



2015-
2020



LOS ANGELES:

PEOPLE, INDUSTRY AND JOBS

INSTITUTE FOR APPLIED ECONOMICS
Los Angeles County Economic Development Corporation



LOS ANGELES: PEOPLE, INDUSTRY AND JOBS

2015-2020



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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.

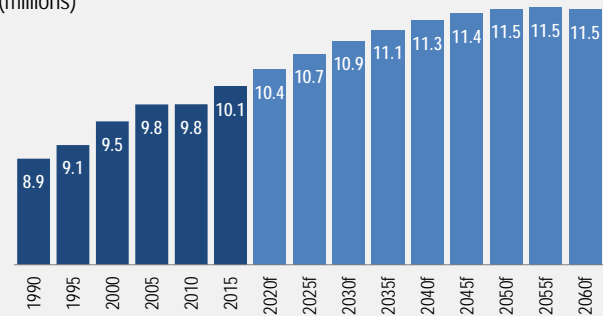
Since 1970, the population in Los Angeles County has increased by nearly 44 percent (Exhibit E-2), while the population in the City of Los Angeles has increased by 41 percent over the period, an average annual growth rate of 1.0 percent and 0.9 percent per year respectively (Exhibit E-3). From 1990 through 2013, the City of Los Angeles has added 471,500 residents, accounting for 37.0 percent of the 1.27 million additional residents added in Los Angeles County during that period.

Exhibit E-1
Selected Demographic and Income Characteristics 2014

	California	LA County	City of LA
Population	38,802,500	10,006,705	3,928,827
Median age	36.0	35.8	35.0
Households	12,758,648	3,269,112	1,343,084
Average household size	2.98	3.04	2.86
Median household income	\$61,933	\$55,746	\$50,544
HH below poverty level	14.7%	16.9%	20.2%
Per capita income	\$30,441	\$28,373	\$29,195
Individuals below poverty	16.4%	18.7%	22.4%
Median home value	\$412,700	\$464,400	\$505,500

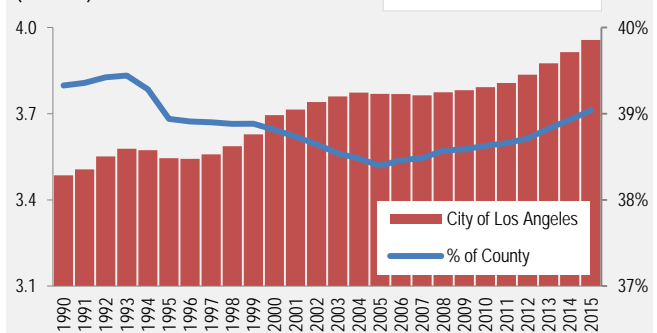
Source: 2014 ACS 1 year estimates

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



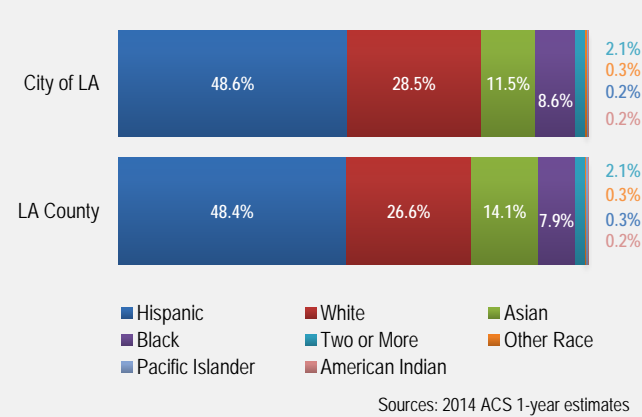
Source: California Department of Finance

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



Source: California Department of Finance

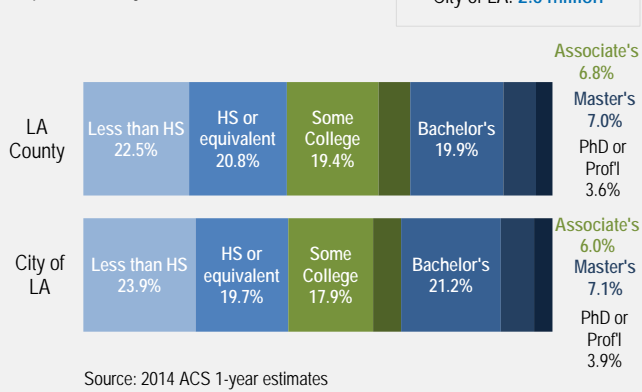
Exhibit E-4
Race and Ethnicity 2014



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).

Exhibit E-5
Educational Attainment
Population 25 years and over



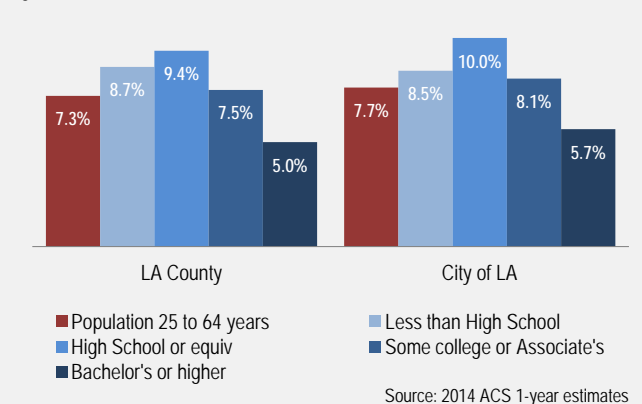
Educational Attainment

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). Almost 25 percent 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.

Exhibit E-6
Civilian Unemployment Rate
by Educational Attainment 2014



Education and Unemployment

The highest unemployment rates, in both the City of Los Angeles and Los Angeles County, exist for individuals with an educational attainment of high school or less (Exhibit E-6).

Residents with a Bachelor's degree or higher had an unemployment rate of 5.0 percent in the County (5.7 percent in the City) in 2014, 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 8.7 percent (8.5 percent) and 9.4 percent (10.0 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 nearly \$53,000 over those with less than a high school education (Exhibit E-7).

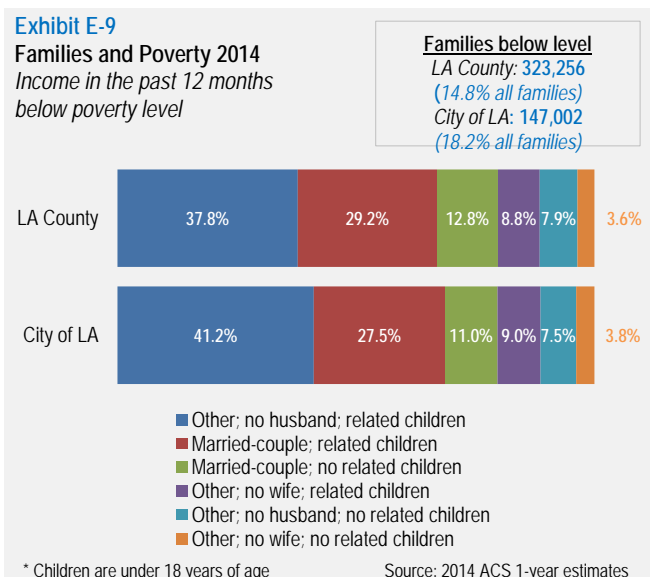
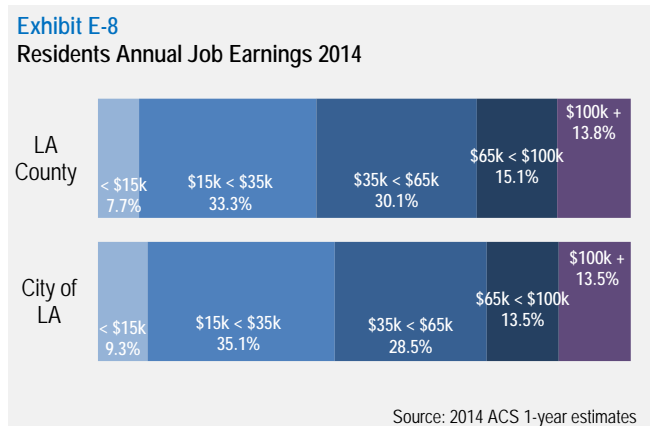
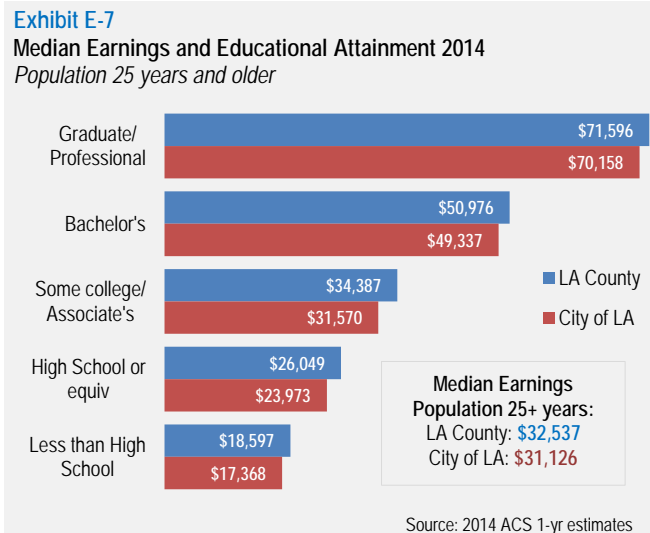
Approximately 29 percent of working residents in Los Angeles County earn more than \$65,000 per year (Exhibit E-8). The majority of working residents in the County and in the City of Los Angeles earn between \$15,000 and \$65,000 annually. Residents who earned less than \$15,000 per year represented 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.

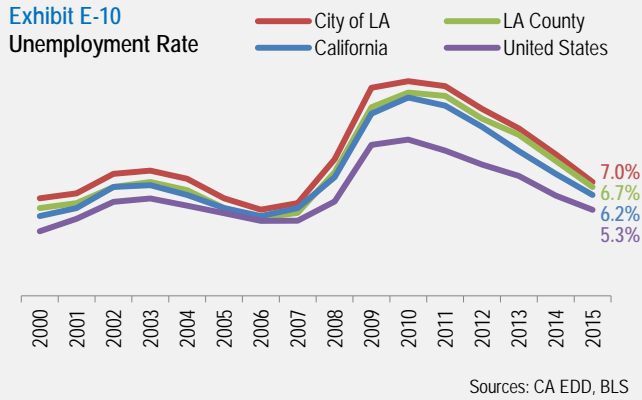
The combination of higher rates of unemployment and lower annual median earnings yield higher levels of poverty for those with lower levels of educational attainment.

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 2014, nearly 15 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 just over 18 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 2015 and 2020, the economy is expected to add 346,000 new jobs in nonfarm industries across Los Angeles County, and 123,000 new jobs in the City of Los Angeles.

Exhibit E-12
Industry Employment Growth 2015-2020 in Los Angeles County

	Annual Average % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.5	346.1
Good Producing Industries:	1.0	26.3
Natural Resources and Mining	0.7	0.2
Construction	3.1	20.9
Manufacturing – Durable Goods	0.3	3.3
Manufacturing – Nondurable Goods	0.2	2.0
Service Providing Industries	1.8	312.3
Wholesale Trade	1.0	11.3
Retail Trade	0.4	9.4
Transportation, Warehousing, Utilities	0.5	4.2
Information	0.8	8.4
Financial Activities	1.7	18.5
Professional and Business Services	3.0	98.6
Educational and Health Services	2.5	99.8
Leisure and Hospitality	2.0	49.1
Other Services	1.6	12.9
Government	0.3	7.5

Sources: California Employment Development Department; LAEDC

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.

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 2015-2020

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	15,420	18,490	33,910
13-0000	Business and financial	15,720	18,210	33,930
15-0000	Computer and mathematical	10,050	8,540	18,580
17-0000	Architecture and engineering	4,700	7,320	12,020
19-0000	Life, physical, social science	2,180	3,250	5,430
21-0000	Community and social services	7,840	7,320	15,160
23-0000	Legal occupations	2,970	2,290	5,260
25-0000	Education, training and library	8,980	11,420	20,400
27-0000	Arts, entertainment, sports	5,440	10,280	15,720
29-0000	Healthcare practitioners	24,660	18,470	43,130
31-0000	Healthcare support	15,720	10,560	26,270
33-0000	Protective services	6,690	7,800	14,490
35-0000	Food preparation and serving	40,750	73,930	114,680
37-0000	Building/grounds maintenance	17,550	11,630	29,180
39-0000	Personal care and service	20,380	19,150	39,530
41-0000	Sales and related	17,990	63,010	81,000
43-0000	Office and administrative	52,360	63,410	115,770
45-0000	Farming, fishing and forestry	220	560	780
47-0000	Construction and extraction	14,440	8,190	22,620
49-0000	Installation, maint / repair	8,400	15,130	23,540
51-0000	Production	11,470	24,190	35,660
53-0000	Transportation/material moving	17,190	29,260	46,450
Total*		321,100	432,400	750,500

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

2.1 Overview

The population of Los Angeles County in 2014 was 10.0 million in 3.3 million households, accounting for more than 25 percent of the population of the State of California and making it the most populous county in the nation (Exhibit 2-1). The median age is 35.8 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 3.9 million in 1.3 million households in 2014. The median age, at 35.0 years, is slightly lower than the County average.

Median household income in Los Angeles County, estimated to be \$55,746, is approximately ten percent lower than the state median. At \$28,373, per capita income in the county is seven percent below the state average. The City of Los Angeles has a median household income of \$50,544 and a per capita income of \$29,195.

Approximately 17 percent of households in Los Angeles County and 20 percent in the City of Los Angeles lived under the poverty level in 2014, compared to 15 percent of households across the state. ❖

Exhibit 2-1
Selected Demographic and Income Characteristics 2014

	California	LA County	City of LA
Population	38,802,500	10,006,705	3,928,827
Median age	36.0	35.8	35.0
Households	12,758,648	3,269,112	1,343,084
Average household size	2.98	3.04	2.86
Median household income	\$61,933	\$55,746	\$50,544
HH below poverty level	14.7%	16.9%	20.2%
Per capita income	\$30,441	\$28,373	\$29,195
Individuals below poverty	16.4%	18.7%	22.4%

Source: 2014 ACS 1 year estimates

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 2015, the population in Los Angeles County was 10.14 million, an increase of more than 300,000 from the population in 2010. The California Department of Finance forecasts that the county's population will continue to increase, reaching 10.44 million by 2020 and 10.70 million by 2025 (Exhibit 2-2).

Population Growth

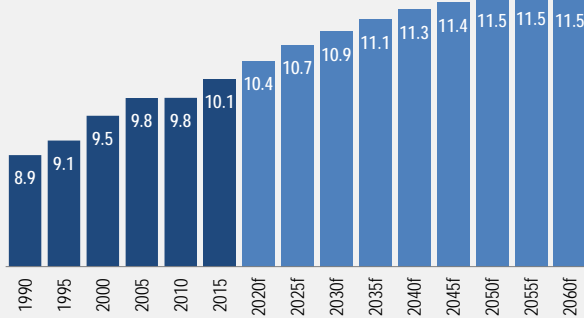
Population growth is determined by expected net migration and the birth and death rates of the current population. Knowing how a population is projected to grow can help to determine what an area will require in the future in terms of products and services, and the labor resources the region will provide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

Since 1970, the population in the county has increased by nearly 44 percent, an average annual growth rate of 1.0 percent per year. In only four of the last 45 years has the population declined from one year to the next. Those years were 1972, 1995, 2006 and 2007 (Exhibit 2-3). The county's current annual growth rate from last year is approximately 0.8 percent, a rate that is lower than the state rate of growth of 0.9 percent over last year.

The population in the City of Los Angeles has increased by 41 percent adding nearly 1.15 million residents since 1970, an average annual growth rate of 0.9 percent (Exhibit 2-4), with year-over-year positive growth since 2008. The city's current annual growth rate is 1.1 percent over last year. From 1990 through 2015, the City of Los Angeles has added 471,500 residents, accounting for 37.0 percent of the 1.27 million additional residents added in Los Angeles County during that period.

As of January 1, 2015, the City of Los Angeles had 3.96 million residents, 39.0 percent of the 10.14 million residents countywide.

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



Source: California Department of Finance

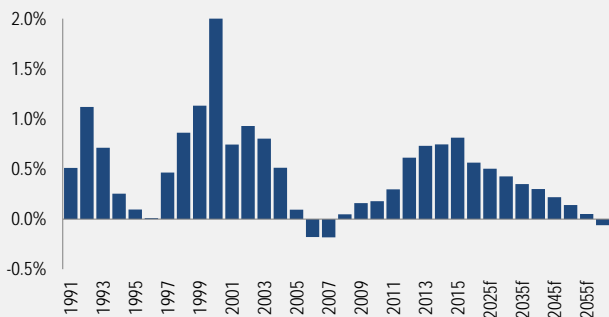
Age Distribution

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 13.0 percent in the city and 13.8 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.

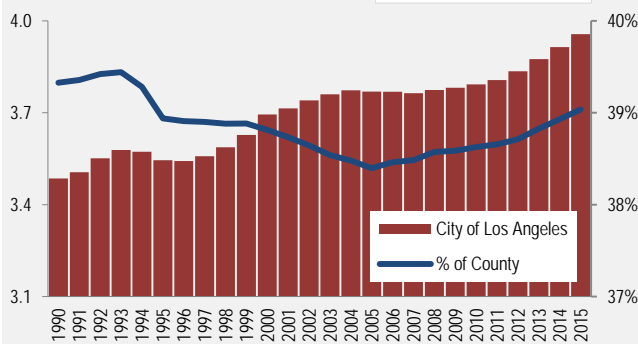
Exhibit 2-3
Population in Los Angeles County
Annual Growth Rates



Source: California Department of Finance; LAEDC

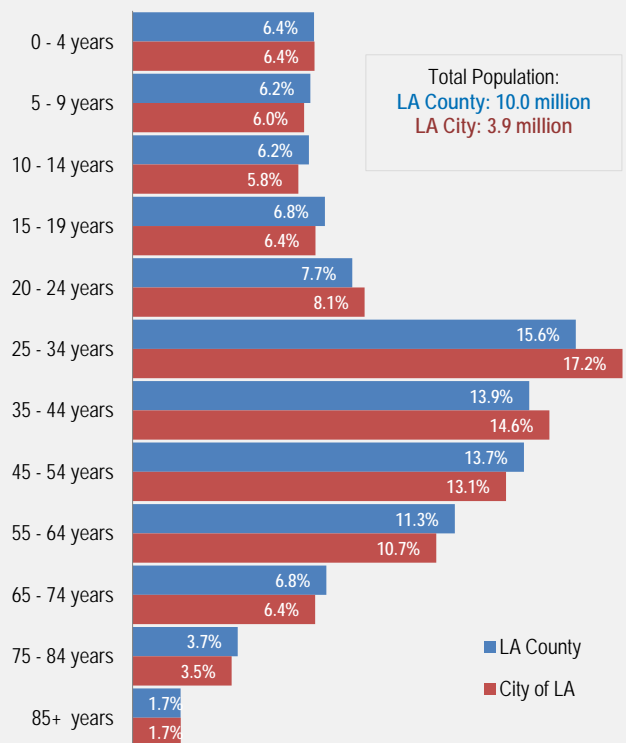
Exhibit 2-4
Population in City of Los Angeles
(millions)

Population 2015:
3.96 million population
39.0% of LA County



Source: California Department of Finance

Exhibit 2-5
Age Distribution of Population 2014



Source: 2014 ACS 1-year estimates

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.

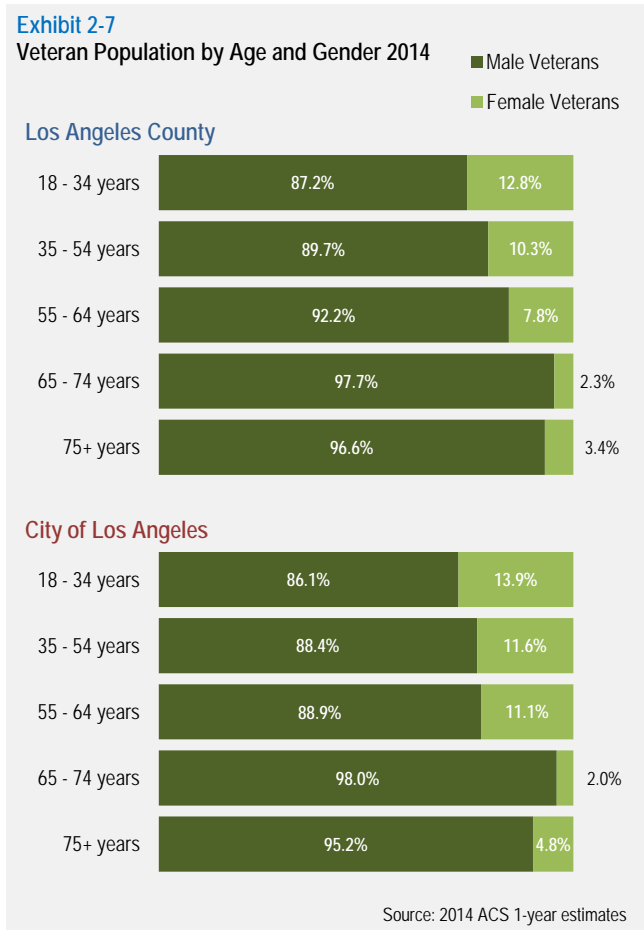
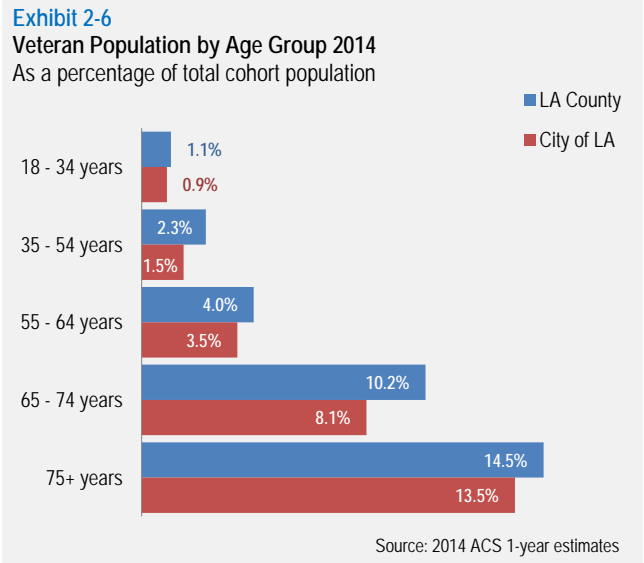
Exhibit 2-6 shows the veteran population ages 18 years and older as a share of the population of the same age in Los Angeles County and the City of Los Angeles in 2014.

