

BACEI:

Regional Economic Assessment of the San Francisco Bay Area

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Developed by:
The Bay Area Council Economic Institute
July 11, 2012

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Introduction

The Bay Area is a large, highly diverse, sophisticated economy. The economy has important business segments in not only sophisticated sectors such as high technology, professional and business services, but also food and beverage processing - in particular: wine. The region also has several distinct, but not independent, economies. These include Silicon Valley, including significant parts of both Santa Clara and San Mateo counties, San Francisco, the East Bay -- Alameda and Contra Costa counties, and the North Bay -- Marin, Napa, Solano, and Sonoma counties.

Silicon Valley is well known as perhaps the innovation and technology center of not only the Bay Area, but the United States, and perhaps the world. San Francisco has long had a reputation as a financial sector. This reputation, however, is fading along with employment in the city in this sector. Of late, more and more technology companies have been choosing to locate in San Francisco.

The North Bay is well known as including one of the major wine growing and viticultural tourism regions of the county. More broadly, it is an agriculture-rich region, with many dairy farms in Marin County in addition to the wineries further north. Marin is also the source of a significant supply of labor for San Francisco and the East Bay, though primarily San Francisco.

The East Bay is perhaps the least well understood of the Bay Area's regions, despite several high quality reports that have recently been published. Long associated with goods movement, because of the air and sea ports that are located within its boundaries, employment in the East Bay is heavily concentrated in professional and business services, with a growing concentration of employment in high value added, high tech manufacturing sectors.

With so much diversity, developing a regional strategy for sustained economic growth and development is a complicated undertaking. Indeed, most of the strategic planning is undertaken at the sub-regional level. Indeed, San Francisco engages in its own strategic planning, organizations like Joint Venture-Silicon Valley, the East Bay Economic Development Alliance, and the North Bay Leadership Council all lead efforts to promote prosperity and economic development in their respective regions.

Accordingly, much of the economic analysis of the Bay Area has focused on but one part of the Bay Area. This report, based on the view that the region is a tightly inter-connected and inter-reliant economy, is an attempt to measure the strengths and weaknesses of the region.

Measurement is the vital input into any strategic planning. Accordingly, this report measures a variety of aspects of the local economy: industry strengths, industry dynamics, labor quality, labor mobility, housing costs, and sentiment in the business community. Without proper measurement, planning is a dubious endeavor.

Several things are worthy of note about the presentation of results. Throughout the report, we make comparisons between the Bay Area and the other major metropolitan regions of the state: Los Angeles and San Diego counties. Also, the regions within the Bay Area that are referred to correspond to the regions discussed above: The North Bay, The East Bay, San Francisco and Silicon Valley (referred to as the Peninsula and South Bay).

As alluded to above, key findings indicate a region that is highly diverse, no doubt a source of its strength. During the dot-com bubble, the economies of the East and North Bay held up relatively well. Each suffered an economic slowdown to be sure, but nothing like what was experienced in San Francisco and Silicon Valley. During the recent recession, the reverse held true. San Francisco and Silicon Valley (the Peninsula and South Bay) held up relatively well, while the brunt of the recession locally was felt in the East and North Bays.

More generally, the Bay Area is a region that has been growing rapidly in terms of local economic activity, or GDP, but not in terms of employment. Employment levels at the time of writing are comparable to those experienced 15 years earlier. The region has experienced dramatic peaks and troughs in employment in the intervening years, but nonetheless, employment has not grown significantly in the last 15 years. Employment has, however, changed significantly during this time towards a higher skilled more economically productive workforce. That is the only way that you can generate economic growth without employment growth: through productivity improvements and specializing in higher value added sectors, such as Information and Professional, Scientific, and Technical Services, which the Bay Area has done.

Despite the four relatively distinct regions of the Bay, we find that the labor force is highly inter-connected, with more than 800,000 workers (out of roughly 3.2 million) crossing at least one county line on their way to work each day. This is more true of the East Bay, San Francisco, and Peninsula than it is of the North Bay (Marin notwithstanding). Workers from the East Bay commonly make their way to Silicon Valley and San Francisco and many of San Francisco's residents make their way to Silicon Valley (the Peninsula) each day.

A survey of more than 75 local businesses was also conducted. Individuals surveyed are senior executives at some of the region's major companies. In all, the respondents were reasonably positive about the business climate, but a number of important concerns were expressed. In particular, a lack of consistency in regulations at the local, regional, and state level, a difficulty in finding qualified applications to meet workforce needs was expressed, and a related concern covering the region's K-12 public education system was uncovered. Quality of life is rated as quite high, and business leaders feel satisfied with their connectivity to clients and customers. National perceptions of elected officials is another matter entirely.

The report proceeds to provide an overview of the region from a population growth and employment perspective. This is followed by industry level analyses providing an indication of the region's overall business strengths. Business dynamics are explored in an effort to discern patterns that might provide insight into effective promotion of employment growth. The labor force is described in some detail, along with commuting patterns. Housing is discussed, as the most important element in the high cost of Bay Area living. This is followed by some indications of where the economy and region are likely headed in the next 20 to 30 years. Finally, the results from the business survey are summarized.

The Region

The Bay Area, most often defined as the region spanned by the 9 counties surrounding San Francisco Bay, spans over 6,900 square miles. Of this vast expanse, approximately 1,442 square miles of land - 20.9 percent - were built up by 2010. The area was not built-up evenly over time. In fact, most of the area was built-up by the 1960's. Since the 1980's further expansion has slowed down to a mere trickle, and in the last decade it has virtually ground to a halt. The first column of table 1 shows the share of the Bay Area's 2010 built area footprint that was in place at the end of each decade.¹

Table 1: Evolution of the Bay Area's Population and Built Area Footprint

Year	Sq.Miles Built-Up	Percent of 2010 Footprint Built	Population (millions)	Percent of 2010 Population
	(1)	(2)	(3)	(4)
1940	372	25.8	1.73	24.5
1950	592	41.1	2.08	29.3
1960	925	64.2	3.27	46.1
1970	1,145	79.4	4.63	65.3
1980	1,315	91.2	5.18	73.0
1990	1,389	96.3	6.02	84.9
2000	1,435	99.5	6.78	95.6
2010	1,442	100.0	7.09	100.0

Source: ACS 2006-2010; Population, US Census;
Calculations by Bay Area Council Economic Institute

Figure 1 provides a series of sequential snapshots of the Bay Area's footprint. The first map indicates the area built by 1940. By that year two continuous stretches of built-up land were already present in the Bay Area, the first spanning the city of San Francisco and the second stretching along the East Bay expanse that runs from Oakland to Berkeley. Most of the settlements comprising the Bay Area were already established by that time, but outside of the two continuous expanses the built-up area they consisted mostly of small town centers surrounded by open land (agricultural and/or virgin). The string of settlements along the San Francisco Peninsula was present, but did not yet form a continuous stretch.

¹Note concerning how figure 1 and columns 1 and 2 of table 1 were constructed: each block-group in the nine county area is classified as being built in a particular decade. The classification is based on the distribution of years in which ACS respondents' residences were built. A block group is classified as being built in, say, the 1950's, if the residence of the 10th percentile of ACS respondents, ranked by the year their residence was built, was built in the 1950's. Block groups whose land area exceeds the 95th percentile of land area in the 9 county region are classified as non-built, and are omitted from the data. As block-groups are defined to have roughly similar populations, excessively large block groups are effectively rural. Because the data are taken from the 2006-2010 ACS, some block-groups may be misclassified as having been built sooner than they would be according to the 10th percentile measure described, but no sooner than the first structures in that block-group were actually built. The possibility of such misclassification is likeliest in block-groups that saw substantial amounts of residential construction in the years 2006-2010, of which there are few, because those years were dominated by the housing crisis.

During the 1940's, 1950's and 1960's the Bay Area expanded dramatically. Expansion was most pronounced in the East Bay, along the Peninsula and in San Jose. By 1970, most of the present day built area footprint was covered. From the 1970's on, expansion continued, but at an ever-slowing pace. As the maps in Figure 1 show, some expansion continued through the 1970's, mostly in the East Bay, but by the 1980's expansion was limited to marginal additions to the built-up area, almost exclusively in the East Bay. The same pattern persisted through the 1990's, and by the 2000's expansion of the Bay Area's built area footprint had virtually halted.²

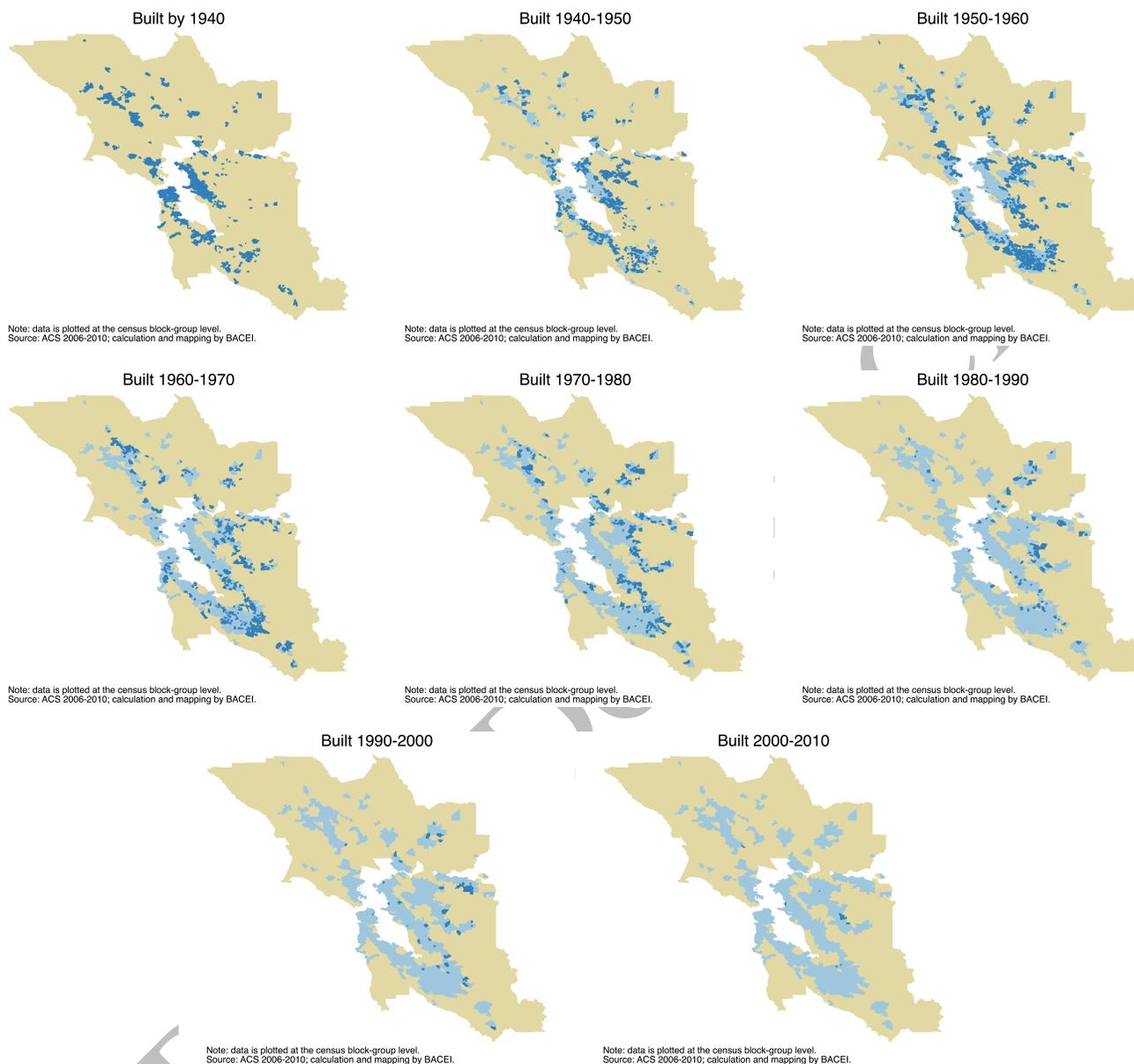
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²See footnote 1.

³Land built during the indicated decade in dark blue; previously built-up land in light blue.

Figure 1: Bay Area's Built Footprint Over Time.



The Bay Area's population in 2010 stood at 7.09 million, almost quadruple its 1940 population. Column 3 of table 1 shows how the Bay Area's population has evolved over the past 70 years, and column 4 shows the population in each decade as a share of the 2010 population. Comparing the rates at which the Bay Area's population and footprint have grown reveals that the Bay Area's geographic expansion exceeded its population growth at first, but expansion has not kept up with population growth over the last 50 years or so. Figure 2 plots the Bay Area's population density over time,

and contrasts it with the that of Greater Los Angeles and the San Diego metropolitan area. With the exception of the 1970's, the current wave of densification, which has been common to the three California metropolises since the 1980's, appears to have begun in the Bay Area during the 1950's.

Figure 2: Population Density

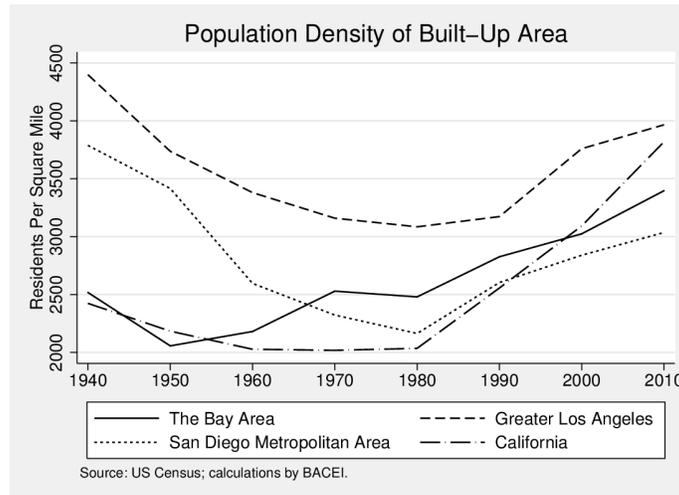


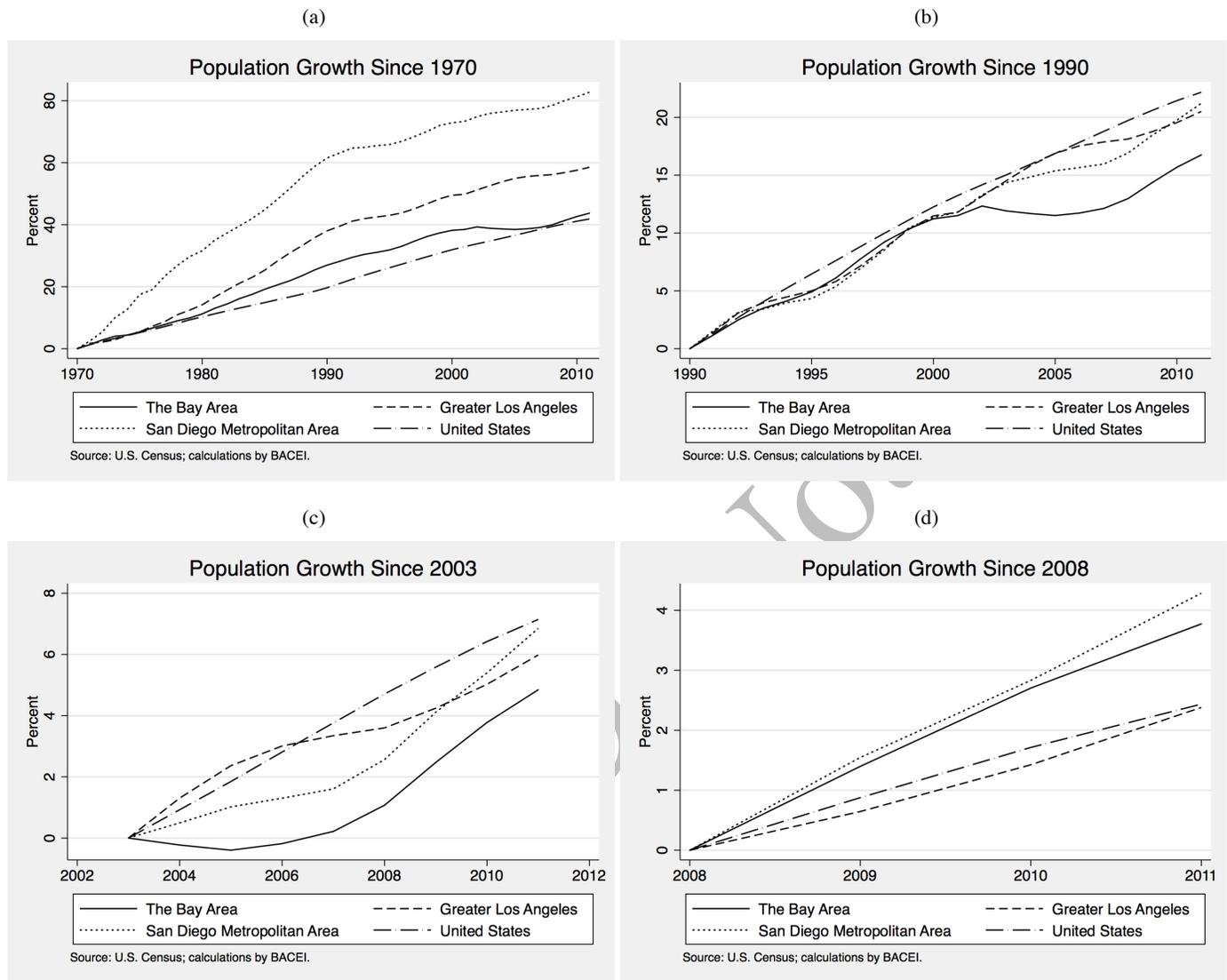
Figure 3 compares the Bay Area's population growth with that of Greater Los Angeles, the San Diego metropolitan area and the United States as a whole. Panel 3a indicates that from 1970 to 2010 the Bay Area's population grew by approximately 40 percent, as did the US population. From 1970 to 1990, however, the Bay Area's population grew faster than the nation's, a trend which the cities of southern California display to an even greater extreme. In 1990 population growth in California slowed down to being in line with national population growth, as is evident in panel 3b. Shortly after 2000 the Bay Area's population growth halted for more than half a decade, likely as a result of the dot-com bubble bursting, and it only resumed around 2007.⁴

In the years following the onset of recession in 2008, the Bay Area and San Diego populations have grown significantly faster than the United States as a whole, or Los Angeles.

Within the Bay Area, population growth has been extremely uneven over the course of the last 40 years. While the Peninsula and South Bay and East Bay regions have grown at about the Bay Area average of just over 40%, the North

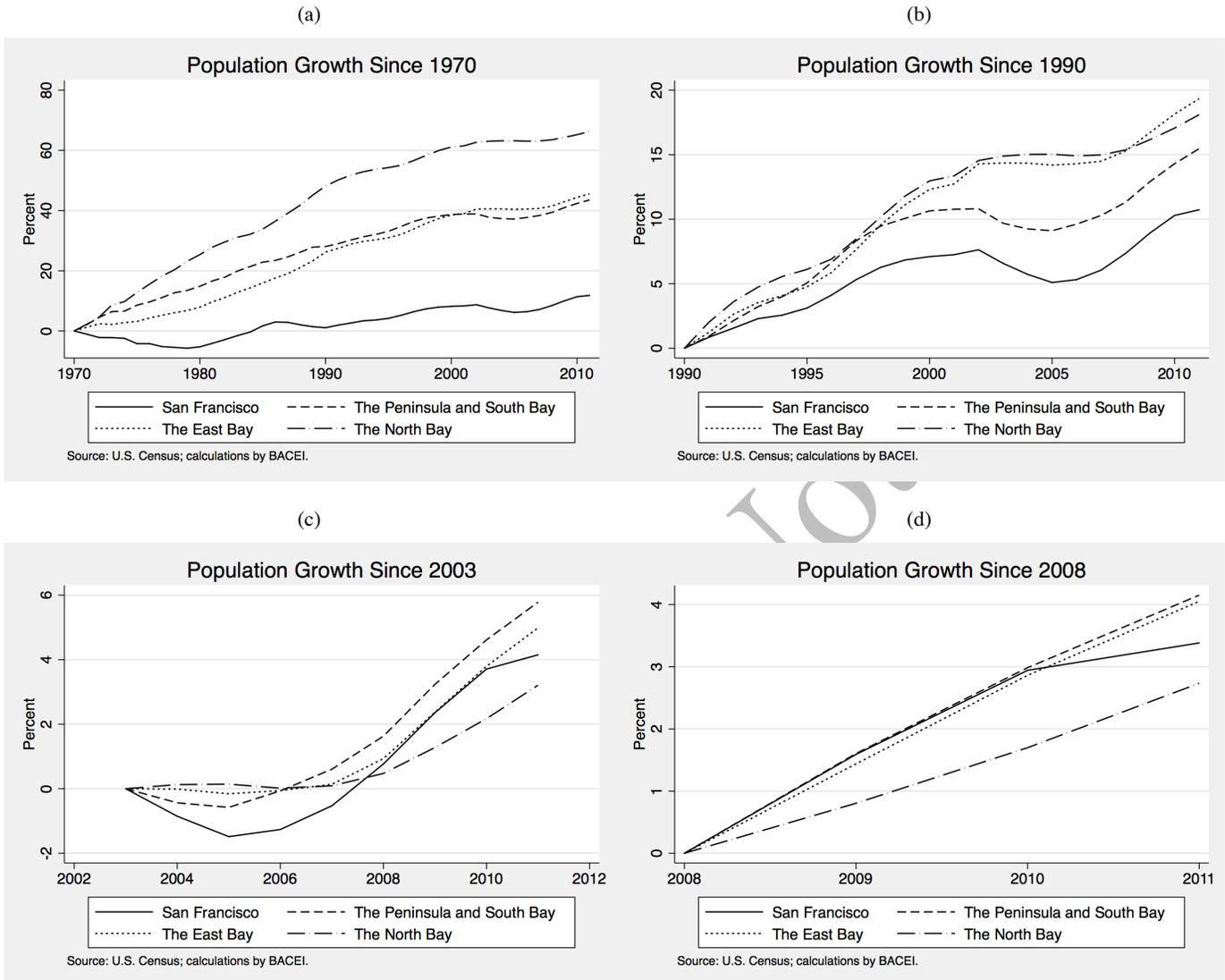
⁴Possible text: Such a period of "lost" population growth is not unusual in the US for cities and regions suffering from localized economic downturns, and is the result of increased out-migration from the area during this period. See Steve Levy's migration flow graph on page 17 of his text, and see Blanchard and Katz (1992) (in .../Projects/JPC/CitedPapers).

Figure 3: Population Growth for California Regions



Bay saw population growth in excess of 60% and San Francisco saw growth of just 12%. Between 1970 and 1980, the City and County of San Francisco lost several percentage points of population. It did recover by the mid-80s, but growth was slow and uneven in the ensuing 26 years. The exceptional rate of growth in the North Bay ceased with the bursting of the dot-com bubble in 2002, with little or no growth in each year through 2008, and growth slower than the regional average thereafter.

Figure 4: Population Growth for Bay Area Sub-Regions



San Francisco's experience in the 1970s was not unique. This is an era during which suburbs were growing rapidly and *white flight* was common for many central cities nationwide. *White flight* was not so much an issue for San Francisco, but the suburbanization in part explains the rapid rate of growth in the North Bay, Marin, in particular. This trend of suburbanization did start to reverse itself in the early 1980s, but did continue through the region for the next 20 years as the North Bay and other parts of the region continued to grow faster than San Francisco. An element of this disparity in growth is rooted in local development policies, making it increasingly difficult to expand capacity in San Francisco, but it wasn't really until the 2000's that living in cities was once again popular. The trend started first in New York

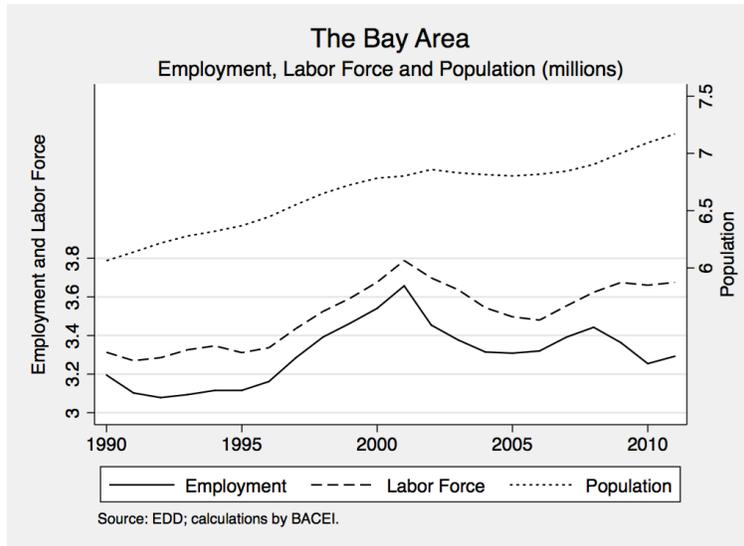
City and then spread such that places with walkable streets and coffee shops were becoming increasingly desirable. Though regionally, many did continue to spread outside of the central core of the region during the 2000's. Much of this spread is due to the increasing affordability of homes in previously lesser developed areas. The increasing availability of mortgage loans, particularly sub-prime mortgages, lead to substantial building and movement away from San Francisco. This trend has been reversing itself as evidenced by rapidly rising rental rates as many displaced homeowners are coming back to the city. A curious development is the falloff in population growth in San Francisco between 2010 and 2011. Though a short run phenomenon, it is a surprise.

The next major disruption to growth in the region came with the bursting of the dot-com bubble just after the turn of the century. Though their populations did not grow significantly faster than those of the North or East Bay regions, the dot-com collapse had a dramatic negative effect on population in San Francisco and the Peninsula. The populations of the East and North Bay were flat during the bursting of the bubble, indicating that there was just sufficient out-migration to offset natural increases in population; there was very little in-migration during these years into any part of the Bay Area.

Across the Bay Area, the dot-com bubble's burst had a greater effect on employment than on population (Figure 5a). While population growth stalled between 2002 and 2007, employment fell dramatically between 2001 and 2005. The implication being that during this period there was not only significant out-migration and reduced in-migration, but many were pushed out of the labor force entirely. Although the overall population was significantly higher in 2011 than in 2002, the labor force has yet to come close to its peak in 2001; labor force participation rates across the Bay Area have declined significantly in the wake of the dot-com bubble. Curiously, the decline in employment that has accompanied the most recent recession has not resulted in significant overall declines in the labor force, declines in labor force participation, to be sure, but not overall declines in the labor force. This is likely due to the fact that the Bay Area was not unique in suffering the recession this time and migrating to other parts of the country is now less desirable than it was a decade ago.

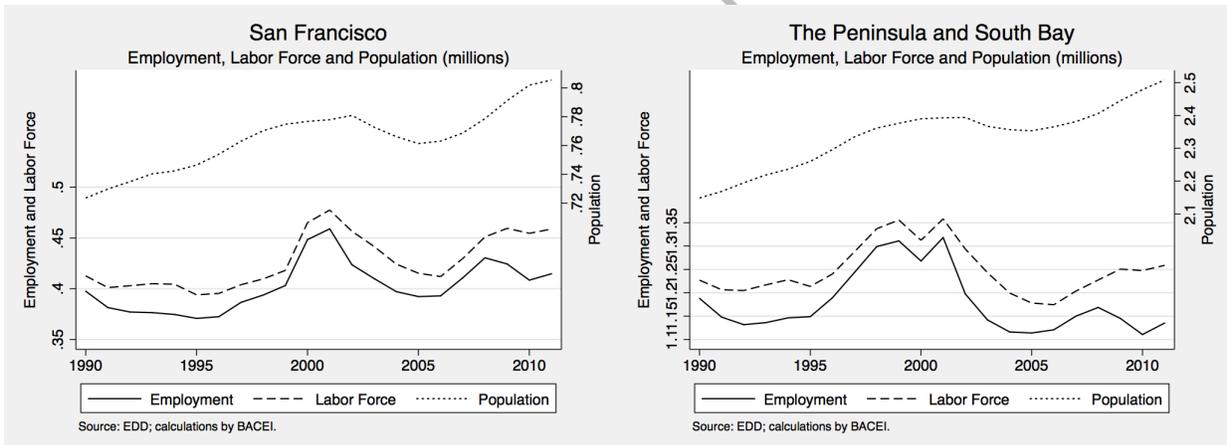
Figure 5: Employment, Labor Force and Population

(a)



(b)

(c)



(d)

(e)

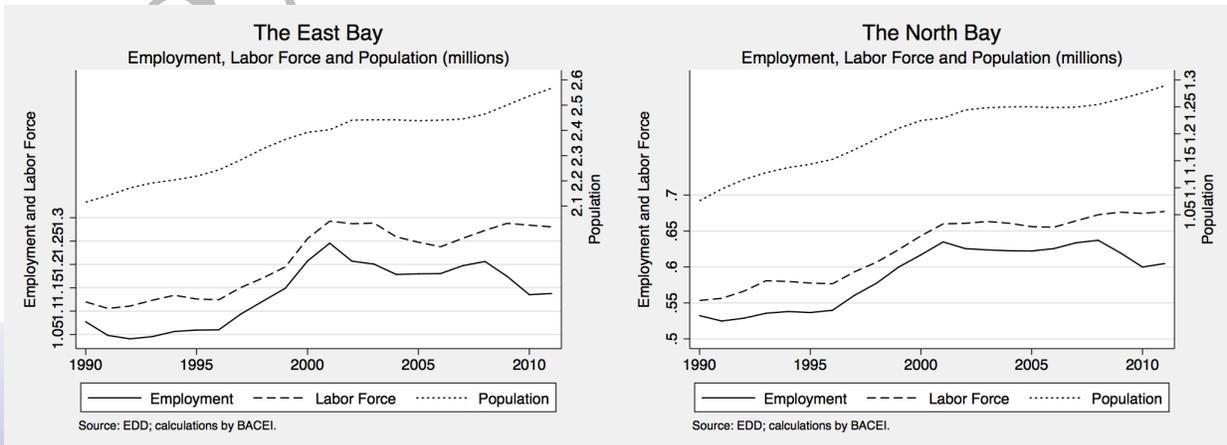
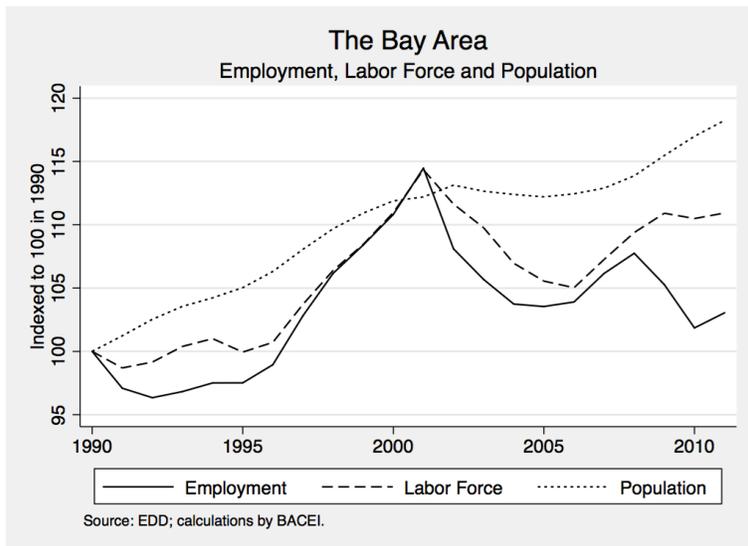
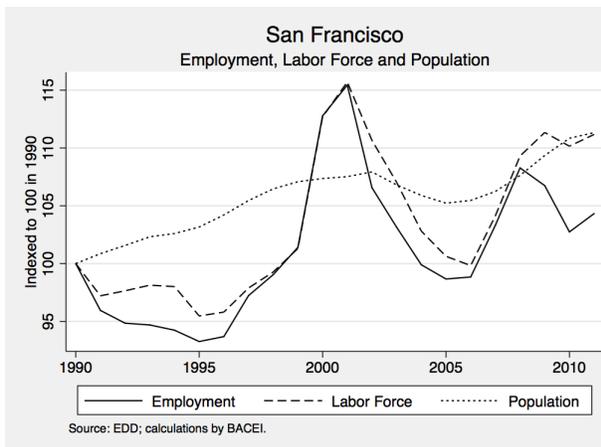


Figure 6: Employment, Labor Force and Population

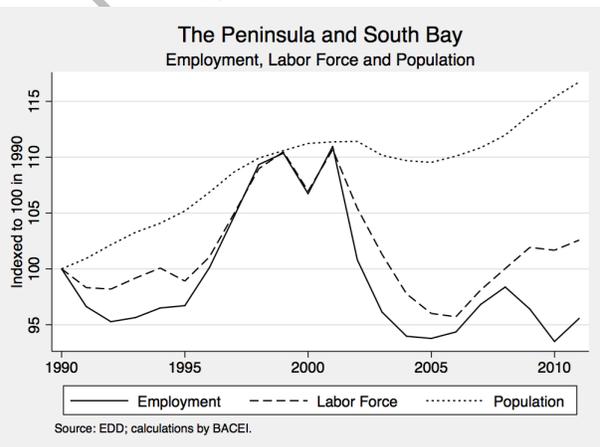
(a)



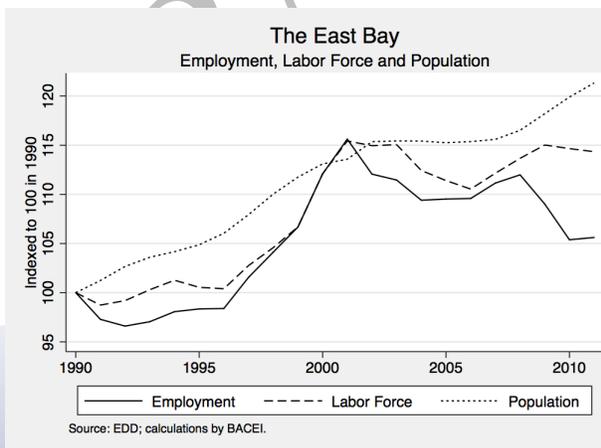
(b)



