 5-axle or less
- Class 8 – Combination Trucks: 6-axle
- Class 9 – Combination Trucks: 7-axle or more

The variable "Estimated Average Carried Weight" listed in the W-3 report is used for payload analysis by VTRIS vehicle group. To maintain accuracy, the data are checked for accuracy and validity record by record using the VTRIS software.

The average payload distribution analyses were carried out for all 50 states and the District of Columbia to fulfill the output requirements by each task as outlined in the SOW. In addition, payload analyses for national average were also carried out and reported as part of the deliverable. For VTRIS, the analysis was limited to 36 states that participated in the annual VTRIS data program. The payload analyses were carried out in the following nine areas:

1. GVW classes without distance and commodity specifications
2. GVW classes by 2-digit SCTG commodity level
3. GVW classes by various traveled distance intervals
4. GVW classes by various axle configurations
5. GVW classes by various vehicle body types
6. State-specific data on empty load
7. State-specific data on truck loaded to size limit
8. State-specific data on truck loaded to weight limit
9. State-specific data on overloaded (weight) trucks

Since both VIUS and VTRIS report different vehicle classes, two sets of vehicle classes were used to accomplish the above task requirements. However, for comparison, VTRIS-equivalent vehicle classes were developed using

the VIUS variable called "axle_config". The following criteria were used to develop comparable FHWA VTRIS vehicle classes using the VIUS data.

- FHWA Class 1 – axle_config = 02
- FHWA Class 2 – axle_config = 03
- FHWA Class 3 – axle_config = 04 and 05
- FHWA Class 4 – axle_config = 06 , 07 , 09, and 27
- FHWA Class 5 – axle_config = 13, 15, 28, and 30
- FHWA Class 6 – axle_config = 08, 11, 14,16, 17, 18, 19, 20, 29, 31, 31, and 32
- FHWA Class 7 – axle_config = 37
- FHWA Class 8 – axle_config = 38 and 41
- FHWA Class 9 – axle_config = 39, 42 to 64

The national analysis on GVW payload, empty weight, and the overload weight limit illustrated in various tables and cumulative distribution graphs were developed using the following criteria and conditions:

- The average payload distribution based on GVW vehicle group (Table 1 and Figures 1-7) and FHWA vehicle class (Table 3) are developed from the VIUS. In VTRIS, the W-3 report consists of the payload variable "Estimated Average Carried Load" based on the FHWA vehicle, which is similar to the VIUS payload (Table 5).
- The average empty weight from VIUS is calculated for both the GVW (Table 2) and FHWA vehicle groups (Table 4) based on the variable WEIGHT EMPTY. The default empty weight reported in VTRIS W-3 is directly taken for the analysis (Table 6).
- The average payload distribution from VIUS based on the 2-digit SCTG commodity code is calculated using the VIUS variable PRODUCT_PRINCPL. Table 9 and Figure 17 illustrate the national distribution of average payloads by commodity carried. For state-specific, this distribution was also carried out for both the GVW (Table 10) and the FHWA vehicle class (Table 13). VTRIS data do not support the product handled and therefore no analysis was conducted.
- The average payload distribution of VIUS data based on the distance traveled is performed using the variable TRIP_PRIMARY. The analysis is carried out for VIUS GVW group (Table 11) and VIUS FHWA vehicle class (Table 14). The payload distribution based on the distance traveled cannot be calculated from a VTRIS data source due to the fact that VTRIS does not support the travel distance criteria. The analysis used the following VIUS travel distance intervals:
 1. Off-the-road
 2. Less than 50 miles
 3. 51 to 100 miles
 4. 101 to 200 miles
 5. 201 to 500 miles
 6. 501 miles or more
- The VIUS identifies 28 vehicle body types. In a similar payload analysis for the FAF-2 traffic analysis project by Battelle, these 28 body types were further grouped to 11 major body types that represent most all possible commodity combinations used by various vehicle body configurations. These include:
 - Platform
 - Van
 - Auto Transport
 - Dump Truck
 - Grain Bodies
 - Garbage Truck
 - Livestock
 - Pole and Logging
 - Tank Truck for Dry Bulk
 - Tank Truck for Liquid Gases

For analysis consistency, Battelle used these similar groupings. The VIUS 2002 variable for this analysis is BODYTYPE. No VTRIS/WIM analysis was feasible for this task. The analysis is carried out for the GVW vehicle group (Table 12) and FHWA vehicle class (Table 15) from VIUS data source.

State Truck Size and Weight (TS&W) regulations are specific to vehicle and axle configuration. No specific regulation exists for size limit that is specific to a particular gross vehicle weight class. Therefore, Battelle developed state-specific data on trucks loaded to size limit by FHWA vehicle configuration and also the GVW classes. Cumulative frequency distribution curves were developed to allow for quantifying the level of overloading by a particular GVW or FHWA class under a governing weight regime (Figures 18 and 19). This cumulative gross weight distribution curve should allow the estimation of the percentage of overloaded and overweight vehicles for a known TS&W size regime in a given state. VTRIS W7 reports the percentage of overweight vehicles by FHWA vehicle class. VTRIS software restricts the gross weight limit values to 5 digits and hence W7 reports for those states with more than 100,000 lbs limitation cannot be generated for analysis.

State Specific analysis results are provided as a separate electronic database in Excel format.

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5.0 Observations

The comparison of average payloads between VIUS and VTRIS by FHWA vehicle class (Table 7 and Figures 8-16) shows that the average payload is randomly distributed among the VTRIS vehicle classes. In VIUS, vehicles are categorized based on the vehicle type specified in the questionnaire but in VTRIS the vehicles are categorized by post processing software using the distance between the axles that are recorded by WIM. Using axle distance from WIM can be problematic and subject to significant error checking for those conditions that can lead to wrong classification. For example, a car pulling a trailer may be categorized as a 3-axle truck based on the distance between axles or tailgating cars may be categorized as 4-axle truck. Non calibrated WIM can also significantly skew the actual GVW of a particular vehicle. Due to significant differences of payload between these two database, repeated analyses were carried out to ensure accuracy. No attempt was made to investigate the vehicle classification algorithm used by VTRIS and no modification was made to adjust the default empty weight reported by VTRIS for each vehicle classes. These are the few reasons for the differences in payload values between VIUS and VTRIS. The payload values from VIUS sources are higher than that from the VTRIS source and also there is a significant difference in payload value from the two sources for all the states and FHWA classes.

Comparison of the average empty weight between VTRIS and VIUS in Table 8 shows that the average empty weight for the single unit vehicles are more or less similar but for the rest of the FHWA classes, there is a significant difference in the empty weight values. The empty weight from VTRIS sources is higher than the empty weight from VIUS.

The payload distribution by product handled and GVW group for 50 states was not estimated due to the small sample size. Instead, the analysis was carried out by commodity group and FHWA class. The average payload distribution for 50 states for the FHWA class (see state specific electronic database) shows that product handling maximum payload differs for each state. Comparing the maximum payload value for each state, it can be deduced that the Utah vehicles of FHWA Class 9 transporting coal handles the maximum payload of 101,759 pounds. Observation of the national payload distribution (Table 9) shows that the vehicles of GVW Group 8 handling gasoline and aviation fuel have a maximum payload of 53,423 pounds, whereas by FHWA vehicle classification (Table 12), Class 9 vehicles handling machinery products carry a maximum payload of 104,387 pounds.

Analysis of the average payload handled by travel distance for all the states (see state specific electronic database), shows that vehicles of GVW Group 8 traveling a distance of 201 to 500 miles handle the maximum payload and of all the states, Wyoming handles the maximum payload of 60,361 pounds. The national maximum payload is 40,243 pounds for the GVW Group 8 vehicles traveling 200 – 500 miles. Analysis of the payload distribution by travel distance for the FHWA vehicle class and 50 states (see state specific electronic database) shows that the maximum average payload of 107,757 pounds is transported by combination trucks with 7 axles or more in Oregon for a distance of more than 501 miles but the national maximum average payload (Table 13) is 77,886 pounds for a trip distance of less than 50 miles.

Based on the body type, the average payload distribution for the GVW group for all 50 states shows that either the tractor + trailers: tank, bulk, or loggings of GVW Group 8 transports the maximum average payload. Analysis of payload distribution by GVW and FHWA class shows that GVW Group 8 tractor + trailers: tank vehicles of Michigan handle the maximum payload of 76,079 pounds, whereas the maximum average payload is 102,563 for the FHWA vehicle Class 9, tractor + trailers-tanks, of Michigan. The national payload distribution (Table 11) by GVW group and FHWA vehicle class shows that the national maximum average payload is 50,135 pounds for the GVW Group 8, tractor + trailers bulk vehicles and FHWA Class 9 tractor + trailers – bulk vehicles handle a maximum average payload of 83,144 pounds.

The percentage of vehicles that carry more than the weight limit or are overloaded is estimated from the cumulative gross weight graph grouped by the GVW group (Figure 18). Vehicles in the GVW Groups 2-7 in almost all states operate under the weight limit. But GVW Group 8 vehicles of all states operate over the weight limit and a maximum of 23.4% of Michigan vehicles operate over the state’s weight limit of 80,000 lbs. Considering the weight limit of 80,000 pounds, vehicles in all states operated within the weight regulation, whereas about 3% of GVW Group 2 and 8 vehicles of Vermont are overweight with a GVW of 115,000 pounds. The national cumulative gross weight graph shows that 1% of GVW Class 7 and 7% of GVW Class 8 vehicles are overweight.

The cumulative gross weight graph based on the FHWA vehicle class is shown in Figure 19. FHWA vehicle Class 6 are more predominantly overweight in most of the states. About 34% of Michigan vehicles operating under FHWA vehicle Group 6 are overweight with an average gross weight of more than 115,000 pounds. The national cumulative gross weight graph shows that about 52% of FHWA Class 6 vehicles and less than 5% of vehicles of other FHWA classes are overweight.

The percentage of overweight vehicles reported by W7 of VTRIS (Table 18) shows that the percentage is randomly distributed throughout the FHWA Class 2 - 9. Analysis shows that irrespective of the vehicle class 12% percent of vehicles are overweight in Michigan state and 70.39% is contributed by FHWA Class 9 vehicles.

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5.0 Observations (continued)

