Title
Trends in California's Jobs

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Publication Date
2001-05-01

Revised May 2001

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by

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Summary

Employment and the journey to work have long been a focus of transportation study. Although today, the work trip accounts for a much smaller share of total trips than it did a few decades ago, there are several reasons why this subject deserves our continued attention:

- First, the journey to work is of critical economic importance, for both households and businesses. If the journey is costly or unreliable, it has the effect of "shrinking" the job market for workers and the labor market for employers.

- Second, the concentration of the majority of work trips into a few hours in the morning and evening means that work trips are heavy consumers of transportation capacity. Capacity provided to ease the work trip often goes underutilized for most of the day. Where capacity is tight, however, work trips experience costly delays – the situation on many transportation corridors leading to major employment centers. This is a political, social, economic, and environmental problem.

- Third, the work trip tends to be a long trip - averaging 10-11 miles in most metropolitan areas. This accentuates its impact.

- Fourth, work trips are frequently paired, or "chained", with trips for other purposes, such as child care, shopping, and personal business. The choice of mode, route, and even time of day for the trip may be affected by the traveler's need to engage in additional activities along the way to work, or before or after work, or midday.

- Finally, residential location is shaped, in part, by job location. In some sense, then, all of a household's trips are influenced by the location of work and the work trip.

In planning for the journey to work, it is important to have an understanding of the anticipated growth in jobs in the coming years. Both the location of job growth and the types of jobs are important; the geographical distribution of jobs will affect transport needs, and different industries and occupations are associated with different land use patterns and transportation behaviors.

This paper presents a review and analysis of California's job trends. The major trends found through the study include:

1. Among all industries, services is the fastest growing sector and is expected to account for one job in three by 2008. Business services is in turn the fastest growing part of the service sector.

2. There will be a substantial increase in low-pay jobs (<$30,000 per year) as well as in relatively high-pay jobs. Among the 10 occupations with greatest absolute growth during 1998-2008, 5 are low-pay occupations with mean annual wages in 1998 below $30,000, some even below $20,000.

3. Employment growth continues to be heavily concentrated in the South Coast and San Francisco Bay Area. The six MSAs in these two areas accounted for three quarters of the State's total job growth during 1993-1998.

4. Much, but not all, of the growth in the traditional large metropolitan areas is occurring in outlying parts of the region, especially for the South Coast and Bay Area, where job growth is strong in Alameda, Contra Costa, Orange, and Riverside counties..

5. In the Sacramento metropolitan area and San Diego metropolitan area, most of the job growth is projected to concentrate in the traditional center of each region. In the six-county Sacramento region, 53% of total job growth during 2000-2020 is projected to occur in Sacramento County, and a large portion of the rest in the parts contagious to this county in Placer and Yolo counties. Similarly in the San Diego region, the City of San Diego alone accounts for 47% of projected job growth in the whole region during 1995-2020.

6. While growth in the two largest metro areas is outstripping the growth in the Central Valley, the percent change in the Valley is large and dramatic. A 70-80% job growth rate is commonly projected for the 2000-2020 period at the county level, and often 100-300% at the city or town level.

The possible effects of these trends on transportation include:

1. With jobs increasingly concentrated in service industries, work hours become more flexible and may vary from day to day and job to job; just-in-time deliveries and travel for appointments may increase. As a consequence, we expect to see a continuing "spread" and/or flattening of peak hours.

2. Increase in low-pay jobs in retail and some services industries suggests a sustaining demand for appropriate public transit services, since low-income employees are more likely to use transit than high-income employees.

3. With job growth in already-high-density established areas, transportation planners will have to contend with serving travel in areas where adding new capacity is likely to be expensive and difficult, and with managing increasing demand for existing facilities.

4. Traditional metropolitan areas are expanding rapidly through "economic annexation" or "economic integration". The diffusion of Silicon Valley is a perfect illustration of this trend. The spread-out of jobs in a larger area combined with job-housing imbalance and/or mismatch, which is not seldom the case, means more suburban-to-suburban trips and longer commute distance. With a multi-center structure becoming clearer in each region, new transportation corridors may emerge and as a result a relatively uniform radial traffic flow might be replaced by a more irregular intra-region travel pattern.

5. The Sacramento metropolitan area and San Diego metropolitan area are very likely to be experiencing what the South Coast and Bay Area experienced 10-20 years ago.

Increasingly serious congestion will be expected in the corridors leading to the urban employment centers in these regions if no preventive measures are taken.

6. Job growth in the Valley is expected to be more moderate, but because the change is significant, the need for new facilities and services is likely to be strong there, too. Major infrastructure improvements may be necessary to meet this doubling or even tripling travel demand. Considering the relatively vulnerable environmental and ecological context, however, cautions should be taken to address the by-no-means marginal impact of transportation improvement projects in this area.

Finally, the policy and planning implications of the above trends and effects are summarized as below:

1. Increase, improvement, and adjustment in public transit services are needed in most urban and some suburban employment centers.

2. More innovative traffic system management (TSM) strategies and adoption of frontier technologies (e.g., intelligent transportation system) may become desirable or even necessary in the densest urban areas.

3. Transportation planning activities should be closely integrated with land use planning in order to achieve higher degree of job-housing balance.

4. Efforts should be directed toward facilitating smooth traffic circulation inside suburban areas around urban centers, not just between urban and suburban.

5. Early planning actions are recommended in the Sacramento and San Diego metropolitan areas to avoid similar congestion problems experienced in the Los Angeles and Bay Area regions.

6. Special caution or appropriate legislation may be needed in dealing with the unique context in Central Valley area.

This is one of a series of papers; other papers cover changing demographics, changes in household composition and lifestyle, trends in housing (the state's major urban land use), and trends in information and transportation technologies. Together the papers are intended to offer insights for the State's transportation plan making.

Study Approach

This study examines employment by industry and occupation data (both historical and projected) from California Employment Development Department. The industry data is used to compare California employment trends to those of the United States as a whole, providing some insight on California's position in relation to national employment. Next, industry and occupation trends for the State as a whole are examined in more detail. Finally, data were analyzed at the metropolitan statistical area (MSA) level, again looking at both industry and occupation. The

following sections present the analyses for each of these topics and then comment on their implications for transportation planning.

Employment Composition and Growth: California – US Comparisons

California holds roughly one tenth of the nation's jobs, a slightly higher share than its population share. With economic ties throughout the nation and world, trends in California employment clearly reflect national and international economic upturns and downturns. The state does not, however, perfectly track US economic performance and employment trends. For example, consider the three five year periods 1983-1987, 1988-1992, and 1993-1998 (Table 1.) California did better than the nation as a whole during the first 5-year period, experienced a worse recession than the rest of the nation in the next 5 years, and slightly out-performed the nation during the most recent 5-year period.

Location quotients are ratios that measure of the relative concentration of an industry in a particular region compared to a reference economy. A *location quotient* of approximately one indicates that the local share is roughly equivalent to the share in the economy as a whole. A ratio larger than one indicates the industry is most likely an "export" industry, producing more than the local economy needs. Finally, a ratio of less than one suggests that an industry accounts disproportionately small share of the local economy and hence the region may "import" its products.

These *location quotients* for California as a whole are presented in Table 1. As of 1998, according to this measure, ***agriculture, forestry, and fishing were export industries*** for the State, while ***mining and construction were import industries***. Manufacturing as a whole had a location quotient of 1.0, but the ***some manufacturing sectors*** such as ***electronic and other electric equipment, instruments and related products, apparel and other textile products, and petroleum and coal products were export industries***. In the wholesale trade, retail trade, and finance, insurance, and real estate, sectors California was similar to the rest of the country.

As a sector Transportation and Public Utilities presents a complex picture. As a broad category it mirrored the national average but among more specific categories, the situation was quite varied. Location quotients show California to be relatively weak in railroad transportation, local and interurban passenger transit, and trucking and warehousing. However, the state had significantly larger employment shares in the water transportation and air transportation sectors. Services, a major employment sector in the State also displays a complex pattern. As with transportation and manufacturing, the location quotient for the broad sector was 1.0 while specific service sector industries showed diversity. Motion pictures, not surprisingly stood out with a quite large location quotient of 3.1. It was followed by business services with 1.2. Government as a whole was below the national average in spite of the fact that state and local government was a bit above average, 1.1.

In short, from an employment standpoint, the state economy looks much like the national economy. The few notable exceptions are agriculture, where the state employs almost twice the national average and a few specialized manufacturing and service sector categories. This reflects the diversity of the State economy. Most states would show much more variation when

compared to national averages. However, the size of the State economy, the sixth largest in the world, seem to facilitate a broad based economy.

Table 1: Job Growth - A Comparison between California and US

	US Growth Rate – California Growth Rate			*Location Quotient*
Industry Title	***83-88***	***88-93***	***93-98***	***1998***
Total, all industries	**4%**	**-4%**	**1%**	**1.0**
Agriculture, forestry, and fishing	**8%**	**-2%**	**-4%**	**1.8**
Mining	**4%**	**8%**	**-24%**	**0.4**
Construction	**14%**	**-7%**	**7%**	**0.9**
Manufacturing*	**4%**	**-7%**	**4%**	**1.0**
Electronic and other electric equipment	*-15%*	*-6%*	*15%*	*1.5*
Instruments and related products	*88%*	*-10%*	*1%*	*2.0*
Apparel and other textile products	*27%*	*20%*	*33%*	*1.9*
Petroleum and coal products	*4%*	*-11%*	*-4%*	*1.4*
Transportation and public utilities	**0%**	**-2%**	**0%**	**1.0**
Railroad transportation	*0%*	*2%*	*-4%*	*0.6*
Local and interurban passenger transit	*na*	*na*	*7%*	*0.9*
Trucking and warehousing	*19%*	*0%*	*-17%*	*0.9*
Water transportation	*na*	*-9%*	*12%*	*1.1*
Transportation by air	*na*	*-7%*	*24%*	*1.1*
Wholesale trade	**8%**	**-5%**	**2%**	**1.1**
Retail trade	**2%**	**-5%**	**-3%**	**1.0**
Finance, insurance, and real estate	**-3%**	**2%**	**-9%**	**1.0**
Services	**5%**	**-6%**	**1%**	**1.0**
Hotels and other lodging places	*15%*	*-5%*	*-6%*	*1.0*
Personal services	*-1%*	*-6%*	*-4%*	*0.8*
Business services	*-5%*	*-9%*	*2%*	*1.2*
Auto & Misc. Repair Services	*-10%*	*-5%*	*-5%*	*1.1*
Motion pictures	*-36%*	*14%*	*5%*	*3.1*
Amusement and recreation services	*7%*	*-5%*	*-8%*	*1.1*
Health services	*-1%*	*-8%*	*-4%*	*0.8*
Legal services	*na*	*na*	*-11%*	*1.0*
Educational services	*na*	*-14%*	*7%*	*0.9*
Government	**3%**	**3%**	**2%**	**0.9**
Federal	*2%*	*3%*	*-7%*	*0.5*
State and local	*3%*	*0%*	*2%*	*1.1*

US Data Source: "GDP by Industry" Data, U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division -- June 1999
California Data Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

California Employment Composition Trends and Forecasts

Table 2 presents data on California employment growth rates by industry sector for the 1983-99 period and presents forecasts for the same sectors for 2000-2008. The table shows that among the major industry divisions, *services* are not only the biggest employer in today's California, but also the sector that experienced the greatest growth during 1983-1999 (87.5%). Other important

employment sectors include *trade*, *manufacturing*, and *government*, but none increased its share of the California job market in the '80s and '90s. In fact, all industry divisions except *services* and *construction* experienced a decrease in employment shares in the16 year reporting period.

For the 1999-2008 forecast period, job growth in *services* is projected to again be the fastest, with a growth rate of 31.7%. *Manufacturing* is projected to turn around and increase by 14.6%, leaving *mining* the only declining industry division. *Construction* seems to be losing its momentum, with a forecast that it will experience only 3.8% growth. Other divisions basically will continue their stable growth during the last two decades.

