

SAN BERNARDINO COMMUNITY COLLEGE DISTRICT

ENVIRONMENTAL SCAN & PROGRAM GAP ANALYSIS

emsi

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EXECUTIVE SUMMARY

San Bernardino Community College District (SBCCD) is located in the city of San Bernardino, California, a part of the Los Angeles greater metropolitan area. It serves an economic region comprised of San Bernardino and Riverside Counties, referred to as the SBCCD Economic Region. This report outlines the economy of this region and provides a “gap” analysis to determine how well SBCCD’s program offerings satisfy regional workforce demand. The report also offers recommendations for new program development. The following lists key findings of the analysis:

ENVIRONMENTAL SCAN AND ECONOMIC OVERVIEW

- The population of the SBCCD Economic Region has increased by nearly 33% since 2001, growing more than the state of California (12%) or the United States (12%). The population growth in the SBCCD Economic Region is projected to slow, increasing by an additional 10% between 2015 and 2024.
- The SBCCD Economic Region exceeds national averages for all population cohorts aged Under 5 years to 44 years old. There are 5.7% more people aged 44 years and younger in the SBCCD Economic Region relative to the national averages.
- Roughly 2.0 million residents of the SBCCD Economic Region are White, Hispanic, equal to 45% of the total regional population. The SBCCD Economic Region has nearly twice as many White, Hispanic as the national average, but the SBCCD Economic Region has only about half as many White, Non-Hispanic residents than the national average.
- San Bernardino and Riverside Counties have higher percentages of the population below the poverty line than California or the nation. Only San Bernardino County has lower median household income than the nation.
- Employment in the SBCCD Economic Region grew faster the population (38% growth), and is expected to grow by another 21% by 2024.
- Government leads all industries in terms of total regional earnings with \$19.6 billion (21%), followed by Health Care & Social Assistance (\$9.4 billion or 10%) and Retail Trade (\$6.6 billion or 7%). Government also leads all industries in terms of value added with \$24.1 billion (18% of GRP), followed by Manufacturing (8% of GRP).
- The three largest industry sectors in terms of employment in the SBCCD Economic Region are Government, Health Care & Social Assistance, and Retail Trade. Together these sectors make up 693,774 jobs, or approximately 38% of total regional employment in 2015.
- Between 2015 and 2024, the occupations with the highest number of average annual job openings for workers will occur in sales & related occupations, office & administrative support occupations, and transportation & material moving occupations.
- The population of the SBCCD Economic Region is less educated than that of the nation as a whole. The percentage of the adult population with a high school diploma or less is 48%, higher than the national average of 44%, but the population with an associate’s degree or higher is 27%, meaning there is an opportunity for educators in the SBCCD Economic Region to boost the percentage of adults with an associate’s degree or higher.
- While crime in the SBCCD Economic Region has declined over the past 10 years, the average total crime rates in both San Bernardino County and Riverside County have exceeded the state crime rates since 2011. In 2012, the estimated cost per inmate for the state of California was greater than \$250,000.

PROGRAM GAP ANALYSIS – SAN BERNARDINO VALLEY COLLEGE

- There were a total of 14 significant gaps identified at the certificate level.
- Culinary Arts (gap of 1,689; median hourly wage \$10.86) has the largest gap. Real Estate (gap of 1,088; median hourly wage \$12.30) and Business Administration (gap of 1,025; median hourly wage \$29.40) are the second and third largest gaps. However, given the low wages of Culinary Arts and Real Estate, expanding programs like Retail Management (gap of 89; median hourly wage \$27.89) and Construction Inspection (gap of 28; median hourly wage \$26.29)-- may be worth consideration given the higher wages.
- SBVC had a total of 14 gaps greater than 50 at the associate's degree level.
- Real Estate (gap of 1,299; median hourly wage \$12.30), Business Administration (gap of 827; median hourly wage \$29.40), and Accounting (gap of 458; median hourly wage \$17.23), make up the top three gaps. Of the top three gaps, only Business Administration pays over \$20/hour.
- There are 12 postsecondary certificate level areas of opportunity listed in the SBCCD Economic Region. Skilled trades and blue collar occupations like heavy & tractor-trailer truck drivers, carpenters, and general maintenance & repair workers appear to be undersupplied. Legal secretaries and telecommunications line installers & repairers are also among the undersupplied. Wage rates for potential new programs range between \$14.73 for teacher assistants to a high of \$26.23 for telecommunications line installers and repairers.
- Six other areas of opportunity were identified at the associate's degree level. The top three are: medical and clinical laboratory technicians, medical equipment repairers, and cardiovascular technologists and technicians. Median hourly earnings range between \$19.15 for medical & clinical laboratory technicians and \$32.19 for occupational therapy assistants.

PROGRAM GAP ANALYSIS – CRAFTON HILLS COLLEGE

- There were four significantly large gaps identified at the post-secondary certificate level.
- Business Administration (gap of 1,025; median hourly wage \$29.40) has the largest gap at this level. Accounting (gap of 475; median hourly wage \$17.23) and Child Development/Early Care & Education (gap of 411; median hourly wage \$6.69) are the second and third largest gaps.
- CHC had a total of four gaps greater than 50 at the associate's degree level.
- The program training for the most undersupplied occupations at the associate's degree level is Business Administration (gap of 827; median hourly wage \$29.40). This program, along with Child Development/Early Care & Education (gap of 372; median hourly wage \$6.69) and Art (gap of 82; median hourly wage \$11.60), comprise the top three gaps.
- There is one program at CHC training for an occupation with a significant surplus of workers at the certificate level. This is the Emergency Medical Services program, with a surplus of 286. CHC produces 123 completers per year for the 61 annual openings. Other regional institutions add another 1,904 completers per year, resulting in the large surplus.
- In the SBCCD Economic Region, there are 10 fields with a significant surplus. The largest reported surplus is Biological & Physical Sciences, with no annual openings compared to 1,500 regional completers (85 from CHC). Social Sciences is associated with the second largest surplus (529), and Respiratory Care the third largest surplus (211).

INTRODUCTION

Colleges face many challenges in their efforts to identify the training needs of their economic regions. They must account for regional economic trends and the changing quality of the workforce. Furthermore, as technology progresses, colleges need to address the increasingly complex and specialized skills required by employers. In light of these dynamics, an understanding of the regional economy and the demand for skilled labor is vital to the planning efforts of colleges seeking to adapt their program offerings to the requirements of an ever-changing workforce.

To gain better insight into economic conditions and workforce trends, San Bernardino Community College District (SBCCD) partnered with Economic Modeling Specialists Intl. (EMSI) to conduct an environmental scan of SBCCD's Economic Region and a workforce "gap" analysis of SBCCD's program offerings. Gap analysis is a technique used to assess the supply and demand of skilled workers and identify the educational programs that need to be adapted in order to fill any existing or future gaps. The analysis weighs the educational output of SBCCD and other regional institutions against the number of job openings

related to the institutions' program offerings to determine whether an oversupply or an undersupply of skilled workers exists. The goal of the analysis is to provide SBCCD with relevant data and information to use when solving problems and making decisions about current and future program development.

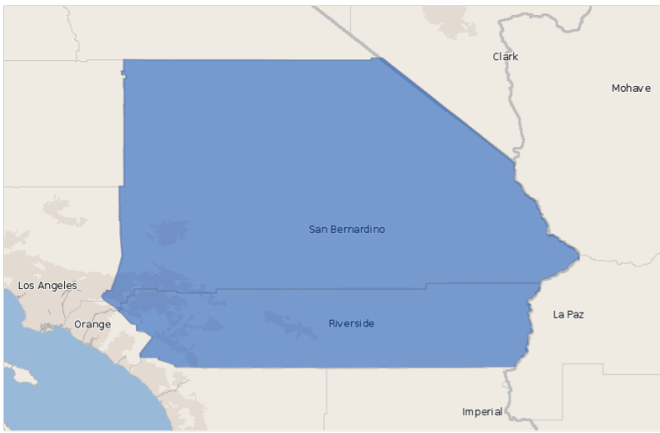
The regional backdrop used in this report is defined by San Bernardino and Riverside Counties. This regional backdrop will be referred to as "the SBCCD Economic Region." See Figure 1.1 for a map of the region.

The report is broken into three chapters. Chapter 1 provides an overview of employment in the SBCCD Economic Region's economy with high-level information about current and projected job trends, unemployment, and educational characteristics of the population by gender and ethnicity.¹ Chapters 2 and 3 summarize the results of the program gap analyses for San Bernardino Valley College and Crafton Hills College, respectively, and provide recommendations for possible future program needs. Detailed information and data are provided in the appendices.

1 The industry and occupation data presented in this report reflect the number of jobs by place of work, not by place of residence.

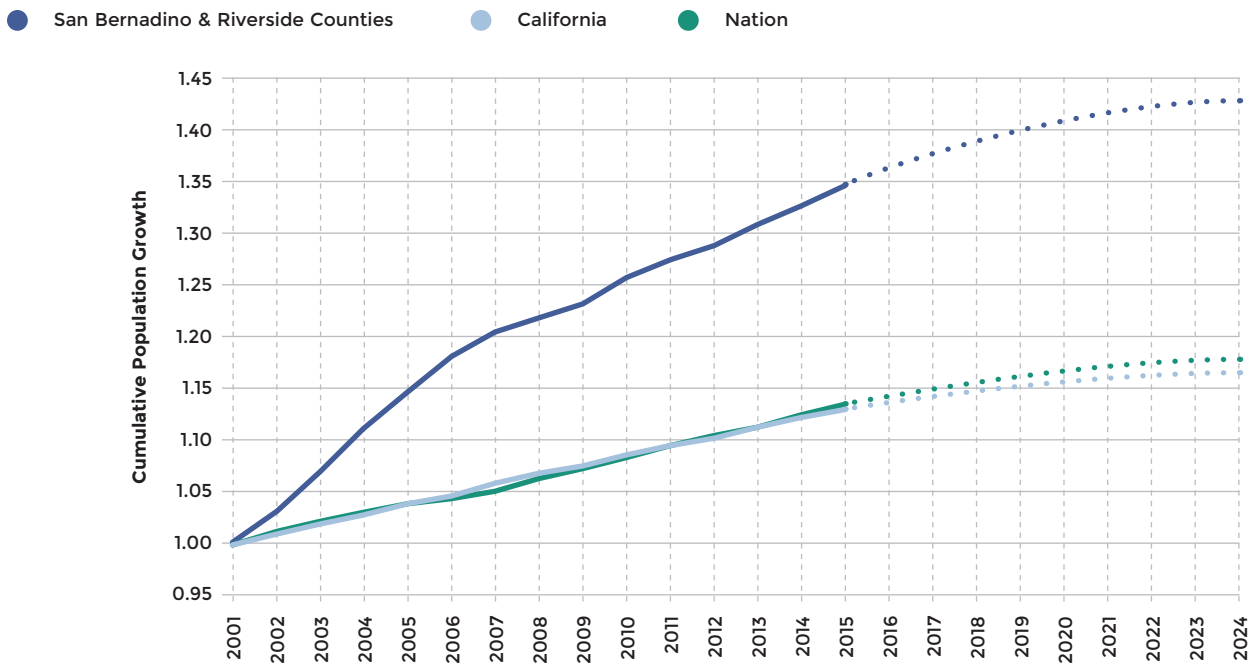
CHAPTER 1: ENVIRONMENTAL SCAN AND ECONOMIC OVERVIEW

FIGURE 1.1: MAP OF THE SBCCD ECONOMIC REGION



This chapter provides an overview of employment and demographics in the economy of the SBCCD Economic Region, defined by San Bernardino and Riverside Counties (see Figure 1.1). The goal of the chapter is to provide data on economic and workforce employment trends that either already exist or are developing in the region. Such information is crucial in building awareness of the region’s labor force – both now and in the future – and identifying priority areas where educators can focus their attention. The chapter examines employment and demographics in the SBCCD Economic Region according to the following indicators: general demographics of the population, employment overview, economic base analysis, jobs by industry, jobs by occupation, unemployment, and educational attainment.

FIGURE 1.2: POPULATION IN THE SBCCD ECONOMIC REGION - 2001 INDEX



Source: EMSI Complete Data 2015.2

DEMOGRAPHIC OVERVIEW

Figure 1.2 and 1.3 display the historical and projected cumulative population growth in the SBCCD Economic Region between 2001 and 2024, with 2001 serving as the base year in Figure 1.2 and 2015 serving as the base year in Figure 1.3. The population of the SBCCD Economic Region has increased by nearly 33% since 2001, growing more than the state of California (12%). The United States as a whole grew by 12% over the same time period. Over the next ten years, the population growth in the SBCCD Economic Region is projected to slow, increasing by an additional 10% between 2015 and 2024.

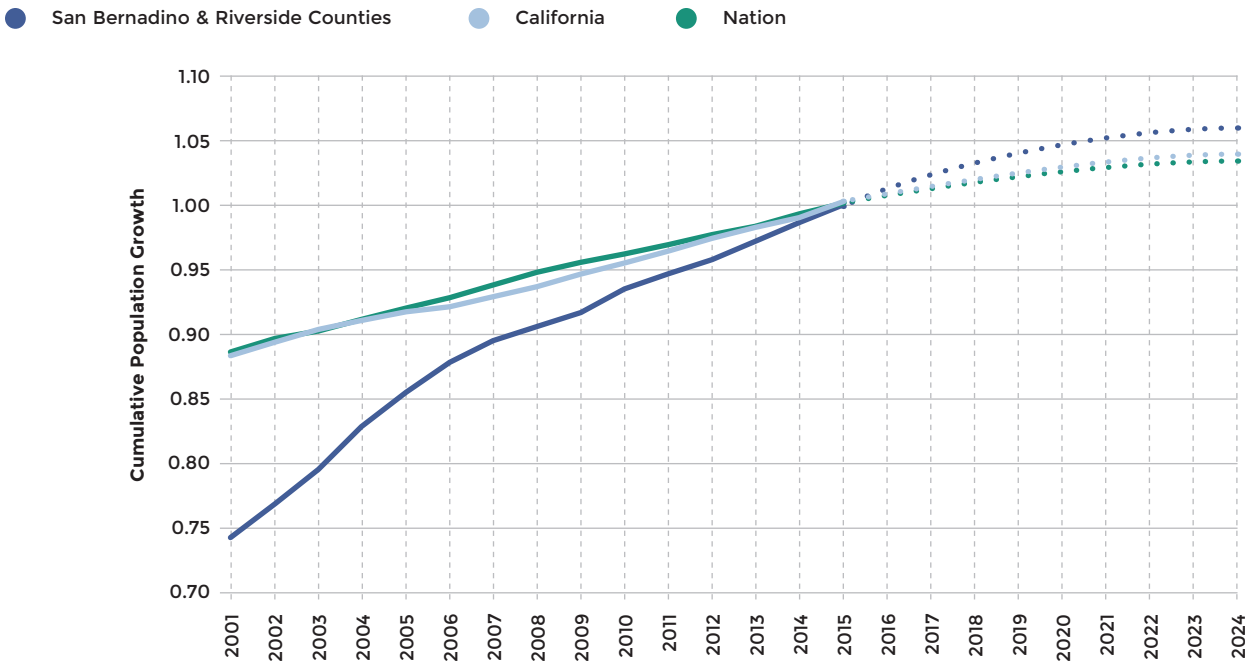
Table 1.1 and Figure 1.4 on the next page display the distribution of the SBCCD Economic Region’s population by age cohort in 2015 compared to national averages. In this case, the national average figures represent the percent distribution of the national population by age cohort applied to the population of the SBCCD Economic Region.

As shown, the SBCCD Economic Region exceeds national averages for all population cohorts aged Under 5 years to 44 years old. In fact, on a per-capita basis there are 5.7% more people aged 44 years and younger in the SBCCD Economic Region relative to the national averages. For the population cohorts above 44 years of age, the region lags behind

TABLE 1.1: POPULATION BY AGE COHORT IN THE SBCCD ECONOMIC REGION

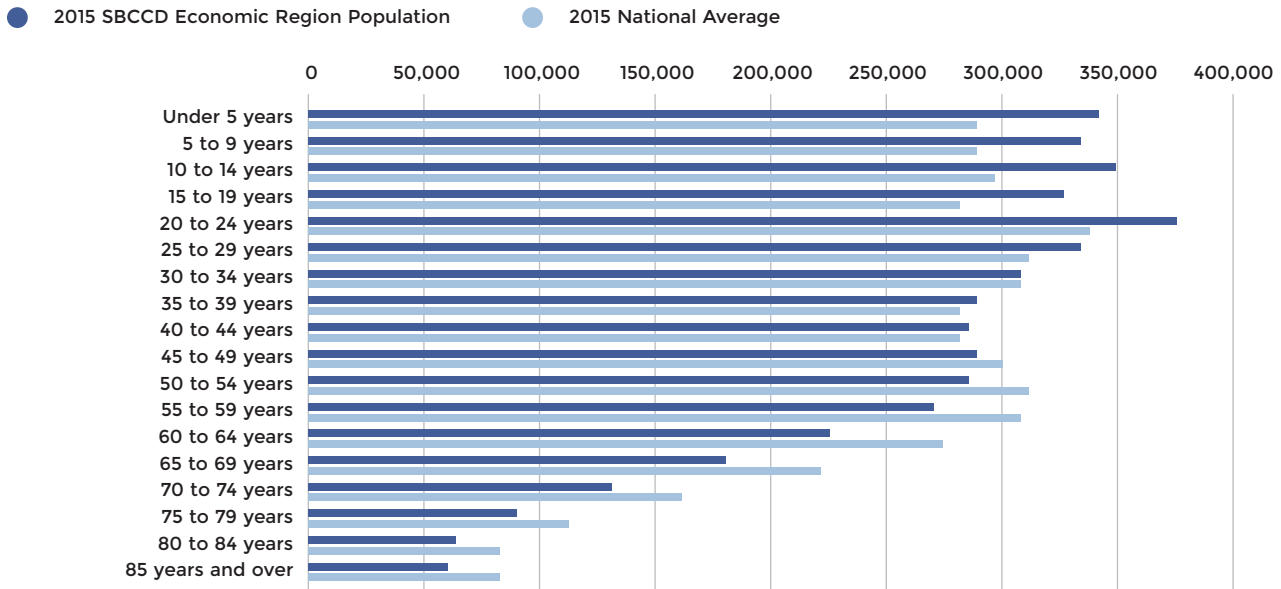
AGE COHORT	2015 REGIONAL POPULATION	2015 NATIONAL AVERAGE	% DIFFERENCE FROM NATIONAL AVERAGE
Under 5 years	343,207	290,855	18%
5 to 9 years	333,451	288,731	15%
10 to 14 years	349,455	298,676	17%
15 to 19 years	327,114	283,356	15%
20 to 24 years	376,422	337,682	11%
25 to 29 years	334,568	314,138	7%
30 to 34 years	308,640	307,533	0%
35 to 39 years	288,221	283,054	2%
40 to 44 years	285,422	283,631	1%
45 to 49 years	288,436	300,542	(4%)
50 to 54 years	287,265	311,577	(8%)
55 to 59 years	269,759	308,439	(13%)
60 to 64 years	227,675	274,544	(17%)
65 to 69 years	180,373	222,376	(19%)
70 to 74 years	131,816	162,714	(19%)
75 to 79 years	90,655	112,389	(19%)
80 to 84 years	64,430	81,582	(21%)
85 years and over	58,416	83,504	(30%)
Total	4,545,323	4,545,323	(0%)

FIGURE 1.3: POPULATION IN THE SBCCD ECONOMIC REGION - 2015 INDEX



Source: EMSI Complete Data 2015.2

FIGURE 1.4: POPULATION BY AGE COHORT IN THE SBCCD ECONOMIC REGION, 2015



all national averages. Overall the SBCCD Economic Region appears to be much younger than the national averages. The largest difference percentage wise is the 85 and older segment (30% lower than the national average) – which is also the smallest population.

Figure 1.5 and Table 1.2 display the distribution of the population in the SBCCD Economic Region by race/ethnicity, compared to national averages. Again, national average figures represent the percent distribution of the national population applied to the SBCCD Economic Region. As shown, roughly 2.0 million residents of the SBCCD Economic Region are White, Hispanic, equal to 45% of the total regional population. The SBCCD Economic Region has nearly twice as many White, Hispanic as the national average, but the SBCCD Economic Region has only about half as many White, Non-Hispanic residents than the national average.

TABLE 1.2: POPULATION BY RACE/ETHNICITY COHORT IN THE SBCCD ECONOMIC REGION COMPARED TO NATIONAL AVERAGES

RACE/ETHNICITY COHORT	2015 REGIONAL POPULATION	2015 NATIONAL AVERAGE	% DIFFERENCE FROM NATIONAL AVERAGE
White, Hispanic	2,049,864	707,534	190%
White, Non-Hispanic	1,521,019	2,802,126	(46%)
Black, Non-Hispanic	321,815	562,709	(43%)
Asian, Non-Hispanic	292,858	238,357	23%
Two or More Races, Non-Hispanic	100,376	93,763	7%
All Other Races/Ethnicities	259,391	140,835	84%

FIGURE 1.5: POPULATION BY RACE/ETHNICITY COHORT IN THE SBCCD ECONOMIC REGION

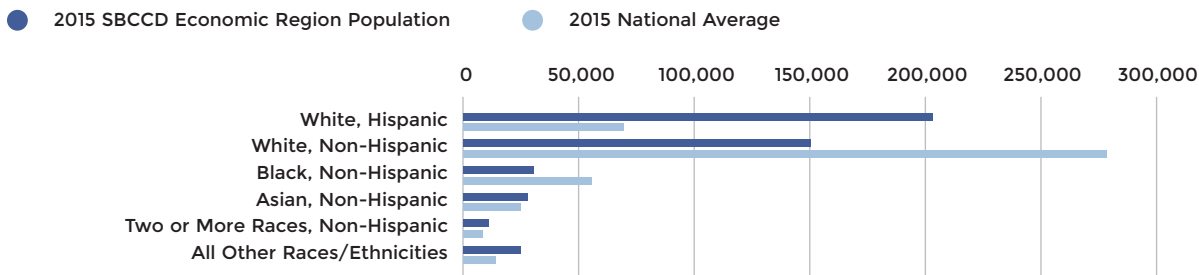


Table 1.3 shows the demographics of the SBCCD Economic Region by gender compared to the national averages. There are slightly more males and fewer females in the SBCCD Economic Region compared to the national averages.

Table 1.4 displays the percentage of the population below the federally-designated poverty level and the median household income for California, the United States, and the key breakouts in the SBCCD Economic Region. All communities in Table 1.4 have greater percentages of their population below poverty. Only San Bernardino County has lower median household income than the United States as a whole.

TABLE 1.3: POPULATION BY GENDER COHORT IN SBCCD ECONOMIC REGION COMPARED TO NATIONAL AVERAGES

GENDER COHORT	2015 REGIONAL POPULATION	2015 NATIONAL AVERAGE	DIFFERENCE FROM NATIONAL AVERAGE %
Females	2,282,737	2,306,763	(1.0%)
Males	2,262,587	2,238,560	1.1%

TABLE 1.4: POVERTY LEVELS AND MEDIAN HOUSEHOLD INCOME IN THE SBCCD ECONOMIC REGION COMPARED TO STATE AND NATION

LOCATION	PERCENTAGE OF POPULATION BELOW POVERTY LEVEL	MEDIAN HOUSEHOLD INCOME
San Bernardino- Riverside- Ontario Metro Area	17.4%	\$54,586
San Bernardino County	18.7%	\$52,041
Riverside County	16.2%	\$57,006
California	15.9%	\$61,933
United States	15.4%	\$53,657

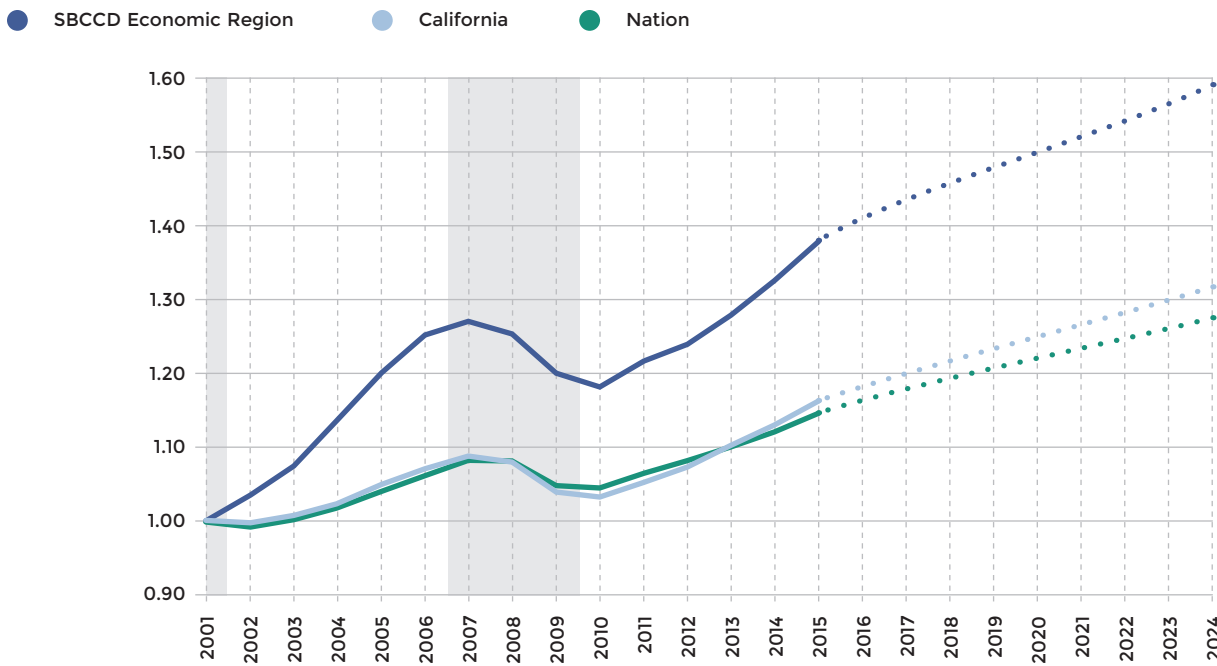
Source: American Community Survey 5-year estimates, 2009-2013

EMPLOYMENT OVERVIEW

Figure 1.6 and Figure 1.7 display the historical and projected cumulative job growth in the SBCCD Service Region between 2001 and 2024, with 2001 serving as the base year in Figure 1.6 and 2015 serving as a base year in Figure 1.7. Years during which a recession occurred are shaded gray.

