Title
California Housing Trends: Implications for Transportation Planning

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Summary

A broad range of population forecasts and historic trends indicate that significant growth is on the horizon for California. Although population growth by geographic regions, racial/ethic groups, and age will vary, growth is a consistent trend. Naturally, growth in population implies growth in households and demand for housing units. It is imperative that any evaluation of regional growth trends to aid transportation infrastructure planning must look at housing patterns to grasp the complete picture.

Housing growth – Key findings for California

(A) Population growth and household demand –
1. By 2020, population is projected to increase by 13 million over the 1997 total. At current housing to population ratios, this implies 5 million additional households in California.
2. This growth in households is expected to be most concentrated in the greater Los Angeles, San Francisco Bay Area, San Joaquin Valley, San Diego and Sacramento metro regions.

(B) Availability of developable land for housing and spillover effects to other counties –
1. Comparison of available land capacity with projected growth of households indicates that land is most likely to be in short supply in the Los Angeles, Orange, Fresno, Stanislaus and Yolo counties.
2. Therefore, evaluating the spillover effects of housing growth from these counties is of critical importance.

(C) Age groups growing and trends in first time homebuyers –
1. Age groups projected to grow most rapidly are those under 18 years, those between 55 and 64, and those over 65. Studying the evolving housing patterns of these specific age cohorts over the coming years may provide an indicator of their pattern of residential choices.
2. Historically first time homebuyers are primarily in their early 30's.
3. First time California homeowner's and recent mover's travel-to-work times are 7.5 minutes more than the US average and distances an average of 4.2 miles more than the US average. [95 data] An analysis of the housing behavior among first time buyers will be an important indicator of future housing trends.

(D) Owners and renters –
1. Both the number of homeowners and renters are projected to grow
2. However, households that own their homes are expected to grow at a faster pace.

(E) House types –
1. The single-family detached unit continues to be the most common type of new construction. The mix of new housing units across regions will have important implications for the development transportation infrastructure.

Implications for Transportation

The above trends in the growth of California have a direct relationship with the need for additional transportation infrastructure. Since most of the growth in households is expected to be concentrated in the greater Los Angeles, San Francisco Bay Area, San Joaquin Valley, San Diego and Sacramento metro regions, it would seem logical that investments and planning for transportation should be most focused on a detailed understanding of growth trends in these areas.

One significant area of uncertainty is the potential impact of land shortages in Los Angeles, Orange, Fresno, Stanislaus and Yolo counties. The gap between projections of land requirements and the acreage currently zoned for residential development implies that an analysis of spillover effects in the neighboring counties will be critical for long-range planning. Since there are multiple responses to land shortages, any attempt to quantify the spillover effects must consider changes in land use policy and housing market dynamics and their impact on development patterns. For example, farm or rangelands may be re-designated to permit residential development, or the density of new construction may increase in response to higher land values. It is most likely that re-zoning, increasing residential density and spillover will all occur. Therefore, the role of any analysis should be to develop potential scenarios and estimate the probability associated with each.

Understanding the housing market dynamics will help identify crucial corridors. A more detailed analysis will also be important to understand the interaction between transportation infrastructure investments and the extent of such housing market spillover. All indications are that the present trend of "populating" the central valley will continue. This suggests that increasing numbers of people will commute from inland counties to jobs in coastal counties. However, the rate of growth at which inland county populations grow and the transportation investments that should be made to serve their needs are central questions for the long-range transportation plan.

Another critical area of analysis for transportation planning is the relationship between the State's changing age structure and housing markets. Historically, first time homebuyers are in their early 30's. When the rapidly growing 18 year old population, sometimes referred to as "tidal wave two" reaches their 30's over the next 12 to 20 years, we can expect a sudden increase in the demand for housing.

Given the shortage of developable land in many built-up urban areas meeting this demand will imply some spreading of the extent of metropolitan regions. We should expect commercial real estate markets to adapt in response to the shift in residential location patterns. However, travel-to-work times and distances, are significantly higher than the national average of 1st time homebuyers, for first time California homebuyers. The challenge for transportation infrastructure will be to adapt to increasing demands in key corridors with more efficient and effective modes of getting to work. Commuter rail as a mode of transport may become more cost effective as

larger number of employees commuter from inland counties with more affordable housing to traditional employment centers in costal counties.

The needs of the growing population of senior citizens also need to be carefully considered. Specifically, the accessibility between their housing locations and key commercial or recreational services should be evaluated. Additionally, not much is known about the residential location choices of retirees. While it is clear that some choose to move to retirement communities, the vast majorities remain in their current suburban residences. Therefore, transit access in older suburban communities may be a challenge to future planning. Additionally, since a larger share of the state's future senior are likely to live in areas without transit access, driving safely among this age group is also an issue that should be noted in the development of the state transportation plan.

The implications of housing trends for transportation planning can be focused around three central questions. First, where will the majority of new housing construction take place? Second, what patterns of housing types will predominate in particular areas (shares of single unit/multi-unit, homeowners/renters)? Finally, what changes can be expected in headship rates within different areas of the state?

Answering these questions implies that basic demographic characteristics must also be considered. The largest source of new households will be from new families or young adults born in the State. Recent emigrants from abroad will be the second most important source of new households. However, housing markets are a dynamic process since a relatively small share of households remaining in the same house for more than five years. The demand for new construction is driven both by first time homebuyers and families moving from existing to new homes.

Trends and projections suggest that there will be more home buyers than renters in rapidly growing regions of the state. This is consistent with the assumption that the most popular type of house will tend to be the single-family type. These are significant for planning to meet transportation needs. If we extend current trends, it implies further spreading of commute sheds and increased demand for peak hour capacity between inland communities and traditional job centers. Interestingly, multifamily housing units are also increasing as a share of housing across all traditional urban centers of the state. This seems to indicate some movement towards increased density along with increased spreading of housing markets to inland counties. This could imply increased demand for transit that services that have lost ridership over the past twenty years. Recent trends do show increased ridership among both traditional urban transit systems as well as commuter rail services. However, it should be noted that such ridership numbers, like vehicle travel, are related to economic cycles and recent increases may be a reflection of a prolonged economic boom raising all forms of travel demand.

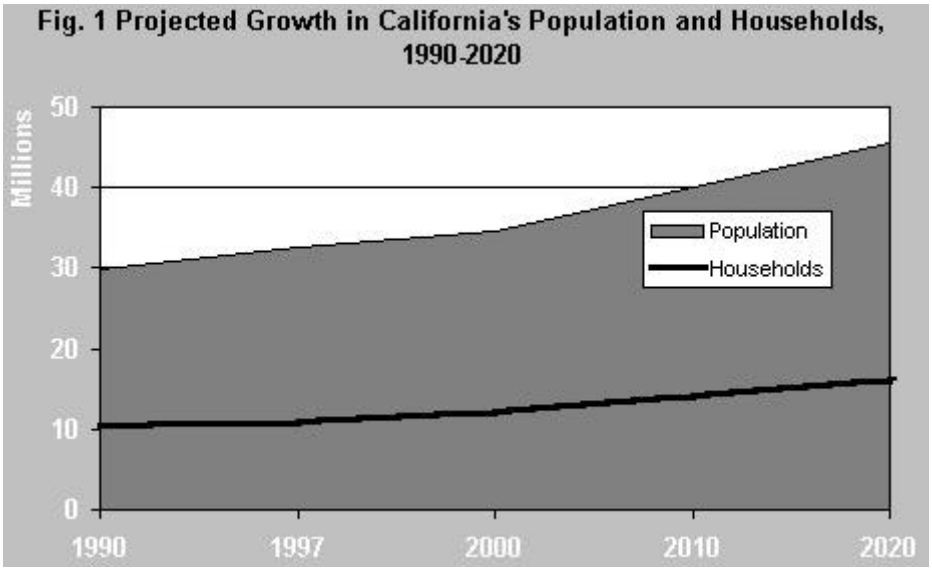
Introduction

The access to "affordable" "good quality" housing is directly related to the location of a housing unit. When households make a housing consumption choice, they are purchasing both a physical home and a location. The amenities in a neighborhood such as schools, recreational amenities and social character influence household choices. Housing consumption for most households is also primarily a tradeoff between the cost per unit of housing (e.g. square feet) and the time required to travel to work. Understandably people locate where they strike a fair balance between daily commute times (either by transit or highways) and the money they are paying for the place they live in. Their final choice is a balance between cost of housing and cost of using the existing transportation options, both in terms of money and time. However, there is some evidence to indicate that households have a more elastic demand for housing consumption than for travel timesaving.

In California, as in all over the United States, there is a trend to be a homeowner rather than a renter. Interestingly rates of increase in homeownership within California are lesser when compared to the nation as a whole. When the affordability of housing is measured by median household price to median incomes across all the metropolitan areas of the state, it becomes clear that there is an inconsistency across the state and hence there is a difference in the regional housing markets within California.

