

# United States: 2007

*Hazardous Materials*

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## **2007 Economic Census**

*Transportation*

2007 Commodity Flow Survey

U.S. Department of Transportation  
Research and Innovative Technology Administration  
BUREAU OF TRANSPORTATION STATISTICS

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



*Hazardous Materials*  
**2007 Economic Census**  
*Transportation*  
2007 Commodity Flow Survey



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# Introduction to the Economic Census

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## **PURPOSES AND USES OF THE ECONOMIC CENSUS**

The economic census is the major source of facts about the structure and functioning of the nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the U.S. Code (Sections 131, 191, and 224) directs the U.S. Census Bureau to take the economic census every 5 years, ending in "2" and "7."

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the federal government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, ship, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **AVAILABILITY OF ADDITIONAL DATA**

All results of the 2007 Economic Census are available on the American FactFinder Internet site <[www.factfinder.census.gov](http://www.factfinder.census.gov)>. The American FactFinder system at the Web site allows selective retrieval and downloading of the data. For more information, including a description of reports

being issued, see the Web site; write to the U.S. Census Bureau, Washington, DC 20233-8300; or call the Customer Services Center at 1-800-923-8282 or 301-763-4636.

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Census of Manufactures was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some service trades in 1933.

Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated, providing comparable census data across economic sectors and using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other federal agencies. Since 1963, administrative records have also been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census report forms.

The range of industries covered in the economic censuses expanded between 1967 and 2007. The census of construction industries began on a regular basis in 1967; and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also, new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic

activity. In 2002, there was new coverage in the following four industries classified in the Agriculture, Forestry, and Fishing sector under the Standard Industry Classification (SIC) system: landscape agricultural services, landscaping services, veterinary services, and pet care services.

Printed statistical reports from the 1997 and earlier economic censuses provide historical figures for the study of long-term time series and are available in some large libraries. CD-ROMs issued from the 1987, 1992, and 1997 Economic Censuses contain databases including all or nearly all data published in print, plus additional statistics, such as Zip Code statistics, published only on CD-ROM.

## **SOURCES FOR MORE INFORMATION**

More information about scope, coverage, and classification system for each economic census and related surveys is published in the “What’s New for 2007” section of the 2007 Economic Census Web site at <[www.census.gov/econ/census07/www/whats\\_new\\_for\\_2007/](http://www.census.gov/econ/census07/www/whats_new_for_2007/)>. Data items and publications for each economic census and related surveys are published as part of the 2007 Economic Census on American FactFinder at <[www.factfinder.census.gov](http://www.factfinder.census.gov)>. More information on the methodology, procedures, and history of each economic census is published in the “Methodology” section of the 2007 Economic Census Web site at <[www.census.gov/econ/census07/www/methodology/](http://www.census.gov/econ/census07/www/methodology/)>.

# 2007 Commodity Flow Survey

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## GENERAL

The 2007 Commodity Flow Survey (CFS) is undertaken through a partnership between the U.S. Census Bureau, U.S. Department of Commerce and the Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS), U.S. Department of Transportation. This survey produces data on the movement of goods in the United States. It provides information on commodities shipped, their value, weight, and mode of transportation, as well as the origin and destination of shipments of commodities from manufacturing, mining, wholesale, and select retail and services establishments. The CFS data are used by policy makers and transportation planners in various federal, state, and local agencies for assessing the demand for transportation facilities and services, energy use, and safety risk and environmental concerns. Additionally, business owners, private researchers, and analysts use the CFS data for analyzing trends in the movement of goods, mapping spatial patterns of commodity and vehicle flows, forecasting demands for the movement of goods, and determining needs for associated infrastructure and equipment. The CFS was conducted previously in 2002, 1997, and 1993.

## HAZARDOUS MATERIAL SHIPMENTS

The U.S. Department of Transportation defines hazardous materials as belonging to one of the nine hazard classes, as shown below.

Hazardous Material Classes:

- Class 1—Explosives
- Class 2—Gases
- Class 3—Flammable Liquids
- Class 4—Flammable Solids
- Class 5—Oxidizers and Organic Peroxides
- Class 6—Toxic Materials and Infectious Substances
- Class 7—Radioactive Materials
- Class 8—Corrosive Materials
- Class 9—Miscellaneous Dangerous Goods

As part of the shipment characteristics collected in the 2007 CFS, we asked respondents to provide the four-digit United Nations (UN) or North American (NA) identification number. For the 2007 CFS data we used the UN/NA code to: (1) identify the shipment as hazardous material, and (2) assign the shipment to one of the nine hazardous material classes for purposes of producing summary tabulations.

The data from the 2007 CFS for hazardous material shipments are aggregated to these nine classes, as well as their subcategories known as divisions. Data are also shown for selected UN/NA codes.

For the 2007 CFS, 20 Standard Classification of Transported Goods (SCTG) codes were identified as always being hazardous materials. Even if the respondent left the UN/NA code blank, we assigned the shipment to the appropriate UN/NA code. For example, every shipment of gasoline (SCTG 17100) was assigned a UN/NA code of 1203 either by the respondent or during our editing process. When an SCTG could have translated to more than one UN/NA code, we selected the dominant UN/NA code for all cases.

Please note that because of the industry coverage and shipment definitions of the CFS, certain hazardous materials, such as infectious substances or radioactive waste, were not well represented in the CFS data.

The UN classification system has been adopted for worldwide use by the United Nations Committee of Experts on the Transport of Dangerous Goods. The UN system was incorporated into the Code of Federal Regulations by the U.S. Department of Transportation for domestic transportation in 1980. The NA system is a parallel hazard identification system used in North America when transporting hazardous materials that are not assigned a UN number or when transporting under specific North American exceptions. For additional information about the UN or NA codes, please refer to Title 49, Code of Federal Regulations, Part 172.101, or contact the Hazardous Materials Information Center, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, at telephone number 1-800-467-4922 or see the Internet site <<http://hazmat.dot.gov>>.

## SCOPE

### Industry Coverage

The 2007 CFS covers business establishments with paid employees that are located in the United States and are classified by the 2002 North American Industry Classification System (NAICS) in mining, manufacturing, wholesale trade, and selected retail and services trade industries—namely, electronic shopping and mail-order houses, fuel dealers, and publishers. Additionally, the survey covers auxiliary establishments (i.e., warehouses and managing offices) of multiestablishment companies. For the 2007 CFS, an advance survey (precanvass) of approximately 40,000 auxiliary establishments was conducted to identify those with shipping activity. Surveyed establishments that indicated undertaking shipping activities and the nonrespondents to the prec canvass were included in the CFS sample universe.

The survey does not cover establishments classified in transportation, construction, and most retail and services industries. Farms, fisheries, foreign establishments, and most government-owned establishments are also excluded.

In-scope industries for the 2007 CFS were selected based on the 2002 version of the NAICS, while the industries included in the 2002 CFS were selected based on the 1997 version of the NAICS. For the 1993 CFS and the 1997 CFS, the industries were selected based on the 1987 Standard Industrial Classification (SIC) system. Although attempts were made to maintain similar coverage among the SIC-based surveys (1993 and 1997) and the NAICS-based surveys (2002 and 2007), there have been some changes in industry coverage due to the conversion from SIC to NAICS. Most notably, the logging industry changed from an in-scope Manufacturing SIC code (SIC 2411) to an out-of-scope sector of Agriculture, Forestry, Fishing, and Hunting under NAICS 1133. Also, publishers were reclassified from Manufacturing Division (SIC 2711, 2721, 2731, 2741, and part of 2771) to information sector (NAICS 5111 and 51223) and were excluded from the 2002 CFS. The 2007 CFS, however, includes publishers and retail fuel dealers. Therefore, data users are urged to use caution when comparing 2007 CFS estimates with estimates from prior years.

The NAICS industries covered in the 2007 CFS are listed in the following table:

NAICS code	Description
212	Mining (except oil and gas)
311	Food manufacturing
312	Beverage and tobacco product manufacturing
313	Textile mills
314	Textile product mills
315	Apparel manufacturing
316	Leather and allied product manufacturing
321	Wood product manufacturing
322	Paper manufacturing
323 <sup>1</sup>	Printing and related support activities
324	Petroleum and coal products manufacturing
325	Chemical manufacturing
326	Plastics and rubber products manufacturing
327	Nonmetallic mineral product manufacturing
331	Primary metal manufacturing
332	Fabricated metal product manufacturing
333	Machinery manufacturing
334	Computer and electronic product manufacturing
335	Electrical equipment, appliance, and component manufacturing
336	Transportation equipment manufacturing
337	Furniture and related product manufacturing
339	Miscellaneous manufacturing
423 <sup>2</sup>	Wholesale trade, durable goods
424 <sup>2</sup>	Wholesale trade, nondurable goods
4541	Electronic shopping and mail-order houses
45431	Fuel dealers
4931 <sup>3</sup>	Warehousing and storage
5111	Newspaper, periodical, book, and directory publishers
51223 <sup>4</sup>	Music publishers
551114 <sup>5</sup>	Corporate, subsidiary, regional managing offices

<sup>1</sup> Excludes Pre-Press Services (NAICS 323122).

<sup>2</sup> Excludes manufacturers sale offices, agents and brokers, and own brand importers.

<sup>3</sup> Includes only captive warehouses that provide storage and shipping support to a single company. Warehouses offering their services to the general public and other businesses are excluded.

<sup>4</sup> For tabulation and publication purposes, NAICS 51223 is grouped with NAICS 5111.

<sup>5</sup> Includes only those establishments in NAICS 551114 with shipping activity.

Note: Other industry areas that are not covered, but may have significant shipping activity, include agriculture and government. For agriculture, specifically, this means that the CFS does not cover shipments of agricultural products from the farm site to the processing centers or terminal elevators (most likely short-distance local movements) but does cover the shipments of these products from the initial processing centers or terminal elevators onward.

## Shipment Coverage

The CFS captures data on shipments originating from select types of business establishments located in the 50 states and the District of Columbia. The survey does not cover shipments originating from business establishments located in Puerto Rico and other U.S. possessions and territories. Shipments traversing the United States from a foreign location to another foreign location (e.g., from Canada to Mexico) are not included, nor are shipments from a foreign location to a U.S. location. However, imported products are included in the CFS at the point that they leave the importer's initial domestic location for shipment to another location. Shipments that are shipped through a foreign territory with both the origin and destination in the United States are included in the CFS data. The mileages calculated for these shipments exclude the international segments (e.g., shipments from New York to Michigan through Canada do not include any mileage for Canada). Export shipments are included in the 2007 CFS. See the "Mileage Calculation" section for additional detail on how mileage estimates were developed.

## Information Collected

Establishments in the 2007 CFS were asked to provide the following information for a sample of their outbound shipments:

- Shipment ID number
- Shipment date (mm/dd)
- Shipment value
- Shipment weight in pounds
- Commodity code from Standard Classification of Transported Goods (SCTG) list
- Commodity description
- Hazmat flag (United Nations [UN] or North American [NA] number)
- U.S. destination (city, state, Zip Code)—gateway for export shipment
- Modes of transportation
- Foreign destination (exports only—city, country)
- Export mode

By CFS definition, a shipment is a single movement of goods, commodities, or products from an establishment to a single customer or to another establishment owned or operated by the same company as the originating establishment (e.g., a warehouse, distribution center, or retail or

wholesale outlet). Full or partial truckloads were counted as a single shipment only if all commodities on the truck were destined for the same location. For multiple deliveries on a route, the goods delivered at each stop were counted as one shipment. Interoffice memos, payroll checks, or business correspondence were not included in the CFS. Likewise, the CFS does not include shipments of refuse, scrap paper, waste, or recyclable materials unless the establishment was in the business of selling or providing these materials.

## Data Collection Method

The CFS survey was conducted through a mailout/mail-back with an electronic reporting option. Each establishment selected into the 2007 CFS sample was mailed four questionnaires—one during each calendar quarter of year 2007. The four questionnaires were the same, except for the addition of Item H—"Third-Party Logistics" to the fourth quarter questionnaire (see Appendix E for a copy of the questionnaire). The establishments were asked to provide shipment information about a sample of their individual outbound shipments during a prespecified 1-week period in each calendar quarter. Each of the 4 weeks was in the same relative position of the calendar quarter. Respondents who were interested in electronic reporting could request and use a secure electronic reporting option.

## Mileage Calculations

### *General*

The distance traveled by each freight shipment sampled for the 2007 CFS was estimated using routing algorithms and an integrated, intermodal transportation network that has been developed and updated expressly for this purpose. Each shipment record contained the ZIP Codes of shipment origin and destination (O-D pair) and the mode or modal sequence required by the routing algorithm for distance estimation. Each record also contained information on type of commodity moved, its weight, dollar value, and hazardous materials (hazmat) status. For each export shipment, the U.S. port of exit (POE) was also identified, along with foreign destination city and country.

Valid and accurate O-D pair ZIP Codes were essential elements needed for estimating the travel distance of any shipment. For shipments with missing or invalid geographic data elements, such data elements were imputed if there was a high probability of accurate correction (e.g., a specific destination city/state was provided to allow a ZIP Code to be imputed for the shipment). Follow-up contact with respondents was required when the missing information could not be reasonably imputed.

*GeoMiler—software to measure the distance traveled by commodity shipments*

Mileages were computed using GeoMiler, a routing tool developed in partnership with MacroSys Research and Technology (MacroSys) specifically for CFS mileage calculations. This software tool used current Geographic Information System (GIS) technology and spatial multimodal network databases. It integrated map-visualization features with route solvers to handle many alternative multimodal combinations. This tool used algorithms that found the “best path” over spatial representations of the U.S. highway, railway, waterway, and airway networks. For waterborne export shipments, GeoMiler used a waterborne commerce database from the U.S. Army Corps of Engineers to route freight originating in the United States via the deep sea (ocean). For airborne export shipments, GeoMiler used a newly developed air export network from the RITA/BTS Office of Airline Information (OAI).

For a domestic shipment, the mileage was calculated between the centroid (center of the geographic area) of the U.S. origin ZIP Code and the centroid of the destination ZIP Code. The route between an O-D pair was composed of a series of links and an impedance factor was assigned to each link (impedance is defined as a function of distance and travel time). Given a mode or modal sequence, the role of GeoMiler was to find that “best path” route which minimized the summed total impedance of the links between the specified O-D pair.

The mileage for shipments within a ZIP Code (matching O-D pair) was calculated by means of a formula that approximated the longest distance within the boundaries of that ZIP Code.

For multimodal shipments (those shipments involving more than one mode, such as truck-rail shipments), spatial joins (intermodal transfer links) were added to the network database to connect the individual modal networks together for routing purposes. An intermodal terminals database and a number of terminal transfer models were developed at RITA/BTS to identify likely transfer points for freight. An algorithm was used to find the minimum impedance path between a shipment’s origin ZIP Code to the transfer point and then from the transfer point to the destination ZIP Code. The cumulative length of the spatial joins plus links on this path provided the estimated distances used in CFS mileage computations.

The mileage for an export shipment was calculated between the centroid of the U.S. origin ZIP Code and the border crossing on the path of minimum impedance to the foreign destination country (foreign city in the case of Canada and Mexico). For all exports, a POE was found (seaport, airport, or border crossing) if not already provided by the respondent. However, only the portion of mileage

measured within U.S. borders was included as domestic mileage in the CFS estimates.

### **Methodological Changes From Past Commodity Flow Surveys**

Improvements in routing logic—particularly for highway, railway, and airway—were built into the GeoMiler software. Through the use of GeoMiler, distance calculations for freight transportation were refined to better estimate the actual shipment mileage. In particular, GeoMiler introduced an overall concept change in algorithm for:

- Highway routing
- Railway routing
- Waterway routing on export shipments
- Airway routing on both domestic and export shipments
- Routing in Alaska

#### *Highway routing*

To estimate highway mileage, GeoMiler considered the functional class of highway so that the “best path” was the quickest path based on the likely use of interstate and other major roadways and not necessarily the shortest path. The “quickest path” algorithms in terms of travel time incorporated the following hierarchical functional class of highway:

1. Interstate route
2. U.S. route
3. State route
4. County or other local route

Hence, the 2007 highway model favored the selection of the higher-order routes (interstate) rather than lower-order routes (state and county), which provided a more realistic path for freight movement via highway.

The use of these selection criteria, coupled with a more extensive highway network, produced higher mileages (an average of about 3 percent) on highway shipments of distances less than 300 miles.

#### *Railway routing*

To estimate railway mileage, GeoMiler selected a “single best path” from those calibrated with route density information obtained from sampled 2005 rail waybills, assigned a specific railroad company at shipment origin, and considered ownership, trackage rights, and interlining (the transfer from one railroad company’s trackage network to that of another). This procedure resulted in an average of about 3 percent higher mileages on railway shipments than the procedure used to estimate the mileage for the 2002 CFS.

### *Waterway routing on export shipments*

The mileage estimates for export shipments in the 2007 CFS include the total distance from the shipment origin up to the exit port on the U.S. territorial borders.

For waterway exports via inland waterways (e.g., the Mississippi River), the mileage calculation included the distance from an inland water POE (such as St. Louis) to a coastal POE (such as New Orleans), and this extra inland waterway mileage was included in the total domestic mileage for this shipment.

The use of these selection criteria on waterway exports via inland waterways resulted in negligible changes to mileages on inland waterways.

For waterway exports via the Great Lakes (Lakes Erie, Huron, Michigan, Ontario, Superior), the mileage calculation was continued from a Great Lakes POE (such as Chicago, Cleveland, Duluth) to the line of demarcation between the United States and Canada (drawn within each of the Great Lakes except Michigan), and this extra Great Lakes mileage was included in the total domestic mileage for this shipment.

The use of these selection criteria on waterway exports via the Great Lakes produced much higher (an average of about 15 percent) mileages on Great Lakes waterways.

### *Airway routing on both domestic and export shipments*

To estimate domestic airway mileage, GeoMiler selected the "single best path" from the three airports closest to the origin ZIP Code to the three airports closest to the destination ZIP Code. Criteria for route selection were calibrated with 2005 air route information provided by the OAI at RITA/BTS. As in the past, to be acceptable, an airway routing must generate at least twice as many airway miles as highway miles (the ratio of air/truck miles should be at least 2 to 1) in order to reach the destination.

Consequently, the GeoMiler chose the most likely air route from those routes that were nonstop (direct) from airport facilities with higher cargo lifts (weight transported between two airports) based on the OAI air cargo data.

For airway exports, the total domestic mileage included the mileage from the inland POE to a coastal point on the U.S. landmass (where the air flight path to a foreign country intersected with the U.S. territorial border).

The use of these selection criteria on both domestic airway and airway exports via inland airports, coupled with a more extensive airway network, produced much higher (an average of about 12 percent) mileages on airways.

### *Routing in Alaska*

Much of Alaska was inaccessible by any mode of transportation except "bush" airplanes. A "bush" airplane is a small aircraft that usually carries no more than four people, including the "bush" pilot. For the 2007 CFS, a network of mini airports, more extensive than that used previously in the 2002 CFS, was incorporated into intrastate travel within Alaska to accommodate "short-hop" flights where no established roads existed, especially in cases where the respondent reported a mode of highway.

### **Mileage Data for Pipeline Shipments**

For pipeline shipments, ton-miles and average miles per shipment are not shown in the data files. For most of these shipments, the respondents reported the shipment destination as a pipeline facility on the main pipeline network. Therefore, for the majority of these shipments, the resulting mileage represented only the access distance through feeder pipelines to the main pipeline network and not the actual distance through the main pipeline network. Pipeline shipments are included in the U.S. totals for ton-miles and average miles per shipment. For security purposes, there is no pipeline network available in the public domain with which to route petroleum-based products. Hence, any modal distance, either single or multi, involving pipeline was considered as solely pipeline mileage from origin ZIP Code to destination ZIP Code and calculated to equal great circle distance (GCD). GCD is defined as the shortest distance between two points on the earth's surface, taking into account the earth's curvature.

### **Availability of Additional Transportation Data**

Users of transportation data may be especially interested in the reports from the Service Annual Survey, which can be found on the Census Bureau's Web site at <[www.census.gov/services](http://www.census.gov/services)>. This survey covers firms with paid employees that provide commercial motor freight transportation and public warehousing services. Data collected include operating revenue and operating revenue by source, percentage of motor carrier freight revenue by commodity type, size of shipments handled, length of haul, and vehicle fleet inventory.



Table 1a.

## Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
<b>Single modes</b> .....	<b>1,370,615</b>	<b>94.6</b>	<b>2,111,622</b>	<b>94.6</b>	<b>279,105</b>	<b>86.3</b>	<b>65</b>
Truck <sup>2</sup> .....	837,074	57.8	1,202,825	53.9	103,997	32.2	59
For-hire truck .....	358,792	24.8	495,077	22.2	63,288	19.6	214
Private truck .....	478,282	33.0	707,748	31.7	40,709	12.6	32
Rail .....	69,213	4.8	129,743	5.8	92,169	28.5	578
Water .....	69,186	4.8	149,794	6.7	37,064	11.5	383
Air (includes truck and air) .....	1,735	0.1	(S)	(S)	(S)	(S)	1,095
Pipeline <sup>3</sup> .....	393,408	27.2	628,905	28.2	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>71,069</b>	<b>4.9</b>	<b>111,022</b>	<b>5.0</b>	<b>42,886</b>	<b>13.3</b>	<b>834</b>
Parcel, U.S. Postal Service or courier .....	7,675	0.5	236	(Z)	151	(Z)	836
Truck and rail .....	7,052	0.5	11,706	0.5	10,120	3.1	779
Truck and water .....	23,451	1.6	36,588	1.6	12,380	3.8	1,010
Rail and water .....	5,153	0.4	5,742	0.3	2,937	0.9	1,506
Other multiple modes .....	27,739	1.9	56,750	2.5	17,297	5.3	233
<b>Other and unknown modes</b> .....	<b>6,534</b>	<b>0.5</b>	<b>8,489</b>	<b>0.4</b>	<b>1,466</b>	<b>0.5</b>	<b>58</b>

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 1b.

## Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value			Tons			Ton-miles <sup>1</sup>			Average miles per shipment		
	2007 (million dollars)	2002 (million dollars)	Percentage change	2007 (thousands)	2002 (thousands)	Percentage change	2007 (millions)	2002 (millions)	Percentage change	2007	2002	Percentage change
<b>Total</b> .....	<b>1,448,218</b>	<b>660,181</b>	<b>119.4</b>	<b>2,231,133</b>	<b>2,191,519</b>	<b>1.8</b>	<b>323,457</b>	<b>326,727</b>	<b>-1.0</b>	<b>96</b>	<b>136</b>	<b>-29.7</b>
<b>Single modes</b> .....	<b>1,370,615</b>	<b>644,489</b>	<b>112.7</b>	<b>2,111,622</b>	<b>2,158,533</b>	<b>-2.2</b>	<b>279,105</b>	<b>311,897</b>	<b>-10.5</b>	<b>65</b>	<b>105</b>	<b>-38.1</b>
Truck <sup>2</sup> .....	837,074	419,630	99.5	1,202,825	1,159,514	3.7	103,997	110,163	-5.6	59	86	-31.6
For-hire truck .....	358,792	189,803	89.0	495,077	449,503	10.1	63,288	65,112	-2.8	214	285	-24.9
Private truck .....	478,282	226,660	111.0	707,748	702,186	0.8	40,709	44,087	-7.7	32	38	-14.8
Rail .....	69,213	31,339	120.9	129,743	109,369	18.6	92,169	72,087	27.9	578	695	-16.8
Water .....	69,186	46,856	47.7	149,794	228,197	-34.4	37,064	70,649	-47.5	383	(S)	(X)
Air (includes truck and air) .....	1,735	1,643	5.6	(S)	64	(S)	(S)	85	(S)	1,095	2,080	-47.3
Pipeline <sup>3</sup> .....	393,408	145,021	171.3	628,905	661,390	-4.9	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes<sup>4</sup></b> .....	<b>71,069</b>	<b>9,631</b>	<b>(X)</b>	<b>111,022</b>	<b>18,745</b>	<b>(X)</b>	<b>42,886</b>	<b>12,488</b>	<b>(X)</b>	<b>834</b>	<b>849</b>	<b>-1.8</b>
Parcel, U.S. Postal Service or courier ..	7,675	4,268	79.8	236	245	-3.6	151	119	27.1	836	837	-0.2
Truck and rail .....	7,052	(X)	(X)	11,706	(X)	(X)	10,120	(X)	(X)	779	(X)	(X)
Truck and water .....	23,451	(X)	(X)	36,588	(X)	(X)	12,380	(X)	(X)	1,010	(X)	(X)
Rail and water .....	5,153	(X)	(X)	5,742	(X)	(X)	2,937	(X)	(X)	1,506	(X)	(X)
Other multiple modes <sup>5</sup> .....	27,739	5,363	(X)	56,750	18,500	(X)	17,297	12,369	(X)	233	1,371	(X)
<b>Other and unknown modes</b> ...	<b>6,534</b>	<b>6,061</b>	<b>7.8</b>	<b>8,489</b>	<b>14,241</b>	<b>-40.4</b>	<b>1,466</b>	<b>2,342</b>	<b>-37.4</b>	<b>58</b>	<b>57</b>	<b>1.2</b>

(S) Estimate did not meet publication standards.

(X) Not applicable.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

<sup>4</sup> The mileage calculation methodology was significantly improved in 2007. Therefore, multimode data for 2007 and 2002 are not comparable. For more information, see "Mileage Calculations."

<sup>5</sup> The 2002 and 2007 "Other multiple modes" categories are not directly comparable due to a definition change. For 2002, "Other multiple modes" includes shipments using "Truck and rail," "Truck and water," "Rail and water," and other mode combinations not specifically listed. For 2007, "Truck and rail," "Truck and water," and "Rail and water" are not part of "Other multiple modes."

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 1c.

## Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: Percentage of Total for 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value		Tons		Ton-miles <sup>1</sup>	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Single modes</b> .....	<b>94.6</b>	<b>97.6</b>	<b>94.6</b>	<b>98.5</b>	<b>86.3</b>	<b>95.5</b>
Truck <sup>2</sup> .....	57.8	63.6	53.9	52.9	32.2	33.7
For-hire truck .....	24.8	28.8	22.2	20.5	19.6	19.9
Private truck .....	33.0	34.3	31.7	32.0	12.6	13.5
Rail .....	4.8	4.7	5.8	5.0	28.5	22.1
Water .....	4.8	7.1	6.7	10.4	11.5	21.6
Air (includes truck and air) .....	0.1	0.2	(S)	—	(S)	—
Pipeline <sup>3</sup> .....	27.2	22.0	28.2	30.2	(S)	(S)
<b>Multiple modes<sup>4</sup></b> .....	<b>4.9</b>	<b>1.5</b>	<b>5.0</b>	<b>0.9</b>	<b>13.3</b>	<b>3.8</b>
Parcel, U.S. Postal Service or courier .....	0.5	0.6	(Z)	—	(Z)	—
Truck and rail .....	0.5	(X)	0.5	(X)	3.1	(X)
Truck and water .....	1.6	(X)	1.6	(X)	3.8	(X)
Rail and water .....	0.4	(X)	0.3	(X)	0.9	(X)
Other multiple modes <sup>5</sup> .....	1.9	0.8	2.5	0.8	5.3	3.8
<b>Other and unknown modes</b> .....	<b>0.5</b>	<b>0.9</b>	<b>0.4</b>	<b>0.6</b>	<b>0.5</b>	<b>0.7</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

<sup>4</sup> The mileage calculation methodology was significantly improved in 2007. Therefore, multimode data for 2007 and 2002 are not comparable. For more information, see "Mileage Calculations."

<sup>5</sup> The 2002 and 2007 "Other multiple modes" categories are not directly comparable due to a definition change. For 2002, "Other multiple modes" includes shipments using "Truck and rail," "Truck and water," "Rail and water," and other mode combinations not specifically listed. For 2007, "Truck and rail," "Truck and water," and "Rail and water" are not part of "Other multiple modes."

Notes:

Generally, estimates that equal zero are not shown and are indicated by "—." However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table 2a.

## Hazardous Material Shipment Characteristics by Hazard Class for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and description	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
Class 1, Explosives .....	11,754	0.8	3,047	0.1	911	0.3	738
Class 2, Gases .....	131,810	9.1	250,506	11.2	55,260	17.1	51
Class 3, Flammable liquids .....	1,170,455	80.8	1,752,814	78.6	181,615	56.1	91
Class 4, Flammable solids .....	4,067	0.3	20,408	0.9	5,547	1.7	309
Class 5, Oxidizers and organic peroxides .....	6,695	0.5	14,959	0.7	7,024	2.2	361
Class 6, Toxic materials and infectious substances .....	21,198	1.5	11,270	0.5	5,667	1.8	467
Class 7, Radioactive materials .....	20,633	1.4	515	(Z)	37	(Z)	(S)
Class 8, Corrosive materials .....	51,475	3.6	114,441	5.1	44,395	13.7	208
Class 9, Miscellaneous dangerous goods .....	30,131	2.1	63,173	2.8	23,002	7.1	484

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table 2b.

## Hazardous Material Shipment Characteristics by Hazard Class for the United States: 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Hazard class and description	Value			Tons			Ton-miles <sup>1</sup>			Average miles per shipment		
	2007 (million dollars)	2002 (million dollars)	Percentage change	2007 (thousands)	2002 (thousands)	Percentage change	2007 (millions)	2002 (millions)	Percentage change	2007	2002	Percentage change
<b>Total</b> .....	<b>1,448,218</b>	<b>660,181</b>	<b>119.4</b>	<b>2,231,133</b>	<b>2,191,519</b>	<b>1.8</b>	<b>323,457</b>	<b>326,727</b>	<b>-1.0</b>	<b>96</b>	<b>136</b>	<b>-29.7</b>
Class 1, Explosives .....	11,754	7,901	48.8	3,047	5,000	-39.1	911	1,568	-41.9	738	651	13.4
Class 2, Gases .....	131,810	73,932	78.3	250,506	213,358	17.4	55,260	37,262	48.3	51	95	-46.6
Class 3, Flammable liquids .....	1,170,455	490,238	138.8	1,752,814	1,788,986	-2.0	181,615	218,574	-16.9	91	106	-14.3
Class 4, Flammable solids .....	4,067	6,566	-38.1	20,408	11,300	80.6	5,547	4,391	26.3	309	158	95.4
Class 5, Oxidizers and organic peroxides .....	6,695	5,471	22.4	14,959	12,670	18.1	7,024	4,221	66.4	361	407	-11.3
Class 6, Toxic materials and infectious substances .....	21,198	8,275	156.2	11,270	8,459	33.2	5,667	4,254	33.2	467	626	-25.5
Class 7, Radioactive materials .....	20,633	5,850	252.7	515	57	804.4	37	44	-16.0	(S)	(S)	(S)
Class 8, Corrosive materials .....	51,475	38,324	34.3	114,441	90,671	26.2	44,395	36,260	22.4	208	301	-30.9
Class 9, Miscellaneous dangerous goods .....	30,131	23,625	27.5	63,173	61,018	3.5	23,002	20,153	14.1	484	368	31.6

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 2c.

## Hazardous Material Shipment Characteristics by Hazard Class for the United States: Percentage of Total for 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Hazard class and description	Value		Tons		Ton-miles <sup>1</sup>	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Class 1, Explosives .....	0.8	1.2	0.1	0.2	0.3	0.5
Class 2, Gases .....	9.1	11.2	11.2	9.7	17.1	11.4
Class 3, Flammable liquids .....	80.8	74.3	78.6	81.6	56.1	66.9
Class 4, Flammable solids .....	0.3	1.0	0.9	0.5	1.7	1.3
Class 5, Oxidizers and organic peroxides .....	0.5	0.8	0.7	0.6	2.2	1.3
Class 6, Toxic materials and infectious substances .....	1.5	1.3	0.5	0.4	1.8	1.3
Class 7, Radioactive materials .....	1.4	0.9	(Z)	-	(Z)	-
Class 8, Corrosive materials .....	3.6	5.8	5.1	4.1	13.7	11.1
Class 9, Miscellaneous dangerous goods .....	2.1	3.6	2.8	2.8	7.1	6.2

- Estimate equal to zero.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Generally, estimates that equal zero are not shown and are indicated by "-." However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "-" represents estimates that equal zero. For 2002 data, the "-" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 3.

### Hazardous Material Shipment Characteristics for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
1005	Ammonia, anhydrous .....	6,101	0.4	15,005	0.7	5,262	1.6	147
1006	Argon, compressed .....	2,847	0.2	13,034	0.6	(S)	(S)	99
1011	Butane .....	6,003	0.4	9,198	0.4	640	0.2	396
1013	Carbon dioxide .....	1,989	0.1	20,637	0.9	4,082	1.3	55
1066	Nitrogen, compressed .....	2,338	0.2	32,034	1.4	4,821	1.5	62
1072	Oxygen, compressed .....	4,171	0.3	19,672	0.9	2,779	0.9	37
1075	Petroleum gases .....	43,707	3.0	57,133	2.6	8,613	2.7	30
1202	Diesel fuel .....	118,341	8.2	217,590	9.8	28,582	8.8	39
1203	Gasoline .....	616,008	42.5	883,928	39.6	61,374	19.0	43
1223	Kerosene .....	7,380	0.5	11,954	0.5	787	0.2	25
1268	Petroleum distillates, n.o.s. ....	7,543	0.5	11,800	0.5	1,984	0.6	278
1824	Sodium hydroxide solution .....	7,587	0.5	23,692	1.1	9,618	3.0	177
1830	Sulfuric acid .....	4,335	0.3	33,065	1.5	13,410	4.1	257
1863	Fuel, aviation, turbine engine .....	48,315	3.3	76,447	3.4	7,359	2.3	99
1964	Hydrocarbon gas mixture, compressed, n.o.s. ....	16,810	1.2	24,007	1.1	7,803	2.4	141
1965	Hydrocarbon gas mixture, liquefied, n.o.s. ....	6,571	0.5	9,519	0.4	(S)	(S)	249
1978	Propane .....	10,876	0.8	15,086	0.7	645	0.2	24
1993	Flammable liquids, n.o.s. ....	273,421	18.9	454,123	20.4	41,183	12.7	37
2448	Sulfur, molten .....	1,427	0.1	16,237	0.7	4,544	1.4	213
3257	Elevated temperature liquid, n.o.s. ....	12,859	0.9	48,399	2.2	14,772	4.6	203

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 4.

### Hazardous Versus Nonhazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Mode of transportation	Tons					Ton-miles <sup>1</sup>				
	Total (thousands)	Hazardous		Nonhazardous		Total (millions)	Hazardous		Nonhazardous	
		2007 (thousands)	Percent	2007 (thousands)	Percent		2007 (millions)	Percent	2007 (millions)	Percent
<b>Total</b> .....	<b>12,543,425</b>	<b>2,231,133</b>	<b>17.8</b>	<b>10,312,292</b>	<b>82.2</b>	<b>3,344,658</b>	<b>323,457</b>	<b>9.7</b>	<b>3,021,201</b>	<b>90.3</b>
<b>Single modes</b> .....	<b>11,698,128</b>	<b>2,111,622</b>	<b>18.1</b>	<b>9,586,507</b>	<b>81.9</b>	<b>2,894,251</b>	<b>279,105</b>	<b>9.6</b>	<b>2,615,146</b>	<b>90.4</b>
Truck <sup>2</sup> .....	8,778,713	1,202,825	13.7	7,575,888	86.3	1,342,104	103,997	7.7	1,238,107	92.3
For-hire truck .....	4,075,136	495,077	12.1	3,580,060	87.9	1,055,646	63,288	6.0	992,359	94.0
Private truck .....	4,703,576	707,748	15.0	3,995,828	85.0	286,457	40,709	14.2	245,748	85.8
Rail .....	1,861,307	129,743	7.0	1,731,564	93.0	1,344,040	92,169	6.9	1,251,871	93.1
Water .....	403,639	149,794	37.1	253,845	62.9	157,314	37,064	23.6	120,251	76.4
Air (includes truck and air) .....	3,611	(S)	(S)	3,256	90.2	4,510	(S)	(S)	4,334	96.1
Pipeline <sup>3</sup> .....	650,859	628,905	96.6	21,954	3.4	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>573,729</b>	<b>111,022</b>	<b>19.4</b>	<b>462,708</b>	<b>80.6</b>	<b>416,642</b>	<b>42,886</b>	<b>10.3</b>	<b>373,756</b>	<b>89.7</b>
Parcel, U.S. Postal Service or courier .....	33,900	236	0.7	33,664	99.3	27,961	151	0.5	27,810	99.5
Truck and rail .....	225,589	11,706	5.2	213,883	94.8	196,772	10,120	5.1	186,652	94.9
Truck and water .....	145,521	36,588	25.1	108,933	74.9	98,396	12,380	12.6	86,016	87.4
Rail and water .....	54,878	5,742	10.5	49,136	89.5	47,111	2,937	6.2	44,174	93.8
Other multiple modes .....	113,841	56,750	49.8	57,092	50.2	46,402	17,297	37.3	29,105	62.7
<b>Other and unknown modes</b> .....	<b>271,567</b>	<b>8,489</b>	<b>3.1</b>	<b>263,078</b>	<b>96.9</b>	<b>33,764</b>	<b>1,466</b>	<b>4.3</b>	<b>32,298</b>	<b>95.7</b>

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 5a.

