



2016-
2021



LOS ANGELES: PEOPLE, INDUSTRY AND JOBS

INSTITUTE FOR APPLIED ECONOMICS
Los Angeles County Economic Development Corporation



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2016-2021



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This report was commissioned by the Los Angeles County and City of Los Angeles Workforce Development Boards.

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EXECUTIVE SUMMARY

Workforce Development Boards (WDBs) are components of a federally-funded system designed to connect job seekers with employer businesses in local communities in order to improve the prosperity of both residents and industry in those communities. The implementation of the new Workforce Innovation and Opportunity Act of 2014 (WIOA) requires WDBs to engage in a holistic and regionally cooperative approach to its programs such that workforce development is to be better aligned with economic development priorities.

These pages outline the characteristics of the people, industry and jobs in Los Angeles County and in the City of Los Angeles.

Demographic Portrait

Social and economic characteristics of the residents of Los Angeles County provide context and insight into the strengths and challenges of the community. Based upon this information, trends and patterns are revealed and can be used to target outreach programs and other types of development efforts.

Population dynamics are important to resource allocation and future planning and development in an area. The size of a population, along with its growth and/or decline, will affect an area’s standard of living, levels of consumption, environmental footprint, infrastructure needs, and more.

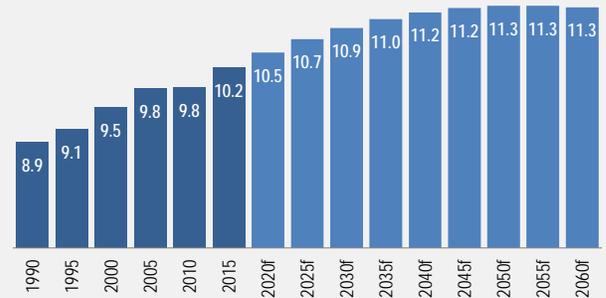
Since 1990, the population in Los Angeles County has increased by nearly 16 percent (Exhibit E-2), while the population in the City of Los Angeles has also increased by 16 percent over the period, both with an average annual growth rate of 0.6 percent per year (Exhibit E-3). From 1990 through 2016, the City of Los Angeles has added 545,300 residents, accounting for 39.6 percent of the 1.38 million additional residents added in Los Angeles County during that period.

Exhibit E-1
Selected Demographic and Income Characteristics 2015

	California	LA County	City of LA
Population	39,144,818	10,170,292	3,971,896
Median age	36.2	36.1	35.0
Households	12,896,357	3,293,095	1,360,164
Average household size	3.04	3.09	2.92
Median household income	\$64,500	\$59,134	\$52,024
HH below poverty level	13.9%	15.6%	18.7%
Per capita income	\$31,587	\$29,403	\$30,136
Individuals below poverty	15.3%	16.6%	20.5%
Median home value	\$449,100	\$497,200	\$542,100

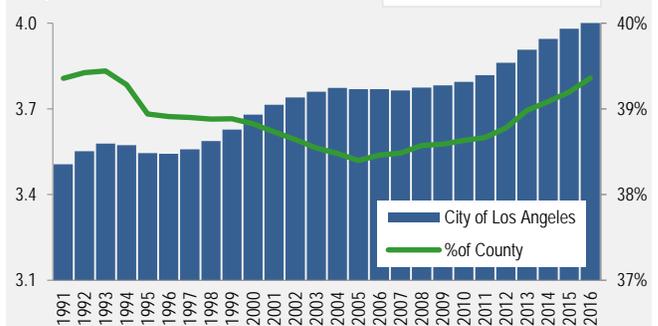
Source: 2015 ACS 1 year estimates

Exhibit E-2
Population in Los Angeles County (millions)

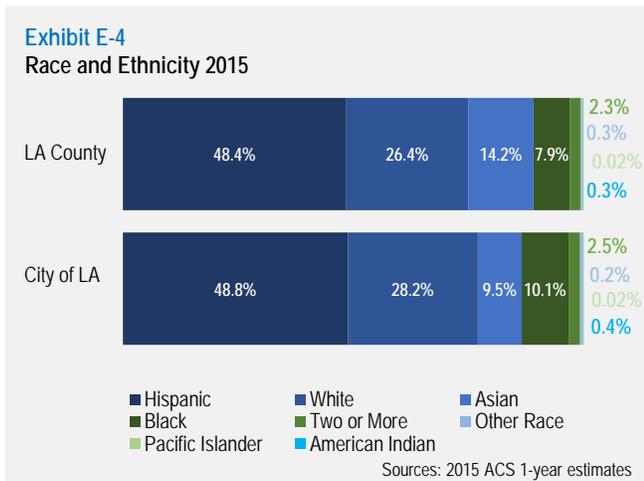


Source: California Department of Finance

Exhibit E-3
Population in City of Los Angeles (millions)

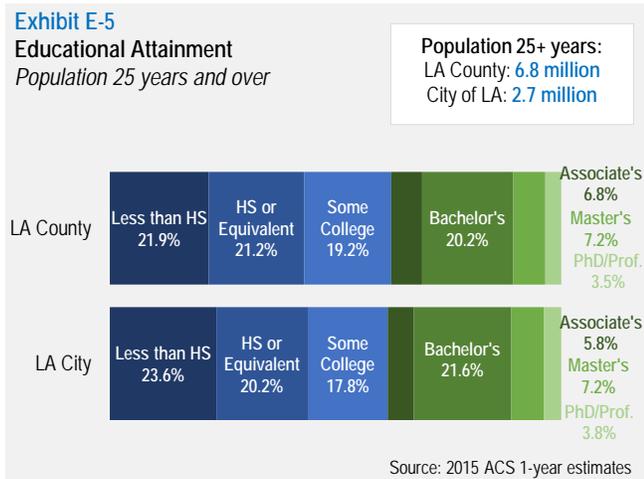


Source: California Department of Finance



Race and Ethnicity

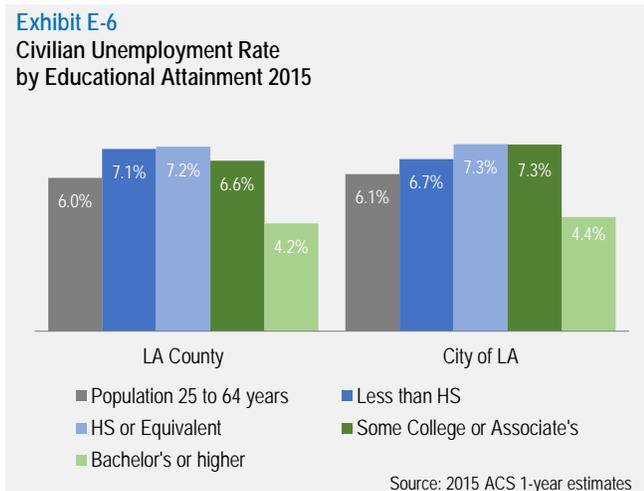
The City of Los Angeles and Los Angeles County as a whole are racially and ethnically diverse. Approximately half of the resident population in both geographies identify as having Hispanic or Latino origins (Exhibit E-4).



Educational Attainment

Educational attainment is a key element in understanding challenges and opportunities present in the available workforce. For an individual, it is a factor in unemployment, earnings potential and poverty status, while from a business perspective, educational attainment of the resident population represents the quality of their labor pool.

Areas with high rates of low educational attainment usually face challenges such as higher rates of unemployment and poverty and will therefore use higher levels of public services and resources.



The city and county both have a large proportion of their resident population with low levels of educational attainment (Exhibit E-5). Close to a quarter of the population has less than a high school education and high school graduates (or equivalent) account for an additional 20 percent. As an increased number of jobs require higher skill levels, a shortage of individuals with higher levels of education can result in fewer prospects for their employment, and consequently higher rates of unemployment.

Education and Unemployment

The highest unemployment rates, in both the City of Los Angeles and Los Angeles County, exist for individuals with lower levels of educational attainment (Exhibit E-6).

Residents with a Bachelor's degree or higher had an unemployment rate of 4.2 percent in the County (4.4 percent in the City) in 2015, significantly lower than the rate experienced by those at the opposite end of the spectrum—less than a high school education and high school diploma or equivalent reported unemployment rates of 7.1 percent (6.7 percent) and 7.2 percent (7.3 percent) respectively.

Income and Poverty

For many, earnings from employment represent the most significant portion of all income. Job-related earnings provide insight into the population’s standard of living. Identifying specific areas or populations that may need targeted services or programs may increase their efficacy.

Earnings differentials exist among employed individuals with varying levels of educational attainment. Those with the highest level of education—a graduate or professional degree—earn an annual wage premium of about \$50,000 over those with less than a high school education (Exhibit E-7).

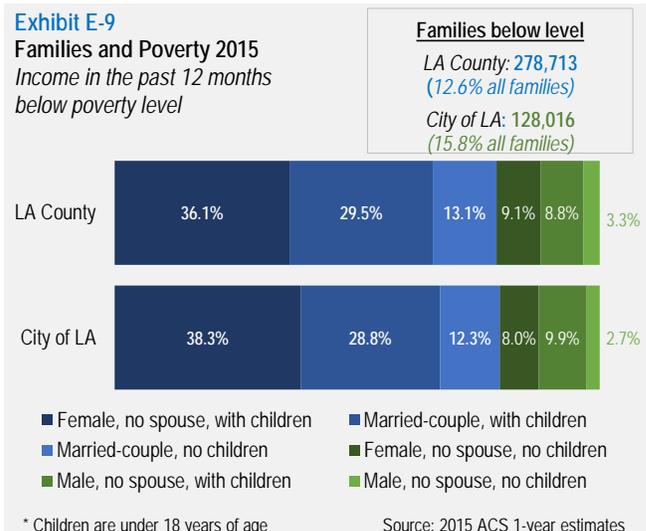
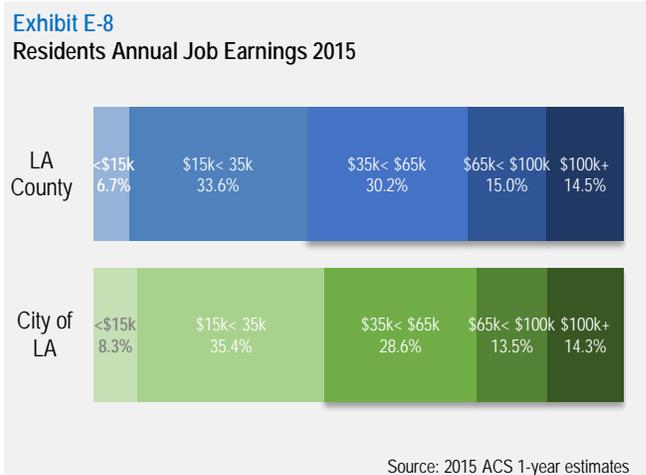
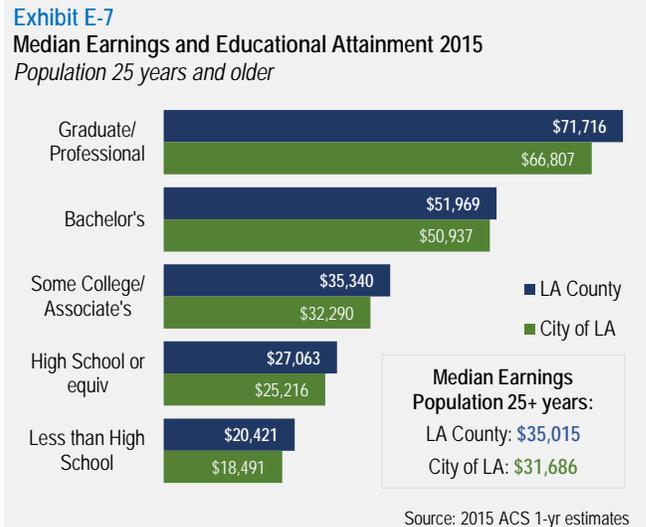
Approximately 29 percent of working residents in Los Angeles County earn more than \$65,000 per year (Exhibit E-8). The majority of working residents in the County and in the City of Los Angeles earn between \$15,000 and \$65,000 annually. Residents who earned less than \$15,000 per year represented close to eight percent of the total. Working residents earning \$100,000 or more annually account for just less than 14 percent of all employed residents in both geographies.

The combination of higher rates of unemployment and lower annual median earnings yield higher levels of poverty for those with lower levels of educational attainment.

Poverty is a relative measure of income inequality. Those who live below poverty level face additional challenges as they lack the resources necessary to maintain a certain quality of life; they do not have the same choices and options in regards to nutrition, health care, housing, education, safety, transportation and such.

Of the total families in Los Angeles County in 2015, nearly 13 percent have had their incomes fall below the poverty level in the 12 months prior (Exhibit E-9). In the City of Los Angeles that share increases to almost 16 percent.

Of those families living below the poverty level, both in the city and countywide, single mothers with children under the age of 18 years head approximately 40 percent. Families headed by a married couple account for another 40 percent of all families living under the poverty level, the majority of whom have children under the age of 18 years.



Employment, Industries and Jobs

Employment opportunities for residents of Los Angeles County will depend on the health of the regional economy.

Los Angeles County was hard hit during the recession, and has experienced a slow and anemic recovery. From an employment base of 4.2 million at the pre-recession peak in December 2007 to a post-recession trough of 3.9 million, the county saw a loss of more than 330,000 jobs, and an unemployment rate reaching a high of 12.5 percent (Exhibit E-10).

The City of Los Angeles fared somewhat worse, with an unemployment rate consistently at least 0.5 percentage points above the county rate, standing currently at 6.7 percent—both are above the state rate of 6.2 percent, which is also above the national rate, which stood at 5.3 percent in 2015.

Recovery of all jobs lost during the recession did not occur until 2015 (Exhibit E-11). Still, this does not take into account the job *growth* needed to accommodate labor force growth.

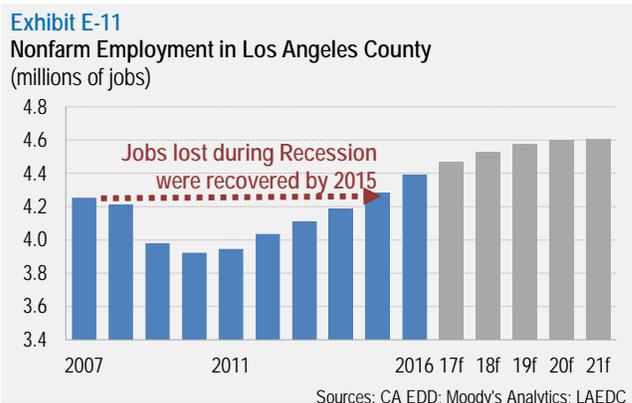
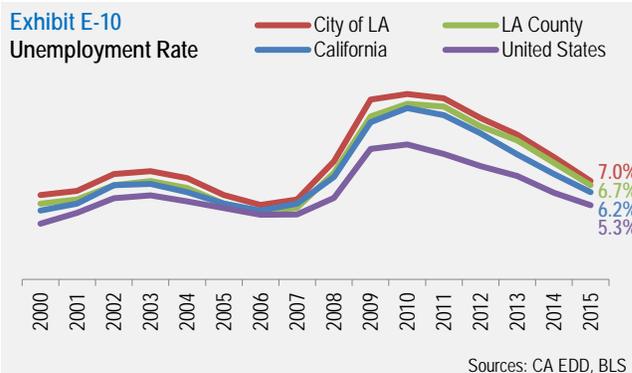
Most industry sectors will follow this general contour of post-recession recovery followed by moderation. However, there are differences among industries. Recovery strength in many cases is determined by the magnitude of the industry’s decline during the recession. Industries where employment fell steeply are expected to experience stronger than average growth as they recover from these deep losses.

The expected employment growth in individual sectors at the county level is shown in Exhibit E-12. While these growth rates are expected to apply at the city level as well, the projected job creation will differ given the different mix of industries in the two regions.

Between 2016 and 2021, the economy is expected to add over 206,700 new jobs in nonfarm industries across the county, and about 67,500 new jobs in the City of Los Angeles.

Industries to Target

Economic development priorities are organized around several priorities. Among these are encouraging job growth in industries that are most competitive and that will generate high-paying jobs that will propel economic growth and wealth creation for all residents.



Industry	Annual Average % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.0%	74.2
Good Producing Industries:	0.0%	-0.8
Natural Resources and Mining	0.6	0.0
Construction	1.5	3.2
Manufacturing – Durable Goods	-0.8	-1.6
Manufacturing – Nondurable Goods	-1.0	-2.3
Service Providing Industries	1.1%	105.5
Wholesale Trade	0.9	3.4
Retail Trade	0.6	4.4
Transportation, Warehousing, Utilities	0.4	1.4
Information	0.1	-1.2
Financial Activities	0.8	3.6
Professional and Business Services	1.4	15.9
Educational and Health Services	1.7	17.7
Leisure and Hospitality	1.5	15.3
Other Services	0.8	2.5
Government	0.8%	12.0

Sources: California Employment Development Department; LAEDC

Workforce development priorities are often in alignment with economic development goals and cognizant of the need to supply a workforce prepared for the jobs of the future, but are also motivated by the immediate need to match those most in need with viable employment opportunities. To fulfill this mission, a broader view of the job market is needed. Augmenting those industries which may drive economic growth and prosperity, population-serving industries will provide the largest number of jobs in terms of job creation, since although they may grow slowly they are large.

Our criteria for choosing target industries thus include (1) industry growth rate – those demonstrating high rates of growth are preferred to those growing slowly; (2) potential job creation – the numbers of jobs projected to be added is also an important metric; (3) industry competitiveness – in light of regional economic development goals, industries that are competitive against other regions are preferred; and (4) prevailing wages – higher wages benefit workers and are preferred to industries that pay lower wages.

Using these sometimes overlapping, sometimes competing goals, the following industries are identified as targets for specific economic and workforce development interventions (in order of relevant NAICS):

- ▶ Construction industries (NAICS 236, 237, 238)
- ▶ Selected manufacturing (fashion, aerospace, analytical instruments, pharmaceuticals, medical devices—NAICS 313, 314, 315, 316, 325, 334, 336, 339)
- ▶ Trade and logistics (NAICS 42x, 48x, 49x)
- ▶ Entertainment and infotech (NAICS 511, 512, 515, 518, 519)
- ▶ Health services (NAICS 621, 622, 623)
- ▶ Leisure and hospitality (NAICS 721, 722)

Occupational Analysis

The overall net growth of an occupation is a consequence of its contribution to industries that are growing and to industries that are declining. Additionally, workers within industries leave current positions, either through retirement or through promotion, or for other reasons, leaving positions open and in need of replacement.

The largest number of overall openings will occur in the largest occupational groups, such as office and administrative support occupations, food preparation and serving occupations, and healthcare occupations (practitioners, technicians and support) (Exhibit E-13 shows openings for Los Angeles County). Many of these

occupations require lower levels of education and training, but approximately half of all occupational openings are middle-skilled occupations, requiring and educational attainment of more than a high school credential but less than a four-year college degree.

Exhibit E-13
Occupational Growth in Los Angeles County 2016-2021

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	8,320	24,340	32,660
13-0000	Business and financial	8,530	22,590	31,110
15-0000	Computer and mathematical	3,770	8,640	12,400
17-0000	Architecture and engineering	1,340	9,450	10,800
19-0000	Life, physical, social science	1,510	5,250	6,750
21-0000	Community and social services	6,060	9,050	15,110
23-0000	Legal occupations	1,680	3,620	5,300
25-0000	Education, training and library	6,680	13,150	19,830
27-0000	Arts, entertainment, sports	2,530	12,850	15,380
29-0000	Healthcare practitioners	17,420	22,850	40,270
31-0000	Healthcare support	10,520	12,980	23,500
33-0000	Protective services	7,760	18,990	26,740
35-0000	Food preparation and serving	31,930	75,040	106,970
37-0000	Building/grounds maintenance	10,180	12,360	22,540
39-0000	Personal care and service	14,060	22,740	36,810
41-0000	Sales and related	12,230	62,410	74,640
43-0000	Office and administrative	31,330	66,130	97,460
45-0000	Farming, fishing and forestry	230	690	920
47-0000	Construction and extraction	7,800	9,900	17,700
49-0000	Installation, maint / repair	4,030	17,940	21,970
51-0000	Production	-2,560	28,050	25,500
53-0000	Transportation/material moving	11,850	33,160	45,010
Total*		197,200	492,100	689,300

* May not sum due to rounding
Source: Estimates by LAEDC

Youth Ages 16 to 24 Years

A significant portion of the working aged population in the City of Los Angeles and the County of Los Angeles as a whole are young working-aged individuals between the ages of 16 years to 24 years. They represent 13.8 percent of the total working aged population of 16 years and older in the City and 13.2 percent countywide (Exhibit E-14).

As new entrants into the job market, the population aged 16 to 24 years may lack knowledge on what is required to be successful in their job search, they may lack workforce experience in general, and they may lack skills that are easily obtained through training that can increase employment opportunities.

Select Target Populations

Los Angeles County is composed of many populations that face unique challenges in the workforce, including those of varying race and ethnicity, the disabled, single parents, individuals with limited English proficiency, and those nearing retirement age (Exhibit E-15).

Each of these target populations have varying rates of labor force participation and unemployment, educational attainment, and the labor force can also be analyzed for groups of individuals with disabilities, individuals near or at retirement age, single-parents, individuals with limited English capabilities, and youths.

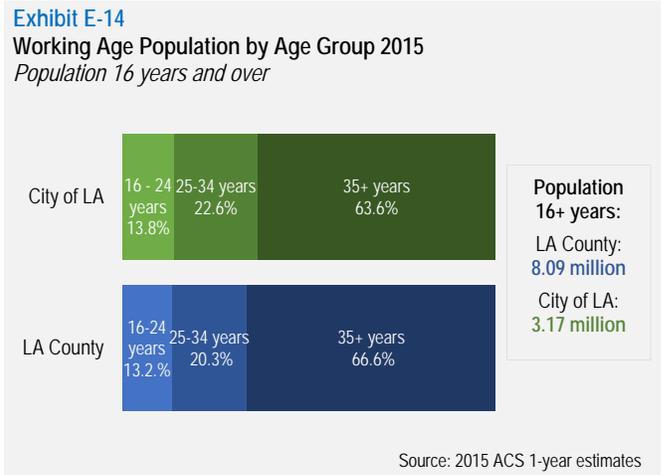


Exhibit E-15
L.A. County Population of Select Target Populations

Total	4,923,661
Latino	836,460
Black	71,427
Indians and Alaska Natives	29,126
Native Hawaiians and Other Pacific Islanders	991,375
Individuals with Disabilities	61,459
Youths with Disabilities	1,175,678
Near Retirement Age (55-64)	1,277,334
At Retirement Age (65 and Over)	2,342,038
Limited English Proficiency	309,468
Single Parents	

Note: All Target Populations are mutually inclusive.
 Sources: US. Census Bureau, American Community Survey; LAEDC

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2 DEMOGRAPHIC PORTRAIT

Demographics play a key role in the growth and quality of the labor force and to a large extent determine the growth potential of the economy.

The population in Los Angeles County is highly diverse, with many groups more highly represented in the county than in most states in the nation. This degree of diversity introduces both challenges and opportunities in regards to workforce development strategies. The following section provides a demographic overview for both the City of Los Angeles and Los Angeles County.

2.1 Overview

The population of Los Angeles County in 2015 was 10.2 million in 3.3 million households, accounting for more than a quarter of the population in California and making it the most populous county in the nation (Exhibit 2-1). The median age is 36.1 years.

Just over 39 percent of the county population lives in its largest city and the county seat, the City of Los Angeles, with a population of just under four million in 1.4 million households in 2015. The median age, at 35.0 years, is slightly lower than the County average.

Median household income in Los Angeles County, estimated to be \$59,134, is eight percent lower than the state median. At \$29,403, per capita income in the county is approximately seven percent below the state average. The City of Los Angeles has a median household income of \$52,024 and a per capita income of \$30,136.

Exhibit 2-1
Selected Demographic and Income Characteristics 2015

	California	LA County	City of LA
Population	39,144,818	10,170,292	3,971,896
Median age	36.2	36.1	35.0
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HH below poverty level	13.9%	15.6%	18.7%
Per capita income	\$31,587	\$29,403	\$30,136
Individuals below poverty	15.3%	16.6%	20.5%

Source: 2015 ACS 1 year estimates

Approximately 16 percent of households in Los Angeles County and 19 percent in the City of Los Angeles lived under the poverty level in 2015, compared to 14 percent of households across the state. ❖

2.2 Population

Population dynamics are important to resource allocation and future planning and development in an area. The size of a population, along with its growth and/or decline, will affect an area's standard of living, levels of consumption, environmental footprint, infrastructure needs and much more.

In January 2016, the population in Los Angeles County was 10.1 million, an increase of close to 420,000 from the population in 2010. The California Department of Finance forecasts that the county's population will continue to increase, reaching 10.4 million by 2020 and 10.7 million by 2025 (Exhibit 2-2).

Population Growth

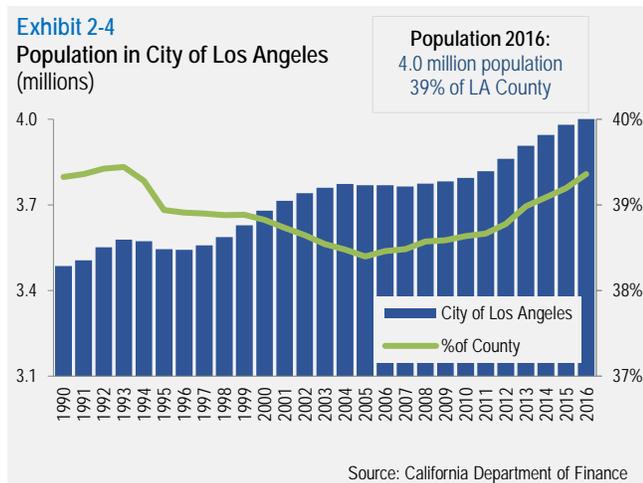
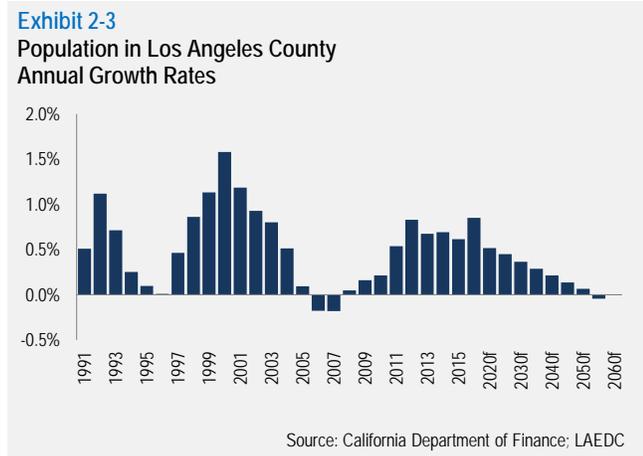
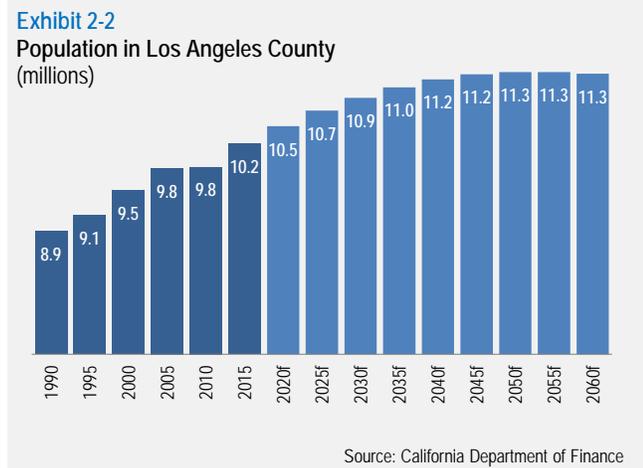
Population growth is determined by net migration and the birth and death rates of the current population. Knowing how a population is projected to grow can help to determine what an area will require in the future in terms of products and services, and the labor resources the region will provide to industry.

As of January 1, 2016, the City of Los Angeles had 4.0 million residents, 39.4 percent of the 10.2 million residents countywide.

Since 1990, the population in the county has increased by nearly 16 percent, an average annual growth rate of 0.6 percent per year (Exhibit 2-3). The county's current annual growth rate from last year is approximately 0.8 percent.

The population in the City of Los Angeles has also increased by close to 16 percent over 1990, an average annual growth rate of 0.6 percent (Exhibit 2-4), with year-over-year positive growth since 2008. The city's current annual growth rate is 1.3 percent over last year. From 1990 through 2016, the City of Los Angeles has

added 545,300 residents, accounting for 39.6 percent of the 1.38 million additional residents added in Los Angeles County during that period.

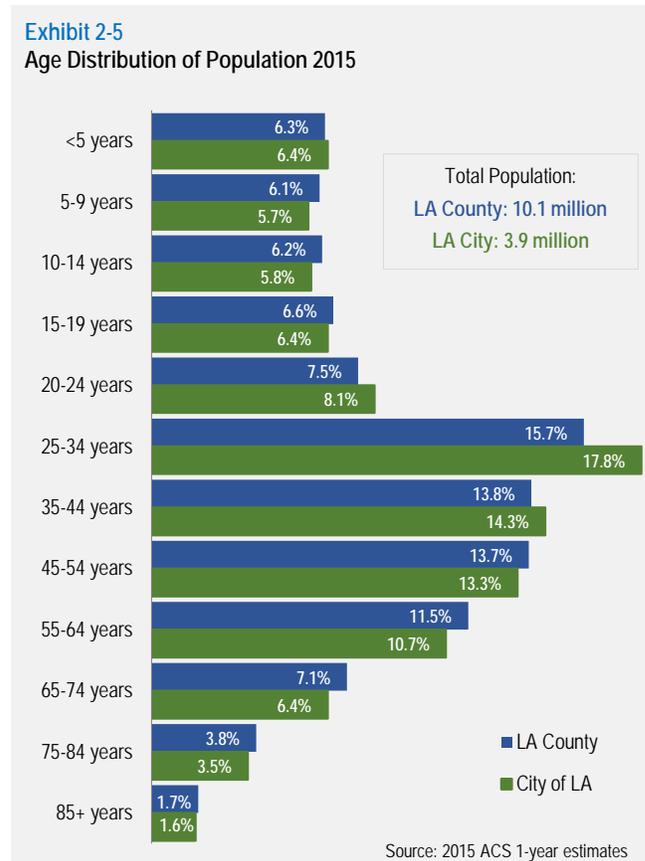


Age Distribution

Age distribution is one way to determine whether the population within an area is expected to grow, excluding all other factors. A large number of children in an area indicate an expected increase in population, while small numbers signify an expected decline. It is also one way of determining whether the population of an area is aging, which will affect the future needs of the area in terms of replacement workforce and provision of services.

In both City of Los Angeles and Los Angeles County overall, about 70 percent of the resident population is of working age (between 15 and 65 years of age). Seniors (those over 64 years of age) account for approximately 12 percent of the population (Exhibit 2-5).

The population in the City of Los Angeles and Los Angeles County as a whole is expected to age somewhat as the share of residents aged 65 years and older increases to 13.1 percent in the city and 14.0 percent countywide by 2020. This has implications for the ability of the workforce to fill local jobs, especially those jobs requiring a higher level of manual labor.



Veteran Population

Demographic characteristics for veterans differ by sex and by age. For example, female veterans tend to be younger, while male veterans tend to be older.

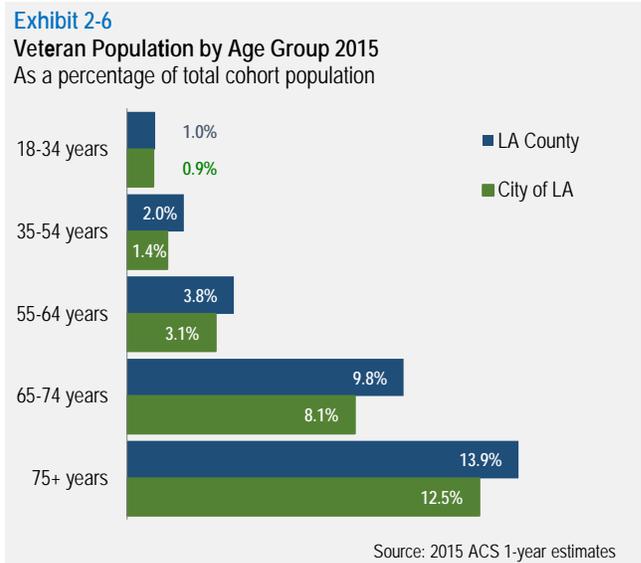
Exhibit 2-6 shows the veteran population ages 18 years and older as a share of the population of the same age in Los Angeles County and the City of Los Angeles in 2015.

There are 85,420 veterans living in the City of Los Angeles, and an additional 274,840 veterans reside in other parts of Los Angeles County, contributing to a total of 360,260 veterans living countywide.

Overall, the share of the population who are veterans has been declining in younger age groups. Of the population aged 75 years and older, 13.9 percent are veterans (12.5 percent in the City), whereas of the population aged 18 to 34 years, only 1.0 percent (0.9 percent) are veterans. These shares will grow, however, as combat troops return from the Middle East.

Exhibit 2-7 shows the gender distribution for the veteran population ages 18 years and older by age group in Los Angeles County and the City of Los Angeles in 2015.

Of all veterans living in Los Angeles County, 93 percent are male. The share of male veterans is similar within the boundaries of the City of Los Angeles with 92 percent. The share of male veterans significantly exceeds those of female veterans across all age groups. However, the male to female ratio of veterans in younger age groups is more balanced as female participation in the armed forces has increased in recent decades. ❖



2.3 Race, Ethnicity and Language Capability

Ethnicity and race are two distinct classifications. There are some characteristics that are more likely to be shared by a population with the same race and ethnicity, including language, educational attainment, unemployment, size of household, and other cultural, economic and social characteristics. As such, we identify both classifications for the resident population of Los Angeles County and the City of Los Angeles.

Race is a social definition used in the U.S. as a means of self identification. This social construct of race does not incorporate biology, anthropology or genetics into its definition. There are seven racial categories used by the Census: White, Black or African-American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Two or More Races, and Some Other Race.

Ethnicity is a shared cultural identity related to origin and considers such things as heritage, lineage, nationality, and ancestral country of birth. Individuals who identify as being of Hispanic origin can self identify as any race.

Here we incorporate both race and ethnicity together into a single chart by grouping all individuals indicating they are of Hispanic or Latino origin, regardless of their racial identification, and include that together with the racial composition of individuals that do not identify as of Hispanic or Latino origin.

The population in Los Angeles County is both ethnically and racially diverse. The share of the residents who reported to be of Hispanic origin in 2015 is 48.4 percent, compared to 38.8 percent at the state level, while 26.4 percent reported to be white (Exhibit 2-8). In the City of Los Angeles, 48.8 percent of residents who reported to be of Hispanic origin and 28.2 percent reported to be white.

Exhibit 2-9 displays the race and ethnicity distribution within each age group in 2015 in Los Angeles County and the City of Los Angeles. These are quite similar, with the proportion of residents identifying as of Hispanic or Latino background increasing in younger cohorts in recent years, as such, the Hispanic population is projected to account for more than 50 percent of the County’s population in the near future.

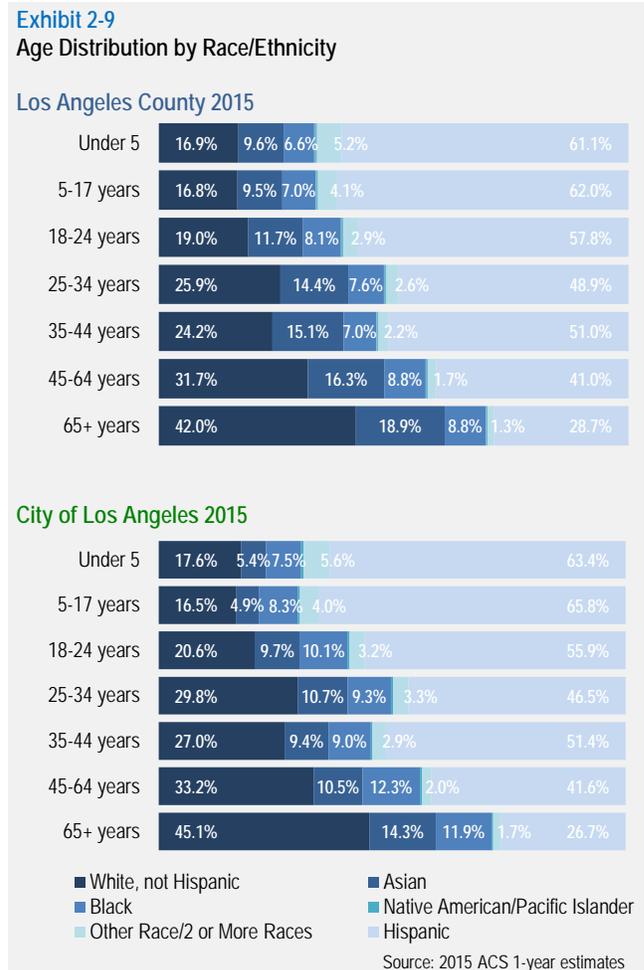
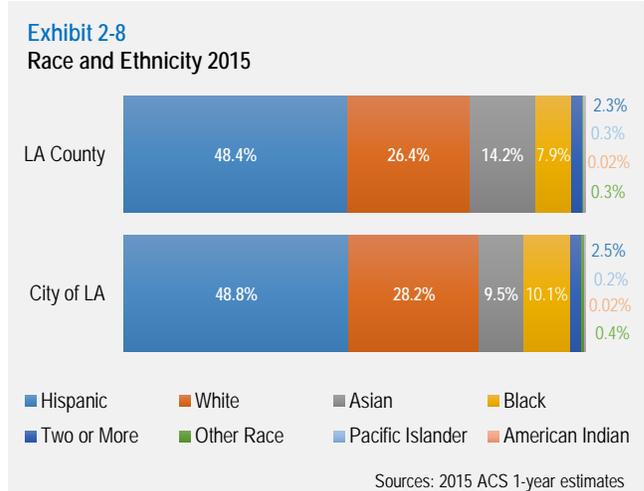
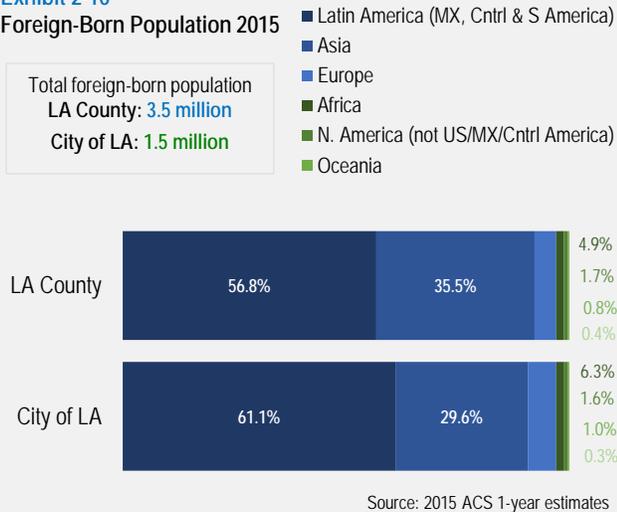


Exhibit 2-10
Foreign-Born Population 2015

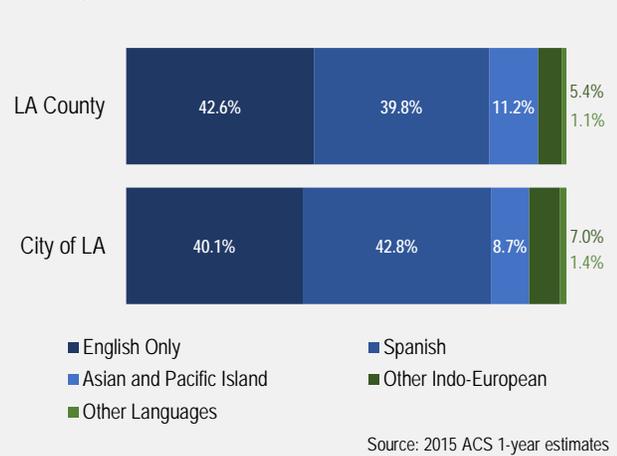


Foreign Born Population

Los Angeles County is home to more than 3.5 million immigrants from around the world, and hosts the largest communities of expatriates of several nations; the City of Los Angeles alone accounts for 43 percent of the foreign-born population in the County with nearly 1.5 million foreign-born residents.

About 60 percent of the foreign-born population originates from Latin America, which includes Mexico, Central America (including El Salvador, Guatemala, Honduras, Nicaragua, Belize, Costa Rica, Panama, and the Dominican Republic) and all of South America (Exhibit 2-10). Approximately one third of the foreign-born population comes from eastern and southeastern Asia (including the countries of China, Korea, Japan, Philippines, Vietnam and Cambodia). The remaining foreign-born population, almost 10 percent, comes from the rest of the world, including Africa, Europe and Canada.

Exhibit 2-11
Languages spoken at Home 2015



Language Ability

Language ability is an important aspect of employment and economic participation.

Over half of the population in Los Angeles County (57 percent) and the City of Los Angeles (60 percent) speaks a language other than English at home, with Spanish being the most common language, spoken by 40 percent and 43 percent of the population in the county and city respectively (Exhibit 2-12). Just 43 percent of residents speak only English at home in Los Angeles County, while that share is only 40 in the City of Los Angeles.

Exhibit 2-12
Languages Other than English Spoken at Home 2015

Language Spoken at Home	LA County		City of LA	
	Total Population (000)	Speak English Less Than Well (%)	Total Population (000)	Speak English Less Than Well (%)
Spanish	3,792.7	26.1%	1,591.5	29.2%
Asian and Pacific	1,063.3	25.8%	321.9	23.8%
Other Indo-European	510.2	15.6%	260.7	14.3%
All other non-English	100.1	7.5%	52.4	6.6%
LA County Total	5,466.2	24.7%	2,226.5	26.1%

Source: 2015 ACS 1-year estimates

English-speaking capability is highly-variable among different nationalities. Exhibit 2-12 shows the population of both Los Angeles County and the City of Los Angeles in homes where languages other than English are spoken, along with the share of those residents who speak English less than well.

Of the 5.5 million residents of Los Angeles County and the 2.2 million residents in the City who speak languages other than English at home, about one quarter speak English less than well. This implies that of all Los Angeles County residents and City residents, approximately 15 percent speak English less than well.

2.4 Educational Attainment and Economic Opportunity

Educational attainment is the highest level of education that an individual has achieved. Knowing the educational attainment of the population within a specific area can provide insight into a variety of factors about the area. Areas with high rates of low educational attainment usually face challenges such as higher rates of unemployment and poverty and will therefore use higher levels of public services and resources.

Additionally, areas with high levels of educational attainment may be sought out by businesses during their site selection process if they require highly educated and high skilled workers. Understanding the gap between workforce needs and resident capabilities can provide insight into the need for training programs and workforce development initiatives.

