

# **Transportation Satellite Accounts**

## **Findings from 2002–2006**



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



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## **TRANSPORTATION SATELLITE ACCOUNTS: FINDINGS FROM 2002–2006**

The Transportation Satellite Accounts (TSAs) provide a means for measuring the contribution of transportation services to the national economy. Prior to the TSAs, the magnitude of transportation services had long been underestimated, as most national measures counted only the value of for-hire services. Measurement of services provided only by for-hire firms misses the sizable contribution of transportation services that take place within nontransportation industries (termed as in-house transportation) (see box A for the definition of for-hire and in-house transportation).

### **Box A. For-Hire and In-House Transportation Definitions**

For-hire transportation consists of the services provided by transportation firms to industries and the public on a fee-basis, such as railroads, transit agencies, common carrier trucking companies, and pipelines.

In-house transportation consists of the services provided by businesses and households for their use. Business in-house transportation includes privately owned and operated vehicles of all body types, used primarily on public rights of way, and the supportive services to store, maintain, and operate those vehicles. Household transportation covers transportation provided by households for their own use through the use of an automobile.

To more accurately measure transportation services, the Bureau of Transportation Statistics (BTS) of the U.S. Department of Transportation and the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce, jointly developed the Transportation Satellite Accounts (TSAs). The TSAs, as a supplement to the U.S. Input-Output (I-O) Accounts, measure the contribution of both for-hire and in-house transportation. The TSAs include all of the for-hire transportation industries reported in the summary level U.S. I-O accounts (air, rail, truck, passenger and group transportation, pipeline, and other transportation and support services) and the five created in-house transportation modes (air, rail, water, truck, and household transportation). Four of the five in-house transportation modes are related to business activities (air, rail, water, and truck transportation) and one, household transportation, is related to household activity. Household transportation covers transportation provided by households for their own use through the use of an automobile and is a new component of the TSAs.

The TSAs were developed using benchmark I-O account data published by BEA. The benchmark I-O data provides detailed information on the commodity inputs used by each industry to produce its output, the commodities produced by each industry, and the commodities used by final consumers. Data are released for every fifth year. For years in-between, BEA releases annual I-O account data that provides the same information as the benchmark data but in less detail.

The annual TSAs were developed as an extension of the benchmark TSAs to provide the most current estimate of the contribution of transportation services to the economy as possible. They are based on the annual I-O accounts published by BEA. Because the annual I-O accounts do not contain the detail of the benchmark I-O accounts, the 2002 benchmark accounts are used in conjunction with the annual accounts to provide estimates of in-house transportation for the years 2003 to 2006. Information on how the 2002 benchmark accounts are used to create the annual I-O accounts can be found at [this page](#). Annual TSAs are presented here for the years 2002 through 2006 along with data from the benchmark 2002 TSAs.

The TSAs consist of four tables: the make, use, direct requirements, and total requirements table. These tables are available on the Bureau of Transportation Statistics' [website](#). The following provides a brief summary of the information contained in these tables.

### **Contribution of Transportation to Gross Domestic Product**

Transportation services contributed about \$466.5 billion of value-added in 2002, or about 3.9 percent of gross domestic product (GDP). The value-added by transportation services grew from about 3.9 percent of gross domestic product (GDP) in 2002 to 4.6 percent in 2006. This growth follows an increase in the absolute value added by business related transportation. The contribution of household transportation declined slightly. (See table 1)

With regards to the value added by business-related transportation,

- The value-added by in-house air, rail, truck, and water transportation services produced and consumed by businesses was \$57.3 billion in 2002 and \$104.9 billion in 2006. Value-added by in-house air, rail, truck, and water transportation services produced and consumed by businesses grew from 2002 to 2006 from 0.48 to 0.75 percent of GDP. This growth derives primarily from the increase in the value-added by in-house truck transportation, which increased from 0.37 percent to 0.58 percent of GDP. The value added by all other in-house transportation related to business grew, but not as significantly. Of all in-house modes, truck transportation contributes the most value.
- The value-added by for-hire transportation air, rail, truck, and water transportation was \$162.9 billion in 2002 and \$230.2 billion in 2006. In 2002, the four modes accounted for 1.37 percent of GDP; in 2006, they accounted for 1.65 percent. Combined value-added by for-hire air, rail, truck, and water transportation grew at approximately the same rate as the four in-house counterparts. The value added by for-hire air, rail, truck, and water transportation grew by 0.27 percentage points, whereas the value added by in-house air, rail, truck, and water transportation grew by 0.28 percentage points.



With regards to the value added by household transportation,

- The value-added by household transportation conducted in a privately owned vehicle was \$131.6 billion in 2002 and \$129.9 billion in 2006. The value added by household transportation declined slightly from 2002 to 2006 from about 1.4 percent of 1.1 percent to 0.9 percent of GDP.

(See table 1)

**Table 1. Value Added by Transportation Mode and Year, 2002–2006 (current dollars, billions)**

Year	In-house <sup>a</sup>					For-hire <sup>b</sup>					All transportation	GDP <sup>d</sup>
	Air	Rail	Water	Truck	HPTS	Air	Rail	Water	Truck	Other <sup>c</sup>		
<b>Billions of dollars</b>												
2002	9.20	2.10	1.70	44.30	131.60	43.10	19.60	7.70	92.50	114.70	466.50	11,892.96
2003	10.97	3.49	2.51	55.87	129.75	53.16	23.24	8.08	99.94	135.70	522.71	11,641.99
2004	14.53	3.35	1.86	57.96	130.25	58.66	24.75	8.36	107.00	151.60	558.32	12,406.79
2005	13.48	3.65	2.28	68.88	129.65	60.00	27.35	8.57	113.84	165.33	593.03	13,225.18
2006	15.48	4.35	4.08	81.02	129.86	64.63	31.10	12.46	121.98	177.56	642.53	13,987.65
<b>Percent of GDP</b>												
2002	0.08	0.02	0.01	0.37	1.11	0.36	0.16	0.06	0.78	0.96	3.92	
2003	0.09	0.03	0.02	0.48	1.11	0.46	0.20	0.07	0.86	1.17	4.49	
2004	0.12	0.03	0.02	0.47	1.05	0.47	0.20	0.07	0.86	1.22	4.50	
2005	0.10	0.03	0.02	0.52	0.98	0.45	0.21	0.06	0.86	1.25	4.48	
2006	0.11	0.03	0.03	0.58	0.93	0.46	0.22	0.09	0.87	1.27	4.59	

<sup>a</sup> In-house transportation consists of the services provided by non-transportation industries, including households, for their use. Business in-house transportation includes privately owned and operated vehicles of all body types, used primarily on public rights of way, and the supportive services to store, maintain, and operate those vehicles. Household transportation covers transportation provided by households for their own use through the use of an automobile.

<sup>b</sup> For-hire transportation consists of the services provided by transportation firms to industries and the public on a fee-basis.

<sup>c</sup> Other for-hire transportation includes: pipeline, transit and ground passenger transportation, including State and local government passenger transit; sightseeing transportation and transportation support; courier and messenger services; and warehousing and storage.) Transit and ground passenger transportation includes State and local government passenger transit in 1997 and 2002 (benchmark years) but not in other years (annual years).

<sup>d</sup> Gross domestic product (GDP) increased from value reported by the Bureau of Economic Analysis in I-O use table by total output from the household production of transportation services.

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

## Use of Transportation by Industry

The importance of transportation to the production of goods and services can be measured through the use of transportation by industries. Use can be represented both as an absolute dollar value (as in the TSA use table) and as a requirement per dollar of industry output (as in the TSA direct requirements table). The latter estimates the importance of transportation relative to all other inputs in producing output and hence the intensity to which transportation is used in the production process. In many cases, the intensity of transportation leads to a different conclusion about the importance of transportation than the one indicated by the absolute dollar value. Industries producing more output, measured in absolute dollars, tend to use a larger amount of transportation because of their greater output. They, however, may use transportation less intensely than industries producing less output (again measured in absolute dollars) if they require less transportation per dollar of industry output. This may result, for example, from greater production efficiency and/or from using transportation that costs less.