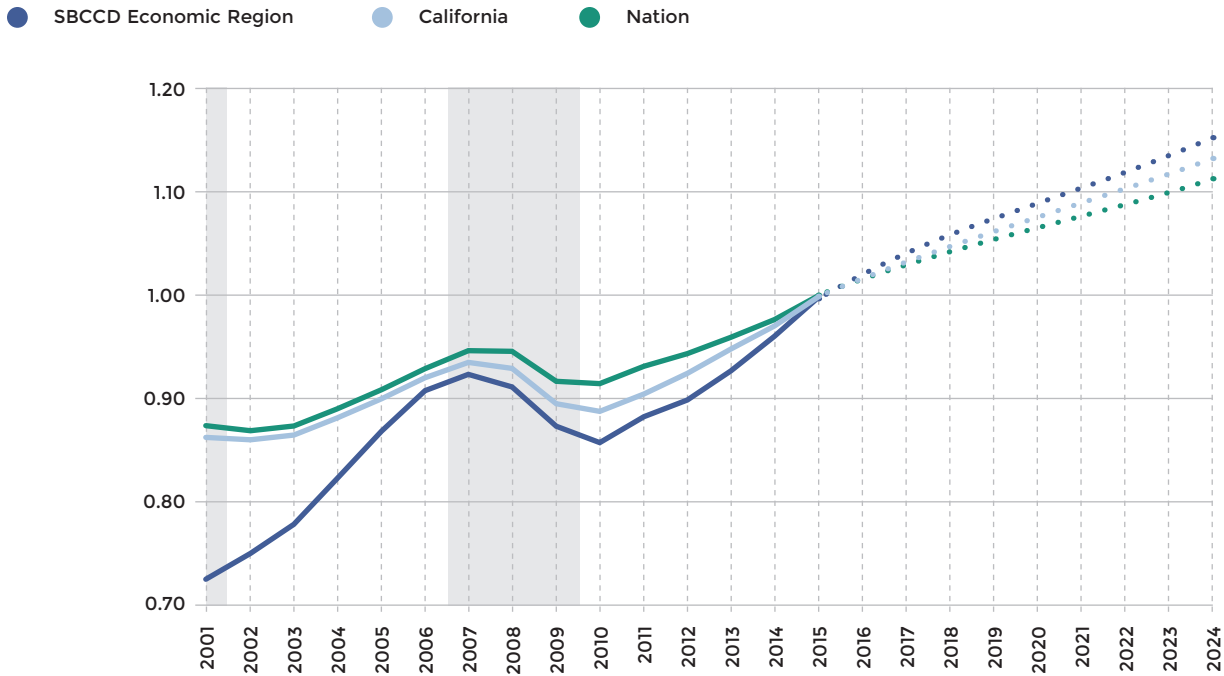
Employment in the SBCCD Economic Region economy has grown greatly since 2001. Total employment is 38% higher than it was in 2001, increasing more than employ-

FIGURE 1.6: HISTORICAL AND PROJECTED JOB GROWTH IN THE SBCCD ECONOMIC REGION - 2001 INDEX



Source: EMSI Complete Data 2015.2

FIGURE 1.7: HISTORICAL AND PROJECTED JOB GROWTH IN THE SBCCD ECONOMIC REGION - 2015 INDEX



Source: EMSI Complete Data 2015.2

TABLE 1.5: HISTORICAL AND PROJECTED EMPLOYMENT BY LOCATION

REGION	2001 JOBS	2014 JOBS	2015 JOBS	2024 JOBS
SBCCD Economic Region	1,385,659	1,834,299	1,908,958	2,199,725
San Bernardino County	720,772	907,761	943,481	1,070,550
Riverside County	664,887	926,538	965,477	1,129,175
California	19,427,086	21,904,563	22,565,704	25,559,056
United States	165,475,092	184,988,767	189,308,128	210,837,975

ment in California (16%), and more than double the growth in the United States (14%) over the same time period. Prior to the Great Recession between 2007 and 2009, job growth was much steeper in the SBCCD Economic Region compared to the state and national averages. However, between 2007 and 2009, the average annual growth rate decreased by 7% compared to a 5% decline in California and 3% decline in the nation. The SBCCD Economic Region is expected to grow by 21% by 2024.

Table 1.5 displays employment by region in 2001, 2014, 2015, and 2024 (projected). Since 2001, employment has increased in the SBCCD Economic Region and California in general. However, all locations are expected to continue to rebound in the future. In comparing Figure 1.2 and Figure 1.5, it is clear that population and employment do

not always tell the same story. Some common causes of this are that different population cohorts have different work patterns, and people do not always live in the same town in which they work. For example, both population and employment are increasing in the SBCCD Economic Region, but employment is outpacing population. This indicates that more commuters from outside the region are coming to the region for jobs.

ECONOMIC BASE ANALYSIS

Economic base theory is widely used as a component of strategic development and planning. Economic base analysis contextualizes the types of economic activities

that drive the regional economy, and assesses how those activities support earnings and create an economic impact across various industries. The simplest way to think about a region's economic base is to think of a region's industries as being composed of two fundamentally different types. One exports goods or services to non-residents, whether people or businesses, and thereby brings outside dollars into the region. The other sells goods or services to local residents and thereby intercepts monies already in circulation within the region. Export-oriented industries are called "basic" industries and serve as the driving force of the regional economy (i.e., the foundation or "base"), while service-oriented industries are called "non-basic" and serve as the support structure for the basic industries. A regional economy can grow by adding or growing basic industries (also known as "export promotion") or by adding or growing non-basic industries (also known as "import substitution").

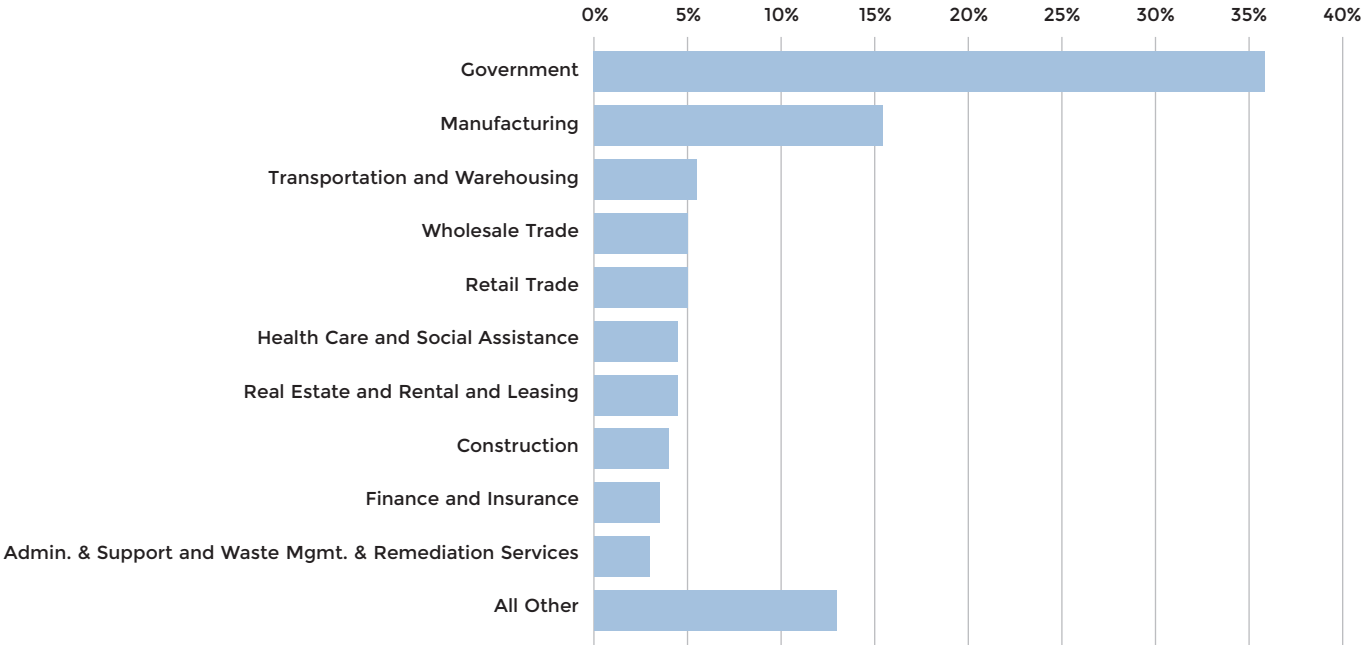
Figure 1.8 displays the top regional industry sectors in terms of the percentage of total regional exports. As shown, Government leads all sectors in terms of exports at \$57.0 billion. Manufacturing comes in a distant second at \$24.7

billion.² The contributions of these and other industries on the list are critical to bringing in a fresh influx of new dollars. Table 1.6 displays these quantities in detail, along with the total earnings paid out annually by each industry and how much each industry contributes to regional "value added," which serves as the primary ingredient in the region's Gross Regional Product (GRP).

Government leads all industries in terms of total earnings with \$19.6 billion (21% of all regional earnings), followed by Health Care & Social Assistance (10%) and Retail Trade (7%). Government also leads all industries in terms of value added with \$24.1 billion (18% of GRP), followed by Manufacturing (8%). Health Care & Social Assistance is also a significant contributor to the regional economy, comprising 7% of regional GRP.

2 According to standard economic impact methodology, when an industry is receiving funds from outside the region it is assumed to be exporting a good or a service. This seems counter-intuitive when applied to Government, because the Government industry is not typically thought to be an exporter of either goods or services. In this case, the numbers are large due to the presence of federally-funded institutions providing public services. Examples include: public universities and the United States District Court for the Eastern District of California.

FIGURE 1.8: PERCENT OF REGIONAL EXPORTS BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION



Source: EMSI Complete Data 2015.2

TABLE 1.6: EXPORTS, EARNINGS, AND VALUE ADDED BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION

NAICS CODE	TITLE	TOTAL EXPORTS (\$ M)	TOTAL EARNINGS (\$ M)	TOTAL VALUE ADDED (\$ M)
90	Government	\$57,018	\$19,628	\$24,145
31-33	Manufacturing	\$24,748	\$5,724	\$11,207
62	Health Care and Social Assistance	\$7,285	\$9,398	\$10,282
44-45	Retail Trade	\$8,058	\$6,580	\$9,888
53	Real Estate and Rental and Leasing	\$7,059	\$2,212	\$8,883
42	Wholesale Trade	\$8,288	\$4,080	\$8,113
23	Construction	\$6,435	\$5,166	\$7,125
48-49	Transportation and Warehousing	\$9,173	\$4,682	\$6,439
52	Finance and Insurance	\$5,405	\$3,332	\$5,218
56	Administrative and Support and Waste Management and Remediation Services	\$4,535	\$3,978	\$5,080
54	Professional, Scientific, and Technical Services	\$3,918	\$3,604	\$4,359
72	Accommodation and Food Services	\$3,613	\$2,617	\$4,027
81	Other Services (except Public Administration)	\$2,708	\$2,617	\$2,941
51	Information	\$2,589	\$929	\$2,720
22	Utilities	\$2,700	\$701	\$2,650
71	Arts, Entertainment, and Recreation	\$1,087	\$736	\$1,024
61	Educational Services	\$659	\$849	\$934
55	Management of Companies and Enterprises	\$1,053	\$719	\$854
11	Agriculture, Forestry, Fishing and Hunting	\$1,655	\$600	\$816
21	Mining, Quarrying, and Oil and Gas Extraction	\$326	\$116	\$380
Total		\$158,310	\$78,271	\$117,086

Excludes "Other Non-industries"

JOBS BY INDUSTRY

Evaluating current and future employment by industry provides information on the economic diversification of a given region. Industries consist of groups of companies that are primarily engaged in producing the same product or service. The North American Industry Classification System (NAICS) is the structure used by the United States Census Bureau to classify establishments into industries based on their production process (although the final product or service is usually similar for the firms in a given industry). NAICS applies a six-digit hierarchical coding system to organize more than 1,100 detailed industries into 20 larger industry sectors. The breakdown of current and future employment by major industry sector in the SBCCD Economic Region appears in Table 1.7 and Figure 1.9 on the next page.

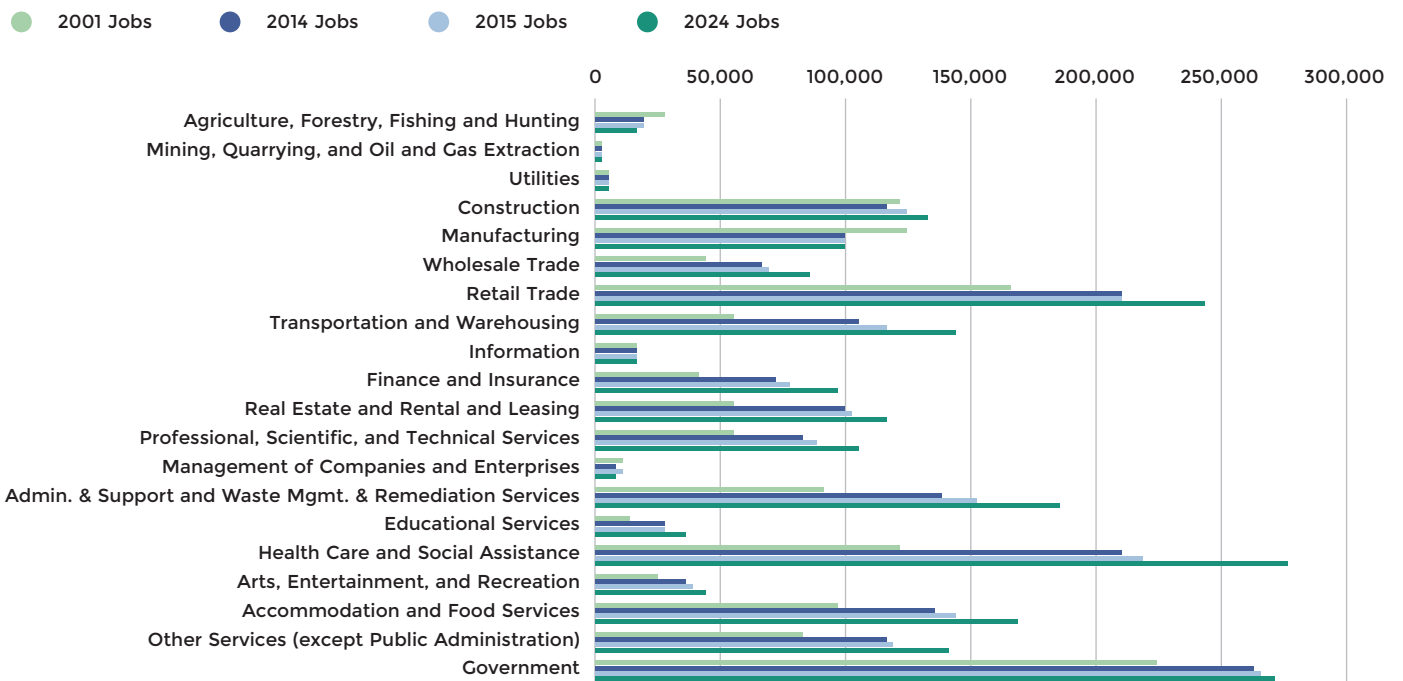
As shown, the three largest industry sectors in the SBCCD Economic Region are Government, Health Care & Social Assistance, and Retail Trade. Together these sectors make up 693,774 jobs, or approximately 38% of total regional employment in 2015. All three of these sectors gained jobs between 2001 and 2014. All three sectors are projected to grow from 2015 through 2024. Other industry sectors with notable projected growth are Administrative & Support & Waste Management & Remediation Services (+32,429 jobs), Transportation & Warehousing (+27,410 jobs), and Accommodation & Food Services (+25,610). Three industry sectors are expected to lose a large number of jobs between 2015 and 2024: Agriculture, Forestry, Fishing, & Hunting (-2,006 jobs); Manufacturing (-1,029 jobs); and Management of Companies & Enterprises (-412 jobs).

TABLE 1.7: CURRENT AND PROJECTED JOBS AND JOB CHANGE BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION

NAICS CODE	DESCRIPTION	2001 JOBS	2014 JOBS	2015 JOBS	2024 JOBS
11	Agriculture, Forestry, Fishing and Hunting	27,584	20,039	19,658	17,652
21	Mining, Quarrying, and Oil and Gas Extraction	1,546	2,747	2,838	3,589
22	Utilities	5,014	5,781	5,793	6,010
23	Construction	120,276	116,207	123,072	132,653
31	Manufacturing	124,762	98,703	99,495	98,465
42	Wholesale Trade	45,500	65,991	69,919	85,054
44	Retail Trade	166,968	209,238	210,837	242,211
48	Transportation and Warehousing	54,507	105,161	117,106	144,515
51	Information	17,756	16,592	16,620	17,126
52	Finance and Insurance	41,649	73,080	77,220	97,461
53	Real Estate and Rental and Leasing	55,833	99,083	102,415	115,477
54	Professional, Scientific, and Technical Services	54,953	83,039	87,844	104,340
55	Management of Companies and Enterprises	10,782	9,477	9,716	9,304
56	Administrative and Support and Waste Management and Remediation Services	90,777	138,879	152,137	184,566
61	Educational Services	14,935	27,737	28,218	35,155
62	Health Care and Social Assistance	122,085	211,274	218,923	276,123
71	Arts, Entertainment, and Recreation	25,455	35,726	37,619	44,370
72	Accommodation and Food Services	96,447	135,128	142,766	168,376
81	Other Services (except Public Administration)	83,693	115,277	119,085	141,992
90	Government	225,036	261,534	264,015	271,569
Total		1,385,659	1,834,299	1,908,958	2,199,725

Source: EMSI Complete Data 2015.2

FIGURE 1.9: JOBS BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION



Source: EMSI Complete Data 2015.2

Table 1.8 shows the employment concentration of the industry sectors in the SBCCD Economic Region, measured in terms of location quotients (LQs). LQs are used to assess national competitiveness by comparing the concentration of employment in a given industry against the concentration of employment for that same industry across the nation. An LQ equal to 1 means that the percentage of total employment comprised by an industry in the region exactly matches the percentage of total employment comprised by that industry in the nation. An LQ greater than 1 means that the industry comprises a greater proportion of total employment in the region than it does in the nation.

High LQs (usually anything greater than 1.2) indicate that the region has a comparative advantage or specialization in certain industries relative to the rest of the nation, or potentially to other competing regions. When evaluated jointly with job counts and expected job growth, high LQs give a sense of the industry sectors that have the greatest potential for workforce investment and where regional

economic development professionals are likely to focus their efforts. This information is of particular importance to educators seeking to engage in larger conversations with other organizations about aligning program offerings with workforce needs.

The following three industry sectors have the highest location quotients in the SBCCD Economic Region in 2015: Transportation & Warehousing (1.82), Administrative & Support & Waste Management & Remediation Services (1.26), and Construction (1.24). All of these are considered to have a comparative advantage. The relative concentrations are expected to undergo some changes over the next decade, yet, with the exception of Construction, the same industry sectors are expected to be above the 1.2 cutoff.³

3 Note that because LQs represent regional employment relative to national employment, a decreasing LQ does not necessarily mean decreasing employment, and likewise an increasing LQ does not necessarily mean increasing employment.

TABLE 1.8: EMPLOYMENT CONCENTRATION BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION

NAICS CODE	DESCRIPTION	2001 LOCATION QUOTIENT	2014 LOCATION QUOTIENT	2015 LOCATION QUOTIENT	2024 LOCATION QUOTIENT
11	Agriculture, Forestry, Fishing and Hunting	0.88	0.57	0.55	0.48
21	Mining, Quarrying, and Oil and Gas Extraction	0.23	0.17	0.17	0.16
22	Utilities	0.97	1.02	0.99	1.00
23	Construction	1.42	1.24	1.24	1.17
31	Manufacturing	0.88	0.78	0.75	0.72
42	Wholesale Trade	0.87	1.04	1.06	1.14
44	Retail Trade	1.10	1.15	1.11	1.16
48	Transportation and Warehousing	1.20	1.72	1.82	1.94
51	Information	0.53	0.50	0.48	0.46
52	Finance and Insurance	0.63	0.72	0.72	0.74
53	Real Estate and Rental and Leasing	1.20	1.20	1.19	1.13
54	Professional, Scientific, and Technical Services	0.64	0.66	0.67	0.66
55	Management of Companies and Enterprises	0.72	0.41	0.41	0.34
56	Administrative and Support and Waste Management and Remediation Services	1.13	1.21	1.26	1.27
61	Educational Services	0.57	0.62	0.61	0.63
62	Health Care and Social Assistance	0.97	1.02	1.02	1.03
71	Arts, Entertainment, and Recreation	0.97	0.86	0.87	0.86
72	Accommodation and Food Services	1.08	1.02	1.03	1.05
81	Other Services (except Public Administration)	1.13	1.12	1.12	1.14
90	Government	1.16	1.10	1.08	1.03

Source: EMSI Complete Data 2015.2

JOBS BY OCCUPATION

Researchers often refer to industry data to get a sense of regional economic trends, but in order to better understand the quality of the jobs contained within that region, some knowledge of occupations is needed. This is because the earning levels and education requirements of workers bear more of a relationship to their occupation than to the industry in which they work. For example, the Manufacturing industry – while employing a number of assemblers and machine operators – also employs people in management and professional occupations such as engineering. All of these occupations have different pay scales and require varying levels of education and training.

Federal agencies use the Standard Occupational Classification (SOC) system to classify workers into occupational categories based on work performed. The 2010 SOC system contains more than 800 detailed occupations organized

according to a five-digit hierarchical coding structure. Detailed occupations with similar job duties are further combined to form 23 major groups. Table 1.9 shows the breakdown of employment in the SBCCD Economic Region by major group, with information on current and projected jobs, job change, average annual openings, and wage rates.

Office & administrative support occupations comprise the largest occupation group in the SBCCD Economic Region at 213,750 jobs, followed by sales & related occupations at 197,414 jobs. Neither of these occupation groups ranks among the highest paid, however. Legal occupations – one of the smallest occupation groups – have median earnings of \$38.14 an hour, the highest on the regional pay scale. Management is second with median hourly earnings of \$35.45. Architecture & engineering occupations have median earnings of \$36.08 an hour, third highest on the regional pay scale.

