# APPENDIX F-F

# Predicted Employment and Economic Impact Analysis

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# DESERT XPRESS: PREDICTED EMPLOYMENT AND ECONOMIC IMPACT ANALYSIS

At the request of DesertXpress, Thomas Carroll and Associates' chief economist Thomas Carroll (Ph.D., Economics, Syracuse University, 1973); with assistance from associate economist Michael Madison (B.A., Economics, University of Nevada, Las Vegas, 2010), prepared the following employment and economic impact analysis of the proposed Desert Xpress high speed rail project. The following section provides a synopsis of Dr. Carroll's credentials for preparing such a report. To view Dr. Carroll's cv visit www.thomascarrollandassociates.com.

# THOMAS CARROLL & ASSOCIATES, FOUNDED 1995

**Chief Economist** Thomas M. Carroll, Ph.D., Economics, Syracuse University, 1973, has been a professor of economics at UNLV since August 1986 and chief economist at Thomas Carroll and Associates since its incorporation in 1995. Dr. Carroll participated in his first economic impact study while a Ph. D. student at Syracuse University when he worked as a research associate and later a research fellow at the Educational Policy Research Center (EPRC) in 1973. While at EPRC Dr. Carroll consulted with the US Office of Education on the Nixon Administration initiative, *Career Education.* After leaving Syracuse University Dr. Carroll spent two years at California State University Northridge, followed by eleven years at Memphis State University (now the University of Memphis). At Memphis Dr. Carroll completed a study on the employment impact of the 1964 Civil Rights Act on Memphis, Tennessee, employment patterns (for the Memphis State University Center for Manpower Research) and helped design a congestion alleviation charge for the Inland Waterway System for the Memphis State Bureau of Business Research. After coming to UNLV in 1986, Dr. Carroll worked closely with the late director of the Center for Business and Economic Research, Keith Schwer. Together they studied the economic impacts of the Nevada Test Site, Nellis Air Force Base, the Fallon Naval Air Station and the Hawthorne Armory as part of the Special Nevada Report ("The Nevada Regional Models: Forecasting and Simulation," *Nevada Review of Business and Economics*, Fall, 1990). Drs. Carroll and Schwer also collaborated on "Estimating the Employment Impacts of a Hub Airline Serving a Tourist Destination: The Case of America West Airline and Las Vegas Nevada," *International Journal of Public Administration*, 1994. Dr. Schwer and I collaborated with Dr. William T. White on a report of the impact of a water-imposed secession of construction on the Clark County economy on behalf of the Southern Nevada Water Authority.

Our consulting practice has performed economic analysis for parties (either plaintiffs or defendants) engaged in personal injury, wrongful deaths, discrimination, business damage, breach of contract, eminent domain and construction defect litigation. We also evaluate business startups, product development, and economic growth issues for public and private clients.

# SUMMARY

To estimate the employment impact of the Desert Xpress train proposed to connect Las Vegas Nevada and Victorville California we used weekly earnings data from the Monthly Earner Study of the *Current Population Survey* to predict the number of full time equivalent jobs in construction and real estate for Clark County Nevada and San Bernardino County California for 2011, 2012, and 2013. We extracted monthly data for primary employment (agriculture, mining, construction, manufacturing, wholesale trade and military bases) and for secondary employment (retail trade and services) from the *Current Population Survey* from May 2004[1] through December 2009. We then arranged the data by month and place (either metropolitan area or rural area of each state) to generate a panel data set. We used a random effects regression to predict the change in secondary employment due to variations in basic (e.g., construction or real estate) employment. We inferred that each new basic job would create 0.94 additional secondary jobs. Our preliminary estimates are that the construction phase of the Desert Xpress project will generate 17,469 primary jobs (payroll = $1.33 billion) in Clark County and 28,384 primary jobs (payroll = $2.16 billion) in San Bernardino County. Expected secondary employment is 16,432 (payroll = $852 million) for Clark County and 26,699 (payroll = $1.52 billion) for San Bernardino County. Summing yields 88,984 total jobs with projected payrolls of $5.87 billion.

| Primary Employment | | | | |
|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 3 yr. Total |
| **Clark County** | | | | |
| **Employment** | 3,613 | 8,763 | 5,093 | 17,469 |
| **Payrolls** | $266,013,520 | $665,033,800 | $399,020,280 | $1,330,067,600 |
| **San Bernardino County** | | | | |
| **Employment** | 5,898 | 14,238 | 8,248 | 28,384 |
| **Payrolls** | $432,063,600 | $1,080,159,000 | $648,095,400 | $2,160,318,000 |
| **Total** | | | | |
| **Employment** | 9,511 | 23,001 | 13,341 | 45,853 |
| **Payrolls** | $698,077,120 | $1,745,192,800 | $1,047,115,680 | $3,490,385,600 |

[1] The indicators for metropolitan areas, drawn from the 2000 Census, were modified between April and May 2004.

| Secondary Employment | | | | |
|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 3 yr. Total |
| **Clark County** | | | | |
| **Employment** | 3,398 | 8,243 | 4,791 | 16,432 |
| **Payrolls** | $170,905,624 | $426,334,386 | $255,213,368 | $852,453,377 |
| **San Bernardino County** | | | | |
| **Employment** | 5,548 | 13,393 | 7,758 | 26,699 |
| **Payrolls** | 307,765,236 | $763,950,588 | $455,791,189 | $1,527,507,013 |
| **Total** | | | | |
| **Employment** | 8,946 | 21,636 | 12,549 | 43,131 |
| **Payrolls** | $478,670,860 | $1,190,284,974 | $711,004,557 | $2,379,960,390 |

# ASSUMPTIONS

DesertXpress provided the following assumptions upon which we have based our calculations. The construction phase of the Desert Xpress project is to be completed over a three year period, with 20% of the work to be done in 2011, 50% in 2012, and the remaining 30% in 2013. The budgetary assumptions for work to be done and the percent of that budget going to labor can be found in the following table. The labor force associated with the Civil/Track Work, Electrical Work, Maintenance Facilities, Control/Signal Work, and Stations portions of the project are to be staffed entirely by union employees. Project Management and Environmental Mitigation work will be staffed by white collar non union labor.

| Description | Clark County, NV | % to Primary Labor | Amount to Primary Labor | San Bernardino County, CA | % to Primary Labor | Amount to Primary Labor |
|---|---|---|---|---|---|---|
| **Civil/Track Work** | $1,017,714,000 | 80% | $814,171,200 | $1,890,041,000 | 80% | $1,512,032,800 |
| **Electrical Work** | | | | | | |
| Primary Distribution | $39,900,000 | 60% | $23,940,000 | $74,100,000 | 60% | $44,460,000 |
| Traction Power and | $136,150,000 | 60% | $81,690,000 | $252,850,000 | 60% | $151,710,000 |
| Overhead Contact Systems | | | | | | |
| **Maintenance Facilities** | | | | | | |
| Las Vegas (Wigwam) Facility | $23,718,000 | 60% | $14,230,800 | | | |
| Baker MOW Facility | | | | $4,952,000 | 60% | $2,971,200 |
| Victorville (Site 3) Facility | | | | $91,541,000 | 60% | $54,924,600 |
| **Control/Signal Work** | $155,050,000 | 60% | $93,030,000 | $287,950,000 | 60% | $172,770,000 |
| **Train Sets/Equipment** | $179,200,000 | 0% | | $332,800,000 | 0% | |
| **Stations** | | | | | | |
| Las Vegas Central Station | $212,726,000 | 60% | $127,635,600 | | | |
| Victorville Station (Site 3) | | | | $242,368,000 | 60% | $145,420,800 |
| **Project Management** | | | | | | |
| Project Management Oversight | $160,000,000 | 80% | $128,000,000 | $40,000,000 | 80% | $32,000,000 |
| Professional Services | $40,000,000 | 80% | $32,000,000 | $10,000,000 | 80% | $8,000,000 |
| Contingency | $77,000,000 | 0% | | $154,244,000 | 0% | |
| **Environmental Mitigation** | $21,210,000 | 60% | $12,726,000 | $42,421,000 | 60% | $25,452,600 |
| **ROW Acquisition** | $52,880,000 | 5% | $2,644,000 | $211,520,000 | 5% | $10,576,000 |
| **Total** | **$2,115,548,000** | | **$1,330,067,600** | **$3,634,787,000** | | **$2,160,318,000** |

# DETAILED EMPLOYMENT IMPACTS

Table 1a on page 9 shows the calculation of primary (i.e., construction and real-estate) employment for 2011, 2012 and 2013 in Clark County. The first column shows each type of expenditure and the expenditures on primary labor are shown for 2011 (column 2), 2012 (column 5), and 2013 (column 8). The average wage rate for the construction industry in Nevada (including fringe benefits) for 2011 (column 3), 2012 (column 6) and 2013 (column 9) are taken from page 23. The first equation on page 20 finds a 4.5% higher wage for union workers in the construction industry living in Nevada than the national average. Dividing the expenditure on labor by the average wage rate yields the employment for each expenditure class by year. Adding the employment for each category yields total employment of 17,469 for the three-year period. Adding the total wage payments for each year yields the 3 year increase in wages for primary workers, equal to $1,330,067,600.

Table 1b on page 10 continues the analysis for Clark County by evaluating the secondary employment (e.g., retail and service workers) that would be generated by the construction employment. The first equation on page 22 implies that for each extra primary worker, labor markets tend to generate an extra 0.94 secondary workers. Multiplying the primary employment in Table 1a by 0.94 generates the predicted secondary employment in 2011 (3,398), 2012 (8,243) and 2013 (4,791) for a total of 16,432. The descriptive statistics on page 21, under the heading Secondary Workers, imply that the average wage rate for secondary workers in 2009 was $795.38 ($41,360 in full-time equivalent earnings). The equation on the top of page 21 implies that the elasticity of the wage rate for secondary workers with respect to the cost of living is 0.937. Multiplying this elasticity by the predicted consumer price index for 2010, 2011, 2012 and 2013 (as shown on pages 27 and 28) implies that the average earnings (including fringe benefits) for secondary workers will be $50,295 in 2011, $51,720 in 2012, and $53,270 in 2013. Multiplying secondary employment for each year by the average secondary pay for each year implies total wage payments of $170,905,624 in 2011, $426,334,386 in 2012, and $255,213,368 in 2013, for a total pay to secondary workers equal to $852,453,377. Adding primary and secondary workers together, we predict that total Clark County employment generated by Desert Xpress will be 33,901 workers, and a total of $2,182,520,977 in payrolls.

Table 2a on page 11 computes the impact of construction expenditures on construction wages and employment for San Bernardino County. Using the average annual earnings of construction and real-estate workers, we predict 5,898 jobs in 2011 ($432,063,600 in payrolls), 14,238 jobs in 2012 ($1,080,159,000 in payrolls), and 8,248 jobs in 2013 ($648,095,400 in payrolls) in 2013. Summing yields 28,384 jobs and a total construction payroll of $2,160,318,000 over the three-year construction period.

Table 2b on page 12 performs the same calculations for secondary employment for San Bernardino County implying 5,548 jobs in 2011 (payroll of $307,765,236), 13,393 jobs in 2012 (payroll of $763,950,588) and, 7,758 jobs in 2013 (payroll of $455,791,189), for a total of 26,699 secondary jobs ($1,527,507,013 in wages and fringe benefits). Adding construction and secondary employment effects, we predict an addition of 55,083 total jobs, with a payroll of $3,687,825,013 for San Bernardino County.

