Title

SPECIAL REPORT: The Growth and Aging of California's Population: Demographic and Fiscal Projections, Characteristics and Service Needs

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The Growth and Aging of California's Population: Demographic and Fiscal Projections, Characteristics and Service Needs

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Technical Assistance Program

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About the California Policy Research Center
The California Policy Research Center (CPRC) is a University of California program that applies the extensive research expertise of the UC system to the analysis, development, and implementation of state policy as well as federal policy on issues of statewide importance. CPRC provides technical assistance to policymakers, commissions policy-relevant research, and disseminates research findings and recommendations through publications and special briefings

About This Report
This report is part of a state-commissioned project undertaken after California enacted Senate Bill 910 (Vasconcellos, Statutes of 1999, Chapter 948), mandating the Secretary of Health and Human Services to develop a plan to address the impending demographic, economic, and social changes triggered by the state's aging and increasingly diverse population. The University of California was asked to conduct the data analyses and provide background information needed to formulate this plan. CPRC has been coordinating this effort over the past three years, drawing on research experts from UC and other institutions. A faculty working group, chaired by Professor Andrew Scharlach (School of Social Welfare, Berkeley), helped guide the project. The authors wish to acknowledge Andrew Scharlach's substantial contributions to the substance and structure of this report, as well as his many valuable editorial suggestions at all stages of the writing.

The authors of this report were charged with developing a composite demographic profile of Californians that would provide (1) a snapshot of aging demographics; (2) a summary of key variables, projections, and their degree of certainty; and (3) an estimation of service needs of elderly Californians in the context of the state budget and changing demographics. A forthcoming report by other authors (*Planning for a Comprehensive Database on Aging Californians*) assesses data the state already collects and where the gaps are, what questions the state needs to ask to project needs for policy planning purposes, and how the questions can be answered by enhancing and linking data that currently exist and selectively collecting new data.

About the Authors
Ronald Lee is a professor of demography and economics and director of the Center on the Economics and Demography of Aging at the University of California, Berkeley, and Timothy Miller is a research associate at the center. Ryan Douglas Edwards is a postdoctoral scholar at the Department of Biological Sciences and Morrison Institute for Population and Resource Studies at Stanford University. Ronald Lee's contribution to the report was funded in part by NIA grant AG R37-AG11761.

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EXECUTIVE SUMMARY

This report provides a composite demographic profile of California's aging population over the next 50 years. Estimates of future demographic characteristics utilize a "probabilistic" projection method that simulates 10,000 possible futures, in an effort to overcome the built-in biases of most population projections and inconsistencies in standard demographic assessments of "most likely" futures. This method enables us to explore future needs while recognizing the degree of uncertainty associated with our projections.

Chapter 1 presents the current and projected age composition of the state's population, highlighting how the ranks of California's elderly will swell over the next 50 years at the same time that the population becomes increasingly diverse. Chapter 2 discusses state budget projections given these population trends, reflecting the countervailing fiscal effects of population aging, immigration, and improving health. Chapter 3 discusses the characteristics of elderly Californians today as well as likely future demographic patterns and resulting service needs.

The Aging of California

According to the recent census, roughly 3.6 million of the 34 million people living in California on April 1, 2000, were 65 or older, representing about 11% of the state's overall population—a slightly lower share than the 13% of Americans who are elderly. At the same time, about 30% of Californians were 19 or younger, and 59% were ages 20 to 64. Differences between California and the rest of the nation are due in large part to the state's comparatively large numbers of international immigrants, who tend to be younger than the rest of the population and are more apt to be male.

Important shifts in the age distribution of the population are forecast over the next 50 years, as mortality rates decline and life expectancy increases. Currently, life expectancy in California is 78.8, about one year longer than in the nation as a whole. By 2050, we estimate a 50% probability that life expectancy in California will reach 84.2, more than three years greater than the current world record, which is held by Japan. As a result of this as well as other factors, the state's population age 65 or older is expected to double in 25 years and triple in 50 years. By 2050, the median forecast shows nearly 11 million seniors—the size of the current population under 20. Now, there are roughly three times as many youth as seniors; by 2050, we project roughly equal numbers.

If the current age distribution of costs were to remain constant in the future, then these purely demographic changes in the age structure of California's population would modestly ease the tax burden in the state over the next 20 years—on the order of a 6% tax cut for the first decade and another 4% in the following decade. This is because the average youth is about 2.7 times more costly to the state than the average elderly person; furthermore, the elderly are net taxpayers at the state level, with only the oldest-old (those over age 85) net recipients of state benefits. However, we also expect the age distribution of costs to change, as we discuss below.

Gender
California's sex ratio is skewed toward males at younger ages and females at older ages because of age-specific mortality differences between men and women. Before age 45, the number of males exceeds those of females by about 5%. At older ages the trend reverses dramatically, with females over 65 outnumbering males by 40%. Among those age 90 and over, women outnumber men by nearly three to one.

Our forecasts show a decline in the mortality gap between men and women and a more equal ratio of men and women among the senior population. By 2050, women will outnumber men by just 14% among seniors, and by just 50% among those age 90 and over. This equalization implies a large reduction in the proportions widowed and the accompanying likelihood of living alone or in an institution, as well as the possibility of some associated reduction in the high poverty rates among elderly women.

Race, Ethnicity, and Language
Hispanics and Asian Americans comprise relatively large shares of California's current population, compared with the nation as a whole. Of the state's 34 million residents in 2000, 11 million (almost one-third) identify themselves as Hispanic or Latino, while only about 13% of the nation as a whole is Hispanic. California's Asian-American population is also comparatively large, accounting for around 12% of the state's population but only about 4% of the U.S. population.

California's elderly population will become increasingly Hispanic and Asian American over the foreseeable future as a result of population aging and continued immigration. The fastest-growing ethnic group will be elderly Hispanics, whose numbers will nearly triple in the next 20 years. The slowest-growing ethnic group will be non-Hispanic whites, whose numbers will still increase, but only by 50% during that same period. By 2050, Hispanics will be the largest ethnic group among California seniors.

Although California's senior population will be increasingly foreign-born, the overwhelming majority will be long-term residents who have lived in the country at least 30 years, have worked here, and are much less costly to the state than recently arrived elderly immigrants. The share of California elders who do not speak English is likely to rise by only a small amount, from 5% today to 6% by 2050, although the number who choose to speak another language at home besides English is likely to increase substantially.

Income, Poverty, Work, and Educational Attainment
Elderly Californians in 2000 received average incomes of about $25,500, roughly $3,000 more than their counterparts in the rest of the nation. To the extent that living costs may be higher in California, however, that difference may or may not translate into a higher standard of living. Further, higher average incomes among the state's seniors as a group conceal disparities according to national origin. Those who were born in the U.S. received about $6,000 more income on average in 2000 than did all elders nationwide, while foreign-born elders in California received $6,000 less.

California seniors have lower poverty rates their counterparts in other states, while children are more impoverished than those elsewhere in the country. The past decade has seen increases in

poverty at almost all ages in California. Only the oldest old saw their poverty rates decline over this period, and only by a percentage point.

Employment status is a key measure of economic well-being among the elderly. In addition to public support programs for the elderly in the U.S., many elderly remain employed or self-employed in order to earn wages and stay active. About 13% of California seniors are employed, compared to 12% nationally, and about 20% of total elderly income comes from labor earnings.

Social Security comprises only 28% of total elderly income in California compared to 34% nationwide. The difference is attributable to higher interest income and labor income for California seniors, as well as the state's comparatively large population of foreign-born elders, some of whom have never participated in Social Security. Foreign-born seniors also tend to receive much less income from investment and labor earnings than those born in the U.S.
Employment rates fall significantly past age 60, due to declining labor-force participation rates. Only a quarter of California seniors age 65 to 69 are employed, and that share falls by half for the next age group.

Economic well-being is tightly linked to educational attainment because education provides skills that make workers more productive. The state's seniors are better educated than their counterparts in the rest of the country; about one-fourth of California seniors have attained a college degree or higher, compared with about one-fifth of seniors in other states.

Over the next 20 years the educational level among seniors is expected to rise, as the shares with college and advanced degrees increase by about one-half. From 2020 to 2050, however, the proportion of the elderly population with a college degree is projected to increase only slightly, while the proportion lacking a high school diploma actually increases from 20 to 24%. The continued influx of less-educated immigrants is apparently enough to partially offset the overall increase in educational attainment among the elderly. Still, educational attainment across all categories is projected to be higher among seniors in 2050 than it is today.

Disability and Health
The disability profile of elderly Californians is quite similar to that of elderly Americans as a whole, averaging at most one percentage point lower on an age-specific basis.

Nationally, disability rates have been declining as much as 3% per year, reflecting improvements in health and living standards. Assuming that this pattern continues, a decreasing share of California's elderly can be expected to be disabled over the next 50 years. The percentage of elderly Californians reporting limitations in self-care (e.g., bathing, eating, toileting) is projected to drop from roughly 17% today to about 12% by 2030. The percentage with mild disability (inability to perform less-critical pursuits such as grocery shopping and household chores) is expected to decrease from 4% to about 2%.

Because disability prevalence rises steeply with age and the population will be more concentrated in older ages, the overall numbers of disabled elderly will inch upward after 2030 as the population ages. Moreover, disabled Californians over 65 will comprise a considerably greater share of the total state population as the population ages and becomes more top-heavy, poten-

tially increasing substantially the demands on the near-elderly population of Californians age 40–64.

In general, declining disability rates offset much of the expected impact on service needs based on population aging alone. Although there will be considerably more elderly in the state, and the elderly themselves will be older, they will also be healthier and therefore less needy than they would otherwise be.

Living Arrangements, Housing, and Nursing Homes

Elderly Californians tend to live on their own or with a spouse. In 2000, 58% of elders were living with a spouse, 25% were living alone, 14% were living with family members or other persons, and 2.5% were living in a nursing home. Eighty-two percent of noninstitutionalized elders owned their own homes, while 18% were renters.

All other things being equal, the older an individual is, the more likely he or she is to be the head of a household, provided that he or she is not institutionalized. The rate of headship for men is higher than it is for women at every age, although women gain significantly after age 65, probably reflecting the prevalence of elderly widowhood.

By 2050, the number of California households is expected to nearly double, as population aging reduces the share of children in the population, resulting in a smaller average household size and an increasing number of households per capita. Homeownership among the elderly will also continue to rise, from nearly 3 million elderly owning homes today to about 9 million by 2050. The share of elderly Californians owning their own home is expected to stay relatively steady at about 82%. The share of elders living alone is forecast to rise by 3 percentage points, while the share living with spouses is likely to decline by about the same amount, with about a 1% increase in the number of elders living with other family members.

The number of nursing-home residents in California is expected to nearly double over the next 50 years, from about 90,000 in 2000 to a median estimate of 170,000 in 2050. These projections reflect steep increases in the population at risk, coupled with declining rates of age-specific disability rates. Given increases in the state's elderly population in general, nursing-home residents are expected to comprise only between 1% and 1.5% of the elderly population by 2020, down from 2.5% today. These reductions are likely to be accompanied by increased utilization of assisted living communities and other residential alternatives.

Fiscal and Service Implications

Although significant, the challenges posed by population aging in California over the next 50 years appear to be manageable. State-administered public services for the elderly, such as means-tested cash support and medical care for the indigent and medically needy, must indeed expand as the number of elderly residents increases. However, resultant strains on the state's future resources will be alleviated somewhat because of two trends: (1) the relative decrease in the number of young Californians, who on average are 2.7 times more costly to the state than are elderly persons; and, (2) declining disability rates, resulting in a decreased need for assistance by each elderly person.

Conclusion

Major shifts in the size and composition of California's population are forecast over the next 50 years as mortality rates decline and life expectancy increases, resulting in a tripling of the population age 65 and older within the next 50 years. Moreover, these elders will be much more ethnically diverse than at present. The fastest-growing ethnic group will be elderly Hispanics, whose numbers will nearly triple in the next 20 years. Those who are foreign-born are apt to be more economically vulnerable, as a result of lower education levels, less access to Social Security, and less income from investment and labor earnings.

Continued improvements in health and living standards are expected to reduce the likelihood of disability among individual older persons. However, disabled Californians over 65 will comprise a considerably greater share of the total state population as the population ages and becomes more top-heavy, potentially increasing substantially the demands on the near-elderly population of Californians age 40–64.

The number of California households is expected to nearly double by 2050, as population aging reduces the share of children in the population, resulting in smaller average household size and an increasing number of households per capita. The number of nursing-home residents also is expected to nearly double over the next 50 years, although the likelihood of being in a nursing home at any one time is expected to decline by 40% in the next 20 years, with increased utilization of home care, assisted-living facilities, and other residential alternatives.

Population aging in California poses several challenges for state finances, although there is ample reason to be optimistic. Although there will be considerably more elderly in the state, and the elderly themselves will be older, they will also be healthier and therefore less needy than they would otherwise be. Moreover, public spending at the state level is primarily directed toward the young, while the state's tax base includes the population of working age and older.

State budgetary pressures derive especially from the growing numbers of elderly Medi-Cal recipients, coupled with climbing per-capita health expenditures. State-administered public services for the elderly, such as means-tested cash support and medical care for the indigent and medically needy, must also expand. We anticipate substantial growth in the need for nursing homes and other residential accommodations, as well as family and community supports. Meeting these needs will require refocusing state fiscal policy as the state's population ages.

Finally, it should be noted that the data available for studying aging in California leave substantial room for improvement. Although data from the 2000 census enable us to study California's elderly population in considerable detail, the information on many topics is very limited. Of particular concern is the lack of detail regarding characteristics such as health and disability, nursing-home use, assisted living and other residential-care options, and home- and community-based care. An accompanying report, "Planning for a Comprehensive Database on Aging Californians: Meeting Public Policy and Research Needs for Better Information" (by Henry Brady, Frank Neuhauser, and Jason Seligman), provides an analysis of existing administrative data that might be utilized to assist state policymakers in responding to the needs of California's growing aging population.

Chapter 1

PROBABILISTIC PROJECTIONS OF THE GROWTH AND AGING OF CALIFORNIA'S POPULATION

Introduction

Population projections are an important component of state-level planning and policy making. Typically, population projections are based on informed judgments by demographers and others as to the future course of fertility, mortality, and migration. In comparing past national-level forecasts to actual subsequent trends, we and others have found systematic errors. Fertility projections have been unduly influenced by the most recently observed levels, and mortality projections have systematically underestimated future gains in life expectancy.[1]

In addition to these biases in judgment, a second problem involves how best to assess our uncertainty about any future population scenario. Typically, demographers create high and low scenarios to bound the "most likely" futures. However, we do not know how likely the future is to fall between the bounds, since no probability has been assigned to the high-low range. Our research has also shown that the bounds defined by high-low scenarios are typically inconsistent across the length of the forecast horizon. In the long-run, more actual outcomes typically fall within the bounds than in the short-run. As a result, good forecasts may be rejected because actual outcomes fall outside the high-low bounds in the early years of the forecast.[2]

As a response to the difficulties of relying on expert judgment, we have adopted a probabilistic approach to population projection. Rather than issue a single forecast or a set of high-low scenarios, we report a probability distribution for the future population based on a simulation of 10,000 possible futures. Each forecast is based on a unique collection of randomly chosen trajectories of fertility, mortality, and migration, both domestic and international. These trajectories are selected based on the level, trend, and variability we have observed in the past time series for these events.

The key assumption underlying our approach is that the best guide to our uncertainty about the future is the variability we have observed in the past. In this chapter, we apply this methodology to a state-level forecast for California. The major difference in this state-level approach is that migration is stochastically forecast.[3] The U.S. Census Bureau is developing new probabilistic population projections, as are the countries in the European Union. We believe this is the first probabilistic population projection at the level of a state.

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[1] See Lee (1999), National Research Council (2000, Chapter 7), and Lee and Miller (2001).
[2] See Lee (1999), National Research Council (2000, Chapter 7), and Lee and Miller (2001).
[3] The probabilistic forecast method is discussed in detail in Lee and Tuljapurkar (2000) with application to the United States. In national forecasts, net immigration is taken as given, because it is a policy variable. At the state level, however, it is not a policy variable, so it is taken as probabilistic, like fertility and mortality. In addition, net migration from other states is treated as probabilistic in the California forecast.

We have not attempted to forecast the California population by immigrant status, by ethnicity, or by county of residence. The state Department of Finance does forecasting with this level of detail.

Methodology

Each forecast begins in the year 2000 with the age/sex distribution of the California population as enumerated in the U.S. census. The standard cohort-component method is used to forecast the population. The forecast proceeds by single year. In each one-year step, the population at a given age becomes one year older, losing some of its members through death and out-migration, but gaining members through in-migration by people at the relevant age. Each year new births are forecast by multiplying age-specific fertility rates by the female population. The forecast ends in the year 2050.

Technical details of this methodology are discussed in a working paper (Miller, 2002). In this section, we provide a brief overview of the three main components: fertility, mortality, and migration. Each of the 10,000 simulations requires a unique random forecast of the trajectories of these three factors.

Fertility

The fertility level can be summarized by a measure called the total fertility rate (TFR). The TFR is the hypothetical number of births a woman would experience under current age-specific fertility rates. Fertility rates in California, like those for the U.S., have been quite variable over the last three decades, ranging from a low of 1.7 births per woman in 1973 to a high of 2.5 in 1991, with a current level of 2.2—slightly above the national rate.

Table 1-1 presents the probability distribution for our fertility simulations. All forecasts begin with a fertility level of 2.2 births per woman in 2000, but after that date they vary randomly. Of the 10,000 projections to the year 2020, 25% show a fertility level below 1.7 and 25% show a level above 2.4. The central or median forecast is shown in the middle column, headed "50%." In any given year, future fertility is estimated to have a 95% chance of falling between the level in the first column, headed "2.5%," and the last column, headed "97.5%."

Table 1-1
Probability Distribution of the Total Fertility Rate in California

Year	2.5%	25%	50%	75%	97.5%
2000	2.2	2.2	2.2	2.2	2.2
2010	1.2	1.8	2.1	2.4	2.9
2020	1.0	1.7	2.0	2.4	3.1
2030	0.9	1.6	2.0	2.4	3.1
2040	0.8	1.6	2.0	2.4	3.1
2050	0.8	1.6	2.0	2.4	3.1

By 2050, the median fertility level is 2.0 births—slightly below replacement level. While our median fertility forecast shows a 10% decline in fertility over the next few decades, our median

birth forecast shows a 15% increase as seen in Table 1-2. This seemingly paradoxical result stems from the increasing number of women of childbearing age as a result of immigration.

Table 1-2
Probability Distribution of Total Births in California

Year	2.5%	25%	50%	75%	97.5%
2000	531,285	531,285	531,285	531,285	531,285
2010	326,764	460,724	542,844	620,301	768,798
2020	280,456	459,632	561,153	667,961	882,456
2030	244,536	446,213	573,996	716,028	1,025,495
2040	207,656	442,054	595,606	781,867	1,203,435
2050	186,567	433,690	613,126	830,265	1,374,866

Mortality

The 20th century has been characterized by remarkable progress in lowering mortality. Some decades were marked by slower progress, others by more rapid. Nonetheless, the long-term trend has been a steady decline in mortality risks. Our forecasts are based on this long-run trend. Table 1-3 shows our forecasts of life expectancy for Californians. Currently, life expectancy in California is about one year longer than in the nation as a whole, and about three years less than in Japan, which has the world's highest life expectancy at 80.7 years. We estimate a 50% probability that California will surpass the current world record within 17 years. There is a 25% chance of surpassing it within 12 years.