- Wholesale/retail trade was the largest user of all transportation services—both for-hire and in-house transportation—in 2002 (\$107.6 billion) through 2006 (\$185.9 billion).
- The utilities industry used less transportation services (for-hire and in-house combined) than wholesale/retail trade in 2002 through 2006 but was the most intense user in 2002, requiring 7.3¢ of transportation per dollar of output. The wholesale and retail trade industry was the most intense user of all transportation services in 2003 through 2006 (requiring 6.7¢ in 2003, 7.0¢ in 2004, 7.4¢ in 2005, and 7.9¢ of transportation per dollar of output in 2006).
- From 2002 through 2006, the manufacturing industry used the largest amount of for-hire air, rail, truck, and water transportation combined (\$73.2 billion in 2002 and \$105.3 billion in 2006); while wholesale/retail trade used the largest combined amount of in-house air, rail, truck, and water transportation services (\$54.2 billion in 2002 and \$94.6 billion in 2006).
- The utilities industry used less for-hire air, rail, truck, and water transportation than the manufacturing industry, but required the most for-hire air, rail, truck, and water transportation per dollar of output (2.8¢ relative to 1.9¢) in 2002. The utilities industry was replaced by the manufacturing industry as the most intense user of for-hire air, rail, truck, and water transportation in 2003 through 2006. The utilities industry used for-hire transportation less intensely in 2003 through 2006, because it used relatively less for-hire transportation during that time period than in 2002. The utilities industry did not use in-house transportation as a substitute because it also used less in-house transportation in 2003 through 2006 than in 2002.
- Wholesale/retail trade required the largest amount of in-house air, rail, truck, and water transportation services (\$54.2 billion in 2002 and \$94.6 billion in 2006) and was the most intense user of in-house transportation services per

dollar of output in the years 2002 through 2006 (requiring 3.1¢ in 2002 and 4.0¢ of transportation per dollar of output in 2006).

(See tables 2 and 3. For further detail, see Appendix A, tables 1 and 2 at [this page.](#))

**Table 2. Use of Transportation Services by Sector, 2002–2006 (current dollars)**

(Billions of dollars at producers' prices)

Sector	2002	2003	2004	2005	2006
<b>In-house air, rail, truck, and water transportation</b>					
Natural resources and mining	3.63	5.89	8.17	5.23	6.60
Construction	9.90	10.31	11.16	14.51	16.99
Manufacturing	18.47	26.90	27.60	33.12	37.72
Wholesale and retail trade	54.22	62.93	68.23	83.21	94.56
Utilities	0.47	0.21	0.25	0.29	0.71
Information	1.31	1.48	1.58	1.67	1.63
Financial services	8.74	11.16	10.33	13.47	15.02
Professional and business services	19.23	20.11	21.92	25.67	27.35
Education and health services	6.18	7.98	9.92	13.17	17.70
Leisure and hospitality	3.80	2.11	2.15	2.75	7.60
Other services	2.65	1.99	2.02	2.39	3.51
Government	0.00	0.00	0.00	0.00	0.00
<b>For-hire air, rail, truck, and water transportation</b>					
Natural resources and mining	9.22	9.36	10.57	11.90	12.88
Construction	17.20	16.52	18.81	21.25	22.63
Manufacturing	73.15	76.45	84.60	97.43	105.32
Wholesale and retail trade	10.97	13.96	16.20	17.49	18.78
Utilities	8.79	2.56	2.27	3.69	3.83
Information	4.55	4.94	4.83	5.57	6.48
Financial services	5.93	9.05	11.18	12.14	13.09
Professional and business services	11.93	14.64	16.22	16.99	17.42
Education and health services	5.86	6.61	6.98	7.54	7.98
Leisure and hospitality	5.29	5.04	5.41	5.91	6.66
Other services	4.79	2.13	2.24	2.22	2.42
Government	22.11	27.80	28.46	28.52	30.13
<b>Total transportation<sup>a</sup></b>					
Natural resources and mining	14.20	19.61	24.20	22.39	24.74
Construction	27.79	27.31	30.52	36.37	40.22
Manufacturing	107.22	118.45	126.73	147.01	160.11
Wholesale and retail trade	107.56	128.08	144.22	163.82	185.89
Utilities	22.97	14.76	14.03	17.54	19.18
Information	13.45	15.85	15.68	18.12	20.44
Financial services	21.19	29.71	33.35	37.88	40.80
Professional and business services	43.31	51.35	56.00	61.72	64.45
Education and health services	16.65	21.65	24.52	28.67	33.88
Leisure and hospitality	12.19	10.41	11.12	12.69	18.86
Other services	12.98	6.85	7.01	7.12	8.40
Government	36.49	43.44	45.27	45.66	48.44

<sup>a</sup> Includes all for-hire modes (not just for-hire air, rail, water and truck) and in-house air, rail, truck, and water

**NOTES:** Transportation sector not shown as user of transportation services.

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

**Table 3. Transportation Commodity-by-Industry Direct Requirements, 2002–2006**

(direct requirements per dollar of industry output at producers' prices)

Sector	Cents required per dollar of industry output				
	2002	2003	2004	2005	2006
<b>In-house air, rail, truck, and water transportation</b>					
Natural resources and mining	0.80	1.15	1.36	0.76	0.90
Construction	0.96	0.94	0.91	1.07	1.18
Manufacturing	0.48	0.69	0.66	0.72	0.77
Wholesale and retail trade	3.05	3.31	3.29	3.76	4.02
Utilities	0.15	0.06	0.07	0.07	0.17
Information	0.14	0.15	0.15	0.15	0.14
Financial services	0.25	0.31	0.26	0.31	0.33
Professional and business services	0.92	0.93	0.94	1.01	1.01
Education and health services	0.49	0.59	0.69	0.86	1.09
Leisure and hospitality	0.51	0.27	0.26	0.31	0.80
Other services	0.47	0.34	0.33	0.39	0.54
Government	0.00	0.00	0.00	0.00	0.00
<b>For-hire air, rail, truck, and water transportation</b>					
Natural resources and mining	2.02	1.82	1.76	1.73	1.75
Construction	1.67	1.51	1.54	1.57	1.58
Manufacturing	1.92	1.95	2.01	2.10	2.15
Wholesale and retail trade	0.62	0.73	0.78	0.79	0.80
Utilities	2.78	0.77	0.66	0.91	0.94
Information	0.17	0.49	0.46	0.51	0.57
Financial services	0.49	0.25	0.29	0.28	0.29
Professional and business services	0.17	0.67	0.69	0.67	0.64
Education and health services	0.57	0.49	0.49	0.49	0.49
Leisure and hospitality	0.46	0.64	0.64	0.67	0.70
Other services	0.71	0.36	0.37	0.36	0.37
Government	1.07	1.25	1.21	1.15	1.14
<b>Total transportation<sup>a</sup></b>					
Natural resources and mining	3.12	3.81	4.02	3.26	3.37
Construction	2.69	2.49	2.50	2.69	2.80
Manufacturing	2.81	3.02	3.01	3.17	3.27
Wholesale and retail trade	6.05	6.73	6.96	7.40	7.91
Utilities	7.28	4.42	4.09	4.32	4.71
Information	1.46	1.56	1.50	1.66	1.80
Financial services	0.60	0.82	0.85	0.88	0.90
Professional and business services	2.08	2.36	2.39	2.43	2.38
Education and health services	1.31	1.60	1.71	1.87	2.09
Leisure and hospitality	1.64	1.32	1.32	1.43	1.99
Other services	2.29	1.17	1.15	1.15	1.29
Government	1.77	1.96	1.92	1.84	1.84

<sup>a</sup> Includes all for-hire modes (not just for-hire air, rail, water and truck) and in-house air, rail, truck, and water**NOTES:** Transportation sector not shown as user of transportation services.**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

## Cost of Transportation Services by Commodity

Many industries produce more than one commodity, and many commodities are produced by more than one industry. The make table in the TSAs shows the commodities made by each industry. The make table for 2002 shows, for example, that the utilities industry makes primarily utilities commodities (\$314.7 billion) but also a small amount of natural resources and mining products (\$0.03 billion) and commodities classified as “other”<sup>1</sup> in the make table (\$0.96 billion). Utilities are produced by the utilities industry itself, but also by the manufacturing industry and by industries classified as “other” in the make table.

