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Highlights

- The $14.4 billion (constant 2004 dollars) of transportation infrastructure investments planned for the Wasatch Front over the next three decades will significantly influence the region's economic development potential, relative competitiveness, and land use patterns.
- This new capacity construction spending will average $531.6 million per year over the 27-year period and includes average annual spending of $163.4 million by UTA (transit), $226.9 million by WFRC (highways), and $141.3 million by MAG (highways).
- The federally financed share of these projects increases the size and composition of the regional economy. Federal in-state spending on these construction projects is estimated to total $4.2 billion over the 27-year period. This is an annual average of $155.7 million composed of $45.3 million for UTA, $68.1 million for WFRC, and $42.4 for MAG.
- The impacts of this federal spending have been analyzed with the REMI model. These federal dollars result in an average annual employment impact of 2,800 additional jobs. This incremental employment will support about 3,900 more people for the duration of the projects than would have been the case without the federal spending. The state's economy, as measured by Gross State Product (GSP), will, on average, be larger by $211.8 million per year. Personal income will be larger by an average of $197.0 million annually, as compared to what it would have been in the absence of the federal spending. Incremental state income taxes will increase on average by an estimated $5.9 million on an annual basis.
- The total economic activity (both externally and internally financed) associated with the 27-year construction program is an annual average of about 8,500 jobs, including approximately 3,400 in construction, the majority of which are in the heavy construction sector. The associated impact population averages about 11,600 annually. Average annual personal income associated with the construction projects is $640.4 million while the average annual GSP associated with this economic activity is $639.9 million. State income taxes generated by this economic activity are on average $19.2 million annually.

Economic and Demographic Impacts of Federally Financed Transportation Infrastructure on the Wasatch Front

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Over the next three decades, $14.4 billion (constant 2004 dollars) of new transit and highway infrastructure is planned to meet the transportation needs of the Wasatch Front.[1] These investments will significantly influence the region's economic development potential, relative competitiveness, and land use patterns. While these more comprehensive long-term effects of the transportation improvements are justifiably the primary focus of planners, there are also substantial regional economic benefits derived from the construction activity. These heavy construction projects employ a labor force that is specialized in the design and construction of transit and highways and that is paid higher than average wages. Given the nearly 30-year duration of these projects, the development of this sector could ultimately result in a regional specialization and eventual export of these services to other regions. This analysis identifies and analyzes the economic and demographic impacts of the construction of transportation infrastructure along the Wasatch Front from 2004 through 2030, particularly focusing on the federally financed portion. The Utah Transit Authority (UTA) has sponsored this research.

Magnitude of the Total Project Spending

The combined population of the Wasatch Front counties (Davis, Salt Lake, Utah, and Weber) is projected to grow by just over 1 million by 2030, increasing from an estimated 1.8 million in 2003 to 2.8 million. The Mountainland Association of Governments (MAG) and the Wasatch Front Regional Council (WFRC) have collaborated with the Utah Transit Authority (UTA), the Utah Department of Transportation

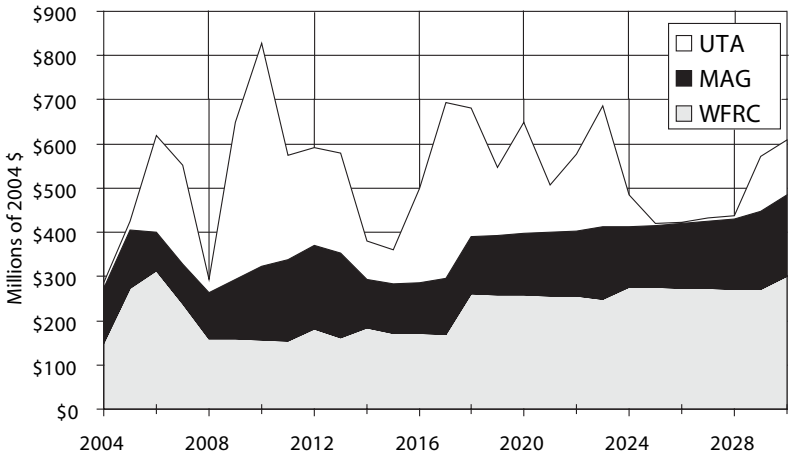
(UDOT), and the local governments in their jurisdictions to prepare long-range transportation plans (LTP) to accommodate the transportation needs of the growing metropolitan Wasatch Front. These long-range transportation plans include nearly $10 billion of highway and major arterial construction and $4.4 billion in transit projects in the four-county area. The construction spending will average $531.6 million per year over the 27-year period. The UTA plans to establish bus rapid transit service and to build heavy and light rail at an annual rate of $163.4 million. WFRC plans for an average annual $226.9 million or a total of $6.1 billion in highway expansion. The MAG LTP calls for $3.8 billion to expand highway capacity by 2030; this is an annual average of $141.3 million. (Table 1 and Figure 1) All of these expenditures, which have been incorporated into the official long-term transportation plans, increase capacity and do not

Table 1
Transportation Infrastructure Projects: Highway and Transit
Millions of Constant 2004 Dollars

	WFRC	MAG	UTA	TOTAL
2004	$149.8	$122.7	$13.6	$286.2
2005	$273.0	$133.3	$18.5	$424.8
2006	$312.2	$87.8	$218.0	$618.0
2007	$238.8	$90.2	$222.6	$551.6
2008	$159.7	$104.8	$29.3	$293.7
2009	$158.7	$135.0	$354.0	$647.7
2010	$157.7	$165.3	$506.1	$829.2
2011	$154.3	$184.1	$235.8	$574.2
2012	$182.3	$187.4	$223.2	$592.9
2013	$161.9	$190.2	$227.0	$579.1
2014	$184.2	$110.0	$86.7	$380.9
2015	$172.0	$112.1	$75.3	$359.4
2016	$171.3	$115.1	$213.7	$500.1
2017	$168.5	$127.3	$396.9	$692.7
2018	$260.0	$130.8	$290.0	$680.8
2019	$259.3	$134.6	$152.2	$546.2
2020	$257.9	$138.7	$251.4	$648.0
2021	$256.6	$143.2	$106.7	$506.4
2022	$255.2	$148.0	$174.1	$577.3
2023	$248.7	$163.5	$274.4	$686.6
2024	$276.5	$135.4	$72.3	$484.1
2025	$275.3	$140.4	$3.3	$419.0
2026	$274.1	$145.9	$3.3	$423.4
2027	$273.0	$151.9	$7.3	$432.2
2028	$271.9	$158.4	$7.3	$437.7
2029	$270.6	$175.7	$124.6	$570.9
2030	$301.8	$183.7	$124.6	$610.1
Average	$226.9	$141.3	$163.4	$531.6
Total	$6,125.1	$3,815.7	$4,412.4	$14,353.2

Source: BEBR analysis of MAG, UTA, and WFRC data.

