

# **Business Outreach Report Governor's Innovation Award**



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# **Business Outreach Report**

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### **Executive Summary**

This report is an attempt to capture the current status of job openings, pay scales and available training in the Inland Empire. It is based upon one-on-one interviews with CEOs, operations executives and human relations personnel in 50 firms spread across 18 sectors. Beyond the specific positions driving the major sectors, the effort looked at the general themes that emerged in how and why companies hire workers. This included the importance they place on learning teamwork, hands-on experience, career technical education and college graduation. That said, companies expressed little interest in graduates in liberal arts or humanities majors at either community colleges or four year universities.

Some generalizations were learned about how firms judged the general aptitudes of potential employees. These ranged from the degree that they had settled on life goals, to the extent they exhibited personality traits such as friendliness, ambition, interest, helpfulness, leadership or innovation needed by the firm. There were expected views on the importance of having degrees and certifications. But these were tempered by a desire to hire workers who, regardless of education, would be good fits for a company's existing workforce and culture. Contrary to the views often expressed on college campuses, employers frequently stated that they not looking for generalists with broad academic backgrounds. Rather, they want new hires whose degrees, certification and hands-on training provide immediate benefit to their companies.

An income of \$20 per hour or \$41,200 a year was selected as the target in judging whether job categories offered workers a chance to bring their families within sufficient range of the middle class with a secondary family member in a lower income job to get them there. Given that target, the Inland Empire's major private sectors were reviewed to understand which jobs in the growing sectors could allow workers to meet or surpass the \$20 per hour threshold. For each sector, the names of the positions and the median hourly and annual rates of pay were identified. So also was a preliminary review of where training of the kind necessary to succeed in these sectors was being made available by public sector institutions. Three exceptions were occupations that showed up in nearly every company interviewed as important to them: IT, accountancy and computer savvy executive assistants.

To place this report in context, it began by looking at the fundamental economic issues that educational strategies must solve if the Inland Empire is to prosper. Thus, it showed that the inland area has moved from the recovery to the expansion phase of its economic activity. However, it still has serious issues of adult workforce education and poverty that are impacting its quality of life. Dealing with those issues is thus the paramount economic development issue for the region.

## **Summary: Demand for 4-Year College Graduates**

Given the need for college and university graduates who could eventually fill specific needs for companies, employers cited specific fields where strong demand for degreed people exists:

- **Information Technology.** Of the 18 sectors in which interviews took place, virtually all of them indicated key positions existed for people trained to apply information technology (*IT*) to their companies. Examples from various industries of their types of IT needs are enumerated on page 11. These ranged from people able to install and maintain hardware to analysts who could analyze, recommend, install and train the use of systems to enhance the overall efficiency of their companies to programmers who could handle the day to day tasks of adapting existing software to a firm's changing needs.

This strong demand exists in a region where there are few firms that are IT specialists and only one giant in the field: ESRI, which founded Geographic Information Systems and has over 2,000 workers. Rather, the region is one in which the practical problems of solving day to day business problems have forced the area's companies to require this kind of talent.

It was clear from the interviews that the Inland Empire's firms will currently take nearly anyone with hardware or software skills to fill these positions whether degreed or not. In part, this is because the demand is so high and there are not enough workers with formal university training to fill it. This imbalance will continue as the pressures of competition force inland firms to increasingly use IT to become ever more efficient, whether they want to or not.

IT is a field in which college graduates are guaranteed middle class or higher pay scales while working in the Inland Empire. As Exhibit 8 shows, the median pay for the various IT positions in the area ranges from \$83,346 (*website developer*) to \$139,402 (*computer network architect*). In addition, it is likely that students with degrees in the field will be in the position to drive strong bargains about their benefits and working conditions, a priority for many of today's millennial graduates.

- **Accounting.** The sheer growth of the Inland Empire's economy means that there is an existing demand for people with accounting degrees. This will continue as the area's economy expands. Thus from 2012-2015, the number of firms in the region grew from 87,533 to 103,586, an increase of 16,053 or 18.3%. While not every firm needs a trained accountant, every company of any size needs access to someone that can help them ensure they are recording their revenues, costs and profits as well as their payroll and other tax obligations.

Some people in this field need to do post-graduate work to become Certified Public Accountants (*CPA*). They often end up in accounting firms that handle the needs of an array of clients. A few CPAs will find work in conventional firms. The median income for CPAs is \$85,197. Most companies appear to rely upon people who have majored in

business with an emphasis in accounting. Depending on the size of the firm, they will have accounts payable, accounts receivable and payroll clerks reporting to them. Their median income is \$68,411.

- **Civil Engineering.** During the period of the Inland Empire's turnaround and expansion, its construction sector has become its second fastest growing employer. A major reason has been the continuation of major infrastructure construction projects throughout the region. Of equal importance has been the development of large warehousing facilities to accommodate the growth of imported goods coming from the ports of Los Angeles and Long Beach as well as the explosion of e-commerce. Of late, the residential construction sector has begun adding life to the sector.

Allied with this growth has come the need for civil engineers to design these projects. They will work directly for construction firms as well as for the engineering companies that provide these functions to them. Their median income in the Inland Empire is \$99,590.

- **Nursing.** Health care was the only sector of the Inland Empire's economy that grew straight through the Great Recession, a record that has continued. Interviews with clinical and hospital executives both underscored their single largest problem is to find and hold registered nurses. The pipeline for training shows several institutions offering bachelor's programs including California State University San Bernardino, Loma Linda University, California Baptist University and the Western University of Health Sciences. There are also several community college programs. That said, the demand has consistently outweighed the supply.

The difficulty stems from four issues. First is the continuing growth of the Inland Empire's population as well as its large numbers of young and aging people. Second is the significant numbers who have gotten first time health care insurance through the Affordable Care Act. Third is the aging of current baby boomer nursing workforce. Fourth is the tendency of nurses to move away from the Inland Empire for higher paying jobs in Southern California's coastal counties.

Registered nursing is a career for which college graduates can find a worthwhile future both in terms of contribution to society and personal income. Today, their median income is \$95,472 in the Inland Empire.

- **Medical and Clinical Laboratory Technologists.** These are the professionals who undertake the analysis of the various body fluids extracted from patients. Their training needs to be at the bachelors level with a strong emphasis on the biochemical sciences. Loma Linda University offers degrees in the field. Interviewees in hospitals, clinics and blood banks indicated a need to have more trained people. There is also the potential for careers in this field due to several local firms specializing in the manufacture of

pharmaceutical products. This is a potential high paying career for graduates with a biological or chemical interest. Today, the median pay is \$83,741 in the inland area.

- **Business Degrees.** Given the desire by the Inland Empire business community to find new staff members who can fill specific needs for them, the strongest non-specialized degrees are those in business. At the bachelor's level, students can select a wide degree of emphases that match the needs of the sectors growing in the inland region. For instance, CA State San Bernardino offers bachelors in business that included, among others, an emphasis in supply chain, information systems, accounting, finance and real estate.

Graduates with business degrees with course work in these specialties fit into the profile of the kind of people for whom local firms are seeking. Thus, logistics is the region's fastest growing sector and needs supply chain managers. As indicated, information systems plus finance and accounting are specialties commented upon in virtually every interview regardless of sector. Real estate has historically been one of the inland area's fastest growing sectors.

Graduates entering these sectors with the right sub-major in business would be qualified to be front line supervisors in competition with experienced personnel moving through the ranks. Pay scales for most such supervisors earn median incomes in the \$50,000s. Thus for those handling supply chain personnel, the median is \$52,978 for managing material movers and \$55,910 for directing transportation personnel. In manufacturing, first line supervisors earn \$51,979. In offices, the administration of support staff has a median pay of \$51,251. Directly managing workers undertaking repairs and maintenance pays a median of \$59,306. In construction, first line supervisors earn a median of \$67,538.

- **Other Bachelor's Degrees.** Graduates who have completed degrees in mathematics as well as various science, engineering and technological subjects do show employers that they had the type of precision minds that would make them assets to their firms. This was the case whether they were needed in their specific discipline. These were potential employees whom executives see as being able to be hired as raw talent and successfully trained to undertake the specific tasks needed by the company.

Graduates in bachelors degrees in fields like the liberal arts, humanities and social sciences were of much less interest to local executives. Only in one of 50 interviews did an executive indicate a preference for people with these types of broad backgrounds. When coaxed, interviewees did agree that a student with a degree in these types of subjects had established two important facts. First, that they could successfully multi-task. Second, that they had proven they could establish a goal for themselves and stick through to its completion. However, today's generation of business leaders were much less interested in them.

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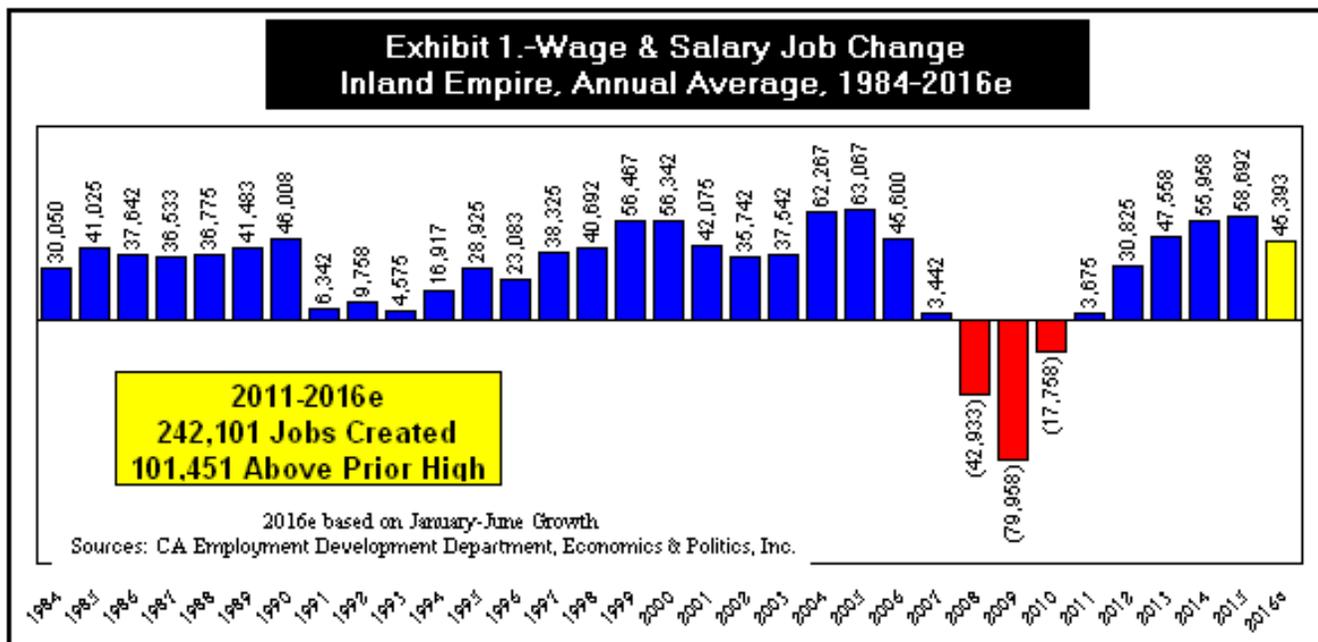
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## Business Outreach Report, Governor’s Innovation Award John E. Husing, Ph.D.

