



The San Bernardino County Economy

Economic Trends & Forecasts

This report details the macroeconomic conditions in the nation and the state of California over next 2 years. It examines the Inland Empire's industries for their ability to drive job growth and identifies those occupations that are most likely to become a supply-constraint to future job creation.

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CHMURA ECONOMICS & ANALYTICS

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I. Background

The County of San Bernardino Workforce Investment Board (WIB) requested labor market information that covers the Inland Empire region of California, via a written report and presentation at the annual WIB retreat. Chmura Economics & Analytics (Chmura) was retained to provide this economic analysis and made a presentation on April 30, 2013 regarding the local, state, and national economic outlook as well as analysis of the region's strongest industry clusters in terms of job creation and which occupations could be in short supply in the region. Specifically, the WIB asked the presentation and subsequent report to include the following topics:

- Demographics - population characteristics of the Inland Empire area
- Economic characteristics of the population in the Inland Empire
- Description of the local labor market, i.e., make-up of the labor market
- Commercial and residential real estate market characteristics
- Employment forecast and occupational analysis in the Inland Empire

Geography & Labor Shed

While the San Bernardino County WIB contracted this research, it is generally recognized that its economy and natural labor shed includes neighboring Riverside County. Together these two counties comprise the "Inland Empire" region (San Bernardino and Riverside counties) which is equivalent to the Riverside-San Bernardino-Ontario, California Metropolitan Statistical Area (MSA). Throughout this report, the Riverside-San Bernardino-Ontario, California MSA is considered the primary labor shed. This report also references data at the state level as well as for the nation as a whole.

Riverside-San Bernardino-Ontario, CA MSA, MSA

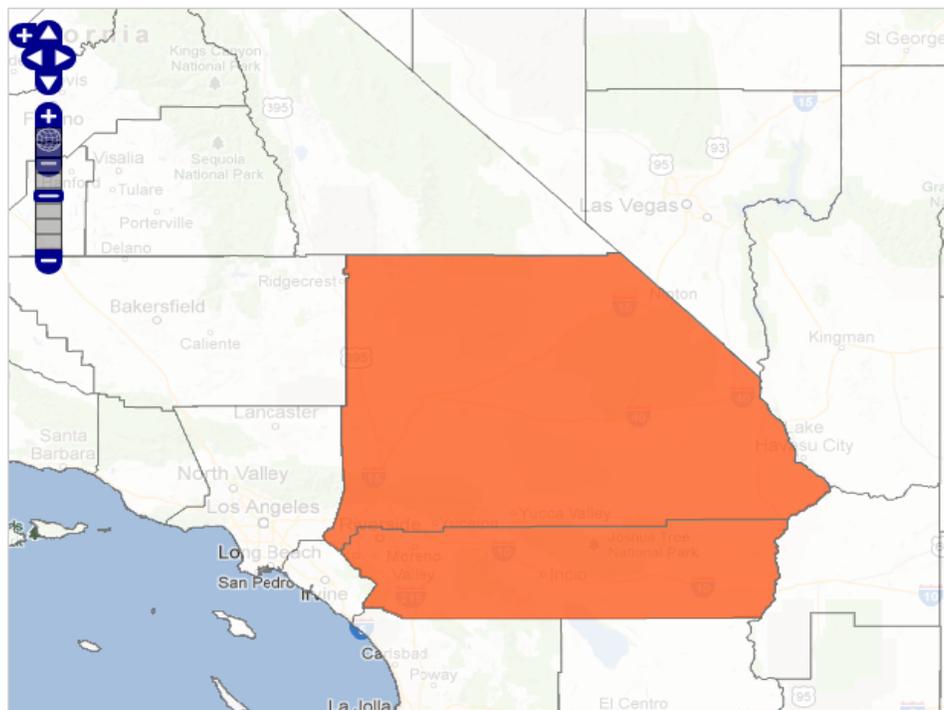


Figure 1: Riverside-San Bernardino-Ontario, California MSA

II. National & Regional Economic Outlook

Growth in real gross domestic product (GDP) stalled in the fourth quarter of 2012, inching forward at a 0.4% annual rate, the slowest rate of growth since the first quarter of 2011. Payroll growth, however, strengthened with 626,000 jobs added over the quarter while the unemployment rate remained unchanged at 7.8%. Home prices continue to show signs of stabilizing; while sales are improving modestly, they are constrained by a tight supply and remain at historically low levels.

National Outlook, 2013-2014

The national economy continued to heal in 2012 from the severe recession that engulfed the nation from December 2007 through November 2009. For the fourth quarter of 2012, real gross domestic product (GDP) grew an annualized 0.4% after increasing an annualized 3.1% in the third quarter. The labor market added jobs at a moderate pace in the fourth quarter of 2012 following modest employment growth in the third quarter. Nonfarm private payroll growth for the fourth quarter accelerated to 1.3% on a year-over-year basis after expanding 0.9% in the third quarter of 2012. The national unemployment rate remained elevated at 7.8% in December 2012, unchanged over the fourth quarter. Home sales have improved from severely depressed levels and various home price indexes suggest that home prices are appreciating once again. The housing sector was a positive contributor to GDP growth in 2012, a trend which Chmura expects will continue in 2013. The U.S. stock market declined modestly over the fourth quarter, coinciding with fiscal cliff worries.

Our most-likely forecast for 2013 and 2014 shows the economy continuing to recover with modest improvement in the housing market. This forecast results in steady but moderate GDP growth and job creation. Our alternative scenario assumes government spending cuts resulting from sequestration cause real GDP to contract modestly on a year-over-year basis in the first quarter of 2013 before posting modest year-over-year increases in the last three quarters of 2013 accompanied by weak labor market growth.

The most-likely scenario assumes the price of oil averages \$80 a barrel in 2013 before receding to \$75 per barrel in 2014 due to slower worldwide growth. The labor market is expected to continue to improve under this scenario, with the unemployment rate projected to average 7.7% in 2013 before falling to 7.1% in 2014. The Federal Open Market Committee (FOMC) is expected to continue to sustain its historically low federal funds rate target until the middle of 2015.

Forecasts	2012	2013	2014
Real GDP	2.3%	1.7%	2.7%
Unemployment Rate	8.1%	7.7%	7.1%
Real Non-Residential Investment	10.7%	5.3%	5.6%
Real Consumer Spending	1.9%	1.6%	2.2%
Key Assumptions			
Oil Prices	\$94	\$80	\$75
Federal Funds Rate	0.1%	0.1%	0.2%
10-Year Treasury	1.8%	1.9%	2.1%

Source: Chmura Economics & Analytics

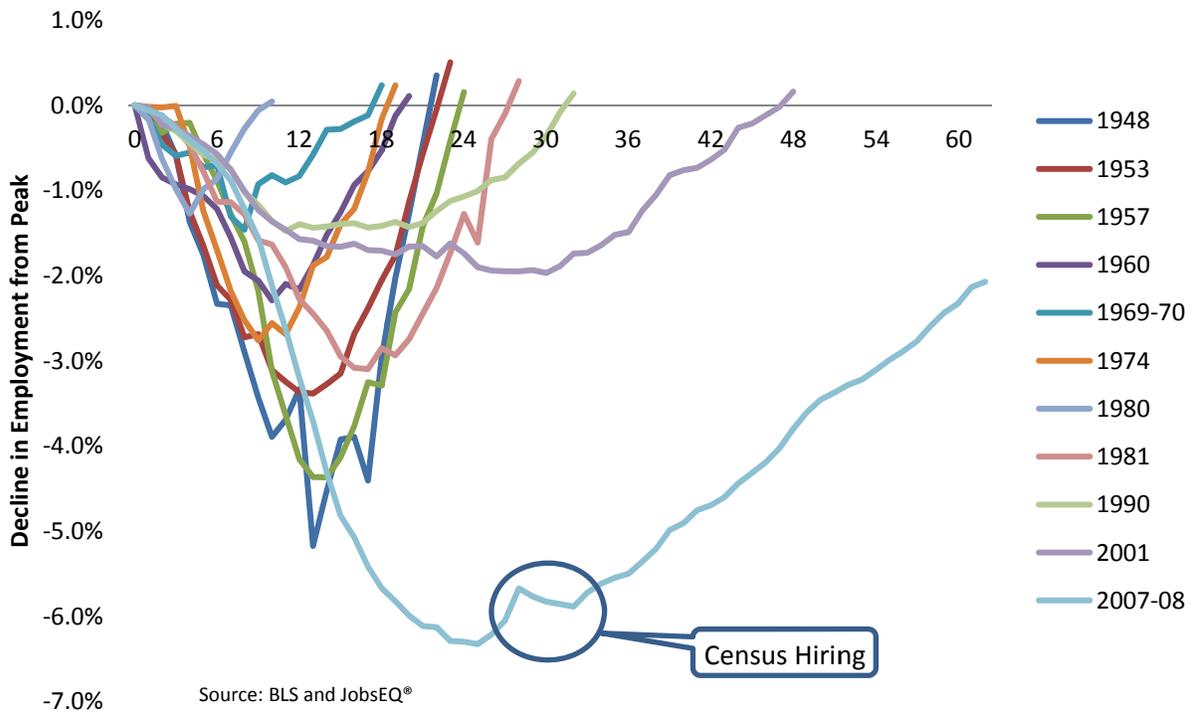
Figure 2: National Macro Forecast, 2013-2014

Recession and Recovery

In terms of the labor market, the recovery from the 2007-2009 recession has been the slowest of all post-World War II recoveries. More than 60 months after the employment level peaked in the fall of 2007, the U.S. labor market remains roughly 2% below the peak. This is in stark contrast to the recoveries from the previous ten recessions which lasted an average of only 24.4 months. For the past decade, job growth has been very modest by the standards of the past 60 years. Between 2003 and 2008, the U.S. economy added 8.1 million jobs only to lose 8.7 million jobs in the 2008-2010 period. Since then, the U.S. economy has added about 5.8 million jobs, leading to a net gain of 5.2 million jobs over the decade 2003-2012.

The last decade has seen a dramatic shift in the overall employment mix in the United States; and of the 5.2 million net jobs created in the past decade, the vast majority have been in the lowest paying deciles. Over the period 2001-2011, there has been a dramatic hollowing-out of traditional “middle-class,” jobs typically paying between \$29,700 and \$42,700 have declined by 5% since 2001. Meanwhile, the U.S. labor market has added jobs paying less than \$23,800—a cohort that experienced no or slightly negative movement in inflation-adjusted wage levels. Over the same period, the national labor market has also added jobs in the two highest paying deciles.

Figure 3: Number of Months for Employment Recovery (Post WWII Recessions)



California Outlook, 2013-2014

The recovery of California's economy is roughly at pace with the nation, though California lost a larger share of its employment during the recession. In 2012, California's employment increased by 2%, about the same rate as in the nation. Chmura projects that employment in California will increase by approximately 1.6% in 2013 and by another 1.7% in 2014, whereas unemployment will average about 9.5% in 2013 and 8.7% in 2014. These estimates are similar to the projections made by University of California Los Angeles (UCLA) Anderson Forecasting, which are made semiannually by a team of economists at UCLA.