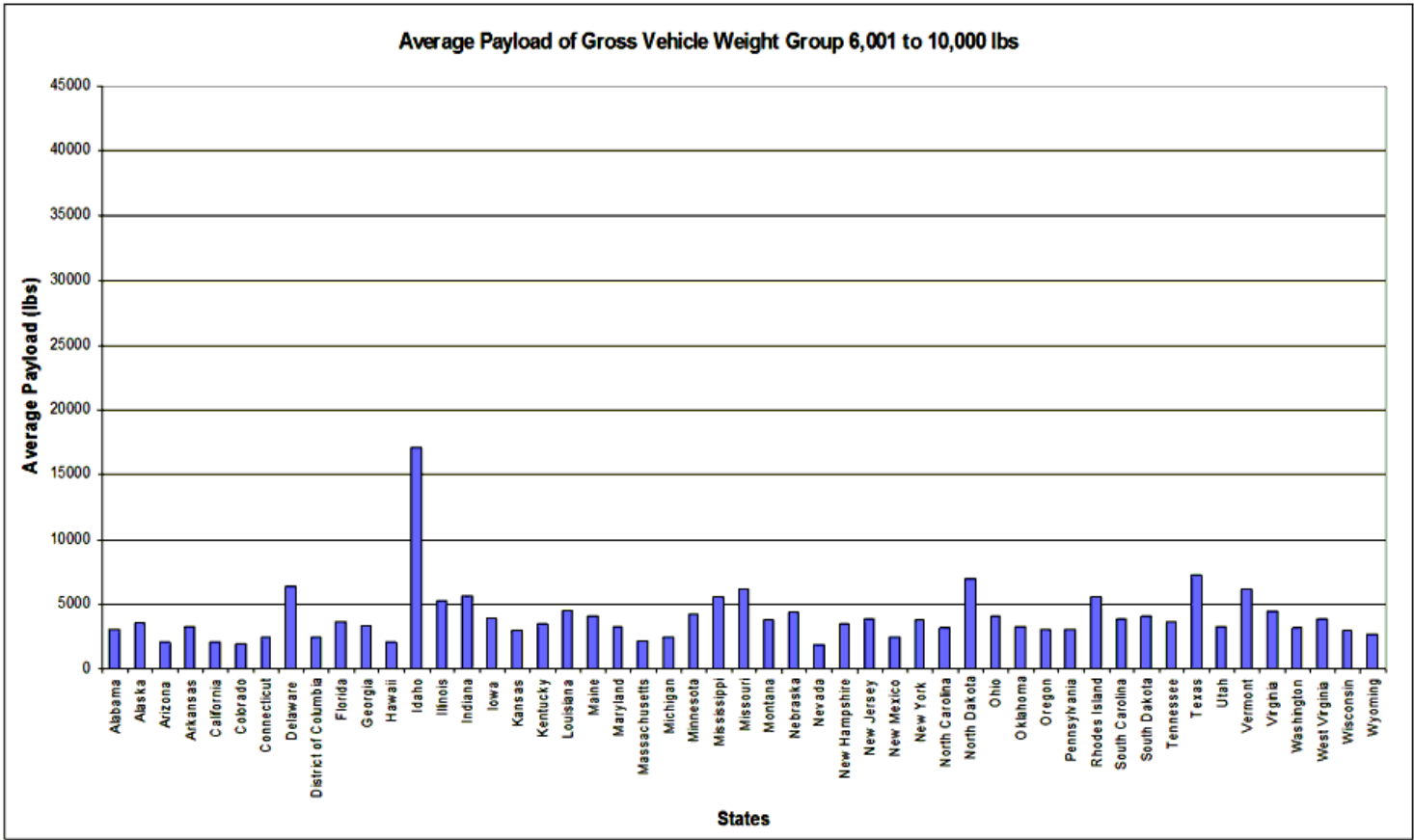


Figure 1. GVW Group 2 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

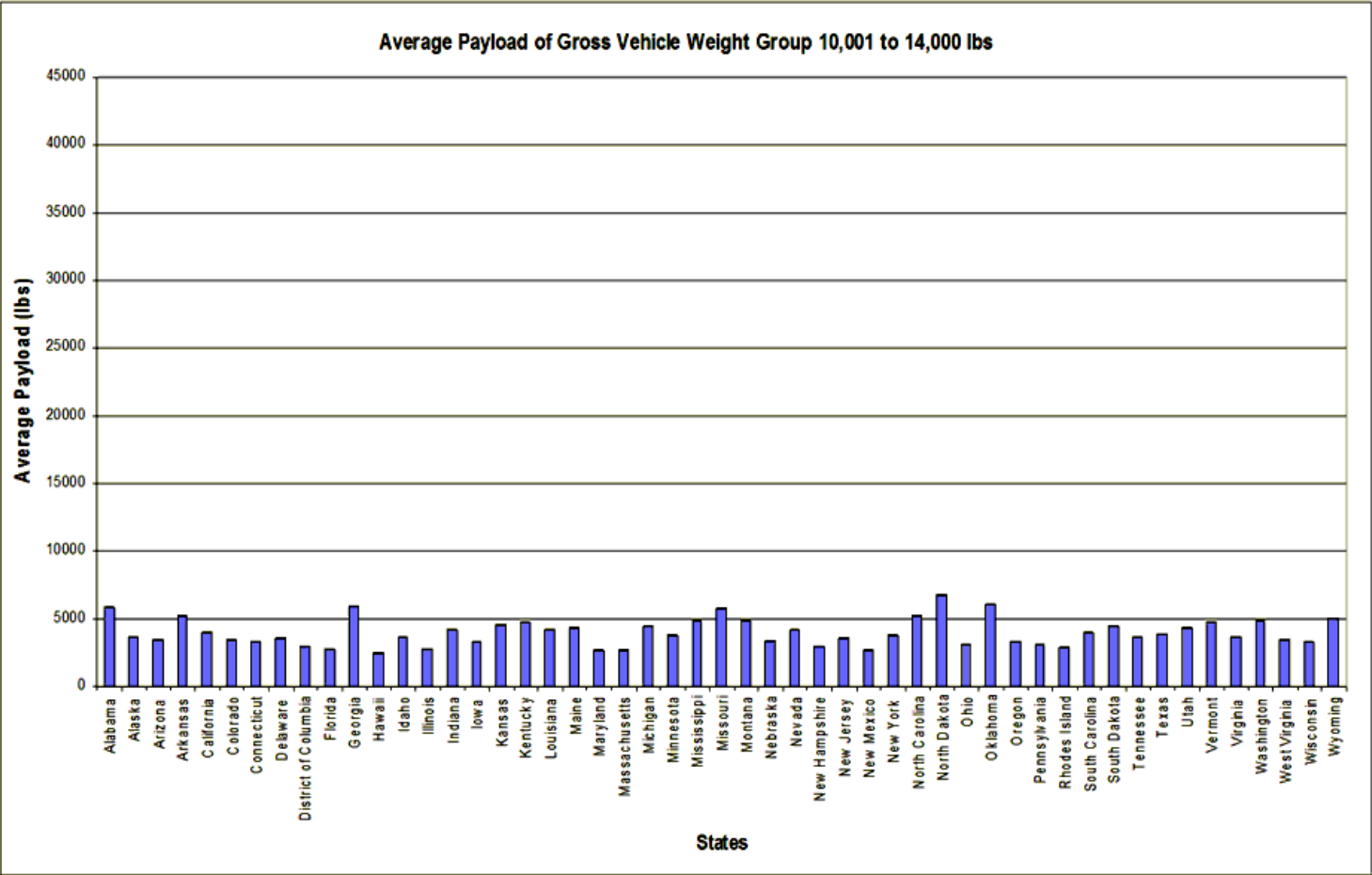


Figure 2. GVW Group 3 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

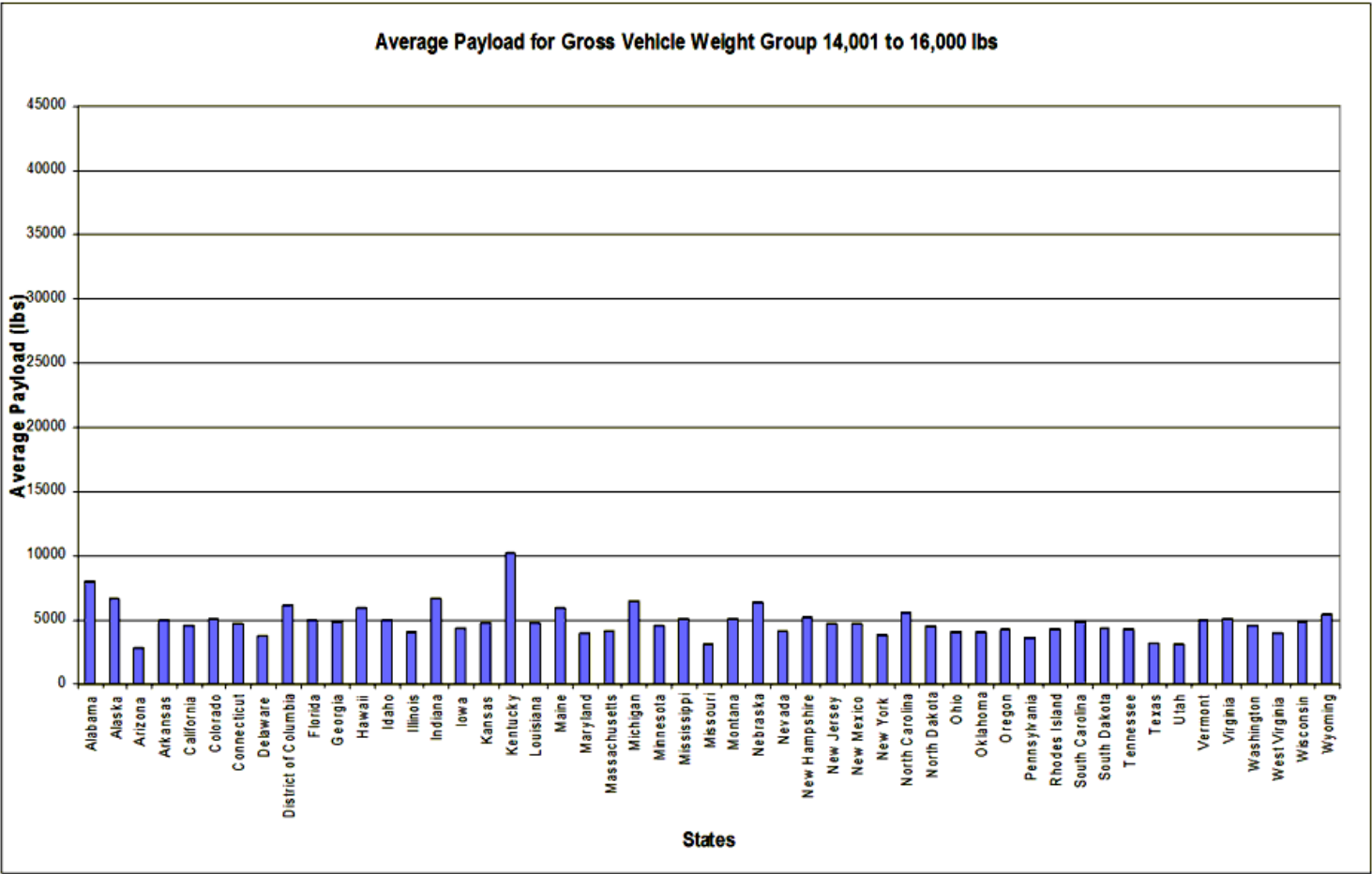


Figure 3. GVW Group 4 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

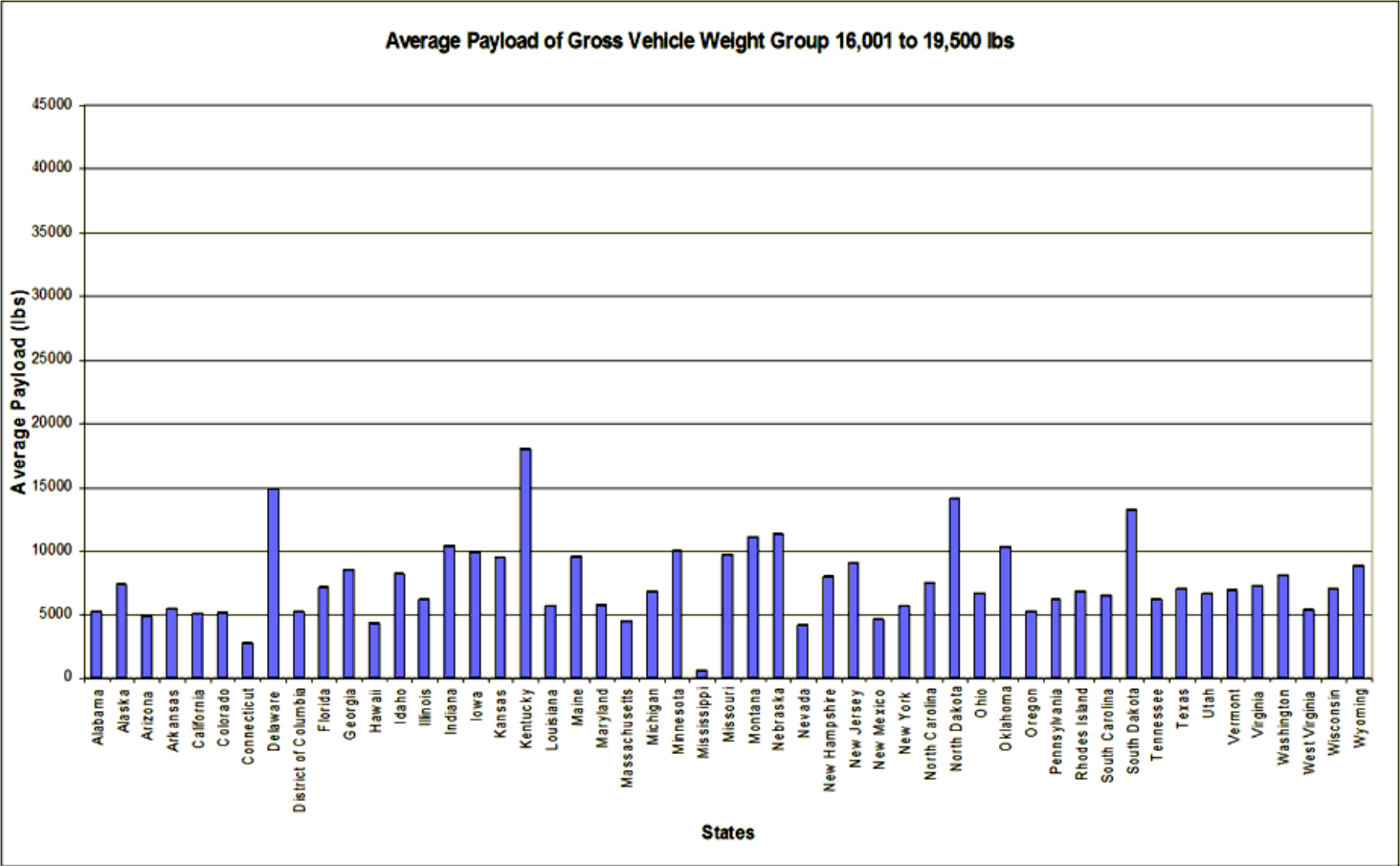


Figure 4. GVW Group 5 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

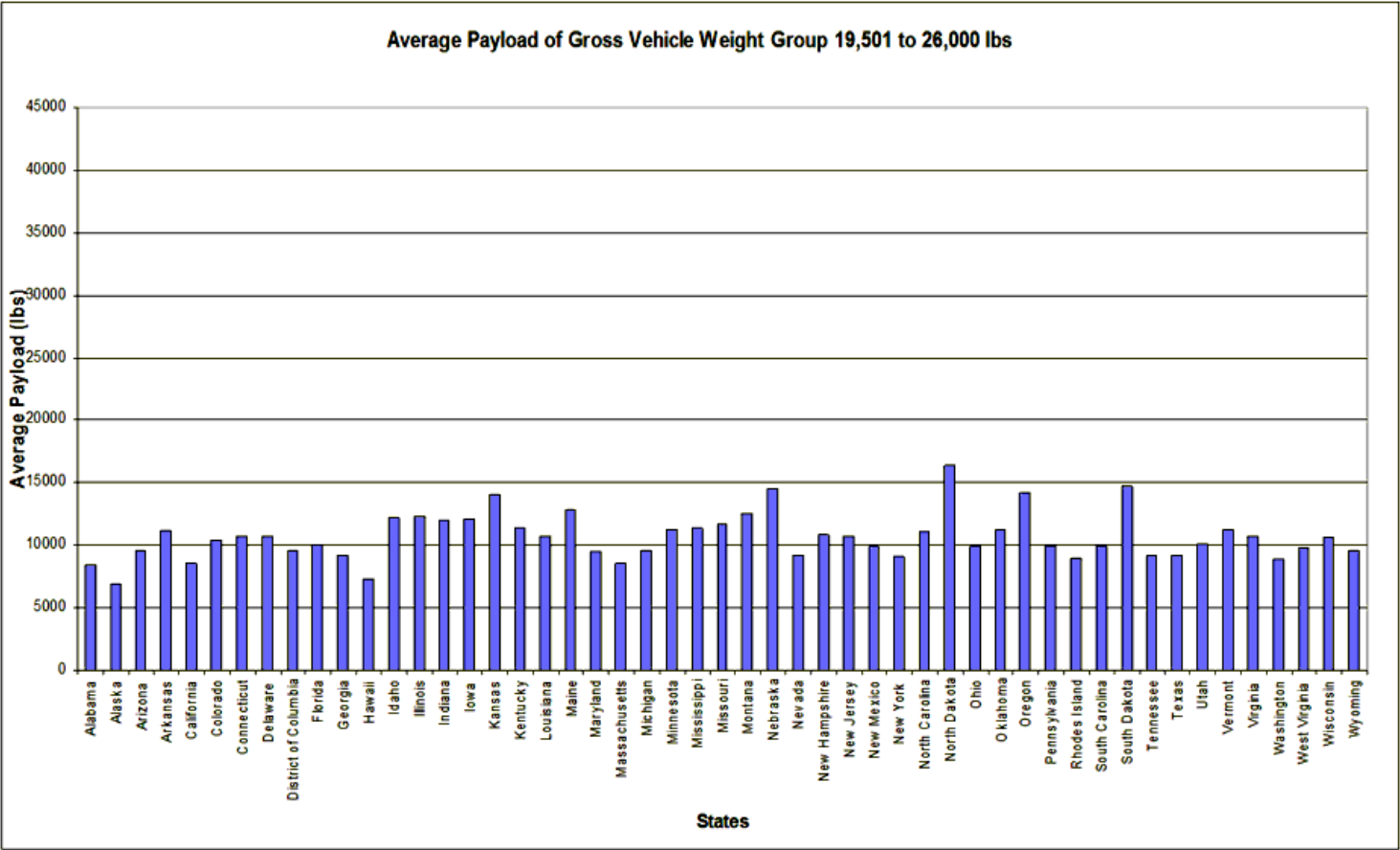


Figure 5. GVW Group 6 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

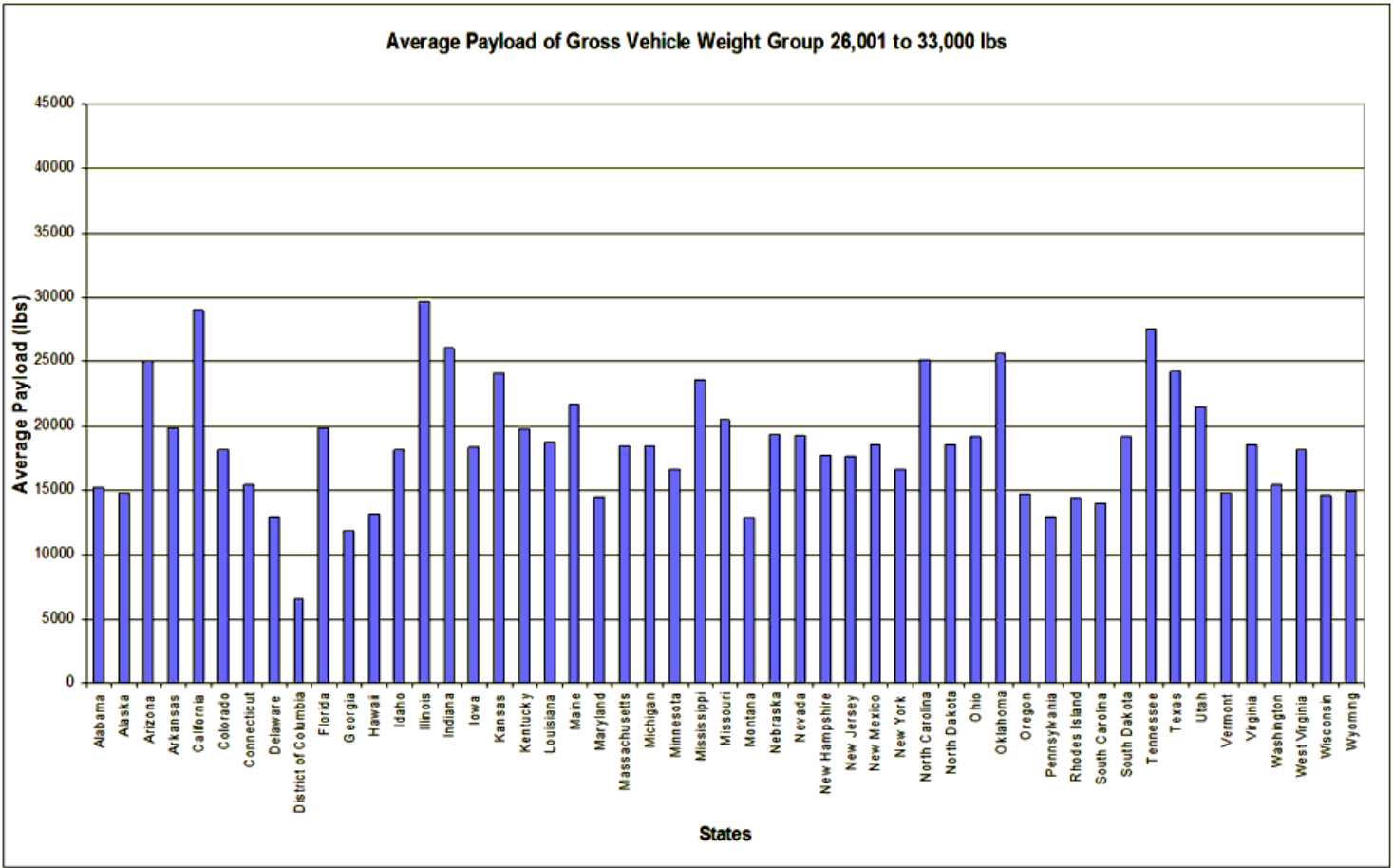


Figure 6. GVW Group 7 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

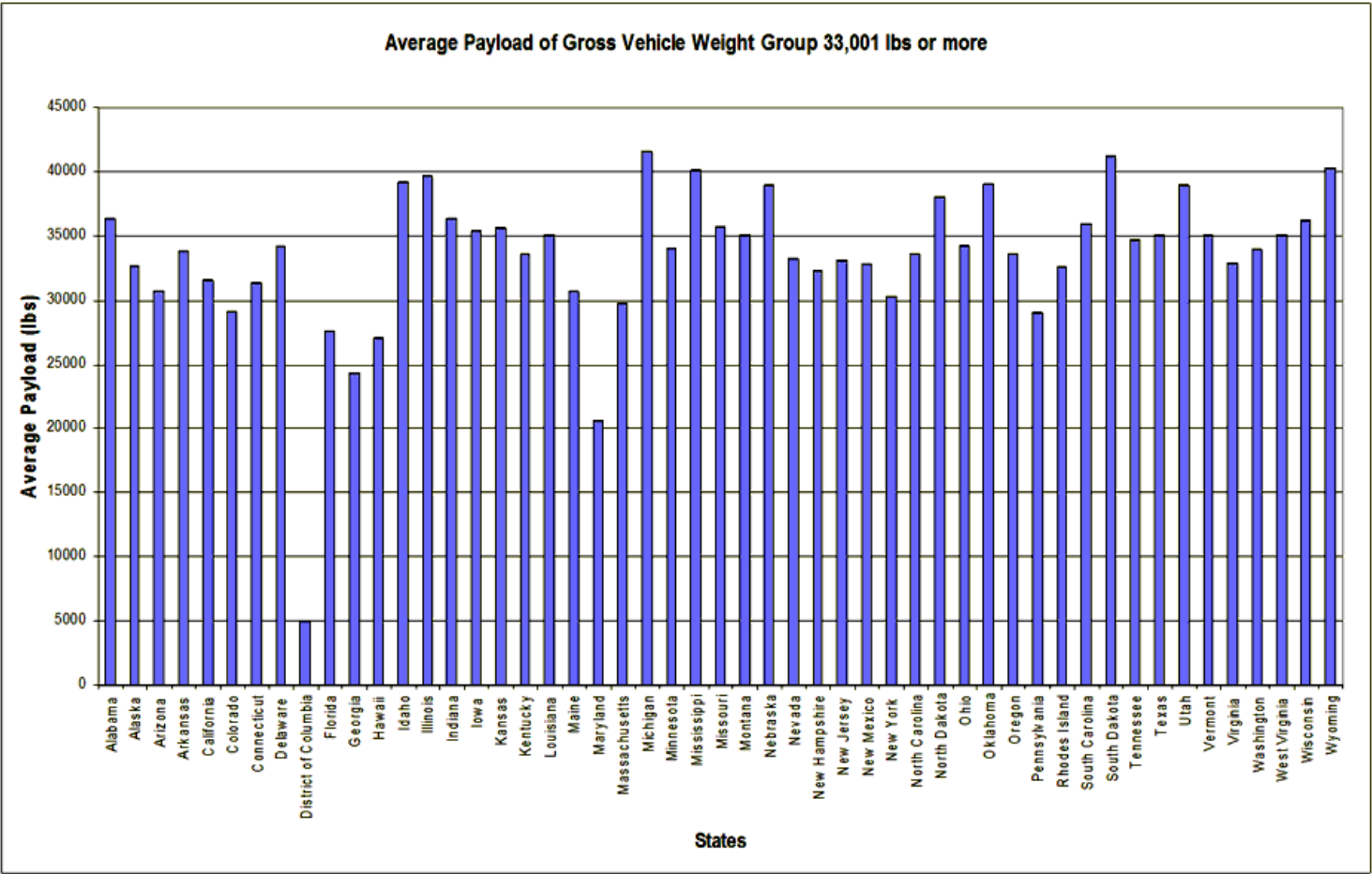


Figure 7. GVW Group 8 – Average Payload by Gross Vehicle Weight Group – VIUS – by State