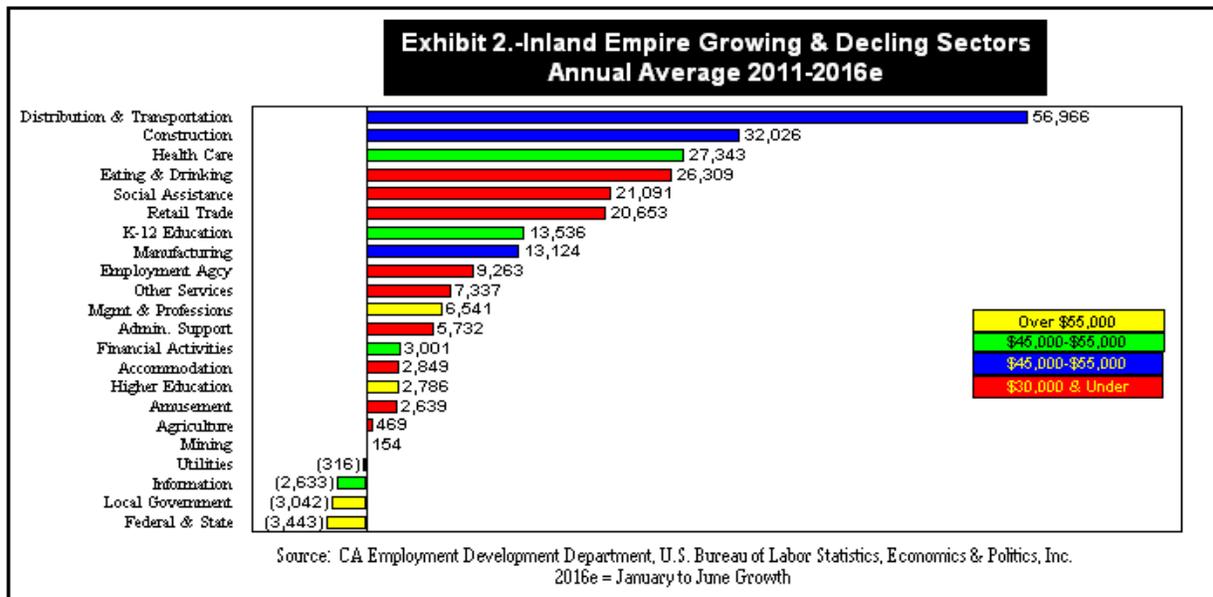
Under the Governor’s Innovation Award, one task to fulfill its mission of increasing the educational success of Inland Empire students and adults has been to identify the sectors of the area’s economy that are growing, the types of employees being hired by firms within them, the kind of jobs that companies and agencies are finding hard to fill, and the general attitudes and abilities firms and agencies are seeking in the prospective hires. Determining the answers to these questions was assigned to the Inland Empire Economic Partnership (*IEEP*). That led to an interview process involving a broad spectrum of 50 companies and agencies in San Bernardino and Riverside counties. All of the discussions were conducted one-on-one with CEOs and/or top administrators with human relations directors often in the meetings.

**General Economic Environment.** In evaluating the interviews, it is important to understand the economic context of where the Inland Empire sits in mid-2016. Looking first at job creation, the region is in the midst of a strong period of expansion. From the start of the turnaround in 2011 through a forecast of 2016 based upon six months of data, the area has created 242,101 jobs to reach 1,407,793. That record level would be 101,451 or 7.8% above the high of 1,306,342 before the recession in 2007 (*Exhibit 1*).

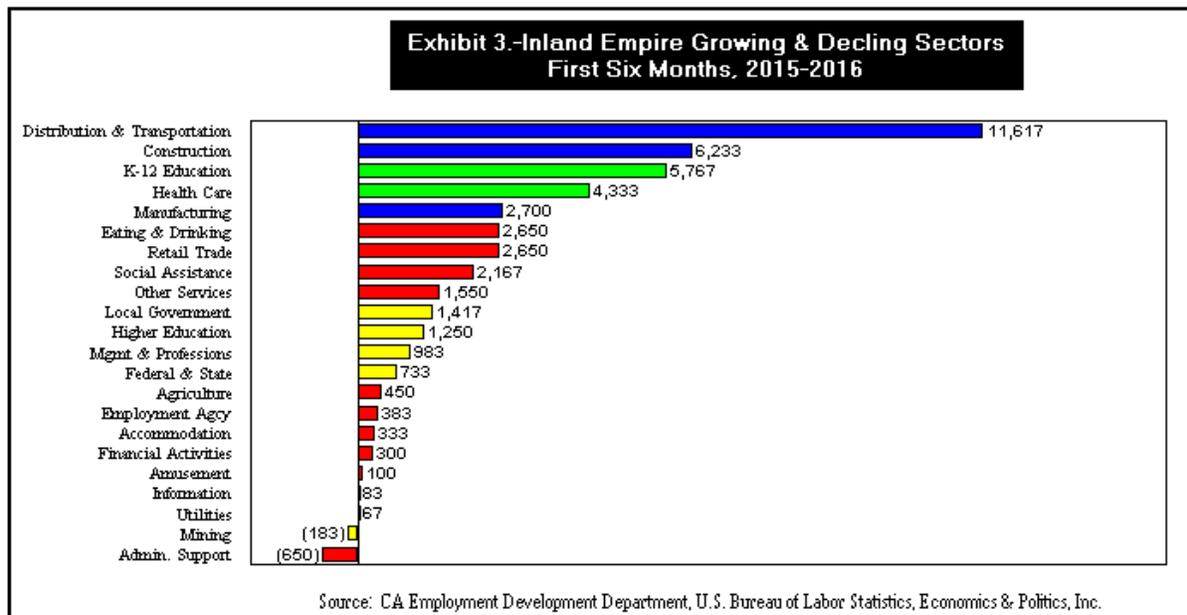


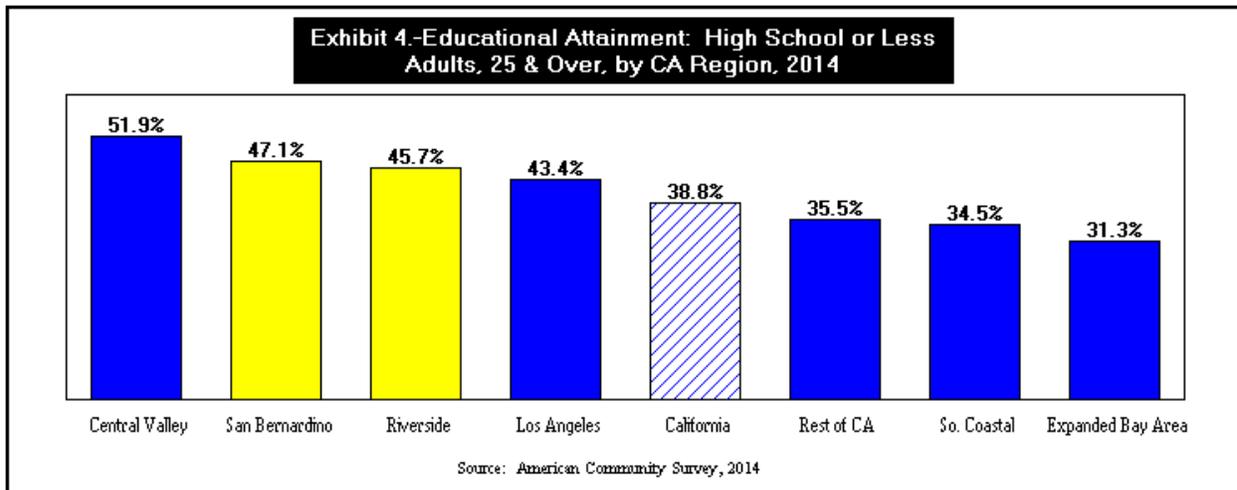
Importantly, the three top sectors creating jobs in local firms and agencies during this period had median pay levels of \$45,000 to \$55,000. Logistics (\$45,456) was responsible for 56,966 new positions in this period, a 24% share of job growth. Construction (\$51,051) saw an increase of 32,026 jobs, a 13% share. Health care (\$54,261) grew by 27,343, an 11% share (*Exhibit 2*).

However, these sectors were followed by three sectors with median pay under \$30,000. This included eating and drinking with 26,309 new jobs (11% share of growth), social assistance with 21,091 more positions (9%) and retail trade which gained 20,653 (9%) (Exhibit 2).

