

California Demographic Futures

Third In a Series of Projections

# GENERATIONAL PROJECTIONS OF THE CALIFORNIA POPULATION BY NATIVITY AND YEAR OF IMMIGRANT ARRIVAL

PopDynamics  
Research Group

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A short descriptive title is:  
Pitkin-Myers 2012 California Generational Projections.

### **About the Series on California Demographic Futures**

The first projection report in the series on California Demographic Futures was issued in 2001, followed by a second in 2005. Additional generational projections that follow this general model have been prepared for the United States and major subareas of California. This specialized program of research is conducted through the USC Population Dynamics Research Group. A number of reports and special studies have also been carried out in preparation for the 2012 series of projections and are available on the project website: <http://www.usc.edu/schools/price/futures>

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### **Acknowledgments**

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# Executive Summary

This report provides uniquely detailed projections of California’s population numbers and characteristics. In addition to the standard content of age, gender and race or Hispanic origin, the Pitkin-Myers/USC projections describe foreign-born and California-born components. The new projections also provide detail on immigrant generations and the length of residence in the U.S. for the first generation. Projections of the total population are carried through 2050, while the detailed characteristics are reported through 2030.

These projections are the third edition in the California Demographic Futures series carried out through the Population Dynamics Research Group in the Sol Price School of Public Policy at the University of Southern California. A substantial track record has been accumulated, most notably by the 2001 edition that projected the substantial leveling off of foreign-born growth that now has occurred.

The following major findings emerge from the 2012 edition of these Generational Projections.

**1. Less Population Growth.** Much slower population growth is foreseen in these projections than was

indicated by the official state population projections issued in 2007 by the state Department of Finance (DOF). The population level previously expected for 2020 is not reached until 2028 (44.1 million). And the 50-million population mark previously anticipated for January 2032 is now expected in January 2046, fully 14 years later. (Once the DOF projections are revised to take account of the 2010 census and recent trends, they also will likely show slower growth.)

**2. A Return to Normal Growth.** In fact, the anticipated growth in each of the coming decades is very similar to what was recorded in 4 of the last 5 census decades, the lone exception being the 1980s’ growth of 6.1 million added persons. See EXHIBIT A.

Along with the slower growth have come several important changes in population characteristics. The largest projected shifts involve the aging of the population and residents’ place of birth.

**3. A Soaring Senior Ratio.** Population growth among seniors ages 65 and older is projected to quadruple in the coming 20 years (4.2 million, amounting to 57% of the total growth in 20 years) compared to the gains in the last 20 years (1.1 million, accounting for only

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## Exhibit A

California Population				Population Growth Each Decade			
	Census	DOF-07	Pitkin-Myers CDF 12		Census	DOF-07	Pitkin-Myers CDF 12
1950	10,586,223			1950-60	5,130,981		
1960	15,717,204			1960-70	4,253,865		
1970	19,971,069			1970-80	3,696,695		
1980	23,667,764			1980-90	6,092,257		
1990	29,760,021			1990-00	4,111,632		
2000	33,871,648			2000-10	3,382,303	5,264,023	3,457,002
2010	37,253,956	39,135,676	37,328,528	2010-20		5,000,247	3,491,673
2020		44,135,923	40,820,201	2020-30		5,104,968	3,936,103
2030		49,240,891	44,756,304	2030-40		5,025,224	3,560,267
2040		54,266,115	48,316,571	2040-50		5,241,761	2,853,429
2050		59,507,876	51,170,000				

Source: Census, California Department of Finance, Pitkin-Myers CDF 2012

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15% of total growth). Driven by aging of the large baby boom generation, the ratio of seniors ages 65 and older to prime working ages (25 to 64), is projected to soar to 36.0 seniors per 100 working age in 2030, compared to 21.6 in 2010, a two-thirds increase in just 20 years. The impact of the increase is amplified because it follows four decades of no change in the senior ratio.

**4. Faltering Growth in Children.** An opposite trend is occurring among children. Whereas children under age 18 were rapidly increasing in number between 1990 and 2010 (+ 1.6 million), in the coming 20 years (2010 to 2030) the growth of children virtually halts (-31 thousand). Given the continued growth of the rest of the population, the share made up by children is projected to slowly decline, from 24.9% in 2010 to 20.7% in 2030.

**5. Foreign-Born Share Holding Constant.** The generational projections contain rich detail on nativity or place of birth not found in other population projections. The total foreign-born share of the state population has leveled off at 27% after decades of increase. Projected foreign-born shares of the total population are 27.0% in 2020 and 27.0% in 2030. (The foreign-born share stood at 8.6% in 1970, 15.1% in 1980, 21.7% in 1990, 26.2% in 2000, and 27.2% in 2010).

**6. Longer Immigrant Settlement.** The growing number of foreign-born residents in the California population includes cumulative increases in the share of long-settled immigrants. As the number of foreign born who are newcomers is declining, the share of the foreign-born who are long settled (entered the U.S. 20 or more years earlier) is increasing. It is projected to rise to 62.2% of all foreign-born in 2030, compared to 45.7% in 2010 and 22.0% in 1990. Conversely, the share of foreign-born that arrived in the U.S. less than 10 years earlier is projected to fall from 27.8% in 2010 to 21.3% in 2030 compared to 50.4% in 1990.

**7. Growing Majority California-Born.** The 2012 edition of California Demographic Futures goes beyond previous editions to describe new detail on the number of residents who are native Californians, as opposed to residents born in other states or abroad.

These homegrown sons and daughters form a rapidly growing majority of California's population.

The native Californian (or homegrown) share of the state population became a majority of the population in the last decade, reaching 53.9% in 2010, and will continue to slowly rise. The homegrown share is far higher among children and young adults than older adults. In 2010, over 90% of children under 10 already were homegrown, native Californians, but major increases in homegrown status are now expected among adults ages 25 to 34 (62.1% in 2030 compared to 50.6% in 2010) and for adults ages 35 to 44 (57.2% in 2030 compared to 38.5% in 2010).

**8. Changing Sources of Future Workforce.** Growth in California's working age population is projected to change dramatically in the coming 20 years compared to the preceding 20 years. Whereas the main working age population (ages 25 to 64) increased 4.2 million from 1990 to 2010, it is expected to grow moderately less (3.3 million) from 2010 to 2030. Virtually all the projected growth is comprised of native-born who are the children of immigrants (98%). This contrasts to the earlier growth period, when immigrants themselves accounted for 80% of the growth. In fact, in the coming period, 112% of the 3.3 million working age increase is projected to be from California-born residents (a 3.7 million increase that exceeds losses in other groups).

**9. A New Recognition of Training Ages.** Youths and young adults are technically able to be working, but those who are ages 18 to 24 more often are enrolled in extended education or training programs, or they may be serving in part-time or apprentice positions that are preparing them to join the main workforce. They are the workforce of the future. The California born already dominated growth in this age group in the last 20 years and are projected to continue to do so in the coming period as well. Latinos predominate among the homegrown population in training ages, but all racial groups contribute. Those raised in California are, of course, educated at the expense of California taxpayers and likely to remain in the state to the benefit of California businesses and other employers. And they will become future taxpayers themselves, as well as possible home buyers to strengthen the housing market.

# 1 Introduction

California is at the cusp of a major generational transition. The large generation born during the national Baby Boom in the 1940s and 1950s is beginning to leave their prime working ages. At the same time, a rising generation born in the California baby boom of the 1990s, many the children of immigrants who arrived in the 1980s and 1990s, will soon be adults and entering the workforce. The impending changes pose the state with both great opportunities and urgent challenges that need to be addressed. Population projections that link the past, present and future can help people better grasp the transition that is underway.

The projections introduced in this report are termed “generational” not only because of these age changes but also because they include immigrant generations. They categorize people by their place of birth, whether in California, elsewhere in the U.S., or another country, and also whether people are second-generation children of foreign-born mothers. This is not information ordinarily found in population projections but it is vital for California, given that its foreign-born population and their children are so prominent. In addition, these projections include the usual age, sex, and race characteristics provided by official state and national agencies (see sidebar).