Table 1-3
Probability Distribution of Life Expectancy at Birth

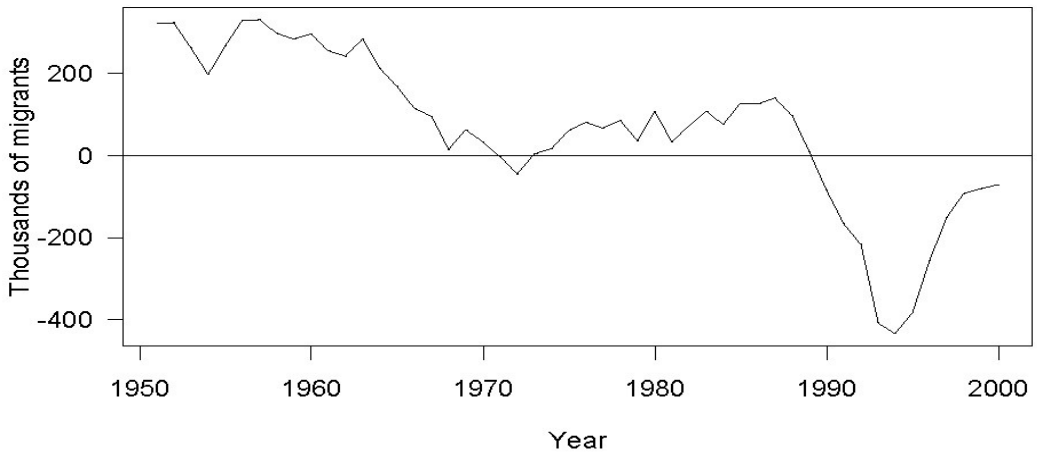
Year	2.5%	25%	50%	75%	97.5%
2000	78.8	78.8	78.8	78.8	78.8
2010	78.9	79.6	79.9	80.3	81.0
2020	79.5	80.5	81.1	81.6	82.6
2030	80.2	81.5	82.1	82.8	84.0
2040	80.8	82.4	83.2	84.0	85.4
2050	81.5	83.3	84.2	85.1	86.7

In California, as in the U.S. and most countries, men face higher mortality risks than women. Part of the reason is thought to be sex-differences in smoking behaviors. This gap has been declining in the U.S. as these sex-differences have declined, and one could reasonably expect this to continue. While our mortality forecast is agnostic about the specific mechanisms of mortality decline, it does yield forecasts consistent with a continuing narrowing of this gap. In 2000, life expectancy at birth for women was 4.7 years higher than men in California. Our median forecast shows a decline in the gap to 4.1 years by 2050, while average life expectancy increases by 5.4 years. This implies significant reductions in widowhood among the elderly.

Migration

California's population has grown phenomenally over the last century, doubling four times. Traditionally, immigration has been an important source of this growth, equal to that of natural increase. However, domestic net migration into California declined to low levels in the 1970s and 1980s and swung dramatically negative in the 1990s, as seen in Figure 1-1. In 1994, net outflows amounted to more than 1.3% of the population. This corresponded to an economic recession in the state.

Figure 1-1
Net Domestic Immigrants



We do not formally model the effects of economic activity on migration. However, to the extent that such effects are present in the time series, they are reflected in our forecasts.

Our forecasts are shown in Table 1-4. In the middle column, we see that our median forecast is for continued negative net migration into the state (that is, net flows out of the state) over the next 50 years, with a net loss to other states each year amounting to 0.2% of California's population. Less than 3% of forecasts show large net out-migration like that experienced in the recession of the 1990s. About 30% of forecasts show a return to positive net inflows.

Our forecast of international immigrants moving to California is based on the middle series national projection of the Census Bureau, which we treat as certain, together with a probabilistic forecast of the percent of U.S. immigrants likely to settle in California. This procedure understates the uncertainty of our immigration projection, but it is preferable to ignoring the uncertainty altogether. The Census Bureau forecasts a net inflow of 915,000 immigrants per year over the next 50 years. Figure 1-2 shows the percent of U.S. immigrants who intend to reside in California according to our forecast. International immigration is forecast to be an important source of population growth, as shown in Table 1-5.

Table 1-4
Probability Distribution of Net Domestic Immigration
(Percent of California Population)

Year	2.5%	25%	50%	75%	97.5%
2000	-0.21%	-0.21%	-0.21%	-0.21%	-0.21%
2010	-1.22%	-0.54%	-0.23%	0.08%	0.68%
2020	-1.35%	-0.57%	-0.23%	0.08%	0.72%
2030	-1.43%	-0.59%	-0.24%	0.09%	0.72%
2040	-1.45%	-0.60%	-0.24%	0.09%	0.74%
2050	-1.50%	-0.59%	-0.25%	0.08%	0.74%

Figure 1-2
Percent of U.S. Immigrants Intending to Reside in California

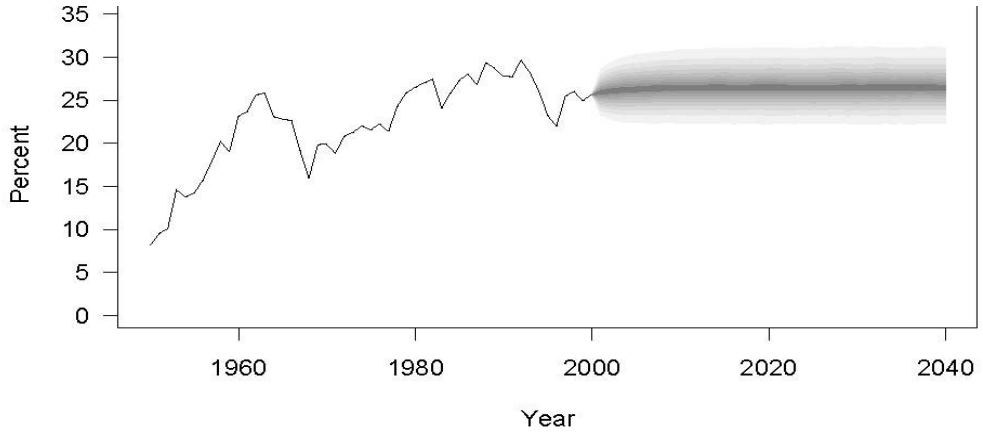


Table 1-5
Probability Distribution of International Immigration to California (Total Number)

Year	2.5%	25%	50%	75%	97.5%
2000	286,188	286,188	286,188	286,188	286,188
2010	186,417	215,101	228,963	242,991	276,406
2020	191,257	223,936	238,996	254,617	292,082
2030	257,826	300,709	320,732	341,725	395,399
2040	248,643	288,984	308,077	327,522	380,181
2050	241,012	282,479	300,398	319,832	371,168

Population Growth

We generated 10,000 population projections based on the trajectories of fertility, mortality, and immigration. The vast majority of projections show increases in population over the next 50 years, as shown in Table 1-6. About half of our projections show increases of at least 19 million people by 2050. About 5 million additional people may be added in the next decade.

Table 1-6
Probability Distribution of California's Population

Year	2.5%	25%	50%	75%	97.5%
2000	33,871,648	33,871,648	33,871,648	33,871,648	33,871,648
2010	35,845,170	37,635,460	38,579,491	39,501,573	41,304,658
2020	35,844,602	40,360,692	42,600,282	44,794,583	49,218,255
2030	34,987,879	42,757,065	46,496,744	50,169,523	58,259,209
2040	33,130,673	44,485,574	49,901,681	55,463,231	67,973,623
2050	30,016,609	45,229,545	52,617,979	60,479,535	78,148,738

Figure 1-3 shows the probability distribution for the total population. The probability is 10% that the population will fall within the darkest shaded region and 90% that it will fall within any shaded region. Also graphed are population forecasts from the Census Bureau (CB, through 2025 only), Bureau of Economic Analysis (BEA), UCLA, Center for the Continuing Study of the California Economy (CCSCE), and the state's Department of Finance (DOF). For a detailed discussion of these forecasts, see Johnson's review (1999). These agency forecasts generally fall within our 90% probability intervals. As a group they tend to represent high-growth scenarios, since most lie in the upper limits of our probability ranges. An important contribution of our probabilistic forecast is to draw attention to the equally likely probabilities of slow-growth scenarios.

Figure 1-4 shows annual population increase by decade since 1900. The state grew by more than 600,000 people per year in the peak decade of the 1980s. The 1990s represented a sharp decline to 400,000 people annually, on a par with the increases of the 1940s, 1950s, 1960s, and 1970s. Most of our forecasts show positive, but declining, growth rates. However, there is a wide band of uncertainty around the median, and this band increases over time. For the decade 2030–2040, about 5 % of our forecasts show a net increase of more than 1.1 million people annually—nearly double the peak rate of the 1980s. Another 5% of forecasts show annual losses of more than 300,000 people per year. Table 1-7 summarizes the probabilities associated with various levels of net population change by decade.

Age Structure of the Population

Important shifts in the age distribution of the population are forecast over the next 50 years. The following tables present results for three large age groups: youth (0 to 19 years) shown in Table 1-8, working-age adults (20 to 64 years) shown in Table 1-9, and seniors (65 and older) shown in Table 1-10. These age categories are conventional and stylized. Many individuals over age 65 continue to work, for example, and many people under 65 are not in the labor force. It is possible that patterns of work by age will change dramatically in the coming decades, but we have not attempted to project actual labor-force participation.

Figure 1-3
California Population Probability Deciles

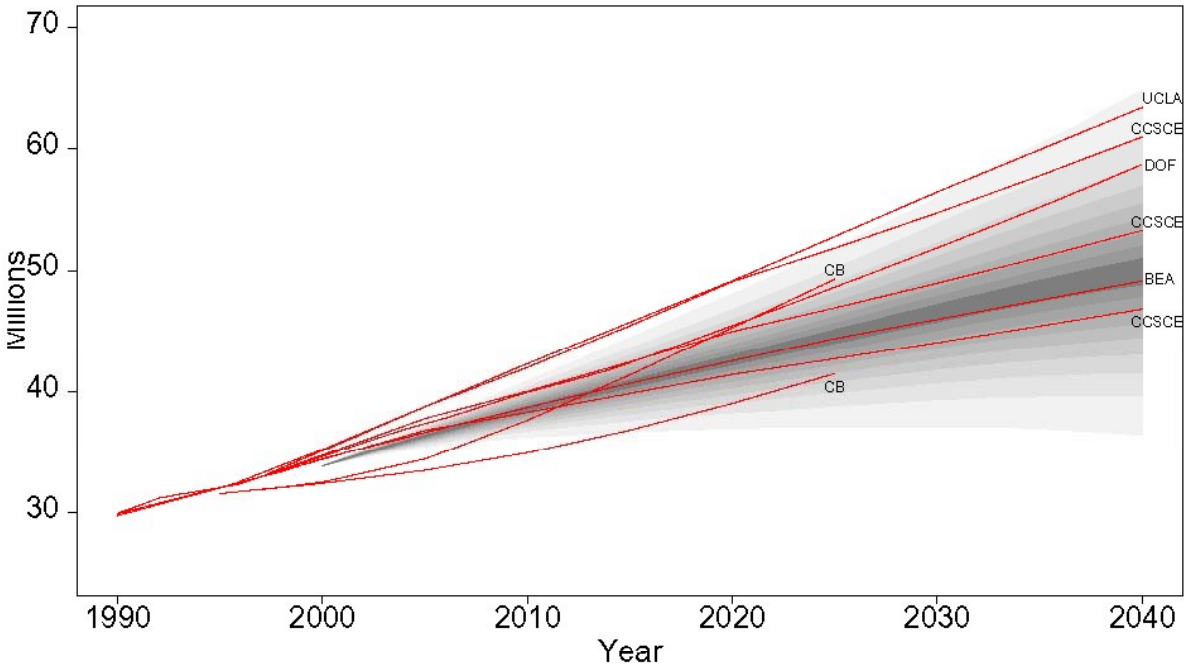


Figure 1-4
Population Increase by Decade

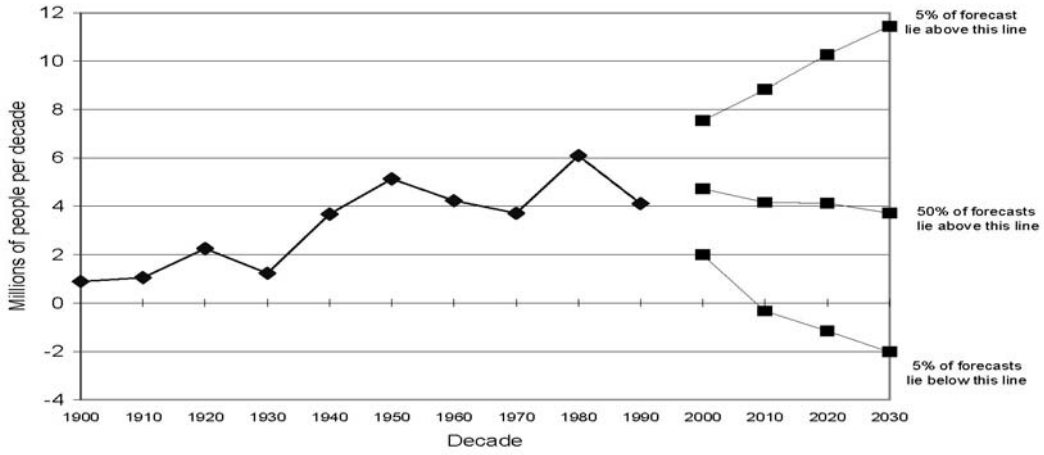


Table 1-7
Annual Population Increase per Decade

Percent of forecasts showing:	2000 to 2010	2010 to 2020	2020 to 2030	2030 to 2040
Population decline over the decade	0.10%	3.40%	6.10%	10.70%
Increase fewer than 200,000 annually	2.50%	17.00%	21.20%	28.50%
Increase fewer than 400,000 annually	30.30%	47.20%	48.20%	53.40%
Increase greater than 600,000 annually	18.40%	20.90%	25.10%	25.20%

Table 1-8
Probability Distribution of the Population, 0 to 19 Years

Year	2.5%	25%	50%	75%	97.5%
2000	10,234,571	10,234,571	10,234,571	10,234,571	10,234,571
2010	9,360,796	10,356,115	10,886,192	11,399,945	12,419,928
2020	7,463,182	9,887,359	11,223,578	12,568,655	15,160,067
2030	6,049,161	9,672,235	11,661,313	13,720,469	18,042,722
2040	5,064,166	9,474,217	12,066,567	14,846,199	21,051,808
2050	4,099,243	9,205,431	12,461,046	16,067,172	24,659,242

Table 1-9
Probability Distribution of the Population, 20 to 64 Years

Year	2.5%	25%	50%	75%	97.5%
2000	20,041,419	20,041,419	20,041,419	20,041,419	20,041,419
2010	21,763,180	22,857,922	23,385,918	23,901,975	24,896,412
2020	21,315,655	24,039,005	25,250,473	26,377,055	28,772,699
2030	19,448,668	24,366,453	26,384,168	28,295,280	32,491,022
2040	17,497,832	24,942,526	27,858,548	30,780,056	37,588,688
2050	15,822,640	25,375,132	29,328,420	33,452,519	43,004,167

Table 1-10
Probability Distribution of the Population, 65 and Older

Year	2.5%	25%	50%	75%	97.5%
2000	3,595,658	3,595,658	3,595,658	3,595,658	3,595,658
2010	4,180,873	4,273,001	4,319,220	4,366,470	4,453,470
2020	5,745,882	6,008,036	6,134,426	6,258,900	6,504,063
2030	7,641,370	8,187,259	8,448,205	8,702,026	9,203,165
2040	8,439,928	9,466,729	9,944,357	10,423,743	11,381,143
2050	8,138,587	9,984,749	10,788,895	11,608,445	13,306,847

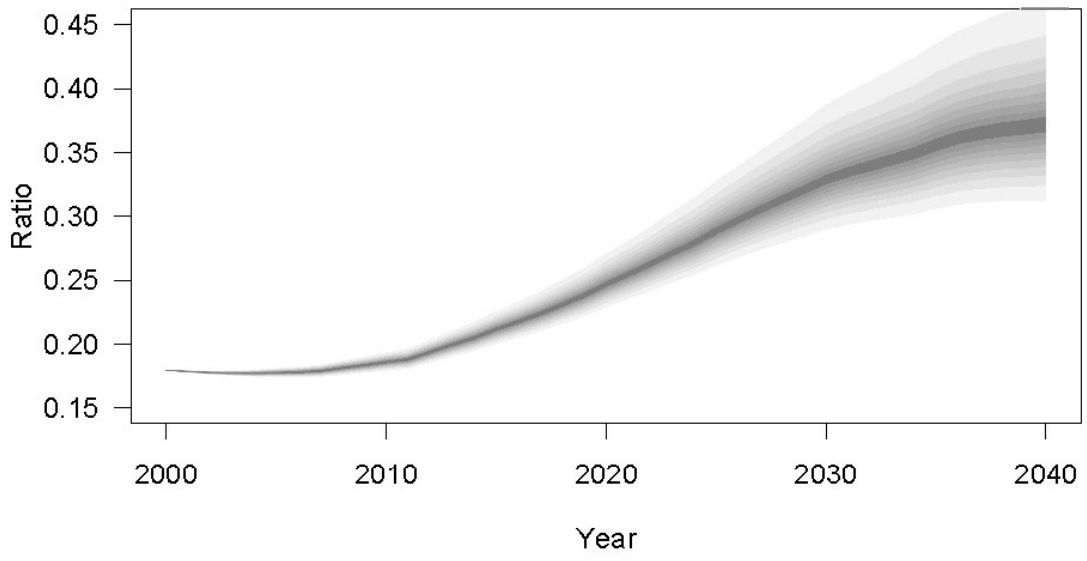
Of the three age groups, seniors are projected to have the most rapid growth. The senior population can be expected to double in 25 years and triple in 50 years. By 2050, the median forecast shows nearly 11 million seniors—the size of the current population under 20. Now, there are roughly three times as many youth as seniors. By 2050, there will be roughly equal numbers in our median forecast.

Shifts in age structure can have important effects on government budgets. As a group, youth and

seniors receive more in government benefits than they pay in taxes, with the deficit financed by the working-age population (20 to 64 years), and in this sense they can be referred to as dependent age groups. As crude measures of the potential fiscal costs of the changing age distribution of the population, we can compute so-called dependency ratios for youth and old age, and for youth and elderly together (the total dependency ratio).

It is virtually certain that the old-age dependency ratio will increase substantially (Figure 1-5). Little change is forecast over the next decade, but this is followed by dramatic increases as baby

Figure 1-5
Probability Deciles for Old-Age Dependency Ratio



boomers retire. By 2050, it more than doubles in the median forecast. Turning to the young-age dependency ratio, we find a considerable range of uncertainty. The median forecast shows a drop in this ratio, indicating an easing of the educational tax burden in the state (Figure 1-6). Combining the two together, we see that the total dependency ratio is relatively constant (Figure 1-7).

The total dependency ratio is a crude measure of the fiscal impact of changes in the state's demography for two reasons. First, it does not differentiate between children and the elderly. In recent years, the average youth has been about 2.7 times more costly to the state than the average elderly person. Second, as a group, the elderly are net taxpayers at the state level. Only the oldest-old (those over age 85) are net recipients of state benefits.

Assuming these current spending patterns continue in the future, Table 1-11 presents the corresponding economic-dependency ratios. In the median forecast, we see that changes in the age structure of California's population over the next 10–20 years are likely to modestly ease tax

burdens in the state—on the order of a 6% tax cut for the first decade and another 4% in the following decade, other things being equal. After 2020 or so, the median forecast shows no further changes from an aging population.

