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LIFE SCIENCES & HEALTH SERVICES CLUSTER: WORKFORCE NEEDS ASSESSMENT

SACRAMENTO CAPITAL REGION

December 2015

Prepared by: Centers of Excellence,
Los Rios Community College District

Valley Vision

Burris Service Group

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Important Disclaimer

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INTRODUCTION

Starting in 2008, the six-county Sacramento Capital region (El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties) was rocked by the global recession, losing 10 percent of the region's jobs. In response, regional leaders initiated Next Economy, an action plan to accelerate job creation and new investment in six high-growth business (industry) clusters. Valley Vision, a regional civic leadership organization, managed the three-year Next Economy design, research and implementation process on behalf of a wide range of private and public sector partners.

As of late 2015, after a lagging recovery, the region's economy is picking up momentum, with the unemployment rate decreasing while job growth is accelerating. Valley Vision received funding from the JPMorgan Chase Foundation to better understand how the region's key growth industry clusters have changed since the original Next Economy research was conducted in 2012, and what new opportunities are emerging. Valley Vision is partnering with the Los Rios Center of Excellence and the Burris Service Group on this effort.

Cluster research is a widely accepted standard of practice for developing regional prosperity strategies to address multiple facets of a region's complex economy. Industry clusters reduce operating costs by shortening supply chains; increasing the flow of information regarding new business opportunities; concentrating workforce training needs in select occupations; and speeding up the identification of gaps in products or services.[1] Firms in identified clusters may also have a reduced risk of failure, as these firms are better supported by the supply chain and can respond more rapidly to shifts in the marketplace.

This report presents findings on the analysis of the Life Sciences and Health Services cluster. It is one in a series of six reports covering Next Economy-identified clusters. Additional reports include advanced manufacturing, the "clean economy," education and knowledge creation, food and agriculture, and information and communications technologies.[2] Each report provides an overview of the cluster, industry trends and economic impact, as well as an overview of the top demand occupations in the cluster requiring postsecondary education or training, along with projected occupational demand, institutions providing related education and training, and possible workforce gaps.

This research will be used to develop cluster-based workforce action plans. Valley Vision will work alongside regional education, and workforce and economic development partners to convene six cluster-based employer forums, setting priorities and developing strategies to address critical workforce gaps, better align education and workforce development resources to meet employer and workforce needs, and strengthen the regional economy overall.

[1] Cluster Manufacturing: A Supply Chain Perspective

[2] Sacramento Area Council of Governments (SACOG) is the principal research for the Food and Agriculture Cluster study, which will focus primarily on industry trends and excludes workforce development and training needs.

CLUSTER DEFINITION

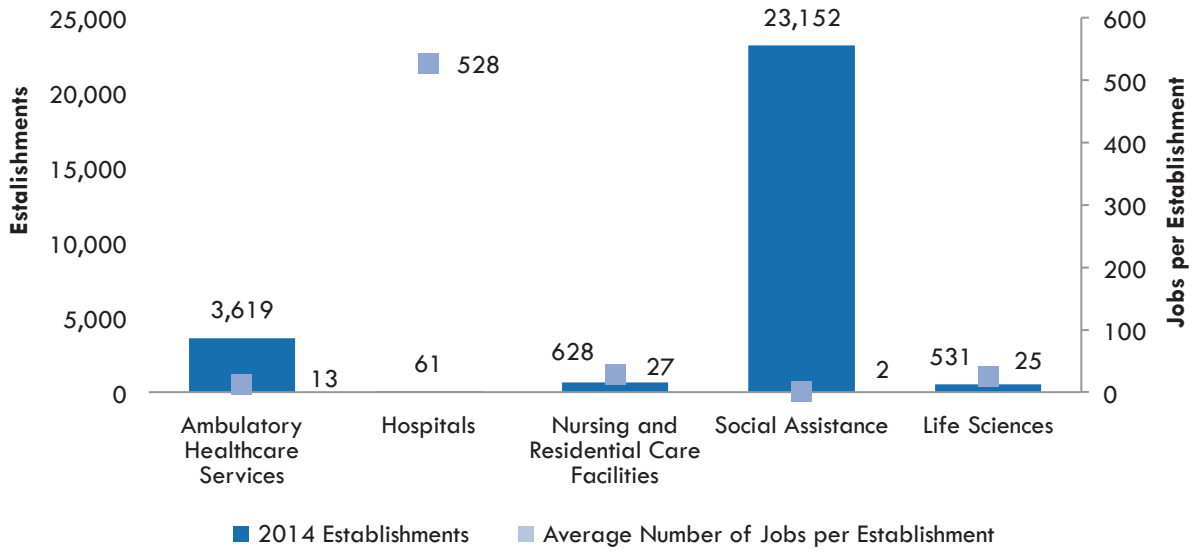
The Life Sciences and Health Services cluster is one of the largest clusters in the region, offering well-paying jobs for thousands of people. This cluster includes five subsectors:

- **Hospitals** provide medical, diagnostic, and treatment services to inpatients and some outpatient services.
- **Ambulatory Healthcare Services** provide healthcare services to outpatients in settings such as offices of physicians, outpatient care centers, and laboratories.
- **Nursing and Residential Care Facilities** provide residential care combined with either nursing, supervisory, or other types of care as needed.
- **Social Assistance** provides social assistance services directly to at-risk children and youth, persons with disabilities, unemployed and underemployed, and the elderly.
- **Life Sciences** conduct research and development; manufacture medical equipment and/or products; and/or retail medical supplies and pharmaceuticals that support the healthcare supply chain.

ESTABLISHMENTS

Exhibit 1 displays establishments and the average number of jobs per establishment for the Life Sciences and Health Services subsectors in the Sacramento Capital region. As shown, hospitals have the fewest establishments and the highest number of workers per establishment compared to other subsectors in the region. The social assistance subsector has the most establishments and the fewest number of jobs per establishment, an estimated two per organization.

Exhibit 1: Establishments and Average Employment by Subsector, Life Sciences and Health Services Cluster, Sacramento Capital Region, 2014[3]



[3] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

CONCENTRATION OF EMPLOYMENT

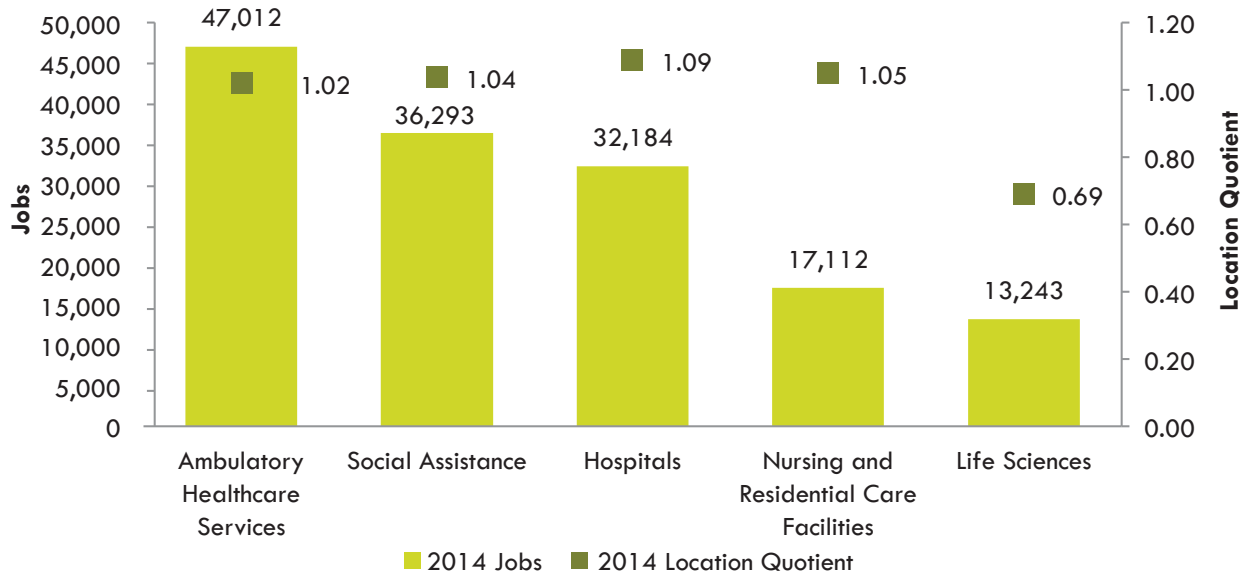
In 2014, there were about 145,800 jobs in the Life Sciences and Health Services cluster, 14 percent of the total employment in the Sacramento Capital region. As shown in Exhibit 2, the largest subsector is ambulatory healthcare services (32%; 47,000 jobs), followed by social assistance (25%; 36,300 jobs) and hospitals (22%; 32,200 jobs).

