United States (Preliminary)

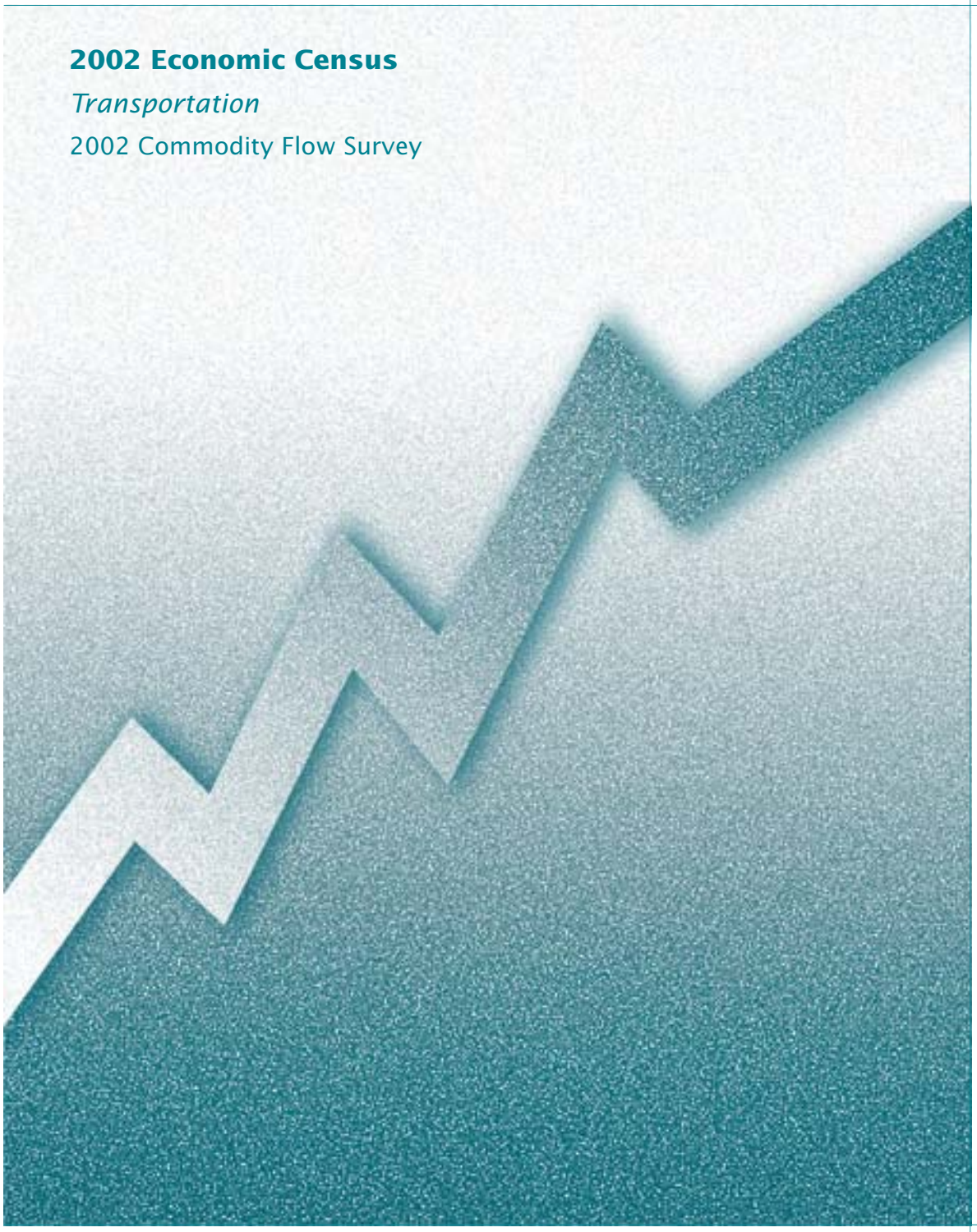
Issued December 2003

EC02TCF-US(P)

2002 Economic Census

Transportation

2002 Commodity Flow Survey



U.S. Department of Transportation
BUREAU OF TRANSPORTATION STATISTICS

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

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Introduction to the Economic Census

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 United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering 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 to 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, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

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 Manufactures Census 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 covering 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 also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992.

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.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including 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 the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the

Guide to the 2002 Economic Census and Related Statistics at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the History of the 2002 Economic Census at www.census.gov/econ/www/history.html.

2002 Commodity Flow Survey

GENERAL

The 2002 Commodity Flow Survey (CFS) is undertaken through a partnership between the U.S. Census Bureau, U.S. Department of Commerce, and the 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 manufacturing, mining, wholesale, and select retail establishments. The CFS was last conducted in 1997. See Appendix A for a comparison between the 2002, 1997 and 1993 surveys. The data from the CFS are used by public policy analysts and for transportation planning and decision-making to assess the demand for transportation facilities and services, energy use, and safety risk and environmental concerns.

This report—the first in a series—presents **preliminary results,** aggregated to the United States and two-digit commodity code levels. **The data in this report are subject to revision based on additional processing and analysis that will follow at the more detailed geographic and commodity levels.** Future reports planned for release beginning in the last quarter of 2004, will include data for census regions, divisions, states, and select metropolitan areas. Select data on the movement of hazardous materials also will be available at that time. A final United States Summary report, reflecting all revisions based on the geographic level and detailed commodity analyses, also will be released.

INDUSTRY COVERAGE

The 2002 CFS covers business establishments with paid employees that are located in the United States and are classified in mining, manufacturing, wholesale trade, and select retail trade industries, based on the 1997 North American Industry Classification System (NAICS). Establishments classified in services, transportation, construction, and most retail industries are excluded from the survey. Farms, fisheries, foreign establishments, and most government-owned establishments are also excluded.

The survey also covers auxiliary establishments (i.e., warehouses and managing offices) of multiestablishment companies, which have nonauxiliary establishments that are in-scope to CFS or are classified in retail trade. The coverage of managing offices has been expanded in the 2002 CFS, compared to the 1997 CFS. For the 1997 CFS, the number of in-scope managing offices was reduced to a large extent based on the results of the 1992 Economic Census. A managing office was considered in-scope to the 1997 CFS only if it had sales or end-of-year inventories in the 1992 Census. However, 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. Therefore, the 1997 Economic Census results were not used in the determination of scope for managing offices in the 2002 CFS.

For the 1993 CFS and the 1997 CFS, establishments were classified based on the 1987 Standard Industrial Classification System (SIC). Though an attempt was made to maintain similar coverage between the 1997 CFS and the 2002 CFS, there were some changes in industry coverage due to the conversion from SIC to NAICS. Most notably, coverage of the logging industry changed from an in-scope Manufacturing SIC code (SIC 2411) to an out-of-scope Agriculture, Forestry, Fishing, and Hunting NAICS code (NAICS 1133). Also, coverage of the publishing industry changed from in-scope Manufacturing SIC codes (SIC 2711, 2721, 2731, 2741, and part of 2771) to out-of-scope Information NAICS codes (NAICS 5111 and 51223).

The NAICS industries covered in the 2002 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	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
421	Wholesale Trade, Durable Goods
422	Wholesale Trade, Nondurable Goods
4541	Electronic Shopping and Mail-Order Houses
493100	Warehousing and Storage
551114	Corporate, Subsidiary, and Regional Managing Offices

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 data do not cover shipments originating from business establishments located in Puerto Rico and other U.S. possessions and territories. Shipments traversing the U.S. 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. Imported products are included in the CFS at the point that they left the importer's domestic location for shipment to another location. Shipments that are shipped through a foreign territory with both the origin and destination in the U.S. 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 mileages for Canada). Export shipments are included, with the domestic destination defined as the U.S. port, airport, or border crossing of exit from the U.S.

The "Industry Coverage" section of the text lists the NAICS groups covered by the CFS. 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.

MILEAGE CALCULATIONS

To compute mileages for the 2002 CFS, the BTS used routing algorithms and an integrated, intermodal transportation network developed and updated for the purpose by Oak Ridge National Laboratory (ORNL), working at a secure data site within the Census Bureau. Each record contained the ZIP Code of shipment origin and destination, and the mode or mode sequence reported. Each record also contained information on the type of commodity moved, its weight, dollar value and hazardous materials status. For export shipments, data on the U.S. port of exit were also identified, along with foreign destination city and country. Processing of shipment records began in the Fall of 2002 and was completed in October of 2003. Missing data elements and other related data problems found by the BTS/ORNL team were reported to the Census Bureau, allowing for callbacks to shippers for clarification/correction. Mileages are calculated between U.S. origin and destination ZIP Codes for domestic shipments, and between a shipment's U.S. origin ZIP Code and its foreign destination city, via a U.S. seaport or airport, in the case of export shipments (where only the domestic portion of the mileage is counted in CFS estimates). These mileages are computed using routing algorithms that find the minimum impedance path over mathematical representations of the U.S. and North American highway, rail and waterway networks and a transglobal representation of U.S.-originating air freight and deep-sea transport networks. Shipment mileages were computed for each record by summing over the distances of the links contained within each minimum impedance path. Impedance was computed as a weighted combination of distance, time, and cost factors.

The ORNL multimodal network database is composed of mode-specific subnetworks representing each of the major transportation modes, highway, rail, waterway, and air (pipeline mileages are not simulated). The links of these networks represent line-haul transportation facilities. Network nodes represent intersections and interchanges, and the access points to the transportation network. To simulate local access, test links are created from each five-digit ZIP Code centroid to nearby nodes on the network. For the truck network, local access is assumed to exist everywhere. For the other modes this is not true. Before any test links are created for these modes, a search procedure is used to determine if and where such networks are most likely to provide access to the ZIP Code. For shipments

involving more than one mode, such as truck-rail or rail-water shipments, intermodal transfer links are added to the network database for the purpose of connecting the individual modal networks together for routing purposes. An intermodal terminals database and a number of terminal transfer models were developed at ORNL to identify likely transfer points for different classes of freight. A measure of link impedance was calculated for each access, line-haul, and intermodal transfer link traversed by a shipment. These impedances were mode specific and are based on various link characteristics. For example, the set of links characterizing the highway network included speed impacting factors, such as the presence of a divided or undivided roadway, the degree of access control, the rural or urban setting, the number of lanes, the degree of urban congestion, and the length of the link. Link impedance measures were also assigned to the local access links. Intermodal transfer link impedances are estimated in terms of the time it takes to move goods through a transfer facility. In the case of rail and air freight, intercarrier transfer penalties were also considered to obtain proper route selections. A shortest path algorithm is used to find the minimum impedance path between a shipment's origin ZIP Code centroid and destination ZIP Code centroid. The cumulative length of the local access plus line-haul links on this path provides the estimated distances used in CFS ton-mileage computations. When rail was involved, these shipment distances were often averaged over more than one path between an origin-destination pair.

Mileage Data for Pipeline Shipments

In the tables, we do not show ton-miles or average miles per shipment for pipeline shipments. 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.

EXPLANATION OF TERMS

Value of shipments. The dollar value of the entire shipment. This was defined as the net selling value, f.o.b. plant, exclusive of freight charges and excise taxes. The value data are displayed in millions of dollars.

The total value of shipments, as measured by the CFS, and the U.S. gross domestic product (GDP) while similar in size provide different measures of economic activity in the United States and are not directly comparable. GDP is the value of all goods produced and services performed by labor and capital located in the United States. In 2002, the U.S. GDP was estimated at $10.4 trillion (measured in current U.S. dollars). The value of shipments, as measured by the CFS, is the market value of goods shipped from manufacturing, mining, wholesale, and mail order retail establishments, as well as warehouses and managing offices of these establishments.

Three important differences can be identified between GDP and value of shipments:

1. GDP captures goods produced by all establishments located in the United States, while the CFS measures goods shipped from a subset of all goods-producing establishments.
2. GDP measures the value of goods produced and of services performed. CFS measures the value of goods shipped.
3. GDP counts only the value-added at each step in the production of a product. CFS captures the value of shipments of materials used to produce or manufacture a product, as well as the value of shipments of the finished product itself. This means that the value of the materials used to produce a particular product contributes multiple times to the value.

Average miles per shipment. For the 1993 CFS, we excluded shipments of STCC 27, Printed Matter, from our calculation of average miles per shipment. We made this decision after determining that respondents in the 1993 CFS shipping newspapers, magazines, catalogs, etc., had used widely varying definitions of the term "shipment."

For the 1997 and 2002 CFS, we made numerous efforts throughout our data collection and editing to produce consistent results from establishments shipping SCTG 29, Printed Products. As a result, we have included printed products in the average miles per shipment estimates for 1997 and 2002.

Commodity. Products that an establishment produces, sells, or distributes. This does not include items that are considered as excess or byproducts of the establishment's operation. Respondents reported the description and the five-digit SCTG code for the major commodity contained in the shipment, defined as the commodity with the greatest weight in the total shipment.

Distance shipped. In Table 4, shipment data are presented for various "distance shipped" intervals. Shipments were categorized into these "distance shipped" intervals based on the great circle distance between their origin and destination ZIP Code centroids. All other distance-related data in this and other tables (i.e., ton-miles and average miles per shipment) are based on the mileage calculations. (See the "Mileage Calculations" section for more details.)

Great circle distance. The shortest distance between two points on the surface of a sphere over the surface of that sphere.

Mode of transportation. The type of transportation used for moving the shipment to its domestic destination. For exports, the domestic destination was the port of exit.

Mode Definitions

In the instructions to the respondent, we defined the possible modes as follows:

1. **Parcel delivery/courier/U.S. Postal Service.** Delivery services, parcels, packages, and other small shipments that typically weigh less than 100 pounds. Includes bus parcel delivery service.
2. **Private truck.** Trucks operated by a temporary or permanent employee of an establishment or the buyer/receiver of the shipment.
3. **For-hire truck.** Trucks that carry freight for a fee collected from the shipper, recipient of the shipment, or an arranger of the transportation.
4. **Railroad.** Any common carrier or private railroad.
5. **Shallow draft vessels.** Barges, ships, or ferries operating primarily 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 shoreline.
6. **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.
7. **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.
8. **Air.** Commercial or private aircraft, and all air service for shipments that typically weigh more than 100 pounds. Includes air freight and air express.
9. **Other mode.** Any mode not listed above.
10. **Unknown.** The shipment was not carried by a parcel delivery/courier/U.S. Postal Service, and the respondent could not determine what mode of transportation was used.

In the tables, we have used additional terms for mode, which we define as follows:

1. **Air (includes truck and air).** Shipments that used air or a combination of truck and air.
2. **Single modes.** Shipments using only one of the above-listed modes, except parcel or other and unknown.
3. **Multiple modes.** Parcel, U.S. Postal Service or courier shipments or shipments for which two or more of the following modes of transportation were used:

   Private truck
   For-hire truck
   Rail
   Shallow draft vessel
   Deep draft vessel
   Pipeline

   We did not allow for multiple modes in combination with "parcel, U.S. Postal Service or courier," "unknown," or "other." By their nature, these shipments may already include various kinds of multiple-mode activity. For example, if the respondent reported a shipment's mode of transportation as parcel and air, we treated the shipment as parcel only.
4. **Other multiple modes.** Shipments using any other mode combinations not specifically listed in the tables.
5. **Other and unknown modes.** Shipments for which modes were not reported, or were reported by the respondent as "Other" or "Unknown."
6. **Truck.** Shipments using for-hire truck only, private truck only, or a combination of for-hire truck and private truck.
7. **Water.** Shipments using shallow draft vessel only, deep draft vessel only, or Great Lakes vessel only. Combinations of these modes, such as shallow draft vessel and Great Lakes vessel are included as "Other multiple modes."
8. **Great Lakes.** In the tables in this publication, "Great Lakes" appears as a single mode. ORNL's transportation network and mileage calculation system allowed for separate mileage calculations for Great Lakes between the origin and destination ZIP Codes (see the "Mileage Calculations" section for more details).

Other Definitions and Terms

Shipment. 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 are counted as a single shipment only if all commodities on the truck are destined for the same location. If a truck makes multiple deliveries on a route, each stop is counted as one shipment. Interoffice memos, payroll checks, or business correspondence are not considered shipments. Shipments such as refuse, scrap paper, waste, or recyclable materials are not considered shipments unless the establishment is in the business of selling or providing these materials.

Standard Classification of Transported Goods (SCTG). The commodities shown in this report are classified using the SCTG coding system. The SCTG coding system was developed jointly by agencies of the United

States and Canadian governments based on the Harmonized System to address statistical needs in regard to products transported.

Ton-miles. The shipment weight multiplied by the mileage traveled by the shipment. The respondents reported shipment weight in pounds. Aggregated pound-miles were converted to ton-miles. Mileage was calculated as the distance between the shipment origin and destination ZIP Codes. For shipments by truck, rail, or shallow draft vessels, the mileage excludes international segments. For example, mileages from Alaska to the continental United States exclude any mileages through Canada (see the "Mileage Calculations" section for more details). Ton-miles estimates are displayed in millions.

Tons shipped. The total weight of the entire shipment. Respondents reported the weight in pounds. Aggregated pounds were converted to short-tons (2,000 pounds). The tons estimates are displayed in thousands.

Total modal activity (Table 2 only). The overall activity (e.g., ton-miles) of a specific mode of transportation, whether used in a single-mode shipment, or as part of a multiple-mode shipment. For example, the total modal activity for private truck is the total ton-miles carried by private truck in single-mode shipments, combined with the total ton-miles carried by private truck in all multiple-mode shipments that include private truck (private truck and for-hire truck, private truck and rail, private truck and air, etc.)

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables for this publication:

–	Represents an estimate equal to zero or less than 1 unit of measure.
D	Denotes estimates withheld to avoid disclosing data of individual companies.
S	Estimate does not meet publication standards because of high sampling variability or poor response quality.
CFS	Commodity Flow Survey.
lb	Pounds.
n.e.c.	Not elsewhere classified.
NA	Not applicable.

OTHER TRANSPORTATION DATA

Users of transportation data may be especially interested in the following reports:

Vehicle Inventory and Use Survey covers state and U.S. level statistics on the physical and operational characteristics of the nation's truck, van, minivan, and sport utility vehicle population. Some of the types of data collected include number of vehicles, major use, body type, annual miles, model year, vehicle size, fuel type, operator classification, engine size, range of operation, weeks operated, products carried, and hazardous materials carried. This survey shows comparative statistics reflecting percent changes in number of vehicles between 2002 and 1997 for most characteristics.