There are 88,930 veterans living in the City of Los Angeles, and an additional 199,660 veterans reside in other parts of Los Angeles County, contributing to a total of 288,590 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, 14.5 percent are veterans (13.5 percent in the City), whereas of the population aged 18 to 34 years, only 1.1 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 2014.

Of all veterans living in Los Angeles County, 94 percent are male. The share of male veterans is similar within the boundaries of the City of Los Angeles with 93 percent. The share of male veterans significantly exceeds those of female veterans across all age groups. However, younger age groups have a larger share of female veterans compared to older age groups as female participation in the armed forces has increased over time. ❖



2.3 Race, Ethnicity and Language Capability

Ethnicity and race are two distinct classifications. There are several characteristics that may be more likely to be common to a population within 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.

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 in 2014 is both ethnically and racially diverse. The share of the residents who reported to be of Hispanic origin is 48.4 percent, compared to 38.6 percent at the state level, while 27.0 percent reported to be white (Exhibit 2-8). In the City of Los Angeles, 48.6 percent of residents who reported to be of Hispanic origin and 28.5 percent reported to be white.

Exhibit 2-9 displays the race and ethnicity distribution within each age group in 2014 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.

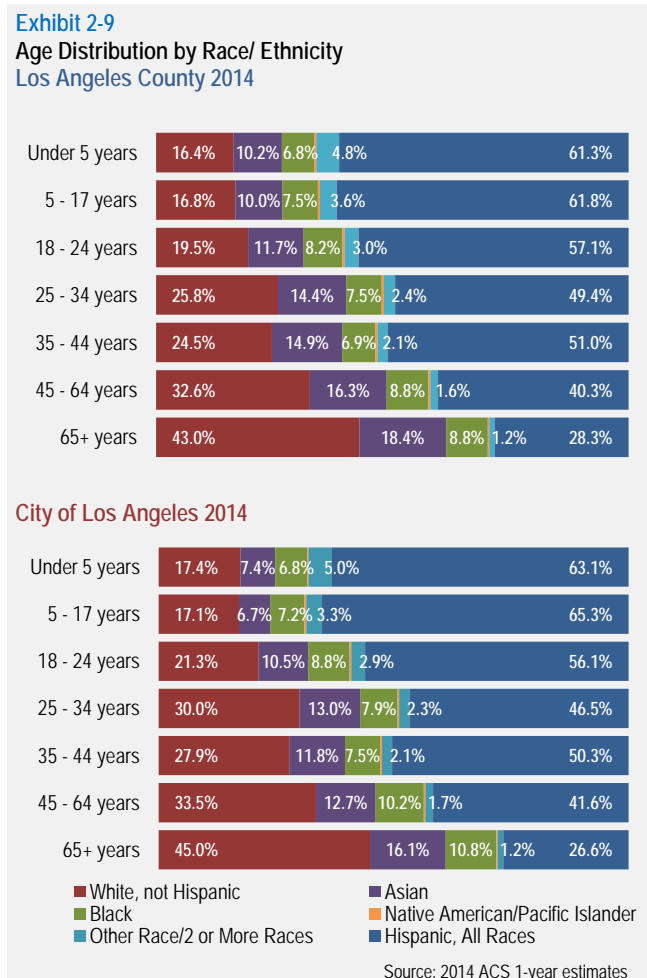
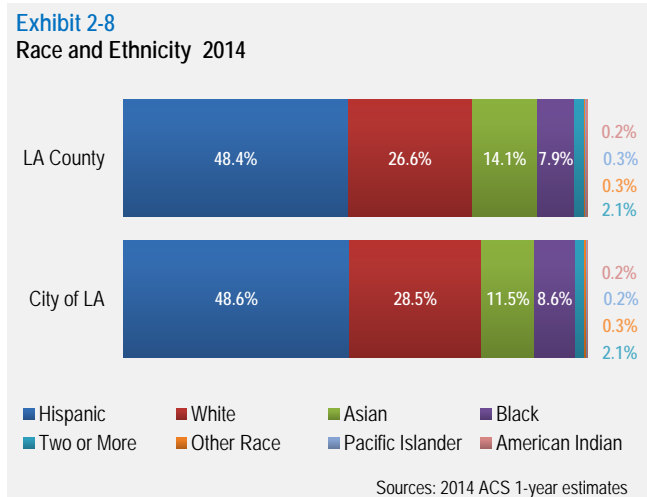
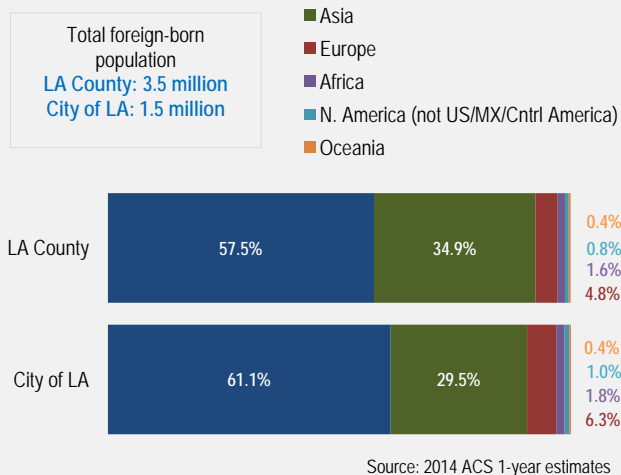


Exhibit 2-10

Foreign-Born Population 2014



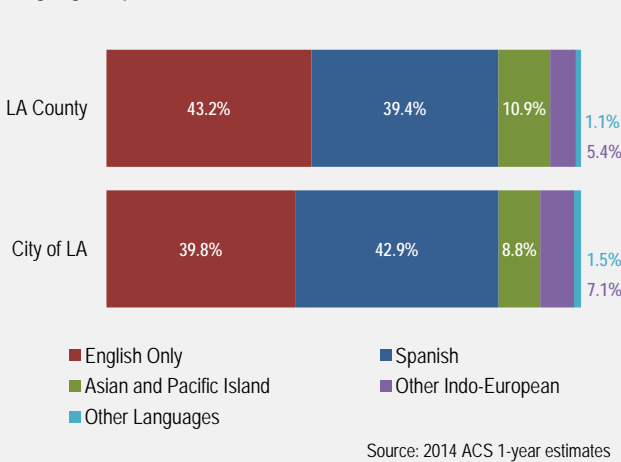
Foreign Born Population

Los Angeles County is home to just over 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.

More than half 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 2014



Language Ability

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

Over half of the population in Los Angeles County (or 57 percent) and the City of Los Angeles (or 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 2014

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	3,653.9	28.4%	1,540.8	32.2%
Other Indo-European	499.7	17.9%	248.9	17.1%
Asian and Pacific	1,001.5	26.6%	308.7	26.2%
All other non-English	100.4	10.5%	52.6	8.9%
LA County Total	5,255.6	26.7%	2,151.0	29.0%

Sources: ESRI; LAEDC

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 5.3 million residents of Los Angeles County that speak languages other than English at home, approximately 27 percent speak English less than well, while 29 percent of the 2.2 million residents in the City who speak languages other than English speak English less than well. This implies that of all Los Angeles County residents, a little over 15 percent speak English less than well—slightly lower than the 18 percent share in the City. ❖

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 aged 25 years and older in Los Angeles County numbered 6.8 million in 2014, and 2.6 million in the City of Los Angeles. Almost 25 percent of county residents in this age group have not earned a high school diploma (or equivalent) while 20 percent have graduated high school but have no other education (Exhibit 2-13). Approximately 30 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 25.4 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.

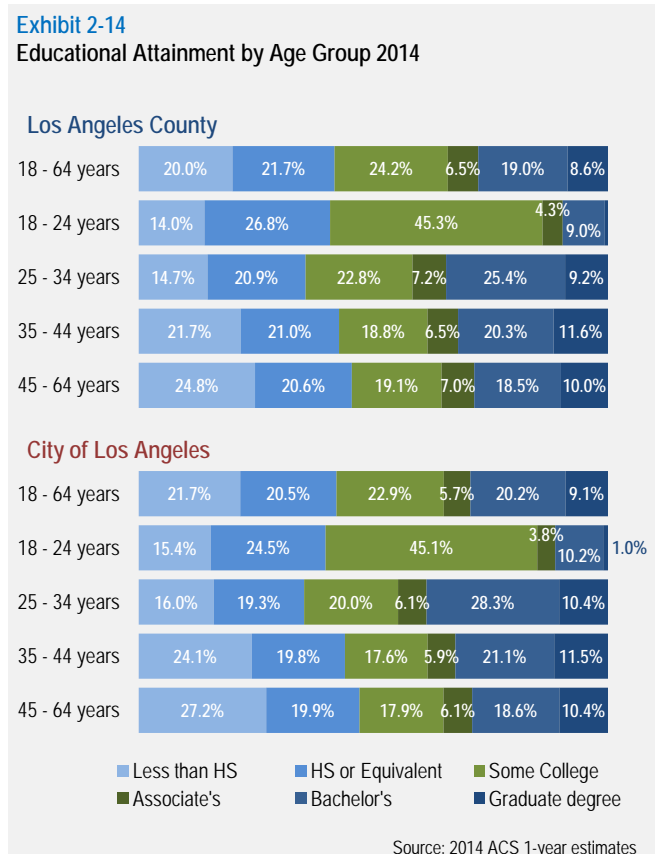
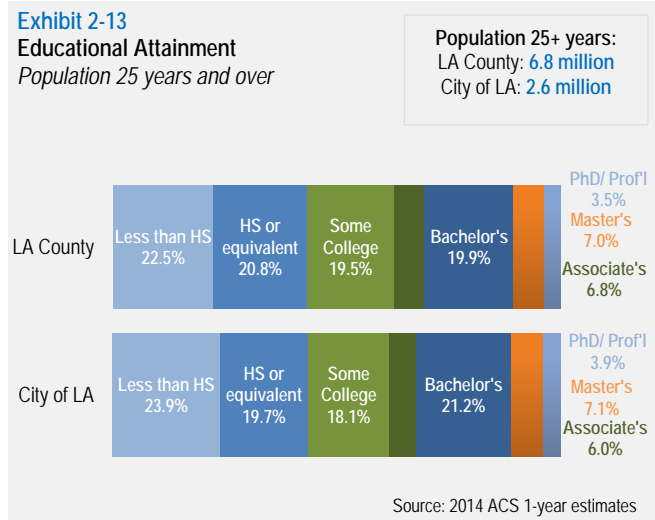
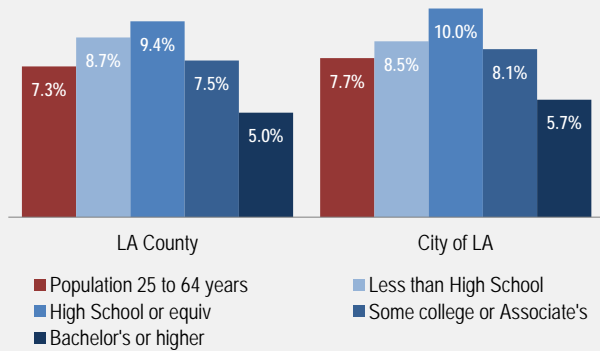


Exhibit 2-15
Civilian Unemployment Rate
by Educational Attainment 2014



Source: 2014 ACS 1-year estimates

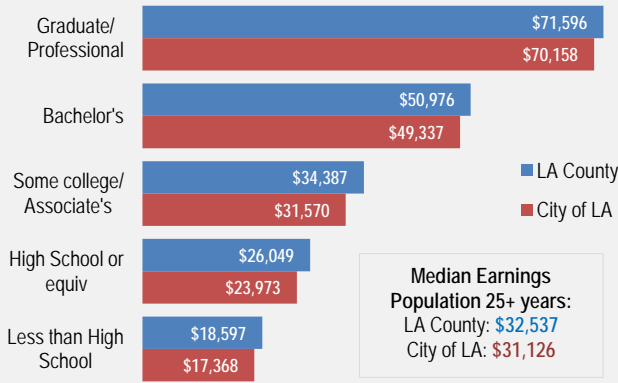
Unemployment is highly correlated with educational attainment.

Overall, the unemployment rate for individuals aged 25 to 64 years was 7.3 percent in the county (7.7 in the city) in 2014. 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 5.0 percent in the County (5.7 percent in the City) in 2014, roughly half 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 8.7 percent (8.5 percent) and 9.4 percent (10.0 percent) respectively.

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).

Exhibit 2-16
Median Earnings and Educational Attainment 2014
Population 25 years and older

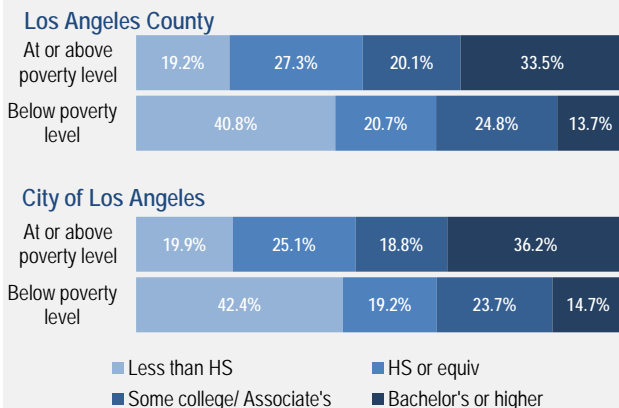


Source: 2014 ACS 1-yr estimates

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, 40.8 percent had less than a high school education. Another 20.7 percent were those with just a high school diploma or equivalent. Together, residents with a high school diploma or less accounted for 61.5 percent of those whose income fell below the poverty threshold the prior year.

Exhibit 2-17
Poverty Level by Educational Attainment 2014
Population 25 years and older



Source: 2014 ACS 1-yr estimates

On the flip side, of those whose income was above the poverty line, approximately one third 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. ❖

2.5 Households and Housing

There were 3.3 million households in Los Angeles County in 2014, with an average household size of 3.0 people per household. By 2020, the county is projected to add over 119,100 additional households. The City of Los Angeles boasted 1.3 million households in 2014, with an average household size of 2.9 people per household. By 2020, the city is projected to add close to 47,200 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 53 percent of all households in the county and 58 percent in the city (Exhibit 2-18). However, the region also has a significant number of larger sized households: 15 percent of all households in the county and 13 percent of households in the city have five or more people.

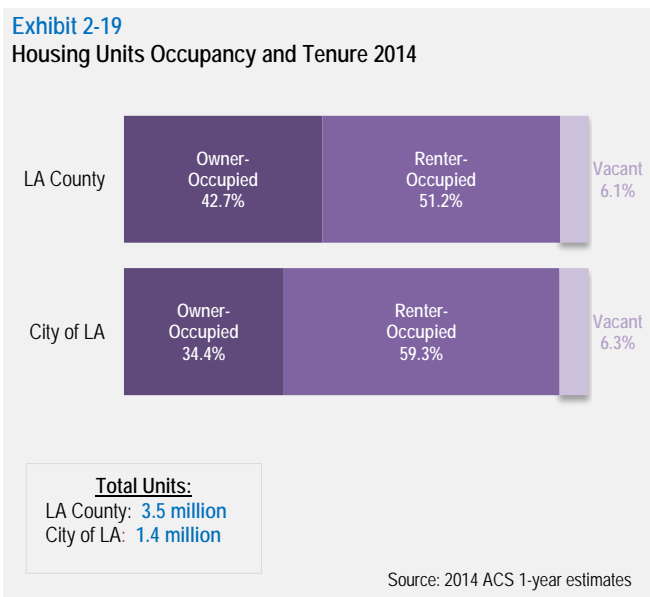
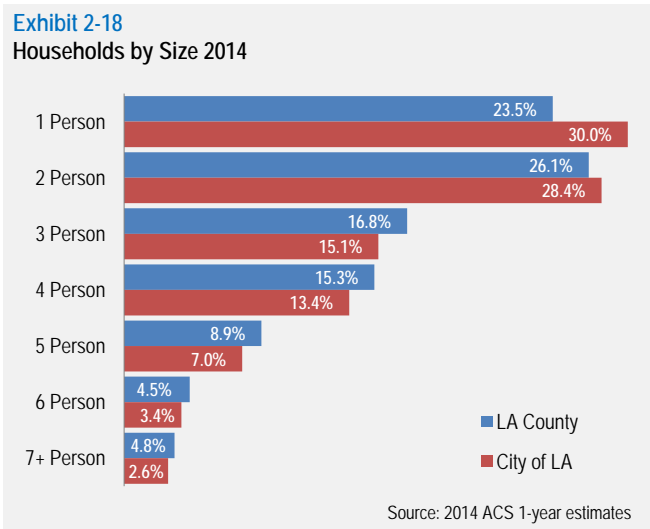
Housing

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 2014, 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.

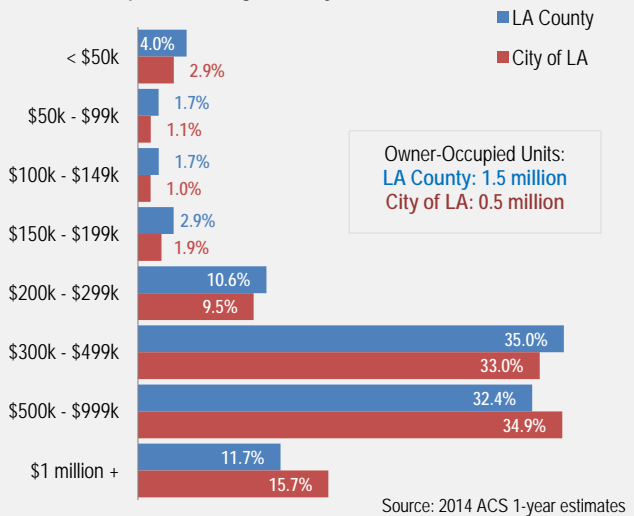
Over half of the housing stock in the county is rental property. There is a lower rate of home ownership in the City of Los Angeles compared to the County as a whole, with only a third of all housing units owner-occupied in the city, compared to 43 percent across all of Los Angeles County. The remaining 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 \$464,400 in 2014, which was lower than the \$505,500 median in the City of Los Angeles, yet higher than the statewide median of \$412,700.

Exhibit 2-20

Owner-Occupied Housing Units by Value 2014



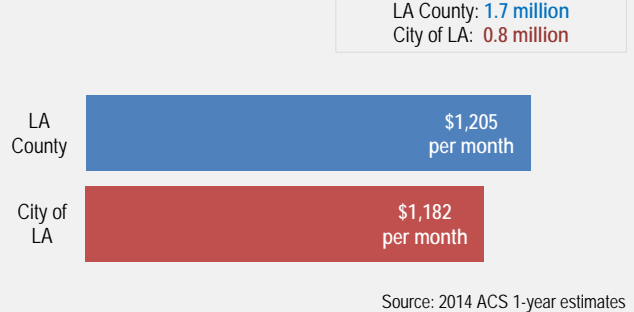
Owner-Occupied Units

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 33 percent in the county and city respectively, falls within the price range of \$300,000 to \$499,000, with close to another third, 32 percent in the county and 35 percent in the city, valued between \$500,000 and \$999,000. An additional 12 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 16 percent. Housing units valued below \$200,000 account for ten percent of total housing stock in Los Angeles County, and only seven percent in the City of Los Angeles.

Exhibit 2-21

Median Gross Rent 2014



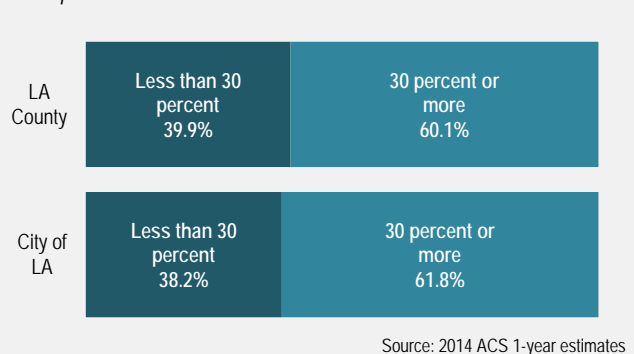
Renter-Occupied Units

More than 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 2-20). 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 2014.

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 a Share of Household Income 2014
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 2014 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 2014. Note that these are earnings from jobs regardless of where the jobs are located.

Approximately 29 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 33 percent and 30 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, exactly 27 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 nine 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 less than 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 \$29,195 in 2014, while countywide it is slightly lower at \$28,373 (Exhibit 2-24). The projected change from 2014 to 2020 is expected to be 6.5 percent in the city and 10.6 percent in the county, raising nominal per capita income to \$31,083 and \$31,376 respectively by 2020.