**Hazardous Material Shipment Characteristics by Selected State<sup>1</sup> of Origin: 2007**

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

State of origin	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
Texas .....	340,144	23.5	499,592	22.4	76,530	23.7	95
Louisiana .....	126,043	8.7	221,005	9.9	37,565	11.6	119
California .....	151,684	10.5	199,755	9.0	9,720	3.0	103
Illinois .....	73,473	5.1	114,925	5.2	32,108	9.9	107
Pennsylvania .....	53,480	3.7	95,592	4.3	9,895	3.1	63
New Jersey .....	47,908	3.3	78,894	3.5	4,421	1.4	144
Florida .....	45,582	3.1	68,259	3.1	9,429	2.9	69
Georgia .....	35,767	2.5	67,633	3.0	6,608	2.0	64
Ohio .....	48,758	3.4	66,218	3.0	10,576	3.3	120
New York .....	37,438	2.6	56,577	2.5	4,411	1.4	46
Oklahoma .....	30,998	2.1	50,428	2.3	7,543	2.3	71
Indiana .....	19,168	1.3	46,314	2.1	5,818	1.8	377
Massachusetts .....	21,489	1.5	43,187	1.9	1,611	0.5	145
Minnesota .....	23,938	1.7	42,960	1.9	5,621	1.7	125
Washington .....	28,513	2.0	40,661	1.8	10,860	3.4	(S)
Kentucky .....	27,644	1.9	39,242	1.8	3,203	1.0	122
Mississippi .....	14,586	1.0	37,253	1.7	9,961	3.1	102
Michigan .....	24,593	1.7	34,455	1.5	3,011	0.9	66
Kansas .....	19,784	1.4	29,512	1.3	3,424	1.1	59
Utah .....	12,596	0.9	28,063	1.3	6,542	2.0	125

(S) Estimate did not meet publication standards.

<sup>1</sup> Selected states shown had the highest estimated weight without considering sampling variability and are shown in descending order. Since an "All other states" line is not shown, estimates do not add to total.<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 5b.

**Hazardous Material Shipment Characteristics by Selected State<sup>1</sup> of Destination: 2007**

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

State of destination	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
Texas .....	318,321	22.0	487,434	21.8	52,256	16.2	93
California .....	159,535	11.0	211,302	9.5	30,720	9.5	265
Louisiana .....	101,838	7.0	182,088	8.2	18,759	5.8	118
Florida .....	57,547	4.0	88,865	4.0	23,422	7.2	84
Illinois .....	56,291	3.9	80,466	3.6	16,557	5.1	91
New Jersey .....	45,654	3.2	80,041	3.6	9,624	3.0	66
Georgia .....	39,381	2.7	69,241	3.1	10,316	3.2	71
New York .....	46,247	3.2	67,308	3.0	7,446	2.3	50
Pennsylvania .....	40,415	2.8	67,220	3.0	6,103	1.9	50
Ohio .....	47,924	3.3	66,226	3.0	9,921	3.1	91
Indiana .....	28,394	2.0	51,746	2.3	7,119	2.2	91
Oklahoma .....	31,499	2.2	47,195	2.1	5,590	1.7	70
Michigan .....	32,165	2.2	44,694	2.0	9,828	3.0	132
Massachusetts .....	20,208	1.4	43,425	1.9	1,957	0.6	52
Minnesota .....	24,029	1.7	42,515	1.9	3,410	1.1	87
Kentucky .....	25,965	1.8	39,180	1.8	6,852	2.1	127
Alabama .....	17,935	1.2	31,853	1.4	7,044	2.2	93
Mississippi .....	18,384	1.3	31,548	1.4	5,132	1.6	131
Washington .....	23,273	1.6	31,526	1.4	5,181	1.6	220
Kansas .....	20,106	1.4	31,514	1.4	4,480	1.4	59

<sup>1</sup> Selected states shown had the highest estimated weight without considering sampling variability and are shown in descending order. Since an "All other states" line is not shown, estimates do not add to total.<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 6.

## Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Hazard Class 1, Explosives</b>							
<b>Total</b> .....	<b>11,754</b>	<b>100.0</b>	<b>3,047</b>	<b>100.0</b>	<b>911</b>	<b>100.0</b>	<b>738</b>
<b>Single modes</b> .....	<b>10,871</b>	<b>92.5</b>	<b>3,020</b>	<b>99.1</b>	<b>869</b>	<b>95.4</b>	<b>459</b>
Truck <sup>2</sup> .....	10,720	91.2	3,012	98.9	858	94.2	451
For-hire truck .....	7,475	63.6	807	26.5	626	68.8	862
Private truck .....	3,245	27.6	2,205	72.4	231	25.4	108
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	130	1.1	(S)	(S)	(S)	(S)	1,572
Pipeline <sup>3</sup> .....	-	-	-	-	-	-	-
<b>Multiple modes</b> .....	<b>853</b>	<b>7.3</b>	<b>26</b>	<b>0.8</b>	<b>42</b>	<b>4.6</b>	<b>944</b>
Parcel, U.S. Postal Service or courier .....	718	6.1	15	0.5	15	1.6	942
Truck and rail .....	-	-	-	-	-	-	-
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	3,036
Rail and water .....	-	-	-	-	-	-	-
Other multiple modes .....	-	-	-	-	-	-	-
<b>Other and unknown modes</b> .....	<b>31</b>	<b>0.3</b>	<b>1</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>
<b>Hazard Class 2, Gases</b>							
<b>Total</b> .....	<b>131,810</b>	<b>100.0</b>	<b>250,506</b>	<b>100.0</b>	<b>55,260</b>	<b>100.0</b>	<b>51</b>
<b>Single modes</b> .....	<b>127,178</b>	<b>96.5</b>	<b>246,129</b>	<b>98.3</b>	<b>53,014</b>	<b>95.9</b>	<b>43</b>
Truck <sup>2</sup> .....	62,895	47.7	135,935	54.3	20,715	37.5	41
For-hire truck .....	15,925	12.1	24,691	9.9	11,077	20.0	243
Private truck .....	46,970	35.6	111,245	44.4	9,637	17.4	31
Rail .....	20,641	15.7	32,538	13.0	22,482	40.7	584
Water .....	1,335	1.0	2,425	1.0	821	1.5	443
Air (includes truck and air) .....	273	0.2	(S)	(S)	2	(Z)	771
Pipeline <sup>3</sup> .....	42,033	31.9	75,226	30.0	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>3,763</b>	<b>2.9</b>	<b>3,321</b>	<b>1.3</b>	<b>2,185</b>	<b>4.0</b>	<b>665</b>
Parcel, U.S. Postal Service or courier .....	1,613	1.2	28	(Z)	8	(Z)	663
Truck and rail .....	1,458	1.1	2,338	0.9	1,946	3.5	758
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	543	0.4	725	0.3	112	0.2	145
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	376
<b>Other and unknown modes</b> .....	<b>868</b>	<b>0.7</b>	<b>1,056</b>	<b>0.4</b>	<b>62</b>	<b>0.1</b>	<b>(S)</b>
<b>Hazard Class 3, Flammable Liquids</b>							
<b>Total</b> .....	<b>1,170,455</b>	<b>100.0</b>	<b>1,752,814</b>	<b>100.0</b>	<b>181,615</b>	<b>100.0</b>	<b>91</b>
<b>Single modes</b> .....	<b>1,107,511</b>	<b>94.6</b>	<b>1,651,675</b>	<b>94.2</b>	<b>146,060</b>	<b>80.4</b>	<b>63</b>
Truck <sup>2</sup> .....	671,734	57.4	944,272	53.9	55,934	30.8	60
For-hire truck .....	285,022	24.4	399,877	22.8	30,423	16.8	167
Private truck .....	386,712	33.0	544,394	31.1	25,512	14.0	30
Rail .....	24,095	2.1	31,485	1.8	22,819	12.6	400
Water .....	62,635	5.4	129,760	7.4	30,716	16.9	382
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	854
Pipeline <sup>3</sup> .....	348,297	29.8	545,821	31.1	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>58,161</b>	<b>5.0</b>	<b>95,317</b>	<b>5.4</b>	<b>34,856</b>	<b>19.2</b>	<b>864</b>
Parcel, U.S. Postal Service or courier .....	2,304	0.2	104	(Z)	83	(Z)	869
Truck and rail .....	3,217	0.3	3,864	0.2	4,198	2.3	1,009
Truck and water .....	22,881	2.0	36,385	2.1	12,129	6.7	698
Rail and water .....	3,803	0.3	3,738	0.2	2,146	1.2	1,813
Other multiple modes .....	25,957	2.2	51,225	2.9	16,301	9.0	239
<b>Other and unknown modes</b> .....	<b>4,784</b>	<b>0.4</b>	<b>5,822</b>	<b>0.3</b>	<b>698</b>	<b>0.4</b>	<b>77</b>

See footnotes at end of table.

Table 6.

## Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Hazard Class 4, Flammable Solids</b>							
<b>Total</b> .....	<b>4,067</b>	<b>100.0</b>	<b>20,408</b>	<b>100.0</b>	<b>5,547</b>	<b>100.0</b>	<b>309</b>
<b>Single modes</b> .....	<b>3,344</b>	<b>82.2</b>	<b>19,513</b>	<b>95.6</b>	<b>5,325</b>	<b>96.0</b>	<b>253</b>
Truck <sup>2</sup> .....	2,424	59.6	10,746	52.7	1,301	23.5	183
For-hire truck .....	1,800	44.3	7,075	34.7	837	15.1	270
Private truck .....	624	15.3	3,670	18.0	(S)	(S)	92
Rail .....	(S)	(S)	3,995	19.6	3,432	61.9	926
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	418
Air (includes truck and air) .....	25	0.6	1	(Z)	(S)	(S)	754
Pipeline <sup>3</sup> .....	9	0.2	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>202</b>	<b>3.6</b>	<b>674</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	671
Truck and rail .....	151	3.7	64	0.3	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	142
<b>Other and unknown modes</b> .....	<b>9</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Hazard Class 5, Oxidizers and Organic Peroxides</b>							
<b>Total</b> .....	<b>6,695</b>	<b>100.0</b>	<b>14,959</b>	<b>100.0</b>	<b>7,024</b>	<b>100.0</b>	<b>361</b>
<b>Single modes</b> .....	<b>6,253</b>	<b>93.4</b>	<b>13,869</b>	<b>92.7</b>	<b>6,272</b>	<b>89.3</b>	<b>342</b>
Truck <sup>2</sup> .....	4,415	65.9	7,843	52.4	2,200	31.3	254
For-hire truck .....	2,617	39.1	4,519	30.2	1,732	24.7	510
Private truck .....	1,798	26.9	3,324	22.2	468	6.7	79
Rail .....	1,737	25.9	5,929	39.6	4,070	57.9	689
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	68	1.0	1	(Z)	(S)	(S)	1,542
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>382</b>	<b>5.7</b>	<b>962</b>	<b>6.4</b>	<b>680</b>	<b>9.7</b>	<b>480</b>
Parcel, U.S. Postal Service or courier .....	61	0.9	2	(Z)	1	(Z)	405
Truck and rail .....	288	4.3	945	6.3	626	8.9	901
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Hazard Class 6, Toxic Materials and Infectious Substances</b>							
<b>Total</b> .....	<b>21,198</b>	<b>100.0</b>	<b>11,270</b>	<b>100.0</b>	<b>5,667</b>	<b>100.0</b>	<b>467</b>
<b>Single modes</b> .....	<b>20,104</b>	<b>94.8</b>	<b>10,450</b>	<b>92.7</b>	<b>5,555</b>	<b>98.0</b>	<b>327</b>
Truck <sup>2</sup> .....	10,128	47.8	2,951	26.2	849	15.0	246
For-hire truck .....	8,682	41.0	2,414	21.4	774	13.7	436
Private truck .....	1,446	6.8	537	4.8	76	1.3	59
Rail .....	6,782	32.0	5,354	47.5	4,576	80.8	913
Water .....	(S)	(S)	1,847	16.4	(S)	(S)	(S)
Air (includes truck and air) .....	36	0.2	1	(Z)	(S)	(S)	767
Pipeline <sup>3</sup> .....	(S)	(S)	298	2.6	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>1,068</b>	<b>5.0</b>	<b>817</b>	<b>7.2</b>	<b>111</b>	<b>2.0</b>	<b>1,013</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	1	(Z)	1,020
Truck and rail .....	50	0.2	39	0.3	18	0.3	(S)
Truck and water .....	6	(Z)	3	(Z)	1	(Z)	237
Rail and water .....	25	0.1	11	0.1	6	0.1	(S)
Other multiple modes .....	(S)	(S)	762	6.8	86	1.5	117
<b>Other and unknown modes</b> .....	<b>26</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>

See footnotes at end of table.

Table 6.

## Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Hazard Class 7, Radioactive Materials</b>							
<b>Total</b> .....	<b>20,633</b>	<b>100.0</b>	<b>515</b>	<b>100.0</b>	<b>37</b>	<b>100.0</b>	<b>(S)</b>
<b>Single modes</b> .....	<b>19,315</b>	<b>93.6</b>	<b>503</b>	<b>97.6</b>	<b>30</b>	<b>82.3</b>	<b>(S)</b>
Truck <sup>2</sup> .....	19,082	92.5	501	97.1	27	73.0	30
For-hire truck .....	2,949	14.3	16	3.0	15	41.5	444
Private truck .....	16,133	78.2	485	94.1	12	31.5	30
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	233	1.1	2	0.5	3	9.3	1,622
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>1,218</b>	<b>5.9</b>	<b>9</b>	<b>1.8</b>	<b>6</b>	<b>17.5</b>	<b>938</b>
Parcel, U.S. Postal Service or courier .....	1,218	5.9	9	1.8	6	17.5	938
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>100</b>	<b>0.5</b>	<b>3</b>	<b>0.6</b>	<b>(Z)</b>	<b>0.2</b>	<b>(S)</b>
<b>Hazard Class 8, Corrosive Materials</b>							
<b>Total</b> .....	<b>51,475</b>	<b>100.0</b>	<b>114,441</b>	<b>100.0</b>	<b>44,395</b>	<b>100.0</b>	<b>208</b>
<b>Single modes</b> .....	<b>47,663</b>	<b>92.6</b>	<b>105,228</b>	<b>91.9</b>	<b>40,316</b>	<b>90.8</b>	<b>151</b>
Truck <sup>2</sup> .....	36,616	71.1	57,066	49.9	14,784	33.3	135
For-hire truck .....	20,930	40.7	31,810	27.8	12,377	27.9	431
Private truck .....	15,686	30.5	25,256	22.1	2,406	5.4	57
Rail .....	7,973	15.5	34,839	30.4	22,064	49.7	633
Water .....	1,483	2.9	8,342	7.3	3,352	7.5	467
Air (includes truck and air) .....	194	0.4	(S)	(S)	(S)	(S)	1,041
Pipeline <sup>3</sup> .....	1,398	2.7	4,976	4.3	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>3,190</b>	<b>6.2</b>	<b>7,817</b>	<b>6.8</b>	<b>3,477</b>	<b>7.8</b>	<b>651</b>
Parcel, U.S. Postal Service or courier .....	1,081	2.1	65	0.1	29	0.1	650
Truck and rail .....	1,025	2.0	3,747	3.3	2,579	5.8	522
Truck and water .....	96	0.2	(S)	(S)	(S)	(S)	3,002
Rail and water .....	513	1.0	1,055	0.9	(S)	(S)	(S)
Other multiple modes .....	473	0.9	(S)	(S)	426	1.0	(S)
<b>Other and unknown modes</b> .....	<b>622</b>	<b>1.2</b>	<b>1,396</b>	<b>1.2</b>	<b>(S)</b>	<b>(S)</b>	<b>175</b>
<b>Hazard Class 9, Miscellaneous Dangerous Goods</b>							
<b>Total</b> .....	<b>30,131</b>	<b>100.0</b>	<b>63,173</b>	<b>100.0</b>	<b>23,002</b>	<b>100.0</b>	<b>484</b>
<b>Single modes</b> .....	<b>28,377</b>	<b>94.2</b>	<b>61,236</b>	<b>96.9</b>	<b>21,664</b>	<b>94.2</b>	<b>259</b>
Truck <sup>2</sup> .....	19,059	63.3	40,500	64.1	7,329	31.9	209
For-hire truck .....	13,392	44.4	23,868	37.8	5,427	23.6	303
Private truck .....	5,667	18.8	16,632	26.3	1,902	8.3	100
Rail .....	7,292	24.2	15,598	24.7	12,722	55.3	1,025
Water .....	(S)	(S)	3,552	5.6	1,478	6.4	328
Air (includes truck and air) .....	25	0.1	1	(Z)	(S)	(S)	1,430
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>1,719</b>	<b>5.7</b>	<b>(S)</b>	<b>(S)</b>	<b>1,327</b>	<b>5.8</b>	<b>1,175</b>
Parcel, U.S. Postal Service or courier .....	261	0.9	6	(Z)	5	(Z)	1,172
Truck and rail .....	862	2.9	710	1.1	665	2.9	1,245
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	250
<b>Other and unknown modes</b> .....	<b>35</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>223</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 7.

## Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Division 1.1, Explosives With a Mass Explosion Hazard</b>							
<b>Total</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	<b>398</b>
<b>Single modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	<b>350</b>
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	310
For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)	670
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	137
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	-	-	-	-	-	-	-
<b>Multiple modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	-	-	-	-	-	-	-
Truck and water .....	-	-	-	-	-	-	-
Rail and water .....	-	-	-	-	-	-	-
Other multiple modes .....	-	-	-	-	-	-	-
<b>Other and unknown modes</b> .....	(S)	(S)	(Z)	0.2	(Z)	(Z)	<b>22</b>
<b>Division 1.2, Explosives With a Projection Hazard</b>							
<b>Total</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Single modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	30
Rail .....	-	-	-	-	-	-	-
Water .....	-	-	-	-	-	-	-
Air (includes truck and air) .....	-	-	-	-	-	-	-
Pipeline <sup>3</sup> .....	-	-	-	-	-	-	-
<b>Multiple modes</b> .....	-	-	-	-	-	-	-
Parcel, U.S. Postal Service or courier .....	-	-	-	-	-	-	-
Truck and rail .....	-	-	-	-	-	-	-
Truck and water .....	-	-	-	-	-	-	-
Rail and water .....	-	-	-	-	-	-	-
Other multiple modes .....	-	-	-	-	-	-	-
<b>Other and unknown modes</b> .....	-	-	-	-	-	-	-
<b>Division 1.3, Explosives With Predominantly a Fire Hazard</b>							
<b>Total</b> .....	<b>818</b>	<b>100.0</b>	<b>47</b>	<b>100.0</b>	<b>27</b>	<b>100.0</b>	<b>628</b>
<b>Single modes</b> .....	<b>818</b>	<b>100.0</b>	<b>47</b>	<b>100.0</b>	<b>27</b>	<b>100.0</b>	<b>625</b>
Truck <sup>2</sup> .....	818	100.0	47	100.0	27	100.0	625
For-hire truck .....	372	45.5	(S)	(S)	23	83.6	1,208
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	136
Rail .....	-	-	-	-	-	-	-
Water .....	-	-	-	-	-	-	-
Air (includes truck and air) .....	-	-	-	-	-	-	-
Pipeline <sup>3</sup> .....	-	-	-	-	-	-	-
<b>Multiple modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	-	-	-	-	-	-	-
Truck and water .....	-	-	-	-	-	-	-
Rail and water .....	-	-	-	-	-	-	-
Other multiple modes .....	-	-	-	-	-	-	-
<b>Other and unknown modes</b> .....	-	-	-	-	-	-	-

See footnotes at end of table.

Table 7.

## Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Division 1.4, Explosives With No Significant Blast Hazard</b>							
<b>Total</b> .....	<b>7,261</b>	<b>100.0</b>	<b>533</b>	<b>100.0</b>	<b>411</b>	<b>100.0</b>	<b>868</b>
<b>Single modes</b> .....	<b>6,539</b>	<b>90.1</b>	<b>516</b>	<b>96.9</b>	<b>395</b>	<b>96.1</b>	<b>672</b>
Truck <sup>2</sup> .....	6,501	89.5	516	96.7	393	95.5	669
For-hire truck .....	5,771	79.5	441	82.7	371	90.2	842
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	178
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	1,672
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>696</b>	<b>9.6</b>	<b>16</b>	<b>3.0</b>	<b>16</b>	<b>3.8</b>	<b>949</b>
Parcel, U.S. Postal Service or courier .....	595	8.2	14	2.6	14	3.4	948
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	2,959
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>
<b>Division 1.5, Very Insensitive Explosives, Blasting Agent</b>							
<b>Total</b> .....	<b>3,413</b>	<b>100.0</b>	<b>2,423</b>	<b>100.0</b>	<b>450</b>	<b>100.0</b>	<b>346</b>
<b>Single modes</b> .....	<b>3,257</b>	<b>95.4</b>	<b>2,413</b>	<b>99.6</b>	<b>423</b>	<b>94.2</b>	<b>295</b>
Truck <sup>2</sup> .....	3,169	92.8	2,411	99.5	422	93.9	282
For-hire truck .....	1,194	35.0	330	13.6	220	49.0	913
Private truck .....	1,975	57.9	2,081	85.9	202	44.8	88
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	88	2.6	2	0.1	(S)	(S)	1,561
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>153</b>	<b>4.5</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>833</b>
Parcel, U.S. Postal Service or courier .....	119	3.5	1	(Z)	(S)	(S)	811
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	33	1.0	(S)	(S)	(S)	(S)	3,135
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>3</b>	<b>0.1</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>
<b>Division 2.1, Flammable Gases</b>							
<b>Total</b> .....	<b>103,480</b>	<b>100.0</b>	<b>137,220</b>	<b>100.0</b>	<b>28,616</b>	<b>100.0</b>	<b>38</b>
<b>Single modes</b> .....	<b>100,258</b>	<b>96.9</b>	<b>134,855</b>	<b>98.3</b>	<b>27,354</b>	<b>95.6</b>	<b>35</b>
Truck <sup>2</sup> .....	40,546	39.2	48,813	35.6	3,958	13.8	32
For-hire truck .....	6,742	6.5	8,796	6.4	1,726	6.0	(S)
Private truck .....	33,804	32.7	40,017	29.2	2,232	7.8	28
Rail .....	18,031	17.4	25,924	18.9	17,854	62.4	567
Water .....	1,193	1.2	1,963	1.4	632	2.2	(S)
Air (includes truck and air) .....	89	0.1	1	(Z)	(S)	(S)	423
Pipeline <sup>3</sup> .....	40,398	39.0	58,153	42.4	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>2,771</b>	<b>2.7</b>	<b>1,920</b>	<b>1.4</b>	<b>(S)</b>	<b>(S)</b>	<b>432</b>
Parcel, U.S. Postal Service or courier .....	1,254	1.2	13	(Z)	3	(Z)	418
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	827
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	4,835
Rail and water .....	543	0.5	725	0.5	112	0.4	145
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>451</b>	<b>0.4</b>	<b>445</b>	<b>0.3</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table 7.

## Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Division 2.2, Nonflammable, Nontoxic Compressed Gases</b>							
<b>Total</b> .....	<b>23,020</b>	<b>100.0</b>	<b>103,457</b>	<b>100.0</b>	<b>22,521</b>	<b>100.0</b>	<b>68</b>
<b>Single modes</b> .....	<b>21,851</b>	<b>94.9</b>	<b>101,518</b>	<b>98.1</b>	<b>21,550</b>	<b>95.7</b>	<b>54</b>
Truck <sup>2</sup> .....	19,119	83.1	82,964	80.2	15,353	68.2	53
For-hire truck .....	7,476	32.5	13,780	13.3	8,269	36.7	448
Private truck .....	11,642	50.6	69,183	66.9	7,083	31.5	35
Rail .....	1,220	5.3	2,609	2.5	2,077	9.2	758
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	955
Pipeline <sup>3</sup> .....	1,276	5.5	15,623	15.1	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>861</b>	<b>3.7</b>	<b>1,350</b>	<b>1.3</b>	<b>937</b>	<b>4.2</b>	<b>827</b>
Parcel, U.S. Postal Service or courier .....	267	1.2	(S)	(S)	4	(Z)	829
Truck and rail .....	451	2.0	1,108	1.1	817	3.6	728
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	568
<b>Other and unknown modes</b> .....	<b>308</b>	<b>1.3</b>	<b>589</b>	<b>0.6</b>	<b>34</b>	<b>0.1</b>	<b>15</b>
<b>Division 2.3, Gases Toxic by Inhalation</b>							
<b>Total</b> .....	<b>5,310</b>	<b>100.0</b>	<b>9,828</b>	<b>100.0</b>	<b>4,124</b>	<b>100.0</b>	<b>147</b>
<b>Single modes</b> .....	<b>5,069</b>	<b>95.5</b>	<b>9,756</b>	<b>99.3</b>	<b>4,110</b>	<b>99.7</b>	<b>122</b>
Truck <sup>2</sup> .....	3,230	60.8	(S)	(S)	(S)	(S)	112
For-hire truck .....	1,706	32.1	(S)	(S)	(S)	(S)	454
Private truck .....	1,524	28.7	2,044	20.8	322	7.8	52
Rail .....	1,390	26.2	4,005	40.8	2,551	61.9	580
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	462
Pipeline <sup>3</sup> .....	358	6.8	1,449	14.7	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>791</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	802
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>22</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>102</b>
<b>Division 4.1, Flammable Solids</b>							
<b>Total</b> .....	<b>2,139</b>	<b>100.0</b>	<b>19,394</b>	<b>100.0</b>	<b>5,050</b>	<b>100.0</b>	<b>269</b>
<b>Single modes</b> .....	<b>1,613</b>	<b>75.4</b>	<b>18,535</b>	<b>95.6</b>	<b>4,895</b>	<b>96.9</b>	<b>217</b>
Truck <sup>2</sup> .....	952	44.5	9,837	50.7	991	19.6	145
For-hire truck .....	680	31.8	6,575	33.9	628	12.4	157
Private truck .....	272	12.7	3,263	16.8	(S)	(S)	119
Rail .....	(S)	(S)	3,926	20.2	3,313	65.6	909
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	418
Air (includes truck and air) .....	7	0.3	(S)	(S)	(Z)	(Z)	293
Pipeline <sup>3</sup> .....	9	0.4	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>836</b>
Parcel, U.S. Postal Service or courier .....	8	0.4	(S)	(S)	(S)	(S)	852
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	142
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table 7.

## Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Division 4.2, Spontaneously Combustible Materials</b>							
<b>Total</b> .....	<b>747</b>	<b>100.0</b>	<b>94</b>	<b>100.0</b>	<b>(S)</b>	<b>(S)</b>	<b>599</b>
<b>Single modes</b> .....	<b>603</b>	<b>80.7</b>	<b>81</b>	<b>86.6</b>	<b>(S)</b>	<b>(S)</b>	<b>519</b>
Truck <sup>2</sup> .....	594	79.6	80	85.7	(S)	(S)	477
For-hire truck .....	546	73.2	33	35.3	(S)	(S)	1,143
Private truck .....	48	6.4	(S)	(S)	(S)	(S)	(S)
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>788</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	790
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	464
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>980</b>
<b>Division 4.3, Dangerous When Wet Materials</b>							
<b>Total</b> .....	<b>1,181</b>	<b>100.0</b>	<b>920</b>	<b>100.0</b>	<b>453</b>	<b>100.0</b>	<b>227</b>
<b>Single modes</b> .....	<b>1,128</b>	<b>95.5</b>	<b>896</b>	<b>97.4</b>	<b>394</b>	<b>87.1</b>	<b>205</b>
Truck <sup>2</sup> .....	878	74.3	828	90.0	276	61.0	136
For-hire truck .....	574	48.6	468	50.8	(S)	(S)	463
Private truck .....	304	25.8	360	39.1	(S)	(S)	(S)
Rail .....	239	20.3	(S)	(S)	(S)	(S)	1,784
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(Z)	(Z)	1,859
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>1</b>	<b>0.1</b>	<b>1</b>	<b>0.1</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>
<b>Division 5.1, Oxidizers</b>							
<b>Total</b> .....	<b>5,983</b>	<b>100.0</b>	<b>14,797</b>	<b>100.0</b>	<b>6,952</b>	<b>100.0</b>	<b>352</b>
<b>Single modes</b> .....	<b>5,559</b>	<b>92.9</b>	<b>13,711</b>	<b>92.7</b>	<b>6,204</b>	<b>89.2</b>	<b>330</b>
Truck <sup>2</sup> .....	3,721	62.2	7,685	51.9	2,132	30.7	242
For-hire truck .....	2,027	33.9	4,376	29.6	1,666	24.0	513
Private truck .....	1,694	28.3	3,309	22.4	466	6.7	75
Rail .....	1,737	29.0	5,929	40.1	4,070	58.5	689
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	68	1.1	1	(Z)	(S)	(S)	1,457
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>365</b>	<b>6.1</b>	<b>959</b>	<b>6.5</b>	<b>676</b>	<b>9.7</b>	<b>484</b>
Parcel, U.S. Postal Service or courier .....	49	0.8	2	(Z)	1	(Z)	(S)
Truck and rail .....	283	4.7	942	6.4	622	8.9	896
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table 7.

## Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Division 5.2, Organic Peroxides</b>							
<b>Total</b> .....	<b>712</b>	<b>100.0</b>	<b>162</b>	<b>100.0</b>	<b>72</b>	<b>100.0</b>	<b>478</b>
<b>Single modes</b> .....	<b>694</b>	<b>97.5</b>	<b>158</b>	<b>97.7</b>	<b>68</b>	<b>94.4</b>	<b>498</b>
Truck <sup>2</sup> .....	694	97.5	158	97.7	68	94.4	392
For-hire truck .....	589	82.8	144	88.9	65	90.9	491
Private truck .....	104	14.7	(S)	(S)	(S)	(S)	181
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>393</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	379
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Division 6.1, Toxic (Poisonous) Materials</b>							
<b>Total</b> .....	<b>21,198</b>	<b>100.0</b>	<b>11,270</b>	<b>100.0</b>	<b>5,666</b>	<b>100.0</b>	<b>467</b>
<b>Single modes</b> .....	<b>20,104</b>	<b>94.8</b>	<b>10,449</b>	<b>92.7</b>	<b>5,555</b>	<b>98.0</b>	<b>327</b>
Truck <sup>2</sup> .....	10,128	47.8	2,950	26.2	849	15.0	246
For-hire truck .....	8,682	41.0	2,414	21.4	774	13.7	436
Private truck .....	1,446	6.8	536	4.8	76	1.3	59
Rail .....	6,782	32.0	5,354	47.5	4,576	80.8	913
Water .....	(S)	(S)	1,847	16.4	(S)	(S)	(S)
Air (includes truck and air) .....	36	0.2	1	(Z)	(S)	(S)	767
Pipeline <sup>3</sup> .....	(S)	(S)	298	2.6	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>1,068</b>	<b>5.0</b>	<b>817</b>	<b>7.2</b>	<b>111</b>	<b>2.0</b>	<b>1,013</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	1	(Z)	1,020
Truck and rail .....	50	0.2	39	0.3	18	0.3	(S)
Truck and water .....	6	(Z)	3	(Z)	1	(Z)	237
Rail and water .....	25	0.1	11	0.1	6	0.1	(S)
Other multiple modes .....	(S)	(S)	762	6.8	86	1.5	117
<b>Other and unknown modes</b> .....	<b>26</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(S)</b>
<b>Division 6.2, Infectious Substances</b>							
<b>Total</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Single modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
For-hire truck .....	—	—	—	—	—	—	—
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 8.

## Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>UN 1066, Nitrogen, Compressed</b>							
<b>Total</b> .....	<b>2,338</b>	<b>100.0</b>	<b>32,034</b>	<b>100.0</b>	<b>4,821</b>	<b>100.0</b>	<b>62</b>
<b>Single modes</b> .....	<b>2,323</b>	<b>99.4</b>	<b>32,026</b>	<b>100.0</b>	<b>4,820</b>	<b>100.0</b>	<b>64</b>
Truck <sup>3</sup> .....	2,273	97.2	30,872	96.4	4,798	99.5	64
For-hire truck .....	319	13.6	2,828	8.8	2,016	41.8	541
Private truck .....	1,954	83.6	28,044	87.5	2,782	57.7	48
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>5</b>	<b>0.2</b>	<b>3</b>	<b>(Z)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Parcel, U.S. Postal Service or courier .....	5	0.2	3	(Z)	(S)	(S)	(S)
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>10</b>	<b>0.4</b>	<b>5</b>	<b>(Z)</b>	<b>(S)</b>	<b>(S)</b>	<b>8</b>
<b>UN 1075, Petroleum Gases</b>							
<b>Total</b> .....	<b>43,707</b>	<b>100.0</b>	<b>57,133</b>	<b>100.0</b>	<b>8,613</b>	<b>100.0</b>	<b>30</b>
<b>Single modes</b> .....	<b>43,054</b>	<b>98.5</b>	<b>56,346</b>	<b>98.6</b>	<b>8,194</b>	<b>95.1</b>	<b>29</b>
Truck <sup>3</sup> .....	26,927	61.6	31,054	54.4	1,929	22.4	28
For-hire truck .....	3,578	8.2	5,163	9.0	696	8.1	(S)
Private truck .....	23,349	53.4	25,891	45.3	1,233	14.3	27
Rail .....	4,067	9.3	6,490	11.4	4,052	47.0	387
Water .....	156	0.4	407	0.7	(S)	(S)	(S)
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	11,905	27.2	18,395	32.2	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>648</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	2	(Z)	1	(Z)	630
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	918
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>125</b>	<b>0.3</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>UN 1202, Diesel Fuel</b>							
<b>Total</b> .....	<b>118,341</b>	<b>100.0</b>	<b>217,590</b>	<b>100.0</b>	<b>28,582</b>	<b>100.0</b>	<b>39</b>
<b>Single modes</b> .....	<b>105,248</b>	<b>88.9</b>	<b>196,016</b>	<b>90.1</b>	<b>24,840</b>	<b>86.9</b>	<b>38</b>
Truck <sup>3</sup> .....	49,354	41.7	87,389	40.2	5,729	20.0	36
For-hire truck .....	15,542	13.1	25,296	11.6	2,612	9.1	105
Private truck .....	33,811	28.6	62,093	28.5	3,117	10.9	26
Rail .....	938	0.8	1,716	0.8	(S)	(S)	455
Water .....	14,854	12.6	37,808	17.4	14,756	51.6	318
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	352
Pipeline <sup>4</sup> .....	40,003	33.8	69,010	31.7	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>12,674</b>	<b>10.7</b>	<b>20,721</b>	<b>9.5</b>	<b>3,729</b>	<b>13.0</b>	<b>425</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	1,023
Truck and water .....	(S)	(S)	(S)	(S)	903	3.2	119
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	3,290	2.8	7,142	3.3	1,453	5.1	160
<b>Other and unknown modes</b> .....	<b>419</b>	<b>0.4</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>19</b>

See footnotes at end of table.

Table 8.

## Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>UN 1203, Gasoline</b>							
<b>Total</b> .....	<b>616,008</b>	<b>100.0</b>	<b>883,928</b>	<b>100.0</b>	<b>61,374</b>	<b>100.0</b>	<b>43</b>
<b>Single modes</b> .....	<b>601,230</b>	<b>97.6</b>	<b>858,969</b>	<b>97.2</b>	<b>52,284</b>	<b>85.2</b>	<b>42</b>
Truck <sup>3</sup> .....	389,935	63.3	537,659	60.8	23,665	38.6	40
For-hire truck .....	170,342	27.7	238,152	26.9	11,441	18.6	50
Private truck .....	219,594	35.6	299,506	33.9	12,224	19.9	35
Rail .....	1,889	0.3	2,596	0.3	376	0.6	105
Water .....	12,837	2.1	21,259	2.4	5,300	8.6	575
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>4</sup> .....	196,519	31.9	297,425	33.6	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>13,782</b>	<b>2.2</b>	<b>23,661</b>	<b>2.7</b>	<b>8,995</b>	<b>14.7</b>	<b>189</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	387	0.1	510	0.1	163	0.3	210
Truck and water .....	5,574	0.9	8,945	1.0	5,079	8.3	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	7,821	1.3	14,207	1.6	3,754	6.1	246
<b>Other and unknown modes</b> .....	<b>997</b>	<b>0.2</b>	<b>1,297</b>	<b>0.1</b>	<b>94</b>	<b>0.2</b>	<b>52</b>
<b>UN 1824, Sodium Hydroxide Solution</b>							
<b>Total</b> .....	<b>7,587</b>	<b>100.0</b>	<b>23,692</b>	<b>100.0</b>	<b>9,618</b>	<b>100.0</b>	<b>177</b>
<b>Single modes</b> .....	<b>7,121</b>	<b>93.9</b>	<b>22,958</b>	<b>96.9</b>	<b>9,149</b>	<b>95.1</b>	<b>135</b>
Truck <sup>3</sup> .....	4,252	56.0	9,359	39.5	1,693	17.6	109
For-hire truck .....	2,273	30.0	4,752	20.1	1,300	13.5	355
Private truck .....	1,979	26.1	4,608	19.4	392	4.1	50
Rail .....	1,637	21.6	7,036	29.7	4,328	45.0	570
Water .....	876	11.5	5,814	24.5	3,112	32.4	726
Air (includes truck and air) .....	(S)	(S)	1	(Z)	1	(Z)	927
Pipeline <sup>4</sup> .....	210	2.8	748	3.2	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>178</b>	<b>2.3</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>512</b>
Parcel, U.S. Postal Service or courier .....	96	1.3	(S)	(S)	6	0.1	503
Truck and rail .....	(S)	(S)	47	0.2	21	0.2	(S)
Truck and water .....	(S)	(S)	(S)	(S)	15	0.2	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	45	0.6	238	1.0	(S)	(S)	524
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>332</b>
<b>UN 1830, Sulfuric Acid</b>							
<b>Total</b> .....	<b>4,335</b>	<b>100.0</b>	<b>33,065</b>	<b>100.0</b>	<b>13,410</b>	<b>100.0</b>	<b>257</b>
<b>Single modes</b> .....	<b>3,968</b>	<b>91.5</b>	<b>30,220</b>	<b>91.4</b>	<b>12,337</b>	<b>92.0</b>	<b>202</b>
Truck <sup>3</sup> .....	2,491	57.5	11,291	34.1	3,805	28.4	170
For-hire truck .....	1,036	23.9	8,242	24.9	3,421	25.5	341
Private truck .....	1,455	33.6	3,049	9.2	385	2.9	90
Rail .....	675	15.6	16,476	49.8	8,355	62.3	505
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	1,275
Pipeline <sup>4</sup> .....	755	17.4	1,562	4.7	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>323</b>	<b>7.5</b>	<b>(S)</b>	<b>(S)</b>	<b>846</b>	<b>6.3</b>	<b>888</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	3	(Z)	(S)	(S)	880
Truck and rail .....	31	0.7	(S)	(S)	(S)	(S)	1,533
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	76	1.8	(S)	(S)	(S)	(S)	315
Other multiple modes .....	164	3.8	(S)	(S)	231	1.7	(S)
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>218</b>

See footnotes at end of table.

Table 8.

## Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>UN 1863, Fuel, Aviation, Turbine Engine</b>							
<b>Total</b> .....	<b>48,315</b>	<b>100.0</b>	<b>76,447</b>	<b>100.0</b>	<b>7,359</b>	<b>100.0</b>	<b>99</b>
<b>Single modes</b> .....	<b>46,116</b>	<b>95.4</b>	<b>72,947</b>	<b>95.4</b>	<b>5,845</b>	<b>79.4</b>	<b>97</b>
Truck <sup>3</sup> .....	6,103	12.6	9,720	12.7	682	9.3	65
For-hire truck .....	3,678	7.6	5,599	7.3	416	5.7	79
Private truck .....	2,426	5.0	4,121	5.4	266	3.6	52
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	340
Water .....	(S)	(S)	7,539	9.9	(S)	(S)	784
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	455
Pipeline <sup>4</sup> .....	32,734	67.8	51,547	67.4	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>2,197</b>	<b>4.5</b>	<b>3,498</b>	<b>4.6</b>	<b>(S)</b>	<b>(S)</b>	<b>513</b>
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	1,113	2.3	1,437	1.9	328	4.5	494
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>21</b>
<b>UN 1964, Hydrocarbon Gas Mixture, Compressed, n.o.s.</b>							
<b>Total</b> .....	<b>16,810</b>	<b>100.0</b>	<b>24,007</b>	<b>100.0</b>	<b>7,803</b>	<b>100.0</b>	<b>141</b>
<b>Single modes</b> .....	<b>16,009</b>	<b>95.2</b>	<b>23,142</b>	<b>96.4</b>	<b>7,057</b>	<b>90.4</b>	<b>137</b>
Truck <sup>3</sup> .....	1,776	10.6	2,450	10.2	477	6.1	81
For-hire truck .....	938	5.6	1,254	5.2	253	3.2	113
Private truck .....	838	5.0	(S)	(S)	(S)	(S)	75
Rail .....	(S)	(S)	(S)	(S)	5,532	70.9	560
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	6,985	41.6	10,701	44.6	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>791</b>
Parcel, U.S. Postal Service or courier .....	(Z)	(Z)	(S)	(S)	(Z)	(Z)	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	1,188
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>UN 1993, Flammable Liquids, n.o.s.</b>							
<b>Total</b> .....	<b>273,421</b>	<b>100.0</b>	<b>454,123</b>	<b>100.0</b>	<b>41,183</b>	<b>100.0</b>	<b>37</b>
<b>Single modes</b> .....	<b>258,257</b>	<b>94.5</b>	<b>420,217</b>	<b>92.5</b>	<b>31,728</b>	<b>77.0</b>	<b>33</b>
Truck <sup>3</sup> .....	168,082	61.5	255,622	56.3	16,408	39.8	30
For-hire truck .....	60,836	22.2	95,519	21.0	8,405	20.4	98
Private truck .....	107,245	39.2	160,103	35.3	8,003	19.4	24
Rail .....	3,284	1.2	4,726	1.0	2,713	6.6	(S)
Water .....	23,867	8.7	49,189	10.8	5,998	14.6	355
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	1,041
Pipeline <sup>4</sup> .....	62,890	23.0	110,589	24.4	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>13,167</b>	<b>4.8</b>	<b>31,081</b>	<b>6.8</b>	<b>9,107</b>	<b>22.1</b>	<b>587</b>
Parcel, U.S. Postal Service or courier .....	160	0.1	(S)	(S)	4	(Z)	592
Truck and rail .....	284	0.1	310	0.1	162	0.4	640
Truck and water .....	6,635	2.4	12,942	2.8	5,180	12.6	804
Rail and water .....	(S)	(S)	100	(Z)	25	0.1	250
Other multiple modes .....	5,988	2.2	17,721	3.9	3,736	9.1	172
<b>Other and unknown modes</b> .....	<b>1,997</b>	<b>0.7</b>	<b>2,826</b>	<b>0.6</b>	<b>348</b>	<b>0.8</b>	<b>126</b>

See footnotes at end of table.

Table 8.

## Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>UN 3257, Elevated Temperature Liquid, n.o.s.</b>							
<b>Total</b> .....	<b>12,859</b>	<b>100.0</b>	<b>48,399</b>	<b>100.0</b>	<b>14,772</b>	<b>100.0</b>	<b>203</b>
<b>Single modes</b> .....	<b>12,668</b>	<b>98.5</b>	<b>47,299</b>	<b>97.7</b>	<b>14,408</b>	<b>97.5</b>	<b>202</b>
Truck <sup>3</sup> .....	9,617	74.8	34,534	71.4	4,982	33.7	147
For-hire truck .....	6,020	46.8	19,978	41.3	3,415	23.1	179
Private truck .....	3,597	28.0	14,555	30.1	1,568	10.6	105
Rail .....	2,000	15.6	8,351	17.3	7,880	53.3	1,129
Water .....	525	4.1	2,829	5.8	1,412	9.6	419
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>716</b>
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	70	0.5	(S)	(S)	(S)	(S)	753
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>6</b>	<b>(Z)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>3</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>4</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9a.

### Hazardous Material Shipment Characteristics by For-Hire Truck for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>358,792</b>	<b>24.8</b>	<b>495,077</b>	<b>22.2</b>	<b>63,288</b>	<b>19.6</b>	<b>214</b>
1005	Ammonia, anhydrous .....	2,114	34.6	4,908	32.7	925	17.6	194
1066	Nitrogen, compressed .....	319	13.6	2,828	8.8	2,016	41.8	541
1075	Petroleum gases, liquefied .....	3,578	8.2	5,163	9.0	696	8.1	(S)
1202	Diesel fuel .....	15,542	13.1	25,296	11.6	2,612	9.1	105
1203	Gasoline .....	170,342	27.7	238,152	26.9	11,441	18.6	50
1263	Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base .....	11,608	69.0	3,034	61.3	1,592	73.5	(S)
1350	Sulfur .....	115	59.2	1,515	55.4	(S)	(S)	124
1791	Hypochlorite solutions .....	517	27.9	1,696	26.5	139	28.5	135
1805	Phosphoric acid solution .....	885	30.2	1,787	25.0	(S)	(S)	388
1824	Sodium hydroxide solution .....	2,273	30.0	4,752	20.1	1,300	13.5	355
1830	Sulfuric acid .....	1,036	23.9	8,242	24.9	3,421	25.5	341
1863	Fuel, aviation, turbine engine .....	3,678	7.6	5,599	7.3	416	5.7	79
1866	Resin solution, flammable .....	4,906	76.8	2,019	81.3	1,149	83.4	685
1942	Ammonium nitrate .....	482	26.9	1,853	29.9	(S)	(S)	407
1987	Alcohols, n.o.s. ....	1,972	29.2	1,731	22.6	385	7.5	299
1993	Flammable liquids, n.o.s. ....	60,836	22.2	95,519	21.0	8,405	20.4	98
2448	Sulfur, molten .....	291	20.4	4,883	30.1	392	8.6	84
2794	Batteries, wet, filled with acid, electric storage .....	4,273	41.9	1,851	44.8	1,434	81.9	607
3082	Environmentally hazardous substances, liquid, n.o.s. ....	4,395	40.3	2,465	28.1	1,282	24.6	452
3257	Elevated temperature liquid, n.o.s. ....	6,020	46.8	19,978	41.3	3,415	23.1	179

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9b.

### Hazardous Material Shipment Characteristics by Private Truck for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>478,282</b>	<b>33.0</b>	<b>707,748</b>	<b>31.7</b>	<b>40,709</b>	<b>12.6</b>	<b>32</b>
1005	Ammonia, anhydrous .....	1,934	31.7	4,349	29.0	(S)	(S)	65
1006	Argon, compressed .....	1,694	59.5	8,786	67.4	947	21.3	37
1013	Carbon dioxide .....	1,585	79.7	7,918	38.4	817	20.0	28
1066	Nitrogen, compressed .....	1,954	83.6	28,044	87.5	2,782	57.7	48
1072	Oxygen, compressed .....	2,454	58.8	18,462	93.9	2,044	73.5	35
1075	Petroleum gases, liquefied .....	23,349	53.4	25,891	45.3	1,233	14.3	27
1202	Diesel fuel .....	33,811	28.6	62,093	28.5	3,117	10.9	26
1203	Gasoline .....	219,594	35.6	299,506	33.9	12,224	19.9	35
1223	Kerosene .....	1,614	21.9	2,142	17.9	73	9.3	19
1789	Hydrochloric acid .....	402	37.8	2,913	44.1	222	10.1	56
1791	Hypochlorite solutions .....	1,122	60.6	4,639	72.6	331	67.8	57
1824	Sodium hydroxide solution .....	1,979	26.1	4,608	19.4	392	4.1	50
1830	Sulfuric acid .....	1,455	33.6	3,049	9.2	385	2.9	90
1863	Fuel, aviation, turbine engine .....	2,426	5.0	4,121	5.4	266	3.6	52
1987	Alcohols, n.o.s. ....	1,789	26.4	2,194	28.6	(S)	(S)	181
1993	Flammable liquids, n.o.s. ....	107,245	39.2	160,103	35.3	8,003	19.4	24
2448	Sulfur, molten .....	107	7.5	2,237	13.8	(S)	(S)	158
2794	Batteries, wet, filled with acid, electric storage .....	5,886	57.7	2,267	54.8	273	15.6	48
3257	Elevated temperature liquid, n.o.s. ....	3,597	28.0	14,555	30.1	1,568	10.6	105
3264	Corrosive liquid, acidic, inorganic, n.o.s. ....	342	26.7	2,116	39.7	203	22.6	82

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9c.

### Hazardous Material Shipment Characteristics by Rail for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>69,213</b>	<b>4.8</b>	<b>129,743</b>	<b>5.8</b>	<b>92,169</b>	<b>28.5</b>	<b>578</b>
1005	Ammonia, anhydrous .....	369	6.1	1,141	7.6	848	16.1	733
1017	Chlorine .....	733	19.8	3,241	38.0	1,768	55.3	473
1075	Petroleum gases, liquefied .....	4,067	9.3	6,490	11.4	4,052	47.0	387
1086	Vinyl chloride, stabilized .....	2,127	66.9	3,085	64.2	3,247	99.3	975
1170	Ethanol and ethyl alcohol .....	1,529	22.8	2,484	42.8	3,053	63.0	1,146
1202	Diesel fuel .....	938	0.8	1,716	0.8	(S)	(S)	455
1203	Gasoline .....	1,889	0.3	2,596	0.3	376	0.6	105
1789	Hydrochloric acid .....	327	30.8	2,187	33.1	1,652	75.0	780
1805	Phosphoric acid solution .....	1,168	39.8	3,269	45.7	2,689	63.2	830
1824	Sodium hydroxide solution .....	1,637	21.6	7,036	29.7	4,328	45.0	570
1830	Sulfuric acid .....	675	15.6	16,476	49.8	8,355	62.3	505
1942	Ammonium nitrate .....	720	40.2	2,928	47.3	1,854	65.8	633
1987	Alcohols, n.o.s. ....	1,787	26.4	2,923	38.1	3,796	73.9	1,273
1993	Flammable liquids, n.o.s. ....	3,284	1.2	4,726	1.0	2,713	6.6	(S)
1999	Tars, liquid including road asphalt and oils, bitumen and cut backs ..	358	10.2	1,450	5.2	1,227	37.5	912
2312	Phenol, molten .....	4,906	59.1	3,373	61.6	2,909	95.4	981
2448	Sulfur, molten .....	(S)	(S)	3,610	22.2	3,119	68.7	933
3077	Environmentally hazardous substances, solid, n.o.s. ....	1,920	40.5	1,521	53.5	1,824	75.5	1,206
3082	Environmentally hazardous substances, liquid, n.o.s. ....	3,254	29.8	3,520	40.1	2,931	56.2	871
3257	Elevated temperature liquid, n.o.s. ....	2,000	15.6	8,351	17.3	7,880	53.3	1,129

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9d.

### Hazardous Material Shipment Characteristics by Water for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>69,186</b>	<b>4.8</b>	<b>149,794</b>	<b>6.7</b>	<b>37,064</b>	<b>11.5</b>	<b>383</b>
0004	Ammonium .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1005	Ammonia, anhydrous .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1010	Butadienes, stabilized .....	302	10.2	276	8.6	442	59.4	1,603
1017	Chlorine .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1075	Petroleum gases, liquefied .....	156	0.4	407	0.7	(S)	(S)	(S)
1086	Vinyl chloride, stabilized .....	(S)	(S)	(S)	(S)	20	0.6	17
1093	Acrylonitrile, stabilized .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1114	Benzene .....	1,753	60.5	3,894	76.1	827	82.9	243
1145	Cyclohexane .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1159	Diisopropyl ether .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1184	Ethylene dichloride .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1197	Extracts, flavoring, liquid .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1202	Diesel fuel .....	14,854	12.6	37,808	17.4	14,756	51.6	318
1203	Gasoline .....	12,837	2.1	21,259	2.4	5,300	8.6	575
1223	Kerosene .....	360	4.9	750	6.3	(S)	(S)	891
1230	Methanol .....	7	0.5	8	0.5	(S)	(S)	(S)
1824	Sodium hydroxide solution .....	876	11.5	5,814	24.5	3,112	32.4	726
1863	Fuel, aviation, turbine engine .....	(S)	(S)	7,539	9.9	(S)	(S)	784
1993	Flammable liquids, n.o.s. ....	23,867	8.7	49,189	10.8	5,998	14.6	355
3257	Elevated temperature liquid, n.o.s. ....	525	4.1	2,829	5.8	1,412	9.6	419

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9e.

### Hazardous Material Shipment Characteristics by Air (Includes Truck and Air) for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>1,735</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>1,095</b>
0004	Ammonium picrate .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0012	Cartridges for weapons, inert projectile or cartridges, small arms .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0042	Boosters, without detonator .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0044	Primers, cap type .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0331	Explosive, blasting, type B or agent blasting, type B .....	88	3.3	2	0.1	(S)	(S)	1,561
0489	Dinitroglycoluril or Dingu .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1017	Chlorine .....	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	489
1046	Helium, compressed .....	(S)	(S)	(Z)	(Z)	(Z)	(Z)	470
1139	Coating solution .....	(S)	(S)	(Z)	0.2	(S)	(S)	(S)
1197	Extracts, flavoring, liquid .....	9	0.7	1	0.2	(Z)	0.2	778
1219	Isopropanol .....	(S)	(S)	(Z)	(Z)	(Z)	(Z)	1,090
1266	Perfumery products with flammable solvents .....	90	3.2	1	1.3	(S)	(S)	(S)
1268	Petroleum distillates, n.o.s. ....	(S)	(S)	(Z)	(Z)	(S)	(S)	1,486
1789	Hydrochloric acid .....	(S)	(S)	(Z)	(Z)	(S)	(S)	1,398
1824	Sodium hydroxide solution .....	(S)	(S)	1	(Z)	1	(Z)	927
1866	Resin solution, flammable .....	88	1.4	1	(Z)	2	0.1	1,369
1950	Aerosols, corrosive, packing group II or III .....	89	4.5	1	0.5	(S)	(S)	(S)
2915	Radioactive material, Type A package non-special form, non-fissile or fissile-excepted .....	183	1.1	2	0.4	3	15.3	1,624
2924	Flammable liquids, corrosive, n.o.s. ....	(S)	(S)	(Z)	0.1	1	0.4	1,093
3082	Environmentally hazardous substances, liquid, n.o.s. ....	11	0.1	(Z)	(Z)	(S)	(S)	1,562

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 9f.

### Hazardous Material Shipment Characteristics by Pipeline for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
	<b>Total</b> .....	<b>393,408</b>	<b>27.2</b>	<b>628,905</b>	<b>28.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
1005	Ammonia, anhydrous .....	966	15.8	2,896	19.3	(S)	(S)	(S)
1013	Carbon dioxide .....	134	6.8	10,297	49.9	(S)	(S)	(S)
1049	Hydrogen, compressed .....	(S)	(S)	598	35.5	(S)	(S)	(S)
1075	Petroleum gases, liquefied .....	11,905	27.2	18,395	32.2	(S)	(S)	(S)
1077	Propylene .....	395	89.2	732	92.7	(S)	(S)	(S)
1145	Cyclohexane .....	(S)	(S)	477	32.2	(S)	(S)	(S)
1202	Diesel fuel .....	40,003	33.8	69,010	31.7	(S)	(S)	(S)
1203	Gasoline .....	196,519	31.9	297,425	33.6	(S)	(S)	(S)
1223	Kerosene .....	4,012	54.4	6,653	55.7	(S)	(S)	(S)
1268	Petroleum distillates, n.o.s. ....	(S)	(S)	5,458	46.3	(S)	(S)	(S)
1547	Aniline .....	(S)	(S)	213	59.4	(S)	(S)	(S)
1824	Sodium hydroxide solution .....	210	2.8	748	3.2	(S)	(S)	(S)
1830	Sulfuric acid .....	755	17.4	1,562	4.7	(S)	(S)	(S)
1863	Fuel, aviation, turbine engine .....	32,734	67.8	51,547	67.4	(S)	(S)	(S)
1962	Ethylene .....	5,855	99.8	6,304	99.8	(S)	(S)	(S)
1964	Hydrocarbon gas mixture, compressed, n.o.s. ....	6,985	41.6	10,701	44.6	(S)	(S)	(S)
1972	Methane, refrigerated liquid .....	851	55.8	1,663	51.7	(S)	(S)	(S)
1978	Propane .....	2,504	23.0	4,192	27.8	(S)	(S)	(S)
1993	Flammable liquids, n.o.s. ....	62,890	23.0	110,589	24.4	(S)	(S)	(S)
2031	Nitric acid other than red fuming .....	(S)	(S)	604	43.1	(S)	(S)	(S)

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 10.

### Shipment Characteristics by Selected Commodities<sup>1</sup> for Hazardous Materials for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		Total (million dollars)	Hazardous		Total (thousands)	Hazardous		Total (millions)	Hazardous	
			2007 (million dollars)	Percent		2007 (thousands)	Percent		2007 (millions)	Percent
<b>Total</b>		<b>11,684,872</b>	<b>1,448,218</b>	<b>12.4</b>	<b>12,543,425</b>	<b>2,231,133</b>	<b>17.8</b>	<b>3,344,658</b>	<b>323,457</b>	<b>9.7</b>
17	Gasoline and aviation turbine fuel	663,194	663,194	100.0	959,161	959,161	100.0	68,647	68,647	100.0
18	Fuel oils	373,515	373,515	100.0	641,894	641,894	100.0	54,243	54,243	100.0
19	Coal and petroleum products, n.e.c.	268,163	133,043	49.6	578,188	247,172	42.7	127,190	59,604	46.9
20	Basic chemicals	271,469	149,697	55.1	412,581	295,890	71.7	171,156	100,093	58.5
22	Fertilizers	43,613	12,468	28.6	149,600	37,788	25.3	58,970	15,598	26.5
23	Chemical products and preparations, n.e.c.	331,750	54,850	16.5	123,537	24,997	20.2	58,477	10,263	17.6

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Percentages represent the proportion of hazardous materials to the two-digit commodity total.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 11a.

### Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b>		<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
17	Gasoline and aviation turbine fuel	663,194	45.8	959,161	43.0	68,647	21.2	43
18	Fuel oils	373,515	25.8	641,894	28.8	54,243	16.8	32
19	Coal and petroleum products, n.e.c.	133,043	9.2	247,172	11.1	59,604	18.4	42
20	Basic chemicals	149,697	10.3	295,890	13.3	100,093	30.9	146
22	Fertilizers	12,468	0.9	37,788	1.7	15,598	4.8	221
23	Chemical products and preparations, n.e.c.	54,850	3.8	24,997	1.1	10,263	3.2	348

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Percentages represent the proportion of hazardous materials by two-digit commodity to total hazardous material shipments.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 11b.

### Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>			Average miles per shipment		
		2007 (million dollars)	2002 (million dollars)	Percentage change	2007 (thousands)	2002 (thousands)	Percentage change	2007 (millions)	2002 (millions)	Percentage change	2007	2002	Percentage change
<b>Total</b>		<b>1,448,218</b>	<b>660,181</b>	<b>119.4</b>	<b>2,231,133</b>	<b>2,191,519</b>	<b>1.8</b>	<b>323,457</b>	<b>326,727</b>	<b>-1.0</b>	<b>96</b>	<b>136</b>	<b>-29.7</b>
17	Gasoline and aviation turbine fuel	663,194	279,407	137.4	959,161	1,063,569	-9.8	68,647	117,219	-41.4	43	52	-16.5
18	Fuel oils	373,515	116,119	221.7	641,894	549,007	16.9	54,243	55,464	-2.2	32	32	-0.2
19	Coal and petroleum products, n.e.c.	133,043	41,855	217.9	247,172	199,735	23.8	59,604	40,959	45.5	42	64	-34.5
20	Basic chemicals	149,697	84,087	78.0	295,890	273,077	8.4	100,093	72,552	38.0	146	223	-34.6
22	Fertilizers	12,468	5,587	123.2	37,788	27,987	35.0	15,598	8,376	86.2	221	142	55.3
23	Chemical products and preparations, n.e.c.	54,850	53,008	3.5	24,997	34,891	-28.4	10,263	14,324	-28.3	348	326	6.7

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 11c.

### Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: Percentage of Total for 2007 and 2002

[Estimates based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value		Tons		Ton-miles <sup>2</sup>	
		2007	2002	2007	2002	2007	2002
	<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
17	Gasoline and aviation turbine fuel .....	45.8	42.3	43.0	48.5	21.2	35.9
18	Fuel oils .....	25.8	17.6	28.8	25.1	16.8	17.0
19	Coal and petroleum products, n.e.c. ....	9.2	6.3	11.1	9.1	18.4	12.5
20	Basic chemicals .....	10.3	12.7	13.3	12.5	30.9	22.2
22	Fertilizers .....	0.9	0.8	1.7	1.3	4.8	2.6
23	Chemical products and preparations, n.e.c. ....	3.8	8.0	1.1	1.6	3.2	4.4

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Percentages represent the proportion of hazardous materials by two-digit commodity to total hazardous material shipments.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 12a.

### Hazardous Material Shipment Characteristics by Truck<sup>1</sup> for Intrastate Versus Interstate for Selected Commodities<sup>2</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>3</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>837,074</b>	<b>81.9</b>	<b>18.1</b>	<b>1,202,825</b>	<b>83.5</b>	<b>16.5</b>	<b>103,997</b>	<b>40.5</b>	<b>59.5</b>
17	Gasoline and aviation turbine fuel .....	395,296	93.0	7.0	546,768	92.9	7.1	24,326	73.9	26.1
18	Fuel oils .....	207,251	88.2	11.8	335,808	86.2	13.8	20,313	53.5	46.5
19	Coal and petroleum products, n.e.c. ....	62,580	77.4	22.6	117,886	77.2	22.8	11,724	42.0	58.0
20	Basic chemicals .....	67,562	50.3	49.7	145,929	57.9	42.1	31,701	18.7	81.3
22	Fertilizers .....	7,132	63.3	36.7	20,152	61.2	38.8	3,908	25.2	74.8
23	Chemical products and preparations, n.e.c. ....	47,329	39.6	60.4	21,187	47.7	52.3	7,733	10.4	89.6

<sup>1</sup> "Truck" as a single mode includes shipments by private truck only, for-hire truck only, or a combination of private truck and for-hire truck.

<sup>2</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>3</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Percentages represent the proportion of hazardous materials by two-digit commodity to total hazardous material shipments.

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different from the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 12b.

### Hazardous Material Shipment Characteristics by For-Hire Truck for Intrastate Versus Interstate for Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>358,792</b>	<b>72.1</b>	<b>27.9</b>	<b>495,077</b>	<b>80.4</b>	<b>19.6</b>	<b>63,288</b>	<b>29.3</b>	<b>70.7</b>
17	Gasoline and aviation turbine fuel .....	173,898	91.4	8.6	243,825	91.4	8.6	11,866	72.0	28.0
18	Fuel oils .....	71,392	85.9	14.1	117,422	85.4	14.6	9,583	47.2	52.8
19	Coal and petroleum products, n.e.c. ....	17,460	64.6	35.4	54,821	76.4	23.6	7,298	37.8	62.2
20	Basic chemicals .....	36,355	28.5	71.5	48,198	45.0	55.0	21,585	8.2	91.8
22	Fertilizers .....	3,656	46.6	53.4	11,274	47.7	52.3	3,016	12.7	87.3
23	Chemical products and preparations, n.e.c. ....	33,418	25.7	74.3	12,110	26.7	73.3	6,555	4.9	95.1

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different than the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 12c.

### Hazardous Material Shipment Characteristics by Private Truck for Intrastate Versus Interstate for Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>478,282</b>	<b>89.1</b>	<b>10.9</b>	<b>707,748</b>	<b>85.6</b>	<b>14.4</b>	<b>40,709</b>	<b>58.0</b>	<b>42.0</b>
17	Gasoline and aviation turbine fuel .....	221,398	94.2	5.8	302,943	94.1	5.9	12,460	75.6	24.4
18	Fuel oils .....	135,859	89.5	10.5	218,386	86.7	13.3	10,730	59.2	40.8
19	Coal and petroleum products, n.e.c. ....	45,120	82.4	17.6	63,065	77.9	22.1	4,426	48.8	51.2
20	Basic chemicals .....	31,207	75.7	24.3	97,731	64.3	35.7	10,116	41.1	58.9
22	Fertilizers .....	3,476	80.9	(S)	8,879	78.4	21.6	892	67.5	32.5
23	Chemical products and preparations, n.e.c. ....	13,911	73.0	27.0	9,077	75.6	24.4	1,178	41.0	59.0

(S) Estimate did not meet publication standards.

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different than the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 13a.

### Hazardous Material Shipment Characteristics by Truck<sup>1</sup> for Intrastate Versus Interstate for Selected UN Numbers<sup>2</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>3</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>837,074</b>	<b>81.9</b>	<b>18.1</b>	<b>1,202,825</b>	<b>83.5</b>	<b>16.5</b>	<b>103,997</b>	<b>40.5</b>	<b>59.5</b>
1005	Ammonia, anhydrous .....	4,048	71.9	28.1	9,257	69.1	30.9	1,275	37.0	63.0
1006	Argon, compressed .....	2,672	51.0	49.0	12,044	38.5	61.5	(S)	7.3	(S)
1013	Carbon dioxide .....	1,691	81.2	18.8	9,209	60.7	39.3	1,382	30.9	69.1
1066	Nitrogen, compressed .....	2,273	64.8	35.2	30,872	60.7	39.3	4,798	(S)	70.4
1072	Oxygen, compressed .....	4,130	42.3	(S)	19,380	59.9	40.1	2,776	36.3	63.7
1075	Petroleum gases, liquefied .....	26,927	88.3	11.7	31,054	87.1	12.9	1,929	59.3	40.7
1202	Diesel fuel .....	49,354	79.8	20.2	87,389	74.9	25.1	5,729	46.5	53.5
1203	Gasoline .....	389,935	93.2	6.8	537,659	93.1	6.9	23,665	74.4	25.6
1263	Paint .....	16,060	39.6	60.4	4,697	42.5	57.5	1,948	8.2	91.8
1789	Hydrochloric acid .....	672	68.2	31.8	4,298	69.7	30.3	507	35.9	64.1
1791	Hypochlorite solutions .....	1,639	69.8	30.2	6,335	72.3	(S)	470	54.7	45.3
1824	Sodium hydroxide solution .....	4,252	59.3	40.7	9,359	61.5	38.5	1,693	22.2	77.8
1830	Sulfuric acid .....	2,491	55.0	45.0	11,291	60.4	39.6	3,805	9.8	90.2
1863	Fuel, aviation, turbine engine .....	6,103	80.8	(S)	9,720	82.4	(S)	682	53.6	(S)
1987	Alcohols, n.o.s. ....	3,761	66.5	33.5	3,924	60.7	39.3	745	29.8	70.2
1993	Flammable liquids, n.o.s. ....	168,082	88.5	11.5	255,622	89.4	10.6	16,408	52.0	48.0
2448	Sulfur, molten .....	397	68.1	31.9	7,120	69.4	30.6	720	30.8	69.2
2794	Batteries, wet, filled with acid, electric storage .....	10,159	52.1	47.9	4,118	52.5	47.5	1,708	8.1	91.9
3082	Environmentally hazardous substances, liquid, n.o.s. ....	5,878	41.9	58.1	3,931	46.5	53.5	1,517	14.3	85.7
3257	Elevated liquid, n.o.s. ....	9,617	65.8	34.2	34,534	62.6	37.4	4,982	38.1	61.9

(S) Estimate did not meet publication standards.

<sup>1</sup> "Truck" as a single mode includes shipments by private truck only, for-hire truck only, or a combination of private truck and for-hire truck.

<sup>2</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>3</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different than the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

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Table 13b.

## Hazardous Material Shipment Characteristics by For-Hire Truck for Intrastate Versus Interstate for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>2</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>358,792</b>	<b>72.1</b>	<b>27.9</b>	<b>495,077</b>	<b>80.4</b>	<b>19.6</b>	<b>63,288</b>	<b>29.3</b>	<b>70.7</b>
1005	Ammonia, anhydrous .....	2,114	62.9	37.1	4,908	60.1	39.9	925	20.6	79.4
1066	Nitrogen, compressed .....	319	(S)	73.8	2,828	(S)	80.3	2,016	(S)	95.2
1075	Petroleum gases, liquefied .....	3,578	75.3	24.7	5,163	76.5	23.5	696	54.8	45.2
1202	Diesel fuel .....	15,542	80.8	19.2	25,296	80.4	19.6	2,612	37.2	(S)
1203	Gasoline .....	170,342	91.8	8.2	238,152	91.8	8.2	11,441	73.0	27.0
1263	Paint .....	11,608	28.0	72.0	3,034	30.5	69.5	1,592	4.6	95.4
1350	Sulfur .....	115	68.8	(S)	1,515	86.2	(S)	(S)	(S)	(S)
1791	Hypochlorite solutions .....	517	56.7	43.3	1,696	82.2	17.8	139	47.4	52.6
1805	Phosphoric acid solution .....	885	(S)	72.1	1,787	(S)	(S)	(S)	(S)	(S)
1824	Sodium hydroxide solution .....	2,273	41.5	58.5	4,752	57.9	42.1	1,300	15.1	84.9
1830	Sulfuric acid .....	1,036	37.5	62.5	8,242	59.3	40.7	3,421	8.0	92.0
1863	Fuel, aviation, turbine engine .....	3,678	74.0	(S)	5,599	75.4	(S)	416	44.4	(S)
1866	Resin solution, flammable .....	4,906	18.0	82.0	2,019	19.9	80.1	1,149	5.2	94.8
1942	Ammonium nitrate .....	482	(S)	70.5	1,853	(S)	(S)	(S)	(S)	(S)
1987	Alcohols, n.o.s. ....	1,972	64.3	35.7	1,731	59.2	40.8	385	21.1	78.9
1993	Flammable liquids, n.o.s. ....	60,836	82.5	17.5	95,519	85.3	14.7	8,405	44.3	55.7
2448	Sulfur, molten .....	291	79.4	20.6	4,883	82.9	17.1	392	44.7	55.3
2794	Batteries, wet, filled with acid, electric storage .....	4,273	(S)	74.5	1,851	(S)	77.1	1,434	3.8	96.2
3082	Environmentally hazardous substances, liquid, n.o.s. ....	4,395	34.9	65.1	2,465	34.0	66.0	1,282	9.6	90.4
3257	Elevated temperature liquid, n.o.s. ....	6,020	65.1	34.9	19,978	67.4	32.6	3,415	35.4	64.6

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

**Notes:**

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different than the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table 13c.