Table 3a on page 13 combines construction expenditures for Clark and San Bernardino Counties for 2011, finding 9,511 total construction jobs, with earnings (wages and fringe benefits) equal to $698,077,120. Table 3b on page 14 makes the same computation for 2012, finding 23,001 total construction jobs, with earnings (wages and fringe benefits) equal to $1,745,192,800. Similarly, table 3c from page 15 combines construction expenditures for Clark and San Bernardino Counties for 2013, finding 13,341 total construction jobs, with earnings (wages and fringe benefits) equal to $1,047,115,680. The projected 3 year increase to construction jobs for Clark and San Bernardino Counties are 45,853 with earnings (wages and fringe benefits) equal to $3,490,385,600.

Table 3d on page 16 shows the combined secondary employment for 2011, equal to 8,946 secondary jobs and payrolls of $478,670,860. Table 3e from page 17 shows the combined secondary employment for 2012, equal to 21,636 secondary jobs and payrolls of $1,190,284,974. Table 3f from page 18 shows the combined secondary employment for 2013, equal to 12,549 secondary jobs and payrolls of $711,004,557. The projected 3 year increase to secondary jobs for Clark and San Bernardino Counties are 43,131 with earnings (wages and fringe benefits) equal to $2,379,960,390. Adding the total construction and secondary employment yields 88,984 total jobs and $5,870,345,990 total wages and fringe benefits.

## STATISTICAL ANALYSIS OF WAGES AND EMPLOYMENT

The first equation on page 19 predicts the average hourly wage rate for construction workers based on the monthly consumer price index and the monthly unemployment rate. This equation predicts that for each 1% increase in the cost of living (the consumer price index), the average wage rate for workers in the construction industry increases by 1.05% (which is significantly greater than zero but not significantly greater than 1). The descriptive statistics after the first equation predicts that the average weekly pay for construction workers in 2009 was $851.40.

The second equation on page 19 predicts the average hourly wage rate for union construction workers based on the monthly consumer price index and the monthly unemployment rate. This equation predicts that for each 1% increase in the cost of living (the consumer price index), the average wage rate for workers in the construction industry increases by 1.01%. The descriptive statistics after the first equation predicts that the average weekly pay for union construction workers in 2009 was $1,073.93.

The first equation on page 20 predicts the average hourly wage rate for union construction workers based on the monthly consumer price index, the monthly unemployment rate, and an indicator variable for those living in Nevada. This equation predicts that for each 1% increase in the cost of living (the consumer price index), the average wage rate for union workers in the construction industry increases by 1%. The equation also predicts that

living in Nevada has a statistically significant and positive 4.5% affect on the earnings of these workers[2].

The second equation on page 20 predicts that the elasticity of hourly wages in the real-estate industry with respect to the cost of living is 0.87. The descriptive statistics below the second equation imply that in 2009 the average weekly pay in the real-estate industry was $802.60.

The first equation on page 21 implies that the elasticity of the average wage rate for workers in secondary jobs (e.g., retail trade and services) with respect to the cost of living is 0.937. The descriptive statistics imply that the average weekly pay was $795.38.

The second equation on page 21 implies that secondary workers living in California earn on average 10.3% more in wages than the national average[3]. This equation also predicts that for each 1% increase in the cost of living (the consumer price index), the average wage rate for secondary workers increases by .92%, when the affect of living in California is accounted for.

The first equation on page 22 shows the panel regression (random effects model) that predicts the number of secondary jobs for each job in the primary (export) sector: agriculture, mining, construction, manufacturing and military bases. The data relate the number of basic and secondary jobs across 330 locations (metropolitan areas and the rural areas of states) between May 2004 and December 2009. The equation indicates that if one city creates one additional basic job (e.g., from government financed construction), that city will generate an additional 0.94 job in the secondary sector. Of the unexplained (stochastic) variation in secondary employment, 95.4% is due to difference in labor markets, while only 4.6% is due to variations over time within labor markets.

## PREDICTING WAGE AND EMPLOYMENT CHANGES

Page 23 shows our calculations of future annual wage and fringe benefits for construction, real estate, and secondary workers. From page 25 we find that the fringe benefit rate in 2009 was 23.78%; because this time-series takes a random walk, we assume that the fringe benefit rate will remain constant through 2013. On page 27 we estimate that the inflation rate will average 2.71% in 2011, 3.02% in 2012, and 3.20% in 2013. Starting with the average construction (industry) annual wage of $44,273, we add the fringe benefits and predict construction wages from 2010 through 2013, based on an elasticity of 1.0545. We take the 2009 average union construction wage of $55,844 (national average) and $58,362 (adjusted for living in Nevada), adjust for elasticity of 1.01 and 1 respectively, and apply the fringe benefit rate. We take the average real-estate (industry) wage of $41,735, apply the fringe benefit rate, and adjust for an elasticity of 0.8712. Finally, we start with the average

[2] Living in California does not have a statistically significant impact on wages for union construction workers

[3] Living in Nevada does not have a statistically significant impact on wages for secondary workers

secondary wage of $41,360 (nationally) and $45,616 (adjusted for living in California), add fringe benefits, and then adjust future wage predictions by the elasticity of 0.94 for each.

Pages 24 and 25 show the historical data on personal income, including wage and salaries and fringe benefits that we used to compute the fringe benefit rate. Pages 26 and 27 show the consumer price index from April 1913 to 2010, the inflation rate (the percent change in the consumer price index) from April 1914 to April 2010, and the unemployment rate from May 1948 to May 2010. Page 27 shows the predicted future inflation, cpi, and unemployment rates, based on the equations on pages 29 and 30.

Page 29 shows that the inflation rate does not follow a random walk and that it can be predicted by the equation $\hat{dpci}_t = 1.53\% + .5514 dcpi_{t-1}$, where $\hat{dcpi}_t$ is the predicted inflation rate for the current year and $dcpi_{t-1}$ is the inflation rate for the previous year. Page 30 confirms that the unemployment rate does not follow a random walk and that it can be predicted by the equation $\hat{ue}_t = 1.86\% + .682 ue_{t-1} + .177(ue_{t-1} - ue_{t-2})$, where $\hat{ue}_t$ is the predicted unemployment rate in year $t$, $ue_{t-1}$ is the unemployment rate in the previous year, and $ue_{t-2}$ is the unemployment rate two years ago.

Finally, page 31 confirms that the fringe benefit rate follows a random walk, implying that the best predictor of future fringe benefit rates is its last known value, which was 23.78% in 2009.

# Desert Xpress:
# Employment Impact Analysis

| Table 1a: Clark County 3 Year Effect to Primary Employment and Output | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Description** | **Amount to Primary Labor in 2011** | **2011 Average Annual Wage** | **2011 Increase in Primary Workers** | **Amount to Primary Labor in 2012** | **2012 Average Annual Wage** | **2012 Increase in Primary Workers** | **Amount to Primary Labor in 2013** | **2013 Average Annual Wage** | **2013 Increase in Primary Workers** |
| **Civil/Track Work** | $ 162,834,240 | $76,146 | 2,138 | $ 407,085,600 | $78,457 | 5,189 | $ 244,251,360 | $80,974 | 3,016 |
| **Electrical Work** | | | | | | | | | |
| Primary Distribution | $ 4,788,000 | $76,146 | 63 | $ 11,970,000 | $78,457 | 153 | $ 7,182,000 | $80,974 | 89 |
| Traction Power and | $ 16,338,000 | $76,146 | 215 | $ 40,845,000 | $78,457 | 521 | $ 24,507,000 | $80,974 | 303 |
| Overhead Contact Systems | | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | | |
| Las Vegas (Wigwam) Facility | $ 2,846,160 | $76,146 | 37 | $ 7,115,400 | $78,457 | 91 | $ 4,269,240 | $80,974 | 53 |
| Baker MOW Facility | | | | | | | | | |
| Victorville (Site 3) Facility | | | | | | | | | |
| **Control/Signal Work** | $ 18,606,000 | $76,146 | 244 | $ 46,515,000 | $78,457 | 593 | $ 27,909,000 | $80,974 | 345 |
| **Train Sets/Equipment** | | | | | | | | | |
| **Stations** | | | | | | | | | |
| Las Vegas Central Station | $ 25,527,120 | $76,146 | 335 | $ 63,817,800 | $78,457 | 813 | $ 38,290,680 | $80,974 | 473 |
| Victorville Station (Site 3) | | | | | | | | | |
| **Project Management** | | | | | | | | | |
| Project Management Oversight | $ 25,600,000 | $60,773 | 421 | $ 64,000,000 | $62,711 | 1,021 | $ 38,400,000 | $64,825 | 592 |
| Professional Services | $ 6,400,000 | $60,773 | 105 | $ 16,000,000 | $62,711 | 255 | $ 9,600,000 | $64,825 | 148 |
| Contingency | | | | | | | | | |
| **Environmental Mitigation** | $ 2,545,200 | $60,773 | 42 | $ 6,363,000 | $62,711 | 101 | $ 3,817,800 | $64,825 | 59 |
| **ROW Acquisition** | $ 528,800 | $47,098 | 11 | $ 1,322,000 | $48,339 | 27 | $ 793,200 | $49,685 | 16 |
| **Total** | **$ 266,013,520** | | **3,613** | **$ 665,033,800** | | **8,763** | **$ 399,020,280** | | **5,093** |
| | | | | | | | **3 year increase in Primary Workers** | | **17,469** |
| | | | | | | | **3 year increase to wages to Primary Workers** | | **$ 1,330,067,600** |

Table 1b: Clark County 3 Year Effect to Secondary Employment and Output

| Description | Secondary Jobs Created in 2011 | 2011 Average Annual Wage | Wages to Secondary Jobs in 2011 | Secondary Jobs Created in 2012 | 2012 Average Annual Wage | Wages to Secondary Jobs in 2012 | Secondary Jobs Created in 2013 | 2013 Average Annual Wage | Wages to Secondary Jobs in 2013 |
|---|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | 2,011 | $50,295 | $ 101,168,635 | 4,881 | $51,720 | $ 252,427,410 | 2,837 | $53,270 | $ 151,144,154 |
| **Electrical Work** | | | | | | | | | |
| Primary Distribution | 59 | $50,295 | $ 2,974,776 | 144 | $51,720 | $ 7,422,410 | 83 | $53,270 | $ 4,444,263 |
| Traction Power and | 202 | $50,295 | $ 10,150,771 | 490 | $51,720 | $ 25,327,345 | 285 | $53,270 | $ 15,165,073 |
| Overhead Contact Systems | | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | | |
| Las Vegas (Wigwam) Facility | 35 | $50,295 | $ 1,768,314 | 85 | $51,720 | $ 4,412,148 | 50 | $53,270 | $ 2,641,830 |
| Baker MOW Facility | | | | | | | | | |
| Victorville (Site 3) Facility | | | | | | | | | |
| **Control/Signal Work** | 230 | $50,295 | $ 11,559,876 | 558 | $51,720 | $ 28,843,224 | 324 | $53,270 | $ 17,270,251 |
| **Train Sets/Equipment** | | | | | | | | | |
| **Stations** | | | | | | | | | |
| Las Vegas Central Station | 315 | $50,295 | $ 15,859,956 | 765 | $51,720 | $ 39,572,419 | 445 | $53,270 | $ 23,694,494 |
| Victorville Station (Site 3) | | | | | | | | | |
| **Project Management** | | | | | | | | | |
| Project Management Oversight | 396 | $50,295 | $ 19,928,627 | 960 | $51,720 | $ 49,650,098 | 557 | $53,270 | $ 29,681,869 |
| Professional Services | 99 | $50,295 | $ 4,982,157 | 240 | $51,720 | $ 12,412,524 | 139 | $53,270 | $ 7,420,467 |
| Contingency | | | | | | | | | |
| **Environmental Mitigation** | 39 | $50,295 | $ 1,981,342 | 95 | $51,720 | $ 4,936,306 | 55 | $53,270 | $ 2,951,027 |
| **ROW Acquisition** | 11 | $50,295 | $ 531,169 | 26 | $51,720 | $ 1,330,501 | 15 | $53,270 | $ 799,938 |
| **Total** | **3,398** | | **$ 170,905,624** | **8,243** | | **$ 426,334,386** | **4,791** | | **$ 255,213,368** |
| | | | | | | | | **3 year increase in Secondary Workers** | **16,432** |
| | | | | | | | | **3 year increase to wages to Secondary Workers** | **$ 852,453,377** |
| | | | | | | | | **3 year increase to all workers** | **33,901** |
| | | | | | | | | **3 year increase to wages to all workers** | **$ 2,182,520,977** |