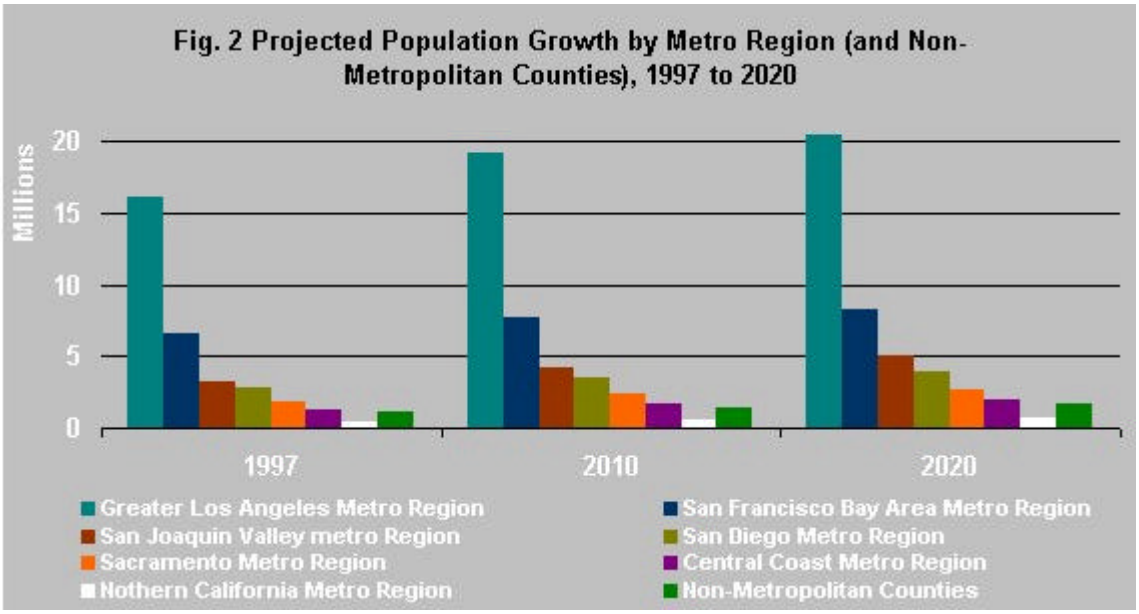
Growth in Population and Households

In spite of California's rapidly growing economy, net migration in and out of the state has reached a balance, with nearly as many people leaving the state as entering. The driving force of population growth in the future will come from within the state itself. Obviously, more people means more housing needs. By 2020, the state is expected to have roughly 13 million more people and 5 million more households than it did in 1997.



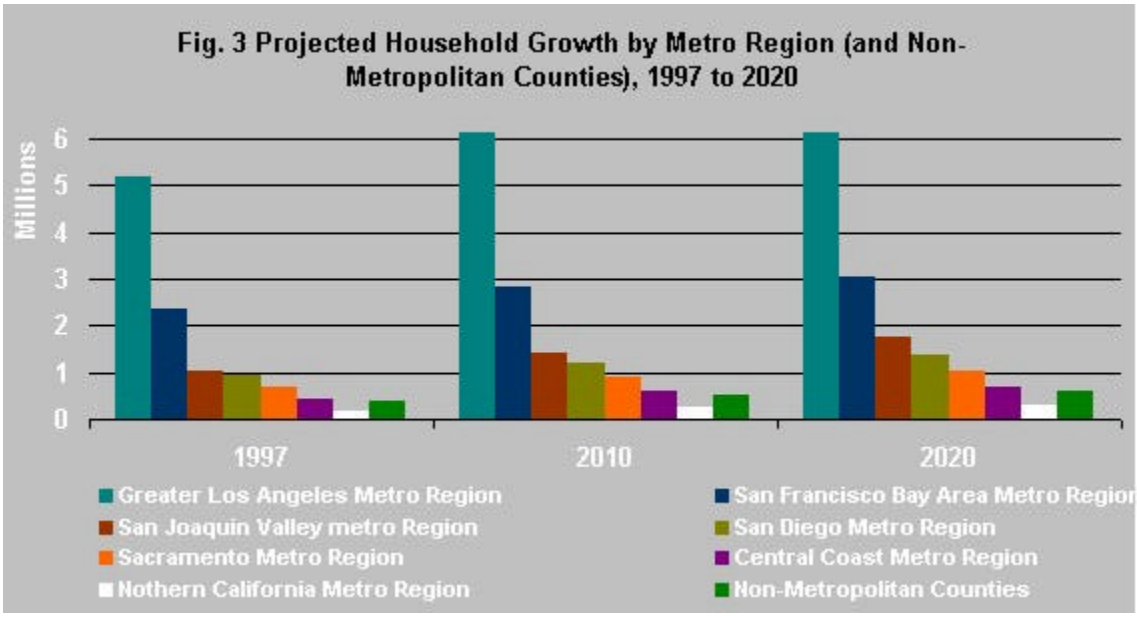
Source: State of California, DoF, County Population Projections with Race/Ethnic Detail

The question that we need to ask is where will this swell of population be located and which regions are projected to grow more than others in California. Figure 2 shows the growth in this population by major metropolitan regions in the state. The projections for the years 2010 and 2020 also follow the pattern of existing growth. Though the numbers themselves might be in question, the pattern of growth cannot be completely off the mark. That pattern suggests that the growth is concentrated in the greater Los Angeles, San Francisco bay area and San Joaquin Valley metropolitan regions.



Source: California Department of Housing and Community Development

Housing needs are a function of the population growth. It follows that the need for housing is most strongly felt in the areas that expect the most growth. Figure 3 follows the pattern of this growth and indicates the same areas - greater Los Angeles, San Francisco bay area and San Joaquin Valley metropolitan regions as areas for higher household growth. “Raising the roof” [Landis, 2000] takes a look at the California map and plots this growth with respect to counties. See Figures 4 and 5.

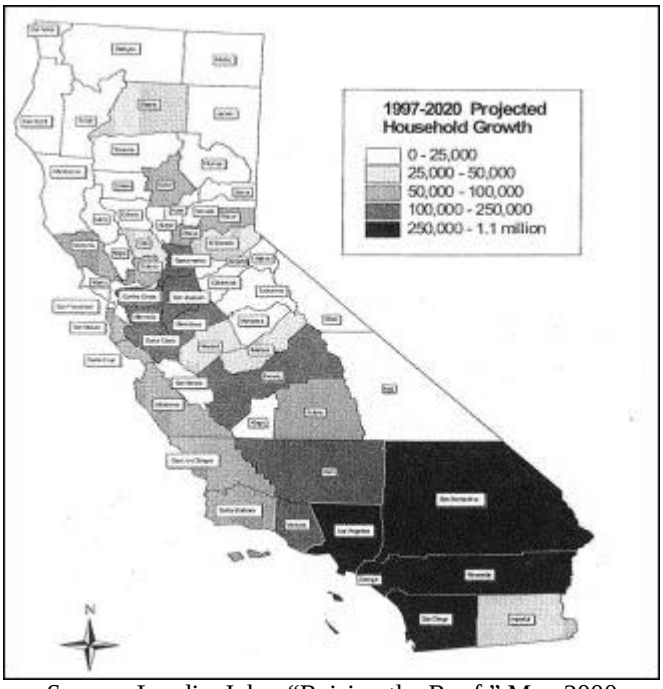


Source: California Department of Housing and Community Development

Fig. 4 Projected Household Growth by County for 1997-2010

Source: Landis, John, "Raising the Roof," May 2000

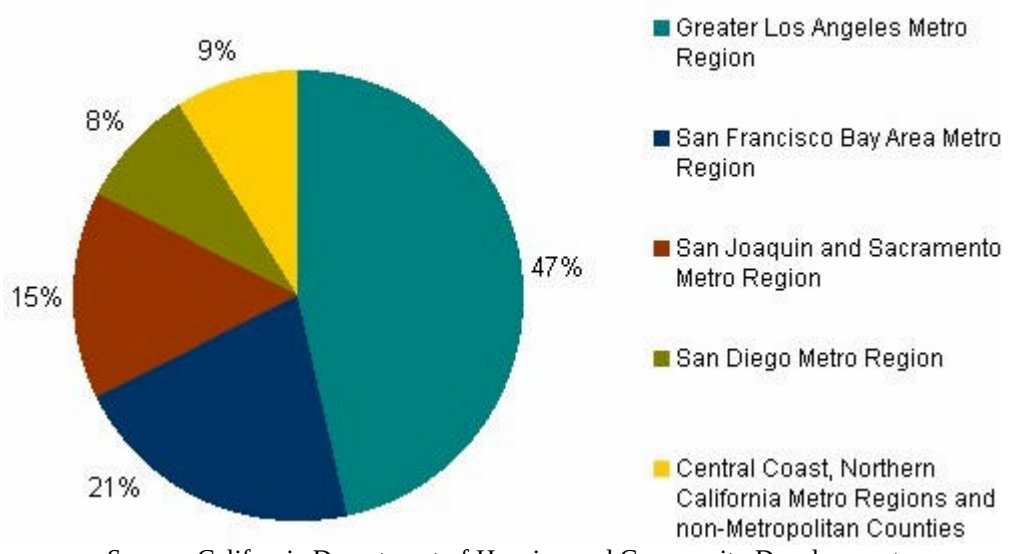
Fig. 5 Projected Household Growth by County for 1997-2020