### Hazardous Material Shipment Characteristics by Private Truck for Intrastate Versus Interstate for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>2</sup>		
		2007 (million dollars)	Intrastate (percent)	Interstate (percent)	2007 (thousands)	Intrastate (percent)	Interstate (percent)	2007 (millions)	Intrastate (percent)	Interstate (percent)
	<b>Total</b> .....	<b>478,282</b>	<b>89.1</b>	<b>10.9</b>	<b>707,748</b>	<b>85.6</b>	<b>14.4</b>	<b>40,709</b>	<b>58.0</b>	<b>42.0</b>
1005	Ammonia, anhydrous .....	1,934	81.7	(S)	4,349	(S)	(S)	(S)	(S)	(S)
1006	Argon, compressed .....	1,694	68.4	31.6	8,786	51.5	48.5	947	(S)	70.1
1013	Carbon dioxide .....	1,585	85.4	14.6	7,918	67.6	32.4	817	42.0	58.0
1066	Nitrogen, compressed .....	1,954	71.1	28.9	28,044	64.8	35.2	2,782	(S)	52.5
1072	Oxygen, compressed .....	2,454	69.4	30.6	18,462	62.0	38.0	2,044	49.0	51.0
1075	Petroleum gases .....	23,349	90.3	9.7	25,891	89.2	10.8	1,233	61.9	38.1
1202	Diesel fuel .....	33,811	79.4	20.6	62,093	72.6	(S)	3,117	54.2	45.8
1203	Gasoline .....	219,594	94.2	5.8	299,506	94.1	5.9	12,224	75.7	24.3
1223	Kerosene .....	1,614	89.3	(S)	2,142	88.3	(S)	73	67.9	(S)
1789	Hydrochloric acid .....	402	82.4	17.6	2,913	73.3	(S)	222	48.4	51.6
1791	Hypochlorite solutions .....	1,122	75.8	(S)	4,639	68.7	(S)	331	57.8	(S)
1824	Sodium hydroxide solution .....	1,979	79.7	20.3	4,608	65.2	34.8	392	45.5	54.5
1830	Sulfuric acid .....	1,455	67.4	32.6	3,049	63.3	36.7	385	25.9	74.1
1863	Fuel, aviation, turbine engine .....	2,426	91.1	8.9	4,121	92.0	8.0	266	67.9	32.1
1987	Alcohols, n.o.s. ....	1,789	68.9	31.1	2,194	61.8	(S)	(S)	(S)	60.9
1993	Flammable liquids, n.o.s. ....	107,245	91.9	8.1	160,103	91.8	8.2	8,003	60.0	40.0
2448	Sulfur, molten .....	107	37.3	(S)	2,237	39.9	(S)	(S)	(S)	(S)
2794	Batteries, wet, filled with acid, electric storage .....	5,886	71.3	28.7	2,267	76.6	23.4	273	30.6	69.4
3257	Elevated temperature liquid, n.o.s. ....	3,597	67.0	33.0	14,555	56.1	43.9	1,568	44.0	56.0
3264	Corrosive liquid, acidic, inorganic, n.o.s. ....	342	82.6	17.4	2,116	79.9	20.1	203	(S)	31.7

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest weight considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

#### Notes:

For purposes of this table, individual shipment data are classified as either completely "interstate" or completely "intrastate." All shipments with the state of destination different than the state of origin are classified as "interstate." All shipments having the state of origin the same as the state of destination are classified as "intrastate."

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Table 14a.

### Hazardous Material Shipment Characteristics for Toxic by Inhalation (TIH)<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>2</sup>	
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>
Toxic by inhalation .....	12,682	0.9	26,925	1.2	10,079	3.1

<sup>1</sup> Toxic by inhalation (TIH) gases and volatile liquids that are toxic when inhaled.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 14b.

### Hazardous Material Shipment Characteristics for Toxic by Inhalation (TIH)<sup>1</sup> for the United States: Percentage of Total for 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>2</sup>	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Toxic by inhalation .....	0.9	1.1	1.2	1.2	3.1	2.0

<sup>1</sup> Toxic by inhalation (TIH) gases and volatile liquids that are toxic when inhaled.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 15a.

**Hazardous Material Shipment Characteristics for Packing Group I for the United States: 2007**

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>1</sup>	
	2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent
<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>
Packing Group I .....	390,846	27.0	585,592	26.2	72,123	22.3

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Packing Groups I, II, and III reflect the level of hazard associated with the material being shipped. Packing Group I is the most rigorous.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 15b.

**Hazardous Material Shipment Characteristics for Packing Group I for the United States: Percentage of Total for 2007 and 2002**

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>1</sup>	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Packing Group I .....	27.0	26.9	26.2	26.3	22.3	24.5

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Packing Groups I, II, and III reflect the level of hazard associated with the material being shipped. Packing Group I is the most rigorous.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 16a.

**Hazardous Material Shipment Characteristics for Export by Country of Destination: 2007**

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Country of destination	Value		Tons	
	2007 (million dollars)	Percent	2007 (thousands)	Percent
<b>Total</b> .....	<b>41,989</b>	<b>100.0</b>	<b>42,120</b>	<b>100.0</b>
Canada .....	12,622	30.1	14,826	35.2
Mexico .....	8,373	19.9	8,762	20.8
All other countries .....	20,995	50.0	18,532	44.0

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 16b.

**Hazardous Material Shipment Characteristics for Export by Country of Destination: 2007 and 2002**

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Country of destination	Value			Tons		
	2007 (million dollars)	2002 (million dollars)	Percentage change	2007 (thousands)	2002 (thousands)	Percentage change
<b>Total</b> .....	<b>41,989</b>	<b>25,634</b>	<b>63.8</b>	<b>42,120</b>	<b>39,428</b>	<b>6.8</b>
Canada .....	12,622	6,473	95.0	14,826	9,770	51.8
Mexico .....	8,373	2,161	287.4	8,762	4,971	76.3
All other countries .....	20,995	17,001	23.5	18,532	24,687	-24.9

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at &lt;www.census.gov/cfs&gt;.

Table 16c.

### Hazardous Material Shipment Characteristics for Export by Country of Destination: Percentage of Total for 2007 and 2002

[Estimates are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Country of destination	Value		Tons	
	2007	2002	2007	2002
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Canada .....	30.1	25.3	35.2	24.8
Mexico .....	19.9	8.4	20.8	12.6
All other countries .....	50.0	66.3	44.0	62.6

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 17.

### Hazardous Material Shipment Characteristics for Selected NAICS Codes<sup>1</sup> for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent	
<b>Total</b> .....		<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>	<b>96</b>
324	Petroleum and coal products manufacturing .....	521,454	36.0	930,698	41.7	128,090	39.6	115
4247	Petroleum and petroleum products merchant wholesalers .....	550,944	38.0	803,894	36.0	39,482	12.2	41
325	Chemical manufacturing .....	169,740	11.7	248,941	11.2	101,050	31.2	529
551114	Corporate, subsidiary, and regional managing offices .....	44,389	3.1	72,893	3.3	17,764	5.5	158
4246	Chemical and allied products merchant wholesalers .....	31,690	2.2	64,533	2.9	12,813	4.0	81
45431	Fuel dealers .....	37,928	2.6	47,817	2.1	1,761	0.5	22
	All other NAICS codes .....	92,073	6.4	62,356	2.8	22,497	7.0	155

<sup>1</sup> NAICS codes shown had the highest estimated weight without considering sampling variability and are shown in descending order.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table 18.

## Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>	
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent
	<b>All Sectors</b>						
	<b>Total</b> .....	<b>1,448,218</b>	<b>100.0</b>	<b>2,231,133</b>	<b>100.0</b>	<b>323,457</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>1,370,615</b>	<b>94.6</b>	<b>2,111,622</b>	<b>94.6</b>	<b>279,105</b>	<b>86.3</b>
	Truck <sup>3</sup> .....	837,074	57.8	1,202,825	53.9	103,997	32.2
	For-hire truck .....	358,792	24.8	495,077	22.2	63,288	19.6
	Private truck .....	478,282	33.0	707,748	31.7	40,709	12.6
	Rail .....	69,213	4.8	129,743	5.8	92,169	28.5
	Water .....	69,186	4.8	149,794	6.7	37,064	11.5
	Air (includes truck and air) .....	1,735	0.1	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	393,408	27.2	628,905	28.2	(S)	(S)
	<b>Multiple modes</b> .....	<b>71,069</b>	<b>4.9</b>	<b>111,022</b>	<b>5.0</b>	<b>42,886</b>	<b>13.3</b>
	Parcel, U.S. Postal Service or courier .....	7,675	0.5	236	(Z)	151	(Z)
	Truck and rail .....	7,052	0.5	11,706	0.5	10,120	3.1
	Truck and water .....	23,451	1.6	36,588	1.6	12,380	3.8
	Rail and water .....	5,153	0.4	5,742	0.3	2,937	0.9
	Other multiple modes .....	27,739	1.9	56,750	2.5	17,297	5.3
	<b>Other and unknown modes</b> .....	<b>6,534</b>	<b>0.5</b>	<b>8,489</b>	<b>0.4</b>	<b>1,466</b>	<b>0.5</b>
324	<b>Petroleum and Coal Products Manufacturing</b>						
	<b>Total</b> .....	<b>521,454</b>	<b>100.0</b>	<b>930,698</b>	<b>100.0</b>	<b>128,090</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>480,387</b>	<b>92.1</b>	<b>859,686</b>	<b>92.4</b>	<b>104,053</b>	<b>81.2</b>
	Truck <sup>3</sup> .....	91,399	17.5	197,961	21.3	17,576	13.7
	For-hire truck .....	47,977	9.2	109,389	11.8	9,666	7.5
	Private truck .....	43,422	8.3	88,573	9.5	7,910	6.2
	Rail .....	18,415	3.5	38,394	4.1	21,501	16.8
	Water .....	44,350	8.5	102,472	11.0	29,110	22.7
	Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	326,212	62.6	520,840	56.0	(S)	(S)
	<b>Multiple modes</b> .....	<b>40,958</b>	<b>7.9</b>	<b>70,862</b>	<b>7.6</b>	<b>24,016</b>	<b>18.7</b>
	Parcel, U.S. Postal Service or courier .....	(S)	(S)	(Z)	(Z)	(Z)	(Z)
	Truck and rail .....	1,206	0.2	1,833	0.2	1,461	1.1
	Truck and water .....	20,491	3.9	32,287	3.5	10,658	8.3
	Rail and water .....	1,240	0.2	1,981	0.2	939	0.7
	Other multiple modes .....	18,012	3.5	34,760	3.7	10,958	8.6
	<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>151</b>	<b>(Z)</b>	<b>21</b>	<b>(Z)</b>
325	<b>Chemical Manufacturing</b>						
	<b>Total</b> .....	<b>169,740</b>	<b>100.0</b>	<b>248,941</b>	<b>100.0</b>	<b>101,050</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>153,730</b>	<b>90.6</b>	<b>227,135</b>	<b>91.2</b>	<b>86,953</b>	<b>86.0</b>
	Truck <sup>3</sup> .....	70,694	41.6	98,332	39.5	22,954	22.7
	For-hire truck .....	53,712	31.6	41,479	16.7	16,289	16.1
	Private truck .....	16,981	10.0	56,854	22.8	6,665	6.6
	Rail .....	43,586	25.7	63,084	25.3	54,042	53.5
	Water .....	9,117	5.4	16,611	6.7	5,286	5.2
	Air (includes truck and air) .....	636	0.4	16	(Z)	19	(Z)
	Pipeline <sup>4</sup> .....	29,697	17.5	49,092	19.7	(S)	(S)
	<b>Multiple modes</b> .....	<b>14,870</b>	<b>8.8</b>	<b>19,967</b>	<b>8.0</b>	<b>13,461</b>	<b>13.3</b>
	Parcel, U.S. Postal Service or courier .....	1,911	1.1	42	(Z)	32	(Z)
	Truck and rail .....	3,354	2.0	4,539	1.8	5,087	5.0
	Truck and water .....	785	0.5	432	0.2	(S)	(S)
	Rail and water .....	3,723	2.2	3,625	1.5	1,873	1.9
	Other multiple modes .....	5,098	3.0	11,329	4.6	5,839	5.8
	<b>Other and unknown modes</b> .....	<b>1,140</b>	<b>0.7</b>	<b>1,839</b>	<b>0.7</b>	<b>635</b>	<b>0.6</b>

See footnotes at end of table.

Table 18.

### Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>	
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent
4246	<b>Chemical and Allied Products Merchant Wholesalers</b>						
	<b>Total</b> .....	<b>31,690</b>	<b>100.0</b>	<b>64,533</b>	<b>100.0</b>	<b>12,813</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>30,516</b>	<b>96.3</b>	<b>63,688</b>	<b>98.7</b>	<b>12,347</b>	<b>96.4</b>
	Truck <sup>3</sup> .....	29,359	92.6	58,329	90.4	9,131	71.3
	For-hire truck .....	8,990	28.4	11,519	17.8	4,568	35.6
	Private truck .....	20,368	64.3	46,810	72.5	4,563	35.6
	Rail .....	1,116	3.5	(S)	(S)	(S)	(S)
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Air (includes truck and air) .....	32	0.1	1	(Z)	(S)	(S)
	Pipeline <sup>4</sup> .....	—	—	—	—	—	—
	<b>Multiple modes</b> .....	<b>879</b>	<b>2.8</b>	<b>102</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>
	Parcel, U.S. Postal Service or courier .....	481	1.5	39	0.1	14	0.1
	Truck and rail .....	24	0.1	28	(Z)	(S)	(S)
	Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Other multiple modes .....	—	—	—	—	—	—
	<b>Other and unknown modes</b> .....	<b>295</b>	<b>0.9</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
4247	<b>Petroleum and Petroleum Products Merchant Wholesalers</b>						
	<b>Total</b> .....	<b>550,944</b>	<b>100.0</b>	<b>803,894</b>	<b>100.0</b>	<b>39,482</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>541,489</b>	<b>98.3</b>	<b>786,105</b>	<b>97.8</b>	<b>36,194</b>	<b>91.7</b>
	Truck <sup>3</sup> .....	508,114	92.2	727,586	90.5	33,081	83.8
	For-hire truck .....	198,771	36.1	291,098	36.2	15,310	38.8
	Private truck .....	309,343	56.1	436,488	54.3	17,771	45.0
	Rail .....	1,393	0.3	1,967	0.2	390	1.0
	Water .....	14,020	2.5	27,988	3.5	(S)	(S)
	Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	17,614	3.2	28,256	3.5	(S)	(S)
	<b>Multiple modes</b> .....	<b>5,835</b>	<b>1.1</b>	<b>13,007</b>	<b>1.6</b>	<b>2,799</b>	<b>7.1</b>
	Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)
	Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)
	Truck and water .....	1,172	0.2	2,608	0.3	(S)	(S)
	Rail and water .....	—	—	—	—	—	—
	Other multiple modes .....	3,558	0.6	8,918	1.1	353	0.9
	<b>Other and unknown modes</b> .....	<b>3,620</b>	<b>0.7</b>	<b>4,782</b>	<b>0.6</b>	<b>488</b>	<b>1.2</b>
45431	<b>Fuel Dealers</b>						
	<b>Total</b> .....	<b>37,928</b>	<b>100.0</b>	<b>47,817</b>	<b>100.0</b>	<b>1,761</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>37,636</b>	<b>99.2</b>	<b>47,450</b>	<b>99.2</b>	<b>1,751</b>	<b>99.4</b>
	Truck <sup>3</sup> .....	37,427	98.7	47,184	98.7	1,750	99.4
	For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)
	Private truck .....	35,650	94.0	44,616	93.3	1,085	61.6
	Rail .....	(S)	(S)	(S)	(S)	(S)	(S)
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	—	—	—	—	—	—
	<b>Multiple modes</b> .....	<b>1</b>	<b>(Z)</b>	<b>1</b>	<b>(Z)</b>	<b>(Z)</b>	<b>(Z)</b>
	Parcel, U.S. Postal Service or courier .....	1	(Z)	1	(Z)	(Z)	(Z)
	Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)
	Truck and water .....	—	—	—	—	—	—
	Rail and water .....	—	—	—	—	—	—
	Other multiple modes .....	—	—	—	—	—	—
	<b>Other and unknown modes</b> .....	<b>291</b>	<b>0.8</b>	<b>366</b>	<b>0.8</b>	<b>10</b>	<b>0.6</b>

See footnotes at end of table.

Table 18.

### Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>	
		2007 (million dollars)	Percent	2007 (thousands)	Percent	2007 (millions)	Percent
551114	<b>Corporate, Subsidiary, and Regional Managing Offices</b>						
	<b>Total</b> .....	<b>44,389</b>	<b>100.0</b>	<b>72,893</b>	<b>100.0</b>	<b>17,764</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>42,539</b>	<b>95.8</b>	<b>68,572</b>	<b>94.1</b>	<b>17,332</b>	<b>97.6</b>
	Truck <sup>3</sup> .....	22,358	50.4	32,066	44.0	9,089	51.2
	For-hire truck .....	15,012	33.8	21,867	30.0	8,365	47.1
	Private truck .....	7,346	16.5	10,198	14.0	724	4.1
	Rail .....	1,267	2.9	(S)	(S)	(S)	(S)
	Water .....	1,650	3.7	2,703	3.7	(S)	(S)
	Air (includes truck and air) .....	46	0.1	1	(Z)	1	(Z)
	Pipeline <sup>4</sup> .....	17,219	38.8	25,959	35.6	(S)	(S)
	<b>Multiple modes</b> .....	<b>1,794</b>	<b>4.0</b>	<b>4,288</b>	<b>5.9</b>	<b>422</b>	<b>2.4</b>
	Parcel, U.S. Postal Service or courier .....	(S)	(S)	2	(Z)	(S)	(S)
	Truck and rail .....	95	0.2	(S)	(S)	(S)	(S)
	Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Other multiple modes .....	1,071	2.4	1,742	2.4	147	0.8
	<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>32</b>	<b>(Z)</b>	<b>(S)</b>	<b>(S)</b>
	<b>All Other NAICS</b>						
	<b>Total</b> .....	<b>92,073</b>	<b>100.0</b>	<b>62,356</b>	<b>100.0</b>	<b>22,497</b>	<b>100.0</b>
	<b>Single modes</b> .....	<b>84,317</b>	<b>91.6</b>	<b>58,986</b>	<b>94.6</b>	<b>20,474</b>	<b>91.0</b>
	Truck <sup>3</sup> .....	77,723	84.4	41,367	66.3	10,417	46.3
	For-hire truck .....	32,552	35.4	17,157	27.5	8,426	37.5
	Private truck .....	45,171	49.1	24,210	38.8	1,991	8.9
	Rail .....	3,233	3.5	(S)	(S)	7,908	35.2
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Air (includes truck and air) .....	660	0.7	9	(Z)	10	(Z)
	Pipeline <sup>4</sup> .....	2,665	2.9	4,758	7.6	(S)	(S)
<b>Multiple modes</b> .....	<b>6,732</b>	<b>7.3</b>	<b>2,794</b>	<b>4.5</b>	<b>1,981</b>	<b>8.8</b>	
Parcel, U.S. Postal Service or courier .....	5,172	5.6	151	0.2	101	0.5	
Truck and rail .....	1,276	1.4	2,589	4.2	1,663	7.4	
Truck and water .....	(S)	(S)	33	0.1	103	0.5	
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	
<b>Other and unknown modes</b> .....	<b>1,024</b>	<b>1.1</b>	<b>576</b>	<b>0.9</b>	<b>42</b>	<b>0.2</b>	

– Estimate equal to zero.

(S) Estimate did not meet publication standards.

(Z) Estimate is between zero and half the unit shown, thus rounded down to zero.

<sup>1</sup> NAICS codes shown had the highest estimated weight without considering sampling variability.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>3</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>4</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

# Appendix A.

## Comparability With Previous Commodity Flow Surveys

The following tables show a comparison of the commodity classification system, industry coverage, sample size, sample weeks, reported mode of transportation, and data items requested for each shipment among the 1993, 1997, 2002, and 2007 Commodity Flow Surveys (CFS).

### Commodity Classification System

1993	1997, 2002, and 2007
Standard Transportation Commodity Classification (STCC), developed by the Association of American Railroads (AAR)	Standard Classification of Transported Goods (SCTG)

### Industry Coverage

1993 and 1997	2002	2007
Establishments classified based on the 1987 Standard Industrial Classification (SIC) system.	Establishments classified based on the 1997 North American Industry Classification System (NAICS).	Establishments classified based on the 2002 NAICS.
Publishers were covered—classified in Manufacturing Division.	Publishers were not covered—classified in information sector. <sup>1</sup>	Publishers were covered—classified in information sector. <sup>1</sup>
Logging covered—under Manufacturing Division.	Logging not covered. <sup>2</sup>	Logging not covered. <sup>2</sup>
Other Manufacturing (excluding Printing Trade Services [SIC 279]).	Other manufacturing (excluding pre-press services [NAICS 323122]).	Other manufacturing (excluding pre-press services [NAICS 323122]).
Mining (except mining services [SICs 108, 124, 138, 148] and oil and gas extraction [SICs 131 and 132]).	Mining (except support activities [NAICS 213] and oil and gas extraction [NAICS 211]).	Mining (except support activities [NAICS 213] and oil and gas extraction [NAICS 211]).
Wholesale (merchants and manufacturers' sales branches and government-owned liquor stores).	Wholesale (merchants and manufacturers' sales branches and government-owned liquor stores).	Wholesale (merchants and manufacturers' sales branches and government-owned liquor stores).
Retail—catalog and mail-order houses.	Retail—electronic shopping and mail-order houses.	Retail—electronic shopping and mail-order houses, fuel dealers.
Auxiliaries (e.g., warehouses).	Auxiliaries (e.g., warehouses).	Auxiliaries (e.g., warehouses). <sup>3</sup>

<sup>1</sup> Under NAICS, publishers were reclassified from Manufacturing (SIC 2711, 2721, 2731, 2741, and part of 2771) to Information (NAICS 5111 and 51223) and were excluded in the 2002 CFS. However, for the 2007 CFS, publishers were restored as an in-scope industry.

<sup>2</sup> Because of changes in the classification of establishments between SIC and NAICS, logging establishments (NAICS 1133), which were covered as part of Manufacturing in the 1993 and 1997 surveys, were not included in 2002 and 2007. Detailed information about NAICS classification can be found on the Census Bureau's NAICS Web site.

<sup>3</sup> While included in all surveys, the procedures for identifying in-scope auxiliary establishments have changed over the years. For the 1997 CFS, a managing office was considered in-scope only if it had sales or end-of-year inventories in the 1992 Census. Research conducted prior to the 2002 CFS showed that not all managing offices with shipping activity in the 1997 CFS indicated sales or inventories in the 1997 Economic Census. Consequently, the 1997 Economic Census results were not used to determine scope for managing offices in the 2002 CFS. For 2002, an auxiliary was included if it supported an in-scope or retail company. For the 2007 CFS, an advance survey of approximately 40,000 auxiliary establishments was conducted in 2006 to identify those auxiliary establishments with shipping activity. Those that indicated that shipping was performed (as well as nonrespondents) were included in the CFS sample universe.

### Sample Size

1993	1997	2002	2007
Approximately 200,000 establishments selected from a universe of about 790,000 in-scope establishments.	Approximately 100,000 establishments selected from a universe of about 770,000 in-scope establishments.	Approximately 50,000 establishments selected from a universe of about 760,000 in-scope establishments.	Approximately 102,000 establishments selected from a universe of about 754,000 in-scope establishments.

## Sample Weeks

1993	1997, 2002, and 2007
Respondents reported for a sample of their individual outbound shipments for a 2-week period during each of the four calendar quarters of the reference year.	Respondents reported for a sample of their individual outbound shipments for a 1-week period during each of the four calendar quarters of the reference year.
Respondents reported key characteristics for each sampled shipment.	Respondents reported key characteristics for each sampled shipment.

## Reported Mode of Transportation

1993	1997, 2002, and 2007
For-hire truck	For-hire truck
Private truck	Private truck
Rail	Rail
Air	Air
Inland water	Shallow draft vessel
Deep sea water	Deep draft vessel
Pipeline	Pipeline
Parcel, U.S. Postal Service, or courier	Parcel, U.S. Postal Service, or courier
Other	Other
Unknown	Unknown

## Data Items Requested for Each Shipment

1993	1997	2002 and 2007
Total value	Total value	Total value
Total weight	Total weight	Total weight
Standard Transportation Commodity Code (STCC) of the commodity that contributes the most to the shipment's weight	Standard Classification of Transported Goods (SCTG) code of the commodity that contributes the most to the shipment's weight	SCTG code of the commodity that contributes the most to the shipment's weight
All known modes of transportation	All known modes of transportation	All known modes of transportation
Single origin (assumed to be the mailing address unless the respondent provided a different physical location address)	Single origin (assumed to be the mailing address unless the respondent provided a different physical location address)	Single origin (assumed to be the mailing address unless the respondent provided a different physical location address)
Destination	Destination	Destination
Containerized (Y/N) (NA)	Containerized (Y/N) (NA)	(NA) Intermodal (2002-N/A) (2007-Y/N)
Hazardous material (Y/N)	Hazardous material—United Nations or North American (UN/NA) code	Hazardous material—UN/NA code
Export (Y/N)	Export (Y/N)	Export (Y/N)
If export: U.S. exit gateway, mode(s) of transport to the gateway, foreign city and country of destination, and mode(s) of export.	If export: U.S. exit gateway, mode(s) of transport to the gateway, foreign city and country of destination, and mode(s) of export.	If export: U.S. exit gateway, mode(s) of transport to the gateway, foreign city and country of destination, and mode(s) of export.

(NA) Not Available.

# Appendix B.

## Reliability of the Estimates

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### INTRODUCTION

The estimates presented by the 2007 Commodity Flow Survey (CFS) may differ from the actual, unknown population values. Statisticians define this difference as the total error of the estimate. When describing the accuracy of survey results, it is convenient to discuss total error as the sum of sampling error and nonsampling error. Sampling error is the average difference between the estimate and the result that would be obtained from a complete enumeration of the sampling frame conducted under the same survey conditions. Nonsampling error encompasses all other factors that contribute to the total error of a sample survey estimate.

The sampling error of the estimates in this publication can be estimated from the selected sample because the sample was selected using probability sampling. Common measures related to sampling error are the sampling variance, the standard error, and the coefficient of variation (CV). The sampling variance is the squared difference, averaged over all possible samples of the same size and design, between the estimator and its average value. The standard error is the square root of the sampling variance. The CV expresses the standard error as a percentage of the estimate to which it refers.

Nonsampling errors are difficult to measure and can be introduced through inadequacies in the questionnaire, nonresponse, inaccurate reporting by respondents, errors in the application of survey procedures, incorrect recording of answers, and errors in data entry and processing. In conducting the 2007 CFS, every effort was made to minimize the effect of nonsampling errors on the estimates. Data users should take into account both the measures of sampling error and the potential effects of nonsampling error when using these estimates.

More detailed descriptions of sampling and nonsampling errors for the 2007 CFS are provided in the following sections.

### SAMPLING ERROR

Because the estimates are based on a sample, exact agreement with results that would be obtained from a complete enumeration of all shipments made in 2007 from all establishments included on the sampling frame using the same enumeration procedures is not expected. However, because

probability sampling was used at each stage of selection, it is possible to estimate the sampling variability of the survey estimates. For CFS estimates, sampling variability arises from each of the three stages of sampling.

The particular sample used in this survey is one of a large number of samples of the same size that could have been selected using the same design. If all possible samples had been surveyed under the same conditions, an estimate of a population parameter of interest could have been obtained from each sample. These samples give rise to a distribution of estimates for the population parameter. A statistical measure of the variability among these estimates is the standard error, which can be approximated from any one sample. The standard error is defined as the square root of the variance. The coefficient of variation (CV or relative standard error) of an estimator is the standard error of the estimator divided by the estimator. For the 2007 CFS, the CV also incorporates the effect of the noise infusion disclosure avoidance method. Note that measures of sampling variability, such as the standard error and CV, are estimated from the sample and are also subject to sampling variability; technically, they should have been referred to as estimated standard error and estimated CV. However, it is important to note that the standard error only measures sampling variability and does not measure systematic biases of the sample. Individuals using estimates contained in this report are advised to incorporate this information into their analyses, as sampling error could affect the conclusions drawn from these estimates.

Data users should exercise caution when using estimates with a high CV. These data are being provided because aggregates of the tabulated estimates can be useful.

An estimate from a particular sample and the standard error associated with the estimate can be used to construct a confidence interval. A "confidence interval" is a range about a given estimator that has a specified probability of containing the result of a complete enumeration of the sampling frame conducted under the same survey conditions. Associated with each interval is a percentage of confidence, which is interpreted as follows. If, for each possible sample, an estimate of a population parameter and its approximate standard error were obtained, then:

1. For approximately 90 percent of the possible samples, the interval from 1.645 standard errors below to 1.645 standard errors above the estimate would include the result

as obtained from a complete enumeration of the sampling frame conducted under the same survey conditions.

2. For approximately 95 percent of the possible samples, the interval from 1.96 standard errors below to 1.96 standard errors above the estimate would include the result as obtained from a complete enumeration of the sampling frame conducted under the same survey conditions.

To illustrate the computation of a confidence interval for an estimate of total value of shipments, assume that an estimate of total value is \$10,750 million and the CV for this estimate is 1.8 percent, or 0.018. First, obtain the standard error of the estimate by multiplying the value of shipments estimate by its CV. For this example, multiply \$10,750 million by 0.018. This yields a standard error of \$193.5 million. The upper and lower bounds of the 90 percent confidence interval are computed as \$10,750 million plus or minus 1.645 times \$193.5 million. Consequently, the 90 percent confidence interval is \$10,432 million to \$11,068 million. If corresponding confidence intervals were constructed for all possible samples of the same size and design, approximately 9 out of 10 (90 percent) of these intervals would contain the result obtained from a complete enumeration.

## **NONSAMPLING ERROR**

Nonsampling error encompasses all other factors that contribute to the total error of a sample survey estimate and may also occur in censuses. It is often helpful to think of nonsampling error as arising from deficiencies or mistakes in the survey process. In the CFS, nonsampling error can be attributed to many sources: inability to obtain information about all units in the sample; response errors; differences in the interpretation of the questions; mistakes in coding or keying the data obtained; and other errors of collection, response, coverage, and processing. Although no direct measurement of the potential biases due to nonsampling error has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence. Individuals using estimates in this report should incorporate this information into their analyses, as nonsampling error could affect the conclusions drawn from these estimates.

A potential source of bias in the estimates is nonresponse. "Nonresponse" is defined as the inability to obtain all the intended measurements or responses from all units in the sample. Four levels of nonresponse can occur in the CFS: item, shipment, quarter (reporting week), and establishment. Item nonresponse occurs either when a question is unanswered or the response to the question fails computer or analyst edits. Nonresponse to the shipment value or weight items is corrected by imputation, which is the

procedure by which a missing value is replaced by a predicted value obtained from an appropriate model.

Shipment, quarter, and establishment nonresponse are used to describe the inability to obtain any of the substantive measurements about a sampled shipment, quarter, or establishment, respectively. Shipment and quarter nonresponse are corrected by reweighting. Reweighting allocates characteristics to the nonrespondents in proportion to the characteristics observed for the respondents. The amount of bias introduced by this nonresponse adjustment procedure depends on the extent to which the nonrespondents differ, characteristically, from the respondents. Establishment nonresponse is corrected during the estimation procedure by the industry-level adjustment weight. In most cases of establishment nonresponse, none of the four questionnaires have been returned to the U.S. Census Bureau, even after several attempts to elicit a response. Approximately 67 percent of the establishments in the sample provided at least one quarter of data that contributed to these tables.

Some possible sources of bias that are attributed to respondent-conducted sampling include misunderstanding the definition of a shipment, constructing an incomplete frame of shipments from which to sample, ordering the shipment sampling frame by selected shipment characteristics, and selecting shipment records by a method other than the one specified in the questionnaire's instructions. The respondents who had reported a shipment with untypically large value or weight when compared to the rest of their reported shipments were often contacted for verification. In such cases, if it was feasible to collect information on all of the large shipments a respondent had made either for a particular reporting week or for the entire quarter, then those large shipments were identified as certainty shipments.

## **DEFINITIONS OF TERMS**

### **Confidentiality**

Title 13 of the U.S. Code authorizes the Census Bureau to conduct censuses and surveys. Section 9 of Title 13 requires that any information collected from the public under the authority of Title 13 be maintained as confidential. Section 214 of Title 13 and Sections 3559 and 3571 of Title 18 of the U.S. Code provide for the imposition of penalties of up to 5 years in prison and up to \$250,000 in fines for wrongful disclosure of confidential census information. In accordance with Title 13, no estimates are published that would disclose the operations of an individual firm.

The Census Bureau's internal Disclosure Review Board sets the confidentiality rules for all data releases. A checklist approach is used to ensure that all potential risks to the confidentiality of the data are considered and addressed.

### **Disclosure Avoidance**

Disclosure is the release of data that have been deemed confidential. It generally reveals information about a specific individual or establishment or permits deduction of sensitive information about a particular individual or establishment. Disclosure avoidance is the process used to protect the confidentiality of the survey data provided by an individual or firm. Using disclosure avoidance procedures, the Census Bureau modifies or removes the characteristics that put confidential information at risk of disclosure. Although it may appear that a table shows information about a specific individual or business, the Census Bureau has taken steps to disguise or suppress the original data while making sure the results are still useful. The techniques used by the Census Bureau to protect confidentiality in tabulations vary, depending on the type of data.

For the CFS, the primary method of disclosure avoidance is noise infusion. Noise infusion is a method of disclosure avoidance in which values for each shipment are perturbed prior to tabulation by applying a random noise multiplier to the magnitude data—characteristics such as shipment

value and weight (but not shipment mileage). Disclosure protection is accomplished in a manner that causes the vast majority of cell values to be perturbed by at most a few percentage points. For sample-based tabulations, such as CFS, the estimated relative standard error for a published cell includes both the estimated sampling error and the amount of perturbation in the estimated cell value due to noise. In certain circumstances, some individual cells may be suppressed on a case-by-case basis for additional disclosure avoidance. In these cases the data are replaced with a "D" in the tables. Other cells in the table may be suppressed because the quality of the data do not meet publication standards. The most common reason for suppressing a cell is a high CV (greater than 50 percent). These suppressed cells are shown with an "S" in the tables.

### **Unpublished Estimates**

Some unpublished estimates can be derived directly from this report by subtracting published estimates from their respective totals. However, the estimates obtained by such subtraction would be subject to poor response, high sampling variability, or other factors that may make them potentially misleading.

Individuals who use estimates in this report to create new estimates should cite the Census Bureau as the source of only the original estimates.