Service Annual 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.

For more information on any Census Bureau product, including a description of electronic and printed reports being issued, see the Web site or call Customer Services at 301-763-INFO (4636).

Table 1a. **Shipment Characteristics by Mode of Transportation for the United States: 2002**

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

Mode of transportation	Value		Tons		Ton-miles[1]		Average miles per shipment
	2002 (million dollars)	Percent of total	2002 (thousands)	Percent of total	2002 (millions)	Percent of total	
Total	**8 483 123**	**100.0**	**11 572 780**	**100.0**	**3 204 410**	**100.0**	**589**
Single modes	**7 052 924**	**83.1**	**10 878 148**	**94.0**	**2 913 015**	**90.9**	**285**
Truck[2]	6 200 469	73.1	7 622 257	65.9	1 311 085	40.9	199
For-hire truck	3 838 514	45.2	3 665 982	31.7	1 001 463	31.3	577
Private truck	2 340 328	27.6	3 920 474	33.9	302 026	9.4	70
Rail	320 469	3.8	1 816 528	15.7	1 199 407	37.4	911
Water	90 895	1.1	713 884	6.2	323 085	10.1	577
Shallow draft	56 480	.7	499 699	4.3	236 619	7.4	423
Great Lakes	787	–	39 485	.3	19 544	.6	391
Deep draft	33 628	.4	174 700	1.5	66 922	2.1	683
Air (includes truck and air)	279 489	3.3	3 891	–	5 560	.2	1 819
Pipeline[3]	161 601	1.9	721 588	6.2	S	S	S
Multiple modes	**1 110 975**	**13.1**	**198 454**	**1.7**	**214 833**	**6.7**	**911**
Parcel, U.S. Postal Service or courier	1 022 033	12.0	26 447	.2	20 536	.6	910
Truck and rail	S	S	S	S	S	S	S
Truck and water	17 053	.2	31 814	.3	59 147	1.8	1 946
Rail and water	S	S	S	S	S	S	S
Other multiple modes	5 528	–	28 047	.2	19 600	.6	173
Other and unknown modes	**319 224**	**3.8**	**496 178**	**4.3**	**76 563**	**2.4**	**153**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]"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.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-1a provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 1b. **Shipment Characteristics by Mode of Transportation for the United States: 2002 and 1997**

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value			Tons			Ton-miles[1]			Average miles per shipment		
	2002 (million dollars)	1997 (million dollars)	Percent change	2002 (thousands)	1997 (thousands)	Percent change	2002 (millions)	1997 (millions)	Percent change	2002	1997	Percent change
Total	**8 483 123**	**6 943 988**	**22.2**	**11 572 780**	**11 089 733**	**4.4**	**3 204 410**	**2 661 363**	**20.4**	**589**	**472**	**24.8**
Single modes	**7 052 924**	**5 719 558**	**23.3**	**10 878 148**	**10 436 538**	**4.2**	**2 913 015**	**2 383 473**	**22.2**	**285**	**184**	**54.6**
Truck[2]	6 200 469	4 981 531	24.5	7 622 257	7 700 675	–1.0	1 311 085	1 023 506	28.1	199	144	38.2
For-hire truck	3 838 514	2 901 345	32.3	3 665 982	3 402 605	7.7	1 001 463	741 117	35.1	577	485	19.0
Private truck	2 340 328	2 036 528	14.9	3 920 474	4 137 294	–5.2	302 026	268 592	12.4	70	53	30.5
Rail	320 469	319 629	.3	1 816 528	1 549 817	17.2	1 199 407	1 022 547	17.3	911	769	18.5
Water	90 895	75 840	19.9	713 884	563 369	26.7	323 085	261 747	23.4	577	482	19.7
Shallow draft	56 480	53 897	4.8	499 699	414 758	20.5	236 619	189 284	25.0	423	177	138.2
Great Lakes	787	1 504	–47.7	39 485	38 421	2.8	19 544	13 415	45.7	391	204	91.4
Deep draft	33 628	20 439	64.5	174 700	110 191	58.5	66 922	59 047	13.3	683	1 024	–33.3
Air (includes truck and air)	279 489	229 062	22.0	3 891	4 475	–13.0	5 560	6 233	–10.8	1 819	1 380	31.8
Pipeline[3]	161 601	113 497	42.4	721 588	618 202	16.7	S	S	S	S	S	S
Multiple modes	**1 110 975**	**945 874**	**17.5**	**198 454**	**216 673**	**–8.4**	**214 833**	**204 514**	**5.0**	**911**	**813**	**12.0**
Parcel, U.S. Postal Service or courier	1 022 033	855 897	19.4	26 447	23 689	11.6	20 536	17 994	14.1	910	813	12.0
Truck and rail	S	75 695	S	S	54 246	S	S	55 561	S	S	1 347	S
Truck and water	17 053	8 241	106.9	31 814	33 215	–4.2	59 147	34 767	70.1	1 946	1 265	53.8
Rail and water	S	1 771	S	S	79 275	S	S	77 590	S	S	1 092	S
Other multiple modes	5 528	4 269	29.5	28 047	26 248	6.9	19 600	18 603	5.4	173	S	S
Other and unknown modes	**319 224**	**278 555**	**14.6**	**496 178**	**436 521**	**13.7**	**76 563**	**73 376**	**4.3**	**153**	**122**	**25.6**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]"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.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-1b provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 1c. Shipment Characteristics by Mode of Transportation for the United States: 2002 and 1993

[Estimates are based on data from the 2002 and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value			Tons			Ton-miles[1]			Average miles per shipment		
	2002 (million dollars)	1993 (million dollars)	Percent change	2002 (thousands)	1993 (thousands)	Percent change	2002 (millions)	1993 (millions)	Percent change	2002	1993	Percent change
Total	**8 483 123**	**5 846 334**	**45.1**	**11 572 780**	**9 688 493**	**19.4**	**3 204 410**	**2 420 915**	**32.4**	**589**	**424**	**39.0**
Single modes	**7 052 924**	**4 941 452**	**42.7**	**10 878 148**	**8 922 286**	**21.9**	**2 913 015**	**2 136 873**	**36.3**	**285**	**197**	**44.7**
Truck[2]	6 200 469	4 403 494	40.8	7 622 257	6 385 915	19.4	1 311 085	869 536	50.8	199	144	38.0
For-hire truck	3 838 514	2 625 093	46.2	3 665 982	2 808 279	30.5	1 001 463	629 000	59.2	577	472	22.4
Private truck	2 340 328	1 755 837	33.3	3 920 474	3 543 513	10.6	302 026	235 897	28.0	70	52	33.2
Rail	320 469	247 394	29.5	1 816 528	1 544 148	17.6	1 199 407	942 561	27.2	911	766	18.9
Water	90 895	61 628	47.5	713 884	505 440	41.2	323 085	271 998	18.8	577	S	S
Shallow draft	56 480	40 707	38.7	499 699	362 454	37.9	236 619	164 371	44.0	423	S	S
Great Lakes	787	S	S	39 485	33 041	19.5	19 544	12 395	57.7	391	534	–26.9
Deep draft	33 628	19 749	70.3	174 700	109 945	58.9	66 922	95 232	–29.7	683	1 861	–63.3
Air (includes truck and air)	279 489	139 086	100.9	3 891	3 139	24.0	5 560	4 009	38.7	1 819	1 415	28.6
Pipeline[3]	161 601	89 849	79.9	721 588	483 645	49.2	S	S	S	S	S	S
Multiple modes	**1 110 975**	**662 603**	**67.7**	**198 454**	**225 676**	**–12.1**	**214 833**	**191 461**	**12.2**	**911**	**736**	**23.8**
Parcel, U.S. Postal Service or courier	1 022 033	563 277	81.4	26 447	18 892	40.0	20 536	13 151	56.2	910	734	24.0
Truck and rail	S	83 082	S	S	40 624	S	S	37 675	S	S	1 403	S
Truck and water	17 053	9 392	81.6	31 814	67 995	–53.2	59 147	40 610	45.6	1 946	1 417	37.3
Rail and water	S	3 636	S	S	79 222	S	S	70 219	S	S	627	S
Other multiple modes	5 528	3 216	71.9	28 047	18 943	48.1	19 600	S	S	173	1 082	–84.0
Other and unknown modes	**319 224**	**242 279**	**31.8**	**496 178**	**540 530**	**–8.2**	**76 563**	**92 581**	**–17.3**	**153**	**229**	**–33.4**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]"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.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-1c provides estimated measures of sampling variability. 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*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 1d. Shipment Characteristics by Mode of Transportation for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation	Value (percent)		Tons (percent)		Ton-miles[1] (percent)		Average miles per shipment (percent)	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**4.1**	**4.2**	**.9**	**2.0**	**3.8**	**3.2**	**4.5**	**3.7**
Single modes	**4.3**	**4.0**	**.8**	**2.2**	**4.1**	**3.5**	**9.1**	**4.2**
Truck[2]	4.5	3.9	–.2	2.0	5.1	4.7	6.7	3.6
For-hire truck	5.8	4.3	1.5	3.0	6.2	5.3	3.5	2.3
Private truck	2.8	3.2	–1.1	1.1	2.4	2.8	5.5	3.2
Rail	.1	2.9	3.2	1.8	3.2	2.7	3.5	1.9
Water	3.7	4.4	4.8	3.9	4.3	1.9	3.7	S
Shallow draft	.9	3.7	3.8	3.6	4.6	4.1	19.0	S
Great Lakes	–12.1	S	.5	2.0	7.8	5.2	13.9	–3.4
Deep draft	10.5	6.1	9.7	5.3	2.5	–3.8	–7.8	–10.5
Air (includes truck and air)	4.1	8.1	–2.8	2.4	–2.3	3.7	5.7	2.8
Pipeline[3]	7.3	6.7	3.1	4.5	S	S	S	S
Multiple modes	**3.3**	**5.9**	**–1.7**	**–1.4**	**1.0**	**1.3**	**2.3**	**2.4**
Parcel, U.S. Postal Service or courier	3.6	6.8	2.2	3.8	2.7	5.1	2.3	2.4
Truck and rail	S	S	S	S	S	S	S	S
Truck and water	15.7	6.9	–.9	–8.1	11.2	4.3	9.0	3.6
Rail and water	S	S	S	S	S	S	S	S
Other multiple modes	5.3	6.2	1.3	4.5	1.1	S	S	–18.4
Other and unknown modes	**2.8**	**3.1**	**2.6**	**–.9**	**.9**	**–2.1**	**4.7**	**–4.4**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]"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.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Annualized growth rate measures the annual rate of change between estimates from any 2 years by assuming a constant yearly rate of change. See Appendix C for additional information about this rate.

Note: Estimates for 2002 are preliminary and may be revised. Table B-1d provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 1e. Shipment Characteristics by Mode of Transportation for the United States: Percent of Total for 2002, 1997, and 1993

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation	Value (percent)			Tons (percent)			Ton-miles[1] (percent)		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Single modes	**83.1**	**82.4**	**84.5**	**94.0**	**94.1**	**92.1**	**90.9**	**89.6**	**88.3**
Truck[2]	73.1	71.7	75.3	65.9	69.4	65.9	40.9	38.5	35.9
For-hire truck	45.2	41.8	44.9	31.7	30.7	29.0	31.3	27.8	26.0
Private truck	27.6	29.3	30.0	33.9	37.3	36.6	9.4	10.1	9.7
Rail	3.8	4.6	4.2	15.7	14.0	15.9	37.4	38.4	38.9
Water	1.1	1.1	1.1	6.2	5.1	5.2	10.1	9.8	11.2
Shallow draft	.7	.8	.7	4.3	3.7	3.7	7.4	7.1	6.8
Great Lakes	–	–	S	.3	.3	.3	.6	.5	.5
Deep draft	.4	.3	.3	1.5	1.0	1.1	2.1	2.2	3.9
Air (includes truck and air)	3.3	3.3	2.4	–	–	–	.2	.2	.2
Pipeline[3]	1.9	1.6	1.5	6.2	5.6	5.0	S	S	S
Multiple modes	**13.1**	**13.6**	**11.3**	**1.7**	**2.0**	**2.3**	**6.7**	**7.7**	**7.9**
Parcel, U.S. Postal Service or courier	12.0	12.3	9.6	.2	.2	.2	.6	.7	.5
Truck and rail	S	1.1	1.4	S	.5	.4	S	2.1	1.6
Truck and water	.2	.1	.2	.3	.3	.7	1.8	1.3	1.7
Rail and water	S	–	–	S	.7	.8	S	2.9	2.9
Other multiple modes	–	–	–	.2	.2	.2	.6	.7	S
Other and unknown modes	**3.8**	**4.0**	**4.1**	**4.3**	**3.9**	**5.6**	**2.4**	**2.8**	**3.8**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]"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.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Table B-1e provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 2a. Shipment Characteristics by Total Modal Activity for the United States: 2002

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

Mode of transportation[1]	Ton-miles[2]		2002 Average miles per shipment
	2002 (millions)	Percent of total	
Total	**3 204 410**	**100.0**	**575**
Truck	1 318 383	41.1	191
Rail	1 275 195	39.8	975
Shallow draft	271 371	8.5	496
Great Lakes	50 490	1.6	491
Deep draft	110 919	3.5	1 517
Air	5 388	.2	1 771
Parcel, U.S. Postal Service or courier	20 536	.6	910
Pipeline[3]	S	S	S
Other and unknown modes	76 587	2.4	153

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Estimates represent activity for a given mode across single and multiple mode shipments. For example, "Truck" ton-miles includes total ton-miles for shipments moving only by truck plus ton-miles for truck segments of multiple mode shipments.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Table B-2a provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 2b. Shipment Characteristics by Total Modal Activity for the United States: 2002 and 1997

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation[1]	Ton-miles[2]			Average miles per shipment		
	2002 (millions)	1997 (millions)	Percent change	2002	1997	Percent change
Total	**3 204 410**	**2 661 363**	**20.4**	**575**	**465**	**23.7**
Truck	1 318 383	1 029 162	28.1	191	142	34.8
Rail	1 275 195	1 115 158	14.4	975	887	9.9
Shallow draft	271 371	226 975	19.6	496	253	95.7
Great Lakes	50 490	38 290	31.9	491	386	27.0
Deep draft	110 919	84 100	31.9	1 517	1 329	14.2
Air	5 388	5 907	–8.8	1 771	1 300	36.2
Parcel, U.S. Postal Service or courier	20 536	17 994	14.1	910	813	12.0
Pipeline[3]	S	S	S	S	S	S
Other and unknown modes	76 587	74 337	3.0	153	121	25.7

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Estimates represent activity for a given mode across single and multiple mode shipments. For example, "Truck" ton-miles includes total ton-miles for shipments moving only by truck plus ton-miles for truck segments of multiple mode shipments.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Table B-2b provides estimated measures of sampling variability. 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*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 2c. Shipment Characteristics by Total Modal Activity for the United States: 2002 and 1993

[Estimates are based on data from the 2002 and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation[1]	Ton-miles[2]			Average miles per shipment		
	2002 (millions)	1993 (millions)	Percent change	2002	1993	Percent change
Total	**3 204 410**	**2 420 915**	**32.4**	**575**	**424**	**35.6**
Truck	1 318 383	880 890	49.7	191	140	36.4
Rail	1 275 195	1 003 552	27.1	975	932	4.6
Shallow draft	271 371	255 057	6.4	496	394	25.8
Great Lakes	50 490	34 619	45.8	491	507	–3.2
Deep draft	110 919	87 564	26.7	1 517	1 676	–9.5
Air	5 388	3 781	42.5	1 771	1 354	30.8
Parcel, U.S. Postal Service or courier	20 536	13 151	56.2	910	734	23.9
Pipeline[3]	S	S	S	S	S	S
Other and unknown modes	76 587	92 581	–17.3	153	229	–33.3

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Estimates represent activity for a given mode across single and multiple mode shipments. For example, "Truck" ton-miles includes total ton-miles for shipments moving only by truck plus ton-miles for truck segments of multiple mode shipments.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Table B-2c provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 2d. **Shipment Characteristics by Total Modal Activity for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation[1]	Ton-miles[2] (percent)		Average miles per shipment (percent)	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**3.8**	**3.2**	**4.4**	**3.4**
Truck	5.1	4.6	6.2	3.5
Rail	2.7	2.7	1.9	.5
Shallow draft	3.6	.7	14.4	2.6
Great Lakes	5.7	4.3	4.9	–.4
Deep draft	5.7	2.7	2.7	–1.1
Air	–1.8	4.0	6.4	3.0
Parcel, U.S. Postal Service or courier	2.7	5.1	2.3	2.4
Pipeline[3]	S	S	S	S
Other and unknown modes	.6	–2.1	4.7	–4.4

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Estimates represent activity for a given mode across single and multiple mode shipments. For example, "Truck" ton-miles includes total ton-miles for shipments moving only by truck plus ton-miles for truck segments of multiple mode shipments.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Annualized growth rate measures the annual rate of change between estimates from any 2 years by assuming a constant yearly rate of change. See Appendix C for additional information about this rate.

Note: Estimates for 2002 are preliminary and may be revised. Table B-2d provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 2e. **Shipment Characteristics by Total Modal Activity for the United States: Percent of Total for 2002, 1997, and 1993**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Mode of transportation[1]	Ton-miles[2] (percent)		
	2002	1997	1993
Total	**100.0**	**100.0**	**100.0**
Truck	41.1	38.7	36.4
Rail	39.8	41.9	41.5
Shallow draft	8.5	8.5	10.5
Great Lakes	1.6	1.4	1.4
Deep draft	3.5	3.2	3.6
Air	.2	.2	.2
Parcel, U.S. Postal Service or courier	.6	.7	.5
Pipeline[3]	S	S	S
Other and unknown modes	2.4	2.8	3.8

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Estimates represent activity for a given mode across single and multiple mode shipments. For example, "Truck" ton-miles includes total ton-miles for shipments moving only by truck plus ton-miles for truck segments of multiple mode shipments.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[3]Estimates for pipeline exclude shipments of crude petroleum.