Source: Landis, John, "Raising the Roof," May 2000

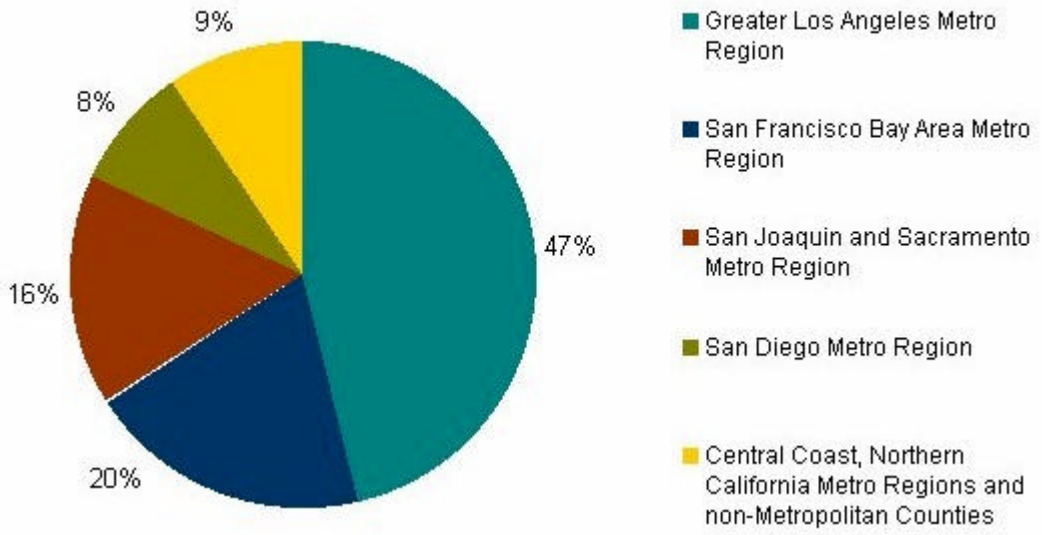
To further understand this growth in housing we need to ask the question: which metropolitan areas take up what percentage share of this *growth*? The pie diagrams (Figures 6,7,8) clearly indicate where the growth is bound to occur. A disproportionate share is in the greater Los Angeles metropolitan region – accounting for a little less than half of all the growth in the state over the next 20 years. A fair share is with San Francisco, San Joaquin and Sacramento metropolitan regions – accounting for almost a third of the growth statewide. This pattern of growth indicates two primary zones – north and south within the state. The other huge geographic areas within the state are barely going to experience any growth whatsoever. The San Diego metropolitan region has a potentially sizable portion at 8%, whereas the "rest of California," that is, central coast and northern California metropolitan regions and all non-metropolitan counties account for barely 10% of the growth.

Fig. 6 % Share of Household Growth in 1997

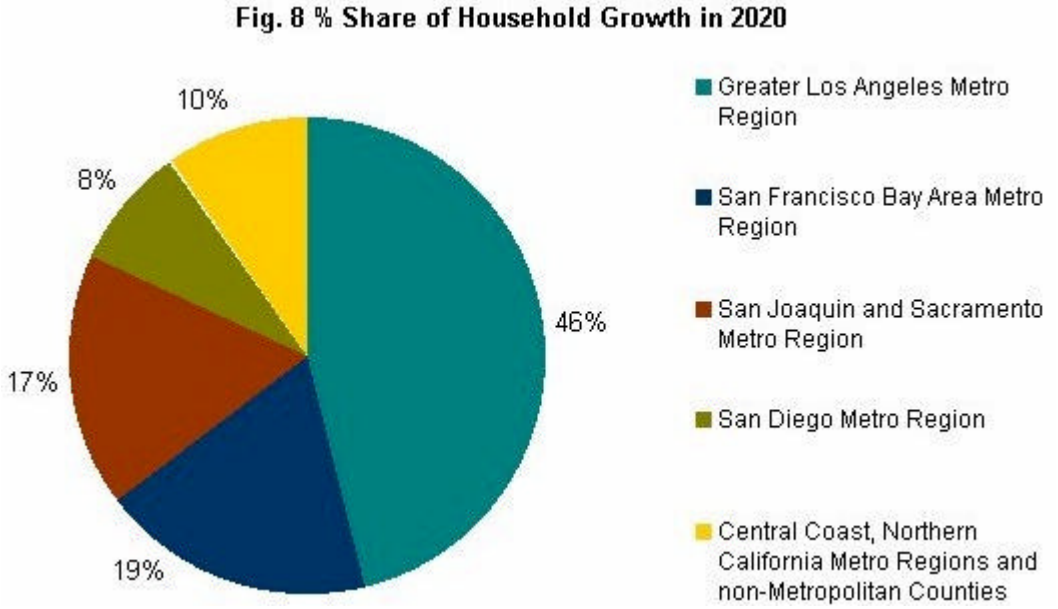


Source: California Department of Housing and Community Development

Fig. 7 % Share of Household Growth in 2010



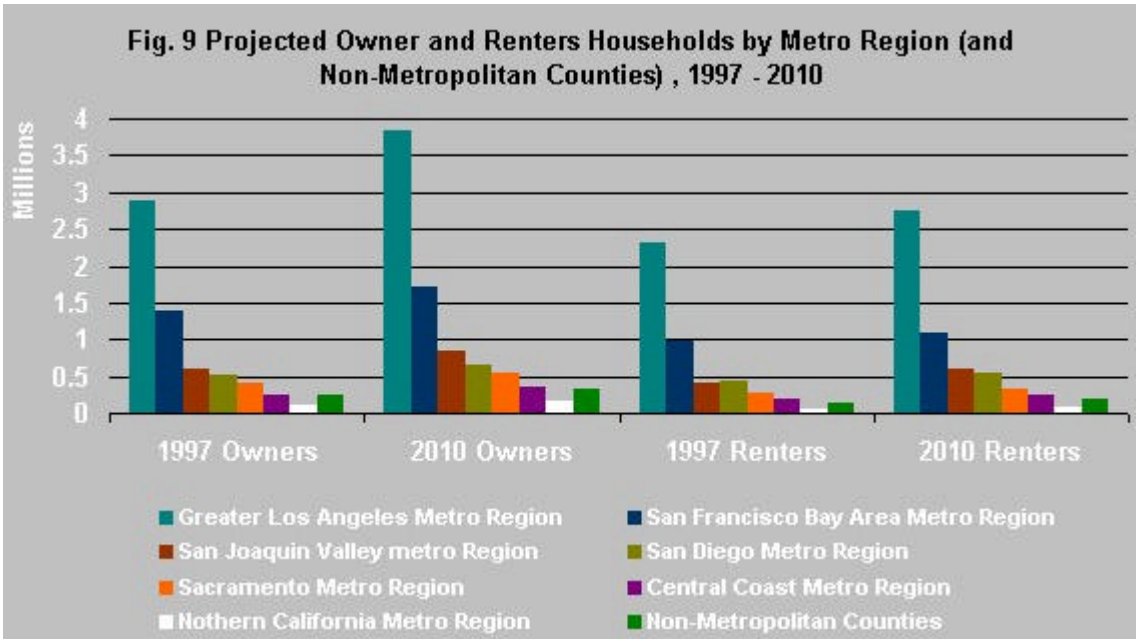
Source: California Department of Housing and Community Development



Source: California Department of Housing and Community Development

Growth in Owner and Renter Housing

Just as the projections for population growth suggest a certain distribution over California, with the most part being concentrated in the south and the north near Los Angles and San Francisco metro regions, the owner and renter surge is deemed to follow the same path. In 2010, the populace either owning or renting housing is going to be more in greater Los Angeles, San Francisco, San Joaquin, and San Diego metropolitan regions. Figure 9 shows the distribution of owners and renters across the major metropolitan areas [and non-metropolitan counties] for the year 1997. The projection for the year 2010 follows the same pattern of growth but the interesting feature of this growth is that a greater increase in the number of owners in the Los Angeles Metro Region is forecast than comparable increases in the other regions.