Figure 1
Transportation Infrastructure Projects: 2004-2030
Millions of Constant 2004 Dollars



Source: BEBR analysis of WFRC, MAG, and UTA data. Note: These data are modeled but not smoothed.

include operations and maintenance. New capacity projects include construction and expansion of highways, freeways, and major arterials along the Wasatch Front. New capacity transit projects include bus rapid transit, light rail, and commuter (heavy) rail in the same area.[2]

Projects Included in the Transit Investment Plan

The 2030 long range plan for transit includes commuter rail, light rail lines, bus rapid transit (BRT), and transit ways. These transportation improvements are designed to function as a system and will eventually include a network of signaling devices, park-and-ride lots, transit hubs, and intermodal centers. Commuter rail will extend from Weber County to Utah County. Light rail extensions are planned for Mid Jordan, West Valley, Airport, Draper, 3500 South, Draper/Traverse Ridge, and Sugarhouse. Bus rapid transit expansions include Provo/Orem, South Davis, North Davis, Redwood Road, Fort Union Boulevard, and Washington Boulevard. Transit corridors are planned for the Mountain View Corridor, Weber State University Transit Way, and Foothill Drive/I-215 Enhanced Bus.

Projects Included in the Highway Investment Plan

The long run transportation plans of MAG and WFRC identify capacity expansion for highways and major arterials. In Utah County, MAG has proposed major improvements in the I-15 corridor, including lane additions and interchange additions and reconstructions. Three major east-to-west corridors are planned to improve accessibility to the rapidly growing northwest area of the county. The Western Transportation Corridor (from Lehi to Pleasant Grove) and many expansions to major arterials are also included in the LTP.[3] The highway capacity expansion projects included in the 2030 LTP update of WFRC include two new freeways – the Legacy Parkway and the Mountain View Corridor – and capacity expansion of I-15, the 2100 South Freeway, and I-80. The WFRC plans to add or widen major arterials in Weber, Davis, and Salt Lake counties.

Economic Impacts of Investment in Transit and Highways

Transit and highway investments produce a wide range of economic impacts. A framework for classifying these impacts has been developed by Cambridge Systematics in research sponsored by the Transportation Research Board. They identify three types of economic impacts — Generative, Redistributive, and Financial Transfer Impacts.

Generative Impacts contribute to the economic growth of a region by improving the performance of the regional transportation system. These may include reduced travel times, increased accessibility, and improvements to air quality and safety. Transit investments can also reduce the demand for parking, improve access to employment centers, and consequently raise regional productivity by lowering

infrastructure costs. These Generative Impacts create employment and income over and above the economic activity generated by the construction, operation or maintenance of the transportation system. This augmentation to regional economic growth occurs regardless of the funding sources used for the construction.[4]

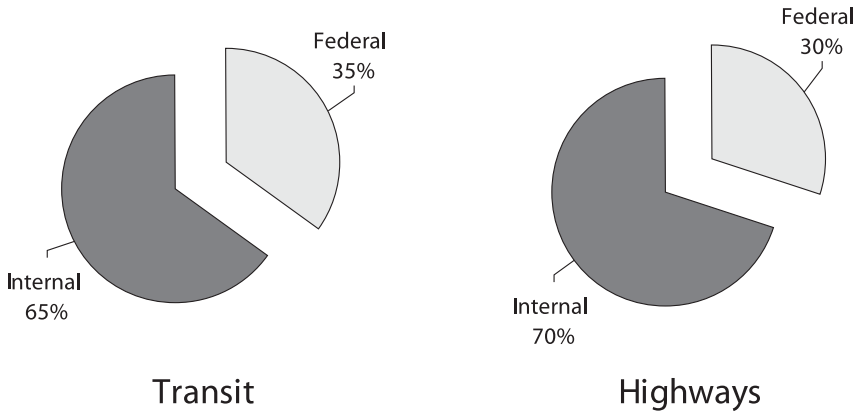
Redistributive Impacts rearrange economic activity within a region as additional transportation infrastructure alters relative intraregional transportation costs. Employment and development tend to cluster near transportation hubs and corridors. Transportation costs also significantly influence residential type and location choices. Importantly, these Redistributive Impacts do not produce net new employment or income in the regional economy, but do significantly alter the spatial distribution and land use patterns. These impacts are also dependent upon local zoning ordinances.

Financial Transfer Impacts occur when funding for transportation projects originates from outside the region. Traditional economic impact analyses measure Financial Transfer Impacts. Like Generative Impacts, Financial Transfer Impacts result in an increase in the size of the regional economy. Traditional economic impact analyses estimate the net new economic activity that is generated by regional exports or by economic activity funded from external sources. Only Financial Transfer Impacts (i.e., traditional economic impacts) of project construction are measured in this analysis. Externally financed transportation system operations and maintenance are not included in this analysis. According to this methodological approach, the portion of transportation infrastructure funded by the federal government increases the size of the regional economy, while the internally financed portion redistributes economic activity within the region, but does not increase its size. Importantly, the Generative Impacts and Redistributive Impacts have not been considered in this study.[5]

Federal Spending in Utah on Transportation Projects

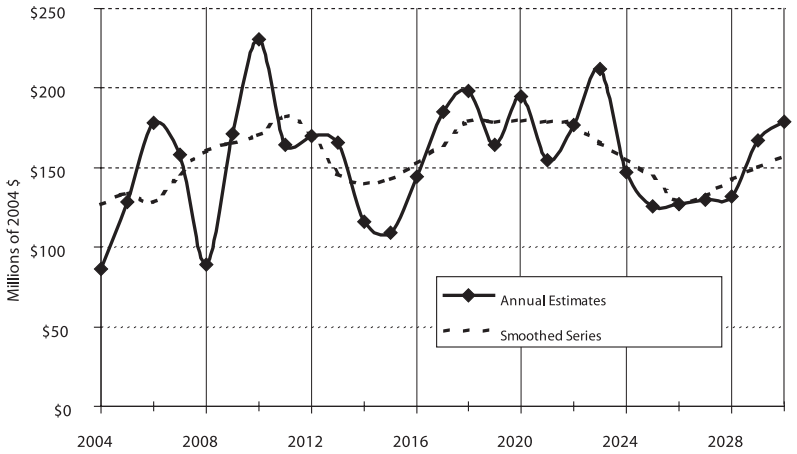
Funding sources for the $14.4 billion of the recommended new transit and highway construction have not yet been identified. Given the current funding structure, it has been estimated that over two-thirds is unfunded and that the Wasatch Front is confronting a "transportation funding crisis."[6] At present, transportation planners anticipate that the federal share of transit projects will be 35 percent while the federal contribution to future highway projects will be 30 percent. Federal contributions to transit and highway projects vary from year to year and are subject to a range of factors. There is no guarantee that federal funding will reach the levels implied by these assumed contribution shares. In the UDOT LTP, federal funds for highway construction are assumed to grow at a rate of 2 percent annually. In 2003, these federal contributions for construction were $211 million.[7] To the extent that spending for highway construction grows faster than this rate, the internally financed portion of the projects increases relative to the federal share.[8]

