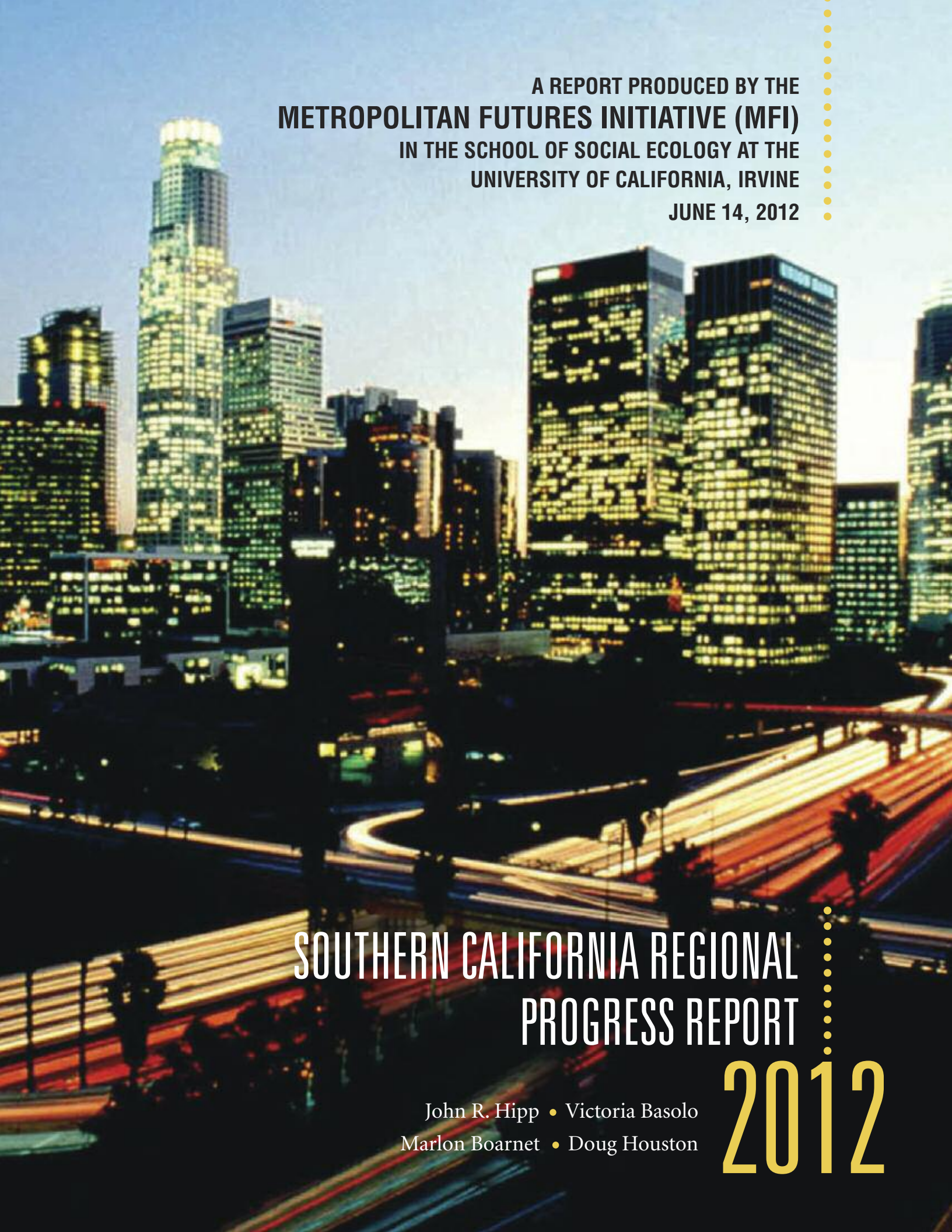

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SOUTHERN CALIFORNIA REGIONAL PROGRESS REPORT 2012

John R. Hipp • Victoria Basolo
Marlon Boarnet • Doug Houston

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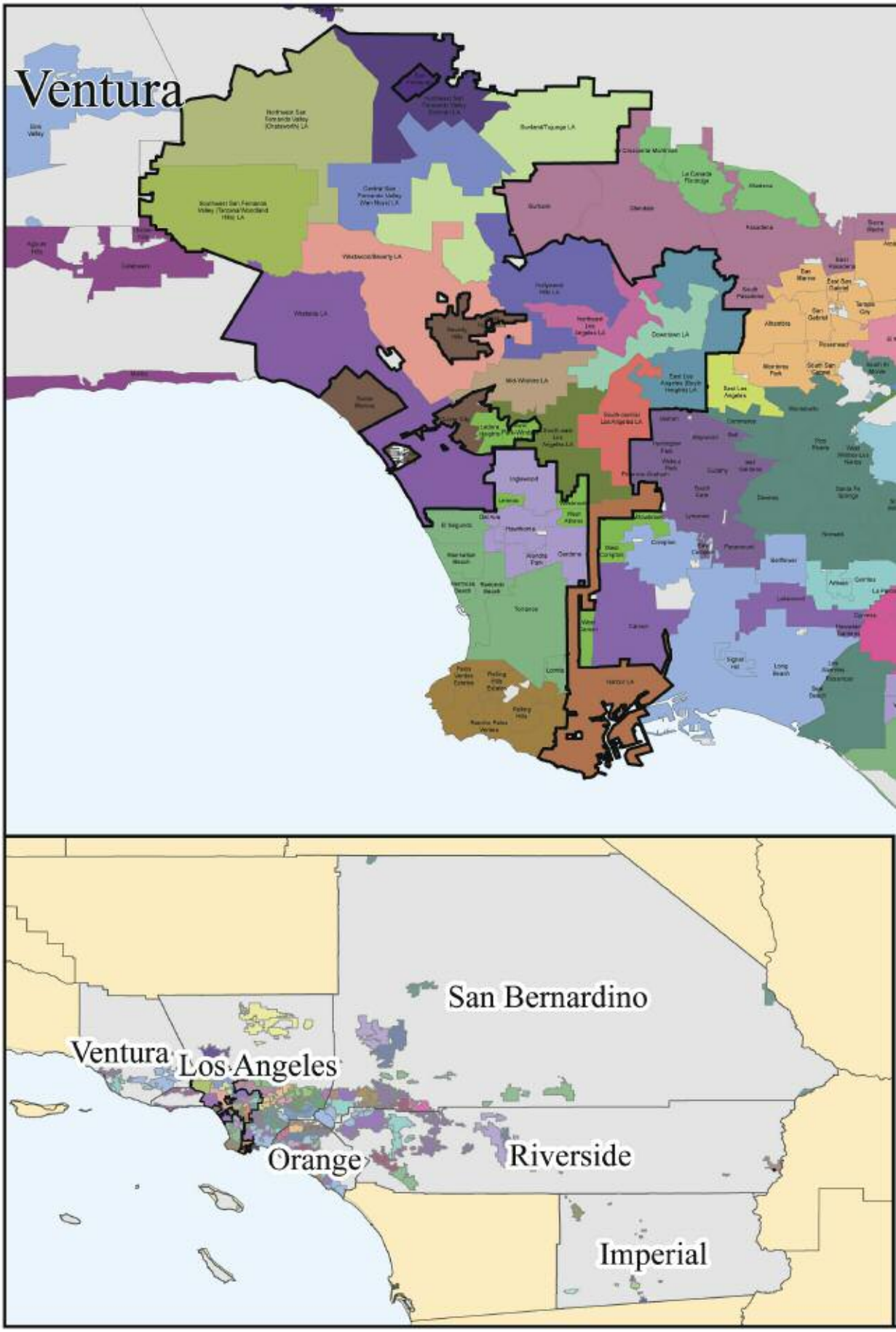
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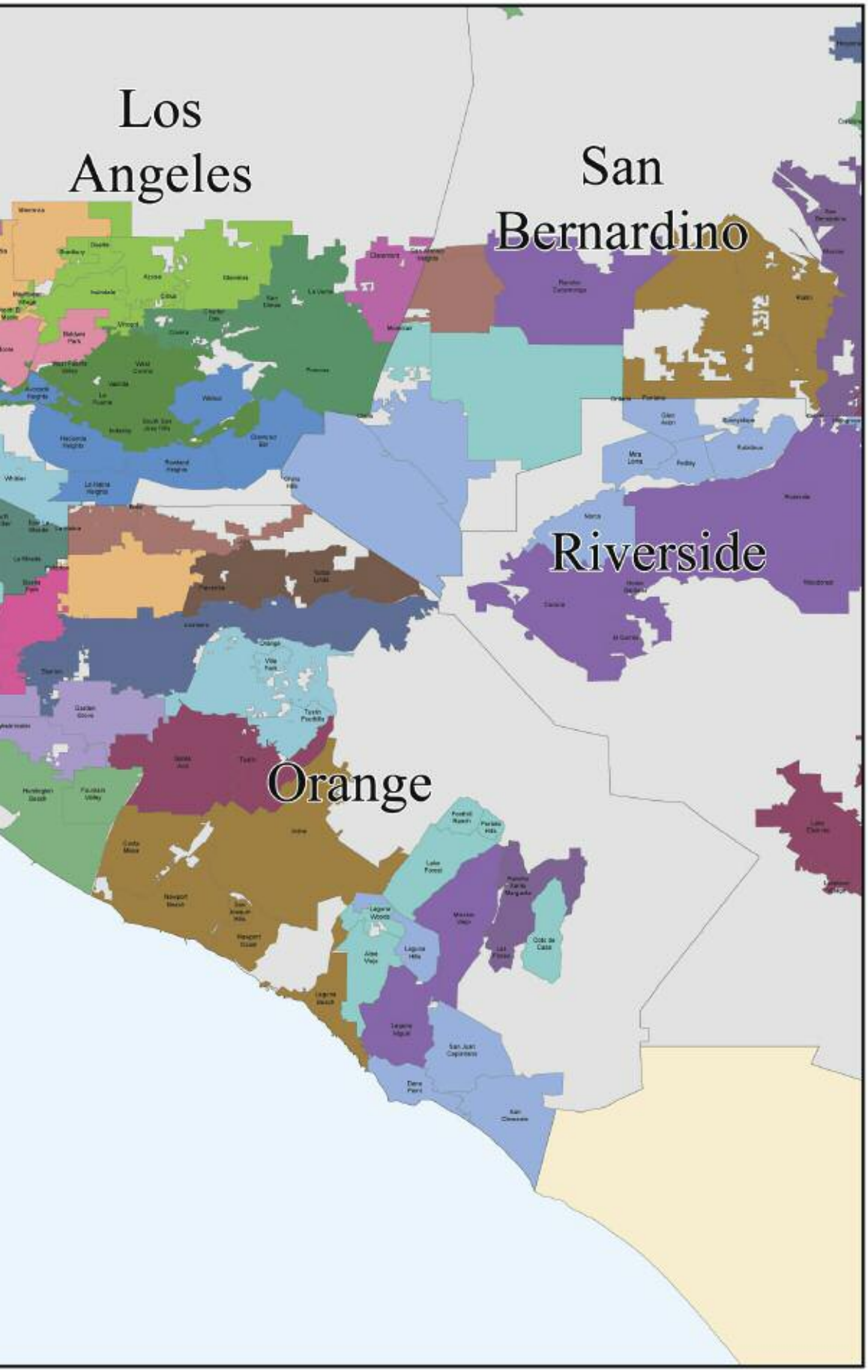
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INTRODUCTION TO THE PROBLEMS AND CHALLENGES

Regions are the central nervous system of our communities. Labor and housing markets are regional in scope, and transportation provides the intra- and inter-regional network that links homes to jobs and goods to consumers. Environmental issues such as air and water quality are also influenced by human activities within a region and may have both local and regional consequences. At the heart of regions are the communities that provide the day-to-day life experiences of the residents in the region.

These communities are impacted not only by the larger region, but also by local policies such as land use and localized conditions such as neighborhood stability and safety. The vitality of these communities, in turn, impacts the region. Understanding the region from above and from below, therefore, is vital to planning for growth, development, and quality of life. In Southern California, with its significant population growth in recent decades and the concomitant heavy demand on resources, it is essential to examine regional relationships and to develop effective policies to ensure Southern California prospers and remains a desirable region for residents, businesses, and visitors.

This is the first Southern California Regional Progress Report (RPR), and moving forward it will be a biennial publication providing an overview and analysis of key regional patterns, trends, and challenges facing Orange County and the broader Southern California region. The intention is that the RPR series will detail demographic, social, environmental, economic, and quality of life trends, explain those trends, and invite public discussion of the future of the region. The purpose of the RPR series is to provide valuable knowledge and information to policy makers and the public alike. It provides academic and practitioner assessments that identify the vital connections across systems and sectors that are necessary to envision region-wide solutions and to forge integrative solutions.

This inaugural Southern California RPR (available at http://socialecology.uci.edu/mfi) addresses critical issues at a unique juncture in the region's history. Changes in demography, development trends, reformed planning mandates by the State of California, and the potential for new governance structures in the region present new challenges and opportunities to Orange County and the entire Southern California region. The RPR is a knowledge-building and communication publication that provides policymakers, businesses, advocates, residents, and others with essential information and thoughtful analyses about our region. Although there is disagreement about the exact boundaries of the region, we define it as five counties: Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

The Southern California region has grown tremendously over the last 60 years, and is now the second largest metropolitan area in the U.S. The tremendous population growth, sprawling development patterns, tumultuous housing markets, and economic growth and change are evident in the region. This complex region and the challenges facing it are daunting and energizing for analysts, city and regional planners, and policymakers.

In this report, two major objectives are met. First, we document changes by sub-areas in the region over time. Second, we analyze past and current conditions to identify relationships between social and economic processes at the community and regional levels.

Before turning to the core sections of the RPR, we want to emphasize that this inaugural report covers considerable ground; at the same time, however, it does not address some critical issues in the region. We do not suggest that the topics and issues addressed in this inaugural edition of the RPR are the only important concerns within the region. We look forward to future editions of the RPR, which will focus on new and ongoing topics and issues.

THE PLAN OF THE REPORT

In Chapter 2, we paint a descriptive picture of Southern California over the study period of this report. We focus on five main dimensions of change in the region. First, we focus on the large racial/ethnic transformation that has occurred; we do so with an eye toward the spatial nature of this transformation. While the white population has been slowly decreasing, the Black population has become concentrated within fewer communities, and there has been significant growth among Latinos and Asians. Second, we examine housing issues and their spatial implications. Third, the spatial distribution of employment is examined, both for jobs in general as well as types of jobs. Fourth, we reveal some of the challenges for transportation related issues in the region, and how they have changed over time. Fifth, we chart how crime and public safety in cities has changed over the last 60 years in the region. Rather than presenting the results for all of the cities in the region, we created *city clusters* to present the results (note that in the later analyses we retain cities as distinct units of interest). This novel approach groups together cities that are similar socio-demographically; this strategy allows for a more parsimonious presentation, and also emphasizes the similarity between some neighboring cities.

In chapters 3 and 4, we direct analytic attention on how the parts that anchor regional dynamics move together. Chapter 3 focuses on the intersection of jobs, housing, and transportation. These three pieces are integrally related, and discussing one without focusing on the others does not provide a realistic picture of the issues facing the region. Chapter 4 addresses the intersection of changing demographics in neighborhoods, public safety and crime, and the economic health of neighborhoods. The large demographic changes that have occurred over this period of time in the region have manifested themselves at the level of neighborhoods, which in turn have consequences for individual neighborhoods. Given the importance of the large foreclosure crisis that has occurred in recent years, we also focus on the effect of a high number of foreclosures on the economic health of neighborhoods, and whether foreclosures have a more deleterious effect for certain types of neighborhoods.

Chapter 5 concludes and discusses implications of the findings.



LAYING OUT THE LANDSCAPE OF SOUTHERN CALIFORNIA OVER TIME

This chapter describes how Southern California has changed over the last 30 to 60 years, focusing on demographic transformations and population change, and how the spatial distribution of various demographic groups has changed over time. Although considerable demographic change has occurred, that change has not occurred uniformly across the spatial surface of the region. We chart those differences here. Given the importance of jobs, housing, and transportation, we chart the trends in each of these dimensions across the region over this period of time. The data are described in Technical Appendix 1.

In this section of the Regional Report, we report the data by city clusters. To accomplish the clustering, we grouped together cities that were both geographically close and socially similar (this procedure is described in Technical Appendix 2). A map and table of the cities in Southern California with their assigned cluster are presented in the Appendix in Figure A.1 and Table A.1, respectively. Table A.2 in the appendix also shows the population of these city clusters over the period of the study. Information on individual cities is available on our webpage (http://socialecology.uci.edu/mfi). Generally speaking, there were five cities per cluster. To compare the City of Los Angeles to the other city clusters, we divided the city into similar-sized council district boundaries.[1]

In this chapter, we also standardized most of the measures to facilitate comparisons between city clusters within the Southern California region. In this standardization, a city cluster that is at the average for the region as a whole will have a value of 100. City clusters with values greater than 100 are areas that have values greater than the average for the entire region, and clusters less than 100 are areas below the average of the region. For example, for the measure of violent crime below, a city cluster with a value of 150 has 50% more violent crime than the average of the region in that year. And a city cluster with a value of 60 has a violent crime rate that is only 60% as large as that of the average of the region (or, we might say their violent crime rate is 40% less than the average of the region).

RACIAL/ETHNIC TRANSFORMATION

Southern California has seen large ethnic/racial transformation over the past 50 years. The single group that did not appear to grow over time is the white population, which has shown a slow decline in Southern California generally. The largest demographic change in the region has been the growth in the proportion if Latinos over this period. Table 2.1 presents the city clusters in the region with the highest concentration of percent Latino, percent Black, or percent Asian in 2007, as well as displaying those experiencing the largest change in these groups over the last 50 years.

While most city clusters show an increase in Latinos over each increment of the study period (from 1960 until 2010), there is notable variation among council districts in the City of Los Angeles and across city clusters in the region. In the City of Los Angeles, for example, seven of the fifteen districts are majority Latino. Moreover, the clusters with the highest growth in the Latino population are all in Los Angeles city or county. Accompanying the

Table 2.1: Top City Clusters for highest percent and change in percent Latino, Black, and Asian in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2007	% Change
Latino: Highest %							
East Los Angeles, Los Angeles County	68.7	.	94.0	94.0	97.0	98.1	29.4
Latino: Highest % Change							
South Gate, Los Angeles County	8.4	22.4	60.8	80.1	88.4	90.8	82.4
South-central Los Angeles, Los Angeles	8.5	12.0	33.7	61.1	73.5	79.2	70.8
Northeast San Fernando Valley, Los Angeles	13.8	20.3	40.6	58.7	74.4	80.0	66.3
Central San Fernando Valley, Los Angeles	6.1	13.0	30.6	50.9	66.4	70.6	64.6
El Monte, Los Angeles County	12.0	26.9	59.8	71.2	74.9	73.9	61.9
Black Highest %							
Willowbrook, Los Angeles County	26.3	53.8	63.4	56.0	48.5	46.1	19.8
South-east Los Angeles, Los Angeles	31.7	72.5	79.5	63.3	51.5	45.9	14.2
Black: Highest % Change							
South-central Los Angeles, Los Angeles	68.4	72.3	60.9	33.6	20.5	15.0	-53.5
Inglewood, Los Angeles County	0.1	5.7	29.5	30.2	30.4	27.9	27.8
Willowbrook, Los Angeles County	26.3	53.8	63.4	56.0	48.5	46.1	19.8
Carson, Los Angeles County	0.2	5.4	15.2	14.6	15.5	15.2	15.0
Lancaster, Los Angeles County	0.8	13.0	9.6	6.0	13.2	15.4	14.6
Asian: Highest %							
Cerritos, Los Angeles County			18.4	38.2	51.0	54.5	36.1
Asian: Highest % Change							
Alhambra, Los Angeles County			12.3	32.4	44.6	51.5	39.2
Diamond Bar, Los Angeles County			9.3	26.4	41.8	45.6	36.4
Cerritos, Los Angeles County			18.4	38.2	51.0	54.5	36.1
Garden Grove, Orange County			7.1	21.0	33.8	36.4	29.3
Buena Park, Orange County			6.5	15.8	23.8	27.9	21.5

*Difference in % Asians calculated from 1980, the earliest year with available data.

increase in Latinos has been changes in the location and relative size of the Black population. In most city clusters, the proportion of Blacks has decreased from 2000–2007, although a number of clusters show a small, steady increase over the study period. In many areas, the Black population increased beginning in 1960, peaked 20-30 years later, and then decreased through 2007. The Black population is relatively concentrated in a few clusters, especially in Los Angeles City and Los Angeles County and, to a lesser extent, in Riverside and San Bernardino Counties. Finally, there has been a notable increase in the Asian population. In addition to Los Angeles, all city clusters in Orange, Riverside, and San Bernardino counties have recorded increases in their proportion of Asians, with the most dramatic growth in Los Angeles and Orange counties. Below, we detail these demographic changes by sub-region.