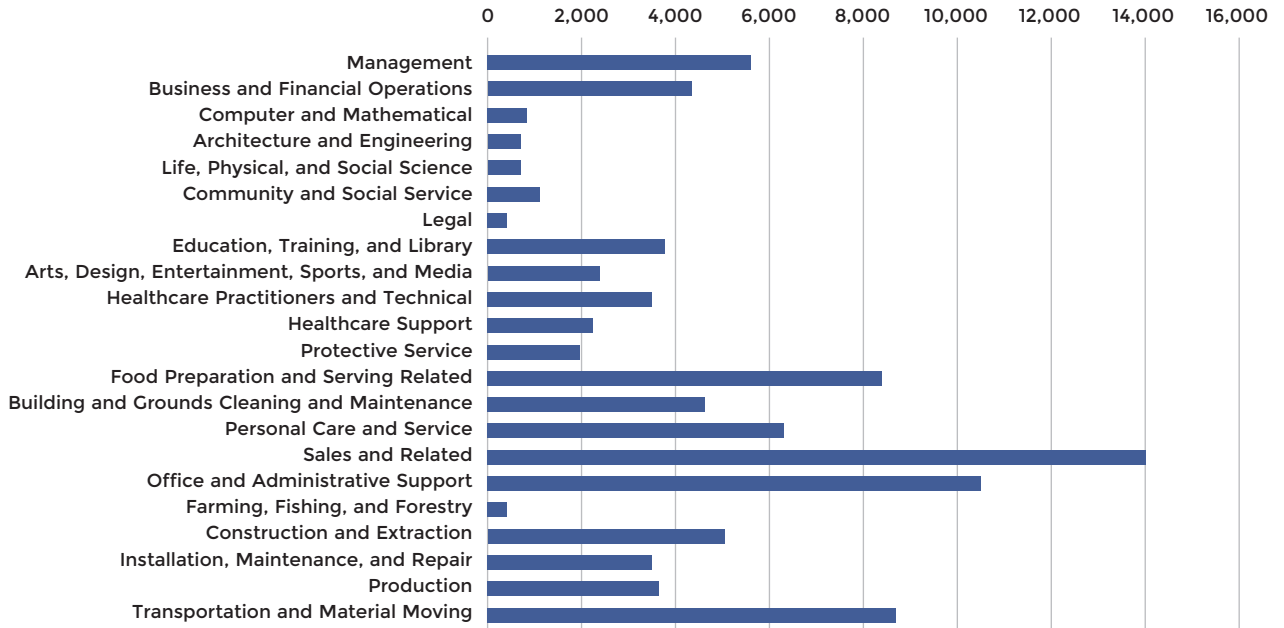
Figure 1.10 on the next page provides a look at the

TABLE 1.9: CURRENT AND PROJECTED JOBS, JOB CHANGE, AND MEDIAN HOURLY EARNINGS BY MAJOR OCCUPATION GROUP IN THE SBCCD ECONOMIC REGION

SOC CODE	DESCRIPTION	2001 JOBS	2014 JOBS	2015 JOBS	2024 JOBS	MEDIAN HOURLY EARNINGS	AVERAGE ANNUAL OPENINGS
11-0000	Management	78,879	109,894	114,433	133,422	\$29.74	5,548
13-0000	Business and Financial Operations	55,415	82,286	86,532	103,415	\$25.05	4,361
15-0000	Computer and Mathematical	15,643	18,516	19,684	23,365	\$31.88	836
17-0000	Architecture and Engineering	14,986	15,736	16,187	17,136	\$34.46	741
19-0000	Life, Physical, and Social Science	8,451	11,846	12,201	13,727	\$31.09	651
21-0000	Community and Social Service	14,764	22,451	22,888	26,746	\$22.20	1,116
23-0000	Legal	8,068	11,156	11,556	13,495	\$32.93	484
25-0000	Education, Training, and Library	76,875	93,563	95,545	105,368	\$26.65	3,725
27-0000	Arts, Design, Entertainment, Sports, and Media	32,285	45,827	47,648	57,447	\$15.28	2,398
29-0000	Healthcare Practitioners and Technical	52,220	74,997	78,005	93,935	\$39.07	3,514
31-0000	Healthcare Support	24,709	42,053	44,225	57,386	\$13.24	2,281
33-0000	Protective Service	26,219	38,534	39,598	45,443	\$23.39	2,011
35-0000	Food Preparation and Serving Related	95,506	135,307	142,460	166,955	\$10.29	8,420
37-0000	Building & Grounds Cleaning & Maintenance	59,441	87,393	90,345	107,583	\$11.39	4,666
39-0000	Personal Care and Service	60,690	103,850	107,601	136,163	\$9.48	6,316
41-0000	Sales and Related	184,668	263,582	270,550	311,739	\$13.42	14,000
43-0000	Office and Administrative Support	180,787	230,118	240,229	267,202	\$16.23	10,442
45-0000	Farming, Fishing, and Forestry	16,032	11,321	11,125	9,667	\$10.71	403
47-0000	Construction and Extraction	92,791	91,305	96,398	104,345	\$18.94	5,021
49-0000	Installation, Maintenance, and Repair	56,775	69,074	71,727	82,264	\$19.45	3,505
51-0000	Production	94,180	86,032	89,019	94,075	\$14.69	3,656
53-0000	Transportation and Material Moving	108,972	156,731	168,467	197,386	\$15.51	8,629

Source: EMSI Complete Data 2015.2

FIGURE 1.10: AVERAGE ANNUAL OPENINGS BETWEEN 2001 AND 2024 BY OCCUPATION GROUP IN THE SBCCD ECONOMIC REGION*



* These average annual openings figures are for any level of education.
Source: EMSI Complete Data 2015.2

average annual job openings for workers with some college or above by occupation group. Job openings refer to new jobs due to growth plus replacement jobs due to worker turnover. Between 2014 and 2024, the occupations with the highest number of average annual job openings for workers with some college or above occurs in sales & related occupations, office & administrative support occupations, and healthcare practitioners & technical occupations.

UNEMPLOYMENT

Data on unemployment give researchers an idea of where skills mismatches may exist in the region. Unemployment data can also provide important context when identifying the training programs that are best suited to transitioning unemployed workers into in-demand occupations.

Table 1.10 and Figure 1.11 on the next page present the number of people unemployed by industry sector in the SBCCD Economic Region. Data reflect April 2015 and follow the same methodology used by the federal statistical agencies to determine the number of workers in an industry that are not currently employed. In order to calculate the unemployment rate, the size of the labor force is needed, but it is difficult to accurately determine the size of the

labor force in a given industry on a monthly basis. Rather than the unemployment rate, the percent of the total number of unemployed workers for each industry in the region and in the nation are provided to display which sectors have the highest concentration of unemployed workers.

As shown in Table 1.10, the category with the highest number of unemployed is in Retail Trade. The next highest numbers of unemployed are in a non-industry labeled as “No Previous Work Experience/Unspecified.” This is simply a catch-all category for which reliable unemployment data are unavailable. Manufacturing, Administrative & Support & Waste Management & Remediation Services, and Health Care & Social Assistance complete the top five high unemployment industries. It is common for industries like Retail Trade and Administrative & Support & Waste Management & Remediation Services to have a high percentage of low-skill jobs that require little to no education and training, thus making them more vulnerable to worker turnover. This is likely the root of their high unemployment numbers. Another sector generally affected by high turnover is Accommodation & Food Services.

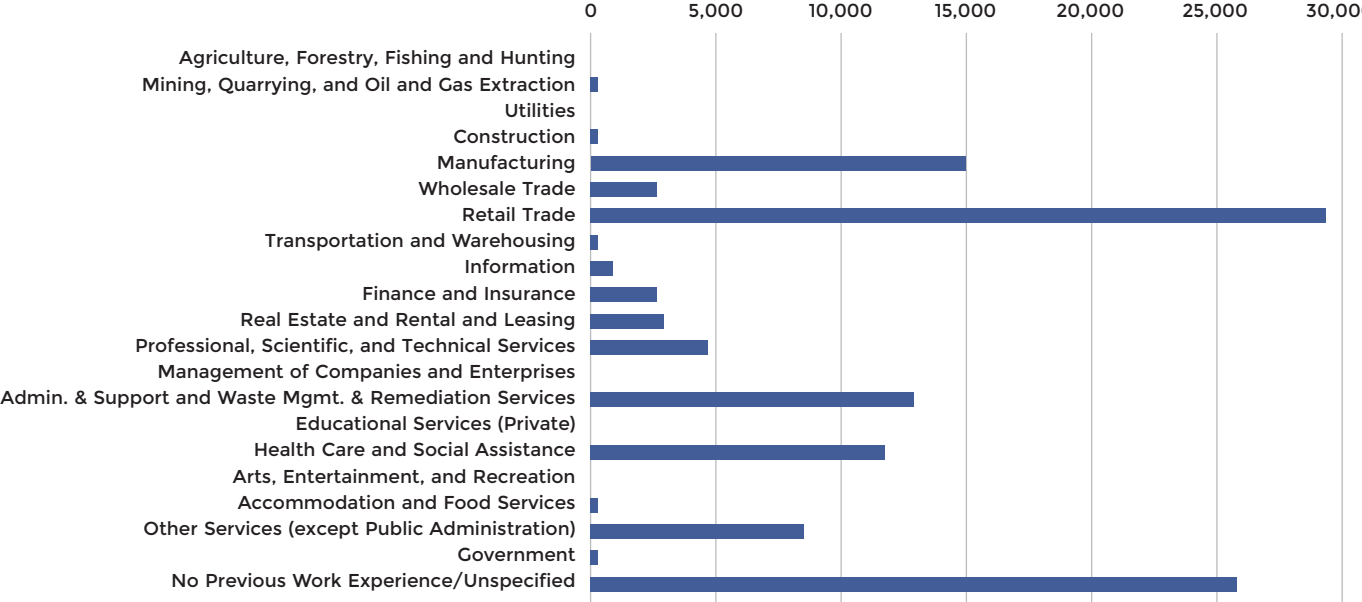
Seven industry sectors in the SBCCD Economic Region exceed the national concentration of unemployed workers. Retail Trade has a much higher proportion of unemployed workers than at the national level. On the other hand,

TABLE 1.10: NUMBER OF UNEMPLOYED WORKERS BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION

NAICS CODE	DESCRIPTION	NO. OF UNEMPLOYED	% OF UNEMPLOYED	NATIONAL % OF UNEMPLOYED
11	Agriculture, Forestry, Fishing and Hunting	35	0%	1%
21	Mining, Quarrying, and Oil and Gas Extraction	395	0%	2%
22	Utilities	23	0%	0%
23	Construction	254	0%	9%
31	Manufacturing	15,058	13%	10%
42	Wholesale Trade	2,785	2%	2%
44	Retail Trade	29,424	25%	12%
48	Transportation and Warehousing	163	0%	3%
51	Information	824	1%	1%
52	Finance and Insurance	2,641	2%	2%
53	Real Estate and Rental and Leasing	2,943	2%	2%
54	Professional, Scientific, and Technical Services	4,606	4%	5%
55	Management of Companies and Enterprises	0	0%	0%
56	Administrative & Support and Waste Mgmt. & Remediation Services	12,968	11%	8%
61	Educational Services (Private)	35	0%	1%
62	Health Care and Social Assistance	11,792	10%	7%
71	Arts, Entertainment, and Recreation	80	0%	2%
72	Accommodation and Food Services	299	0%	8%
81	Other Services (except Public Administration)	8,557	7%	4%
90	Government	197	0%	6%
99	No Previous Work Experience/Unspecified	25,976	22%	16%

Source: EMSI Total Unemployment (4/2015)

FIGURE 1.11: NUMBER OF UNEMPLOYED WORKERS BY INDUSTRY SECTOR IN THE SBCCD ECONOMIC REGION



Source: EMSI Total Unemployment (4/2015)

Construction and Accommodation & Food Services actually have a lower proportion of unemployed workers than at the national level.

Table 1.11 and Figure 1.12 on the next page provide a breakdown of unemployment in the SBCCD Economic Region by major occupation group. As shown, occupational groups that contain the highest number of unemployed workers are: office & administrative support occupations (31,562 unemployed workers), sales & related occupations (21,167 unemployed workers), and no previous work/unspecified occupations (18,263 unemployed workers).

Though some of these occupational groups have a relatively high number of annual openings (see Figure 1.10), high turnover still leads to a high number of unemployed.

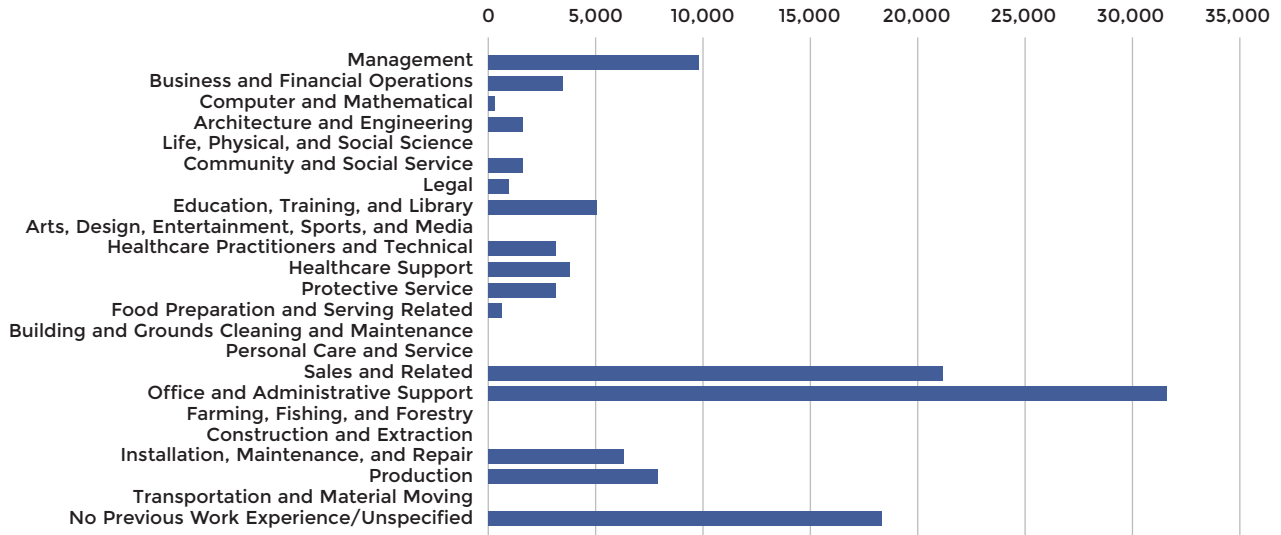
A number of occupation groups have a concentration of unemployed workers that are well below the national concentration, including construction & extraction occupations, transportation & material moving occupations, and building & grounds cleaning & maintenance occupations. Office & administrative support occupations and sales & related occupations have a much higher concentration of unemployed than at the national level.

TABLE 1.11: NUMBER OF UNEMPLOYED WORKERS BY OCCUPATION GROUP IN THE SBCCD ECONOMIC REGION

SOC CODE	DESCRIPTION	NO. OF UNEMPLOYED	% OF UNEMPLOYED	NATIONAL % OF UNEMPLOYED
11-0000	Management	9,908	8%	6%
13-0000	Business and Financial Operations	3,575	3%	3%
15-0000	Computer and Mathematical	162	0%	1%
17-0000	Architecture and Engineering	1,442	1%	1%
19-0000	Life, Physical, and Social Science	0	0%	0%
21-0000	Community and Social Service	1,563	1%	1%
23-0000	Legal	841	1%	1%
25-0000	Education, Training, and Library	5,194	4%	2%
27-0000	Arts, Design, Entertainment, Sports, and Media	0	0%	2%
29-0000	Healthcare Practitioners and Technical	3,221	3%	2%
31-0000	Healthcare Support	3,816	3%	2%
33-0000	Protective Service	3,306	3%	1%
35-0000	Food Preparation and Serving Related	674	1%	5%
37-0000	Building and Grounds Cleaning and Maintenance	0	0%	6%
39-0000	Personal Care and Service	0	0%	3%
41-0000	Sales and Related	21,167	18%	9%
43-0000	Office and Administrative Support	31,562	27%	15%
45-0000	Farming, Fishing, and Forestry	46	0%	1%
47-0000	Construction and Extraction	0	0%	12%
49-0000	Installation, Maintenance, and Repair	6,294	5%	3%
51-0000	Production	8,022	7%	6%
53-0000	Transportation and Material Moving	0	0%	7%
99-0000	No Previous Work Experience/Unspecified	18,263	15%	11%

Source: EMSI Total Unemployment (4/2015)

FIGURE 1.12: NUMBER OF UNEMPLOYED WORKERS BY OCCUPATION GROUP IN THE SBCCD ECONOMIC REGION



Source: EMSI Total Unemployment (4/2015)

COMMUTING PATTERNS

The Longitudinal Employer-Household Dynamics (LEHD) program⁴ at the United States Census Bureau provides information on the residential and employment locations of workers. “Jobs by place of work” refers to where residents of the region commute to work, and “Jobs by place of residence” refers to where workers in the region live. Data for the SBCCD Economic Region appears in Tables 1.12 and 1.13, with the same information displayed in Figures 1.13 and 1.14.

Approximately 41.9% of residents commute outside the SBCCD Economic Region for work, indicating that there are strong economic links between the Economic Region and surrounding communities. Almost a third of residents work in San Bernardino County (29.1%), and nearly the same portion of residents work in Riverside County (29.0%). Table 1.12 and Figure 1.13 display the top ten employment counties for SBCCD Economic Region residents.

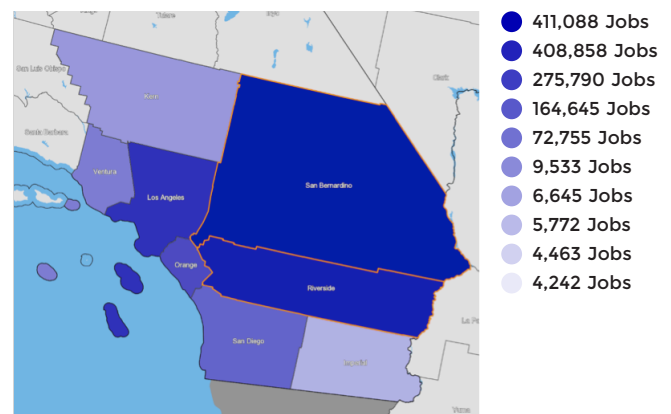
Table 1.13 and Figure 1.14 on the next page display the top ten counties by place of residency. Of the people who work in the SBCCD Economic Region, 38.5% live in Riverside County. San Bernardino County houses another

TABLE 1.12: JOBS BY PLACE OF WORK

COUNTY	JOBS	COMMUTE SHARE
San Bernardino County	411,088	29.1%
Riverside County	408,858	29.0%
Los Angeles County	275,790	19.5%
Orange County	164,645	11.7%
San Diego County	72,755	5.2%
Ventura County	9,533	0.7%
Kern County	6,645	0.5%
Imperial County	5,772	0.4%
Santa Clara County	4,463	0.3%
Alameda County	4,242	0.3%
All Other Locations	47,010	3.3%

Source: Census LEHD

FIGURE 1.13: JOBS BY PLACE OF WORK



4 LEHD is an innovative program that uses modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys while protecting the confidentiality of people and firms that provide the data.

third of the region's workers (34.1%). Los Angeles has the third largest share at 12.3%. Altogether, 72.7% of people that work in the SBCCD Economic Region also live in the region.

Figure 1.15 presents the inflow and outflow of jobs to and from the SBCCD Economic Region. There are 1,128,522 jobs in the region, with 819,946 of these jobs filled by residents and 308,576 jobs going to people living outside the region. Additionally, 590,855 residents commute outside the region for work. The figure clearly illustrates the fact that more workers out-commute than in-commute.

EDUCATIONAL ATTAINMENT

This section describes the educational attainment of the population in the SBCCD Economic Region for adults aged 25 years and older. This information is useful for educators targeting specific population groups that have low education levels. Educational attainment data in this section are presented by gender and by ethnicity and are broken out according to the following categories: 1) less than a high school degree, 2) high school degree, 3) some college,⁵ 4) associate's degree, 5) bachelor's degree, and 6) graduate degree and higher.

Overall Educational Attainment

Table 1.14 and Figure 1.16 on the next page display the educational attainment of the overall adult population in the SBCCD Economic Region, without reference to gender and ethnicity. In the SBCCD Economic Region, the percentage of the adult population with a high school diploma or less is 48%, which is higher than the national average of 44%. These data suggest there is still an opportunity for educators in the SBCCD Economic Region to boost the percentage of adults with an associate's degree or higher (currently this percentage sits at 27% for the region overall). Out of the education categories in Table 1.13, the people most likely to seek education and training from SBCCD are those in the "Less than high school diploma," "High school diploma," and "Some college" categories. Together these categories total 2,061,302 people, or 73% of the entire adult population in the region. Between 2010 and 2015, the proportion of the overall adult population with "Less than

5 The "some college" category includes individuals who attended college but did not successfully obtain a degree and individuals who have received a postsecondary vocational award or professional certification but did not receive an associate's or bachelor's degree.

TABLE 1.13: JOBS BY PLACE OF RESIDENCE

COUNTY	COUNT	COMMUTE SHARE
Riverside County	435,011	38.5%
San Bernardino County	384,935	34.1%
Los Angeles County	138,470	12.3%
Orange County	65,199	5.8%
San Diego County	43,574	3.9%
Ventura County	7,992	0.7%
Kern County	7,121	0.6%
Imperial County	4,955	0.4%
Alameda County	2,896	0.3%
Clark County, NV	2,851	0.3%
All Other Locations	35,518	3.1%

Source: Census LEHD

FIGURE 1.14: JOBS BY PLACE OF RESIDENCE

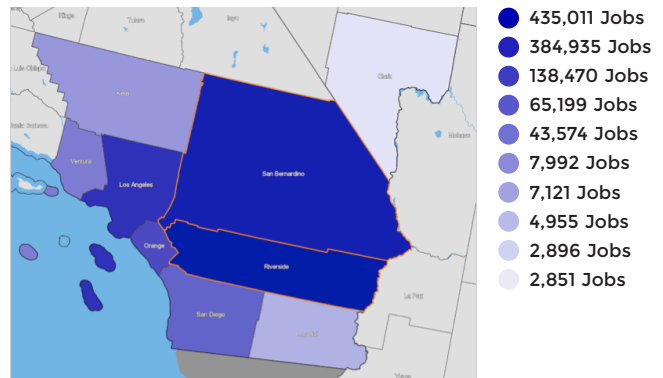


FIGURE 1.15: IN-FLOW/OUT-FLOW JOB COUNT



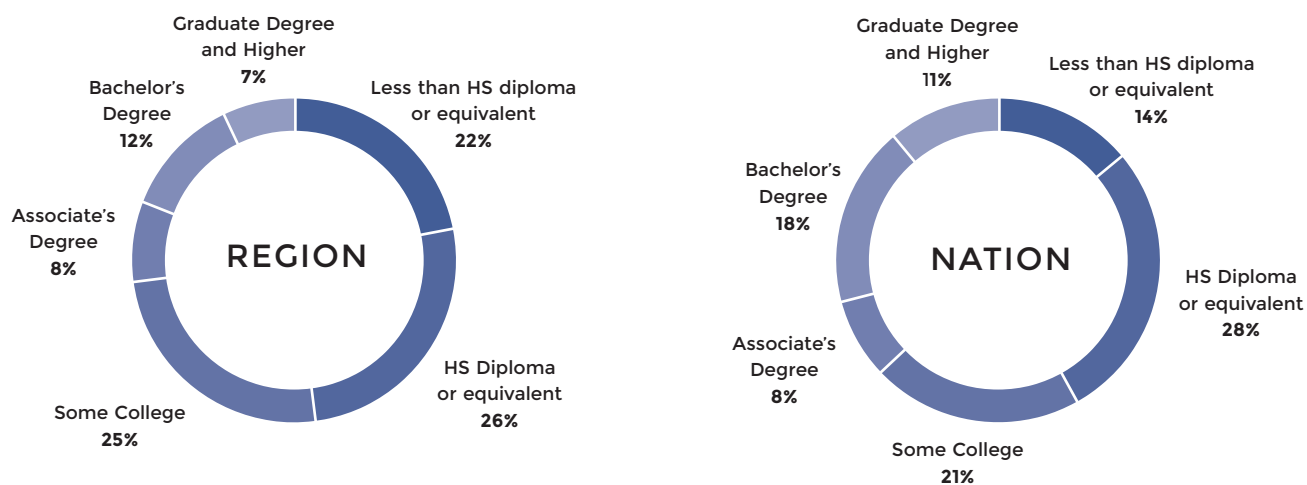
- 308,576 - Employed in the Economic Region but Living Outside
- 590,855 - Living in the Economic Region but Employed Outside
- 819,946 - Living and Employed in the Economic Region

TABLE 1.14: BREAKDOWN OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION BY EDUCATIONAL ATTAINMENT

EDUCATION LEVEL	2010 POPULATION	2010 % DISTRIBUTION	2015 POPULATION	2015 % DISTRIBUTION	POPULATION CHANGE	% DISTRIBUTION CHANGE
Less than HS diploma or equivalent	557,016	22%	624,137	22%	67,121	0.5%
High school diploma or equivalent	663,805	26%	731,864	26%	68,060	0.1%
Some college	657,851	26%	705,301	25%	47,450	(0.6%)
Associate's degree	193,392	8%	220,491	8%	27,099	0.3%
Bachelor's degree	322,625	13%	348,316	12%	25,691	(0.2%)
Graduate degree or higher	170,887	7%	185,565	7%	14,678	(0.1%)

Source: EMSI Complete Data 2015.2

FIGURE 1.16: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION, 2015



a high school diploma” increased by 0.5 percentage points, and the proportion of adults with a “Associate’s degree” increased by 0.3 percentage points.⁶ Meanwhile, the proportion of the adult population with “Some college” decreased by 0.6 percentage points. Those with a “Bachelor’s degree” or a “Graduate degree and higher” decreased by 0.2 and 0.1 percentage points, respectively. Those with a “High school diploma or equivalent” increased marginally.

Educational Attainment by Gender

The distribution of educational attainment by gender is

6 The column labeled “% Change” in Table 1.14 refers to the proportional change, not to the percent change between 2010 and 2015. For example, if a category comprised 20% of the total adult population in 2010 and 25% of the total adult population in 2015, the proportional change is equal to the difference between the two values (in this example, 5%).

almost identical in the SBCCD Economic Region. Males are slightly more likely to have “Less than high school diploma” level of education while females are more likely to have an “Associate’s degree” level. This information appears in Table 1.15 and Figure 1.17 on the next page.