Source: California Department of Housing and Community Development

As was noted previously, the Los Angles and San Francisco regions will account for most of the State's growth in households. However, in percentage terms, the *fastest* development in terms of owner housing is projected in San Joaquin, Sacramento, northern California, and the central coast metropolitan regions. Renter housing development will increase most rapidly in San Joaquin and northern California metropolitan regions, as well as non-metropolitan counties. We know that these areas are not exactly the most favored points to locate in the state and yet the pace of growth here suggests that we are arriving at a pattern of development with a lot of growth in the median belt of California and that is where transportation needs will probably emerge.

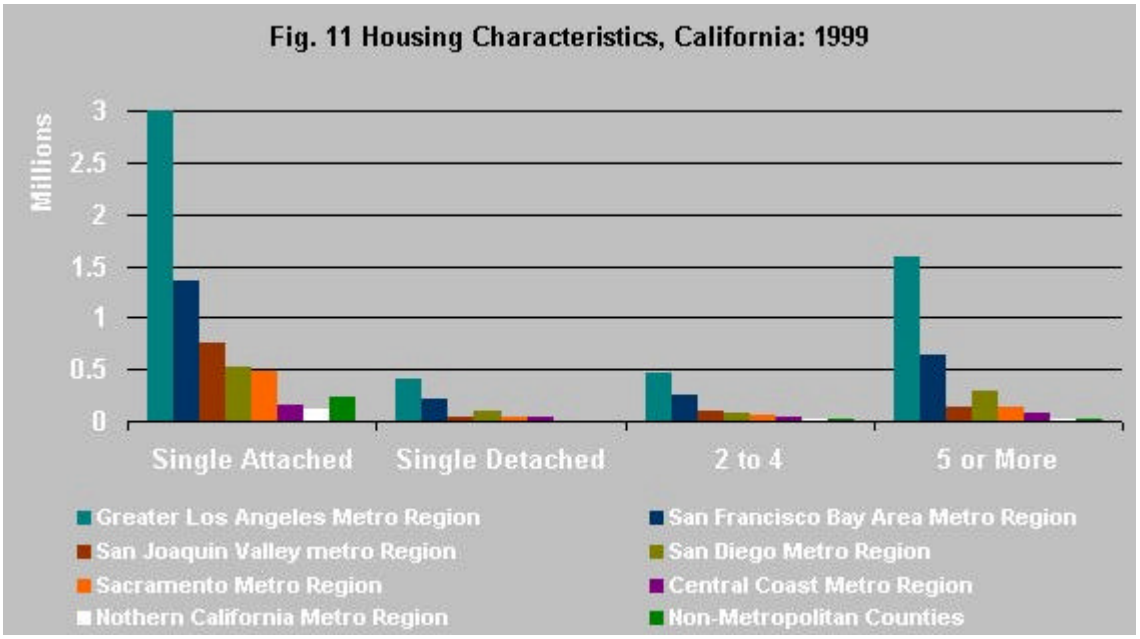
Figure 10 Projected Owner and Renter Household by Metro Region (and Non-Metropolitan Counties), 1997-2010

	Increase from 1997 to 2010	% Up from 1997 to 2010	% Of Total Growth	Increase from 1997 to 2010	% Up from 1997 to 2010	% Of Total Growth
Greater Los Angeles Metro Region	970154	34%	47%	449621	19%	42%
San Francisco Bay Area Metro Region	337071	24%	16%	118983	12%	11%
San Joaquin Valley Metro Region	253863	**43%**	12%	166984	**40%**	16%
San Diego Metro Region	140363	27%	7%	124574	29%	12%
Sacramento Metro Region	145483	**36%**	7%	74674	28%	7%
Central Coast Metro Region	91292	**37%**	4%	55301	29%	5%
Northern California Metro Region	45198	**39%**	2%	22927	**35%**	2%
Non-Metropolitan Counties	86658	**35%**	4%	51424	**38%**	5%
Totals	2070082	**Owners**	100%	1064488	**Renters**	100%

Source: California Department of Housing and Community Development

Growth in different House Types

In spite of the common notion equating the American dream to owning a single-family home, California's high housing prices put this out of reach for many. Figure 11 illustrates the point graphically. This data from the DoF from 1999 shows the distribution of the choice of house type by metropolitan regions. Clearly the single attached dwelling unit is the largest portion of the total. But surprisingly the next one is the 5 units or more [multifamily - apartment or condominium type]. A logical inference is that the rising land costs coupled with the lack of land is forcing people to move into higher densities, thus utilizing land more efficiently. Both the house-types most sold in 1999 aim at increasing the density.



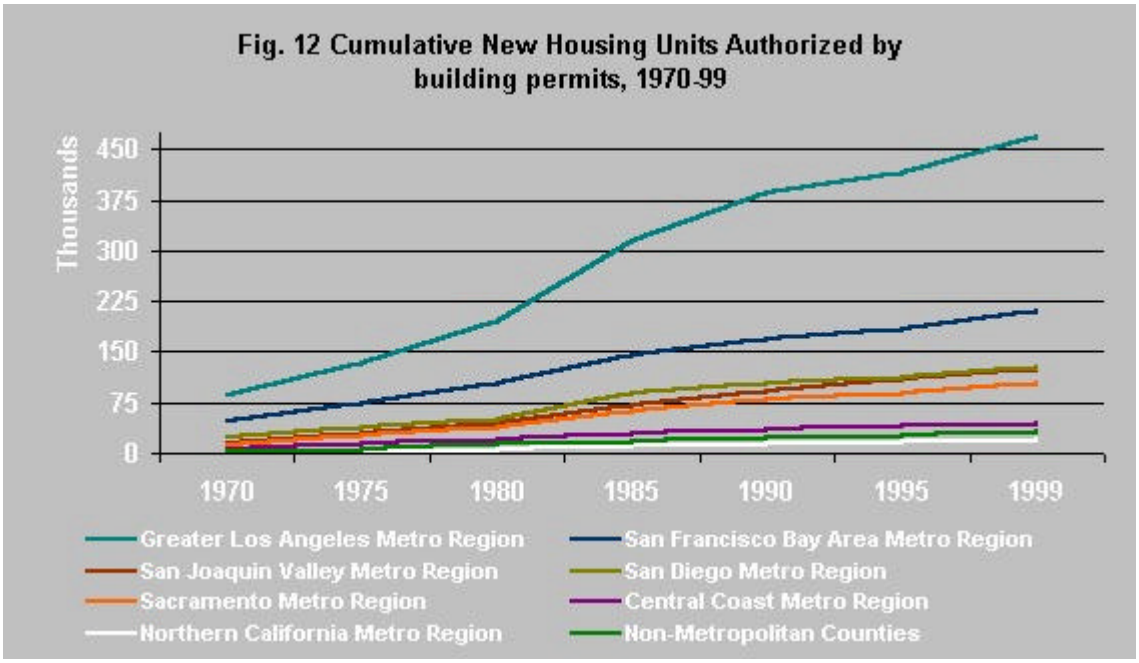
Source: California Department of Finance

These results need to be studied if we are to make choices between the wide variety of options that are left with city and transportation planners. If this data from 1999 is to be taken as an indication of where the housing market is headed, we can see a move towards increased density. This would mean that given the fixed amount of space available, we would have more people in the same area in the city cores (at least the major metropolitan areas.) Though new development will be lesser in major city cores in terms of area, it will be at higher densities and hence present a significant finding for our analysis here. This opens up the possibility for planning higher density dependent urban transit systems.

Historic Characteristics of Housing Growth in California

A study of projections of the growth in housing presents an incomplete picture. Most of the figures we have seen are estimates and so our analysis could be flawed. It is best to take a look at what the figures have been like in the past to be sure. Figure 12 shows trend-lines for cumulative new housing units authorized by building permits between 1970 and 1999. Beginning from 1970,

the growth in Los Angeles metropolitan region is much more than any of the other areas of the state. The San Francisco bay area is the next highest in growth of sheer numbers, followed closely by San Diego, San Joaquin and Sacramento metro regions.



