**2019**

ORANGE COUNTY
**WORKFORCE
INDICATORS
REPORT**

**ORANGE COUNTY
BUSINESS COUNCIL**

![Orange County Business Council logo]

Dear Workforce Development Partner:

Orange County Business Council is pleased to present the 2019 Orange County Workforce Indicators Report highlighting the accomplishments of Orange County's employers, educators, and workforce. The findings also provide insight into remaining challenges that Orange County must address to close the skills gap and develop a highly-skilled workforce in an ever-evolving economy. The 2019 Orange County Workforce Indicators Report provides a detailed analysis of economic, demographic, workforce, and education trends. More importantly, this study utilized qualitative analysis drawn from local, regional, and statewide collaborative initiatives and projects complete with educational institutions, business executives, and government organizations.

According to the report findings, a new workforce environment is emerging which is dominated by digitalization, automation, and artificial intelligence. In this fast-paced environment, 21st-century students and job seekers must build up "defensible" skills and career education to adapt and thrive with the onset of new technologies. Dr. Wallace Walrod, OCBC's Chief Economic Adviser, and partners deftly explore how Orange County is uniquely equipped to face these changes, with a "strong, diverse economy" and a "higher educational attainment than peer regions." The regional unemployment rate is 2.8 percent and falling and Orange County boasts the lowest high school dropout rate in the region with over half of graduates eligible for UC and CSU higher education. Furthermore, "middle-skill" jobs which are not easily replaced by automation technologies are on the rise – including healthcare and social assistance, finance and insurance, manufacturing, retail, and professional, scientific, and technical service occupations.

The theme for this year's conference is "From Defense to Game-Changing Offense: How OC's Workforce Can Lead the Way." Orange County is a great place to live, work, and thrive, but faces new challenges as the old ways of doing business evolve into technology-based processes, creating a new set of needs and skills for Orange County's workforce and economic prosperity as a whole.

OCBC continues to build an enduring alliance to seek out creative workforce solutions, educational success, and superior workforce training. We hope you will gain a new understanding about these issues in a spirit of collaboration and partnership. We encourage you to utilize today's materials to plan for future success in all endeavors.

Sincerely,

*[signature]*

Lucy Dunn
President and CEO
Orange County Business Council

# Contents

# 1 INTRODUCTION

Now in its 17th year, the 2018 Orange County Workforce Indicators Report provides a comprehensive look at the region's economic, demographic, industry, occupational, and educational trends. This detailed analysis of past, current, and future trends provides the foundation for actionable strategies to ensure the county's continued economic success.

## 2018 WORKFORCE INDICATORS
# PREPARING ORANGE COUNTY'S WORKFORCE FOR THE FUTURE

U.S. employment has grown significantly over the past year, adding 201,000 jobs in August 2018 for an average of 207,000 jobs per month in 2018, substantially higher than 2017's monthly average of 182,000.

July 2018 saw the most workers quitting their jobs in 18 years, with 3.58 million workers voluntarily leaving their jobs, 2.4 percent of the nation's workforce. Federal Reserve Chairman Jerome Powell has argued that this high "quits rate" reflects a labor market at near-full employment, a conclusion supported by the fact that job postings exceeded the number of unemployed people by 659,000 in July 2018, the largest gap since 2000.

Many employers have had trouble finding qualified available employees in this tight labor market; the U.S. Department of Labor's Job Openings and Labor Turnover Survey (JOLTS), for example, reported a total of 6.94 million unfilled job openings in July. JOLTS also found another indication of this struggle to fill qualified workers: the fastest wage growth since 2009. A separate survey from the National Federation of Independent Business found that 38 percent of U.S. small businesses had unfilled job openings in August 2018, the highest percentage since the survey began in 1973. Additional JOLTS findings included:

- There were 0.91 unemployed persons per job opening in July, compared with 1.9 people per job opening when the recession began at the end of 2007.

- Openings increased in Manufacturing, Leisure and Hospitality, and Finance and Insurance; decreased in Retail, Educational Services, and the Federal Government sectors.

With robust employment trends and national Gross Domestic Product (GDP) growth of 4.1 percent in the second quarter of 2018, the short-term economic outlook looks bright for both the United States and Orange County. Longer-term, however, economic performance remains unclear to many due to a variety of factors, including political uncertainty, concerns about the likelihood and timing of the next recession (the current recovery is the second longest in U.S. history), international tariff and trade disputes, and a rising interest rate environment. There is also growing evidence that significant additional changes may be on the horizon. These factors will not uniquely affect Orange County, but are significant macro-level trends affecting the state, national, and global economy:

- Automation and Industry 4.0: A shift so dramatic that it has been labeled "The 4th Industrial Revolution" by some, advancing technologies are increasing operational efficiency across a number of industries and, unless properly understood and planned for, could have dramatic labor market impacts. The implementation of Industry 4.0 will likely cut both ways, significantly reducing demand for certain current types of work, while at the same time increasing demand in other emerging occupations and industries:

  - Industry 4.0 technological advances – automation, robotics, AI, machine learning – are predicted to affect approximately half of all current jobs and work activities. The McKinsey Global Institute predicts that, by 2030, as many as 375 million workers around the globe will have to learn and master new skills as their jobs evolve alongside the rise of automation and smart machines.

  - The rise of new technologies such as Geographic Information Systems (GIS), Location-Based Services (LBS), and the Internet of Things (IoT) will create new jobs requiring new skills, exacerbating the current skills gap in many industries. Demand for workers with the right skills will only continue to grow.

- A Shifting Retail Environment: Driven by technological advances and shifting generational preferences, the U.S. retail sector is currently undergoing unprecedented change in what and how consumers are buying. Unless local brick-and-mortar stores can create a more attractive value proposition for consumers, they risk falling victim to e-commerce giants such as Amazon. For an in-depth look at how retail is transforming Orange County, please see OCBC's research report *Inside Orange County's Retail E-volution: How e-Commerce is Transforming the Future of Orange County's Retail Sector, Land Use, Workforce, and Tax Base* available on at www.ocbc.org.

- The Continuing Rise of the Gig Economy, Sharing Economy and On-Demand Consumption: New, innovative business models are revolutionizing how businesses operate. The Gig Economy, exemplified by disruptive services such as Uber and Lyft, is explored in a special feature in this report.



The World Economic Forum Centre for the Fourth Industrial Revolution is organized around eight focus areas that will drive the next industrial revolution, not just in industrial settings, but throughout the economy and workforce. They will be key to understanding the world of work going forward:
- Artificial Intelligence (AI) and Machine Learning
- Internet of Things (IoT) and Connected Devices
- Blockchain and Distributed Ledger Technology
- Autonomous and Urban Mobility
- Drones and Tomorrow's Airspace
- Precision Medicine
- Digital Trade
- Fourth Industrial Revolution for the Earth

Several other emerging sectors also have game-changing potential:
- Augmented Reality (AR)/Virtual Reality (VR)
- Big Data
- Cloud Solutions
- Cybersecurity
- Geographic Information Systems (GIS) and Location-Based Software (LBS)
- Robotics
- 5G

# DISRUPTION IS THE NEW MANTRA

Disruption seems to be the mantra of our time. According to dictionary.com, disruption [dis-ruhp-shuh n] is defined as:

- forcible separation or division into parts.
- a disrupted condition:
- After the coup, the country was in disruption.
    - Business: a radical change in an industry, business strategy, etc., especially involving the introduction of a new product or service that creates a new market:
- Globalization and the rapid advance of technology are major causes of business disruption.

Speculating and worrying about the future seems to a main topic of conversation these days. Disruption dominates *Wall Street Journal* headlines and CNBC news tickers. Deloitte recently listed seven "disruptors" that will transform the very nature of the world of work:

## Seven Key Disruptors

**Technology is everywhere**

**Tsunami of data**

**Diversity and generational change**

**Change in nature of a career**

**Explosion in contingent work**

**AI, Cognitive Computing, Robotics**

**Jobs vulnerable to automation**

The new technologies that make up Industry 4.0 pose many questions for employers, educators and policymakers:

- How will businesses implement new technology in the workplace?
- What is a defensible workforce?
    - How can workers in vulnerable jobs adapt?
    - Can automation complement rather than displace the workforce?
- How can students and young adults who are just entering the automated workplace effectively leverage new technologies?
- How should educational institutions change so that future generations will be educated and trained with respect to automation?
- How will regions, communities, and states respond to the potentially substantial impacts on the economic landscape?

Most importantly for readers of this report, what is Orange County's position in this rapidly approaching future? As Orange County enters this new world, this report seeks to shed some light on the above questions from a number of different perspectives to enable a long-term, strategic approach to these changes.

The report's special sections focus on several key topics:

- Exploring Millennial Migration Patterns in Orange County
- The Key Role of Community Colleges in the Orange County Economy
- Healthcare IT
- The Gig Economy
- Workforce Housing
- An Update on Middle-Skills in Orange County

# ORANGE COUNTY OVERVIEW

Orange County's unemployment rate is one of the key benchmarks that tracks Orange County's economic vitality at the local level. Ten years after the start of the Great Recession, Orange County's economy continues to outperform the state and nation as a whole. After hitting a 10-year low of 2.6 percent earlier in the year, the county's unemployment rate of 3.1 percent in August 2018 was well below the state and national rates of 4.3 and 3.9 percent, respectively.

Alongside the aforementioned national and global trends, several interrelated regional trends could have major potential impacts on Orange County's economy and workforce. These include:
- An aging population, which could dramatically change labor force demographics;
- Increasing workforce housing concerns as home prices and rents reach new highs due to high demand and low supply; and
- Declining K-12 enrollment, which will have long-term labor market impacts.

# TWO DRIVING FORCES

Macro trends shaping Orange County's economy and workforce fall into two main categories: demographic change and technological development (and its related consequences). Each trend both directly and indirectly impacts how businesses function, how they create value for customers, and how they connect and interact with workforce talent. Both will be analyzed and discussed throughout this year's report.

## Technological Development

- Computer processing power has increased exponentially since the invention of the microchip, eventually affecting every aspect of society, from commerce to communication to entertainment. Moreover, these new technologies are gaining a life of their own and creating new branches of path-dependent social interactions and forces. People interacting and communalizing anonymously over the internet, for example, is remaking the advertising landscape through Amazon, Yelp, and other innovative websites. Rather than just changing how the economy functions, computers are fundamentally changing how people live and work; digitization is creating a new world of information and communication that reduces barriers to entry for information providers and seekers of information. Examples include social media and new marketplaces that alter how information is shared and understood and provide access to previously inaccessible information.

- Automation is replacing routine work tasks and jobs with robots, smart machines, automated processes, and other technologies in ways previously thought impossible. Oxford economists Carl Benedikt Frey and Michael Osborne, for example, predict that nearly half of all jobs will become vulnerable to automation over the next twenty years due to the diffusion of existing technology across industries and workplaces; exponential advances in new technology may yet prove this to be a conservative estimate.

- The proliferation of data – so-called "Big Data"– is changing the way we use reason and analysis to make sense of the environment around us through analytical tools such as machine learning. There is growing evidence that businesses that efficiently and creatively use data are the most successful in the modern economy, giving rise to a significant surge in job creation for occupations such as Business Intelligence Analysts. Meanwhile, companies are finding increasing value in mining and analyzing their own data collection and creation activities.

Many work activities that require routine cognitive skills will be threatened by software, machines, and other automated processes. However, many of today's highly-valued skills will retain their value in tomorrow's job market because they are transferable and defensible, although their context and environment will likely be very different. High-quality job opportunities will increasingly be concentrated in occupations that utilize both technology and non-routine cognitive skills. Important skills in this environment will likely include:

- Fluency with new ideas and data;
- The ability and willingness to learn new things; and
- Complex problem-solving skills that help employers maintain competitive advantage and create value.

Unfortunately, many of today's students graduate unprepared for this new reality. Much of today's technology-oriented training, for example, focuses on specific technical skills that may rapidly become out of date, instead of preparing students to adapt to technological change in a competitive, ever-shifting job market. Focus should be placed on teaching the skills that will remain relevant, such as technological fluency and strategies to solve difficult, unstructured problems.

## Demographic Change

Alongside technology, demographic shifts are also transforming Orange County's economy and workforce. Tomorrow's Orange County will be more diverse, older, and far more globally connected than ever before. Aging is perhaps the most important ongoing trend; if demographic changes continue at the current rate, almost 30 percent of the county's population will be over 65 by 2060. A section of this report explores the question of whether the county is losing its young population to other counties and states that are perceived to offer better opportunities. Workforce housing supply and affordability is almost certainly the most pressing issue currently facing Orange County. The county's high and rising housing costs limits residents' ability to save for the future, pushes entry-level job seekers and young families to relocate to more affordable areas, and exacerbates the population's rapid aging "in-place." Increasing the county's workforce housing supply will make it a better environment for young talent, which will in turn make it a more attractive destination for established and emerging businesses.

Many young adults in Orange County, recent graduates of local colleges and universities, have found themselves priced out of the county's housing market, one of the most expensive in the United States.  High housing costs thus accelerates the county's aging population, a trend already observed in declining birth rates and decreasing K-12 enrollment. Orange County's aging population, in turn, will significantly affect labor force needs, especially by increasing demand for Healthcare services.

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In a report entitled *Digitalization and the American Workforce*, Brookings Institution finds that:

- Digitalization (the process of employing digital technologies and information to transform business operations) has rapidly transformed the U.S. workplace over the last decade. "For years to come," according to the report, "this type of employment [digitalization] will be a source of well-paying jobs that will facilitate the digitalization of local firms and benefit regional prosperity. There is no option for workers, industries, and places except to immerse in digitalization."

- The degree and pace of digitalization will vary widely across occupations and industries.

- While digitalization is associated with increased pay for many workers and reduced risk of automation, it favors certain skillsets and occupations. Since 2002, there have been declines in "low-digitalization" jobs, increases in "medium-digitalization" jobs, and very significant increases in "high-digitalization" jobs.
    - Workers in "High" Digital Occupations made an average of $72,896 in 2017, compared to
    - $48,274 in "Medium; and
    - $30,393 in "Low."

- The extent of digitalization also varies widely across places and is strongly associated with variations in regional economic performance.

- California, for example, has both the most-digitally oriented metro area in the U.S., San Jose-Sunnyvale-Santa Clara, and four of the five lowest ranked: the Inland Empire Fresno, Stockton, and Bakersfield.

- Digitalization is changing the very skills needed to access economic opportunity while creating new challenges; educators and policymakers need to "develop strategies for radically broadening the exposure of those without a college degree to basic workplace productivity software."

- Digitalization is even transforming seemingly established occupations. Two occupations in particular, Construction Managers, and Tool and Die Makers, have become increasingly digitized in recent years, gaining 43 and 48 points, respectively, on Brookings' 100-point scale.

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### The Dimensions of Defensibility

Produced in partnership with the Orange County Department of Education (OCDE) and OC Pathways, "*The Dimensions of Defensibility: Human-Centered Design in an Automated Workplace*" is OCBC authors' Dr. Wallace Walrod and Petersen Walrod's comprehensive, cutting-edge analysis of the labor market, job characteristics and their relationship to automation. While previous studies have focused on what makes jobs vulnerable, this study is the first research of its kind that defines what makes jobs defensible and analyzes the characteristics of jobs and how they relate to the forces of automation. This research begins to identify the key facts that help workers stay relevant in an increasingly automated workplace.

## PROMOTING A NEW ERA OF ECONOMIC GROWTH AND JOB CREATION

Front and center to understanding and adapting to the new era will be the business community and educational institutions. Orange County will clearly need a much more flexible, responsive education and training system going forward. One early indication of this is the rising importance of middle-skills and the key role Orange County's community colleges play in the labor market, both of which will be explored in special sections of the report.

Orange County employers will require a nimble workforce that can respond to increasingly rapid advances in innovation and technology; one "soft" skill, being a lifetime learner, will become particularly valuable.  Business, educators, policymakers, and civic leaders must come to the table to find the best ways to train and educate Orange County's workforce for a 21st century global economy, which will involve creating a system that promotes customer-centric options. "Customers" in this sense includes at least three parties:

- Individuals – Orange County students need to be prepared for the coming 4th Industrial Revolution by focusing on education and training that promotes "defensible" skills (see text box "The Dimensions of Defensibility") and career flexibility.   While middle-skills are becoming a more important part of the labor market, approximately 8.7 million working age individuals in California are unable to complete higher education courses due to work, family obligations interfering with class times, or cost, which severely limits their career advancement opportunities. The California Community Colleges have begun implementing one solution to this problem – an entirely online community college, which will enable to students to take classes in their own homes, at their own pace. This will provide increased flexibility for students at a cost consistent with California's other community colleges, which offer the nation's lowest tuition and fees.

- Employers – skill gaps are emerging as businesses prepare for the 4th Industrial Revolution, causing many workforce needs to go unfulfilled due to a lack of coordination between employers and educators. Irvine Valley College (IVC) offers a good example of the potential benefits of cooperation and collaboration; IVC Photonics faculty sat down with employees at Alcon and Precision Optical to design and build curriculum and modes of educational delivery that meets the needs of the innovative Photonics industry. This unprecedented level of partnership with the business community has led to class modules being offered in industry laboratories as well as on campus, leading ultimately to the hiring of IVC students. This model is now spreading across multiple sectors such as Coding and Manufacturing, demonstrating the benefits of businesses joining forces and working closely with educators in the process of building a highly qualified workforce for 21st century jobs in Orange County.

- Communities – as shown by the significant regional variation in California's digitization rates, regions that have prepared for the 4th Industrial Revolution with digitization and technology-focused STEAM education and training will have a significant competitive advantage going forward. Instead of "business as usual", the first steps involve understanding and predicting future capability and skills requirements using advanced predictive labor market analytics, which will enable proactive strategies in the face of a rapidly transforming economy. By comparing current and  future skill capabilities  required, Orange County will be able to determine what percentage of existing employees already possess these skills, and what percentage need to be reskilled for new and/or changing occupations in order to prepare a workforce for emerging job opportunities in the years ahead.

One clear conclusion is that, in order to emerge stronger from the coming automation age, Orange County must create a new system to compete in the 21st century: a system that develops the skills of both current workers and students to meet new skills requirements. Due to the very nature of labor market change as outlined in this introduction and throughout the rest of this report, alignment between the business community and educational partners will be a very significant part of preparing Orange County's workforce for tomorrow's economy. However, the new alignment must be transformational, requiring both educators and employers to rethink conventional wisdom about their roles in the labor market.

Education and training institutions will have to make a serious commitment to dedicating at least part of their resources to getting access to good information and data in order to create curricula tailored to job market demand; this will require its own infrastructure, drawing on recent developments in data analytics. Other institutions will also need to become involved, such as platforms that help coordinate and integrate the multitude of providers and options available, creating effective talent pipelines and growing awareness regarding the most in-demand skills. These efforts will combine to create tomorrow's educational system, with a core of deep-thinking, defensible skills and learning abilities that are necessary for success in a knowledge-intensive economy supplemented by in-demand skills training that makes workers more competitive in labor market.

# 2 ORANGE COUNTY DEMOGRAPHIC TRENDS

As Orange County continues to grow and evolve, demographic trends across the region and their associated effects impact how community, government and business leaders plan for the future. Therefore, a detailed overview of demographic change in the county is the first step towards understanding trends that will drive future economic growth.

# 37.9

**Median age in OC**

# 21,626

**Population growth
in OC during 2017**

# INTRODUCTION

Orange County's rapidly aging population is its most important demographic trend, one that will impact education, the labor market and the county's overall business climate. It will also put major pressures on the county's Healthcare system, which will require a more robust workforce pipeline to meet increasing demand.

## WHAT HAS HAPPENED

The first chart illustrates Orange County's dramatic age shift since the turn of the millennium. The county's median age increased from 33 in 2000 to 37.9 in 2017, while its proportion of residents aged 65 and older increased from 9.8 percent to 14.4 percent over the same period. The proportion of residents under 24, on the other hand, has shrunk from 36.4 percent in 2000 to 31.5 percent in 2017.

" **Orange County's largest cities are Anaheim (population 357,048), Santa Ana (338,247) and Irvine (276,176). Irvine, Brea and Lake Forest have experienced the most rapid population growth since 2010... The past year alone has seen Irvine grow by 3.4 percent and Lake Forest by 1.7 percent."**



### Orange County Age Trends, 2000-2017
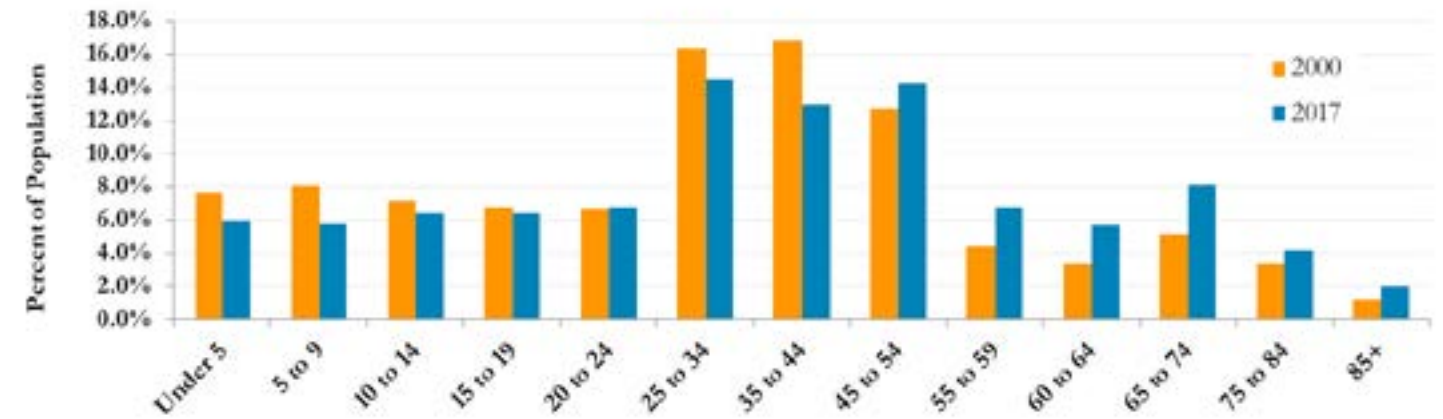
Source: U.S. Census Bureau, 2017 American Community Survey

Orange County has also seen accelerating population growth in recent years. In 2017, for example, its population grew by 21,626, compared to a population growth of only 16,500 the previous year. This increasing population growth is largely to due to a decrease in negative domestic migration; almost 19,000 residents moved out of the county in 2016 compared to less than 14,000 in 2017, as more Orange County residents choose to stay in the county rather than relocate to neighboring counties and states. This positive trend may be the result of increasing wage growth in Orange County, which helps offset increases in housing costs and other affordability concerns.



### Orange County Population Growth, 2000-2017
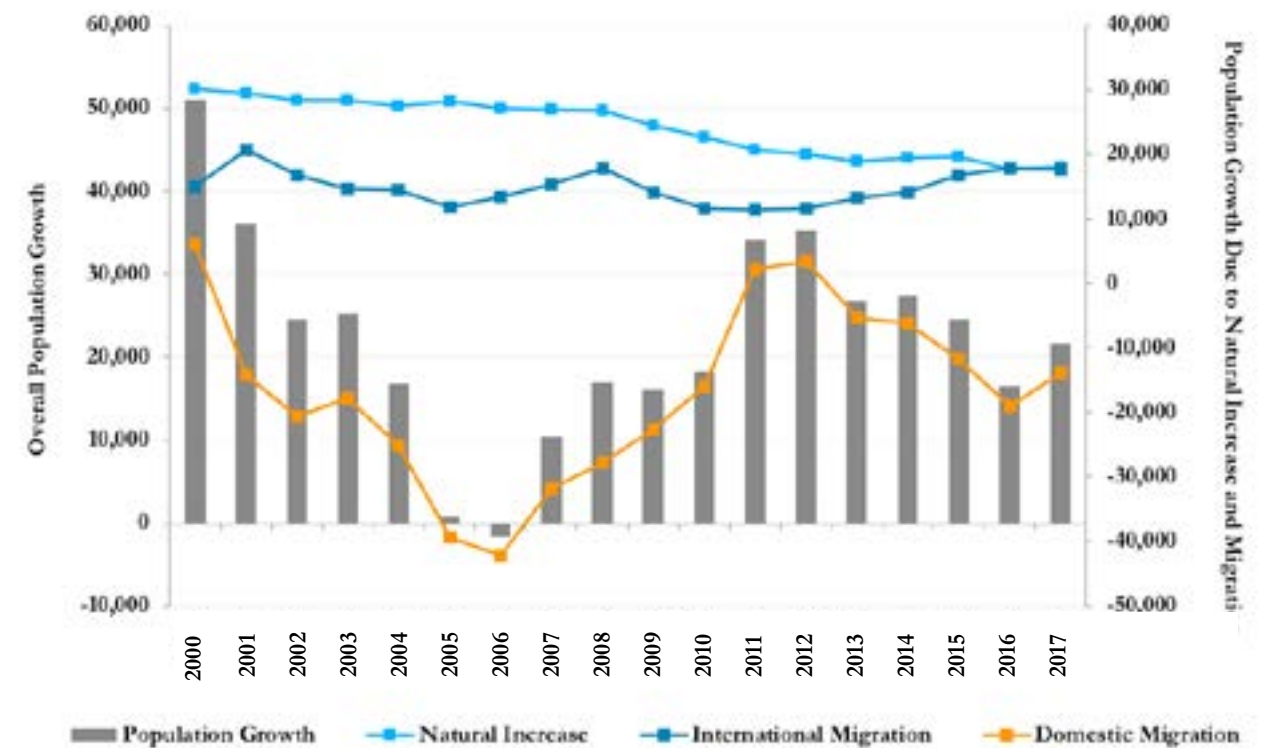
Source: California Department of Finance

Orange County's largest cities, as seen in the following graph, are Anaheim (population 357,048), Santa Ana (338,247) and Irvine (276,176). Irvine, Brea and Lake Forest have experienced the most rapid population growth since 2010, growing by 30, 14.6 and 9.6 percent, respectively; the past year alone has seen Irvine grow by 3.4 percent and Lake Forest by 1.7 percent. Irvine has seen particularly strong population growth due to its central location within the county, unofficial status as a regional business hub, strong infrastructure and reputation as one of the nation's safest cities, as well as the presence of the University of California, Irvine.



## Largest 15 Orange County Cities and 2010-2018 Population Growth Rates
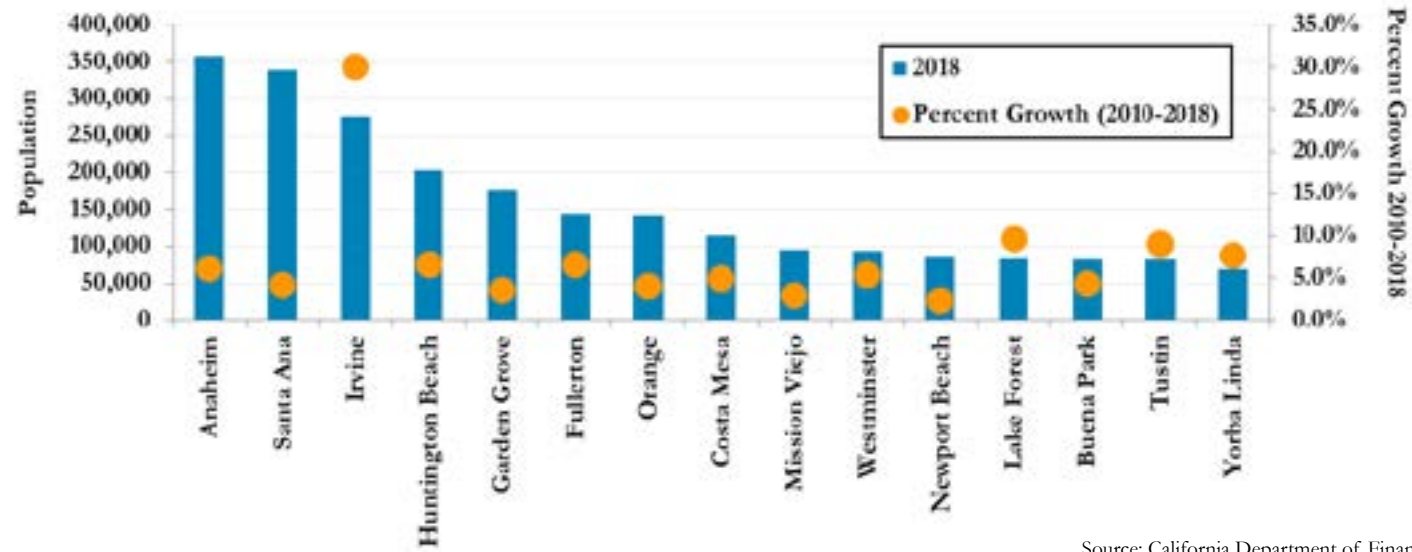
Source: California Department of Finance

Orange County has also become increasingly ethnically diverse since 1990. In 1990, as illustrated by the graph below, Whites, Latinos or Hispanics and Asians made up 64.6 percent, 23.4 percent and 10.5 percent, respectively, of the county's population; these numbers have changed to 40.4 percent, 34.2 percent and 20.3 percent in 2017. While this increased diversity provides significant benefits to Orange County, it also creates a few challenges, such as pressure on the educational system to create more robust English Language Learner programs. Fortunately, as discussed in a later section of this report, county educators have generally responded well and have made major progress on this issue.
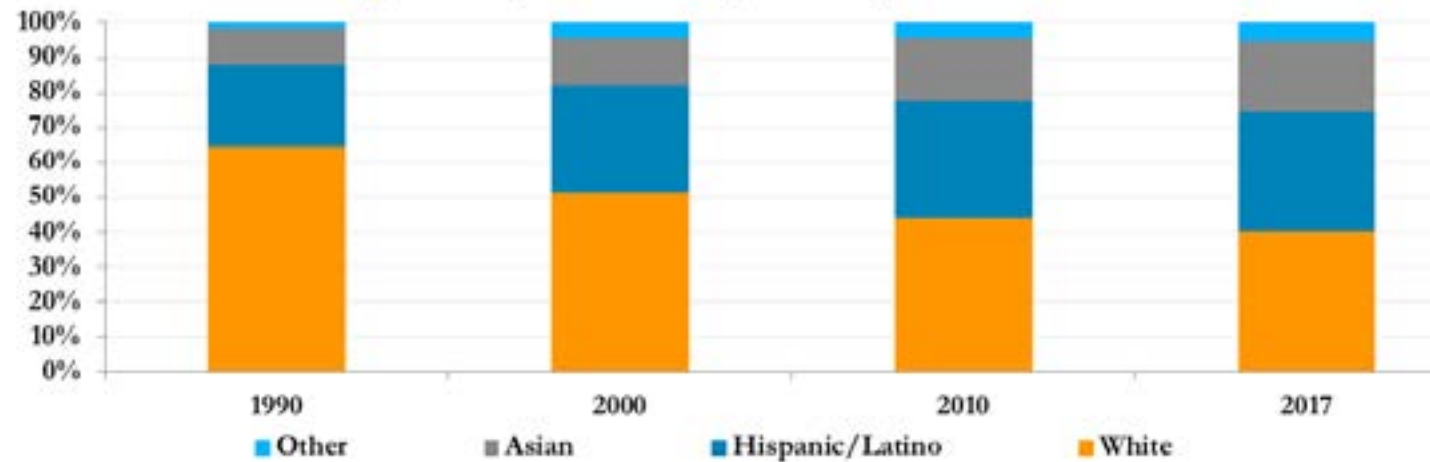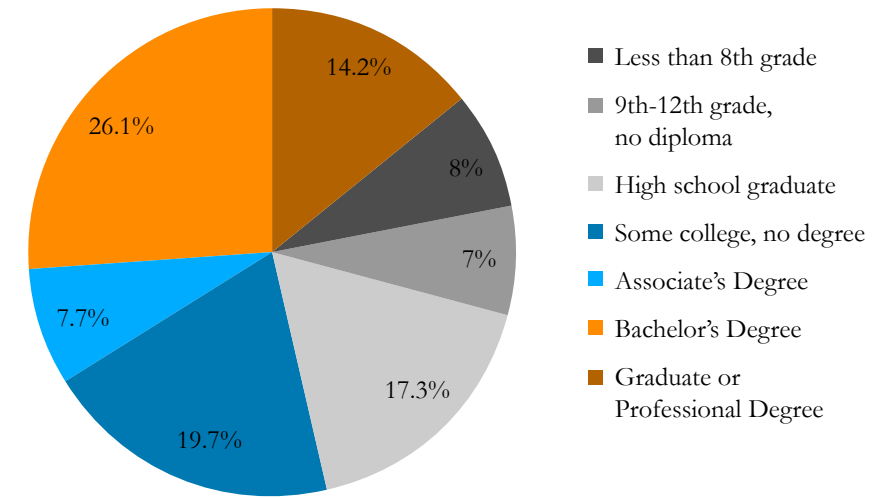


## Orange County Ethnic Composition, 1990-2017

Source: U.S. Census Bureau, 2017 American Community Survey

The county has also seen rising rates of educational attainment, with 26.1 percent of residents holding a Bachelor's degree and 14.2 percent holding a Graduate or Professional degree in 2017, compared to only 20.4 percent and 10.4 percent, respectively, in 2000. Over the same time period, the percentage of county residents without a high school diploma decreased from 20.5 percent to 15 percent. Orange County's per capita income has increased alongside educational attainment, growing to $39,038 in 2017.

## Orange County Educational Attainment of Population Age 25+, 2017



- Less than 8th grade
- 9th-12th grade, no diploma
- High school graduate
- Some college, no degree
- Associate's Degree
- Bachelor's Degree
- Graduate or Professional Degree

The percentage of county households making more than $100,000 annually has also increased dramatically since 2005, growing to 43.2 percent in 2017, and growing by 1.7 percentage points in the past year. At the same time, the proportion of households making under $50,000 has decreased from 36.9 percent in 2005 to 28.6 percent in 2017, providing another important illustration of the positive impacts of economic growth and job creation on household finances.