Educational Attainment by Ethnicity

Figure 1.18 and Table 1.16 display the educational attainment of the adult population by ethnicity. The “Asian, Non-Hispanics” ethnicity category has the highest percentage of adults with post-secondary degrees (56%). The “White, Non-Hispanic” category has the second highest percentage of adults with post-secondary degrees (35%). “Hispanic, All Types” category has the lowest levels of educational attainment. For this group, only 13% of the adult population has a post-secondary degree and 66% has a high school

TABLE 1.15: BREAKDOWN OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION BY EDUCATIONAL ATTAINMENT AND GENDER

EDUCATION LEVEL	MALES	PROPORTION	FEMALES	PROPORTION
Less than high school diploma or equivalent	313,431	23%	310,706	22%
High school diploma or equivalent	361,186	26%	370,679	26%
Some college	339,773	25%	365,528	25%
Associate's degree	100,730	7%	119,762	8%
Bachelor's degree	168,253	12%	180,063	12%
Graduate degree and higher	91,410	7%	94,155	7%

Source: EMSI Complete Data 2015.2

FIGURE 1.17: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION BY GENDER, 2015

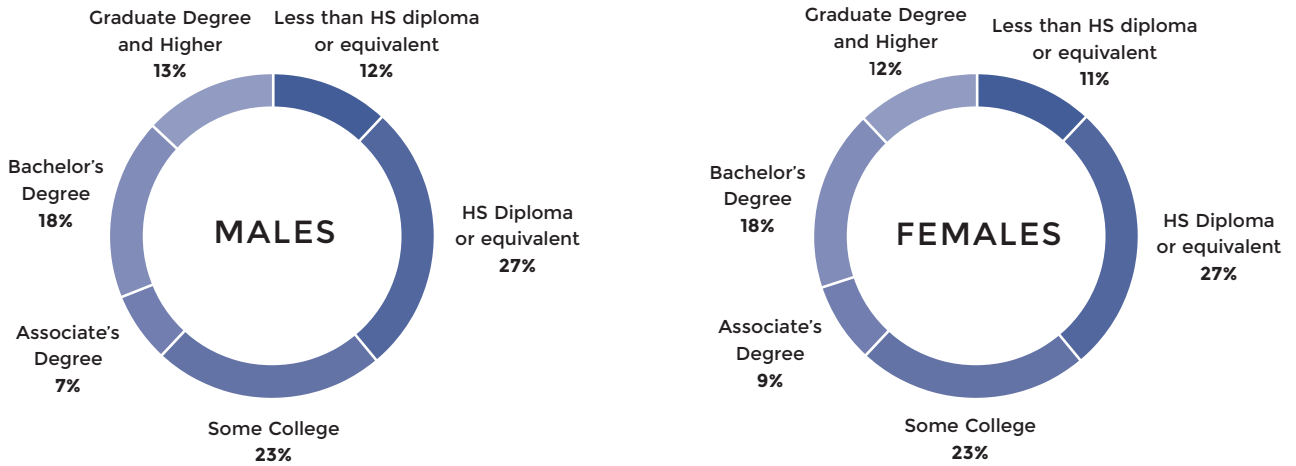


FIGURE 1.18: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION BY ETHNICITY, 2015

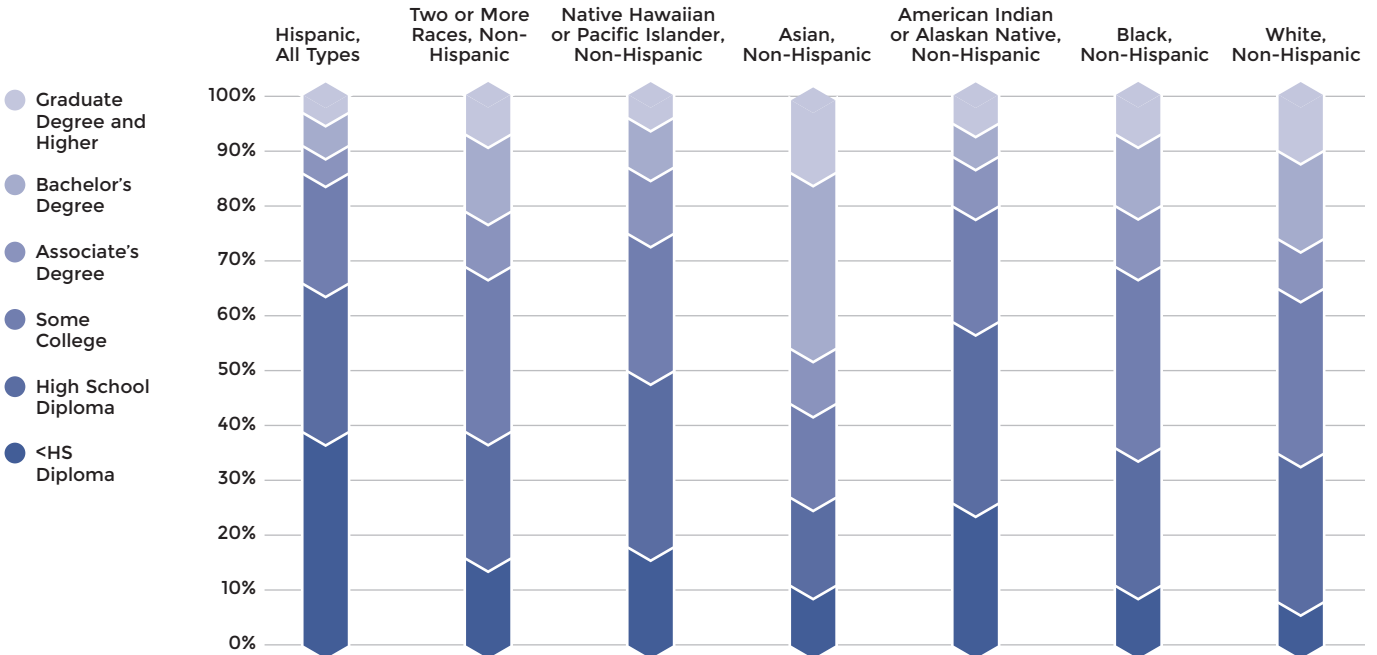


TABLE 1.16: BREAKDOWN OF ADULT POPULATION IN THE SBCCD ECONOMIC REGION BY EDUCATIONAL ATTAINMENT AND ETHNICITY, 2015

		< HS DIPLOMA	HIGH SCHOOL DIPLOMA	SOME COLLEGE	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	GRADUATE DEGREE AND HIGHER
White, Non-Hispanic	COUNT	93,037	305,965	340,703	108,255	181,867	110,752
	PERCENT	8%	27%	30%	9%	16%	10%
Black, Non-Hispanic	COUNT	22,458	50,675	67,232	21,600	26,227	14,345
	PERCENT	11%	25%	33%	11%	13%	7%
American Indian or Alaskan Native, Non-Hispanic	COUNT	3,452	4,414	2,743	1,140	825	655
	PERCENT	26%	33%	21%	9%	6%	5%
Asian, Non-Hispanic	COUNT	22,720	32,345	35,554	20,806	66,023	27,276
	PERCENT	11%	16%	17%	10%	32%	13%
Native Hawaiian or Pacific Islander, Non-Hispanic	COUNT	1,437	2,596	2,019	951	732	364
	PERCENT	18%	32%	25%	12%	9%	4%
Two or More Races, Non-Hispanic	COUNT	6,657	9,492	12,193	3,958	5,643	2,996
	PERCENT	16%	23%	30%	10%	14%	7%
Hispanic, All Types	COUNT	474,375	326,376	244,856	63,781	66,999	29,177
	PERCENT	39%	27%	20%	5%	6%	2%

Source: EMSI Complete Data 2015.2

diploma or less. Given the region is largely “Hispanic, All Types,” many opportunities exist to increase educational attainment.

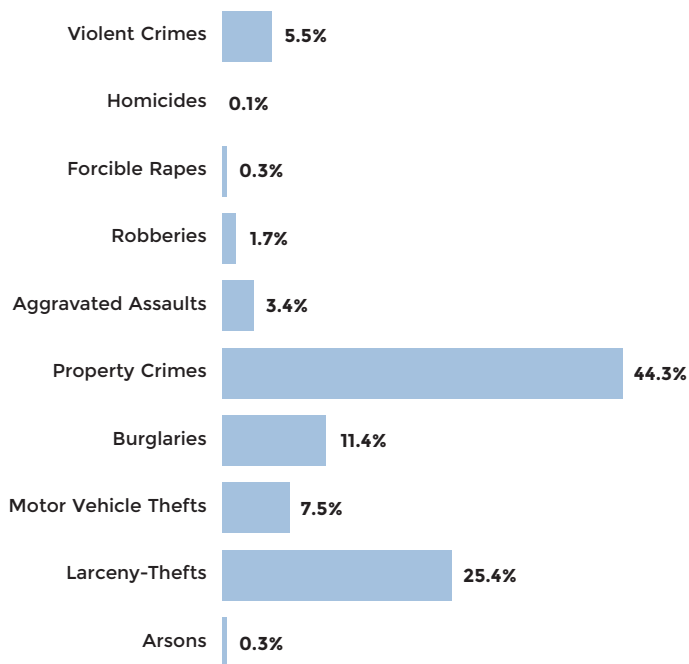
CRIME DATA

In addition to the educational attainment by demographic data, SBCCD requested data on crime for the SBCCD Economic Region. As these data are unavailable from the data sources currently used by EMSI, crime data was collected from a variety of sources: the website of the State of California’s Department of Justice Office of the Attorney General, the California Department of Corrections and Rehabilitation, and a Census Bureau working paper by Ewert and Wildhagen.

Figure 1.19 shows the composition of crime in 2014 for the SBCCD Economic Region. These data are from the State of California’s Department of Justice Office of the Attorney General for the years 2005 to 2014 by county, police department, and crime-type within the state of California. As shown in the figure, 88.6% of all crimes in 2014 are property crimes or various kinds of theft (i.e. larceny, burglaries, and motor vehicle theft).

To further explain the composition of the region’s crime, Figures 1.21 and 1.22 on the next page display the crime

FIGURE 1.19: COMPOSITION OF CRIME IN THE SBCCD ECONOMIC REGION, 2014



Source: State of California DOJ- OAG

FIGURE 1.20: TOTAL CRIME RATES IN SBCCD ECONOMIC REGION AND CALIFORNIA, 2005 TO 2014

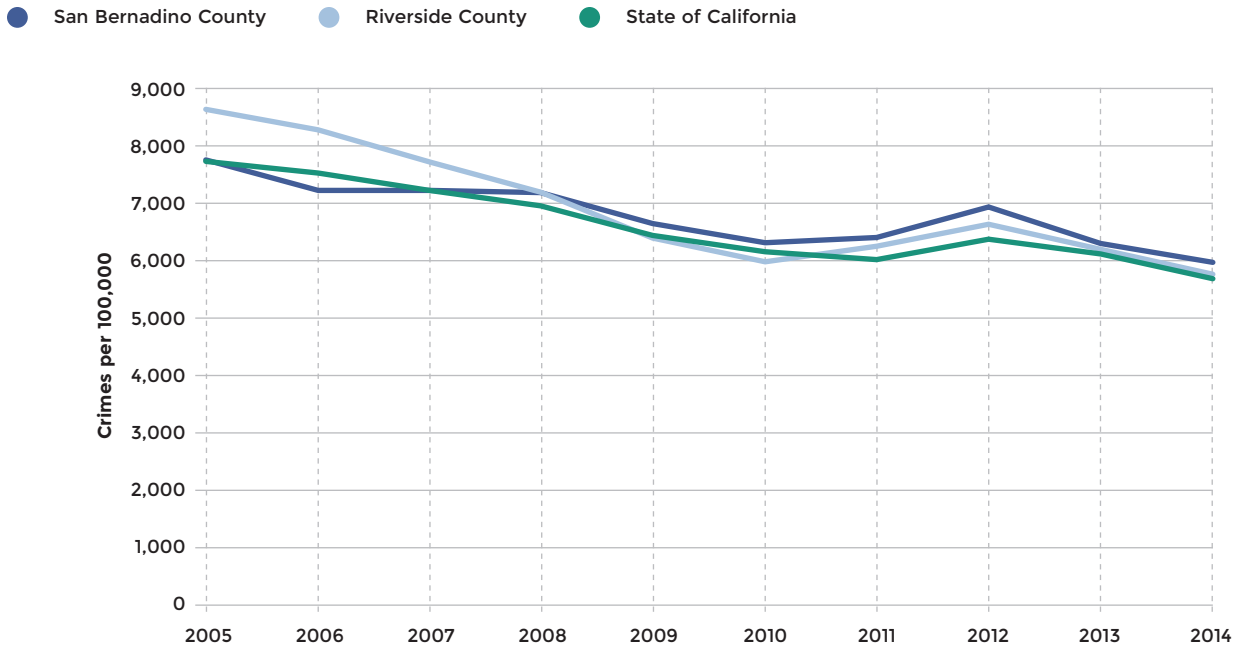


FIGURE 1.21: PROPERTY AND VIOLENT CRIMES PER 100,000 POPULATION IN SAN BERNARDINO COUNTY, 2005 TO 2014

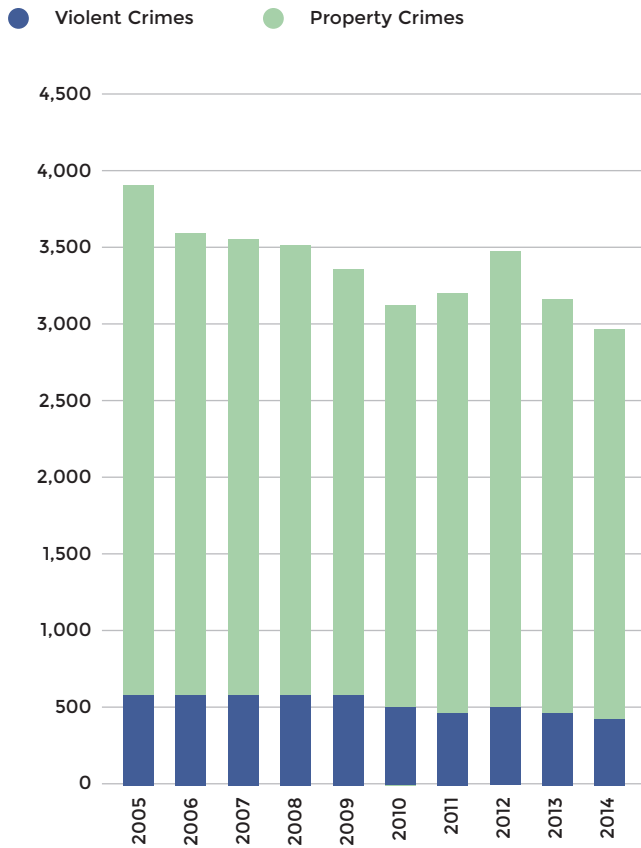
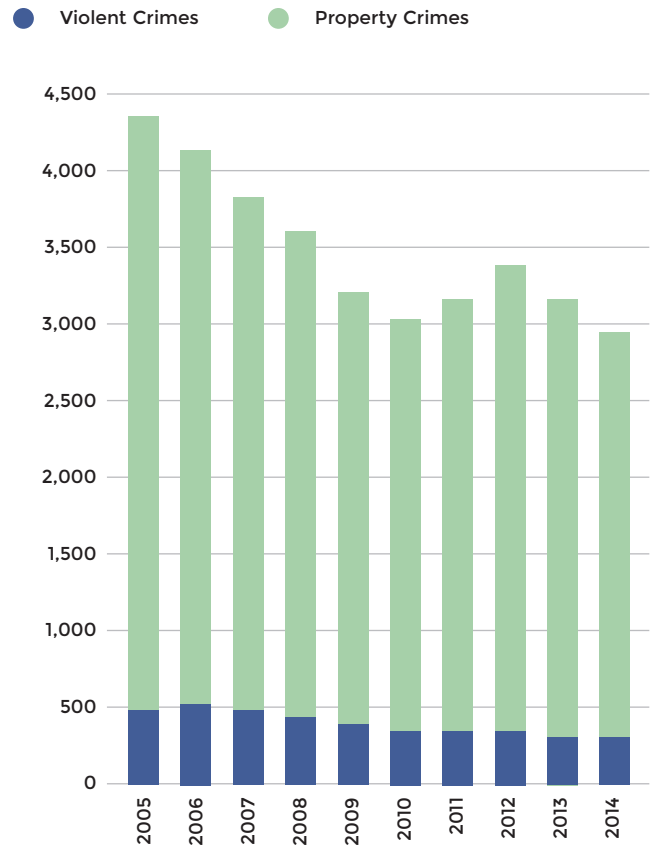


FIGURE 1.22: PROPERTY AND VIOLENT CRIMES PER 100,000 POPULATION IN RIVERSIDE COUNTY, 2005 TO 2014



rate per 100,000 people for property and violent crimes. These figures show the disaggregated time series of crime in the SBCCD Economic Region by county. Figure 1.20 shows the comparison between San Bernardino County and Riverside County for total crime rates over the past 10 years. Between 2005 and 2008, Riverside County had a higher crime rate, but since 2008 San Bernardino County crime rates have been higher. As of 2014, San Bernardino County's crime rate was 5,958 crimes per 100,000 people, and Riverside County's was 5,755 crimes per 100,000 people. Both counties have higher crime rates on average than the state of California.

As Figures 1.21 and 1.22 show, the amount of property crimes have decreased in both San Bernardino and Riverside Counties, but the amount of violent crimes have stayed relatively constant in San Bernardino County. The amount

of violent crimes in Riverside County has decreased by nearly half over the last 10 years (448 crimes to 266 crimes per 100,000).

In addition to knowing the amount of crime, crime rates, and the types of crime in the SBCCD Economic Region, it is valuable to examine the educational attainment of prisoners to draw connections between education and crime. Data for Table 1.17 comes from a working paper developed by Ewert and Wildhagen in 2011 using 2009 ACS and Census data (Tables 4 and 6 of the working paper). These are the national averages of educational attainment of prisoners by demographic breakout. For all prisoner age/race groups, only 23% of male prisoners and 31% of female prisoners had postsecondary education. For young prisoners aged 18 to 24, only about 13% of males and 22% of females had some form of postsecondary education.

TABLE 1.17: EDUCATIONAL ATTAINMENT OF PRISONERS BY GENDER, AGE, AND RACE/ETHNICITY-NATIONAL FIGURES, 2009

	PRISON POPULATION			
	MEN	STD. ERROR	WOMEN	STD. ERROR
EDUCATIONAL ATTAINMENT OF PRISONERS				
All (Total Number)	1,947,103	7,980	195,927	8,014
Less than high school (Percent)	40.2	0.34	36.5	0.88
High school diploma	17.4	0.26	17.1	0.91
GED	19.8	0.25	16.0	0.63
Some college +	22.6	0.23	30.5	1.04
AGE				
18-24 (Total Number)	351,832	4,796	34,661	1,971
Less than high school (Percent)	53.8	0.67	44.6	2.22
High school diploma	16.7	0.48	19.3	1.80
GED	17.0	0.40	13.9	1.48
Some college +	12.5	0.44	22.1	2.06
25-44 (Total Number)	1,125,706	9,968	123,674	6,532
Less than high school (Percent)	38.9	0.39	35.7	1.07
High school diploma	17.1	0.31	15.9	1.04
GED	21.7	0.33	17.0	0.87
Some college +	22.4	0.30	31.4	1.23
45+ (Total Number)	469,565	8,800	37,592	2,711
Less than high school (Percent)	33.2	0.54	31.6	2.25
High school diploma	18.7	0.45	19.0	2.01
GED	17.5	0.43	14.4	1.36
Some college +	30.7	0.47	35.0	2.36

PRISON POPULATION

	MEN	STD. ERROR	WOMEN	STD. ERROR
YOUNG MEN/WOMEN AGE 18-24				
White, non-Hispanic (Total Number)	101,661	2,584	96,361	4,650
Less than high school (Percent)	40.8	1.20	28.7	1.19
High school diploma	19.4	0.90	16.6	1.12
GED	23.0	0.90	19.5	0.94
Some college +	16.8	0.90	35.3	1.48
Black, non-Hispanic (Total Number)	150,135	3,041	56,316	3,167
Less than high school (Percent)	58.4	0.94	41.6	1.89
High school diploma	16.5	0.76	21.0	1.89
GED	15.3	0.64	13.1	1.18
Some college +	9.9	0.71	24.3	1.66
Hispanic (Total Number)	83,267	2,081	29,946	1,813
Less than high school (Percent)	62.7	1.30	51.9	1.96
High school diploma	14.1	0.79	12.5	1.41
GED	12.3	0.78	11.9	1.51
Some college +	10.8	0.88	23.7	1.80

Source: Ewert, Stephanie and Tara Wildhagen. "Educational Characteristics of Prisoners: Data from the ACS." Presented at the Annual Meeting of the Population Association of America, Washington, DC, March 31-April 2, 2011. Working paper. Accessed November 2015. https://www.census.gov/hhes/socdemo/education/data/acs/Ewert_Wildhagen_prisoner_education_4-6-11.doc

CHAPTER 2:

PROGRAM GAP ANALYSIS, SBVC CAMPUS

The results that appear in this chapter present a focused view of the program groups projected to have a regional gap or surplus. Programs are analyzed at two different levels: postsecondary vocational certifications and associate's degrees, according to the training level offered at the San Bernardino Valley Campus (SBVC).

Each table includes the CIP code and title, the average annual job openings associated with that program (which have been de-duplicated using the process outlined in Appendix 3), the average annual completers between 2012 and 2014, and finally the gap or surplus figure. If the numbers are positive, there is a shortage or “gap” of completers—i.e., there are more job openings in those occupations than there are graduates or completers. If the numbers are negative, then there are fewer annual job openings compared to the “surplus” of completers for those program groups. The median hourly wage rate for related occupations is included. Due to data limitations, the wages are aggregated for all education levels.

INTERPRETING GAP/SURPLUS ANALYSIS RESULTS

The gap analysis is intended to serve as a point of departure for SBVC as the College discusses regional workforce needs. A surplus or deficit of workers in a particular category does not necessarily indicate a problem for the region, and it is important that each occupation group be evaluated on a case-by-case basis. Evaluation of the program supply (surplus and gaps) will provide an understanding of the role skilled occupations play in economic sustainability and growth.

Other information should also be considered when evaluating these surpluses and gaps. For example, only the education supply pipeline is considered in this analysis because these numbers can be tracked at the county

and school level. However, other sources—unemployed workers, industry trained pipelines, in-migrators, and job changers from other occupational categories—can also be a source of skilled workers. These types of considerations are useful when evaluating specific types of occupations. Unfortunately, secondary data sources (e.g., regional, state, and federal data) do not account for this, and primary data collection methods (i.e., interviews and surveys) are among the only ways to obtain information on this type of supply pipeline.

Lastly, it is important to keep in mind that the labor market is not so simple or efficient that one could expect supply and demand to be at perfect equilibrium for any extended period of time. As such, as a general rule of thumb, only programs with considerable gaps or surpluses should be considered long-term strategic issues worthy of closer examination. Given the size and characteristics of the SBCCD Economic Region, any gap or surplus within 50 jobs either above or below zero should be considered within the normal range of labor market fluctuations.

Once evaluated internally within the College, specific implications should be considered for programs with substantial surpluses or gaps. These implications include:

- **Surplus:** Oversupply of specific education completers may lead to higher attrition rates (i.e., brain drain). In other words, the region is educating a workforce that is leaving after program completion because of a lack of jobs. Note: In the analysis of the SBCCD Economic Region where the population density is high in neighboring areas, a surplus of completers may indicate the need for regional residents to commute outside of the region to find job opportunities.
- **Gap:** Undersupply of specific program completers may lead to missed opportunities for economic growth and put stress on local businesses to find necessary human capital elsewhere. In other words, the region's educa-

tion institutions are not providing the necessary workforce for the region, thereby shifting the burden to the industries to attract workers from other economies to fill the needed occupations. This translates into higher human resources costs and decreased efficiencies in the economic system. This also provides an opportunity for institutions to develop new programs. Note: Given population density in the areas bordering the SBCCD Economic Region, a completion gap may be filled by other institutions near the region or by people moving into the area. This potential scenario will need to be taken into consideration from the leadership.

POSTSECONDARY CERTIFICATE LEVEL GAP ANALYSIS

Figure 2.1 provides an illustration that summarizes the top ten gaps for SBVC postsecondary certificate level programs. There were a total of 14 significant gaps identified at this education level.

Table 2.1 on the next page lists supply and demand for all certificate program types for which SBVC offers a training program. While other program groups in the region may face larger surpluses, SBVC did not offer any of the programs. Table 2.3 addresses programs that are not currently being offered but which would address considerable regional workforce gaps. At the certificate level, SBVC is only one of many institutions offering programs, and as such, their completers comprise 3% of total regional supply.

As shown in Table 2.1, Culinary Arts holds the largest gap (gap of 1,689; median hourly wage \$10.86). There are 1,734 annual openings but only 45 average annual completers (nine from SBVC). Real Estate (gap of 1,088; median hourly wage \$12.30) and Business Administration (gap of 1,025; median hourly wage \$29.40) are the second and third largest gaps. It is important to keep wages in mind when reviewing the gap analysis. In the instance of Culinary Arts, there may be a large gap, but because the wages of the occupations associated with this program are low, the returns to education may not be justified. Also, by extension, expanding the program may not be warranted. Expanding programs like Human Services (gap of 113; median hourly wage \$22.04) and Retail Management (gap of 89; median hourly wage \$27.89) could fill workforce shortages in occupations that pay well over \$20 an hour.

