<u>Victory Valley Cover</u>

March 2019

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

BW Research Partnership Inc. (BW Research), an independent research firm, was commissioned by the Victor Valley Adult Education Regional Consortium (VVAERC) to complete research that supports the consortium's adult education strategic planning efforts. The purpose of this research is to accomplish the following objectives:

- Develop a comprehensive profile of the area's *potential adult education students by different program segments*. This includes demographic, educational, socio-economic, and geographic data on potential adult education students in the area. This is a regional supply-side assessment of potential adult education students in the VVAERC region.

- Produce a regional analysis of the VVAERC regional economy and demand-side employment profile to better understand the need for training, education, and career pathways for adult education students. The employment profile includes an assessment of the area's *industry sectors and occupational pathways*. This includes an examination of relevant career pathways, job quality, and specific evaluations of key industries and vocational jobs that could be supported by adult education programming for VVAERC regional employment.

The report is organized into the following six sections;

1. **Regional Economic & Workforce Profile**, this initial section provides an introductory framework to the world of work in the VVAERC region.

2. **Victor Valley Adult Education Potential Student Assessment**, this second section examines the concentration and distribution of potential adult education students in the VVAERC region.

3. **Regional Job Quality Analysis**, this third section analyzes the quality of the jobs in the VVAERC region.

4. **Victor Valley Adult Education Industry Cluster Profile**, this fourth section identifies and describes the industry clusters in the VVAERC region.

5. **Regional Occupational Analysis,** this section highlights fourteen living-wage occupations that have education requirements obtainable for most adult education students.

6. **Regional Job Volatility Analysis**, this final section assesses the potential for changes to the region's occupational profile due to automation and technology.

KEY FINDINGS

To be written after the body of the report has been finalized.

Victor Valley Adult Education Regional Consortium (VVAERC)
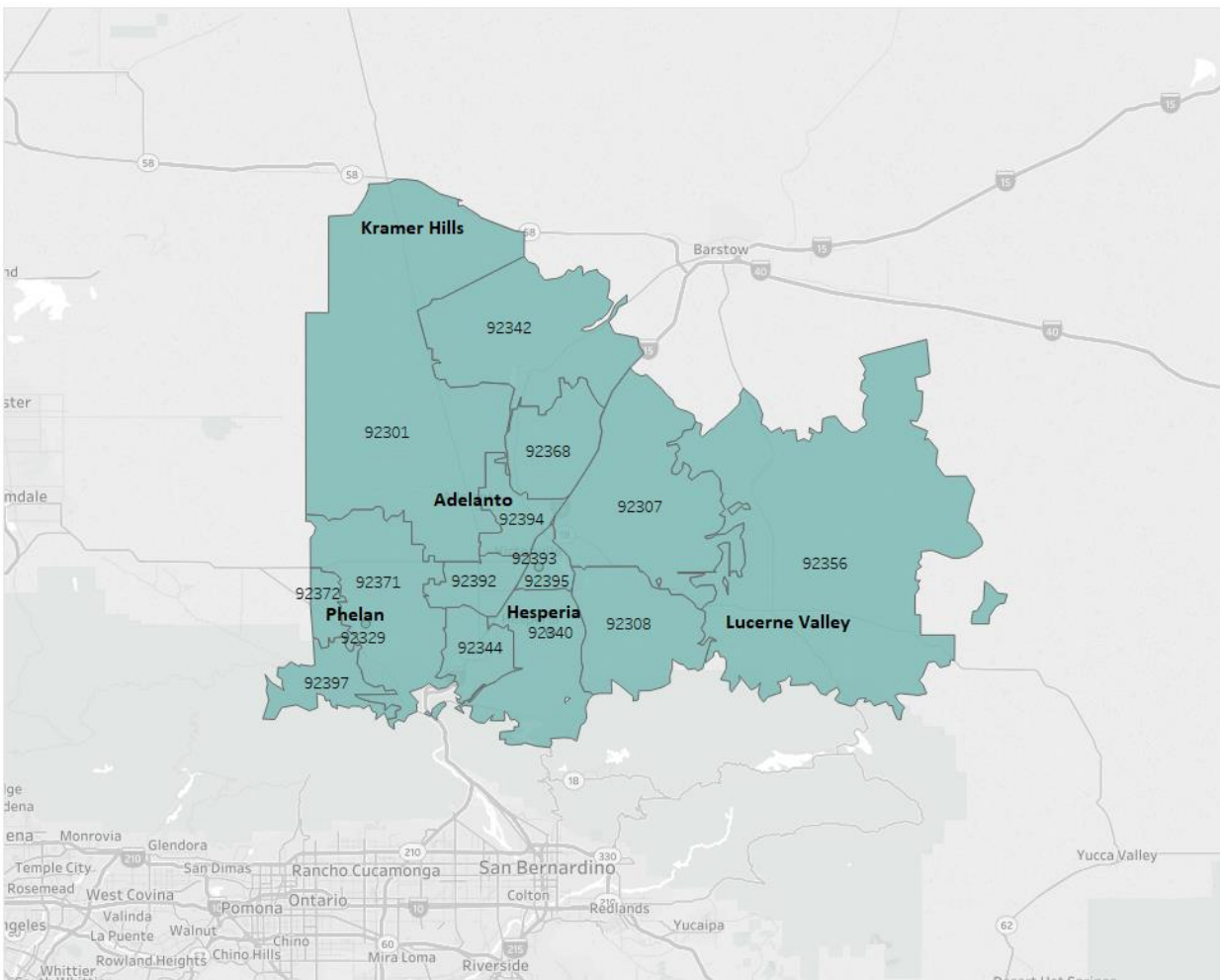
VICTOR VALLEY ADULT EDUCATION REGIONAL CONSORTIUM SERVICE AREA
The Victor Valley Adult Education Regional Consortium (VVAERC) service area is comprised of 17 zip codes in San Bernardino County. The VVAERC region ranges from Kramer Hills in the north, to Lucerne Valley in the Southeast and near Phelan in the southwest.

REGIONAL ECONOMIC & WORKFORCE PROFILE

EMPLOYMENT & ECONOMIC ACTIVITY

There are a total **85,648 jobs** in the Victor Valley Adult Education Regional Consortium (VVAERC) region.[1] Since 2013, the number of jobs in the region has increased 13%, or by an additional **9,651 jobs**. Average wages per job in VVAERC ($60,435) are below both the state and national averages.

Since 2013, employment in the VVAERC region has increased at a faster rate than state (12%) and national (8%) averages (Figure 1). The industries with the largest job creation since 2013 include restaurants and other eating places (1,753 additional jobs), education (local government) (1,242 additional jobs), general warehousing and storage (825 additional jobs), local government (excluding education and hospitals) (725 additional jobs), and ready-mix concrete manufacturing (357 additional jobs).

Economic Profile Analysis Summary

With a total of **85,648 jobs** in 2018, the VVAERC region has grown at a **faster rate** than the state and national averages. Conversely, the average wage per job in the VVAERC region are lower than the state and national averages.

Why is this Important?

Overall employment growth is a general indicator of the economic health of a region. Understanding the region's employment trends can help support efforts to effectively grow the economy.

---

[1] Victor Valley Adult Education Regional Consortium or VVAERC will be used interchangeably throughout this report.

Figure 1. Total Employment Growth, 2013-2018[2]
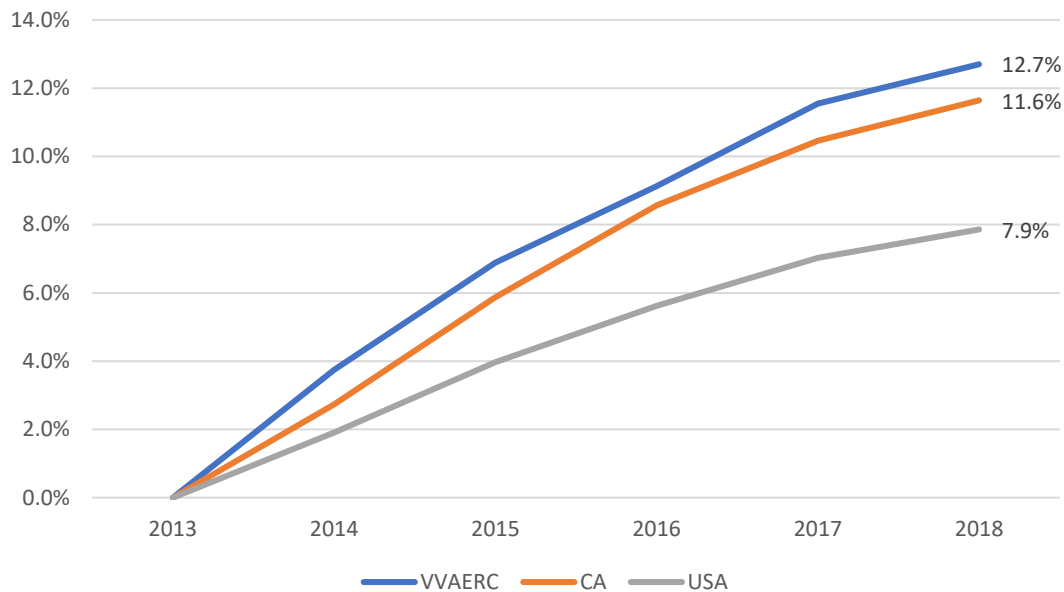
Unemployment

Approximately 53.8% of the population 16 years and older is in the labor force. The labor force participation rates in California and the U.S. are higher, at 63.5% and 63.4%, respectively. The **unemployment rate** in the VVAERC region is approximately **5.7%**[3], which is higher than the state (4.4%)[4] and national rates (3.8%)[5] (Table 1).

Economic Profile Analysis Summary

The relatively low labor force participation rate and relatively high unemployment rate suggest that the VVAERC region is experiencing a "loose" labor market, where there are relatively fewer people in the labor market and a lower proportion of those with jobs. This likely hampers economic growth in the region and may make finding employment relatively more difficult.

Why is this Important?

Just like with overall employment growth, the unemployment rate is another way to measure the economic health of a region. A low unemployment rate is a sign of a tight labor market, which means more job opportunities than the available workforce can fill.

---

[2] EMSI 2019.1. QCEW and non-QCEW workers
[3] State of California EDD Unemployment and Labor Force data. VVAERC region approximated using the regions of Adelanto city, Apple Valley town, Hesperia city, Mountain View Acres CDP, Victorville city, and Wrightwood CDP.
[4] Source: CA Employment Development Department, Labor Force and Unemployment Rate, February 2019.
[5] Bureau of Labor Statistics. Unemployment rate- February 2019, Current Population Survey

Table 1: Labor Force Participation (2017)[6] and Unemployment Rate (2019)[7] by Region

Region	In labor force	In labor force - Unemployed
VVAERC Region	53.8%	5.7%
California	63.5%	4.4%
U.S.	63.4%	3.8%

Resident Workforce vs. Local Workforce

The VVAERC region's workforce includes all residents in the labor force 16 years and older who may work in or outside the region. In this workforce analysis, the research team assessed how the region's workforce intersects with the local availability of jobs. To do so, the research team compared the number of people in the residential workforce to the number of local jobs in the same occupational clusters.