Source: U.S. Census Bureau, 2017 American Community Survey

## Orange County Per Capita Income, 2005-2017
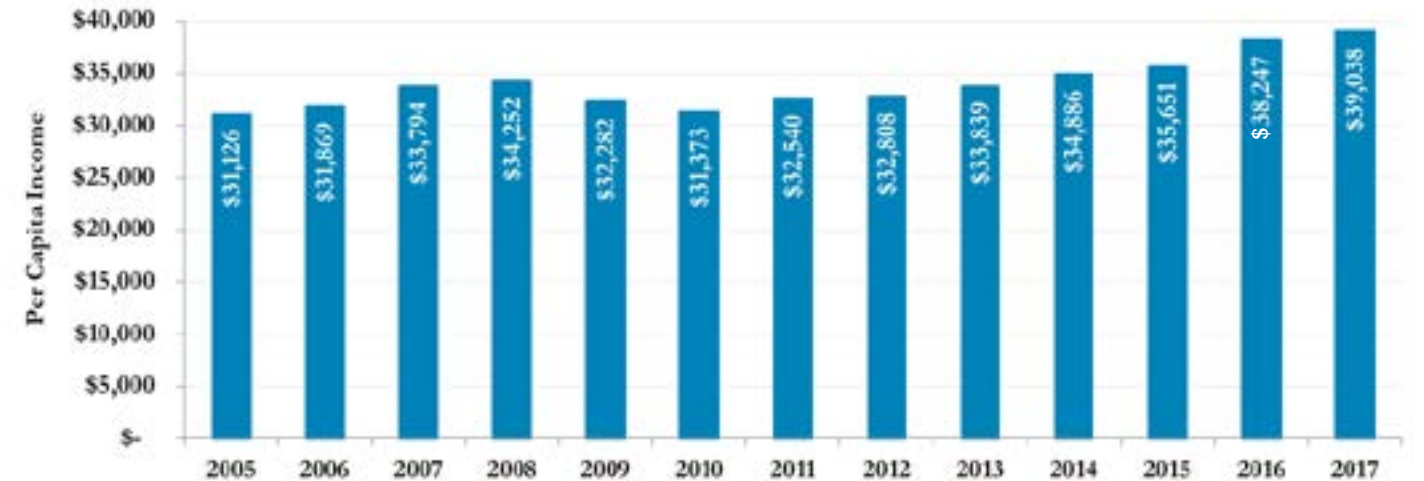


Source: U.S. Census Bureau, 2017 American Community Survey

## Orange County Median Household Income Distribution, 2017
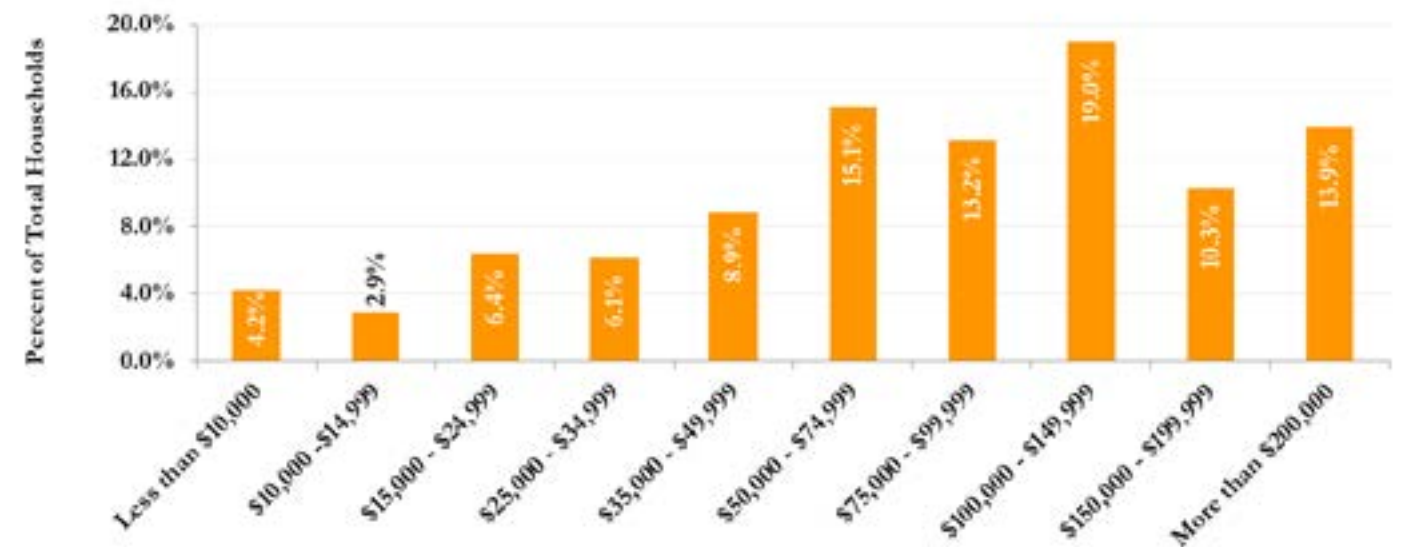


Source: U.S. Census Bureau, 2017 American Community Survey

# LOOKING FORWARD

In addition to current demographic estimates, the California Department of Finance also forecasts demographic changes over the next several decades. It predicts, as seen in the following graph, that Orange County's population will age significantly between now and 2060; individuals aged 65 and older made up 13.7 percent of the county's population in 2015 and are predicted to make up 28.9 percent by 2060. The relative share of younger age groups will decline at the same time. For example, children aged 14 years and younger, a group that made up almost 20 percent of the county's population in 2015, will account for only 13.7 percent of its population in 2060.

These trends will have a particularly significant impact on Healthcare in Orange County, as an aging population will both increase demand for Healthcare services and decrease the supply of working-aged residents able to fill Healthcare job vacancies.

### Projected Components of Population by Age in Orange County, 2010-2060
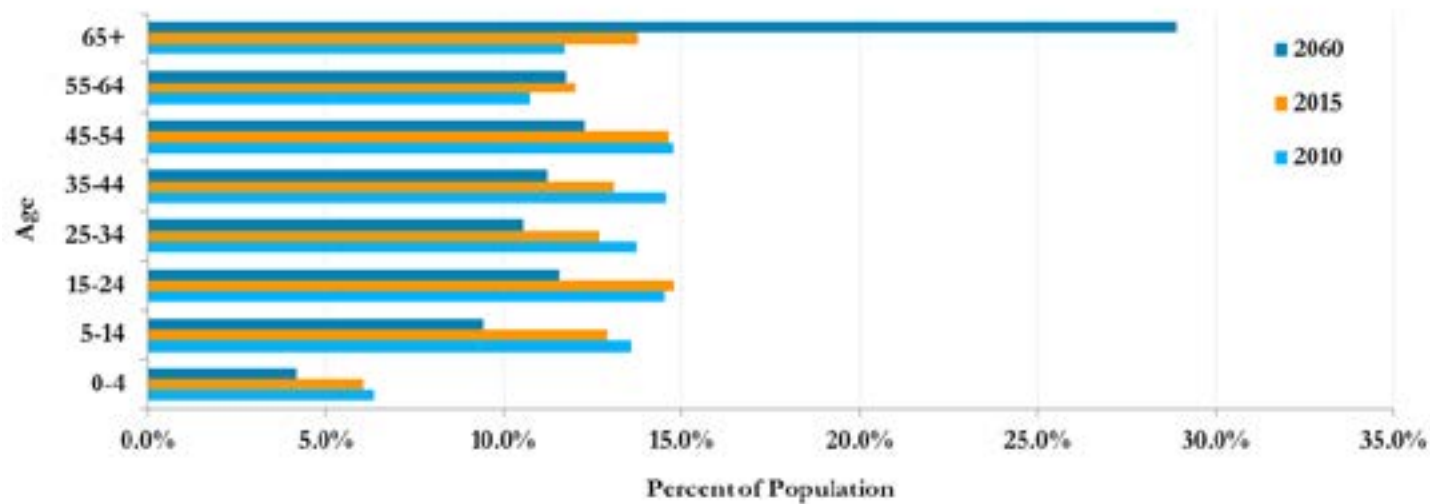


Source: California Department of Finance

Increases in older age groups will drive Orange County's population growth between 2010 and 2060. The California Department of Finance predicts that the Seniors age group (aged 85 and older) will increase by almost 500 percent by 2060, with Mature Retirees (aged 75-84) increasing by 223 percent and Young Retirees (65-74) increasing by just over 100 percent.

Younger age groups, on the other hand, are predicted to see minimal growth or even shrink, as seen in the following chart. The county's Working Age population (25-65), for example, is predicted to increase by only two percent over the next several decades, which poses important questions for all county stakeholders regarding issues such as talent pipelines and the skills gap.

> " Orange County's population will age significantly between now and 2060; individuals aged 65 and older made up 13.7 percent of the county's population in 2015 and are predicted to make up 28.9 percent by 2060. The relative share of younger age groups will decline at the same time."

> " These trends will have a particularly significant impact on Healthcare in Orange County, as an aging population will both increase demand for Healthcare services and decrease the supply of working-aged residents able to fill Healthcare job vacancies."

| County | Preschool Age (0-4) | School Age (5-17) | College Age (18-24) | Working Age (25-64) | Young Retirees (65-74) | Mature Retirees (75-84) | Seniors (85 +) | Total (All Ages) |
|---|---|---|---|---|---|---|---|---|
| San Francisco | 40% | 62% | 6% | 17% | 119% | 265% | 400% | 48% |
| San Diego | 2% | 21% | 13% | 10% | 107% | 230% | 427% | 33% |
| *Orange County* | *-21%* | *-16%* | *0%* | *2%* | *103%* | *223%* | *487%* | *20%* |
| California | -5% | 0% | 12% | 21% | 128% | 238% | 488% | 37% |
| Los Angeles | -31% | -26% | -13% | -5% | 117% | 243% | 597% | 14% |
| Santa Clara | 11% | 24% | 45% | 34% | 142% | 297% | 606% | 57% |
| Riverside | -6% | -1% | 18% | 55% | 202% | 294% | 711% | 64% |
| San Bernardino | 12% | 16% | 35% | 53% | 173% | 277% | 605% | 58% |

**Projected Age Components of California County Population Growth 2010-2060**

Source: California Department of Finance

The California Department of Finance also predicts that the county will continue to become more diverse in the coming decades, estimating that Orange County's Hispanic population will grow from 35.1 percent to 43 percent over time.

### Projected Components of Population by Ethnicity, Orange County 2010-2060
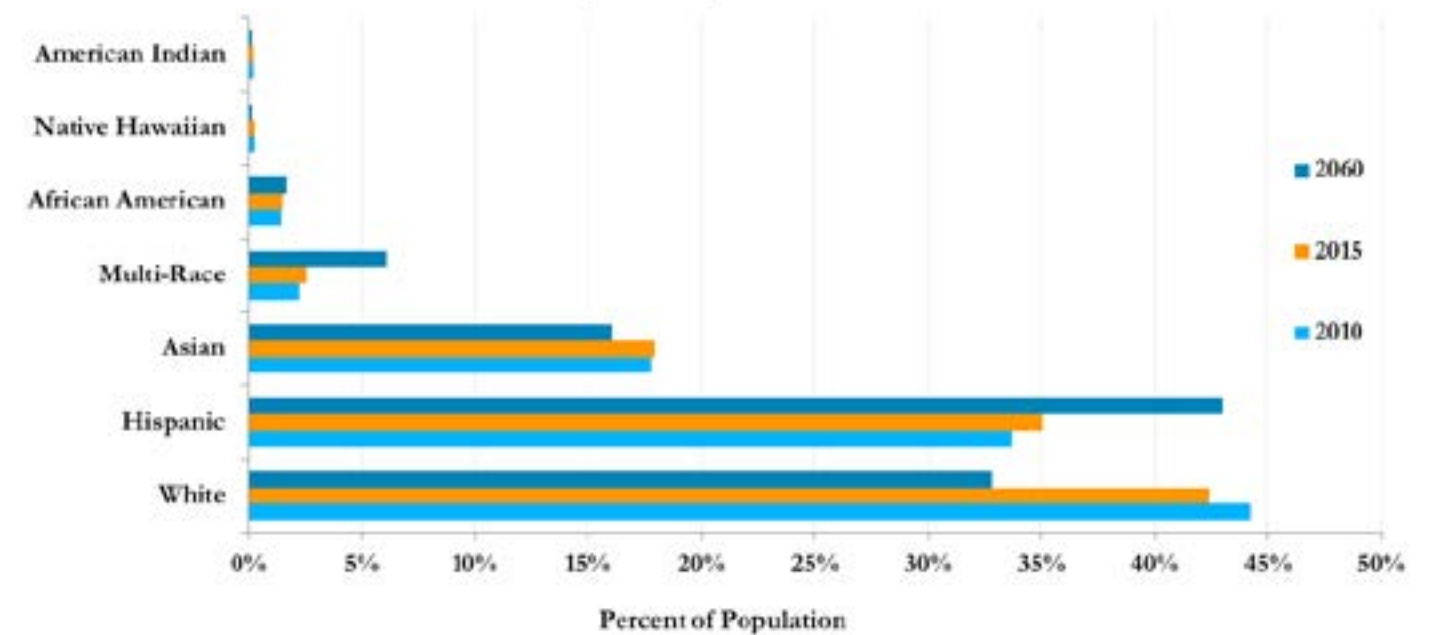


Source: California Department of Finance

# MILLENNIALS ON THE MOVE, ORANGE COUNTY TRENDS

Millennial migration trends to and from Orange County, as well as millennials themselves, have recently been the subject of analysis and speculation in terms of habits and preferences, for good reason. As the now largest generational group in the nation, millennial trends are impacting regional economies more than ever and as they grow older and progress through their professional careers those impacts will only grow in scale. While the term "millennial" has multiple definitions, this report defines millennials as individuals currently aged 20 to 34.

Orange County is currently undergoing a major demographic shift marked by an aging population and a decreasing number of young individuals and families. While many factors play a role in this trend, the most commonly accepted is the county's high cost of housing, which prices many young workers and families out of the area. Wage growth has failed to keep pace with Orange County housing prices, which have surpassed pre-Recession highs. This trend, combined with rising interest rates, has led to a chronic shortage of workforce housing that has disproportionately affected younger generations.

While Orange County remains one of the region's best places to live and work, with a celebrated quality of life and thriving job market, workforce housing affordability issues have led to negative net migration in most years since the turn of the millennium (for a discussion of workforce housing trends, consult the special feature on that topic later in this report). Orange County continues to create large number of jobs at almost every education and salary level; its high cost of living, however, has pushed many county workers to relocate to more affordable counties such as Riverside and San Bernardino, trading longer commute times for lower housing costs.

Recent data shows, however, that the majority of Orange County millennials are increasingly leaving not for surrounding counties but for other states. This issue brief aims to quantify this trend by measuring the number of individuals leaving or coming into the region. Breaking these numbers down by city identifies county cities which are attracting and retaining millennial workers, as well as those that struggle to do so. Finally, this report identifies some of the main areas that local millennials are moving to. Together, this information will help local stakeholders and policymakers better understand these important but challenging trends and implement policies and strategies aimed at attracting and retaining this crucial generation.

## CURRENT MILLENNIAL POPULATION

The U.S. Census Bureau's 5-Year 2016 American Community Survey found that Orange County's median age is 37.3, with millennials accounting for approximately 21.2 percent of the county's population. Orange County's youngest cities include:
- Santa Ana (median age of 30.5);
- Anaheim (33.7); and
- La Habra (34.2).

The county's oldest cities by median age include:
- Laguna Woods (75.5);
- Seal Beach (57.7); and
- Villa Park (51.0).

In terms of Orange County's largest cities (populations over 65,000), Costa Mesa had the highest percentage of millennial residents, 28.3 percent, followed by Orange at 27.3 percent and Santa Ana at 24.5 percent. In addition to their larger populations, these cities tend to have many elements that attract millennial workers:
- Affordable workforce housing options, especially in mixed-use developments which provide housing, amenities, retail, dining and entertainment;
- Downtown or downtown-style areas with additional urban amenities;
- Central locations with access to freeways and public transit; and
- Employment opportunities.

While 2017 numbers are not available yet for cities with populations below 65,000, 2016 data shows that the Orange County cities with the lowest proportion of millennial residents were Laguna Woods (0.2 percent), Villa Park (10.3 percent), and Laguna Beach (11.3 percent).

## Percent Millennials, 2017
### (Orange County Cities with Population over 65,000)



| City | Percent |
|---|---|
| Costa Mesa | 28.3% |
| Orange | 27.3% |
| Santa Ana | 25.4% |
| Irvine | 24.3% |
| Buena Park | 24.3% |
| Anaheim | 24.1% |
| Lake Forest | 23.8% |
| Fullerton | 22.7% |
| Garden Grove | 22.3% |
| Tustin | 21.4% |
| Orange County | 21.30% |
| Westminster | 19.4% |
| Huntington Beach | 18.5% |
| Mission Viejo | 15.6% |
| Newport Beach | 14.7% |
| San Clemente | 14.6% |
| Yorba Linda | 14.5% |
| Laguna Niguel | 12.0% |
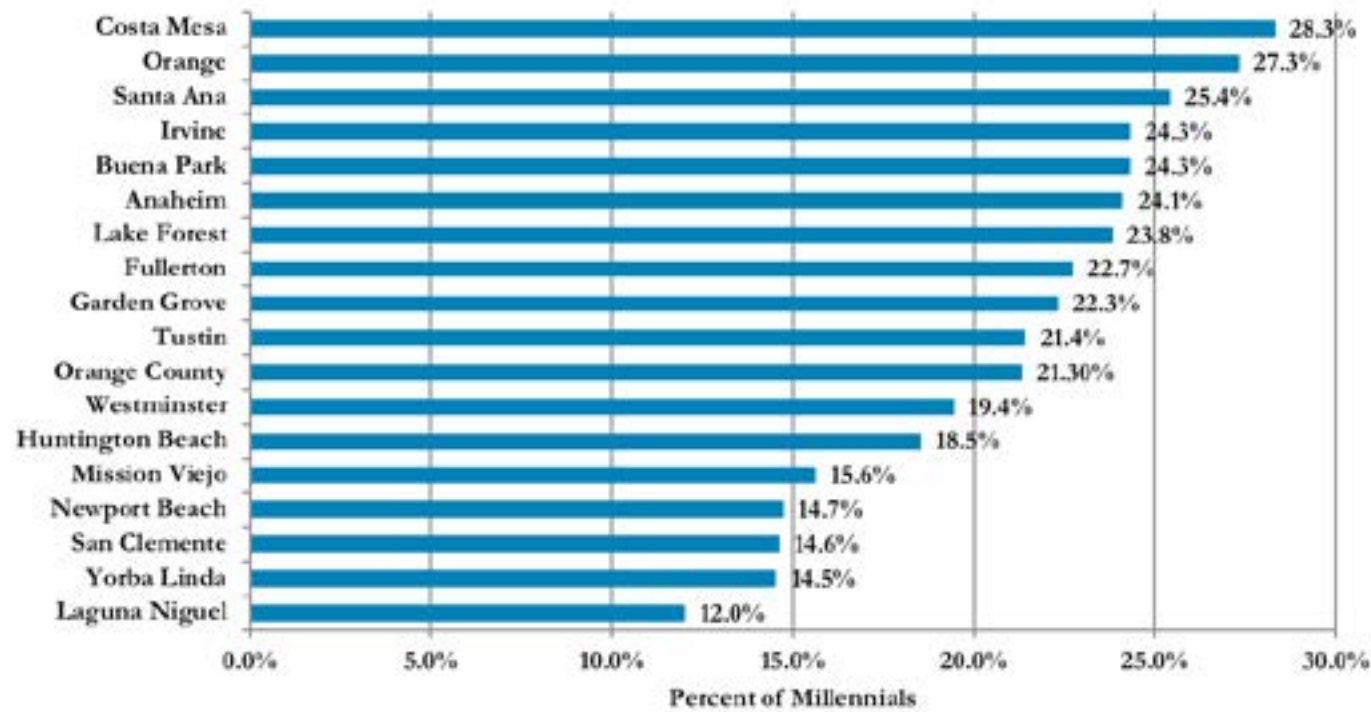
Source: U.S. Census Bureau, 2017 1-Year American Community Survey

Orange County has lost population, in most age groups, to domestic migration in every year since 2000 except for 2011 and 2012, with the largest losses occurring in the housing bubble years of 2005 and 2006. Millennial migration trends mirrored broader trends in 2016; 54,733 millennials left Orange County and 44,750 moved to the county, resulting in a net loss of almost 10,000 millennial residents. Almost three quarters of millennials who left Orange County moved to other states, a trend that held true for 2017, when the county lost a net total of just over 7,000 millennials.

This sustained negative migration, combined with the fact that many millennials choose to leave California entirely, points to lack of workforce housing supply as a statewide concern. The loss of working-aged millennials could have an especially severe impact on Orange County because it threatens one of the county's most important competitive advantages: its deep pool of educated, qualified workers. The table below highlights millennials inflows and outflows in Orange County, including unincorporated areas, in 2016 and 2017.

### Orange County Millennial Migration Trends Overview

| | | Inflow | Millennials as Percent of Total Inflow | Outflow | Millennials as Percent of Total Outflow | Balance |
|---|---|---|---|---|---|---|
| 2016 | Different County, Same State | 32,185 | 41.0% | 34,836 | 41.6% | -2,651 |
| | Different State | 12,565 | 34.8% | 19,897 | 34.5% | -7,332 |
| | Total | 44,750 | 39.0% | 54,733 | 38.7% | -9,983 |
| 2017 | Different County, Same State | 26,455 | 37.6% | 28,285 | 39.7% | -1,830 |
| | Different State | 13,187 | 42.8% | 18,468 | 34.9% | -5,281 |
| | Total | 39,642 | 39.2% | 46,753 | 37.7% | -7,111 |

Source: U.S. Census Bureau 2016 and 2017 1-Year American Community Survey

The table below highlights the number of millennials in Orange County who migrated to and from the county in 2016. Fullerton and Irvine had the largest influx of millennials at 1,515 and 809, respectively, which is likely due to the presence of California State University, Fullerton and the University of California, Irvine. These cities, along with Orange, home of Chapman University, had the youngest median age of incoming residents:
- Orange (23.8);
- Irvine (25.8); and
- Fullerton (26.3).

While 11 Orange County cities had net positive millennial migration flow in 2016, 23 cities experienced net losses, with Garden Grove, Santa Ana and San Clemente losing the most in that year. Each had a slightly different profile of where millennials moved to, with Garden Grove millennials primarily moving to other states. San Clemente millennials primarily moved to other counties within California, while Santa Ana was almost evenly split between the two.

### Domestic Millennial Inflows and Outflows by Orange County City, 2016*

| Cities | Different County, Same State | | | Different State | | | Total |
|---|---|---|---|---|---|---|---|
| | Inflow | Outflow | Balance | Inflow | Outflow | Balance | |
| Fullerton | 3,225 | 2,108 | 1,117 | 814 | 416 | 398 | 1,515 |
| Irvine | 4,709 | 4,774 | -65 | 2,657 | 1,783 | 874 | 809 |
| Aliso Viejo | 598 | 346 | 252 | 409 | 170 | 239 | 491 |
| Costa Mesa | 1,537 | 1,427 | 110 | 1,008 | 673 | 335 | 445 |
| La Habra | 1,123 | 909 | 214 | 215 | 158 | 57 | 271 |
| Placentia | 617 | 302 | 315 | 124 | 278 | -154 | 161 |
| Seal Beach | 537 | 367 | 170 | 97 | 135 | -38 | 132 |
| San Juan Capistrano | 162 | 91 | 71 | 105 | 117 | -12 | 59 |
| La Palma | 125 | 181 | -56 | 108 | 21 | 87 | 31 |
| Laguna Hills | 139 | 208 | -69 | 146 | 74 | 72 | 3 |
| Los Alamitos | 273 | 195 | 78 | 49 | 124 | -75 | 3 |
| Laguna Woods | 0 | 5 | -5 | 0 | 7 | -7 | -12 |
| Stanton | 277 | 278 | -1 | 19 | 42 | -23 | -24 |
| Villa Park | 0 | 52 | -52 | 14 | 19 | -5 | -57 |
| Dana Point | 165 | 249 | -84 | 186 | 202 | -16 | -100 |
| Laguna Beach | 191 | 129 | 62 | 112 | 277 | -165 | -103 |
| Brea | 656 | 686 | -30 | 106 | 187 | -81 | -111 |
| Anaheim | 3,700 | 3,355 | 345 | 1,058 | 1,531 | -473 | -128 |
| Rancho Santa Margarita | 328 | 370 | -42 | 281 | 401 | -120 | -162 |
| Newport Beach | 1,162 | 1,254 | -92 | 939 | 1,047 | -108 | -200 |
| Mission Viejo | 800 | 592 | 208 | 274 | 686 | -412 | -204 |
| Huntington Beach | 2,002 | 2,007 | -5 | 1,136 | 1,346 | -210 | -215 |
| Fountain Valley | 373 | 561 | -188 | 115 | 154 | -39 | -227 |
| Cypress | 380 | 504 | -124 | 115 | 246 | -131 | -255 |
| Buena Park | 1,003 | 1,104 | -101 | 206 | 407 | -201 | -302 |
| Westminster | 495 | 708 | -213 | 307 | 439 | -132 | -345 |
| Lake Forest | 407 | 749 | -342 | 199 | 306 | -107 | -449 |
| Tustin | 772 | 962 | -190 | 146 | 411 | -265 | -455 |
| Orange | 1,060 | 1,426 | -366 | 650 | 806 | -156 | -522 |
| Laguna Niguel | 323 | 704 | -381 | 385 | 566 | -181 | -562 |
| Yorba Linda | 462 | 760 | -298 | 185 | 460 | -275 | -573 |
| San Clemente | 479 | 1,094 | -615 | 717 | 774 | -57 | -672 |
| Santa Ana | 1,521 | 1,920 | -399 | 668 | 1,032 | -364 | -763 |
| Garden Grove | 886 | 1,121 | -235 | 411 | 970 | -559 | -794 |

* Note that the countywide 1 year ACS 2016 and 2017 numbers in the above table above are not directly comparable to the 2016 ACS 5 year estimates for cities in the table below due to different time periods of the estimates.

Source: U.S. Census Bureau 2016 5-Year American Community Survey

Strategies focused on millennials can dramatically increase Orange County's ability to retain its young workforce, if they take millennial habits and preferences into account. As previously mentioned, high housing costs are the most important reason why millennials – and members of other generations – leave Orange County. The county's job market remains strong, which leads many workers to live in neighboring areas, such as the Inland Empire, and commute to Orange County. This, however, leads to negative consequences such as traffic congestion and long commute times, which has a negative impact on quality of life; retaining and attracting more millennials in Orange County could help improve this situation, as the burden of commuting could become a drain on the county economy. Cost of living is also a major factor for individuals relocating to other states, although additional analysis is needed to identify other important reasons for these decisions.

Overall, millennial migration is just one part of a wider trend -- Orange County's rapidly aging population. Cities losing millennials will see labor shortages and populations aging in place, while the opposite is true for those that can attract and retain millennials. These trends will impact the county's status as a strong business environment and could potentially limit future economic growth. Therefore, cities losing large numbers of millennials should create actionable strategies aimed at ensuring millennials are able to live and work in the area through additional workforce housing, innovative mixed-use retail properties, and rewarding job opportunities.

Orange County cities with an influx of millennials, on the other hand, cannot be complacent and should create strategies to leverage this trend and ensure future attraction and retention. This will enable these cities to preserve this key competitive advantage and build a strong foundation for their future workforce. Cities should consider a collaborative initiative to retain and attract millennials, complementing and supplementing each other's unique strengths and weaknesses to provide a comprehensive value-add for individuals living and working in the county. These collaborations would also help these cities further attract and retain businesses and non-millennial workers. This, in turn, will also help these cities to support their increasingly aging populations while providing an environment which allows young families to live, grow, and thrive.

> " **Cities losing millennials will see labor shortages and populations aging in place, while the opposite is true for those that can attract and retain millennials. These trends will impact the county's status as a strong business environment and could potentially limit future economic growth. Therefore, cities losing large numbers of millennials should create actionable strategies aimed at ensuring millennials are able to live and work in the area through additional workforce housing, innovative mixed-use retail properties, and rewarding job opportunities.** "

# 3 EDUCATION AND WORKFORCE TRAINING TRENDS

As Orange County's labor market continues to shift alongside new technologies, changing demographics and evolving business processes, it is important that educators follow these trends and craft educational programs which can better support and leverage these changes. K-12, higher education and career technical programs all have dramatic impacts on how well-prepared the local workforce is and can dramatically impact the region's ability to foster continued economic growth and development while ensuring a high quality of life for residents.

# 23.5%

**Of OC students were English Language Learners in 2018.**

# 40,000

**Expected decrease in student enrollment over next decade**

# INTRODUCTION

Multiple factors are transforming Orange County's labor market, from technological advances and new business concepts to demographic shifts. Local educators, policymakers and other stakeholders need to adapt to these changes in order to preserve one of the county's primary advantages: its deep, well-educated talent pool. The skills gap – the mismatch between job candidates' skills and those needed by employers – has become a particularly challenging issue, one that pressures educational institutions at all levels, to teach students a combination of hard and soft skills that will lead to success in the job market. While Orange County remains an economic powerhouse in Southern California, only foreword-thinking policies can assure that it maintains this role in the face of a rapidly shifting economy.

## K-12 EDUCATION
## WHAT HAS HAPPENED

Three statistics in particular illustrate how well county schools are preparing students for the workplace: dropout rates, the percentage of English Language Learners, and the percentage of students prepared for the next step in their education.

The importance of dropout rates cannot be overstated, as higher educational attainment directly correlates to higher earnings later in life. Strong correlations exist between a highly educated population and economic competitiveness, business retention and attraction, talent attraction and retention, growth in innovation capacity, and overall economic growth and job creation.

As highlighted in the Demographic section of this report, Orange County is expected to become more diverse in the coming decades. As a result, English Language Learning (ELL) programs, especially those at the K-12 level, should remain a major priority for local educators. Strengthening these programs will help individuals more easily advance through their academic careers, reduce dropout risks, increase students' chances to attend higher education programs such as University of California or California State University institutions and increase their chances at being able to find rewarding employment occupations after graduation.

In addition to demographic trends, the technological revolutions discussed in the report introduction also requires a reimagining of local education and workforce development training programs. Because of near record employment levels, local and regional employers still struggle to fill positions despite skyrocketing college attendance. Many job candidates lack, in particular, the combination of "hard" and "soft" skills necessary for employment in many of today's jobs.

Fortunately, Orange County students are much less likely to dropout from K-12 enrollment than students in neighboring and peer counties across the state. According to the California Department of Educations' Data Reporting Office, only 1.5 percent of Orange County students dropped out during the 2016-2017 school year, compared to 2.4 percent at the state level. Riverside County had a similar annualized dropout rate of 1.5 percent, while Los Angeles County had an annualized dropout rate of 3.2 percent and San Diego County had an annualized dropout rate of 2.1 percent; the comparatively low dropout rates in Orange and Riverside counties highlight the focus both counties have placed on K-12 education. Overall dropout rates have improved at both the local and state levels since 2012.



**Grades 9-12 Adjusted High School Dropouts by County**

Legend: 2011-2012, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017
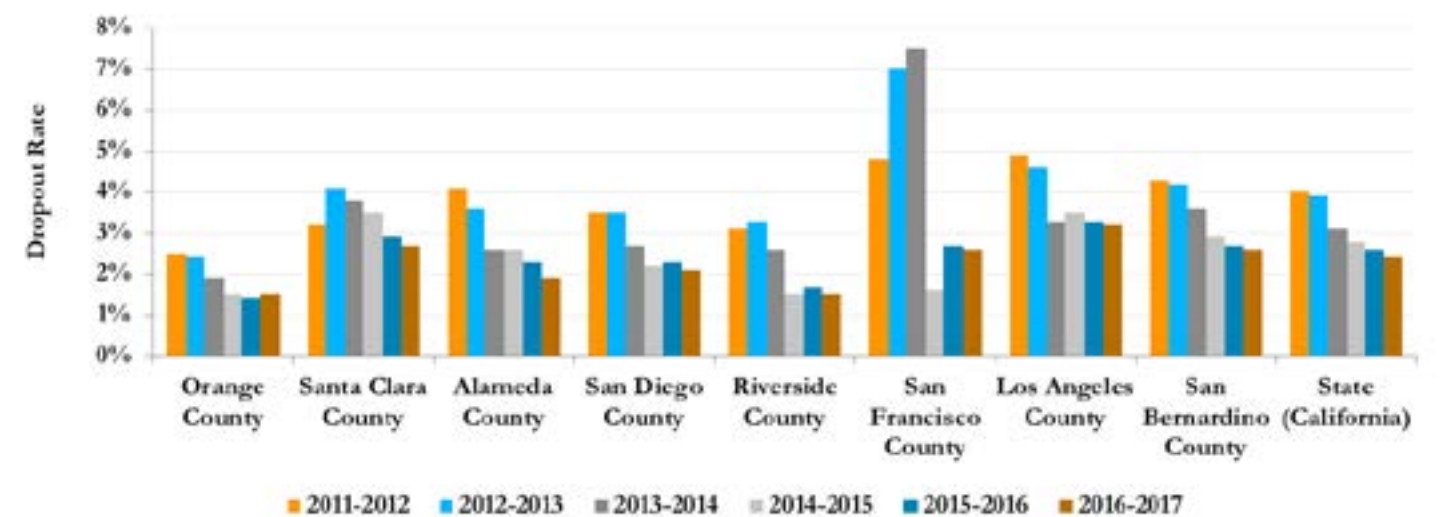
Source: California Department of Education, Data Reporting Office

The way dropout rates are measured has changed in recent years. In previous years, students who transferred to an adult education program were subsequently removed from their cohort and counted as dropouts. Now, students who transfer to an adult education program will be counted as dropouts unless they graduate from an approved adult education program within the cohort outcome period and with acceptable written documentation. This new methodology allows published dropout rates to more accurately reflect students who have transferred out and failed to complete their programs within the cohort outcome period.

Dropout rates vary widely within Orange County, as illustrated by the following graph. The Anaheim Union High district had the highest annualized dropout rate (2.0 percent), while Los Alamitos Unified had the lowest rate (0.1 percent).