Often some programs prepare students for fields where they may compete with many other graduates. There are 11 programs at SBVC that train for occupations with a significant surplus of workers. Automobile Technology has a surplus of 785. Although SBVC only produces 13 completers per year for the 524 annual openings, other regional institutions add another 1,294 completers per year, resulting in the large surplus. Pharmacy Technology is second with a surplus of 356 completers, followed by Alcohol & Controlled Substances (188). It is likely that the additional annual openings in areas outside of the SBCCD Economic Region are being filled by SBVC completers. A review of placement rates could provide additional information.

FIGURE 2.1: SUPPLY AND DEMAND FOR SBVC POSTSECONDARY CERTIFICATE LEVEL PROGRAMS

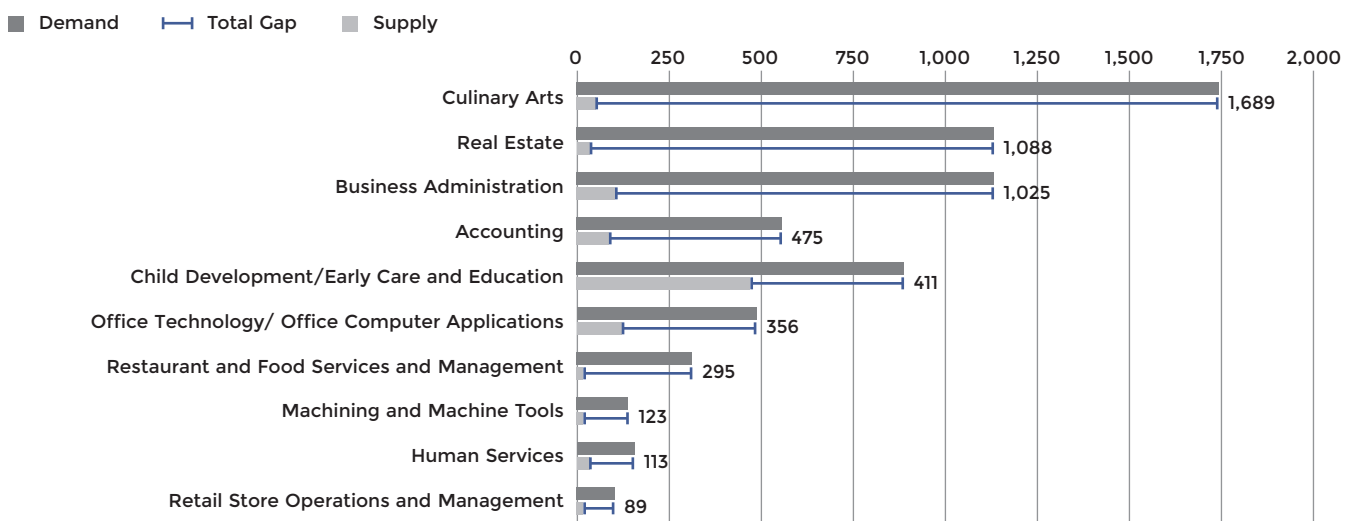


TABLE 2.1: SUPPLY AND DEMAND FOR SBVC CERTIFICATE LEVEL PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
12.0500	Cooking and Related Culinary Arts, General	1306.30	Culinary Arts	1,734	45	9	1,689	\$10.86
52.1501	Real Estate	511.00	Real Estate	1,124	36	4	1,088	\$12.30
52.0201	Business Administration and Management, General	505.00	Business Administration	1,130	105	1	1,025	\$29.40
52.0302	Accounting Technology/ Technician and Bookkeeping	502.00	Accounting	563	88	15	475	\$17.23
19.0709	Child Care Provider/Assistant	1305.00	Child Development/ Early Care and Education	888	477	36	411	\$6.69
52.0401	Administrative Assistant and Secretarial Science, General	514.00	Office Technology/ Office Computer Applications	484	127	10	356	\$18.07
12.0504	Restaurant, Culinary, and Catering Management/ Manager	1307.10	Restaurant and Food Services and Management	310	15	4	295	\$14.33
48.0501	Machine Tool Technology/ Machinist	956.30	Machining and Machine Tools	133	10	10	123	\$15.57
44.0000	Human Services, General	2104.00	Human Services	151	37	9	113	\$22.04
52.0212	Retail Management	506.50	Retail Store Operations and Management	99	10	6	89	\$27.89
19.0505	Foodservice Systems Administration/ Management	1306.20	Dietetic Services and Management	85	8	1	78	\$14.22
25.0301	Library and Archives Assisting	1602.00	Library Technician (Aide)	82	8	8	75	\$15.40
47.0101	Electrical/Electronics Equipment Installation and Repair, General	934.00	Electronics and Electric Technology	78	20	12	58	\$14.56
47.0603	Autobody/Collision and Repair Technology/ Technician	949.00	Automotive Collision Repair	97	45	38	52	\$15.12
47.0104	Computer Installation and Repair Technology/ Technician	934.10	Computer Electronics	50	3	3	47	\$16.29
50.0409	Graphic Design	1030.00	Graphic Art and Design	72	40	5	32	\$15.22
46.0403	Building/Home/ Construction Inspection/Inspector	957.20	Construction Inspection	52	24	3	28	\$26.29
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	162	143	26	19	\$38.54
43.0102	Corrections	2105.10	Corrections	46	30	4	16	\$39.11
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/ Technician	958.00	Water and Wastewater Technology	43	28	9	15	\$29.64
15.0613	Manufacturing Engineering Technology/ Technician	956.00	Manufacturing and Industrial Technology	8	3	1	5	\$29.44
9.0701	Radio and Television	604.00	Radio and Television	19	15	2	4	\$17.99
14.1004	Telecommunications Engineering	934.30	Telecommunications Technology	1	1	0	0	\$39.65

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
19.0707	Family and Community Services	1305.60	Parenting and Family Education	0	0	0	(0)	\$21.01
47.0609	Avionics Maintenance Technology/ Technician	950.40	Aircraft Electronics (Avionics)	0	0	0	(0)	\$28.39
19.0708	Child Care and Support Services Management	1305.80	Child Development Administration and Management	2	2	1	(1)	\$12.90
52.0203	Logistics, Materials, and Supply Chain Management	510.00	Logistics and Materials Transportation	17	22	0	(5)	\$35.37
13.1015	Education/Teaching of Individuals in Early Childhood Special Education Programs	1305.20	Children with Special Needs	4	13	4	(9)	\$33.50
45.0799	Geography, Other	2206.10	Geographic Information Systems	0	11	6	(11)	\$-
11.0201	Computer Programming/ Programmer, General	707.00	Computer Software Development	23	35	1	(12)	\$30.22
46.0301	Electrical and Power Transmission Installation/ Installer, General	934.40	Electrical Systems and Power Transmission	118	136	4	(18)	\$32.08
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	614.10	Multimedia	6	28	4	(23)	\$10.19
4.0901	Architectural Technology/ Technician	201.00	Architecture and Architectural Technology	1	27	0	(26)	\$24.82
11.0103	Information Technology	702.00	Computer Information Systems	22	49	2	(27)	\$33.70
47.0608	Aircraft Powerplant Technology/ Technician	950.20	Aviation Powerplant Mechanics	17	44	14	(27)	\$26.88
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/ Technician	946.00	Environmental Control Technology	28	57	7	(30)	\$21.78
51.1502	Psychiatric/Mental Health Services Technician	1239.00	Psychiatric Technician	4	34	34	(30)	\$21.51
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/ Technician	950.00	Aeronautical and Aviation Technology	23	55	25	(32)	\$27.31
47.0605	Diesel Mechanics Technology/ Technician	947.00	Diesel Technology	147	180	5	(33)	\$19.16
48.0508	Welding Technology/ Welder	956.50	Welding Technology	136	228	3	(92)	\$16.38
51.1501	Substance Abuse/Addiction Counseling	2104.40	Alcohol and Controlled Substances	12	201	27	(188)	\$17.67
51.0805	Pharmacy Technician/ Assistant	1221.00	Pharmacy Technology	76	432	13	(356)	\$16.77
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	948.00	Automotive Technology	524	1,307	13	(784)	\$14.51

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding

ASSOCIATE'S LEVEL GAP ANALYSIS

Figure 2.2 below provides an illustration of the top gaps for SBVC associate's degree level programs. SBVC had a total of 14 gaps greater than 50 at this education level.

Similar to the previous table, Table 2.2 displays supply and demand for all associate's level programs for which SBVC provides training. Again, the table only includes program groups available at SBVC. Other program groups in the region may face larger gaps, but SBVC does not offer the program. Table 2.3 addresses programs that are not currently being offered but which would address considerable regional workforce gaps. SBVC is once again only one of the institutions offering associate's degree level programs in the region, and as such, their completers comprise 7% of total regional supply.

The program training for the most undersupplied occupations at the associate's degree level is Real Estate (gap of 1,299; median hourly wage \$12.30). Along with Business Administration (gap of 827; median hourly wage \$29.40) and Accounting (gap of 458; median hourly wage \$17.23), these are the top three gaps. Of the top three gaps, only Business Administration pays over \$20/hour.

For the SBCCD Economic Region, nine fields currently experience a significant surplus. The largest reported surplus is Biological & Physical Sciences (and Mathematics). There are no annual openings compared to 1,500 regional completers (124 from SBVC). Nursing is associated with the second largest surplus (259). Administration of Justice is the third largest surplus (200). As alluded to earlier, it is possible that SBVC completers are finding jobs outside the SBCCD Economic Region. A review of placement rates could provide additional information.

FIGURE 2.2: SUPPLY AND DEMAND FOR SBVC ASSOCIATE'S DEGREE LEVEL PROGRAMS

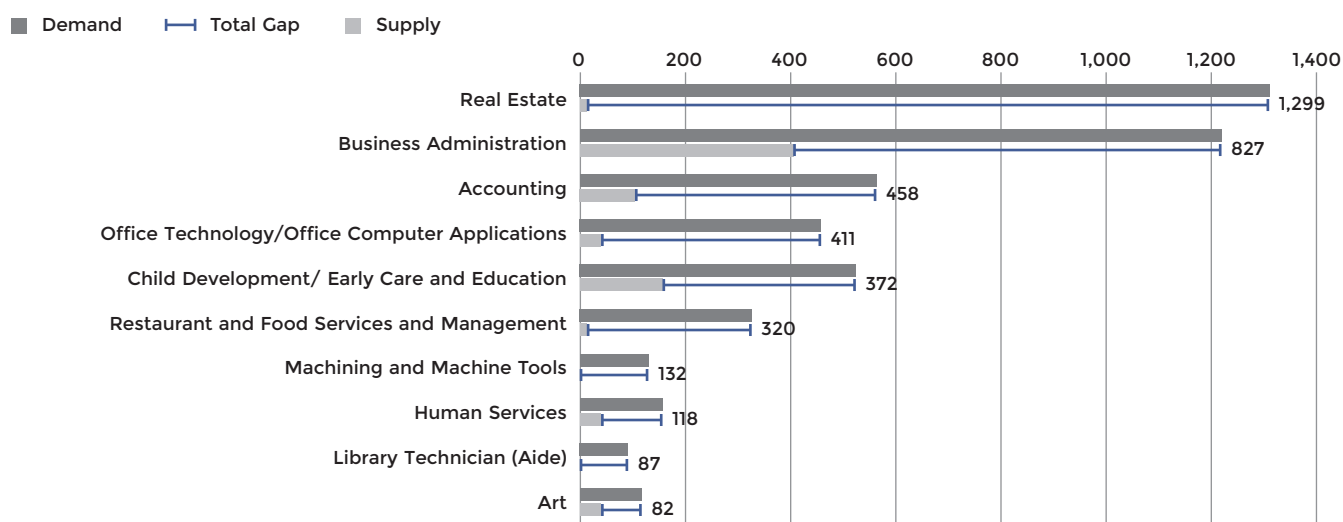


TABLE 2.2: SUPPLY AND DEMAND FOR SBVC ASSOCIATE'S LEVEL PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
52.1501	Real Estate	511.00	Real Estate	1,317	18	2	1,299	\$12.30
52.0201	Business Administration and Management, General	505.00	Business Administration	1,232	405	53	827	\$29.40
52.0302	Accounting Technology/ Technician and Bookkeeping	502.00	Accounting	566	108	21	458	\$17.23

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
52.0401	Administrative Assistant and Secretarial Science, General	514.00	Office Technology/Office Computer Applications	456	45	10	411	\$18.07
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care and Education	528	156	20	372	\$6.69
12.0504	Restaurant, Culinary, and Catering Management/Manager	1307.10	Restaurant and Food Services and Management	331	11	2	320	\$14.33
48.0501	Machine Tool Technology/Machinist	956.30	Machining and Machine Tools	134	1	1	132	\$15.57
44.0000	Human Services, General	2104.00	Human Services	153	35	26	118	\$22.04
25.0301	Library and Archives Assisting	1602.00	Library Technician (Aide)	90	4	4	87	\$15.40
50.0701	Art/Art Studies, General	1002.00	Art	122	40	6	82	\$11.60
47.0101	Electrical/Electronics Equipment Installation and Repair, General	934.00	Electronics and Electric Technology	68	9	4	59	\$14.56
47.0603	Autobody/ Collision and Repair Technology/ Technician	949.00	Automotive Collision Repair	58	3	0	56	\$15.12
47.0104	Computer Installation and Repair Technology/ Technician	934.10	Computer Electronics	66	11	1	54	\$16.29
50.0901	Music, General	1004.00	Music	68	17	1	51	\$14.58
46.0403	Building/Home/Construction Inspection/ Inspector	957.20	Construction Inspection	37	6	2	31	\$26.29
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	948.00	Automotive Technology	69	42	1	27	\$14.51
3.0104	Environmental Science	301.00	Environmental Science	11	1	0	10	\$32.84
15.0613	Manufacturing Engineering Technology/ Technician	956.00	Manufacturing and Industrial Technology	9	1	1	8	\$29.44
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/ Technician	958.00	Water and Wastewater Technology	22	20	11	2	\$29.64
46.0301	Electrical and Power Transmission Installation/ Installer, General	934.40	Electrical Systems and Power Transmission	13	11	3	2	\$32.08
50.0409	Graphic Design	1030.00	Graphic Art and Design	53	51	7	2	\$15.22
48.0508	Welding Technology/ Welder	956.50	Welding Technology	9	8	1	1	\$16.38
14.1004	Telecomm. Engineering	934.30	Telecomm. Technology	1	1	1	(0)	\$39.65
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/ Technician	950.00	Aeronautical and Aviation Technology	7	7	2	(1)	\$27.31

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/ Technician	946.00	Environmental Control Technology	4	7	1	(2)	\$21.78
45.0701	Geography	2206.00	Geography	0	4	2	(4)	\$-
13.1015	Education/ Teaching of Individuals in Early Childhood Special Education Programs	1305.20	Children with Special Needs	1	8	2	(7)	\$33.50
9.0701	Radio and Television	604.00	Radio and Television	7	14	5	(7)	\$17.99
19.0708	Child Care and Support Services Management	1305.80	Child Development Administration and Management	1	10	1	(9)	\$12.90
40.0801	Physics, General	1902.00	Physics, General	0	11	2	(11)	\$51.76
40.0501	Chemistry, General	1905.00	Chemistry, General	1	12	7	(11)	\$35.81
51.1502	Psychiatric/ Mental Health Services Technician	1239.00	Psychiatric Technician	1	14	14	(14)	\$21.51
4.0901	Architectural Technology/ Technician	201.00	Architecture and Architectural Technology	1	15	0	(14)	\$24.82
9.0101	Speech Communication and Rhetoric	1506.00	Speech Communication	47	62	1	(15)	\$15.32
26.0101	Biology/ Biological Sciences, General	401.00	Biology, General	0	19	5	(19)	\$41.09
45.0201	Anthropology	2202.00	Anthropology	0	19	0	(19)	\$24.68
23.0101	English Language and Literature, General	1501.00	English	2	26	1	(24)	\$37.55
51.0805	Pharmacy Technician/ Assistant	1221.00	Pharmacy Technology	22	87	13	(65)	\$16.77
27.0101	Mathematics, General	1701.00	Mathematics, General	1	70	15	(69)	\$38.47
11.0103	Information Technology	702.00	Computer Information Systems	9	85	1	(76)	\$33.70
22.0302	Legal Assistant/ Paralegal	1402.00	Paralegal	25	105	1	(81)	\$21.96
45.1101	Sociology	2208.00	Sociology	0	93	7	(93)	\$33.07
42.0101	Psychology, General	2001.00	Psychology, General	1	97	4	(96)	\$31.78
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	74	274	47	(200)	\$38.54
51.3801	Registered Nursing/ Registered Nurse	1230.00	Nursing	299	558	79	(259)	\$42.37
30.0101	Biological and Physical Sciences	4902.00	Biological and Physical Sciences (and Mathematics)	0	1,500	124	(1,499)	\$50.16

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding

TRANSFER TRACK (LIBERAL ARTS) STUDENTS

A number of students attend SBVC with the intention of transferring to a four-year school to receive a bachelor's degree. Though these students study any number of topics, a large number of them receive associate of arts degrees in liberal arts. Over the past three years, an average of 336 students have completed liberal arts, biological and physical sciences, or general studies degrees at the associate's degree level, which composes 17% of the College's annual production of certificates and degrees.

Once these students leave SBVC, their educational and career track is difficult to predict. They could attend a four-year college in the region or outside the region, and they could study any number of different programs that will ultimately determine their future career. What can be shown is that over the next 10 years, jobs that require a bachelor's degree are projected to be in high demand. In any given year between 2014 and 2024, around 18,652 jobs will require a bachelor's degree and 74,183 will require a bachelor's degree or less, availing these students of 91% of all regional job openings.

POTENTIAL NEW PROGRAMS

In addition to knowing how well SBVC's current educational programs are serving the local labor market, it is helpful to know the fields of opportunity where the College could create new program offerings. Table 2.3 contains a list of 18 programmatic areas of opportunity that could fill gaps in the labor market by postsecondary vocational certificates and associate's degrees. These selected occupations present unmet annual openings by completions within the region. Please note that these tables highlight particular occupations, and in many cases a program can be designed to train for multiple occupations. Once these occupations are grouped with other similar occupations, the actual workforce gap may be larger. Therefore, several programs with relatively small gaps are included. The median hourly earnings for workers in the region are included in Table 2.3. The education level at which the analysis was performed is listed for each occupation.

There are 12 postsecondary certificate level areas of opportunity listed in Table 2.3. Skilled trades and blue collar occupations like heavy & tractor-trailer truck drivers, carpenters, and general maintenance & repair workers

TABLE 2.3: PROGRAMMATIC AREAS OF OPPORTUNITY

SOC	SOC TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	GAP	MEDIAN HOURLY EARNINGS	EDUCATION LEVEL
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,407	0	1,407	\$19.24	Certificate
47-2031	Carpenters	419	0	419	\$17.19	Certificate
49-9071	Maintenance and Repair Workers, General	399	0	399	\$17.32	Certificate
53-3033	Light Truck or Delivery Services Drivers	384	0	384	\$16.06	Certificate
25-9041	Teacher Assistants	274	25	249	\$14.73	Certificate
53-3022	Bus Drivers, School or Special Client	130	0	130	\$16.91	Certificate
47-2111	Electricians	181	55	126	\$23.60	Certificate
49-9041	Industrial Machinery Mechanics	115	1	114	\$23.70	Certificate
47-2152	Plumbers, Pipefitters, and Steamfitters	106	0	106	\$20.76	Certificate
11-9013	Farmers, Ranchers, and Other Agricultural Managers	108	29	80	\$13.91	Certificate
49-9052	Telecommunications Line Installers and Repairers	59	0	59	\$26.23	Certificate
31-9094	Medical Transcriptionists	53	0	53	\$13.59	Certificate
29-2012	Medical and Clinical Laboratory Technicians	33	0	33	\$19.15	Associate's
49-9062	Medical Equipment Repairers	28	0	28	\$24.22	Associate's
29-2031	Cardiovascular Technologists and Technicians	19	0	19	\$23.11	Associate's
19-4093	Forest and Conservation Technicians	14	1	13	\$19.20	Associate's
19-4099	Life, Physical, and Social Science Technicians, All Other	12	0	12	\$24.79	Associate's
31-2011	Occupational Therapy Assistants	11	0	11	\$32.19	Associate's

Source: EMSI Gap Analysis Model

appear to be undersupplied in the SBCCD Economic Region. Legal secretaries and telecommunications line installers & repairers are also among the undersupplied. Wage rates range between \$14.73 for teacher assistants to a high of \$26.23 for telecommunications line installers and repairers.

The other six areas of opportunity are at the associate's degree level. Two of these potential new programmatic areas have gaps that are less than half of the significant workforce gap of 50 (25). The top three are: medical and clinical laboratory technicians, medical equipment repairers, and cardiovascular technologists and technicians. Median hourly earnings range between \$19.15 for medical & clinical laboratory technicians and \$32.19 for occupational therapy assistants.

CONCLUSION

Postsecondary certificate level and associate's degree level each had 14 programs that were associated with significant workforce gaps. There were a combined 20 programs associated with significant workforce surpluses.

Culinary Arts has the largest gap at the certificate level (gap of 1,689; median hourly wage \$10.86). Real Estate (gap of 1,088; median hourly wage \$12.30) and Business Administration (gap of 1,025; median hourly wage \$29.40) are the second and third largest gaps. However, given the low wages of Culinary Arts and Real Estate, expanding programs with workforce shortages in occupations that pay well over \$20 an hour like Human Services (gap of 113; median hourly wage \$22.04) and Retail Management (gap of 89; median hourly wage \$27.89)-- may be worth consideration given the higher wages in those occupations.

There are 11 programs at SBVC that train for occupations with a significant surplus of workers. Automobile Technology has a surplus of 785. Although SBVC only produces 13 completers per year for the 524 annual openings, other regional institutions add another 1,294 completers per year, resulting in the large surplus. Pharmacy Technology is second with a surplus 356 completers; followed by Alcohol & Controlled Substances (188). It is likely that the

additional annual openings in areas outside of the SBCCD Economic Region are being filled by SBVC completers. A review of placement rates could provide additional information.

The program training for the most undersupplied occupations at the associate's degree level is Real Estate (gap of 1,299; median hourly wage \$12.30). Along with Business Administration (gap of 827; median hourly wage \$29.40) and Accounting (gap of 458; median hourly wage \$17.23), these are the top three gaps. Of the top three gaps, only Business Administration pays over \$20/hour.

For the SBCCD Economic Region, nine fields are experiencing a significant surplus. The largest reported surplus is Biological & Physical Sciences (and Mathematics). There are no annual openings compared to 1,500 regional completers (124 from SBVC). Nursing is associated with the second largest surplus (259). Administration of Justice is the third largest surplus (200). As alluded to earlier, it is possible that SBVC completers are finding jobs outside the SBCCD Economic Region. A review of placement rates could provide additional information.

There are 12 postsecondary certificate level areas of opportunity identified for the region as a whole. Skilled trades and blue collar occupations like heavy & tractor-trailer truck drivers, carpenters, and general maintenance & repair workers appear to be undersupplied in the entire region. Legal secretaries and telecommunications line installers & repairers are also among the undersupplied. Wage rates range between \$14.73 for teacher assistants to a high of \$26.23 for telecommunications line installers & repairers.

The other six areas of opportunity are at the associate's degree level. Two of these potential new programmatic areas have gaps that are less than half of the significant workforce gap of 50 (25). The top three are: medical & clinical laboratory technicians, medical equipment repairers, and cardiovascular technologists & technicians. Median hourly earnings range between \$19.15 for medical & clinical laboratory technicians and \$32.19 for occupational therapy assistants.

CHAPTER 3:

PROGRAM GAP ANALYSIS, CHC CAMPUS

The results that appear in this chapter present a focused view of the program groups projected to have a regional gap or surplus. Programs are analyzed at two different levels: postsecondary vocational certifications and associate's degrees, according to the training level offered at CHC.

Each table includes the CIP code and title, the average annual job openings associated with that program (which have been de-duplicated using the process outlined in Appendix 3), the average annual completers between 2012 and 2014, and finally the gap or surplus figure. If the numbers are positive, there is a shortage or “gap” of completers—i.e., there are more job openings in those occupations than there are graduates or completers. If the numbers are negative, then there are fewer annual job openings compared to the “surplus” of completers for those program groups. The median hourly wage rate for related occupations is included. Due to data limitations, the wages are aggregated for all education levels.

INTERPRETING GAP/SURPLUS ANALYSIS RESULTS

The gap analysis is intended to serve as a point of departure for CHC as the College discusses regional workforce needs. A surplus or deficit of workers in a particular category does not necessarily indicate a problem for the region, and it is important that each occupation group be evaluated on a case-by-case basis. Evaluation of the program supply (surplus and gaps) will provide an understanding of the role skilled occupations play in economic sustainability and growth.

Other information should also be considered when evaluating these surpluses and gaps. For example, only the education supply pipeline is considered in this analysis because these numbers can be tracked at the county and school level. However, other sources—unemployed

workers, industry trained pipelines, in-migrators, and job changers from other occupational categories—can also be a source of skilled workers. These types of considerations are useful when evaluating specific types of occupations. Unfortunately, secondary data sources (e.g., regional, state, and federal data) do not account for this, and primary data collection methods (i.e., interviews and surveys) are among the only ways to obtain information on this type of supply pipeline.