The population of residents ages 25 years and older in Los Angeles County numbered 6.9 million in 2015, and 2.7 million in the City of Los Angeles. Almost 22 percent of county residents in this age group have not earned a high school diploma (or equivalent) while 21 percent have graduated high school but have no other education (Exhibit 2-13). In 2015, approximately 31 percent of county residents have a bachelor’s degree or higher. The distribution of educational attainment in the City of Los Angeles is quite similar.

The distribution of educational attainment across various age groups also provides valuable information about composition of each level of educational attainment in regard to age in Los Angeles County and the City of Los Angeles. Exhibit 2-14 shows the distribution of educational attainment levels for the residents ages 18 and over of both geographies broken out into five age groups.

The cohort of residents aged 18 to 24 years are still highly involved in the educational system, with 45.3 percent of county residents in this age group having attained some college education. Completion of a Bachelor’s degree program was attained by 26.0 percent of those aged 25 to 34 years, while older age groups show lower levels of educational attainment. This implies that the resident population is attaining higher levels of education than in the past.

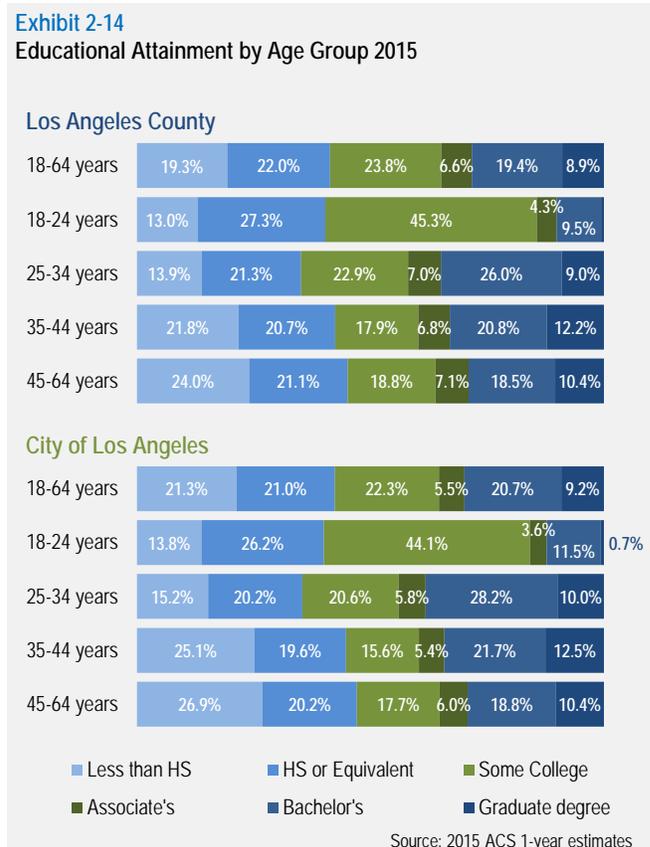
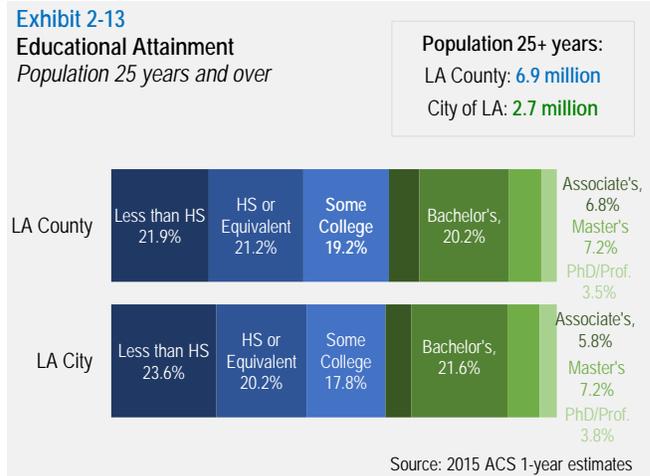
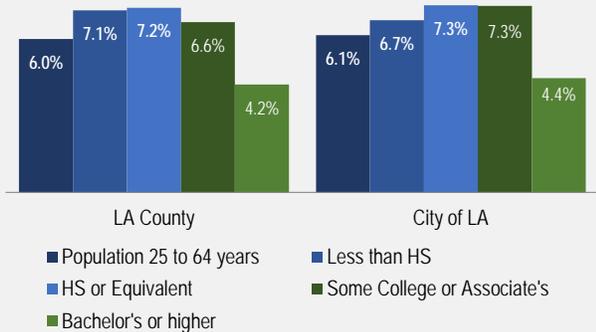


Exhibit 2-15
Civilian Unemployment Rate
by Educational Attainment 2015



Unemployment is highly correlated with educational attainment.

Overall, the unemployment rate for individuals aged 25 to 64 years was 6.0 percent in the county (6.1 in the city) in 2015. However, rates of those with low levels of educational attainment are higher (Exhibit 1-15). Residents with a Bachelor's degree or higher had an unemployment rate of 4.2 percent in the County (4.4 percent in the City) in 2015, significantly lower than the rate experienced by those at the opposite end of the spectrum—less than a high school education and high school diploma or equivalent reported much higher unemployment rates.

Higher levels of educational attainment are also highly correlated with higher earnings.

Workers with a graduate or professional degree earn an annual wage premium of almost \$53,000 over those with less than a high school education (Exhibit 2-16).

The combination of higher rates of unemployment and lower annual median earnings yield higher levels of poverty for those with lower levels of educational attainment (Exhibit 2-17).

Of residents of Los County aged 25 years and older whose income fell below the poverty level in the previous twelve months, 39.7 percent had less than a high school education. Another 25.2 percent were those with just a high school diploma or equivalent. Together, residents with a high school diploma or less accounted for 64.9 percent of those whose income fell below the poverty threshold the prior year.

On the flip side, of those whose income was above the poverty line, approximately 39 percent had a high school diploma or less.

The distribution of educational attainment of those in poverty is similar in the City of Los Angeles that that in the County. ❖

Exhibit 2-16
Median Earnings and Educational Attainment 2015
Population 25 years and older

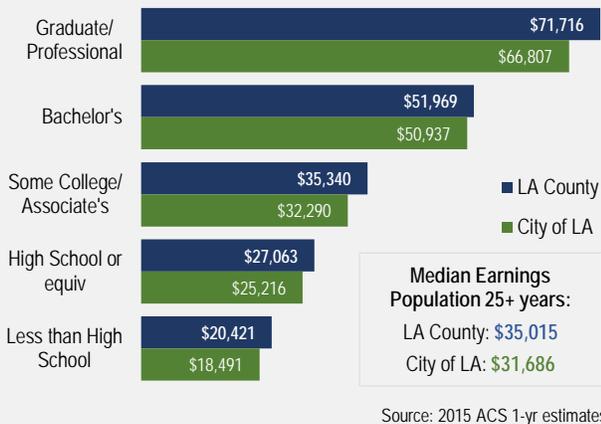
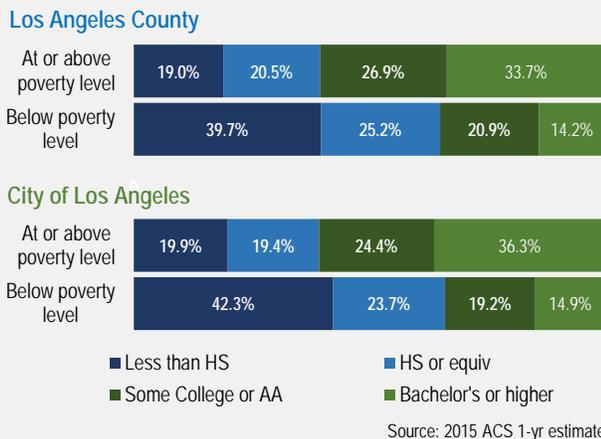


Exhibit 2-17
Poverty Level by Educational Attainment 2015
Population 25 years and older



2.5 Households and Housing

There were 3.3 million households in Los Angeles County in 2015, with an average household size of 3.0 people per household. By 2021, the county is projected to add nearly 123,900 additional households. The City of Los Angeles boasted 1.3 million households in 2015, with an average household size of 2.9 people per household. By 2021, the city is projected to add more than 42,400 additional households.

The size of households can be an indicator of the standard of living within an area. Often, lower income areas will have a higher share of large sized households as people reside together to share fixed household expenses such as rent.

One- and two-person households account for 59 percent of all households in the county and 54 percent in the city (Exhibit 2-18). However, the region also has a significant number of larger sized households: 30 percent of all households in the county and 26 percent of households in the city have five or more people, compared to 23 percent nationwide.

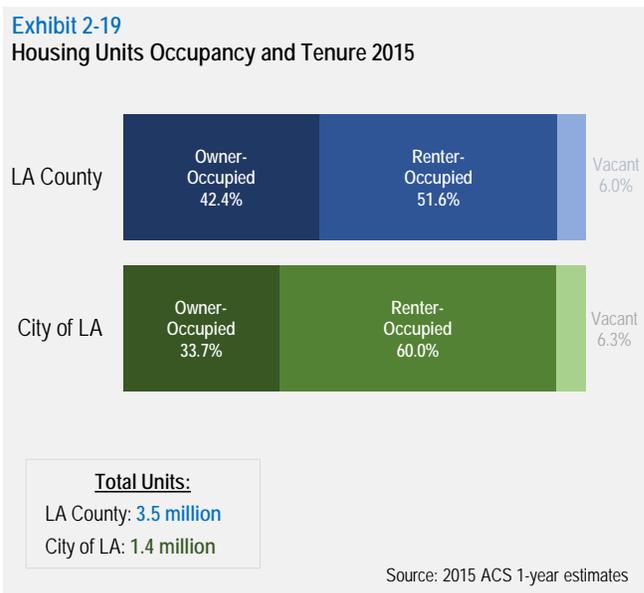
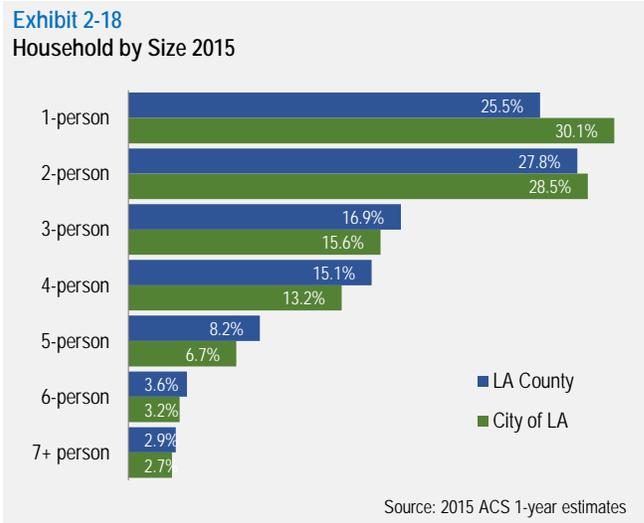
Housing

Housing represents the largest component of a household’s budget, and, if owned, is usually the family’s most valuable asset.

The tenure and occupancy status of homes, along with their values, provides information on their affordability. Often, higher levels of homeownership lead to neighborhood stability, since there is lower turnover of residents.

In 2015, there were 3.5 million housing units in Los Angeles County, 41 percent of which (1.4 million units) were located in the City of Los Angeles. The occupancy status and tenure of all housing units are shown in Exhibit 2-19.

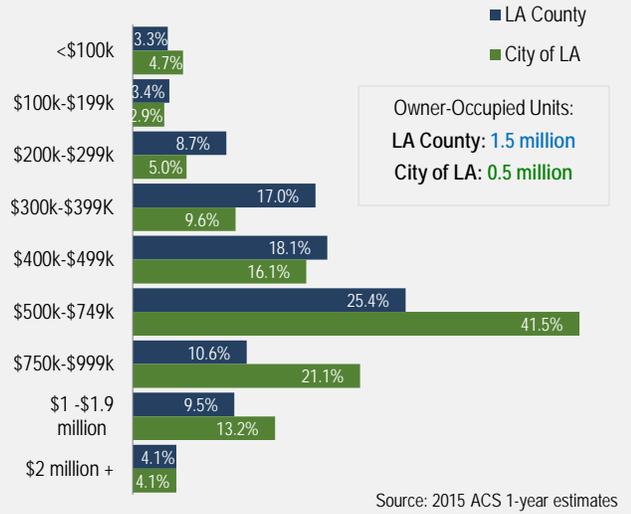
Over half of the housing stock in Los Angeles County is rental property, one of the lowest homeownership rates in the nation. An even lower rate of home ownership exists in the City, with only a third of all housing units owner-occupied, compared to 42 percent across all of Los Angeles County. The remaining vacant units account for approximately six percent of all housing units in both the city and countywide.



Median home values are used to compare the price of real estate across different areas and over periods of time. The median is deemed a reliable estimate as it is not affected by the presence of extremely high or low valued transactions, and is therefore used to compare real estate prices across different areas. The median home value in Los Angeles County was \$497,200 in 2015, which was lower than the \$542,100 median in the City of Los Angeles, yet higher than the statewide median of \$449,100.

Exhibit 2-20

Owner-Occupied Housing Units by Value 2015



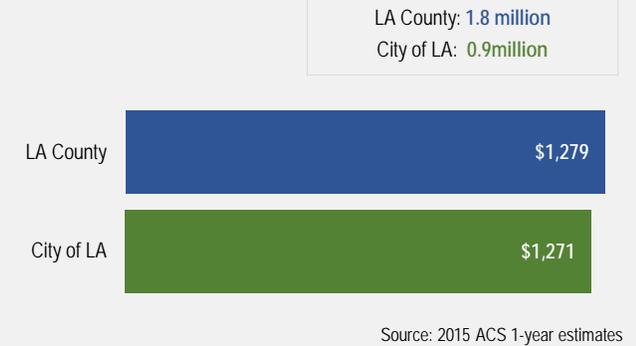
Owner-Occupied Units

Approximately 43 percent of the housing stock in Los Angeles County and 34 percent of housing stock in the City of Los Angeles are owner-occupied. The value of these homes varies from less than \$50,000 to millions of dollars (Exhibit 2-20).

One third of the owner-occupied housing stock, or 35 percent and 26 percent in the county and city respectively, falls within the price range of \$300,000 to \$499,000, with another 36 percent in the county and 63 percent in the city, valued between \$500,000 and \$999,000. An additional 14 percent of units in the county are valued at \$1 million and above, while the share of high valued units in the city is even higher with 17 percent. Housing units valued below \$200,000 account for only seven percent of total housing stock in Los Angeles County, and eight percent in the City of Los Angeles.

Exhibit 2-21

Median Gross Rent 2015



Renter-Occupied Units

Just over half (51 percent) of the housing stock in Los Angeles County and 60 percent of housing stock in the City of Los Angeles are occupied by renters (Exhibit 2-19). Exhibit 2-21 displays the median gross rent of occupied housing units paying rent in Los Angeles County and the City of Los Angeles in 2015.

As shown in the following section, money spent on housing is typically the largest expenditure made in a household budget, on average comprising more than one-third of household expenditures. A common guideline is that housing account for only about 30 percent of the total household budget to assure affordability, leaving the remaining 70 percent available for other personal and household expenses.

Exhibit 2-22

Gross Rent as Share of Household Income 2015
In the past 12 months



Residents in the county and city appear to have a difficult time adhering to this guideline. In both the city and the county, only about 40 percent of occupied units paying rent in 2015 paid rent that equaled less than 30 percent of their income, while approximately 60 percent paid a higher percentage of household income on rent (Exhibit 2-22).

This can be interpreted as a high cost of living relative to other areas, or, alternatively, as a large portion of the resident population with lower annual earnings. ❖

2.6 Income and Poverty

For many, earnings from employment represent the most significant portion of all income. Job-related earnings provide insight into the population’s standard of living. This is an indicator of the earning potential of the residents, as differentiated from household income which aggregates the overall income (including non-job-related incomes) for all members of the household. It can help identify areas that may need targeted services or programs.

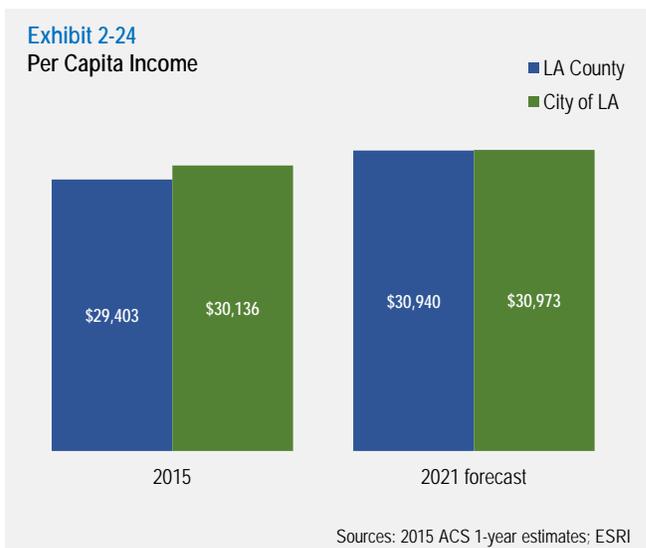
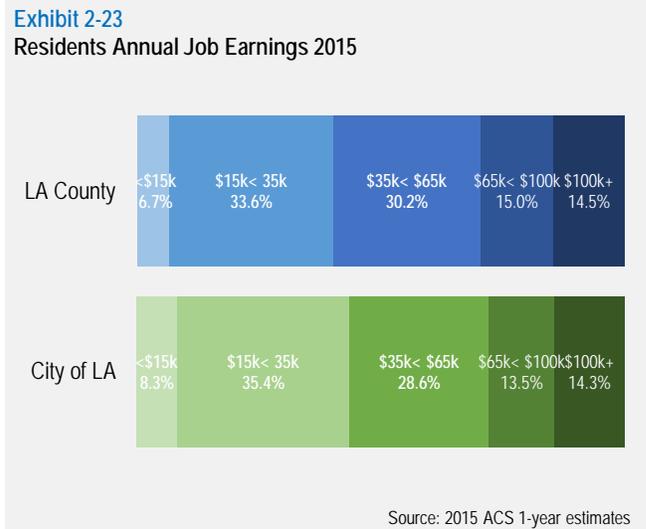
Detailed (individual) information for job-related earnings is not available in order to protect confidentiality; however, aggregated data is available. Exhibit 2-23 shows the job-related earnings for working residents in Los Angeles County and in the City of Los Angeles for 2015. Note that these are earnings from jobs regardless of where the jobs are located.

Approximately 15 percent of working residents in Los Angeles County earn more than \$65,000 per year. The majority of working residents earn between \$15,000 and \$65,000 annually. Residents earning between \$15,000 and \$35,000 and between \$35,000 and \$65,000 account for 34 percent and 35 percent respectively. Residents who earned less than \$15,000 per year represented close to eight percent of the total.

In the City of Los Angeles, nearly 28 percent of working residents earn more than \$65,000 per year and residents who earned less than \$15,000 per year represented a little over eight percent of the total. As at the county level, the majority of working residents of the city earn between \$15,000 and \$65,000 annually. Working residents earning \$100,000 or more annually account for just over 14 percent of all employed residents in both geographies.

Per capita income is the aggregation of all sources of income within an area (including job earnings, transfer payments and other sources of income) divided by the total population, resulting in the average income per person.

Per capita income in the City of Los Angeles is estimated at \$30,136 in 2015, while countywide it is slightly lower at \$29,403 (Exhibit 2-24). The projected change from 2015 to 2021 is expected be 2.8 percent in the city and 5.2 percent in the county, raising nominal per capita income to \$30,973 and \$30,940 respectively by 2021.



Median household income is the midpoint value of all household income levels within an area, dividing them into two equal groups. Where average income figures can be skewed by the presence of a few extremely high or low values, the median income figure is not, and therefore is viewed as more representative of an area’s income. Median household income in Los Angeles County in 2015 was estimated to be \$59,134 while in the City of Los Angeles it was slightly lower with \$52,024.

Just under half (43 percent) of households in Los Angeles County earn less than \$50,000 per year, and 13 percent earn over \$150,000 per year (Exhibit 2-25). In the City of Los Angeles, 48 percent of households earn less than \$50,000 per year, and 13 percent earn over \$150,000 per year.

Household expenditures are related to household incomes, not only in magnitude but also in composition. Households with lower incomes tend to spend a larger percentage on necessities such as food and rent and have less disposable income for luxury items such as travel and leisure activities, especially relevant for regions with much higher average household incomes.

In 2014-2015, household expenditures in Los Angeles Metropolitan Statistical Area, which includes Los Angeles County, averaged \$58,388. Exhibit 2-26 displays a breakdown of these expenditures by broad category. (This data is not available at the city level.)

As noted above, on average, nearly 38 percent of household expenditures were allocated to housing, with another 15 percent paid towards transportation and 12 percent for food. The category “Other” includes personal care products, insurance, apparel and other services not previously listed.

Poverty Status

Poverty is a relative measure of income inequality. The poverty status of an individual, household or family is determined using a set of thresholds established by the Census Bureau, typically a level of income proportional to the area’s median and incorporating the number of individuals in the unit being measured (i.e. household, family). The established thresholds do not vary geographically. They are revised annually to reflect changes in inflation.

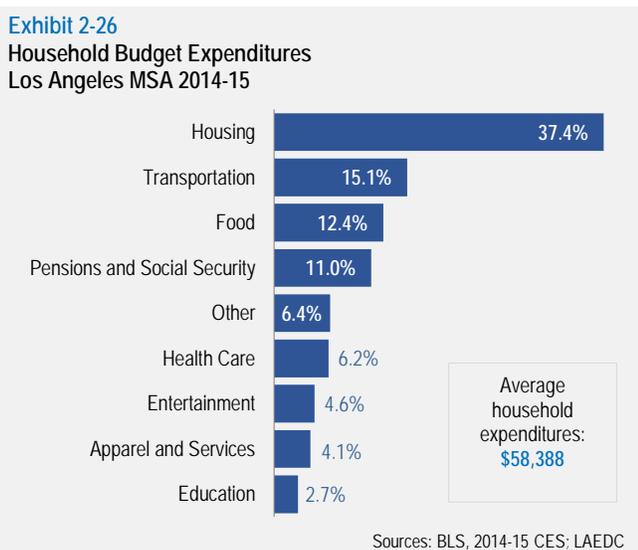
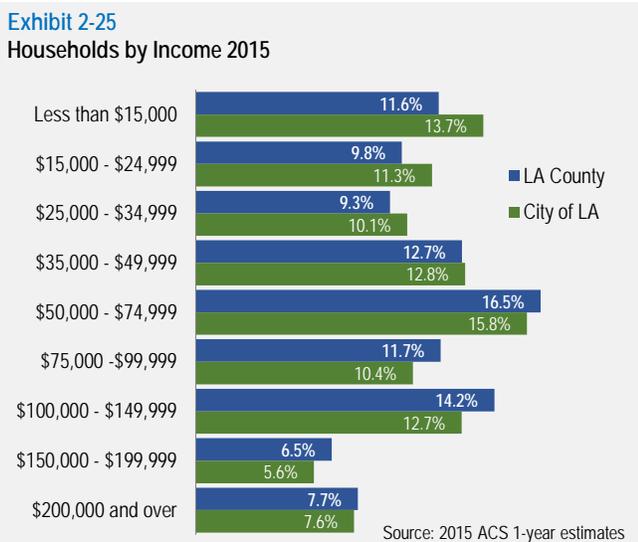
Those who live below poverty level face additional challenges as they lack the resources necessary to maintain a certain quality of life; they do not have the same choices and options in regards to nutrition, health care, housing, education, safety, transportation and such.

There are several ways to look at poverty, including poverty in households, individual poverty and poverty in families.

It was noted above that of the 3.3 million households in Los Angeles County, 1.4 million of which were located in the City of Los Angeles, the share of those households whose income fell below the poverty level within the prior twelve months were 15.6 percent and 18.7 percent respectively.

Families and Poverty

Poverty for families takes into account the number of people in a family unit and the total income that that unit earns. A family unit consists of two or more people living in the same housing unit that are related by birth, marriage or adoption. This is distinct from households in that households include all persons living in a housing unit regardless of relatedness.



Of the 2.2 million families in Los Angeles County in 2015, approximately 278,700 have had their incomes fall below the poverty level in the 12 months prior; in the City of Los Angeles 128,000 of the almost 810,600 total families had their incomes fall below the poverty level within the prior year.

Exhibit 2-27 shows the distribution by family type of those whose income has fallen below the poverty level in Los Angeles County and the City of Los Angeles. Of all families living below the poverty level, single mothers with children under the age of 18 years head the largest segment, with 38 percent in the city and 36 percent in the county as a whole. Families headed by a married couple account for 41 percent and 43 percent of all families living under the poverty level in the city and county, respectively, the majority of whom have children under the age of 18 years. Single father families with related children under the age of 18 years account for just less than ten percent of all families whose income has fallen below poverty level in the previous year.

Poverty of Individuals

If a family's total income is under the dollar value of the appropriate poverty threshold, then all individual members of that family are considered to be in poverty. If the total income of an individual or unrelated persons living in a household falls below the value of the threshold, all of those individuals are also considered to be in poverty. The total number of individuals living below the poverty level is the sum of people in families and the number of unrelated individuals with incomes in the prior year below the threshold. This is the basis of the individual poverty rate.

The individual poverty rate varies by age group (Exhibit 2-28). The individual poverty rate for all age groups is higher in the City of Los Angeles than in the county as a whole. In both geographies, the highest individual poverty rates are visible in the youngest age groups: under 16 years, 16 to 17 years and 18 to 24 years. Each has a rate of close to 30 percent of its cohort. ❖

Exhibit 2-27
Families and Poverty 2015
Income in the past 12 months below poverty level

Families below level
 LA County: 278,713
 (12.6% all families)
 City of LA: 128,016
 (15.8% all families)

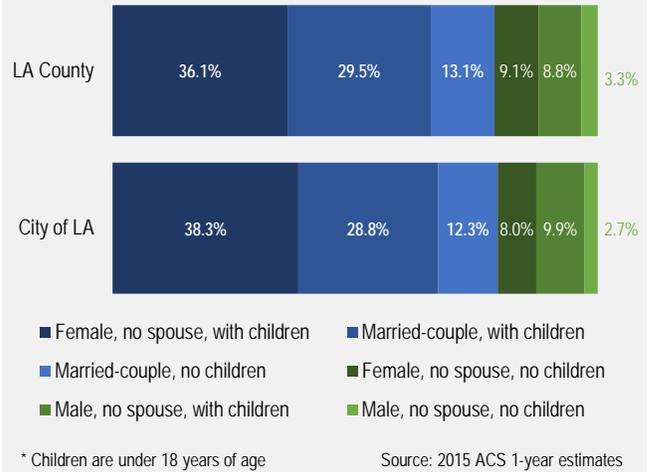
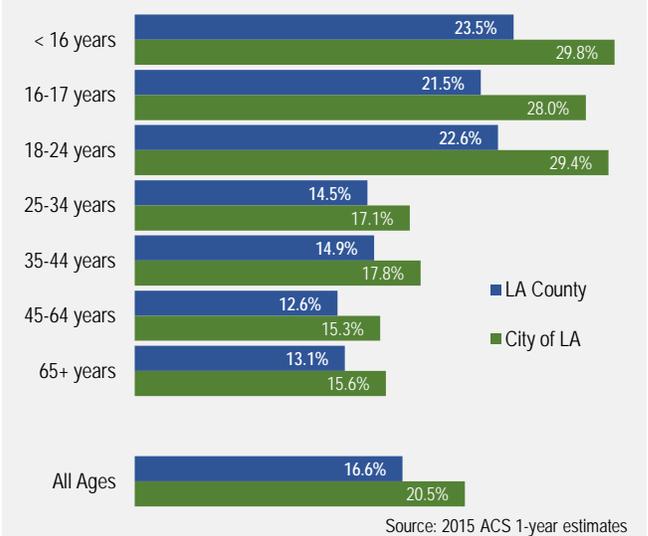


Exhibit 2-28
Individuals Poverty Status by Age Group 2015
Income in the past 12 months below poverty level



3 EMPLOYMENT, INDUSTRY AND JOBS

Labor market analysis provides an understanding of the resident population, its participation in the job market, and how well workers are matched to the jobs needed by firms in regional industries.

3.1 Labor Force

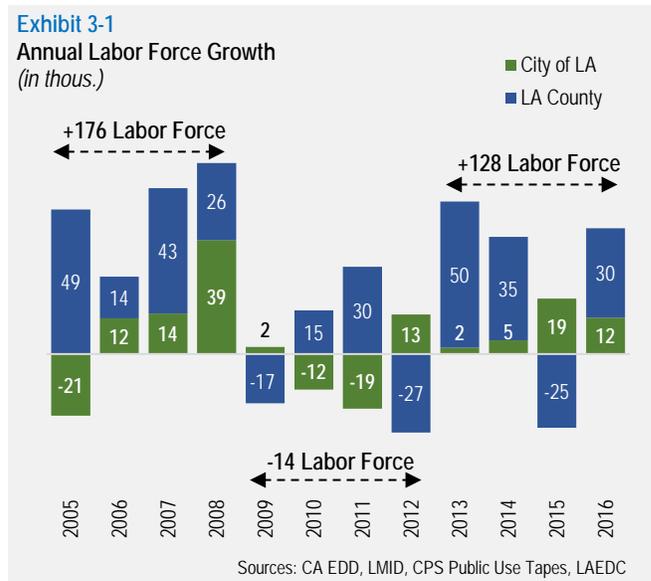
Employment and employment growth are fundamentally based on labor force growth, which is a consequence of both changes in population and in labor force participation rates. Population levels and growth were reviewed above; here, the focus is on the component of the population that is able, willing and looking for work.

The labor force is defined as the population of working-aged individuals (16 years and older) in an area who are currently employed or who are unemployed but still actively seeking work. Individuals not actively looking for work are excluded from the count, including students, retirees, stay-at-home parents and workers who have stopped seeking employment.

People who age into the working age population and those who migrate from other regions can augment the size of the labor force, while workers who retire or migrate out of the region deduct from its size.

The labor force has hovered around five million workers over the last eight years (2009 through 2016) in Los Angeles County, and the City of Los Angeles has maintained approximately 2 million workers (Exhibit 3-1). A steady pace of labor force entrants is in line with population growth, but many workers who left the labor force during the economic downturn remain on the sidelines.

Labor force participation is the willingness to work or look for work, it is the ratio of the labor force (both those employed and those unemployed) to the total working-age population in a specified area. This is estimated to be 63.8 percent in Los Angeles County in 2015 (the most recent year that this data is available), compared to 65.8 percent in the City of Los Angeles.



Changes in labor force participation are not always clear. For example, in the short term, a lower rate of participation can be indicative of a lack of people’s willingness to work, while in the long-term, it can reflect a lower need to work when sufficient income is earned from other sources (such as from the wages earned by other members of the household or from income earned through investments).

Participation rates of older workers (aged 55 and over), while lower than average, has been rising since 1980. This is expected to continue increasing as future boomers remain in the labor force rather than retiring.

Unemployment

The unemployment rate measures the number of individuals who are unemployed and actively seeking work as a share of the total labor force.

Few workers who are participants of the labor force remain unemployed. The term “normal rate of unemployment” is used to describe current unemployment rates both nationally and regionally. Nevertheless, in 2016, unemployed workers numbered 265,000 in Los Angeles County, which included the 118,000 unemployed workers in the City of Los Angeles.

The unemployment rate fell in 2016 in both Los Angeles County and the City of Los Angeles to 5.2 percent and 5.8

percent respectively (Exhibit 3-2). The unemployment rate in the City has been consistently higher than in the county as a whole, it currently stands 0.6 percentage points above the county rate.

Unemployment exists in different concentrations throughout the county and city as observed when looking at unemployment rates by census tract (Exhibit 3-3). While not as current, data is only available up to 2015, unemployment rates by census tract provide a glimpse of where residents are more likely to be employed or unemployed.

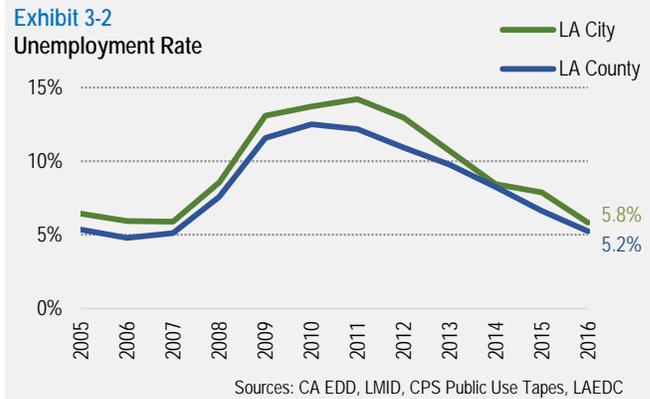
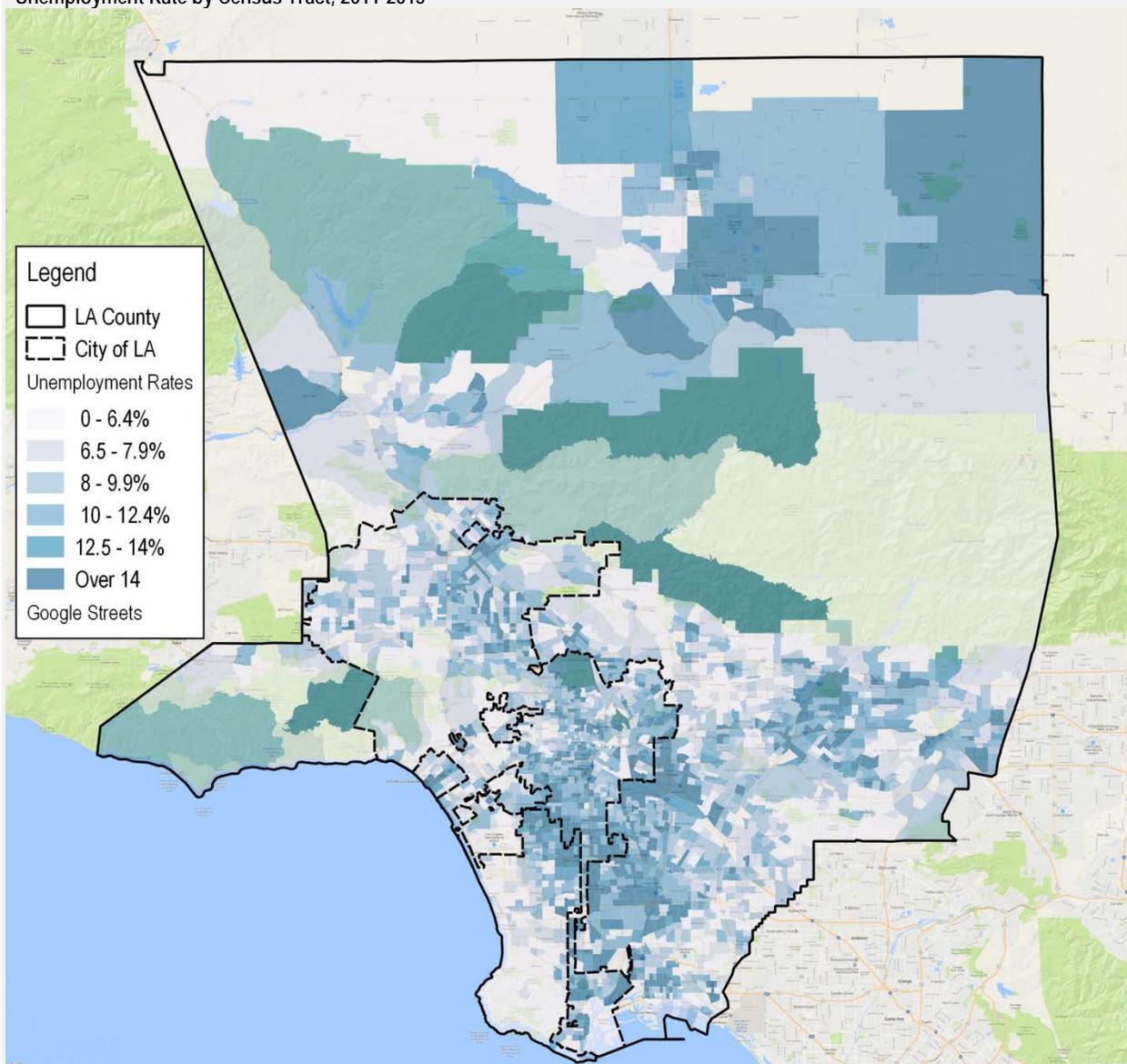


Exhibit 3-3
Unemployment Rate by Census Tract, 2011-2015



Source: ACS 2011-2015, 5-year estimate

Census tracts with an unemployment rate above 14 percent, from 2011 through 2015, are predominantly located in South Los Angeles neighborhoods. Many census tracts in Southeast Los Angeles County and in East San Fernando Valley neighborhoods in the City of Los Angeles had unemployed rates in excess of 12.5 percent.

A zoomed in view of unemployment rates by census tract in the City of Los Angeles is provided in Exhibit A-1 in the appendix.

Long-Term Unemployment

An individual without a job for 27 weeks (six months) or more, and who has actively been looking for work in the last four weeks, is classified as being unemployed long-term. Long-term unemployment can be cyclical or structural in nature, meaning that it can be related to contractionary periods in the business cycle (recessions) or changes in the structure of the regional economy. Regardless of the type, the long-term unemployed experience additional challenges when trying to find work, but may also stand to benefit the most by workforce development efforts that provide retraining and upskilling opportunities.

Bouts of long-term unemployment are associated with additional hardships and can negatively impact a workers' long-term career development. These individuals can run out of unemployment insurance benefits, their skills may become outdated, and they may find themselves underemployed, taking whatever job is available often settling for a lower wage job versus waiting for one that is a better fit.

Long-term unemployment in the aftermath of the Great Recession reached unprecedented levels. In 2011, the share of the unemployed in Los Angeles County that was long-term reached a high of 48.8 percent (Exhibit 3-4). While economic recovery brought these levels down, there remains a relatively high level of long-term unemployed workers; in 2016, approximately 77,400 workers in Los Angeles County had not worked in over 26 weeks and were considered long-term unemployed, representing over a quarter (29.2 percent) of all unemployed workers and 1.5 percent of the labor force (Exhibit 3-5).

Long-term unemployment varies slightly by education in Los Angeles County; nearly half of these individuals had their highest level of educational attainment of a high school degree or below (Exhibit 3-6).

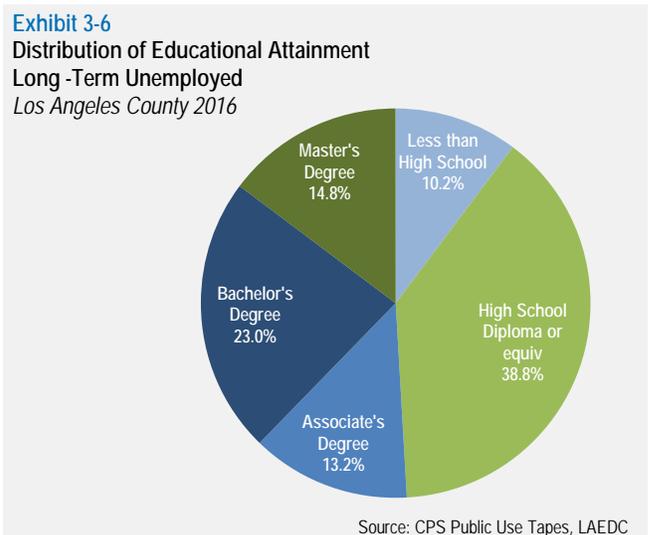
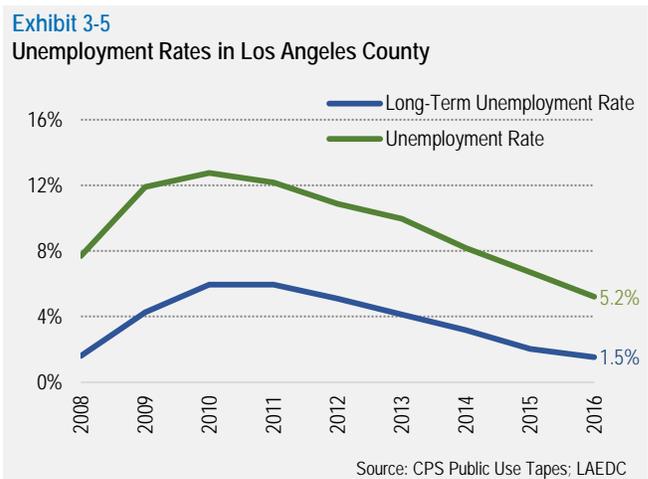
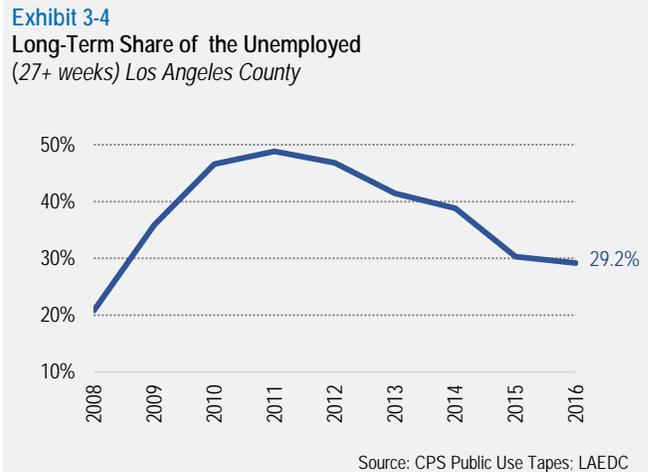
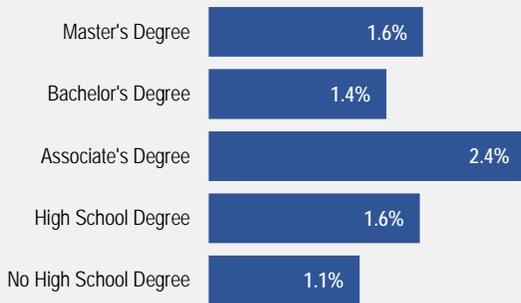


Exhibit 3-7
Long-Term Unemployment Rate by Education
Los Angeles County 2016

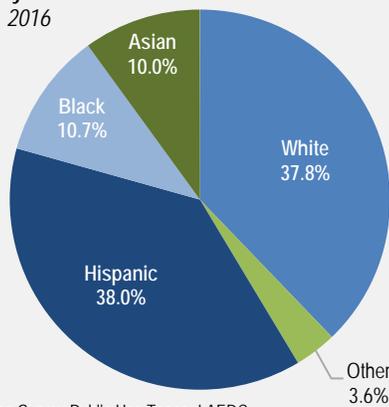


Source: Current Population Survey Public Use Tapes; LAEDC

While those with educational attainment of a high school degree or less accounted for the largest share of the long-term unemployed in Los Angeles County, looking at each cohort by educational attainment reveals the long-term rate of unemployment was highest among workers with an associate's degree as their highest level of education – a recent trend in LA County (Exhibit 3-7).