Analyzing dropout rates by school district helps identify academically struggling parts of Orange County. These districts tend to be in high-poverty communities, which suggests an important link between student success and economic opportunity. The *Orange County Comprehensive Economic Development Strategy* (CEDS) uses the term "Red-Zone" to refer to areas with above average unemployment rates and below average per capita incomes; "Red-Zones" usually correlate with academically struggling areas. Improving the lives and economic opportunity of residents in these areas will be an essential part of improving the county's overall academic performance, ensuring that educational performance can improve as more resources will become available to both students and teachers.
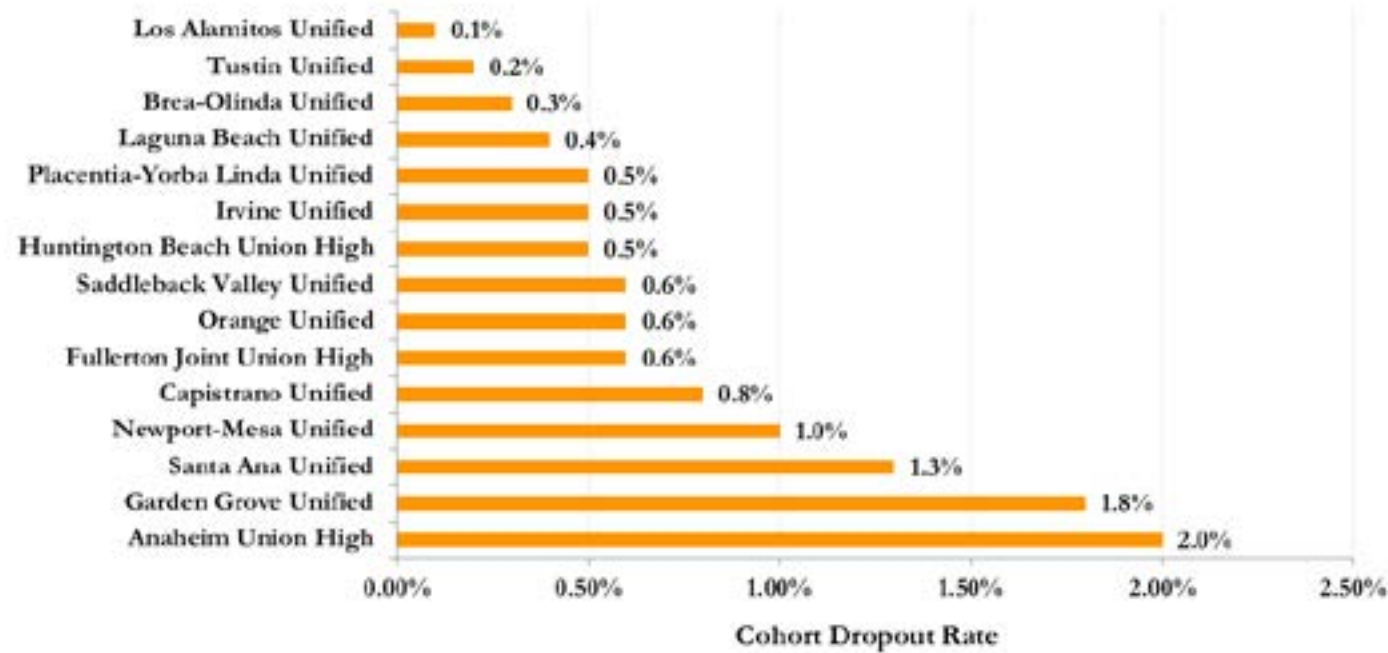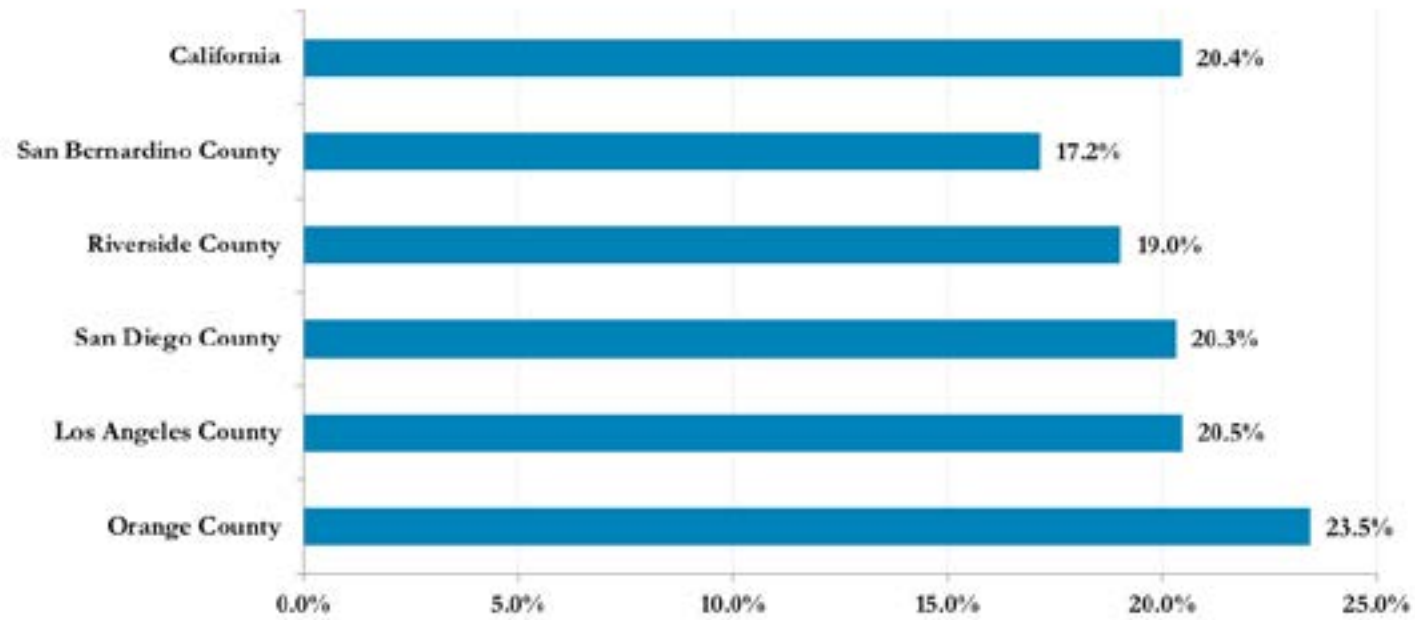
Orange County has a higher percentage of English Language Learner (ELL) students than neighboring counties or the state as a whole. In 2018, the California Department of Education's Data Reporting Office estimated that 23.5 percent of Orange County students were English Language Learners compared to 20.4 percent for the state, 20.5 percent for Los Angeles County and 20.3 percent for San Diego County. Orange County's high percentage of ELL students and relatively low dropout rates highlights the success of local ELL programs, which build a strong foundation for progress in these students' educational futures.

The California Department of Education also measures the number of students in Fluent English Proficient and Redesignated programs. Students with English as a second language are designated as Fluent English Proficient after passing state assessments, while Redesignated students are former English Language Learners who have been reassessed as proficient in English. The numbers of both groups, as seen in the chart below, have generally trended upward since 2000, although Fluent English Proficient students saw a small drop between 2017 and 2018. The number of English Language Learners has steadily decreased over the same time period, illustrating the progress made by local English language programs.

In 2018, the Anaheim Elementary, Magnolia Elementary and Savanna Elementary districts had the highest rates of English Learners at 57.4 percent, 48.3 percent, and 40.1 percent, respectively. On the other hand, the Los Alamitos Unified, Laguna Beach Unified and Huntington Beach City Elementary districts had the lowest percentage of ELL students at 2.2 percent, 3.6 percent and 5.0 percent, respectively. In general, school districts with the highest rates of English learners are located in and around Anaheim, whereas districts with the lowest rates tend to be located in southern Orange County.



Orange County High School Dropout Rates by District, 2016-2017

Source: California Department of Education, Data Reporting Office



English Learners, Fluent English Proficient and Redesignated Students in Orange County, 2000-2018

Source: California Department of Education, Data Reporting Office
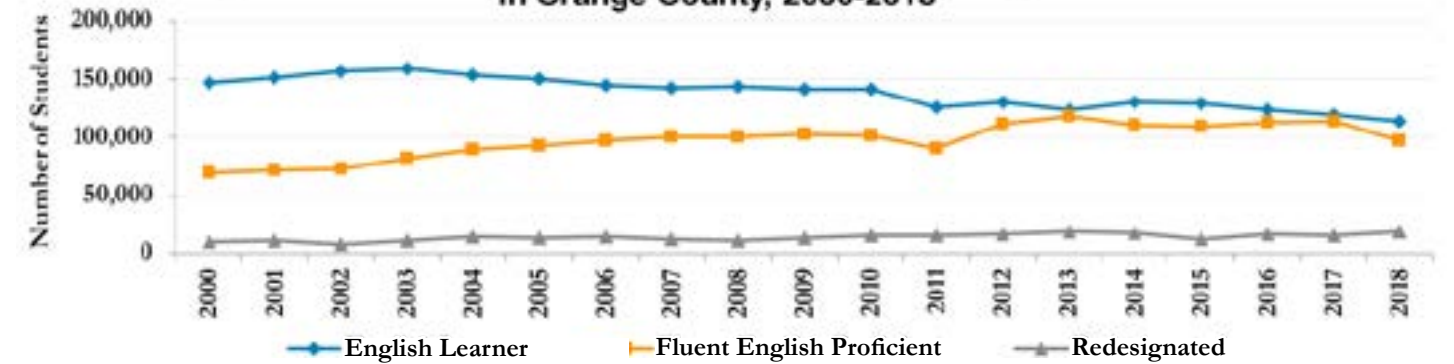


English Learners as a Percent of Total Enrollment, 2018

Source: California Department of Education, Data Reporting Office



Percent of English Learners by District, Orange County 2018
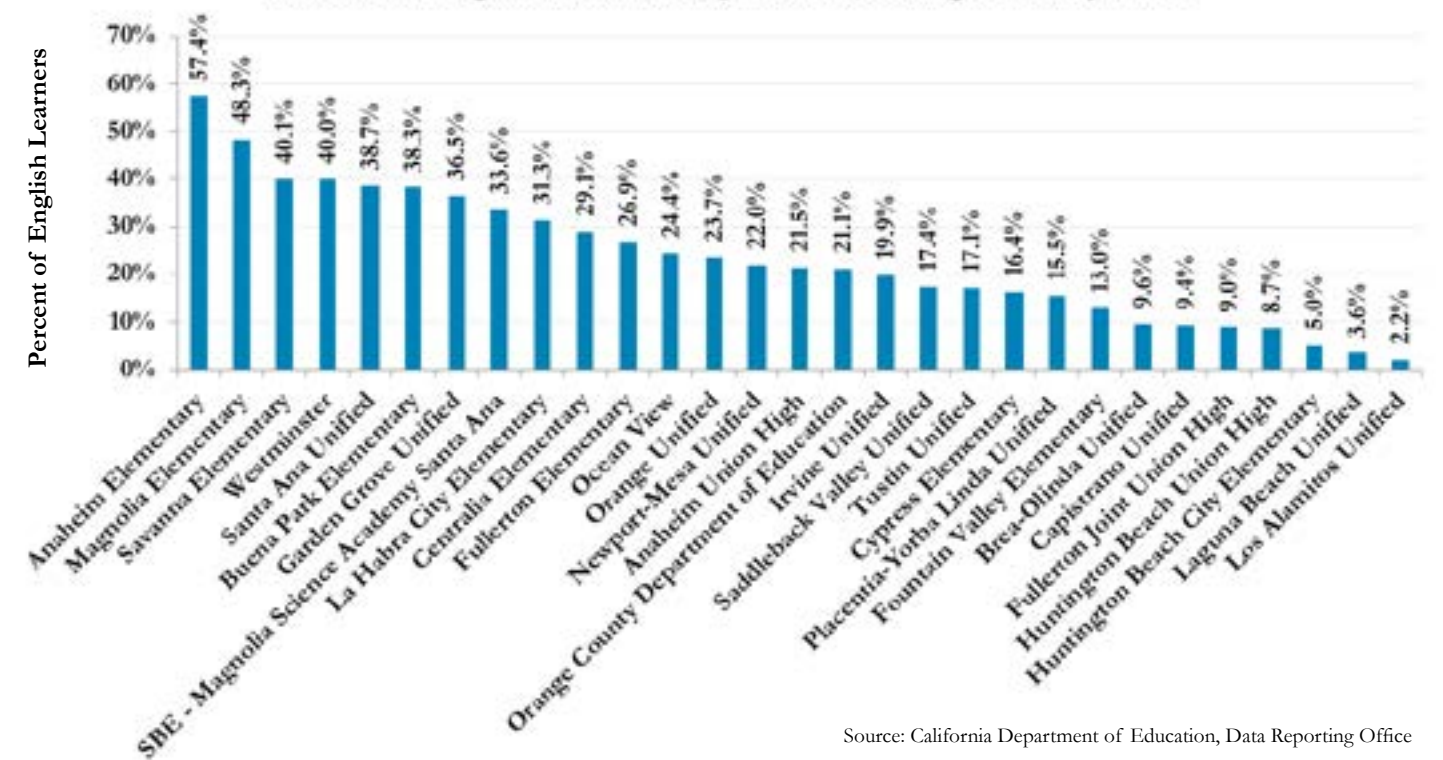
Source: California Department of Education, Data Reporting Office

# LOOKING FORWARD

Orange County's increasingly diverse population, as previously mentioned, makes effective ELL programs even more important going forward. Properly preparing students, starting at a young age, for their academic and professional careers will enable them to more readily climb their respective career ladders, allowing them to enjoy a higher quality-of-life. Graduates without sufficient English language skills, on the other hand, face extremely limited career options. Ensuring that new job candidates have sufficient English skills will produce another major benefit, helping to fill the skills gap throughout the county's labor market.

Orange County's population is predicted to become much older over the next few decades due to several factors, such as younger residents (especially those aged 25 to 34) leaving the county for more affordable areas. As many young families leave Orange County, the county's birth rate will also drop due to losing the children this age cohort would have had if they had stayed in Orange County. This trend, which is alread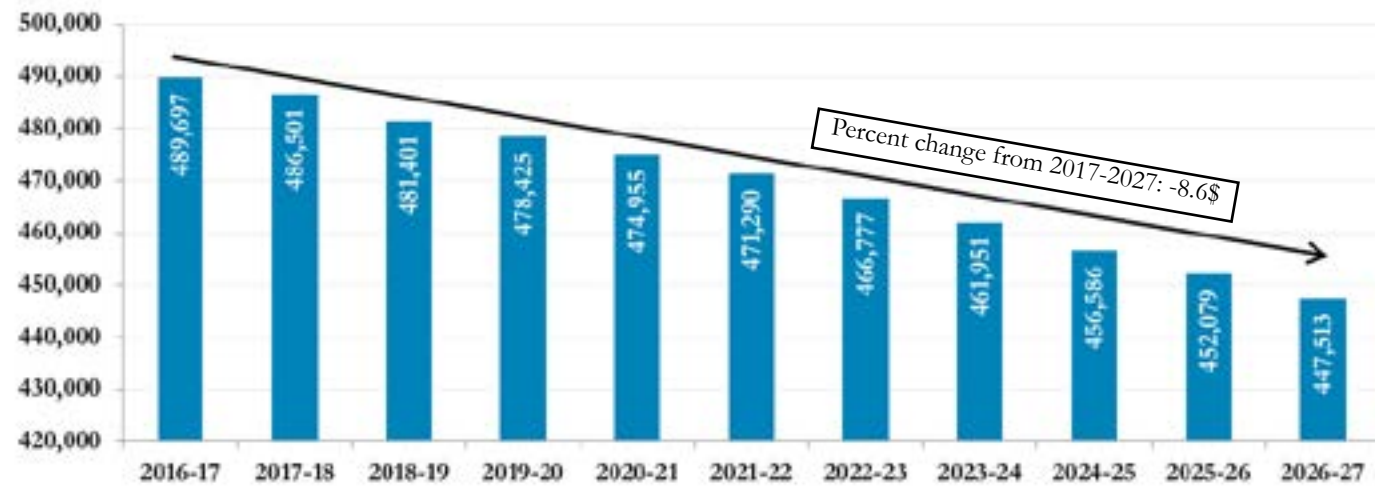y beginning to have a major impact on K-12 school enrollment, will accelerate in the near future; the California Department of Finance expects K-12 enrollment to decrease by 8.6 percent over the next decade, representing a drop of 42,184 students.



Source: California Department of Finance, Data Reporting Office

Orange County's declining school-aged population could have a significant impact on local school systems in the near future. While overcrowded classrooms were a major concern just a few years ago, smaller class sizes will likely put downward pressure on school funding. These declines are expected to be spread fairly evenly throughout Orange County, rather than concentrated in certain areas; this suggests the need for a comprehensive, countywide strategy to mitigate this trends' potential consequences. This trend alone could exacerbate the already significant skills gap in the county.

> " Orange County's increasingly diverse population, as previously mentioned, makes effective ELL programs even more important going forward. Properly preparing students, starting at a young age, for their academic and professional careers will enable them to more readily climb their career ladder… Ensuring that new job candidates have sufficient English skills will produce another major benefit, helping to fill the skills gap throughout the county's labor market." "
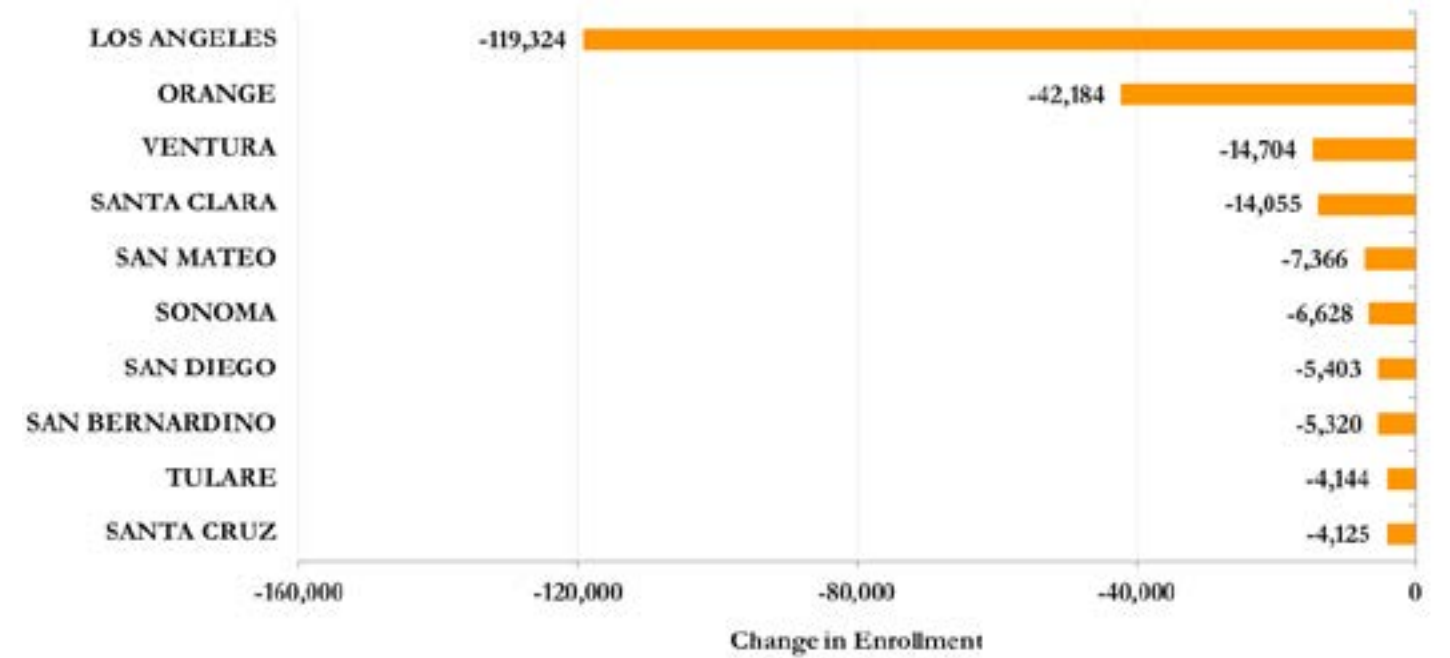


Source: California Department of Finance, Data Reporting Office

Statewide, Los Angeles County is expected to lose by far the most student enrollments over the next decade – almost 120,000. Orange County is expected to lose more than 40,000 enrollments, the second most and significantly more than any county except for Los Angeles. Ventura and Santa Cruz counties are predicted to lose the highest percentage of enrollments, more than ten percent in both cases. Orange County is expected to lose 8.6 percent of its current student body over the next decade, a trend that local educators, policymakers and other stakeholders will need to plan for to ensure the impact is properly mitigated so that schools and, eventually, the labor market are not dramatically impacted.
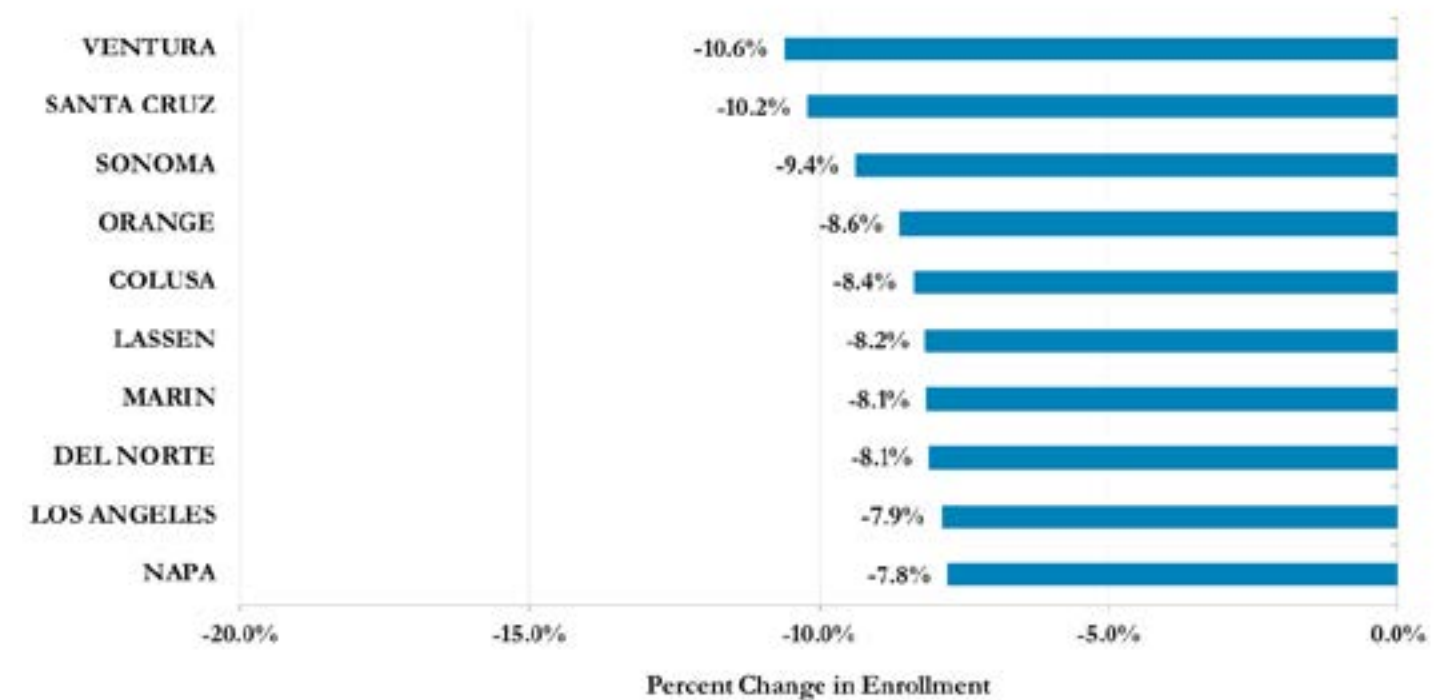


Source: California Department of Finance, Data Reporting Office

# THE IMPORTANCE OF COMMUNITY COLLEGES TO OC'S ECONOMY

Orange County is home to four community colleges districts with a total enrollment of almost 300,000. Community colleges are a cornerstone of education and workforce training in Orange County, creating opportunities for higher education and career advancement at low cost. They offer multiple pathways to career advancement and further education, including Associate's degrees, professional certificates and programs geared towards preparing students to transfer to four-year universities, depending on the individual's goals and aspirations. Furthermore, the rising importance of middle-skill occupations in Orange County means that community colleges will become even more important as a pathway to gainful employment in the current and future labor market.

Orange County's community colleges are uniquely suited to address many of the challenges – and take advantage of many of the opportunities – outlined in this report.

- First, the relatively low cost of attending community colleges, along with their flexibility and wide variety of options, means that they can provide education in growing, in-demand fields to a wide variety of students, such as mid-career professionals and English learners. Many courses, for example, are offered online, during the evening, on weekends and over various time frames, making them more accessible to full-time workers.

- Second, this flexibility also extends to the kinds of courses offered by community colleges; they can respond to changing labor market quickly by adding more technical courses in response to increased labor market demand.

- Finally, the clear pathways to employment offered by Orange County's community colleges minimize students' roadblocks to success by connecting students to specific career opportunities with industry-specific skills and educational credentials.

OCBC and the Los Angeles Orange/County Regional Consortium (LAOCRC) are collaborating on an upcoming in-depth study regarding the key role that Orange County Community Colleges play in the local and regional economy. That report is expected to be released in early 2019.

## ADDRESSING THE WIDENING SKILLS GAP

The global economy's rapid transformation has outpaced the ability of society to prepare workers to perform in emerging jobs and utilize new skills, leading to the skills gap, a shortage of workers qualified to fill many open positions. In 2017, for example, Burning Glass reports that demand for workers in leading industries (including Healthcare, Business and Finance, Computers and Mathematics, and Sales) exceeded the supply of skilled employees, resulting in 4.4 million job openings. The International Assessment of Adult Competencies (PIACC), found significant mismatches between the skills of the current workforce and those demanded by the jobs of today and tomorrow. In fact, requirements are changing so rapidly that many incumbent workers, who have been with companies for years, would not be qualified today if reapplying for those same jobs without significant additional skills upgrades. Upskilling and reskilling have become a top priority for many employers.

Orange County's well-trained, well-educated workforce has long been one of its most important competitive advantages. This talent pool attracts innovative world-class businesses, which in turn create jobs and drive economic growth. Over the past few years, however, the skills gap has led to open positions in many industries going unfilled due to a lack of qualified candidates, and has persisted despite efforts to address it. In fact, the skills gap has only widened during 2018, a year that has seen Orange County's labor market reach near record levels of employment. Addressing the skills gap will likely persistent as a challenge in the county's growing, rapidly shifting economy.

For years, Orange County's community colleges have played a critical role in developing Orange County's talent pipeline and have become a major leader in closing the skills gap by providing students with the necessary preparation for many hard-to-fill middle-skill job openings. Their focus on technical skills and industry-specific certifications, for example, has made them indispensable to the IT, Construction, Hospitality and Tourism, and Healthcare sectors. With an extensive network of campuses across the county, community colleges are well placed to serve both traditional students and adult workers seeking to expand their skills and knowledge.

## FLEXIBLE SOLUTIONS TO A TIGHT LABOR MARKET FOR BOTH STUDENTS AND EMPLOYERS

Technological advances that have transformed the workplace have dramatically increased in recent years, leading employers to place significant emphasis on more robust skills requirement for their job openings. As a result, employers have become more flexible about the specific educational requirements for certain jobs and are increasingly emphasizing a potential employee's skillset rather than his or her credential or degree. While technological advances will continue to change the structure of the labor market, eroding some jobs and creating others, the community must continue to respond to emerging requirements for new skillsets, abilities, and knowledge bases.

Looking forward, employers will need flexible education and workforce training solutions to prepare job candidates to fill today's open positions and effectively utilize tomorrow's skills. Community college degrees and certificate programs have become extremely valuable, as they provide individuals with the ability to acquire more focused job and career specific training and education that is well-suited for the necessarily flexible nature of up-skilling.

Students attending community colleges can pursue two-year degrees, certifications or transfer degrees, allowing them to advance their educational attainment at low cost with great flexibility. This flexibility also extends to community colleges' curricula, as their academic structures allow them to quickly respond to changing skills needs in the job market. Community colleges have become incredibly valuable to local employers as they can provide valuable skillsets and certifications to individuals who then go on to fill middle-skill jobs across a number of industries. The academic structure of community colleges enables students to more rapidly earn degrees and certificates which align with current in-demand middle-skills, allowing community colleges to play a key role in closing Orange County's skills gap.

Additionally, if students do want to further their educations even more, they have the ability to focus on core classes – typically required courses the majority of students take in their first few years at a university – and then transfer to four-year colleges to pursue a Bachelor's degree.

## ECONOMIC IMPACT OF ORANGE COUNTY COMMUNITY COLLEGES

In addition to advancing students' careers and building a talent pool for local employers, Orange County Community Colleges also have a dramatic positive impact on the local and regional economy. This report measures this impact in several different ways:
- Community College Operations Spending, which relates to the staffing and the money spent operating campuses;
- Construction Spending impacts, which relate to the economic impacts that occur as colleges expand their facilities and build new structures;
- Student Spending impacts which relate to the economic impact felt as students purchase food, materials, and other things while attending community colleges; and
- Alumni Impact, which measures the increased earning power of students who previously studied at Orange County community colleges and are now employed in Orange County.

Data from Economic Modeling Specialists International (Emsi) shows that community colleges accounted for 2.6 percent of Orange County's gross regional product (GRP) in 2017. Orange County community colleges contributed a total of $6.4 billion on an annual basis in fiscal year (FY) 2016-17 to the county economy and supported 82,551 jobs through direct, indirect, and induced impacts. The largest overall contribution came from Alumni Impact, or the wage gains students experience due to a community education, with a total impact of $4.6 billion and approximately 58,607 jobs added.

| Orange County Community College Economic Impacts, 2017 | | |
|---|---|---|
| | Economic Impact | Jobs Impact |
| Operations Spending Impact | $1.1 billion | 12,946 |
| Construction Spending Impact | $68.1 million | 614 |
| Student Spending Impact | $619.1 million | 10,384 |
| Alumni Impact | $4.6 billion | 58,607 |
| Total Impact | $6.4 billion | 82,551 |

Source: Emsi "Analysis of the Economic Impact and Return on Investment of Education-The Economic Value of Orange County's Community Colleges" July 2018

Alongside having a significant impact on the regional economy, Orange County Community Colleges also provided significant benefit to students:
- An estimated student rate of return measured at 13.5 percent; and
- Students increase their lifetime earnings by $3.90 for every dollar they invest in their community college education.

Taxpayers spent a total of $914.9 million supporting the operations of community colleges in Orange County in FY 2016-2017. In return, the added tax revenue from students' higher earnings and increased output and productivity of businesses was estimated to be:
- $2.9 billion in benefits to taxpayers;
- 3.5 benefit-cost ratio, or $3.50 in benefits for every dollar of cost, which represents an average annual return on investment of 9.6%
- $16.50 in reduced crime, lower unemployment and lower healthcare costs for every dollar invested in the community college system.

These statistics underscore Orange County community colleges' importance to their surrounding communities.

| Economic Impact by Community College Districts in Orange County, 2016-2017 ($ in Millions) | | | | | |
|---|---|---|---|---|---|
| | Operations Spending Impact | Construction Spending Impact | Student Spending Impact | Alumni Impact | Total Impact |
| Coast Community College District | $309.3 | $31.5 | $141.8 | $1,400 | $1,900 |
| Jobs Supported | 3,584 | 284 | 2,392 | 18,375 | 24,635 |
| North Orange County Community College District | $282.1 | $8.3 | $103.0 | $1,200 | $1,600 |
| Jobs Supported | 3,713 | 75 | 1,730 | 14,558 | 20,076 |
| Rancho Santiago Community College District | $276.6 | $18.1 | $116.8 | $1,200 | $1,600 |
| Jobs Supported | 3,133 | 165 | 1,967 | 14,239 | 19,504 |
| South Orange County Community College District | $227.8 | $10.2 | $257.5 | $827 | $1,300 |
| Jobs Supported | 2,516 | 91 | 4,295 | 11,439 | 18,341 |

Source: Emsi "Analysis of the Economic Impact and Return on Investment of Education-The Economic Value of Orange County's Community Colleges" July 2018

## COMMUNITY COLLEGE DISTRICT AND COMMUNITY COLLEGE DEMOGRAPHIC OVERVIEW

Orange County community colleges had a total of approximately 289,281 students during the 2017-2018 academic year, as seen in the following graph.

| Orange County Community College District Student Counts | |
|---|---|
| District / College | Student Count |
| Coast Community College District | 64,535 |
| Coastline Community College | 18,158 |
| Golden West College | 17,550 |
| Orange Coast College | 28,827 |
| North Orange Community College District | 75,396 |
| Cypress Community College | 21,016 |
| Fullerton Community College | 32,413 |
| North Orange Adult Community College | 21,967 |
| Rancho Santiago Community College District | 88,068 |
| Santa Ana Community College | 60,068 |
| Santiago Community College | 28,000 |
| South Orange County Community College District | 61,282 |
| Irvine Community College | 22,056 |
| Saddleback Community College | 39,226 |
| Total Students | 289,281 |

Source: California Community College Chancellor's Office – Management Information Systems Data Mart

**More than 20 percent of Orange County community college students are between the ages of 25 and 34. Remarkably, students aged 35 years or older represent a significant portion of community college students in Orange County, highlighting the trend of older individuals finding renewed interest in pursuing educational attainment to either refine their current skill set or learn new skills and abilities to be able to better market themselves to local employers."**

The majority of students in each district are between the ages of 20 and 24, followed by those aged 19 or younger, reflecting the trend of many high school graduates working for a year or two before beginning college. Additionally, many Associate degrees or programs will take around two years to complete, which means if an individual immediately starts attending courses after their high school graduation, they will likely be 20 or 21 years old by the time they graduate.

On the other hand, more than 20 percent of Orange County community college students are between the ages of 25 and 34. Remarkably, students aged 35 years or older represent a significant portion of community college students in Orange County, highlighting the trend of older individuals finding renewed interest in pursuing educational attainment to either refine their current skill set or learn new skills and abilities to be able to better market themselves to local employers.

The large percentage of older individuals attending Orange County community colleges highlights the importance of continuing education and training at all stages in an individual's life. Whether they have just graduated high school, been unemployed for a few years, re-entering the workforce after decades or simply trying to improve their current skill set; the value of higher education can be found at all age levels, as seen in the following graph.

### Students by Age Group at Orange County Community College Districts

| Age Group | Coast Community College District | | North Orange Community College District | | Rancho Santiago Community College District | | South Orange County Community College District | |
|---|---|---|---|---|---|---|---|---|
| | Percent of Total | Total | Percent of Total | Total | Percent of Total | Total | Percent of Total | Total |
| 19 or Less | 23.2% | 14,700 | 22.6% | 17,591 | 20.1% | 17,701 | 26.3% | 16,227 |
| 20 to 24 | 36.3% | 22,981 | 31.3% | 24,334 | 22.3% | 19,656 | 29.3% | 18,046 |
| 25 to 29 | 15.7% | 9,928 | 12.2% | 9,453 | 13.9% | 12,304 | 10.1% | 6,210 |
| 30 to 34 | 7.8% | 4,914 | 6.3% | 4,875 | 10.7% | 9,450 | 5.6% | 3,431 |
| 35 to 39 | 4.9% | 3,120 | 4.3% | 3,354 | 8.4% | 7,387 | 3.8% | 2,358 |
| 40 to 49 | 6.3% | 3,965 | 5.9% | 4,593 | 13.3% | 11,770 | 6.2% | 3,838 |
| 50 + | 6.0% | 3,780 | 17.3% | 13,453 | 11.3% | 10,008 | 18.8% | 11,580 |

Source: California Community College Chancellor's Office – Management Information Systems Data Mart

## THE IMPACT OF COMMUNITY COLLEGE DEGREES AND CERTIFICATIONS ON SALARY LEVELS

The California Community Colleges Chancellor's Office launched Salary Surfer, a website that shows the effect that certificates and degrees have on salaries. Key priority industry sectors for Orange County's community colleges which have seen strong job growth in recent years and are projected to continue to grow include:
- Healthcare
- Hospitality and Tourism
- Information and Communication Technology
- Energy, Construction and Utilities
- Advanced Transportation and Logistics
- Business and Entrepreneurship

In order to measure the impact of an education from Orange County community colleges, the California Community Colleges Chancellor's Office Salary Surfer website measures salaries 2 years prior to receiving certificates or degrees and then 2 years after and 5 years after completion by major industry sector.

On average, for the sectors measured below, salaries for individuals who completed a certificate program increased from $31,130 two years prior to earning their certificate to $43,202 two years after completion, an increase of 38.8 percent; after 5 years of completing a certification program, salaries increased to $53,334 or an increase of another 23.5 percent above salaries levels 2 years after completing the certification. The most significant increase occurred in the Health industry, followed by the Hospitality and Tourism industry.

### Salary Increases for Students Completing Community College Certificate Programs

| Industry Sector | Salary 2 Years Before | Salary 2 Years After | Salary 5 Years After |
|---|---|---|---|
| Advanced Transportation and Logistics | $35,376 | $46,513 | $56,666 |
| Percent Change | | 31.5% | 60.2% |
| Business & Entrepreneurship | $30,383 | $35,943 | $43,523 |
| Percent Change | | 18.3% | 43.2% |
| Energy, Construction and Utilities | $35,551 | $46,912 | $57,751 |
| Percent Change | | 32.0% | 62.4% |
| Health | $23,447 | $47,139 | $56,042 |
| Percent Change | | 101% | 139.0% |
| Hospitality and Tourism | $17,892 | $24,766 | $34,069 |
| Percent Change | | 38.4% | 90.4% |
| Information / Communication Technologies | $29,038 | $39,682 | $51,413 |
| Percent Change | | 36.7% | 77.1% |
| Average | $31,130 | $43,202 | $53,334 |
| Percent Change | | 38.8% | 71.3% |

Source: California Community Colleges, Salary Surfer

The chart below highlights percent changes by industry compared to salary levels two years prior to certificate completion.



