

Introduction to FAF4

December 16, 2015

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FHWA Resource Center



Our Agenda Today

Introduction & FAF Overview

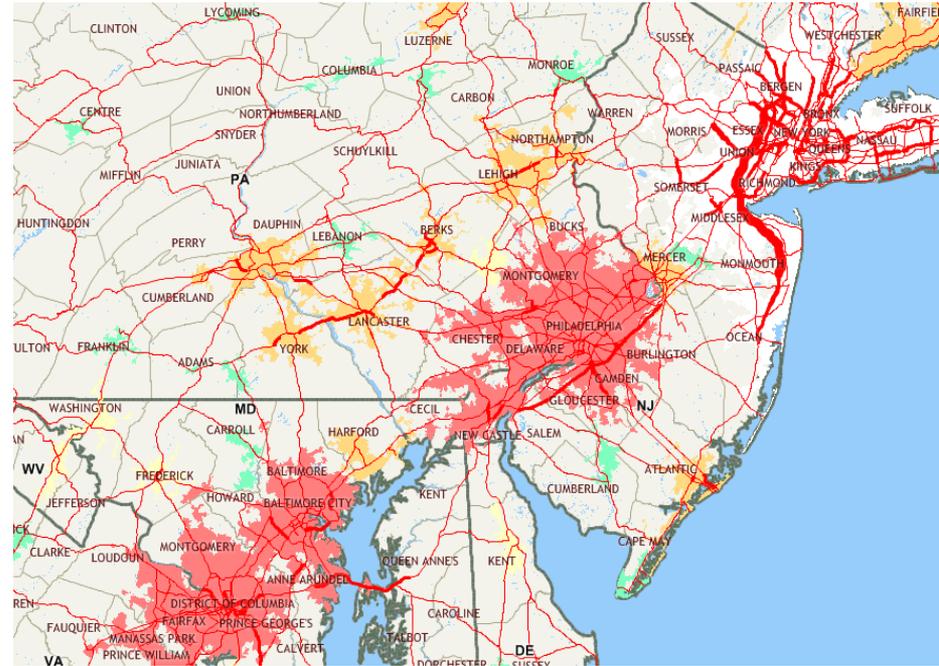
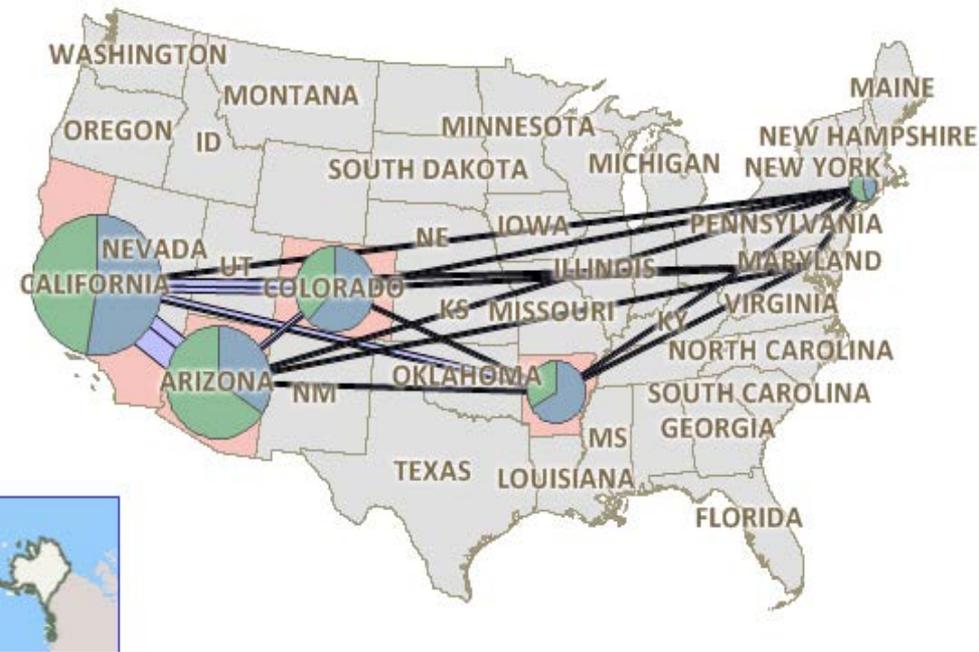
What's New in FAF4