This set of projections is the third in a series with a long history of development. Previous generational projections in the California Demographic Futures series were issued for California in 2001 (Myers

and Pitkin 2001) and 2005 (Myers, Pitkin and Park 2005), both of which were posted on our website and reported in the media in California. An earlier model (Pitkin and Simmons 1996) was developed for the nation as a whole. The new projections simulate processes of demographic change forward from 2000 and are then calibrated to the 2010 Census counts before launching into the future. They are the latest in a series of projections under development for well over a decade. A notable record of success has been established. The 2001 projections foresaw the leveling off of the foreign-born share of California’s population before the results of the 2000 census were released and successfully projected the share later observed in 2010. In addition, a 2009 study from the research group was the first to recognize that a new homegrown majority had formed in California (Myers, Pitkin and Ramirez 2009). And, in advance of the 2010 census release, a “predictive simulation” used demographic analysis to reasonably estimate the population total for California (Pitkin and Myers 2010).

A very brief description of the method is offered here, with fuller details found in section 8, and in other sections where appropriate. The projections are made by the cohort-component method, which ages the base 2010 population forward year by year into the future, changing it according to age and sex-appropriate rates of mortality and migration to and from California, and projects births by applying fertility rates to the projected population of women

<b>Content of Projections</b>	
<b>Conventional population projections have . . .</b>	
Age	
Sex	
Race & Hispanic Origin	
<b>California Demographic Futures Projections have . . .</b>	
Age	
Sex	
Race & Hispanic Origin	
<b>+</b>	<b>Generation</b>
	. Foreign-born
	. Native-born second generation
	. Native-born third generation
<b>+</b>	<b>Foreign-Born Year of Arrival in U.S.</b>
<b>+</b>	<b>Native-Born State of Birth</b>
	. California
	. Other state

of child-bearing ages. Since many of these rates vary across race and origin (nativity) groups, different sets or schedules of rates are used for the different race and origin groups. For example, fertility rates are higher for foreign than native-born women, and native Californians are less likely to migrate to other states than those who were born in other states. All of these rates are calibrated according to the changes actually observed between the censuses of 2000 and 2010. They are then projected forward according to known or expected trends in migration, fertility, and mortality. More information on the method of projection can also be found in “Methodology and Questions and Answers About the Generational Population Projections” in section 8 of this report.

### Utility of the New Projections

The added detail provided by the new projections for California provides major benefits for public understanding and policy making. All projections yield an assessment of the future total number of residents, but without the added detail provided here about characteristics of California’s residents, the public and policy makers alike can only speculate about

substantial social changes, projecting them into the future based on short-cut empirical methods, at best, or guesses or emotions, at worst.

Under the limitations of the conventional content, for example, we might know that the number of Latinos or Hispanics<sup>1</sup> are increasing and will soon be the majority of the state’s population. But users would not know whether those added Latinos are likely to have been born in another country (and be immigrants), or whether they are likely to have been born in the United States (and be native-born). Further, users would not know how many of these new Latinos are actually California-born and whether their mothers are likely to be immigrants or native-born themselves.

All of this information is available for historical dates, up to 2011, but only available in projections for California in the California Demographic Futures series. Without explicit projections, many observers assume that all growth will come from migration by outsiders, rather than from births in California. The birth data are readily available, and births have even been projected, but the contribution to the total changes in population is not known unless this information is organized into projections.

Without projections, the public or leaders in business and government do not have a firm grasp of who will make up the workforce of the future. In the new projections, population in the working ages is categorized not only by race and Hispanic-origin but also by generation and place of birth. Based on these projections, it is now possible for the public to discuss the implications of having a future workforce the great majority of whom will be California born and raised.

It is a matter of simple logic that a new worker who will be age 25 in 2030 and California-born is age 7 in 2012 and likely in the second grade. The new worker will be educated in California schools that are paid for by California taxpayers, all for the benefit of California employers. But these same new workers of the future will also be new taxpayers themselves, and they might also be new home buyers who contribute to the real estate economy as well.

What is not known and a matter of demographic accounting, is how many will there be, how many will be native sons and daughters of California, and how many will come to the state from other states



or nations. The projections offered here help to make the future more concrete. Although questions such as these about the future population can never be answered with certainty, projections that account for the migration, immigration, and mortality, as well as births, provide a rational source of answers and narrow the range of uncertainty about the state's true demographic situation.

## Projections Build on Analysis of Recent Demographic History

Projections require more than simple extrapolation of past trends. They require a detailed accounting of movements in more than 1000 subgroups, but this needs to be based on careful analysis of recent history. There is a great deal of momentum built into the current population structure, and people do grow older one year at a time, but uncertainty prevails about the amount of migration, fertility, and mortality that could reshape the population in future years. All of these factors have been reflected in the new projections.

As an overview, it is useful to think of California's demographic structure as being shaped by three major demographic waves.

The first wave was the well-known post-World War II Baby Boom, which lasted from 1946 to 1964. The number of births in California more than doubled between 1945 and 1963, giving rise to the large native-born Baby Boom generation. Its numbers were further increased by migrants who moved to California from other states starting in the 1950s and continuing in later decades.

A second wave, less well known but equally important, was the migration-driven boom of the 1980-1990 decade, when California's population grew at an average annual rate of 2.5%, two and a half times the rate of increase in the 2000-2010 decade. Several components contribute to this overall growth, including net immigration, natural increase (i.e., the excess of births over deaths), and net domestic migration.<sup>2</sup> Large influxes of migrants came both from other states and abroad. These new residents were mostly adults who had or sought jobs, needed and bought houses, and started families. The flows of migrants from other states ended and turned around during the deep economic recession in the early 1990s, while immigrants from other countries continued to come, although in declining numbers.<sup>3</sup>

In a third wave, which was a direct and immediate result of the 1980-1990 wave of migration, the state experienced a surge of births, a "California baby boom," which peaked in 1990-1991 at 610 thousand, more than 50% above the number in 1980. This boom did not last however. By 1997 the number of births had fallen to 524 thousand and has remained near that level in later years. During the 1990-2000 decade the number of births more than made up for 2.8 million migrants lost on net to other states.

Each of these large demographic waves and other past demographic events send predictable ripples forward in time, and it is their predictability that gives the projections a credibility that requires attention. Which is not to say that future demographic events, giving birth, dying, and migrating, can be foreseen with complete certainty either for individuals or groups of people. The pattern prevailing for the past century is that death rates change more slowly and therefore predictably than rates of fertility, and rates of migration, domestic and international, are more variable than both.

Going forward in time, the population in the *near* future is more predictable with greater certainty than in the more distant future: with more time, there is more scope for demographic rates to change and for the effects of unanticipated changes to cumulate and multiply. For this reason, the report emphasizes the projections of detailed characteristics for the period 2010 to 2030 while more basic results are reported for later years.

## Questions of Future Trajectories

Sections 2 to 4 of the report address common important questions about California's population.

- The 2010 census delivered a major surprise to California, because its count came in well below the projections prepared by the State of California in 2007. Looking forward, a major question is how much growth to expect for the current decade and those beyond. (Section 2)
- Rapid changes in the racial and Hispanic composition of the population have proceeded in California at least since 1970. Given that migration patterns have shifted and birth rates have decreased, should these changes now be expected to continue at the same rate in the coming decades? (Section 2)



- How rapidly will the aging of the giant baby boom generation shift the prevailing balance between the state’s working age population and the population of seniors with entitlement benefits, most of whom will be retired from the work force? (Section 3)
- How much will the number of children continue to grow in the future, given these changes for adults and recent declines in the number of births? (Section 3)
- What is the future of California’s large foreign-born population? Will it continue to grow through rapid immigration, and how should it be expected to change? (Section 4)

Sections 5 and 6 report the continued growth of the new homegrown, California-born majority in the state’s population, an important finding of these projections (Section 5), and projected changes in the working and “training” age populations, with major implications for the state’s work force and economy (Section 6). Section 7 presents a concise, accessible overview of California’s demographic structure and the ongoing generational transition, its roots in the past, the current situation, and where it is headed in the foreseeable future.