Desert Xpress:
Economic Impact Analysis

Desert Xpress:
Employment Impact Analysis

Table 2a: San Bernadino County 3 Year Effect to Primary Employment and Output

| Description | Amount to Primary Labor in 2011 | 2011 Average Annual Wage | 2011 Increase in Primary Workers | Amount to Primary Labor in 2012 | 2012 Average Annual Wage | 2012 Increase in Primary Workers | Amount to Primary Labor in 2013 | 2013 Average Annual Wage | 2013 Increase in Primary Workers |
|---|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | $ 302,406,560 | $73,936 | 4,090 | $ 756,016,400 | $76,591 | 9,871 | $ 453,609,840 | $79,343 | 5,717 |
| **Electrical Work** | | | | | | | | | |
| Primary Distribution | $ 8,892,000 | $73,936 | 120 | $ 22,230,000 | $76,591 | 290 | $ 13,338,000 | $79,343 | 168 |
| Traction Power and | $ 30,342,000 | $73,936 | 410 | $ 75,855,000 | $76,591 | 990 | $ 45,513,000 | $79,343 | 574 |
| Overhead Contact Systems | | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | | |
| Las Vegas (Wigwam) Facility | | | | | | | | | |
| Baker MOW Facility | $ 594,240 | $73,936 | 8 | $ 1,485,600 | $76,591 | 19 | $ 891,360 | $79,343 | 11 |
| Victorville (Site 3) Facility | $ 10,984,920 | $73,936 | 149 | $ 27,462,300 | $76,591 | 359 | $ 16,477,380 | $79,343 | 208 |
| **Control/Signal Work** | $ 34,554,000 | $73,936 | 467 | $ 86,385,000 | $76,591 | 1,128 | $ 51,831,000 | $79,343 | 653 |
| **Train Sets/Equipment** | | | | | | | | | |
| **Stations** | | | | | | | | | |
| Las Vegas Central Station | | $73,936 | | | | | | | |
| Victorville Station (Site 3) | $ 29,084,160 | $73,936 | 393 | $ 72,710,400 | $76,591 | 949 | $ 43,626,240 | $79,343 | 550 |
| **Project Management** | | | | | | | | | |
| Project Management Oversight | $ 6,400,000 | $60,773 | 105 | $ 16,000,000 | $62,711 | 255 | $ 9,600,000 | $64,825 | 148 |
| Professional Services | $ 1,600,000 | $60,773 | 26 | $ 4,000,000 | $62,711 | 64 | $ 2,400,000 | $64,825 | 37 |
| Contingency | | | | | | | | | |
| **Environmental Mitigation** | $ 5,090,520 | $60,773 | 84 | $ 12,726,300 | $62,711 | 203 | $ 7,635,780 | $64,825 | 118 |
| **ROW Acquisition** | $ 2,115,200 | $47,098 | 45 | $ 5,288,000 | $48,339 | 109 | $ 3,172,800 | $49,685 | 64 |
| **Total** | **$ 432,063,600** | | **5,898** | **$ 1,080,159,000** | | **14,238** | **$ 648,095,400** | | **8,248** |
| | | | | | | | **3 year increase in Primary Workers** | | **28,384** |
| | | | | | | | **3 year increase to wages to Primary Workers** | | **$ 2,160,318,000** |

# Desert Xpress:
# Employment Impact Analysis

Table 2b: San Bernadino County 3 Year Effect to Secondary Employment and Output

| Description | Secondary Jobs Created in 2011 | 2011 Average Annual Wage | Wages to Secondary Jobs in 2011 | Secondary Jobs Created in 2012 | 2012 Average Annual Wage | Wages to Secondary Jobs in 2012 | Secondary Jobs Created in 2013 | 2013 Average Annual Wage | Wages to Secondary Jobs in 2013 |
|---|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | 3,847 | $55,471 | $ 213,412,786 | 9,285 | $57,043 | $ 529,631,129 | 5,378 | $58,751 | $ 315,946,666 |
| **Electrical Work** | | | | | | | | | |
| Primary Distribution | 113 | $55,471 | $ 6,275,216 | 273 | $57,043 | $ 15,573,339 | 158 | $58,751 | $ 9,290,135 |
| Traction Power and | 386 | $55,471 | $ 21,412,799 | 932 | $57,043 | $ 53,140,606 | 540 | $58,751 | $ 31,700,548 |
| Overhead Contact Systems | | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | | |
| Las Vegas (Wigwam) Facility | | | | | | | | | |
| Baker MOW Facility | 8 | $55,471 | $ 419,364 | 18 | $57,043 | $ 1,040,745 | 11 | $58,751 | $ 620,847 |
| Victorville (Site 3) Facility | 140 | $55,471 | $ 7,752,221 | 337 | $57,043 | $ 19,238,854 | 195 | $58,751 | $ 11,476,764 |
| **Control/Signal Work** | 440 | $55,471 | $ 24,385,269 | 1,061 | $57,043 | $ 60,517,451 | 614 | $58,751 | $ 36,101,138 |
| **Train Sets/Equipment** | | | | | | | | | |
| **Stations** | | | | | | | | | |
| Las Vegas Central Station | | | | | | | | | |
| Victorville Station (Site 3) | 370 | $55,471 | $ 20,525,122 | 893 | $57,043 | $ 50,937,640 | 517 | $58,751 | $ 30,386,389 |
| **Project Management** | | | | | | | | | |
| Project Management Oversight | 99 | $55,471 | $ 5,494,855 | 240 | $57,043 | $ 13,689,858 | 139 | $58,751 | $ 8,184,084 |
| Professional Services | 25 | $55,471 | $ 1,373,714 | 60 | $57,043 | $ 3,422,464 | 35 | $58,751 | $ 2,046,021 |
| Contingency | | | | | | | | | |
| **Environmental Mitigation** | 79 | $55,471 | $ 4,370,573 | 191 | $57,043 | $ 10,888,827 | 111 | $58,751 | $ 6,509,569 |
| **ROW Acquisition** | 42 | $55,471 | $ 2,343,318 | 103 | $57,043 | $ 5,869,676 | 60 | $58,751 | $ 3,529,027 |
| **Total** | **5,548** | | **$ 307,765,236** | **13,393** | | **$ 763,950,588** | **7,758** | | **$ 455,791,189** |
| | | | | | | | | **3 year increase in Secondary Workers** | **26,699** |
| | | | | | | | | **3 year increase to wages to Secondary Workers** | **$ 1,527,507,013** |
| | | | | | | | | **3 year increase to all workers** | **55,083** |
| | | | | | | | | **3 year increase to wages to all workers** | **$ 3,687,825,013** |

Table 3a: 2011 Aggregate Effect to Primary Employment and Output

| Description | Amount to Primary Labor in 2011 (NV) | 2011 Average Annual Wage (NV) | 2011 Increase in Primary Workers (NV) | Amount to Primary Labor in 2011 (CA) | 2011 Average Annual Wage (CA) | 2011 Increase in Primary Workers (CA) | Amount to Primary Labor in 2011 | 2011 Increase in Primary Workers |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | $ 162,834,240 | $76,146 | 2,138 | $ 302,406,560 | $73,936 | 4,090 | $ 465,240,800 | 6,229 |
| **Electrical Work** | | | | | | | | |
| Primary Distribution | $ 4,788,000 | $76,146 | 63 | $ 8,892,000 | $73,936 | 120 | $ 13,680,000 | 183 |
| Traction Power and | $ 16,338,000 | $76,146 | 215 | $ 30,342,000 | $73,936 | 410 | $ 46,680,000 | 625 |
| Overhead Contact Systems | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | $ 2,846,160 | $76,146 | 37 | | | | $ 2,846,160 | 37 |
| Baker MOW Facility | | | | $ 594,240 | $73,936 | 8 | $ 594,240 | 8 |
| Victorville (Site 3) Facility | | | | $ 10,984,920 | $73,936 | 149 | $ 10,984,920 | 149 |
| **Control/Signal Work** | $ 18,606,000 | $76,146 | 244 | $ 34,554,000 | $73,936 | 467 | $ 53,160,000 | 712 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | $ 25,527,120 | $76,146 | 335 | | $73,936 | | $ 25,527,120 | 335 |
| Victorville Station (Site 3) | | | | $ 29,084,160 | $73,936 | 393 | $ 29,084,160 | 393 |
| **Project Management** | | | | | | | | |
| Project Management Oversight | $ 25,600,000 | $60,773 | 421 | $ 6,400,000 | $60,773 | 105 | $ 32,000,000 | 527 |
| Professional Services | $ 6,400,000 | $60,773 | 105 | $ 1,600,000 | $60,773 | 26 | $ 8,000,000 | 132 |
| Contingency | | | | | | | | |
| **Environmental Mitigation** | $ 2,545,200 | $60,773 | 42 | $ 5,090,520 | $60,773 | 84 | $ 7,635,720 | 126 |
| **ROW Acquisition** | $ 528,800 | $47,098 | 11 | $ 2,115,200 | $47,098 | 45 | $ 2,644,000 | 56 |
| **Total** | **$ 266,013,520** | | **3,613** | **$ 432,063,600** | | **5,898** | **$ 698,077,120** | **9,511** |

Table 3b: 2012 Aggregate Effect to Primary Employment and Output

| Description | Amount to Primary Labor in 2012 (NV) | 2012 Average Annual Wage (NV) | 2012 Increase in Primary Workers (NV) | Amount to Primary Labor in 2012 (CA) | 2012 Average Annual Wage (CA) | 2012 Increase in Primary Workers (CA) | Amount to Primary Labor in 2012 | 2012 Increase in Primary Workers |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | $ 407,085,600 | $78,457 | 5,189 | $ 756,016,400 | $76,591 | 9,871 | $ 1,163,102,000 | 15,059 |
| **Electrical Work** | | | | | | | | |
| Primary Distribution | $ 11,970,000 | $78,457 | 153 | $ 22,230,000 | $76,591 | 290 | $ 34,200,000 | 443 |
| Traction Power and Overhead Contact Systems | $ 40,845,000 | $78,457 | 521 | $ 75,855,000 | $76,591 | 990 | $ 116,700,000 | 1,511 |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | $ 7,115,400 | $78,457 | 91 | | | | $ 7,115,400 | 91 |
| Baker MOW Facility | | | | $ 1,485,600 | $76,591 | 19 | $ 1,485,600 | 19 |
| Victorville (Site 3) Facility | | | | $ 27,462,300 | $76,591 | 359 | $ 27,462,300 | 359 |
| **Control/Signal Work** | $ 46,515,000 | $78,457 | 593 | $ 86,385,000 | $76,591 | 1,128 | $ 132,900,000 | 1,721 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | $ 63,817,800 | $78,457 | 813 | | | | $ 63,817,800 | 813 |
| Victorville Station (Site 3) | | | | $ 72,710,400 | $76,591 | 949 | $ 72,710,400 | 949 |
| **Project Management** | | | | | | | | |
| Project Management Oversight | $ 64,000,000 | $62,711 | 1,021 | $ 16,000,000 | $62,711 | 255 | $ 80,000,000 | 1,276 |
| Professional Services | $ 16,000,000 | $62,711 | 255 | $ 4,000,000 | $62,711 | 64 | $ 20,000,000 | 319 |
| Contingency | | | | | | | | |
| **Environmental Mitigation** | $ 6,363,000 | $62,711 | 101 | $ 12,726,300 | $62,711 | 203 | $ 19,089,300 | 304 |
| **ROW Acquisition** | $ 1,322,000 | $48,339 | 27 | $ 5,288,000 | $48,339 | 109 | $ 6,610,000 | 137 |
| **Total** | **$ 665,033,800** | | **8,763** | **$ 1,080,159,000** | | **14,238** | **$ 1,745,192,800** | **23,001** |