Figure 1-6
Probability Deciles for Young-Age Dependency Ratio

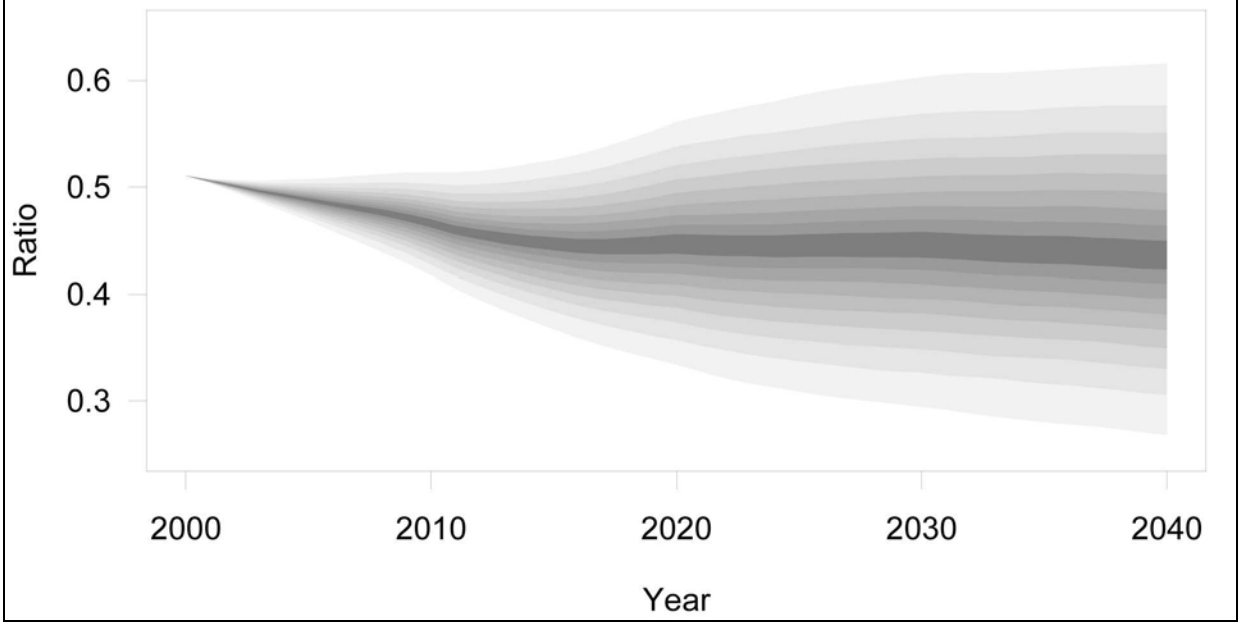


Figure 1-7
Probability Deciles for Total Dependency Ratio

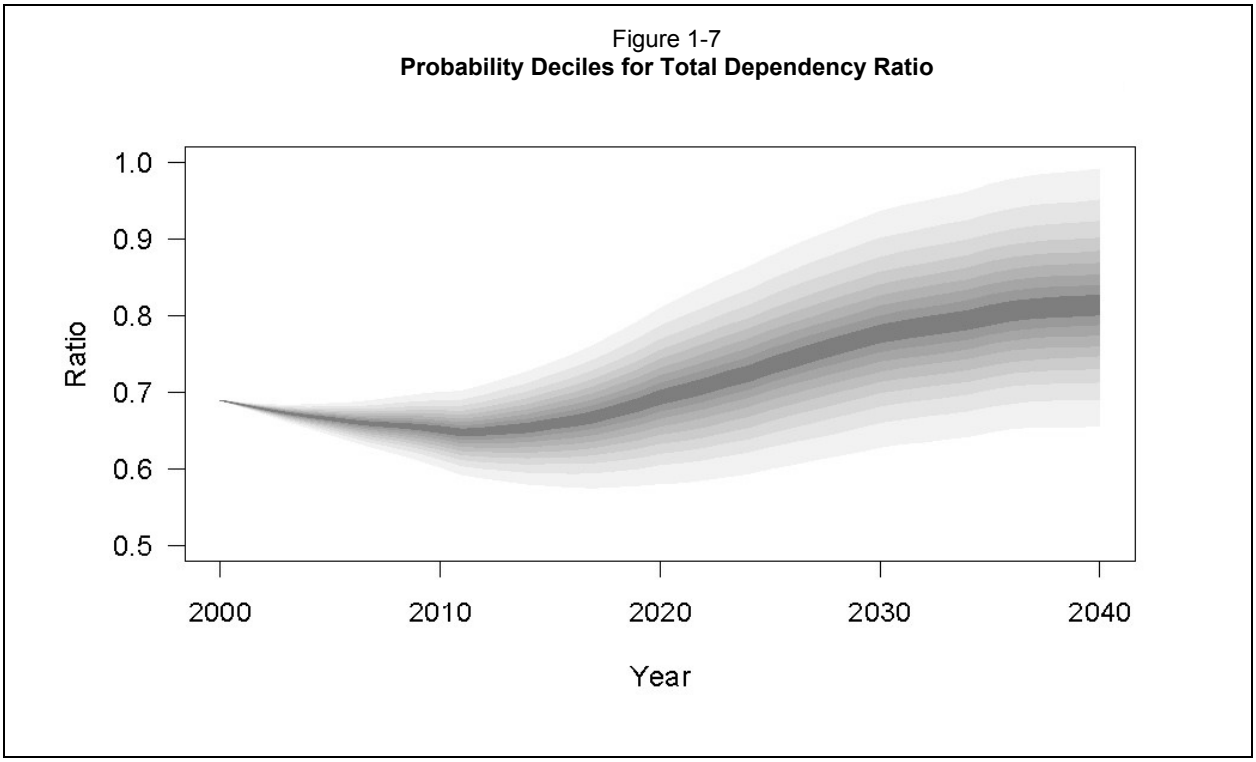


Table 1-11
Probability Distribution of the Economic-Dependency Ratio

Year	2.5%	25%	50%	75%	97.5%
2000	1.00	1.00	1.00	1.00	1.00
2010	0.90	0.92	0.94	0.95	0.97
2020	0.78	0.86	0.90	0.94	1.02
2030	0.71	0.83	0.90	0.97	1.08
2040	0.69	0.82	0.90	0.98	1.12
2050	0.67	0.81	0.90	0.98	1.14

Note, however, that these projections effectively hold costs per old and young person constant. Two competing trends will determine the future course of state benefits claimed by the elderly. On the one hand, there is good reason to expect that older people of a given age will be less likely to need long-term care in the future because of declining disability rates. On the other hand, costs of long-term care and medical care have been rising steadily. The net outcome of these competing trends is examined in Chapter 2.

California's Seniors

The population over age 85 is likely to be the fastest-growing age group. Currently, there are about 425,000 seniors over age 85. This is likely to increase by 50% in the next decade, as seen in Table 1-12. A fivefold increase is possible by 2050. The median outcome is a fivefold increase, but there is a chance it could grow by a factor of 6.5.

Table 1-12
Probability Distribution of the Population, 85 and Older

Year	2.5%	25%	50%	75%	97.5%
2000	425,657	425,657	425,657	425,657	425,657
2010	608,779	630,895	642,381	654,151	675,843
2020	640,625	695,510	724,111	753,671	811,961
2030	786,963	889,904	943,755	998,432	1,109,074
2040	1,247,116	1,450,321	1,559,978	1,674,762	1,900,127
2050	1,635,421	1,972,710	2,156,302	2,351,960	2,747,530

In the midst of this dramatic rise in the population of seniors and especially among the "oldest-old" population, there will be concurrent changes in what it means to be old. Two salient issues are widowhood and illness. We can consider these topics through their relationship with mortality. Among California seniors, there are currently 40% more women than men. This disparity is a product of differential mortality and is reflected in widowhood. According to the Census 2000, among California seniors 14% of men are widowed, while 43% of women are widowed. Our forecasts show a decline in the mortality gap between men and women and a more equal ratio of men and women among the senior population. By 2050, women will outnumber men by just 14% among seniors. This equalization implies a large reduction in the proportions widowed and the accompanying likelihood of living alone or in an institution.

From the perspective of their future mortality risks, 65-years-olds of today are like the 61-year-olds of a generation ago. We forecast this trend to continue, with 65-year-olds of 2030 facing the mortality risks of 57-year-olds a generation ago. In this sense, future seniors will be much younger than their chronological age implies. There is also evidence that this youthfulness (in respect to being further away from death) translates into improved health—with reductions in the likelihood of disability, hospitalization, and institutionalization.

Conclusion

California's population is likely to experience moderate growth over the next 50 years in an environment characterized by low fertility, low levels of net out-migration to other states, and continued high levels of international immigration. As the population grows, the age structure of the population will change, with relatively fewer young people and relatively more seniors. This combination of a growing and aging population is unusual and is indicative of the importance of immigration to the state's growth.

These demographic changes will have an impact on the state's budget, a topic we turn to in the next chapter. The state's fiscal balance is in part driven by population age structure, since the state provides benefits such as public education to children and health care to the elderly. According to our analysis of the economic-dependency ratio, demographic changes in the next 20 years should lead to a modest easing of budget pressures in the state in the near term—a 10% reduction in taxes by 2020. Following this, despite the retirement of the baby-boom generation, expenditures will not change much under current program structures.

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Chapter 2

FISCAL PROJECTIONS FOR THE STATE OF CALIFORNIA

Although significant, the challenges posed by population aging in California over the next 50 years appear to be manageable. State-administered public services for the elderly, such as means-tested cash support and medical care for the indigent and medically needy, must indeed increase as the number of elderly Californians rises.

Two significant factors help offset the strains on future resources that are implied by these trends, however. First, reflecting historical divisions of the support burden between federal and state levels, California's public support system is primarily directed toward assisting young residents rather than old. Population aging will decrease the relative number of young Californians and may lessen state budgetary pressures considerably, even though elderly support will have to increase. Second, patterns of declining disability rates by age, if projected to continue, imply that on a per-capita basis the elderly are likely to require less assistance. To explore how these factors interact to influence future needs for elderly services, in this chapter we estimate future public-service needs in the context of the state's General Fund budget.

New probabilistic methods are used to convey the degree of uncertainty associated with these projections. Budget forecasts are driven largely by the demographic predictions described in Chapter 1, which we continue to treat as uncertain. Uncertainty about productivity growth rates, interest rates, and rates of increase in health costs per person is also interwoven into the forecasts. Tax rates and patterns of program usage by age and sex are assumed to remain fixed through time, however. Overall, these probabilistic budget projections reflect a reasonably large set of uncertain influences, and they should capture future uncertainty fairly well. These probabilistic projections have been designed to reflect long-run uncertainty, but not uncertainty arising from shorter-term economic fluctuations of the sort the state is now experiencing.

The California Budget

California's General Fund budget is the simplest measure of the state's fiscal condition, although it is not comprehensive. The General Fund, which accounts for the majority of the state's fiscal activities, measures taxes and expenditures that are not otherwise restricted by law. Restricted activities (the excluded ones) include the state employees' pension system, CalPERS, and other systems maintained separately by the state.

Tables 2-1 and 2-2 display General Fund receipts and expenditures in the 2000–01 fiscal year. The meaning of the italics will be explained later. Personal income taxes account for almost two-thirds of General Fund inflows, while the largest component of spending is K–12 education, at more than one-third of outlays. Medi-Cal spending on medical care for the poor and medically needy is roughly 12% of the budget, with only a fraction of that spending currently accounted for by nursing-home patients in institutionalized care. Support for higher education currently equals the amount spent on Medi-Cal.

Although California's state government is not required by law to balance the General Fund budget, a combination of debt ceilings and restrictions on tax increases has resulted in fund balances near zero during the recent past (Poterba and Rueben, 1999). Figure 2-1 displays the history of General Fund deficits and surpluses and the corresponding credit rating of California's municipal bonds since the late 1970s. Deficits in the state's General Fund generally have been associated with downgrades in credit ratings, and surpluses have been rewarded with upgrades. The state's future fiscal health and its relationship to population aging will therefore be assessed by projecting the General Fund budget.

Table 2-1

Revenue Categories, in Thousands of Current Dollars

	2000–01	**Percentage**
Sales taxes[1]	21,691,958	30.4
Corporation tax	6,899,302	9.7
Horse racing (parimutuel) license fees	4,382	0
Estate, inheritance, and gift tax	934,708	1.3
Insurance gross premiums tax	1,496,556	2.1
Trailer coach license (in-lieu) fees	26,337	0
Personal income tax	44,614,297	62.5
Regulatory taxes and licenses	64,745	0.1
Revenue from local agencies	309,448	0.4
Services to the public	36,625	0.1
Use of property and money	890,493	1.2
Miscellaneous	638,737	0.9
Transfers and loans	-6,180,234	-8.7
Totals, revenues, and transfers	71,428,156	100

[1] Includes the following subcategories: alcoholic-beverage taxes and fees; cigarette tax; and retail sales and use taxes. Italics are used to identify fiscal programs that are intrinsically tied to the population's age characteristics.

Sources: Data are from California Governor's Budget Summary 2002–03, Schedule 8. They represent General Fund transactions only. Data for 2001–02 are preliminary, and data for 2002–03 are proposed.

Patterns of Growth

Long-term fiscal pressures can be gauged by first identifying the likely determinants of growth in spending and taxes. In reality, the trajectories of taxes and spending are determined in part by economic activity and in large part by a complicated political process that reconciles the needs of multiple interest groups across the state with the requirements imposed by statewide propositions. The approach we take this report is more mechanical in nature, focusing solely on the demographic and economic sources that are likely to propel growth in taxes and spending over time, given current patterns of taxation and program usage.

Table 2-2
Expenditure Categories, in Thousands of Current Dollars

	2000–01	Percentage
Legislative, judicial, and executive[1]	2,568,694	3.3
State and consumer services	546,987	0.7
Business, transportation, and housing[2]	2,555,035	3.3
Technology, Trade, and Commerce Agency	144,313	0.2
Resources	2,110,007	2.7
California Environmental Protection Agency	479,275	0.6
Medi-Cal noninstitutionalized	7,884,129	10.1
Medi-Cal institutionalized	1,283,463	1.6
CalWORKS (TANF/AFDC)	1,965,870	2.5
Foster care	388,217	0.5
SSI/SSP	2,555,047	3.3
Child Welfare Services	513,807	0.7
Misc. Health and Human Services	5,218,864	6.7
Youth and Adult Correctional Agency	5,298,367	6.8
K through 12 education	29,746,390	38.1
Higher education[3]	9,148,780	11.7
General administration	707,881	0.9
Tax relief	4,655,679	6
Local government subventions	687,720	0.9
Debt service	8,452	0
Statewide expenditures	-328,748	-0.4
Augmentation for employee compensation	-	
Statewide savings	-83,156	-0.1
Adjustment to reconcile to controller	-2,124	0
Grand Total	78,052,949	100

[1] Includes the following subcategories: totals, legislative; totals, judicial; totals, executive/governor; and totals, executive/constitutional offices.
[2] Includes the following subcategories: totals, business and housing; totals, transportation; and totals, statewide distributed costs.
[3] Includes the following subcategories: totals, higher education—community colleges; and totals, higher education—UC, CSU, and other.
Italics are used to identify fiscal programs that are intrinsically tied to the population's age characteristics.

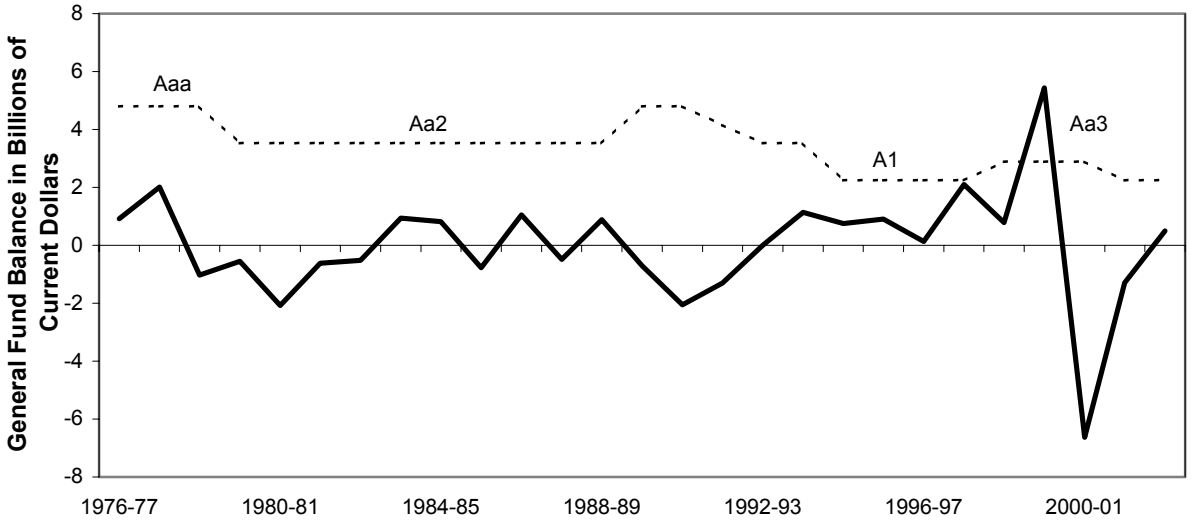
Sources: Data are from California Governor's Budget Summary 2002–03, Schedule 9. They represent general fund transactions only. Data for 2001–02 are preliminary, and data for 2002–03 are proposed.

Italics in Tables 2-1 and 2-2 identify fiscal programs that are intrinsically tied to the population's age characteristics. In contrast, the programs that are not italicized are those that are not likely to be disproportionately tied to any particular age group. On both sides of the balance sheet, the largest programs are those that are linked to specific age groups. For example, personal income

taxes, at two-thirds of general revenues, are tightly linked to age patterns of working and earning returns on investments, which tend to rise and then fall with age in a hump shape. Sales taxes are linked to consumption activity, which tends to be sensitive to income and wealth. Primary and secondary education clearly targets children between 5 and 18, and higher education is similarly linked to age. Nursing-home residents, many supported by the institutional component of Medi-Cal, are by and large older widows. A somewhat less-rigorous connection can be made between the population's age structure and Medi-Cal support of the noninstitutionalized population. To the degree that income and wealth profiles tend to follow strict age patterns, the propensity to qualify for needs-based assistance can also be related to age.

For these programs, a reasonable supposition is that, over time, aggregate budget totals will tend to grow with the size of the target populations and with the growth in average incomes. We assume that as average incomes in California grow, both labor income and capital income will grow at the same rate, maintaining a fixed share of the total. Taxes based on capital income, such as the corporate income tax, are therefore expected to rise with California's total income, or gross state product (GSP). Likewise, the remaining categories of taxes and expenditures that are not tightly associated with age are assumed to grow with state income. The underlying logic is that the demand for public services is likely to grow with income, and the miscellaneous taxes required to finance them should keep pace.

Figure 2-1
California's General Fund Balance and Moody's Credit Rating of California's Municipal Bonds



Sources: California Department of Finance, Historical Data, General Fund Budget Summary; California State Treasurer's Office reporting data from Moody's Investor Services.

Using data from the Current Population Survey's Annual March Supplement for the years 1995–2002, we construct age profiles of use for all state spending programs, age profiles of incidence

for all taxes, and also measure labor earnings by age and sex. The National Nursing Home Survey from 1995 provides an age profile of usage of Medicaid in nursing homes, which we project to 2000 according to the observed rates of decline in usage, discussed in more detail below. We assume that the age profile of institutionalized Medi-Cal usage in California nursing homes has the same shape as its national counterpart. All age profiles are scaled so as to represent true program totals per user in the state's 2000–01 fiscal year.

Growth in average incomes is fueled by productivity growth, defined as real output per labor input. Paralleling earlier work by Lee and Tuljapurkar (1998), Lee, Tuljapurkar, and Edwards (1998), and Lee and Edwards (2002), a stochastic productivity growth rate is projected at the national level with a long-run average of 1.6%. California's output per capita has grown at roughly the same rate as national productivity in the recent past, but it also has displayed transitory effects of state-specific shocks. By shocks, we mean unanticipated changes in the economy. A stochastic California-specific productivity growth rate is constructed by layering probabilistic shocks averaging to zero over the national productivity series. This series is then used to forecast gross state product and to scale up the demand for state programs and the tax base over time.

Like most states, California has special reserve funds for economic uncertainties, sometimes referred to as "rainy-day funds" for use when bad times erode the General Fund balance. Similarly, the state controls other trust funds whose balances are constantly evolving; and, of course, California currently has outstanding debts of many kinds. We have not attempted to formally model the dynamics of California's net indebtedness. Rather, we focus solely on General Fund surpluses and deficits and their consequences. General Fund expenditures are therefore presented as primary spending plus the interest payments that are required to service previous years' General Fund deficits.

The debt concept in these projections is the amount of debt serviced in the General Fund budget plus any new debt acquired through General Fund deficits, minus any debt retired by General Fund surpluses. The interest rate California pays on its General Fund debt is projected with a stochastic process, as in Lee and Tuljapurkar (1998). Its long-term average is assumed to be a real rate of 2.2%, and it is adversely affected by the stochastic California-specific productivity shock.

Growth in medical care is subject to two special conditions. As recent history has shown, per-capita medical expenditures tend to rise faster than per-capita incomes (e.g., Cutler and Sheiner, 2001, and Lee and Miller, 2002). Future Medi-Cal spending is therefore projected using a growth factor that averages roughly 2% per year in excess of the growth in incomes for the near future, declining eventually to 1% per year. Although such a path is unsustainable in the long run, the current consensus among forecasters is that it is a reasonable approximation given current knowledge. A second, offsetting factor is that rates of disability appear to be declining, as discussed earlier. As noted, rates of nursing-home usage also appear to be declining. The institutional component of Medi-Cal spending, which is directed toward destitute nursing-home residents, likewise grows less quickly because rates of program usage appear to be declining. Based on national data on Medicaid patients in nursing homes between 1977 and 1995, it appears that Medi-Cal usage rates by age are declining at an annual rate of 0.7%.

With these components—population projections, age profiles of use, productivity growth rates, excess health-cost growth rates, rates of declining nursing-home utilization, and interest rates—a full set of stochastic budget simulations can be produced. The projection period is set arbitrarily at 2001–2050; any length could be chosen.

Long-term Fiscal Projections

California's aggregate fiscal outlook during the next 50 years is considerably brighter than that of the federal government, about which much has been written elsewhere (e.g., CBO 2000). The primary reason is the historical division of support responsibilities between the states and the federal government, in which the federal government provides for elderly Americans with Social Security and Medicare, while the states provide children with education and several other more-limited services. There are notable exceptions to that rule, however. Medi-Cal, which is funded jointly by California and the federal government, is one such exception.