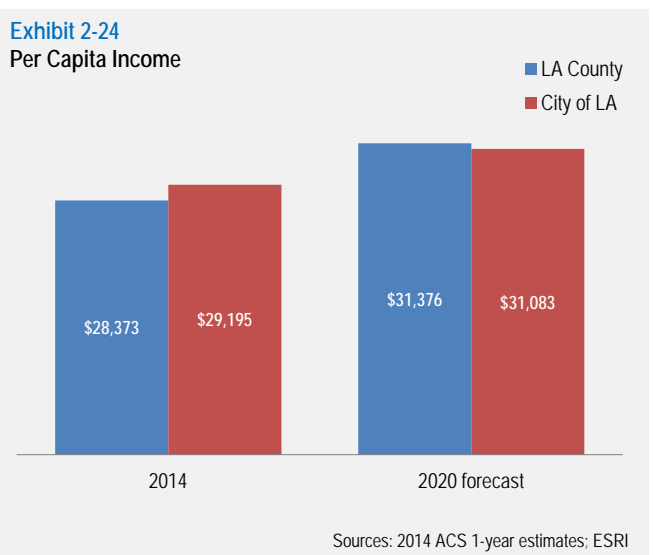
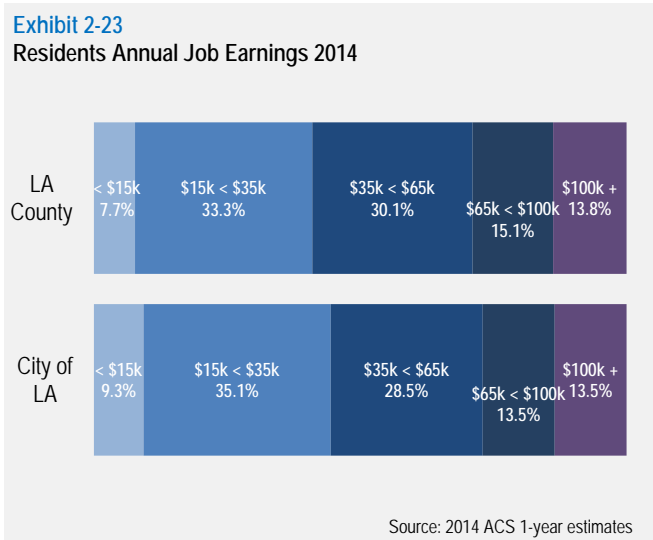


Exhibit 2-25
Households by Income 2014

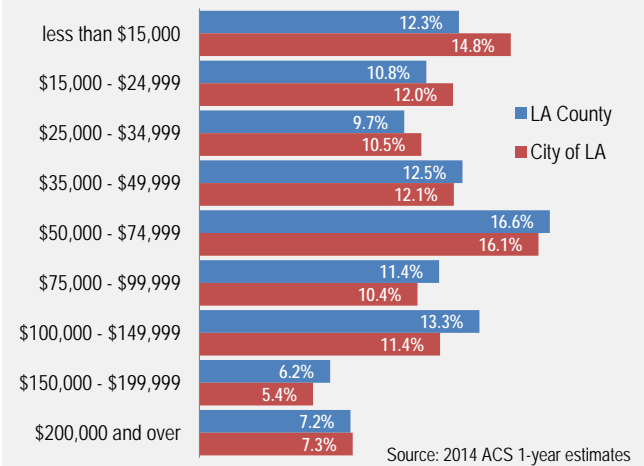
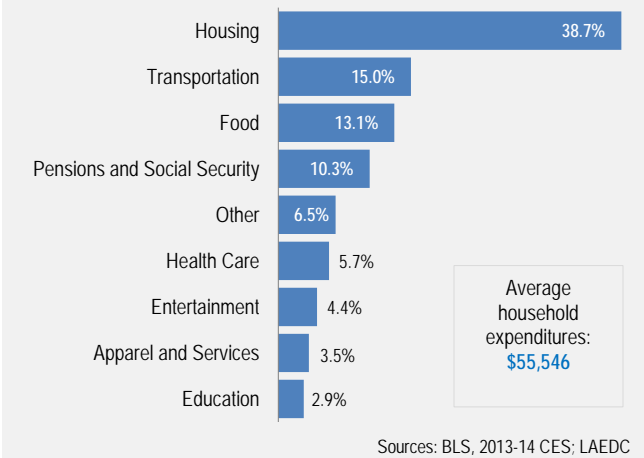


Exhibit 2-26
Household Budget Expenditures
Los Angeles MSA 2013-14



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 2014 was estimated to be \$55,746 while in the City of Los Angeles it was slightly lower with \$50,544.

Almost half (45 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, 49 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 2013-2014, household expenditures in Los Angeles Metropolitan Statistical Area, which includes Los Angeles County, averaged \$55,546. 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 39 percent of household expenditures were allocated to housing, with another 15.0 percent paid towards transportation and 13.1 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 3.2 million households in LA County, 1.3 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 16.9 percent and 20.2 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.

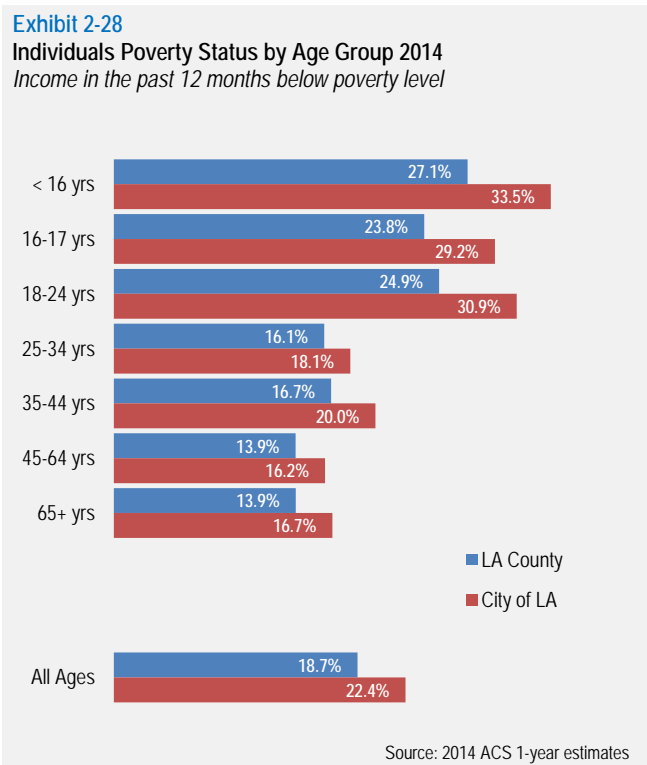
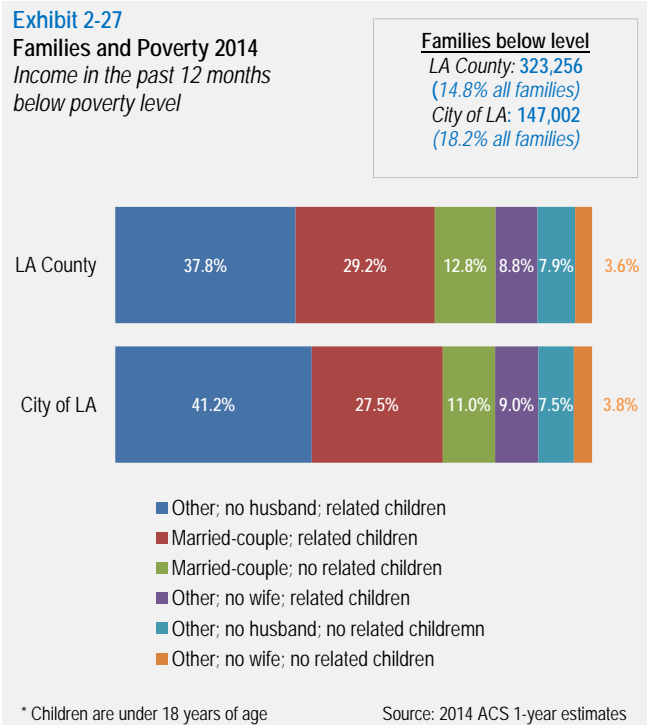
Of the 2.19 million families in Los Angeles County in 2014, approximately 323,300 have had their incomes fall below the poverty level in the 12 months prior; in the City of Los Angeles 147,000 of the almost 806,000 total families had their incomes fall below the poverty level within the prior year.

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 41 percent in the city and 38 percent in the county as a whole. Families headed by a married couple account for 39 percent and 42 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.

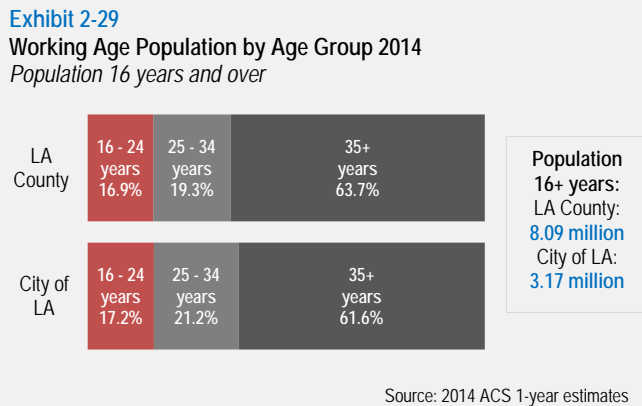
Poverty of Individuals

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 in excess of 24 percent of its cohort. ❖

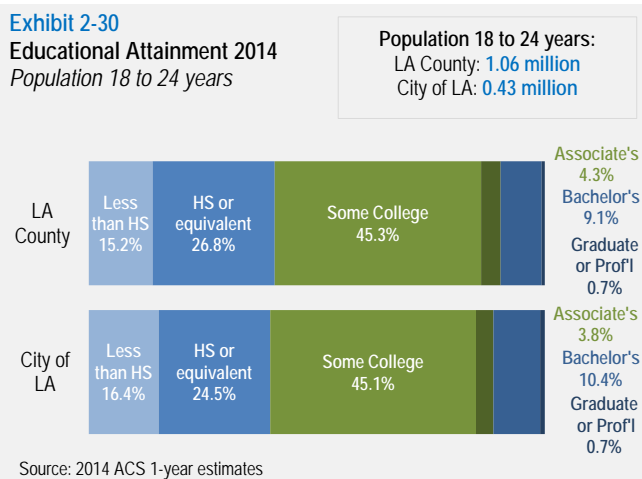


2.7 Population Aged 16 to 24 Years



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.

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 17.2 percent of the total working aged population of 16 years and older in the City and 16.9 percent countywide (Exhibit 2-29).



Educational Attainment and Enrollment

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 2-30). 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 16 to 24 years of age group was some college without a degree, with its share in the city and the county both at 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 11.2 percent of this cohort in 2014 had the education level of a bachelor's degree or higher in the City of Los Angeles and 9.7 percent in Los Angeles County as a whole.

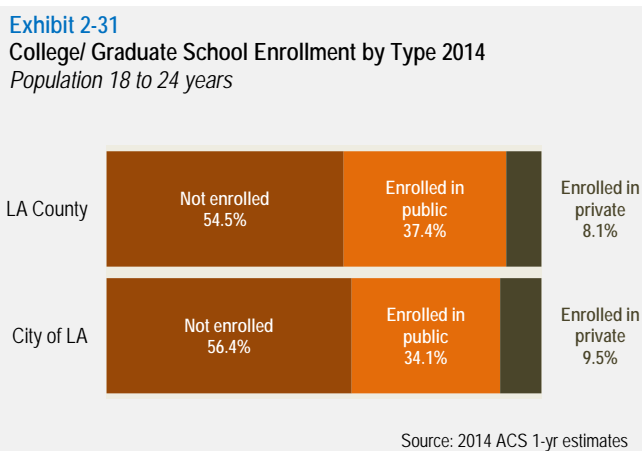


Exhibit 2-31 shows the percentage of the population ages 18 to 24 years that were enrolled in school at a college, university or graduate school in 2014 in the City of Los Angeles and the County as a whole.

Approximately half of this cohort is currently enrolled in school and in the process of obtaining a higher level of education in both geographies.

Poverty Status

As seen above, lower levels of educational attainment are associated with low earnings and increased rates of poverty. This applies to this younger cohort as well (Exhibit 2-32).

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 exceed 29 percent in all three of the youngest age groups in the city and roughly 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.

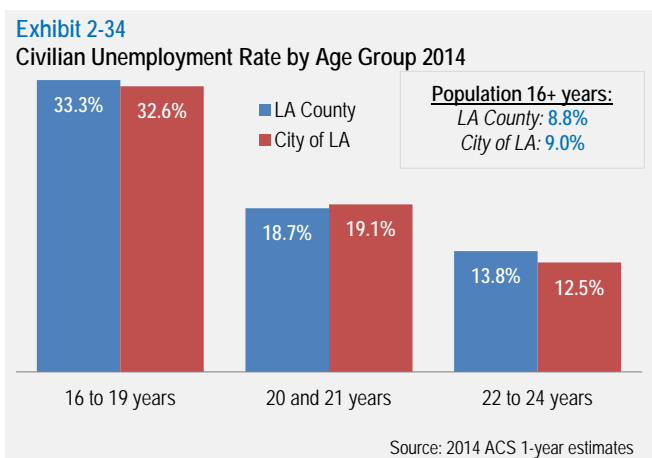
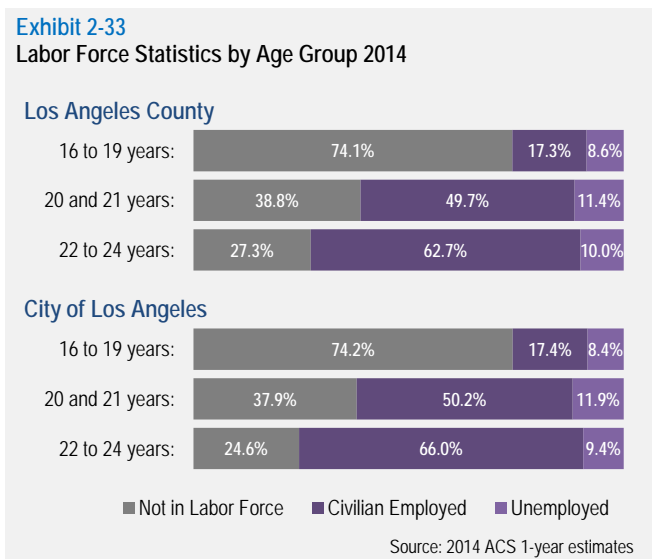
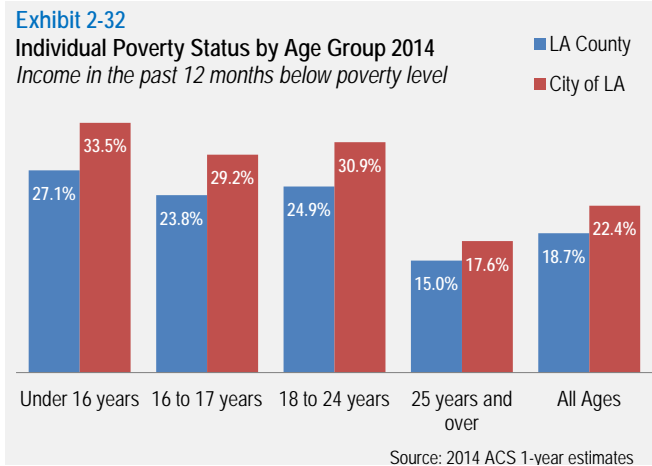
Poverty rates decline as the population gets older; more of these individuals have completed their education and have entered the workforce full-time.

Labor Force

Labor force participation for those aged 16 to 24 years varies greatly according with their age (Exhibit 2-33). 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 2014 by age group for this population subset (ages 16 to 24 years) is displayed in Exhibit 2-34.

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 and are entering the workforce. ❖



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.

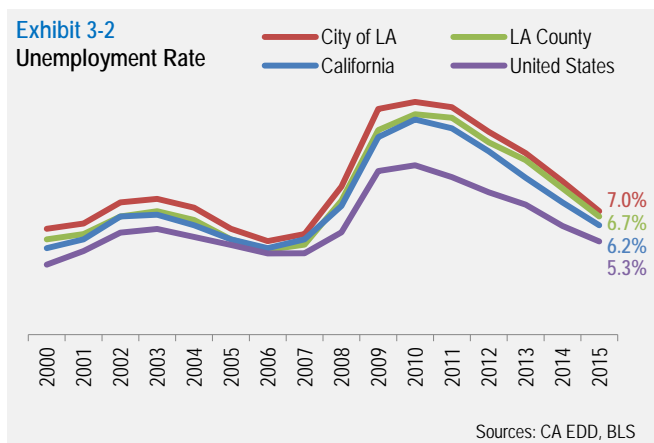
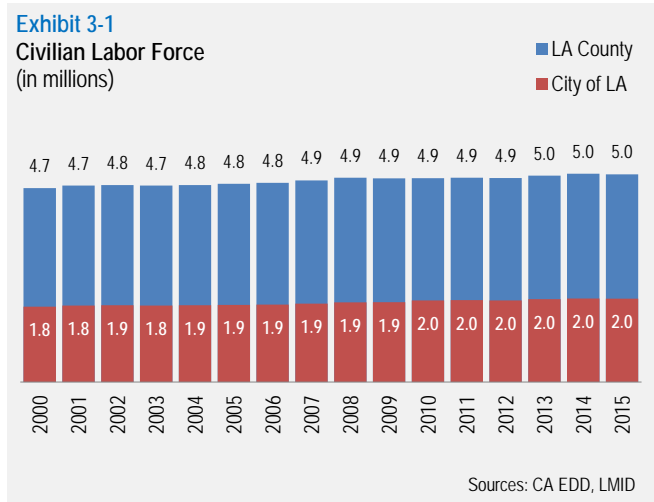
From 2007 through 2012, the labor force in Los Angeles County has hovered around 4.9 million, increasing to 5.0 million in 2013 through 2015. The labor force in the City of Los Angeles hovered around 1.9 million from 2002 through 2009, increasing to 2.0 million in 2010 through 2015 (Exhibit 3-1).

The labor force participation rate 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 64.3 percent in Los Angeles County in 2014 (the most recent year that this data is available), compared to 66.5 percent in the City of Los Angeles.

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.



From 4.8 percent in 2006 (the lowest rate in more than 30 years), unemployment in Los Angeles County reached a peak of 12.5 percent in 2010, improving since and currently standing at 6.7 percent (Exhibit 3-2).

The unemployment rate in the City has been consistently higher than in the county as a whole, from its lowest level of 5.3 in 2006 to a peak of 13.2 percent in 2010—almost one percentage point higher than the county. The unemployment rate in the City currently stands at 7.0 percent, just 0.3 percentage points above the county rate. ❖

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 3-3). 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 is the largest, accounting for over 17 percent of employment, followed by professional and business services, 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 2013 was food services and drinking places, providing 340,490 jobs (Exhibit 3-4). 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 275,660 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 900,000 jobs.

Exhibit 3-3
Industrial Profile 2014
(% of Total Employment)

	LA County	City of LA
Total Nonfarm Payroll Employment	100.0%	100.0%
Good Producing Industries:	11.8%	8.6%
Natural Resources and Mining	0.2%	0.1%
Construction	2.9%	2.4%
Manufacturing – Durable Goods	4.9%	2.8%
Manufacturing – Nondurable Goods	3.9%	3.3%
Service Providing Industries	75.3%	72.9%
Wholesale Trade	5.3%	4.4%
Retail Trade	9.9%	8.8%
Transportation, Warehousing, Utilities	3.8%	3.4%
Information	4.8%	4.0%
Financial Activities	5.0%	5.8%
Professional and Business Services	14.5%	14.7%
Educational and Health Services	17.3%	17.2%
Leisure and Hospitality	11.2%	11.2%
Other Services	3.5%	3.4%
Government	12.9%	18.5%

Sources: California Employment Development Department (QCEW); LAEDC

Exhibit 3-4
Top 20 Private Sector Industries by Employment
Los Angeles County 2014

NAICS	Industry	Employment	% of total
722	Food services and drinking places	340,490	9.4
541	Professional and technical services	275,660	7.6
561	Administrative and support services	255,250	7.0
624	Social assistance	228,020	6.3
621	Ambulatory health care services	194,040	5.4
512	Motion picture and sound recording	121,760	3.4
622	Hospitals	110,730	3.1
611	Educational services	104,710	2.9
423	Wholesale: Durable goods	100,260	2.8
424	Wholesale: Nondurable goods	99,760	2.8
445	Retail: Food and beverage stores	91,700	2.5
623	Nursing and residential care facilities	77,320	2.1
238	Specialty trade contractors	76,680	2.1
452	Retail: General merchandise stores	72,970	2.0
522	Credit intermediation	63,660	1.8
551	Management of companies	58,830	1.6
531	Real estate	56,080	1.5
448	Retail: Clothing and accessories	52,870	1.5
812	Personal and laundry services	52,170	1.4
336	Manufacturing: Transportation equipment	46,120	1.3

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 2014 was also food services and drinking places, providing 128,490 jobs and the second largest industry was professional and technical services, providing 118,460 jobs (Exhibit 3-5).

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 370,000 jobs.

A complete list of employment by industry for the county and the city is provided in Exhibits A-1 and A-2 in the appendix. ❖

Exhibit 3-5
Top 20 Private Sector Industries by Employment
City of Los Angeles

NAICS	Industry	Employment	% of total
722	Food services and drinking places	128,490	10.0
541	Professional and technical services	118,460	9.2
624	Social assistance	96,840	7.5
561	Administrative and support services	91,300	7.1
621	Ambulatory health care services	70,810	5.5
611	Educational services	39,500	3.1
424	Wholesale: Nondurable goods	37,370	2.9
622	Hospitals	33,620	2.6
445	Retail: Food and beverage stores	32,980	2.6
623	Nursing and residential care facilities	29,640	2.3
512	Motion picture and sound recording	29,570	2.3
423	Wholesale: Durable goods	24,920	1.9
531	Real estate	24,890	1.9
238	Specialty trade contractors	24,890	1.9
522	Credit intermediation	23,740	1.8
812	Personal and laundry services	21,410	1.7
452	Retail: General merchandise stores	20,950	1.6
524	Insurance carriers and related	20,590	1.6
813	Membership associations and orgs	20,180	1.6
551	Management of companies	19,250	1.5

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 2014 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 10.3. 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 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: religious, grantmaking and civic organizations and securities, contracts and investments.

Exhibit 3-6
Top Competitive Industries 2014
(Location Quotients v. US)

NAICS	Industry	LA County	City of LA
512	Motion picture and sound recording	10.4	6.6
315	Manufacturing: Apparel	10.3	11.4
711	Performing arts and spectator sports	2.7	3.3
525	Funds, trusts, and other financial	2.4	0.6
488	Support activities for transportation	2.3	1.9
515	Broadcasting (except internet)	2.3	4.4
624	Social assistance	2.3	2.5
316	Manufacturing: Leather products	2.2	1.2
313	Manufacturing: Textile mills	1.8	1.9
483	Water transportation	1.7	1.2
424	Wholesale: Nondurable goods	1.6	1.6
519	Other information services	1.6	1.3
481	Air transportation	1.5	3.3
324	Manufacturing: Petroleum and coal products	1.4	1.1
611	Educational services (private)	1.3	1.3
448	Retail: Clothing and accessories	1.3	1.2
337	Manufacturing: Furniture	1.3	0.9
812	Personal and laundry services	1.3	1.3
314	Manufacturing: Textile product mills	1.3	1.0
531	Real estate	1.2	1.4
334	Manufacturing: Computer / electronic prods	1.2	0.9
532	Rental and leasing services	1.2	1.4
443	Retail: Electronics and appliance	1.1	1.0
423	Wholesale: Durable goods	1.1	0.7
492	Couriers and messengers	1.1	1.5
712	Museums, historical sites, zoos and parks	1.1	2.1
541	Professional and technical services	1.1	1.2
339	Miscellaneous manufacturing	1.1	0.9
323	Printing and related support activities	1.1	0.8
453	Retail: Miscellaneous stores	1.1	1.2
722	Food services and drinking places	1.1	1.0
813	<i>Religious/grantmaking/civic/professional orgs</i>	1.0	1.3
523	<i>Securities, contracts and investments</i>	0.9	1.3

Sources: California Employment Development Department; LAEDC

A complete list of all industries is provided in Exhibit A-3 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). Almost 32 percent is in traded industry clusters, such as trade, entertainment, business services and fashion.