Table 3c: 2013 Aggregate Effect to Primary Employment and Output

| Description | Amount to Primary Labor in 2013 (NV) | 2013 Average Annual Wage (NV) | 2013 Increase in Primary Workers (NV) | Amount to Primary Labor in 2013 (CA) | 2013 Average Annual Wage (CA) | 2013 Increase in Primary Workers (CA) | Amount to Primary Labor in 2013 | 2013 Increase in Primary Workers |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | $ 244,251,360 | $80,974 | 3,016 | $ 453,609,840 | $79,343 | 5,717 | $ 697,861,200 | 8,733 |
| **Electrical Work** | | | | | | | | |
| Primary Distribution | $ 7,182,000 | $80,974 | 89 | $ 13,338,000 | $79,343 | 168 | $ 20,520,000 | 257 |
| Traction Power and Overhead Contact Systems | $ 24,507,000 | $80,974 | 303 | $ 45,513,000 | $79,343 | 574 | $ 70,020,000 | 876 |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | $ 4,269,240 | $80,974 | 53 | | | | $ 4,269,240 | 53 |
| Baker MOW Facility | | | | $ 891,360 | $79,343 | 11 | $ 891,360 | 11 |
| Victorville (Site 3) Facility | | | | $ 16,477,380 | $79,343 | 208 | $ 16,477,380 | 208 |
| **Control/Signal Work** | $ 27,909,000 | $80,974 | 345 | $ 51,831,000 | $79,343 | 653 | $ 79,740,000 | 998 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | $ 38,290,680 | $80,974 | 473 | | | | $ 38,290,680 | 473 |
| Victorville Station (Site 3) | | | | $ 43,626,240 | $79,343 | 550 | $ 43,626,240 | 550 |
| **Project Management** | | | | | | | | |
| Project Management Oversight | $ 38,400,000 | $64,825 | 592 | $ 9,600,000 | $64,825 | 148 | $ 48,000,000 | 740 |
| Professional Services | $ 9,600,000 | $64,825 | 148 | $ 2,400,000 | $64,825 | 37 | $ 12,000,000 | 185 |
| Contingency | | | | | | | | |
| **Environmental Mitigation** | $ 3,817,800 | $64,825 | 59 | $ 7,635,780 | $64,825 | 118 | $ 11,453,580 | 177 |
| **ROW Acquisition** | $ 793,200 | $49,685 | 16 | $ 3,172,800 | $49,685 | 64 | $ 3,966,000 | 80 |
| **Total** | **$ 399,020,280** | | **5,093** | **$ 648,095,400** | | **8,248** | **$ 1,047,115,680** | **13,341** |

| | |
|---|---|
| **3 year increase in Primary Workers** | **45,853** |
| **3 year increase to wages to Primary Workers** | **$ 3,490,385,600** |

Table 3d: 2011 Aggregate Effect to Secondary Employment and Output

| Description | Secondary Jobs Created in 2011 (NV) | 2011 Average Annual Wage (NV) | Wages to Secondary Jobs in 2011 (NV) | Secondary Jobs Created in 2011 (CA) | 2011 Average Annual Wage (CA) | Wages to Secondary Jobs in 2011 (CA) | Secondary Jobs Created in 2011 | Wages to Secondary Jobs in 2011 |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | 2,011 | $50,295 | $ 101,168,635 | 3,847 | $55,471 | $ 213,412,786 | 5,859 | $ 314,581,421 |
| **Electrical Work** | | | | | | | | |
| Primary Distribution | 59 | $50,295 | $ 2,974,776 | 113 | $55,471 | $ 6,275,216 | 172 | $ 9,249,992 |
| Traction Power and Overhead Contact Systems | 202 | $50,295 | $ 10,150,771 | 386 | $55,471 | $ 21,412,799 | 588 | $ 31,563,570 |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | 35 | $50,295 | $ 1,768,314 | | | | 35 | $ 1,768,314 |
| Baker MOW Facility | | | | 8 | $55,471 | $ 419,364 | 8 | $ 419,364 |
| Victorville (Site 3) Facility | | | | 140 | $55,471 | $ 7,752,221 | 140 | $ 7,752,221 |
| **Control/Signal Work** | 230 | $50,295 | $ 11,559,876 | 440 | $55,471 | $ 24,385,269 | 669 | $ 35,945,145 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | 315 | $50,295 | $ 15,859,956 | | | | 315 | $ 15,859,956 |
| Victorville Station (Site 3) | | | | 370 | $55,471 | $ 20,525,122 | 370 | $ 20,525,122 |
| **Project Management** | | | | | | | | |
| Project Management Oversight | 396 | $50,295 | $ 19,928,627 | 99 | $55,471 | $ 5,494,855 | 495 | $ 25,423,482 |
| Professional Services Contingency | 99 | $50,295 | $ 4,982,157 | 25 | $55,471 | $ 1,373,714 | 124 | $ 6,355,871 |
| **Environmental Mitigation** | 39 | $50,295 | $ 1,981,342 | 79 | $55,471 | $ 4,370,573 | 118 | $ 6,351,915 |
| **ROW Acquisition** | 11 | $50,295 | $ 531,169 | 42 | $55,471 | $ 2,343,318 | 53 | $ 2,874,487 |
| **Total** | **3,398** | | **$ 170,905,624** | **5,548** | | **$ 307,765,236** | **8,946** | **$ 478,670,860** |

Table 3e: 2012 Aggregate Effect to Secondary Employment and Output

| Description | Secondary Jobs Created in 2012 (NV) | 2012 Average Annual Wage (NV) | Wages to Secondary Jobs in 2012 (NV) | Secondary Jobs Created in 2012 (CA) | 2012 Average Annual Wage (CA) | Wages to Secondary Jobs in 2012 (CA) | Secondary Jobs Created in 2012 | Wages to Secondary Jobs in 2012 |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | 4,881 | $51,720 | $ 252,427,410 | 9,285 | $57,043 | $ 529,631,129 | 14,165 | $ 782,058,539 |
| **Electrical Work** | | | | | | | | |
| Primary Distribution | 144 | $51,720 | $ 7,422,410 | 273 | $57,043 | $ 15,573,339 | 417 | $ 22,995,749 |
| Traction Power and | 490 | $51,720 | $ 25,327,345 | 932 | $57,043 | $ 53,140,606 | 1,421 | $ 78,467,951 |
| Overhead Contact Systems | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | 85 | $51,720 | $ 4,412,148 | | | | 85 | $ 4,412,148 |
| Baker MOW Facility | | | | 18 | $57,043 | $ 1,040,745 | 18 | $ 1,040,745 |
| Victorville (Site 3) Facility | | | | 337 | $57,043 | $ 19,238,854 | 337 | $ 19,238,854 |
| **Control/Signal Work** | 558 | $51,720 | $ 28,843,224 | 1,061 | $57,043 | $ 60,517,451 | 1,619 | $ 89,360,674 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | 765 | $51,720 | $ 39,572,419 | | | | 765 | $ 39,572,419 |
| Victorville Station (Site 3) | | | | 893 | $57,043 | $ 50,937,640 | 893 | $ 50,937,640 |
| **Project Management** | | | | | | | | |
| Project Management Oversight | 960 | $51,720 | $ 49,650,098 | 240 | $57,043 | $ 13,689,858 | 1,200 | $ 63,339,955 |
| Professional Services | 240 | $51,720 | $ 12,412,524 | 60 | $57,043 | $ 3,422,464 | 300 | $ 15,834,989 |
| Contingency | | | | | | | | |
| **Environmental Mitigation** | 95 | $51,720 | $ 4,936,306 | 191 | $57,043 | $ 10,888,827 | 286 | $ 15,825,133 |
| **ROW Acquisition** | 26 | $51,720 | $ 1,330,501 | 103 | $57,043 | $ 5,869,676 | 129 | $ 7,200,177 |
| **Total** | **8,243** | | **$ 426,334,386** | **13,393** | | **$ 763,950,588** | **21,636** | **$ 1,190,284,974** |

Table 3f: 2013 Aggregate Effect to Secondary Employment and Output

| Description | Secondary Jobs Created in 2013 (NV) | 2013 Average Annual Wage (NV) | Wages to Secondary Jobs in 2013 (NV) | Secondary Jobs Created in 2013 (CA) | 2013 Average Annual Wage (CA) | Wages to Secondary Jobs in 2013 (CA) | Secondary Jobs Created in 2013 | Wages to Secondary Jobs in 2013 |
|---|---|---|---|---|---|---|---|---|
| **Civil/Track Work** | 2,837 | $53,270 | $ 151,144,154 | 5,378 | $58,751 | $ 315,946,666 | 8,215 | $ 467,090,820 |
| **Electrical Work** | | | | | | | 0 | |
| Primary Distribution | 83 | $53,270 | $ 4,444,263 | 158 | $58,751 | $ 9,290,135 | 242 | $ 13,734,398 |
| Traction Power and | 285 | $53,270 | $ 15,165,073 | 540 | $58,751 | $ 31,700,548 | 824 | $ 46,865,622 |
| Overhead Contact Systems | | | | | | | | |
| **Maintenance Facilities** | | | | | | | | |
| Las Vegas (Wigwam) Facility | 50 | $53,270 | $ 2,641,830 | | | | 50 | $ 2,641,830 |
| Baker MOW Facility | | | | 11 | $58,751 | $ 620,847 | 11 | $ 620,847 |
| Victorville (Site 3) Facility | | | | 195 | $58,751 | $ 11,476,764 | 195 | $ 11,476,764 |
| **Control/Signal Work** | 324 | $53,270 | $ 17,270,251 | 614 | $58,751 | $ 36,101,138 | 939 | $ 53,371,389 |
| **Train Sets/Equipment** | | | | | | | | |
| **Stations** | | | | | | | | |
| Las Vegas Central Station | 445 | $53,270 | $ 23,694,494 | | | | 445 | $ 23,694,494 |
| Victorville Station (Site 3) | | | | 517 | $58,751 | $ 30,386,389 | | |
| **Project Management** | | | | | | | 0 | |
| Project Management Oversight | 557 | $53,270 | $ 29,681,869 | 139 | $58,751 | $ 8,184,084 | 697 | $ 37,865,953 |
| Professional Services | 139 | $53,270 | $ 7,420,467 | 35 | $58,751 | $ 2,046,021 | 174 | $ 9,466,488 |
| Contingency | | | | | | | 0 | |
| **Environmental Mitigation** | 55 | $53,270 | $ 2,951,027 | 111 | $58,751 | $ 6,509,569 | 166 | $ 9,460,596 |
| **ROW Acquisition** | 15 | $53,270 | $ 799,938 | 60 | $58,751 | $ 3,529,027 | 75 | $ 4,328,965 |
| **Total** | **4,791** | | **$ 255,213,368** | **7,758** | | **$ 455,791,189** | **12,549** | **$ 711,004,557** |

| | |
|---|---|
| **3 year increase in Secondary Workers** | **43,131** |
| **3 year increase to wages to Secondary Workers** | **$ 2,379,960,390** |
| **3 year increase to all workers** | **88,984** |
| **3 year increase to wages to all workers** | **$ 5,870,345,990** |