Long-term unemployment also varies in Los Angeles County according to race and ethnicity. Hispanics or Latinos accounted for 38.0 percent of long-term unemployed workers in the county in 2016, while White workers accounted for 37.8 percent (Exhibit 3-8).

Exhibit 3-8
Distribution of Race/ Ethnicity
Long-Term Unemployed
Los Angeles County 2016



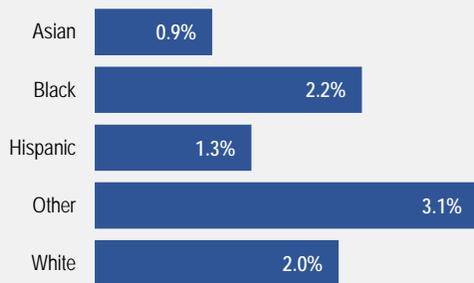
Source: Current Population Survey Public Use Tapes; LAEDC
 Note: Each racial group excluded Hispanics and Latinos

The long-term unemployment rates for each race and ethnicity are displayed in Exhibit 3-9. In Los Angeles County in 2016, long-term unemployment was more prevalent among Black or African American workers with 2.2 percent of their unemployed classified as long-term. Asians and those of Hispanic or Latino origin had the lowest long-term unemployment rates, with 0.9 percent and 1.3 percent respectively.

Exhibit 3-10 shows the age distribution of long-term unemployed in Los Angeles County in 2016. The youth population (ages 16 to 25 years) and the senior age group (ages 65 years and over) held the lowest share of the population of long-term unemployed in the County.

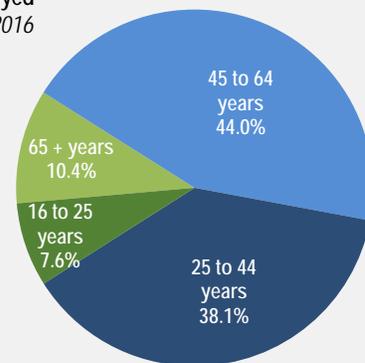
Isolating each cohort, long-term unemployment was less likely to occur as workers age and accumulate years of experience. In 2016, workers ages 16 to 25 years in Los Angeles County had a long-term unemployment rate of 2.2 percent compared to a 1.2 percent long-term unemployment rate workers ages 65 years and over (Exhibit 3-11).

Exhibit 3-9
Long-Term Unemployment Rate by Race/ Ethnicity
Los Angeles County 2016



Source: Current Population Survey Public Use Tapes; LAEDC
 Note: Each racial group excluded Hispanics and Latinos

Exhibit 3-10
Age Distribution
Long-Term Unemployed
Los Angeles County 2016



Source: Current Population Survey Public Use Tapes; LAEDC

Discouraged Workers

Long-term unemployment can lead to discouragement when a job search is unsuccessful. These discouraged workers are only marginally attached to the labor force, meaning that while these individuals do not qualify to be included in the standard labor force count, they remain in need of jobs.

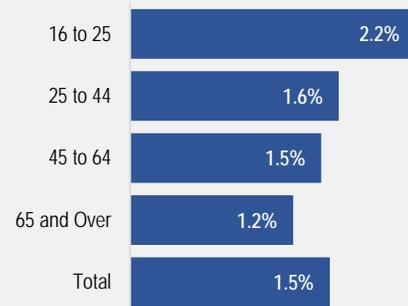
Discouraged workers have sought work sometime in the previous 12 months, but not in the last four weeks. They cite a lack of job prospects, either availability or ones where they would qualify, as a reason for discontinuing their search. These workers are sometimes referred to as hidden unemployment, as they are typically not included in official unemployment statistics.

In Los Angeles County, there were approximately 15,000 discouraged workers in 2016, a discouraged rate of 0.3 percent of the labor force. Including these discouraged workers along with those classified as unemployed results in a discouraged plus unemployment rate; this rate was 5.5 percent in the county in 2016.

Discouraged rates don't exhibit much variation by ethnicity or by age, they typically range between 0.2 percent and 0.4 percent across all classifications.

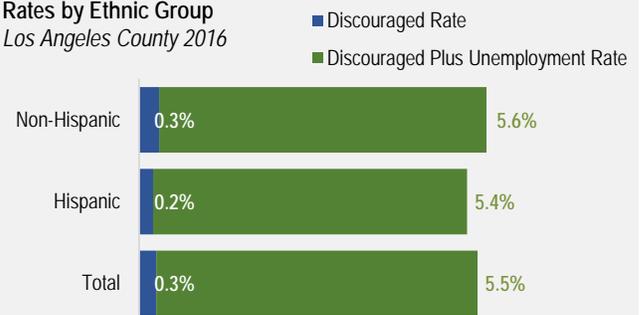
Discouraged rates for Hispanics in LA County were slightly lower (0.1 percentage point) than for non-Hispanics in 2016 (Exhibit 3-12). Workers ages 16 to 44 were more likely to be discouraged than workers ages 45 years and up, albeit workers over the age of 45 were more likely to be unemployed. ❖

Exhibit 3-11
Long Term Unemployment Rate by Age
Los Angeles County 2016



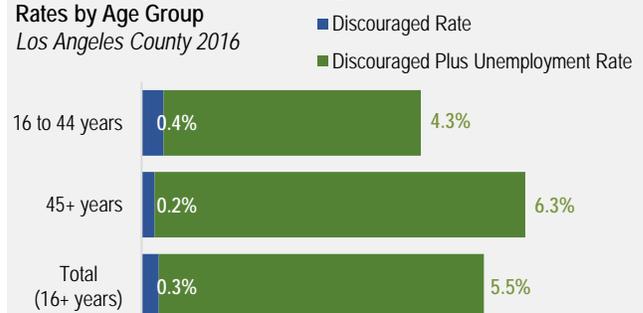
Source: Current Population Survey Public Use Tapes; LAEDC

Exhibit 3-12
The Discouraged and the Unemployed
Rates by Ethnic Group
Los Angeles County 2016



Source: CPS Public Use Tapes; LAEDC

Exhibit 3-13
The Discouraged and the Unemployed
Rates by Age Group
Los Angeles County 2016



Source: CPS Public Use Tapes; LAEDC

3.2 Current Employment by Industry

To investigate the potential for employment opportunities in the county, an understanding of existing employment is needed. Here, we consider employment opportunities provided by firms in the region.

In general, both Los Angeles County and the City of Los Angeles reflect the national pattern of being largely service-oriented, with services accounting for about three-fourths of all nonfarm employment (Exhibit 3-14). Government employment (including local, state and federal government employment) accounts for 13 percent of nonfarm county employment and more than 19 percent of all city employment.

Among the service industries, educational and health services and professional and business services are the largest, in terms of employment, followed by, leisure and hospitality, and retail trade.

Los Angeles County

At a more disaggregated level, the largest private sector industry in terms of employment in Los Angeles County in 2015 was food services and drinking places, providing 355,540 jobs (Exhibit 3-15). This industry includes all food services, including full-service restaurants, fast food outlets, caterers, mobile food services and drinking establishments—and is consistently the largest single industry by employment in the county. Close to 93 percent of this industry’s employment was in restaurants.

The second largest industry was professional and technical services, providing 273,230 jobs. This industry is large and diverse, and includes a variety of professions such as legal, accounting, architectural, engineering, computer design, advertising, environmental consulting, commercial photography, veterinary services and more.

Other significant industries in the county include administrative and support services (which includes temporary employment), social assistance, ambulatory health care services such as doctors’ and dentists’ offices, motion pictures and sound recording industries and hospitals, together providing more than 929,600 jobs.

Exhibit 3-14
Industrial Profile 2015
(% of Total Employment)

	LA County	City of LA
Total Nonfarm Payroll Employment	100.0%	100.0%
Good Producing Industries:	11.7%	8.1%
Natural Resources and Mining	0.2%	0.0%
Construction	3.0%	2.4%
Manufacturing – Durable Goods	4.8%	2.6%
Manufacturing – Nondurable Goods	3.7%	3.0%
Service Providing Industries	75.2%	73.4%
Wholesale Trade	5.3%	4.2%
Retail Trade	9.9%	8.6%
Transportation, Warehousing, Utilities	3.9%	3.6%
Information	4.9%	4.1%
Financial Activities	5.1%	5.7%
Professional and Business Services	14.1%	13.8%
Educational and Health Services	17.3%	18.7%
Leisure and Hospitality	11.5%	11.3%
Other Services	3.1%	3.3%
Government	13.1%	18.6%

Sources: California Employment Development Department (QCEW); LAEDC

Exhibit 3-15
Top 20 Private Sector Industries by Employment
Los Angeles County 2015

NAICS	Industry	Employment	% of total
722	Food services and drinking places	355,540	8.4
541	Professional and technical services	273,230	6.4
561	Administrative and support services	252,010	5.9
624	Social assistance	237,750	5.6
621	Ambulatory health care services	199,660	4.7
512	Motion picture and sound recording	127,720	3.0
622	Hospitals	112,510	2.7
424	Wholesale: Nondurable goods	102,800	2.4
423	Wholesale: Durable goods	100,710	2.4
611	Educational services	97,600	2.3
445	Retail: Food and beverage stores	93,470	2.2
238	Specialty trade contractors	82,380	1.9
623	Nursing and residential care facilities	79,660	1.9
452	Retail: General merchandise stores	74,420	1.8
522	Credit intermediation	61,690	1.5
531	Real estate	58,620	1.4
551	Management of companies	57,390	1.4
812	Personal and laundry services	52,920	1.2
448	Retail: Clothing and accessories	51,670	1.2
524	Insurance carriers and related activities	46,540	1.1

Sources: California Employment Development Department (QCEW); LAEDC

City of Los Angeles

This distribution of jobs across industries is broadly similar at the city level.

The largest private sector industry in terms of employment in the City of Los Angeles in 2015 was also food services and drinking places, providing 134,260 jobs and the second largest industry was professional and technical services, providing 117,790 jobs (Exhibit 3-16).

Other significant industries in the city include social assistance, administrative and support services (which includes temporary employment), ambulatory health care services such as doctors’ and dentists’ offices, private education services, establishments involved in the wholesale of nondurable goods (such as paper products, apparel, grocery items, and chemical and petroleum products) and hospitals, together providing just under 391,900 jobs.

A complete list of employment by industry for the county and the city is provided in Exhibits A-2 and A-3 in the appendix. ❖

Exhibit 3-16
Top 20 Private Sector Industries by Employment
City of Los Angeles 2015

NAICS	Industry	Employment	% of total
722	Food services and drinking places	134,260	8.2
541	Professional and technical services	117,790	7.2
624	Social assistance	96,840	5.9
561	Administrative and support services	87,480	5.3
621	Ambulatory health care services	83,610	5.1
611	Educational services	48,100	2.9
622	Hospitals	39,700	2.4
424	Wholesale: Nondurable goods	36,240	2.2
623	Nursing and residential care facilities	34,990	2.1
445	Retail: Food and beverage stores	33,810	2.1
512	Motion picture and sound recording	31,950	1.9
238	Specialty trade contractors	26,530	1.6
423	Wholesale: Durable goods	24,940	1.5
531	Real estate	24,920	1.5
522	Credit intermediation	24,230	1.5
812	Personal and laundry services	22,070	1.3
452	Retail: General merchandise stores	21,390	1.3
524	Insurance carriers and related	21,020	1.3
813	Membership associations and orgs	19,740	1.2
721	Accommodation	18,480	1.1

Sources: California Employment Development Department (OCEW); LAEDC

3.3 Industry Competitiveness

While large employing industries are valuable in their ability to provide job opportunities for local residents, other industries, while still small in terms of employment, may be important for promoting economic growth. These industries are likely to be exposed to the larger global market, and if they are competitive with their counterparts elsewhere, they can gain market share by growing their companies and creating jobs.

Competitiveness in this sense is measured using relative employment shares. An industry with a presence in Los Angeles that is larger (as a percentage of total employment in the county) than its presence elsewhere would indicate that Los Angeles has a concentration of this industry and is evidence of the region having a competitive advantage.

For example, if 4 percent of employment in the county is in the motion picture industry, while across the United States only 1 percent is employed in that industry, then the location quotient for the motion picture industry in Los Angeles is 4. A location quotient of 1.2 or higher is considered a threshold for demonstrating competitiveness.

The industry with the highest location quotient in Los Angeles County in 2015 was motion picture and sound recording industries, with a location quotient of 10.4 compared to the national average (Exhibit 3-6). Apparel manufacturing is a close second with a location quotient of 10.0. These industries are undeniably those in which the region has a competitive advantage.

Competitive industries include manufacturing industries. Although manufacturing employment is on a sectoral decline across the nation, Los Angeles remains a relatively concentrated center of manufacturing across many product lines, including leather products, textiles, petroleum and coal products, furniture, computer and electronic products, printing and other miscellaneous manufacturing.

The City of Los Angeles exhibits competitive strength across most of the same industries at the county level, but there are some differences. Industries in which the city is competitive but the County is not are shown in italics at the bottom of the exhibit. These include: securities, contracts and investments; religious, grantmaking and civic organizations; miscellaneous retail stores; and professional and technical services.

Exhibit 3-17
Top Competitive Industries 2015
(Location Quotients v. US)

NAICS	Industry	LA County	City of LA
512	Motion picture and sound recording	10.4	6.7
315	Manufacturing: Apparel	10.0	10.9
711	Performing arts and spectator sports	2.7	3.3
488	Support activities for transportation	2.4	1.9
515	Broadcasting (except internet)	2.3	4.3
624	Social assistance	2.3	2.4
316	Manufacturing: Leather products	1.9	1.1
313	Manufacturing: Textile mills	1.7	1.7
483	Water transportation	1.7	1.3
424	Wholesale: Nondurable goods	1.7	1.5
481	Air transportation	1.6	3.3
519	Other information services	1.5	1.1
324	Manufacturing: Petroleum and coal products	1.4	1.1
531	Real estate	1.3	1.4
448	Retail: Clothing and accessories	1.3	1.1
337	Manufacturing: Furniture	1.3	0.8
812	Personal and laundry services	1.2	1.3
314	Manufacturing: Textile product mills	1.2	0.9
492	Couriers and messengers	1.2	1.4
532	Rental and leasing services	1.2	1.3
611	Educational services (private)	1.2	1.5
334	Manufacturing: Computer / electronic prods	1.2	0.8
423	Wholesale: Durable goods	1.1	0.7
443	Retail: Electronics and appliance	1.1	1.0
712	Museums, historical sites, zoos and parks	1.1	2.1
339	Miscellaneous manufacturing	1.1	0.9
722	Food services and drinking places	1.1	1.0
323	Printing and related support activities	1.1	0.8
523	<i>Securities, contracts and investments</i>	0.9	1.3
813	<i>Religious/grantmaking/civic/professional orgs</i>	1.0	1.2
453	<i>Retail: Miscellaneous store</i>	1.0	1.2
541	<i>Professional and technical services</i>	1.0	1.2

Sources: California Employment Development Department; LAEDC

A complete list of all industries is provided in Exhibit A-4 in the appendix. ❖

3.4 Industry Clusters

An alternate method of viewing the industrial makeup of the region is through industry clusters. Clusters are geographic concentrations of firms in similar industries that are more likely to compete and collaborate more efficiently, driving demand for their supplier industries and encouraging the growth of specialized labor and local infrastructure.

Industries are classified into two types of clusters using definitions developed by Professor Michael Porter of the Institute for Strategy and Competitiveness at Harvard Business School and now published by the Cluster Mapping project (CMP). These are: (1) *Local industry clusters*, which provide goods and services to the resident population, and have limited exposure to other markets; and (2) *Traded industry clusters*, which are comprised of industries that are more highly-concentrated in a few regions, and provide the potential for economic growth and wealth generation through exports to external markets.

Approximately 55 percent of all employment in Los Angeles County is in local industry clusters, such as health services, local commercial services and local hospitality establishments (Exhibit 3-7). Just over 31 percent is in traded industry clusters, such as trade, entertainment, business services and fashion.

The largest traded industry cluster in Los Angeles County in 2015 was trade, employing approximately 279,100 workers, followed by business services, with close to 221,200 workers, and entertainment, with just over 156,700 employed (Exhibit 3-19). Overall, more than 1.3 million jobs were involved in traded industry clusters.

Of the fifteen largest traded industry clusters in the county, eight have location quotients greater than one, reflecting the county’s competitive strength in a wide variety of industries.

Local industry clusters provide just over 70 percent more jobs than traded industry clusters (Exhibit 3-20). The largest clusters in Los Angeles County are health services, with just over 415,300 jobs, local hospitality establishments with close to 386,300 jobs, and local commercial services, with just over 298,000 jobs. ❖

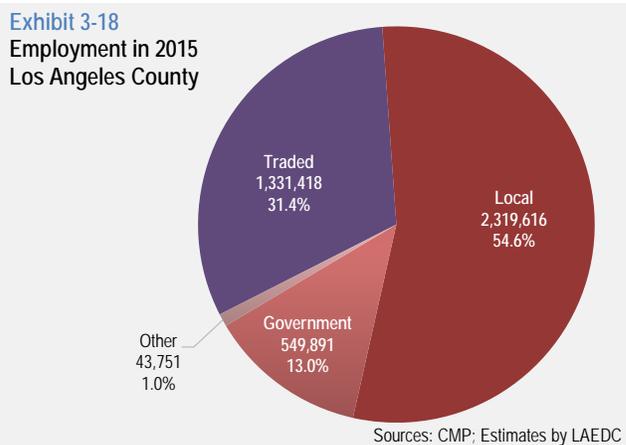


Exhibit 3-19
Largest Traded Industry Clusters in Los Angeles County in 2015
(By employment)

	Employment	LQ
Trade ¹	279,070	1.2
Business Services	221,150	0.9
Entertainment	156,720	8.8
Education and Knowledge Creation	85,260	1.2
Hospitality and Tourism	82,510	0.9
Fashion	60,200	1.5
Marketing, Design and Publishing	55,250	4.0
Aerospace Vehicles and Defense	53,730	2.9
Financial Services	52,490	0.9
Food Processing and Manufacturing	29,190	0.9
IT and Analytical Instruments	27,030	0.7
All Other Traded Clusters	288,820	
Total Traded Cluster Employment	1,331,420	1.1

¹ Includes Transportation and Logistics, Distribution and Electronic Commerce and Water Transportation ² Includes Music and Sound Recording, Performing Arts and Video Production and Distribution ³ Includes Apparel, Footwear, Jewelry and Precious Metals, Leather and Related Products, and Textiles

Sources: CMP; CA EDD; BLS; Estimates by LAEDC

Exhibit 3-20
Largest Local Industry Clusters in Los Angeles County in 2015
(By employment)

	Employment
Health Services	415,310
Local Hospitality Establishments	386,270
Local Commercial Services	298,010
Community and Civic Organizations	254,270
Real Estate, Const. and Development	211,230
All Other Local Clusters	754,430
Total Local Cluster Employment	2,319,616

Sources: CMP; CA EDD; BLS; Estimates by LAEDC

3.5 Regional Industry Employment Forecast

Employment opportunities for residents of Los Angeles County and in the City of Los Angeles will depend on the health of the regional economy. Here we present the industry employment forecast for the City of Los Angeles and Los Angeles County as a whole.

Los Angeles County

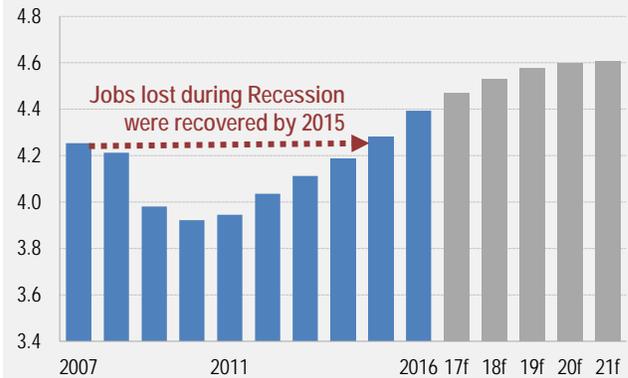
Recovery from the Great Recession has been disappointing (Exhibit 3-21). Instead of robust job growth after the devastating decline of 2009 and 2010, anemic employment growth began in 2011 with a year-over-year gain of 0.6 percent. Employment growth has continued its recovery through 2016, but remains modest.

Recovery of all jobs lost during the recession did not occur until 2015. Still, this does not take into account the job growth needed to accommodate population and labor force growth.

Many industry sectors will follow this general contour of post-recession recovery followed by moderation. However, there are differences among industries. Recovery strength in many cases is determined by the magnitude of the industry’s decline during the recession. For example, construction employment fell steeply in 2008, 2009 and 2010. Its recovery in the near term is expected to be much stronger than the average, as it recovers from these deep losses.

The expected employment growth in individual sectors at the county level is shown in Exhibit 3-22. While these growth rates are expected to apply at the city level as well, the projected job creation will differ given the different mix of industries in the two regions.

Exhibit 3-21
Nonfarm Employment in Los Angeles County
(millions of jobs)



Sources: CA EDD; Moody's Analytics; LAEDC

Exhibit 3-22
Industry Employment Growth 2016-2021
(Los Angeles County)

	Average Annual % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.0%	212.7
Good Producing Industries:	-0.2%	-3.5
Natural Resources and Mining	0.6	0.1
Construction	1.5	10.4
Manufacturing – Durable Goods	-0.8	-7.6
Manufacturing – Nondurable Goods	-0.9	-6.5
Service Providing Industries	1.1%	194.2
Wholesale Trade	0.9	10.5
Retail Trade	0.6	13.7
Transportation, Warehousing, Utilities	0.4	3.9
Information	0.1	1.7
Financial Activities	0.8	8.3
Professional and Business Services	1.4	43.7
Educational and Health Services	1.7	66.3
Leisure and Hospitality	1.5	39.2
Other Services	0.8	6.9
Government	0.8%	22.0

Sources: California Employment Development Department; LAEDC

City of Los Angeles

Employment in the City of Los Angeles has experienced the same general trend post-recession as the county as a whole, although the recovery of jobs in 2011 was much steeper. However, jobs lost during the recession will not be recovered until 2017 (Exhibit 3-23). Still, this does not take into account the job *growth* needed to accommodate labor force growth.

Again, most industry sectors will follow this general contour of post-recession recovery followed by moderation. However, there are differences among industries. Recovery strength in many cases is determined by the magnitude of the industry’s decline during the recession.

The expected employment growth in individual sectors at the city level is shown in Exhibit 3-24. The projected job creation differs from the county given the different mix of industries in the two regions. ❖

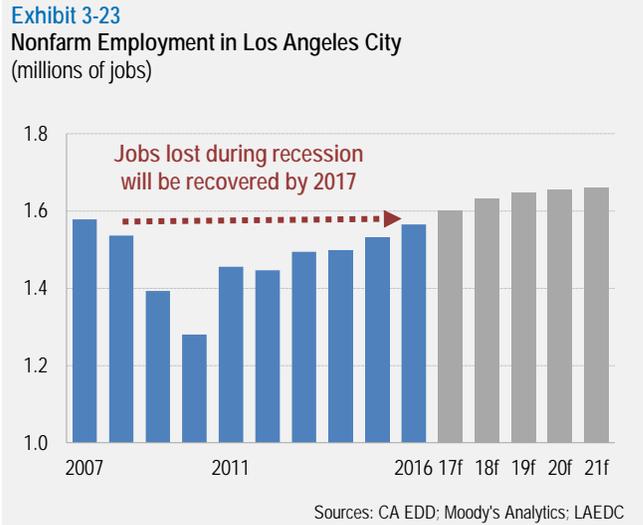


Exhibit 3-24
Industry Employment Growth 2016-2021
 (City of Los Angeles)

	Annual Average % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.0%	74.2
Good Producing Industries:	0.0%	-0.8
Natural Resources and Mining	0.6	0.0
Construction	1.5	3.2
Manufacturing – Durable Goods	-0.8	-1.6
Manufacturing – Nondurable Goods	-1.0	-2.3
Service Providing Industries	1.1%	105.5
Wholesale Trade	0.9	3.4
Retail Trade	0.6	4.4
Transportation, Warehousing, Utilities	0.4	1.4
Information	0.1	-1.2
Financial Activities	0.8	3.6
Professional and Business Services	1.4	15.9
Educational and Health Services	1.7	17.7
Leisure and Hospitality	1.5	15.3
Other Services	0.8	2.5
Government	0.8%	12.0

Sources: California Employment Development Department; LAEDC

3.6 Job Creation Potential

Projected growth rates of industries and their current size together determine the potential for an industry’s job creation. A small industry growing quickly may add jobs but the absolute number of jobs added will be smaller than a large industry growing slowly.

Between 2016 and 2021, the economy is expected to add over 206,700 new jobs in nonfarm industries across the county, and about 67,500 new jobs in the City of Los Angeles (Exhibit 3-25).

The industry with the largest expected new job creation potential is food services and drinking places, projected to add 32,010 jobs between 2016 and 2021 in the county and 12,180 in the city. This is a very large industry that includes restaurants of all service types, including fast food, full service, catering and mobile food service, as well as bars and nightclubs.

The industry with the second largest expected employment gains is the administrative and support services industry, expected to add 29,920 jobs between 2016 and 2021 in the county and 10,130 jobs in the city. This is largely a result of the increase in temporary employment services, which accounts for 40 percent of the industry. Other large segments include security services and janitorial/landscape services.

Combined health care services provided by hospitals, ambulatory health care services, nursing and residential care facilities and social assistance are together projected to add 62,180 jobs from 2016 to 2021 in the county and 15,626 in the city. As noted above, these are expected to continue growing, although more than one third of the additional jobs are in social assistance.

Next is professional and technical services, a large and diverse industry with relatively high growth potential.

Also on the list are specialty trade contractors, credit intermediation, motion pictures and sound recording, personal and laundry services and wholesalers.

Taken together, these thirty industries are expected to add more than 206,700 new jobs during the period from 2016 to 2021 in Los Angeles County and more than 67,400 new jobs in the City of Los Angeles, over 90 percent of all jobs forecasted to be added in each region.

Exhibit 3-25
Projected New Job Creation 2016-2021

NAICS	Industry	LA County	LA City
722	Food services and drinking places	32,010	12,180
561	Administrative and support services	29,920	10,130
624	Social assistance	23,480	5,900
621	Ambulatory health care services	19,730	4,960
541	Professional and technical services	12,260	5,210
622	Hospitals	11,110	2,790
623	Nursing and residential care facilities	7,870	1,980
238	Specialty trade contractors	6,640	2,130
424	Merchant wholesalers, nondurables	6,040	2,130
512	Motion picture and sound recording	6,030	1,510
445	Food and beverage stores	5,460	1,970
452	General merchandise stores	4,760	1,370
611	Educational services	4,120	2,030
721	Accommodation	4,060	1,550
812	Personal and laundry services	3,750	1,590
522	Credit intermediation and related	2,890	1,280
423	Merchant wholesalers, durable goods	2,560	630
519	Other information services	2,440	650
454	Nonstore retailers	2,410	840
446	Health and personal care stores	2,220	780
524	Insurance carriers and related activities	2,180	970
441	Motor vehicle and parts dealers	2,010	530
236	Construction of buildings	1,940	680
425	Electronic markets, agents and brokers	1,860	690
237	Heavy and civil engineering	1,850	340
531	Real estate	1,570	670
713	Amusements, gambling, and recreation	1,510	560
811	Repair and maintenance	1,430	470
711	Performing arts and spectator sports	1,430	530
488	Support activities for transportation	1,260	440
TOTAL JOB CREATION		206,700	67,500

Source: Estimates by LAEDC

A complete list of job creation in all industries in the county and the city is provided in Exhibit A-5 in the appendix. ❖

3.7 Identifying Target Industries

Economic development efforts are organized around several priorities. Among these are encouraging job growth in industries that are most competitive and that will generate high-paying jobs that will propel economic growth and wealth creation for all residents.

Workforce development priorities are often in alignment with economic development goals and cognizant of the need to supply a workforce prepared for the jobs of the future, but are also motivated by the immediate need to match those most in need with viable employment opportunities. To fulfill this mission, a broader view of the job market is needed. Augmenting those industries which may drive economic growth and prosperity, population-serving industries will provide the largest number of jobs in terms of job creation, since although they may grow slowly they are large.

Our criteria for choosing target industries thus include (1) industry growth rate – those demonstrating high rates of growth are preferred to those growing slowly; (2) potential job creation – the numbers of jobs projected to be added is also an important metric; (3) industry competitiveness – in light of regional economic development goals, industries that are competitive against other regions are preferred; and (4) prevailing wages – higher wages benefit workers and are preferred to industries that pay lower wages.

Using these sometimes overlapping, sometimes competing goals, the following industries are identified as targets for specific economic and workforce development interventions (in order of relevant NAICS):

- ▶ Construction industries (NAICS 236, 237, 238)
- ▶ Selected manufacturing (fashion, aerospace, analytical instruments, pharmaceuticals, medical devices—NAICS 313, 314, 315, 316, 325, 334, 336, 339)
- ▶ Trade and logistics (NAICS 42x, 48x, 49x)
- ▶ Entertainment and infotech (NAICS 511, 512, 515, 518, 519)
- ▶ Health services (NAICS 621, 622, 623)
- ▶ Leisure and hospitality (NAICS 721, 722)

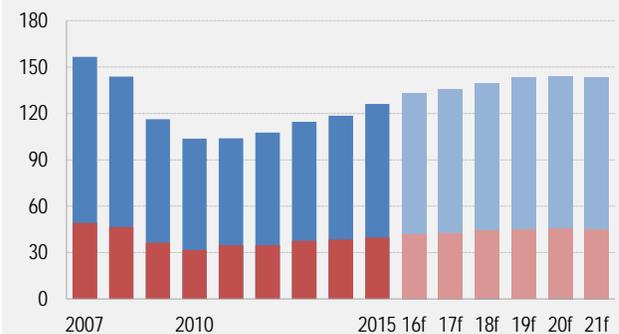
These industries are discussed individually below, including employment projections at the industry level and the types of occupations that they are most likely to employ. A breakout of middle skill occupations for each is provided in the appendix, Exhibits A-6 through A-11.

Construction Industries

As the housing market recovers, construction industries are expected to make a robust recovery. Housing starts are showing signs of life after a dismal few years, and will be needed to meet pent-up demand. In addition, many of the existing infrastructure projects currently planned will come on line, employing thousands of workers in highway, transit, infrastructure and other projects. Finally, continuing incentives and mandates related to energy efficiency and greening of existing buildings have the potential to drive employment in retrofitting and energy efficient implementations. Together, the sector is projected to add a 10,400 jobs between 2016 and 2021 in Los Angeles County and almost 3,300 jobs in the City of Los Angeles.

Exhibit 3-26

Construction Employment (thousands of jobs)



Sources: CA EDD; Moody's Analytics; LAEDC

Exhibit 3-27

Top Occupations in Construction Industry (by % of Industry Employment)

SOC	Occupational Title
47-2061	Construction laborers
47-2031	Carpenters
47-2111	Electricians
47-1011	First-line sups of const trades and extraction workers
47-2152	Plumbers, pipefitters and steamfitters
47-2141	Painters, construction and maintenance
11-9021	Construction managers
47-2081	Drywall and ceiling tile installers
47-2051	Cement masons and concrete finishers
11-1021	General and operations managers

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Manufacturing (Selected Products)

Employment in manufacturing as a whole has been on a long term decline over the past two decades, but is expected to show some improvement from current levels. The distinction must be made between durable goods and nondurable goods manufacturing. Overall, *durable goods manufacturing* will experience anemic growth as labor substitution and replacement by capital increases output at the expense of employment gains. *Nondurable goods manufacturing* will continue to be challenged as low-cost competition from lower income countries will drive these industries from the area.

Nevertheless, several manufacturing industries continue to be promising targets for employment growth in the county based on upon their linkage to important traded industry clusters. These clusters include Fashion, Aerospace, Information Technology and Analytical instruments and Biomedical Devices. Fabricated metals manufacturing is also a component industry of these important clusters and an important regional industry.

Many of these jobs are highly-skilled jobs that are highly-compensated, but many include positions that require workers with community college degrees or technical training. In addition, the expected retirement of aging skilled craftsman in some specialized manufacturing industries presents opportunities for apprenticeships, new entrants, and those moving up the career ladder.

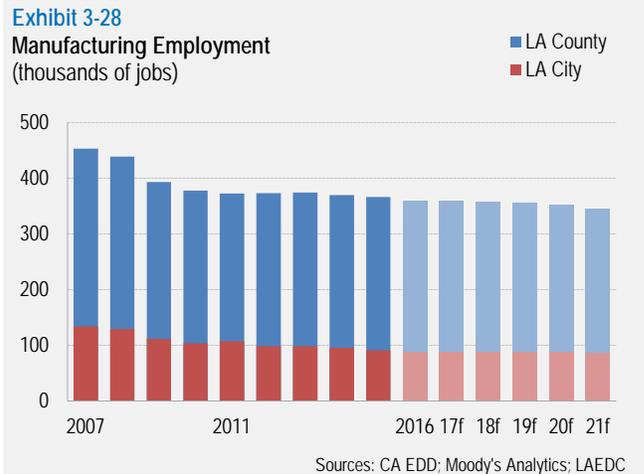


Exhibit 3-29
Top Occupations in Fashion (NAICS 313, 314, 315, 316)
 (by % of Industry Employment)

SOC	Occupational Title
51-6031	Sewing machine operators
51-6061	Textile bleaching and dyeing machine operators and tenders
51-6062	Textile cutting machine setters, operators and tenders
43-5071	Shipping, receiving, and traffic clerks
51-9031	Cutters and trimmers, hand
51-1011	First-line supervisors of production and operating workers
11-1021	General and operations managers
53-7064	Packers and packagers, hand
51-9061	Inspectors, testers, sorters, samplers and weighers

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Exhibit 3-30
Top Occupations in Other Manufacturing (NAICS 334, 336, 339)
 (by % of Industry Employment)

SOC	Occupational Title
15-1133	Software developers, systems software
51-2092	Team assemblers
51-2022	Electrical and electronic equipment assemblers
51-9061	Inspectors, testers, sorters, samplers and weighers
15-1132	Software developers, applications
17-2072	Electronics engineers, except computer
17-2061	Computer hardware engineers
17-2112	Industrial engineers
11-9041	Architectural and engineering managers
11-1021	General and operations managers
17-2071	Electrical engineers

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Trade and Logistics

Trade-related employment is the region’s largest traded industry cluster, one in which the region has competitive advantage, and one that will continue to dominate our export-oriented economic activity.

However, challenges exist to continued employment growth. The warehousing industry has become increasingly efficient and centralized and requires extremely large parcels of land, which are not available in Los Angeles County—expansion is moving to the Inland Empire. Transportation, however, will continue to grow as the ports of San Pedro Bay handle increasing trade volumes and as goods are delivered to inland warehouses.

Wholesale activities are included in the trade cluster, and although traditional wholesale activities will grow slowly, transactions conducted online will grow robustly.

The sector will add approximately 14,500 jobs from 2016 to 2021 in Los Angeles County, of which 4,600 will be in the City of Los Angeles. Many of these jobs can be filled by workers with lower levels of education and little work experience.

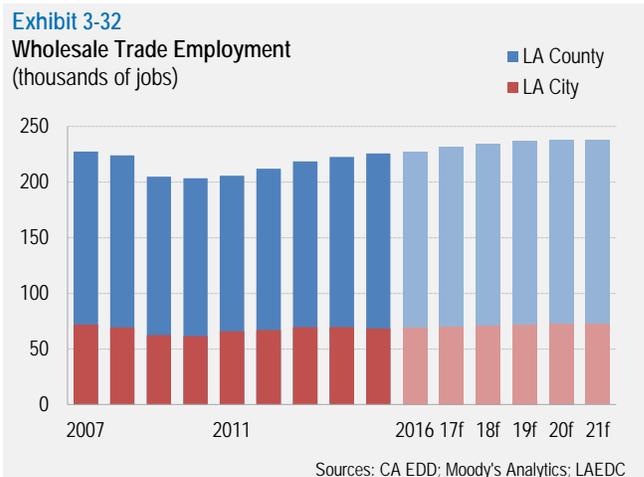


Exhibit 3-33
Top Occupations in Transportation / Warehousing (NAICS 48, 49)
 (by % of Industry Employment)

SOC	Occupational Title
53-3032	Heavy and tractor-trailer truck drivers
53-7062	Laborers and freight, stock and material movers, hand
43-5052	Postal service mail carriers
53-3033	Light truck or delivery services drivers
53-7051	Industrial truck and tractor operators
53-3022	Bus drivers, school or special client
43-4181	Reservation and transportation ticket agents and travel clerks
43-5053	Postal service mail sorters/processors/processing machine ops
53-2031	Flight attendants
43-5011	Cargo and freight agents
43-5081	Stock clerks and order fillers

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Exhibit 3-34
Top Occupations in Wholesale Trade (NAICS 42)
 (by % of Industry Employment)

SOC	Occupational Title
41-4012	Sales representatives, wholesale and manufacturing
53-7062	Laborers and freight, stock and material movers, hand
11-1021	General and operations managers
43-5071	Shipping, receiving and traffic clerks
43-5081	Stock clerks and order fillers
41-4011	Sales representatives, technical and scientific products
43-4051	Customer service representatives
43-9061	Office clerks, general
53-3033	Light truck or delivery services drivers
43-3031	Bookkeeping, accounting and auditing clerks

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Entertainment Industry and InfoTech

As the region’s signature traded industry cluster, the entertainment industry continues to generate employment opportunities for a range of occupations. This industry includes not only motion picture and television production, but also sound recording industries, pre- and post-production work, performing arts, and independent artists and performers, and has a variety of workforce needs in its direct supply chain as well.

This industry has connections across a spectrum of others, including marketing, publishing, information technology, software publishers (including video gaming) and online publishing and services. Together, these form a critical mass of creative industries and workers, which become a magnet for firms engaged in supporting and encouraging these activities. This is evidenced by these industries’ high location quotients.

The broader industry sector known as Information (NAICS 51) includes not only the motion picture production, broadcasting, publishing and new media industries. This sector will grow at an average annual of 0.1 percent per year, at almost the same rate as the overall nonfarm economy. The motion picture industry has recovered since the recession, assisted by incentives received through the California Film and Television Tax Credit Program. Traditional publishing industries will continue to decline as internet publishing and broadcasting will continue to grow, bringing new employment opportunities. Overall, the information sector is forecast to add 1,700 new jobs between 2016 and 2021 in the county.

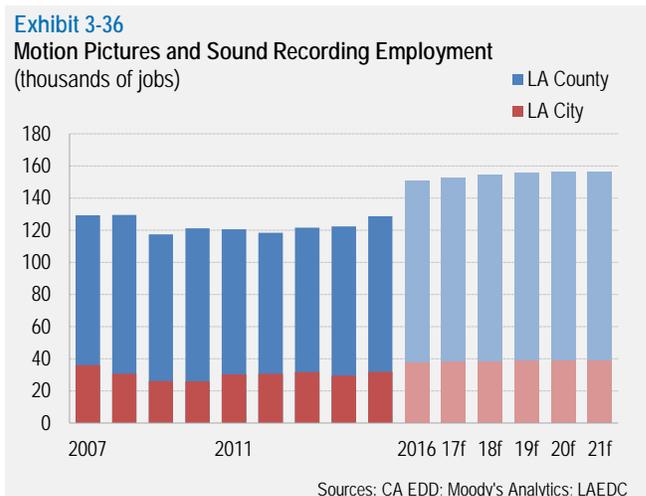
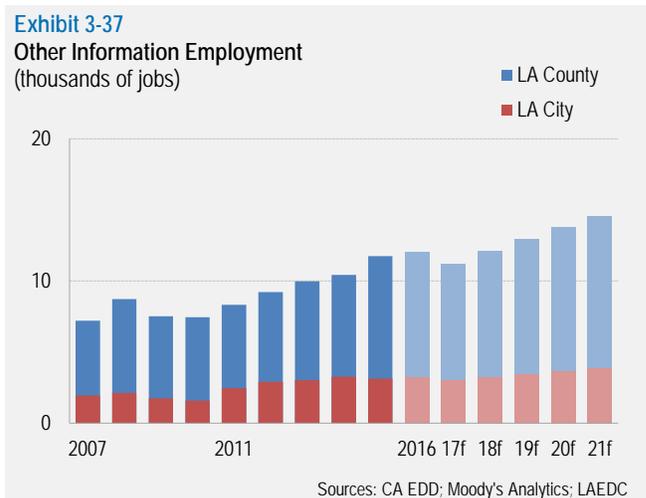


Exhibit 3-38
Top Occupations in Information (NAICS 51)
(by % of Industry Employment)

SOC	Occupational Title
15-1132	Software developers, applications
27-2012	Producers and directors
49-2022	Telecommunications equip installers/repairers, not line installers
41-3099	Sales representatives, services, all other
27-2011	Actors
27-4032	Film and video editors
43-4051	Customer service representatives
13-1199	Business operations specialists, all other
11-3021	Computer and information systems managers
43-9061	Office clerks, general
11-1021	General and operations managers

Sources: BLS: Occupational Employment Statistics Survey, May 2015



Professional and Business Services

The professional and business services sector is a large, diverse sector which includes professional, scientific and technical services, company management (headquarters locations), and administrative, support and waste services industries. Most of these firms provide services to other businesses in Los Angeles County.

These activities typically require a high degree of expertise and training, and can be highly-compensated. However, there is a wide range of occupations within these industries that can be filled by workers with some college training, some technical training, or on-the-job experience, such as clerical positions, receptionists, draftsmen, legal assistants, bookkeepers, accounting clerks, and so on.

Employment in the sector is forecast to grow at an average annual rate of 1.5 percent, assisted in large part by the rapid growth in administrative services (which includes temporary employment).

Overall, the sector will add more than 43,700 new jobs between 2007 and 2021, of which 15,500 will be in the City of Los Angeles.