Table B-1a.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
<b>Single modes</b> .....	<b>2.4</b>	<b>0.6</b>	<b>3.2</b>	<b>0.6</b>	<b>4.1</b>	<b>1.6</b>	<b>8.6</b>
Truck <sup>2</sup> .....	3.4	1.5	5.4	1.8	6.5	1.9	9.4
For-hire truck .....	5.9	1.8	6.5	1.6	8.2	1.8	20.1
Private truck .....	5.5	1.1	7.4	1.3	9.3	1.0	4.5
Rail .....	8.2	0.4	10.4	0.5	8.0	1.6	11.2
Water .....	15.9	0.7	13.3	0.8	15.2	1.8	22.8
Air (includes truck and air) .....	34.9	0.1	(S)	(S)	(S)	(S)	7.5
Pipeline <sup>3</sup> .....	5.7	1.5	5.3	1.8	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>12.5</b>	<b>0.5</b>	<b>13.5</b>	<b>0.6</b>	<b>14.4</b>	<b>1.6</b>	<b>5.4</b>
Parcel, U.S. Postal Service or courier .....	19.4	0.1	16.7	—	28.9	—	5.6
Truck and rail .....	16.8	0.1	16.2	0.1	18.2	0.5	11.2
Truck and water .....	24.8	0.3	23.5	0.3	20.1	0.7	28.4
Rail and water .....	20.4	0.1	19.1	0.1	24.1	0.2	22.6
Other multiple modes .....	20.3	0.4	19.9	0.5	25.6	1.2	13.8
<b>Other and unknown modes</b> .....	<b>9.2</b>	—	<b>10.8</b>	—	<b>24.6</b>	<b>0.1</b>	<b>26.8</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-1b.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment					
	Coefficient of variation of number		Coefficient of variation of number		Coefficient of variation of number		Coefficient of variation of number					
	2007	2002	2007	2002	2007	2002	2007	2002				
<b>Total</b> .....	<b>2.6</b>	<b>3.0</b>	<b>8.7</b>	<b>3.3</b>	<b>4.2</b>	<b>5.5</b>	<b>4.6</b>	<b>4.4</b>	<b>6.3</b>	<b>8.1</b>	<b>7.1</b>	<b>7.6</b>
<b>Single modes</b> .....	<b>2.4</b>	<b>3.1</b>	<b>8.4</b>	<b>3.2</b>	<b>4.2</b>	<b>5.2</b>	<b>4.1</b>	<b>4.9</b>	<b>5.7</b>	<b>8.6</b>	<b>6.1</b>	<b>6.5</b>
Truck <sup>2</sup> .....	3.4	3.7	10.1	5.4	4.6	7.4	6.5	7.0	9.0	9.4	6.3	7.8
For-hire truck .....	5.9	5.2	14.9	6.5	6.2	9.9	8.2	9.4	12.3	20.1	7.4	16.1
Private truck .....	5.5	4.8	15.5	7.4	5.3	9.2	9.3	7.9	11.3	4.5	5.3	5.9
Rail .....	8.2	7.7	25.1	10.4	6.6	14.6	8.0	5.8	12.7	11.2	2.6	9.5
Water .....	15.9	12.5	30.1	13.3	14.3	12.8	15.2	12.0	10.5	22.8	(S)	(X)
Air (includes truck and air) .....	34.9	20.7	42.8	(S)	38.0	(S)	(S)	39.2	(S)	7.5	8.2	5.9
Pipeline <sup>3</sup> .....	5.7	6.6	23.7	5.3	7.0	8.4	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes<sup>4</sup></b> .....	<b>12.5</b>	<b>14.9</b>	<b>(X)</b>	<b>13.5</b>	<b>24.3</b>	<b>(X)</b>	<b>14.4</b>	<b>19.9</b>	<b>(X)</b>	<b>5.4</b>	<b>12.8</b>	<b>13.7</b>
Parcel, U.S. Postal Service or courier .....	19.4	14.6	43.4	16.7	20.2	25.2	28.9	13.0	40.2	5.6	13.2	14.3
Truck and rail .....	16.8	(X)	(X)	16.2	(X)	(X)	18.2	(X)	(X)	11.2	(X)	(X)
Truck and water .....	24.8	(X)	(X)	23.5	(X)	(X)	20.1	(X)	(X)	28.4	(X)	(X)
Rail and water .....	20.4	(X)	(X)	19.1	(X)	(X)	24.1	(X)	(X)	22.6	(X)	(X)
Other multiple modes <sup>5</sup> .....	20.3	23.6	(X)	19.9	24.7	(X)	25.6	20.1	(X)	13.8	(X)	(X)
<b>Other and unknown modes</b> .....	<b>9.2</b>	<b>18.7</b>	<b>22.4</b>	<b>10.8</b>	<b>19.0</b>	<b>13.0</b>	<b>24.6</b>	<b>46.0</b>	<b>32.5</b>	<b>26.8</b>	<b>39.0</b>	<b>47.9</b>

(S) Estimate did not meet publication standards.

(X) Not applicable.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

<sup>4</sup> The mileage calculation methodology was significantly improved in 2007. Therefore, multimode data for 2007 and 2002 are not comparable. For more information, see "Mileage Calculations."

<sup>5</sup> The 2002 and 2007 "Other multiple modes" categories are not directly comparable due to a definition change. For 2002, "Other multiple modes" includes shipments using "Truck and rail," "Truck and water," "Rail and water," and other mode combinations not specifically listed. For 2007, "Truck and rail," "Truck and water," and "Rail and water" are not part of "Other multiple modes."

Note:

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-1c.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value— standard error		Tons— standard error		Ton-miles <sup>1</sup> — standard error	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	—	—	—	—	—	—
<b>Single modes</b> .....	<b>0.6</b>	<b>0.2</b>	<b>0.6</b>	<b>0.2</b>	<b>1.6</b>	<b>0.9</b>
Truck <sup>2</sup> .....	1.5	1.4	1.8	1.3	1.9	2.0
For-hire truck .....	1.8	1.2	1.6	0.8	1.8	1.8
Private truck .....	1.1	1.3	1.3	1.3	1.0	1.1
Rail .....	0.4	0.4	0.5	0.3	1.6	1.6
Water .....	0.7	0.8	0.8	1.3	1.8	2.2
Air (includes truck and air) .....	0.1	—	(S)	—	(S)	—
Pipeline <sup>3</sup> .....	1.5	1.2	1.8	1.4	(S)	(S)
<b>Multiple modes</b> .....	<b>0.5</b>	<b>0.2</b>	<b>0.6</b>	<b>0.2</b>	<b>1.6</b>	<b>0.9</b>
Parcel, U.S. Postal Service or courier .....	0.1	0.1	—	—	—	—
Truck and rail .....	0.1	(X)	0.1	(X)	0.5	(X)
Truck and water .....	0.3	(X)	0.3	(X)	0.7	(X)
Rail and water .....	0.1	(X)	0.1	(X)	0.2	(X)
Other multiple modes <sup>5</sup> .....	0.4	0.2	0.5	0.2	1.2	0.9
<b>Other and unknown modes</b> .....	<b>—</b>	<b>0.2</b>	<b>—</b>	<b>0.1</b>	<b>0.1</b>	<b>0.4</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

<sup>4</sup> The mileage calculation methodology was significantly improved in 2007. Therefore, multimode data for 2007 and 2002 are not comparable. For more information, see "Mileage Calculations."

<sup>5</sup> The 2002 and 2007 "Other multiple modes" categories are not directly comparable due to a definition change. For 2002, "Other multiple modes" includes shipments using "Truck and rail," "Truck and water," "Rail and water," and other mode combinations not specifically listed. For 2007, "Truck and rail," "Truck and water," and "Rail and water" are not part of "Other multiple modes."

Notes:

Generally, estimates that equal zero are not shown and are indicated by "—." However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-2a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and description	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment— coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
Class 1, Explosives .....	17.6	0.2	14.1	—	13.0	—	8.7
Class 2, Gases .....	9.2	0.8	8.5	0.9	12.8	1.8	10.7
Class 3, Flammable liquids .....	3.3	1.2	3.3	1.1	2.7	2.0	18.6
Class 4, Flammable solids .....	22.2	0.1	20.9	0.2	21.1	0.3	18.1
Class 5, Oxidizers and organic peroxides .....	10.6	—	15.0	0.1	18.9	0.4	9.8
Class 6, Toxic materials and infectious substances .....	22.0	0.4	13.9	0.1	15.7	0.4	14.7
Class 7, Radioactive materials .....	25.7	0.3	35.8	—	24.0	—	(S)
Class 8, Corrosive materials .....	5.9	0.2	9.4	0.4	16.1	1.7	14.3
Class 9, Miscellaneous dangerous goods .....	10.5	0.2	9.7	0.2	12.5	0.8	16.3

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-2b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class for the United States: 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Hazard class and description	Value		Tons			Ton-miles <sup>1</sup>			Average miles per shipment			
	Coefficient of variation of number		Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change	
	2007	2002	2007	2002		2007	2002		2007	2002		
<b>Total</b> .....	<b>2.6</b>	<b>3.0</b>	<b>8.7</b>	<b>3.3</b>	<b>4.2</b>	<b>5.5</b>	<b>4.6</b>	<b>4.4</b>	<b>6.3</b>	<b>8.1</b>	<b>7.1</b>	<b>7.6</b>
Class 1, Explosives .....	17.6	23.8	43.9	14.1	43.2	27.7	13.0	29.5	18.7	8.7	10.9	15.8
Class 2, Gases .....	9.2	7.9	21.9	8.5	15.6	20.8	12.8	8.9	23.5	10.7	29.0	16.5
Class 3, Flammable liquids .....	3.3	3.7	11.8	3.3	4.3	5.3	2.7	5.2	4.9	18.6	12.2	19.0
Class 4, Flammable solids .....	22.2	22.1	19.7	20.9	8.8	41.8	21.1	14.0	32.6	18.1	46.3	97.1
Class 5, Oxidizers and organic peroxides .....	10.6	21.8	29.6	15.0	26.8	36.0	18.9	25.3	52.2	9.8	18.7	18.7
Class 6, Toxic materials and infectious substances .....	22.0	11.6	64.6	13.9	15.9	28.3	15.7	22.2	36.0	14.7	21.3	19.3
Class 7, Radioactive materials .....	25.7	39.0	164.7	35.8	31.2	428.8	24.0	31.7	33.3	(S)	(S)	(S)
Class 8, Corrosive materials .....	5.9	6.9	12.2	9.4	9.7	17.1	16.1	10.1	23.3	14.3	14.9	14.3
Class 9, Miscellaneous dangerous goods .....	10.5	13.4	21.9	9.7	20.6	23.6	12.5	11.8	19.8	16.3	9.3	24.7

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-2c.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics by Hazard Class for the United States: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Hazard class and description	Value—standard error		Tons—standard error		Ton-miles <sup>1</sup> —standard error	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	—	—	—	—	—	—
Class 1, Explosives .....	0.2	0.3	—	—	—	0.1
Class 2, Gases .....	0.8	0.8	0.9	1.1	1.8	0.9
Class 3, Flammable liquids .....	1.2	1.4	1.1	1.4	2.0	1.6
Class 4, Flammable solids .....	0.1	0.2	0.2	—	0.3	0.2
Class 5, Oxidizers and organic peroxides .....	—	0.2	0.1	0.2	0.4	0.3
Class 6, Toxic materials and infectious substances .....	0.4	0.2	0.1	—	0.4	0.3
Class 7, Radioactive materials .....	0.3	0.3	—	—	—	—
Class 8, Corrosive materials .....	0.2	0.5	0.4	0.6	1.7	1.1
Class 9, Miscellaneous dangerous goods .....	0.2	0.5	0.2	0.6	0.8	0.7

— Estimate equal to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Generally, estimates that equal zero are not shown and are indicated by "—." However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-3.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
1005	Ammonia, anhydrous .....	23.1	0.1	25.0	0.2	27.5	0.5	8.6
1006	Argon, compressed .....	28.0	0.1	26.6	0.2	(S)	(S)	45.9
1011	Butane .....	37.2	0.2	43.4	0.2	43.6	0.1	32.5
1013	Carbon dioxide .....	22.2	—	23.6	0.2	27.4	0.3	46.6
1066	Nitrogen, compressed .....	20.0	—	35.6	0.4	27.2	0.4	18.8
1072	Oxygen, compressed .....	31.1	0.1	25.7	0.2	27.3	0.2	14.0
1075	Petroleum gases .....	7.4	0.2	10.4	0.3	16.9	0.4	9.3
1202	Diesel fuel .....	4.3	0.4	6.4	0.4	24.6	2.2	19.8
1203	Gasoline .....	5.0	1.3	4.9	1.1	10.3	1.6	5.4
1223	Kerosene .....	33.2	0.2	33.3	0.2	33.2	0.1	18.0
1268	Petroleum distillates, n.o.s. ....	27.5	0.1	28.4	0.2	32.2	0.3	25.0
1824	Sodium hydroxide solution .....	12.7	0.1	9.1	0.1	19.5	0.4	16.4
1830	Sulfuric acid .....	26.0	0.1	23.8	0.3	30.4	1.1	16.3
1863	Fuel, aviation, turbine engine .....	14.1	0.5	13.0	0.5	20.9	0.5	16.5
1964	Hydrocarbon gas mixture, compressed, n.o.s. ....	26.6	0.3	21.5	0.2	29.4	0.7	28.0
1965	Hydrocarbon gas mixture, liquefied, n.o.s. ....	37.5	0.2	35.4	0.2	(S)	(S)	15.8
1978	Propane .....	46.1	0.3	44.9	0.3	24.5	0.1	14.6
1993	Flammable liquids, n.o.s. ....	6.1	1.0	5.9	1.1	8.7	1.4	8.9
2448	Sulfur, molten .....	48.6	—	23.2	0.1	29.3	0.4	31.5
3257	Elevated temperature liquid, n.o.s. ....	8.2	0.1	7.7	0.2	11.0	0.4	14.2

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-4.

### Estimated Measures of Reliability for Hazardous Versus Nonhazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Mode of transportation	Tons					Ton-miles <sup>1</sup>				
	Coefficient of variation of number	Hazardous		Nonhazardous		Coefficient of variation of number	Hazardous		Nonhazardous	
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
<b>Total</b> .....	<b>1.9</b>	<b>3.3</b>	<b>0.7</b>	<b>2.4</b>	<b>0.7</b>	<b>3.1</b>	<b>4.6</b>	<b>0.5</b>	<b>3.3</b>	<b>0.5</b>
<b>Single modes</b> .....	<b>1.7</b>	<b>3.2</b>	<b>0.7</b>	<b>2.2</b>	<b>0.7</b>	<b>3.1</b>	<b>4.1</b>	<b>0.5</b>	<b>3.4</b>	<b>0.5</b>
Truck <sup>2</sup> .....	1.4	5.4	0.8	2.0	0.8	1.3	6.5	0.5	1.3	0.5
For-hire truck .....	1.2	6.5	0.8	1.6	0.8	1.7	8.2	0.5	1.6	0.5
Private truck .....	2.2	7.4	1.1	2.9	1.1	2.1	9.3	1.1	1.7	1.1
Rail .....	5.0	10.4	0.7	5.4	0.7	6.7	8.0	0.7	7.1	0.7
Water .....	9.2	13.3	3.5	9.7	3.5	11.8	15.2	2.6	12.7	2.6
Air (includes truck and air) .....	7.9	(S)	(S)	6.0	5.5	7.3	(S)	(S)	7.4	2.5
Pipeline <sup>3</sup> .....	5.1	5.3	1.0	30.3	1.0	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>5.4</b>	<b>13.5</b>	<b>2.7</b>	<b>6.9</b>	<b>2.7</b>	<b>5.4</b>	<b>14.4</b>	<b>1.8</b>	<b>6.4</b>	<b>1.8</b>
Parcel, U.S. Postal Service or courier .....	2.4	16.7	0.1	2.4	0.1	3.0	28.9	0.1	2.9	0.1
Truck and rail .....	7.8	16.2	0.7	7.8	0.7	5.9	18.2	0.8	5.7	0.8
Truck and water .....	16.4	23.5	6.8	21.7	6.8	15.2	20.1	5.3	18.5	5.3
Rail and water .....	23.4	19.1	7.0	26.4	7.0	21.8	24.1	7.2	23.8	7.2
Other multiple modes .....	11.3	19.9	5.4	12.1	5.4	11.3	25.6	6.6	12.5	6.6
<b>Other and unknown modes</b> .....	<b>17.0</b>	<b>10.8</b>	<b>0.5</b>	<b>17.4</b>	<b>0.5</b>	<b>8.0</b>	<b>24.6</b>	<b>1.1</b>	<b>8.4</b>	<b>1.1</b>

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-5a.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected State<sup>1</sup> of Origin: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

State of origin	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
Texas .....	5.9	1.4	5.8	1.6	6.9	1.8	24.2
Louisiana .....	5.9	0.5	4.8	0.4	14.3	1.3	12.5
California .....	12.8	1.1	13.6	1.0	12.8	0.3	16.0
Illinois .....	16.4	0.7	17.3	0.8	26.4	2.6	34.9
Pennsylvania .....	23.8	0.8	34.5	1.3	22.0	0.6	15.8
New Jersey .....	21.3	0.6	20.6	0.7	23.5	0.3	46.7
Florida .....	10.4	0.4	9.3	0.3	21.0	0.6	36.0
Georgia .....	33.2	0.7	47.1	1.2	37.9	0.7	20.2
Ohio .....	15.0	0.5	16.3	0.5	46.4	1.3	25.9
New York .....	18.3	0.5	12.7	0.4	15.7	0.2	28.5
Oklahoma .....	20.1	0.4	21.3	0.5	20.6	0.4	20.4
Indiana .....	13.1	0.2	23.4	0.5	23.6	0.4	28.1
Massachusetts .....	24.8	0.4	35.7	0.6	33.9	0.2	18.3
Minnesota .....	25.3	0.4	26.1	0.5	29.1	0.6	22.4
Washington .....	12.5	0.3	16.0	0.3	38.3	1.3	(S)
Kentucky .....	27.3	0.5	34.6	0.6	21.6	0.2	39.6
Mississippi .....	28.9	0.3	30.9	0.5	39.3	1.3	34.0
Michigan .....	20.0	0.3	21.8	0.4	22.4	0.3	8.8
Kansas .....	19.0	0.2	17.8	0.2	6.3	0.1	22.3
Utah .....	23.6	0.2	28.2	0.3	49.6	0.9	14.5

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> States shown had the highest estimated weight without considering sampling variability and are shown in descending order. Since an "All other states" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-5b.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected State<sup>1</sup> of Destination: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

State of destination	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
Texas .....	6.1	1.4	5.3	1.5	9.0	1.7	25.8
California .....	12.3	1.1	12.6	1.0	13.9	1.2	33.4
Louisiana .....	5.2	0.3	6.1	0.4	31.7	1.8	20.8
Florida .....	7.8	0.4	5.3	0.3	21.3	1.4	24.8
Illinois .....	11.3	0.4	11.2	0.3	16.3	0.7	28.4
New Jersey .....	23.8	0.7	24.8	0.8	19.1	0.5	26.7
Georgia .....	30.0	0.7	39.2	1.0	19.9	0.6	48.3
New York .....	13.6	0.4	11.9	0.4	14.2	0.3	26.7
Pennsylvania .....	16.3	0.4	22.9	0.6	10.5	0.2	13.1
Ohio .....	13.5	0.4	11.3	0.4	18.1	0.6	10.8
Indiana .....	12.7	0.3	15.4	0.3	11.5	0.3	13.2
Oklahoma .....	21.2	0.5	23.5	0.5	22.2	0.3	32.0
Michigan .....	18.7	0.4	16.0	0.3	9.3	0.4	15.1
Massachusetts .....	21.6	0.3	34.5	0.6	28.5	0.1	27.0
Minnesota .....	27.4	0.5	27.2	0.5	22.9	0.3	39.6
Kentucky .....	20.6	0.3	22.9	0.4	20.9	0.4	38.4
Alabama .....	15.5	0.2	23.3	0.3	17.4	0.3	30.3
Mississippi .....	17.7	0.2	17.4	0.2	17.1	0.3	37.5
Washington .....	8.0	0.1	11.4	0.2	19.8	0.3	24.1
Kansas .....	18.8	0.2	15.2	0.2	7.7	0.1	41.8

— Estimate equal to zero.

<sup>1</sup> States shown had the highest estimated weight without considering sampling variability and are shown in descending order. Since an "All other states" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-6.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Hazard Class 1, Explosives</b>							
<b>Total</b> .....	<b>17.6</b>	—	<b>14.1</b>	—	<b>13.0</b>	—	<b>8.7</b>
<b>Single modes</b> .....	<b>18.0</b>	<b>2.6</b>	<b>14.2</b>	<b>0.2</b>	<b>13.0</b>	<b>1.4</b>	<b>10.8</b>
Truck <sup>2</sup> .....	18.2	2.7	14.3	0.2	13.2	1.5	11.0
For-hire truck .....	22.3	6.2	15.5	4.2	14.4	4.0	9.4
Private truck .....	22.9	5.6	16.1	4.3	17.7	3.5	9.0
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	34.5	0.6	(S)	(S)	(S)	(S)	13.8
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>28.5</b>	<b>2.6</b>	<b>21.5</b>	<b>0.2</b>	<b>40.3</b>	<b>1.4</b>	<b>7.7</b>
Parcel, U.S. Postal Service or courier .....	30.5	1.2	14.8	0.1	16.7	0.3	7.8
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	19.1
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>47.1</b>	<b>0.1</b>	<b>39.5</b>	—	<b>27.3</b>	—	<b>(S)</b>
<b>Hazard Class 2, Gases</b>							
<b>Total</b> .....	<b>9.2</b>	—	<b>8.5</b>	—	<b>12.8</b>	—	<b>10.7</b>
<b>Single modes</b> .....	<b>9.3</b>	<b>0.8</b>	<b>8.5</b>	<b>0.5</b>	<b>12.2</b>	<b>0.9</b>	<b>10.6</b>
Truck <sup>2</sup> .....	9.1	3.4	13.1	4.8	20.5	6.0	10.9
For-hire truck .....	14.0	1.5	16.6	1.6	33.3	4.7	37.9
Private truck .....	12.1	3.6	16.8	5.4	23.6	4.3	10.3
Rail .....	21.4	4.2	18.5	2.1	18.2	4.1	10.0
Water .....	20.7	0.4	18.4	0.3	35.4	0.6	37.3
Air (includes truck and air) .....	44.8	0.2	(S)	(S)	44.0	—	27.9
Pipeline <sup>3</sup> .....	20.4	4.3	21.8	5.4	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>24.0</b>	<b>0.7</b>	<b>27.8</b>	<b>0.4</b>	<b>33.0</b>	<b>0.9</b>	<b>11.5</b>
Parcel, U.S. Postal Service or courier .....	40.6	0.5	28.2	—	21.0	—	12.5
Truck and rail .....	39.9	0.5	33.7	0.3	37.7	0.9	12.5
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	27.3	0.7	13.4	0.6	23.7	0.4	14.6
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	21.5
<b>Other and unknown modes</b> .....	<b>31.3</b>	<b>0.2</b>	<b>34.1</b>	<b>0.2</b>	<b>31.0</b>	—	<b>(S)</b>
<b>Hazard Class 3, Flammable Liquids</b>							
<b>Total</b> .....	<b>3.3</b>	—	<b>3.3</b>	—	<b>2.7</b>	—	<b>18.6</b>
<b>Single modes</b> .....	<b>3.1</b>	<b>0.7</b>	<b>3.1</b>	<b>0.8</b>	<b>3.8</b>	<b>3.1</b>	<b>21.7</b>
Truck <sup>2</sup> .....	4.3	1.7	5.1	1.9	6.1	2.3	23.5
For-hire truck .....	6.4	1.7	7.5	1.8	7.8	1.7	30.7
Private truck .....	5.5	1.0	6.3	1.1	8.7	1.3	2.9
Rail .....	14.5	0.3	15.9	0.3	14.1	2.1	30.8
Water .....	15.8	0.8	14.1	0.9	19.6	3.1	24.1
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	25.3
Pipeline <sup>3</sup> .....	6.1	1.6	5.4	1.8	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>15.2</b>	<b>0.6</b>	<b>15.9</b>	<b>0.7</b>	<b>17.1</b>	<b>3.1</b>	<b>8.1</b>
Parcel, U.S. Postal Service or courier .....	45.8	0.1	27.7	—	49.8	—	8.1
Truck and rail .....	29.2	0.1	29.5	0.1	33.4	0.7	9.2
Truck and water .....	25.2	0.4	23.7	0.4	20.3	1.3	38.3
Rail and water .....	24.1	0.1	27.1	0.1	26.5	0.3	21.9
Other multiple modes .....	21.8	0.5	21.5	0.6	27.3	2.3	17.7
<b>Other and unknown modes</b> .....	<b>9.6</b>	—	<b>12.4</b>	—	<b>27.1</b>	<b>0.1</b>	<b>26.8</b>

See footnotes at end of table.

Table B-6.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Hazard Class 4, Flammable Solids</b>							
<b>Total</b> .....	<b>22.2</b>	—	<b>20.9</b>	—	<b>21.1</b>	—	<b>18.1</b>
<b>Single modes</b> .....	<b>17.5</b>	<b>4.5</b>	<b>20.8</b>	<b>2.5</b>	<b>21.4</b>	<b>3.0</b>	<b>19.2</b>
Truck <sup>2</sup> .....	14.6	6.8	14.2	7.1	20.5	8.9	22.0
For-hire truck .....	20.6	6.6	13.5	8.8	28.5	8.4	17.5
Private truck .....	31.5	5.2	35.2	3.0	(S)	(S)	18.7
Rail .....	(S)	(S)	39.1	5.3	33.9	11.0	16.0
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	34.9
Air (includes truck and air) .....	45.6	0.4	48.6	—	(S)	(S)	22.6
Pipeline <sup>3</sup> .....	44.0	0.3	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>46.7</b>	<b>2.3</b>	<b>12.0</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	15.5
Truck and rail .....	12.8	6.1	43.7	1.2	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	25.9
<b>Other and unknown modes</b> .....	<b>38.1</b>	<b>0.5</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Hazard Class 5, Oxidizers and Organic Peroxides</b>							
<b>Total</b> .....	<b>10.6</b>	—	<b>15.0</b>	—	<b>18.9</b>	—	<b>9.8</b>
<b>Single modes</b> .....	<b>11.6</b>	<b>2.8</b>	<b>16.6</b>	<b>3.4</b>	<b>21.1</b>	<b>6.0</b>	<b>10.7</b>
Truck <sup>2</sup> .....	9.4	4.3	14.5	5.6	21.0	6.6	10.6
For-hire truck .....	13.6	3.1	20.6	2.8	23.7	5.0	11.3
Private truck .....	7.4	3.5	12.7	5.2	20.9	3.3	19.4
Rail .....	21.5	3.8	23.2	5.5	24.5	7.4	10.0
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	41.0	0.6	46.5	—	(S)	(S)	13.4
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>37.1</b>	<b>2.7</b>	<b>44.2</b>	<b>3.3</b>	<b>42.5</b>	<b>5.9</b>	<b>34.5</b>
Parcel, U.S. Postal Service or courier .....	39.4	0.5	29.6	—	38.4	—	43.3
Truck and rail .....	43.3	2.5	44.2	3.6	46.5	6.7	32.1
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Hazard Class 6, Toxic Materials and Infectious Substances</b>							
<b>Total</b> .....	<b>22.0</b>	—	<b>13.9</b>	—	<b>15.7</b>	—	<b>14.7</b>
<b>Single modes</b> .....	<b>21.9</b>	<b>1.2</b>	<b>12.8</b>	<b>2.2</b>	<b>16.0</b>	<b>1.0</b>	<b>12.3</b>
Truck <sup>2</sup> .....	30.1	5.5	14.4	4.6	15.0	3.7	9.8
For-hire truck .....	36.3	5.0	18.8	4.1	16.3	3.2	12.3
Private truck .....	18.2	3.6	12.0	1.3	16.8	0.7	28.2
Rail .....	20.7	5.5	23.9	9.3	19.2	5.3	14.3
Water .....	(S)	(S)	49.1	13.5	(S)	(S)	(S)
Air (includes truck and air) .....	29.0	0.1	37.5	—	(S)	(S)	36.2
Pipeline <sup>3</sup> .....	(S)	(S)	16.2	1.7	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>36.0</b>	<b>1.2</b>	<b>42.6</b>	<b>2.2</b>	<b>30.8</b>	<b>1.0</b>	<b>19.9</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	36.6	—	19.9
Truck and rail .....	37.1	0.5	43.7	0.4	30.4	0.3	(S)
Truck and water .....	41.2	0.2	36.4	0.1	46.5	—	49.1
Rail and water .....	26.9	0.4	38.5	0.4	42.7	0.2	(S)
Other multiple modes .....	(S)	(S)	37.9	2.9	24.4	1.7	23.0
<b>Other and unknown modes</b> .....	<b>46.7</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>49.8</b>	—	<b>(S)</b>

See footnotes at end of table.

Table B-6.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Hazard Class 7, Radioactive Materials</b>							
<b>Total</b> .....	<b>25.7</b>	—	<b>35.8</b>	—	<b>24.0</b>	—	<b>(S)</b>
<b>Single modes</b> .....	<b>26.9</b>	<b>5.2</b>	<b>36.5</b>	<b>1.6</b>	<b>28.4</b>	<b>5.7</b>	<b>(S)</b>
Truck <sup>2</sup> .....	27.2	6.6	36.6	2.2	30.2	6.9	38.2
For-hire truck .....	34.9	6.1	43.0	1.4	45.4	9.2	38.0
Private truck .....	31.1	8.5	37.7	3.0	29.9	8.0	18.1
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	27.7	1.8	24.6	1.0	36.9	3.5	8.4
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>34.0</b>	<b>5.2</b>	<b>47.0</b>	<b>1.6</b>	<b>28.7</b>	<b>5.7</b>	<b>18.4</b>
Parcel, U.S. Postal Service or courier .....	34.0	5.2	47.0	1.6	28.7	5.7	18.4
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>18.1</b>	<b>0.3</b>	<b>32.7</b>	<b>0.5</b>	<b>36.9</b>	<b>0.3</b>	<b>(S)</b>
<b>Hazard Class 8, Corrosive Materials</b>							
<b>Total</b> .....	<b>5.9</b>	—	<b>9.4</b>	—	<b>16.1</b>	—	<b>14.3</b>
<b>Single modes</b> .....	<b>6.1</b>	<b>1.0</b>	<b>9.7</b>	<b>1.7</b>	<b>17.6</b>	<b>2.2</b>	<b>14.9</b>
Truck <sup>2</sup> .....	7.0	2.6	6.8	4.3	12.7	4.3	15.0
For-hire truck .....	7.3	3.2	9.5	2.6	14.1	3.2	6.5
Private truck .....	12.6	2.4	10.8	2.8	11.4	1.2	5.0
Rail .....	11.9	1.6	26.8	5.8	24.5	6.2	5.4
Water .....	37.0	1.1	28.6	2.2	45.9	3.1	21.8
Air (includes truck and air) .....	48.1	0.2	(S)	(S)	(S)	(S)	11.6
Pipeline <sup>3</sup> .....	40.2	1.0	36.1	1.5	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>14.8</b>	<b>0.9</b>	<b>27.0</b>	<b>1.7</b>	<b>25.4</b>	<b>2.4</b>	<b>14.6</b>
Parcel, U.S. Postal Service or courier .....	22.0	0.5	43.5	—	20.2	—	14.4
Truck and rail .....	24.3	0.4	30.3	1.0	24.0	1.6	43.8
Truck and water .....	49.1	0.1	(S)	(S)	(S)	(S)	26.8
Rail and water .....	44.3	0.7	44.8	0.6	(S)	(S)	(S)
Other multiple modes .....	42.6	1.0	(S)	(S)	37.4	1.5	(S)
<b>Other and unknown modes</b> .....	<b>32.2</b>	<b>0.4</b>	<b>38.2</b>	<b>0.5</b>	<b>(S)</b>	<b>(S)</b>	<b>25.4</b>
<b>Hazard Class 9, Miscellaneous Dangerous Goods</b>							
<b>Total</b> .....	<b>10.5</b>	—	<b>9.7</b>	—	<b>12.5</b>	—	<b>16.3</b>
<b>Single modes</b> .....	<b>10.7</b>	<b>1.7</b>	<b>9.5</b>	<b>1.3</b>	<b>13.2</b>	<b>2.4</b>	<b>8.7</b>
Truck <sup>2</sup> .....	7.9	3.9	10.9	4.6	9.0	3.8	8.2
For-hire truck .....	7.0	3.2	7.8	4.3	9.8	3.5	9.0
Private truck .....	14.2	1.9	20.6	3.4	17.5	1.2	12.7
Rail .....	22.7	2.9	19.3	2.7	17.3	3.7	5.1
Water .....	(S)	(S)	47.5	4.3	50.0	3.2	29.6
Air (includes truck and air) .....	30.7	—	48.0	—	(S)	(S)	17.5
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>34.9</b>	<b>1.7</b>	<b>(S)</b>	<b>(S)</b>	<b>46.9</b>	<b>2.4</b>	<b>7.0</b>
Parcel, U.S. Postal Service or courier .....	30.4	0.4	33.6	—	37.7	—	11.1
Truck and rail .....	37.0	0.9	38.6	0.3	42.5	1.1	15.9
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	17.0
<b>Other and unknown modes</b> .....	<b>23.4</b>	—	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>34.9</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-7.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Division 1.1, Explosives With a Mass Explosion Hazard</b>							
<b>Total</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	<b>22.8</b>
<b>Single modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	<b>21.2</b>
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	23.0
For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)	27.0
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	35.2
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	(S)	(S)	45.2	5.6	48.8	0.7	<b>0.6</b>
<b>Division 1.2, Explosives With a Projection Hazard</b>							
<b>Total</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Single modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	49.5
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	—	—	—	—	—	—	—
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	—	—	—	—	—	—	—
<b>Division 1.3, Explosives With Predominantly a Fire Hazard</b>							
<b>Total</b> .....	37.9	—	45.2	—	25.8	—	<b>29.7</b>
<b>Single modes</b> .....	37.9	—	45.2	—	25.8	—	<b>29.9</b>
Truck <sup>2</sup> .....	37.9	—	45.2	—	25.8	—	29.9
For-hire truck .....	19.0	17.9	(S)	(S)	26.8	15.2	11.2
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	25.8
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	—	—	—	—	—	—	—

See footnotes at end of table.

