TranStats
U.S. Department of Transportation
Bureau of Transportation Statistics

The Economic Importance of Transportation Services:
Highlights of the Transportation Satellite Accounts

A new study by the federal government has established that transportation services contribute a greater share of the value generated by the U.S. economy than previously measured. The study also shows that the services sector, like manufacturing, is highly dependent on transportation. Further, the study suggests that improved transportation efficiency could play a more important role than previously understood in supporting the competitiveness of U.S. products.

The magnitude of transportation services has long been underrepresented in national economic data used by government and private sector decisionmakers. One reason is that, until now, national measures of transportation services only counted the value of for-hire transportation, ignoring the sizable contribution of in-house transportation within nontransportation firms. For example, grocery companies often use their own truck fleets to move goods from their warehouses to their retail outlets. Because the in-house contribution was missing in the national data, the true value of transportation services in the economy was unknown, and, therefore, most estimates of the economic benefits to industry from transportation investments have been too low.

A new accounting tool, called the Transportation Satellite Accounts (TSA), now provides a way to measure both in-house and for-hire transportation services. The TSA, developed jointly by the Bureau of Transportation Statistics (BTS) of the Department of Transportation and the Bureau of Economic Analysis of the Department of Commerce, is statistically and conceptually consistent with the national accounts used to calculate gross domestic product (GDP), the measure of net output of goods and services in the U.S. economy. These accounts are based on the 5-year Economic Census; 1992 is the most recent year for which complete data are available.

Key Findings

- ***Transportation services contributed about $313 billion, or 5 percent of the value generated by the U.S. economy in 1992. This is roughly comparable to the value-added by the wholesale/retail trade industry or the health industry, and more than the individual shares of the agriculture, mining, and computer industries.***

The value-added by in-house transportation services was about $121 billion compared with about $192 billion contributed by for-hire transportation (figure 1). The value-added contributed by in-house transportation alone was about the same as the total value-added by education ($120 billion), and much more than the agriculture ($86 billion), mining ($75 billion), or computer industries ($89 billion). The satellite accounting method has not been applied to most other industries. For example, the value-added when companies use their own staff and facilities to provide educational services to their employees is not included in the education figure cited above.

It is important to note that the TSA measures for-hire and in-house transportation services from the supply side, and is comprised only of services that move people and goods on the transportation system. It should not be con-

fused with a demand-side measure that includes all purchases of transportation-related goods and services (e.g., motor vehicles, gasoline, and automobile insurance) by consumers and other end-users. This transportation-related final demand was about 11 percent of GDP in 1992.

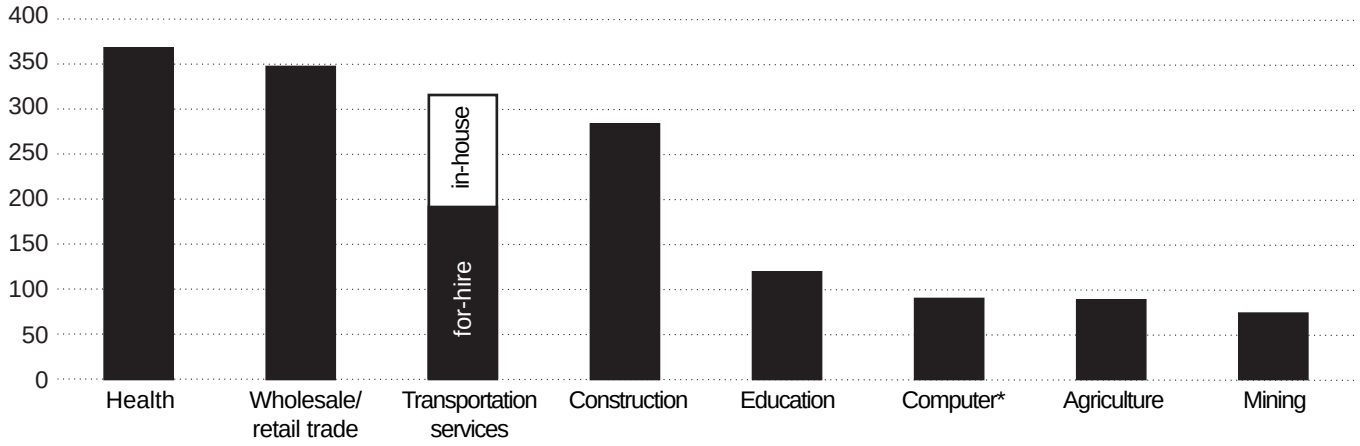
- ***Trucking accounts for 65 percent of the total value-added by transportation services.***

  As shown in table 1, the biggest contributors were in-house trucking, accounting for 38 percent, and for-hire trucking, accounting for 27 percent. The next largest contributors were air transportation and railroads, accounting for 13 percent and 11 percent, respectively, of the total value-added of transportation services.