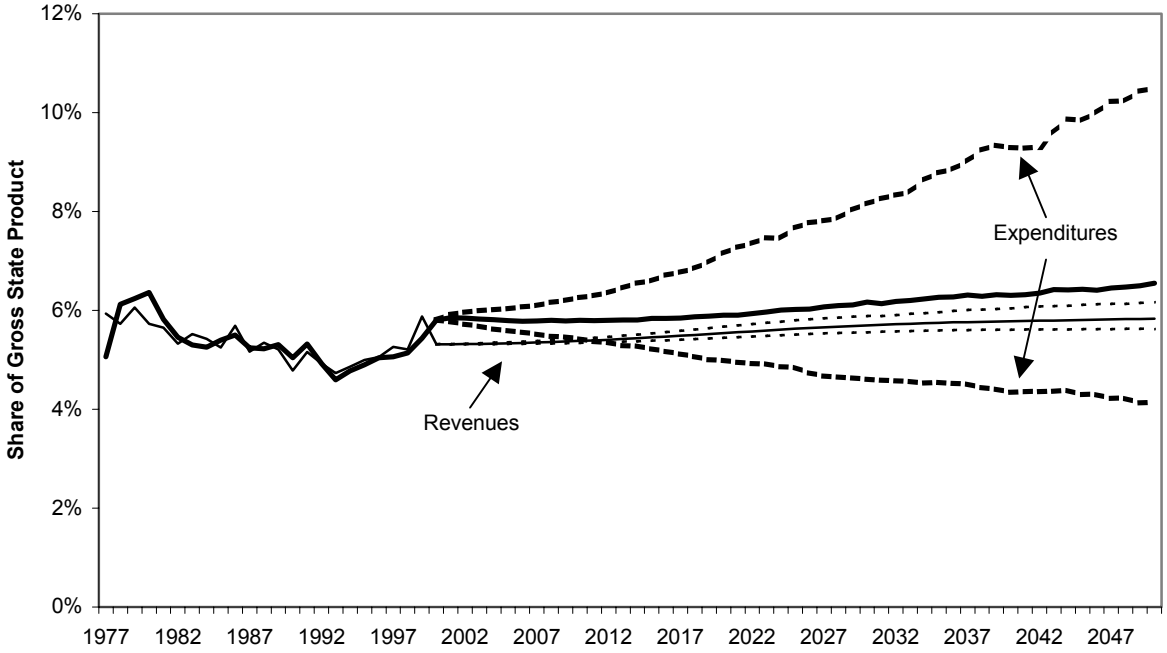
Figure 2-2 displays historical data and stochastic projections of total revenues and total expenditures as shares of gross state product. Revenues are represented by the thinner lines and expenditures by the thicker lines, with 95% probability intervals shown as dashed lines around the solid median projections. There is little uncertainty about revenues as a share of income, since the state's tax receipts are based on elements that grow directly with income. As a result, the stochastic projection of state tax revenue simply reflects the average "tax take" of state income, with some upward drift due to there being a slightly higher proportion of Californians of tax-paying age in the future.

General Fund revenues are projected to grow slightly as a share of income, hovering around 5% to 6% of GSP. Expenditures, on the other hand, are quite uncertain and could reach as much as 10% of state income by 2050, or as little as 4%. Their median forecast increases slowly from slightly under 6% of GSP today to about 6.5% by 2050. Although the picture is somewhat influenced by the choice of 2000–01 as the base fiscal year, when the General Fund deficit was at an historic high, the size of the probability interval around future expenditures displays how little the initial conditions matter over time. Potentially rapid growth in state spending is far more important to the long-term picture than a balanced budget at any point in time.

The state's long-term fiscal balance depends critically on the rate of growth in Medi-Cal spending. Figure 2-3 displays stochastic projections of the component of Medi-Cal that funds nursing care as a share of gross state product. Although it absorbs only about 0.1% of GSP today, or about $1/60^{th}$ of the current budget, growth in institutionalized Medi-Cal is likely to be robust. The median trajectory suggests a near-quadrupling of program expenditures per GSP by 2050, with a share as high as 0.75% of GSP possible at the upper end of the probability distribution. The rest of Medi-Cal, or the larger noninstitutional component, is also an engine for growth in state expenditures, as shown in Figure 2-4. Noninstitutional Medi-Cal already accounts for about 10% of the budget and appears likely to double its share by 2050. Outside of Medi-Cal, the rest of the budget exhibits a more muted potential for growth, as shown in Figure 2-5. The median projection of the budget excluding Medi-Cal remains quite flat, although the probability distribution of trajectories is skewed toward higher percentages of income.

Figure 2-2

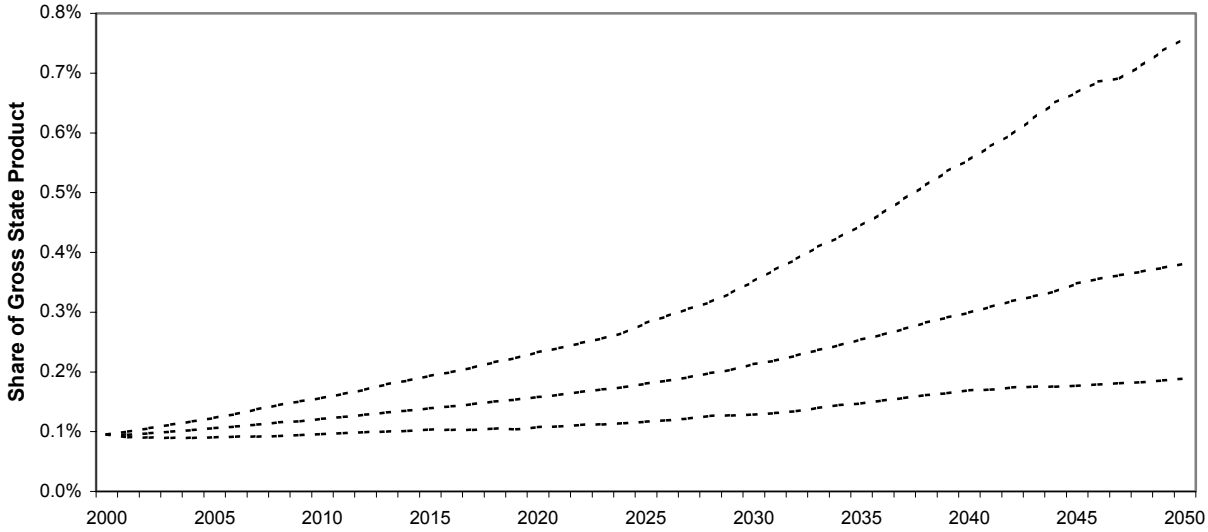
Projections of California's General Fund Revenues and Expenditures as Shares of GSP



Sources: Authors' calculations using various age profiles; in-house stochastic projections of the California population by age, state productivity growth rates, excess health-cost growth, and borrowing costs; and declining-nursing home usage. See text for details. The dashed lines define a 95% probability interval derived through stochastic projection techniques. while the solid lines represent median trajectories.

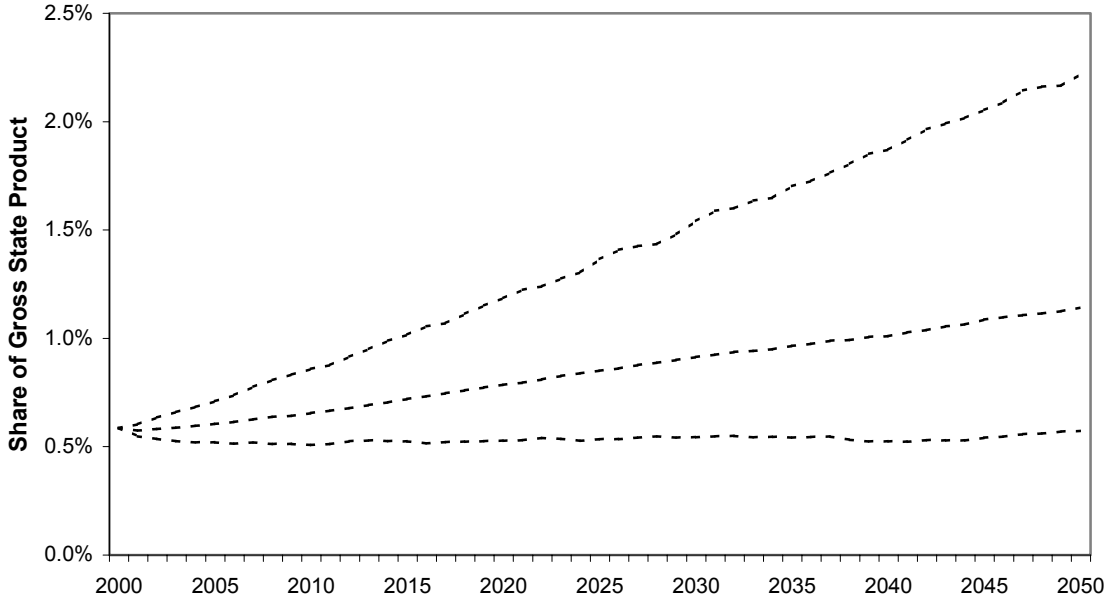
Figure 2-3

Projections of California's Institutionalized Medi-Cal Spending as a Share of GSP



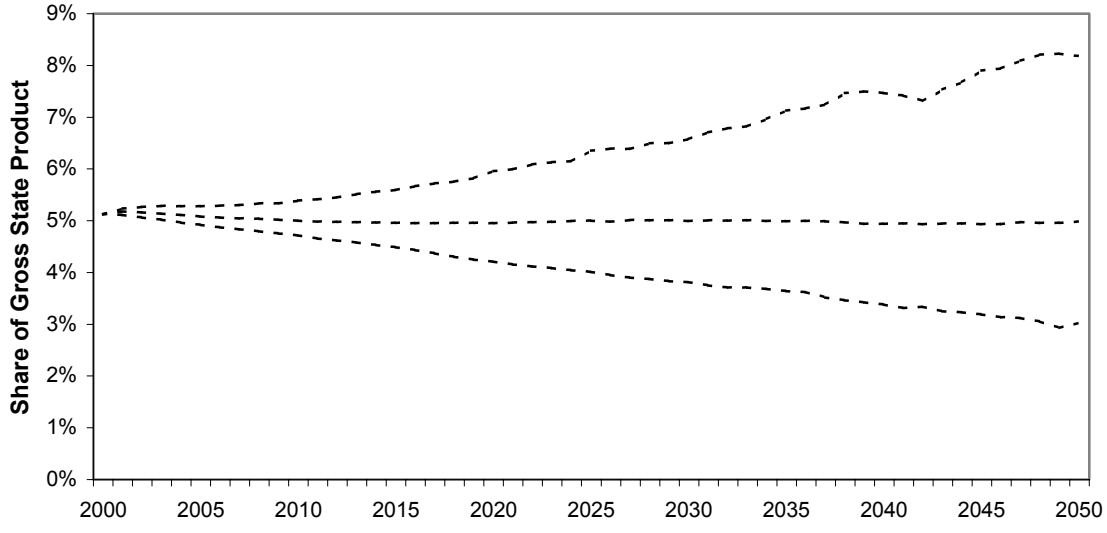
Sources: Authors' calculations using age profiles from the National Nursing Home Survey (NNHS); in-house stochastic projections of population, productivity growth rates, and excess health-cost growth; and declining rates of usage. See text for details. The dashed lines represent 97.5%, 50%, and 2.5% probability intervals on the stochastic projections.

Figure 2-4
Projections of Noninstitutionalized Medi-Cal Spending as a Share of GSP



Sources: Authors' calculations using age profiles from the CPS; and in-house stochastic projections of population, productivity growth rates, and excess health cost growth. See text for details. The dashed lines represent 97.5%, 50%, and 2.5% probability intervals on the stochastic projections.

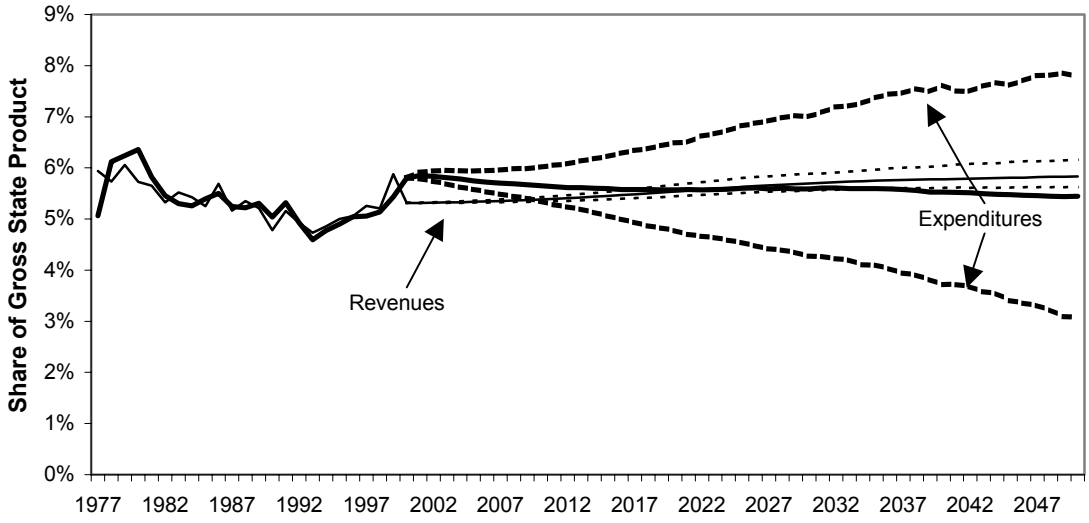
Figure 2-5
Projections of California's Public Spending Excluding Medi-Cal



Sources: Authors' calculations using age profiles from the CPS; and in-house stochastic projections of population and produc-tivity growth rates. See text for details.The dashed lines represent 97.5%, 50%, and 2.5% probability intervals on the stochastic projections.

Figure 2-6 depicts the dramatically lower expenditure projections that result if the excess medical-care cost growth assumption is dropped. With medical-cost growth set equal to the growth in average incomes, spending grows much more slowly. California's tax receipts could even surpass expenditures by 2020 without any changes in the state's sizable shortfalls today, if medical-care cost growth were not explosive. Assumptions about future costs of medical care are clearly a critical factor in the state's fiscal outlook.

Figure 2-6
Projected Revenues and Expenditures as Shares of GSP Without Excess Medical-Care Cost Growth



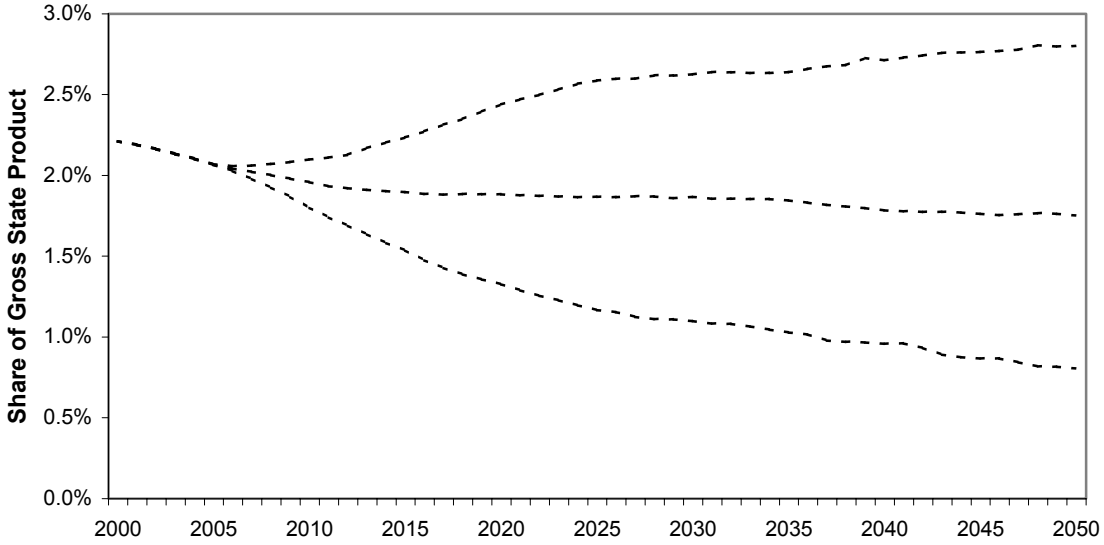
Sources: Authors' calculations using age profiles from the CPS and NNHS; in-house stochastic projections of population, productivity growth rates, borrowing costs; and declining rates of nursing home usage. See text for details.The dashed lines represent 97.5%, 50%, and 2.5% probability intervals on the stochastic projections.

Outlook

The outlook for California's aggregate fiscal position over the next 50 years is relatively favorable. Population aging will be costly, especially if per-capita medical care costs continue to rise as they have. The share of the budget funding nursing-home care through Medi-Cal will expand rapidly even as rates of nursing-home utilization and disability are declining. But since the state's primary support responsibilities are directed toward the young, the net effect of population aging on the state's fiscal balance is roughly zero and may be slightly positive over a 50-year horizon.

These results are contingent on declining shares of state budgets being devoted to the support of young people, however. Figure 2-7 displays stochastic projections of K–12 educational spending as a share of state income. The median trajectory indicates steady declines, and the lower 2.5% confidence bound is below 1% of GSP. Although the level of K–12 spending itself is still projected to rise over time, it is unclear whether a drop in the share of the state budget devoted to

Figure 2-7
Projection of K-12 Spending in California



Sources: Authors' calculations using age profiles from the CPS; and in-house stochastic projections of population and productivity growth rates. See text for details.The medians and 95% probability intervals reflect demographic uncertainty.

education is really a reasonable forecast. Even if political forces were content to allow such a shift in spending, there is the additional question of whether revenues that have traditionally been earmarked for certain activities could be redirected away from portions of the budget whose shares will shrink and toward those that will expand. Omitting issues of political economy in the budget process, as these projections do, is clearly an oversimplification. At the very least, however, forecasts of demographically driven demand for program usage and the likely availability of tax proceeds to meet that demand are useful in identifying key issues to be resolved by the political apparatus.

Conclusion

Population aging in California poses several key challenges for state finances, but there is ample reason to be optimistic about the future. Californians are living healthier as well as longer, even as the ranks of elderly increase with population aging. Public spending at the state level is primarily directed toward the young, while the state's tax base includes the population of working age and older. Both of these trends are expected to help offset most of the adverse effects of population aging on California's fiscal condition.

The primary budgetary pressures facing California over the next decade derive from rapid growth in per-capita health expenditures. Population aging will shift resources toward elderly Medi-Cal recipients as increases in the numbers of elderly people at risk and in the costs of treating them are likely to outweigh any positive effects of declining disability rates. It remains to be seen whether it will be politically feasible to refocus state fiscal policy away from young Californians and toward older Californians as the state ages.

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Chapter 3

CURRENT AND PROJECTED CHARACTERISTICS AND SERVICE NEEDS OF CALIFORNIA'S ELDERLY POPULATION

In Chapter 1 we presented the current and projected age composition of California's population, highlighting how the ranks of the state's elderly will swell over the next 50 years at the same time that immigration into the state is likely to continue. In Chapter 2 we discussed budget projections for California given these population trends. The state's decidedly mixed fiscal outlook was traced to the countervailing effects that population aging, immigration, and improving health have on finances. In this chapter we discuss the characteristics of elderly Californians today as well as likely future patterns, and explore the implications of these traits for assessing the service needs of the elderly—augmenting both of the earlier chapters by extending the analysis to a less aggregated and more detailed level.

Here, as in Chapter 2, we use the probabilistic demographic forecasts described in Chapter 1 to generate projections for a number of other outcomes. Some of these projections are done very simply, by applying a set of age-specific rates to these expected population age distributions. In some cases, such as for household headship rates, these age-specific rates are assumed to hold constant at their current level, with only the numbers of people by age in future years varying. In other cases, such as with disability rates, age-specific rates are projected as well, usually under the assumption that recent trends will continue.

In either case, future age-specific rates are assumed to be known exactly, so that the only uncertainty reflected in the probabilistic projections is coming from demographic uncertainty as estimated in Chapter 1. This procedure will seriously underestimate the uncertainty in our projections. Nonetheless, proceeding in this way does make it possible to say something about important topics that would otherwise have to be ignored.