Accessing FAF4

Upcoming FAF4 Resources



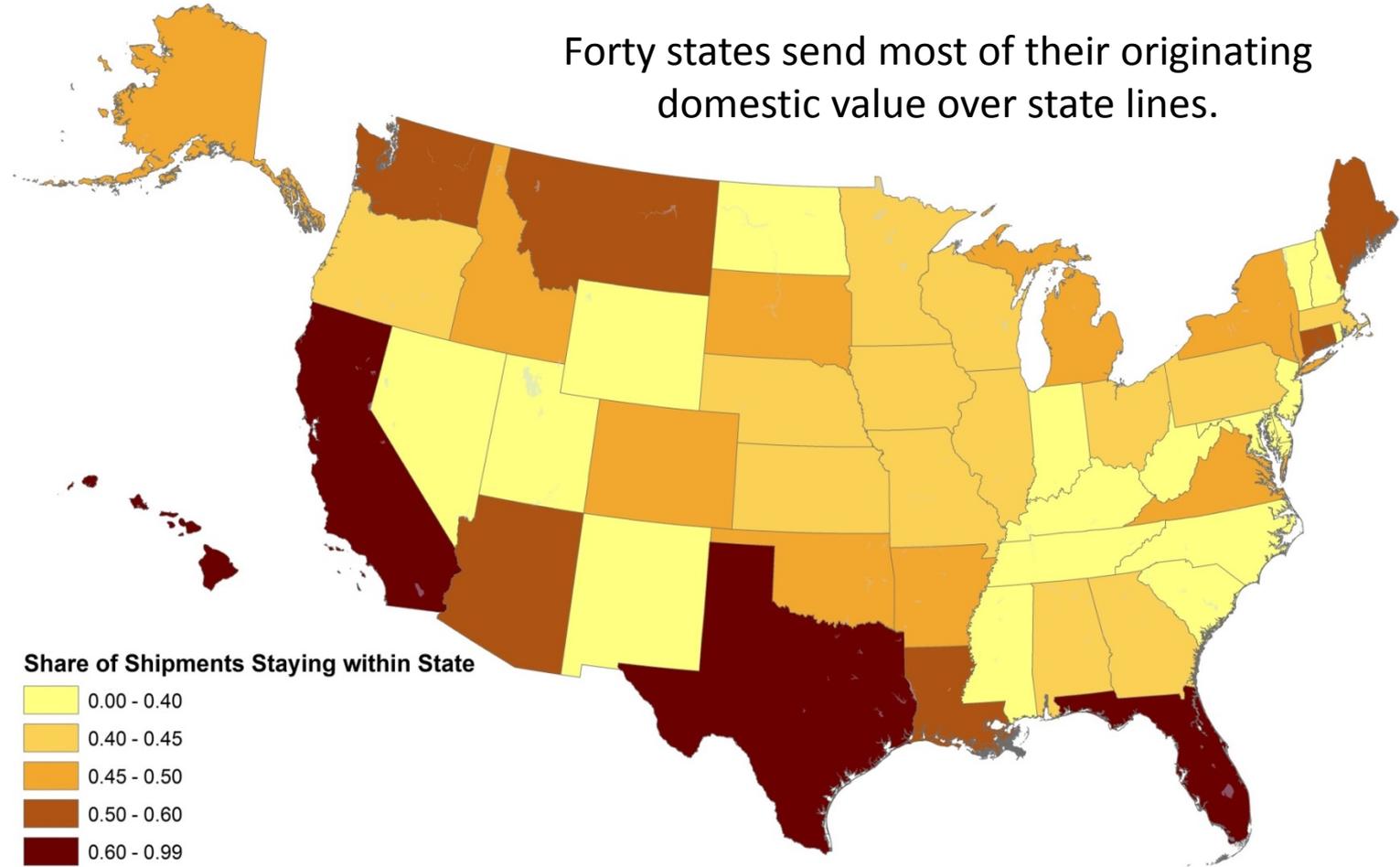
What is the FAF?



Key public resource for national-level freight studies and analyses

Our Interconnected Country

Forty states send most of their originating domestic value over state lines.



Why Do We Need the FAF?

