2012 Commodity Flow Survey (CFS)

Public Use Microdata (PUM) File

Data Users Guide

*Technical Documentation*

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1. **Introduction**

This document describes the Public Use Microdata (PUM) File created for the 2012 Commodity Flow Survey (CFS). This user guide provides a brief description of the CFS and the differences between the CFS data used to create the published estimates and the records available in the PUM file. This document also explains how to create estimates and measures of sampling variability from the PUM file data. For a complete description of the CFS and access to the published tables, visit the CFS website at: [www.census.gov/econ/cfs/](http://www.census.gov/econ/cfs/). This is an experimental data product and comments from users regarding the content and usefulness of this product are appreciated. Contact the CFS staff by e-mail (ERD.CFS@census.gov) or phone (301-763-2108) with your comments.

1. **CFS Background**

The Commodity Flow Survey (CFS) is a joint effort by the Bureau of Transportation Statistics (BTS) and the U.S. Census Bureau, U.S. Department of Commerce. The survey is the primary source of national and state-level data on domestic freight shipments by establishments in mining, manufacturing, wholesale, auxiliaries, and selected retail and services trade industries located in the 50 states and the District of Columbia. The survey produces estimates on the type, origin and destination, value, weight, modes of transportation, distance shipped, and ton-miles of commodities shipped. The CFS is conducted every five years as part of the Economic Census. It provides a modal picture of national freight flows, and represents the only publicly available source of commodity flow data for the highway mode. The CFS was conducted in 1993, 1997, 2002, 2007 and most recently in 2012.

For special tabulations of the CFS data that cannot be computed using this PUM file, contact the CFS staff by e-mail (ERD.CFS@census.gov) or phone (301-763-2108) to discuss cost estimates and exact specifications for the type and format of the data requested.

**3. PUM File Contents**

The PUM file includes 20 variables for all usable shipment records collected by the CFS – a total of 4,547,661 shipments from approximately 60,000 responding establishments. The information included on each shipment record is:

* Shipment Origin
* State
* Metropolitan Area
* Shipment Destination (in US)
  + State
  + Metropolitan Area
* NAICS industry classification of the shipper
* Quarter in 2012 in which the shipment was made
* Type of commodity
* Mode of transportation
* The value of the shipment (dollars)
* The weight of the shipment (pounds)
* The great circle distance between the shipment origin and US destination (in miles)
* The routed distance between the shipment origin and US destination (in miles)[[1]](#footnote-1)
* Whether or not the shipment required temperature control during transportation
* Whether or not the shipment was an export
* If an export, the final export destination country
* Hazardous material code
* Shipment tabulation weighting factor – used to expand PUM file (numeric) shipment data to represent the total population of in-scope U.S. shipments in 2012. This shipment tabulation weighting factor is the product of seven different component weights and disclosure avoidance noise factors. The 2012 CFS Survey Methodology at [www.census.gov/econ/cfs/2012\_methodology.html](http://www.census.gov/econ/cfs/2012_methodology.html) describes how the component weights were calculated. For this PUM file, further adjustments were made to the weighting factor and are described in section 4 below.

*Note: The shipment tabulating weighting factor (WGT\_FACTOR) assigned to a shipment is also an estimate of the number of shipments of the type represented by that PUM file shipment record* [[2]](#footnote-2)*. Summing the tabulation weighting factors of all PUM file shipments going from, say, Ohio to Texas will produce an estimate of the U.S. total number of shipments travelling that route*. *However, the survey respondent determines what constitutes a shipment - there are no weight, value, volume, or other limits on the size of a shipment.  The only requirement is that it must have a single destination and require one trip. Single shipments may have multiple pieces or go by multiple vehicles, such as unit trains or truck convoys, but only one destination. See the 2012 CFS instruction guide at www.census.gov/econ/cfs/get\_forms.html for more information on the guidance given to CFS respondents.*

The complete layout and description of the variables of the PUM file is provided in Appendix A.

1. **Differences Between Published CFS Estimates and PUM File Tabulations**

To protect the confidentiality of CFS respondents, the CFS uses noise-infusion when producing estimates of shipment value and shipment weight. Details relating to this disclosure avoidance technique may be found on the CFS website at www.census.gov/econ/cfs/2012\_methodology.html along with information on the survey coverage, sampling, mileage calculation, and estimation methodologies.