Because commodities are produced by multiple industries, the amount of transportation required to deliver a commodity differs from the amount of transportation required to produce a dollar of industry output. The TSA commodity-by-commodity direct requirements table shows the amount of transportation required (for each of the transportation modes listed on the commodity-by-commodity table’s columns) to deliver a dollar of a commodity (listed on the commodity-by-commodity table’s rows) to consumers. This information is summarized in table 4. As shown in table 4, the largest amount of transportation (for-hire and in-house combined) required to deliver a dollar of a commodity to final users in 2002 was for utilities. The amount of transportation required to deliver a dollar of utilities fell from 8.6¢ in 2002 to 6.0¢ in 2006. This decline reflects the decline in the use of transportation by the utilities industry in producing the utilities delivered to final users. As a result, utility products fell from the most costly, in terms of the amount of transportation required to deliver, in 2002 to the second most costly in 2006. In 2006, a larger amount of transportation was required to deliver a dollar of manufacturing products to consumers (6.2¢). In delivering wholesale/retail trade and professional/business services, the amount of in-house air, rail, truck, and water transportation required to deliver a dollar’s worth of goods exceeded the amount of for-hire air, rail, truck, and water transportation required.

(See table 4. For further detail, see Appendix A, table 3 at [this page](#).)

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<sup>1</sup> In the TSAs, “other” commodities consist primarily of government enterprise (except State and local government passenger transit) commodities.

**Table 4. Transportation Required to Produce Commodities, 2002–2006**

(cents of transportation required to deliver a dollar of the commodity to consumers)

Commodity	Total transportation															
	All transportation <sup>a</sup>						For-hire (all for-hire transportation)						In-house air, rail, truck, and water transportation combined			
	2002	2003	2004	2005	2006		2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Natural resources and mining	6.53	5.09	5.07	4.93	4.79		3.63	3.14	3.08	3.12	3.06	1.56	2.00	2.24	1.57	1.74
Construction	5.96	3.94	4.08	4.20	4.23		3.09	2.79	2.90	3.01	3.01	1.76	1.87	1.87	2.10	2.28
Manufacturing products	7.26	5.62	5.77	6.07	6.18		4.03	3.85	4.01	4.26	4.34	1.48	1.82	1.85	1.94	2.10
Wholesale and retail trade	7.57	4.75	5.08	5.01	5.34		1.11	1.22	1.30	1.31	1.32	3.38	3.66	3.66	4.15	4.44
Utilities	8.61	5.67	5.36	5.95	5.98		3.61	1.78	1.68	2.11	2.01	0.65	0.66	0.69	0.75	0.81
Information	3.30	3.02	2.82	3.06	3.35		1.20	1.20	1.14	1.22	1.34	0.56	0.60	0.58	0.62	0.68
Financial services	1.51	1.38	1.58	1.62	1.64		0.51	0.66	0.76	0.79	0.81	0.50	0.63	0.62	0.72	0.77
Professional and business services	3.45	2.60	2.64	2.65	2.65		1.12	1.21	1.25	1.26	1.25	1.21	1.25	1.27	1.38	1.42
Education and health services	3.13	2.50	2.51	2.56	2.55		1.27	1.27	1.28	1.33	1.32	0.85	1.00	1.08	1.29	1.53
Leisure and hospitality	3.86	2.72	2.76	2.86	2.96		1.67	1.52	1.55	1.61	1.65	1.01	0.84	0.83	0.92	1.46
Other services	4.39	1.92	1.95	1.87	1.93		1.71	0.91	0.94	0.94	0.99	0.95	0.73	0.72	0.80	1.00
Government	3.75	3.39	3.40	3.39	3.43		1.90	1.98	1.98	1.98	1.99	0.45	0.45	0.47	0.51	0.57

<sup>a</sup> Includes all for-hire modes (not just for-hire air, rail, water and truck) and in-house air, rail, truck, and water

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

## Direct and Indirect Effects of Transportation on the Economy

Transportation has both a direct and an indirect effect on the economy. The direct effect is the change in transportation output caused by a change in demand for another product; the indirect effect is the change, induced by a change in the demand for transportation, in the output of another industry or industries. The direct effect can be measured by the increase (or decrease) in the amount of transportation required to support a dollar increase (or decrease) in an industry's production. This amount is shown in the TSA total requirements table.

The total requirements table shows the amount of transportation output required (for each of the transportation modes listed on the industry-by-commodity direct requirements table's columns) to deliver a dollar of a commodity (listed on the industry-by-commodity table's rows) to consumers. This information is summarized in table 5. As shown in table 5, transportation (for-hire and in-house combined) was used most heavily to deliver a dollar of utilities to final users in 2002 (7.4¢). The largest amount of transportation (for-hire and in-house combined) was required to deliver manufacturing products in 2004 through 2006. More transportation was required to deliver manufacturing goods than utilities because of the decline in the use of transportation within the utilities industry, which is the primary producer of utilities, despite an overall increase in output by the utilities industry.

The total requirements, which, as discussed, show the amount of transportation required to deliver a dollar of goods to consumers, can be used to measure the additional amount of transportation required to meet a change in demand. If, for instance, the demand for output from the manufacturing industry (e.g., from increased consumer demand for wholesale like grocery product wholesalers) were to increase by \$1 billion in 2006, then an additional \$61.0 million ( $\$1 \text{ billion} * 0.0610$ ) of transportation services would be required. Commodities with smaller direct requirements will require less additional transportation services to meet an increase in demand.

(See table 5. For further detail, see Appendix A, table 4 at [this page](#).)

**Table 5. Transportation Requirements for all Commodities, 2002–2006**  
(cents per dollar increase in final demand)

Commodity	Total transportation											
	All transportation <sup>a</sup>						In-house air, rail, truck, and water transportation combined					
	2002	2003	2004	2005	2006		2002	2003	2004	2005	2006	
Natural resources and mining	6.49	5.04	5.02	4.89	4.74		1.56	2.00	2.24	1.57	1.74	
Construction	5.92	3.88	4.03	4.14	4.18		1.76	1.87	1.87	2.10	2.28	
Manufacturing products	7.21	5.55	5.70	6.00	6.10		1.48	1.82	1.85	1.94	2.10	
Wholesale and retail trade	7.44	4.61	4.92	4.87	5.19		3.38	3.66	3.66	4.15	4.44	
Utilities	8.57	5.58	5.28	5.85	5.88		0.65	0.66	0.69	0.75	0.81	
Information	3.24	2.93	2.74	2.97	3.25		0.56	0.60	0.58	0.62	0.68	
Financial services	1.49	1.33	1.53	1.57	1.59		0.50	0.63	0.62	0.72	0.77	
Professional and business services	3.42	2.52	2.57	2.59	2.60		1.21	1.25	1.27	1.38	1.42	
Education and health services	3.10	2.43	2.44	2.49	2.48		0.85	1.00	1.08	1.29	1.53	
Leisure and hospitality	3.83	2.66	2.70	2.79	2.88		1.01	0.84	0.83	0.92	1.46	
Other services	4.32	1.87	1.90	1.83	1.88		0.95	0.73	0.72	0.80	1.00	
Government	3.72	3.28	3.29	3.28	3.32		0.45	0.45	0.47	0.51	0.57	

<sup>a</sup> Includes all for-hire modes (not just for-hire air, rail, water and truck) and in-house air, rail, truck, and water  
**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.