Los Angeles City

While the trajectories of Latino population growth are positive in all areas, they have had different patterns of growth. East Los Angeles (Boyle Heights) has been a long-standing Latino community, with over one-third Latino in 1960, reaching majority Latino in 1970 and rising to 73.8% Latino by 2007. Northeast San Fernando Valley, however, was less than one-seventh Latino in 1960 and became majority Latino in 1990; this sub-area of the City had the largest proportion of Latinos, 80%, in 2007. Although growing at a positive rate, the more exclusive hill and Westside communities have the lowest proportion of Latinos in the City.

South Central Los Angeles area has experienced one of the most notable demographic changes. A historically poor, Black area, Latinos comprised only 8.5% of the area in 1960, but rose to almost 80% by 2007. The area was majority Black until 1990, and has continued to fall to 15% in 2007; this area appears to be a strong example of racial-ethnic succession.

The concentration of the Black population in recent years reflects historic demographic patterns within the City of Los Angeles. Aside from South Central Los Angeles, three other areas with relatively large proportions of Blacks during the study period (the Harbor, Mid-Wilshire, and South East Los Angeles clusters) demonstrate this succession trend as well.

Finally, while the Asian population has increased generally in Southern California, two of the three clusters in the San Fernando Valley showed the highest increases in the percentage of Asians during the study period for Los Angeles. The proportion of Asians in the Westside cluster and nearby Westwood/Beverly area also grew steadily from 1980 to 2007.

Los Angeles County

Across city clusters in Los Angeles County, the proportion of Latinos in 2007 ranges from a low of 7.7% in Rancho Palos Verdes to over 98% in unincorporated East Los Angeles. The two clusters under 10% Latino in 2007 are relatively exclusive suburban areas, and while they still increased their proportion of Latinos over time, these increases are less dramatic than other areas of the county. Similar to the Boyle Heights area, unincorporated East Los Angeles was already a Latino community in 1960 (68.7%) and become almost exclusively Latino by 2007. Other areas have transitioned demographically over time; for example, South Gate cluster began primarily as a White, working class area with a small Latino population (8.4% in 1960), and shifted to majority Latino (90.8%) due to "white flight" and immigration over the decades. Additionally, every city cluster within Los Angeles County has experienced a rise in the portion of Asians, with the exception of East Los Angeles. Alhambra and Cerritos city clusters had relatively large Asian concentrations (12.3% and 18.4% respectively) at the beginning of the study period in 1980, and by 2007, these areas were majority Asian.

There are several city clusters in Los Angeles County that have traditionally been considered Black, including Altadena, Carson, Inglewood, and Long Beach. While none of these communities were majority Black during the study period, they had consistently larger Black proportions than in the general population. All four of these areas exhibited a rise in the proportion of Black from 1960 to a subsequent period, followed by decline. While most of the city clusters in Los Angeles County have relatively low or declining Black populations, one exurban area in the County, the Lancaster cluster, has experienced an increase in the proportion of Blacks over the last several decades. In 1990, Blacks constituted 6% of the population, rising to 15.4% in 2007.

Orange and Ventura Counties

The growth of the Latino population also is evident in cities in the other four counties in this study. Orange County was traditionally a suburban county with a mostly white population in the 1960s and 1970s. Today, while almost all of the city clusters in the county show an increasing proportion of Latinos, the Santa Ana cluster is 71% Latino, the highest proportion in Orange County. Anaheim is the only other city cluster with a majority Latino population (52.2%) in 2007. Although Orange County shows a slight increase in the proportion of Blacks in some communities, no area exceeds 4%; this level is below the state and national Black population levels. The Asian population also has had considerable growth, where all but one city cluster showed a proportional rise each year reported in our study. The Garden Grove cluster, known for its large Vietnamese population, had the most notable proportional increase over the study period, nearly 30 percentage points, and has the largest percentage of Asians for a city cluster in Orange County.

Ventura County has had significant increases in the proportion of Latinos over time, with two of the city clusters, Oxnard and Santa Paula, changing most substantially, and are now majority Latino. While the proportion of Blacks in Ventura has indicated a decrease, similar to Orange County, the Black population is still relatively small.

Riverside and San Bernardino Counties

The data for Riverside and San Bernardino counties also show marked growth in the Latino population from 1960-2007. In 2007, four of the nine city clusters in Riverside, and three of the twelve city clusters in San Bernardino, were majority Latino communities. The Indio cluster had a notable proportion of Latinos in 1960 (30.6%) and it has grown to over 70% Latino by 2007. The communities in San Bernardino County also have become increasingly Latino over time. In contrast to other counties, none of the clusters in San Bernardino show a large base of Latinos in 1960, but show an average of one-third Latino across city clusters in 2007, which may reflect the more recent population growth spurt in the county.

These counties also exhibit variation in Black population shifts over time. Four city clusters in San Bernardino and one cluster in Riverside County have populations that are over 10% Black. Barstow, a community in the Mojave desert that is relatively far from other mid-size or large cities, has grown notably in the proportion of Blacks in the population, from 3.3% in 1960 to 11.2% in 2007. Asians comprise much smaller proportions of the city cluster populations in general when compared to many clusters in Los Angeles and Orange Counties. Nonetheless, the percentage of Asians is growing in small increments in the clusters in these counties. While no city cluster in Riverside County is more than 7% Asian, two clusters, Redlands and Chino in San Bernardino were over 10% Asian in 2007.

HOUSING

We next examine measures of housing across the region over this period, including overcrowding and home values. Overcrowding of housing was measured in two ways: as the number of households per area (density across *space*) and the number of persons per household (density *within* households).

Table 2.2: Household density per square mile in city clusters in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2007
Top 5 Clusters						
Hollywood Hills, Los Angeles	526	798	781	786	761	460
Downtown, Los Angeles	821	992	899	833	893	457
Mid-Wilshire, Los Angeles	588	862	783	750	678	409
Northeast Los Angeles, Los Angeles	608	992	889	841	717	409
Santa Monica, Los Angeles County	431	380	399	360	353	327
Bottom 5 Clusters						
Blythe, Riverside County	29	43	33	38	23	28
Victorville, San Bernardino County	30	7	9	19	15	25
Hesperia, San Bernardino County	4	3	6	18	17	25
Barstow, San Bernardino County	33	17	16	17	13	24
Yucca Valley, San Bernardino County	2	20	18	26	20	13

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

Housing units in Los Angeles City and County continue to be denser than in other areas of Southern California, particularly in older and concentrated minority communities. Los Angeles also has a few clusters with a substantial amount of overcrowded houses (over 20% of the homes in a cluster), but the majority of city clusters in greater Los Angeles County and other counties in Southern California have relatively low levels of overcrowding.

Household Density

Household density per square mile in the City of Los Angeles has historically and continues to be significantly higher than the regional average. In 2007, four clusters in L.A. City, Downtown, Hollywood Hills, Mid-Wilshire, and Northeast Los Angeles, were at least four times higher than the regional mean. Household density in city clusters in Los Angeles County varies substantially relative to the regional average. Older suburbs and concentrated minority areas such as the South Gate, Inglewood, Long Beach and East Los Angeles clusters have densities about twice as high as the regional average, while areas in more distant suburbs, such as the Agoura Hills, Lancaster, and Diamond Bar clusters, generally have much lower densities than the region as a whole. Table 2.2 displays the five city clusters in the region with the highest household density, and the five with the lowest household density (standardized such that 100 represents the average of the region).

None of the other counties in the region have the level of household density present in the City of Los Angeles and other parts of Los Angeles County. Orange County has nine city clusters with densities above the regional mean in 2007, with the two highest clusters being the poorer, Latino Santa Ana cluster and the more affluent, white Seal Beach cluster. The Santa Ana cluster is capturing the older, denser central city character of the City of Santa Ana, while the Seal Beach cluster reflects the tendency for higher densities in beach areas where land is expensive. In contrast, all of the bottom 5 clusters are from Riverside or San Bernardino Counties. The clusters in Riverside County have relatively low household densities, all well below the regional mean. In San Bernardino and Ventura counties, only one cluster each – Ontario and Oxnard, respectively – have a density above the regional average.

Household Crowding

The second measure captures the degree of overcrowding *within* housing units. We have used a standard definition of overcrowding, the percentage of housing units with more than one person per room. In the City of Los Angeles, five clusters, Central San Fernando Valley, Downtown, Northeast Los Angeles, Northeast San Fernando Valley, and South Central Los Angeles, had more than 20% overcrowded units in 2007; these areas historically had relatively higher levels of overcrowding as well. Two of these clusters (Downtown and Northeast Los Angeles), however, also reveal a 20% increase in overcrowding between 1960 and 2007. Only three clusters in Los Angeles County – East Los Angeles, El Monte, and South Gate – had more than 20% overcrowded units in 2007. The majority of the city clusters in L.A. County had less than 10% overcrowding in 2007, and many had less than 5%. Table 2.3 displays the five city clusters in the region with the highest overcrowding and the five with the lowest levels of overcrowding.

Many of the areas with lower levels of overcrowded units are in suburban locales, including Mission Viejo, Seal Beach, Rancho Palos Verdes, and Agoura Hills. The other four counties in the region had few clusters with large proportions of overcrowded units in 2007. In Orange County, only one cluster, Santa Ana, had significant overcrowding at over 30% of the housing units in 2007. In the same year, Riverside, San Bernardino and Ventura Counties had several clusters with over 10% overcrowded units, but no cluster reached an overcrowding rate of over 15% in these counties.

Home Values

Median home values fluctuated across counties in the region over the decades between 1980 and 2007. Orange, Ventura, and parts of Los Angeles Counties had the highest median home values, whereas San Bernardino and Riverside were near the average. Clusters in these two counties were all below the regional average in 2007. Table 2.4 displays the five city clusters in the region with the highest median home values and the five with the lowest median values in 2007 (standardized such that 100 represents the average of the region in that year). With the exception of San Clemente, the highest clusters generally reflect an increase from 1980–2000, and then a decrease in 2007. Median home values in the bottom 5 clusters have all shown decreases from 1980–2007.

Table 2.3: Percent living in crowded conditions in city clusters in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2007
Top 5 Clusters						
Downtown, Los Angeles	10.2	16.2	39.5	54.9	52.7	34.9
South Central Los Angeles, Los Angeles	14.6	15.1	26.0	43.1	51.4	31.1
Santa Ana, Orange County	10.5	4.2	14.6	33.1	45.0	31.0
South Gate, Los Angeles County	12.3	4.9	25.6	46.9	55.0	30.8
East Los Angeles, Los Angeles County	24.5	.	33.6	46.1	48.8	28.9
Bottom 5 Clusters						
Santa Monica, Los Angeles County	4.3	1.6	3.8	5.2	6.3	2.1
Mission Viejo, Orange County	7.4	0.5	1.2	2.3	4.6	1.9
Seal Beach, Orange County	6.5	1.3	1.3	2.3	3.0	1.2
Rancho Palos Verdes, Los Angeles County	3.0	0.2	0.9	1.7	2.7	1.2
Agoura Hills, Los Angeles County	7.5	.	1.1	0.9	2.0	0.8

Table 2.4: Median home values of city clusters in Southern California, 1980–2007

	1980	1990	2000	2007
Top 5 Clusters				
Rancho Palos Verdes, Los Angeles County	224	233	288	192
Agoura Hills, Los Angeles County	224	186	243	179
Westwood/Beverly, Los Angeles	183	195	222	170
Santa Monica, Los Angeles County	181	205	220	161
San Clemente, Orange County	142	132	152	159
Bottom 5 Clusters				
Victorville, San Bernardino County	60	45	43	48
Yucca Valley, San Bernardino County	63	43	53	46
Hemet, Riverside County	63	46	40	44
Blythe, Riverside County	47	30	40	33
Barstow, San Bernardino County	48	30	30	28

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

In 2007 for the City of Los Angeles, about half of the clusters were below the regional median for average home values. Clusters on the west side of Los Angeles and the western parts of the San Fernando Valley had median home values higher than the regional average, including Hollywood Hills, Mid-Wilshire, Northwest San Fernando Valley, Southwest San Fernando Valley, Sunland/Tujunga, Westside, and Westwood Beverly. City clusters in Los Angeles County have exhibited wide variation across time and between clusters. The median home values in South Central and South East Los Angeles clusters were the lowest in the city, although they also posted some of the largest gains over time.

Orange County had the highest median home values compared to the region as a whole. Twelve of the 15 city clusters had median home values above the regional mean in 2007. Only the Anaheim, Garden Grove, and Santa Ana clusters fell slightly below the regional average, and even the lowest of these clusters – Santa Ana – is only 8 points below the regional mean. In contrast, some of the highest clusters in Orange County had median home values over 35% above the regional average, including San Clemente, Irvine, Mission Viejo, Seal Beach, Huntington Beach, and Yorba Linda.

Median home values in 2007 for three of the four city clusters in Ventura County exceeded the regional average, and similar to Orange County, the lowest cluster is only 3 points below the regional average. Moreover, all of the clusters exhibit a positive trend over time in median home values. In contrast, none of the city clusters in each Riverside and San Bernardino Counties exceeded the regional means in 2007, and Riverside County averaged 44% below the regional mean. In San Bernardino, Chino, Ontario, and Upland clusters had the highest median home values. Exurban areas in these counties, such as Blythe in Riverside County and Barstow in San Bernardino, had median home values that were substantially lower than the regional mean.

Foreclosures

The foreclosure crisis that largely began in 2006 has had a large impact on the region as a whole, but its impact was not uniform, disproportionately affecting some city clusters across the region. These values are standardized to the average number of foreclosures in the year 2000, which allows us to demonstrate both the increase in the number of foreclosures over time, as well as how they compare across different parts of the region. Housing price declines coupled with the related financial crisis spurred foreclosures throughout the region beginning in 2007. The values reported for 1995 reflect the clusters emerging from a housing market trough in the 1990s, and are similar to the values for 2007. In 2008 however, the foreclosures spiked within all clusters. By 2010, the relative percentage of foreclosures was declining in many clusters, with some notable exceptions discussed below. Table 2.5 shows the 10 city clusters with the highest foreclosure rate in 2010 and the 5 city clusters with the lowest rate (standardized such that 100 represents the average of the region in 2000).

Table 2.5: Foreclosures as percentage of housing units (using average foreclosures in 2000 for the index) in city clusters in Southern California, 1995–2010

	1995	2000	2005	2006	2007	2008	2009	2010
Top 10 Clusters								
Victorville, San Bernardino County	249	431	16	73	843	2863	2360	484
Temecula, Riverside County	119	58	24	238	1515	2667	1998	438
Lake Elsinore, Riverside County	228	163	15	121	930	2756	2128	414
Moreno Valley, Riverside County	368	377	26	122	1098	3177	2098	378
Lancaster, Los Angeles County	282	318	16	88	724	2194	1647	352
Hesperia, San Bernardino County	284	357	18	55	552	1795	1418	317
Hemet, Riverside County	96	103	13	84	544	1479	1295	279
Fontana, San Bernardino County	286	426	16	62	565	1804	1267	253
Indio, Riverside County	85	54	11	58	522	1300	1307	230
Yucca Valley, San Bernardino County	133	203	59	72	332	755	786	220
Bottom 5 Clusters								
Hollywood Hills, Los Angeles	36	12	5	10	35	69	70	18
Torrance, Los Angeles County	48	9	1	5	25	60	68	16
Northeast Los Angeles, Los Angeles	32	16	3	8	29	53	53	14
Westside, Los Angeles	48	9	2	4	22	40	47	14
Seal Beach, Orange County	12	9	0	4	13	32	44	12

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

As reflected in the table, the highest rates of foreclosures largely occur in contiguous city clusters in Riverside and San Bernardino Counties, with some clusters experiencing 20–30 times the 2000 average foreclosure rate during the peak years of the crisis. Clusters in these Counties were the first to have significant foreclosures, with percentages for 2007–2009 well above the regional average in all clusters. In 2008, Riverside County had 7 out of 8 clusters with foreclosure percentages more than 10 times the mean for the region, and one cluster, Moreno Valley, was over 30 times the 2000 regional average. Four of 12 clusters in San Bernardino had more than 10 times the percentage of foreclosures compared to the region.

In contrast, many of the clusters with the lowest foreclosures are in wealthy Los Angeles and Orange County communities. There is still considerable variation within counties, however. In Los Angeles City, the three city clusters within the San Fernando Valley exhibit the largest increase in foreclosures relative to the regional average, while the Northeast Los Angeles and Westside clusters have the lowest relative foreclosures in the City.

For example, in 2007 the foreclosure rate in the northeast San Fernando Valley was 170% higher than the 2000 city average, and was 790% higher in 2008, and 580% higher in 2009. Foreclosures during the late 2000s severely affected clusters in Los Angeles County as well. In 2008 and in 2009, twenty of the 24 city clusters had higher percentages of foreclosures relative to the regional average. However, the values for the Lancaster cluster are particularly staggering, showing foreclosures 15 to over 20 times the regional average in the last few years. A few relatively wealthier clusters, for example Rancho Palos Verdes and Santa Monica, had proportionally few foreclosures compared to the region; in 2008 and 2009, these two clusters had about half as many foreclosures than the 2000 average.

Orange and Ventura counties also were significantly impacted by foreclosures in the late 2000s. Ten of the eleven Orange County clusters with data were above the regional average in percentage of foreclosures. The hardest hit clusters in this county in 2008 and 2009 were Anaheim, Rancho Santa Margarita, and Santa Ana. The Seal Beach cluster was the only area in Orange County below the regional average during the entire period, with rates at 50 to 80 percent lower than the 2000 average. Ventura County's four city clusters had foreclosure percentages above the regional average over the last several years. The Oxnard cluster appears to be the most affected by foreclosures, with foreclosure percentages about eight times the regional mean in 2008, and over four times the average in 2009.

JOBS

The types of jobs in the region and their distribution across the regional landscape are critical to the growth and prosperity of the regional economy. We first consider access to jobs, as measured by the unemployment rate, and then turn to location and type of job. There is significant variation between different clusters in Southern California, with Orange County indicating lower unemployment, and Riverside and San Bernardino Counties exhibiting higher unemployment. Similarly, there are high levels of clustering according to job type, both within and between counties.