Location quotient analysis compares the total employment in a region relative to the total employment in a larger area, in this case, California. A location quotient of less than one indicates a lower concentration of employment for that industry in the region than in the state overall. A location quotient of more than one indicates a higher concentration of employment for the region than in the state overall. Most of the cluster's subsectors in the Sacramento Capital region have a location quotient that is close to one, indicating an average concentration of employment compared to other areas of the state. The life science subsector has a concentration well below one, indicating a lower than average concentration of employment.

Within the subsectors, there are industries with above average location quotients, indicating a higher concentration of employment for those industries than in the state overall. These include:

- **Hospitals**: State Government Hospitals (3.11 LQ)
- **Ambulatory Healthcare Services**: HMO Medical Centers (11.79 LQ); Family Planning Centers (1.64 LQ); and Offices of Dentists (1.31 LQ)
- **Nursing and Residential Care Facilities**: Assisted Living Facilities for the Elderly (1.64 LQ)
- **Social Assistance:** Services for the Elderly and Persons with Disabilities (2.84)
- **Life Science**: Research and Development in the Physical, Engineering and Life Sciences (1.85 LQ) and Analytical Laboratory Instrument Manufacturing (1.33 LQ)

Exhibit 2: Total Employment and Location Quotient by Subsector, Life Sciences and Health Services Cluster, Sacramento Capital Region, 2014[4]



[4] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

TRENDS AND PROJECTIONS

The Life Sciences and Health Services cluster has grown by 29 percent over the last five years, with a sharp increase between 2012 and 2013. The services for the elderly and persons with disabilities industry grew by the most during this time period, accounting for nearly 80% of the cluster's growth. Over the next five years, the Life Sciences and Health Services cluster is projected to grow by 19 percent, adding about 27,300 jobs by 2019. The social assistance subsector is projected to add the most jobs, followed by ambulatory healthcare services, and nursing and residential care facilities. Hospitals are expected to add the least number of positions over this time period.

Exhibit 3: Employment Trends and Projections, Life Sciences and Health Services Cluster, Sacramento Capital Region, 2009–2019[5]

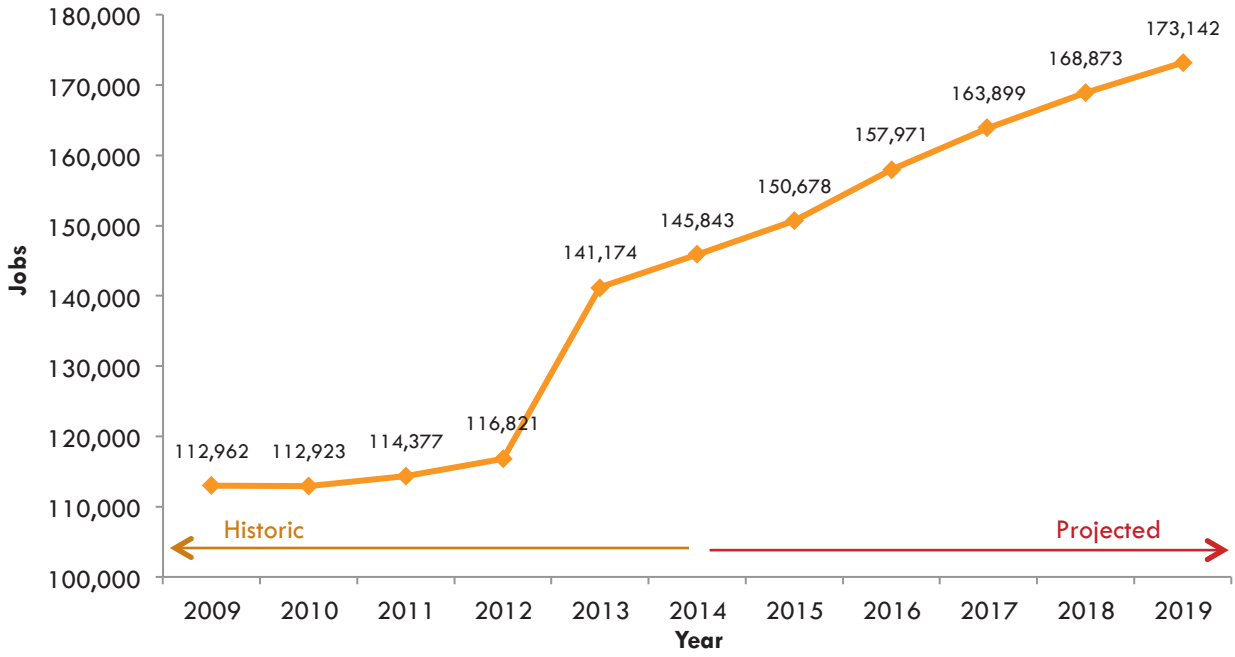


Exhibit 4: Employment Projections by Subsector, Life Sciences and Health Services Cluster, Sacramento Capital Region, 2014–2019[5]

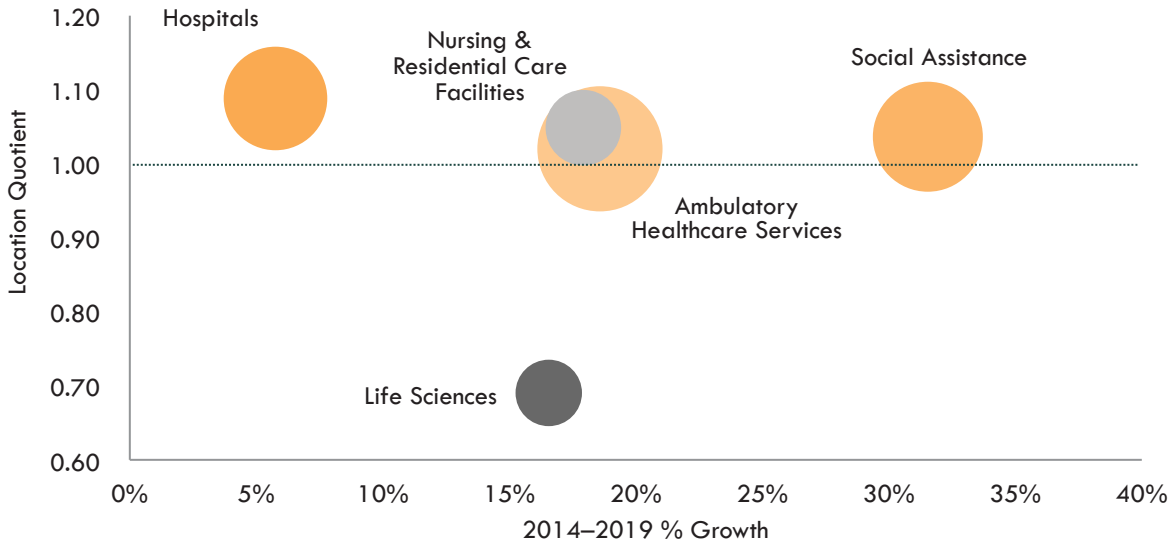
Healthcare & Life Sciences Subsector	2014 Jobs	2019 Jobs	Change	% Change
Ambulatory Healthcare Services	47,012	55,748	8,736	19%
Social Assistance	36,293	47,741	11,448	32%
Hospitals	32,184	34,037	1,853	6%
Nursing and Residential Care Facilities	17,112	20,180	3,068	18%
Life Sciences	13,243	15,436	2,193	17%
Total	**145,844**	**173,142**	**27,298**	**19%**

[5] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

TRENDS AND PROJECTIONS

The following bubble chart compares the projected five-year growth rate to the concentration of employment in the region, where the size of the bubble indicates the total number of jobs for that subsector. All of the subsectors, except life sciences, have an average concentration of employment compared to other areas of the state. Ambulatory healthcare services and social assistance are the largest subsectors, with high projected growth. The hospitals subsector is large, but with modest projected growth over the next five years. Life sciences is the smallest subsector with a below average concentration of employment and moderate growth rate.