Figure 2
Shares of Transportation Infrastructure Spending Financed by the Federal Government: 2004-2030



Source: BEBR analysis of WFRC, MAG, and UTA data.

Figure 3
Federal Spending in Utah on Transportation Infrastructure
Millions of Constant 2004 Dollars

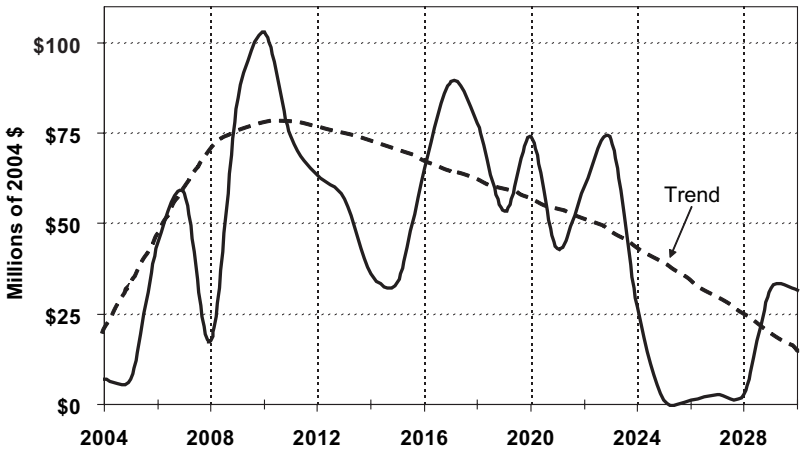


Source: BEBR analysis of WFRC, MAG, and UTA data.

The federally financed portion of these planned transportation improvement projects is an infusion of new money into the Wasatch Front and it increases the size of the state's economy. The internally financed portion of the projects initially alters the structure but not the size of the regional economy, if only the Financial Transfer Impacts are evaluated. For this study, the assumed federal contribution to highway projects is 30 percent and while the federal share of transit projects is assumed to be 35 percent, which is consistent with the long-term plans. To the extent that these funding assumptions underestimate the flow of federal funds to Utah for transportation system improvements, this study underestimates the associated economic and demographic impacts. Conversely, if the federal contribution is lower than assumed here, the results overstate the economic and demographic impacts of the construction projects. (Figure 2)

Although the federal share of transit projects is higher than that for highways, a larger portion of the purchases of materials and equipment to construct transit will be made out-of-state. For example, the rolling stock and specialized signaling equipment must be purchased from outside Utah, while more of the required inputs for highway construction (cement, aggregates, etc.) are available in-state. Purchases from out-of-state are imports that constitute leakages from the economy and reduce the economic impact of project spending. After accounting for these spending patterns, the estimated amount of federal purchases in Utah for both transit and highway projects average $155.7 million annually for a total of $4.2 billion by 2030. Of these, $1.2 billion are devoted to transit improvements while $3.0 billion are for highway improvements.[9] (Table 2 and Figures 3-6)

Figure 4
Federal Spending in Utah on Transportation Infrastructure:
Utah Transit Authority (Transit)
Millions of Constant 2004 Dollars



Note: These amounts are modeled, smoothed, and controlled. Source: BEBR analysis of WFRC, MAG, and UTA data.

Table 2
Estimated In-State Federal Spending on Transportation Infrastructure Projects
Millions of Constant 2004 Dollars

	WFRC	MAG	UTA	Total
2004	$66.2	$54.1	$7.1	$127.3
2005	$85.6	$41.7	$6.8	$134.0
2006	$65.4	$18.3	$44.9	$128.7
2007	$63.7	$24.0	$58.5	$146.2
2008	$86.6	$56.7	$17.6	$160.9
2009	$44.1	$37.4	$84.6	$166.0
2010	$32.9	$34.4	$103.1	$170.3
2011	$49.4	$58.8	$74.1	$182.2
2012	$53.0	$54.3	$63.4	$170.7
2013	$41.3	$48.4	$56.7	$146.4
2014	$65.3	$38.9	$36.2	$140.3
2015	$66.2	$43.0	$33.7	$142.8
2016	$52.1	$34.9	$65.4	$152.3
2017	$42.6	$32.1	$89.4	$164.1
2018	$67.8	$34.0	$77.7	$179.5
2019	$82.6	$42.7	$53.6	$178.9
2020	$68.7	$36.8	$74.1	$179.7
2021	$87.4	$48.6	$43.2	$179.2
2022	$74.4	$43.0	$60.3	$177.8
2023	$55.9	$36.6	$73.3	$165.9
2024	$86.6	$42.3	$26.9	$155.9
2025	$94.6	$48.1	$1.3	$144.1
2026	$83.2	$44.1	$1.2	$128.5
2027	$83.5	$46.3	$2.6	$132.4
2028	$88.5	$51.4	$2.8	$142.7
2029	$71.8	$46.5	$32.3	$150.6
2030	$78.4	$47.5	$31.7	$157.6
Average	$68.1	$42.4	$45.3	$155.7
Total	$1,837.5	$1,144.7	$1,222.6	$4,204.9

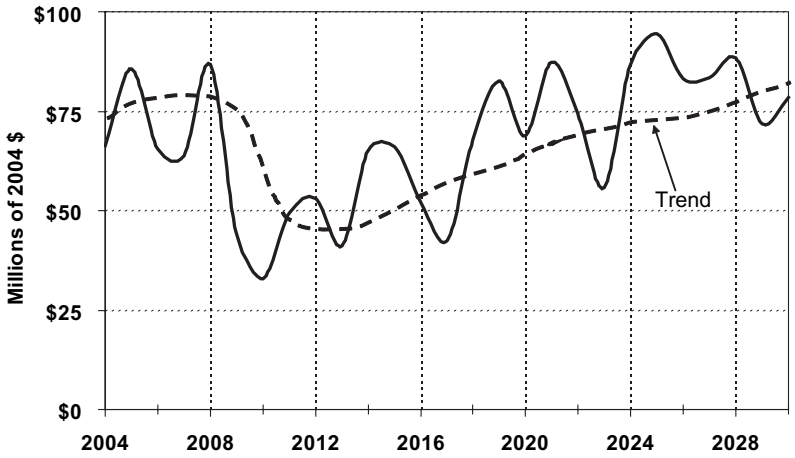
Source: BEBR analysis of MAG, UTA, and WFRC data.