Unemployment Rates

Unemployment in the region over time exhibits a general pattern of lower unemployment rates in 1960 and 2007 with higher rates in the decades in between. The peak year for unemployment relative to the regional average varied by city clusters but tended to be from 1970 and 2000. Among clusters, there are distinct differences in the relative unemployment rates. In Los Angeles City, South Central Los Angeles and South East Los Angeles, two communities with large Black and Latino populations, had much higher unemployment rates than other clusters. The South Central cluster had over two times the rate of unemployment compared to the regional mean in nearly all the study years, and the Southeast Los Angeles cluster varied from 1.4 to

over 2 times the regional mean over the study period. Conversely, lower unemployment levels were found in the Westside and the Northwest and Southwest San Fernando Valley clusters, areas with lower minority populations. Each of these areas fell below the regional average for unemployment in all of the study years except 1970. Nonetheless, it is worth noting that most of the neighborhoods in the city improved between 2000 and 2007. Table 2.6 displays the five city clusters with the highest unemployment rate in 2007 and the five with the lowest rate (standardized to the average in the entire region).

Unemployment levels in Los Angeles County vary substantially among the clusters as well. Of the 24 clusters, seven areas had unemployment rates above the regional average in all study years. East Los Angeles, Willowbrook, and Southgate clusters consistently had the highest levels of unemployment for the county over the entire period, with levels around 50% greater than the regional mean. Relatively higher unemployment clusters in Los Angeles County appear to be associated with relatively higher levels of minority residents and lower incomes. Nine of the clusters in Los Angeles County had unemployment rates below the regional average in every year of our study. Rancho Palos Verdes, an affluent cluster, had the lowest relative levels of unemployment in Los Angeles County at less than half the rate of the regional average across the study period. This cluster also has comparatively lower proportions of Latino and Black residents, but has an increasing Asian population. Other clusters with relatively lower unemployment levels, such as Alhambra and Cerritos, also exhibit increasing Asian populations.

Orange County had lower unemployment rates for the study years compared to the region as a whole, with a few exceptions. First, in 1970, just under half of the clusters in Orange County had employment rates slightly above the regional average; however, the figures for all these clusters dropped below the regional mean in 1980. In particular, the Rancho Santa Margarita cluster indicates high levels of unemployment in this area from 1960 and 1980, but dropped dramatically from 1990 to the end of the study period to a rate of 50% below the regional average. Finally, the only cluster in Orange County to experience unemployment levels above the regional average in three of the study years is Santa Ana, an area marked by significant demographic change and an increase in the Latino population over time.

Overall, Riverside and San Bernardino Counties experienced comparatively high unemployment levels during the study period. In Riverside County, most of the clusters exceeded the regional average on unemployment in at least five of the six study years. Only the Palm Springs cluster had consistently lower

Table 2.6: Unemployment rate in city clusters in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2007
Top 5 Clusters						
Victorville, San Bernardino County	128	137	167	189	152	189
Hesperia, San Bernardino County	148	103	161	143	144	167
Blythe, Riverside County	120	52	111	152	161	167
South-east Los Angeles, Los Angeles	138	163	186	214	209	153
Hemet, Riverside County	105	142	115	139	143	148
Bottom 5 Clusters						
Torrance, Los Angeles County	93	97	62	58	57	60
San Clemente, Orange County	79	95	59	56	60	60
Yorba Linda, Orange County	97	85	55	56	53	59
Rancho Santa Margarita, Orange County	120	.	165	30	43	52
Rancho Palos Verdes, Los Angeles County	38	47	44	43	34	49

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

Table 2.7: White Collar, Blue Collar, and Retail jobs per capita in city clusters in Southern California, 1982–2009

	1982	1987	1994	1999	2004	2009
Top 5 White Collar Job Clusters						
Irvine, Orange County		259	184	894	1101	1077
Glendale, Los Angeles County		177	911	805	786	829
Santa Monica, Los Angeles County		461	1016	768	681	657
Westwood/Beverly, Los Angeles		386	480	429	415	424
La Habra, Orange County		98	4	268	234	364
Top 5 Blue Collar Job Clusters						
Irvine, Orange County			247	647	693	802
Downey, Los Angeles County			426	819	741	704
South-central Los Angeles, Los Angeles			86	381	346	313
Temecula, Riverside County			64	179	222	255
Central San Fernando Valley, Los Angeles			184	250	241	239
Top 5 Retail Job Clusters						
Santa Monica, Los Angeles County	303	274	625	564	531	517
Irvine, Orange County	189	191	263	388	443	497
Glendale, Los Angeles County	128	124	537	460	454	434
Long Beach, Los Angeles County	93	87	180	208	207	412
Westwood/Beverly, Los Angeles	209	211	366	338	315	294

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

unemployment compared to the regional as a whole. Half of the clusters in San Bernardino County had unemployment levels above the regional average in all study years. Redlands was the only cluster with lower than average unemployment over time.

Of the four clusters in Ventura County, Oxnard and Santa Paula exceeded the regional mean for unemployment in five of the six study years. The other two clusters, Ventura and Thousand Oaks, recorded unemployment levels below the regional mean in almost all years with available data.

The Locations of Jobs

We next consider the different types of jobs within city clusters across the study area. The data for this section come from the U.S. Economic Census and are organized around three types of jobs: white collar, blue collar, and retail.[2] While the data are available for relatively long time periods, the time periods for these data vary by job type. The data on white collar jobs by cluster span the period 1987 to 2009. In general, there is considerable variation by job type within counties, although most of the areas with the highest number of jobs per capita are in Los Angeles City and County, and Orange County. Table 2.7 shows the top and bottom 5 city clusters for white collar, blue collar, and retail jobs.

In the City of Los Angeles during this period, two areas, the Westside and Westwood/Beverly clusters, stand out as centers of white collar jobs, with 3 to 4 times the number of white collar jobs compared to the regional average. Other areas with white collar jobs well above the average for the region include the Downtown and Hollywood Hills clusters and the Northwest and Southwest San Fernando Valley clusters. Areas with lower levels of white collar jobs relative to the region tended to be in areas with higher unemployment and larger concentrations of minorities.

For example, the South Central, South East, and East Los Angeles clusters consistently had a lower percentage of white collar jobs than the region as a whole during the study period. In contrast, clusters with higher levels of blue collar jobs are in South-central Los Angeles, as well as several clusters in San Fernando Valley. These clusters all reflected increasing concentration of blue-collar jobs over time. In contrast, many wealthier clusters on the west side of Los Angeles experienced decreasing blue collar jobs and increasing retail jobs over the study period, including Downtown, Hollywood Hills, Mid-Wilshire, Westside, and Westwood/Beverly.

In Los Angeles County, the Glendale and Santa Monica clusters are notable for their level of white collar jobs. Both have very high values; however, Glendale shows a notable relative increase from 1987 to 1994, and in 2009 recorded more than eight times the level of white collar jobs compared to the regional mean. These two areas also experienced the largest decreases in blue collar jobs over time, although Glendale still has over twice the rate of blue collar jobs compared to the regional mean. In addition to the Long Beach cluster, Glendale and Santa Monica also recorded large increases in retail jobs as well. While blue collar jobs fell in approximately half the clusters in Los Angeles County over the study time period, Downey has experienced the largest increase in blue collar jobs, and represents the highest rate in the county.

The center of white collar, blue collar, and retail jobs in Orange County is unquestionably the Irvine cluster. Since 1994, white collar jobs in this cluster have dramatically increased relative to the region and, in 2009, the Irvine cluster had more than ten times these jobs relative to the regional average. Irvine also had eight times the level of blue collar jobs, and five times the level of retail jobs in 2009 compared to the regional mean. While considerably less than Irvine's figures, the La Habra and Orange clusters also exceeded the regional average for white collar jobs in 1999, 2004, and 2009. The Anaheim and Orange clusters also indicate levels of both blue collar and retail jobs above the regional mean across time, but other Orange County clusters reflect lower than average levels of these types of jobs in more recent decades.

In most of the city clusters in Riverside, San Bernardino, and Ventura Counties, the levels of white collar jobs were well below the regional average across time. In Riverside County, the Temecula cluster shows a steady increase over time, exceeding the regional mean in 2004 and 2009. The San Bernardino cluster in San Bernardino County is the only city grouping that exceeded the regional average for more than one study time period. The data show that white collar jobs in this cluster increased over the time period to more than twice the regional mean in 2004, although it lost some ground in 2009. In Ventura County, the Thousand Oaks cluster stands out in terms of white collar jobs. This cluster exceeded the regional average in all study years. Blue collar jobs across all three counties are also consistently lower than average, with some notable exceptions in higher-population clusters, including Riverside, Temecula, Ontario, San Bernardino and Thousand Oaks. While retail jobs are above the mean for approximately half the clusters in Riverside County, most clusters in San Bernardino and Ventura counties are below the mean in more recent decades.

TRANSPORTATION

We next focus on commuting patterns in the region. We chart the average commute time in minutes across these city clusters from 1980 to 2007. Table 2.8 displays the 5 city clusters with the longest average commute time in 2007, and the 5 with the shortest average commute time.

Average commute time increased in all clusters within the City of Los Angeles from 1980–2000. However, from 2000–2007, seven of the fifteen clusters recorded slight decreases in average commute time. Within the city, the downtown cluster had the highest average, while the Westside had the lowest average commute time.

In the city clusters within Los Angeles County, a large proportion of areas (17 of 24) showed year-over-year increases in average commute time for the study years, 1980–2007. The Claremont cluster had the lowest average commute time (25.4 minutes) in 2007, but the Glendale cluster also was relatively lower (25.7 minutes) than the other clusters in the County. The lower value for Glendale may be due to the concentration of all types of jobs in this cluster and the availability of housing in this cluster. In 2007, the Lancaster cluster, an exurban area with comparatively low home values and relatively lower levels of white and blue collar jobs, had the highest average commute time in the County.

Many of the clusters in Orange County showed steady increases in average commute time between 1980 and 2000; however, seven of the fifteen clusters posted decreases from 2000–2007. Yorba Linda is a cluster that showed an increase in the average commute time for each study year and in 2007, this cluster had the highest average (28.9 minutes) among the Orange County clusters. The Irvine cluster, a relatively jobs rich area, had the lowest average commute time in the County.

Average commute time steadily increased in each study year between 1980 and 2000 for most clusters in San Bernardino and Riverside County. In 2007, despite many of the areas having a decline in this average, two clusters in Riverside County, Lake Elsinore and Moreno Valley, and one cluster in San Bernardino County, Hesperia, had some of the highest average commute times in the region.

Ventura County clusters showed increases in average commute time for each of the study years. Overall, however, these clusters had a lower average than many of the clusters across the region. Within the County, the Ventura cluster at 22.2 minutes had the lowest average commute time, while Santa Paula had the highest average (27.5 minutes).

Table 2.8: Average commute time in city clusters in Southern California, 1960–2007

	1980	1990	2000	2007
Top 5 Clusters				
Lake Elsinore, Riverside County	32.0	33.3	37.8	39.7
Moreno Valley, Riverside County	24.6	34.6	34.9	36.9
Lancaster, Los Angeles County	24.8	32.3	36.3	36.4
Hesperia, San Bernardino County	24.1	29.5	34.7	35.7
Diamond Bar, Los Angeles County	29.0	31.5	32.8	33.8
Bottom 5 Clusters				
San Buenaventura (Ventura), Ventura County	18.0	19.8	21.4	22.2
Barstow, San Bernardino County	13.8	18.8	20.7	22.2
Palm Springs, Riverside County	16.5	17.8	21.3	22.1
Indio, Riverside County	16.3	18.1	21.4	20.1
Blythe, Riverside County	13.9	13.6	19.2	19.6

CRIME AND SAFETY

We next focus on crime and safety in the region. Violent crime is particularly troublesome to residents, as it is not only frightening for their safety, but it also can cause households to move away from neighborhoods . In this section, we first computed violent or property crime rates per 100,000 population, and then standardized these rates such that a city cluster with a violent crime rate equal to the average in the region would have a value of 100. Values greater than 100 show high crime areas, and values less than 100 show areas with crime rates below the average of the region.

Violent Crime Rates Over Time

In the City of Los Angeles, the highest violent crime rates are in South Central and South East Los Angeles. These two areas have had violent crime rates about 250% higher than the rest of the region since 1990, the earliest time period for which we have data for Los Angeles neighborhoods. In contrast, the northwest San Fernando Valley consistently has below average violent crime rates, ranging between 65% and 90% of the region average. There is evidence of the revival of downtown Los Angeles, as the violent crime rates have fallen from 350% higher than the region average in 1990 to just 67% above the average in 2010. Both Northeast San Fernando Valley and Hollywood Hills have fallen from double or triple the average in 1990, to average rates in 2010. Finally, the Westside and Westwood/Beverly areas have fallen from about average in 1990, to half the average or more in 2010. Table 2.9 displays the 5 city clusters with the highest violent crime rate in 2010 and the 5 with the lowest rate.

As reflected in the Table 2.9, clusters with both the highest and lowest levels of violent crime have remained relatively stable over time, with the notable exception of Barstow in San Bernardino. Clusters with low levels of violent crime represent largely suburban residental areas. In Los Angeles County, there are consistently low violent crime rates in the Agoura Hills, Altadena, Claremont, Diamond Bar, and Rancho Palos Verdes city clusters. The Glendale, Glendora, and Torrance city clusters have improved, going from average violent crime rates in the 1960s to about half the average violent crime rate in 2010. The El Monte and Santa Clarita city clusters have also improved, going from high violent crime rates to average violent crime rates. On the other hand, the Inglewood city cluster has consistently had high violent crime rates at about 80% above the region average, and the Long Beach city cluster has had violent crime rates about double the region average. The Lancaster city cluster has shown a sharp uptick in violent crime, going from just above the region average in 1990 to almost double the region average in 2010.

Orange County and Ventura city clusters tend to have relatively low violent crime rates. In Orange County with the exception of the Santa Ana city cluster, all are consistently below the region average. The violent crime rates are lowest in the south Orange County city clusters of Mission Viejo, Lake Forest, Rancho Santa Margarita, and Irvine. The Thousand Oaks city cluster consistently has the lowest violent crime rates in Ventura County.

The Blythe city cluster in Riverside County has appeared to improve in recent years, and as of 2010 has been replaced by Moreno Valley as the city cluster with the highest violent crime rate in the county. The Palm Springs city cluster has shown a sharp uptick in violent crimes in recent years, going from average violent crime rates in the 1980s and 1990s to rates about 50% above the average in recent years. Rubidoux and Temecula are two city clusters with consistently low violent crime rates.

Table 2.9: Violent crime rate in city clusters in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2010
Top 5 Clusters						
South-central Los Angeles, Los Angeles	.	.	.	397	459	351
South-east Los Angeles, Los Angeles	.	.	.	354	368	326
Barstow, San Bernardino County	103	47	145	77	92	252
San Bernardino, San Bernardino County	151	167	199	159	134	206
Harbor, Los Angeles	.	.	.	270	339	195
Bottom 5 Clusters						
Lake Forest, Orange County	.	.	.	.	20	27
Rancho Palos Verdes, Los Angeles County	12	21	30	21	18	23
Altadena, Los Angeles County	.	.	38	20	22	23
Mission Viejo, Orange County	.	.	.	16	16	18
Rancho Santa Margarita, Orange County	.	.	.	.	15	12

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

In San Bernardino County, the San Bernardino city cluster has consistently had the highest violent crime rates, which are about double the region average in recent years. Finally, the Barstow city cluster has worsened dramatically in recent years, from an average violent rate in the 1990s to a rate 150% higher than the region average in 2010. The Rancho Cucamonga, Yucaipa, and Hesperia city clusters have consistently low violent crime rates.

Property Crime Rates 0ver Time

The gap between city clusters is not nearly as dramatic for property crime as they are for violent crime. For example, the clusters in Los Angeles city have about double the violent crime rate of the region since 1990, but they only have about 10% more property crime than the region. The highest property crime rates are seen in South-central Los Angeles, but even these have fallen from about double the region average in the 1990s to 20% above the region average in 2010. While crime has generally decreased in recent years in Southern California, almost all other areas of the city have experienced an even stronger drop in property crime than the rest of the region.

Table 2.10 displays the top and bottom 5 city clusters for property crime rate in 2010.

As indicated in the Table 2.10, Orange County has the lowest levels of property crime, while Riverside and San Bernardino Counties generally have higher levels, although some clusters in Los Angeles County indicate higher than average property crimes as well. In Los Angeles County, the lowest property crime rates are found in the Agoura Hills, Altadena, and Rancho Palos Verdes city clusters. The highest property crime rates are in the Santa Monica and West Covina city clusters. Two high violent crime city clusters – Long Beach and Inglewood – have surprisingly low property crime rates. Both have gone from property crime rates about 20% above average in the 1960s to 1980s to average, or even below average in 2010.

Although Orange County cities are below the region average for property crime, the gap is not as wide as it is for violent crime. Whereas Orange County cities have violent crime rates about 50% of the region average, their property crime rates are about 80% of the region average. The lowest property crime rates are in the south Orange County city clusters of Mission Viejo, Lake Forest, and Rancho Santa Margarita. Although the Irvine city cluster has a low violent crime rate, its property crime rate has

Table 2.10: Property crime rate in city clusters in Southern California, 1960–2007

	1960	1970	1980	1990	2000	2010
Top 5 Clusters						
Palm Springs, Riverside County	124	121	126	174	207	254
Moreno Valley, Riverside County	38	97	128	193	165	193
San Bernardino, San Bernardino County	144	128	177	171	156	164
Barstow, San Bernardino County	96	65	116	125	126	163
Victorville, San Bernardino County	.	15	38	170	130	154
Bottom 5 Clusters						
Yorba Linda, Orange County	54	83	57	48	52	59
Rancho Palos Verdes, Los Angeles County	38	51	51	37	40	51
Lake Forest, Orange County	.	.	.	.	45	46
Mission Viejo, Orange County	.	.	.	39	40	42
Rancho Santa Margarita, Orange County	.	.	.	.	27	35

Note: values are standardized by dividing the city cluster value by the average value in the region, and multiplying by 100. Values of 100 represent the region mean for the year, whereas values above 100 represent the percent greater than the mean and values below 100 show the percent below the mean.

hovered at the region average over this period. The Anaheim and Santa Ana city clusters have shown improvement, going from property crime rates of 30% to 50% above the region average in the 1980s, to 10% to 20% below the average in 2010. Only the La Habra city cluster has noticeably worsened, increasing from about 20% below the average previously to average levels currently.

Several city clusters in Riverside County show strikingly high property crime rates. Compared to the Southern California region average, Moreno Valley's rate is about double, Palm Springs is about 150% higher, Indio is 50% higher, and Hemet, Lake Elsinore, and Riverside are all about 25% above the region average. One positive sign is that the Blythe city cluster has gone from about double the region property crime rate in the 1980s and 1990s to about average in 2010.

In San Bernardino County, the Yucaipa, Rancho Cucamonga, and Fontana city clusters have the lowest property crime rates. Fontana city cluster in particular has improved over time, from a high of 50% above the average in the late 1960s – early 1970s to 20% below the average 2010. Although the San Bernardino city cluster has consistently had high property crime rates about 50% above the region average, the Barstow and Victorville city clusters have achieved similarly high rates in recent years. Chino, Redlands, Upland, Barstow and Victorville city clusters have gone from below average property crime rates pre-1985 to above average rates.

The city clusters in Ventura County also tend to have low property crime rates, especially the Thousand Oaks city cluster. The Ventura city cluster has worsened in recent years and has property crime rates almost 20% higher than the region average.