Note: Estimates for 2002 are preliminary and may be revised. Table B-2e provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 3a. **Shipment Characteristics by Two-Digit Commodity for the United States: 2002**

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

SCTG code	Commodity description	Value		Tons		Ton-miles[1]		Average miles per shipment
		2002 (million dollars)	Percent of total	2002 (thousands)	Percent of total	2002 (millions)	Percent of total	
	Total[2]	**8 483 123**	**100.0**	**11 572 780**	**100.0**	**3 204 410**	**100.0**	**589**
01	Live animals and live fish	7 200	–	6 549	–	2 021	–	534
02	Cereal grains	55 927	.7	578 637	5.0	263 718	8.2	125
03	Other agricultural products	129 890	1.5	277 547	2.4	122 134	3.8	477
04	Animal feed and products of animal origin, n.e.c	55 251	.7	240 003	2.1	77 474	2.4	141
05	Meat, fish, seafood, and their preparations	204 869	2.4	85 019	.7	41 795	1.3	192
06	Milled grain products and preparations, and bakery products	119 718	1.4	116 018	1.0	51 384	1.6	265
07	Other prepared foodstuffs and fats and oils	362 312	4.3	463 363	4.0	171 249	5.3	206
08	Alcoholic beverages	115 772	1.4	93 698	.8	25 572	.8	56
09	Tobacco products	77 163	.9	5 793	–	1 256	–	414
10	Monumental or building stone	2 451	–	16 851	.1	1 325	–	170
11	Natural sands	4 611	–	466 338	4.0	33 952	1.1	57
12	Gravel and crushed stone	12 643	.1	1 775 181	15.3	104 552	3.3	33
13	Nonmetallic minerals n.e.c.	12 680	.1	186 322	1.6	56 975	1.8	214
14	Metallic ores and concentrates	15 741	.2	116 050	1.0	59 404	1.9	465
15	Coal	24 085	.3	1 255 082	10.8	562 463	17.6	112
17	Gasoline and aviation turbine fuel	233 563	2.8	840 400	7.3	130 207	4.1	103
18	Fuel oils	109 618	1.3	507 540	4.4	108 928	3.4	81
19	Coal and petroleum products, n.e.c.	74 693	.9	431 255	3.7	96 006	3.0	125
20	Basic chemicals	152 069	1.8	497 049	4.3	173 927	5.4	516
21	Pharmaceutical products	426 753	5.0	22 825	.2	12 095	.4	722
22	Fertilizers	34 079	.4	214 227	1.9	74 422	2.3	150
23	Chemical products and preparations, n.e.c.	234 355	2.8	109 819	.9	54 824	1.7	409
24	Plastics and rubber	343 386	4.0	147 035	1.3	83 916	2.6	430
25	Logs and other wood in the rough	5 178	–	86 316	.7	8 882	.3	108
26	Wood products	140 006	1.7	321 143	2.8	114 007	3.6	250
27	Pulp, newsprint, paper, and paperboard	102 406	1.2	139 895	1.2	82 591	2.6	233
28	Paper or paperboard articles	105 890	1.2	72 508	.6	25 480	.8	282
29	Printed products	136 886	1.6	34 418	.3	17 364	.5	903
30	Textiles, leather, and articles of textiles or leather	506 992	6.0	53 306	.5	34 589	1.1	967
31	Nonmetallic mineral products	143 106	1.7	910 259	7.9	120 262	3.8	388
32	Base metal in primary or semifinished forms and in finished basic shapes	253 678	3.0	325 992	2.8	121 634	3.8	275
33	Articles of base metal	234 922	2.8	115 686	1.0	44 434	1.4	396
34	Machinery	509 477	6.0	62 943	.5	34 653	1.1	413
35	Electronic and other electrical equipment and components and office equipment	948 049	11.2	53 789	.5	32 906	1.0	747
36	Motorized and other vehicles (including parts)	735 730	8.7	133 676	1.2	59 077	1.8	401
37	Transportation equipment, n.e.c.	162 984	1.9	10 269	–	6 220	.2	1 003
38	Precision instruments and apparatus	222 042	2.6	15 208	.1	3 401	.1	986
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	135 049	1.6	30 880	.3	13 293	.4	564
40	Miscellaneous manufactured products	404 683	4.8	90 600	.8	37 082	1.2	1 003
41	Waste and scrap	49 307	.6	305 638	2.6	71 063	2.2	163
43	Mixed freight	858 320	10.1	332 188	2.9	57 793	1.8	434
--	Commodity unknown	19 588	.2	25 464	.2	10 079	.3	585

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]Estimates exclude shipments of crude petroleum (SCTG 16).

Note: Estimates are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-3a provides estimated measures of sampling variability. The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information onthe Internet may be found at *www.census.gov/cfs*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 3b. Shipment Characteristics by Two-Digit Commodity for the United States: 2002 and 1997

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value			Tons			Ton-miles[1]			Average miles per shipment		
		2002 (million dollars)	1997 (million dollars)	Percent change	2002 (thousands)	1997 (thousands)	Percent change	2002 (millions)	1997 (millions)	Percent change	2002	1997	Percent change
	Total[2]	**8 483 123**	**6 943 988**	**22.2**	**11 572 780**	**11 089 733**	**4.4**	**3 204 410**	**2 661 363**	**20.4**	**589**	**472**	**24.8**
01	Live animals and live fish	7 200	6 173	16.6	6 549	5 922	10.6	2 021	1 497	35.0	534	272	96.3
02	Cereal grains	55 927	59 642	–6.2	578 637	489 693	18.2	263 718	200 594	31.5	125	125	.6
03	Other agricultural products	129 890	102 344	26.9	277 547	201 661	37.6	122 134	80 762	51.2	477	438	8.9
04	Animal feed and products of animal origin, n.e.c	55 251	66 848	–17.3	240 003	219 699	9.2	77 474	46 770	65.6	141	79	78.8
05	Meat, fish, seafood, and their preparations	204 869	183 784	11.5	85 019	79 485	7.0	41 795	36 383	14.9	192	137	40.1
06	Milled grain products and preparations, and bakery products	119 718	109 854	9.0	116 018	102 721	12.9	51 384	48 487	6.0	265	122	116.4
07	Other prepared foodstuffs and fats and oils	362 312	346 379	4.6	463 363	396 882	16.8	171 249	124 110	38.0	206	127	61.6
08	Alcoholic beverages	115 772	87 932	31.7	93 698	81 079	15.6	25 572	27 812	–8.1	56	58	–4.7
09	Tobacco products	77 163	56 394	36.8	5 793	4 128	40.3	1 256	1 011	24.2	414	296	39.5
10	Monumental or building stone	2 451	2 726	–10.1	16 851	15 893	6.0	1 325	1 472	–9.9	170	115	48.3
11	Natural sands	4 611	4 279	7.8	466 338	442 509	5.4	33 952	25 460	33.4	57	46	23.1
12	Gravel and crushed stone	12 643	11 508	9.9	1 775 181	1 814 761	–2.2	104 552	92 862	12.6	33	36	–7.1
13	Nonmetallic minerals n.e.c.	12 680	11 329	11.9	186 322	235 731	–21.0	56 975	52 229	9.1	214	174	23.0
14	Metallic ores and concentrates	15 741	12 605	24.9	116 050	90 705	27.9	59 404	47 666	24.6	465	303	53.3
15	Coal	24 085	25 486	–5.5	1 255 082	1 217 038	3.1	562 463	542 300	3.7	112	81	37.8
17	Gasoline and aviation turbine fuel	233 563	217 051	7.6	840 400	962 815	–12.7	130 207	136 639	–4.7	103	45	126.5
18	Fuel oils	109 618	94 309	16.2	507 540	481 682	5.4	108 928	51 171	112.9	81	28	185.1
19	Coal and petroleum products, n.e.c.	74 693	74 900	–.3	431 255	475 105	–9.2	96 006	81 873	17.3	125	85	48.2
20	Basic chemicals	152 069	159 623	–4.7	497 049	296 056	67.9	173 927	136 806	27.1	516	332	55.5
21	Pharmaceutical products	426 753	224 448	90.1	22 825	9 897	130.6	12 095	5 580	116.7	722	692	4.3
22	Fertilizers	34 079	27 334	24.7	214 227	179 056	19.6	74 422	43 562	70.8	150	116	29.4
23	Chemical products and preparations, n.e.c.	234 355	209 487	11.9	109 819	92 034	19.3	54 824	45 004	21.8	409	333	22.8
24	Plastics and rubber	343 386	278 832	23.2	147 035	130 411	12.7	83 916	69 092	21.5	430	451	–4.7
25	Logs and other wood in the rough	5 178	15 129	–65.8	86 316	370 686	–76.7	8 882	28 090	–68.4	108	85	27.2
26	Wood products	140 006	126 426	10.7	321 143	329 119	–2.4	114 007	96 896	17.7	250	287	–12.7
27	Pulp, newsprint, paper, and paperboard	102 406	106 578	–3.9	139 895	152 290	–8.1	82 591	83 669	–1.3	233	194	20.2
28	Paper or paperboard articles	105 890	98 347	7.7	72 508	73 513	–1.4	25 480	22 013	15.7	282	307	–8.3
29	Printed products	136 886	260 327	–47.4	34 418	78 053	–55.9	17 364	22 797	–23.8	903	431	109.5
30	Textiles, leather, and articles of textiles or leather	506 992	379 161	33.7	53 306	45 872	16.2	34 589	24 666	40.2	967	912	6.0
31	Nonmetallic mineral products	143 106	109 197	31.1	910 259	910 133	–	120 262	91 412	31.6	388	401	–3.2
32	Base metal in primary or semifinished forms and in finished basic shapes	253 678	285 690	–11.2	325 992	335 878	–2.9	121 634	117 479	3.5	275	276	–.3
33	Articles of base metal	234 922	227 182	3.4	115 686	106 519	8.6	44 434	48 691	–8.7	396	403	–1.8
34	Machinery	509 477	417 103	22.1	62 943	49 915	26.1	34 653	27 037	28.2	413	356	15.9
35	Electronic and other electrical equipment and components and office equipment	948 049	869 675	9.0	53 789	39 612	35.8	32 906	27 053	21.6	747	640	16.8
36	Motorized and other vehicles (including parts)	735 730	570 981	28.9	133 676	98 074	36.3	59 077	45 907	28.7	401	278	44.3
37	Transportation equipment, n.e.c.	162 984	129 185	26.2	10 269	5 477	87.5	6 220	3 758	65.5	1 003	796	25.9
38	Precision instruments and apparatus	222 042	157 946	40.6	15 208	2 939	417.4	3 401	2 169	56.8	986	840	17.3
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	135 049	97 255	38.9	30 880	19 910	55.1	13 293	11 565	14.9	564	625	–9.7
40	Miscellaneous manufactured products	404 683	420 883	–3.8	90 600	112 492	–19.5	37 082	39 872	–7.0	1 003	860	16.7
41	Waste and scrap	49 307	32 714	50.7	305 638	177 824	71.9	71 063	40 126	77.1	163	164	–.6
43	Mixed freight	858 320	230 415	272.5	332 188	110 271	201.2	57 793	17 224	235.5	434	252	72.0
--	Commodity unknown	19 588	36 527	–46.4	25 464	46 191	–44.9	10 079	11 796	–14.6	585	499	17.3

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]Estimates exclude shipments of crude petroleum (SCTG 16).

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-3b provides estimated measures of sampling variability. The Introduction and appendixes give information on confidentiality protection, sampling error, nonsampling error, sample design, and definitions. Links to this information onthe Internet may be found at *www.census.gov/cfs.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 3c. Shipment Characteristics by Two-Digit Commodity for the United States: Percent of Total for 2002 and 1997

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

SCTG code	Commodity description	Value (percent)		Tons (percent)		Ton-miles[1] (percent)	
		2002	1997	2002	1997	2002	1997
	Total[2]	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
01	Live animals and live fish	–	–	–	–	–	–
02	Cereal grains	.7	.9	5.0	4.4	8.2	7.5
03	Other agricultural products	1.5	1.5	2.4	1.8	3.8	3.0
04	Animal feed and products of animal origin, n.e.c	.7	1.0	2.1	2.0	2.4	1.8
05	Meat, fish, seafood, and their preparations	2.4	2.6	.7	.7	1.3	1.4
06	Milled grain products and preparations, and bakery products	1.4	1.6	1.0	.9	1.6	1.8
07	Other prepared foodstuffs and fats and oils	4.3	5.0	4.0	3.6	5.3	4.7
08	Alcoholic beverages	1.4	1.3	.8	.7	.8	1.0
09	Tobacco products	.9	.8	–	–	–	–
10	Monumental or building stone	–	–	.1	.1	–	–
11	Natural sands	–	–	4.0	4.0	1.1	1.0
12	Gravel and crushed stone	.1	.2	15.3	16.4	3.3	3.5
13	Nonmetallic minerals n.e.c.	.1	.2	1.6	2.1	1.8	2.0
14	Metallic ores and concentrates	.2	.2	1.0	.8	1.9	1.8
15	Coal	.3	.4	10.8	11.0	17.6	20.4
17	Gasoline and aviation turbine fuel	2.8	3.1	7.3	8.7	4.1	5.1
18	Fuel oils	1.3	1.4	4.4	4.3	3.4	1.9
19	Coal and petroleum products, n.e.c.	.9	1.1	3.7	4.3	3.0	3.1
20	Basic chemicals	1.8	2.3	4.3	2.7	5.4	5.1
21	Pharmaceutical products	5.0	3.2	.2	–	.4	.2
22	Fertilizers	.4	.4	1.9	1.6	2.3	1.6
23	Chemical products and preparations, n.e.c.	2.8	3.0	.9	.8	1.7	1.7
24	Plastics and rubber	4.0	4.0	1.3	1.2	2.6	2.6
25	Logs and other wood in the rough	–	.2	.7	3.3	.3	1.1
26	Wood products	1.7	1.8	2.8	3.0	3.6	3.6
27	Pulp, newsprint, paper, and paperboard	1.2	1.5	1.2	1.4	2.6	3.1
28	Paper or paperboard articles	1.2	1.4	.6	.7	.8	.8
29	Printed products	1.6	3.7	.3	.7	.5	.9
30	Textiles, leather, and articles of textiles or leather	6.0	5.5	.5	.4	1.1	.9
31	Nonmetallic mineral products	1.7	1.6	7.9	8.2	3.8	3.4
32	Base metal in primary or semifinished forms and in finished basic shapes	3.0	4.1	2.8	3.0	3.8	4.4
33	Articles of base metal	2.8	3.3	1.0	1.0	1.4	1.8
34	Machinery	6.0	6.0	.5	.5	1.1	1.0
35	Electronic and other electrical equipment and components and office equipment	11.2	12.5	.5	.4	1.0	1.0
36	Motorized and other vehicles (including parts)	8.7	8.2	1.2	.9	1.8	1.7
37	Transportation equipment, n.e.c.	1.9	1.9	–	–	.2	.1
38	Precision instruments and apparatus	2.6	2.3	.1	–	.1	–
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	1.6	1.4	.3	.2	.4	.4
40	Miscellaneous manufactured products	4.8	6.1	.8	1.0	1.2	1.5
41	Waste and scrap	.6	.5	2.6	1.6	2.2	1.5
43	Mixed freight	10.1	3.3	2.9	1.0	1.8	.6
--	Commodity unknown	.2	.5	.2	.4	.3	.4

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.
[2]Estimates exclude shipments of crude petroleum (SCTG 16).

Note: Estimates for 2002 are preliminary and may be revised. Table B-3c provides estimated measures of sampling variability. 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*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 4a. **Shipment Characteristics by Distance Shipped for the United States: 2002**

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

Distance shipped[1] (Based on Great Circle Distance)	Value		Tons		Ton-miles[2]	
	2002 (million dollars)	Percent of total	2002 (thousands)	Percent of total	2002 (millions)	Percent of total
Total	**8 483 123**	**100.0**	**11 572 780**	**100.0**	**3 204 410**	**100.0**
Less than 50 miles	2 447 018	28.8	6 028 724	52.1	121 093	3.8
50 to 99 miles	753 019	8.9	1 242 433	10.7	116 044	3.6
100 to 249 miles	1 345 926	15.9	1 553 406	13.4	343 922	10.7
250 to 499 miles	1 258 978	14.8	1 097 835	9.5	539 271	16.8
500 to 749 miles	862 741	10.2	647 884	5.6	541 309	16.9
750 to 999 miles	568 002	6.7	437 698	3.8	508 330	15.9
1,000 to 1,499 miles	545 968	6.4	386 657	3.3	619 659	19.3
1,500 to 1,999 miles	360 651	4.3	122 649	1.1	260 455	8.1
2,000 miles or more	340 820	4.0	55 493	.5	154 327	4.8

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Shipments are grouped into distance categories based on Great Circle Distance (GCD). GCD is the shortest distance betweeen 2 points on the surface of a sphere over the surface of that sphere.

[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-4a provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 4b. **Shipment Characteristics by Distance Shipped for the United States: 2002 and 1997**

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Distance shipped[1] (Based on Great Circle Distance)	Value			Tons			Ton-miles[2]		
	2002 (million dollars)	1997 (million dollars)	Percent change	2002 (thousands)	1997 (thousands)	Percent change	2002 (millions)	1997 (millions)	Percent change
Total	**8 483 123**	**6 943 988**	**22.2**	**11 572 780**	**11 089 733**	**4.4**	**3 204 410**	**2 661 363**	**20.4**
Less than 50 miles	2 447 018	2 168 057	12.9	6 028 724	6 444 454	–6.5	121 093	135 926	–10.9
50 to 99 miles	753 019	597 587	26.0	1 242 433	1 079 841	15.1	116 044	102 983	12.7
100 to 249 miles	1 345 926	1 062 579	26.7	1 553 406	1 311 278	18.5	343 922	296 032	16.2
250 to 499 miles	1 258 978	975 367	29.1	1 097 835	905 504	21.2	539 271	437 463	23.3
500 to 749 miles	862 741	656 846	31.3	647 884	541 782	19.6	541 309	467 800	15.7
750 to 999 miles	568 002	436 491	30.1	437 698	383 327	14.2	508 330	440 999	15.3
1,000 to 1,499 miles	545 968	469 777	16.2	386 657	302 918	27.6	619 659	487 859	27.0
1,500 to 1,999 miles	360 651	293 654	22.8	122 649	77 130	59.0	260 455	169 651	53.5
2,000 miles or more	340 820	283 628	20.2	55 493	43 499	27.6	154 327	122 651	25.8

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Shipments are grouped into distance categories based on Great Circle Distance (GCD). GCD is the shortest distance betweeen 2 points on the surface of a sphere over the surface of that sphere.