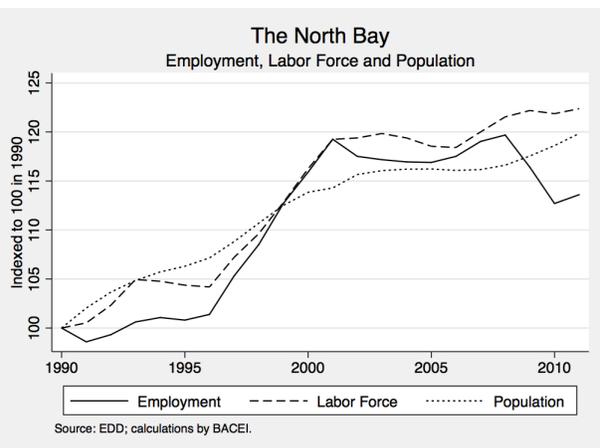
(c)



(d)

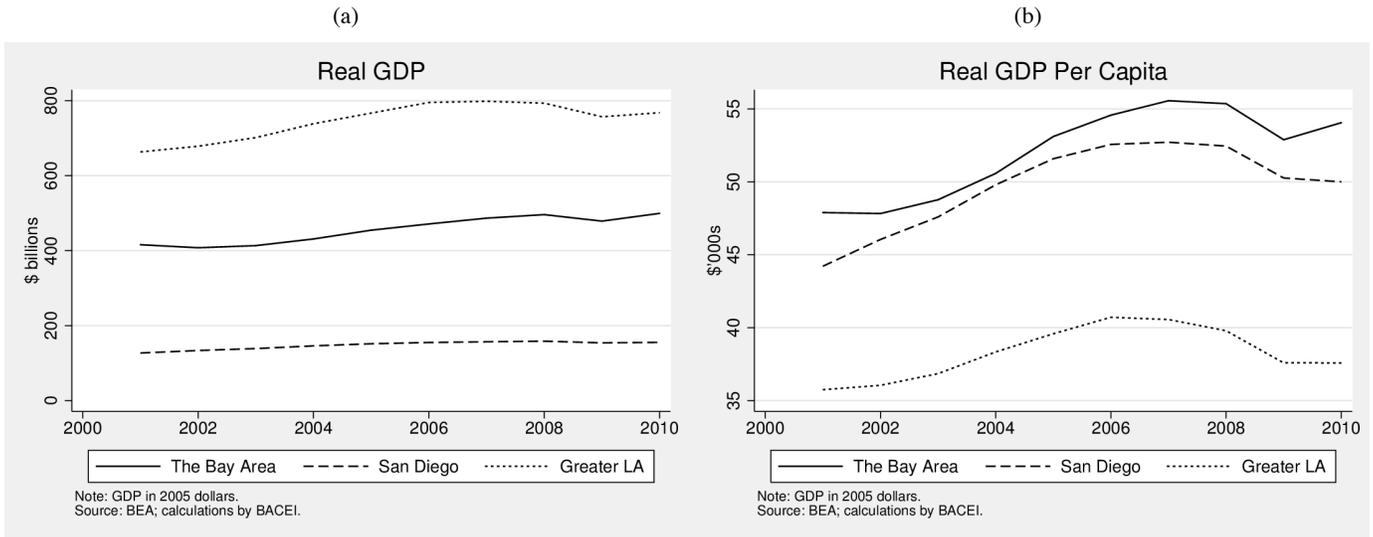


(e)



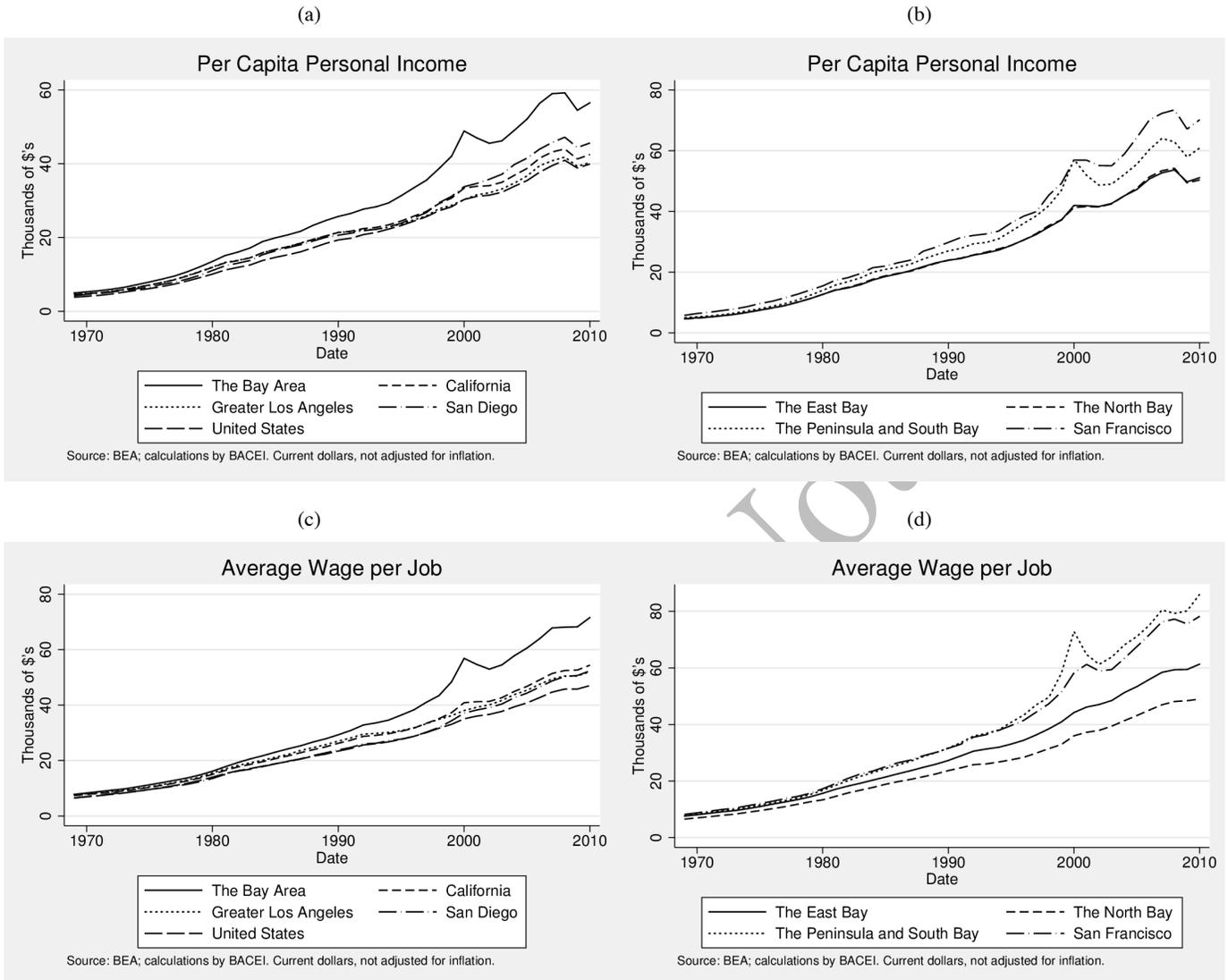
As mentioned earlier, the dot-com bust was felt more strongly in San Francisco and on the Peninsula than it was in the East Bay and the North Bay. These graphs suggest that the Peninsula was hit hardest, then SF, then the East Bay, and least of all the North Bay, which speaks to these sub-regions degree of connection to the ``Silicon Valley economy."

Figure 7



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Figure 8



Industry Level Analysis

From an industry-level perspective, the Bay Area is a relatively diverse economy. However, it does have some significant concentrations in high-skilled, high-value added activities. These are sectors for which the Bay Area is well known: Information (including the social media companies); Computer and Peripheral Equipment Manufacturing; Beverage Manufacturing (wine); as well as a variety of Professional, Scientific, and Technical Services sub-sectors.

The Bay Area's industrial composition has evolved since 1990. Notable trends that can be seen in Table 2 are:

- (1) The dramatic growth of the Professional, Scientific and Technical Services (PSTS) sector.
- (2) The almost equally dramatic growth of the Healthcare sector.
- (3) The precipitous decline of the Manufacturing sector.
- (4) The shrinkage (by 33%) of the Finance and Insurance industry.

This section of the report will discuss these trends and provide explanations for some and questions for ongoing investigation and analysis.

The Evolution of Industry in the Bay Area

Table 2 provides an indication of changes over time in the distribution of Bay Area employment across major sectors of the economy. An important transition of the economy between 1990 and 2011 is the movement away from an economy with employment heavily concentrated in manufacturing and retail trade, to a more diverse broad base of employment. In 2011, five sectors had employment shares greater than the third largest sector in 1990. In four of these sectors, employment growth outpaced that of the nation as a whole (or fell more slowly, as in the case of manufacturing). The only one of these sectors that fell short of the national employment trend was retail trade.

A common means of tracking local employment relative to some other geography, here, the United States as a whole, or California, is through a location quotient. The location quotient is simply the ratio of the share of employment in the Bay Area relative to the share of employment in the nation or state. Figure 9 presents location quotients for industries in the Bay Area relative to the U.S. on the vertical axis and relative to California on the horizontal axis. For example, PSTS has a location quotient of about 2.0 relative to the U.S. and about 1.5 relative to California. This means that the share of PSTS employment in total Bay Area employment is twice as large as it is in the United States as a whole, and 50% larger than in California as a whole.

Table 2: Industry Composition

Table 2: Industry Employment Share by Year

Thousands of Jobs, Sorted by 2011 Share of Bay Area Employment

Industry	Share of Bay Area Employment (%)				Employment Levels (Thousands)			
	1990	2000	2003	2011	1990	2000	2003	2011
Prof., Sci., & Tech.	7.8	10.3	9.4	11.8	205	332	278	340
Health Care & Soc. Asst.	7.4	7.6	8.9	11.0	196	244	262	317
Retail Trade	12.9	11.0	11.4	10.8	342	353	336	311
Accom. & Food Svcs	7.8	7.7	8.6	9.8	207	249	252	283
Manufacturing	14.9	13.1	10.9	9.3	395	423	320	269
Educ. Services	5.9	6.2	7.1	6.6	156	200	208	190
Admin, Support, & Waste	6.2	7.3	5.9	5.8	165	237	172	167
Other Svcs	4.0	4.0	4.7	5.4	107	128	138	154
Construction	5.6	5.8	6.1	4.6	149	188	179	132
Wholesale Trade	5.3	4.3	4.2	3.9	141	137	124	113
Public Admin	3.9	3.1	3.8	3.8	103	101	111	110
Fin & Ins.	5.8	3.9	4.8	3.7	153	124	141	105
Information	2.9	4.3	3.8	3.6	78	139	110	103
Trans. & Ware.	4.1	3.8	3.7	3.0	109	123	110	86
Mgmt of Companies	0.6	3.4	2.3	2.1	15	111	68	60
Arts, Ent., & Rec	1.6	1.3	1.5	1.9	42	43	45	54
RE, Rental, Leasing	2.4	1.9	2.1	1.8	62	62	61	52
Other	0.9	0.8	0.9	1.3	24	27	27	37
Total	100.0	100.0	100.0	100.0	2,649	3,219	2,943	2,884

Source: BLS, Calculations by BACEI

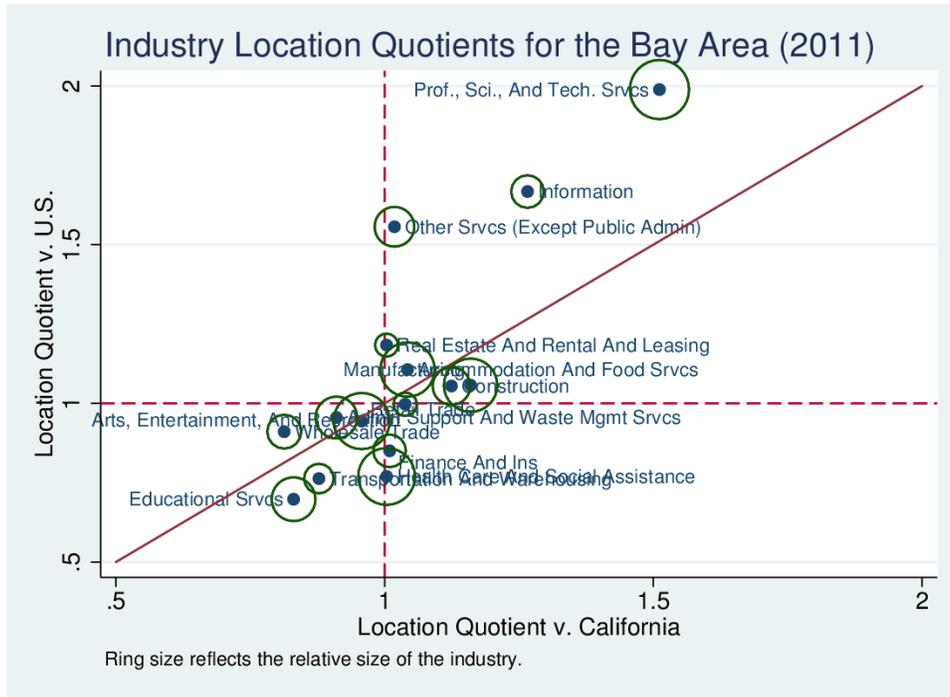
According to Figure 9, there are three industries with location quotients significantly greater than one relative to the United States: PSTS, Information, and Other Services (except Public Administration).⁵ Industries with location quotients significantly larger than one are often considered to be "driving industries", those that play a primary role in growing employment in the region.

Other industries with location quotients of approximately one are often referred to as "supporting industries". In the Bay Area some of these industries include Retail and Wholesale Trade; Finance and Insurance; Manufacturing; Construction; Arts, Entertainment, and Recreation; and Administrative Support and Waste Management Services (Table 3). It is worthy of note that some of these industries are plausibly categorized as driving industries within specific regions of the Bay Area. Particular examples include Manufacturing on the Peninsula and South Bay, and Arts, Entertainment, and Recreation in San Francisco.

⁵Other Services include establishments providing a wide variety of services that do not fit well into any other category. Examples include Equipment Repair and Maintenance including Electronic and Precision Equipment Repair and Maintenance; Religious, Grant-making, Civic, Professional and Similar Organizations; Death Care Services; and Other Personal Services including Pet Care (except Veterinary) Services and Parking Lots and Garages.

Figure 9: Location Quotients for the Bay Area as a Whole

(a)



(b)

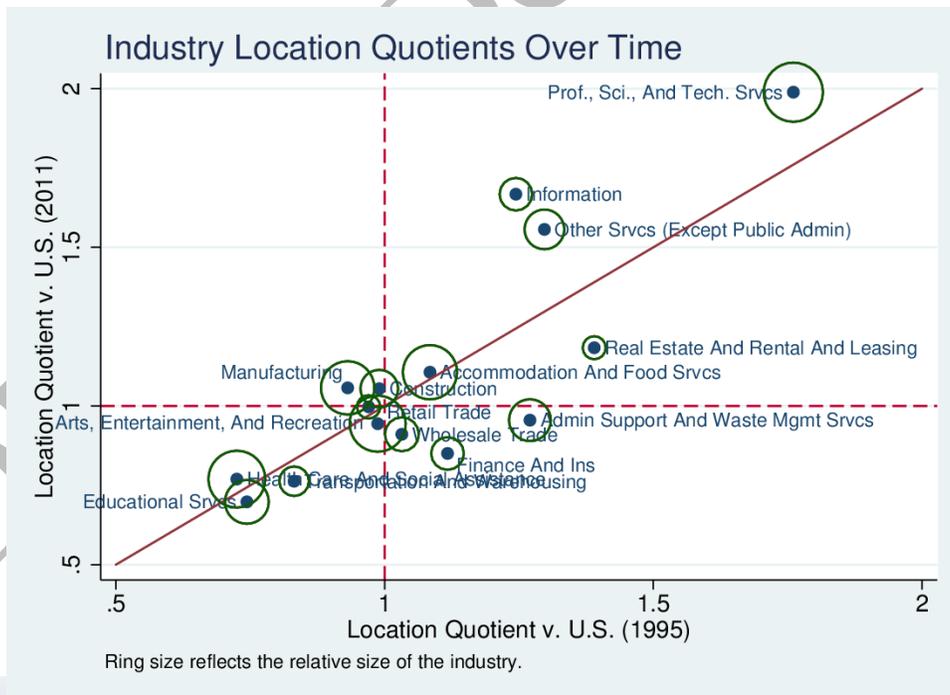


Table 3: Location Quotients vs. the U.S. by Sub-Region

Table 3: LQ's vs. the US by Sub-Region

Industry	Bay Area	East Bay	North Bay	San Francisco	San Jose
Other	3.1	3.0	2.9	3.5	2.5
Prof., Sci., And Tech. Svcs	2.0	1.5		2.5	2.3
Information	1.6			2.0	2.8
Other Svcs (Except Public Admin)	1.6	1.6	1.5	2.0	
Real Estate And Rental And Leasing	1.2			1.5	
Accommodation And Food Svcs	1.1		1.3	1.4	
Construction	1.0		1.4		
Arts, Entertainment, And Recreation	1.0			1.4	
Manufacturing	1.0				1.9
Admin Support And Waste Mgmt Svcs	1.0				
Retail Trade	0.9				
Wholesale Trade	0.9				
Finance And Ins	0.9			1.3	
Health Care And Social Assistance	0.8				
Transportation And Warehousing	0.8				
Educational Svcs	0.7				
Ag., Forestry, Fishing And Hunting	0.7		4.2		
Public Admin	0.7				
Utilities	0.3				
Mining	0.0				

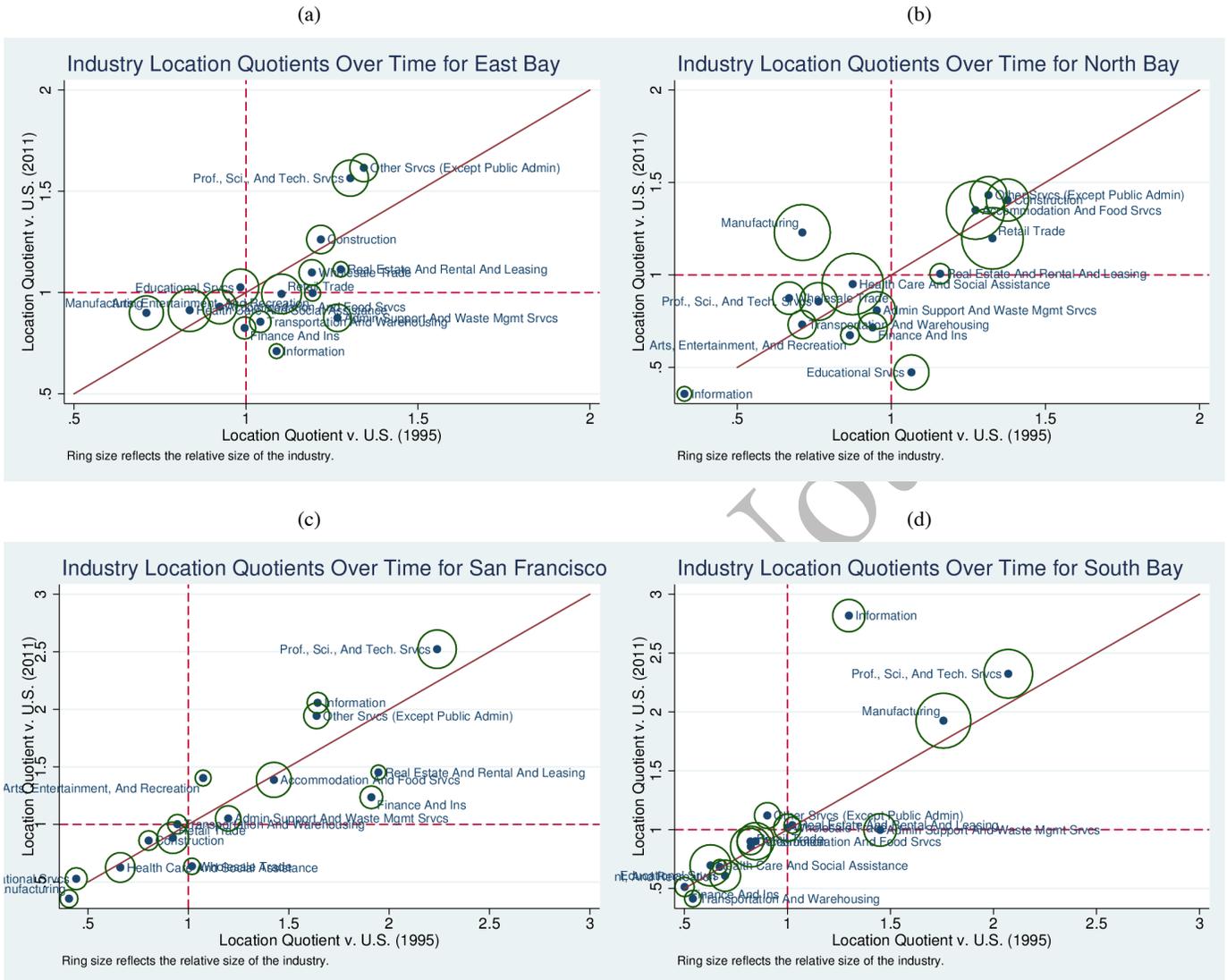
Source: BLS, Calculations by BACEI

Similarly, not all driving industries in the Bay Area are driving industries in each of the regional economies. Examples include Information, which is heavily concentrated in only San Francisco and the Peninsula, PSTS, which is not a driving industry in the North Bay, and Other Services, which play a relatively small role in the economy on the Peninsula. Figure 10 below provides more evidence on the local concentrations of the Bay Area's four sub-regions.

Regionally, there is a clear pecking order in terms of the quality of driving industries, in terms of average wages. Overall, full time employees in the Bay Area earned an average of \$71.4 thousand. In the Bay Area's driving industries, both PSTS and Information are characterized as having very high wages, \$104.0 thousand and \$92.9 thousand, respectively. San Jose, with a heavy concentration of employees in both PSTS and Information, as well as Manufacturing, has a very solid core of driving industries with exceptionally high wages. San Francisco has more of a mixed bag of driving industries, with a solid concentration in high wage sectors, but also heavy concentration in industries with lower than average wages; for example, Arts, Entertainment, and Recreation (\$49.4 thousand), Accommodation and Food Services (\$31.1 thousand), and Other Services (\$45.4 thousand).

The East Bay has a heavy concentration in PSTS, but other areas of concentration, Other Services and Construction, are industries with relatively low average wages. The North Bay is lacking any concentration in high wage sectors. All

Figure 10: Location Quotients for Bay Area Sub-Regions

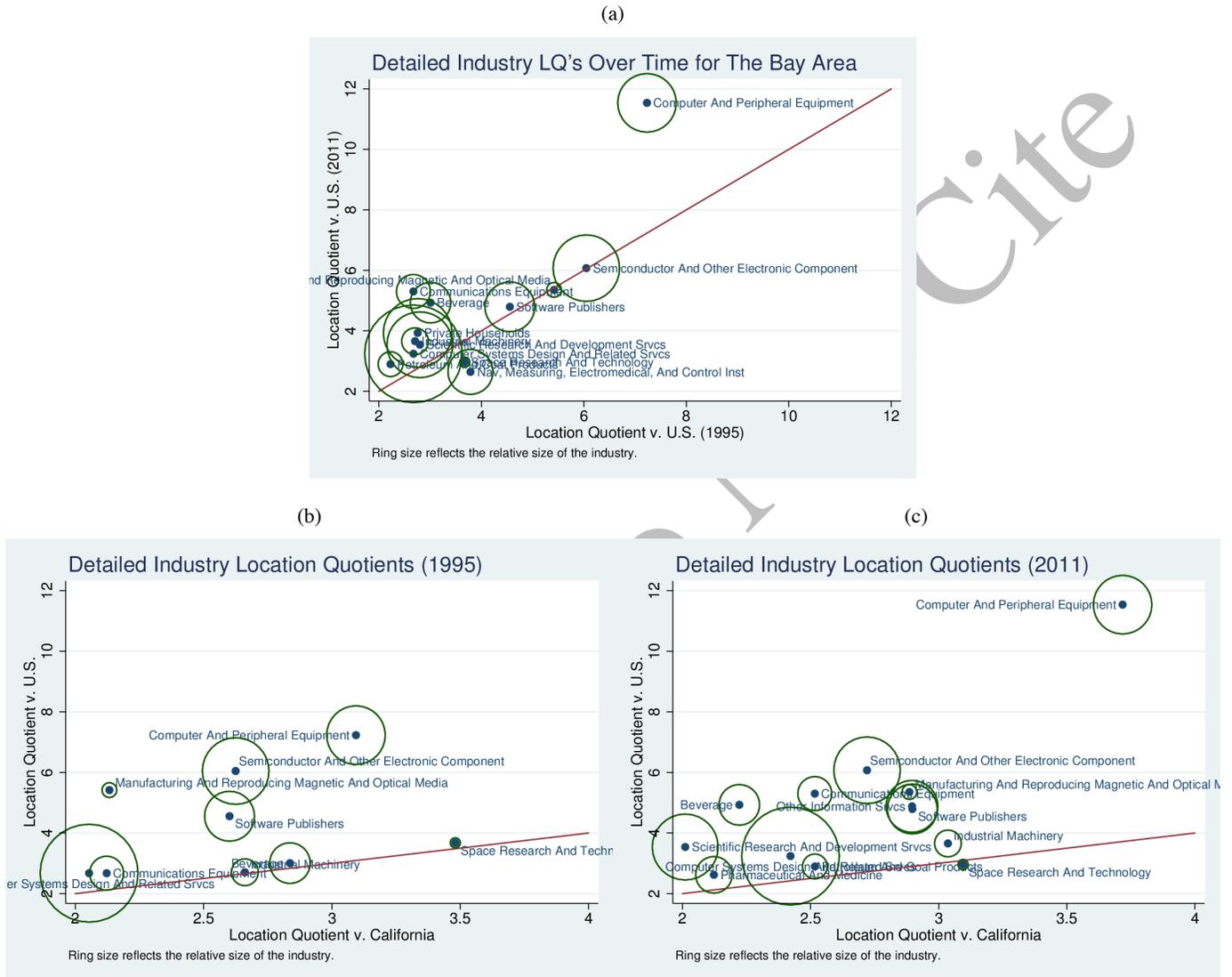


three of its driving industries are relatively low wage, with average wages between \$15 and \$40 thousand below the regional average.

There are also heavy concentrations in sub-sectors of the major industries indicated above. In particular, Computer and Peripheral Equipment Manufacturing has a location quotient of nearly 12 in the Bay Area relative to the United States as a whole; for every one employee in the sector nationwide, there are 12 in the Bay Area (Figure 11). Other sub-sectors include a variety of manufacturing activities. In fact, the top 5 most heavily concentrated sub-sectors in the Bay Area

are all manufacturing, followed by some information services and software publishing. Each of these sectors are also driving industries relative to California as a whole.

Figure 11: Detailed Location Quotients for the Bay Area



As mentioned above, some industries have been outperforming employment growth at the national level. Figure 12 provides the history of location quotient change for four of these industries, along with their concentration in the Bay Area's sub-regions. Manufacturing employment, though falling both as a share of regional employment and in absolute numbers, is gaining in concentration relative to the U.S. as a whole. Much of this increase comes from the Peninsula,

while the North Bay is also showing relative growth in the sector (Figure 12(a)). The growth in the North Bay location quotient is largely due to employment growth in the beverages manufacturing sector.

Figure 12: Location Quotients Over Time for Growing Industries with Increased Concentration Locally

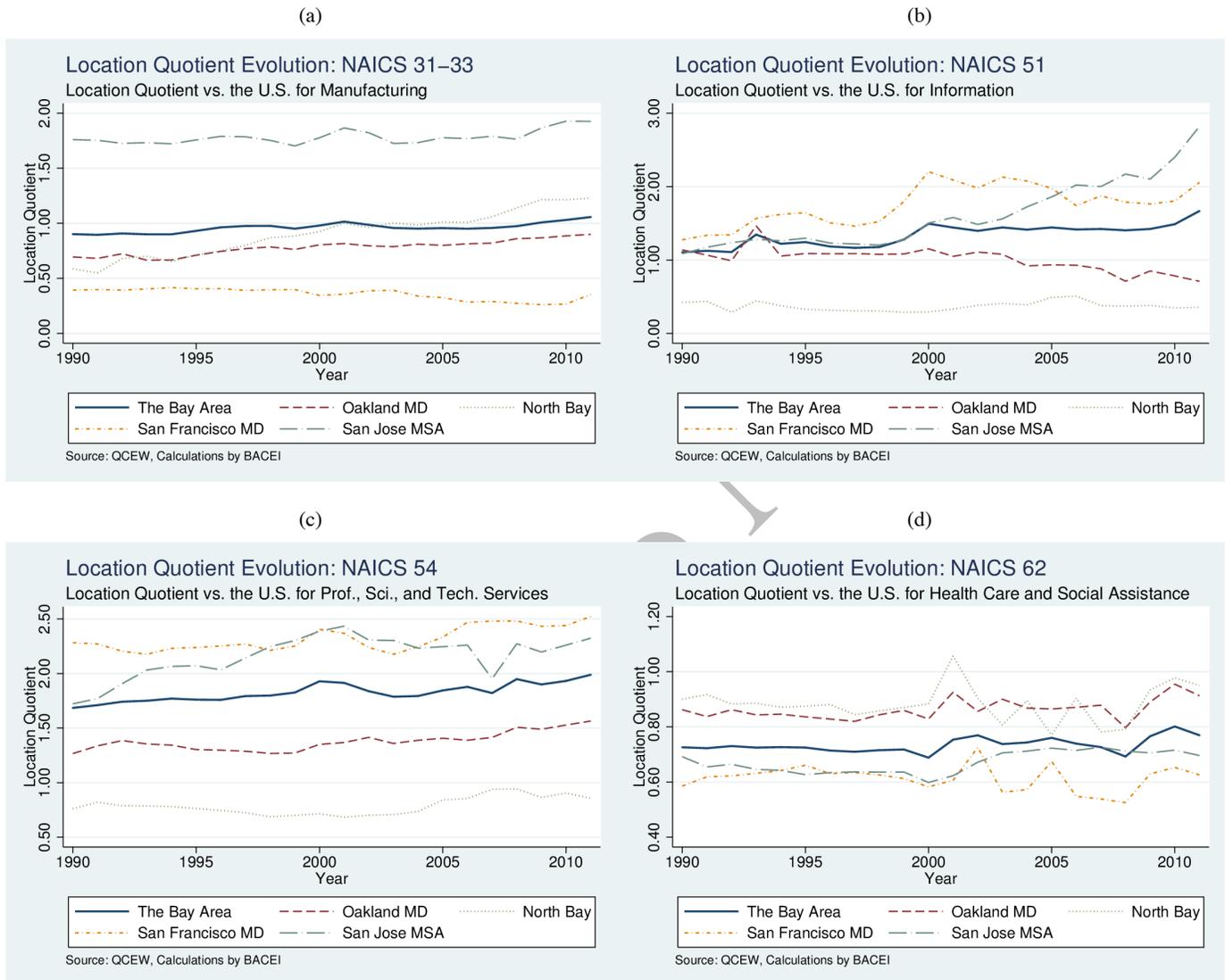
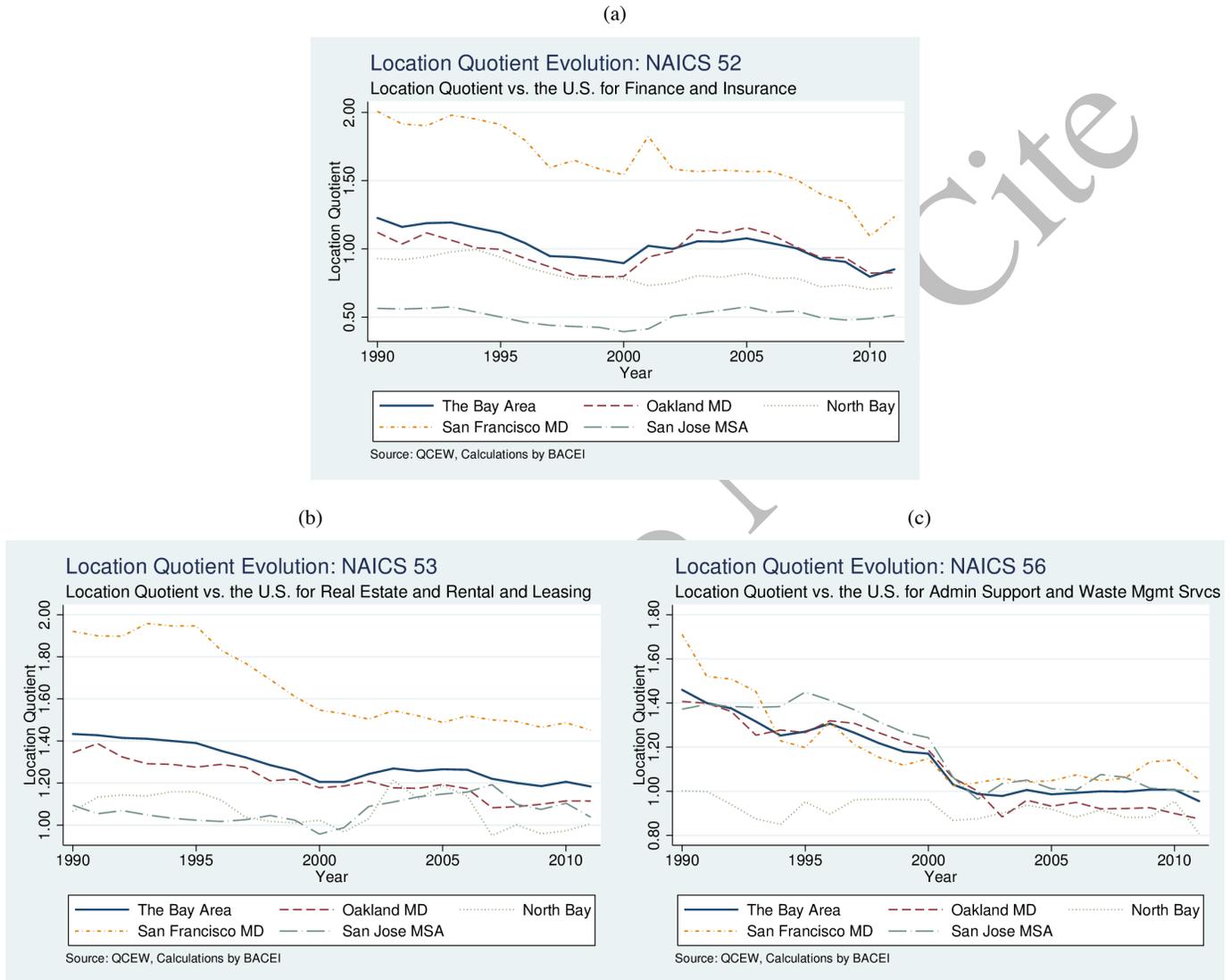


Figure 13 provides evidence on the declining concentration among some of the Bay Area's formerly driving industries. Most notable among these is the Finance and Insurance industry. Though never a major driving force for the bay-wide economy, it did have a location quotient of 2.0 for San Francisco in 1990, thus explaining the area's reputation as a major financial sector. For a variety of reasons, including the movement of Bank of America's headquarters out of the

state, employment in this industry in San Francisco has been in long term decline, with a location quotient in 2011 of approximately 1.25.