In the VVAERC region there are approximately **136,217 people** in the resident workforce and only **84,539 jobs**[8] in the region (armed forces jobs not included). This means that there is a net surplus of approximately 51,678 people who need to leave the VVAERC region to go to work. This resident workforce surplus is found across all occupational clusters, though the occupation cluster of management, business, science, and arts occupations has the largest surplus (Figure 2). About 45% (16,100) of the residents in these occupations must leave the VVAERC region for work.

Workforce Analysis Summary

The VVAERC region is a net-exporter of talent across all occupational clusters. The largest gap between the residential workforce and regional jobs available occurs within the higher-paying occupational cluster of management, business, science, and arts occupations. This means that in the largest occupational cluster, in which over 35,600 VVAERC residents work, there are not enough jobs in the area to meet the needs of the resident workforce. Service occupations are evenly matched between those living and working in the VVAERC region.

Why is this Important?

In addition to the overall economic and workforce analysis, this analysis is important as it has significant implications for transportation and commuting, housing, and employment opportunities. The fact that the VVAERC region is a **net-exporter** of talent in all occupational clusters illustrates the availability of talent in the region and the opportunity for further economic development.

---

[6] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.
[7] Unemployment Rates: Unemployment Rates for California: California Economic Development Department, December 2018 estimates.
[8] 2017 jobs used to match the resident workforce numbers (where most recent available data is 2017).

Figure 2: VVAERC Region Workforce[9] vs. People Working in the VVAERC Region[10]

■ Resident Workforce　　■ Working in VVAERC

Occupation	Resident Workforce	Working in VVAERC
Management, business, science, and arts occupations	35,664	19,562
Service occupations	27,114	25,318
Sales and office occupations	34,405	21,735
Natural resources, construction, and maintenance occupations	16,626	6,448
Production, transportation, and material moving occupations	22,408	11,475

---
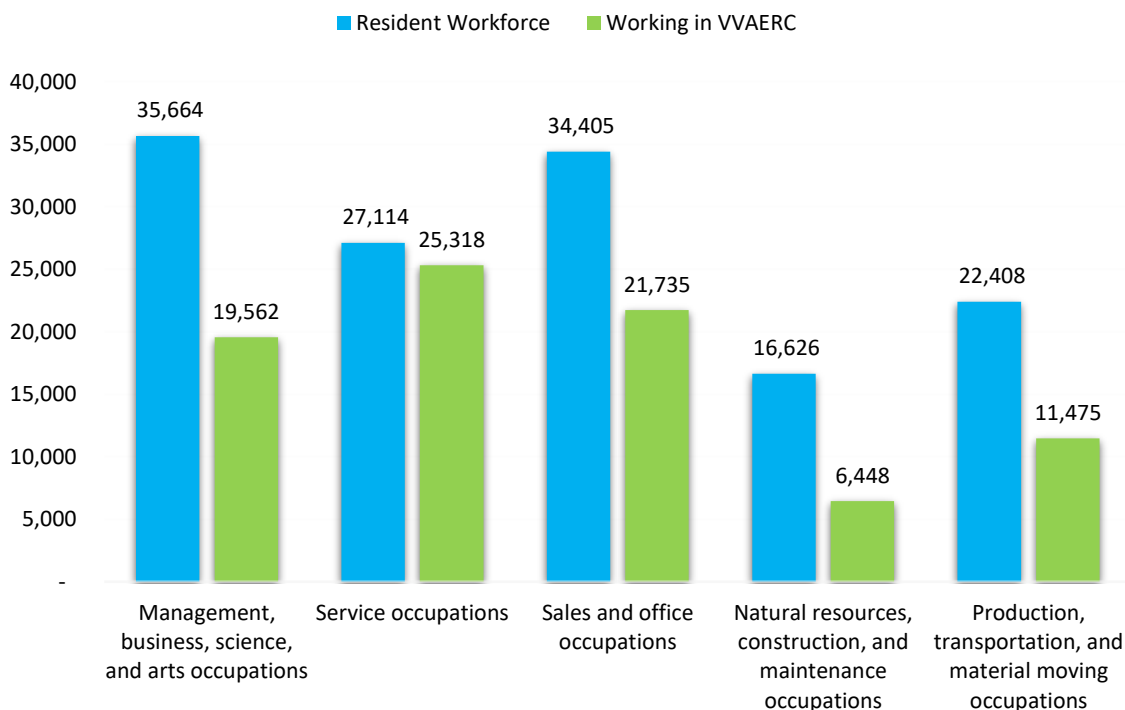
[9] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates
[10] EMSI 2019.1. QCEW and non-QCEW workers, 2017.

REGIONAL DEMOGRAPHIC OVERVIEW

Total Population

The VVAERC region area had a total population of **406,760** people in 2018.[11] This represents an increase of 5% since 2013. This growth rate is slightly greater than California's population growth rate of about 4% during the same time period.

<div style="background">

Population Analysis Summary

Total population in the VVAERC region service area is over **406,760 people**, a 5% increase since 2013, which is slightly greater than the 4% growth rate experienced in California.

</div>

Figure 3: Victor Valley Adult Education Regional Consortium Total Population, 2017[12]

---
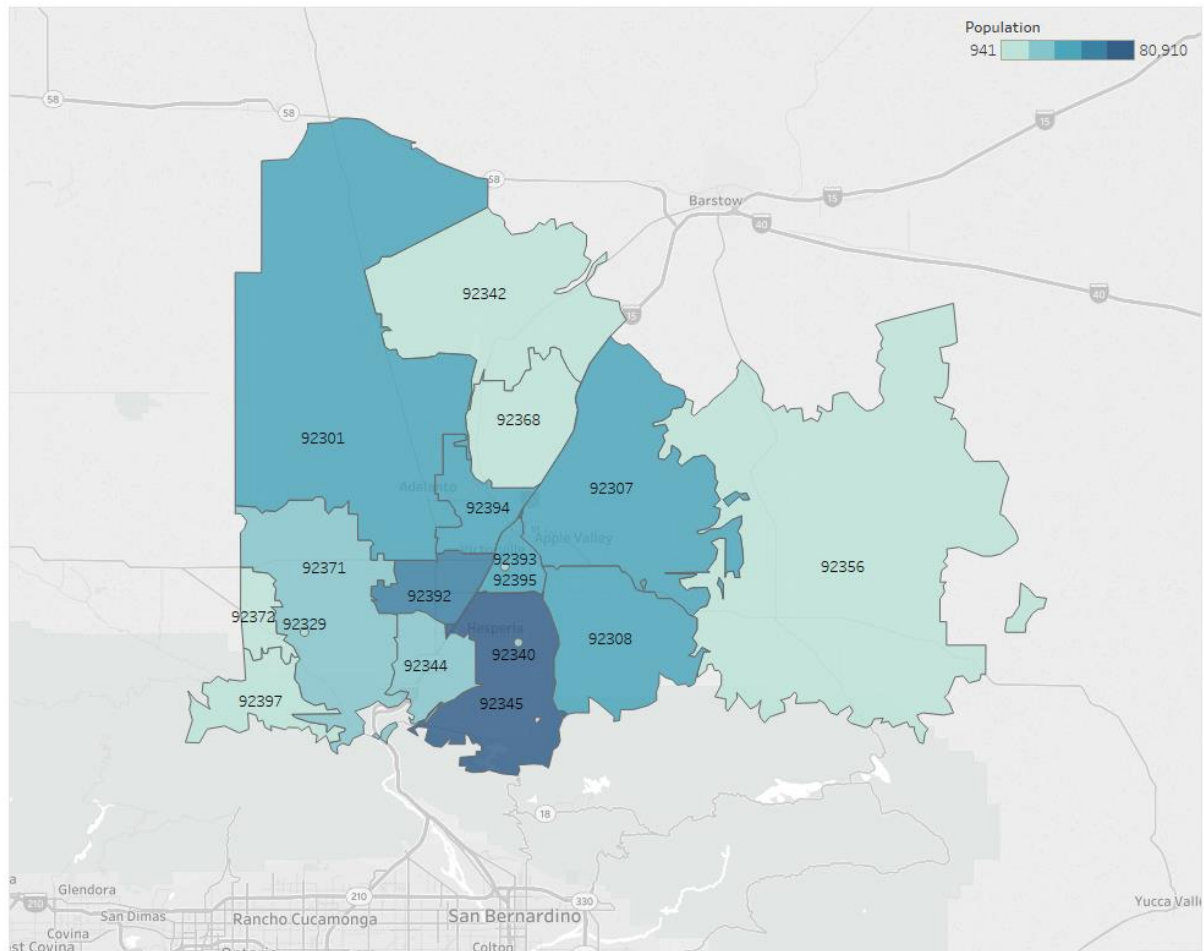
[11] Emsi 2019.1

[12] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Educational Attainment

Educational attainment in the VVAERC region is significantly lower than in statewide and national rates. While just under 3 out of every ten adults in California (29%) and in the country (28%) have a bachelor's degree or higher, the rate is only 11% among adult residents 18 years of age and older in the VVAERC region. Conversely, about half of residents in the VVAERC area have a highest-level of education as a high school diploma or lower, compared to 37% statewide and 39% nationally (Figure 4).

Educational Attainment Summary

VVAERC residents have a notably higher percentage of those who have attained a high school diploma or less, and lower percentages of residents pursuing bachelor's degrees or more advanced degrees.

Why is this Important?

Metrics such as population growth, income, and educational attainment provide a better understanding of the region's potential workforce and talent pipeline. These population characteristics have an impact on the regional workforce availability and help us understand where education and training resources can be focused.