Source: Construction Industry Research Board [CIRB] annual reports, 1970-1999

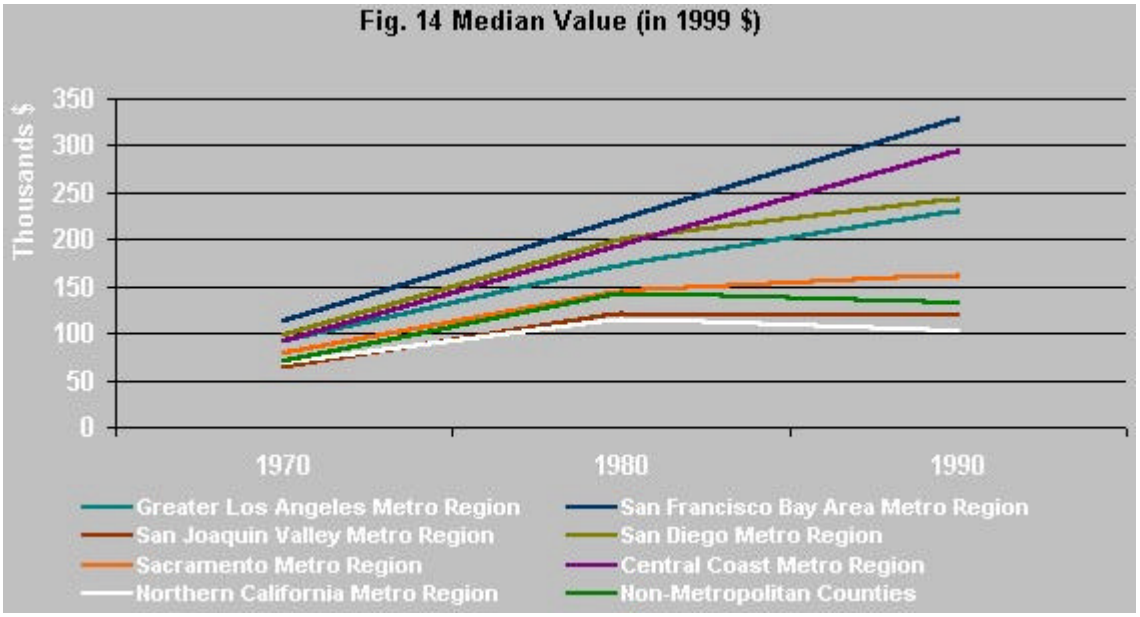
Figure13 presents another analysis of the same data as represented in appendix 12. The percentage increase in the figure is clearly evident from the table. Interestingly the growth in housing was quite pronounced in the 1970-75 period. But the following five-year intervals until the 1999-95 interval show a greatly reduced impetus in building in the state altogether. The increasing populace in the state in this decade and the succeeding ones indicate strongly the need for more (and not less) percentage increases in new housing units. The percentage increase is quite high for the north California metropolitan and the non-metropolitan region - a reflection of the regional housing markets. In these areas, the growth in housing seems to be at a higher pace and at a larger percentage value because more units are being added in shorter intervals of time *in comparison to already present numbers of housing units*. Whereas in the major growing metropolitan areas, the growth is definitely more in terms of sheer numbers (Figure 12) but the percentage growth over what was already present in the previous years works out to be a smaller number.

Figure 13: Percentage Increase in New Housing Units Authorized by Building Units, 1970-1999

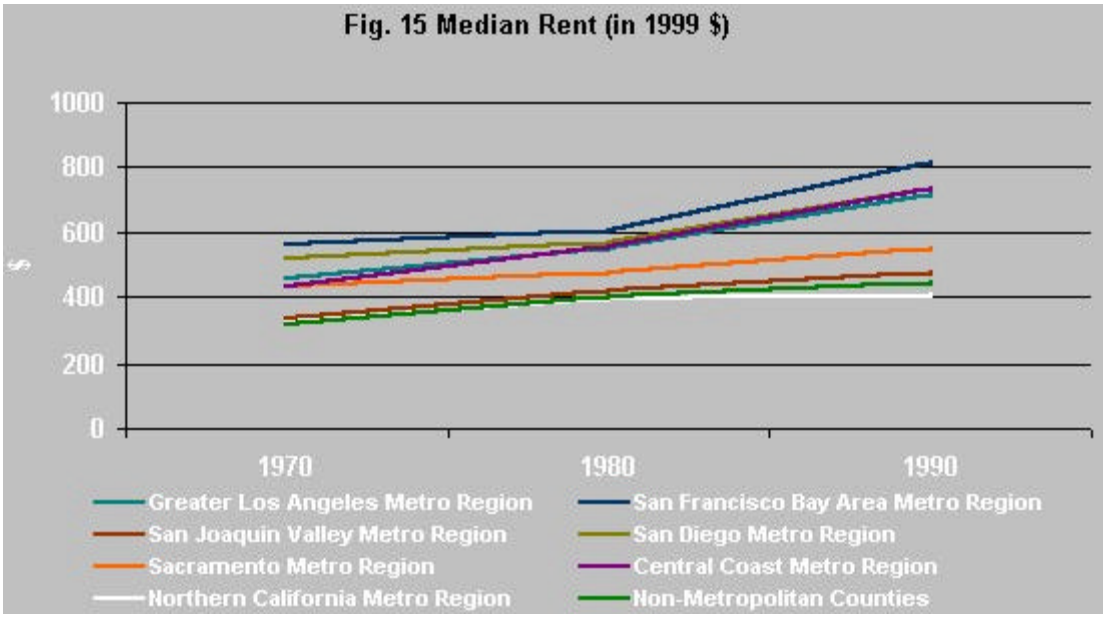
	1975-70	1980-75	1985-80	1990-85	1995-90	1999-95
Greater Los Angeles Metro Region	**57%**	31%	38%	18%	7%	11%
San Francisco Bay Area Metro Region	**53%**	27%	30%	13%	9%	13%
San Joaquin Valley Metro Region	**103%**	34%	35%	24%	14%	13%
San Diego Metro Region	**64%**	26%	43%	15%	6%	13%
Sacramento Metro Region	**99%**	31%	40%	22%	10%	15%
Central Coast Metro Region	**102%**	32%	35%	14%	10%	13%
Northern California Metro Region	**206%**	**42%**	**32%**	**31%**	**10%**	**10%**
Non-Metropolitan Counties	**149%**	**51%**	**26%**	**26%**	**11%**	**10%**
California	**67%**	31%	37%	18%	9%	12%

Source: Construction Industry Research Board [CIRB] annual reports, 1970-1999

The median value of housing units and median rents provide another indicator of housing affordability. Figures 14 and 15 show that since 1970 the San Francisco Bay Area has been the State's most expensive region. The central coast, San Diego, and the greater Los Angeles metropolitan regions follow closely behind. However, the rest of the state is comparatively less expensive. One should caveat these findings by understanding that these numbers represent an average and one still needs to be aware that there are other groups that live in the same "rich" and "poor" areas of the state and need different kinds of transportation options than are readily available.



Source: US Census of 1970, 1980, and 1990. Inflation calculated based is on http://www.westegg.com/inflation/infl.cgi



Source: US Census of 1970, 1980, and 1990. Inflation calculated based is on http://www.westegg.com/inflation/infl.cgi

Land Capacity for Housing and Spillover patterns

In a study for HCD called Raising the Roof [Landis, 2000] quantified a trend that a lot of planners have suspected – that housing demand is outstripping supply drastically in California and the future looks bleak at best. The most relevant portion of that study for this paper is the assembled data of land availability for housing development throughout the state. The study makes projections for housing growth associated with demographic data and delineates the first step in thinking about what happens when the land "runs out" in certain counties where growth in housing is bound to occur. Estimates and scenarios of where this growth and the "spillover" will be headed are amongst the few measures we have to identify "growth" areas needing increasing amounts of transportation infrastructure and consequently planning for it.

The study defines raw land as comprising of parcels located at the fringe of existing urban areas that are commonly referred to as "greenfield" sites and distinguishes them from "infill sites," which are located within developed urban areas. For the analysis, the data on raw land was gathered from detailed digital maps obtained from various sources such as the U.S. Geological Survey, the California Farmland Mapping and Monitoring Project (FMMP), the State of California Teale Data Center, the National Wetlands Inventory, FEMA, the U.S. Census Bureau, the California Department of Fish and Game's Natural Heritage Program, and the Gap Analysis Project. Then the data was formed into grids of one-hectare cells before separating it by county. Due to lack of data for urban areas, the analysis does not cover the urban areas and hence lacks the infill component in the eventual calculations.

California's 60% land area is accounted for and the calculation covers 35 counties (of the 58). Land data on almost 57 million acres of land is organized into one-hectare units and classified further according to the system below. Allowing for all these reductions listed below in the

supply of available land in California, there would still be 7.9 million acres of raw land available for development in these 35 counties.

1. *Already developed sites* – Sites identified as urbanized in 1996 by FMMP for industrial, commercial, residential and public uses. Urbanized sites were distinguished from non-urbanized sites by using a limiting density of one residential unit per two acres.

2. *Undevelopable sites* – Sites under the above category plus land under public ownership, underwater lands and lands with a slope of 15 percent or more but not including privately or municipally owned watershed lands.