The final section of the report (Section 8) describes the projection methodology and answers common questions about the basis for the California Demographic Futures generational projections.

# 2 Population Growth and Racial-Ethnic Change

Several major population dimensions are included in the new Generational Projections developed using the California Demographic Futures model. Addressed in this section are two of the most conventional, total population growth and racial and ethnic changes.

## Total Population Growth

Total population growth is often considered the main result to any population projection, even when a host of more detailed results are generated for use. Population growth reported in the 2012 Generational Projections for California is substantially lower than

what was previously expected for the state. The benchmark standard, and the official projections for policy making by the State of California, is the set of projections produced by the Demographic Research Unit in the California Department of Finance (DOF). Their latest projections issued at this writing remain those produced in 2007. The DOF projections are scheduled for revision in 2012 to take account of results from the 2010 census and also to make needed adjustments for more recent trends.

The population totals expected from the 2012 Generational Projections are presented in Exhibit 2.1, comparing these to census results since 1950 and to

Exhibit 2.1: California Population Total By Decade

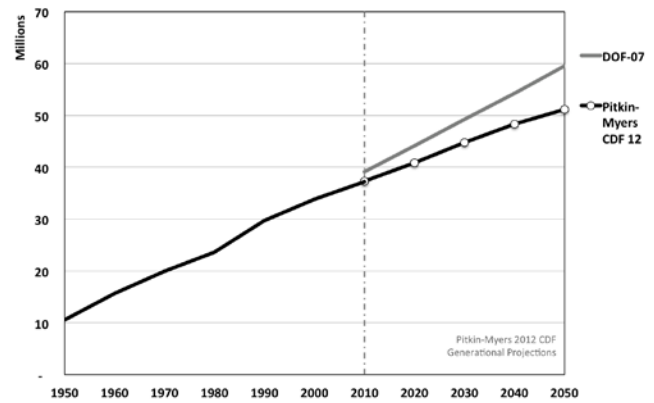
	California Population				Population Growth Each Decade		
	Census	DOF-07	Pitkin-Myers CDF 12		Census	DOF-07	Pitkin-Myers CDF 12
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2050		59,507,876	51,170,000				

Source: Census Bureau, Department of Finance 2007 Projections, Pitkin-Myers CDF 2012

the DOF-07 projections through 2050. The totals reached in the present projections include 44.8 million in 2030 and 51.2 million in 2050. These figures are well below those projected in 2007 by the California DOF, as illustrated in Exhibit 2.2. An initial difference of 1.8 million people already exists in 2010, because our new projections are benchmarked to the 2010 census that turned out to be that much lower than the DOF-07 projections. And the gap opens wider in subsequent decades, with the new projections 4.5 million lower in 2030 and 8.3 million lower in 2050.

The best way to track these projections across the decades is to compare the total population growth accruing in each decade. What stands out is the extraordinary 6.1 million population growth between 1980 and 1990, an increase of 26%. Previous decades saw only 4.3 million growth in the 1960s and 3.7 million growth in the 1970s. And subsequent decades recorded only 4.1 million growth in the 1990s (a 14% increase), and 3.4 million growth (10%) in the decade just completed. It turns out that the 1980s were an isolated moment, a surge of growth due to cold war defense spending on aerospace, largely in Southern California, combined with economic doldrums in the oil patch and the rustbelt that made California a national magnet for growth for a decade. However, those attractions did not continue after 1991, and growth decreased substantially in the decades that followed (Exhibit 2.3).

Exhibit 2.2: Total Population

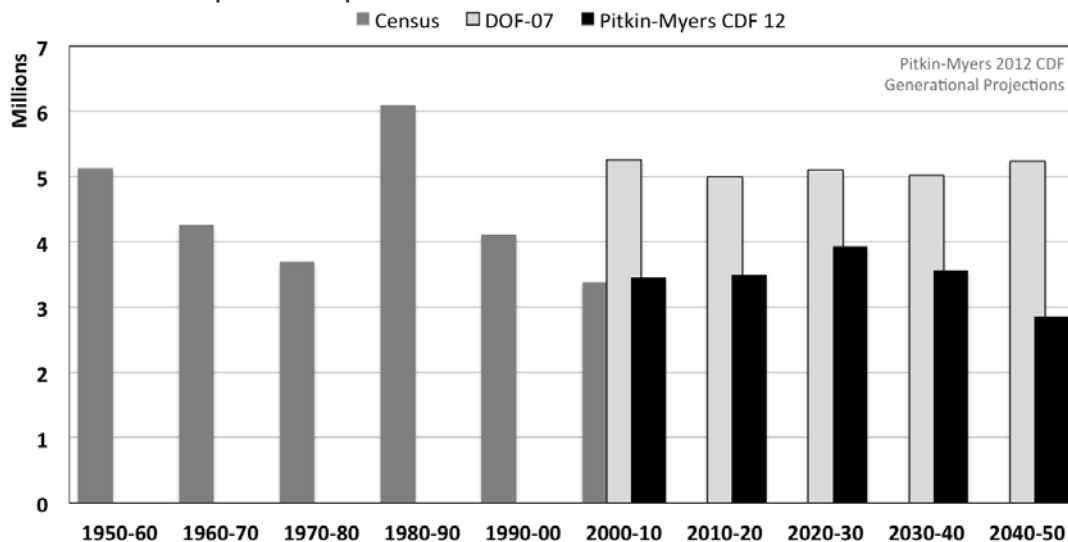


Source: Census Bureau, Department of Finance 2007 Projections, Pitkin-Myers, CDF 2012

The annual growth projected by the California Demographic Futures model continues past trends of much reduced migration to California. Even during the boom years of the early 2000s migration to California was falling, so this should not be seen as just an event of the Great Recession. Fertility rates also have been low for more than a decade, although they dropped even more during the Great Recession. To this day, even though California has a population that is 25% larger overall, the peak year for births in California is still 1990, marking the climax of the 1980s boom years.

As evident in Exhibit 2.3, the DOF-07 projections seemed to anticipate a rebound in growth to levels

Exhibit 2.3: Observed & Expected Population Growth Each Decade



Source: Source Census Bureau, Department of Finance 2007 Projections, Pitkin-Myers CDF 2012

closer to the boom years of the 1980s, extending this high assumption to every future decade. The projections under the California Demographic Futures model also foresee a small eventual rebound from the recent low period of growth (which straddles both the decades of the 2000s and the 2010s), but our projections never again reach 4 million growth in a decade, and never exceed 10% growth in a decade. It is certainly possible that the state could reap another unusual decade (an anomaly like the 1980s), but the average outlook is for much more subdued growth.

Growth continues at a healthy clip in these projections, just more slowly. In view of the fiscal state of affairs in California, and the difficulty in financing infrastructure or services required to support growth, it may be helpful that the pace has slowed. Essentially, the state has received a reprieve, buying more time to plan for future growth. The expected schedule under the DOF-07 projections was extremely demanding. Under the new California Demographic Futures projections, there is more time to prepare for growth.

Population growth has slowed so much that the previous level of population once expected in 2020 (under DOF-07) now is expected by the new projections to be reached in 2028. And what had been expected for 2030 is now projected for 2042. Perhaps the most significant benchmark is the year of attaining 50-million population. This population milestone once was expected for January 2032 (under DOF-07 projections). Under the 2012 Generational

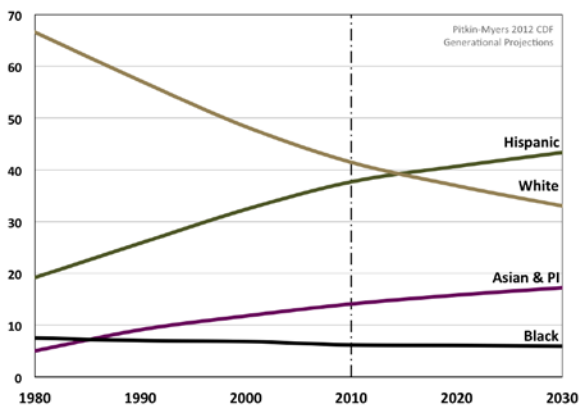
Projections, however, the 50-million benchmark level of population is not anticipated until January 2046, some 14 years later.