The largest traded industry cluster in Los Angeles County in 2014 was trade, employing approximately 270,400 workers, followed by business services, with just over 235,700 workers, and entertainment, with close to 149,800 employed (Exhibit 3-8). Overall, more than 1.3 million jobs were involved in traded industry clusters.

Of the fifteen largest traded industry clusters in the county, seven 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 3-9). The largest clusters in Los Angeles County are health services, with almost 405,000 jobs, local hospitality establishments with close to 370,000 jobs, and local commercial services, with just over 288,000 jobs. ❖

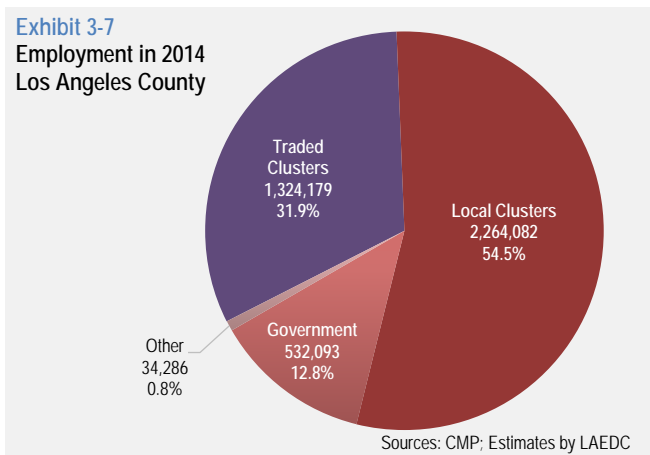


Exhibit 3-8
Largest Traded Industry Clusters in Los Angeles County in 2014
(By employment)

	Employment	LQ
Trade ¹	270,350	1.2
Business Services	235,740	1.0
Entertainment	149,750	8.7
Education and Knowledge Creation	83,680	1.2
Hospitality and Tourism	79,990	0.9
Fashion	58,390	4.2
Marketing, Design and Publishing	57,870	1.4
Aerospace Vehicles and Defense	54,160	2.9
Financial Services	53,390	0.9
Food Processing and Manufacturing	28,750	0.9
IT and Analytical Instruments	26,370	0.7
All Other Traded Clusters	225,750	
Total Traded Cluster Employment	1,324,180	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 3-9
Largest Local Industry Clusters in Los Angeles County in 2014
(By employment)

	Employment
Health Services	404,880
Local Hospitality Establishments	369,470
Local Commercial Services	288,430
Community and Civic Organizations	245,430
Real Estate, Const. and Development	200,790
All Other Local Clusters	755,090
Total Local Cluster Employment	2,264,080

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 3-10). 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 2015, 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 3-11. 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 3-10
Nonfarm Employment in Los Angeles County
(millions of jobs)

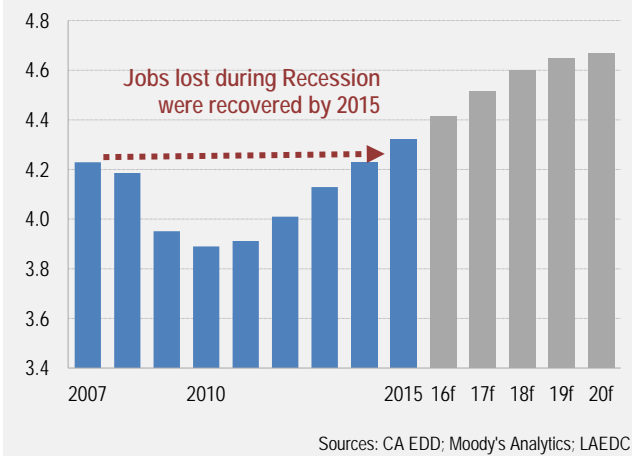


Exhibit 3-11
Industry Employment Growth 2015-2020
(Los Angeles County)

	Annual Average % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.5%	346.1
Good Producing Industries:	1.0%	26.3
Natural Resources and Mining	0.7	0.2
Construction	3.1	20.9
Manufacturing – Durable Goods	0.3	3.3
Manufacturing – Nondurable Goods	0.2	2.0
Service Providing Industries	1.8%	312.3
Wholesale Trade	1.0	11.3
Retail Trade	0.4	9.4
Transportation, Warehousing, Utilities	0.5	4.2
Information	0.8	8.4
Financial Activities	1.7	18.5
Professional and Business Services	3.0	98.6
Educational and Health Services	2.5	99.8
Leisure and Hospitality	2.0	49.1
Other Services	1.6	12.9
Government	0.3%	7.5

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 late 2016 (Exhibit 3-12). 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 3-13. The projected job creation differs from the county given the different mix of industries in the two regions. ❖

Exhibit 3-12
Nonfarm Employment in Los Angeles City
(millions of jobs)

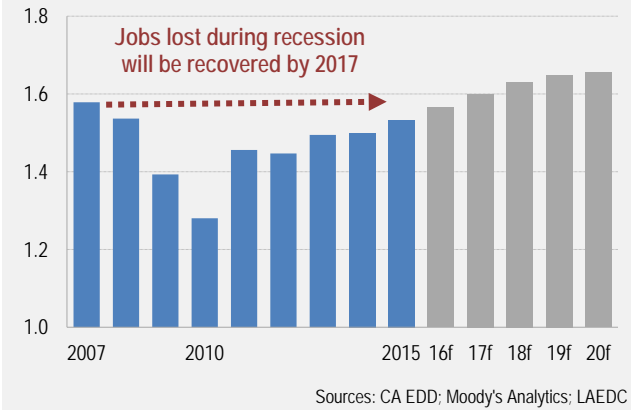


Exhibit 3-13
Industry Employment Growth 2015-2020
(City of Los Angeles)

	Annual Average % Growth	Δ Employment (000s)
Total Nonfarm Payroll Employment	1.5%	122.7
Good Producing Industries:	1.0%	8.1
Natural Resources and Mining	0.7	0.0
Construction	3.1	6.7
Manufacturing – Durable Goods	0.3	0.8
Manufacturing – Nondurable Goods	0.2	0.6
Service Providing Industries	1.8%	105.5
Wholesale Trade	1.0	3.5
Retail Trade	0.4	3.1
Transportation, Warehousing, Utilities	0.5	1.4
Information	0.8	2.7
Financial Activities	1.7	8.1
Professional and Business Services	3.0	37.4
Educational and Health Services	2.5	26.0
Leisure and Hospitality	2.0	18.6
Other Services	1.6	4.6
Government	0.3%	3.9

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 2015 and 2020, the economy is expected to add 346,000 new jobs in nonfarm industries across the county, and 122,700 new jobs in the City of Los Angeles (Exhibit 3-14).

The industry with the largest expected new job creation potential is the administrative and support services industry, expected to add 57,560 jobs between 2015 and 2020 in the county and 20,640 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.

The industry with the second largest expected employment gains is food services and drinking places, projected to add 39,510 jobs between 2015 and 2020 in the county and 14,900 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.

Combined health care services provided by hospitals, ambulatory health care services, nursing and residential care facilities and social assistance are together projected to add 91,770 jobs from 2015 to 2020 in the county and 34,730 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.

Fourth on the list 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 320,000 new jobs during the period from 2015 to 2020 in Los Angeles County and more than 120,000 new jobs in the City of Los Angeles, approximately 96 percent of all jobs forecasted to be added in each region.

Exhibit 3-14
Projected New Job Creation 2015-2020

NAICS	Industry	LA County	LA City
561	Administrative and support services	57,560	20,640
722	Food services and drinking places	39,510	14,900
624	Social assistance	34,300	14,560
541	Professional and technical services	33,300	14,310
621	Ambulatory health care services	29,190	10,650
622	Hospitals	16,650	5,060
238	Specialty trade contractors	13,650	4,420
623	Nursing and residential care facilities	11,630	4,460
522	Credit intermediation	5,950	2,220
512	Motion pictures and sound recording	5,630	1,370
812	Personal and laundry services	5,610	2,300
424	Wholesale: Nondurable goods	5,490	2,060
721	Accommodation	5,160	2,050
611	Educational services	4,860	1,830
236	Construction of buildings	4,560	1,620
531	Real estate	4,440	1,970
452	Retail: General merchandise	4,340	1,250
524	Insurance carriers	4,090	1,930
551	Management of companies	3,990	1,310
445	Retail: Food and beverage stores	3,980	1,430
519	Other information services	3,920	1,210
811	Repair and maintenance	3,090	1,020
423	Wholesale: Durable goods	2,890	720
813	Membership associations and orgs	2,890	1,370
425	Wholesale electronic markets	2,690	980
237	Heavy / civil engineering construction	2,450	620
523	Securities, contracts, investments	2,250	1,250
562	Waste management and remediation	2,220	430
92	State government	2,090	1,590
713	Amusements, gambling and recreation	2,040	510
TOTAL JOB CREATION		346,100	122,700

Source: Estimates by LAEDC

A complete list of job creation in all industries in the county and the city is provided in Exhibit A-4 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.

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 more than 20,000 jobs between 2015 and 2020 in Los Angeles County and almost 7,000 jobs in the City of Los Angeles.

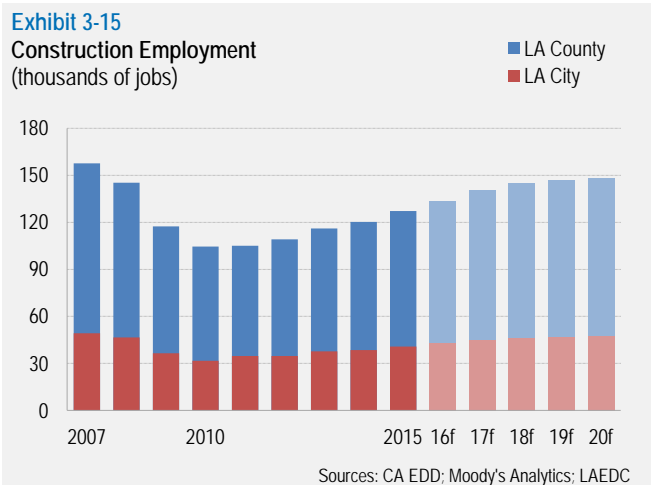


Exhibit 3-16
Top Occupations in Construction Industry (by % of Industry Employment)

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.

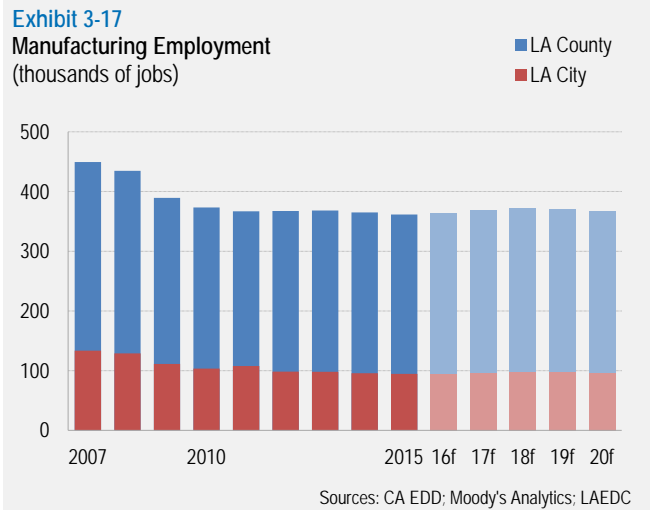


Exhibit 3-18
Top Occupations in Fashion (NAICS 313, 314, 315, 316)
 (by % of Industry Employment)

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 3-19
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 15,250 jobs from 2015 to 2020 in Los Angeles County, of which 5,270 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.

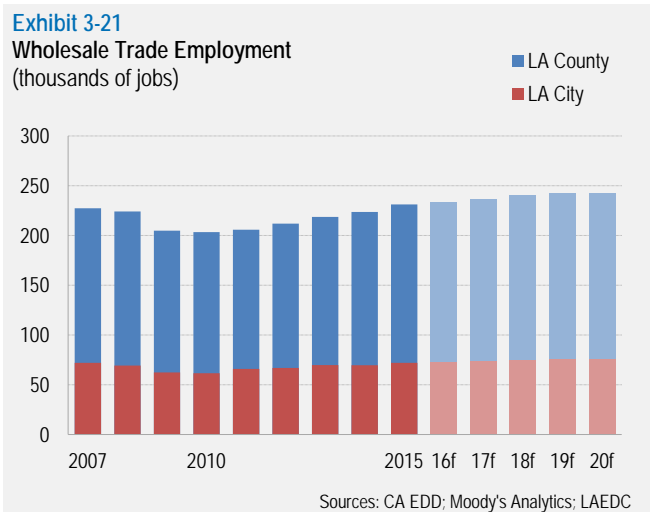
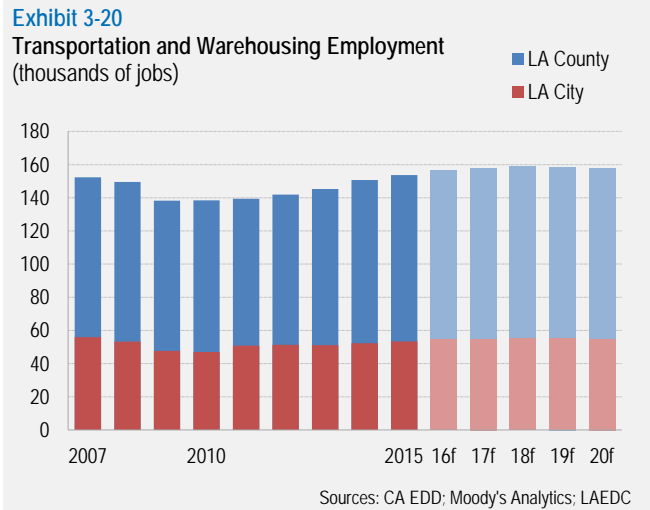


Exhibit 3-22
Top Occupations in Transportation / Warehousing (NAICS 48, 49)
 (by % of Industry Employment)

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 3-23
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 0.8 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 8,460 new jobs between 2015 and 2020 in the county and 2,050 in the city.

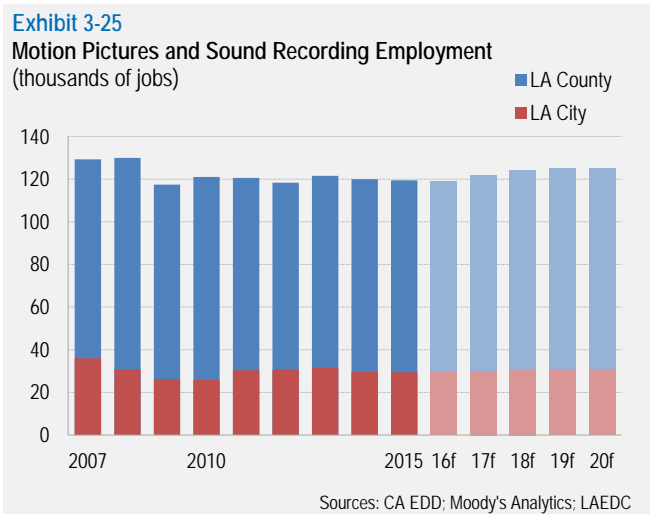
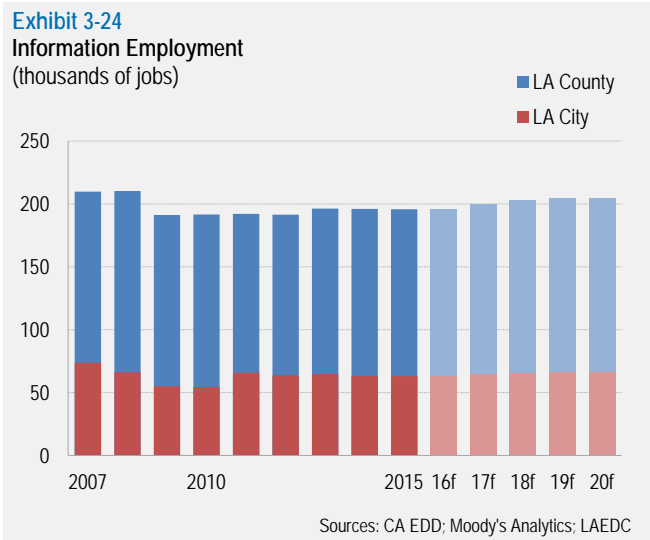
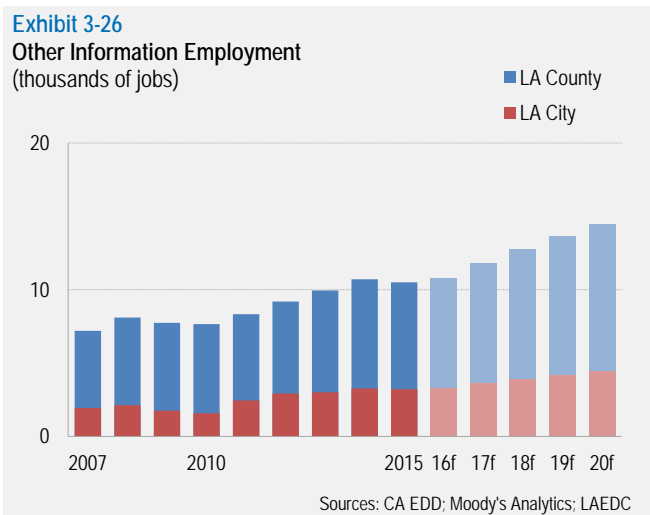


Exhibit 3-27
Top Occupations in Information (NAICS 51)
(by % of Industry Employment)

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 3.0 percent, assisted in large part by the rapid growth in administrative services (which includes temporary employment).

Overall, the sector will add more than 97,000 new jobs between 2015 and 2020, of which 36,680 will be in the City of Los Angeles.

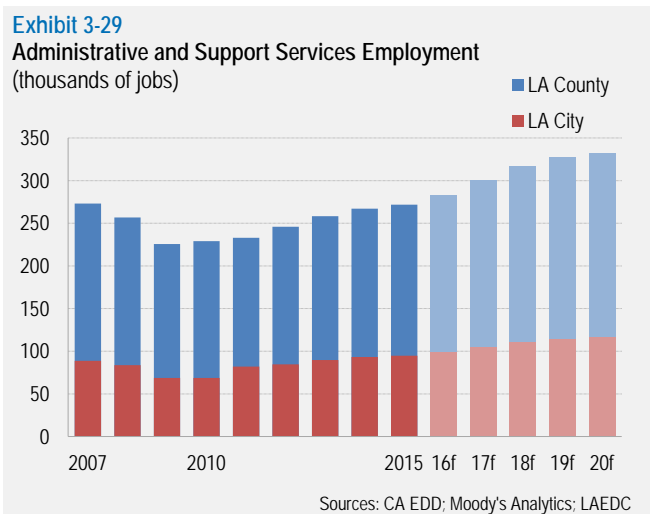
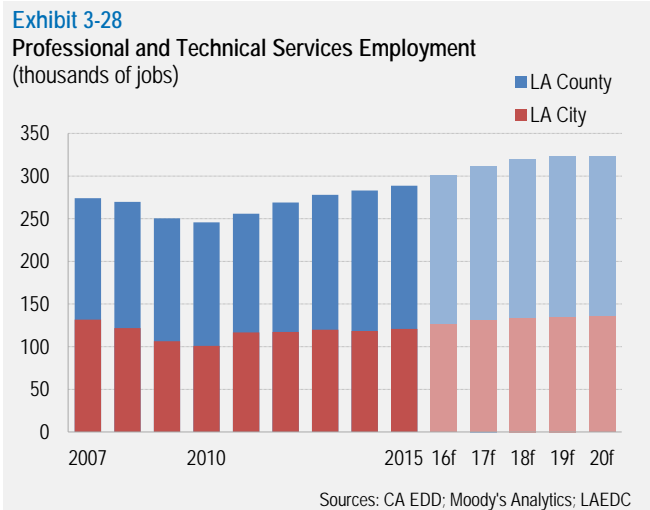


Exhibit 3-30

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 3-31

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 92,000 new jobs from 2015 to 2020 in Los Angeles County and almost 35,000 in the City of Los Angeles.

Exhibit 3-32
Health Care Services Employment
(thousands of jobs)

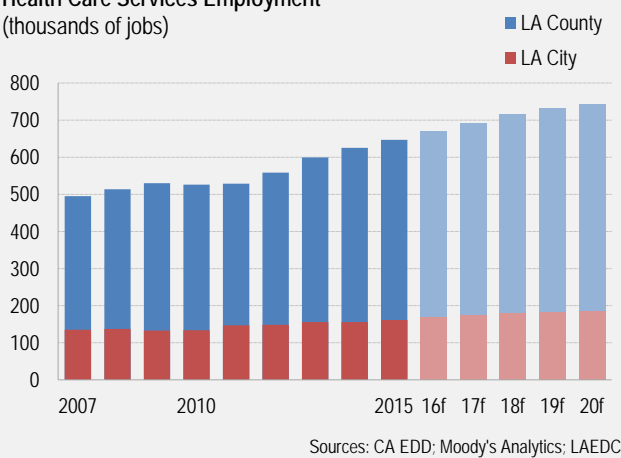


Exhibit 3-33
Top Occupations in Health Services (NAICS 62)
(by % of Industry Employment)

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 more than 49,000 new jobs from 2015 to 2020 in the county and almost 19,000 in the City of Los Angeles.