The indirect effect of transportation on the economy is captured in the TSA industry-by-commodity total requirement table. In the industry-by-commodity total requirement table, the values below the transportation columns are the amount of industry (e.g., in natural resources and mining, construction, etc.) output needed to provide a dollar of transportation. For instance, in 2002, to provide a billion dollars of in-house air transportation, the natural resources and mining industry is required to produce \$29.7 million (\$1 billion \* 0.0297) of industry output, the construction industry is required to produce \$7.5 million (\$1 billion \* 0.00753) of industry output, and so forth. The output required by all industries to provide a dollar of transportation is given by the total industry output requirement at the bottom of the transportation columns in the industry-by-commodity total requirement table and in table 6. Table 6 shows that, in 2002, to deliver a billion dollars of in-house air transportation, output by all industries would need to increase by 202.94 million (\$1 billion \* 2.02938).

The increase in output comes about from an increase in the demand for commodities supporting in-house air transportation, such as airplane parts, aviation fuel, etc. Output will increase by a larger amount when a larger number of commodities are required to support the increase and/or when the required commodities are more costly to produce. With the exception of rail, for-hire air, truck, and water transportation industry output multipliers grew from 2002 to 2006, but not steadily. The in-house counterparts declined slightly, with the exception of in-house water transportation (see table 6). Due to this slight decline, the for-hire air, rail, truck, and water multipliers are larger than the in-house counterparts in 2006, but were not larger for all for-hire versus in-house modes in previous years.

**Table 6. Total Industry Output Multipliers for Transportation Industries, 2002–2006**

		2002	2003	2004	2005	2006
<b>For-hire transportation</b>	Air	1.862	1.950	1.966	2.089	2.106
	Rail	1.935	1.805	1.868	1.924	1.924
	Water	1.982	2.351	2.434	2.482	2.331
	Truck	2.004	1.950	2.000	2.064	2.069
	Transit and ground passenger transportation <sup>a</sup>	2.366	1.474	1.580	1.679	1.717
	Pipeline transportation	2.463	1.993	2.007	2.078	2.063
	Other <sup>b</sup>	1.753	1.741	1.716	1.687	1.736
<b>In-house transportation</b>	Air	2.029	1.824	1.792	1.902	1.905
	Rail	2.080	1.769	1.812	1.845	1.842
	Water	2.166	2.190	2.270	2.310	2.175
	Truck	2.012	1.893	1.932	1.975	1.971
	HPTS	2.393	2.716	2.748	2.764	2.773

<sup>a</sup> "Transit and ground passenger transportation" includes State and local government passenger transit in 2002 but not in other years.

<sup>b</sup> "Other" transportation includes: sightseeing transportation and transportation support; courier and messenger services; and warehousing and storage.

**NOTES:** For-hire transportation consists of the services provided by transportation firms to industries and the public on a fee-basis. Other for-hire transportation includes: transit and ground passenger transportation, including State and local government passenger transit; sightseeing transportation and transportation support; courier and messenger services; and warehousing and storage. In-house transportation consists of the services provided by non-transportation industries for their use. It includes privately owned and operated vehicles of all body types, used primarily on public rights of way, and the supportive services to store, maintain, and operate those vehicles. HPTS = Household production of transportation services through the use of an automobile.

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

For detailed make, use, and direct requirements tables, see [this page](#).

## APPENDIX A

**Table A1. Use of Transportation Services by Sector, 2002–2006 (current dollars)**  
(millions of dollars at producers' prices)

Sector	2002	2003	2004	2005	2006
<b>In-house</b>					
Natural resources and mining					
All	3,627	5,893	8,175	5,233	6,600
Air	972	2,814	4,980	1,720	2,009
Rail	177	29	45	65	71
Water	879	1,255	1,180	741	1,229
Truck	1,599	1,795	1,970	2,706	3,291
Other	NA	NA	NA	NA	NA
Construction					
All	9,900	10,311	11,155	14,507	16,986
Air	233	0	0	0	0
Rail	405	20	17	14	19
Water	372	290	233	826	799
Truck	8,890	10,001	10,905	13,667	16,168
Other	NA	NA	NA	NA	NA
Manufacturing products					
All	18,471	26,904	27,604	33,118	37,722
Air	2,027	1,848	1,971	2,946	2,887
Rail	3,211	5,637	5,510	6,196	7,721
Water	209	351	359	0	0
Truck	13,024	19,069	19,765	23,976	27,113
Other	NA	NA	NA	NA	NA
Wholesale and retail trade					
All	54,219	62,927	68,231	83,206	94,561
Air	918	283	745	384	837
Rail	343	514	535	529	262
Water	0	0	0	0	0
Truck	52,959	62,130	66,951	82,292	93,462
Other	NA	NA	NA	NA	NA
Utilities					
All	469	213	251	288	708
Air	286	0	0	0	405
Rail	0	0	0	0	0
Water	0	0	0	0	0
Truck	183	213	251	288	303
Other	NA	NA	NA	NA	NA
Information					
All	1,314	1,483	1,582	1,671	1,626
Air	0	0	0	0	0
Rail	107	17	11	11	11
Water	0	0	0	0	0
Truck	1,207	1,466	1,571	1,660	1,615
Other	NA	NA	NA	NA	NA

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<b>Sector</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Financial services</b>					
All	8,744	11,158	10,334	13,470	15,015
Air	3,492	3,023	3,378	3,454	3,317
Rail	0	0	0	0	0
Water	2,668	4,703	3,312	5,460	6,476
Truck	2,583	3,432	3,645	4,556	5,222
Other	NA	NA	NA	NA	NA
<b>Professional and business services</b>					
All	19,226	20,112	21,915	25,673	27,351
Air	7,884	6,335	6,989	7,282	6,570
Rail	0	0	0	0	0
Water	0	0	0	0	0
Truck	11,342	13,776	14,926	18,392	20,782
Other	NA	NA	NA	NA	NA
<b>Education and health services</b>					
All	6,180	7,977	9,918	13,167	17,697
Air	5,311	6,857	8,724	12,038	15,910
Rail	0	0	0	0	0
Water	138	330	393	0	0
Truck	731	790	801	1,128	1,787
Other	NA	NA	NA	NA	NA
<b>Leisure and hospitality</b>					
All	3,798	2,108	2,147	2,754	7,604
Air	0	0	0	0	0
Rail	0	0	0	0	0
Water	1,248	2,080	2,108	2,737	4,514
Truck	2,549	28	39	17	3,089
Other	NA	NA	NA	NA	NA
<b>Other services</b>					
All	2,651	1,990	2,017	2,394	3,510
Air	0	0	0	0	0
Rail	0	0	0	0	0
Water	144	0	0	0	0
Truck	2,507	1,990	2,017	2,394	3,510
Other	NA	NA	NA	NA	NA
<b>Government</b>					
All	0	0	0	0	0
Air	0	0	0	0	0
Rail	0	0	0	0	0
Water	0	0	0	0	0
Truck	0	0	0	0	0
Other	NA	NA	NA	NA	NA
<b>For-hire</b>					
<b>Natural resources and mining</b>					
All	10,569	13,713	16,029	17,152	18,143
Air	266	208	260	366	449
Rail	2,123	2,968	3,281	3,638	4,077
Water	352	526	804	1,032	1,236
Truck	6,477	5,654	6,228	6,866	7,123
Other	1,351	4,357	5,456	5,251	5,259

