

Section 4: The Input-Output Impact Multipliers

An impact multiplier is defined as the ratio of an industrial sector's or a project's total impact to its direct impact. Expressed as single numbers, multipliers are used as a quick reference for a summary measure of estimated total impacts; thus they lack industrial details.

There are numerous types of Input-Output impact multipliers. Table 4-1 shows the four most widely used multipliers obtained from the aggregated three-sector 2012 Washington I/O table presented in previous chapters (Table 1-1, Table 3-1 and Table 3-2).

**Table 4-1. 2012 Washington State Input-Output Multipliers
Three Sector Model**

	Total Jobs (per \$ Million direct output)	Total Employment (per direct job)	Total Labor Income (per \$ direct output)	Total Output (per \$ direct output)
Natural Resources / Utilities	11.040	2.210	0.692	2.049
Manufacturing / Construction	6.312	2.790	0.404	1.700
Trade and Services	13.016	1.924	0.692	2.032

The formal definitions of these multipliers are:

1. **Total jobs multiplier** (jobs per \$million direct output). Total number of jobs (wage and salary workers, and proprietors) generated in all sectors of the economy per million dollars of the industry's direct output change in the economy.
2. **Total employment multiplier** (jobs per direct job). Total number of jobs (wage and salary works and proprietors) generated in all sectors of the economy per direct job change in the industry.
3. **Labor income multiplier** (\$ earnings per \$dollar direct output). Total labor income (wages, salaries, proprietor's income and other labor income) generated in all sectors of the economy per dollar of direct output change in the industry.
4. **Total output multiplier** (\$output per \$dollar direct output). Total output generated in all sectors of the economy per dollar of direct output change in the industry.

We reported multipliers for all industries defined in the Washington State Input-Output Table in Table 4-2. Again, as we discussed in Chapter 3, the input-output model is a Type II model, which treats households as an endogenous part of the model. So the multipliers presented here are Type II multipliers.

Table 4-2. 2012 Washington State Input-Output Multipliers

		Jobs /\$Mil Output	Total / Direct Job	Output /\$FD	Total Labor Income /\$FD
IO-01	Crop Production	12.45	1.53	2.09	0.66
IO-02	Animal Production	3.02	3.10	2.10	0.44
IO-03	Forestry and Logging	2.41	4.40	2.44	0.69
IO-04	Fishing, Hunting and Trapping	4.07	2.15	1.90	0.51
IO-05	Mining	10.98	1.52	1.95	0.57
IO-06	Electric Utilities	1.50	4.43	1.97	0.60
IO-07	Gas Utilities	2.96	2.07	1.62	0.26
IO-08	Other Utilities	3.35	2.63	1.87	0.56
IO-09	Highway, Street and Bridge Construction	3.47	3.01	2.12	0.61
IO-10	Other Construction	3.95	2.74	2.09	0.58
IO-11	Food, Beverage and Tobacco Manufacturing	2.07	3.27	1.82	0.34
IO-12	Textiles and Apparel Mills	3.22	2.70	1.86	0.55
IO-13	Wood Product Manufacturing	2.68	3.29	2.20	0.48
IO-14	Paper Manufacturing	1.26	4.15	1.76	0.33
IO-15	Printing and Related Activities	2.33	3.34	1.89	0.57
IO-16	Petroleum and Coal Products Manufacturing	0.07	11.21	1.14	0.05
IO-17	Chemical Manufacturing	1.85	3.13	1.67	0.43
IO-18	Nonmetallic Mineral Products Manufacturing	2.97	2.37	1.70	0.38
IO-19	Primary Metal Manufacturing	1.50	4.06	1.81	0.36
IO-20	Fabricated Metals Manufacturing	3.70	2.29	1.78	0.46
IO-21	Machinery Manufacturing	1.96	3.40	1.80	0.39
IO-22	Computer and Electronic Product Manufacturing	1.87	3.35	1.69	0.55
IO-23	Electrical Equipment Manufacturing	1.92	3.32	1.76	0.39
IO-24	Aircraft and Parts Manufacturing	2.09	2.42	1.47	0.37
IO-25	Ship and Boat Building	2.60	3.20	1.92	0.54
IO-26	Other Transportation Equipment Manufacturing	2.08	3.28	1.80	0.37
IO-27	Furniture Product Manufacturing	4.63	2.24	1.93	0.63
IO-28	Other Manufacturing	3.32	2.57	1.86	0.54
IO-29	Wholesale	5.29	1.97	1.80	0.57
IO-30	Non-Store Retail	8.38	1.42	1.56	0.39
IO-31	Other Retail	9.13	1.64	1.92	0.61
IO-32	Air Transportation	1.66	2.81	1.58	0.30
IO-33	Water Transportation	3.53	2.68	2.07	0.52
IO-34	Truck Transportation	5.70	2.02	2.05	0.56
IO-35	Other Transportation/Postal Offices	3.16	2.86	2.04	0.66
IO-36	Support Activities for Storage, Transportation and Warehousing	5.67	2.17	2.07	0.66

Table 4-2. 2012 Washington State Input-Output Multipliers (continued)

		Jobs /\$Mil Output	Total / Direct Job	Output /\$FD	Total Labor Income /\$FD
IO-37	Software Publishers, Data Processing & Internet Service Providers	1.72	4.67	1.95	0.64
IO-38	Telecommunications	1.55	2.96	1.61	0.32
IO-39	Other Information	0.97	7.88	2.35	0.55
IO-40	Credit Intermediation and Related Activities	2.09	3.31	1.82	0.40
IO-41	Other Finance and Insurance	10.47	1.89	2.36	0.78
IO-42	Real Estate and Rental and Leasing	10.22	1.39	1.62	0.46
IO-43	Legal /Accounting and Bookkeeping /Management Services	10.23	1.91	2.42	1.22
IO-44	Architectural, Engineering and Computing Services	6.69	2.19	2.20	0.96
IO-45	Educational Services	11.62	1.62	2.17	0.73
IO-46	Ambulatory Health Care Services	7.80	2.24	2.44	1.05
IO-47	Hospitals	4.77	2.66	2.18	0.78
IO-48	Nursing and Residential Care Facilities, Social Assistance	16.94	1.45	2.20	0.81
IO-49	Arts, Recreation and Accommodation	13.41	1.49	2.00	0.68
IO-50	Food Services and Drinking Places	12.58	1.53	2.10	0.64
IO-51	Administrative/Employment Support Services	12.92	1.61	2.24	0.93
IO-52	Waste Management/Other, and Agriculture Services	8.50	1.86	2.16	0.70