[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-4b provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 4c. **Shipment Characteristics by Distance Shipped for the United States: 2002 and 1993**

[Estimates are based on data from the 2002 and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Distance shipped[1] (Based on Great Circle Distance)	Value			Tons			Ton-miles[2]		
	2002 (million dollars)	1993 (million dollars)	Percent change	2002 (thousands)	1993 (thousands)	Percent change	2002 (millions)	1993 (millions)	Percent change
Total	**8 483 123**	**5 846 334**	**45.1**	**11 572 780**	**9 688 493**	**19.4**	**3 204 410**	**2 420 915**	**32.4**
Less than 50 miles	2 447 018	1 770 189	38.2	6 028 724	5 423 012	11.2	121 093	119 533	1.3
50 to 99 miles	753 019	536 987	40.2	1 242 433	1 066 691	16.5	116 044	106 447	9.0
100 to 249 miles	1 345 926	927 911	45.0	1 553 406	1 149 069	35.2	343 922	262 494	31.0
250 to 499 miles	1 258 978	851 303	47.9	1 097 835	858 891	27.8	539 271	421 432	28.0
500 to 749 miles	862 741	570 804	51.1	647 884	535 424	21.0	541 309	466 413	16.1
750 to 999 miles	568 002	371 685	52.8	437 698	289 304	51.3	508 330	341 582	48.8
1,000 to 1,499 miles	545 968	348 451	56.7	386 657	241 219	60.3	619 659	391 113	58.4
1,500 to 1,999 miles	360 651	226 380	59.3	122 649	76 413	60.5	260 455	171 072	52.2
2,000 miles or more	340 820	242 625	40.5	55 493	48 470	14.5	154 327	140 830	9.6

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Shipments are grouped into distance categories based on Great Circle Distance (GCD). GCD is the shortest distance betweeen 2 points on the surface of a sphere over the surface of that sphere.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-4c provides estimated measures of sampling variability. 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*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 4d. **Shipment Characteristics by Distance Shipped for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Distance shipped[1] (Based on Great Circle Distance)	Value (percent)		Tons (percent)		Ton-miles[2] (percent)	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**4.1**	**4.2**	**.9**	**2.0**	**3.8**	**3.2**
Less than 50 miles	2.5	3.7	–1.3	1.2	–2.3	.1
50 to 99 miles	4.7	3.8	2.8	1.7	2.4	1.0
100 to 249 miles	4.8	4.2	3.4	3.4	3.0	3.0
250 to 499 miles	5.2	4.4	3.9	2.8	4.3	2.8
500 to 749 miles	5.6	4.7	3.6	2.1	3.0	1.7
750 to 999 miles	5.4	4.8	2.7	4.7	2.9	4.5
1,000 to 1,499 miles	3.1	5.1	5.0	5.4	4.9	5.2
1,500 to 1,999 miles	4.2	5.3	9.7	5.4	9.0	4.8
2,000 miles or more	3.7	3.8	5.0	1.5	4.7	1.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Shipments are grouped into distance categories based on Great Circle Distance (GCD). GCD is the shortest distance betweeen 2 points on the surface of a sphere over the surface of that sphere.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Annualized growth rate measures the annual rate of change between estimates from any 2 years by assuming a constant yearly rate of change. See Appendix C for additional information about this rate.

Note: Estimates for 2002 are preliminary and may be revised. Table B-4d provides estimated measures of sampling variability. 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*.

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 4e. **Shipment Characteristics by Distance Shipped for the United States: Percent of Total for 2002, 1997, and 1993**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Distance shipped[1] (Based on Great Circle Distance)	Value (percent)			Tons (percent)			Ton-miles[2] (percent)		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Less than 50 miles	28.8	31.2	30.3	52.1	58.1	56.0	3.8	5.1	4.9
50 to 99 miles	8.9	8.6	9.2	10.7	9.7	11.0	3.6	3.9	4.4
100 to 249 miles	15.9	15.3	15.9	13.4	11.8	11.9	10.7	11.1	10.8
250 to 499 miles	14.8	14.0	14.6	9.5	8.2	8.9	16.8	16.4	17.4
500 to 749 miles	10.2	9.5	9.8	5.6	4.9	5.5	16.9	17.6	19.3
750 to 999 miles	6.7	6.3	6.4	3.8	3.5	3.0	15.9	16.6	14.1
1,000 to 1,499 miles	6.4	6.8	6.0	3.3	2.7	2.5	19.3	18.3	16.2
1,500 to 1,999 miles	4.3	4.2	3.9	1.1	.7	.8	8.1	6.4	7.1
2,000 miles or more	4.0	4.1	4.2	.5	.4	.5	4.8	4.6	5.8

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Shipments are grouped into distance categories based on Great Circle Distance (GCD). GCD is the shortest distance betweeen 2 points on the surface of a sphere over the surface of that sphere.
[2]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Table B-4e provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 5a. **Shipment Characteristics by Shipment Weight for the United States: 2002**

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

Shipment weight	Value		Tons		Ton-miles[1]		2002 Average miles per shipment
	2002 (million dollars)	Percent of total	2002 (thousands)	Percent of total	2002 (millions)	Percent of total	
Total	**8 483 123**	**100.0**	**11 572 780**	**100.0**	**3 204 410**	**100.0**	**589**
Less than 50 lb	1 009 779	11.9	19 140	.2	10 869	.3	735
50 to 99 lb	298 263	3.5	13 855	.1	5 308	.2	388
100 to 499 lb	829 694	9.8	81 940	.7	22 757	.7	283
500 to 749 lb	250 562	3.0	39 364	.3	9 907	.3	252
750 to 999 lb	181 610	2.1	33 991	.3	8 128	.3	239
1,000 to 9,999 lb	1 797 380	21.2	584 664	5.1	154 612	4.8	259
10,000 to 49,999 lb	3 111 754	36.7	4 358 037	37.7	906 343	28.3	212
50,000 to 99,999 lb	351 127	4.1	1 948 882	16.8	211 709	6.6	107
100,000 lb or more	652 955	7.7	4 492 907	38.8	1 874 776	58.5	539

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-5a provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 5b. Shipment Characteristics by Shipment Weight for the United States: 2002 and 1997

[Estimates are based on data from the 2002 and 1997 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Shipment weight	Value			Tons			Ton-miles[1]			Average miles per shipment		
	2002 (million dollars)	1997 (million dollars)	Percent change	2002 (thousands)	1997 (thousands)	Percent change	2002 (millions)	1997 (millions)	Percent change	2002	1997	Percent change
Total	**8 483 123**	**6 943 988**	**22.2**	**11 572 780**	**11 089 733**	**4.4**	**3 204 410**	**2 661 363**	**20.4**	**589**	**472**	**24.8**
Less than 50 lb	1 009 779	853 289	18.3	19 140	21 348	–10.3	10 869	9 950	9.2	735	574	27.9
50 to 99 lb	298 263	249 541	19.5	13 855	14 200	–2.4	5 308	4 450	19.3	388	312	24.5
100 to 499 lb	829 694	727 368	14.1	81 940	82 166	–.3	22 757	19 601	16.1	283	243	16.7
500 to 749 lb	250 562	219 136	14.3	39 364	38 955	1.1	9 907	8 852	11.9	252	225	11.6
750 to 999 lb	181 610	154 348	17.7	33 991	32 484	4.6	8 128	7 260	11.9	239	223	7.2
1,000 to 9,999 lb	1 797 380	1 536 448	17.0	584 664	579 490	.9	154 612	131 388	17.7	259	225	15.0
10,000 to 49,999 lb	3 111 754	2 286 364	36.1	4 358 037	4 073 970	7.0	906 343	734 805	23.3	212	183	15.7
50,000 to 99,999 lb	351 127	360 091	–2.5	1 948 882	2 229 997	–12.6	211 709	188 735	12.2	107	83	28.5
100,000 lb or more	652 955	557 404	17.1	4 492 907	4 017 124	11.8	1 874 776	1 556 321	20.5	539	418	29.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-5b provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 5c. Shipment Characteristics by Shipment Weight for the United States: 2002 and 1993

[Estimates are based on data from the 2002 and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Shipment weight	Value			Tons			Ton-miles[1]			Average miles per shipment
	2002 (million dollars)	1993 (million dollars)	Percent change	2002 (thousands)	1993 (thousands)	Percent change	2002 (millions)	1993 (millions)	Percent change	
Total	**8 483 123**	**5 846 334**	**45.1**	**11 572 780**	**9 688 493**	**19.4**	**3 204 410**	**2 420 915**	**32.4**	**589**
Less than 50 lb	1 009 779	591 779	70.6	19 140	21 783	–12.1	10 869	8 647	25.7	735
50 to 99 lb	298 263	186 656	59.8	13 855	12 764	8.5	5 308	3 559	49.1	388
100 to 499 lb	829 694	589 693	40.7	81 940	74 922	9.4	22 757	16 423	38.6	283
500 to 749 lb	250 562	178 173	40.6	39 364	35 059	12.3	9 907	7 586	30.6	252
750 to 999 lb	181 610	140 468	29.3	33 991	29 517	15.2	8 128	5 910	37.5	239
1,000 to 9,999 lb	1 797 380	1 372 352	31.0	584 664	533 447	9.6	154 612	115 024	34.4	259
10,000 to 49,999 lb	3 111 754	2 038 193	52.7	4 358 037	3 296 465	32.2	906 343	612 622	47.9	212
50,000 to 99,999 lb	351 127	281 045	24.9	1 948 882	2 050 860	–5.0	211 709	160 096	32.2	107
100,000 lb or more	652 955	467 975	39.5	4 492 907	3 633 676	23.6	1 874 776	1 491 048	25.7	539

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Value-of-shipments estimates have not been adjusted for price changes. Table B-5c provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 5d. **Shipment Characteristics by Shipment Weight for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Shipment weight	Value (percent)		Tons (percent)		Ton-miles[1] (percent)		Average miles per shipment (percent)	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**4.1**	**4.2**	**.9**	**2.0**	**3.8**	**3.2**	**4.5**	**3.7**
Less than 50 lb	3.4	6.1	–2.2	–1.4	1.8	2.6	5.1	3.5
50 to 99 lb	3.6	5.3	–.5	.9	3.6	4.5	4.5	3.1
100 to 499 lb	2.7	3.9	–.1	1.0	3.0	3.7	3.1	2.7
500 to 749 lb	2.7	3.9	.2	1.3	2.3	3.0	2.2	2.2
750 to 999 lb	3.3	2.9	.9	1.6	2.3	3.6	1.4	2.2
1,000 to 9,999 lb	3.2	3.0	.2	1.0	3.3	3.3	2.8	2.1
10,000 to 49,999 lb	6.4	4.8	1.4	3.2	4.3	4.4	3.0	1.6
50,000 to 99,999 lb	–.5	2.5	–2.7	–.6	2.3	3.2	5.1	3.8
100,000 lb or more	3.2	3.8	2.3	2.4	3.8	2.6	5.2	1.3

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Annualized growth rate measures the annual rate of change between estimates from any 2 years by assuming a constant yearly rate of change. See Appendix C for additional information about this rate.

Note: Estimates for 2002 are preliminary and may be revised. Table B-5d provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Table 5e. **Shipment Characteristics by Shipment Weight for the United States: Percent of Total for 2002, 1997, and 1993**

[Estimates are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys. Because of rounding, estimates may not be additive]

Shipment weight	Value (percent)			Tons (percent)			Ton-miles[1] (percent)		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Less than 50 lb	11.9	12.3	10.1	.2	.2	.2	.3	.4	.4
50 to 99 lb	3.5	3.6	3.2	.1	.1	.1	.2	.2	.1
100 to 499 lb	9.8	10.5	10.1	.7	.7	.8	.7	.7	.7
500 to 749 lb	3.0	3.2	3.0	.3	.4	.4	.3	.3	.3
750 to 999 lb	2.1	2.2	2.4	.3	.3	.3	.3	.3	.2
1,000 to 9,999 lb	21.2	22.1	23.5	5.1	5.2	5.5	4.8	4.9	4.8
10,000 to 49,999 lb	36.7	32.9	34.9	37.7	36.7	34.0	28.3	27.6	25.3
50,000 to 99,999 lb	4.1	5.2	4.8	16.8	20.1	21.2	6.6	7.1	6.6
100,000 lb or more	7.7	8.0	8.0	38.8	36.2	37.5	58.5	58.5	61.6

– Represents an estimate equal to zero or less than 1 unit of measure.
S Estimate does not meet publication standards because of high sampling variability or poor response quality.

[1]Ton-miles estimates are based on estimated distances traveled along a modeled transportation network. See the "Mileage Calculations" section for additional information.

Note: Estimates for 2002 are preliminary and may be revised. Table B-5e provides estimated measures of sampling variability. 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.*

Note: Coverage for the 2002 Commodity Flow Survey (CFS) differs from the previous surveys due to a change from the 1987 Standard Industrial Classification system to the 1997 North American Industry Classification System and other survey improvements. Therefore, data users are urged to use caution when comparing 2002 CFS estimates with estimates from prior years. Please see "Industry Coverage" section for details.

Appendix A. Comparability With the 1993 and 1997 Commodity Flow Surveys

The following tables show a comparison of the key characteristics among the 1993, 1997, and 2002 Commodity Flow Surveys.

Industry Coverage

1993	1997	2002
Based on 1987 SIC	Based on 1987 SIC	Based on 1997 NAICS[1]
Manufacturing (excluding Printing Trade Services (SIC 279))	Manufacturing (excluding Printing Trade Services (SIC 279))	Manufacturing (excluding Prepress Services (NAICS 323122))
Mining (except mining services (SICs 108, 124, 138, 148) and oil and gas extraction (SICs 131 and 132))	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))
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 catalog and mail order houses	Retail electronic shopping and mail-order houses
Auxiliaries (e.g., warehouses)	Auxiliaries (e.g., warehouses)	Auxiliaries[2] (e.g., warehouses)

[1]Because of changes in the classification of establishments between SIC and NAICS, establishments classified in the following industries were covered in the 1993 and 1997 surveys, but not in the 2002 survey: NAICS 11331, Logging; NAICS 5111, Newspaper, Periodical, Book, and Database Publishers; and NAICS 51223, Music Publishers. Detailed information about NAICS can be found on the Census Bureau Web site at: hhttp://www.census.gov/epcd/www/naics.html

[2]See the Industry Coverage section for additional information about the coverage of auxiliary establishments in the 2002 CFS.

Commodity Classification System

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

Sample Size

1993	1997	2002
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.

Survey Methodology

1993	1997	2002
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 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.	Respondents reported key characteristics for each sampled shipment.

Reported Mode of Transportation

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

Data Items Requested

1993	1997	2002
For each shipment:	For each shipment:	For each shipment:
Total value Total weight Commodity that contributes the most to the shipment's weight (STCC)	Total value Total weight Commodity that contributes the most to the shipment's weight (SCTG)	Total value Total weight Commodity that contributes the most to the shipment's weight (SCTG)
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 Containerized (Y/N) Hazardous material (Y/N)	Destination Containerized (Y/N) Hazardous material (UN/NA) code	Destination Hazardous material (UN/NA) code
Export (Y/N) If export: mode of export, foreign city and country of destination; U.S. port, airport, or border crossing of exit.	Export (Y/N) If export: mode of export, foreign city and country of destination; U.S. port, airport, or border crossing of exit.	Export (Y/N) If export: mode of export, foreign city and country of destination; U.S. port, airport, or border crossing of exit.

Appendix B. Reliability of the Estimates

The total error of an estimate based on a sample survey is the difference between the estimate and the population parameter that it estimates. This error may be considered to be comprised of sampling error and nonsampling error. Sampling error is the 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. This error occurs because characteristics differ among sampling units and because only a subset of the entire sampling frame is measured in a sample survey. Nonsampling error encompasses all other factors that contribute to the total error of a sample survey estimate. The accuracy of a survey result may be affected by these two types of errors.

Sampling and nonsampling errors are often measured by the quantities and bias and variance. The bias of an estimator of a population parameter is the difference, averaged over all possible samples of the same size and design, between the estimator and the population parameter being estimated. (The population parameter is usually unknown.) Any systematic error, or inaccuracy that affects all samples of a specified design in a similar way, may bias the resulting estimates. The *variance* of an estimator is the squared difference, averaged over all possible samples of the same size and design, between the estimator and its average value.

Descriptions of sampling and nonsampling errors for the 2002 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 2002 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. (See Appendix C for a description of the sample design.)

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* (or relative standard error) of an estimator is the standard error of the estimator divided by the estimator. Note that measures of sampling variability, such as the standard error and coefficient of variation, are estimated from the sample and are also subject to sampling variability. (Technically, we should refer to the *estimated* standard error or the *estimated* coefficient of variation of an estimator. However, for the sake of brevity, we have omitted this detail.) It is important to note that the standard error and coefficient of variation only measure sampling variability. They do not measure any systematic biases in the estimates. The Census Bureau recommends that individuals using estimates contained in this report incorporate this information into their analyses, as sampling error could affect the conclusions drawn from these estimates.

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 coefficient of variation 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 coefficient of variation. 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. The Census Bureau recommends that individuals using estimates in this report 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. (See Appendix C for a description of the imputation procedure.) 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. (See Appendix C for a description of the estimation procedure.) In most cases of establishment nonresponse, none of the four questionnaires have been returned to the Census Bureau, after several attempts to elicit a response. Approximately 63 percent of the establishments provided at least one quarter of data that contributed to tabulation.

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. We often contact respondents who reported shipments having a typically large value or weight when compared to the rest of their reported shipments. Upon contact, if we are able to collect information on all of a given respondent's large shipments made either for a particular reporting week or for the entire quarter, then we identify these large shipments as certainty shipments. (See Appendix C for a description of how certainty shipments are used in the estimation process.)