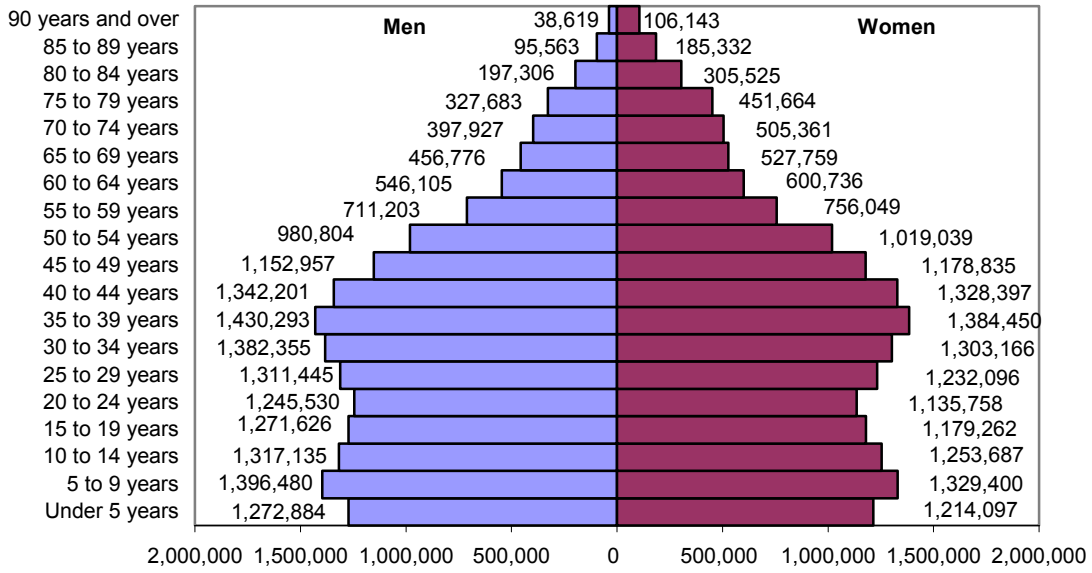
The first focus is the age and sex composition of California's elderly population. This is followed by an overview of their racial and ethnic characteristics as well as their language abilities. Educational attainment, income, and other economic characteristics comprise the third section. Health and disability status is the topic of the fourth section, and in the final section we discuss seniors' living arrangements and housing needs.

Age and Sex Composition

According to the recent census, roughly 3.6 million of the 34 million people residing in California on April 1, 2000, were 65 or older, representing about 11% of the state's overall population—a slightly lower share than the 13% of Americans who are elderly. Figure 3-1 displays California's population pyramid in 2000, a graphical depiction of the numbers of male and female residents by age. At ages below 45, numbers of males exceed those of females by about 5%. Near the top of the pyramid, the trend reverses dramatically; elderly females vastly outnumber males. California absorbs a large share of U.S. immigration, and many recent immigrants tend to be young rather than old, and male rather than female. Together, these trends help explain why California's sex ratio is heavily skewed toward males at younger ages, whereas nationally

men outnumber women only by about 1%. At older ages, greater survival of females leads to a shortage of males.

Figure 3-1
Californians Enumerated in the 2000 Census, by Sex and Age

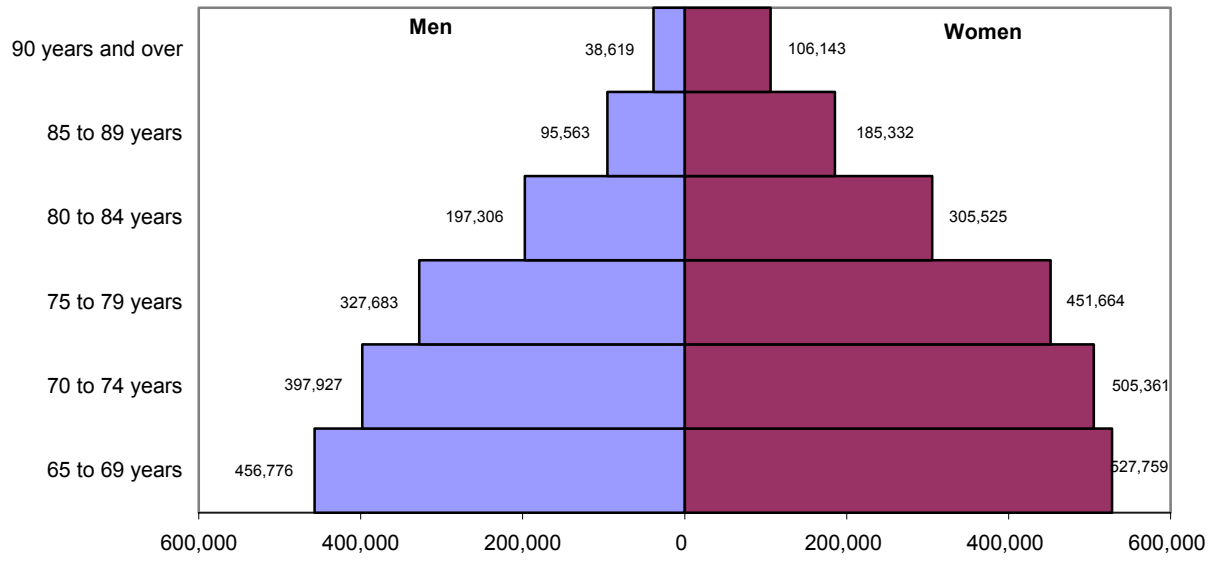


Sources: Data are from Census 2000.

Figure 3-2 narrows the focus to the population age 65 and over. The effects of mortality, as well as earlier variations in numbers of births and immigration, are evident in the strong tapering of the population pyramid above age 65: a large base of nearly 1 million seniors age 65–69 dwindles to only 145,000 seniors age 90 and over. Higher male mortality leads to an increasingly lopsided tip of the pyramid. Among seniors age 90 and over, women outnumber men by nearly 3 to 1. Prospects for elderly widowhood and the poverty that can frequently accompany it are currently quite high, although not any worse in California specifically.

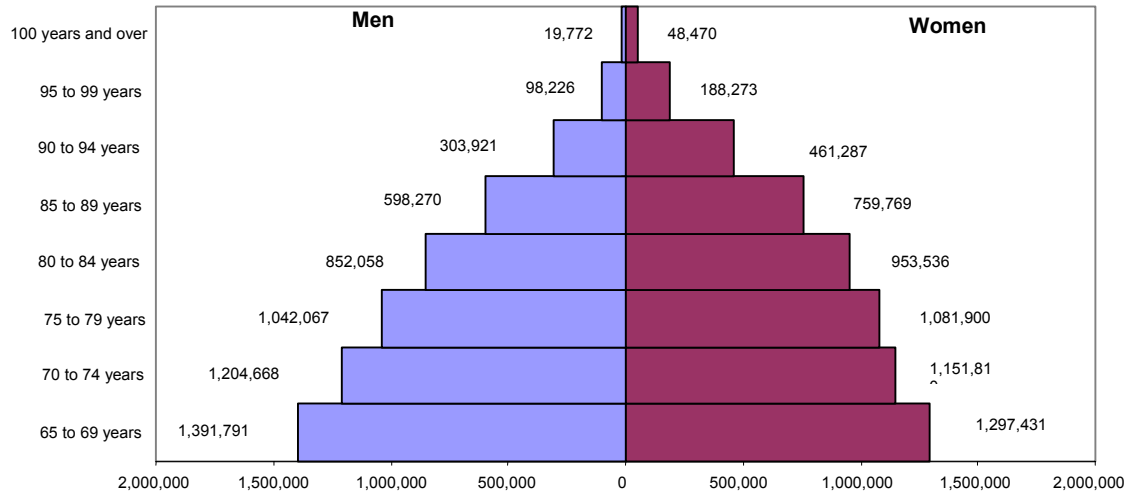
Elderly widowhood is likely to remain an issue in the future as well, but the sex ratio is expected to become significantly more balanced. This is partly due to the current relative abundance of young males, as shown in Figure 3-1; partly due to assumptions about future immigration patterns, as discussed in Chapter 1; but mainly a result of the declining gap in life expectancy between males and females. Nationally, the Census Bureau projects a fairly large increase in the ratio of elderly males to females by 2050, due largely to assumptions about the age and sex of immigrants. These projections for California, which borrow from Census Bureau immigration projections, forecast a larger increase in the state's elderly sex ratio over the same period because immigration disproportionately affects California. Figure 3-3 presents the age pyramid for California seniors based on median trajectories of the population projections described in Chapter 1. Lengthening lifespans are projected to result in almost two males for every three females among

Figure 3-2
California Seniors Enumerated in the 2000 Census



Sources: Data are from Census 2000.

Figure 3-3
Median Projected Numbers of California Seniors in 2050



Sources: Data are based on median projections of the California population by age and sex using the assumptions described in Chapter 1.

those age 90 and over by 2050, roughly doubling their relative numbers in 2000. At more advanced ages there is a greater disparity, but even among centenarians the sex ratio is projected to rise, reaching roughly two men for every five women.

Although the elderly population is projected to become less female over time because of declining widowhood and poverty rates, the elderly population is also projected to become older, as depicted in Figure 3-3. While seniors 85 and over comprised only about 12% of the elderly population in 2000, they are likely to represent almost one- quarter of the elderly population by 2050. All other things being equal, advanced age is associated with increased need. This topic will be revisited in the section below on disability and health, which explores trends in the quality as well as length of life, and discusses the likely impacts of those trends on aging-related service needs.

Race, Ethnicity, and Language

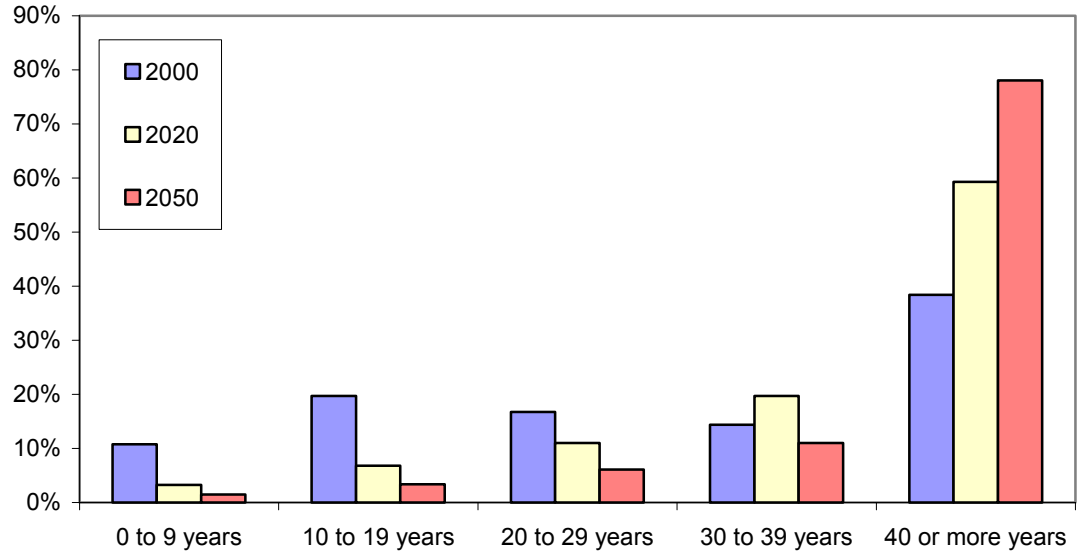
Hispanics and Asian Americans comprise large shares of California's population. Of the state's 34 million enumerated residents in 2000, 11 million (almost a third) identify themselves as Hispanic or Latino, while only about 13% of the nation as a whole is Hispanic. California's Asian-American population is also comparatively large, accounting for around 12% of the population but only about 4% of the U.S. population. Both ethnic groups have native tongues different from English, the most commonly spoken language in the U.S. In this section we address California's racial and ethnic composition and closely related trends in language usage among elderly residents.

In 2000, about one out of every four California seniors was foreign-born, according to the Census 2000 Supplementary Survey (C2SS). The population projections described in Chapter 1 suggest that by 2050 it is likely that nearly half of all California seniors will have been born outside the country. Although this represents a considerable shift, any impact on public service needs is likely to be muted. While elderly immigrants are fairly costly, because they arrive without having paid taxes during their working years, the foreign-born elderly in California will increasingly be long-time U.S. residents, as shown in Figure 3-4. Despite a senior population that will be increasingly comprised of the foreign-born, the overwhelming majority will be long-term U.S. residents who arrived in the country 30 or more years ago.

In recent decades, U.S. immigrants have arrived mainly from Spanish-speaking countries. This is especially true for California. Among recent immigrants, nearly half were Hispanic, one-third Asian, and about one-sixth non-Hispanic whites. This predominance of Hispanic immigrants has shaped the ethnic distribution of the current population by age. Figure 3-5 shows the current percentage of Californians by age who are Hispanic. A far greater proportion of young Californians are Hispanic than are older Californians. Among current California seniors, 70% classified themselves as non-Hispanic whites. By contrast, among the state's population under 30, Hispanics are the dominant ethnic group, approaching nearly 50% of the youngest age group in Figure 3-5.

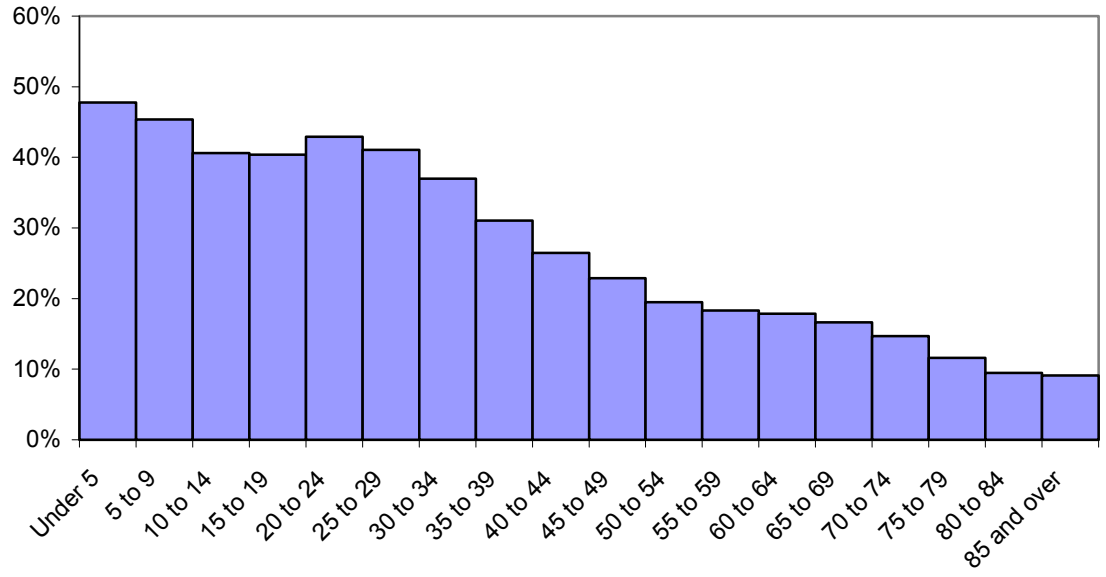
In the coming decades, the proportion of Hispanic seniors will rise as these younger cohorts age, and our projections indicate that this trend is likely to be reinforced by international migration.

Figure 3-4
Length of U.S. Residence Among Foreign-born California Seniors



Sources: Data for 2000 are from the Census 2000 Supplementary Survey. For 2020 and 2050, data are based on median projections of the California population by age and sex using the assumptions described in Chapter 1.

Figure 3-5
Hispanics as Percentages of Age Groups in California in 2000



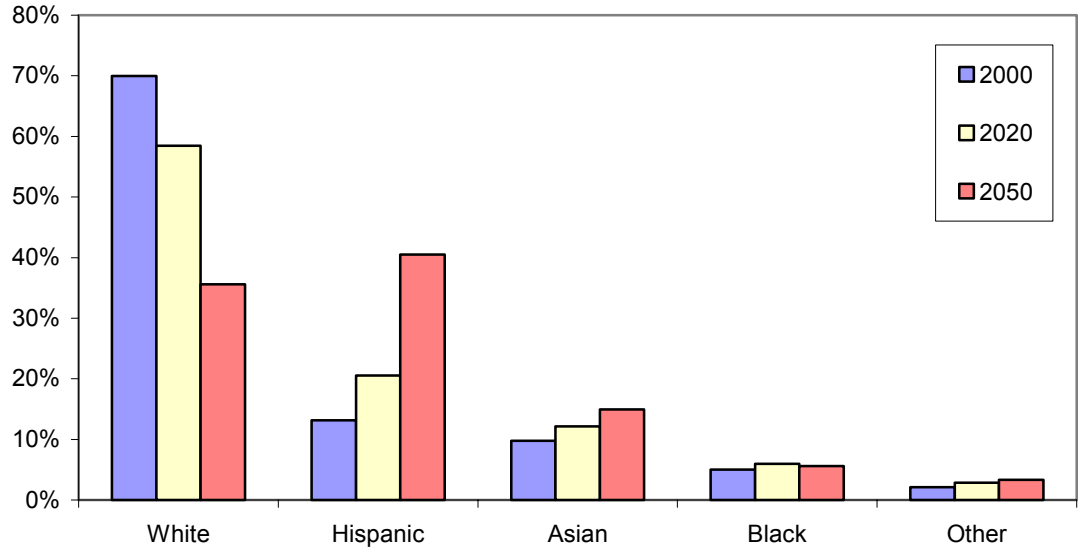
Sources: Data are from the Census 2000 Supplementary Survey.

Figure 3-6 shows the resultant large shifts in the racial and ethnic composition of California seniors over time. The fastest-growing ethnic group will be elderly Hispanics, whose numbers will nearly triple in the next 20 years. The slowest-growing ethnic group will be non-Hispanic whites, whose numbers will still increase, but only by 50% during that same period. By 2050, Hispanics will be the largest ethnic group among California seniors.

Increasing shares of Hispanics and Asian Americans among the elderly may appear to imply increasing language disparities among elderly Californians. It is true that poor English proficiency and the use of a non-English native language at home are linked to immigrant status. About 18% of recently arrived immigrants do not speak English and another 25% report they do not speak English well. Ninety-four percent of recently arrived immigrants do not usually speak English at home. But long-term residents are likely to develop greater English proficiency through increased exposure to the language, whether through work activity, marriage, or other changes in family living arrangements.

The experiences of current foreign-born seniors may indicate the degree to which languages used at home and English proficiency change with length of residence. Among this group, significant assimilation appears to occur with length of residence. For example, based on C2SS data, only about 5% of foreign-born seniors who are also recent immigrants usually speak English at home, while among those residing more than 40 years in the U.S., nearly 40% usually speak English at home.

Figure 3-6
Racial and Ethnic Distribution of California Seniors in 2000, 2020, and 2050



Sources: Data for 2000 are from the Census 2000 Supplementary Survey. For 2020 and 2050, data are based on median projections of the California population by age and sex using the assumptions described in Chapter 1.

However, this analysis overlooks the fact that immigrants' countries of origin have changed over time, from European and English-speaking nations to non-European and non-English-speaking nations. Current long-term resident seniors tend to be from European and English-speaking nations, so it may not be surprising that high levels of English-proficiency are found among this group. The future assimilation behavior of current immigrants seems likely to be more like that of earlier waves of non-European, non-English-speaking immigrants rather than that of the entire stock of foreign-born. Among this subgroup there are somewhat more modest degrees of assimilation over time, as shown by the language-use profile in Table 3-1. The share of these residents who do not speak English tends to be quite high in the first decade after arrival—more than half—but it declines significantly over time, falling below 10% after four decades. Conversely, the share not usually speaking English at home starts out very high, at 96%, and does not decline much at all until the fourth decade.

Table 3-1
Ability to Speak English and Language Spoken at Home by Length of Residence in the U.S. Among Foreign-born California Seniors from Non-European, non-English-Speaking Nations

Length of Residence in the U.S.	Percent Who Do Not Speak English	Percent Not Usually Speaking English at Home
0 to 9 years	55%	96%
10 to 19 years	39%	97%
20 to 29 years	34%	97%
30 to 39 years	20%	95%
40 or more years	9%	86%

Sources: Authors' tabulation of Census 2000 Supplementary Survey.