Exhibit 5: Projected Growth Rate vs. Subsector Concentration, Life Sciences and Health Services Cluster, Sacramento Capital Region[6]

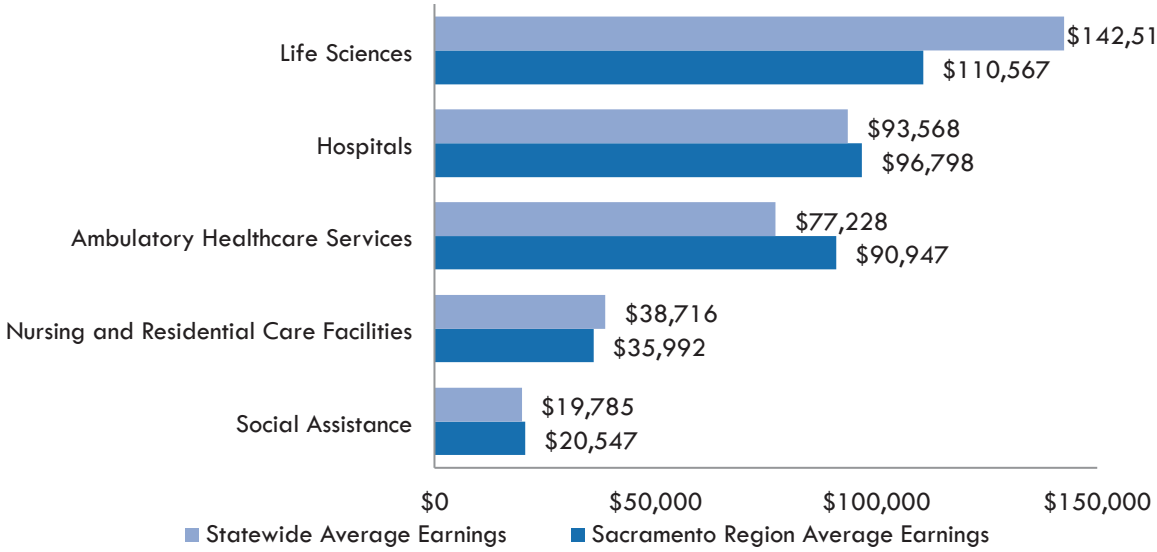


[6] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

EARNINGS

The life sciences subsector provides the best earnings in the Sacramento Capital region, followed by hospitals and ambulatory healthcare services. These subsectors provide earnings that are above the regional average across all industries.[7] Nursing/residential care facilities and social assistance organizations provide wages that are below the regional average. The earning calculation includes an average of all wages, salaries, proprietor earnings and supplemental earnings (such as retirement benefits, bonuses, etc.) for all occupations in the subsector.

Exhibit 6: Earnings by Subsector, Life Sciences and Health Services Cluster, Sacramento Capital Region, 2014[8]



[7] The average earnings across all industries in the Sacramento region is $63,400 and includes wages, salaries, proprietor earnings and supplements.

[8] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

SHIFT SHARE ANALYSIS

Shift share analysis is a method for determining how much of regional job growth can be attributed to national trends and how much is due to unique regional factors. Exhibit 7 displays four key components:

- **Industrial Mix Effect** – represents the share of regional industry growth explained by the growth of the specific industry at the national level.
- **National Growth Effect** – represents how much of the regional industry's growth is explained by the overall growth of the national economy. Given that the nation's economy is growing, it is normal to see positive change in each subsector.
- **Expected Change** – the change expected due to national growth effect and industry mix effects.
- **Regional Competitive Effect** – explains how much of the change in the subsectors is due to some unique competitive advantage that the region possesses, because the growth cannot be explained by national trends in the industry or the economy as a whole.

Four of the five subsectors are outperforming national trends, while the hospitals subsector is underperforming compared to national trends. This suggests that the region has an overall competitive advantage in the Life Sciences and Health Services cluster compared to other areas of the nation.

Exhibit 7: Shift Share Analysis by Subsector, 2013–2018[9]

	Industrial Mix Effect	National Growth Effect	Expected Change	Regional Competitive Effect
Ambulatory Healthcare Services	5,197	2,989	8,186	550
Hospitals	57	2,046	2,103	(250)
Nursing and Residential Care Facilities	828	1,088	1,916	1,152
Social Assistance	7,430	2,307	9,737	1,710
Life Sciences	179	842	1,021	1,173
Cluster Total	**13,691**	**9,272**	**22,963**	**4,335**

[9] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

ECONOMIC IMPACT

Economic impact provides a quantitative method to estimate the total economic benefit from a project, or in this case, an industry cluster. In other words, it is the "ripple effect" of all economic activities resulting from that cluster. Impact analysis is typically comprised of direct, indirect and induced impacts:

- Direct impacts are those resulting from the expenditures of operations within that industry cluster.
- Indirect impacts are those resulting from suppliers of that cluster spending money and hiring employees.
- Induced impacts are the combined value of employees of the industry cluster spending money at a household level.

Combined, these three variables equate to the total economic impact of a project or industry cluster.

The Healthcare cluster impacts the Sacramento Capital region's economy in several ways. The IMPLAN input output model was used to measure the cluster's total economic impacts. First, the cluster directly benefits the economy through the operations and jobs supported by the establishments within its subsectors. Exhibits 8 and 9 show that the Healthcare cluster directly contributes nearly $18.3 billion in output and 146,000 jobs to the regional economy. In addition to this direct effect, these establishments generate an indirect impact through their supplier purchases—around $6.0 billion in output and 41,000 jobs are created within sectors that generally supply this cluster. Finally, the Healthcare cluster creates an induced effect of around $7.7 billion and approximately 56,000 jobs as a result of consumption activities within the local economy of both direct (cluster) and indirect (supplier) employees.