Exhibit 3-34
Leisure and Hospitality Employment
(thousands of jobs)

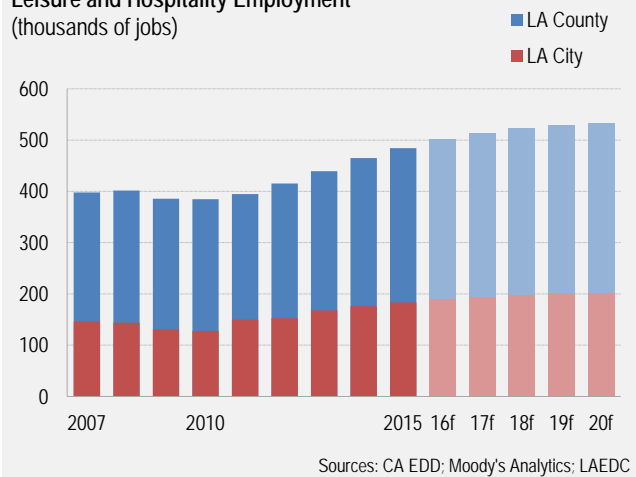


Exhibit 3-35
Top Occupations in Leisure and Hospitality (NAICS 71-72)
(by % of Industry Employment)

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 17.7 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 9.2 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	5.7%
13-0000	Business and financial operations	5.6%
15-0000	Computer and mathematical science	2.4%
17-0000	Architecture and engineering	1.7%
19-0000	Life, physical and social science	0.9%
21-0000	Community and social services	1.6%
23-0000	Legal occupations	1.0%
25-0000	Education, training and library	5.7%
27-0000	Arts, design, entertainment, sports, media	3.6%
29-0000	Healthcare practitioners and technical	5.0%
31-0000	Healthcare support	2.4%
33-0000	Protective services	2.7%
35-0000	Food preparation and serving	9.2%
37-0000	Building/grounds cleaning and maintenance	2.7%
39-0000	Personal care and service	2.7%
41-0000	Sales and related	10.4%
43-0000	Office and administrative support	17.7%
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	6.5%
53-0000	Transportation/material moving	7.2%
Total		100.0%

Sources: BLS: Occupational Employment Statistics Survey, May 2015

Blue-collar occupations, such as those in construction, protective services, maintenance production and transportation account for almost 22 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 2015-2020

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	15,420	18,490	33,910
13-0000	Business and financial	15,720	18,210	33,930
15-0000	Computer and mathematical	10,050	8,540	18,580
17-0000	Architecture and engineering	4,700	7,320	12,020
19-0000	Life, physical, social science	2,180	3,250	5,430
21-0000	Community and social services	7,840	7,320	15,160
23-0000	Legal occupations	2,970	2,290	5,260
25-0000	Education, training and library	8,980	11,420	20,400
27-0000	Arts, entertainment, sports	5,440	10,280	15,720
29-0000	Healthcare practitioners	24,660	18,470	43,130
31-0000	Healthcare support	15,720	10,560	26,270
33-0000	Protective services	6,690	7,800	14,490
35-0000	Food preparation and serving	40,750	73,930	114,680
37-0000	Building/grounds maintenance	17,550	11,630	29,180
39-0000	Personal care and service	20,380	19,150	39,530
41-0000	Sales and related	17,990	63,010	81,000
43-0000	Office and administrative	52,360	63,410	115,770
45-0000	Farming, fishing and forestry	220	560	780
47-0000	Construction and extraction	14,440	8,190	22,620
49-0000	Installation, maint / repair	8,400	15,130	23,540
51-0000	Production	11,470	24,190	35,660
53-0000	Transportation/material moving	17,190	29,260	46,450
Total*		321,100	432,400	750,500

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

Exhibit 4-3

Occupational Growth in City of Los Angeles 2015-2020

SOC	Occupational Group	New Jobs	Replacement	Total *
11-0000	Management occupations	6,030	8,290	14,310
13-0000	Business and financial	6,590	9,490	16,080
15-0000	Computer and mathematical	4,000	3,790	7,790
17-0000	Architecture and engineering	1,980	3,260	5,240
19-0000	Life, physical, social science	980	2,270	3,260
21-0000	Community and social services	3,350	4,440	7,790
23-0000	Legal occupations	1,350	1,510	2,860
25-0000	Education, training and library	3,700	5,180	8,880
27-0000	Arts, entertainment, sports	1,840	4,020	5,870
29-0000	Healthcare practitioners	8,720	7,720	16,440
31-0000	Healthcare support	5,880	4,250	10,130
33-0000	Protective services	3,090	10,150	13,240
35-0000	Food preparation and serving	15,300	27,600	42,900
37-0000	Building/grounds maintenance	6,490	4,860	11,360
39-0000	Personal care and service	8,270	7,810	16,080
41-0000	Sales and related	6,550	22,280	28,830
43-0000	Office and administrative	20,100	27,270	47,370
45-0000	Farming, fishing and forestry	80	240	320
47-0000	Construction and extraction	4,820	3,590	8,410
49-0000	Installation, maint / repair	3,070	6,140	9,210
51-0000	Production	3,930	7,560	11,490
53-0000	Transportation/material moving	6,030	10,850	16,880
Total*		122,160	182,590	304,750

* 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 2015 and 2020 in Los Angeles County and in the City of Los Angeles. These twenty-five occupations will account for almost 42 percent of all job openings in all occupations.

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 2015-2020 Top 25 Detailed Occupations

SOC	Detailed Occupation	LA County	LA City
35-3021	Combined food preparation and serving workers	28,700	10,840
35-3031	Waiters and waitresses	27,120	10,200
41-2011	Cashiers	24,480	8,650
41-2031	Retail salespersons	23,170	7,810
43-4051	Customer service representatives	16,690	6,750
53-7062	Laborers and freight, stock, and material movers, hand	16,350	6,370
43-9061	Office clerks, general	16,110	5,620
29-1111	Registered nurses	14,120	5,150
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	13,380	5,150
39-9021	Personal care aides	11,440	4,720
43-5081	Stock clerks and order fillers	10,840	4,230
11-1021	General and operations managers	10,740	3,770
43-6014	Secretaries and administrative assistants	8,960	3,710
35-3022	Counter attendants, cafeteria, food concession and coffee shop	8,810	3,710
39-9011	Childcare workers	8,520	3,620
13-2011	Accountants and auditors	8,360	3,300
31-1014	Nursing assistants	8,270	3,280
43-1011	First-line supervisors of office and administrative support workers	7,980	3,200
33-9032	Security guards	7,790	2,920
43-4171	Receptionists and information clerks	7,420	2,900
35-2014	Cooks, restaurant	7,280	2,870
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	7,200	2,870
31-1011	Home health aides	7,170	2,850
37-3011	Landscaping and groundskeeping workers	7,100	2,740
35-1012	First-line supervisors of food preparation and serving workers	6,650	2,680
Total*		314,650	119,900

* 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 2015-2020

SOC	Detailed Occupation	Median Annual Wage	Entry Level		
			Educ	Work Exp	OJT
35-3021	Combined food preparation and serving workers	\$ 19,650	8	None	ST
35-3031	Waiters and waitresses	22,540	8	None	ST
41-2011	Cashiers	19,890	8	None	ST
41-2031	Retail salespersons	23,020	8	None	ST
43-4051	Customer service representatives	35,510	7	None	ST
53-7062	Laborers and freight, stock, and material movers, hand	24,330	8	None	ST
43-9061	Office clerks, general	30,840	7	None	ST
29-1111	Registered nurses	98,380	4	None	None
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	26,560	8	None	ST
39-9021	Personal care aides	20,790	8	None	ST
43-5081	Stock clerks and order fillers	22,880	8	None	ST
11-1021	General and operations managers	105,530	3	<5 yrs	None
43-6014	Secretaries and administrative assistants	38,240	7	None	ST
35-3022	Counter attendants, cafeteria, food concession and coffee shop	19,780	8	None	ST
39-9011	Childcare workers	23,600	7	None	ST
13-2011	Accountants and auditors	72,090	3	None	None
31-1014	Nursing assistants	28,870	5	None	None
43-1011	First-line supervisors of office and administrative support workers	56,510	7	<5 yrs	None
33-9032	Security guards	23,730	7	None	ST
43-4171	Receptionists and information clerks	28,380	7	None	ST
35-2014	Cooks, restaurant	23,880	8	<5 yrs	MT
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	47,970	7	None	MT
31-1011	Home health aides	23,540	8	None	ST
37-3011	Landscaping and groundskeeping workers	25,680	8	None	ST
35-1012	First-line supervisors of food preparation and serving workers	31,590	7	<5 yrs	None

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 2012 through 2022. This period encapsulates in its first few years a somewhat faster job growth out of the recession than is expected to persist beyond 2015. 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 2015 to 2020. 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. ❖

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APPENDIX

Exhibit A-1

Private Sector Industry Employment
Los Angeles County 2014

NAICS	Industry	Employment	% of total
211	Oil and gas extraction	2,227	0.1%
212	Mining, except oil and gas	357	0.0%
213	Support activities for mining	2,058	0.1%
221	Utilities	12,019	0.3%
236	Construction of buildings	28,802	0.8%
237	Heavy and civil engineering construction	13,237	0.4%
238	Specialty trade contractors	76,684	2.1%
311	Food manufacturing	38,463	1.1%
312	Beverage and tobacco prod manufacturing	5,336	0.1%
313	Textile mills	6,400	0.2%
314	Textile product mills	4,354	0.1%
315	Apparel manufacturing	43,831	1.2%
316	Leather and allied product manufacturing	1,908	0.1%
321	Wood product manufacturing	2,907	0.1%
322	Paper manufacturing	6,718	0.2%
323	Printing and related support activities	14,743	0.4%
324	Petroleum and coal prods manufacturing	4,726	0.1%
325	Chemical manufacturing	20,229	0.6%
326	Plastics and rubber prods manufacturing	13,413	0.4%
327	Nonmetallic mineral prod manufacturing	5,460	0.2%
331	Primary metal manufacturing	6,827	0.2%
332	Fabricated metal product manufacturing	43,719	1.2%
333	Machinery manufacturing	15,198	0.4%
334	Computer / electronic prod manufacturing	38,453	1.1%
335	Electrical equipment and appliance mfg.	9,206	0.3%
336	Transportation equipment manufacturing	46,116	1.3%
337	Furniture and related prod manufacturing	14,123	0.4%
339	Miscellaneous manufacturing	19,061	0.5%
423	Merchant wholesalers, durable goods	100,258	2.8%
424	Merchant wholesalers, nondurable goods	99,759	2.8%
425	Electronic markets and agents	20,341	0.6%
441	Motor vehicle and parts dealers	43,992	1.2%
442	Furniture and home furnishings stores	13,292	0.4%
443	Electronics and appliance stores	16,953	0.5%
444	Building material and garden supply stores	23,973	0.7%
445	Food and beverage stores	91,697	2.5%
446	Health and personal care stores	30,061	0.8%
447	Gasoline stations	11,418	0.3%
448	Clothing and clothing accessories stores	52,875	1.5%
451	Sporting, hobby, book / music stores	15,980	0.4%
452	General merchandise stores	72,968	2.0%
453	Miscellaneous store retailers	26,332	0.7%
454	Nonstore retailers	11,054	0.3%
481	Air transportation	19,772	0.5%
482	Rail transportation	20	0.0%
483	Water transportation	3,482	0.1%

Exhibit A-1 (cont'd)

NAICS	Industry	Employment	% of total
484	Truck transportation	27,826	0.8%
485	Transit and ground passenger transport	12,815	0.4%
486	Pipeline transportation	595	0.0%
487	Scenic and sightseeing transportation	727	0.0%
488	Support activities for transportation	44,104	1.2%
491	Postal service	165	0.0%
492	Couriers and messengers	19,087	0.5%
493	Warehousing and storage	14,891	0.4%
511	Publishing industries, except internet	14,206	0.4%
512	Motion picture and sound recording	121,758	3.4%
515	Broadcasting, except internet	20,051	0.6%
517	Telecommunications	24,918	0.7%
518	Data processing, hosting, related services	5,581	0.2%
519	Other information services	10,583	0.3%
521	Monetary authorities - central bank	223	0.0%
522	Credit intermediation and related activities	63,657	1.8%
523	Securities, commodities, investments	23,976	0.7%
524	Insurance carriers and related activities	43,697	1.2%
525	Funds, trusts, and other financial vehicles	417	0.0%
531	Real estate	56,076	1.5%
532	Rental and leasing services	19,055	0.5%
533	Lessors of nonfinancial intangible assets	746	0.0%
541	Professional and technical services	275,655	7.6%
551	Management of companies / enterprises	58,826	1.6%
561	Administrative and support services	255,251	7.0%
562	Waste mgmt and remediation services	9,841	0.3%
611	Educational services	104,705	2.9%
621	Ambulatory health care services	194,045	5.4%
622	Hospitals	110,731	3.1%
623	Nursing and residential care facilities	77,322	2.1%
624	Social assistance	228,018	6.3%
711	Performing arts and spectator sports	36,676	1.0%
712	Museums, historical sites, zoos, and parks	4,830	0.1%
713	Amusements, gambling, and recreation	37,934	1.0%
721	Accommodation	44,421	1.2%
722	Food services and drinking places	340,493	9.4%
811	Repair and maintenance	37,508	1.0%
812	Personal and laundry services	52,168	1.4%
813	Membership associations and orgs	42,442	1.2%

Sources: California Employment Development Department; LAEDC

Exhibit A-2

Private Sector Industry Employment
City of Los Angeles 2014

NAICS	Industry	Employment	% of total
211	Oil and gas extraction	509	0.0%
212	Mining, except oil and gas	100	0.0%
213	Support activities for mining	400	0.0%
221	Utilities	1,401	0.1%
236	Construction of buildings	10,219	0.8%
237	Heavy and civil engineering construction	3,367	0.3%
238	Specialty trade contractors	24,886	1.9%
311	Food manufacturing	9,474	0.7%
312	Beverage and tobacco prod manufacturing	2,260	0.2%
313	Textile mills	2,561	0.2%
314	Textile product mills	1,271	0.1%
315	Apparel manufacturing	18,420	1.4%
316	Leather and allied product manufacturing	404	0.0%
321	Wood product manufacturing	714	0.1%
322	Paper manufacturing	553	0.0%
323	Printing and related support activities	4,411	0.3%
324	Petroleum and coal prods manufacturing	1,387	0.1%
325	Chemical manufacturing	8,512	0.7%
326	Plastics and rubber prods manufacturing	2,485	0.2%
327	Nonmetallic mineral prod manufacturing	1,768	0.1%
331	Primary metal manufacturing	602	0.0%
332	Fabricated metal product manufacturing	10,552	0.8%
333	Machinery manufacturing	2,358	0.2%
334	Computer / electronic prod manufacturing	10,967	0.8%
335	Electrical equipment and appliance mfg.	1,782	0.1%
336	Transportation equipment manufacturing	5,023	0.4%
337	Furniture and related prod manufacturing	3,716	0.3%
339	Miscellaneous manufacturing	6,384	0.5%
423	Merchant wholesalers, durable goods	24,923	1.9%
424	Merchant wholesalers, nondurable goods	37,372	2.9%
425	Electronic markets and agents	7,368	0.6%
441	Motor vehicle and parts dealers	11,696	0.9%
442	Furniture and home furnishings stores	4,624	0.4%
443	Electronics and appliance stores	5,702	0.4%
444	Building material and garden supply stores	8,786	0.7%
445	Food and beverage stores	32,977	2.5%
446	Health and personal care stores	10,879	0.8%
447	Gasoline stations	4,133	0.3%
448	Clothing and clothing accessories stores	18,649	1.4%
451	Sporting, hobby, book / music stores	4,631	0.4%
452	General merchandise stores	20,948	1.6%
453	Miscellaneous store retailers	11,669	0.9%
454	Nonstore retailers	3,778	0.3%
481	Air transportation	16,861	1.3%
482	Rail transportation	-	-
483	Water transportation	959	0.1%

Exhibit A-2 (cont'd)

NAICS	Industry	Employment	% of total
484	Truck transportation	4,956	0.4%
485	Transit and ground passenger transport	4,721	0.4%
486	Pipeline transportation	189	0.0%
487	Scenic and sightseeing transportation	300	0.0%
488	Support activities for transportation	13,402	1.0%
491	Postal service	68	0.0%
492	Couriers and messengers	9,512	0.7%
493	Warehousing and storage	1,324	0.1%
511	Publishing industries, except internet	6,438	0.5%
512	Motion picture and sound recording	29,571	2.3%
515	Broadcasting, except internet	14,309	1.1%
517	Telecommunications	8,254	0.6%
518	Data processing, hosting, related services	1,305	0.1%
519	Other information services	3,272	0.3%
521	Monetary authorities - central bank	223	0.0%
522	Credit intermediation and related activities	23,736	1.8%
523	Securities, commodities, investments	13,405	1.0%
524	Insurance carriers and related activities	20,590	1.6%
525	Funds, trusts, and other financial vehicles	43	0.0%
531	Real estate	24,888	1.9%
532	Rental and leasing services	8,458	0.7%
533	Lessors of nonfinancial intangible assets	269	0.0%
541	Professional and technical services	118,458	9.1%
551	Management of companies / enterprises	19,251	1.5%
561	Administrative and support services	91,301	7.1%
562	Waste mgmt and remediation services	1,879	0.1%
611	Educational services	39,503	3.1%
621	Ambulatory health care services	70,807	5.5%
622	Hospitals	33,624	2.6%
623	Nursing and residential care facilities	29,635	2.3%
624	Social assistance	96,838	7.5%
711	Performing arts and spectator sports	16,840	1.3%
712	Museums, historical sites, zoos, and parks	3,588	0.3%
713	Amusements, gambling, and recreation	9,451	0.7%
721	Accommodation	17,682	1.4%
722	Food services and drinking places	128,493	9.9%
811	Repair and maintenance	12,392	1.0%
812	Personal and laundry services	21,414	1.7%
813	Membership associations and orgs	20,176	1.6%

Sources: California Employment Development Department; LAEDC

Exhibit A-3

Competitiveness of Private Sector Industries 2014
(Location Quotients v. US)

NAICS	Industry	LA County	LA City
211	Oil and gas extraction	0.4	-
212	Mining, except oil and gas	0.1	-
213	Support activities for mining	0.2	-
221	Utilities	0.7	0.2
236	Construction of buildings	0.7	0.7
237	Heavy and civil engineering construction	0.5	0.3
238	Specialty trade contractors	0.7	0.6
311	Food manufacturing	0.9	0.5
312	Beverage and tobacco prod manufacturing	0.8	0.9
313	Textile mills	1.8	1.9
314	Textile product mills	1.3	1.0
315	Apparel manufacturing	10.3	11.4
316	Leather and allied product manufacturing	2.2	1.2
321	Wood product manufacturing	0.3	0.2
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	0.7	0.3
327	Nonmetallic mineral prod manufacturing	0.5	0.4
331	Primary metal manufacturing	0.6	0.1
332	Fabricated metal product manufacturing	1.0	0.6
333	Machinery manufacturing	0.4	0.2
334	Computer / electronic prod manufacturing	1.2	0.9
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	0.9
339	Miscellaneous manufacturing	1.1	0.9
423	Merchant wholesalers, durable goods	1.1	0.7
424	Merchant wholesalers, nondurable goods	1.6	1.6
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	1.2
451	Sporting, hobby, book / music stores	0.9	0.6
452	General merchandise stores	0.8	0.6
453	Miscellaneous store retailers	1.1	1.2
454	Nonstore retailers	0.7	0.7
481	Air transportation	1.5	3.3
482	Rail transportation	0.9	-
483	Water transportation	1.7	1.2

Exhibit A-3 (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	0.3
487	Scenic and sightseeing transportation	0.8	-
488	Support activities for transportation	2.3	1.9
491	Postal service	1.0	1.0
492	Couriers and messengers	1.1	1.5
493	Warehousing and storage	0.7	0.2
511	Publishing industries, except internet	0.6	0.8
512	Motion picture and sound recording	10.4	6.6
515	Broadcasting, except internet	2.3	4.4
517	Telecommunications	1.0	0.8
518	Data processing, hosting, related services	0.7	0.4
519	Other information services	1.6	1.3
521	Monetary authorities - central bank	0.4	1.0
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	2.4	0.6
531	Real estate	1.2	1.4
532	Rental and leasing services	1.2	1.4
533	Lessors of nonfinancial intangible assets	1.0	1.0
541	Professional and technical services	1.1	1.2
551	Management of companies / enterprises	0.9	0.8
561	Administrative and support services	1.0	1.0
562	Waste mgmt and remediation services	0.8	0.4
611	Educational services	1.3	1.3
621	Ambulatory health care services	1.0	0.9
622	Hospitals	0.8	0.6
623	Nursing and residential care facilities	0.8	0.8
624	Social assistance	2.3	2.5
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	0.9
812	Personal and laundry services	1.3	1.3
813	Membership associations and orgs	1.0	1.3

Sources: California Employment Development Department; estimates by LAEDC

Exhibit A-4

Projected New Job Creation 2015-2020

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	(0.2)	78	18
212	Mining, except oil and gas	(0.2)	12	3
213	Support activities for mining	(0.2)	72	14
221	Utilities	0.1	(153)	(18)
236	Construction of buildings	3.6	4,557	1,617
237	Heavy and civil engineering construction	2.7	2,449	622
238	Specialty trade contractors	3.7	13,648	4,424
311	Food manufacturing	0.1	393	97
312	Beverage and tobacco prod manufacturing	(0.6)	(54)	(23)
313	Textile mills	(1.9)	(361)	(144)
314	Textile product mills	(1.8)	(77)	(23)
315	Apparel manufacturing	0.4	348	146
316	Leather and allied product manufacturing	(0.5)	226	48
321	Wood product manufacturing	1.4	322	79
322	Paper manufacturing	(0.8)	19	2
323	Printing and related support activities	0.1	575	172
324	Petroleum and coal prods manufacturing	0.0	(13)	(4)
325	Chemical manufacturing	0.6	593	249
326	Plastics and rubber prods manufacturing	0.2	339	63
327	Nonmetallic mineral prod manufacturing	0.7	485	157
331	Primary metal manufacturing	0.2	192	17
332	Fabricated metal product manufacturing	(0.2)	152	37
333	Machinery manufacturing	(0.5)	(58)	(9)
334	Computer / electronic prod manufacturing	(0.0)	830	237
335	Electrical equipment and appliance mfg.	(0.6)	(312)	(60)
336	Transportation equipment manufacturing	0.0	608	66
337	Furniture and related prod manufacturing	1.8	1,238	326
339	Miscellaneous manufacturing	0.0	(226)	(76)
423	Merchant wholesalers, durable goods	1.0	2,892	718
424	Merchant wholesalers, nondurable goods	1.4	5,495	2,058
425	Electronic markets and agents	2.6	2,694	976
441	Motor vehicle and parts dealers	1.1	1,565	416
442	Furniture and home furnishings stores	(0.9)	(949)	(330)
443	Electronics and appliance stores	(0.5)	(829)	(279)
444	Building material and garden supply stores	0.4	398	146
445	Food and beverage stores	0.9	3,978	1,431
446	Health and personal care stores	0.5	789	285
447	Gasoline stations	0.9	384	139
448	Clothing and clothing accessories stores	(0.2)	(1,297)	(457)
451	Sporting, hobby, book / music stores	0.7	(306)	(89)
452	General merchandise stores	1.3	4,344	1,247
453	Miscellaneous store retailers	(0.2)	(630)	(280)
454	Nonstore retailers	2.8	1,936	660
481	Air transportation	0.8	575	490
482	Rail transportation	0.8	2	-
483	Water transportation	0.8	101	28