In sum, Chapter 2 details how Southern California has experienced considerable demographic change over the past 30–60 years. In particular, Latinos and Asians have shown large growth in the region, the Black population has become increasingly concentrated in certain areas, and the white population has slowly decreased as a portion of the overall population. Los Angeles city and county have experienced the largest increases in the Latino population over time, with several historically Black neighborhoods in Los Angeles experiencing growing Latino populations. Traditionally white Orange County has also experienced enormous Latino and Asian growth.

Although much of Southern California has experienced the effects of the recent mortgage

foreclosure crisis in 2006, wealthier neighborhoods, particularly in Orange and Los Angeles counties, have been more protected from the foreclosure crisis. In contrast, Riverside and San Bernardino Counties were disproportionately impacted, with some of these clusters experiencing 20-30 times the 2000 average foreclosure rate. Over the last 30 years, Orange County, Ventura County, and parts of Los Angeles County consistently had the highest median home values. While unemployment has fluctuated over time, it has generally shown improvements in recent years in Southern California. Orange County and many of the wealthier, west side areas in Los Angeles have experienced lower unemployment and higher rates of white collar and retail jobs.

Riverside and San Bernardino have experienced relatively higher levels of unemployment over time and lower levels of white collar jobs. The locations with larger volumes of jobs also tend to have shorter commute times.

Finally, violent crime rates have generally decreased over the study time period for many areas of Southern California. However, differences in violent crime rates across areas are notable, as clusters with the highest levels of violence crime (e.g., South Central and South East Los Angeles) and the lowest levels of violent crime (e.g., Altadena and Rancho Palos Verdes) have remained relatively stable over time. This difference in violent crime across cities is greater than for property crime.

[1] We also used cluster analysis to combine the census tracts of Los Angeles City into approximately similar-sized clusters as our city clusters. In comparing our clusters with the defined council district boundaries, there was enough overlap that we felt that simply using the council district boundaries would suffice.

[2] These categories are aggregations from the 2-digit NAICS codes. To classify these 2-digit NAICS categories, we first estimated principal components factor analyses for each of the years of the sample. This asks whether certain types of firms are more likely to co-locate in space. In assessing the results, we found that four factors were generally found, and they could be classified based on the descriptions above (the fourth category was mining and utility jobs, which we do not focus on here).



HOW THE PIECES MOVE TOGETHER: JOBS, HOUSING, AND TRANSPORTATION

In this chapter, we focus on the interdependencies of some of the characteristics of the region. Specifically, we focus on how the location of jobs and the location of housing are important to consider simultaneously, and how public safety issues are also intertwined. The co-location of jobs and housing in space has significant consequences for commuting patterns and transportation needs in the region. We start by providing an overview of transportation patterns, including congestion, environmental concerns, and funding. We then provide analyses studying the location of job clusters. After that we consider transportation behavior by residents, and how they are impacted by the presence of jobs and land use.

TRANSPORTATION

Los Angeles is the nation's prototypical automobile city. Los Angeles County had over 6.6 million vehicles registered as of January 1, 2007 – a total that was exceeded by only six states, Florida, Illinois, New York, Ohio, Pennsylvania, and Texas (U.S. Census Bureau, 2009). Certainly the size of the vehicle fleet reflects Los Angeles County's large population, but the story of Southern California and the automobile is far deeper than that.

Los Angeles was an early adopter of the automobile, and aided in large part by the city's rapid population growth during the same period, it made strong inroads as a consumer product. During the 1920s, Los Angeles' population more than doubled, from 577,000 to 1.24 million, and the cars per capita increased from one car for every nine persons to one car for every three persons. The city's and region's dispersed urban form, relatively upper income population, and temperate weather (a benefit in an era when vehicles were often open to the elements and roads were often unpaved) all favored early and quick adoption of the automobile (Bottles, 1987; Wachs, 1984).

Given the construction of freeways beginning in the 1950s, driving provided relatively unparalleled mobility; the cultural transformation was nonetheless perhaps even more important. The car became synonymous with modernity and freedom, and Southern California, a cultural trendsetter, led the country into the automobile era. People could travel when and where they wished, at high speed, irrespective of a rail or trolley schedule. Cars were viewed as a force for the common man, reducing the power of monopoly suppliers of passenger transportation in cities, or freight movement over rails in rural areas (Gutfreund, 2004). Transportation became a personal decision, with a previously unimagined amount of privacy.

Transportation in the Southern California region today is distinguished less by the positives of automobility, and more by a policy focus on managing car-oriented transportation in a world of traffic congestion, air quality problems, and limited resources. The region's transportation problems can be summarized by five issues: (1) managing congestion, (2) improving air quality, (3) reducing greenhouse gas emissions, (4) financing the transportation system in an era of increasingly scarce resources, and (5) building other modes beyond the car.

Congestion

The Texas Transportation Institute (TTI) has calculated congestion indices for U.S. metropolitan areas annually since 1982, which shows how much longer trips will take in the region in peak hours (the morning or afternoon rush hour) compared to free flow travel. In 2010, the Los Angeles-Long Beach-Santa Ana metropolitan area was the most congested area in the U.S. based on TTI's travel time index at 1.38 (indicating that travel time in peak periods takes 38% longer than at free-flow conditions). The travel time index implies that a commute that would take 20 minutes in uncongested conditions would take 27.6 minutes on the typical (or average) rush hours conditions in Los Angeles or Orange County (Schrank, Lomax, and Eisele, 2011).

A second measure of congestion is TTI's delay hours index, which is the average number of hours of delay, per driver, per year. Los Angeles-Orange County-Santa Ana drivers spent an average of 64 extra driving hours during the year due to congestion, which ranks third in the nation (Schrank, Lomax, & Eisele, 2011 September). These findings are not restricted to just Los Angeles and Orange County; in the Riverside-San Bernardino metropolitan area (Riverside and San Bernardino Counties), a commute that would take 20 minutes in free flow traffic required 23.6 minutes in typical rush hour traffic, and drivers lost an average of 31 minutes each year due to peak hour congestion (Schrank, Lomax, & Eisele, 2011 September).

Air Quality

The Los Angeles region, long known for having some of the most severe air quality problems in the nation, has experienced dramatic improvements in air quality during the past three decades. The Clean Air Act Amendments of 1970 created the national ambient air quality standards (NAAQS), which set limits for six atmospheric pollutants. Of those associated with automobiles, ozone is the most well known, and is a key component of Los Angeles' smog. Stage I smog alert days, called when ozone[3] concentrations exceeded 0.2 parts per million (ppm), have decreased over time. There were 117 Stage I smog alerts in the Los Angeles air basin in 1978, 77 Stage I smog alerts in 1988, and zero Stage I smog alerts for the first time ever in 1996 (Boarnet & Crane, 2001).[4]

While this improvement is striking, air quality remains an important issue. Other pollutants have garnered increased attention in the past several years. As an example, the California Air Resources Board (ARB) has estimated in 2008 that fine particulates from diesel engines (mostly trucks) causes 3,500 premature deaths each year. More broadly, the region is still out of compliance with federal clean air act standards, creating both health risks and the potential for loss of federal transportation funds if regional transportation plans are judged insufficient to bring the region into compliance in the future.[5]

Greenhouse Gas Emissions

California is a national leader in greenhouse gas emission regulation. The Global Warming Solutions Act of 2006, requires the state's ARB to develop strategies and regulations that will reduce greenhouse gas emissions to 1990 levels by 2020 (AB 32, 2006). The Sustainable Communities and Climate Protection Act of 2008 mandates that the ARB set targets for greenhouse gas emissions from passenger vehicles and that the state's 18 metropolitan planning organizations write sustainable communities strategies that demonstrate compliance with ARB targets (SB 375, 2008). Once adopted, a metropolitan planning organization's sustainable community strategy becomes part of that region's adopted regional transportation plan, bringing links to federal enforcement through air quality compliance requirements under the 1990 Clean Air Act Amendments and the 1991 Intermodal Surface Transportation and Efficiency Act and successor legislation (SB 375, 2008).

A sustainable community strategy, as required by The Sustainable Communities and Climate

Protection Act, should demonstrate that the metropolitan planning organization and its member jurisdictions have an integrated land use, housing, and transportation plan that will result in greenhouse gas emission reductions (from passenger vehicles) that meet ARB targets. Two major planning efforts required by state and federal law – the federally mandated regional transportation plans and California's requirement for regional housing needs assessments – are key components of a sustainable community strategy. In other words, a sustainable community strategy should demonstrate that the approved regional transportation plans, which is the long-term program of transportation investments and policies, and the regional housing needs assessment, which allocates housing targets by level of affordability to municipalities, combined with municipal general plans and resulting growth patterns and forecasts, are all consistent with ARB greenhouse gas reduction targets.

For the Southern California region, the ARB has set a goal of 8% reduction in per capita passenger travel greenhouse gas emissions in 2020, from a 2005 baseline, and a 13% reduction in per capita greenhouse gas emissions from the passenger transport sector in 2035 (SB 375, 2008). The Southern California Regional Transportation Plan/Sustainable Community Strategy, adopted April 2012, forecasts greenhouse gas reductions of 9% by 2020 and 16% by 2035 for the Southern California Association of Governments six-county region (Southern California Association of Governments, 2012 April). That forecast is based on growth projections and land use plans, but the program is necessarily broad. As the region moves forward, there is much work to be done in assessing the ramifications of specific projects for greenhouse gas emissions and for the region's land use, housing, and transportation integration.

Financing Transportation Infrastructure

The 2012 Southern California Association of Governments' Regional Transportation Plan models revenues and costs for the transportation investment program that will span from 2012 to 2035. Core revenues, according to that plan, are those that have been historically available. Approximately three-fourths of the core revenues are from local sources within the Southern California region, primarily sales tax increments authorized by voters to fund transportation projects in Los Angeles, Orange, Riverside, and San Bernardino counties (Southern California Association of Governments, 2011 December). The 2012 Regional Transportation Plan reveals a substantial gap between available revenue and transportation needs. Of the $524 billion needed for transportation projects in the plan, only $303 billion is available from core revenues. The plan specifies options for the remaining approximately $220 billion of revenue (Southern California Association of Governments, 2011 December). The gap between needs and revenues reflects a long-brewing crisis in U.S. transportation finance.

The transportation system has almost completely devolved to one that is locally financed and locally specified – a reality that makes coordination within the metropolitan area of utmost importance (Rose, 1990). This large share for local funding reflects a radical change from transportation funding historically. After passage of the 1956 Interstate Highway Act, which funded the national highway system with 90 percent federal funding, transportation (particularly highway building) was predominantly a national effort, funded by the federal government and built to federal specifications (Levin, 1959). The Interstate Highway Act placed the gasoline tax at the center of highway finance under the idea was that a fuel tax is an appropriate "user fee" – requiring road users to pay for road construction and maintenance.

In the early years of the Interstate Highway era, increases in the gas tax that were coincident with the agreements to pass the 1956 Act, coupled with increases in driving, generated a windfall of revenues. The initial windfall did not last, however. Gas tax revenues are assessed as a set amount, not a fraction of the price, and so gas tax revenues do not keep pace with either inflation or improvements in vehicle fuel efficiency.[6] The federal gas tax, 18.4 cents per gallon (American Petroleum Institute, Jan. 2012), was last increased in 1993, and California's gas tax of 35.7 cents per gallon was last increased in 1989 (Boarnet and DiMento, 2004). The result has been a continued decline in available funds for transportation (Taylor, 2000; 2006). With transportation finance now almost entirely a regional responsibility, and the declining role for both state and federal funds, alternative financing methods will be a topic of continued discussion within the Southern California area.

JOB CLUSTERS AND ECONOMIC VIBRANCY

A major role for transportation systems is to move people from their houses to their jobs. We therefore next consider the spatial location of jobs, and what explains why some jobs are located in certain neighborhoods, but not others.

Explaining the Presence of Job Clusters Over Time

In this section, we utilize annual data aggregated to zip codes for the Southern California region from 1994 to 2009 to examine trends in where jobs are located. The data were obtained from the U.S. Census and the U.S. Economic Census. We created measures of the number of workers in a zip code for white collar jobs, blue collar jobs, and retail jobs, and estimated two sets of models. The first set of models takes a snapshot approach to determine which demographic and socio-economic characteristics of zip codes are associated with higher levels of white collar jobs, blue collar jobs, and retail jobs. The second set of models takes a dynamic approach to determine which characteristics of a zip code in one year affect the number of jobs in *the following year*.

The strongest pattern we observed was how white collar jobs tended to serve as generators of other types of jobs. For example, the snapshot models reveal that a zip code with more white collar jobs will also tend to have more blue collar jobs and more retail jobs. In the dynamic models, a zip code with 10% more white collar jobs in one year will experience an increase of 0.2% more retail jobs and 0.3% more blue collar jobs the following year. On the other hand, retail jobs tend to "follow" other jobs, and are therefore less likely to generate jobs. Zip codes with more blue collar or white collar jobs at one point in time tend to also have more retail jobs, but a zip code with more retail jobs in one year will not have more blue collar jobs the following year. White collar and blue collar jobs tend to move together; in the "snapshot" models, the presence of more of one leads to the presence of more of the other. Thus, a zip code with 10% more blue collar jobs in one year will have 0.4% more white collar jobs the following year.

There are patterns of spatial clustering of job types as well. In the "snapshot" models, retail and white collar jobs follow a similar spatial pattern. A zip code has 6% more retail jobs if there are 10% more retail jobs within one mile of the zip code; it has 2.1% more retail jobs if there are 10% more retail jobs between 3 and 10 miles from the zip code; however, it will have 0.8% fewer retail jobs if there are 10% more retail jobs within 1 to 3 miles of the zip code. This complicated pattern suggests that there is both an *agglomeration effect* and a *competition effect* occurring. An *agglomeration effect* suggests there are benefits from locating near other retail businesses, such as the advantage of locating in a shopping mall where shoppers can conveniently shop at not only your own store, but others in the same mall. On the other hand, there is a competition effect from nearby businesses within 1 to 3 miles, where there are costs from too many other retail businesses locating nearby, such as a shopping mall located too close by to another shopping mall. Interestingly, white collar jobs exhibit a similar spatial pattern as this pattern for retail jobs. We also found a positive spatial

agglomeration effect for both retail and white collar jobs in the dynamic models, though the size of the effect was stronger for white collar jobs in these dynamic models.

The spatial pattern for blue collar jobs did not show the short-range agglomeration effect. Thus, whereas there is a positive effect of blue collar jobs at longer distances (more than 3 miles) and a negative effect at mid-range distances (1 to 3 miles) there was no short-range effect within one mile in the "snapshot" models. In the short-term dynamic models the only spatial effect is a negative one in which 10% more blue collar jobs within one mile actually reduce the number of blue collar jobs in a zip code 0.7% the next year. This short-run effect results in blue collar jobs being located in areas that are not near other blue collar jobs. This contrasts with the long-run effect detected in the cross-sectional models, which suggests that there is positive spatial clustering of blue collar jobs. This may imply that the current spatial clustering of blue collar jobs will break down over time.

It is often assumed that the presence of more nearby residents, as measured by population density, would be associated with more jobs nearby. However, we only find a short-run effect for this, which is due to a broader spatial effect rather than density. For example, higher levels of population density in the zip code itself modestly decreases the number of jobs of all types in the short-run and the "snapshot" models. And zip codes that are surrounded by higher population density areas also have fewer retail and white collar jobs (though they have more blue collar jobs). There is thus little evidence that jobs are more likely to locate near where residents live. This may have implications for commuting patterns, an issue we will address in the next section.

Median income also had a positive relationship on some types of jobs, although these effects are not necessarily universal across job type and space. In the cross-sectional models, zip codes with higher median income have somewhat fewer retail and blue collar jobs. In the dynamic models, zip codes with $10,000 higher median income and surrounded by areas with $10,000 higher median income will have 0.02% fewer retail and blue collar jobs the next year.

We also examined whether jobs were disproportionately located near residents of certain racial/ ethnic backgrounds. The results suggest that zip codes with a higher proportion of Latinos have more blue collar jobs; however, if the zip code is surrounded by an area with more Latinos it will have fewer blue collar jobs. And a zip code with 10% more Asians has 0.07% more blue collar jobs. In the dynamic models, the presence of racial/ ethnic minorities either in the zip code or surrounding area can have some short-run negative effects on the presence of jobs. For example, a zip code with 10% more Latinos or Asians in the surrounding area will have 0.02% fewer jobs of all types the following year.

The age structure of the neighborhood also appears to have an impact on the type of jobs nearby. The most striking pattern is that the presence of more young adults aged 19 to 29 years is associated with more white collar and blue collar jobs. There is also a short-run effect in which a zip code with 10% more young adults will have 0.03% more retail jobs the following year. Furthermore, a zip code that is *surrounded* by areas with more young adults also has more blue collar jobs, and such zip codes will experience an increase in all jobs types the following year. The presence of children has only a minimal relationship to the presence of jobs: zip codes with more children, and those surrounded by areas with more children, have more blue collar jobs, but do not differ for the other job types. And the presence of elderly residents does not generate jobs.

We find strong evidence that higher rates of crime in cities lead to fewer jobs in the zip codes within a city. Cities with higher crime rates have lower numbers of all types of jobs, and this negative effect is even stronger for violent crime compared to property crime. Compared to a city with an average violent crime rate, a city with a high violent crime rate will have 0.14% fewer retail jobs and 0.9% fewer white collar jobs. And in the dynamic models, zip codes in cities with higher levels of either property crime or violent crime experienced decreases in all job types the following year. Thus, compared to a city with an average violent crime rate, a city with a high violent crime rate will have 0.03% fewer retail and white collar jobs the next year, and 0.4% fewer blue collar jobs the next year. City crime levels have an important effect on the economic vibrancy of a zip code. We will return to the importance of crime for other processes in the next chapter.

TRANSPORTATION, JOBS AND RESIDENTIAL LOCATION, AND LAND USE

The location of jobs has important consequences for transportation flows depending on where residents live. Policy officials have long debated how urban development patterns – what gets built and where – influences transportation. It is also the case that the location of transportation corridors affects where houses and jobs get placed. In light of the region's congestion and air quality challenges, this section explores how land use planning and urban development can help solve transportation challenges.

When examining the average distance traveled, per household, among city clusters in the Southern California region, a clear pattern emerges – more centrally located areas have less vehicle travel and more transit and non-motorized (walking and bicycling) travel. Almost every location in the City of Los Angeles and Orange County has household vehicle travel that is below the regional average. In contrast, all city clusters in San Bernardino County have above regional average vehicle travel. There is a similar pattern by location for the mode of transportation, or the fraction of household trips that are by car, rail transit, bus, and walking. Some areas in Los Angeles show that a high proportion of trips are walking trips. For example, walking is popular in downtown, where residents take an average of 20% of all trips by walking, Hollywood Hills experiences 17% of trips by walking, and South Central Los Angeles has a 18% walking rate. Yet high walking rates are not confined to near downtown locations. Households in the Claremont city cluster take an average of 18% of their trips by walking, and in Irvine and Rancho Santa Margarita, in Orange County, walking trip fractions are in the 10 to 11% range.

We next turn to understanding how development patterns influence travel. This question is particularly pressing, given the requirements of SB 375 to reduce transport-sector greenhouse gas emissions and the greater Los Angeles region's substantial investment in rail transit and transit-oriented development. Before delving into the relationship between development patterns and transportation, we review questions of spatial scale, the role of demographics and land use, and location.