3. *Potentially developable sites* – All sites not accounted for under the category "undevelopable sites" including all undeveloped and privately owned sites which are not underwater and have an average slope of less than 15 percent.

4. *Developable and Accessible Sites* – All sites that are potentially developable but also located within 10 kilometers of a major roadway [such as a interstate highway, four-lane freeway, and/or a major federal or state highway] or within 10 kilometers of an existing urban development.

5. *Developable and Accessible Sites Excluding Wetlands and Unique Farmlands* – All sites that were either listed under the National Wetlands Inventory or all sites identified by FMMP as being either "prime" or "unique" were excluded from the above category, to constitute this category.

6. *Developable and accessible sites, excluding wetlands, prime and unique farmlands, and Q3 floodzones* – This category further excluded sides identified as Q3 floodzones by the Federal Emergency Management Agency (1996).

   Developable and accessible sites, excluding wetlands, prime and unique farmlands, Q3 floodzones, and areas identified as significant natural areas – All sites identified as significant natural areas by the Natural Heritage Division of the California Department of Fish and Game were excluded herein.

   Developable and accessible sites, excluding wetlands, prime and unique farmlands, Q3 floodzones, and sites classified as highly suitable habitat for eight or more threatened and endangered amphibian, bird, mammal, or reptile species – Excluded all sites identified by the Gap Analysis Project as habitat for multiple number of threatened and endangered species.

7. *Developable and accessible sites, excluding wetlands, prime and unique farmlands, Q3 floodzones, and sites 1 mile or more beyond existing urban development* – Excluded developable sites which were located more than one-mile from existing urban development in the process simulating the effect of comprehensive 1-mile urban growth boundaries (UGBs) and their effect on the supply of raw land. [The 1-mile UGB width is

conservative and stringent, and is entirely arbitrary. Most of the UGBs adopted to date in California are far narrower than one mile, and thus include far less potentially developable land. (Landis, 2000)]

Land is not only used for building housing on but for a varied number of other purposes. But in the view that the State does not have long-term employment projections, and so the land needed for job growth cannot be estimated, and the mix of urban uses is different for different areas, the gross housing densities for 1996 for each county were estimated and used for the analysis. Gross housing density was calculated by dividing the total urbanized land area as of 1996 (including all urban non-residential uses) by its total number of housing units. So gross housing densities arrived at accounted for the total amount of non-residential land use but include commercial, industrial, and public land uses, which are associated with residential uses. *Assuming that the future residential and non-residential land use mixes will not change,* these gross housing densities were used to estimate the total amount of urban land associated with projected residential growth. The average gross housing density in 1996 was 2.4 housing units per acre. Also for the purpose of these calculations, the effects of local general plan, zoning ordinances, and subdivision codes were not taken into account.

With these considerations in mind, the study predicts that Los Angeles, Orange, San Bernardino, Riverside, Santa Clara, Alameda, Solano, Fresno, Kern, Madera, San Joaquin, Stanislaus, Yolo, San Diego, Sacramento and San Benito will have insufficient land to put housing on by the year 2010 (see Figure 16). Percentages show the availability of sufficient developable land within the county to physically accommodate projected household demand at 1996 gross densities. *Ratios less than one indicate that projected household demand will exceed available capacity.* [Landis, 2000] This analysis suggest that these counties are potentially in short supply for land for housing to develop upon more so than others when taking an account of the amount of "accessible and developable" land that is within a mile of existing urbanization but excluding wetlands, Prime and Unique Farmlands, and Q3 Floodzones, and areas most suitable to large numbers of endangered species.

Figure 16: Comparison of Available Land Capacity with Projected 1997- 2020 Household Growth for a Few Critical Counties

County	Percent of Projected 1997- 2020 Household Growth Which Could be Accommodated by Available Land Supplies (of Particular Characteristics); Evaluated at Current Gross Densities (Bolded entries are less than 150%)									
	Projected Households Growth		Developable and accessible		Excluding Wetlands, Prime and Unique Farmlands, and Q3 Floodzones		Excluding Wetlands, Prime and Unique Farmlands, Q3 Floodzones, and Areas most suitable to large numbers of endangered species		Areas within 1 mile of existing urbanization, excluding Wetlands, Prime and Unique Farmlands, and Floodzones	
	1997- 2010	1997- 2020	1997- 2010	1997- 2020	1997- 2010	1997- 2020	1997- 2010	1997- 2020	1997- 2010	1997- 2020
Alameda	91,588	152,903	921%	552%	804%	482%	394%	236%	234%	**140%**
Fresno	86,347	150,959	4139%	2367%	2666%	1525%	2023%	1157%	**90%**	**51%**

Kern	90,986	165,373	5173%	2846%	3038%	1671%	2422%	1332%	**128%**	**70%**
Los Angeles	653,679	1,070,401	242%	**148%**	212%	**129%**	**137%**	**84%**	**106%**	**65%**
Madera	22,099	38,760	3884%	2215%	2209%	1259%	951%	542%	**118%**	**67%**
Orange	222,652	322,228	214%	**148%**	177%	**122%**	**111%**	**76%**	**93%**	**64%**
Riverside	247,902	456,450	987%	536%	819%	445%	684%	371%	283%	**154%**
Sacramento	116,846	205,379	1146%	652%	506%	288%	566%	322%	161%	**91%**
San Benito	7,856	12,874	4638%	2830%	3319%	2025%	2197%	1341%	227%	**139%**
San Bernardino	217,434	408,148	1427%	760%	1389%	740%	1344%	716%	251%	**134%**
San Diego	267,119	433,634	646%	398%	na	0%	407%	251%	202%	**125%**

Adapted from: "Raising the Roof," Landis, May 2000

All these counties are not going to be affected in equal measures at the same time. If the percentages in figure 16 are carefully studied, there is a difference in the rate at which land is predicted to run out in these counties. The highlighted figures assume that the base “risk” level is at 150% and anything below this threshold is an indication of low land supply for that particular county in that particular category. The ones already feeling a crunch are Los Angeles, Orange and Santa Clara. But in a descending order of severity we have Yolo, Fresno, Stanislaus, Madera, San Joaquin and Kern counties. These counties will be running out of land options to put housing on by the year 2010. Consequently by the year 2020, a lot more counties will be added to this list in differing degrees of severity.

This estimate is crucial from a transportation planning perspective because it helps assess where this “squeezed” out growth is going to ”spillover” into. When land supply runs out in these counties, the housing market will adapt by finding new land to grow. It logically follows that the spillover that will result will be headed into neighboring counties with the most “favorable” land markets. Understanding the repercussions of this development process will require further research that quantifies the spillover pattern. As an example, in the case of Los Angeles, the spillover now is heading into San Bernardino and Riverside counties. All along the coast of California, this pattern of unmanaged growth moving into the central valley is the prevalent model now and in most probability will continue.

Concerns and Strategies for future development of Housing Growth

Today much of the new housing is being placed on so-called "greenfield" sites (i.e., former agricultural land and open space). Some of this land, in turn, is prime agricultural land according to analyses done by the Great Valley Center (www.greatvalley.org), and some is unique cropland especially suited to particular crops, land for which substitutes are scarce or inferior (e.g., coastal bluffs). Strategies to overcome these barriers include redirection of development to brownfields (former industrial / warehouse sites) and skipped-over land within the urbanized area and redevelopment at higher densities, especially in areas well served by transit. These alternative development patterns could absorb a significant proportion of growth; see e.g., MTC Raft analysis (www.sierraclub.org/sprawl/transportation/RAFT.asp, www.transcoalition.org/warningtext.html), but often face opposition from local governments, concerned about the high service requirements of such development.

A number of transit agencies are now pursuing the strategic placement of high-density housing to support transit and offer residents a convenient travel option. State law provides some assistance for such development, but it still faces barriers. Such development can be relatively costly and sometimes it faces opposition from neighboring residents, who fear negative impacts on their quality of life from higher density development. In addition, land suitable for housing must be available at prices that permit housing development, and there must be a market for housing at the available sites. These conditions are not always met in transit station areas. Around downtown station areas, prices may be too high for all but the most expensive housing units, and other station areas are sometimes negatively impacted by their surroundings (especially stations built in freeway medians or along former rail lines.)

Mixed-use development is increasingly proposed as a strategy to overcome concerns about costs, revenues, and traffic impacts. Mixing commercial uses with residential development may improve the financial picture for local government, because tax revenues from the commercial development may compensate at least in part for the costs of services that housing may require. A well-chosen mix of commercial and residential also can create convenience both for new residents and for those already located in nearby neighborhoods, by providing conveniently accessible services, retail, and jobs. Finally, in mixed-use development, the share of trips made by walking is generally higher than in single use development. See, e.g., Handy, Steiner, Cervero.