- ***Adding in-house transportation changes our view of which industries are most dependent on transportation services. Agriculture, construction, and wholesale/retail trade are the most transportation-intensive sectors, counting both in-house and for-hire services.***

  Although manufacturing is the most intensive user of for-hire transportation services, and also consumes the most transportation services in absolute terms, it ranks below some sectors in overall transportation intensity because other industries rely more heavily on in-house services. (Table 2 presents transportation costs for the nine non-transportation sectors of the economy. Each sector is an aggregate of many related industries.) On average, agriculture and services industries use about twice as much in-house transportation as they use for-hire transportation. The ratio of in-house to for-hire transportation was about 3 to 1 in construction, and roughly 5 to 1 in the whole-

Figure 1.
Value-Added by Selected Industry Sectors: 1992
($ billions)



* The computer industry consists of computer and office equipment manufacturing, and computer and data processsing services.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, April 1998.

Table 1.
Transportation Services Value-Added by Mode: 1992

Transportation mode	Value-added ($ billions)	Percent of total
Total transportation services, adjusted*	313.2	
Total transportation services, unadjusted	313.9	100.0
Railroad and ground passenger transportation	34.4	11.0
Water	12.8	4.1
Air	42.2	13.4
Pipeline and other transportation services	19.6	6.3
For-hire trucking and warehousing	83.4	26.6
In-house trucking	120.2	38.3
In-house bus	1.3	0.4

* Adjustment is a reduction of $0.7 billion for selected state and local government subsidies to passenger transit.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, April 1998.

Table 2.
Transportation Services Costs to Establishments in Nontransportation Industries: 1992

Industry	In-house services ($ millions)	For-hire services ($ millions)	Total transportation costs ($ millions)	Industry output ($ millions)	Transportation costs per $ output (Cents)
Total	**164,743**	**151,835**	**316,578**	**9,519,471**	**3.3**
Agriculture, forestry, fisheries	13,177	5,720	18,897	237,662	8.0
Mining	3,870	2,810	6,680	156,717	4.3
Construction	38,950	13,286	52,235	679,330	7.7
Manufacturing	21,806	80,248	102,054	2,951,303	3.5
Communications and utilities	1,187	8,803	9,990	520,688	1.9
Wholesale/retail trade	42,819	8,963	51,783	1,091,489	4.7
Services*	42,035	21,482	63,517	2,227,550	2.9
Finance, insurance, real estate	899	10,523	11,422	1,654,732	0.7

* In the national accounts, the services sector includes: hotels and lodging; personal and repair services; computer and data processing; legal, engineering, and accounting services; business and professional services; advertising; automobile repair and services; amusements; health services; and education and social services.

Note: Transportation costs to industries, as shown here, should not be confused with transportation costs embodied in goods grouped by product category in figure 2.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, April 1998.

sale/retail trade industries.

Figure 2 shows total transportation costs embodied in a dollar of goods and services purchased by consumers and other end-users in 1992. Transportation costs embodied in construction and agricultural products are larger than that in manufactured products on a per dollar basis.

The TSA documents the critical importance of transportation to specific industries, as well as how changes in industrial output influence transportation demand. For instance, transportation costs have a greater effect on agricultural product prices and markets than on manufacturing or mining products. A $1 increase in the final demand for agricultural products will require 14.2¢ in transportation services, compared with 9.1¢ in the case of manufactured goods and about 8¢ for mining products.

- ***Transportation will continue to play a key role in the economy, even as the economy shifts from a manufacturing focus to a focus on services.***

  The services sector, as defined in the national accounts, is the largest and fastest growing sector in the U.S. economy. According to the national accounts, demand for for-hire transportation generated from services sector growth between 1992 and 1996 was about $6 billion. TSA data show that the services sector would have used an additional $12 billion for in-house transportation.