For this PUM file, additional measures were taken to protect the confidentiality of the data of the CFS respondents. While implementing these measures, certain desirable properties in the original data were maintained to the extent possible. These were:

* Estimates produced from the PUM file would be close to the published ones.
* The value to weight ratio of individual shipments was maintained.
* When the level of detail provided had to be reduced, mode and commodity detail were reduced before geographic detail.

The additional measures to protect confidentiality were:

* Additional noise was applied to the shipment value and weight.
* Extremely large shipment values and weights were top-coded.
* Extremely large shipment weighting factors were truncated to 975,000.

*Note: In the three cases above, adjustments were also made to other variables so that the product of shipment value (or shipment weight) and the weighting factor for each shipment after these changes is approximately equal to the same product before the changes.*

* Shipment value, weight and distance quantities were rounded to the nearest integer. Weighting factors were rounded to the nearest tenth.
* For approximately 14,000 shipments, the detail provided for the origin, commodity, and/or mode of transportation was reduced or collapsed. For example, a shipment origin might have been changed from the Chicago, IL CFS Area to just Illinois.

Tables of U.S.-level estimates by origin state, commodity, and mode comparing published CFS data to tabulations created using the PUM file are shown in Appendix B.

Estimates produced using the 2012 CFS PUM file have the same issues with comparability to prior surveys as the published 2012 estimates. Data users should be cautious when comparing any 2012 estimates with 2007 or earlier CFS estimates. See the Comparability of Estimates section of the 2012 CFS Survey Methodology at [www.census.gov/econ/cfs/2012\_methodology.html](http://www.census.gov/econ/cfs/2012_methodology.html) for a discussion of these comparability issues.

**5. How to Estimate Totals and Average Miles Per Shipment with the PUM File**

1. **Total value, total tonnage, and total ton-miles**

**Important note**: To make estimates of total value, one must multiply the value of the shipment (SHIPMT\_VALUE) by the shipment tabulation weighting factor (WGT\_FACTOR), before summing. This same rule applies to making estimates of total tonnage and total ton-miles. The formulas showing this method are given below.

An estimate of the total value (in dollars) for a given domain is given by

where is the shipment tabulation weighting factor, is the value of the shipment, indexes the shipments in the given domain, and is the number of shipments in the given domain.

For example, if we want to estimate the total value of shipments originating in Maryland, then we compute the quantity above using shipments where ORIG\_STATE = 24. **Note that by domain, we do not only mean a geographical domain. For example, if we want to estimate the total value of shipments of basic chemicals, then we compute the quantity above using shipments where SCTG = 20.**

Estimates of the total tonnage and total ton-miles can be made analogously. An estimate of the total tonnage for a given domain is given by

where is the shipment tabulation weighting factor, is the weight of the shipment, indexes the shipments in the given domain, and is the number of shipments in the given domain. (We divide by 2000 since is in pounds.)

An estimate of the total ton-miles for a given domain is given by

where is the shipment tabulation weighting factor, is the weight of the shipment, is the routed distance between the shipment origin and destination, indexes the shipments in the given domain, and is the number of shipments in the given domain. (We divide by 2000 since is in pounds.)

1. **Average miles per shipment**

**Important note**: Similar to the important note above for estimates of total value, total tonnage, and total ton-miles, one must use the shipment tabulation weighting factor (WGT\_FACTOR) in making estimates of average miles per shipment, as given by the formula below.

An estimate of the average miles per shipment for a given domain is given by

where is the shipment tabulation weighting factor, is the routed distance between the shipment origin and destination, indexes the shipments in the given domain, and is the number of shipments in the given domain.

*Note: The tables in Appendix B (in the columns under “PUM File Tabulations – Weighted”) contain estimates for Modes, Commodities, and Origin States produced using these formulas.*

**6. How to Estimate Coefficients of Variation (CVs) with the PUM File**

**a. Motivation and basic idea of the generalized variance function (GVF) method**

We developed a generalized variance function (GVF) method to allow users to compute coefficients of variation (CVs) of estimates made with the PUM file. This is necessary because, due to confidentiality concerns, we are not able to place the information on the PUM file that would allow users to compute CVs by the random groups method. (The random groups method is used to compute the CVs of the estimates that are released to the public.)