DEFINITION OF TERMS

Confidentiality

Title 13 of the United States Code authorizes the Census Bureau to conduct censuses and surveys. Section 9 of the same Title 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 United States 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 Limitation

A disclosure of data occurs when an individual can use published statistical information to identify either an individual or firm that has provided information under a pledge of confidentiality. Disclosure limitation is the process used to protect the confidentiality of the survey data provided by an individual or firm. Using disclosure limitation procedures, the Census Bureau modifies or removes the characteristics that put confidential information at risk for 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.

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 Shipment Characteristics by Mode of Transportation for the United States: 2002

[Estimates are shown as percents and are based on data from the 2002 Commodity Flow Survey]

Mode of transportation	Value		Tons		Ton-miles		Average miles per shipment—coefficient of variation
	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	
Total	**1.2**	**–**	**1.7**	**–**	**2.0**	**–**	**2.2**
Single modes	**1.4**	**.4**	**1.7**	**.5**	**2.2**	**.7**	**9.2**
Truck	1.5	.6	2.0	.6	2.2	1.0	6.2
For-hire truck	2.0	.5	2.7	.7	2.4	.9	4.6
Private truck	1.8	.5	3.1	.8	3.1	.3	7.6
Rail	5.6	.2	3.5	.6	4.2	1.0	7.0
Water	6.2	–	5.7	.4	7.3	.7	13.7
Shallow draft	6.6	–	6.1	.3	8.2	.6	7.9
Great Lakes	24.3	–	20.3	–	23.7	.1	15.1
Deep draft	14.1	–	18.2	.3	19.9	.4	27.8
Air (includes truck and air)	16.3	.5	16.7	–	8.9	–	3.2
Pipeline	6.3	.1	6.4	.4	S	S	S
Multiple modes	**2.8**	**.4**	**7.7**	**.1**	**9.7**	**.7**	**2.0**
Parcel, U.S. Postal Service or courier	3.0	.4	3.4	–	3.0	–	2.0
Truck and rail	S	S	S	S	S	S	S
Truck and water	22.5	–	17.5	–	34.5	.7	6.1
Rail and water	S	S	S	S	S	S	S
Other multiple modes	24.8	–	24.9	–	27.6	.2	30.0
Other and unknown modes	**5.0**	**.2**	**12.3**	**.5**	**12.5**	**.3**	**12.3**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 1a does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates are preliminary and may be revised. 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 Shipment Characteristics by Mode of Transportation for the United States: 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

Mode of transportation	Value			Tons			Ton-miles			Average miles per shipment		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1997		2002	1997		2002	1997		2002	1997	
Total	**1.2**	**1.0**	**1.9**	**1.7**	**1.8**	**2.5**	**2.0**	**2.6**	**3.9**	**2.2**	**2.8**	**4.5**
Single modes	**1.4**	**1.1**	**2.2**	**1.7**	**1.8**	**2.6**	**2.2**	**2.6**	**4.2**	**9.2**	**2.9**	**14.9**
Truck	1.5	1.1	2.3	2.0	2.1	2.8	2.2	1.1	3.1	6.2	3.5	9.8
For-hire truck	2.0	1.5	3.3	2.7	3.4	4.7	2.4	1.1	3.5	4.6	2.9	6.5
Private truck	1.8	1.3	2.5	3.1	3.0	4.1	3.1	2.8	4.7	7.6	3.5	10.9
Rail	5.6	4.7	7.3	3.5	4.5	6.7	4.2	5.9	8.5	7.0	3.7	9.4
Water	6.2	5.6	9.9	5.7	5.8	10.3	7.3	6.6	12.1	13.7	30.4	39.9
Shallow draft	6.6	5.8	9.2	6.1	6.3	10.6	8.2	6.1	12.8	7.9	28.7	70.8
Great Lakes	24.3	25.0	18.2	20.3	19.3	28.8	23.7	19.3	44.5	15.1	22.1	51.2
Deep draft	14.1	14.4	33.1	18.2	22.6	46.0	19.9	20.9	32.7	27.8	22.0	23.7
Air (includes truck and air)	16.3	9.5	23.0	16.7	6.5	15.6	8.9	8.8	11.2	3.2	1.6	4.8
Pipeline	6.3	7.2	13.6	6.4	9.6	13.5	S	S	S	S	S	S
Multiple modes	**2.8**	**2.1**	**4.1**	**7.7**	**7.9**	**10.1**	**9.7**	**9.8**	**14.4**	**2.0**	**2.7**	**3.8**
Parcel, U.S. Postal Service or courier	3.0	2.1	4.4	3.4	2.0	4.4	3.0	2.3	4.3	2.0	2.7	3.8
Truck and rail	S	7.7	S	S	21.1	S	S	18.8	S	S	3.2	S
Truck and water	22.5	9.4	50.4	17.5	12.7	20.7	34.5	28.0	75.6	6.1	13.1	22.2
Rail and water	S	16.7	S	S	15.6	S	S	17.2	S	S	7.1	S
Other multiple modes	24.8	20.5	41.6	24.9	19.0	33.4	27.6	32.4	44.9	30.0	S	S
Other and unknown modes	**5.0**	**4.4**	**7.6**	**12.3**	**9.5**	**17.7**	**12.5**	**7.5**	**15.2**	**12.3**	**10.7**	**20.4**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 1b does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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 Measures of Reliability for Shipment Characteristics by Mode of Transportation for the United States: 2002 and 1993

[Estimates are shown as percents and are based on data from the 2002 and 1993 Commodity Flow Surveys]

Mode of transportation	Value			Tons			Ton-miles			Average miles per shipment		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1993		2002	1993		2002	1993		2002	1993	
Total	**1.2**	**.8**	**2.1**	**1.7**	**1.6**	**2.7**	**2.0**	**2.7**	**4.5**	**2.2**	**3.0**	**5.2**
Single modes	**1.4**	**.9**	**2.3**	**1.7**	**1.6**	**2.8**	**2.2**	**2.7**	**4.7**	**9.2**	**4.6**	**14.9**
Truck	1.5	1.1	2.6	2.0	1.9	3.3	2.2	1.9	4.4	6.2	1.5	8.8
For-hire truck	2.0	1.1	3.4	2.7	3.4	5.7	2.4	2.0	5.0	4.6	2.1	6.2
Private truck	1.8	2.0	3.6	3.1	1.8	4.0	3.1	2.8	5.4	7.6	1.6	10.3
Rail	5.6	3.3	8.4	3.5	3.8	6.1	4.2	4.5	7.8	7.0	1.9	8.6
Water	6.2	6.9	13.7	5.7	8.0	13.8	7.3	9.5	14.2	13.7	S	S
Shallow draft	6.6	6.6	13.0	6.1	7.8	13.6	8.2	10.4	19.1	7.9	S	S
Great Lakes	24.3	S	S	20.3	19.3	33.5	23.7	20.4	49.3	15.1	12.7	14.4
Deep draft	14.1	17.2	37.8	18.2	26.0	50.3	19.9	18.8	19.2	27.8	8.3	10.7
Air (includes truck and air)	16.3	5.2	34.3	16.7	12.7	26.0	8.9	8.1	16.7	3.2	2.7	5.4
Pipeline	6.3	9.7	20.8	6.4	10.7	18.6	S	S	S	S	S	S
Multiple modes	**2.8**	**2.5**	**6.3**	**7.7**	**6.6**	**8.9**	**9.7**	**10.7**	**16.2**	**2.0**	**2.9**	**4.4**
Parcel, U.S. Postal Service or courier	3.0	1.6	6.2	3.4	2.4	5.8	3.0	3.8	7.5	2.0	3.0	4.4
Truck and rail	S	15.6	S	S	9.4	S	S	9.1	S	S	6.0	S
Truck and water	22.5	13.5	47.6	17.5	17.6	11.6	34.5	17.4	56.3	6.1	6.8	12.6
Rail and water	S	26.6	S	S	16.4	S	S	19.0	S	S	21.4	S
Other multiple modes	24.8	36.5	75.8	24.9	28.1	55.5	27.6	S	S	30.0	35.8	7.5
Other and unknown modes	**5.0**	**5.2**	**9.5**	**12.3**	**7.7**	**13.3**	**12.5**	**11.6**	**14.1**	**12.3**	**12.6**	**11.7**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 1c does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–1d. Estimated Standard Errors for Shipment Characteristics by Mode of Transportation for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation	Value		Tons		Ton-miles		Average miles per shipment	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**.3**	**.1**	**.5**	**.2**	**.7**	**.3**	**.7**	**.3**
Single modes	**.4**	**.1**	**.5**	**.2**	**.7**	**.3**	**2.1**	**.9**
Truck	.4	.2	.6	.3	.5	.3	1.5	.6
For-hire truck	.5	.2	.9	.4	.6	.3	1.1	.5
Private truck	.4	.2	.9	.4	.9	.4	1.8	.7
Rail	1.5	.6	1.2	.5	1.5	.6	1.6	.7
Water	1.7	.8	1.7	.9	2.0	1.2	6.9	S
Shallow draft	1.8	.9	1.8	.9	2.1	1.2	7.1	S
Great Lakes	6.1	S	5.6	2.8	6.6	2.6	6.1	2.6
Deep draft	4.4	1.8	6.4	2.7	5.9	3.8	6.5	5.9
Air (includes truck and air)	3.9	1.2	3.5	2.0	2.5	1.1	.8	.4
Pipeline	2.1	.9	2.4	1.1	S	S	S	S
Multiple modes	**.7**	**.3**	**2.2**	**1.2**	**2.8**	**1.5**	**.7**	**.3**
Parcel, U.S. Postal Service or courier	.8	.3	.8	.4	.8	.4	.7	.3
Truck and rail	S	S	S	S	S	S	S	S
Truck and water	5.6	2.0	4.3	4.4	9.9	3.4	3.1	.8
Rail and water	S	S	S	S	S	S	S	S
Other multiple modes	6.8	3.5	6.3	3.3	8.6	S	S	15.6
Other and unknown modes	**1.4**	**.7**	**3.2**	**1.7**	**2.9**	**2.1**	**3.4**	**2.5**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 1d does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–1e. Estimated Standard Errors for Shipment Characteristics by Mode of Transportation for the United States: Percent of Total for 2002, 1997, and 1993

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation	Value			Tons			Ton-miles		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Single modes	**.4**	**.3**	**.4**	**.5**	**.4**	**.4**	**.7**	**.7**	**.6**
Truck	.6	.4	.4	.6	.8	1.0	1.0	.9	1.1
For-hire truck	.5	.5	.3	.7	.9	.8	.9	.7	.8
Private truck	.5	.3	.5	.8	.9	.7	.3	.4	.3
Rail	.2	.2	.2	.6	.6	.5	1.0	1.5	.8
Water	–	–	–	.4	.2	.4	.7	.7	.9
Shallow draft	–	–	–	.3	.2	.3	.6	.5	.7
Great Lakes	–	–	S	–	–	–	.1	.1	.1
Deep draft	–	–	–	.3	.2	.3	.4	.5	.7
Air (includes truck and air)	.5	.3	.1	–	–	–	–	–	–
Pipeline	.1	.1	.2	.4	.5	.5	S	S	S
Multiple modes	**.4**	**.2**	**.3**	**.1**	**.1**	**.2**	**.7**	**.7**	**.7**
Parcel, U.S. Postal Service or courier	.4	.2	.2	–	–	–	–	–	–
Truck and rail	S	–	.2	S	.1	–	S	.4	.1
Truck and water	–	–	–	–	–	.1	.7	.3	.3
Rail and water	S	–	–	S	.1	.1	S	.5	.5
Other multiple modes	–	–	–	–	–	–	.2	.2	S
Other and unknown modes	**.2**	**.2**	**.2**	**.5**	**.4**	**.4**	**.3**	**.2**	**.5**

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 1e does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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 Shipment Characteristics by Total Modal Activity for the United States: 2002

[Estimates are shown as percents and are based on data from the 2002 Commodity Flow Survey]

Mode of transportation	Ton-miles		Average miles per shipment—coefficient of variation
	Coefficient of variation of number	Standard error of percentage	
Total	**2.0**	**–**	**2.0**
Truck	2.2	1.0	4.3
Rail	3.9	1.0	6.0
Shallow draft	8.0	.7	8.5
Great Lakes	11.2	.2	12.3
Deep draft	20.4	.7	8.3
Air	8.9	–	3.3
Parcel, U.S. Postal Service or courier	3.0	–	2.0
Pipeline	S	S	S
Other and unknown modes	12.5	.3	12.3

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 2a does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates are preliminary and may be revised. 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 Shipment Characteristics by Total Modal Activity for the United States: 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

Mode of transportation	Ton-miles			Average miles per shipment		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1997		2002	1997	
Total	**2.0**	**2.6**	**3.9**	**2.0**	**2.8**	**4.2**
Truck	2.2	1.1	3.1	4.3	3.4	7.4
Rail	3.9	5.5	7.7	6.0	2.7	7.3
Shallow draft	8.0	6.0	12.0	8.5	13.7	31.5
Great Lakes	11.2	13.6	23.2	12.3	12.2	22.0
Deep draft	20.4	18.0	35.9	8.3	13.0	17.6
Air	8.9	9.0	11.6	3.3	1.6	5.0
Parcel, U.S. Postal Service or courier	3.0	2.3	4.3	2.0	2.7	3.8
Pipeline	S	S	S	S	S	S
Other and unknown modes	12.5	7.7	15.2	12.3	10.7	20.5

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 2b does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–2c. Estimated Measures of Reliability for Shipment Characteristics by Total Modal Activity for the United States: 2002 and 1993

[Estimates are shown as percents and are based on data from the 2002 and 1993 Commodity Flow Surveys]

Mode of transportation	Ton-miles			Average miles per shipment		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1993		2002	1993	
Total	**2.0**	**3.4**	**5.2**	**2.0**	**3.9**	**5.9**
Truck	2.2	1.4	3.9	4.3	1.3	6.1
Rail	3.9	5.4	8.5	6.0	5.2	8.3
Shallow draft	8.0	11.1	14.6	8.5	5.1	12.4
Great Lakes	11.2	24.6	39.4	12.3	14.4	18.3
Deep draft	20.4	14.0	31.3	8.3	5.4	9.0
Air	8.9	6.2	15.5	3.3	3.9	6.7
Parcel, U.S. Postal Service or courier	3.0	3.6	7.3	2.0	3.3	4.8
Pipeline	S	S	S	S	S	S
Other and unknown modes	12.5	11.6	14.1	12.3	14.4	12.6

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 2c does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–2d. Estimated Standard Errors for Shipment Characteristics by Total Modal Activity for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation	Ton-miles		Average miles per shipment	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**.7**	**.4**	**.7**	**.4**
Truck	.5	.2	1.2	.4
Rail	1.4	.6	1.3	.9
Shallow draft	2.1	1.5	3.7	1.0
Great Lakes	3.7	2.4	3.6	2.1
Deep draft	5.7	2.4	3.2	1.2
Air	2.5	1.0	.8	.5
Parcel, U.S. Postal Service or courier	.8	.4	.7	.4
Pipeline	S	S	S	S
Other and unknown modes	3.0	2.1	3.4	2.7

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 2d does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–2e. Estimated Standard Errors for Shipment Characteristics by Total Modal Activity for the United States: Percent of Total for 2002, 1997, and 1993

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Mode of transportation	Ton-miles		
	2002	1997	1993
Total	**–**	**–**	**–**
Truck	1.0	.9	.9
Rail	1.0	1.5	.9
Shallow draft	.7	.5	1.0
Great Lakes	.2	.2	.3
Deep draft	.7	.6	.5
Air	–	–	–
Parcel, U.S. Postal Service or courier	–	–	–
Pipeline	S	S	S
Other and unknown modes	.3	.2	.5

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 2e does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–3a. Estimated Measures of Reliability for Shipment Characteristics by Two-Digit Commodity for the United States: 2002

[Estimates are shown as percents and are based on data from the 2002 Commodity Flow Survey]

SCTG code	Commodity description	Value		Tons		Ton-miles		Average miles per shipment—coefficient of variation
		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	
	Total	**1.2**	**–**	**1.7**	**–**	**2.0**	**–**	**2.2**
01	Live animals and live fish	24.1	–	45.6	–	43.8	–	16.6
02	Cereal grains	6.1	–	6.0	.3	14.1	1.1	13.3
03	Other agricultural products	10.4	.1	8.8	.2	12.0	.4	17.6
04	Animal feed and products of animal origin, n.e.c	7.1	–	9.9	.2	26.9	.7	12.1
05	Meat, fish, seafood, and their preparations	5.1	.1	5.4	–	6.0	–	12.5
06	Milled grain products and preparations, and bakery products	7.0	.1	8.7	–	9.1	.2	13.8
07	Other prepared foodstuffs and fats and oils	3.2	.1	4.4	.2	5.5	.3	20.7
08	Alcoholic beverages	4.3	–	4.5	–	7.9	–	8.6
09	Tobacco products	20.7	.2	38.0	–	35.7	–	18.3
10	Monumental or building stone	21.8	–	24.3	–	18.4	–	20.0
11	Natural sands	25.6	–	14.6	.5	15.5	.2	9.8
12	Gravel and crushed stone	4.6	–	5.3	.7	8.1	.3	6.8
13	Nonmetallic minerals n.e.c.	14.6	–	12.3	.2	18.4	.3	8.7
14	Metallic ores and concentrates	20.8	–	15.5	.2	15.8	.3	9.5
15	Coal	5.1	–	5.9	.6	8.8	1.3	9.1
17	Gasoline and aviation turbine fuel	4.4	.1	4.3	.3	10.4	.5	12.5
18	Fuel oils	8.6	.1	7.8	.3	15.6	.5	27.3
19	Coal and petroleum products, n.e.c.	5.3	–	6.4	.3	13.0	.3	14.5
20	Basic chemicals	5.3	.1	16.3	.6	14.0	.7	10.2
21	Pharmaceutical products	10.8	.5	15.0	–	15.9	–	5.5
22	Fertilizers	12.6	–	14.5	.3	16.0	.4	26.7
23	Chemical products and preparations, n.e.c.	6.3	.2	8.0	–	9.2	.2	6.0
24	Plastics and rubber	4.5	.2	3.8	–	3.5	.1	5.7
25	Logs and other wood in the rough	17.5	–	49.4	.4	32.5	–	29.5
26	Wood products	4.0	–	5.3	.2	8.4	.3	9.1
27	Pulp, newsprint, paper, and paperboard	3.2	–	3.7	–	4.0	.1	11.8
28	Paper or paperboard articles	4.3	–	5.5	–	10.4	–	10.6
29	Printed products	3.7	–	6.2	–	6.4	–	5.2
30	Textiles, leather, and articles of textiles or leather	6.8	.4	6.8	–	11.7	.1	2.1
31	Nonmetallic mineral products	7.0	.1	9.6	.7	8.7	.3	10.5
32	Base metal in primary or semifinished forms and in finished basic shapes	3.1	–	5.9	.2	7.7	.3	7.3
33	Articles of base metal	4.4	.1	11.2	.1	9.8	.1	5.2
34	Machinery	5.8	.4	5.8	–	6.7	–	5.1
35	Electronic and other electrical equipment and components and office equipment	4.0	.4	8.7	–	7.8	–	4.6
36	Motorized and other vehicles (including parts)	7.2	.6	9.3	–	8.3	.1	10.3
37	Transportation equipment, n.e.c.	28.5	.5	30.1	–	24.3	–	4.3
38	Precision instruments and apparatus	7.3	.2	26.3	–	12.6	–	6.2
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	8.7	.1	13.2	–	6.0	–	5.9
40	Miscellaneous manufactured products	5.3	.2	14.5	.1	7.0	–	4.5
41	Waste and scrap	14.1	–	14.7	.4	17.8	.4	12.1
43	Mixed freight	3.9	.4	7.4	.2	6.0	.1	9.7
--	Commodity unknown	10.6	–	18.7	–	35.2	.1	8.2