Lastly, it is important to keep in mind that the labor market is not so simple or efficient that one could expect supply and demand to be at perfect equilibrium for any extended period of time. As such, as a general rule of thumb, only programs with considerable gaps or surpluses should be considered long-term strategic issues worthy of closer examination. Given the size and characteristics of the SBCCD Economic Region, any gap or surplus within 50 jobs either above or below zero should be considered within the normal range of labor market fluctuations.

Once evaluated internally within the College, specific implications should be considered for programs with substantial surpluses or gaps. These implications include:

- **Surplus:** Oversupply of specific education completers may lead to higher attrition rates (i.e., brain drain). In other words, the region is educating a workforce that is leaving after program completion because of a lack of jobs. Note: In the analysis of the SBCCD Economic Region where the population density is high in neighboring areas, a surplus of completers may indicate the need for regional residents to commute outside of the region to find job opportunities.
- **Gap:** Undersupply of specific program completers may lead to missed opportunities for economic growth and put stress on local businesses to find necessary human capital elsewhere. In other words, the region's education institutions are not providing the necessary work-

force for the region, thereby shifting the burden to the industries to attract workers from other economies to fill the needed occupations. This translates into higher human resources costs and decreased efficiencies in the economic system. This also provides an opportunity for institutions to develop new programs. Note: Given population density in the areas bordering the SBCCD Economic Region, a completion gap may be filled by other institutions near the region or by people moving into the area. This potential scenario will need to be taken into consideration from the leadership.

POSTSECONDARY CERTIFICATE LEVEL GAP ANALYSIS

Figure 3.1 provides an illustration that summarizes the top four gaps for CHC postsecondary certificate level programs. These were the only significant gaps identified at this education level.

Table 3.1 lists supply and demand for all certificate program types for which CHC offers a training program. While other program groups in the region may face larger surpluses, CHC did not offer any of the programs. Table 2.3

FIGURE 3.1: SUPPLY AND DEMAND FOR CHC POSTSECONDARY CERTIFICATE LEVEL PROGRAMS

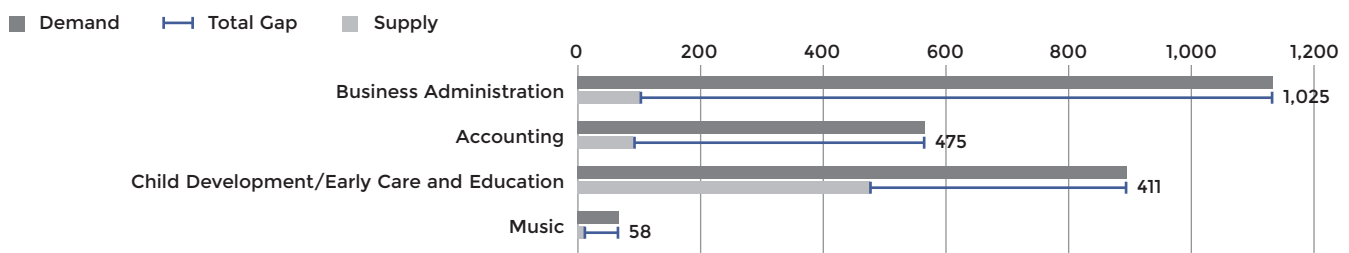


TABLE 3.1: SUPPLY AND DEMAND FOR CHC CERTIFICATE LEVEL PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
52.0201	Business Administration and Management, General	505.00	Business Administration	1,130	105	2	1,025	\$29.40
52.0302	Accounting Technology/Technician & Bookkeeping	502.00	Accounting	563	88	1	475	\$17.23
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care & Education	888	477	6	411	\$6.69
50.0901	Music, General	1004.00	Music	71	13	1	58	\$14.58
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	162	143	0	19	\$38.54
43.0203	Fire Science/Fire-fighting	2133.50	Fire Academy	81	68	39	13	\$26.16
11.0803	Computer Graphics	614.60	Computer Graphics and Digital Imagery	12	11	0	1	\$20.04
11.1004	Web/Multimedia Management and Webmaster	709.00	World Wide Web Administration	0	2	0	(2)	\$24.20
16.1601	American Sign Language (ASL)	850.00	Sign Language	2	6	6	(4)	\$18.77
51.0911	Radiologic Technology/Science - Radiographer	1225.00	Radiologic Technology	5	9	9	(4)	\$31.87
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	614.10	Multimedia	6	28	0	(23)	\$10.19
11.0103	Information Technology	702.00	Computer Information Systems	22	49	11	(27)	\$33.70
51.0904	Emergency Medical Technology/ Technician (EMT Paramedic)	1250.00	Emergency Medical Services	61	348	225	(286)	\$12.04

addresses programs not currently being offered but which would address considerable regional workforce gaps. At the certificate level, CHC is only one of many institutions offering programs, and as such their completers comprise 2% of total regional supply.

As shown in Table 3.1, Business Administration (median hourly wage \$29.40) has the largest gap. There are 1,130 annual openings but only 105 average annual completers (two from CHC). Accounting (gap of 475; median hourly wage \$17.23) and Child Development/Early Care & Education (gap of 411; median hourly wage \$6.69) are the second and third largest gaps. It is important to keep wages in mind when reviewing the gap analysis. In the instance of Child Development/Early Care & Education, there may be a large gap, but because the wages of the occupations associated with this program are low, the returns to education may not be justified. By extension, expanding the program may not be warranted. Slightly expanding programs like Administration of Justice (gap of 19; median hourly wage \$38.54) and Fire Academy (gap of 13; median hourly wage \$26.16) could fill small workforce shortages in occupations that pay well over \$20 per hour.

Often some programs prepare students for fields where they may compete with many other graduates. There is one program at CHC training for an occupation with a significant surplus of workers. Emergency Medical Services has a surplus of 286. CHC produces 123 completers per year for the 61 annual openings. Other regional institutions add another 1,904 completers per year, resulting in the large surplus.

ASSOCIATE’S LEVEL GAP ANALYSIS

Figure 3.2 below provides an illustration of the top gaps for CHC associate’s degree level programs. CHC had a total of four gaps greater than 50 at this education level.

Similar to the previous table, Table 3.2 on the next page displays supply and demand for all associate’s level programs for which CHC provides training. Again, the table only includes program groups available at CHC. Other program groups in the region may face larger gaps, but CHC does not offer the program. Table 3.3 addresses programs not currently being offered but which would address considerable regional workforce gaps. CHC is once again only one of the institutions offering associate’s degree level programs in the region, and as such, their completers comprise 3% of total regional supply.

The program training for the most undersupplied occupations at the associate’s degree level is Business Administration (gap of 827; median hourly wage \$29.40). Along with Child Development/Early Care & Education (gap of 372; median hourly wage \$6.69) and Art (gap of 82; median hourly wage \$11.60), these are the top three gaps. For the SBCCD Economic Region, there are 10 fields with a significant surplus. The largest reported surplus is Biological & Physical Sciences. There are no annual openings compared to 1,500 regional completers (85 from CHC). Social Sciences is associated with the second largest surplus (529), and Respiratory Care the third largest surplus (211). As alluded to earlier, it is possible that CHC completers are finding jobs outside the SBCCD Economic Region. A review of placement rates could provide additional information.

TRANSFER TRACK (LIBERAL ARTS) STUDENTS

A number of students attend CHC with the intention of transferring to a four-year school to receive a bachelor’s degree. Though these students study any number of topics, a large number of them receive associate of arts degrees in liberal arts. Over the past three years, an average of 403 students have completed liberal arts, biological & physi-

FIGURE 3.2: SUPPLY AND DEMAND FOR CHC ASSOCIATE’S DEGREE LEVEL PROGRAMS

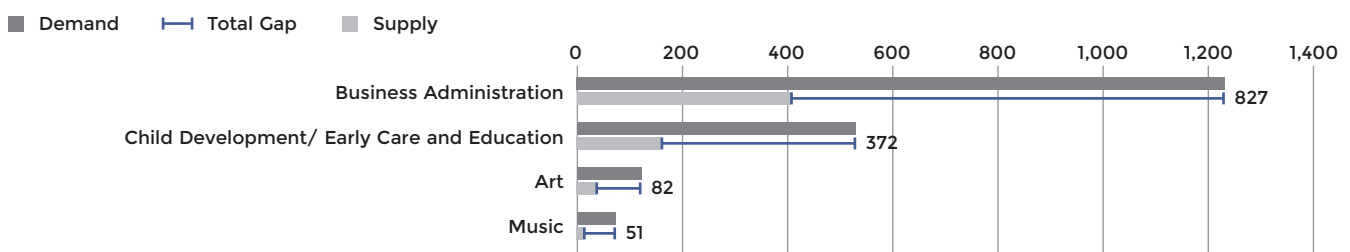


TABLE 3.2: SUPPLY AND DEMAND FOR CHC ASSOCIATE’S LEVEL PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP	MEDIAN WAGE
52.0201	Business Administration and Management, General	505.00	Business Administration	1,232	405	39	827	\$29.40
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care & Education	528	156	5	372	\$6.69
50.0701	Art/Art Studies, General	1002.00	Art	122	40	4	82	\$11.60
50.0901	Music, General	1004.00	Music	68	17	2	51	\$14.58
50.0501	Drama and Dramatics/Theatre Arts, General	1007.00	Dramatic Arts	62	16	5	46	\$16.52
16.0905	Spanish Language and Literature	1105.00	Spanish	26	9	6	17	\$18.77
3.0104	Environmental Science	301.00	Environmental Science	11	1	1	10	\$32.84
40.0601	Geology/Earth Science, General	1914.00	Geology	1	1	1	(0)	\$40.70
51.0904	Emergency Medical Technology/ Technician (EMT Paramedic)	1250.00	Emergency Medical Services	18	18	10	(1)	\$12.04
16.0302	Japanese Language and Literature	1108.00	Japanese	0	2	2	(1)	\$18.77
26.0901	Physiology, General	410.00	Anatomy & Physiology	0	2	2	(2)	\$43.37
45.0701	Geography	2206.00	Geography	0	4	1	(4)	\$-
38.0201	Religion/Religious Studies	1510.00	Religious Studies	0	7	0	(6)	\$37.55
16.1601	American Sign Language (ASL)	850.00	Sign Language	1	10	6	(9)	\$18.77
40.0801	Physics, General	1902.00	Physics, General	0	11	3	(11)	\$51.76
40.0501	Chemistry, General	1905.00	Chemistry, General	1	12	2	(11)	\$35.81
38.0101	Philosophy	1509.00	Philosophy	1	12	0	(11)	\$37.55
9.0101	Speech Communication and Rhetoric	1506.00	Speech Communication	47	62	7	(15)	\$15.32
50.0101	Visual and Performing Arts, General	1001.00	Fine Arts, General	37	53	3	(16)	\$11.64
51.0911	Radiologic Technology/ Science - Radiographer	1225.00	Radiologic Technology	7	26	6	(19)	\$31.87
26.0101	Biology/Biological Sciences, General	401.00	Biology, General	0	19	3	(19)	\$41.09
45.0201	Anthropology	2202.00	Anthropology	0	19	1	(19)	\$24.68
45.1001	Political Science and Government, General	2207.00	Political Science	0	20	5	(20)	\$37.59
45.0601	Economics, General	2204.00	Economics	0	22	4	(21)	\$26.56
23.0101	English Language and Literature, General	1501.00	English	2	26	8	(24)	\$37.55
54.0101	History, General	2205.00	History	0	39	9	(39)	\$29.38
27.0101	Mathematics, General	1701.00	Mathematics, General	1	70	11	(69)	\$38.47
11.0103	Information Technology	702.00	Computer Information Systems	9	85	4	(76)	\$33.70
43.0201	Fire Prevention and Safety Technology/ Technician	2133.00	Fire Technology	4	87	21	(82)	\$39.49
45.1101	Sociology	2208.00	Sociology	0	93	25	(93)	\$33.07
42.0101	Psychology, General	2001.00	Psychology, General	1	97	27	(96)	\$31.78
43.0107	Criminal Justice/ Police Science	2105.00	Administration of Justice	74	274	4	(200)	\$38.54
51.0908	Respiratory Care Therapy/ Therapist	1210.00	Respiratory Care/ Therapy	15	236	31	(221)	\$31.75
45.0101	Social Sciences, General	2201.00	Social Sciences, General	7	536	60	(529)	\$22.96
30.0101	Biological and Physical Sciences	4902.00	Biological and Physical Sciences (and Mathematics)	0	1,500	85	(1,499)	\$50.16

cal sciences, or general studies degrees at the associate's degree level, which composes 1% of the College's annual production of certificates and degrees.

Once these students leave CHC, their educational and career track is difficult to predict. They could attend a four-year college in the region or outside the region, and they could study any number of different programs that will ultimately determine their future career. What can be shown is that over the next 10 years, jobs that require a bachelor's degree are projected to be in high demand. In any given year between 2014 and 2024, around 18,652 jobs will require a bachelor's degree and 74,183 will require a bachelor's degree or less, availing these students of 91% of all regional job openings.

CONCLUSION

Both the postsecondary certificate level and associate's degree level each had 4 programs associated with significant workforce gaps. There were 11 programs associated with significant workforce surpluses—one at the certificate level and ten at the associate's level.

Business Administration has the largest gap at the certificate level (gap of 1,025; median hourly wage \$29.40). There are 1,130 annual openings but only 105 average annual completers (two from CHC). Accounting (gap of 475;

median hourly wage \$17.23) and Child Development/Early Care & Education (gap of 411; median hourly wage \$6.69) are the second and third largest gaps. Slightly expanding programs like Administration of Justice (gap of 19; median hourly wage \$38.54) and Fire Academy (gap of 13; median hourly wage \$26.16) could fill small workforce shortages in occupations that pay well over \$20 an hour.

There is one program at CHC training for an occupation with a significant surplus of workers. Emergency Medical Services has a surplus of 286. CHC produces 123 completers per year for the 61 annual openings. Other regional institutions add another 1,904 completers per year, resulting in the large surplus.

The program training for the most undersupplied occupations at the associate's degree level is Business Administration (gap of 827; median hourly wage \$29.40). Along with Child Development/Early Care & Education (gap of 372; median hourly wage \$6.69) and Art (gap of 82; median hourly wage \$11.60), these are the top three gaps.

For the SBCCD Economic Region, there are 10 fields with a significant surplus. The largest reported surplus is Biological & Physical Sciences. There are no annual openings compared to 1,500 regional completers (85 from CHC). Social Sciences is associated with the second largest surplus (529), and Respiratory Care the third largest surplus (211). It is likely that CHC completers are finding jobs outside the SBCCD Economic Region.

APPENDIX 1: ABOUT EMSI DATA

As stated in Chapter 2, EMSI data were used to calculate the projected number of annual job openings from 2015 to 2025. These projections take into account openings due to job growth and openings due to replacement needs.

In order to capture a complete picture of industry employment, EMSI gathers and integrates economic, labor market, demographic, and education data from over 90 government and private-sector sources, creating a comprehensive and current database that includes both published data and detailed estimates with full coverage of the United States.

More specifically, EMSI combines covered employment data from Quarterly Census of Employment and Wages (QCEW-produced by the Department of Labor) with total employment data in Regional Economic Information System (REIS-published by the Bureau of Economic Analysis

or BEA). This is augmented with County Business Patterns (CBP) and Non-Employer Statistics (NES) published by the United States Census Bureau. Projections are based on the latest-available EMSI industry data, 15-year past local trends in each industry, growth rates in statewide and (where available) sub-state area industry projections published by individual state agencies, and (in part) growth rates in national projections from the Bureau of Labor Statistics.

Through this combination of data sources, EMSI is able to fill gaps in individual sources (such as suppressions and missing proprietors). This yields a composite database that leverages the strengths of all its sources. Finally, EMSI's database is updated quarterly, providing the most up-to-date integrated information possible.

APPENDIX 2: PROGRAM-TO-OCCUPATION MAPPING

Table A2.1 displays the crosswalk between educational programs (CIP codes) and occupations (SOC codes) that EMSI used to complete the gap analysis. Also listed are the adjustment factors which were applied to the annual openings figures for each occupation within each program. The methodology for these factors is described in Appendix 3, with the program based weight figure recounted under “De-duplication of Annual Openings” and the educational level adjustments recounted under “Education Level Adjustments.”

TABLE A2.1: PROGRAM TO OCCUPATION MAPPING WITH EMPLOYMENT ADJUSTMENT FACTORS

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
3.0104	Environmental Science	19-2041	Environmental Scientists and Specialists, Including Health	0.83	3	6
		19-4091	Environmental Science and Protection Technicians, Including Health	0.83	42	54
4.0901	Architectural Technology/ Technician	17-3011	Architectural and Civil Drafters	0.23	41	73
9.0101	Speech Communication and Rhetoric	27-3012	Public Address System and Other Announcers	1.00	54	61
		27-3031	Public Relations Specialists	0.94	16	20
		27-3043	Writers and Authors	0.59	12	15
9.0701	Radio and Television	27-2012	Producers and Directors	0.12	20	26
		27-3011	Radio and Television Announcers	1.00	54	61
		27-3021	Broadcast News Analysts	0.73	12	16
		27-4032	Film and Video Editors	0.98	32	39
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	27-1014	Multimedia Artists and Animators	0.26	34	43
11.0103	Information Technology	15-1111	Computer and Information Research Scientists	0.43	6	9
		15-1121	Computer Systems Analysts	0.38	20	28
		15-1122	Information Security Analysts	0.20	29	43
		15-1132	Software Developers, Applications	0.40	11	16
		15-1133	Software Developers, Systems Software	0.37	11	16
		15-1134	Web Developers	0.20	23	31
		15-1143	Computer Network Architects	0.20	27	41

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
11.0201	Computer Programming/Programmer, General	15-1122	Information Security Analysts	0.06	29	43
		15-1131	Computer Programmers	0.20	19	28
		15-1132	Software Developers, Applications	0.12	11	16
		15-1133	Software Developers, Systems Software	0.11	11	16
		15-1134	Web Developers	0.06	23	31
		15-1143	Computer Network Architects	0.06	27	41
		15-1151	Computer User Support Specialists	0.09	40	57
		15-1152	Computer Network Support Specialists	0.09	40	57
		51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	1.00	82	93
11.0803	Computer Graphics	15-1131	Computer Programmers	0.21	19	28
		27-1024	Graphic Designers	0.18	31	44
11.1004	Web/Multimedia Management and Webmaster	15-1122	Information Security Analysts	0.00	29	43
		15-1134	Web Developers	0.00	23	31
		15-1143	Computer Network Architects	0.00	27	41
12.05	Cooking and Related Culinary Arts, General	35-1011	Chefs and Head Cooks	0.26	70	86
		35-1012	First-Line Supervisors of Food Preparation and Serving Workers	0.53	78	86
		35-2012	Cooks, Institution and Cafeteria	0.80	90	95
		35-2014	Cooks, Restaurant	0.26	90	95
		35-2019	Cooks, All Other	0.26	90	95
		35-2021	Food Preparation Workers	0.90	87	92
		39-9021	Personal Care Aides	0.80	80	88
12.0504	Restaurant, Culinary, and Catering Management/Manager	11-9051	Food Service Managers	0.73	66	75
		35-1012	First-Line Supervisors of Food Preparation and Serving Workers	0.40	78	86
13.1015	Education/Teaching of Individuals in Early Childhood Special Education Programs	25-2051	Special Education Teachers, Pre-school	0.62	10	13
		25-2052	Special Education Teachers, Kindergarten and Elementary School	0.62	10	13
14.1004	Telecommunications Engineering	11-9041	Architectural and Engineering Managers	0.00	11	16
		17-2072	Electronics Engineers, Except Computer	0.02	12	21
		17-2199	Engineers, All Other	0.17	11	18
		25-1099	Postsecondary Teachers	0.00	3	5

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/ Technician	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	0.21	83	96
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/ Technician	51-8031	Water and Wastewater Treatment Plant and System Operators	1.00	79	91
15.0613	Manufacturing Engineering Technology/ Technician	17-2112	Industrial Engineers	1.00	19	28
		17-3026	Industrial Engineering Technicians	0.21	60	83
		27-1021	Commercial and Industrial Designers	0.06	31	44
16.0302	Japanese Language and Literature	27-3091	Interpreters and Translators	0.01	37	50
16.0905	Spanish Language and Lit- erature	27-3091	Interpreters and Translators	0.47	37	50
16.1601	American Sign Language (ASL)	27-3091	Interpreters and Translators	0.05	37	50
19.0505	Foodservice Systems Admin- istration/ Management	29-1031	Dietitians and Nutritionists	0.03	21	25
		35-1012	First-Line Supervisors of Food Preparation and Serving Workers	0.07	78	86
		35-2012	Cooks, Institution and Cafeteria	0.11	90	95
		51-3092	Food Batchmakers	1.00	87	94
19.0707	Family and Community Services	25-9021	Farm and Home Management Advisors	0.08	17	21
19.0708	Child Care and Support Ser- vices Management	25-2011	Preschool Teachers, Except Special Education	0.03	39	53
19.0709	Child Care Provider/Assistant	39-9011	Childcare Workers	1.00	75	84
22.0302	Legal Assistant/Paralegal	23-2011	Paralegals and Legal Assistants	1.00	38	58
		23-2093	Title Examiners, Abstractors, and Searchers	1.00	46	59
		23-2099	Legal Support Workers, All Other	1.00	46	59
23.0101	English Language and Litera- ture, General	25-1099	Postsecondary Teachers	0.11	3	5
24.0101	Liberal Arts and Sciences/ Liberal Studies	25-1099	Postsecondary Teachers	0.64	3	5
25.0301	Library and Archives Assist- ing	25-4031	Library Technicians	1.00	58	67
		25-9011	Audio-Visual and Multimedia Col- lections Specialists	1.00	17	21
		43-4121	Library Assistants, Clerical	1.00	46	56
26.0101	Biology/Biological Sciences, General	11-9121	Natural Sciences Managers	0.21	7	11
		19-1029	Biological Scientists, All Other	0.78	1	4
		19-1099	Life Scientists, All Other	0.96	1	2
26.0901	Physiology, General	19-1042	Medical Scientists, Except Epide- miologists	0.02	1	2

PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
27.0101	Mathematics, General	11-9121	Natural Sciences Managers	0.09	7	11
		15-2021	Mathematicians	0.99	8	11
		15-2041	Statisticians	0.87	8	11
		15-2099	Mathematical Science Occupations, All Other	0.99	8	11
30.0101	Biological and Physical Sciences	11-9121	Natural Sciences Managers	0.50	7	11
38.0101	Philosophy	25-1099	Postsecondary Teachers	0.03	3	5
38.0201	Religion/Religious Studies	25-1099	Postsecondary Teachers	0.01	3	5
40.0501	Chemistry, General	11-9121	Natural Sciences Managers	0.05	7	11
		19-2031	Chemists	1.00	4	7
40.0601	Geology/Earth Science, General	11-9121	Natural Sciences Managers	0.01	7	11
		19-2042	Geoscientists, Except Hydrologists and Geographers	0.97	3	6
		19-2043	Hydrologists	1.00	3	6
40.0801	Physics, General	11-9121	Natural Sciences Managers	0.03	7	11
		19-2012	Physicists	1.00	6	7
42.0101	Psychology, General	19-3031	Clinical, Counseling, and School Psychologists	0.92	1	1
		19-3032	Industrial-Organizational Psychologists	1.00	1	1
		19-3039	Psychologists, All Other	0.92	1	1
43.0102	Corrections	33-1011	First-Line Supervisors of Correctional Officers	1.00	58	71
		33-1012	First-Line Supervisors of Police and Detectives	0.07	44	59
		33-3012	Correctional Officers and Jailers	0.23	73	86
43.0107	Criminal Justice/Police Science	33-3011	Bailiffs	1.00	73	86
		33-3021	Detectives and Criminal Investigators	0.98	33	46
		33-3051	Police and Sheriff's Patrol Officers	0.98	49	66
		33-9021	Private Detectives and Investigators	1.00	38	50
		33-9031	Gaming Surveillance Officers and Gaming Investigators	0.60	74	84
43.0201	Fire Prevention and Safety Technology/Technician	33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	1.00	53	77
		33-2021	Fire Inspectors and Investigators	0.61	53	71
43.0203	Fire Science/Fire-fighting	33-2011	Firefighters	1.00	59	79
		33-2021	Fire Inspectors and Investigators	0.39	53	71
		33-2022	Forest Fire Inspectors and Prevention Specialists	1.00	53	71
44.0000	Human Services, General	11-9151	Social and Community Service Managers	0.03	25	31
		21-1011	Substance Abuse and Behavioral Disorder Counselors	0.28	16	21