Table 3-2 presents the results of forecasting language use among California seniors by combining state population projections with the assimilation patterns in Table 3-1. Although there will be a dramatic increase in the foreign-born population, the share of California elders who do not speak English is likely to rise by only a small amount, from 5% today to 6% by 2050. This reflects the rapid rise of English proficiency over time that is observed even among non-

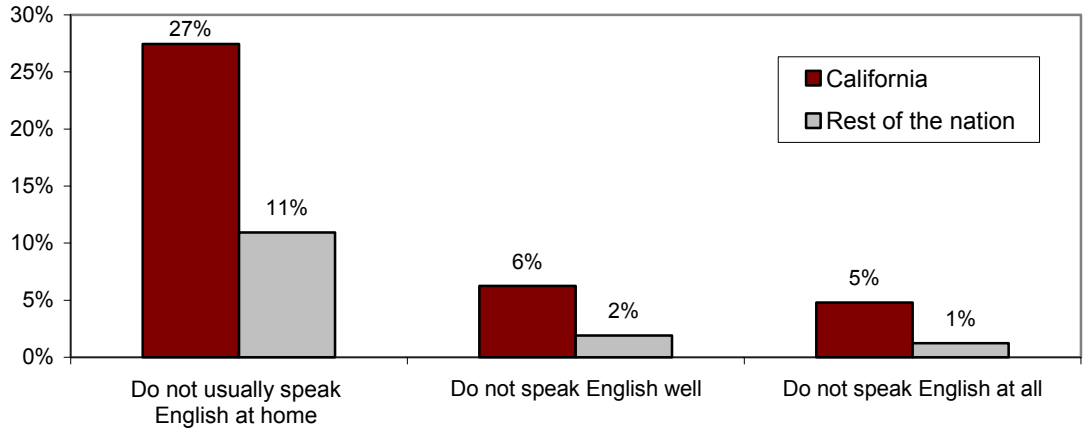
Table 3-2
California Seniors Who Do Not Speak English and Those Who Do Not Usually Speak English at Home

Year	Percent Who Do Not Speak English	Percent Not Usually Speaking English at Home
2000	5%	28%
2010	5%	30%
2020	5%	34%
2030	5%	37%
2040	6%	43%
2050	6%	44%

Sources: Authors' tabulation of Census 2000 Supplementary Survey and in-house population projections for California. New immigrants' language abilities and usage are assumed to behave according to the data in Table 3-1.

European, originally non-English-speaking immigrants, as shown in Table 3-1. The proportion that usually speaks another language at home is projected to increase from under 30% today to about 45% by 2050, however, representing a rise of one-half. As shown in Figure 3-7, rates of English proficiency and its usage in the home among California seniors are low compared to the rest of the nation.

Figure 3-7
English-Speaking Ability Among Seniors in California and the Rest of the U.S., 2000, by Percent



Sources: Data are from the Census 2000 Supplementary Survey.

California's elderly population will become increasingly Hispanic and Asian American over the foreseeable future, as population aging and continued immigration both increase the numbers of Hispanics and other traditionally minority groups. Although large numbers of immigrants are likely to continue arriving in California, the stock of foreign-born elderly will become increasingly weighted toward immigrants who arrived many years earlier and are less costly to the state. Language barriers are not projected to worsen significantly, although it is likely that the share of California's elderly population choosing to speak another language at home besides English will increase.

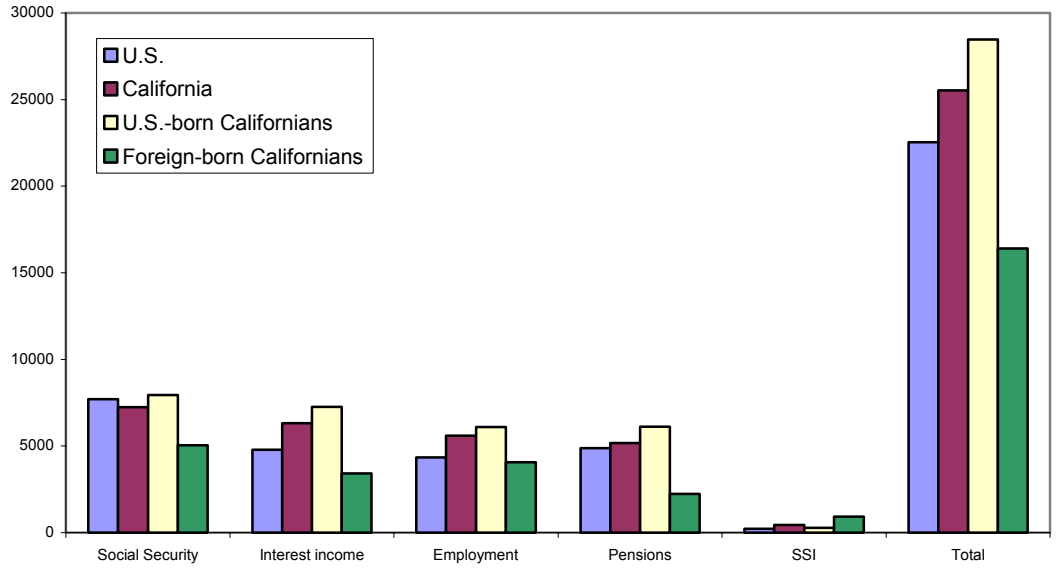
Income, Poverty, Work, and Educational Attainment

National origin is closely linked in California to patterns of income receipt, a key measure of well-being among the elderly. Income and poverty rates, in turn, are associated with working and educational levels. In this section we describe these components to explore the economic well-being of the state's seniors.

Overall, elderly Californians in 2000 received about $3,000 more income on average than their counterparts in the rest of the nation, who received about $22,500 according to Census 2000 statistics. To the extent that costs of living may be higher in California, however, some or all of that

difference may not be real. Further, higher average incomes among California seniors as a group conceal disparities among seniors according to their national origin. Figure 3-8 shows average incomes of California seniors in 2000 by source according to their national origin, as well as average incomes of seniors by source nationwide. As shown in the rightmost column, California elders who were born in the U.S. received about $6,000 more income on average in 2000 than did all elders nationwide, while foreign-born elders in California received $6,000 less.

Figure 3-8
Seniors' Average Incomes by Source and National Origin, U.S. and California, in 2000



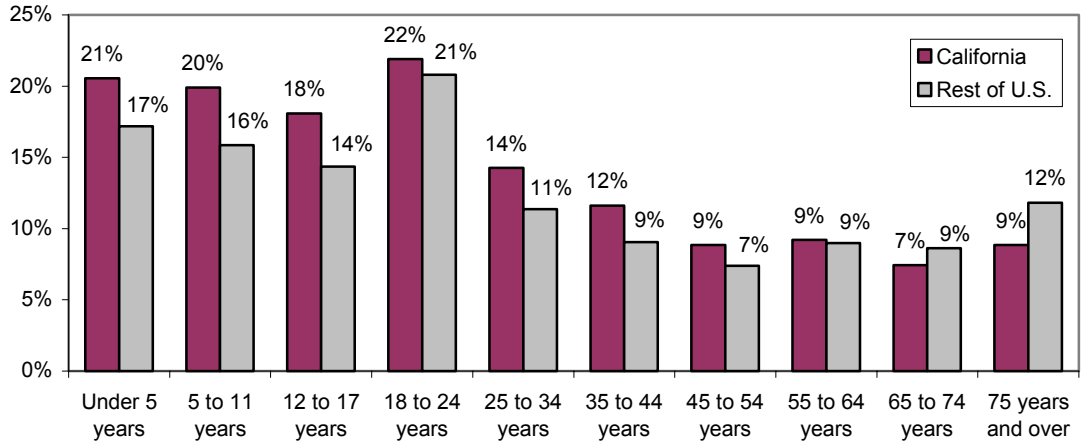
Sources: Data are from the Census 2000 Supplementary Survey. Seniors are individuals age 65 and over. "SSI" is Supplemental Security Income. "Total" includes some income not included elsewhere.

As a share of total elderly income, Social Security is less important in California than elsewhere in the nation, comprising only 28% compared to 34% nationwide. Social Security actually provides similar average amounts to California seniors and their national counterparts, as shown by the leftmost column in Figure 3-8, however. Part of the difference is clearly attributable to California's population of foreign-born elders, some of whom never participated in Social Security and instead receive Supplemental Security Income. A far larger share is due to higher interest income and labor income among California seniors. California elders born in the U.S. tend to receive much more income from these sources than the average U.S. senior, as shown in Figure 3-8.

A closely related measure of economic status is the proportion living in poverty, defined as the share of individuals earning less than a baseline amount. The relevant baseline varies according to family size and age; the threshold in 2000 for a two-person elderly family was about $10,500 per year, $17,500 for a married couple with two minor children, and $8,300 for a single elderly

householder. Figure 3-9 shows poverty rates by age in California and in the rest of the nation. Like poverty in the U.S. generally, poverty in California is more prevalent among children and young adults than the elderly. California seniors have lower poverty rates than their counterparts in other states, while children in California are more impoverished than children elsewhere in the country. As shown in Figure 3-10, the past decade has seen increases in poverty at almost all ages in California. Only those over 75 saw their poverty rates decline over this period, and only by a percentage point.

Figure 3-9
Poverty Rates by Age in 1999, California and the Rest of the U.S.

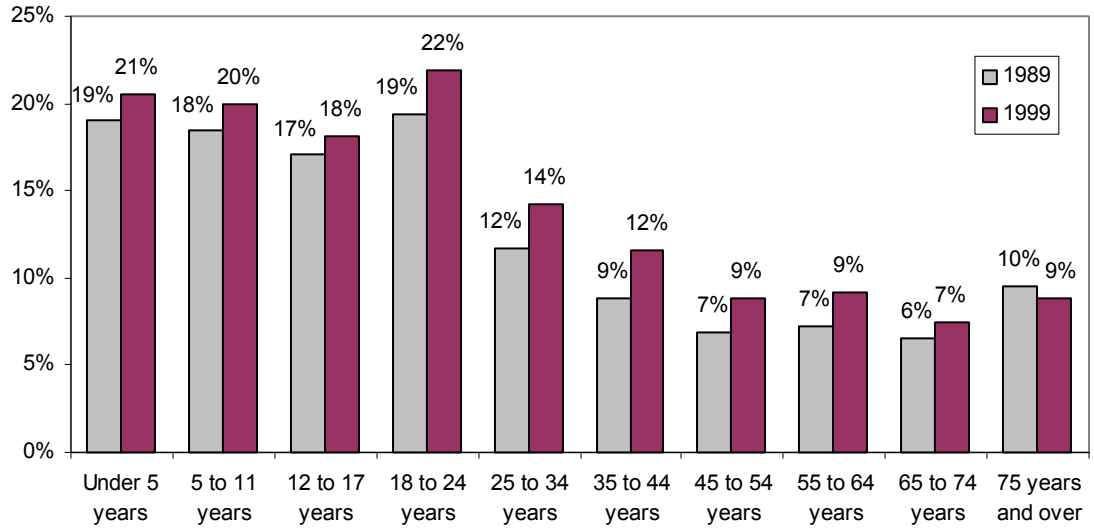


Sources: Data are from the Census 2000 Supplementary Survey.

As suggested by the income data presented in Figure 3-8, employment status is a key measure of economic well-being among the elderly. Public-support programs for the elderly in the U.S. generally preclude the need to work at advanced ages, but many elderly choose to remain employed or self-employed in order to earn wages or stay active. As shown in Figure 3-8, over 20% of the average California senior's income in 2000 came from labor earnings. However, compared to other sources of income such as Social Security, labor earnings are probably more heavily concentrated among a select group of high-earning seniors.

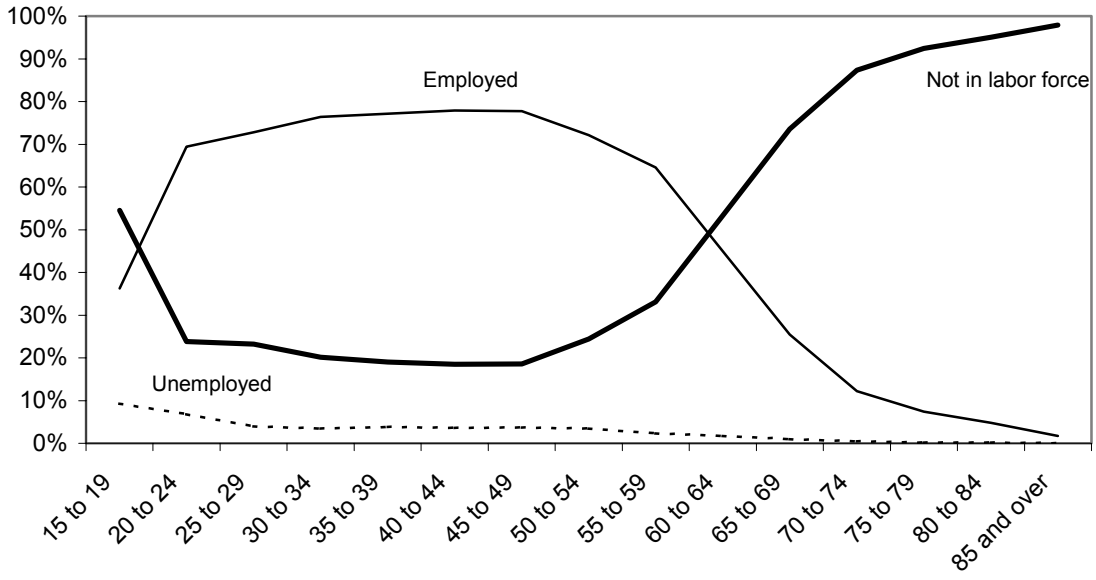
Figure 3-11 charts the employment status of California's population by age. Employment rates fall significantly past age 60, due to declining labor-force participation rates. Only a quarter of California seniors age 65 to 69 are employed, and that share falls by half for the next age group. These rates roughly reflect national trends; the share of California seniors who are employed is roughly 13%, while the national share is 12%. A special characteristic of working seniors is their proclivity to work at home. Figure 3-12 shows that working seniors in California are much more likely to work at home than their younger counterparts. The vast majority of working seniors still drive themselves to work, however, just like most Californians.

Figure 3-10
Poverty Rates by Age in California, 1989 and 1999



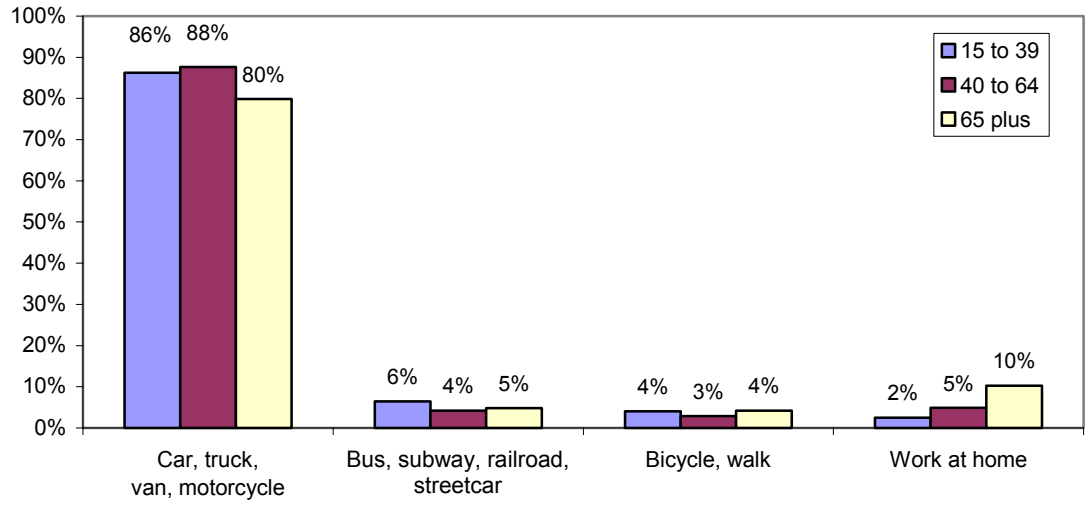
Sources: Data are from the Census 1990 and Census 2000 Supplementary Surveys.

Figure 3-11
California Trends in Employment Status by Age Group



Sources: Data are averages by age observed over eight annual March supplements to the Current Population Survey between 1995 and 2002.

Figure 3-12
Means of Transportation to Work by Age, California, 2000



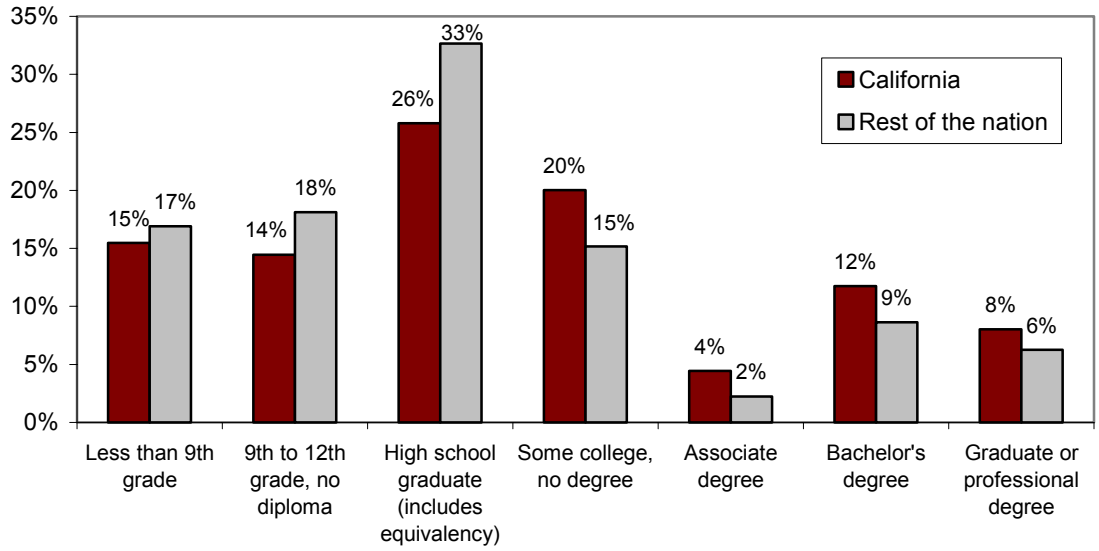
Sources: Data are from the Census 2000 Supplementary Survey.

Economic well-being is tightly linked to educational attainment because education provides skills that make workers more productive. The educational profile of seniors is a useful guide in understanding their well-being, because much of retirees' incomes derive from the pensions and private savings they accumulated. Pensions and savings are largely based on wages received from past work efforts, which were in turn linked to educational attainment.

Currently, California seniors are better educated than their counterparts in the rest of the country, as depicted in Figure 3-13. About one-fourth of California seniors have attained a college degree or higher, compared with about one-fifth of seniors in other states. The outlook for education levels among seniors in the future also appears to be good. Younger Californians who will become seniors over the next several decades are even more educated than the current set of seniors, as shown in Figure 3-14.

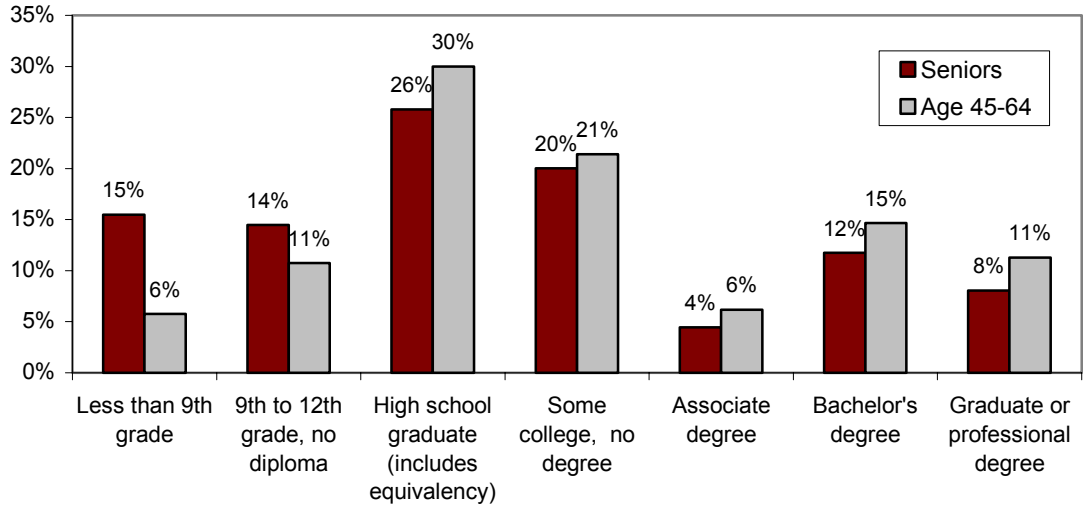
Immigration patterns are likely to cloud the picture, however, since immigrants tend to be concentrated at the low and high ends of the educational attainment distribution. Furthermore, trends in the U.S. and in sending countries suggest that future immigrants may well be better educated than previous groups of immigrants. For these and other reasons, formulating a projection of future educational attainment is a complicated and imprecise task that requires making some basic assumptions. The simplest and most easily defensible assumption, although it is likely to result in an underestimate of educational attainment, is that entry and completion rates for high school, college, and graduate school will remain unchanged from their current levels.