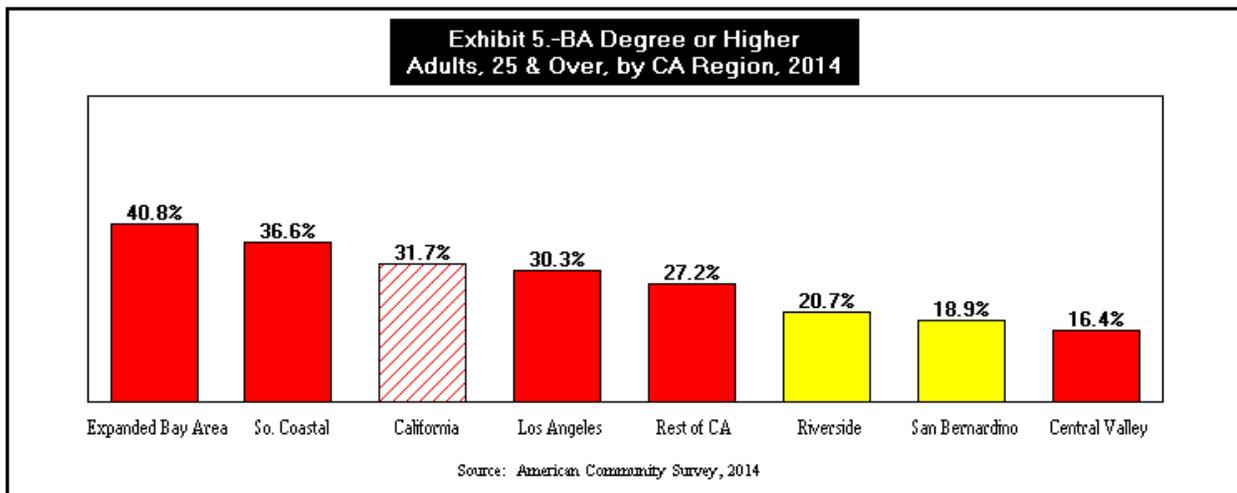


That said, the mix of jobs being created in 2016, now that the economy has hit a different stride, has become more strongly tilted towards its moderate paying sectors. Thus from June 2015-2016, the Inland Empire is up 44,933 jobs. Of these, the logistics sector has led with 11,617 more jobs, a 26% share. That has been followed by construction (6,233; 14% share) which continues strengthening largely due to infrastructure and industrial projects. K-12 education (5,767; 13%) has grown as school budgets have healed. Health care remains strong (4,333; 10%) as the sector continues reacting to the Affordable Care Act and the aging population. Manufacturing (2,700; 6%) is unusually strong for a California area. These sectors represented 86% of new jobs with each having a median income in the \$45,000 to \$55,000 range.

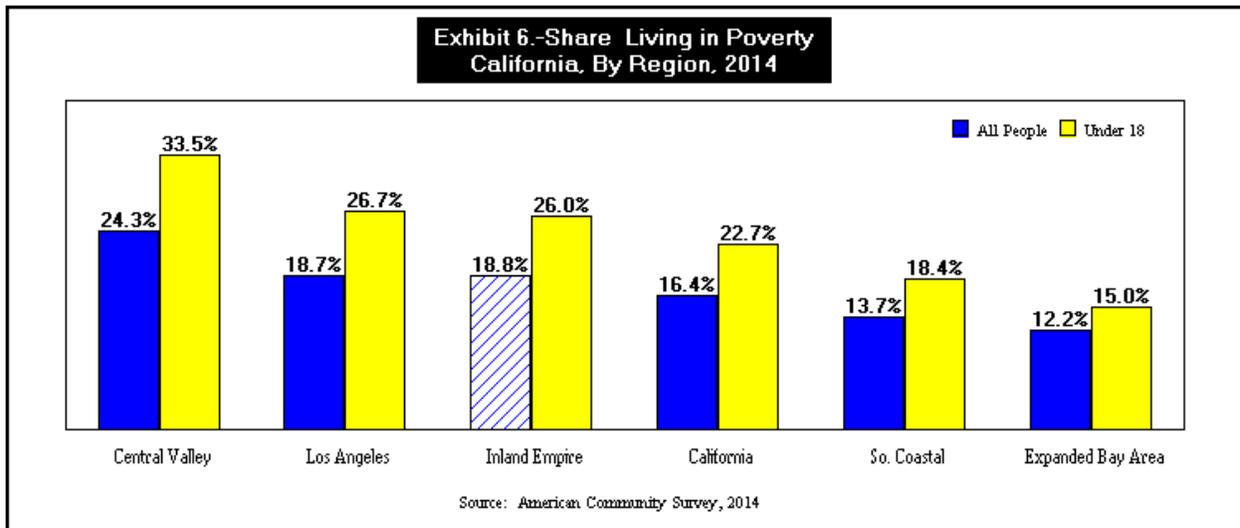




While the Inland Empire is in the expansion phase of its business cycle, the 2014 American Community Survey reveals that the community has some serious economic issues. First and foremost is the share of the population that has a high school or less education. The share in San Bernardino County was 47.1%. It was 45.7% in Riverside County. Among the regions of California, only the Central Valley (51.9%) had a higher share of marginally educated adults (*Exhibit 4*). This fact has meant that the types of sectors for which nearly half of the inland region's adults are qualified tend to be blue collar or technical jobs, office based support positions or work in consumers services (*e.g., retailing, hotel, amusement*). The sectors with the best pay in these groups tend to be in the blue collar/technical group as well as health care and finance. The lower paying sectors are largely the population serving categories.



Turning the view around, only 20.7% of Riverside County's adults had a bachelors or higher degree in 2014. It was 18.9% in San Bernardino County. Again, the only area with a lower share was the Central Valley (16.4%) (*Exhibit 5*). These facts put the Inland Empire at a competitive disadvantage in its attempts to draw higher paying companies when Los Angeles's share is 30.3% and the southern coastal counties are at 36.6%. The reason the Bay Area (*defined here as San Luis Obispo north to Marin and east to Sacramento*) is able to draw so many technical firms is due to the area's 40.8% of adults with bachelors or higher degrees.



It is no surprise that poverty levels follow the education data. In 2014, 26.0% of Inland Empire children under 18 were living in family units below the poverty line. For all people, it was 18.8%. For children, Los Angeles County (26.7%) was slightly worse; the Central Valley (33.5%) had a much more difficult situation. For all people, only the Central Valley (24.3%) had a greater share living in poverty. Los Angeles County (18.7%) was slightly better.

These data lead to several conclusions about the Inland Empire and its labor force:

- This is a good time for job creation in the two county area.
- The sectors adding the most jobs in the recovery and expansion are those in the moderate paying to low paying groups.
- The moderate paying sectors have lately been dominating job growth as they have been responsible for 68% of new jobs in January-June 2016 versus the same period of 2015.
- Despite a relatively healthy economy, the Inland Empire continues to have great difficulties with its demographics. The share of marginally educated adults keeps the economy locked in a world of blue collar/technical, health care and lower paying sectors.

These facts create a two-fold education needed for the Inland Empire:

- Finding local jobs in the moderate paying sectors that are not being filled and for which those adults and children not headed for college can gain skills, certifications and other qualifications. These jobs need to be on skill ladders up which motivated workers can climb to median incomes of over \$40,000. That threshold is set so that a family with a secondary worker in a lower paying sector at \$25,000-\$30,000 could reach the middle class (\$65,000-\$75,000).
- Finding local jobs and creating strategies that encourage the children of parents who themselves are not well educated to start and finish educations at either the AA or bachelors levels.

**Interviews.** For this portion of the Governor’s Innovation Award, the goal was to identified the local occupations that can fill one or both of these job creation needs. As indicated, altogether senior executives in 50 companies and agencies were interviewed. They ranged across 18 different sectors. They included many of the largest companies within the Inland Empire, but also a smattering of smaller firms more representative of their sectors.

<b>Exhibit 7.-Sectors &amp; Number of Interviews</b>	
• Trucking & Warehousing (9)	• Hotels (2)
• Health Care (6)	• Railroad (2)
• Manufacturing (6)	• Water (1)
• Agencies (5)	• Aircraft Repair (1)
• Construction (4)	• Oil & Gas (1)
• Finance (3)	• Real Estate (1)
• Engineering (2)	• Entertainment (1)
• Software (2)	• Printing (1)
• Retailing (2)	• Restaurant (1)

**General Hiring Themes.** Across all of the sectors, there were themes that continually emerged about the kind of employees that firms are looking to hire. These characteristics were often found in the hiring of experienced workers from other firms. However, it was repeatedly stated that they were needed from workers coming directly to them out of academic or career technical training. The most frequently mentioned were:

1. **Teamwork.** Employers want people experienced in working in teams since that is the essence of what occurs in most companies. For educators, the goal should be to have students within their majors gain experience that would include:
  - Collaborating with other students on projects, even across majors
  - Working in a group to meet specific project deadlines
  - Demonstrating project leadership
  - Understanding the need to assist other participants
  - Showing a willingness and the ability to innovate in achieving project success
2. **Hands-On Experience.** Employers prefer students who have had some hands-on experience in their field whether in academic programs, career technical education, hobbies or on jobs while working their way through school. The rationale for this point of view include:
  - Companies want employees who have worked on real world projects not just made up assignments. This is a place where instructors in academic or technical programs need relationships with businesses that can feed such projects to them. Examples:
    - Designing, engineering or working on CAD drawings for specific products

- Machining, welding, wiring or assembling a company's product
  - Handling accounts receivable, payable, payroll or overall accounting functions for a firm
  - Designing, installing and teaching the use of software to solve a company's specific needs
  - Developing project flow charts, timelines and budgets to meet a firm's goals
  - Creating documents, spreadsheets, powerpoints or using social media to support a manager's needs
  - Assisting certified staff on their functions within a health care organization
- Students in both academic and career technical education programs have an advantage in the hiring process if they come from programs offering job shadowing or internships. This is again a place where instructors in both worlds can benefit their students by developing relationships with relevant companies.
  - At a minimum, any potential worker has an advantage if they can demonstrate that they have mastered the Microsoft package of software skills. This includes the ability to type, an ability apparently disappearing.
  - In tech sectors, students need to show that they have at a minimum undertaken personal software projects. This demonstrates they truly enjoy this type of work and have been willing to innovate on their own.
  - For blue collar/technical positions, students must show they have used both general tools and those specific to their trade school work. As more than one such firm stated, "certificates of competence are not sufficient if the person has never picked up a wrench."