Percent Change in Average Salaries Compared to 2 Years Before Certificate Completion by Industry Sector

- Advanced Transportation and Logistics
- Business & Entrepreneurship
- Energy, Construction and Utilities
- Health
- Hospitality and Tourism
- Information and Communication Technologies
- Average
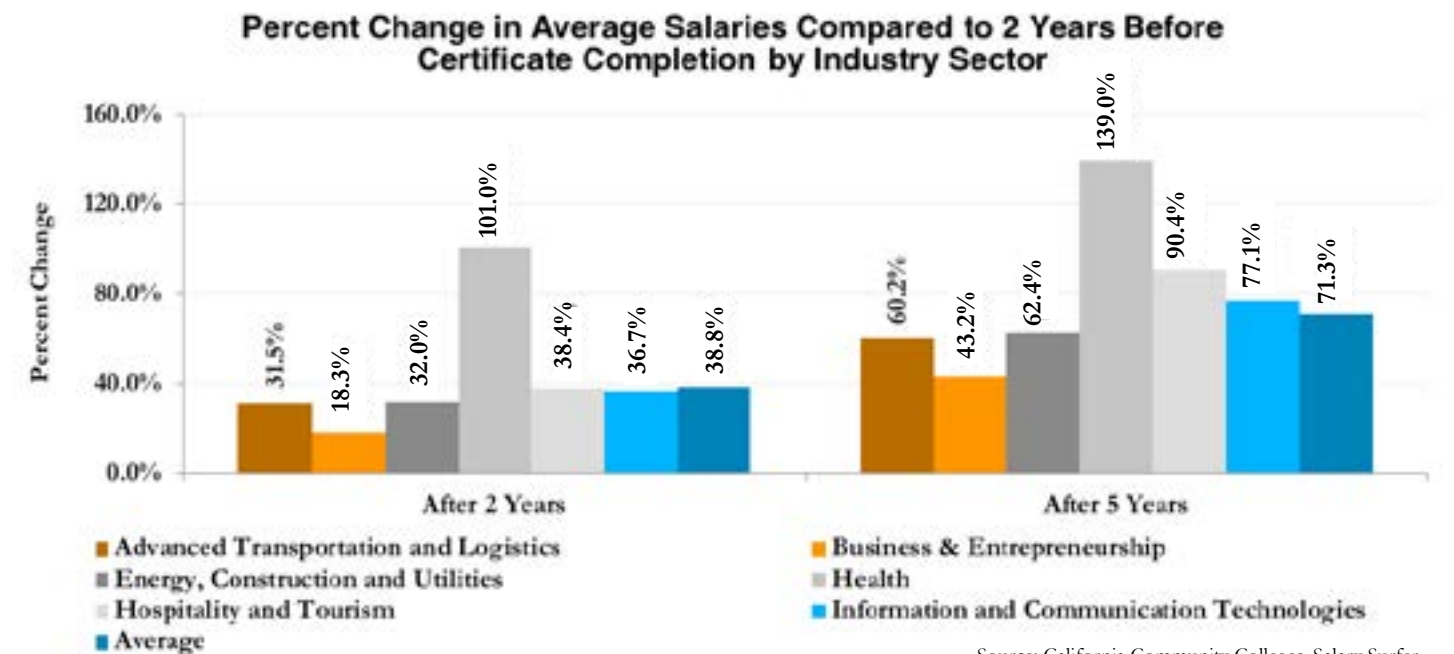
Source: California Community Colleges, Salary Surfer

On average, salaries grew by $15,397, or almost 60 percent, from two years prior to attending to the community college program to two years after. Salaries five years after the completion of a degree increased from $41,207 to $51,961, an increase of $10,754 or more than 25 percent. Healthcare had the largest increase, followed by Advanced Transportation and Logistics.

| Salary Increases for Students Completing Community College Degree Programs | | | |
|---|---|---|---|
| Industry Sector | Salary 2 Years Before | Salary 2 Years After | Salary 5 Years After |
| Advanced Transportation and Logistics | $29,111 | $44,550 | $56,606 |
| *Percent Change* | | *53.0%* | *94.5%* |
| Business & Entrepreneurship | $25,852 | $33,292 | $42,417 |
| *Percent Change* | | *28.8%* | *64.1%* |
| Energy, Construction and Utilities | $30,813 | $46,407 | $58,755 |
| *Percent Change* | | *50.6%* | *90.7%* |
| Health | $21,464 | $50,966 | $57,294 |
| *Percent Change* | | *137.4%* | *166.9%* |
| Hospitality and Tourism | $19,284 | $28,222 | $40,604 |
| *Percent Change* | | *46.3%* | *110.6%* |
| Information / Communication Technologies | $22,274 | $28,542 | $40,602 |
| *Percent Change* | | *28.1%* | *82.3%* |
| Average | $25,810 | $41,207 | $51,961 |
| *Percent Change* | | *59.7%* | *101.3%* |

Source: California Community Colleges, Salary Surfer

The chart below highlights percentage changes by industry compared to salary levels two years prior to degree completion.



Percent Change in Average Salaries Compared to 2 Years Before Completion of Degree by Industry Sector

■ Advanced Transportation and Logistics   ■ Business & Entrepreneurship
■ Energy, Construction and Utilities   ■ Health
Hospitality and Tourism   ■ Information and Communication Technologies
■ Average
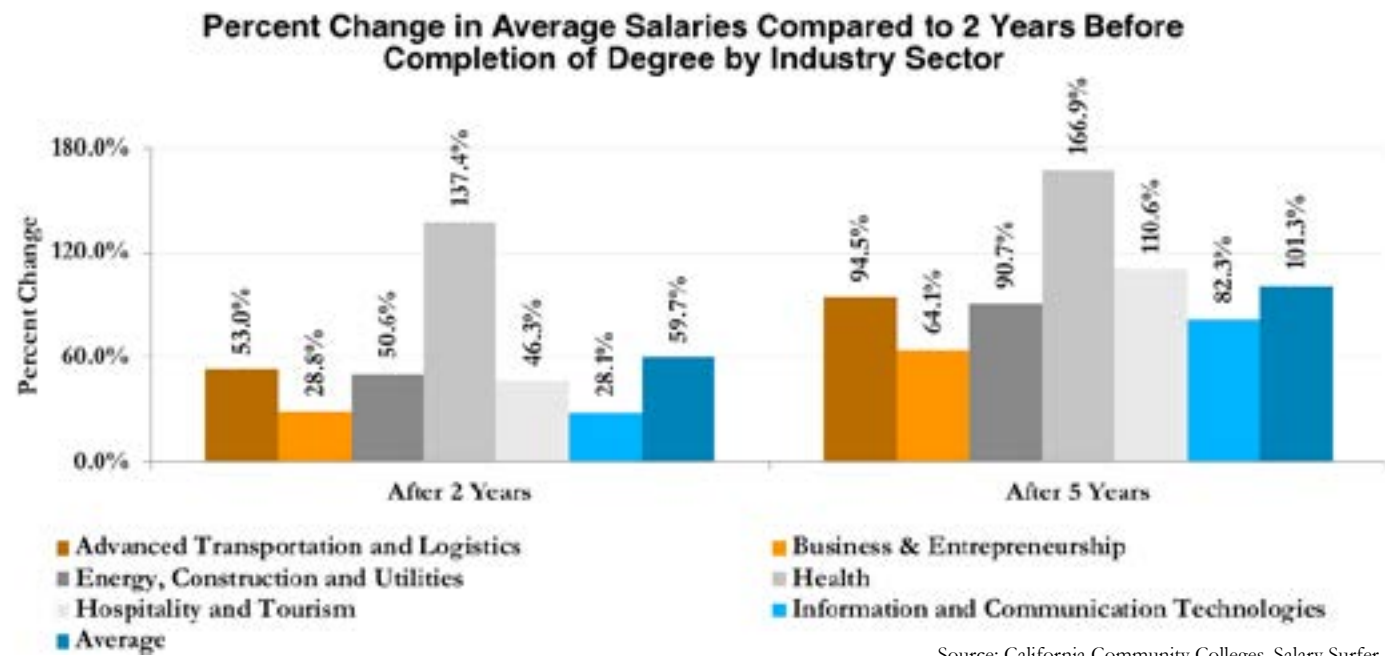
Source: California Community Colleges, Salary Surfer

Salaries for students who completed certificates experienced large increases. These individuals saw a 38.8 percent increase from two years before completion to two years after completion, and an additional 23.5 percent increase from two years after completion to five years after completion. Degrees, on the other hand, saw a 59.7 percent salary increase from two years before completion to two years after completion and a 26.1 percent increase from two to five years after completion.

# 52%

**OC high school graduates were eligible for entry into UC and CSU systems**

# 58%

**Of students met or exceeded ELA standards**

# 49%

**Of students met or exceeded Math standards**

# COLLEGE READINESS

## WHAT HAS HAPPENED

Orange County's primary competitive advantage is its well-trained, well-educated talent pool. Maintaining this advantage is crucial; it attracts new businesses to the area, supports the continued growth of existing businesses, and encourages innovation.

Higher education is still the best step towards addressing the persistent skills gap by developing a skilled, well-educated workforce. Therefore, measuring the number of students eligible for entrance into four-year institutions, primarily the University of California (UC) and California State University (CSU) systems, provides an important look at the future workforce. In 2016-2017, 52 percent of Orange County high school graduates were eligible for entry into UC or CSU systems, an all-time high well above the state average of 46.8 percent of graduates. Breaking this down by ethnicity, Asian students had the highest proportion of graduates at 77.5 percent, followed by Filipino graduates at 69.7 percent and White (Non-Hispanic) students at 58.1 percent.

There is, however, still progress to be made towards creating educational and career opportunities for all local students. Community colleges, as noted in the previous section of this report, are a particularly important pipeline towards well-paying middle-skill positions, which are currently some of the hardest to fill for local employers.

### UC/CSU Eligible Graduates in Orange County and California, 2016-2017
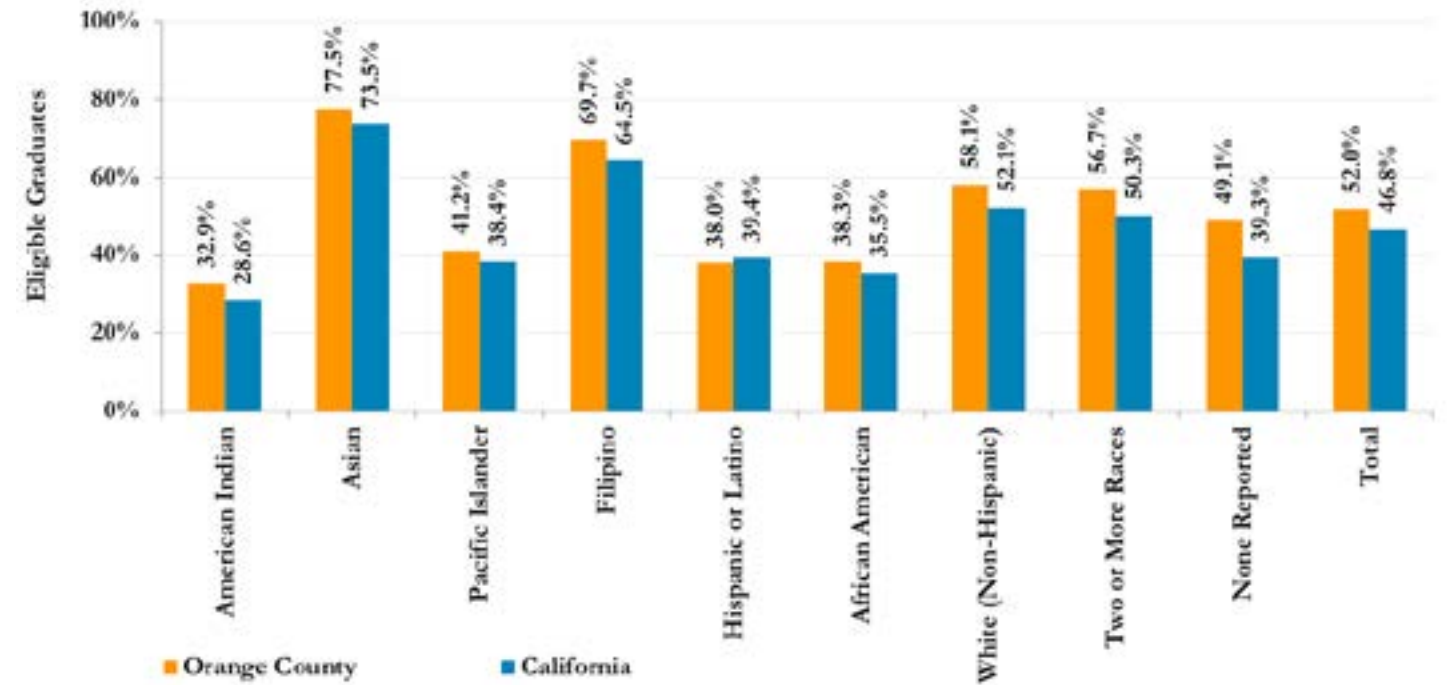


Source: California Department of Finance, Data Reporting Office

The graph below highlights the progress of Orange County students' UC/CSU eligibility by ethnicity. Nearly all demographic groups have seen continued improvements since 2010, a major accomplishment for Orange County's K-12 education system.

### UC/CSU Eligible Graduates by Ethnicity, 2010-2017
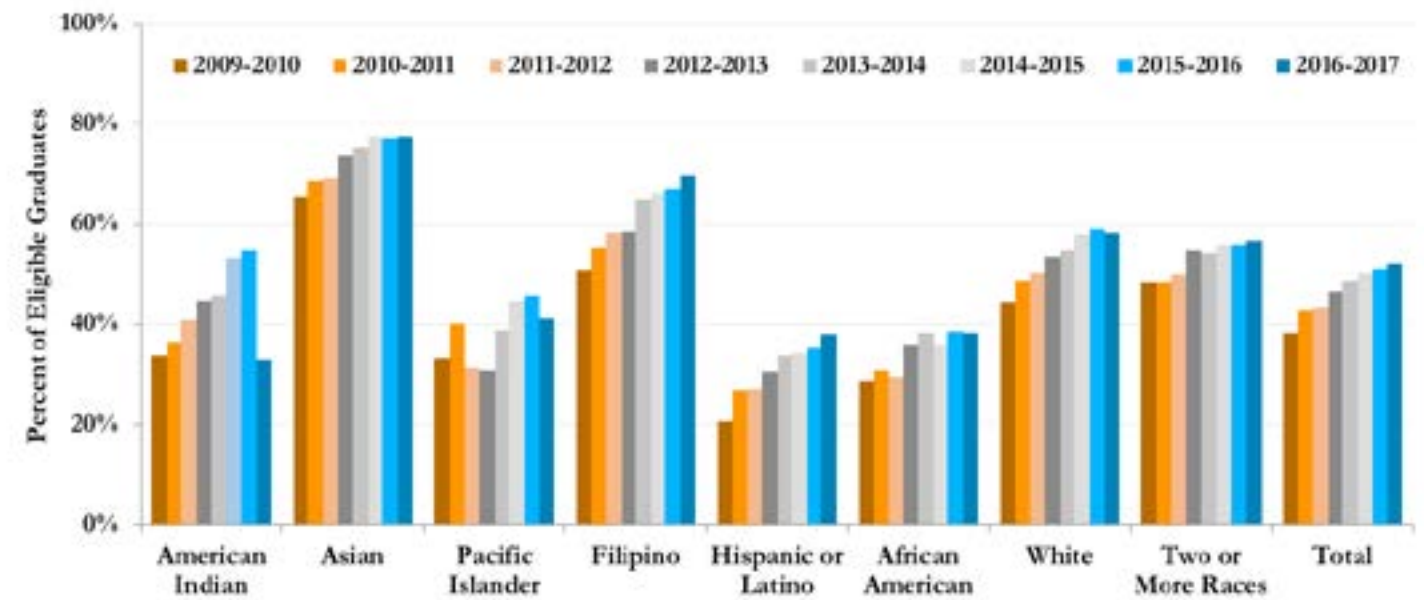


Source: California Department of Finance, Data Reporting Office

The California Assessment of Student Performance and Progress (CAASPP) system provides an end-of-year assessment of student progress towards college and career readiness aligned with the Common Core State Standards for English Language Arts/Literacy (ELA) and Mathematics. In general, students meeting or exceeding the CAASPP achievement standard are prepared for success in college coursework.

Orange County has significantly outperformed the rest of the state in CAASPP performance for the last several years, as seen in the following graph. Since 2015, the percentage of county students meeting or exceeding ELA standards has increased from 53 to 58 percent, while the percentage of students meeting or exceeding Mathematics standards has increased from 45 to 49 percent; these scores also improved at the state level but remain well below Orange County's performance. While Orange County continues to outperform the state, it still has significant room for improvement, especially considering less than half of students meet or exceed the CAASPP Mathematics standards.

### Smarter Balanced Assessment Results for Orange County and California (All Grades), 2015-2017
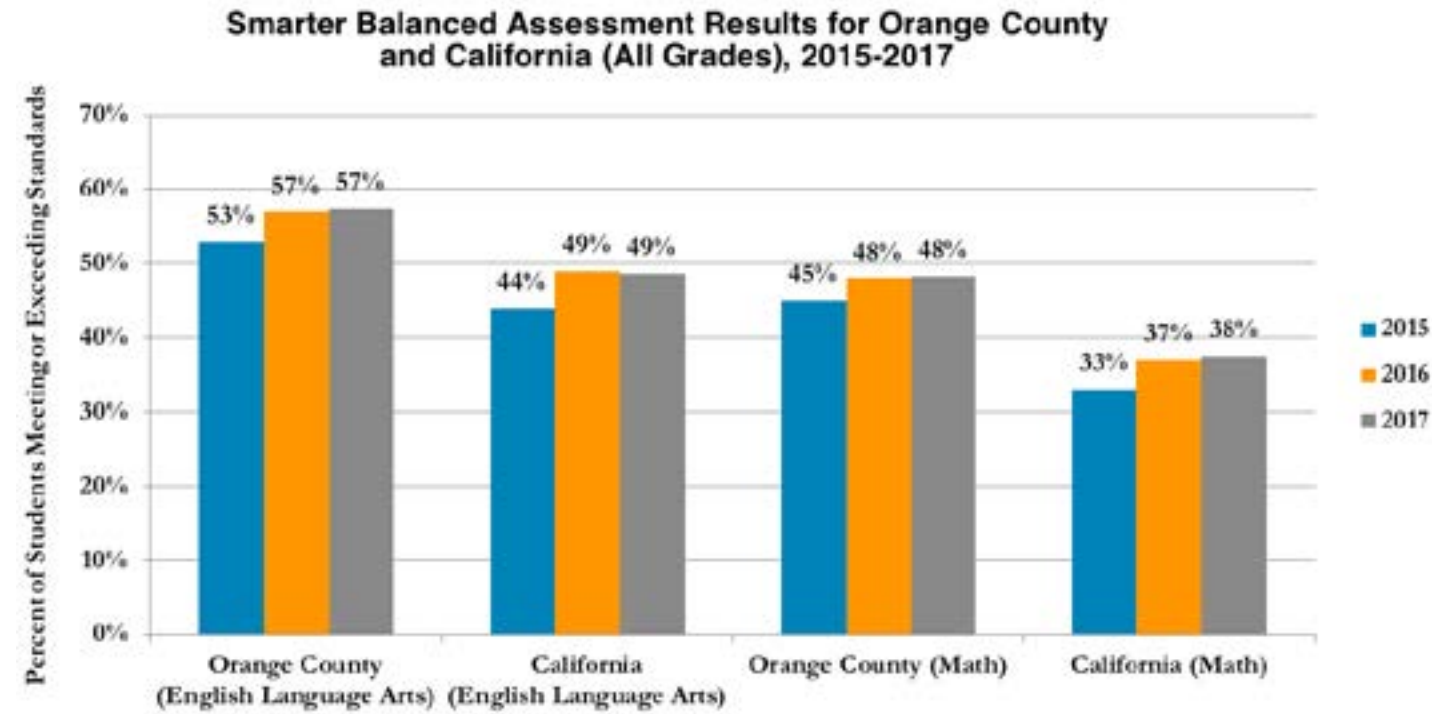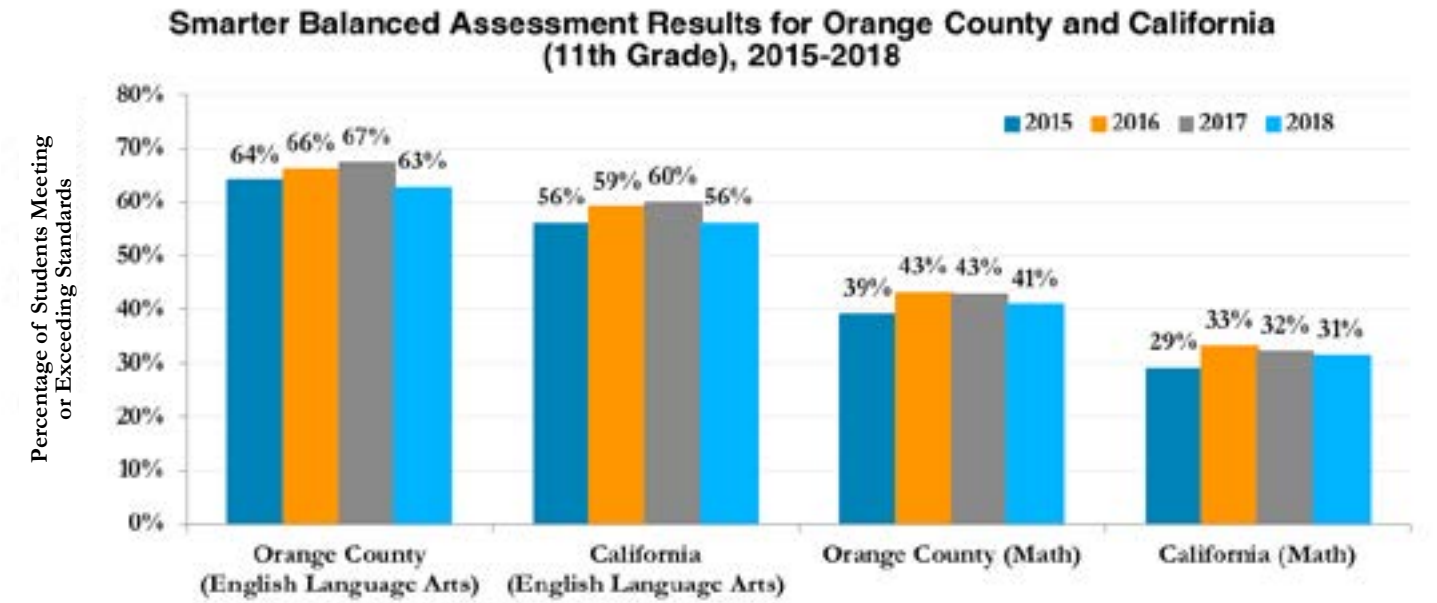
Source: California Department of Education, CAASPP

Common Core State Standards, which include English Language Arts/Literacy (ELA) and Mathematics standards, are meant to better reflect student capabilities and knowledge by grade level, ensuring that each student is prepared to progress academically. They also ensure that each student has the skills and knowledge necessary to succeed in college or in their careers regardless of which state they live in. These standards are designed to be:
- Research- and evidence-based;
- Clear, understandable, and consistent;
- Aligned with college and career expectations;
- Based on rigorous content and application of knowledge through higher-order thinking skills;
- Built upon the strengths and lessons of current state standards; and
- Informed by other top performing countries in order to prepare all students for success in our global economy and society.

The California Department of Education found that the percentage of county 11th graders meeting or exceeding ELA standards decreased from 64 percent in 2015 to 63 percent in 2018. Orange County students continue to outperform state averages, as seen in the following graph.

### Smarter Balanced Assessment Results for Orange County and California (11th Grade), 2015-2018

Source: California Department of Education, CAASPP

## ORANGE COUNTY SAT PERFORMANCE

In 2016, the College Board made dramatic changes to the SAT's content, format and scoring in order to better measure performance and prioritize content reflective of what students will experience in college and as they enter the workforce. Major changes included:
- A reduced number of questions;
- No penalties for guessing;
- Sections changed from Critical Reading, Writing and Essay, and Mathematics to Evidence-Based Reading and Writing, Math, and an optional Essay; and
- The maximum score dropped from 2400 to 1600.

The reporting of scores has also changed. The California Department of Education no longer provides average scores by geographic area; instead, it provides the number and percent of students currently meeting English Language Arts (ELA) and Math benchmarks alongside the total number of students tested. Students who reach these benchmarks, scores of at least 480 in ELA and 530 in Math, have a 75 percent likelihood of receiving C's or higher in their college courses.

48.6 percent of Orange County high school seniors took the SAT in 2017, compared to 45.7 percent of all California students. Approximately 79.7 percent of Orange County students who took the SAT met ELA benchmarks, with 62.0 percent meeting Math benchmarks. Orange County, as seen below, outperformed both the state and nation as a whole in both subjects, although it trailed behind San Diego and Santa Clara counties in ELA and Santa Clara County in Math.

| SAT Performance for the Nation, State and Peer Counties, 2016-2017 | | |
| --- | --- | --- |
| | Percent Meeting English Language Arts Benchmarks | Percent Meeting Math Benchmarks |
| Santa Clara County | 83.2% | 69.7% |
| San Diego County | 80.8% | 60.4% |
| **Orange County** | 79.7% | 62.0% |
| California | 72.3% | 50.8% |
| United States | 70.0% | 49.0% |
| Los Angeles County | 64.3% | 41.7% |

Source: California Department of Education, DataQuest; College Board SAT Suite of Assessments Annual Report

## SAT Student Performance by County, 2017
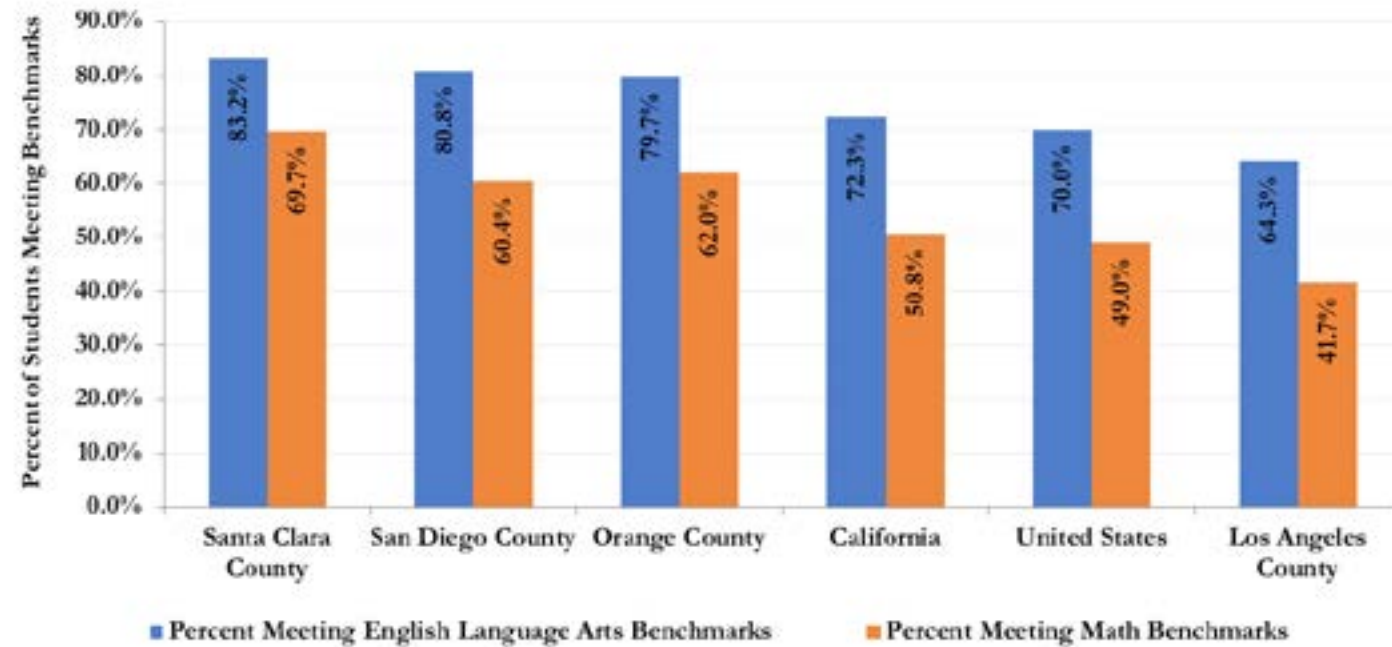


Source: California Department of Education, DataQuest

Within Orange County, the Laguna Beach Unified, Irvine Unified and Brea-Olinda Unified school districts had the best ELA performance, with 96.9, 95.7 and 93.7 percent of their respective students meeting the benchmark. The best Math performers included Irvine Unified (90.5 percent of students meeting benchmarks), Laguna Beach Unified (82.8 percent) and Brea-Olinda Unified (77.0 percent). Students in these three districts, located in some of the county's most affluent areas, tend to have broad access to SAT preparation courses and other resources less available to students in lower income communities.

## Percent of Students Meeting English Language Arts and Mathematics Benchmarks in Orange County by District, 2016-2017
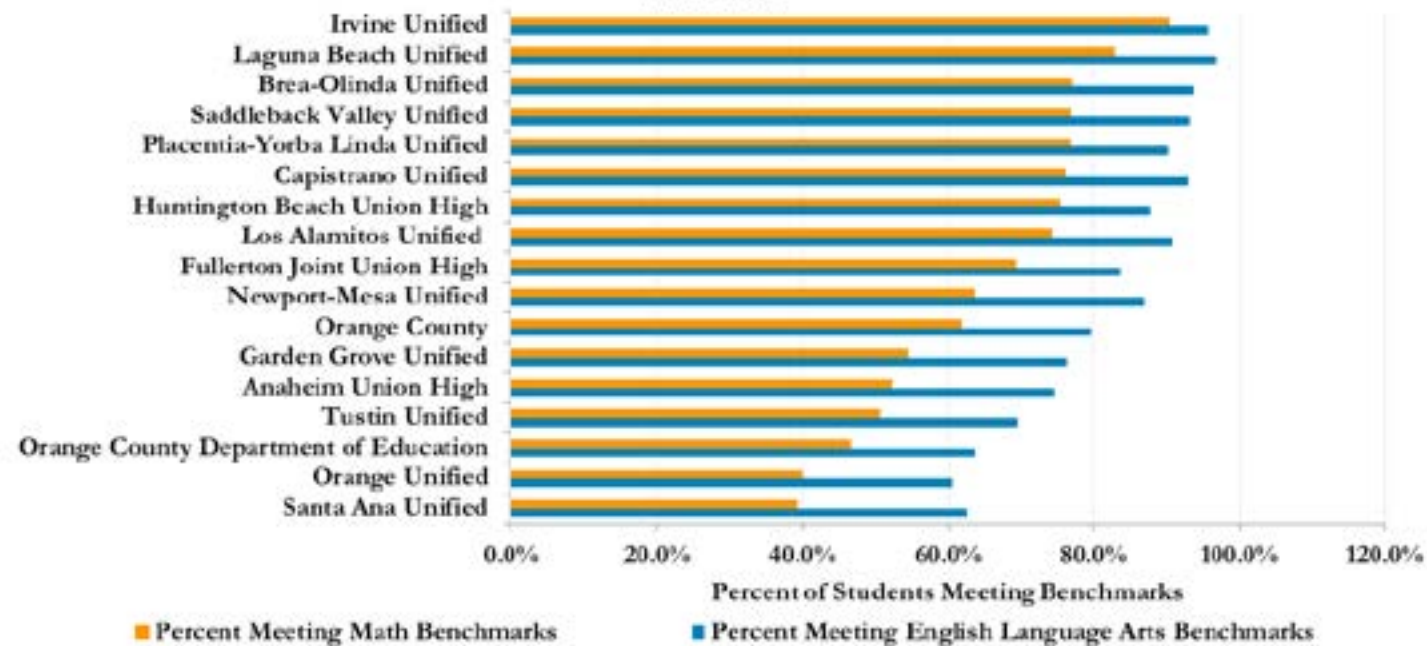


Source: California Department of Education, DataQuest

While the new SAT format is still being assessed for its ability to better measure and prepare students for college readiness, it is important that Orange County educators understand why these changes were made and their impacts so that they may better prepare students for the test and ensure more individuals are prepared for the rigors of college courses.

# LOOKING FORWARD

As Orange County's demographic and economic landscape continues to evolve, it is imperative that educational institutions understand these shifts and how to prepare students for them. The recent change to the SAT test highlights how the education community is responding to these shifts. The SAT experienced its first major revamp in 2005 when the point scale was increased to 2400 and a written essay was required. In addition to a return to the traditional 1600-point scale, the redesigned SAT is an attempt to link the exam more closely to the work high school students encounter in the classroom. Additionally, to address perceived advantages of students who can afford costly SAT test preparation courses, the College Board announced a new partnership with Khan Academy to offer free online practice problems and instructional videos.

The new SAT is designed to be more reflective of knowledge required for smooth progression within the college system and through the labor force. While only time will tell whether or not this new format is more or less effective, ensuring that all students, even those unable to afford costly college preparation courses, have a fair shot at entry into the college of their choice is a move in the right direction. As the economy and workforce continues to shift, there will likely be further modifications to testing and admission standards, including the SAT, in the future.

UC/CSU eligibility rates provide another example of a major progress for Orange County high schools. County students' eligibility rates, as previously mentioned, reached an all-time high last year, a testament to the effectiveness of local educators and administrators. Preparing Orange County high school students for success at the post-secondary level will become even more important going forward, as higher educational requirements strongly correlate with both career success and jobs resistant to automation.

> " **UC/CSU eligibility rates provide another example of a major progress for Orange County high schools. County students' eligibility rates, as previously mentioned, reached an all-time high last year, a testament to the effectiveness of local educators and administrators. Preparing Orange County high school students for success at the post-secondary level will become even more important going forward, as higher educational requirements strongly correlate with both career success and jobs resistant to automation."**

# HEALTHCARE
# INFORMATION TECHNOLOGY

Information Technology (IT) is revolutionizing workplaces across the nation and Healthcare is no exception. Technological developments – including big data, automated processes, Internet-of-Things (IoT) and new ways to communicate – have transformed Healthcare, creating new occupations such as Medical Records and Health Information Technicians. This shift will dramatically change the current system.

It will streamline the patient experience, allow for collaboration between medical specialists and increase the ability of hospitals, urgent care centers and other healthcare organizations to more efficiently manage their facilities and operations. Additionally, and perhaps more importantly, IT analytics will result in better patient care as the interconnectedness of systems will allow for more rapid, accurate diagnoses and treatment at a lower cost.

Successfully integrating IT into the Healthcare industry means shifting from a largely manual and rigid system to a flexible and automated system, which will require a new database and software-driven approach with a focus on cybersecurity in order to analyze and protect patient data. The sheer amount of patient records and data, combined with the increasing pressure placed on healthcare organizations to efficiently deliver quality care, makes the development of Healthcare IT likely a continuing source of employment growth.

Approximately 1,914 Medical Records and Health Information Technicians were employed in Orange County in 2017, earning average annual wages of $51,605. This emerging occupation, which grew by 6.3 percent in Orange County last year, represents the intersection between the Information and Healthcare industries and requires skills such as Medical Coding, Customer Billing, Medical Billing, Customer Service and International Statistical Classification of Diseases and Related Health Problems (ICD-10).