- ***Transportation may have a greater influence on the competitiveness of U.S. products in international markets than previously thought, and the economic benefits of transportation infrastructure investments are larger than estimates based on for-hire transportation data alone.***

  Because of the addition of in-house services, transportation comprises a larger share of the total costs of the products and services of many industries than previously estimated in the national accounts. Therefore, improvements in transportation efficiency would have a larger influence on the price of their products, particularly agricultural products, and their competitiveness in international markets.

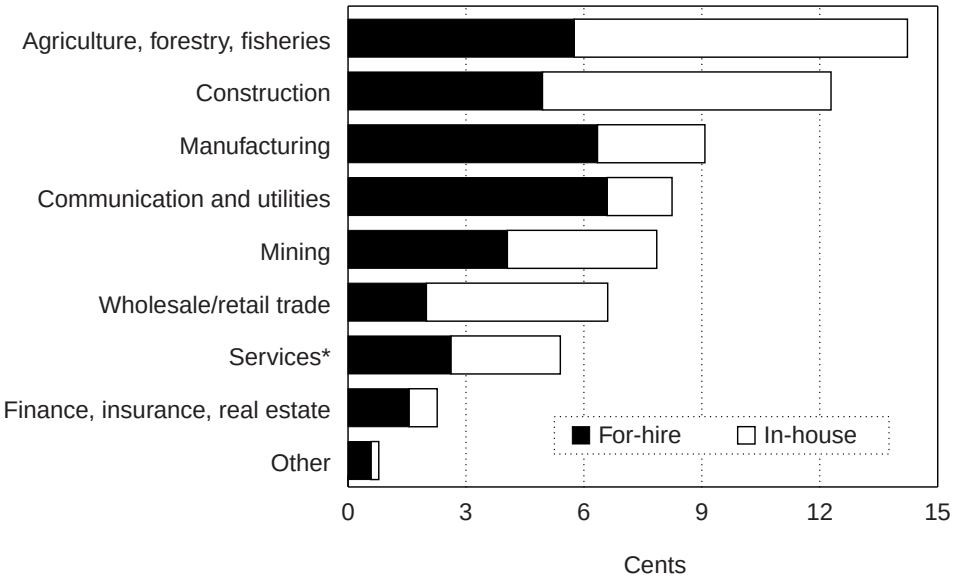
  The TSA also shows that the economic benefit of investing in transportation infrastructure is larger than shown by estimates based solely on for-hire transportation statistics. To illustrate this point, consider the wholesale/retail trade as a hypothetical example. Assume that investments in transportation infrastructure increase the speed, reliability, and flexibility of transportation, resulting in a 10 percent decrease in the cost of transportation services. If only for-hire data are used to calculate transportation's share of production costs, the 10 percent reduction would translate into a 0.08 percent decrease in wholesale/retail trade production costs, or a 0.08 percent increase in the sector's productivity. In reality, wholesale/retail trade would benefit more from a 10 percent fall in transportation costs. Its production costs would decline by 0.47 percent, and its productivity would increase by 0.48 percent, six times more than estimated using for-hire transportation statistics only.

- ***Although the TSA demonstrates that transportation services command a much larger role in the economy than previously understood, the picture is still incomplete.***

  Some in-house transportation services, such as the use of corporate aircraft, have not yet been measured. Also, the TSA does not fully reflect the economic role of personal transportation in getting people to work or school, in bringing goods home from retail outlets, and in supporting social and recreational activities.

  BTS work is continuing to fill these and other gaps. Basic strategies are outlined in the Bureau's report, *Transportation Statistics Beyond ISTEA: Critical Gaps and Strategic Responses*.

Figure 2.
Transportation Services Costs Embodied in a Dollar of Goods and Services Purchased by Consumers and Other End-Users: 1992



* In the national accounts, the services sector includes: hotels and lodgings; personal and repair services; computer and data processing; legal, engineering, and accounting services; business and professional services; advertising; automobile repair and services; amusements; health services; and education and social services.

Note: Transportation costs embodied in goods grouped by product category, as shown here, should not be confused with transportation costs to industries in Table 2.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, April 1998.

For further information on this subject, visit the Transportation Studies section of the BTS website, www.bts.gov, or call Xiaoli Han at 202-366-8927 or Bingsong Fang at 202-606-9977. For additional copies of this publication or other BTS publications, call 202-366-3282 or send your name and address to orders@bts.gov.