**3. Academic Training.** For those coming from colleges, students gain a competitive advantage if they have had to learn overall management perspectives for a product or service. This would appear to be a place where the design of academic majors gives students experience in:

- Documenting issues to be solved for a product or service to be made available
- Creating flow charts of the events that must occur for the issues to be resolved
- Explaining the input supply chain required whether of physical supplies for a product or professional assignments for a service
- Costing each input in the system
- Understanding the software requirements for the system to operate efficiently
- Pricing the product or service

- Researching the sales potential for the product or service
- Describing the marketing approach
- Developing the pro formas incorporating these factors
- Writing up this effort and explaining it orally

**4. Career Technical Education.** For those coming from technical or trade programs, students have a competitive advantage if their instructors have helped them master the following in their studies:

- Complete training in the relevant levels of mathematics
- Learn specific skills on modern equipment
- Have hands-on experience with more generalized tools
- Working on real world projects brought by companies to the instructor
- Demonstrate the ability to understand and handle software relevant to their technical field
- Work on a team with differing skills working together to complete a project
- Complete certifications for their technical or trade field
- Understand the working conditions in the job market for their skill set (*e.g., assignments, starting/ending hours, length of day*)

**General Aptitudes.** There were statements very frequently made by CEOs/human relations directors about how they evaluate and differentiate between potential new workers. To some extent, these factors indirectly showed the manner in which baby boomer executives were attempting to deal with potential millennial employees. To the extent possible, educators would do their students a service by helping them hone and demonstrate these soft skills:

**1. Life Goals.** Often mentioned was the ability of a potential worker to articulate their goals and ambitions and demonstrate that they have taken steps to achieve them. This applies to people coming out of college, technical programs or from other firms. Examples include:

- For full time students, the choice of college major or attainment of technical certification
- For existing workers, choosing to attend part time certification courses aimed at allowing upward mobility into better paying jobs
- During K-12 years, choosing to participate in sector specific academies set up by high schools
- Working as an intern in their field through opportunities arranged by their instructors

- Participation in job shadowing made available by their instructors during their course work
- For full time students, gaining part time job experience in related fields while obtaining their training
- Personal hobbies that relate to their desired field

**2. Personality Characteristics.** There are specific personality traits often stated as important to evaluating the potential success of a new employee. While very much part of a person’s personality, these are attributes that educators can assist their students in developing. Examples include:

- **Friendliness.** Workers in many occupations will interact with the customers of their employers. Friendliness is thus an attribute sought for those who will work in a wide array of occupations. These include engineers and IT workers who will be meeting clients, bank clerks and loan officers, retail sales clerks and managers, real estate brokers and document processors, gaming dealers, restaurant and hotel staffs, governmental workers, health care technicians or sales people.
- **Ambition.** While technical competence is often sufficient to obtain a job, the ability to migrate to higher paying positions is most often a function of workers taking advantage of possibilities that open over time. These may come from acquiring added occupational skills from fellow workers or short course programs and certifications. They can also come from learning the techniques and viewpoints needed to move into supervision. Firms often foster such advancement but it is up to individuals to seize such openings when they occur.
- **Interest.** Companies are proud of what they do. They prefer workers who they feel can reflect that excitement. Potential employees who have the skills needed by firms would be well served to look into a company’s history and workforce culture and consider how they might succeed in that context.
- **Helpfulness.** Firms realize that they succeed when their workers work as a team to produce their products or services. They want employees who are competent but also are likely to cooperate in a labor force composed of individuals with both similar and different skill sets and varying levels of competence.
- **Leadership.** Companies of all types recognize that their new workers will be the group from which their future mid-managers and senior executives will most likely come. While they seek technical competence for specific occupations, an added bonus is some appearance of a new worker’s willingness or ability to lead.
- **Innovation.** Firms often find that their products advance and systems increase in efficiency due to the thinking coming from their workers. Some demonstration of the ability and willingness to think “outside of the box” is thus a valued asset in new hires.

- **Bi-Lingual.** In 2014, exactly 33% of the Inland Empire’s population spoke Spanish at home. In the workplace, the ability to move between Spanish and English is thus an advantage in many companies.
- 3. Higher Education.** When executives expressed their views about the value of higher education, there were some obvious answers but also significant surprises. Higher education is defined here to mean bachelor’s level work:
- Clearly, executives are interested in students who have completed majors giving them specific skills needed by their firms that require college degrees. However, they also expressed the importance for new employees to understand that skills and technical abilities are changing rapidly and will require a willingness to continue with training and certifications to stay abreast of their fields.
  - Across several sectors, executives noted the importance to their firms of students who have completed course work in science, technology, engineering and/or mathematics (*STEM*). Others added the arts to this list (*STEAM*). The rationale is that they will possess intellectual rigor as well as understand the pace at which technology is changing the workplace.
  - Numerous employers, surprisingly including those in technology sectors, stated that they placed less of a priority on attaining college completion than on the ability of an employee to fit into their workplace team, as well as a willingness to work hard and a desire to learn on the job.
  - Outside of technical majors, the importance of a degree was seen as important in that it shows that a student has the ability to multi-task and to expend effort towards a goal. Also, most graduates are likely to have attained the mathematics and writing skills necessary for success with the company or agency. That said, executives did not express a great appetite for college trained generalists without the other characteristics discussed here.
- 4. Certifications.** The large bulk of executives interviewed stressed their disappointment that the education system has not created the career technical education pipeline to provide them with the technically trained workforce they need. The complaints included the following:
- There are a wide variety of technical occupations in which employers are having trouble finding qualified staff (*see examples below*). This stems from the increasing retirements of skilled baby boomer technicians as well as changes in technology that are requiring workers to have new forms of skill. Employers do not see either the public high school or community college systems approaching anywhere near the scale of training required to filling these needs.
  - When slots are filled from private sector training groups, employers indicated that too often their new employees have the neither skill levels or other workplace attributes they seek.

- While public educators often feel they are reaching out to deal with the pipeline issue, employers find that their manner of doing so is generally not effective. Often, they find educators creating courses on their own or through advisory groups that meet infrequently on-campus. Neither approach creates the buy-in from employers that is necessary for such efforts to succeed.
- Several labor intensive elements are needed if this gap is to be filled:
  - Executives do not like taking the time to navigate school campuses. Educators must be prepared to spend time one-on-one in the offices of industry leaders and ultimately to develop industry advisory committees that meet at industry facilities. This can build support from relevant sectors.
  - Instructors must expect to meet with their industry advisors frequently if their programs are to remain relevant and if companies are to either recruit from them or regularly send their employees to them. In a sense, instructors need to become regarded as colleagues of industry executives.
  - Approval times for technical programs must be rapid given the pace of change in the business world. There is no time for programs to navigate the time consuming educational approval processes that make this impossible. This is a particular difficulty for community colleges.
  - Technical programs do not easily lend themselves to the structure of the community college or high school time schedules. They often need to be taught faster than in quarterly or semester systems. For adults, they likely should involve night or weekend teaching.
- When designing programs, educators should be aware that certifications in trade skills are important. However in designing programs, it is important to stress the combination of certifications along with acquiring hands-on and teamwork experience within the field.
- Beyond technical abilities, prospective technical workers should also gain the ability to communicate in writing and learn to use elementary forms of information technology relevant to their fields.

**Income Target.** In looking at pay within different occupations the goal is to find jobs that fill one of two conditions:

- A worker makes \$65,000-\$75,000 a year which is defined here to be middle class.
- A worker makes \$20 an hour (*\$41,600 a year*) or more. That level would allow a secondary wage earner in the family who is working in a lower paying sector (*median pay under \$30,000*) to bring the household to the middle class.

**High Demand Skill Fields.** During the interview process, it became clear that there are three sets of skill sets needed in virtually every sector. In these occupational fields, demand is high and is almost universal across the sectors plus it is often not being met:

- **Information Technology (IT).** Virtually every company in every sector interviewed stressed the need for computer savvy staff members to handle IT functions. The demand is so high that one county indicated they could hire the entire IT class finishing at Cal State San Bernardino each year. Examples show the wide variety of functions these workers needed to perform and manage:
  - Food manufacturers must track every item entering and leaving their facilities for health and inventory reasons.
  - Retailers must track every item entering and leaving stores for both inventory control and to understand trends in product demand.
  - Warehousing and fulfillment functions are controlled by computerized systems which also track product flows.
  - Trucking companies increasingly plan the routes and track their vehicles via geographic information systems.
  - Hospitals increasingly have patient records, facility management, treatment coding and record keeping on integrated systems.
  - Printing companies use IT systems that interface between sales staff, graphic artists and instructions to presses.
  - Real estate, title, insurance and loan documents are created on-line or inputted into systems so they can be analyzed and tracked.
  - Credit unions and banking input every transaction, serve on-line customers and need experts in computer security.
  - IT companies need staffing to analyze issues for their expanding base of customers plus write customized software for these clients and help with software installation and training.

Executives stressed that their great need is for people who can perform these functions. To a surprising extent, they were more interested in potential performance however gained, than whether employees acquired those skills in education or training programs.

Workers able to fill these positions are among the highest paid in their companies. Training can be at the Bachelors level or higher at each of the local four year institutions: University of California Riverside, CA State San Bernardino, University of Redlands, California Baptist University and La Sierra University. Associates level training is available at each of the 12 community colleges located throughout the two county area. In addition, certifications such as that from the CISCO academy can be

learned on-line and related training at the Baldy View, Riverside County, Colton-Redlands-Yucaipa and San Bernardino County regional occupational programs (ROP). This represents a bonus to prospective workers.

In virtually every occupational category, IT workers can move on to sufficient median incomes to put them in the \$65,000-\$75,000 bracket that constitutes the middle class (*Exhibit 8*).

<b>Exhibit 8.-Median Hourly Rates, Annual Incomes, IT Workers</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Computer Network Architects	\$67.02	\$139,402
Software Developers, Systems Software	\$60.41	\$125,653
Software Developers, Applications	\$58.26	\$121,181
Information Security Analysts	\$53.48	\$111,238
Database Administrators	\$47.79	\$99,403
Computer Occupations, All Other	\$45.65	\$94,952
Computer Programmers	\$45.32	\$94,266
Computer Systems Analysts	\$44.53	\$92,622
Network and Computer Systems Administrators	\$43.00	\$89,440
Computer Network Support Specialists	\$41.41	\$86,133
Web Developers	\$40.07	\$83,346
Computer User Support Specialists	\$29.93	\$62,254

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

- **Accounting.** As has always been the case, every company needs someone keeping their books. This potentially involves four types of positions (*Exhibit 9*):
  - **Certified Public Accountant (CPA).** A few firms may have person with a bachelor’s degree in accounting who has passed the CPA exams. Most however do not because the pay scale needed to retain CPAs is too high. Using the 75% threshold of all accountants and auditors, CPA’s should be able to work their way up to an hourly rate of \$40.96 or \$85,197.
  - **Accountant.** More often, companies have someone who has worked as a clerk or bookkeeper and moved up to leading their accounting functions. Their training may come from on-the-job learning or courses at a community college. Less often it is a person who has a bachelor’s degree in business with an accounting stress who did move on to becoming a CPA. The median hourly rate for people with the accountant title is \$32.89 per hour or \$68,411. This is the rate people in these positions should be able to reach.
  - **Clerks/Bookkeepers.** Three types of clerk/bookkeeping functions exist in medium to larger firms: accounts receivable, accounts payable and payroll. For those coming from school, training can come from course work in a college extension or community college program. Workers generally fall just above or just below the \$20 per hour level.