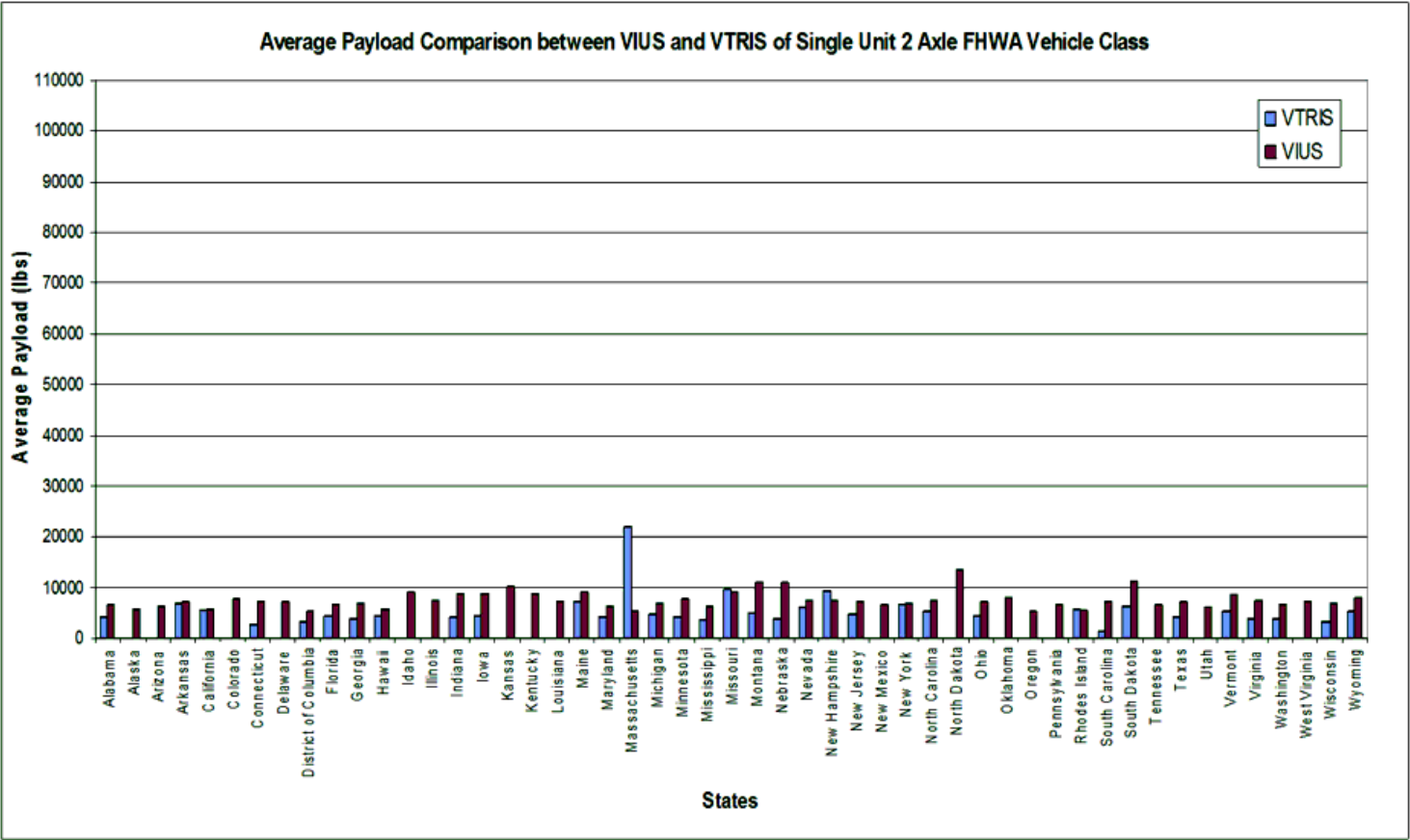


Figure 8. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 1 – by State

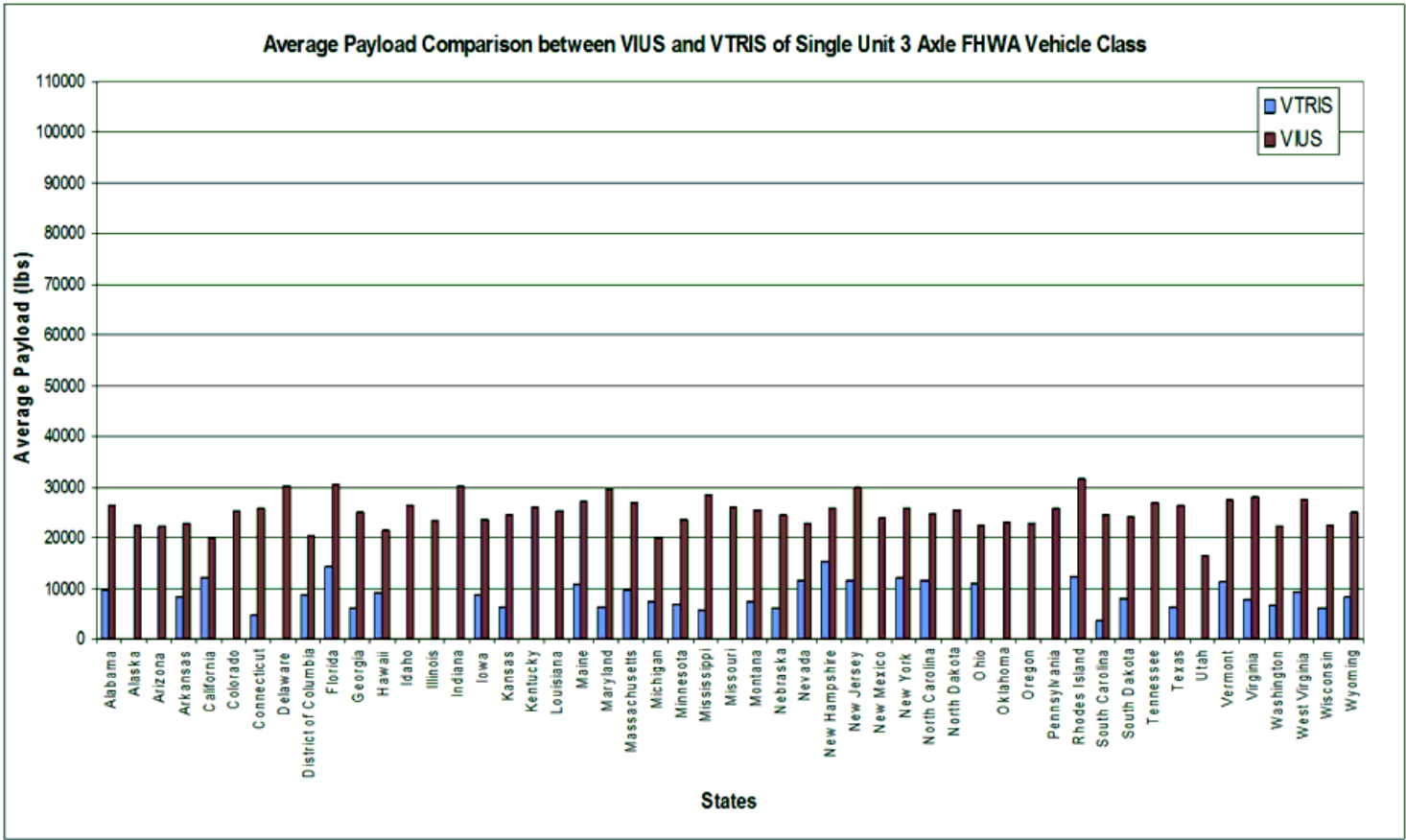


Figure 9. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 2 – by State

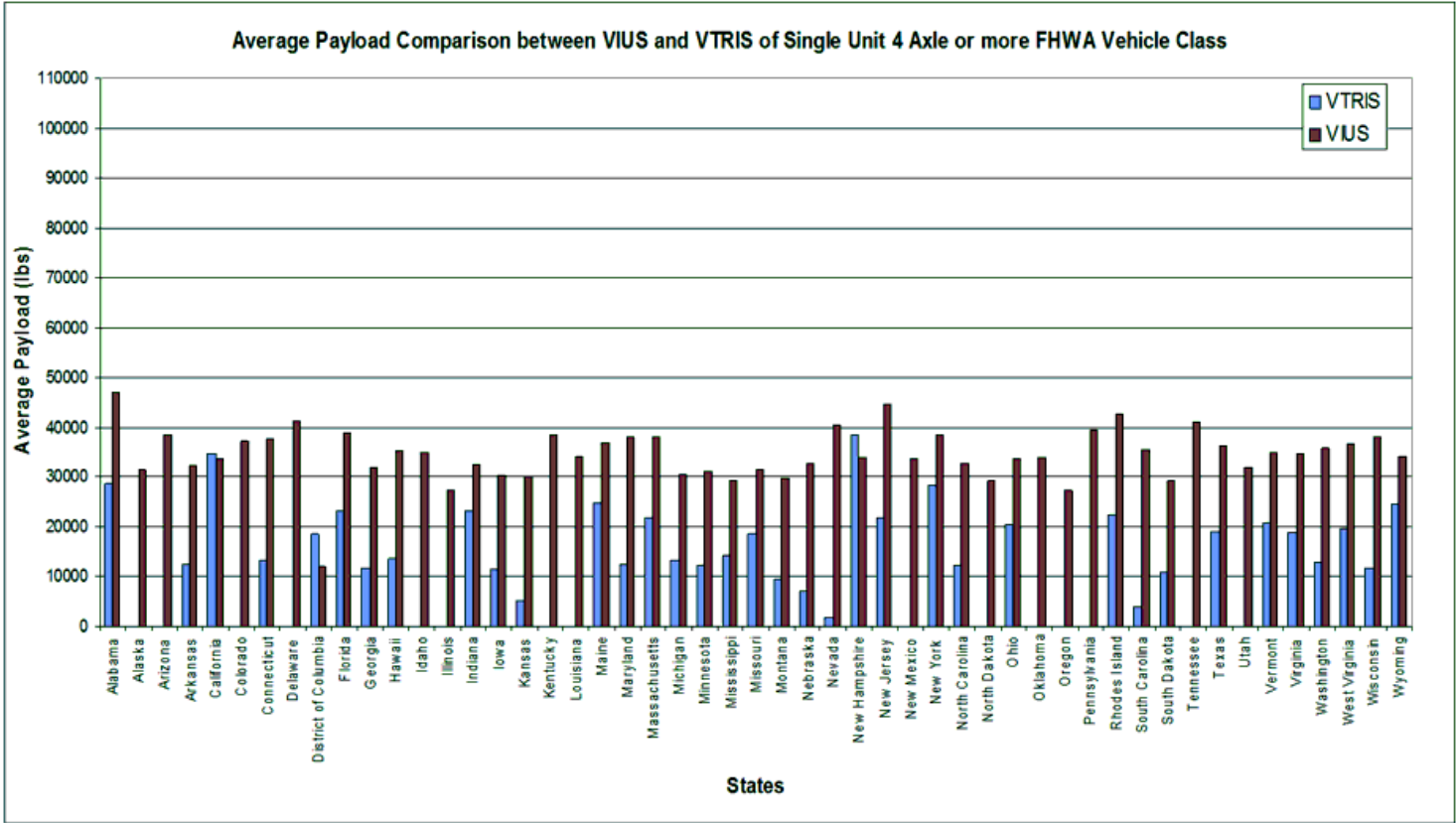


Figure 10. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 3 – by State

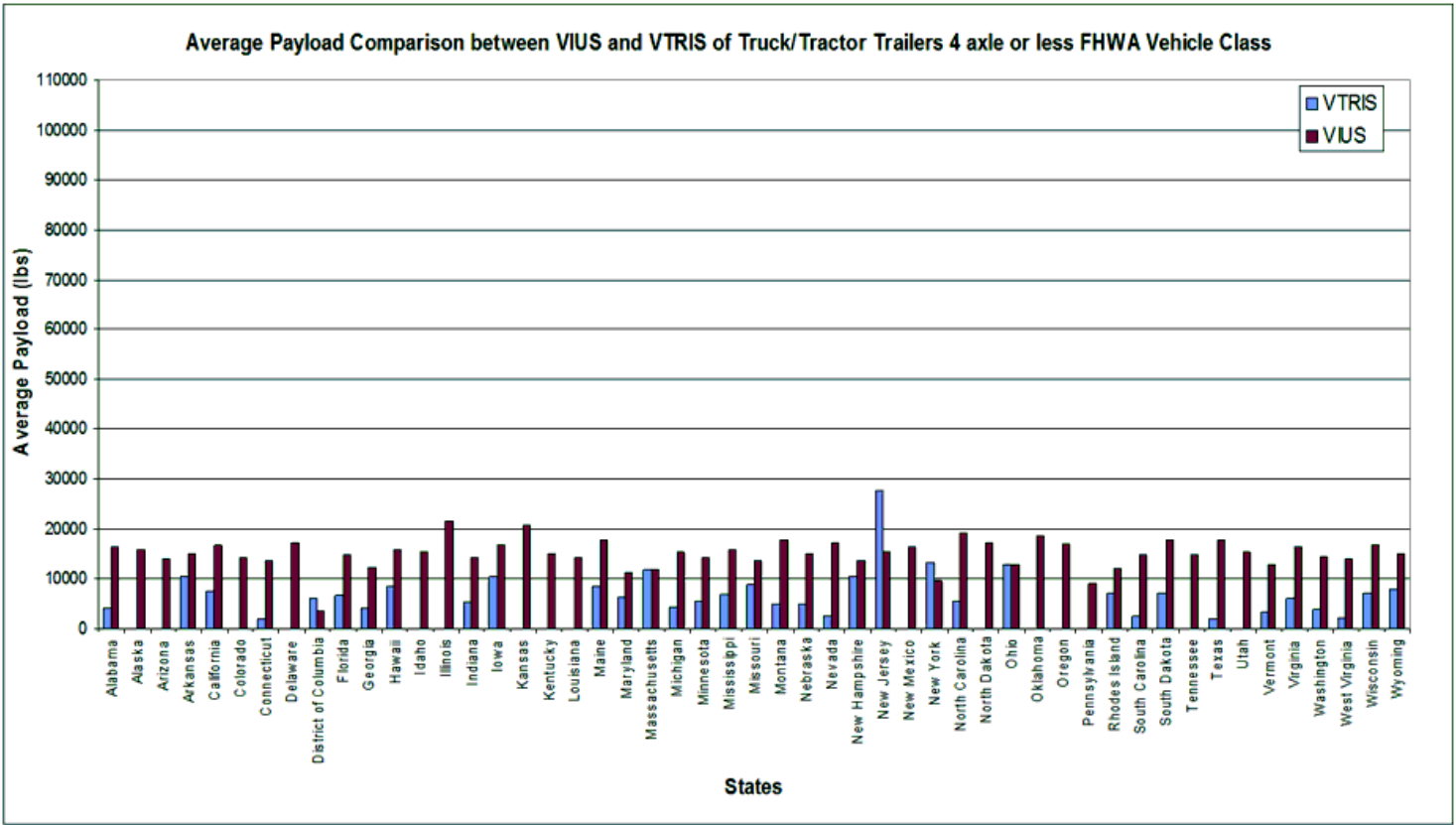


Figure 11. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 4 – by State

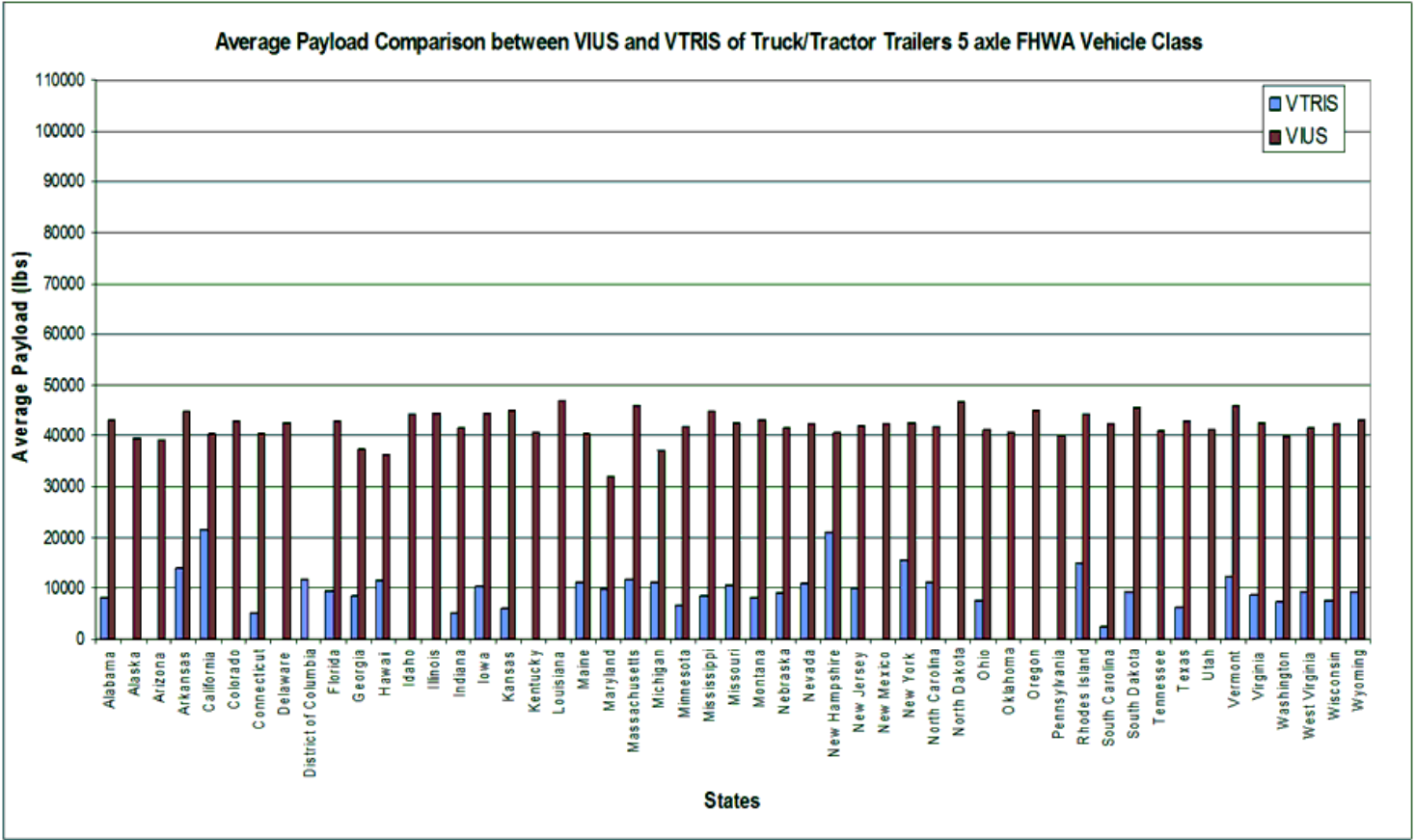


Figure 12. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 5 – by State

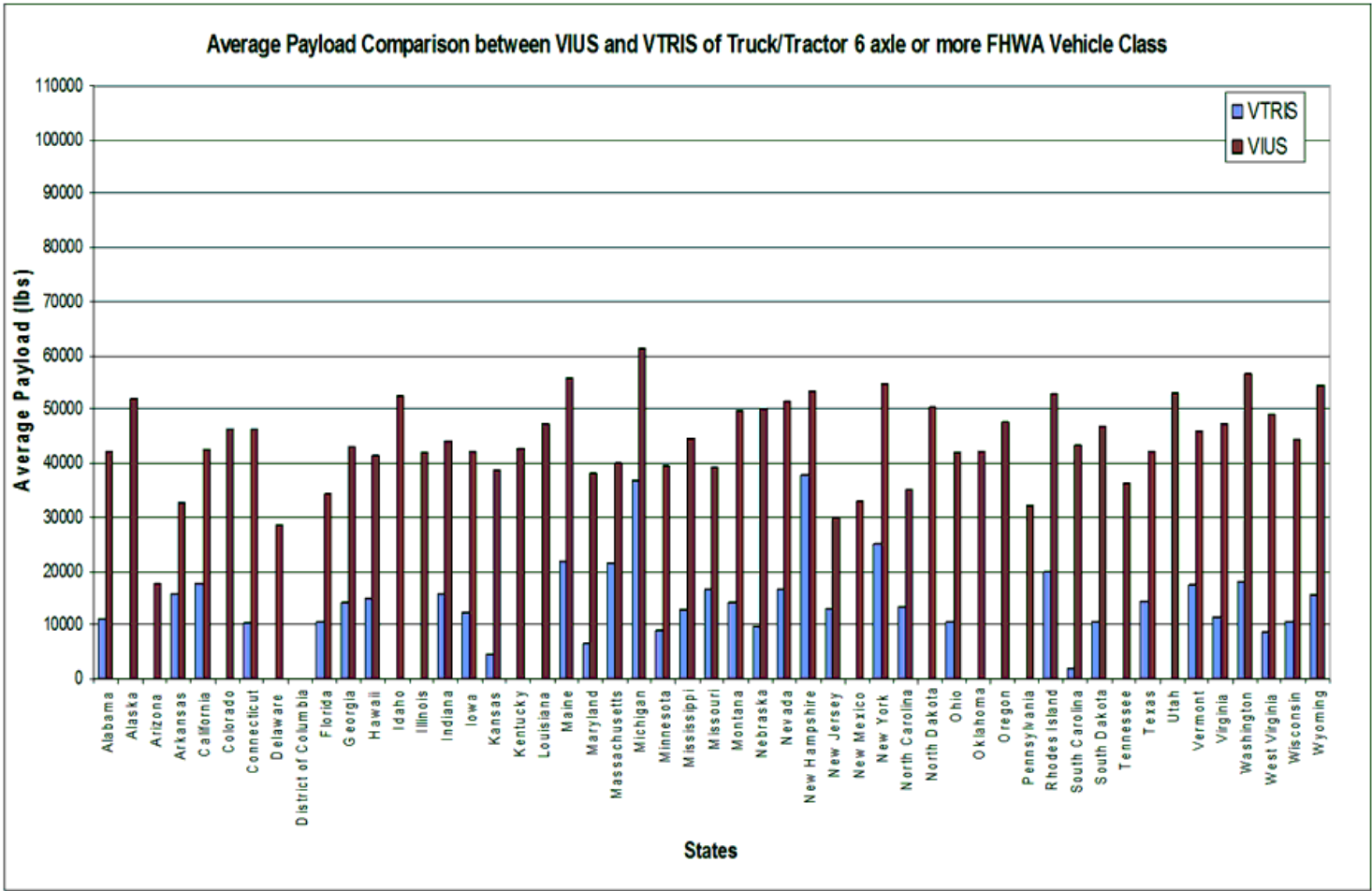


Figure 13. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 6 – by State

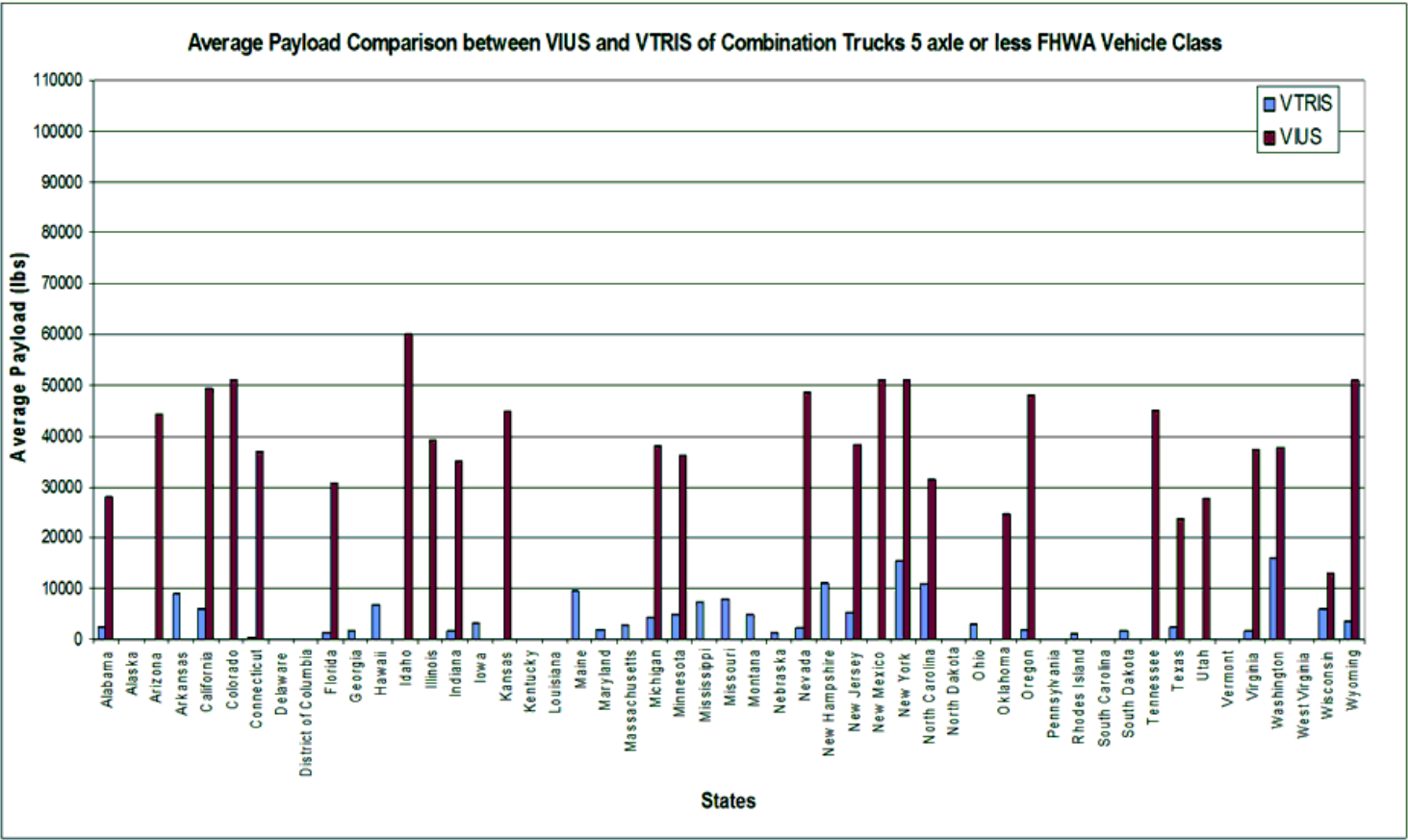