**Construction Industry**

reg lwage lcpi lue if const==1, cluster(time)

| | | | |
|---|---|---|---|
| Linear regression | | Number of obs = | 49770 |
| | | F( 2, 71) = | 153.29 |
| | | Prob > F = | 0 |
| | | R-squared = | 0.0151 |
| | | Root MSE = | 0.43095 |

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 1.054537 | 0.06026 | 17.5 | 0 | 0.934382 | 1.174691 |
| lue | 0.14145 | 0.025996 | 5.44 | 0 | 0.089617 | 0.1932842 |
| cons | -3.104296 | 0.333598 | -9.31 | 0 | -3.76947 | -2.439121 |

su wklypay if construction==1 & year==2009

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| wklypay | 9335 | 851.3965 | 520.1919 | 0 | 2884.61 |

**Union Workers in the Construction Industry**

reg lwage lcpi lue if const==1 & union==1, cluster(time)

| | | | |
|---|---|---|---|
| Linear regression | | Number of obs = | 9309 |
| | | F( 2, 71) = | 68.62 |
| | | Prob > F = | 0 |
| | | R-squared = | 0.0164 |
| | | Root MSE = | 0.41235 |

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 1.009939 | 0.087291 | 11.57 | 0 | 0.835885 | 1.183993 |
| lue | 0.095278 | 0.047689 | 2 | 0.05 | 0.000188 | 0.1903681 |
| cons | -2.464598 | 0.493003 | -5 | 0 | -3.447618 | -1.481578 |

su wklypay if construction==1 & union==1 & year==2009

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| wklypay | 1570 | 1073.931 | 497.8953 | 0 | 2884.61 |

**Union Workers in the Construction Industry with Affect Adjustment for Living in Nevada**

. reg lwage lcpi lue nevada if construction==1 & union==1, cluster(time)

| | | | |
|---|---|---|---|
| Linear regression | | Number of obs = | 9309 |
| | | F( 3, 71) = | 50.55 |
| | | Prob > F = | 0 |
| | | R-squared = | 0.0168 |
| | | Root MSE = | 0.41229 |

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 1.003667 | 0.087247 | 11.5 | 0 | 0.829702 | 1.177632 |
| lue | 0.094499 | 0.047568 | 1.99 | 0.051 | -0.00035 | 0.1893474 |
| nevada | 0.045075 | 0.019467 | 2.32 | 0.023 | 0.00626 | 0.0838904 |
| _cons | -2.431792 | 0.492342 | -4.94 | 0 | -3.413494 | -1.45009 |

**Real Estate Industry**

reg lwage lcpi lue if realestind==1, cluster(time)

| | | | |
|---|---|---|---|
| Linear regression | | Number of obs = | 6162 |
| | | F( 2, 71) = | 39.15 |
| | | Prob > F = | 0 |
| | | R-squared = | 0.0128 |
| | | Root MSE = | 0.40195 |

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 0.871159 | 0.098673 | 8.83 | 0 | 0.674411 | 1.067907 |
| lue | 0.046368 | 0.042346 | 1.09 | 0.277 | -0.038067 | 0.1308035 |
| cons | -2.201753 | 0.539782 | -4.08 | 0 | -3.278049 | -1.125458 |

su wklypay if realestind==1 & year==2009

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| wklypay | 2205 | 802.5956 | 620.6943 | 0 | 2884.61 |

**Secondary Workers**

reg lwage lcpi lue if secondary==1, cluster(time)

Linear regression — Number of obs = 304074
F( 2, 71) = 473.87
Prob > F = 0
R-squared = 0.011
Root MSE = 0.47427

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 0.937092 | 0.041318 | 22.68 | 0 | 0.854706 | 1.019478 |
| lue | 0.03285 | 0.020951 | 1.57 | 0.121 | -0.008925 | 0.0746237 |
| cons | -2.525984 | 0.243892 | -10.36 | 0 | -3.01229 | -2.039678 |

su wklypay if secondary==1 & year==2009

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| wklypay | 88835 | 795.3791 | 611.8022 | 0 | 2884.61 |

**Secondary Workers with Affect of Living in California**

. reg lwage lcpi lue california if secondary==1, cluster(time)

Linear regression — Number of obs = 304074
F( 3, 71) = 533.79
Prob > F = 0
R-squared = 0.0141
Root MSE = 0.47354

(Std. Err. adjusted for 72 clusters in time)

| lwage | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lcpi | 0.929091 | 0.040981 | 22.67 | 0 | 0.847377 | 1.010805 |
| lue | 0.034532 | 0.020801 | 1.66 | 0.101 | -0.006944 | 0.0760081 |
| california | 0.102907 | 0.004069 | 25.29 | 0 | 0.094795 | 0.1110191 |
| _cons | -2.493759 | 0.241783 | -10.31 | 0 | -2.975859 | -2.011658 |

xtreg secondary basic, re

| | | | |
|---|---|---|---|
| Random-effects GLS regression | | Number of obs = | 20591 |
| Group variable: place | | Number of groups = | 330 |
| R-sq: within = 0.3003 | | Obs per group: min = | 4 |
| between = 0.8908 | | avg = | 62.4 |
| overall = 0.8804 | | max = | 68 |
| Random effects u_i ~ Gaussian | | Wald chi2(1) = | 10035.46 |
| corr(u_i, X) = 0 (assumed) | | Prob > chi2 = | 0 |

| secondary | Coef. | Std. Err. | z | P>z | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| basic | 0.940635 | 0.00939 | 100.18 | 0 | 0.922231 | 0.9590383 |
| _cons | 82.14173 | 4.679492 | 17.55 | 0 | 72.9701 | 91.31337 |

| | | |
|---|---|---|
| sigma_u | 82.10699 | |
| sigma_e | 17.95275 | |
| rho | 0.954373 | (fraction of variance due to u_i) |

reg lsecondary vlconst sblconst lconst

| Source | SS | df | MS | Number of obs = | 20591 |
|---|---|---|---|---|---|
| | | | | F( 3, 20587) = | 29605.79 |
| Model | 20796.34 | 3 | 6932.113 | Prob > F = | 0 |
| Residual | 4820.389 | 20587 | 0.234147 | R-squared = | 0.8118 |
| | | | | Adj R-squared = | 0.8118 |
| Total | 25616.73 | 20590 | 1.244134 | Root MSE = | 0.48389 |

| lsecondary | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| vlconst | 0.025351 | 0.013339 | 1.9 | 0.057 | -0.000795 | 0.0514973 |
| sblconst | -0.024474 | 0.014557 | -1.68 | 0.093 | -0.053007 | 0.0040585 |
| lconst | 0.83608 | 0.002834 | 295.05 | 0 | 0.830526 | 0.8416344 |
| _cons | 2.604671 | 0.00706 | 368.94 | 0 | 2.590833 | 2.618509 |

| | |
|---|---|
| Fringe benefit rate | 23.78% |
| inflation rate April 2009 to April 2010 | 2.24% |
| inflation rate 2010 to 2011 | 2.71% |
| inflation rate 2011 to 2012 | 3.02% |
| inflation rate 2012 to 2013 | 3.20% |

| | | | |
|---|---|---|---|
| 2009 Average Construction Wage | $44,273 | 2009 Average Union Construction Wage | $55,844 |
| construction wage elasticity to inflation | 1.05 | construction wage elasticity to inflation | 1.01 |
| **Annual Construction wage & fringes** | | **Annual Union Construction wage & fringes** | |
| 2010 | $59,084 | 2010 | $71,375 |
| 2011 | $60,773 | 2011 | $73,936 |
| 2012 | $62,711 | 2012 | $76,591 |
| 2013 | $64,825 | 2013 | $79,343 |

| | | | |
|---|---|---|---|
| 2009 Average Union Construction Wage | $58,362 | 2009 Average Real Estate Wage | $41,735 |
| Union construction wage elasticity to inflation | 1.00 | real estate wage elasticity to inflation | 0.87 |
| Wage differential for Nevada Workers | 4.51% | Annual Real Estate wage & fringes | |
| **NV Annual Union Construction wage & fringes** | | **Annual Real Estate Wage & Fringes** | |
| 2010 | $74,129 | 2010 | $46,012 |
| 2011 | $76,146 | 2011 | $47,098 |
| 2012 | $78,457 | 2012 | $48,339 |
| 2013 | $80,974 | 2013 | $49,685 |

| | | | |
|---|---|---|---|
| | | 2009 Average Secondary Wage | $45,616 |
| 2009 Average Secondary Wage | $41,360 | secondary wage elasticity to inflation | 0.94 |
| secondary wage elasticity to inflation | 0.94 | Wage differential for California workers | 10.29% |
| **Annual Secondary Wage & Fringes** | | **Annual Secondary Wage & Fringes for California workers** | |
| 2010 | $49,049 | 2010 | $54,097 |
| 2011 | $50,295 | 2011 | $55,471 |
| 2012 | $51,720 | 2012 | $57,043 |
| 2013 | $53,270 | 2013 | $58,751 |

**Tax and Fringe Benefit Rates, 1929- 2009**

***expressed in Billions of current dollars***

| Year | Personal Income | Personal Taxes | Tax Rate | Wages & Sararies | Fringe Benefits | FB Rate |
|---|---|---|---|---|---|---|
| | billions | billions | percent | billions | billions | percent |
| 1929 | $84.9 | $1.7 | 2.00% | $50.5 | $0.7 | 1.39% |
| 1930 | $76.1 | $1.6 | 2.10% | $46.2 | $0.7 | 1.52% |
| 1931 | $65.2 | $1.0 | 1.53% | $39.2 | $0.6 | 1.53% |
| 1932 | $49.9 | $0.7 | 1.40% | $30.5 | $0.6 | 1.97% |
| 1933 | $46.8 | $0.8 | 1.71% | $29.0 | $0.5 | 1.72% |
| 1934 | $53.7 | $0.9 | 1.68% | $33.7 | $0.6 | 1.78% |
| 1935 | $60.3 | $1.1 | 1.82% | $36.7 | $0.7 | 1.91% |
| 1936 | $68.6 | $1.3 | 1.90% | $42.0 | $1.0 | 2.38% |
| 1937 | $74.1 | $1.9 | 2.56% | $46.1 | $1.8 | 3.90% |
| 1938 | $68.4 | $1.9 | 2.78% | $43.0 | $2.0 | 4.65% |
| 1939 | $72.9 | $1.5 | 2.06% | $46.0 | $2.2 | 4.78% |
| 1940 | $78.4 | $1.7 | 2.17% | $49.9 | $2.3 | 4.61% |
| 1941 | $96.0 | $2.3 | 2.40% | $62.1 | $2.7 | 4.35% |
| 1942 | $123.4 | $4.9 | 3.97% | $82.1 | $3.2 | 3.90% |
| 1943 | $152.1 | $16.7 | 10.98% | $105.6 | $3.8 | 3.60% |
| 1944 | $166.0 | $17.7 | 10.66% | $116.9 | $4.5 | 3.85% |
| 1945 | $171.6 | $19.4 | 11.31% | $117.5 | $5.8 | 4.94% |
| 1946 | $178.6 | $17.2 | 9.63% | $112.0 | $7.6 | 6.79% |
| 1947 | $190.9 | $19.8 | 10.37% | $123.1 | $7.0 | 5.69% |
| 1948 | $209.7 | $19.2 | 9.16% | $135.5 | $6.4 | 4.72% |
| 1949 | $207.0 | $16.7 | 8.07% | $134.8 | $7.1 | 5.27% |
| 1950 | $228.9 | $18.9 | 8.26% | $147.2 | $8.0 | 5.43% |
| 1951 | $257.9 | $27.1 | 10.51% | $171.5 | $9.8 | 5.71% |
| 1952 | $275.2 | $32.0 | 11.63% | $185.7 | $10.5 | 5.65% |
| 1953 | $291.7 | $33.2 | 11.38% | $199.1 | $11.2 | 5.63% |
| 1954 | $294.3 | $30.2 | 10.26% | $197.3 | $11.9 | 6.03% |
| 1955 | $316.0 | $32.9 | 10.41% | $212.2 | $13.5 | 6.36% |
| 1956 | $339.5 | $36.6 | 10.78% | $229.0 | $15.5 | 6.77% |
| 1957 | $358.5 | $38.9 | 10.85% | $240.0 | $17.6 | 7.33% |
| 1958 | $368.9 | $38.5 | 10.44% | $241.3 | $18.2 | 7.54% |
| 1959 | $392.3 | $42.3 | 10.78% | $259.8 | $21.1 | 8.12% |
| 1960 | $411.3 | $46.1 | 11.21% | $272.9 | $23.6 | 8.65% |
| 1961 | $428.8 | $47.3 | 11.03% | $280.5 | $24.8 | 8.84% |
| 1962 | $456.4 | $51.6 | 11.31% | $299.4 | $27.8 | 9.29% |
| 1963 | $479.5 | $54.6 | 11.39% | $314.9 | $30.4 | 9.65% |
| 1964 | $514.3 | $52.1 | 10.13% | $337.8 | $32.9 | 9.74% |
| 1965 | $555.5 | $57.7 | 10.39% | $363.8 | $35.7 | 9.81% |
| 1966 | $603.8 | $66.4 | 11.00% | $400.3 | $42.3 | 10.57% |
| 1967 | $648.1 | $73.0 | 11.26% | $429.0 | $46.1 | 10.75% |
| 1968 | $711.7 | $87.0 | 12.22% | $472.0 | $52.3 | 11.08% |
| 1969 | $778.3 | $104.5 | 13.43% | $518.3 | $59.3 | 11.44% |
| 1970 | $838.6 | $103.1 | 12.29% | $551.6 | $65.7 | 11.91% |