<b>Exhibit 9.-Median Hourly Pay, Accounting Fields, 2016, Inland Empire</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
CPA	\$40.96	\$85,197
Accountants and Auditors	\$32.89	\$68,411
Payroll and Timekeeping Clerks	\$20.16	\$41,933
Bookkeeping, Accounting, and Auditing Clerks	\$19.58	\$40,726
Billing and Posting Clerks	\$17.30	\$35,984

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

Training at the bachelors level or higher is available at each of the local four year universities described above. Associates level training is also available at each of the 12 community colleges located throughout the two county area. In addition, clerical training is available through every community colleges and some of the ROPs in the two counties. A surprise in the interviews was the extent to which company accounts are managed by people who have been promoted from clerics as opposed to trained accountants.

- **Executive Assistants.** Depending on size, firms need anywhere from one to many people who can work as executive assistances. The more such individuals have skills using the Microsoft's office suite, the better they will likely be paid. With most companies led by baby boomer executives, interviewees often stressed their reliance on assistants who could handle computer based office skills as well as social media.
  - **Word** requires typing ability and allows the creation, storage and management of documents.
  - **Excel** allows development and use of spreadsheets for data manipulation
  - **Powerpoint** is used to create slides for presentations and hand-outs
  - **Access** is used for the creation and management of databases
  - **Outlook** is a major standard for managing calendars
  - **Publisher** permits the elementary design of items like brochures and newsletters

Workers can gain these skills at the 12 community colleges, the Riverside County and Colton-Redlands-Yucaipa ROPs. They can move up to a median hourly pay scales at a median of \$18.35 per hour or \$38,168 for secretaries or administrative assistants (*Exhibit 10*). They can graduate to being work processors or typists at \$20.34 or \$42,307 and move up to becoming Executive Assistants at \$26.01 per hour target or \$54.101.

<b>Exhibit 10.-Executive Support Staffing, 2016, Inland Empire</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Executive Secretaries & Executive Administrative Assistants	\$26.01	\$54,101
Word Processors and Typists	\$20.34	\$42,307
Secretaries and Administrative Assistants	\$18.35	\$38,168

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

**Sector Specific Skills Going Unfilled.** A key function of the interview effort has been to uncover skill sets that are in demand and either pay at the \$20 or higher or put workers on a career path towards achieving that level. In addition, discussions were held to identify those occupations where the training pipelines appear insufficient to fill the demand, Examples include:

- **Logistics.** This is the Inland Empire’s fastest growing sector (*56,966 or 24% of new jobs 2011-2016*). It includes warehousing operations as well as trucking fleets. The firms range from small operations to major international trade and e-commerce companies. It is a part of the economy in which the use of information systems, whether managing the flow of goods or running robotic equipment is expanding rapidly. It is also a sector where technical skills are very much in demand.
  - **Warehousing.** Workers in initial jobs in warehousing generally learn on the job. Examples include:
    - labor intensive positions handling cargo with and median pay (*half above/half below*) runs at \$11.87 an hour or \$24,690 per year. These jobs generally involve the ability to use bar coded systems.
    - Workers can later move laterally to positions like shipping, receiving and traffic clerks at \$14.51 an hour or \$30,180 a year. They are responsible for tracking the flow of goods moving in and out of warehouses. They must be able to read and file reports that are usually on-line.
    - Employees may choose to learn functions such as become hostler drivers whose vehicles move containers to and from warehouse doors. Their median pay is \$18.00 an hour or \$37,440. Workers in these types of occupations
    - Workers showing leadership abilities can work up to becoming front line supervisors in positions like:
      - Team leaders, Shift Managers or Department Heads where median income are \$24.99 or \$51,979 a year. Their jobs involve leading, scheduling and motivating workers to meet company targets.
      - As their positions advance, they must acquire an increasing knowledge of company policies, use of software systems and management of the use of robotic processes. Positions rise to *transportation, storage and distribution managers* who earn a median of \$40.86 an hour or \$84,989.

Here, courses in management can aid workers in their careers. Programs like Cal State San Bernardino’s B.A. in Administration Supply Chain and Transportation Management are helpful. So also are the certificate and AA degree programs like those at Norco College and through Riverside County’s ROP. Given the

dispersion of leadership in the logistics field, this is a place where the interaction of the business and education communities appears to be a work in progress.

Meanwhile, an increasing amount of robotic (*conveyor belts, computerized racking, automated guided vehicles*) and other equipment is being used in warehouses. This has led to increasing demand for technicians who can keep it aligned, repaired and running. Included are occupations such as:

- Precision equipment and machinery repairers (\$29.99; \$62,379),
- Industrial machinery mechanics (\$24.25; \$50,440)
- Heating and air conditioning (HVAC) mechanics (\$22.95; \$47,736)
- general maintenance and repair workers (\$18.16; \$37,773).

These are the types of occupations for which community college technical efforts like the Chaffey College Industrial and Technical Learning Center are particularly important (*electrical & mechanical maintenance, machining, automation & robotics, metal fabrication, welding, engineering technician and cyber security and control systems technology*). The coming together of business leaders and the community college community for efforts like this are particularly important.

- **Trucking.** The second aspect of the logistics industry is composed of the trucking firms that move goods. Their major need is for heavy duty truck drivers. These come in two forms. One is made up of heavy and tractor trailer drivers on staff as employees. Their median income is \$22.75 per hour or \$47,320 per year. The other are owner-operator drivers who work as independent contractors. Research by this economist put their median net income at \$55,261 in 2013. As independents, their hours are determined by the drivers themselves and were not available. In either case, there is a national, state and local shortage of drivers. Unfortunately, training largely appears available through private training companies. The companies indicate that they are not impressed with the drivers coming immediately from them. Training is also available through the non-profit Center for Employment Training (*CET*) in Colton. The lack of public school participation is perhaps an insurance issue. That is unfortunate as it is definitely an occupation that can bring the families of workers towards the middle class.

A second need is for mechanics who can keep maintain, restore and repair trucks. There is again a shortage of these technicians. They are needed to work on engines, vehicle electronics, brakes, transmissions and increasingly complex environmental systems. Truck mechanics and diesel engine specialists have a median income of \$21.94 per hour or \$45,635 a year. This again is an occupational group in which private schools dominate the training though it is available through San Bernardino Valley College. This may be an issue of the capital cost of having modern equipment for students to use, given the rapid escalation in the technology of trucks.

- **Construction.** This sector has emerged as the second fastest growing in the Inland Empire (32,026 or 13% of new jobs 2011-2016). Its major difficulty has been the loss of much of its trained labor force due to the collapse of the housing industry during the Great Recession. The sector needs workers in most skill sets as well as project managers.

Exhibit 11 shows the median hourly and annual pay levels for workers in the construction trades. These vary from a low of median hourly pay of \$13.71 per hour for construction helpers (\$28,517) and carpenter helpers (\$15.01; \$31,221) which is insufficient to get a family within reach of the to the middle class (yellow). Somewhat below the \$20 threshold are laborers, painters, stonemasons and painters whose median incomes vary from \$17.10 an hour (\$35,568) to a high of \$19.20 per hour or \$39,936 (blue). Within reach of putting families in the middle class are nine trades paying a median of \$21.91 per hour (\$45,373) to \$29.53 per hour (\$61,422) for the operating engineers who handle equipment like earth movers (tan). For first line supervisors, the median hourly rate is \$32.47 per hour (\$67,538) is in the middle class range (green).

Exhibit 11-Median Pay In Construction Trades		
Occupation	Median Hourly	Annual
First-Line Supervisors of Construction Trades and Extraction Workers	\$32.47	\$67,538
Operating Engineer & Other Heavy Equipment Operators	\$29.53	\$61,422
Electricians	\$27.22	\$56,618
Tile and Marble Setters	\$26.75	\$55,640
Sheet Metal Workers	\$26.62	\$55,370
Drywall and Ceiling Tile Installers	\$24.33	\$50,606
Plumbers, Pipefitters, and Steamfitters	\$24.22	\$50,378
Cement Masons and Concrete Finishers	\$22.71	\$47,237
Carpenters	\$21.91	\$45,573
Painters, Construction and Maintenance	\$19.20	\$39,936
Stonemasons	\$18.47	\$38,418
Plasterers and Stucco Masons	\$17.43	\$36,254
Construction Laborers	\$17.10	\$35,568
Helpers--Carpenters	\$15.01	\$31,221
Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	\$13.71	\$28,517

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

There are two sources for training for the construction sector. One is made up of union apprenticeship programs. These exist for every trade and can be found through the San Bernardino-Riverside Central Labor Council located at 1074 E La Cadena Dr. in Riverside. In the past, this economist had the opportunity to sit down with the apprenticeship coordinators for each of the affiliated unions and found them to be excited to help train new workers. Generally, union construction workers are found on “prevailing wage” jobs. These are largely those on projects with some form of public financing or value added involved in them. In addition, they work on projects where the use of union labor has been negotiated with the developers or construction firms. Pay for union workers generally exceeds the medians for the various trades.

The other are programs in community colleges and non-profits which train workers in a variety of skills. Examples include the construction technology program at Victor Valley College and the training in specific skill including electrical; HVAC; and welding at San Bernardino Valley College or brick masons, carpenters, laborers, painters and roofers at Riverside Community College. Similarly, the non-profit CET offers training in a variety of fields in Colton and Coachella, including green building skills. ROP programs in both counties offer training in several skill sets. Meanwhile, a potential source of training is found in Orange County, where eight high schools have adopted the Building Industry Technology Academy for students wishing to go into construction upon graduation.