The basic idea of the GVF method is to find a function (which is called the GVF) that expresses the CVs in terms of quantities that can be computed with the PUM file and unknown parameters. This function is then incorporated into a linear regression model, in which the CV computed by the random groups method is the outcome variable, the quantities that can be computed with the PUM file are the covariates, and the unknown parameters are regression coefficients. The regression coefficients are estimated by the Census Bureau, and supplied to the users. Then, with the quantities that can be computed with the PUM file, and with the estimates of the regression coefficients, users can compute CVs.

**b. Computing CVs for total value, total tonnage, and total ton-miles**

For estimates of total value, total tonnage, and total ton-miles, the GVF is

where ln is the natural log (i.e., log to the base e), is the CV (expressed as a percent) of the estimate of the total, is the number of shipments that were used to compute the estimate, and are regression coefficients found in table 1 below.

Therefore, in order to compute the CV of an estimate of a total, compute:

.

***Note: Choose a, b, and c from Table 1 below, depending on which type of total is being estimated*.**

1. **Example of computing the CV of an estimate of total value**

Suppose we want to compute the CV of the estimate of the total value of shipments originating in Maryland. The number of shipments originating in Maryland is 71,425, and we need to choose from the first row of Table 1 below. So the CV is:

1. **Computing CVs for average miles per shipment (AMPS)**

For estimates of average miles per shipment, the GVF is

where ln is the natural log (i.e., log to the base e), is the CV (expressed as a percent) of the estimate of average miles per shipment, is the number of shipments that were used to compute the estimate, is the estimate of average miles per shipment, and are regression coefficients.

Therefore, in order to compute the CV of the estimate of average miles per shipment, compute:

.

***Note: Choose a, b, and c from the last row of Table 1 below.***

***Table 1: Regression Coefficients of the GVFs***

|  |  |  |  |
| --- | --- | --- | --- |
| Estimate |  |  |  |
| Total value | 3.844 | 0.039 | -0.020 |
| Total tonnage | 3.761 | 0.076 | -0.019 |
| Total ton-miles | 4.092 | -0.015 | -0.012 |
| Average miles per shipment | 5.168 | -0.084 | -0.376 |

Note: The tables in Appendix C (in the columns under “PUM File GVF CVs”) contain CVs produced using these formulas for the estimates in the tables in Appendix B.

Appendix A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2012 CFS PUM File Data Dictionary** | |  |  |  |
| **Field** | **Description** | **Valid Values** | **Type** | **Length** |
| **SHIPMT\_ID** | Shipment identifier | 0000001 – 4547661 | CHAR | 7 |
| **ORIG\_STATE** | FIPS state code of shipment origin | 01 - 56 | CHAR | 2 |
| **ORIG\_MA** | Metro area of shipment origin | *See Note (1)* | CHAR | 5 |
| **ORIG\_CFS\_AREA** | CFS Area of shipment origin | Concatenation of ORIG\_STATE and ORIG\_MA (ex: 24-12580) | CHAR | 8 |
| **DEST\_STATE** | FIPS state code of shipment destination | 01-56 | CHAR | 2 |
| **DEST\_MA** | Metro area of shipment destination | *See Note (1)* | CHAR | 5 |
| **DEST\_CFS\_AREA** | CFS Area of shipment destination | Concatenation of DEST\_STATE and DEST\_MA (ex: 01-142) | CHAR | 8 |
| **NAICS** | Industry classification of shipper | *See Note (2)* | CHAR | 6 |
| **QUARTER** | Quarter of 2012 in which the shipment occurred | 1, 2, 3, 4 | CHAR | 1 |
| **SCTG** | 2-digit SCTG commodity code of the shipment | *See Note (3)* | CHAR | 5 |
| **MODE** | Mode of transportation of the shipment | *See Note (4)* | CHAR | 3 |
| **SHIPMT\_VALUE** | Value of the shipment in dollars | 0 - 999,999,999 | NUM |  |
| **SHIPMT\_WGHT** | Weight of the shipment in pounds | 0 - 999,999,999 | NUM |  |
| **SHIPMT\_DIST\_GC** | Great circle distance between ship-ment origin and destination (in miles) | 0 - 99,999 | NUM |  |
| **SHIPMT\_DIST\_ROUTED** | Routed distance between shipment origin and destination (in miles) | 0 - 99,999 | NUM |  |
| **TEMP\_CNTL\_YN** | Temperature controlled shipment - Yes or No | Y, N | CHAR | 1 |
| **EXPORT\_YN** | Export shipment - Yes or No | Y, N | CHAR | 1 |
| **EXPORT\_CNTRY** | Export final destination | C = Canada | CHAR | 1 |
|  |  | M = Mexico |  |  |
|  |  | O = Other country  N = Not an export |  |  |
| **HAZMAT** | Hazardous material (HAZMAT) code | P = Class 3.0 Hazmat (flammable liquids) | CHAR | 1 |
|  |  | H = Other Hazmat |  |  |
|  |  | N = Not Hazmat |  |  |
| **WGT\_FACTOR** | Shipment tabulation weighting factor. (*This factor is also an estimate of the total number of shipments represent-ted by the PUM file shipment.*) | 0 – 975,000.0 | NUM |  |