Figure 13: Location Quotients Over Time for Industries with Declining Concentration Locally



The Administrative Support and Waste Management Services sector has experienced perhaps the most striking and broad based decline in concentration throughout the region. The decline occurred between 1990 and 2002, with a relatively constant location quotient since then. The sub-sectors that are primarily responsible for this trend include Employment and Business Support Services, about half of employment in the broader industry. These declines are shared by each of the Bay Area's sub-regions.

The Geographic Organization of Bay Area Industries

Up to this point, this section has been concerned with changes and characteristics of regional employment at the industry level. This section examines the current location within the four major subregions of employment by industry and how the location patterns have changed between 1990 and 2011.

Table 4 provides sub-regional employment shares for each of the major industries along with an indication for how those shares have changed. For example, in 1990, 43.8% of all jobs in the PSTS sector were in San Francisco, 30.1% were in Santa Clara, 3.9% were in the North Bay, and 22.3% were in the East Bay. Since that time, there has been greater growth in PSTS employment outside of San Francisco, with each region gaining share in rough proportion to its original share in 1990. By 2011, Santa Clara had gained the most (2.5 percentage points of share), the East Bay second (2.0%), and the North Bay last (0.8%).

Table 4: Industry Employment Share by Region and Year

Table 0: Industry Employment Share by Region and Year
% Share, Sorted by Industry Size in the Bay Area for 2011

Industry	1990				2011				Change			
	SF	SC	NB	EB	SF	SC	NB	EB	SF	SC	NB	EB
Prof., Sci., & Tech.	43.8	30.1	3.9	22.3	38.3	33.0	5.0	24.2	-5.5	3.0	1.1	1.9
Health Care & Soc. Asst.	26.1	28.0	10.7	35.2	24.6	25.3	13.5	36.7	-1.5	-2.8	2.8	1.5
Retail Trade	29.8	24.1	11.4	34.7	28.3	25.2	13.9	32.4	-1.5	1.1	2.5	-2.3
Accom. & Food Svcs	40.1	22.3	11.3	26.3	37.9	23.2	13.2	26.1	-2.2	1.0	1.9	-0.3
Manufacturing	14.1	57.4	5.6	22.8	7.1	53.0	12.5	27.2	-7.0	-4.4	6.8	4.4
Educ. Services	18.2	27.6	12.2	42.0	22.7	24.2	7.5	45.0	4.5	-3.4	-4.7	3.0
Admin, Support, & Waste	37.9	27.7	5.9	28.6	33.1	30.0	9.1	28.5	-4.7	2.3	3.2	-0.0
Other Svcs	38.6	23.1	9.0	29.3	38.2	20.2	10.2	32.2	-0.5	-2.9	1.2	3.0
Construction	25.9	24.0	14.7	35.5	24.9	25.1	14.4	36.8	-0.9	1.1	-0.3	1.3
Wholesale Trade	33.3	31.5	5.7	29.5	21.3	31.2	10.5	37.2	-12.0	-0.3	4.8	7.7
Public Admin	36.5	20.4	9.0	34.1	35.2	18.0	15.6	31.0	-1.3	-2.4	6.6	-3.1
Fin & Ins.	52.9	13.5	6.5	27.1	44.2	16.8	9.5	29.6	-8.7	3.3	2.9	2.6
Information	37.3	28.9	3.3	30.5	36.5	48.1	2.4	14.0	-0.8	19.2	-0.9	-16.5
Trans. & Ware.	51.1	14.4	6.2	28.3	40.3	15.1	10.5	34.3	-10.8	0.7	4.3	6.0
Arts, Ent., & Rec	36.0	25.2	7.3	31.5	39.1	19.0	7.2	29.7	3.2	-6.2	-0.1	-1.9
RE, Rental, Leasing	43.3	22.5	6.4	27.8	37.3	24.8	9.0	28.8	-6.0	2.3	2.6	1.1
Other	16.0	26.5	46.2	11.3	19.4	19.5	38.3	23.2	3.4	-7.0	-8.0	11.9
Total	32.3	29.4	8.6	29.6	30.0	28.3	10.9	31.0	-2.3	-1.2	2.3	1.4

Source: BLS, Calculations by BACEI

Not surprisingly, this pattern roughly describes the experience of almost all industries. In particular, San Francisco has lost employment shares in all but three industries: Education Services, Information, and Arts, Entertainment, and Recreation. The largest share declines come in Wholesale Trade and Transportation and Warehousing. Considerable

share has been lost by San Francisco to both the North and East Bay sub-regions. Most of the share losses were to the East Bay. Not surprisingly as this period represents one of solid growth at the Port of Oakland, for both maritime and air cargo movements. Another, perhaps more noteworthy shift is the loss of share of finance and insurance jobs to other parts of the Bay Area. Over the 21 year period, San Francisco lost nearly 9 percentage points of its share, roughly evenly split between the three other regions.

Another sector with significant changes in employment shares is Manufacturing. Between 1990 and 2011, Santa Clara and San Francisco lost a combined 10.6 share points. Most of this went to the North Bay, which experienced significant growth in not only Beverage Manufacturing, but also Animal and Fruit and Vegetable Processing. The East Bay also gained share, but through more broad-based growth of relative Manufacturing employment.⁶ Much of this gain in share by the East Bay is in Southern Alameda County, representing an expansion outside of the traditional technology corridor at Silicon Valley into the East Bay.

The Information sector also experienced a significant geographical shift in industry concentration. In 1990, nearly one-third (30.3%) of all information sector employment was in the East Bay. By 2011, the East Bay had lost 17.4 share points, all of which were gained by Santa Clara. This transfer is both a result of employment losses in the East Bay and significant gains in Santa Clara, primarily in the technology, social media, and data storage sub-sectors.

Establishment Level Analysis

An analysis of industries and employment dynamics in a region is incomplete without consideration of the underlying establishment level dynamics. Although employment in a particular industry may grow, the underlying dynamics may be such that there is tremendous dislocation of employment. In particular, new businesses are created at a rapid rate in most regions throughout California; existing businesses expand employment, contract employment, or go out of business. These underlying dynamics provide valuable information about the nature of the local economy.

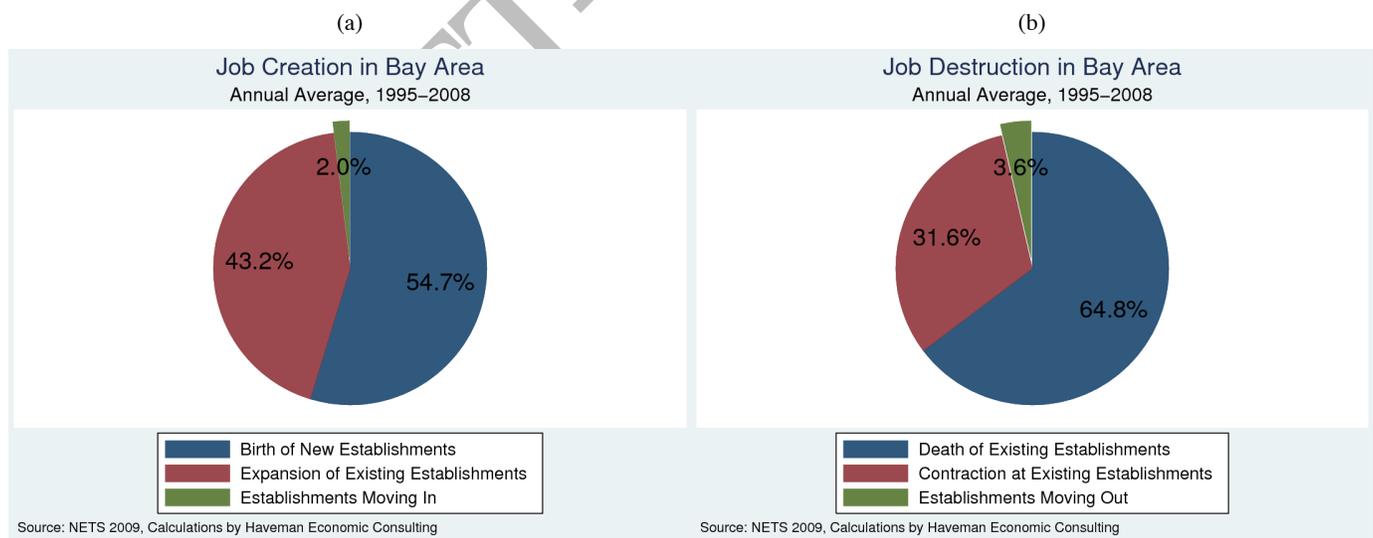
⁶See: Building on Our Assets: Economic Development and Job Creation in the East Bay, October 2011, East Bay EDA

Thinking about employment growth at the industry level is akin to thinking about expansion or contraction of a single business. In fact, there are many thousands of business establishments in most industries that have a variety of characteristics. Understanding the age, size, and expansion patterns of industries can enable a more thorough understanding of the health of the local economy and industries.

The underlying dynamics are often understood in the context of job creation and job destruction. Jobs are created through three avenues in an economy: new establishments, expanding establishments or establishments moving into the region. Similarly, jobs are destroyed in (removed from) the local economy through three avenues: establishments going out of business (dying), establishments reducing their employment (contracting), or establishments moving out of the region.

Figures 14(a) and 14(b) provide an indication of the relative importance of these factors in explaining the dynamics of the Bay Area economy. With respect to job creation, more than half (54.7%) comes from the opening of new business establishments. These can be standalone companies, or new establishments being opened by existing firms (a new Starbucks, for example). Another 43.2% of job creation comes from the expansion of employment at existing establishments and just 2.0% of employment growth is from existing establishments moving into the region.

Figure 14: Job Creation and Destruction in the Bay Area



With respect to job destruction, the majority, nearly two-thirds (64.8%) comes from the closure of existing business establishments. Just under one-third (31.5%) comes from the contraction of employment at existing establishments, and just 3.6% is from establishments choosing to move out of the area.

Together, job creation and job destruction are often labeled indicators of job churn in an economy. Together, they provide evidence of the dynamic nature of the economy or particular industries. Table 5 provides statistics on job churn for the major industry groups in the Bay Area. Looking first at the bottom line of the table, the first three numbers correspond to those displayed in Figure 14(a), the second three to those displayed in Figure 14(b), while the last two provide summary measures of job creation and job destruction on an average annual basis between 1995 and 2008. In an average year, jobs equivalent to 9.1% of the existing level of employment are added to Bay Area employment through job creation. At the same time, 8.3% of existing jobs are lost through one or another avenue of job destruction. This paints a distinctly different picture of the economy than the simple observation that employment in the Bay Area grows at an average rate of 0.8% per year; that small percentage masks a great deal of job turnover.

Table 5: Sources of Job Creation and Job Destruction - by Industry
(Average Annual Figures, % of Total)

Industry	Job Creation			Job Destruction			Job Churn	
	Births	Growth	Move In	Deaths	Contraction	Move Out	Creation	Destruction
Ag., Forestry, Fishing and Hunting	49.8	48.0	2.2	61.3	34.8	3.9	7.6	6.3
Mining	41.3	45.8	12.9	53.1	29.7	17.2	9.2	7.6
Utilities	52.0	45.3	2.7	72.6	22.4	5.0	3.7	8.7
Construction	48.5	50.3	1.3	61.8	34.3	3.9	9.8	7.8
Manufacturing	41.9	54.6	3.5	61.1	34.1	4.8	8.6	10.0
Wholesale Trade	51.3	46.1	2.6	70.8	24.6	4.6	9.2	10.3
Retail Trade	64.2	34.4	1.4	71.2	26.4	2.4	8.2	7.1
Transportation and Warehousing	57.3	40.1	2.6	58.2	37.3	4.5	6.9	9.8
Information	49.7	46.8	3.5	68.8	24.6	6.6	12.8	10.2
Finance and Insurance	55.8	42.8	1.4	62.0	32.1	6.0	8.9	8.6
Real Estate and Rental and Leasing	59.8	39.0	1.2	67.7	30.0	2.3	9.6	8.0
Prof., Sci., and Tech. Services	51.6	45.3	3.0	66.2	29.5	4.3	11.6	9.7
Admin Support and Waste Mgmt Svcs	65.7	33.0	1.3	64.1	31.5	4.4	13.6	9.1
Educational Services	41.9	57.5	0.6	53.8	44.6	1.5	4.7	4.8
Health Care and Social Assistance	53.4	45.8	0.9	66.7	32.0	1.4	7.2	6.4
Arts, Entertainment, and Recreation	62.7	36.1	1.3	71.3	26.6	2.1	10.1	7.1
Accommodation and Food Services	68.6	30.4	1.0	72.3	26.6	1.1	6.8	6.3
Other Services (except Public Admin)	59.1	39.8	1.1	63.7	35.0	1.4	9.0	8.1
Public Administration	52.8	47.1	0.2	55.5	44.2	0.3	7.9	8.8
Other	98.7	0.3	1.0	83.8	5.0	11.2	25.0	12.9
All Industries	54.6	43.4	2.0	64.8	31.6	3.6	9.1	8.3

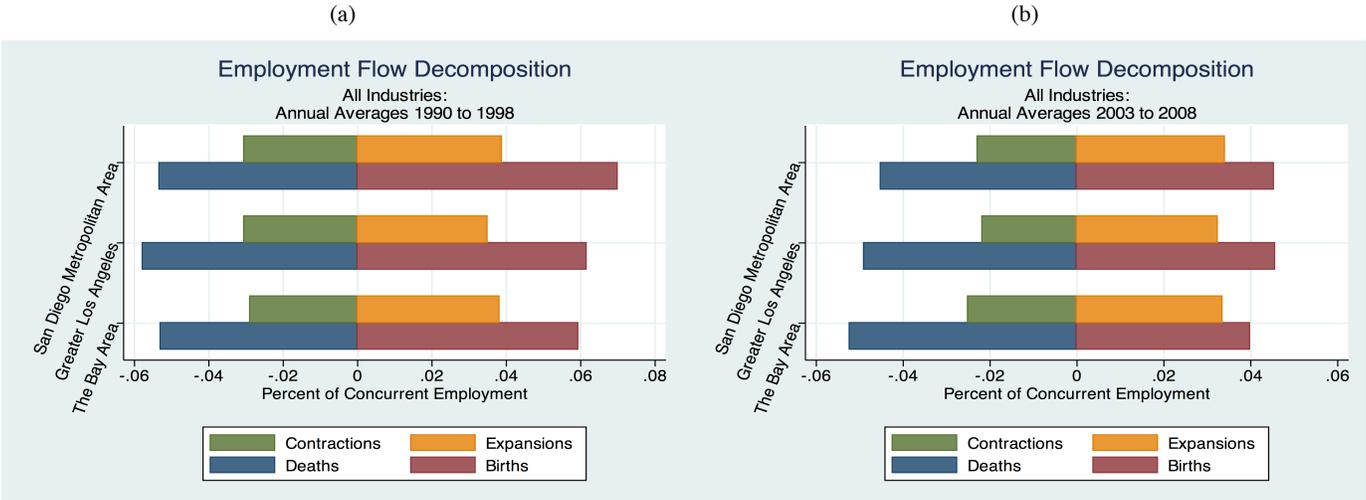
Source: NETS 2009, Calculations by Bay Area Council Economic Institute

The other rows of the table present the same information for each major industry group in the Bay Area. In particular, PSTS exhibits job churn that tends to be greater than for the economy as a whole; a job creation rate of 11.6% and a job destruction rate of 9.7%. The information sector, another important sector for the Bay Area exhibits even more job creation. At the industry level, establishment moves can be more important as a source of job churn. In particular, movements in the Mining sector are equal to 12.9% for moves in and 17.2% for establishments moving out in an average year. There are other industries that are much less mobile. Education services, for example, gains only 0.6% from moves in and loses 1.5% from moves out of the region.

Births and deaths also play distinctly different roles in different industries. Accommodation and food services relies heavily on births and experiences a large number of deaths, while manufacturing relies much less on births (41.9%) and loses jobs at a slower rate than average due to deaths (61.1%). Contractions are relatively commonplace in education services and public administration, as are expansions.

A comparison of these statistics with other regions is revealing. Figure 15(a) and 15(b) provide evidence on the relative contributions of the components of job creation and destruction in the Bay Area relative to Los Angeles and San Diego. Here, moves are absorbed into births and deaths for a clearer exposition. These figures present evidence from before and after the dot-com bubble to avoid conflating the experience of that extraordinary time with more fundamental long-run dynamics in the region. The figure on the left is from the eight years prior to the bubble and the figure on the right reflects the experience of the five years following the bursting of the dot-com bubble, 2003-2008. The latter period is also chosen to exclude the experience of the recent recession, which is not helpful in understanding long term trends.

Figure 15: Employment Flow - by CA Region



In the earlier period, 1990-1998, the Bay Area stands out as having relatively less impact from births and deaths than do the other two regions. Contractions and expansions happen at a rate similar to the other regions. The story changes in the post dot-com era, during which deaths are still quite important; this may well be due to the lingering effects of the bursting dot-com bubble. The pattern that the Bay Area creates less employment through births remains true in the latter period.

The difference in birth rates among regions appears to be quite small, but the cumulative effect over 18 years is quite important. From Figure 16(a), it is clear that the lower birth rate has resulted in a substantial difference in the numbers of jobs created from births across regions. As a percent of 1990 employment levels, births generated approximately 20% fewer jobs in the Bay Area than on Los Angeles or San Diego; in this chart, the effect of the dot-com bubble is clear, though quite small. There is no specific explanation for this finding other than perhaps that there are regulatory or other barriers to births that exist locally that are not as prevalent in the other two regions. A likely explanation is simply that the cost of starting a new business because of rents or other costs is higher here. The cumulative effects of differences in other measures of job change are not as significant as with births, though the region appears to perform at a high level in terms of the expansion of existing businesses and to experience greater employment loss through deaths and contractions.

Figure 16: 1990

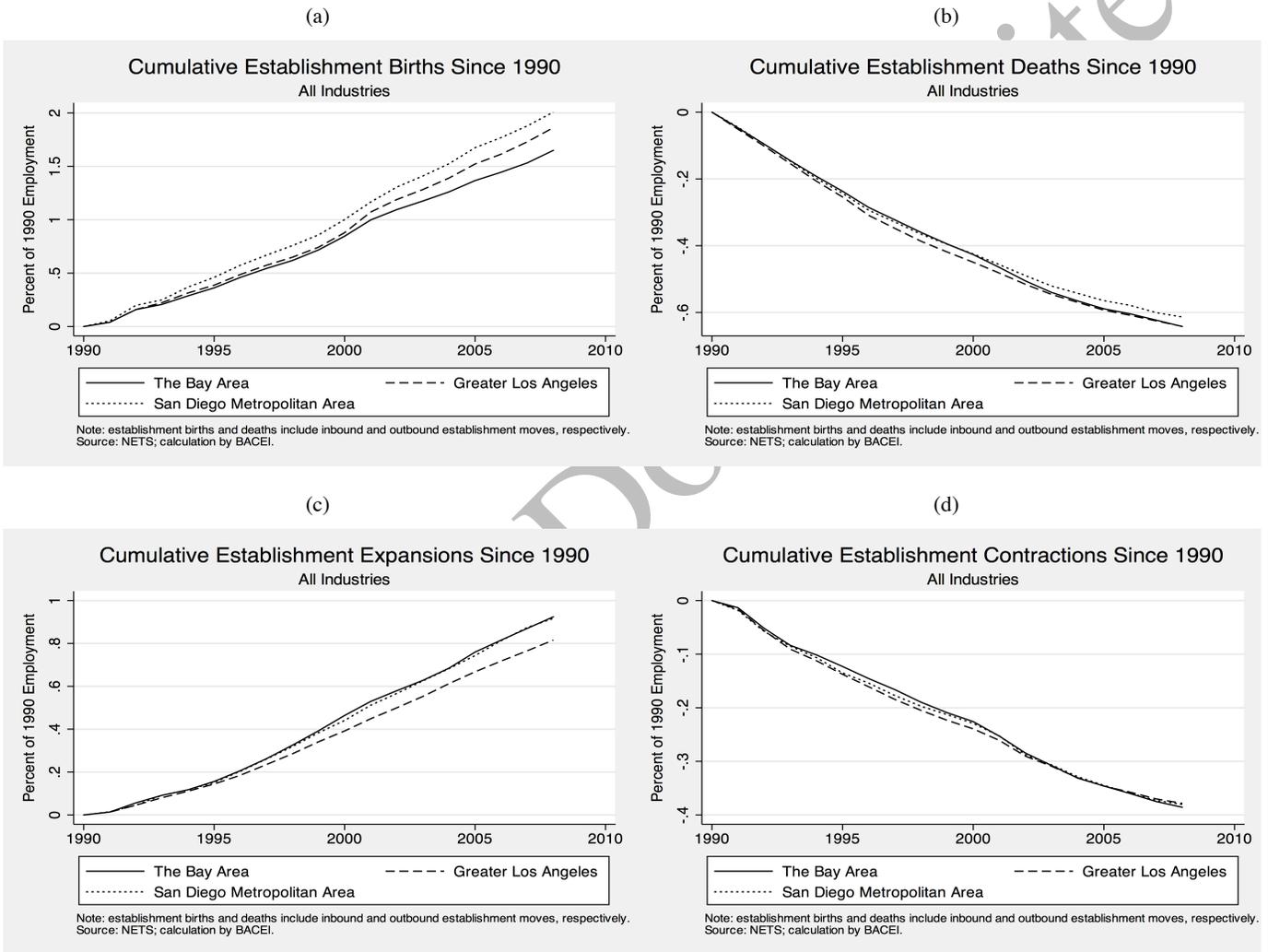
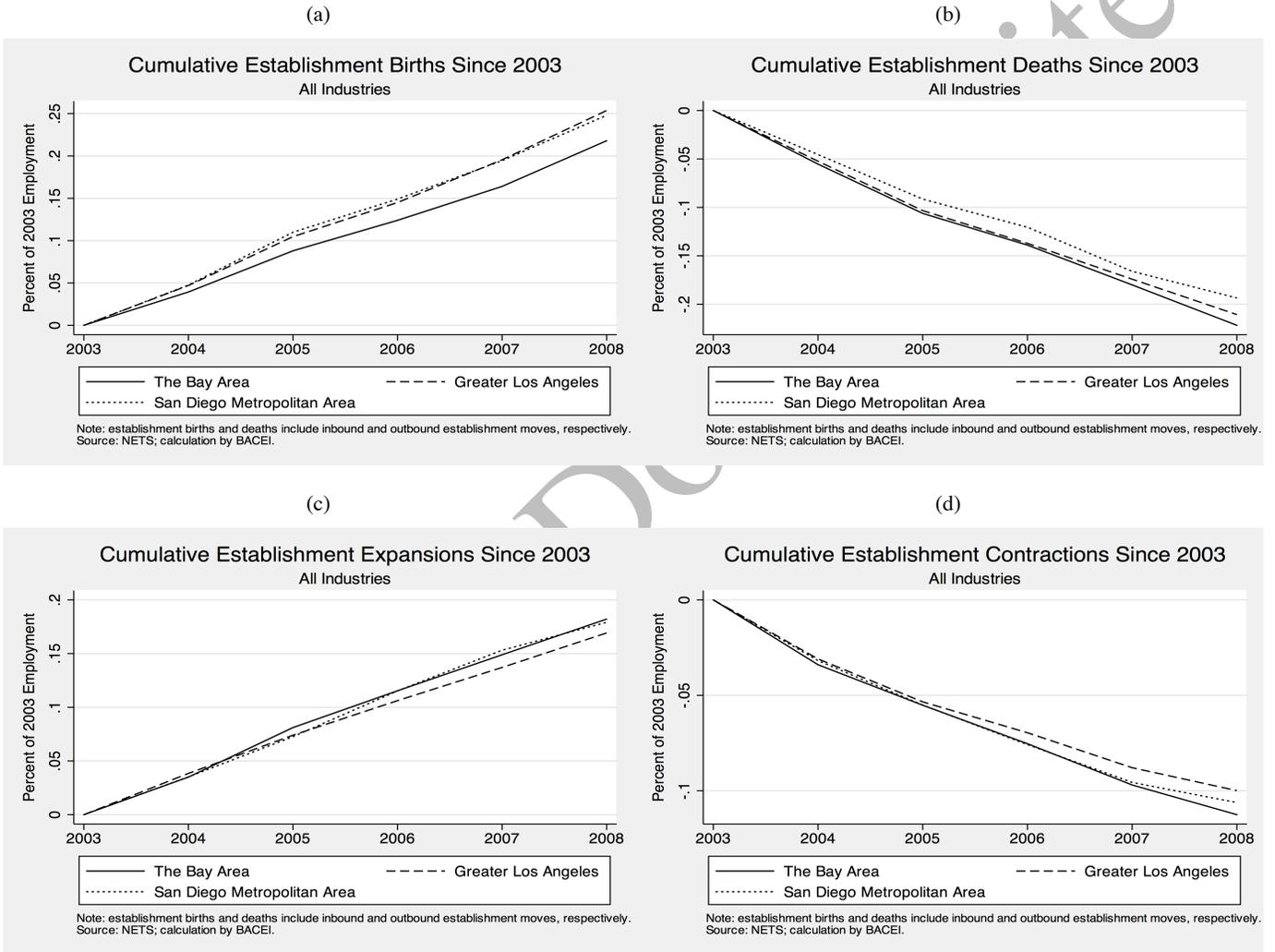
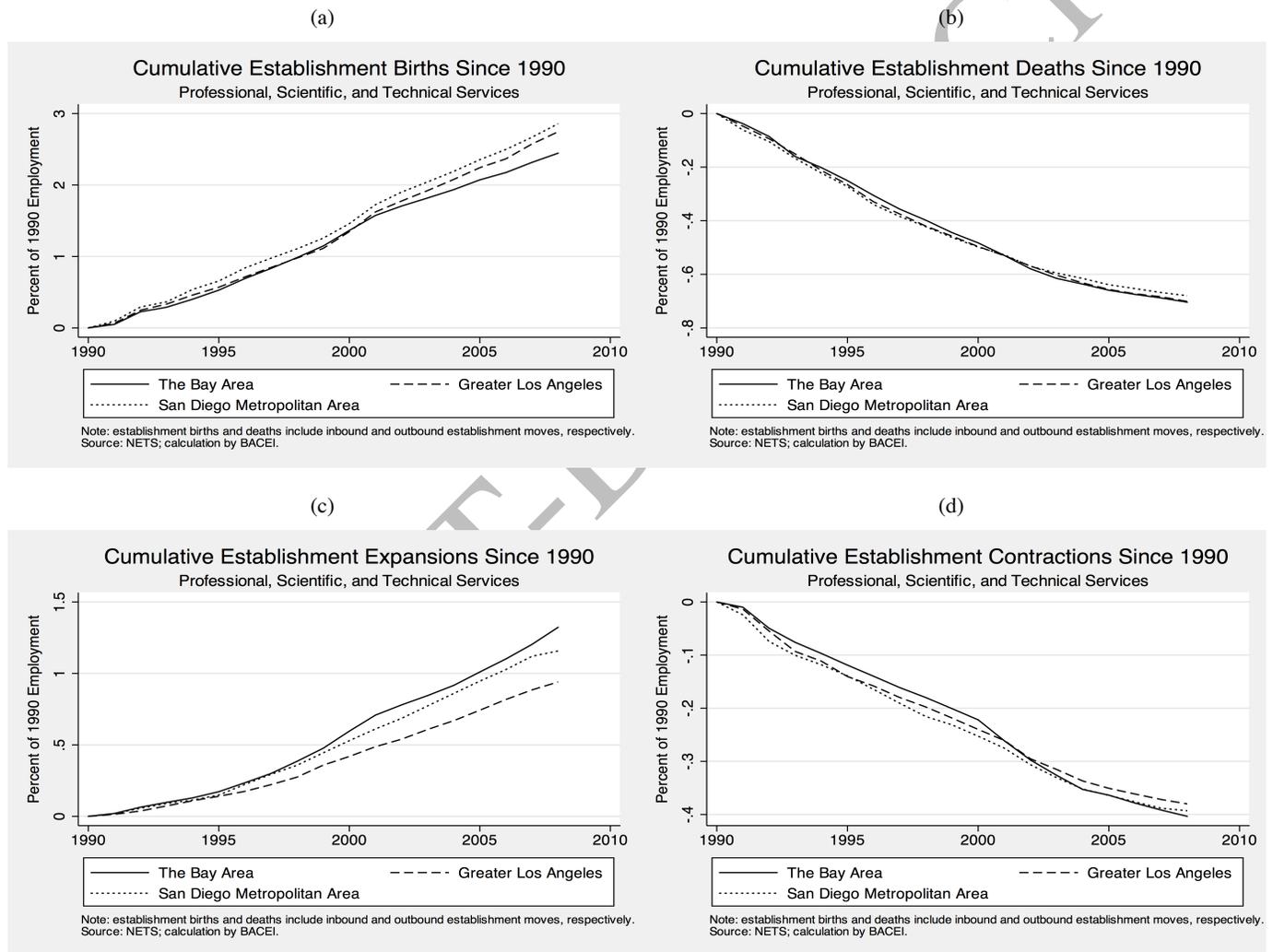


Figure 17: 2003



This pattern holds even for the Bay Area's most prominent driving industry, PSTS (Figure 18). In particular, births have been slower since 2003, while expansions have been higher over the 18 years, most of the difference appears related to the dot-com era. Contractions and deaths have not been significantly different in the Bay Area, but both are on the high side as contributors to overall job destruction. This is particularly true of contractions in the wake of the bursting of the dot-com bubble; in the 10 years between 1990 and 2000, establishment contractions had been relatively benign in the Bay Area.

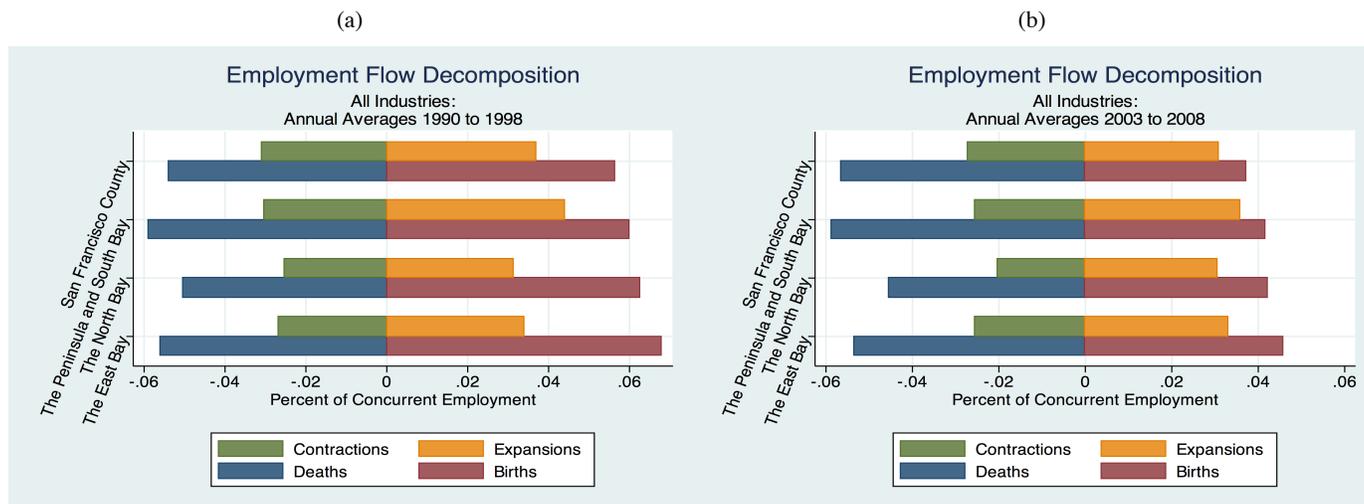
Figure 18: 1990 - PSTS



Within the Bay Area, these sources of job churn vary across sub-regions (Figure 19). In particular, births appear more likely in the East Bay, both before and after the dot-com bubble, while deaths are a leading cause of job destruction

in the Peninsula and South Bay region. Death and contractions are more likely in the Bay Area, and within it in San Francisco and on the Peninsula. Expansions are a larger source of job creation on the Peninsula than elsewhere, while contractions are lower in the North and East Bay regions.