Table 3.1: Cumulative Vehicle Miles of Travel from By Trip Distance (Less Than or Greater Than 30 Miles)

	2009 Southern California Travel Survey, metro Los Angeles 6-county area (includes Imperial County)	2009 NHTS, L.A. CMSA sub-sample, 5-county area (excludes Imperial County)	2009 NHTS, national sample	2009 NHTS, CA sample
Trip length (miles)	Cumulative percent of VMT	Cumulative percent of VMT	Cumulative percent of VMT	Cumulative percent of VMT
< 30	62.69%	62.66%	61.88%	62.04%
>= 30	37.31%	37.34%	38.12%	37.96%

Source: Authors calculations from 2009 National Household Travel Survey (NHTS).

What Spatial Scale Matters

Many recently popular planning ideas, including Transit Oriented Development (TOD) and Smart Growth, are focused on small neighborhoods – often about a ¼ mile from center to edge – to approximate typical walking distances.[7] Yet the general commuting patterns suggest that distance from the urban core is an important determinant of travel behavior.

For example, knowing the county of residence for a Southern California household appears to provide clues about their driving, transit, and non-motorized travel. Table 3.1 above shows the amount of vehicle miles of travel that are from short trips (less than 30 miles) and long trips (greater than 30 miles.)

Approximately 37% of the miles driven in the Southern California region are from trips longer than 30 miles – a fraction that is almost identical to what is observed in the rest of the state and in national data. The implication is that the broad regional pattern of accessibility – to jobs, shopping, and leisure destinations – is an important determinant of vehicle miles traveled. We distinguish between local (neighborhood scale approximating walking distances) and regional land use patterns in the analysis that follows.

Role of Household Demographics and Land Use Patterns

The general commuting patterns in southern California suggest a role for both land use and household demographics, particularly income. For example, Southeast and South Central Los Angeles have the lowest vehicle miles traveled and highest bus miles travelled of any location in Los Angeles City or County. That pattern reflects not only a relatively central location, but also lower income and hence a higher dependence on transit. Similarly, the City of San Bernardino, with generally lower income levels, has the highest transit usage in San Bernardino County. It is necessary to analyze the influence of urban development on vehicle miles traveled while controlling for the characteristics of households, including household income.

We address both of these issues (spatial scale and the influence of household demographics) through multiple regression analysis. The regression explains household vehicle miles traveled during the day as a function of population density, job access, household characteristics, and measures of land use and urban development patterns.[8] The population density measure is for a census block group – a small unit of geography that approximates a residential neighborhood. The job access measure is the sum of the number of jobs within ten miles of each household, using data on employment location and jobs in 2008 provided by

the Southern California Association of Governments. The population density measure is a neighborhood-scale measure, and the sum of jobs within ten miles captures more regional metropolitan-scale aspects of development patterns in Southern California.

Vehicle miles traveled per household is also explained by sociodemographic variables that include measures of the household's income, race/ethnicity (indicator variables that show whether the head of the household is Black, white, or Latino), the number of children (both under 16, and 16 or older in the household), the number of workers in the household, and education level (whether the household head is college educated). The land use measures include block group population density and total jobs within ten miles of the survey household's residence. Additional variables include indicators of whether a bus or light rail station is within ¼ mile of the survey household's residence. The regression coefficients were used to estimate the impact of changes in population density or job access, measured as jobs within ten miles, on vehicle miles traveled. The results were converted into elasticities to provide a consistent measure.[9] Further details are described in the Technical Appendix.

A ten percent increase in census block group population density will, on average, reduce household vehicle miles traveled by 0.35 percent. A ten percent increase in the number of jobs within ten miles of a household will, on average, reduce that household's vehicle miles traveled by 1.58 percent. The results suggest that access to jobs is a more important factor than population density in reducing driving – a result that is similar to other findings in the literature.[10] In general, the association between employment access and driving is approximately four times the size of the association between population density and driving, as has been documented in other studies.[11] Much of the policy discussion in the Southern California region has focused on population density, and density is an important component of job access; one way more persons can live closer to jobs is to build at higher residential densities near job centers. Simply placing more persons into higher density living without increasing their access to employment is a weak way to leverage development patterns to reduce vehicle miles traveled, however.

Where increases in population density and employment access may produce the largest reductions in vehicle miles traveled

The five-county Southern California region is vast, and it may be expected that changes to the urban form produce different impacts on vehicle miles traveled in different locations. We consider next where the impact of urban form on driving might be the largest. Specifically, we examine whether the region's focus on intensifying development in the already urbanized core, increasing densities and job access on the fringe, or a combination of both approaches, would be a more effective way to reduce driving. We divided the NHTS data into four groups, sorting from the lowest to highest population density ranges, and then similarly sorting the NHTS households into the lowest and highest job access ranges. The raw data, sorted into quartiles, is below in tables 3.2 and 3.3.[12]

Both tables show substantial variation in population density and job access. Households in the lowest quartile of density and job access live in places with average block group population densities of 1,651 persons per square mile and, on average, 14,378 jobs within 10 miles, while households in the highest quartile for each category live in places with average block group population density of 38,340 persons per square mile and, on average, 173,983 jobs within 10 miles.

We next used regression analysis to control for income levels and other household characteristics to isolate the impact of population density and job access, repeating the same regression described above for each population density and job access quartile. We calculated elasticities of vehicle miles traveled with respect to population density and job access for each of the quartiles, and results are shown below in table 3.4.[13]

The impact of improved job access in reducing vehicle miles traveled is only statistically significant in the bottom and top quartile, and the magnitude is largest in the top quartile. In the places with the best job accessibility (top quartile), a 10 percent increase in the number of jobs within ten miles is associated with a 4 percent decrease in daily household vehicle miles traveled. Southern California has a highly sub-centered employment pattern, with job concentrations in downtown, along the Wilshire corridor,

and in employment centers in the South Bay and Harbor communities, the San Fernando and San Gabriel Valleys, South Coast Metro and Anaheim in Orange County, and the cities of Riverside and Ontario in the Inland Empire (e.g. Redfearn, 2007; Funderburg and Boarnet, 2008).

As with the earlier results, population density has a smaller impact on household vehicle miles traveled, where a 10 percent increase in block group population density is associated with reductions in household vehicle miles traveled of 0.07 percent in the 2nd quartile of density, 0.2 percent in the 3rd quartile of density, and 0.5 percent in the most dense locations. In general, the results suggest that further intensifying land use patterns by focusing on employment access in the region's already more urbanized locations (typically in Los Angeles and Orange Counties) will be a more fruitful approach to vehicle miles traveled reduction.

Chapter 3 examines how jobs, transportation and housing are all interrelated. Not surprisingly, and consistent with the region's reliance on automobile transportation, the Los Angeles-Long Beach-Santa Ana is the most congested [region]. As California has been taking multiple steps to improve greenhouse gas emissions targets under SB 375, which includes major future planning efforts for sustainable transportation strategies, the regional air quality has improved. Jobs are not only important to the region's infrastructure, but also influence travel patterns. White collar jobs appear to be generators of blue collar and retail jobs, as an increase in white collar jobs leads to an increase in other types of jobs in the following year. Neighborhoods with more young adults aged 19–29 have more white collar and blue collar jobs, and areas with higher crime rates have fewer jobs than those with low-crime areas. Jobs also impact travel behavior, as central areas with denser populations had less vehicle travel, and outlying areas relied more heavily on vehicle travel. Relatedly, areas with lower average incomes are characterized by higher dependence on transit, whereas areas with more employment, retail, and leisure traveled fewer vehicle miles. Finally, analyses revealed that improved job access would likely impact transportation patterns the most in the already more urban locations with higher numbers of jobs and population density.

Table 3.2: Population Density Quartiles and Mean Household vehicle miles traveled

	1st Quartile (lowest density)	2nd Quartile	3rd Quartile	4th Quartile (highest density)
Mean Block Group Population Density	1650.93	5260.33	9285.14	38340.41
Mean Household Daily vehicle miles traveled	56.89	48.56	44.77	33.81
Number of NHTS observations in quartile	1505	1501	1503	1502

Source: Authors calculations using 2009 NHTS data and 2010 Census Data.

Table 3.3: Job Access Quartiles and Mean Household vehicle miles traveled

	1st Quartile (lowest job access)	2nd Quartile	3rd Quartile	4th Quartile (highest job access)
Mean Number of Jobs within 10 Miles of NHTS Household	14,378.32	51,959.00	91,172.46	173,983.40
Mean vehicle miles traveled	56.08	51.50	42.45	34.01
Number of NHTS observations in quartile	1503	1503	1503	1502

Source: Authors calculations using 2009 NHTS data and 2010 Census Data.

Table 3.4: Elasticity of vehicle miles traveled with respect to total jobs (within 10 miles of the household) and population density (in the census block group where the household lives), by quartile

Quartile	Elasticity of Household Daily Vehicle Miles Traveled with respect to:	
	Total Jobs within 10 Miles	Block Group Population Density
1 (lowest job access or density	**-0.132**	-0.002
2	0.117	**-0.007**
3	-0.205	**-0.021**
4 (highest job access or density	**-0.408**	**-0.051**

Source: Authors calculations using 2009 NHTS data and 2010 Census Data.

[3] Ozone is formed in the lower atmosphere as a byproduct when hydrocarbons react with nitrogen oxides.

[4] The federal standard for ozone concentrations was 0.12 before 1997 and 0.08 ppm after 1997, creating a range where air basins could be out of compliance with federal standards without triggering State I alerts. The trend in days that exceed the federal standard show the same trend of improvement – the number of days that the Los Angeles air basin exceeded the federal standard dropped from194 days out of compliance in 1976 to 7 days with concentrations in excess of the older 0.12 ppm standard in 2010, and similarly using the 0.08 standard the air basin exceeded the federal standard in 206 days in 1976 and 68 days in 2010 (South Coast Air Quality Management District, 2011).

[5] See, e.g., Boarnet and Crane (2001) p. 23, for a discussion of the penalties for being out of compliance with federal clean air act standards.

[6] In California, sales tax is charged on fuel sales, providing a small amount of tax revenue that is pegged to prices at the pump.

[7] "Smart growth" is an urban planning and transportation term in which growth is concentrated in compact walkable urban centers to avoid sprawl. Other features are compact, transit-oriented, walkable, bicycle-friendly land use, neighborhood schools, complete streets, and mixed-use development with a range of housing choices.

[8] We have household data on vehicle miles traveled from the 2009 National Household Travel Survey (NHTS). The 2009 survey includes data on 6,011 households in the 5-county greater Los Angeles metropolitan area, recording all trips during a survey day in a household. The California Department of Transportation (Caltrans) provided access to GIS information on household locations, allowing us to match each household to geographic data on population density and the number of jobs surrounding the household's residence. To preserve survey respondent confidentiality, the results here are reported only in aggregated format that cannot identify any individual survey respondent.

[9] An elasticity shows how a percentage change in one variable (block group population density or job access) is related to a percentage change in an outcome variable (household VMT in this case.)

[10] E.g. Boarnet and Handy, 2010; Handy, Tal, and Boarnet, 2010; Ewing and Cervero, 2010.

[11] Boarnet and Handy, 2010; Handy, Tal, and Boarnet, 2010; Ewing and Cervero, 2010.

[12] Mean block group population density includes only the block groups that contain NHTS surveyed households in each quartile. Mean household daily vehicle miles traveled is the mean for households living within the respective quartiles. For example, the mean population density in the 1st (lowest) quartile is the mean of the variable for the 1,505 households in the 1st quartile, and similarly for vehicle miles traveled and the variables for each quartile. Means for number of jobs within ten miles and household daily VMT are calculated for households living within the quartiles shown above. For example, the mean number of jobs within ten miles in the 1st (lowest) quartile is the mean of the variable (number of jobs within ten miles) for the 1,503 households in the 1st quartile, and similarly for VMT and the variables for each quartile.

[13] Quartiles are defined based on total jobs (first column) and population density (second column.) Bold values are those whose difference from zero is statistically significant.

HOW THE PIECES MOVE TOGETHER: DEMOGRAPHIC TRANSITION, CRIME, AND ECONOMIC VIBRANCY

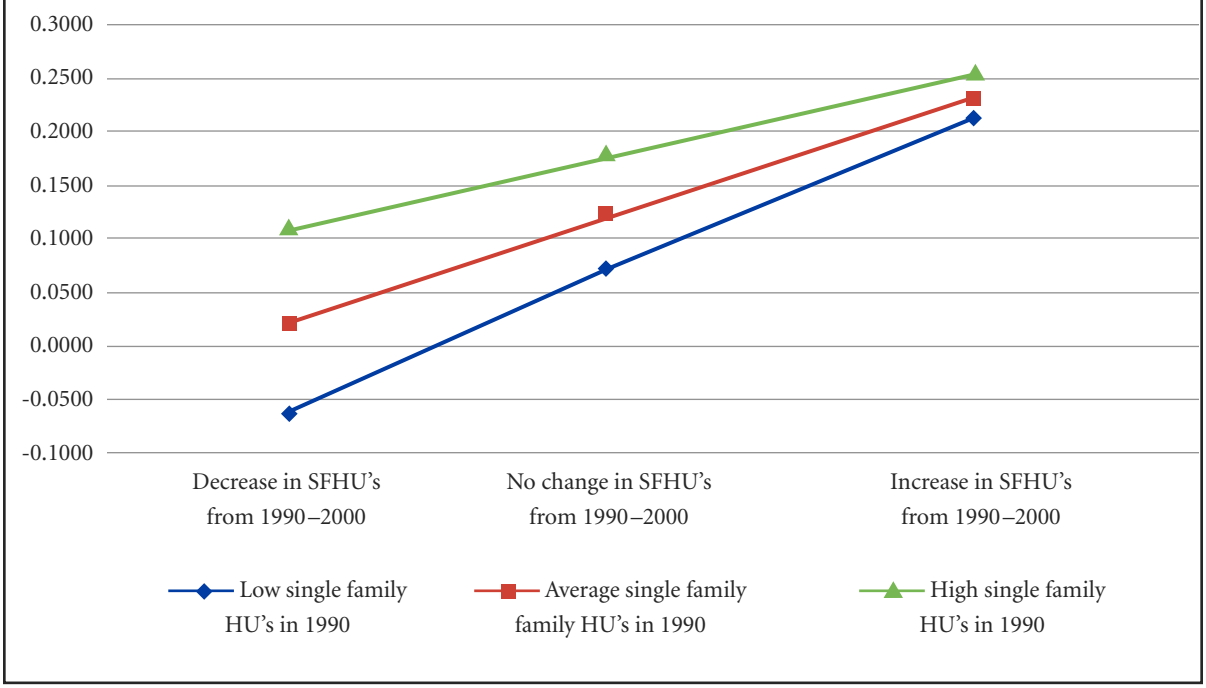
This chapter focuses on the consequences of demographic transitions that have occurred in many Southern California areas for the vibrancy of those neighborhoods. The vibrancy of neighborhoods can be measured in various ways. Here we focus on: the general economic health of neighborhoods as measured by home values, as well as the level of safety in areas as measured by violent and property crime rates. We also empirically assess the effect of the large foreclosure crisis of recent years on the sales prices of homes in specific neighborhoods, and whether these consequences have varied across neighborhoods.

PREDICTING HOME VALUES IN CHANGING NEIGHBORHOODS OVER TIME

In this section, we consider why home values tend to appreciate more over time in some neighborhoods compared to others in Southern California over a 50 year period (1960–2009).[14] Specifically, we examine the change in home values in Southern California neighborhoods over each of the five decades.[15] In our models, we identify which neighborhood characteristics explain the greatest increase or decrease in home values during the same decade, and which neighborhood characteristics at the beginning of the decade explain the greatest increase or decrease in home values during the subsequent decade. We also consider the characteristics of the broader area (both nearby neighborhoods and the neighborhood's city) that might explain change in home values.[16] Given that we are focusing on so many decades, we are able to determine which of these factors consistently explain the change in home values over various decades.[17]

The physical structure of the housing and the number of people living in that housing has important effects on a change in home values. Neighborhoods with a higher percentage of single family housing units at the beginning of the decade or a greater increase in single family housing units during the decade experience greater increases in home values over the subsequent decade. For example, a neighborhood with 1% more single family housing units than another neighborhood experiences a 1% greater increase in home values during the subsequent decade. Furthermore, an increase in the percentage single family housing units in a neighborhood increases home values during the same decade, although this effect is weaker in more recent decades; there is about a 0.5% increase in home values for a 1% increase in single family housing units, compared to about a 1.5% increase in earlier decades.

Figure 4.1: Effect of single family housing units on home values, 1990–2000



Although an increase in single family housing units raises home values during the same decade, it matters how many single family units the neighborhood had at the beginning of the decade in the 1970s and 1990s.

For example, neighborhoods that experience an increase in single family units during the decade uniformly have the largest increase in home values, regardless of the proportion of single family units in the neighborhood at the beginning of the decade, as seen in Figure 4.1. However, for neighborhoods that experience a decrease in single family units during the decade, the negative effect on home values was particularly pronounced in neighborhoods that began the decade with fewer single family housing units (this is the bottom left point in the graph in Figure 1).

The effect of the age of housing has changed over the past fifty years. In the 1960s and 1970s, neighborhoods with older homes at the beginning of the decade experienced a relatively slower increase in home values than newer homes. In the more recent decades, however, neighborhoods with older homes actually experienced *greater* increases in home values. This is an interesting and notable change, and may reflect the changing preferences among homeowners for older homes with better "bones" in more interesting and vibrant locations (Coleman, 2012). One consistent finding is that neighborhoods that are experiencing an influx of new units also have increases in average home values.[18]

The presence of single family units and the age of those units are not the only important characteristics for explaining increases in home values. Additionally, the percentage of units that are standing vacant is significant, although the number of vacant units in a neighborhood is less important than the number of vacant units in *nearby* neighborhoods. In other words, the presence of more vacant units in nearby areas at the beginning of the decade leads to smaller increases in home values in the neighborhood of interest. Thus, vacancies have a diffusion effect on neighborhoods, as higher levels of vacancies in nearby neighborhoods will reduce home values in ones own neighborhood. Furthermore, higher

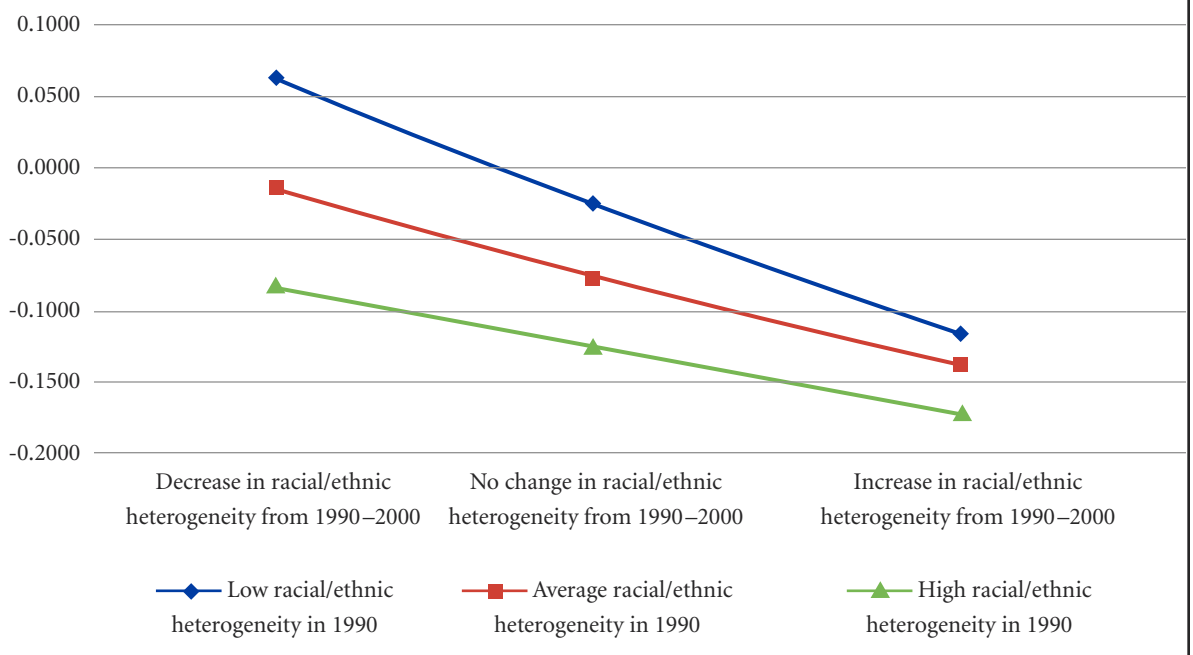
vacancy rates in nearby neighborhoods during the decade leads to a greater decrease in home values in the neighborhood of interest. Notably, the change in vacancy rates in the neighborhood itself does not impact the change in home values; thus, it is the spatial patterning of vacancies that is important.