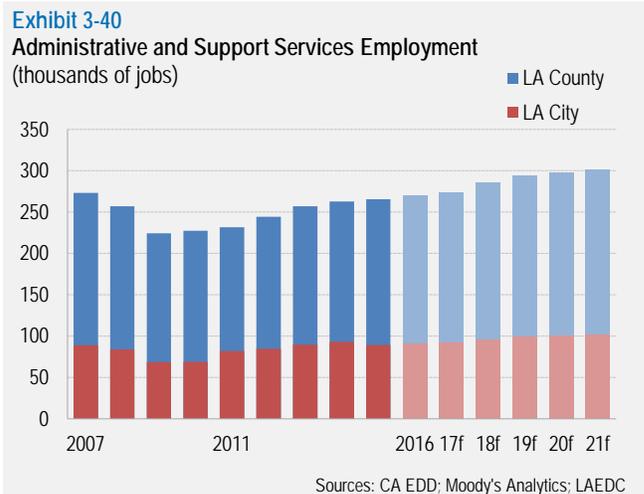
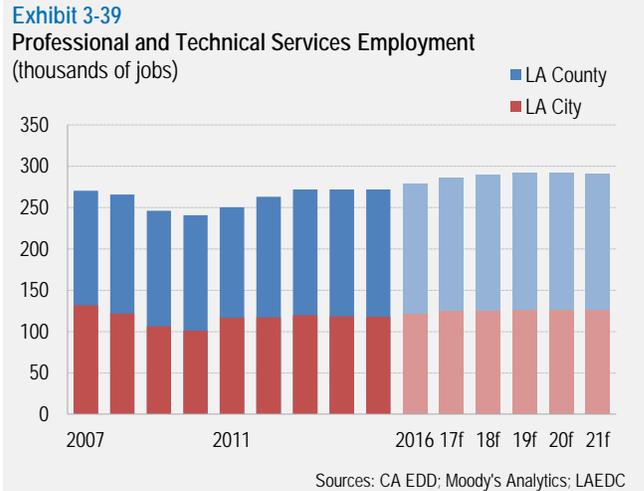


Exhibit 3-41
Top Occupations in Professional / Technical Services (NAICS 54)
(by % of Industry Employment)

SOC	Occupational Title
13-2011	Accountants and auditors
15-1132	Software developers, applications
23-1011	Lawyers
15-1133	Software developers, systems software
11-1021	General and operations managers
13-1111	Management analysts
13-1161	Market research analysts and marketing specialists
43-9061	Office clerks, general
15-1121	Computer systems analysts
43-3031	Bookkeeping, accounting and auditing clerks
43-6014	Secretaries and admin assistants, not legal/medical/executive

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Exhibit 3-42
Top Occupations in Administrative Services (NAICS 561)
(by % of Industry Employment)

SOC	Occupational Title
33-9032	Security guards
37-2011	Janitors and cleaners, not maids/ housekeeping cleaners
53-7062	Laborers and freight, stock and material movers, hand
37-3011	Landscaping and groundskeeping workers
43-9061	Office clerks, general
43-4051	Customer service representatives
53-7064	Packers and packagers, hand
43-6014	Secretaries and admin assistants, not legal/medical/ executive
11-1021	General and operations managers
41-3099	Sales representatives, services, all other

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Health Services

This is a large and growing industry sector which includes establishments providing health care, including: ambulatory health care services such as doctors’ offices, dentistry practices, medical laboratories and home health care services; hospitals; nursing and residential care facilities; and social assistance. These are large industries with high growth potential given the ongoing demographic shift, the advancement of medical technology and increased coverage through the American Care Act. The industry employs workers with a variety of skills and educational requirements, with career pathways that are achievable through stackable certificates. This sector is expected to add almost 62,200 new jobs from 2016 to 2021 in Los Angeles County and almost 15,600 in the City of Los Angeles.

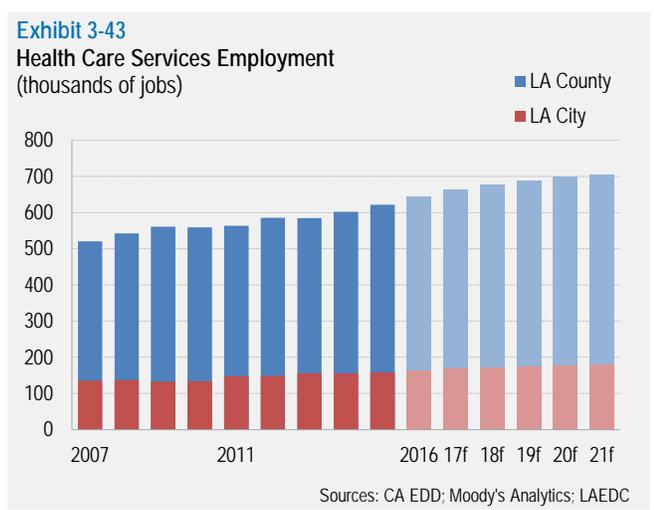


Exhibit 3-44
Top Occupations in Health Services (NAICS 62)
 (by % of Industry Employment)

SOC	Occupational Title
29-1141	Registered nurses
39-9021	Personal care aides
31-1014	Nursing assistants
31-9092	Medical assistants
43-6013	Medical secretaries
29-2061	Licensed practical and licensed vocational nurses
31-9091	Dental assistants
43-4171	Receptionists and information clerks
43-9061	Office clerks, general
25-2011	Preschool teachers, not special education

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Leisure and Hospitality

One of the region’s major industry clusters, hospitality and tourism will continue to provide employment opportunities for a wide range of job entrants and incumbent workers. Food services is a large industry with a wide range of establishments serving food and beverages to customers. They include full-service restaurants, limited-service eating places, food service contractors (such as caterers), mobile food services, and drinking places. It is projected to add 39,200 new jobs from 2016 to 2021 in the county, almost half of which were added in the City of Los Angeles.

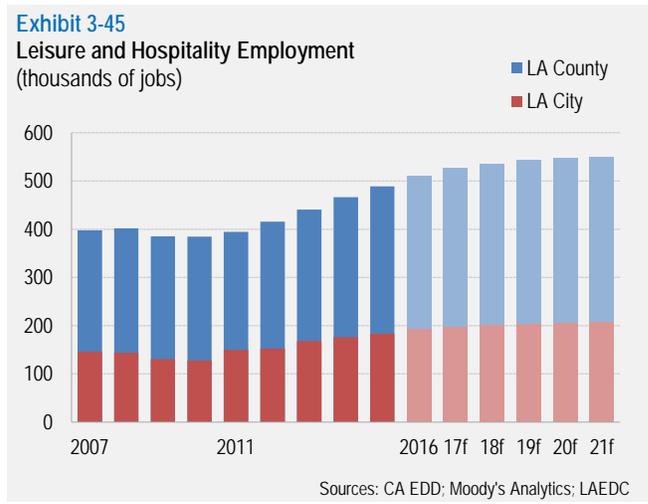


Exhibit 3-46
Top Occupations in Leisure and Hospitality (NAICS 71-72)
 (by % of Industry Employment)

SOC	Occupational Title
35-3021	Combined food prep and serving workers, including fast food
35-3031	Waiters and waitresses
35-2014	Cooks, restaurant
35-2011	Cooks, fast food
35-2021	Food preparation workers
35-9021	Dishwashers
35-1012	First-Line supervisors of food prep and serving workers
35-9011	Dining room and cafeteria attendants/ bartender helpers
37-2012	Maids and housekeeping cleaners
35-3011	Bartenders
41-2011	Cashiers
35-9031	Hosts and hostesses, restaurant, lounge and coffee shop

Sources: BLS: Occupational Employment Statistics Survey, May 2015

4 OCCUPATIONAL ANALYSIS

Understanding how industries are expected to grow or decline and estimating their job creation potential provides one aspect of the overall workforce needs. The more important aspect, however, is the composition of those expected jobs and their educational attainment and skills needs. In this section, we convert industry job creation projections into occupational projections.

4.1 Current Occupational Profile

Occupations are commonly classified using the Standard Occupational Classification (SOC) system, developed by the Bureau of Labor Statistics. This system classifies all workers into one of 840 detailed occupations with similar job duties, skills, education and training. These detailed occupations are not generally industry-specific but are common to many industries. For example, retail salespersons are employed in a full spectrum of industries.

Detailed occupations are aggregated into 23 major groups, which include broad descriptive categories such as production occupations, management occupations and business and financial operations occupations.

The occupational profile of Los Angeles County is shown in Exhibit 4-1. These are the occupations of the jobs that are located in Los Angeles County. (This data is not available at the City level.)

There is a diversity of occupations, as would be expected from such a large economy. The largest occupational group is office and administrative support, accounting for 17.0 percent of all jobs in the region. This is followed by sales occupations, accounting for just over ten percent. These two occupational groups represent a variety of detailed occupations that are employed across many industries. The third largest occupational group, food preparation and serving occupations, accounted for 9.4 percent of all jobs. These are more likely to be found in restaurants and other food services establishments.

Healthcare occupations, including both practitioners and support occupations, account for 7.4 percent of jobs in Los Angeles County.

Exhibit 4-1
Occupational Profile 2015
(% of Employment)

SOC	Occupational Group	
11-0000	Management occupations	5.4%
13-0000	Business and financial operations	5.8%
15-0000	Computer and mathematical science	2.5%
17-0000	Architecture and engineering	1.5%
19-0000	Life, physical and social science	0.8%
21-0000	Community and social services	1.6%
23-0000	Legal occupations	0.9%
25-0000	Education, training and library	6.0%
27-0000	Arts, design, entertainment, sports, media	3.8%
29-0000	Healthcare practitioners and technical	5.1%
31-0000	Healthcare support	2.3%
33-0000	Protective services	2.7%
35-0000	Food preparation and serving	9.4%
37-0000	Building/grounds cleaning and maintenance	2.4%
39-0000	Personal care and service	3.2%
41-0000	Sales and related	10.1%
43-0000	Office and administrative support	17.0%
45-0000	Farming, fishing and forestry	0.1%
47-0000	Construction and extraction	2.5%
49-0000	Installation, maintenance and repair	3.0%
51-0000	Production	6.3%
53-0000	Transportation/material moving	7.4%
Total		100.0%

Sources: BLS: Occupational Employment Statistics Survey, May 2016

Blue-collar occupations, such as those in construction, protective services, maintenance production and transportation account for almost 20 percent of all jobs, a measure of how important these sectors are to the region's economy. ❖

4.2 Projected Occupational Needs

The growth of industries in the region will precipitate the growth of particular occupations. The overall net growth of an occupation is a consequence of its contribution to industries that are growing and to industries that are declining. This may result in an occupation experiencing no or little growth as workers that had been employed in a failing industry shift to similar roles in industries that are growing, or as workers in certain occupations are replaced with improved technologies or processes.

In addition to the growth and decline of industries, workers within industries leave current positions, either through retirement or through promotion, or for other reasons, leaving positions open and in need of replacement. Replacement rates depend on several factors. The age profile of the existing workforce can portend high replacement rates, such as occurs in many manufacturing industries as highly-skilled craftsmen are reaching retirement age and younger workers have not been trained or received apprenticeships to replace them. Occupations that enable current workers to gain valuable skills through on-the-job training will encourage them to move into higher-skilled occupations and leave jobs opening for those with less experience. Industries that are undergoing technological change may find that new processes require fewer workers, leaving fewer openings available as workers retire or leave for other positions.

The Census Bureau estimates replacement needs by industry and occupation through detailed surveys of employers and households. These take into account industry changes, the age of the current workforce within each industry and occupation, and the nature of the career path. These estimates are an important component of occupational job openings and workforce development needs, since the retirement and promotion of individuals leave openings for newer entrants and those moving up the career ladder to assume.

Projected new openings are calculated by applying the industry occupational composition to the detailed industry employment forecast, and occupational forecasts are aggregated across industries.

Projected job openings by major occupational group in Los Angeles County are presented in Exhibit 4-2, and in the City of Los Angeles in Exhibit 4-3.

The largest number of overall openings will occur in the largest occupational groups, such as office and administrative support occupations, food preparation and serving occupations, and healthcare occupations (practitioners, technicians and support). Other occupations that will provide large number of openings are personal care occupations, sales occupations, education and training occupations, and transportation and material moving occupations.

Data do not sum to estimated industry job creation shown in Section 3 due to non-disclosed data and rounding across all detailed occupations.

Exhibit 4-2

Occupational Growth in Los Angeles County 2016-2021

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	8,320	24,340	32,660
13-0000	Business and financial	8,530	22,590	31,110
15-0000	Computer and mathematical	3,770	8,640	12,400
17-0000	Architecture and engineering	1,340	9,450	10,800
19-0000	Life, physical, social science	1,510	5,250	6,750
21-0000	Community and social services	6,060	9,050	15,110
23-0000	Legal occupations	1,680	3,620	5,300
25-0000	Education, training and library	6,680	13,150	19,830
27-0000	Arts, entertainment, sports	2,530	12,850	15,380
29-0000	Healthcare practitioners	17,420	22,850	40,270
31-0000	Healthcare support	10,520	12,980	23,500
33-0000	Protective services	7,760	18,990	26,740
35-0000	Food preparation and serving	31,930	75,040	106,970
37-0000	Building/grounds maintenance	10,180	12,360	22,540
39-0000	Personal care and service	14,060	22,740	36,810
41-0000	Sales and related	12,230	62,410	74,640
43-0000	Office and administrative	31,330	66,130	97,460
45-0000	Farming, fishing and forestry	230	690	920
47-0000	Construction and extraction	7,800	9,900	17,700
49-0000	Installation, maint / repair	4,030	17,940	21,970
51-0000	Production	-2,560	28,050	25,500
53-0000	Transportation/material moving	11,850	33,160	45,010
Total*		197,200	492,100	689,300

* May not sum due to rounding
Source: Estimates by LAEDC

Exhibit 4-3

Occupational Growth in City of Los Angeles 2016-2021

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	3,040	8,490	11,520
13-0000	Business and financial	3,570	9,380	12,950
15-0000	Computer and mathematical	1,460	3,420	4,890
17-0000	Architecture and engineering	780	3,550	4,330
19-0000	Life, physical, social science	680	2,420	3,100
21-0000	Community and social services	1,890	3,320	5,200
23-0000	Legal occupations	770	1,690	2,460
25-0000	Education, training and library	2,480	5,540	8,020
27-0000	Arts, entertainment, sports	310	4,690	5,000
29-0000	Healthcare practitioners	4,900	6,910	11,820
31-0000	Healthcare support	2,810	3,620	6,440
33-0000	Protective services	3,550	9,860	13,410
35-0000	Food preparation and serving	11,910	27,920	39,830
37-0000	Building/grounds maintenance	3,570	4,590	8,160
39-0000	Personal care and service	4,270	7,850	12,120
41-0000	Sales and related	4,080	21,890	25,970
43-0000	Office and administrative	11,150	24,730	35,880
45-0000	Farming, fishing and forestry	90	250	340
47-0000	Construction and extraction	2,650	3,680	6,340
49-0000	Installation, maint / repair	1,500	6,400	7,900
51-0000	Production	-380	7,950	7,570
53-0000	Transportation/material moving	4,220	11,560	15,780
Total*		69,300	179,700	249,000

* May not sum due to rounding
Source: Estimates by LAEDC

Within each occupational group are 840 detailed occupations. Detailed occupations are differentiated according to jobs skills, abilities and work experience required. They are not generally industry specific but are common to several industries. For example, retail salespersons are employed in a full spectrum of industries.

Exhibit 4-4 presents the top 25 detailed occupations by projected job openings (new jobs and replacement jobs) between 2016 and 2021 in Los Angeles County and in the City of Los Angeles. These twenty-five occupations will account for approximately 40 percent of all job openings in all occupations in both regions.

The largest number of openings will be found in occupations related to the largest major occupational groups: combined food preparation and serving workers and waiters and waitresses, which are both in the food preparation and serving occupational group; cashiers and retail salespersons, which are in the sales occupational group; and customer service representatives and office clerks, which are in office and administrative support occupational group.

Other occupations with large numbers of openings expected over the next five years are registered nurses, laborers and freight movers, janitors and cleaners, and personal care aides.

A complete list of all occupational projections for Los Angeles County is in Exhibit A-5 in the appendix.

Exhibit 4-4

Occupational Growth in Los Angeles County 2016-2021 Top 25 Detailed Occupations

SOC	Detailed Occupation	LA County	LA City
35-3031	Waiters and waitresses	25,450	9,680
41-2011	Cashiers	24,980	8,800
35-3021	Food preparation and serving workers	24,080	9,120
41-2031	Retail salespersons	22,930	7,730
43-9061	Office clerks, general	14,370	5,330
53-7062	Freight, stock, and material movers	13,700	4,610
29-1141	Registered nurses	13,500	3,880
43-4051	Customer service representatives	12,480	4,560
43-5081	Stock clerks and order fillers	11,140	3,730
11-1021	General and operations managers	11,130	4,050
37-2011	Janitors and cleaners, except maids	10,460	3,780
35-3022	Counter attendants, cafeteria, concession	8,960	2,910
39-9021	Personal care aides	8,670	2,240
31-1014	Nursing assistants	7,690	2,120
35-2014	Cooks, restaurant	7,670	2,920
33-3051	Police and sheriff's patrol officers	7,390	4,040
39-9011	Childcare workers	7,200	1,970
49-9071	Maintenance and repair workers, general	6,930	2,780
13-2011	Accountants and auditors	6,700	2,690
43-6014	Secretaries and administrative assistants	6,570	2,480
41-4012	Sales representatives, wholesale and manufacturing	6,560	2,090
35-1012	First-line supervisors of food preparation and serving workers	6,390	2,390
39-3031	Ushers and lobby attendants	6,330	1,860
31-1011	Home health aides	6,300	1,630
43-4171	Receptionists and information clerks	6,140	2,010
Total*		283,700	99,400

* May not sum due to rounding
Source: Estimates by LAEDC

Education and Skills Requirements

Careful examination of the detailed occupations that will provide the most job openings in the next five years as shown in Exhibit 4-4 reveal that many of these occupations require lower levels of education and training. The expected openings for these job market participants are especially important to understand given the capabilities of the local labor supply.

The education and work experience needed for an entry level position in each of the top twenty-five occupations is shown in Exhibit 4-5.

Entry level education requirements are as follows: 3=Bachelor’s degree; 4=Associate’s degree; 5=Post-secondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; and 8=Less than high school. Short-term on-the-job training is training of less than one month. Moderate on-the-job training is training from 1 to 12 months.

Most occupations in the exhibit require a high school diploma or less and no work experience. The median wages shown for each occupation reflect the degree of preparation and skills levels needed, as most of them are below the average wage paid to workers in Los Angeles County.

A complete list of all occupational projections for Los Angeles County and the City of Los Angeles, along with their entry level educational and work experience requirements are provided in Exhibit A-5 in the appendix. ❖

Exhibit 4-5
Median Wage and Entry Level Requirements for Top 25 Detailed Occupations 2016-2021

SOC	Detailed Occupation	Median Annual Wage	Entry Level		OJT
			Educ	Work Exp	
35-3031	Waiters and waitresses	\$24,310	8	None	ST
41-2011	Cashiers	22,130	8	None	ST
35-3021	Food preparation and serving workers	22,070	8	None	ST
41-2031	Retail salespersons	24,100	8	None	ST
43-9061	Office clerks, general	30,460	7	None	ST
53-7062	Freight, stock, and material movers	25,340	8	None	ST
29-1141	Registered nurses	95,900	3	None	None
43-4051	Customer service representatives	35,660	7	None	ST
43-5081	Stock clerks and order fillers	23,600	8	None	ST
11-1021	General and operations managers	111,800	3	≥5 years	None
37-2011	Janitors and cleaners, except maids	27,030	8	None	ST
35-3022	Counter attendants, cafeteria, concession	22,980	8	None	ST
39-9021	Personal care aides	23,260	8	None	ST
31-1014	Nursing assistants	29,720	5	None	None
35-2014	Cooks, restaurant	25,650	8	<5 years	MT
33-3051	Police and sheriff's patrol officers	100,660	7	None	MT
39-9011	Childcare workers	24,860	7	None	ST
49-9071	Maintenance and repair workers, general	40,870	7	None	LT
13-2011	Accountants and auditors	73,740	3	None	None
43-6014	Secretaries and administrative assistants	39,180	7	None	ST
41-4012	Sales representatives, wholesale and manufacturing	51,250	7	None	MT
35-1012	First-line supervisors of food preparation and serving workers	30,680	7	<5 years	None
39-3031	Ushers and lobby attendants	23,650	8	None	ST
31-1011	Home health aides	23,180	8	None	ST
43-4171	Receptionists and information clerks	27,820	7	None	ST

ST=short term; MT=moderate-term
 Source: Estimates by LAEDC

5 LOS ANGELES IN THE CALIFORNIA CONTEXT

The discussion has focused on Los Angeles County and the City of Los Angeles. Workforce development planning is intended to be a regional effort, in recognition of the integration of cities and counties into functioning, inter-related economic regions. The California Annual Plan contains its own state-level labor market analysis. In addition to an overview of economic and demographic conditions, it provides projections of employment and occupational growth over the period from 2012 to 2022.

In this section, the identification of target industries above is compared to the findings of the California labor market analysis produced by the Employment Development Department.

5.1 California's Labor Market Analysis

The labor market analysis in the California Annual Plan identifies “target” industries using three metrics: (1) the absolute number of jobs projected to be added in each industry; (2) the growth rate of industries over the forecast period; and (3) middle-skilled occupations.

High Job Creation Potential

Large industries, such as those that are population-serving industries, in general are those that generate the largest number of jobs in absolute terms—even though they may be quite slow growing. The largest industries in California are those that are expected to add the highest absolute number of jobs, including:

- Social assistance;
- Ambulatory health care services; and
- Educational services.

Industries with Highest Growth Rate

The labor market analysis identifies those super sectors that are projected to have the fastest growth rate, regardless of size, including:

- Construction;
- Education and health care services;
- Professional and business services; and
- Leisure and hospitality.

Individual industries that have grown the most quickly over the past three years include several information technology industries, professional services industries and industries associated with California’s housing and construction sector.

Middle-Skilled Occupations with Highest Needs

Middle-skilled jobs are those that require candidates with an educational attainment of more than high school credential but less than a bachelor’s degree. Many projected job openings fall into this category. It is expected that these occupations will pay higher wages than occupations requiring lower levels of education. Middle-skilled occupations projected to have the highest number of job openings (generated through both job growth and through replacement needs of existing workers) over the forecast period include:

- Registered nurses;
- Teacher assistants;
- Heavy and tractor-trailer truck drivers;
- Nursing assistants;
- Medical assistants; and
- Licensed practical / licensed vocational nurses.

The state-level labor market analysis also identifies the sub-regions of the state and notes that these are differentiated according to prevailing wages, occupational distribution and industry make-up.

Employment and occupational projections are based on the ten-year period from 2014 through 2024. This period encapsulates in its first few years a somewhat faster job growth out of the recession than is expected to persist beyond 2016. As the projections are based on a ten-year period rather than a five-year period as used in this report, the absolute numbers of job creation estimates are based on ten years of growth. Furthermore, the projections are based on statewide industry and employment growth. ❖

5.2 The Los Angeles Region

The findings in this report are based on the industry and occupational structure of the Los Angeles region. As noted in the sections above, this region is more specialized in a number of industries that the area is competitive in.

As such, its growth industries and those which are identified as targets differ somewhat from the state level findings. These include:

- Entertainment-related industries;
- Aerospace and analytical instruments;
- Trade and logistics; and
- Hospitality and tourism.

Still, large population-serving industries that are projected to add significant numbers of jobs are consistent across all regions. These include:

- Health care services;
- Social assistance;
- Construction; and
- Professional and business services.

Several fast-growing industries identified in the California analysis are associated with industries concentrated in the Bay area, such as computer systems design and other information services. While the latter is an industry showing potential growth in the Los Angeles region, it is still quite small.

Projections for middle-skilled occupations are similar across regions as most of these emanate from population-serving industries.

The projections in this report are based on the five-year period from 2016 to 2021. This period reflects a somewhat slower growth rate than the years immediately following the recession as the business cycle is now more mature, hence the annual projections of job growth are similarly proportionately smaller. ❖

6 YOUTH AGES 16 TO 24 YEARS

A significant portion of the working aged population in the City of Los Angeles and the County of Los Angeles as a whole are young working-aged individuals between the ages of 16 years to 24 years. They represent 13.8 percent of the total working aged population of 16 years and older in the City and 13.2 percent countywide (Exhibit 6-1).

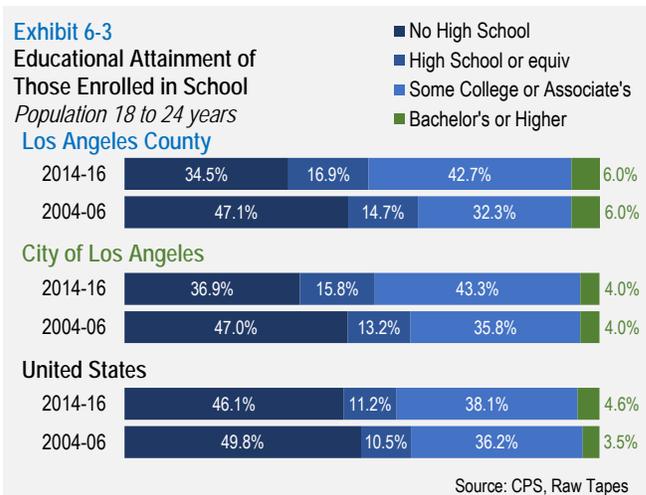
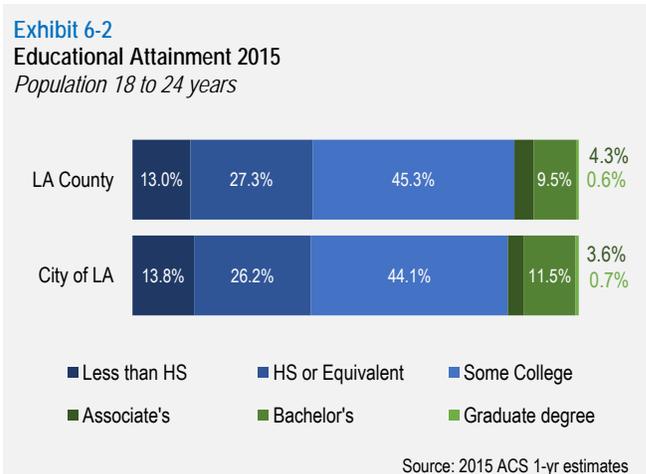
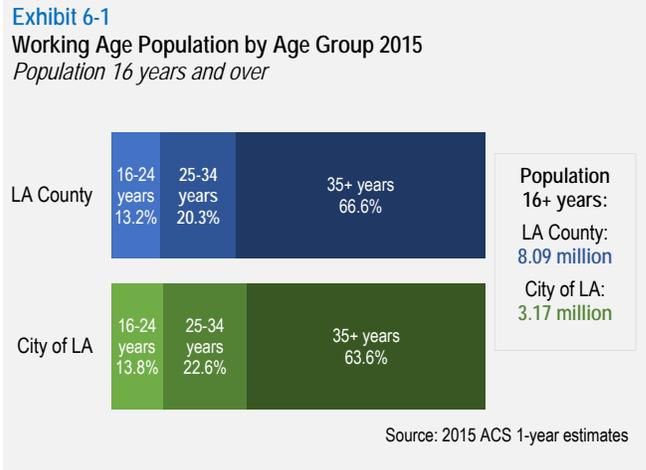
As new entrants into the job market, the population aged 16 to 24 years may lack knowledge on what is required to be successful in their job search, they may lack workforce experience in general, and they may lack skills that are easily obtained through training that can increase employment opportunities.

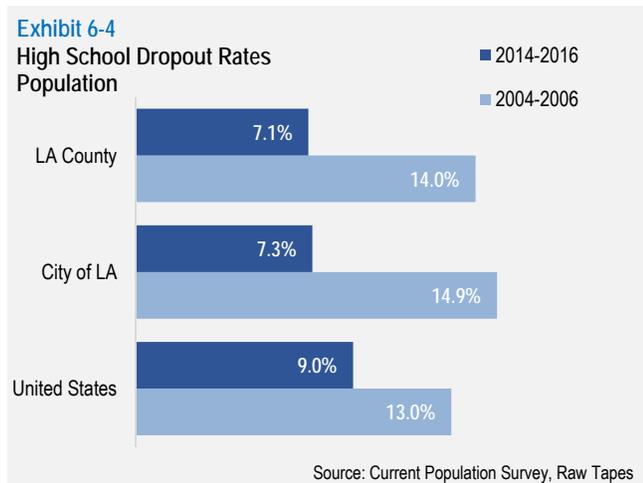
6.1 Education

The educational attainment for the population ages 16 to 24 years are predominantly low levels as individuals are still in the process of completing their education, whether that be secondary school or postsecondary education (Exhibit 6-2). Individuals aged 16 to 17 years are most likely still in the process of completing their high school education. The most predominant level of educational attainment in the 18 to 24 years of age group was some college without a degree, with its share in the city and the county both at approximately 45 percent.

Young adults ages 18 to 22 are typically in the process of obtaining their college degree, therefore, it is reasonable to assume that there would be a low representation of higher levels of educational attainment in the population for which it is being examined here (ages 18 to 24 years). Only 12.2 percent of this cohort in 2015 had the education level of a bachelor’s degree or higher in the City of Los Angeles and 10.1 percent in Los Angeles County as a whole.

A large number of the youth population ages 18 years to 24 years are currently enrolled in either high school or postsecondary education. Exhibit 6-3 shows the highest level of educational attainment of these enrolled youth, presented as a three-year average for the periods of 2014 through 2016 and, for comparison, 2004 through 2006.





In both Los Angeles County and the City of Los Angeles, more enrolled students have completed some college compared to a decade ago; in 2014-16, the proportion of enrolled students that had obtained some college or higher had grown by 7.5 percentage points and 10.4 percentage points, respectively, over the share in 2004-06.

Growing levels of educational attainment is reflective of the drastic decline in local high school dropout rates. Whereas dropout rates in both the City of LA and LA County were much higher than the nation in 2004-06, they were much lower by 2014-2016 (Exhibit 6-5).

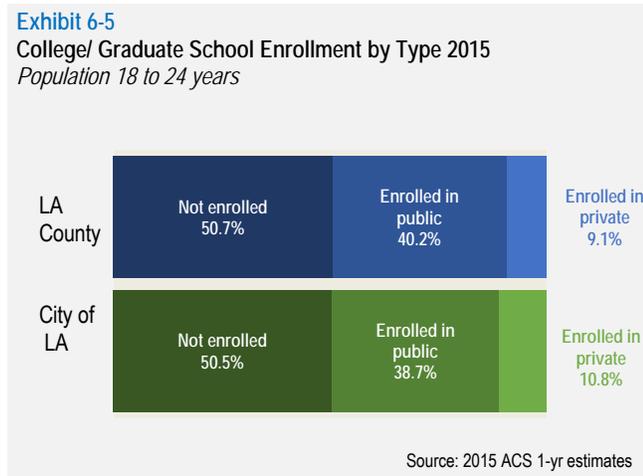


Exhibit 6-5 shows the percentage of the population ages 18 to 24 years enrolled in a postsecondary institution, a college, university or graduate school, in 2015 in the City of Los Angeles and the County as a whole. Approximately half of this cohort is currently enrolled in school and in the process of obtaining a higher level of education in both geographies.

First-time, full-time, undergraduate degree seeking enrollment data is available through the Integrated Post-Secondary Data System (IPEDS). Recent postsecondary enrollment trends for incoming, full-time, freshman undergraduate degree programs in Los Angeles County show more students attending public schools versus private schools (Exhibit 6-6). Enrollment for this freshman cohort at two-year public schools (i.e. community colleges) in the County grew from 17,200 in 2006 to 28,700 in 2015, while enrollment at 4-year public schools in the county grew from 18,200 to 23,200.

Exhibit 6-6
Incoming, Full-Time, Freshman Undergraduate Enrollment
Campuses in Los Angeles County

Postsecondary Institution Type	2006	2015
Public, 2-year	17,203	28,669
Public, 4-year or above	18,203	23,197
Private, not for profit, 4-year or above	10,528	12,320
Private, for profit, 4-year or above	2,630	2,034
Private, for profit, 2-year	679	171
Private, not for profit, 2-year	2,630	144
Total	49,534	66,535

* First-time, full-time undergraduate degree seeking enrollment
Source: U.S. Department of Education, Integrated Post-Secondary Data System, LAEDC

6.2 Poverty Status

As previously mentioned, lower levels of educational attainment are associated with low earnings and increased rates of poverty. This applies to this younger cohort as well (Exhibit 6-7).

The share of individuals whose income has fallen below the poverty threshold in the previous twelve months is higher among children and young working age adults in both the City of Los Angeles and Los Angeles County as a whole. Individual poverty rates were approximately 29 percent in all three of the youngest age groups in the city and just under a quarter of all individuals in each respective age group have fallen below the poverty level in the county. The poverty rate in every age group is slightly higher in the City of Los Angeles compared to the rates countywide.

Poverty rates decline as the population gets older; more of these individuals have completed their education and have entered the workforce full-time. ❖

6.3 Labor Force

Youths aged 16 to 24 years enter the workforce to various degrees. Some are conditionally attached, prioritizing formal education and supporting themselves with a combination of part-time work, student loans, grants, and scholarships. Others fully enter the workforce often starting at entry level job. Undoubtedly, many youths do not yet understand what is required to be successful in their job search and how to develop a career that suits them well.

Labor force participation for those aged 16 to 24 years varies greatly according with their age (Exhibit 6-7). Many younger individuals, age 16 to 19 years, have not completed high school and thus they are classified as not in labor force since fewer are seeking employment opportunities. The population aged 22 to 24 years has the highest share of employed in this population subset (ages 16 to 24 years), as many of these individuals have completed high school and the first levels of their postsecondary education and have entered into the workforce.

The civilian unemployment rate is the ratio of individuals classified as unemployed to the civilian labor force. The civilian unemployment rate in 2015 by age group for this population subset (ages 16 to 24 years) is displayed in Exhibit 6-8.

The youngest of this population subset has the highest unemployment rate in both the city and the county, most likely attributable to the large portion of these individuals (about three fourths of the cohort) classified as not in labor force. Unemployment rates decline significantly in the next two groups, ages 20 to 21 years and ages 22 to 24 years, as more of these individuals have completed their education are entering the workforce.

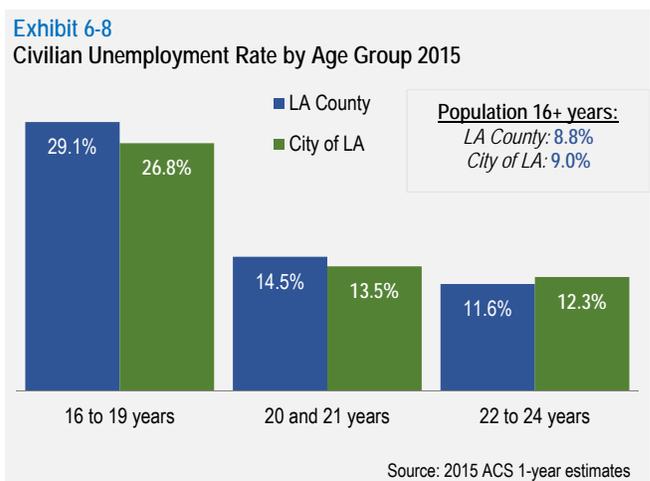
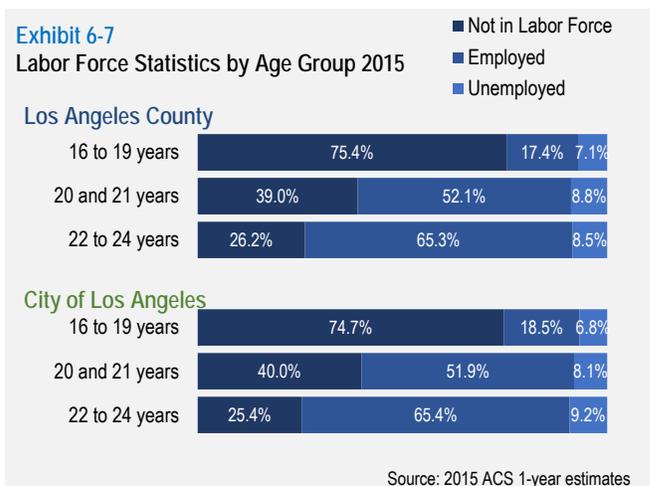
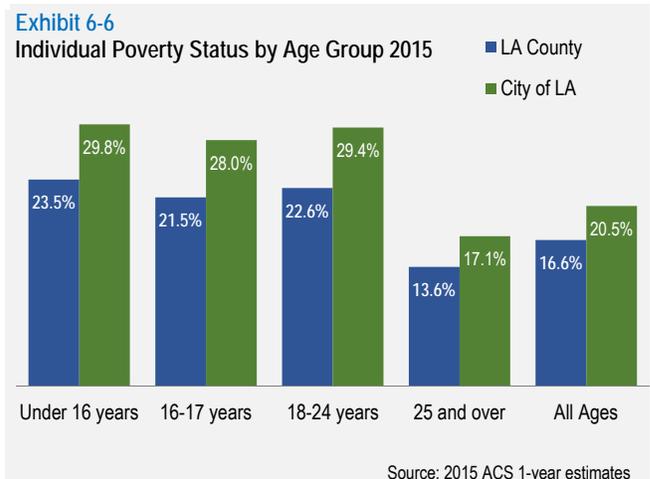


Exhibit 6-9
Youth (16 to 24 Years) Employment to Population Ratio

	City of LA		LA County		United States	
	04-06	14-16	04-06	14-16	04-06	14-16
No High School	63.0%	38.9%	56.0%	40.8%	51.5%	41.9%
High School	66.2%	63.3%	66.7%	66.3%	70.7%	66.2%
Some College or Associate's	78.1%	73.2%	76.7%	75.5%	80.0%	76.4%
Bachelor's or Higher	83.6%	89.8%	83.2%	84.7%	87.4%	85.9%
Total	69.8%	66.7%	67.4%	67.4%	69.6%	67.1%
Older-Youth (20 to 29 Years) Employment to Population Ratio						
No High School	69.3%	56.1%	64.2%	59.1%	61.4%	55.3%
High School	70.3%	70.1%	72.4%	71.3%	73.8%	70.1%
Some College or Associate's	78.5%	76.4%	78.2%	78.5%	79.9%	78.8%
Bachelor's or Higher	82.7%	85.9%	83.5%	84.5%	86.0%	87.5%
Total	75.3%	74.8%	74.5%	75.7%	76.4%	75.9%

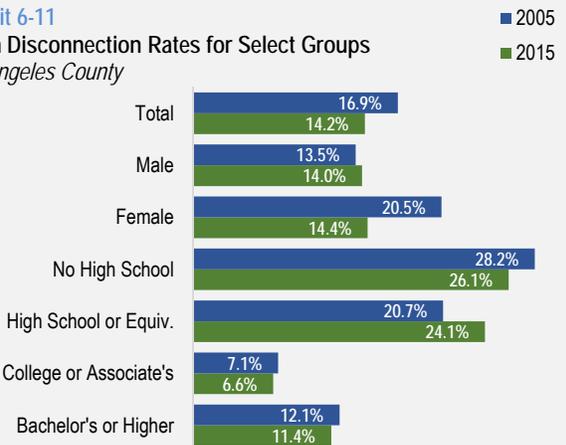
Source: CPS, Raw Tapes

Exhibit 6-10
Youth Labor Force Participation by Educational Attainment

	City of LA		LA County		United States	
	04-06	14-16	04-06	14-16	04-06	14-16
No High School	34.5%	21.0%	32.5%	19.8%	42.7%	30.2%
High School	63.9%	57.1%	65.8%	59.2%	74.1%	68.6%
Some College or Associate's	66.3%	50.9%	64.8%	55.6%	69.7%	63.8%
Bachelor's or Higher	75.7%	78.2%	78.7%	79.9%	83.4%	80.6%
Total	53.7%	47.1%	53.0%	48.2%	61.4%	55.4%

Source: CPS, Raw Tapes

Exhibit 6-11
Youth Disconnection Rates for Select Groups
Los Angeles County



Source: 2005 and 2015 ACS 1-year estimates, PUMS

An employment to population ratio for youth is determined by dividing youth employment by the total cohort, it can be considered an employment rate.

Youth with higher levels of education attainment have higher employment-to-population ratios (Exhibit 6-9). In the City of Los Angeles, the employment-to-population ratio ranges from 38.9 percent for youths with less than a high school education to 89.8 percent for those who have earned a Bachelor's degree or higher. Data for older youths (ages 20 to 29 years) shows that employment-to-population ratios in the City of Los Angeles continued to range from 56.1 percent for older youths with less than a high school education to 85.9 percent for those with a Bachelor's degree or higher.

Among the most drastic changes in employment-to-population ratios in this cohort: the ratio in the City of Los Angeles for youth with less than a high school education has fallen from 63.0 percent in 2004-2006 to 38.9 percent in 2014-2016, a similar trend occurred countywide. The implication is that youth with less than a high school education are becoming disconnected; choosing to remain on the sidelines either attending school full-time or choosing not to work.

Labor force participation, the willingness to work or look for work, for youth is the ratio of those in the labor force (both those employed and those unemployed) to the total cohort. Labor force participation is decreasing for youth with and without a high school degree, with the exception of those with a Bachelor's; in the City of Los Angeles 78.2 percent were in the labor force in 2014-2016 versus 75.7 percent ten years prior. ❖

6.4 Youth in the Workforce

The number of disconnected youth, those neither in the labor force nor enrolled in school, is a major concern in workforce development. These disconnected individuals lack valuable work experience and opportunities to network, receive mentorship, and other types of opportunities, all of which can lead to decreased career outcomes in the long-term.

The youth disconnection rate in Los Angeles County has declined overall, dropping to 14.2 percent in 2015 from 16.9 percent in 2005 (Exhibit 6-11). The disconnection rate for females in the County showed the strongest improvement, dropping from 20.5 percent in 2005 to 14.4 percent in 2015. Youth with high school as their highest level of education experienced an uptick in disconnection over the same period, with disconnection

rising to 24.1 percent over 20.7 percent from a decade earlier.

Even youth enrolled in school are obtaining less workplace experience today than in the recent past. In 2015, a little more than 28 percent of connected youth in Los Angeles County had not worked in the last five years (or likely ever given their age), compared to 17.4 percent in 2005 (Exhibit 6-12). Indeed, the proportion of youth who had worked in the prior five years declined over the decade for many groups in the cohort, including both male and female and across the various levels of educational attainment (Exhibit 6-13).

The lack of work experience among youth is found in most of the seven regions in the City of Los Angeles and countywide. Youth in South Los Angeles were least likely to have worked in the last five years (38.8 percent), followed by North Valley (31.9 percent) and East Los Angeles (30.9 percent).

Even among those youth who have worked within the last five years, the number of hours work has been declining; in 2015, they worked, on average, 1,243 hours annually compared to 1,297 hours per year in 2005, a decline of 4.2 percent (Exhibit 6-14). Within the seven regions in the City of Los Angeles, the lowest average number of hours worked in 2015 was in West Los Angeles while the highest average number of hours worked was in South Valley (Exhibit 6-15).

A significant decline in the average number of hours worked for connected youth also occurred. This implies that either many youth have reprioritized the importance of work, now preferring to focus solely on academics, or that fewer employers are willing to hire students.