Figure 14. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 7 – by State

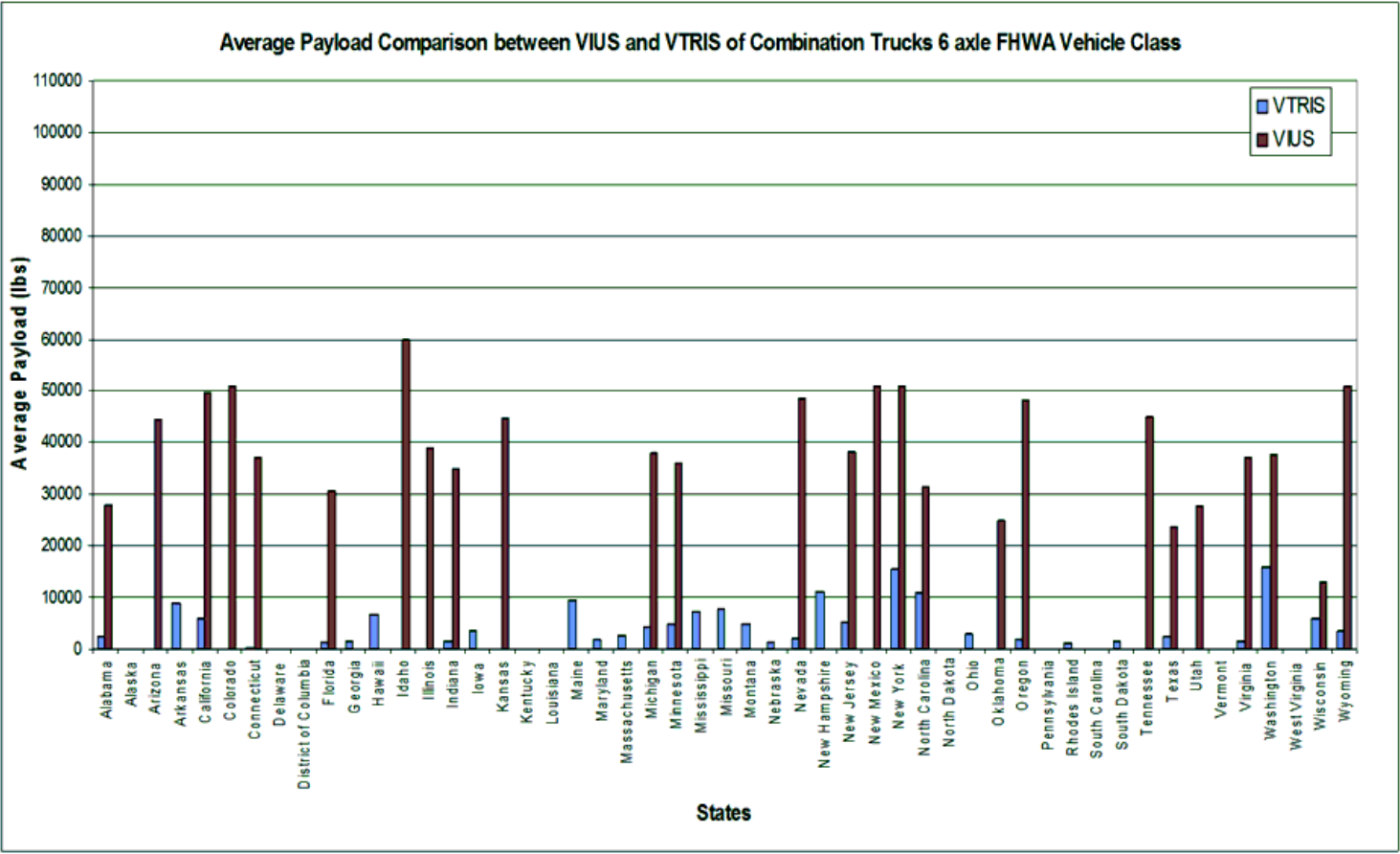


Figure 15. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 8 – by State

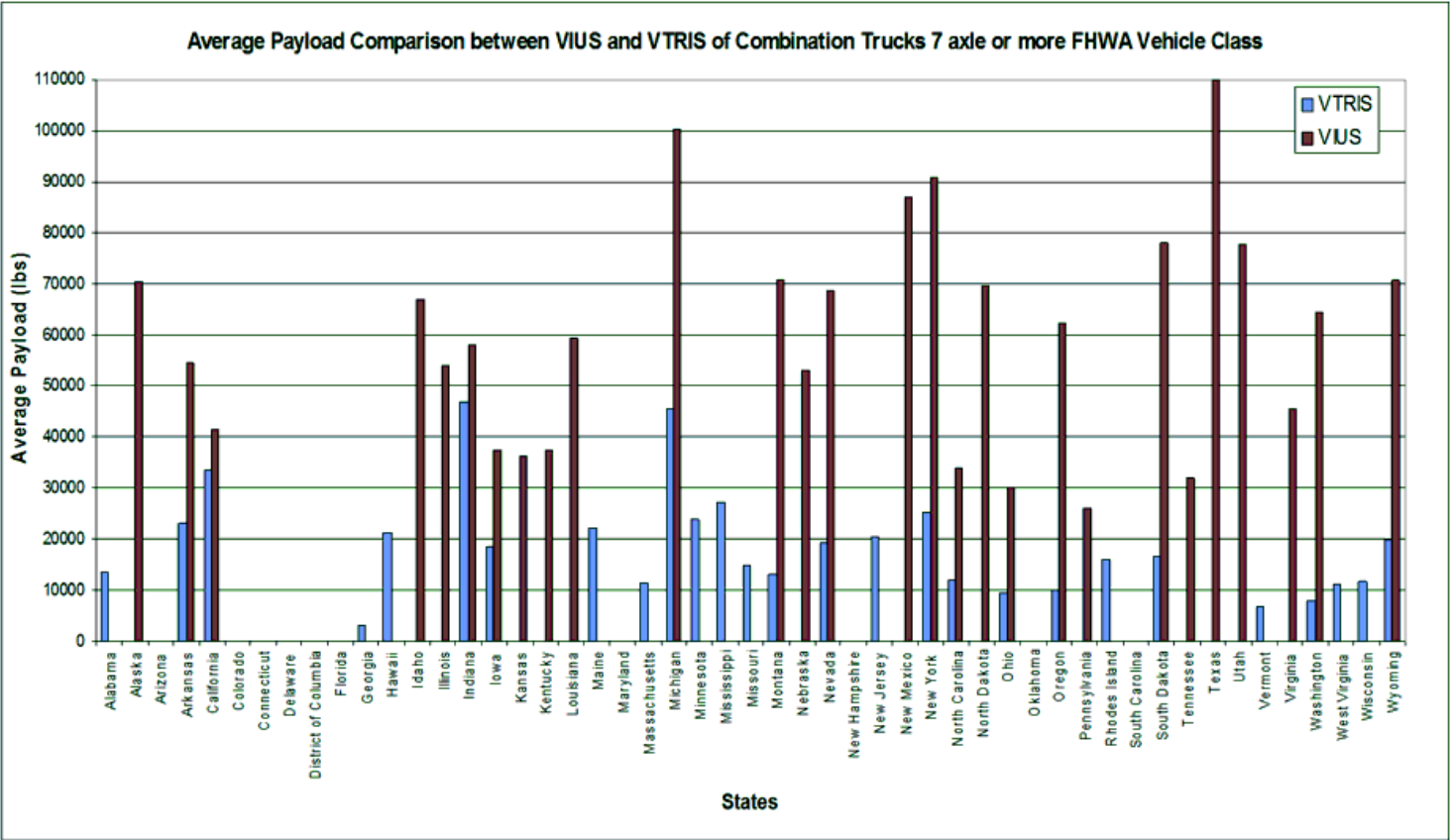


Figure 16. Average Payload Comparison between VIUS and VTRIS – FHWA Vehicle Class 9 – by State

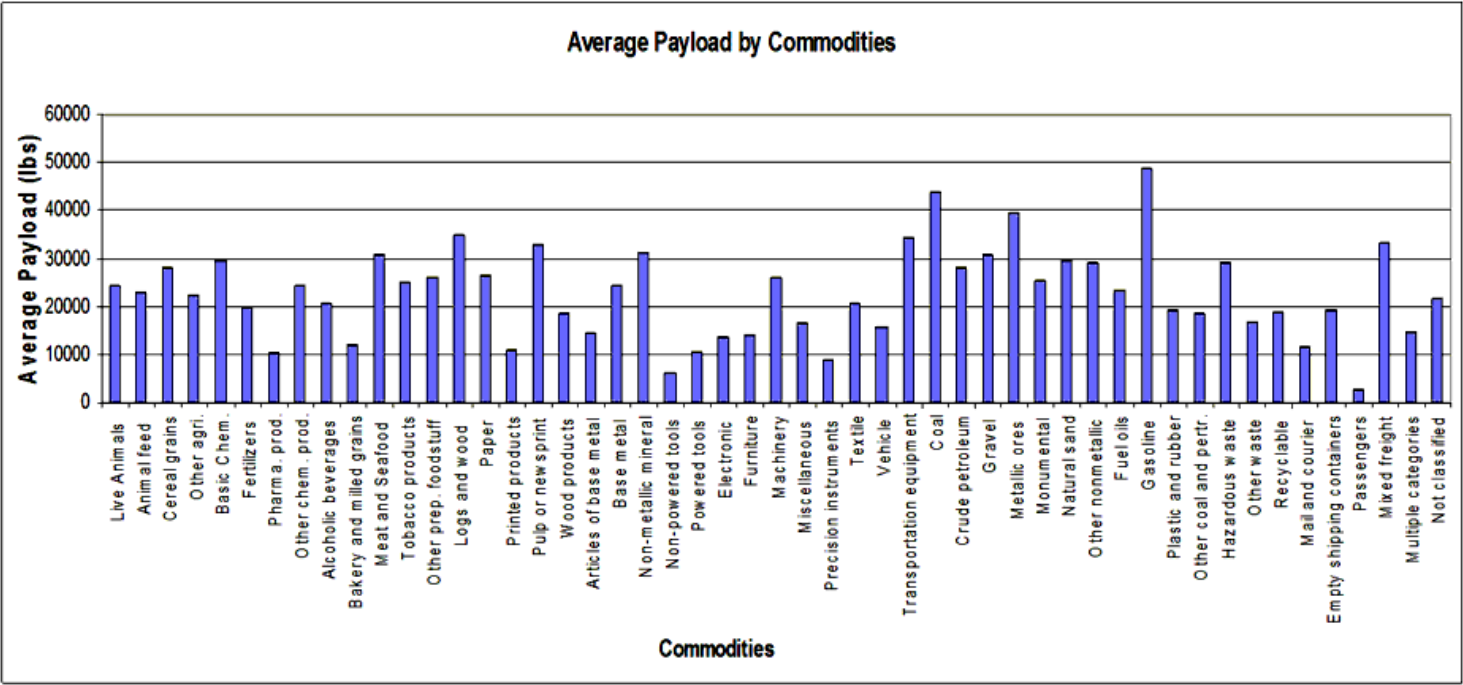
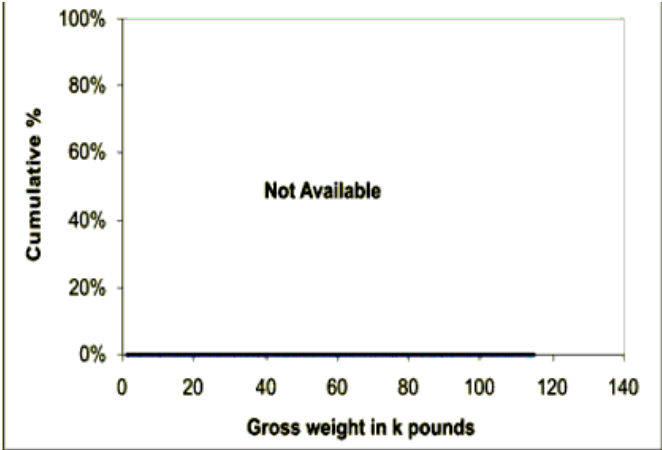
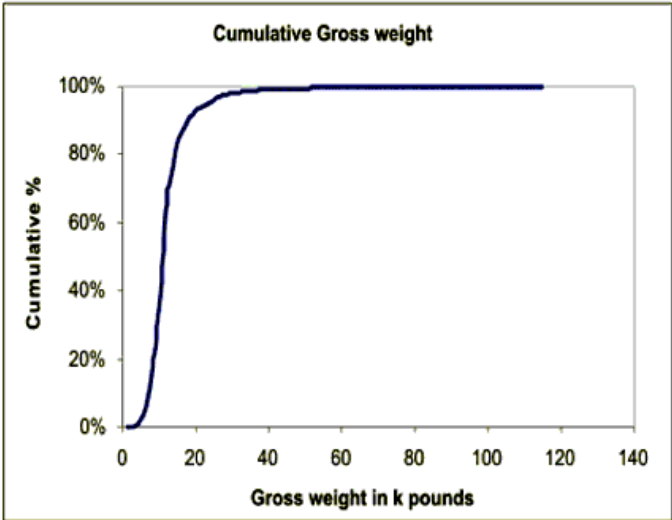


Figure 17. Average Payload by Commodities – VIUS – National

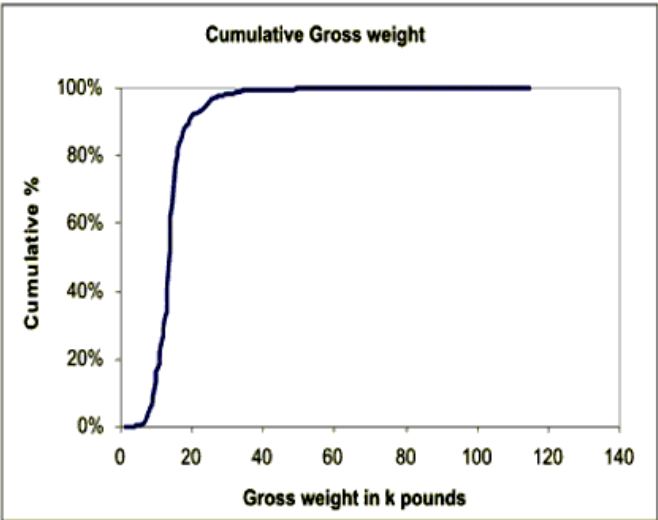




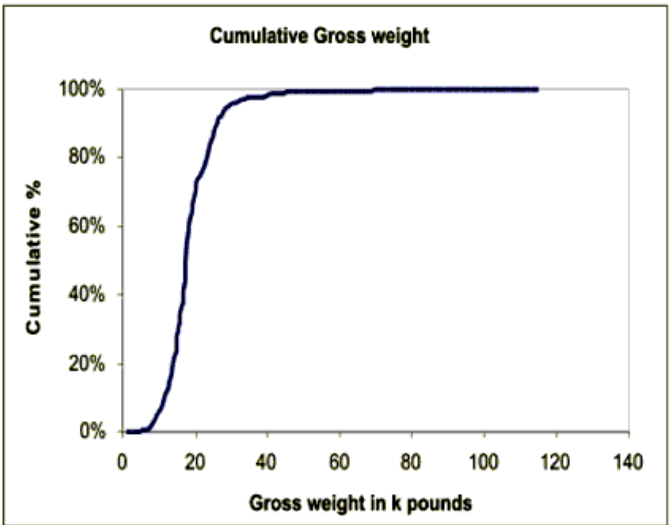
Group 3



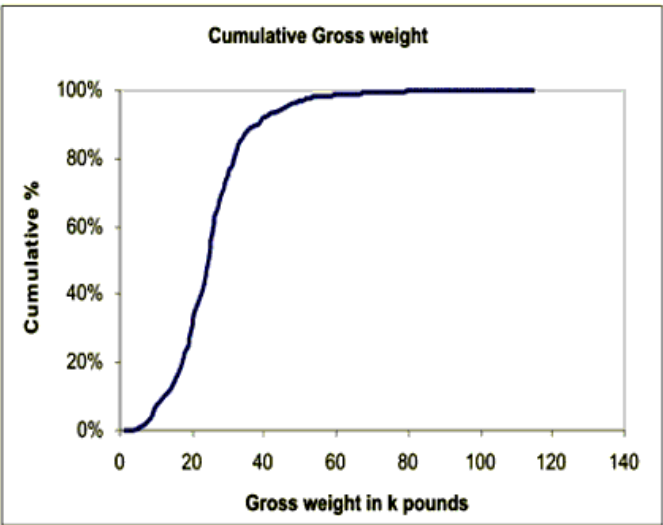
Group 4



Group 5



Group 6



Group 7



Group 8



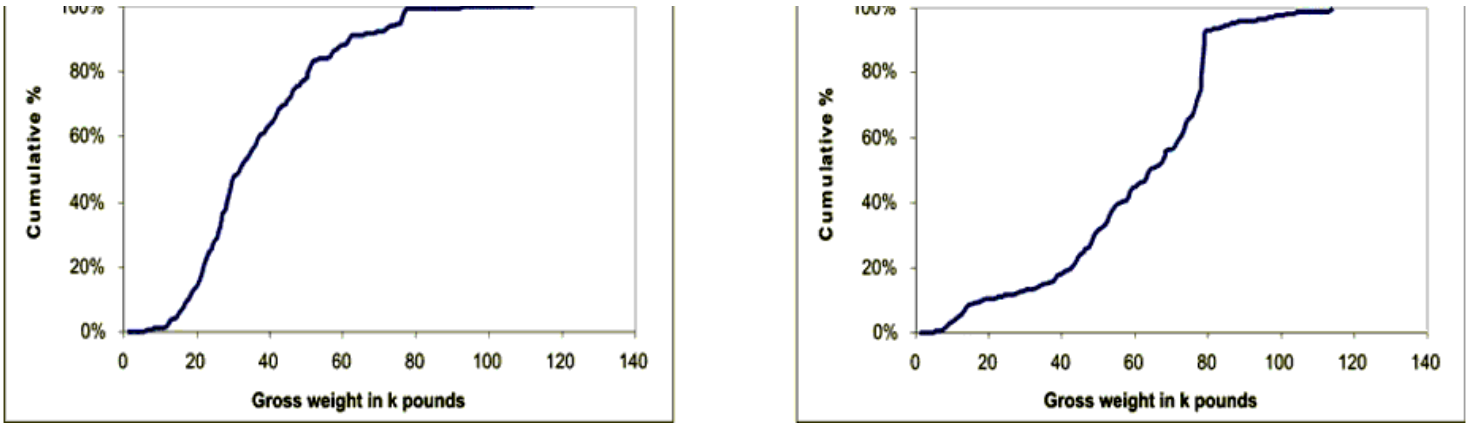
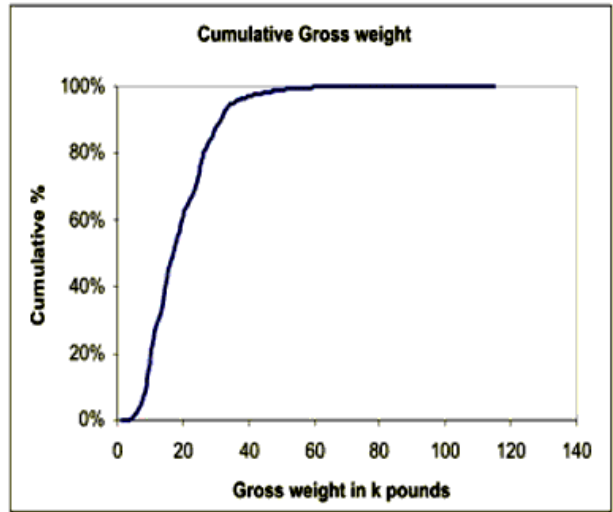
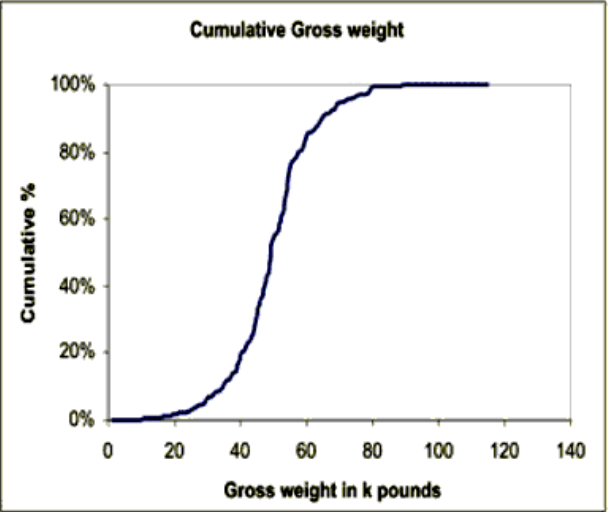