Notes:

(1) See Appendix A-1 for the descriptions of the 132 valid CFS areas

(2) See Appendix A-2 for the descriptions of the 45 valid NAICS codes

(3) See Appendix A-3 for the descriptions of the 43 valid SCTG commodity codes

(4) See Appendix A-4 for the descriptions of the 20 valid Mode codes

Appendix A-1

**CFS Areas**

| **ORIG\_MA**  **DEST\_MA** | **ORIG\_STATE**  **DEST\_STATE** | **ORIG\_CFS\_AREA**  **DEST\_CFS\_AREA** | ***MA***  ***Type*** | ***Description*** |
| --- | --- | --- | --- | --- |
| 104 | 36 | 36-104 | C | Albany-Schenectady, NY CFS Area |
| 122 | 13 | 13-122 | C | Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area |
| 142 | 01 | 01-142 | C | Birmingham-Hoover-Talladega, AL CFS Area |
| 148 | 25 | 25-148 | C | Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (MA Part) |
|  | 33 | 33-148 | C | Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (NH Part) |
|  | 44 | 44-148 | C | Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (RI Part) |
| 160 | 36 | 36-160 | C | Buffalo-Cheektowaga, NY CFS Area |
| 172 | 37 | 37-172 | C | Charlotte-Concord, NC-SC CFS Area (NC Part) |
| 176 | 17 | 17-176 | C | Chicago-Naperville, IL-IN-WI CFS Area (IL Part) |
|  | 18 | 18-176 | C | Chicago-Naperville, IL-IN-WI CFS Area (IN Part) |
| 178 | 21 | 21-178 | C | Cincinnati-Wilmington-Maysville, OH-KY-IN CFS Area (KY Part) |
|  | 39 | 39-178 | C | Cincinnati-Wilmington-Maysville, OH-KY-IN CFS Area (OH Part) |
| 184 | 39 | 39-184 | C | Cleveland-Akron-Canton, OH CFS Area |
| 198 | 39 | 39-198 | C | Columbus-Marion-Zanesville, OH CFS Area |
| 204 | 48 | 48-204 | C | Corpus Christi-Kingsville-Alice, TX CFS Area |
| 206 | 48 | 48-206 | C | Dallas-Fort Worth, TX-OK CFS Area (TX Part) |
| 212 | 39 | 39-212 | C | Dayton-Springfield-Sidney, OH CFS Area |
| 216 | 08 | 08-216 | C | Denver-Aurora, CO CFS Area |
| 220 | 26 | 26-220 | C | Detroit-Warren-Ann Arbor, MI CFS Area |
| 238 | 48 | 48-238 | C | El Paso-Las Cruces, TX-NM CFS Area (TX Part) |
| 258 | 18 | 18-258 | C | Fort Wayne-Huntington-Auburn, IN CFS Area |
| 260 | 06 | 06-260 | C | Fresno-Madera, CA CFS Area |
| 266 | 26 | 26-266 | C | Grand Rapids-Wyoming-Muskegon, MI CFS Area |
| 268 | 37 | 37-268 | C | Greensboro--Winston-Salem--High Point, NC CFS Area |
| 273 | 45 | 45-273 | C | Greenville-Spartanburg-Anderson, SC CFS Area |
| 288 | 48 | 48-288 | C | Houston-The Woodlands, TX CFS Area |
| 294 | 18 | 18-294 | C | Indianapolis-Carmel-Muncie, IN CFS Area |
| 300 | 12 | 12-300 | C | Jacksonville-St. Marys-Palatka, FL-GA CFS Area (FL Part) |
| 312 | 20 | 20-312 | C | Kansas City-Overland Park-Kansas City, MO-KS CFS Area (KS Part) |
|  | 29 | 29-312 | C | Kansas City-Overland Park-Kansas City, MO-KS CFS Area (MO Part) |
| 314 | 47 | 47-314 | C | Knoxville-Morristown-Sevierville, TN CFS Area |
| 332 | 32 | 32-332 | C | Las Vegas-Henderson, NV-AZ CFS Area (NV Part) |
| 348 | 06 | 06-348 | C | Los Angeles-Long Beach, CA CFS Area |
| 350 | 21 | 21-350 | C | Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CFS Area (KY Part) |
| 368 | 47 | 47-368 | C | Memphis, TN-MS-AR CFS Area (TN Part) |
| 370 | 12 | 12-370 | C | Miami-Fort Lauderdale-Port St. Lucie, FL CFS Area |
| 376 | 55 | 55-376 | C | Milwaukee-Racine-Waukesha, WI CFS Area |
| 378 | 27 | 27-378 | C | Minneapolis-St. Paul, MN-WI CFS Area (MN Part) |