**Tax and Fringe Benefit Rates, 1929- 2009**

***expressed in Billions of current dollars***

| | | | | | | |
|---|---|---|---|---|---|---|
| 1971 | $903.1 | $101.7 | 11.26% | $584.0 | $74.4 | 12.74% |
| 1972 | $992.6 | $123.6 | 12.45% | $638.8 | $86.4 | 13.53% |
| 1973 | $1,110.5 | $132.4 | 11.92% | $708.8 | $102.5 | 14.46% |
| 1974 | $1,222.7 | $151.0 | 12.35% | $772.8 | $118.0 | 15.27% |
| 1975 | $1,334.9 | $147.6 | 11.06% | $814.7 | $134.3 | 16.48% |
| 1976 | $1,474.7 | $172.3 | 11.68% | $899.6 | $159.6 | 17.74% |
| 1977 | $1,632.5 | $197.5 | 12.10% | $994.1 | $186.4 | 18.75% |
| 1978 | $1,836.7 | $229.4 | 12.49% | $1,120.3 | $214.9 | 19.18% |
| 1979 | $2,059.5 | $268.7 | 13.05% | $1,253.5 | $245.0 | 19.55% |
| 1980 | $2,301.5 | $298.9 | 12.99% | $1,373.5 | $274.2 | 19.96% |
| 1981 | $2,582.3 | $345.2 | 13.37% | $1,511.3 | $308.3 | 20.40% |
| 1982 | $2,766.8 | $354.1 | 12.80% | $1,587.5 | $332.1 | 20.92% |
| 1983 | $2,952.2 | $352.3 | 11.93% | $1,678.0 | $358.0 | 21.33% |
| 1984 | $3,268.9 | $377.4 | 11.55% | $1,844.7 | $400.5 | 21.71% |
| 1985 | $3,496.7 | $417.3 | 11.93% | $1,982.8 | $429.2 | 21.65% |
| 1986 | $3,696.0 | $437.2 | 11.83% | $2,102.3 | $455.3 | 21.66% |
| 1987 | $3,924.4 | $489.1 | 12.46% | $2,256.3 | $479.4 | 21.25% |
| 1988 | $4,231.2 | $504.9 | 11.93% | $2,439.8 | $514.4 | 21.08% |
| 1989 | $4,557.5 | $566.1 | 12.42% | $2,583.1 | $548.3 | 21.23% |
| 1990 | $4,846.7 | $592.7 | 12.23% | $2,741.1 | $585.1 | 21.35% |
| 1991 | $5,031.5 | $586.6 | 11.66% | $2,814.5 | $623.9 | 22.17% |
| 1992 | $5,347.3 | $610.5 | 11.42% | $2,973.5 | $673.6 | 22.65% |
| 1993 | $5,568.1 | $646.5 | 11.61% | $3,076.6 | $714.1 | 23.21% |
| 1994 | $5,874.8 | $690.5 | 11.75% | $3,230.8 | $750.1 | 23.22% |
| 1995 | $6,200.9 | $743.9 | 12.00% | $3,418.0 | $760.8 | 22.26% |
| 1996 | $6,591.6 | $832.0 | 12.62% | $3,616.3 | $771.4 | 21.33% |
| 1997 | $7,000.7 | $926.2 | 13.23% | $3,876.6 | $792.0 | 20.43% |
| 1998 | $7,525.4 | $1,026.4 | 13.64% | $4,181.6 | $842.3 | 20.14% |
| 1999 | $7,910.8 | $1,107.5 | 14.00% | $4,460.0 | $888.8 | 19.93% |
| 2000 | $8,559.4 | $1,232.3 | 14.40% | $4,827.7 | $961.2 | 19.91% |
| 2001 | $8,883.3 | $1,234.8 | 13.90% | $4,952.2 | $1,027.1 | 20.74% |
| 2002 | $9,060.1 | $1,050.4 | 11.59% | $4,997.3 | $1,113.5 | 22.28% |
| 2003 | $9,378.1 | $1,000.3 | 10.67% | $5,139.6 | $1,228.0 | 23.89% |
| 2004 | $9,937.2 | $1,047.8 | 10.54% | $5,425.7 | $1,282.7 | 23.64% |
| 2005 | $10,485.9 | $1,208.6 | 11.53% | $5,701.0 | $1,359.1 | 23.84% |
| 2006 | $11,268.1 | $1,352.4 | 12.00% | $6,068.9 | $1,406.9 | 23.18% |
| 2007 | $11,894.1 | $1,490.9 | 12.53% | $6,408.9 | $1,453.8 | 22.68% |
| 2008 | $12,238.8 | $1,432.4 | 11.70% | $6,545.9 | $1,496.6 | 22.86% |
| 2009 | $12,072.1 | $1,107.6 | 9.17% | $6,330.6 | $1,505.7 | 23.78% |

Source: http://www.bea.gov/national/nipaweb

| Year | CPI | Inflation | UE |
|---|---|---|---|
| 1913 | 9.8 | | |
| 1914 | 9.9 | 1.02% | |
| 1915 | 10 | 1.01% | |
| 1916 | 10.4 | 4.00% | |
| 1917 | 12 | 15.38% | |
| 1918 | 14.1 | 17.50% | |
| 1919 | 16.2 | 14.89% | |
| 1920 | 19.5 | 20.37% | |
| 1921 | 18.4 | -5.64% | |
| 1922 | 16.9 | -8.15% | |
| 1923 | 16.8 | -0.59% | |
| 1924 | 17.2 | 2.38% | |
| 1925 | 17.2 | 0.00% | |
| 1926 | 17.9 | 4.07% | |
| 1927 | 17.4 | -2.79% | |
| 1928 | 17.1 | -1.72% | |
| 1929 | 17.1 | 0.00% | |
| 1930 | 17 | -0.58% | |
| 1931 | 15.7 | -7.65% | |
| 1932 | 14.1 | -10.19% | |
| 1933 | 12.7 | -9.93% | |
| 1934 | 13.3 | 4.72% | |
| 1935 | 13.7 | 3.01% | |
| 1936 | 13.8 | 0.73% | |
| 1937 | 14.1 | 2.17% | |
| 1938 | 14.1 | 0.00% | |
| 1939 | 13.9 | -1.42% | |
| 1940 | 14 | 0.72% | |
| 1941 | 14.1 | 0.71% | |
| 1942 | 15.8 | 12.06% | |
| 1943 | 16.9 | 6.96% | |
| 1944 | 17.4 | 2.96% | |
| 1945 | 17.8 | 2.30% | |
| 1946 | 18.1 | 1.69% | |
| 1947 | 21.5 | 18.78% | |
| 1948 | 23.5 | 9.30% | 3.8 |
| 1949 | 23.8 | 1.28% | 4.7 |
| 1950 | 23.5 | -1.26% | 6.4 |
| 1951 | 25.7 | 9.36% | 3.4 |
| 1952 | 26.3 | 2.33% | 3.1 |
| 1953 | 26.5 | 0.76% | 2.6 |
| 1954 | 26.9 | 1.51% | 5.2 |
| 1955 | 26.7 | -0.74% | 4.7 |
| 1956 | 26.8 | 0.37% | 3.9 |
| 1957 | 27.7 | 3.36% | 3.9 |
| 1958 | 28.6 | 3.25% | 6.4 |
| 1959 | 28.9 | 1.05% | 5.9 |
| 1960 | 29.4 | 1.73% | 4.8 |
| 1961 | 29.8 | 1.36% | 6.9 |

| Year | CPI | Inflation | UE |
|---|---|---|---|
| 1962 | 30.1 | 1.01% | 5.5 |
| 1963 | 30.4 | 1.00% | 5.9 |
| 1964 | 30.9 | 1.64% | 5.4 |
| 1965 | 31.2 | 0.97% | 5.1 |
| 1966 | 32 | 2.56% | 3.8 |
| 1967 | 32.9 | 2.81% | 3.8 |
| 1968 | 34.2 | 3.95% | 3.8 |
| 1969 | 35.8 | 4.68% | 3.4 |
| 1970 | 38 | 6.15% | 4.2 |
| 1971 | 39.9 | 5.00% | 5.9 |
| 1972 | 41.3 | 3.51% | 5.7 |
| 1973 | 42.9 | 3.87% | 5 |
| 1974 | 47.2 | 10.02% | 5.2 |
| 1975 | 52.5 | 11.23% | 8.1 |
| 1976 | 55.8 | 6.29% | 7.7 |
| 1977 | 59.1 | 5.91% | 7.6 |
| 1978 | 62.9 | 6.43% | 6.3 |
| 1979 | 69.1 | 9.86% | 5.9 |
| 1980 | 78.9 | 14.18% | 6.3 |
| 1981 | 87.9 | 11.41% | 7.4 |
| 1982 | 94.6 | 7.62% | 8.9 |
| 1983 | 97.9 | 3.49% | 10.4 |
| 1984 | 102.4 | 4.60% | 7.8 |
| 1985 | 106 | 3.52% | 7.2 |
| 1986 | 109.3 | 3.11% | 7.2 |
| 1987 | 111.6 | 2.10% | 6.6 |
| 1988 | 116 | 3.94% | 5.7 |
| 1989 | 121.6 | 4.83% | 5.2 |
| 1990 | 128 | 5.26% | 5.3 |
| 1991 | 134.8 | 5.31% | 6.6 |
| 1992 | 138.6 | 2.82% | 7.4 |
| 1993 | 143.1 | 3.25% | 7.1 |
| 1994 | 146.7 | 2.52% | 6.6 |
| 1995 | 150.9 | 2.86% | 5.4 |
| 1996 | 154.9 | 2.65% | 5.5 |
| 1997 | 159.6 | 3.03% | 5.2 |
| 1998 | 161.9 | 1.44% | 4.6 |
| 1999 | 164.5 | 1.61% | 4.4 |
| 2000 | 169.8 | 3.22% | 4.1 |
| 2001 | 175.8 | 3.53% | 4.2 |
| 2002 | 177.8 | 1.14% | 5.7 |
| 2003 | 183.1 | 2.98% | 5.9 |
| 2004 | 186.2 | 1.69% | 5.6 |
| 2005 | 191.8 | 3.01% | 5.4 |
| 2006 | 198.7 | 3.60% | 4.8 |
| 2007 | 203.5 | 2.42% | 4.5 |
| 2008 | 211.7 | 4.03% | 4.8 |
| 2009 | 212.2 | 0.24% | 8.2 |
| 2010 | 216.7 | 2.14% | 9.7 |