Table 2: Job Growth Rate by Major Industry Sector

Industry	*% Change 83-99*	*% Change 99-2008*
Mining	-50.3	-11.0
Construction	85.1	3.8
Manufacturing	-0.2	14.6
Transportation & Public Utilities	35.2	14.1
Trade	37.0	16.6
Finance, Insurance & Real Estate	25.7	17.3
Services	87.5	31.7
Government	29.6	15.9

Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

Figures 1 through 3 show California employment by major industry sectors for 1983, 1999, and 2008 (projected). In1983, *services*, *trade*, *manufacturing*, and *government* were the 4 biggest employers, which combined accounted for more than 4/5 of the state's total employment. *Manufacturing* had a share of nearly 1/5. By 1999, the "Big 4" combined still held almost the same share as they did in 1983, but the relative shares among them had shifted substantially. *Services* stood out as a growth industry, with a share of 31.3%, up from 23.5% in the previous period. *Manufacturing* dropped dramatically to only 13.8%. *Trade* and *government* each declined slightly. The projection to 2008 seems to be continuing the trend, though with much less change. Those industries that have been increasing continue to increase, and those that have been decreasing continue to decrease, with the exception of *construction* which gained share during 1983-1999 but is projected to lose share during 1999-2008.

Figure 1: California Employment by Major Industry Sector (1983)

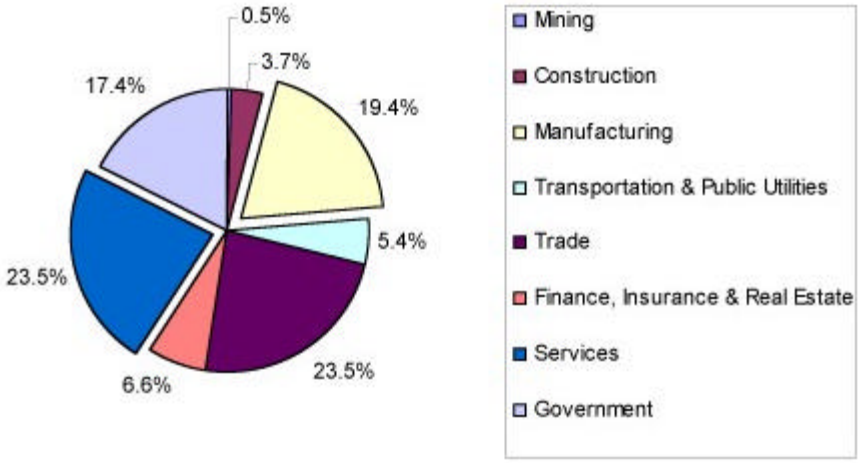


Figure 2: California Employment by Major Industry Sector (1999)

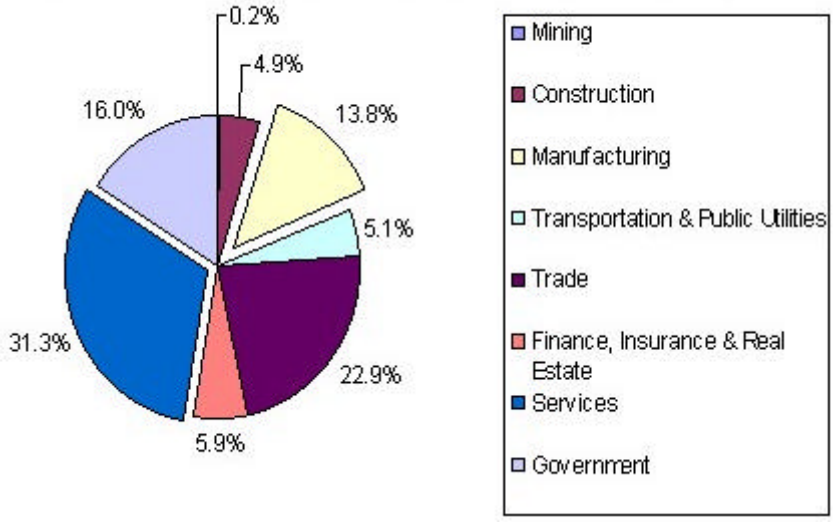
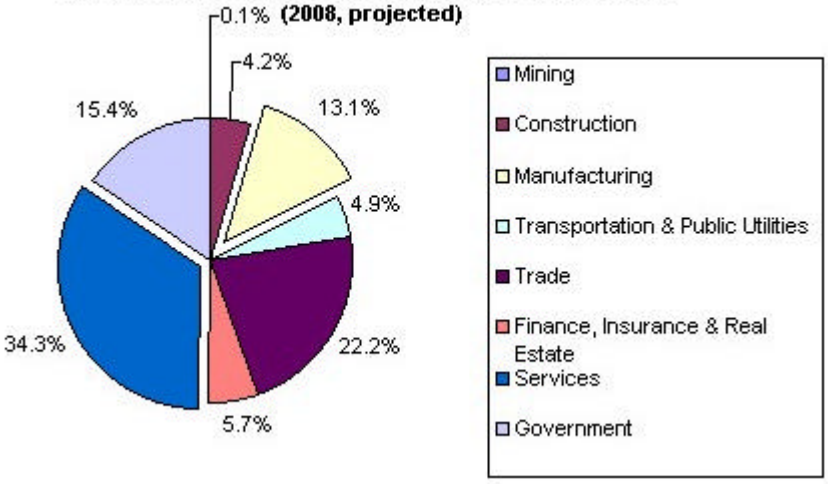


Figure 3: California Employment by Major Industry Sector



While growth rates are informative, it also is important to look at total numbers of jobs added or lost in each industry. Absolute growth (or decline, in the case of *mining* and *manufacturing*), for the period 1983-1999 is shown in Table 3, along with projections of absolute changes for the 1999-2008 period. When it comes to absolute change, the *services* sector stands out even more: it accounted for roughly half of the job growth in California over the 1983-1999 period, and is projected to continue this trend in the coming decade. *Services*, *Trade*, and *Government* combined account for 4/5 of the total job growth. Figures 4 and 5 illustrate the growth shares of each industry group for the two time periods.

Table 3: Absolute Job Growth by Major Industry Sector

Industry	*Absolute change 83-99*	*Absolute change 99-2008*
Mining	-24,000	-2,600
Construction	312,300	25,900
Manufacturing	-4,200	281,100
Transportation & Public Utilities	187,000	101,300
Trade	861,900	529,300
Finance, Insurance & Real Estate	167,700	141,900
Services	2,043,500	1,385,900
Government	510,300	355,500
Total	**4,054,500**	**2,818,300**

Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

Figure 4: California Employment Growth by Major Industry Divisions (1983-1999)

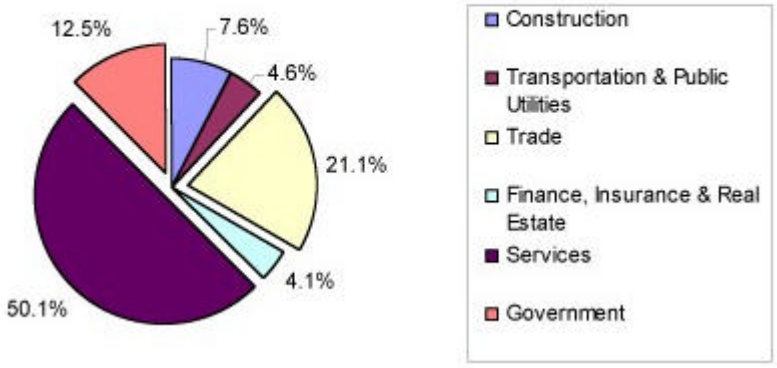
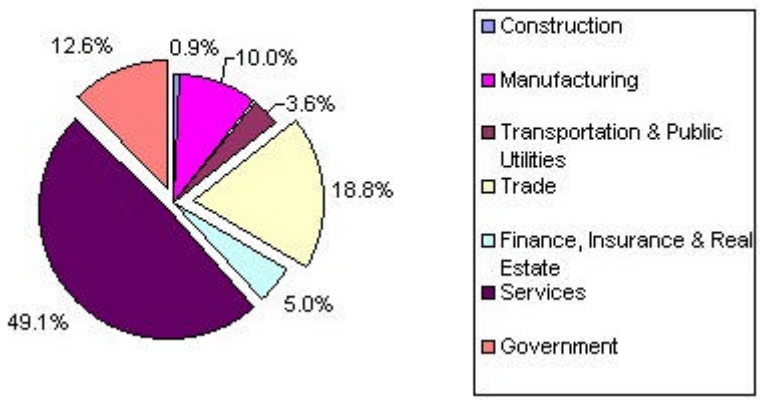


Figure 5: California Employment Growth by Major Industry Divisions (1999-2008, projected)



Figures 6 and 7 both picture job growth, with Figure 6 showing the change in absolute numbers and Figure 7 showing percentage changes. Figure 6 shows that *services* industries accounted for the largest share of total job growth, while Figure 7 shows that *construction* actually saw the greatest percentage increase as a contributor to the job market. However, as the absolute numbers in Figure 6 make clear, the job growth in *construction* was actually very limited; its high percentage change is on a small base. Nevertheless, it is important to watch industries that show a high percent growth rate, because such industries may generate large absolute growth in the long term.

Figure 6: Absolute Job Growth by Sector over 5 Year Periods

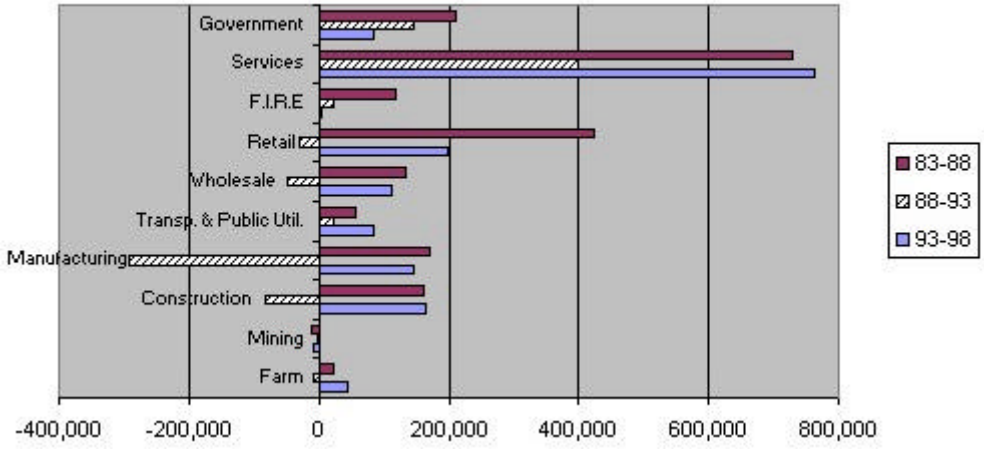
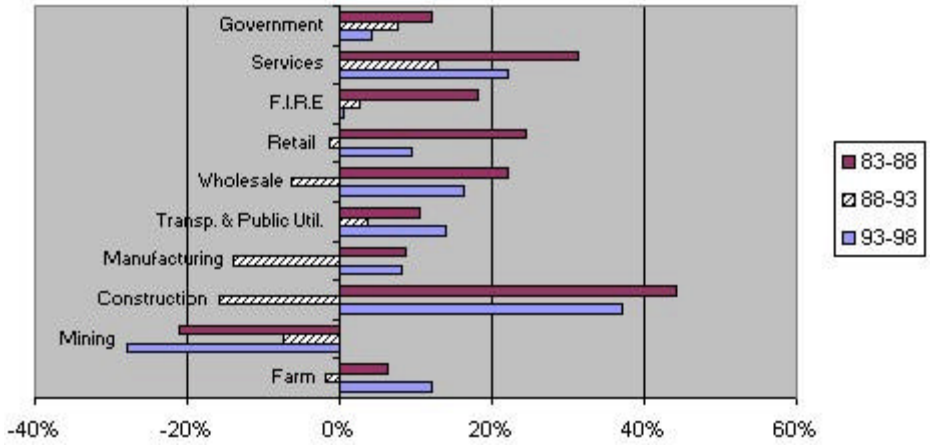


Figure 7: Job Growth Rate by Sector over 5 Year Periods



We turn next to composition of the service industries. Figure 8 shows composition of service jobs in 1998, expressed as shares; Table 4 shows growth rates 1983-99 (1992-99 for industries listed in italics) as well as projections for the ten-year period1999-2008.
Among various services industries, *health services* and *business services* are the two biggest employers in California. While *health services* increased by 50.5% during 1983-1999, *business services* employment more than doubled in that same period (an increase of 135.05%). Projections are for business services to continue its leadership in growth rate during the next decade.