Figure 4: Educational Attainment by Region, 2017[13]

---
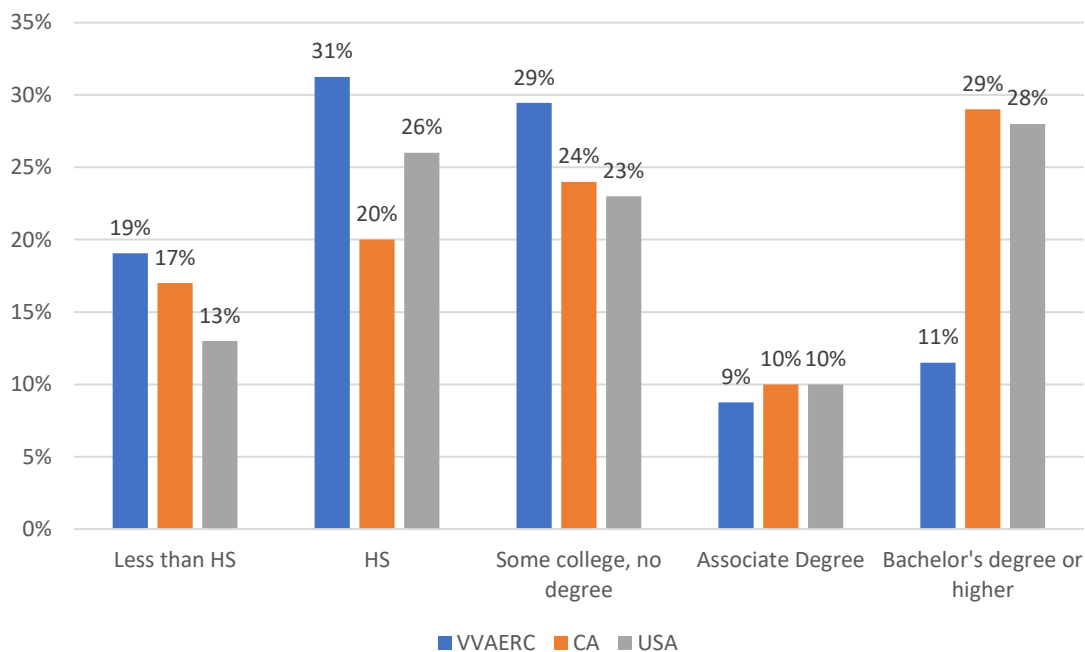
[13] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Income

The median household income in the VVAERC region is $51,068.[14] About one quarter (25%) of households have an income of less than $25,000 and more than four-in-ten households have an income between $25,000 and $75,000. Only 19% of households have an income of $100,000 or higher, compared to 34% across the state (Figure 5). Examining broader trends, VVAERC households tend to have lower rates of income than the state average.

Income

Median household income in the VVAERC region is lower than the statewide median. (Figure 5).

Figure 5: Median Household Income Distribution, 2017[15]

---
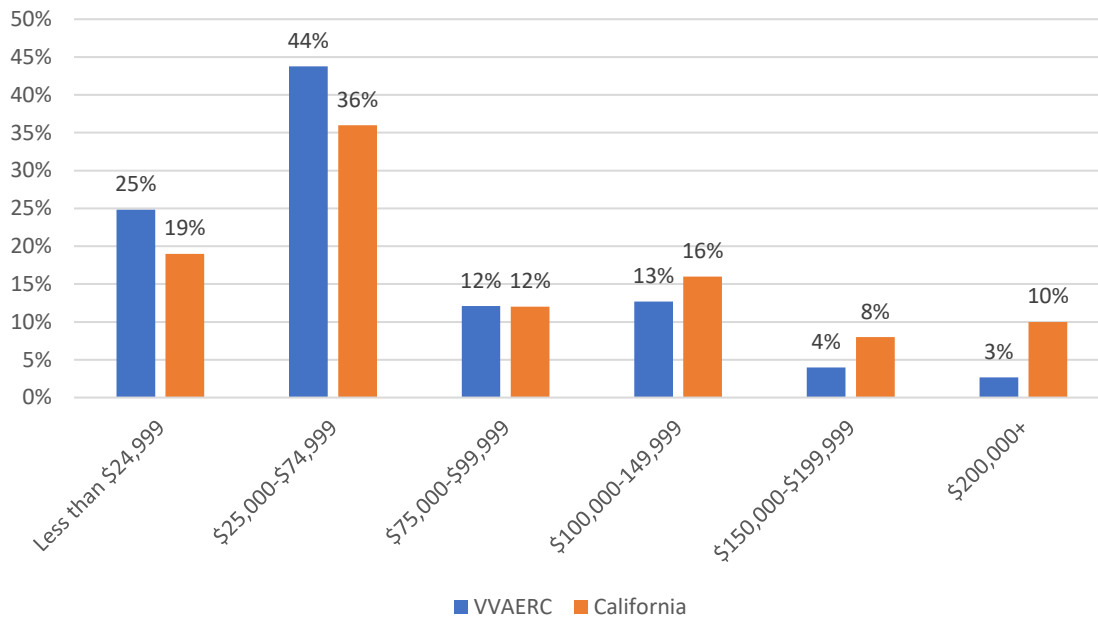
[14] Household income refers to the income of those workers living in the Victor Valley Adult Education Regional Consortium region, regardless of where they work. This differs from the average wage per job, which refers to the income of those working in the VVAERC region, regardless of where they live.
[15] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Within the region, the zip codes with the highest median household incomes are 92344 (near Hesperia) and 92342 (near Helendale). There are three zip codes with median household incomes below $40,000 a year; they are 92301 (near Adelanto), 92368 (near Victorville), and 92356 (near Lucerne Valley), which have a median household income below $30,000 per year. For more than half of the region's zip codes, the median household income dips below the sustainable living wage in San Bernardino County of $54,780 a year for a family of four[16] (Figure 6).

Figure 6: Median Household Income, 2017[17]

---
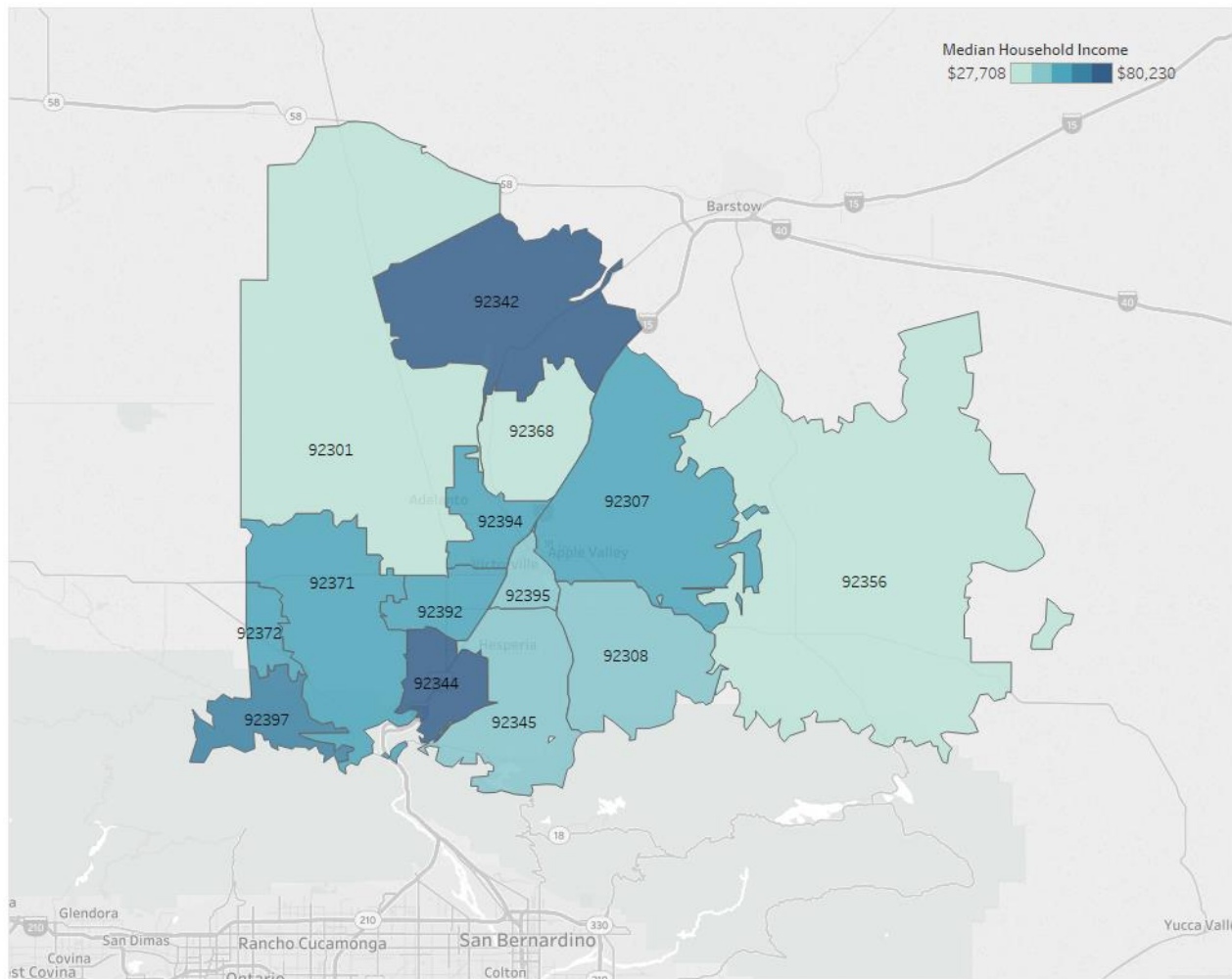
[16] Figure based on family of four, one parent working
Source: Living Wage Calculator - http://livingwage.mit.edu/counties/060671.
[17] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

VICTORY VALLEY ADULT EDUCATION POTENTIAL STUDENT ASSESSMENT

The potential Victor Valley Adult Education Regional Consortium adult education student population is delineated into four categories:

Students Needing Elementary & Secondary Basic Skills

There are nearly 53,000 of these potential students who have a less than a high school diploma (or high school equivalency). Adult education courses targeting these students are meant to build a solid foundation of vocabulary, reading, and writing skills, and/or assist students in completing their high school diploma or equivalency.

English as Second Language (ESL)

There are more than 35,000 potential ESL students. This includes the population 18 years and older who speak English "less than very well." Adult education courses targeting this population will offer classes for adult English language learners, vocational English as a Second Language (ESL), and citizenship courses.

Adult with Disabilities

There are more than 25,000 adults with disabilities in the VVAERC region. This population consists of those 18 to 64 years old with a verified disability such as: hearing, vision, or cognitive disability, self-care difficulty, or independent living difficulty. Adult education courses targeting this population offer services and programs that are meant to support educational goals and increase independence.

Career & Technical Education (CTE):

There are more than 168,600 potential CTE students. These adult education courses are meant to provide specific training and education to expand and improve employment opportunities, to assist students in completing their college degree, or to help them move into a career pathway.

The following population segments were selected for further emphasis as these programs and courses are the foundation of adult education. The following sections and maps illustrate the geographic spread of the potential adult education student population (Figure 7).

Why is this Important?

Adult schools and community colleges should develop classes and programs that respond to the needs and characteristics of its adult population. Looking at different population sectors and understanding where they are located geographically can help schools develop programs and classes that better fit its students' needs.