### Racial and Ethnic Change

Along with California's rapid population growth has come rapid change in the racial and ethnic composition of the state's population. We report these changes here for a long sweep of recent history and future decades, covering 1980 to 2040. Over this time period the definition of racial categories has changed somewhat, and we have made adjustments to facilitate comparisons. It bears emphasis that the meaning and definitions of race are likely to change even more into the future, so any projections of this topic should be received with circumspection. Race or Hispanic origin is a matter of personal, self-identification, which can change for the same individual over time, and its recording is a matter of administrative procedures that also can offer different categories for selection in different decades. Certainly, no one should claim to predict people's future identities, which can be changeable in unknown ways. Perhaps the best way to think of these projections is as a projection of predominant racial and ethnic heritage in the future according to the major categories as defined today. We offer these projections of race and ethnicity as a convenient metric of comparison with other population projections and census trends.

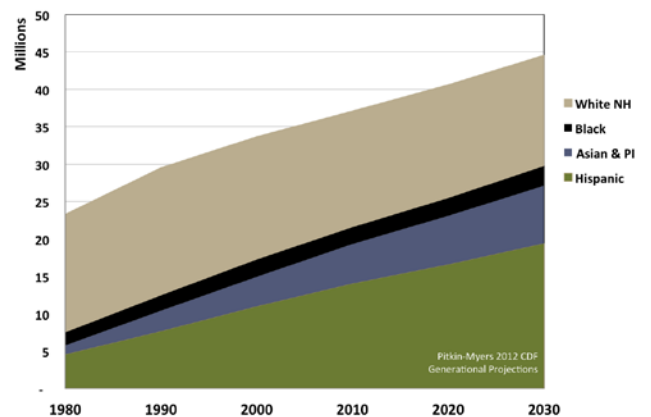
In 1980, two-thirds (66.6%) of California's population was non-Hispanic and White, but by 2000

Exhibit 2.4: Race and Ethnic Shares of Total Population



Source: Census Bureau, Pitkin-Myers CDF 2012

Exhibit 2.5: Race and Ethnic Population Numbers



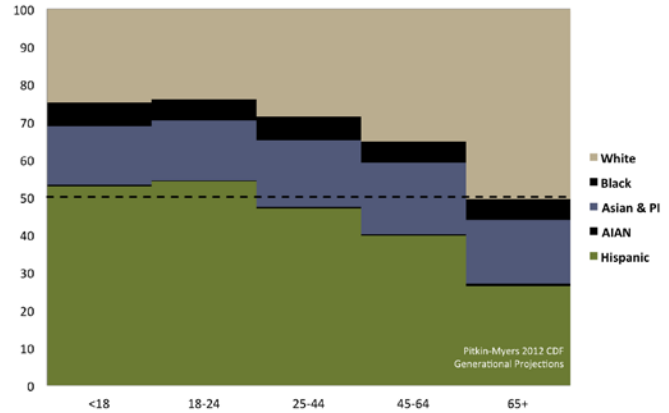
Source: Census Bureau, Pitkin-Myers CDF 2012

this fraction fell below 50%, making California an all-minority state. The next milestone will come in about 2015 when the Latino population is projected to surpass the non-Hispanic White population, and become the largest race-ethnic group. The date when Latinos become a majority of the population is not projected here but likely occurs a few years after 2050, based on projected rates of change after 2010. By that time California will have spent nearly six decades with no single group in the majority.

The projected trajectories of changing racial composition are shown in Exhibit 2.4. The pace of change was greater in the 1980s, because of the boom, but also in the 1990s, because the deep California recession sent many 1980s migrants, many of whom were white, back to their home states or on to new destinations. More recently, the slowing of immigration from Mexico, as well as declining fertility, have also slowed the rate of increase of the Latino population.

Another way of viewing this growing racial and ethnic mosaic is to see the population, not as percentage shares of a fixed total pie, but as the sum of the numbers of people in different groups (Exhibit 2.5). In this perspective, we do not see decline but rather growth. Latino and Asian residents have rapidly increased in number, but there is no evidence of decline among Whites and Blacks. Even though the percentage shares of these two groups have declined, their absolute numbers have held fairly steady and are projected to remain so. In 2040 there are still projected to be more than 14 million non-Hispanic White residents of California, more than the entire population of all but three states.

Exhibit 2.6: Race-Ethnic Shares in 2030



Source: Pitkin-Myers CDF 2012

To be sure, many of these White residents will be older, some from the giant baby boom generation, but others their children and grandchildren. Brookings demographer William Frey (2010) has called attention to a cultural generation gap, where many more of the older age groups are non-Hispanic White, while in the youngest age groups Whites make up only a small fraction in contrast to the burgeoning numbers of Latinos and other newly growing groups. Thus we can think of racial and ethnic change as working its way slowly up the age ladder a year at a time. This is demonstrated for the year 2030 in Exhibit 2.6. Among Californians 65 and older, 50.5% are projected to be White, while among those under age 18, only 24.9% will be White, exactly half as large a share. Conversely, 26.4% of seniors are projected to be Latino in 2030, compared to 52.9% of children under 18.

## 3 A Changing Age Structure

Age is the central dimension of demography, because change happens a year at a time, and all of the population members advance in predictable ways. The probabilities of a great many behaviors and events vary systematically across the different ages, making age a uniquely useful and widely used predictor. The age structure, or distribution of the population across age groups, differs from decade to decade because of aging and because of the legacy of past events. In this section we summarize the changes in age structure that have occurred since 1990 and that are projected to occur through 2030. That is a capstone year for aging in California, because it marks the point at which the last members of the baby boom generation have crossed age 65 and become eligible for Medicare and many pension benefits.

A tremendous amount of change will be compressed into just the coming 2 decades, and the clearest understanding of a changing California population can be gained through a contrast of 2030 with 2010 and 1990. This contrast will be examined from different perspectives, beginning with the processes that generate those differences.

### The Legacy of Past Events

The giant baby boom generation, born 1946 to 1964, has rippled upward through the age structure for decades. Once born, a cohort can increase in numbers only through migration from another locale. Decrease occurs through out-migration and eventual death.

California's baby boom cohort was augmented during the boom years of the 1980s, when many people then in their 20s and 30s, the ages with highest migration probabilities, were attracted to jobs and lifestyles in the Golden State. Many of these new Californians came from other states; others from foreign countries, as to be discussed in the section on immigration. Rates of migration slow substantially after age 40, and so California's population of boomers has been relatively stable since.

Later, younger cohorts, born in the late 1960s and 1970s, are smaller, and fewer of them have moved to California because the employment attractions and housing costs have not been as welcoming in recent decades. At times, especially during the 1990s, the economy in California was so much worse than in other parts of the nation that many young adults moved to other states. The combined effects of smaller cohort sizes and out-migration are still visible today in the current slightly depressed number of middle-aged residents relative to older and younger cohorts.

California experienced its own baby boom from 1984 to 1996, when many of the young adults attracted to the state had their own children. These years also coincided with the baby boom echo, the children born of the baby boomers. Annual births soared 37% between 1984 and 1990, then fell 12% by 1996 before leveling again.<sup>4</sup> Those children are now aged 17 to 27 in 2012, with the largest cohort



turning 22 this year. This new generation of young adults is larger than their predecessors, but they leave behind them a decline in school age children in their wake. Given the current declines of another 10% in births statewide during the Great Recession, the ranks of children are being further depressed, and for the future, young adults. Nonetheless, the decline is expected to be short-lived, with a small rebound in fertility anticipated after full recovery from the Great Recession. Overall, for the long-term the outlook is for relative stability with very little net change.