Figure 8: Composition of Services Jobs in 1998

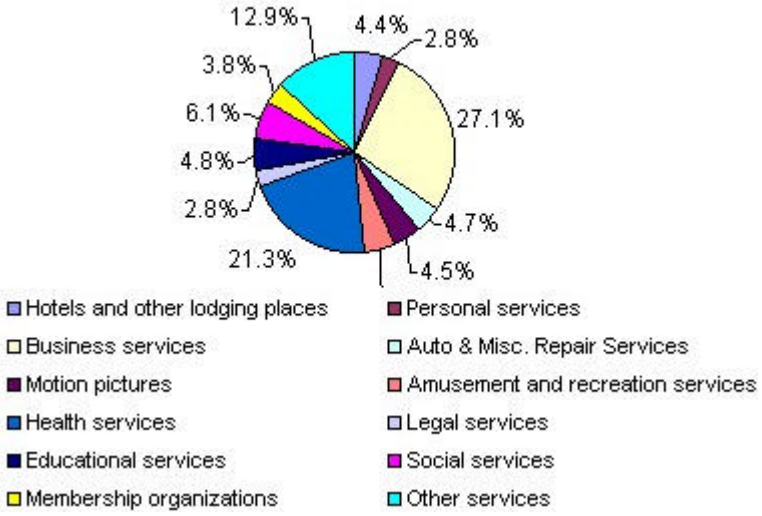


Table 4: Job Growth Rates in Services Industries

Industry	*% Change 83-99**	*% Change 99-2008*
Hotels & Other Lodging Places	56.0	18.2
Personal Services	16.7	13.7
Business Services	135.1	45.5
Motion Pictures	143.5	19.5

Amusement & Recreation Serv.	99.9	21.2
Health Services	50.5	33.7
Other Services	132.1	25.5
Auto & Misc. Repair Services	*16.4*	*17.2*
Legal Services	*-6.7*	*22.4*
Private Educational Services	*21.1*	*26.1*
Social Services	*36.0*	*25.1*
Museums, Bot., Zoological Gardens	*59.2*	*30.1*
Membership Organizations	*13.7*	*17.6*
Engineering & Management	*12.7*	*32.9*
Miscellaneous Services	*4.8*	*43.9*
Agricultural Services	*45.9*	*24.6*

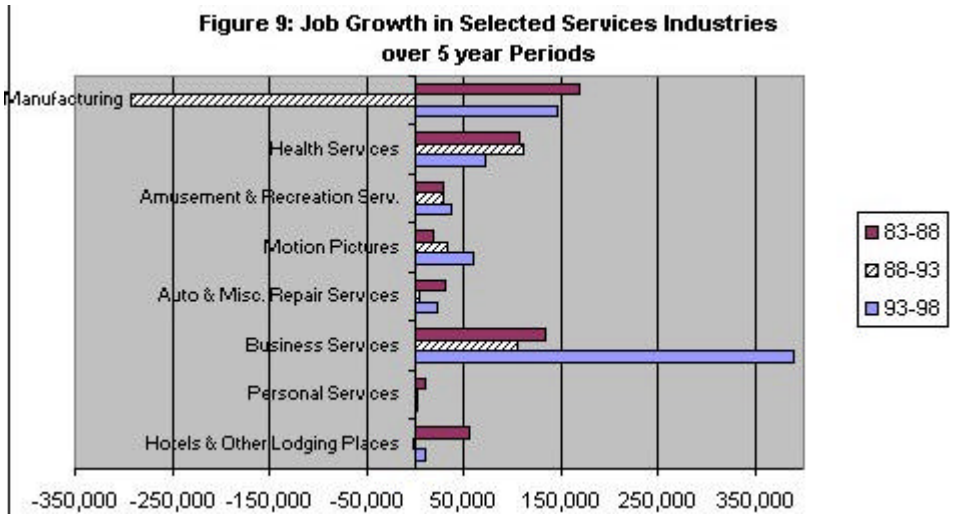
*For industries in italic font, the percent change is for 92-99 instead of 83-99

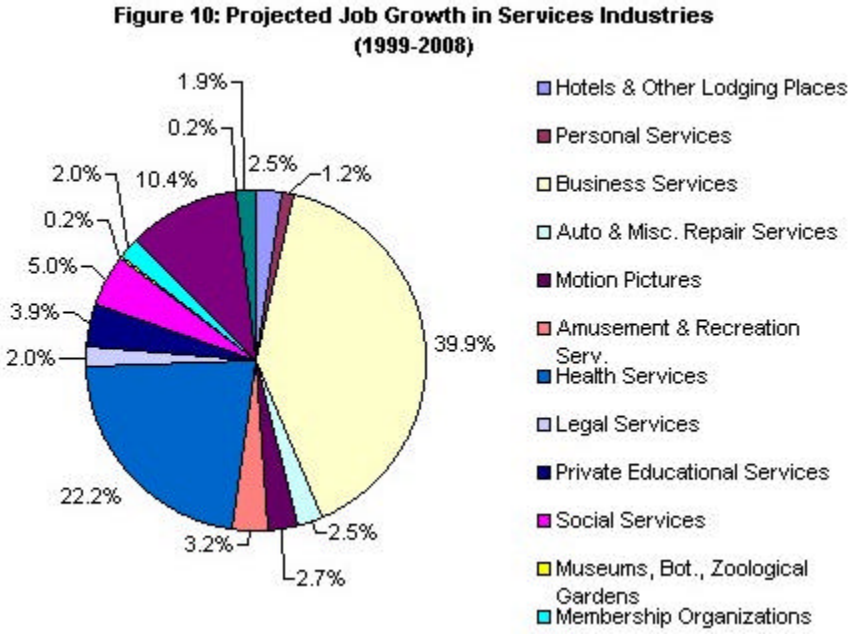
Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

Figure 9 shows absolute changes in employment in the service sector industrial groups, with *manufacturing* included for comparison purposes. Note that in 1983-1988, when *manufacturing* was still a dominant industry in terms of employment, it added more jobs than any of the services industries. However, in the following 5 years of recession and cutbacks in military procurement (then a major element in California manufacturing), *manufacturing* suffered a dramatic job loss. Growth in the last period shown was solid but not sufficient to counter these earlier losses. In comparison, *business services* has experienced growth in each period. However, what really distinguished *business services* from *manufacturing* or from other services was its amazing performance during the last 5-year period (1993-1998), when it apparently took off in the burgeoning "new economy". During 1993-1998, job growth in *business services* alone was more than twice that in *manufacturing*.

Motion pictures was the fastest-growing employer during 1983-1999, but its share of the whole services industry was still fairly small in 1999 (4.4%). Other services, composed of *legal services*, *private educational services*, *engineering and management* and so forth, holds a large share in the whole services industry and enjoyed a 132.1% increase in its jobs during that period, but its share seems to be decreasing slightly.

It is projected that *business services* will continue to prosper during the next decade. Figure 10 shows that *business services* are expected to account for nearly 40% of all job growth in the services sector, followed by *health services* (22.2%) and *engineering and management* (10.4%). These three combined are expected to account for over 70% of all job additions.





MSAs

Data on job growth in selected California MSAs are shown in Table 5, which presents both absolute and percentage growth for 1983-88, 1988-93, and 1993- 98. Data on the MSAs' share of the state's total growth are also shown, for the 1983-88 and 1993-98 periods. Note that the listed MSAs account for three-quarters of the state's total growth. Furthermore, most of the job growth has occurred in the two state's major metropolitan areas, with the South Coast alone—the Los Angeles, Orange, and Riverside MSAs—accounting for 46.6% of the growth 1983-88 and 35.5% of the growth 1993-98. The three major Bay Area MSAs, Oakland, San Francisco, and San Jose, together accounted for an additional14.3 percent of the state's total job growth in 1983-88 and 22.2% of the total growth in 1993-98. (Vallejo and Santa Rosa, two smaller MSAs, are also part of the Bay Area and together added another 2.7% to the Bay Area's share of the state job growth in the 1983-88 period, 3% in 1993-1998.)

Table 5: Total Job Growth by MSA

MSA	*Absolute Growth*			*Percent Growth*			*Share of State's Total Growth*	
	83-88	***88-93***	***93-98***	***83-88***	***88-93***	***93-98***	***83-88***	***93-98***
Los Angeles	497,000	-329,500	234,400	14.0%	-8.1%	6.3%	24.7%	14.7%
Oakland	145,200	37,600	102,000	20.9%	4.5%	11.6%	7.2%	6.4%
Orange	259,800	-15,400	183,100	29.6%	-1.4%	16.3%	12.9%	11.5%
Sacramento	71,100	44,400	97,400	16.1%	8.6%	17.4%	3.5%	6.1%
San Diego	225,200	44,400	158,200	32.7%	4.9%	16.5%	11.2%	9.9%
San Francisco	54,400	-14,200	103,400	6.2%	-1.5%	11.3%	2.7%	6.5%
San Jose	89,000	-6,900	159,500	12.4%	-0.9%	19.9%	4.4%	10.0%
Riverside & San Bernardino	182,000	108,200	147,900	39.1%	16.7%	19.6%	9.0%	9.3%
Santa Rosa (Sonoma)	30,600	17,000	29,800	29.9%	12.8%	19.9%	1.5%	1.9%
Stockton (San Joaquin)	29,400	7,500	18,500	22.1%	4.6%	10.9%	1.5%	1.2%
Vallejo	24,200	14,100	17,200	22.4%	10.7%	11.8%	1.2%	1.1%
Modesto (Stanilaus)	23,100	13,600	18,500	23.5%	11.2%	13.7%	1.1%	1.2%
California	**2,015,700**	**126,700**	**1,594,700**	**19.6%**	**1.0%**	**12.9%**	**100.0%**	**100.0%**

Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

A comparison between Figure 11 and Figure 12 indicates again how different "absolute growth" and "relative growth" are. Figure 11 demonstrates that the two traditional employment centers – Southern California and the Bay Area – are still enjoying substantial job growth, while other areas, including the Central Valley, are far behind when it comes to absolute job growth. The greatest job growth still occurs in the Los Angeles MSA, although losses in the '80s also were most severe there and the MSA is less dominant than it was 10 years ago. Percent change is, however, largest in outlying areas, including the outlying areas of the two largest regions.