	California Employment Growth**				California Unemployment Rate			
	2012*	2013	2014	2015	2012*	2013	2014	2015
Chmura Forecast	2.0%	1.6%	1.7%	-	10.5%	9.5%	8.7%	-
UCLA Anderson Forecast	2.0%	1.4%	2.1%	2.3%	10.5%	9.6%	8.4%	7.2%

Forecasts as of Mar-2013

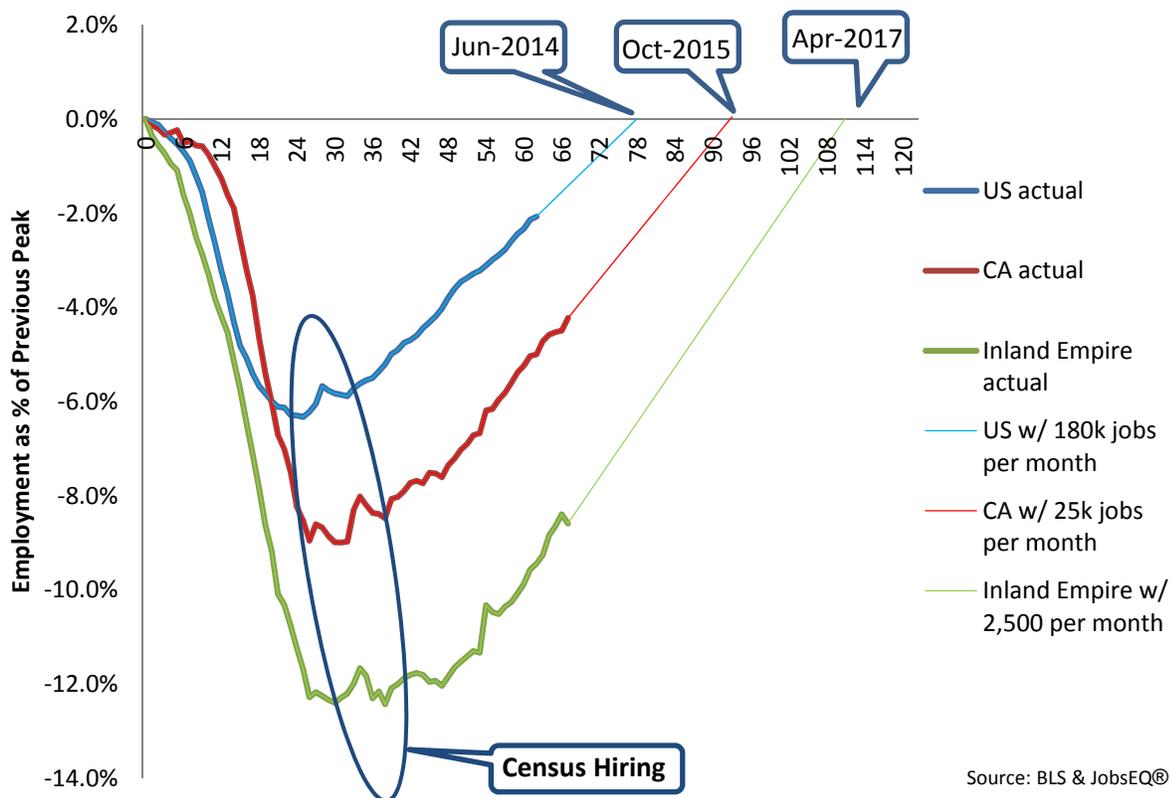
*Actual

**Employment refers to nonagricultural employment.

Figure 4: California Employment Summary Forecasts

Because California's economy lost approximately 9% of its employment from its mid-2007 peak to its trough in mid-2010, it is unlikely to fully recover these losses until the final quarters of 2015. Over the past year, California has averaged about 25,000 new jobs per month and its labor market was about 4% below its previous peak as of April, 2013.

Figure 5: California's Slow Jobs Recovery

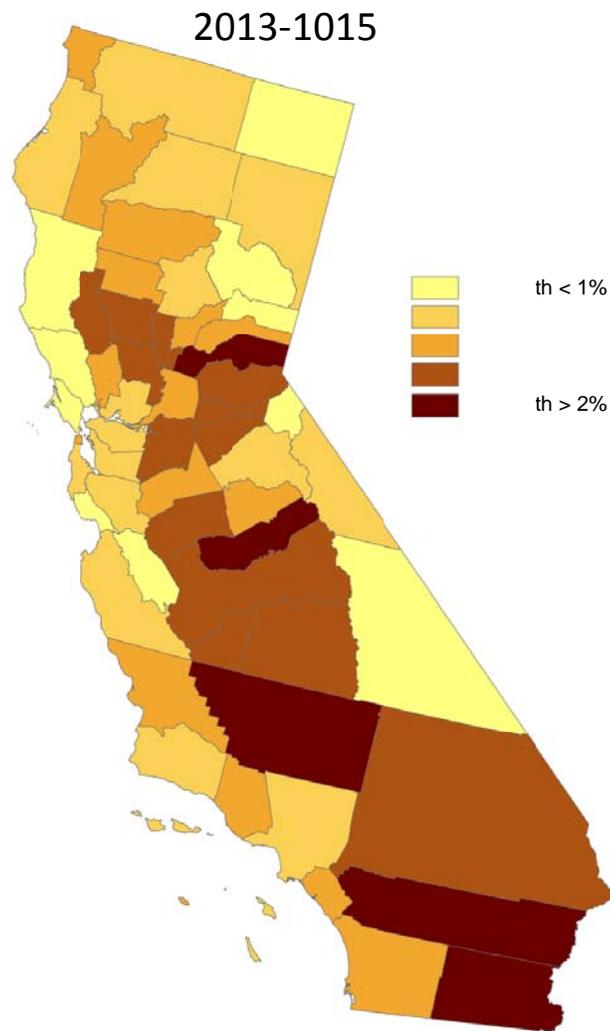


Source: BLS & JobsEQ®

The job outlook is not consistent across all California’s counties, and Chmura forecasts that many of the inland counties that were hit the hardest in the previous recession—including San Bernardino and Riverside—are likely to grow more quickly in the next three years. While California is anticipated to experience employment growth between 1.6% and 1.8% over the next three years, some counties will have growth rates in excess of 2% per year while others will see employment grow at or less than 1% per year on average.

In the past two years, California’s economy has added approximately 500,000 jobs. However, this job growth has been skewed and more than 66% of these new jobs were created in only five sectors: professional, scientific and technical services; accommodation and food services; administrative and waste management and remediation services; healthcare and social assistance; and other services (not including public administration). California’s education services and public administration sectors have continued to shed jobs as state and local budgets are cut and the Golden State’s manufacturing sector has added a paltry 6,000 jobs (+0.2%) in the past two years.

Figure 6: California’s 3-Year Job Outlook by County



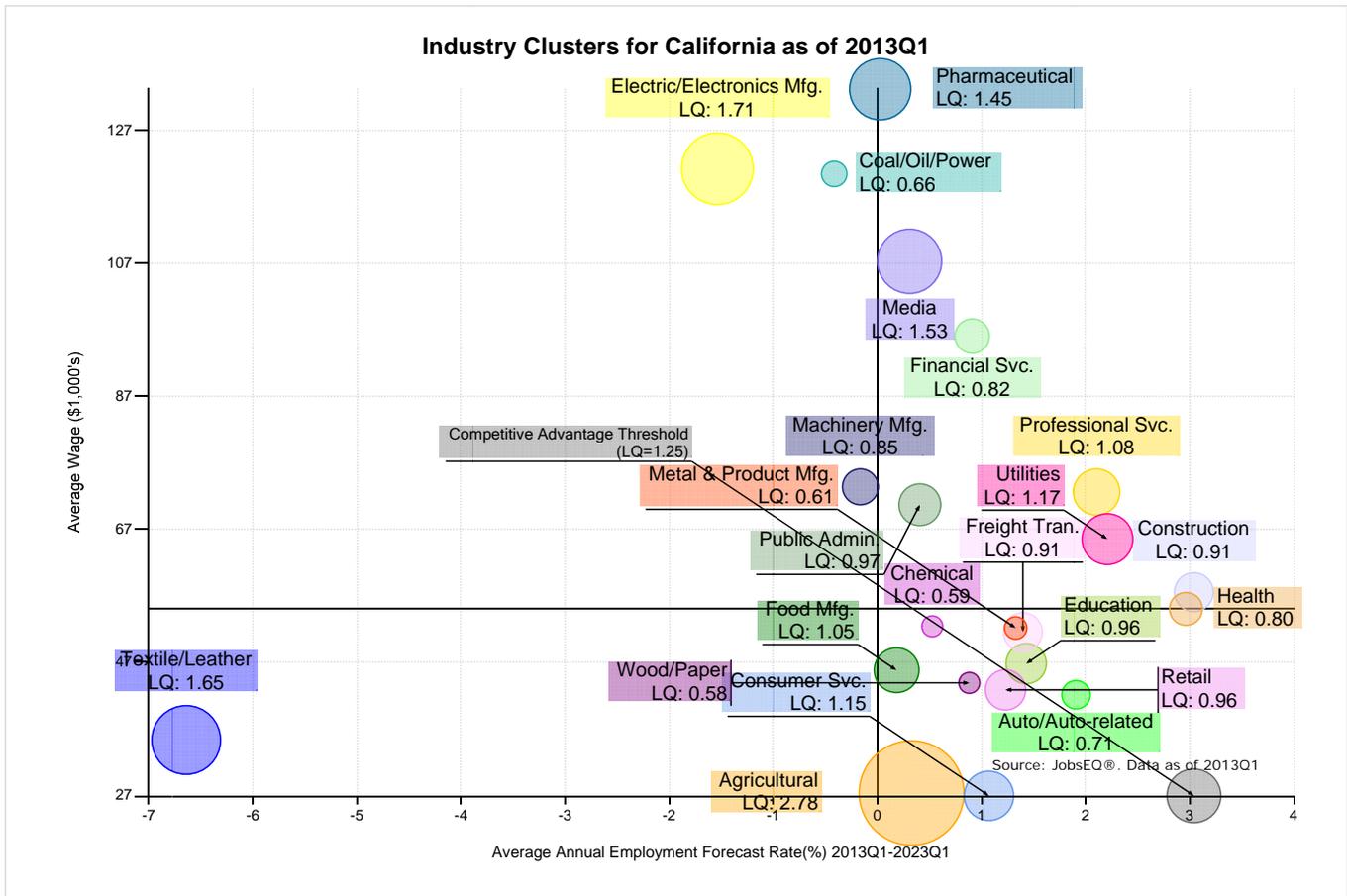


Figure 7: California Industry Cluster 10-Year Growth Forecast

In terms of the location quotient (LQ)—a common measure of the relative size of an industry and traditional gauge of the presence of competitive cluster—California has significant clusters in agriculture (LQ=2.79), pharmaceutical manufacturing (1.44), electrical/electronic manufacturing (1.71), textiles/leather manufacturing (1.65), and media (1.54). The pharmaceutical (0.0% projected yearly average growth), media (+0.3%), and agricultural (+0.3%) sectors are not forecast to grow significantly in terms of employment over the next decade. Moreover, the textile/leather manufacturing sector is forecast to shrink by 6.6% annually and employment in the electrical/electronics manufacturing sector is forecast decline by 1.5% annually.

III. Inland Empire Economic Outlook

The remainder of this report focuses on the Inland Empire region, San Bernardino and Riverside counties, which is equivalent to the Riverside-San Bernardino-Ontario, California MSA.

Demographic Profile

The Riverside-San Bernardino-Ontario, California MSA is home to more than 4.3 million people and represents about 11.4% of California’s total population. Over the past ten years, this region has grown substantially faster than the state and national norms of roughly 1% per year. The population of the two-county region grew 2.2% per year for the past decade. This population growth is significant and Chmura projects the population of the Riverside-San Bernardino-Ontario, California MSA will continue to grow more quickly than the rest of California over the coming decade, which in turn will help bolster the region’s long-run economic prospects.

Region	Average Yearly Population Growth 2000-2010	Working Age Population Growth 2013-2020	Ratio of Retirees to Working Age Population in 2020
Inland Empire	2.2%	+24%	4.80
California	0.9%	+7%	4.66

Source: Chmura Economics & Analytics

Figure 8: Population Growth Statistics

The Inland Empire region has a poverty rate about one percentage point above that of the nation, but only about a half percentage point above California’s poverty rate. Overall, the Inland Empire is nearly half Hispanic or Latino according to the U.S. 2010 Census and about 40% white. African Americans account for roughly 7.6% of the population and Asian Americans about 6.1% of the population. This demographic profile is distinct from the rest of California—with roughly a 13% Asian-American mix—and starkly different from the demographic make-up of the nation where Latinos account for only about 16.3% of the total population. The Inland Empire region has approximately the same level of military personnel living in the area as compared to the state and national norms.

The average educational attainment in the Inland Empire is lower than both state and national averages. The share of population in the Inland Empire with no high school diploma is 21.4% compared to 19.2% for California and 14.6% for the nation. Similarly, the share of the Inland Empire’s population with a bachelor’s degree is only 12.8% compared to 19.3% in California and 17.7% in the nation. Overall postsecondary attainment—share of the population with an associate’s degree or higher—is about ten percentage points lower than the California average of 38% and eight percentage points below the national norm of 36%.