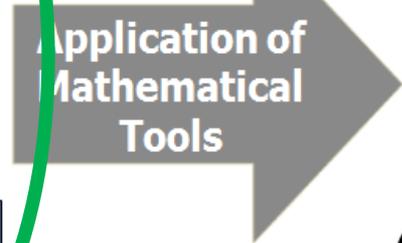
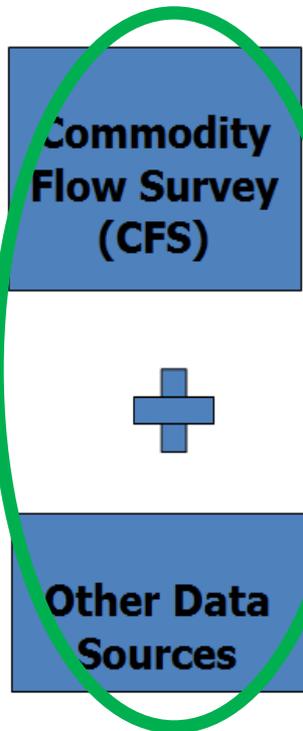
- Assess freight flows to identify transportation priorities
- Identify baseline conditions to better understand where there are freight-related challenges
- Provides a starting point to “tell the freight story” and plan for future freight transportation infrastructure needs
- Assist in developing state/regional freight transportation plans
- Key resource for important freight planning tools

What Does FAF Help Us Answer?

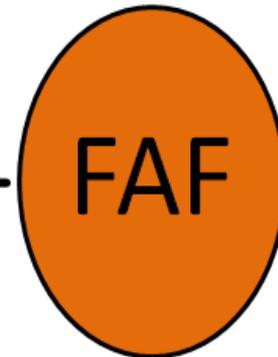
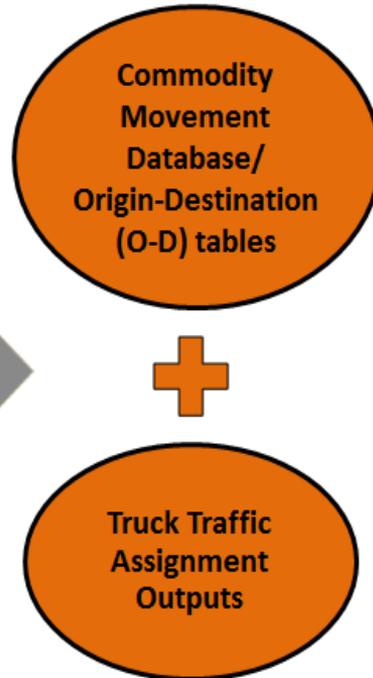
- ***How much*** of ***what*** moves from place to place?
 - Weight
 - Value
 - Commodity
- ***Where*** and ***how*** is freight moving?
 - Origin and destination
 - Route used
 - Mode of transport

How is FAF Developed (The “101” Version)?

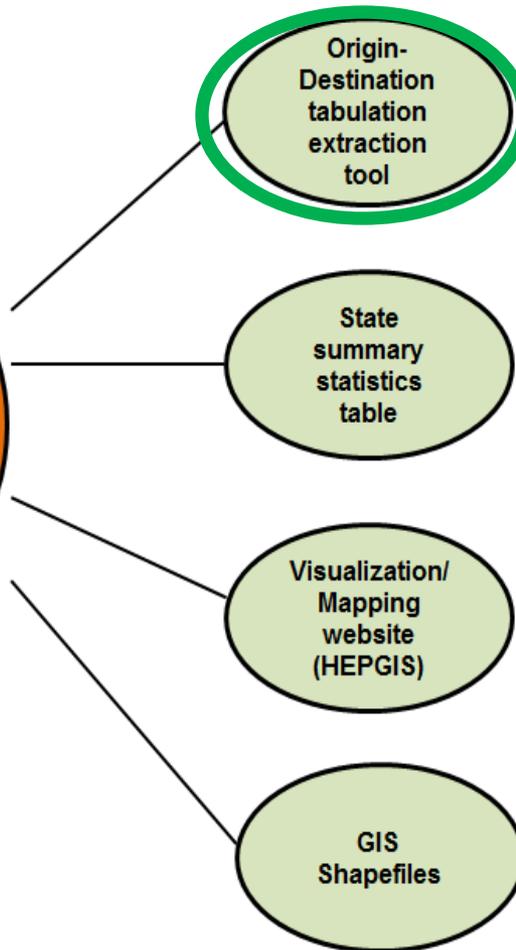
DATA SOURCES



FAF COMPONENTS



USER TOOLS



How is FAF Developed (The “101” Version)?