Figure 11: Absolute Job Growth by MSA Over Five Year Periods

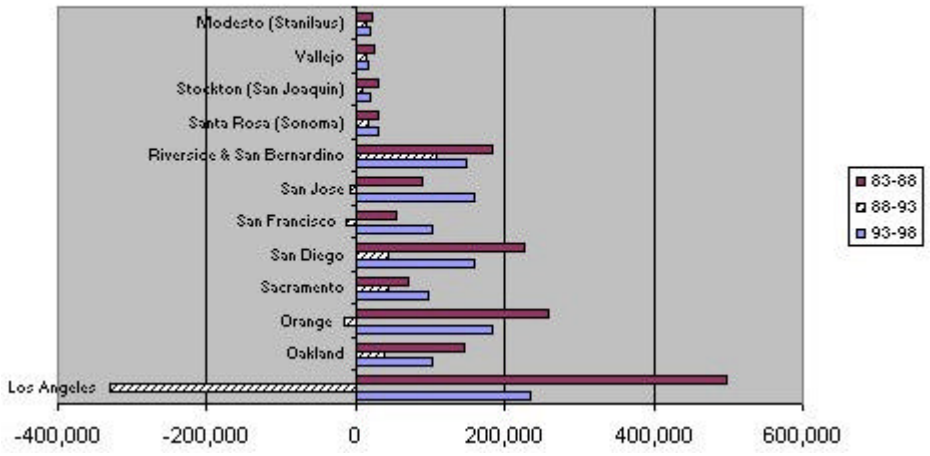
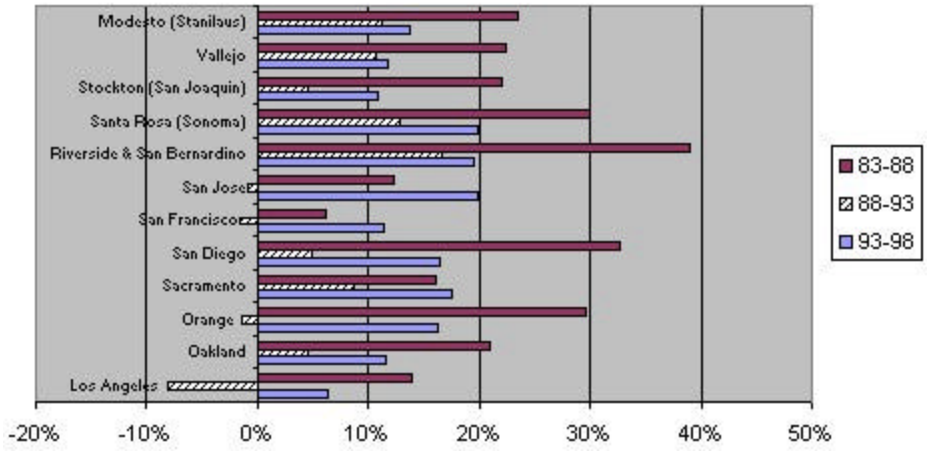


Figure 12: Job Growth Rate by MSA Over Five Year Periods



Some areas are experiencing substantial amounts of both absolute and relative job growth, namely Orange, San Jose, Riverside and San Bernardino. These areas seem to have something in common: they are all located at the edge of Los Angeles or San Francisco metropolitan areas. Sacramento and San Diego also have experienced substantial job growth but not at nearly the same magnitude as these others.

Figures 13 and 14 illustrate the shares of job growth in pie chart format. The figures again show the dominance of the traditional centers, but also reveal that growth was more "balanced" across the MSAs in the second period reported.

Figure 13: Share of State's Total Job Growth by MSA (1983-1988)

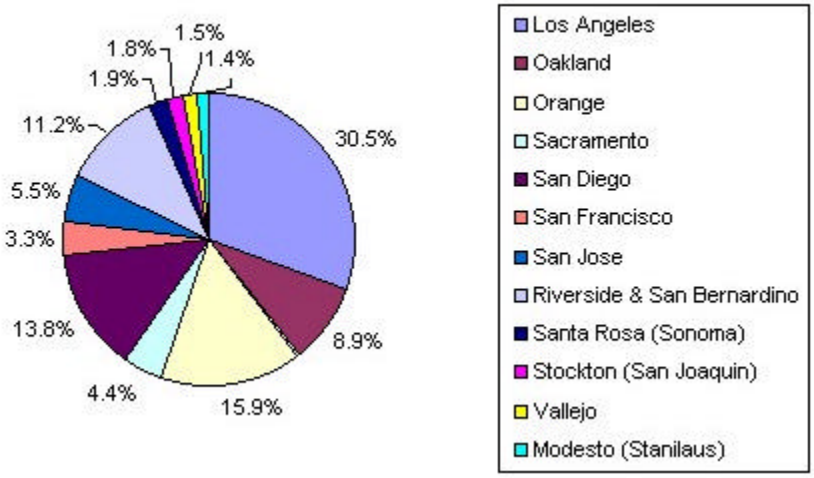
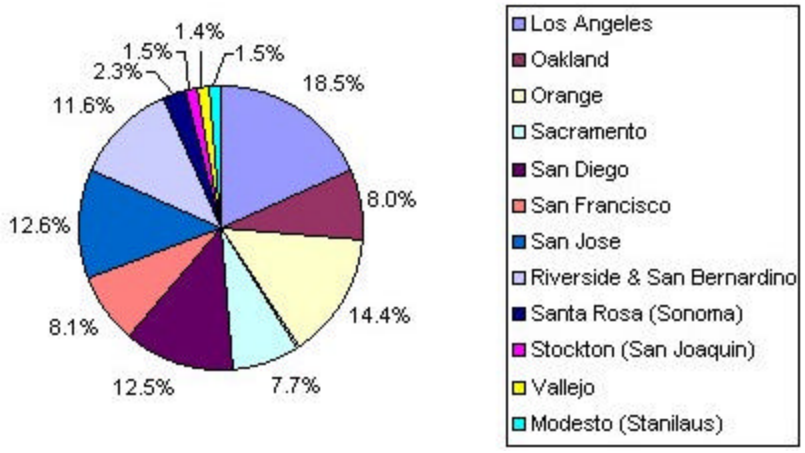


Figure 14: Share of State's Total Job Growth by MSA (1993-1998)



The most distinct difference lies in Los Angeles' share of job growth, which went from more than 30% of total in 1983-1988 to only 18.5% in the 1993-1998 period. Substantially increased shares of job growth were captured by San Jose, San Francisco and Sacramento, whose shares increased from 5.5% to 12.6%, from 3.3% to 8.1%, and from 4.4% to 7.7%, respectively.

Table 6 shows a detailed breakdown of the industry location quotients and the relative growth rates by industry in comparison with the state, for the MSAs covered here.

Table 6: Difference from State's Growth Rate and Location Quotients by MSA

	Los Angeles		*Orange*		*San Diego*		*San Francisco*	
Title	*1998**	*93-98***	*1998*	*93-98*	*1998*	*93-98*	*1998*	*93-98*
Total, All Industries	**1.0**	**-7%**	**1.0**	**3%**	**1.0**	**4%**	**1.0**	**-2%**
Farm	**0.1**	**-28%**	**0.2**	**-22%**	**0.3**	**-13%**	**0.1**	**-26%**
Mining	**0.7**	**-7%**	**0.4**	**28%**	**0.1**	**3%**	**0.3**	**11%**
Construction	**0.7**	**-16%**	**1.1**	**10%**	**1.3**	**19%**	**0.9**	**10%**
Manufacturing	**1.2**	**-8%**	**1.3**	**4%**	**0.8**	**1%**	**0.5**	**-5%**
Industrial Machinery	0.7	-19%	1.3	-24%	1.0	13%	0.4	30%
Computer & Office Equipment	*0.3*	*-45%*	*1.0*	*-34%*	*0.8*	*17%*		
Electronic Equipment	0.6	-19%	1.5	24%	1.1	4%	0.4	-26%
Transportation Equipment	1.7	-2%	1.4	25%	1.1	-18%	0.1	50%
Instruments & Related Prods.	1.1	-10%	1.7	-9%	0.9	-19%	0.4	38%
Apparel & Other Textile Prods	2.5	5%			0.4	-16%	1.3	-21%
Chemicals & Allied Products	1.2	-2%			1.0	29%	0.8	6%
Drugs	*0.7*	*-9%*						
Petroleum & Coal Products	1.2	-17%					1.0	-5%
Transportation & Public Utilities	**1.1**	**-1%**	**0.7**	**12%**	**0.8**	**18%**	**1.6**	**-9%**
Transportation	1.3	-2%	0.6	11%	0.6	9%	1.7	-18%
Local & Interurban Pass. Trans.			0.7	11%			1.3	-19%
Trucking & Warehousing	1.0	-3%	0.7	-5%	0.6	9%	0.5	-18%
Water Transportation	1.9	26%					1.6	-45%
Air Transportation	1.4	-16%	0.5	110%	0.6	34%	3.1	-36%
Trade	**1.0**	**-5%**	**1.1**	**5%**	**1.0**	**0%**	**0.9**	**-1%**
Wholesale Trade	1.2	-8%	1.3	12%	0.8	5%	0.8	-17%

Retail Trade	0.9	-4%	1.0	2%	1.1	-1%	1.0	4%
Finance, Insurance & Real Estate	**1.0**	**-9%**	**1.3**	**6%**	**1.0**	**4%**	**1.9**	**7%**
Services	**1.1**	**-9%**	**1.0**	**-1%**	**1.1**	**3%**	**1.2**	**-1%**
Hotels & Other Lodging Places	0.8	0%	1.1	9%	1.6	-8%	1.8	0%
Personal Services	1.1	-2%	1.1	8%				
Business Services	1.0	-16%	1.1	-9%	1.0	7%	1.3	-11%
Motion Pictures	2.8	2%						
Amusement & Recreation Serv.	0.9	-20%	1.7	-4%	1.4	10%	1.5	12%
Health Services	1.0	-7%	0.9	-6%	1.0	1%	0.9	5%
Private Educational Services	1.3	-6%	0.7	12%			1.3	-3%
Engineering & Management	1.0	-16%	1.1	1%	1.5	14%	1.6	7%
Government	**0.9**	**-2%**	**0.7**	**3%**	**1.1**	**4%**	**0.8**	**-9%**
Federal Government	0.7	3%	0.5	4%	2.0	17%	1.2	-2%
State & Local Government	0.9	-4%	0.7	1%	1.0	4%	0.7	-9%

**For each MSA, the first column is its location quotient against the State of California*
***For each MSA, the second column is the difference between the MSA's growth rate and the State's growth rate, i.e., (MSA's growth rate – State's growth rate)*
Source: "Employment by Industry" Data, Labor Market Information, California Employment Development Department

Continued

	Oakland		***San Jose***		***Sacramento***		***Riverside & San Bernardino***	
Title	***1998***	***93-98***	***1998***	***93-98***	***1998***	***93-98***	***1998***	***93-98***
Total, All Industries	**1.0**	**-1%**	**1.0**	**7%**	**1.0**	**5%**	**1.0**	**7%**
Farm	**0.1**	**-42%**	**0.2**	**-16%**	**0.2**	**-22%**	**0.8**	**-13%**
Mining	**1.1**	**-13%**	**0.1**	**-22%**	**0.2**	**-32%**	**0.6**	**11%**
Construction	**1.3**	**-5%**	**1.0**	**23%**	**1.3**	**12%**	**1.5**	**25%**
Manufacturing	**0.9**	**10%**	**2.0**	**5%**	**0.5**	**22%**	**0.9**	**21%**
Industrial Machinery	1.0	28%	4.4	4%	0.8	83%	0.6	20%
Computer & Office Equipment	*0.8*	*21%*	*8.2*	*10%*	*1.6*	*115%*		
Electronic Equipment	1.1	75%	5.1	-2%	0.7	40%	0.5	17%
Transportation Equipment	0.6	26%	1.1	-18%	0.4	24%	1.1	23%
Instruments & Related Prods.	0.6	22%	3.6	12%			0.3	-12%
Apparel & Other Textile Prods							0.3	34%
Chemicals & Allied Products	1.5	-24%	1.0	-32%			0.8	23%
Drugs								
Petroleum & Coal Products	5.5	7%						
Transportation & Public Utilities	**1.3**	**-4%**	**0.6**	**6%**	**0.8**	**-4%**	**1.0**	**9%**
Transportation	1.2	3%	0.6	11%	0.6	-10%	1.2	25%
Local & Interurban Pass. Trans.								
Trucking & Warehousing	1.1	-17%	0.6	2%	0.7	2%	1.6	13%
Water Transportation	2.0	6%						
Air Transportation	1.3				0.5	15%		
Trade	**1.0**	**-3%**	**0.9**	**7%**	**1.0**	**1%**	**1.1**	**4%**
Wholesale Trade	1.1	7%	1.0	8%	0.7	5%	0.8	16%
Retail Trade	1.0	-6%	0.8	7%	1.0	0%	1.2	2%
Finance, Insurance & Real Estate	**1.0**	**-6%**	**0.6**	**0%**	**1.3**	**15%**	**0.6**	**-5%**
Services	**1.0**	**1%**	**1.1**	**12%**	**0.9**	**5%**	**0.9**	**2%**
Hotels & Other Lodging Places	0.5	-1%	0.6	6%	0.8	16%	1.2	-3%
Personal Services	1.1	-10%			1.0	-2%	1.0	3%
Business Services	1.1	1%	1.7	24%	0.9	20%	0.7	-7%