Demographic Profile

	-----Percent-----			-----Value-----		
	Riverside-San Bernardino-Ontario, CA MSA	California	USA	Riverside-San Bernardino-Ontario, CA MSA	California	USA
Demographics						
Population ³	-	-	-	4,304,997	37,691,912	311,591,917
Population Annual Average Growth ³	2.2%	0.9%	0.9%	92,763	321,245	2,662,296
Median Age ⁴	-	-	-	32.7	35.2	37.2
Under 18 Years	28.8%	25.0%	24.0%	1,214,696	9,295,040	74,181,467
18 to 24 Years	10.9%	10.5%	9.9%	458,633	3,922,951	30,672,088
25 to 34 Years	13.4%	14.3%	13.3%	564,520	5,317,877	41,063,948
35 to 44 Years	13.4%	13.9%	13.3%	566,254	5,182,710	41,070,606
45 to 54 Years	13.5%	14.1%	14.6%	570,032	5,252,371	45,006,716
55 to 64 Years	9.7%	10.8%	11.8%	410,782	4,036,493	36,482,729
65 to 74 Years	5.8%	6.1%	7.0%	244,093	2,275,336	21,713,429
75 Years, and Over	4.6%	5.3%	6.0%	195,841	1,971,178	18,554,555
Race: White	58.9%	57.6%	72.4%	2,488,308	21,453,934	223,553,265
Race: Black or African American	7.6%	6.2%	12.6%	322,405	2,299,072	38,929,319
Race: American Indian and Alaska Native	1.1%	1.0%	0.9%	46,399	362,801	2,932,248
Race: Asian	6.1%	13.0%	4.8%	259,071	4,861,007	14,674,252
Race: Native Hawaiian and Other Pacific Islander	0.3%	0.4%	0.2%	13,744	144,386	540,013
Race: Some Other Race	21.0%	17.0%	6.2%	887,896	6,317,372	19,107,368
Race: Two or More Races	4.9%	4.9%	2.9%	207,028	1,815,384	9,009,073
Hispanic or Latino (of any race)	47.3%	37.6%	16.3%	1,996,402	14,013,719	50,477,594
Economic						
Labor Force (civilian population 16 years and over) ⁵	62.1%	64.1%	64.4%	1,932,781	18,472,288	155,320,515
Armed Forces Labor Force ⁵	0.6%	0.5%	0.5%	18,648	146,361	1,136,179
Median Household Income ^{4, 5}	-	-	-	\$57,096	\$61,632	\$52,762
Poverty Level (of all people) ⁵	15.1%	14.4%	14.3%	618,822	5,211,481	42,739,924
Mean Commute Time (minutes) ⁵	-	-	-	30.6	27	25.4
Commute via Public Transportation ⁵	1.6%	5.1%	5.0%	26,836	833,261	6,915,130

Figure 9: Demographic Profile Riverside-San Bernardino-Ontario, CA MSA

	-----Percent-----			-----Value-----		
	Riverside-San Bernardino-Ontario, CA MSA	California	USA	Riverside-San Bernardino-Ontario, CA MSA	California	USA
Housing						
Total Housing Units	-	-	-	1,500,344	13,680,081	131,704,730
Median House Value (of owner-occupied units) ^{4, 5}	-	-	-	\$281,600	\$421,600	\$186,200
Homeowner Vacancy	3.5%	2.1%	2.4%	30,555	154,775	1,896,796
Rental Vacancy	9.1%	6.3%	9.2%	45,439	374,610	4,137,567
Renter-Occupied Housing Units (Percent of Occupied Units)	35.5%	44.6%	35.5%	452,093	5,542,127	40,730,218
Occupied Housing Units with No Vehicle Available (Percent of Occupied Units) ⁵	5.1%	7.7%	8.9%	64,458	953,126	10,264,658
Social						
Educational Attainment: No High school Diploma ⁵	21.4%	19.2%	14.6%	539,253	4,564,854	29,518,935
Educational Attainment: High School Graduate ⁵	26.1%	21.1%	28.6%	655,435	5,025,372	57,861,283
Educational Attainment: Some College, No Degree ⁵	25.0%	21.8%	21.0%	629,643	5,186,847	42,350,233
Educational Attainment: Associate's Degree ⁵	7.8%	7.7%	7.6%	196,907	1,825,704	15,344,048
Educational Attainment: Bachelor's Degree ⁵	12.8%	19.3%	17.7%	321,303	4,583,032	35,852,277
Educational Attainment: Post Graduate Degree ⁵	6.9%	11.0%	10.5%	172,413	2,612,035	21,121,347
Disabled, Age 16 to 64 (Percent of Total Population) ¹	1.6%	1.6%	1.5%	68,862	622,147	4,776,516
Foreign Born ⁵	21.8%	27.2%	12.8%	911,725	10,042,574	39,268,838
Speak English Less Than Very Well (population 5 yrs and over) ⁵	17.0%	19.7%	8.7%	654,907	6,792,119	24,950,788

Figure 10: Demographic Profile (cont.) Riverside-San Bernardino-Ontario, CA MSA

Recent Economic Performance & Outlook 2013-2014

The Riverside-San Bernardino-Ontario MSA was hit harder in the previous recession and in the housing crisis than most other regions of California. Thus far, the Inland Empire's recovery has been lagging that of the overall state as well as the nation. California has shown better job growth and registered stronger wage gains in the previous two years than the Inland Empire. However, Chmura's forecasts indicate that the Inland Empire economy will outperform the California economy in terms of job creation and wage growth in 2013 and 2014. Real retail sales should remain strong in the metro area, averaging above 6.5% for both of the next two years. Building permits, a leading indicator of economic activity, should maintain a double-digit expansion over the next two years, but will likely underperform the statewide norm. Chmura's growth forecast for 2013 is consistent with approximately 24,500 jobs being created over the course of the year, or about 2,000 jobs per month. This 2,000-per-month new jobs projection is consistent with the recent average for monthly job creation from March 2012 to February 2013 for the Inland Empire economy. This higher forecast implies roughly 2,300 jobs created per month, an annual increase of 2.3% in total employment.

Region/Indicators	Actual			Forecast	
	2010	2011	2012	2013	2014
San Bernardino MSA					
Employment	-2.3%	0.8%	1.3%	2.0%	2.1%
Wages and Salaries	-1.2%	2.7%	3.5%	4.0%	4.1%
Real Retail Sales	3.7%	6.4%	6.9%	6.5%	6.9%
Building Permits	4.9%	-23.8%	22.8%	11.6%	14.2%
California					
Employment	-1.4%	0.9%	2.0%	1.6%	1.7%
Wages and Salaries	1.8%	4.5%	4.2%	3.5%	3.8%
Real Retail Sales	3.0%	6.2%	6.9%	6.5%	6.9%
Building Permits	24.7%	7.2%	27.9%	14.5%	20.1%

Source: Chmura Economics & Analytics

*Employment refers to nonagricultural employment.

**Wages and salaries include some options that were exercised. Actual data are through the 4th quarter of 2012.

All reported series are seasonally adjusted.

Figure 11: Recent Economic Performance

The Inland Empire's unemployment rate has been long above 11% (seasonally adjusted),¹ but has been tracking steadily downward since October 2010 and currently is estimated to be 10.9%. The region's unemployment rate peaked at roughly 14.5% in early 2010, has dropped nearly 3.7 percentage points since then, but remains more than three percentage points higher than the national unemployment rate. Chmura's employment growth forecast is consistent with the region's unemployment rate reaching single digits by either the 4th quarter 2013 or the 1st quarter of 2014. The region, however, is still probably at least three-and-a-half years from reaching its previous level of peak employment.

¹ The seasonal adjustment calculation in JobsEQ is based on a proprietary algorithm designed for online applications. Thus, seasonally adjusted data in JobsEQ may not match exactly with seasonally adjusted data from other sources, such as the Bureau of Labor Statistics (BLS).

