

Employment Impacts of Highway Infrastructure Investment

For many years, the Federal Highway Administration (FHWA) has periodically estimated the employment impacts of highway capital expenditures. Two rigorous efforts to estimate these impacts were performed in 1997 and 2005. The 1997 analysis estimated that each one billion dollars of Federal-aid highway expenditures, plus a 20 percent State share, supported 47,500 jobs. The employment estimate included direct, supporting, and induced positions, defined as:

- **Construction oriented** employment, including all jobs that are created either by the construction firms that work directly on the project or by the firms that provide direct inputs (paving materials, steel, concrete, etc.) to the construction project;
- **Supporting industries'** employment, including jobs in firms that provide inputs to the industries that directly provide materials and equipment used in highway construction. For example, a firm that produces guard rails is counted as 'construction oriented' employment but the firm that provides the sheet steel to make the guard rails is considered part of 'supporting industries' employment; and
- **Induced** employment, which includes all of the jobs supported by consumer expenditures resulting from wages to 'construction oriented' and 'supporting industries' employment.

The 1997 analysis estimated that each one billion dollars of Federal-aid highway expenditures, combined with \$250 million from the States¹, supported 19,584 construction oriented jobs; 6,939 supporting industries' jobs; and 21,052 induced employment jobs. The analysis also estimated that the total jobs equated to employment income of \$1.7 billion.

Although the analysis was performed more than a decade ago, the jobs number is cited on a routine basis as a justification for increased highway spending. The figure was even cited in SAFETEA-LU. A subsequent analysis was performed to update the estimate to 2005, but the results of the analysis were not released due to concerns that the jobs number would continue to be misused and that the new, lower estimate would not be understood. The analysis of 2005 data, reflecting increases in the cost of raw materials and labor, estimated that 36,488 jobs would be supported by each \$1.25 billion in highway capital investment.

FHWA has now updated its estimate to 2007, and estimates that a total of 34,779 jobs, equating to employment income of \$1.3 billion, would be supported by each \$1.25 billion in highway capital investment. The number has dropped in the past two years due to input price increases, including a 56 percent increase in asphalt and a 24 percent increase in the cost of diesel fuel.

¹ The Federal share is 80% of the total project cost, so \$1 billion in Federal spending would equate to \$1.25 billion including the 20% State share.

Impacts of \$1,000,000,000 Federal Expenditure
with 20% State Share
1997, 2005 and 2007
(2007 dollars)

	1997	2005	2007*
Construction Oriented Employment Income	\$736,704,000	\$536,053,016	\$493,517,797
Construction Oriented Employment Person-Years	19,584	12,572	11,921
Supporting Industries Employment Income	\$278,221,000	\$240,940,000	\$218,834,879
Supporting Industries Employment Person-years	6,939	5,604	5,405
Induced Employment Income	\$681,478,000	\$685,193,000	\$615,113,374
Induced Employment Person-years	21,052	18,311	17,453
Total Employment Income	\$1,696,406,000	\$1,462,188,000	\$1,327,466,049
Total Person-years	47,500	36,488	34,779

*Preliminary

Cautions about the use of the job employment and income figures

- The estimated jobs figure, if used at all, should be used carefully --
 - ❖ The FHWA analysis refers to jobs *supported* by highway investments, not jobs *created*;
 - ❖ The distinction needs to be made between jobs directly related to highway construction -- about one-third of the total jobs -- and the supporting industries' and induced employment jobs.
 - ❖ The assumed State share must be included in the overall investment number;
 - ❖ Annual highway funding supports the same jobs, except to the extent that incremental spending increases create new ones.
 - ❖ The estimated job support utilizes the national average mix of construction materials and labor inputs. Specific projects and local utilization ratios will alter the estimated number of jobs supported.

- The FHWA analysis assumes there is slack capacity in the markets for labor and for goods and services. If there is not excess capacity, some of the employment will be met by workers shifting from other jobs.

- The employment figures have recently been used as a justification for including highway spending in an economic stimulus package. But with the exception of short-term resurfacing and preservation projects, highway funds spend out slowly, with only 27% of a project, on average, outlaying in the first year. Further, it is unlikely that States would undertake additional resurfacing projects; instead, States would likely use additional funds to move other planned projects.

Impacts of \$1,000,000,000 Federal Expenditure
with 20% State Share
1997, 2005 and 2007
(2007 dollars)

	1997	2005	2007*	2007 Ratios
Construction Oriented Employment Income	\$736,704,000	\$536,053,016	\$493,517,797	
Construction Oriented Employment Person-Years	19,584	12,572	11,921	34.3%
Supporting Industries Employment Income	\$278,221,000	\$240,940,000	\$218,834,879	
Supporting Industries Employment Person-years	6,939	5,604	5,405	15.5%
Induced Employment Income	\$681,478,000	\$685,193,000	\$615,113,374	
Induced Employment Person- years	21,052	18,311	17,453	50.2%
Total Employment Income	\$1,696,406,000	\$1,462,188,000	\$1,327,466,049	
Total Person-years	47,500	36,488	34,779	100.0%

*See explanations in paper titled "Employment Impacts of Highway Infrastructure Investments"