### Age Structure in Each Decade

Here we offer a snapshot of the age distribution in each decade. As shown in Exhibit 3.1, in 1990, an exceptionally large share of California’s population was ages 25 to 34 (19.3%). This share fell to a low point in 2010 (14.4%) before a brief revival in 2020 and a projected new decline in 2030 (14.0%). A more prolonged downward shift is found among children, with the share of the population that is under age 10 falling from 15.5% in 1990 to 13.5% in 2010 and projected to 11.4% in 2030.

What has been growing is the share in middle age, as the baby boomers have progressed through the age groups. The share ages 35 to 44 peaked in 2000, the share ages 45 to 54 peaked in 2010, and the share ages 55 to 64 will peak in 2020. These peaks reflect the aging of the cohort that was age 25 to 34 in 1990,

representing the younger half of the baby boomers. Ultimately, the cohorts passing through middle age arrive in elder years, with the baby boom cohorts beginning to arrive there after 2010. Our large cohort from 1990 makes its arrival in 2030, at which time the share of the population that is 65 and older is projected to reach 18.5%, well above the 11.4% of today. This highly significant change is discussed below and in later sections as well.

### Impacts of Changing Numbers at Different Ages

As a measure of direct impacts on public services and private businesses, changes in the absolute numbers of residents each period are more important than their shares of the total. People of different ages have very different needs and demands, and when an age group is growing its influence has an expansive effect on those activities it most engages in, while in the case of shrinking numbers, the effects are opposite. An especially important impact is when the effects reverse from one period to another. Such a reversal can create wrenching changes as suppliers in the private and public sectors alike adjust to shifts in established patterns of demand by consumers and clients.

California faces such a period of wrenching change today. This can be seen by comparing the growth of the last 20 years by age group with the growth projected for the coming 20 years, as shown in Exhibit 3.2. Substantial reversals in growth patterns lie ahead

Exhibit 3.1: Trends in Share of Population

	1990	2000	2010	2020	2030
<10	15.5	15.4	13.5	12.1	11.4
10-17	10.5	11.9	11.5	10.5	9.5
18-24	11.2	9.9	10.6	9.6	9.1
25-34	19.3	15.4	14.4	15.2	14.0
35-44	15.6	16.2	13.8	13.4	14.4
45-54	9.9	12.8	14.0	12.4	12.2
55-64	7.5	7.7	10.9	12.0	10.9
65-74	6.3	5.6	6.1	8.8	9.9
75+	4.2	5.0	5.3	6.1	8.7
Total	100.0	100.0	100.0	100.0	100.0

Source: Census Bureau IPUMS, Pitkin Myers CDF 2012

as large cohorts, led by the boomers, transition to new stages of life.

Among young people under age 25, California experienced more than 2 million population growth from 1990 to 2010. However, in the coming 20 years, we project virtually zero growth in any part of this age range. (These differences include, of course, the combined effects of past births and migration.)

Among the crucial group of young adults ages 25 to 34, in the last 20 years, California lost 367 thousand people. In contrast, in the coming two decades, the state is projected to gain 889 thousand, an important revitalization of the age group that supplies new workers, supports entry-level housing demand, and starts families.

Similarly, at ages 35 to 44, growth is projected to increase from only 492 thousand in the last 20 years to 1.3 million in the coming 20 years. This can be expected to reinvigorate the labor supply and add to demand for housing.

Conversely, in late middle age, from 45 to 64, growth in the last 20 years amounted to an increase of 4.1 million, while in the coming 20 years growth is reduced to only one-quarter as much (1.0 million). This is the age range of maximum earnings and largest house purchases, but its impact as an economic driver will be much less robust in the future.

Finally, we arrive at the elderly ages, where 20-year growth of the young-old will expand from 424 thousand in the past 20 years to 2.1 million in the coming 20 years, and all elderly combined will increase their growth from 1.1 million to 4.0 million, a nearly four-fold growth at elderly ages.

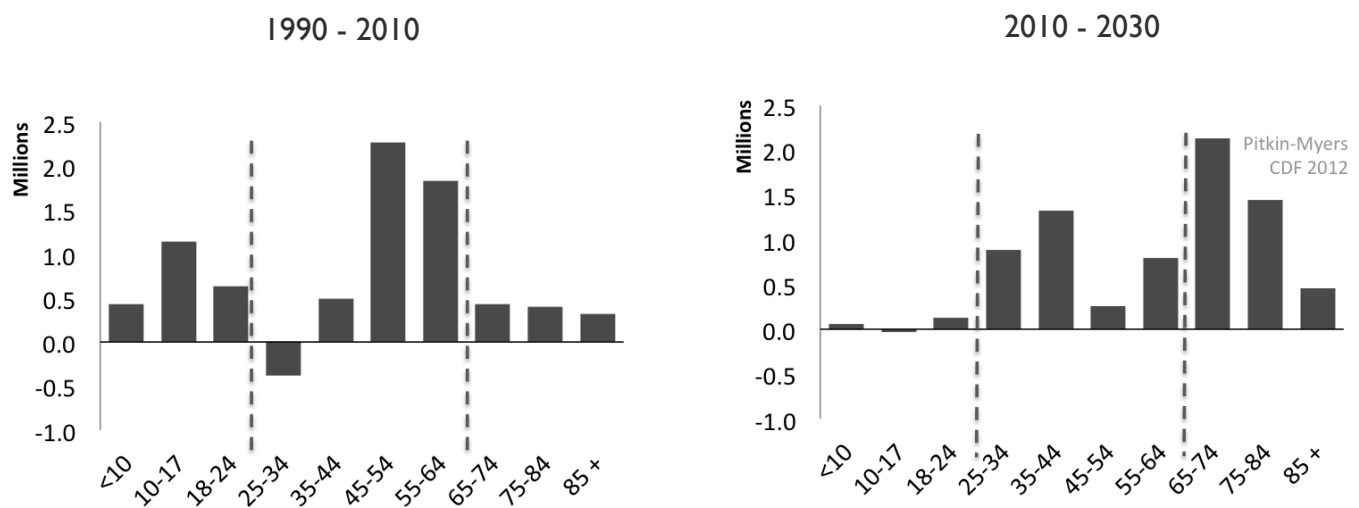
### A New Era of Aging

The portraits of change that compare aging in the last 20 years to the next 20 years could not be more different from one another. In the period just closed we experienced growth of the middle aged and children. In the period to come, growth is projected among the senior population and for young adults, accompanied by a slowing among the middle aged and children.

Indeed, the state's future prosperity and vitality will be greatly shaped by these growing segments of young adults and seniors. What will they look like? In subsequent sections we address the immigration and second-generation trends in California, as well as the new, growing majority of homegrown, native Californians.