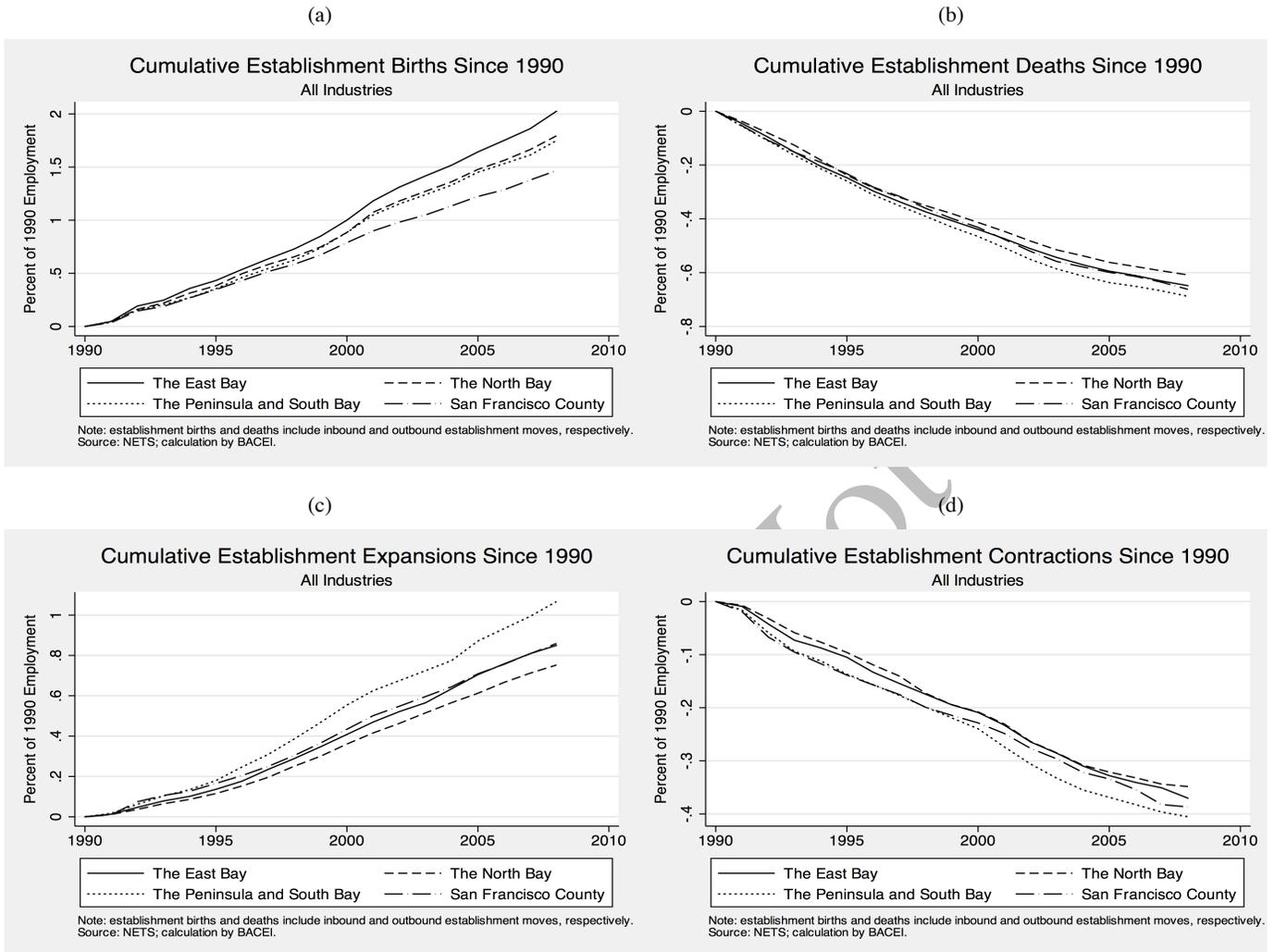
Figure 19: Employment Flow - by Bay Area Region



These subtle differences play out on more significant cumulative differences within the Bay Area than were reported above between metro areas in California (Figure 20). In particular, births in the East Bay were responsible for about 50% more job growth in the East Bay than in San Francisco, and expansions about 40% more job growth on the Peninsula than in the North Bay.

The reasons for these differences are not clear. However, rates of births, deaths, and particularly expansions and contractions can be linked to the relative ages and sizes of the establishments. In general, the issue is how well established the businesses are in the market place - with more established businesses being generally older and larger.

Figure 20: 1990



Establishment Movements

In the previous discussion, establishment moves were included in the reporting of births and deaths. A move in was equated with a birth and a move out with a death. There is much to be learned, however, from looking more specifically at the movement of establishments across county lines. At the same time, however, it should be noted that the majority of recorded establishment moves are local.⁷ Between 1990 and 2008, there were 141 thousand recorded moves involv-

⁷The word **recorded** is used here because some movements of establishments involve the shuttering of one location and the simultaneous opening of another location. This activity is sometimes misclassified as a birth and a death, rather than the movement of an establishment even when it is tantamount to a move.

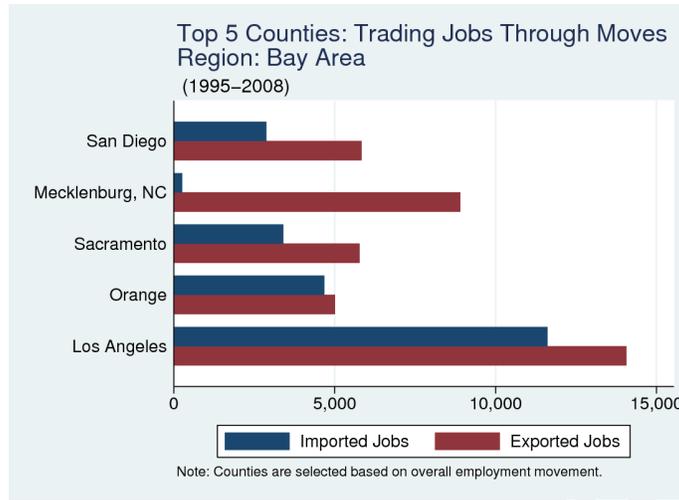
ing Bay Area establishments. Within the Bay Area, 91 thousand involved moves within the same county and just 49 thousand were across county lines. Moves involving Bay Area establishments included about 1.8 million jobs during this period. Of these 1.8 million jobs, about 62% were moved within the same county, 20% were moved into or out of the Bay Area, and the remaining 18% were moved between counties within the Bay Area.

Figure 21 presents evidence on the geographical flow of those moves across county lines. Figure 21(a) indicates the major sources and destinations of establishment moves into and out of the Bay Area. Only one county, Los Angeles, shows up as being a major trading partner with the Bay Area, and 4 of the top 5 are in California. The fifth, Mecklenburg, NC, is on the list only because Bank of America moved from San Francisco to Charlotte, NC. The remaining figures illustrate movements between the four major Bay Area counties and their primary trading partners.

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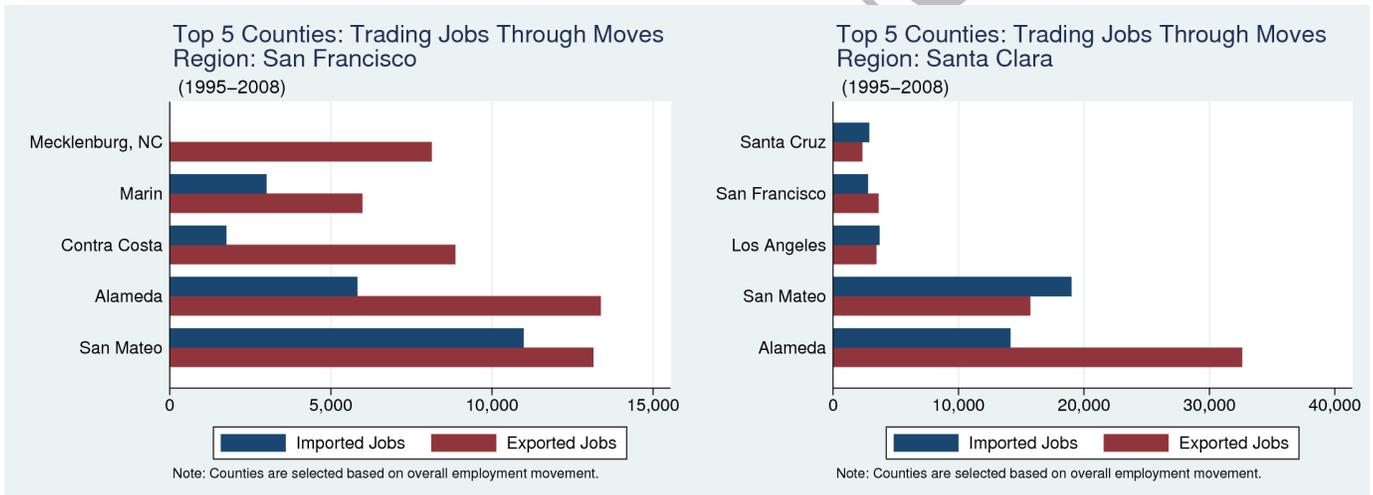
Figure 21: Moves

(a)



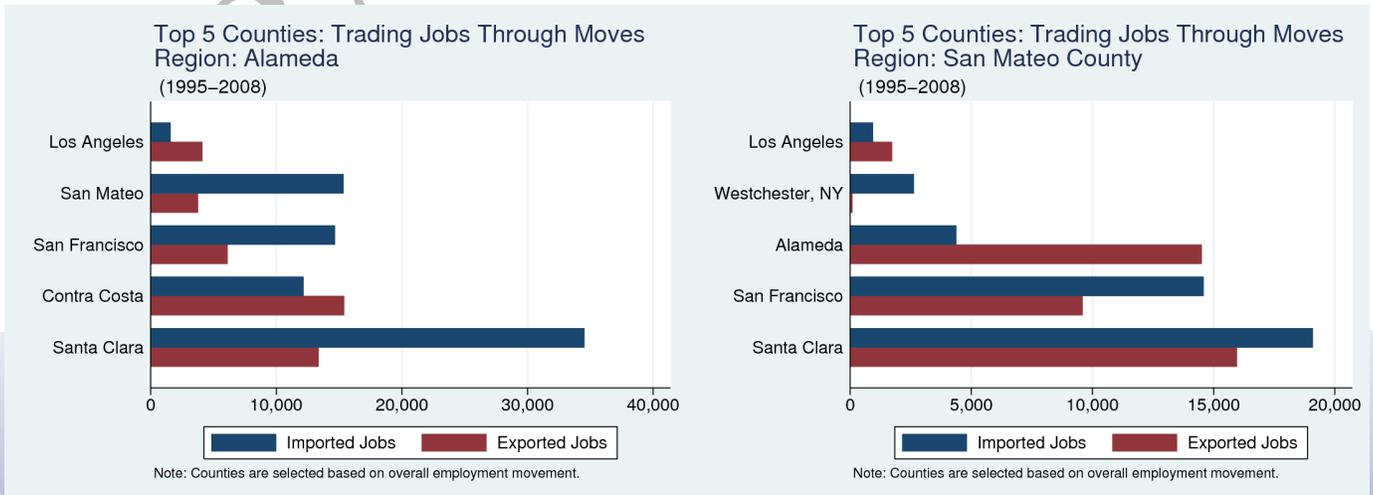
(b)

(c)



(d)

(e)



The primary takeaway from these findings is that moves tend to be local. In particular, 80% of all moves were within the Bay Area. On a county by county basis, the vast majority of moves that are not within the same county are with the two or three counties that either border the county, or are closest in geographical proximity. San Francisco County trades jobs most commonly with San Mateo, Alameda, and Contra Costa counties. Santa Clara trades jobs most often with Alameda and San Mateo, and so on.

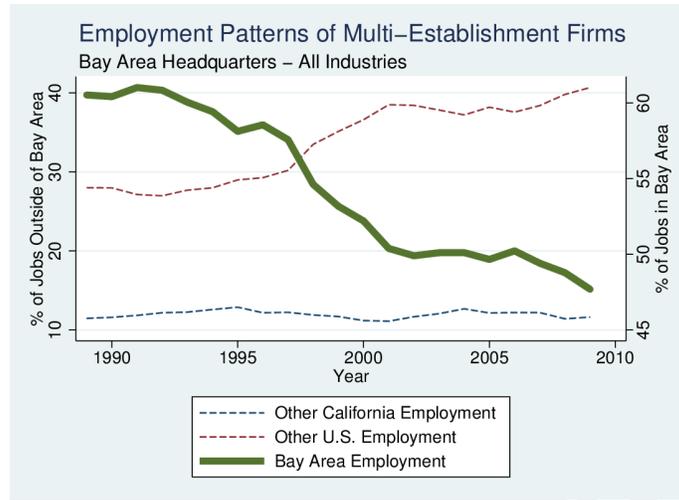
Accordingly, it is likely that moves are not generally driven by regulations and or levels of taxation, but are more often driven by some other establishment specific consideration. Those considerations include the need for a different space, a desire to move closer to a particular market, or changes in relative costs of doing business (e.g., rents in the East Bay versus San Francisco). Much of this is evidenced by the fact that so many moves are within a specific county, a large number of moves within the Bay Area are from the core economies to the periphery (San Francisco and San Jose to the East Bay, for example).

One concern with the discussion of moves is that it does not pick up changes in location choice for expansion by companies headquartered in the region. In particular, as a region becomes less competitive, the argument goes, the less likely companies headquartered in the region are to expand employment locally. Figure 22 provides evidence for the Bay Area, Los Angeles County and San Diego County. In Figure 22(a), the distribution of employment among businesses headquartered in the Bay Area is indicated. The solid line indicates the proportion of Bay Area headquarters employment that is located in the Bay Area (to be read off of the right hand axis). The top (red) and bottom (blue) dashed lines indicate the proportion of employment in establishments related to these headquarters that are employed outside of California and within California, but outside of the Bay Area, respectively. Figures 22(b) and (c) are analogous, but for Los Angeles and San Diego counties.

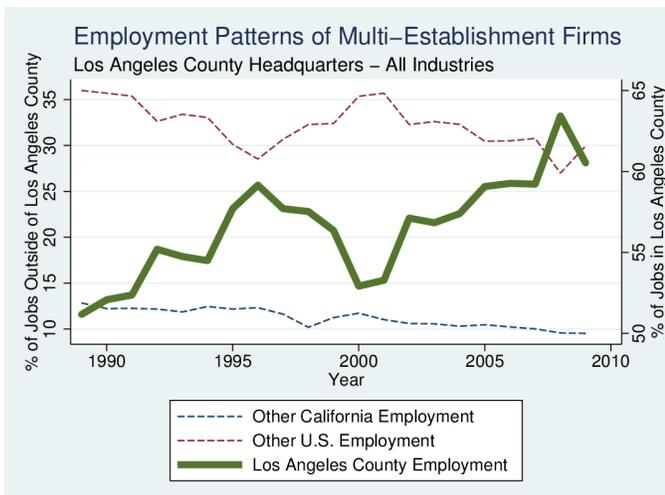
The figures present starkly differing experiences in the three metropolitan areas. In particular, headquarters employment in the Bay Area has been shifting out of the region since 1990, with an acceleration of that decline between 1995 and 2002. Most of this employment shift has been to employment outside of the state. In Los Angeles, the opposite is roughly true, with an apparent consolidation of headquarters employment in the county, and reduced employment shares both in the rest of California and out of the state. San Diego experienced the same decline during the 1995-2002 period that the Bay Area did, but has since been consolidating headquarters employment in the county.

Figure 22: Employment Patterns

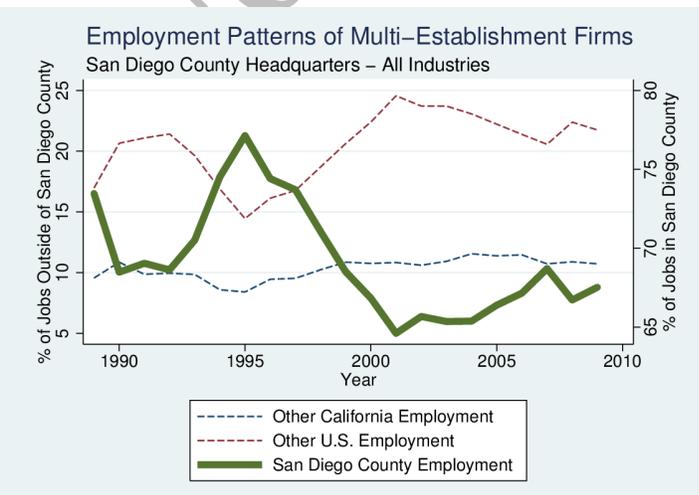
(a) Bay Area



(b) Los Angeles



(c) San Diego



Headquarters employment can shift for a variety of reasons. Chief among these are the distribution of production or lower skill or value added activities to cheaper locations, the expansion of production to new markets (think Starbucks), or an expansion of the location of headquarters activity within a particular region. The first of these represents an unfortunate consequence of local business conditions, while the second and third are likely positive for a region. Further investigation will shed light on which of these factors is at work in the Bay Area relative to Los Angeles and San Diego.

Establishment Size

Another metric by which an economy can be measured is by the size of the business establishments. A larger size of establishments can be an indicator of several things. In particular, it may be an indicator of a more mature economy. These would be economies that have gone through their startup phase and are now largely populated by mature, more stable companies. It could also be an indication of industry composition. Some industries naturally have larger numbers of employees per establishment. In California, for example, educational services, utilities, and manufacturing all have significantly larger average establishment sizes than do other sectors of the economy.

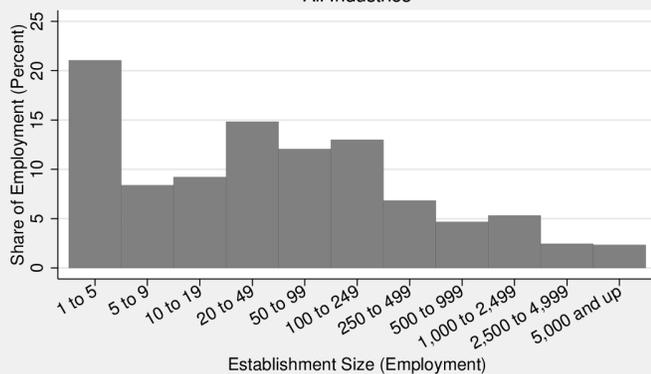
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Figure 23

(a)

The Distribution of Establishment Size

The Bay Area
All Industries

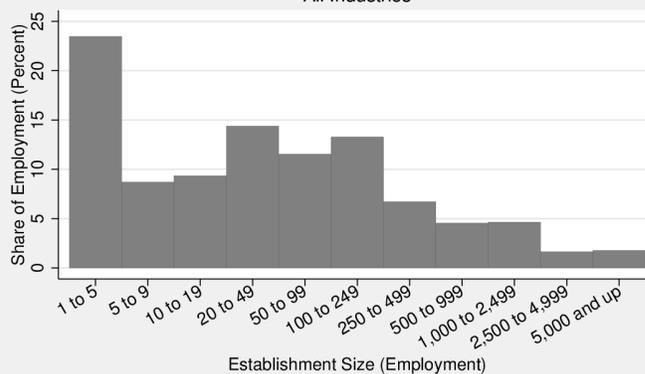


Source: NETS 2010; calculations by BACEI.

(b)

The Distribution of Establishment Size

Greater Los Angeles
All Industries

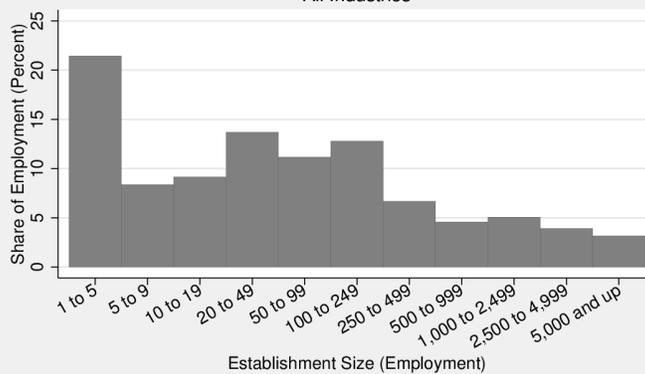


Source: NETS 2010; calculations by BACEI.

(c)

The Distribution of Establishment Size

San Diego Metropolitan Area
All Industries



Source: NETS 2010; calculations by BACEI.

Figure 24

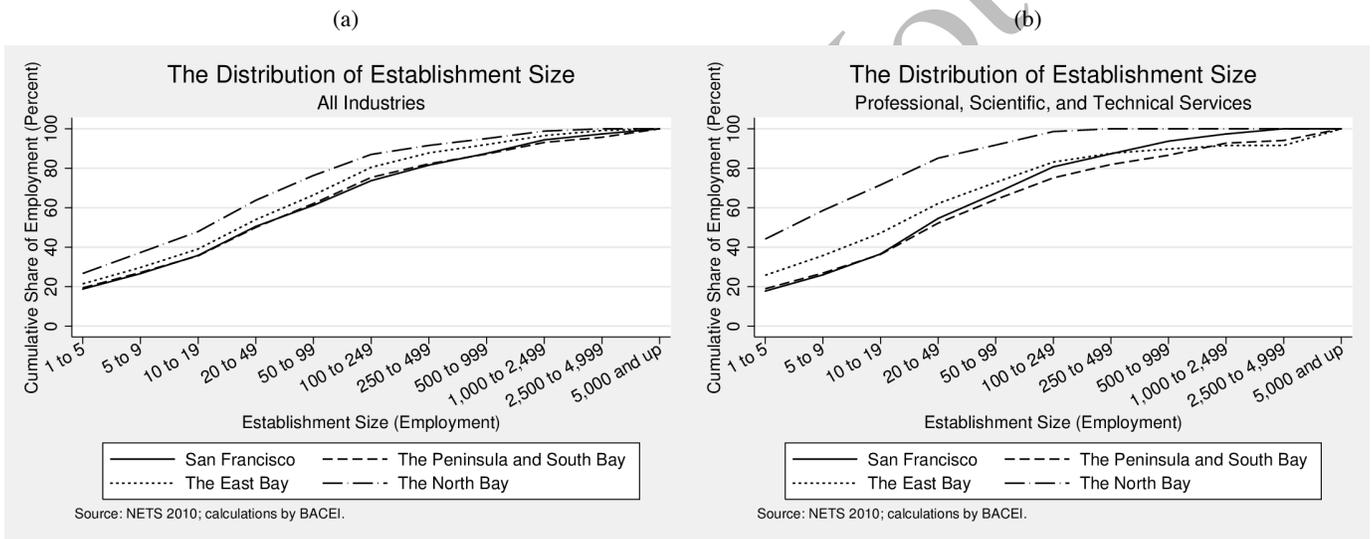


Table 6 provides an indication of business establishment sizes in the Bay Area, comparable California metropolitan areas, the state as a whole, and sub-regions within the Bay Area. There are several lessons to be taken from these data. The first is that business establishment sizes are remarkably similar across California. There is almost no difference in the size distribution in California and the state as a whole, or other major metropolitan regions. Within the Bay Area, there are some differences. In particular, the East Bay has a larger number of small establishments relative to the other major regions. Santa Clara County appears to have the largest average sized establishment.

Table 6: Establishment and Employment Distribution by Establishment Size: 2008

Region	Number of Employees					
	1-2	3-25	26-100	101-250	251-1,000	1,001+
Distribution of Establishments						
Bay Area	66.3	29.7	3.3	0.5	0.2	0.0
Los Angeles County	67.1	29.4	2.9	0.4	0.2	0.0
San Diego County	65.6	30.6	3.1	0.5	0.2	0.0
California	66.5	29.7	3.1	0.5	0.2	0.0
San Francisco MD	65.5	30.6	3.2	0.5	0.2	0.0
Santa Clara	65.1	30.4	3.7	0.6	0.2	0.0
East Bay	67.5	28.5	3.3	0.5	0.2	0.0
Distribution of Employment						
Bay Area	14.3	29.5	24.3	11.3	11.4	9.2
Los Angeles County	16.1	30.4	22.5	11.3	11.3	8.4
San Diego County	14.2	29.5	22.4	11.4	11.1	11.4
California	15.3	30.6	23.6	11.3	11.2	8.1
San Francisco MD	14.2	30.2	23.0	10.9	11.5	10.2
Santa Clara	12.7	26.6	24.1	11.8	13.6	11.2
East Bay	14.9	29.7	25.1	11.9	10.7	7.8

Source: NETS 2009, Calculations by Bay Area Council Economic Institute

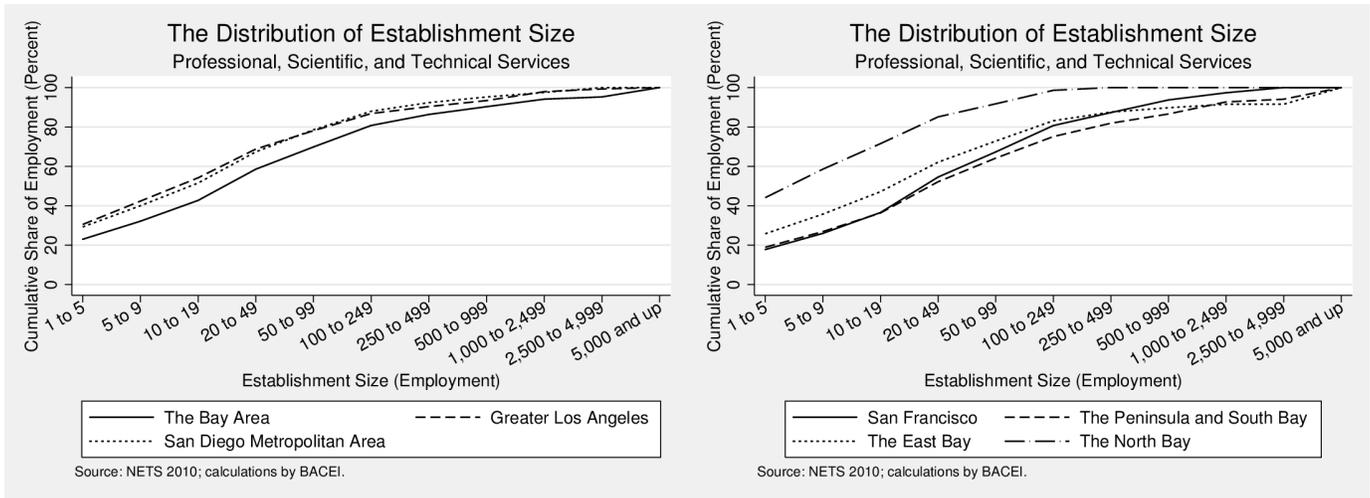
On a sector by sector basis, the relationships can be different. As Figure 25 indicates, the average size of a firm in the PSTS sector in the Bay Area is larger than in either Los Angeles or San Diego. The lines in the chart represent the cumulative distribution of establishment sizes. A higher line indicates that a larger proportion of establishments within the region are of the particular size category or smaller. For example, in the "5 to 9" category in Figure 25(a), the solid line for the Bay Area is below either of the other two lines. This indicates that a larger proportion of the establishments in the PSTS sector in Los Angeles and San Diego have 9 employees or less than is the case in the Bay Area. The gap between the sets of lines closes as the size categories increase, indicating a higher proportion of establishments are larger in the Bay Area.

Within the Bay Area, there is also significant size variation within sectors. In PSTS, it is clear that the North Bay has a much higher number of small establishments than in other parts of the Bay Area, and that San Francisco has a higher

Figure 25: Professional, Scientific, and Technical Services

(a) Metro Area Comparison

(b) Sub-Regional Comparison



proportion of establishments in the mid-range of establishment sizes than either the East Bay or the Peninsula (Figure 25(b)). This is evidenced by the steeper slope of the solid line in the figure.

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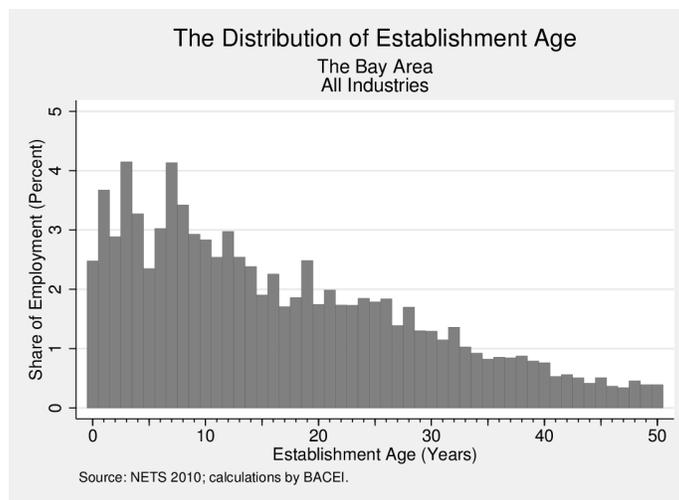
Establishment Age

Above, it was suggested that establishment size could be correlated with age, or a more mature economy. This section looks directly at the age question. Establishments in the Bay Area tend to be somewhat younger than those in other California metro regions, though the distributions are quite similar (Figure 26). There is more diversity of ages within the Bay Area, with San Francisco having the oldest set of establishments, the Peninsula has on average younger establishments, with the North and East Bays being intermediate between the two (Figure 27). This relationship is particularly true for the PSTS sector.