Motion Pictures								
Amusement & Recreation Serv.			0.9	9%				
Health Services	1.1	2%	0.8	8%	1.1	-3%	1.2	16%
Private Educational Services	0.9	-4%	1.7	-8%	0.7	11%	0.8	-8%
Engineering & Management	1.1	-1%	1.3	-4%	0.8	5%	0.4	-30%
Government	**1.1**	**-5%**	**0.6**	**-3%**	**1.7**	**4%**	**1.2**	**8%**
Federal Government	1.1	-9%	0.6	9%	1.3	-4%	1.0	9%
State & Local Government	1.1	-3%	0.6	-6%	0.1	-103%	1.3	7%

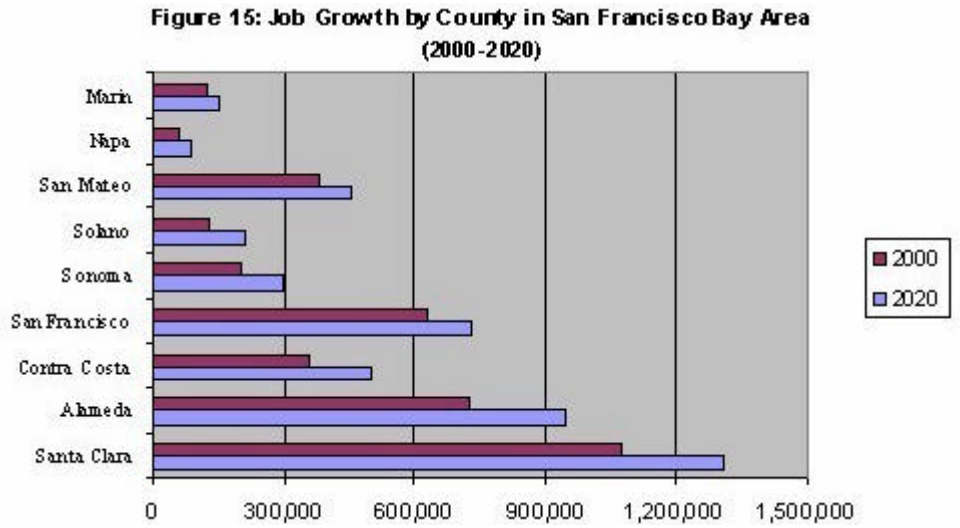
Continued

	Santa Rosa (Sonoma)		***Stockton (San Joaquin)***		***Vallejo (Solano)***		***Modesto (Stanilaus)***	
Title	***1998***	***93-98***	***1998***	***93-98***	***1998***	***93-98***	***1998***	***93-98***
Total, All Industries	**1.0**	**7%**	**1.0**	**-2%**	**1.0**	**-1%**	**1.0**	**1%**
Farm	**1.2**	**2%**	**3.1**	**12%**	**1.4**	**11%**	**3.6**	**10%**
Mining	**1.2**	**8%**	**0.3**	**28%**	**1.7**	**53%**		
Construction	**1.3**	**3%**	**1.1**	**5%**	**1.5**	**-8%**	**1.2**	**-18%**
Manufacturing	**1.1**	**30%**	**0.9**	**-6%**	**0.8**	**31%**	**1.2**	**0%**
Industrial Machinery	0.8	1%					0.7	11%
Computer & Office Equipment								
Electronic Equipment	0.7	83%						
Transportation Equipment								
Instruments & Related Prods.	3.8	48%						
Apparel & Other Textile Prods								
Chemicals & Allied Products								
Drugs								
Petroleum & Coal Products								
Transportation & Public Utilities	**0.7**	**-5%**	**1.3**	**7%**	**0.8**	**-9%**	**0.7**	**-18%**
Transportation	0.7	12%	1.6	16%	0.8	4%	0.8	-8%
Local & Interurban Pass. Trans.								
Trucking & Warehousing			3.4	50%			1.6	0%
Water Transportation								
Air Transportation								
Trade	**1.1**	**4%**	**1.0**	**-5%**	**1.1**	**-1%**	**1.0**	**2%**
Wholesale Trade	0.8	13%	0.8	-3%	0.6	2%	0.8	5%
Retail Trade	1.2	3%	1.0	-5%	1.3	-1%	1.1	1%
Finance, Insurance & Real Estate	**1.0**	**-5%**	**0.8**	**-6%**	**0.6**	**10%**	**0.5**	**-11%**
Services	**0.9**	**8%**	**0.8**	**-1%**	**0.9**	**0%**	**0.7**	**3%**
Hotels & Other Lodging Places					1.6	25%		
Personal Services					5.7	78%		
Business Services	0.6	3%	0.6	24%			0.5	48%
Motion Pictures								
Amusement & Recreation Serv.			0.9	4%				
Health Services	1.2	23%	1.1	2%	1.2	-5%	1.3	-2%
Private Educational Services			1.2	-4%				
Engineering & Management								
Government	**0.9**	**0%**	**1.2**	**-2%**	**1.3**	**-15%**	**1.0**	**7%**
Federal Government	0.5	19%	1.2	5%	1.4	-40%	0.4	52%
State & Local Government	1.0	-4%	1.2	-3%	1.2	2%	1.1	1%

Job Growth 2000-2020: How ABAG, SACOG, SCAG, and SANDAG view their own regions

- ABAG: the San Francisco Bay Area

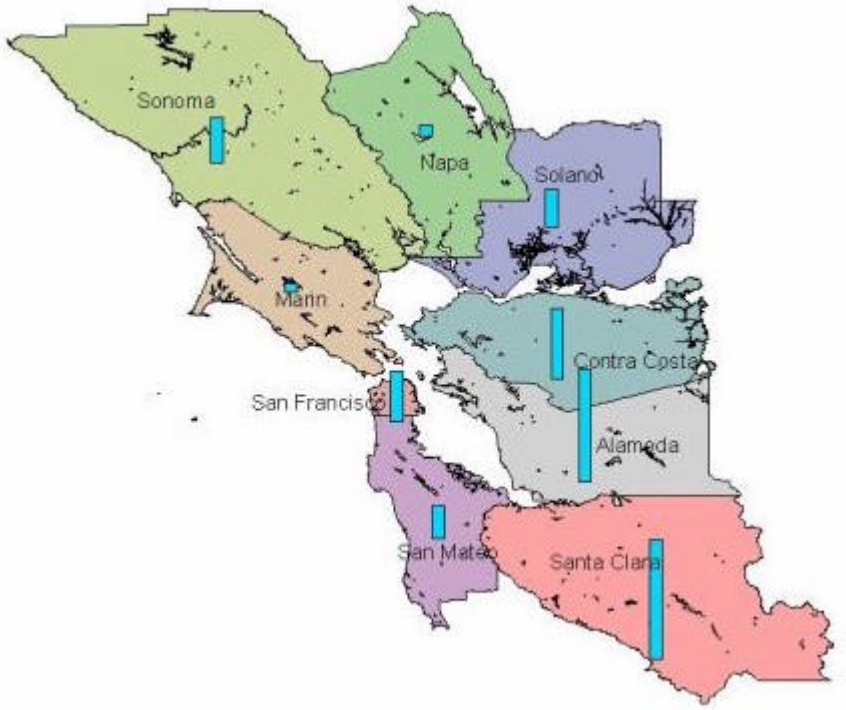
According to ABAG's Projections 2000, this region will experience a significant transformation in both types of jobs available and their location. Silicon Valley is going to diffuse. "As neighboring cities and counties carve out their own "silicon-area" niches, Silicon Valley will no longer be exclusively confined to the South Bay." "Companies and jobs began to move from the urban centers, causing cities ringing the edges of the region to grow." At the same time, "Job opportunities were no longer tied to a handful of high-tech sectors, but expanded to complementary and competitive industry clusters." "We are moving away from the perception of our regional economy being based only on high-tech manufacturing jobs based in Silicon Valley, to the reality of a much more broadly-based economy that will see growth in an array of job sectors offering employment throughout the Bay Area."



From a county perspective, most of the new jobs will be located in the South Bay, East Bay, and San Francisco: they will account for over 60% of total new jobs. But the rate of growth will be highest in the North Bay: 63% in Solano County, 50% in Napa County and 47% in Sonoma County.

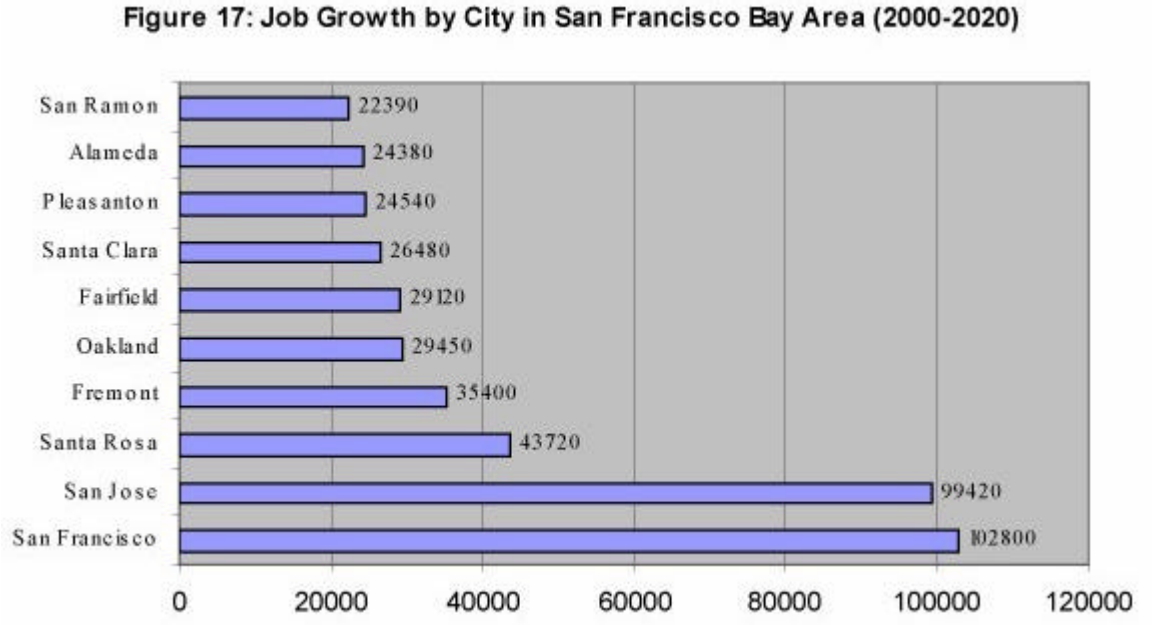
Santa Clara will top the charts among counties for new jobs in the services sector (114,000 jobs) and manufacturing/wholesale (70,000). Alameda County will gain the most retail jobs (23,000) and "other" jobs (46,000), and will closely follow Santa Clara with 110,000 service jobs.

Figure 16: Absolute Job Growth by County in San Francisco Bay Area (2000-2020)



From a city perspective, San Francisco and San Jose will be the top cities with most jobs to be added during the next decades, followed by cities scattered around the Bay Area—Santa Rosa, Fremont, Oakland, Fairfield, etc. The "Projections 2000" report also predict that large amounts of new jobs will emerge in Tri-Valley, Sonoma County's Telecom Valley, San Francisco's Multi-Media Gulch and the Fremont-Milpitas corridor.