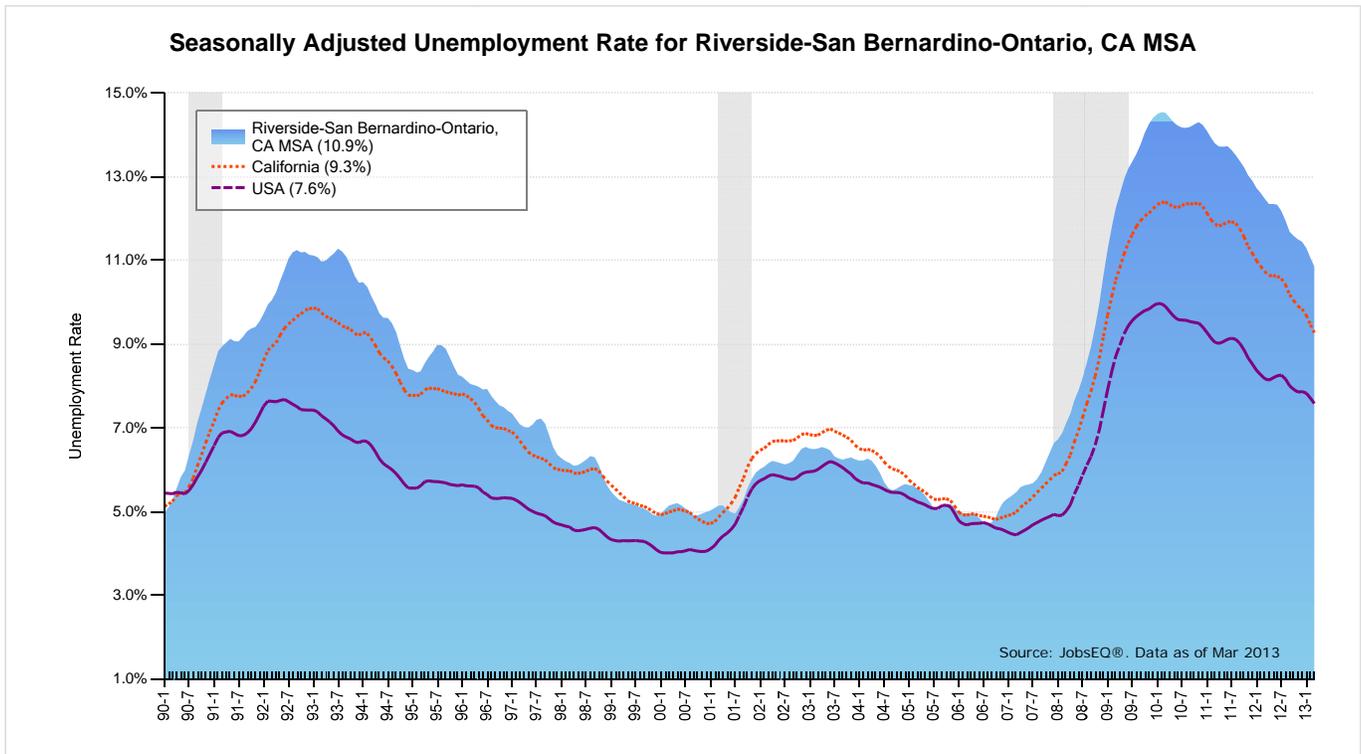


Figure 12: Seasonally Adjusted Unemployment Trends

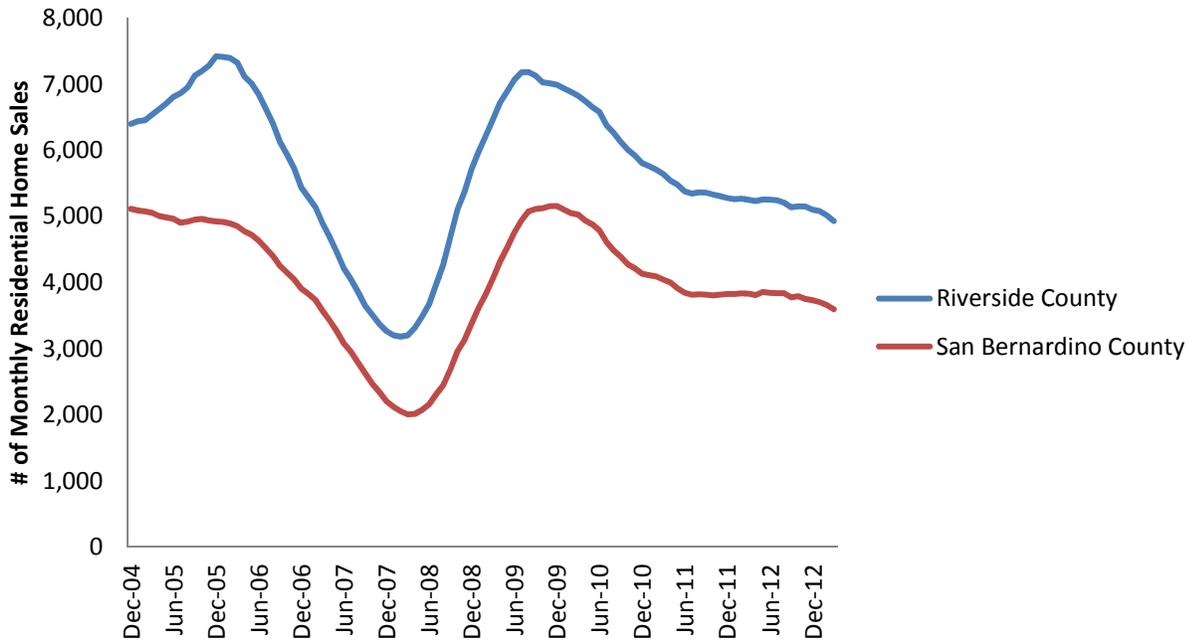
Housing Sector Analysis

The housing sector is unambiguously moving in a positive direction on a number of fronts. Home sales are moving towards levels that are predicated upon healthy fundamentals such as household formation, overall population growth, and the replenishment of depreciated housing stock (replacing old homes). Several metrics indicate that the region’s distressed housing stock (short-sales, foreclosures, and other non-traditional sales) are becoming a smaller share of overall sales—a trend that is more pronounced in Riverside County than in San Bernardino. Perhaps most importantly, housing prices have bottomed out and are slowly, but steadily, moving upwards. The commercial real estate market looks much stronger relative to the residential market, with vacancies moving steadily downward and rental/lease prices moving upward. The region’s commercial sector looks particularly strong in the industrial segment, where the region benefits from the ultra-low industrial space vacancy rates in Los Angeles (roughly 2.5%) and the continuing strong volumes being processed through the Port of Los Angeles.²³

² “In the Inland Empire, and Industrial Real Estate Boom” Roger Vincent, Los Angeles Times; 12-Apr-2013

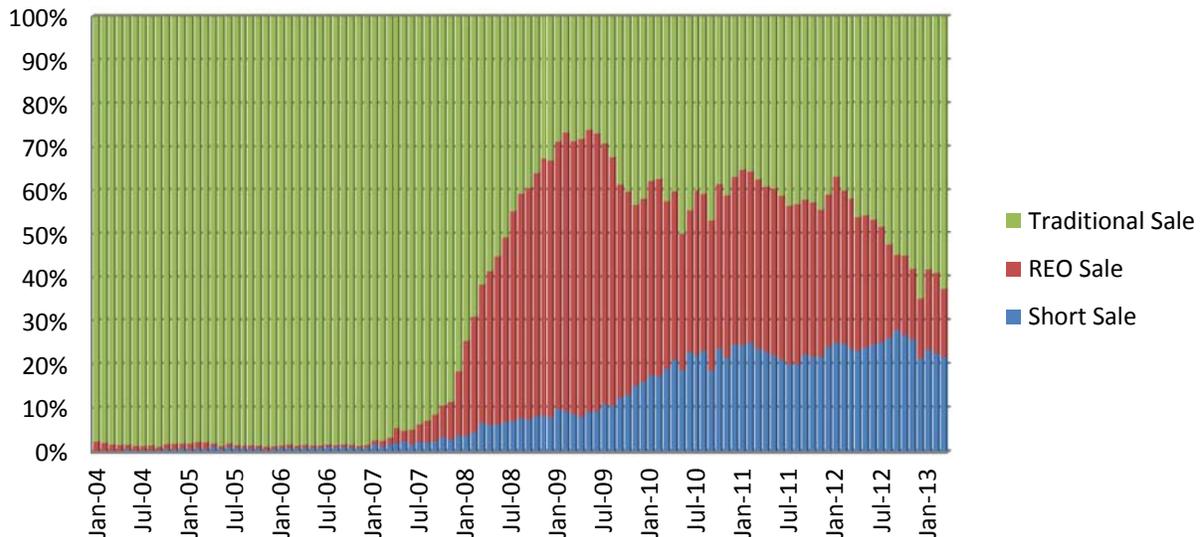
³ Port of Los Angeles Container Statistics 2012-2013

Figure 13: Twelve-Month Moving Average Home Sales



The San Bernardino residential housing market is also moving in a positive direction, but the data is a bit more mixed than in Riverside County. Housing prices (see Figure 16) and the moving average of monthly home sales are both moving at the same rate as in Riverside County, however, the number of distressed sales as a share of overall residential sales has not declined as consistently as in Riverside County. Foreclosure sales in San Bernardino have declined to roughly 15% of all sales—close to the trend in Riverside County—but the share of short sales remains roughly 22% of all sales in San Bernardino County; close to its 30-month average of 23.5%. Chmura expects that the twelve-month moving average of home sales will hover near 3,600 sales per month for the remainder of 2013.

Figure 14: San Bernardino County: Residential Home Sales by Type



The housing market appears stronger in Riverside County than in San Bernardino where the number of foreclosure-based sales has been in decline for more than a year and is now only about 10% of all monthly sales. Short sales as a share of all sales in Riverside County peaked in mid-2012, but have since been trending steadily lower and are now less than 20% of all monthly sales. Based on these trends, the share of total distressed sales will likely fall below 25% of all sales by the end of 2013. Chmura expects that the twelve-month moving average of home sales—a simple way to remove the strong seasonality associated with home sales—will hover near 4,900 sales per month for the remainder of 2013.

Figure 15: Riverside County: Residential Home Sales by Type

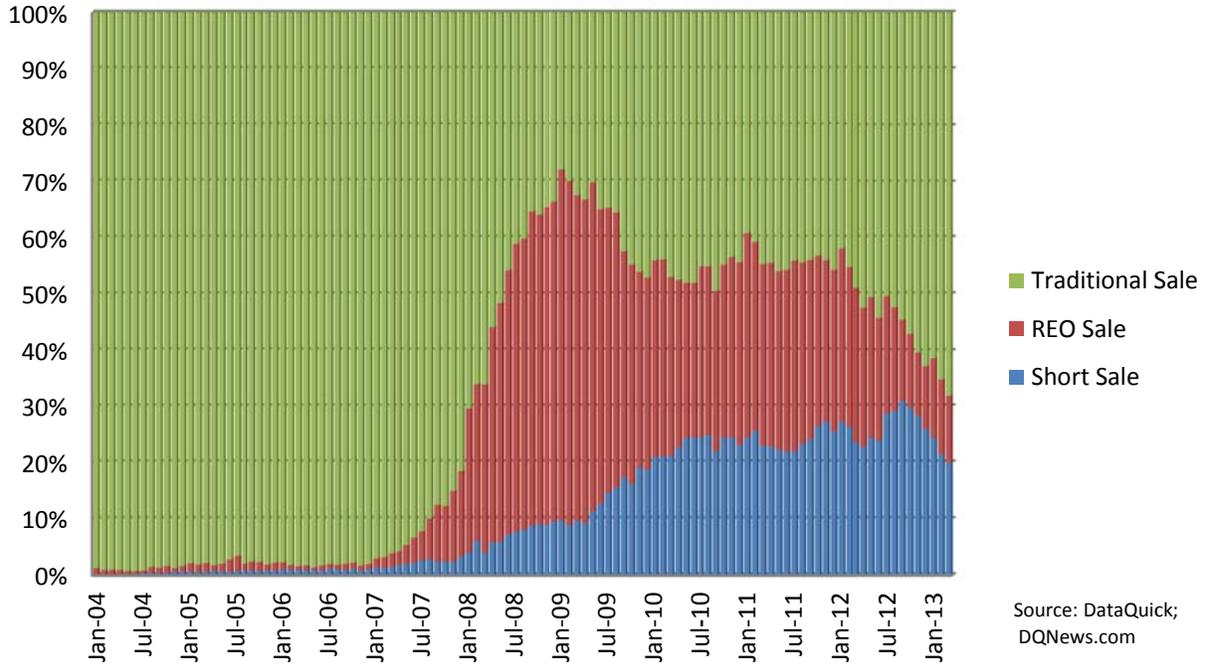
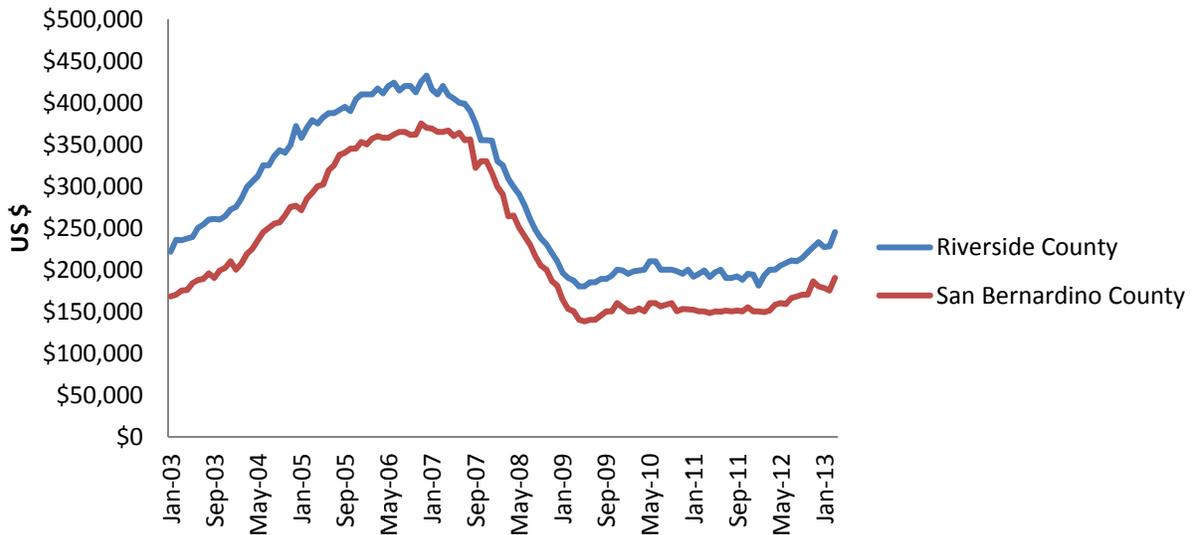


Figure 16: Median Single Family Home Prices



Industry Clusters & Job Creation Potential

An industry scorecard brings together several metrics to assess the relative ability of an industry to drive long-run employment gains. This analysis synthesizes several different employment-related trends in order to identify those industries that are thriving and likely to continue to thrive in the local economy, and thus likely to drive job gains. In particular, this analysis examines the location quotient, the three-year employment growth projection, recent trends in the number of firms operating by sector, and the three-year competitiveness score—which indicates if employment (not output) has increased after accounting for national employment trends and the local mix of industries.