| Year | CPI | Inflation | UE |
|---|---|---|---|
| 2011 | **222.6** | **2.71%** | **8.75** |
| 2012 | **229.3** | **3.02%** | **7.66** |
| 2013 | **236.7** | **3.20%** | **6.90** |
| 2014 | **244.5** | **3.29%** | **6.43** |
| 2015 | **252.6** | **3.34%** | **6.17** |
| 2016 | **261.2** | **3.37%** | **6.02** |
| 2017 | **270.0** | **3.39%** | **5.95** |
| 2018 | **279.2** | **3.40%** | **5.91** |
| 2019 | **288.7** | **3.40%** | **5.88** |
| 2020 | **298.5** | **3.41%** | **5.87** |
| 2021 | **308.7** | **3.41%** | **5.87** |
| 2022 | **319.2** | **3.41%** | **5.86** |
| 2023 | **330.1** | **3.41%** | **5.86** |
| 2024 | **341.3** | **3.41%** | **5.86** |
| 2025 | **353.0** | **3.41%** | **5.86** |
| 2026 | **365.0** | **3.41%** | **5.86** |
| 2027 | **377.5** | **3.41%** | **5.86** |
| 2028 | **390.3** | **3.41%** | **5.86** |
| 2029 | **403.6** | **3.41%** | **5.86** |
| 2030 | **417.4** | **3.41%** | **5.86** |
| 2031 | **431.6** | **3.41%** | **5.86** |
| 2032 | **446.3** | **3.41%** | **5.86** |
| 2033 | **461.5** | **3.41%** | **5.86** |
| 2034 | **477.3** | **3.41%** | **5.86** |
| 2035 | **493.5** | **3.41%** | **5.86** |
| 2036 | **510.4** | **3.41%** | **5.86** |
| 2037 | **527.8** | **3.41%** | **5.86** |
| 2038 | **545.7** | **3.41%** | **5.86** |
| 2039 | **564.3** | **3.41%** | **5.86** |
| 2040 | **583.6** | **3.41%** | **5.86** |
| 2041 | **603.5** | **3.41%** | **5.86** |
| 2042 | **624.0** | **3.41%** | **5.86** |
| 2043 | **645.3** | **3.41%** | **5.86** |
| 2044 | **667.3** | **3.41%** | **5.86** |
| 2045 | **690.1** | **3.41%** | **5.86** |
| 2046 | **713.6** | **3.41%** | **5.86** |
| 2047 | **737.9** | **3.41%** | **5.86** |
| 2048 | **763.1** | **3.41%** | **5.86** |
| 2049 | **789.1** | **3.41%** | **5.86** |
| 2050 | **816.0** | **3.41%** | **5.86** |
| 2051 | **843.8** | **3.41%** | **5.86** |
| 2052 | **872.5** | **3.41%** | **5.86** |
| 2053 | **902.3** | **3.41%** | **5.86** |
| 2054 | **933.0** | **3.41%** | **5.86** |
| 2055 | **964.8** | **3.41%** | **5.86** |
| 2056 | **997.7** | **3.41%** | **5.86** |
| 2057 | **1031.7** | **3.41%** | **5.86** |
| 2058 | **1066.9** | **3.41%** | **5.86** |
| 2059 | **1103.3** | **3.41%** | **5.86** |
| 2060 | **1140.9** | **3.41%** | **5.86** |

dfuller inf, regress lags(0)

Dickey-Fuller test for unit root  Number of obs = 96

| | Test Statistic | 1% Critical Value | 5% Critical Value | 10% Critical Value |
|---|---|---|---|---|
| | ---------- Interpolated Dickey-Fuller --------- | | | |
| Z(t) | -5.219 | -3.516 | -2.893 | -2.582 |

MacKinnon approximate p-value for Z(t) = 0.0000

| D.inf | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| inf | | | | | | |
| L1. | -0.44859 | 0.085947 | -5.22 | 0 | -0.6192368 | -0.2779371 |
| _cons | 0.015291 | 0.0053164 | 2.88 | 0.005 | 0.0047351 | 0.0258466 |

reg inf l.inf

| Source | SS | df | MS | Number of obs = | 96 |
|---|---|---|---|---|---|
| | | | | F( 1, 94) = | 41.16 |
| Model | 0.078286 | 1 | 0.07828611 | Prob > F = | 0 |
| Residual | 0.178781 | 94 | 0.001901921 | R-squared = | 0.3045 |
| | | | | Adj R-squared = | 0.2971 |
| Total | 0.257067 | 95 | 0.002705965 | Root MSE = | 0.04361 |

| inf | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| inf | | | | | | |
| L1. | 0.551413 | 0.085947 | 6.42 | 0 | 0.3807632 | 0.7220629 |
| _cons | 0.015291 | 0.0053164 | 2.88 | 0.005 | 0.0047351 | 0.0258466 |

dfuller ue, regress lags(1)

Dickey-Fuller test for unit root  Number of obs = 61

| | ---------- Interpolated Dickey-Fuller --------- | | |
|---|---|---|---|
| Test Statistic | 1% Critical Value | 5% Critical Value | 10% Critical Value |
| Z(t) -2.981 | -3.565 | -2.921 | -2.596 |

MacKinnon approximate p-value for Z(t) = 0.0367

| D.ue | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| ue | | | | | | |
| L1. | -0.31767 | 0.1065785 | -2.98 | 0.004 | -0.5310099 | -0.1043298 |
| LD. | 0.17683 | 0.1351376 | 1.31 | 0.196 | -0.0936772 | 0.4473374 |
| _cons | 1.861704 | 0.6148992 | 3.03 | 0.004 | 0.6308491 | 3.092558 |

reg ue l.ue l.d.ue

| Source | SS | df | MS | Number of obs = | 61 |
|---|---|---|---|---|---|
| | | | | F( 2, 58) = | 29.81 |
| Model | 76.93981 | 2 | 38.4699049 | Prob > F = | 0 |
| Residual | 74.8533 | 58 | 1.29057412 | R-squared = | 0.5069 |
| | | | | Adj R-squared = | 0.4899 |
| Total | 151.7931 | 60 | 2.52988515 | Root MSE = | 1.136 |

| ue | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| ue | | | | | | |
| L1. | 0.68233 | 0.1065785 | 6.4 | 0 | 0.4689901 | 0.8956702 |
| LD. | 0.17683 | 0.1351376 | 1.31 | 0.196 | -0.0936772 | 0.4473374 |
| _cons | 1.861704 | 0.6148992 | 3.03 | 0.004 | 0.6308491 | 3.092558 |

dfuller tx, regress lags(0)

Dickey-Fuller test for unit root Number of obs = 80

| | ---------- Interpolated Dickey-Fuller --------- | | |
|---|---|---|---|
| | Test Statistic | 1% Critical Value | 5% Critical Value | 10% Critical Value |
| Z(t) | -2.129 | -3.538 | -2.906 | -2.588 |

MacKinnon approximate p-value for Z(t) = 0.2328

| D.tx | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| tx | | | | | | |
| L1. | -0.06603 | 0.0310076 | -2.13 | 0.036 | -0.1277611 | -0.0042982 |
| _cons | 0.007849 | 0.0033091 | 2.37 | 0.02 | 0.0012606 | 0.0144365 |

dfuller tx, regress lags(1)

Dickey-Fuller test for unit root Number of obs = 80

| | ---------- Interpolated Dickey-Fuller --------- | | |
|---|---|---|---|
| | Test Statistic | 1% Critical Value | 5% Critical Value | 10% Critical Value |
| Z(t) | -0.726 | -3.538 | -2.906 | -2.588 |

MacKinnon approximate p-value for Z(t) = 0.1620

| D.fbr | Coef. | Std. Err. | t | P>t | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| fbr | | | | | | |
| L1. | -0.0061 | 0.0084095 | -0.73 | 0.47 | -0.0228448 | 0.0106392 |
| _cons | 0.003496 | 0.0012619 | 2.77 | 0.007 | 0.0009842 | 0.0060086 |

. dfuller r, lags(0)

Dickey-Fuller test for unit root Number of obs = 28

| | ---------- Interpolated Dickey-Fuller --------- | | |
|---|---|---|---|
| | Test Statistic | 1% Critical Value | 5% Critical Value | 10% Critical Value |
| Z(t) | -0.66 | -3.73 | -2.992 | -2.626 |

MacKinnon approximate p-value for Z(t) = 0.8569

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# ADDENDUM TO DESERT XPRESS: PREDICTED EMPLOYMENT AND ECONOMIC IMPACT ANALYSIS

At the request of DesertXpress Enterprises, LLC, Thomas Carroll and Associates' chief economist, Thomas Carroll (Ph.D., Economics, Syracuse University, 1973); with assistance from associate economist Michael Madison (B.A., Economics, University of Nevada, Las Vegas, 2010), prepared an employment and economic impact analysis of the proposed DesertXpress high speed rail project dated October 6, 2010. Following is an Addendum to that report.

The first table on pages 3 and 4 summarize the findings of the economic and employment impact study done by Thomas Carroll & Associates on behalf of Desert Xpress. This study found that the proposed Desert Xpress high speed rail project will bring an increase in primary employment spending of $1,330,067,600 in Clark County, Nevada and $2,160,318,000 in San Bernardino County, California.[1] Additionally, Desert Xpress is projected to increase spending in secondary employment in Clark County by $856,203,699 and $1,552,444,889 in San Bernardino County.

The second table on pages 3 and 4 use final demand output multipliers provided by the Bureau of Economic Analysis, Regional Input - Output Modeling System (RIMSII).[2] Based on these multipliers and the assumptions of spending provided by Desert Xpress, we find an additional $779,579,438 will be spent into the economy in Clark County and $1,882,092,709 in San Bernardino County. I used data from the Bureau of Economic Analysis State and Regional GDP[3] to find employment multipliers for each industry identified by RIMSII to find the expected amount of the induced spending that will go to labor spending. Clark County can expect $346,528,619 in labor expenditures from the induced spending, and San Bernardino County can expect $852,042,154 of its induced spending to be spent on labor.