Economic and Demographic Impacts of Federal Spending

According to traditional regional economic approaches, economic impacts occur when production within a region is externally financed or purchased. The federal dollars financing transportation construction directly employ Utah residents and are used to purchase other inputs for the construction; a portion of these purchases will be from Utah firms. These Utah workers and firms make purchases that have further multiplier effects in the state. In addition to these strictly defined economic impacts, the additional economic activity resulting from the 27-year construction program enables more people to live in Utah. This includes the workers themselves and others in their households. The REMI model has been used to capture these dynamic impacts.[10]

Over the course of the 27-year construction program, the employment impact of the federally financed portion of the projects is an annual average of about 2,800 additional jobs. This incremental employment will support about 3,900 more people for the duration of the projects than would have been the case without the federal spending. The state's economy, as measured by Gross State Product (GSP), will, on average, be larger by $211.8 million per year.[11] Personal income will be higher by an average of $197.0 million annually, as compared to what it would have been in the absence of the federal spending. Incremental state income taxes will increase on average by an estimated $5.9 million on an annual basis. (Table 3 and Figure 7)

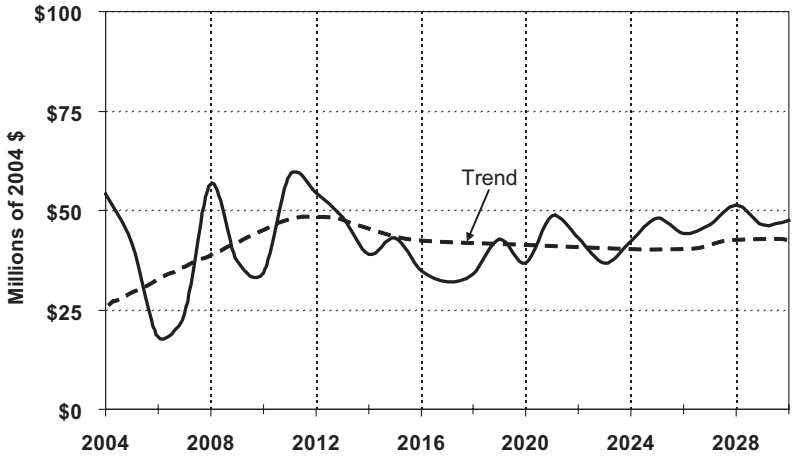
Figure 6
Federal Spending in Utah on Transportation Infrastructure:
Wasatch Front Regional Council (Highways)
Millions of Constant 2004 Dollars



Note: These amounts are modeled, smoothed, and controlled. Source: BEBR analysis of WFRC, MAG, and UTA data.

Besides the heavy construction sector, economic activity and employment will be created in services (especially engineering and management services), manufacturing, trade, and state and local government. The households directly employed by the projects will purchase goods and services in the community to support retail, service, government, and other sectors. All of this increased employment contributes to a higher level of personal income than otherwise would have occurred if the federal dollars had not been spent in the state. (Table 4 and Figure 8)

Figure 5
Federal Spending in Utah on Transportation Infrastructure:
Mountainlands Association of Governments (Highways)
Millions of Constant 2004 Dollars



Note: These amounts are modeled, smoothed, and controlled. Source: BEBR analysis of WFRC, MAG, and UTA data.

These additional economic opportunities result in more people being able to live in the region than would have been the case without the projects. This "impact population," which increases over time as household sizes grow through child bearing, may be new residents migrating to the area or current residents who are not forced to leave the area for employment elsewhere. This could represent additions to net in-migration to the Wasatch Front or less net out-migration from the region, depending upon future labor market conditions. Short-term heavy construction projects

Table 3
Economic and Population Impacts Generated by the
Federal Expenditures on Transportation Infrastructure Projects
Constant 2004 Dollars

	Employment	Population	Gross State Product	Personal Income
2004	2,900	570	$177,246,840	$109,814,811
2005	2,949	1,071	$184,512,000	$123,502,744
2006	2,757	1,487	$176,208,960	$126,846,889
2007	3,059	1,926	$199,503,600	$148,410,860
2008	3,289	2,366	$218,531,400	$167,207,263
2009	3,306	2,775	$223,490,160	$179,200,060
2010	3,311	3,150	$227,872,320	$189,232,495
2011	3,496	3,530	$243,671,160	$207,452,321
2012	3,180	3,814	$223,951,440	$201,571,238
2013	2,632	3,967	$186,126,480	$180,699,159
2014	2,478	4,080	$177,131,520	$176,663,122
2015	2,505	4,188	$181,859,640	$182,428,890
2016	2,676	4,317	$197,889,120	$197,419,886
2017	2,886	4,469	$217,724,160	$216,792,865
2018	3,151	4,654	$242,402,640	$240,778,459
2019	3,113	4,805	$242,748,600	$247,582,064
2020	3,098	4,930	$244,939,680	$255,884,770
2021	3,057	5,028	$244,824,360	$261,650,538
2022	3,001	5,096	$243,440,520	$258,075,762
2023	2,771	5,104	$226,719,120	$239,971,251
2024	2,582	5,067	$213,226,680	$222,789,263
2025	2,377	4,985	$197,889,120	$200,648,715
2026	2,124	4,854	$177,708,120	$172,973,031
2027	2,200	4,747	$187,279,680	$178,508,168
2028	2,371	4,680	$206,076,840	$194,191,056
2029	2,498	4,639	$220,953,120	$210,681,151
2030	2,603	4,617	$233,868,960	$226,825,301
Average	2,829	3,886	$211,770,231	$196,955,634