Sector	Current			Historical				Forecast	3-Year Analytic
	Four Quarters Ending with 2012q4			Total Change over the Last 3 Years	Average Annual % Change in Employment 2009q4-2012q4			Next 3-Years	
	Employment	Average Annual Wages	LQ	Employment	Riverside-San Bernardino-Ontario, CA MSA	CA	USA	Average Annual Growth Percent	Local Competitiveness
Health Care and Social Assistance	140,981	\$50,420	0.85	10,929	2.7%	2.2%	1.7%	3.8%	✓
Transportation and Warehousing	68,657	\$43,415	1.51	4,460	2.3%	-0.1%	0.5%	3.0%	✓
Retail Trade	160,932	\$29,003	1.21	4,088	0.9%	0.9%	0.7%	2.2%	✓
Wholesale Trade	51,585	\$49,862	1.02	3,069	2.1%	1.3%	0.5%	2.4%	✓
Arts, Entertainment, and Recreation	29,113	\$31,138	1.39	-31	0.0%	0.7%	0.4%	2.7%	✓
Manufacturing	84,789	\$48,540	0.8	-2,759	-1.1%	-1.0%	0.3%	1.5%	
Construction	60,324	\$49,729	1.19	-7,851	-4.0%	-2.0%	-2.4%	4.0%	
Utilities	9,932	\$82,452	1.37	-132	-0.4%	-1.2%	-0.5%	1.7%	
Total All Industries	1,170,318	\$40,736	1	-2,187	-0.1%	0.5%	0.7%	2.6%	

Source: JobsEQ®

Figure 17: Sector Scorecard

Based on this analysis, five sectors emerge as having particularly good prospects for driving future job growth in the Inland Empire. While this analysis is a quantitative way to assess a sector’s employment “health” as well as potential to drive future job growth, it is not a suitable methodology for assessing the long-run output (economic value measured in GDP calculations) of a firm or sector, nor is it a reliable proxy for the underlying profitability of individual firms operating within the sector. Within these five sectors are 26 separate industries (4-digit NAICS) that

have very strong growth potential after factoring in the same criteria—long-run growth rates, high location quotient, three-year job gains, trends in the number of firms, and three-year competitiveness.

Figure 18: Industries with High Job Creating Potential

NAICS	Industry	Current			Total Change	Historical			Forecast		
		Four Quarters Ending with 2012q4				Average Annual % Change in Employment 2009q4-2012q4			Over the Next 3 Years		
		Employment	Average Annual Wages	LQ	3-Year Employment	Riverside-San Bernardino-Ontario, CA MSA	CA	USA	Total Approx. Replacement Demand	Total Employment Change	Average Annual Growth Percent
6211	Offices of Physicians	26,442	\$74,224	1.22	3,895	5.5%	4.6%	1.9%	1,466	3,186	3.9%
4931	Warehousing and Storage	20,657	\$39,945	3.41	3,564	6.5%	-0.1%	1.9%	1,597	2,180	3.4%
4841	General Freight Trucking	16,886	\$43,071	2.04	828	1.7%	2.4%	1.7%	1,025	1,453	2.8%
4481	Clothing Stores	14,754	\$15,207	1.54	3,048	8.0%	4.1%	1.0%	1,253	1,397	3.1%
7139	Other Amusement and Recreation Industries	14,148	\$23,100	1.27	477	1.2%	6.1%	0.0%	1,261	1,258	2.9%
4411	Automobile Dealers	12,472	\$52,922	1.29	1,544	4.5%	2.0%	2.2%	964	1,144	3.0%
4441	Building Material and Supplies Dealers	11,727	\$33,161	1.29	142	0.4%	0.0%	-0.2%	987	1,094	3.0%
4461	Health and Personal Care Stores	9,519	\$38,068	1.06	379	1.4%	0.4%	0.7%	753	1,101	3.7%
6212	Offices of Dentists	9,505	\$40,331	1.26	528	1.9%	1.0%	1.1%	563	1,128	3.8%
4244	Grocery and Related Product Merchant Wholesalers	7,173	\$50,221	1.12	385	1.9%	1.3%	0.5%	505	614	2.8%
4413	Automotive Parts, Accessories, and Tire Stores	6,384	\$32,052	1.41	295	1.6%	0.2%	1.8%	500	508	2.6%
4842	Specialized Freight Trucking	5,600	\$47,937	1.49	271	1.7%	1.2%	3.6%	352	733	4.2%
4511	Sporting Goods, Hobby, and Musical Instrument Stores	4,637	\$17,819	1.07	37	0.3%	1.6%	1.8%	393	394	2.8%
4239	Miscellaneous Durable Goods Merchant Wholesalers	3,892	\$35,312	1.47	1,241	13.6%	3.7%	2.9%	280	415	3.4%
4421	Furniture Stores	3,534	\$35,977	1.87	272	2.7%	1.3%	-1.3%	275	379	3.5%
6219	Other Ambulatory Health Care Services	2,994	\$39,389	1.2	14	0.2%	3.2%	1.9%	169	374	4.0%
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	2,496	\$52,336	1.26	113	1.6%	1.4%	-1.1%	171	181	2.4%
4482	Shoe Stores	2,409	\$16,652	1.46	282	4.2%	2.6%	1.1%	202	187	2.5%
4884	Support Activities for Road Transportation	2,392	\$34,760	2.42	349	5.4%	2.2%	2.7%	157	264	3.5%
4232	Furniture and Home Furnishing Merchant Wholesalers	2,375	\$42,619	2.84	143	2.1%	0.7%	-1.0%	167	217	3.0%
4881	Support Activities for Air Transportation	2,303	\$43,258	1.22	362	5.9%	6.5%	1.5%	179	248	3.5%
4422	Home Furnishings Stores	2,164	\$28,631	1.06	115	1.8%	3.1%	0.7%	176	222	3.3%
4483	Jewelry, Luggage, and Leather Goods Stores	1,563	\$29,705	1.28	302	7.4%	0.6%	0.0%	126	108	2.3%
4859	Other Transit and Ground Passenger Transportation	1,002	\$23,881	1.26	140	5.1%	5.3%	4.7%	54	130	4.1%
4922	Local Messengers and Local Delivery	490	\$32,640	1.33	82	6.3%	-2.5%	-0.6%	32	52	3.4%
4852	Interurban and Rural Bus Transportation	260	\$31,204	1.31	35	4.9%	-6.5%	0.9%	15	18	2.3%

Source: JobsEQ®

In Chmura’s long-run growth model, the Inland Empire has several industry clusters that are likely to expand employment in excess of 2% per year over the next decade. These industries—retail, education, professional services, consumer services, healthcare, and construction—represent well over half of the total employment in the region and are likely to expand faster than the overall pace of job growth in California.

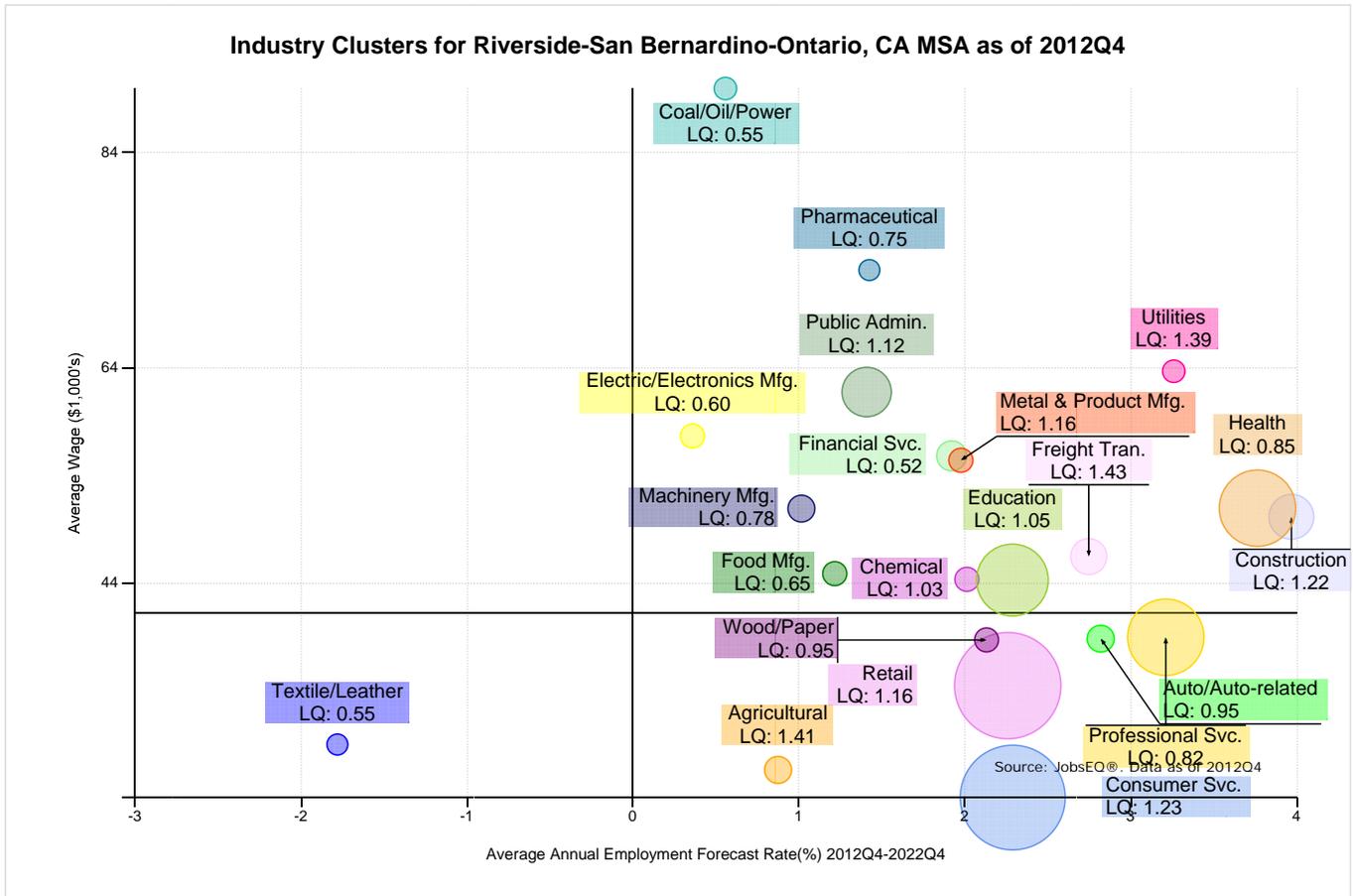


Figure 19: Riverside-San Bernardino-Ontario, CA MSA Industrial Clusters (scaled by employment)

Workforce Alignment Analysis & Outlook

Over the next three years, job growth in the Inland Empire is expected to be reasonably balanced with greater than 2% annual expansions across job cohorts, regardless of educational requirements. Fast growth is expected for jobs requiring very little education to those typically requiring extensive postsecondary education. While the relatively strong growth rates for jobs requiring a high school diploma or less is at odds with state trends—which is seeing more of a skill-bias in job creation—the region’s average annual wages and unemployment rates by education level strongly mirror the norms of the state and the nation.

Figure 19: Employment Growth by Education Level

	Regional Employment Q4 2012	Average Annual Salary 2011	Unemployment Rate Q4 2012	Average Annual Growth Rate Next Three Years
Doctoral or professional degree	25,666	\$ 120,025	4.8%	2.8%
Master's degree	14,841	\$ 74,707	5.9%	3.0%
Bachelor's degree	151,780	\$ 72,423	6.6%	2.6%
Associate's degree	58,427	\$ 57,166	7.7%	2.6%
Postsecondary non-degree award	48,143	\$ 47,762	9.0%	2.3%
Some college, no degree	5,409	\$ 55,000	11.7%	2.6%
High school diploma or equivalent	494,747	\$ 41,539	11.6%	2.1%
Less than high school	371,300	\$ 30,925	17.2%	2.3%

Source: JobsEQ®

High-Level Workforce Alignment Metrics

Estimated occupational deficits over the next ten years are likely to vary across the Inland Empire in terms of the level of education required. Overall, about 60 percent of the occupations (at the 6-digit SOC code level) with the highest projected gaps over the next ten years will require some postsecondary education. About one quarter of these occupations with the largest projected gaps are likely to require a STEM-related degree or specific training in a medical or healthcare field. In the case of gaps related to positions that require only short-term on-the-job training, it is likely that the Inland Empire economy will not suffer from widespread skill-shortages, but rather the need to facilitate the transition of workers from some of its declining industries—such as low-value-added food service industries—into the higher-level service sector jobs that are likely to be growing rapidly over the next decades—such as home-health aides.

