

Chapter 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 utilized multipliers obtained from the aggregated three-sector 2002 Washington I-O table presented in previous chapters (Table 1-1, Table 3-1, and Table 3-2).

Table 4-1
2002 WASHINGTON STATE INPUT-OUTPUT MULTIPLIERS
Three Sector Model

Industry	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	14.006	2.209	0.497	1.925
Manufacturing/Construction	10.181	2.516	0.489	1.734
Trade and services	18.429	1.908	0.733	1.986

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.

Multipliers for all industries defined in the Washington State Input-Output Table are reported in Table 4-2. Again as 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
2002 WASHINGTON STATE INPUT-OUTPUT MULTIPLIERS

	Total Jobs (per \$million final demand)	Total Employment (per direct job)	Total Output (per \$ final demand)	Total Labor Income (per \$ of final demand)
1. Crop Production	22.74	2.033	2.30	0.64
2. Animal Production	37.19	1.593	2.41	0.77
3. Forestry and Logging	17.30	1.845	1.82	0.37
4. Fishing, Hunting, and Trapping	17.99	2.085	2.05	0.78
5. Mining	19.37	2.320	2.23	0.80
6. Electric Utilities	5.84	4.221	1.73	0.30
7. Gas Utilities	5.57	5.382	1.48	0.26
8. Other Utilities	11.05	2.193	1.64	0.47
9. Construction	15.95	2.344	1.97	0.64
10. Food, Beverage and Tobacco	14.18	4.001	2.17	0.51
11. Textiles and Apparel	17.53	1.782	1.82	0.60
12. Wood Product Manufacturing	14.78	3.052	2.16	0.54
13. Paper Manufacturing	10.54	4.053	1.99	0.51
14. Printing	18.22	2.061	2.02	0.73
15. Petroleum and Coal Products	3.23	9.555	1.35	0.15
16. Chemical Manufacturing	7.96	6.408	1.78	0.50
17. Nonmetallic Mineral Products	12.56	2.555	1.88	0.52
18. Primary Metals	12.34	2.782	1.90	0.57
19. Fabricated Metals	15.01	2.101	1.85	0.61
20. Machinery Manufacturing	13.86	2.229	1.83	0.61
21. Computer and Electronic Product	11.42	2.762	1.79	0.58
22. Electrical Equipment	10.50	2.436	1.69	0.48
23. Aircraft and Parts	5.63	2.814	1.38	0.32
24. Ship and Boat Building	19.97	2.428	2.20	1.06
25. Other Transportation	9.93	3.727	1.82	0.45
26. Furniture	18.90	2.005	2.05	0.68
27. Other Manufacturing	14.28	2.034	1.81	0.57
28. Wholesale	13.76	2.298	1.80	0.62
29. Retail	21.92	1.623	1.89	0.66
30. Air Transportation	9.60	2.811	1.72	0.44
31. Water Transportation	10.60	3.682	1.80	0.48
32. Truck Transportation	21.57	2.165	2.20	0.83
33. Other Transportation/Postal Offices	23.04	2.031	2.26	0.94
34. Support Activities for Transportation/Warehousing/Storage	21.49	2.341	2.24	0.95
35. Software Publishers & Internet Service Providers	10.76	5.887	1.89	0.67

Table 4-2 (Continued)
2002 WASHINGTON STATE INPUT-OUTPUT MULTIPLIERS

	Total Jobs (per \$million final demand)	Total Employment (per direct job)	Total Output (per \$ final demand)	Total Labor Income (per \$ of final demand)
36. Telecommunications	10.71	4.006	2.00	0.50
37. Other Information	14.96	3.359	2.17	0.68
38. Credit Intermediation and Related Activities	12.34	2.735	1.93	0.51
39. Other Finance and Insurance	14.43	2.918	2.10	0.69
40. Real Estate, Rental and Leasing	14.65	1.765	1.70	0.43
41. Legal /Accounting and Bookkeeping /Management Services	24.37	1.995	2.24	1.07
42. Architectural and Engineering /Computer Systems Design and Related Services	22.96	2.234	2.26	1.10
43. Educational Services	27.13	1.550	2.07	0.71
44. Ambulatory Health Care Services	22.88	2.012	2.16	0.99
45. Hospitals	20.38	2.108	2.11	0.86
46. Nursing and Residential Care Facilities, Social Assistance	36.43	1.461	2.21	0.95
47. Arts, Recreation, and Accommodation	30.87	1.479	2.01	0.75
48. Food Services and Drinking Places	32.12	1.451	2.13	0.71
49. Administrative/Employment Support Services	33.11	1.534	2.17	0.98
50. Waste Management/Others, and Agriculture Services	21.99	1.773	2.04	0.65