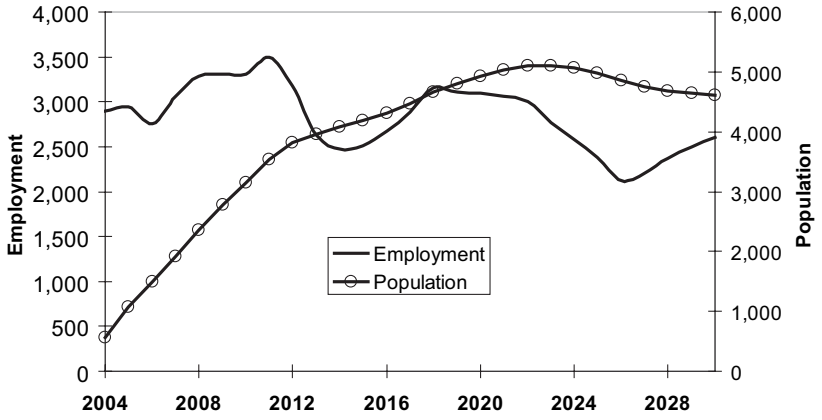
Source: BEBR analysis using the REMI model.

often bring large contingents of temporary workers who send the bulk of their paychecks to households outside the region. Because the projects in the Wasatch Front long-term transportation plan span several decades, the majority of the labor force should be permanent residents of Utah. (Table 5 and Figure 9)

Economic Activity of Total Project Expenditures

Although the internally financed portion of the $14.4 billion transit and highway investment does not increase the size of the regional economy, when measured with traditional economic impact methods, it

Figure 7
Employment and Population Impacts:
Federal Spending on Transportation Infrastructure in Utah



Source: BEBR analysis using the REMI model.

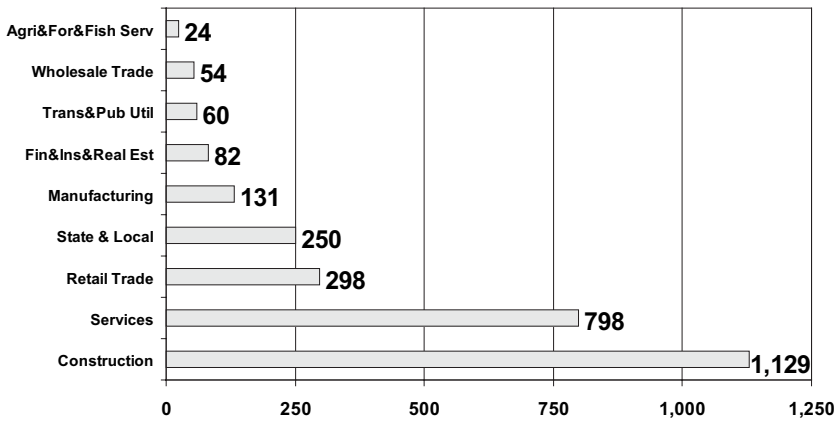
does alter its structure. As previously discussed, Generative Impacts capture the economic benefits of investment in transit and highways, even if internally funded. The total economic activity associated with the 27-year construction project is an annual average of about 8,500 jobs, including approximately 3,400 in construction, the majority of which are in the heavy construction sector. The associated impact population averages about 11,600 annually. GSP associated with the total in-state construction spending is on average $639.9 million per year while personal income associated with total economic activity is $640.4 million annually. State income tax generated by total economic activity of the construction of this infrastructure is estimated to be about $19.2 million on an annual average basis.[12] (Tables 6 and 7, Figures 10 and 11)

Direct Project Employment

Heavy and highway construction employment in Utah has been on a general upward trend since 1970, although the sector has been subject to the volatility of major project starts and completions. (Figure 12) Depending upon the exact timing of the construction generated by the long-term transportation plan, this 27-year heavy construction program could introduce an element of stability and growth to this sector.

In 2002, the average monthly wage for the construction sector in Utah was $3,467, which is 38 percent higher than the $2,510 average wage for all jobs in the state. The average monthly wage for highway, street, and bridge construction (a sub-sector of heavy construction) was $3,560. The architectural and engineering services sector, which is a major support sector to transit and highway construction, had an average monthly wage of $3,831 in Utah in 2002.[13] Jobs generated by heavy construction projects are on average higher skill and pay than the average for all sectors. (Figures 13 and 14)

Figure 8
Average Annual Employment Impact of Federally Financed Transportation Infrastructure
(By Major Sector)



Source: BEBR analysis using the REMI model.

Table 4
Detailed Employment Impacts Generated by the
Federal Expenditures on Transportation Infrastructure Construction on the Wasatch Front

	Manufacturing	Construction	TCPU	FIRE	Retail Trade	Wholesale Trade	Services	Agricultural Services	State & Local Government	Total Employment
2004	166	1,213	72	109	355	79	846	20	38	2,900
2005	165	1,232	73	103	352	79	853	20	71	2,949
2006	148	1,150	67	89	322	71	792	19	98	2,757
2007	158	1,259	73	94	352	76	898	21	127	3,059
2008	162	1,300	76	96	372	77	1,024	23	157	3,289
2009	161	1,367	76	90	365	76	962	24	184	3,306
2010	157	1,375	76	86	357	73	954	24	209	3,311
2011	164	1,464	79	88	372	75	992	26	234	3,496
2012	143	1,350	70	73	331	65	870	24	252	3,180
2013	109	1,111	56	52	264	49	707	20	262	2,632
2014	100	1,035	51	49	246	44	664	19	268	2,478
2015	102	1,027	52	53	249	44	685	20	274	2,505
2016	112	1,077	55	62	269	47	748	22	282	2,676
2017	125	1,148	60	73	294	51	819	24	291	2,886
2018	140	1,252	66	85	324	57	897	27	301	3,151
2019	139	1,229	64	85	319	55	882	28	310	3,113
2020	138	1,222	64	87	317	54	871	28	317	3,098
2021	137	1,209	62	87	311	52	848	29	322	3,057
2022	134	1,184	61	87	304	50	826	29	325	3,001
2023	121	1,080	55	81	279	44	758	27	324	2,771
2024	113	1,007	51	78	258	40	688	26	321	2,582
2025	103	913	46	74	237	35	629	25	315	2,377
2026	90	794	40	70	211	30	560	23	306	2,124
2027	96	802	42	78	222	31	606	24	298	2,200
2028	108	859	46	89	241	34	673	26	294	2,371
2029	116	896	48	97	256	37	728	29	291	2,498
2030	122	929	51	103	268	38	771	30	289	2,603
Average	131	1,129	60	82	298	54	798	24	250	2,829