I-95 / SR1 Mall Interchange Improvements

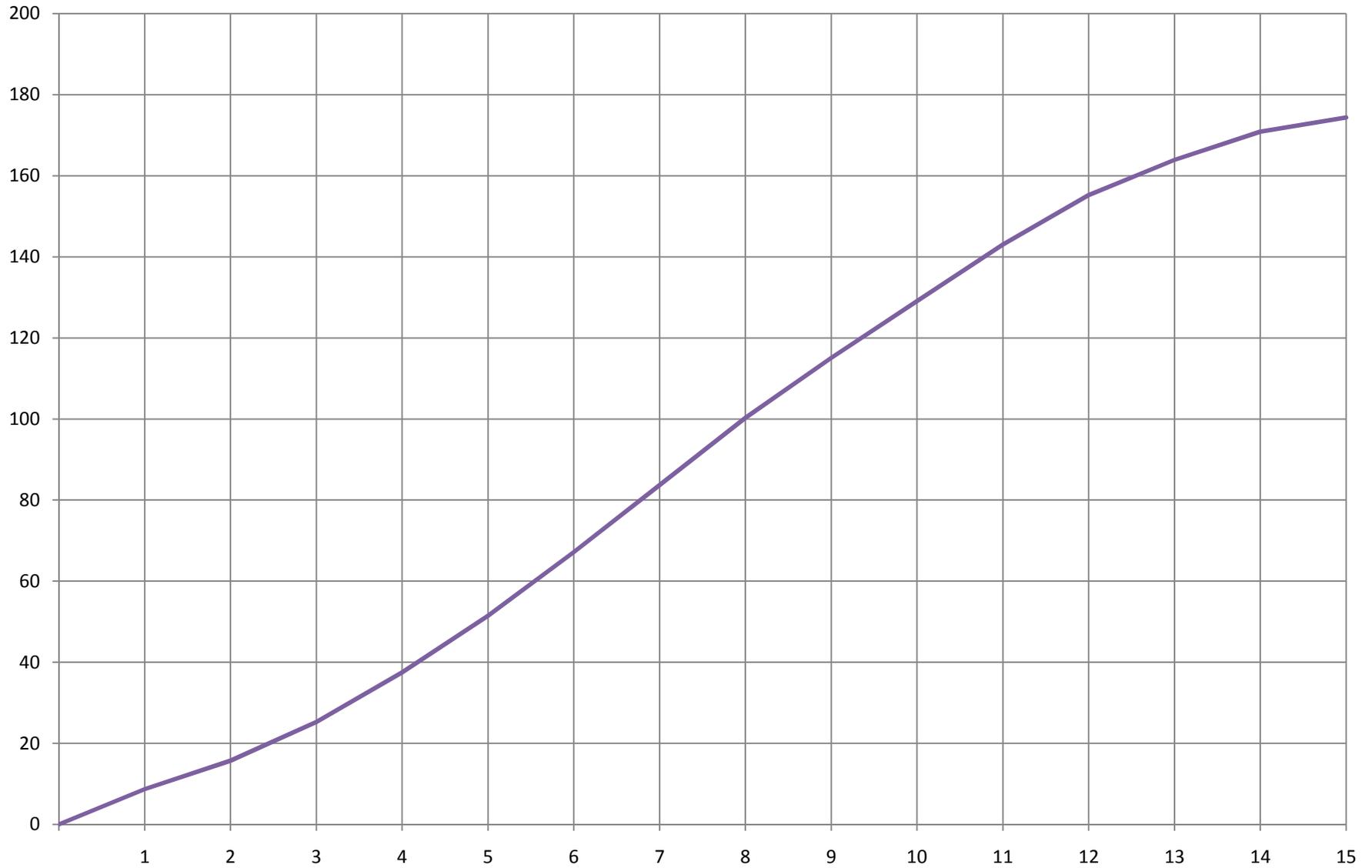
Total Constructed Value	Percent of \$1.25 Billion
\$174,358,275	0.13948662

	FHWA 2007 Values	I-95 / SR1
Construction Oriented Employment Income	\$493,517,797	
Construction Oriented Employment Person-Years	11,921	1,663
Supporting Industries Employment Income	\$218,834,879	
Supporting Industries Employment Person-years	5,405	754
Induced Employment Income	\$615,113,374	
Induced Employment Person-years	17,453	2,434
Total Employment Income	\$1,327,466,049	
Total Person-years	34,779	4,851

TABLE 5: I-95 / SRI Mall Interchange Improvements - Job Creation by Quarter (jobs in person-years)

Quarter	Est. Cash Flow % per Quarter	Est. Cash Flow Dollars per Quarter	Cash Flow % of \$1.25B	Construction Oriented Employment Person-Years (11,921/\$1.25B)	Supporting Industries Employment Person-years (5,405/\$1.25B)	Induced Employment Person-years (17,453/\$1.25B)	Total Employment Person-years
1	5.0%	\$8,717,914	0.70%	83	38	122	243
2	4.0%	\$6,974,331	0.56%	67	30	97	194
3	5.5%	\$9,589,705	0.77%	91	41	134	267
4	7.0%	\$12,205,079	0.98%	116	53	170	340
5	8.0%	\$13,948,662	1.12%	133	60	195	388
6	9.0%	\$15,692,245	1.26%	150	68	219	437
7	9.5%	\$16,564,036	1.33%	158	72	231	461
8	9.5%	\$16,564,036	1.33%	158	72	231	461
9	8.5%	\$14,820,453	1.19%	141	64	207	412
10	8.0%	\$13,948,662	1.12%	133	60	195	388
11	8.0%	\$13,948,662	1.12%	133	60	195	388
12	7.0%	\$12,205,079	0.98%	116	53	170	340
13	5.0%	\$8,717,914	0.70%	83	38	122	243
14	4.0%	\$6,974,331	0.56%	67	30	97	194
15	2.0%	\$3,487,166	0.28%	33	15	49	97
100.0%		\$174,358,275		1,663	754	2,434	4,851

Cumm Cash Flow



— Cumm Cash Flow