Basic Skills

In total, the VVAERC has nearly 53,000 potential basic skills students. The largest number of potential Basic Skills students reside in the zip code 92345, near Hesperia, where there are more than 12,800 potential basic skills students. The zip codes 92392 (near Victorville) and 92301 (near Adelanto) each have more than 7,100 potential basic skills students (Figure 7).

Figure 7: Population 18 Years Old and Older with Less than a High School Diploma (or equivalent)[18]

---
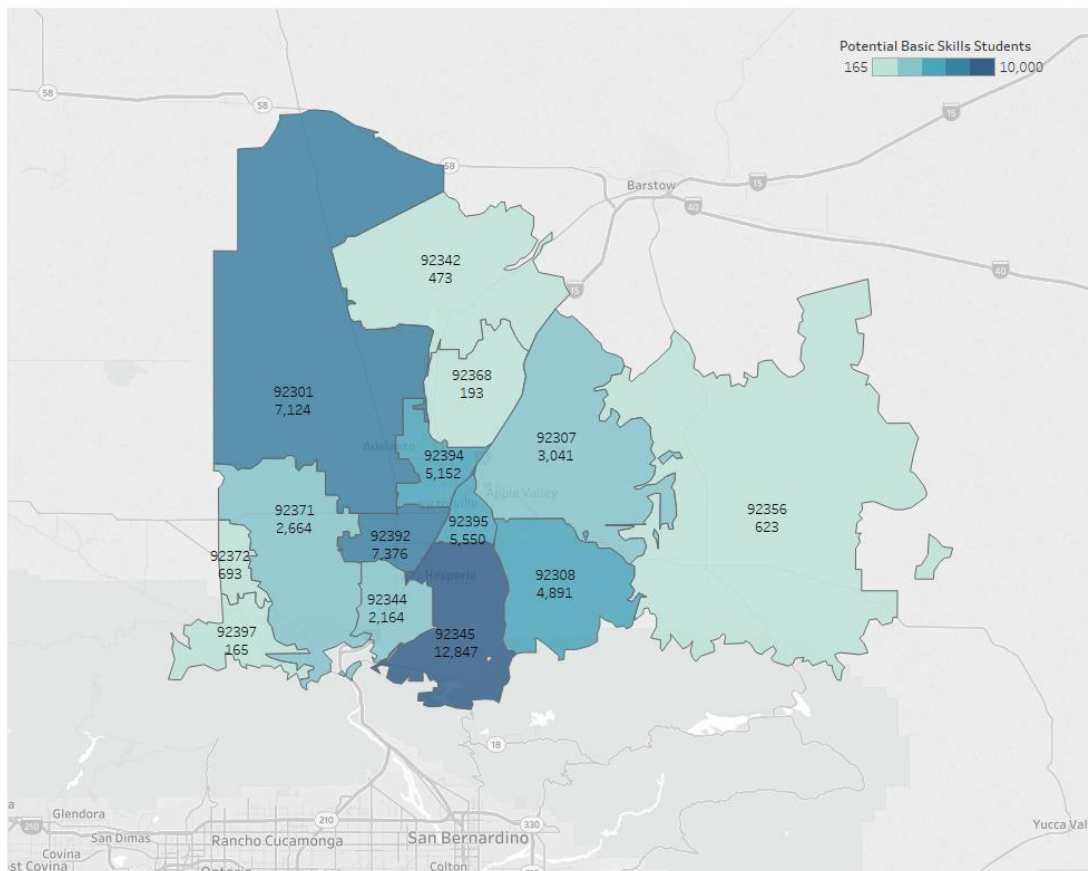
[18] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

English as a Second Language

This population includes adults 18 years and older who speak English less than "very well." There are more than 35,000 potential ESL students in the VVAERC region. The highest numbers of these individuals reside in the zip codes 92345 (near Hesperia) and 92392 (near Victorville). As was the case with potential basic skills students, the largest populations of potential ESL students reside along a central band of zip codes in the region (Figure 8).

Figure 8: Adults 18 Years Old and Older, Speaking English Less than "Very Well"[19]

---
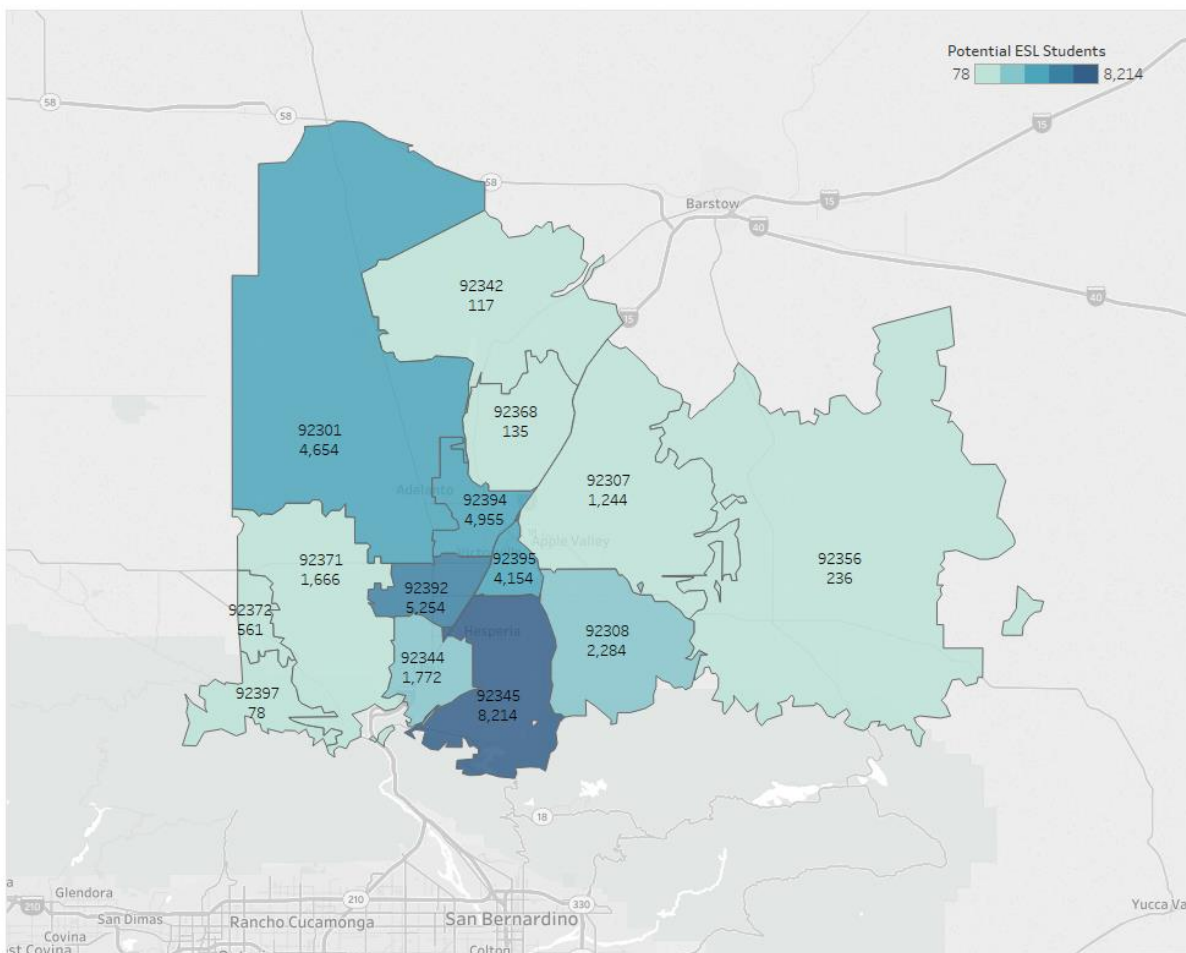
[19] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Career & Technical Education (CTE)

Career & Technical Education courses are meant to provide specific training and education to expand and improve employment opportunities and move student into career pathways. These potential students include workers trying to get a degree or certificate, get a job, get a better job, or get promoted with their current employer. Developing strong CTE classes and programs will include identifying technical and non-technical skills demanded in growing industry clusters to better prepare students to complete a degree, enter the workforce, select career pathways, and/or move up in the career lattice. For these classes, two population segments were identified: (1) adults with a high school diploma and (2) adults with some college, no degree.

a. Adults with a High School Diploma (or equivalent)

There are more than 86,800 adults whose highest educational attainment is a high school diploma in the VVAERC region. Most of these potential CTE students can be found in the zip codes surrounding Hesperia, Victorville, and Apple Valley. The zip code 92345, near Hesperia, has more than 19,300 potential CTE students alone (Figure 9).

Figure 9: Population 18 Years and Older with a High School Diploma (or equivalent) [20]

---
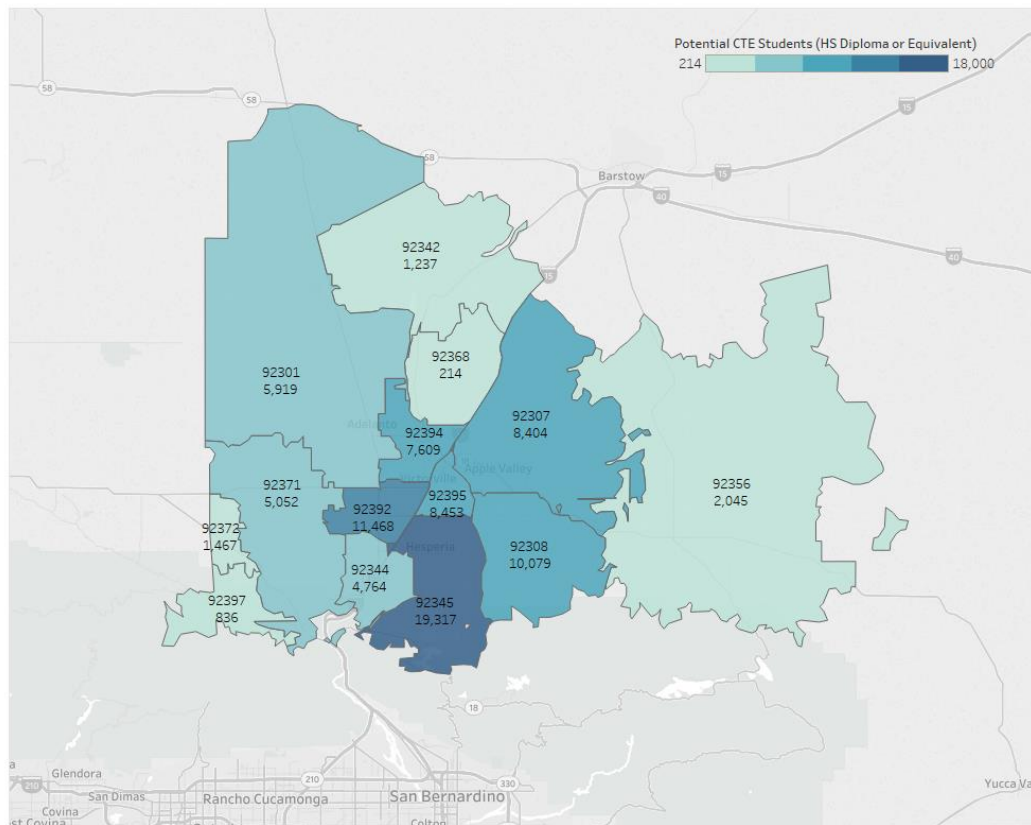
[20] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

b. Adults with some College, no Degree

There are over 81,800 potential CTE students who attended some college but did not receive a degree. The zip codes with the largest populations of those who have attended some college but received no degree are concentrated in the central southern portion of the VVAERC region, around Hesperia. Between the three zip codes with the largest populations (92345, 92392, and 92308) there are more than 36,500 potential CTE students. (Figure 10).