Figure 18. Cumulative Gross Weight Curve by GVW Vehicle Group VIUS – National

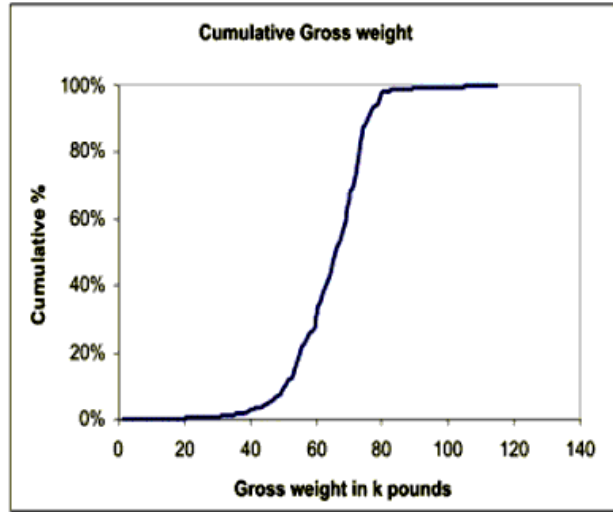
Class 1



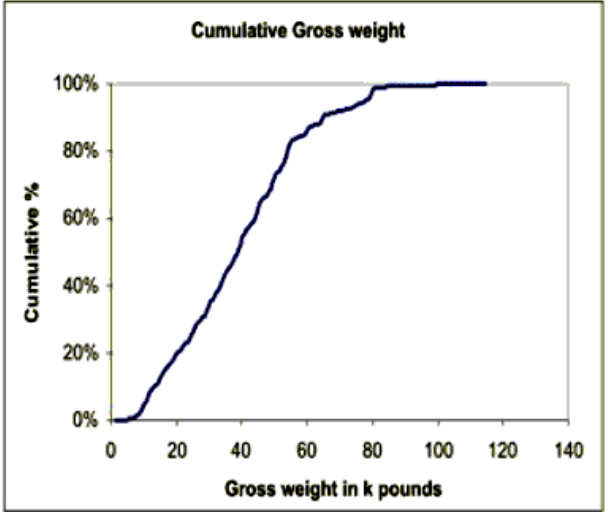
Class 2



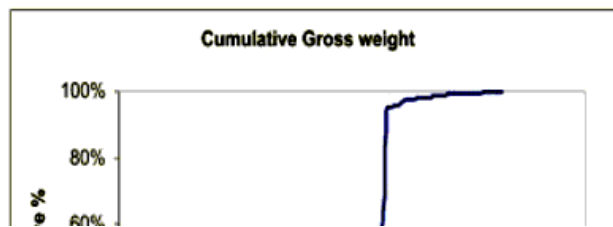
Class 3



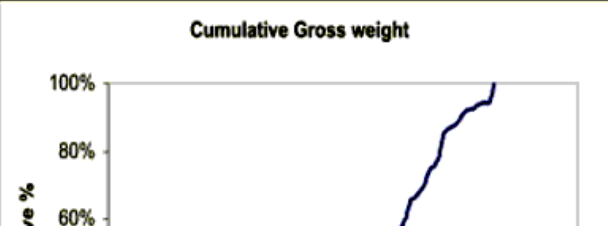
Class 4



Class 5



Class 6



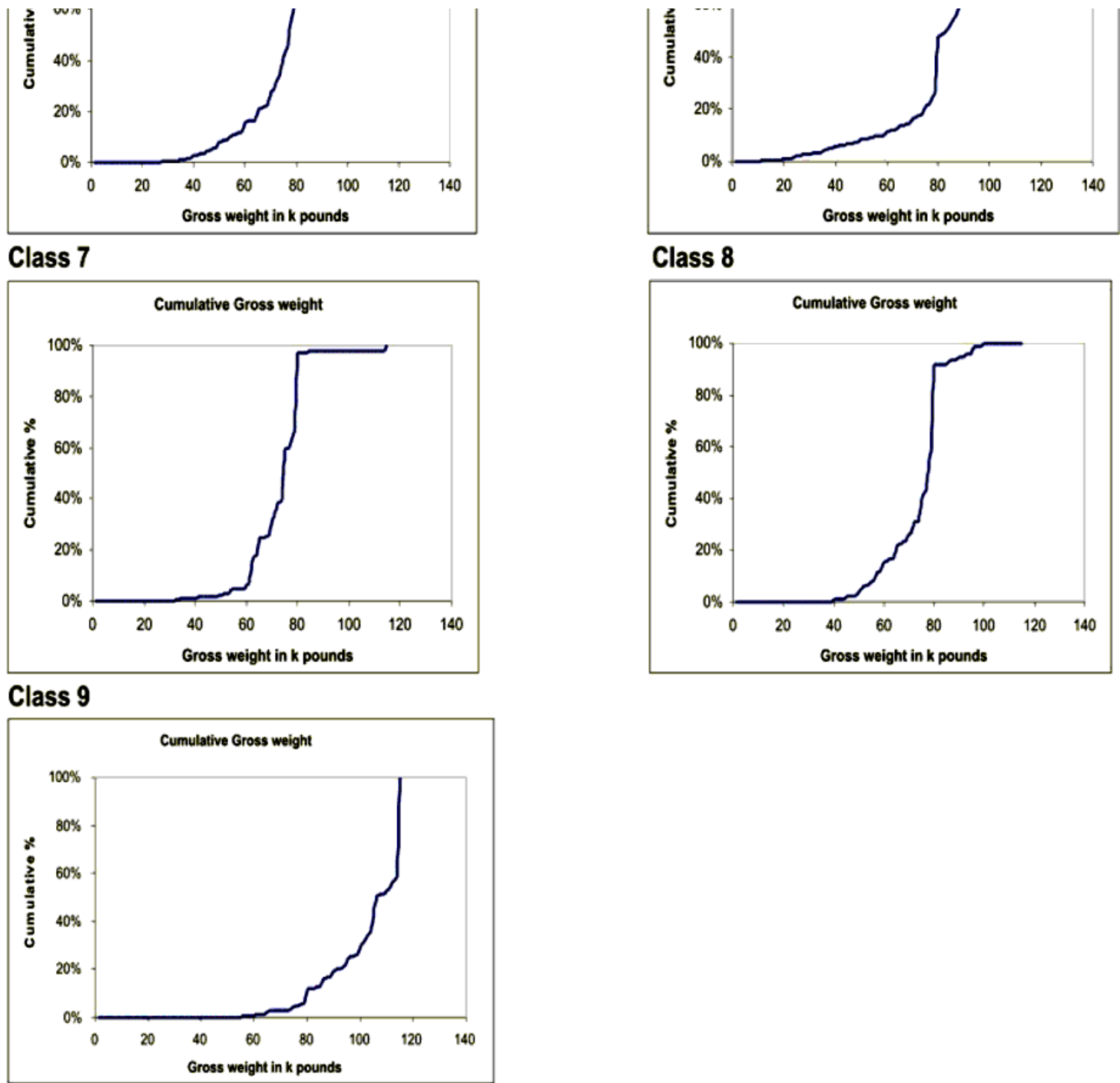


Figure 19. Cumulative Gross Weight Curve by FHWA Class VIUS – National

Metadata for State Specific Database

File name	Worksheet Name	Description
	PL GVW VIUS	Average Payload distribution by Gross Vehicle Weight Group calculated from VIUS database for all the 51 states
	EW GVW-VIUS	Average Empty weight by Gross Vehicle Weight Group from VIUS database for all the 51 states
	PL FHWA-VIUS	Average payload distribution by FHWA vehicle class calculated from VIUS database for all the 51 states
		Average empty weight by FHWA vehicle class from VIUS database for all the 51

National table.xls	EW FHWA-VIUS	states
	PL VTRIS	Payload distribution by FHWA vehicle class from the VTIRS database for 38 states
	EW VTRIS	Average empty weight distribution by FHWA vehicle class from VTRIS database for 38 states.
	PL COMP FHWA	Comparison of average payload distribution by FHWA vehicle class calculated from VIUS and VTRIS database.
	EW COMP FHWA	Comparison of average empty weight distribution by FHWA vehicle class calculated from VIUS and VTRIS database.
	PL -PROD	National average payload distribution by commodities handled
	PL-PROD_GVW	National average payload distribution by Gross Vehicle Weight Group and commodities handled calculated from VIUS database.
	PL-DIST-GVW	National average payload distribution by Gross Vehicle Weight Group and distance traveled calculated from VIUS database.
	PL-BODYTYPE-GVW	National average payload distribution by Gross Vehicle Weight Group and majorbody type calculated from VIUS database
	PL-PROD-FHWA	National average payload distribution by FHWA vehicle class and commodities handled calculated from VIUS database.
	PL-DIST_ FHWA	National average payload distribution by FHWA vehicle class and distance traveled calculated from VIUS database.
	PL-BODYTYPE_FHWA	National average payload distribution by FHWA vehicle class and majorbody type calculated from VIUS database
National Graph.xls	PL-GVW graph	Graphical representation of average payload distribution by GVW group calculated from VIUS database.
	PL FHWA-Graph	Graphical representation of average payload distribution by FHWA group calculated from VIUS and VTRIS database.
	PI Commodities	Graphical representation of average payload distribution by GVW group and commodities handled calculated from VIUS database.
	VIUS -GVW graph	National average gross vehicle weight vs Cumulative frequency graph by GVW group from VIUS database
	VIUS -FHWA graph	National average gross vehicle weight vs Cumulative frequency graph by FHWA group from VIUS database
VIUS-GVW - products.xls	Abbreviation of each state name	Average payload distribution by GVW group and commodities handled calculated for each state from VIUS database
VIUS-GVW - Trip primary.xls	Abbreviation of each state name	Average payload distribution by GVW group and distance traveled calculated for each state from VIUS database
VIUS-GVW majorbody.xls	Abbreviation of each state name	Average payload distribution by GVW group and majorbody type calculated for each state from VIUS database
VIUS-GVW Cumulative GVW graph AL -MA.xls	Abbreviation of each state name	Gross vehicle weight vs Cumulative frequency graph by GVW group from VIUS database for states Alabama to Massachusetts
VIUS-GVW Cumulative GVW graph MI - WY.xls	Abbreviation of each state name	Gross vehicle weight vs Cumulative frequency graph by GVW group from VIUS database for states Michigan - Wyoming
VIUS -FHWA Product_princpl.xls	Abbreviation of each state name	Average payload distribution by FHWA vehicle class and commodities handled calculated for each state from VIUS database
VIUS -FHWA Trip_Primary.xls	Abbreviation of each state name	Average payload distribution by FHWA vehicle class and distance traveled calculated for each state from VIUS database
VIUS - FHWA major body.xls	Abbreviation of each state name	Average payload distribution by FHWA vehicle class and majorbody type calculated for each state from VIUS database

VIUS -FHWA Cumulative GVW graph AI -MA.xls	Abbreviation of each state name	Gross vehicle weight vs Cumulative frequency graph by GVW group from VIUS database for states Alabama to Massachusetts
VIUS -FHWA Cumulative GVW graph MI - WY.xls	Abbreviation of each state name	Gross vehicle weight vs Cumulative frequency graph by FHWA group from VIUS database for states Michigan - Wyoming

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United States Department of Transportation - Federal Highway Administration

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 1. Average Payload (lbs) by Gross Vehicle Weight Group VIUS – by State

State	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Alabama	-	3,063	5,907	8,036	5,288	8,432	15,228	36,375
Alaska	-	3,615	3,720	6,621	7,393	6,856	14,795	32,680
Arizona	-	2,130	3,469	2,790	4,833	9,626	25,059	30,646
Arkansas	-	3,282	5,291	4,975	5,519	11,173	19,820	33,855
California	-	2,116	3,945	4,560	5,097	8,518	29,012	31,550
Colorado	-	2,034	3,447	5,062	5,196	10,403	18,158	29,088
Connecticut	-	2,454	3,280	4,670	2,718	10,776	15,455	31,346
Delaware	-	6,369	3,597	3,708	14,853	10,796	12,974	34,154
District of Columbia	-	2,477	2,975	6,136	5,258	9,585	6,560	4,978
Florida	-	3,658	2,788	4,966	7,142	9,973	19,865	27,565
Georgia	-	3,406	5,967	4,930	8,515	9,159	11,816	24,376
Hawaii	-	2,081	2,518	5,897	4,347	7,283	13,197	27,050
Idaho	-	17,150	3,635	5,033	8,190	12,239	18,130	39,117
Illinois	-	5,284	2,829	4,058	6,199	12,333	29,741	39,709
Indiana	-	5,707	4,151	6,642	10,427	12,051	26,096	36,363
Iowa	-	4,028	3,301	4,375	9,934	12,073	18,344	35,371

Kansas	-	3,024	4,536	4,821	9,460	14,059	24,149	35,637
Kentucky	-	3,484	4,804	10,244	17,981	11,378	19,748	33,640
Louisiana	-	4,613	4,163	4,768	5,662	10,707	18,795	35,115
Maine	-	4,065	4,352	5,902	9,580	12,815	21,689	30,713
Maryland	-	3,312	2,676	3,943	5,774	9,546	14,474	20,604
Massachusetts	-	2,205	2,705	4,208	4,584	8,537	18,453	29,793
Michigan	-	2,486	4,422	6,415	6,823	9,571	18,418	41,511
Minnesota	-	4,299	3,761	4,628	10,031	11,258	16,584	33,998
Mississippi	-	5,590	4,874	5,064	583	11,398	23,577	40,059
Missouri	-	6,136	5,796	3,114	9,726	11,714	20,437	35,684
Montana	-	3,794	4,896	5,055	11,019	12,570	12,911	35,115
Nebraska	-	4,387	3,395	6,314	11,425	14,482	19,376	38,957
Nevada	*	1,940	4,187	4,165	4,230	9,173	19,230	33,206
New Hampshire	*	3,501	3,027	5,228	7,965	10,812	17,745	32,235
New Jersey	-	3,872	3,530	4,711	9,052	10,765	17,648	33,084
New Mexico	-	2,500	2,644	4,655	4,669	9,968	18,566	32,765
New York	-	3,808	3,772	3,837	5,707	9,133	16,647	30,295
North Carolina	-	3,232	5,264	5,625	7,519	11,100	25,155	33,595
North Dakota	-	6,985	6,789	4,525	14,116	16,422	18,561	38,056
Ohio	-	4,108	3,036	4,084	6,662	9,932	19,164	34,231
Oklahoma	-	3,306	6,095	4,052	10,308	11,277	25,602	39,039
Oregon	-	3,041	3,314	4,239	5,304	14,153	14,673	33,621
Pennsylvania	-	3,104	3,098	3,680	6,228	9,933	12,929	29,023
Rhode Island	-	5,621	2,851	4,293	6,854	8,987	14,401	32,542
South Carolina	-	3,908	3,973	4,926	6,581	9,880	13,959	35,913

South Dakota	-	4,053	4,423	4,331	13,232	14,698	19,168	41,191
Tennessee	-	3,688	3,696	4,258	6,223	9,205	27,518	34,637
Texas	-	7,272	3,827	3,210	7,094	9,238	24,264	35,101
Utah	*	3,296	4,399	3,124	6,600	10,133	21,458	38,905
Vermont	-	6,140	4,752	4,950	6,944	11,252	14,815	35,078
Virginia	-	4,477	3,689	5,136	7,315	10,727	18,593	32,895
Washington	-	3,229	4,835	4,576	8,094	8,914	15,403	33,917
West Virginia	-	3,903	3,508	3,912	5,363	9,828	18,115	35,127
Wisconsin	-	3,025	3,303	4,936	7,100	10,602	14,621	36,231
Wyoming	-	2,669	5,095	5,392	8,896	9,646	14,920	40,270

(*) Small sample size.
(-) No observation.

Table 2. Average Empty Weight (lbs) by Gross Vehicle Weight Group VIUS – by State

State	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Alabama	-	7,478	8,903	10,547	13,123	17,319	24,056	28,827
Alaska	-	7,134	8,281	9,865	12,618	14,159	20,427	26,357
Arizona	-	7,352	7,997	10,618	11,174	11,665	23,155	27,260
Arkansas	-	6,403	9,311	10,135	12,141	16,104	23,218	26,536
California	-	6,190	8,689	9,646	12,292	16,293	24,675	25,356
Colorado	-	6,848	8,588	10,082	10,920	14,181	19,403	23,994
Connecticut	-	7,036	8,819	8,874	12,112	16,156	17,422	24,780
Delaware	-	8,811	9,102	10,174	11,654	15,309	17,943	27,304
District of Columbia	-	6,070	10,191	7,866	9,442	14,874	16,377	12,752
Florida	-	7,497	8,202	9,798	13,319	15,956	21,212	23,924
Georgia	-	7,607	9,785	9,631	11,771	15,954	19,327	23,934

Hawaii	-	6,618	8,074	9,368	10,377	12,987	17,360	23,976
Idaho	-	9,807	8,894	10,504	10,123	14,985	18,377	28,247
Illinois	-	8,426	8,550	10,391	10,893	16,116	28,117	27,601
Indiana	-	7,472	8,069	9,651	9,668	14,010	20,808	27,887
Iowa	-	8,093	7,725	9,778	10,791	13,118	17,116	25,227
Kansas	-	7,173	7,637	9,097	9,987	13,530	19,382	26,603
Kentucky	-	7,377	8,205	13,444	11,090	14,798	20,724	26,372
Louisiana	-	7,849	8,908	11,953	12,990	15,669	20,655	26,171
Maine	-	7,229	8,024	9,410	11,635	15,354	17,482	24,794
Maryland	-	7,652	8,600	11,829	12,791	15,682	19,554	19,944
Massachusetts	-	7,011	7,851	9,438	10,256	15,753	28,576	26,699
Michigan	-	6,773	9,296	9,432	8,855	15,858	21,774	32,945
Minnesota	-	7,705	9,317	10,239	10,910	14,297	23,565	26,496
Mississippi	-	6,709	8,867	7,532	10,900	14,515	23,940	28,848
Missouri	-	9,074	8,254	10,349	11,628	14,048	20,186	26,777
Montana	-	6,974	7,841	9,745	9,832	12,178	15,222	26,347
Nebraska	-	7,779	7,795	8,918	9,038	12,989	18,787	32,151
Nevada	*	6,820	8,980	9,923	13,113	16,750	21,530	26,652
New Hampshire	*	7,224	8,668	9,376	9,785	15,676	19,204	27,869
New Jersey	-	8,253	7,957	10,042	10,990	15,224	18,876	26,577
New Mexico	-	6,118	7,879	8,594	11,621	15,917	22,553	28,401
New York	-	7,140	9,392	10,361	11,020	14,191	16,600	24,870
North Carolina	-	7,396	9,393	9,815	10,208	16,493	25,024	26,880
North Dakota	-	7,267	10,509	11,180	11,272	12,878	15,084	25,707
Ohio	-	7,815	8,306	9,177	9,240	14,218	17,918	27,131

Oklahoma	-	7,097	9,320	10,694	10,568	14,162	31,706	31,157
Oregon	-	7,880	8,986	9,957	14,668	15,737	17,350	24,567
Pennsylvania	-	6,974	7,416	9,526	11,005	13,683	18,721	24,657
Rhode Island	-	7,456	9,419	9,428	11,930	13,722	15,684	25,491
South Carolina	-	7,190	8,390	9,454	9,899	14,537	20,145	27,017
South Dakota	-	6,685	7,337	8,769	9,109	12,495	21,054	28,188
Tennessee	-	7,622	9,043	9,018	11,703	14,159	20,012	26,626
Texas	-	7,495	8,780	10,646	10,464	15,412	21,775	28,600
Utah	*	9,969	10,779	11,717	11,828	15,937	25,088	30,740
Vermont	-	8,431	8,084	10,156	10,016	14,483	17,858	27,417
Virginia	-	7,101	6,976	7,791	8,646	13,744	16,320	26,175
Washington	-	8,992	8,047	9,682	11,739	12,727	19,969	26,095
West Virginia	-	6,987	8,713	10,589	12,458	14,876	19,092	28,793
Wisconsin	-	7,081	8,062	10,405	11,469	15,344	17,889	28,713
Wyoming	-	6,579	9,328	10,483	8,887	13,478	17,346	29,470

(*) Small sample size.
(-) No observation.