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 3a does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates are preliminary and may be revised. 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–3b. Estimated Measures of Reliability for Shipment Characteristics by Two-Digit Commodity for the United States: 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

SCTG code	Commodity description	Value			Tons			Ton-miles			Average miles per shipment		
		Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
		2002	1997		2002	1997		2002	1997		2002	1997	
	Total	**1.2**	**1.0**	**1.9**	**1.7**	**1.8**	**2.5**	**2.0**	**2.6**	**3.9**	**2.2**	**2.8**	**4.5**
01	Live animals and live fish	24.1	13.8	32.4	45.6	16.5	53.6	43.8	14.1	62.1	16.6	22.8	55.4
02	Cereal grains	6.1	7.4	8.9	6.0	6.0	10.0	14.1	8.3	21.6	13.3	9.3	16.3
03	Other agricultural products	10.4	5.3	14.8	8.8	5.9	14.6	12.0	8.1	21.9	17.6	12.2	23.3
04	Animal feed and products of animal origin, n.e.c	7.1	4.5	6.9	9.9	2.8	11.3	26.9	4.3	45.1	12.1	28.9	56.0
05	Meat, fish, seafood, and their preparations	5.1	4.0	7.2	5.4	5.1	7.9	6.0	6.3	10.0	12.5	8.7	21.4
06	Milled grain products and preparations, and bakery products	7.0	4.3	8.9	8.7	3.6	10.7	9.1	5.8	11.5	13.8	18.8	50.5
07	Other prepared foodstuffs and fats and oils	3.2	3.1	4.7	4.4	3.4	6.5	5.5	3.7	9.2	20.7	14.4	40.7
08	Alcoholic beverages	4.3	4.2	7.9	4.5	4.6	7.4	7.9	13.5	14.3	8.6	19.5	20.3
09	Tobacco products	20.7	12.8	33.4	38.0	22.2	61.8	35.7	20.7	51.2	18.3	19.6	37.4
10	Monumental or building stone	21.8	15.0	23.9	24.3	17.4	31.7	18.4	16.9	22.5	20.0	37.5	63.1
11	Natural sands	25.6	10.1	29.7	14.6	10.8	19.1	15.5	9.9	24.6	9.8	8.9	16.2
12	Gravel and crushed stone	4.6	3.8	6.5	5.3	3.8	6.4	8.1	5.8	11.2	6.8	6.6	8.9
13	Nonmetallic minerals n.e.c.	14.6	13.3	22.2	12.3	12.0	13.6	18.4	13.6	25.0	8.7	12.0	18.2
14	Metallic ores and concentrates	20.8	8.1	27.9	15.5	13.7	26.5	15.8	21.5	33.2	9.5	10.8	22.1
15	Coal	5.1	4.6	6.6	5.9	4.4	7.6	8.8	9.5	13.4	9.1	13.8	22.7
17	Gasoline and aviation turbine fuel	4.4	4.9	7.0	4.3	7.8	7.8	10.4	20.4	21.8	12.5	7.7	33.2
18	Fuel oils	8.6	4.5	11.3	7.8	5.9	10.3	15.6	13.4	43.7	27.3	5.5	79.5
19	Coal and petroleum products, n.e.c.	5.3	4.2	6.8	6.4	5.2	7.5	13.0	12.9	21.4	14.5	19.6	36.1
20	Basic chemicals	5.3	11.9	12.4	16.3	8.1	30.6	14.0	13.0	24.3	10.2	11.0	23.3
21	Pharmaceutical products	10.8	4.6	22.3	15.0	11.6	43.7	15.9	18.1	52.2	5.5	5.0	7.7
22	Fertilizers	12.6	8.0	18.6	14.5	8.9	20.3	16.0	9.7	32.0	26.7	12.9	38.3
23	Chemical products and preparations, n.e.c.	6.3	4.5	8.6	8.0	5.7	11.7	9.2	6.3	13.5	6.0	6.2	10.6
24	Plastics and rubber	4.5	2.1	6.2	3.8	6.7	8.7	3.5	4.7	7.1	5.7	5.0	7.3
25	Logs and other wood in the rough	17.5	5.3	6.3	49.4	9.7	11.7	32.5	11.8	10.9	29.5	15.4	42.3
26	Wood products	4.0	3.8	6.1	5.3	7.3	8.8	8.4	8.4	14.0	9.1	7.3	10.2
27	Pulp, newsprint, paper, and paperboard	3.2	2.5	3.9	3.7	7.1	7.4	4.0	2.9	4.8	11.8	8.1	17.2
28	Paper or paperboard articles	4.3	3.0	5.7	5.5	6.8	8.6	10.4	3.7	12.8	10.6	6.0	11.1
29	Printed products	3.7	12.4	6.8	6.2	4.7	3.4	6.4	6.1	6.8	5.2	6.8	17.9
30	Textiles, leather, and articles of textiles or leather	6.8	5.9	12.0	6.8	4.6	9.6	11.7	5.0	17.9	2.1	3.3	4.1
31	Nonmetallic mineral products	7.0	2.4	9.7	9.6	9.9	13.8	8.7	4.9	13.1	10.5	12.2	15.6
32	Base metal in primary or semifinished forms and in finished basic shapes	3.1	2.8	3.7	5.9	5.4	7.8	7.7	4.5	9.2	7.3	6.2	9.6
33	Articles of base metal	4.4	2.3	5.1	11.2	6.1	13.8	9.8	9.3	12.3	5.2	5.9	7.8
34	Machinery	5.8	1.9	7.4	5.8	3.5	8.5	6.7	6.3	11.8	5.1	4.1	7.6
35	Electronic and other electrical equipment and components and office equipment	4.0	3.4	5.7	8.7	3.6	12.8	7.8	7.0	12.7	4.6	4.2	7.3
36	Motorized and other vehicles (including parts)	7.2	3.3	10.2	9.3	4.7	14.1	8.3	3.8	11.8	10.3	4.3	16.1
37	Transportation equipment, n.e.c.	28.5	14.5	40.3	30.1	10.2	59.5	24.3	16.0	48.1	4.3	6.0	9.3
38	Precision instruments and apparatus	7.3	6.4	13.6	26.3	7.4	141.3	12.6	7.3	22.9	6.2	4.3	8.8
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	8.7	4.9	13.8	13.2	6.0	22.5	6.0	7.8	11.4	5.9	4.9	6.9
40	Miscellaneous manufactured products	5.3	6.2	7.9	14.5	20.1	19.9	7.0	9.2	10.8	4.5	4.1	7.1
41	Waste and scrap	14.1	5.1	22.6	14.7	5.2	26.8	17.8	6.2	33.3	12.1	11.2	16.4
43	Mixed freight	3.9	9.0	36.5	7.4	9.8	36.9	6.0	16.8	59.9	9.7	11.3	25.7
--	Commodity unknown	10.6	7.9	7.1	18.7	27.5	18.3	35.2	28.9	38.9	8.2	8.4	13.8

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 3b does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–3c. Estimated Standard Errors for Shipment Characteristics by Two-Digit Commodity for the United States: Percent of Total for 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

SCTG code	Commodity description	Value		Tons		Ton-miles	
		2002	1997	2002	1997	2002	1997
	Total	**–**	**–**	**–**	**–**	**–**	**–**
01	Live animals and live fish	–	–	–	–	–	–
02	Cereal grains	–	–	.3	.3	1.1	.5
03	Other agricultural products	.1	–	.2	.1	.4	.2
04	Animal feed and products of animal origin, n.e.c	–	–	.2	–	.7	.1
05	Meat, fish, seafood, and their preparations	.1	.1	–	–	–	.1
06	Milled grain products and preparations, and bakery products	.1	–	–	–	.2	.1
07	Other prepared foodstuffs and fats and oils	.1	.1	.2	.1	.3	.2
08	Alcoholic beverages	–	–	–	–	–	.1
09	Tobacco products	.2	.1	–	–	–	–
10	Monumental or building stone	–	–	–	–	–	–
11	Natural sands	–	–	.5	.4	.2	–
12	Gravel and crushed stone	–	–	.7	.5	.3	.2
13	Nonmetallic minerals n.e.c.	–	–	.2	.3	.3	.3
14	Metallic ores and concentrates	–	–	.2	.1	.3	.4
15	Coal	–	–	.6	.5	1.3	1.5
17	Gasoline and aviation turbine fuel	.1	.1	.3	.6	.5	1.0
18	Fuel oils	.1	–	.3	.2	.5	.2
19	Coal and petroleum products, n.e.c.	–	–	.3	.2	.3	.4
20	Basic chemicals	.1	.3	.6	.2	.7	.6
21	Pharmaceutical products	.5	.1	–	–	–	–
22	Fertilizers	–	–	.3	.2	.4	.2
23	Chemical products and preparations, n.e.c.	.2	.1	–	–	.2	.1
24	Plastics and rubber	.2	.1	–	–	.1	.1
25	Logs and other wood in the rough	–	–	.4	.3	–	.1
26	Wood products	–	–	.2	.2	.3	.2
27	Pulp, newsprint, paper, and paperboard	–	–	–	–	.1	.1
28	Paper or paperboard articles	–	–	–	–	–	–
29	Printed products	–	.4	–	–	–	–
30	Textiles, leather, and articles of textiles or leather	.4	.3	–	–	.1	–
31	Nonmetallic mineral products	.1	–	.7	.7	.3	.2
32	Base metal in primary or semifinished forms and in finished basic shapes	–	.1	.2	.2	.3	.2
33	Articles of base metal	.1	–	.1	–	.1	.2
34	Machinery	.4	.1	–	–	–	–
35	Electronic and other electrical equipment and components and office equipment	.4	.4	–	–	–	–
36	Motorized and other vehicles (including parts)	.6	.3	–	–	.1	–
37	Transportation equipment, n.e.c.	.5	.3	–	–	–	–
38	Precision instruments and apparatus	.2	.1	–	–	–	–
39	Furniture, mattresses and mattress supports, lamps, lighting fittings, and illuminated signs	.1	–	–	–	–	–
40	Miscellaneous manufactured products	.2	.4	.1	.2	–	.1
41	Waste and scrap	–	–	.4	–	.4	.1
43	Mixed freight	.4	.3	.2	–	.1	.1
--	Commodity unknown	–	–	–	.1	.1	.1

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 3c does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–4a. Estimated Measures of Reliability for Shipment Characteristics by Distance Shipped for the United States: 2002

[Estimates are shown as percents and are based on data from the 2002 Commodity Flow Survey]

Distance shipped (Based on Great Circle Distance)	Value		Tons		Ton-miles	
	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
Total	**1.2**	**–**	**1.7**	**–**	**2.0**	**–**
Less than 50 miles	2.2	.6	2.9	1.0	3.2	.1
50 to 99 miles	1.9	.2	5.9	.6	5.2	.2
100 to 249 miles	2.0	.3	3.1	.4	3.4	.4
250 to 499 miles	2.8	.4	3.3	.3	3.1	.5
500 to 749 miles	2.9	.3	3.5	.2	4.1	.5
750 to 999 miles	3.3	.2	6.2	.2	6.3	.8
1,000 to 1,499 miles	3.1	.2	6.3	.2	7.2	1.3
1,500 to 1,999 miles	2.4	.1	8.8	.1	7.7	.6
2,000 miles or more	5.0	.2	5.1	–	5.3	.3

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 4a does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates are preliminary and may be revised. 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–4b. Estimated Measures of Reliability for Shipment Characteristics by Distance Shipped for the United States: 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

Distance shipped (Based on Great Circle Distance)	Value			Tons			Ton-miles		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1997		2002	1997		2002	1997	
Total	**1.2**	**1.0**	**1.9**	**1.7**	**1.8**	**2.5**	**2.0**	**2.6**	**3.9**
Less than 50 miles	2.2	1.3	2.9	2.9	2.7	3.7	3.2	2.7	3.7
50 to 99 miles	1.9	2.7	4.2	5.9	3.3	7.8	5.2	3.4	6.9
100 to 249 miles	2.0	2.1	3.6	3.1	2.1	4.5	3.4	2.7	5.1
250 to 499 miles	2.8	1.7	4.3	3.3	3.9	6.2	3.1	4.1	6.4
500 to 749 miles	2.9	1.6	4.3	3.5	4.1	6.5	4.1	4.2	6.8
750 to 999 miles	3.3	1.8	4.9	6.2	5.2	9.3	6.3	5.2	9.4
1,000 to 1,499 miles	3.1	2.7	4.8	6.3	7.6	12.6	7.2	7.9	13.5
1,500 to 1,999 miles	2.4	2.5	4.2	8.8	5.0	16.1	7.7	5.1	14.2
2,000 miles or more	5.0	3.1	7.1	5.1	1.7	6.8	5.3	1.8	7.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 4b does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–4c. Estimated Measures of Reliability for Shipment Characteristics by Distance Shipped for the United States: 2002 and 1993

[Estimates are shown as percents and are based on data from the 2002 and 1993 Commodity Flow Surveys]

Distance shipped (Based on Great Circle Distance)	Value			Tons			Ton-miles		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1993		2002	1993		2002	1993	
Total	**1.2**	**.8**	**2.1**	**1.7**	**1.6**	**2.7**	**2.0**	**2.7**	**4.5**
Less than 50 miles	2.2	1.4	3.5	2.9	2.1	4.0	3.2	2.6	4.2
50 to 99 miles	1.9	1.8	3.7	5.9	2.1	7.3	5.2	3.4	6.7
100 to 249 miles	2.0	2.4	4.6	3.1	2.7	5.5	3.4	2.9	5.9
250 to 499 miles	2.8	1.9	5.0	3.3	2.8	5.6	3.1	3.3	5.7
500 to 749 miles	2.9	1.8	5.1	3.5	4.5	6.9	4.1	4.6	7.1
750 to 999 miles	3.3	1.9	5.8	6.2	5.0	12.1	6.3	5.8	12.7
1,000 to 1,499 miles	3.1	2.3	6.1	6.3	6.1	14.1	7.2	7.3	16.3
1,500 to 1,999 miles	2.4	2.2	5.1	8.8	4.7	16.0	7.7	6.1	14.9
2,000 miles or more	5.0	4.4	9.3	5.1	9.1	11.9	5.3	9.0	11.5

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 4c does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–4d. Estimated Standard Errors for Shipment Characteristics by Distance Shipped for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Distance shipped (Based on Great Circle Distance)	Value		Tons		Ton-miles	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**.3**	**.1**	**.5**	**.2**	**.7**	**.3**
Less than 50 miles	.5	.2	.8	.4	.8	.5
50 to 99 miles	.7	.2	1.4	.6	1.3	.7
100 to 249 miles	.6	.3	.8	.4	.9	.4
250 to 499 miles	.7	.3	1.1	.4	1.1	.4
500 to 749 miles	.7	.3	1.1	.6	1.2	.6
750 to 999 miles	.8	.3	1.7	.7	1.7	.7
1,000 to 1,499 miles	.8	.3	2.1	.7	2.2	.9
1,500 to 1,999 miles	.7	.3	2.2	.8	2.0	.8
2,000 miles or more	1.2	.6	1.1	1.1	1.2	1.1

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 4d does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–4e. Estimated Standard Errors for Shipment Characteristics by Distance Shipped for the United States: Percent of Total for 2002, 1997, and 1993

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Distance shipped (Based on Great Circle Distance)	Value			Tons			Ton-miles		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	–	–	–	–	–	–	–	–	–
Less than 50 miles	.6	.4	.3	1.0	.8	.6	.1	.2	.1
50 to 99 miles	.2	.2	.1	.6	.3	.3	.2	.1	.2
100 to 249 miles	.3	.2	.3	.4	.2	.3	.4	.3	.3
250 to 499 miles	.4	.2	.2	.3	.4	.2	.5	.6	.5
500 to 749 miles	.3	.1	.2	.2	.2	.2	.5	.6	.6
750 to 999 miles	.2	–	.1	.2	.2	.1	.8	.6	.5
1,000 to 1,499 miles	.2	.2	.1	.2	.2	.1	1.3	1.1	.9
1,500 to 1,999 miles	.1	–	–	.1	–	–	.6	.4	.4
2,000 miles or more	.2	.1	.2	–	–	–	.3	.1	.5

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 4e does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–5a. Estimated Measures of Reliability for Shipment Characteristics by Shipment Weight for the United States: 2002

[Estimates are shown as percents and are based on data from the 2002 Commodity Flow Survey]