Table B-7.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Division 1.4, Explosives With No Significant Blast Hazard</b>							
<b>Total</b> .....	<b>28.7</b>	—	<b>25.6</b>	—	<b>23.9</b>	—	<b>7.5</b>
<b>Single modes</b> .....	<b>29.7</b>	<b>6.0</b>	<b>26.6</b>	<b>2.7</b>	<b>24.6</b>	<b>1.6</b>	<b>17.8</b>
Truck <sup>2</sup> .....	29.8	6.0	26.6	3.1	25.0	2.6	17.3
For-hire truck .....	28.9	6.4	26.3	5.2	24.1	2.5	14.8
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	13.7
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	46.7
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>36.2</b>	<b>5.8</b>	<b>16.9</b>	<b>2.5</b>	<b>18.5</b>	<b>1.5</b>	<b>8.0</b>
Parcel, U.S. Postal Service or courier .....	38.5	3.6	16.1	1.7	18.4	1.2	8.0
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	33.4
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>44.8</b>	<b>0.1</b>	<b>(S)</b>
<b>Division 1.5, Very Insensitive Explosives, Blasting Agent</b>							
<b>Total</b> .....	<b>10.7</b>	—	<b>14.6</b>	—	<b>19.6</b>	—	<b>15.0</b>
<b>Single modes</b> .....	<b>11.4</b>	<b>1.5</b>	<b>14.7</b>	<b>0.2</b>	<b>19.2</b>	<b>2.5</b>	<b>15.9</b>
Truck <sup>2</sup> .....	11.4	2.0	14.7	0.2	19.2	2.5	16.5
For-hire truck .....	25.9	5.6	23.3	5.4	25.0	5.7	6.6
Private truck .....	16.5	6.8	16.7	5.5	20.2	6.2	13.5
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	47.1	1.3	48.8	0.1	(S)	(S)	19.5
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>21.6</b>	<b>1.5</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>23.0</b>
Parcel, U.S. Postal Service or courier .....	29.4	1.6	44.2	—	(S)	(S)	14.2
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	28.6	2.0	(S)	(S)	(S)	(S)	25.5
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>28.6</b>	—	<b>33.8</b>	—	<b>34.8</b>	—	<b>(S)</b>
<b>Division 2.1, Flammable Gases</b>							
<b>Total</b> .....	<b>9.9</b>	—	<b>12.2</b>	—	<b>17.2</b>	—	<b>11.8</b>
<b>Single modes</b> .....	<b>9.8</b>	<b>0.8</b>	<b>12.3</b>	<b>0.5</b>	<b>16.1</b>	<b>1.2</b>	<b>10.7</b>
Truck <sup>2</sup> .....	9.8	3.7	10.9	3.5	12.5	2.9	10.6
For-hire truck .....	10.7	1.0	10.4	1.2	20.7	1.6	(S)
Private truck .....	13.1	3.9	14.9	3.5	14.7	1.7	12.1
Rail .....	24.6	4.5	23.4	4.5	22.6	4.5	12.3
Water .....	21.0	0.5	21.0	0.7	42.3	1.4	(S)
Air (includes truck and air) .....	43.3	0.1	43.7	—	(S)	(S)	42.3
Pipeline <sup>3</sup> .....	21.4	5.6	23.8	5.9	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>30.3</b>	<b>0.8</b>	<b>36.6</b>	<b>0.5</b>	<b>(S)</b>	<b>(S)</b>	<b>12.8</b>
Parcel, U.S. Postal Service or courier .....	48.9	0.5	36.6	—	32.8	—	13.7
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	9.5
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	41.1
Rail and water .....	27.3	0.9	13.4	1.1	23.7	0.9	14.6
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>47.7</b>	<b>0.2</b>	<b>41.4</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table B-7.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Division 2.2, Nonflammable, Nontoxic Compressed Gases</b>							
<b>Total</b> .....	<b>13.6</b>	—	<b>15.9</b>	—	<b>19.5</b>	—	<b>15.4</b>
<b>Single modes</b> .....	<b>13.4</b>	<b>1.2</b>	<b>16.2</b>	<b>0.7</b>	<b>19.8</b>	<b>2.1</b>	<b>13.7</b>
Truck <sup>2</sup> .....	15.4	4.5	20.2	5.5	24.4	6.7	13.8
For-hire truck .....	26.8	5.1	26.2	3.1	40.4	7.9	18.7
Private truck .....	15.3	4.8	24.5	7.9	31.5	7.5	13.6
Rail .....	18.8	1.1	27.8	0.5	30.9	2.3	6.5
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	30.9
Pipeline <sup>3</sup> .....	34.9	4.2	26.0	4.6	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>26.9</b>	<b>1.0</b>	<b>37.3</b>	<b>0.6</b>	<b>42.6</b>	<b>2.0</b>	<b>16.9</b>
Parcel, U.S. Postal Service or courier .....	35.8	0.4	(S)	(S)	38.1	—	17.8
Truck and rail .....	34.9	1.1	36.6	0.6	45.3	2.5	16.4
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	39.2
<b>Other and unknown modes</b> .....	<b>47.3</b>	<b>0.4</b>	<b>47.1</b>	<b>0.3</b>	<b>46.7</b>	<b>0.1</b>	<b>48.3</b>
<b>Division 2.3, Gases Toxic by Inhalation</b>							
<b>Total</b> .....	<b>22.7</b>	—	<b>22.9</b>	—	<b>26.5</b>	—	<b>27.8</b>
<b>Single modes</b> .....	<b>23.1</b>	<b>1.5</b>	<b>23.1</b>	<b>0.6</b>	<b>26.6</b>	<b>0.3</b>	<b>19.1</b>
Truck <sup>2</sup> .....	34.8	6.6	(S)	(S)	(S)	(S)	21.3
For-hire truck .....	48.2	5.9	(S)	(S)	(S)	(S)	13.3
Private truck .....	26.1	4.0	35.6	2.9	46.4	1.9	16.5
Rail .....	19.1	6.2	13.5	7.7	28.1	7.8	9.9
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	10.1
Pipeline <sup>3</sup> .....	38.6	2.3	47.8	5.1	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>22.1</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	25.2
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>31.9</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>42.8</b>
<b>Division 4.1, Flammable Solids</b>							
<b>Total</b> .....	<b>30.0</b>	—	<b>21.7</b>	—	<b>24.2</b>	—	<b>16.1</b>
<b>Single modes</b> .....	<b>16.4</b>	<b>7.6</b>	<b>21.5</b>	<b>2.5</b>	<b>24.1</b>	<b>1.9</b>	<b>19.1</b>
Truck <sup>2</sup> .....	14.0	11.0	14.5	7.3	23.5	8.0	16.6
For-hire truck .....	16.1	9.1	13.5	9.0	30.3	8.0	18.8
Private truck .....	33.6	5.5	37.7	3.3	(S)	(S)	32.0
Rail .....	(S)	(S)	39.3	5.4	34.7	11.2	14.5
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	34.9
Air (includes truck and air) .....	46.6	0.7	(S)	(S)	44.6	—	48.0
Pipeline <sup>3</sup> .....	44.0	0.4	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>39.6</b>
Parcel, U.S. Postal Service or courier .....	34.5	0.3	(S)	(S)	(S)	(S)	42.5
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	25.9
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table B-7.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Division 4.2, Spontaneously Combustible Materials</b>							
<b>Total</b> .....	<b>34.9</b>	—	<b>37.4</b>	—	<b>(S)</b>	<b>(S)</b>	<b>20.3</b>
<b>Single modes</b> .....	<b>40.3</b>	<b>7.1</b>	<b>42.3</b>	<b>5.9</b>	<b>(S)</b>	<b>(S)</b>	<b>27.1</b>
Truck <sup>2</sup> .....	40.8	7.1	42.7	6.0	(S)	(S)	29.0
For-hire truck .....	43.8	10.8	33.2	12.3	(S)	(S)	19.8
Private truck .....	49.7	14.5	(S)	(S)	(S)	(S)	(S)
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>18.1</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	19.5
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	22.6
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>48.7</b>
<b>Division 4.3, Dangerous When Wet Materials</b>							
<b>Total</b> .....	<b>29.1</b>	—	<b>21.2</b>	—	<b>35.6</b>	—	<b>25.1</b>
<b>Single modes</b> .....	<b>29.3</b>	<b>2.4</b>	<b>21.9</b>	<b>2.5</b>	<b>33.4</b>	<b>5.1</b>	<b>49.8</b>
Truck <sup>2</sup> .....	21.8	7.0	25.8	7.8	48.5	14.0	46.7
For-hire truck .....	33.6	10.1	41.5	11.5	(S)	(S)	16.3
Private truck .....	43.2	10.6	44.3	12.5	(S)	(S)	(S)
Rail .....	49.5	14.0	(S)	(S)	(S)	(S)	27.9
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	41.6	—	27.0
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>3.3</b>	<b>0.7</b>	<b>47.6</b>	<b>0.9</b>	<b>49.4</b>	<b>1.1</b>	<b>(S)</b>
<b>Division 5.1, Oxidizers</b>							
<b>Total</b> .....	<b>10.3</b>	—	<b>15.2</b>	—	<b>19.0</b>	—	<b>9.9</b>
<b>Single modes</b> .....	<b>11.2</b>	<b>2.9</b>	<b>16.8</b>	<b>3.4</b>	<b>21.3</b>	<b>5.9</b>	<b>10.5</b>
Truck <sup>2</sup> .....	9.1	4.7	14.8	5.6	21.7	6.7	12.4
For-hire truck .....	13.7	3.2	21.2	2.7	24.6	5.0	12.0
Private truck .....	8.4	3.9	12.8	5.2	21.0	3.3	20.2
Rail .....	21.5	4.3	23.2	5.6	24.5	7.6	10.0
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	41.0	0.6	46.6	—	(S)	(S)	14.2
Pipeline <sup>3</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>38.9</b>	<b>2.8</b>	<b>44.3</b>	<b>3.3</b>	<b>42.8</b>	<b>5.9</b>	<b>38.8</b>
Parcel, U.S. Postal Service or courier .....	49.2	0.6	30.0	—	43.6	—	(S)
Truck and rail .....	44.1	2.6	44.3	3.6	46.8	6.7	32.4
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

See footnotes at end of table.

Table B-7.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Hazard Class Division and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Hazard class division and mode of transportation	Value		Tons		Ton-miles <sup>1</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Division 5.2, Organic Peroxides</b>							
<b>Total</b> .....	<b>27.4</b>	—	<b>30.1</b>	—	<b>39.7</b>	—	<b>18.2</b>
<b>Single modes</b> .....	<b>28.6</b>	<b>3.5</b>	<b>31.3</b>	<b>4.1</b>	<b>42.9</b>	<b>7.6</b>	<b>20.1</b>
Truck <sup>2</sup> .....	28.6	3.5	31.3	4.1	42.9	7.6	16.1
For-hire truck .....	31.1	7.3	34.4	5.2	44.2	8.0	15.9
Private truck .....	39.4	6.0	(S)	(S)	(S)	(S)	25.5
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>26.7</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	28.1
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Division 6.1, Toxic (Poisonous) Materials</b>							
<b>Total</b> .....	<b>22.0</b>	—	<b>13.9</b>	—	<b>15.7</b>	—	<b>14.7</b>
<b>Single modes</b> .....	<b>21.9</b>	<b>1.2</b>	<b>12.8</b>	<b>2.2</b>	<b>16.0</b>	<b>1.0</b>	<b>12.3</b>
Truck <sup>2</sup> .....	30.1	5.5	14.4	4.6	15.0	3.7	9.8
For-hire truck .....	36.3	5.0	18.8	4.1	16.3	3.2	12.3
Private truck .....	18.2	3.6	12.0	1.3	16.8	0.7	28.2
Rail .....	20.7	5.5	23.9	9.3	19.2	5.3	14.3
Water .....	(S)	(S)	49.1	13.5	(S)	(S)	(S)
Air (includes truck and air) .....	29.0	0.1	37.5	—	(S)	(S)	36.2
Pipeline <sup>3</sup> .....	(S)	(S)	16.2	1.7	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>36.0</b>	<b>1.2</b>	<b>42.6</b>	<b>2.2</b>	<b>30.8</b>	<b>1.0</b>	<b>19.9</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	36.6	—	19.9
Truck and rail .....	37.1	0.5	43.7	0.4	30.4	0.3	(S)
Truck and water .....	41.2	0.2	36.4	0.1	46.5	—	49.1
Rail and water .....	26.9	0.4	38.5	0.4	42.7	0.2	(S)
Other multiple modes .....	(S)	(S)	37.9	2.9	24.4	1.7	23.0
<b>Other and unknown modes</b> .....	<b>46.7</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>49.8</b>	—	<b>(S)</b>
<b>Division 6.2, Infectious Substances</b>							
<b>Total</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>Single modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Truck <sup>2</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
For-hire truck .....	—	—	—	—	—	—	—
Private truck .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>3</sup> .....	—	—	—	—	—	—	—
<b>Multiple modes</b> .....	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>2</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>3</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-8.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>UN 1066, Nitrogen, Compressed</b>							
<b>Total</b> .....	<b>20.0</b>	—	<b>35.6</b>	—	<b>27.2</b>	—	<b>18.8</b>
<b>Single modes</b> .....	<b>19.9</b>	<b>0.3</b>	<b>35.6</b>	—	<b>27.2</b>	—	<b>19.2</b>
Truck <sup>3</sup> .....	20.2	1.5	37.3	4.5	27.3	0.5	19.2
For-hire truck .....	28.6	6.3	25.6	9.9	35.5	13.2	29.4
Private truck .....	22.1	5.5	41.4	8.8	47.0	12.3	17.8
Rail .....	—	—	—	—	—	—	—
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>49.5</b>	<b>0.1</b>	<b>49.9</b>	—	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
Parcel, U.S. Postal Service or courier .....	49.5	0.1	49.9	—	(S)	(S)	(S)
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>42.6</b>	<b>0.3</b>	<b>49.8</b>	—	<b>(S)</b>	<b>(S)</b>	<b>45.4</b>
<b>UN 1075, Petroleum Gases</b>							
<b>Total</b> .....	<b>7.4</b>	—	<b>10.4</b>	—	<b>16.9</b>	—	<b>9.3</b>
<b>Single modes</b> .....	<b>7.7</b>	<b>0.7</b>	<b>10.8</b>	<b>0.8</b>	<b>18.6</b>	<b>3.5</b>	<b>9.3</b>
Truck <sup>3</sup> .....	7.8	5.8	8.7	5.6	10.1	4.9	9.7
For-hire truck .....	20.3	1.8	18.4	2.0	21.4	2.6	(S)
Private truck .....	9.2	5.5	10.3	5.0	14.7	3.2	11.5
Rail .....	21.6	2.3	16.3	1.6	19.6	7.2	21.2
Water .....	41.4	0.4	41.3	0.8	(S)	(S)	(S)
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	32.2	6.1	34.4	6.4	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>18.8</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	26.1	—	34.4	—	21.5
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	14.5
Truck and water .....	—	—	—	—	—	—	—
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	—	—	—	—	—	—	—
<b>Other and unknown modes</b> .....	<b>46.9</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
<b>UN 1202, Diesel Fuel</b>							
<b>Total</b> .....	<b>4.3</b>	—	<b>6.4</b>	—	<b>24.6</b>	—	<b>19.8</b>
<b>Single modes</b> .....	<b>4.7</b>	<b>3.9</b>	<b>7.2</b>	<b>3.3</b>	<b>26.9</b>	<b>3.9</b>	<b>20.1</b>
Truck <sup>3</sup> .....	9.9	4.1	17.7	4.5	21.6	6.4	19.9
For-hire truck .....	11.2	1.8	11.8	1.8	45.5	4.7	26.8
Private truck .....	14.7	3.8	25.6	4.6	23.8	4.8	12.6
Rail .....	46.2	0.5	44.3	0.5	(S)	(S)	24.1
Water .....	26.5	3.0	23.4	4.0	48.6	9.8	27.0
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	22.2
Pipeline <sup>4</sup> .....	10.5	4.0	9.6	4.3	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>45.7</b>	<b>4.0</b>	<b>39.1</b>	<b>3.3</b>	<b>43.2</b>	<b>4.0</b>	<b>28.8</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	29.6
Truck and water .....	(S)	(S)	(S)	(S)	36.5	2.4	44.2
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	31.8	1.4	28.3	1.6	34.7	5.3	34.8
<b>Other and unknown modes</b> .....	<b>48.4</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>22.1</b>

See footnotes at end of table.

Table B-8.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>UN 1203, Gasoline</b>							
<b>Total</b> .....	<b>5.0</b>	—	<b>4.9</b>	—	<b>10.3</b>	—	<b>5.4</b>
<b>Single modes</b> .....	<b>5.0</b>	<b>0.5</b>	<b>4.9</b>	<b>0.6</b>	<b>8.7</b>	<b>3.3</b>	<b>3.7</b>
Truck <sup>3</sup> .....	6.0	2.2	6.4	2.4	4.8	5.3	3.4
For-hire truck .....	8.4	2.7	8.6	2.6	8.6	3.4	7.6
Private truck .....	9.0	1.6	9.5	1.7	7.7	2.9	4.1
Rail .....	34.2	0.1	31.1	0.1	37.9	0.3	14.5
Water .....	32.3	0.7	34.5	0.8	40.3	3.0	24.7
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Pipeline <sup>4</sup> .....	7.9	1.8	7.7	2.0	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>20.6</b>	<b>0.4</b>	<b>22.6</b>	<b>0.6</b>	<b>30.2</b>	<b>3.3</b>	<b>30.7</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Truck and rail .....	47.6	—	42.7	—	47.5	0.1	29.5
Truck and water .....	24.6	0.3	25.1	0.3	33.5	2.6	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	20.9	0.3	25.1	0.4	28.5	1.8	37.6
<b>Other and unknown modes</b> .....	<b>30.1</b>	—	<b>29.3</b>	—	<b>30.1</b>	—	<b>38.0</b>
<b>UN 1824, Sodium Hydroxide Solution</b>							
<b>Total</b> .....	<b>12.7</b>	—	<b>9.1</b>	—	<b>19.5</b>	—	<b>16.4</b>
<b>Single modes</b> .....	<b>12.5</b>	<b>2.0</b>	<b>9.9</b>	<b>2.0</b>	<b>21.2</b>	<b>3.9</b>	<b>17.9</b>
Truck <sup>3</sup> .....	18.2	4.5	16.3	5.1	30.7	7.1	18.0
For-hire truck .....	24.7	4.1	14.8	2.1	32.6	5.8	8.2
Private truck .....	19.0	3.2	20.2	3.3	28.2	1.5	10.7
Rail .....	18.6	3.9	17.8	4.7	18.4	8.5	5.1
Water .....	32.0	3.7	27.2	6.2	48.8	10.0	24.0
Air (includes truck and air) .....	(S)	(S)	35.2	—	36.8	—	11.7
Pipeline <sup>4</sup> .....	29.6	0.9	38.3	1.2	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>26.7</b>	<b>1.0</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>15.8</b>
Parcel, U.S. Postal Service or courier .....	30.5	0.4	(S)	(S)	43.8	—	17.0
Truck and rail .....	(S)	(S)	46.2	0.3	23.9	0.3	(S)
Truck and water .....	(S)	(S)	(S)	(S)	45.3	0.1	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	12.1	4.5	45.5	5.7	(S)	(S)	15.9
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>28.9</b>
<b>UN 1830, Sulfuric Acid</b>							
<b>Total</b> .....	<b>26.0</b>	—	<b>23.8</b>	—	<b>30.4</b>	—	<b>16.3</b>
<b>Single modes</b> .....	<b>26.7</b>	<b>3.0</b>	<b>25.5</b>	<b>4.0</b>	<b>32.9</b>	<b>5.0</b>	<b>17.3</b>
Truck <sup>3</sup> .....	26.5	9.1	14.9	13.5	31.0	14.0	15.9
For-hire truck .....	13.6	6.5	20.3	10.7	32.3	11.7	21.1
Private truck .....	43.8	7.2	26.4	6.6	39.6	4.5	13.9
Rail .....	36.0	4.0	44.8	12.4	44.9	14.8	19.9
Water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	12.6
Pipeline <sup>4</sup> .....	44.7	7.5	47.5	1.9	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>42.4</b>	<b>3.2</b>	<b>(S)</b>	<b>(S)</b>	<b>47.4</b>	<b>5.2</b>	<b>24.9</b>
Parcel, U.S. Postal Service or courier .....	(S)	(S)	35.3	—	(S)	(S)	21.6
Truck and rail .....	46.4	2.2	(S)	(S)	(S)	(S)	34.5
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	29.9	2.7	(S)	(S)	(S)	(S)	32.4
Other multiple modes .....	5.2	6.7	(S)	(S)	43.2	9.1	(S)
<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>29.5</b>

See footnotes at end of table.

Table B-8.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>UN 1863, Fuel, Aviation, Turbine Engine</b>							
Total .....	14.1	—	13.0	—	20.9	—	16.5
Single modes .....	15.0	2.3	13.9	2.6	25.8	8.5	17.5
Truck <sup>3</sup> .....	13.6	2.4	14.3	2.3	32.6	4.7	17.5
For-hire truck .....	16.7	1.5	16.4	1.5	42.1	3.1	18.9
Private truck .....	20.9	1.5	22.6	1.5	23.1	2.2	25.7
Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	38.1
Water .....	(S)	(S)	42.6	5.4	(S)	(S)	25.5
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	0.8
Pipeline <sup>4</sup> .....	14.7	4.2	14.3	4.4	(S)	(S)	(S)
Multiple modes .....	33.5	4.3	41.9	5.0	(S)	(S)	16.0
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	—	—	—	—	—	—	—
Truck and water .....	11.7	2.3	11.1	1.7	25.3	13.3	31.3
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other and unknown modes .....	(S)	(S)	(S)	(S)	(S)	(S)	45.3
<b>UN 1964, Hydrocarbon Gas Mixture, Compressed, n.o.s.</b>							
Total .....	26.6	—	21.5	—	29.4	—	28.0
Single modes .....	25.3	1.4	20.6	1.1	24.8	2.9	31.9
Truck <sup>3</sup> .....	25.6	4.1	28.7	4.4	41.2	4.0	43.3
For-hire truck .....	41.9	3.9	26.5	4.2	35.4	3.8	44.0
Private truck .....	38.0	2.3	(S)	(S)	(S)	(S)	35.4
Rail .....	(S)	(S)	(S)	(S)	33.3	7.5	17.6
Water .....	—	—	—	—	—	—	—
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	24.7	7.7	20.6	7.4	(S)	(S)	(S)
Multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	33.1
Parcel, U.S. Postal Service or courier .....	47.9	—	(S)	(S)	44.3	—	(S)
Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	23.7
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Other and unknown modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>UN 1993, Flammable Liquids, n.o.s.</b>							
Total .....	6.1	—	5.9	—	8.7	—	8.9
Single modes .....	6.3	0.9	6.2	1.2	10.6	4.3	7.9
Truck <sup>3</sup> .....	6.0	3.0	6.4	2.7	13.0	2.6	5.2
For-hire truck .....	11.1	2.2	11.0	2.1	8.4	2.0	8.7
Private truck .....	5.1	1.4	5.8	1.2	21.4	2.1	3.8
Rail .....	20.5	0.3	20.2	0.2	27.5	2.0	(S)
Water .....	26.2	2.0	23.4	2.2	36.0	4.1	30.0
Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	32.9
Pipeline <sup>4</sup> .....	17.5	3.1	15.9	3.2	(S)	(S)	(S)
Multiple modes .....	20.5	0.9	19.4	1.2	22.5	4.4	28.7
Parcel, U.S. Postal Service or courier .....	40.6	—	(S)	(S)	29.9	—	34.7
Truck and rail .....	33.4	—	43.2	—	33.3	0.1	40.4
Truck and water .....	21.9	0.5	18.1	0.5	31.2	3.8	29.4
Rail and water .....	(S)	(S)	29.0	0.1	41.6	0.3	14.2
Other multiple modes .....	33.8	0.7	27.1	1.0	33.3	3.1	27.6
Other and unknown modes .....	15.5	0.1	16.1	0.1	39.0	0.4	22.1

See footnotes at end of table.

Table B-8.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected UN Numbers<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number, description, and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>UN, 3257, Elevated Temperature Liquid, n.o.s.</b>							
<b>Total</b> .....	<b>8.2</b>	—	<b>7.7</b>	—	<b>11.0</b>	—	<b>14.2</b>
<b>Single modes</b> .....	<b>8.3</b>	<b>0.9</b>	<b>7.7</b>	<b>1.7</b>	<b>11.8</b>	<b>2.5</b>	<b>14.2</b>
Truck <sup>3</sup> .....	11.6	5.0	12.1	5.7	12.3	4.6	15.0
For-hire truck .....	9.4	4.6	9.2	4.6	14.4	4.2	15.4
Private truck .....	22.2	4.2	20.4	4.5	18.0	1.7	17.0
Rail .....	15.8	1.8	15.4	2.2	15.1	4.2	5.3
Water .....	38.9	7.1	38.0	8.8	37.4	7.6	44.1
Air (includes truck and air) .....	—	—	—	—	—	—	—
Pipeline <sup>4</sup> .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Multiple modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>22.3</b>
Parcel, U.S. Postal Service or courier .....	—	—	—	—	—	—	—
Truck and rail .....	44.0	0.4	(S)	(S)	(S)	(S)	21.4
Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
Rail and water .....	—	—	—	—	—	—	—
Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>17.9</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>3</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>4</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by For-Hire Truck for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>5.9</b>	<b>1.8</b>	<b>6.5</b>	<b>1.6</b>	<b>8.2</b>	<b>1.8</b>	<b>20.1</b>
1005	Ammonia, anhydrous .....	34.2	8.8	37.2	7.9	31.4	6.1	32.6
1066	Nitrogen, compressed .....	28.6	6.3	25.6	9.9	35.5	13.2	29.4
1075	Petroleum gases, liquefied .....	20.3	1.8	18.4	2.0	21.4	2.6	(S)
1202	Diesel fuel .....	11.2	1.8	11.8	1.8	45.5	4.7	26.8
1203	Gasoline .....	8.4	2.7	8.6	2.6	8.6	3.4	7.6
1263	Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base .....	11.4	4.1	13.9	5.0	14.4	5.6	(S)
1350	Sulfur .....	41.0	11.7	18.3	11.2	(S)	(S)	32.1
1791	Hypochlorite solutions .....	30.6	8.7	36.1	7.9	21.6	8.1	26.7
1805	Phosphoric acid solution .....	40.0	6.6	43.0	6.4	(S)	(S)	15.2
1824	Sodium hydroxide solution .....	24.7	4.1	14.8	2.1	32.6	5.8	8.2
1830	Sulfuric acid .....	13.6	6.5	20.3	10.7	32.3	11.7	21.1
1863	Fuel, aviation, turbine engine .....	16.7	1.5	16.4	1.5	42.1	3.1	18.9
1866	Resin solution, flammable .....	10.9	2.4	14.4	2.2	15.0	4.5	7.1
1942	Ammonium nitrate .....	39.5	4.9	43.2	4.8	(S)	(S)	16.2
1987	Alcohols, n.o.s. ....	31.0	4.0	14.4	3.6	23.5	1.8	22.3
1993	Flammable liquids, n.o.s. ....	11.1	2.2	11.0	2.1	8.4	2.0	8.7
2448	Sulfur, molten .....	13.4	14.4	15.0	10.9	31.0	9.0	40.1
2794	Batteries, wet, filled with acid, electric storage .....	34.0	7.2	32.3	7.6	34.0	3.7	20.6
3082	Environmentally hazardous substances, liquid, n.o.s. ....	12.3	5.5	13.2	5.9	16.5	4.6	12.5
3257	Elevated temperature liquid, n.o.s. ....	9.4	4.6	9.2	4.6	14.4	4.2	15.4

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Private Truck for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>5.5</b>	<b>1.1</b>	<b>7.4</b>	<b>1.3</b>	<b>9.3</b>	<b>1.0</b>	<b>4.5</b>
1005	Ammonia, anhydrous .....	46.7	8.4	48.9	7.4	(S)	(S)	17.8
1006	Argon, compressed .....	26.2	10.5	33.2	9.3	31.4	19.6	14.3
1013	Carbon dioxide .....	26.0	5.6	28.1	13.6	32.6	15.9	34.8
1066	Nitrogen, compressed .....	22.1	5.5	41.4	8.8	47.0	12.3	17.8
1072	Oxygen, compressed .....	23.4	11.7	28.2	5.0	37.1	10.9	16.0
1075	Petroleum gases, liquefied .....	9.2	5.5	10.3	5.0	14.7	3.2	11.5
1202	Diesel fuel .....	14.7	3.8	25.6	4.6	23.8	4.8	12.6
1203	Gasoline .....	9.0	1.6	9.5	1.7	7.7	2.9	4.1
1223	Kerosene .....	22.7	9.8	24.6	8.9	27.2	11.7	10.5
1789	Hydrochloric acid .....	12.4	5.6	41.8	8.0	26.6	9.2	9.9
1791	Hypochlorite solutions .....	27.8	7.6	41.1	7.7	48.5	7.4	7.2
1824	Sodium hydroxide solution .....	19.0	3.2	20.2	3.3	28.2	1.5	10.7
1830	Sulfuric acid .....	43.8	7.2	26.4	6.6	39.6	4.5	13.9
1863	Fuel, aviation, turbine engine .....	20.9	1.5	22.6	1.5	23.1	2.2	25.7
1987	Alcohols, n.o.s. ....	26.3	4.1	48.4	6.9	(S)	(S)	19.8
1993	Flammable liquids, n.o.s. ....	5.1	1.4	5.8	1.2	21.4	2.1	3.8
2448	Sulfur, molten .....	46.8	6.4	39.4	3.2	(S)	(S)	21.1
2794	Batteries, wet, filled with acid, electric storage .....	38.1	7.2	44.1	7.5	37.5	3.9	27.2
3257	Elevated temperature liquid, n.o.s. ....	22.2	4.2	20.4	4.5	18.0	1.7	17.0
3264	Corrosive liquid, acidic, inorganic, n.o.s. ....	29.8	4.8	40.6	10.1	41.9	8.3	11.4

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9c.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Rail for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>8.2</b>	<b>0.4</b>	<b>10.4</b>	<b>0.5</b>	<b>8.0</b>	<b>1.6</b>	<b>11.2</b>
1005	Ammonia, anhydrous .....	17.4	3.7	21.3	4.9	23.3	10.1	6.7
1017	Chlorine .....	20.3	7.6	13.8	8.9	30.4	9.6	8.9
1075	Petroleum gases, liquefied .....	21.6	2.3	16.3	1.6	19.6	7.2	21.2
1086	Vinyl chloride, stabilized .....	24.9	9.1	23.8	9.2	27.9	1.1	11.7
1170	Ethanol and ethyl alcohol .....	19.5	3.0	21.1	5.4	21.9	7.5	10.7
1202	Diesel fuel .....	46.2	0.5	44.3	0.5	(S)	(S)	24.1
1203	Gasoline .....	34.2	0.1	31.1	0.1	37.9	0.3	14.5
1789	Hydrochloric acid .....	41.7	6.7	24.3	5.9	40.3	9.1	17.5
1805	Phosphoric acid solution .....	42.6	6.1	43.9	7.5	46.3	8.0	9.9
1824	Sodium hydroxide solution .....	18.6	3.9	17.8	4.7	18.4	8.5	5.1
1830	Sulfuric acid .....	36.0	4.0	44.8	12.4	44.9	14.8	19.9
1942	Ammonium nitrate .....	36.3	5.9	37.6	6.0	34.3	4.2	13.2
1987	Alcohols, n.o.s. ....	14.6	6.1	15.8	6.2	13.9	6.1	5.6
1993	Flammable liquids, n.o.s. ....	20.5	0.3	20.2	0.2	27.5	2.0	(S)
1999	Tars, liquid including road asphalt and oils, bitumen and cut backs .....	43.4	5.3	42.1	6.2	37.6	8.7	17.9
2312	Phenol, molten .....	30.2	11.3	35.4	11.8	28.3	1.1	20.3
2448	Sulfur, molten .....	(S)	(S)	43.1	6.2	38.0	11.5	15.1
3077	Environmentally hazardous substances, solid, n.o.s. ....	48.2	7.5	44.6	9.3	43.8	8.1	6.9
3082	Environmentally hazardous substances, liquid, n.o.s. ....	22.2	4.4	21.8	5.9	19.9	6.6	11.4
3257	Elevated temperature liquid, n.o.s. ....	15.8	1.8	15.4	2.2	15.1	4.2	5.3

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9d.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Water for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>15.9</b>	<b>0.7</b>	<b>13.3</b>	<b>0.8</b>	<b>15.2</b>	<b>1.8</b>	<b>22.8</b>
0004	Ammonium .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1005	Ammonia, anhydrous .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1010	Butadienes, stabilized .....	6.3	6.0	5.3	3.5	5.2	15.2	-
1017	Chlorine .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1075	Petroleum gases, liquefied .....	41.4	0.4	41.3	0.8	(S)	(S)	(S)
1086	Vinyl chloride, stabilized .....	(S)	(S)	(S)	(S)	28.0	3.0	2.3
1093	Acrylonitrile, stabilized .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1114	Benzene .....	28.8	10.4	39.2	11.1	47.4	13.4	28.3
1145	Cyclohexane .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1159	Diisopropyl ether .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1184	Ethylene dichloride .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1197	Extracts, flavoring, liquid .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1202	Diesel fuel .....	26.5	3.0	23.4	4.0	48.6	9.8	27.0
1203	Gasoline .....	32.3	0.7	34.5	0.8	40.3	3.0	24.7
1223	Kerosene .....	26.8	10.2	29.0	13.6	(S)	(S)	40.7
1230	Methanol .....	43.0	4.9	31.2	2.9	(S)	(S)	(S)
1824	Sodium hydroxide solution .....	32.0	3.7	27.2	6.2	48.8	10.0	24.0
1863	Fuel, aviation, turbine engine .....	(S)	(S)	42.6	5.4	(S)	(S)	25.5
1993	Flammable liquids, n.o.s. ....	26.2	2.0	23.4	2.2	36.0	4.1	30.0
3257	Elevated temperature liquid, n.o.s. ....	38.9	7.1	38.0	8.8	37.4	7.6	44.1

- Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9e.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Air (Includes Truck and Air) for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>34.9</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>7.5</b>
0004	Ammonium picrate .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0012	Cartridges for weapons, inert projectile or cartridges, small arms .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0042	Boosters, without detonator .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0044	Primers, cap type .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
0331	Explosive, blasting, type B or agent blasting, type B .....	47.1	1.6	48.8	0.3	(S)	(S)	19.5
0489	Dinitroglycoluril or dingy .....	(S)	(S)	(S)	(S)	(S)	(S)	(S)
1017	Chlorine .....	18.4	—	16.2	—	13.9	—	5.7
1046	Helium, compressed .....	(S)	(S)	43.5	—	3.0	0.1	42.3
1139	Coating Solution .....	(S)	(S)	37.6	0.4	(S)	(S)	(S)
1197	Extracts, flavoring, liquid .....	33.0	1.3	45.7	1.4	33.0	0.7	16.1
1219	Isopropanol .....	(S)	(S)	47.5	—	49.0	0.2	34.9
1266	Perfumery products with flammable solvents .....	37.4	2.4	29.8	1.1	(S)	(S)	(S)
1268	Petroleum distillates, n.o.s. ....	(S)	(S)	42.4	—	(S)	(S)	33.6
1789	Hydrochloric acid .....	(S)	(S)	37.4	—	(S)	(S)	38.8
1824	Sodium hydroxide solution .....	(S)	(S)	35.2	—	36.8	—	11.7
1866	Resin solution, flammable .....	16.7	0.7	48.8	0.1	36.0	0.1	11.7
1950	Aerosols, corrosive, packing group II or III .....	34.1	9.9	46.6	3.6	(S)	(S)	(S)
2915	Radioactive material, type A package non-special form, non-fissile or fissile-excepted .....	25.6	3.1	25.4	1.4	25.9	7.1	9.1
2924	Flammable liquids, corrosive, n.o.s. ....	(S)	(S)	37.6	2.7	42.3	5.7	14.1
3082	Environmentally hazardous substances, liquid, n.o.s. ....	27.0	0.2	36.9	—	(S)	(S)	23.9

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-9f.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Pipeline for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment—coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>5.7</b>	<b>1.5</b>	<b>5.3</b>	<b>1.8</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>
1005	Ammonia, anhydrous .....	43.6	15.0	43.8	14.8	(S)	(S)	(S)
1013	Carbon dioxide .....	37.7	5.3	31.7	14.3	(S)	(S)	(S)
1049	Hydrogen, compressed .....	(S)	(S)	48.9	11.0	(S)	(S)	(S)
1075	Petroleum gases, liquefied .....	32.2	6.1	34.4	6.4	(S)	(S)	(S)
1077	Propylene .....	28.9	7.2	17.6	5.1	(S)	(S)	(S)
1145	Cyclohexane .....	(S)	(S)	21.4	16.1	(S)	(S)	(S)
1202	Diesel fuel .....	10.5	4.0	9.6	4.3	(S)	(S)	(S)
1203	Gasoline .....	7.9	1.8	7.7	2.0	(S)	(S)	(S)
1223	Kerosene .....	44.6	15.8	44.5	16.1	(S)	(S)	(S)
1268	Petroleum distillates, n.o.s. ....	(S)	(S)	49.1	13.7	(S)	(S)	(S)
1547	Aniline .....	(S)	(S)	17.2	19.0	(S)	(S)	(S)
1824	Sodium hydroxide solution .....	29.6	0.9	38.3	1.2	(S)	(S)	(S)
1830	Sulfuric acid .....	44.7	7.5	47.5	1.9	(S)	(S)	(S)
1863	Fuel, aviation, turbine engine .....	14.7	4.2	14.3	4.4	(S)	(S)	(S)
1962	Ethylene .....	32.2	0.1	28.1	0.1	(S)	(S)	(S)
1964	Hydrocarbon gas mixture, compressed, n.o.s. ....	24.7	7.7	20.6	7.4	(S)	(S)	(S)
1972	Methane, refrigerated liquid .....	32.2	16.4	33.0	16.1	(S)	(S)	(S)
1978	Propane .....	29.9	8.7	30.9	9.6	(S)	(S)	(S)
1993	Flammable liquids, n.o.s. ....	17.5	3.1	15.9	3.2	(S)	(S)	(S)
2031	Nitric acid other than red fuming .....	(S)	(S)	23.4	17.9	(S)	(S)	(S)

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-10.

### Estimated Measures of Reliability for Shipment Characteristics by Selected Commodities<sup>1</sup> for Hazardous Materials for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Hazardous		Coefficient of variation of number	Hazardous		Coefficient of variation of number	Hazardous	
			Coefficient of variation of number	Standard error of percentage		Coefficient of variation of number	Standard error of percentage		Coefficient of variation of number	Standard error of percentage
	<b>Total</b> .....	<b>0.9</b>	<b>2.6</b>	<b>0.3</b>	<b>1.9</b>	<b>3.3</b>	<b>0.7</b>	<b>3.1</b>	<b>4.6</b>	<b>0.5</b>
17	Gasoline and aviation turbine fuel .....	4.6	4.6	—	4.5	4.5	—	9.7	9.7	—
18	Fuel oils .....	3.7	3.7	—	3.9	3.9	—	8.2	8.2	—
19	Coal and petroleum products, n.e.c. ....	4.7	8.0	2.9	4.2	10.1	3.1	7.9	17.4	4.7
20	Basic chemicals .....	6.9	7.3	2.4	6.8	8.4	3.6	9.8	8.7	5.2
22	Fertilizers .....	10.2	17.5	2.7	11.8	19.5	2.8	16.8	21.8	3.2
23	Chemical products and preparations, n.e.c. ....	5.5	5.4	0.8	4.3	11.1	1.4	5.3	10.6	1.2

— Estimate equal to zero.