| 380 | 01 | 01-380 | C | Mobile-Daphne-Fairhope, AL CFS Area |
| 400 | 47 | 47-400 | C | Nashville-Davidson--Murfreesboro, TN CFS Area |
| 406 | 22 | 22-406 | C | New Orleans-Metairie-Hammond, LA-MS CFS Area (LA Part) |
| 408 | 09 | 09-408 | C | New York-Newark, NY-NJ-CT-PA CFS Area (CT Part) |
|  | 34 | 34-408 | C | New York-Newark, NY-NJ-CT-PA CFS Area (NJ Part) |
|  | 36 | 36-408 | C | New York-Newark, NY-NJ-CT-PA CFS Area (NY Part) |
|  | 42 | 42-408 | C | New York-Newark, NY-NJ-CT-PA CFS Area (PA Part) |
| 416 | 40 | 40-416 | C | Oklahoma City-Shawnee, OK CFS Area |
| 420 | 31 | 31-420 | C | Omaha-Council Bluffs-Fremont, NE-IA CFS Area (NE Part) |
| 422 | 12 | 12-422 | C | Orlando-Deltona-Daytona Beach, FL CFS Area |
| 428 | 10 | 10-428 | C | Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (DE Part) |
|  | 34 | 34-428 | C | Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (NJ Part) |
|  | 42 | 42-428 | C | Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (PA Part) |
| 430 | 42 | 42-430 | C | Pittsburgh-New Castle-Weirton, PA-OH-WV CFS Area (PA Part) |
| 440 | 41 | 41-440 | C | Portland-Vancouver-Salem, OR-WA CFS Area (OR Part) |
|  | 53 | 53-440 | C | Portland-Vancouver-Salem, OR-WA CFS Area (WA Part) |
| 450 | 37 | 37-450 | C | Raleigh-Durham-Chapel Hill, NC CFS Area |
| 464 | 36 | 36-464 | C | Rochester-Batavia-Seneca Falls, NY CFS Area |
| 472 | 06 | 06-472 | C | Sacramento-Roseville, CA CFS Area |
| 476 | 17 | 17-476 | C | St. Louis-St. Charles-Farmington, MO-IL CFS Area (IL Part) |
|  | 29 | 29-476 | C | St. Louis-St. Charles-Farmington, MO-IL CFS Area (MO Part) |
| 482 | 49 | 49-482 | C | Salt Lake City-Provo-Orem, UT CFS Area |
| 488 | 06 | 06-488 | C | San Jose-San Francisco-Oakland, CA CFS Area |
| 496 | 13 | 13-496 | C | Savannah-Hinesville-Statesboro, GA CFS Area |
| 500 | 53 | 53-500 | C | Seattle-Tacoma, WA CFS Area |
| 536 | 04 | 04-536 | C | Tucson-Nogales, AZ CFS Area |
| 538 | 40 | 40-538 | C | Tulsa-Muskogee-Bartlesville, OK CFS Area |
| 545 | 51 | 51-545 | C | Virginia Beach-Norfolk, VA-NC CFS Area (VA Part) |
| 556 | 20 | 20-556 | C | Wichita-Arkansas City-Winfield, KS CFS Area |
| 12420 | 48 | 48-12420 | M | Austin-Round Rock, TX CFS Area |
| 12580 | 24 | 24-12580 | M | Baltimore-Columbia-Towson, MD CFS Area |
| 12940 | 22 | 22-12940 | M | Baton Rouge, LA CFS Area |
| 13140 | 48 | 48-13140 | M | Beaumont-Port Arthur, TX CFS Area |
| 16700 | 45 | 45-16700 | M | Charleston-North Charleston-Summerville, SC CFS Area |
| 25540 | 09 | 09-25540 | M | Hartford-West Hartford-East Hartford, CT CFS Area |
| 29340 | 22 | 22-29340 | M | Lake Charles, LA CFS Area |
| 29700 | 48 | 48-29700 | M | Laredo, TX CFS Area |
| 38060 | 04 | 04-38060 | M | Phoenix-Mesa-Glendale, AZ CFS Area |
| 40060 | 51 | 51-40060 | M | Richmond, VA CFS Area |
| 41700 | 48 | 48-41700 | M | San Antonio-New Braunfels, TX CFS Area |
| 41740 | 06 | 06-41740 | M | San Diego-Carlsbad-San Marcos, CA CFS Area |
| 45300 | 12 | 12-45300 | M | Tampa-St. Petersburg-Clearwater, FL CFS Area |
| 46520 | 15 | 15-46520 | M | Urban Honolulu, HI CFS Area |
| 47900 | 11 | 11-47900 | M | Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (DC Part) |
|  | 24 | 24-47900 | M | Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (MD Part) |
|  | 51 | 51-47900 | M | Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (VA Part) |