Table 3. Average Payload (lbs) by FHWA Vehicle Class VIUS – by State

State	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	6,534	26,277	47,116	16,272	43,141	42,072	28,000	27,000	-
Alaska	5,859	22,573	31,430	15,695	39,528	51,935	-	31,800	70,325
Arizona	6,281	22,278	38,708	13,974	39,146	17,793	44,300	43,225	-
Arkansas	7,184	22,697	32,204	15,025	44,629	32,551	-	33,960	54,500
California	5,639	20,023	33,732	16,746	40,403	42,462	49,511	47,073	41,530
Colorado	7,594	25,252	37,090	14,105	42,974	46,373	51,000	-	-
Connecticut	7,265	25,769	37,803	13,729	40,415	46,281	37,000	59,000	-

Delaware	7,250	30,254	41,258	17,303	42,457	28,605	-	-	-
District of Columbia	5,346	20,388	11,978	3,500	-	-	-	-	-
Florida	6,637	30,529	38,986	14,857	42,885	34,338	30,667	23,000	-
Georgia	6,801	24,925	31,954	12,172	37,304	42,892	-	-	-
Hawaii	5,651	21,442	35,388	15,699	36,369	41,519	-	-	-
Idaho	9,127	26,349	34,967	15,157	44,307	52,455	59,900	-	67,000
Illinois	7,444	23,364	27,380	21,667	44,606	41,816	38,993	39,675	53,983
Indiana	8,700	30,144	32,671	14,165	41,512	44,022	35,000	60,218	58,000
Iowa	8,680	23,560	30,398	16,602	44,449	42,275	-	-	37,500
Kansas	10,101	24,547	30,116	20,853	45,064	38,650	44,737	42,500	36,170
Kentucky	8,889	25,942	38,711	15,125	40,730	42,766	-	-	37,280
Louisiana	7,144	25,256	34,072	14,327	47,028	47,319	-	-	59,224
Maine	9,127	27,086	36,926	17,650	40,267	55,838	-	-	-
Maryland	6,205	29,582	38,000	11,114	32,038	38,109	-	-	-
Massachusetts	5,247	26,974	38,085	11,834	45,852	39,958	-	-	-
Michigan	6,771	20,065	30,697	15,412	37,088	61,272	38,000	40,000	100,145
Minnesota	7,581	23,509	31,129	14,178	41,868	39,443	36,000	31,500	-
Mississippi	6,223	28,608	29,248	15,779	44,716	44,753	-	-	-
Missouri	9,105	26,110	31,533	13,636	42,471	39,272	-	-	-
Montana	10,912	25,410	29,729	17,813	43,243	49,817	-	-	70,824
Nebraska	11,054	24,528	32,747	15,087	41,550	50,195	-	36,500	53,013
Nevada	7,550	22,711	40,499	17,123	42,319	51,454	48,553	45,265	68,513
New Hampshire	7,313	25,825	34,054	13,667	40,755	53,346	-	-	-
New Jersey	7,154	29,850	44,487	15,388	41,927	30,040	38,190	-	-

New Mexico	6,655	23,854	33,538	16,277	42,173	32,867	51,000	53,525	87,000
New York	6,883	25,703	38,705	9,568	42,558	54,837	51,000	-	90,755
North Carolina	7,522	24,688	32,827	19,043	41,852	35,086	31,529	34,000	34,000
North Dakota	13,344	25,525	29,259	17,158	46,730	50,459	-	-	69,500
Ohio	7,021	22,493	33,568	12,799	41,318	41,881	-	45,000	30,000
Oklahoma	8,030	23,057	33,847	18,560	40,674	42,141	24,817	30,333	-
Oregon	5,244	22,832	27,449	16,998	44,978	47,662	48,166	40,492	62,234
Pennsylvania	6,540	25,872	39,530	8,976	40,187	32,124	-	-	26,000
Rhode Island	5,576	31,550	42,570	11,907	44,264	52,904	-	-	-
South Carolina	7,280	24,417	35,520	14,789	42,222	43,311	-	-	-
South Dakota	11,210	24,178	29,315	17,687	45,679	46,840	-	-	77,997
Tennessee	6,561	26,774	41,064	14,827	41,013	36,271	45,000	-	32,000
Texas	7,275	26,224	36,280	17,665	42,948	42,209	23,514	21,583	110,000
Utah	5,917	16,510	32,118	15,307	41,196	53,222	27,606	32,503	77,802
Vermont	8,439	27,309	34,971	12,803	45,788	45,911	-	61,400	-
Virginia	7,352	27,859	34,654	16,424	42,527	47,412	37,159	40,282	45,500
Washington	6,638	22,209	35,971	14,366	39,919	56,690	37,728	51,149	64,585
West Virginia	7,120	27,446	36,591	13,947	41,495	49,097	-	-	-
Wisconsin	6,865	22,474	37,909	16,624	42,399	44,392	13,000	-	-
Wyoming	8,067	24,995	34,214	14,983	43,061	54,541	51,000	-	70,772

(-) No observation.

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 4. Average Empty Weight (lbs) by FHWA Vehicle Class VIUS – by State

State	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	13,986	27,094	28,473	21,367	31,493	34,091	46,500	22,000	-
Alaska	11,528	23,380	25,485	20,487	30,335	34,952	-	18,200	34,312
Arizona	9,901	26,823	31,174	19,638	31,142	12,844	35,450	29,525	-
Arkansas	12,381	22,828	29,715	21,116	28,927	28,666	-	46,040	27,500
California	12,202	27,165	28,472	22,073	29,176	30,957	27,485	28,635	31,464
Colorado	11,570	23,828	28,025	18,582	30,333	34,760	29,000	-	-
Connecticut	12,052	25,776	30,245	17,834	27,883	31,395	17,000	17,000	-
Delaware	12,299	26,559	28,280	18,236	31,308	24,749	-	-	-
District of Columbia	10,571	28,022	28,022	4,000	-	-	-	-	-
Florida	12,333	28,242	27,291	18,976	30,241	34,051	33,333	52,000	-
Georgia	12,300	27,205	24,594	19,777	31,592	31,456	-	-	-
Hawaii	10,777	23,922	27,117	19,629	28,547	25,925	-	-	-
Idaho	12,217	22,134	30,509	18,709	30,694	33,764	25,100	-	35,826
Illinois	12,016	24,021	33,120	22,158	28,481	33,237	34,495	32,162	34,260
Indiana	11,250	25,625	32,114	14,048	29,890	33,061	40,000	19,782	21,000
Iowa	10,977	19,768	26,102	16,379	28,858	29,621	-	-	42,500

Kansas	10,786	22,724	26,643	19,585	29,828	33,942	34,379	35,917	29,146
Kentucky	12,131	24,194	28,087	17,177	29,207	30,968	-	29,000	36,000
Louisiana	12,771	24,593	30,649	16,762	29,656	34,487	-	-	40,694
Maine	12,378	25,000	29,568	15,544	29,942	34,409	-	-	-
Maryland	12,385	27,044	28,344	16,344	30,242	32,101	-	-	-
Massachusetts	11,403	28,541	31,704	20,296	34,491	33,043	-	-	-
Michigan	12,209	25,189	34,303	19,539	31,464	39,739	37,000	40,000	51,935
Minnesota	11,774	20,602	26,891	19,305	30,066	32,433	25,000	30,750	-
Mississippi	9,735	24,340	24,752	16,885	30,848	32,989	-	-	-
Missouri	11,942	24,319	24,563	16,810	28,883	27,361	-	-	-
Montana	11,251	22,238	28,356	15,747	30,049	30,797	-	-	37,477
Nebraska	10,969	20,260	28,534	18,541	35,108	30,420	-	31,000	33,519
Nevada	13,827	25,624	27,919	21,793	31,097	35,451	27,948	30,860	42,131
New Hampshire	11,677	26,748	32,799	17,973	32,322	35,548	-	-	-
New Jersey	12,004	28,040	29,187	17,827	31,118	30,973	29,810	-	-
New Mexico	11,916	24,809	26,554	21,629	33,335	34,586	34,000	27,175	42,000
New York	11,564	25,990	27,204	16,840	30,833	35,537	29,000	-	51,245
North Carolina	12,024	24,449	27,623	23,207	30,117	27,312	32,835	33,500	41,000
North Dakota	11,679	18,705	21,179	17,628	28,975	33,261	-	-	41,833
Ohio	11,356	24,756	29,193	15,360	29,479	32,511	-	30,000	43,558
Oklahoma	10,870	28,419	26,705	22,876	31,646	30,872	32,610	31,479	-
Oregon	10,987	19,652	29,625	18,395	29,487	30,493	31,486	35,308	40,384
Pennsylvania	10,771	24,933	29,742	14,099	30,104	29,010	-	-	30,500
Rhode Island	10,849	26,551	31,030	17,372	30,774	35,037	-	-	-
South									

Carolina	11,681	23,777	27,742	19,790	29,431	33,337	-	-	-
South Dakota	10,691	18,240	26,327	19,322	29,565	32,438	-	-	39,896
Tennessee	11,373	27,153	27,351	17,325	28,982	26,577	35,000	-	33,000
Texas	12,184	26,370	26,620	21,365	30,383	39,165	71,336	42,136	90,000
Utah	12,808	31,170	32,474	20,532	31,874	35,239	32,263	40,255	38,263
Vermont	11,640	25,527	30,804	15,603	30,967	33,385	-	18,600	-
Virginia	10,332	23,755	25,538	17,801	30,984	37,859	36,159	37,723	48,500
Washington	10,973	24,205	29,489	18,498	28,709	34,517	29,755	33,685	37,679
West Virginia	12,037	26,986	26,729	18,955	30,588	43,736	-	-	-
Wisconsin	11,933	26,578	28,777	18,067	30,643	33,963	23,000	-	-
Wyoming	11,994	23,912	32,319	15,430	30,673	32,767	29,000	-	41,196

(-) No observation.

Table 5. Average Payload (lbs) by FHWA Vehicle Class VTRIS – by State

State	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	4,054	9,641	28,642	4,010	8,272	11,125	2,471	-	13,519
Alaska	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arkansas	6,845	8,219	12,617	10,470	13,799	15,869	9,074	13,340	23,005
California	5,558	11,982	34,807	7,282	21,449	17,708	6,074	-	33,523
Colorado	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Connecticut	2,676	4,643	13,338	1,931	5,232	10,479	403	1,261	-
Delaware	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
District of Columbia	3,274	8,878	18,705	6,007	11,796	*	*	*	*
Florida	4,400	14,361	23,358	6,510	9,617	10,732	1,420	*	*

Georgia	3,790	5,950	11,854	4,109	8,494	14,277	1,733	2,229	3,018
Hawaii	4,506	8,960	13,744	8,580	11,471	14,903	6,843	4,616	21,211
Idaho	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Illinois	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indiana	4,050	-	23,316	5,157	5,273	15,801	1,753	16,680	46,868
Iowa	4,376	8,730	11,581	10,236	10,399	12,174	3,395	5,227	18,369
Kansas	-	6,343	5,265	-	6,016	4,537	-	-	-
Kentucky	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Louisiana	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maine	7,178	10,816	24,936	8,384	11,182	21,808	9,445	12,952	22,086
Maryland	3,995	6,208	12,454	6,257	9,725	6,557	1,978	-	*
Massachusetts	21,865	9,711	21,885	11,638	11,720	21,480	2,612	-	11,292
Michigan	4,661	7,500	13,384	4,436	11,091	36,740	4,418	3,891	45,581
Minnesota	4,010	6,949	12,220	5,386	6,601	9,019	4,762	12,308	23,711
Mississippi	3,439	5,842	14,202	6,881	8,375	12,712	7,423	4,284	27,064
Missouri	9,570	-	18,530	8,863	10,531	16,616	7,804	4,259	14,934
Montana	4,938	7,496	9,570	5,049	8,250	14,057	4,797	3,971	12,899
Nebraska	3,953	6,105	7,064	4,852	9,085	9,866	1,473	*	*
Nevada	6,146	11,389	1,953	2,452	10,860	16,640	2,271	*	19,350
New Hampshire	9,233	15,298	38,603	10,344	21,085	37,935	11,171	9,229	*
New Jersey	4,656	11,405	21,766	27,659	9,991	12,957	5,247	15,027	20,294
New Mexico	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York	6,515	12,015	28,448	13,109	15,437	24,914	15,529	17,328	25,252
North Carolina	5,150	11,440	12,445	5,529	11,120	13,342	10,752	1,025	11,874
North Dakota	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Ohio	4,522	11,109	20,620	12,738	7,602	10,512	3,106	2,970	9,374
Oklahoma	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oregon	-	-	-	-	-	-	1,832	5,298	10,077
Pennsylvania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rhode Island	5,889	12,297	22,558	7,222	15,106	19,925	1,063	4,639	15,944
South Carolina	1,411	3,642	4,034	2,399	2,348	1,909	*	*	*
South Dakota	6,290	7,824	11,043	7,083	9,213	10,706	1,574	-	16,400
Tennessee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Texas	4,211	6,237	19,088	1,978	6,149	14,301	2,520	1,349	-
Utah	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vermont	5,187	11,160	20,743	3,166	12,194	17,436	*	11,036	6,717
Virginia	3,973	7,756	18,962	5,983	8,647	11,449	1,517	-	-
Washington	3,772	6,598	12,965	3,768	7,469	17,924	15,915	6,711	7,760
West Virginia	-	9,420	19,689	2,147	9,405	8,715	-	-	11,016
Wisconsin	3,364	6,043	11,647	7,064	7,747	10,558	6,069	3,012	11,559
Wyoming	5,159	8,311	24,670	7,987	9,407	15,421	3,589	2,926	19,861

(*) Small sample size.
(-) No observation.
N/A – Data not available.

Table 6. Average Empty Weight (lbs) by FHWA Vehicle Class VTRIS – by State

State	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	11,583	20,483	28,420	27,337	46,242	54,915	56,663	57,206	58,495
Alaska	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arkansas	12,207	23,916	38,896	28,572	47,604	53,182	48,109	54,556	75,297

California	9,758	18,980	23,149	27,941	34,114	44,822	34,460	61,796	99,764
Colorado	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Connecticut	13,810	27,974	34,829	36,081	50,281	56,981	54,139	58,890	-
Delaware	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
District of Columbia	10,344	26,782	30,686	28,792	40,477	*	*	*	*
Florida	14,090	23,429	28,332	33,257	44,117	58,026	40,845	42,210	*
Georgia	18,054	27,611	25,256	34,458	50,321	51,507	51,839	60,762	53,425
Hawaii	9,330	25,944	33,925	31,030	40,561	49,858	56,621	42,472	76,756
Idaho	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Illinois	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indiana	9,262	-	28,334	21,129	45,298	49,203	52,693	56,635	55,669
Iowa	11,125	21,912	31,240	25,190	46,361	51,740	52,060	53,861	76,902
Kansas	18,642	25,657	22849	31,934	46,764	55,823	38,579	39,849	21,559
Kentucky	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Louisiana	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maine	14,266	25,424	34,672	33,488	43,819	44,741	51,240	44,434	38,660
Maryland	18,080	29,743	35,069	26,015	51,826	59,622	36,473	63,414	*
Massachusetts	13,552	25,646	29,848	29,751	46,290	50,847	53,885	57,126	43,061
Michigan	13,248	23,010	26,577	35,371	46,542	52,005	58,374	56,846	63,544
Minnesota	12,747	23,215	26,969	27,082	45,027	55,953	53,259	55,032	61,692
Mississippi	12,214	24,668	28,257	24,994	53,187	57,757	58,149	63,487	62,545
Missouri	12,366	-	19,167	19,242	44,945	48,391	53,253	54,648	34,751
Montana	15,496	25,016	36,288	31,235	50,296	49,924	53,473	59,986	64,732
Nebraska	16,625	28,995	23,477	25,452	52,223	52,278	56,458	51,055	47,027
Nevada	13,267	22,727	9,921	33,120	48,630	38,473	51,767	42,058	68,118

New Hampshire	13,748	26,460	34,844	32,829	45,512	51,767	55,162	63,160	*
New Jersey	12,864	24,229	37,218	32,549	40,367	49,955	36,487	42,587	61,399
New Mexico	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York	16,160	24,233	26,489	29,939	45,570	48,985	46,374	57,671	51,573
North Carolina	9,839	21,993	21,345	21,261	39,846	47,146	39,337	41,103	57,907
North Dakota	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ohio	11,515	23,261	27,095	23,149	39,935	50,254	45,228	58,354	72,686
Oklahoma	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oregon	-	-	-	-	-	-	52,785	54,265	69,706
Pennsylvania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rhode Island	11,402	24,811	31,231	32,986	40,953	47,532	40,927	42,104	54,397
South Carolina	13,689	20,274	15,878	21,832	40,517	35,763	*	*	*
South Dakota	11,753	24,630	32,481	28,318	43,475	44,119	44,040	31,901	68,980
Tennessee	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Texas	8,527	23,821	-	37,091	49,498	54,571	62,834	65,945	65,036
Utah	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vermont	8,505	25,047	32,697	27,800	42,704	48,039	31,489	59,324	39,871
Virginia	15,157	21,859	16,577	28,687	45,552	51,421	53,358	54,970	61,485
Washington	10,807	22,293	28,731	26,821	46,963	48,160	48,757	59,346	72,199
West Virginia	17,022	24,601	25,104	30,499	45,133	44,079	35,278	33,940	21,253
Wisconsin	10,999	21,255	31,052	21,680	46,987	49,780	50,166	51,377	55,365
Wyoming	14,767	23,135	26,643	32,421	47,260	49,701	42,646	57,790	59,088

(*) Small sample size.
(-) No observation.
N/A – Data not available.

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 7. Average Payload Comparison (lbs) between VIUS and VTRIS by FHWA Vehicle Class – by State

State	Class 1		Class 2		Class 3		Class 4		Class 5		Class 6		Class 7		Class 8		Class 9	
	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS
Alabama	4,054	6,534	9,641	26,277	28,642	47,116	4,010	16,272	8,272	43,141	11,125	42,072	2,471	28,000	-	27,000	13,519	-
Alaska	N/A	5,859	N/A	22,573	N/A	31,430	N/A	15,695	N/A	39,528	N/A	51,935	N/A	-	N/A	31,800	N/A	70,325
Arizona	N/A	6,281	N/A	22,278	N/A	38,708	N/A	13,974	N/A	39,146	N/A	17,793	N/A	44,300	N/A	43,225	N/A	-
Arkansas	6,845	7,184	8,219	22,697	12,617	32,204	10,470	15,025	13,799	44,629	15,869	32,551	9,074	-	13,340	33,960	23,005	54,500
California	5,558	5,639	11,982	20,023	34,807	33,732	7,282	16,746	21,449	40,403	17,708	42,462	6,074	49,511	-	47,073	33,523	41,530
Colorado	N/A	7,594	N/A	25,252	N/A	37,090	N/A	14,105	N/A	42,974	N/A	46,373	N/A	51,000	N/A	-	N/A	-
Connecticut	2,676	7,265	4,643	25,769	13,338	37,803	1,931	13,729	5,232	40,415	10,479	46,281	403	37,000	1,261	59,000	-	-
Delaware	N/A	7,250	N/A	30,254	N/A	41,258	N/A	17,303	N/A	42,457	N/A	28,605	N/A	-	N/A	-	N/A	-
District of Columbia	3,274	5,346	8,878	20,388	18,705	11,978	6,007	3,500	11,796	-	*	-	*	-	*	-	*	-
Florida	4,400	6,637	14,361	30,529	23,358	38,986	6,510	14,857	9,617	42,885	10,732	34,338	1,420	30,667	*	23,000	*	-
Georgia	3,790	6,801	5,950	24,925	11,854	31,954	4,109	12,172	8,494	37,304	14,277	42,892	1,733	-	2,229	-	3,018	-
Hawaii	4,506	5,651	8,960	21,442	13,744	35,388	8,580	15,699	11,471	36,369	14,903	41,519	6,843	-	4,616	-	21,211	-
Idaho	N/A	9,127	N/A	26,349	N/A	34,967	N/A	15,157	N/A	44,307	N/A	52,455	N/A	59,900	N/A	-	N/A	67,000
Illinois	N/A	7,444	N/A	23,364	N/A	27,380	N/A	21,667	N/A	44,606	N/A	41,816	N/A	38,993	N/A	39,675	N/A	53,983
Indiana	4,050	8,700	-	30,144	23,316	32,671	5,157	14,165	5,273	41,512	15,801	44,022	1,753	35,000	16,680	60,218	46,868	58,000
Iowa	4,376	8,680	8,730	23,560	11,581	30,398	10,236	16,602	10,399	44,449	12,174	42,275	3,395	-	5,227	-	18,369	37,500
Kansas	-	10,101	6,343	24,547	5,265	30,116	-	20,853	6,016	45,064	4,537	38,650	-	44,737	-	42,500	-	36,170
Kentucky	N/A	8,889	N/A	25,942	N/A	38,711	N/A	15,125	N/A	40,730	N/A	42,766	N/A	-	N/A	-	N/A	37,280