Some aspects of the Jobs/Housing (Im)balance

Before we get to the stage of analysis where we can build a model for spillovers, we need to understand why there is a spillover in the first place. In the ideal world, the jobs and housing for the employees would grow equally and be located nearby so that people's travel times would never be more than a few minutes. But the reality of the situation is that of an existing wide mismatch between where jobs and housing are located – a *jobs/housing [im]balance*. The term job-housing balance is fast becoming a part of our vocabulary but what does it actually mean. "…, the concept can be defined generally as *equal* housing and employment opportunities within an identified geographic area; in theory, each person working in an area with a jobs/housing balance would also be able to live in that area [and vice versa]" [Bookout, 1990] Or "…, a jobs/housing balance simply means a *ratio* between a *measure* of employment and a *measure* of housing within a given geographic area." [Hamilton, et al, 1991] Or "…, a jobs/housing balance means *matching* housing supply to area workers' earnings and targeting new jobs to areas where qualified workers live or will live." [Cervero, 1991]

The jobs/housing balance concept has a lot of appeal to the layperson and decision makers, for the transportation benefits are obvious in terms of more walking and cycling trips as well as shortened automobile trips. The added benefit is that a major reduction in traffic congestion will ensue because commuting patterns are made up of many overlapping commute sheds between homes and major work centers, so the extent to which the size of the commute shed can be shrunk and overlaps reduced, traffic congestion would ease. [Cervero, 1991] Also, telecommuting has the potential to reduce peak period travel and is much talked about these days as a tool to reduce congestion. But to date less than 5% of the workforce regularly telecommutes,

as many as 15% telecommute several times a month, according to studies by the Bureau of Labor Statistics. See Mokhtarian (1994, 1997) for a discussion of telecommuting among California employees.

But this issue is much more muddled that it seems to be. In a 1987 paper, the California department of Housing and Community Development came up with an equation: Ideal Number of Housing Units = (Total Jobs/Workers per household) X (1+Desired Vacancy Rate) When applied to real life situations, the theoretical simplicity of such an equation [which hides a web of interrelated issues] becomes obvious for it is easier to show what jobs/housing balance is not than to define what it is. This formula does little about qualitative measures such as lifestyle preferences, housing type preferences, quality of neighborhoods and schools, commuting costs versus housing costs and so on. Three major issues present themselves – first what is meant by balance, second what is the appropriate spatial zone in which it should occur and third what does "housing" mean? [Hamilton, et al, 1991]

A specific definition of this balance is seldom pursued at the local or regional level. The underlying assumption is that local regulation and residents' preferences will lead to the right mix of commercial, industrial, and residential land uses. However, this can often lead to exclusive single use zoning. Residential development has largely been zoned out of new commercial areas and limited in density to peripheral locations. In considering development proposals, some local governments often favor revenue producing commercial development and try to exclude revenue loosing residential development – a trend that exists in a lot many local governments in spite of pressure from legislation as well as advocacy groups.

In California, the legacy of Proposition 13 has also increased pressure on cities and counties to rely on sales taxes. This limitation on property taxes has increased the disincentives for cities to provide housing that is suitable for middle-income families. Some analysts contend that this has contributed to the creation of a regional divide between housing and jobs. Pro-active local governments go ahead with a largely commercial agenda and those left behind have to make do with the "spillover" development that is largely residential.

These commercial zones have permitted the development of high-density employment centers and have preferred traditional low-density suburban housing development. Public perception of higher density housing is that the "American dream" is incompatible with higher density development. Therefore, very few communities have been willing to accept higher-density housing – especially affordable priced for-sale or rental projects. [Bookout, 1990}

Another issue is the appropriate scale to define *balance*. Most census data and spatial analyses are bound by political jurisdictions. However, these units do not always match with commute-sheds. Since they may cut across several jurisdictions, researchers and policy analysts face difficulty in gathering detailed data from the entire commuting shed.

The growth of two wage households has further complicated residential location choices, as household members now have to consider housing locations in relation to two workplaces or, in households with a primary and secondary worker, in relation to the primary worker's job and

the job market for the secondary worker. IN addtion, most household members change jobs more frequently than they move, further complication the analysis of jobs-housing balance.

Effects of Age Cohort Growth on Housing Demand

Some other important indicators for predicting housing growth are demographic projections for California, which suggest that age groups under 18, between 55 & 64, and above 65 years are going to grow, whereas the other age groups are going to hold steady. Two aspects of this growth are important - the sheer number increase in these age groups and the percentage increase over the years. Those under 18 years are projected to grow a little under 4.6 million by 2020 - a growth of 37%. Those between 55 and 64 years are projected to add about 3.1 million by 2020 - a growth of 58%. And those over 65 years of age will grow by 3.2 million by 2020 - a growth of 51% (see Figure 17).

Figure 17: Population Growth by Age: 1990-2020

Age Group	1990	2010	2020	Number increase from 1990 to 2010	Number increase from 1990 to 2020	% Change from 1990 to 2010	% Change from 1990 to 2020
Under 18	7,869,132	10,884,663	12,442,683	3,015,531	**4,573,551**	28%	**37%**
18 to 24	3,474,026	4,235,933	4,490,582	761,907	1,016,556	18%	23%
25 to 34	5,714,423	5,119,926	6,444,055	-594,497	729,632	-12%	11%
35 to 44	4,630,685	5,204,967	5,241,358	574,282	610,673	11%	12%
45 to 54	2,887,962	5,649,561	5,080,081	2,761,599	2,192,119	49%	43%
55 to 64	2,237,939	4,306,878	5,386,478	2,068,939	**3,148,539**	48%	**58%**
Over 65	3,128,230	4,555,688	6,363,390	1,427,458	**3,235,160**	31%	**51%**

Source: U.S. Census, DoF Projections, December 1998

The under 18 years age group

If we take a look at historical trends that show the median age of first time homebuyers over the last 15 years (see Figure 18), the age of this group is roughly in the early 30's. This observation compounded with the previous projections has serious implications for housing growth. When the different subsets of this18 year age cohort reach their early 30's, there is bound to be an increase in the demand for housing: a demand that will peak during certain years. It is these time periods that need to be analyzed and understood to be able to make any projections about how and where the growth in housing is going to occur.

Figure 18: Median Age of First-time Homeowners

	1985	1989	1995
US	29	30	31
Selected Non-Californian Metropolitan areas	29	30	33
California Metropolitan Areas	31	31	32
Los Angeles County	34	31	32
Orange County	na	29	32
San Bernardino/Riverside	na	32	33
San Diego	na	31	34
San Francisco – Oakland	na	31	33
San Jose	na	30	32

Source: US Census, Annual Housing Survey, 1975, 1985, 1989, and 1995

Data from 1985 and 1995 point out that California's first time homebuyer's travel-to-work times are 7.5 minutes more than the US average (see Figure 19) and they travel 4.2 miles more than the national average (see Figure 20). The previously discussed land crunch issues and the increasing demand for housing suggests that in the near future, if the same pattern of sub-urban sprawl exists [which will probably be the case], people who buy homes first time around will need to locate even further off. So travel-to-work times and distances of travel are bound to increase leading to an increased demand for the existing transportation infrastructure. Other questions worth asking are concerned with the nature of jobs this group will hold, the mode of travel they will most likely use and the lifestyle choices they will make. All these will have a direct effect on the transportation infrastructure that will be needed to connect the job place, shopping and recreation areas to the home.

Figure 19: Mean Commute Time [in minutes]

	US	Selected Non-Californian Metropolitan areas	CA Metropolitan Areas	Los Angeles County
All Owners '85	19.6	21.6	21.7	22.7
All Owners '95	20.6	22.3	23	23.2
Owners/Recent Movers '85	23.6	24	24	22.2
Owners/Recent Movers '95	22	26.6	26.6	22.7
First-time Owners/Recent Movers '85	23.6	22.9	22.8	26.9
First-time Owners/Recent Movers '95	**22.1**	24.2	**29.6**	23.4
Renters '85	19.1	20.3	20.8	21.2
Renters '95	19.5	21.5	19.4	21.8

Source: US Census, Annual Housing Survey, 1975, 1985, 1989, and 1995

Figure 20: Mean Commute Distance [in miles]

	US	Selected Non-Californian Metropolitan areas	CA Metropolitan Areas	Los Angeles County
All Owners '85	11.2	11.3	12.6	13.1
All Owners '95	13.5	13.5	14.7	13.7
Owners/Recent Movers '85	13.4	12.7	14.6	10.7
Owners/Recent Movers '95	14.9	14.1	18.6	13.1
1st time Owners/Recent Movers '85	14	13.2	11.1	9.9
1st time Owners/Recent Movers '95	**14.8**	15.6	**19**	12.3
Renters '85	9.5	9.9	12.3	10
Renters '95	11	11.4	10.9	11.5