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<b>Sector</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Construction</b>					
All	17,890	17,002	19,368	21,859	23,236
Air	1,100	1,163	1,293	1,555	1,671
Rail	1,384	1,285	1,470	1,640	1,734
Water	277	548	828	1,002	1,129
Truck	14,441	13,524	15,222	17,052	18,097
Other	688	482	555	609	605
<b>Manufacturing products</b>					
All	88,745	91,543	99,123	113,888	122,386
Air	6,099	6,599	6,787	8,755	10,082
Rail	14,635	18,010	19,639	22,332	24,665
Water	1,321	2,001	2,897	3,577	4,221
Truck	51,098	49,842	55,274	62,770	66,353
Other	15,592	15,091	14,526	16,454	17,065
<b>Wholesale and retail trade</b>					
All	53,338	65,150	75,990	80,609	91,324
Air	1,660	2,232	2,450	2,909	3,325
Rail	234	171	205	197	216
Water	32	35	53	55	60
Truck	9,044	11,522	13,497	14,328	15,176
Other	42,369	51,189	59,785	63,119	72,546
<b>Utilities</b>					
All	22,501	14,547	13,783	17,252	18,468
Air	309	822	706	1,116	1,004
Rail	6,877	1,373	1,211	1,964	2,238
Water	122	58	80	152	162
Truck	1,482	307	271	460	427
Other	13,710	11,987	11,516	13,560	14,637
<b>Information</b>					
All	12,133	14,365	14,102	16,446	18,819
Air	2,229	2,345	2,232	2,766	3,485
Rail	285	197	201	201	249
Water	10	16	20	22	29
Truck	2,030	2,386	2,381	2,579	2,716
Other	7,579	9,421	9,268	10,878	12,340
<b>Financial services</b>					
All	12,446	18,550	23,017	24,412	25,788
Air	3,790	6,283	7,797	8,303	8,928
Rail	206	655	800	1,049	1,157
Water	21	53	99	120	171
Truck	1,916	2,055	2,481	2,665	2,833
Other	6,513	9,504	11,840	12,275	12,700
<b>Professional and business services</b>					
All	24,084	31,236	34,089	36,044	37,096
Air	5,870	8,541	8,912	9,820	11,178
Rail	467	497	616	631	766
Water	1,400	1,688	2,298	1,830	823
Truck	4,189	3,917	4,394	4,710	4,654
Other	12,158	16,593	17,868	19,053	19,674

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<b>Sector</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Education and health services</b>					
All	10,468	13,675	14,597	15,508	16,185
Air	1,516	2,801	2,907	3,228	3,603
Rail	344	356	403	408	437
Water	26	70	98	126	144
Truck	3,971	3,388	3,572	3,773	3,795
Other	4,611	7,060	7,617	7,973	8,207
<b>Leisure and hospitality</b>					
All	8,397	8,305	8,970	9,936	11,256
Air	1,114	1,071	1,115	1,249	1,559
Rail	426	603	633	661	729
Water	29	72	111	124	153
Truck	3,717	3,298	3,550	3,874	4,222
Other	3,110	3,261	3,561	4,028	4,594
<b>Other services</b>					
All	10,333	4,864	4,997	4,724	4,893
Air	1,010	647	658	645	735
Rail	199	89	97	94	110
Water	7	16	24	29	36
Truck	3,569	1,381	1,464	1,457	1,542
Other	5,547	2,731	2,753	2,499	2,470
<b>Government</b>					
All	36,494	43,443	45,273	45,664	48,438
Air	7,957	11,189	11,843	12,495	13,990
Rail	2,179	2,450	2,530	2,630	3,232
Water	1,927	1,036	1,449	1,066	543
Truck	10,042	13,125	12,635	12,327	12,361
Other	14,389	15,643	16,816	17,146	18,312

**KEY:** NA = not available

**NOTES:** Transportation sector not shown as user of transportation services

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

**Table A2. Transportation Commodity-by-Industry Direct Requirements, 2002–2006 (current dollars)**  
 (direct requirements per dollar of industry output at producers' prices)

Commodity	2002	2003	2004	2005	2006
<b>In-house</b>					
Natural resources and mining					
All	0.80	1.15	1.36	0.76	0.90
Air	0.21	0.55	0.83	0.25	0.27
Rail	0.04	0.01	0.01	0.01	0.01
Water	0.19	0.24	0.20	0.11	0.17
Truck	0.35	0.35	0.33	0.39	0.45
Other	NA	NA	NA	NA	NA
Construction					
All	0.96	0.94	0.91	1.07	1.18
Air	0.02	0.00	0.00	0.00	0.00
Rail	0.04	0.00	0.00	0.00	0.00
Water	0.04	0.03	0.02	0.06	0.06
Truck	0.86	0.91	0.89	1.01	1.13
Other	NA	NA	NA	NA	NA
Manufacturing products					
All	0.48	0.69	0.66	0.72	0.77
Air	0.05	0.05	0.05	0.06	0.06
Rail	0.08	0.14	0.13	0.13	0.16
Water	0.01	0.01	0.01	0.00	0.00
Truck	0.34	0.49	0.47	0.52	0.55
Other	NA	NA	NA	NA	NA
Wholesale and retail trade					
All	3.05	3.31	3.29	3.76	4.02
Air	0.05	0.02	0.04	0.02	0.04
Rail	0.02	0.03	0.03	0.02	0.01
Water	0.00	0.00	0.00	0.00	0.00
Truck	2.98	3.27	3.23	3.72	3.98
Other	NA	NA	NA	NA	NA
Utilities					
All	0.15	0.06	0.07	0.07	0.17
Air	0.09	0.00	0.00	0.00	0.10
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.06	0.06	0.07	0.07	0.07
Other	NA	NA	NA	NA	NA
Information					
All	0.14	0.15	0.15	0.15	0.14
Air	0.00	0.00	0.00	0.00	0.00
Rail	0.01	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.13	0.15	0.15	0.15	0.14
Other	NA	NA	NA	NA	NA
Financial services					
All	0.25	0.31	0.26	0.31	0.33
Air	0.10	0.08	0.09	0.08	0.07
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.08	0.13	0.08	0.13	0.14

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<b>Commodity</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Truck	0.07	0.10	0.09	0.11	0.12
Other	NA	NA	NA	NA	NA
<b>Professional and business services</b>					
All	0.92	0.93	0.94	1.01	1.01
Air	0.38	0.29	0.30	0.29	0.24
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.54	0.63	0.64	0.73	0.77
Other	NA	NA	NA	NA	NA
<b>Education and health services</b>					
All	0.49	0.59	0.69	0.86	1.09
Air	0.42	0.51	0.61	0.79	0.98
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.01	0.02	0.03	0.00	0.00
Truck	0.06	0.06	0.06	0.07	0.11
Other	NA	NA	NA	NA	NA
<b>Leisure and hospitality</b>					
All	0.51	0.27	0.26	0.31	0.80
Air	0.00	0.00	0.00	0.00	0.00
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.17	0.26	0.25	0.31	0.48
Truck	0.34	0.00	0.01	0.00	0.33
Other	NA	NA	NA	NA	NA
<b>Other services</b>					
All	0.47	0.34	0.33	0.39	0.54
Air	0.00	0.00	0.00	0.00	0.00
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.03	0.00	0.00	0.00	0.00
Truck	0.44	0.34	0.33	0.39	0.54
Other	NA	NA	NA	NA	NA
<b>Government</b>					
All	0.00	0.00	0.00	0.00	0.00
Air	0.00	0.00	0.00	0.00	0.00
Rail	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.00	0.00	0.00	0.00	0.00
Other	NA	NA	NA	NA	NA
<b>For-hire</b>					
<b>Natural resources and mining</b>					
All	2.32	2.67	2.66	2.50	2.47
Air	0.06	0.04	0.04	0.05	0.06
Rail	0.47	0.58	0.55	0.53	0.56
Water	0.08	0.10	0.13	0.15	0.17
Truck	1.42	1.10	1.03	1.00	0.97
Other	0.30	0.85	0.91	0.76	0.72
<b>Construction</b>					
All	1.73	1.55	1.59	1.62	1.62
Air	0.11	0.11	0.11	0.12	0.12
Rail	0.13	0.12	0.12	0.12	0.12
Water	0.03	0.05	0.07	0.07	0.08