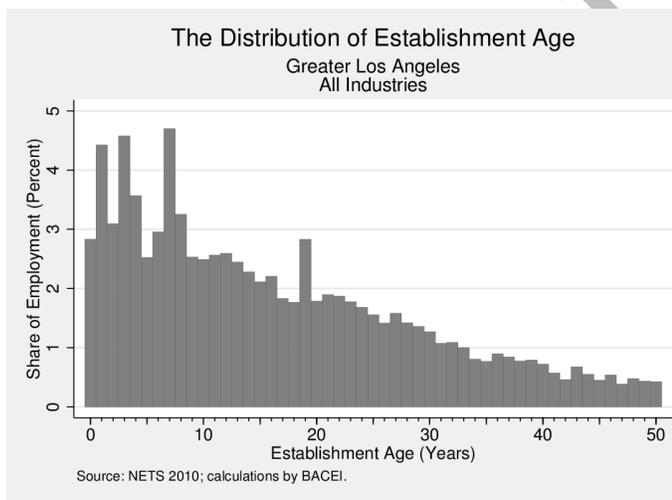
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Figure 26

(a)



(b)



(c)

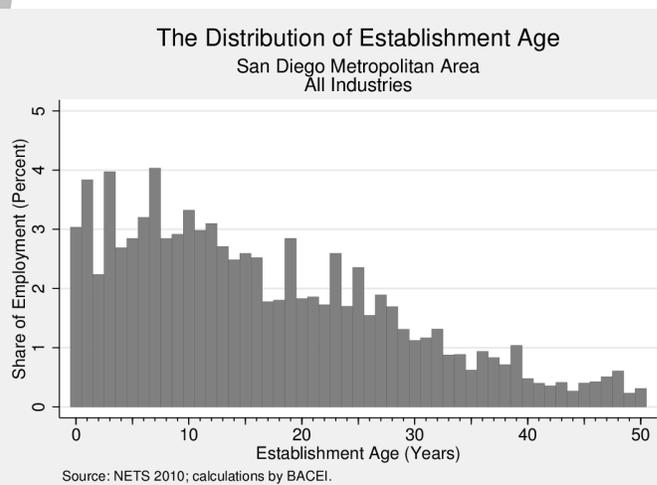
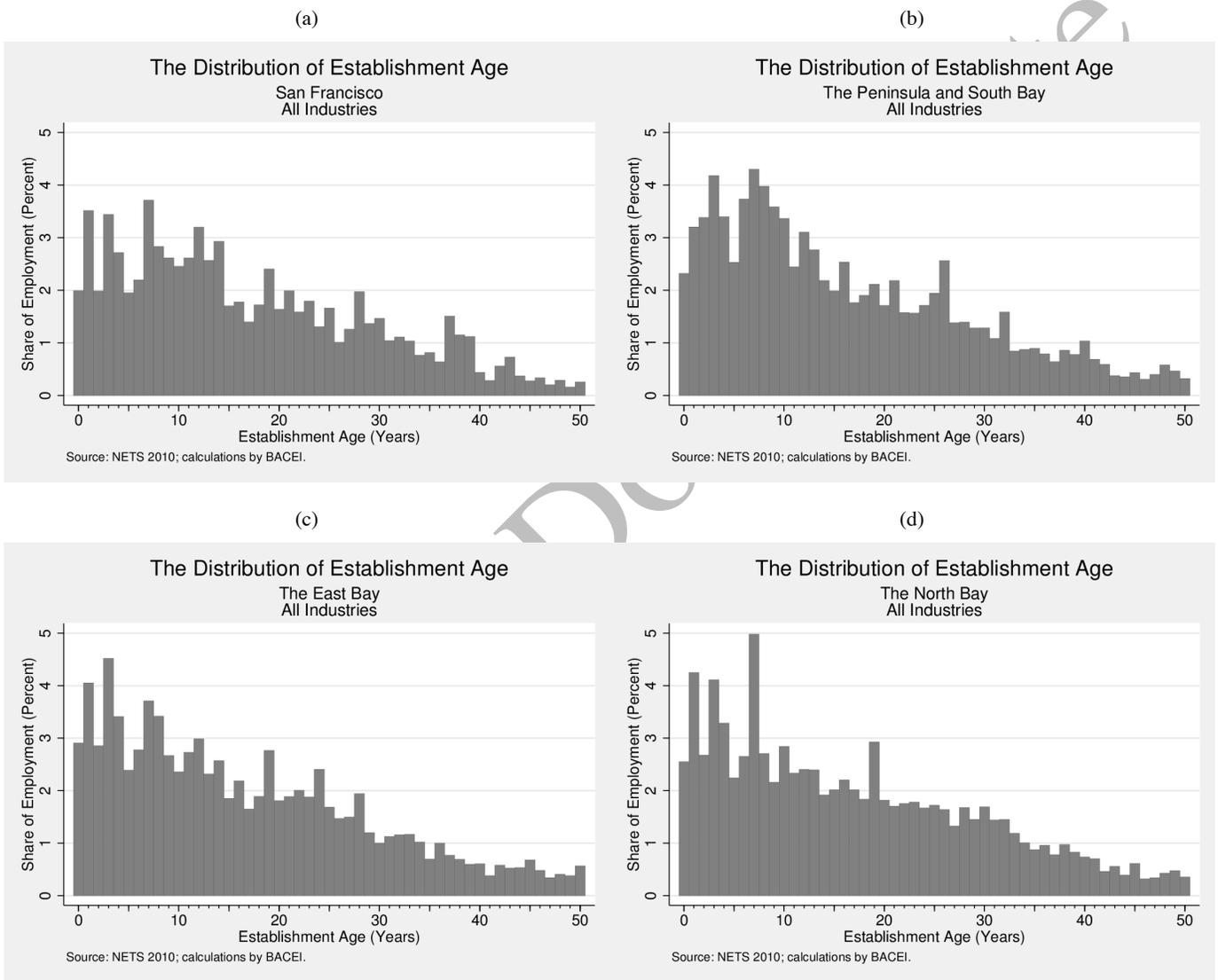
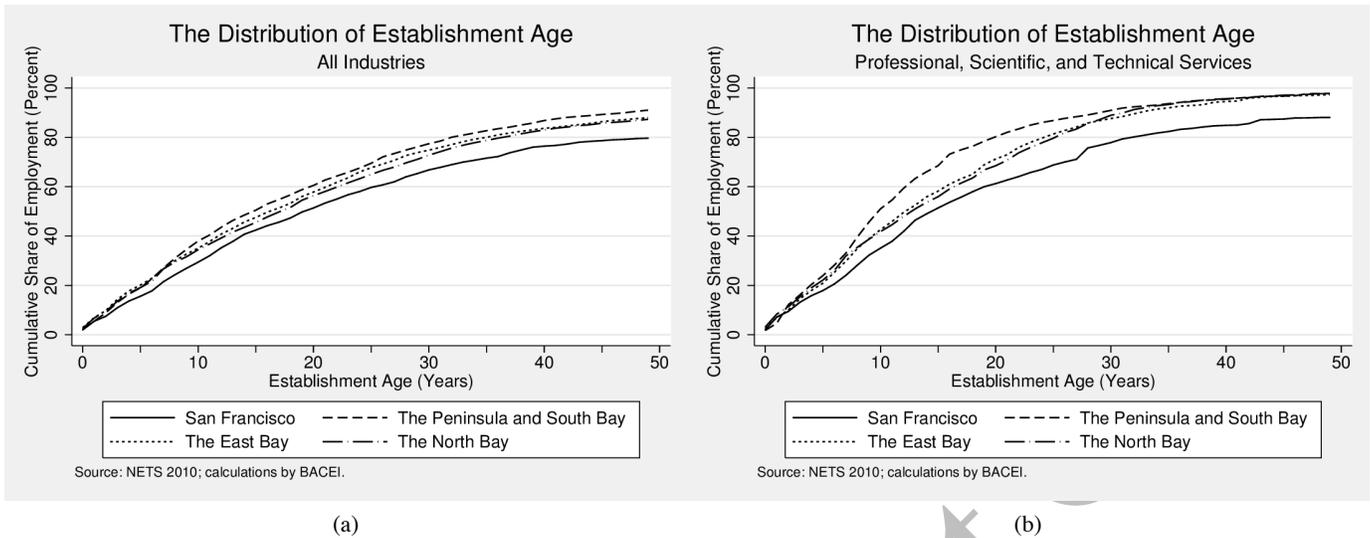


Figure 27





Establishment Starts

The evidence on establishment age would suggest differing patterns of establishment startups. Table 7 provides evidence on this point for the period between 1985 and 2009. Perhaps the most striking feature of the table is that no particular region stands out as having new establishment activity that is dramatically different from the rest of the region. Santa Clara and Solano counties do stand out as being higher than the regional average, but by less than a single percentage point. Relative to the state as a whole, new establishment formation in Santa Clara occurs at approximately the same rate, with new establishments entering the market at a rate just 11 new establishments per 100 existing establishments. Those counties that do stand out around the state are in the periphery of Los Angeles, Orange, Riverside, and San Bernardino counties. This has to do with two aspects of the region. First, these are rapidly growing regions absorbing the overflow from Los Angeles County. Second, businesses in these counties are heavily concentrated in retail and restaurant sectors, sectors with notoriously high rates of turnover.

Survival rates are more in line with expectations, though there are only very small differences across counties. In particular, Santa Clara County has one of the lowest rates of survival to age 5 among the Bay Area counties, and the Los Angeles border counties mentioned above have among the lowest rates of establishment survival around the state.

Table 7: New Establishment Activity - Average Annual Statistics

County	# Estabs	# Births	New Estab Activity	5 Year Survival
Bay Area	420,841	43,428	10.32	54.91
Alameda	81,172	8,530	10.51	54.06
Contra Costa	52,188	5,656	10.84	54.35
Marin	25,467	2,471	9.70	55.53
Napa	8,508	784	9.22	58.43
San Francisco	62,473	5,951	9.53	56.10
San Mateo County	45,306	4,533	10.00	55.11
Santa Clara	98,238	10,711	10.90	54.36
Solano	16,902	1,913	11.32	53.92
Sonoma	30,588	2,879	9.41	57.13
Bay Area	420,841	43,428	10.32	54.91
California	1,937,407	214,456	11.07	53.71
Los Angeles County	546,459	64,068	11.72	52.96
San Diego County	163,309	18,604	11.39	55.30
Orange County	197,570	23,555	11.92	51.40
Riverside County	73,829	9,287	12.58	53.74
San Bernardino County	74,036	9,065	12.24	51.40
Sacramento County	63,481	7,767	12.24	50.35

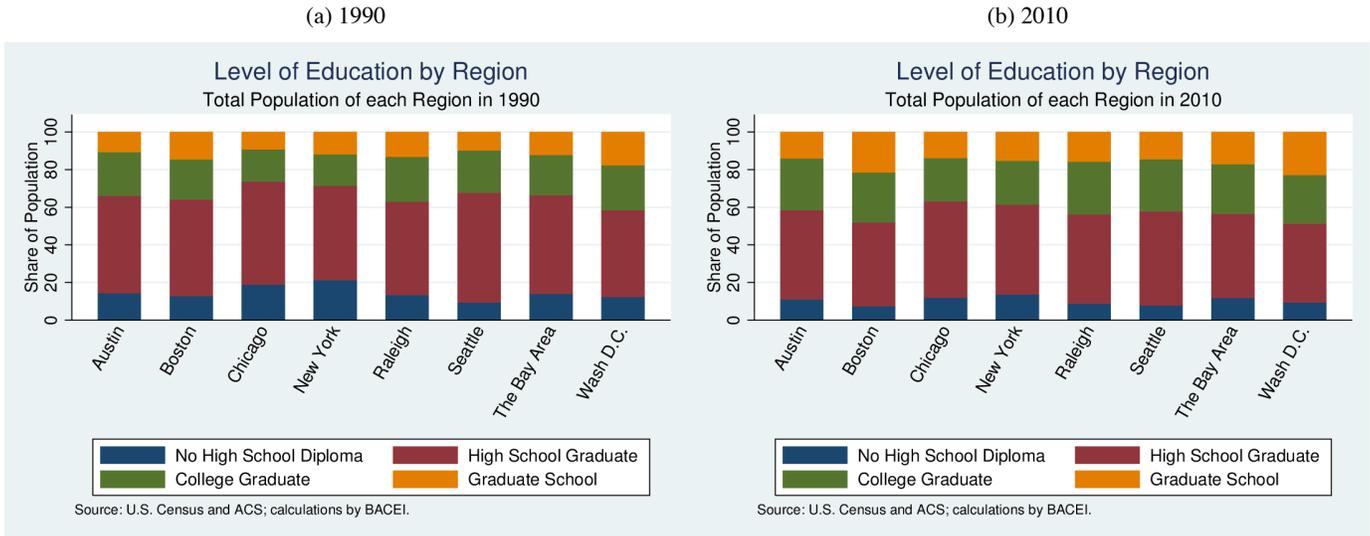
Source: National Establishment Time Series 2010, Calculations by Bay Area Council Economic Institute
 New Establishment Activity is births as a proportion of all establishments.

Labor Force

The Bay Area is often described as thriving because of the high skilled nature of its labor force. This section examines statistics on the Bay Area's labor force, including a discussion of overall levels of education, occupations that are over-represented in the Bay Area, residential concentrations of workers with various levels of education, and locations and work opportunities for members of the low and moderate income (LMI) community.

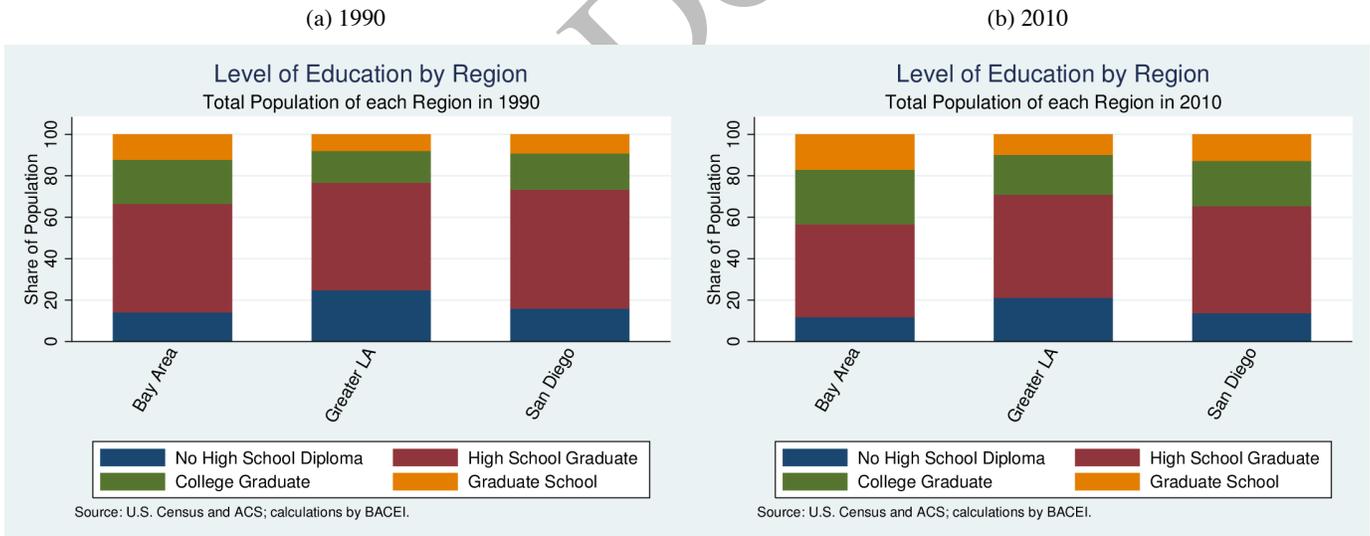
Figure 28 provides an indication of the level of education in the Bay Area labor force relative to some commonly referenced peer metropolitan areas. In 1990, the Bay Area was roughly middle of the pack, with just 37% of the population having a bachelor's degree or higher (the green and yellow bars combined), Washington, DC, Austin, Boston, and Raleigh all ranked higher. By 2010, however, the Bay Area had overtaken both Austin and Raleigh, with 42% of the population having at least a bachelor's degree. This figure compares quite favorably with the overall population of the United States, with just 28% having at least a bachelor's degree.

Figure 28: Level of Education



Relative to other major metropolitan areas of the state, the Bay Area labor force has had higher levels of education since at least 1990. Between 1990 and 2010, the Bay Area extended its lead in this regard.

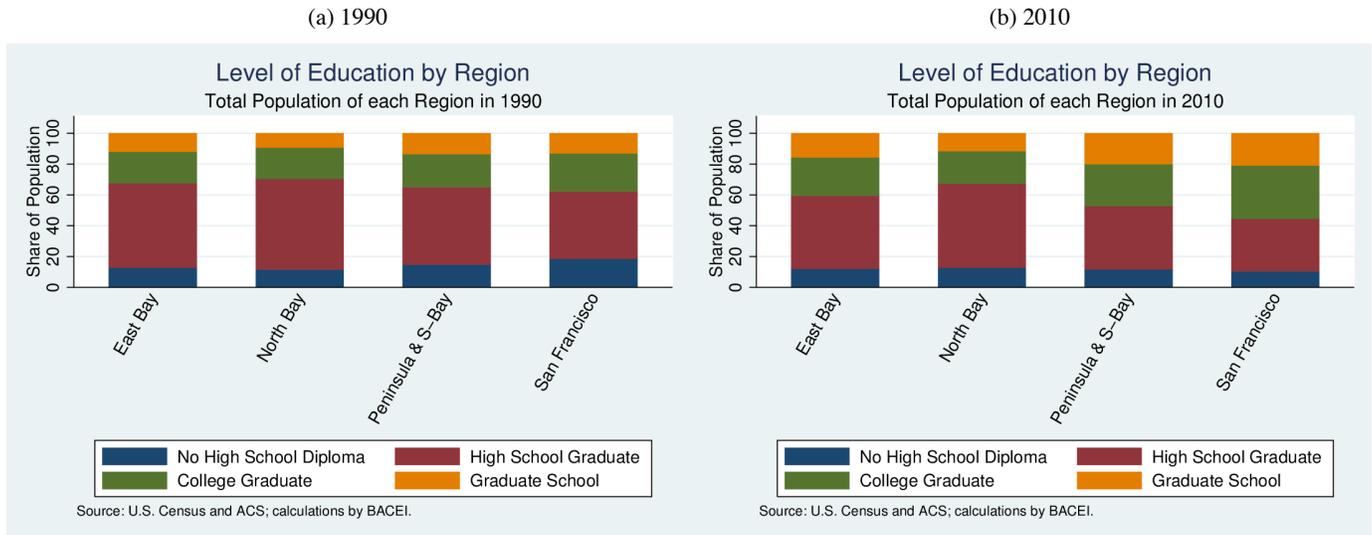
Figure 29: Level of Education



Within the Bay Area, there is generally a high level of educational achievement. San Francisco has the highest proportion of workers with at least a bachelor's degree at an astonishing 61.2%. Between 1990 and 2010, all regions of the Bay

Area increased the proportion of the population with at least a bachelor's degree, though the North Bay experienced the smallest such gains.

Figure 30: Level of Education



There are some significant differences in education levels around the Bay Area. Table 8 provides an indication of this distribution. The top panel of the table indicates the percent of the Bay Area or sub-region's labor force that has achieved each level of education, while the bottom panel indicates the percent that have achieved *at least* that level of education. For example, the top panel indicates that 20.7% of the labor force in the labor force has a bachelor's degree. The bottom panel, on the other hand, indicates that 43.4% of the labor force has at least a bachelor's degree.

Table 8: Educational Attainment in and Around the Bay Area

Level of Education	Percent of the Labor Force with Specific Education Level				
	Bay Area	San Francisco	Peninsula	East Bay	North Bay
Less than High School	11.0	7.9	10.3	9.6	11.9
High school graduate	18.0	12.0	15.9	19.0	19.5
Some college, but less than 1 year	4.9	2.7	4.2	5.2	6.4
One or more years of college, no degree	14.9	10.6	13.7	15.2	18.5
Associate's degree	7.8	5.6	7.9	7.7	9.6
Bachelor's degree	26.7	39.3	27.9	26.8	22.8
Master's degree	11.7	14.3	14.6	11.5	7.6
Professional school degree	2.6	4.9	2.4	2.4	2.5
Doctorate degree	2.4	2.7	3.2	2.4	1.2

Level of Education	Percent of the Labor Force with AT LEAST the Specific Education Level				
	Bay Area	San Francisco	Peninsula	East Bay	North Bay
Less than High School	100.0	100.0	100.0	100.0	100.0
High school graduate	89.0	92.1	89.7	90.4	88.1
Some college, but less than 1 year	71.0	80.1	73.8	71.4	68.6
One or more years of college, no degree	66.1	77.4	69.6	66.1	62.2
Associate's degree	51.2	66.8	55.9	50.9	43.7
Bachelor's degree	43.4	61.2	48.0	43.2	34.1
Master's degree	16.7	21.9	20.2	16.4	11.3
Professional school degree	5.0	7.6	5.6	4.8	3.7
Doctorate degree	2.4	2.7	3.2	2.4	1.2

Source: 5 year 2010 American Community Survey, Calculations by Bay Area Council Economic Institute

The contents of this table provide insight into the educational attainment figures presented above. In particular, it was indicated above that 61.2% of the labor force in San Francisco has at least a bachelor's degree. The top panel of the table indicates that it is the percent of people with a bachelor's degree that is highly irregular. While those living in San Francisco do have high professional degrees in somewhat higher numbers than the other regions of the Bay Area, the proportions of people with a master's degree or a doctorate degree do not stand out.

Other entries in the table that stand out are the percent of the labor force with just a high school diploma in the East and North Bays. At roughly 19%, they are both significantly higher than in other parts of the Bay Area.

Relative to the state and other metro areas of the state, the Bay Area has a highly skilled labor force. In each degree category above associate's degree, the Bay Area has a higher proportion of workers having earned that degree. Relative to the state overall, about 12 percentage points more people in the Bay Area have at least a college education than statewide, and more than 6 percentage points more than San Diego, the next most educated region of the state.

Table 9: Educational Attainment in California

Level of Education	Percent of the Labor Force with Specific Education Level			
	Bay Area	Los Angeles	San Diego	California
Less than High School	11.0	19.0	11.6	16.4
High school graduate	18.0	21.6	18.6	21.3
Some college, but less than 1 year	4.9	4.9	6.4	6.0
One or more years of college, no degree	14.9	15.6	17.8	16.6
Associate's degree	7.8	7.1	8.3	7.9
Bachelor's degree	26.7	21.3	24.0	20.8
Master's degree	11.7	7.0	8.7	7.6
Professional school degree	2.6	2.2	2.3	2.0
Doctorate degree	2.4	1.2	2.2	1.4

Level of Education	Percent of the Labor Force with AT LEAST the Specific Education Level			
	Bay Area	Los Angeles	San Diego	California
High school graduate	89.0	81.0	88.4	83.6
Some college, but less than 1 year	71.0	59.4	69.8	62.3
One or more years of college, no degree	66.1	54.5	63.4	56.3
Associate's degree	51.2	38.8	45.6	39.7
Bachelor's degree	43.4	31.7	37.2	31.8
Master's degree	16.7	10.4	13.2	11.0
Professional school degree	5.0	3.4	4.5	3.4
Doctorate degree	2.4	1.2	2.2	1.4

Source: 5 year 2010 American Community Survey
 Calculations by Bay Area Council Economic Institute

Another way of assessing the Bay Area labor force is through the occupation that are over- and under-represented in the region. As was done with industries in a previous section, we can calculate location quotients for the Bay Area's labor force with respect to occupations. These location quotients will tell us which occupations have a heavy concentration, are a higher percent of the labor force, in the Bay Area than nationwide.

Figure 31 presents those location quotients, along with average annual wages. There are two occupations that stand out for the Bay Area as being highly over-represented. These are computer and mathematical and architecture and engineering occupations. Both are present in the Bay Area at more than three times their share of the U.S. labor force overall. Another pair are heavily concentrated, but much less so. Those are management and business and financial operations occupations. Both have a location quotient of about 1.5, indicating shares in the Bay Area that are 50% higher than in the U.S. more broadly.

Figure 31: Occupations

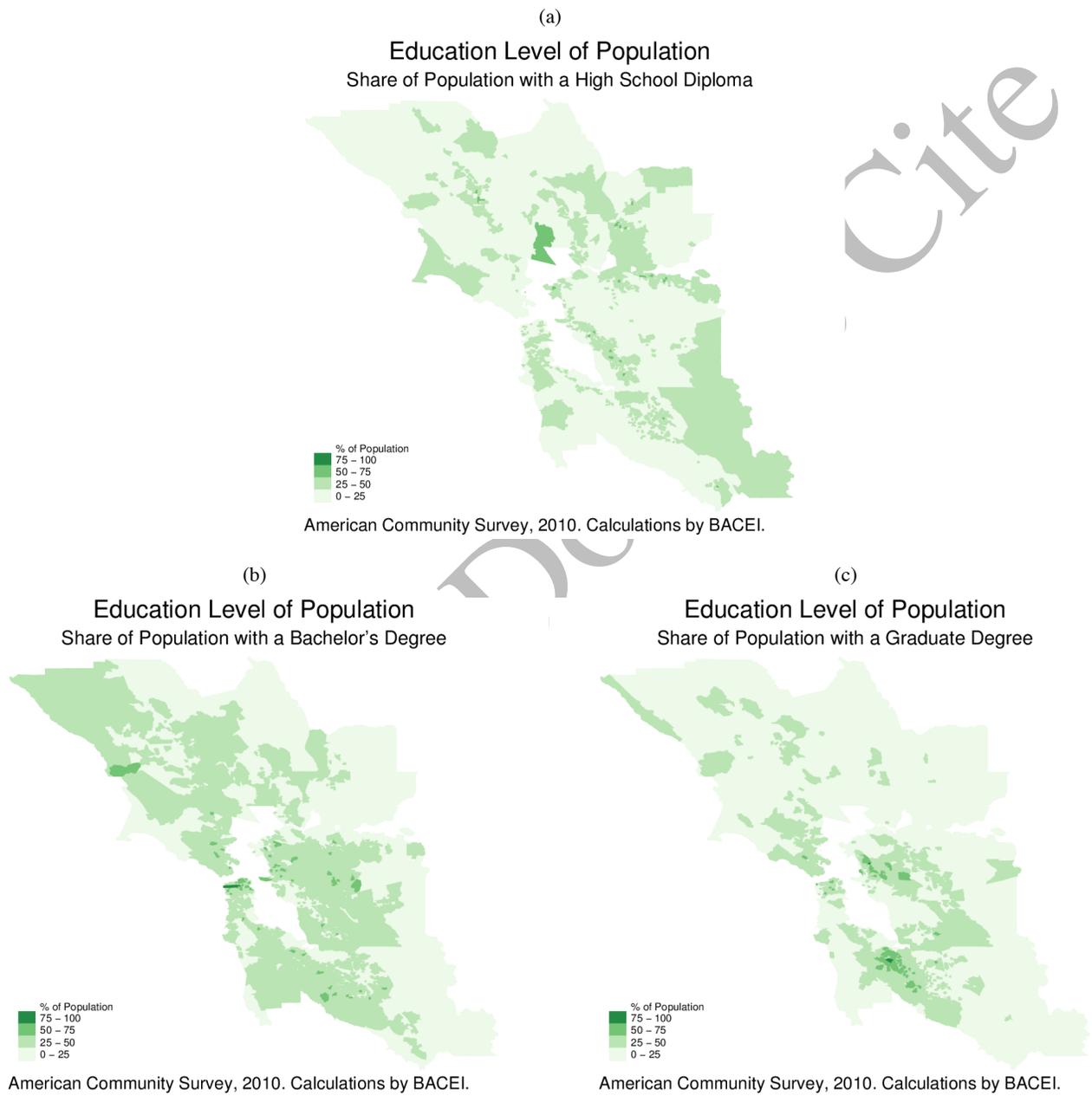
(a)



These four occupation categories are not only heavily concentrated in the Bay Area, but they also have high average annual wages associated with them. Average wages of full time workers in the United States was \$44,410 in 2010. The wages in the four most heavily over-represented occupations in the Bay Area are all in excess of \$60,000, with most closer to \$80,000. This suggests both a significant demand for and supply of skilled, highly educated workers in the Bay Area.

Figure 32 provides a more fine-grained indication of the places people live who have different levels of education. Figure 32(a) indicates that those with just a bachelor's degree are most heavily concentrated in Solano County, Oakland and the I-80 corridor through Alameda County, and in the outskirts of the Bay Area. Figure 32(b) suggests that those with a Bachelor's degree, and no higher degree, are relatively evenly distributed around the region, with a relative concentration in San Francisco's North Beach area. Those with a graduate degree are more heavily concentrated in the Silicon Valley region.

Figure 32: Education Level by Block Group



Commuting Patterns

The previous section highlighted the fact that workers at all education levels, in particular those with a bachelor's degree or more, live in all corners of the Bay Area. At the same time, jobs are more heavily concentrated in economic centers. This means significant commutes for many of the Bay Area's residents. In excess of 850,000 Bay Area residents cross a county line on their way to work each day.

Table 10 provides an indication of the counties whose residents and employees engage in the most commuting. The table is sorted by the percent of residents of each county that also work in the county. Solano and Contra Costa counties stand out as having less than 40% of their working residents employed in the county. Solano also has less than 40% of its jobs filled by county residents, tied with Marin at 39%. San Mateo and Marin also have significant volumes of movements across county lines. Marin, Contra Costa and Solano are perhaps the Bay Areas prominent bedroom communities. San Mateo is less a bedroom community than a county that straddles the two major employment centers of the region: San Francisco and Silicon Valley.

Table 10: Commute Patterns: 2010

County	% of Residents that Work in County	% of Employees that Live in County
Solano	36	39
Contra Costa	39	51
San Mateo	40	40
Marin	41	39
Alameda	49	47
Napa	55	52
San Francisco	60	40
Sonoma	63	71
Santa Clara	71	61

Source: 5 year 2010 American Community Survey, Calculations by Bay Area Council Economic Institute

Napa and Sonoma counties are more self contained than other counties in the region. Santa Clara is also among the most self contained. Nearly three-quarters of Santa Clara's working residents are employed in the county and three-fifths of its workers reside in the county. San Francisco has less outward commuting, but significant numbers of workers commuting into the county. In fact, commutes into San Francisco represent the most common city to city commutes in the region (Table 11). San Francisco is clearly the hub of the Bay Area as it takes one side or the other in eight of the top ten commutes in the region.

Table 11: Top 10 Inter-County Commutes

(by One-way City Pair)		
Home City	Work City	# Workers
Oakland	San Francisco	25,343
Daly City	San Francisco	17,194
San Francisco	Oakland	12,235
Fremont	San Jose	12,137
San Jose	Fremont	11,242
San Jose	San Francisco	10,031
S. San Francisco	San Francisco	8,202
San Francisco	S. San Francisco	7,397
San Francisco	San Jose	7,364
San Mateo	San Francisco	7,109

Source: 5 year 2010 American Community Survey, Calculations by Bay Area Council Economic Institute

Figure 33 provides a glimpse of the density of residents and the density of employment around the region. These maps indicate the density in terms of residents and employees per square mile in each Census tract in the nine Bay Area counties. From Figure 33(a), the more densely populated regions are relatively clear. In particular, the region surrounding the Bay to the south, and along major highway corridors to the north and east. The pattern of jobs is similar (Figure 33(b)).

Figure 33: Density of Residents and Employees

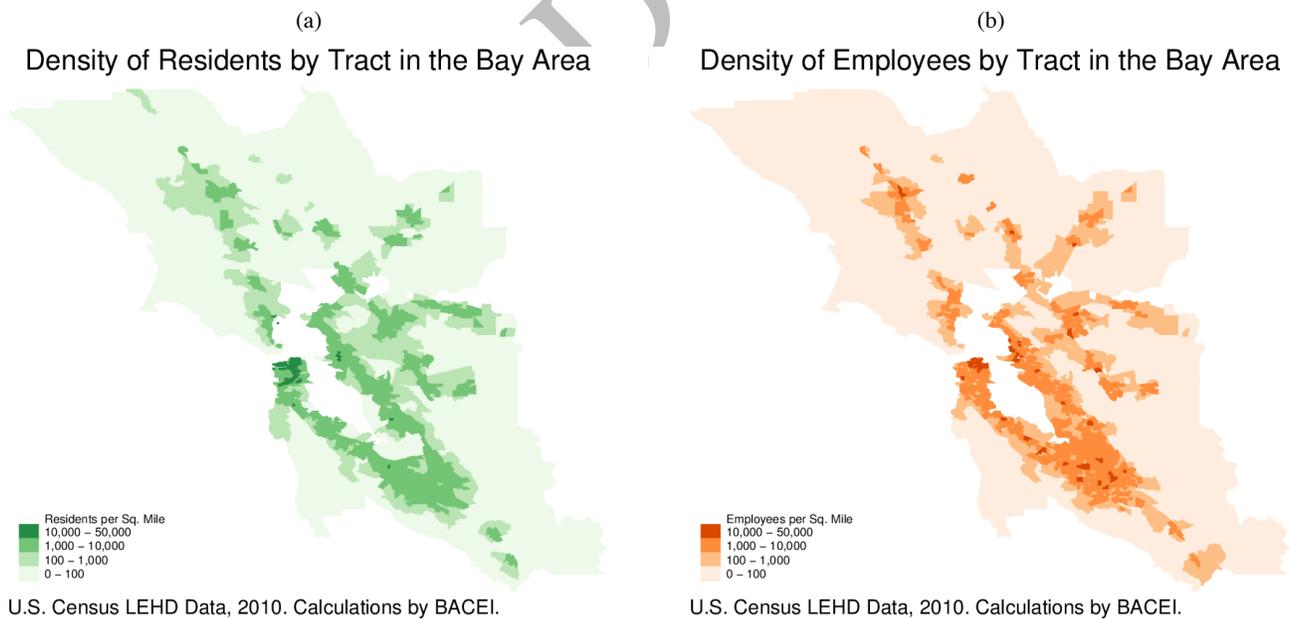
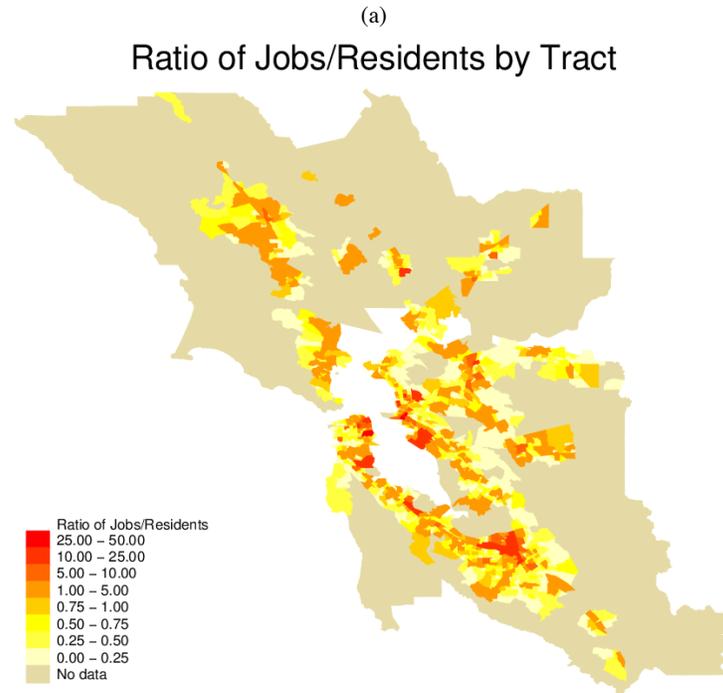


Figure 34 provides in essence an overlay of the maps in Figure 34. From this map, we get an indication of local mismatches in the number of jobs versus employed residents. Darker areas represent those with relatively more jobs than

residents while lighter areas reflect the opposite. These mismatches are particularly acute in downtown San Francisco, northern San Mateo County, downtown San Jose, and the area surrounding the Oakland airport.

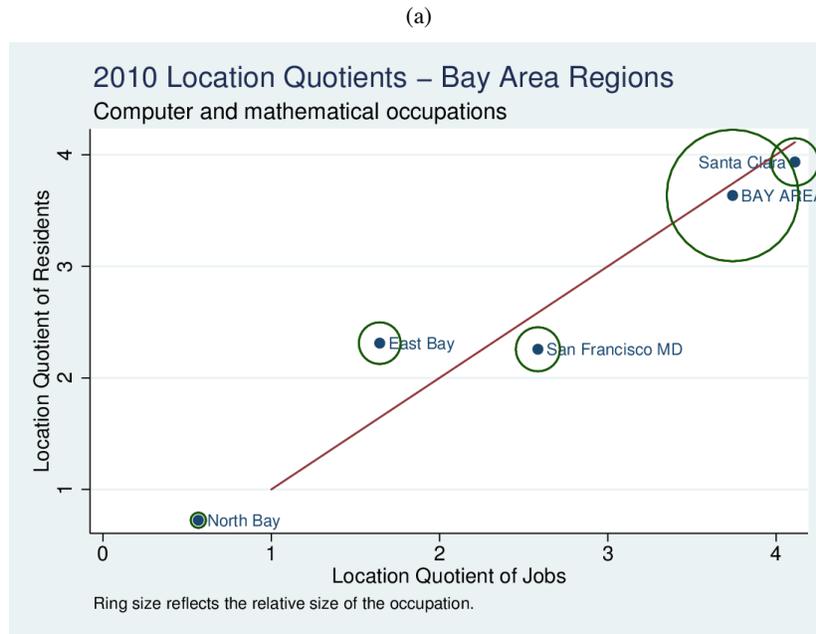
Figure 34: Ratio of Jobs to Residents



U.S. Census LEHD Data, 2010. Calculations by BACEI.

This map only presents part of the story, however. Mismatches between skill requirements of jobs and residents with those skills are likely to be significantly greater than is suggested above. For instance, of the 161 thousand residents employed in Computer and Mathematical occupations, more than one-third (37%) cross county lines on their way to work each day. Figure 35 provides an indication of the exporting and importing regions for members of this occupation category. The graph has a location quotient for residents on the vertical axis and for jobs on the horizontal axis. The red line indicates points along which the region or sub-region is neither a net exporter of workers nor a net importer of workers in the occupation category. The Bay Area lies high along the red line, indicating that it has a large share of residents working in this occupation category and a large share of jobs in this category. The Bay Area employs this occupation relatively intensively.