Medical Records and Health Information Technicians are not the only technology-related occupations in Healthcare. Many traditional IT occupations are already present in the Healthcare sector and have been rapidly growing over the past decade, highlighting the increased pervasiveness of technology in Healthcare delivery. These occupations typically provide above-average annual wages.

| IT Occupations Within the Healthcare Industry in Orange County | | | | | |
|---|---|---|---|---|---|
| Occupation | Jobs (2007) | Jobs (2017) | % Change | Median Hourly Earnings | Entry Level Education |
| Computer User Support Specialists | 149 | 267 | 79% | $55,806 | Some College, No Degree |
| Network and Computer Systems Admin. | 107 | 167 | 56% | $89,107 | Bachelor's |
| Computer Systems Analyst | 93 | 161 | 73% | $94,578 | Bachelor's |
| Computer Occupations, All Other | 50 | 139 | 178% | $86,798 | Bachelor's |
| Software Developers, Applications | 67 | 113 | 69% | $117,104 | Bachelor's |
| Database Administrators | 27 | 58 | 115% | $88,046 | Bachelor's |
| Computer Network Support Specialists | 36 | 57 | 58% | $70,845 | Associate's |
| Operations Research Analysts | 6 | 51 | 750% | $87,006 | Bachelor's |
| Software Developers, Systems Software | 23 | 43 | 87% | $112,715 | Bachelor's |
| Computer Programmers | 27 | 37 | 37% | $87,152 | Bachelor's |

Source: Emsi

Healthcare IT occupations provide a variety of services, from big data analysis to remote patient monitoring, where patients can talk to doctors virtually and be diagnosed without having to step foot in a doctor's office. Advanced algorithms allow patients to input symptoms and receive a diagnosis from an automated software. These developing technologies will have a dramatic impact on Healthcare, with several new innovations in particular highlighting the industry's rapid transformation:

- 3-D Printed Devices allow for highly customized, low-cost products such as prosthetics.
- Point-of-Care (POC) Diagnostics allow for more convenient and timely testing resulting in faster, more cohesive and cheaper patient care.
- Telehealth offers convenient access to care while reducing office visits and travel time with the potential to increase self-care.
- Biosensors and Trackers allow consumers and doctors to efficiently monitor and track patient health enabling earlier intervention and prevention.
- Leveraging Social Media to Improve Patient Experience by tracking data on consumer experiences and population health trends.

While some of these innovations are already impacting the market, others, such as fully integrated Biosensors and Trackers, have not begun to reach their full transformative potential. Creating an environment which supports the development and implementation of these technologies will positively impact Orange County's Healthcare sector, increasing accessibility to Healthcare services while decreasing their cost.

One occupation, Medical and Health Services Managers, will be at the forefront of these efforts, with over three thousand job postings in the past twelve months. Medical and Health Services Managers are responsible for properly implementing and leveraging new technologies to ensure collaboration and oversight of information technology in the healthcare environment in order to increase efficiency, improve patient care and protect patient privacy.

Other occupations which will be crucial as Information Technology and Health Care become increasingly intertwined include:

- Chief Medical Information Officer, a healthcare executive responsible for the health informatics platform required to work with clinical IT staff to support the efficient design, implementation and use of Healthcare technology;
- Medical Records and Health Information Technician, typically in charge of organizing and managing health information data helping to maintain its quality, accuracy, accessibility and security in physical files and electronic systems;
- Nurse Informaticists, defined by the International Medical Informatics as a "science and practice that integrates nursing, its information and knowledge, with management of information and communication technologies to promote the health of people, families, and communities worldwide;"
- Health Informatics Director, defined by the National Library of Medicine as those in charge of the design, development, adoption and application of information technology-based innovations in Healthcare services delivery, management, and planning.

The Healthcare Information and Management Systems Society (HIMSS), a global advisor and thought leader supporting the transformation of health through the application of information and technology, surveyed 369 Healthcare Information Technology leaders earlier this year. The table below shows the top five priorities identified by both hospitals and vendor/consultants:

| Vendor/Consultants | Hospitals |
|---|---|
| Data Analytics/Clinical And Business Intelligence | Patient Safety |
| Health Information Exchange, Interoperability and Data Integration | Privacy, Security, and Cybersecurity |
| Improving Quality Outcomes Through Health IT | Process Improvement, Workflow, Change Management |
| Privacy, Security, and Cybersecurity | Data Analytics/Clinical and Business Intelligence |
| Electronic Health Records (EHRs) | Clinical Informatics and Clinician Engagement |

Source: 2018 Annual HIMSS Survey

> " Technological developments – including big data, automated processes, Internet-of-Things (IoT) and new ways to communicate – have transformed Healthcare, creating new occupations such as Medical Records and Health Information Technicians. This shift will dramatically change the current system."

> " Successfully integrating IT into the Healthcare industry means shifting from a largely manual and rigid system to a flexible and automated system, which will require a new database and software-driven approach with a focus on cybersecurity in order to analyze and protect patient data. The sheer amount of patient records and data, combined with the increasing pressure placed on healthcare organizations to efficiently deliver quality care, makes the development of Healthcare IT a likely continuing source of employment growth."

The importance of Privacy, Security and Cybersecurity, Data Analytics/Clinical and Business Intelligence and Clinical Informatics and Clinician Engagement to hospitals illustrates the impact technology continues to have on Healthcare; vendors and consultants also focused on Information-related priorities. Data Analytics/Clinical and Business Intelligence, a top five priority for both groups, rose in importance between the 2017 and 2018 surveys, suggesting the increasing importance of information technology for strategic processes in healthcare.

Orange County stakeholders should take notice of these shifting priorities and position themselves to fully leverage the strong local presence of Healthcare and Information Technology industries and resources at their disposal to ensure the region becomes an industry leader in the field of Healthcare Information Technology. Growth in this new industry will require a talent pool with the right skillsets. The table below provides the baseline, specialized and software and programming skills for both Medical Records and Health Information Technicians and Medical and Health Services Managers.

| Skill Sets Required for Medical Records and Health Information Technicians, Orange County 2018 | | |
|---|---|---|
| **Baseline Skills** | **Specialized Skills** | **Software and Programming Skills** |
| Communications Skills | Medical Coding | ICD-10 |
| Computer Literacy | Customer Billing | ICD-9-CM Coding |
| Detail-Oriented | Medical Billing | SQL |
| Organizational Skills | Customer Service | HCPCS Coding |
| Research | ICD-10 | SAS |
| Teamwork/Collaboration | Billing | Word Processing |
| Writing | Medical Records | Epic Systems |
| Problem Solving | Medical Terminology | 3M Encoder |
| Typing | ICD-9-CM Coding | Medical Encoder |
| Multi-Tasking | CPT Coding | Adobe Acrobat |

Source: Burning Glass Labor Insight

| Hard Skills, Common Skills, and Top Qualifications for Medical Records and Health Information Technicians, Orange County 2018 | | |
|---|---|---|
| **Hard Skills** | **Common Skills** | **Top Qualifications** |
| Medical Records | Management | Certified Coding Specialist |
| Implantable Cardioverter-Defibrillator | Communications | Certified Professional Coder |
| CPT Coding | Operations | Registered Health Information Technician |
| Auditing | Research | Registered Health Information Admin. |
| Medical Billing and Coding | Customer Service | Certified Professional Medical Auditor |
| Medical Terminology | Computer Literacy | Licensed Vocational Nurses |
| Medicare | Driving | Certified Medical Coder |
| Electronic Medical Record | Filing | Nurse Practitioner |
| Billing | Innovation | Licensed Practical Nurse |
| Clinical Works | Problem Solving | Certified Documentation Improvement Practitioner |

Source: Emsi

## Skill Sets Required for Medical and Health Services Managers, Orange County 2018

| Baseline Skills | Specialized Skills | Software and Programming Skills |
|---|---|---|
| Communication Skills | Budgeting | Word Processing |
| Teamwork/Collaboration | Patient Care | ICD-10 |
| Planning | Scheduling | SQL |
| Organizational Skills | Staff Management | ICD-9-CM Coding |
| Problem Solving | Quality Assurance and Control | Integrated Development Environment |
| Writing | Customer Service | Adobe Acrobat |
| Building Effective Relationships | Case Management | Salesforce |
| Computer Literacy | Project Management | SAS |
| Research | Supervisory Skills | Oracle |
| Detail-Oriented | Cardiopulmonary Resuscitation (CPR) | Adobe Photoshop |

Source: Burning Glass Labor Insight

## Hard Skills, Common Skills, and Top Qualifications for Medical and Health Services Manager, Orange County 2018

| Hard Skills | Common Skills | Top Qualifications |
|---|---|---|
| Nursing | Management | Master of Business Administration (MBA) |
| Managed Care | Leadership | Licensed Clinical Social Worker (LCSW) |
| Utilization Management | Innovation | Licensed Vocational Nurses |
| Medical Management | Operations | Licensed Professional Counselor (LPC) |
| Appeals | Communications | Licensed Marriage and Family Therapist (LMFT) |
| Medicare | Driving | Licensed Practical Nurse |
| Quality Management | Coordinating | Nurse Practitioner |
| Medicaid | Problem Solving | Certified Case Manager |
| Health Administration | Interpersonal Communications | Licensed Master Social Worker |
| Acute Care | Presentations | Radiation Oncologist |

Source: Emsi

"The importance of Privacy, Security and Cybersecurity, Data Analytics/Clinical and Business Intelligence and Clinical Informatics and Clinician Engagement to hospitals illustrates the impact technology continues to have on Healthcare. Orange County stakeholders should take notice of these shifting priorities and position themselves to fully leverage the strong local presence of Healthcare and Information Technology industries and resources at their disposal to ensure the region becomes an industry leader in the field of Healthcare Information Technology."

# $91,707

**Average annual salary of STEM-related occupations in OC**

# 103,334

**Number of jobs in the Creative industry by end of 2018**

## STE(A)M

## WHAT HAS HAPPENED

Science, Technology, Engineering and Mathematics (STEM) education has been a regional priority for several years, as these fields of study lead to employment in high-paying industries and occupations. Occupations in these fields typically pay higher-than-average wages and offers significant career advancement opportunities due to their ongoing growth and innovation. Including the Arts sector in this category – changing STEM to STEAM – highlights the similar local growth and innovation in the Arts.

Successful STEAM-related educational programs have made Orange County a leader in a variety of developing, innovative sectors, from Aerospace to Biotechnology to Hospitality and Tourism. These sectors have grown into industry clusters – a concept explored later in this report – that provide multiple key benefits for workers and the economy as a whole, such as higher than average wages. Therefore, a continued focus on STEAM disciplines at local colleges and universities should be a priority, as it will ensure a steady supply of qualified candidates for jobs in these growing industries.

STEAM occupations are incredibly diverse: from Software Developers to Registered Nurses to Architects, Actors, and Musicians. While this diversity complicates any analysis of this job category as well as any forecast of its future growth, it also speaks to STEAM's cross-cutting importance across many industries and the plethora of potential career pathways it offers. While the first portion of this section will focus on the more traditional STEM sector, an Arts highlight has been provided at the end and showcases a number of occupations and how they are expected to shift over the next five years as well as their overall salaries.

The most in-demand STEM occupations over the past twelve months were:
- Software Developers, Applications (9,899 job postings);
- Registered Nurses (9,508 job postings); and
- Computer Occupations, All Other (8,449 job postings).

Overall, the majority of STEM-related jobs in Orange County are in Information Technology, Healthcare, or Engineering. These jobs, which provide valuable services and drive innovation, also pay higher-than average wages. According to Emsi, the average hourly wage for STEM-related occupations in Orange County was $44.09 translating to an annual average wage of $91,707, well above the average hourly earnings for all occupations measured at $27.19 per hour or $56,555 per year.

### Orange County STEM-Related Job Postings by Occupation, Last 12 Months

| Occupation | Job Postings |
|---|---|
| Software Developers, Applications | 9,898 |
| Registered Nurses | 9,508 |
| Computer Occupations, All Other | 8,449 |
| Medical and Health Services Managers | 2,877 |
| Computer User Support Specialists | 2,605 |
| Web Developers | 2,175 |
| Computer Systems Analysts | 1,999 |
| Engineers, All Other | 1,867 |
| Licensed Practical and Licensed Vocational Nurses | 1,556 |
| Database Administrators | 1,440 |
| Mechanical Engineers | 1,285 |
| Medical Records and Health Information Technicians | 1,231 |
| Civil Engineers | 1,208 |
| Network and Computer Systems Administrators | 1,130 |
| Sales Representatives, Wholesale and Manufacturing | 1,074 |
| Architectural and Engineering Managers | 1,021 |
| Electrical Engineers | 1,011 |
| Information Security Analysts | 994 |
| Computer Network Architects | 884 |
| Speech-Language Pathologists | 879 |

Source: Burning Glass Labor Insight

STEM-related skills requirements have shifted slightly in recent years. The most in-demand STEM skills over the past twelve months – as measured by the number of job postings requiring them – were Structured Query Language (SQL) with 8,644 job postings, followed by Project Management (8,120) and Quality Assurance and Control (6,353). The most in-demand STEM skills related to employment in the Information Technology and Healthcare sectors, which are both predicted to grow over the foreseeable future.

As technology continues to transform almost every industry across the nation and Orange County's aging population requires more and more Healthcare services, skills at the intersection of these two sectors will see even higher demand. Indeed, the field of Healthcare Information Technology is predicted to see significant job growth over the next few years, as explored in the previous section of this report. Over the past twelve months, for example, Orange County saw 1,231 job postings for Medical Records and Health Information Technicians, an occupation that exemplifies the connection between these increasingly interconnected sectors.

### Orange County STEM-Related Skills by Job Postings, Last 12 Months

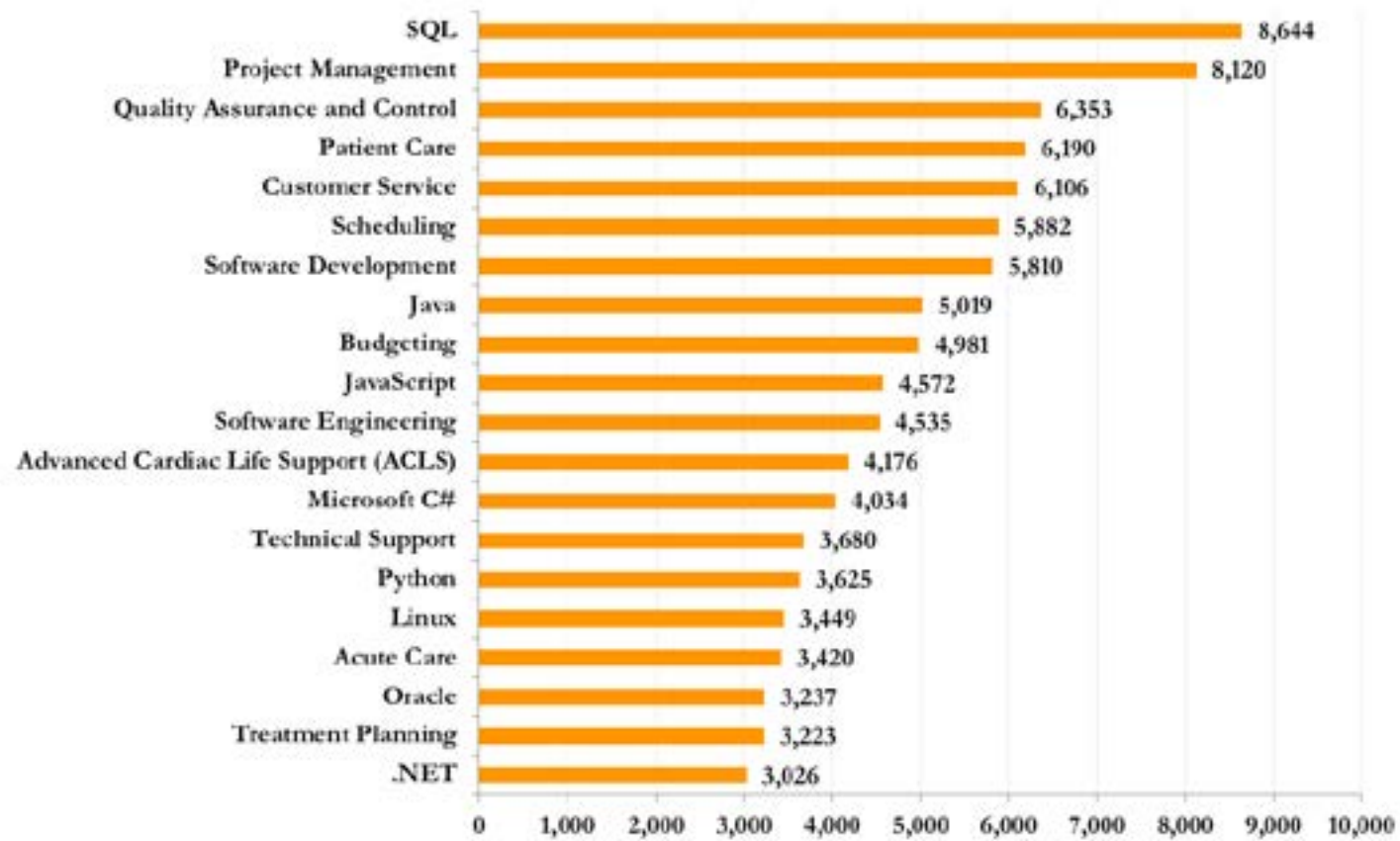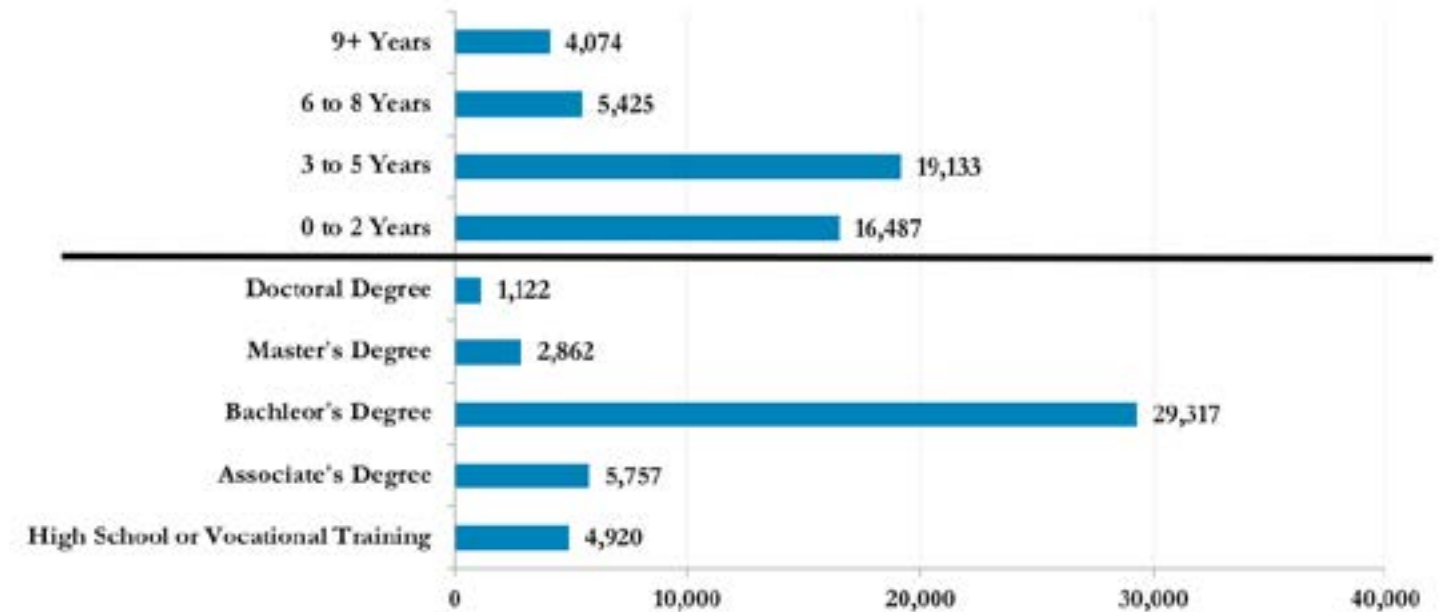| Skill | Job Postings |
| --- | --- |
| SQL | 8,644 |
| Project Management | 8,120 |
| Quality Assurance and Control | 6,353 |
| Patient Care | 6,190 |
| Customer Service | 6,106 |
| Scheduling | 5,882 |
| Software Development | 5,810 |
| Java | 5,019 |
| Budgeting | 4,981 |
| JavaScript | 4,572 |
| Software Engineering | 4,535 |
| Advanced Cardiac Life Support (ACLS) | 4,176 |
| Microsoft C# | 4,034 |
| Technical Support | 3,680 |
| Python | 3,625 |
| Linux | 3,449 |
| Acute Care | 3,420 |
| Oracle | 3,237 |
| Treatment Planning | 3,223 |
| .NET | 3,026 |

Source: Burning Glass Labor Insight

> " STEM-related skills requirements have shifted slightly in recent years. The most in-demand STEM skills over the past twelve months –as measured by number of job postings requiring them – were Structured Query Language (SQL) with 8,644 job postings, followed by Project Management (8,120) and Quality Assurance and Control (6,353)."

Despite some popular misconceptions, many STEM-related occupations do not require extensive education and experience. Two-thirds of STEM-related Orange County job postings over the past year, for example, required only a Bachelor's degree instead of a Graduate degree, while 36.5 percent of job postings required two or fewer years of experience and 78.9 percent required five or fewer years of experience. STEM careers are, in other words, fairly accessible to many county residents considering Orange County's generally high educational attainment.

### Orange County STEM-Related Job Postings by Educational Attainment and Experience, Last 12 Months

| Category | Job Postings |
| --- | --- |
| 9+ Years | 4,074 |
| 6 to 8 Years | 5,425 |
| 3 to 5 Years | 19,133 |
| 0 to 2 Years | 16,487 |
| Doctoral Degree | 1,122 |
| Master's Degree | 2,862 |
| Bachleor's Degree | 29,317 |
| Associate's Degree | 5,757 |
| High School or Vocational Training | 4,920 |

Source: Burning Glass Labor Insight

STEM-related degrees will continue to grow in importance as new technologies continue to transform the world of work. Several growing industry clusters in Orange County, such as Medical Devices, Biopharmaceuticals, Advanced Manufacturing, Information Technology, Professional and Business Services, Cybersecurity and Data Analytics all depend on a steady stream of well-educated workers in order to fill new positions.

Orange County's three major universities – the University of California, Irvine, Chapman University, and California State University, Fullerton – awarded a total of 3,842 STEM-related Bachelor's degrees and 1,734 STEM-related Graduate degrees in 2017. Physical Sciences has seen the largest overall growth in Bachelor's degrees since 2004, growing by 131.3 percent, while Mathematics has seen the largest growth in Graduate degrees, growing by an impressive 332 percent.

| Regional Completions of STEM-Related Degrees at University of California, Irvine; California State University, Fullerton; and Chapman University, 2004-2017 | | | | |
| --- | --- | --- | --- | --- |
| | 2017 | | 2004-2017 Percent Change | |
| Discipline | Bachelor's Degrees Granted | Graduate Degrees Granted | Bachelor's Degree Change | Graduate Degree Change |
| Biological Sciences | 1,022 | 153 | 31.4% | 188.7% |
| Engineering | 1,235 | 876 | 114.8% | 257.6% |
| Information and Computer Science | 1,081 | 467 | 10.2% | 166.9% |
| Physical Sciences | 266 | 130 | 131.3% | 51.2% |
| Math | 238 | 108 | 124.5% | 332.0% |
| Total | 3,842 | 1,734 | 50.4% | 196.9% |

Source: Emsi

The same software also tracks STEM-related completions at Orange County community colleges including Coastline Community College, Cypress College, Fullerton College, Golden West College, Irvine Valley College, Orange Coast College, Santa Ana College, Saddleback College and Santiago Canyon College. These institutions saw a total of 1,953 completions in 2017, a significant increase over the early years of this millennium. As traditional college degrees become more and more expensive, community colleges will continue to increase in importance as a vital part of the STEM education and workforce training system.

| Regional Completions of STEM-Related Program Completions by Major Field of Study at Orange County Community Colleges, 2004 - 2017 | | | |
|---|---|---|---|
| Discipline | All Completions (2004) | All Completions (2017) | 2004-2017 Percent Change |
| Biological Sciences | 35 | 171 | 388.6% |
| Engineering | 252 | 642 | 154.8% |
| Information and Computer Science | 248 | 485 | 95.6% |
| Physical Sciences | 45 | 385 | 755.6% |
| Math | 26 | 270 | 938.5% |
| Total | 606 | 1,953 | 222.3% |

Source: Emsi

## A FOCUS ON THE ARTS

The Arts are part of the "Creative" industry as highlighted in the *2018 Otis Report on the Creative Economy* published by the Otis College of Art and Design. The report estimates that Orange County's Creative sector supports 93,000 direct, indirect and induced jobs, with a total labor income of $6.1 billion and an overall output of approximately $19.2 billion. This industry, which provides approximately $900 million in state and local taxes, also accounts for 25,970 self-employed individuals, highlighting this industry as a potential opportunity for Gig Economy professionals in the region.

In 2016, Orange County had a total of 57,900 creative industries jobs, with the majority in Publishing and Printing (13,200), Fashion (11,800) and Furniture and Decorative Arts (7,600). Looking forward out to 2021, the largest absolute increase in employment will come from Architecture and Design, which is expected to add 1,200 jobs, followed by Digital Media, which is expected to add 1,100 jobs, and Communication Arts which is expected to add 400 jobs. On a percentage basis, the largest increases are slated to occur in Industrial Design Services, Architecture and Interior Design and Digital Media.

Overall, the Creative industry is expected to add a total of 1,000 jobs by 2021, growing from 57,900 in 2016 to 58,900 in 2021, an increase of 1.7 percent. While certain Creative industry sectors are expected to expand by well over 1,000 jobs, other Creative sectors are slated to decrease over the next five years including Publishing and Printing, which is expected to shrink by 1,200 jobs, representing a decrease of 9.1 percent. Furniture and Decorative Arts is also expected to lose more than 1,000 jobs, while Entertainment is predicted to see much smaller losses.

> " **Overall, the Creative industry is expected to add a total of 1,000 jobs by 2021, growing from 57,900 in 2016 to 58,900 in 2021, an increase of 1.7 percent. While certain Creative industry sectors are expected to expand by well over 1,000 jobs, other Creative sectors are slated to decrease over the next five years including Publishing and Printing, which is expected to shrink by 1,200 jobs, representing a decrease of 9.1 percent.**"

| Orange County Creative Industries Employment Forecast, 2016-2021 | | | | |
|---|---|---|---|---|
| | 2016 | 2021f | Percent Change | Average Annual Growth Rate |
| Architecture and Interior Design | 6,500 | 7,700 | 18.5% | 3.70% |
| Art Galleries | 210 | 170 | -19.0% | -3.80% |
| Communication Arts | 4,200 | 4,600 | 9.5% | 1.90% |
| Digital Media | 6,500 | 7,600 | 16.9% | 3.40% |
| Entertainment | 1,800 | 1,700 | -5.6% | -1.10% |
| Fashion | 11,800 | 12,200 | 3.4% | 0.70% |
| Fine and Performing Arts Schools | 1,300 | 1,500 | 15.4% | 2.90% |
| Furniture and Decorative Arts | 8,700 | 7,600 | -12.6% | -2.50% |
| Industrial Design Services | 500 | 620 | 24.0% | 4.80% |
| Publishing and Printing | 13,200 | 12,000 | -9.1% | -1.80% |
| Toys | 520 | 460 | -11.5% | -2.30% |
| Visual and Performing Arts Providers | 2,500 | 2,700 | 8.0% | 1.60% |
| Total | 57,900 | 58,900 | 1.70% | 0.40% |

Source: 2018 OTIS Report on the Creative Economy

Orange County's largest Creative industry occupation was Software Developers, Applications, which had a total of 10,660 occupations in 2016, representing growth of 540 jobs or an increase of 8.0 percent since 2015. While typically classified in the IT sector, these occupations are included in the Creative industry as they produce creative applications which require a significant amount of innovation, creativity and design. The next largest occupation was Graphic Designers, with approximately 2,970 jobs in 2016 representing a decrease of 10 percent. Lastly, Architects was the third largest occupation within the Creative sector with 1,630 jobs; it grew by more than 25 percent between 2015 and 2016. On a percentage basis, the largest growth in occupations came from Architects, which expanded by 28.3 percent, followed by Fashion Designers, which expanded by 16.7 percent and Software Developers, Applications which grew by 7.7 percent. A number of occupations also shrunk over the past year, with the largest percentage loss coming from Fabric/Apparel Patternmakers, which shrunk by 40 percent, followed by Landscape Architects (17.8 percent) and Film/Video Editors (13.3 percent).

Orange County Creative Occupation Employment, 2015 and 2016
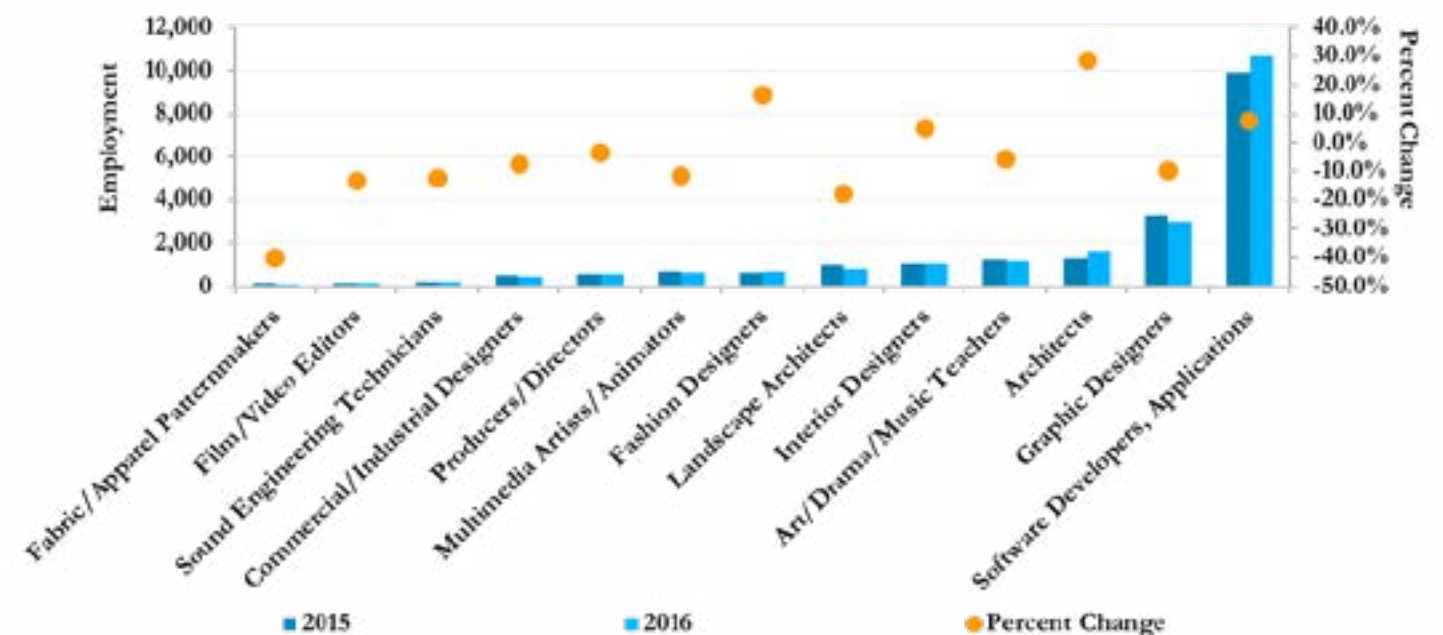
Source: 2018 OTIS Report on the Creative Economy

Software Developers, Applications had the sectors highest average annual salary, $115,704, while other Creative industries jobs included Architects ($81,274) and Art/Drama/Music Teachers ($79,695). Film/Video Editors saw the largest salary increase over the past year (9.1 percent), followed by Fashion Designers (9.7 percent) and Software Developers, Applications (8.0 percent).



Orange County Creative Occupation Earnings, 2015 and 2016
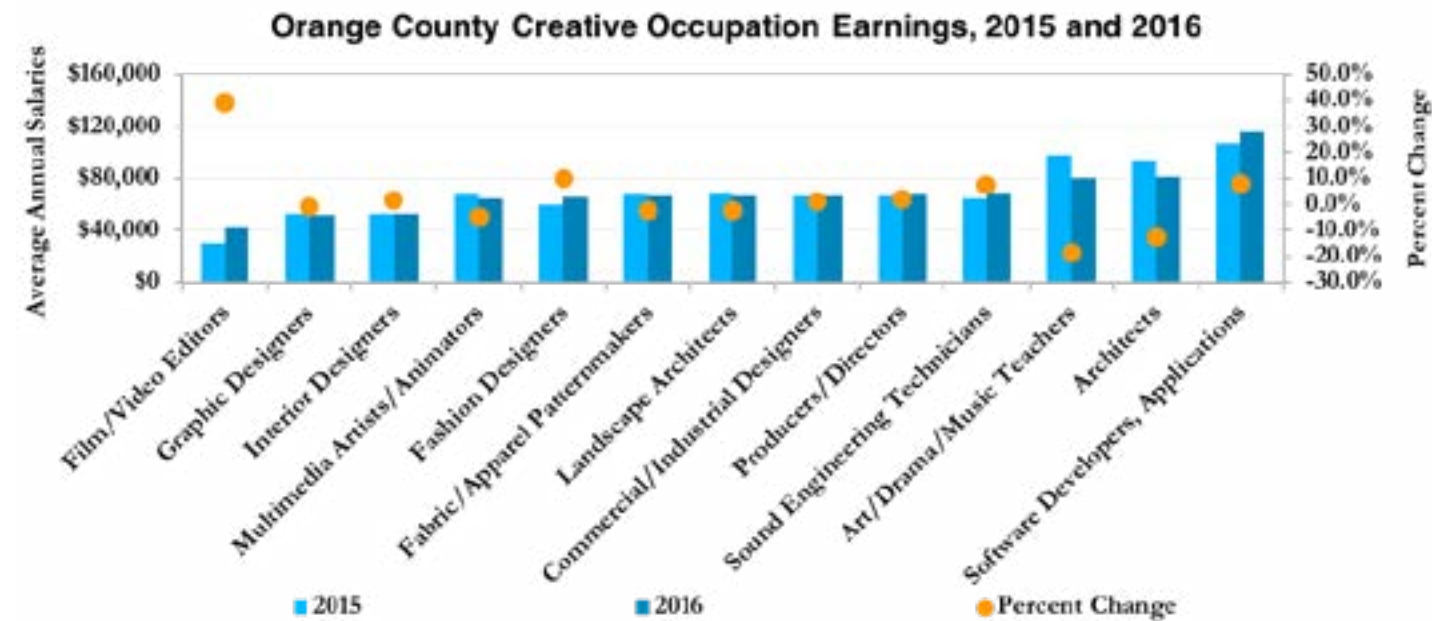
Source: 2018 OTIS Report on the Creative Economy

## LOOKING FORWARD

STEM-related occupations are expected to see continued job growth as technology continues to advance and transform the job market. Emsi predicts that Orange County STEM employment will reach 103,334 this year and grow to almost 113,000 by 2028. Local educators and workforce development professionals will need to support county education and training programs – and possibly create new, innovative programs – in order to prepare enough qualified workers to meet this demand.