| 99999 | 01 | 01-99999 | R | Remainder of Alabama CFS Area |
| 99999 | 02 | 02-99999 | R | Remainder of Alaska CFS Area |
| 99999 | 04 | 04-99999 | R | Remainder of Arizona CFS Area |
| 99999 | 05 | 05-99999 | R | Remainder of Arkansas CFS Area |
| 99999 | 06 | 06-99999 | R | Remainder of California CFS Area |
| 99999 | 08 | 08-99999 | R | Remainder of Colorado CFS Area |
| 99999 | 09 | 09-99999 | R | Remainder of Connecticut CFS Area |
| 99999 | 10 | 10-99999 | R | Remainder of Delaware CFS Area |
| 99999 | 12 | 12-99999 | R | Remainder of Florida CFS Area |
| 99999 | 13 | 13-99999 | R | Remainder of Georgia CFS Area |
| 99999 | 15 | 15-99999 | R | Remainder of Hawaii CFS Area |
| 99999 | 16 | 16-99999 | R | Remainder of Idaho CFS Area |
| 99999 | 17 | 17-99999 | R | Remainder of Illinois CFS Area |
| 99999 | 18 | 18-99999 | R | Remainder of Indiana CFS Area |
| 99999 | 19 | 19-99999 | R | Remainder of Iowa CFS Area |
| 99999 | 20 | 20-99999 | R | Remainder of Kansas CFS Area |
| 99999 | 21 | 21-99999 | R | Remainder of Kentucky CFS Area |
| 99999 | 22 | 22-99999 | R | Remainder of Louisiana CFS Area |
| 99999 | 23 | 23-99999 | R | Remainder of Maine CFS Area |
| 99999 | 24 | 24-99999 | R | Remainder of Maryland CFS Area |
| 99999 | 25 | 25-99999 | R | Remainder of Massachusetts CFS Area |
| 99999 | 26 | 26-99999 | R | Remainder of Michigan CFS Area |
| 99999 | 27 | 27-99999 | R | Remainder of Minnesota CFS Area |
| 99999 | 28 | 28-99999 | R | Remainder of Mississippi CFS Area |
| 99999 | 29 | 29-99999 | R | Remainder of Missouri CFS Area |
| 99999 | 30 | 30-99999 | R | Remainder of Montana CFS Area |
| 99999 | 31 | 31-99999 | R | Remainder of Nebraska CFS Area |
| 99999 | 32 | 32-99999 | R | Remainder of Nevada CFS Area |
| 99999 | 33 | 33-99999 | R | Remainder of New Hampshire CFS Area |
| 99999 | 35 | 35-99999 | R | Remainder of New Mexico CFS Area |
| 99999 | 36 | 36-99999 | R | Remainder of New York CFS Area |
| 99999 | 37 | 37-99999 | R | Remainder of North Carolina CFS Area |
| 99999 | 38 | 38-99999 | R | Remainder of North Dakota CFS Area |
| 99999 | 39 | 39-99999 | R | Remainder of Ohio CFS Area |
| 99999 | 40 | 40-99999 | R | Remainder of Oklahoma CFS Area |
| 99999 | 41 | 41-99999 | R | Remainder of Oregon CFS Area |
| 99999 | 42 | 42-99999 | R | Remainder of Pennsylvania CFS Area |
| 99999 | 45 | 45-99999 | R | Remainder of South Carolina CFS Area |
| 99999 | 46 | 46-99999 | R | Remainder of South Dakota CFS Area |
| 99999 | 47 | 47-99999 | R | Remainder of Tennessee CFS Area |
| 99999 | 48 | 48-99999 | R | Remainder of Texas CFS Area |
| 99999 | 49 | 49-99999 | R | Remainder of Utah CFS Area |
| 99999 | 50 | 50-99999 | R | Remainder of Vermont CFS Area |
| 99999 | 51 | 51-99999 | R | Remainder of Virginia CFS Area |
| 99999 | 53 | 53-99999 | R | Remainder of Washington CFS Area |
| 99999 | 54 | 54-99999 | R | Remainder of West Virginia CFS Area |
| 99999 | 55 | 55-99999 | R | Remainder of Wisconsin CFS Area |
| 99999 | 56 | 56-99999 | R | Remainder of Wyoming CFS Area |
| ***The following codes only apply to shipment origin variables*** | | | | |
| 00000 | NN | NN-00000 | R | Origin metro area suppressed (where NN is a valid ORIG\_STATE code) |
| 00000 | 00 | 00-00000 | R | Origin state and metro area suppressed |