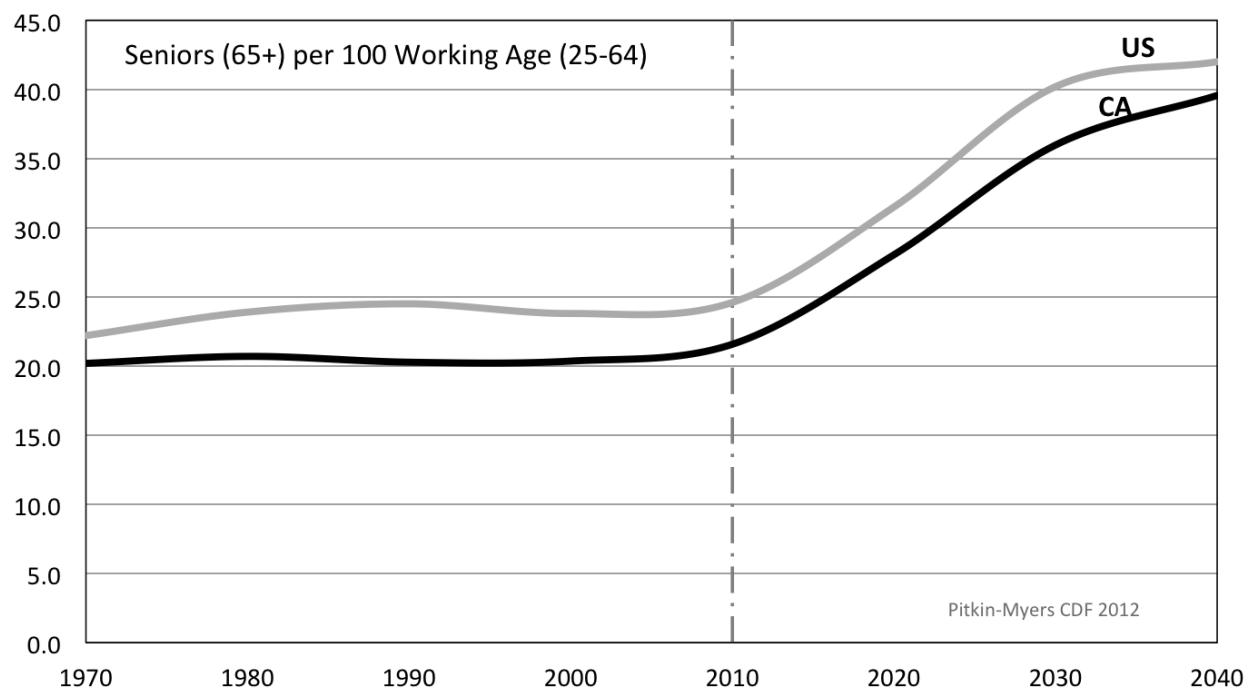
In sum, the magnitude of the coming generational transition can be seen from a simple numerical calculation, one that contrasts the number of elders, ages 65 and older, with prime working age residents, assumed to be ages 25 to 64. Even though some may

Exhibit 3.2: Growth by age group, 1990 to 2010 and 2010 to 2030



Source: Census Bureau IPUMS, iPtkin Myers CDF 2012

Exhibit 3.3: Senior Ratio Soars as Baby Boomers Cross Age 65



Source: Census, Census Bureau Projections, Pitkin-Myers CDF 2012

be working before or after these ages, this “senior ratio” captures the main relationship between the entitlement and retiree ages and the size of the age groups that are their principal supporters.<sup>5</sup>

Although the rising number of seniors is significant, of key importance for our society and economy is the ratio between their number and the working age people who will support them in different ways. As this ratio slowly rises, it will gradually tip the scales toward more emphasis on behaviors that the elderly are likely to engage in—not simply retirement but consumption of public entitlements, reduced taxpaying, and increased home selling. After four decades of remaining almost flat at the same constant level, the ratio of seniors is quite suddenly beginning to escalate (Exhibit 3.3). In California, what had been 20 or 21 seniors per 100 working-age residents is projected to climb to 28 in 2020 and then to 36 in 2030. A two-thirds increase in the ratio of seniors to working age Californians seems certain to impose enormous pressure on state and local governments and the taxpayers. A lot is riding on the shoulders of the new generation of young adults.

# 4 The Immigrant Population

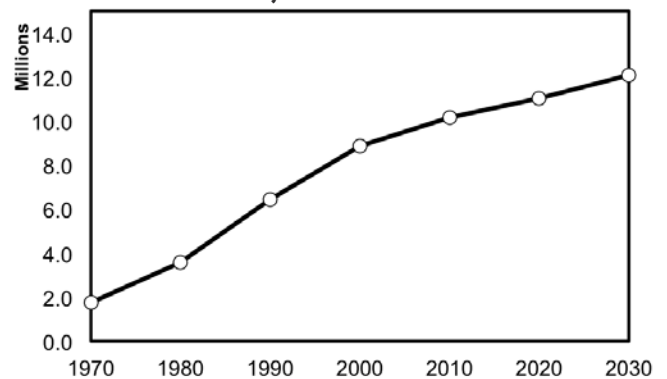
The foreign-born population has been a central element of the demographic changes of the past three decades in California and is an important component of the transitions coming in the next two decades. Immigrants make up the “first generation” of their families to live in the U.S. They include those who arrived in the large immigration wave of the 1980s and early 1990s as well as substantial numbers who have arrived much earlier or since 2000. They come from diverse origins, the largest number from Mexico, but substantial numbers are also from Central American and Asian countries. Immigrants play a large role in the workforce, the economy, the housing market, and culture and, of great importance for the future, they are the parents of the rising second generation of children born in California.

The most distinctive feature of the new Generational Projections is the explicit treatment of immigration and the trajectories of foreign-born cohorts that arrived in different decades. As discussed in the Introduction, conventional population projections do not track immigrants as a separate group anywhere in the United States. Yet this population segment is larger (10.1 million in 2010) and more important in California (27.2% of the total population in 2010) than in any state in the U.S. In fact, the foreign-born share is higher in California, and the number larger, than in any nation in the world of at least 10 million population (but Australia may surpass California within the next 2 or 3 years). We can ill afford to overlook such an important group for determining the size and

characteristics of California’s population. The lack of forecast information about immigrants in California has forced the public and policy makers alike to rely on imagined trends that merely extrapolate the past. Much better information is required for improved decision making.

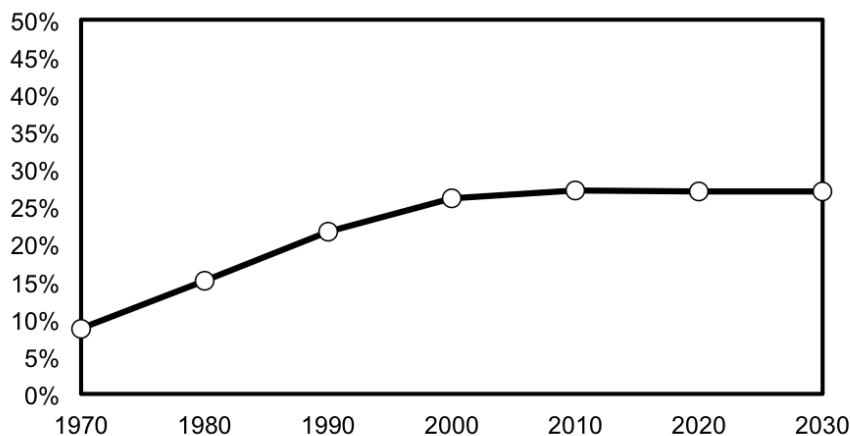
A wealth of detail is generated by our approach, and the highlights, as well as justification for key assumptions, are summarized in this section. These include growth in the foreign-born population and their children, the second generation, and the accumulation of waves of immigrants that arrived in different decades and that now have a growing length of settlement. The Generational Projections show the generation of immigrants who arrived in the immigration boom

Exhibit 4.1: Foreign-Born Population of California, 1970-2010 and Projected



Source: Censuses of 1970-2010; 2010 American Community Survey, 1-year estimates; and Pitkin-Myers CDF 2012

## Exhibit 4.2 Foreign-Born Shares of California, 1970-2010 and Projected



Source: Censuses of 1970-2010; 2010 American Community Survey, 1-year estimates; and Pitkin-Myers CDF 2012

years aging and advancing to new life stages, just as the somewhat older, native-born generation of boomers are doing. And the overall growth in foreign-born has slowed markedly, so that the foreign-born share of the total population has stabilized at its current level, no longer escalating as in the past.

The Generational Projections treat the foreign-born population as an explicit component in the widely adopted, cohort-component method of population projections. The benefits of this approach are clear, because the logic of the cohort-component method is that treating each component explicitly will lead to more accurate overall projections when all the individual components are summed. The foreign-born component is based on the 2010 foreign-born population, a projection of future immigration, and the California Demographic Futures projection model which “ages” past and future cohorts of immigrant arrivals forward in time. Of these three elements, the most uncertainty attaches to the projections of immigration. Accordingly, in this section we explain the empirical basis for estimating that factor for input into the projections.