- **Health Care:** For the Inland Empire, health care has been the third fastest growing sector in the 2011-2016 period (*27,343 or 11% of new jobs*). The interview process centered on non-physician occupations. Exhibit 8 provides an indication of the demand for positions in these jobs. For inland positions, it shows where there was moderate to major difficulty in finding workers statewide. Among these, those for which data was available showed the range of difficulty in finding workers to be from 21% (*medical assistants*) of positions to 94% (*clinical laboratory scientist*). The information is from the annual Health Care Workforce Survey of hospitals in the state and the inland area for these 19 occupational categories.

<b>Exhibit 12.-Demand &amp; Pay Scales For Medical Occupations, Inland Empire, 2016</b>			
<b>Occupation</b>	<b>Moderate to Major Difficulty Recruiting</b>	<b>Median Hourly Pay</b>	<b>Annual Pay</b>
Pharmacist	79%	\$68.99	\$143,499
Medical Laboratory Technician	45%	\$46.77	\$97,282
Nurses of All Types	75%	\$45.90	\$95,472
Physical Therapist	84%	\$43.17	\$89,794
Clinical Laboratory Scientist	94%	\$40.26	\$83,741
Ultrasound Technologist	66%	\$36.17	\$73,819
Respiratory Therapist	34%	\$34.38	\$71,510
Clinical Dietitian	n.a.	\$33.16	\$68,973
MRI Technologist	76%	\$41.03	\$65,936
CT Scan Technologist	48%	\$31.70	\$65,936
Radiological Technologist	29%	\$31.70	\$65,936
Licensed Clinical Social Worker	72%	\$30.17	\$62,754
Cardiovascular Interventional Radiology Tech	38%	\$29.10	\$60,528
Epidemiologist	n.a.	\$28.65	\$59,592
Medical Coder	81%	\$20.54	\$42,723
Phlebotomist	n.a.	\$18.39	\$38,261
Emergency Medical Technician ( <i>EMT</i> )	n.a.	\$15.39	\$32,011
Medical Assistant	21%	\$13.84	\$28,787
Occupational Therapy Assistant	31%	\$13.63	\$28,350

Sources: Health Care Workforce Survey, 2015; CA Employment. Development. Department, SOC pay levels, Inland Empire

Median hourly pay within the health care demand occupations puts most workers on a path to the middle class or higher incomes as their pay exceeds the \$20 per hour threshold. Of the 19 demand occupations (*Exhibit 12*):

- Only three (*colored yellow*) have median pay well under the \$20 level
- Two (*colored blue*) are either at the \$20 median per hour level or near to it: (*phlebotomists: \$18.39 & medical coders: \$20.54*)
- Three (*colored tan*) put families just below the middle class range of \$65,000-\$75,000. Their median annual incomes range from \$59,592 - \$62,754
- Five (*colored white*) put families in the \$65,000-\$75,000 range that constitutes the middle class
- Five (*colored green*) put workers beyond the middle class with median annual incomes from \$89,794 to \$142,499

An informal look at training found in the Inland Empire included:

- AA degrees in nursing can be obtained at seven local community colleges.
- BAs in nursing can be attained at CA Baptist University, Loma Linda University (*LLU*) and Cal State San Bernardino.
- Licensed Vocational Nursing programs exist at six community colleges plus ROP programs in both counties and several career schools.
- Radiologic technology is taught at Chaffey College, Crafton Hills College, Arrowhead Regional Medical Center and *LLU*.
- Sonography programs are available at Mt. San Jacinto Community College and a few career schools.
- EMT's are trained at seven local community colleges as well as several fire departments and the Riverside County ROP.
- *LLU* trains physical therapists.
- Respiratory therapist programs exist at *LLU*, Victor Valley College, Crafton College and several private schools.
- Medical coders can train locally at *LLU* and eight career schools.
- Phlebotomy programs can be found at six community colleges.

In addition, six high schools are taking part in mature career academies in conjunction with the Coachella Valley Economic Partnership (*CVEP*). These programs are aimed at giving students tours of medical facilities, job shadowing of medial professionals, experience as interns and courses aimed at opening careers in health care for them.

Despite these efforts, it was generally indicated by interviewees that the pipeline for filling health care positions in the Inland Empire is not a strong one. For that reason, an IEEP program called Convergence, led by the major inland healthcare providers is in the

process of researching the precise situation between open positions and training with recommendation of how to close the gaps. It is headed by Harris Koenig, president and CEO of San Antonio Regional Medical Center. Dora Barilla of HC2 Strategies will provide coordination of the effort.

- **Manufacturing:** For the Inland Empire, manufacturing followed K-12 education as the eighth fastest growing sector during the recent 2011-2016 period (*13,134 or 5% of new jobs*). This was an unusually strong performance for a relatively good paying sector which has generally falter in California. The sectors with greater job growth have either been lower paying (*e.g., eating & drinking, retailing*) or in K-12 education. While growth has been positive, the main need for new employees is coming because large numbers of baby boomer technicians are retiring from the sector without a good pipeline of new workers to replace them.

In examining pay levels in the inland manufacturing sector, it is important to understand that of the 2,767 companies with two or more workers, only 433 (15%) had 50 or more employees. The average employment for all of the firms 32.4 workers. As largely entrepreneurially owned companies, this has impacted their ability to pay workers.

At the top level, production functions at manufacturing firms need first line supervisors who understand their products, their machines and can motivate and lead the workforce. Interviewees indicated that they are generally promoted from within. Their median hourly rate in the Inland Empire is \$24.99 or an annual income of \$51,979 (*Exhibit 13*). Paid more are bachelors degree level engineers and product designers whose median incomes were roughly \$75,000 to \$80,000 a year as well as aircraft mechanics at \$64,334 (*green*). Along with supervisors, there were eight other production groups earning median hourly rates from \$19.72 or \$41,018 a year to \$27.71 or \$57,737 a year (*tan*). This puts them in a position for their families to reach the middle class. Their skill sets had them working as machine tool programmers, electricians, sheet metal workers, industrial machinery mechanics, mechanical drafters, tool and die making machinists, industrial engineering technicians and machinery maintenance workers.

Somewhat below the \$20 threshold are three sets of workers doing general maintenance and repair, operating machine tools and chemical tools. Their median hourly rates vary from \$16.43 or \$34,174 per year to \$18.16 or \$37,773 per year (*blue*). Finally, there are a wide variety of workers whose earnings would be insufficient to get their families into the middle class range. Their incomes vary from a median of \$10.26 per hour or \$21,341 to \$15.92 per hour or \$33,114 (*yellow*).

Looking at training available, designers and engineers can find bachelors or higher degree programs at UCR and Cal Baptist University in the Inland Empire and Cal Poly Pomona next door. Manufacturing front line supervisors appear to be largely promoted out of the ranks of the production staff though career training is available at Norco College.

### Exhibit 13.-Median Incomes Operations Occupations, Manufacturing, 2016 Inland Empire

Occupation	Median Hourly Rate	Annual Income
Commercial and Industrial Designers	\$38.70	\$80,496
Mechanical Engineers	\$38.14	\$79,331
Industrial Engineers	\$35.76	\$74,381
Aircraft Mechanics and Service Technicians	\$30.93	\$64,334
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	\$27.71	\$57,737
Electricians	\$27.22	\$56,618
Sheet Metal Workers	\$26.62	\$55,370
First-Line Supervisors of Production and Operating Workers	\$24.99	\$51,979
Industrial Machinery Mechanics	\$24.25	\$50,440
Mechanical Drafters	\$24.09	\$50,107
Tool and Die Makers	\$24.06	\$50,045
Industrial Engineering Technicians	\$23.72	\$49,338
Maintenance Workers, Machinery	\$19.72	\$41,018
Maintenance and Repair Workers, General	\$18.16	\$37,773
Computer-Controlled Machine Tool Operators, Metal and Plastic	\$17.76	\$36,941
Chemical Equipment Operators and Tenders	\$17.71	\$36,837
Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	\$16.64	\$34,611
Machinist Operators	\$16.52	\$34,362
Inspectors, Testers, Sorters, Samplers, and Weighers	\$16.43	\$34,174
Adhesive Bonding Machine Operators and Tenders	\$15.92	\$33,114
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$15.19	\$31,595
Mixing and Blending Machine Setters, Operators, and Tenders	\$14.47	\$30,098
Molders, Shapers, and Casters, Except Metal and Plastic	\$14.40	\$29,952
Molding, Core making, and Casting Machine Setters, Operators &Tenders, Metal & Plastic	\$14.34	\$29,827
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$14.24	\$29,619
Metal Workers and Plastic Workers, All Other	\$14.18	\$29,494
Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators &Tenders, Metal & Plastic	\$13.39	\$27,851
Grinding and Polishing Workers, Hand	\$13.06	\$27,165
Team Assemblers	\$13.01	\$27,061
Fiberglass Laminators and Fabricators	\$12.88	\$26,790
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	\$12.20	\$25,376
Cutting and Slicing Machine Setters, Operators, and Tenders	\$11.91	\$24,773
Packaging and Filling Machine Operators and Tenders	\$11.85	\$24,648
Assemblers and Fabricators, All Other	\$11.41	\$23,733
Cutters and Trimmers, Hand	\$11.29	\$23,483
Sewing Machine Operators	\$10.99	\$22,859
Helpers--Production Workers	\$10.85	\$22,568
Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	\$10.26	\$21,341

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

Training for the skills sets of production workers in the \$41,018 to \$57,737 group has been an issue for the region. These are the types of programs for which community college technical efforts like the Chaffey College Industrial and Technical Learning Center mentioned earlier are particularly important. That center, located at California

Steel was funded by a \$15 million U.S. government award. There is a diversity of other skills training venues throughout the region's other community colleges. Airframe and power plant mechanics are trained at Victor Valley College. Welding and machinery is available at San Bernardino Valley College, welding at San Jacinto Community College. Electricians are trained at Norco College. The non-profit Technical Education Training center specializes in CNC machinists. Entry level machining can be learned at the Riverside County and Colton-Redlands-Yucaipa ROPs plus the non-profit CET.

Manufacturing executives indicated that unskilled workers are hired for most of their lower paying functions. They are taught on-the-job by the employers. Workers gain more income as they learn different skill sets or more responsibility.

