

Section 1: The Washington Input-Output Model

The 2012 Washington State Input-Output Study produced a 52-sector model of the state economy using the North American Industrial Classification System definition of industries. In addition to the industrial sectors, the model also contains six final demand categories:

- Washington personal consumption expenditure.
- Washington private investment outlays.
- Washington state and local government expenditures.
- Sales by Washington sectors to the federal government.
- Sales by Washington sectors to elsewhere in the United States and to foreign customers.

In addition to the items above, the table below provides estimates of payments of labor income, other value added, and purchases by Washington industries from elsewhere in the United States and from foreign countries. You can download the table through the [website](#).

Except for its lack of sector details, this table is the same as the detailed table you find at the link we referenced above. The table identifies three industry groupings (natural resources and utilities, manufacturing and construction, and trade and services), three final demand sectors (personal consumption, investment and government, and exports), and a value added sector (labor income and other value added), and imports.

Table 1-1. Aggregate 2012 Washington Input-Output Table (\$ Millions)

	Resources & Utilities	Manufacturing & Construction	Trade & Services*	Personal Consumption Expenditures	Investment & Government	Exports	Total Sales
Resources & Utilities	3065	4521	2498	6730	1353	8659	26826
Manufacturing & Construction	2056	16448	21499	11537	44917	125232	221689
Trade & Services*	3323	27752	76510	155828	27131	110033	400577
Value Added	13385	60005	216472	36463	47328	0	373652
Labor Income	7616	40451	141996	0	39717	0	229781
Imports	4998	112963	83596	59536	43652	0	304746
Total Inputs	26826	221689	400575	270094	164381	243924	1327491

*Includes all the services not covered by the other two industrial groups.
Zeros: entries here not applicable to this model

- The first component is the block of interindustry transactions—the part of Table 1-1 bounded in double black lines. Estimates in this block show the flow of goods and services that are both produced and consumed among the state’s industries. Another name for these transactions is “intermediate demand.” This means that industries purchase these inputs to transform them into a product or service for subsequent sales.

- The second component contains the final demand sectors—the double-red-line bordered part of Table 1-1. Transactions in this block of the table represent the sales by industry to “ultimate” consumers: households, the capital goods sector (Washington investors), governments, and export markets outside the state. These final demand sectors purchase output from the producing sectors in the state economy, not for further production or resale, but for final consumption or use.
- The third component of the table contains the payments to the basic factors of production—labor, capital and land—as well as to sources of inputs located outside Washington. The yellow block bordered by shaded lines in Table 1-1 represents this component. This block includes value-added (payments to labor and other estimates of other value added), as well as imports from the rest of the United States and from foreign countries.
- The fourth block of Table I-1, colored in blue, contains other elements of the matrix related to sales and purchases.

The Input-Output Table: A Comprehensive Description of the Washington Economy

The Input-Output table constitutes a detailed set of accounts on all economic activities within the state; it portrays the flow of commodities and services between producing sectors and consuming sectors. The table thus provides a complete description of the state economy at a point in time -- 2012.

Each row in the table shows the production and sales of an industry to all industries within the state and to final demand. For example, in 2012, total output (sales) of Washington manufacturing and construction industries amounted to \$222 billion. 56% of this output, valued at \$125.2 billion, was exported; and 44% was sold to in-state markets. In contrast, output of trade and services industries totaled \$400.6 billion, 81% higher than manufacturing and construction, but only 27% of the total output was exported, while 46% or \$183.0 billion of this output was used by in-state final demand.

Each column shows an industry’s purchases of goods and services from its own or other industries in the state, from factors of production including labor, land, capital and tax payments to government. Total imports from other regions in the U.S. or from overseas are a part of an industry’s purchases for use in its production process. Table 1-1 shows that, in 2012, \$113 billion or 51% of total purchases by Washington manufacturing and construction industries for production use were imported. In comparison, the more “local” trade and service industries imported a relatively small amount, about 21%, of their total purchases.

The sum of a row is the total output of an industrial sector. The sum of a column is the total inputs to an industrial sector. The basic accounting rule dictates that for each industry the row total (i.e., total output or sales) equals the corresponding column total (i.e., total inputs or purchases).

The Input-Output Tables: Measuring Changes in the State's Economic Structure Over Time

With a series of historical tables available for Washington (i.e., 1963, 1967, 1972, 1982, 1987, 1997, 2002, 2007 and 2012), we can observe changes in the structure of the economy over time. The change from the SIC to NAICS industry classification in 1997 complicates how we compare interindustry industrial structure over time. However, aggregate comparisons are possible. These comparisons need to be viewed with reference to the particular prevailing cyclical situation each historical table reflects. For example, 1987 and 1997 were relatively comparable years of economic expansions in Washington, while 1982 and 1972 were years when severe contractions took place. Table 1-2 shows the changing “openness,” or shifts in imports and exports, of the Washington economy over the 1963-2012 period.

Table 1-2. Changing Importance of Washington External Trade, 1963-2012

	Percent Industrial Outputs Exported (All Sectors)	Percent of Industrial Inputs Imported		
		All Sectors	Manufacturing	Services & Trade*
1963	28.1%	19.4%	28.0%	4.5%
1967	32.2%	25.6%	35.3%	9.3%
1972	35.6%	19.4%	31.2%	5.9%
1982	37.2%	23.9%	39.1%	8.4%
1987	36.0%	22.5%	40.2%	7.9%
1997	38.2%	22.7%	48.1%	9.8%
2002	35.9%	28.3%	53.7%	17.4%
2007	41.3%	32.6%	50.5%	23.2%
2012	37.6%	29.3%	51.0%	20.9%

*Includes finance, insurance and real estate (FIRE); exclude resources, construction, transportation, communication and utilities (TCU); since 1997, include telecommunication.

Exports as a share of total industrial output in the state during the 1963-1982 period increased from 28.1% to 37.2%, and then increased modestly between 1982 and 2007. Part of the reason for a low export share in 2002 might have to do with the U.S. cyclical downturn in that year depressing the state's export markets. However, 2007 continued the long-term upward trend in the share of industrial output that was exported, with a historically high value of 41.3%. Exports in 2012 were slightly lower than in 2007, 37.6% of output. Since 1963, imports as a share of production inputs grew steadily for the state's services and trade industries; the share increased to over 20% in 2007 and 2012. For manufacturing industries in the state, the import share of production inputs has also risen significantly, reaching 51.0% in 2012.

We can conduct more detailed analyses at the individual sector level that show shifting patterns of exports to other regions in the U.S. and to overseas markets. We can also do this for changes in imports from the rest of the U.S. and from foreign producers.