MA Type: C = Combined statistical area (CSA) type CFS Area, M = Metropolitan statistical area (MSA) type CFS Area,

R = Remainder of state type CFS Area

NOTE: For some shipments, it was necessary to suppress the CFS area of the shipment origin while still providing the state. For example, if a shipment originating in the Chicago CFS Area (IL part) had to be (partially) suppressed, the ORIG\_MA would be set to 00000 and the origin CFS Area would be 17-00000 (somewhere in IL).

Appendix A-2

**NAICS (North American Industry Classification System) Codes**

|  |  |
| --- | --- |
| **NAICS** | **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 |
| 4231 | Motor vehicle and parts merchant wholesalers |
| 4232 | Furniture and home furnishing merchant wholesalers |
| 4233 | Lumber and other construction materials merchant wholesalers |
| 4234 | Commercial equip. merchant wholesalers |
| 4235 | Metal and mineral (except petroleum) merchant wholesalers |
| 4236 | Electrical and electronic goods merchant wholesalers |
| 4237 | Hardware and plumbing merchant wholesalers |
| 4238 | Machinery, equipment, and supplies merchant wholesalers |
| 4239 | Miscellaneous durable goods merchant wholesalers |
| 4241 | Paper and paper product merchant wholesalers |
| 4242 | Drugs and druggists' sundries merchant wholesalers |
| 4243 | Apparel, piece goods, and notions merchant wholesalers |
| 4244 | Grocery and related product merchant wholesalers |
| 4245 | Farm product raw material merchant wholesalers |
| 4246 | Chemical and allied products merchant wholesalers |
| 4247 | Petroleum and petroleum products merchant wholesalers |
| 4248 | Beer, wine, and distilled alcoholic beverage merchant wholesalers |
| 4249 | Miscellaneous nondurable goods merchant wholesalers |
| 4541 | Electronic shopping and mail-order houses |
| 45431 | Direct selling establishments |
| 4931 | Warehousing and storage (includes 484) |
| 5111 | Newspaper, periodical, book, and directory publishers |
| 551114 | Corporate, subsidiary, and regional managing offices |