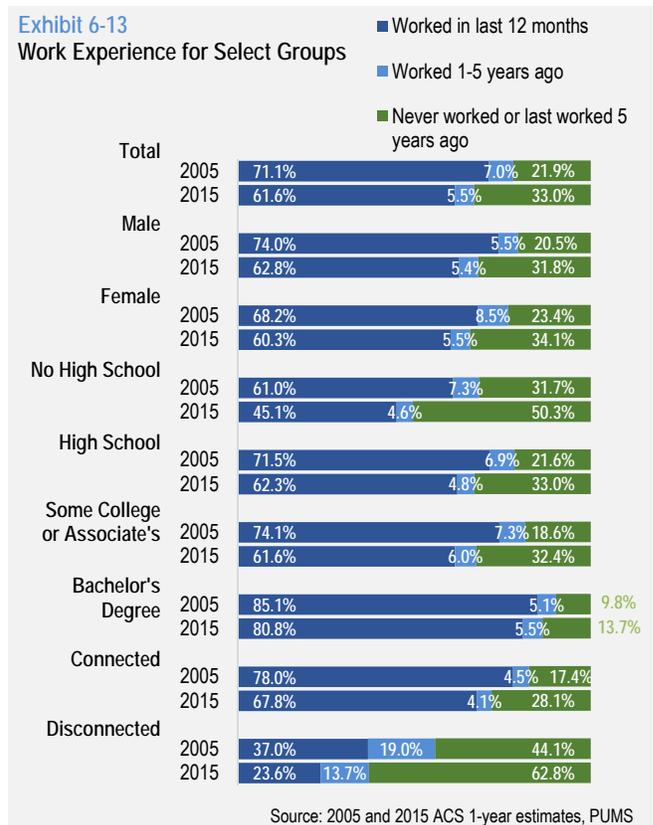
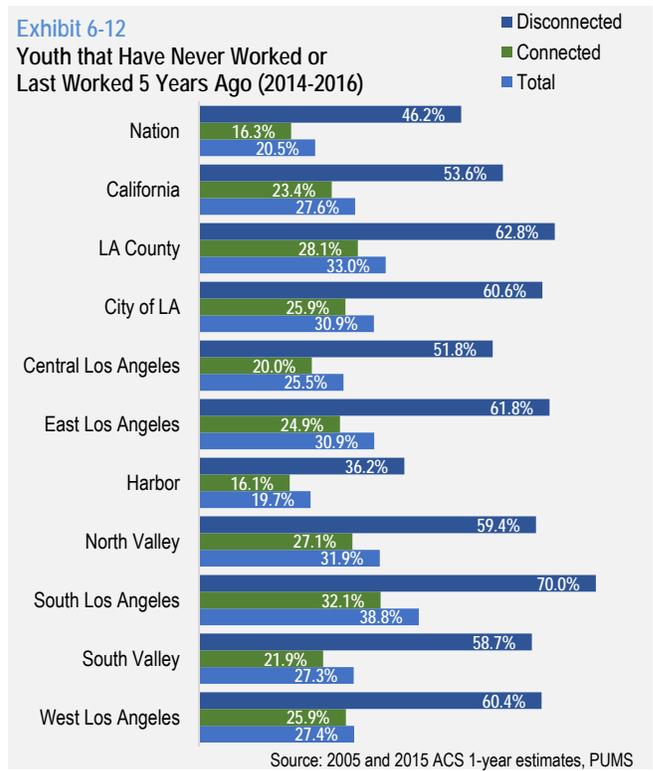
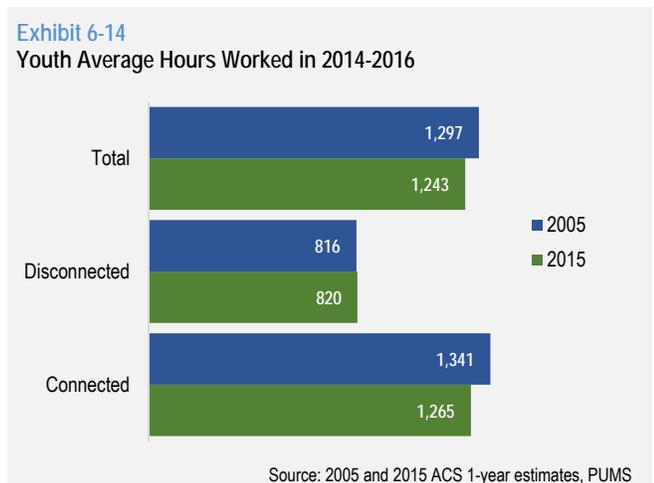


Exhibit 6-15

Youth Average Annual Hours Worked in 2015

	Connected	Disconnected	Total
Nation	1,263	808	1,251
LA County	1,265	820	1,243
Harbor	1,202	547	1,164
LA City	1,290	866	1,268
Central Los Angeles	1,588	938	1,535
East Los Angeles	1,401	672	1,377
Harbor	1,202	547	1,164
North Valley	1,277	846	1,253
South Los Angeles	1,302	860	1,272
South Valley	1,334	1,146	1,322
West Los Angeles	1,001	707	995

Source: 2015 ACS 1-year estimates, PUMS

Exhibit 6-16

Youth Underutilization by Educational Attainment

	City of LA		LA County		United States	
	04-06	14-16	04-06	14-16	04-06	14-16
No High School	26.3%	38.1%	26.4%	37.9%	25.0%	28.4%
High School	22.5%	33.3%	21.3%	28.9%	20.6%	27.0%
Some College or Associate's	11.8%	20.9%	13.5%	21.5%	12.9%	17.1%
Bachelor's or Higher	13.3%	12.5%	13.5%	17.1%	10.3%	13.9%
Total	18.8%	25.1%	18.9%	25.0%	18.2%	21.8%

Source: CPS, Raw Tapes

Underutilization is another important issue for youth in the workforce. Underutilized workers include: the unemployed who are seeking work; the underemployed, those employed part-time but who want to work full-time; and discouraged workers, workers that have fallen out of the labor force because they gave up looking for work.

Labor underutilization in Los Angeles County among youth was estimated at a rate of 25.1 percent in 2014-2016, an increase of 6.3 percentage points over the rate in 2004-2006 of 18.8 percent (Exhibit 6-16). The underutilization rate grew at a similar rate in the City of Los Angeles, from 18.9 percent to 25.0 percent in 2014-2016, while nationally the rate increased only slightly (18.2 percent in 2004-2006 to 21.8 percent in 2014-2016). Growing underutilization is prevalent across all levels of educational attainment in both the City of Los Angeles and in Los Angeles County as a whole.

Similarly, fewer youth are obtaining jobs in sectors and in occupations associated with better opportunities for personal development (Appendix Exhibits A-13 and A-14). Both in the City of Los Angeles and Los Angeles County, the composition of youth employment by industry in 2014-2016 was more concentrated in retail trade and leisure and hospitality industries compared to 2004-2006. Similarly, the composition of youth employment by occupation was less concentrated in office and administrative support industries in both the City of Los Angeles and countywide. ❖

7 SELECT TARGET POPULATIONS

Los Angeles County is composed of many populations that face unique challenges in the workforce, including those of varying race and ethnicity, the disabled, single parents, individuals with limited English proficiency, and those nearing retirement age (Exhibit 7-1). As such, each cohort will have some characteristics that are more likely to be shared. We review labor force characteristics for these select target populations to provide additional information that can be used in workforce efforts for these groups.

Each of these target populations vary in size and have varying rates of labor force participation and unemployment, educational attainment, and employment growth, which is detailed for each in the pages that follow.

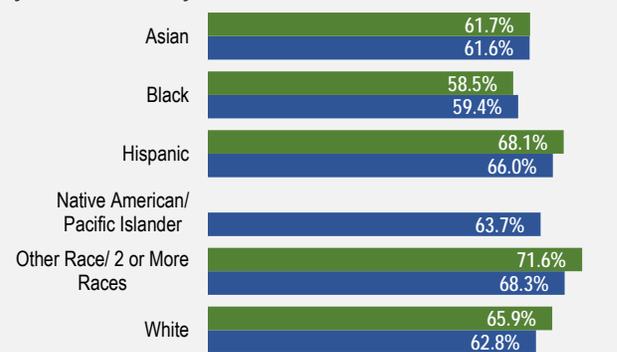
Labor force participation rates and unemployment rates vary greatly by race and ethnicity in Los Angeles County. In 2015, labor force participation rates among major race and ethnic groups ranged from a low of 59.4 percent among blacks and African-Americans to a high of 68.6 percent for those who reported as other race or two or more races. Meanwhile, unemployment rates ranged from 5.4 percent for Asians to 11.5 percent for blacks and African-Americans. ❖

Exhibit 7-1
Select Target Populations
Los Angeles County

	Population
Latino	4,923,661
Black	836,460
Indians and Alaska Natives	71,427
Native Hawaiians and Other Pacific Islanders	29,126
Individuals with Disabilities	991,375
Youths with Disabilities	61,459
Near Retirement Age (55-64)	1,175,678
At Retirement Age (65 and Over)	1,277,334
Limited English Proficiency	2,342,038
Single Parents	309,468

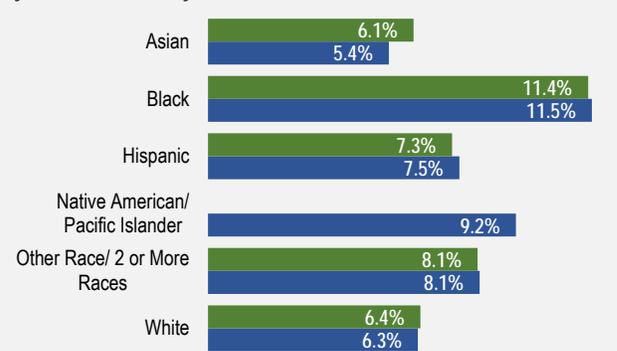
Note: All Target Populations are mutually inclusive.
Sources: US. Census Bureau, American Community Survey; LAEDC

Exhibit 7-2
Labor Force Participation
by Race and Ethnicity 2015



Sources: US. Census Bureau, American Community Survey; LAEDC

Exhibit 7-3
Unemployment Rates
by Race and Ethnicity 2015



Sources: US. Census Bureau, American Community Survey; LAEDC

7.1 Hispanic Origin

The Hispanic population in Los Angeles County accounts for nearly half of the entire population (Exhibit 7-4). With a labor force of 2.4 million workers in 2015, the Hispanic population in the county has historically demonstrated greater labor force participation rates than the county's population as a whole (Exhibit 7-5). Nevertheless, the Hispanic labor force participation rate in the County reached a recent low in 2015 of 66.0 percent.

Exhibit 7-6 displays Hispanic employment and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). The employment level for Hispanic workers was 7.4 percent higher in 2015 than in the base year, this compares to employment growth of 3.9 percent for all workers in the County.

Employment growth for Hispanic workers outpaced the County as a whole from 2013 to 2015, yet the unemployment rate for Hispanic workers stood 0.3 percent higher than for all workers in Los Angeles County in 2015 (Exhibit 7-7).

Educational attainment among the County's Hispanic population is collectively low; only 11.6 percent of the population ages 25 years and over had obtained a Bachelor's degree or higher in 2015, while 66.5 percent had an education of high school or less. However, higher levels of educational attainment exist among younger Hispanics. ❖

Exhibit 7-4

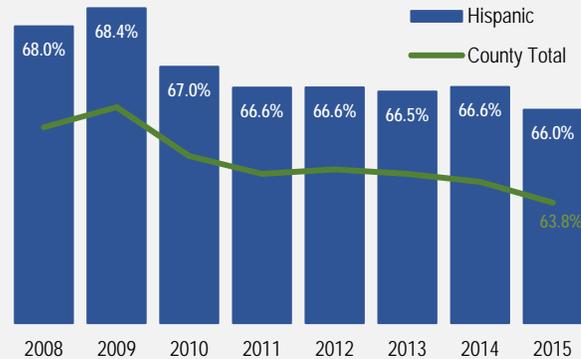
**Selected Education and Workforce Statistics
Hispanics in Los Angeles County 2015**

Population	4,923,661
<i>Share of County Population</i>	<i>48.4%</i>
Educational Attainment (25 and over)	
No High School Degree	40.6%
High School Degree	25.9%
Associate's Degree	22.0%
Bachelor's Degree	8.6%
Grad/Prof Degree	3.0%
Labor Force Statistics	
Labor Force	2,429,039
Labor Force Participation Rate	66.0%
Employment	2,246,403
Unemployment	182,638
Unemployment Rate	7.5%

Sources: US. Census Bureau, American Community Survey; LAEDC

Exhibit 7-5

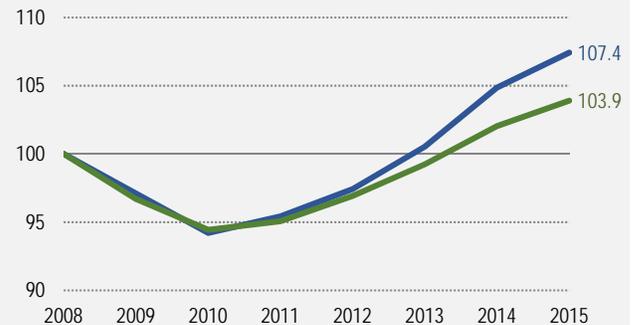
Labor Force Participation in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-6

**Employment Growth in Los Angeles County
Indexed Growth (2008=100)**



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-7

Unemployment Rate in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

7.2 Black or African-American

The Black population in Los Angeles County accounts for 8.2 percent of the total population. With a labor force of 409,227 workers in 2015, labor force participation among Black residents in the county has been historically lower than that of the total population; in 2015, the labor force participation rate for Black residents was estimated at 59.4 percent compared to 63.8 percent for the total population. Aside from a declining labor force participation rate, the level of employment among Black residents in Los Angeles County reflects a pattern of outmigration; the Black population has declined by 3.5 percent from 2008 to 2015.

Exhibit 7-10 displays Black employment and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). As of 2015, the number of employed Black residents has yet to rebound from the jobs lost during the economic downturn; The employment level is 3.2 percent lower in 2015 than in the base year, this compares to employment growth of 3.9 percent for all workers in the County.

While the unemployment rate of 11.5 percent was 0.1 percent points lower in 2015 than in 2008, the rate has remained high over the whole period.

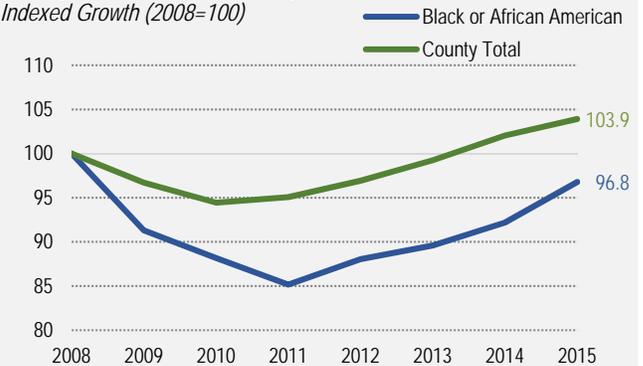
Census data shows that 32.9 percent of Black residents in Los Angeles County ages 25 years and over have an educational attainment of a Bachelor’s degree or higher, compared to 30.8 percent of county population as a whole. ❖

Exhibit 7-8
Select Education and Workforce Statistics for Black or African American in Los Angeles County 2015

Population	836,460
<i>Share of County Population</i>	<i>8.2%</i>
Educational Attainment (25 and over)	
No High School Degree	20.3%
High School Degree	39.9
Associate’s Degree	6.9
Bachelor’s Degree	20.4
Grad/Prof Degree	12.5
Labor Force Statistics	
Labor Force	409,227
Labor Force Participation Rate	59.4%
Employment	361,959
Unemployment	46,958
Unemployment Rate	11.5%

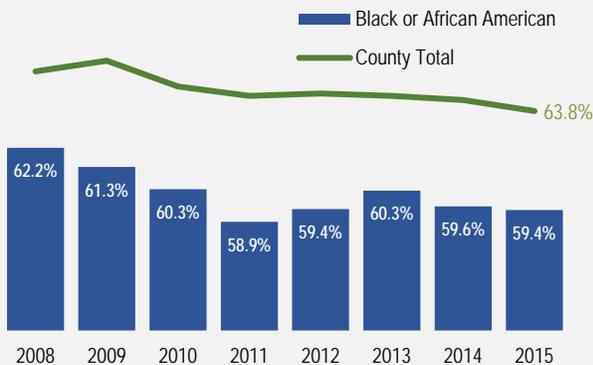
Sources: U.S. Census Bureau, American Community Survey; LAEDC
Note: Includes Hispanics or Latinos that also identify themselves as Black.

Exhibit 7-10
Employment Growth in Los Angeles County
Indexed Growth (2008=100)



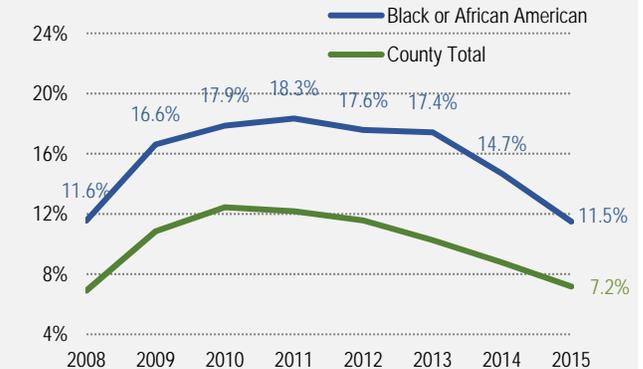
Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-9
Labor Force Participation in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-11
Unemployment Rate in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

7.3 Indian and Alaskan Natives

There was a population of 71,400 Indian and Alaska Natives in Los Angeles County in 2015, accounting for 0.7 percent of total population. With a counted labor force of 35,410, the labor force participation rate closely resembled that of the population as a whole (64 percent).

Exhibit 7-14 displays Indian and Alaska Natives employment and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Indian and Alaska natives employment in LA County grew by 11.9 percent from 2008 to 2015, this compares to employment growth of 3.9 percent for all workers in the County.

The unemployment rate for Indian and Alaska Natives in 2015 was 9.1 percent, approximately two percentage points higher than the rate of 7.2 percent for all county residents.

Educational attainment for the Indian and Alaska natives population in Los Angeles County is collectively low; only 14.8 percent of the population ages 25 years and over have earned a Bachelor’s degree or higher as of 2015, while 79.9 percent had an education of High School or less. ❖

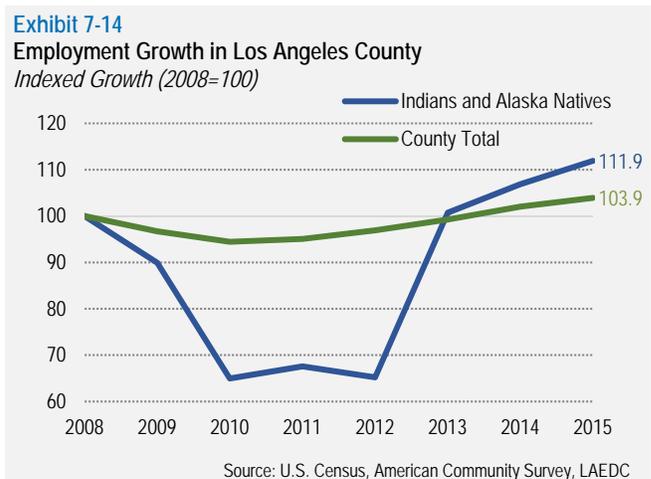
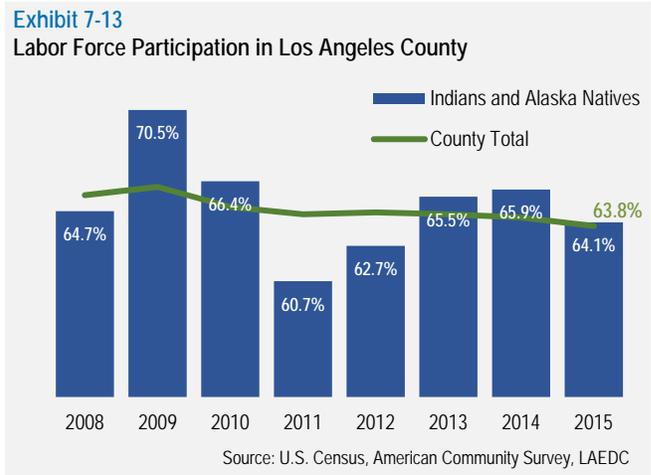
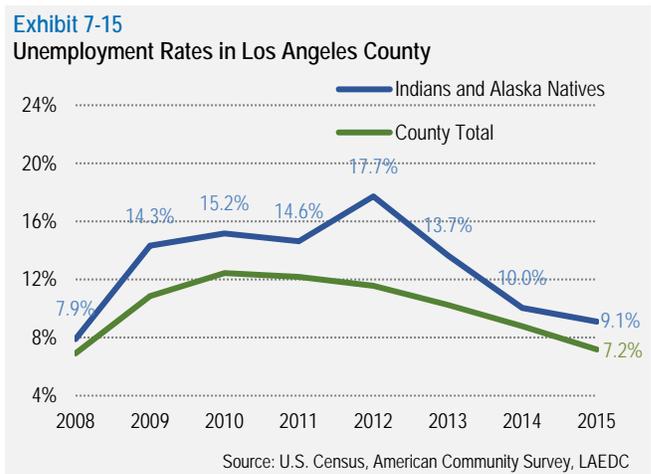


Exhibit 7-12
Select Education and Workforce Statistics
Indians and Alaska Natives in Los Angeles County 2015

Population	71,427
Share of County Population	0.7%
Educational Attainment (25 and over)	
No High School Degree	36.3%
High School Degree	43.6
Associate’s Degree	5.2
Bachelor’s Degree	9.8
Grad/Prof Degree	5.0
Labor Force Statistics	
Labor Force	35,410
Labor Force Participation Rate	64.1%
Employment	32,189
Unemployment	3,221
Unemployment Rate	9.1%

Sources: US. Census Bureau, American Community Survey; LAEDC
Note: Includes Hispanics or Latinos that also identify themselves as Indians or Alaska Natives.



7.4 Native Hawaiians and Other Pacific Islanders

The Native Hawaiian and Other Pacific Islanders population in Los Angeles County in 2015 was 29,100, roughly 0.3 percent of total population. With a labor force of 29,126 in 2015, the labor force participation rate for Native Hawaiian and Other Pacific Islanders (62.8 percent) closely resembled that of the population as a whole (63.8 percent). Census data shows that the labor force participation rate has been on par with County trends since 2008.

Exhibit 7-18 displays Native Hawaiian and Other Pacific Islanders employment and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Native Hawaiian and Other Pacific Islanders employment in Los Angeles County grew by 4.8 percent from 2008 to 2015, this compares to employment growth of 3.9 percent for all workers in the County.

The unemployment rate for Native Hawaiian and Other Pacific Islanders in 2015 was 9.5 percent, approximately 2.3 percentage points higher than the rate of 7.2 percent for all county residents.

Educational attainment of the Native Hawaiian and Other Pacific Islanders population is collectively low. Census data shows that 75.6 percent had an education of High School or below. ❖

Exhibit 7-16

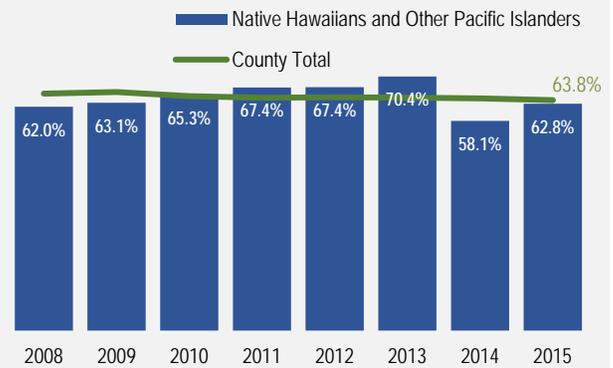
Select Education and Workforce Statistics Native Hawaiians and Other Pacific Islanders in Los Angeles County 2015

Population	29,126
<i>Share of County Population</i>	<i>0.3%</i>
Educational Attainment (25 and over)	
No High School Degree	10.7%
High School Degree	64.9
Associate's Degree	6.2
Bachelor's Degree	12.8
Grad/Prof Degree	5.4
Labor Force Statistics	
Labor Force	13,742
Labor Force Participation Rate	62.8%
Employment	12,437
Unemployment	1,305
Unemployment Rate	9.5%

Sources: U.S. Census Bureau, American Community Survey; LAEDC
Note: Includes Hispanics or Latinos that also identify themselves as Native Hawaiian or Other Pacific Islander.

Exhibit 7-17

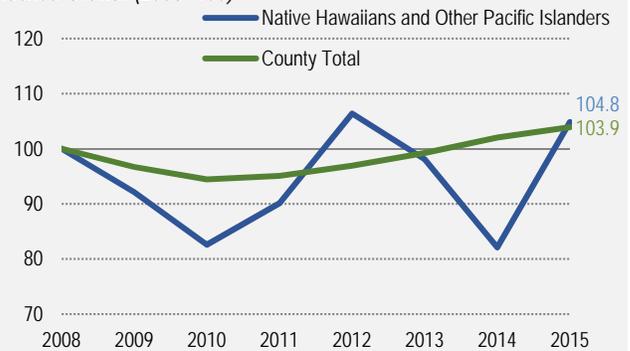
Labor Force Participation in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-18

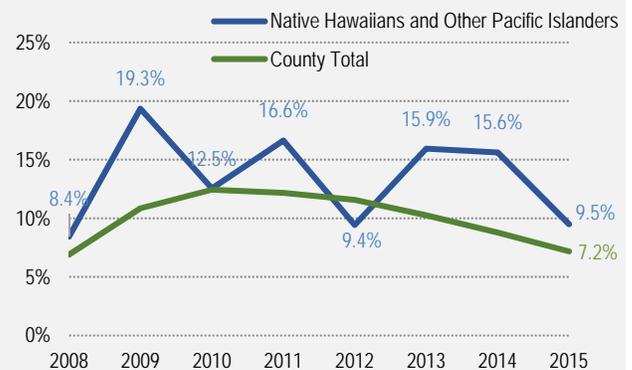
Employment Growth in Los Angeles County Indexed Growth (2008=100)



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-19

Unemployment Rates in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

7.5 Near Retirement Age

The population that is near retirement age (55 years to 64 years of age), which includes baby boomers, was just under 1.2 million in Los Angeles County in 2015, accounting for 11.6 percent of the total population. Approximately 760,790 of workers near retirement age are in the labor force, yielding a 64.7 percent labor force participation rate. Labor force participation for this population has been stable since 2008.

Exhibit 7-22 displays employment for workers near retirement age and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Employment for workers near retirement age in Los Angeles County grew by nearly 21.5 percent from 2008 to 2015, this compares to employment growth of 3.9 percent for all workers in the County.

The unemployment rate for workers near retirement age in 2015 was 5.4 percent, compared to a rate of 7.2 percent for all county residents.

In 2015, approximately 28.4 percent of resident near retirement age in Los Angeles County had obtained a Bachelor’s degree or higher, of which 11.5 percent had obtained a graduate or professional degree. ❖

Exhibit 7-20

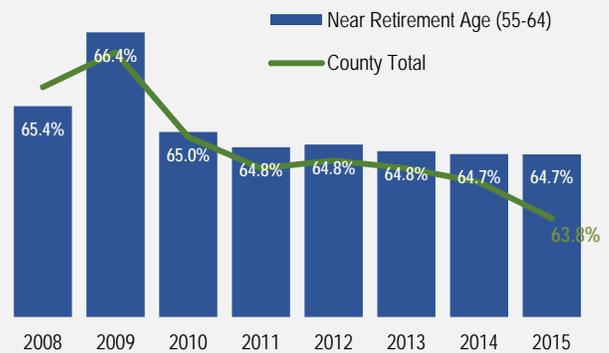
Select Education and Workforce Statistics Individuals Near Retirement Age (55 to 64) in Los Angeles County 2015

Population	1,175,678
Share of County Population	11.6%
Educational Attainment (25 and over)	
No High School Degree	23.8%
High School Degree	39.6%
Associate’s Degree	7.5%
Bachelor’s Degree	17.9%
Grad/Prof Degree	11.5%
Labor Force Statistics	
Labor Force	760,790
Labor Force Participation Rate	64.7%
Employment	719,850
Unemployment	40,929
Unemployment Rate	5.4%

Sources: US. Census Bureau, American Community Survey; LAEDC

Exhibit 7-21

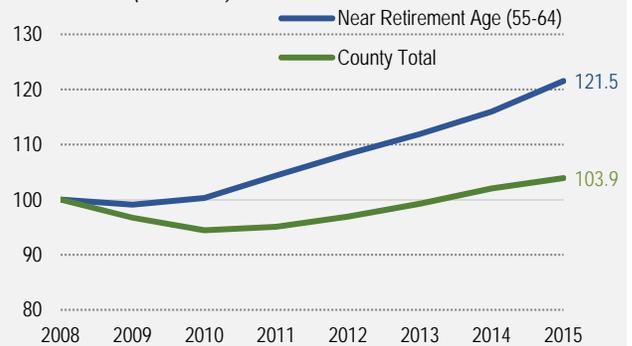
Labor Force Participation in Los Angeles County



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-22

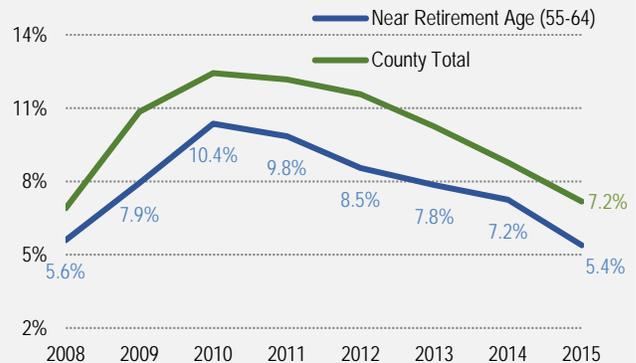
Employment Growth in Los Angeles County Indexed Growth (2008=100)



Source: U.S. Census, American Community Survey, LAEDC

Exhibit 7-23

Unemployment Rate in L.A. County



Source: U.S. Census, American Community Survey, LAEDC

7.6 At Retirement Age

Over 1.2 million residents in Los Angeles County are of retirement age (65 years and over), close to 13 percent of the total population. In 2015, there were 233,000 workers of retirement age still in the labor force. As many workers in this age choose to retire, the labor force participation rate for this cohort remains very low, 18.2 percent in 2015 versus to 63.8 percent for the total population.

Exhibit 7-26 displays employment for workers of retirement age and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Even as labor force participation remains relatively constant, as baby boomers continue to age and remain in the workforce, it contributes to employment growth in this cohort. Since 2008, employment among workers at retirement age has grown by 39.2 percent this compares to employment growth of 3.9 percent for all workers in the County.

The unemployment rate for workers at retirement age is also very low (2.7 percent) as many residents in this age group choose to retire and drop out of the labor force.

Approximately 27.3 percent of residents of retirement age in Los Angeles County had an educational attainment of a Bachelor’s degree or higher in 2015, of which 12.0 percent had obtained a graduate or professional degree.



Exhibit 7-24
 Select Education and Workforce Statistics
 Individuals At Retirement Age (65 years and Over)
 in Los Angeles County 2015

Population	1,277,334
Share of County Population	12.6%
Educational Attainment (25 and over)	
No High School Degree	27.7%
High School Degree	39.0
Associate’s Degree	6.0
Bachelor’s Degree	15.3
Grad/Prof Degree	12.0
Labor Force Statistics	
Labor Force	233,035
Labor Force Participation Rate	81.7%
Employment	226,843
Unemployment	6,192
Unemployment Rate	2.7%

Sources: US. Census Bureau, American Community Survey; LAEDC

Exhibit 7-25
 Labor Force Participation in Los Angeles County

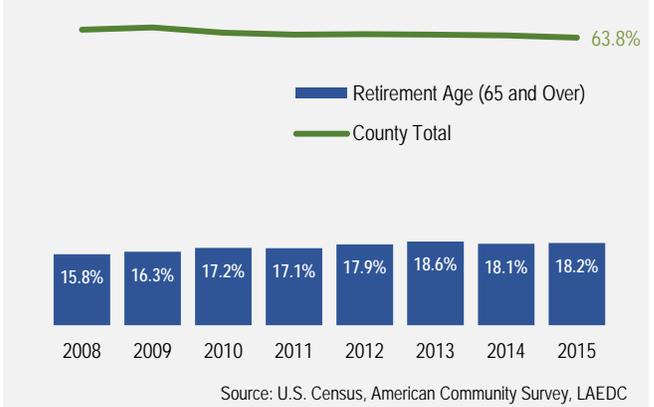


Exhibit 7-26
 Employment Growth in Los Angeles County
 Indexed Growth (2008=100)

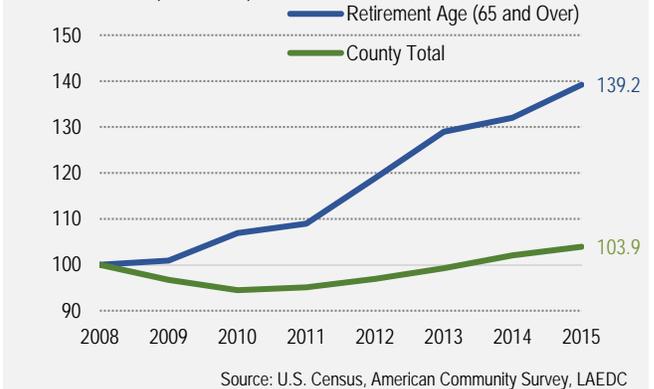
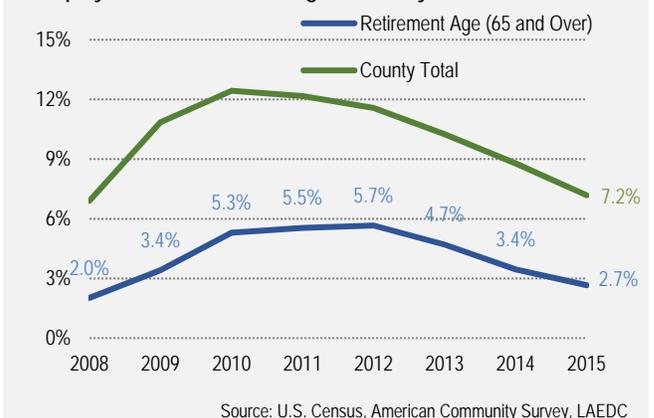


Exhibit 7-27
 Unemployment Rates in Los Angeles County



7.7 Limited English Proficiency

More than 2.3 million residents in Los Angeles County reported limited English proficiency in 2015, nearly a quarter of the total population. Approximately 1.3 million of these residents were in the labor force, with a labor force participation rate of 54.5 percent, about nine percentage points below the labor force participation rate for all residents in the County.

Exhibit 7-30 displays employment for workers with limited English proficiency and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Employment counts for LA County residents with limited English proficiency continued to decline in 2015, down 10.6 percent from the count in 2008. This compares to employment growth of 3.9 percent for all workers in the County.

Ongoing improvement in the unemployment rate for this group serves as a better metric of the health of the labor market as employment declines can be attributed to two causes: actual job loss, but also, as individuals improve their English, they no longer identifying as having limited proficiency and they drop out of the cohort. The unemployment rate for people with limited English proficiency was measured at 6.4 percent in 2015.

Formal education among the population with limited English proficiency in Los Angeles County is collectively low; almost 83 percent of the population ages 25 years and over had an education of High School or below. ❖

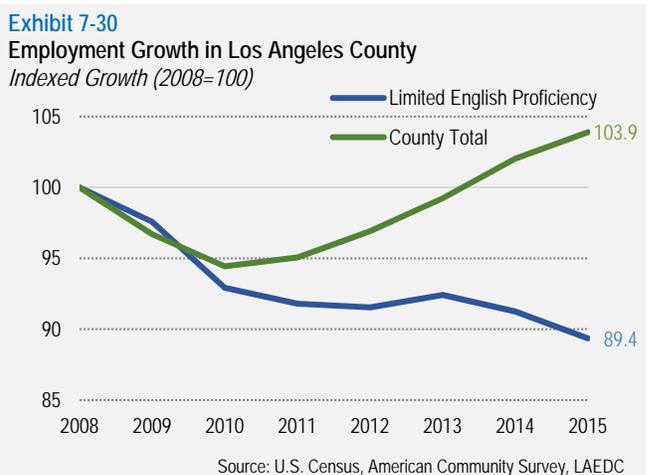
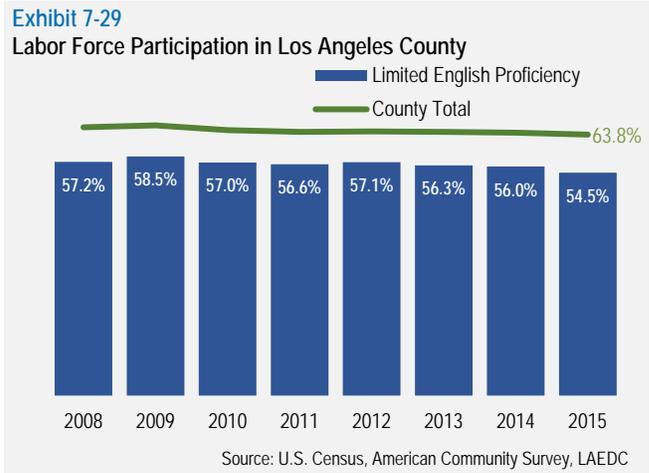
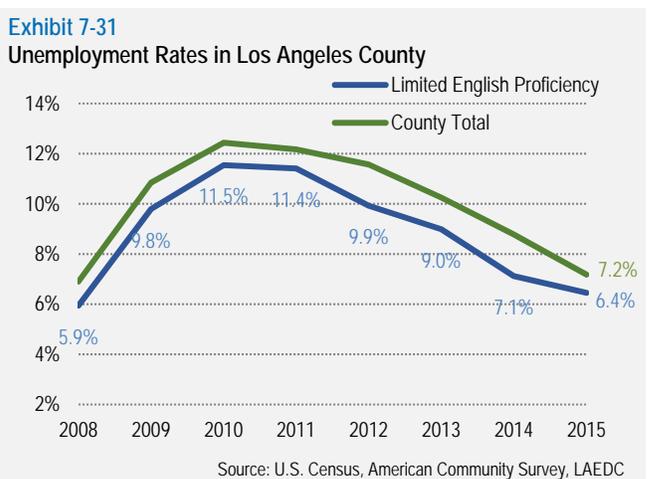


Exhibit 7-28
Select Education and Workforce Statistics for Individuals with Limited English Proficiency in L.A. County in 2015

Population	2,342,038
Share of County Population	24.6%
Population by Educational Attainment (25 and over)	
No High School Degree	50.3%
High School Degree	32.6
Associate's Degree	4.0
Bachelor's Degree	9.5
Grad/Prof Degree	3.6
Labor Force Statistics	
Labor Force	1,277,179
Labor Force Participation Rate	54.5%
Employment	1,194,803
Unemployment	82,306
Unemployment Rate	6.4%

Sources: US. Census Bureau, American Community Survey; LAEDC



7.8 Single Parents

In 2015, Los Angeles County had 309,500 residents who were single parents. A very large share of these single parents were in the labor force, 252,920 workers, contributing to a high labor force participation rate of 82 percent; labor force participation rates have held steady in recent years.

Exhibit 7-34 displays employment for workers who are single parents and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Employment growth for single parents continued to decline in 2015, down by 11 percent since 2008.

Ongoing improvement in the unemployment rate for this cohort serves as a better metric of the health of the labor market as declines in employment can be the result of several phenomena, such as actual job loss, a marriage, or children aging into adulthood (reaching 18 years of age). Single-parents carried an unemployment rate of 6.5 percent in 2015.

In 2015, nearly 30 percent of single parents living in Los Angeles County did not complete high school and 46.4 percent earned a High School diploma or equivalent as their highest level of educational. ❖

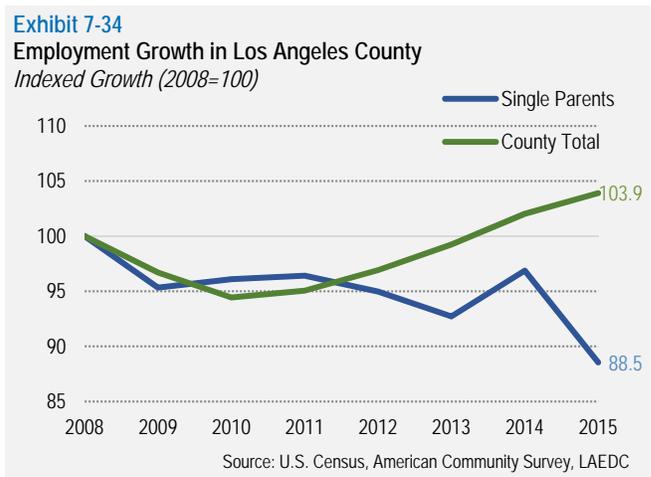
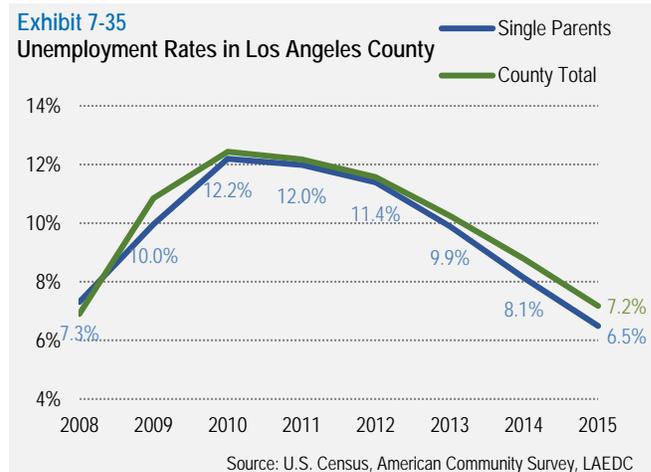


Exhibit 7-32

Select Education and Workforce Statistics
Single Parents in Los Angeles County 2015

Population	309,468
Share of County Population	3.0%
Educational Attainment (25 and over)	
No High School Degree	29.1%
High School Degree	46.4
Associate's Degree	6.9
Bachelor's Degree	11.9
Grad/Prof Degree	5.5
Labor Force Statistics	
Labor Force	252,920
Labor Force Participation Rate	81.7%
Employment	236,358
Unemployment	16,403
Unemployment Rate	6.5%

Sources: US. Census Bureau, American Community Survey; LAEDC



7.9 Individuals with Disabilities

The population of individuals with disabilities in Los Angeles County in 2015 was just under 991,400, close to ten percent of the total population. Few individuals with disabilities enter the workforce; the labor force for workers with disabilities amounted to 192,700 in 2015, a labor force participation rate estimated at 39.8 percent.

Exhibit 7-38 displays employment for individuals with disabilities and total employment in Los Angeles County, indexed to 2008 employment levels. Values of 100 mean that the employment level is equal to that seen in the base year (2008). Employment for workers with disabilities in Los Angeles County grew by nearly seven percent from 2008 to 2015, this compares to employment growth of four percent for all workers in the County.