Figure 3-13
Educational Distribution of Seniors by Highest Degree Obtained, California and the Rest of the U.S., 2000



Sources: Data are from the Census 2000 Supplementary Survey.

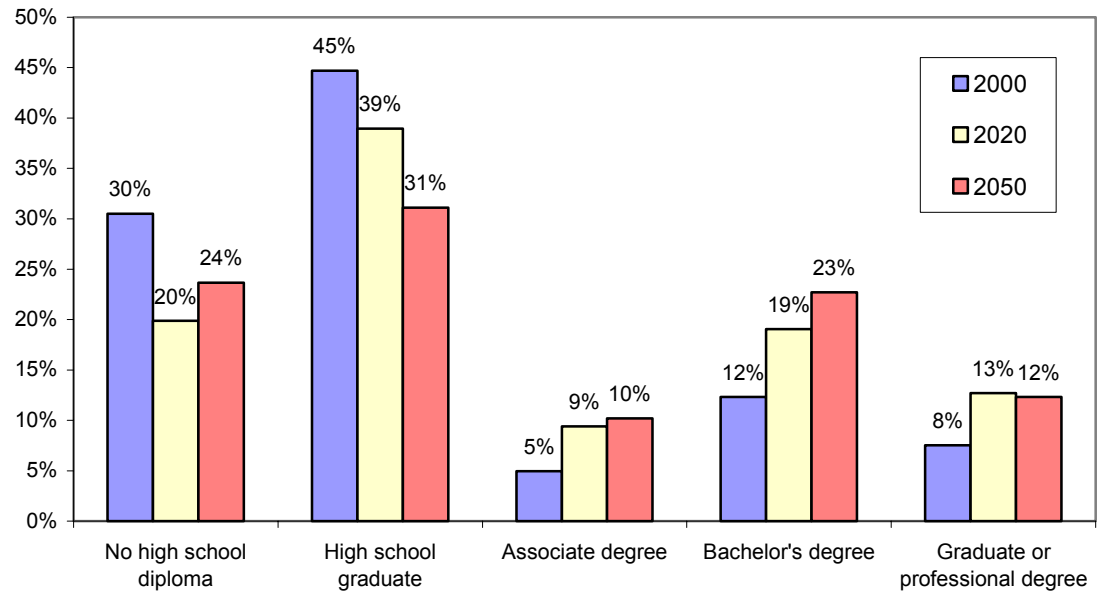
Figure 3-14
Educational Distribution of California Seniors and Residents Age 45-64 by Highest Degree Obtained, 2000



Sources: Data are from the Census 2000 Supplementary Survey.

The results of projecting the educational attainment of California seniors using these assumptions and the population projections described in Chapter 1 are shown in Figure 3-15. Over the next 20 years, the general educational level among seniors is expected to rise, as the shares with college and advanced degrees increase by about one-half. To the extent that service needs may be negatively correlated with education, whether through increased functional ability or financial resources, these increases in educational levels may portend a reduction in average needs. Interestingly, a slightly different picture emerges from comparing 2020 to 2050, however. Those forecasts show only a slight increase in the proportion of the elderly population with a college degree, while the proportion lacking a high school diploma actually increases from 20% to 24%. The continued flow of less-educated immigrants to the state is apparently enough to partially offset the overall increase in educational attainment among the elderly. Still, educational attainment across all categories is projected to be higher among seniors in 2050 than it is today.

Figure 3-15
Educational Distribution of California Seniors: 2000, 2020, 2050



Sources: Data for 2000 are from the Census 2000 Supplementary Survey. For 2020 and 2050, data are based on median projections of the California population by age and sex using the assumptions described in Chapter 1. Graduation rates are assumed constant; see text for detail.

Although disparities exist among California seniors, as a group their overall level of well-being appears to be quite good, based on the array of indicators considered in this section. Nominally, average income per senior in California is higher than in the nation as a whole, although the state's foreign-born seniors are considerably less well off than the rest. While poverty rates have risen for almost every age group in California in recent years, seniors still enjoy the lowest poverty rates in the state. Relative to seniors in the rest of the nation, fewer in California live below the poverty line. A fairly small share of elderly Californians chooses to continue working, earning a relatively large amount by national standards. Many of those who work decide to work at

home. Education among California's elderly population is high relative to the rest of the nation's seniors, and the state's elderly are also projected to be well-educated in the future.

Disability and Health

Another key barometer of the need for services, aside from economic status, is the health of the elderly population and, in particular, disability status. As mentioned earlier, advanced age is generally associated with increased need, largely because aging is linked to decreasing health and increasing disability. In this section we discuss the relationship that appears to exist between disability rates and population aging. This relationship helps explain why increasing numbers of oldest old among the elderly population may not drive service needs up as fast as one might otherwise expect.

Disabilities are typically defined in terms of the ability to perform activities of daily life. Those who cannot perform key activities by themselves are termed disabled in that regard and require the services of others to help them perform critical tasks. The disability profile of elderly Californians is quite similar to that of elderly Americans as a whole. As reported by the U.S. Census Bureau, 19% of Californians over 65 reported a limitation related either to mobility or self-care in 1990. Nationwide, the equivalent figure was 20%. Estimates of age-specific rates of disability were also quite similar, at most one percentage point lower for elderly Californians than for seniors across the nation.

Considerable debate is under way regarding trends in disability rates among older Americans over time. A key question is whether disability rates by age are declining over time, which would imply that as total lifespans continue to increase, healthy lifespans are increasing as well. Using a nationally representative survey covering the period 1982 to 1994, Manton, Corder, and Stallard (1997) found significant annual rates of decline in disability prevalence that range between 0.5 and 3.0% per year. Table 3-3 shows these rates, which are adapted from Table 2 in Manton et al. Although the change in disability rates and healthiness over time remains a topic of contention among scholars, the Manton results provide a reasonable basis for projections of disability among California seniors.

Table 3-3

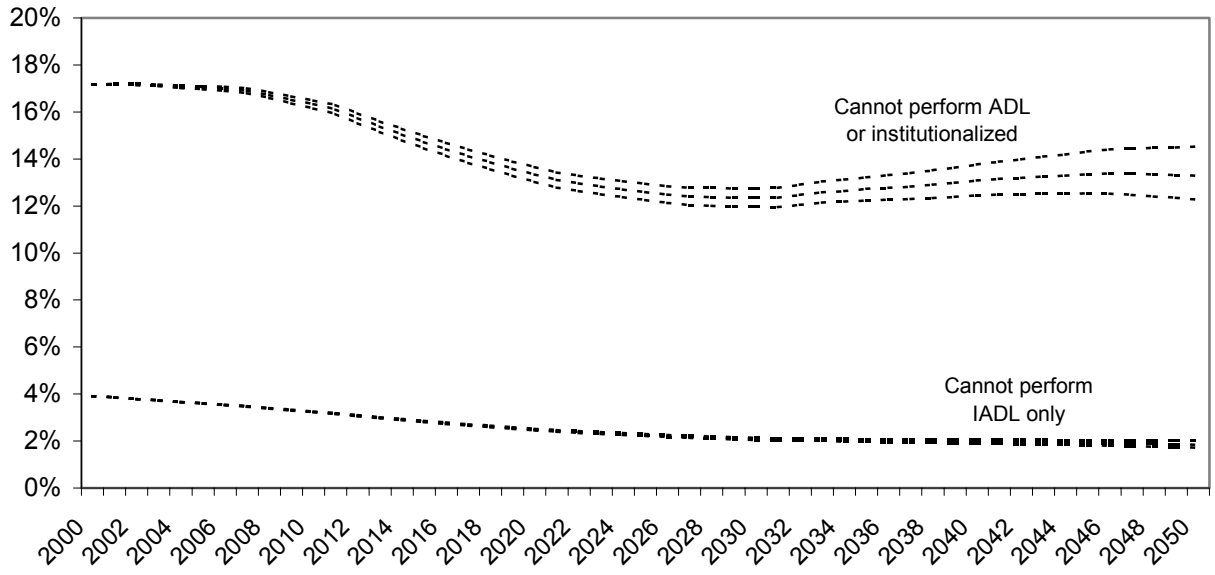
Disability Rates and Estimated Annual Percentage Rates of Disability Decline, by Age

		65–74	75–84	84+
IADLs only	Rate in 1994	3.1%	5.5%	7.2%
	Annual rate of change in the rate	-2.69%	-2.22%	-0.77%
ADLs or institutionalized	Rate in 1994	8.4%	21.4%	52.7%
	Annual rate of change in the rate	-1.28%	-1.19%	-0.69%

Sources: Data are derived from Table 2 in Manton et al. (1997). The annual rates of decline are annualized percentage changes in the age-specific disability rates. IADLs are instrumental activities of daily living and cover pursuits such as grocery shopping. ADLs are activities of daily living and are comprised of more critical tasks such as bathing and eating. The two disability groups depicted are independent of each other and comprise the entire disabled population over 65.

Figure 3-16 shows a stochastic projection of the percentage of Californians over 65 with disabilities based on the population projections discussed in Chapter 1 and the declining age-specific rates of disability described in Table 3-3. Of the two distinct sets of lines, the higher set represents individuals who are unable to perform at least one activity of daily living (ADL) or who are institutionalized. The lower set represents those who report being unable to perform only instrumental activities of daily living (IADL). ADLs are comprised of fairly critical tasks such as bathing and eating. IADLs measure the ability to perform pursuits that are less critical, such as grocery shopping. Each of the two sets contains three lines: a median, a 97.5 percentile, and a 2.5 percentile. The latter two lines describe a 95% probability interval. The uncertainty in Figure 3-16 derives solely from uncertainty about the age distribution of those over 65; it is assumed that the share of disabled people at each age is known exactly. Obviously, the true level of uncertainty would be much greater than that shown in the figure.

Figure 3-16
The Effect of Demographic Uncertainty on the Shares of Elderly Californians with Disabilities



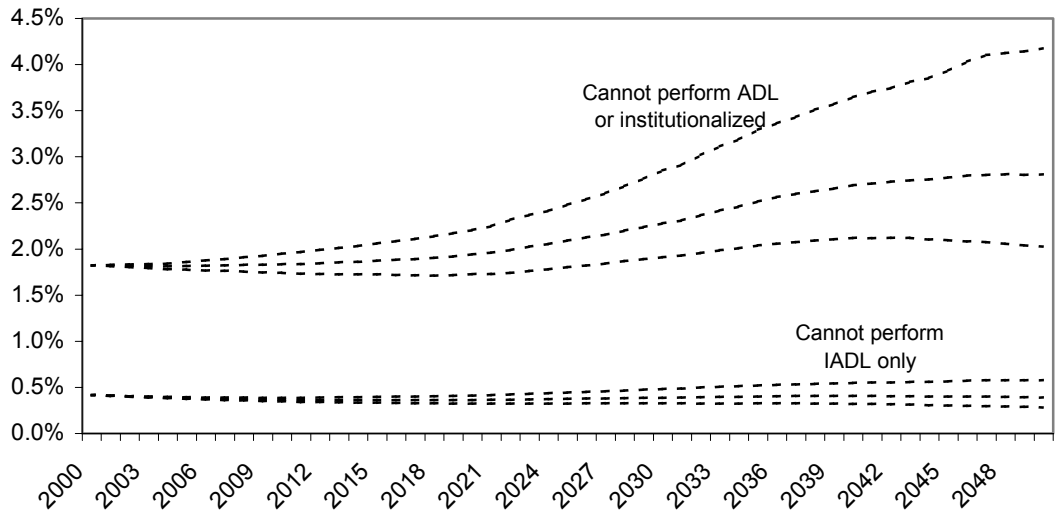
Sources: Authors' calculations using in-house stochastic projections of the California population by age and projections of disability rates by age and type of disability from Manton et al. (1997). See text for details. Each set of three dotted lines represents a lower 2.5% confidence interval, a median, and an upper 97.% confidence interval that describe the stochastic distribution of the variable in question.

The share of elderly Californians reporting mild disability, as represented by the lower set of lines showing IADL-impairment rates, is expected to decrease monotonically. As shown in Table 3-3, IADL disability does not increase as strongly with age as ADL disability. As the elderly population ages, the dominant effect is a decline in age-specific disability rates. Similarly, the share of elderly Californians with more-significant ADL disability is projected to drop from roughly 17% today almost to 12% by 2030. Because ADL-disability prevalence rises steeply with age, however, and the elderly themselves will be more concentrated in older ages, the over-

all share of elderly with ADL-disability will inch upward after 2030 as the population ages. Altogether, Figure 3-16 indicates that a declining share of California's elderly will be disabled over the next 50 years.

The story changes somewhat if the total population is the reference point rather than those over 65. Figure 3-17 shows the same projections of disabled Californians over 65 as shares of the total state population. These shares, which are similar to the dependency ratio, are projected to rise considerably by 2050 as the population ages and becomes more top-heavy. The median ratio of ADL-disabled elderly to the population rises from 1.8% to 2.8%, and there also is more uncertainty about the projections, with a 2.5% chance of reaching a ratio as high as 4% by 2050 and a 2.5% chance of remaining around 2%. The wider probability intervals reflect our uncertainty about the future size of the nonelderly population.

Figure 3-17
The Effect of Demographic Uncertainty on the Ratio of Elderly Californians with Disabilities to the Total State Population



Sources: Authors' calculations using in-house stochastic projections of the California population by age and projections of disability rates by age and type of disability from Manton et al. (1997). See text for details. Each set of three dotted lines represents a lower 2.5% confidence interval, a median, and an upper 97.5% confidence interval that describe the stochastic distribution of the variable in question.

As these figure demonstrate, the outlook for the support burden depends critically on the definitions of the group in need and of the group that provides help. Table 3-4 explores this relationship further by projecting three different support ratios to 2050. The first row displays the burden as defined by the size of the cohort age 70 and older divided by the size of the cohort likely to be their children, the population age 40–65. In 2000, there were roughly four children for every surviving parent in the elderly group, but by 2050 that relationship is likely to decline at least to 2.6 children for every parent, with a median support ratio of 46.3% indicating that a roughly 2-to-1 share, or a halving of the available support, is expected. At worst, the support ratio could rise as high as 61%, or almost 1.6-to-1, which is nearly a tripling of the current support burden.

Table 3-4
Three Types of Support Ratios in California by Disability Group in 2000 and 2050, by Percent

		2000	2050
Age 70+ per age 40–65	*2.5%*		38.6%
	median	**24.6%**	**46.3%**
	97.5%		61.3%
Disabled age 70+ per age 40–65	*2.5%*		6.7%
	median	**6.2%**	**8.5%**
	97.5%		12.0%
Disabled age 70+ not in nursing homes per age 40–65	*2.5%*		6.0%
	median	**5.4%**	**7.6%**
	97.5%		10.7%

Sources: Support ratios are constructed as the particular subpopulation of those age 70+ divided by the total population age 40-65. The data are in-house stochastic projections of the California population by age, projections of the disabled population using data shown in Table 3-3, and projections of the nursing-home population as described in the text. The projections reflect only demographic uncertainty. For each support ratio in 2050, three numbers are reported: the lower 2.5% probability interval, the median (in bold), and the upper 97.5% probability interval.

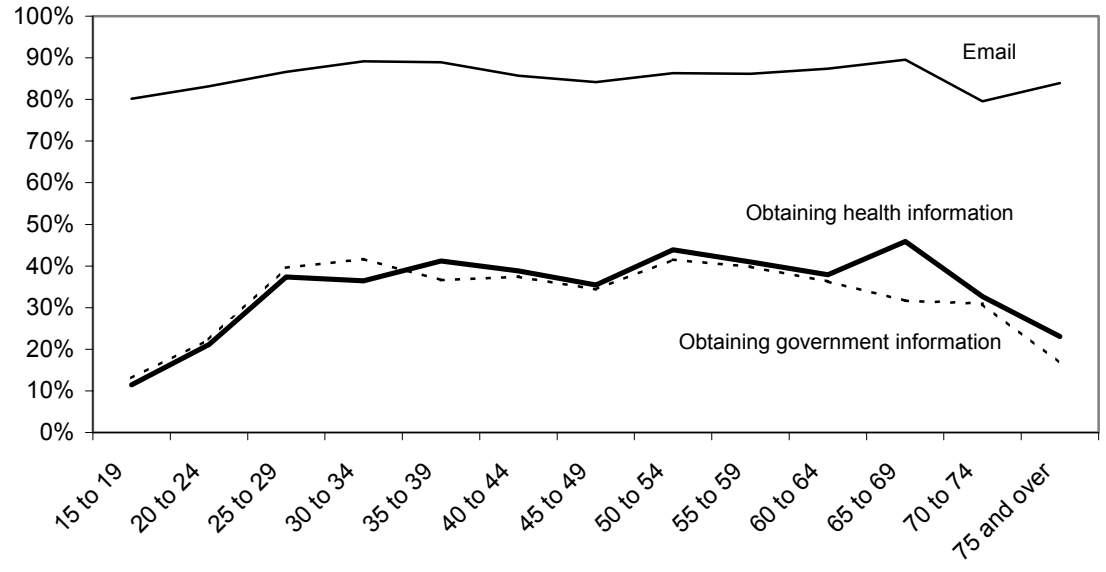
The second row in Table 3-4 shows the ratio of the disabled members of the age 70+ cohort to their children's cohort. Projected declines in disability rates clearly have a favorable impact on the growth in this support ratio, as the median ratio is expected to climb only by about one-third, from 6.2% to 8.5%, in 50 years. Growth in the ratio could be as low as a 0.5 percentage point, and at worst cannot exceed a doubling. The story is similar when nursing-home residents, who may be supported financially by offspring but are physically cared for by others, are excluded from the numerator, as shown in the third row of Table 3-4.

Altogether, the outlook for the disabled elderly in California is therefore mixed. The share of elderly who are disabled appears likely to decline, reflecting continued improvements in health and living standards. But the burden of caring for the disabled elderly is likely to increase, as their share of the state population rises due to population aging. The expanding ranks of disabled elderly will be somewhat counterbalanced by an expanding base of their near-elderly children, however. Population aging will generally make resources more scarce, but looming bottlenecks are not as wide as sheer numbers might suggest. In general, declining disability rates offset much of the expected impact on service needs based on population aging alone. Although there will be considerably more elderly in the state, and the elderly themselves will be older, they will also be healthier and therefore less needy than many of today's elderly.

It should come as no surprise that California's elderly are keenly aware of the importance of health and disability. As such, they are likely to demand expanded information about health even if service needs themselves turn out to be fairly manageable. Figure 3-18, which characterizes patterns of Internet usage among Californians by age, depicts a heightened interest in health-related information among elders of retirement age. Rates of Internet access are considerably lower among the current elderly than they are among the rest of the state's population, and the highest access rates are found among the Baby-Boom cohorts—which suggests that as they near retirement age, interest in health-related Internet content is likely to increase considerably.

In the next section we discuss some specific ways in which population aging and trends in health and disability status are likely to affect living patterns and the demand for housing in California.

Figure 3-18
Type of Internet Use by Those Using the Internet in 2001



Sources: Data are from the 2001 Computer and Internet Use Supplement of the Current Population Survey.

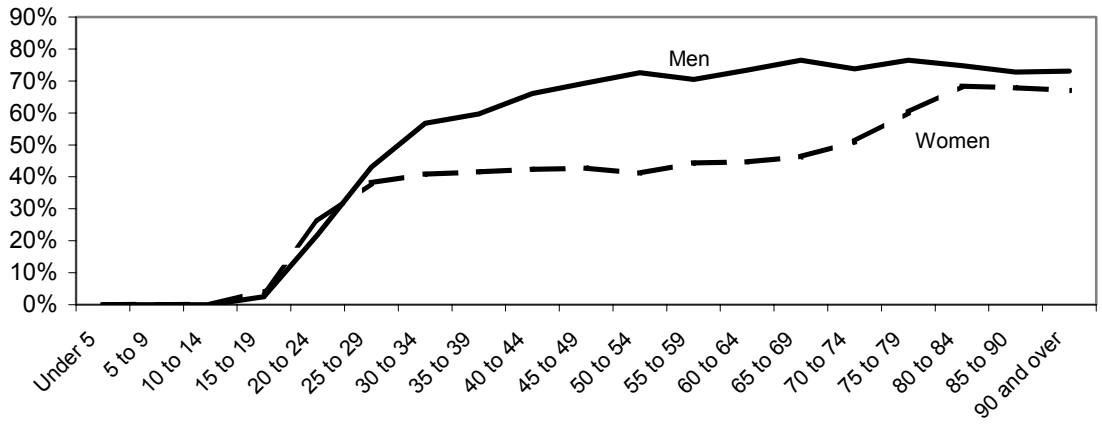
Living Arrangements, Housing, and Nursing Homes

Housing demand is related to population aging in several key ways. Aging reduces the share of children in the population, which reduces average household size and increases the number of households per capita, given the typical living arrangements prevailing in California today. To the extent that aging and rising disability are linked, however, demand for group quarters or nursing-home care is likely to increase at the expense of the demand for housing. Similarly, families may choose to provide elder care informally through intergenerational co-residence. Additional complications may arise if income distributions and housing prices, both of which are likely to affect housing choices, change over time. In order to focus on the demographic deter-

minants of housing needs, this analysis simply assumes that resources, prices, and behavior remain constant over time.