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<b>Commodity</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Truck	1.40	1.23	1.25	1.26	1.26
Other	0.07	0.04	0.05	0.05	0.04
<b>Manufacturing products</b>					
All	2.33	2.34	2.35	2.46	2.50
Air	0.16	0.17	0.16	0.19	0.21
Rail	0.38	0.46	0.47	0.48	0.50
Water	0.04	0.05	0.07	0.08	0.09
Truck	1.34	1.27	1.31	1.35	1.35
Other	0.41	0.39	0.34	0.35	0.35
<b>Wholesale and retail trade</b>					
All	3.00	3.42	3.67	3.64	3.88
Air	0.09	0.12	0.12	0.13	0.14
Rail	0.01	0.01	0.01	0.01	0.01
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.51	0.61	0.65	0.65	0.65
Other	2.39	2.69	2.88	2.85	3.09
<b>Utilities</b>					
All	7.13	4.35	4.02	4.25	4.53
Air	0.10	0.25	0.21	0.28	0.25
Rail	2.18	0.41	0.35	0.48	0.55
Water	0.04	0.02	0.02	0.04	0.04
Truck	0.47	0.09	0.08	0.11	0.11
Other	4.34	3.59	3.36	3.34	3.59
<b>Information</b>					
All	1.31	1.42	1.34	1.50	1.66
Air	0.24	0.23	0.21	0.25	0.31
Rail	0.03	0.02	0.02	0.02	0.02
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.22	0.24	0.23	0.24	0.24
Other	0.82	0.93	0.88	1.00	1.09
<b>Financial services</b>					
All	0.35	0.51	0.59	0.57	0.57
Air	0.11	0.17	0.20	0.19	0.20
Rail	0.01	0.02	0.02	0.02	0.03
Water	0.00	0.00	0.00	0.00	0.00
Truck	0.05	0.06	0.06	0.06	0.06
Other	0.19	0.26	0.30	0.29	0.28
<b>Professional and business services</b>					
All	1.16	1.44	1.46	1.42	1.37
Air	0.28	0.39	0.38	0.39	0.41
Rail	0.02	0.02	0.03	0.03	0.03
Water	0.07	0.08	0.10	0.07	0.03
Truck	0.20	0.18	0.19	0.19	0.17
Other	0.58	0.76	0.76	0.75	0.73
<b>Education and health services</b>					
All	0.82	1.01	1.02	1.01	1.00
Air	0.12	0.21	0.20	0.21	0.22
Rail	0.03	0.03	0.03	0.03	0.03
Water	0.00	0.01	0.01	0.01	0.01
Truck	0.31	0.25	0.25	0.25	0.23
Other	0.36	0.52	0.53	0.52	0.51

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Commodity	2002	2003	2004	2005	2006
Leisure and hospitality					
All	1.13	1.05	1.07	1.12	1.19
Air	0.15	0.14	0.13	0.14	0.17
Rail	0.06	0.08	0.08	0.07	0.08
Water	0.00	0.01	0.01	0.01	0.02
Truck	0.50	0.42	0.42	0.44	0.45
Other	0.42	0.41	0.42	0.45	0.49
Other services					
All	1.82	0.83	0.82	0.76	0.75
Air	0.18	0.11	0.11	0.10	0.11
Rail	0.04	0.02	0.02	0.02	0.02
Water	0.00	0.00	0.00	0.01	0.01
Truck	0.63	0.24	0.24	0.24	0.24
Other	0.98	0.47	0.45	0.40	0.38
Government					
All	1.77	1.96	1.92	1.84	1.84
Air	0.39	0.51	0.50	0.50	0.53
Rail	0.11	0.11	0.11	0.11	0.12
Water	0.09	0.05	0.06	0.04	0.02
Truck	0.49	0.59	0.54	0.50	0.47
Other	0.70	0.71	0.72	0.69	0.69

**KEY:** NA = not available

**NOTES:** Transportation sector not shown as user of transportation services

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

**Table A3. Transportation Required to Produce Commodities, 2002–2006 (current dollars)**  
(cents of transportation required to deliver a dollar of the commodity to consumers)

Commodity	2002	2003	2004	2005	2006
<b>In-house</b>					
Natural resources and mining					
All	1.56	2.00	2.24	1.57	1.74
Air	0.37	0.74	1.10	0.37	0.39
Rail	0.08	0.05	0.05	0.05	0.06
Water	0.26	0.33	0.26	0.15	0.23
Truck	0.85	0.88	0.84	1.00	1.06
Other	NA	NA	NA	NA	NA
Construction					
All	1.76	1.87	1.87	2.10	2.28
Air	0.14	0.10	0.12	0.09	0.09
Rail	0.08	0.07	0.06	0.07	0.07
Water	0.06	0.06	0.05	0.08	0.09
Truck	1.48	1.64	1.63	1.86	2.03
Other	NA	NA	NA	NA	NA
Manufacturing products					
All	1.48	1.82	1.85	1.94	2.10
Air	0.22	0.23	0.30	0.21	0.21
Rail	0.15	0.23	0.22	0.22	0.26
Water	0.05	0.08	0.07	0.04	0.06
Truck	1.06	1.28	1.27	1.46	1.57
Other	NA	NA	NA	NA	NA
Wholesale and retail trade					
All	3.38	3.66	3.66	4.15	4.44
Air	0.13	0.08	0.11	0.08	0.09
Rail	0.03	0.04	0.04	0.04	0.03
Water	0.01	0.02	0.02	0.02	0.03
Truck	3.21	3.52	3.49	4.00	4.29
Other	NA	NA	NA	NA	NA
Utilities					
All	0.65	0.66	0.69	0.75	0.81
Air	0.19	0.16	0.22	0.12	0.19
Rail	0.02	0.02	0.02	0.03	0.03
Water	0.05	0.07	0.05	0.05	0.06
Truck	0.38	0.41	0.40	0.54	0.53
Other	NA	NA	NA	NA	NA
Information					
All	0.56	0.60	0.58	0.62	0.68
Air	0.10	0.08	0.08	0.07	0.07
Rail	0.03	0.02	0.02	0.02	0.03
Water	0.02	0.03	0.02	0.03	0.04
Truck	0.42	0.47	0.45	0.50	0.55
Other	NA	NA	NA	NA	NA
Financial services					
All	0.50	0.63	0.62	0.72	0.77
Air	0.17	0.15	0.17	0.15	0.14
Rail	0.01	0.01	0.01	0.01	0.01