Exhibit 8: Total Output Impacts[10]

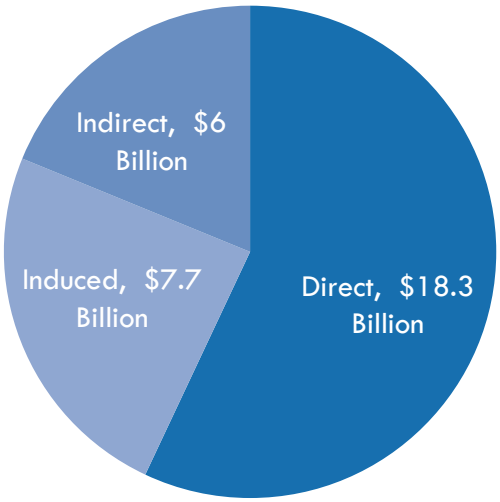
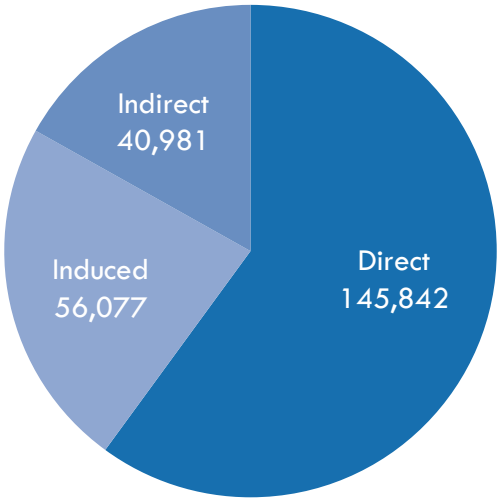
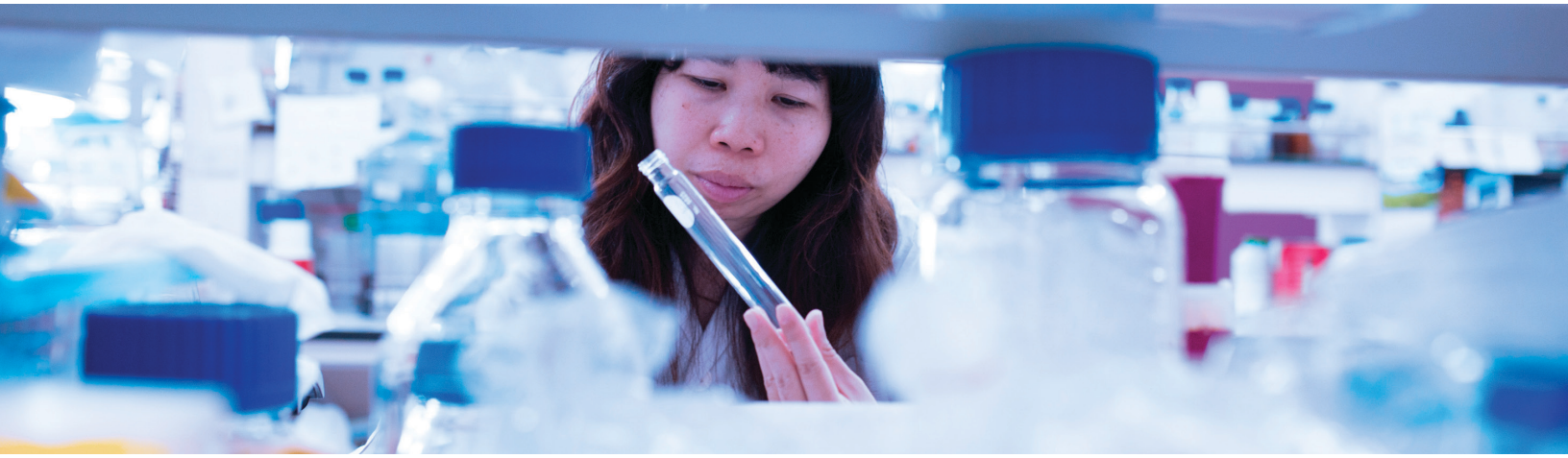


Exhibit 9: Total Employment Impacts[10]





[10] EMSI employment and IMPLAN 2013 data coefficients

ECONOMIC IMPACT

The Healthcare cluster contributes a total of about $32.0 billion in output, almost 243,000 jobs and $14.4 billion in labor income. Exhibit 10 provides the employment impacts by each subsector within the Healthcare cluster and by output, employment, and labor income (which includes all forms of employment income, including employee compensation and proprietor income). With about $11.6 billion in output, 82,000 jobs, and $5.5 billion in labor income, the ambulatory care services subsector, by far, accounts for the largest share of the cluster's total economic impacts while the nursing and residential care facilities subsector has the smallest share.

Exhibit 10: Total Economic Impacts by Cluster Subsector[11]

	Direct	Indirect	Induced	Total
Output				
Total	*$18,264,356,260*	*$6,029,117,542*	$7,749,627,699	$32,043,101,500
Life Sciences	$3,555,315,913	$1,356,387,523	$1,099,828,851	$6,011,532,287
Ambulatory Care Services	$6,715,933,047	$1,874,234,464	$2,982,634,470	$11,572,801,981
Hospitals	$5,641,456,588	$1,873,224,134	$2,598,021,739	$10,112,702,461
Nursing and Residential Care Facilities	$1,063,375,296	$352,314,530	$492,387,165	$1,908,076,990
Social Assistance	$1,288,275,416	$572,956,891	$576,755,474	$2,437,987,781
Employment				
Total	*145,843*	*40,981*	*56,077*	*242,900*
Life Sciences	13,243	8,489	7,961	29,693
Ambulatory Care Services	47,012	13,068	21,586	81,666
Hospitals	32,184	13,219	18,794	64,197
Nursing and Residential Care Facilities	17,112	2,471	3,562	23,145
Social Assistance	36,293	3,734	4,174	44,201
Total Labor Income				
Total	*$9,779,595,811*	*$2,038,863,930*	*$2,576,689,367*	*$14,395,149,108*
Life Sciences	$1,196,057,292	$476,414,356	$365,722,400	$2,038,194,048
Ambulatory Care Services	$3,936,188,414	$605,916,768	$991,753,841	$5,533,859,022
Hospitals	$3,290,297,385	$683,565,824	$863,728,073	$4,837,591,282
Nursing and Residential Care Facilities	$645,915,824	$106,830,290	$163,700,236	$916,446,350
Social Assistance	$711,136,896	$166,136,692	$191,784,817	$1,069,058,406

ECONOMIC LEAKAGE

Supply chain leakage is a primary factor in determining the value of an industry multiplier used to define the total "ripple effect" of that industry cluster. Stronger supply chain linkages, better described as a cluster using more locally sourced products and services, has a reciprocal benefit of lower leakage, increasing the multiplier and the total impact on the surrounding economy.

It was determined through an in-depth analysis of the Healthcare industry cluster and its subsets, that there is a relatively high level of supply chain leakage, roughly 57 percent. Conversely, 43 percent of goods and services supporting the industry cluster are purchased within the region.

[11] EMSI employment and IMPLAN 2013 data coefficients

INDUSTRY TRENDS

Several factors are transforming the Life Sciences and Health Services cluster. At the regional level, demographic factors such as a growing and aging population are creating demand for expanded healthcare services. At the national level, the Patient Protection and Affordable Care Act (ACA) contains provisions that are increasing demand for healthcare services and changing the way services are delivered. This section explores how these factors are affecting the Life Sciences and Health Services cluster in the region.

Over the next five years, the Sacramento Capital region's residential population is projected to grow by 3.6 percent from 2.4 million to 2.5 million, which is on par with the projected growth rate for the state.[12] By 2019, health care organizations in the region will need to expand their operations to serve an additional 87,000 residents.[13&14]

Another important demographic factor influencing the Life Sciences and Health Services cluster is the region's aging population. In 2014, approximately 19 percent of the Sacramento Capital region's population was age 60 or older. By 2024, this age group is projected to increase by 28 percent, while the age cohort 20 to 59 is expected to decrease by 2 percent.[13] Since use of healthcare services increases with age, any increase in numbers of older population cohorts will significantly impact health care demand. Further, the aging of the healthcare workforce itself is expected to create staffing shortages as workers in key healthcare occupations become eligible for retirement.

The Patient Protection and Affordable Care Act enacted in 2010 is a multi-faceted bill that restructured the national healthcare system. The bill is making healthcare more affordable and accessible for residents across the state and nation. According to Gallup, the Affordable Care Act is facilitating the reduction of the uninsured rate across the state and nation.

