

## Updated Freight Ton-Mile Estimates Technical Summary

The Bureau of Transportation Statistics (BTS) has revised the methodology for calculating freight ton-miles across modes.<sup>1</sup> The objective is to make more comprehensive estimates by using the estimates of total freight ton-miles and pipeline ton-miles from the Federal Highway Administration's Freight Analysis Framework<sup>2</sup> (FAF). FAF uses the Commodity Flow Survey<sup>3</sup> (CFS) as the basis for estimating total freight ton-miles, and supplements those estimates with other data and modeling to estimate shipments outside the scope of the CFS, such as import movements from ports or border crossings to inland distribution centers, crude petroleum transport by pipeline, and product shipments from farms. We use the total freight ton-mile estimates and the pipeline ton-mile estimates from FAF3 as the basis for our revised estimates.

### Estimating Total Ton-Miles

For the years covered by FAF estimates, 1997, 2002, 2007, and 2008 to 2011, the total ton-miles from FAF3 are used directly. For the years between 1997 and 2002, and between 2002 and 2007, linear interpolation is used to make those estimates. For years prior to 1997, truck ton-miles are estimated directly, and as a result, total ton-miles then become the summation of the modal estimates.

### Estimating Air, Rail, Waterway and Pipeline Ton-Miles

The previous methodology and data sources are used for air freight, railroads, and waterways. The FAF combined total estimates for oil and gas pipelines are used for 1997, 2002, 2007, and 2008 to 2011. For the intermediate years between 1997 and 2002, and between 2002 and 2007, linear interpolation is used. For years prior to 1997, the trend in oil pipeline ton-miles<sup>4</sup> is used to make those estimates. For each previous year, the 1997 FAF total pipeline ton-mile estimate is multiplied by the ratio of that year's oil pipeline number divided by the 1997 oil pipeline number.

### Estimating Truck Ton-Miles

Previous estimates of truck ton-miles (TM) were based upon miles traveled by trucks on intercity highways and average payloads of those trucks. New estimates are based upon FAF3, which provides a more direct and complete measure of ton-miles. The residual of total ton-miles less the sum of ton-

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<sup>1</sup> The previous methodology is described in Dennis, Scott M., *Improved Estimates of Ton-Miles*, Journal of Transportation and Statistics, 8(1), 2005, pp. 23-30, U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics.

<sup>2</sup> Information on FAF<sup>3</sup> can be found at: [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/faf/index.htm](http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm)

<sup>3</sup> Information on the CFS can be found at: [http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/commodity\\_flow\\_survey/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/commodity_flow_survey/index.html)

<sup>4</sup> Oil pipeline ton-miles are taken from The Association of Oil Pipelines, *Report on Shifts in Petroleum Transportation*, 2012 and earlier editions.

miles by other modes is a more reliable estimate of truck ton-miles given uncertainties in estimates of truck ton miles traveled and the lack of payload data since discontinuation of the Vehicle Inventory and Use Survey after 2002. In equation form:

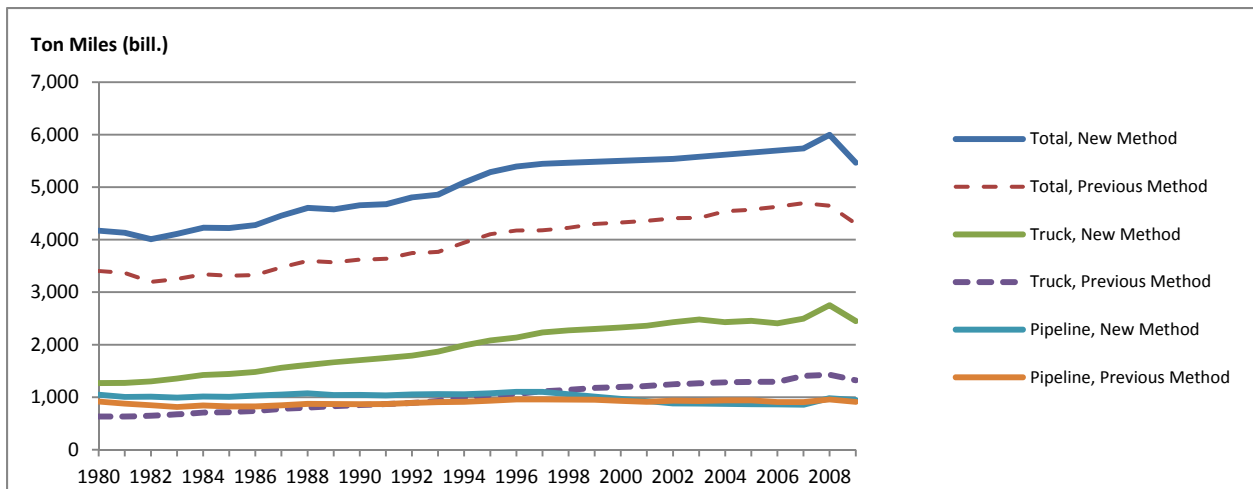
$$\text{Truck TM} = \text{Total TM} - \text{Air TM} - \text{Railroad TM} - \text{Waterway TM} - \text{Pipeline TM}$$

For years before 1997, the trend in Truck Vehicle Miles Traveled (VMT) is used to make those estimates. For each previous year, the benchmark 1997 Truck TM is multiplied by the ratio of that year's truck VMT divided by the 1997 truck VMT value.

### Comparison of Previous Ton-Miles Estimates with New Estimates

The estimates for total ton-miles and truck ton-miles using the previous methodology and the new methodology are shown in Figure 1.

Figure 1. Total Ton-Miles and Truck Ton-Miles with Previous Methodology and New Methodology



The increase in both the total ton-miles and truck ton-miles is a result of using the higher, more comprehensive, estimates of total ton-miles from FAF3. The total pipeline ton-miles estimates are similar to those using the previous methodology.

Figure 2 shows the ton-mile estimates for all modes using the new methodology. The only modes that have changed from the previous methodology are truck ton-miles and pipeline ton-miles.

Figure 2. Ton-Miles by Mode with New Methodology