Estimated and Forecasted STEM Occupations in Orange County, 2001 - 2028
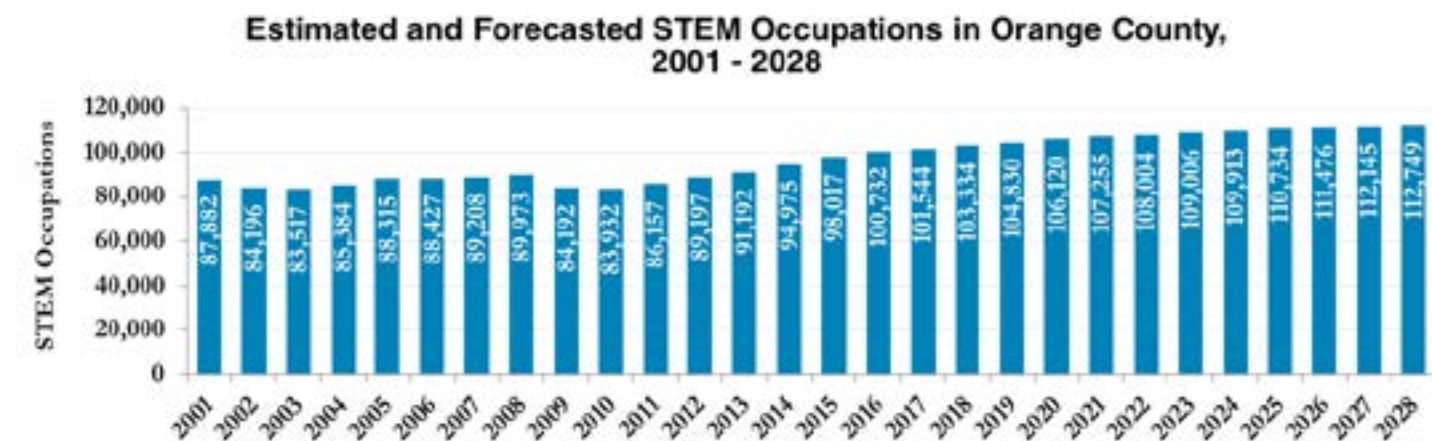
Source: Emsi

Emsi predicts that Software Developers, Applications will add the most jobs over the next decade; the following chart shows outlooks over the next five and ten years. Software Developers, Applications, is expected to add the most jobs over both time periods, with an estimated total of 12,584 jobs by 2028. Other occupations expected to see significant growth include Civil Engineers, Computer User Support Specialists and Computer Systems Analysts. Overall, six of the top 10 occupations – all of which are in the top seven – are related to computers and software, which reflects the way that new technologies have transformed and are continuing to transform almost every industry.

### Top 10 Orange County STEM Occupations, 5-Year and 10-Year Outlook

| STEM Occupation | Employment | | | Absolute Change | |
|---|---|---|---|---|---|
| | 2018 | 2023 | 2028 | 2018-2023 | 2018-2028 |
| Software Developers, Applications | 10,222 | 11,617 | 12,584 | 1,395 | 2,362 |
| Civil Engineers | 5,663 | 6,122 | 6,477 | 459 | 813 |
| Computer User Support Specialists | 8,619 | 9,077 | 9,381 | 458 | 762 |
| Computer Systems Analysts | 5,531 | 5,836 | 6,023 | 304 | 491 |
| Computer Occupations, All Other | 5,236 | 5,449 | 5,589 | 213 | 353 |
| Operations Research Analysts | 1,756 | 1,955 | 2,093 | 199 | 337 |
| Software Developers, Systems Software | 7,924 | 8,129 | 8,240 | 205 | 316 |
| Industrial Engineers | 3,665 | 3,847 | 3,951 | 182 | 286 |
| Mechanical Engineers | 3,088 | 3,258 | 3,369 | 170 | 281 |
| Clinical, Counseling, and School Psychologists | 1,251 | 1,415 | 1,528 | 164 | 277 |

Source: Emsi

While the tables above highlight the progression of STEM-related occupations, it is important to keep the Arts in mind. Orange County Creative industries are expected to grow by 1.7 percent between 2016 and 2021, creating approximately 1,000 new jobs. Furthermore, these jobs will be largely resistant to automation, as research has shown creativity to be one of the most defensible job characteristics. This will likely make the Arts sector even more important to local economies as a reliable, sustainable job creator in an era when machines perform more and more job tasks across a variety of industries.

The Art's growing importance in the job market, combined with the increasing importance of technology to almost every industry, mean that STEAM-related degrees will continue to be an essential pathways going forward. Ensuring that Orange County residents have access to a variety of STEAM-related degree programs will be crucial in maintaining its world-class workforce. Before students reach colleges and universities, K-12 plays a key role in informing students about STEAM career opportunities.

> " Overall, six of the top 10 occupations – all of which are in the top seven – are related to computers and software, which reflects the way that new technologies have transformed and are continuing to transform almost every industry."

# 4 INDUSTRY AND OCCUPATION TRENDS

This section of the report highlights the strengths of the regional economy while providing insight into the key sectors currently driving employment growth.

# 3.1%

**OC's unemployment rate as of August 2018**

# 26.6%

**Of OC's population will be aged 65+ by 2060**

# INTRODUCTION

Orange County has seen significant economic growth in a variety of areas in recent years: thriving industry clusters, low unemployment rates, and higher wages. This growth, however, has not been evenly spread across the county's communities, and other issues still remain that could limit further economic expansion. These include the county's growing skills gap and its chronic shortage of workforce housing. Addressing these issues will require a collaborative effort from a number of stakeholders including local employers, educators, workforce development organizations and policy-makers; this collaborative approach will help ensure the region can maximize its economic productivity by leveraging its competitive advantages and strengths while mitigating potential weaknesses.

## UNEMPLOYMENT

Orange County continues to enjoy low unemployment rates; its rate was 3.1 percent in August 2018, much lower than the state (4.3 percent) and national (3.9 percent) rates. While this rate was slightly higher than the near-historic low of 2.6 percent reached in April and May 2018, it likely reflects seasonal fluctuations rather than a weakening economy, with the majority of the loss in local government due to the summer recess as in previous years. Once those workers are rehired, Orange County's temporary increase in the unemployment rate is expected to return to its near record lows.

### Unemployment Rates in Orange County, California, and the United States, January 2008 - August 2018

Legend: Orange County (3.1%) — California (4.3%) — United States (3.9%)
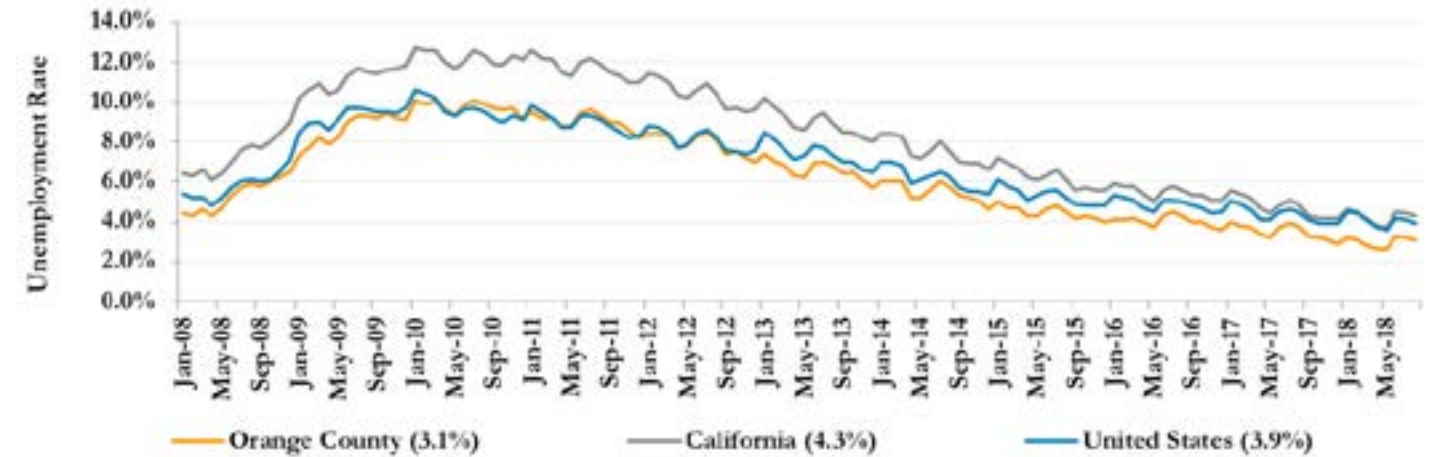
Source: California Employment Development Department

### Orange County Unemployment Rate Compared to Peer California Counties, August 2018

| County | Unemployment Rate |
|---|---|
| Los Angeles | 5.1% |
| Riverside | 4.7% |
| San Bernardino | 4.2% |
| San Diego | 3.4% |
| Orange | 3.1% |
| Santa Clara | 2.6% |
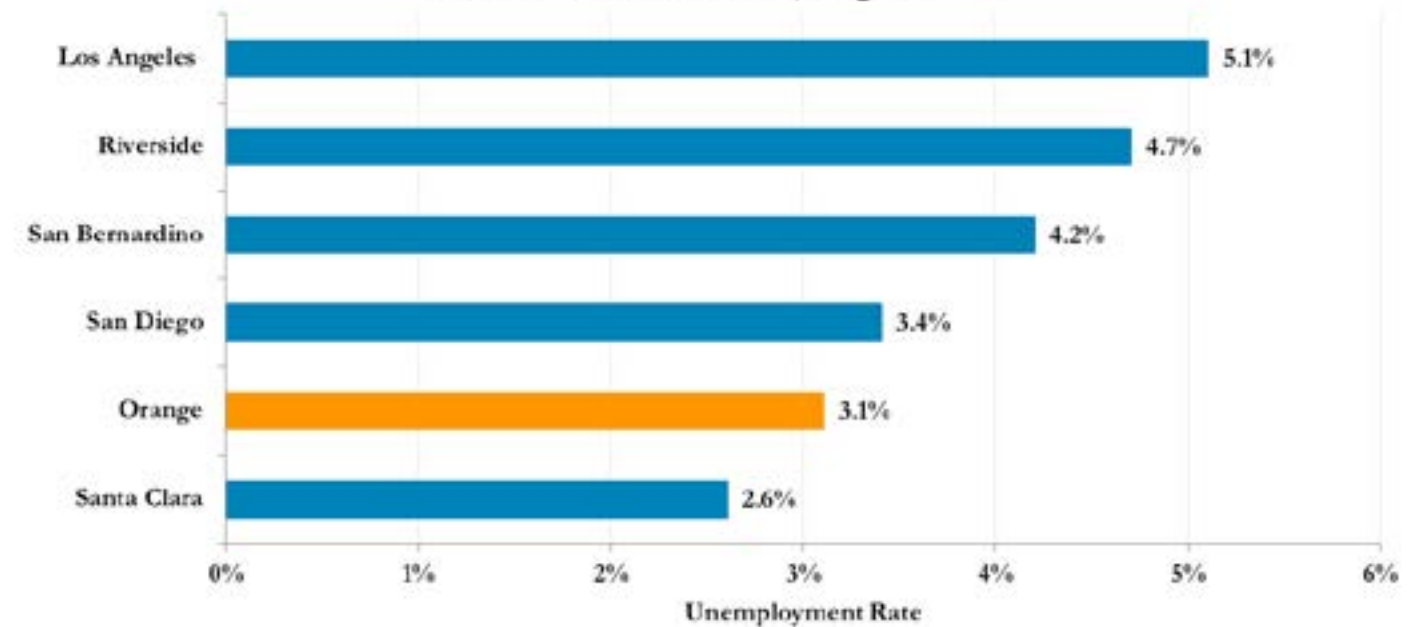
Source: California Employment Development Department

Over the past year, county employment growth has been concentrated in Educational and Health Services, Professional and Business Services, and Leisure and Hospitality. Several industries saw employment declines, including Manufacturing, Financial Activities, and Other Services.

Since the beginning of the decade, the sectors driving Orange County's employment growth and recovery from the Great Recession have included:
- Professional and Business Services (66,700 jobs added);
- Leisure and Hospitality (58,000); and
- Educational and Health Services (54,300).

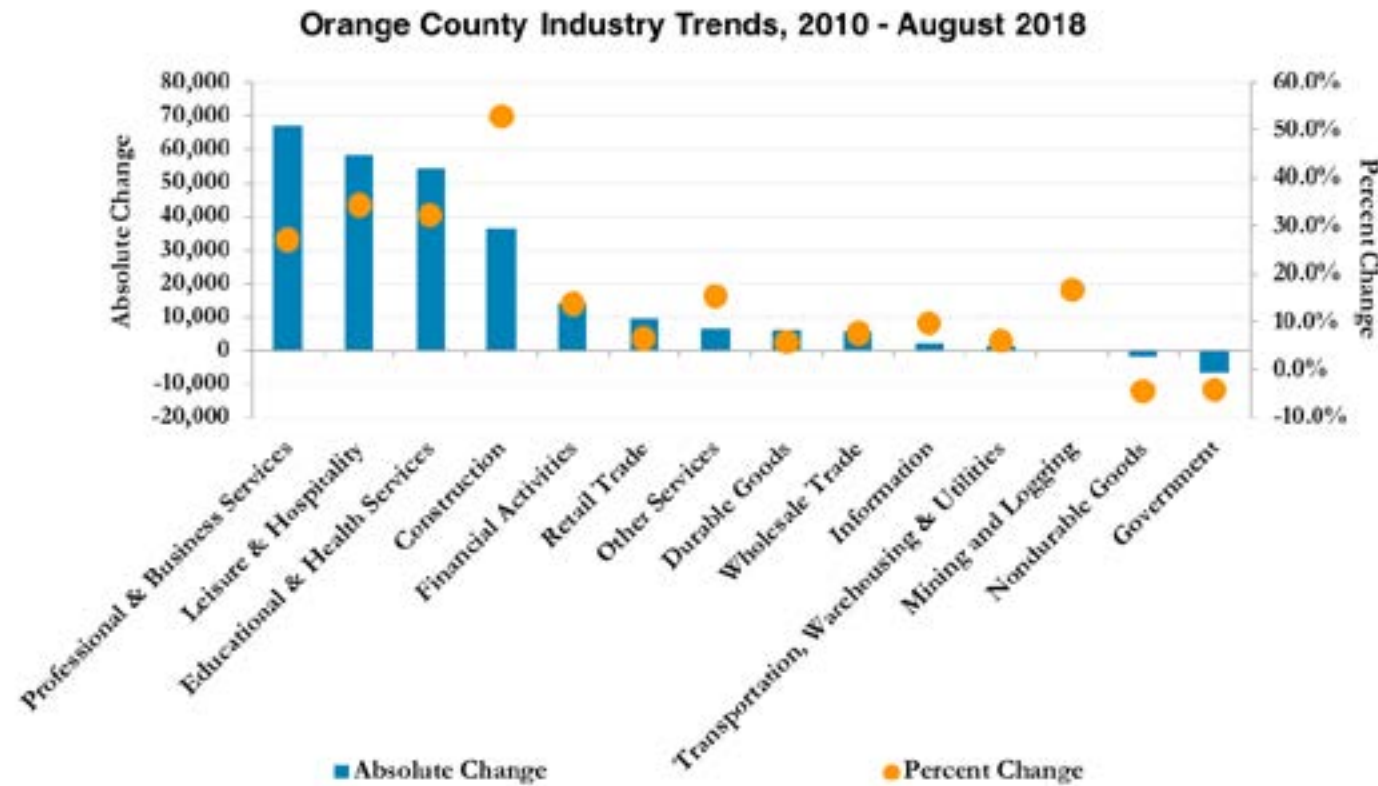Construction saw the largest percentage growth (52.7 percent), followed by Leisure and Hospitality (34.4 percent) and Education and Health Services (32.1 percent). Construction's strong employment growth since 2010 can be attributed to the recovering housing sector, where low supply and high demand has led to increased prices and additional construction projects throughout the county. Only two county industries, Nondurable Goods Manufacturing and Government, lost jobs since 2010; employment decreased by 1,900 or 4.3 percent and 6,400 or 4.2 percent in these sectors, respectively.



Orange County Industry Trends, 2010 - August 2018

Source: California Employment Development Department

> " **Construction saw the largest percentage growth (52.7 percent), followed by Leisure and Hospitality (34.4 percent) and Education and Health Services (32.1 percent). Construction's strong employment growth since 2010 can be attributed to the recovering housing sector, where low supply and high demand has led to increased prices and additional construction projects throughout the county.**"

# LOOKING FORWARD

California State University, Fullerton forecasts that Orange County's total nonfarm employment will grow by 16,900 jobs to a total of 1,625,500 in 2019, representing growth of 1.0 percent. Employment growth will likely slow as Orange County nears full employment. The county's strong labor market benefits both county residents and residents of nearby counties such as Riverside and San Bernardino, as an increasing number of these counties' residents commute to Orange County for work.



Orange County Forecasted Nonfarm Employment, 2014 - 2019
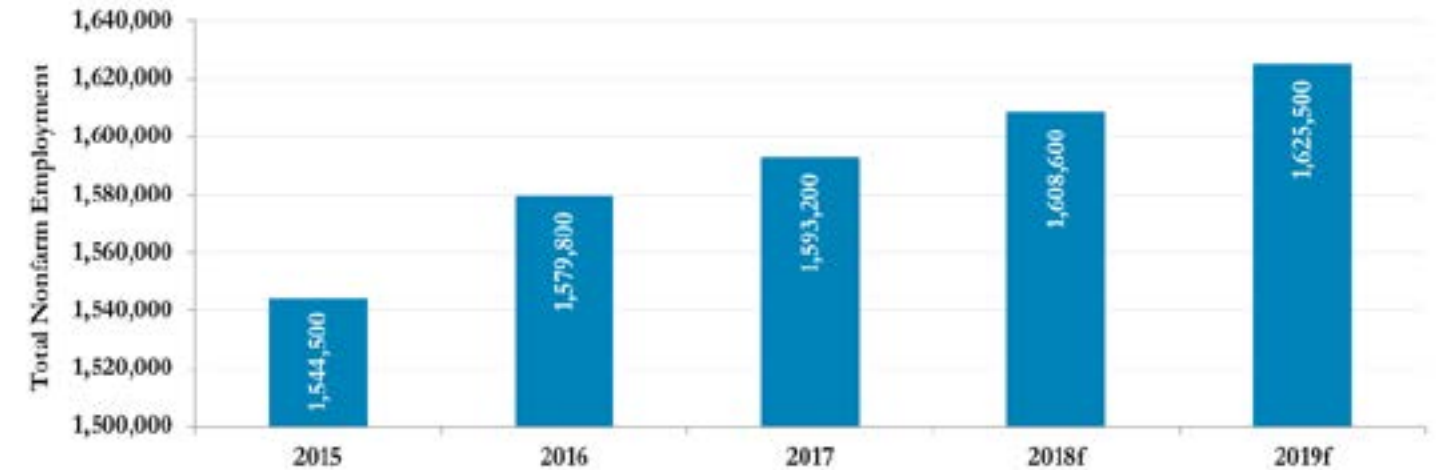
Source: California State University, Fullerton

Compared to every neighboring county, more workers commute into Orange County than commute to other counties, with the most significant difference coming from Riverside County, where 107,507 workers commute to Orange County. Only 38,488 Orange County workers commute to Riverside County, leaving 69,019 net commuters in Orange County. The second largest imbalance of commuting workers came from San Bernardino County, which sent 74,222 workers to Orange County and received only 37,733 workers from Orange County, providing a total of 36,489 net commuters to the area. The table below highlights the various commuter inflows and outflows as well as the balance of workers.

These trends are primarily due to Orange County's strong job market and high housing costs, which have priced many workers out of the county. While highlighting the affordability issues currently impacting the region, this helps to reinforce one of the county's primary competitive advantages – a deep pool of well-educated, qualified workers for local employers. In order to maintain this advantage, it is important that the region's infrastructure is continually improved and updated to handle the large cross-county workers flows supporting employment across local industries. Additionally, improving traffic congestion along the county's most used transportation corridors would help in improving the quality-of-life for many commuters.

| Commuter Inflows and Outflows from Orange County to County Neighbors | | | |
|---|---|---|---|
|  | Worker Inflows | Worker Outflows | Net Commuters into Orange County |
| Los Angeles | 326,187 | -312,035 | 14,152 |
| San Diego | 62,684 | -37,069 | 25,615 |
| San Bernardino | 74,222 | -37,733 | 36,489 |
| Riverside | 107,507 | -38,488 | 69,019 |
| Other California Counties | 86,324 | -64,786 | 21,538 |

Source: Jones Lang LaSalle, December 2017

# THE GIG ECONOMY

The nature of work is changing. One emerging trend, the Gig Economy, is known by many other names, including the sharing economy, the social economy, and collaborative consumption, and almost as many definitions as names, complicating any attempt at analysis. It includes "1099ers", who are typically freelancers or contract workers who have professional, technical and/or creative skills that they use to provide services to a client under a contractual relationship. The sector's multiple names and definitions reflect its unique importance in today's economy; it is simply too new, too innovative, and too prone to change to fully define.

With these complications in mind, this report uses the name and definition offered by the U.S. Bureau of Labor Statistics (BLS) in a recent report. The name "Gig Economy" refers to the frequent, short-term projects often undertaken by workers in this space, including independent workers, on-call workers, temporary help agency workers, and workers provided by contract. While online and mobile services such as Uber, Lyft and Airbnb are the most prominent Gig Economy employers in today's economy, Gig Economy workers are increasingly ubiquitous in almost every field imaginable, from walking dogs to ghostwriting memoirs to developing software.

The Gig Economy's main benefits for workers are the independence and flexible schedules it offers, which can lead to a better work-life balance. Gig Economy work also provides an opportunity for already employed individuals to supplement their income, as illustrated by many Lyft and Uber drivers. Employers, on the other hand, are able to hire specialized workers for individual projects.

In a report released June 2018, the U.S. Bureau of Labor Statistics (BLS) estimated "Contingent and Alternative Employment Arrangements" (Gig Economy) employment as of May 2017.

| U.S. Contingent and Alternative Employment Arrangements, 2017 | | |
| --- | --- | --- |
| | Workers (in Millions) | Percent of Total |
| Independent Contractors | 10.6 | 6.9% |
| Contingent Workers | 5.9 | 3.8% |
| On-Call Workers | 2.6 | 1.0% |
| Temporary Help Agency Workers | 1.4 | 0.9% |
| Contact Firms | 0.933 | 0.6% |
| Total | 21.4 | 13.9% |

Source: U.S. Bureau of Labor Statistics

The BLS found that the overall proportion of these workers has been shrinking over time and now represents a smaller percentage of workers than in 2005. These results surprised many, who, expected the Gig Economy and its workers to be increasing in numbers due to new technologies and new technology-driven business models. This apparent decline may reflect new difficulties in measuring the Gig Economy rather than a decline; while the BLS attempts to take into account all Gig workers, it unfortunately fails to capture workers who combine part-time and or full-time work with independent work, potentially excluding a very important hybrid segment of Gig Economy workers.

Other researchers have estimated gig economy prevalence at far higher levels. For example, in *The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015,* Lawrence F. Katz (Harvard University) and Alan B. Krueger (Princeton University) found that from 2005 to 2015, the proportion of American workers engaged in what they refer to as "contingent/alternative work" jumped from 10.7 percent to 15.8 percent. Notably, they found that 94 percent of net job growth from 1995-2005, was in the alternative work category, and over 60 percent was due to the rising levels of independent contractors, freelancers and contract company workers.

According to another study by Upwork, a platform which connects freelancers with businesses, there were a total of 57.3 million people, or 36 percent of the U.S. workforce, acting as freelancers in 2017. This represents an 8.1 percent increase since 2014; Upwork expects this number to grow to 86.5 million by 2027, when it will outnumber traditional employment. The Upwork study found a number of interesting trends in the Gig Economy:
- 54 percent of the U.S. workforce said they're not very confident that work they do will exist in 20 years. Reskilling is therefore critical.
- 55 percent of freelancers participated in skill-related education in the last six months versus only 30 percent of non-freelancers.
- Asked whether they started freelancing more by choice or necessity, 63 percent of freelancers said by choice — up 10 percent since 2014.

# $68,519
**Average annual salary
for industry clusters**

# 48.9%
**Increase in jobs for
Web Developers
2014-2024**

# INDUSTRY CLUSTER EMPLOYMENT AND COMPENSATION TRENDS

Industry clusters are regions where a number of similar businesses benefit from each other's presence. These businesses' growth fuels the attraction and growth of nearby complimentary and supplementary industries, which, in turn, fuels further growth in a virtuous cycle. This creates a self-sustaining cycle of business growth and innovation which results in areas becoming "specialized" centers for those industries, such as entertainment in Hollywood, winemaking in Napa Valley, and technology in Silicon Valley.

Industry clusters have five primary characteristics:
- Critical Mass: a large number of similar and supportive businesses, resulting in specialized labor pools, reduced logistical costs, and the promotion of both healthy competition and collaboration between those firms.
- Regional Specialization: businesses refine their processes and become more efficient, which leads to increased consumer spending and a high demand of exports, increasing general cash flow into the region.
- High Multiplier Effect: reflects the overall impact the industry has on the regional economy and its ability to spur job creation in other area industries.
- High Growth Rates: As previously mentioned, industry clusters' ability to attract new businesses and workers into the region, they dramatically boost their ability to grow and overall economic growth.
- World-Class, Industry-Leading Companies: the rapid growth of companies, high density of competitors and collaborators, and the increased specialization both creates and attracts world-class organizations which help to define the region as a center for that industry cluster.

Industry clusters are important parts of their local economies as they provide employment growth across multiple industries. Data provided by Emsi which aggregates data points from dozens of government sources including the Bureau of Labor Statistics and updates their data quarterly, provides a snapshot of Orange County industry employment with slightly different industry definitions.

Emsi estimates that overall industry employment in Orange County has had an annual growth rate of 2.2 percent since 2012. The county's total industry employment was 1,631,596 in 2017, 2.1 percent higher than in 2016. The Healthcare and Social Assistance sector had the highest overall employment in 2017 (184,295), followed by Accommodation and Food Services (167,679) and Government (164,535). The Administration and Support and Waste Remediation, Construction, and Management of Companies and Enterprises sectors also saw significant percentage growth.



**Orange County Average Industry Employment, 2012 - 2017**
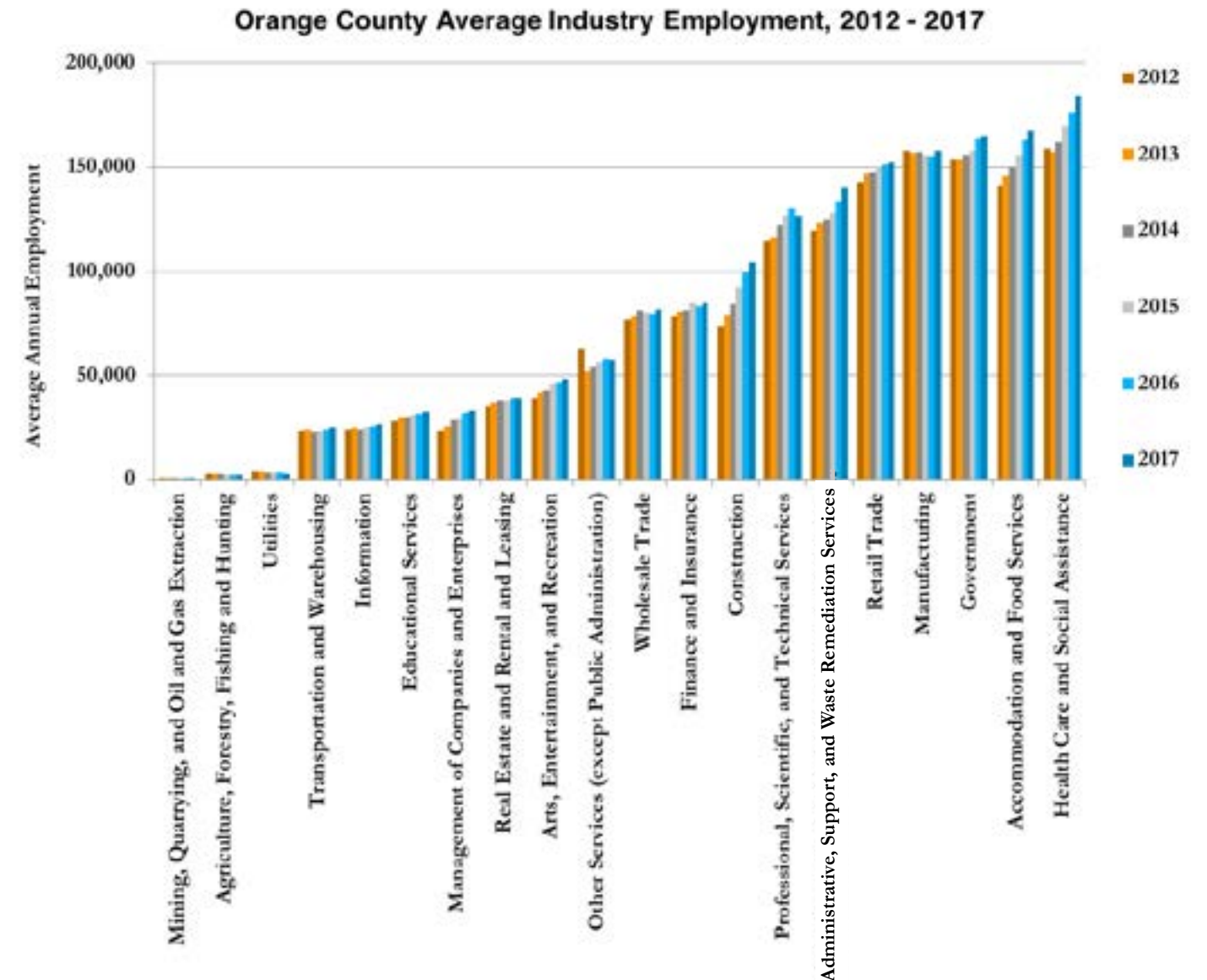
Source: Emsi

> " The Healthcare and Social Assistance sector had the highest overall employment in 2017 (184,295), followed by Accommodation and Food Services (167,679) and Government (164,535). The Administration and Support and Waste Remediation, Construction, and Management of Companies and Enterprises sectors also saw significant percentage growth."

Overall, Emsi found that Orange County had a weighted average industry salary of $73,697, an increase of 2.6 percent or $1,864 over the previous year. Orange County's highest paying industries in 2017 were Utilities, with an annual average wage of $166,644, Finance and Insurance, with an annual average wage of $126,212, and Information, with an annual average wage of $122,690. The Real Estate and Rental and Leasing industry saw the largest year-over-year percentage growth (8.3 percent), followed by Arts, Entertainment and Recreation (67 percent), Construction (6.2 percent) and Information (also 6.2 percent).
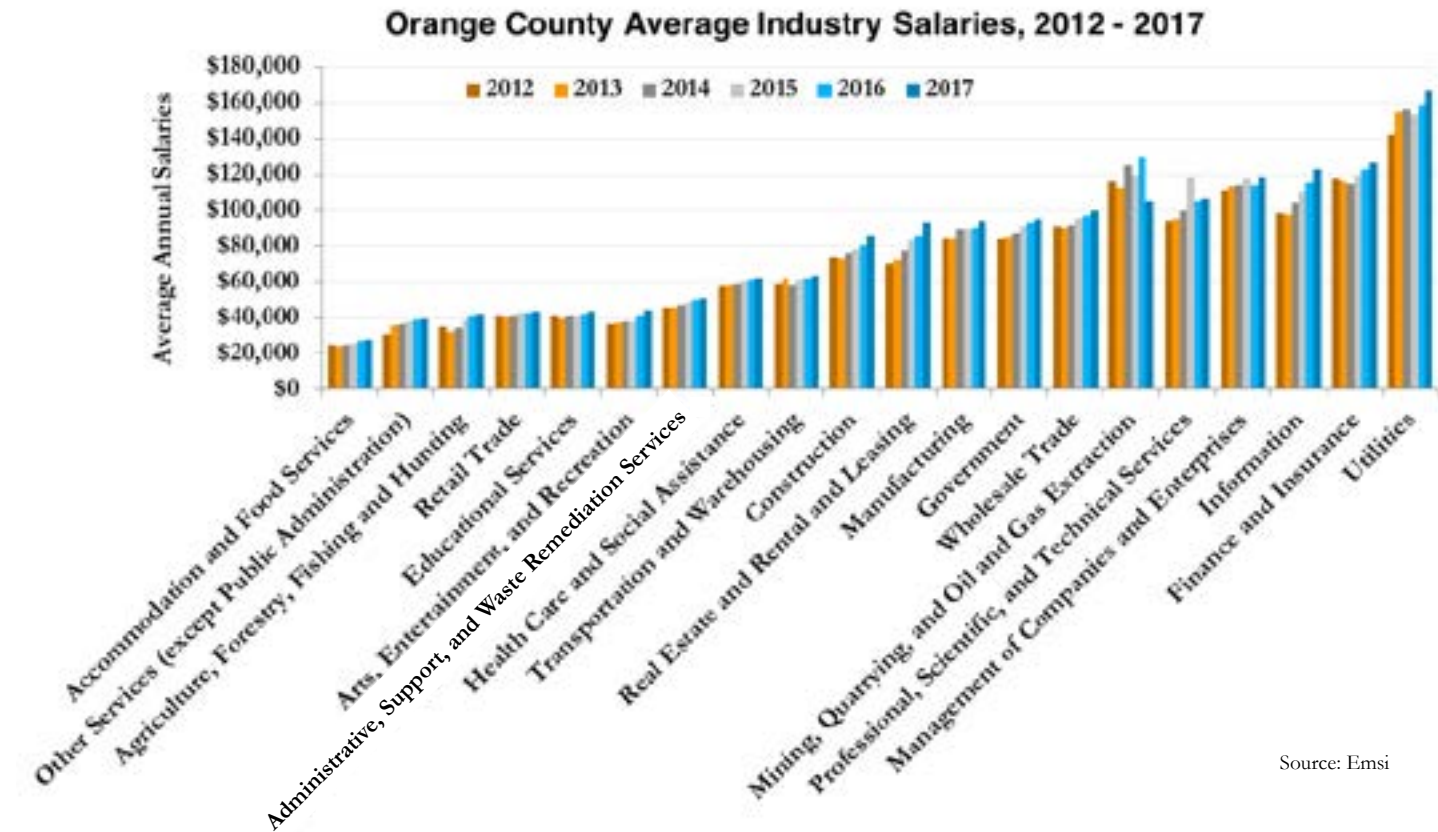


Source: Emsi

Emsi also measures industry concentrations using location quotients, which compare the concentration of an industry in a specific area with its concentration at the national level. Emsi found that Orange County's Arts, Entertainment and Recreation industry had its highest location quotient at 1.94, which means that this industry is almost twice as concentrated in Orange County as in the nation as a whole. Other highly concentrated Orange County industries, as shown in the chart below, include Real Estate and Rental and Leasing (1.62) and Administrative and Support and Waste Management and Remediation Services (1.42).

| Orange County Location Quotients by Industry 2012-2017 | | | | | | |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| Arts, Entertainment, and Recreation | 1.87 | 1.94 | 1.94 | 2 | 1.95 | 1.94 |
| Real Estate and Rental and Leasing | 1.69 | 1.72 | 1.74 | 1.67 | 1.67 | 1.62 |
| Administrative/Support and Waste Management | 1.42 | 1.41 | 1.37 | 1.36 | 1.38 | 1.42 |
| Management of Companies and Enterprises | 1.11 | 1.17 | 1.25 | 1.24 | 1.33 | 1.35 |
| Construction | 1.21 | 1.24 | 1.26 | 1.3 | 1.33 | 1.34 |
| Wholesale Trade | 1.28 | 1.3 | 1.32 | 1.27 | 1.26 | 1.27 |
| Professional, Scientific, and Technical Services | 1.36 | 1.34 | 1.36 | 1.36 | 1.35 | 1.27 |
| Finance and Insurance | 1.26 | 1.3 | 1.29 | 1.31 | 1.25 | 1.25 |
| Manufacturing | 1.25 | 1.24 | 1.22 | 1.18 | 1.17 | 1.17 |
| Accommodation and Food Services | 1.14 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 |

Source: Emsi

The California Employment Development Department (EDD) publishes a Quarterly Census of Employment and Wages that provides another look at industry employment in Orange County. It found that, in 2017, the county's largest industries were Healthcare and Social Assistance (182,908 employees), Accommodation and Food Services (167,751 employees) and Manufacturing (157,589 employees). Industries with the highest growth from 2016 to 2017 included Healthcare and Social Assistance (8,375 employees), Administrative and Waste Services (6,828 employees) and Construction (4,895 employees).