Louisiana	N/A	7,144	N/A	25,256	N/A	34,072	N/A	14,327	N/A	47,028	N/A	47,319	N/A	-	N/A	-	N/A	59,224
Maine	7,178	9,127	10,816	27,086	24,936	36,926	8,384	17,650	11,182	40,267	21,808	55,838	9,445	-	12,952	-	22,086	-
Maryland	3,995	6,205	6,208	29,582	12,454	38,000	6,257	11,114	9,725	32,038	6,557	38,109	1,978	-	-	-	*	-
Massachusetts	21,865	5,247	9,711	26,974	21,885	38,085	11,638	11,834	11,720	45,852	21,480	39,958	2,612	-	-	-	11,292	-
Michigan	4,661	6,771	7,500	20,065	13,384	30,697	4,436	15,412	11,091	37,088	36,740	61,272	4,418	38,000	3,891	40,000	45,581	100,145
Minnesota	4,010	7,581	6,949	23,509	12,220	31,129	5,386	14,178	6,601	41,868	9,019	39,443	4,762	36,000	12,308	31,500	23,711	-
Mississippi	3,439	6,223	5,842	28,608	14,202	29,248	6,881	15,779	8,375	44,716	12,712	44,753	7,423	-	4,284	-	27,064	-
Missouri	9,570	9,105	-	26,110	18,530	31,533	8,863	13,636	10,531	42,471	16,616	39,272	7,804	-	4,259	-	14,934	-
Montana	4,938	10,912	7,496	25,410	9,570	29,729	5,049	17,813	8,250	43,243	14,057	49,817	4,797	-	3,971	-	12,899	70,824
Nebraska	3,953	11,054	6,105	24,528	7,064	32,747	4,852	15,087	9,085	41,550	9,866	50,195	1,473	-	*	36,500	*	53,013
Nevada	6,146	7,550	11,389	22,711	1,953	40,499	2,452	17,123	10,860	42,319	16,640	51,454	2,271	48,553	*	45,265	19,350	68,513
New Hampshire	9,233	7,313	15,298	25,825	38,603	34,054	10,344	13,667	21,085	40,755	37,935	53,346	11,171	-	9,229	-	*	-
New Jersey	4,656	7,154	11,405	29,850	21,766	44,487	27,659	15,388	9,991	41,927	12,957	30,040	5,247	38,190	15,027	-	20,294	-
New Mexico	N/A	6,655	N/A	23,854	N/A	33,538	N/A	16,277	N/A	42,173	N/A	32,867	N/A	51,000	N/A	53,525	N/A	87,000
New York	6,515	6,883	12,015	25,703	28,448	38,705	13,109	9,568	15,437	42,558	24,914	54,837	15,529	51,000	17,328	-	25,252	90,755
North Carolina	5,150	7,522	11,440	24,688	12,445	32,827	5,529	19,043	11,120	41,852	13,342	35,086	10,752	31,529	1,025	34,000	11,874	34,000
North Dakota	N/A	13,344	N/A	25,525	N/A	29,259	N/A	17,158	N/A	46,730	N/A	50,459	N/A	-	N/A	-	N/A	69,500
Ohio	4,522	7,021	11,109	22,493	20,620	33,568	12,738	12,799	7,602	41,318	10,512	41,881	3,106	-	2,970	45,000	9,374	30,000
Oklahoma	N/A	8,030	N/A	23,057	N/A	33,847	N/A	18,560	N/A	40,674	N/A	42,141	N/A	24,817	N/A	30,333	N/A	-
Oregon	-	5,244	-	22,832	-	27,449	-	16,998	-	44,978	-	47,662	1,832	48,166	5,298	40,492	10,077	62,234
Pennsylvania	N/A	6,540	N/A	25,872	N/A	39,530	N/A	8,976	N/A	40,187	N/A	32,124	N/A	-	N/A	-	N/A	26,000
Rhode Island	5,889	5,576	12,297	31,550	22,558	42,570	7,222	11,907	15,106	44,264	19,925	52,904	1,063	-	4,639	-	15,944	-
South Carolina	1,411	7,280	3,642	24,417	4,034	35,520	2,399	14,789	2,348	42,222	1,909	43,311	*	-	*	-	*	-
South Dakota	6,290	11,210	7,824	24,178	11,043	29,315	7,083	17,687	9,213	45,679	10,706	46,840	1,574	-	-	-	16,400	77,997
Tennessee	N/A	6,561	N/A	26,774	N/A	41,064	N/A	14,827	N/A	41,013	N/A	36,271	N/A	45,000	N/A	-	N/A	32,000
Texas	4,211	7,275	6,237	26,224	19,088	36,280	1,978	17,665	6,149	42,948	14,301	42,209	2,520	23,514	1,349	21,583	-	110,000
Utah	N/A	5,917	N/A	16,510	N/A	32,118	N/A	15,307	N/A	41,196	N/A	53,222	N/A	27,606	N/A	32,503	N/A	77,802
Vermont	5,187	8,439	11,160	27,309	20,743	34,971	3,166	12,803	12,194	45,788	17,436	45,911	*	-	11,036	61,400	6,717	-

Virginia	3,973	7,352	7,756	27,859	18,962	34,654	5,983	16,424	8,647	42,527	11,449	47,412	1,517	37,159	-	40,282	-	45,500
Washington	3,772	6,638	6,598	22,209	12,965	35,971	3,768	14,366	7,469	39,919	17,924	56,690	15,915	37,728	6,711	51,149	7,760	64,585
West Virginia	-	7,120	9,420	27,446	19,689	36,591	2,147	13,947	9,405	41,495	8,715	49,097	-	-	-	-	11,016	-
Wisconsin	3,364	6,865	6,043	22,474	11,647	37,909	7,064	16,624	7,747	42,399	10,558	44,392	6,069	13,000	3,012	-	11,559	-

(*) Small sample size.
(-) No observation.
N/A - Data not available.

Table 8. Average Empty Weight Comparison (lbs) between VIUS and VTRIS by FHWA Vehicle Class – by State

State	Class 1		Class 2		Class 3		Class 4		Class 5		Class 6		Class 7		Class 8		Class 9	
	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS	VTRIS	VIUS
Alabama	11,583	13,986	20,483	27,094	28,420	28,473	27,337	21,367	46,242	31,493	54,915	34,091	56,663	46,500	57,206	22,000	58,495	-
Alaska	N/A	11,528	N/A	23,380	N/A	25,485	N/A	20,487	N/A	30,335	N/A	34,952	N/A	-	N/A	18,200	N/A	34,312
Arizona	N/A	9,901	N/A	26,823	N/A	31,174	N/A	19,638	N/A	31,142	N/A	12,844	N/A	35,450	N/A	29,525	N/A	-
Arkansas	12,207	12,381	23,916	22,828	38,896	29,715	28,572	21,116	47,604	28,927	53,182	28,666	48,109	-	54,556	46,040	75,297	27,500
California	9,758	12,202	18,980	27,165	23,149	28,472	27,941	22,073	34,114	29,176	44,822	30,957	34,460	27,485	61,796	28,635	99,764	31,464
Colorado	N/A	11,570	N/A	23,828	N/A	28,025	N/A	18,582	N/A	30,333	N/A	34,760	N/A	29,000	N/A	-	N/A	-
Connecticut	13,810	12,052	27,974	25,776	34,829	30,245	36,081	17,834	50,281	27,883	56,981	31,395	54,139	17,000	58,890	17,000	-	-
Delaware	N/A	12,299	N/A	26,559	N/A	28,280	N/A	18,236	N/A	31,308	N/A	24,749	N/A	-	N/A	-	N/A	-
District of Columbia	10,344	10,571	26,782	28,022	30,686	28,022	28,792	4,000	40,477	-	*	-	*	-	*	-	*	-
Florida	14,090	12,333	23,429	28,242	28,332	27,291	33,257	18,976	44,117	30,241	58,026	34,051	40,845	33,333	42,210	52,000	*	-
Georgia	18,054	12,300	27,611	27,205	25,256	24,594	34,458	19,777	50,321	31,592	51,507	31,456	51,839	-	60,762	-	53,425	-
Hawaii	9,330	10,777	25,944	23,922	33,925	27,117	31,030	19,629	40,561	28,547	49,858	25,925	56,621	-	42,472	-	76,756	-
Idaho	N/A	12,217	N/A	22,134	N/A	30,509	N/A	18,709	N/A	30,694	N/A	33,764	N/A	25,100	N/A	-	N/A	35,826
Illinois	N/A	12,016	N/A	24,021	N/A	33,120	N/A	22,158	N/A	28,481	N/A	33,237	N/A	34,495	N/A	32,162	N/A	34,260
Indiana	9,262	11,250	-	25,625	28,334	32,114	21,129	14,048	45,298	29,890	49,203	33,061	52,693	40,000	56,635	19,782	55,669	21,000
Iowa	11,125	10,977	21,912	19,768	31,240	26,102	25,190	16,379	46,361	28,858	51,740	29,621	52,060	-	53,861	-	76,902	42,500
Kansas	18,642	10,786	25,657	22,724	22,849	26,643	31,934	19,585	46,764	29,828	55,823	33,942	38,579	34,379	39,849	35,917	21,559	29,146
Kentucky	N/A	12,131	N/A	24,194	N/A	28,087	N/A	17,177	N/A	29,207	N/A	30,968	N/A	-	N/A	29,000	N/A	36,000
Louisiana	N/A	12,771	N/A	24,593	N/A	30,649	N/A	16,762	N/A	29,656	N/A	34,487	N/A	-	N/A	-	N/A	40,694

Maine	14,266	12,378	25,424	25,000	34,672	29,568	33,488	15,544	43,819	29,942	44,741	34,409	51,240	-	44,434	-	38,660	-
Maryland	18,080	12,385	29,743	27,044	35,069	28,344	26,015	16,344	51,826	30,242	59,622	32,101	36,473	-	63,414	-	*	-
Massachusetts	13,552	11,403	25,646	28,541	29,848	31,704	29,751	20,296	46,290	34,491	50,847	33,043	53,885	-	57,126	-	43,061	-
Michigan	13,248	12,209	23,010	25,189	26,577	34,303	35,371	19,539	46,542	31,464	52,005	39,739	58,374	37,000	56,846	40,000	63,544	51,935
Minnesota	12,747	11,774	23,215	20,602	26,969	26,891	27,082	19,305	45,027	30,066	55,953	32,433	53,259	25,000	55,032	30,750	61,692	-
Mississippi	12,214	9,735	24,668	24,340	28,257	24,752	24,994	16,885	53,187	30,848	57,757	32,989	58,149	-	63,487	-	62,545	-
Missouri	12,366	11,942	-	24,319	19,167	24,563	19,242	16,810	44,945	28,883	48,391	27,361	53,253	-	54,648	-	34,751	-
Montana	15,496	11,251	25,016	22,238	36,288	28,356	31,235	15,747	50,296	30,049	49,924	30,797	53,473	-	59,986	-	64,732	37,477
Nebraska	16,625	10,969	28,995	20,260	23,477	28,534	25,452	18,541	52,223	35,108	52,278	30,420	56,458	-	51,055	31,000	47,027	33,519
Nevada	13,267	13,827	22,727	25,624	9,921	27,919	33,120	21,793	48,630	31,097	38,473	35,451	51,767	27,948	42,058	30,860	68,118	42,131
New Hampshire	13,748	11,677	26,460	26,748	34,844	32,799	32,829	17,973	45,512	32,322	51,767	35,548	55,162	-	63,160	-	*	-
New Jersey	12,864	12,004	24,229	28,040	37,218	29,187	32,549	17,827	40,367	31,118	49,955	30,973	36,487	29,810	42,587	-	61,399	-
New Mexico	N/A	11,916	N/A	24,809	N/A	26,554	N/A	21,629	N/A	33,335	N/A	34,586	N/A	34,000	N/A	27,175	N/A	42,000
New York	16,160	11,564	24,233	25,990	26,489	27,204	29,939	16,840	45,570	30,833	48,985	35,537	46,374	29,000	57,671	-	51,573	51,245
North Carolina	9,839	12,024	21,993	24,449	21,345	27,623	21,261	23,207	39,846	30,117	47,146	27,312	39,337	32,835	41,103	33,500	57,907	41,000
North Dakota	N/A	11,679	N/A	18,705	N/A	21,179	N/A	17,628	N/A	28,975	N/A	33,261	N/A	-	N/A	-	N/A	41,833
Ohio	11,515	11,356	23,261	24,756	27,095	29,193	23,149	15,360	39,935	29,479	50,254	32,511	45,228	-	58,354	30,000	72,686	43,558
Oklahoma	N/A	10,870	N/A	28,419	N/A	26,705	N/A	22,876	N/A	31,646	N/A	30,872	N/A	32,610	N/A	31,479	N/A	-
Oregon	-	10,987	-	19,652	-	29,625	-	18,395	-	29,487	-	30,493	52,785	31,486	54,265	35,308	69,706	40,384
Pennsylvania	N/A	10,771	N/A	24,933	N/A	29,742	N/A	14,099	N/A	30,104	N/A	29,010	N/A	-	N/A	-	N/A	30,500
Rhode Island	11,402	10,849	24,811	26,551	31,231	31,030	32,986	17,372	40,953	30,774	47,532	35,037	40,927	-	42,104	-	54,397	-
South Carolina	13,689	11,681	20,274	23,777	15,878	27,742	21,832	19,790	40,517	29,431	35,763	33,337	*	-	*	-	*	-
South Dakota	11,753	10,691	24,630	18,240	32,481	26,327	28,318	19,322	43,475	29,565	44,119	32,438	44,040	-	31,901	-	68,980	39,896
Tennessee	N/A	11,373	N/A	27,153	N/A	27,351	N/A	17,325	N/A	28,982	N/A	26,577	N/A	35,000	N/A	-	N/A	33,000
Texas	8,527	12,184	23,821	26,370	-	26,620	37,091	21,365	49,498	30,383	54,571	39,165	62,834	71,336	65,945	42,136	65,036	90,000
Utah	N/A	12,808	N/A	31,170	N/A	32,474	N/A	20,532	N/A	31,874	N/A	35,239	N/A	32,263	N/A	40,255	N/A	38,263
Vermont	8,505	11,640	25,047	25,527	32,697	30,804	27,800	15,603	42,704	30,967	48,039	33,385	31,489	-	59,324	18,600	39,871	-
Virginia	15,157	10,332	21,859	23,755	16,577	25,538	28,687	17,801	45,552	30,984	51,421	37,859	53,358	36,159	54,970	37,723	61,485	48,500

Washington	10,807	10,973	22,293	24,205	28,731	29,489	26,821	18,498	46,963	28,709	48,160	34,517	48,757	29,755	59,346	33,685	72,199	37,679
West Virginia	17,022	12,037	24,601	26,986	25,104	26,729	30,499	18,955	45,133	30,588	44,079	43,736	35,278	-	33,940	-	21,253	-
Wisconsin	10,999	11,933	21,255	26,578	31,052	28,777	21,680	18,067	46,987	30,643	49,780	33,963	50,166	23,000	51,377	-	55,365	-

(*) Small sample size.
(-) No observation.
N/A - Data not available.

Table 9. Average Payload by Commodities VIUS – National

Commodities	Payload (lbs)
Live animals and fish	24,492
Animal feed or products of animal origin	22,967
Cereal grains	27,945
All other agricultural products	22,140
Basic chemicals	29,391
Fertilizers and fertilizer materials	19,833
Pharmaceutical products	10,260
All other chemical products	24,432
Alcoholic beverages	20,573
Bakery and milled grains	11,831
Meat, seafood, and their preparation	30,691
Tobacco products	25,168
All other prepared foodstuff	25,926
Logs and other wood in rough	35,073
Paper and paperboard articles	26,282
Printed products	11,024
Pulp, newsprint, paper, or paperboard	33,046
Wood products	18,494
Articles of base metal	14,395
Base metal in finished or semi-finished form	24,458
Non-metallic mineral products	31,044

Non-powered tools	6,064
Powered tools	10,698
Electronic and other electrical equipment	13,821
Furniture, mattresses, lamps, etc.	14,103
Machinery	26,072
Miscellaneous manufactured products	16,462
Precision instruments and apparatus	9,024
Textile, leather, and related article	20,608
Vehicle, including parts	15,690
All other transportation equipment	34,282
Coal	43,866
Crude petroleum	28,007
Gravel and crushed stones	30,840
Metallic ores and concentrates	39,464
Monumental or building stones	25,429
Natural sand	29,501
All other nonmetallic minerals	29,101
Fuel oils	23,442
Gasoline and aviation turbine	48,686
Plastic and rubber	19,324
All other coal and refined petroleum	18,608
Hazardous waste	29,113
All other waste and scrap	16,902
Recyclable products	18,859
Mail and courier parcels	11,826
Empty shipping containers	19,129
Passengers	2,613
Mixed freight	33,268

Multiple categories	14,621
Products not classified, blank, not reported or applicable	21,739

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United States Department of Transportation - Federal Highway Administration

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 10. Average Payload (lbs) by Commodities and Gross Vehicle Weight Group VIUS – National

Commodities	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Live animals and fish	-	5,055	7,638	5,424	9,472	17,200	16,345	40,022
Animal feed or products of animal origin	-	4,682	6,138	3,760	8,330	11,778	18,980	39,841
Cereal grains	-	13,348	15,234	8,690	14,334	17,640	24,208	41,922
All other agricultural products	-	10,728	6,889	5,985	7,660	11,348	26,793	34,616
Basic chemicals	-	*	*	3,386	*	11,180	14,264	38,431
Fertilizers and fertilizer materials	-	8,062	2,937	5,382	7,898	12,308	25,148	30,134
Pharmaceutical products	-	*	*	-	*	7,455	*	14,507
All other chemical products	-	2,715	3,046	4,357	6,193	9,712	17,574	36,411
Alcoholic beverages	-	-	2,670	-	*	16,177	20,142	35,758
Bakery and milled grains	-	2,000	2,407	7,083	*	3,198	27,732	31,389
Meat, seafood, and their preparation	-	*	10,402	3,646	-	8,819	10,738	40,012
Tobacco products	-	-	2,700	-	-	*	9,253	34,381
All other prepared foodstuff	-	4,354	3,607	3,617	5,486	13,240	23,736	38,894

Logs and other wood in rough	-	5,838	4,880	*	9,384	11,029	22,746	46,774
Paper and paperboard articles	-	-	*	-	6,718	8,842	18,591	37,932
Printed products	-	8,864	3,418	4,699	2,126	8,578	8,805	21,340
Pulp, newsprint, paper, or paperboards	-	*	*	*	-	10,904	15,815	41,774
Wood products	-	3,303	3,592	5,410	7,263	8,218	16,182	34,699
Articles of base metal	*	1,808	2,016	4,399	4,323	8,095	12,840	29,564
Base metal finished or semi-finished form	*	3,375	3,871	3,731	4,080	6,356	12,110	38,010
Non-metallic mineral products	-	3,737	2,088	3,438	6,652	10,527	28,977	35,962
Non-powered tools	-	2,675	3,167	4,353	5,421	6,680	9,899	14,810
Powered tools	-	3,894	3,602	4,849	8,513	7,405	12,242	25,241
Electronic and other electrical equipment	-	2,463	4,068	2,060	*	7,877	9,946	26,353
Furniture, mattresses, lamps, etc.	-	2,056	2,769	2,591	-	6,397	17,501	22,598
Machinery	-	4,271	4,277	9,265	5,020	9,958	17,598	35,754
Miscellaneous manufactured products	-	1,401	2,411	6,148	5,615	8,571	17,861	27,236
Precision instruments and appliances	-	1,455	1,373	10,095	-	4,391	*	26,195
Textile, leather, and related articles	-	2,073	2,986	*	8,701	7,599	41,925	36,656
Vehicle, including parts	-	3,751	5,506	5,896	7,333	8,173	23,554	31,945
All other transportation equipment	-	-	2,025	5,431	*	16,312	18,286	42,517
Coal	-	*	*	-	-	6,748	-	50,011
Crude petroleum	-	-	-	-	-	8,590	-	39,890
Gravel and crushed stones	-	6,544	6,931	6,276	10,122	13,770	24,305	39,130

Metallic ores and concentrates	-	-	*	-	10,000	-	-	42,272
Monumental and building stones	-	*	3,460	5,782	14,100	10,392	9,473	35,960
Natural sand	-	7,306	3,029	12,849	6,000	11,643	28,662	38,067
All other nonmetallic minerals	-	7,337	3,064	2,478	7,662	16,262	13,580	38,835
Fuel oils	-	4,484	14,811	-	*	15,422	17,525	39,634
Gasoline and aviation turbine	-	*	-	2,825	-	15,128	18,916	53,423
Plastic and rubber	-	*	2,931	3,329	*	8,113	12,548	30,379
All other coal and refined petroleum	-	4,519	4,336	*	4,874	10,326	18,672	41,027
Hazardous waste	-	*	1,500	-	-	6,854	15,517	37,856
All other waste and scrap	-	3,384	2,927	*	5,951	8,120	12,823	24,944
Recyclable products	-	3,153	4,878	3,689	*	8,425	13,743	27,532
Mail and courier parcels	*	7,976	5,559	4,608	7,342	10,884	33,344	31,628
Empty shipping containers	-	2,661	*	-	*	2,309	16,129	26,699
Passengers	-	2,264	2,501	*	*	*	*	*
Mixed freight	-	2,080	2,633	4,051	*	20,137	28,811	37,094
Multiple categories	-	3,602	3,375	4,198	5,463	8,127	17,189	31,946
Products not classified, blank, not reported or applicable	-	2,471	*	6,556	7,809	11,622	17,644	30,545

(*) Small sample size.
(-) No observation.

Table 11. Average Payload (lbs) by Distance Traveled and Gross Vehicle Weight Group VIUS – National

Distance Traveled	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Off-the-road	-	3,335	5,380	4,085	8,249	11,089	16,018	33,378

Less than 50 miles	-	4,528	3,706	4,550	8,023	10,310	18,674	29,628
51 to 100 miles	*	3,761	3,585	4,913	6,436	10,628	23,270	36,247
101 to 200 miles	-	3,012	4,189	6,628	8,491	12,747	30,180	39,743
201 to 500 miles	-	3,980	4,273	7,029	6,360	10,301	25,379	40,243
501 miles or more	-	4,668	3,216	8,052	6,545	12,031	34,210	40,089

(*) Small sample size.

(-) No observation.