- Professional, Scientific, Engineering & Management Firms.** This group of high paying firms created 6,541 jobs from 2011-2016, a 3% share of the Inland Empire's job growth in that period. These firms ranked 11<sup>th</sup> in job growth in that period. This has been a disappointment for community leaders. The difficulty has stemmed from the fact that only 20% of the region's adults have bachelors or higher degrees while the region is competing with nearby counties where the share ranges from 30% in Los Angeles to 36.6% in San Diego, Orange, Ventura and Santa Barbara. This is fundamentally why the IEEP has concentrated much of its strategic thinking on how to increase the number of local college graduates to change the dynamics of the inland economy.

<b>Exhibit 14.-Sample, Median Incomes, 2016, Inland Empire Professional, Scientific, Engineering &amp; Management Occupations</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Lawyers	\$63.68	\$132,454
Architectural and Engineering Managers	\$62.88	\$130,790
Computer and Information Systems Managers	\$56.40	\$117,312
Aerospace Engineers	\$53.50	\$111,280
Financial Managers	\$53.21	\$110,677
Natural Sciences Managers	\$51.46	\$107,037
Information Security Analysts, Web Developers, and Network Architects	\$50.84	\$105,747
Electronics Engineers, Except Computer	\$49.42	\$102,794
Computer Hardware Engineers	\$48.80	\$101,504
Civil Engineers	\$47.88	\$99,590
Electrical Engineers	\$46.28	\$96,262
Medical Scientists, Except Epidemiologists	\$46.10	\$95,888
Surveyors	\$40.55	\$84,344
Architects, Except Landscape and Naval	\$39.52	\$82,202
Urban and Regional Planners	\$38.83	\$80,766
Geoscientists, Except Hydrologists and Geographers	\$38.18	\$79,414
Mechanical Engineers	\$38.14	\$79,331
Environmental Scientists and Specialists, Including Health	\$37.73	\$78,478
Materials Engineers	\$37.51	\$78,021
Environmental Engineers	\$36.77	\$76,482
Management Analysts	\$36.08	\$75,046

Industrial Engineers	\$35.76	\$74,381
Business Operations Specialists, All Other	\$31.19	\$64,875
Landscape Architects	\$30.71	\$63,877
Cost Estimators	\$30.20	\$62,816
Civil Engineering CAD	\$27.91	\$58,053
Architecture CAD	\$27.62	\$57,451
Paralegals and Legal Assistants	\$26.66	\$55,453
Public Relations Specialists	\$25.83	\$53,726
Environmental Science and Protection Technicians	\$25.82	\$53,706
Market Research Analysts and Marketing Specialists	\$25.33	\$52,686
Graphic Designers	\$21.13	\$43,950

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

Exhibit 14 shows a sample of the of occupations in the Inland Empire’s professional, scientific, engineering and management firms. Significantly, a single worker in the great bulk of these occupations will earn a median annual income above the \$65,000-\$75,000 which is defined here as middle class (*green*). Three of them put a worker inside that category (*white*). The balance of the job categories put workers at a level where a secondary wage earner in the family would bring them into the middle class. They range from graphic designers at a median hourly rate of \$21.13 or \$43,950 per year to landscape architects at a median hourly rate of \$30.71 or \$63,877 per year (*tan*).

In approaching the need for more college graduates to make the Inland Empire competitive for jobs in these sectors, the region has a wide array of local public and private institutions. Engineering students can attend UC Riverside or CA Baptist University in the region or Cal Poly Pomona adjacent to it. Management, finance, information, science and environmental programs with differing emphases are taught at those schools as well as Cal State San Bernardino, La Sierra University and the University of Redlands. The ABA accredited University of La Verne School of Law is in Ontario. Programs that prepare people for these majors as well as teaching computer aided drafting (*CAD*) can be found at most of the 12 local community colleges. In addition, Riverside County ROP has a *CAD* program while Norco College has a pre-engineering curriculum.

Of interest in the interview process was the fact that the area’s technology sectors were acutely aware of the need for more college graduates to feed their businesses and to assist in the growth of these types of sectors in the Inland Empire. They thus tend to be engaged with the local universities to help encourage this to occur. That said, it was interesting of the extent to which they have tended to stress the importance of new hires fitting into their company cultures whether or not they have completed their degrees.

- **Finance, Insurance & Real Estate:** Companies that deal in finance, real estate and insurance represented only 3,001 of the new jobs created in the Inland Empire from 2011-2016, a tiny 1% share. This group should grow during the next few years as the housing market begins to return to normal and population growth rises. Still, that growth will be somewhat below past recoveries as these sectors have been inhibited by the

increasing use of the internet for many of the paper heavy functions once conducted in offices. That said, there is still a need for people to work with systems to evaluate and verify incomes, handle escrow transactions between parties, investigate chains of title, appraise property, evaluate insurance risks, manage properties or handle bank deposits and lending. In addition, as the housing market normalizes, executives believe they will need an increasing number of staff members to assist buyers and sellers in finding homes and deal with arranging initial (*take out*) financing as well as moving mortgages into the secondary market through such vehicles as FHA, VA, Fannie Mae, Freddie Mac or other institutions.

<b>Exhibit 15.-Sample, Median Incomes, 2016, Inland Empire Finance, Insurance &amp; Real Estate Occupations</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Loan Officers	\$40.23	\$83,678
Credit Analysts	\$39.03	\$81,182
Financial Analysts	\$36.88	\$76,710
Claims Adjusters, Examiners, and Investigators	\$32.10	\$66,768
Appraisers and Assessors of Real Estate	\$29.71	\$61,797
Real Estate Sales Agents	\$28.41	\$59,093
Title Examiners, Abstractors, and Searchers	\$27.58	\$57,366
Insurance Underwriters	\$27.44	\$57,075
Real Estate Brokers	\$26.09	\$54,267
Property, Real Estate, and Community Association Managers	\$25.89	\$53,851
First-Line Supervisors of Office and Administrative Support Workers	\$25.71	\$53,477
Insurance Sales Agents	\$25.38	\$52,790
Securities, Commodities, and Financial Services Sales Agents	\$20.32	\$42,266
Loan Interviewers and Clerks	\$18.86	\$39,229
Maintenance and Repair Workers, General	\$18.16	\$37,773
Insurance Claims and Policy Processing Clerks	\$18.15	\$37,752
Customer Service Representatives	\$16.86	\$35,069
New Accounts Clerks	\$15.50	\$32,240
Tellers	\$14.05	\$29,224
Counter and Rental Clerks	\$12.90	\$26,832

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

Within these financial sectors, three positions (*loan officers, credit analysts, financial analysts*) allow employees to exceed the \$65,000-\$75,000 range for the middle class (*green*). One is in that range (*claims adjusters*) at \$66,768 (*white*). A large number of occupations put workers in a position to bring their families to the middle class. They range from finance services sales agents at a median of \$20.32 per hour or \$42,266 to appraisers and assessors at a median of \$29.71 per hour or \$61,797 per year (*tan*). Three other occupations pay median hourly rates somewhat below the \$20 threshold: loan interviewers, property maintenance & repair worker and insurance claims processors close to that level (*blue*). Unfortunately, the largest number of workers in this group of

sectors earn incomes insufficient to bring their families into the middle class, even with a secondary worker in similar jobs (*yellow*): customer service representatives (\$16.86), new account clerks (\$15.50), tellers (\$14.05) and counter and rental clerks (\$12.90).

Interviews with financial related companies indicated that many hire workers into entry level positions and then train them to their own specifications. However, community college training is available to assist workers in becoming prepared for these occupations. San Bernardino Valley College has AA degree and certificate programs in escrow, title, mortgages and finance. Riverside Community College offers AA and certificate training for financial clerks, managers and appraisers. Norco, Moreno Valley and San Jacinto community colleges have AA and certificate programs for real estate training. Victor Valley College has degrees and credentials in real estate and escrow.

- **Water.** Water management and production is another sector that is seeing the greying of its technical labor force. While the sector is small, it is vital one that will grow due to the rising importance of recycling, ground water management, wastewater treatment and water conservation. Interviews with agency directors stressed that new workers need more than certifications to truly assist their organizations. They need people who have had hands on experience with the specialized tools and systems to do their jobs as well as a usage of general tools.

Water technicians generally make sufficient incomes to put their families within reach of the middle class. Their median hourly rates range from maintenance and repair workers who are somewhat below that level (\$18.16 an hour; \$37,773) (*blue*) to environmental engineering technicians (\$31.94 an hour; \$66,435) who exceed it (*white*).

Two local community colleges provide course work allowing workers to receive AA degrees or certifications in water related occupations. San Bernardino Valley College has course in water supply, water distribution, water treatment and wastewater treatment. Mt. San Jacinto College has a program in water technology.

<b>Exhibit 16.-Water Agency Technicians, Median Incomes, 2016, Inland Empire</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Environmental Engineering Technicians	\$31.94	\$66,435
Water and Wastewater Treatment Plant and System Operators	\$30.05	\$62,504
Biological Technicians	\$22.93	\$47,694
Chemical Technicians	\$22.08	\$45,926
Maintenance and Repair Workers, General	\$18.16	\$37,773

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

- **Food & Drink.** For the Inland Empire, the eating and drinking sector was a source of 26,309 new jobs from 2011-2016. That ranked fourth highest and represented 11% of new positions, nearly matching health care. Traditionally, restaurants, fast food outlets and bars are not a high paying sector. Good pay is confined to those who attain management positions in the field and are often filled from within the organizations.

Interviewees stressed that it should be noted that pay scales in this field do not include the tips earned by workers in many occupations.

Of the several occupations in the eating and drinking sector, only two put the families of workers within reach of the middle class. These are food service managers at a median pay scale of \$23.25 per hour or \$48,360 a year, and chefs and head cooks who have a median hourly rate of \$22.72 or \$47,258 a year (*tan*). All of the other occupations fall well short of the \$20 threshold (*yellow*). They range from a low for dining room, cafeteria attendants and bar helpers at a median of \$9.50 an hour or \$19,760 to a high of \$13.72 per hour or \$28,538. These are types of positions that a second wage earner in a family can use to move a family to the middle class if the primary worker is above the \$20 level.