Figure 10: Adults 18 Years and Older with Some College, No Degree[21]

---
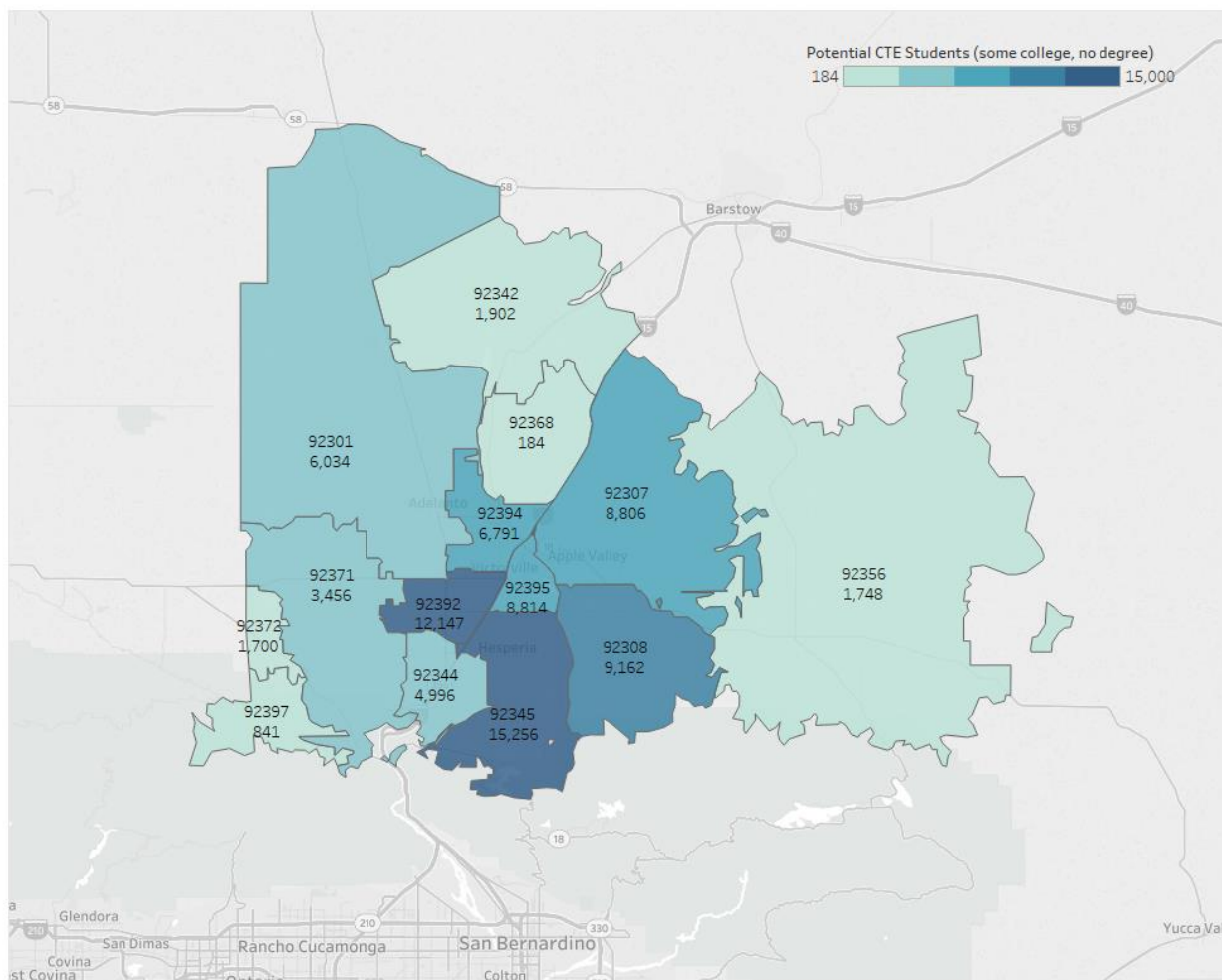
[21] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Courses for adults with disabilities

There are more than 25,000 adults aged 18-64 with disabilities in the VVAERC region. Most of this population resides around the zip codes 92345, 92308, 92392, and 92307 that encompass Hesperia and Apple Valley. There are also sizable populations in the zip codes 92301 (near Adelanto) and 92392 (near Victorville) (Figure 11).

Figure 11. Non-institutionalized adults (ages 18-64) with a disability[22]

---
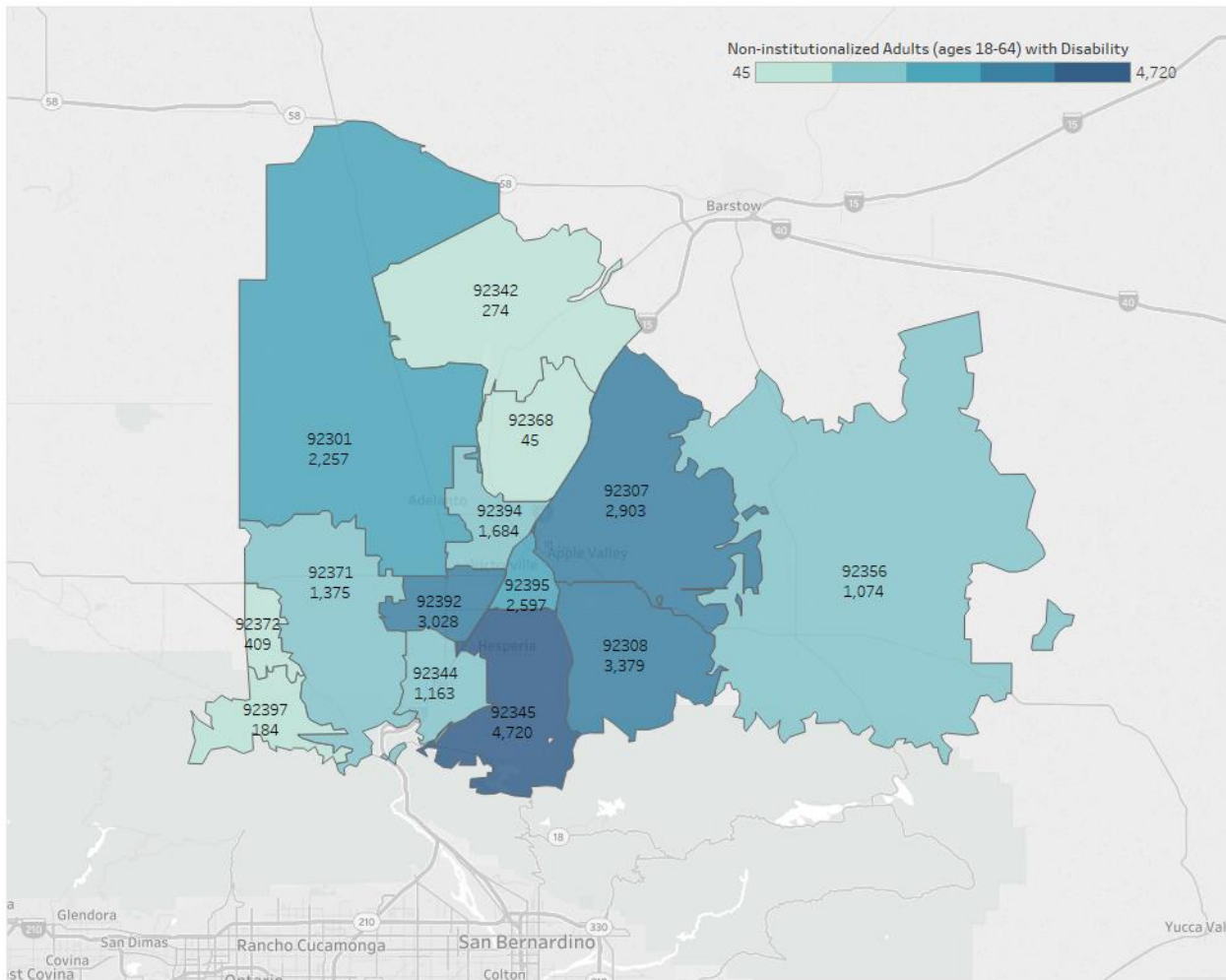
[22] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

REGIONAL JOB QUALITY ANALYSIS

Employment trends and economic snapshots are important in understanding the quantity of jobs in a given area, but they typically fall short in providing a strong understanding of job quality. Educational attainment, training, and experience are often associated with employment opportunity, career growth, and potential earnings. Based on these elements, most occupations can be categorized into one of three occupational tiers that will provide more insight into job quality.

The three-tiered system used in this study is largely defined by current wage data, general educational attainment, and skills requirements. They are as follows:

Job Quality Analysis Summary

The VVAERC region has a higher proportion of Tier 3 jobs. These lower-skill, lower-paying jobs have also seen the highest recent growth among all jobs. These two factors suggest that job quality in the region is relatively lower than state and national averages, and that this quality has continued to decline.

Why is this Important?

Job quality represents a critical metric in understanding economic sustainability. Since tier 3 employment does not typically provide enough income for people to afford to live in the area, to improve job and life quality, the number of tier 1 and tier 2 jobs should increase so that more people are able to live and work in the VVAERC region.

Tier 1 Occupations are typically the highest-paying, highest-skilled occupations in the economy. In 2018, the median annual wage for Tier 1 occupations in the VVAERC region is approximately $85,509 a year. This occupational category includes positions such as managers (e.g., Chief Executives and Sales Managers), professional positions (e.g., Lawyers and Physicians) and highly-skilled technology occupations, such as scientists, engineers, computer programmers, and software developers.