With the implementation of the Health Insurance Marketplace and Medicaid expansion, the uninsured rate in California dropped by 6.3%, from 21.6% in 2013 to 15.3% in 2014.[15] This equates to 2.44 million more California residents with healthcare coverage than in the previous year. As of January 2015, more than three million California residents have obtained coverage through the Health Insurance Marketplace.[16] In addition to expanded insurance coverage, there are several provisions in the Act that are increasing demand for health services:

- Insurance companies can no longer impose lifetime dollar limits on health benefits.
- Insurance companies can no longer deny coverage due to pre-existing conditions.
- Insurance companies are required to provide benefits for mental health and substance use services.
- Many insurance plans are required to provide preventive health services with no deductible or co-pay.

These provisions as well as the expanded reach of healthcare coverage to previously uninsured individuals are driving demand for healthcare services at the local and national levels.

[12] California's population is projected to increase by 3.4 percent between 2014 and 2019.

[13] EMSI Population Demographics – 2015.2.

[14] The Sacramento Area Council of Governments long-term population projections indicate a higher population growth than estimated by EMSI. Should the population grow at a higher rate, it will increase the demand for health services across the region.

[15] *State of the State Series, Arkansas, Kentucky Sees Most Improvement in Uninsured Rates*. February, 2015. gallup.com.

[16] U.S. Department of Health and Human Services. *Five Years Later: How the Affordable Care Act is Working for California*. hhs.gov

OCCUPATION DEMAND

Fifteen occupations were selected for inclusion in the study based on the following criteria:

- Annual job openings were significant.
- The minimum education requirement is a high school diploma plus on-the-job training, postsecondary award, associate degree or bachelor's degree.

Exhibit 10 displays the employment demand for the Life Sciences and Health Services cluster occupations selected for inclusion in the study. Over the next five years (2014–2019), these occupations are projected to grow by 14%, adding more than 7,400 new jobs and 6,000 replacement jobs. Sacramento Capital region employers will need to fill nearly 2,700 openings annually to keep pace with cluster growth, retirements and other separations.

Registered nurses is the largest occupation in the group with the most annual openings over the next five years. Nursing assistants and medical assistants are also large occupations with significant annual openings created by new job growth and replacement needs. For each occupation, replacement estimates include retirements and general separations, but not turnover within the occupation. As such, replacements and new job growth combined is a good measure of demand for workers.

Exhibit 10: Employment Outlook, Life Sciences and Health Services Occupations, Sacramento Capital Region[17]

Description	2014 Jobs	2019 Jobs	2014–2019 Change	2014–2019 % Change	Total Replace-ments	Total Openings	Annual Openings
Registered Nurses	17,301	19,451	2,150	12%	1,827	3,977	795
Medical Assistants	6,245	7,090	845	14%	660	1,505	301
Nursing Assistants	5,449	6,716	1,267	23%	597	1,864	373
Dental Assistants	3,403	3,711	308	9%	376	684	137
Social and Human Service Assistants	3,106	3,597	491	16%	449	940	188
Licensed Vocational Nurses	2,919	3,537	618	21%	413	1,031	206
Pharmacy Technicians	2,551	2,788	237	9%	134	371	74
Dental Hygienists	2,165	2,431	266	12%	301	567	113
Child, Family, and School Social Workers	2,109	2,321	212	10%	239	451	90
Medical and Health Services Managers	1,848	2,141	293	16%	251	544	109
Health Information Technicians	1,250	1,419	169	14%	180	349	70
Medical Laboratory Technicians	1,202	1,388	186	15%	173	359	72
Emergency Medical Technicians and Paramedics	1,050	1,259	209	20%	168	377	75
Mental Health and Substance Abuse Social Workers	863	969	106	12%	99	205	41
Biological Technicians	667	747	80	12%	106	186	37
Total	**52,128**	**59,565**	**7,437**	**14%**	**5,973**	**13,410**	**2,682**

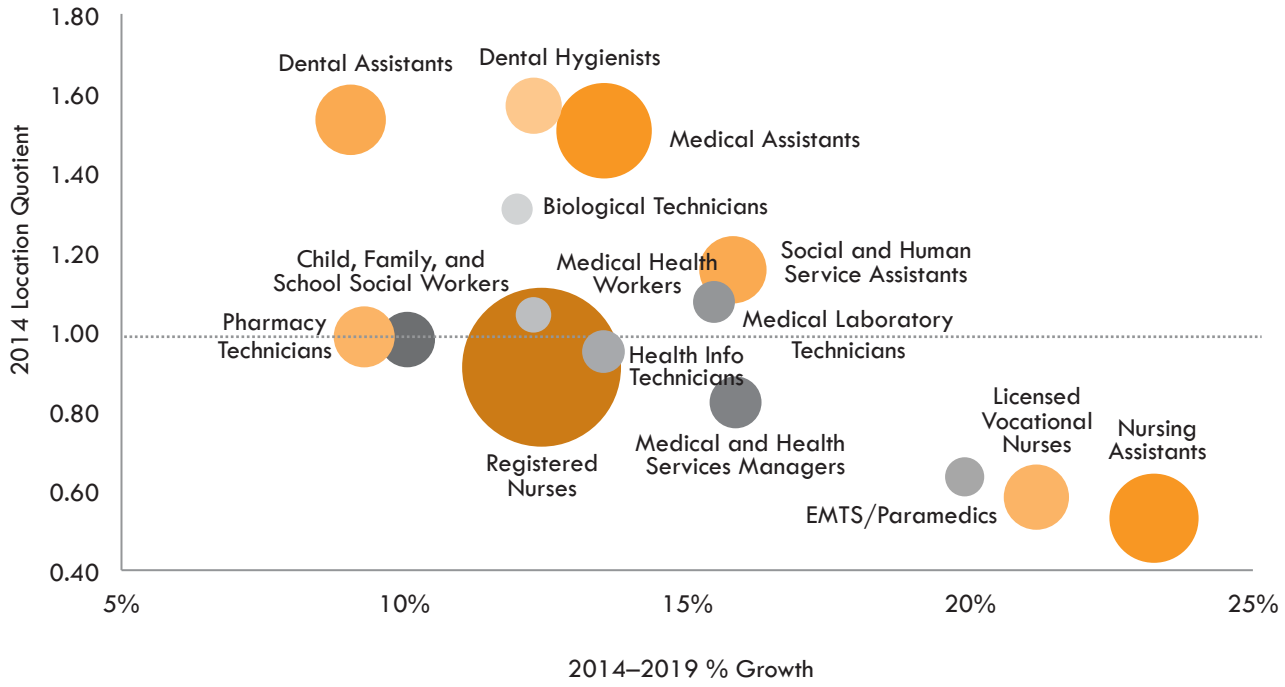
[17] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

OCCUPATION DEMAND

In addition to industry analysis, location quotient can also be applied to occupations. In this case, the location quotient compares an occupation's total employment in the region relative to the state's total employment for that occupation. A location quotient of less than one indicates a lower concentration of employment for that occupation in the region than in the state overall. A location quotient of more than one indicates a higher concentration of employment for the occupation than in the state overall.

The bubble chart below compares the concentration of occupation employment to the projected five-year growth rate in the region, where the size of the bubble indicates the total number of jobs for each occupation. As shown below, registered nurses is the largest occupation, with average concentration in the region and a moderate projected growth rate. Dental assistants and dental hygienists have above average location quotients and moderate projected growth rates. Licensed vocational nurses and nursing assistants are projected to grow faster than any other occupation in the group, but have below average concentration of employment in the region.