Figure 35: Location Quotients by Bay Area Region and Occupation

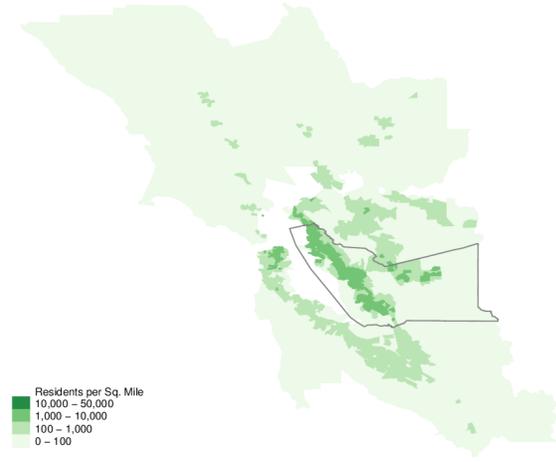


Around the Bay Area, the experiences differ somewhat. The North Bay both houses and employs relatively few workers in this occupation, as evidenced by location quotients in both dimensions being less than one. The East Bay, to the left of the red line indicates that it is a net exporter of these workers; it houses these workers more intensively than it employs them. San Francisco is the East Bay's major market for these workers, employing them more intensively than it houses them. Santa Clara both employs and houses these workers intensively.

As indicated above, the region varies significantly in terms of housing and employing individuals. Some counties are more like bedroom communities, while others are more self-contained. The figures below provide evidence for each of the nine counties in terms of their labor flows. The green maps indicate the home locations for those employed in the county while the orange maps indicate the work location for county residents. The spread of each around the Bay Area provides an indication of the incorporation of the county into the Bay Area labor market.

Counties such as Alameda, Contra Costa, San Francisco, and San Mateo all have long reach for workers and long spread of residents across the region. Other counties, primarily in the North Bay, and to a lesser extent also Santa Clara, tend to house and employ most of their workforce.

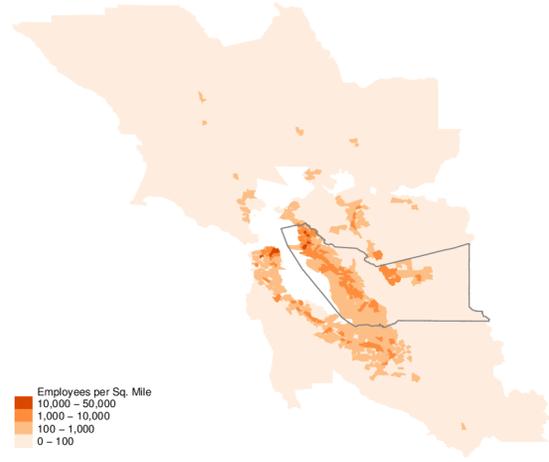
Home Location for Employees of Alameda County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(a)

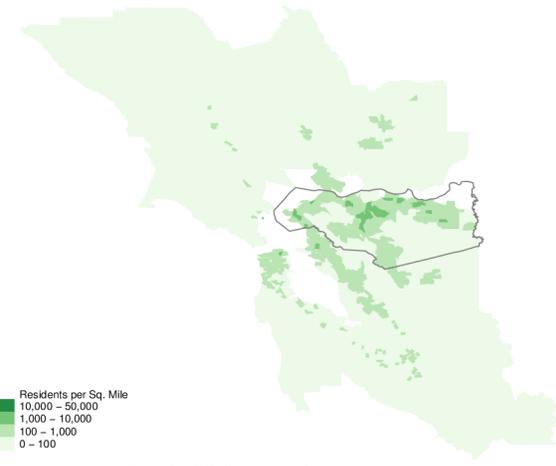
Work Location for Residents of Alameda County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(b)

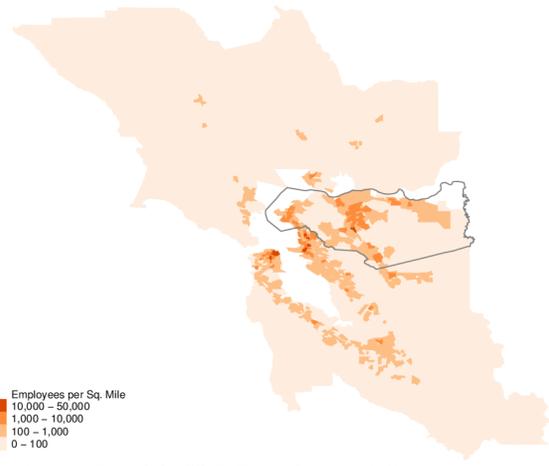
Home Location for Employees of Contra Costa County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(c)

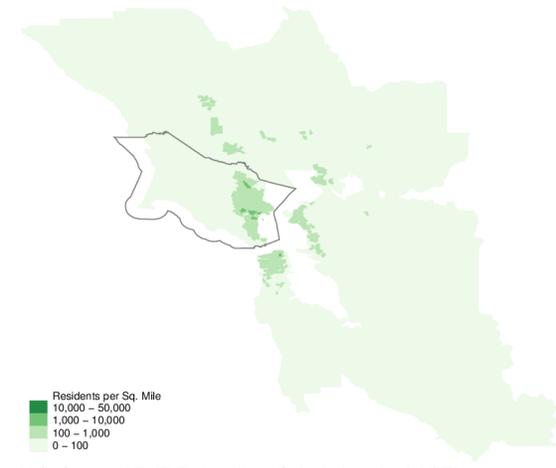
Work Location for Residents of Contra Costa County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

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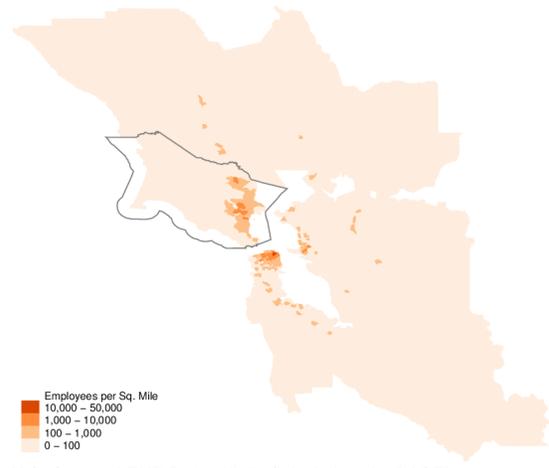
Home Location for Employees of Marin County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(e)

Work Location for Residents of Marin County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(f)

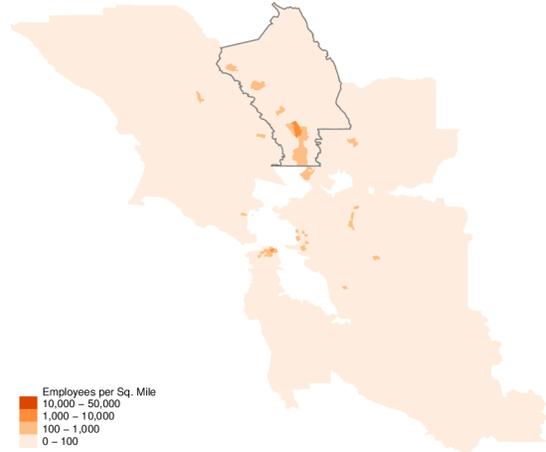
Home Location for Employees of Napa County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(a)

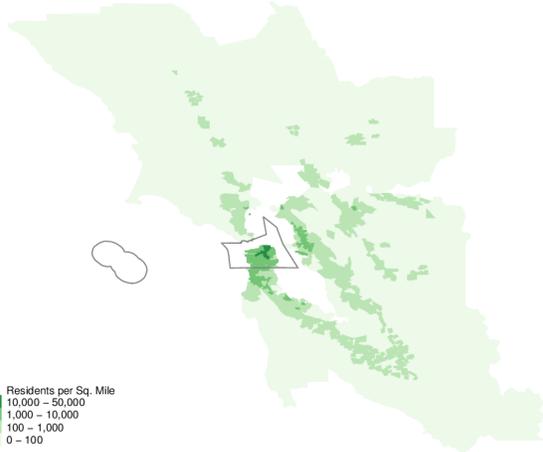
Work Location for Residents of Napa County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(b)

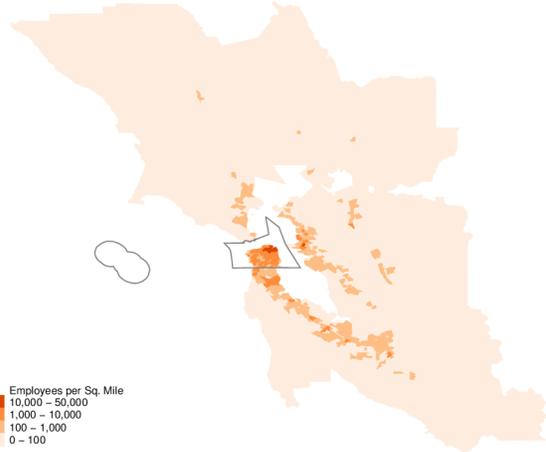
Home Location for Employees of San Francisco County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(c)

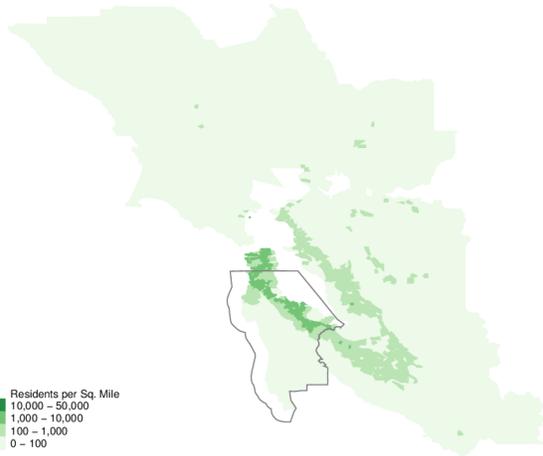
Work Location for Residents of San Francisco County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(d)

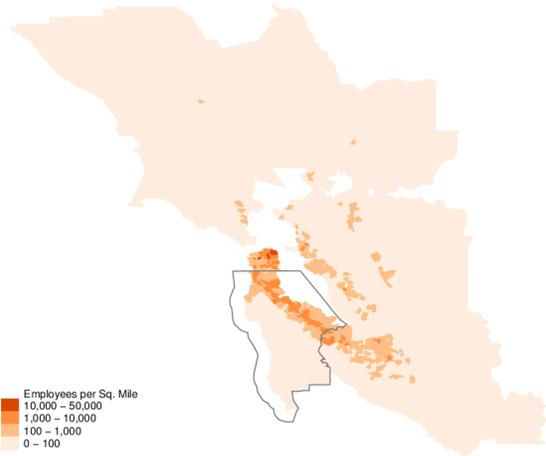
Home Location for Employees of San Mateo County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(e)

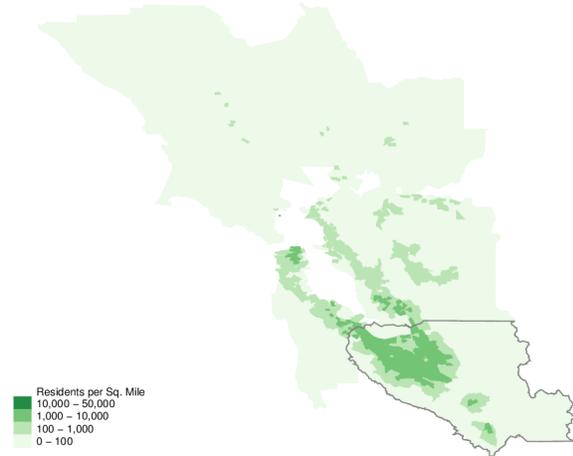
Work Location for Residents of San Mateo County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(f)

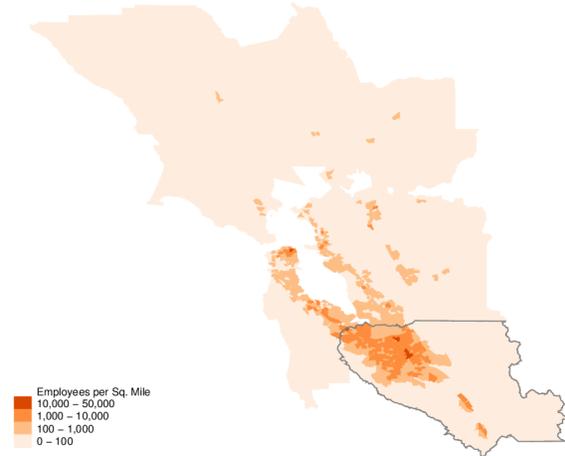
Home Location for Employees of Santa Clara County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(a)

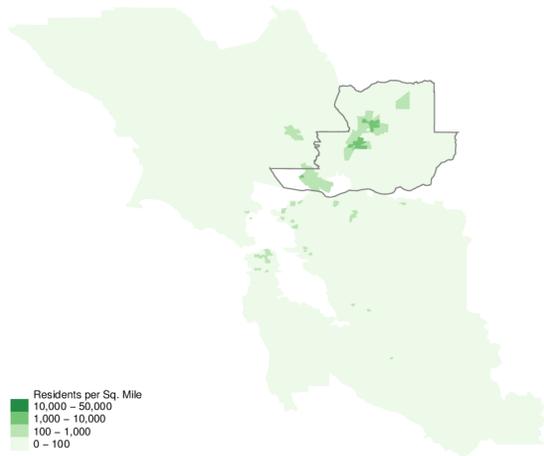
Work Location for Residents of Santa Clara County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(b)

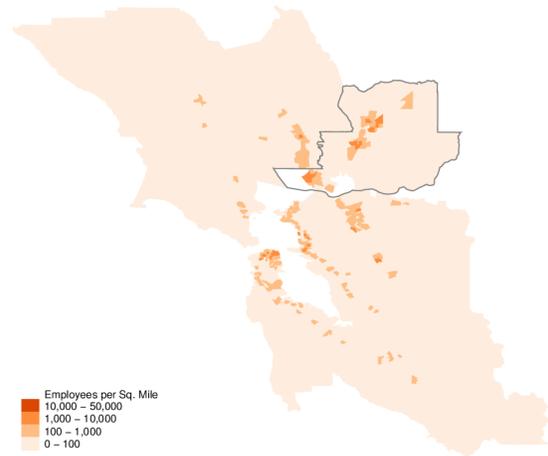
Home Location for Employees of Solano County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(c)

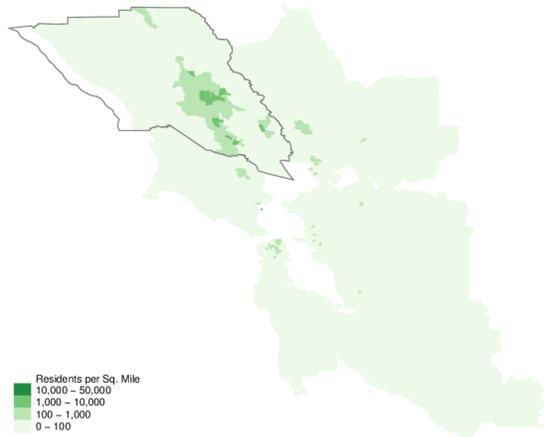
Work Location for Residents of Solano County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(d)

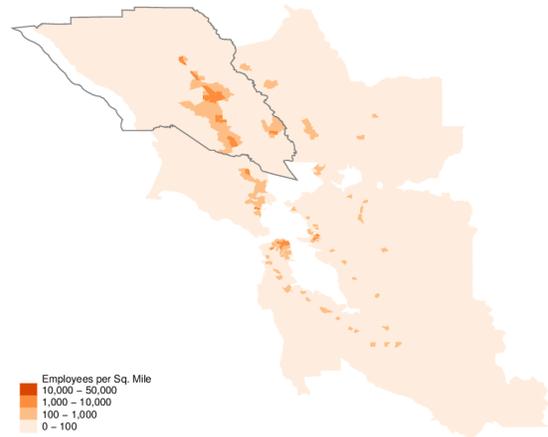
Home Location for Employees of Sonoma County



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(e)

Work Location for Residents of Sonoma County

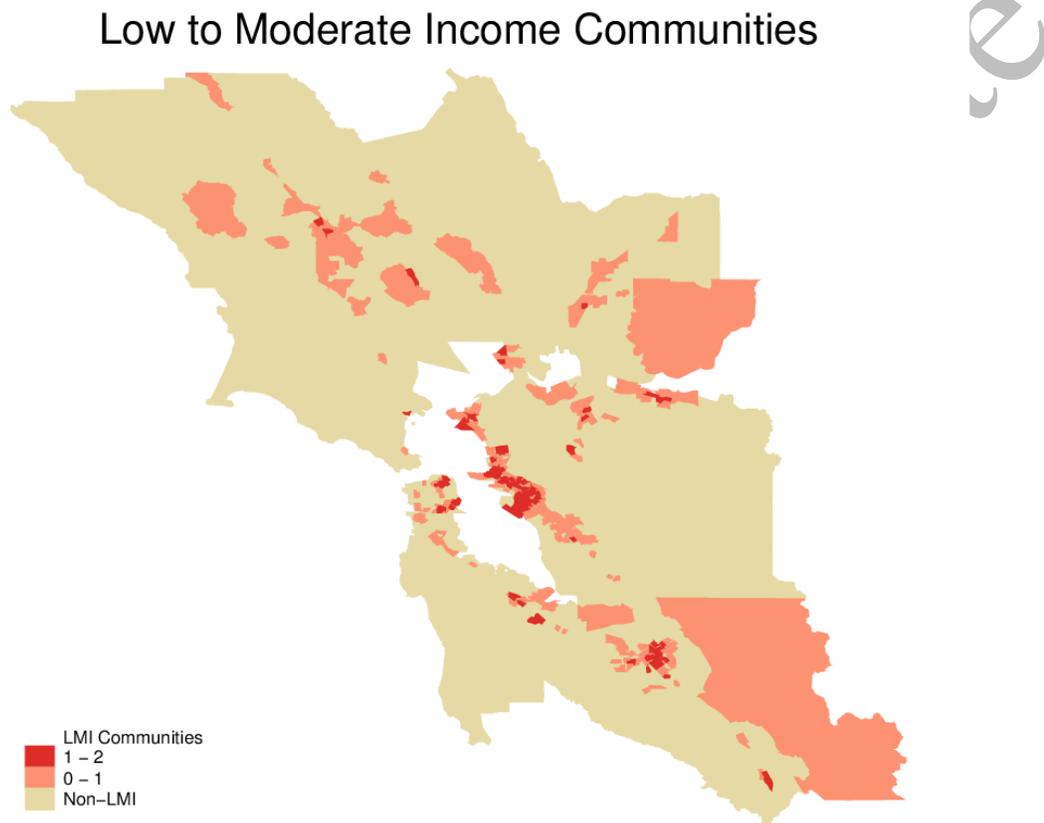


U.S. Census LEHD Data, 2010. Calculations by BACEI.

(f)

Rather than assessing commutes for populations in specific regions or counties, we can also examine the movement of specific populations. In particular, the following graphs illustrate the locations of and commute patters for the Bay Area's low to moderate income communities. Figure 36 presents a map of the location of LMI communities. In the legend, "1-2", or dark red indicates a low income community, while the pink indicates a moderate income community.

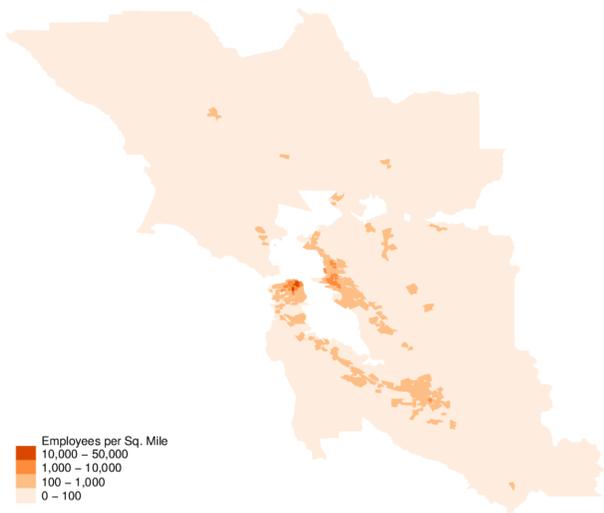
Figure 36: LMI Communities



Figures 37(a-b) provide an indication of the commute patterns of LMI communities. Figure 37(a) describes the employment locations for low income communities and Figure 37(b) provides the same for moderate income communities. The range of clustered job opportunities is significantly wider for those from moderate communities than for those from low income communities, as is the location of residences.

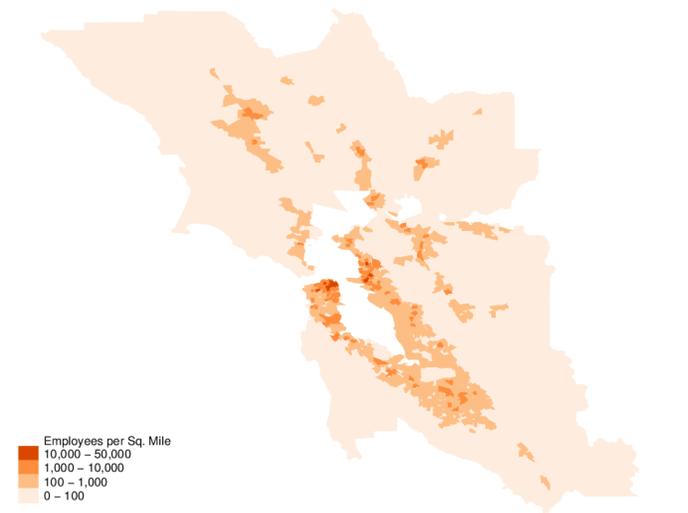
Figure 37: LMI Communities

(a)
Where Low-Income Communities Commute To



U.S. Census LEHD Data, 2010. Calculations by BACEI.

(b)
Where Moderate-Income Communities Commute To



U.S. Census LEHD Data, 2010. Calculations by BACEI.

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Commute Times

The volume of commuting begs the question of how long Bay Area commutes are relative to other cities and how is the pattern evolving. Figure 38 presents a set of scatterplots of average commute time versus population for a variety of metropolitan areas in the United States for each of 3 years: 1990, 2000, and 2010. The three major California metropolitan areas are highlighted in red. The dotted line represents the general relationship between population size and commute times. The primary observation from these graphs is that commute times in the Bay Area are not abnormally high. In only 2000 is the point for the Bay Area above the dotted line, and then only just. It is below the line in each of the other two years.

Over time, a pattern emerges that is not terribly surprising. Between 1990 and 2000, commute times in the Bay Area worsened, both in absolute terms as well as relative to other regions. This change is no doubt the result of the dot-com bubble, which raised congestion on Bay Area roads to levels not previously experienced. By 2010, commute times in the Bay Area had fallen back in line with other regions and in fact gained some ground. The distance between the Bay Area point and the dotted line was greater in 2010 than in 1990, indicating commute times shorter than would be expected. At the same time, however, commute times were higher in 2010 than in 1990. This is partly due to a larger population in the area, but also partly due to the inability of existing infrastructure to handle the higher level of population. This is a growing trend nationwide, as evidenced by the higher level of the dotted line in 2010 relative to the dotted line in 1990.

These changes are perhaps better seen in Figure 39(a-c). These graphs indicate the change in average commute times between decades (Figures 39(a) and 39(b)) and over the entire 20 year period (Figure 39(c)). Commute times generally increased between 1990 and 2000, with the Bay Area increasing by more than would be expected (it is above the dotted line). Between 2000 and 2010, average commute times around the country fell, or increased by much less than during the previous decade, with commute times in the Bay Area falling by more than most. Overall, commute times increased between 1990 and 2010, with commute times in all three California regions increasing by significantly less than average.

Figure 38: Commute Times

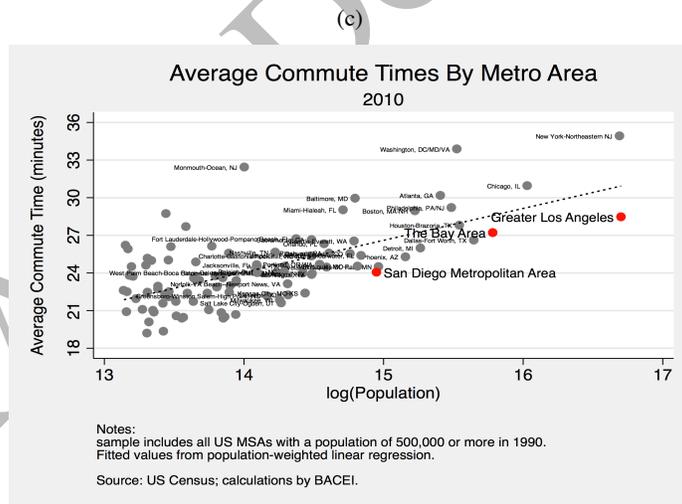
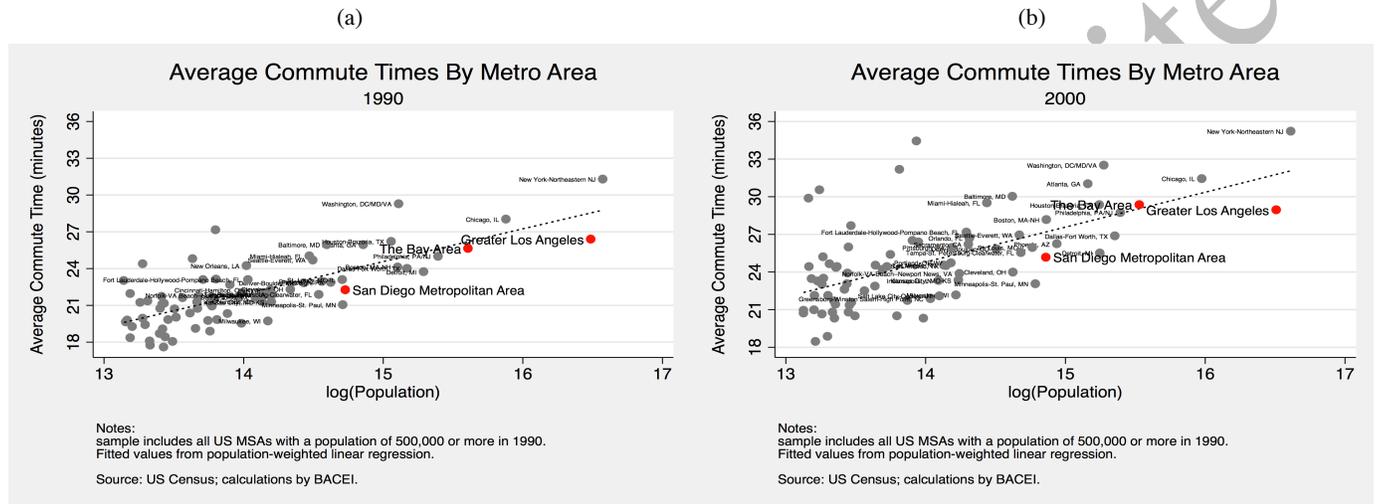
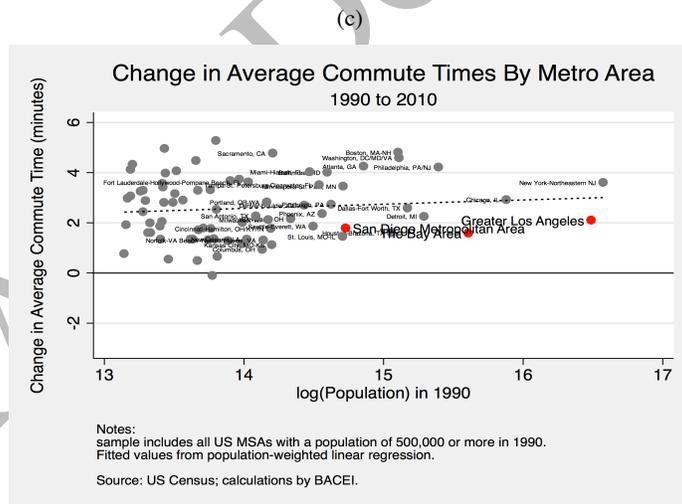
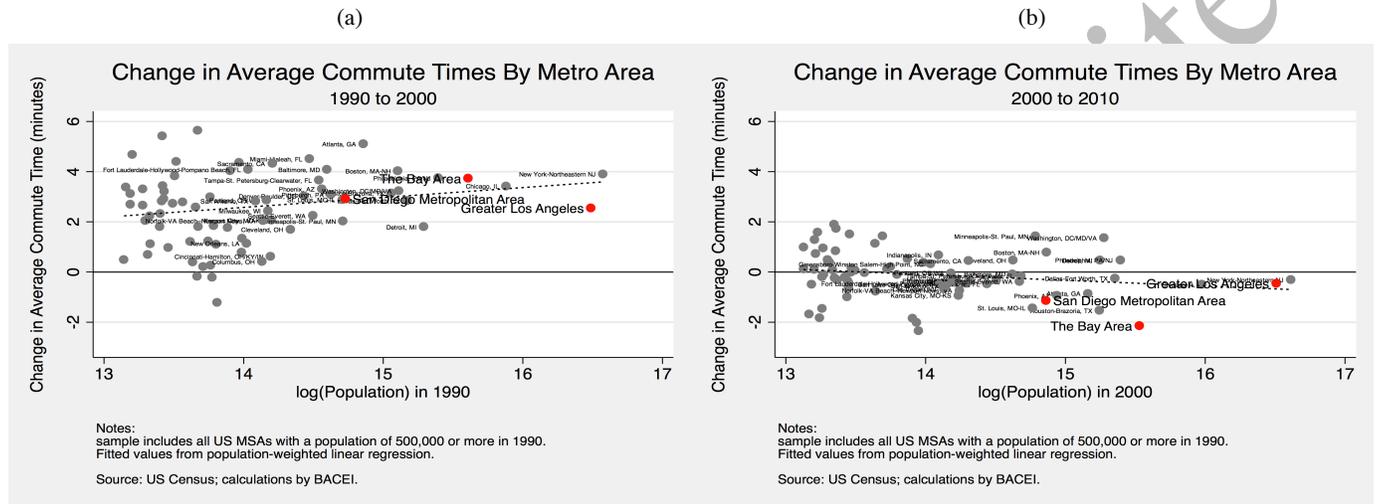


Figure 39: Change in Commute Times



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Public Transportation

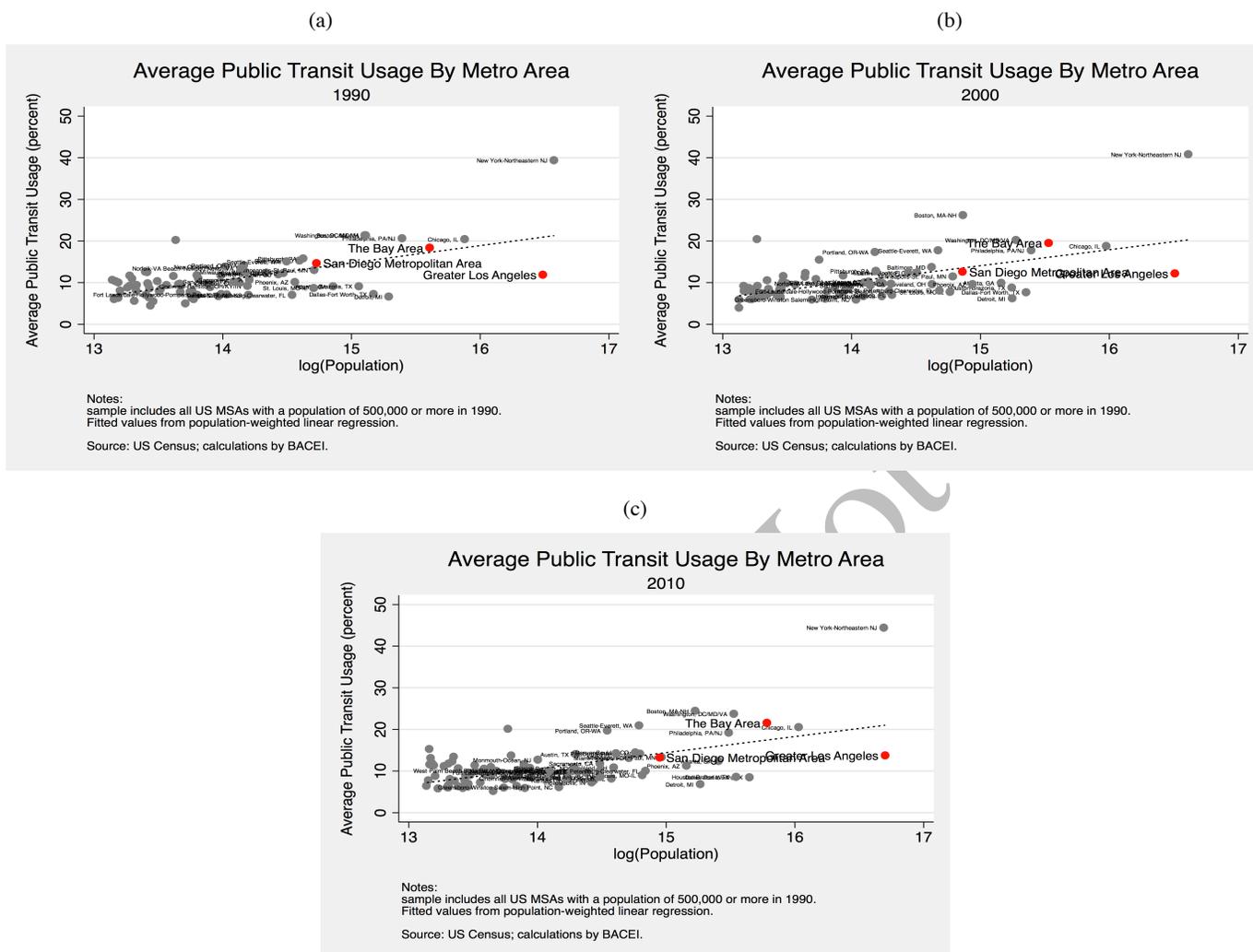
It is also worth considering the role of public transportation in commute patterns around the Bay Area. Public transportation use can change for a variety of reasons. First, system expansions can increase utilization by making it serve the general population more effectively. Second, general perceptions surrounding public transportation use can change. Third, increased congestion on local roads can encourage the use of public transportation. Fourth, increased population growth relative to public transportation capacity can cause utilization to decline as public transportation becomes more crowded and hence less desirable relative to alternatives.