Exhibit A-4 (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	0.8	810	144
485	Transit and ground passenger transport	0.8	373	137
486	Pipeline transportation	0.8	17	5
487	Scenic and sightseeing transportation	0.8	21	9
488	Support activities for transportation	0.8	1,282	389
491	Postal service	0.1	(2)	(1)
492	Couriers and messengers	0.8	557	276
493	Warehousing and storage	0.8	433	38
511	Publishing industries, except internet	(0.7)	(787)	(357)
512	Motion picture and sound recording	0.7	5,634	1,374
515	Broadcasting, except internet	0.6	(35)	(25)
517	Telecommunications	(1.0)	(908)	(301)
518	Data processing, hosting, related services	2.3	635	148
519	Other information services	5.1	3,921	1,212
521	Monetary authorities - central bank	1.4	8	21
522	Credit intermediation and related activities	1.4	5,954	2,220
523	Securities, commodities, investments	1.4	2,249	1,254
524	Insurance carriers and related activities	1.4	4,088	1,926
525	Funds, trusts, and other financial vehicles	1.4	29	4
531	Real estate	1.6	4,435	1,969
532	Rental and leasing services	1.6	1,508	669
533	Lessors of nonfinancial intangible assets	1.6	59	21
541	Professional and technical services	2.2	33,303	14,307
551	Management of companies / enterprises	1.5	3,991	1,306
561	Administrative and support services	3.7	57,556	20,645
562	Waste mgmt and remediation services	3.7	2,225	425
611	Educational services	1.2	4,863	1,834
621	Ambulatory health care services	2.9	29,194	10,649
622	Hospitals	2.9	16,652	5,057
623	Nursing and residential care facilities	2.9	11,625	4,457
624	Social assistance	2.9	34,298	14,565
711	Performing arts and spectator sports	1.5	1,975	906
712	Museums, historical sites, zoos, and parks	1.5	260	193
713	Amusements, gambling, and recreation	1.5	2,039	508
721	Accommodation	2.5	5,157	2,050
722	Food services and drinking places	2.5	39,506	14,900
811	Repair and maintenance	1.5	3,087	1,019
812	Personal and laundry services	2.4	5,614	2,304
813	Membership associations and orgs	1.4	2,886	1,366

Source: Estimates by LAEDC

Exhibit A-5
Projected Occupational Openings 2015-2020 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	
11-1011	Chief Executives	1,308	571	3	≥5 years	None	N/A
11-1021	General and Operations Managers	10,736	4,226	3	<5 years	None	107,557
11-1031	Legislators	85	206	3	<5 years	None	N/A
11-2011	Advertising and Promotions Managers	248	106	3	<5 years	None	126,568
11-2021	Marketing Managers	1,070	403	3	≥5 years	None	139,984
11-2022	Sales Managers	1,845	659	3	<5 years	None	109,845
11-2031	Public Relations and Fundraising Managers	318	147	3	≥5 years	None	96,866
11-3011	Administrative Services Managers	1,166	519	3	<5 years	None	89,960
11-3021	Computer and Information Systems Managers	1,489	617	3	≥5 years	None	140,816
11-3031	Financial Managers	2,464	1,054	3	≥5 years	None	138,653
11-3051	Industrial Production Managers	520	150	3	≥5 years	None	96,054
11-3061	Purchasing Managers	311	128	3	≥5 years	None	102,710
11-3071	Transportation, Storage, and Distribution Managers	460	197	7	≥5 years	None	83,678
11-3111	Compensation and Benefits Managers	93	40	3	≥5 years	None	112,403
11-3121	Human Resources Managers	671	290	3	≥5 years	None	116,646
11-3131	Training and Development Managers	173	71	3	≥5 years	None	116,522
11-9013	Farmers, Ranchers, and Other Agricultural Managers	7	3	7	≥5 years	None	100,027
11-9021	Construction Managers	1,048	381	3	None	MT OJT	49,566
11-9031	Education Administrators, Preschool and Childcare	799	342	3	<5 years	None	N/A
11-9032	Education Administrators, Elementary and Secondary School	361	144	2	≥5 years	None	98,114
11-9033	Education Administrators, Postsecondary	200	76	2	≥5 years	None	98,384
11-9039	Education Administrators, All Other	86	63	3	<5 years	None	150,842
11-9041	Architectural and Engineering Managers	942	396	3	≥5 years	None	46,363
11-9051	Food Service Managers	1,197	453	7	<5 years	None	57,970
11-9061	Funeral Service Managers	74	30	4	<5 years	None	84,053
11-9071	Gaming Managers	7	2	7	≥5 years	MT OJT	50,128
11-9081	Lodging Managers	194	77	7	<5 years	None	117,291
11-9111	Medical and Health Services Managers	1,910	765	3	None	None	141,981
11-9121	Natural Sciences Managers	249	148	3	≥5 years	None	88,754
11-9141	Property, Real Estate, and Community Association Managers	1,146	528	7	<5 years	None	61,693
11-9151	Social and Community Service Managers	1,217	586	3	≥5 years	None	75,421
11-9161	Emergency Management Directors	20	21	3	≥5 years	None	112,694
11-9199	Managers, All Other	1,496	914	7	<5 years	None	120,744
13-1011	Agents and Business Managers of Artists, Performers, and	170	73	3	<5 years	None	89,877
13-1021	Buyers and Purchasing Agents, Farm Products	56	20	7	None	LT OJT	65,458
13-1022	Wholesale and Retail Buyers, Except Farm Products	601	199	7	None	LT OJT	50,461
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm	1,090	496	7	None	LT OJT	66,934
13-1031	Claims Adjusters, Examiners, and Investigators	1,006	636	7	None	LT OJT	67,808
13-1032	Insurance Appraisers, Auto Damage	58	27	5	None	MT OJT	69,909
13-1041	Compliance Officers	848	642	3	None	MT OJT	75,338
13-1051	Cost Estimators	1,341	437	3	None	None	64,314
13-1071	Human Resources Specialists	2,564	1,117	3	None	None	63,232
13-1075	Labor Relations Specialists	380	182	3	None	None	87,339
13-1081	Logisticians	378	182	3	None	None	83,304
13-1111	Management Analysts	2,726	1,343	3	<5 years	None	87,194
13-1121	Meeting, Convention, and Event Planners	408	172	3	None	None	52,915
13-1131	Fundraisers	350	155	3	None	None	67,330
13-1141	Compensation, Benefits, and Job Analysis Specialists	352	172	3	None	None	68,515

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-5 (cont'd)

Projected Occupational Openings 2015-2020 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	1,250	527	3	<5 years	None	58,614
13-1161	Market Research Analysts and Marketing Specialists	2,326	915	3	None	None	64,750
13-1199	Business Operations Specialists, All Other	3,312	1,797	7	None	None	74,006
13-2011	Accountants and Auditors	8,359	3,714	3	None	None	71,531
13-2021	Appraisers and Assessors of Real Estate	172	118	3	None	LT OJT	84,510
13-2031	Budget Analysts	306	242	3	None	None	82,971
13-2041	Credit Analysts	386	146	3	None	None	70,845
13-2051	Financial Analysts	1,455	642	3	None	None	92,456
13-2052	Personal Financial Advisors	908	455	3	None	None	83,117
13-2053	Insurance Underwriters	428	198	3	None	MT OJT	68,952
13-2061	Financial Examiners	150	104	3	None	MT OJT	76,877
13-2071	Credit Counselors	123	50	3	None	MT OJT	44,907
13-2072	Loan Officers	1,372	525	3	None	MT OJT	84,282
13-2081	Tax Examiners and Collectors, and Revenue Agents	150	364	3	None	MT OJT	76,336
13-2082	Tax Preparers	493	212	7	None	MT OJT	40,394
13-2099	Financial Specialists, All Other	412	222	3	None	MT OJT	61,110
15-1121	Computer Systems Analysts	2,527	1,076	3	None	None	92,664
15-1122	Information Security Analysts	389	160	3	<5 years	None	101,109
15-1131	Computer Programmers	2,048	859	3	None	None	89,440
15-1132	Software Developers, Applications	3,447	1,355	3	None	None	103,750
15-1133	Software Developers, Systems Software	1,752	679	3	None	None	120,286
15-1134	Web Developers	739	284	4	None	None	67,142
15-1141	Database Administrators	560	234	3	<5 years	None	91,270
15-1142	Network and Computer Systems Administrators	1,702	695	3	None	None	80,974
15-1143	Computer Network Architects	638	269	3	≥5 years	None	113,298
15-1151	Computer User Support Specialists	2,649	1,064	6	None	MT OJT	53,248
15-1152	Computer Network Support Specialists	738	306	4	None	None	69,722
15-1199	Computer Occupations, All Other	652	445	3	None	None	79,123
15-2011	Actuaries	119	56	3	None	LT OJT	97,053
15-2021	Mathematicians	4	2	2	None	None	113,214
15-2031	Operations Research Analysts	425	197	3	None	None	83,262
15-2041	Statisticians	142	86	2	None	None	83,720
17-1011	Architects, Except Landscape and Naval	658	292	3	None	I/R	82,202
17-1012	Landscape Architects	128	58	3	None	I/R	93,995
17-1021	Cartographers and Photogrammetrists	53	34	3	None	None	71,822
17-1022	Surveyors	267	127	3	<5 years	None	88,150
17-2011	Aerospace Engineers	348	142	3	None	None	125,362
17-2031	Biomedical Engineers	104	41	3	None	None	87,838
17-2041	Chemical Engineers	167	69	3	None	None	84,136
17-2051	Civil Engineers	1,521	876	3	None	None	97,656
17-2061	Computer Hardware Engineers	165	65	3	None	None	107,349
17-2071	Electrical Engineers	862	329	3	None	None	108,930
17-2072	Electronics Engineers, Except Computer	603	269	3	None	None	104,790
17-2081	Environmental Engineers	304	173	3	None	None	105,165
17-2111	Health and Safety Engineers, Except Mining Safety Engineers	132	57	3	None	None	100,547
17-2112	Industrial Engineers	1,205	353	3	None	None	98,946
17-2121	Marine Engineers and Naval Architects	16	7	3	None	None	N/A
17-2131	Materials Engineers	135	50	3	None	None	101,858
17-2141	Mechanical Engineers	1,708	633	3	None	None	95,472

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
17-2151	Mining and Geological Engineers, Including Mining	12	5	3	None	None	N/A
17-2161	Nuclear Engineers	21	10	3	None	None	N/A
17-2171	Petroleum Engineers	102	34	3	None	None	119,309
17-2199	Engineers, All Other	508	269	3	None	None	101,837
17-3011	Architectural and Civil Drafters	511	218	4	None	None	60,133
17-3012	Electrical and Electronics Drafters	129	49	4	None	None	56,181
17-3013	Mechanical Drafters	220	74	4	None	None	50,523
17-3019	Drafters, All Other	66	25	4	None	None	54,995
17-3021	Aerospace Engineering and Operations Technicians	58	21	4	None	None	73,840
17-3022	Civil Engineering Technicians	319	232	4	None	None	72,571
17-3023	Electrical and Electronics Engineering Technicians	598	241	4	None	None	62,192
17-3024	Electro-Mechanical Technicians	59	21	4	None	None	44,262
17-3025	Environmental Engineering Technicians	102	48	4	None	None	57,075
17-3026	Industrial Engineering Technicians	241	72	4	None	None	61,610
17-3027	Mechanical Engineering Technicians	220	77	4	None	None	59,259
17-3029	Engineering Technicians, Except Drafters, All Other	216	136	4	None	None	65,603
17-3031	Surveying and Mapping Technicians	259	132	7	None	MT OJT	74,090
19-1011	Animal Scientists	4	2	3	None	None	N/A
19-1012	Food Scientists and Technologists	78	28	3	None	None	64,626
19-1013	Soil and Plant Scientists	32	14	3	None	None	74,568
19-1021	Biochemists and Biophysicists	207	88	1	None	None	95,306
19-1022	Microbiologists	109	63	3	None	None	81,536
19-1023	Zoologists and Wildlife Biologists	71	79	3	None	None	56,264
19-1029	Biological Scientists, All Other	40	22	3	None	None	79,165
19-1031	Conservation Scientists	13	11	3	None	None	85,134
19-1032	Foresters	6	4	3	None	None	64,750
19-1041	Epidemiologists	7	4	3	None	None	48,069
19-1042	Medical Scientists, Except Epidemiologists	522	212	1	None	None	91,853
19-1099	Life Scientists, All Other	37	20	3	None	None	88,358
19-2011	Astronomers	3	1	3	None	None	137,176
19-2012	Physicists	82	45	1	None	None	109,637
19-2021	Atmospheric and Space Scientists	20	10	3	None	None	109,138
19-2031	Chemists	471	226	3	None	None	63,898
19-2032	Materials Scientists	36	14	3	None	None	93,850
19-2041	Environmental Scientists and Specialists, Including Health	474	346	3	None	None	84,053
19-2042	Geoscientists, Except Hydrologists and Geographers	169	88	3	None	None	105,414
19-2043	Hydrologists	12	6	3	None	None	N/A
19-2099	Physical Scientists, All Other	67	57	3	None	None	106,163
19-3011	Economists	96	71	2	None	None	102,835
19-3022	Survey Researchers	84	37	2	None	None	59,509
19-3031	Clinical, Counseling, and School Psychologists	554	245	1	None	I/R	69,659
19-3039	Psychologists, All Other	50	49	2	None	I/R	102,690
19-3041	Sociologists	12	7	2	None	None	74,547
19-3051	Urban and Regional Planners	168	243	2	None	None	72,675
19-3091	Anthropologists and Archeologists	36	21	2	None	None	65,062
19-3092	Geographers	1	1	3	None	None	N/A
19-3093	Historians	4	2	3	None	None	48,630
19-3094	Political Scientists	7	4	3	None	None	81,141
19-3099	Social Scientists and Related Workers, All Other	74	81	3	None	None	85,155

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
19-4011	Agricultural and Food Science Technicians	110	46	4	None	MT OJT	31,470
19-4021	Biological Technicians	380	207	3	None	None	47,944
19-4031	Chemical Technicians	350	147	4	None	MT OJT	42,266
19-4041	Geological and Petroleum Technicians	67	26	4	None	MT OJT	55,224
19-4051	Nuclear Technicians	3	1	4	None	MT OJT	N/A
19-4061	Social Science Research Assistants	193	90	4	None	None	39,354
19-4091	Environmental Science and Protection Technicians, Including Health	249	148	4	None	None	47,091
19-4092	Forensic Science Technicians	45	82	3	None	MT OJT	84,531
19-4093	Forest and Conservation Technicians	90	193	4	None	None	38,397
19-4099	Life, Physical, and Social Science Technicians, All Other	399	213	4	None	None	44,242
21-1011	Substance Abuse and Behavioral Disorder Counselors	682	293	7	None	MT OJT	33,509
21-1012	Educational, Guidance, School, and Vocational Counselors	753	332	2	None	None	63,461
21-1013	Marriage and Family Therapists	314	150	2	None	I/R	45,947
21-1014	Mental Health Counselors	1,120	480	2	None	I/R	42,162
21-1015	Rehabilitation Counselors	1,248	589	2	None	None	28,912
21-1019	Counselors, All Other	200	102	2	None	None	41,454
21-1021	Child, Family, and School Social Workers	2,166	1,268	3	None	None	49,317
21-1022	Healthcare Social Workers	1,084	458	2	None	None	63,253
21-1023	Mental Health and Substance Abuse Social Workers	898	405	3	None	None	53,290
21-1029	Social Workers, All Other	295	247	3	None	None	62,442
21-1091	Health Educators	377	195	3	None	None	48,506
21-1092	Probation Officers and Correctional Treatment Specialists	192	391	3	None	ST OJT	73,549
21-1093	Social and Human Service Assistants	4,154	2,004	7	None	ST OJT	32,365
21-1094	Community Health Workers	482	227	7	None	ST OJT	38,459
21-1099	Community and Social Service Specialists, All Other	764	452	2	None	None	49,234
21-2011	Clergy	253	114	3	None	MT OJT	53,414
21-2021	Directors, Religious Activities and Education	136	64	3	<5 years	None	44,824
21-2099	Religious Workers, All Other	41	19	3	None	None	63,960
23-1011	Lawyers	3,153	1,636	1	None	None	160,368
23-1012	Judicial Law Clerks	14	34	1	None	None	69,930
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	17	41	1	<5 years	ST OJT	89,856
23-1022	Arbitrators, Mediators, and Conciliators	17	8	1	<5 years	MT OJT	57,054
23-1023	Judges, Magistrate Judges, and Magistrates	34	83	1	≥5 years	ST OJT	N/A
23-2011	Paralegals and Legal Assistants	1,539	748	4	None	None	61,922
23-2091	Court Reporters	73	57	5	None	ST OJT	99,403
23-2093	Title Examiners, Abstractors, and Searchers	279	123	7	None	ST OJT	43,597
23-2099	Legal Support Workers, All Other	138	127	7	None	ST OJT	55,286
25-1011	Business Teachers, Postsecondary	85	32	1	None	None	N/A
25-1021	Computer Science Teachers, Postsecondary	36	14	1	None	None	N/A
25-1022	Mathematical Science Teachers, Postsecondary	54	21	1	None	None	N/A
25-1031	Architecture Teachers, Postsecondary	3	1	1	None	None	N/A
25-1032	Engineering Teachers, Postsecondary	36	14	1	None	None	N/A
25-1041	Agricultural Sciences Teachers, Postsecondary	11	4	1	None	None	N/A
25-1042	Biological Science Teachers, Postsecondary	55	21	1	None	None	N/A
25-1043	Forestry and Conservation Science Teachers, Postsecondary	1	0	1	None	None	N/A
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers,	11	4	1	None	None	N/A
25-1052	Chemistry Teachers, Postsecondary	22	8	1	None	None	N/A
25-1053	Environmental Science Teachers, Postsecondary	2	1	1	None	None	N/A
25-1054	Physics Teachers, Postsecondary	14	5	1	None	None	N/A

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	2	1	None	None	N/A
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	9	3	1	None	None	N/A
25-1063	Economics Teachers, Postsecondary	14	5	1	None	None	N/A
25-1064	Geography Teachers, Postsecondary	2	1	1	None	None	N/A
25-1065	Political Science Teachers, Postsecondary	18	7	1	None	None	N/A
25-1066	Psychology Teachers, Postsecondary	38	14	1	None	None	N/A
25-1067	Sociology Teachers, Postsecondary	16	6	1	None	None	N/A
25-1069	Social Sciences Teachers, Postsecondary, All Other	11	4	1	None	None	N/A
25-1071	Health Specialties Teachers, Postsecondary	195	72	1	<5 years	None	N/A
25-1072	Nursing Instructors and Teachers, Postsecondary	68	25	2	<5 years	None	N/A
25-1081	Education Teachers, Postsecondary	61	23	1	None	None	N/A
25-1082	Library Science Teachers, Postsecondary	2	1	1	None	None	N/A
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	16	6	1	None	None	N/A
25-1112	Law Teachers, Postsecondary	6	2	1	None	None	N/A
25-1113	Social Work Teachers, Postsecondary	4	2	2	None	None	N/A
25-1121	Art, Drama, and Music Teachers, Postsecondary	99	38	2	None	None	N/A
25-1122	Communications Teachers, Postsecondary	30	11	1	None	None	N/A
25-1123	English Language and Literature Teachers, Postsecondary	76	29	1	None	None	N/A
25-1124	Foreign Language and Literature Teachers, Postsecondary	31	12	1	None	None	N/A
25-1125	History Teachers, Postsecondary	25	9	1	None	None	N/A
25-1126	Philosophy and Religion Teachers, Postsecondary	23	9	1	None	None	N/A
25-1191	Graduate Teaching Assistants	128	48	3	None	None	N/A
25-1192	Home Economics Teachers, Postsecondary	3	1	2	None	None	N/A
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	18	7	1	None	None	N/A
25-1194	Vocational Education Teachers, Postsecondary	150	67	3	<5 years	None	53,061
25-1199	Postsecondary Teachers, All Other	73	27	2	None	None	N/A
25-2011	Preschool Teachers, Except Special Education	5,977	2,559	4	None	None	29,869
25-2012	Kindergarten Teachers, Except Special Education	391	155	3	None	I/R	N/A
25-2021	Elementary School Teachers, Except Special Education	1,827	693	3	None	I/R	N/A
25-2022	Middle School Teachers, Except Special and Career/Technical Education	864	327	3	None	I/R	N/A
25-2023	Career/Technical Education Teachers, Middle School	5	2	3	None	I/R	N/A
25-2031	Secondary School Teachers, Except Special and Career/Technical	1,467	564	3	None	I/R	N/A
25-2032	Career/Technical Education Teachers, Secondary School	126	55	3	<5 years	I/R	N/A
25-2051	Special Education Teachers, Preschool	144	61	3	None	I/R	N/A
25-2052	Special Education Teachers, Kindergarten and Elementary School	298	117	3	None	I/R	N/A
25-2053	Special Education Teachers, Middle School	104	40	3	None	I/R	N/A
25-2054	Special Education Teachers, Secondary School	163	64	3	None	I/R	N/A
25-2059	Special Education Teachers, All Other	49	20	3	None	I/R	N/A
25-3011	Adult Basic and Secondary Education and Literacy Teachers and	162	74	3	None	I/R	76,877
25-3021	Self-Enrichment Education Teachers	627	278	7	<5 years	None	34,778
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	266	117	3	None	I/R	N/A
25-3098	Substitute Teachers	999	381	3	None	I/R	42,370
25-4011	Archivists	30	16	2	None	None	47,403
25-4012	Curators	44	36	2	None	None	64,480
25-4013	Museum Technicians and Conservators	40	35	3	None	None	50,003
25-4021	Librarians	370	271	2	None	None	72,925
25-4031	Library Technicians	472	550	5	None	None	44,138
25-9011	Audio-Visual and Multimedia Collections Specialists	7	3	3	<5 years	None	43,888
25-9021	Farm and Home Management Advisors	5	3	2	≥5 years	None	N/A