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		21-1012	Educational, Guidance, School, and Vocational Counselors	0.50	16	21
		21-1013	Marriage and Family Therapists	0.31	16	21
		21-1014	Mental Health Counselors	0.26	16	21
		21-1015	Rehabilitation Counselors	0.87	16	21
		21-1019	Counselors, All Other	0.34	16	21
		21-1021	Child, Family, and School Social Workers	0.36	16	22
		21-1022	Healthcare Social Workers	1.00	16	22
		21-1023	Mental Health and Substance Abuse Social Workers	1.00	16	22
		21-1029	Social Workers, All Other	0.36	16	22
		21-1091	Health Educators	0.57	39	47
		21-1092	Probation Officers and Correctional Treatment Specialists	0.36	19	25
		21-1093	Social and Human Service Assistants	0.83	50	60
		21-1094	Community Health Workers	0.51	39	47
		21-1099	Community and Social Service Specialists, All Other	0.47	39	47
45.0101	Social Sciences, General	19-3099	Social Scientists and Related Workers, All Other	0.86	6	10
		19-4061	Social Science Research Assistants	1.00	42	54
45.0201	Anthropology	19-3091	Anthropologists and Archeologists	0.97	6	10
45.0601	Economics, General	19-3011	Economists	0.38	1	1
		19-3022	Survey Researchers	0.57	6	10
45.0701	Geography	19-3092	Geographers	0.55	6	10
45.0799	Geography, Other	19-3092	Geographers	0.45	6	10
45.1001	Political Science and Government, General	19-3094	Political Scientists	0.66	6	10
45.1101	Sociology	19-3041	Sociologists	1.00	6	10
46.0301	Electrical and Power Transmission Installation/Installer, General	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	0.43	82	89
		49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	0.56	64	89
		49-9051	Electrical Power-Line Installers and Repairers	1.00	83	94
46.0403	Building/Home/Construction Inspection/Inspector	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	0.09	82	89
		47-4011	Construction and Building Inspectors	1.00	61	73
47.0101	Electrical/Electronics Equipment Installation and Repair, General	49-2092	Electric Motor, Power Tool, and Related Repairers	1.00	77	93
		49-9011	Mechanical Door Repairers	0.55	84	95

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		49-9099	Installation, Maintenance, and Repair Workers, All Other	0.55	80	90
47.0104	Computer Installation and Repair Technology/Technician	49-2011	Computer, Automated Teller, and Office Machine Repairers	0.92	54	75
		49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	1.00	64	89
47.0603	Autobody/Collision and Repair Technology/Technician	49-3021	Automotive Body and Related Repairers	1.00	91	97
		49-3022	Automotive Glass Installers and Repairers	1.00	89	96
		51-9122	Painters, Transportation Equipment	1.00	93	97
47.0604	Automobile/Automotive Mechanics Technology/Technician	49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	1.00	64	89
		49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.00	76	95
		49-3023	Automotive Service Technicians and Mechanics	1.00	85	96
47.0605	Diesel Mechanics Technology/Technician	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1.00	87	97
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	49-2091	Avionics Technicians	0.99	65	87
		49-3011	Aircraft Mechanics and Service Technicians	0.56	69	90
		51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.56	85	93
47.0608	Aircraft Powerplant Technology/Technician	49-3011	Aircraft Mechanics and Service Technicians	0.44	69	90
		51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.44	85	93
47.0609	Avionics Maintenance Technology/Technician	49-2091	Avionics Technicians	0.01	65	87
		51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.00	85	93
48.0501	Machine Tool Technology/Machinist	51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	1.00	90	96
		51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	1.00	89	96
		51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	1.00	95	98
		51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	1.00	94	98

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1.00	88	98
		51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	0.41	92	97
		51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1.00	89	95
		51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	1.00	91	96
		51-4041	Machinists	0.41	86	97
		51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	0.41	91	96
		51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	0.41	90	94
		51-4192	Layout Workers, Metal and Plastic	0.41	91	96
		51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	0.41	87	94
		51-4199	Metal Workers and Plastic Workers, All Other	0.41	91	96
48.0508	Welding Technology/Welder	51-4121	Welders, Cutters, Solderers, and Brazers	1.00	92	98
		51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1.00	92	98
50.0101	Visual and Performing Arts, General	27-1012	Craft Artists	0.21	34	43
		27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	0.20	34	43
		27-1019	Artists and Related Workers, All Other	0.28	34	43
		27-4021	Photographers	0.20	42	52
50.0409	Graphic Design	27-1011	Art Directors	1.00	34	43
		27-1014	Multimedia Artists and Animators	0.53	34	43
		27-1019	Artists and Related Workers, All Other	0.59	34	43
		27-1024	Graphic Designers	0.45	31	44
		51-9123	Painting, Coating, and Decorating Workers	1.00	93	97
50.0501	Drama and Dramatics/Theatre Arts, General	27-2011	Actors	1.00	38	43
		27-2012	Producers and Directors	0.33	20	26
		27-2099	Entertainers and Performers, Sports and Related Workers, All Other	1.00	53	60

PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
50.0701	Art/Art Studies, General	27-1012	Craft Artists	0.76	34	43
		27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	0.71	34	43
		27-4021	Photographers	0.70	42	52
50.0901	Music, General	27-2042	Musicians and Singers	0.71	40	46
51.0805	Pharmacy Technician/Assistant	29-2052	Pharmacy Technicians	0.77	62	82
		31-9095	Pharmacy Aides	0.77	64	74
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	29-2041	Emergency Medical Technicians and Paramedics	0.70	65	85
		53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	1.00	81	89
51.0908	Respiratory Care Therapy/Therapist	29-1126	Respiratory Therapists	0.63	16	71
		29-2054	Respiratory Therapy Technicians	0.56	62	82
51.0911	Radiologic Technology/Science - Radiographer	29-2034	Radiologic Technologists	0.19	31	77
		29-2035	Magnetic Resonance Imaging Technologists	0.55	31	77
51.1501	Substance Abuse/Addiction Counseling	21-1011	Substance Abuse and Behavioral Disorder Counselors	0.66	16	21
		21-1014	Mental Health Counselors	0.62	16	21
51.1502	Psychiatric/Mental Health Services Technician	29-2053	Psychiatric Technicians	0.23	62	82
		31-1013	Psychiatric Aides	0.23	83	91
51.3801	Registered Nursing/Registered Nurse	29-1141	Registered Nurses	0.73	6	45
52.0201	Business Administration and Management, General	11-1011	Chief Executives	0.78	27	33
		11-1021	General and Operations Managers	0.79	42	51
		11-2022	Sales Managers	0.81	27	33
		11-3011	Administrative Services Managers	0.78	48	59
		11-3051	Industrial Production Managers	0.83	47	56
		11-3071	Transportation, Storage, and Distribution Managers	0.79	63	71
		11-9021	Construction Managers	0.82	59	66
		11-9151	Social and Community Service Managers	0.76	25	31
		11-9199	Managers, All Other	0.75	38	46
		13-1051	Cost Estimators	0.80	55	67
		13-1111	Management Analysts	0.83	18	23
		37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	1.00	83	89
		39-1011	Gaming Supervisors	1.00	58	68
39-1021	First-Line Supervisors of Personal Service Workers	1.00	64	74		

PERCENT OF WORKFORCE WITH GIVEN EDUCATION LEVEL

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
52.0203	Logistics, Materials, and Supply Chain Management	11-3071	Transportation, Storage, and Distribution Managers	0.01	63	71
		13-1081	Logisticians	1.00	44	58
52.0212	Retail Management	11-1021	General and Operations Managers	0.00	42	51
		25-1099	Postsecondary Teachers	0.00	3	5
		41-1011	First-Line Supervisors of Retail Sales Workers	0.14	66	75
52.0302	Accounting Technology/Technician and Bookkeeping	13-2082	Tax Preparers	0.99	41	50
		43-3021	Billing and Posting Clerks	1.00	70	83
		43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.89	72	83
		43-3041	Gaming Cage Workers	1.00	82	89
		43-3051	Payroll and Timekeeping Clerks	1.00	68	81
		43-4011	Brokerage Clerks	1.00	50	59
		43-9111	Statistical Assistants	1.00	56	67
52.0401	Administrative Assistant and Secretarial Science, General	43-6011	Executive Secretaries and Executive Administrative Assistants	0.44	67	81
		43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.00	67	81
52.1501	Real Estate	11-9141	Property, Real Estate, and Community Association Managers	1.00	52	61
		13-2021	Appraisers and Assessors of Real Estate	1.00	40	51
		41-9021	Real Estate Brokers	1.00	43	52
		41-9022	Real Estate Sales Agents	1.00	43	52
54.0101	History, General	19-3093	Historians	0.92	6	10

APPENDIX 3: PROGRAM GAP ANALYSIS METHODOLOGY

This appendix focuses on describing and understanding the methodology used in the program gap analysis. This requires data on both occupation demand (e.g., annual job openings) and education supply (e.g., number of postsecondary degree completions). These are then compared through an education “gap” analysis to determine whether an education program is potentially producing a surplus or shortage of workforce talent relative to the number of job openings. In this way, it is possible to see how the institution’s current programs are satisfying regional workforce needs.

SUPPLY AND DEMAND MODEL

EMSI builds a model using demand-side data (average annual openings) and supply-side data (postsecondary education output) to compare workforce demand with education supply. The purpose of this analysis is to find the difference or “gap” between the average annual openings for an occupation and the number of people completing postsecondary degrees for that occupation, whether at SBCCD or at another training provider within one of the regions. This makes it possible to identify whether there may be talent shortages or surpluses within the Economic Region.

The first step involves mapping the linkage between annual openings for a SOC code and the number of completions for an education program CIP code. The BLS provides information on the occupations that completers of specific CIP codes are more likely to enter. Specific connections have been refined through previous engagements with education institutions and state departments of labor. Some programs have direct occupational ties. For example, a physical therapist assistant is a specific occupation that requires specialized postsecondary training. In this case, one CIP code (physical therapy technician/assistant) maps

to only one SOC code (physical therapists assistants). This provides an easy comparison of annual openings for physical therapist assistants to the number of people completing the relevant program to see whether a talent shortage or surplus exists. Unfortunately, this is not always the case. More often than not an educational program maps to multiple occupations and an occupation maps to multiple educational programs. For this reason, EMSI has pioneered a method of de-duplicating completers, such that the potential sources of supply are not double-counted for any occupation. The details of this process are outlined in this chapter, under “De-duplication of Annual Openings.”

OCCUPATION DEMAND

Educational Level Adjustments

To capture occupation demand, EMSI uses a proprietary employment dataset that reflects total employment (i.e., employment covered by unemployment insurance as well as proprietor employment). The employment data reflects jobs for the first quarter of 2015. Within this dataset, EMSI calculates the number of regional annual job openings for the occupations that require two different levels of postsecondary training.⁷ The BLS also provides educational attainment data of current workers for each SOC code, broken out by their highest level of education attained. The data is presented as the percentage of workers in the SOC code with educational attainment ranging from less than a high school degree to an associate’s degree. Using these data, EMSI adjusts the annual opening estimates for each SOC code to only incorporate the percentage of workers for three different educational levels that correspond with SBCCD’s program offerings.

For example, as shown in Table A3.1, there are three

⁷ See Appendix 1 for a description of the sources and processes of EMSI data.

TABLE A3.1: EDUCATIONAL LEVEL ADJUSTMENTS

CIP CODE	CIP TITLE	SOC	TITLE	"SOME COLLEGE, NO DEGREE" OR POSTSECONDARY AWARD OR LOWER	ASSOCIATE'S DEGREE OR LOWER
43.0102	Corrections	33-3012	Correctional Officers and Jailers	75%	88%
		33-1012	First-Line Supervisors of Police and Detectives	46%	62%
		33-1011	First-Line Supervisors of Correctional Officers	61%	75%
Weighted Average				68%	85%

occupations trained for by Corrections (CIP code 43.0102). Within that cluster are an assortment of career fields, including correctional officers and jailers, first-line supervisors of police and detectives, and first-line supervisors of correctional officers. Among correctional officers, the majority of job openings (75%) are available to somebody with “some college” or a postsecondary vocational award. Alternatively, for first-line supervisors of police and detectives, only 46% of job openings are accessible to a person without a college degree. The weighted average of job openings is calculated for each program at each program/degree level where SBCCD has produced completers over the past three years. Not taking into account the educational attainment dynamics in this way would bias the result by over-counting potential job opportunities for completers.⁸

De-duplication of Annual Openings

Most educational programs are designed to train people for multiple occupational types, many of which are simultaneously linked with other educational programs. This presents a complexity when comparing supply and demand for any particular educational program. For instance, the Computer Systems Networking & Telecommunications program is mapped to three different occupations: computer support specialists, information security analysts, and computer systems analysts. If we focus on just one of the occupations for this list—computer support specialists—it is also mapped to 10 different educational programs, spanning program titles such as Computer Systems Analysis and Medical Office Computer Specialist.

To ensure that no double-counting occurs, it is necessary to either realign the program groupings to eliminate the mapping of occupations to multiple programs, or to determine what proportion of demand should be com-

pared with supply numbers from each program. EMSI takes the second approach in this analysis, which has the advantage of maintaining the program titles and descriptions in roughly the same format that completer data were originally delivered to EMSI. EMSI uses a formula that favors program types with the largest number of completers, attributing a greater proportion of demand to these than the programs which produce a smaller number of completers. This method utilizes the assumption that the higher output educational programs are likely feeding a higher degree of demand within the Economic Region.⁹ Appendix 2 contains the detailed mapping of each CIP code to all relevant occupations.

One possible criticism of this methodology is that it assumes, all else being equal, students from higher-output programs are more likely to obtain a job than students from lower-output programs, whereas in reality students are judged more by their skills and merits than their educational program of study. The intention of the analysis is not to rate students’ capability of competing for jobs, but rather to capture the unique dynamics of the local labor market. For example, in a region where a unique program such as Commercial and Advertising Art is more prevalent than Graphic Design, it can safely be assumed that the graduates of the Commercial and Advertising Art program will be offered a larger number of local openings than are students from the Graphic Design program. If such were not the case, it would be unlikely for the Commercial and Advertising Art program to remain the producer of local talent in the long-term, as the program would yield students to a program with a more successful job placement

⁸ Given the changing dynamics and need for more education in the existing workforce (i.e., skills-biased technology change in many occupations and industry sectors), this assumption is considered conservative.

⁹ Note this adjustment is performed on a program-by-program basis without consideration of individual colleges or training providers. Therefore, a single program offered at one large institution has no advantage over a group of similar programs offered a number of smaller educational providers provided that the aggregate output of the smaller schools is near the output of the single larger school.

rate.

Recognizing that some smaller programs produce students who are more capable of obtaining local jobs than students from larger programs, EMSI also provides an alternative gap analysis, which does not reduce the number of annual openings based on the size of each educational program. Rather the total number of annual openings available for students at each educational level is provided without further modification. Due to this modification, these numbers have not been de-duplicated, unlike the annual openings figures shown in Chapter 2. These figures are provided in Appendix 4: Alternative Supply and Demand Calculations.

EDUCATION OUTPUT

There are several educational institutions in the Economic Region, some of which have programs similar to those offered at SBVC and CHC. Hence completers at SBVC and

CHC will be competing for some jobs with completers from other regional institutions. EMSI determined education output by Classification of Instructional Program (CIP) codes and identified the number of completers for every award level within those CIP codes. To find the output for all public and private education institutions in the Economic Region, EMSI used data from the Integrated Postsecondary Educational System (IPEDS).¹⁰ These data are publicly available through the National Center for Educational Statistics. Completions data were averaged for a three-year period, 2012 through 2014, to smooth out any bumps in enrollment that may be unique to a particular academic year. Data gathered for SBVC and CHC from IPEDS were reviewed for accuracy by both SBVC and CHC.

Tables A3.2 and A3.3 on the following pages display the completion breakdown by institution and award type. SBVC and CHC are two of many institutions in this region, granting 386 certificates and 841 associate's degrees at SBVC and granting 302 certificates and 426 associate's degrees at CHC, which are 7% of both totals.

10 These data come with inherent weaknesses. First, numbers are only available for institutions that participate in or are applicants for any federal financial assistance program authorized by the Higher Education Act (HEA). Also, IPEDS does not account for the fact that some people may receive multiple degrees or certifications, so when the number of degrees awarded exceeds the number of people receiving the degrees, the number of completers can be overstated. Nevertheless, this system is the best source for collecting data regarding a broad range of educational institutions.

TABLE A3.2: SUMMARY OF POSTSECONDARY CERTIFICATE LEVEL REGIONAL COMPLETIONS BY INSTITUTION

INSTITUTION	3-YEAR AVERAGE	PERCENT OF TOTAL
Advance Beauty Techs Academy	30	0%
American Career College-Ontario	873	6%
American College of Healthcare	251	2%
Argosy University-Inland Empire	1	0%
Ashdown College of Health Sciences	6	0%
Barstow Community College	12	0%
Beaumont Adult School	73	0%
Bridges Academy of Beauty	2	0%
California Nurses Educational Institute	177	1%
CET-Coachella	115	1%
CET-Rancho Temecula	91	1%
CET-San Bernardino	141	1%
Chaffey College	814	5%
Champion Institute of Cosmetology	43	0%
Coachella Valley Beauty College	53	0%
Coachella Valley Beauty College-Beaumont	2	0%
Coast Career Institute	119	1%
College of the Desert	189	1%
Colton-Redlands-Yucaipa Regional Occupational Program	177	1%
Computer Training Academy	52	0%
Concorde Career College-San Bernardino	492	3%
Copper Mountain Community College	44	0%
Crafton Hills College	302	2%
Elite Cosmetology School	51	0%
Everest College-Ontario	608	4%
Everest College-San Bernardino	377	2%
Fab School	59	0%
Four-D College	428	3%
Franklin Career College	30	0%
InterCoast Colleges-Riverside	202	1%
International School of Beauty Inc	202	1%
Kaplan College-Palm Springs	283	2%
Kaplan College-Riverside	185	1%
La Sierra University	84	1%
Loma Linda University	42	0%

INSTITUTION	3-YEAR AVERAGE	PERCENT OF TOTAL
Marinello Schools of Beauty-Hemet	886	6%
Marinello Schools of Beauty-Moreno Valley	216	1%
Mayfield College	280	2%
Milan Institute of Cosmetology-La Quinta	69	0%
Milan Institute-Palm Desert	188	1%
Mojave Barber College	8	0%
Moreno Valley College	410	3%
Mt San Jacinto Community College District	235	2%
Norco College	344	2%
North-West College-Riverside	145	1%
Palo Verde College	232	2%
Paul Mitchell the School-Temecula	172	1%
Platt College-Ontario	2	0%
Riverside City College	1,001	7%
Riverside County Office of Education	257	2%
Royale College of Beauty	45	0%
Sage College	35	0%
Salon Success Academy-Corona	84	1%
Salon Success Academy-Fontana	32	0%
Salon Success Academy-Redlands	86	1%
Salon Success Academy-San Bernardino	25	0%
Salon Success Academy-Upland	127	1%
San Bernardino Valley College	386	3%
San Joaquin Valley College-Hesperia	11	0%
San Joaquin Valley College-Ontario	5	0%
San Joaquin Valley College-Temecula	42	0%
Summit College	937	6%
The Art Institute of California-Argosy University Inland Empire	35	0%
The University of America	12	0%
Universal Technical Institute of California Inc	1,335	9%
University of Redlands	117	1%
Victor Valley Beauty College Inc	65	0%
Victor Valley College	249	2%
Westech College	422	3%
Westwood College-Inland Empire	14	0%
Grand Total	15,119	100%

Source: IPEDS; SBCCD

TABLE A3.3: SUMMARY OF ASSOCIATE’S DEGREE REGIONAL COMPLETIONS BY INSTITUTION

INSTITUTION	3-YEAR AVERAGE	PERCENT OF TOTAL
American Career College-Ontario	137	1%
Argosy University-Inland Empire	1	0%
Ashdown College of Health Sciences	23	0%
Barstow Community College	296	2%
Chaffey College	1,668	14%
College of the Desert	616	5%
Community Christian College	9	0%
Concorde Career College-San Bernardino	112	1%
Copper Mountain Community College	171	1%
Crafton Hills College	426	3%
Everest College-Ontario Metro	288	2%
Everest College-San Bernardino	53	0%
Four-D College	2	0%
ITT Technical Institute-Corona	121	1%
ITT Technical Institute-San Bernardino	298	2%
Kaplan College-Palm Springs	38	0%
Kaplan College-Riverside	33	0%
Loma Linda University	105	1%
Mayfield College	0	0%
Moreno Valley College	488	4%
Mt San Jacinto Community College District	1,632	13%
Norco College	714	6%
Palo Verde College	108	1%
Platt College-Ontario	230	2%
Platt College-Riverside	59	0%
Professional Golfers Career College	207	2%
Riverside City College	1,583	13%
Sage College	14	0%
San Bernardino Valley College	841	7%
San Joaquin Valley College-Hesperia	265	2%
San Joaquin Valley College-Ontario	326	3%
San Joaquin Valley College-Temecula	33	0%
The Art Institute of California-Argosy University Inland Empire	280	2%
The University of America	6	0%
Victor Valley College	968	8%
West Coast University-Ontario	6	0%
Westwood College-Inland Empire	66	1%
Grand Total	12,225	100%

Source: IPEDS; SBCCD

APPENDIX 4: ALTERNATIVE GAP ANALYSIS CALCULATIONS

EMSI de-duplicated the annual openings shown in Chapter 2 to account for the magnitude of output from different educational programs in the region. The process is explained in detail in Appendix 3 under “De-duplication of Annual Openings.” This procedure is designed to reflect the unique supply and demand dynamics of each regional economy. However, EMSI also recognizes that in some cases a student from a less predominant educational program is a more likely candidate to be offered a local job. These alternative supply and demand calculations give equal weight to every job opportunity within students’ field of study, regardless of whether that program is a big or small player in talent development for the region. Therefore, these estimates should be considered as less conservative measures than those from Chapter 2.

ALTERNATIVE GAP ANALYSIS TABLES

TABLE A4.1: ALTERNATIVE SUPPLY AND DEMAND FOR SBVC’S POSTSECONDARY CERTIFICATE PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
12.0500	Cooking and Related Culinary Arts, General	1306.30	Culinary Arts	2,650	45	9	2,604
52.0201	Business Administration and Management, General	505.00	Business Administration	1,381	105	1	1,276
52.1501	Real Estate	511.00	Real Estate	1,124	36	4	1,088
52.0212	Retail Management	506.50	Retail Store Operations and Management	1,013	10	6	1,003
12.0504	Restaurant, Culinary, and Catering Management/Manager	1307.10	Restaurant and Food Services and Management	621	15	4	606
19.0505	Foodservice Systems Administration/Management	1306.20	Dietetic Services and Management	607	8	1	599
52.0302	Accounting Technology/Technician and Bookkeeping	502.00	Accounting	602	88	15	514
19.0709	Child Care Provider/Assistant	1305.00	Child Development/ Early Care and Education	888	477	36	411
52.0401	Administrative Assistant and Secretarial Science, General	514.00	Office Technology/ Office Computer Applications	529	127	10	402
48.0501	Machine Tool Technology/Machinist	956.30	Machining and Machine Tools	233	10	10	222
44.0000	Human Services, General	2104.00	Human Services	244	37	9	206
46.0403	Building/Home/ Construction Inspection/Inspector	957.20	Construction Inspection	182	24	3	158
43.0102	Corrections	2105.10	Corrections	154	30	4	125
47.0101	Electrical/ Electronics Equipment Installation and Repair, General	934.00	Electronics and Electric Technology	141	20	12	120
11.0201	Computer Programming/ Programmer, General	707.00	Computer Software Development	139	35	1	104

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician	946.00	Environmental Control Technology	134	57	7	77
50.0409	Graphic Design	1030.00	Graphic Art and Design	116	40	5	76
25.0301	Library and Archives Assisting	1602.00	Library Technician (Aide)	82	8	8	75
46.0301	Electrical and Power Transmission Installation/Installer, General	934.40	Electrical Systems and Power Transmission	200	136	4	64
52.0203	Logistics, Materials, and Supply Chain Management	510.00	Logistics and Materials Transportation	80	22	0	58
19.0708	Child Care and Support Services Management	1305.80	Child Development Administration and Management	58	2	1	55
47.0603	Autobody/Collision and Repair Technology/Technician	949.00	Automotive Collision Repair	97	45	38	52
47.0104	Computer Installation and Repair Technology/Technician	934.10	Computer Electronics	54	3	3	50
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	165	143	26	22
14.1004	Telecommunications Engineering	934.30	Telecommunications Technology	23	1	0	22
11.0103	Information Technology	702.00	Computer Information Systems	70	49	2	21
15.0613	Manufacturing Engineering Technology/Technician	956.00	Manufacturing and Industrial Technology	21	3	1	18
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician	958.00	Water and Wastewater Technology	43	28	9	15
9.0701	Radio and Television	604.00	Radio and Television	28	15	2	12
47.0609	Avionics Maintenance Technology/Technician	950.40	Aircraft Electronics (Avionics)	6	0	0	6
19.0707	Family and Community Services	1305.60	Parenting and Family Education	0	0	0	0
47.0608	Aircraft Powerplant Technology/Technician	950.20	Aviation Powerplant Mechanics	37	44	14	(7)
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	614.10	Multimedia	21	28	4	(7)
13.1015	Education/Teaching of Individuals in Early Childhood Special Education Programs	1305.20	Children with Special Needs	6	13	4	(7)
45.0799	Geography, Other	2206.10	Geographic Information Systems	0	11	6	(11)
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician	950.00	Aeronautical and Aviation Technology	40	55	25	(15)
51.1502	Psychiatric/Mental Health Services Technician	1239.00	Psychiatric Technician	15	34	34	(18)
4.0901	Architectural Technology/Technician	201.00	Architecture and Architectural Technology	6	27	0	(21)
47.0605	Diesel Mechanics Technology/Technician	947.00	Diesel Technology	147	180	5	(33)
48.0508	Welding Technology/Welder	956.50	Welding Technology	136	228	3	(92)
51.1501	Substance Abuse/Addiction Counseling	2104.40	Alcohol and Controlled Substances	19	201	27	(181)
51.0805	Pharmacy Technician/Assistant	1221.00	Pharmacy Technology	99	432	13	(333)
47.0604	Automobile/Automotive Mechanics Technology/Technician	948.00	Automotive Technology	524	1,307	13	(783)