Tier 2 Occupations are typically the middle-skill, middle-wage occupations. In 2018, the median annual wage for Tier 2 occupations in the VVAERC region is approximately $50,402 a year. This occupational category includes positions such as technicians, teachers, and office and administrative positions (e.g., Accounting Clerks and Secretaries), and manufacturing, operations, and production positions (e.g., Assemblers, Electricians, and Machinists).

Tier 3 Occupations are typically the lowest-paying, lowest-skilled occupations that have historically provided the largest portion of employment in the region. In 2018, the median annual wage for Tier 3 occupations in the VVAERC region is approximately $28,484 a year. These occupations include positions such as security guards, food service and retail positions, building and grounds cleaning positions (e.g., Janitors), and personal care positions (e.g., Home Health Aides and Child Care Workers).

Since 2013 the concentrations of occupational tiers have remained relatively constant, though Tier 2 jobs have lost one percentage point while Tier 3 jobs have gained one percentage point in relative share of occupations in the region. Tier 1 jobs have accounted for a relatively unchanged proportion of jobs in the VVAERC region (Table 2).

Table 2: Occupational Tier Share of Jobs in Victor Valley Adult Education Regional Consortium Region[23]

Tiers	2013	2014	2015	2016	2017	2018
Tier 1	16%	16%	16%	15%	15%	16%
Tier 2	34%	34%	34%	33%	33%	33%
Tier 3	50%	50%	51%	51%	51%	51%

Job quality in the VVAERC region has a higher percentage of Tier 3 jobs relative to the state and national averages. Much of this difference is accounted for in Tier 1 jobs, where the share of Tier 1 employment in the VVAERC region is 5 and 7 percentage points lower than the national and statewide averages, respectively (Figure 12).

Figure 12: Job Composition by Region[24]
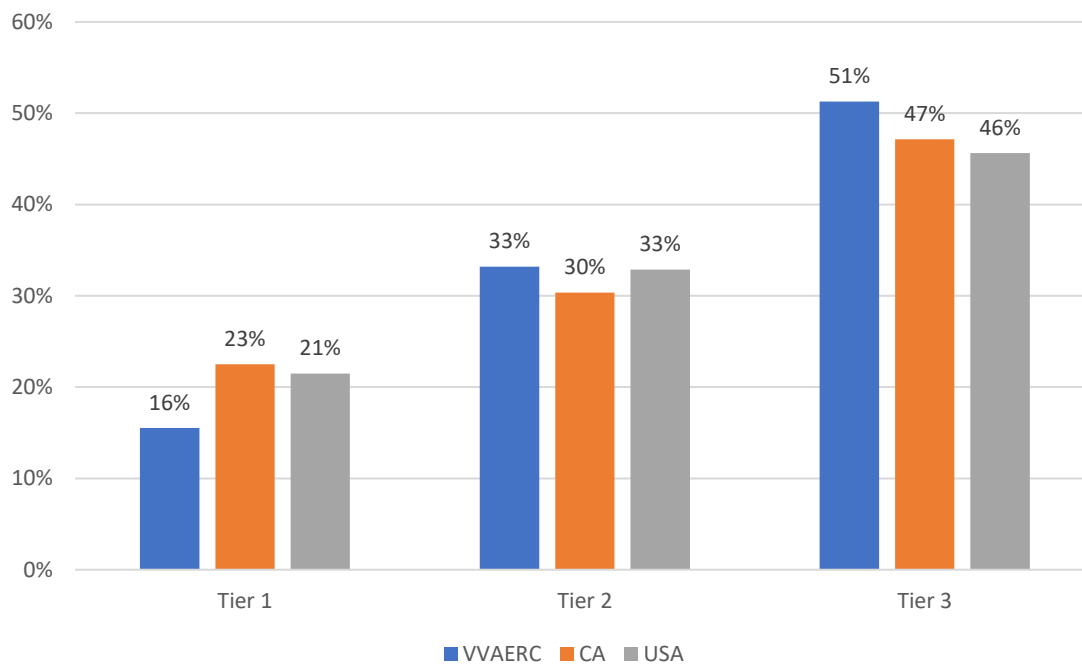
Tier 1 and Tier 2 jobs are critical to increase job and life quality in the area, as tier 3 employment does not typically provide enough income for families to be able to afford

---

[23] Emsi 2019.1 QCEW and non-QCEW
[24] Emsi 2019.1 QCEW and non-QCEW

living in the area. In San Bernardino County, [25] a family of 2 adults (one working) and 2 children needs 1.09 tier 2 jobs and 1.92 tier 3 jobs to meet self-sufficiency[26] (Table 3).

Table 3: Number of Jobs a Family of 2 Adults (One Working) and 2 Children Need to Meet Self-Sufficiency in San Bernardino County[27]

	Median Annual Wage	Number of Jobs to Meet Family Self-Sufficiency
Tier 1	$85,509	0.64
Tier 2	$50,402	1.09
Tier 3	$28,484	1.92

Tier 3 jobs increased by a greater percentage than Tier 2 and Tier 1 employment (Figure 13). Looking at specific occupations, tier 3 job growth was particularly strong among fast food and counter workers (+831 jobs), hand laborers and material movers (+696 jobs), and personal care aids (+559 jobs). The highest growth Tier 2 occupations include elementary and middle school teachers (+275 jobs), driver/sales workers and truck drivers (+246 jobs), and secondary school teachers (+151). Tier 1 occupations experiencing the largest increase in workers include registered nurses (+201 jobs) and postsecondary teachers (+173).[28]

---

[25] Self-sufficiency data could only be found at the county level.
[26] Self-sufficiency takes into account costs of living such as food, housing, transportation, and other regionally-specific costs.
[27] Living Wage Calculator - http://livingwage.mit.edu/counties/06071
[28] EMSI 2019 Q1, QCEW and non-QCEW

Figure 13: Employment Growth in the VVAERC Region by Occupational Tier, 2013-2018[29]
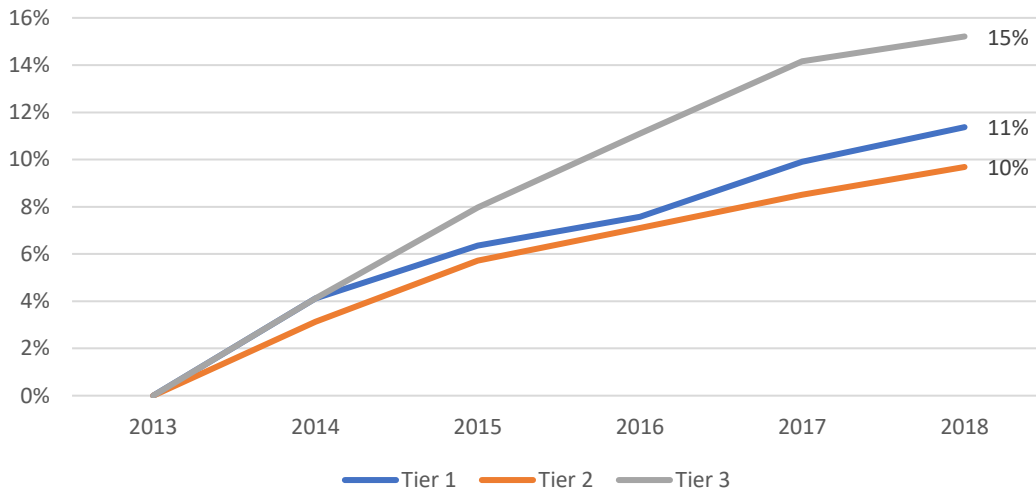
Tier 3 employment in the VVAERC region increased at a faster rate than in both California and the country (Figure 14). VVAERC also runs counter to state and national patterns where Tier 1 growth is the highest, followed by Tier 3 and Tier 2. Strong growth in Tier 3 is indicative that job quality in the region is declining and may make it harder for even those with jobs to sustain themselves and their families.

Figure 14: Employment Growth by Occupational Tiers and Region, 2013-2018[30]

---
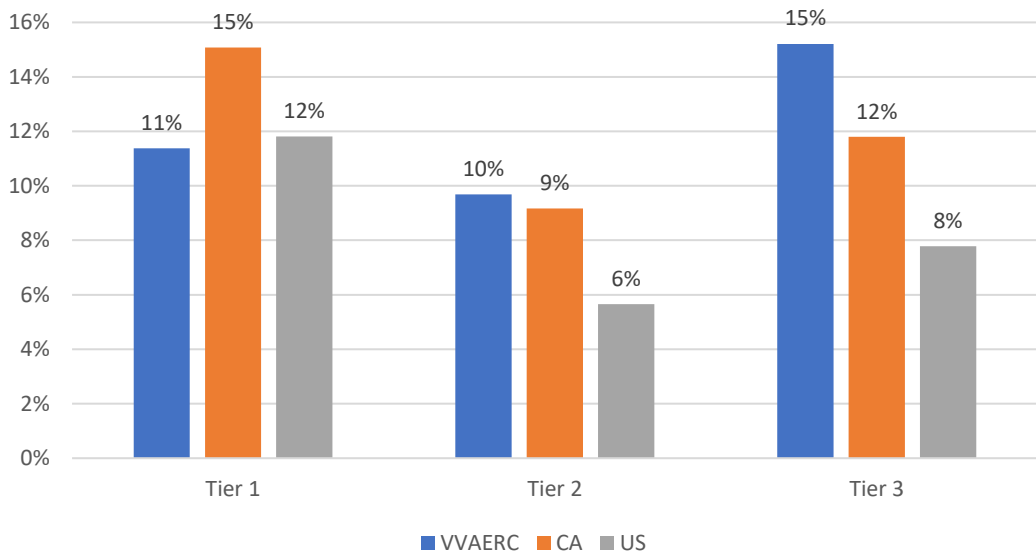
[29] EMSI 2019 Q1, QCEW and non-QCEW
[30] EMSI 2019.1. QCEW and non-QCEW workers

VICTOR VALLEY EDUCATION REGIONAL CONSORTIUM INDUSTRY CLUSTER PROFILE

INDUSTRY CLUSTERS

Industry clusters are geographic concentrations of labor and capital that share a common market and exchange supporting goods and services. Unlike the classical industry sectors, clusters are comprised of interrelated industries complementing various elements of the supply chain and create a local ecosystem of industries. Industry clusters are also a useful framework for identifying relevant focal points for workforce development, outlining local economic drivers, and emphasizing job growth and quality.

The research team analyzed 18 standardized industry clusters for consideration for adult education students in the VVAERC region. Overall, these clusters account for **84,762 jobs in the VVAERC region or 99% of all jobs in the region**. The industry clusters with the largest number of jobs include education and knowledge creation, and retail (Table 4).

Industry Clusters Analysis Summary

Some of the region's largest industry clusters have seen consistent growth over the past five years, while other industries have seen substantial growth. Education and Knowledge Creation, the region's largest industry cluster, increased by more than 10% between 2013 and 2018. Other, smaller industry clusters like building and design and other manufacturing increased by more than 37%.