Based on National Data Source (CFS)

Not Developed to:

- Estimate flows accurately for local regions/individual routes
- Estimate temporal variations in freight flows
- Include effects of capacity limitation or forecast future capacity expansion
- Adjust for changes in costs of transportation

Therefore: ***Local Data Collection/Simulation is Still Key***

FAF4 Enhancements

- ✓ Commodity Flow Survey Improvements
- ✓ Non CFS Data Augmentation



CFS Improvements Help FAF

Better Data Collection

- Sixty percent submissions were electronic

Better Coverage of Energy Sector

- Commodities are more properly specified (principally, ethanol and biodiesel)

CFS Improvements Help FAF

Greater Geographic Coverage

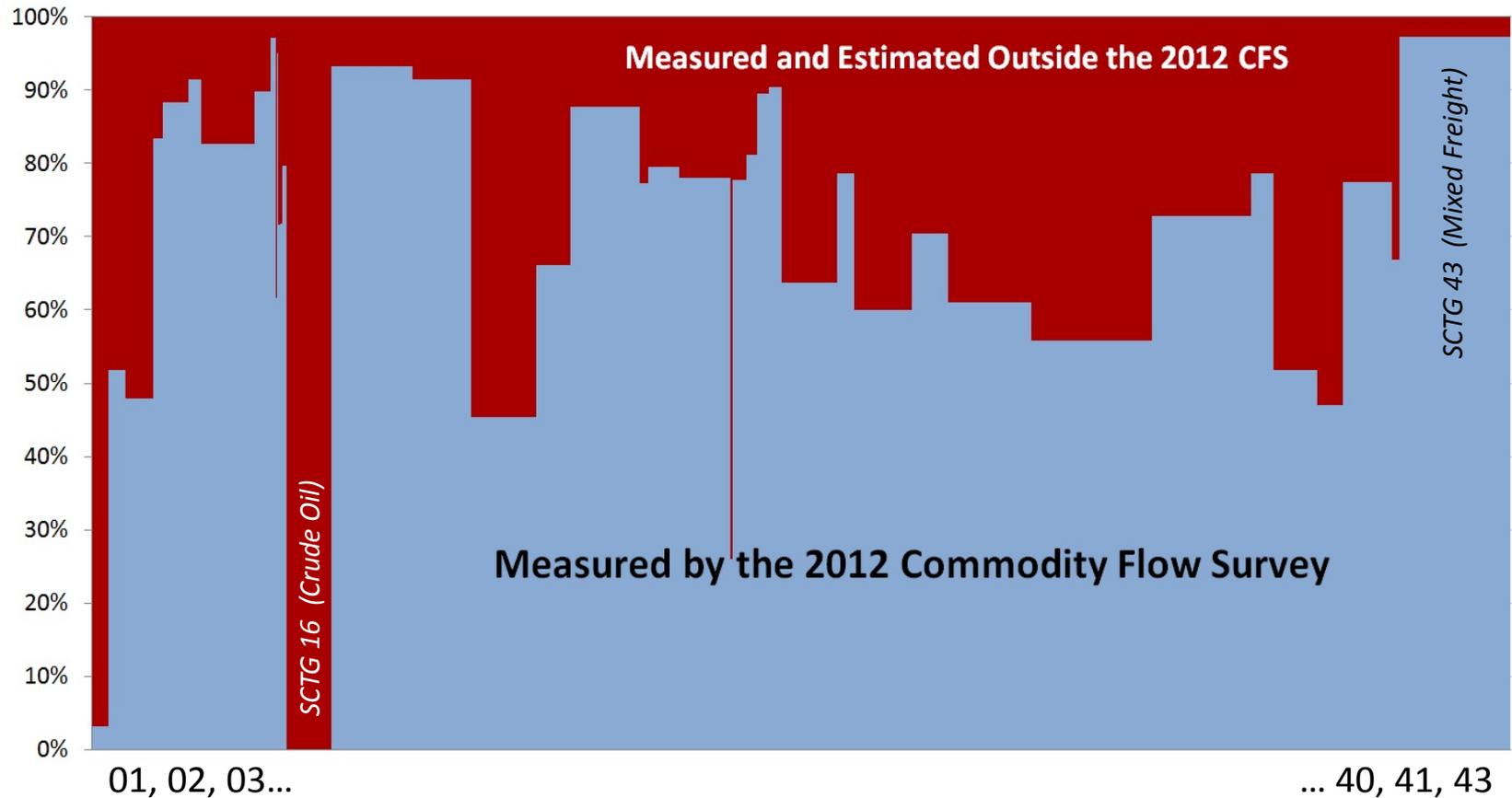
- Published geographies are based on Office of Management and Budget (OMB) definitions
- Number of domestic geographic areas from 123 to 132 from FAF3 to FAF4

Data Quality Focus

- Focus on Modal combinations and transit points Lots and lots of data editing...