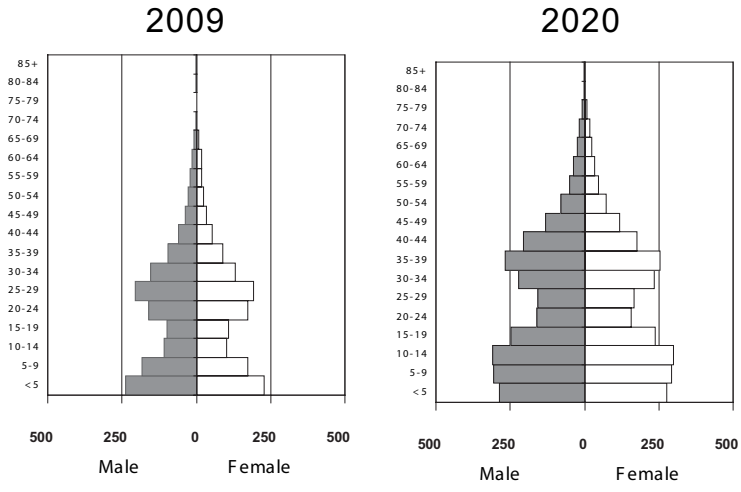
Note: TCPU is Transportation, Communication, and Public Utilities. FIRE is Finance, Insurance and Real Estate.
Source: BEBR analysis using the REMI model.

Economic growth supports a larger population and certainly this induced population growth imposes fiscal burdens on state and local governments. However, when wages associated with the direct project employment exceed the state average by such a substantial amount, as is the case with heavy construction projects, the tax revenues per direct job also exceed the average.

Conclusion

The $14.4 billion of planned transit and highway infrastructure for the Wasatch Front occurring from 2004

Figure 9
Population Impact of
Federally Financed Transportation Infrastructure



Source: BEBR analysis using the REMI model.

Table 5
Detailed Population Impacts Generated by Federal Expenditures on Transportation Infrastructure on the Wasatch Front

Males

Age Group	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030
Ages 0- 4	54	99	136	174	210	237	261	290	287	245	209
Ages 5- 9	28	56	82	112	144	181	214	300	305	261	190
Ages 10- 14	20	39	55	73	91	109	129	237	309	287	227
Ages 15- 19	26	46	61	76	90	100	111	149	246	288	254
Ages 20- 24	50	87	111	133	150	160	167	137	159	204	227
Ages 25- 29	42	79	109	142	175	206	228	211	157	126	139
Ages 30- 34	26	52	75	101	128	155	181	260	223	132	77
Ages 35- 39	16	32	46	62	80	97	115	201	267	208	102
Ages 40- 44	10	19	28	38	48	59	70	128	206	258	190
Ages 45- 49	8	14	20	26	33	39	45	78	131	198	244
Ages 50- 54	5	10	14	19	24	28	33	51	80	125	188
Ages 55- 59	4	8	11	14	18	21	24	37	52	75	116
Ages 60- 64	3	6	8	11	14	16	19	26	37	47	67
Ages 65- 69	0	1	2	3	5	7	9	19	25	34	43
Ages 70- 74	0	0	0	0	0	0	1	8	17	23	31
Ages 75- 79	0	0	0	0	0	0	0	0	7	15	20
Ages 80- 84	0	0	0	0	0	0	0	0	0	6	12
85 and over	0	0	0	0	0	0	0	0	0	0	4

Females

Age Group	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030
Ages 0- 4	53	97	132	168	204	230	253	280	277	235	201
Ages 5- 9	26	52	77	106	137	174	206	290	294	253	183
Ages 10- 14	20	38	54	70	87	103	122	228	299	277	220
Ages 15- 19	30	53	69	85	99	109	118	143	238	276	240
Ages 20- 24	51	90	116	140	160	174	183	150	158	198	215
Ages 25- 29	34	66	95	127	160	193	218	224	166	127	137
Ages 30- 34	24	46	65	87	109	131	153	245	234	144	86
Ages 35- 39	15	29	42	56	72	87	103	173	253	222	118
Ages 40- 44	9	17	25	34	43	53	63	115	177	244	205
Ages 45- 49	7	13	18	23	29	34	40	71	118	171	233
Ages 50- 54	5	9	13	17	21	25	29	45	72	113	162
Ages 55- 59	4	8	10	13	17	19	22	33	46	68	105
Ages 60- 64	4	7	9	12	15	17	19	25	34	42	61
Ages 65- 69	0	1	2	4	6	9	11	21	25	32	39
Ages 70- 74	0	0	0	0	0	0	1	11	19	23	30
Ages 75- 79	0	0	0	0	0	0	0	1	10	18	21
Ages 80- 84	0	0	0	0	0	0	0	0	1	8	15
85 and over	0	0	0	0	0	0	0	0	0	0	7

Source: BEBR analysis using the REMI model.

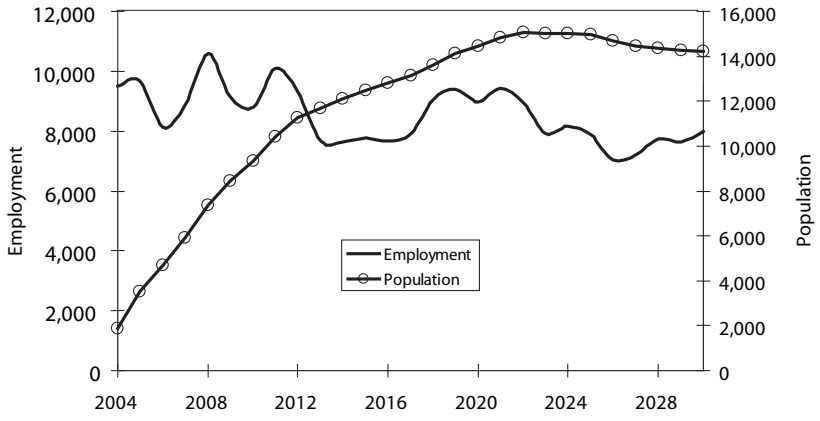
Table 6
Economic Activity Generated by the Total Expenditures on Transportation Infrastructure Projects
Constant 2004 Dollars