Exhibit 11: Growth Rate vs. Occupation Concentration, Life Sciences and Health Services Occupations, Sacramento Capital Region[18]

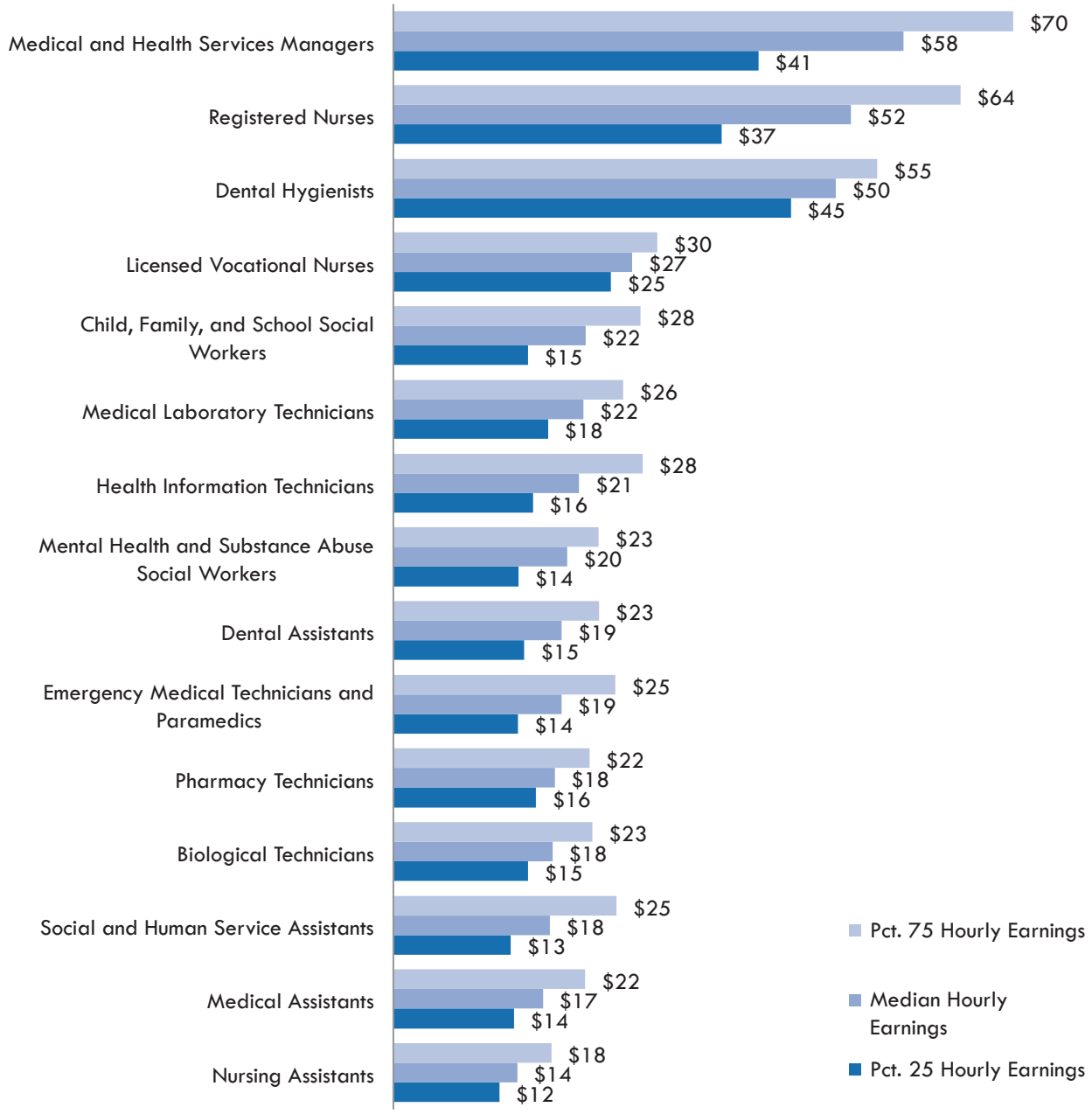


[18] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

OCCUPATIONAL WAGES

Most of occupations included in the Life Sciences and Health Services cluster analysis earn wages that are close to or above the regional median wage. Medical and health services managers is the highest paid occupation, followed by registered nurses and dental hygienists. The lowest paid occupations in the group include social and human services assistants, medical assistants and nursing assistants. The median hourly wage across all occupations in the Sacramento Capital region is $22.69 per hour.

Exhibit 12: Hourly Wages, Life Sciences and Health Services Occupations, Sacramento Capital Region, 2015[19]



[19] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

EDUCATION ASSESSMENT

This section provides a review of the training and education supply supporting the Life Sciences and Health Services cluster for the occupations selected for inclusion in this study. Exhibit 13 identifies the minimum education requirements for the Life Sciences and Health Services cluster occupations. The minimum education requirement for the majority of occupations is a postsecondary certificate or associate degree. Two occupations have a minimum entry-level education requirement of a high school diploma plus on-the-job training. However, postsecondary training or education may give candidates a competitive advantage in the hiring process over those with only a high school diploma.

Exhibit 13: Minimum Education Requirements, Life Sciences and Health Services Occupations

Description	Entry Level Education	Typical On-The-Job Training
Biological Technicians	Bachelor's degree	None
Child, Family, and School Social Workers	Bachelor's degree	None
Dental Assistants	Postsecondary non-degree award	None
Dental Hygienists	Associate degree	None
Emergency Medical Technicians and Paramedics	Postsecondary non-degree award	None
Health Information Technicians	Postsecondary non-degree award	None
Licensed Vocational Nurses	Postsecondary non-degree award	None
Medical and Health Services Managers	Bachelor's degree	None
Medical Assistants	Postsecondary non-degree award	None
Medical Laboratory Technicians	Associate degree	None
Mental Health and Substance Abuse Social Workers	Bachelor's degree	None
Nursing Assistants	Postsecondary non-degree award	None
Pharmacy Technicians	High school diploma or equivalent	On-the-job training
Registered Nurses	Associate degree	None
Social and Human Service Assistants	High school diploma or equivalent	On-the-job training

EDUCATION ASSESSMENT

Exhibit 14 lists the programs with certificate and degree programs that provide a workforce pipeline to the Life Sciences and Health Services cluster. The table includes an estimate of the certificate and degrees conferred each year, based on a three-year historical average as well as the total number of training programs in the region. Appendix B provides a complete list of the educational programs in the region, including the type of degree conferred.

In the Sacramento Capital region, there are 71 training programs supporting the Life Sciences and Health Services cluster occupations. These programs confer an average 2,700 degrees and certificates annually. Based on a high level assessment of supply and demand, there could be gaps in the workforce pipeline in several areas: biological technicians, dental hygienists, emergency medical technicians/paramedics, health information technicians/coders, medical laboratory technicians, and registered nurses.

The supply and demand data also suggests that there could be a significant oversupply of medical assistants, dental assistants and licensed vocational nurses. When there is an oversupply in the workforce systems, new graduates may not be able to find work in their field of study, forcing them to return to school, move out of the region, or find employment in other environments.

The total certificates and degrees conferred provide some information about the supply of workers to an industry or cluster. However, it is limited in that there are several unknown variables that impact the supply, such as migration trends, employer preferences, worker preparedness, qualified unemployed labor force, and graduate/completion duplication. Therefore, it is necessary to conduct additional research to verify potential training shortages in the region.

Exhibit 14: Educational Programs & Awards, Life Sciences and Health Services Occupations, Sacramento Capital Region[20&21]

Educational Program	3-Year Average Certificate/Degrees Conferred	Number of Training Programs
Alcohol and Controlled Substances	135	7
Biotechnology & Biomedical Technology	18	1
Dental Assistant	282	5
Dental Hygiene/Hygienist	66	2
Emergency Medical Services/Paramedic	15	6
Health Administration	Not Available	1
Health Information Technology/Coding	33	3
Human Services	124	6
Licensed Vocational Nursing	308	6
LVN to RN Bridge	Not Available	4
Medical Assistant	779	12
Medical Laboratory Technology	6	1
Nursing Assistant	Not Available	3
Pharmacy Technician/Assistant	141	5
Registered Nursing	583	8
Social Work	221	1
Total	**2,711**	**71**

[20] California Community College Chancellor's Office Data Mart. National Center for Education Statistics (NCES). Higher education institutions are required to report completion data to NCES if they participate in any federal financial assistance program authorized by Title IV of the Higher Education Act. Completion data not reported to the NCES or CCCCO Data Mart were not included in the estimate.