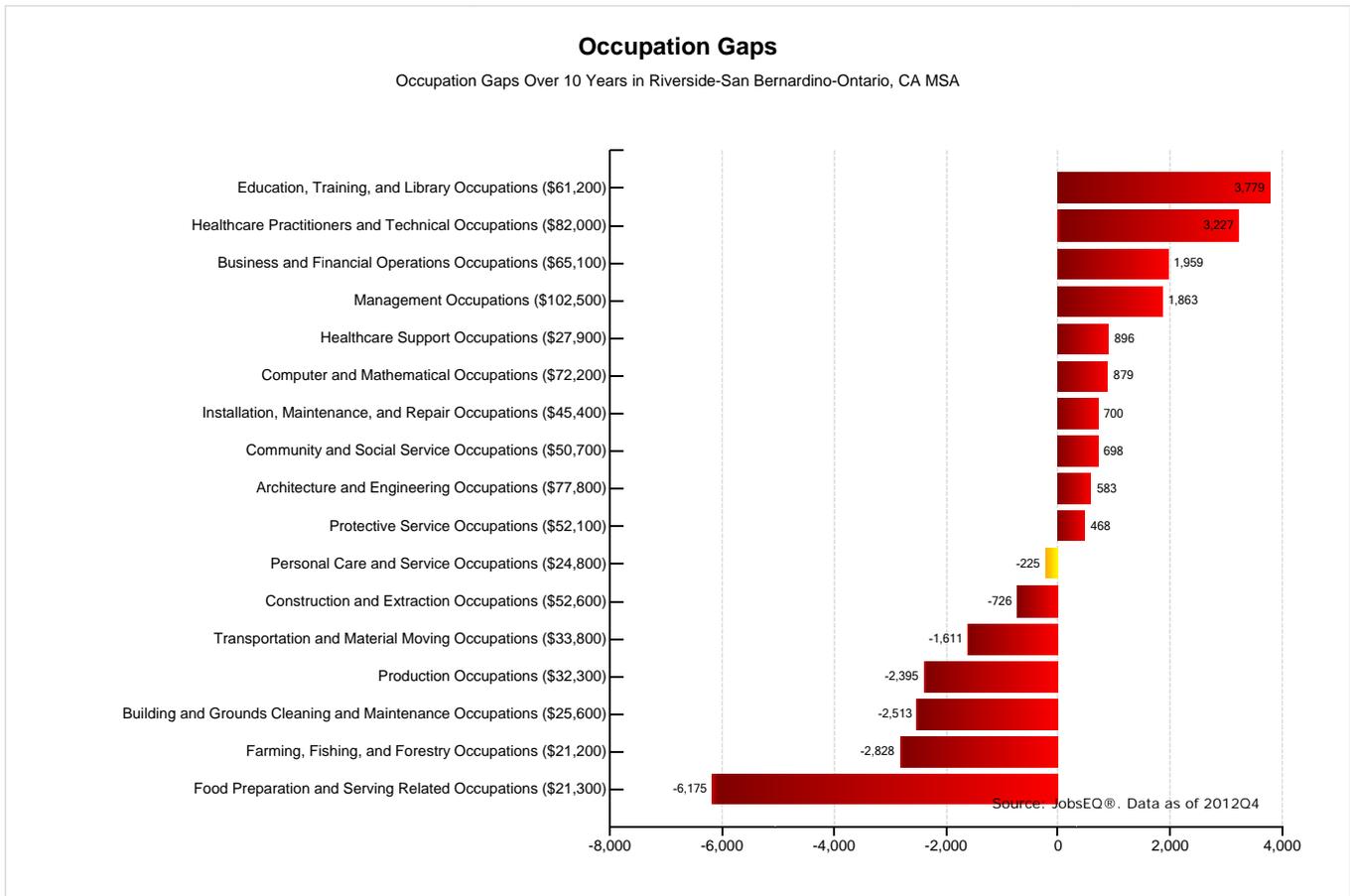


Figure 20: Inland Empire Long-Run Potential Occupational Gaps

At the major occupation group level (2-digit SOC), the Inland Empire has a shortfall in the number of awards (graduates) being bestowed by the region’s postsecondary schools; this is not uncommon, but can be a particular challenge, especially for area’s with below average postsecondary educational attainment. Taking into account the size of the regional economy and the industry mix of the area, the Inland Empire region falls short in the number of recent postsecondary awards across several major occupational groups. For example, in the 2010-2011 academic year, 30,773 awards were produced by postsecondary schools in the Inland Empire region related to occupations in the business and financial operations field. However, given the region’s current employment in these occupations, this award production fell short of the national norm by 1,068 awards. Likewise, award production in the Inland Empire region fell short by 364 awards related to architectural and engineering occupations and was short by 3,385 awards for education, training and library occupations. In other words, for the region to maintain a properly trained employment base, new workers for these occupations would need to be “imported” from schools outside the region. This “import” of trained individuals includes residents of the area who may have moved outside the region to be educated and then move back for employment once their studies are completed.

Figure 21: Broad-Level Educational Alignment Analysis

Title	2012Q4 Employment	Awards (2010- 2011)	Training Concentration	Short-Run Supply & Demand Analysis	Max Annual Shortfall
Management Occupations	40,386	4,752	115.0%	↔ Equilibrium	-
Business and Financial Operations Occupations	39,773	757	41.0%	↓ Under-Supply	1,068
Computer and Mathematical Occupations	18,455	732	87.0%	↔ Equilibrium	-
Architecture and Engineering Occupations	11,020	473	56.0%	↓ Under-Supply	364
Life, Physical, and Social Science Occupations	6,258	852	85.0%	↔ Equilibrium	-
Community and Social Service Occupations	14,867	1,655	92.0%	↔ Equilibrium	-
Legal Occupations	5,163	210	60.0%	↓ Under-Supply	140
Education, Training, and Library Occupations	69,763	4,273	56.0%	↓ Under-Supply	3,385
Arts, Design, Entertainment, Sports, and Media Occupations	10,456	1,173	82.0%	↔ Equilibrium	-
Healthcare Practitioners and Technical Occupations	55,802	4,129	113.0%	↔ Equilibrium	-

Source: JobsEQ®

Industry-Occupation Crosswalk

This section of the report examines those specific occupations that are most relevant to the five sectors with the highest potential for job creation and estimates the supply and demand of skilled workers—at all education levels—in the region. A proprietary industry-to-occupation crosswalk was utilized to identify those occupations that were employed in these sectors. This crosswalk yielded approximately 700 occupations that were employed in these various industrial sectors. Additional occupations were flagged as priorities because they had previously been identified by the California Workforce Investment Board as key occupations to support the development and expansion of top industries in the state of California.

Key Occupations

This list of occupations most relevant to the Inland Empire’s key industries was further refined down to 75 occupations by examining a variety of labor market factors that can contribute to an occupational skills gap. Chmura identified the key occupations by combining several different labor market estimates to pinpoint localized deficiencies in occupations requiring specific skillsets. This analysis identifies those occupations that are filled by workers with at least some postsecondary training. Occupations that require little to no specialized training—that are filled predominantly by individuals with a high school education or less and may only require short-term on-the-job training—are largely excluded from this analysis. This analysis specifically incorporates recent employment

growth trends, wage trends, current estimates of unemployment by occupation, long-run growth forecasts for individual occupations, and an assessment as to whether recent graduation rates for specific occupation-oriented programs in the region are sufficient to meet short- and long-run demand. Based on these inputs and a proprietary algorithm, Chmura identified those select occupations that are highly likely to either be in short supply currently or are likely to become a binding constraint on growing the economy through existing business expansion or new business attraction.

Relevant factors:⁴

3-Year Growth Trend: This factor identifies those occupations that have experienced above average growth in the 4-quarter moving average of employment by occupation for the period Q4-2007 to Q4-2012.

Unemployment Rate: This factor identifies those occupations that currently have below average (for a given region) unemployment rates as of the most recent quarter.

Potential Local Education Shortage: This factor identifies occupations in a locality where the training concentration score—a measure of the local graduates in specific occupation-related programs is on par with national norms—is below 75% in 2011 (for a region with less than 2 million people). This analysis relies on postsecondary awards reported to the National Center for Education Statistics database.

- The “% College Educated” refers to analysis found in the Current Population Survey that indicates the percentage of current workers in an occupation nationally that have at least some college education or above.

Local Emerging Skills Gap: This factor identifies those occupations in a region where Chmura’s model projects a supply gap could emerge in the coming five years. This estimate is based on long-run estimates of supply and demand for each occupation based on industry employment trends. Employment supply and demand projections are based on employment data as of the most recent quarter.

3-Year Growth Forecast: This factor identifies those occupations that are currently projected to increase in employment above the average pace (for a given region) in terms of their 5-year growth rates from the JobsEQ baseline forecast.

Again, this analysis yielded 75 occupations that are or could potentially become constraints on the expansion of the key job creating sectors (see Figure 17).

⁴ A complete definition of the data utilized in this section can be found in the appendix.

Figure 22: Occupations with a High Potential to be in Short-Supply

SOC	Title	Current					Historical				Forecast		
		Four Quarters Ending with 2012q4					Total Change over the Last 3 Years	Average Annual % Change in Employment 2009q4-2012q4			Over the Next 3 Years		
		Employment	Average Annual Wages	Location Quotient	Estimated Unemployed	Unemployment Rate		Employment Change	Riverside-San Bernardino-Ontario, CA MSA	CA	USA	Total Replacement Demand	Total Employment Change
29-2056	Veterinary Technologists and Technicians	486	\$32,900	0.68	49	7.0%	55	4.1%	2.6%	2.0%	21	83	5.4%
13-1161	Market Research Analysts and Marketing Specialists	2,030	\$59,500	0.70	242	8.7%	27	0.4%	2.1%	1.2%	143	311	4.9%
29-2032	Diagnostic Medical Sonographers	459	\$72,300	0.93	14	2.5%	36	2.7%	4.4%	1.4%	19	71	4.9%
31-2022	Physical Therapist Aides	330	\$30,500	0.75	18	4.2%	28	3.0%	2.9%	2.6%	13	47	4.6%
31-2011	Occupational Therapy Assistants	205	\$57,000	0.77	10	3.7%	12	2.1%	2.6%	2.2%	8	29	4.5%
29-1131	Veterinarians	360	\$94,300	0.70	13	3.1%	39	3.9%	2.6%	2.0%	19	47	4.2%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2,145	\$49,700	1.41	184	6.9%	158	2.6%	0.9%	0.9%	123	268	4.0%
49-9062	Medical Equipment Repairers	274	\$49,600	0.88	29	7.5%	6	0.7%	1.9%	0.1%	21	34	4.0%
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	187	\$25,600	1.13	17	7.4%	6	1.0%	3.5%	2.0%	10	23	4.0%
13-1151	Training and Development Specialists	1,443	\$56,800	0.78	126	6.6%	21	0.5%	1.6%	1.0%	68	169	3.8%
13-1081	Logisticians	838	\$68,200	0.82	91	7.9%	25	1.0%	1.4%	1.2%	45	99	3.8%
15-1141	Database Administrators	626	\$69,700	0.63	41	4.9%	5	0.3%	2.3%	1.3%	29	75	3.8%
29-2031	Cardiovascular Technologists and Technicians	410	\$56,600	0.90	11	2.3%	24	2.0%	4.1%	1.1%	18	49	3.8%
29-2037	Radiologic Technologists and Technicians*	1,835	\$63,400	0.92	57	2.6%	139	2.7%	4.5%	1.4%	79	211	3.7%
29-1041	Optometrists	216	\$85,100	0.84	5	2.1%	24	4.0%	2.8%	3.0%	21	25	3.7%
29-9091	Athletic Trainers	141	\$53,900	0.85	9	5.3%	4	1.1%	2.3%	1.2%	14	16	3.7%
31-2012	Occupational Therapy Aides	47	\$32,100	0.71	2	3.6%	2	1.7%	2.9%	2.1%	2	5	3.7%