### Empirical Basis for Projecting Future Immigration

Over the past half century, immigration from other countries to California has varied widely yet there are regularities in this history that afford a rational basis for projecting future immigration. The number of new immigrants rose from less than 100 thousand a year during the 1950s to well over 400 thousand a year in the late 1980s, then declined to about 350 thousand a year in 1994-2001 and further to 200

thousand in 2009--half the level at the peak of the wave. Although there have been some brief dips and blips, there has been a downward trend since the peak. However, it cannot be known for certain whether this trend will continue in the future or whether the recent low point was due to the Great Recession and is the prelude to a new upswing.

Our assumptions about future immigration to California are derived from regularities observed in past trends and, to the extent that judgments about the future must be made, we rely on those of a panel of experts and researchers on U.S. immigration. California’s share of U.S. immigration has varied little since it fell abruptly after the peak of immigration to California in the late 1980s. It seems unlikely that the dispersal of immigration to other states will be reversed because the migration networks that were formerly concentrated in California have become well established in many other states. Moreover, since California’s share of new arrivals was quite stable from the early 1990s through 2011, we believe that a further decline is unlikely, and that it will hold this share into the future.

By itself, this insight is helpful but it also means that we require projections of future immigration to the U.S. in order to project immigration to California. In order to project U.S. immigration and avoid bias that might follow from sole reliance on our own professional judgments, we sought the opinions of other scholars who study migration to the U.S. through a Delphi-style survey in April 2011 (Pitkin and Myers, 2011b).<sup>6</sup> In response to questions we posed about their expectations for the levels of immigration to the

U.S. in future years, on average, the members of the panel anticipated that U.S. immigration will rebound from the low levels recorded in 2009 and 2010 by 2015 and will increase further to near the peak (recorded in 2000) by 2025. The two important findings were that, one, while the average expert opinion expected a recovery of immigration, two, there was an expectation that future immigration will remain well below the continued increases in the Census Bureau's 2008 population projections for the nation.

Our projection for future U.S. immigration is derived from this average expert opinion on expected trends. Together with the assumption about California's stable share of U.S. immigration it implies that the number of new immigrants to California will increase gradually from the recent low of 200 thousand to 262 thousand a year by 2025, or by 30%. This is substantially below the large inflows seen at the end of the 1980s. As discussed in Section 2 about population growth, that period was unusually attractive for all migration to California and is not likely to be repeated. It should be noted that our immigration assumption has validity only as a long-run average and should not be treated as an annual forecast; variations above and below this long-run trend are likely but cannot be projected with specificity.

### The Resulting Trend in Foreign Born Population

The effects of this assumption can be readily seen in the resulting projection of the foreign-born population in the state (Exhibit 4.1) which indicates that the foreign-born share of California's total population will level off at approximately the 2010 share of 27.2%, as shown in Exhibit 4.2. In other words, with this amount of future immigration, the foreign-born population of California is projected to increase at approximately the same pace as the state's native-born population.

This is an important finding of the Generational Projections. While this result may seem surprising to those who assumed the upward surge in immigration of the 1980s is continuing, in fact, the turning point came in the deep California recession of the early 1990s that deflected new immigrants to other states. Our 2001 edition of the California Demographic Futures reported that this slowdown had commenced, and that study successfully projected the continued slowdown that unfolded by time of the 2010 census.<sup>7</sup>

This new pattern of a stable foreign born share is significant because it means that California is not being "taken over" by immigrants as earlier trends suggested. More significant may be the conclusion that California cannot rely on an unlimited supply of foreign-born labor, or domestic labor for that matter, to meet its workforce needs, and consequently the state will be increasingly dependent on the talents and skills of homegrown workers.

The slowdown in immigration also means that the characteristics of the immigrant population are shifting as more of them become long-settled in the state. Two of these characteristics, age and duration of residence in the U.S., are matters of accounting and can be projected with a high degree of confidence. The projections of these characteristics are described next.

### Arrival Cohorts

In addition to the number of immigrants in the population of California, the California Demographic Futures model also projects the population of each generation or cohort, of immigrants who arrived in the U.S. in the same year. The projections are summarized by year of arrival in Exhibit 4.3. They show, for example, the population of the cohort that arrived in the U.S. in 1980-1989 and was first observed at 3.1 million in the Census of 1990 (and shown in the first column of the table).<sup>8</sup> By reading this row across the columns, one can trace the population of the 1980s arrivals first in the censuses of 2000 and 2010 and then in the generational projections to 2020, 2030, and 2040. The population of this "arrival cohort" shrinks over time, with losses initially due mainly to emigration (often back to countries of origin) and, increasingly as the cohort ages in later years, due to the impact of mortality. Earlier and later arrival cohorts can also be seen in the exhibit, showing their past and projected populations residing in California.

### Duration Since Arrival and Age

The duration of time elapsed since arrival in the U.S. is an especially significant characteristic of the foreign-born population and can be calculated directly for each cohort any year, since their year of arrival in the U.S. is known. This is significant because growing duration is associated with settlement, integration and advancement in the U.S. (See Myers,



### Exhibit 4.3: Population of California by Nativity and Foreign-Born Decade of Arrival

	1990	2000	2010	2020	2030	2040
(thousands)						
<b>Decade of arrival</b>						
<b>Foreign born</b>	2040-2049					130
	2030-2039				130	2,479
	2020-2029			124	2,447	2,255
	2010-2019		123	2,166	2,001	1,876
	2000-2009		148	2,698	2,422	2,238
	1990-1999	129	3,122	2,686	2,403	2,149
	1980-1989	3,112	2,893	2,406	2,122	1,812
	Before 1980	3,202	2,700	2,234	1,780	1,315
<b>Total foreign born</b>	<b>6,443</b>	<b>8,863</b>	<b>10,147</b>	<b>11,017</b>	<b>12,092</b>	<b>12,927</b>
<b>Native born</b>	<b>23,273</b>	<b>25,008</b>	<b>27,181</b>	<b>29,803</b>	<b>32,671</b>	<b>35,388</b>
<b>Total population</b>	<b>29,716</b>	<b>33,871</b>	<b>37,328</b>	<b>40,820</b>	<b>44,763</b>	<b>48,315</b>

Sources: 1990: 1990 Census 5% Public Use Microdata Sample.  
 2000: 2000 Census 5% Public Use Microdata Sample.  
 2010: 2010 American Community Survey 1-year estimate  
 2020-2040: Pitkin-Myers CDF 2012 Generational Projections

Notes: Populations are as of April 1, 1990, and April 1, 2000, and July 1 in subsequent years.  
 1990 year of arrival in 1990 estimated as prorated share of population that arrived in 1987-1990.

Small numbers at top of each column are foreign-born who arrived between January 1 of the current year and the date of the census or projection.

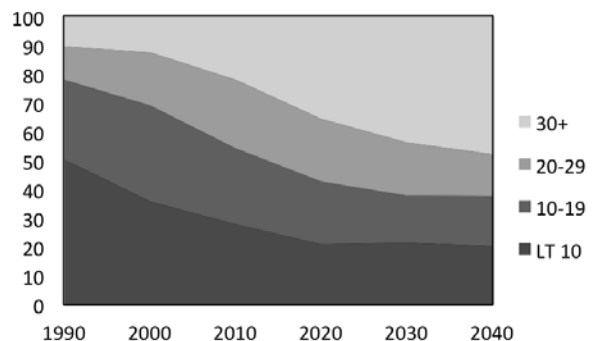
2007, chapter 5 or Myers and Pitkin 2011) For each arrival cohort, average duration in the U.S. grows by approximately ten years each decade.

Exhibit 4.4 shows how immigration duration added up for the entire foreign born population in the past and how it is projected to add up in the future. In 1990, half of the foreign-born population were recent arrivals who had come to the U.S. in the previous 10 years, and the median time since arrival stood at 10.0 years. By 2010, the share of recent arrivals had declined by almost half, and the share comprised by cohorts in the U.S. for 20 years or more had more than doubled; as a result the median duration had risen to 19.5 years. In the future, cohorts in the U.S. for 30 years or more are projected to steadily increase relative to the number of more arrivals, and in 2030 the median duration is projected to rise further to 27.7 years. These projected changes and the growing average U.S. “experience” of the immigrant population reflect the aging of the large cohorts of immigrants who came to California during the boom years of the 1980s and early 1990s.