[21] The 3-year average is based on academic years 2011–12, 2012–13 and 2013–14 for private education institutions and public four-year universities and 2012–13, 2013–14, and 2014–15 for community colleges.

SKILLS ASSESSMENT

Exhibit 15 displays the top skills and professional credentials for the Life Sciences and Health Services cluster occupations selected for inclusion in this study. The data is based on analysis of job posting data, aggregated by Burning Glass. This online tool uses intelligent "spidering" to search the Internet for job listings, removes duplication, and aggregates the data into a search database. As shown below, most of the skills/knowledge areas are specialized and require specific training and certifications.

Exhibit 15: Skill and Professional Credential Preferences, Life Sciences and Health Services Occupations[22]

Occupation	Top Skill/Knowledge Areas	Top Certifications/ Professional Credentials
Biological Technicians	Biology, chemistry, botany, physics, mathematics, entomology, test equipment, experiments, medical equipment instruction, molecular biology, and data collection	Biomedical Equipment Technician (BMET)
Child, Family, and School Social Workers	Case management, social services, psychology, child development, screening, mental health, treatment planning, and therapy	Social Work License, First Aid CPR AED
Dental Assistants	Dentistry, radiology, patient treatment, front office, oral hygiene, X-Rays, dental procedures and infection control	First Aid CPR AED, Certified Dental Assistant
Dental Hygienists	Oral hygiene, treatment planning, dentistry, X-Rays, patient/family education and instruction, prophylaxis, local anesthetics, scaling, and sealants.	Dental Hygienist Certification
Emergency Medical Technicians and Paramedics	Patient care, first aid, life support, advanced cardiac life support, electrocardiogram, triage, physical demand, trauma, and emergency medical care	EMT, Paramedic Certification, First Aid CPR AED
Health Information Technicians	Medical coding, medical billing, ICD-9-CM coding, health information technology, CPT coding, medical records, data entry, medical terminology, and electronic records, ICD-10	Registered Health Information Technician, Certified Professional Coder, Registered Health Information Administrator
Licensed Vocational Nurses	Patient care, treatment planning, patient/family education and instruction, medication administration, home health, acute care, vital signs measurement, screening, infection control, patient evaluation, care planning and data collection	Licensed Vocational Nurse, First Aid CPR AED, Basic Cardiac Life Support Certification
Medical and Health Services Managers	Patient care, case management, collaboration, nurse management, scheduling, acute care, clinical experience, staff development, advanced cardiac life support, home health, treatment planning and patient direction	Registered Nurse, First Aid CPR AED, Basic Cardiac Life Support Certification, Advanced Cardiac Life Support Certification
Medical Assistants	Patient care, vital signs measurement, appointment setting, injections, scheduling, medical terminology, patient preparation, phlebotomy, front office, electrocardiogram, and electronic medical records	Certified Medical Assistant, First Aid CPR AED, Basic Cardiac Life Support Certification
Medical Laboratory Technicians	Chemistry, phlebotomy, laboratory equipment, biology, data entry, equipment maintenance, laboratory testing, laboratory procedures and pathology	Phlebotomy Certification, Certified Medical Laboratory Technician
Mental Health and Substance Abuse Social Workers	Mental health, treatment planning, case management, psychology, crisis intervention, behavioral health, patient care, discharge planning, social services and patient assistance	Social Work License
Nursing Assistants	Patient care, patient bathing, vital signs measurement, acute care, patient direction, blood pressure checking, patient assistance, and life support	Certified Nursing Assistant, First Aid CPR AED, Basic Cardiac Life Support Certification
Pharmacy Technicians	Pharmacist assistance, labeling, HIPAA, scheduling, data entry, training programs, and prescription processing	Certified Pharmacy Technician
Registered Nurses	Patient care, advanced cardiac life support, acute care, treatment planning, case management, critical care, patient/family education and instruction, collaboration, patient direction, patient evaluation, and telemetry	Registered Nurse, Advanced Cardiac Life Support Certification
Social and Human Service Assistants	Case management, social services, mental health, screening, data entry, psychology, crisis intervention and record keeping	First Aid CPR AED

[22] Burning Glass, 2015.

SUMMARY

The Life Sciences and Health Services cluster employs more than 145,000 workers, about 14 percent of the total employment in the Sacramento Capital region. This cluster includes five subsectors: hospitals, ambulatory healthcare services, nursing and residential care, social assistance, and life sciences. In the last five years, this cluster has grown by 29 percent with a sharp increase between 2012 and 2013 – which corresponds with the implementation of the health insurance marketplace and the expansion of insurance coverage to thousands of previously uninsured individuals.

Over the next five years, the Life Sciences and Health Services cluster is projected to grow by 19 percent, adding about 27,300 jobs to Sacramento's economy. Population growth and an aging workforce are driving demand, as well as expansion of care through the Patient Protection and Affordable Care Act.

There are more than 60 occupations and career tracks for individuals with an interest in the field of Life Sciences and Health Services. Fifteen occupations were selected for inclusion in this study based on total number of job openings and minimum education requirements, including:

- Biological Technicians
- Child, Family, and School Social Workers
- Dental Assistants
- Dental Hygienists
- Emergency Medical Technicians and Paramedics
- Health Information Technicians
- Licensed Vocational Nurses
- Medical and Health Services Managers
- Medical Assistants
- Medical Laboratory Technicians
- Mental Health/Substance Abuse Social Workers
- Nursing Assistants
- Pharmacy Technicians
- Registered Nurses
- Social and Human Service Assistants

SUMMARY

Registered nurses is the largest occupation in the group, with the most annual openings over the next five years. Nursing assistants and medical assistants are also large occupations, with significant annual openings created by new job growth and replacement needs. Most of occupations in the cluster earn wages that are close to or above the regional median wage.

There are 71 training programs supporting the Life Sciences and Health Services cluster. These programs confer an average 2,700 degrees and certificates annually. Based on a high level assessment of supply and demand, there could be gaps in the workforce pipeline in several areas: biological technicians, dental hygienists, emergency medical technicians/paramedics, health information technicians/coders, medical laboratory technicians, and registered nurses. The supply and demand data also suggests that there could be a significant oversupply of medical assistants, dental assistants and licensed vocational nurses. However, due to several unknown variables that impact the supply, more research is necessary to verify potential training and education shortages or oversupplies in the region.

Valley Vision, along with the Center of Excellence and other partners, will be conducting forums with Life Sciences and Health Services employers to review the cluster findings, high priority occupations and skills gaps that can be addressed through a concerted cluster workforce action plan. Priorities that may be elevated based on this analysis include:

1. Conduct primary research to assess potential skill gaps in existing training programs. Partner with regional employers and education institutions to identify skill requirements and competencies, and to close skills gaps.
2. Identify occupations that will be most impacted by projected retirements and the Patient Protection and Affordable Care Act, and develop action steps to increase supply.
3. Develop stackable credentials and training pathways to provide students with career advancement options in the Life Science and Health Services cluster.
4. Identify other Life Science and Health Services occupations not selected for inclusion in this study for additional research and review.

APPENDIX A: LIFE SCIENCES AND HEALTH SERVICES CLUSTER DEFINITION

The Life Sciences and Health Services cluster is comprised of the following NAICS codes.