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Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Educ-ation	Work Exp		
25-9031	Instructional Coordinators	246	120	2	≥5 years	None	77,126
25-9041	Teacher Assistants	4,183	1,753	6	None	None	N/A
25-9099	Education, Training, and Library Workers, All Other	78	34	6	None	None	29,723
27-1011	Art Directors	326	117	3	≥5 years	None	110,344
27-1012	Craft Artists	51	20	7	None	LT OJT	68,619
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	123	46	7	None	LT OJT	59,509
27-1014	Multimedia Artists and Animators	565	165	3	None	MT OJT	81,640
27-1019	Artists and Related Workers, All Other	36	25	7	None	LT OJT	66,186
27-1021	Commercial and Industrial Designers	166	58	3	None	None	60,133
27-1022	Fashion Designers	307	114	3	None	None	68,016
27-1023	Floral Designers	181	74	7	None	MT OJT	28,350
27-1024	Graphic Designers	1,427	554	3	None	None	52,104
27-1025	Interior Designers	295	120	3	None	None	53,976
27-1026	Merchandise Displayers and Window Trimmers	519	191	7	None	MT OJT	31,637
27-1027	Set and Exhibit Designers	194	67	3	None	None	58,448
27-1029	Designers, All Other	74	24	3	None	None	51,605
27-2011	Actors	536	148	7	None	None	N/A
27-2012	Producers and Directors	2,963	962	3	<5 years	None	102,898
27-2021	Athletes and Sports Competitors	151	67	7	None	LT OJT	N/A
27-2022	Coaches and Scouts	661	263	3	None	None	N/A
27-2023	Umpires, Referees, and Other Sports Officials	90	59	7	None	MT OJT	N/A
27-2031	Dancers	120	52	7	None	LT OJT	20779.2
27-2032	Choreographers	27	11	7	≥5 years	LT OJT	N/A
27-2041	Music Directors and Composers	121	51	3	<5 years	None	57,845
27-2042	Musicians and Singers	460	207	7	None	LT OJT	77084.8
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	220	63	7	None	None	37377.6
27-3011	Radio and Television Announcers	227	153	3	None	None	37,586
27-3012	Public Address System and Other Announcers	61	27	7	None	ST OJT	25,792
27-3021	Broadcast News Analysts	49	35	3	None	None	74,131
27-3022	Reporters and Correspondents	308	161	3	None	None	37,710
27-3031	Public Relations Specialists	993	459	3	None	None	65,728
27-3041	Editors	573	215	3	<5 years	None	63,045
27-3042	Technical Writers	364	148	3	<5 years	ST OJT	72,571
27-3043	Writers and Authors	404	154	3	None	MT OJT	N/A
27-3091	Interpreters and Translators	208	94	3	None	ST OJT	65,624
27-3099	Media and Communication Workers, All Other	444	123	7	None	ST OJT	47,070
27-4011	Audio and Video Equipment Technicians	715	247	5	None	ST OJT	48,214
27-4012	Broadcast Technicians	197	116	4	None	ST OJT	53,893
27-4013	Radio Operators	0	0	4	None	ST OJT	N/A
27-4014	Sound Engineering Technicians	329	94	5	None	ST OJT	58,594
27-4021	Photographers	273	115	7	None	LT OJT	58,115
27-4031	Camera Operators, Television, Video, and Motion Picture	234	69	3	None	None	59,134
27-4032	Film and Video Editors	471	122	3	None	None	86,778
27-4099	Media and Communication Equipment Workers, All Other	252	77	7	None	ST OJT	70,928
29-1011	Chiropractors	213	77	1	None	None	128,502
29-1021	Dentists, General	758	282	1	None	None	130,437
29-1022	Oral and Maxillofacial Surgeons	22	8	1	None	None	N/A
29-1023	Orthodontists	47	17	1	None	I/R	186,098
29-1024	Prosthodontists	3	1	1	None	None	N/A

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Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
29-1029	Dentists, All Other Specialists	27	16	1	None	I/R	124,467
29-1031	Dietitians and Nutritionists	272	115	3	None	I/R	73,278
29-1041	Optometrists	256	93	1	None	None	106,413
29-1051	Pharmacists	1,395	506	1	None	None	137,114
29-1061	Anesthesiologists	122	44	1	None	None	N/A
29-1062	Family and General Practitioners	467	167	1	None	None	N/A
29-1063	Internists, General	345	123	1	None	I/R	179,733
29-1064	Obstetricians and Gynecologists	161	58	1	None	I/R	N/A
29-1065	Pediatricians, General	229	82	1	None	I/R	183,414
29-1066	Psychiatrists	166	69	1	None	I/R	183,706
29-1067	Surgeons	300	109	1	None	I/R	N/A
29-1069	Physicians and Surgeons, All Other	1,936	802	1	None	I/R	N/A
29-1071	Physician Assistants	332	119	1	None	I/R	95,222
29-1081	Podiatrists	60	24	1	None	I/R	57,034
29-1122	Occupational Therapists	570	212	2	None	None	91,333
29-1123	Physical Therapists	1,387	504	1	None	None	90,771
29-1124	Radiation Therapists	94	31	4	None	None	95,306
29-1125	Recreational Therapists	98	45	3	None	None	55,931
29-1126	Respiratory Therapists	543	176	4	None	None	75,920
29-1127	Speech-Language Pathologists	475	183	2	None	None	79,830
29-1128	Exercise Physiologists	28	10	3	None	None	73,528
29-1129	Therapists, All Other	65	25	3	None	None	35,506
29-1131	Veterinarians	553	247	1	None	None	101,234
29-1141	Registered Nurses	14,118	5,149	4	None	None	96,366
29-1151	Nurse Anesthetists	230	83	2	None	None	177,070
29-1161	Nurse Midwives	19	7	2	None	None	129,854
29-1171	Nurse Practitioners	763	278	2	None	None	116,563
29-1181	Audiologists	37	13	2	None	None	89,024
29-1199	Health Diagnosing and Treating Practitioners, All Other	142	94	2	None	None	61,797
29-2011	Medical and Clinical Laboratory Technologists	986	355	3	None	None	81,182
29-2012	Medical and Clinical Laboratory Technicians	1,059	385	4	None	None	42,224
29-2021	Dental Hygienists	1,579	582	4	None	None	106,746
29-2031	Cardiovascular Technologists and Technicians	241	77	4	None	None	64,605
29-2032	Diagnostic Medical Sonographers	303	101	4	None	None	87,506
29-2033	Nuclear Medicine Technologists	100	33	4	None	None	99,070
29-2034	Radiologic Technologists	957	331	4	None	None	71,573
29-2035	Magnetic Resonance Imaging Technologists	172	58	4	<5 years	None	87,339
29-2041	Emergency Medical Technicians and Paramedics	1,429	774	5	None	None	27,997
29-2051	Dietetic Technicians	115	44	4	None	None	31,262
29-2052	Pharmacy Technicians	1,051	372	7	None	MT OJT	36,941
29-2053	Psychiatric Technicians	226	99	5	None	ST OJT	54,371
29-2054	Respiratory Therapy Technicians	41	13	4	None	MT OJT	73,778
29-2055	Surgical Technologists	437	143	5	None	None	53,955
29-2056	Veterinary Technologists and Technicians	499	216	4	None	None	36,608
29-2057	Ophthalmic Medical Technicians	201	73	5	None	None	43,867
29-2061	Licensed Practical and Licensed Vocational Nurses	4,623	1,859	5	None	None	50,814
29-2071	Medical Records and Health Information Technicians	1,238	468	5	None	None	41,475
29-2081	Opticians, Dispensing	489	173	7	None	LT OJT	37,544
29-2091	Orthotists and Prosthetists	18	7	2	None	I/R	58,032

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Educ-ation	Work Exp		
29-2092	Hearing Aid Specialists	11	4	3	None	ST OJT	54,891
29-2099	Health Technologists and Technicians, All Other	425	152	7	None	None	41,995
29-9011	Occupational Health and Safety Specialists	273	168	3	None	ST OJT	73,299
29-9012	Occupational Health and Safety Technicians	64	33	7	None	MT OJT	38,397
29-9091	Athletic Trainers	121	44	3	None	None	N/A
29-9092	Genetic Counselors	7	2	3	None	None	91,811
29-9099	Healthcare Practitioners and Technical Workers, All Other	230	101	3	None	None	56,306
31-1011	Home Health Aides	7,173	2,850	8	None	ST OJT	23,150
31-1013	Psychiatric Aides	316	168	7	None	ST OJT	28,038
31-1014	Nursing Assistants	8,273	3,204	5	None	None	28,434
31-1015	Orderlies	251	88	7	None	ST OJT	33,675
31-2011	Occupational Therapy Assistants	236	88	4	None	None	70,138
31-2012	Occupational Therapy Aides	64	24	7	None	ST OJT	28,954
31-2021	Physical Therapist Assistants	519	187	4	None	None	69,243
31-2022	Physical Therapist Aides	331	123	7	None	ST OJT	28,101
31-9011	Massage Therapists	470	183	5	None	None	38,709
31-9091	Dental Assistants	2,262	845	5	None	None	36,858
31-9092	Medical Assistants	3,897	1,413	5	None	None	32,635
31-9093	Medical Equipment Preparers	267	88	7	None	MT OJT	38,626
31-9094	Medical Transcriptionists	417	147	5	None	None	53,581
31-9095	Pharmacy Aides	162	58	7	None	ST OJT	23,400
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	472	204	7	None	ST OJT	28,184
31-9097	Phlebotomists	703	245	5	None	None	36,733
31-9099	Healthcare Support Workers, All Other	456	212	7	None	None	38,272
33-1011	First-Line Supervisors of Correctional Officers	127	248	7	<5 years	MT OJT	90,043
33-1012	First-Line Supervisors of Police and Detectives	206	491	7	<5 years	MT OJT	135,928
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	183	419	5	<5 years	MT OJT	167,378
33-1099	First-Line Supervisors of Protective Service Workers, All Other	418	188	7	<5 years	None	43,430
33-2011	Firefighters	700	1,420	5	None	LT OJT	81,910
33-2021	Fire Inspectors and Investigators	27	54	7	≥5 years	MT OJT	105,726
33-3011	Bailiffs	3	7	7	None	MT OJT	N/A
33-3012	Correctional Officers and Jailers	1,024	1,946	7	None	MT OJT	56,243
33-3021	Detectives and Criminal Investigators	170	413	7	<5 years	MT OJT	109,990
33-3031	Fish and Game Wardens	1	2	7	None	MT OJT	N/A
33-3041	Parking Enforcement Workers	18	37	7	None	ST OJT	46,093
33-3051	Police and Sheriff's Patrol Officers	1,382	3,279	7	None	MT OJT	89,544
33-3052	Transit and Railroad Police	6	14	7	None	ST OJT	N/A
33-9011	Animal Control Workers	27	52	7	None	MT OJT	50,669
33-9021	Private Detectives and Investigators	204	86	7	<5 years	MT OJT	55,245
33-9031	Gaming Surveillance Officers and Gaming Investigators	35	16	7	None	ST OJT	31,574
33-9032	Security Guards	7,788	2,917	7	None	ST OJT	24,128
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service	1,152	846	7	None	ST OJT	28,933
33-9093	Transportation Security Screeners	82	171	7	None	ST OJT	39,645
33-9099	Protective Service Workers, All Other	858	586	7	None	ST OJT	36,358
35-1011	Chefs and Head Cooks	656	251	7	≥5 years	None	38,584
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	6,655	2,513	7	<5 years	None	31,346
35-2011	Cooks, Fast Food	3,466	1,307	8	None	ST OJT	19,302
35-2012	Cooks, Institution and Cafeteria	2,071	862	8	None	ST OJT	29,390
35-2014	Cooks, Restaurant	7,281	2,739	8	<5 years	MT OJT	23,317

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Educ-ation	Work Exp		
35-2015	Cooks, Short Order	1,116	417	8	None	ST OJT	22,630
35-2019	Cooks, All Other	116	44	8	None	MT OJT	28,870
35-2021	Food Preparation Workers	6,103	2,315	8	None	ST OJT	19,781
35-3011	Bartenders	5,309	2,031	8	None	ST OJT	19,906
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	28,702	10,841	8	None	ST OJT	19,302
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	8,809	2,868	8	None	ST OJT	19,594
35-3031	Waiters and Waitresses	27,117	10,202	8	None	ST OJT	19,926
35-3041	Food Servers, Nonrestaurant	1,790	672	8	None	ST OJT	23,130
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	4,086	1,535	8	None	ST OJT	19,240
35-9021	Dishwashers	5,143	1,937	8	None	ST OJT	19,157
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	5,772	2,178	8	None	None	19,469
35-9099	Food Preparation and Serving Related Workers, All Other	488	186	8	None	ST OJT	21,154
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	1,132	446	7	<5 years	None	42,286
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and	623	244	7	<5 years	None	41,808
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	13,379	5,152	8	None	ST OJT	24,835
37-2012	Maids and Housekeeping Cleaners	5,625	2,144	8	None	ST OJT	23,504
37-2019	Building Cleaning Workers, All Other	124	47	8	None	ST OJT	28,974
37-2021	Pest Control Workers	717	262	7	None	MT OJT	29,827
37-3011	Landscaping and Groundskeeping Workers	7,097	2,871	8	None	ST OJT	24,586
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	184	81	7	None	MT OJT	29,827
37-3013	Tree Trimmers and Pruners	235	86	7	None	MT OJT	32,448
37-3019	Grounds Maintenance Workers, All Other	65	26	8	None	ST OJT	31,304
39-1011	Gaming Supervisors	105	39	7	<5 years	None	43,534
39-1021	First-Line Supervisors of Personal Service Workers	1,478	604	7	<5 years	None	41,122
39-2011	Animal Trainers	117	50	7	None	MT OJT	41,933
39-2021	Nonfarm Animal Caretakers	796	351	8	None	ST OJT	22,069
39-3011	Gaming Dealers	387	136	7	None	ST OJT	19,136
39-3012	Gaming and Sports Book Writers and Runners	81	34	7	None	ST OJT	20,758
39-3019	Gaming Service Workers, All Other	20	7	7	None	ST OJT	28,475
39-3021	Motion Picture Projectionists	437	108	8	None	ST OJT	21,590
39-3031	Ushers, Lobby Attendants, and Ticket Takers	5,031	1,505	8	None	ST OJT	19,302
39-3091	Amusement and Recreation Attendants	2,121	978	8	None	ST OJT	23,962
39-3092	Costume Attendants	214	66	7	None	ST OJT	50,565
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	166	62	7	None	ST OJT	24,003
39-3099	Entertainment Attendants and Related Workers, All Other	9	3	7	None	ST OJT	22,152
39-4011	Embalmers	31	13	5	None	ST OJT	52,291
39-4021	Funeral Attendants	285	117	7	None	ST OJT	29,141
39-4031	Morticians, Undertakers, and Funeral Directors	198	82	4	None	LT OJT	38,626
39-5011	Barbers	122	50	5	None	None	20,634
39-5012	Hairdressers, Hairstylists, and Cosmetologists	2,801	1,140	5	None	None	22,672
39-5091	Makeup Artists, Theatrical and Performance	40	10	5	None	None	64,314
39-5092	Manicurists and Pedicurists	437	179	5	None	None	19,115
39-5093	Shampooers	66	27	5	None	None	21,674
39-5094	Skincare Specialists	193	77	5	None	None	32,989
39-6011	Baggage Porters and Bellhops	290	111	7	None	ST OJT	22,755
39-6012	Concierges	213	89	7	None	MT OJT	31,970
39-7011	Tour Guides and Escorts	319	182	7	None	MT OJT	26,229
39-7012	Travel Guides	30	11	7	None	MT OJT	35,714
39-9011	Childcare Workers	8,519	3,620	7	None	ST OJT	22,422

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
39-9021	Personal Care Aides	11,444	4,722	8	None	ST OJT	21,174
39-9031	Fitness Trainers and Aerobics Instructors	721	254	7	None	ST OJT	46,530
39-9032	Recreation Workers	1,297	733	3	None	None	24,606
39-9041	Residential Advisors	1,178	512	7	None	ST OJT	32,698
39-9099	Personal Care and Service Workers, All Other	368	207	7	None	ST OJT	27,269
41-1011	First-Line Supervisors of Retail Sales Workers	4,346	1,498	7	<5 years	None	40,414
41-1012	First-Line Supervisors of Non-Retail Sales Workers	1,069	391	7	<5 years	None	59,259
41-2011	Cashiers	24,475	8,646	8	None	ST OJT	20,197
41-2012	Gaming Change Persons and Booth Cashiers	37	13	8	None	ST OJT	N/A
41-2021	Counter and Rental Clerks	2,971	1,192	8	None	ST OJT	24,190
41-2022	Parts Salespersons	1,001	270	8	None	MT OJT	29,203
41-2031	Retail Salespersons	23,170	7,814	8	None	ST OJT	23,130
41-3011	Advertising Sales Agents	1,349	632	7	None	MT OJT	68,910
41-3021	Insurance Sales Agents	1,591	744	7	None	MT OJT	54,018
41-3031	Securities, Commodities, and Financial Services Sales Agents	1,724	805	3	None	MT OJT	68,848
41-3041	Travel Agents	571	206	7	None	MT OJT	34,694
41-3099	Sales Representatives, Services, All Other	5,975	2,226	7	None	ST OJT	54,995
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and	1,665	564	3	None	MT OJT	77,230
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical	7,204	2,355	7	None	MT OJT	52,562
41-9011	Demonstrators and Product Promoters	271	107	8	None	ST OJT	26,853
41-9012	Models	15	5	8	None	None	46,405
41-9021	Real Estate Brokers	174	77	7	<5 years	None	69,742
41-9022	Real Estate Sales Agents	707	315	7	None	LT OJT	54,205
41-9031	Sales Engineers	299	103	3	None	MT OJT	102,170
41-9041	Telemarketers	1,920	700	8	None	ST OJT	28,059
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related	17	7	7	None	ST OJT	23,026
41-9099	Sales and Related Workers, All Other	452	163	7	None	None	33,904
43-1011	First-Line Supervisors of Office and Administrative Support Workers	7,976	3,297	7	<5 years	None	56,888
43-2011	Switchboard Operators, Including Answering Service	631	242	7	None	ST OJT	30,451
43-2021	Telephone Operators	38	16	7	None	ST OJT	19,698
43-3011	Bill and Account Collectors	2,746	1,017	7	None	MT OJT	37,898
43-3021	Billing and Posting Clerks	2,907	1,103	7	None	ST OJT	36,150
43-3031	Bookkeeping, Accounting, and Auditing Clerks	5,973	2,386	7	None	MT OJT	40,747
43-3041	Gaming Cage Workers	73	28	7	None	ST OJT	30,576
43-3051	Payroll and Timekeeping Clerks	933	376	7	None	MT OJT	45,011
43-3061	Procurement Clerks	404	221	7	None	MT OJT	41,350
43-3071	Tellers	4,216	1,576	7	None	ST OJT	27,394
43-3099	Financial Clerks, All Other	217	93	7	None	ST OJT	43,389
43-4011	Brokerage Clerks	335	174	7	None	MT OJT	50,482
43-4021	Correspondence Clerks	20	8	7	None	MT OJT	40,976
43-4031	Court, Municipal, and License Clerks	164	356	7	None	MT OJT	43,950
43-4041	Credit Authorizers, Checkers, and Clerks	183	66	7	None	ST OJT	40,165
43-4051	Customer Service Representatives	16,693	6,368	7	None	ST OJT	35,838
43-4061	Eligibility Interviewers, Government Programs	250	436	7	None	MT OJT	44,907
43-4071	File Clerks	902	404	7	None	ST OJT	30,867
43-4081	Hotel, Motel, and Resort Desk Clerks	2,001	798	7	None	ST OJT	23,858
43-4111	Interviewers, Except Eligibility and Loan	1,072	408	7	None	ST OJT	35,963
43-4121	Library Assistants, Clerical	473	530	7	None	ST OJT	24,461
43-4131	Loan Interviewers and Clerks	714	269	7	None	ST OJT	44,013