Appendix A-3

**SCTG (Standard Classification of Transported Goods) Codes**

|  |  |  |
| --- | --- | --- |
| **SCTG** | **Description** | **SCTG Group** |
| 01 | Animals and Fish (live) | 01-05 |
| 02 | Cereal Grains (includes seed) |  |
| 03 | Agricultural Products (excludes Animal Feed, Cereal Grains, and Forage Products) |  |
| 04 | Animal Feed, Eggs, Honey, and Other Products of Animal Origin |  |
| 05 | Meat, Poultry, Fish, Seafood, and Their Preparations |  |
| 06 | Milled Grain Products and Preparations, and Bakery Products | 06-09 |
| 07 | Other Prepared Foodstuffs, and Fats and Oils |  |
| 08 | Alcoholic Beverages and Denatured Alcohol |  |
| 09 | Tobacco Products |  |
| 10 | Monumental or Building Stone | 10-14 |
| 11 | Natural Sands |  |
| 12 | Gravel and Crushed Stone (excludes Dolomite and Slate) |  |
| 13 | Other Non-Metallic Minerals not elsewhere classified |  |
| 14 | Metallic Ores and Concentrates |  |
| 15 | Coal | 15-19 |
| 16 | Crude Petroleum |  |
| 17 | Gasoline, Aviation Turbine Fuel, and Ethanol (includes Kerosene, and Fuel Alcohols) |  |
| 18 | Fuel Oils (includes Diesel, Bunker C, and Biodiesel) |  |
| 19 | Other Coal and Petroleum Products, not elsewhere classified |  |
| 20 | Basic Chemicals | 20-24 |
| 21 | Pharmaceutical Products |  |
| 22 | Fertilizers |  |
| 23 | Other Chemical Products and Preparations |  |
| 24 | Plastics and Rubber |  |
| 25 | Logs and Other Wood in the Rough | 25-30 |
| 26 | Wood Products |  |
| 27 | Pulp, Newsprint, Paper, and Paperboard |  |
| 28 | Paper or Paperboard Articles |  |
| 29 | Printed Products |  |
| 30 | Textiles, Leather, and Articles of Textiles or Leather |  |
| 31 | Non-Metallic Mineral Products | 31-34 |
| 32 | Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes |  |
| 33 | Articles of Base Metal |  |
| 34 | Machinery |  |
| 35 | Electronic and Other Electrical Equipment and Components, and Office Equipment | 35-38 |
| 36 | Motorized and Other Vehicles (includes parts) |  |
| 37 | Transportation Equipment, not elsewhere classified |  |
| 38 | Precision Instruments and Apparatus |  |
| 39 | Furniture, Mattresses and Mattress Supports, Lamps, Lighting Fittings, and Illuminated Signs | 39-99 |
| 40 | Miscellaneous Manufactured Products |  |
| 41 | Waste and Scrap (excludes of agriculture or food, see 041xx) |  |
| 43 | Mixed Freight |  |
| 99 | Missing Code |  |
| 00 | Commodity code suppressed |  |

NOTE: For some shipments the 2-digit SCTG was replaced with the SCTG Group (for example, SCTG = “35-38”) or suppressed completely (SCTG = “00”)

Appendix A-4

**Mode of Transportation Codes**

|  |  |
| --- | --- |
| **Mode Code** | **Mode of transportation Description**  NOTE: The vast majority of shipments in the PUM File are assigned the most detailed mode code listed in the table to the left (in **bold**). However, for some shipments, it was necessary to recode the Mode to a less detailed code. For example, the Mode of a shipment would be recoded from Great Lakes (09) to the less detailed code, Water (07) or even less detailed, Single Mode (02). In very rare circumstances, the Mode of a shipment was suppressed entirely (00).  The table below shows the sequential collapsing pattern used when it was not possible to retain the most detailed Mode code. Mode 20, Non-parcel multiple mode, is not a Mode level included in the published CFS tables. |
| *02* | *Single mode* |
| *03* | *Truck* |
| **04** | **For-hire truck** |
| **05** | **Private truck** |
| **06** | **Rail** |
| *07* | *Water* |
| **08** | **Inland Water** |
| **09** | **Great Lakes** |
| **10** | **Deep Sea** |
| **101** | **Multiple Waterways** |
| **11** | **Air (incl truck & air)** |
| **12**  **19** | **Pipeline**  **Other mode** |
| *13* | *Multiple mode* |
| **14**  *20* | **Parcel, USPS, or courier**  *Non-parcel multiple mode* |
| **15** | **Truck and rail** |
| **16** | **Truck and water** |
| **17** | **Rail and water** |
| **18** | **Other multiple mode** |
| *00* | *Mode suppressed* |



Appendix B

Comparison of Published Estimates and Estimates Produced from the PUM File

for Selected Shipment Characteristics







Appendix C

Comparison of Published CVs and CVs Produced Using the PUM File GVF

for Selected Shipment Characteristics







1. Note that multiple shipments traveling together on the same vehicle (truck, airplane, etc.) will each have an origin-to-destination distance assigned to them even though the carrier travels that distance only once. [↑](#footnote-ref-1)
2. Note: A small number of shipments have weighting factors < 1. [↑](#footnote-ref-2)