There is little evidence that population density – a measure of the number of people within a particular sized neighborhood – affects the change in home values. The level of population density at the beginning of the decade does not affect the change in home values during the subsequent decade. Whereas an influx of persons during the 1960s and 1970s led to greater increases in home values during the same decade, such an influx in the 1990s actually led to lower increases in home values.

We find that the racial/ethnic composition of the neighborhood and the surrounding area impacted the change in home values in earlier years, although this effect disappeared in recent years. In the 1970s and 1980s, a greater percentage of Blacks or Latinos in a neighborhood depressed the amount of home value appreciation experienced in the neighborhood. In these decades, a neighborhood with 10% more Blacks experienced a decrease in home values between 2.6% and 4.5% over the subsequent decade, and a neighborhood with 10% more Latinos experienced a decrease of between 3.7% and 6% over the following decade. However, in the two more recent decades there is no evidence of such a negative effect. In the 2000s, neighborhoods with 10% more Latinos at the beginning of the decade experienced a 1.3% greater increase in values. This is certainly a hopeful trend, given the considerable evidence in earlier decades of segregation and steering experienced by Blacks and Latinos. There was also evidence in the 1970s that neighborhoods surrounded by areas with more Blacks experienced lower home value appreciation, but this spatial effect is not present in more recent decades.

The dynamic models suggest that an influx of Blacks or Latinos in a neighborhood coincides with decreases in home values during the same decade, though again this effect may be weakening. During the 1970s through the 1990s, neighborhoods that

Figure 4.2: Effect of racial/ethnic heterogeneity on home values, 1990–2000



experienced a greater increase in Blacks or Latinos experienced lower home value appreciation than other neighborhoods. It was also the case in the 1980s and 1990s that neighborhoods *surrounded* by areas with increasing numbers of Black and Latino residents experienced lower home value appreciation during these decades. Nonetheless, there is no evidence in the most recent decade that an influx of Blacks – or more Black residents at the beginning of the decade – in the neighborhood itself or in surrounding areas affects home values. There is still evidence, however, that neighborhoods in the 2000s that experienced an influx in Latinos, or neighborhoods surrounded by areas experiencing an influx of Latinos, had lower home value appreciation during the same decade. The size of this discounted appreciation appears about half the size of this discount in earlier decades.

We also assessed the effect of general racial/ethnic mixing in a neighborhood, given that such mixing may be perceived negatively by some residents. If this is perceived negatively, residents could avoid such neighborhoods, leading to lower home values.[19] In the 1980s and 1990s, neighborhoods with higher levels of racial/ethnic mixing at the beginning of the decade experienced lower home value appreciation over the subsequent decade. This effect was a nonlinear one during these earlier decades (the 1970s, 1980s, and 1990s). Nonetheless, there is evidence that this effect may be changing: in the 2000s, neighborhoods with more racial/ethnic mixing at the beginning of the decade actually experienced greater *increases* in relative home values during the subsequent decade.

The effect of changing racial/ethnic mixing in neighborhoods on home values depends on the level of racial/ethnic mixing at the *beginning* of the decade. As seen in Figure 4.2, neighborhoods that experienced an increase in racial/ethnic mixing during the decade had relative decreases in home values, regardless of whether the neighborhood was starting from a low or high level of mixing at the beginning of the decade (the right hand side of the figure). Among neighborhoods with *decreasing* racial/ethnic mixing during the decade, the improvement in home values was much weaker for those that were already at higher levels of mixing (the bottom left point in this figure)

compared to those that were already at low levels of mixing (the top left point in this figure).

Although the economic situation of the neighborhood, as measured by the unemployment rate, impacted home values in earlier decades, this is not the case more recently. During the 1960s through the 1980s, lower home value appreciation occurred in neighborhoods with higher unemployment rates at the beginning of the decade. Lower home value appreciation also happened in neighborhoods that experienced a greater increase in the unemployment rate during the same decade. This negative effect has consistently weakened over time, and there is no evidence of such an effect in the two most recent decades. It is possible that this may simply be an artifact of the economic situation during these two most recent decades, when the economy was relatively robust during the 1990s, and these data end before the most recent downturn at the end of the 2000s. Thus, it may be premature to conclude that the economic vibrancy of a neighborhood is less important for how home values change over time.

The effect of children on home values has also changed over the past fifty years. In the 1960s, neighborhoods with more children at the beginning of the decade, or neighborhoods that experienced a greater influx of children, experienced greater home value appreciation. However, there is no evidence of such a positive effect in any of the subsequent decades. In the 1970s and 1980s, neighborhoods experiencing an increase in children during the decade actually endured relatively *lower* home value appreciation during the same period. Also, in the 2000s, neighborhoods with more children at the beginning of the decade had lower home value appreciation during the subsequent decade.

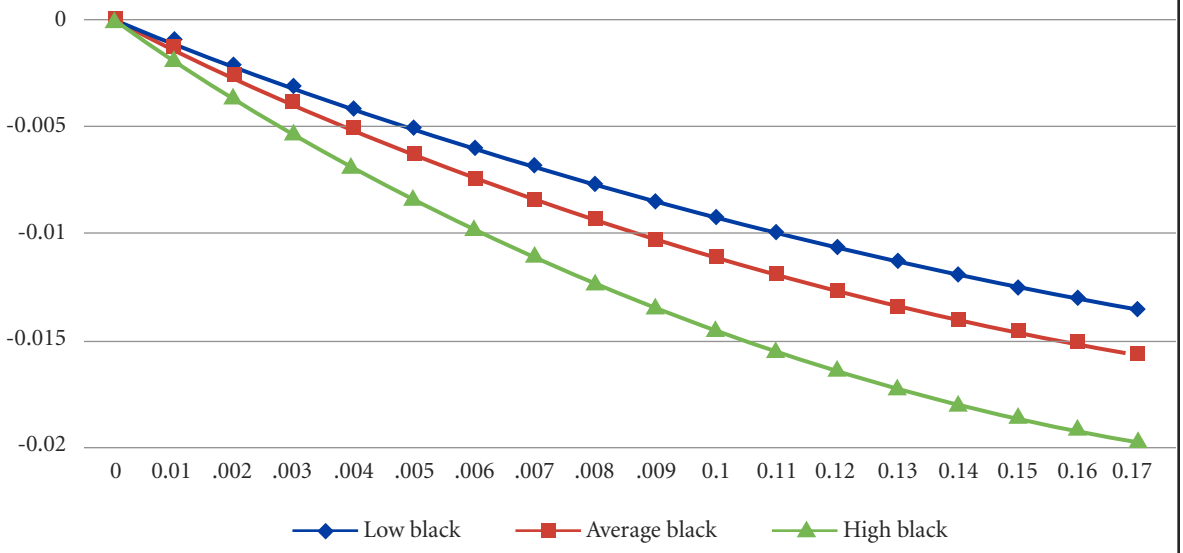
Neighborhoods with more residential stability, where there are few residents moving out of the neighborhood, may lead to more social interaction among residents. Residents in more stable neighborhoods are more likely to know each other, which in turn results in social interaction that can enhance the sense of cohesion and attachment residents feel. If this is indeed desirable, this would increase home values. Although this implies a sort of "Ozzie and

Harriet" model in which the close ties of a cohesive neighborhood foster a more desirable neighborhood for residents, neighborhoods with more residential stability experienced greater home value appreciation during the subsequent decade only in the 1960s. In the two most recent decades, neighborhoods with more residential stability actually resulted in *lower* home value appreciation. The short-term effect of residential stability on home values similarly had a positive effect on home values in earlier decades: in the 1960s, 1970s, and 1980s, neighborhoods with few residents moving out experienced larger gains in home values during the same decade. This effect reversed during the 1990s and 2000s, however; neighborhoods with falling levels of residential stability, or with many new residents were moving into the neighborhood, experienced the greatest gains in home values during these decades. These striking and interesting changes suggest that the residential stability of neighborhoods is not as important, at least in Southern California.

It is perhaps a testament to the car culture of Southern California that the average commute time in a neighborhood does not have a consistent effect on home values. There is no evidence that the change in average commute time during a decade affects home values. Although neighborhoods that began the 1990s with longer average commute times experienced lower home value appreciation during that decade, such neighborhoods actually experience greater appreciation in the 1980s and 2000s. There is evidence for a ceiling effect at work in these two decades: for neighborhoods that began the decade with relatively short commute times, an increase in commute times has a positive effect on home values, however, increasing commute times appear to be relatively intolerable for neighborhoods that already had long commutes, as they result in falling home values. Nonetheless, there is no consistent pattern in which commute times affect home value appreciation over these decades.

Another important characteristic for neighborhood home values is the level of crime and feelings of safety. Given that collecting crime data for neighborhoods is extremely difficult, particularly over the long period of this study, we used data on the violent crime rates of the cities within which these neighborhoods were located.[20] As reflected earlier in the report, violent crime rates affect the location of jobs, and so we test whether they affect the desirability of neighborhoods as assessed by home values in this section. Across all of the study decades, neighborhoods in cities that were experiencing the greatest increase in violent crime rates also had the lowest home value appreciation during the same decade. Violence is a particularly negative characteristic that can drive down home values. Notably, cities with the highest violent crime rates at the beginning of the decade did not experience the lowest home appreciation – such neighborhoods actually experienced greater increases in home values – but rather those in cities that experienced a worsening of the violent crime rate over time. This suggests that neighborhoods in cities with high rates of violent crime have already experienced the negative discounting of their home values. Thus, it is only increases in violent crime rates that will further depress these home values.

Figure 4.3: Effect of foreclosures on logged average home sales prices, by percent black in the zip code

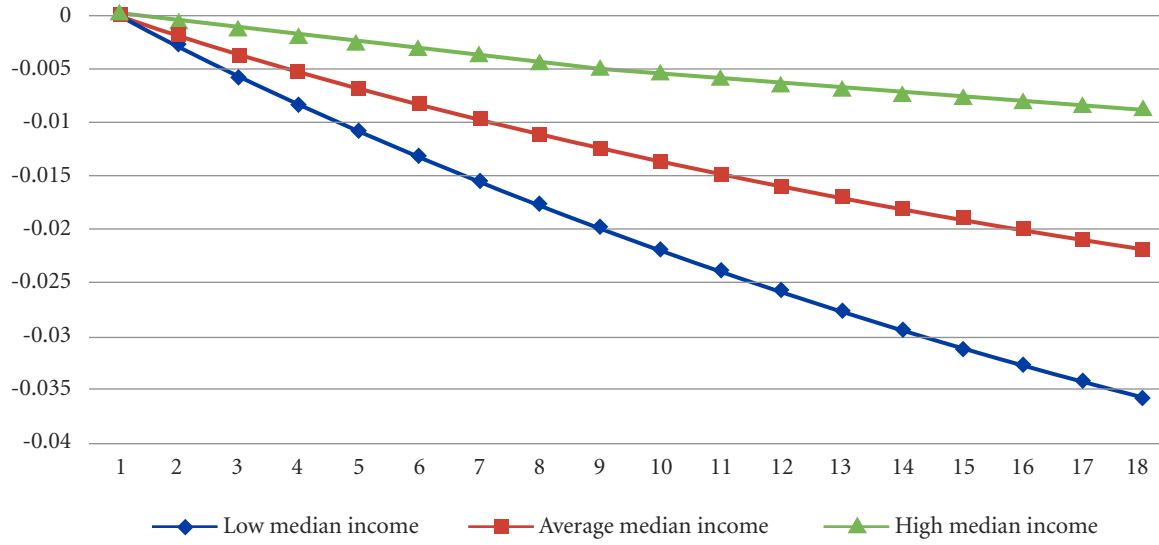


We also tested whether the characteristics of the city in which a neighborhood is located has important effects on how home values appreciate over time. Cities provide various public services that can help maintain general safety and the appearance of the neighborhood. Given that such provision of public services is a collective good, this may require a degree of coordination among the various neighborhoods in a city. If there are great economic disparities *between neighborhoods* in a city, however, coordination may be more difficult. We assessed this disparity by constructing a measure of the degree of economic segregation between the neighborhoods of a city.[21] On the one hand, there is mixed evidence for the effect of the level of economic segregation at the beginning of the decade on the subsequent change in home values in the following decade. In the earlier decades (the 1960s and 1970s), neighborhoods in cities with higher levels of economic segregation at the beginning of the decade had lower home value appreciation during the subsequent decade. However, this effect changed into a positive one in the two most recent decades. On the other hand, cities experiencing a greater increase in economic segregation during the decade also experienced lower home value appreciation during the same decade. It appears that increasing levels of economic segregation in a city have a simultaneous negative impact on the home values for all neighborhoods in the city.

FORECLOSURES AND HOME SALES PRICES

Given the foreclosure crisis of the late 2000s that hit the United States and Southern California in particular, it is important to examine the effect of foreclosures on home sales prices. Although a single foreclosure is of concern to a single homeowner, a spate of foreclosures is an external shock to a neighborhood that can have many deleterious consequences. These consequences could include increasing disorder and crime, as well as decreasing desirability of the neighborhood as reflected by falling home sales prices. It also may be that the context in which foreclosures occur has different consequences for how home sales prices respond. Certain neighborhoods may be more vulnerable than others, and home prices may therefore be more likely to fall in response to increasing foreclosure rates in such areas. Specifically, we ask whether foreclosures more strongly reduce sales prices in neighborhoods based on racial/ethnic composition, economic resources, or level of crime. Given that

Figure 4.4: Effect of foreclosures on logged average home sales prices, by median income in zip code



such neighborhoods are already less desirable to some residents, it may be that foreclosures in them have particularly deleterious consequences for the change in sales prices.[22] We address these questions in this section by utilizing monthly data on foreclosures in all zip codes in Southern California over a 15 year period (1995-2009).[23] Such temporally precise data is particularly useful for viewing the impact of foreclosures because their effects on home sales prices may be relatively instantaneous.

Results indicate that an increase in the foreclosure rate in the zip code leads to lower average sales prices the following month. This estimate is arguably relatively accurate given the precise temporality of the data (monthly) and our analytic strategy.[24] A 1% increase in foreclosures reduces home sales prices 5.9% the following month. This effect of foreclosures differs from the effect of general home sales, where increasing numbers of home sales are associated with *increases* in the average sales price. This is not necessarily surprising, as home sales likely reflect the popularity of the neighborhood. Nonetheless, there is a limiting effect of this positive relationship; at very high levels of home sales, further increases only minimally increase sales prices. Therefore, foreclosures have a very different effect on sales prices compared to the effect of unencumbered sales.

In contrast, there is no evidence that the number of foreclosures or home sales in nearby zip codes affects the average sales price in the focal zip code area. This may be because zip codes are relatively large geographic units, and too large to accurately capture effects of surrounding neighborhoods. There is, however, evidence that zip codes surrounded by other areas with higher average sales prices in the previous month experience a larger increase in average sales price in the current month.

We find strong evidence that the effect of foreclosures on home sales prices differs based on the neighborhood context in which the foreclosures occur. Although an increase in foreclosures reduces the average sales price in all neighborhoods, this effect is particularly pronounced in communities with more Blacks or Latinos. Figure 4.3 illustrates that in neighborhoods with few Black residents (the top line in this figure) experience only modestly falling sales prices as the foreclosure rate increases. However, neighborhoods with a high proportion of Black residents[25] experience a particularly sharp decrease in home sales prices as the foreclosure rate rises (the bottom line in this figure). This pattern is

similar for neighborhoods with a higher proportion of Latinos, although we do not plot this here.

The negative effect of foreclosures on subsequent home sales prices is particularly strong in low income neighborhoods. As illustrated in Figure 4.4, the negative effect of foreclosures on subsequent home sales prices is quite modest for neighborhoods with high median income (the top line in this figure, which is relatively flat as foreclosures increase). However, foreclosures sharply reduce home sales prices the following month in neighborhoods with low median income (the bottom line in this figure). At a 0.1 percent foreclosure rate, home sales prices fall 0.56 percent more in a low income neighborhood compared to a high income neighborhood.

It is notable that while more sales overall increase home sales prices the following month, this effect is weaker as the percent Black or Latino residents increase in the zip code. Similarly, the effect of foreclosures in low income neighborhoods differs from the effect of general home sales in low income neighborhoods. Although increasing sales modestly increase home sales prices the following month in a high income neighborhood, a spike in sales in a low income neighborhood results in much steeper increases in home sales prices the following month.

Finally, home sales prices are lower the following year in cities with higher violent crime rates. A ten percent increase in the violent crime rate in the city over the previous twelve months reduces home sales prices in the zip code about 8%, whereas a similar increase in the city property crime rate reduces home sales prices about 1%. Foreclosures also reduce home sales prices more when they occur in cities with higher violent crime rates.