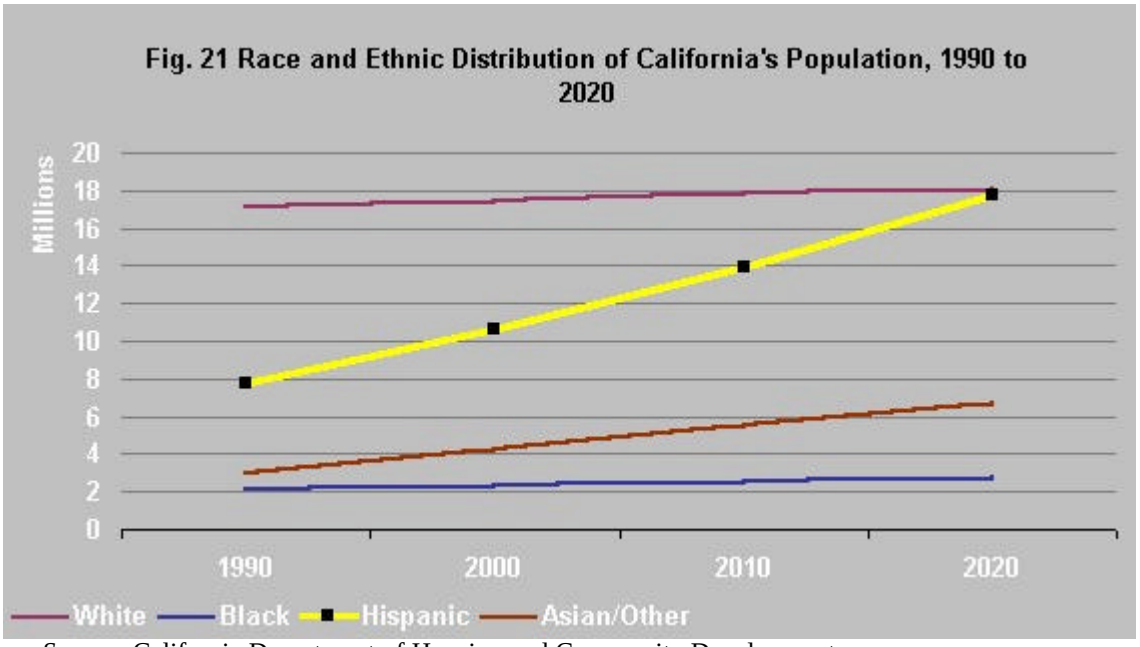
Source: US Census, Annual Housing Survey, 1975, 1985, 1989, and 1995

The above 55 age group

The increase in this age group will mean that we will see a lot of senior citizens in our communities and that there will be many more retirement communities around. It becomes very crucial that we look at the repercussions of this development in demographics from the transportation viewpoint. The modes of travel most likely to be used by this large age group will be important to understand. Is it feasible to assume that this group will be using more transit based services if it became much more accessible and convenient to use? Questions like these will inform decisions in setting up long-term transportation plans for the state with built in mechanisms to take care of the aging population.

Effects of the growth of Specific Racial groups on Housing Demand

Changes in the racial composition of the state will also have serious implications for transportation policy planning. Projections of future increases in the numbers of people of different racial backgrounds are shown in figure 21. Hispanics are projected to grow the maximum - an increase of 10 million persons or a 129% increase from 1990 figures. This is important with reference to issues of which housing type this group will own or rent, what kind of jobs will they have and what modes of transportation will they use. Once a housing pattern is revealed, we will be able to understand the association between home, work, recreation and transportation needs. (Recent research suggest that Hispanics tend to assimilate into the American culture rather quickly and so it would be possible to make forecasts up to a very few number of generations.)



Source: California Department of Housing and Community Development

Effects of the changes in Headship rates on Housing Demand

Headship rates, which are defined as the statistical tendency of a populace to form households, vary by age, gender and ethnicity. Higher headship rates mean more new households will be formed. For example a headship rate of 0.35 would mean that out of 1000 persons, 350 would form households. As in all the other categories discussed before, we need to analyze the headship rates across age groups, race groups and gender. If a pattern does exist for the headship rates, (for example, we discover that a certain race group tends to form more households than another,) we will be able to isolate that variable and look for specific data that points to the forms of transportation and house types being utilized by that group of people. This will inform decisions about who the target populations for certain forms of transportation infrastructure are and where investments for them need to be made. Figure 22 shows historic data on headship rates in California. Headship rates for females are a third of those for males but interestingly enough they have risen over the decade 1980-90 for females and have fallen for males in every racial category. This trend needs to be analyzed to quantify the effect of gender differences in household formation. Also the headship rates are different across racial groups and this is tied in with working patterns and income levels.

Figure 22: California's Headship Rates by Age and Race, 1980 and 1990

Males

Age Groups	Total '80	Total '90	White '80	White '90	Black '80	Black '90	Hispanic '80	Hispanic '90	Asian/Others '80	Asian/Others '90
0 – 18	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
18 – 24	0.334	0.215	0.360	0.264	0.273	0.208	0.308	0.175	0.255	0.154
25 – 34	0.759	0.610	0.783	0.669	0.683	0.530	0.725	0.535	0.703	0.552
35 – 44	0.882	0.785	0.899	0.816	0.820	0.683	0.841	0.719	0.884	0.794
45 – 54	0.909	0.843	0.922	0.868	0.846	0.778	0.875	0.771	0.907	0.849
55 – 64	0.915	0.866	0.927	0.892	0.863	0.820	0.873	0.802	0.876	0.794
65+	0.891	0.868	0.910	0.900	0.846	0.833	0.811	0.782	0.741	0.673
Mean	**0.670**	**0.598**	**0.686**	**0.630**	**0.619**	**0.550**	**0.634**	**0.541**	**0.624**	**0.545**

Females

Age Groups	Total '80	Total '90	White '80	White '90	Black '80	Black '90	Hispanic '80	Hispanic '90	Asian/Others '80	Asian/Others '90
Under 18	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001
18 – 24	0.169	0.155	0.183	0.185	0.259	0.251	0.108	0.101	0.130	0.118
25 – 34	0.263	0.264	0.270	0.286	0.456	0.450	0.192	0.198	0.157	0.183
35 – 44	0.266	0.301	0.261	0.310	0.477	0.517	0.233	0.256	0.178	0.201
45 – 54	0.265	0.315	0.253	0.319	0.462	0.523	0.259	0.278	0.196	0.217
55 – 64	0.307	0.330	0.300	0.334	0.494	0.545	0.295	0.297	0.221	0.217
65+	0.499	0.493	0.509	0.513	0.573	0.621	0.419	0.414	0.325	0.273
Mean	**0.253**	**0.266**	**0.254**	**0.278**	**0.389**	**0.416**	**0.215**	**0.221**	**0.173**	**0.173**

Source: California Department of Housing and Community Development

Figure 23 shows headship rates the State's major regions. Although headship rates are going up in every metropolitan area, the *highest* rates of growth are expected in the Los Angeles, San Joaquin and central coast metropolitan regions. Compared with 1997-2010, the growth in headship rates from 2010-20 is projected to be much lower. This indicates a major slow down of household formation in the coming years.

Projected Growth in Headship Rates

	1997	2010	2020
Greater Los Angeles Metro Region	**0.321**	**0.345**	0.348
San Francisco Bay Area Metro Region	0.355	0.364	0.368
San Joaquin Valley Metro Region	**0.318**	**0.341**	0.345
San Diego Metro Region	0.342	0.351	0.351
Sacramento Metro Region	0.371	0.379	0.382
Central Coast Metro Region	**0.334**	**0.354**	0.352
Northern California Metro Region	0.393	0.408	0.411
Non-Metropolitan Counties	0.39	0.401	0.404

Source: California Department of Housing and Community Development

Conclusions

In concluding, it is safe to assume that the growth for housing is going to be different for different parts of the state and this growth has a pattern that needs to be quantified. Growth is most concentrated in the north and south of the state – Greater Los Angeles and San Francisco Bay Area metropolitan regions. But there is an increasing surge in growth in the inland areas of the central valley including San Joaquin and Sacramento. The need for land to develop housing on is a function of its demand and hence the present pattern of development or spillover into the inland counties will in most probability remain consistent. This pattern suggests that the people will increasingly be working in the coastal counties but living inland.

The second big part of the picture is the connection of growth in specific demographic groups and its relation with housing. For example, with those over 55 and under 18 years of age projected to grow the most and the Hispanic race group projected to grow the most, we need to take a look at the life style and hence living and traveling modes of these and such other specific groups. The population's composition is a strong indicator of who needs to be thought out for if the planning process is to take into account the needs of all people.

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