The unemployment rate in LA County for workers with disabilities has been consistently twice the rate of all workers, with the most recent rate estimated at 14.7 percent in 2015.

The population with disabilities in Los Angeles County, ages 25 years and over, is composed of many people with less than a high school education, 32.7 percent, and those who have earned a high school diploma or equivalent as their highest level of education account for an additional 43.8 percent. ❖

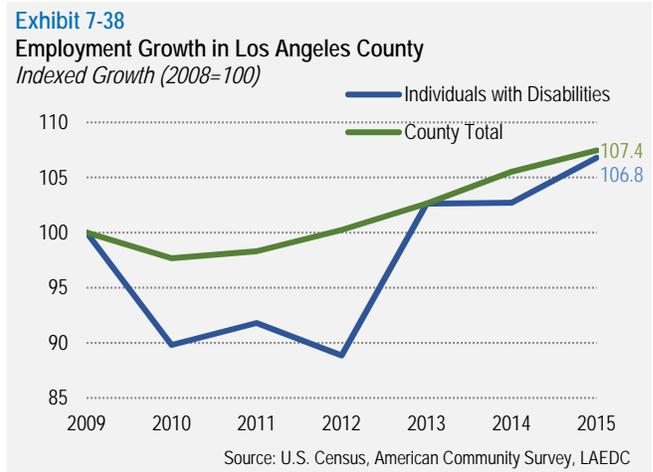
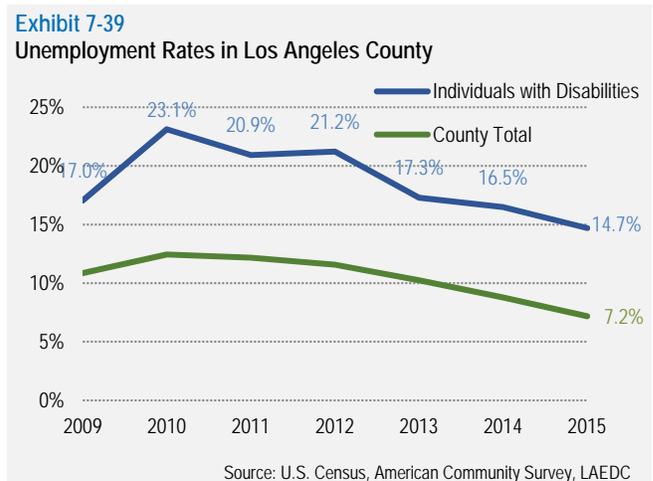


Exhibit 7-36
Select Education and Workforce Statistics
Individuals with Disabilities in Los Angeles County 2015

Population	991,375
Share of County Population	9.8%
Educational Attainment (25 and over)	
No High School Degree	32.7%
High School Degree	43.8
Associate's Degree	5.9
Bachelor's Degree	11.2
Grad/Prof Degree	6.4
Labor Force Statistics	
Labor Force	192,709
Labor Force Participation Rate	39.8%
Employment	164,405
Unemployment	28,304
Unemployment Rate	14.7%

Sources: US. Census Bureau, American Community Survey; LAEDC



Youth with Disabilities

There are a large number of youth, under 18 years of age, that have disabilities. The proportion of these youth to the population with disabilities in Los Angeles County was 2.7 percent in 2015.

A significant number of these youth with disabilities, over the age of three, are enrolled in High School (36.9 percent) compared to high school enrollment for all youths in the County (28.9 percent).

Exhibit 7-40

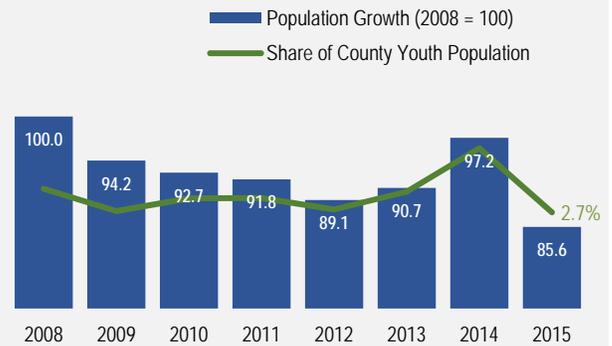
Select Education Statistics Youth (Under 18 years of age) with Disabilities in Los Angeles County 2015

	With Disability	Total
Population	61,459	
<i>Share of County Youth Population</i>	2.7	
School Enrollment by Grade Level (3 to 17 Years of Age)		
Pre-K through 3 rd Grade	27.3%	36.4%
4 th Grade through 6 th Grade	22.2	20.7
7 th or 8 th Grade	13.6	13.9
High School	36.9	28.9

Sources: California Employment Development Department; LAEDC

Exhibit 7-41

Youth with Disability Population in L.A. County



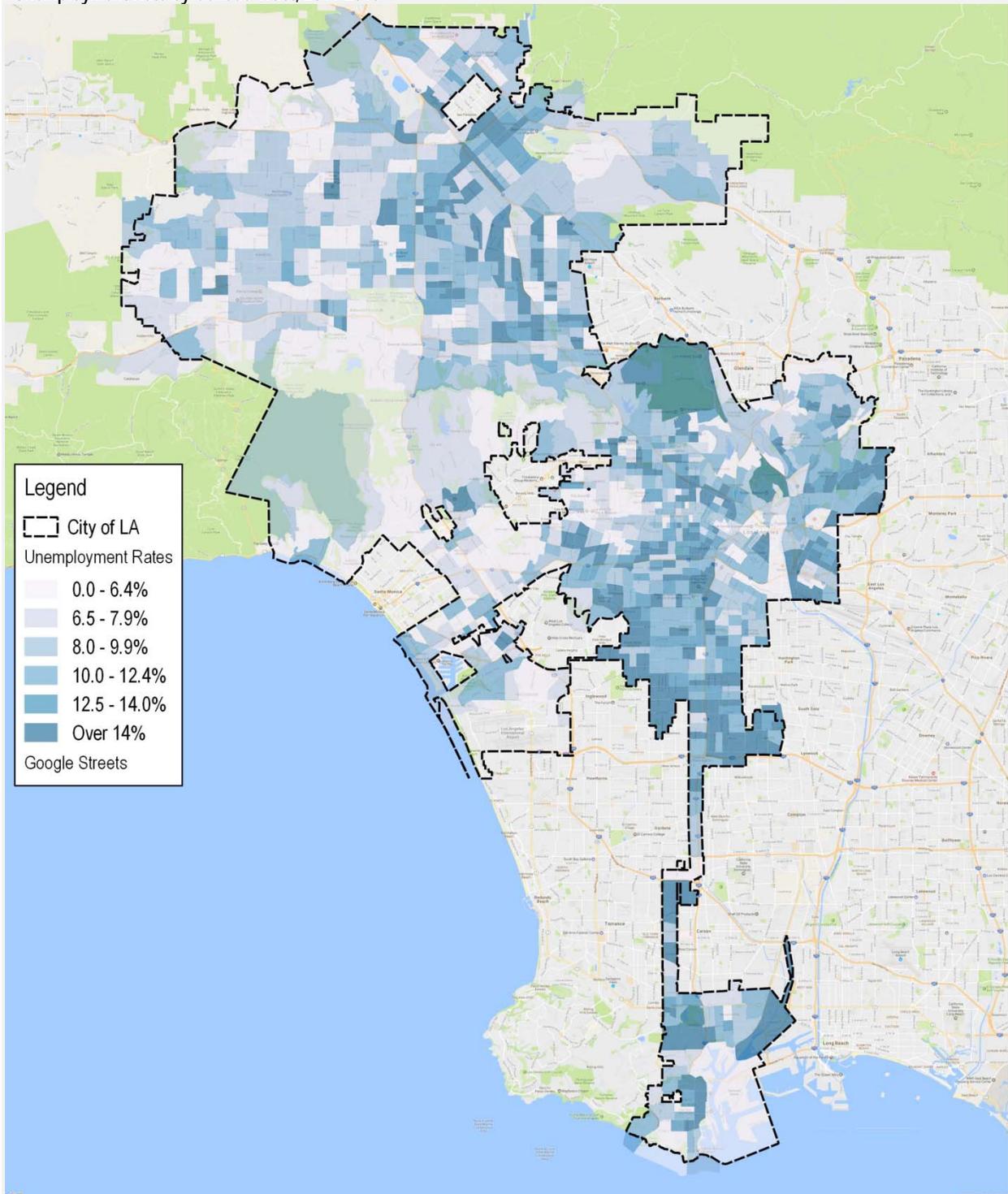
Source: U.S. Census, American Community Survey, LAEDC

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APPENDIX

Exhibit A-1
Unemployment Rate by Census Tract, 2011-2015



Source: ACS 2011-2015, 5-year estimate

Exhibit A-2

Private Sector Industry Employment
Los Angeles County 2015

NAICS	Industry	Employment	% of total
211	Oil and gas extraction	2,131	0.1
212	Mining, except oil and gas	346	0.0
213	Support activities for mining	1,356	0.0
221	Utilities	11,996	0.3
236	Construction of buildings	30,667	0.8
237	Heavy and civil engineering construction	12,700	0.3
238	Specialty trade contractors	82,380	2.3
311	Food manufacturing	38,316	1.1
312	Beverage and tobacco prod manufacturing	5,564	0.2
313	Textile mills	6,182	0.2
314	Textile product mills	4,236	0.1
315	Apparel manufacturing	41,132	1.1
316	Leather and allied product manufacturing	1,699	0.0
321	Wood product manufacturing	3,030	0.1
322	Paper manufacturing	6,857	0.2
323	Printing and related support activities	14,308	0.4
324	Petroleum and coal prods manufacturing	4,620	0.1
325	Chemical manufacturing	20,727	0.6
326	Plastics and rubber prods manufacturing	12,828	0.4
327	Nonmetallic mineral prod manufacturing	5,588	0.2
331	Primary metal manufacturing	6,423	0.2
332	Fabricated metal product manufacturing	43,822	1.2
333	Machinery manufacturing	14,789	0.4
334	Computer / electronic prod manufacturing	37,657	1.0
335	Electrical equipment and appliance mfg.	9,254	0.3
336	Transportation equipment manufacturing	46,534	1.3
337	Furniture and related prod manufacturing	14,440	0.4
339	Miscellaneous manufacturing	19,135	0.5
423	Merchant wholesalers, durable goods	100,714	2.8
424	Merchant wholesalers, nondurable goods	102,799	2.8
425	Electronic markets and agents	19,609	0.5
441	Motor vehicle and parts dealers	45,110	1.2
442	Furniture and home furnishings stores	13,872	0.4
443	Electronics and appliance stores	17,149	0.5
444	Building material and garden supply stores	24,147	0.7
445	Food and beverage stores	93,468	2.6
446	Health and personal care stores	30,821	0.8
447	Gasoline stations	11,383	0.3
448	Clothing and clothing accessories stores	51,665	1.4
451	Sporting, hobby, book / music stores	15,541	0.4
452	General merchandise stores	74,419	2.0
453	Miscellaneous store retailers	25,769	0.7
454	Nonstore retailers	12,533	0.3
481	Air transportation	22,067	0.6
482	Rail transportation	20	0.0
483	Water transportation	3,552	0.1

Exhibit A-2 (cont'd)

NAICS	Industry	Employment	% of total
484	Truck transportation	27,524	0.8
485	Transit and ground passenger transport	12,476	0.3
486	Pipeline transportation	624	0.0
487	Scenic and sightseeing transportation	734	0.0
488	Support activities for transportation	46,527	1.3
491	Postal service	171	0.0
492	Couriers and messengers	22,051	0.6
493	Warehousing and storage	15,649	0.4
511	Publishing industries, except internet	16,048	0.4
512	Motion picture and sound recording	127,717	3.5
515	Broadcasting, except internet	19,775	0.5
517	Telecommunications	22,771	0.6
518	Data processing, hosting, related services	6,605	0.2
519	Other information services	11,278	0.3
521	Monetary authorities - central bank	223	0.0
522	Credit intermediation and related activities	61,690	1.7
523	Securities, commodities, investments	24,118	0.7
524	Insurance carriers and related activities	46,540	1.3
525	Funds, trusts, and other financial vehicles	417	0.0
531	Real estate	58,622	1.6
532	Rental and leasing services	19,787	0.5
533	Lessors of nonfinancial intangible assets	722	0.0
541	Professional and technical services	273,234	7.5
551	Management of companies / enterprises	57,385	1.6
561	Administrative and support services	252,006	6.9
562	Waste mgmt and remediation services	9,861	0.3
611	Educational services	97,595	2.7
621	Ambulatory health care services	199,664	5.5
622	Hospitals	112,514	3.1
623	Nursing and residential care facilities	79,658	2.2
624	Social assistance	237,746	6.5
711	Performing arts and spectator sports	37,928	1.0
712	Museums, historical sites, zoos, and parks	5,050	0.1
713	Amusements, gambling, and recreation	40,046	1.1
721	Accommodation	45,114	1.2
722	Food services and drinking places	355,543	9.8
811	Repair and maintenance	37,663	1.0
812	Personal and laundry services	52,918	1.5
813	Membership associations and orgs	41,385	1.1

Sources: California Employment Development Department; LAEDC

Exhibit A-3

Private Sector Industry Employment
City of Los Angeles 2015

NAICS	Industry	Employment	% of total
211	Oil and gas extraction	230	0.0
212	Mining, except oil and gas	45	0.0
213	Support activities for mining	181	0.0
221	Utilities	2,764	0.2
236	Construction of buildings	10,805	0.8
237	Heavy and civil engineering construction	2,305	0.2
238	Specialty trade contractors	26,526	2.0
311	Food manufacturing	8,704	0.7
312	Beverage and tobacco prod manufacturing	2,268	0.2
313	Textile mills	2,301	0.2
314	Textile product mills	1,205	0.1
315	Apparel manufacturing	17,269	1.3
316	Leather and allied product manufacturing	359	0.0
321	Wood product manufacturing	608	0.0
322	Paper manufacturing	405	0.0
323	Printing and related support activities	4,260	0.3
324	Petroleum and coal prods manufacturing	1,357	0.1
325	Chemical manufacturing	8,219	0.6
326	Plastics and rubber prods manufacturing	2,417	0.2
327	Nonmetallic mineral prod manufacturing	1,778	0.1
331	Primary metal manufacturing	585	0.0
332	Fabricated metal product manufacturing	10,827	0.8
333	Machinery manufacturing	1,938	0.1
334	Computer / electronic prod manufacturing	9,629	0.7
335	Electrical equipment and appliance mfg.	1,690	0.1
336	Transportation equipment manufacturing	4,831	0.4
337	Furniture and related prod manufacturing	3,777	0.3
339	Miscellaneous manufacturing	6,259	0.5
423	Merchant wholesalers, durable goods	24,937	1.9
424	Merchant wholesalers, nondurable goods	36,238	2.7
425	Electronic markets and agents	7,318	0.6
441	Motor vehicle and parts dealers	11,876	0.9
442	Furniture and home furnishings stores	4,983	0.4
443	Electronics and appliance stores	5,777	0.4
444	Building material and garden supply stores	8,862	0.7
445	Food and beverage stores	33,807	2.6
446	Health and personal care stores	10,874	0.8
447	Gasoline stations	4,090	0.3
448	Clothing and clothing accessories stores	18,196	1.4
451	Sporting, hobby, book / music stores	4,589	0.3
452	General merchandise stores	21,385	1.6
453	Miscellaneous store retailers	11,430	0.9
454	Nonstore retailers	4,376	0.3
481	Air transportation	18,008	1.4
482	Rail transportation	-	-
483	Water transportation	1,024	0.1

Exhibit A-3 (cont'd)

NAICS	Industry	Employment	% of total
484	Truck transportation	5,293	0.4
485	Transit and ground passenger transport	5,042	0.4
486	Pipeline transportation	202	0.0
487	Scenic and sightseeing transportation	300	0.0
488	Support activities for transportation	14,314	1.1
491	Postal service	68	0.0
492	Couriers and messengers	10,159	0.8
493	Warehousing and storage	1,414	0.1
511	Publishing industries, except internet	7,567	0.6
512	Motion picture and sound recording	31,945	2.4
515	Broadcasting, except internet	14,097	1.1
517	Telecommunications	7,742	0.6
518	Data processing, hosting, related services	1,730	0.1
519	Other information services	3,130	0.2
521	Monetary authorities - central bank	68	0.0
522	Credit intermediation and related activities	24,228	1.8
523	Securities, commodities, investments	13,683	1.0
524	Insurance carriers and related activities	21,017	1.6
525	Funds, trusts, and other financial vehicles	44	0.0
531	Real estate	24,918	1.9
532	Rental and leasing services	8,468	0.6
533	Lessors of nonfinancial intangible assets	269	0.0
541	Professional and technical services	117,786	8.9
551	Management of companies / enterprises	17,819	1.3
561	Administrative and support services	87,477	6.6
562	Waste mgmt and remediation services	1,800	0.1
611	Educational services	48,071	3.6
621	Ambulatory health care services	83,607	6.3
622	Hospitals	39,702	3.0
623	Nursing and residential care facilities	34,992	2.6
624	Social assistance	96,838	7.3
711	Performing arts and spectator sports	17,437	1.3
712	Museums, historical sites, zoos, and parks	3,715	0.3
713	Amusements, gambling, and recreation	9,786	0.7
721	Accommodation	18,476	1.4
722	Food services and drinking places	134,264	10.1
811	Repair and maintenance	12,480	0.9
812	Personal and laundry services	22,067	1.7
813	Membership associations and orgs	19,743	1.5

Sources: California Employment Development Department; LAEDC

Exhibit A-4

Competitiveness of Private Sector Industries 2015
(Location Quotients v. US)

NAICS	Industry	LA County	LA City
211	Oil and gas extraction	0.4	0.1
212	Mining, except oil and gas	0.1	-
213	Support activities for mining	0.1	-
221	Utilities	0.7	0.4
236	Construction of buildings	0.7	0.6
237	Heavy and civil engineering construction	0.4	0.2
238	Specialty trade contractors	0.7	0.6
311	Food manufacturing	0.8	0.5
312	Beverage and tobacco prod manufacturing	0.8	0.9
313	Textile mills	1.7	1.7
314	Textile product mills	1.2	0.9
315	Apparel manufacturing	10.0	10.9
316	Leather and allied product manufacturing	1.9	1.1
321	Wood product manufacturing	0.3	0.1
322	Paper manufacturing	0.6	0.1
323	Printing and related support activities	1.1	0.8
324	Petroleum and coal prods manufacturing	1.4	1.1
325	Chemical manufacturing	0.8	0.9
326	Plastics and rubber prods manufacturing	0.6	0.3
327	Nonmetallic mineral prod manufacturing	0.5	0.4
331	Primary metal manufacturing	0.5	0.1
332	Fabricated metal product manufacturing	1.0	0.6
333	Machinery manufacturing	0.4	0.1
334	Computer / electronic prod manufacturing	1.2	0.8
335	Electrical equipment and appliance mfg.	0.8	0.4
336	Transportation equipment manufacturing	1.0	0.3
337	Furniture and related prod manufacturing	1.3	0.8
339	Miscellaneous manufacturing	1.1	0.9
423	Merchant wholesalers, durable goods	1.1	0.7
424	Merchant wholesalers, nondurable goods	1.7	1.5
425	Electronic markets and agents	0.7	0.7
441	Motor vehicle and parts dealers	0.8	0.5
442	Furniture and home furnishings stores	1.0	0.9
443	Electronics and appliance stores	1.1	1.0
444	Building material and garden supply stores	0.6	0.6
445	Food and beverage stores	1.0	0.9
446	Health and personal care stores	1.0	0.9
447	Gasoline stations	0.4	0.4
448	Clothing and clothing accessories stores	1.3	1.1
451	Sporting, hobby, book / music stores	0.8	0.6
452	General merchandise stores	0.8	0.6
453	Miscellaneous store retailers	1.0	1.2
454	Nonstore retailers	0.8	0.7
481	Air transportation	1.6	3.3
482	Rail transportation	0.9	-
483	Water transportation	1.7	1.3

Exhibit A-4 (cont'd)

NAICS	Industry	LA County	LA City
484	Truck transportation	0.6	0.3
485	Transit and ground passenger transport	0.9	0.9
486	Pipeline transportation	0.4	0.4
487	Scenic and sightseeing transportation	0.8	0.8
488	Support activities for transportation	2.4	1.9
491	Postal service	0.9	0.9
492	Couriers and messengers	1.2	1.4
493	Warehousing and storage	0.6	0.1
511	Publishing industries, except internet	0.7	0.9
512	Motion picture and sound recording	10.4	6.7
515	Broadcasting, except internet	2.3	4.3
517	Telecommunications	0.9	0.8
518	Data processing, hosting, related services	0.7	0.5
519	Other information services	1.5	1.1
521	Monetary authorities - central bank	0.4	0.3
522	Credit intermediation and related activities	0.8	0.8
523	Securities, commodities, investments	0.9	1.3
524	Insurance carriers and related activities	0.7	0.8
525	Funds, trusts, and other financial vehicles	2.0	0.5
531	Real estate	1.3	1.4
532	Rental and leasing services	1.2	1.3
533	Lessors of nonfinancial intangible assets	1.0	1.0
541	Professional and technical services	1.0	1.2
551	Management of companies / enterprises	0.9	0.7
561	Administrative and support services	1.0	0.9
562	Waste mgmt and remediation services	0.8	0.4
611	Educational services	1.2	1.5
621	Ambulatory health care services	1.0	1.0
622	Hospitals	0.8	0.7
623	Nursing and residential care facilities	0.8	0.9
624	Social assistance	2.3	2.4
711	Performing arts and spectator sports	2.7	3.3
712	Museums, historical sites, zoos, and parks	1.1	2.1
713	Amusements, gambling, and recreation	0.8	0.5
721	Accommodation	0.8	0.8
722	Food services and drinking places	1.1	1.0
811	Repair and maintenance	1.0	0.8
812	Personal and laundry services	1.2	1.3
813	Membership associations and orgs	1.0	1.2

Sources: California Employment Development Department; estimates by LAEDC

Exhibit A-5

Projected New Job Creation 2016-2021

NAICS	Industry	Annual Average Percent Change	Number of New Jobs in LA County	Number of New Jobs in LA City
211	Oil and gas extraction	0.6	60	7
212	Mining, except oil and gas	0.6	10	1
213	Support activities for mining	0.6	38	5
221	Utilities	(0.4)	(218)	(50)
236	Construction of buildings	1.2	1,937	681
237	Heavy and civil engineering construction	2.7	1,847	335
238	Specialty trade contractors	1.5	6,639	2,134
311	Food manufacturing	(0.0)	(6)	(1)
312	Beverage and tobacco prod manufacturing	0.9	265	108
313	Textile mills	(2.4)	(629)	(234)
314	Textile product mills	(0.6)	(131)	(37)
315	Apparel manufacturing	(2.2)	(3,946)	(1,654)
316	Leather and allied product manufacturing	1.3	108	23
321	Wood product manufacturing	1.7	296	59
322	Paper manufacturing	(0.7)	(244)	(14)
323	Printing and related support activities	(0.4)	(254)	(76)
324	Petroleum and coal prods manufacturing	(1.0)	(224)	(66)
325	Chemical manufacturing	(0.8)	(863)	(342)
326	Plastics and rubber prods manufacturing	(0.8)	(540)	(102)
327	Nonmetallic mineral prod manufacturing	1.4	413	131
331	Primary metal manufacturing	(1.1)	(343)	(31)
332	Fabricated metal product manufacturing	(1.5)	(3,115)	(769)
333	Machinery manufacturing	(1.2)	(827)	(108)
334	Computer / electronic prod manufacturing	(0.6)	(1,143)	(292)
335	Electrical equipment and appliance mfg.	(1.5)	(696)	(127)
336	Transportation equipment manufacturing	(0.6)	(1,430)	(148)
337	Furniture and related prod manufacturing	0.4	322	84
339	Miscellaneous manufacturing	(1.2)	(1,086)	(355)
423	Merchant wholesalers, durable goods	0.5	2,561	633
424	Merchant wholesalers, nondurable goods	1.1	6,035	2,126
425	Electronic markets and agents	1.8	1,856	690
441	Motor vehicle and parts dealers	0.9	2,012	529
442	Furniture and home furnishings stores	(1.3)	(899)	(324)
443	Electronics and appliance stores	(0.9)	(785)	(263)
444	Building material and garden supply stores	0.0	34	12
445	Food and beverage stores	1.1	5,457	1,972
446	Health and personal care stores	1.4	2,221	784
447	Gasoline stations	0.9	560	201
448	Clothing and clothing accessories stores	(0.7)	(1,842)	(647)
451	Sporting, hobby, book / music stores	(0.1)	(71)	(21)
452	General merchandise stores	1.3	4,757	1,367
453	Miscellaneous store retailers	(0.1)	(184)	(82)
454	Nonstore retailers	3.2	2,412	840
481	Air transportation	0.5	595	210
482	Rail transportation	0.5	1	-
483	Water transportation	0.5	95	34

Exhibit A-5 (Cont'd)

NAICS	Industry	Annual Average Percent Change	Number of New Jobs in LA County	Number of New Jobs in LA City
484	Truck transportation	0.5	741	262
485	Transit and ground passenger transport	0.5	335	118
486	Pipeline transportation	0.5	17	6
487	Scenic and sightseeing transportation	0.5	20	7
488	Support activities for transportation	0.5	1,257	444
491	Postal service	1.0	7	3
492	Couriers and messengers	0.5	592	209
493	Warehousing and storage	0.5	420	148
511	Publishing industries, except internet	(2.0)	(1,608)	(760)
512	Motion picture and sound recording	0.8	6,025	1,507
515	Broadcasting, except internet	(2.3)	(2,264)	(1,614)
517	Telecommunications	(3.0)	(3,172)	(1,071)
518	Data processing, hosting, related services	0.8	300	75
519	Other information services	3.9	2,436	646
521	Monetary authorities - central bank	0.9	4	-
522	Credit intermediation and related activities	0.9	2,889	1,281
523	Securities, commodities, investments	0.9	1,132	502
524	Insurance carriers and related activities	0.9	2,179	966
525	Funds, trusts, and other financial vehicles	0.9	14	-
531	Real estate	0.5	1,570	667
532	Rental and leasing services	0.5	529	225
533	Lessors of nonfinancial intangible assets	0.5	19	8
541	Professional and technical services	0.8	12,258	5,205
551	Management of companies / enterprises	0.1	406	126
561	Administrative and support services	2.2	29,920	10,131
562	Waste mgmt and remediation services	2.2	1,162	394
611	Educational services	0.8	4,121	2,026
621	Ambulatory health care services	1.8	19,731	4,958
622	Hospitals	1.8	11,107	2,791
623	Nursing and residential care facilities	1.8	7,870	1,978
624	Social assistance	1.8	23,476	5,899
711	Performing arts and spectator sports	0.7	1,426	531
712	Museums, historical sites, zoos, and parks	0.7	190	498
713	Amusements, gambling, and recreation	0.7	1,505	560
721	Accommodation	1.7	4,059	1,545
722	Food services and drinking places	1.7	32,010	12,182
811	Repair and maintenance	0.7	1,428	471
812	Personal and laundry services	1.3	3,747	1,593
813	Membership associations and orgs	0.3	576	276

Source: Estimates by LAEDC

Exhibit A-6

Top Occupations in L.A. County's Manufacturing Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	51-2092	Team Assemblers	4.8%	13.67	28,440	11.90	15	7	None	MT OJT
2	51-1011	First-Line Supervisors of Production and Operating Workers	2.8%	28.21	58,670	26.04	36	7	<5 years	None
3	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2.7%	20.27	42,170	17.98	25	7	None	MT OJT
4	11-1021	General and Operations Managers	2.4%	65.33	135,890	53.75	84	3	≥5 years	None
5	15-1133	Software Developers, Systems Software	2.2%	56.36	117,230	57.00	71	3	None	None
6	51-4041	Machinists	2.2%	18.97	39,470	17.96	23	7	None	LT OJT
7	51-9111	Packaging and Filling Machine Operators and Tenders	2.1%	14.25	29,640	11.74	15	7	None	MT OJT
8	51-2022	Electrical and Electronic Equipment Assemblers	2.1%	15.59	32,420	13.97	18	7	None	MT OJT
9	43-5071	Shipping, Receiving, and Traffic Clerks	1.7%	15.4	32,030	14.14	18	7	None	ST OJT
10	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1.6%	30.53	63,500	24.64	37	7	None	MT OJT
11	17-2112	Industrial Engineers	1.4%	50.39	104,820	47.38	60	3	None	None
12	51-4121	Welders, Cutters, Solderers, and Brazers	1.3%	19.54	40,650	17.80	23	7	None	MT OJT
13	11-3051	Industrial Production Managers	1.3%	53.44	111,140	47.56	65	3	≥5 years	None
14	43-4051	Customer Service Representatives	1.2%	18.73	38,960	17.15	22	7	None	ST OJT
15	43-9061	Office Clerks, General	1.2%	16.17	33,640	14.65	19	7	None	ST OJT
16	49-9071	Maintenance and Repair Workers, General	1.0%	20.94	43,560	19.65	25	7	None	LT OJT
17	51-3092	Food Batchmakers	1.0%	13.13	27,320	11.48	14	7	None	MT OJT
18	43-5061	Production, Planning, and Expediting Clerks	1.0%	23.06	47,970	21.36	28	7	None	MT OJT
19	17-2141	Mechanical Engineers	1.0%	49.22	102,370	46.95	63	3	None	None
20	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	1.0%	34.76	72,300	33.19	43	3	None	LT OJT
21	15-1132	Software Developers, Applications	1.0%	51.63	107,390	51.56	62	3	None	None
22	43-3031	Bookkeeping, Accounting, and Auditing Clerks	1.0%	21.77	45,280	20.85	26	6	None	MT OJT
23	49-9041	Industrial Machinery Mechanics	1.0%	27.05	56,270	26.61	33	7	None	LT OJT
24	51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	1.0%	16.03	33,350	14.70	19	7	None	MT OJT
25	11-9041	Architectural and Engineering Managers	0.9%	77.38	160,950	74.01	91	3	≥5 years	None
26	51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	0.9%	15.18	31,580	13.92	17	7	None	MT OJT
27	17-2061	Computer Hardware Engineers	0.9%	*	*	*	*	3	None	None
28	13-2011	Accountants and Auditors	0.9%	39.8	82,780	35.45	47	3	None	None
29	17-2072	Electronics Engineers, Except Computer	0.9%	56.9	118,360	55.03	72	3	None	None
30	51-5112	Printing Press Operators	0.9%	17.79	36,990	15.85	22	7	None	MT OJT
31	17-3023	Electrical and Electronics Engineering Technicians	0.9%	31.38	65,260	30.82	38	4	None	None
32	51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	0.8%	18.04	37,530	16.11	23	7	None	MT OJT
33	53-3032	Heavy and Tractor-Trailer Truck Drivers	0.8%	21.53	44,780	21.07	27	5	None	ST OJT
34	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	0.8%	19.74	41,060	18.84	24	7	None	ST OJT
35	13-1199	Business Operations Specialists, All Other	0.8%	37.04	77,040	34.21	46	3	None	None
36	51-7011	Cabinetmakers and Bench Carpenters	0.7%	16.4	34,100	14.60	19	7	None	MT OJT
37	17-2071	Electrical Engineers	0.7%	53.31	110,890	52.57	68	3	None	None

Exhibit A-6 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
38	51-9199	Production Workers, All Other	0.7%	14.2	29,530	11.19	15	7	None	MT OJT
39	13-1161	Market Research Analysts and Marketing Specialists	0.6%	34.66	72,100	29.91	43	3	None	None
40	51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	0.6%	15.17	31,550	13.59	18	7	None	MT OJT
41	41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	0.6%	45.01	93,630	39.29	59	3	None	MT OJT
42	11-3021	Computer and Information Systems Managers	0.6%	75.36	156,740	70.73	88	3	≥5 years	None
43	51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	0.6%	13.82	28,750	11.99	16	7	None	MT OJT
44	51-2099	Assemblers and Fabricators, All Other	0.6%	16.65	34,630	13.47	18	7	None	MT OJT
45	43-1011	First-Line Supervisors of Office and Administrative Support Workers	0.5%	28.88	60,060	27.21	35	7	<5 years	None
46	11-2022	Sales Managers	0.5%	62.44	129,870	52.00	80	3	<5 years	None
47	51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	0.5%	20.38	42,390	19.92	27	7	None	MT OJT
48	53-3033	Light Truck or Delivery Services Drivers	0.5%	17.9	37,230	15.26	22	7	None	ST OJT
49	11-3031	Financial Managers	0.5%	75.69	157,440	67.71	93	3	≥5 years	None
50	15-1121	Computer Systems Analysts	0.5%	44.97	93,530	43.66	56	3	None	None

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-7

Top Occupations in L.A. County's Construction Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	47-2031	Carpenters	10.6%	25.94	53,950	24.60	33	7	None	APP
2	47-2111	Electricians	6.4%	31.26	65,010	30.29	40	7	None	APP
3	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	5.1%	35.46	73,760	34.61	44	7	≥5 years	None
4	47-2152	Plumbers, Pipefitters, and Steamfitters	4.9%	27.71	57,630	26.39	35	7	None	APP
5	11-9021	Construction Managers	3.6%	43.66	90,800	38.66	56	3	None	MT OJT
6	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	2.6%	27.26	56,710	26.40	36	5	None	LT OJT
7	43-9061	Office Clerks, General	2.5%	16.17	33,640	14.65	19	7	None	ST OJT
8	47-2073	Operating Engineers and Other Construction Equipment Operators	2.3%	38.6	80,280	40.11	47	7	None	MT OJT
9	11-1021	General and Operations Managers	2.3%	65.33	135,890	53.75	84	3	≥5 years	None
10	13-1051	Cost Estimators	2.1%	31.45	65,410	29.87	40	3	None	None
11	43-3031	Bookkeeping, Accounting, and Auditing Clerks	2.0%	21.77	45,280	20.85	26	6	None	MT OJT
12	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.9%	19.74	41,060	18.84	24	7	None	ST OJT
13	41-3099	Sales Representatives, Services, All Other	1.7%	30.12	62,640	26.06	37	7	None	MT OJT
14	47-2211	Sheet Metal Workers	1.1%	29.74	61,850	28.02	42	7	None	APP
15	49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1.0%	27.45	57,090	27.27	34	5	None	MT OJT
16	47-2221	Structural Iron and Steel Workers	0.8%	33.11	68,870	31.01	40	7	None	APP
17	47-2121	Glaziers	0.7%	28.31	58,890	27.32	32	7	None	APP
18	51-4121	Welders, Cutters, Solderers, and Brazers	0.7%	19.54	40,650	17.80	23	7	None	MT OJT
19	43-1011	First-Line Supervisors of Office and Administrative Support Workers	0.7%	28.88	60,060	27.21	35	7	<5 years	None
20	47-3013	Helpers—Electricians	0.7%	19.68	40,920	18.23	26	7	None	ST OJT
21	53-3032	Heavy and Tractor-Trailer Truck Drivers	0.6%	21.53	44,780	21.07	27	5	None	ST OJT
22	47-2021	Brickmasons and Blockmasons	0.6%	26.38	54,870	27.55	33	7	None	APP
23	13-1199	Business Operations Specialists, All Other	0.5%	37.04	77,040	34.21	46	3	None	None
24	49-9052	Telecommunications Line Installers and Repairers	0.5%	32.11	66,800	34.11	37	7	None	LT OJT
25	13-2011	Accountants and Auditors	0.5%	39.8	82,780	35.45	47	3	None	None
26	17-2051	Civil Engineers	0.5%	52.09	108,340	52.02	61	3	None	None
27	47-2171	Reinforcing Iron and Rebar Workers	0.4%	28.07	58,380	26.94	31	7	None	APP
28	43-4171	Receptionists and Information Clerks	0.4%	14.52	30,200	13.38	17	7	None	ST OJT
29	49-9071	Maintenance and Repair Workers, General	0.4%	20.94	43,560	19.65	25	7	None	LT OJT
30	43-3051	Payroll and Timekeeping Clerks	0.4%	21.33	44,370	21.13	26	7	None	MT OJT
31	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0.4%	36.4	75,720	35.53	46	7	<5 years	None
32	49-9099	Installation, Maintenance, and Repair Workers, All Other	0.3%	18.34	38,150	16.07	22	7	None	MT OJT
33	43-5032	Dispatchers, Except Police, Fire, and Ambulance	0.3%	19.64	40,860	17.82	23	7	None	MT OJT
34	43-6011	Executive Secretaries and Executive Administrative Assistants	0.3%	31.51	65,540	31.39	38	7	<5 years	None
35	47-3015	Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters	0.3%	15.62	32,480	14.23	17	7	None	ST OJT
36	11-3031	Financial Managers	0.3%	75.69	157,440	67.71	93	3	≥5 years	None
37	49-2098	Security and Fire Alarm Systems Installers	0.3%	21.08	43,840	21.34	27	7	None	MT OJT
38	49-9051	Electrical Power-Line Installers and Repairers	0.3%	44.57	92,700	47.24	55	7	None	LT OJT

Exhibit A-7 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
39	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.3%	34.76	72,300	33.19	43	3	None	LT OJT
40	43-5061	Production, Planning, and Expediting Clerks	0.3%	23.06	47,970	21.36	28	7	None	MT OJT
41	47-2022	Stonemasons	0.3%	20.31	42,240	19.36	23	7	None	APP
42	49-9098	Helpers--Installation, Maintenance, and Repair Workers	0.2%	15.41	32,060	14.10	18	7	None	ST OJT
43	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	0.2%	31.62	65,780	29.20	41	7	None	LT OJT
44	17-3011	Architectural and Civil Drafters	0.2%	29.67	61,720	28.93	36	4	None	None
45	47-4021	Elevator Installers and Repairers	0.2%	40.25	83,720	44.78	55	7	None	APP
46	53-7032	Excavating and Loading Machine and Dragline Operators	0.2%	24.28	50,500	22.32	28	7	<5 years	MT OJT
47	47-4099	Construction and Related Workers, All Other	0.2%	19.66	40,890	16.37	23	7	None	MT OJT
48	11-1011	Chief Executives	0.2%	109.59	227,940	#	#	3	≥5 years	None
49	53-3033	Light Truck or Delivery Services Drivers	0.2%	17.9	37,230	15.26	22	7	None	ST OJT
50	43-3021	Billing and Posting Clerks	0.2%	19.29	40,130	18.11	23	7	None	MT OJT

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-8

Top Occupations in L.A. County's Health Care Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	29-1141	Registered Nurses	13.4%	45.87	95,400	46.11	56	3	None	None
2	31-1014	Nursing Assistants	4.9%	15.21	31,630	14.29	18	5	None	None
3	31-9092	Medical Assistants	4.3%	17.46	36,310	16.38	20	5	None	None
4	43-6013	Medical Secretaries	3.8%	18.23	37,920	17.25	22	7	None	MT OJT
5	29-2061	Licensed Practical and Licensed Vocational Nurses	3.0%	24.24	50,420	24.08	29	5	None	None
6	31-9091	Dental Assistants	2.5%	18.06	37,560	16.70	22	5	None	None
7	43-4171	Receptionists and Information Clerks	2.3%	14.52	30,200	13.38	17	7	None	ST OJT
8	25-2011	Preschool Teachers, Except Special Education	1.8%	17.77	36,950	14.96	20	4	None	None
9	43-1011	First-Line Supervisors of Office and Administrative Support Workers	1.6%	28.88	60,060	27.21	35	7	<5 years	None
10	43-9061	Office Clerks, General	1.6%	16.17	33,640	14.65	19	7	None	ST OJT
11	11-9111	Medical and Health Services Managers	1.4%	54.06	112,450	53.72	66	3	<5 years	None
12	21-1093	Social and Human Service Assistants	1.3%	21.94	45,630	20.00	27	7	None	ST OJT
13	29-2021	Dental Hygienists	1.1%	45.09	93,780	46.96	55	4	None	None
14	29-2099	Health Technologists and Technicians, All Other	1.1%	22.87	47,580	20.16	25	7	None	None
15	43-3021	Billing and Posting Clerks	1.1%	19.29	40,130	18.11	23	7	None	MT OJT
16	39-9011	Childcare Workers	1.0%	12.65	26,310	11.95	14	7	None	ST OJT
17	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.0%	19.74	41,060	18.84	24	7	None	ST OJT
18	29-2034	Radiologic Technologists	0.9%	33.15	68,940	33.54	41	4	None	None
19	29-2041	Emergency Medical Technicians and Paramedics	0.9%	18.78	39,070	17.22	24	5	None	None
20	29-2012	Medical and Clinical Laboratory Technicians	0.9%	21.75	45,240	19.13	26	4	None	None
21	29-1126	Respiratory Therapists	0.8%	35.38	73,590	35.52	42	4	None	None
22	29-2071	Medical Records and Health Information Technicians	0.8%	22.75	47,330	19.44	28	5	None	None
23	21-1021	Child, Family, and School Social Workers	0.8%	29.11	60,540	27.09	39	3	None	None
24	43-4051	Customer Service Representatives	0.7%	18.73	38,960	17.15	22	7	None	ST OJT
25	25-9041	Teacher Assistants	0.7%	*	31,830	*	*	6	None	None
26	11-1021	General and Operations Managers	0.6%	65.33	135,890	53.75	84	3	≥5 years	None
27	31-9097	Phlebotomists	0.6%	19.97	41,540	19.43	24	5	None	None
28	13-1199	Business Operations Specialists, All Other	0.6%	37.04	77,040	34.21	46	3	None	None
29	43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.6%	21.77	45,280	20.85	26	6	None	MT OJT
30	11-9151	Social and Community Service Managers	0.6%	40.35	83,930	35.56	48	3	≥5 years	None
31	43-4111	Interviewers, Except Eligibility and Loan	0.6%	17.66	36,730	16.92	20	7	None	ST OJT
32	29-2011	Medical and Clinical Laboratory Technologists	0.5%	37.49	77,970	39.70	47	3	None	None
33	29-2055	Surgical Technologists	0.5%	27.23	56,640	27.43	32	5	None	None
34	49-9071	Maintenance and Repair Workers, General	0.5%	20.94	43,560	19.65	25	7	None	LT OJT
35	29-2052	Pharmacy Technicians	0.5%	18.66	38,800	17.93	23	7	None	MT OJT
36	39-9032	Recreation Workers	0.4%	13.85	28,810	12.95	15	7	None	ST OJT
37	21-1011	Substance Abuse and Behavioral Disorder Counselors	0.4%	20.57	42,800	18.17	24	3	None	None
38	39-1021	First-Line Supervisors of Personal Service Workers	0.4%	22.33	46,460	20.93	25	7	<5 years	None
39	29-2053	Psychiatric Technicians	0.4%	26.32	54,750	27.17	32	5	<5 years	ST OJT
40	31-9093	Medical Equipment Preparers	0.3%	19.66	40,880	18.84	23	7	None	MT OJT
41	31-2022	Physical Therapist Aides	0.3%	14.02	29,150	13.39	15	7	None	ST OJT
42	13-2011	Accountants and Auditors	0.3%	39.8	82,780	35.45	47	3	None	None
43	29-2081	Opticians, Dispensing	0.3%	19.35	40,240	17.77	24	7	None	LT OJT