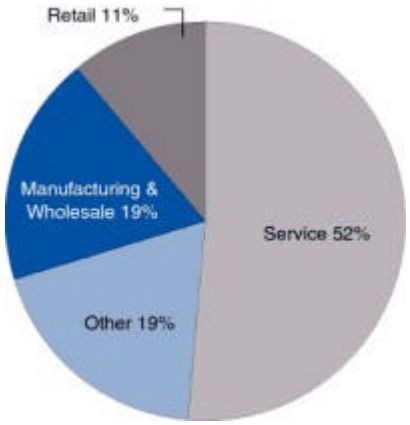
Figure 17: Job Growth by City in San Francisco Bay Area (2000-2020)



The areas with the highest rates of job growth will be concentrated in the East and North Bays, namely unincorporated Solano County (299 percent), the Napa Airport area (286 percent), and Eastern Contra Costa County (147 percent), and cities and towns such as Oakley (260 percent),

Cotati (209 percent), American Canyon (196 percent), Brentwood (176 percent), Windsor (134 percent), Healdsburg (113 percent) and Cloverdale (110 percent).

Figure 18: Job Demand by Sector in San Francisco Bay Area (2000-2020)

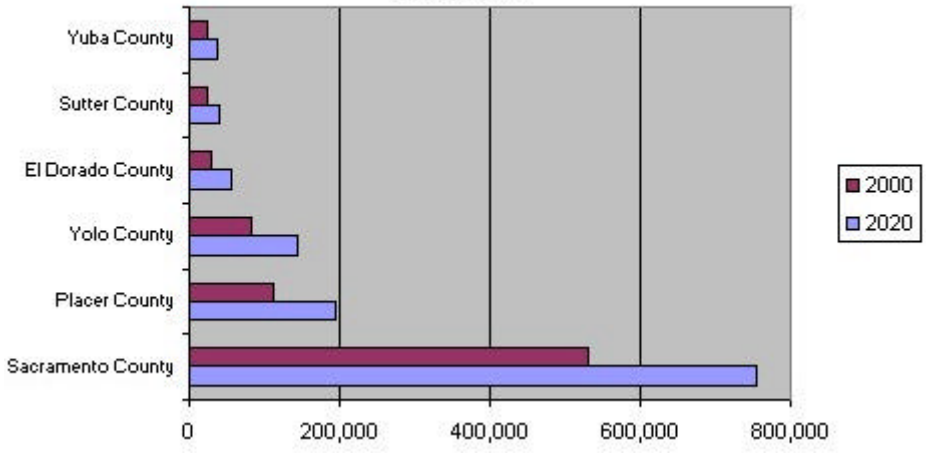


Among different sectors, the services sector (business and professional, health and recreation, social and personal) will account over 50% of total new jobs, the manufacturing and wholesale sector will comprise 19% of the new jobs, retail will be 11%, and the remaining 19 percent will include a variety of professional and other jobs (ranging from communications, insurance and real estate to construction and transportation).

- SACOG: the Sacramento Region

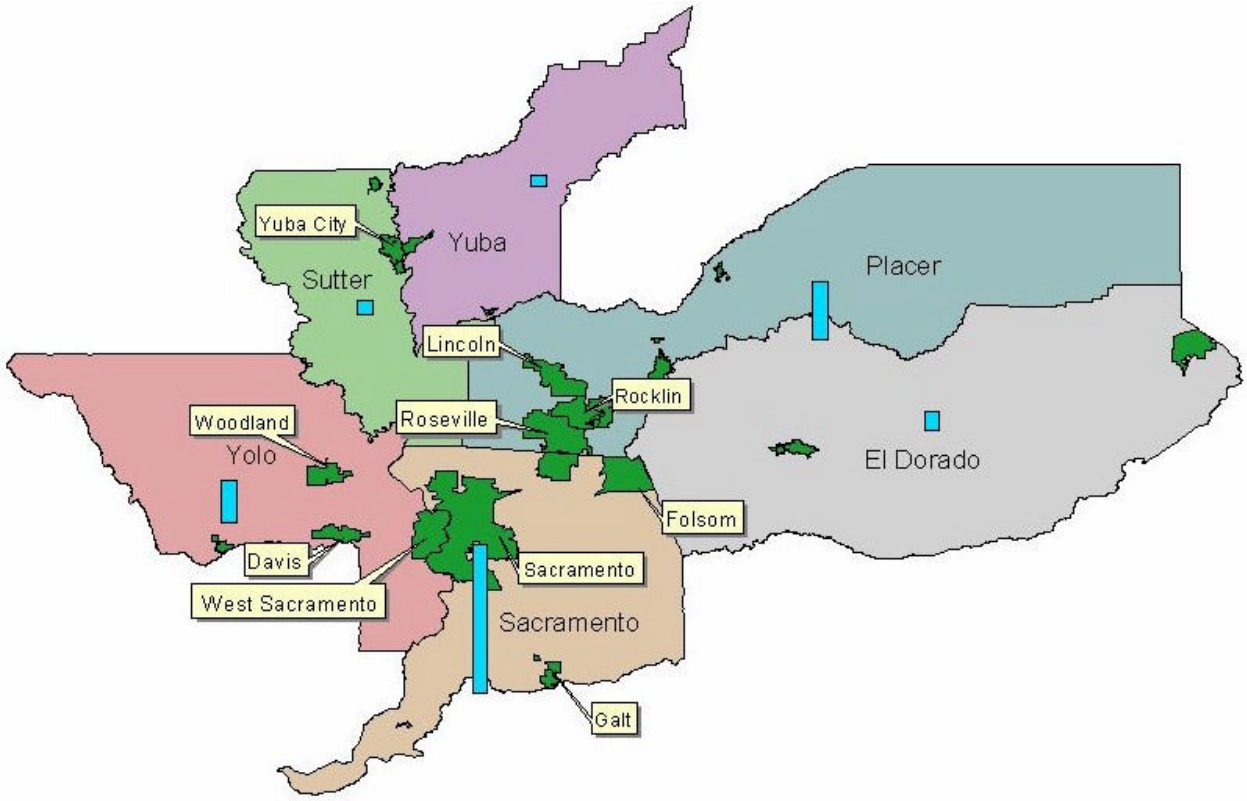
According to SACOG's employment projection to 2020, Sacramento County will continue to dominate this region's job growth, by adding more than 50% of the total new jobs of the region during 2000-2020. The highest rates of growth, however, will occur in other counties—80% in El Dorado, 75% in Placer, 74% in Yolo, and 66% in Sutter, against Sacramento County's 42%.

Figure 19: Job Growth by County in the Sacramento Region (2000-2020)



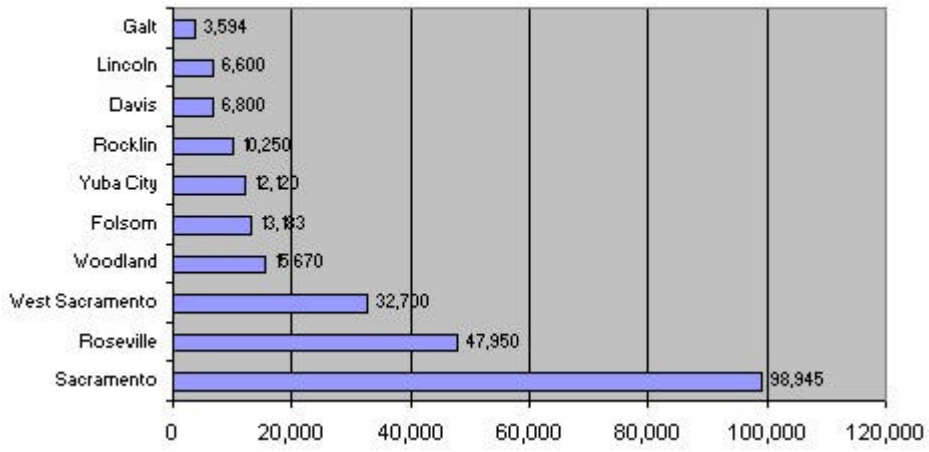
A significant feature of this region's job growth is that a large share (39%) of new jobs is going to emerge in the unincorporated areas of the region, especially in El Dorado (94%), Yuba (89%), and Sacramento (48%) counties.

Figure 20: SACOG's Projection of Absolute Job Growth by County and City (2000-2020)



Among the cities with most projected new jobs, Sacramento (98,945) occupies the top position, leaving other cities in the region far behind. The two cities immediately following Sacramento are Roseville (47,950) and West Sacramento (32,700). Most of the cities with fastest growing jobs are located either inside or near Sacramento County.

Figure 21: Job Growth by City in the Sacramento Region (2000-2020)



- SCAG: the Southern California Region

According to SCAG's 1998 Adopted Forecasts, most new jobs (63%) to be added in this region during the next two decades will occur in Los Angeles County (1,259,700) and Orange County (734,900). Riverside (445,100) and San Bernardino (486,300) will also add substantial number of new jobs. These two counties are also projected to have highest rates of growth, with 86% for Riverside and 79% for San Bernardino.

Figure 22: Job Growth by County in the Southern California Region (2000-2020)

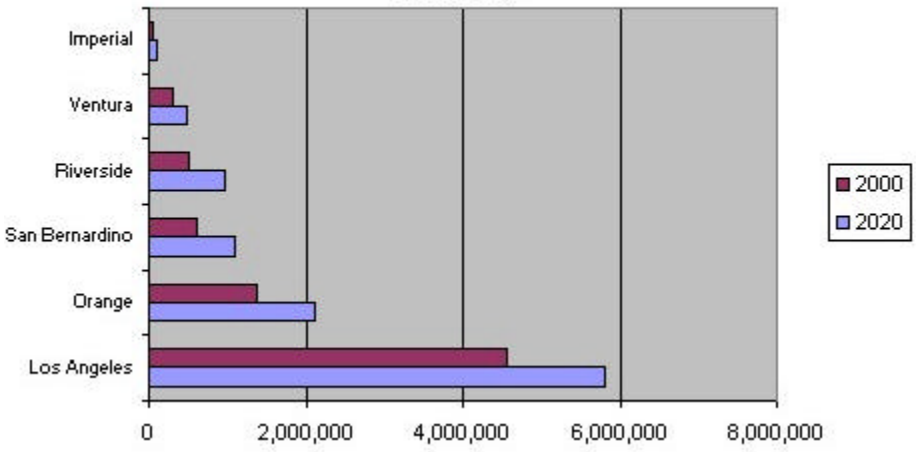
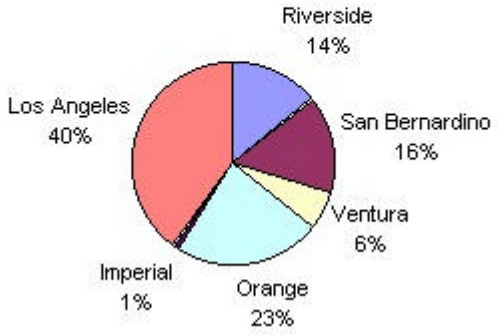


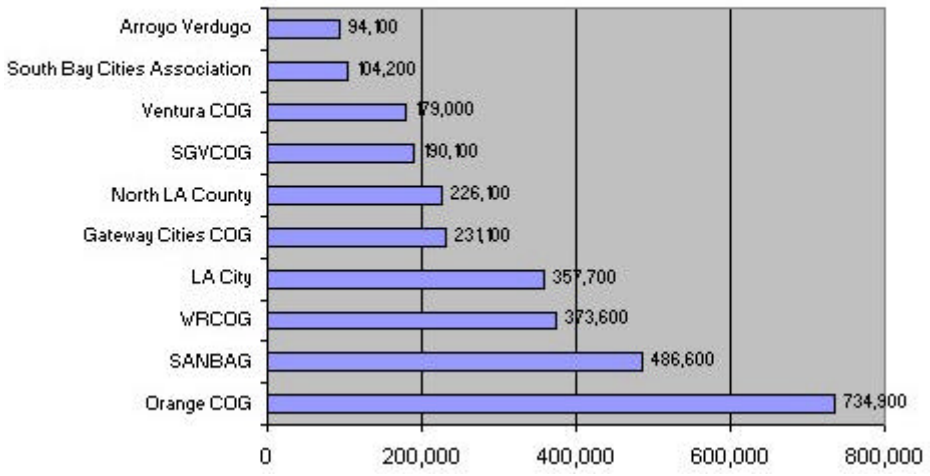
Figure 23: County's Share of Job Growth in the Southern California Region (2000-2020)



SCAG also lists employment projections by subregion instead of by city. At this scale, Orange COG leads others with 734,900 new jobs, followed by SANBAG (San Bernardino Association of Governments) with 486,600, WRCOG (West Riverside Council of Governments) with 373,600, LA City with 357,700, and Gateway Cities COG with 231,100.