Shipment weight	Value		Tons		Ton-miles		Average miles per shipment—coefficient of variation
	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	
Total	**1.2**	**–**	**1.7**	**–**	**2.0**	**–**	**2.2**
Less than 50 lb	3.0	.3	2.5	–	3.3	–	2.1
50 to 99 lb	6.1	.2	2.1	–	4.9	–	4.9
100 to 499 lb	2.2	.2	2.2	–	2.6	–	1.8
500 to 749 lb	2.6	–	2.9	–	3.2	–	3.5
750 to 999 lb	4.5	–	4.0	–	3.7	–	3.9
1,000 to 9,999 lb	2.3	.4	1.8	.1	2.8	.2	1.9
10,000 to 49,999 lb	1.9	.5	3.2	.9	1.8	.8	2.6
50,000 to 99,999 lb	4.7	.2	3.7	.6	6.2	.4	4.7
100,000 lb or more	6.0	.4	2.4	.7	3.5	1.0	3.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 5a does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates are preliminary and may be revised. 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–5b. Estimated Measures of Reliability for Shipment Characteristics by Shipment Weight for the United States: 2002 and 1997

[Estimates are shown as percents and are based on data from the 2002 and 1997 Commodity Flow Surveys]

Shipment weight	Value			Tons			Ton-miles			Average miles per shipment		
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change
	2002	1997		2002	1997		2002	1997		2002	1997	
Total	**1.2**	**1.0**	**1.9**	**1.7**	**1.8**	**2.5**	**2.0**	**2.6**	**3.9**	**2.2**	**2.8**	**4.5**
Less than 50 lb	3.0	2.2	4.4	2.5	2.4	3.1	3.3	2.5	4.5	2.1	3.2	4.9
50 to 99 lb	6.1	1.7	7.6	2.1	1.9	2.7	4.9	2.9	6.8	4.9	2.7	7.0
100 to 499 lb	2.2	2.1	3.5	2.2	1.5	2.6	2.6	1.8	3.6	1.8	2.2	3.3
500 to 749 lb	2.6	1.9	3.7	2.9	1.4	3.3	3.2	4.5	6.2	3.5	3.7	5.7
750 to 999 lb	4.5	2.7	6.2	4.0	1.4	4.4	3.7	4.3	6.3	3.9	4.1	6.1
1,000 to 9,999 lb	2.3	2.2	3.8	1.8	1.6	2.4	2.8	2.7	4.6	1.9	2.3	3.5
10,000 to 49,999 lb	1.9	1.4	3.2	3.2	2.0	4.0	1.8	1.3	2.7	2.6	1.8	3.6
50,000 to 99,999 lb	4.7	4.4	6.2	3.7	3.2	4.3	6.2	3.2	7.8	4.7	3.1	7.2
100,000 lb or more	6.0	3.2	8.0	2.4	3.5	4.8	3.5	4.0	6.4	3.0	6.3	9.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 5b does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–5c. Estimated Measures of Reliability for Shipment Characteristics by Shipment Weight for the United States: 2002 and 1993

[Estimates are shown as percents and are based on data from the 2002 and 1993 Commodity Flow Surveys]

Shipment weight	Value			Tons			Ton-miles			Average miles per shipment—coefficient of variation
	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	Coefficient of variation of number		Standard error of percent change	
	2002	1993		2002	1993		2002	1993		
Total	**1.2**	**.8**	**2.1**	**1.7**	**1.6**	**2.7**	**2.0**	**2.7**	**4.5**	**2.2**
Less than 50 lb	3.0	1.3	5.6	2.5	2.9	3.4	3.3	4.5	7.1	2.1
50 to 99 lb	6.1	2.0	10.3	2.1	2.5	3.6	4.9	2.7	8.4	4.9
100 to 499 lb	2.2	2.5	4.7	2.2	2.3	3.5	2.6	2.4	4.9	1.8
500 to 749 lb	2.6	3.3	5.9	2.9	1.6	3.8	3.2	3.9	6.6	3.5
750 to 999 lb	4.5	4.7	8.4	4.0	1.7	5.0	3.7	2.4	6.1	3.9
1,000 to 9,999 lb	2.3	2.5	4.5	1.8	1.6	2.7	2.8	2.6	5.2	1.9
10,000 to 49,999 lb	1.9	1.4	3.6	3.2	1.7	4.8	1.8	1.2	3.2	2.6
50,000 to 99,999 lb	4.7	3.8	7.5	3.7	3.5	4.8	6.2	2.3	8.8	4.7
100,000 lb or more	6.0	6.1	12.0	2.4	3.4	5.1	3.5	4.6	7.3	3.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 5c does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–5d. Estimated Standard Errors for Shipment Characteristics by Shipment Weight for the United States: Annualized Growth Rate for 1997 to 2002 and 1993 to 2002

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Shipment weight	Value		Tons		Ton-miles		Average miles per shipment	
	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002	1997 to 2002	1993 to 2002
Total	**.3**	**.1**	**.5**	**.2**	**.7**	**.3**	**.7**	**.3**
Less than 50 lb	.8	.3	.7	.5	.8	.5	.8	.4
50 to 99 lb	1.3	.5	.6	.3	1.2	.5	1.2	.5
100 to 499 lb	.6	.3	.5	.3	.6	.3	.6	.3
500 to 749 lb	.7	.4	.7	.3	1.1	.5	1.0	.4
750 to 999 lb	1.1	.6	.8	.4	1.2	.4	1.2	.5
1,000 to 9,999 lb	.7	.3	.5	.3	.8	.4	.6	.3
10,000 to 49,999 lb	.5	.2	.8	.3	.5	.2	.6	.3
50,000 to 99,999 lb	1.3	.6	.9	.6	1.4	.6	1.2	.5
100,000 lb or more	1.4	.8	.9	.4	1.1	.6	1.5	.4

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 5d does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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–5e. Estimated Standard Errors for Shipment Characteristics by Shipment Weight for the United States: Percent of Total for 2002, 1997, and 1993

[Estimates are shown as percents and are based on data from the 2002, 1997, and 1993 Commodity Flow Surveys]

Shipment weight	Value			Tons			Ton-miles		
	2002	1997	1993	2002	1997	1993	2002	1997	1993
Total	–	–	–	–	–	–	–	–	–
Less than 50 lb	.3	.2	.1	–	–	–	–	–	–
50 to 99 lb	.2	–	–	–	–	–	–	–	–
100 to 499 lb	.2	.2	.2	–	–	–	–	–	–
500 to 749 lb	–	–	.1	–	–	–	–	–	–
750 to 999 lb	–	–	.1	–	–	–	–	–	–
1,000 to 9,999 lb	.4	.4	.5	.1	.1	.1	.2	.1	.2
10,000 to 49,999 lb	.5	.4	.6	.9	.8	.6	.8	.7	.7
50,000 to 99,999 lb	.2	.2	.2	.6	.5	.6	.4	.2	.2
100,000 lb or more	.4	.2	.4	.7	.8	.9	1.0	.9	1.0

– Represents an estimate equal to zero or less than 1 unit of measure.
S Corresponding estimate in Table 5e does not meet publication standards because of high sampling variability or poor response quality.

Note: Estimates for 2002 are preliminary and may be revised. 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*.

Appendix C.
Sample Design, Data Collection, and Estimation

INTRODUCTION

The primary goal for the 2002 Commodity Flow Survey (CFS) is to estimate *shipping volumes* (value, tons, and ton-miles) by *commodity* and *mode of transportation* at varying levels of geographic detail. A secondary objective is 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 2002 CFS is provided below.

SAMPLE DESIGN

The sample for the 2002 Commodity Flow Survey (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

Sampling frame

To create the first-stage sampling frame, we extracted a subset of establishment records from the Business Register (formerly the Standard Statistical Establishment List) as of September 2001. 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.) Establishments located in the United States, having nonzero payroll in 2000, and classified in mining (except oil and gas extraction), manufacturing, wholesale, or electronic shopping and mail order retail industries, as defined by the 1997 North American Industry Classification System (NAICS), were included on the sampling 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. All other establishments included on the sampling frame are referred to as *nonauxiliary establishments*.

Some portion of establishments classified in the Retail Trade sector in the 1997 Economic Census is expected to be classified in the Wholesale Trade sector in the 2002 Economic Census. Because we wanted complete coverage of the Wholesale Trade sector as defined for the 2002 Economic Census, the sampling frame also included establishments from the following retail industries: automotive parts and accessories, tires, floor coverings, building materials, nursery and garden, and office supplies.

Establishments classified in forestry, fishing, utilities, construction, transportation, services, and all other retail industries were not included on the sampling frame. Farms and government-owned entities (except government-owned liquor stores) were also excluded from the sampling frame. The resulting frame comprised approximately 760,000 establishments.

For each establishment we extracted sales, payroll, number of employees, a six-digit NAICS code, name and address, and a primary identifier. We also computed a measure of size for each establishment. The measure of size was designed to approximate an establishment's annual total value of shipments for the year 2000.

All of the establishments included on the sampling frame had state, county, and place geographic codes. We used these codes to assign each establishment to one of the 273 metropolitan areas (MAs) defined as a combination of the metropolitan statistical areas (MSAs) and consolidated metropolitan statistical areas (CMSAs). Establishments not located in an MA were assigned to MA 9999.

Stratification

We stratified the sampling frame by geography and industry. Geographic strata were defined by a combination of the 50 states, the District of Columbia, and the top 50 metropolitan areas (MAs) based on their population in Census 2000. If a particular MA was not one of the 50 largest, then it was collapsed with the remaining MAs and non-MAs within the state in which the particular MA resided. We refer to these collapsed strata as Rest of State (ROS) strata. When an MA crossed state boundaries, we considered the size of each part of the MA 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. The industry strata were determined as follows. Within each of the geographic strata, we started with a total of 45 industry groups based on 1997 NAICS: three mining (four-digit NAICS); 21 manufacturing (three-digit NAICS); 18 wholesale (four-digit NAICS); 1 retail (NAICS 4541); and 2 auxiliary (NAICS 4931 and 5511). We then

implemented a rule that states a particular industry stratum will be defined within a geographic stratum if it contributes at least 2 percent to its corresponding state total measure of size or it contributes at least 2 percent to the national total measure of size for the industry. Industry groups not meeting these criteria were combined into at most 12 new collapsed industry strata using a clustering algorithm. Because of potential differences in shipping patterns between auxiliary and nonauxiliary establishments, we created two industry strata of auxiliary establishments in every geographic stratum. We refer to a particular geographic-by-industry combination as a *primary stratum.*

Sample size and allocation

To reduce the sampling variability of the estimates, we used a stratified design with a certainty component. Within each primary stratum, a boundary (or cutoff) that divides the certainty establishments from the noncertainty establishments was determined using the Lavallee-Hidiroglou algorithm. If an establishment's measure of size was greater than the cutoff, the establishment was selected with certainty. Establishments selected with certainty were sure to be selected and represent only themselves (i.e., had a selection probability of one and a sampling weight of one).

Because the 2002 sample was about half the size of the 1997 CFS sample, we were concerned about the ability of the sample to capture less frequent types of shipments (e.g., air, water, rail, and hazardous materials). After considering several different alternatives, we felt the best approach was to identify those establishments which made the bulk of these types of shipments in 1997 and then select them with certainty. To identify these establishments, we proceeded as follows.

We identified all establishments in the 1997 CFS sample that reported shipments made by air, water, or rail. We also identified those establishments that reported shipments of hazardous materials. For each of these establishments, we computed the percentage of the establishment's total value and tonnage accounted for by each of these types of shipments. Next, we matched these establishments to the sampling frame for the 2002 CFS and identified each establishment with measure of size less than the certainty boundary. For both value and tons, we then looked to see what percent of the total volume of shipments for each type of shipment was captured by selecting with certainty the top 50, top 100, or all establishments. We considered the top 50 establishments as those establishments making the largest volume of each type of shipment (air, water, rail, hazardous). Once these establishments were identified, we grouped them into one file and unduplicated them. This procedure added a total of about 500 certainty establishments.

Establishments not selected with certainty made up the noncertainty frame. We further stratified the noncertainty establishments within each primary stratum using the measure of size previously described. We refer to these measure-of-size strata as *substrata* of the primary strata. The measure of size stratification increased the efficiency of the sample design. The Dalenius-Hodges cumulative $\sqrt{f}$ rule was used to set the substratum boundaries. We then used optimum allocation to determine the sample size required within each substratum to meet a coefficient of variation constraint on an estimate of the total measure of size for the primary stratum. Within each substratum, a simple random sample of establishments was selected without replacement.

To arrive at the final sample size, we allocated additional establishments to some of the strata so that the minimum substratum sample size was two and the probability of selecting any establishment was no less than 1 in 100. In total, the first-stage sample comprised 51,005 establishments.

Second Stage

The frame for the second stage of sampling consisted of 52-weeks from January 6, 2002 to January 4, 2003. Each establishment selected into the 2002 CFS sample was systematically assigned to report for four reporting weeks-one in each quarter of the reference year. Each of the 4-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, we sorted the selected sample by primary stratum (state x metropolitan area x industry) and measure-of-size.

Third Stage

For each of the four reporting weeks in which an establishment was asked to report, we requested the respondent 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, we asked the respondent to select a systematic sample of the establishment's shipments and to provide us with information only about the selected shipments. If an establishment made *40 or fewer* shipments during that week, we asked the respondent 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. We mailed each establishment a questionnaire

once every quarter of 2002. For a given establishment, we requested that the respondent provide the following information about each of the establishment's reported shipments: shipment identification number, the date on which the shipment was made, value, weight, commodity, mode(s) of transportation, domestic destination or port of exit, an indication of whether the shipment was an export, and the United Nations or North America (UN/NA) number for hazardous material shipments. 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.* For an export shipment, we also asked the respondent to provide the mode of export and the foreign destination city and country. See Appendix E for a copy of the questionnaire.

IMPUTATION OF SHIPMENT VALUE OR WEIGHT

To correct for nonresponse to *either* the value *or* weight item for a given shipment reported in the CFS, the missing value or value that failed edit is replaced by a predicted value obtained from an appropriate model. Such a shipment is considered a "recipient" if its commodity code is valid and the other item is reported greater than zero and passed edit. The recipient's item that is missing or failed edit is imputed as follows. First, a "donor" shipment is 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 passed edit.
- Origin and value for the item reported by the recipient similar to those of the recipient.

Then, the donor's value and weight data are used to calculate a ratio, which is applied to the recipient's reported item, to impute the item that is missing or failed edit. If no donor is 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 is applied to the recipient's reported item. For either the value or weight item, about 3 percent of the shipment records input to the calculation of estimates have imputed data for the item.

ESTIMATION

Estimated totals (e.g., value of shipments, tons, ton-miles) are produced as the sum of weighted shipment data (reported or imputed). Percent change and percent-of-total estimates are derived using the appropriate estimated totals. Estimates of average miles per shipment are computed by dividing an estimate of the total miles traveled by the estimated number of shipments. The annualized growth rate $\hat{A}$ for estimates from year y_1 to y_2 is computed as:

$$\hat{A} = 100 * \left(\left(\frac{\hat{X}_{y_2}}{\hat{X}_{y_1}} \right)^{1/(y_2 - y_1)} - 1 \right)$$

where $\hat{X}_{y_1}$ and $\hat{X}_{y_2}$ are estimates of the value of shipments, tons, ton-miles, or average miles per shipment for years y_1 and y_2, respectively. The annualized growth rate measures the annual rate of change between estimates from any 2 years by assuming a constant yearly rate of change.

Each *shipment* has associated with it a single *tabulation weight,* which was used in computing all estimates to which the shipment contributes. The tabulation weight is a product of seven different component weights. 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, we produced an estimate of that establishment's total value of shipments for the entire survey year. To do this, we used four different weights, the *shipment weight,* the *shipment nonresponse weight,* the *quarter weight,* and the *quarter nonresponse weight.*

Like establishments, we identified shipments as either certainty or noncertainty. (See the Nonsampling Error section in Appendix B for a description of how certainty shipments were identified.) For noncertainty shipments, the *shipment weight* was defined as the ratio of the total number of shipments (as reported by the respondent) made by an establishment in a reporting week to the number of sampled shipments for the same week. This weight uses 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, we applied the *shipment nonresponse weight.* For noncertainty shipments from a particular establishment's reporting week, this weight is 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 and shipment nonresponse weight for certainty shipments from a particular establishment's reporting week are both equal to one.

The *quarter weight* inflates an establishment's estimate for a particular reporting week to an estimate for the corresponding quarter. For noncertainty shipments, the quarter

weight is 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, we computed a quarter nonresponse weight. The *quarter nonresponse weight* for a particular establishment is 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 we received usable shipment data from the establishment.

Using these four component weights, we computed an estimate of each establishment's value of shipments for the entire survey year. We then multiplied this estimate 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,* attempts to correct for any sampling or nonsampling errors that occur during the sampling of shipments by the respondent.

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

A final adjustment weight, the *industry-level adjustment weight,* uses information from other surveys and censuses conducted by the Census Bureau to account for establishments from which we did not receive a response (including establishments from which we did not receive any usable shipment data) and for changes in the population of establishments between the time the first-stage sampling frame was constructed (2001) and the year in which the data were collected (2002). Separate industry-level adjustment weights were determined for nonauxiliary and auxiliary establishments.

Appendix D. Standard Classification of Transported Goods Code Information

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 agencies of the United States and Canadian governments based on the Harmonized System (HS) 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 1993, Commodity Flow Survey (CFS) data were collected and reported using product classifications found in the Standard Transportation Commodity Classification (STCC) system. These classifications were developed in the early 1960s by the American Association of Railroads (AAR) to analyze commodity movements by rail. The original purpose of the STCC was for identification of commodities for purposes of assigning rates for Interstate Commerce Commission (ICC) regulated rail carriers. The STCC continues to be used by the AAR as a tariff mechanism.