<b>Exhibit 17.- Eating &amp; Drinking Occupations, Median Incomes, 2016, Inland Empire</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Food Service Managers	\$23.25	\$48,360
Chefs and Head Cooks	\$22.72	\$47,258
First-Line Supervisors of Food Preparation and Servers	\$13.72	\$28,538
Butchers and Meat Cutters	\$12.91	\$26,853
Bakers	\$12.22	\$25,418
Cooks, Restaurant	\$11.53	\$23,982
Cooks, Short Order	\$11.51	\$23,941
Waiters and Waitresses	\$10.09	\$20,987
Bartenders	\$9.89	\$20,571
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	\$9.67	\$20,114
Dishwashers	\$9.59	\$19,947
Cooks, Fast Food	\$9.54	\$19,843
Dining Room and Cafeteria Attendants and Bartender Helpers	\$9.50	\$19,760

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

There are several routes in the restaurant field to become qualified for management or to qualify as chefs. The most well known is Cal Poly Pomona’s Hospitality Program. Other local programs include culinary arts taught at Chaffey College, Riverside Community College, San Bernardino Valley College, College of the Desert and Copper Mountain College. There are also culinary arts courses at the San Bernardino and Riverside county ROPs.

- **Hotels & Amusement.** Related to the food and drink sector are two Inland Empire groups that have been relatively dormant of late. These are sectors providing lodging and entertainment to travelers and the public. In part, interviewees stated this has been because of the steep decline of flights at Ontario International Airport. Also indicated was the impact of the strong value of the dollar which has made travel in the U.S. more expensive to international tourists. That impact has been felt in the Coachella Valley. From 2011-2016, the combination of these sectors added 5,488 jobs or just 2% of the

inland area’s job growth. That slow growth has occurred despite the success of tribal hotel and gaming operations in the two counties.

Within these two sectors, management positions pay well. Senior staff working as sales, operations, gaming and human relations managers all have median annual incomes at or above the \$65,000-\$75,000 incomes level (*green*). Ranked below them are three management positions that were above the \$20 threshold that allows families to access the middle class. They ranged from a median hourly rate of \$19.88 or \$41,350 for lodging managers to \$23.25 or \$48,360 for food service managers (*tan*). Five positions are near \$20 threshold. Their range was a median hourly rate of \$16.52 or \$34,362 for gaming surveillance officers and investigators to \$18.21 per hour or \$37,877 for first line supervisors of personal service workers (*blue*).

<b>Exhibit 19.-Hotel &amp; Amusement, Median Incomes, 2016, Inland Empire</b>		
<b>Occupation</b>	<b>Median Hourly Rate</b>	<b>Annual Income</b>
Sales Managers	\$44.08	\$91,686
General and Operations Managers	\$43.51	\$90,501
Gaming Managers	\$42.77	\$88,962
Human Resources, Training, and Labor Relations Specialists, All Other	\$33.89	\$70,491
Food Service Managers	\$23.25	\$48,360
Gaming Supervisors	\$22.90	\$47,632
Lodging Managers	\$19.88	\$41,350
First-Line Supervisors of Personal Service Workers	\$18.21	\$37,877
Maintenance and Repair Workers, General	\$18.16	\$37,773
Meeting, Convention, and Event Planners	\$17.97	\$37,378
Massage Therapists	\$17.42	\$36,234
Gaming Surveillance Officers and Gaming Investigators	\$16.52	\$34,362
First-Line Supervisors of Food Preparation and Serving Workers	\$13.72	\$28,538
Cooks, Institution and Cafeteria	\$13.46	\$27,997
Gaming Cage Workers	\$11.70	\$24,336
Hotel, Motel, and Resort Desk Clerks	\$11.63	\$24,190
Cooks, Restaurant	\$11.53	\$23,982
Laundry and Dry-Cleaning Workers	\$11.39	\$23,691
Gaming Change Persons and Booth Cashiers	\$11.11	\$23,109
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	\$10.86	\$22,589
Maids and Housekeeping Cleaners	\$10.76	\$22,381
Gaming Dealers	\$10.30	\$21,424
Waiters and Waitresses	\$10.09	\$20,987
Bartenders	\$9.89	\$20,571
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	\$9.67	\$20,114

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

As with food & drink, the bulk of workers in the hotel and amusement sectors median hourly rates are well below the \$20 an hour needed for a second worker to bring the family into the middle class. Again, many of these workers do earn tips that are not counted in payroll data (*yellow*). The range was from a median hourly rate of \$9.57 per hour or \$20,114 for hosts and hostess throughout hotels to \$13.72 per hour or \$28,538 for first line supervisors of food workers. Again, these are the types of positions that a secondary family worker can hold and bring a family's income into the middle class if the primary worker is earning over \$20 per hour. Also, hotel executives tend to look at workers in these lower positions as potential candidates to move up into management

Training for management in the hospitality industry can be found in the Cal Poly Pomona Hospitality Program. There are also hospitality management programs at Chaffey College and College of the Desert plus the Riverside County ROP.

- **Retailing.** The last private sector reviewed in this report is retailing. Stores of all kinds added 20,653 jobs into the inland economy from 2011-2016. That ranked sixth highest in the region and accounted for a 9% share of new positions. The sector has lagged behind its normal growth during this recovery and expansion period because of the increasing diversion of retail spending to on-line sites. Like the food & drink, hotel & entertainment sectors, the retailing sector has generally been a low paying one except in management positions. Interviewees did show that though this is the case, management positions and training are often offered to lower paid workers who have exhibited leadership potential.

• Exhibit 18.- Retailing Occupations, Median Incomes, 2016, Inland Empire		
Occupation	Median Hourly Rate	Annual Income
Sales Managers	\$44.08	\$91,686
First-Line Supervisors of Personal Service Workers	\$18.21	\$37,877
Sales and Related Workers, All Other	\$13.89	\$28,891
Laborers and Freight, Stock, and Material Movers, Hand	\$12.33	\$25,646
Stock Clerks and Order Fillers	\$11.46	\$23,837
Hairdressers, Hairstylists, and Cosmetologists	\$11.21	\$23,317
Retail Salespersons	\$10.59	\$22,027
Cashiers	\$9.75	\$20,280
Personal Care and Service Workers, All Other	\$9.57	\$19,906

Source: CA Employment Development Department, Standard Occupational Classifications, 2016, Inland Empire

Within retail stores, only sales managers had jobs that constituted middle class or above given their median hourly rate of \$44.08 or \$91,680 a year. Close to the \$20 level were first line supervisors of personal service workers. Their median rate was \$18.21 or \$37,877 per year. The balance of the positions were those that were useful to bring a family to the middle class if the primary worker was in the \$20 pay range or stronger. They ranged from personal care workers at a median of \$9.57 per hour or \$19,906 to sales workers at \$13.89 an hour or \$28,891. It was noted that people working with customers in retailing can exceed the median pay levels if they are skilled in consumer service and able to meet and exceed the sales quotas they are often assigned.

There are few retail management programs in the Inland Empire. Those that exist are aimed at the food store business. Thus, Norco College has a retail food management program. A limited effort is a certificate program at San Bernardino Valley College run in conjunction with Stater Brothers Markets. Similarly, Orange County's Cerritos College conducts a program at the Coca Cola distribution facility in Rancho Cucamonga. It is used by workers at Cardenas Markets. That chain has proposed making unused space at its new headquarters for that program to be run by a local college and opened up to the food store industry generally.

**Summary.** This report has attempted to capture the current status of job openings, pay scales and available training in the Inland Empire. It is based upon one-on-one interviews with CEOs, operating executives and human relations personnel in 50 companies that were spread across 18 sectors. Beyond the specific positions driving the major sectors, the effort looked at the general themes that emerged in how and why companies hire workers. This included the importance they place on teamwork, hands-on experience and career technical education. These values seem to be regarded as more important than academic training.

Some generalizations were learned about how firms judged the general aptitudes of potential employees. These ranged from the degree that they had settled on life goals, to the extent they exhibited personality trades such as friendliness, ambition, interest, helpfulness, leadership or innovation needed by the firm. There were expected views on the importance of having degrees and certifications. But these were tempered by a desire to hire workers who, regardless of education, would be good fits for a company's existing workforce and culture. Contrary to the views often expressed on college campuses, employers frequently stated that they not looking for generalists with broad academic backgrounds. Rather, they want new hires whose degrees, certification and hands-on training provide immediate benefit to their companies.

An income of \$20 per hour or \$41,200 a year was selected as the target in judging whether job categories offered workers a chance to bring their families within sufficient range of the middle class with a secondary family member in a lower income job to get them there. Given that target, the Inland Empire's major private sectors were reviewed to understand which jobs in the growing sectors could allow workers to meet or surpass the \$20 per hour threshold. For each sector, the names of the positions and the median hourly and annual rates of pay were identified. So also was a preliminary review of where training of the kind necessary to succeed in these sectors was being made available by public sector institutions. Three exceptions were occupations that showed up in nearly every company interviewed as important to them: IT, accountancy and computer savvy executive assistants.

To place this report in context, it began by looking at the fundamental economic issues that educational strategies must solve if the Inland Empire is to prosper. Thus, it showed that the inland area has moved from the recovery to the expansion phase of its economic activity. However, it still has serious issues of adult workforce education and poverty that are impacting its quality of life. Dealing with those issues is thus the paramount economic development issue for the region.

## Appendix A

Thanks to the following 50 companies and agencies for their assistance with this project:

AD/S	Inland Empire Utilities District
Agiline	Jack Jones Trucking
Albert A. Webb & Associates	KB Home
Allegra Printing	Lewis Corp.
Altura Credit Union	LifeStream
Amazon.com	Lois Lauer Realty
Bank of America	Morongo Casino
BNSF	Nordstrom
Bourne Engineering	Ontario
California Steel	Pacific Mountain Logistics
Caprice Restaurant	Peabody Engineering
Cardenas Markets	Plymouth Care
Coachella Valley MWD	Rail Delivery Services
Coca Cola Logistics	Redlands Community
Concord Group	Riverside County
Dalton Trucking	San Antonio Community
Del Rio Foods	San Bernardino County
Development Planning & Financing Group	SigmaNet
Double Tree Hotel	Sketchers
Eagle Medical Transport	So. California Aviation
East Valley Water District	Target
EPIC Medical	Tesoro
Gerdau Steel	Thoro Packaging
Home Depot	Trilogy Financing
Hotel Nevada & Casino	Union Pacific