Overall, EDD found that county industries employed a total of 1,585,139 workers in 2017, an increase of 33,611 jobs from the previous year. The Construction and Healthcare and Social Assistance industries have both seen dramatic growth since the Great Recession. Growth in Construction has been fueled by the county's thriving demand for housing and numerous transportation improvement projects, while growth in Healthcare has been largely due to its aging population, which has increased demand for Healthcare-related products and services. The continued growth of the Accommodation and Food Services industry, on the other hand, reflects Orange County's continued status as a world-class tourism and retail destination.
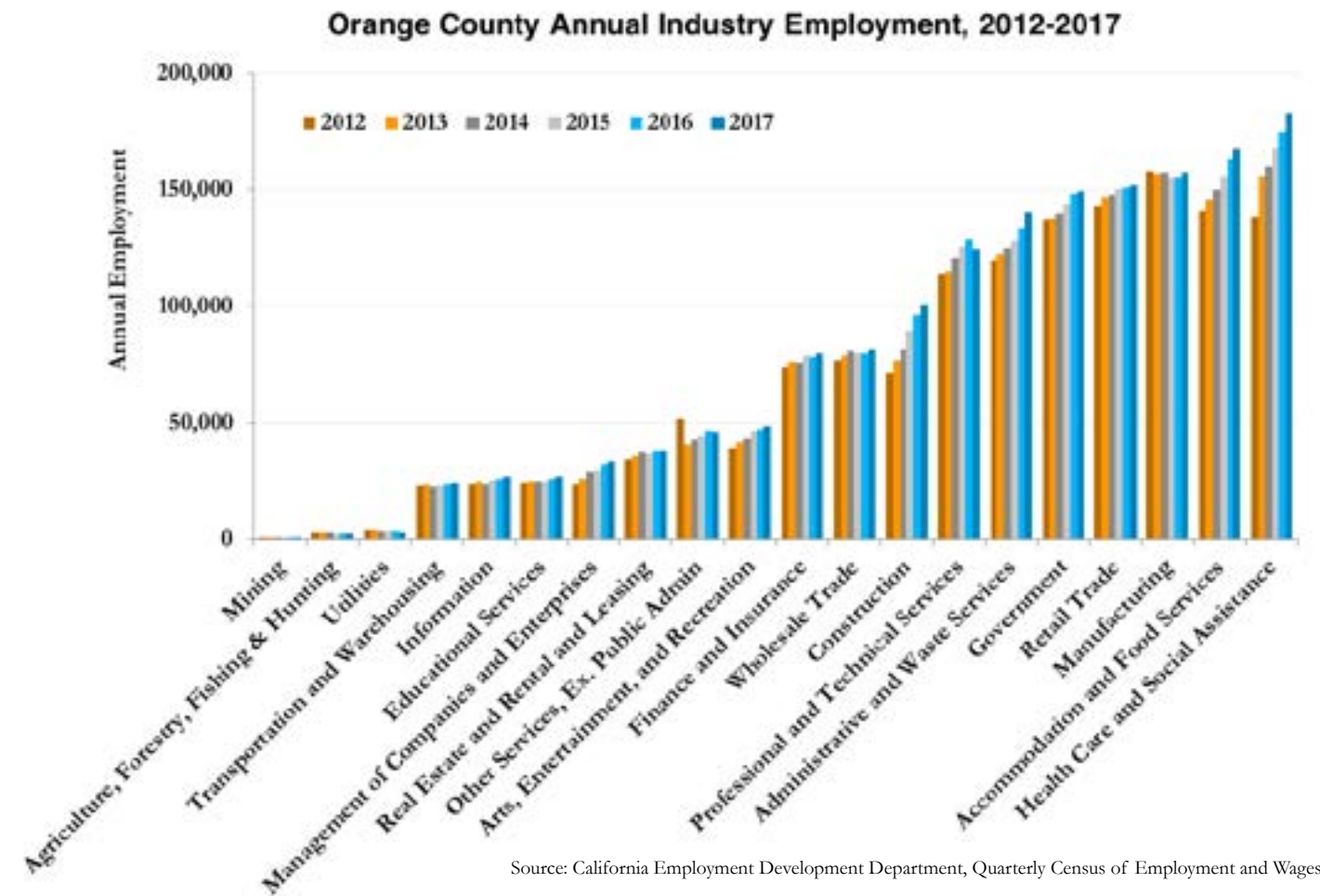


Source: California Employment Development Department, Quarterly Census of Employment and Wages

Orange County's highest paying industries in 2017 included Utilities, with an annual average wage of $123,916, followed by Finance and Insurance ($110,695) and Information ($107,705). The highest absolute growth occurred in the Information sector, where annual wages increased by $6,617, followed by Real Estate and Rental and Leasing ($6,396 increase) and Utilities ($6,084 increase).

Overall, average industry wages totaled $68,519 in 2017, representing growth of $1,420 or 2.1 percent since 2016. Orange County's annual wages have grown by an average of 2.9 percent annual since 2010, the depth of the Great Recession.

## Orange County Annual Industry Wages, 2012-2017
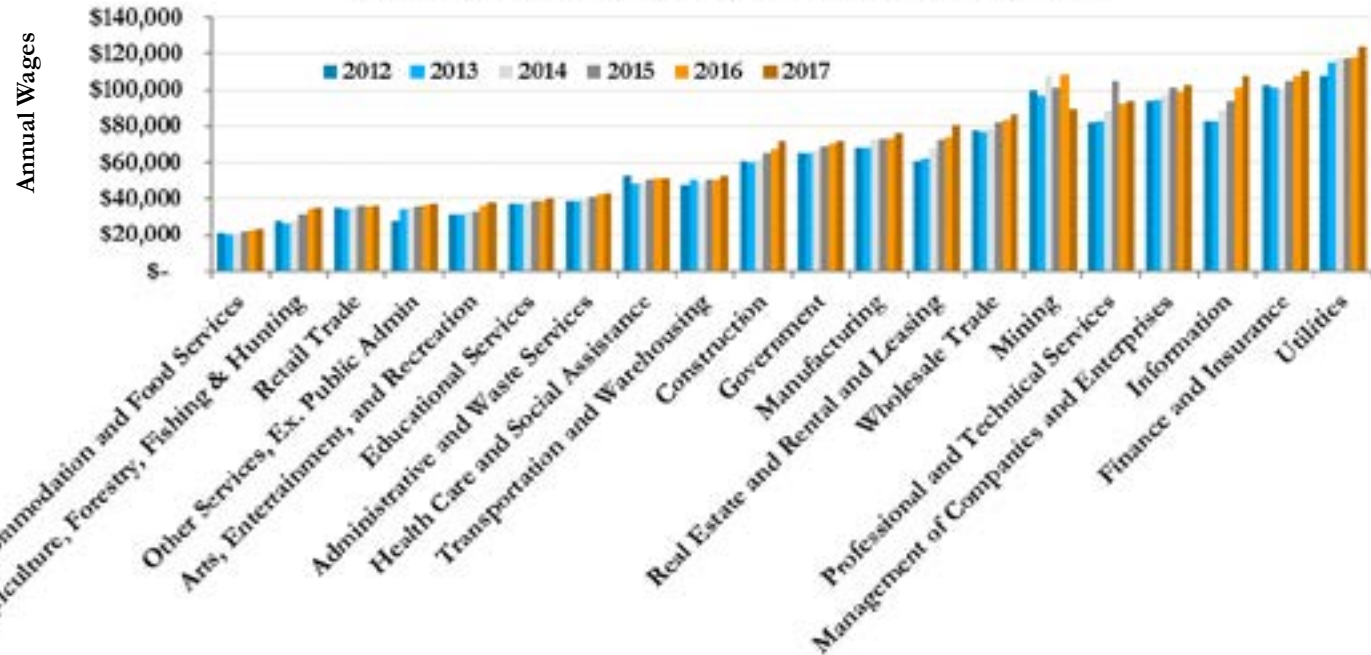


Legend: ■ 2012 ■ 2013 ■ 2014 ■ 2015 ■ 2016 ■ 2017

Source: California Employment Development Department, Quarterly Census of Employment and Wages

## OCCUPATIONAL GROWTH TRENDS

Burning Glass provides job posting data, an essential look at occupational demand in Orange County. Over the past 12 months, Software Developers, Applications had more job postings (almost 10,000) than any other county occupation. Other highly in-demand occupations include Sales Representatives, Wholesale and Distribution (9,112) and Retail Sales Persons (8,248). Registered Nurses, last year's most in-demand occupation, came in 4th place with 8,101 postings.

## Top 10 Orange County Occupations with the Most Job Postings, Last 12 Months
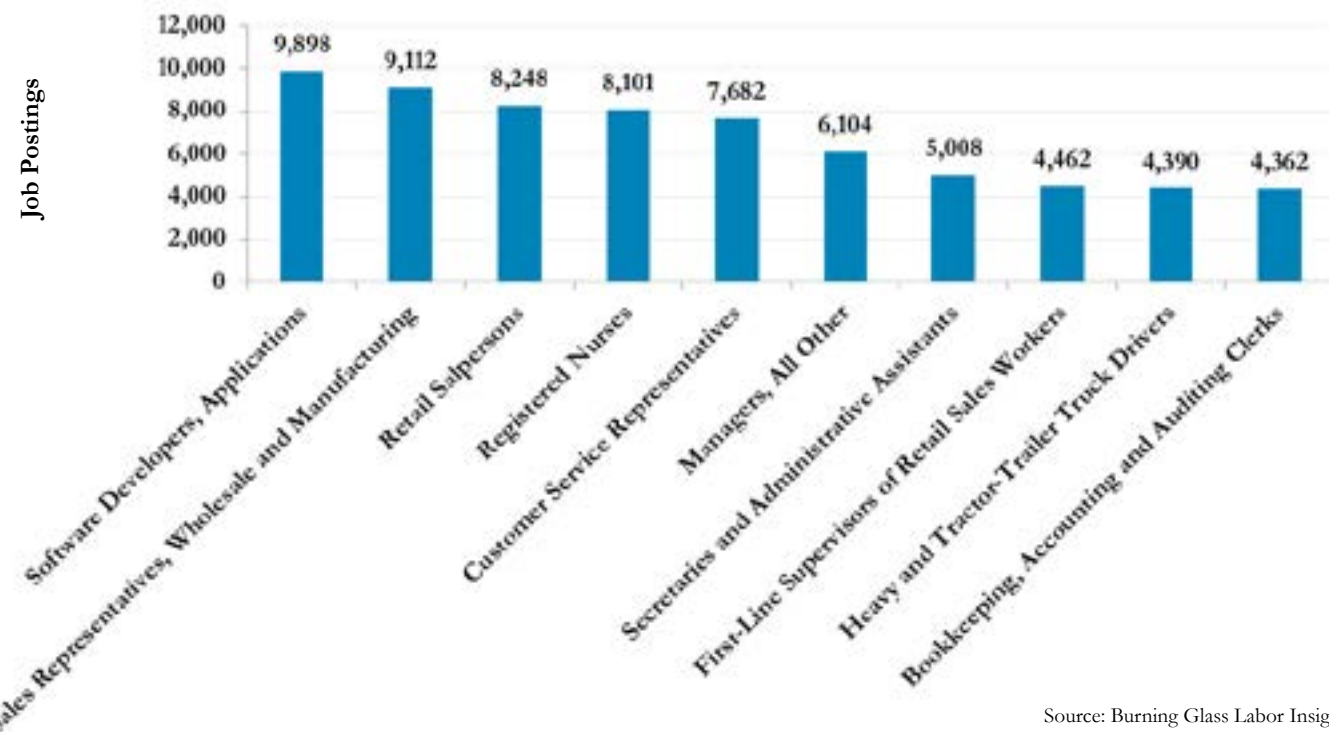


Source: Burning Glass Labor Insight

In terms of broader occupational families as defined by Burning Glass Labor Insight, Office and Administrative Support had the highest number of job posting, with almost 40,000 over the past twelve months, followed by Management with 34,818 job postings and Computer and Mathematical with 31,992 job postings.

## Orange County Job Postings by Occupational Group, Last 12 Months
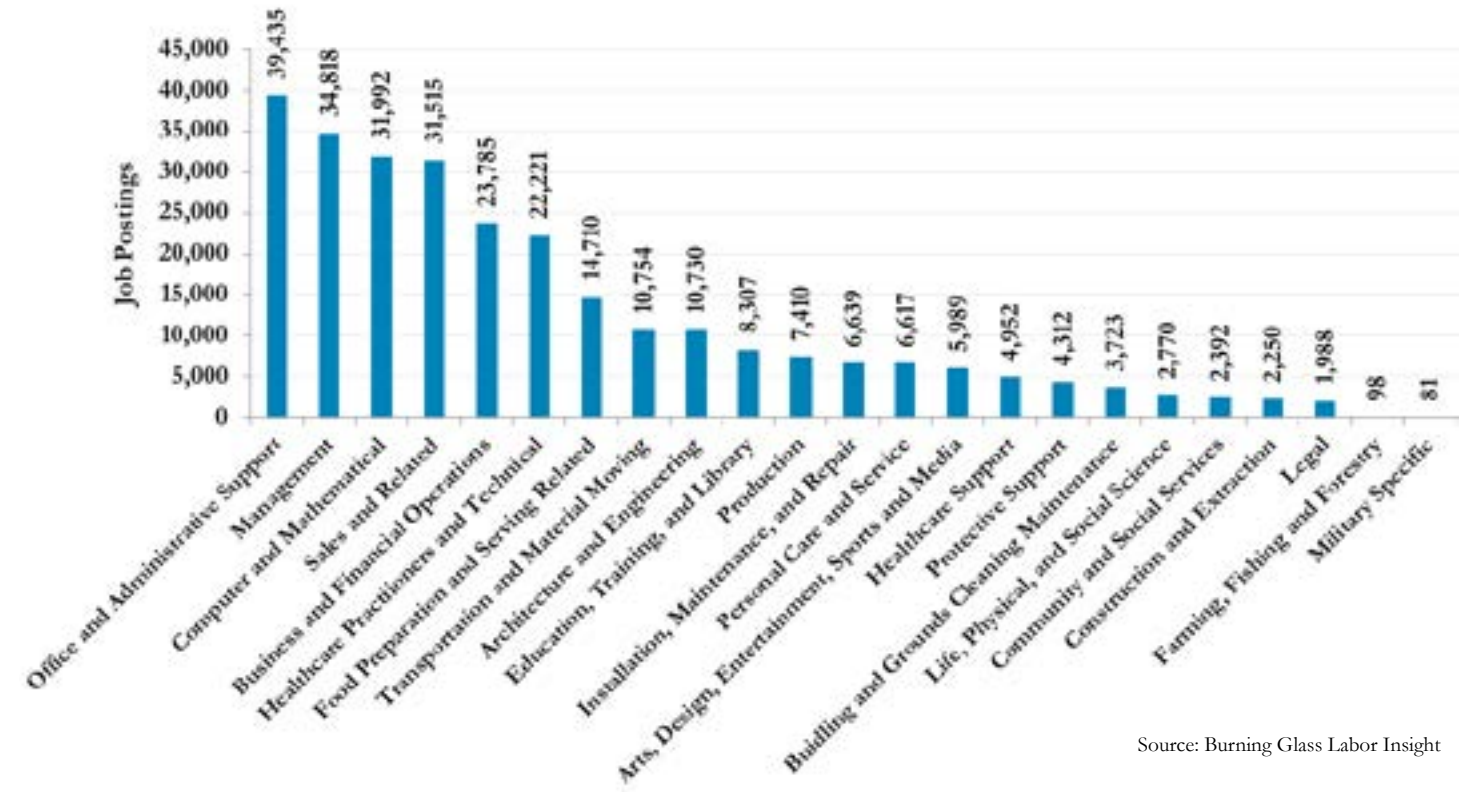


Source: Burning Glass Labor Insight

Burning Glass provides another perspective on Orange County's job market by highlighting "Hard to Fill" jobs and estimating job postings, overall job demand, and the average time needed to fill open positions. The top ten hardest to fill occupations are highlighted below, sorted by the time needed to fill those positions. Based on this criterion, the hardest to fill position with high demand in Orange County was Nanny/Babysitter, followed by Marketing Managers and Construction Managers. While Nanny/Babysitter only had annual average salaries of $32,603, Marketing Managers had average salaries of $90,931 and Construction Managers had average salaries of $94,911, according to Burning Glass.

By highlighting and better promoting or marketing these "hard to fill" positions in Orange County and the lucrative salaries many of them provide, workforce development professionals could help drive applicants to those positions and further reduce the skills gap.

| Hard to Fill Occupations in Orange County, Last 12 Months | | | |
|---|---|---|---|
| BGTOCC | Number of Job Postings | Demand | Time to Fill |
| Nanny / Babysitter | 1,799 | Very High | 69 days |
| Marketing Manager | 1,887 | Very High | 49 days |
| Construction Manager | 1,746 | Very High | 49 days |
| Retail Store Manager / Supervisor | 4,400 | Very High | 45 days |
| Cook | 2,732 | Very High | 45 days |
| Business Development / Sales Manager | 3,387 | Very High | 44 days |
| Software Developer / Engineer | 8,879 | Very High | 43 days |
| Sales Representative | 7,174 | Very High | 43 days |
| Restaurant / Food Service Manager | 2,377 | Very High | 43 days |
| Registered Nurse | 6,597 | Very High | 42 days |

Source: California Community College Chancellor's Office – Management Information Systems Data Mart

EDD projects the fastest-growing occupations expected in Orange County between 2014 and 2024. Overall, Web Developers are expected to see the largest percentage increase at 48.9 percent, followed by Floor Layers, Except Carpet/Wood/Hard Tile at 45.2 percent and Operations Research Analysts at 42.2 percent. These occupations enjoy relatively high wages: $72,161 for Web Developers and $84,609 for Operations Research Analysts. Therefore, the expected employment growth for these occupations will bring significant economic benefits to Orange County. Additionally, many of the fastest-growing occupations are related to the Construction industry, indicating that the state projects an expanding construction industry over the next decade. An expanding Construction sector is welcome news, as planned and currently under construction homes will help make up for the county's housing shortage.



Average Salaries of Fastest-Growing Occupations in Orange County, 2014-2024
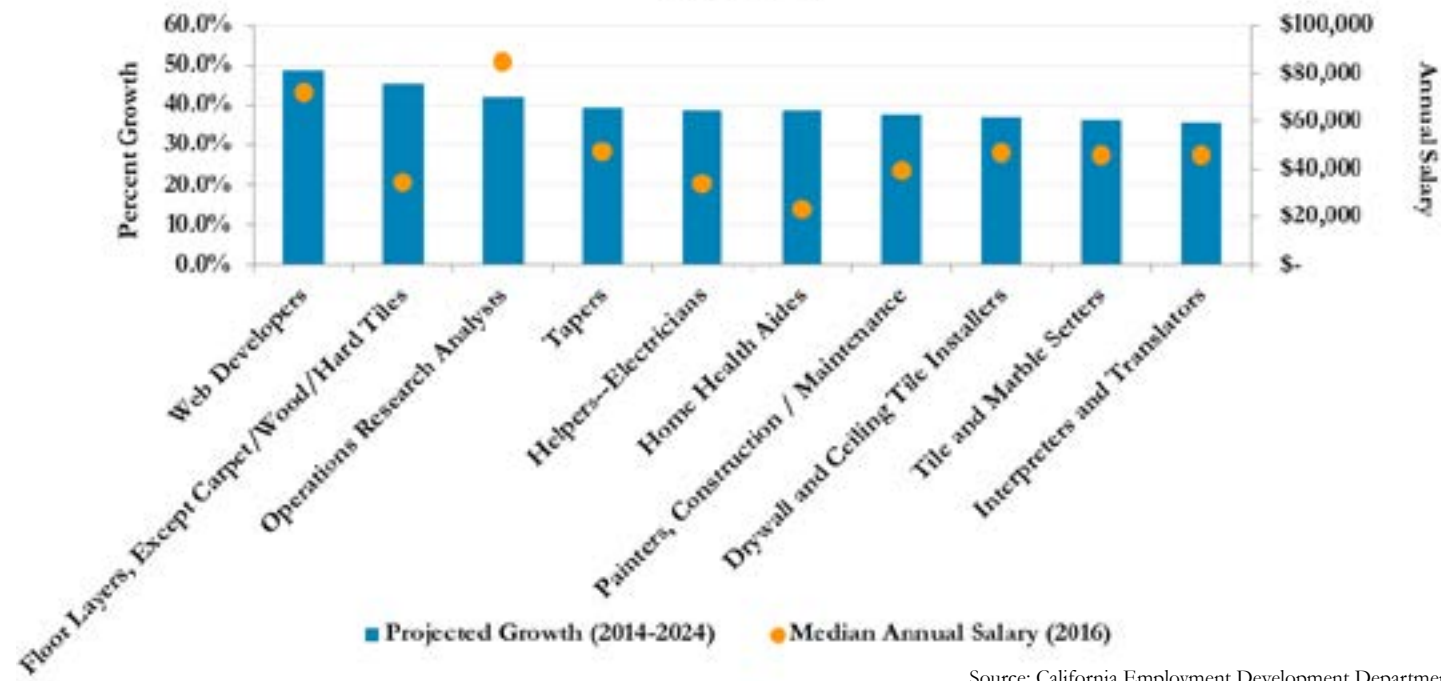
Source: California Employment Development Department

While understanding the in-demand occupations over the past 12 months in the region is important, understanding what these occupations require in terms of baseline and specialized skills is equally important as understanding the required skillsets enables proper education and training for these in-demand positions.

In terms of baseline skills (the in-demand basic skills an individual should have), Communication Skills was the most in-demand, appearing in a total of 94,978 job postings over the past 12 months in Orange County. Other important baseline skills included Microsoft Excel which appeared in 44,684 job postings and Teamwork/Collaboration which appeared in 44,653 job postings. With the exception of Microsoft Excel, this highlights the dramatic importance of soft skills in today in-demand occupations.

### Top Orange County Baseline and Specialized Skills in Job Postings, Last 12 Months

| Baseline Skills | Job Postings | Specialized Skills | Job Postings |
|---|---|---|---|
| Communication Skills | 94,978 | Customer Service | 48,985 |
| Microsoft Excel | 44,684 | Sales | 34,451 |
| Teamwork/Collaboration | 44,653 | Scheduling | 33,761 |
| Organization Skills | 43,779 | Budgeting | 23,057 |
| Detail-Oriented | 37,689 | Project Management | 20,797 |
| Problem Solving | 35,637 | Customer Contact | 18,725 |
| Microsoft Office | 34,502 | Retail Industry Knowledge | 15,696 |
| Writing | 32,408 | Accounting | 14,755 |
| Planning | 29,281 | Repair | 13,612 |
| Computer Literacy | 28,700 | Quality Assurance and Control | 12,694 |

Source: Burning Glass Labor Insight

# LOOKING FORWARD

As explored in more depth in other sections of this report, employers, educators and workforce development professionals will need to work together to plan for current and future shifts in the labor market. Automation, which has already begun to replace jobs, will have ramifications for almost every sector of the economy. While automation will replace a number of low-skill occupations where daily tasks are repetitive, it will also create a number of new occupations, providing some respite to individuals worried about the potential negative impacts of automation on the workforce.

The occupations with the lowest risks of automation tend to require higher educational attainment, such as Bachelor's and Graduate degrees. Burning Glass, for example, found that occupations with the lowest risk of automation include Software Developers, Applications, Registered Nurses, and Computers Occupations, All Other. Overall, the top 10 low-risk of automation occupations had a total of 54,914 job postings over the past 12 months with a mean advertised salary of $85,000; almost 80 percent of all of these occupations require at least a Bachelor's degree.

Occupations with a low-risk of automation tend be to be high-skill, high-wage occupations requiring increased levels of educational attainment suggesting the more skilled a position becomes, the less likely it is to be automated.

### Top 10 Orange County Occupations with Low-Risk of Automation Over Next 20 Years by Job Postings, Last 12 Months

| | Job Postings Last 12 Months | Mean Advertised Salary | Percent of Postings Requiring a Bachelor's Degree |
|---|---|---|---|
| Software Developers, Applications | 9,898 | $109,080 | 95% |
| Registered Nurses | 9,508 | $76,069 | 53% |
| Computer Occupations, All Other | 8,449 | $89,538 | 91% |
| Managers, All Other | 6,917 | $80,185 | 86% |
| First-Line Supervisors of Retail Sales Workers | 4,462 | $45,387 | 49% |
| Human Resources Specialists | 3,612 | $57,484 | 83% |
| Sales Managers | 3,398 | $93,024 | 90% |
| Financial Managers | 3,032 | $110,713 | 91% |
| Medical and Health Services Managers | 2,877 | $79,958 | 77% |
| Marketing Managers | 2,761 | $94,766 | 94% |
| **Total / Weighted Average** | **54,914** | **$85,000** | **80%** |

Source: Burning Glass Labor Insight

> "Overall, the top 10 low-risk of automation occupations had a total of 54,914 job postings over the past 12 months with a mean advertised salary of $85,000; almost 80 percent of all of these occupations require at least a Bachelor's degree."

# 78.8%

**Number of Veterans with higher education**

# 5.4%

**Veteran unemployment rate in 2017**

# VETERAN EMPLOYMENT IN OC

A total of 161,917 veterans call Orange County home, according to the California Association of County Veterans Service Officer's 2018 Annual Report. Overall, Orange County veterans enjoy higher levels of employment, educational attainment, and median incomes than nonveterans, highlighting their importance to the local economy. During their time in the service, veterans learn valuable labor market skills which are highly transferable in today's workforce environment: leadership, teamwork/collaboration, and communication skills. Additionally, depending on their occupations during their service, Veterans often have a high degree of technical skills which line up almost perfectly with the needs and requirements of local employers and can transfer into a number of Orange County's most in-demand occupations and industries.

Veterans, however, had a higher 2017 unemployment rate than nonveterans, which makes it imperative that local stakeholders and policymakers focus on programs that support veterans in the job market. Current programs that provide needed support to local veterans include the County of Orange's Veterans Service Office, the Veteran's Employment-Related Assistance Program (VEAP) provided by the Orange County One-Stop Center, the Orange County Veterans Initiative provided by the Orange County Community Foundation, and the Orange County Veterans and Military Families Collaborative. These organizations provide valuable services and access to programs for many veterans currently residing in Orange County; local stakeholders should consider supporting these programs as well as publicizing their services and beneficial impacts.

## Orange County Veteran Educational Attainment Compared to Non-Veterans, 2017



- Veterans
- Non-Veterans

| | Veterans | Non-Veterans |
|---|---|---|
| Less than High School Graduate | 5.1% | 15.5% |
| High School Graduate | 16.2% | 17.4% |
| Some College or Associate's Degree | 36.9% | 26.9% |
| Bachelor's Degree or Higher | 41.9% | 40.2% |

Source: U.S. Census 2017 1-Year American Community Survey

## Orange County Veterans Employment Status Compared to Non-Veterans, 2017



- Veterans
- Nonveterans

| | Veterans | Nonveterans |
|---|---|---|
| Unemployment Rate | 5.4% | 4.1% |
| Labor Force Participation Rate | 80.8% | 77.6% |

Source: U.S. Census 2017 1-Year American Community Survey

## Median Income and Poverty Rates for Orange County Veterans Compared to Non-Veterans, 2017



- Median Income
- Poverty Rate

Source: U.S. Census 2017 1-Year American Community Survey

# WORKFORCE HOUSING HIGHLIGHT

Orange County's median home price was $735,750 in July 2018, representing 6.6 percent growth from the previous year.



**Orange County Median Home Prices, 2004-2018**

July 2018: $735,750

Source: Corelogic

The California Association of Realtors (CAR) reports that Orange County has Southern California's lowest Housing Affordability Index, which measures the percentage of households that can afford a median-priced home. Only San Francisco and Santa Clara counties had a lower Housing Affordability Index than Orange County, where the median-priced home requires a minimum household income of $175,930.

| CAR Traditional Housing Affordability Index by County | | | |
|---|---|---|---|
| | Q2 2018 | Q1 2018 | Q2 2017 |
| San Francisco | 14 | 15 | 12 |
| Santa Clara | 16 | 17 | 17 |
| **Orange** | **20** | **21** | **21** |
| San Diego | 23 | 26 | 26 |
| California | 26 | 31 | 29 |
| Los Angeles | 26 | 28 | 28 |
| Ventura | 28 | 31 | 27 |
| Riverside | 37 | 39 | 39 |
| San Bernardino | 49 | 52 | 51 |

Source: California Association of Realtors

> " Orange County's median home price was $735,750 in July 2018. Orange County has Southern California's lowest Housing Affordability Index, which measures the percentage of households that can afford a median-priced home."

The graph below shows the historical progression of CAR's Housing Affordability Index from Q2 2013 to Q2 2018. Orange County's Traditional Housing Affordability Index was measured at 23 in Q2 2013 before dropping to 20 the next quarter; it has since hovered around that level. This indicates that since 2013 only around 20 percent of Orange County residents have been able to afford a median priced home in the region, highlighting workforce housing affordability concerns in the region. While Orange County's Housing Affordability Index has stayed consistent, San Bernardino has seen the largest drop in affordability (20 points), followed by Riverside (12 points) and Los Angeles (11 points) counties.

Looking at peer counties in Northern California, Santa Clara's index dropped 8 points, from 24 to 16, while San Francisco's index, already the state's lowest, dropped by a further three points. Overall, the state saw its affordability index drop from 36 in Q2 2013 to 26 in Q2 2018.
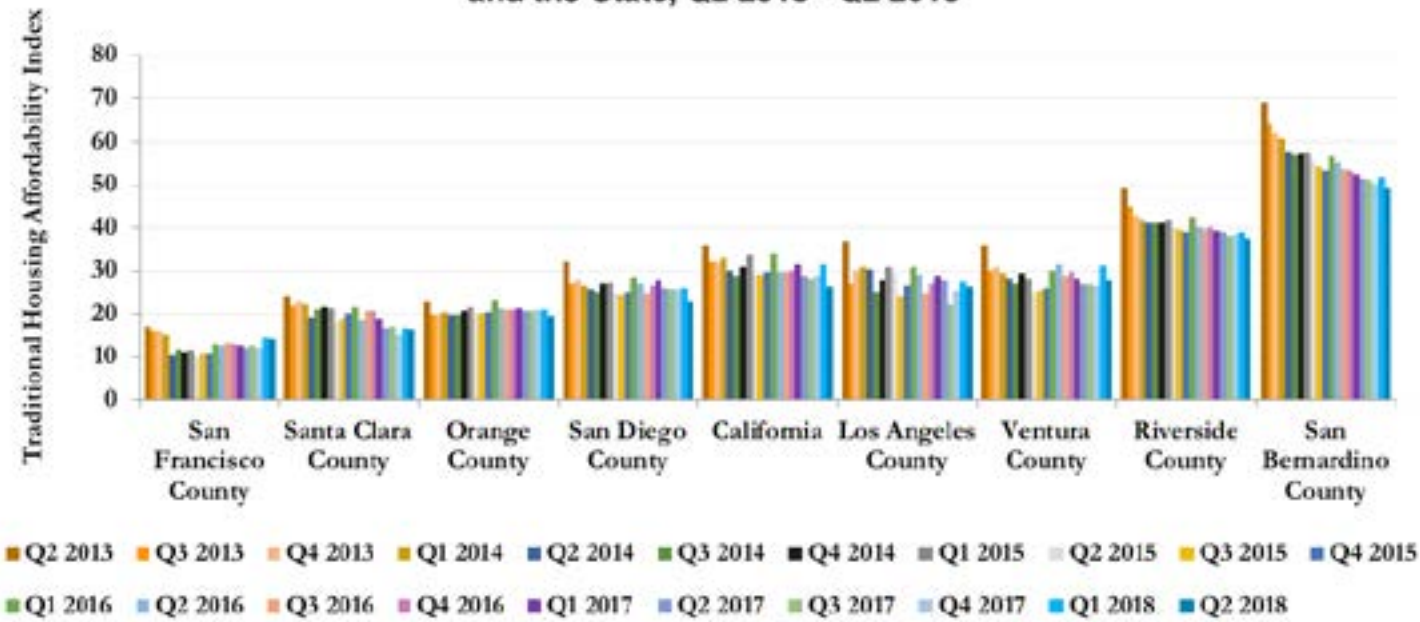


Source: California Association of Realtors

As shown above, the housing affordability crisis is a statewide issue not limited to Orange County. Only 26 percent of California residents can afford a median-priced home, which encourages migration from California to other, less expensive states, as seen in Orange County millennial migration trends of the last few years. This, in turn, could exacerbate long-term issues such as a shrinking working-age population. Conversely, increasing the county and state's supply of affordable housing would create a number of economic benefits, such as a deeper talent pool for local employers and increased economic activity in the form of retail sales.

" **The housing affordability crisis is a statewide issue not limited to Orange County. Only 26 percent of California residents can afford a median-priced home, which encourages migration from California to other, less expensive states, as seen in Orange County millennial migration trends of the last few years. This, in turn, could exacerbate long-term issues such as a shrinking working-age population.** "

# UPDATE ON MIDDLE-SKILLS IN ORANGE COUNTY

In 2016, OCBC released *Closing Orange County's Skills Gap: Preparing to Meet Employer Demand for Middle-Skill Occupations*, which outlined significant unfilled job opportunities for middle-skill workers in the Healthcare, Information Technology, and Advanced Manufacturing sectors. The demand for middle-skill jobs continues to rise and represents an important opportunity for economic growth in Orange County.

## BACKGROUND ON MIDDLE-SKILL JOBS

In 1973, only 28 percent of jobs required a postsecondary education. In 2020, on the other hand, an estimated 65 percent of jobs will require a postsecondary education. While university graduates programs are experiencing healthy increases in earnings, this does not mean that all in-demand, well-paying jobs require a Bachelor's or graduate degree. Middle-skill jobs, which typically require an Associate's degree or certification from a community college, had 13 percent more job openings than available workers in 2017, according to Burning Glass. The U.S. economy created approximately 3.1 million middle-skill jobs between 2010 and 2016.

Looking forward, the Georgetown Center on Education and the Workforce report *Recovery: Job Growth and Education Requirements Through 2020* predicts that 30 percent of all 2020 jobs will fall under the middle-skills category, while 35 percent will require a Bachelor's degree and 35 percent will require only a high school diploma.

Tony Carnevale, a research Professor and Director of the Georgetown University Center on Education and the Workforce, observes that:
- 43 percent of young workers with occupational licenses out-earn the average associate's recipient;
- 27 percent of workers with a license out-earn those with a bachelor's degree; and
- 31 percent of workers with an associate's degree out-earn bachelor's degree holders.

"While it remains generally true that the more education you have, the higher your lifetime earnings, nearly one-third of those with two-year degrees were earning more than average four-year-degree holders… [what matters is] how well the skills learned align with labor market demands—not the amount of time spent in college."