Figure 40(a-c) provides an indication of public transportation use in the Bay Area. These figures are analogous to those presented in Figures 38(a-c) above with respect to commute times, but in this case, being higher on the y-axis is a good thing. Being above the dotted line is also a positive reflection of public transportation use. In all three years, the point for the Bay Area is above the dotted line, though the distance above the dotted line is less in 1990 than in 2000 or 2010. This indicates that accounting for population size, public transportation use in the Bay Area is relatively high.

Changes over the 20 year period are presented in Figures 41(a-c). In each decade and hence over the 20 year period, public transportation usage grew in the Bay Area. In each period, this growth was greater than happened in regions with comparable levels of population, and greater than in either San Diego, where usage declined over the period, and Los Angeles, where usage grew, but by less than might have been expected. The Bay Area appears to be doing relatively well in terms of exploiting the available public transportation systems, or the public transportation systems appear to serve the local population relatively well.

That public transportation use grew between 2000 and 2010 is somewhat surprising given the two recessions between that time that significantly reduced employment and hence commute related congestion.

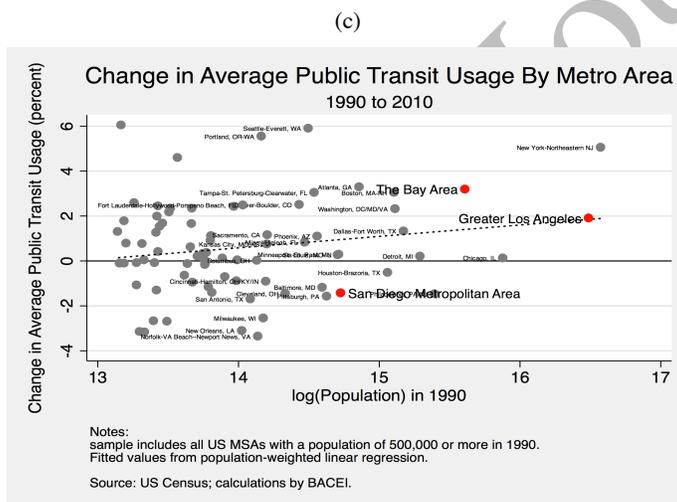
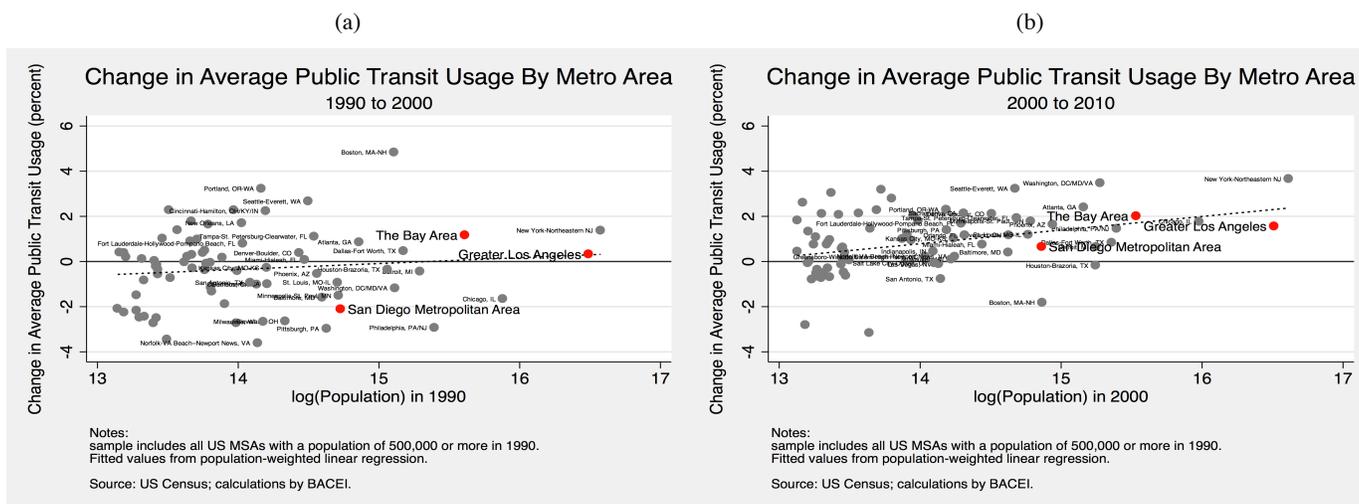
Figure 40: Public Transit Use



Housing Costs

Real estate prices are notoriously high in the Bay Area and California more generally. Often cited as one reason for the poor business climate, high home prices do have the potential to make it more difficult to attract workers to the region. This section compares real estate prices across regions of California, and within the Bay Area to get a sense for how housing costs have changed over the last 17 years. The last 17 years, and more specifically, the last 10 to 12 years, have been some of the most volatile in residential real estate history. This volatility describes not only the Bay

Figure 41: Change in Public Transit Use

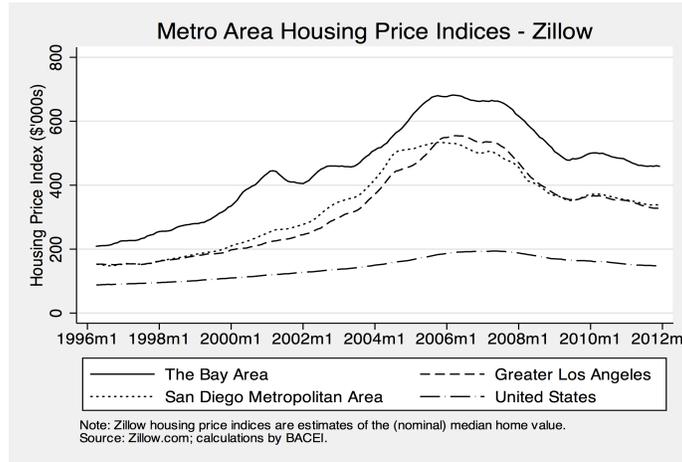


Area and California, but many real estate markets throughout the country. In addition to California, particularly hard hit were states such as Arizona, Florida, and Nevada.

Figure 42 illustrates the boom and bust in housing prices around California, and to a lesser extent nationwide. Between 1996 and 2007, home prices in the Bay Area increased by 215% to nearly \$675 thousand.⁸ The same period saw somewhat smaller price increases in Los Angeles and San Diego, but still prices more than tripled. Nationwide, home prices simply doubled during this period.

⁸Need a discussion of the Zillow price index.

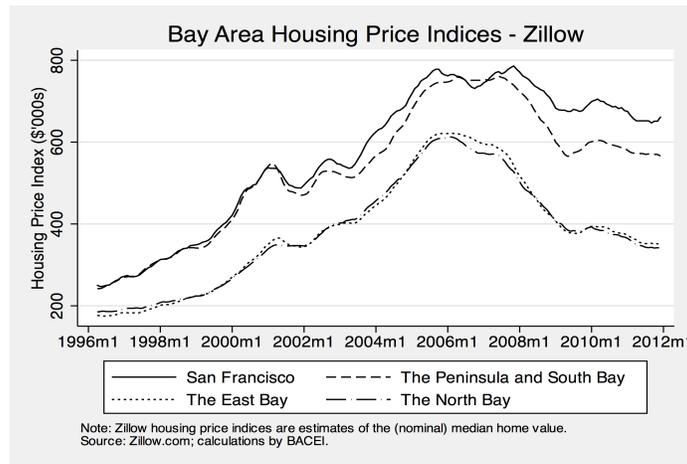
Figure 42



In the aftermath of the bubble, prices have fallen all around the country. In the Bay Area, prices have fallen by more than \$200 thousand to just over \$450 thousand. Similar declines were experienced in other parts of California, with smaller, but proportional declines being experienced nationwide.

Within the Bay Area, similar trends have occurred in home prices, but in varying degrees. Beginning in about 1996, home prices increased significantly through late 2000 (Figure 43). This episode of price increases was primarily driven by the dot-com bubble and had a greater effect in the San Francisco and Peninsula (Silicon Valley) regions than elsewhere. By 2002, this housing price bubble had softened somewhat, with price declines around the region from their 2000 peaks. Between 2002 and 2005, a housing bubble of another sort began. This was driven by a variety of factors, but the increased availability of sub-prime mortgages was an important driver.

Figure 43

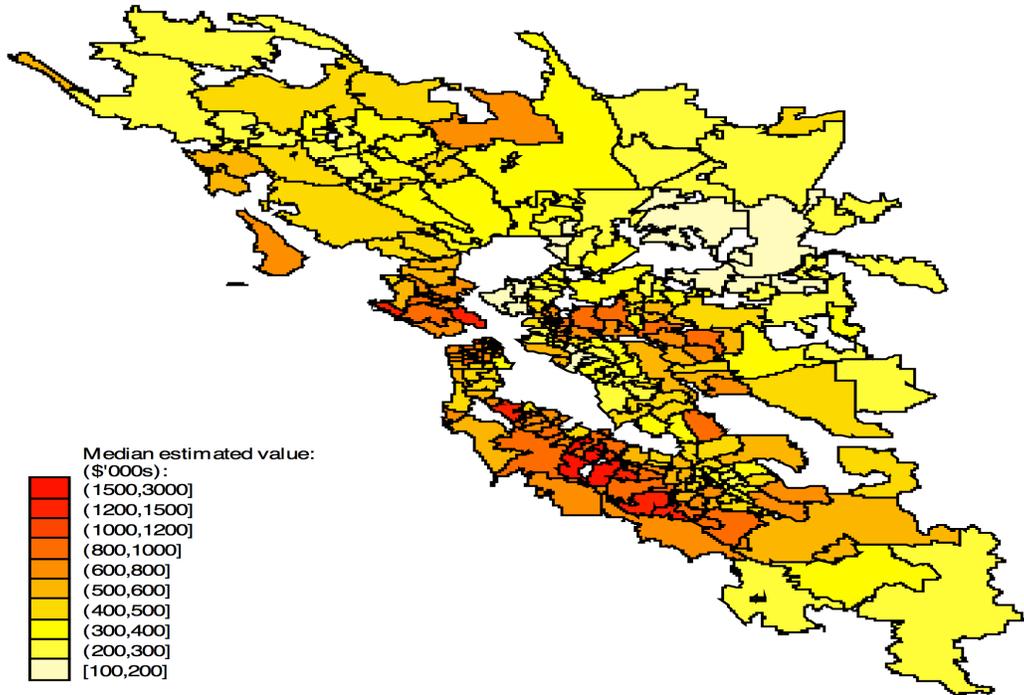


Between 2002 and 2005, home prices in the East and North Bays kept pace with prices in San Francisco and the Peninsula; there was a relatively constant gap of just under \$200 thousand in home prices. As East and North Bay prices were lower than in the other regions, they were increasing at a faster pace, experiencing a proportionately bigger bubble. Beginning in about 2005, home prices in the East and North bays began a precipitous decline, by as much as 60% in some regions. The price declines in other parts of the region did not begin in earnest until the economy slipped into recession, in late 2007 to early 2008.

Home prices have currently stabilized, with small increases and decreases characterizing most of the Bay Area. Figure 44 provides a more detailed indication of pricing patterns around the region. Median prices are indicated by zip code around the Bay Area, with darker zip codes indicating higher prices. The highest prices are clustered around the Silicon Valley region, with some pockets of high prices in Marin as well.

Figure 44

Median Housing Price Estimate: 2011

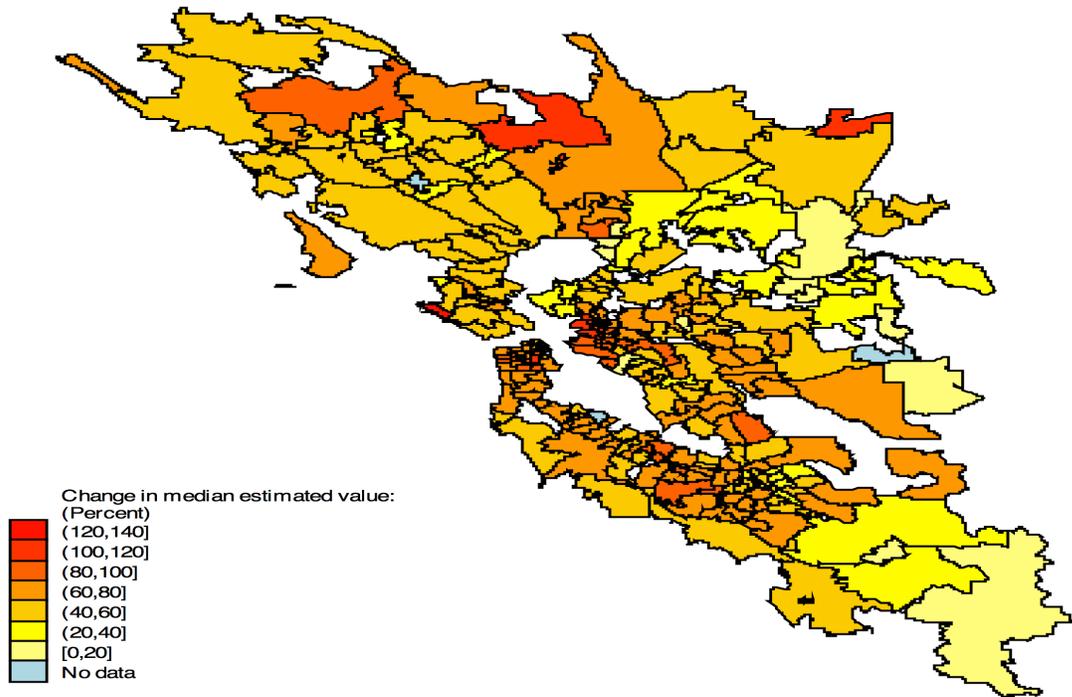


Source: Zillow.com, Census; calculation and mapping by BACEI.

Overall price changes have been more widespread around the Bay Area (Figure 45). Despite the collapsing of the housing bubble, some regions have seen significant increases since 1999. As housing prices are the single largest contributor to the Bay Area's higher cost of living relative to comparable regions, this presents an ongoing cause for concern.

Figure 45

Change in Median Housing Price Estimate: 1999 to 2011



Source: Zillow.com, Census; calculation and mapping by BACEI.

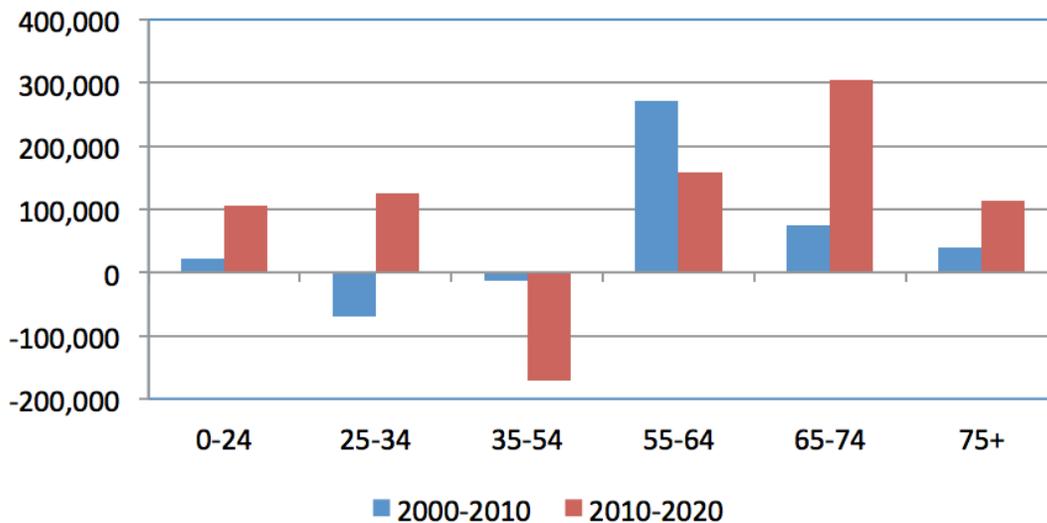
Bay Area Economic and Demographic Futures

The Bay Area in the Midst of Demographic Change

The Decade Between 2010 and 2020

The Bay Area is in the midst of a substantial change in the age composition of the population, which will affect workforce and housing. After three decades when baby boomers filled the workforce and single family homes, change came to the region in the decade between 2000 and 2010 and that change will continue in the decades ahead as the large baby boom generation moves into older age groups.

Figure 46: Bay Area Population Growth (Thousands)



One large change is the decline in the number of residents in the prime family age groups (35-54). After large increases between 1975 and 1995, which dominated the region’s workforce and housing trends, the number of residents in these key age groups leveled off between 2000 and 2010 and is now poised to decline substantially in the decade ahead.

Baby boomers who moved into the 55-64 age groups between 2000 and 2010 will now move into the 65-74 age groups as the remaining baby boomers continue to fill the 55-64 cohorts.

These trends have three important implications:

1. A growing number of baby boomers will retire as we move toward 2020.
2. These retirements will leave a large number of replacement job openings and, as shown later in this report, among a wide range of occupation and skill categories.
3. These job openings will need to be filled by the growth in the workforce aged 25-34, by existing workers and by new immigrants. A large share of these workers will be recent immigrants and the children and grandchildren of recent immigrants.

The largest population growth will be in the 65-74 age group and their decisions about working and where they choose to live will be critical in regional workforce and housing planning. How many will continue to work and how many will want to vacate their larger homes as their children move out will determine the course of workforce and housing trends in the region.

The under 35 population will grow after a period of no growth as many residents move into the high school, college and young adult age groups.

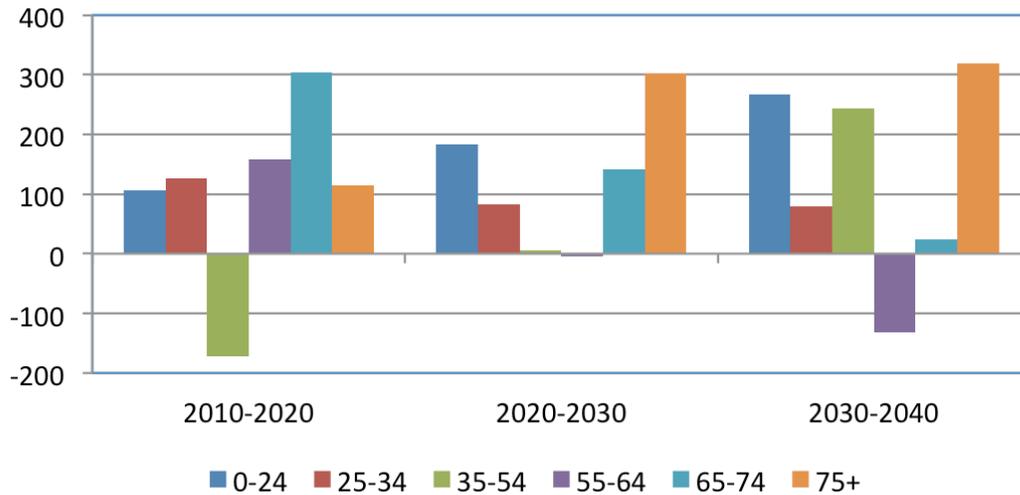
The Decade between 2020 and 2030

This decade continues the aging and retirement of the baby boom generation with the majority of population growth in age groups over 65 with the remaining gains in population under 24 and a continuation of growth in the young adult (25-34) age groups.

In this decade there will be virtually no growth not only in the 35-54 age groups but also in residents aged 55-64

Toward the middle of this decade nearly all of the baby boom generation will need to be replaced in the workforce by the region’s growing Hispanic and Asian population including new immigrants and the children and grandchildren of recent immigrants.

Figure 47: Bay Area Population Growth (Thousands)



The Decade between 2030 and 2040

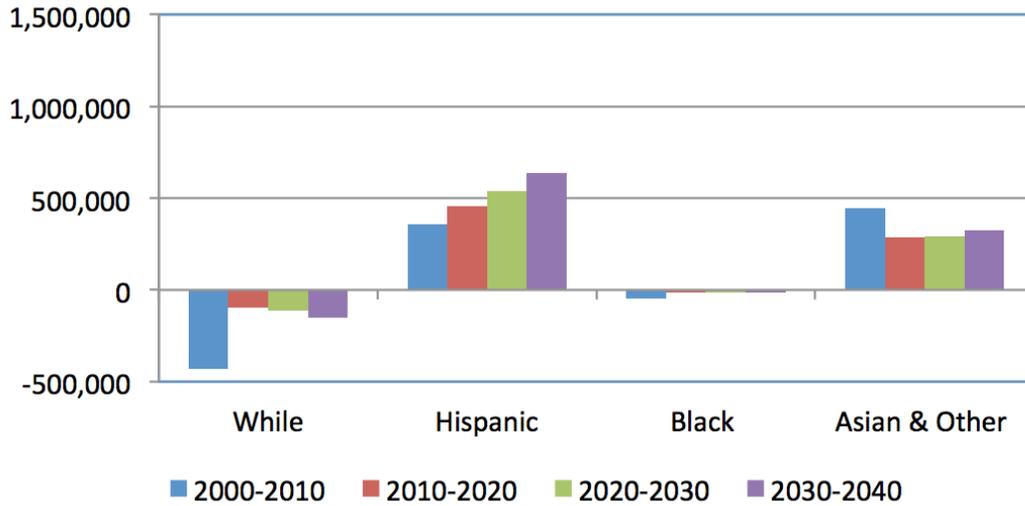
This decade will bring a return of growth in the number of children and residents in the family (35-54) age groups and a continuing surge in the 75+ population as the last of the baby boomers turn 75.

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Population Change by Ethnic Group

The region’s demographic change includes continuing changes in the ethnic composition of the population as Hispanic, Asian and multi-race residents account for all of the region’s recent and expected population growth. (Figure 48)

Figure 48: Bay Area Population Growth by Ethnic Group



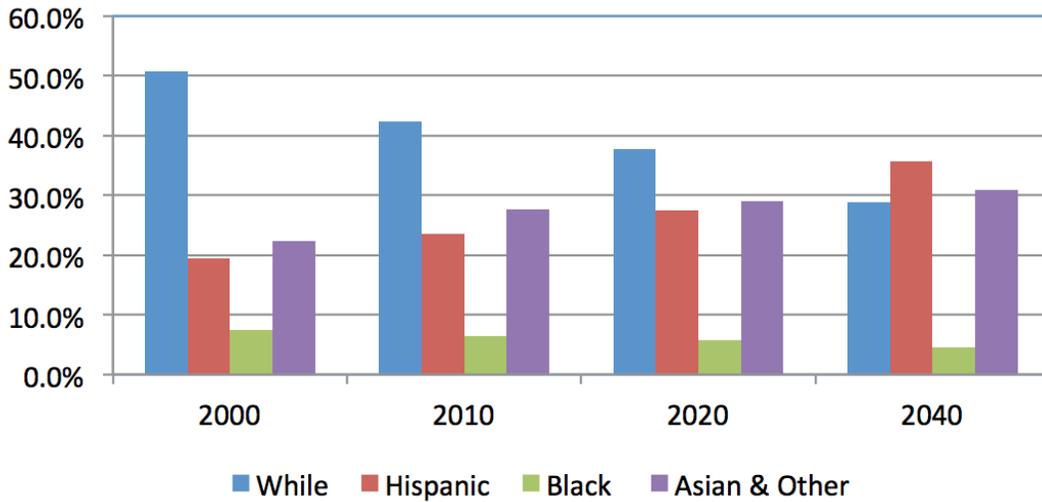
The White non Hispanic population saw a substantial decline in the past decade with the combination of the large job losses accompanying the dot.com bust and then record high housing prices in mid decade. These declines are expected to continue at a modest level as deaths will exceed births.

Continuing growth is expected in the number of Hispanic and Asian residents and the Asian and Other group also includes residents who mark multiple races on the Census form. These increases are the result of continuing high levels of immigration and births to the existing population.

As a result, the composition of Bay Area population will change in the decade ahead and the following 20 years. It should be noted that the ethnic labels become less clear over time as many Hispanic and Asian residents will have been here for many generations while a smaller proportion will be recent immigrants.

By 2020 there will be roughly an equal number of Hispanic, Asian and White non Hispanic residents in the region with continuing changes in the ethnic make-up of the region to 2040.

Figure 49: Bay Area Population by Ethnic Group



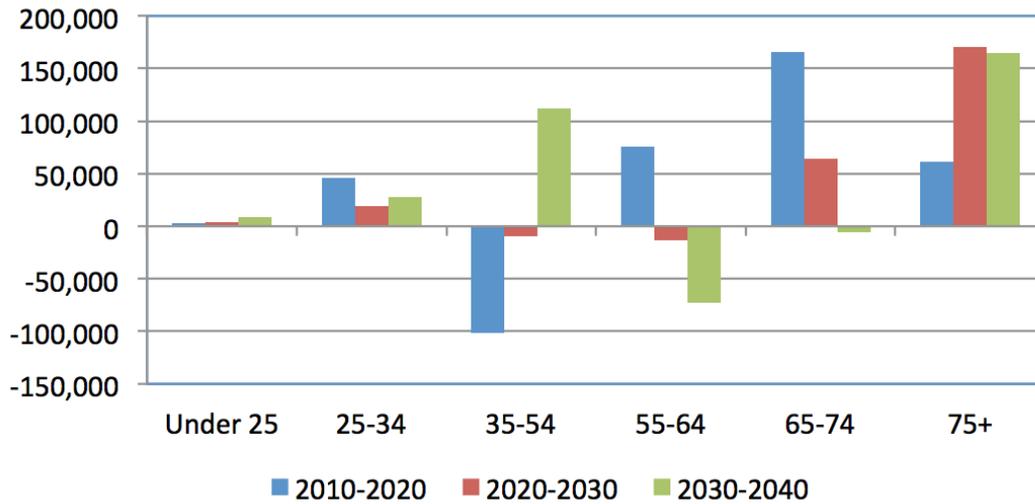
Household Trends and Implications for Housing

The demographic changes have important implications for housing preferences in the next decade and beyond. There will be a decline in households headed by a resident aged 35-54, the prime family housing group, and there will be no growth in the number of households in these age groups until after 2030. Household growth until 2020 will be largest in the 65-74 age groups where baby boomers will surge followed by the 55-64, 75+ and young adults (25-34) groups.

These trends could support demand for smaller housing units and for new housing in areas that are close to amenities. Already the growth in demand from younger households is leading to rent increases and new apartment development in amenity rich areas in San Francisco, San Jose and other Bay Area locations. The choices made by older households, where most of the growth will occur, will supplement the demand for smaller units and amenity rich neighborhoods.

Between 2010 and 2020 a decline of approximately 100,000 is expected in the number of households headed by a resident aged 35-54. There are also still a number of homes that are vacant and/or in some stage of foreclosure. If some of the baby boomers choose to downsize as they age and as their children leave the household, these trends will simul-

Figure 50: Bay Area Household Growth by Age Group



taneously increase the demand for smaller living space including apartments, condos, and town-homes while providing a large enough supply of larger single family homes for the next generation of family households.

Job Growth

The Bay Area is projected to outpace the state and nation in job growth to 2020 and 2040 although the differences between the regional, state and national job growth rates are not large. The Bay Area is projected to add nearly 700,000 jobs between 2010 and 2020 (+20.2%) although nearly 300,000 of these jobs represent recovery of jobs lost during the recession. With 2007 as the starting point, the Bay Area job growth to 2020 is a more modest 11.4%, still outpacing the expected 9.2% state and 8.8% national job growth.

The Bay Area has begun a strong job recovery adding 44,000 jobs in 2011 and has posted a gain of 67,500 jobs seasonally adjusted for the 12 months ending in March 2012. As a result, the Bay Area outpaced the state and nation with a 2.2% job increase during this period.

Figure 51: Growth in Total Jobs

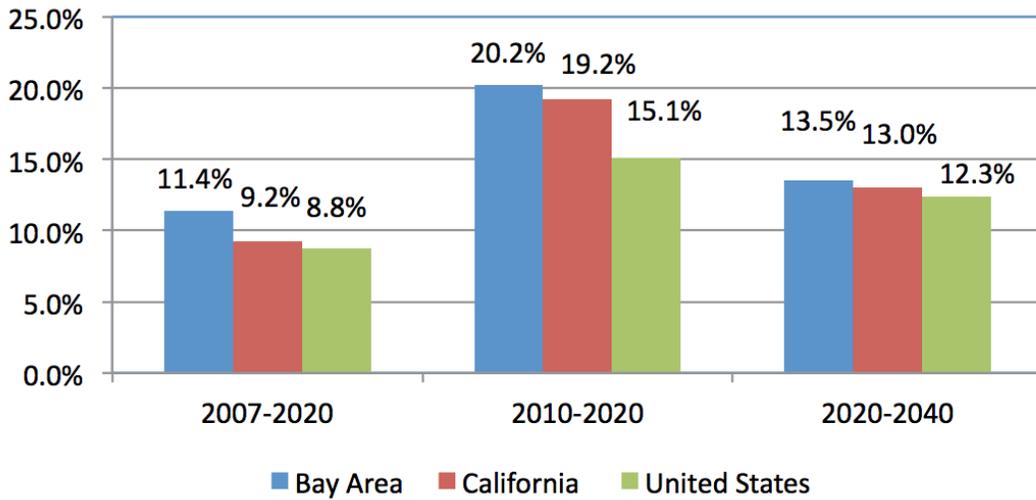
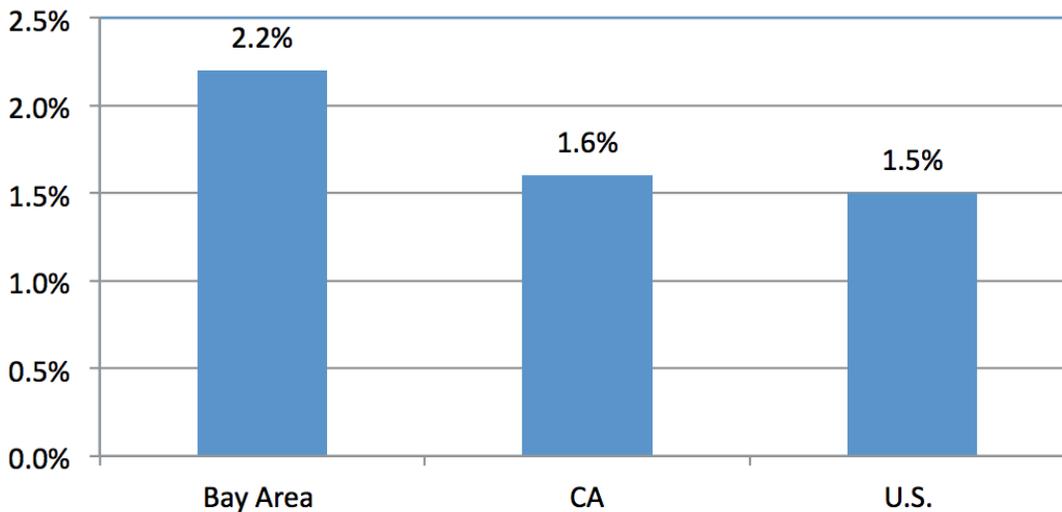


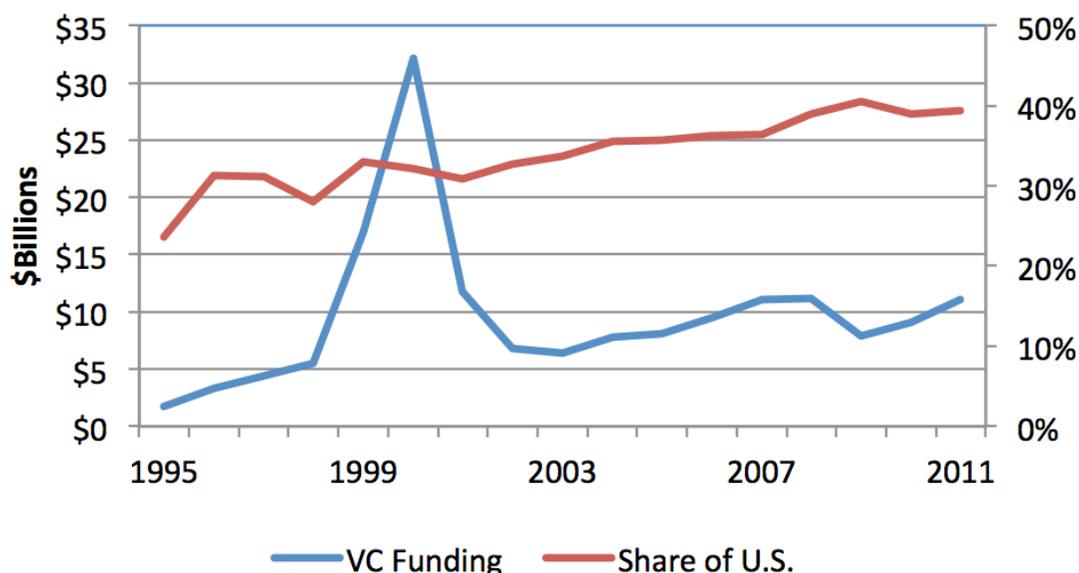
Figure 52: Wage and Salary Job Growth // March 2011-2012



The Bay Area job growth will be driven by the region’s large competitive advantage in technology and innovation. That advantage can be seen in the region’s large and growing share of U.S. venture capital funding and by the region’s competitive advantage in faster-growing high wage industries.