CRIME AND SAFETY IN CITIES OVER TIME

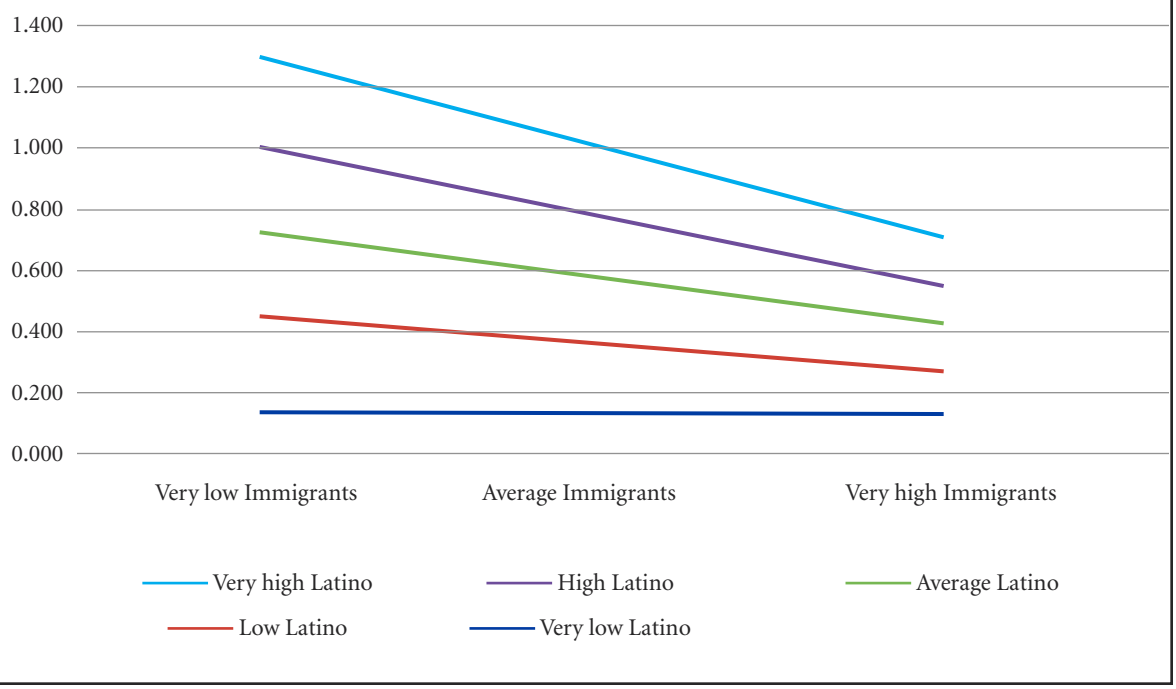
We have seen that the crime rate in cities has consequences for other processes in the neighborhoods of the city. For example, neighborhoods in cities with higher violent crime rates have fewer

jobs over time, and home values do not increase as rapidly in cities with higher or increasing violent crime rates. Given the importance of crime for these various processes, we next explore why some cities have higher levels of violent or property crime than other cities using data on city level crime rates for the cities of the Southern California area over four decades, from 1970–2000.[26] We constructed measures of various socio-demographic characteristics, such as poverty, unemployment rates, housing homeownership and vacancy rates, race, immigration, racial heterogeneity (or "mixing") of these cities, all factors that criminologists have suggested likely explain levels of crime. We estimated two sets of statistical models over this time period. The first set of models adopted a cross-sectional, or "snapshot," view: that is, characteristics of cities that are associated with the highest property or violent crime rates at a point in time. The second set of dynamic models explains which cities will experience the largest increase in crime over the subsequent decade.[27] An advantage of studying these crime rates over several decades is that we can assess how consistent the effects are for various measures over time.

Although it might be assumed that poverty rates are the best predictor of where crime occurs, this is not always the case. There is no evidence that cities with higher poverty rates have higher property crime rates, nor is there evidence to suggest that cities with more poverty at the beginning of the decade experience an increase in the property crime rate during the subsequent decade. Poverty is related to violent crime rates, however. In the snapshot models, cities with higher poverty rates also have higher violent crime rates. However, there is a ceiling effect of poverty on violent crime. For example, in 1980 and 1990 although violent crime increases as the poverty rate increases until a poverty rate of about 17%, but further increases in poverty do not increase the violent crime rate. Furthermore, cities with higher levels of poverty at the beginning of the decade experienced larger increases in the violent crime rate during the 1970s and 1980s, but this effect was not present in more recent decades.

There is no evidence to suggest that the unemployment rate affects violent or property

Figure 4.5: Effect of racial/ethnic heterogeneity on home values, 1990–2000



crime rates when controlling for these other measures, nor that higher unemployment at the beginning of the decade or increasing unemployment during the decade leads to increasing violent or property crime during the decade. This parallels findings in the criminological literature that unemployment rates have an ambiguous effect on crime rates.

In sum, the economic context of the city, as measured by the poverty rate or the unemployment rate, has only a modest effect on crime rates, thus raising the question: what characteristics of the city do matter for crime rates? One important factor is the presence of homeowners for reducing crime rates. Cities with a higher proportion of homeowners have lower property and violent crime rates in all four decades in the snapshot models. Cities with a 10% high homeownership rate had between 5.3% and 15.3% lower violent and property crime rates, respectively. This effect is also present in the dynamic models, as cities with a higher proportion of homeowners at the beginning of the decade have lower property crime rates by the end of the decade.

The causal direction of this pattern is hard to determine, as this exodus of residents from a city could cause increasing crime rates, or increasing crime rates could cause an exodus of residents.

The effect of racial/ethnic heterogeneity on crime rates is surprisingly weak in Southern California, in contrast to much prior research in other geographic locations. Cities with higher levels of racial/ethnic heterogeneity had higher violent and property crime rates in 1980, but actually had lower property crime rates in 1990 and 2000. This is an interesting finding, not only because the relationship between racial/ethnic heterogeneity on crime rates is so robust in other geographic locations, but also given the famous Black-Latino racial conflict in Los Angeles. The effect of racial/ethnic heterogeneity also weakened over time, according to the dynamic models: whereas cities experiencing increasing racial/ethnic heterogeneity during the 1970s also experienced increasing violent and property crime rates, no such effect was detected in subsequent decades. Moreover, cities with higher levels of racial/ethnic heterogeneity in 1970 experienced larger increases in the violent crime rate over the following decade, but this was not the case in more recent decades.

However, there is some evidence that violent crime rates were higher in cities with more racial/ethnic minorities. For example, cities with a higher percentage of Blacks have higher *violent* crime rates across all four decades, although they did not have higher *property* crime rates in the three most recent decades. Additionally, cities with a higher Latino presence have higher violent and property crime rates in the three most recent decades. However, the evidence for the effect of racial/ethnic minorities on crime rates is much weaker in the dynamic models; although cities with an increasing Black population in the 1970s and 1990s experienced increasing violent crime rates, this was not the case in the other decades. Furthermore, property crime rates did not increase in these same cities; in fact, cities that experienced a larger increase in Blacks during the 1980s actually had falling property crime rates.

Given these somewhat modest effects of the racial/ethnic composition on crime rates, an important question is whether the immigrant concentration in these cities might explain the crime rates. There is no evidence of an immigration effect; in none of the time periods did higher levels of in immigrants lead to a higher property or violent crime rates, in either the snapshot models or the dynamic models. In 1980, cities with more immigrants had *lower* property crime rates than cities with fewer immigrants.

In addition to finding no evidence that immigrants increase crime rates, a higher presence of Latino and Asian immigrants is associated with *lower* property crime rates. Figure 4.5 shows that the presence of more Latino immigrants in 1990 has a protective effect on the level of property crime in these cities; the highest crime cities are those with very high percentages of Latinos who are non-immigrants (the upper left point in the figure). As the proportion of Latinos who are immigrants increases, however, the level of property crime decreases. The plot for this relationship in 2000 is very similar. Thus, we see no evidence that the presence of more immigrants increases crime rates, but instead a generally negative effect on property crime rates in more recent years. It appears that later generations are associated with higher crime rates,

which is consistent with evidence of the pattern of delinquent behavior by youth.

Chapter 4 examined the consequences of changing demographics on economic and crime indicators in the Southern California region. Housing preferences over time have changed, as reflected in home values. Home values for older homes have increased in more recent years, whereas newer homes traditionally had higher home values. The racial/ethnic composition of neighborhoods appears to have little to no effect on home values recently, marking a change from earlier decades when the presence of Black and Latino populations depreciated neighborhood home values. In fact, neighborhoods with greater racial/ethnic mixing experienced higher home value appreciation in the last decade. Neighborhoods with higher levels of residential stability actually experienced lower home value appreciation more recently, which also represents a change from earlier decades.

The recent foreclosure crisis and has had differential consequences in various neighborhoods. Foreclosures led to lower sales prices the following month. Moreover, some neighborhoods are more vulnerable than others to foreclosure. For example, low-income areas and areas with high proportions of Black residents experienced particularly sharp decreases in sales prices as foreclosure rates increased. In contrast, the impact of foreclosures on home sales prices in high income neighborhoods was quite modest.

Crime, vacancies, and home values are inextricably intertwined. At the neighborhood level, violent crime decreases home values, although there is a ceiling effect for neighborhoods with preexisting high crime rates where home values have already depreciated. While there is some evidence to suggest that cities with more racial minorities have higher levels of violent crime, immigration was not related to higher crime rates. Two of the strongest predictors of the amount of crime in a city were homeowner and vacancy rates: cities with higher levels of home-ownership have lower crime rates, whereas cities with higher vacancy rates have higher levels of crime.

[14] Home values are reported to the Census by homeowners. Studies have shown that whereas residents typically over-value their own home, there is no systematic bias across neighborhoods (CITES). That is, on average, all residents equally over-value their homes, and therefore these reports can be used for comparing changes in neighborhoods. In addition, given that we are taking into account home values at the beginning of the decade (and therefore are only looking at the *change* in home values), we are effectively taking into account the different housing quality and sizes across neighborhoods.

[15] "Neighborhoods" are measured by the U.S. Census as census tracts. A tract has a population of about 4,000 persons. Because they are constructed by the Census, it is possible to reconcile boundary changes that occur across each decade.

[16] Measures of nearby neighborhoods are sometimes referred to as *spatial lags.* We define "nearby" neighborhoods as those within 2 miles of the neighborhood of interest. We use a distance decay function (inverse distance), such that closer neighborhoods have more effect on the neighborhood of interest than do neighborhoods farther away.

[17] We estimated multivariate models, which allow us to assess the effect of certain neighborhood characteristics while simultaneously taking into account the possible effect of other neighborhood characteristics.

[18] These neighborhoods experience a decrease in the average age of homes, whereas neighborhoods that do not receive new units will, by definition, experience an increase of 10 years in the average age of homes over the decade.

[19] We measured this as racial/ethnic heterogeneity by This racial/ethnic heterogeneity measure is described in Technical Appendix 1.

[20] Although this is not as precise as having a measure of the amount of crime in the particular neighborhood (given that there can be both high and low crime neighborhoods within the same city), it still provides us a conservative assessment of the effect of crime on changing home values.

[21] This was constructed as the variance in median incomes across the neighborhoods within a city.

[22] Given the difficulty in obtaining crime data for neighborhoods, we collected violent and property crime data for the cities in which these zip codes are located. Although this is less geographically precise, it does have the advantage of enabling us to use monthly crime rates to assess this effect. That is, what we lose in geographical precision we make up for with temporal precision, given that such spikes in crime may have important consequences for sales prices.

[23] The data were obtained from the RAND Corporation. For the years from 2002-2009, the foreclosure numbers are strictly recorded Trustee's Deeds, or when the property is actually taken back by the bank. For the years from 1995–2001, the source is the California Association of Realtors. For computing the foreclosure rate, the numerator is the number of units in foreclosure in a month, and the denominator is the total number of housing units in the ZIP code. The outcome measure is the average sales price of all units sold in the ZIP code during a particular month (log transformed). This includes both attached and detached single-family housing units including condominiums.

[24] We estimated these as fixed effects models. An advantage of such an approach is that we do not need to compare across neighborhoods (which is what is commonly done in many analytic strategies). Instead, we are simply comparing *within* a zip code. Thus, we are testing whether an increase in foreclosures in a zip code leads to a decrease in average sales prices the following month in the same zip code.

[25] As measured by one standard deviation above the mean. All "high" and "low" values are calculated as one standard deviation above and below the mean, respectively.

[26] Drawn from the FBI's Uniform Crime Report (UCR), the crime data comprise serious crime events known to the police. We created counts of violent crimes by combining counts of aggravated assault, robbery, and homicide over the three years nearest to a decadal point (aggregating three years smoothes over yearly fluctuations) and then rounded to the nearest integer. We created a measure of property crime by aggregating counts of burglary, automotive theft, and larceny events.

[27] In these dynamic models we test: 1) which city characteristics at the beginning of the decade explain the greatest increase or decrease in crime rates during the subsequent decade, and 2) based on how they change during the decade, which city characteristics explain the greatest increase or decrease in crime rates during the same decade.



WHAT WE HAVE LEARNED, AND FUTURE DIRECTIONS

The analyses in this report show that the Southern California region is dynamic and complex. The longitudinal approach of the report reveals that the region has undergone tremendous change over the past 50 years and suggests a need for planned urban development that can address interconnected processes in the region. Moreover, the report depicts coincident phenomena, interconnected processes at the regional level and more localized effects on neighborhoods, which feedback to development at the regional scale and, equally important, impact the daily lives of 18 million residents. This Regional Report provides solid empirical evidence to allow for informed discussions while also serving as baseline information for monitoring trends in the future. In this section, we highlight the major report findings, and then turn to a discussion of policy implications.

Striking demographic change is evident in the region over the study period. The Latino and Asian populations have increased overall and certain areas of the region are almost exclusively comprised of these racial-ethnic groups. The Black population has decreased with neighborhood succession, particularly Black to Latino succession occurring in some areas. Primarily white concentrations remain in the affluent clusters, even as small changes in racial-ethnic concentration are occurring in these areas as well. These changes, while structural, are occurring at different rates across counties and communities, thus there is both a spatial and temporal component to these changes.[28]

Southern California has a highly sub-centered employment pattern. Our analyses reveal that the Irvine cluster dominates the region with concentrated white and blue collar jobs and retail jobs. The Glendale and Santa Monica clusters also have relatively high levels of white collar and retail jobs and some concentration of blue collar jobs. Other employment sub-centers identified in the report include Downtown Los Angeles, the Wilshire Corridor, the South Bay and Harbor communities, the San Fernando and San Gabriel Valleys, South Coast Metro and Anaheim in Orange County, and the cities of Riverside and Ontario in the Inland Empire.

Access to jobs and patterns of population density influence household vehicle miles traveled and are important considerations in meeting greenhouse gas emissions targets under SB 375. The analyses show the density of nearby jobs had a stronger effect on reducing travel mileage than did the density of population. Importantly, our analyses indicate that white collar job centers, in particular, are associated with higher numbers of blue collar positions; retail jobs follow thereafter and do not serve as job multipliers. Therefore, the co-location of job centers with residential opportunities for

workers in all types of positions in these job centers should prove beneficial in shorter commutes and reduced greenhouse gas emissions.

The locations of jobs and residences in relation to transportation are clearly understood from a regional level, even as regions and the communities within them are impacted by more localized phenomena. A common theme in this report is that the level of crime in a community has important consequences for residents' quality of life and the overall health of the region. Of course, crime is undesirable to residents, particularly violent crime. Nonetheless, our analyses show that besides increasing fear, violent crime also has a series of negative consequences for communities. Violent crime in the community renders an area less desirable, as indicated by home values in neighborhoods; that is, home values are negatively impacted by increasing violent crime rates in the city. Higher violent crime rates in cities lead to lower sales prices the following year and longer term effects occur as well. For example, increasing violent crime over the decade leads to a simultaneous relative drop in home values. Additionally, cities with higher violent crime rates experienced the largest job losses the following year in their neighborhoods. Clearly, it is not simply the level of crime in the neighborhood that mattered, but rather the level of crime in the entire city that then had consequences for all neighborhoods in the city. Thus, the effect of crime, especially violent crime, diffuses throughout the city.

However, the presence of homeowners is a prophylactic against increasing crime rates. Consistent with findings from other research, our analyses reveal that crime rates tend to be lower in neighborhoods and cities with more homeowners. Likewise, the presence of more vacant units in a city leads to higher crime rates. Thus, maintaining a healthy housing economy has important consequences for the level of crime in a city.

Our regional analysis reveals some surprising findings related to the spatial dimensions of crime. Although studies in other locations commonly find that cities and neighborhoods with higher levels of racial/ethnic mixing have higher crime rates, we found little evidence of this for Southern California. There is some evidence in the 1970s that cities with more racial/ethnic mixing had higher crime rates, and also experienced larger crime increases during the decade. However, there is no evidence that racial/ethnic mixing since 1980 leads to more crime for the cities of the region. Similarly, whereas a greater presence of Latinos or Blacks in a neighborhood depressed home value appreciation over the subsequent decade prior to 1980, there is no such evidence in recent years. These combined findings suggest that some of the negative implications of racial differences are likely less palpable in the current era.

Another important finding relates to immigration. There is no evidence that cities with more immigrants had any more crime, once taking into account the usual characteristics that explain the location of crime. Thus, cities with more immigrants, and cities experiencing a larger increase in immigrants, did not have any more violent or property crime than other cities. Thus, in a region experiencing such a large influx of immigrants, it is notable that we found no evidence that this led to higher crime rates in these cities over this fifty year period of this study.

Many findings related to housing have important implications for future development. For example, older units appear more desirable in recent years. Though newer housing units in a neighborhood led to greater home value appreciation in earlier decades, the presence of older units actually led to more home value appreciation in the most recent decades. This finding is consistent with a recent movement towards gentrification of older downtown areas and a push for denser development in more walkable areas. Additionally, cities in which economic segregation is decreasing experience the largest increases in home values. Decreasing economic segregation is one of the principles of the New Urbanist movement, as it implies mixed use developments in which lower income housing is located nearby to higher income housing. Combined, these findings suggest that the preferences of residents are changing to be more in line with the New Urbanist perspective in Southern California. At the same time, the consistent evidence that neighborhoods with more single family housing units experience greater home value appreciation suggest that there is still considerable appeal for this type of development in the region as well.

There was strong evidence that foreclosures have a negative impact on sales prices. It is notable the strength of this effect in our models: a 1% increase in foreclosures reduces home sales prices 5.9% the following month. Furthermore, foreclosures do not affect sales prices in all neighborhoods equally. Lower income neighborhoods have sales prices most strongly impacted by foreclosures. In such neighborhoods, residents have the least cushion from economic setbacks, and therefore foreclosures are more likely to translate into forced sales. In contrast, in higher income neighborhoods foreclosures do not lower sales prices as much, at least in part because buyers are easier to find for units in such neighborhoods. In addition, a high rate of foreclosures also has a strong negative effect on sales prices when they occur in neighborhoods with a high proportion of Latino residents. This finding occurs even when accounting for the fact that such neighborhoods typically have lower average income. In other words, this is not simply an economic story, but rather additional effects in which foreclosures strongly negatively impact sales prices in such neighborhoods.

Taken as a whole, the findings in this report reveal the power of a regional analysis that focuses on Southern California. With an eye toward temporal and spatial change, as well as stability, this approach showcases the patterned connections between the local and the regional. Understanding the very phenomena that anchor our communities and contextualize our daily lives--housing, jobs, transportation, and the like--is a key step toward understanding the past and focusing on the present to anticipate and plan the future.

POLICY IMPLICATIONS

Public decision makers are faced with a complex and challenging policy environment when accounting for the interrelated processes that motor a region and, in turn, define local communities. Such policy decisions require considering structural change, jobs and residential locations; the linkages between land use and transportation; the relationships among localized social and economic conditions, neighborhood quality and regional vitality; various state regulatory and planning mandates; and local land use regulations. Nevertheless, policy makers within the region have the responsibility to plan within this complexity to avoid environmental harm such as unnecessary air emissions, to promote strong neighborhoods and a higher quality of life for residents, and to improve the overall function of the region and thus, increase the economic and social well being for all communities in the region. Understanding this tremendous responsibility, we offer our thoughts on the policy implications of the results in this report.

Demographic change is a lengthy process that is evident in the longer view presented in this report. Structural demographic changes often prompt concerns that are unproductive in terms of effective planning. While demographic change is often viewed with uneasiness by long term residents of communities, our data show that negative consequences often associated with demographic change are minimal or non-existent. For example, despite demographic trends, the overall crime rate has decreased over time and the notion that an increase in immigrants is related to higher rates of crime is not borne out by our analysis. It is important that decision makers encourage outreach to diverse subgroups in the population and affirm participation by longstanding residents and more recent entrants to communities in the region. History and empirical analyses reveal that regions are stronger when diverse groups work together to achieve a set of desired goals.