[1] All findings are based on the assumptions provided by Desert Xpress as found on page 3 of the Predicted Employment and Economic Analysis
[2] http://www.bea.gov/regional/rims/index.cfm
[3] http://www.bea.gov/regional/gsp/

# PRIMARY, SECONDARY, AND INDUCED IMPACTS TO CLARK AND SAN BERNARDINO COUNTIES

The following two tables sum the expected economic increase in Clark and San Bernardino Counties as the result of the construction phase of the Desert Xpress Project. Clark County is expected to benefit by $2,965,850,737 and San Bernardino can expect $5,594,855,597 in benefit.

| | | |
|---|---|---|
| Primary Employment | $ | 1,330,067,600 |
| Secondary Employment | $ | 856,203,699 |
| Induced Spending | $ | 779,579,438 |
| **Total Impact to Clark County Economy** | **$** | **2,965,850,737** |

| | | |
|---|---|---|
| Primary Employment | $ | 2,160,318,000 |
| Secondary Employment | $ | 1,552,444,889 |
| Induced Spending | $ | 1,882,092,709 |
| **Total Impact to San Bernardino Economy** | **$** | **5,594,855,597** |

**Clark County: Aggregated Effect to Employment and Output in 2010 Dollars**

| Description | Clark County, NV | % to Primary Labor | Amount to Primary Labor | 2010 Average Annual Wage | Increase in Primary Workers | Secondary Jobs Created | Average Annual Wage | Wages to Secondary Jobs |
|---|---|---|---|---|---|---|---|---|
| Civil/Track Work | $ 1,017,714,000 | 80% | $ 814,171,200 | $ 74,129 | 10,983 | 10,331 | $49,049 | $ 506,733,507 |
| Electrical Work | | | | | | | | |
| Primary Distribution | $ 39,900,000 | 60% | $ 23,940,000 | $ 74,129 | 323 | 304 | $49,049 | $ 14,900,061 |
| Traction Power and Overhead Contact Systems | $ 136,150,000 | 60% | $ 81,690,000 | $ 74,129 | 1,102 | 1,037 | $49,049 | $ 50,843,189 |
| Maintenance Facilities | | | | | | | | |
| Las Vegas (Wigwam) Facility<br>Baker MOW Facility<br>Victorville (Site 3) Facility | $ 23,718,000 | 60% | $ 14,230,800 | $ 74,129 | 192 | 181 | $49,049 | $ 8,857,134 |
| Control/Signal Work | $ 155,050,000 | 60% | $ 93,030,000 | $ 74,129 | 1,255 | 1,180 | $49,049 | $ 57,901,112 |
| Train Sets/Equipment | $ 179,200,000 | 0% | | | | | | |
| Stations | | | | | | | | |
| Las Vegas Central Station<br>Victorville Station (Site 3) | $ 212,726,000 | 60% | $ 127,635,600 | $ 74,129 | 1,722 | 1,620 | $49,049 | $ 79,439,355 |
| Project Management | | | | | | | | |
| Project Management Oversight | $ 160,000,000 | 80% | $ 128,000,000 | $ 59,084 | 2,166 | 2,038 | $49,049 | $ 99,952,527 |
| Professional Services | $ 40,000,000 | 80% | $ 32,000,000 | $ 59,084 | 542 | 509 | $49,049 | $ 24,988,132 |
| Contingency | $ 77,000,000 | 0% | | | | | | |
| Environmental Mitigation | $ 21,210,000 | 60% | $ 12,726,000 | $ 59,084 | 215 | 203 | $49,049 | $ 9,937,468 |
| ROW Acquisition | $ 52,880,000 | 5% | $ 2,644,000 | $ 46,012 | 57 | 54 | $49,049 | $ 2,651,214 |
| **Total** | **$ 2,115,548,000** | | **$ 1,330,067,600** | | **18,558** | **17,456** | | **$ 856,203,699** |
| | | | | | | | **Increase in Workers** | **$ 36,014** |
| | | | | | | | **Increase to Wages** | **$ 2,186,271,299** |

| | Construction Multiplier* | Construction Spending | Induced Spending | Employment Multiplier | Amount to Employment |
|---|---|---|---|---|---|
| Agriculture, forestry, fishing, and hunting | 0 | $2,115,548,000 | $0 | 0.2289653 | $0 |
| Mining | 0.0043 | $2,115,548,000 | $9,096,856 | 0.2584085 | $2,350,705 |
| Utilities* | 0.0065 | $2,115,548,000 | $13,751,062 | 0.3027847 | $4,163,611 |
| Manufacturing | 0.0813 | $2,115,548,000 | $171,994,052 | 0.331744 | $57,057,995 |
| Wholesale trade | 0.024 | $2,115,548,000 | $50,773,152 | 0.4781621 | $24,277,797 |
| Retail trade | 0.0513 | $2,115,548,000 | $108,527,612 | 0.368414 | $39,983,092 |
| Transportation and warehousing* | 0.0162 | $2,115,548,000 | $34,271,878 | 0.5420351 | $18,576,561 |
| Information | 0.0127 | $2,115,548,000 | $26,867,460 | 0.2746995 | $7,380,478 |
| Finance and insurance | 0.0184 | $2,115,548,000 | $38,926,083 | 0.1747405 | $6,801,963 |
| Real estate and rental and leasing | 0.0288 | $2,115,548,000 | $60,927,782 | 0.069386 | $4,227,535 |
| Professional, scientific, and technical services | 0.0766 | $2,115,548,000 | $162,050,977 | 0.6649545 | $107,756,526 |
| Management of companies and enterprises | 0.0121 | $2,115,548,000 | $25,598,131 | 0.8459958 | $21,655,911 |
| Administrative and waste management services | 0.0162 | $2,115,548,000 | $34,271,878 | 0.7932045 | $27,184,608 |
| Educational services | 0.0001 | $2,115,548,000 | $211,555 | 0.7963862 | $168,479 |
| Health care and social assistance | 0.0006 | $2,115,548,000 | $1,269,329 | 0.7708488 | $978,461 |
| Arts, entertainment, and recreation | 0.0017 | $2,115,548,000 | $3,596,432 | 0.255232 | $917,924 |
| Accommodation | 0.0027 | $2,115,548,000 | $5,711,980 | 0.5524346 | $3,155,495 |
| Food services and drinking places | 0.0036 | $2,115,548,000 | $7,615,973 | 0.6934112 | $5,281,001 |
| Other services* | 0.0114 | $2,115,548,000 | $24,117,247 | 0.6058103 | $14,610,477 |
| | | | **$779,579,438** | | **$346,528,619** |

*Construction Multiplier provided by Bureau of Economic Analysis, RIMSII. Final Demand Output Multipliers - industry aggregations

Region: Las Vegas-Paradise, NV Metropolitan Statistical Area (Type I)

Series: 2002 U.S. Benchmark I-O data and 2007 Regional Data

**San Bernadino County: Aggregated Effect to Employment and Output in 2010 Dollars**

| Description | San Bernardino County, CA | % to Primary Labor | Amount to Primary Labor | 2010 Average Annual Wage | Increase in Primary Workers | Secondary Jobs Created | Average Annual Wage | Wages to Secondary Jobs |
|---|---|---|---|---|---|---|---|---|
| Civil/Track Work | $ 1,890,041,000 | 80% | $ 1,512,032,800 | $71,375 | 21,184 | 19,927 | $54,097 | $ 1,077,968,321 |
| Electrical Work | | | | | | | | |
| Primary Distribution | $ 74,100,000 | 60% | $ 44,460,000 | $71,375 | 623 | 586 | $54,097 | $ 31,696,714 |
| Traction Power and | $ 252,850,000 | 60% | $ 151,710,000 | $71,375 | 2,126 | 1,999 | $54,097 | $ 108,158,086 |
| Overhead Contact Systems | | | | | | | | |
| Maintenance Facilities | | | | | | | | |
| Las Vegas (Wigwam) Facility | | | | | | | | |
| Baker MOW Facility | $ 4,952,000 | 60% | $ 2,971,200 | $71,375 | 42 | 39 | $54,097 | $ 2,118,247 |
| Victorville (Site 3) Facility | $ 91,541,000 | 60% | $ 54,924,600 | $71,375 | 770 | 724 | $54,097 | $ 39,157,205 |
| Control/Signal Work | $ 287,950,000 | 60% | $ 172,770,000 | $71,375 | 2,421 | 2,277 | $54,097 | $ 123,172,319 |
| Train Sets/Equipment | $ 332,800,000 | 0% | | | | | | |
| Stations | | | | | | | | |
| Las Vegas Central Station | | | | | | | | |
| Victorville Station (Site 3) | $ 242,368,000 | 60% | $ 145,420,800 | $71,375 | 2,037 | 1,916 | $54,097 | $ 103,674,349 |
| Project Management | | | | | | | | |
| Project Management Oversight | $ 40,000,000 | 80% | $ 32,000,000 | $60,773 | 527 | 495 | $54,097 | $ 26,793,608 |
| Professional Services | $ 10,000,000 | 80% | $ 8,000,000 | $60,773 | 132 | 124 | $54,097 | $ 6,698,402 |
| Contingency | $ 154,244,000 | 0% | | | | | | |
| Environmental Mitigation | $ 42,421,000 | 60% | $ 25,452,600 | $60,773 | 419 | 394 | $54,097 | $ 21,311,469 |
| ROW Acquisition | $ 211,520,000 | 5% | $ 10,576,000 | $46,012 | 230 | 216 | $54,097 | $ 11,696,168 |
| **Total** | **$ 3,634,787,000** | | **$ 2,160,318,000** | | **30,509** | **28,698** | | **$ 1,552,444,889** |
| | | | | | | | **Increase in Workers** | **$ 59,206** |
| | | | | | | | **Increase to Wages** | **$ 3,712,762,889** |

| | Construction Multiplier* | Construction Spending | Induced Spending | Employment Multiplier | Amount to Employment |
|---|---|---|---|---|---|
| Agriculture, forestry, fishing, and hunting | 0.0036 | $3,634,787,000 | $13,085,233 | 0.146715 | $1,919,800 |
| Mining | 0.0104 | $3,634,787,000 | $37,801,785 | 0.1307486 | $4,942,530 |
| Utilities* | 0.0116 | $3,634,787,000 | $42,163,529 | 0.1709525 | $7,207,961 |
| Manufacturing | 0.2055 | $3,634,787,000 | $746,948,729 | 0.4610934 | $344,413,129 |
| Wholesale trade | 0.0417 | $3,634,787,000 | $151,570,618 | 0.5181238 | $78,532,345 |
| Retail trade | 0.0521 | $3,634,787,000 | $189,372,403 | 0.4156678 | $78,716,010 |
| Transportation and warehousing* | 0.0321 | $3,634,787,000 | $116,676,663 | 0.4015428 | $46,850,674 |
| Information | 0.013 | $3,634,787,000 | $47,252,231 | 0.3456241 | $16,331,510 |
| Finance and insurance | 0.0172 | $3,634,787,000 | $62,518,336 | 0.6008259 | $37,562,636 |
| Real estate and rental and leasing | 0.0287 | $3,634,787,000 | $104,318,387 | 0.05564 | $5,804,275 |
| Professional, scientific, and technical services | 0.0526 | $3,634,787,000 | $191,189,796 | 0.6054006 | $115,746,417 |
| Management of companies and enterprises | 0.0068 | $3,634,787,000 | $24,716,552 | 0.2709534 | $6,697,034 |
| Administrative and waste management services | 0.0201 | $3,634,787,000 | $73,059,219 | 0.6826277 | $49,872,246 |
| Educational services | 0.0002 | $3,634,787,000 | $726,957 | 0.8495705 | $617,602 |
| Health care and social assistance | 0.0007 | $3,634,787,000 | $2,544,351 | 0.7829259 | $1,992,038 |
| Arts, entertainment, and recreation | 0.001 | $3,634,787,000 | $3,634,787 | 0.6621226 | $2,406,675 |
| Accommodation | 0.0029 | $3,634,787,000 | $10,540,882 | 0.5107329 | $5,383,575 |
| Food services and drinking places | 0.0039 | $3,634,787,000 | $14,175,669 | 0.6434541 | $9,121,393 |
| Other services* | 0.0137 | $3,634,787,000 | $49,796,582 | 0.7615845 | $37,924,305 |
| | | | **$1,882,092,709** | | **$852,042,154** |

*Construction Multiplier provided by Bureau of Economic Analysis, RIMSII. Final Demand Output Multipliers - industry aggregations

Region: Riverside-San Bernardino-Ontario, CA Metropolitan Statistical Area (Type I)

Series: 2002 U.S. Benchmark I-O data and 2007 Regional Data

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