19-2042	Geoscientists, Except Hydrologists and Geographers	152	\$93,100	0.49	6	3.1%	9	2.1%	2.7%	3.0%	13	16	3.5%
29-1011	Chiropractors	180	\$84,700	0.70	6	2.9%	20	4.0%	2.1%	3.6%	10	19	3.4%
29-1051	Pharmacists	2,575	\$118,000	1.04	114	4.1%	77	1.0%	1.7%	0.9%	183	264	3.3%
41-3021	Insurance Sales Agents	1,664	\$52,700	0.57	168	6.9%	20	0.4%	-1.4%	0.0%	108	170	3.3%
33-9021	Private Detectives and Investigators	289	\$61,900	1.22	28	7.6%	22	2.7%	1.0%	0.9%	19	29	3.3%
17-3025	Environmental Engineering Technicians	139	\$47,100	0.78	13	6.8%	5	1.2%	1.8%	1.2%	7	14	3.3%
29-1128	Exercise Physiologists	122	\$47,300	0.86	8	5.6%	6	1.7%	3.2%	1.8%	7	12	3.3%
13-1078	Human Resources, Training, and Labor Relations Specialists, All Other*	3,715	\$59,300	0.93	373	7.9%	41	0.4%	1.9%	1.9%	179	363	3.2%
29-2799	Health Technologists and Technicians, All Other*	858	\$41,000	0.91	62	5.7%	101	4.2%	8.1%	2.3%	48	85	3.2%
43-3021	Billing and Posting Clerks	4,132	\$34,900	0.94	493	8.6%	202	1.7%	2.5%	1.2%	206	396	3.1%
11-9111	Medical and Health Services Managers	2,239	\$96,500	0.86	99	3.8%	150	2.3%	4.3%	1.6%	154	217	3.1%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2,001	\$38,300	1.22	207	8.2%	40	0.7%	1.2%	0.8%	109	188	3.0%
39-9041	Residential Advisors	542	\$29,400	0.79	61	8.6%	17	1.1%	0.2%	0.8%	57	51	3.0%
29-1124	Radiation Therapists	154	\$82,600	0.93	4	2.4%	12	2.9%	4.9%	1.5%	8	14	3.0%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2,195	\$52,200	1.24	206	7.6%	85	1.3%	0.5%	0.6%	132	188	2.8%
29-9799	Healthcare Practitioners and Technical Workers, All Other*	425	\$69,800	0.84	25	4.9%	22	1.8%	3.7%	1.6%	43	37	2.8%
25-1191	Graduate Teaching Assistants	402	\$33,400	0.41	34	6.2%	8	0.7%	-0.8%	1.1%	18	34	2.8%
31-9093	Medical Equipment Preparers	391	\$30,600	0.87	30	6.0%	19	1.7%	4.6%	1.2%	17	34	2.8%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	12,548	\$59,900	0.99	1,240	7.6%	280	0.8%	0.9%	0.6%	855	1,041	2.7%
29-1199	Health Diagnosing and Treating Practitioners, All Other	275	\$74,100	0.94	12	3.8%	12	1.5%	2.8%	1.5%	15	23	2.7%
21-2021	Directors, Religious Activities and Education	198	\$39,600	1.28	6	2.6%	3	0.5%	-1.3%	-0.4%	11	17	2.7%

11-3131	Training and Development Managers	175	\$84,800	0.72	18	7.5%	2	0.3%	1.5%	1.1%	12	14	2.7%
21-2099	Religious Workers, All Other	87	\$35,100	1.29	3	2.5%	2	0.7%	-1.3%	-0.3%	5	7	2.7%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	2,565	\$45,100	1.28	253	8.0%	80	1.1%	0.6%	0.8%	162	203	2.6%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	2,477	\$78,700	0.72	281	7.9%	60	0.8%	1.6%	0.9%	168	198	2.6%
29-2012	Medical and Clinical Laboratory Technicians	1,255	\$38,600	0.88	135	8.4%	92	2.6%	4.6%	1.8%	71	99	2.6%
21-2011	Clergy	421	\$63,100	1.10	5	1.1%	15	1.2%	-0.1%	0.5%	21	34	2.6%
29-9012	Occupational Health and Safety Technicians	79	\$54,000	0.79	6	6.3%	2	0.8%	1.4%	1.3%	8	6	2.6%
29-1081	Podiatrists	67	\$115,500	0.79	2	2.9%	8	4.0%	2.8%	3.2%	4	5	2.6%
19-2043	Hydrologists	57	\$89,100	0.90	2	3.5%	2	1.0%	2.2%	1.1%	5	5	2.6%
41-9799	Sales and Related Workers, All Other*	1,443	\$32,800	0.93	135	7.1%	23	0.5%	1.8%	0.6%	105	110	2.5%
49-3041	Farm Equipment Mechanics and Service Technicians	262	\$30,900	0.84	24	7.2%	5	0.7%	1.0%	1.1%	20	20	2.5%
51-9083	Ophthalmic Laboratory Technicians	230	\$32,900	0.92	29	8.9%	11	1.7%	0.7%	0.9%	21	17	2.5%
29-1125	Recreational Therapists	167	\$56,500	0.95	5	2.9%	4	0.7%	2.0%	0.7%	17	13	2.5%
19-1013	Soil and Plant Scientists	81	\$78,800	0.69	8	7.5%	3	1.1%	2.2%	1.2%	10	6	2.4%
53-3021	Bus Drivers, Transit and Intercity	1,109	\$37,000	0.70	102	6.3%	7	0.2%	-0.3%	0.0%	62	78	2.3%
29-2011	Medical and Clinical Laboratory Technologists	1,268	\$77,800	0.85	123	7.6%	72	2.0%	3.9%	1.3%	73	87	2.2%
39-1021	First-Line Supervisors of Personal Service Workers	1,053	\$39,800	0.86	93	6.3%	18	0.6%	2.1%	0.9%	74	72	2.2%
11-9041	Architectural and Engineering Managers	1,045	\$130,200	0.62	51	3.7%	3	0.1%	0.6%	0.6%	61	71	2.2%
13-1022	Wholesale and Retail Buyers, Except Farm Products	970	\$48,000	1.01	79	6.2%	40	1.4%	1.2%	1.0%	73	67	2.2%
11-3061	Purchasing Managers	484	\$96,700	0.79	41	6.4%	4	0.3%	0.5%	0.7%	44	32	2.2%
29-9011	Occupational Health and Safety Specialists	456	\$70,600	0.87	36	6.6%	3	0.2%	1.5%	0.9%	48	31	2.2%
53-2011	Airline Pilots, Copilots, and Flight Engineers	336	\$104,100	0.52	16	3.5%	5	0.5%	-0.2%	-0.1%	38	23	2.2%
17-2161	Nuclear Engineers	142	\$119,000	0.86	4	2.7%	9	2.3%	2.4%	0.5%	9	9	2.2%

17-2072	Electronics Engineers, Except Computer	830	\$95,200	0.68	64	5.8%	4	0.2%	-0.5%	-0.5%	61	53	2.1%
27-1026	Merchandise Displayers and Window Trimmers	723	\$29,000	1.19	74	8.2%	26	1.2%	1.0%	1.0%	65	47	2.1%
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	651	\$31,400	0.57	78	7.8%	8	0.4%	-0.2%	0.2%	37	42	2.1%
17-2011	Aerospace Engineers	321	\$76,600	0.45	18	3.5%	6	0.6%	0.7%	0.5%	21	21	2.1%
17-2131	Materials Engineers	131	\$73,700	0.64	7	3.8%	3	0.7%	0.3%	1.1%	11	8	2.1%
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	209	\$76,200	0.99	14	5.5%	8	1.2%	2.0%	-0.7%	16	13	2.0%
17-2071	Electrical Engineers	922	\$95,100	0.66	66	5.3%	19	0.7%	0.4%	0.2%	66	54	1.9%
13-1141	Compensation, Benefits, and Job Analysis Specialists	671	\$59,900	0.78	65	7.3%	4	0.2%	1.2%	0.8%	34	36	1.8%
41-1012	First-Line Supervisors of Non-Retail Sales Workers	1,772	\$64,800	0.83	126	5.3%	24	0.4%	0.5%	0.2%	134	92	1.7%
31-9094	Medical Transcriptionists	625	\$41,400	0.89	71	8.4%	56	3.2%	3.9%	1.3%	29	33	1.7%
17-3027	Mechanical Engineering Technicians	253	\$49,700	0.62	22	5.7%	2	0.3%	0.5%	1.2%	15	13	1.7%
51-8013	Power Plant Operators	343	\$74,700	0.97	14	3.5%	12	1.2%	1.7%	-0.8%	40	12	1.2%
51-8012	Power Distributors and Dispatchers	105	\$75,500	1.02	5	3.6%	2	0.7%	7.4%	-0.4%	12	4	1.1%
11-9051	Food Service Managers	1,837	\$49,500	1.09	171	7.2%	59	1.1%	2.2%	1.8%	123	49	0.9%

California Priority Occupations (Mid-Skill)

Occupations	Current Regional Employment	CA Growth Estimate 2020	Chmura Regional Growth Estimate 2020	Estimated Unemployment Rate	Potential Regional Current Skill Deficiency	Emerging Regional Occupation-Skills Gap	WIB Priority
Installation, Maintenance, & Repair							
Aircraft Mechanics and Service Technicians	891	5.8%	16.9%	5.7%	✓		✓
Automotive Service Technicians and Mechanics	6,988	20.0%	21.6%	10.0%			
Bus and Truck Mechanics and Diesel Engine Specialists	2,565	15.3%	19.5%	8.0%	✓	✓	✓
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,893	27.1%	32.2%	13.2%	✓	✓	
Industrial Machinery Mechanics	2,279	26.9%	27.6%	7.1%	✓	✓	✓
Mobile Heavy Equipment Mechanics, Except Engines	962	13.3%	22.9%	9.9%	✓	✓	
Telecommunications Line Installers and Repairers	1,023	12.2%	23.9%	12.0%	✓	✓	
Telecommunications Equipment Installers and Repairers, Except Line Installers	1,319	12.5%	25.0%	10.6%	✓	✓	
Engineering							
Civil Engineers	1,734	8.5%	21.1%	4.2%	✓	✓	✓
Electrical and Electronic Engineering Technicians	971	8.3%	12.2%	5.6%	✓		
Production							
Machinists	2,789	13.1%	17.4%	8.6%			
Welders, Cutters, Solderers, and Brazers	2,640	11.1%	22.4%	15.4%	✓	✓	
Production, Planning, and Expediting Clerks	2,164	9.6%	16.1%	9.6%	✓	✓	
Construction							
Carpenters	6,240	16.7%	23.3%	20.1%	✓	✓	
Construction and Building Inspectors	635	18.6%	20.8%	11.2%			
Operating Engineers and Other Construction Equipment Operators	3,210	15.7%	27.8%	28.8%	✓	✓	
Painters, Construction and Maintenance	2,460	23.1%	23.1%	21.1%	✓	✓	
Plumbers, Pipefitters, and Steamfitters	2,963	17.2%	26.6%	15.3%	✓	✓	

Healthcare							
Dental Hygienists	2,083	17.10%	34.5%	3.7%	✓		✓
Diagnostic Medical Sonographers	459	37.70%	39.9%	2.5%	✓	✓	✓
Medical and Clinical Laboratory Technologists	1,268	14.80%	16.8%	7.6%	✓	✓	✓
Radiologic Technologists and Technicians	1,835	23.80%	28.9%	2.6%	✓	✓	✓
Respiratory Therapy Technicians	105	26.10%	10.5%	4.6%	✓		✓
Surgical Technologists	773	14.60%	22.5%	5.0%	✓		✓
Licensed Practical and Licensed Vocational Nurses	5,796	22.50%	24.0%	7.2%			

Source: CA Workforce Investment Board & JobsEQ®

Figure 23: California Priority Occupations, Mid-Skill

The occupations identified in Figure 23 represent priority occupations as identified by the California Workforce Investment Board. The occupations marked WIB priority represent those occupations in the Inland Empire region that have a combination of low unemployment, high growth rates, and either a short-run supply constraint or long-run projected occupational gap. Several specialty healthcare occupations are in relatively short-supply in the region.



IV. Key Findings & Conclusions

The list of 75 occupations should be further refined to a smaller list that can be the focus of specific targeted intervention by the San Bernardino County WIB. Focus groups and interviews with some of the area's larger employers, community colleges, and WIB professionals should provide the basis for identifying those select occupations where the supply of qualified candidates is the most constrained. Additionally, data from job-posting websites can be included to further identify those occupations that are experiencing a surge of hiring in the previous six-month or twelve-month period.