All other things being equal, the older an individual is, the more likely he or she is to be the head of a household, provided that he or she is not institutionalized. Figure 3-19 depicts this relationship in the form of two age profiles of household headship rates by age and sex for noninstitutionalized Californians based on data from the Current Population Survey. The rate of headship for men is higher than it is for women at every age, although women gain significantly after age 65, probably reflecting the prevalence of elderly widowhood. Neither age profile shows any signs of decreased headship due to aging. Rather, noninstitutionalized elderly Californians tend to live on their own rather than with their adult children.

Figure 3-19
Age Profiles of Household Headship for California Men and Women



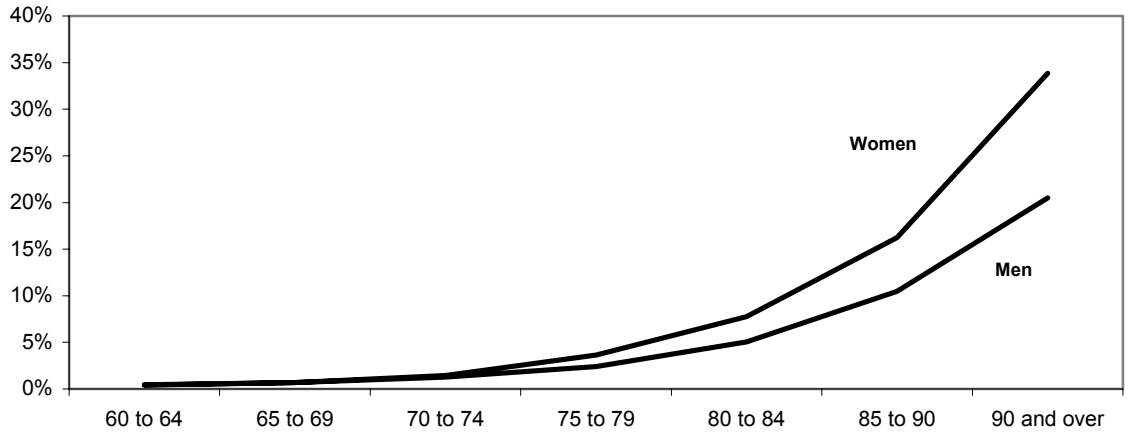
Sources: Data are averages from annual March supplements to the Current Population Survey between 1995 and 2002.

A significant number of elderly Californians live in nursing homes, however. According to California's Office of Statewide Health Planning and Development, 90,000 elderly resided in nursing homes at the end of 2000. That represents about 2.5% of the state's 3.6 million elderly, although not all are long-term residents. Still, the outlook for nursing-home use by California's elderly will play a role in determining housing demand over the next 50 years.

The outlook for nursing-home utilization is similar to that for disability rates, since the two are tightly linked. The prevalence of disability plays an important role in determining the need for nursing care, which is frequently regarded as a last resort in planning elderly living arrangements. Nursing care is certainly not the only means by which disabled elderly can arrange to live, and the continuing development of assisted-living communities and other alternatives is likely to siphon off demand for nursing care.

National trends over the past several decades indicate declining rates of nursing-home utilization by age that are similar to rates of decline in disability prevalence. Age-specific national rates of nursing-home usage in 1995 are presented in Figure 3-20. Utilization rises steeply with age, and female usage is greater than male usage at every age, reflecting the prevalence of elderly widowhood. According to data from several waves of the National Nursing Home Survey, these rates have been falling by an average of about 1.8% per year between 1977 and 1995.

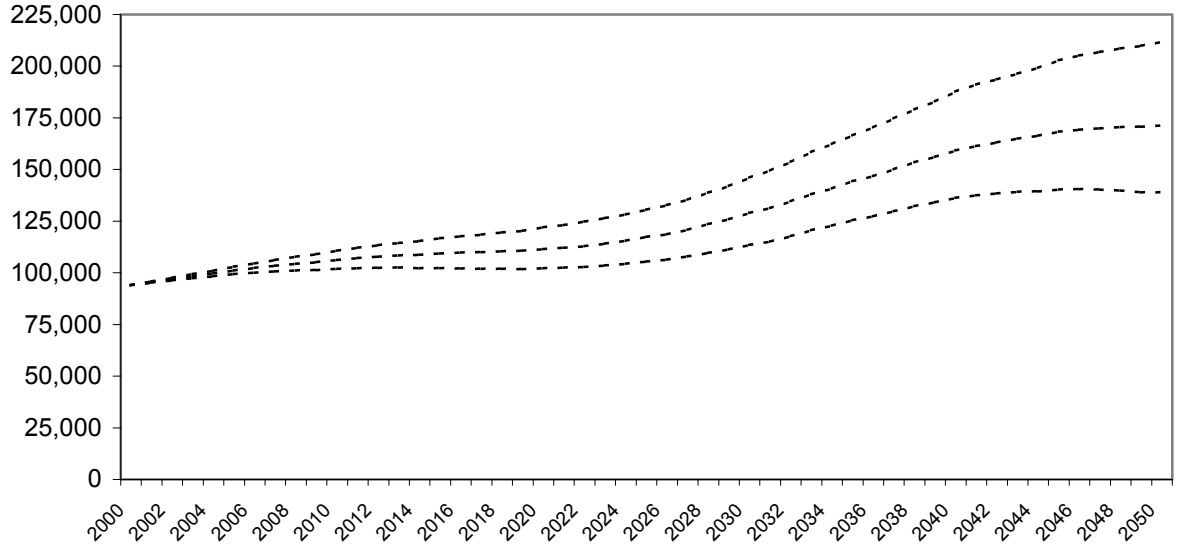
Figure 3-20
National Age Profiles of Nursing-Home Utilization for Men and Women, 1995



Sources: Based on data from the National Nursing Home Survey, 1995.

Figure 3-21 presents stochastic projections of the total number of California nursing-home residents by year using the data in Figure 3-20 and a 1.8% annual rate of decline in the age-specific rates. The probability fan hovers around 100,000 for the first 20 years and then increases to roughly 175,000 by 2050, with a 2.5% chance of exceeding 200,000 and no chance of remaining below 100,000. Increases in the raw numbers of nursing-home residents appear to be assured after 2025, although they are vastly exceeded by increases in the state's elderly population in general. Nursing-home residents are expected to comprise only between 1% and 1.5% of the population over 60 by 2020, down from 2% today.

Figure 3-21
Projected Number of California Nursing-Home Residents



Sources: Authors' calculations using in-house stochastic projections of the California population by age and projections of nursing-home utilization by age and sex based on 1977-1995 trends in the National Nursing Home Survey (NNHS) samples. See text.The median and 95% probability intervals reflect only demographic uncertainty.

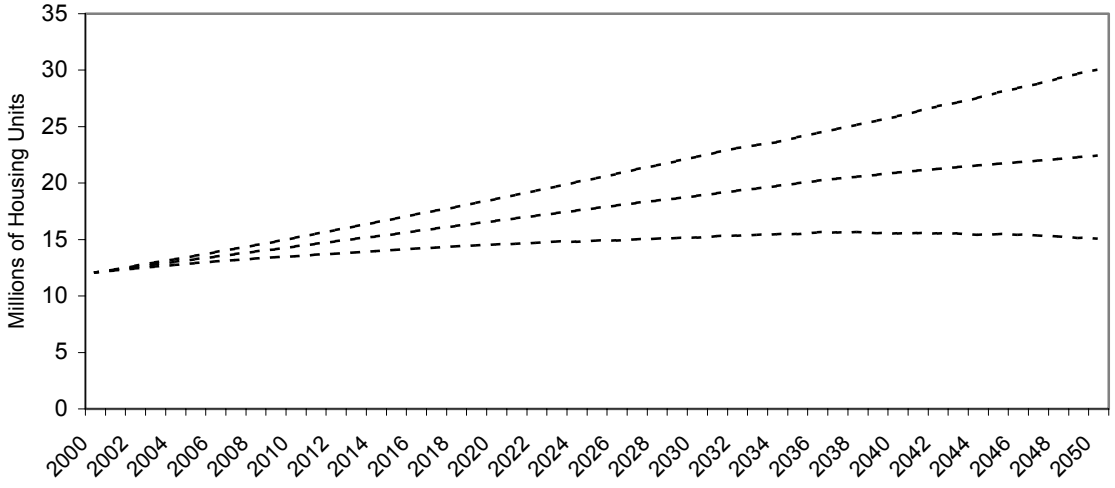
Housing needs of the much larger share of the elderly population that will live outside of nursing homes can be projected using current data on household headship and forecasts of the state population by age. Figure 3-22 displays the median estimate of the total number of California households and its 95% probability interval. By 2050, the number is expected almost to double, with a 2.5% chance it could reach 30 million. However, the downside risks are also significant, with a chance that the number of households could reach only about 15 million. Additionally, any possible behavioral changes that might increase or decrease the number of households, such as increased divorce or a shift toward greater intergenerational co-residence, are not incorporated in the projections.

The type of housing that is likely to be demanded by California's aging population is another salient issue. Housing preferences may shift due to aging; older Californians may prefer to rent smaller living quarters rather than own large houses that require more upkeep. To the extent that the elderly may be financially less well off than younger Californians, they may be forced to sell property and begin renting. Rent subsidies or public housing needs may increase as the population ages if private resources prove to be insufficient.

Tables 3-5 and 3-6 describe the housing situation of the national population over 65 according respectively to disability status and then to age. Table 3-5 indicates that disability status is definitely associated with housing type. Almost 85% of disability-free elderly are homeowners, while only 70% of the elderly with at least one ADL impairment own their homes. All other housing categories, including publicly subsidized or provided housing, are more heavily used by disabled elders. Table 3-6 shows that this pattern is just as strong in the age dimension as it is

with disability. Older Americans tend to be found in rental units more than younger Americans, and public housing assistance rises with age.

Figure 3-22
Projected Number of California Households, Excluding Nursing-Home Residents



Sources: Authors' calculations using in-house stochastic projections of the California population by age and projections of nursing-home utilization by age and sex based on 1977-1995 trends in the NNHS samples. See text for details. The median and 95% probability intervals reflect only demographic uncertainty.

Table 3-5
Housing by Disability Status, Noninstitutionalized Americans Over 65

	No disability	All Americans 65+ IADL only	At least 1 ADL
Owners	83.5%	74.3%	70.0%
Renters, Subsidized	0.9%	2.8%	1.2%
Renters, Public Housing	2.4%	5.8%	6.8%
Renters, No Assistance	10.9%	13.0%	16.2%
Occupied with No Cash Rent	2.3%	4.2%	5.7%
All	100.0%	100.0%	100.0%

Sources: Data are national and are taken from tables provided by the Lewin Group (2002) based on data from the 1995 SIPP. IADLs are instrumental activities of daily living and cover pursuits such as grocery shopping. ADLs are activities of daily living and are comprised of more critical tasks such as bathing and eating. The three disability groups depicted are independent of each other and total the entire population over 65.

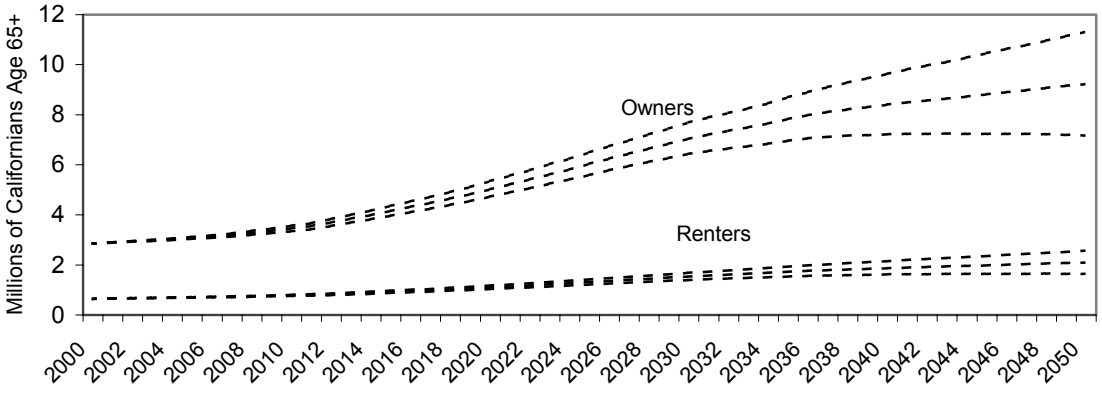
Table 3-6
Housing by Age, Noninstitutionalized Americans Over 65

	65–74	85+
Owners	83.3%	75.4%
Renters, Subsidized	1.2%	0.7%
Renters, Public Housing	2.4%	4.2%
Renters, No Assistance	11.1%	14.5%
Occupied with No Cash Rent	2.0%	5.1%
All	100.0%	100.0%

Sources: Data are national and are taken from tables provided by the Lewin Group (2002) based on data from the 1995 SIPP. The three groups depicted are independent of each other and total the entire population over 65.

Figure 3-23 displays projections of demand by elderly noninstitutionalized Californians for two broad types of housing, owned and rented, using national age-disability profiles similar to those shown in Tables 3-5 and 3-6, stochastic projections of the noninstitutionalized California population by age, and projections of disability status as described in earlier sections. Growth in home ownership among the elderly is forecast to continue unabated, rising from nearly 3 million elderly owning homes today to between 7 and 11 million by 2050, with a best guess of 9 million.

Figure 3-23
Projected Number of California Homeowners and Renters



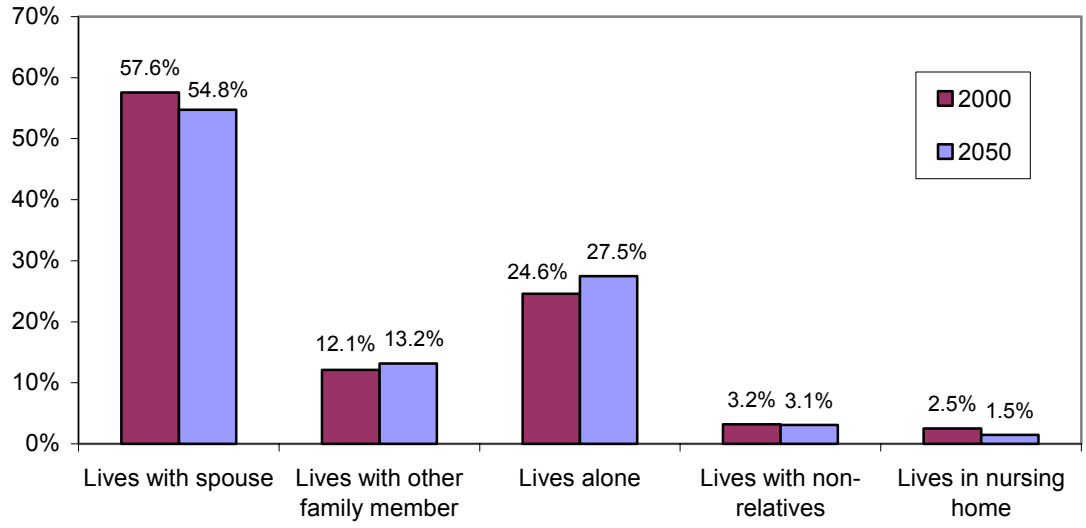
Sources: Authors' calculations using in-house projections of the California noninstitutionalized population by age; projections of disability status by age; and housing usage rates by age provided by the Lewin Group. See text for details. Each set of three lines represents a lower 2.5% probability interval, a median, and an upper 97.5% probability interval that describes the stochastic distribution of the variable in question.

Although increases in the number of homeowners appear from the figure to outstrip growth among renters, in fact the ratio of homeowners to renters in any year remains remarkably stable over time. The share of elderly Californians owning their own home fluctuates by only about half a percentage point around an average value of 82%. The relative size of that 0.5 percentage point fluctuation is larger but still fairly insignificant for renters, the other 18% of the elderly population.

Another relevant characteristic for housing demand is marital status. Population aging is likely to affect marital status in several subtle ways. Declining mortality rates imply that more men are alive at any given age, which helps lower the rate of elderly widowhood, since women are longer-lived than men. Patterns of divorce and remarriage, which frequently pairs older men with younger women, may tend to mute the decrease in widowhood, however. Although these more complex dynamics are important, the approach taken here is to focus solely on the demographic forces at work.

Figure 3-24 displays the living arrangements of California's elderly population in 2000 alongside a median projection for 2050, assuming that patterns of behavior by age and sex remain fixed over time. The projection probably overstates the prevalence of elders living alone, since the availability of more elderly men seems likely to decrease elderly widowhood on balance. Even with these biases, the projection demonstrates that no massive changes in elderly living arrangements are likely over a 50-year horizon. The share of elders living with spouses is projected to

Figure 3-24
Living Arrangements and Marital Status of California Seniors (Age 65+) in 2000 and 2050



Sources: Census 2000 rates by sex and age, in-house stochastic projections of the California population by age; and projections of declining nursing-home usage. These median forecasts reflect demographic effects only.

decline from roughly 58% to 55%, but one percentage point of that is absorbed by more elders living with other family members. Still, the share of elders living alone is forecast to rise by three percentage points, from 25% to 28%, since nursing-home residency declines by a percentage point.

In this section we have shown that barring any changes in the way Californians choose or are able to afford their living arrangements, the primary concern in providing housing for the elderly appears to be the growing need for nursing-home beds, but only after 2025. Still, the demand for nursing-home care appears likely to increase much less rapidly than the overall elderly population, due to declining utilization rates that are probably linked to the declining prevalence of disability. There is a 2.5% chance that demand for nursing care could double in 50 years, a worst-case scenario that implies average annual growth in demand of about 1.4%. Noninstitutionalized elderly Californians are projected to obtain the majority of their shelter from the private markets. Public-housing requirements do not appear to be on a path of explosive growth, although as the numbers of elderly increase, so too will the numbers of poor elderly requiring housing assistance.

Conclusion

We have presented detailed characteristics of California's elderly population in order to better describe their current state of well-being and to offer some predictions about likely future trends. As in the rest of the nation, the state's seniors today are largely female, suggesting that the poverty frequently associated with elderly widowhood is as large an issue in California as elsewhere. Over time, however, the immigration patterns that greatly influence the state's overall size and age structure are likely to increase the number of elderly males relative to females.

Although California seniors are increasingly foreign-born and Hispanic, language barriers are not expected to worsen. Rather, the state's elderly population is predicted to be multilingual. Although foreign immigration is projected to continue, foreign-born seniors will increasingly be long-term residents who are much less costly than elderly recent arrivals and are likely to be net contributors to public finances.

California seniors receive more income on average and are better educated than their counterparts in the rest of the country, and it is likely that seniors in the future will attain even higher levels of education. They are also slightly more likely to be working than seniors in other states, and their poverty rates, which are lower than the national average among seniors, show few signs of increasing.

Californians are living healthier as well as longer, as disability prevalence by age is projected to continue declining. The share of elderly who are disabled is likely to shrink as a result, even as the number of oldest old increases with population aging. As a share of the total population, the disabled elderly will increase in size, but trends in more relevant support ratios, such as the ratio of disabled elderly to their children, indicate that the rising burden is not likely to be overwhelming. Still, increased elderly care must be provided by someone. If the growing pool of nondisabled elderly could somehow take part in providing such care, the burden on Californians of working age would be greatly reduced.

The demand for nursing-home care will rise slightly over the next several decades as the population ages, even as disability prevalence falls. Increases in need will be partially met by alternative living arrangements, however. Californians will also increase their demand for housing significantly. The split between rented and owned housing does not appear likely to undergo major shifts, provided that older Californians continue to live on their own, primarily in houses.

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