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<b>Commodity</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Water	0.10	0.17	0.12	0.17	0.19
Truck	0.23	0.30	0.33	0.39	0.42
Other	NA	NA	NA	NA	NA
<b>Professional and business services</b>					
All	1.21	1.25	1.27	1.38	1.42
Air	0.44	0.35	0.36	0.34	0.30
Rail	0.01	0.02	0.02	0.02	0.02
Water	0.02	0.03	0.02	0.03	0.04
Truck	0.74	0.86	0.87	0.99	1.07
Other	NA	NA	NA	NA	NA
<b>Education and health services</b>					
All	0.85	1.00	1.08	1.29	1.53
Air	0.47	0.53	0.63	0.78	0.95
Rail	0.02	0.03	0.03	0.03	0.03
Water	0.03	0.06	0.05	0.03	0.04
Truck	0.34	0.38	0.38	0.45	0.52
Other	NA	NA	NA	NA	NA
<b>Leisure and hospitality</b>					
All	1.01	0.84	0.83	0.92	1.46
Air	0.11	0.09	0.11	0.09	0.08
Rail	0.02	0.04	0.03	0.03	0.04
Water	0.19	0.30	0.27	0.33	0.51
Truck	0.69	0.41	0.41	0.47	0.83
Other	NA	NA	NA	NA	NA
<b>Other services</b>					
All	0.95	0.73	0.72	0.80	1.00
Air	0.10	0.06	0.07	0.06	0.06
Rail	0.02	0.02	0.02	0.02	0.02
Water	0.05	0.03	0.02	0.03	0.04
Truck	0.78	0.61	0.61	0.69	0.89
Other	NA	NA	NA	NA	NA
<b>Government</b>					
All	0.45	0.45	0.47	0.51	0.57
Air	0.10	0.07	0.09	0.07	0.07
Rail	0.02	0.03	0.03	0.03	0.04
Water	0.02	0.02	0.02	0.02	0.03
Truck	0.32	0.32	0.33	0.39	0.43
Other	NA	NA	NA	NA	NA
<b>For-hire</b>					
<b>Natural resources and mining</b>					
All	4.97	6.29	6.15	6.23	6.12
Air	0.23	3.14	3.08	3.12	3.06
Rail	0.81	0.20	0.20	0.23	0.24
Water	0.12	0.90	0.86	0.85	0.87
Truck	2.47	0.16	0.20	0.23	0.24
Other	1.34	1.89	1.82	1.81	1.72
<b>Construction</b>					
All	4.20	5.59	5.80	6.01	6.03
Air	0.28	2.79	2.90	3.01	3.01

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Commodity	2002	2003	2004	2005	2006
Rail	0.40	0.28	0.28	0.31	0.32
Water	0.06	0.39	0.41	0.42	0.43
Truck	2.35	0.09	0.12	0.13	0.14
Other	1.11	2.03	2.09	2.14	2.12
Manufacturing products					
All	5.78	7.69	8.01	8.52	8.67
Air	0.39	3.85	4.01	4.26	4.34
Rail	0.81	0.40	0.39	0.46	0.49
Water	0.09	0.90	0.92	0.97	1.01
Truck	2.74	0.12	0.16	0.18	0.19
Other	1.75	2.43	2.53	2.65	2.64
Wholesale and retail trade					
All	4.19	2.43	2.60	2.62	2.64
Air	0.19	1.22	1.30	1.31	1.32
Rail	0.10	0.24	0.25	0.27	0.30
Water	0.02	0.09	0.09	0.09	0.09
Truck	0.80	0.02	0.03	0.03	0.02
Other	3.07	0.87	0.93	0.92	0.91
Utilities					
All	7.96	3.55	3.36	4.22	4.02
Air	0.27	1.78	1.68	2.11	2.01
Rail	2.02	0.43	0.39	0.48	0.46
Water	0.09	0.56	0.51	0.67	0.70
Truck	1.23	0.07	0.09	0.11	0.10
Other	4.36	0.71	0.69	0.84	0.74
Information					
All	2.74	2.41	2.28	2.45	2.69
Air	0.40	1.20	1.14	1.22	1.34
Rail	0.14	0.43	0.39	0.45	0.53
Water	0.02	0.13	0.12	0.13	0.15
Truck	0.64	0.03	0.03	0.03	0.03
Other	1.53	0.62	0.59	0.62	0.64
Financial services					
All	1.01	1.32	1.52	1.59	1.62
Air	0.19	0.66	0.76	0.79	0.81
Rail	0.06	0.31	0.35	0.35	0.37
Water	0.01	0.08	0.09	0.10	0.11
Truck	0.25	0.02	0.03	0.03	0.02
Other	0.50	0.26	0.30	0.31	0.31
Professional and business services					
All	2.24	2.41	2.50	2.51	2.50
Air	0.40	1.21	1.25	1.26	1.25
Rail	0.11	0.53	0.52	0.54	0.58
Water	0.08	0.11	0.12	0.12	0.13
Truck	0.53	0.10	0.12	0.10	0.05
Other	1.13	0.47	0.49	0.50	0.49
Education and health services					
All	2.28	2.55	2.56	2.65	2.65
Air	0.28	1.27	1.28	1.33	1.32
Rail	0.17	0.40	0.39	0.41	0.44

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Commodity	2002	2003	2004	2005	2006
Water	0.04	0.17	0.17	0.18	0.18
Truck	0.78	0.04	0.05	0.05	0.04
Other	1.01	0.68	0.68	0.69	0.67
Leisure and hospitality					
All	2.85	3.04	3.10	3.22	3.30
Air	0.30	1.52	1.55	1.61	1.65
Rail	0.25	0.31	0.31	0.34	0.37
Water	0.04	0.25	0.25	0.26	0.26
Truck	1.08	0.04	0.06	0.06	0.05
Other	1.18	0.92	0.94	0.96	0.96
Other services					
All	3.44	1.82	1.89	1.88	1.97
Air	0.32	0.91	0.94	0.94	0.99
Rail	0.19	0.23	0.23	0.23	0.26
Water	0.03	0.11	0.12	0.12	0.13
Truck	1.17	0.02	0.03	0.03	0.03
Other	1.73	0.54	0.56	0.56	0.57
Government					
All	3.30	3.96	3.95	3.97	3.99
Air	0.52	1.98	1.98	1.98	1.99
Rail	0.26	0.65	0.64	0.66	0.70
Water	0.12	0.25	0.25	0.27	0.29
Truck	1.00	0.07	0.10	0.08	0.06
Other	1.40	1.01	0.98	0.98	0.95

**KEY:** NA = not available

**NOTES:** Transportation sector not shown as user of transportation services

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.

**Table A4. Transportation Requirements for all Commodities, 2002–2006 (current dollars)**  
(cents per dollar increase in final demand)

Commodity	2002	2003	2004	2005	2006
<b>In-house</b>					
Natural resources and mining					
All	1.56	2.00	2.24	1.57	1.74
Air	0.37	0.74	1.10	0.37	0.39
Rail	0.08	0.05	0.05	0.05	0.06
Water	0.26	0.33	0.26	0.15	0.23
Truck	0.85	0.88	0.84	1.00	1.06
Other	NA	NA	NA	NA	NA
Construction					
All	1.76	1.87	1.87	2.10	2.28
Air	0.14	0.10	0.12	0.09	0.09
Rail	0.08	0.07	0.06	0.07	0.07
Water	0.06	0.06	0.05	0.08	0.09
Truck	1.48	1.64	1.63	1.86	2.03
Other	NA	NA	NA	NA	NA
Manufacturing products					
All	1.48	1.82	1.85	1.94	2.10
Air	0.22	0.23	0.30	0.21	0.21
Rail	0.15	0.23	0.22	0.22	0.26
Water	0.05	0.08	0.07	0.04	0.06
Truck	1.06	1.28	1.27	1.46	1.57
Other	NA	NA	NA	NA	NA
Wholesale and retail trade					
All	3.38	3.66	3.66	4.15	4.44
Air	0.13	0.08	0.11	0.08	0.09
Rail	0.03	0.04	0.04	0.04	0.03
Water	0.01	0.02	0.02	0.02	0.03
Truck	3.21	3.52	3.49	4.00	4.29
Other	NA	NA	NA	NA	NA
Utilities					
All	0.65	0.66	0.69	0.75	0.81
Air	0.19	0.16	0.22	0.12	0.19
Rail	0.02	0.02	0.02	0.03	0.03
Water	0.05	0.07	0.05	0.05	0.06
Truck	0.38	0.41	0.40	0.54	0.53
Other	NA	NA	NA	NA	NA
Information					
All	0.56	0.60	0.58	0.62	0.68
Air	0.10	0.08	0.08	0.07	0.07
Rail	0.03	0.02	0.02	0.02	0.03
Water	0.02	0.03	0.02	0.03	0.04
Truck	0.42	0.47	0.45	0.50	0.55
Other	NA	NA	NA	NA	NA
Financial services					
All	0.50	0.63	0.62	0.72	0.77
Air	0.17	0.15	0.17	0.15	0.14
Rail	0.01	0.01	0.01	0.01	0.01
Water	0.10	0.17	0.12	0.17	0.19