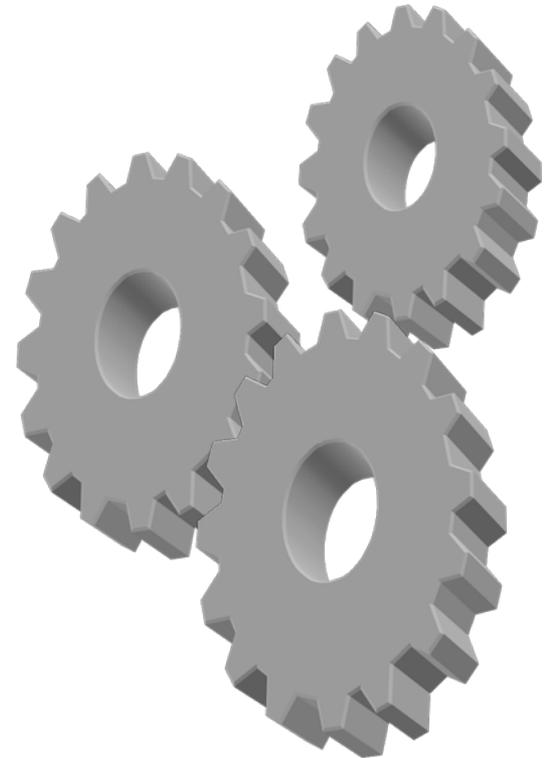
How much of the CFS becomes FAF? (And how much of the FAF is from CFS?)

Value by Commodity by Data Source



CFS Does Not Cover Some Sectors Well

- Farm-Based Shipments
- Fisheries
- Logging
- Municipal Solid Waste
- Construction and Demolition
- Retail
- Services
- Household and Business Moves
- Crude Petroleum
- Natural Gas
- International Trade



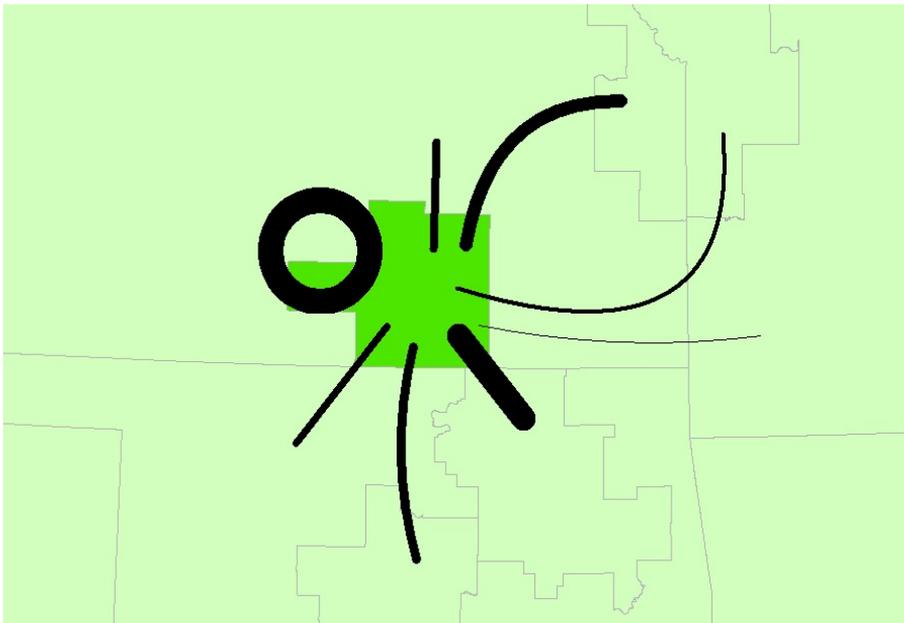
Other Datasets Used in CFS (FAF4)

Sector	Data Source	Improvement Approach
Agriculture (Farm Based Shipments)	USDA: <i>Census of Agriculture, 2013 Agricultural Statistics</i> , and associated databases	Once-shipped. Does not move far. Goods handled uniquely when necessary
Forestry/Logging	USDA Forest Service : Forest Inventory Data Online and Timber Product Output reports	Everything stayed regional and was assumed domestic.
Municipal Solid Waste	<ul style="list-style-type: none"> – Individual state reports – BioCycle (<i>State of Garbage in America</i>) – EPA (<i>Municipal Solid Waste in the United States</i>) 	Tonnage, but no value Everything stayed regional and was assumed domestic

Agriculture: Farm-Based Shipments

Data improvements based on analysis of production locations and reasonable movement patterns.