Exhibit A-8 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
44	29-1031	Dietitians and Nutritionists	0.3%	34.14	71,010	34.98	39	3	None	I/R
45	31-9099	Healthcare Support Workers, All Other	0.3%	19.91	41,410	19.07	24	7	None	None
46	29-2032	Diagnostic Medical Sonographers	0.3%	39.72	82,620	40.41	48	4	None	None
47	43-6011	Executive Secretaries and Executive Administrative Assistants	0.3%	31.51	65,540	31.39	38	7	<5 years	None
48	11-3011	Administrative Services Managers	0.3%	50.07	104,140	45.97	60	3	<5 years	None
49	43-3011	Bill and Account Collectors	0.3%	20.66	42,970	19.18	25	7	None	MT OJT
50	21-1091	Health Educators	0.3%	29.94	62,270	27.92	38	3	None	None

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-9
Top Occupations in L.A. County's Accommodation and Food Services Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	35-1012	First-Line Supervisors of Food Preparation and Serving Workers	4.8%	16.73	34,800	14.75	20	7	<5 years	None
2	11-9051	Food Service Managers	1.9%	23.58	49,050	20.93	29	7	<5 years	None
3	43-4081	Hotel, Motel, and Resort Desk Clerks	1.5%	13.27	27,600	12.36	15	7	None	ST OJT
4	35-1011	Chefs and Head Cooks	1.0%	22.1	45,970	20.33	29	7	≥5 years	None
5	11-1021	General and Operations Managers	0.7%	65.33	135,890	53.75	84	3	≥5 years	None
6	53-3031	Driver/Sales Workers	0.7%	16.34	33,990	12.46	21	7	None	ST OJT
7	49-9071	Maintenance and Repair Workers, General	0.7%	20.94	43,560	19.65	25	7	None	LT OJT
8	33-9032	Security Guards	0.5%	14.89	30,960	12.08	16	7	None	ST OJT
9	43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.4%	21.77	45,280	20.85	26	6	None	MT OJT
10	11-9081	Lodging Managers	0.3%	27.86	57,940	25.79	35	7	<5 years	None
11	37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	0.3%	21.74	45,220	21.13	27	7	<5 years	None
12	43-9061	Office Clerks, General	0.2%	16.17	33,640	14.65	19	7	None	ST OJT
13	39-6011	Baggage Porters and Bellhops	0.2%	13.51	28,100	11.88	15	7	None	ST OJT
14	39-3011	Gaming Dealers	0.2%	13.4	27,870	11.48	17	7	None	ST OJT
15	43-1011	First-Line Supervisors of Office and Administrative Support Workers	0.2%	28.88	60,060	27.21	35	7	<5 years	None
16	41-3099	Sales Representatives, Services, All Other	0.2%	30.12	62,640	26.06	37	7	None	MT OJT
17	53-3033	Light Truck or Delivery Services Drivers	0.2%	17.9	37,230	15.26	22	7	None	ST OJT
18	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	0.2%	19.74	41,060	18.84	24	7	None	ST OJT
19	13-1121	Meeting, Convention, and Event Planners	0.1%	24.54	51,040	22.53	32	3	None	None
20	39-6012	Concierges	0.1%	16.27	33,840	16.48	18	7	None	MT OJT
21	43-4051	Customer Service Representatives	0.1%	18.73	38,960	17.15	22	7	None	ST OJT
22	31-9011	Massage Therapists	0.1%	21	43,690	20.69	27	5	None	None
23	13-2011	Accountants and Auditors	0.1%	39.8	82,780	35.45	47	3	None	None
24	11-2022	Sales Managers	0.1%	62.44	129,870	52.00	80	3	<5 years	None
25	43-2011	Switchboard Operators, Including Answering Service	0.1%	15.96	33,200	14.65	18	7	None	ST OJT
26	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	0.1%	19.76	41,110	19.37	25	7	None	ST OJT
27	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	0.1%	36.4	75,720	35.53	46	7	<5 years	None
28	39-9032	Recreation Workers	0.1%	13.85	28,810	12.95	15	7	None	ST OJT
29	11-3031	Financial Managers	0.1%	75.69	157,440	67.71	93	3	≥5 years	None
30	41-1011	First-Line Supervisors of Retail Sales Workers	0.1%	20.9	43,460	18.18	24	7	<5 years	None
31	43-4171	Receptionists and Information Clerks	0.1%	14.52	30,200	13.38	17	7	None	ST OJT
32	13-1071	Human Resources Specialists	0.1%	35.27	73,360	31.62	43	3	None	None
33	43-3021	Billing and Posting Clerks	0.1%	19.29	40,130	18.11	23	7	None	MT OJT
34	11-3011	Administrative Services Managers	0.1%	50.07	104,140	45.97	60	3	<5 years	None
35	11-9199	Managers, All Other	0.0%	63.33	131,730	57.37	77	3	<5 years	None
36	39-9031	Fitness Trainers and Aerobics Instructors	0.0%	24.46	50,880	23.09	31	7	None	ST OJT
37	13-1199	Business Operations Specialists, All Other	0.0%	37.04	77,040	34.21	46	3	None	None
38	43-5071	Shipping, Receiving, and Traffic Clerks	0.0%	15.4	32,030	14.14	18	7	None	ST OJT
39	13-1161	Market Research Analysts and Marketing Specialists	0.0%	34.66	72,100	29.91	43	3	None	None
40	43-3051	Payroll and Timekeeping Clerks	0.0%	21.33	44,370	21.13	26	7	None	MT OJT
41	39-3093	Locker Room, Coatroom, and Dressing Room Attendants	0.0%	14.68	30,540	15.38	18	7	None	ST OJT
42	43-6011	Executive Secretaries and Executive Administrative Assistants	0.0%	31.51	65,540	31.39	38	7	<5 years	None

Exhibit A-9 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
43	39-1021	First-Line Supervisors of Personal Service Workers	0.0%	22.33	46,460	20.93	25	7	<5 years	None
44	43-3041	Gaming Cage Workers	0.0%	14.89	30,970	13.17	18	7	None	ST OJT
45	49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	0.0%	17.55	36,490	16.26	21	7	None	ST OJT
46	29-1031	Dietitians and Nutritionists	0.0%	34.14	71,010	34.98	39	3	None	I/R
47	51-3092	Food Batchmakers	0.0%	13.13	27,320	11.48	14	7	None	MT OJT
48	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.0%	34.76	72,300	33.19	43	3	None	LT OJT
49	43-4161	Human Resources Assistants, Except Payroll and Timekeeping	0.0%	21.41	44,540	20.40	26	4	None	None
50	11-3121	Human Resources Managers	0.0%	61.61	128,150	58.29	75	3	≥5 years	None

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-10

Top Occupations in L.A. County's Transportation and Warehousing Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	53-3032	Heavy and Tractor-Trailer Truck Drivers	82,410	14.2%	21.53	44,780	21.07	27	5	None
2	43-5052	Postal Service Mail Carriers	34,590	5.9%	25	52,000	28.77	29	7	None
3	53-3033	Light Truck or Delivery Services Drivers	31,880	5.5%	17.9	37,230	15.26	22	7	None
4	53-3022	Bus Drivers, School or Special Client	15,990	2.8%	15.12	31,450	14.28	18	7	None
5	53-2031	Flight Attendants	13,990	2.4%	*	50,610	*	*	7	<5 years
6	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	13,540	2.3%	23.72	49,340	27.03	27	7	None
7	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	12,890	2.2%	19.76	41,110	19.37	25	7	None
8	43-5011	Cargo and Freight Agents	12,320	2.1%	20.31	42,250	19.89	24	7	None
9	43-5032	Dispatchers, Except Police, Fire, and Ambulance	11,390	2.0%	19.64	40,860	17.82	23	7	None
10	43-5071	Shipping, Receiving, and Traffic Clerks	10,090	1.7%	15.4	32,030	14.14	18	7	None
11	53-3021	Bus Drivers, Transit and Intercity	9,880	1.7%	19.28	40,100	19.22	24	7	None
12	43-1011	First-Line Supervisors of Office and Administrative Support Workers	9,470	1.6%	28.88	60,060	27.21	35	7	<5 years
13	53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	8,730	1.5%	29.83	62,040	29.30	37	7	<5 years
14	43-9061	Office Clerks, General	8,610	1.5%	16.17	33,640	14.65	19	7	None
15	53-2011	Airline Pilots, Copilots, and Flight Engineers	8,060	1.4%	*	158,280	*	*	3	<5 years
16	49-3011	Aircraft Mechanics and Service Technicians	7,980	1.4%	28.41	59,100	29.21	36	5	None
17	43-5051	Postal Service Clerks	7,600	1.3%	25.73	53,530	27.31	28	7	None
18	43-4051	Customer Service Representatives	7,480	1.3%	18.73	38,960	17.15	22	7	None
19	53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	7,420	1.3%	23.12	48,100	20.33	29	7	<5 years
20	11-1021	General and Operations Managers	7,320	1.3%	65.33	135,890	53.75	84	3	≥5 years
21	11-3071	Transportation, Storage, and Distribution Managers	5,770	1.0%	47.38	98,540	43.02	55	7	≥5 years
22	41-3099	Sales Representatives, Services, All Other	5,710	1.0%	30.12	62,640	26.06	37	7	None
23	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	5,610	1.0%	26.32	54,740	27.03	31	7	None
24	43-5021	Couriers and Messengers	4,930	0.8%	16.35	34,010	15.96	19	7	None
25	43-3031	Bookkeeping, Accounting, and Auditing Clerks	4,900	0.8%	21.77	45,280	20.85	26	6	None
26	53-6061	Transportation Attendants, Except Flight Attendants	4,890	0.8%	14.51	30,180	13.67	16	7	None
27	53-6099	Transportation Workers, All Other	3,960	0.7%	19.34	40,230	17.75	26	7	None
28	49-9071	Maintenance and Repair Workers, General	3,890	0.7%	20.94	43,560	19.65	25	7	None
29	43-5061	Production, Planning, and Expediting Clerks	3,400	0.6%	23.06	47,970	21.36	28	7	None
30	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,360	0.6%	19.74	41,060	18.84	24	7	None
31	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	2,370	0.4%	36.4	75,720	35.53	46	7	<5 years
32	43-4151	Order Clerks	2,180	0.4%	16.62	34,570	15.33	19	7	None
33	13-1199	Business Operations Specialists, All Other	2,080	0.4%	37.04	77,040	34.21	46	3	None
34	53-2012	Commercial Pilots	1,730	0.3%	*	95,770	*	*	7	None
35	43-3021	Billing and Posting Clerks	1,690	0.3%	19.29	40,130	18.11	23	7	None
36	13-2011	Accountants and Auditors	1,410	0.2%	39.8	82,780	35.45	47	3	None
37	39-6011	Baggage Porters and Bellhops	1,380	0.2%	13.51	28,100	11.88	15	7	None
38	53-3031	Driver/Sales Workers	1,350	0.2%	16.34	33,990	12.46	21	7	None

Exhibit A-10 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
39	33-9032	Security Guards	1,330	0.2%	14.89	30,960	12.08	16	7	None
40	49-3023	Automotive Service Technicians and Mechanics	1,300	0.2%	20.88	43,440	18.99	26	5	None
41	11-2022	Sales Managers	1,170	0.2%	62.44	129,870	52.00	80	3	<5 years
42	11-3011	Administrative Services Managers	1,120	0.2%	50.07	104,140	45.97	60	3	<5 years
43	13-1071	Human Resources Specialists	1,030	0.2%	35.27	73,360	31.62	43	3	None
44	43-4171	Receptionists and Information Clerks	1,030	0.2%	14.52	30,200	13.38	17	7	None
45	53-6051	Transportation Inspectors	990	0.2%	37.77	78,560	36.46	45	7	None
46	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	980	0.2%	31.62	65,780	29.20	41	7	None
47	13-1081	Logisticians	940	0.2%	41.39	86,100	40.66	50	3	None
48	49-2091	Avionics Technicians	940	0.2%	32.55	67,710	32.22	37	4	None
49	49-9098	Helpers--Installation, Maintenance, and Repair Workers	890	0.2%	15.41	32,060	14.10	18	7	None
50	43-9021	Data Entry Keyers	860	0.1%	15.16	31,530	14.04	18	7	None

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)
Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-11

Top Occupations in L.A. County's Information Technology Industry

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
1	15-1132	Software Developers, Applications	6.7%	58.67	122,033	57.43	119,457	3	None	None
2	15-1133	Software Developers, Systems Software	4.3%	62.98	130,990	61.94	128,832	3	None	None
3	13-1161	Market Research Analysts and Marketing Specialists	3.1%	41.68	86,703	37.48	77,949	3	None	None
4	41-3099	Sales Representatives, Services, All Other	2.8%	37.48	77,955	33.62	69,922	7	None	MT OJT
5	11-1021	General and Operations Managers	2.8%	81.80	170,148	71.73	149,208	3	≥5 years	None
6	15-1121	Computer Systems Analysts	2.5%	51.74	107,625	49.80	103,586	3	None	None
7	43-4051	Customer Service Representatives	2.2%	21.48	44,686	19.67	40,906	7	None	ST OJT
8	15-1151	Computer User Support Specialists	2.2%	31.36	65,225	29.28	60,911	6	None	None
9	13-1111	Management Analysts	2.0%	53.86	112,044	46.75	97,246	3	<5 years	None
10	11-3021	Computer and Information Systems Managers	2.0%	86.49	179,895	80.32	167,065	3	≥5 years	None
11	43-9061	Office Clerks, General	1.9%	17.45	36,299	15.94	33,149	7	None	ST OJT
12	13-1199	Business Operations Specialists, All Other	1.9%	43.75	91,000	40.52	84,272	3	None	None
13	15-1131	Computer Programmers	1.6%	45.41	94,466	44.24	92,029	3	None	None
14	13-2011	Accountants and Auditors	1.6%	43.74	90,971	39.13	81,383	3	None	None
15	49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1.4%	26.75	55,640	26.82	55,794	5	None	MT OJT
16	17-2061	Computer Hardware Engineers	1.4%	66.62	138,574	65.96	137,197	3	None	None
17	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.4%	20.70	43,053	19.98	41,547	7	None	ST OJT
18	27-2012	Producers and Directors	1.3%	64.75	134,677	50.21	104,425	3	<5 years	None
19	51-2022	Electrical and Electronic Equipment Assemblers	1.3%	16.66	34,640	15.45	32,128	7	None	MT OJT
20	41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	1.2%	46.86	97,472	40.18	83,584	3	None	MT OJT
21	15-1142	Network and Computer Systems Administrators	1.2%	47.23	98,238	46.01	95,706	3	None	None
22	43-6011	Executive Secretaries and Executive Administrative Assistants	1.2%	33.18	69,017	32.77	68,170	7	<5 years	None
23	43-3031	Bookkeeping, Accounting, and Auditing Clerks	1.2%	22.87	47,571	22.06	45,877	6	None	MT OJT
24	27-1024	Graphic Designers	1.1%	29.43	61,214	26.92	55,985	3	None	None
25	17-2072	Electronics Engineers, Except Computer	1.0%	56.89	118,324	54.94	114,265	3	None	None
26	11-2021	Marketing Managers	1.0%	86.59	180,108	82.44	171,477	3	≥5 years	None
27	43-1011	First-Line Supervisors of Office and Administrative Support Workers	0.9%	34.22	71,182	31.77	66,085	7	<5 years	None
28	43-5071	Shipping, Receiving, and Traffic Clerks	0.9%	16.26	33,816	15.10	31,397	7	None	ST OJT
29	15-1134	Web Developers	0.9%	40.56	84,366	37.47	77,942	4	None	None
30	43-5061	Production, Planning, and Expediting Clerks	0.9%	25.69	53,433	24.04	50,012	7	None	MT OJT
31	15-1199	Computer Occupations, All Other	0.8%	48.27	100,412	46.02	95,727	3	None	None
32	11-2022	Sales Managers	0.8%	78.45	163,185	71.43	148,569	3	<5 years	None
33	11-9041	Architectural and Engineering Managers	0.8%	86.01	178,909	81.81	170,155	3	≥5 years	None
34	13-1071	Human Resources Specialists	0.8%	40.24	83,695	36.42	75,751	3	None	None
35	17-3023	Electrical and Electronics Engineering Technicians	0.8%	31.41	65,338	29.74	61,859	4	None	None
36	17-2071	Electrical Engineers	0.8%	58.75	122,195	58.50	121,666	3	None	None
37	27-4032	Film and Video Editors	0.7%	51.65	107,436	37.82	78,649	3	None	None
38	15-1143	Computer Network Architects	0.7%	60.62	126,089	58.90	122,508	3	≥5 years	None
39	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.7%	30.70	63,846	26.03	54,147	7	None	MT OJT

Exhibit A-11 (Cont'd)

	SOC Code	Occupation	% of Industry	Hourly Average Wage	Annual Average Wage	Hourly Median Wage	Annual Median Wage	Entry Level Education	Work Experience	On-the-Job Training
40	11-3031	Financial Managers	0.7%	84.32	175,396	76.21	158,509	3	≥5 years	None
41	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	0.7%	20.98	43,632	18.91	39,338	7	None	MT OJT
42	51-2092	Team Assemblers	0.6%	15.86	32,982	14.71	30,605	7	None	MT OJT
43	31-9096	Veterinary Assistants and Laboratory Animal Caretakers	0.6%	13.90	28,910	13.41	27,890	7	None	ST OJT
44	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.6%	38.57	80,232	36.48	75,882	3	None	LT OJT
45	11-9199	Managers, All Other	0.6%	73.57	153,024	68.62	142,745	3	<5 years	None
46	51-5112	Printing Press Operators	0.6%	18.07	37,584	16.31	33,932	7	None	MT OJT
47	41-3011	Advertising Sales Agents	0.6%	38.24	79,543	29.87	62,128	7	None	MT OJT
48	27-3031	Public Relations Specialists	0.6%	40.00	83,205	32.55	67,699	3	None	None
49	27-1014	Multimedia Artists and Animators	0.6%	39.99	83,184	38.50	80,086	3	None	MT OJT
50	43-4171	Receptionists and Information Clerks	0.6%	15.80	32,873	15.13	31,461	7	None	ST OJT

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level -----			Median Annual Wage
				Education	Work Exp	On-the-Job Training to Attain Competency	
11-1011	Chief Executives	366	963	3	≥5 years	None	N/A
11-1021	General and Operations Managers	4,052	11,127	3	<5 years	None	111,800
11-1031	Legislators	269	492	3	<5 years	None	62,160
11-2011	Advertising and Promotions Managers	79	199	3	<5 years	None	103,990
11-2021	Marketing Managers	293	813	3	≥5 years	None	142,290
11-2022	Sales Managers	537	1,580	3	<5 years	None	108,150
11-2031	Public Relations and Fundraising Managers	162	369	3	≥5 years	None	116,900
11-3011	Administrative Services Managers	449	1,149	3	<5 years	None	95,620
11-3021	Computer and Information Systems Managers	360	924	3	≥5 years	None	147,110
11-3031	Financial Managers	954	2,393	3	≥5 years	None	140,840
11-3051	Industrial Production Managers	142	518	3	≥5 years	None	98,920
11-3061	Purchasing Managers	111	298	3	≥5 years	None	113,360
11-3071	Transportation, Storage, and Distribution Managers	192	499	7	≥5 years	None	89,490
11-3111	Compensation and Benefits Managers	34	87	3	≥5 years	None	140,000
11-3121	Human Resources Managers	247	650	3	≥5 years	None	121,240
11-3131	Training and Development Managers	59	155	3	≥5 years	None	111,610
11-9013	Farmers, Ranchers, and Other Agricultural Managers	3	7	7	≥5 years	None	74,030
11-9021	Construction Managers	238	689	3	None	MT OJT	80,410
11-9031	Education Administrators, Preschool and Childcare	185	701	3	<5 years	None	48,120
11-9032	Education Administrators, Elementary and Secondary School	177	365	2	≥5 years	None	115,240
11-9033	Education Administrators, Postsecondary	95	195	2	≥5 years	None	115,330
11-9039	Education Administrators, All Other	74	144	3	<5 years	None	74,600
11-9041	Architectural and Engineering Managers	358	930	3	≥5 years	None	153,940
11-9051	Food Service Managers	421	1,117	7	<5 years	None	43,540
11-9061	Funeral Service Managers	24	57	4	<5 years	None	N/A
11-9071	Gaming Managers	6	16	7	≥5 years	MT OJT	N/A
11-9081	Lodging Managers	51	133	7	<5 years	None	53,650
11-9111	Medical and Health Services Managers	541	1,788	3	None	None	111,730
11-9121	Natural Sciences Managers	129	269	3	≥5 years	None	97,900
11-9141	Property, Real Estate, and Community Association Managers	320	753	7	<5 years	None	51,150
11-9151	Social and Community Service Managers	427	1,325	3	≥5 years	None	73,950
11-9161	Emergency Management Directors	26	51	3	≥5 years	None	114,810
11-9199	Managers, All Other	868	1,901	7	<5 years	None	119,320
13-1011	Agents and Business Managers of Artists, Performers, and	75	211	3	<5 years	None	66,090
13-1021	Buyers and Purchasing Agents, Farm Products	21	60	7	None	LT OJT	59,040
13-1022	Wholesale and Retail Buyers, Except Farm Products	216	662	7	None	LT OJT	47,160
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm	580	1,476	7	None	LT OJT	69,030
13-1031	Claims Adjusters, Examiners, and Investigators	616	1,291	7	None	LT OJT	70,360
13-1032	Insurance Appraisers, Auto Damage	21	48	5	None	MT OJT	56,470
13-1041	Compliance Officers	541	1,134	3	None	MT OJT	78,540
13-1051	Cost Estimators	294	919	3	None	None	62,120
13-1071	Human Resources Specialists	1,008	2,639	3	None	None	65,770
13-1075	Labor Relations Specialists	159	340	3	None	None	90,290
13-1081	Logisticians	177	418	3	None	None	84,560
13-1111	Management Analysts	957	2,194	3	<5 years	None	87,710
13-1121	Meeting, Convention, and Event Planners	124	288	3	None	None	46,860
13-1131	Fundraisers	84	210	3	None	None	67,010
13-1141	Compensation, Benefits, and Job Analysis Specialists	171	410	3	None	None	73,730

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Entry Level		Median Annual Wage
					Work Exp	On-the-Job Training to Attain Competency	
13-1151	Training and Development Specialists	454	1,230	3	<5 years	None	60,500
13-1161	Market Research Analysts and Marketing Specialists	511	1,387	3	None	None	62,220
13-1199	Business Operations Specialists, All Other	1,435	3,264	7	None	None	71,150
13-2011	Accountants and Auditors	2,686	6,695	3	None	None	73,740
13-2021	Appraisers and Assessors of Real Estate	168	337	3	None	LT OJT	85,710
13-2031	Budget Analysts	168	357	3	None	None	90,300
13-2041	Credit Analysts	184	458	3	None	None	75,410
13-2051	Financial Analysts	397	983	3	None	None	87,480
13-2052	Personal Financial Advisors	388	890	3	None	None	99,710
13-2053	Insurance Underwriters	121	276	3	None	MT OJT	71,570
13-2061	Financial Examiners	99	202	3	None	MT OJT	90,430
13-2071	Credit Counselors	33	83	3	None	MT OJT	48,400
13-2072	Loan Officers	416	960	3	None	MT OJT	71,400
13-2081	Tax Examiners and Collectors, and Revenue Agents	495	904	3	None	MT OJT	76,580
13-2082	Tax Preparers	157	370	7	None	MT OJT	45,810
13-2099	Financial Specialists, All Other	192	417	3	None	MT OJT	71,690
15-1121	Computer Systems Analysts	643	1,598	3	None	None	90,820
15-1122	Information Security Analysts	90	225	3	<5 years	None	105,440
15-1131	Computer Programmers	593	1,489	3	None	None	85,360
15-1132	Software Developers, Applications	837	2,248	3	None	None	107,240
15-1133	Software Developers, Systems Software	407	1,079	3	None	None	118,550
15-1134	Web Developers	156	440	4	None	None	67,420
15-1141	Database Administrators	181	455	3	<5 years	None	98,230
15-1142	Network and Computer Systems Administrators	394	1,033	3	None	None	87,860
15-1143	Computer Network Architects	142	353	3	≥5 years	None	119,830
15-1151	Computer User Support Specialists	612	1,619	6	None	MT OJT	55,210
15-1152	Computer Network Support Specialists	168	424	4	None	None	69,920
15-1199	Computer Occupations, All Other	383	798	3	None	None	77,470
15-2011	Actuaries	45	104	3	None	LT OJT	98,610
15-2021	Mathematicians	6	11	2	None	None	108,480
15-2031	Operations Research Analysts	132	314	3	None	None	81,750
15-2041	Statisticians	50	110	2	None	None	72,870
17-1011	Architects, Except Landscape and Naval	156	364	3	None	I/R	81,670
17-1012	Landscape Architects	35	84	3	None	I/R	85,290
17-1021	Cartographers and Photogrammetrists	45	94	3	None	None	81,500
17-1022	Surveyors	122	281	3	<5 years	None	90,110
17-2011	Aerospace Engineers	134	366	3	None	None	128,080
17-2031	Biomedical Engineers	29	78	3	None	None	88,480
17-2041	Chemical Engineers	57	146	3	None	None	82,500
17-2051	Civil Engineers	875	1,885	3	None	None	108,190
17-2061	Computer Hardware Engineers	110	296	3	None	None	N/A
17-2071	Electrical Engineers	232	631	3	None	None	109,350
17-2072	Electronics Engineers, Except Computer	192	473	3	None	None	114,470
17-2081	Environmental Engineers	171	368	3	None	None	107,450
17-2111	Health and Safety Engineers, Except Mining Safety Engineers	48	125	3	None	None	106,840
17-2112	Industrial Engineers	241	854	3	None	None	98,540
17-2121	Marine Engineers and Naval Architects	17	39	3	None	None	N/A
17-2131	Materials Engineers	43	125	3	None	None	105,530
17-2141	Mechanical Engineers	451	1,275	3	None	None	97,660

Education: 1=Doctoral or professional degree; 2=Master's degree; 3=Bachelor's degree; 4=Associate's degree; 5=Postsecondary non-degree award; 6=Some college, no degree; 7=High school diploma or equivalent; 8=Less than high school; On-the-Job Training: I/R=Internship/Residency; APP=Apprenticeship; LT OJT=Long-term on-the-job training (more than one year); MT OJT=Moderate-term on-the-job training (1-12 months); ST OJT=Short-term on-the-job training (1 month or less)

Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Work Exp	Entry Level		Median Annual Wage
						On-the-Job Training to Attain Competency	MT OJT	
17-2151	Mining and Geological Engineers, Including Mining	10	23	3	None	None	None	127,290
17-2161	Nuclear Engineers	30	70	3	None	None	None	N/A
17-2171	Petroleum Engineers	20	73	3	None	None	None	123,790
17-2199	Engineers, All Other	249	567	3	None	None	None	108,500
17-3011	Architectural and Civil Drafters	122	292	4	None	None	None	60,170
17-3012	Electrical and Electronics Drafters	25	66	4	None	None	None	67,630
17-3013	Mechanical Drafters	35	93	4	None	None	None	54,480
17-3019	Drafters, All Other	15	40	4	None	None	None	60,030
17-3021	Aerospace Engineering and Operations Technicians	14	42	4	None	None	None	70,810
17-3022	Civil Engineering Technicians	248	501	4	None	None	None	82,450
17-3023	Electrical and Electronics Engineering Technicians	201	541	4	None	None	None	64,110
17-3024	Electro-Mechanical Technicians	16	48	4	None	None	None	51,460
17-3025	Environmental Engineering Technicians	46	104	4	None	None	None	64,050
17-3026	Industrial Engineering Technicians	52	185	4	None	None	None	70,410
17-3027	Mechanical Engineering Technicians	57	167	4	None	None	None	66,510
17-3029	Engineering Technicians, Except Drafters, All Other	145	317	4	None	None	None	70,760
17-3031	Surveying and Mapping Technicians	76	169	7	None	MT OJT	None	69,060
19-1011	Animal Scientists	3	7	3	None	None	None	N/A
19-1012	Food Scientists and Technologists	23	71	3	None	None	None	58,410
19-1013	Soil and Plant Scientists	52	106	3	None	None	None	80,690
19-1021	Biochemists and Biophysicists	58	142	1	None	None	None	82,140
19-1022	Microbiologists	51	110	3	None	None	None	71,310
19-1023	Zoologists and Wildlife Biologists	79	136	3	None	None	None	55,400
19-1029	Biological Scientists, All Other	119	233	3	None	None	None	83,220
19-1031	Conservation Scientists	82	151	3	None	None	None	83,520
19-1032	Foresters	31	60	3	None	None	None	92,040
19-1041	Epidemiologists	24	47	3	None	None	None	77,670
19-1042	Medical Scientists, Except Epidemiologists	193	508	1	None	None	None	86,870
19-1099	Life Scientists, All Other	22	49	3	None	None	None	91,520
19-2011	Astronomers	4	7	3	None	None	None	105,820
19-2012	Physicists	32	72	1	None	None	None	76,810
19-2021	Atmospheric and Space Scientists	28	56	3	None	None	None	68,900
19-2031	Chemists	151	353	3	None	None	None	77,520
19-2032	Materials Scientists	8	21	3	None	None	None	92,080
19-2041	Environmental Scientists and Specialists, Including Health	347	710	3	None	None	None	81,660
19-2042	Geoscientists, Except Hydrologists and Geographers	78	181	3	None	None	None	83,330
19-2043	Hydrologists	23	46	3	None	None	None	N/A
19-2099	Physical Scientists, All Other	37	73	3	None	None	None	115,620
19-3011	Economists	64	128	2	None	None	None	136,270
19-3022	Survey Researchers	21	48	2	None	None	None	58,580
19-3031	Clinical, Counseling, and School Psychologists	152	459	1	None	I/R	None	86,920
19-3039	Psychologists, All Other	40	86	2	None	I/R	None	119,440
19-3041	Sociologists	4	8	2	None	None	None	114,280
19-3051	Urban and Regional Planners	130	245	2	None	None	None	85,430
19-3091	Anthropologists and Archeologists	13	26	2	None	None	None	N/A
19-3092	Geographers	5	9	3	None	None	None	N/A
19-3093	Historians	13	23	3	None	None	None	N/A
19-3094	Political Scientists	21	40	3	None	None	None	N/A
19-3099	Social Scientists and Related Workers, All Other	74	142	3	None	None	None	51,570

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Work Exp	Entry Level -----		Median Annual Wage
						On-the-Job Training to Attain Competency	Competency	
19-4011	Agricultural and Food Science Technicians	38	99	4	None	MT OJT	39,350	
19-4021	Biological Technicians	169	375	3	None	None	50,120	
19-4031	Chemical Technicians	118	297	4	None	MT OJT	37,870	
19-4041	Geological and Petroleum Technicians	14	40	4	None	MT OJT	37,150	
19-4051	Nuclear Technicians	5	15	4	None	MT OJT	N/A	
19-4061	Social Science Research Assistants	80	174	4	None	None	43,460	
19-4091	Environmental Science and Protection Technicians, Including Health	146	314	4	None	None	50,990	
19-4092	Forensic Science Technicians	101	189	3	None	MT OJT	94,060	
19-4093	Forest and Conservation Technicians	233	427	4	None	None	40,870	
19-4099	Life, Physical, and Social Science Technicians, All Other	205	460	4	None	None	42,870	
21-1011	Substance Abuse and Behavioral Disorder Counselors	177	606	7	None	MT OJT	37,800	
21-1012	Educational, Guidance, School, and Vocational Counselors	253	683	2	None	None	64,180	
21-1013	Marriage and Family Therapists	94	300	2	None	I/R	50,070	
21-1014	Mental Health Counselors	275	972	2	None	I/R	43,540	
21-1015	Rehabilitation Counselors	347	1,150	2	None	None	31,150	
21-1019	Counselors, All Other	71	202	2	None	None	44,030	
21-1021	Child, Family, and School Social Workers	1,053	2,803	3	None	None	56,340	
21-1022	Healthcare Social Workers	310	1,045	2	None	None	65,380	
21-1023	Mental Health and Substance Abuse Social Workers	271	886	3	None	None	N/A	
21-1029	Social Workers, All Other	260	577	3	None	None	68,330	
21-1091	Health Educators	125	345	3	None	None	58,060	
21-1092	Probation Officers and Correctional Treatment Specialists	376	700	3	None	ST OJT	83,390	
21-1093	Social and Human Service Assistants	1,051	3,384	7	None	ST OJT	41,610	
21-1094	Community Health Workers	122	386	7	None	ST OJT	42,840	
21-1099	Community and Social Service Specialists, All Other	286	752	2	None	None	53,120	
21-2011	Clergy	81	209	3	None	MT OJT	53,430	
21-2021	Directors, Religious Activities and Education	39	87	3	<5 years	None	48,600	
21-2099	Religious Workers, All Other	10	24	3	None	None	53,030	
23-1011	Lawyers	1,175	2,574	1	None	None	148,830	
23-1012	Judicial Law Clerks	56	103	1	None	None	60,280	
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	69	127	1	<5 years	ST OJT	N/A	
23-1022	Arbitrators, Mediators, and Conciliators	21	45	1	<5 years	MT OJT	70,750	
23-1023	Judges, Magistrate Judges, and Magistrates	138	252	1	≥5 years	ST OJT	N/A	
23-2011	Paralegals and Legal Assistants	657	1,467	4	None	None	53,750	
23-2091	Court Reporters	80	168	5	None	ST OJT	75,740	
23-2093	Title Examiners, Abstractors, and Searchers	99	234	7	None	ST OJT	46,250	
23-2099	Legal Support Workers, All Other	167	327	7	None	ST OJT	51,140	
25-1011	Business Teachers, Postsecondary	42	86	1	None	None	N/A	
25-1021	Computer Science Teachers, Postsecondary	17	36	1	None	None	114,080	
25-1022	Mathematical Science Teachers, Postsecondary	27	54	1	None	None	N/A	
25-1031	Architecture Teachers, Postsecondary	4	7	1	None	None	89,310	
25-1032	Engineering Teachers, Postsecondary	18	36	1	None	None	137,090	
25-1041	Agricultural Sciences Teachers, Postsecondary	4	9	1	None	None	N/A	
25-1042	Biological Science Teachers, Postsecondary	26	52	1	None	None	114,950	
25-1043	Forestry and Conservation Science Teachers, Postsecondary	1	2	1	None	None	N/A	
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers,	5	11	1	None	None	106,640	
25-1052	Chemistry Teachers, Postsecondary	11	22	1	None	None	112,580	
25-1053	Environmental Science Teachers, Postsecondary	3	5	1	None	None	95,970	
25-1054	Physics Teachers, Postsecondary	7	14	1	None	None	N/A	

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Work Exp	Entry Level	Median Annual Wage
						On-the-Job Training to Attain Competency	
25-1061	Anthropology and Archeology Teachers, Postsecondary	3	6	1	None	None	N/A
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	10	1	None	None	N/A
25-1063	Economics Teachers, Postsecondary	6	13	1	None	None	111,140
25-1064	Geography Teachers, Postsecondary	2	5	1	None	None	N/A
25-1065	Political Science Teachers, Postsecondary	8	17	1	None	None	106,650
25-1066	Psychology Teachers, Postsecondary	19	38	1	None	None	N/A
25-1067	Sociology Teachers, Postsecondary	8	17	1	None	None	89,320
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	11	1	None	None	N/A
25-1071	Health Specialties Teachers, Postsecondary	86	189	1	<5 years	None	N/A
25-1072	Nursing Instructors and Teachers, Postsecondary	30	66	2	<5 years	None	N/A
25-1081	Education Teachers, Postsecondary	29	60	1	None	None	65,530
25-1082	Library Science Teachers, Postsecondary	3	5	1	None	None	N/A
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	8	16	1	None	None	N/A
25-1112	Law Teachers, Postsecondary	8	16	1	None	None	148,810
25-1113	Social Work Teachers, Postsecondary	7	13	2	None	None	61,030
25-1121	Art, Drama, and Music Teachers, Postsecondary	49	99	2	None	None	N/A
25-1122	Communications Teachers, Postsecondary	14	29	1	None	None	N/A
25-1123	English Language and Literature Teachers, Postsecondary	38	77	1	None	None	N/A
25-1124	Foreign Language and Literature Teachers, Postsecondary	15	31	1	None	None	N/A
25-1125	History Teachers, Postsecondary	11	23	1	None	None	N/A
25-1126	Philosophy and Religion Teachers, Postsecondary	11	23	1	None	None	80,980
25-1191	Graduate Teaching Assistants	62	127	3	None	None	31,650
25-1192	Home Economics Teachers, Postsecondary	2	4	2	None	None	N/A
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	9	19	1	None	None	N/A
25-1194	Vocational Education Teachers, Postsecondary	79	168	3	<5 years	None	55,770
25-1199	Postsecondary Teachers, All Other	113	230	2	None	None	N/A
25-2011	Preschool Teachers, Except Special Education	1,352	5,108	4	None	None	31,120
25-2012	Kindergarten Teachers, Except Special Education	141	351	3	None	I/R	59,210
25-2021	Elementary School Teachers, Except Special Education	799	1,641	3	None	I/R	76,050
25-2022	Middle School Teachers, Except Special and Career/Technical Education	374	773	3	None	I/R	68,090
25-2023	Career/Technical Education Teachers, Middle School	8	17	3	None	I/R	N/A
25-2031	Secondary School Teachers, Except Special and Career/Technical	595	1,215	3	None	I/R	77,330
25-2032	Career/Technical Education Teachers, Secondary School	58	116	3	<5 years	I/R	71,020
25-2051	Special Education Teachers, Preschool	36	122	3	None	I/R	36,360
25-2052	Special Education Teachers, Kindergarten and Elementary School	120	277	3	None	I/R	76,330
25-2053	Special Education Teachers, Middle School	49	101	3	None	I/R	71,690
25-2054	Special Education Teachers, Secondary School	75	159	3	None	I/R	78,890
25-2059	Special Education Teachers, All Other	37	97	3	None	I/R	80,140
25-3011	Adult Basic and Secondary Education and Literacy Teachers and	64	163	3	None	I/R	58,680
25-3021	Self-Enrichment Education Teachers	274	575	7	<5 years	None	40,370
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	287	658	3	None	I/R	39,120
25-3098	Substitute Teachers	393	881	3	None	I/R	40,750
25-4011	Archivists	30	43	2	None	None	42,840
25-4012	Curators	120	72	2	None	None	68,310
25-4013	Museum Technicians and Conservators	104	77	3	None	None	46,420
25-4021	Librarians	261	535	2	None	None	76,220
25-4031	Library Technicians	540	1,045	5	None	None	43,030
25-9011	Audio-Visual and Multimedia Collections Specialists	4	7	3	<5 years	None	43,200
25-9021	Farm and Home Management Advisors	14	26	2	≥5 years	None	N/A

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Work Exp	Entry Level -----		Median Annual Wage
						On-the-Job Training to Attain Competency	Competency	
25-9031	Instructional Coordinators	116	254	2	≥5 years	None	None	70,710
25-9041	Teacher Assistants	1,293	3,711	6	None	None	None	30,480
25-9099	Education, Training, and Library Workers, All Other	76	155	6	None	None	None	35,490
27-1011	Art Directors	75	227	3	≥5 years	None	None	119,500
27-1012	Craft Artists	15	40	7	None	LT OJT	LT OJT	55,410
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	35	102	7	None	LT OJT	LT OJT	65,050
27-1014	Multimedia Artists and Animators	127	469	3	None	MT OJT	MT OJT	79,790
27-1019	Artists and Related Workers, All Other	24	50	7	None	LT OJT	LT OJT	61,930
27-1021	Commercial and Industrial Designers	37	110	3	None	None	None	69,080
27-1022	Fashion Designers	54	166	3	None	None	None	69,880
27-1023	Floral Designers	72	174	7	None	MT OJT	MT OJT	30,770
27-1024	Graphic Designers	369	993	3	None	None	None	53,930
27-1025	Interior Designers	79	199	3	None	None	None	62,690
27-1026	Merchandise Displayers and Window Trimmers	157	439	7	None	MT OJT	MT OJT	30,410
27-1027	Set and Exhibit Designers	64	180	3	None	None	None	52,990
27-1029	Designers, All Other	19	62	3	None	None	None	78,510
27-2011	Actors	527	1,935	7	None	None	None	N/A
27-2012	Producers and Directors	798	2,817	3	<5 years	None	None	109,570
27-2021	Athletes and Sports Competitors	43	116	7	None	LT OJT	LT OJT	N/A
27-2022	Coaches and Scouts	307	715	3	None	None	None	36,430
27-2023	Umpires, Referees, and Other Sports Officials	66	143	7	None	MT OJT	MT OJT	21,090
27-2031	Dancers	35	94	7	None	LT OJT	LT OJT	N/A
27-2032	Choreographers	11	29	7	≥5 years	LT OJT	LT OJT	30,290
27-2041	Music Directors and Composers	45	114	3	<5 years	None	None	50,420
27-2042	Musicians and Singers	167	440	7	None	LT OJT	LT OJT	N/A
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	120	437	7	None	None	None	N/A
27-3011	Radio and Television Announcers	61	103	3	None	None	None	47,530
27-3012	Public Address System and Other Announcers	25	66	7	None	ST OJT	ST OJT	32,620
27-3021	Broadcast News Analysts	11	15	3	None	None	None	58,330
27-3022	Reporters and Correspondents	69	159	3	None	None	None	42,800
27-3031	Public Relations Specialists	287	696	3	None	None	None	62,260
27-3041	Editors	231	639	3	<5 years	None	None	64,870
27-3042	Technical Writers	83	219	3	<5 years	ST OJT	ST OJT	77,210
27-3043	Writers and Authors	92	283	3	None	MT OJT	MT OJT	76,570
27-3091	Interpreters and Translators	73	178	3	None	ST OJT	ST OJT	55,380
27-3099	Media and Communication Workers, All Other	131	499	7	None	ST OJT	ST OJT	43,850
27-4011	Audio and Video Equipment Technicians	208	681	5	None	ST OJT	ST OJT	50,300
27-4012	Broadcast Technicians	4	48	4	None	ST OJT	ST OJT	50,580
27-4013	Radio Operators	3	6	4	None	ST OJT	ST OJT	N/A
27-4014	Sound Engineering Technicians	89	344	5	None	ST OJT	ST OJT	60,250
27-4021	Photographers	113	294	7	None	LT OJT	LT OJT	58,590
27-4031	Camera Operators, Television, Video, and Motion Picture	42	213	3	None	None	None	65,380
27-4032	Film and Video Editors	122	507	3	None	None	None	78,880
27-4099	Media and Communication Equipment Workers, All Other	107	374	7	None	ST OJT	ST OJT	81,630
29-1011	Chiropractors	41	164	1	None	None	None	81,710
29-1021	Dentists, General	148	570	1	None	None	None	99,730
29-1022	Oral and Maxillofacial Surgeons	8	31	1	None	None	None	N/A
29-1023	Orthodontists	9	36	1	None	I/R	I/R	185,470
29-1024	Prosthodontists	1	4	1	None	None	None	N/A