Because the list of occupations spans all education levels, the nature of the intervention to strengthen the talent pipeline will vary considerably. For some occupations that require less than a bachelor's degree, discussions with the local community colleges and workforce development practitioners will yield insight as to whether the constraint is more likely a function of insufficient enrollment in key programs or a failure to complete, including applying (e.g. sitting for an exam) for final credentialing. It is likely that marketing efforts to increase enrollment in programs designed to feed select occupations may require outreach to neighborhoods with low-educational attainment populations. It is equally possible that special incentive plans or targeted assistance may be required to overcome social barriers that have thus far inhibited some individuals from seeking postsecondary educational opportunities.

In many cases, the region would benefit from promoting and identifying those students with the potential to progress from an associate's degree to a bachelor's degree via an industry-focused 2 + 2 degree program. In many cases, this can be accomplished via a combination of online or flexible-time classes to accommodate various work schedules. Similarly, there may be opportunities to advance (in terms of specific skill-sets) many unemployed workers with prior work experience and potentially some stackable credentials within several construction-related trades fields for occupations that require advanced electro-mechanical trouble-shooting skills.

Other key occupations will inevitably require increasing the enrollment and subsequent graduation of individuals with at least a 4-year bachelor's degree in STEM fields. This has typically involved a multi-faceted approach to provide more money towards high school STEM programs, including advanced placement classes, initiatives to incentivize STEM degrees at the four-year level through scholarships and grants, expanding the funding available for universities with strong STEM-related research and development programs, and outreach and marketing efforts designed to convey to students the value of a STEM degree.



Key Summary Points

The San Bernardino-Riverside economy is rebounding:

- Employment is set to expand by 2% in 2013; the California economy is also poised for modest employment growth.
 - Job growth is expected to be relatively strong across jobs requiring all levels of education.
 - The unemployment rate is trending down, but likely to remain elevated throughout 2013.
- The local housing market is getting better every month; building permits are growing, but from a low-base.
 - Distressed sales as a share of total sales are on a downward trend, particularly in Riverside County.
- The region has five broad sectors that are primed to create the bulk of jobs over the next three years: healthcare; transportation and warehousing; retail trade; wholesale trade; and arts, entertainment and recreation.
 - The occupation alignment analysis identified 75 occupations where the opportunity exists for expanding supply of locally trained and credentialed workers.
 - The Inland Empire lags the state and the nation in terms of postsecondary education attainment in its populace
 - In several cases, clear up-skilling and 2 + 2 opportunities exist where collaboration from local community colleges and technical schools with regional colleges and universities would bear fruit.
 - This may require additional outreach to some low-education attainment communities to foster greater enrollment in key medical fields.

V. Appendix

The following section contains supplementary information relevant to this report.

Terms & Definitions

Demographics: All data are from the U.S. Census Bureau per the dates shown in the profile table footnotes included in the accompanying spreadsheets.

Current Employment & Historical (5-Year) Job Growth: Measures the current employment and past performance of an industry sector and identifies whether industries have been growing/declining/emerging and the rate of change. Employment and wages data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and updated through 2012Q3 with preliminary estimates by Chmura updated to 2013Q1. Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2010-2020, adapted for regional growth patterns by Chmura.

Projected Job Growth (5-Year): Incorporates historical growth and performance with additional factors and expectations of growth/decline of the region's working-age population, industry mix, educational attainment, and regional growth expectations. The JobsEQ® Baseline Forecast comprises industry and occupation projections based, in part, upon the Bureau of Labor Statistics (BLS) national forecasts or state forecasts provided by state employment agencies.

Location Quotient & Location Quotient Trend: The location quotient variable is a comparative statistic used to calculate relative employment concentration of a given industry against the average employment of the industry in the nation. Industries with a higher location quotient (usually greater than 1.25) indicate that the region has a comparative advantage or specialization in the production of that good or service. The location quotient trend is the change in the location quotient over time, in this case from average employment by industry in 2007 to the average employment by sector in 2012.

Industry Competitiveness 1-Year & 5-Year (Shift-Share Analysis): A standard method of regional economic analysis that attempts to separate regional job growth into its component causes. The three main causes identified are the "national growth effect," which is regional growth that can be attributed to the overall growth of the entire U.S. economy; the "industrial mix effect," which is regional growth that can be attributed to positive trends in the specific industry or occupation at a national level; and the "regional competitiveness effect," which is growth that cannot be explained by either overall or industry-specific trends. This measure can be measured in terms of economic output or employment, and the examples found in this report utilize employment levels. A positive value indicates that an industry has a regional competitive advantage compared to the nation in terms of generating employment. Positive shift share values do not explain why an industry has a competitive advantage, only that there are potential factors that contribute to the industry's ability to outperform the national average rate of growth/decline.

Indirect (Supply Chain) Job Multiplier Effects: A job multiplier indicates how important an industry is in terms of regional job creation for creating ancillary jobs, suppliers, and other service providers. For example, a job multiplier of 0.5 would mean that for every job created by the primary industry, another 1/2 job would be created in other related (supplier) industries (for a total of 1.5 jobs). Higher job multipliers indicated industries that have the potential to anchor regional job creation. For example, a new construction firm may buy lumber from local suppliers and may use accounting services from local private accountants

Spillover (Earnings) Induced Multiplier Effects: An earnings multiplier indicates the level of additional earnings associated with adding one new dollar of earnings or employment to an industry in an economy. Therefore, the jobs and sales/output created when new employees from the new or expanded firm spend their wages at local establishments; for example, a new manufacturing plant may increase business at a nearby diner causing the diner with increased sales to hire more employees.

Average Annual (Industry) Wage & Wage Trend: This statistic is based on an industry staffing pattern and the average occupational wage associated with that staffing pattern for a given region and industry. Employment and wages data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and updated through 2012Q3 with preliminary estimates by Chmura updated to 2013Q1.

Real Output Growth (5-Year): This is a measure of the inflation-adjusted economic value (\$ of sales) generated by the industry, that is a central component of the US GDP figure. This data is collected by the Bureau of Economic Analysis (BEA) and the BEA's national, international, regional, and industry estimates; the Survey of Current Business; and BEA news releases are available without charge on BEA's Web site at www.bea.gov.

Trend in the # of Firms: This statistic indicates the number of firms currently active in an industry and is derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and updated through 2012Q3 with preliminary estimates by Chmura updated to 2013Q1.

Wages & Unemployment Rate by Occupation: Occupation average wage data are derived from national occupation/industry wage data provided by the Bureau of Labor Statistics modified where necessary. Wages by occupation are as of 2011 provided by the BLS and imputed by Chmura where necessary. All occupation data are presented in terms of at-place employment except for occupation unemployment and unemployment rate which are calculated by place of residence. Occupation unemployment figures are imputed by Chmura. Employment forecasts are developed by Chmura using occupation forecasts from the BLS.

Long-run (5-Year) Occupational Forecast: Average Annual Growth Rate: Forecast employment growth uses national projections from the Bureau of Labor Statistics, forecasts for 2010-2020, adapted for regional growth patterns by Chmura. Occupation employment data are derived from the most recent industry employment (from the Bureau of Labor Statistics, updated quarterly) and the industry/occupation matrix available for the region. Although JobsEQ baseline forecast may use national forecasts (by industry or occupation), these forecasts are adjusted to be more reflective of the region rather than the nation by taking into account the unique industry/occupation mix of the region as well as the region's general overall growth expectations. Regional employment growth expectations are modeled to be consistent with US Census population forecasts, labor market commuting patterns, and expected changes in participation rates over time by education level.

Training Concentration: This analysis provides an estimate of supply and demand alignment between local postsecondary training output and the demands of local area industries.

A training concentration of 100% means that a region is producing a number of awards per occupation employment that matches the national norm. A training concentration of 200% means the region is producing twice the number of awards than the national norm and a training concentration of 50% means the region is at half the norm. For example, if postsecondary schools in the nation grant awards for registered nurses at the rate of one award for every ten nurses employed, and if a region grants awards at the rate of one award for every twenty employed nurses, that region will have a training concentration of 50% for registered nurses.

Awards data are estimates, produced via a Chmura algorithm that distributes degrees conferred for the academic year 2010-2011, data for which are provided by the National Center for Education Statistics. Occupation

employment data are estimated via industry employment data and the Chmura industry/occupation matrix. Industry employment data are derived from the Quarterly Census of Employment and Wages, provided by the Bureau of Labor Statistics and currently updated through 2012Q3 with preliminary estimates by Chmura updated to 2013Q1.

The education program to occupation crosswalk methodology description refers to the training concentration analysis. Training programs are classified according to the Classification of Instructional Programs (CIP codes). For relating training programs, this report uses a modified version of the CIP to SOC crosswalk from the National Center for Education Statistics (NCES). While this is a very helpful crosswalk for estimating occupation production from training program awards data, the crosswalk is neither perfect nor comprehensive. Indeed, it is hard to imagine such a crosswalk being perfect since many training program graduates for one reason or another do not end up employed in occupations that are most related to the training program from which they graduated. Therefore, the education program analyses should be considered in this light.

As an example of the many scenarios that may unfold, consider a journalism degree that crosswalks into three occupations: editors, writers, and postsecondary communications teachers. Graduates with a journalism degree may get a job in one of these occupations—and that may be the most-likely scenario—but a good number of these graduates may get a job in a different occupation altogether (the job may be somewhat related, such as a reporter, or the job may be totally unrelated, such as a real estate agent). Furthermore, a graduate may stay in school or go back to school for a degree that will lead to other occupation possibilities. Still another possibility includes the graduate not entering the labor market (maybe being unemployed, being a non-participant, or moving to another region).

Given this background, training concentration gaps that are close to the average value of 100% (such as within 20 percentage points) should largely be viewed as having supply and demand for those occupations to be roughly in equilibrium. However, in areas where the training concentration is significantly lower (such as below 80%), one can infer a substantial deficit of training for this occupation exists that corresponds to a market opportunity. The threshold where a shortage can be clearly identified varies based on the size of the region, with larger regions allowing a finer estimate of the shortfall.

Occupational Replacement Demand: Replacement demand is the minimum demand due to separations such as retirements and moves into different occupations. Said differently, it is an estimate of the minimum number of workers that would need to be hired to replace those incumbent workers that due to retirement, death, incarceration or a permanent move into an alternate occupation will need to be back-filled by their employer.

The methodology for this estimate is based upon BLS-derived techniques. To develop estimates of replacements, the BLS used occupational employment data from the Current Population Survey (CPS), a household survey that collects demographic and employment information about individuals. BLS analysts measured the net change in occupational employment for 13 different age cohorts over a 5-year period.

Long-Run (5-Year) Expected Occupational Gap: Gaps projection data are developed by Chmura and updated quarterly. Employment supply and demand projections are based on a starting date of 2012Q3. Technical Notes: Occupation gaps are developed by Chmura and use a multitude of data sources. This analytic is updated quarterly along with ES-202 updates. Gaps are forecast based upon the educational make-up of the region's first-time workers and include changes due to replacements. For example, consider the case in which a retail salesperson gets a degree, leaves their occupation, and becomes a financial analyst. This turnover dictates that a new retail salesperson is needed. Even though the total number of retail salespersons in the region is unchanged, the analysis counts this situation as an increase of one in demand for retail salesperson. The forecasts that are provided are long-run (over a period of three, five, or ten years) and do not fully account for short-run imbalances in the workforce. The short-run deficit is not accounted for in the forecast gap because of the long-term perspective of

the gap. From a practical perspective, Chmura created the gaps to have a long-term view because it is highly relevant for strategic planning.

- **Annual Supply Gap (or Surplus)** - The annual average difference between projected supply and demand. A positive number represents a deficit in workers and a negative (parenthetical) number represents a surplus of workers.
- **Annual Growth Demand** - The demand due to overall growth in that occupation.
- **Annual Replacement Demand** - The minimum demand due to separations such as retirements and moves into different occupations (based on an annual average over the next ten years).
- **Total Annual Demand** - The sum of growth and replacement demand (if growth is positive, otherwise, this is simply replacement demand).