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-11a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment— coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
	<b>Total</b> .....	<b>2.6</b>	<b>—</b>	<b>3.3</b>	<b>—</b>	<b>4.6</b>	<b>—</b>	<b>8.1</b>
17	Gasoline and aviation turbine fuel .....	4.6	1.4	4.5	1.3	9.7	1.7	5.3
18	Fuel oils .....	3.7	0.8	3.9	0.9	8.2	1.9	9.0
19	Coal and petroleum products, n.e.c. ....	8.0	0.7	10.1	0.9	17.4	3.0	9.2
20	Basic chemicals .....	7.3	0.8	8.4	1.0	8.7	1.9	8.3
22	Fertilizers .....	17.5	0.2	19.5	0.3	21.8	1.1	11.1
23	Chemical products and preparations, n.e.c. ....	5.4	0.2	11.1	0.1	10.6	0.2	25.3

— Estimate equal to zero.

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-11b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>			Average miles per shipment		
		Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change
		2007	2002		2007	2002		2007	2002		2007	2002	
	<b>Total</b> .....	<b>2.6</b>	<b>3.0</b>	<b>8.7</b>	<b>3.3</b>	<b>4.2</b>	<b>5.5</b>	<b>4.6</b>	<b>4.4</b>	<b>6.3</b>	<b>8.1</b>	<b>7.1</b>	<b>7.6</b>
17	Gasoline and aviation turbine fuel .....	4.6	3.6	14.0	4.5	3.8	5.3	9.7	10.4	8.3	5.3	12.2	11.1
18	Fuel oils .....	3.7	8.1	28.8	3.9	8.1	10.6	8.2	9.5	12.4	9.0	7.6	11.8
19	Coal and petroleum products, n.e.c. ....	8.0	11.7	45.5	10.1	12.6	20.1	17.4	13.7	33.0	9.2	19.9	14.4
20	Basic chemicals .....	7.3	11.1	23.8	8.4	19.6	23.1	8.7	11.9	20.5	8.3	13.6	10.4
22	Fertilizers .....	17.5	23.5	65.2	19.5	21.8	39.3	21.8	16.1	49.9	11.1	35.2	57.3
23	Chemical products and preparations, n.e.c. ....	5.4	16.1	17.6	11.1	11.1	11.2	10.6	12.7	11.8	25.3	18.0	33.1

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-11c.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics by Selected Commodities<sup>1</sup> for the United States: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value— standard error		Tons— standard error		Ton-miles <sup>2</sup> — standard error	
		2007	2002	2007	2002	2007	2002
	<b>Total</b> .....	—	—	—	—	—	—
17	Gasoline and aviation turbine fuel .....	1.4	1.5	1.3	1.9	1.7	2.7
18	Fuel oils .....	0.8	1.1	0.9	1.4	1.9	1.8
19	Coal and petroleum products, n.e.c. ....	0.7	0.7	0.9	1.1	3.0	1.5
20	Basic chemicals .....	0.8	1.4	1.0	2.0	1.9	2.4
22	Fertilizers .....	0.2	0.2	0.3	0.3	1.1	0.5
23	Chemical products and preparations, n.e.c. ....	0.2	1.1	0.1	0.2	0.2	0.6

— Estimate equal to zero.

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Generally, estimates that equal zero are not shown and are indicated by "—" However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-12a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Truck<sup>1</sup> for Intrastate Versus Interstate for Selected Commodities<sup>2</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>3</sup>		
		Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage	Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage	Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage
	<b>Total</b> .....	3.4	0.9	0.9	5.4	1.2	1.2	6.5	2.2	2.2
17	Gasoline and aviation turbine fuel .....	6.0	0.8	0.8	6.3	0.9	0.9	5.2	3.3	3.3
18	Fuel oils .....	4.9	1.5	1.5	6.4	2.0	2.0	10.6	4.3	4.3
19	Coal and petroleum products, n.e.c. ....	8.4	2.6	2.6	14.0	2.6	2.6	10.2	3.0	3.0
20	Basic chemicals .....	5.2	3.0	3.0	12.1	3.8	3.8	15.2	3.7	3.7
22	Fertilizers .....	20.0	4.4	4.4	21.6	4.1	4.1	25.9	4.5	4.5
23	Chemical products and preparations, n.e.c. ....	5.9	2.5	2.5	13.4	2.0	2.0	14.1	1.1	1.1

<sup>1</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>2</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>3</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-12b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by For-Hire Truck for Intrastate Versus Interstate for Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage	Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage	Coefficient of variation of number	Intrastate— standard error of percentage	Interstate— standard error of percentage
	<b>Total</b> .....	5.9	1.1	1.1	6.5	1.3	1.3	8.2	2.1	2.1
17	Gasoline and aviation turbine fuel .....	8.3	1.5	1.5	8.5	1.4	1.4	8.8	3.7	3.7
18	Fuel oils .....	9.8	1.4	1.4	9.5	1.5	1.5	15.2	4.5	4.5
19	Coal and petroleum products, n.e.c. ....	7.0	5.0	5.0	23.5	4.5	4.5	10.5	4.0	4.0
20	Basic chemicals .....	7.5	2.5	2.5	8.8	3.7	3.7	19.8	1.8	1.8
22	Fertilizers .....	28.2	4.4	4.4	28.4	4.0	4.0	30.8	3.1	3.1
23	Chemical products and preparations, n.e.c. ....	5.9	2.7	2.7	14.7	2.3	2.3	14.4	0.9	0.9

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-12c.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Private Truck for Intrastate Versus Interstate for Selected Commodities<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage
	<b>Total</b> .....	<b>5.5</b>	<b>1.1</b>	<b>1.1</b>	<b>7.4</b>	<b>1.5</b>	<b>1.5</b>	<b>9.3</b>	<b>2.3</b>	<b>2.3</b>
17	Gasoline and aviation turbine fuel .....	8.9	0.7	0.7	9.4	0.8	0.8	7.7	3.9	3.9
18	Fuel oils .....	5.4	2.0	2.0	8.6	2.7	2.7	14.6	5.4	5.4
19	Coal and petroleum products, n.e.c. ....	10.7	2.3	2.3	11.6	2.5	2.5	13.5	4.5	4.5
20	Basic chemicals .....	10.1	2.6	2.6	17.7	4.2	4.2	23.6	3.9	3.9
22	Fertilizers .....	27.6	3.5	(S)	28.4	3.9	3.9	27.7	3.8	3.8
23	Chemical products and preparations, n.e.c. ....	8.5	2.4	2.4	12.8	2.6	2.6	14.4	4.3	4.3

<sup>1</sup> Commodity codes shown had the highest estimated weight without considering sampling variability. Since an "All other SCTG" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-13a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Truck<sup>1</sup> for Intrastate Versus Interstate for Selected UN Numbers<sup>2</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>3</sup>		
		Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage
	<b>Total</b> .....	<b>3.4</b>	<b>0.9</b>	<b>0.9</b>	<b>5.4</b>	<b>1.2</b>	<b>1.2</b>	<b>6.5</b>	<b>2.2</b>	<b>2.2</b>
1005	Ammonia, anhydrous .....	27.6	5.3	4.9	30.0	6.2	5.9	30.1	9.4	7.4
1006	Argon, compressed .....	29.3	7.6	7.6	29.2	10.7	10.7	(S)	11.4	(S)
1013	Carbon dioxide .....	24.5	6.6	6.6	24.1	7.9	7.9	24.0	10.2	10.2
1066	Nitrogen, compressed .....	20.2	5.8	5.8	37.3	8.3	8.3	27.3	(S)	7.7
1072	Oxygen, compressed .....	31.2	10.4	(S)	26.2	5.7	5.7	27.3	8.0	8.0
1075	Petroleum gases, liquefied .....	7.8	1.2	1.2	8.7	1.5	1.5	10.1	5.5	5.5
1202	Diesel fuel .....	9.9	3.9	3.9	17.7	4.9	4.9	21.6	7.7	7.7
1203	Gasoline .....	6.0	0.8	0.8	6.4	0.8	0.8	4.8	3.4	3.4
1263	Paint .....	9.1	4.0	4.0	12.7	3.1	3.1	11.9	1.4	1.4
1789	Hydrochloric acid .....	10.3	3.2	3.2	27.0	4.4	4.4	19.9	7.0	7.0
1791	Hypochlorite solutions .....	19.0	5.9	5.9	30.2	4.8	(S)	34.1	6.4	6.4
1824	Sodium hydroxide solution .....	18.2	3.9	3.9	16.3	3.0	3.0	30.7	3.0	3.0
1830	Sulfuric acid .....	26.5	4.1	4.1	14.9	5.0	5.0	31.0	4.8	4.8
1863	Fuel, aviation, turbine engine .....	13.6	6.8	(S)	14.3	6.5	(S)	32.6	9.7	(S)
1987	Alcohols, n.o.s. ....	27.5	5.6	5.6	28.1	3.7	3.7	34.9	4.2	4.2
1993	Flammable liquids, n.o.s. ....	6.0	1.1	1.1	6.4	1.2	1.2	13.0	3.8	3.8
2448	Sulfur, molten .....	12.9	8.9	8.9	14.1	7.5	7.5	29.7	13.0	13.0
2794	Batteries, wet, filled with acid, electric storage .....	33.6	5.6	5.6	35.2	7.1	7.1	33.5	2.6	2.6
3082	Environmentally hazardous substances, liquid, n.o.s. ....	12.0	5.2	5.2	15.8	5.7	5.7	16.0	4.6	4.6
3257	Elevated liquid, n.o.s. ....	11.6	3.4	3.4	12.1	4.1	4.1	12.3	3.9	3.9

(S) Estimate did not meet publication standards.

<sup>1</sup> "Truck" as a single mode includes shipments by private truck only, for-hire truck only, or a combination of private truck and for-hire truck.

<sup>2</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>3</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-13b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by For-Hire Truck for Intrastate Versus Interstate for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage
	<b>Total</b> .....	<b>5.9</b>	<b>1.1</b>	<b>1.1</b>	<b>6.5</b>	<b>1.3</b>	<b>1.3</b>	<b>8.2</b>	<b>2.1</b>	<b>2.1</b>
1005	Ammonia, anhydrous .....	34.2	9.5	9.6	37.2	9.6	9.6	31.4	10.6	7.3
1066	Nitrogen, compressed .....	28.6	(S)	12.8	25.6	(S)	12.6	35.5	(S)	10.4
1075	Petroleum gases, liquefied .....	20.3	8.0	8.5	18.4	7.0	7.3	21.4	8.0	7.2
1202	Diesel fuel .....	11.2	3.0	3.0	11.8	2.7	2.7	45.5	11.0	(S)
1203	Gasoline .....	8.4	1.4	1.4	8.6	1.4	1.4	8.6	3.7	3.7
1263	Paint .....	11.4	3.6	3.6	13.9	2.9	2.9	14.4	1.1	1.1
1350	Sulfur .....	41.0	11.3	(S)	18.3	6.2	(S)	(S)	(S)	(S)
1791	Hypochlorite solutions .....	30.6	10.7	10.7	36.1	10.9	10.9	21.6	10.1	10.1
1805	Phosphoric acid solution .....	40.0	(S)	6.7	43.0	(S)	(S)	(S)	11.4	(S)
1824	Sodium hydroxide solution .....	24.7	5.1	5.1	14.8	3.6	3.6	32.6	3.4	3.4
1830	Sulfuric acid .....	13.6	4.7	4.7	20.3	6.5	6.5	32.3	7.0	7.0
1863	Fuel, aviation, turbine engine .....	16.7	8.8	(S)	16.4	8.8	(S)	42.1	13.9	(S)
1866	Resin solution, flammable .....	10.9	2.8	2.8	14.4	2.9	2.9	15.0	1.2	1.2
1942	Ammonium nitrate .....	39.5	(S)	10.0	43.2	(S)	(S)	(S)	(S)	(S)
1987	Alcohols, n.o.s. ....	31.0	9.4	9.4	14.4	6.3	6.3	23.5	5.9	5.9
1993	Flammable liquids, n.o.s. ....	11.1	1.3	1.3	11.0	1.6	1.6	8.4	3.5	3.5
2448	Sulfur, molten. ....	13.4	9.4	12.6	15.0	7.8	10.5	31.0	14.3	14.9
2794	Batteries, wet, filled with acid, electric storage .....	34.0	(S)	5.8	32.3	(S)	5.7	34.0	2.3	2.3
3082	Environmentally hazardous substances, liquid, n.o.s. ....	12.3	4.6	4.6	13.2	5.0	5.0	16.5	3.9	3.9
3257	Elevated temperature liquid, n.o.s. ....	9.4	3.2	3.2	9.2	3.1	3.1	14.4	5.7	5.7

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-13c.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Private Truck for Intrastate Versus Interstate for Selected UN Numbers<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

UN number	UN description	Value			Tons			Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage	Coefficient of variation of number	Intrastate—standard error of percentage	Interstate—standard error of percentage
	<b>Total</b> .....	<b>5.5</b>	<b>1.1</b>	<b>1.1</b>	<b>7.4</b>	<b>1.5</b>	<b>1.5</b>	<b>9.3</b>	<b>2.3</b>	<b>2.3</b>
1005	Ammonia, anhydrous.....	46.7	6.4	(S)	48.9	(S)	(S)	(S)	(S)	(S)
1006	Argon, compressed.....	26.2	6.1	6.1	33.2	9.3	9.3	31.4	(S)	9.8
1013	Carbon dioxide .....	26.0	6.5	6.5	28.1	8.8	8.8	32.6	12.3	12.3
1066	Nitrogen, compressed.....	22.1	6.1	5.9	41.4	8.0	7.9	47.0	(S)	7.0
1072	Oxygen, compressed.....	23.4	3.7	3.7	28.2	4.4	4.4	37.1	5.6	5.6
1075	Petroleum gases, liquefied .....	9.2	1.2	1.2	10.3	1.3	1.3	14.7	4.6	4.6
1202	Diesel fuel .....	14.7	5.4	5.4	25.6	6.9	(S)	23.8	8.6	8.6
1203	Gasoline .....	9.0	0.7	0.7	9.5	0.8	0.8	7.7	3.9	3.9
1223	Kerosene .....	22.7	4.9	(S)	24.6	5.1	(S)	27.2	8.6	(S)
1789	Hydrochloric acid.....	12.4	3.6	3.6	41.8	5.3	(S)	26.6	10.1	10.1
1791	Hypochlorite solutions .....	27.8	4.4	(S)	41.1	5.8	(S)	48.5	5.6	(S)
1824	Sodium hydroxide solution.....	19.0	3.9	3.9	20.2	5.1	5.1	28.2	4.9	4.9
1830	Sulfuric acid.....	43.8	4.6	4.6	26.4	5.9	5.9	39.6	9.3	9.3
1863	Fuel, aviation, turbine engine .....	20.9	3.4	3.4	22.6	3.1	3.1	23.1	8.2	8.2
1987	Alcohols, n.o.s. ....	26.3	5.6	5.6	48.4	4.2	(S)	(S)	(S)	4.1
1993	Flammable liquids, n.o.s.....	5.1	1.3	1.3	5.8	1.5	1.5	21.4	6.4	6.4
2448	Sulfur, molten.....	46.8	19.3	(S)	39.4	18.6	(S)	(S)	(S)	(S)
2794	Batteries, wet, filled with acid, electric storage.....	38.1	7.1	7.1	44.1	8.6	8.6	37.5	11.0	11.0
3257	Elevated temperature liquid, n.o.s. ....	22.2	5.7	5.7	20.4	6.6	6.6	18.0	6.7	6.7
3264	Corrosive liquid, acidic, inorganic, n.o.s. ....	29.8	4.2	4.2	40.6	8.7	8.7	41.9	(S)	8.7

(S) Estimate did not meet publication standards.

<sup>1</sup> UN numbers shown had the highest estimated weight without considering sampling variability. Since an "All other UN numbers" line is not shown, estimates do not add to total.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-14a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Toxic by Inhalation (TIH)<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>2</sup>	
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—
Toxic by inhalation .....	15.2	0.1	17.4	0.2	16.5	0.5

— Estimate equal to zero.

<sup>1</sup> Toxic by inhalation (TIH) gases and volatile liquids that are toxic when inhaled.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-14b.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics for Toxic by Inhalation (TIH)<sup>1</sup> for the United States: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Description	Value—standard error		Tons—standard error		Ton-miles <sup>2</sup> —standard error	
	2007	2002	2007	2002	2007	2002
	<b>Total</b> .....	—	—	—	—	—
Toxic by inhalation .....	0.1	0.1	0.2	0.1	0.5	0.2

— Estimate equal to zero.

<sup>1</sup> Toxic by inhalation (TIH) gases and volatile liquids that are toxic when inhaled.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Generally, estimates that equal zero are not shown and are indicated by "—." However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.

Table B-15a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Packing Group I for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Description	Value		Tons		Ton-miles <sup>1</sup>	
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
<b>Total</b> .....	<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—
Packing group I .....	3.7	0.9	3.6	1.2	4.6	1.7

— Estimate equal to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Packing Groups I, II, and III reflect the level of hazard associated with the material being shipped. Packing Group I is the most rigorous.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-15b.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics for Packing Group I for the United States: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Description	Value—standard error		Tons—standard error		Ton-miles <sup>1</sup> —standard error	
	2007	2002	2007	2002	2007	2002
<b>Total</b> .....	—	—	—	—	—	—
Packing group I .....	0.9	0.9	1.2	1.0	1.7	2.1

— Estimate equal to zero.

<sup>1</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Notes:

Packing Groups I, II, and III reflect the level of hazard associated with the material being shipped. Packing Group I is the most rigorous.

Generally, estimates that equal zero are not shown and are indicated by "—" However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-16a.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Export by Country of Destination: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

Country of destination	Value		Tons	
	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
<b>Total</b> .....	<b>9.3</b>	—	<b>14.6</b>	—
Canada .....	20.7	4.1	24.7	7.1
Mexico .....	29.6	4.5	30.5	5.4
All other countries .....	6.9	5.3	25.4	7.5

— Estimate equal to zero.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-16b.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Export by Country of Destination: 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Country of destination	Value			Tons		
	Coefficient of variation of number		Standard error of percentage change	Coefficient of variation of number		Standard error of percentage change
	2007	2002		2007	2002	
<b>Total</b> .....	<b>9.3</b>	<b>16.2</b>	<b>30.4</b>	<b>14.6</b>	<b>24.9</b>	<b>30.7</b>
Canada .....	20.7	19.9	55.4	24.7	26.1	53.8
Mexico .....	29.6	28.5	160.5	30.5	29.9	76.2
All other countries .....	6.9	20.3	26.6	25.4	39.0	34.9

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-16c.

### Estimated Standard Errors for Hazardous Material Shipment Characteristics for Export by Country of Destination: Percentage of Total for 2007 and 2002

[Estimates are shown as percentages and are based on data from the 2007 and 2002 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Country of destination	Value— standard error		Tons— standard error	
	2007	2002	2007	2002
<b>Total</b> .....	—	—	—	—
Canada .....	4.1	4.7	7.1	7.4
Mexico .....	4.5	3.3	5.4	7.5
All other countries .....	5.3	5.4	7.5	9.8

— Estimate equal to zero.

#### Notes:

Generally, estimates that equal zero are not shown and are indicated by "—" However, the 2007 and 2002 Commodity Flow Surveys have different distinctions between an estimate that equals zero and an estimate that rounds to zero. For 2007 data, the "—" represents estimates that equal zero. For 2002 data, the "—" represents estimates that equal or round to zero.

The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-17.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics for Selected NAICS Codes<sup>1</sup> for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title	Value		Tons		Ton-miles <sup>2</sup>		Average miles per shipment— coefficient of variation of number
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
<b>Total</b> .....		<b>2.6</b>	—	<b>3.3</b>	—	<b>4.6</b>	—	<b>8.1</b>
324	Petroleum and coal products manufacturing .....	3.9	0.8	4.8	1.2	6.9	1.9	8.4
4247	Petroleum and petroleum products merchant wholesalers .....	4.8	1.2	5.3	1.3	8.4	1.5	10.1
325	Chemical manufacturing .....	7.4	0.9	7.6	1.0	3.6	1.2	8.4
551114	Corporate, subsidiary, and regional managing offices .....	8.4	0.3	9.7	0.4	30.6	1.5	49.6
4246	Chemical and allied products merchant wholesalers .....	11.1	0.2	26.5	0.6	35.6	1.2	29.4
45431	Fuel dealers .....	3.6	0.2	4.5	0.2	32.7	0.2	8.2
	All other NAICS codes .....	6.3	0.4	14.5	0.4	17.8	1.1	19.2

— Estimate equal to zero.

<sup>1</sup> NAICS codes shown had the highest estimated weight without considering sampling variability and are shown in descending order.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

Note: The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <[www.census.gov/cfs](http://www.census.gov/cfs)>.

Table B-18.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>	
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
	<b>All Sectors</b>						
	<b>Total</b> .....	2.6	—	3.3	—	4.6	—
	<b>Single modes</b> .....	2.4	0.6	3.2	0.6	4.1	1.6
	Truck <sup>3</sup> .....	3.4	1.5	5.4	1.8	6.5	1.9
	For-hire truck .....	5.9	1.8	6.5	1.6	8.2	1.8
	Private truck .....	5.5	1.1	7.4	1.3	9.3	1.0
	Rail .....	8.2	0.4	10.4	0.5	8.0	1.6
	Water .....	15.9	0.7	13.3	0.8	15.2	1.8
	Air (includes truck and air) .....	34.9	0.1	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	5.7	1.5	5.3	1.8	(S)	(S)
	<b>Multiple modes</b> .....	12.5	0.5	13.5	0.6	14.4	1.6
	Parcel, U.S. Postal Service or courier .....	19.4	0.1	16.7	—	28.9	—
	Truck and rail .....	16.8	0.1	16.2	0.1	18.2	0.5
	Truck and water .....	24.8	0.3	23.5	0.3	20.1	0.7
	Rail and water .....	20.4	0.1	19.1	0.1	24.1	0.2
	Other multiple modes .....	20.3	0.4	19.9	0.5	25.6	1.2
	<b>Other and unknown modes</b> .....	9.2	—	10.8	—	24.6	0.1
324	<b>Petroleum and Coal Products Manufacturing</b>						
	<b>Total</b> .....	3.9	—	4.8	—	6.9	—
	<b>Single modes</b> .....	3.9	1.1	4.9	1.1	7.3	2.6
	Truck <sup>3</sup> .....	9.2	1.6	15.6	2.5	12.1	2.2
	For-hire truck .....	16.6	1.5	15.4	1.6	13.5	1.4
	Private truck .....	21.3	1.8	24.8	1.9	19.0	1.4
	Rail .....	24.0	0.8	19.2	0.7	15.0	2.3
	Water .....	17.6	1.4	15.7	1.5	18.8	3.3
	Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)
	Pipeline <sup>4</sup> .....	5.5	2.2	5.1	2.9	(S)	(S)
	<b>Multiple modes</b> .....	16.2	1.1	15.4	1.1	15.9	2.6
	Parcel, U.S. Postal Service or courier .....	(S)	(S)	47.1	—	48.1	—
	Truck and rail .....	39.4	0.1	32.2	0.1	44.4	0.4
	Truck and water .....	28.2	1.0	26.9	0.9	22.4	1.6
	Rail and water .....	49.2	0.2	40.1	0.1	33.3	0.4
	Other multiple modes .....	22.5	0.9	23.0	0.9	25.5	2.1
	<b>Other and unknown modes</b> .....	(S)	(S)	48.1	—	31.5	—
325	<b>Chemical Manufacturing</b>						
	<b>Total</b> .....	7.4	—	7.6	—	3.6	—
	<b>Single modes</b> .....	7.6	0.9	8.3	1.6	3.5	1.9
	Truck <sup>3</sup> .....	4.3	2.7	12.8	4.7	10.5	2.2
	For-hire truck .....	6.0	2.8	6.4	1.8	9.5	1.5
	Private truck .....	13.5	1.0	19.2	3.8	16.6	1.0
	Rail .....	4.6	1.8	1.5	2.3	3.7	2.6
	Water .....	22.7	1.1	20.1	0.9	30.4	1.4
	Air (includes truck and air) .....	22.2	0.1	28.7	—	27.2	—
	Pipeline <sup>4</sup> .....	32.0	4.2	33.7	4.9	(S)	(S)
	<b>Multiple modes</b> .....	11.4	0.9	17.7	1.6	17.8	2.1
	Parcel, U.S. Postal Service or courier .....	18.6	0.2	32.9	—	22.6	—
	Truck and rail .....	15.5	0.2	13.3	0.3	16.8	0.8
	Truck and water .....	33.6	0.2	45.4	0.1	(S)	(S)
	Rail and water .....	24.8	0.6	21.0	0.3	27.9	0.6
	Other multiple modes .....	25.0	0.9	30.6	1.6	42.9	2.2
	<b>Other and unknown modes</b> .....	31.2	0.2	25.3	0.2	47.8	0.3

See footnotes at end of table.

Table B-18.

### Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>		
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	
4246	<b>Chemical and Allied Products Merchant Wholesalers</b>							
	<b>Total</b> .....	<b>11.1</b>	—	<b>26.5</b>	—	<b>35.6</b>	—	
	<b>Single modes</b> .....	<b>10.8</b>	<b>0.6</b>	<b>26.7</b>	<b>0.5</b>	<b>35.5</b>	<b>1.4</b>	
	Truck <sup>3</sup> .....	11.2	1.1	27.8	4.1	27.4	7.2	
	For-hire truck .....	13.7	2.8	20.4	4.1	30.9	6.7	
	Private truck .....	13.1	3.3	34.3	6.2	46.4	6.9	
	Rail .....	24.9	1.1	(S)	(S)	(S)	(S)	
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Air (includes truck and air) .....	42.9	—	38.0	—	(S)	(S)	
	Pipeline <sup>4</sup> .....	—	—	—	—	—	—	
	<b>Multiple modes</b> .....	<b>38.0</b>	<b>0.6</b>	<b>25.9</b>	<b>0.1</b>	<b>(S)</b>	<b>(S)</b>	
	Parcel, U.S. Postal Service or courier .....	22.8	0.3	42.5	—	29.6	0.1	
	Truck and rail .....	42.2	0.2	26.6	0.1	(S)	(S)	
	Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Other multiple modes .....	—	—	—	—	—	—	
	<b>Other and unknown modes</b> .....	<b>31.0</b>	<b>0.2</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	<b>(S)</b>	
	4247	<b>Petroleum and Petroleum Products Merchant Wholesalers</b>						
		<b>Total</b> .....	<b>4.8</b>	—	<b>5.3</b>	—	<b>8.4</b>	—
		<b>Single modes</b> .....	<b>4.7</b>	<b>0.4</b>	<b>5.1</b>	<b>0.6</b>	<b>7.8</b>	<b>2.7</b>
Truck <sup>3</sup> .....		4.6	1.4	4.6	1.8	6.1	3.7	
For-hire truck .....		7.0	2.5	6.5	2.6	11.3	3.2	
Private truck .....		7.0	2.0	7.4	2.0	8.6	3.9	
Rail .....		46.8	0.1	46.0	0.1	44.7	0.4	
Water .....		36.6	0.8	37.0	1.0	(S)	(S)	
Air (includes truck and air) .....		(S)	(S)	(S)	(S)	(S)	(S)	
Pipeline <sup>4</sup> .....		24.7	0.9	25.0	0.9	(S)	(S)	
<b>Multiple modes</b> .....		<b>40.4</b>	<b>0.4</b>	<b>39.7</b>	<b>0.6</b>	<b>47.0</b>	<b>2.6</b>	
Parcel, U.S. Postal Service or courier .....		(S)	(S)	(S)	(S)	(S)	(S)	
Truck and rail .....		(S)	(S)	(S)	(S)	(S)	(S)	
Truck and water .....		44.0	0.1	47.6	0.2	(S)	(S)	
Rail and water .....		—	—	—	—	—	—	
Other multiple modes .....		37.3	0.8	28.5	1.1	29.4	1.2	
<b>Other and unknown modes</b> .....		<b>12.4</b>	<b>0.1</b>	<b>13.9</b>	<b>0.1</b>	<b>25.7</b>	<b>0.3</b>	
45431		<b>Fuel Dealers</b>						
		<b>Total</b> .....	<b>3.6</b>	—	<b>4.5</b>	—	<b>32.7</b>	—
		<b>Single modes</b> .....	<b>3.5</b>	<b>0.3</b>	<b>4.4</b>	<b>0.3</b>	<b>32.7</b>	<b>0.3</b>
	Truck <sup>3</sup> .....	3.4	0.5	4.3	0.6	32.7	0.3	
	For-hire truck .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Private truck .....	3.5	2.9	4.0	3.1	12.0	11.9	
	Rail .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Air (includes truck and air) .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Pipeline <sup>4</sup> .....	—	—	—	—	—	—	
	<b>Multiple modes</b> .....	<b>31.9</b>	—	<b>29.8</b>	—	<b>30.0</b>	—	
	Parcel, U.S. Postal Service or courier .....	41.7	—	40.0	—	37.3	—	
	Truck and rail .....	(S)	(S)	(S)	(S)	(S)	(S)	
	Truck and water .....	—	—	—	—	—	—	
	Rail and water .....	—	—	—	—	—	—	
	Other multiple modes .....	—	—	—	—	—	—	
	<b>Other and unknown modes</b> .....	<b>40.6</b>	<b>0.3</b>	<b>44.3</b>	<b>0.3</b>	<b>37.0</b>	<b>0.3</b>	

See footnotes at end of table.

Table B-18.

## Estimated Measures of Reliability for Hazardous Material Shipment Characteristics by Selected NAICS Code<sup>1</sup> and Mode of Transportation for the United States: 2007—Con.

[Estimates are shown as percentages and are based on data from the 2007 Commodity Flow Survey. Because of rounding, estimates may not be additive]

NAICS code	NAICS title and mode of transportation	Value		Tons		Ton-miles <sup>2</sup>	
		Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage	Coefficient of variation of number	Standard error of percentage
551114	<b>Corporate, Subsidiary, and Regional Managing Offices</b>						
	<b>Total</b> .....	<b>8.4</b>	—	<b>9.7</b>	—	<b>30.6</b>	—
	<b>Single modes</b> .....	<b>8.2</b>	<b>1.2</b>	<b>9.6</b>	<b>1.6</b>	<b>31.4</b>	<b>2.7</b>
	Truck <sup>3</sup> .....	19.9	7.4	15.2	7.4	43.1	8.9
	For-hire truck .....	30.2	7.2	25.0	8.0	45.2	8.9
	Private truck .....	23.0	4.4	22.2	4.1	28.3	3.5
	Rail .....	30.9	1.3	(S)	(S)	(S)	(S)
	Water .....	40.5	2.5	39.7	2.2	(S)	(S)
	Air (includes truck and air) .....	44.2	0.1	39.8	—	47.5	—
	Pipeline <sup>4</sup> .....	17.7	6.8	18.3	6.5	(S)	(S)
	<b>Multiple modes</b> .....	<b>35.1</b>	<b>1.2</b>	<b>32.7</b>	<b>1.6</b>	<b>30.8</b>	<b>2.8</b>
	Parcel, U.S. Postal Service or courier .....	(S)	(S)	49.1	—	(S)	(S)
	Truck and rail .....	47.6	0.6	(S)	(S)	(S)	(S)
	Truck and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Other multiple modes .....	20.1	2.6	15.3	2.7	25.0	6.0
	<b>Other and unknown modes</b> .....	<b>(S)</b>	<b>(S)</b>	<b>31.8</b>	—	<b>(S)</b>	<b>(S)</b>
	<b>All Other NAICS</b>						
	<b>Total</b> .....	<b>6.3</b>	—	<b>14.5</b>	—	<b>17.8</b>	—
	<b>Single modes</b> .....	<b>6.8</b>	<b>1.8</b>	<b>15.0</b>	<b>1.4</b>	<b>19.1</b>	<b>2.6</b>
	Truck <sup>3</sup> .....	7.0	2.4	13.1	6.0	15.9	7.0
	For-hire truck .....	12.6	5.1	14.4	3.7	15.4	6.0
	Private truck .....	14.0	4.7	17.0	5.2	20.4	1.4
	Rail .....	29.0	0.9	(S)	(S)	48.4	7.6
	Water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Air (includes truck and air) .....	20.0	0.2	26.4	—	34.6	—
	Pipeline <sup>4</sup> .....	37.8	2.2	26.3	5.9	(S)	(S)
	<b>Multiple modes</b> .....	<b>24.3</b>	<b>1.6</b>	<b>29.1</b>	<b>1.3</b>	<b>30.9</b>	<b>2.7</b>
	Parcel, U.S. Postal Service or courier .....	30.9	1.6	23.0	0.1	47.0	0.3
	Truck and rail .....	25.1	0.4	30.7	1.2	36.1	2.7
	Truck and water .....	(S)	(S)	48.8	—	48.4	0.3
	Rail and water .....	(S)	(S)	(S)	(S)	(S)	(S)
	Other multiple modes .....	(S)	(S)	(S)	(S)	(S)	(S)
<b>Other and unknown modes</b> .....	<b>19.5</b>	<b>0.2</b>	<b>29.8</b>	<b>0.5</b>	<b>39.9</b>	<b>0.1</b>	

— Estimate equal to zero.

(S) Estimate did not meet publication standards.

<sup>1</sup> NAICS codes shown had the highest estimated weight without considering sampling variability.

<sup>2</sup> Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See "Mileage Calculations" section for additional information.

<sup>3</sup> "Truck" as a single mode includes shipments that were made by only private truck, only for-hire truck, or a combination of private and for-hire truck.

<sup>4</sup> Estimates for pipeline exclude shipments of crude petroleum (SCTG 16).

Note: The Introduction and appendices give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information on the Internet may be found at <www.census.gov/cfs>.



# Appendix C.

## Sample Design, Data Collection, and Estimation

### INTRODUCTION

The primary goal for the 2007 Commodity Flow Survey (CFS) was to estimate *shipping volumes* (value, tons, and ton-miles) by *commodity and mode of transportation* at varying levels of geographic detail. A secondary objective was to estimate the volume of shipments moving from one geographic area to another (i.e., flows of commodities between states, regions, etc.) by mode and commodity. A detailed description of the sample design for the 2007 CFS is provided below.

### SAMPLE DESIGN

The sample for the 2007 CFS was selected using a stratified three-stage design in which the first-stage sampling units were establishments, the second-stage sampling units were groups of four 1-week periods (reporting weeks) within the survey year, and the third-stage sampling units were shipments.

#### First Stage—Establishment Selection

##### *Sampling frame*

To create the first-stage sampling frame, a subset of establishment records (as of August 2006) was extracted from the U.S. Census Bureau's Business Register. The Business Register is a database of all known establishments located in the United States or its territories. An establishment is a single physical location where business transactions take place or services are performed. Most establishments located in the United States, having nonzero payroll in 2005, and classified in mining (except oil and gas extraction), manufacturing, wholesale, electronic shopping and mail order, fuel dealers, and publishing industries, as defined by the 2002 North American Industry Classification System (NAICS), were included on the sampling frame. Certain manufacturers (pre-press services) and wholesalers (manufacturers' sales offices, agents and brokers, and certain importers) were excluded from the frame.

*Auxiliary establishments* (e.g., warehouses and central administrative offices) with shipping activity were also included on the sampling frame. Auxiliary establishments are establishments that are primarily involved in rendering support services for other establishments within the same company instead of for the public, government, or other business firms. Establishments classified in forestry, fishing, utilities, construction, transportation, and all other retail and services industries were not included on the sampling frame. Farms and government-owned entities

(except government-owned wholesale liquor stores) were also excluded from the sampling frame.

The resulting frame comprised approximately 754,000 establishments as listed in the table below.

Trade area	Establishments
Mining	6,789
Manufacturing	327,826
Wholesale	356,477
Retail	25,190
Services	22,539
Auxiliaries	14,878
<b>Total</b>	<b>753,699</b>

For each establishment, sales, payroll, number of employees, a six-digit NAICS code, name and address, and a primary identifier were extracted, and a measure of size was computed. The measure of size was designed to approximate an establishment's annual total value of shipments for the year 2004.

All of the establishments included on the sampling frame had state, county, and place geographic codes, which were used to assign each establishment to one of the 73 metropolitan areas (MAs) defined as a combination of the metropolitan statistical areas (MSAs), combined statistical areas (CSAs), and states. Establishments not located in an MA were assigned to the balance of the state.