Goal: Match where things could be going to where they were needed to produce later shipped goods.



Two Main Factors

- Distance
- Amount in inputs for later stage products

Other Datasets Used in CFS (FAF4)

Sector	Data Source	Improvement Approach
Construction and Demolition	<ul style="list-style-type: none">– Individual state reports– BioCycle (<i>State of Garbage in America</i>)– EPA (<i>Municipal Solid Waste in the United States</i>)	Everything stayed regional and was assumed domestic
Retail	Census reports <ul style="list-style-type: none">– Annual Retail Trade Survey; 2012 <i>Economic Census</i> ; County Business Patterns	Select the industries that deal in physical items. Account for deliveries by the types of goods sold. Goods mostly stayed regional.
Services	Same as retail	Select the industries that deal in physical items. Receipts are related to items moving. Distance depends on type

Accessing the FAF4



Accessing FAF4 Online Tool

http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/

U.S. Department of Transportation
Federal Highway Administration

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Freight Analysis Framework

The Freight Analysis Framework (FAF), produced through a partnership between Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA), integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. Starting with data from the 2012 Commodity Flow Survey (CFS) and international trade data from the Census Bureau, FAF incorporates data from agriculture, extraction, utility, construction, service, and other sectors.

The FAF version 4 (FAF4) baseline edition provides estimates for tonnage and value by regions of origin and destination, commodity type, and mode for 2012, the most recent CFS year. Data are available through the Data Extraction Tool, for download as a complete database, as well as summary files.

Throughout 2016, releases of additional FAF4 products will provide forecasts through 2045; state-to-state flows for 1997, 2002, and 2007; truck flows assigned to the highway network for 2012 and 2045; and domestic ton-miles and distance bands.

The 2013 Freight Facts and Figures ([HTML](#), [PDF 5.8MB](#)) is now available.

[FAF4 Data and Documentation](#)

[Archived FAF3 Data and Documentation](#)

FAF4 Data and Documentation

Data Extraction Tool

The Data Extraction Tool (DET) allows users to create and download customized [FAF4 summary tables](#).

Data Files

- [FAF4 Regional Database for 2012 in zipped CSV format](#)
- [FAF4 Regional Database for 2012 in zipped MS Access format](#)

Schedule of Releases

Click to access online tool

Download FAF4 databases

FAF4 Online Tool

- Total flows: including all flows (domestic, imports, and exports) within the U.S.

Freight Analysis Framework Version 4 (FAF4)



Freight Analysis Framework Data Tabulation Tool (FAF4)

This web tool is designed to allow users to create and download summary tables directly from the FAF⁴ regional database. The user can select one or more elements from each category to generate a customized data set on demand and download the resulting CSV output data set for further analysis.

Select a type of Flow:

[Total Flows](#) [Domestic Flows](#) [Import Flows](#) [Export Flows](#)

- **Freight Analysis Framework Version 4**
 - [Overview](#)
 - [Version Descriptions](#)
 - [Summary Statistics](#)
 - [Data Tabulation Tool](#)
 - FAF⁴ Maps
 - Network Database and Flow Assignment
 - Documentation
- **Related Links**
 - [FHWA Freight Analysis Framework home](#)
 - [FAF at Bureau of Transportation Statistics](#)
 - [Freight at U.S. DOT](#)
 - [CTA/ORNL](#)



FAF4 Origin-Destination Flows

- Currently, only ton and value data for base year 2012 are published. Data for other years, as well as ton-miles, will be added as they become available.

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 origins and destinations and includes both domestic and foreign shipments. For import shipments, the origin of the flow is the zone (state or region) of entry, and for export shipments the destination of the flow is the zone (state or region) of exit. Mode 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 units of measure are **thousands of tons** for weight, **millions dollars** for value, and millions for ton-miles.