The results of this research illustrate how the metropolitan pattern of employment centers, and the resulting spatial pattern of access to job centers, is important in reducing VMT. Given these results, the state mandates for reduction in green-house gas emissions and the requirements in SB 375,

strengthening employment sub-centers and planning for accessible and economically diverse housing to these job centers, especially in the more urbanized counties of Los Angeles and Orange, is a comparatively high impact land use strategy for reduction of vehicle miles traveled. Co-location of a range of housing types to job centers could promote densities that encourage walking rather than driving, while in less urbanized areas heavy and light rail transportation could provide accessibility to job centers serviced by these transportation modes. In these areas, as well as the denser urban areas, transit oriented development, and related policies encouraginging higher intensity, mixed use developments near transportation nodes, will strengthen the effort to increase accessibility. In other words, place-making strategies that link mixed use and mixed housing developments to job centers with excellent transportation access, are advisable given our analysis. The Southern California Association of Governments COMPASS program, which focuses on infill development around major transportation nodes, is a start in this direction.

We used housing values to assess economic vibrancy in communities in the region. The data in this report clearly show higher ownership rates are associated with less crime in neighborhoods, while higher vacant rates are related to higher rates of crime. Our analyses also reveal that vacant units and foreclosures have negative impacts on housing sales prices. Unfortunately, the housing market crash of 2007 produced both relatively high foreclosures (reducing homeownership) and vacant units in many neighborhoods. In addition, the sales prices in low-income neighborhoods and areas with a larger share of Latinos were most strongly negatively impacted by foreclosures. Interestingly, neighborhoods with an older housing stock fared better on housing value appreciation. This set of conditions poses particularly difficult and potentially controversial policy choices for decision makers. Reducing vacant units by promoting homeownership in neighborhoods with, and near areas of, high foreclosures is a reasonable policy approach and is at the center of the relatively limited federally-funded Neighborhood Stabilization Program. However, policies that serve the most affected populations and that connect to the larger regional issues concerning the distribution of job centers, housing, and transportation would be stronger and, from a planning perspective, more effective in the long run. Such an approach implies preference be given to certain locations; in other words, using the "triage" method to save some neighborhoods, while allowing others to fade.

Conclusion

Given all the moving parts in the Southern California region, policy decisions are clearly a challenge. Nonetheless, it is imperative that such decisions are based on solid evidence. To that end, a goal of this initial Regional Progress Report (RPR) was to provide such evidence. Future RPR's will do the same as the region continues to grapple with these various challenges. Related to the future of the RPR, the School of Social Ecology at the University of California, Irvine, welcomes hosting public discussions of the findings contained in this report and subsequent reports. Indeed, independent empirical analyses of our communities are the first step to planning a future that enhances our communities and contributes to our lives. The second step is to engage the findings and ensure they inform how we build and serve communities in the region in the future.

[28] See "The Orange Crush: The Squeezing of Orange County's Middle Class" by John Hipp for a more in-depth discussion of these changes in Orange County (April 2009). Available at: https://webfiles.uci.edu/hippj/johnhipp/oc60_00_ineq_final.pdf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TECHNICAL APPENDIX 1

To address the question of how these cities in have changed over this time period, we utilized data from several sources. Much of the data comes from the U.S. Census.

We used data from the U.S. decennial censuses to construct several measures. At the city level, we computed the percent of various racial/ethnic groups: white, Black, Latino, Asian, and other races. We constructed a measure of the racial/ethnic heterogeneity in the city by using a Herfindahl index (Gibbs and Martin 1962: 670) of these same five racial/ethnic groupings, which takes the following form:

(1) $$H = 1 - \sum_{j=1}^{J} G_j^{\,2}$$

where G represents the proportion of the population of ethnic group j out of J ethnic groups. Subtracting from 1 makes this a measure of heterogeneity. We computed economic resources as the median income in the city. We measured overall income inequality by utilizing the Gini coefficient, which is defined as:

(2) $$G = \frac{2}{\mu n^2} \sum_{i=1}^{n} i x_i - \frac{n+1}{n}$$

where xi is the household's income for 1999 as reported in the 2000 census, μ is the mean income value, the households are arranged in ascending values indexed by i, up to n households in the sample. Because the data are binned (as income is coded into various ranges of values), we will take this into account by utilizing the Pareto-linear procedure (Aigner and Goldberger 1970; Kakwani and Podder 1976), which Nielsen and Alderson (1997) adapted from the U.S. Census Bureau strategy.[28]

TECHNICAL APPENDIX 2

We accomplished this clustering by first performing a factor analysis for the following characteristics for the cities within a county in 2000: percent aged 65 or more; percent with children aged 6 to 17; percent homeowners; population density; residential stability (average length of residence of residents); racial/ethnic composition (percent Asian, black, Latino or White); percent immigrants; median household income; education (percent with at least a bachelor's degree); median home value; unemployment rate; inequality (Gini coefficient for household income), and average commute time. This yielded a solution with 4 or 5 factors in each county, and we computed factor scores for each city for these factors. We then performed k-means clustering on these four or five factor scores for each county. We obtained a solution with five clusters and a solution with ten clusters for each county. Based on visual inspection, the five cluster solution was nearly always the best solution. For the final clusters, we combined cities with the same cluster assignment as well as geographic contiguity. There were instances in which two socially similar but physically distant groups of (usually five) geographically contiguous cities were classified into the same cluster. We assigned the two groups of cities to separate clusters.

TECHNICAL APPENDIX 3

Regression Analysis and Elasticity Calculations, Impact of Block Group Population Density and Job Access (jobs within 10 miles) on Vehicle Miles Traveled (VMT)

The elasticities are based on regressions of Vehicle Miles Traveled (VMT) on sociodemographic

and land use variables. The basic regression equation is shown below.

$$VMT = \alpha + SD\beta + LU\gamma + \varepsilon$$

VMT is household daily VMT (from the NHTS), SD is a row-vector of sociodemographic variables for each household, LU is a row-vector of land use variables for each household, ε is the regression error term, and the parameters to be estimated are α (scalar), β (column vector of coefficients), and γ (column vector of coefficients). The observations are the households in the NHTS, and all data are observed for each NHTS household. (Household subscripts are suppressed in the regression equation above.)

The SD variables include dummy variables to indicate household annual income between $20,000 and $40,000, household income between $40,000 and $60,000, household income between $60,000 and $100,000, and household income above $100,000 per year. Dummy variables for the race and ethnicity of the household head (Black, white, Latino) are also included, as are variables that indicate the number of children below age 16 and the number of children 16 and older in the household. A variable indicating the number of vehicles in the household and a variable indicating the number of employed workers in the household was also included in the regression. A dummy variable indicating if the household head had at least a college degree is also in the SD variables.

The LU variables include a dummy variable indicating whether the household lives within ¼ mile of a rail stop and a dummy variable indicating whether the household lives within ¼ mile of a bus stop. Census block group population density (2010 census data) for the block group where the household resides and the sum of all jobs within 10 miles of the household were also included in the LU variables.

Approximately 20 percent of the NHTS households in the 5-county Southern California region took no vehicle trips during the survey day, and so the data are left-censored. For that reason, the VMT regressions were estimated using the tobit routine in Stata version 11. The tobit coefficients were converted into elasticities using the formula below.

$$elasticity_{vmt-i} = \gamma_i * p * \frac{\overline{LUi}}{\overline{VMT}}$$

Where "i" indicates either population density or job access, hence elasticityvmt-i indicates either the elasticity of VMT with respect to population density or the elasticity of VMT with respect to job access (total jobs within 10 miles.)

γ is the tobit regression coefficient on density or job access (depending on the elasticity being calculated)

p is the proportion of observations that are not censored at zero (i.e. the proportion of observations for which VMT is non-zero)

$\overline{LU_i}$ is the sample average for the land use variable in question – block group population density or total jobs within 10 miles

$\overline{VMT}$ is the sample average for VMT

The elasticity formula uses the rule of thumb that marginal effects can be approximated by the tobit coefficient multiplied by the fraction of the sample observations that are not censored (e.g. Greene, 2006, pp. 863-875.) The approximate marginal effect is then multiplied by sample means, giving an elasticity value evaluated at the sample mean. The elasticity and regressions are calculated from estimation on the complete sample and on quartiles of the sample, and in all cases means are drawn from the same sample used for the regression. Regression results are shown below.

Table A1. Names of cities contained within each city cluster

Name of city cluster (largest city)	Other cities in cluster (sorted in descending population size)
Los Angeles County	
Agoura Hills	Calabasas, Malibu, Westlake Village, Hidden Hills, Point Dume
Alhambra	Monterey Park, Rosemead, Arcadia, San Gabriel, Monrovia, Temple City, East San Gabriel, San Marino, South San Gabriel
Altadena	La Canada Flintridge, La Crescenta-Montrose
Carson	Lakewood, Hawaiian Gardens
Cerritos	Artesia
Claremont	
Diamond Bar	Hacienda Heights, Rowland Heights, Walnut, Avocado Heights, La Habra Heights,
Downey	Norwalk, Pico Rivera, Montebello, South Whittier, La Mirada, West Whittier-Los Nietos, South El Monte, Santa Fe Springs, Commerce, East La Mirada
East Los Angeles	
El Monte	Baldwin Park
Glendale	Pasadena, Burbank, South Pasadena, Sierra Madre, East Pasadena
Glendora	Azusa, Duarte, Vincent, Citrus, Mayflower Village, North El Monte, Irwindale, Bradbury
Inglewood	Hawthorne, Gardena, Lawndale, Lennox, Del Aire, Alondra Park
Lancaster	Palmdale, Lake Los Angeles, Quartz Hill, East Foothills, West Bishop Acton, Desert View, Highlands, Littlerock, Palmdale East
Long Beach	Compton, Bellflower, Signal Hill
Pomona	Covina, San Dimas, La Verne, Charter Oak, Westmorland
Rancho Palos Verdes	Palos Verdes Estates, Rolling Hills Estates, Rolling Hills
Santa Clarita	San Fernando
Santa Monica	Culver City, West Hollywood, Beverly Hills, Marina del Rey
South Gate	Lynwood, Huntington Park, Florence-Graham, Paramount, Bell Gardens Bell, Maywood, Cudahy, Walnut Park, East Compton, Vernon
Torrance	Redondo Beach, Manhattan Beach, Lomita, Hermosa Beach, El Segundo
West Covina	La Puente, West Puente Valley, Valinda, South San Jose Hills, Industry
Whittier	
Willowbrook	Westmont, West Carson, View Park-Windsor Hills, West Athens, Ladera Heights, West Compton
Orange County	
Anaheim	Stanton
Buena Park	Cypress La Palma
Fullerton	
Garden Grove	Westminster
Huntington Beach	Fountain Valley
Irvine	Costa Mesa, Newport Beach, Laguna Beach, San Joaquin Hills, Newport Coast
La Habra	Brea
Lake Forest	Aliso Viejo, Laguna Woods, Coto de Caza, Foothill Ranch, Portola Hills
Mission Viejo	Laguna Niguel
Orange	Tustin, Foothills, Villa Park
Rancho Santa Margarita	Las Flores
San Clemente	Dana Point, San Juan Capistrano, Laguna Hills
Santa Ana	Tustin
Seal Beach	Los Alamitos, Rossmoor
Yorba Linda	Placentia

Table A1. Names of cities contained within each city cluster (continued)

Name of city cluster (largest city)	Other cities in cluster (sorted in descending population size)
Riverside County	
Blythe	Mecca, East Blythe
Hemet	San Jacinto, Banning, Sun City, East Hemet, Beaumont, Valle Vista, Calimesa Cherry Valley, Idyllwild-Pine Cove, Homeland, Romoland, Cabazon
Indio	Cathedral City, Coachella
Lake Elsinore	Wildomar, Lakeland Village, Murrieta Hot Springs, Sedco Hills
Moreno Valley	Perris, Canyon Lake, Nuevo, Quail Valley, Lakeview, March AFB
Palm Springs	Palm Desert, La Quinta, Desert Hot Springs, Rancho Mirage, Bermuda Dunes Thousand Palms, Indian Wells
Riverside	Corona, Home Gardens, Woodcrest, El Cerrito
Rubidoux	Norco, Mira Loma, Glen Avon, Pedley, Sunnyslope, Highgrove
Temecula	Murrieta
San Bernardino County	
Barstow	Needles, Lenwood, Searles Valley, Big River, Nebo Center, Bluewater
Chino	Chino Hills
Fontana	Rialto, Bloomington
Hesperia	Apple Valley
Ontario	Montclair
Rancho Cucamonga	
Redlands	Loma Linda, Grand Terrace
San Bernardino	Colton, Highland, Muscoy
Upland	San Antonio Heights
Victorville	Adelanto, Mountain View Acres
Yucaipa	Mentone
Yucca Valley	Twentynine Palms, Crestline, Lake Arrowhead, Twentynine Palms Base, Big Bear City, Big Bear Lake, Running Springs, Joshua Tree, Wrightwood, Morongo Valley
Ventura County	
Oxnard	Port Hueneme, El Rio, Channel Islands Beach
San Buenaventura (Ventura)	
Santa Paula	Fillmore, Ojai, Mira Monte, Oak View, Meiners Oaks, Piru
Thousand Oaks	Simi Valley, Camarillo, Moorpark, Casa Conejo, Oak Park

Table A2. Regression Results, full sample and sample split into quartiles for total jobs within 10 miles of household

	(1) Full Sample	(2) First Quartile of Job Access	(3) Second Quartile of Job Access	(4) Third Quartile of Job Access	(5) Fourth Quartile of Job Access
=1 if HH income [20k,40K)	0.877	-4.701	4.640	-1.889	2.716
	(0.36)	(-0.88)	(0.89)	(-0.40)	(0.70)
=1 if HH income [40k,60K)	4.313	0.608	5.449	2.134	5.280
	(1.63)	(0.10)	(0.96)	(0.44)	(1.22)
=1 if HH income [60k,100K)	3.817	9.117	3.091	4.551	-4.523
	(1.60)	(1.77)	(0.63)	(1.00)	(-1.09)
=1 if HH income >= $100K	8.339***	10.54*	7.755	7.108	7.457*
	(4.17)	(2.35)	(1.95)	(1.94)	(1.98)
=1 if Hispanic HH	-2.905	-3.568	-6.096	-3.089	3.094
	(-1.30)	(-0.64)	(-1.29)	(-0.75)	(0.84)
=1 if White HH	1.974	7.783	0.172	-3.051	2.020
	(0.97)	(1.48)	(0.04)	(-0.85)	(0.64)
=1 if Black HH	3.315	9.865	6.300	3.052	-0.529
	(0.88)	(0.78)	(0.74)	(0.33)	(-0.11)
number of kids <16 in HH	4.210***	3.942	5.605*	4.523*	2.823
	(3.88)	(1.76)	(2.48)	(2.19)	(1.41)
Number of Child older than 16	1.790*	3.573	4.374*	0.227	-1.287
	(2.16)	(1.89)	(2.56)	(0.14)	(-0.95)
Count of HH vehicles	9.878***	7.427***	8.189***	10.04***	13.81***
	(13.07)	(4.85)	(5.16)	(7.01)	(9.45)
Number of workers in HH	16.65***	17.45***	18.12***	15.54***	14.44***
	(17.08)	(7.90)	(9.33)	(8.24)	(8.54)
indicator HH Head education is at least college	7.407***	6.104	7.698*	8.243*	9.773**
	(4.05)	(1.55)	(1.98)	(2.32)	(3.12)
Number of Train Stations in 0.25 mile radius	4.356	9.583	8.826	99.14***	1.453
	(1.66)	(0.60)	(1.81)	(3.77)	(0.52)
Number of Bus Stops in 0.25 mile radius	-0.0674	-0.860	-1.224**	-0.168	0.00211
	(-1.02)	(-1.38)	(-2.74)	(-0.94)	(0.03)
Block group level population density	-0.000132***	-0.000571	-0.000326	-0.000231*	-0.0000778*
	(-3.52)	(-1.47)	(-1.48)	(-2.38)	(-2.20)
Total jobs in 10 miles	-0.0000981***	-0.000558*	0.000126	-0.000108	-0.0000945**
	(-7.11)	(-2.31)	(0.99)	(-1.06)	(-2.73)
Constant	-2.376	4.154	-13.56	5.798	-2.092
	(-0.70)	(0.51)	(-1.40)	(0.52)	(-0.27)
Pseudo R2	0.024	0.018	0.022	0.023	0.029
Observations	6011	1503	1503	1503	1502

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3. Regression Results, full sample and sample split into quartiles for block group population density

	(1) Full Sample	(2) First Quartile of Population Density	(3) Second Quartile of Population Density	(4) Third Quartile of Population Density	(5) Fourth Quartile of Population Density
=1 if HH income [20k,40K)	0.877	-6.710	-3.347	4.576	5.276
	(0.36)	(-1.12)	(-0.70)	(0.99)	(1.33)
=1 if HH income [40k,60K)	4.313	-2.807	0.0994	12.16*	4.263
	(1.63)	(-0.44)	(0.02)	(2.48)	(0.90)
=1 if HH income [60k,100K)	3.817	2.703	4.988	3.144	1.381
	(1.60)	(0.50)	(1.16)	(0.72)	(0.29)
=1 if HH income >= 100K, ~	8.339***	10.28*	7.765*	6.639	5.745
	(4.17)	(2.35)	(2.16)	(1.73)	(1.35)
=1 if Hispanic HH	-2.905	-9.083	-3.775	1.387	-0.120
	(-1.30)	(-1.52)	(-0.87)	(0.35)	(-0.03)
=1 if White HH	1.974	3.870	2.688	-1.747	3.398
	(0.97)	(0.73)	(0.67)	(-0.48)	(0.98)
=1 if Black HH	3.315	-1.113	15.19	3.197	-0.599
	(0.88)	(-0.09)	(1.81)	(0.47)	(-0.11)
number of kids <16 in HH	4.210***	7.416**	3.499	5.279*	1.513
	(3.88)	(2.99)	(1.72)	(2.49)	(0.76)
Number of Child older than 16	1.790*	5.213*	0.844	2.049	0.345
	(2.16)	(2.50)	(0.54)	(1.28)	(0.24)
Count of HH vehicles	9.878***	6.345***	9.534***	10.71***	12.49***
	(13.07)	(4.18)	(6.49)	(6.90)	(8.21)
Number of worker	16.65***	16.43***	16.43***	18.35***	14.64***
	(17.08)	(7.41)	(9.20)	(9.63)	(7.85)
indicator HH Head education is at least college	7.407***	-0.932	5.173	10.55**	13.19***
	(4.05)	(-0.22)	(1.46)	(3.11)	(3.84)
Number of Train Stations in 0.25 mile radius	4.356	-4.808	23.54**	4.235	-77.89
	(1.66)	(-0.45)	(3.21)	(1.48)	(.)
Number of Bus Stops in 0.25 mile radius	-0.0674	-0.710	-0.0229	-0.226	-0.0805
	(-1.02)	(-1.05)	(-0.23)	(-0.91)	(-0.95)
Block group level population density	-0.000132***	-0.00212	-0.000443	0.000349	-0.0000928*
	(-3.52)	(-1.30)	(-0.33)	(0.41)	(-2.32)
Total jobs in 10 miles	-0.0000981***	-0.0000668	-0.0000722*	-0.000110***	-0.0000550*
	(-7.11)	(-1.46)	(-2.44)	(-3.78)	(-2.29)
Constant	-2.376	9.581	1.677	-11.83	-13.71*
	(-0.70)	(1.14)	(0.18)	(-1.19)	(-2.14)
Pseudo R2	0.024	0.016	0.022	0.026	0.027
Observations	6011	1505	1501	1503	1502

t statistics in parentheses $^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$

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5300 Social and Behavioral Sciences Gateway
Irvine, CA 92697–7050
www.socialecology.uci.edu • secomm@uci.edu