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
43-4141	New Accounts Clerks	287	108	7	None	MT OJT	39,666
43-4151	Order Clerks	1,169	391	7	None	ST OJT	31,283
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	751	348	7	None	ST OJT	42,578
43-4171	Receptionists and Information Clerks	7,422	2,896	7	None	ST OJT	29,078
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	679	409	7	None	ST OJT	39,874
43-4199	Information and Record Clerks, All Other	532	465	7	None	ST OJT	41,787
43-5011	Cargo and Freight Agents	725	262	7	None	ST OJT	45,240
43-5021	Couriers and Messengers	326	135	7	None	ST OJT	31,470
43-5031	Police, Fire, and Ambulance Dispatchers	257	436	7	None	MT OJT	54,746
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1,101	414	7	None	MT OJT	35,859
43-5041	Meter Readers, Utilities	125	93	7	None	ST OJT	45,760
43-5051	Postal Service Clerks	1	1	7	None	ST OJT	56,410
43-5052	Postal Service Mail Carriers	11	6	7	None	ST OJT	58,053
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine	1	0	7	None	ST OJT	55,328
43-5061	Production, Planning, and Expediting Clerks	1,780	618	7	None	MT OJT	45,739
43-5071	Shipping, Receiving, and Traffic Clerks	3,706	1,201	7	None	ST OJT	28,725
43-5081	Stock Clerks and Order Fillers	10,837	3,711	8	None	ST OJT	23,171
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	388	131	7	None	ST OJT	24,731
43-6011	Executive Secretaries and Executive Administrative Assistants	2,762	1,260	7	<5 years	None	57,574
43-6012	Legal Secretaries	1,148	528	7	None	MT OJT	56,618
43-6013	Medical Secretaries	2,844	1,012	7	None	MT OJT	35,672
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and	8,963	3,773	7	None	ST OJT	37,565
43-9011	Computer Operators	212	85	7	None	MT OJT	43,638
43-9021	Data Entry Keyers	1,045	416	7	None	MT OJT	30,285
43-9022	Word Processors and Typists	128	87	7	None	ST OJT	39,291
43-9031	Desktop Publishers	47	18	4	None	ST OJT	47,528
43-9041	Insurance Claims and Policy Processing Clerks	1,173	538	7	None	MT OJT	39,499
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	632	270	7	None	ST OJT	31,470
43-9061	Office Clerks, General	16,108	6,748	7	None	ST OJT	30,680
43-9071	Office Machine Operators, Except Computer	447	171	7	None	ST OJT	32,531
43-9081	Proofreaders and Copy Markers	46	17	3	None	None	42,661
43-9111	Statistical Assistants	59	41	3	None	None	41,350
43-9199	Office and Administrative Support Workers, All Other	1,127	609	7	None	ST OJT	24,669
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	39	20	7	<5 years	None	50,918
45-2011	Agricultural Inspectors	40	59	3	None	MT OJT	49,878
45-2041	Graders and Sorters, Agricultural Products	94	34	8	None	ST OJT	22,027
45-2091	Agricultural Equipment Operators	23	8	7	None	MT OJT	N/A
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	407	119	8	None	ST OJT	20,197
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	141	55	8	None	ST OJT	30,347
45-2099	Agricultural Workers, All Other	8	3	8	None	ST OJT	44,450
45-4011	Forest and Conservation Workers	13	19	7	None	MT OJT	17,035
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	1,843	672	7	≥5 years	None	75,005
47-2011	Boilermakers	33	10	7	None	APP	86,632
47-2021	Brickmasons and Blockmasons	256	85	7	None	APP	62,358
47-2022	Stonemasons	36	12	7	None	APP	27,310
47-2031	Carpenters	2,814	974	7	None	APP	50,731
47-2041	Carpet Installers	45	14	8	None	ST OJT	23,712
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	20	6	8	None	MT OJT	52,666
47-2043	Floor Sanders and Finishers	13	4	8	None	MT OJT	37,731

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
47-2044	Tile and Marble Setters	152	50	8	None	LT OJT	38,106
47-2051	Cement Masons and Concrete Finishers	660	216	8	None	MT OJT	48,838
47-2053	Terrazzo Workers and Finishers	14	4	7	None	APP	51,958
47-2061	Construction Laborers	4,546	1,589	8	None	ST OJT	39,021
47-2071	Paving, Surfacing, and Tamping Equipment Operators	179	86	7	None	MT OJT	50,627
47-2072	Pile-Driver Operators	9	2	8	None	MT OJT	56,930
47-2073	Operating Engineers and Other Construction Equipment Operators	1,357	621	7	None	MT OJT	80,475
47-2081	Drywall and Ceiling Tile Installers	369	121	8	None	MT OJT	58,323
47-2082	Tapers	71	23	8	None	MT OJT	53,914
47-2111	Electricians	2,751	937	7	None	APP	61,006
47-2121	Glaziers	221	72	7	None	APP	58,198
47-2131	Insulation Workers, Floor, Ceiling, and Wall	81	26	8	None	ST OJT	35,568
47-2132	Insulation Workers, Mechanical	91	30	8	None	ST OJT	41,309
47-2141	Painters, Construction and Maintenance	984	348	8	None	MT OJT	44,096
47-2142	Paperhangers	12	5	8	None	ST OJT	N/A
47-2151	Pipelayers	120	58	8	None	ST OJT	61,318
47-2152	Plumbers, Pipefitters, and Steamfitters	1,559	531	7	None	APP	61,443
47-2161	Plasterers and Stucco Masons	77	26	8	None	LT OJT	39,021
47-2171	Reinforcing Iron and Rebar Workers	57	18	8	None	MT OJT	57,866
47-2181	Roofers	544	178	8	None	MT OJT	47,632
47-2211	Sheet Metal Workers	587	202	7	None	APP	61,152
47-2221	Structural Iron and Steel Workers	381	125	7	None	APP	75,691
47-2231	Solar Photovoltaic Installers	15	5	8	None	ST OJT	N/A
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble	114	37	8	None	ST OJT	24,024
47-3012	Helpers--Carpenters	184	64	8	None	ST OJT	30,534
47-3013	Helpers--Electricians	334	112	7	None	ST OJT	28,954
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	56	18	8	None	ST OJT	29,120
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	244	80	7	None	ST OJT	29,578
47-3016	Helpers--Roofers	39	13	8	None	ST OJT	N/A
47-3019	Helpers, Construction Trades, All Other	78	27	8	None	ST OJT	33,072
47-4011	Construction and Building Inspectors	390	314	7	≥5 years	MT OJT	85,904
47-4021	Elevator Installers and Repairers	96	31	7	None	APP	87,651
47-4031	Fence Erectors	115	38	7	None	MT OJT	36,587
47-4041	Hazardous Materials Removal Workers	308	70	7	None	MT OJT	38,771
47-4051	Highway Maintenance Workers	178	364	7	None	MT OJT	50,149
47-4061	Rail-Track Laying and Maintenance Equipment Operators	8	3	7	None	MT OJT	N/A
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	144	52	8	None	MT OJT	35,298
47-4099	Construction and Related Workers, All Other	119	56	7	None	MT OJT	29,682
47-5011	Derrick Operators, Oil and Gas	4	1	8	None	ST OJT	50,918
47-5012	Rotary Drill Operators, Oil and Gas	42	10	8	None	MT OJT	78,125
47-5013	Service Unit Operators, Oil, Gas, and Mining	104	24	8	None	MT OJT	49,192
47-5021	Earth Drillers, Except Oil and Gas	36	11	8	None	MT OJT	67,122
47-5071	Roustabouts, Oil and Gas	101	24	8	None	MT OJT	46,010
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	2,156	910	7	<5 years	None	72,613
49-2011	Computer, Automated Teller, and Office Machine Repairers	433	148	6	None	None	41,995
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	29	12	4	None	MT OJT	65,770
49-2022	Telecommunications Equipment Installers and Repairers, Except Line	434	170	5	None	MT OJT	56,326
49-2091	Avionics Technicians	95	37	4	None	None	65,811
49-2092	Electric Motor, Power Tool, and Related Repairers	65	21	5	None	LT OJT	46,675

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
49-2093	Electrical and Electronics Installers and Repairers, Transportation	35	16	5	None	LT OJT	69,035
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	230	108	5	None	LT OJT	54,101
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	54	23	5	None	LT OJT	75,546
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	19	5	5	None	ST OJT	35,110
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	161	55	5	None	None	32,885
49-2098	Security and Fire Alarm Systems Installers	492	172	7	None	MT OJT	44,990
49-3011	Aircraft Mechanics and Service Technicians	830	439	5	None	None	70,824
49-3021	Automotive Body and Related Repairers	648	210	7	None	MT OJT	37,190
49-3023	Automotive Service Technicians and Mechanics	3,014	1,024	7	None	LT OJT	34,507
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	952	363	7	None	LT OJT	54,309
49-3041	Farm Equipment Mechanics and Service Technicians	38	11	7	None	LT OJT	N/A
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	596	250	7	None	LT OJT	61,464
49-3043	Rail Car Repairers	69	26	7	None	LT OJT	41,558
49-3051	Motorboat Mechanics and Service Technicians	25	7	7	None	LT OJT	42,557
49-3052	Motorcycle Mechanics	53	15	7	None	LT OJT	46,093
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	108	39	7	None	MT OJT	43,118
49-3091	Bicycle Repairers	43	13	7	None	MT OJT	22,901
49-3092	Recreational Vehicle Service Technicians	12	4	7	None	LT OJT	N/A
49-3093	Tire Repairers and Changers	520	144	7	None	ST OJT	30,763
49-9011	Mechanical Door Repairers	42	14	7	None	ST OJT	39,229
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	169	82	7	None	MT OJT	67,392
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,463	507	5	None	LT OJT	51,896
49-9031	Home Appliance Repairers	21	7	7	None	ST OJT	36,587
49-9041	Industrial Machinery Mechanics	1,411	452	7	None	LT OJT	60,133
49-9043	Maintenance Workers, Machinery	219	72	7	None	MT OJT	39,666
49-9044	Millwrights	75	24	7	None	MT OJT	69,326
49-9051	Electrical Power-Line Installers and Repairers	461	176	7	None	LT OJT	101,795
49-9052	Telecommunications Line Installers and Repairers	447	160	7	None	LT OJT	67,766
49-9061	Camera and Photographic Equipment Repairers	6	2	7	None	MT OJT	43,950
49-9062	Medical Equipment Repairers	258	84	4	None	MT OJT	50,232
49-9063	Musical Instrument Repairers and Tuners	30	9	7	None	APP	N/A
49-9069	Precision Instrument and Equipment Repairers, All Other	54	28	7	None	LT OJT	68,453
49-9071	Maintenance and Repair Workers, General	5,998	2,682	7	None	LT OJT	40,352
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	120	43	7	None	ST OJT	35,506
49-9094	Locksmiths and Safe Repairers	164	63	7	None	LT OJT	46,821
49-9096	Riggers	91	32	7	None	ST OJT	60,008
49-9097	Signal and Track Switch Repairers	1	1	5	None	MT OJT	N/A
49-9098	Helpers--Installation, Maintenance, and Repair Workers	712	280	7	None	MT OJT	29,370
49-9099	Installation, Maintenance, and Repair Workers, All Other	639	259	7	None	MT OJT	32,531
51-1011	First-Line Supervisors of Production and Operating Workers	1,695	548	5	<5 years	None	52,707
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	126	20	7	None	MT OJT	46,862
51-2021	Coil Winders, Tapers, and Finishers	21	5	7	None	ST OJT	23,566
51-2022	Electrical and Electronic Equipment Assemblers	629	191	7	None	ST OJT	27,206
51-2023	Electromechanical Equipment Assemblers	98	27	7	None	ST OJT	27,394
51-2031	Engine and Other Machine Assemblers	15	5	7	None	ST OJT	36,234
51-2041	Structural Metal Fabricators and Filers	462	112	7	None	MT OJT	37,003
51-2091	Fiberglass Laminators and Fabricators	47	8	7	None	MT OJT	30,098
51-2092	Team Assemblers	4,285	1,218	7	None	MT OJT	24,752
51-2099	Assemblers and Fabricators, All Other	1,167	382	7	None	MT OJT	28,101

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Educ-ation	Work Exp		
51-3011	Bakers	867	291	8	None	LT OJT	23,733
51-3021	Butchers and Meat Cutters	685	245	8	None	LT OJT	25,043
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	600	172	8	None	ST OJT	20,467
51-3023	Slaughterers and Meat Packers	35	10	8	None	MT OJT	24,773
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and	78	22	8	None	MT OJT	25,230
51-3092	Food Batchmakers	607	170	7	None	MT OJT	22,256
51-3093	Food Cooking Machine Operators and Tenders	160	46	7	None	MT OJT	24,066
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	556	115	7	None	MT OJT	37,024
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and	98	23	7	None	LT OJT	61,318
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal	168	33	7	None	MT OJT	27,934
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	61	14	7	None	MT OJT	33,883
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	80	14	7	None	MT OJT	28,662
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders,	421	116	7	None	MT OJT	26,645
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal	42	9	7	None	MT OJT	27,643
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters,	207	43	7	None	MT OJT	29,203
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal	111	24	7	None	MT OJT	36,920
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and	58	12	7	None	MT OJT	40,539
51-4041	Machinists	1,429	382	7	None	LT OJT	34,674
51-4051	Metal-Refining Furnace Operators and Tenders	35	4	7	None	MT OJT	40,934
51-4052	Pourers and Casters, Metal	14	1	7	None	MT OJT	26,166
51-4071	Foundry Mold and Coremakers	17	2	7	None	MT OJT	33,862
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and	252	58	7	None	MT OJT	24,128
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	279	61	7	None	MT OJT	40,768
51-4111	Tool and Die Makers	85	18	7	None	LT OJT	52,790
51-4121	Welders, Cutters, Solderers, and Brazers	1,506	403	7	None	MT OJT	36,296
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	199	40	7	None	MT OJT	28,600
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and	57	12	7	None	MT OJT	34,944
51-4192	Layout Workers, Metal and Plastic	40	10	7	None	MT OJT	38,501
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and	108	27	7	None	MT OJT	30,805
51-4199	Metal Workers and Plastic Workers, All Other	88	30	7	None	MT OJT	35,360
51-5111	Prepress Technicians and Workers	168	54	5	None	None	41,933
51-5112	Printing Press Operators	654	215	7	None	MT OJT	34,653
51-5113	Print Binding and Finishing Workers	207	66	7	None	ST OJT	27,539
51-6011	Laundry and Dry-Cleaning Workers	1,691	692	8	None	ST OJT	21,174
51-6021	Pressers, Textile, Garment, and Related Materials	326	133	8	None	ST OJT	21,133
51-6031	Sewing Machine Operators	792	312	8	None	ST OJT	19,240
51-6041	Shoe and Leather Workers and Repairers	38	9	7	None	MT OJT	23,192
51-6042	Shoe Machine Operators and Tenders	27	6	7	None	MT OJT	N/A
51-6051	Sewers, Hand	38	15	8	None	MT OJT	22,110
51-6052	Tailors, Dressmakers, and Custom Sewers	96	37	8	None	MT OJT	30,493
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	32	12	7	None	ST OJT	21,882
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	159	62	7	None	MT OJT	24,586
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	118	48	7	None	MT OJT	22,776
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators,	55	21	7	None	MT OJT	23,525
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders,	37	12	7	None	MT OJT	32,032
51-6092	Fabric and Apparel Patternmakers	92	37	7	None	MT OJT	47,507
51-6093	Upholsterers	202	56	7	None	MT OJT	27,810
51-6099	Textile, Apparel, and Furnishings Workers, All Other	63	24	7	None	ST OJT	19,198
51-7011	Cabinetmakers and Bench Carpenters	363	100	7	None	MT OJT	36,046
51-7021	Furniture Finishers	79	22	7	None	ST OJT	26,936
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	136	35	7	None	ST OJT	31,034

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Education	Work Exp		
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	143	38	7	None	ST OJT	27,102
51-7099	Woodworkers, All Other	31	9	7	None	MT OJT	20,114
51-8012	Power Distributors and Dispatchers	39	20	7	None	LT OJT	103,334
51-8013	Power Plant Operators	124	49	7	None	LT OJT	85,384
51-8021	Stationary Engineers and Boiler Operators	149	76	7	None	LT OJT	71,448
51-8031	Water and Wastewater Treatment Plant and System Operators	324	534	7	None	LT OJT	78,582
51-8091	Chemical Plant and System Operators	208	85	7	None	LT OJT	57,990
51-8092	Gas Plant Operators	54	14	7	None	LT OJT	73,278
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	236	76	7	None	LT OJT	77,043
51-8099	Plant and System Operators, All Other	12	4	7	None	LT OJT	59,259
51-9011	Chemical Equipment Operators and Tenders	349	136	7	None	MT OJT	39,978
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Crushing, Grinding, and Polishing Machine Setters, Operators, and	212	74	7	None	MT OJT	45,802
51-9021	Grinding and Polishing Workers, Hand	100	30	7	None	MT OJT	31,741
51-9022	Mixing and Blending Machine Setters, Operators, and Tenders	121	28	8	None	MT OJT	23,317
51-9023	Cutters and Trimmers, Hand	506	177	7	None	MT OJT	28,163
51-9031	Cutting and Slicing Machine Setters, Operators, and Tenders	38	10	8	None	ST OJT	25,043
51-9032	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	173	45	7	None	ST OJT	28,392
51-9041	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	222	60	7	None	MT OJT	27,747
51-9051	Inspectors, Testers, Sorters, Samplers, and Weighers	54	13	7	None	MT OJT	43,701
51-9061	Jewelers and Precious Stone and Metal Workers	2,292	732	7	None	MT OJT	36,941
51-9071	Dental Laboratory Technicians	82	27	7	None	LT OJT	35,443
51-9081	Medical Appliance Technicians	201	72	7	None	MT OJT	38,418
51-9082	Ophthalmic Laboratory Technicians	78	26	7	None	LT OJT	37,606
51-9083	Packaging and Filling Machine Operators and Tenders	165	56	7	None	MT OJT	31,866
51-9111	Coating, Painting, and Spraying Machine Setters, Operators, and	2,000	665	7	None	MT OJT	23,192
51-9121	Painters, Transportation Equipment	248	61	7	None	MT OJT	27,435
51-9122	Painting, Coating, and Decorating Workers	223	64	7	None	MT OJT	39,478
51-9123	Semiconductor Processors	68	22	8	None	MT OJT	33,904
51-9141	Photographic Process Workers and Processing Machine Operators	120	35	4	None	MT OJT	31,699
51-9151	Adhesive Bonding Machine Operators and Tenders	237	83	7	None	ST OJT	35,776
51-9191	Cleaning, Washing, and Metal Pickling Equipment Operators and	56	11	7	None	MT OJT	26,790
51-9192	Cooling and Freezing Equipment Operators and Tenders	55	14	8	None	MT OJT	27,997
51-9193	Etchers and Engravers	27	7	7	None	MT OJT	26,936
51-9194	Molders, Shapers, and Casters, Except Metal and Plastic	28	9	7	None	MT OJT	38,189
51-9195	Paper Goods Machine Setters, Operators, and Tenders	130	40	7	None	LT OJT	26,187
51-9196	Tire Builders	105	19	7	None	MT OJT	29,286
51-9197	Helpers--Production Workers	9	2	7	None	MT OJT	N/A
51-9198	Production Workers, All Other	2,032	658	8	None	ST OJT	21,944
51-9199	Production Workers, All Other	1,494	497	7	None	MT OJT	24,586
53-1011	Aircraft Cargo Handling Supervisors	34	20	7	<5 years	None	51,043
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	928	302	7	<5 years	None	46,384
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine	1,042	398	7	<5 years	None	60,861
53-2011	Airline Pilots, Copilots, and Flight Engineers	539	460	3	<5 years	MT OJT	N/A
53-2012	Commercial Pilots	124	47	7	None	MT OJT	N/A
53-2021	Air Traffic Controllers	93	161	4	None	LT OJT	N/A
53-2022	Airfield Operations Specialists	37	39	7	None	LT OJT	60,362
53-2031	Flight Attendants	0	0	7	<5 years	MT OJT	N/A
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical	63	23	7	None	MT OJT	26,395
53-3021	Bus Drivers, Transit and Intercity	407	366	7	None	MT OJT	40,435
53-3022	Bus Drivers, School or Special Client	1,395	691	7	None	ST OJT	31,242
53-3031	Driver/Sales Workers	2,239	817	7	None	ST OJT	25,168

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

Exhibit A-5 (cont'd)

Projected Occupational Openings 2015-2020 with Job Requirements

SOC Code	Occupational Title	LA County	LA City	Entry Level		On-the-Job Training to Attain Competency	Median Annual Wage
				Educ-ation	Work Exp		
53-3032	Heavy and Tractor-Trailer Truck Drivers	5,373	1,523	5	None	ST OJT	40,165
53-3033	Light Truck or Delivery Services Drivers	3,298	1,223	7	None	ST OJT	28,787
53-3041	Taxi Drivers and Chauffeurs	787	309	8	None	ST OJT	26,083
53-3099	Motor Vehicle Operators, All Other	326	146	7	None	ST OJT	58,011
53-4011	Locomotive Engineers	9	3	7	<5 years	MT OJT	N/A
53-4031	Railroad Conductors and Yardmasters	12	16	7	None	MT OJT	N/A
53-4041	Subway and Streetcar Operators	2	4	7	None	MT OJT	48,693
53-4099	Rail Transportation Workers, All Other	6	5	7	None	MT OJT	36,858
53-5011	Sailors and Marine Oilers	38	13	5	None	ST OJT	37,482
53-5021	Captains, Mates, and Pilots of Water Vessels	370	127	3	None	None	65,728
53-5022	Motorboat Operators	5	2	7	None	MT OJT	N/A
53-5031	Ship Engineers	12	4	5	None	ST OJT	64,314
53-6011	Bridge and Lock Tenders	1	1	7	None	MT OJT	N/A
53-6021	Parking Lot Attendants	1,634	668	8	None	ST OJT	20,550
53-6031	Automotive and Watercraft Service Attendants	525	177	8	None	ST OJT	27,643
53-6041	Traffic Technicians	6	4	8	None	ST OJT	65,998
53-6051	Transportation Inspectors	104	94	7	None	MT OJT	73,944
53-6061	Transportation Attendants, Except Flight Attendants	54	22	7	None	ST OJT	28,392
53-6099	Transportation Workers, All Other	406	223	7	None	ST OJT	38,480
53-7011	Conveyor Operators and Tenders	162	50	8	None	ST OJT	31,450
53-7021	Crane and Tower Operators	79	24	5	None	ST OJT	83,782
53-7032	Excavating and Loading Machine and Dragline Operators	102	32	7	<5 years	MT OJT	43,139
53-7041	Hoist and Winch Operators	3	1	8	None	ST OJT	N/A
53-7051	Industrial Truck and Tractor Operators	2,555	762	8	None	ST OJT	39,437
53-7061	Cleaners of Vehicles and Equipment	1,852	602	8	None	ST OJT	20,758
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	16,353	5,620	8	None	ST OJT	24,294
53-7063	Machine Feeders and Offbearers	88	25	8	None	ST OJT	22,734
53-7064	Packers and Packagers, Hand	4,593	1,541	8	None	ST OJT	19,947
53-7072	Pump Operators, Except Wellhead Pumpers	12	4	8	None	ST OJT	43,493
53-7073	Wellhead Pumpers	4	1	8	None	ST OJT	71,469
53-7081	Refuse and Recyclable Material Collectors	654	276	8	None	ST OJT	45,760
53-7121	Tank Car, Truck, and Ship Loaders	18	5	8	None	ST OJT	58,635
53-7199	Material Moving Workers, All Other	101	42	8	None	ST OJT	53,165

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



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