Year	Origin	Destination
1997	Combine national total (not origin-specific)	Combine national total (not destination-specific)
2002		
2007		
2012		
2013		
2014		
2015		

Distance Band	Measure	Commodity	Domestic Mode
Combine all (no specific info)	Select All Tons Ton-Mile Values	Combine total (no specific info) Select all 01 Live animals/fish 02 Cereal grains 03 Other ag prods. 04 Animal feed 05 Meat/seafood	Combine total (no specific info) Select all 1 Truck 2 Rail 3 Water 4 Air (include truck-air) 5 Multiple modes & mail

Other FAF4 Online Information

- Overview
 - File downloads
 - Documentation: Users Guide
- Version Descriptions
- Summary Statistics
 - Premade state-level summary tables in Excel

The screenshot shows the 'Freight Analysis Framework Data Tabulation' web application. On the left is a navigation menu with sections: 'Freight Analysis Framework Version 4' (containing links for Overview, Version Descriptions, Summary Statistics, Data Tabulation Tool, FAF4 Maps, Network Database and Flow Assignment, and Documentation) and 'Related Links' (containing links for FHWA Freight Analysis Framework home, FAF at Bureau of Transportation Statistics, Freight at U.S. DOT, and CTA/ORNL). The main content area is titled 'Freight Analysis Framework Data Tabulation' and includes a 'Total Flows' section with a 'Domestic Flows' link. A text block explains that this option is for users interested in tabulating FAF4 data for import shipments, where the origin is the zone (state or region) and the mode is zone of entry to the domestic destination. A note states that only 2012 data is currently available. Below the text are two interactive elements: a 'Year' dropdown menu with 2012 selected, and an 'Origin FAF zone-selector' dropdown menu with 'Alaska' selected. At the bottom, there is a 'Distance Band' dropdown menu set to 'Combine all (no specific info)'. The interface has a light blue header and a light gray background.

What's Coming Next?



FAF4 maps are coming!



FAQs Coming Soon

Some of the FAQs from 12/11 webinar

- *What counties are included in the new California FAF?*
Fresno-Madera counties, CA, 2012 NEW CFS Area code 260, and San Joaquin county is part of San Jose-San Francisco-Oakland, CA CFS Area code 480
- *Was the rest of NJ zone in FAF3 merged with other metropolitan area in the FAF4 data? The released FAF4 data does not contain zone 349, rest of NJ?*
Yes, Atlantic and Cape May counties is part Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area code 428, and Warren County is part of CFS Area code 408

FAQs Coming Soon

Some of the FAQs from 12/11 webinar

- *How different are FAF3.5 and FAF4 totals and mode shares, in 2012?*

Mode	FAF3.5	FAF4.0
Truck only	13,182	10,913
Rail only	2,018	1,718
Water	975	685
Air	15	2,961
Pipeline	1,546	386
Multiple modes	1,588	51
Other	338	325
TOTAL	19,662	17,045
* Millions of Tons		

Note, It is not accurate to compare FAF 3.5 and 4.0. We do not encourage or recommend comparison at this time.

Upcoming FAF4 Products

- FAF4.0 – released in October 2015
 - ODCM matrix based on 2012 CFS
 - Release of Data Extraction Tool
- FAF4.1
 - Revised edition of the 2012 base year data
 - Regional forecasts to 2045 Annual estimates for 2013-15 based on 2012
- FAF4.2
 - FAF network assignments
 - Historical data for 1997, 2002, and 2007
- FAF4.3
 - Domestic ton-miles
 - New provisional estimate methodology for estimating annual data

Upcoming FMIP webinar series

- **Thursday January 28, 2016:**
 - ✓ The Role of Commercial Establishment Surveys in Freight Behavior Research; and the Modeling of Freight Trip Generation, and Service Trips
- **2016 webinars (planned)**
 - ✓ Commercial Vehicle Survey and its applications
 - SHRP2 C20 Implementation Projects
 - ✓ Local freight data innovations
 - ✓ Behavior-based Freight Models

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RESOURCES

FAF website:

http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/ or

https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/freight_transportation/faf

- FAF3 & 4 User Guide
- User tools:
 - O-D tabulation extraction tool
 - State summary tables
 - GIS shapefiles ->

<http://faf.ornl.gov/faf4/Default.aspx>

FAF4 Zones Shapefile:

http://www.census.gov/econ/census/help/geography/cfs_areas.html.