At the time that the Commodity Transportation Survey (CTS) (the CTS—the predecessor of the CFS) was first conducted in 1963, STCC codes were still useful for analyzing most important aspects of the U.S. transportation system. Since then, many changes have taken place that have gradually made the STCC code less useful for tracking domestic product movements across all modes (although it remains perfectly functional for tracking rail-only movements). These include the deregulation of trucking, the enactment of North American Free Trade Agreement (NAFTA), changes in logistics practices, the emergence of plastics and composite materials to replace metals and glass, the obsolescence of many categories of wood products, and the very rapid recent development of high-tech electronic goods. Because the CFS is a shipper survey, the CFS collects information about shipments moving on all modes. As a consequence, STCC classifications frequently provide inadequate detail for identifying products that are significant for modes, such as truck and air. It is for these reasons that the Bureau of Transportation Statistics (BTS) has sponsored the development of a new product code to collect and report CFS data.

In 2002, the CFS 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, we instructed respondents 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, we aggregated the SCTG codes to the two-digit level.

Appendix E.
Sample Report Form and Instructions

The sample report form and instructions are shown on the following pages.

OMB No. 0607-0889: Approval Expires 10/31/2004

FORM **CFS-1000** (7-2-2002)

2002 COMMODITY FLOW SURVEY
CENSUS OF TRANSPORTATION

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Reporting period:

Please return by:

RETURN TO
▼
U.S. CENSUS BUREAU
1201 East 10th Street
Jeffersonville IN 47132-0001

(Please correct above any error in name, address, and ZIP Code)

BEFORE COMPLETING YOUR REPORT, please read the accompanying Instruction Guide. Visit our website at **www.census.gov/CFS** or telephone us at **1–800–772–7851** if you would like additional information.

This survey requests a limited amount of data on a sample of your outbound shipments. Its purpose is to develop information on the characteristics of freight flows in the United States. This information is essential for understanding transportation markets, investment needs, and the economic, safety, energy, and environmental consequences of transportation.

If book figures are not available for the information we are requesting, estimates are acceptable.

Thank you for your timely completion of this report.

Item A Is the establishment name shown in the mailing address correct?

1 ☐ Yes
2 ☐ No — *Enter correct name.* ↙

Item B *Mark (X) the **ONE** box which best describes this establishment during the one-week reporting period shown above.*

1 ☐ In operation
2 ☐ Temporarily or seasonally inactive
3 ☐ Ceased operation — *Give date* →

Month	Day	Year

Item C Is this establishment's physical location the same as the address shown above? (PO boxes or rural routes are not physical locations.)

1 ☐ Yes
2 ☐ No — *Enter physical location below.* ↙

Number and street		
City, town, village, etc.	State	ZIP Code

NOTE — The rest of this questionnaire requests information about shipments (or deliveries) from the establishment located at the address in the mailing label.

If you entered a different address in item C — *Please complete the form for shipments originating from the location listed in item C.*

Item D **TOTAL NUMBER OF SHIPMENTS —** Please enter the **total number** of outbound shipments (or deliveries), including customer pick-up, for the one-week reporting period shown above. If book figures are not available, please provide your best estimate.

This number should reflect **ALL** shipments (not just those listed in item F) and deliveries leaving this location during the one-week reporting period. *Please see Instruction Guide for a definition of "shipment."*

DO NOT PROCEED UNTIL YOU HAVE COMPLETED ITEM D.

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.

Item E SAMPLING INSTRUCTIONS

The purpose of this section is to identify a sample of your shipments for which you will provide data. Through the use of a sample, we can avoid asking you for information on all of your shipments, while still obtaining statistically accurate information.

1. FINDING YOUR SELECTION RATE

Identify from the table below, the selection rate that corresponds to your total number in item D. Enter the selection rate in the box below.

For example, if you reported in item D that you had 350 shipments for the reporting week, the corresponding selection rate found in the table to your right.

Please enter your selection rate. ↙

Number of shipments reported in item D	Selection rate	Number of shipments that should be reported in item F
1— 40	Every shipment	1–40
41— 80	2	20–40
81— 100	3	27–33
101— 200	5	20–40
201— 400	10	20–40
401— 800	20	20–40
801— 1600	40	20–40
1601— 3200	80	20–40
3201— 6400	160	20–40
6401—12800	320	20–40
More than 12800	Call Census at **1–800–772–7851**	

SAMPLING INSTRUCTIONS CONTINUE ON TOP OF NEXT PAGE. ↗

Item F SHIPMENT CHARACTERISTICS

NOTE ▶ ***Complete columns (b) through (h) below; then continue on next page with columns (i) through (m).*** →

Line No. (a)	Shipment ID Number (b)	Shipment date (c) Month	Shipment date (c) Day	Shipment value (excluding shipping costs) in whole dollars (d)	Shipment weight **in pounds** (e)	Commodity code from SCTG list (f)	Commodity description (g)	If a hazardous material, enter the "UN" or "NA" number (h)
0	123-5	4	26	4,235	140	3 5 1 2 0	Electrical transformers	
00	402H	4	26	12,530	62,650	1 7 1 0 0	Gasoline	1 2 0 3
1								
2								
3								
4								
5								
6								
7								

Mode of transport codes for columns (j) and (m) ▶ **1** — Parcel delivery, courier, or U.S. Postal Service **2** — Private truck **3** — For-hire truck **4** — Railroad

Continued →

FORM CFS-1000 (7-2-2002)

SAMPLING INSTRUCTIONS — Continued

2. SELECTING YOUR SAMPLE OF SHIPMENTS

a. Use the file or combination of files that best reflects your full range of outbound shipping activities.

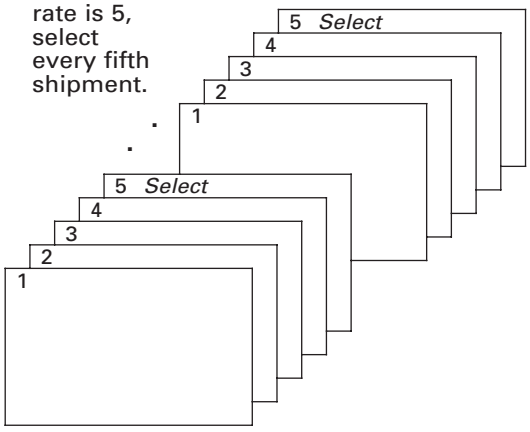
b. Begin with the first shipment. Count the shipments until you reach your selection rate. Select this shipment to report on in item F.

c. Continue counting with the next shipment. Count this shipment as 1 and continue until you reach the selection rate again. Select this shipment to report on in item F.

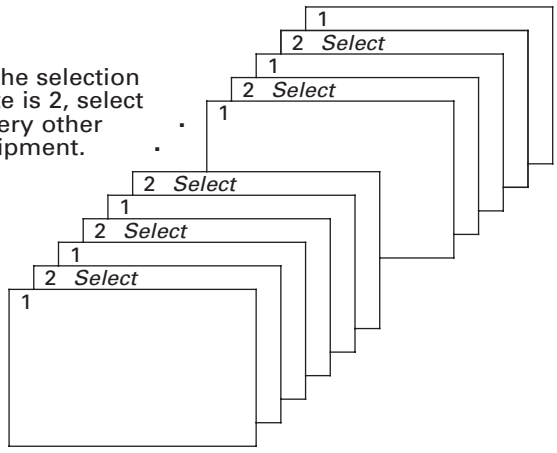
d. Repeat the previous step until you have completed your shipment file for the one-week reporting period.

In the following examples, each rectangle represents one shipment.

If the selection rate is 5, select every fifth shipment.



If the selection rate is 2, select every other shipment.



Once you have selected your sample of shipments, please proceed to item F and enter the requested information for each selected shipment. Examples of completed lines for two shipments are provided on lines "0" and "00" below.

U.S. destination *(Complete for all shipments.)* (i)			Mode(s) of transport to U.S. destination *Enter all that apply in order used. Use codes below.* (j)	Export? *(Y/N)* (k)	Foreign destination (for export shipments only) **Note:** In column (i) enter the U.S. port, airport, or border crossing of exit. (l)		Export mode (m)	Line No. (n)
City	State	ZIP Code			City	Country		
Los Angeles	CA	90040	2, 4	N				0
New York	NY	10454	3	Y	London	England	6	00
								1
								2
								3
								4
								5
								6
								7

5 — Shallow draft vessel
6 — Deep draft vessel
7 — Pipeline
8 — Air
9 — Other mode
0 — Unknown

FORM CFS-1000 (7-2-2002)

PLEASE CONTINUE ON PAGE 4.

Item F **SHIPMENT CHARACTERISTICS — Continued**

NOTE ▶ ***Complete columns (b) through (h) below; then continue on next page with columns (i) through (m).*** →

Line No. (a)	Shipment ID Number (b)	Shipment date (c) Month	Shipment date (c) Day	Shipment value (excluding shipping costs) in whole dollars (d)	Shipment weight **in pounds** (e)	Commodity code from SCTG list (f)	Commodity description (g)	If a hazardous material, enter the "UN" or "NA" number (h)
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

Mode of transport codes for columns (j) and (m) ▶ **1** — Parcel delivery, courier, or U.S. Postal Service; **2** — Private truck; **3** — For-hire truck; **4** — Railroad

Continued →

FORM CFS-1000 (7-2-2002)

U.S. destination ***(Complete for all shipments.)*** (i)			Mode(s) of transport to U.S. destination *Enter all that apply in order used. Use codes below.* (j)	Export? *(Y/N)* (k)	Foreign destination (for export shipments only) **Note:** In column (i) enter the U.S. port, airport, or border crossing of exit. (l)		Export mode (m)	Line No. (n)
City	State	ZIP Code			City	Country		
								8
								9
								10
								11
								12
								13
								14
								15
								16
								17
								18
								19
								20
								21
								22
								23
								24
								25
								26
								27
								28
								29
								30

5 — Shallow draft vessel
6 — Deep draft vessel
7 — Pipeline
8 — Air
9 — Other mode
0 — Unknown

FORM CFS-1000 (7-2-2002)

PLEASE CONTINUE ON PAGE 6.

Item F **SHIPMENT CHARACTERISTICS — Continued**

NOTE ▶ ***Complete columns (b) through (h) below; then continue on next page with columns (i) through (m).*** →

Line No. (a)	Shipment ID Number (b)	Shipment date (c) Month	Shipment date (c) Day	Shipment value (excluding shipping costs) in whole dollars (d)	Shipment weight **in pounds** (e)	Commodity code from SCTG list (f)	Commodity description (g)	If a hazardous material, enter the "UN" or "NA" number (h)
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Mode of transport codes for columns (j) and (m) ▶ **1** — Parcel delivery, courier, or U.S. Postal Service **2** — Private truck **3** — For-hire truck **4** — Railroad

Continued →

Item G **MONTHLY VALUE OF SHIPMENTS**

*Please mark (X) the box below that represents your best estimate of the total value of all shipments originating from this establishment for the most recent **month**.*

1 ☐ Less than $100,000
2 ☐ $100,000 to $499,999
3 ☐ $500,000 to $999,999
4 ☐ $1,000,000 to $4,999,999
5 ☐ $5,000,000 to $19,999,999
6 ☐ $20,000,000 and more

Item H **CERTIFICATION**

Name of person to contact regarding this report – *Please print*	Telephone number – *Include area code*	Date

Signature	Title

FORM CFS-1000 (7-2-2002)

U.S. destination ***(Complete for all shipments.)*** (i)			Mode(s) of transport to U.S. destination *Enter all that apply in order used. Use codes below.* (j)	Export? *(Y/N)* (k)	Foreign destination (for export shipments only) **Note:** In column (i) enter the U.S. port, airport, or border crossing of exit. (l)		Export mode (m)	Line No. (n)
City	State	ZIP Code			City	Country		
								31
								32
								33
								34
								35
								36
								37
								38
								39
								40

5 — Shallow draft vessel
6 — Deep draft vessel
7 — Pipeline
8 — Air
9 — Other mode
0 — Unknown

Remarks

THANK YOU FOR COMPLETING YOUR REPORT

FORM CFS-1000 (7-2-2002)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

2002 Commodity Flow Survey

INSTRUCTION GUIDE

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

Contents:

The 2002 Commodity Flow Survey is a component of the Census Bureau's 2002 Economic Census. It will produce key information about the transportation of freight in the United States. This survey provides a crucial summary of transportation statistics not available elsewhere, including value of shipments, weight of shipments, commodities shipped, mode(s) of transportation used, origin and destination of shipments, ton-miles, and average miles per shipment.

Some instructions are included on the questionnaire. However, due to space limitation, most of the instructions and definitions are included either in separate reference materials or on our website. These include this instruction guide and a listing of commodity codes to be used for classifying individual shipments in this survey.

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. You can call us at **1–800–772–7851.**

Frequently Asked Questions About the Commodity Flow Survey (CFS)

Why are you conducting the CFS?

The CFS provides a crucial set of transportation statistics not available elsewhere, including value of shipments, commodities shipped, all modes of transportation used, origin and destination of shipments, ton-miles, and average miles per shipment.

The results of the CFS are used by transportation policy makers to analyze future transportation needs.

Who reports in the CFS?

The CFS covers a sample of mining, manufacturing, wholesale, and selected retail locations.

Why is my participation important?

Your establishment was selected as part of a sample designed to represent a wide range of industries and geographic regions.

Your report helps ensure quality results.

Is this survey mandatory?

Yes. The CFS is mandatory under the authority of Title 13, United States Code (USC) and there are penalties for your failure to report.

Will my data be kept confidential?

Yes. The same law that requires your participation, Title 13, USC, also guarantees your data will be kept strictly confidential.

The reports you provide to the Census Bureau cannot be used for purposes of taxation, regulation, or investigation.

Your report is used only to develop summary data that do not reveal the activities of individual firms or establishments.

How often must I report?

You will be sent four questionnaires in all: one during each calendar quarter of 2002.

The CFS will not be conducted again until 2007.

Part II — Instructions for Completing Your Questionnaire

Items A –C: Description of Information Requested

Please enter the information requested on your establishment's name, operational status, and physical location.

Item D: Total Number of Shipments

Enter in the space provided your total number of outbound shipments **for the one week reporting period** printed on the front of the questionnaire.

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

What we mean by a "shipment":

For the purposes of this survey, a shipment is a single movement of goods, commodities, products, etc. from your location to a customer or to another location of your company.

"Commodities" refer to items that your location produces, sells, or distributes, *not* to items that are considered by-products of your location's operation.

What we don't mean by a "shipment":

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

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

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 stop as one shipment.**

Item E: Sampling Instructions

If you reported in item D that you had 40 or fewer shipments for the week, complete Item F (Shipment Characteristics) for **ALL** of your shipments covered by the one-week reporting period.

If you reported in item D that you had more than 40 shipments for the week, follow the instructions in item E in order to select a sample of shipments on which to report in item F.

By asking you to select a sample of your shipments from this location for the one-week reporting period, we avoid asking you for information on all your shipments, while still obtaining statistically accurate information.

Reminder: The files you are sampling from should reflect the full range of your location's shipping activities in terms of modes of transportation used, commodities 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** or call us at **1–800–772–7851**.

Part II — 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.
- **Shipment Weight, Column (e) –** Enter the weight of the total shipment in whole pounds. If weight is not readily available from your records, please estimate.
- **Commodity Code, Column (f) –** Please use the list of Standard Classification of Transported Goods (SCTG) Codes to select the proper code. For shipments with more than one commodity, enter only the code for the commodity with the greatest weight.
- **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)	Shipment ID Number (b)	Shipment date (c) Month	Shipment date (c) Day	Shipment value (excluding shipping costs) in whole dollars (d)	Shipment weight **in pounds** (e)	Commodity code from SCTG list (f)	Commodity description (g)
0	123-5	4	26	4,235	140	3 5 1 2 0	Electrical transformers
00	402H	4	26	12,530	62,650	1 7 1 0 0	Gasoline
1							
2							
3							
4							

Mode of transport codes for columns (j) and (m) ▶ **1** — Parcel delivery, courier, or U.S. Postal Service **2** — Private truck **3** — For-hire truck **4** — Railroad

Continued →

Part II — 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 or North American number.

U.S. Destination: City, State, and ZIP Code, 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 abbreviation shown in part IV.

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, 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 2, 3, 4, and 5 of the questionnaire. Enter in the sequence used, all that apply. See part III 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 port, airport, or border crossing of exit.

If a hazardous material, enter the "UN" or "NA" number (h)	U.S. destination ***(Complete for all shipments.)*** (i)			Mode(s) of transport to U.S. destination *Enter all that apply using codes shown below.* (j)
	City	State	ZIP Code	
	Los Angeles	CA	90040	2, 4
1203	New York	NY	10454	3

Part II — Instructions for Completing Your Questionnaire – Continued

Item F: Shipment Characteristics –Continued

- **Export Shipment, Column (k) –** 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 (l) —** 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 (m) –** 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 2, 3, 4, and 5 of the questionnaire.

Export? *(Y/N)* (k)	Foreign destination (for export shipments only) **Note:** In column (i) enter the U.S. port, airport, or border crossing of exit. (l)		Export mode (m)	Line No. (n)
	City	Country		
N				0
Y	London	England	6	00
				1
				2
				3
				4
				5

Item G: Monthly Value of Shipments

Please enter the information requested.

Item H: Certification

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

Parcel delivery/Courier/U.S. Postal Service – Delivery services that carry letters, parcels, packages, and other small shipments that typically weigh less than 100 pounds. Includes bus parcel delivery service.

Private truck – Trucks operated by a temporary or permanent employee of this establishment or the buyer/receiver of the shipment.

For-hire truck – Trucks that carry freight for a fee collected from the shipper, recipient of the shipment, or an arranger of the transportation.

Railroad – Any common carrier or private railroad.

Shallow draft vessel – Barges, ships, or ferries operating primarily 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 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 – Commercial or private aircraft, and all air service for shipments that typically weigh more than 100 pounds. Includes air freight and air express.

Other mode – Any mode not listed above.

Unknown – The shipment was not carried by a parcel delivery/courier/U.S. Postal service, and you cannot determine what mode of transportation is used.

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

Part IV — State 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 – We estimate that it will take an average of 2 hours to complete this form. This includes time to read instructions, assemble and review information, and record answers on the form. If you have any comments regarding this estimate or any other aspect of this survey, send them to the Associate Director for Administration, Attn: Paperwork Reduction Project 0607-0189, Room 3104, Federal Building 3, U.S. Census Bureau, Washington, DC 20233-0001. 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.