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Entry Level -----		Median Annual Wage
					Work Exp	On-the-Job Training to Attain Competency	
29-1029	Dentists, All Other Specialists	13	34	1	None	I/R	126,770
29-1031	Dietitians and Nutritionists	69	211	3	None	I/R	72,760
29-1041	Optometrists	68	255	1	None	None	105,570
29-1051	Pharmacists	511	1,528	1	None	None	140,910
29-1061	Anesthesiologists	48	192	1	None	None	N/A
29-1062	Family and General Practitioners	203	768	1	None	None	160,640
29-1063	Internists, General	75	296	1	None	I/R	191,990
29-1064	Obstetricians and Gynecologists	35	137	1	None	I/R	174,010
29-1065	Pediatricians, General	49	195	1	None	I/R	183,050
29-1066	Psychiatrists	49	163	1	None	I/R	N/A
29-1067	Surgeons	67	260	1	None	I/R	N/A
29-1069	Physicians and Surgeons, All Other	600	1,942	1	None	I/R	N/A
29-1071	Physician Assistants	135	502	1	None	I/R	95,210
29-1081	Podiatrists	15	51	1	None	I/R	51,490
29-1122	Occupational Therapists	148	533	2	None	None	90,830
29-1123	Physical Therapists	320	1,210	1	None	None	93,470
29-1124	Radiation Therapists	20	77	4	None	None	107,370
29-1125	Recreational Therapists	36	109	3	None	None	59,410
29-1126	Respiratory Therapists	142	538	4	None	None	73,880
29-1127	Speech-Language Pathologists	163	526	2	None	None	86,120
29-1128	Exercise Physiologists	6	23	3	None	None	70,230
29-1129	Therapists, All Other	14	49	3	None	None	70,160
29-1131	Veterinarians	108	246	1	None	None	113,780
29-1141	Registered Nurses	3,879	13,497	4	None	None	95,900
29-1151	Nurse Anesthetists	59	222	2	None	None	185,260
29-1161	Nurse Midwives	6	25	2	None	None	124,640
29-1171	Nurse Practitioners	183	685	2	None	None	127,950
29-1181	Audiologists	17	63	2	None	None	102,350
29-1199	Health Diagnosing and Treating Practitioners, All Other	97	232	2	None	None	70,460
29-2011	Medical and Clinical Laboratory Technologists	228	812	3	None	None	82,580
29-2012	Medical and Clinical Laboratory Technicians	236	849	4	None	None	39,790
29-2021	Dental Hygienists	265	1,034	4	None	None	97,680
29-2031	Cardiovascular Technologists and Technicians	52	207	4	None	None	62,890
29-2032	Diagnostic Medical Sonographers	68	268	4	None	None	84,050
29-2033	Nuclear Medicine Technologists	22	88	4	None	None	101,300
29-2034	Radiologic Technologists	233	870	4	None	None	69,750
29-2035	Magnetic Resonance Imaging Technologists	38	151	4	<5 years	None	81,130
29-2041	Emergency Medical Technicians and Paramedics	467	1,284	5	None	None	35,830
29-2051	Dietetic Technicians	28	96	4	None	None	28,890
29-2052	Pharmacy Technicians	426	1,271	7	None	MT OJT	37,280
29-2053	Psychiatric Technicians	83	239	5	None	ST OJT	56,510
29-2054	Respiratory Therapy Technicians	7	29	4	None	MT OJT	74,460
29-2055	Surgical Technologists	82	323	5	None	None	57,060
29-2056	Veterinary Technologists and Technicians	121	281	4	None	None	38,800
29-2057	Ophthalmic Medical Technicians	38	151	5	None	None	37,600
29-2061	Licensed Practical and Licensed Vocational Nurses	1,312	4,521	5	None	None	50,090
29-2071	Medical Records and Health Information Technicians	283	964	5	None	None	40,440
29-2081	Opticians, Dispensing	129	446	7	None	LT OJT	36,950
29-2091	Orthotists and Prosthetists	5	15	2	None	I/R	64,780

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Work Exp	----- Entry Level -----	Median Annual Wage
						On-the-Job Training to Attain Competency	
29-2092	Hearing Aid Specialists	9	29	3	None	ST OJT	N/A
29-2099	Health Technologists and Technicians, All Other	92	335	7	None	None	41,940
29-9011	Occupational Health and Safety Specialists	129	288	3	None	ST OJT	79,470
29-9012	Occupational Health and Safety Technicians	20	49	7	None	MT OJT	44,210
29-9091	Athletic Trainers	28	90	3	None	None	46,380
29-9092	Genetic Counselors	2	9	3	None	None	78,810
29-9099	Healthcare Practitioners and Technical Workers, All Other	65	196	3	None	None	63,440
31-1011	Home Health Aides	1,629	6,297	8	None	ST OJT	23,180
31-1013	Psychiatric Aides	165	437	7	None	ST OJT	29,600
31-1014	Nursing Assistants	2,123	7,689	5	None	None	29,720
31-1015	Orderlies	65	238	7	None	ST OJT	34,540
31-2011	Occupational Therapy Assistants	54	205	4	None	None	69,550
31-2012	Occupational Therapy Aides	16	58	7	None	ST OJT	29,220
31-2021	Physical Therapist Assistants	126	492	4	None	None	69,160
31-2022	Physical Therapist Aides	86	323	7	None	ST OJT	27,850
31-9011	Massage Therapists	113	316	5	None	None	43,030
31-9091	Dental Assistants	533	2,035	5	None	None	34,740
31-9092	Medical Assistants	838	3,247	5	None	None	34,070
31-9093	Medical Equipment Preparers	57	220	7	None	MT OJT	39,190
31-9094	Medical Transcriptionists	91	319	5	None	None	51,780
31-9095	Pharmacy Aides	72	210	7	None	ST OJT	31,530
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	140	325	7	None	ST OJT	27,800
31-9097	Phlebotomists	148	579	5	None	None	40,420
31-9099	Healthcare Support Workers, All Other	180	507	7	None	None	39,650
33-1011	First-Line Supervisors of Correctional Officers	254	471	7	<5 years	MT OJT	93,650
33-1012	First-Line Supervisors of Police and Detectives	691	1,262	7	<5 years	MT OJT	141,050
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	511	937	5	<5 years	MT OJT	149,110
33-1099	First-Line Supervisors of Protective Service Workers, All Other	169	428	7	<5 years	None	38,150
33-2011	Firefighters	1,768	3,265	5	None	LT OJT	77,510
33-2021	Fire Inspectors and Investigators	62	115	7	≥5 years	MT OJT	106,090
33-3011	Bailiffs	80	146	7	None	MT OJT	N/A
33-3012	Correctional Officers and Jailers	2,361	4,382	7	None	MT OJT	60,440
33-3021	Detectives and Criminal Investigators	553	1,011	7	<5 years	MT OJT	118,670
33-3031	Fish and Game Wardens	29	52	7	None	MT OJT	N/A
33-3041	Parking Enforcement Workers	46	85	7	None	ST OJT	46,950
33-3051	Police and Sheriff's Patrol Officers	4,042	7,388	7	None	MT OJT	100,660
33-3052	Transit and Railroad Police	13	24	7	None	ST OJT	N/A
33-9011	Animal Control Workers	62	113	7	None	MT OJT	55,820
33-9021	Private Detectives and Investigators	62	161	7	<5 years	MT OJT	79,100
33-9031	Gaming Surveillance Officers and Gaming Investigators	15	35	7	None	ST OJT	32,750
33-9032	Security Guards	1,893	5,231	7	None	ST OJT	25,130
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service	262	550	7	None	ST OJT	34,520
33-9093	Transportation Security Screeners	148	273	7	None	ST OJT	40,860
33-9099	Protective Service Workers, All Other	174	391	7	None	ST OJT	35,490
35-1011	Chefs and Head Cooks	215	563	7	≥5 years	None	42,280
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2,392	6,388	7	<5 years	None	30,680
35-2011	Cooks, Fast Food	1,393	3,660	8	None	ST OJT	21,890
35-2012	Cooks, Institution and Cafeteria	735	2,210	8	None	ST OJT	30,610
35-2014	Cooks, Restaurant	2,919	7,674	8	<5 years	MT OJT	25,650

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Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Education	Entry Level -----		Median Annual Wage
					Work Exp	On-the-Job Training to Attain Competency	
35-2015	Cooks, Short Order	455	1,200	8	None	ST OJT	23,830
35-2019	Cooks, All Other	45	124	8	None	MT OJT	30,600
35-2021	Food Preparation Workers	2,074	5,648	8	None	ST OJT	23,470
35-3011	Bartenders	1,907	4,944	8	None	ST OJT	31,030
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	9,118	24,080	8	None	ST OJT	22,070
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	2,913	8,957	8	None	ST OJT	22,980
35-3031	Waiters and Waitresses	9,678	25,448	8	None	ST OJT	24,310
35-3041	Food Servers, Nonrestaurant	452	1,422	8	None	ST OJT	24,820
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1,588	4,206	8	None	ST OJT	22,030
35-9021	Dishwashers	1,780	4,733	8	None	ST OJT	21,380
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	2,006	5,274	8	None	None	23,190
35-9099	Food Preparation and Serving Related Workers, All Other	161	436	8	None	ST OJT	22,690
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	264	731	7	<5 years	None	43,960
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and	205	534	7	<5 years	None	49,730
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	3,784	10,455	8	None	ST OJT	27,030
37-2012	Maids and Housekeeping Cleaners	1,707	4,996	8	None	ST OJT	24,170
37-2019	Building Cleaning Workers, All Other	34	96	8	None	ST OJT	36,090
37-2021	Pest Control Workers	166	483	7	None	MT OJT	31,310
37-3011	Landscaping and Groundskeeping Workers	1,817	4,768	8	None	ST OJT	28,950
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	53	139	7	None	MT OJT	29,950
37-3013	Tree Trimmers and Pruners	85	238	7	None	MT OJT	46,770
37-3019	Grounds Maintenance Workers, All Other	44	101	8	None	ST OJT	30,620
39-1011	Gaming Supervisors	55	141	7	<5 years	None	46,870
39-1021	First-Line Supervisors of Personal Service Workers	448	1,380	7	<5 years	None	43,540
39-2011	Animal Trainers	42	93	7	None	MT OJT	27,530
39-2021	Nonfarm Animal Caretakers	438	880	8	None	ST OJT	24,090
39-3011	Gaming Dealers	180	472	7	None	ST OJT	23,880
39-3012	Gaming and Sports Book Writers and Runners	33	87	7	None	ST OJT	#N/A
39-3019	Gaming Service Workers, All Other	19	51	7	None	ST OJT	24,630
39-3021	Motion Picture Projectionists	128	499	8	None	ST OJT	26,540
39-3031	Ushers, Lobby Attendants, and Ticket Takers	1,860	6,333	8	None	ST OJT	23,650
39-3091	Amusement and Recreation Attendants	1,010	2,257	8	None	ST OJT	23,160
39-3092	Costume Attendants	57	197	7	None	ST OJT	48,860
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	55	142	7	None	ST OJT	32,000
39-3099	Entertainment Attendants and Related Workers, All Other	17	42	7	None	ST OJT	23,220
39-4011	Embalmers	11	25	5	None	ST OJT	#N/A
39-4021	Funeral Attendants	101	238	7	None	ST OJT	30,720
39-4031	Morticians, Undertakers, and Funeral Directors	72	170	4	None	LT OJT	42,000
39-5011	Barbers	35	82	5	None	None	#N/A
39-5012	Hairdressers, Hairstylists, and Cosmetologists	1,035	2,470	5	None	None	23,930
39-5091	Makeup Artists, Theatrical and Performance	10	40	5	None	None	77,150
39-5092	Manicurists and Pedicurists	135	318	5	None	None	21,640
39-5093	Shampoosers	29	68	5	None	None	24,940
39-5094	Skincare Specialists	56	143	5	None	None	28,920
39-6011	Baggage Porters and Bellhops	90	237	7	None	ST OJT	24,710
39-6012	Concierges	62	160	7	None	MT OJT	34,290
39-7011	Tour Guides and Escorts	337	277	7	None	MT OJT	30,070
39-7012	Travel Guides	6	15	7	None	MT OJT	38,580
39-9011	Childcare Workers	1,966	7,198	7	None	ST OJT	24,860

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	----- Entry Level -----			Median Annual Wage
				Educ- ation	Work Exp	On-the-Job Training to Attain Competency	
39-9021	Personal Care Aides	2,240	8,670	8	None	ST OJT	23,260
39-9031	Fitness Trainers and Aerobics Instructors	339	849	7	None	ST OJT	48,030
39-9032	Recreation Workers	827	1,981	3	None	None	26,940
39-9041	Residential Advisors	245	866	7	None	ST OJT	31,420
39-9099	Personal Care and Service Workers, All Other	169	395	7	None	ST OJT	28,170
41-1011	First-Line Supervisors of Retail Sales Workers	1,542	4,502	7	<5 years	None	37,800
41-1012	First-Line Supervisors of Non-Retail Sales Workers	246	720	7	<5 years	None	59,540
41-2011	Cashiers	8,803	24,984	8	None	ST OJT	22,130
41-2012	Gaming Change Persons and Booth Cashiers	37	96	8	None	ST OJT	N/A
41-2021	Counter and Rental Clerks	934	2,382	8	None	ST OJT	25,460
41-2022	Parts Salespersons	238	895	8	None	MT OJT	26,990
41-2031	Retail Salespersons	7,731	22,934	8	None	ST OJT	24,100
41-3011	Advertising Sales Agents	338	837	7	None	MT OJT	64,050
41-3021	Insurance Sales Agents	621	1,410	7	None	MT OJT	53,890
41-3031	Securities, Commodities, and Financial Services Sales Agents	466	1,069	3	None	MT OJT	55,190
41-3041	Travel Agents	123	363	7	None	MT OJT	36,170
41-3099	Sales Representatives, Services, All Other	1,309	3,641	7	None	ST OJT	54,200
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and	465	1,426	3	None	MT OJT	81,730
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical	2,091	6,555	7	None	MT OJT	51,250
41-9011	Demonstrators and Product Promoters	198	515	8	None	ST OJT	26,860
41-9012	Models	6	15	8	None	None	44,340
41-9021	Real Estate Brokers	37	89	7	<5 years	None	55,330
41-9022	Real Estate Sales Agents	160	381	7	None	LT OJT	46,150
41-9031	Sales Engineers	92	283	3	None	MT OJT	105,930
41-9041	Telemarketers	428	1,234	8	None	ST OJT	26,460
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related	1	5	7	None	ST OJT	23,000
41-9099	Sales and Related Workers, All Other	103	303	7	None	None	36,330
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,951	5,311	7	<5 years	None	56,600
43-2011	Switchboard Operators, Including Answering Service	131	397	7	None	ST OJT	30,470
43-2021	Telephone Operators	9	24	7	None	ST OJT	36,830
43-3011	Bill and Account Collectors	667	1,902	7	None	MT OJT	39,890
43-3021	Billing and Posting Clerks	782	2,470	7	None	ST OJT	37,670
43-3031	Bookkeeping, Accounting, and Auditing Clerks	1,684	4,566	7	None	MT OJT	43,370
43-3041	Gaming Cage Workers	28	71	7	None	ST OJT	27,400
43-3051	Payroll and Timekeeping Clerks	328	912	7	None	MT OJT	43,950
43-3061	Procurement Clerks	203	493	7	None	MT OJT	42,370
43-3071	Tellers	1,342	3,037	7	None	ST OJT	28,360
43-3099	Financial Clerks, All Other	73	175	7	None	ST OJT	36,380
43-4011	Brokerage Clerks	111	253	7	None	MT OJT	53,130
43-4021	Correspondence Clerks	15	38	7	None	MT OJT	44,630
43-4031	Court, Municipal, and License Clerks	288	531	7	None	MT OJT	45,430
43-4041	Credit Authorizers, Checkers, and Clerks	39	101	7	None	ST OJT	39,980
43-4051	Customer Service Representatives	4,558	12,481	7	None	ST OJT	35,660
43-4061	Eligibility Interviewers, Government Programs	356	676	7	None	MT OJT	47,330
43-4071	File Clerks	285	764	7	None	ST OJT	30,280
43-4081	Hotel, Motel, and Resort Desk Clerks	757	1,981	7	None	ST OJT	25,700
43-4111	Interviewers, Except Eligibility and Loan	296	903	7	None	ST OJT	35,200
43-4121	Library Assistants, Clerical	437	871	7	None	ST OJT	28,000
43-4131	Loan Interviewers and Clerks	714	269	7	None	ST OJT	46,210

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	----- Entry Level -----			Median Annual Wage
				Education	Work Exp	On-the-Job Training to Attain Competency	
43-4141	New Accounts Clerks	94	214	7	None	MT OJT	37,150
43-4151	Order Clerks	352	1,073	7	None	ST OJT	31,890
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	171	452	7	None	ST OJT	42,430
43-4171	Receptionists and Information Clerks	2,006	6,143	7	None	ST OJT	27,820
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	217	611	7	None	ST OJT	40,290
43-4199	Information and Record Clerks, All Other	566	1,178	7	None	ST OJT	43,950
43-5011	Cargo and Freight Agents	314	885	7	None	ST OJT	41,360
43-5021	Couriers and Messengers	90	262	7	None	ST OJT	33,190
43-5031	Police, Fire, and Ambulance Dispatchers	462	877	7	None	MT OJT	60,380
43-5032	Dispatchers, Except Police, Fire, and Ambulance	357	971	7	None	MT OJT	37,060
43-5041	Meter Readers, Utilities	82	177	7	None	ST OJT	50,100
43-5051	Postal Service Clerks	1	2	7	None	ST OJT	56,800
43-5052	Postal Service Mail Carriers	5	10	7	None	ST OJT	59,850
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine	1	3	7	None	ST OJT	56,220
43-5061	Production, Planning, and Expediting Clerks	502	1,552	7	None	MT OJT	44,420
43-5071	Shipping, Receiving, and Traffic Clerks	873	2,713	7	None	ST OJT	29,410
43-5081	Stock Clerks and Order Fillers	3,734	11,137	8	None	ST OJT	23,600
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	133	396	7	None	ST OJT	24,930
43-6011	Executive Secretaries and Executive Administrative Assistants	867	2,152	7	<5 years	None	65,290
43-6012	Legal Secretaries	309	702	7	None	MT OJT	52,120
43-6013	Medical Secretaries	523	2,033	7	None	MT OJT	35,880
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and	2,484	6,568	7	None	ST OJT	39,180
43-9011	Computer Operators	54	143	7	None	MT OJT	48,980
43-9021	Data Entry Keyers	289	788	7	None	MT OJT	29,200
43-9022	Word Processors and Typists	106	215	7	None	ST OJT	45,610
43-9031	Desktop Publishers	17	47	4	None	ST OJT	47,350
43-9041	Insurance Claims and Policy Processing Clerks	403	939	7	None	MT OJT	41,240
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	181	461	7	None	ST OJT	36,520
43-9061	Office Clerks, General	5,331	14,373	7	None	ST OJT	30,460
43-9071	Office Machine Operators, Except Computer	122	337	7	None	ST OJT	31,400
43-9081	Proofreaders and Copy Markers	12	33	3	None	None	32,810
43-9111	Statistical Assistants	55	116	3	None	None	46,980
43-9199	Office and Administrative Support Workers, All Other	546	1,276	7	None	ST OJT	29,370
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	22	52	7	<5 years	None	N/A
45-2011	Agricultural Inspectors	57	108	3	None	MT OJT	38,950
45-2041	Graders and Sorters, Agricultural Products	33	99	8	None	ST OJT	22,710
45-2091	Agricultural Equipment Operators	24	75	7	None	MT OJT	N/A
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	111	360	8	None	ST OJT	22,880
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	47	131	8	None	ST OJT	27,840
45-2099	Agricultural Workers, All Other	11	25	8	None	ST OJT	42,500
45-4011	Forest and Conservation Workers	28	49	7	None	MT OJT	19,110
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	414	1,195	7	≥5 years	None	71,990
47-2011	Boilermakers	14	47	7	None	APP	88,520
47-2021	Brickmasons and Blockmasons	47	142	7	None	APP	57,290
47-2022	Stonemasons	10	29	7	None	APP	40,280
47-2031	Carpenters	586	1,736	7	None	APP	51,180
47-2041	Carpet Installers	18	55	8	None	ST OJT	43,830
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	7	22	8	None	MT OJT	52,670
47-2043	Floor Sanders and Finishers	5	16	8	None	MT OJT	54,950

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level -----			Median Annual Wage
				Education	Work Exp	On-the-Job Training to Attain Competency	
47-2044	Tile and Marble Setters	29	89	8	None	LT OJT	39,400
47-2051	Cement Masons and Concrete Finishers	136	431	8	None	MT OJT	53,670
47-2053	Terrazzo Workers and Finishers	3	9	7	None	APP	55,210
47-2061	Construction Laborers	1,079	3,327	8	None	ST OJT	38,880
47-2071	Paving, Surfacing, and Tamping Equipment Operators	107	273	7	None	MT OJT	55,210
47-2072	Pile-Driver Operators	3	12	8	None	MT OJT	89,440
47-2073	Operating Engineers and Other Construction Equipment Operators	465	1,254	7	None	MT OJT	83,420
47-2081	Drywall and Ceiling Tile Installers	61	186	8	None	MT OJT	46,520
47-2082	Tapers	12	36	8	None	MT OJT	43,650
47-2111	Electricians	593	1,772	7	None	APP	63,000
47-2121	Glaziers	38	116	7	None	APP	56,820
47-2131	Insulation Workers, Floor, Ceiling, and Wall	31	95	8	None	ST OJT	35,050
47-2132	Insulation Workers, Mechanical	37	112	8	None	ST OJT	N/A
47-2141	Painters, Construction and Maintenance	249	722	8	None	MT OJT	45,530
47-2142	Paperhangers	6	15	8	None	ST OJT	N/A
47-2151	Pipelayers	58	151	8	None	ST OJT	51,750
47-2152	Plumbers, Pipefitters, and Steamfitters	366	1,087	7	None	APP	54,890
47-2161	Plasterers and Stucco Masons	14	41	8	None	LT OJT	40,160
47-2171	Reinforcing Iron and Rebar Workers	17	54	8	None	MT OJT	56,030
47-2181	Roofers	101	313	8	None	MT OJT	54,170
47-2211	Sheet Metal Workers	153	445	7	None	APP	58,280
47-2221	Structural Iron and Steel Workers	60	189	7	None	APP	64,510
47-2231	Solar Photovoltaic Installers	6	19	8	None	ST OJT	N/A
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble	22	67	8	None	ST OJT	28,920
47-3012	Helpers--Carpenters	38	112	8	None	ST OJT	37,220
47-3013	Helpers--Electricians	66	199	7	None	ST OJT	37,920
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	10	32	8	None	ST OJT	26,000
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	47	146	7	None	ST OJT	29,590
47-3016	Helpers--Roofers	15	46	8	None	ST OJT	N/A
47-3019	Helpers, Construction Trades, All Other	16	48	8	None	ST OJT	29,830
47-4011	Construction and Building Inspectors	358	719	7	≥5 years	MT OJT	85,130
47-4021	Elevator Installers and Repairers	20	61	7	None	APP	93,130
47-4031	Fence Erectors	24	74	7	None	MT OJT	56,680
47-4041	Hazardous Materials Removal Workers	77	218	7	None	MT OJT	40,820
47-4051	Highway Maintenance Workers	737	1,365	7	None	MT OJT	52,230
47-4061	Rail-Track Laying and Maintenance Equipment Operators	19	42	7	None	MT OJT	N/A
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	65	157	8	None	MT OJT	39,130
47-4099	Construction and Related Workers, All Other	44	110	7	None	MT OJT	34,060
47-5011	Derrick Operators, Oil and Gas	2	16	8	None	ST OJT	N/A
47-5012	Rotary Drill Operators, Oil and Gas	5	33	8	None	MT OJT	N/A
47-5013	Service Unit Operators, Oil, Gas, and Mining	14	83	8	None	MT OJT	46,190
47-5021	Earth Drillers, Except Oil and Gas	13	51	8	None	MT OJT	71,890
47-5071	Roustabouts, Oil and Gas	12	73	8	None	MT OJT	44,800
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	628	1,687	7	<5 years	None	73,900
49-2011	Computer, Automated Teller, and Office Machine Repairers	119	357	6	None	None	44,790
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	7	4	None	MT OJT	56,040
49-2022	Telecommunications Equipment Installers and Repairers, Except Line	(125)	(323)	5	None	MT OJT	56,710
49-2091	Avionics Technicians	30	85	4	None	None	67,010
49-2092	Electric Motor, Power Tool, and Related Repairers	25	80	5	None	LT OJT	48,280

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	----- Entry Level -----			Median Annual Wage
				Educ- ation	Work Exp	On-the-Job Training to Attain Competency	
49-2093	Electrical and Electronics Installers and Repairers, Transportation	15	39	5	None	LT OJT	75,250
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	88	219	5	None	LT OJT	59,350
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	24	60	5	None	LT OJT	82,920
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	7	25	5	None	ST OJT	32,310
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	18	55	5	None	None	40,040
49-2098	Security and Fire Alarm Systems Installers	122	365	7	None	MT OJT	44,380
49-3011	Aircraft Mechanics and Service Technicians	329	879	5	None	None	60,750
49-3021	Automotive Body and Related Repairers	189	593	7	None	MT OJT	35,950
49-3023	Automotive Service Technicians and Mechanics	971	3,013	7	None	LT OJT	39,490
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	324	867	7	None	LT OJT	56,230
49-3041	Farm Equipment Mechanics and Service Technicians	44	167	7	None	LT OJT	39,310
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	202	563	7	None	LT OJT	60,730
49-3043	Rail Car Repairers	27	71	7	None	LT OJT	32,030
49-3051	Motorboat Mechanics and Service Technicians	21	67	7	None	LT OJT	36,250
49-3052	Motorcycle Mechanics	14	53	7	None	LT OJT	30,100
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	35	100	7	None	MT OJT	42,590
49-3091	Bicycle Repairers	12	42	7	None	MT OJT	25,380
49-3092	Recreational Vehicle Service Technicians	12	42	7	None	LT OJT	44,180
49-3093	Tire Repairers and Changers	141	513	7	None	ST OJT	35,020
49-9011	Mechanical Door Repairers	19	60	7	None	ST OJT	47,810
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	105	270	7	None	MT OJT	72,470
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	290	854	5	None	LT OJT	54,920
49-9031	Home Appliance Repairers	47	140	7	None	ST OJT	54,260
49-9041	Industrial Machinery Mechanics	330	1,073	7	None	LT OJT	55,350
49-9043	Maintenance Workers, Machinery	56	172	7	None	MT OJT	37,610
49-9044	Millwrights	31	106	7	None	MT OJT	62,460
49-9051	Electrical Power-Line Installers and Repairers	216	639	7	None	LT OJT	98,260
49-9052	Telecommunications Line Installers and Repairers	15	70	7	None	LT OJT	70,940
49-9061	Camera and Photographic Equipment Repairers	4	12	7	None	MT OJT	39,170
49-9062	Medical Equipment Repairers	48	163	4	None	MT OJT	53,440
49-9063	Musical Instrument Repairers and Tuners	6	18	7	None	APP	54,230
49-9069	Precision Instrument and Equipment Repairers, All Other	19	46	7	None	LT OJT	90,680
49-9071	Maintenance and Repair Workers, General	2,784	6,930	7	None	LT OJT	40,870
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	52	142	7	None	ST OJT	33,820
49-9094	Locksmiths and Safe Repairers	62	173	7	None	LT OJT	55,160
49-9096	Riggers	33	99	7	None	ST OJT	58,520
49-9097	Signal and Track Switch Repairers	8	16	5	None	MT OJT	N/A
49-9098	Helpers--Installation, Maintenance, and Repair Workers	262	715	7	None	MT OJT	29,320
49-9099	Installation, Maintenance, and Repair Workers, All Other	202	539	7	None	MT OJT	33,420
51-1011	First-Line Supervisors of Production and Operating Workers	367	1,150	5	<5 years	None	54,170
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	17	97	7	None	MT OJT	47,560
51-2021	Coil Winders, Tapers, and Finishers	1	4	7	None	ST OJT	24,240
51-2022	Electrical and Electronic Equipment Assemblers	84	274	7	None	ST OJT	29,050
51-2023	Electromechanical Equipment Assemblers	10	34	7	None	ST OJT	29,730
51-2031	Engine and Other Machine Assemblers	10	54	7	None	ST OJT	38,600
51-2041	Structural Metal Fabricators and Fitters	21	81	7	None	MT OJT	41,600
51-2091	Fiberglass Laminators and Fabricators	6	34	7	None	MT OJT	35,560
51-2092	Team Assemblers	886	3,325	7	None	MT OJT	24,750
51-2099	Assemblers and Fabricators, All Other	281	903	7	None	MT OJT	28,010

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level -----			Median Annual Wage
				Education	Work Exp	On-the-Job Training to Attain Competency	
51-3011	Bakers	263	788	8	None	LT OJT	25,210
51-3021	Butchers and Meat Cutters	227	639	8	None	LT OJT	25,090
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	135	488	8	None	ST OJT	22,810
51-3023	Slaughterers and Meat Packers	57	236	8	None	MT OJT	22,880
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and	17	60	8	None	MT OJT	27,640
51-3092	Food Batchmakers	109	405	7	None	MT OJT	23,890
51-3093	Food Cooking Machine Operators and Tenders	35	125	7	None	MT OJT	23,580
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	72	361	7	None	MT OJT	33,510
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and	15	64	7	None	LT OJT	59,080
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal	21	109	7	None	MT OJT	30,780
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	9	41	7	None	MT OJT	36,070
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	8	44	7	None	MT OJT	31,180
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders,	53	184	7	None	MT OJT	30,580
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal	3	13	7	None	MT OJT	33,220
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters,	53	258	7	None	MT OJT	28,270
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal	14	67	7	None	MT OJT	35,970
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and	4	20	7	None	MT OJT	43,230
51-4041	Machinists	302	1,151	7	None	LT OJT	37,350
51-4051	Metal-Refining Furnace Operators and Tenders	4	36	7	None	MT OJT	38,960
51-4052	Pourers and Casters, Metal	2	17	7	None	MT OJT	23,740
51-4071	Foundry Mold and Coremakers	1	5	7	None	MT OJT	33,890
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and	28	112	7	None	MT OJT	24,940
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	23	105	7	None	MT OJT	30,780
51-4111	Tool and Die Makers	(4)	(32)	7	None	LT OJT	52,640
51-4121	Welders, Cutters, Solderers, and Brazers	317	1,196	7	None	MT OJT	37,020
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	28	147	7	None	MT OJT	37,800
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and	4	16	7	None	MT OJT	38,900
51-4192	Layout Workers, Metal and Plastic	7	27	7	None	MT OJT	45,120
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and	17	65	7	None	MT OJT	28,910
51-4199	Metal Workers and Plastic Workers, All Other	22	66	7	None	MT OJT	31,170
51-5111	Prepress Technicians and Workers	20	62	5	None	None	41,960
51-5112	Printing Press Operators	93	292	7	None	MT OJT	32,960
51-5113	Print Binding and Finishing Workers	29	94	7	None	ST OJT	28,640
51-6011	Laundry and Dry-Cleaning Workers	363	940	8	None	ST OJT	23,260
51-6021	Pressers, Textile, Garment, and Related Materials	140	334	8	None	ST OJT	22,080
51-6031	Sewing Machine Operators	(488)	(1,132)	8	None	ST OJT	21,660
51-6041	Shoe and Leather Workers and Repairers	10	43	7	None	MT OJT	24,290
51-6042	Shoe Machine Operators and Tenders	7	34	7	None	MT OJT	25,190
51-6051	Sewers, Hand	9	26	8	None	MT OJT	25,870
51-6052	Tailors, Dressmakers, and Custom Sewers	56	150	8	None	MT OJT	30,340
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	(13)	(33)	7	None	ST OJT	23,240
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	(6)	(7)	7	None	MT OJT	24,500
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	(14)	(32)	7	None	MT OJT	23,030
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators,	(5)	(11)	7	None	MT OJT	23,820
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders,	(1)	1	7	None	MT OJT	36,480
51-6092	Fabric and Apparel Patternmakers	(16)	(36)	7	None	MT OJT	49,860
51-6093	Upholsterers	40	143	7	None	MT OJT	30,680
51-6099	Textile, Apparel, and Furnishings Workers, All Other	1	8	7	None	ST OJT	21,840
51-7011	Cabinetmakers and Bench Carpenters	51	187	7	None	MT OJT	30,370
51-7021	Furniture Finishers	15	53	7	None	ST OJT	25,170
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	27	121	7	None	ST OJT	34,360

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level -----			Median Annual Wage
				Education	Work Exp	On-the-Job Training to Attain Competency	
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	39	159	7	None	ST OJT	27,430
51-7099	Woodworkers, All Other	5	19	7	None	MT OJT	24,450
51-8012	Power Distributors and Dispatchers	24	59	7	None	LT OJT	78,280
51-8013	Power Plant Operators	68	186	7	None	LT OJT	107,720
51-8021	Stationary Engineers and Boiler Operators	70	172	7	None	LT OJT	78,720
51-8031	Water and Wastewater Treatment Plant and System Operators	483	916	7	None	LT OJT	79,190
51-8091	Chemical Plant and System Operators	29	76	7	None	LT OJT	55,290
51-8092	Gas Plant Operators	18	59	7	None	LT OJT	82,460
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	63	205	7	None	LT OJT	75,710
51-8099	Plant and System Operators, All Other	34	78	7	None	LT OJT	58,980
51-9011	Chemical Equipment Operators and Tenders	79	215	7	None	MT OJT	33,610
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters,	65	191	7	None	MT OJT	41,430
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and	21	74	7	None	MT OJT	25,710
51-9022	Grinding and Polishing Workers, Hand	13	53	8	None	MT OJT	26,300
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	93	284	7	None	MT OJT	28,960
51-9031	Cutters and Trimmers, Hand	8	31	8	None	ST OJT	24,130
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	33	135	7	None	ST OJT	29,100
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters,	60	226	7	None	MT OJT	27,380
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	11	41	7	None	MT OJT	27,870
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	526	1,710	7	None	MT OJT	37,400
51-9071	Jewelers and Precious Stone and Metal Workers	13	41	7	None	LT OJT	29,950
51-9081	Dental Laboratory Technicians	30	97	7	None	MT OJT	40,650
51-9082	Medical Appliance Technicians	14	44	7	None	LT OJT	31,730
51-9083	Ophthalmic Laboratory Technicians	35	117	7	None	MT OJT	31,000
51-9111	Packaging and Filling Machine Operators and Tenders	682	2,195	7	None	MT OJT	24,430
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and	28	116	7	None	MT OJT	28,990
51-9122	Painters, Transportation Equipment	53	176	7	None	MT OJT	40,770
51-9123	Painting, Coating, and Decorating Workers	15	47	8	None	MT OJT	32,720
51-9141	Semiconductor Processors	16	60	4	None	MT OJT	34,830
51-9151	Photographic Process Workers and Processing Machine Operators	56	161	7	None	ST OJT	29,350
51-9191	Adhesive Bonding Machine Operators and Tenders	8	43	7	None	MT OJT	35,880
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and	12	49	8	None	MT OJT	28,210
51-9193	Cooling and Freezing Equipment Operators and Tenders	6	25	7	None	MT OJT	25,580
51-9194	Etchers and Engravers	8	23	7	None	MT OJT	41,280
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	37	120	7	None	LT OJT	25,230
51-9196	Paper Goods Machine Setters, Operators, and Tenders	12	80	7	None	MT OJT	36,610
51-9197	Tire Builders	5	25	7	None	MT OJT	N/A
51-9198	Helpers--Production Workers	628	2,107	8	None	ST OJT	23,050
51-9199	Production Workers, All Other	280	905	7	None	MT OJT	23,270
53-1011	Aircraft Cargo Handling Supervisors	16	44	7	<5 years	None	50,140
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	328	975	7	<5 years	None	42,290
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine	455	1,235	7	<5 years	None	60,930
53-2011	Airline Pilots, Copilots, and Flight Engineers	201	549	3	<5 years	MT OJT	124,300
53-2012	Commercial Pilots	35	100	7	None	MT OJT	87,050
53-2021	Air Traffic Controllers	134	252	4	None	LT OJT	140,750
53-2022	Airfield Operations Specialists	21	45	7	None	LT OJT	66,530
53-2031	Flight Attendants	0	0	7	<5 years	MT OJT	48,300
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical	36	116	7	None	MT OJT	24,130
53-3021	Bus Drivers, Transit and Intercity	337	690	7	None	MT OJT	39,970
53-3022	Bus Drivers, School or Special Client	520	1,297	7	None	ST OJT	29,710
53-3031	Driver/Sales Workers	793	2,198	7	None	ST OJT	25,930

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-12 (cont'd)

Projected Occupational Openings 2016-2021 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level -----			Median Annual Wage
				Educ- ation	Work Exp	On-the-Job Training to Attain Competency	
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,812	5,251	5	None	ST OJT	43,830
53-3033	Light Truck or Delivery Services Drivers	1,092	3,234	7	None	ST OJT	31,740
53-3041	Taxi Drivers and Chauffeurs	297	897	8	None	ST OJT	25,790
53-3099	Motor Vehicle Operators, All Other	154	398	7	None	ST OJT	66,940
53-4011	Locomotive Engineers	3	9	7	<5 years	MT OJT	N/A
53-4031	Railroad Conductors and Yardmasters	15	31	7	None	MT OJT	N/A
53-4041	Subway and Streetcar Operators	81	149	7	None	MT OJT	N/A
53-4099	Rail Transportation Workers, All Other	9	19	7	None	MT OJT	36,310
53-5011	Sailors and Marine Oilers	82	214	5	None	ST OJT	30,820
53-5021	Captains, Mates, and Pilots of Water Vessels	131	351	3	None	None	58,070
53-5022	Motorboat Operators	10	25	7	None	MT OJT	N/A
53-5031	Ship Engineers	31	79	5	None	ST OJT	61,140
53-6011	Bridge and Lock Tenders	14	26	7	None	MT OJT	N/A
53-6021	Parking Lot Attendants	690	1,690	8	None	ST OJT	23,050
53-6031	Automotive and Watercraft Service Attendants	209	626	8	None	ST OJT	27,400
53-6041	Traffic Technicians	28	53	8	None	ST OJT	70,500
53-6051	Transportation Inspectors	84	175	7	None	MT OJT	75,850
53-6061	Transportation Attendants, Except Flight Attendants	25	66	7	None	ST OJT	28,440
53-6099	Transportation Workers, All Other	210	574	7	None	ST OJT	36,920
53-7011	Conveyor Operators and Tenders	51	162	8	None	ST OJT	35,020
53-7021	Crane and Tower Operators	53	168	5	None	ST OJT	58,190
53-7032	Excavating and Loading Machine and Dragline Operators	33	96	7	<5 years	MT OJT	46,420
53-7041	Hoist and Winch Operators	4	11	8	None	ST OJT	N/A
53-7051	Industrial Truck and Tractor Operators	745	2,307	8	None	ST OJT	35,400
53-7061	Cleaners of Vehicles and Equipment	612	1,915	8	None	ST OJT	23,130
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	4,609	13,703	8	None	ST OJT	25,340
53-7063	Machine Feeders and Offbearers	75	259	8	None	ST OJT	24,080
53-7064	Packers and Packagers, Hand	1,272	3,862	8	None	ST OJT	21,090
53-7072	Pump Operators, Except Wellhead Pumps	12	37	8	None	ST OJT	57,080
53-7073	Wellhead Pumpers	2	15	8	None	ST OJT	61,860
53-7081	Refuse and Recyclable Material Collectors	371	843	8	None	ST OJT	48,920
53-7121	Tank Car, Truck, and Ship Loaders	30	85	8	None	ST OJT	N/A
53-7199	Material Moving Workers, All Other	46	126	8	None	ST OJT	24,460

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Sources: Estimates by LAEDC; Education and skills requirements from BLS

Exhibit A-13**Youth Employment by Industry**

Industry	LA City		LA County		United States	
	'04-'06	'14-'16	'04-'06	'14-'16	'04-'06	'14-'16
Natural Resources and Mining	0.0%	0.2%	0.2%	0.2%	1.6%	1.8%
Construction	12.5%	8.7%	13.5%	9.8%	14.2%	11.4%
Wholesale Trade	2.1%	1.7%	2.6%	2.5%	1.9%	1.4%
Retail Trade	18.7%	22.8%	21.4%	21.4%	21.4%	20.6%
Transportation, Warehousing, Utilities	2.3%	4.0%	3.8%	5.2%	2.4%	2.9%
Information	4.7%	4.6%	3.4%	2.8%	2.2%	1.6%
Financial Activities	7.9%	2.6%	6.8%	3.1%	5.2%	3.7%
Professional and Business Services	11.6%	8.8%	9.6%	9.3%	7.8%	8.2%
Educational and Health Services	15.6%	17.6%	15.6%	15.8%	14.5%	16.8%
Leisure and Hospitality	18.6%	24.1%	17.0%	24.3%	22.1%	25.3%
Other Services	5.3%	4.1%	5.2%	4.5%	5.1%	4.6%
Government	0.6%	0.9%	0.8%	1.2%	1.6%	1.6%
Total	235,558	208,012	601,478	568,223	19,989,515	18,837,566

Source: Current Population Survey, Raw Tapes

Exhibit A-14**Youth Employment by Occupation**

Occupation	LA City		LA County		United States	
	'04-'06	'14-'16	'04-'06	'14-'16	'04-'06	'14-'16
Management	5.6%	7.9%	4.7%	7.4%	4.3%	5.4%
Professional	13.0%	15.9%	11.9%	13.9%	10.5%	12.8%
Service	23.7%	22.5%	22.1%	24.9%	29.0%	31.8%
Sales	17.4%	25.4%	18.7%	21.5%	17.8%	17.3%
Office Admin	20.7%	15.7%	21.7%	16.1%	15.6%	13.4%
Construction and Installation	8.4%	4.6%	7.9%	4.8%	9.8%	6.8%
Production	5.0%	2.7%	5.3%	3.8%	6.4%	5.9%
Transportation	6.2%	5.3%	7.8%	7.5%	6.7%	6.7%
Total	235,558	208,012	601,478	568,223	19,989,515	18,837,566

Source: Current Population Survey, Raw Tapes



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