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding

TABLE A4.2: ALTERNATIVE SUPPLY AND DEMAND FOR SBVC'S ASSOCIATE'S DEGREES

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
52.1501	Real Estate	511.00	Real Estate	1,317	18	2	1,299
52.0201	Business Administration and Management, General	505.00	Business Administration	1,534	405	53	1,128
12.0504	Restaurant, Culinary, and Catering Management/Manager	1307.10	Restaurant and Food Services and Management	675	11	2	664
52.0302	Accounting Technology/Technician and Bookkeeping	502.00	Accounting	610	108	21	502
52.0401	Administrative Assistant and Secretarial Science, General	514.00	Office Technology/Office Computer Applications	511	45	10	466
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care and Education	528	156	20	372
48.0501	Machine Tool Technology/Machinist	956.30	Machining and Machine Tools	244	1	1	243
44.0000	Human Services, General	2104.00	Human Services	273	35	26	238
46.0403	Building/Home/Construction Inspection/Inspector	957.20	Construction Inspection	178	6	2	172
50.0701	Art/Art Studies, General	1002.00	Art	172	40	6	132
47.0101	Electrical/Electronics Equipment Installation and Repair, General	934.00	Electronics and Electric Technology	139	9	4	130
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician	946.00	Environmental Control Technology	98	7	1	91
25.0301	Library and Archives Assisting	1602.00	Library Technician (Aide)	90	4	4	87
50.0901	Music, General	1004.00	Music	102	17	1	85
46.0301	Electrical and Power Transmission Installation/Installer, General	934.40	Electrical Systems and Power Transmission	85	11	3	73
19.0708	Child Care and Support Services Management	1305.80	Child Development Administration and Management	76	10	1	66
50.0409	Graphic Design	1030.00	Graphic Art and Design	114	51	7	63
47.0104	Computer Installation and Repair Technology/Technician	934.10	Computer Electronics	70	11	1	59
47.0603	Autobody/Collision and Repair Technology/Technician	949.00	Automotive Collision Repair	58	3	0	56
14.1004	Telecommunications Engineering	934.30	Telecommunications Technology	38	1	1	37
47.0604	Automobile/Automotive Mechanics Technology/Technician	948.00	Automotive Technology	69	42	1	27
15.0613	Manufacturing Engineering Technology/Technician	956.00	Manufacturing and Industrial Technology	27	1	1	26
3.0104	Environmental Science	301.00	Environmental Science	13	1	0	12
9.0701	Radio and Television	604.00	Radio and Television	18	14	5	4
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Tech.	950.00	Aeronautical and Aviation Technology	11	7	2	4
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician	958.00	Water and Wastewater Technology	22	20	11	2
48.0508	Welding Technology/Welder	956.50	Welding Technology	9	8	1	1
9.0101	Speech Communication and Rhetoric	1506.00	Speech Communication	60	62	1	(2)
45.0701	Geography	2206.00	Geography	0	4	2	(4)
23.0101	English Language and Literature, General	1501.00	English	20	26	1	(6)

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
13.1015	Education/Teaching of Individuals in Early Childhood Special Education Programs	1305.20	Children with Special Needs	2	8	2	(6)
40.0801	Physics, General	1902.00	Physics, General	1	11	2	(10)
4.0901	Architectural Technology/Technician	201.00	Architecture and Architectural Technology	5	15	0	(10)
40.0501	Chemistry, General	1905.00	Chemistry, General	2	12	7	(10)
51.1502	Psychiatric/Mental Health Services Technician	1239.00	Psychiatric Technician	3	14	14	(11)
26.0101	Biology/Biological Sciences, Gen.	401.00	Biology, General	1	19	5	(18)
45.0201	Anthropology	2202.00	Anthropology	0	19	0	(19)
11.0103	Information Technology	702.00	Computer Information Systems	50	85	1	(35)
51.0805	Pharmacy Technician/Assistant	1221.00	Pharmacy Technology	29	87	13	(58)
27.0101	Mathematics, General	1701.00	Mathematics, General	2	70	15	(68)
22.0302	Legal Assistant/Paralegal	1402.00	Paralegal	25	105	1	(81)
45.1101	Sociology	2208.00	Sociology	0	93	7	(93)
42.0101	Psychology, General	2001.00	Psychology, General	1	97	4	(95)
51.3801	Registered Nursing/Registered Nurse	1230.00	Nursing	409	558	79	(149)
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	79	274	47	(196)
24.0101	Liberal Arts and Sciences/Liberal Studies	4901.00	Liberal Arts and Sciences, General	9	1,163	230	(1,154)
30.0101	Biological and Physical Sciences	4902.00	Biological and Physical Sciences (& Mathematics)	1	1,500	124	(1,499)

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding

TABLE A4.3: ALTERNATIVE SUPPLY AND DEMAND FOR CHC'S POSTSECONDARY CERTIFICATE PROGRAMS

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
52.0201	Business Administration and Management, General	505.00	Business Administration	1,381	105	2	1,276
52.0302	Accounting Technology/Technician and Bookkeeping	502.00	Accounting	602	88	1	514
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care and Education	888	477	6	411
50.0901	Music, General	1004.00	Music	101	13	1	88
11.0803	Computer Graphics	614.60	Computer Graphics and Digital Imagery	68	11	0	57
16.1601	American Sign Language (ASL)	850.00	Sign Language	42	6	6	36
11.1004	Web/Multimedia Management and Webmaster	709.00	World Wide Web Administration	29	2	0	27
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	165	143	0	22
11.0103	Information Technology	702.00	Computer Information Systems	70	49	11	21
43.0203	Fire Science/Fire-fighting	2133.50	Fire Academy	81	68	39	13
51.0911	Radiologic Technology/Science - Radiographer	1225.00	Radiologic Technology	22	9	9	13
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	614.10	Multimedia	21	28	0	(7)
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	1250.00	Emergency Medical Services	85	348	225	(263)

Source: EMSI Gap Analysis Model
Numbers may not sum due to rounding

TABLE A4.4: ALTERNATIVE SUPPLY AND DEMAND FOR CHC'S ASSOCIATE'S DEGREES

CIP	PROGRAM	TOP	TOP TITLE	DEMAND	SUPPLY	SCHOOL COMPLETERS	GAP
52.0201	Business Administration and Management, General	505.00	Business Administration	1,534	405	39	1,128
19.0709	Child Care Provider/Assistant	1305.00	Child Development/Early Care and Education	528	156	5	372
50.0701	Art/Art Studies, General	1002.00	Art	172	40	4	132
50.0101	Visual & Performing Arts, General	1001.00	Fine Arts, General	181	53	3	128
50.0901	Music, General	1004.00	Music	102	17	2	85
16.0302	Japanese Language and Literature	1108.00	Japanese	57	2	2	55
50.0501	Drama and Dramatics/Theatre Arts, General	1007.00	Dramatic Arts	70	16	5	53
16.0905	Spanish Language and Literature	1105.00	Spanish	57	9	6	48
16.1601	American Sign Language (ASL)	850.00	Sign Language	51	10	6	41
51.0911	Radiologic Technology/Science - Radiographer	1225.00	Radiologic Technology	44	26	6	18
38.0201	Religion/Religious Studies	1510.00	Religious Studies	20	7	0	13
3.0104	Environmental Science	301.00	Environmental Science	13	1	1	12
38.0101	Philosophy	1509.00	Philosophy	20	12	0	8
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	1250.00	Emergency Medical Services	25	18	10	6
40.0601	Geology/Earth Science, General	1914.00	Geology	1	1	1	0
26.0901	Physiology, General	410.00	Anatomy and Physiology	0	2	2	(1)
9.0101	Speech Communication and Rhetoric	1506.00	Speech Communication	60	62	7	(2)
45.0701	Geography	2206.00	Geography	0	4	1	(4)
23.0101	English Language and Literature, General	1501.00	English	20	26	8	(6)
40.0801	Physics, General	1902.00	Physics, General	1	11	3	(10)
40.0501	Chemistry, General	1905.00	Chemistry, General	2	12	2	(10)
26.0101	Biology/Biological Sciences, Gen.	401.00	Biology, General	1	19	3	(18)
45.0201	Anthropology	2202.00	Anthropology	0	19	1	(19)
45.1001	Political Science and Government, General	2207.00	Political Science	0	20	5	(20)
45.0601	Economics, General	2204.00	Economics	1	22	4	(21)
11.0103	Information Technology	702.00	Computer Information Systems	50	85	4	(35)
54.0101	History, General	2205.00	History	0	39	9	(39)
27.0101	Mathematics, General	1701.00	Mathematics, General	2	70	11	(68)
43.0201	Fire Prevention and Safety Technology/Technician	2133.00	Fire Technology	4	87	21	(82)
45.1101	Sociology	2208.00	Sociology	0	93	25	(93)
42.0101	Psychology, General	2001.00	Psychology, General	1	97	27	(95)
43.0107	Criminal Justice/Police Science	2105.00	Administration of Justice	79	274	4	(196)
51.0908	Respiratory Care Therapy/Therapist	1210.00	Respiratory Care/Therapy	24	236	31	(212)
45.0101	Social Sciences, General	2201.00	Social Sciences, General	7	536	60	(529)
24.0101	Liberal Arts and Sciences/Liberal Studies	4901.00	Liberal Arts and Sciences, General	9	1,163	25	(1,154)
30.0101	Biological and Physical Sciences	4902.00	Biological and Physical Sciences (& Mathematics)	1	1,500	85	(1,499)

Source: EMSI Gap Analysis Model
 Numbers may not sum due to rounding

APPENDIX 5: DETAILED EMPLOYMENT PROJECTIONS

Table A5.1 displays the occupations that align with one or more of SBCCD’s educational programs. The programs with which they align can be found in Table A2.1. Table A5.2 displays the occupations that align with one or more of the programs discussed in the analysis of potential new programs (Tables 2.3). Note that if an occupation appears in Table A5.1, it is usually not included in Table A5.2.

TABLE A5.1: DETAILED EMPLOYMENT PROJECTIONS RELATED TO EXISTING PROGRAMS

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	PERCENT CHANGE	PROJECTED ANNUAL OPENINGS
11-1011	Chief Executives	5,119	6,307	1,188	23%	246
11-1021	General and Operations Managers	21,368	24,488	3,120	15%	744
11-2022	Sales Managers	5,283	6,109	826	16%	205
11-3011	Administrative Services Managers	2,523	2,945	422	17%	87
11-3051	Industrial Production Managers	1,493	1,547	54	4%	39
11-3071	Transportation, Storage, and Distribution Managers	2,006	2,504	498	25%	103
11-9021	Construction Managers	5,495	5,299	(196)	(4%)	133
11-9041	Architectural and Engineering Managers	1,149	1,218	69	6%	37
11-9051	Food Service Managers	7,193	8,550	1,357	19%	280
11-9121	Natural Sciences Managers	255	267	12	5%	7
11-9141	Property, Real Estate, and Community Association Managers	16,587	20,126	3,539	21%	802
11-9151	Social and Community Service Managers	1,256	1,670	414	33%	73
11-9199	Managers, All Other	17,843	22,665	4,822	27%	939
13-1051	Cost Estimators	2,639	2,947	308	12%	127
13-1081	Logisticians	928	1,170	242	26%	37
13-1111	Management Analysts	9,101	11,074	1,973	22%	357
13-2021	Appraisers and Assessors of Real Estate	5,112	5,413	301	6%	92
13-2082	Tax Preparers	1,878	2,366	488	26%	93
15-1111	Computer and Information Research Scientists	116	127	11	9%	3
15-1121	Computer Systems Analysts	2,662	3,387	725	27%	121
15-1122	Information Security Analysts	156	226	70	45%	10
15-1131	Computer Programmers	1,468	1,659	191	13%	61
15-1132	Software Developers, Applications	3,114	3,743	629	20%	107
15-1133	Software Developers, Systems Software	826	1,126	300	36%	43
15-1134	Web Developers	1,855	2,498	643	35%	99
15-1143	Computer Network Architects	308	360	52	17%	13
15-1151	Computer User Support Specialists	3,987	4,776	789	20%	148
15-1152	Computer Network Support Specialists	1,070	1,187	117	11%	30

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	PERCENT CHANGE	PROJECTED ANNUAL OPENINGS
15-2021	Mathematicians	22	26	4	18%	1
15-2041	Statisticians	91	133	42	46%	8
15-2099	Mathematical Science Occupations, All Other	<10	<10	--	--	0
17-2072	Electronics Engineers, Except Computer	1,109	1,145	36	3%	29
17-2112	Industrial Engineers	844	940	96	11%	36
17-2199	Engineers, All Other	1,133	1,245	112	10%	35
17-3011	Architectural and Civil Drafters	878	843	(35)	(4%)	14
17-3026	Industrial Engineering Technicians	351	355	4	1%	9
19-1029	Biological Scientists, All Other	271	254	(17)	(6%)	8
19-1042	Medical Scientists, Except Epidemiologists	837	915	78	9%	27
19-1099	Life Scientists, All Other	54	64	10	19%	2
19-2012	Physicists	26	34	8	31%	2
19-2031	Chemists	392	438	46	12%	16
19-2041	Environmental Scientists and Specialists, Including Health	1,428	1,586	158	11%	61
19-2042	Geoscientists, Except Hydrologists and Geographers	275	296	21	8%	11
19-2043	Hydrologists	46	52	6	13%	2
19-3011	Economists	199	227	28	14%	9
19-3022	Survey Researchers	93	142	49	53%	7
19-3031	Clinical, Counseling, and School Psychologists	3,559	4,219	660	19%	174
19-3032	Industrial-Organizational Psychologists	41	53	12	29%	2
19-3039	Psychologists, All Other	489	592	103	21%	26
19-3041	Sociologists	12	14	2	17%	1
19-3091	Anthropologists and Archeologists	111	129	18	16%	4
19-3092	Geographers	<10	<10	--	--	0
19-3093	Historians	114	114	0	0%	3
19-3094	Political Scientists	21	28	7	33%	1
19-3099	Social Scientists and Related Workers, All Other	202	216	14	7%	5
19-4061	Social Science Research Assistants	106	165	59	56%	12
19-4091	Environmental Science and Protection Technicians, Including Health	230	295	65	28%	17
21-1011	Substance Abuse and Behavioral Disorder Counselors	1,220	1,449	229	19%	52
21-1012	Educational, Guidance, School, and Vocational Counselors	2,481	2,733	252	10%	81
21-1013	Marriage and Family Therapists	521	637	116	22%	24
21-1014	Mental Health Counselors	1,575	1,906	331	21%	71
21-1015	Rehabilitation Counselors	1,748	2,169	421	24%	85
21-1019	Counselors, All Other	325	385	60	18%	14
21-1021	Child, Family, and School Social Workers	1,837	2,189	352	19%	79
21-1022	Healthcare Social Workers	1,729	2,285	556	32%	100
21-1023	Mental Health and Substance Abuse Social Workers	921	1,117	196	21%	42
21-1029	Social Workers, All Other	1,368	1,481	113	8%	42
21-1091	Health Educators	471	552	81	17%	22
21-1092	Probation Officers and Correctional Treatment Specialists	1,003	1,032	29	3%	30
21-1093	Social and Human Service Assistants	3,135	3,977	842	27%	181
21-1094	Community Health Workers	425	550	125	29%	26
21-1099	Community and Social Service Specialists, All Other	954	1,136	182	19%	46

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	PERCENT CHANGE	PROJECTED ANNUAL OPENINGS
23-2011	Paralegals and Legal Assistants	2,399	2,779	380	16%	81
23-2093	Title Examiners, Abstractors, and Searchers	1,019	1,267	248	24%	44
23-2099	Legal Support Workers, All Other	637	726	89	14%	20
25-1099	Postsecondary Teachers	10,758	12,829	2,071	19%	387
25-2011	Preschool Teachers, Except Special Education	3,908	4,203	295	8%	148
25-2051	Special Education Teachers, Preschool	171	221	50	29%	9
25-2052	Special Education Teachers, Kindergarten and Elementary School	2,078	2,231	153	7%	53
25-4031	Library Technicians	1,211	1,334	123	10%	81
25-9011	Audio-Visual and Multimedia Collections Specialists	151	154	3	2%	2
25-9021	Farm and Home Management Advisors	82	95	13	16%	2
27-1011	Art Directors	1,406	1,654	248	18%	63
27-1012	Craft Artists	830	989	159	19%	39
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	976	1,165	189	19%	45
27-1014	Multimedia Artists and Animators	1,399	1,658	259	19%	63
27-1019	Artists and Related Workers, All Other	431	518	87	20%	20
27-1021	Commercial and Industrial Designers	628	728	100	16%	29
27-1024	Graphic Designers	3,694	4,426	732	20%	182
27-2011	Actors	1,276	1,501	225	18%	69
27-2012	Producers and Directors	683	859	176	26%	45
27-2042	Musicians and Singers	4,149	5,329	1,180	28%	250
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	1,243	1,559	316	25%	49
27-3011	Radio and Television Announcers	545	666	121	22%	27
27-3012	Public Address System and Other Announcers	545	742	197	36%	34
27-3021	Broadcast News Analysts	126	176	50	40%	10
27-3031	Public Relations Specialists	1,346	1,652	306	23%	52
27-3043	Writers and Authors	3,707	4,747	1,040	28%	198
27-3091	Interpreters and Translators	2,837	3,529	692	24%	114
27-4021	Photographers	8,445	10,038	1,593	19%	260
27-4032	Film and Video Editors	219	291	72	33%	9
29-1031	Dietitians and Nutritionists	825	1,032	207	25%	32
29-1126	Respiratory Therapists	1,256	1,480	224	18%	43
29-1141	Registered Nurses	25,346	30,554	5,208	21%	1075
29-2034	Radiologic Technologists	1,394	1,777	383	27%	61
29-2035	Magnetic Resonance Imaging Technologists	169	228	59	35%	9
29-2041	Emergency Medical Technicians and Paramedics	2,151	2,701	550	26%	123
29-2052	Pharmacy Technicians	3,234	4,145	911	28%	129
29-2053	Psychiatric Technicians	1,183	1,142	(41)	(3%)	12
29-2054	Respiratory Therapy Technicians	62	77	15	24%	2
31-1013	Psychiatric Aides	426	439	13	3%	10
31-9095	Pharmacy Aides	824	956	132	16%	31
33-1011	First-Line Supervisors of Correctional Officers	592	638	46	8%	26
33-1012	First-Line Supervisors of Police and Detectives	314	378	64	20%	17
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	267	313	46	17%	17
33-2011	Firefighters	3,615	3,940	325	9%	136

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	PERCENT CHANGE	PROJECTED ANNUAL OPENINGS
33-2021	Fire Inspectors and Investigators	45	53	8	18%	2
33-2022	Forest Fire Inspectors and Prevention Specialists	<10	<10	--	--	0
33-3011	Bailiffs	13	22	9	69%	1
33-3012	Correctional Officers and Jailers	4,858	5,315	457	9%	182
33-2021	Detectives and Criminal Investigators	1,128	1,180	52	5%	31
33-3051	Police and Sheriff's Patrol Officers	6,145	6,780	635	10%	267
33-9021	Private Detectives and Investigators	671	944	273	41%	53
33-9031	Gaming Surveillance Officers and Gaming Investigators	130	138	8	6%	3
35-1011	Chefs and Head Cooks	2,159	2,510	351	16%	74
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	10,134	12,428	2,294	23%	558
35-2012	Cooks, Institution and Cafeteria	3,065	3,770	705	23%	139
35-2014	Cooks, Restaurant	12,482	15,307	2,825	23%	561
35-2019	Cooks, All Other	219	278	59	27%	11
35-2021	Food Preparation Workers	9,966	11,349	1,383	14%	448
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	4,120	4,682	562	14%	167
39-1011	Gaming Supervisors	227	254	27	12%	8
39-1021	First-Line Supervisors of Personal Service Workers	3,411	4,018	607	18%	137
39-9011	Childcare Workers	28,167	31,042	2,875	10%	1191
39-9021	Personal Care Aides	18,695	30,872	12,177	65%	1409
41-1011	First-Line Supervisors of Retail Sales Workers	26,011	29,350	3,339	13%	1047
41-9021	Real Estate Brokers	9,172	10,434	1,262	14%	241
41-9022	Real Estate Sales Agents	48,515	55,663	7,148	15%	1314
43-3021	Billing and Posting Clerks	4,968	6,045	1,077	22%	211
43-3031	Bookkeeping, Accounting, and Auditing Clerks	17,678	20,788	3,110	18%	489
43-3041	Gaming Cage Workers	166	171	5	3%	4
43-3051	Payroll and Timekeeping Clerks	2,274	2,538	264	12%	82
43-4011	Brokerage Clerks	149	146	(3)	(2%)	4
43-4121	Library Assistants, Clerical	1,186	1,379	193	16%	76
43-6011	Executive Secretaries and Executive Administrative Assistants	6,051	6,483	432	7%	120
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	23,113	26,730	3,617	16%	668
43-9111	Statistical Assistants	44	53	9	20%	2
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	7,694	8,018	324	4%	174
47-4011	Construction and Building Inspectors	1,399	1,672	273	20%	65
49-2011	Computer, Automated Teller, and Office Machine Repairers	1,686	2,046	360	21%	76
49-2091	Avionics Technicians	59	81	22	37%	4
49-2092	Electric Motor, Power Tool, and Related Repairers	88	90	2	2%	2
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	164	178	14	9%	5
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	590	657	67	11%	19
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	73	87	14	19%	3
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	175	177	2	1%	2
49-3011	Aircraft Mechanics and Service Technicians	1,046	1,220	174	17%	49

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	PERCENT CHANGE	PROJECTED ANNUAL OPENINGS
49-3021	Automotive Body and Related Repairers	1,858	2,100	242	13%	74
49-3022	Automotive Glass Installers and Repairers	248	283	35	14%	13
49-3023	Automotive Service Technicians and Mechanics	12,475	15,070	2,595	21%	612
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	4,609	5,247	638	14%	169
49-9011	Mechanical Door Repairers	162	197	35	22%	10
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3,887	4,444	557	14%	162
49-9051	Electrical Power-Line Installers and Repairers	1,216	1,430	214	18%	67
49-9099	Installation, Maintenance, and Repair Workers, All Other	4,001	4,891	890	22%	165
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	143	161	18	13%	4
51-3092	Food Batchmakers	1,028	1,129	101	10%	46
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	208	267	59	28%	13
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	296	297	1	0%	7
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	334	326	(8)	(2%)	7
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	381	386	5	1%	9
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	1,815	1,786	(29)	(2%)	24
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	220	195	(25)	(11%)	4
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	709	635	(74)	(10%)	15
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	463	457	(6)	(1%)	10
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	431	403	(28)	(6%)	8
51-4041	Machinists	3,963	4,475	512	13%	153
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	388	393	5	1%	10
51-4121	Welders, Cutters, Solderers, and Brazers	3,958	4,081	123	3%	134
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	291	342	51	18%	13
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	93	96	3	3%	3
51-4192	Layout Workers, Metal and Plastic	50	50	0	0%	1
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	270	230	(40)	(15%)	5
51-4199	Metal Workers and Plastic Workers, All Other	318	351	33	10%	7
51-8031	Water and Wastewater Treatment Plant and System Operators	1,039	1,193	154	15%	55
51-9122	Painters, Transportation Equipment	710	722	12	2%	20
51-9123	Painting, Coating, and Decorating Workers	521	480	(41)	(8%)	10
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	106	148	42	40%	6

TABLE A5.2: DETAILED EMPLOYMENT PROJECTIONS RELATED TO POTENTIAL FUTURE PROGRAMS

SOC	TITLE	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
11-9013	Farmers, Ranchers, and Other Agricultural Managers	4,720	4,965	245	5%	153
19-4093	Forest and Conservation Technicians	673	626	(47)	(7%)	26
19-4099	Life, Physical, and Social Science Technicians, All Other	366	429	63	17%	22
25-9041	Teacher Assistants	14,298	15,320	1,022	7%	442
29-2012	Medical and Clinical Laboratory Technicians	1,036	1,392	356	34%	68
29-2031	Cardiovascular Technologists and Technicians	529	684	155	29%	24
31-2011	Occupational Therapy Assistants	212	280	68	32%	13
31-9094	Medical Transcriptionists	1,162	1,757	595	51%	88
47-2031	Carpenters	19,356	20,521	1,165	6%	480
47-2111	Electricians	6,640	7,480	840	13%	228
47-2152	Plumbers, Pipefitters, and Steamfitters	4,415	5,018	603	14%	120
49-9041	Industrial Machinery Mechanics	2,559	3,133	574	22%	140
49-9052	Telecommunications Line Installers and Repairers	1,678	1,980	302	18%	76
49-9062	Medical Equipment Repairers	399	600	201	50%	34
49-9071	Maintenance and Repair Workers, General	13,847	15,766	1,919	14%	478
53-3022	Bus Drivers, School or Special Client	5,303	5,807	504	10%	154
53-3032	Heavy and Tractor-Trailer Truck Drivers	41,896	49,923	8,027	19%	1,564
53-3033	Light Truck or Delivery Services Drivers	12,434	14,512	2,078	17%	427