Bureau of Transportation Statistics

2012 Commodity Flow Survey
Final Data Release

Annual Meeting
Transportation Research Board
January 14, 2015

Ron Duych
Overview – Commodity Flow Survey

• BTS required to collect statistics on goods movement (49 USC 6303).
• The Commodity Flow Survey is the only comprehensive source of information on National Freight Flow. Provides information on commodities shipped, value, weight, ton-miles, origin/destination by all modes of transportation, either single mode or multi mode. It is the only source for highway freight (hazardous materials) data.
• Conducted through a partnership between:
  Bureau of Transportation Statistics (BTS)
  - Office of the Assistant Secretary for Research and Technology, U.S. Department of Transportation
  - U.S. Census Bureau - U.S. Department of Commerce
• Shipper survey of 102,565 (2012 CFS) establishments in manufacturing, mining, wholesale, and select retail industries.
Establishments were requested to complete a questionnaire on their outbound shipments for one week during each quarter of the 2012 calendar year.

About 60% of the 2012 CFS questionnaires were filed electronically as compared to paper.

Uses of the CFS include: analyzing trends, economic analysis, developing models and analytical tools, forecasting goods movement and infrastructure needs, establishing benchmarks for national accounts, mapping commodity and vehicle flows, used as the foundation for the Freight Analysis Framework.
Changes and Modifications – 2012 CFS

• 2012 CFS Questionnaire
  – Added questions on temperature controlled shipments and rush delivery shipments.
  – Dropped intermodal question and 3PL question.

• 2012 CFS results
  – 4.9 million shipment records collected in the 2012 and the 2007 CFS.

• Edits
  – Developed edit programs to identify incompatible SCTG/NAICS combinations, incompatible SCTG/Mode combinations, unreasonable distances for selected truck shipments, etc.
Changes and Modifications – 2012 CFS (continued)

- Revised **SCTG Manual** – expanded and corrected
  - Mostly codes for fuels (from 3 to 10).
  - SCTG codes added for SCTG 08, 17, and 18 – code moved from SCTG 19.
- Provided for respondents: electronic reporting option, look-up tables, “How to Sample” video, etc.
- **Mileage Calculation**
  - New routing network and modal categories
- Parcel and air shipments aligned with industry standards
- Weighting methodology (ATV – MOS) researched to salvage unused shipments
- Expanded the number of published geographic areas to 132
- Developing a 2012 CFS Public Use Micro-dataset (PUMS)
Improvements to Modal Mileage Calculations of Shipment Distances

The BTS mileage software has been enhanced to:

• Limit shipments by Parcel to a maximum of 150 pounds; shipments above 150 pounds are converted to travel by For-Hire Truck.

• Convert commodity travel by Private Truck to For-Hire Truck if shipment travels 500+ miles, regardless of the commodity.

• Check that an export shipment to an overseas country travels by either Airway or Waterway.

• Provide mileage for a new category under Single Modes of Multiple Waterways if the commodity travels by both River and Ocean, and not by any other mode, from origin to destination.

[Note: Previously classified under Other Multiple Modes.]
Improvements to Modal Mileage Calculations of Shipment Distances (continued)

Mileage Calculation provides an "early warning" detection of a possible problem as coded on the shipment record, thereby requiring further review:

Detect especially heavy commodities that are traveling lengthy distances by Truck:

- SCTG 11: Natural Sands if shipment travels 500+ miles
- SCTG 12: Gravel and Crushed Stone if shipment travels 500+ miles
- SCTG 15: Coal if shipment travels 300+ miles
Detect flammable commodities that are traveling lengthy distances by Truck:
  • SCTG 17: Gasoline and Aviation Turbine Fuel if shipment travels 300+ miles
  • SCTG 18: Fuel Oils if shipment travels 300+ miles
  • SCTG 19: Other Coal and Petroleum Products if shipment travels 500+ miles

Detect commodities that are unrealistically traveling by Pipeline:
  • Any commodity other than gasoline, fuel oils, petroleum products, chemicals, minerals, ores and concentrates
2012 Commodity Flow Survey (CFS) Data
(comparative analysis with 2007 CFS)

- Total ton-miles decreased -11.2%
- Total tonnage decreased -9.9%
- Total value of shipments increased +18.5%
- Truck tonnage decreased -8.2%
- Value of truck shipments increased +21.6%
- Rail tonnage decreased -12.5%
- Value of rail shipments increased +8.4%
- Average miles per shipment increased +1.7%
## 2012 Commodity Flow Survey (CFS) Data By Commodity

<table>
<thead>
<tr>
<th>Highest value</th>
<th>SCTG 43: Mixed Freight – multiple commodities – supplies for stores and restaurants etc.</th>
<th>$1.4 Trillion [9.9% Total Value]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCTG 17: Gasoline, aviation turbine fuel, and ethanol.</td>
<td>$1.2 Trillion [8.3% Total Value]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Greatest Weight</th>
<th>SCTG 12: Gravel and crushed stone</th>
<th>1.5 Billion Tons [13.6% Total Tons]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCTG 17: Gasoline, aviation turbine fuel, and ethanol.</td>
<td>$1.2 Billion Tons [11.0% Total Tons]</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Most Ton-miles</th>
<th>SCTG 15: Coal</th>
<th>663.7 Billion Ton-miles [22.3% Total Ton-miles]</th>
</tr>
</thead>
</table>
# 2012 Commodity Flow Survey (CFS) Data By Industry

| Largest Tonnage and Ton-Miles | Manufacturing 21(3) digit codes: NAICS 31-33 | 4.2 Billion Tons [36.8% of Total Tons]  
$5.7 Trillion [41.0% of Total Value]  
1.3 Trillion Ton-miles [43.1% of Total Ton-miles] |
|-------------------------------|---------------------------------------------|---------------------------------------------------------------------------------|
| Highest value                 | Wholesale 20 (3 and 4) digit codes: NAICS 42 | 3.8 Billion Tons [33.5% of Total Tons]  
$6.1 Trillion [44.2% of Total Value]  
0.7 Trillion Ton-miles [24.4% of Total Ton-miles] |
SCTG 17 Gasoline and SCTG 18 Fuel Oils
CFS 2007 and 2012

<table>
<thead>
<tr>
<th>Total Ton (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
</tr>
<tr>
<td>2012</td>
</tr>
</tbody>
</table>

SCTG 17
- Gasoline
- Ethanol, ethanol blends, and other fuel alcohols/Kerosene

SCTG 18
- Fuel oils
- Blends of fuel oils/Biodiesel

Legend:
- Blue: Gasoline
- Red: Ethanol, ethanol blends, and other fuel alcohols/Kerosene
- Green: Fuel oils
- Yellow: Blends of fuel oils/Biodiesel

- 100% for Gasoline
- 86% for Ethanol, ethanol blends, and other fuel alcohols/Kerosene
- 100% for Fuel oils
- 90% for Blends of fuel oils/Biodiesel
## Microdata: Proposed Variables Available

*release June 2015*

- Origin Metro Area
- Destination Metro Area
- Export country code
- Transportation Mode
- NAICS (3 or 4 digit)
- Commodity Code (2-digit SCTG)
- Shipment Value ($)
- Shipment Weight (lbs)
- Distance Shipped
- Temperature Control (Yes/No)
- Export (Yes/No)
- HAZMAT code (C3=Class 3, H=Other HAZMAT, N=non HAZMAT)
- Weighting factor (rounded)
Contact Information

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For data and additional information about the survey, please visit...

1) The Commodity Flow Survey website at
2) CFS data in American FactFinder at
   http://factfinder2.census.gov