When it comes to rate of growth, North LA County stands out with 119%, followed by WRCOG (102%), SANBAG (79%), Ventura COG (58%), Orange COG (53%), Coachella Valley COG (48%) of Riverside County, and Imperial COG (45%).

Figure 24: Job Growth by Subregion in the Southern California Region (2000-2020)



- SANDAG: the San Diego Region

According to SANDAG's Preliminary 2020 Cities/Counties forecast, the City of San Diego will dominate in this region's job growth in the first two decades of the new millennium: 230,352 new jobs will be added to this city, which alone accounts for 47% of total job growth in the whole region in this projection period. Those that follow are scattered around the region, namely Carlsbad (44,931), Chula Vista (41,537), Vista (37,286), Oceanside (32,598), San Marcos (25,445), and Poway (24,344).

Again, the cities with highest rates of growth are located in the outer ring of the region. Poway leads the way by an astonishing 169%, followed by Vista (145%), Carlsbad (109%), San Marcos (105%), Oceanside (94%), and Chula Vista (90%).

Figure 25: Job Growth by City in the San Diego Region (1995-2020)

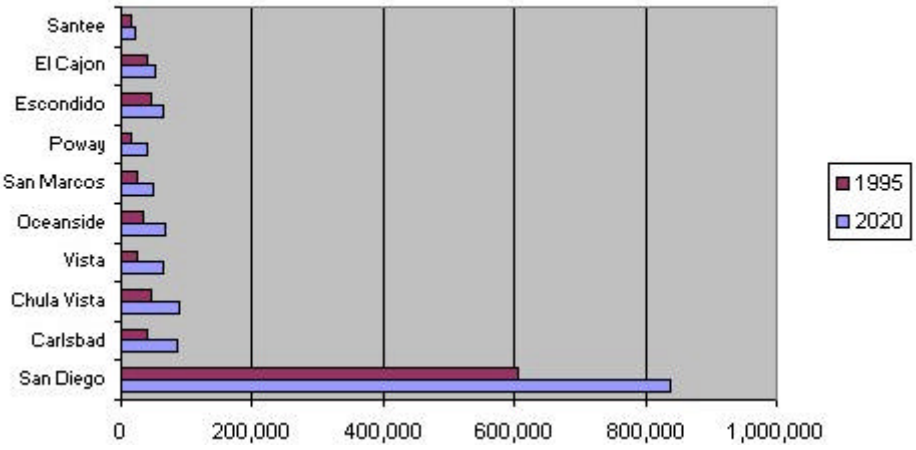
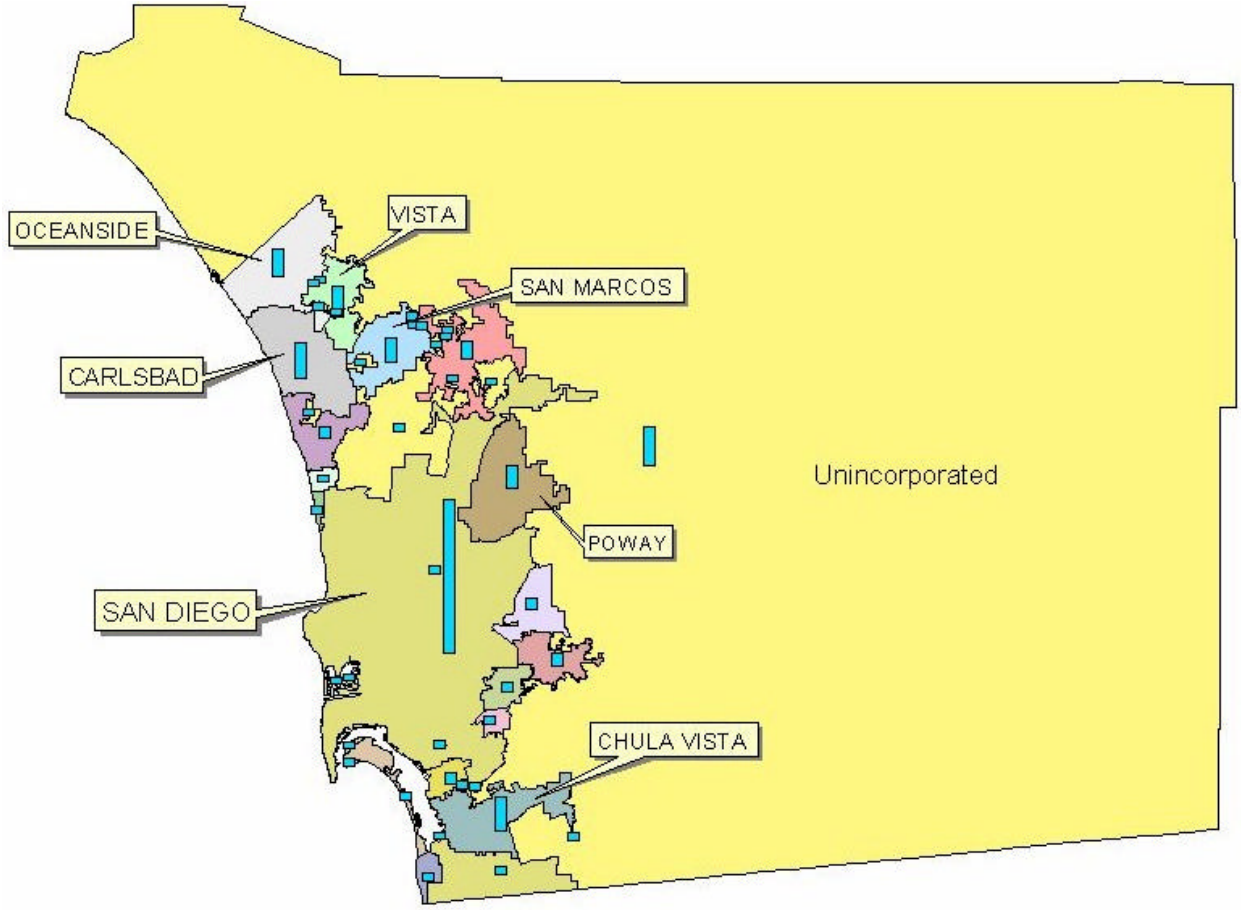


Figure 26: SANDAG's Projection of Absolute Job Growth by City (2000-2020)



Occupations

In today's thriving high-tech economy with buzz words like e-business and bio-tech regarded as driving forces, people are tempted to think that most new employment will be high-salary white-collar jobs, such as computer engineers or bioscientists. This is basically true at the relative scale: the EDD 1998-2008 occupation projection shows that seven of the 10 occupations enjoying highest growth rates during the coming decade would be highly-paid occupations with over $40,000 mean annual wages in 1998 (Figure 28 and 30). However, computers and the Internet are not all there is to life, and business requires more than just managers and engineers, as shown by Figures 27 and 29. Among the 10 occupations with greatest absolute growth during 1998-2008, 5 are low-pay occupations with mean annual wages in 1998 below $30,000, some even below $20,000.

Figure 27: California's Top 10 Occupations with Greatest Absolute Growth during 1998-2008

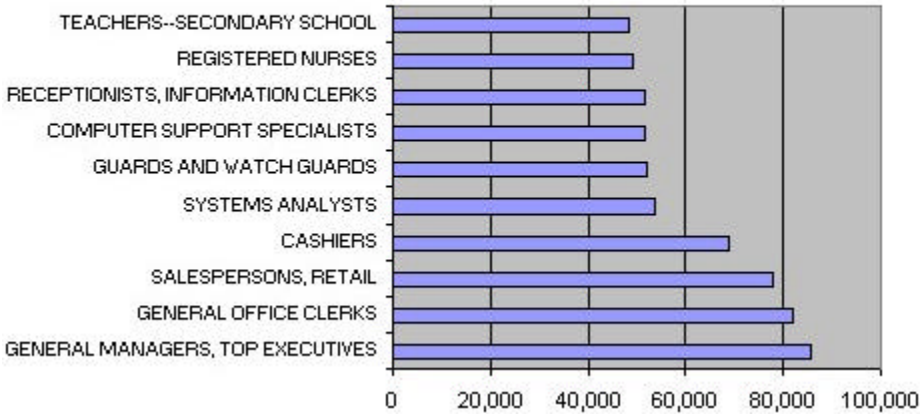
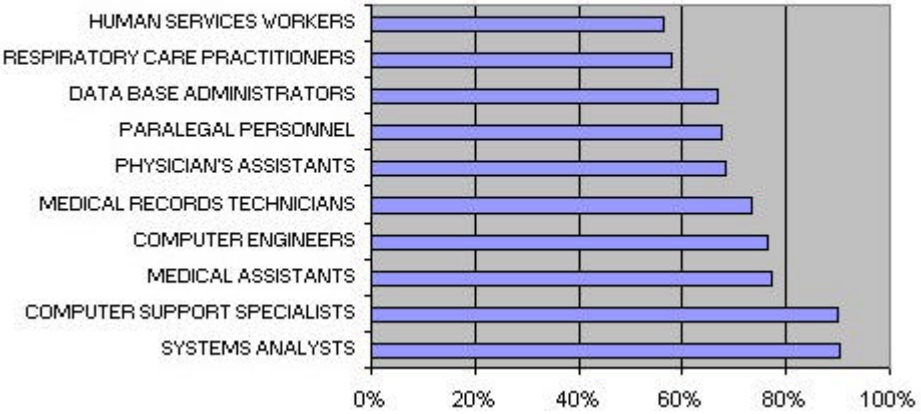


Figure 28: California's Top 10 Occupations with Highest Rates of Growth during 1998-2008



Source: ""Occupational Employment & Wage Data 1998, State of California"", Labor market Information, California Employment Development Department

Figure 29: Mean Annual Wages (1998) of Top 10 Occupations with Greatest Absolute Growth

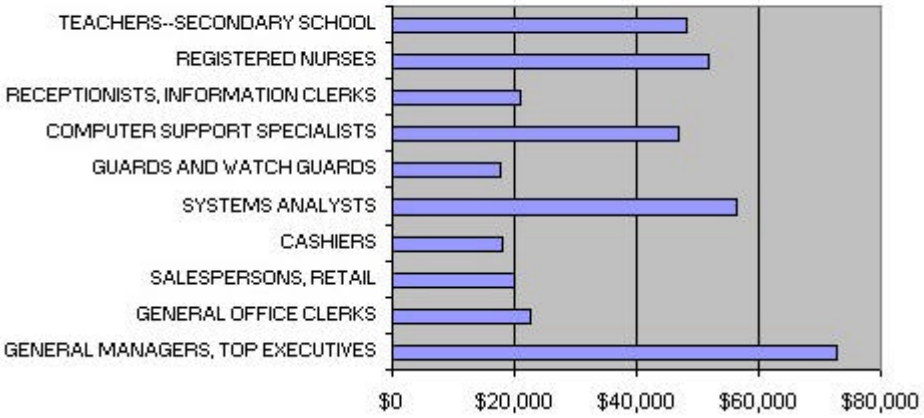
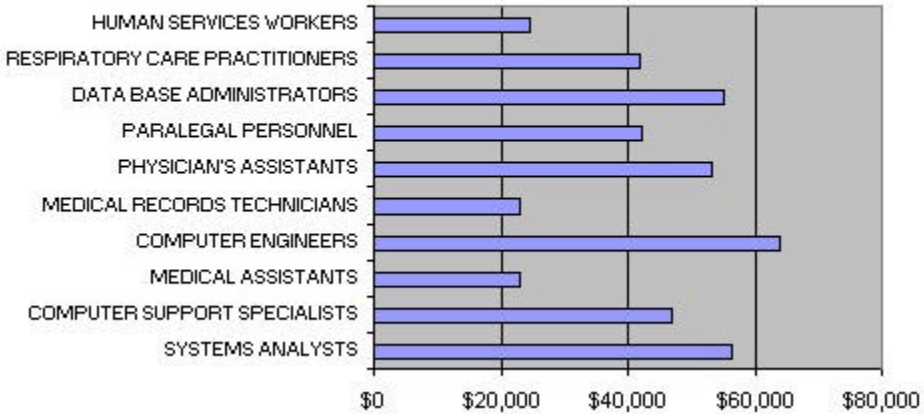


Figure 30: Mean Annual Wages (1998) of Top 10 Occupations with Highest Rates of Growth



Note that among the top ten occupations with either greatest absolute growth or highest growth rates, mean annual wages in 1998 are either high, over $40,000, or low, below $30,000; no occupation in the top ten has a intermediate-level yearly wage between $30,000 and $40,000. What's happening here seems to be that low-pay jobs are increasing with (or driven by) the rise in high-pay jobs. Such a balance in the occupation structure is unlikely to be changed in the near future.