Bay Area VC funding is rising again and the region accounts for \$2 in every \$5 (40%) of national funding. Recent successful IPO offerings for Bay Area firms such as LinkedIn, Facebook and Zynga bodes well for future VC funding.

Figure 53: Bay Area VC Funding



The region had 2.4% of national jobs in 2010 but a much larger share of technology sectors as shown below.

Table 12: Bay Area Share Advantage in Key Technology Sectors (2010 Data)

<i>Jobs in Thousands</i>	Bay Area	U.S.	Bay Area Share of U.S.
Computer & Electronics Manufacturing	132.5	1,100.1	12.0%
Pharmaceuticals	16.0	276.5	5.8%
Medical Equipment	11.1	359.0	3.1%
Software	26.7	259.8	10.3%
Internet-Related	31.8	383.5	8.3%
Architectural & Engr. Services	42.1	1,276.7	3.3%
Computer Services	100.9	1441.5	7.0%
Management & Technical Serv.	41.7	991.4	4.2%
Scientific R&D Services	50.0	620.3	8.1%
Total Jobs	3,401.8	141,821.3	2.4%

Source: BLS, EDD and CCSCE

Bay Area projected job growth to 2020 is shown below in comparison to both 2007 pre-recession and 2010 levels. The largest job growth in absolute numbers is expected in Professional and Business Services, which includes the fast-growing professional, scientific and technical services sectors and in Education and Health Services where the primary growth is in health and social service sectors as the region's population ages.

While construction is poised for a rebound, the 2020 job level is expected to be below the 2007 level and a similar result is expected in manufacturing although output and exports will increase and some advanced manufacturing sectors may see job gains. A similar pattern is expected in the Finance, Retail Trade and Government sectors. On the other hand, Leisure and Hospitality and Self Employment are also expected to post job gains.

Table 13: Bay Area Jobs (Thousands)

	2007	2010	2020
Farm	23.2	20.7	21.7
Natural Resources and Mining	2.4	1.9	2.3
Construction	193.9	130.5	184.3
Manufacturing	348.0	308.3	319.1
Wholesale Trade	129.2	113.6	134.9
Retail Trade	343.1	308.0	345.4
Transp, Warehousing and Util	102.2	90.5	111.1
Information	113.4	111.0	139.6
Financial Activities	201.4	170.6	210.4
Prof. and Business Services	581.1	547.1	719.8
Educational and Health Services	385.6	410.5	516.5
Leisure and Hospitality	332.5	324.3	392.7
Other Services	112.1	109.3	139.2
Government	486.0	457.5	482.6
Self Employed	317.5	298.0	368.7
Total Jobs	3671.6	3401.8	4088.3

Source: 2007, 2010--EDD and ACS; 2020--CCSCE

The results are similar in terms of percentage gains except that the Information sector, which includes key Internet related firms, is expected to post strong percentage gains on a comparatively small initial job base.

Implications of the Job Projections

Technology followed by foreign trade and tourism are the economic base sectors expected to determine the growth rate of jobs in the Bay Area to 2020 and beyond. **These sectors stand out as the focus for efforts to sustain and improve the region's competitive position.**

Table 14: Bay Area Job Growth

	<i>Thousands</i>			
	2010-20	2007-20	2010-20	2007-20
Farm	4.8%	-6.5%	1.0	-1.5
Natural Resources and Mining	21.0%	-4.2%	0.4	-0.1
Construction	41.2%	-5.0%	53.8	-9.6
Manufacturing	3.5%	-8.3%	10.8	-28.9
Wholesale Trade	18.7%	4.4%	21.3	5.7
Retail Trade	12.1%	0.7%	37.4	2.3
Transp, Warehousing and Util	22.8%	8.7%	20.6	8.9
Information	25.8%	23.1%	28.6	26.2
Financial Activities	23.4%	4.5%	39.8	9.0
Professional and Business Services	31.6%	33.9%	106.0	130.9
Educational and Health Services	25.8%	33.9%	106.0	130.9
Leisure and Hospitality	21.1%	18.1%	68.4	60.2
Other Services	27.3%	24.1%	29.9	27.1
Government	5.5%	-0.7%	25.1	-3.4
Self Employed	23.7%	16.1%	70.7	51.2
Total Jobs	20.2%	11.3%	686.5	416.6

While the Bay Area currently retains competitive advantages in technology, trade and tourism as a result of strong VC funding, innovative companies, high amenities and a Pacific Rim location, a prosperous future is not guaranteed in an increasingly competitive world.

Recent studies of workforce challenges in the high tech sector combined with annual surveys conducted by the Bay Area Council and Silicon Valley Leadership Group confirm two major findings for sustaining competitiveness in the region:

- Access to skilled labor is the primary competitive advantage of the region and firms are having increasing trouble finding enough skilled workers as the recovery progresses
- Firms cite many competitive concerns but the common theme is that the region competes for **both companies and workers and their families.**

ABAG asked CCSCE to develop job projections based on success in addressing at least some of the region's competitiveness challenges. CCSCE's analysis assumes that over the next 30 years, many of the challenges facing the nation, state and region will be addressed. In addition this analysis assumes that at the regional level, the Bay Area will address challenges of housing, transportation and quality of life as well or better than other regions in the United States.

Providing investors and families a high quality of life is essential to maintaining the Bay Area's competitive advantage in the technology sectors that are expected to drive the region's job growth. Up until now the region has done well in the competition for providing great places to live and work. A study of Silicon Valley high tech employers completed in 2011 for the NOVA workforce board reported:

"Silicon Valley's top competitive advantage is its highly skilled pool of talent. Executives interviewed for the study say there is nowhere else in the world with such a concentration of highly skilled tech professionals, which is essential for businesses that require a steady stream of talent. The Valley's high quality of life—including beautiful weather, excellent schools, and the ability to live and work in the suburbs—was another major advantage, making CEOs want to locate their companies there and attracting talented workers and their families."

On the other hand maintaining a high quality of life is increasingly difficult. A 2011 survey of Silicon Valley CEOs states the quality of life imperative succinctly. The Silicon Valley Leadership Group 2011 CEO Survey reported "a deteriorating state infrastructure in areas ranging from public education to public transportation has added to the difficulties of recruiting the best workforce, finding them housing and educating their children to be tomorrow's world-class workforce".

The Leadership Group's 2012 Survey finds that employee recruitment and retention is the number one challenge for Bay Area businesses.

The 2012 Bay Area Council Economic Institute Bay Area economic profile identifies a list of well-known Bay Area competitiveness challenges:

- Housing affordability. Although median home prices have fallen and affordability is higher than it has been in several years, Bay Area median home prices and rents are still well above the national average.
- K-12 and higher education. Both are facing continuing budget cuts throughout California as well as rising tuition levels at the state's public and private colleges. Moreover, average test scores are at or below nationwide levels and high school dropout rates remain high. While immigration can continue to supply a part of the region's workforce needs, most jobs will be filled by residents who are born, educated and trained in California.
- Transportation infrastructure. Despite the ongoing work by MTC and local transit districts and the \$billions planned for improving highway and public transit travel, the region does not yet have sufficient funding for all needed transportation infrastructure investments. Although transportation funding is a nationwide problem, it is an especially important challenge in a region that needs to be able to move people and goods efficiently to compete in the 21st century global economy
- Governance challenges. California does not as yet have a plan to develop state and local budgets that are balanced and able to provide high quality public services

The bottom line is that Bay Area competitiveness depends on creating great places to work and live. Families, like entrepreneurs, have choices as to where to locate. And families, like entrepreneurs, demand a great quality of life including world class education, infrastructure and public services as well as ample housing opportunities to offset the high cost of living in the Bay Area. In addition businesses will demand great customer service to continue locating and expanding in the region.

Many strategies identified in these Bay Area studies serve double duty as they help respond to the needs of businesses and residents simultaneously. Education and training, infrastructure and housing rank high on the list of firms and residents. And even in regulatory strategies, there may be win-win reforms that benefit all.

Occupational and Skill Requirement Trends

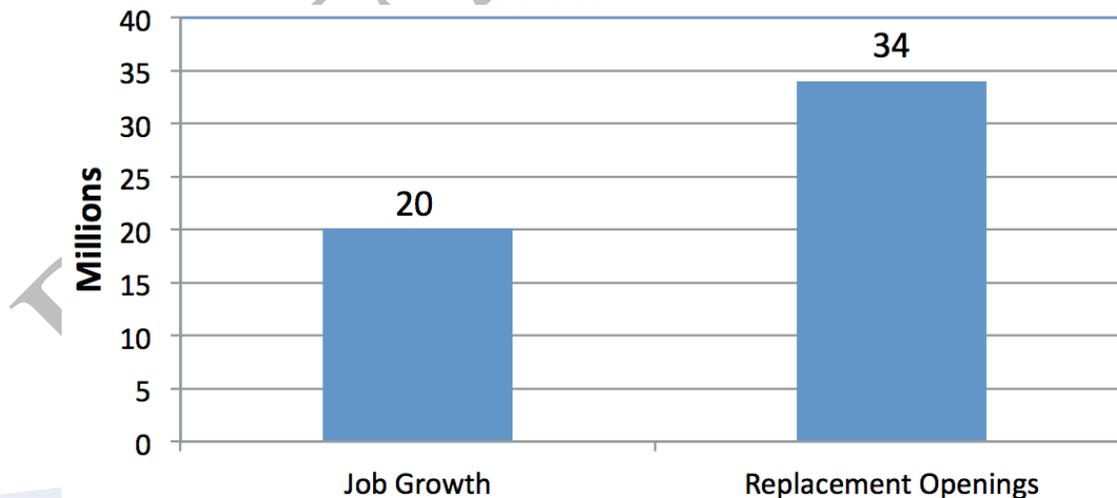
In February 2012 the U.S. Bureau of Labor Statistics released new industry and occupational projections reflecting both long-term trends and the impact of the recent recession and very large job losses. These projections provide a guide to trends that should be repeated in the Bay Area in the period from 2010 to 2020.

The first major finding is that more than 60% of job openings will come from replacing existing workers and not from job growth. And if we consider that much of the job growth replaces jobs lost in the recession the importance of replacement jobs becomes even more important in the last five years of the decade. The driving factor in the replacement job opening surge is the retirement of the baby boom generation reflected in the age trends shown in page ??.

Replacement job openings come from two sources. One is the churn in many low wage job sectors as young workers start in sectors such as food service and retail trade and then move to higher wage sectors as they gain education and skills. So there is large continuing replacement needs in occupations such as waitresses and retail clerks.

But most high wage replacement job openings are the result of retirements from the labor force and these will surge in the coming decade.

Figure 54: U.S. Job Openings from Growth and Replacement



The rising importance of replacement job openings has two critical implications for the Bay Area. The first implication is that workforce policy must recognize the large size and critical nature of these replacement needs and not focus the majority of efforts in identifying fast growing sectors, a common practice today.

While sectors with high rates of job growth are important and do have their own workforce needs, this is not where a majority of students and workers will find jobs nor is it where a majority of employers need skilled workers.

The second implication is that the replacement job opening story is a story of both **hope** and **challenge**. It is a story of **hope** because the retirement of the baby boom generation will create a large number of job openings across a wide range of skill requirements. But the replacement story brings **challenge** in part because the baby boom generation on average was our most highly educated workforce cohort and in part as a result of concerns about educational quality and access in California's fiscally stressed schools and public colleges.

The second major finding is that all major occupational categories and nearly all smaller occupations will show growth measured from 2010 even though, in some cases, the growth merely replaces jobs lost between 2006 and 2010. Overall job and occupational growth is 20.4 million or 14.3% between 2010 and 2020 and all major groups show a gain of more than 10% measured from 2010. The fastest growing major occupational groups are healthcare and computer, engineering and science occupations.

However, measured from 2006 job levels, the large sales and office occupation group shows little growth and the large construction, installation, production and goods movement occupations never recover to 2006 job levels during this period.

Table 15: U.S. Occupational Trends by Major Occupation (Millions)

	2006	2010	2020	<i>Percent Change</i>	
				2010-20	2006-20
Management, Business, and Financial	15.6	15.6	17.4	11.5	11.2
Computer, Engineering, and Science	7.1	7.2	8.4	17.0	19.2
Education, Legal, Community, Arts, and Media	15.3	15.5	18.0	15.9	17.4
Healthcare and Healthcare Support	10.9	12.0	15.5	28.9	41.5
Protective, food, Bldg. Maint. and Personal Care	25.1	24.9	28.4	13.9	13.0
Sales and Office	40.3	37.5	41.7	11.2	3.5
Constr., Installation, Production and Goods Movement	35.2	29.4	33.2	13.3	-5.6
Total, All Occupations	150.6	143.1	163.5	14.3	8.6

Source: U.S. Bureau of Labor Statistics

The third major finding is that a very large share of occupations is in low and moderate wage sectors. This includes most sales and office occupations, the protective service, food service, building maintenance and personal care sectors and most occupations in the construction, installation, production and goods movement sectors. These sectors account for 103.3 million jobs in 2020 or 63% of all jobs. While occupations with higher skill requirements and pay are expected to increase as a share of the total economy, the increase is modest because these sectors are relatively small to begin with.

It is often said that the recovery will not bring back the same jobs as were lost during the recession. While this is certainly true in some sectors such as manufacturing where globalization is a major factor and in some technology sectors, for the overall economy most of the recovery jobs **will be very nearly the same as the jobs lost**. The heavy losses were in construction, installation, goods movement and in the sales and office occupations. And most of these jobs will be the same, requiring the same skills as the economy recovers.

We now look at occupations in a little more detail and include a comparison of overall job gains and replacement job openings. The table below includes occupational categories that experienced job losses of 4% or more during the recession. For example construction occupations saw a 23.7% decline between 2006 and 2020 and will have 559,300 fewer jobs in 2020 compared to 2006. Even so there will be job gains of 1.4 million between 2010 and 2020 replacing some of the job losses during the recession. And there will be 2.8 million job openings in construction occupations including recovery growth and replacement job openings.

Production occupations will recover only a small portion of the jobs lost during the recession but still will produce 2.2 million job openings between 2010 and 2020. Sales and office occupations will show small job gains by 2020 compared to 2006 levels but will produce over 14 million job openings. Most of the job openings in these sectors will come from replacement job openings.

This table reinforces the finding that baby boom retirements will produce job openings in occupations that have little or modest overall job growth.

Table 16: Occupational Trends (Millions)

Industries that lost 4% or more of jobs 2006-10	<i>Job Openings 2010-20</i>					
	2006	2010	2020	2006-10	2006-10	2010-20
Architecture and Engineering	2,583.2	2,433.4	2686.2	-5.8%	103.0	797.9
Building and Maintenance	5,744.6	5,498.5	6,162.5	-4.3%	417.9	1654.6
Sales	15,985.4	14,915.6	16,784.7	-6.7%	799.3	6453.6
Office and Admin. Support	24,344.0	22,602.5	24,938.2	-7.2%	594.2	7449.7
Construction	8,294.5	6,328.0	7,735.2	-23.7%	-559.3	2760.1
Inst., Maint., and Repair	5,883.5	5,428.6	6,228.7	-7.7%	345.2	2025.8
Production	10,674.6	8,594.4	8,951.2	-19.5%	-1723.4	2231.2
Goods Movement	10,350.8	9,004.8	10,333.4	-13.0%	-17.4	3597.2

Source: U.S. Bureau of Labor Statistics

The occupations below had little change in job levels between 2006 and 2010. As a result the job growth is nearly the same measured from 2010 as from 2006. All of the occupations will have higher job levels in 2020 compared to 2006. Roughly half of the job openings in these occupations will come from replacement job openings.

Table 17: Occupational Trends (Millions)

Industries that had little change in jobs 2006-10	<i>Job Openings 2010-20</i>					
	2006	2010	2020	2006-10	2006-20	2010-20
Management Occupations	8,771.9	8,776.1	9,391.9	0.0%	620.0	2,567.7
Business and Financial	6,831.9	6,789.2	7,961.7	-0.6%	1,129.8	2,555.2
Community and Social Service	2,385.5	2,402.7	2,985.0	0.7%	599.5	1,098.1
Legal	1,222.2	1,211.9	1,342.9	-0.8%	120.7	343.6
Education, Training, and Library	9,033.7	9,193.6	10,597.3	1.8%	1,563.6	3,397.8
Arts, Design, Ent., Sports, and Media	2,677.0	2,708.5	3051.0	1.2%	374.0	1,066.7
Food Preparation and Serving	11,352.4	11,150.3	12,242.8	-1.8%	890.4	5,102.7
Personal Care	4,877.6	4,994.7	6,331.4	2.4%	1,453.8	2,582.9

Source: U.S. Bureau of Labor Statistics

There are four large occupational groups that experienced job gains between 2006 and 2010 and in each case job growth is expected to continue to 2020. In two sectors—computer and mathematical occupations and healthcare practitioners and technical health care occupations, most job openings will come from job growth and not replacements as these are fast-growing sectors.

Table 18: Occupational Trends (Millions)

Industries that gained 4% or more of jobs 2006-10	<i>Job Openings 2010-20</i>					
	2006	2010	2020	2006-10	2006-20	2010-20
Computer and Mathematical	3,313.2	3,542.8	4,321.1	6.9%	1,007.9	1,437.8
Life, Physical and Social Science	1,172.6	1,228.8	1,419.6	4.8%	247.0	545.7
Healthcare Practitioners and Technical	7,197.6	7,799.3	9,819.0	8.4%	2,621.4	3,591.3
Protective Service	3,162.9	3,302.5	3,667.0	4.4%	504.1	1,195.5

Source: U.S. Bureau of Labor Statistics

Bottom Line

There will be job openings across the broad spectrum of occupations. A majority of job openings will come from replacements—1) the normal churn of low-wage jobs such as waitresses and 2) the need to replace a growing number of retiring baby boomers. The other way to look at this finding is that the economy will need new workers in nearly every occupation whether it is growing rapidly, slowly or not at all. This is the twin finding of **hope and challenge**.

Replacements will account for most job openings in slower growing occupations and will account for a majority of job openings in all but the very fast-growing occupations associated with computer skills and health care.

Job Growth and Openings by Education Category

The BLS has introduced new analyses of the educational and training requirements associated with specific occupations. The results and methodology are discussed in <http://www.bls.gov/opub/mlr/2012/01/art5full.pdf>. A summary of the results is shown below.

It is true that occupations requiring more than high school graduation are expected to grow faster than the average job growth rate between 2010 and 2020. The growth rates for occupations requiring post-graduate degrees, bachelor's degrees, associate's degrees and some post-secondary education are all projected to grow faster than the 14.3% average for all jobs. And occupations requiring high school graduation or less are expected to grow at below-average rates to 2020. **But the differences in growth rates for varying levels of education is not great and most jobs in 2020 will still require only high school education or less according to the BLS research.**

It is possible that these data understate the level of educational improvement required for the U.S. economy over the coming years. These projections assume that occupations in the future will require the same level of education and training as current workers possess. On the other hand it may be true that most occupations will require continuing skills upgrading to accommodate the growing influence of technology in the workplace and continuing improvement in the education and training of workforces globally.

Table 19: U.S. Job Growth and job Openings by Education Category (Millions)

	2010	2020	Change	% Change	Job Openings
Post-graduate degree	6,395.7	7,703.5	1,307.8	20.4%	2,605.7
Bachelor's degree	22,171.1	25,827.2	3,656.1	16.5%	8,562.4
Associate's degree	7,994.6	9,434.6	1,440.0	18.0%	2,941.0
Some post-secondary	7,335.6	8,578.7	1,243.1	16.9%	2,751.6
High school graduate	62,089.6	69,665.7	7,576.1	12.2%	21,745.9
Less than high school	37,081.7	42,372.4	5,245.7	14.1%	16,180.8

Source: U.S. Bureau of Labor Statistics

Implications and Issues

The Bay Area will meet future workforce needs from four sources:

- Existing Workers
- Today's students
- New immigrants

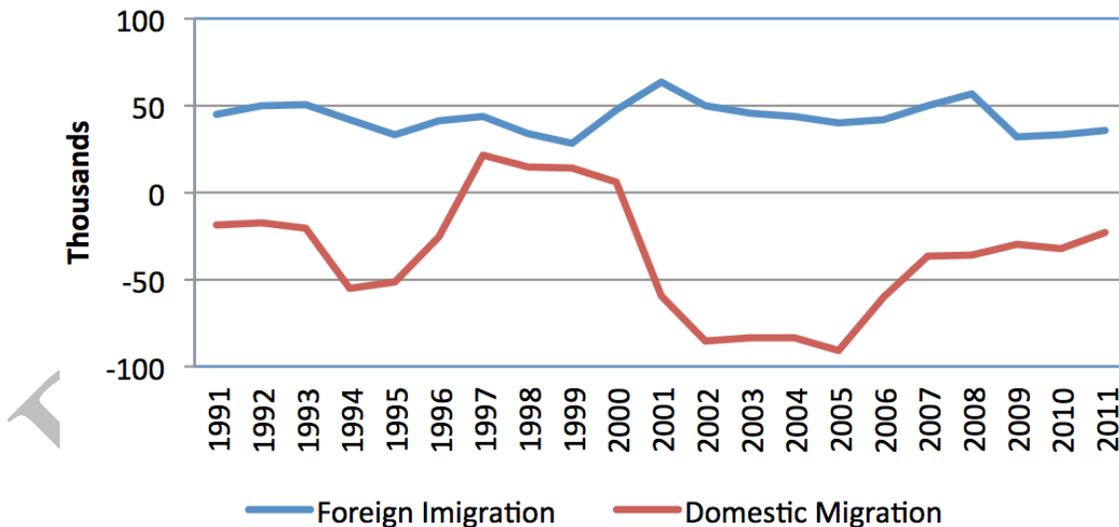
- Migrants from other parts of the U.S.

The generation of baby boomers who are retiring had the highest educational attainment of any American labor force cohort in history. Replacing them and providing for the increasing skill requirements of new jobs will be a challenge that, at the broadest policy level, requires four components— 1) training opportunities for existing workers, 2) improved K-12 education and access to higher education, 3) immigration policies that welcome workers at all skill levels and 4) policies that provide incentives for highly skilled workers in other areas of the country to come to the Bay Area to live and work.

The education and training challenges come at a time when funding for training, K-12 and higher education in California is being cut and the number of residents with access to training and/or college education has been falling.

Foreign immigration flows have been large and important in the Bay Area for the past two decades. Annual foreign immigration levels have been between 40,000 and 60,000 per year. A high share of Bay Area immigrants come from Asia with China and India being the largest countries of origin.

Figure 55: Migration Flows to the Bay Area



Domestic migration has been negative especially in the years after defense cuts in the early 1990s and the end of the dot.com boom in 2001 but within this trend is some migration of highly educated residents to the Bay Area.

Immigration policies are mentioned as important competitiveness considerations in all surveys of Bay Area businesses.

County by County Trends

The county by county projections in this section are from the current preliminary ABAG projections being circulated for review. The regional projections are based on CCSCE’s analysis although the totals are slightly lower than the CCSCE projections as a result of ABAG assumptions. The regional population and household projections are based on CCSCE’s analysis. The county projections were developed by ABAG staff.

Jobs

Table 20: Jobs and Job Growth (Thousands)

	2010	2020	2040	2010-20	2010-40
Alameda	694.4	826.4	946.9	132.0	252.4
Contra Costa	344.9	408.1	467.8	63.1	122.9
Marin	110.7	120.4	130.0	9.7	19.3
Napa	70.7	81.5	90.2	10.9	19.6
San Francisco	568.7	663.9	743.8	68.3	112.7
San Mateo	345.2	413.5	457.9	68.3	112.7
Santa Clara	926.3	1088.0	1222.9	161.8	296.6
Solano	132.3	156.7	183.3	24.4	51.0
Sonoma	192.0	228.5	262.4	36.5	70.3
Regional Total	3385.3	3987.1	4505.2	601.8	1119.9

Source: ABAG

Jobs and job growth are concentrated in five counties led by Santa Clara and Alameda and joined by San Francisco, Contra Costa and San Mateo. These counties account for approximately 85% of the region’s total jobs and 85% of the projected job growth.

The pattern of growth is similar for both the 2010-2020 and 2010-2040 periods.

Under the ABAG projections all counties will see job recovery and growth by 2020. Approximately half of all job growth is expected in the first ten years as a result of the recovery and then slow labor force growth as baby boomers retire.

Population

Regional population and household growth is somewhat more dispersed compared to jobs and job growth. Still, 82% of regional population is centered in the five largest counties with Solano and Sonoma contributing slightly more to population growth than was true for job gains. In part, these projections reflect the ABAG policy goals of planning for population and household growth closer to job growth.

The largest gains are expected in Santa Clara and Alameda counties. Contra Costa is the third largest growth center for population while San Francisco was third largest for job growth.

Population growth is more evenly distributed among the 30 years from 2010 to 2040.

Table 21: Population and Growth (Thousands)

	2010	2020	2040	2010-20	2010-40
Alameda	1510.3	1649.7	1976.6	139.4	466.3
Contra Costa	1049.0	1128.4	1350.2	79.4	301.2
Marin	252.4	265.7	293.7	13.3	41.3
Napa	136.5	146.5	168.8	10.0	32.3
San Francisco	805.2	880.4	1062.3	75.1	257.0
San Mateo	718.5	773.9	903.3	55.5	184.8
Santa Clara	1781.6	1958.6	2370.6	177.0	589.0
Solano	413.3	455.5	543.8	42.2	130.5
Sonoma	483.9	527.9	629.9	44.0	146.1
Regional Total	7150.7	7786.7	9299.2	635.9	2148.4

Source: ABAG

Households

Household growth has the same general pattern as population growth. The largest growth is expected in Santa Clara and Alameda counties followed by Contra Costa and San Francisco. Household growth is slightly slower in the first ten years as the first wave of job recovery will not require much population growth as many jobs will go to current residents who are unemployed.

Table 22: HH and HH Growth (Thousands)

	2010	2020	2040	2010-20	2010-40
Alameda	545.1	596.9	703.0	51.8	157.8
Contra Costa	375.4	400.9	465.4	25.5	90.0
Marin	103.2	106.9	114.4	3.7	11.2
Napa	48.9	51.9	58.1	3.0	9.3
San Francisco	345.8	376.5	439.3	30.7	93.5
San Mateo	257.8	376.5	439.3	30.7	93.5
Santa Clara	604.2	668.6	800.6	64.4	196.4
Solano	141.8	153.5	177.4	11.7	35.7
Sonoma	185.8	201.6	233.8	15.7	48.0
Regional Total	2608.0	2833.7	3308.1	225.6	700.1

Source: ABAG

Business Views on the Bay Area's Economy and Related Regulatory Issues

In researching this report, the Economic Institute interviewed seventy-five regional business leaders. They included, on a weighted basis, companies in all nine Bay Area counties, and a cross-section of Bay Area industries representing technology (life sciences, software, hardware, high tech manufacturing), non-technology manufacturing, professional and technical services, building and design (construction, architecture and engineering), financial services, tourism, retail and logistics. Most (eighty-seven percent) were headquartered in the Bay Area, and all of the participants were owners, presidents, or senior managers engaged in business strategy, planning or government affairs.

The survey group also included firms with employment in the region on different scales.

Number of Bay Area employees

8%	1-4 employees
44%	5-24 employees
35%	25-99 employees
11%	100 or more employees
3%	No response

Many of these firms have significant numbers of employees outside the Bay Area, indicating that they are far from being exclusively tied to the region, they operate in diverse places and have options for where they locate.

Bay Area employees compared to total number of employees

12%	1-5 percent of employees work in the Bay Area
9%	6-24 percent of employees work in the Bay Area
6%	25-49 percent of employees work in the Bay Area
26%	50-74 percent of employees work in the Bay Area
47%	75-100 percent of employees work in the Bay Area

Views on the Economy

Taken together, these companies reported a mixed performance over the last three years: 28% had grown, 25% had declined, and for 45% business had stayed the same. This suggests a less-than dynamic business environment, with much of the economy trading water (sector-by-sector performance, of course, can vary considerably).

Firms that provided data on past and present employment levels reported a very modest three year growth in employment of 1.8 percent. This reflects the slow recovery in the job market that the Bay Area, together with the rest of California and the nation has experienced since the end of the Great Recession. Looking forward, however, 45% of the companies that responded planned to increase their count of permanent employees in the region over the next twelve months. Only 4% expected to have fewer employees, and half (forty-five percent) expect no change. For these firms, this represents 4.1% growth in employment, suggesting modest momentum in hiring, albeit from a low base.

When asked for the main reasons why their companies had originally located in the Bay Area, the reason most often given (in 59% of the cases) was that the founders lived here. Other factors, but far down the scale, included access to talent, proximity to customers and collaborators, growth opportunities, connections to universities or related institutions, access to technology, quality of life, and connections to Asia.

When asked why their company is currently in the Bay Area, the responses were similar but more balanced. Forty-five percent said it was because the owners/employees live here, 19% pointed to industry/business growth in the region, and 9% indicated a qualified talent pool.

It is likely that the survey did not fully capture entrepreneurs or overseas companies locating to the Bay Area for access to technology or venture capital. The findings indicate, however, how strongly company formation is rooted in individuals who are already in the region, and how much decisions on company location can turn on the personal preferences and perceptions of individual business leaders.

Business Themes

Questions regarding business issues were clustered around two major themes: perceptions of the region's business climate (including regulation), and the Bay Area's regional plans.

Business Climate

Generally, the region comes out well as place to do business, with 56% of respondents describing it as good or excellent, 28% rating it fair, and 35% poor or very poor. Business views of the region's business climate (including regulation) were mixed but generally positive, with just over 40 percent of business decision makers satisfied with the overall climate, 27% neither satisfied nor dissatisfied, and 26 percent dissatisfied. One significant dividing line was between firms that are growing and those that aren't. Firms that have grown in the last three years or expect to grow in the next 12 months are considerably more likely to be satisfied with the region's business climate than those that have declined or don't anticipate growth. To some degree this may reflect the region's business distribution, where technology is experiencing strong growth while other sectors are still struggling to recover from recession.

Views of the region's regulatory environment specifically are also mixed, but more negative: with 38 percent expressing satisfaction and one-third (33 percent) indicating dissatisfaction, and 24% in between. These regulatory issues included zoning, permitting, and environmental regulations. Higher levels of dissatisfaction (36 percent) were, not surprisingly, expressed on local and regional taxes. Thirty percent expressed some level of satisfaction, and 36% dissatisfaction (with 27% in the middle.)

The frustrations of business leaders who expressed dissatisfaction with the regulatory environment are broadly concentrated in three categories:

1. Lack of consistency between regulations and requirements at the local, regional and state levels was a major theme. Business leaders were frustrated with the perceived lack of consistency between regulatory agencies' policies at all these levels, and many commented that this limited their ability to expand within the region;
2. The State of California and the City of San Francisco were identified as having bureaucracies that are difficult to work with.
3. Consistent with the theme of inconsistent regulations, the complexity and cost of meeting regulatory requirements coming from too many agencies was also an issues.

Other Business Views

Most respondents expressed satisfaction or were neutral when asked their views on key components of Bay Area infrastructure: public transit including BART, busses and Caltrain (57% satisfied), airports (72% satisfied), the overall ease of commute for employees (60% satisfied), and access to broadband (78% satisfied.) Relatively fewer expressed satisfaction (44%) when asked about roads and bridges (44%).

Business leaders are generally satisfied with access to capital in the region, with just over half of the respondents indicating positive views, and only 12% negative.

The answers to Workforce questions point to deeper concerns. Sixty-two percent of respondents reported difficulty finding qualified applicants to meet their companies' workforce needs. While the region's university and community college systems ranked well, more companies were concerned with the quality of the K-12 public education system.

Regional Plans

We also asked the companies if they were aware of the regional growth or sustainability plans being developed by Bay Area agencies, such as Plan Bay Area or the Sustainable Communities Strategy (SCS). Over 60% of the companies surveyed were unaware of regional plans, and just under 40% had some awareness of them. It should be noted, however, that approximately one-third of the interviewees who gave positive responses were thinking of projects such as high-speed rail, redevelopment agencies, or vehicle charging stations. The percentage that were knowledgeable about the plans being led by JPC member agencies was therefore considerably lower than 40 percent.

The respondents who were aware of regional plans for growth and sustainability were somewhat more likely to believe they would have a positive impact on the region than a negative one, but about one-third were concerned that they would lead to more taxes or generate ineffective bureaucracies.

Emerging Themes

Several other take-aways emerge from the interviews:

1. While the region's K-12 public education system received low satisfaction ratings (32 percent) and comparable levels of dissatisfaction (33%), respondents were much more positive about their ability to recruit high-skill talent (with 63% reporting satisfaction.) This suggests that for the present the region has a reasonably ample supply of workers with the specialized skills that businesses require. It is questionable, however, whether it can continue to provide that workforce if the K-12 system continues to underperform. This is also a problem because the quality of public education is tied to perceptions of the region's quality of life, which is a positive factor in recruiting and retaining top talent, but could turn negative if K-12 education declines.
2. The Bay Area's quality of life remains a positive differentiator for the region, with over 90 percent of respondents expressing satisfaction. It is an important asset, as many businesses and their employees want to live and work here. This helps the region retain existing businesses and talent, and draws new resources to the region. The importance of quality of life is also reflected in answers to question about why businesses were founded in the Bay Area, and to a lesser extent why they remain here. It should not be assumed, however, that positive perceptions of the region's quality of life can consistently counter negative perceptions of its business climate.
3. In general, business leaders feel satisfied with their connectivity with clients and customers, educational institutions and regional economic development organizations, all of which had over 50 percent positive ratings. Interestingly, with national perceptions of elected officials at historic lows, just over 50 percent of Bay Area business leaders also feel satisfied with their access to local elected officials and policy makers.