	Employment	Population	Gross State Product	Personal Income
2004	9,493	1,865	$579,944,280	$361,398,319
2005	9,665	3,505	$604,738,080	$407,293,829
2006	8,132	4,693	$519,285,960	$380,425,352
2007	8,851	5,928	$576,600,000	$435,546,091
2008	10,580	7,385	$703,682,640	$536,908,287
2009	9,134	8,427	$615,924,120	$505,773,141
2010	8,797	9,328	$603,238,920	$514,191,162
2011	10,110	10,420	$704,028,600	$600,216,416
2012	9,329	11,250	$656,862,720	$590,299,296
2013	7,682	11,690	$543,387,840	$527,452,428
2014	7,628	12,090	$547,078,080	$538,407,386
2015	7,772	12,480	$566,221,200	$561,239,827
2016	7,682	12,800	$567,605,040	$572,771,362
2017	7,906	13,120	$594,474,600	$603,675,877
2018	9,050	13,630	$695,840,880	$693,852,483
2019	9,408	14,130	$735,280,320	$744,014,662
2020	8,970	14,460	$708,987,360	$743,784,031
2021	9,440	14,840	$758,574,960	$801,095,762
2022	8,928	15,050	$725,016,840	$793,830,895
2023	7,930	15,020	$647,637,120	$745,052,500
2024	8,151	15,020	$676,351,800	$780,108,368
2025	7,900	14,950	$662,974,680	$781,722,783
2026	7,027	14,680	$592,514,160	$730,984,027
2027	7,218	14,470	$618,691,800	$762,349,803
2028	7,749	14,380	$676,813,080	$828,079,555
2029	7,650	14,250	$676,351,800	$845,376,858
2030	8,005	14,200	$719,020,200	$905,571,473
Average	8,525	11,632	$639,893,596	$640,423,036

Source: BEBR analysis using the REMI model.

through 2030 will contribute significantly to the economic growth and development of the region. These investments will have a wide range of economic, fiscal, demographic, and environmental impacts. This study has focused on the strictly defined economic and demographic impacts associated with the construction projects themselves, a subset of the larger impacts. Although other comprehensive impacts the will shape the future of the region more permanently, the construction projects themselves create and sustain a specialized heavy construction sector with average wages that are over a third higher than the average for the state as a whole. There is also the potential that such a long-term transportation investment program will sustain a specialized labor force with expertise that could ultimately provide services to other regions.

Figure 10
Total Employment and Population Associated with Transportation Infrastructure Projects: All Sources of Funding



Source: BEBR analysis using the REMI model.

Endnotes

[1]All dollars in this report are 2004 constant dollars unless otherwise noted. Wasatch Front refers to Davis, Salt Lake, Utah, and Weber counties combined.

[2]The WFRC has published *Wasatch Front Urban Area Long Range Transportation Plan Update: 2004-2030* (December, 2003). MAG is in the process of updating their plan, and some of their data was provided in draft form. Their most recent plan is *30 Year Long Range Transportation Plan.* The project list in this LTP was amended for this study. The Utah Transit Authority provided a detailed listing of transit investment projects. UDOT has produced *Utah Transportation 2030: State of Utah Long Range Transportation Plan* (January 2004). These plans allocate projects to different multi-year phases. BEBR developed algorithms in consultation with the UTA, MAG, and WFRC to convert these to projected annual spending patterns. Details of these calculations are available on request.

[3]For this study, two illustrative projects were added to the third phase.

[4]Cambridge Systematics is completing work for Envision Utah to estimate the Generative Impacts of the transit component of the 2030 long run transportation plan.

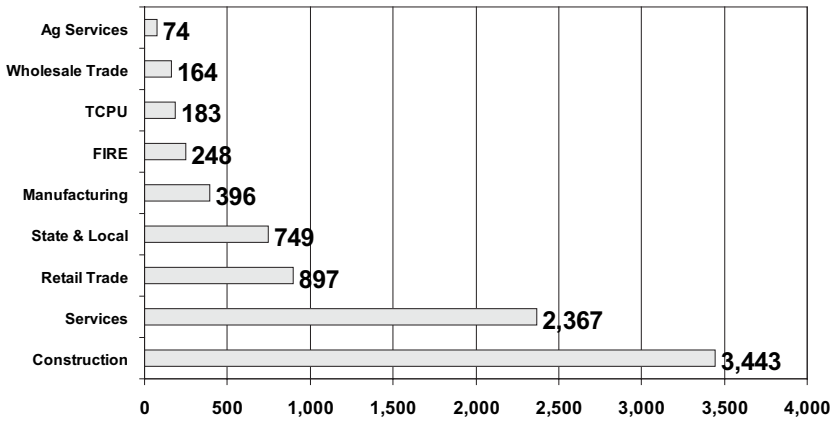
[5]Transportation Research Board. (1998) *Economic Impact Analysis for Transit Investments: Guidebook for Practitioners: TCRP Report 35*, Washington, D.C.: National Academy Press.

Cambridge Systematics, Inc. (1999) *Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact.*

[6]Utah Foundation, "Fueling Our Future: Options for Financing Major Transportation Projects," September, 2004.

[7]These are current 2003 dollars. All other dollar denominated data in the report are constant 2004 dollars. Source: Governor's Office of Planning and Budget, *State of Utah Budget Summary: Fiscal Year 2005*, April, 2004.

Figure 11
Major Sector Average Annual Employment Associated with Transportation Infrastructure Projects (All Sources of Funding)



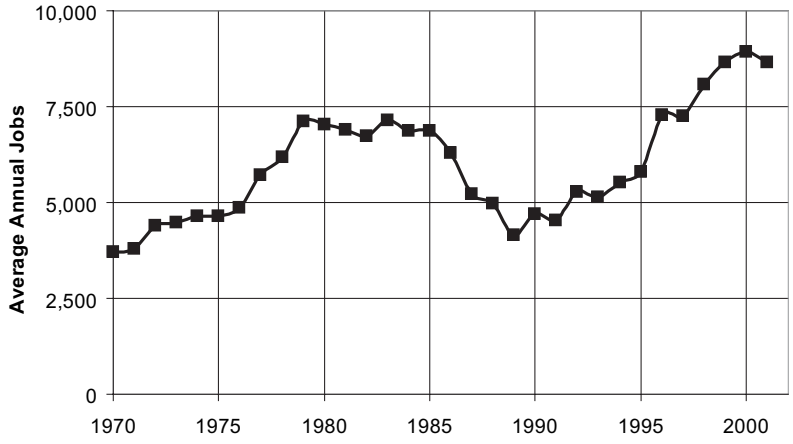
Source: BEBR analysis using the REMI model.