Why is this Important?

These industry clusters offer opportunities for training and workforce development as we look for economic and workforce opportunities in the region.

Table 4: Traditional Industry Cluster Profiles for the Victor Valley Adult Education Regional Consortium[31]

	2018 Jobs	2014 - 2018 Change	2014 - 2018 % Change	Avg. Earnings Per Job	2018 Location Quotient
Education and Knowledge Creation	14,286	1,376	10.7%	$71,869	0.75
Retail	12,990	707	5.8%	$38,821	1.06
Tourism, Hospitality, and Recreation	10,896	1,921	21.4%	$24,865	0.80
Healthcare	10,663	913	9.4%	$63,142	0.82
Public Services and Infrastructure	10,220	920	9.9%	$97,120	1.13
Logistics	4,817	1,150	31.4%	$63,573	0.74
Building and Design	4,299	1,234	40.3%	$76,712	1.85
Professional and Business Services	4,044	(179)	-4.2%	$55,359	0.75
Other Services	3,532	549	18.4%	$36,119	1.07
Other Manufacturing	3,191	872	37.6%	$73,524	1.34
FIRE	2,331	180	8.4%	$68,283	0.45
Energy	892	(214)	-19.3%	$131,870	0.53
ICT	814	57	7.5%	$82,141	0.24
Agriculture and Food	788	93	13.4%	$49,698	0.24
Information and Communications	349	(30)	-7.9%	$34,679	0.17
B&BD	242	(85)	-26.0%	$61,024	0.19
DATM	207	25	13.7%	$64,269	0.24
Water	201	30	17.5%	$88,701	1.41

[31] EMSI 2019.1. QCEW and non-QCEW workers
Note: Location Quotient (LQ) is a way of quantifying how concentrated a particular industry or industry cluster is in a region as compared to the nation. An LQ of 1 means the concentration of jobs in the region is equal to the national average, higher than 1 means the job concentration is higher than the national average, and an LQ of less than 1 means the job concentration in the region is below the national average.

Retail and Tourism, Hospitality, and Recreation

While the Tourism, Hospitality, and Recreation and Retail industry clusters provide a large and growing number of jobs in the VVAERC region, they are not profiled in this report because of the lack of sustainable career pathways they offer.

It is important to note that these industry sectors provide numerous opportunities for entry-level workers to gain **on-the-job training and experience** and to develop important skillsets—customer service and communication skills—that transfer into nearly all other industry clusters.

Career Lattice is a framework in which employees can move through a variety of positions across different industries, provided they acquire the appropriate, transferable skillsets. A lattice allows for more flexibility and growth, as individuals are not simply moving upward, but instead can move outward and design their own pathways based on the skills they have gained in previous positions.

Building upon these areas of expertise provides entry-level workers with greater opportunity to transition into more sustainable careers. With more than 23,800 workers in VVAERC region and an average 13.6% employment growth since 2013 between the two industry clusters, these industry sectors could be seen as a useful stepping stone or **career lattice** into other industry clusters.

Regional Clusters Analysis

From the 18 standard industry clusters, **five** were selected because of their overall employment, job concentration, growth potential, provision of sustainable wages, and strong career pathways opportunities in the area. These regional industry clusters include education and knowledge creation, healthcare, building and design, other manufacturing, and finance, insurance, banking, and real estate (Figure 15).

Figure 15: Selected Industry Clusters in the Victor Valley Adult Education Regional Consortium region[32]
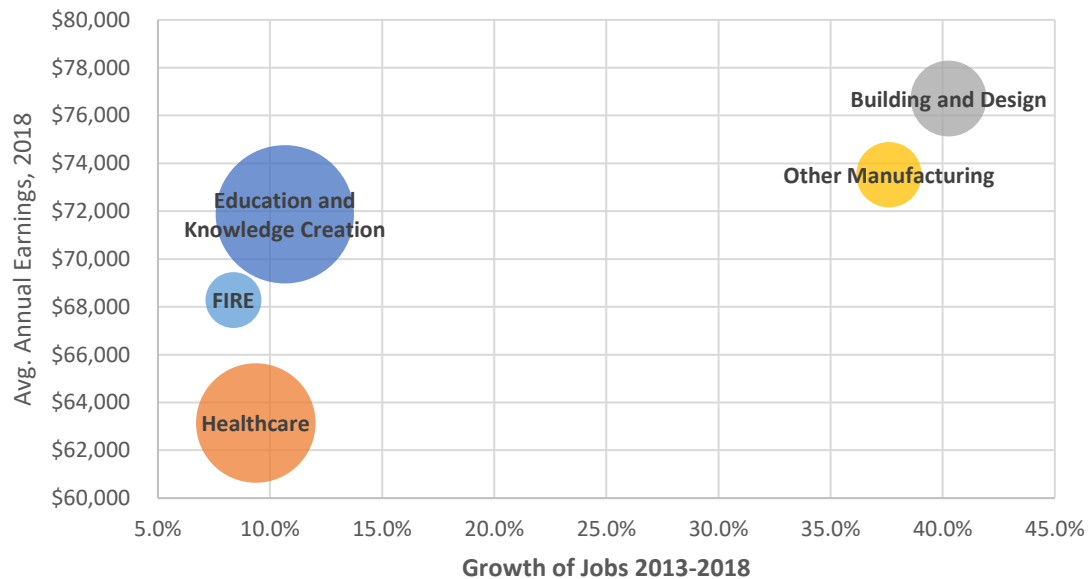
*The size of each bubble is relative to the number of jobs in the given industry.

Clusters with Higher Wages

Building and Design

Building and Design occupations account for **4,299 jobs** in the VVAERC region. The industry has grown 40% between 2013-2018, adding an additional 1,200 jobs during that time. Since 2013, the top five occupations in terms of employment grew by 30% or more (Table 5). Typical educational requirements for these occupations are between a high school diploma and a postsecondary nondegree award.

Table 5: Top Building and Design Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2013-2018	Median Hourly Earnings
Carpenters	353	38%	$22.32
Construction Laborers	288	30%	$18.32
Heavy and Tractor-Trailer Truck Drivers	199	64%	$22.45
Plumbers, Pipefitters, and Steamfitters	145	56%	$24.34
Electricians	143	54%	$28.96

---

[32] Emsi 2019.1 QCEW and non-QCEW

Nearly two-thirds of all building and design jobs are tier 2 occupations. Tier 3 jobs (24%) and tier 1 jobs (15%) account for a much smaller share (Table 6).

Table 6: Occupational Tier Distribution in Building and Design

Industry Cluster	Tier 1	Tier 2	Tier 3
Building and Design	15%	61%	24%

Other Manufacturing

The other manufacturing industry cluster provides the second-highest average annual earnings among all five selected clusters, with workers receiving approximately $73,524 per year. With a total of **4,299 jobs** in the VVAERC region, the job concentration for this clusters about 34% greater than the national average. Since 2013, total employment increased by 37.6% – for a total of 872 jobs created. The top five occupations in this cluster have all increased by at least 35% since 2013 (Table 7).

Table 7: Top Five Other Manufacturing Occupations in the VVAERC region[33]

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings
Assemblers and Fabricators	191	45%	$13.06
Hand Laborers and Freight, Stock, and Material Movers	146	72%	$13.47
First-Line Supervisors of Production and Operating Workers	111	39%	$26.78
Heavy and Tractor-Trailer Truck Drivers	105	62%	$22.45
Machinists	89	35%	$18.40

Nearly all other manufacturing occupations fall under Tier 2 or Tier 3. Only about one in ten occupations are Tier 1 (Table 8).

Table 8: Occupation Tier Distribution in Other Manufacturing[34]

Industry Cluster	Tier 1	Tier 2	Tier 3
Other Manufacturing	11%	42%	47%

---

[33] Emsi 2019.1 QCEW and non-QCEW
[34] Emsi 2019.1 QCEW and non-QCEW

Education and Knowledge Creation

The education and knowledge creation industry cluster is the largest in the VVAERC region; there are about **14,286 workers** accounting for 16.7% of the region's total employment. This industry cluster has above average wages of about $71,869 per job. Four out of the five most-common occupations grew by 16% or more between 2013-2018 (Table 9).

Table 9: Top Five Education and Knowledge Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings
Elementary School Teachers (except Special Education)	2,009	16%	$41.80
Teachers Assistants	1,854	23%	$15.94
Secondary School Teachers (except special and career/technical education)	1,073	17%	$37.47
Postsecondary Teachers	996	19%	$35.34
Substitute Teachers	620	-1%	$15.80

Tier 2 jobs account for nearly half of all education and knowledge creation jobs. As was the case with other manufacturing, Tier 1 jobs account for fewer than two in every 10 education and knowledge creation jobs in the VVAERC area (Table 10).

Table 10: Occupational Tier Distribution in Education and Knowledge Creation

Industry Cluster	Tier 1	Tier 2	Tier 3
Education and Knowledge Creation	15%	44%	41%

Medium Wages

Finance, Banking, Insurance, and Real Estate (F.I.R.E.)

The region's F.I.R.E. industry cluster employs over **2,300 workers** and has grown by 8.4% since 2013. This amounts to about 2.7% of the VVAERC regional workforce and reflects a concentration of employment that is about 55% lower than the national average. Each of the five largest occupations in F.I.R.E increased by at least 22% between 2014 and 2018 (Table 11).

Table 11: Top Five F.I.R.E. Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings
Insurance Sales Agents	245	1%	$17.78
Tellers	199	7%	$13.61
Securities, Commodities, and Financial Services Sales Agents	153	39%	$18.47
General Maintenance and Repair Workers	137	26%	$18.51
Loan Officers	110	8%	$29.79
Counter and Rental Clerks	99	43%	$13.60

Nearly half of F.I.R.E. jobs in the VVAERC region are Tier 2 occupations. (Table 12).

Table 12: Occupational Tier Distribution in F.I.R.E.

Industry Cluster	Tier 1	Tier 2	Tier 3
F.I.R.E.	27%	45%	28%

Healthcare

The healthcare industry cluster is the fourth-largest in the VVAERC region and employs **10,663 workers**. This represents 12.4% of all jobs in the area. Since 2013, healthcare has grown by 9.4%, or an additional 913 jobs. Despite these rates, Healthcare in the VVAERC region is about 18% less concentrated than the national average.

Four of the five most prevalent healthcare occupations have grown by at least 8% since 2014, with personal care aides growing by an impressive 29% during the same time (Table 13). The typical education level required for the top five occupations is between a high school diploma and a bachelor's degree.