Table 7: Occupations with Highest Growth Rates by County

		Los Angeles, 1995-2002	*Orange, 1997-2004*	*San Diego, 1997-2004*
Top 5 in absolute growth	***#1***	GENERAL MANAGERS, TOP EXECUTIVES	GENERAL MANAGERS, TOP EXECUTIVES	SALESPERSONS, RETAIL
	#2	WAITERS AND WAITRESSES	SALESPERSONS, RETAIL	GENERAL MANAGERS, TOP EXECUTIVES
	#3	GUARDS AND WATCH GUARDS	GUARDS AND WATCH GUARDS	CASHIERS
	#4	SECRETARIES, GENERAL	JANITORS, CLEANERS--EXCEPT MAIDS	GUARDS AND WATCH GUARDS
	#5	SEWING MACHINE OPERATORS—GARMENT	LABORERS, LANDSCAPING/GRNDSKPING	GENERAL OFFICE CLERKS
Top 5 in percent growth	***#1***	TEXTILE BLEACHING, DYEING MACH OPS	ELECTRONIC PAGINATION SYSTEM WKRS	COMPUTER ENGINEERS
	#2	PATTERNMAKERS AND LAYOUT WORKERS	SYSTEMS ANALYSTS--ELEC DATA PROC	SYSTEMS ANALYSTS--ELEC DATA PROC
	#3	MANICURISTS	COMPUTER ENGINEERS	ELECTRONIC PAGINATION SYSTEM WKRS
	#4	SYSTEMS ANALYSTS--ELEC DATA PROC	PRODUCERS, DIRECTORS, ACTORS	COMPUTER SUPPORT SPECIALISTS
	#5	MAINTENANCE MECHANICS--SEWING MACH	PARALEGAL PERSONNEL	DATA BASE ADMINISTRATORS

Continued

		San Francisco, 1995-2002	*Oakland (Alameda), 1995-2002*	*San Jose, 1997-2004*
Top 5 in absolute growth	***#1***	JANITORS, CLEANERS--EXCEPT MAIDS	CASHIERS	COMPUTER ENGINEERS
	#2	GENERAL MANAGERS, TOP EXECUTIVES	SALESPERSONS, RETAIL	SALESPERSONS, RETAIL
	#3	SYSTEMS ANALYSTS--ELEC DATA PROC	GENERAL MANAGERS, TOP EXECUTIVES	SYSTEMS ANALYSTS--ELEC DATA PROCESSOR
	#4	SALESPERSONS, RETAIL	ASSEMB, FABRICATORS--EX MACH,ELECT	ELECT AND ELECTRONIC ENGINEERS
	#5	SECRETARIES, GENERAL	WAITERS AND WAITRESSES	COMPUTER SUPPORT SPECIALISTS
Top 5 in percent	***#1***	COMPUTER ENGINEERS	COMPUTER ENGINEERS	SYSTEMS ANALYSTS--ELEC DATA PROCESSORS

percent growth	***#2***	EMPL INTERVIEWERS--PRIV OR PUB	SYSTEMS ANALYSTS--ELEC DATA PROC	HOME HEALTH CARE WORKERS
	#3	HOME HEALTH CARE WORKERS	NUMERICAL MACH TOOL OPS--MET, PLAS	COMPUTER ENGINEERS
	#4	INSPECTORS, TESTERS, & GRADERS,PRECI	HOME HEALTH CARE WORKERS	AMUSEMENT, RECREATION ATTENDANTS
	#5	SYSTEMS ANALYSTS--ELEC DATA PROC	ELECTRICAL EQUIP ASSEMBLERS--PREC	COMPUTER SUPPORT SPECIALISTS

Continued

		Sacramento, 1995-2002	***Riverside, 1995-2002***	***Santa Rosa (Sonoma), 1997-2004***
	#1	SALESPERSONS, RETAIL	CASHIERS	SALESPERSONS, RETAIL
	#2	CASHIERS	WAITERS AND WAITRESSES	CASHIERS
Top 5 in absolute growth	***#3***	GENERAL MANAGERS, TOP EXECUTIVES	REGISTERED NURSES	GENERAL MANAGERS, TOP EXECUTIVES
	#4	COMPUTER ENGINEERS	GENERAL MANAGERS, TOP EXECUTIVES	TEACHER AIDES, PARAPROFESSIONAL
	#5	SYSTEMS ANALYSTS--ELEC DATA PROC	SALESPERSONS, RETAIL	GENERAL OFFICE CLERKS
	#1	COMPUTER ENGINEERS	SURGICAL TECHNICIANS	ELECTRONIC PAGINATION SYSTEM WKRS
	#2	SALES ENGINEERS	COMPUTER ENGINEERS	SYSTEMS ANALYSTS--ELEC DATA PROC
Top 5 in percent growth	***#3***	OPS, SYS RESEARCHERS--EX COMPUTER	SYSTEMS ANALYSTS--ELEC DATA PROC	DEMONSTRATORS AND PROMOTERS
	#4	INDUST ENGINEERS--EXCEPT SAFETY	MANICURISTS	COMPUTER SUPPORT SPECIALISTS
	#5	ELECTRICAL, ELECTRONIC ASSEMBLERS	OCCUPATIONAL THERAPISTS	ADJUSTMENT CLERKS

Continued

		Stockton (San Joaquin), 1995-2002	***Vallejo (Solano), 1995-2002***	***Modesto (Stanilaus), 1997-2004***
	#1	SALESPERSONS, RETAIL	SALESPERSONS, RETAIL	SALESPERSONS, RETAIL
	#2	CASHIERS	CASHIERS	CASHIERS
Top 5 in absolute growth	***#3***	GENERAL MANAGERS, TOP EXECUTIVES	GENERAL MANAGERS, TOP EXECUTIVES	COMBINED FOOD PREP AND SERVICE
	#4	CORRECTION OFFICERS, JAILERS	REGISTERED NURSES	TEACHER AIDES, PARAPROFESSIONAL
	#5	GENERAL OFFICE CLERKS	GENERAL OFFICE CLERKS	GENERAL MANAGERS, TOP EXECUTIVES
	#1	BILL AND ACCOUNT COLLECTORS	PERSONAL AND HOME CARE AIDES	SYSTEMS ANALYSTS--ELEC DATA PROCESSOR
	#2	TIRE REPAIRERS AND CHANGERS	PHYSICAL THERAPY ASSISTANTS & AIDE	PEST CONTROLLERS AND ASSISTANTS
Top 5 in percent growth	***#3***	BAKERS--BREAD AND PASTRY	HOME HEALTH CARE WORKERS	PARALEGAL PERSONNEL
	#4	EMERGENCY MEDICAL TECHNICIANS	MEDICAL ASSISTANTS	COMPUTER SUPPORT SPECIALISTS
	#5	SYSTEMS ANALYSTS--ELEC DATA PROC	PHYSICAL THERAPISTS	BILL AND ACCOUNT COLLECTORS

Source: " Employment Projections by Occupation ", Labor market Information, California Employment Development Department

Conclusions and Implications for Transportation

This paper has reviewed employment trends and projections for job growth for the next decade, focusing on California but also offering national comparisons. The data reviewed show the following major trends:

1. Among all industries, *services* is the fastest growing sector and is expected to account for one job in three by 2008. *Business services* is in turn the fastest growing part of the service sector.

2. There will be a substantial increase in low-pay jobs (<$30,000 per year) as well as in relatively high-pay jobs. Among the 10 occupations with greatest absolute growth during 1998-2008, 5 are low-pay occupations with mean annual wages in 1998 below $30,000, some even below $20,000.

3. Employment growth continues to be heavily concentrated in the South Coast and San Francisco Bay Area. The six MSAs in these two areas accounted for three quarters of the State's total job growth during 1993-1998.

4. Much, but not all, of the growth in the traditional large metropolitan areas is occurring in outlying parts of the region, especially for the South Coast and Bay Area, where job growth is strong in Alameda, Contra Costa, Orange, and Riverside counties..

5. In the Sacramento metropolitan area and San Diego metropolitan area, most of the job growth is projected to concentrate in the traditional center of each region. In the six-county Sacramento region, 53% of total job growth during 2000-2020 is projected to occur in Sacramento County, and a large portion of the rest in the parts contagious to this county in Placer and Yolo counties. Similarly in the San Diego region, the City of San Diego alone accounts for 47% of projected job growth in the whole region during 1995-2020.

6. While growth in the two largest metro areas is outstripping the growth in the Central Valley, the percent change in the Valley is large and dramatic. A 70-80% job growth rate is commonly projected for the 2000-2020 period at the county level, and often 100-300% at the city or town level.

The study also identifies the possible effects of these trends on transportation:

1. With jobs increasingly concentrated in service industries, work hours become more flexible and may vary from day to day and job to job; just-in-time deliveries and travel for appointments may increase. As a consequence, we expect to see a continuing "spread" and/or flattening of peak hours.

2. Increase in low-pay jobs in retail and some services industries suggests a sustaining demand for appropriate public transit services, since low-income employees are more likely to use transit than high-income employees.

3. With job growth in already-high-density established areas, transportation planners will have to contend with serving travel in areas where adding new capacity is likely to be expensive and difficult, and with managing increasing demand for existing facilities.

4. Traditional metropolitan areas are expanding rapidly through "economic annexation" or "economic integration". The diffusion of Silicon Valley is a perfect illustration of this trend. The spread-out of jobs in a larger area combined with job-housing imbalance

and/or mismatch, which is not seldom the case, means more suburban-to-suburban trips and longer commute distance. With a multi-center structure becoming clearer in each region, new transportation corridors may emerge and as a result a relatively uniform radial traffic flow might be replaced by a more irregular intra-region travel pattern.

5. The Sacramento metropolitan area and San Diego metropolitan area are very likely to be experiencing what the South Coast and Bay Area experienced 10-20 years ago. Increasingly serious congestion will be expected in the corridors leading to the urban employment centers in these regions if no preventive measures are taken.

6. Job growth in the Valley is expected to be more moderate, but because the change is significant, the need for new facilities and services is likely to be strong there, too. Major infrastructure improvements may be necessary to meet this doubling or even tripling travel demand. Considering the relatively vulnerable environmental and ecological context, however, cautions should be taken to address the by-no-means marginal impact of transportation improvement projects in this area.

Some policy and planning implications of the above trends and effects are as follows:

1. Increase, improvement, and adjustment in public transit services are needed in most urban and some suburban employment centers.

2. More innovative traffic system management (TSM) strategies and adoption of frontier technologies (e.g., intelligent transportation system) may become desirable or even necessary in the densest urban areas.

3. Transportation planning activities should be closely integrated with land use planning in order to achieve higher degree of job-housing balance.

4. Efforts should be directed toward facilitating smooth traffic circulation inside suburban areas around urban centers, not just between urban and suburban.

5. Early planning actions are recommended in the Sacramento and San Diego metropolitan areas to avoid similar congestion problems experienced in the Los Angeles and Bay Area regions.

6. Special attention, and even special legislation, may be needed in dealing with the unique context in Central Valley area.

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