Life Sciences

325411 Medicinal and Botanical Manufacturing

325412 Pharmaceutical Preparation Manufacturing

325413 In-Vitro Diagnostic Substance Manufacturing

325414 Biological Product (except Diagnostic) Manufacturing

334510 Electromedical and Electrotherapeutic Apparatus Manufacturing

334516 Analytical Laboratory Instrument Manufacturing

334517 Irradiation Apparatus Manufacturing

339112 Surgical and Medical Instrument Manufacturing

339113 Surgical Appliance and Supplies Manufacturing

446110 Pharmacies and Drug Stores

541380 Testing Laboratories

541711 Research and Development in Biotechnology

541712 Research and Development in the Physical, Engineering, and Life Sciences

Ambulatory Care Services

621111 Offices of Physicians (except Mental Health Specialists)

621112 Offices of Physicians, Mental Health Specialists

621210 Offices of Dentists

621310 Offices of Chiropractors

621320 Offices of Optometrists

621330 Offices of Mental Health Practitioners (except Physicians)

621340 Offices of Physical, Occupational and Speech Therapists, and Audiologists

621391 Offices of Podiatrists

621399 Offices of All Other Miscellaneous Health Practitioners

621410 Family Planning Centers

621420 Outpatient Mental Health and Substance Abuse Centers

621491 HMO Medical Centers

621492 Kidney Dialysis Centers

621493 Freestanding Ambulatory Surgical and Emergency Centers

621498 All Other Outpatient Care Centers

621511 Medical Laboratories

621512 Diagnostic Imaging Centers

621610 Home Health Care Services

621910 Ambulance Services

621991 Blood and Organ Banks

621999 All Other Miscellaneous Ambulatory Health Care Services

Hospitals

622110 General Medical and Surgical Hospitals

622210 Psychiatric and Substance Abuse Hospitals

622310 Specialty (except Psychiatric and Substance Abuse) Hospitals

902622 Hospitals (State Government)

903622 Hospitals (Local Government)

Nursing and Residential Care Facilities

623110 Nursing Care Facilities (Skilled Nursing Facilities)

623210 Residential Intellectual and Developmental Disability Facilities

623220 Residential Mental Health and Substance Abuse Facilities

623311 Continuing Care Retirement Communities

623312 Assisted Living Facilities for the Elderly

623990 Other Residential Care Facilities

Social Assistance

624110 Child and Youth Services

624120 Services for the Elderly and Persons with Disabilities

624190 Other Individual and Family Services

624310 Vocational Rehabilitation Services

APPENDIX B: LIFE SCIENCES AND HEALTH SERVICES CLUSTER TRAINING PROGRAMS

The following table provides a list of educational programs supporting the 15 life science and health services occupations selected for inclusion in this study.

Program	College	Award Type
Alcohol and Controlled Substances	American River College	Associate of Arts, Certificate
	Cosumnes River College	Associate of Science, Certificate
	InterCoast Colleges, Elk Grove	Certificate
	Lake Tahoe Community College	Associate of Arts, Certificate
	William Jessup University	Certificate
	Woodland College	Associate of Science, Certificate
	Yuba College	Associate of Science, Certificate
Biotechnology & Biomedical Technology	American River College	Associate Degree; Certificate
Dental Assistant	Carrington College California, Citrus Heights	Associate degree, Certificate
	Carrington College California, Sacramento	Associate degree, Certificate
	Kaplan College, Sacramento	Certificate
	Lake Tahoe Community College	Certificate
	Sacramento City College	Associate of Science, Certificate
Dental Hygiene/ Hygienist	Carrington College California, Sacramento	Associate degree
	Sacramento City College	Associate of Science
Emergency Medical Services/Paramedic	American River College	Associate of Science, Certificate
	Cosumnes River College	Certificate
	Folsom Lake College	Course
	Lake Tahoe College	Course
	Sierra College	Course
	Yuba College	Certificate
Health Administration	University of Phoenix, Sacramento Valley Campus	Bachelor's and Master's
Health Information Technology/Coding	Asher College	Certificate
	Bryan College, Gold River	Associate degree
	Cosumnes River College	Certificate in Coding; Associate of Science in HIT
Human Services	American River College	Associate of Arts, Certificate
	Cosumnes River College	Associate of Arts, Certificate
	Sacramento City College	Associate of Arts, Certificate
	University of Phoenix, Sacramento Valley Campus	Bachelor's degree
	Woodland College	Associate of Science
	Yuba College	Associate of Science
Health Licensed Vocational Nursing	Carrington College, Sacramento	Associate degree, Certificate
	Charles A Jones Career and Education Center	Certificate
	Curam College of Nursing	Certificate
	Kaplan College, Sacramento	Certificate
	Sacramento City College	Associate of Science, Certificate
	Unitek College, Sacramento	Certificate

APPENDIX B: LIFE SCIENCES AND HEALTH SERVICES CLUSTER TRAINING PROGRAMS

Program	College	Award Type
LVN to RN Bridge	American River College	Associate degree/Certificate
	Sacramento City College	Certificate
	Sierra College	Certificate
	Yuba College	Certificate
Medical Assistant	Cambridge Junior College, Woodland	Certificate
	Cambridge Junior College, Yuba City	Certificate
	Carrington College California, Citrus Heights	Associate degree, Certificate
	Carrington College California, Sacramento	Associate degree, Certificate
	CET, Sacramento	Certificate
	Charles A Jones Career and Education Center	Certificate
	Cosumnes River College	Associate of Science, Certificate
	InterCoast Colleges, Elk Grove	Certificate
	Kaplan College, Sacramento	Certificate
	Lake Tahoe Community College	Associate of Arts, Certificate
	MTI College	Certificate
	San Joaquin Valley College, Rancho Cordova	Certificate
Medical Laboratory Technology	Folsom Lake College	Associate of Science
Nursing Assistant	American River College	Certificate
	Cosumnes River College	Certificate
	Sierra College	Courses
Pharmacy Technician/ Assistant	Asher College	Certificate
	Carrington College California, Citrus Heights	Associate degree
	Carrington College California, Sacramento	Associate degree
	Charles A Jones Career and Education Center	Certificate
	Cosumnes River College	Associate of Science
Registered Nursing	American River College	Associate of Science
	Breckinridge School of Nursing, ITT Technical Institute, Rancho Cordova	Associate degree
	California State University, Sacramento	Bachelor's and Master's degree
	Carrington College California, Sacramento	Associate degree, Certificate
	Sacramento City College	Associate of Science
	Sierra College	Associate of Science
	University of California, Davis	Master's degree
	University of Phoenix, Sacramento Valley Campus	Bachelor's degree
	Yuba College	Associate of Science
Social Work	California State University, Sacramento	Bachelor's and Master's

MORE ABOUT...

More About The Centers of Excellence

The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California community colleges for program decision making and resource development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Technical Education (CTE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

The Centers of Excellence Initiative is funded in part by the Chancellor's Office, California Community Colleges, Economic and Workforce Development Program. The Centers aspire to be the leading source of regional workforce information and insight for California community colleges. More information about the Centers of Excellence is available at **www.coeccc.net**.

For more information on this study, contact:

Theresa Milan, COE Director
Northern California Region
(916) 563-3221
milant@losrios.edu

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More About Valley Vision

Since 1994, Valley Vision's work has driven transformative change and improved lives across Northern California. An independent social impact and civic leadership organization headquartered in Sacramento, Valley Vision strengthens our communities through unbiased research, boundary-crossing collaboration and change leadership. Our work improves overall quality of life and creates the conditions for economic prosperity and community health and vitality.

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The Burris Service Group (BSG) is a full-service consulting practice providing expertise in economic development, strategic economic research, real estate site strategy, management, and institutional growth. The company was established based on the clear need that advisory services be delivered in an "action-oriented" form. The founder of BSG, Robert Burris, brings to his clients an active local and international network of professionals, as well as 20 years of experience in economic development, market and economic analysis, commercial real estate information, corporate sales, and consulting.

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