- Hoffman & Schwartz, *Learning for Careers: The Pathways to Prosperity Network*, Harvard Education Press, 2017

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1) From 2010 to 2016, 11.5 million out of 11.6 million new jobs went to workers with education beyond high school and with at least some postsecondary education (3.1 million to those with some college or an Associate's degree, 4.6 million to those with a Bachelor's degree, and 3.8 to those with a Master's).

# MIDDLE-SKILLS AND DEFENSIBILITY

Automation, one of the most important labor market trends, is rapidly transforming many jobs, from factory workers to supermarket cashiers. The jobs most likely to survive this transformation are those that involve many non-routine activities, such as stakeholder interaction or unpredictable physical labor. This, in turn, will have a profound effect on education and workforce training, as the skills, abilities and knowledge bases needed for tomorrow's jobs will be very different than in the past. Middle-skills – skills acquired through postsecondary education such as community college degrees and certificates – are becoming more important in this new labor market.

On one hand, jobs with lower educational requirements are highly vulnerable to automation. Of the 271 occupations that require less than "middle-skills" training, only seven have a high defensibility score, which indicates resistance to automation . On the other hand, despite the fact that jobs that require a Bachelor's degree or higher tend to be more defensible than the rest of the labor market, two other employment categories are growing much faster in Orange County: middle-skill occupations and occupations requiring graduate or professional degrees. Middle-skill jobs in particular have seen rapid increases in job postings, a trend expected to continue going forward.

| Job Zone | 2014 Job Postings | 2017 Job Postings | Increase in Openings | % Change |
|---|---|---|---|---|
| 1 – Less than High School | 10,819 | 11,312 | 493 | 4.6% |
| 2 – High School Diploma | 71,399 | 72,643 | 1,244 | 1.7% |
| 3 – Middle-Skills | 58,747 | 68,745 | 9,999 | 17.0% |
| 4 – Bachelor's Degree | 79,652 | 74,269 | -5,382 | -6.8% |
| 5 – Graduate/Professional Degree | 17,155 | 20,630 | 3,475 | 20.3% |
| Overall | 237,772 | 247,600 | 9,828 | 4.1% |

Source: Burning Glass Labor Insights

Middle-skill jobs have already experienced tremendous growth since the recovery from the Great Recession; the number of middle-skill job postings has increased by almost ten thousand since then, with no other category adding more than 3,500 postings. Overall, middle-skill job openings have increased as a percentage of overall county job market activity, a trend expected to continue in the future. Community colleges play a key role in preparing workers to fill middle-skill roles.

Middle-skill jobs have had an even larger impact on defensible job openings in Orange County; the share of defensible middle-skill job openings increased from 24 percent in 2014 to 29 percent in 2017, faster than the rest of the labor market.



**2014 Middle-Skill Percent of Openings in Orange County**
25% / 75%
■ Middle-Skill ■ Non Middle-Skill
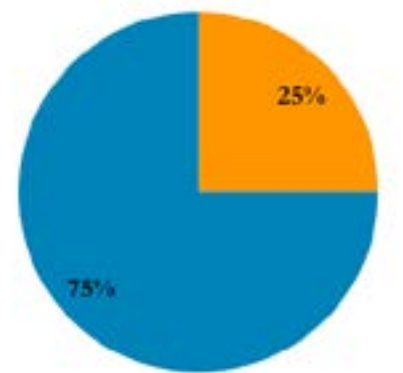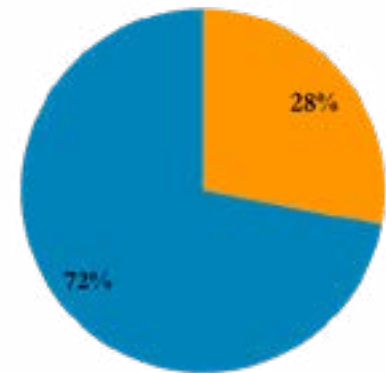
**2017 Middle-Skill Percent of Openings in Orange County**
28% / 72%
■ Middle-Skill ■ Non Middle-Skill

Source: Burning Glass Labor Insights

2) 7 out of the 271 occupations in that set have a defensibility score of .9 or higher. Any occupations with a defensibility lower than .9 are likely to experience at least substantial impacts from automation. See Dimensions of Defensibility, OCBC and OCDE.

## Middle Skills Jobs Defensible Openings in Orange County



Percent of Defensible Jobs in 2014 — 24.3%
Percent of Defensible Jobs in 2017 — 29.4%
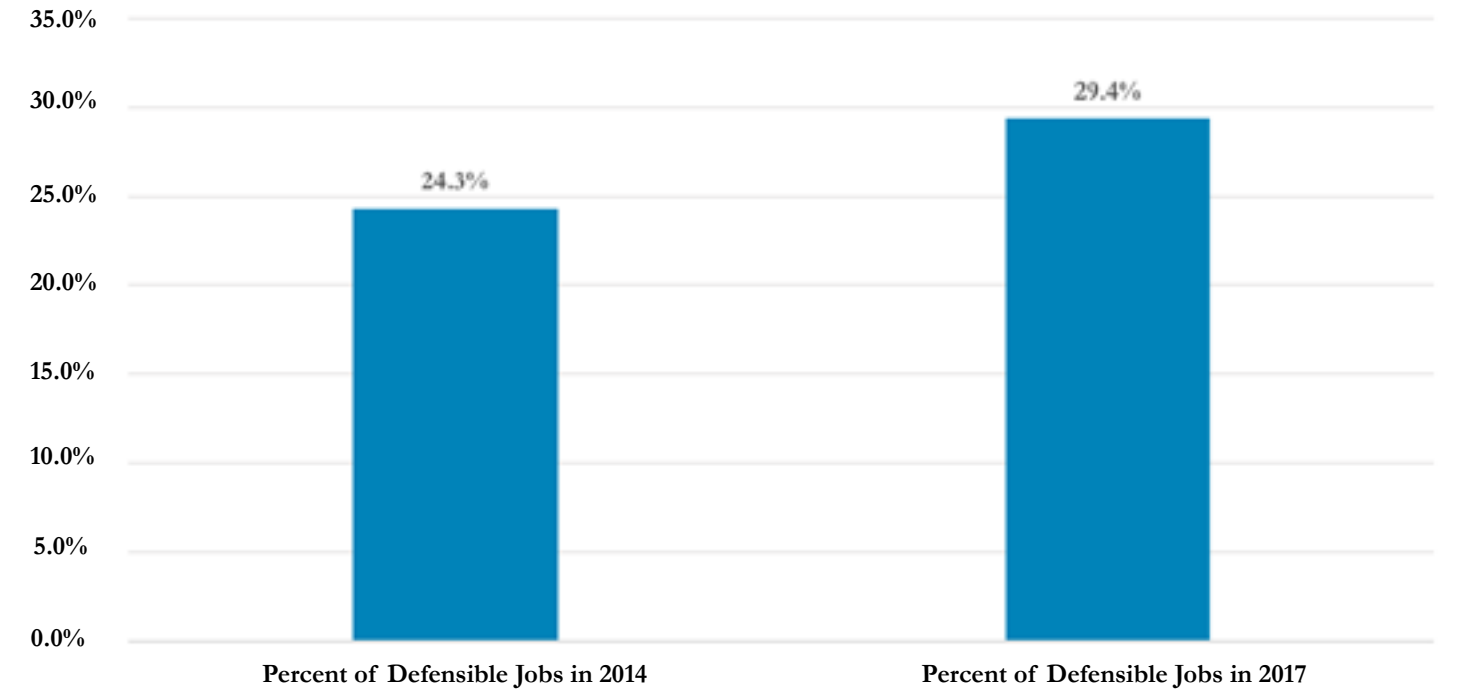
Source: OCBC, The Dimensions of Defensibility

# MIDDLE-SKILLS IN ORANGE COUNTY

The composition of middle-skill job postings in Orange County has also changed over time. Office and Administrative Support was the most in-demand middle-skill occupation in 2014, with 10,754 postings. By 2017, Healthcare Practitioners and Technical occupations had taken the lead, with job postings increasing by more than 50 percent to reach a total of 16,625; Installation, Maintenance and Repair also added more than 600 job postings. Community colleges serve as an important pipeline for these occupations, providing highly relevant middle-skills training.

| Top 5 Fastest Growing 2-Digit O*NET Occupational Families by Postings for Middle-Skills Occupations, Orange County | | | | |
|---|---|---|---|---|
| Occupation | 2014 Postings | 2017 Postings | Change | Percent Change |
| Healthcare Practitioners and Technical | 10,605 | 16,625 | 6,020 | 56.8% |
| Construction and Extraction | 523 | 794 | 271 | 51.8% |
| Life, Physical, and Social Science | 345 | 444 | 99 | 28.7% |
| Office and Administrative Support | 10,754 | 13,241 | 2,487 | 23.1% |
| Installation, Maintenance, and Repair | 3,736 | 4,419 | 683 | 18.3% |

Source: Burning Glass Labor Insights

The changes that have occurred in employment by occupational sector are parallel with the present composition of industry-based demand for middle skills. The most frequent Orange County middle-skill job postings in the last year reflect the changes in employment composition, most notably increased demand for Healthcare, managerial and maintenance-related occupations; Healthcare has become the county's most important middle-skills employing industry, with almost 20,000 job postings in the past year. Other industries opening large amounts of middle-skill jobs included Finance and Insurance, Manufacturing, and Retail Trade.

In short, Healthcare has rapidly become the most important employer of middle-skill workers. The rapid expansion of the Healthcare industry in Orange County in recent years, supported by an increasingly older population requiring additional Healthcare services, has helped drive overall middle-skills occupational growth.

## Orange County Middle-Skills Job Postings by Industry, Last 12 Months



| Industry | Job Postings |
|---|---|
| Health Care and Social Assistance | 19,264 |
| Finance and Insurance | 10,907 |
| Manufacturing | 9,590 |
| Retail Trade | 7,695 |
| Professional, Scientific, and Technical Services | 7,141 |
| Accommodation and Food Services | 6,751 |
| Administrative, Support, and Waste Remediation Services | 6,355 |
| Transportation and Warehousing | 4,361 |
| Educational Services | 3,842 |
| Real Estate and Rental and Leasing | 3,805 |
| Construction | 2,770 |
| Information | 2,095 |
| Public Administration | 1,562 |
| Arts, Entertainment, and Recreation | 1,539 |
| Other Services | 1,532 |
| Wholesale Trade | 1,095 |
| Management of Companies and Enterprises | 347 |
| Utilities | 306 |
| Mining, Quarrying, and Oil and Gas Extraction | 168 |
| Agriculture, Forestry, Fishing, and Hunting | 91 |

Source: Burning Glass Labor Insights

Registered Nurses had more demand than any other middle-skill occupation over the past twelve months, with 8,101 job postings for Orange County. Other in-demand middle-skill occupations included Sales Representatives, Wholesale and Manufacturing, and Customer Service Representatives. The variety of industries represented by these jobs highlights the diversity of middle-skills employment. Additionally, a number of managerial positions, which typically have higher than average salaries, fall under the middle-skills category.

## Orange County Middle-Skills Occupations by Job Postings, Last 12 Months



| Occupation | Job Postings |
|---|---|
| Registered Nurses | 8,101 |
| Sales Representatives, Wholesale and Manufacturing | 7,889 |
| Customer Service Representatives | 7,682 |
| Secretaries and Administrative Assistants | 5,008 |
| First-Line Supervisors of Retail Sales Workers | 4,462 |
| Heavy and Tractor-Trailer Truck Drivers | 4,390 |
| Bookkeeping, Accounting, and Auditing Clerks | 4,362 |
| Human Resources Specialists | 3,612 |
| General and Operations Managers | 2,443 |
| Food Service Managers | 2,372 |
| Maintance and Repair Workers, General | 2,212 |
| Office Clerks, General | 2,183 |
| Computer User Support Specialists | 2,126 |
| Construction Managers | 1,746 |
| Supervisors of Office and Administrative Support Workers | 1,742 |
| Supervisors of Food Preparation and Serving Workers | 1,615 |
| Licensed Practical and Licensed Vocational Nurses | 1,556 |
| Critical Care Nurses | 1,346 |
| Automotive Speciality Technicans | 1,307 |
| Sales Agents, Financial Services | 1,275 |

Source: Burning Glass Labor Insights

The experience requirements of middle-skills job postings, as illustrated in the graph below, shows the accessibility of middle-skills occupations for younger workers. Overall, 38,134 middle-skills job postings only required 0 to 2 years of experience, while 22,486 job postings required three to five years' experience.

This also highlights the importance of local community colleges in terms of helping to fill the widening skills gap in Orange County. Community colleges give students the ability to graduate with an Associate's Degree, certification or transfer degree giving them the option to either enter the workforce sooner or to pursue additional educational attainment at a four-year institution. This flexibility, in turn, allows students to develop a robust mix of hard and soft skills that will prove essential in the labor market.

## Experience Required in Orange County Middle-Skill Job Postings, Last 12 Months



| Experience | Number of Job Postings |
|---|---|
| 0 to 2 Years | 38,134 |
| 3 to 5 Years | 22,486 |
| 6 to 8 Years | 2,690 |
| 9+ Years | 2,429 |

Source: Burning Glass Labor Insights

> " By 2017, Healthcare Practitioners and Technical occupations had taken the lead, with job postings increasing by more than 50 percent to reach a total of 16,625; Installation, Maintenance and Repair also added more than 600 job postings. Community colleges serve as an important pipeline for these occupations, providing highly relevant middle-skills training. "
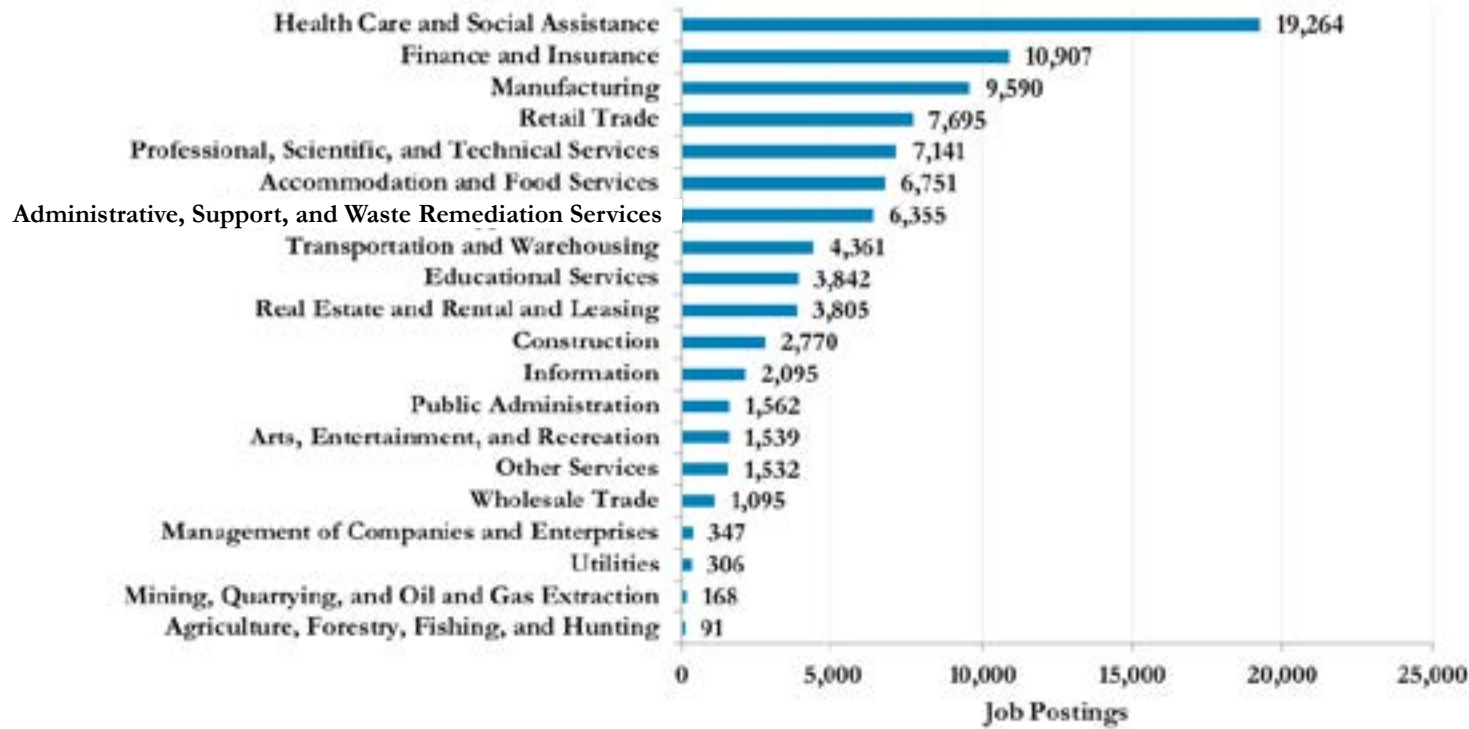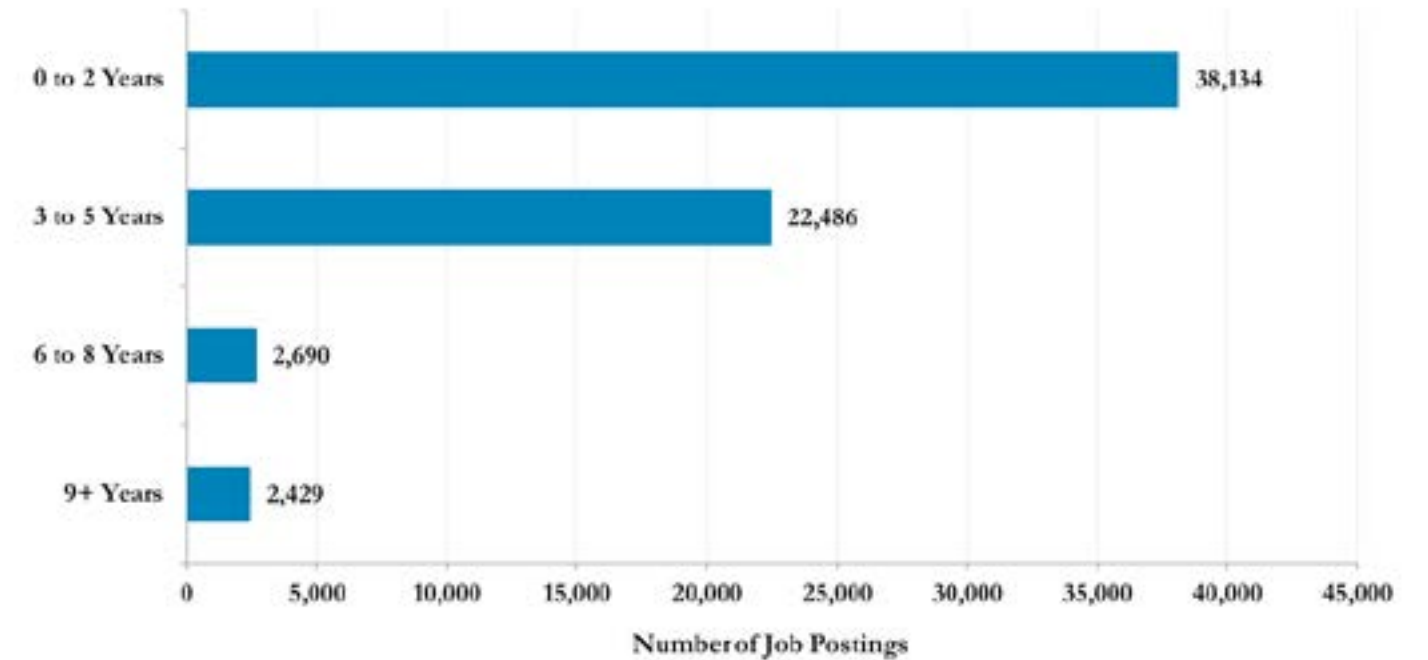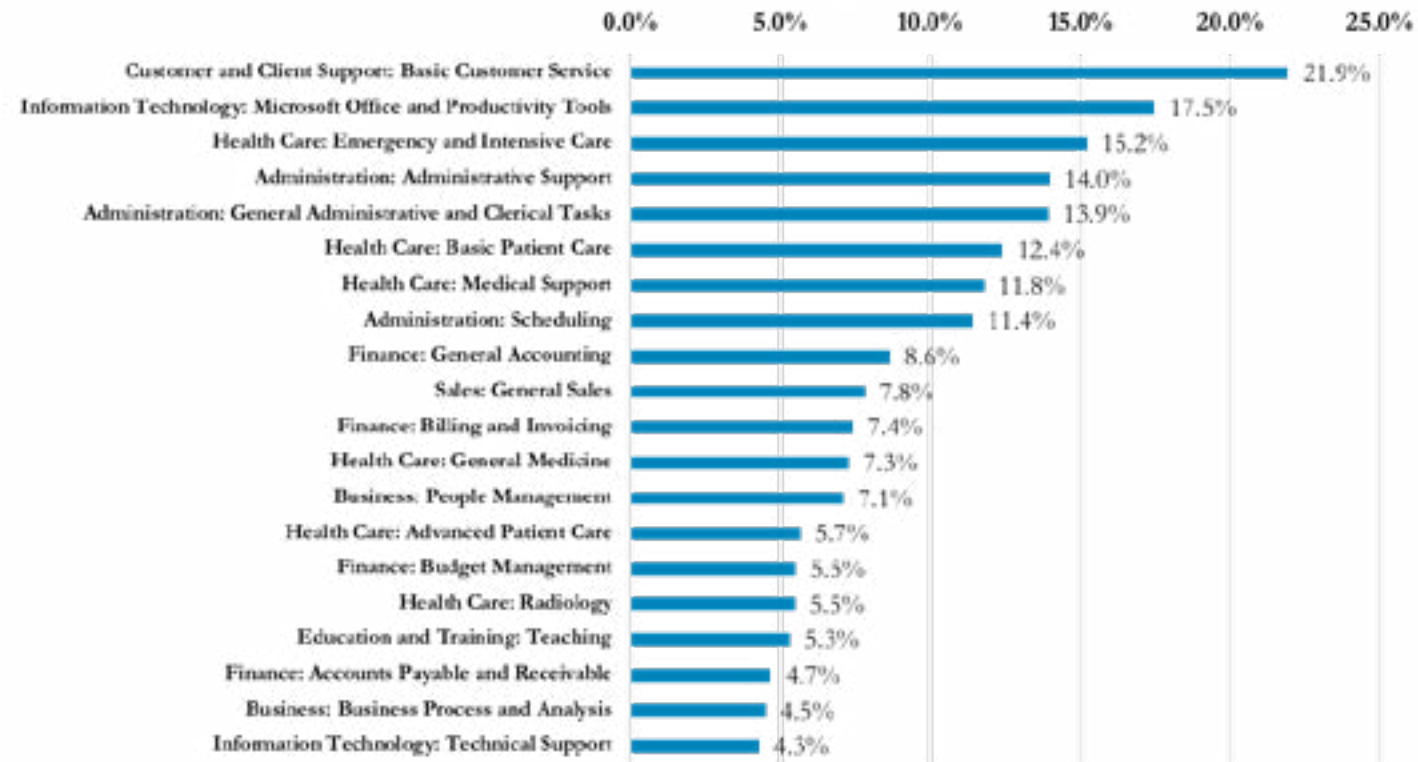
# MIDDLE-SKILLS CERTIFICATIONS AND SKILLS

Job postings for occupations that require a Bachelor's degree typically emphasize skills related to operating and managing an organization's administration, while job postings for occupations without educational requirements focus on labor-intensive skills, with customer contact, lifting, and data entry in the top ten required skills. Middle-skills jobs, a hybrid of these two, usually require a combination of job-specific "hard" and "soft" skills, which makes them unique in the labor market.



### Top Skill Clusters Required in Orange County Middle-Skills Job Postings, 2017

| Skill Cluster | Percent |
|---|---|
| Customer and Client Support: Basic Customer Service | 21.9% |
| Information Technology: Microsoft Office and Productivity Tools | 17.5% |
| Health Care: Emergency and Intensive Care | 15.2% |
| Administration: Administrative Support | 14.0% |
| Administration: General Administrative and Clerical Tasks | 13.9% |
| Health Care: Basic Patient Care | 12.4% |
| Health Care: Medical Support | 11.8% |
| Administration: Scheduling | 11.4% |
| Finance: General Accounting | 8.6% |
| Sales: General Sales | 7.8% |
| Finance: Billing and Invoicing | 7.4% |
| Health Care: General Medicine | 7.3% |
| Business: People Management | 7.1% |
| Health Care: Advanced Patient Care | 5.7% |
| Finance: Budget Management | 5.5% |
| Health Care: Radiology | 5.5% |
| Education and Training: Teaching | 5.3% |
| Finance: Accounts Payable and Receivable | 4.7% |
| Business: Business Process and Analysis | 4.5% |
| Information Technology: Technical Support | 4.3% |

Source: Burning Glass Labor Insight

Baseline skills, also known as fundamental skills, are especially important for middle-skill jobs. The following chart shows the ten most important baseline skills for 2017 middle-skill job postings. Many of the fundamental skills that are important for middle-skill occupations are also important for Bachelor's degree occupations, which points towards growing overlap between jobs with strict educational requirements and jobs that seemingly emphasize specialized skills.

> " **"Soft" Specialized and Baseline skills were especially in demand, with Customer Service and Communication skills appearing in 26,144 and 40,135 job postings, respectively."**

### Top Ten Baseline Skills for Orange County Middle-Skills Job Postings, 2017

| Skills | Percent of Postings |
|---|---|
| Communication Skills | 28.3% |
| Microsoft Excel | 15.6% |
| Organizational Skills | 14.8% |
| Teamwork / Collaboration | 11.5% |
| Detail-Oriented | 11.5% |
| Microsoft Office | 11.3% |
| Computer Literacy | 10.9% |
| Problem Solving | 10.2% |
| Writing | 9.2% |
| Planning | 8.2% |
| Building Effective Relationships | 8.0% |
| Research | 7.8% |

Source: Burning Glass Labor Insight

An analysis of demand for specialized skills provides important insight into middle-skills jobs and their place in the broader labor market, because specialized skill demand is where middle-skills jobs differ from other kinds of jobs. In Orange County, as seen in the following table, Healthcare- and Information-related specialized skills are in demand, as are crosscutting skills such as Customer Service and Scheduling. The importance of skills related to Healthcare reflects this industry's aforementioned importance as a middle-skills employer in Orange County. Specialized skills are also where community colleges particularly add value to aspiring middle-skill workers and the Orange County labor market.

### Top Ten Specialized Skills for Orange County Middle-Skills Job Postings, 2017

| Skills | Percent of Postings |
|---|---|
| Customer Service | 15.1% |
| Scheduling | 11.4% |
| Administrative Support | 10.0% |
| Patient Care | 9.1% |
| Repair | 8.8% |
| Advanced Cardiac Life Support (ACLS) | 7.9% |
| Accounting | 7.8% |
| Sales | 6.2% |
| Acute Care | 6.0% |
| Data Entry | 5.9% |

Source: Burning Glass Labor Insight

"Soft" Specialized and Baseline skills were especially in demand, with Customer Service and Communication skills appearing in 26,144 and 40,135 job postings, respectively. Microsoft Office-related skills were the most important software and programming skills, accounting for the top five most in-demand skills in that category.

| Baseline Skill for Middle-Skills in Orange County | Specialized Skills for Middle-Skills in Orange County | Software and Programming Middle-Skills in Orange County |
|---|---|---|
| Skill | Skill | Skill |
| Communication Skills | Customer Service | Microsoft Excel |
| Microsoft Excel | Scheduling | Microsoft Office |
| Organizational Skills | Sales | Microsoft Word |
| Microsoft Office | Repair | Microsoft PowerPoint |
| Detail-Oriented | Customer Contact | Microsoft Outlook |
| Teamwork/Collaboration | Budgeting | Word Processing |
| Computer Literacy | Administrative Support | Enterprise Resource Planning (ERP) |
| Problem Solving | Data Entry | SAP |
| Writing | Retail Industry Knowledge | Microsoft Windows |
| Multi-Tasking | Accounting | Salesforce |
| Building Effective Relationships | Patient Care | SQL |
| English | Staff Management | Oracle |
| Planning | Customer Billing | QuickBooks |
| Written Communication | Project Management | Microsoft Access |
| Microsoft Word | Quality Assurance and Control | AutoCAD |
| Research | Product Sales | Customer Relationship Management (CRM) |
| Time Management | Appointment Setting | Microsoft Project |
| Verbal/Oral Communication | Cardiopulmonary Resuscitation (CPR) | Adobe Photoshop |
| Troubleshooting | Sales Goals | Adobe Acrobat |
| Bilingual | Advanced Cardiac Life Support (ACLS) | Accounting Software |

Source: Burning Glass Labor Insight

As technological, demographic and social changes continue to transform Orange County's economy, educators and workforce development organizations need to understand these shifts and proactively respond to their potential impacts. The skills gap in particular will limit economic growth and prosperity unless properly addressed, which means that local stakeholders should implement strategies to better prepare students and young workers for open, in-demand positions. While some of these occupations may not provide above-average wages, they do provide ready access to career ladders which offer a number of opportunities across a number of sectors.

# CONCLUSION

In the context of both the looming impact posed by automation to entry-level jobs, and the society-wide assumption that a college degree is "the only acceptable path to a good career," as the Council for Foreign Relations observes in *The Work Ahead: Machines, Skills, and U.S. Leadership in the Twenty-First Century*, middle-skill jobs play an increasingly important but often neglected role in employing Orange County citizens.

Middle-skill workers themselves play particularly important roles in important, growing fields such as Healthcare Information Technology, Medical Data Analytics, Web Development and Advanced Manufacturing. The rise of well-paying middle-skill jobs, which helps level the playing field for those who cannot afford traditional college educations, also represents a response to new challenges created by a changing labor market, which require education and training solutions that can respond to these changes much faster and create programs for 21st century jobs.

Healthcare, as previously mentioned, is Orange County's most in-demand middle-skills sector. As seen in the following chart, Healthcare-related degrees and certificates lead to substantial salary increases, with students on average more than doubling their average salaries from two years before the degree program to two years after. Students who receive Healthcare-related certificates, for example, see a salary increase from $23,447 two years prior to taking the certificate, to $47,139 two years after the certificate, an increase of more than 100 percent. Healthcare degrees lead to an even larger salary increase of more than $30,000 per student.

Just as important, graduates continue to see wage increases over the next phase of their careers, suggesting that these degrees and certificates lead to significant career advancement opportunities in addition entry-level jobs.

| California Community College Salary Data, Average Salary Impact of Health Certificates and Degrees | | | |
|---|---|---|---|
|  | 2 years before | 2 years after | 5 years after |
| Health Certificates | $ 23,447 | $ 47,139 | $ 56,042 |
| Health Degrees | $ 21,464 | $ 52,290 | $ 58,577 |
| Combined | $ 22,412 | $ 49,772 | $ 57,394 |

Source: California Community Colleges Salary Surfer

The following chart shows the five most lucrative Healthcare community college certificate programs, ranked by average salary five years after completing the program. All of these programs offer tremendous return on investment for students, with Physicians Assistants more than tripling their average salaries over a seven-year span to reach an average salary of more than $120,000. The significant increase in average salaries from two years to five years after completion for all of these programs, as mentioned before, reflects the major career advancement opportunities in Healthcare.

| California Community College Salary Data, Top 5 Health Certificates | | | |
|---|---|---|---|
| Curriculum | 2 years before | 2 years after | 5 years after |
| Physician's Assistant | $37,872 | $109,345 | $121,166 |
| Paramedic | $34,434 | $63,680 | $97,197 |
| Diagnostic Medical Sonography | $25,256 | $80,610 | $88,007 |
| Registered Nursing | $20,611 | $74,863 | $83,194 |
| Radiologic Technology | $15,313 | $71,776 | $80,019 |

Source: California Community Colleges Salary Surfer

# WHERE ARE ORANGE COUNTY'S MIDDLE-SKILL WORKERS?

The following table provides insight into Orange County's middle-skills geography by showing the top 10 Orange County cities by percent of 18-64 year old residents in each of three education levels – high school diploma or below, middle-skills (education level above high school, but not a 4-year degree), and Bachelor's degree and higher (graduate or professional degrees).

At the county level:

- 659,409 residents, or 33.5 percent of the population aged 18-64, had a High School Diploma or Below;

- 640,575 residents, or 31.5 percent were middle-skill (either some college experience with no diploma or an Associate's degree); and

- 695,354 residents, or 35 percent, had a Bachelor's degree or higher.

These statistics highlight the region's ability to potentially address the middle-skill gap through education and training programs focused on gaining valuable, in-demand middle-skills and abilities. These results are not evenly spread across county cities. A breakdown of the top 10 Orange County cities in terms of overall workforce (18-64) population, as well as at different age cohorts, can help stakeholders and policymakers identify how and where to implement middle-skills strategies.

Possible target demographics include:

- High school graduates without further education that can be connected to a community college degree or certificate program to access a middle-skill job;

- Disconnected youth who never graduated high school but are trying to get reintegrated into the workforce and need additional education/training; and

- Underemployed workers who are looking for additional education/training to advance their career in a middle-skill job opportunity.

Increased educational attainment and its corollary, higher salaries, will positively impact members of these groups as well as their families, neighborhoods and communities. On a broader scale, equipping these individuals with the skills necessary to fill in-demand middle-skills positions will help the regional economy as a whole, and contribute to future growth.

The table below shows Orange County's top cities by percentage of available middle-skills workforce: cities with high percentages of residents who have completed high school or below or middle-skills education (Associate's degrees and/or some college, which also includes community college certificates). County cities with high percentages of middle-skill residents, as seen below, include Brea, Cypress and La Palma, making them potentially attractive locations for middle-skills employers. Workforce development organizations should also note these middle-skills cities and implement programs to reinforce residents' skills and knowledge bases so that these cities can continue to provide valuable workers to local and regional employers.

Similarly, workforce development organizations should take into account Orange County cities with high proportions of residents with high school diplomas and below, as these cities represent significant opportunities for effective training and educational programs. Residents in cities such as Santa Ana, Stanton and Garden Grove would benefit tremendously from training and educational programs aimed at improving their educational attainment rates and enabling them to better fill open middle-skills positions, as these positions provide both higher wages and scalable career ladders which can lead to advanced or managerial positions. A collaborative effort between regional employers, workforce development organizations and local community colleges would enable residents of all working ages to access cost-efficient programs and enable them to both dramatically improve their quality-of-life and contribute to economic growth and activity in these communities.

| Top Ten Orange County Middle-Skills Cities, Current and Potential, 18 to 64 Age Cohort | | | |
|---|---|---|---|
| High School and Below | | Middle-Skills (Associate's Degree and Some College) | |
| Santa Ana | 63.6% | Brea | 39.0% |
| Stanton | 52.8% | Cypress | 37.7% |
| Garden Grove | 47.5% | La Palma | 37.5% |
| Anaheim | 46.7% | Huntington Beach | 37.3% |
| Westminster | 42.7% | Los Alamitos | 37.2% |
| La Habra | 41.6% | Laguna Woods | 36.7% |
| Buena Park | 38.9% | Placentia | 36.2% |
| San Juan Capistrano | 38.0% | Dana Point | 35.8% |
| Orange | 34.9% | Fountain Valley | 35.8% |
| Tustin | 34.8% | Orange | 35.8% |

Source: U.S. Census Bureau, 5-Year ACS2017 American Community Survey

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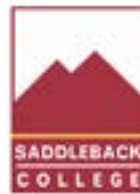
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