Measurement of All Freight Movement in the United States

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The Challenge

Intermodal Transportation Database (49 USC 6303)
- BTS is required to provide “information on the volumes and patterns of movement of goods, including local, interregional, and international movement, by all modes of transportation, intermodal combinations, and relevant classification”

BTS and Census survey 100,000 shippers every 5 years
- Commodity Flow Survey covers 2/3rds of the tonnage
- How to estimate the missing pieces and provide more timely results?
Freight Analysis Framework (FAF)

- A benchmark database of freight tons and value by 8 modes of transportation by over 40 classes of commodities by 130 origins by 130 destinations for each Economic Census year starting in 1997
- Annual provisional updates of the database
- 30-year forecasts of the database
- Assignment of tonnage moved by truck to individual highway routes
Regions

- Domestic regions are from the Commodity Flow Survey
  - State portions of major metropolitan areas as an origin, destination, or gateway
  - Balance of state as an origin, destination, or gateway
  - International origins and destinations
Major Data Sources

- Commodity Flow Survey (CFS)
- Transborder Freight Data
- U.S. Merchandise Trade Statistics
- T-100 air traffic data
- Waterborne Commerce Statistics
- Census of Agriculture
- Energy Information Administration
- National Transportation Atlas Database
Creating the Benchmark

2012 U.S. Commodity Flow Survey
Data: Domestic Shipper Based, Multi-Modal Commodity Flows (Highway, Rail, Air, and Water)

U.S. Shipper Sampled Multi-Modal Commodity Flows by Value and Weight

CFS In-Scope Flows


Flow Matrix Construction and Missing Flow Value Inference Techniques

CFS Out-Of-Scope Flows

Truck Only Flows associated with: Farm Based, Fisheries, Logging, Construction, Retail, Services, Municipal Solid Waste, and Household & Business Moves

Foreign & Domestic Carrier & Shipper Reported Commodity Flows


National Commodity Origin – Destination Accounts (NCODA) Complete Freight Flow Matrix (reported in annual tons and 2012 dollars)
Products

Freight Analysis Framework Data Tabulation Tool (FAF4)

**Total Flows**
- Domestic Flows
- Import Flows
- Export Flows

This option is provided for users interested in tabulating FAF4 data to examine total flows moved between domestic areas and includes both domestic and foreign shipments. For import shipments, the origin is the country (state or region) of entry, and for export shipments, the destination of the flow is the zone (state or region). Flows of transportation for this tabulation is the mode used from zone of entry to the domestic destination, domestic origin to domestic destination, and domestic origin to zone of exit.

Note: Currently, only 2012 data is available. Data for other years will be added as they become available. The measure is in thousands of tons for weight, millions of dollars for value, and millions for ton-miles.

![Map of the United States](image)

**Figure 2-3a. Mode Share of Freight Ton-Miles by Distance Band: 2007**

- Other / Unknown
- Pipeline
- Multiple Modes & Mail
- Air
- Water
- Rail
- Truck

**Distance Band**
- Select All
- Combined (no specific info)
- Combined (specific info)

**Measure**
- Commodity
- Domestic Mode

**Commodity**
- Combine total (no specific info)
- Select all
- 1. Truck
- 2. Rail
- 3. Water
- 4. Air (include truck-air)
- 5. Multiple modes & mail

**Domestic Mode**
- Select all
- 1. Truck
- 2. Rail
- 3. Water
- 4. Air (include truck-air)
- 5. Multiple modes & mail

**Average Distance Band (miles)**
- Below 100
- 100-249
- 250-499
- 500-749
- 750-999
- 1,000-1,499
- 1,500-2,000
- Over 2,000
Issues

- Demand for greater geographic detail
- How to determine quality
- Commodity classification versus product classification
- Administrative records and other alternative data for improved quality, especially for annual updates
- Alternative strategies for improved timeliness
  - Benchmark with expanded updates
  - Continuous measurement
  - Other?
Thank You

For additional information on BTS programs and products visit: [www.bts.gov](http://www.bts.gov)

For additional information on USDOT freight data programs and products visit: [freight.dot.gov](http://freight.dot.gov)