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<b>Commodity</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Truck	0.23	0.30	0.33	0.39	0.42
Other	NA	NA	NA	NA	NA
<b>Professional and business services</b>					
All	1.21	1.25	1.27	1.38	1.42
Air	0.44	0.35	0.36	0.34	0.30
Rail	0.01	0.02	0.02	0.02	0.02
Water	0.02	0.03	0.02	0.03	0.04
Truck	0.74	0.86	0.87	0.99	1.07
Other	NA	NA	NA	NA	NA
<b>Education and health services</b>					
All	0.85	1.00	1.08	1.29	1.53
Air	0.47	0.53	0.63	0.78	0.95
Rail	0.02	0.03	0.03	0.03	0.03
Water	0.03	0.06	0.05	0.03	0.04
Truck	0.34	0.38	0.38	0.45	0.52
Other	NA	NA	NA	NA	NA
<b>Leisure and hospitality</b>					
All	1.01	0.84	0.83	0.92	1.46
Air	0.11	0.09	0.11	0.09	0.08
Rail	0.02	0.04	0.03	0.03	0.04
Water	0.19	0.30	0.27	0.33	0.51
Truck	0.69	0.41	0.41	0.47	0.83
Other	NA	NA	NA	NA	NA
<b>Other services</b>					
All	0.95	0.73	0.72	0.80	1.00
Air	0.10	0.06	0.07	0.06	0.06
Rail	0.02	0.02	0.02	0.02	0.02
Water	0.05	0.03	0.02	0.03	0.04
Truck	0.78	0.61	0.61	0.69	0.89
Other	NA	NA	NA	NA	NA
<b>Government</b>					
All	0.96	0.45	0.47	0.51	0.57
Air	0.18	0.07	0.09	0.07	0.07
Rail	0.07	0.03	0.03	0.03	0.04
Water	0.03	0.02	0.02	0.02	0.03
Truck	0.67	0.32	0.33	0.39	0.43
Other	NA	NA	NA	NA	NA
<b>For-hire</b>					
<b>Natural resources and mining</b>					
All	4.93	8.18	8.09	8.00	7.80
Air	0.22	5.04	5.02	4.89	4.74
Rail	0.78	0.20	0.20	0.23	0.24
Water	0.12	0.90	0.86	0.85	0.87
Truck	2.37	0.15	0.20	0.22	0.24
Other	1.45	1.89	1.82	1.81	1.72
<b>Construction</b>					
All	4.16	6.68	6.93	7.15	7.19
Air	0.27	3.88	4.03	4.14	4.18
Rail	0.38	0.28	0.28	0.31	0.32
Water	0.06	0.39	0.41	0.42	0.43

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<b>Commodity</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Truck	2.25	0.09	0.12	0.13	0.14
Other	1.20	2.03	2.09	2.14	2.13
<b>Manufacturing products</b>					
All	5.72	9.39	9.71	10.26	10.44
Air	0.38	5.55	5.70	6.00	6.10
Rail	0.78	0.40	0.39	0.46	0.49
Water	0.09	0.90	0.92	0.97	1.01
Truck	2.63	0.12	0.16	0.18	0.19
Other	1.85	2.43	2.54	2.66	2.65
<b>Wholesale and retail trade</b>					
All	4.06	5.83	6.23	6.19	6.52
Air	0.19	4.61	4.92	4.87	5.19
Rail	0.09	0.24	0.25	0.27	0.30
Water	0.02	0.09	0.09	0.09	0.09
Truck	0.77	0.02	0.03	0.03	0.02
Other	2.99	0.87	0.94	0.93	0.93
<b>Utilities</b>					
All	7.93	7.36	6.96	7.97	7.89
Air	0.26	5.58	5.28	5.85	5.88
Rail	1.93	0.43	0.39	0.48	0.46
Water	0.09	0.56	0.51	0.67	0.70
Truck	1.18	0.07	0.09	0.11	0.10
Other	4.47	0.71	0.69	0.85	0.75
<b>Information</b>					
All	2.68	4.13	3.88	4.20	4.60
Air	0.38	2.93	2.74	2.97	3.25
Rail	0.14	0.43	0.39	0.45	0.53
Water	0.02	0.13	0.12	0.13	0.14
Truck	0.62	0.03	0.03	0.03	0.03
Other	1.52	0.62	0.60	0.62	0.65
<b>Financial services</b>					
All	0.99	1.99	2.29	2.36	2.41
Air	0.18	1.33	1.53	1.57	1.59
Rail	0.06	0.31	0.35	0.35	0.37
Water	0.01	0.08	0.09	0.10	0.11
Truck	0.24	0.02	0.03	0.03	0.02
Other	0.50	0.26	0.30	0.32	0.32
<b>Professional and business services</b>					
All	2.21	3.74	3.84	3.88	3.90
Air	0.38	2.52	2.57	2.59	2.60
Rail	0.11	0.53	0.52	0.54	0.58
Water	0.08	0.11	0.12	0.12	0.13
Truck	0.51	0.09	0.12	0.10	0.05
Other	1.13	0.49	0.52	0.54	0.53
<b>Education and health services</b>					
All	2.24	3.70	3.72	3.82	3.81
Air	0.27	2.43	2.44	2.49	2.48
Rail	0.17	0.40	0.39	0.41	0.44
Water	0.03	0.17	0.17	0.18	0.18
Truck	0.75	0.04	0.05	0.05	0.04
Other	1.03	0.68	0.68	0.70	0.67

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Commodity	2002	2003	2004	2005	2006
Leisure and hospitality					
All	2.82	4.18	4.25	4.40	4.54
Air	0.29	2.66	2.70	2.79	2.88
Rail	0.24	0.31	0.31	0.33	0.37
Water	0.03	0.25	0.25	0.26	0.26
Truck	1.04	0.04	0.06	0.06	0.05
Other	1.21	0.92	0.94	0.97	0.97
Other services					
All	3.37	2.78	2.84	2.77	2.88
Air	0.31	1.87	1.90	1.83	1.88
Rail	0.18	0.23	0.23	0.23	0.26
Water	0.03	0.11	0.12	0.12	0.13
Truck	1.12	0.02	0.03	0.03	0.03
Other	1.74	0.54	0.57	0.56	0.57
Government					
All	4.21	5.27	5.27	5.27	5.32
Air	0.43	3.28	3.29	3.28	3.32
Rail	0.46	0.65	0.64	0.66	0.70
Water	0.10	0.25	0.25	0.27	0.29
Truck	1.63	0.07	0.10	0.08	0.06
Other	1.58	1.01	0.99	0.98	0.95

**KEY:** NA = not available

**NOTES:** Transportation sector not shown as user of transportation services

**SOURCE:** U.S. Department of Transportation, Bureau of Transportation Statistics, 2014.