Table 7
Total Employment by Sector Associated with the Economic Activity Generated by Transportation Infrastructure Construction on the Wasatch Front (All Funding Sources)

	Manufacturing	Construction	TCPU	FIRE	Retail Trade	Wholesale Trade	Services	Agricultural Services	State & Local Government	Total Employment
2004	548	4,033	237	355	1,160	260	2,704	66	123	9,493
2005	544	4,095	239	337	1,153	259	2,732	68	231	9,665
2006	434	3,432	196	258	947	209	2,286	57	310	8,132
2007	456	3,697	210	266	1,013	218	2,532	62	392	8,851
2008	532	4,315	248	312	1,197	252	3,155	75	489	10,580
2009	437	3,833	210	238	996	207	2,583	65	559	9,134
2010	405	3,699	199	214	937	190	2,465	64	620	8,797
2011	475	4,278	229	254	1,072	217	2,809	76	691	10,110
2012	422	3,991	207	217	969	191	2,513	71	744	9,329
2013	321	3,270	163	155	771	145	2,025	58	771	7,682
2014	317	3,216	160	159	763	139	2,016	60	794	7,628
2015	325	3,224	162	172	779	139	2,087	62	817	7,772
2016	321	3,128	158	178	771	134	2,090	63	835	7,682
2017	336	3,173	163	196	799	137	2,179	67	853	7,906
2018	405	3,629	189	246	928	162	2,525	79	882	9,050
2019	426	3,757	196	264	967	168	2,628	85	911	9,408
2020	402	3,562	185	253	916	155	2,481	83	929	8,970
2021	430	3,763	195	275	966	163	2,604	90	949	9,440
2022	401	3,541	181	261	906	149	2,437	87	959	8,928
2023	346	3,096	157	232	797	125	2,141	78	954	7,930
2024	363	3,200	162	250	821	129	2,188	83	951	8,151
2025	352	3,073	156	250	794	122	2,123	82	943	7,900
2026	307	2,671	136	229	703	103	1,875	75	924	7,027
2027	321	2,692	140	249	727	106	1,990	79	909	7,218
2028	354	2,880	151	279	787	115	2,190	87	902	7,749
2029	351	2,792	148	285	778	112	2,199	87	893	7,650
2030	373	2,910	156	305	818	117	2,339	94	889	8,005
Average	396	3,443	183	248	897	164	2,367	74	749	8,525

Source: BEBR analysis using the REMI model.

Figure 12
Heavy & Highway Construction Employment in Utah: 1970-2001

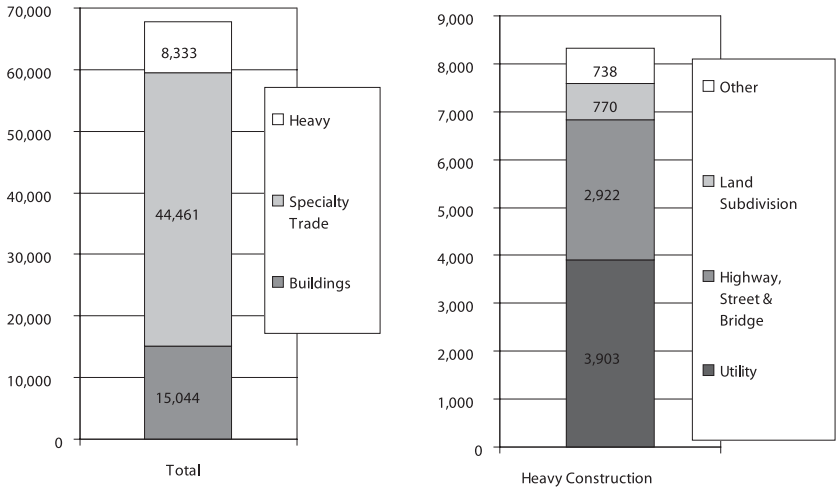


Source: BEA, SA25, Full and Part Time Employment; BEBR Calculations.

[8]The federal share of total project costs for the Salt Lake North/South Light Rail Line was 77 percent, for the University Light Rail Line it was 81 percent, and for the Medical Center Light Rail Line it was 60 percent. These data were provided by UTA.

[9]In this analysis, the estimated annual federal spending on transportation construction was smoothed to generate a more realistic pattern of annual project spending. This smoothed series was then constrained to phase spending totals for each entity. These gross flows were allocated to economic sectors representing project spending in Utah. These were then translated into inputs for the REMI model.

Figure 13
Utah Construction Employment: 2002
(Payroll Employment)



Source: Dept. of Workforce Services, 2003 Annual Labor Market Report

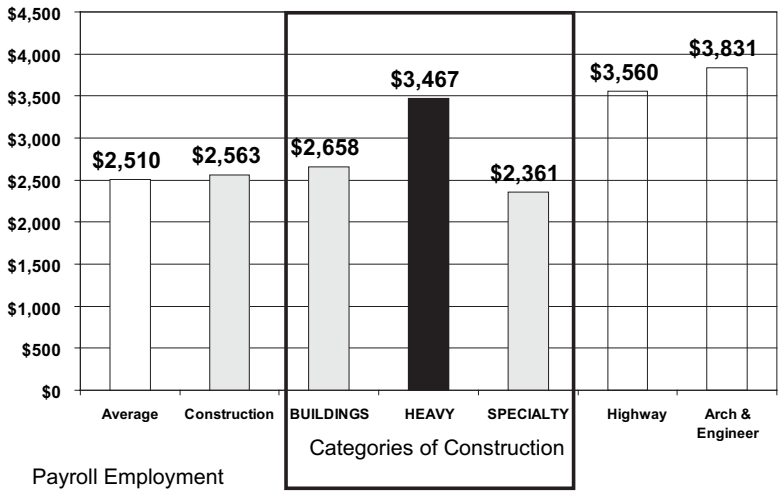
[10]Regional Economic Models, Inc. has built *Policy Insight* models for the State of Utah. The 57-sector state model has been used in this study. The model is a structural equation dynamic projection model. Detailed information on the modeling techniques used in this analysis is available upon request.

[11]Gross State Product is a measure of the value added production of a state. It is the state counterpart of the Gross Domestic Product at the national level. It is the value of gross output minus the value of intermediate inputs (imports).

[12]These estimates of income tax collections have been developed by BEBR. A four-year average of the ratio of income taxes to personal income for Utah have been applied to the personal income projections generated by REMI. The tax data are for fiscal years 1998-99 through 2000-01 as reported by the U.S. Bureau of the Census in *Government Finances.* Calendar year personal income estimates from the U.S. Bureau of Economic Analysis have been converted to a fiscal year basis for the computations.

[13]Department of Workforce Services, Labor Market Information. (2003) *Annual Report of Labor Market Information*, (Salt Lake City, Utah: Department of Workforce Services).

Figure 14
Utah Average Monthly Wages: 2002



Source: Dept. of Workforce Services, 2003 Annual Labor Market Report

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