Table 13: Top Five Occupations in Healthcare in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings
Registered Nurses	1.524	12%	$45.09
Personal Care Aides	1,427	61%	$11.34
Medical Assistants	493	-6%	$14.55
Nursing Assistants	487	3%	$14.50
Licensed Practical and Licensed Vocational Nurses	429	1%	$22.99

Nearly half of all healthcare occupations are tier 3. The remainder are split relatively evenly between tier 1 and tier 2 (Table 14).

Table 14: Occupational Tier Distribution in Healthcare

Industry Cluster	Tier 1	Tier 2	Tier 3
Healthcare	28%	29%	43%

CAREER PATHWAYS

Building and Design

Table 15: Entry-Level Building and Design Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Entry-Level Education
Carpenters	353	38%	$22.32	High school diploma or equivalent
Plumbers, Pipefitters, and Steamfitters	145	56%	$24.34	No formal educational credential
Construction Laborers	288	30%	$18.32	High school diploma or equivalent

Table 16: Mid-Level Building and Design Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Heavy and Tractor-Trailer Truck Drivers	199	64%	$22.45	Postsecondary nondegree award
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	89	51%	$21.73	Postsecondary nondegree award
Architectural and Civil Drafters	33	18%	$25.67	Associate degree

Table 17: Upper-Level Building and Design Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
General and Operations Managers	98	34%	$47.40	Bachelor's degree
Construction Managers	74	35%	$40.26	Bachelor's degree
Cost Estimators	58	18%	$29.34	Bachelor's degree

Other Manufacturing

Table 18: Entry-Level Other Manufacturing Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Entry-Level Education
Machinists	89	35%	$18.40	High school diploma or equivalent

Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	80	51%	$27.07	High school diploma or equivalent
First-Line Supervisors of Production and Operating Workers	111	39%	$26.78	High school diploma or equivalent

Table 19: Mid-Level Other Manufacturing Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Heavy and Tractor-Trailer Truck Drivers	199	64%	$22.45	Postsecondary nondegree award
Bookkeeping, Accounting, and Auditing Clerks	29	32%	$18.94	Some college, no degree
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	<10	33%	$30.03	Postsecondary nondegree award

Table 20: Upper-Level Other Manufacturing Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
General and Operations Managers	61	39%	$47.40	Bachelor's degree
Industrial Production Managers	33	32%	$46.94	Bachelor's degree
Sales Managers	22	38%	$41.70	Bachelor's degree

Education and Knowledge Creation

Table 21: Entry-Level Education and Knowledge Creation Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Entry-Level Education
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	507	11%	$17.62	High school diploma or equivalent
Childcare Workers	403	6%	$11.96	High school diploma or equivalent
Office Clerks, General	330	6%	$16.24	High school diploma or equivalent

Table 22: Mid-Level Education and Knowledge Creation Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Teacher Assistants	1,854	23%	$15.94	Some college, no degree
Preschool Teachers, Except Special Education	235	16%	$14.23	Associate degree
Human Resources Assistants, Except Payroll and Timekeeping	17	21%	$18.92	Associate degree

Table 23: Upper-Level Education and Knowledge Creation Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Elementary School Teachers, Except Special Education	2,009	16%	$41.80	Bachelor's degree
Secondary School Teachers, Except Special and Career/Technical Education	1,073	17%	$37.47	Bachelor's degree
Education Administrators, Elementary and Secondary School	215	16%	$60.58	Master's degree

Finance, Banking, Insurance, and Real Estate (F.I.R.E.)

Table 24: Entry-Level F.I.R.E. Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Entry-Level Education
Insurance Sales Agents	245	1%	$17.78	High school diploma or equivalent
Tellers	199	7%	$13.61	High school diploma or equivalent
Customer Service Representatives	91	2%	$16.96	High school diploma or equivalent

Table 25: Mid-Level F.I.R.E. Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Bookkeeping, Accounting, and Auditing Clerks	47	2%	$18.94	Some college, no degree

Computer, Automated Teller, and Office Machine Repairers	<10	0%	$17.40	Some college, no degree
Human Resources Assistants, Except Payroll and Timekeeping	<10	0%	$18.92	Associate degree

Table 26: Upper-Level F.I.R.E. Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Securities, Commodities, and Financial Services Sales Agents	153	39%	$18.47	Bachelor's degree
Loan Officers	110	8%	$29.79	Bachelor's degree
Personal Financial Advisors	51	16%	$42.93	Bachelor's degree

Healthcare

Table 27: Entry-Level Healthcare Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Entry-Level Education
Personal Care Aides	1,427	61%	$11.34	High school diploma or equivalent
Medical Secretaries	414	0%	$16.18	High school diploma or equivalent
Social and Human Services Assistants	80	11%	$18.44	High school diploma or equivalent

Table 28: Mid-Level Healthcare Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Dental Hygienists	128	17%	$42.40	Associate degree
Nursing Assistants	487	3%	$14.50	Postsecondary nondegree award
Licensed Practical and Vocational Nurses	429	1%	$22.99	Postsecondary nondegree award

Table 29: Upper-Level Healthcare Occupations in the VVAERC region

Occupations	2018 Jobs	% Change 2014-2018	Median Hourly Earnings	Typical Education
Registered Nurses	1,524	12%	$45.09	Bachelor's degree

Substance Abuse, Behavioral Disorder, and Mental Health Counselors	98	48%	$19.32	Bachelor's degree
Medical and Health Services Manager	125	13%	$53.75	Bachelor's degree

REGIONAL JOB VOLATILITY ANALYSIS

The world of work is continually changing and many of the jobs of today will not look the same as the jobs of tomorrow. BW Research recently (2017 data) completed a national analysis of job volatility by occupational segment and industry cluster to better understand how the employment landscape could change over the next three to ten years. The analysis focused more specifically on the impact that technology and automation is likely to have on employment opportunities into the future. The examination of occupational skills was built upon an assessment of the likelihood of that skill being automated and its relative importance for the position.[35] The analysis looked to:

o   Assess occupations and industry employment patterns based on current job skills and the likelihood that those skills could be replaced by technology or some related advancement in automation;
o   Evaluate and better understand the magnitude of change that is likely to occur in employment composition by industry and occupational segment over the next three to ten years; and,
o   Measure the potential job volatility within a given region, such as VVAERC region, and the impact it could have on the region's industry clusters.

Nationally, 21% of employment currently falls under the five most volatile industries according to our analysis. Approximately 23% of current VVAERC region employment falls into the same five most volatile industries. These findings indicate that nearly one in four jobs in the area will likely be impacted by automation and technology in the next three to 10 years, changing the skills and training required for the position or changing the position and title altogether.

The VVAERC region has a low relative concentration (about 75% fewer jobs than the national average for a territory the same size) of Agriculture and Food industry positions, which is the most volatile industry according to our analysis. In total, this industry accounts for about only about 0.9% of all jobs in the VVAERC region. Other relatively volatile industries like Logistics and Tourism, Hospitality, and Recreation, are less

---

[35] Automation assessment included information and analysis from the following study: https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

concentrated in the VVAERC region. Water and Other Manufacturing are about 41% and 34% more concentrated than the national average, respectively.

Table 30: Five Industries Most Likely to Experience Volatility

Five Most Volatile Industries	2018 Jobs in VVAERC Region	Percent of Total Jobs in VVAERC Region
Agriculture & Food	788	0.9%
Logistics	4,817	5.6%
Water	201	0.2%
Other Manufacturing	3,191	3.7%
Tourism, Hospitality & Recreation	10,896	12.7%
Total	19,893	23.2%

Some of the highest-risk occupations for experiencing volatility are outlined in the table below. In total, they represent about 4,270 jobs in the region (Table 31). Most of the occupations are physically and mentally repetitive, which are some of the main characteristics that make them most susceptible to advancing technology and automation.

Table 31: High Risk Occupations:

High Risk Occupations	2018 Jobs in VVAERC Region
Packaging and Filling Machine Operators and Tenders	122
Laborers and Freight, Stock, and Material Movers, Hand	2,024
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	36
Stock Clerks and Order Fillers	2,015
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	73

The Healthcare industry is the fifth-largest industry cluster in the VVAERC region, employing more than 10,600 people (12.4% of the workforce). It is also the third least volatile industry overall according to our analysis. Technological advancement is likely to help this industry, as developments in imaging and predictive healthcare benefit patients and practitioners alike. Given the levels of complex problem solving and emotional intelligence required for many Healthcare occupations, it is more likely that healthcare practitioners will work more effectively with the help of robots rather than be replaced by them.

Table 32. Five Industries Least Likely to Experience Volatility

Top Five Industries Least Likely to Experience Volatility	2018 Jobs in VVAERC Region	Percent of Total Jobs in VVAERC Region
Healthcare	10,663	12.4%
Education & Knowledge Creation	14,286	16.7%
Information & Communication Technologies (ICT)	814	1.0%
Financial & Banking, Insurance, Real Estate (FIRE)	2,331	2.7%
Information & Communications	349	0.4%
Total	28,443	33.2%

Education and Knowledge Creation is the largest industry cluster in the region, employing about 14,286 individuals. Overall, about 33.2% of occupations, or about 28,443 employees, in the VVAERC region fall into the five least-volatile industry clusters.

APPENDIX A: METHODOLOGY

BW Research conducted secondary data analysis using data sources such as Economic Modeling Specialists Intl. (EMSI), the Census Bureau's American Community Survey, California Economic Development Department, and the Federal Reserve to understand the regional labor market and population demographics.

RESEARCH OBJECTIVES

Prior to beginning the project, BW Research discussed with the Victor Valley Adult Education Regional Consortium (VVAERC) to determine the research objectives for this study. Some of the questions that drive this research include:

o   How is the world of work changing in the VVAERC region?

o   What industry clusters are growing and should be the focus of workforce development efforts and which ones are in decline?

o   What is the VVAERC region's current job quality profile?

o   What types of workers is the VVAERC region importing and exporting and are there opportunities to develop job prospects for local workers?

o   How can the Victor Valley Adult Education Regional Consortium work with its partners across the county to facilitate workforce and economic development strategies that connect with the needs and objectives of local job-seekers and businesses?

o   How can the Victor Valley Adult Education Regional Consortium best support regional employers who are looking for talent?

SECONDARY DATA COLLECTION

Employment, population, workforce, income, and educational attainment data for the VVAERC region were defined the region's zip codes. Industry clusters were defined using the North American Industry Classification System (NAICS) codes.
Employment data were compiled from the Economic Modelling Specialists Intl. (Emsi) 2019.1 QCEW and non-QCEW for the zip codes of the VVAERC region. Additional employment datasets were also extracted from the Bureau of Labor Statistics (BLS), California Economic Development Department, the Federal Reserve, and the regional living income from the M.I.T. Living Wage Calculator. Population and workforce statistics were compiled from the Census Bureau's American Community Survey (ACS), 2017 5-year estimate.