Table 12. Average Payload (lbs) by Body Type and Gross Vehicle Weight Group VIUS – National

Major Body Type	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Truck or Truck + Trailer								
Bulk	-	6,249	4,798	5,004	10,831	13,152	15,707	30,966
Flatbed	*	4,027	4,767	4,858	7,836	9,465	11,405	16,693
Tank	-	6,077	4,438	7,266	7,249	12,991	15,743	26,858
Van	*	4,179	3,071	4,322	6,770	7,516	9,519	6,233
Reefer	-	4,820	3,196	4,263	*	9,161	10,983	10,414
Logging	-	15,036	*	*	*	10,787	*	42,857
Other	*	2,969	3,075	4,442	5,235	7,391	11,887	23,853
Tractor + Trailer								
Automobile	-	-	-	*	-	*	25,443	34,257
Livestock	-	-	-	*	-	44,361	27,747	42,535
Bulk	-	*	-	*	-	36,846	45,319	50,135
Flatbed	-	*	*	*	*	24,997	31,949	41,874
Tank	-	-	-	-	-	*	47,656	49,788
Van	-	-	-	-	-	23,995	28,079	38,721

Reefer	-	-	-	-	-	19,390	24,775	41,426
Logging	-	-	-	*	-	*	*	50,004
Other	-	-	-	-	-	*	31,498	31,800

(*) Small sample size.
(-) No observation.

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 13. Average Payload (lbs) by Commodities and FHWA Vehicle Class VIUS – National

Commodities	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Live animals and fish	8,374	18,579	32,102	15,028	41,627	37,426	-	-	*
Animal feed or products animal origin	9,428	24,576	32,395	15,086	44,674	23,302	54,568	37,565	63,969
Cereal grains	15,874	27,390	34,225	33,585	49,682	54,474	52,563	39,199	70,119
All other agricultural products	8,711	24,059	37,659	15,684	41,891	50,540	49,225	50,078	64,244
Basic chemicals	8,295	18,750	-	26,531	43,906	63,167	-	*	87,994
Fertilizers and fertilizer materials	10,624	24,745	20,375	13,049	45,315	43,441	*	*	72,707
Pharmaceutical products	5,802	9,000	-	*	31,289	-	-	-	-
All other chemical products	6,604	23,810	31,031	14,833	45,692	35,833	-	-	*
Alcoholic beverages	9,978	27,370	-	22,604	43,848	-	*	-	-
Bakery and milled grains	2,851	19,322	-	25,448	40,729	69,588	*	*	-
Meat, seafood, and their preparation	6,481	22,782	-	17,415	43,554	50,000	-	*	-
Tobacco	8,045	*	-	*	42,444	-	-	-	-

products									
All other prepared foodstuff	9,895	26,038	37,097	22,640	43,529	51,519	45,791	46,985	*
Logs and other wood in rough	7,986	27,342	38,084	24,905	49,553	53,130	-	-	74,179
Paper and paperboard articles	7,579	17,246	40,000	25,303	40,788	55,092	*	-	40,000
Printed products	6,137	18,544	-	*	35,565	-	-	-	-
Pulp, newsprint, paper, or paperboard	8,689	*	-	13,190	42,227	52,073	-	-	-
Wood products	6,665	20,215	23,982	14,210	43,441	58,837	*	*	61,909
Articles of base metal	5,191	17,950	16,614	12,700	39,979	46,527	-	*	-
Base metal – finished or semi-finished	4,563	11,801	34,103	17,091	40,697	52,761	*	-	58,225
Non-metallic mineral products	7,036	31,174	35,825	18,612	44,852	50,048	50,967	*	82,096
Non-powered tools	4,530	14,898	24,887	6,803	30,991	45,451	-	-	*
Powered tools	4,543	11,109	23,595	9,718	37,311	36,387	-	-	-
Electronic and electrical equipment	5,005	9,955	*	18,302	39,588	14,775	-	-	-
Furniture, mattresses, lamps, etc.	3,992	*	-	16,834	37,494	33,765	-	*	*
Machinery	5,224	17,419	30,975	14,819	37,548	46,420	-	*	104,387
Miscellaneous manufactured products	4,451	14,994	-	21,376	37,925	35,099	-	*	-
Precision instruments and apparatus	3,468	*	-	9,782	35,042	*	*	-	-
Textile, leather, and related	4,542	-	-	26,496	43,969	-	-	*	-

articles									
Vehicle, including parts	6,319	19,996	13,873	14,018	36,453	36,087	-	-	*
All other transportation equipment	8,298	25,573	*	14,510	45,079	43,656	-	-	75,229
Coal	5,614	32,290	44,124	-	48,702	56,010	-	-	97,735
Crude petroleum	8,590	25,254	41,602	-	43,018	70,750	-	-	55,643
Gravel and crushed stones	11,570	30,455	39,976	18,394	45,643	47,966	48,854	49,626	85,521
Metallic ores and concentrates	*	28,390	40,294	-	52,342	-	-	-	*
Monumental or building stones	6,971	27,470	41,164	*	41,751	50,907	-	*	*
Natural sand	10,412	28,836	39,182	19,752	47,265	47,205	*	*	92,440
All other nonmetallic minerals	13,979	29,194	38,400	23,567	47,713	46,391	52,000	*	83,457
Fuel oils	15,253	24,635	40,339	31,979	51,915	69,013	-	-	77,294
Gasoline and aviation turbine	11,871	20,903	*	*	53,988	80,404	*	-	68,592
Plastic and rubber	5,286	14,833	-	11,542	38,109	45,522	*	*	-
All other coal and refined petroleum	9,998	19,347	38,609	15,234	46,783	67,721	*	-	71,067
Hazardous waste	6,818	25,125	*	*	45,292	55,849	-	-	-
All other waste and scrap	7,033	20,170	26,758	8,048	43,038	46,960	-	-	79,101
Recyclable products	6,799	19,800	21,345	14,288	38,950	41,832	-	-	*
Mail and courier parcels	7,706	*	-	29,575	31,813	-	37,702	36,485	45,763
Empty shipping containers	2,995	7,622	*	16,938	33,709	-	-	-	-

Passengers	2,613	-	-	-	-	-	-	-	-
Mixed freight	5,914	21,937	-	24,625	39,024	43,892	33,200	34,843	55,209
Multiple categories	5,363	23,687	37,463	9,320	41,747	46,169	49,245	46,420	80,593
Products not classified, blank, not reported or applicable.	11,084	25,482	25,674	24,598	42,120	34,779	-	-	-

(*) Small sample size.
(-) No observation.

Table 14. Average Payload (lbs) by Distance Traveled and FHWA Vehicle Class VIUS – National

Distance Traveled	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Off-the-road	9,235	24,210	37,058	22,034	46,144	39,989	*	*	68,099
Less then 50 miles	7,223	25,293	35,198	13,392	42,135	44,964	37,611	47,330	77,886
51 to 100 miles	6,851	23,736	36,198	18,590	43,911	48,072	48,328	46,877	73,810
101 to 200 miles	7,509	23,463	35,732	21,207	42,061	53,637	40,054	43,074	71,319
201 to 500 miles	7,085	21,407	32,938	18,909	41,588	35,180	33,250	35,455	61,586
501 miles or more	6,231	21,334	39,368	21,271	40,184	47,807	38,505	39,928	67,979

(*) Small sample size.

Table 15. Average Payload (lbs) by Body Type and FHWA Vehicle Class VIUS – National

Major Body Type	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Truck or Truck +Trailers									
Bulk	10,815	28,534	39,016	8,911	34,867	34,965	-	-	-
Flatbed	6,827	19,281	28,128	8,785	32,210	19,284	-	-	-
Tank	12,713	24,758	34,510	15,867	44,741	56,774	-	-	-
Van	5,522	20,333	22,875	6,421	31,977	20,000	-	-	-
Reefer	8,391	21,914	12,347	6,030	-	-	-	-	-

Logging	11,682	30,052	38,118	14,498	48,497	59,835	-	-	-
Other	5,555	23,235	32,696	7,261	31,989	17,099	-	-	-
Tractor + Trailers									
Automobile	-	-	-	25,326	34,635	37,051	-	-	-
Livestock	-	-	-	37,594	41,462	56,746	-	-	64,759
Bulk	-	-	-	39,623	47,956	53,814	51,996	48,169	83,144
Flatbed	-	-	-	24,037	40,849	46,937	48,244	50,389	64,150
Tank	-	-	-	39,788	48,395	62,555	53,412	47,354	79,811
Van	-	-	-	23,991	39,806	45,233	34,345	34,413	51,631
Reefer	-	-	-	24,585	41,659	50,000	32,392	43,342	54,333
Logging	-	-	-	43,595	49,642	53,051	3,000	-	74,179
Other	-	-	-	45,340	36,250	27,817	-	-	-

(-) No observation.

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Development of Truck Payload Equivalent Factor (TPEF)

5.0 Observations (continued)

Table 16. Percentage of Vehicles Overweight by GVW Group – VIUS

States	Gross Weight Limit lbs	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Alabama	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.61%
Alaska	150,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%
Arizona	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.62%
Arkansas	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.67%
California	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	1.22%
Colorado	85,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.49%
Connecticut	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.68%
Delaware	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
District of Columbia	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Florida	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%
Georgia	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%
Hawaii	88,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.82%
Idaho	105,500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.54%
Illinois	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.82%
Indiana	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%
Iowa	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.47%
Kansas	85,500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%
Kentucky	80,000	0.00%	0.00%	0.00%	6.00%	10.00%	0.00%	0.00%	4.91%
Louisiana	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.76%

Maine	100,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.76%
Maryland	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Massachusetts	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.81%
Michigan	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.08%	23.40%
Minnesota	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.74%
Mississippi	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.65%
Missouri	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.91%
Montana	132000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.82%
Nebraska	95,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.43%
Nevada	129,000	*	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.29%
New Hampshire	80,000	*	0.00%	0.00%	0.00%	0.00%	1.00%	2.00%	11.16%
New Jersey	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.77%
New Mexico	86,400	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.49%
New York	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	10.13%
North Carolina	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.09%
North Dakota	105,500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%
Ohio	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.57%
Oklahoma	90,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%
Oregon	105,500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.68%
Pennsylvania	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.91%
Rhodes Island	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.65%
South Carolina	80,608	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.97%
South Dakota	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.04%
Tennessee	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%
Texas	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.26%
Utah	80,000	*	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.55%
Vermont	80,000	0.00%	6.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.45%
Virginia	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.38%

Washington	105,500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.91%
West Virginia	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	3.00%
Wisconsin	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.32%
Wyoming	117,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.21%

(*) Small sample size.

Table 17. Percentage of Vehicles Overweight by FHWA Vehicle Class – VIUS

States	Gross Weight Limit lbs	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	80,000	0.00%	2.78%	23.68%	2.99%	13.13%	31.25%	0.00%	0.00%	0.00%
Alaska	150,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%
Arizona	80,000	0.00%	0.00%	0.00%	2.00%	0.00%	2.39%	0.00%	0.00%	*
Arkansas	80,000	0.00%	1.23%	1.03%	0.00%	4.52%	24.00%	0.00%	0.00%	0.00%
California	80,000	0.00%	1.04%	2.22%	1.16%	1.88%	0.00%	0.00%	0.00%	0.00%
Colorado	85,000	0.00%	0.33%	0.00%	0.00%	1.38%	33.33%	0.00%	0.00%	0.00%
Connecticut	80,000	0.00%	0.65%	1.72%	0.00%	3.01%	32.14%	0.00%	0.00%	0.00%
Delaware	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%
District of Columbia	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Florida	80,000	0.00%	1.88%	0.00%	1.85%	1.27%	21.15%	0.00%	0.00%	0.00%
Georgia	80,000	0.00%	0.00%	0.00%	0.00%	1.37%	18.18%	0.00%	0.00%	0.00%
Hawaii	88,000	0.00%	0.00%	0.00%	0.00%	1.76%	4.72%	0.00%	0.00%	0.00%
Idaho	105,500	0.00%	0.00%	0.00%	0.00%	0.00%	11.40%	0.00%	0.00%	31.71%
Illinois	80,000	0.00%	0.00%	0.00%	0.78%	0.84%	19.05%	0.00%	8.33%	50.00%
Indiana	80,000	0.00%	0.00%	0.00%	0.00%	0.73%	16.67%	0.00%	0.00%	0.00%
Iowa	80,000	0.00%	0.00%	0.00%	0.00%	0.00%	35.29%	0.00%	0.00%	0.00%
Kansas	85,500	0.00%	0.00%	0.00%	0.00%	3.76%	28.57%	0.00%	16.67%	0.00%
Kentucky	80,000	0.00%	2.44%	2.08%	1.32%	2.26%	60.61%	0.00%	0.00%	0.00%
Louisiana	80,000	0.00%	1.00%	0.00%	5.48%	29.02%	62.50%	0.00%	0.00%	0.00%
Maine	100,000	0.00%	0.00%	0.00%	0.00%	0.00%	6.02%	0.00%	0.00%	0.00%

Maryland	80,000	0.00%	0.00%	0.00%	0.00%	1.54%	0.00%	0.00%	0.00%	0.00%
Massachusetts	80,000	0.00%	2.63%	1.89%	0.93%	28.15%	46.47%	0.00%	0.00%	0.00%
Michigan	80,000	0.00%	2.14%	7.14%	2.86%	2.65%	73.24%	0.00%	0.00%	0.00%
Minnesota	80,000	0.00%	0.00%	0.00%	0.00%	3.45%	9.37%	0.00%	0.00%	0.00%
Mississippi	80,000	0.00%	1.35%	0.00%	0.00%	8.64%	45.45%	0.00%	0.00%	0.00%
Missouri	80,000	0.00%	0.93%	0.00%	0.00%	0.00%	11.43%	0.00%	0.00%	0.00%
Montana	132000	0.00%	0.00%	0.00%	0.00%	0.00%	32.05%	0.00%	0.00%	0.00%
Nebraska	95,000	0.00%	0.00%	0.00%	0.00%	0.00%	3.95%	0.00%	0.00%	0.00%
Nevada	129,000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
New Hampshire	80,000	0.00%	0.00%	2.91%	0.00%	11.92%	61.54%	0.00%	0.00%	0.00%
New Jersey	80,000	0.00%	0.76%	0.00%	0.00%	1.00%	5.00%	0.00%	0.00%	0.00%
New Mexico	86,400	0.00%	0.00%	0.00%	0.00%	0.36%	40.00%	0.00%	*	0.00%
New York	80,000	0.00%	1.40%	0.00%	3.57%	16.76%	72.00%	0.00%	0.00%	0.00%
North Carolina	80,000	0.00%	0.00%	1.96%	0.00%	0.86%	11.00%	0.00%	0.00%	0.00%
North Dakota	105,500	0.00%	0.00%	1.00%	0.00%	0.00%	63.38%	0.00%	0.00%	66.67%
Ohio	80,000	0.00%	0.00%	0.00%	0.00%	1.92%	8.82%	0.00%	0.00%	0.00%
Oklahoma	90,000	0.00%	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%
Oregon	105,500	0.00%	0.00%	0.00%	0.00%	1.19%	26.51%	0.00%	*	31.71%
Pennsylvania	80,000	0.00%	0.00%	0.00%	2.38%	0.67%	9.09%	0.00%	0.00%	0.00%
Rhodes Island	80,000	0.00%	0.77%	0.00%	2.94%	27.03%	*	0.00%	0.00%	0.00%
South Carolina	80,608	0.00%	1.12%	0.00%	1.61%	0.52%	23.08%	0.00%	0.00%	0.00%
South Dakota	80,000	0.00%	1.23%	2.94%	0.00%	3.33%	56.58%	0.00%	0.00%	100.00%
Tennessee	80,000	0.00%	0.00%	0.00%	1.25%	1.12%	6.67%	0.00%	0.00%	0.00%
Texas	80,000	0.00%	0.00%	0.00%	0.00%	3.61%	40.00%	*	0.00%	0.00%
Utah	80,000	0.00%	0.00%	0.00%	0.00%	1.44%	58.73%	0.00%	0.00%	86.00%
Vermont	80,000	1.00%	0.00%	0.00%	2.08%	8.80%	55.10%	0.00%	0.00%	*
Virginia	80,000	0.00%	0.00%	0.00%	0.00%	2.62%	31.82%	0.00%	0.00%	0.00%

Washington	105,500	0.00%	0.00%	1.52%	0.00%	0.00%	14.09%	0.00%	0.00%	29.45%
West Virginia	80,000	0.00%	1.01%	0.00%	0.00%	1.00%	36.11%	0.00%	0.00%	0.00%
Wisconsin	80,000	0.00%	0.74%	1.23%	0.00%	1.14%	34.14%	0.00%	0.00%	0.00%
Wyoming	117,000	0.00%	0.00%	0.00%	0.00%	0.00%	2.78%	0.00%	0.00%	0.00%

(*) Small sample size.

Table 18. Percentage of Vehicles Overweight by FHWA Vehicle Class – VTRIS

States	Gross Weight Limit lbs	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Alabama	80,000	0.00%	0.00%	20.00%	0.00%	7.93%	39.53%	1.30%	0.00%	0.00%
Alaska	150,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arkansas	80,000	0.00%	0.00%	0.00%	0.33%	7.46%	10.00%	1.92%	9.68%	0.00%
California	80,000	0.00%	0.00%	0.00%	0.00%	6.72%	14.29%	3.23%	1.85%	0.00%
Colorado	85,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Connecticut	80,000	0.00%	0.00%	0.00%	0.00%	1.70%	20.00%	0.00%	2.63%	0.00%
Delaware	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
District of Columbia	80,000	0.00%	0.67%	7.69%	0.00%	5.38%	0.00%	0.00%	0.00%	0.00%
Florida	80,000	0.00%	0.00%	0.00%	0.00%	7.16%	37.50%	0.00%	0.00%	0.00%
Georgia	80,000	0.00%	0.00%	0.00%	0.00%	8.26%	29.63%	9.18%	13.16%	30.00%
Hawaii	88,000	0.00%	0.00%	0.00%	0.00%	3.56%	5.88%	0.00%	0.00%	0.00%
Idaho	105,500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Illinois	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indiana	80,000	0.00%	0.00%	0.00%	0.00%	0.92%	10.13%	0.00%	4.17%	11.11%
Iowa	80,000	0.00%	0.00%	0.00%	7.69%	7.52%	21.43%	2.17%	7.14%	0.00%
Kansas	85,500	0.00%	0.00%	0.00%	0.00%	0.56%	0.00%	0.00%	0.00%	0.00%
Kentucky	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Louisiana	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maine	100,000	-	-	-	-	-	-	-	-	-

Maryland	80,000	0.00%	0.00%	0.00%	0.00%	13.04%	0.00%	9.09%	0.00%	0.00%
Massachusetts	80,000	0.00%	0.00%	9.09%	0.34%	9.27%	54.05%	4.76%	0.00%	0.00%
Michigan	80,000	0.00%	0.00%	4.35%	0.00%	10.73%	44.77%	7.50%	12.50%	70.39%
Minnesota	80,000	0.00%	0.00%	0.00%	0.00%	4.00%	16.92%	1.16%	0.00%	0.00%
Mississippi	80,000	0.00%	0.00%	0.00%	0.00%	5.51%	31.03%	4.65%	14.29%	42.86%
Missouri	80,000	0.00%	0.00%	0.00%	0.00%	8.16%	33.33%	2.17%	5.00%	0.00%
Montana	132,000	-	-	-	-	-	-	-	-	-
Nebraska	95,000	0.00%	0.00%	0.00%	0.00%	0.11%	4.35%	0.00%	0.00%	0.00%
Nevada	129,000	-	-	-	-	-	-	-	-	-
New Hampshire	80,000	0.00%	3.13%	44.44%	1.28%	14.99%	64.18%	5.26%	0.00%	0.00%
New Jersey	80,000	0.00%	0.00%	16.98%	2.14%	9.51%	20.00%	0.00%	0.00%	0.00%
New Mexico	86,400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York	80,000	0.40%	2.63%	30.77%	2.65%	15.48%	51.06%	6.25%	11.11%	0.00%
North Carolina	80,000	0.00%	0.00%	0.00%	0.00%	2.84%	12.50%	0.00%	0.00%	0.00%
North Dakota	105,500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ohio	80,000	0.00%	0.00%	8.33%	0.00%	3.73%	22.22%	0.00%	0.00%	0.00%
Oklahoma	90,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oregon	105,500	-	-	-	-	-	-	-	-	-
Pennsylvania	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rhodes Island	80,000	0.00%	1.16%	14.29%	0.00%	7.05%	42.86%	0.00%	0.00%	0.00%
South Carolina	80,608	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
South Dakota	80,000	0.00%	0.00%	0.00%	0.00%	10.80%	31.25%	0.00%	0.00%	57.14%
Tennessee	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Texas	80,000	0.00%	0.00%	0.00%	0.00%	2.53%	22.22%	1.92%	6.67%	0.00%
Utah	80,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vermont	80,000	0.00%	0.00%	0.00%	0.00%	11.46%	41.67%	0.00%	0.00%	0.00%
Virginia	80,000	0.00%	0.00%	0.00%	0.00%	8.60%	32.00%	0.00%	0.00%	0.00%
Washington	105,500	-	-	-	-	-	-	-	-	-

West Virginia	80,000	0.00%	0.00%	0.00%	0.00%	2.87%	12.50%	1.00%	0.00%	0.00%
Wisconsin	80,000	0.00%	0.00%	0.00%	0.54%	1.75%	11.11%	0.00%	0.00%	0.00%
Wyoming	117,000	-	-	-	-	-	-	-	-	-

(*) Small sample size.
(-) Not possible.

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