##### *Stratification*

The sampling frame was stratified by geography and industry. A particular geographic-by-industry combination defined a "primary stratum." Geographic strata were defined by a combination of the 50 states, the District of Columbia, and 65 MAs based on their population and importance as transportation gateways. All other MAs were collapsed with the non-MAs within the state into rest of state (ROS) strata. When an MA crossed state boundaries, the size of each part of the MA was considered relative to the MAs total measure of size when determining whether or not to create strata in each state in which the MA was defined. Six MAs had strata in two or more states.

The industry strata were determined as follows. Within each of the geographic strata, 48 industry groups were defined based on the 2002 NAICS: 3 mining (four-digit NAICS); 21 manufacturing (three-digit NAICS); 18 wholesale (four-digit NAICS); 2 retail (NAICS 4541 and 45431); 1 ser-

vices (NAICS 5111 and 51223 combined); and 3 auxiliary (combinations of NAICS 4931 and 551114).

If a three- or four-digit NAICS industry contributed at least 4 percent of the total value (based on sampling measure of size) or tonnage (based on 2002 CFS data) for the geographic stratum or the nation, it was designated as a *do not collapse* industry stratum within the geographic stratum. Industries not meeting this level of activity within a geographic stratum were grouped with other similar industries. The remaining industry strata were collapsed to form at most 10 *collapsed* industry strata within each geographic stratum.

The method used to collapse the remaining strata used 2002 CFS data as input to a Classification and Regression Tree (CART) procedure that related industries with commodities. The terminal nodes from the CART procedure were then grouped using a hierarchical clustering algorithm. Using the results from the hierarchical clustering algorithm, some of the clusters were manually regrouped to arrive at the final industry clusters.

To produce better estimates of the shipment of hazardous materials (hazmat) for 2007, a total of 160 strata targeting hazmat shippers were created. Using 2002 CFS data, the six-digit NAICS industries that accounted for a large proportion of the estimated total value and/or total tonnage for six groups of hazmat were identified. These included ammonium nitrate, ethanol, explosives, hydrogen, toxic by inhalation, and all other miscellaneous hazmat.

The treatment of auxiliary establishments was modified for 2007 to take advantage of the data collected through the advance survey. For auxiliaries that responded to the advance survey and were considered to be shippers, 123 strata were created—one in each geographic stratum, combining both NAICS 4931 and 551114. Two national strata for auxiliary establishments were also created for those that did not respond to the advance survey—one stratum for nonresponding warehouses (those classified in NAICS 4931) and one stratum for nonresponding management offices (NAICS 551114).

The table below summarizes the primary stratification of the CFS sampling frame. Of the 2,745 primary strata, 232 were designated as *take-all* strata because of the small number of establishments in the stratum and/or their importance.

Primary strata	Number
Do not collapse	1,306
Collapsed	1,154
Auxiliaries (advance survey responders)	123
Auxiliaries (advance survey nonresponders)	2
Hazmat	160
<b>Total</b>	<b>2,745</b>

### Sample size and allocation

Sample sizes were computed to meet coefficient of variation (CV) constraints on estimated value of shipments totals for each primary stratum. A CV of 1.5 percent on the estimated total value of shipments was used for each primary stratum because it produced total sample sizes of approximately 100,000 establishments.

The primary constraints were budget related, which are translated into an approximate fixed sample size for the survey. The goal of the design was to allocate this fixed total sample size in a statistically efficient manner. The CV constraints were primarily used as a tool to allocate more of the sample to more important strata. It was assumed that the cost of data collection would not vary by stratum. Maximum sampling weight and minimum sample size constraints were also imposed. For the CFS designs, the maximum first stage sample weight was set to 100 and the minimum sample size to 2 establishments per stratum.

The procedure for determining sampling parameters was an iterative computerized process. The sample design programs used in the process are part of a group of generalized programs that have been modified to accommodate the needs of the survey but use common methods, such as the Dalenius & Hodges cumulative sqrt(f) procedure, Neyman allocation, and similar rules for determining acceptable designs.

For each (non-take-all) primary sampling stratum, the survey designer specified as input to a Generalized Univariate Stratification (GUS) program:

- The desired number of bins (for a frequency distribution used in the Dalenius & Hodges' cumulative sqrt[f] procedure).
- The desired number of size strata.
- The desired number of certainty companies.
- The desired coefficient of variation for total value of shipments.
- The maximum sampling weight.
- The minimum sample size.

Once designs were determined for each of the primary strata, the information from these designs was used as input to a program that attempted to more efficiently allocate the sample to meet the desired CV on each primary stratum and also determine the sample sizes needed to meet a national level constraint. Designs with a national level constraint tend to allocate more samples to the larger states so there is a trade off between better national estimates and the quality of the more detailed geographic estimates. For the 2007 CFS, a design with a primary strata CV of 1.7 percent and a national CV of 0.036 percent was chosen. The final first stage sample size was 102,369 establishments.

## Second Stage—Reporting Week Selection

The frame for the second stage of sampling consisted of 52 weeks from January 6, 2007, to January 4, 2008. Each establishment selected into the 2007 CFS sample was systematically assigned to report for four reporting weeks—one in each quarter of the reference year. Each of the four weeks was in the same relative position of the quarter. For example, an establishment might have been requested to report data for the 5th, 18th, 31st, and 44th weeks of the reference year. In this instance, each reporting week corresponds to the 5th week of each quarter. Prior to assignment of weeks to establishments, the selected sample was sorted by primary stratum (state by metropolitan area by industry) and measure-of-size.

## Third Stage—Shipment Selection

For each of the four reporting weeks in which an establishment was asked to report, the respondent was requested to construct a sampling frame consisting of all shipments made by the establishment in the reporting week. Each respondent was asked to count or estimate the total number of shipments comprising the sampling frame and to record this number on the questionnaire. For each assigned reporting week, if an establishment made *more than 40* shipments during that week, the respondent was asked to select a systematic sample of the establishment's shipments and to provide information only about the selected shipments. If an establishment made *40 or fewer* shipments during that week, the respondent was asked to provide information about *all* of the establishment's shipments made during that week (i.e., no sampling was required).

## DATA COLLECTION

Each establishment selected into the CFS sample was mailed a questionnaire for each of its four reporting weeks, that is, an establishment was sent a questionnaire once every quarter of 2007. For a given establishment, the respondent was asked to provide the following information about each of the establishment's reported shipments:

- Shipment ID number
- Shipment date (mm/dd)
- Shipment value
- Shipment weight in pounds
- Commodity code from Standard Classification of Transported Goods (SCTG) list
- Commodity description
- United Nations or North America (UN/NA) number for hazardous material shipments
- U.S. destination (city, state, Zip Code)—or gateway for export shipment
- Modes of transport

- An indication of whether the shipment was an export
- City and country of destination for exports
- Export mode

For a shipment that included more than one commodity, the respondent was instructed to report the commodity that made up the greatest percentage of the shipment's weight.

## IMPUTATION OF SHIPMENT VALUE OR WEIGHT

To correct for nonresponse to *either* the value *or* weight for a given shipment reported in the CFS, the missing value for the item (or value that failed edit) was replaced by a predicted value obtained from an appropriate model. Such a shipment was considered a "recipient" if it had a valid commodity code and the other item reported was greater than zero and had passed edit. The recipient's item that was missing or failed edit was imputed as follows. First, a "donor" shipment was randomly selected from shipments that were reported in the CFS with:

- The same commodity code as the recipient.
- Both value and weight items reported greater than zero and had passed edit.
- Similar origin and value for the item reported by the recipient.

Then, the donor's value and weight data were used to calculate a ratio, which was then applied to the recipient's reported item to impute the item that was missing or failed edit. If no donor was found, the median ratio for all shipments reported in the survey with the same commodity code as the recipient—and with both value and weight items reported greater than zero—was applied to the recipient's reported item. For either the value or weight item, about 3 percent of the shipment records used for the calculation of estimates had imputed data for the item.

## ESTIMATION

Estimated totals (e.g., value of shipments, tons, ton-miles) were produced as the sum of weighted shipment data (reported or imputed). Percentage change and percentage-of-total estimates were derived using the appropriate estimated totals. Estimates of average miles per shipment were computed by dividing a weighted estimate of the total miles traveled by the estimated weighted number of shipments.

Each shipment had associated with it a single tabulation weight, which was used in computing all estimates to which the shipment contributes. The tabulation weight was a product of seven different component weights and a noise factor. A description of each component weight follows.

CFS respondents provided data for a sample of shipments made by their respective establishments in the survey year. For each establishment, an estimate of that establishment's total value of shipments was produced for the entire survey year. To do this, four different weights were used—the shipment weight, the shipment nonresponse weight, the quarter weight, and the quarter nonresponse weight. Three additional weights were then applied to produce estimates representative of the entire universe—the establishment-level adjustment weight, the establishment (or sample) weight, and the industry-level adjustment weight.

Like establishments, shipments were identified as either certainty or noncertainty (see the "Nonsampling Error" section). For noncertainty shipments, the "shipment weight" was defined as the ratio of the reported total number of shipments made by an establishment in a reporting week to the number of sampled shipments for the same week. This weight used data from the sampled shipments to represent all the establishment's shipments made in the reporting week. However, a respondent may have failed to provide sufficient information about a particular sampled shipment. For example, a respondent may not have been able to provide value, weight, or a destination for one of the sampled shipments. If this data item could not be imputed, then this shipment did not contribute to tabulations and was deemed unusable (a "usable shipment" is one that has valid entries for value, weight, and origin and destination ZIP Codes). To account for these unusable shipments, a "shipment nonresponse weight" was applied. For noncertainty shipments from a particular establishment's reporting week, the weight was equal to the ratio of the number of sampled shipments for the reporting week to the number of usable shipments for the same week. The shipment weight for certainty shipments from a particular establishment's reporting week was equal to 1.

The *quarter weight* inflated an establishment's estimate for a particular reporting week to an estimate for the corresponding quarter. For noncertainty shipments, the quarter weight was equal to 13. The quarter weight for most certainty shipments is also equal to 13. However, if a respondent was able to provide information about all large (or certainty) shipments made in the quarter containing the reporting week, then the quarter weight for each of these

shipments was one. For each establishment, the quarterly estimates were added to produce an estimate of the establishment's value of shipments for the entire survey year. Whenever an establishment did not provide the Census Bureau with a response for each of its four reporting weeks, a quarter nonresponse weight was computed. The "quarter nonresponse weight" for a particular establishment was defined as the ratio of the number of quarters for which the establishment was in business in the survey year to the total number of quarters (reporting weeks) for which usable shipment data was received from the establishment.

Using these four component weights, an estimate of each establishment's value of shipments was computed for the entire survey year. This estimate was then multiplied by a factor that adjusts the estimate using value of shipments and sales data obtained from other surveys and censuses conducted by the Census Bureau. This weight, the *establishment-level adjustment weight*, attempted to correct for any sampling or nonsampling errors that occurred during the sampling of shipments by the respondent.

The adjusted value of shipments estimate for an establishment was then weighted by the *establishment (or sample) weight*. This weight was equal to the reciprocal of the establishment's probability of being selected into the first stage sample.

A final adjustment weight, the *industry-level adjustment weight*, used information from other surveys and censuses conducted by the Census Bureau to account for establishment nonresponse or nonuseable response and changes in the universe of establishments from 2006 when the first-stage sampling frame was constructed and from 2007 when the data were collected. Separate industry-level adjustment weights were determined for nonauxiliary and auxiliary establishments. For the final CFS estimates, these industry-level adjustments were made by state at the three-digit (Manufacturing) or four-digit (all other industries) NAICS levels. There were approximately 2,150 separate industry adjustment weights computed.

A noise factor was then applied to provide additional disclosure protection (see Appendix B, "Reliability of the Estimates").

# Appendix D.

## Standard Classification of Transported Goods Code Information

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The commodities shown in this report are classified using the Standard Classification of Transported Goods (SCTG) coding system. The SCTG coding system was created jointly by U.S. agencies and Canadian governments based on the Harmonized System of product classification that is used worldwide. The purpose of the SCTG coding system was to specifically address statistical needs in regard to products transported.

In 1997, 2002, and 2007, the Commodity Flow Survey provided respondents with a listing of SCTG codes and descriptions at the five-digit level to use in assigning a commodity code for each shipment. For shipments of more than one commodity, respondents were instructed to use the five-digit code for the major commodity, defined as the commodity of greatest total weight in the shipment. For the data presented on this report, the SCTG codes were aggregated to the two-digit level.



## Appendix E.

# Sample Questionnaire Instructions and Form

The sample questionnaire instructions and form for the fourth quarter are shown on the following pages.

Note: The questionnaires for each calendar quarter were the same, except for the addition of Item H—"Third Party Logistics" to the fourth quarter questionnaire.

# 2007 Commodity Flow Survey

## INSTRUCTION GUIDE

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*Instructions for Completing the Commodity Flow Survey  
Please read all instructions.*

**Contents:**

- **Part I** — Instructions for Completing your Questionnaire . . . . .Pages 2–6
- **Part II** — Mode of Transportation Definitions . . . . .Page 7
- **Part III** — State Postal Abbreviation List . . . . .Page 8

Instructions for completing the Commodity Flow Survey also are available on our website at <http://www.census.gov/CFS>. If you need to contact us by telephone, a representative will be glad to assist you. Call us at **1-800-772-7851** between 8:30 a.m. and 5:00 p.m. Eastern time.

## Part I — Instructions for Completing Your Questionnaire

*Item A: Establishment Name:*

Enter **only** if different from mailing address in label area.

*Item B: Physical Location:*

Enter **only** if different from mailing address in label area.

*Item C: Operating Status:*

Check the box that best describes this establishment's operating status during the designated reporting week.

If this establishment was inactive and made no outbound shipments during the designated reporting week: skip to the end of the questionnaire and complete the Contact information, and then return the form to the Census Bureau in the envelope provided.

*Item D(1): Total Number of Outbound Shipments*

Enter in the space provided your total number of outbound shipments **for the one week reporting period** printed in Item D(1).

**What we mean by a "shipment":**

For the purposes of this survey, a shipment is a single consignment of commodities or products from your establishment to a single customer or to another specific location of your company transported in commerce, often with a shipping document such as a manifest, bill of lading, or waybill.

"Commodities" refer to items that the establishment at this location produces, sells, or distributes, *not* to items that are considered waste-products (without value) of your location's operation.

**A special note about "shipments":**

A full, or partial, truckload should be counted as a single shipment only if all the commodities on the truck are destined for one location. If a truck makes multiple deliveries on a route, **please count each delivery as one shipment.**

**Include:**

*Include* in this count any materials picked up by the customer ("customer pick-up").

*Include* only those shipments from the location specified in Item B, or label address if not changed.

*Include* shipments of commodities of all sizes, by any mode of transportation (e.g., parcels).

*Include* any shipment of products from this establishment to another location of the company if intended for sale (e.g., products moved from this establishment to a company warehouse).

**Do not include:**

Do *not* include as shipments internal administrative items, such as inter-office memos, payroll checks, business correspondence, etc.

Do *not* include as shipments such as refuse, scrap paper, waste, and recyclable materials **unless** this establishment is in the business of selling or providing these materials to others.

Do *not* include as shipments items moved from the establishment at this location to another location of the company if not intended for commercial activity (e.g., the transfer of office furniture from one location of this company to another location of this company for use at the new location).

## Part I — Instructions for Completing Your Questionnaire

### *Item D(2): Total Number of Outbound Shipments*

Check the appropriate box in Item D(2) to indicate whether this establishment reported 40 or fewer shipments in Item D(1). If "Yes" is marked, skip to Item F beginning on page 4 and report the information requested for all shipments made during the assigned week.

If "No", continue with Item E on page 3 to determine the sample of shipments that this establishment should report in Item F.

### *Item E: Sampling Instructions*

If you have more than 40 outbound shipments for the one-week reporting period you are asked to report only a sample of them in Item F.

Item E provides instructions for selecting shipments for which to report in Item F.

#### **Example**

For example, if in Item D(1) you reported 150 outbound shipments for the one-week period:

Using the table provided in Item E: Go to the line with the range in column 1 that includes your total number of shipments for the week. In this example, row 4 (101-200), includes 150 so you would follow the instructions in column 2 which reads, "Report every 5th outbound shipment". You would then report the following 30 shipments in Item F, beginning on Page 4 of the report form:

Line 1: your 5<sup>th</sup> outbound shipment  
Line 2: your 10<sup>th</sup> outbound shipment  
Line 3: your 15<sup>th</sup> outbound shipment  
•     •     •     (continue with every 5<sup>th</sup> shipment)  
•     •     •  
•     •     •  
Line 30: your 150<sup>th</sup> outbound shipment

When sampling your shipments, please use the files, or combination of files that reflect the full range of your location's shipping activities in terms of modes of transportation used, commodities or products shipped, and destinations.

We're here to answer your questions! If you have questions about the sampling process (or any part of the questionnaire) please visit our website at [www.census.gov/cfs](http://www.census.gov/cfs) or call us at 1-800-772-7851, from 8:30 am to 5:00 pm, Eastern time.

## Part I — Instructions for Completing Your Questionnaire – Continued

### Item F: Shipment Characteristics

- **Shipment ID Number, Column (B)** – Enter the invoice number, shipment number, or some other unique identification number that your establishment could use to find this particular shipping document if questions arise regarding your report.
- **Shipment Date, Column (C)** – Enter the month and day of the shipment. If shipment date is not available, use the invoice/shipping document date. Use numbers only.
- **Shipment Value, Column (D)** – Enter the dollar value, in whole dollars, of the entire shipment. The value should not include freight charges or excise taxes (i.e., report the net selling value, f.o.b. plant). If the value is not readily available from your records, please estimate.
- **Net Shipment Weight, Column (E)** – Enter the net weight of the total shipment in whole pounds. If net weight is not readily available from your records, please estimate.
- **SCTG Commodity Code, Column (F)** – Please use the list of commodity codes provided in the SCTG Commodity Codes booklet to select the proper code. For shipments with more than one commodity, enter only the code for the commodity with the greatest weight. For assistance in locating the appropriate commodity code, refer to the alphabetized listing of selected commodities at the end of the SCTG Commodity Codes booklet. Additional assistance is available at our website at [www.census.gov/cfs](http://www.census.gov/cfs), or you may call us at 1-800-772-7851 to speak with a Census Bureau representative.
- **Commodity Description, Column (G)** – Enter a brief description of the commodity shipped. For shipments with more than one commodity, describe only the commodity with the greatest weight. Do not use trade names, catalog numbers, or other codes not familiar to persons outside your business.

Item F SHIPMENT CHARACTERISTICS								
Line No. (A)	Your Shipment ID Number (B)	Shipment date (C)		Shipment value (excluding shipping costs) in whole dollars <i>Estimates acceptable.</i> (D)	Net Shipment weight in pounds (E)	SCTG commodity code from accompanying booklet (F)	Commodity description (G)	Continue with column (H) on page 5
		Month	Day					
0	123-5	4	26	244,235	4840	34520	Mechanical machinery	→
00	402H	4	26	1,375	50,125	20222	Sulfuric acid	→
1								
2								
3								
4								

## Part I — Instructions for Completing Your Questionnaire – Continued

### Item F: Shipment Characteristics – Continued

- **For Hazardous Materials, Column (H)** – If shipment is a hazardous material, enter the 4-digit United Nations (UN) or North American (NA) number.
- **U.S. Destination or U.S. Exit Port, Column (I)** – For domestic shipments, enter the city, state, and 5-digit ZIP Code of the buyer/receiver as it appears on the shipping document. Use the "**ship to**" address. Use the two letter state postal abbreviation shown in part III.
 

**Important** – For export shipments, report the U.S. **port of exit** as the destination city. The port of exit is the port or airport from which the shipment left the country. In case of land shipments into Mexico or Canada, it is the border crossing.
- **Mode(s) of Transport to U.S. Destination, Column (J)** – Enter the code(s) for **all** modes of transport used for the shipment to its U.S. destination (i.e., the destination reported in **Column (I)**). Codes are located on the bottom of pages 5 and 7 of the questionnaire. Enter in the sequence used, all that apply. See part II for definitions of each mode.
 

**For Customer Pick-up:** Report the mode(s) of transportation used, if known. Otherwise, report mode as "0" (unknown).

**For Export Shipments:** List only the mode(s) of transport used to reach the U.S. port, airport, or border crossing of exit.

If a hazardous material, enter the "UN" or "NA" number  (H)	U.S. destination or U.S. Exit Port (Complete for all shipments.)  (I)			Mode(s) of transport to U.S. destination <b>Enter all that apply in order used.</b> <b>Use codes at bottom.</b>  (J)
	City	State	ZIP Code	
	Los Angeles	C A	90040	2, 4
1 8 3 0	Newark	N J	07105	4

## Part I — Instructions for Completing Your Questionnaire – Continued

### Item F: Shipment Characteristics – Continued

**Intermodal Shipment, Column (K)** – An intermodal shipment is defined as a shipment of a commodity that has been placed within a piece of transportation equipment that is designed to be interchanged (transferred) between different modes of transportation under a single rate (e.g., a single bill of lading). Examples of intermodal transportation include the shipment of commodities in truck trailers designed to be placed on railroad flat cars (TOFC); shipping containers designed to be placed on railroad flat cars (COFC); or shipping containers for marine transportation. Intermodal (IM or ISO) tanks designed for interchange between the truck, rail and marine modes are also examples of intermodal transportation reportable in the CFS.

**Export Shipment, Column (L)** – Indicate whether or not the shipment is intended for export outside of the United States, by entering a "Y" or "N" (yes or no). For purposes of this survey, shipments to Puerto Rico and U.S. territories and possessions **are** considered exports.

**Foreign Destination: City and Country, Column (M)** – If the shipment is an export, enter the foreign city and country of destination. For **U.S. Destination, Column (I)**, enter the U.S. port, airport, or border crossing of exit. In **Column (J)**, enter the mode of transport used to the U.S. destination.

**Export Mode, Column (N)** – If the shipment is an export, enter the code for the mode of transport by which the shipment left the country. Codes are located at the bottom of pages 5 and 7 of the questionnaire.

Intermodal Shipment? (Y/N)* (K)	Export? (Y/N) (L)	Foreign Destination (for export shipments only) <b>Note:</b> In column (I) enter the U.S. port, airport, or border crossing of exit. (M)		Export mode (N)	Line No. (O)
		City	Country		
Y	Y	Beijing	China	6	0
N	N				00
					1
					2
					3
					4

### Item G: Monthly Value of Outbound Shipments

Please check the box that corresponds to the total value of all outbound shipments from this location for the most recently completed calendar month.

### Contact

Please enter name and telephone number of the person to contact in the event that we have a question about your report.

## Part II — Mode of Transportation Definitions

**Parcel delivery/Courier/U.S. Parcel Post** – Includes ground and air shipments of packages and parcels that each weigh less than 100 pounds, and are transported by a for-hire carrier.

**Private truck** – Trucks operated by employees of this establishment or the buyer/receiver of the shipment. Includes trucks providing dedicated services to this establishment.

**For-hire truck** – Shipments by common or contract carriers made under a negotiated rate.

**Railroad** – Any common carrier or private railroad.

**Shallow draft vessel** – Barges, ships, or ferries operating on rivers and canals; in harbors, the Great Lakes, the Saint Lawrence Seaway, the Intracoastal Waterway, the Inside Passage to Alaska, major bays and inlets, or in the ocean close to the U.S. shoreline.

**Deep draft vessel** – Barges, ships, or ferries operating primarily in the open ocean. (Shipping on the Great Lakes and the Saint Lawrence Seaway is classified with shallow draft vessels.)

**Pipeline** – Movements of oil, petroleum, gas, slurry, etc. through pipelines that extend to other establishments or locations beyond the shipper's establishment. (Aqueducts for the movement of water are not included.)

**Air** – Any individual package shipped by air that weighs 100 pounds or more.

**Other mode** – Any mode not listed above.

**Unknown** – A shipment where you are unable to determine the mode of transportation.

**Note:** Transportation equipment that is "shipped" under its own power, such as boats, barges, ferries, ships, aircraft, trucks, and trains **should be classified with the appropriate mode above.** Transportation equipment shipped under its own power for which an appropriate mode is not listed (e.g., buses, recreational vehicles) should be listed as **"other" mode.**

### Part III — State Postal Abbreviation List

State	Abbrev.	State	Abbrev.
Alabama	AL	Montana	MT
Alaska	AK	Nebraska	NE
Arizona	AZ	Nevada	NV
Arkansas	AR	New Hampshire	NH
California	CA	New Jersey	NJ
Colorado	CO	New Mexico	NM
Connecticut	CT	New York	NY
Delaware	DE	North Carolina	NC
Dist. of Col.	DC	North Dakota	ND
Florida	FL	Ohio	OH
Georgia	GA	Oklahoma	OK
Hawaii	HI	Oregon	OR
Idaho	ID	Pennsylvania	PA
Illinois	IL	Rhode Island	RI
Indiana	IN	South Carolina	SC
Iowa	IA	South Dakota	SD
Kansas	KS	Tennessee	TN
Kentucky	KY	Texas	TX
Louisiana	LA	Utah	UT
Maine	ME	Vermont	VT
Maryland	MD	Virginia	VA
Massachusetts	MA	Washington	WA
Michigan	MI	West Virginia	WV
Minnesota	MN	Wisconsin	WI
Mississippi	MS	Wyoming	WY
Missouri	MO		

**NOTICE :**

Public reporting burden for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Paperwork Project 0607-0932, U.S. Census Bureau, 4700 Silver Hill Road, Stop 1500, Washington, DC 20233-1500. You may e-mail comments to [Paperwork@census.gov](mailto:Paperwork@census.gov); use "Paperwork Project 0607-0932" as the subject. Respondents are not required to respond to any information collection unless it displays a valid approval number in the top right corner on the front of the questionnaire.



**DUE DATE:**

**YOUR RESPONSE IS REQUIRED BY LAW.** Title 13, United States Code, requires businesses and other organizations that receive this questionnaire to answer the questions and return the report to the U.S. Census Bureau. By the same law, **YOUR REPORT IS CONFIDENTIAL.** It may be seen only by persons sworn to uphold the confidentiality of Census Bureau information and may be used only for statistical purposes. Further, copies retained in respondents' files are immune from legal process.

*Please make corrections to name, address, and ZIP code if necessary.*

**INSTRUCTIONS:**

- Please refer to the accompanying Instruction Guide for help in answering specific questions.
- More information is available at [www.census.gov/cfs](http://www.census.gov/cfs) or at 1-800-772-7851.

**PURPOSE OF THIS SURVEY:** To develop information on the characteristics of freight flows in the United States. The information you provide is critical to understanding transportation markets, investment needs and the economic, energy, safety, and security consequences of transportation.

**Item A ESTABLISHMENT NAME**

Is the establishment name shown above in the mailing address correct?

1  Yes

2  No - Enter establishment name →

**Item B PHYSICAL LOCATION**

Is the establishment's physical location the same as shown in the mailing label above? *PO Box or rural routes are not physical locations.*

1  Yes

2  No - Print physical location below

Number and street

City, town, village, etc.

State

ZIP Code + 4

*If you entered a different location above, please complete the form for that location.*



**Item C OPERATING STATUS**

Which of the following best describes this establishment's operating status during the week of

?

- 1  In operation
- 2  Temporarily or seasonally inactive
- 3  Ceased operation - *Enter date ceased operation* →

Date (MM-DD-YYYY)

-  -

**Item D TOTAL NUMBER OF OUTBOUND SHIPMENTS**

For this survey, it is important to obtain information about a sample of the outbound shipments made from this establishment.

*An outbound shipment in this survey is defined as a movement of commodities from your establishment to another **single** location. If a truck makes multiple stops on a delivery route, please **count each stop as one shipment**.*

- Remember to include only outbound shipments from your physical location (label address or physical location in Item B).
- Also include customer pick-ups, parcels, and all other outbound shipments.

**1. What was the total number of all outbound shipments for this establishment the week of**

?

Total number of outbound shipments

*Estimates are acceptable.*

*For further information, refer to the Instruction Guide, page 2.*

**2. Did you enter 40 or fewer shipments above?**

- 1  Yes - *Skip Item E and report all outbound shipments in Item F, pages 4-7.*
- 2  No - *Continue with Item E, on page 3.*



**Item E SAMPLING INSTRUCTIONS**

In order to avoid asking you for information regarding all of your shipments, we will only ask about a sample of them. This section will help you **identify your sample of shipments**.

- 1. Using the table below, mark the row that includes the total number of outbound shipments reported in Item D, and the corresponding "report every" number.**

Number of outbound shipments reported in Line 1	Report every...	Mark (X) one
1-40	Report every outbound shipment	
41-80	Report every <b>2nd</b> outbound shipment	
81-100	Report every <b>3rd</b> outbound shipment	
101-200	Report every <b>5th</b> outbound shipment	
201-400	Report every <b>10th</b> outbound shipment	
401-800	Report every <b>20th</b> outbound shipment	
801-1600	Report every <b>40th</b> outbound shipment	
1601-3200	Report every <b>80th</b> outbound shipment	
3201-6400	Report every <b>160th</b> outbound shipment	
6401-12800	Report every <b>320th</b> outbound shipment	
More than 12800	Call Census at 1-800-772-7851 or go to <a href="http://www.census.gov/cfs">www.census.gov/cfs</a>	

- 2. Using your full set of shipments records for the week named in Item D, follow the steps below.**

- Step 1. Count until you reach the "report every" number marked above.  
 Step 2. Select that record.  
 Step 3. Report that record in Line 1 of Item F, pages 4-5.  
 Step 4. Continuing with the next shipment record, count until you reach the "report every" number again.  
 Step 5. Select that record.  
 Step 6. Report in Line 2 of Item F, pages 4-5.  
 Step 7. Repeat this process until you have gone through your full set of shipment records.

- 3. Report these selected shipments in Item F.**

**Example:** If an establishment reported 150 shipments in Item D, it would correspond to the range of 101-200 in the table above, and every 5th outbound shipment record would be selected. This means the establishment would count 5 shipment records, select that record, and report it in Item F. Continuing with the next shipment record, the establishment would count 5 shipment records again, select that record, and report it in Item F. The establishment would repeat this until it had gone through the full set of shipment records for the week named in Item D.

*For further information, refer to the Instruction Guide, page 3.*



<b>Item F SHIPMENT CHARACTERISTICS</b>									
<i>NOTE: Each line runs across pages 4 and 5. After entering column H data on page 4 for any line, continue with column (I) on page 5 for the same line.</i>									
Line No. (A)	Your Shipment ID Number (B)	Shipment Date (C)		Shipment value (excluding shipping costs) in whole dollars. Estimates acceptable. (D)	Net Shipment Weight in pounds (E)	SCTG commodity code from accompanying booklet (F)	Commodity Description (G)	If a hazardous material, enter the "UN" or "NA" number (H)	Continue with column (I) on page 5
		Month	Day						
0	123-5	4	26	224,235	4840	34520	Mechanical machinery		→
00	402H	4	26	1,375	50,125	20222	Sulfuric acid	1830	→
1									→
2									→
3									→
4									→
5									→
6									→
7									→
8									→
9									→
10									→
11									→
12									→
13									→
14									→
15									→
16									→
17									→
18									→
19									→
20									→



U.S. Destination or U.S. Exit Port <i>(Complete for all shipments.)</i>			Mode(s) of transport to U.S. destination. <b>Enter all that apply in order used. Use codes at bottom.</b>	* Intermodal shipment? (Y/N) Export? (Y/N)		Foreign Destination (for export shipments only) <b>Note:</b> In column (I) enter the U.S. port, airport, or border crossing of exit.	Export mode (N)	Line No. (O)	
(I)				(J)	(K)				(L)
City	State	ZIP Code				City	Country		
Los Angeles	CA	90040	2, 4	Y	Y	Beijing	China	6	0
Newark	NJ	07105	4	N	N				00
									1
									2
									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

**Mode of transport codes for columns (J) and (N):**

1 - Parcel delivery, courier, or U.S. Parcel Post	4 - Railroad	7 - Pipeline
2 - Private truck	5 - Shallow draft vessel	8 - Air
3 - For-hire truck	6 - Deep draft vessel	9 - Other mode
		0 - Unknown

**\* Intermodal shipments (column K):** include Trailer on Flat Car (TOFC), Container on Flat Car (COFC), and Intermodal (IM or ISO) tank.



Item F SHIPMENT CHARACTERISTICS - Continued									
NOTE: Each line runs across pages 6 and 7. After entering column H data on page 6 for any line, continue with column (I) on page 7 for the same line.									
Line No. (A)	Your Shipment ID Number (B)	Shipment Date (C)		Shipment value (excluding shipping costs) in whole dollars. Estimates acceptable. (D)	Net Shipment Weight in pounds (E)	SCTG Commodity Code from accompanying booklet (F)	Commodity Description (G)	If a hazardous material, enter the "UN" or "NA" (H)	Continue with column (I) on page 7
		Month	Day						
21									→
22									→
23									→
24									→
25									→
26									→
27									→
28									→
29									→
30									→
31									→
32									→
33									→
34									→
35									→
36									→
37									→
38									→
39									→
40									→



U.S. Destination or U.S. Exit Port <i>(Complete for all shipments.)</i>			Mode(s) of transport to U.S. destination. <b>Enter all that apply in order used. Use codes at bottom.</b>	* Intermodal shipment? (Y/N)	Export? (Y/N)	Foreign Destination (for export shipments only) <b>Note:</b> In column (I) enter the U.S. port, airport, or border crossing of exit.		Export mode (N)	Line No. (O)
(I)						(M)			
City	State	ZIP Code	(J)	(K)	(L)	City	Country		
									21
									22
									23
									24
									25
									26
									27
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									32
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									34
									35
									36
									37
									38
									39
									40

**Mode of transport codes for columns (J) and (N):**

1 - Parcel delivery, courier, or U.S. Parcel Post	4 - Railroad	7 - Pipeline
2 - Private truck	5 - Shallow draft vessel	8 - Air
3 - For-hire truck	6 - Deep draft vessel	9 - Other mode
		0 - Unknown

**\* Intermodal shipments (column K):** include Trailer on Flat Car (TOFC), Container on Flat Car (COFC), and Intermodal (IM or ISO) tank.



**Item G MONTHLY VALUE OF OUTBOUND SHIPMENTS**

Which of the following represents your best estimate of the total value of all outbound shipments originating from this establishment for the most recently completed month?

- 1  Less than \$1 Million
- 2  \$1 Million or more but less than \$10 Million
- 3  \$10 Million or more but less than \$40 Million
- 4  \$40 Million or more but less than \$100 Million
- 5  \$100 Million or more but less than \$400 Million
- 6  \$400 Million or more

**Item H THIRD-PARTY LOGISTICS**

The next series of questions relates to your use of third-party logistics providers (3PLs).

A 3PL is **not** a contractor who provides only basic logistics services, such as common carrier trucking and/or public warehousing.

Rather, a 3PL is a contractor that manages and arranges for the provision of multiple logistics services, including freight forwarding, customs brokerage, contract warehousing, transportation, etc.

1. Does this establishment contract out all or a portion of its logistics activities to a 3PL(s)?

- 1  Yes
- 2  No - Go to Contact below.

2. Which of the following services does the 3PL(s) provide, manage and arrange for this establishment? Mark (X) all that apply.

- 1  Transportation
- 2  Contract warehousing
- 3  Cross-docking
- 4  Re-packing/consolidation
- 5  Reverse Logistics
- 6  Management of overall transportation and logistics functions (including dedicated trucking services)
- 7  Customs brokerage
- 8  Freight forwarding
- 9  Inventory control and/or management
- 10  Information systems

3. Which of the following best represents the percentage of this establishment's outbound shipments (by weight) which was shipped with the involvement of a 3PL(s) during the last 12 months?

- 1  1 to 25%
- 2  26 to 50%
- 3  51 to 75%
- 4  76 to 100%

**Contact** Please provide the information below for the contact person regarding this report.

Name - Please print	Title - Please print		
<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>		
Signature	Area Code	Phone Number	Extension
<input style="width: 95%;" type="text"/>	<input style="width: 20%;" type="text"/>	- <input style="width: 20%;" type="text"/>	- <input style="width: 20%;" type="text"/>
		- <input style="width: 20%;" type="text"/>	- <input style="width: 20%;" type="text"/>

Please return this survey in the enclosed envelope or send it to:  
**U.S. CENSUS BUREAU**  
 1201 East 10th Street  
 Jeffersonville IN 47132-0001

**THANK YOU FOR COMPLETING THIS REPORT.**