As cohorts of immigrant arrivals spend longer in the U.S., they also of course grow older. For each cohort,

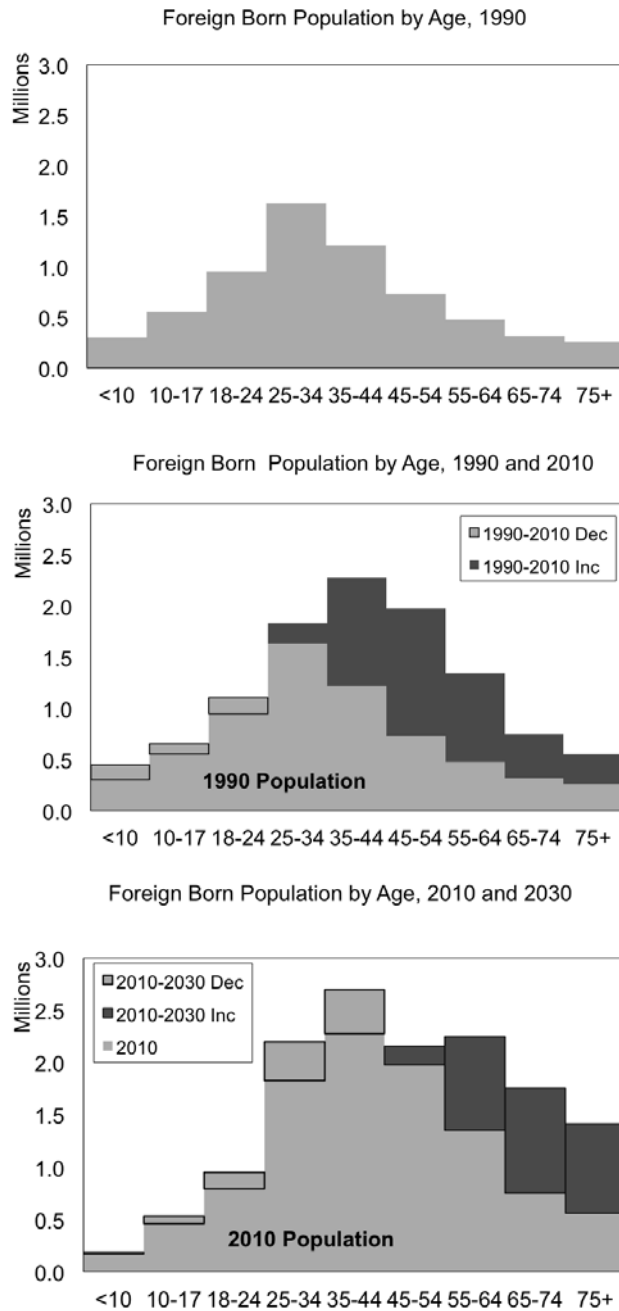
average age increases almost in step with duration since arrival.<sup>9</sup> Somewhat less obviously, the average age of the entire foreign-born, first-generation population has increased over time and is projected to continue to rise in the coming decades. The large cohorts of immigrants who arrived during the 1980s and 1990s, most as youths or young adults, are aging; more recent immigrants are also mostly young, but they make up a shrinking proportion of the total population of immigrants, so the average age tends to increase over time.

Exhibit 4.4: Duration (Years) of Residence in U.S.



Source: Exhibit 4.3

## Exhibit 4.5: Foreign-Born Population by Age



Source: 1990 Census 5% Public Use Microdata Sample, 2010 American Community Survey 1-year estimate 2030: Pitkin-Myers CDF 2012 Generational Projections

This dynamic can be seen in Exhibit 4.5, which shows the age distribution of the foreign-born first in 1990, when the peak age with the largest population was 25 to 34 years. Next it shows the changes to 2010, with the earlier 1990 distribution shaded light, the 1990–2010 increases, all over age 25, shaded dark, and declines, at younger ages, in outlined boxes. The peak age had advanced to 35 to 44. In the bottom panel of the Exhibit, the changes projected to 2030

are shown: increases above age 45, declines at younger ages, and still a peak at age 35 to 44 years but also a new peak at 55 to 64. Over the entire period from 1990 to 2030, the greatest growth is projected over age 45. As a result, between 1990 and 2010 the median age of all foreign born in California increased by 9.4 years, from 33.6 to 43.0, and in 2030 it is projected to rise another 9.1 years, to 52.1.

## Exhibit 4.6: Two Definitions of Second Generation for the Population of California, 1990, 2010, 2030

Nativity and Nativity of Parents	1990		2010		2030	
	Population (thousands)	Share of total	Population (thousands)	Share of total	Population (thousands)	Share of total
<b>Base definition of Second generation: children of foreign-born mothers</b>						
Second generation	3,908	13.2%	7,305	19.6%	9,909	22.1%
Third generation	19,365	65.2%	19,876	53.2%	22,762	50.8%
Total native born	23,273	78.3%	27,181	72.8%	32,671	73.0%
<b>Expanded definition of Second generation: children with at least one foreign-born parent</b>						
Second generation	5,021	16.9%	8,861	23.7%	12,113	27.1%
Third generation	18,252	61.4%	18,320	49.1%	20,558	45.9%
Total native born	23,273	78.3%	27,181	72.8%	32,671	73.0%
Foreign born	6,443	21.7%	10,147	27.2%	12,092	27.0%
Total population	29,716	100.0%	37,328	100.0%	44,763	100.0%

Note: Expanded definition reported in this table is estimated from base definition and is used only in this report section. **The base definition is used in the generational projections and in other sections of this report.**

Source: 1990 Census 5% Public Use Microdata Sample, 2010 American Community Survey 1-year estimate 2030: Pitkin-Myers CDF 2012 Generational Projections

### The Second Generation

As immigrants age, they not only grow more settled, but like the native-born population, many have children. These “second generation” children of the first-generation immigrants are often considered to be part of the immigrant population, and they are therefore separately identified and tracked in the Generational Projections as the children of foreign-born mothers.<sup>10 11</sup> In the recent past and the period of projection, the second-generation population grows slightly faster than the first. In 1990, including all residents with at least one foreign-born parent, a commonly used but more expansive definition than used in the projections or other sections of this report,<sup>12</sup> the second generation comprised 16.9% of the total population of California, less than the 21.7% that were foreign born, but nonetheless substantial. In 2010 the children born to immigrants in the 1990s and 2000s had raised this share to 23.7% of the state’s total population, and by 2030, the second generation is projected to comprise 27.1% of the total population, roughly equal to the number of first-generation foreign-born population. In that year, the first and second generations combined are projected to make up 54.1% of the resident California population. These results are shown in Exhibit 4.6, which also shows the second generation population according to the base definition used elsewhere in the Generational Projections.

The age distribution of the second generation population is quite different than for the first generation. Between 1990 and 2010, continued births to immigrants caused the median age of the second-generation population to fall from 21.8 years in 1990 to just 17.6 years in 2010. The median age is projected to stop falling and increase substantially, 2010 to 28.5 years in 2030, due declining numbers of births to foreign-born women and the aging of the large cohort born in the 1990s and early 2000s.

In this section we have focused on the foreign-born population, its growth through immigration, and their children, the second generation. It has grown rapidly in past decades and is projected to continue to grow at slower rate in the future. Immigrants are not frozen in time like Peter Pan, they are no longer all newcomers, and further predictable changes are projected. In the next section we consider the foreign-born population in context as one of three large origin groups that together comprise the California population and the relationships among them.

# 5 Changing Origins of the Population: Fewer Immigrants and More Homegrown

The result of migration trends is that the predominant origins of residents in California have shifted over time. This is played out differently across the age groups for the reason that adults have had more time than children to relocate themselves and also because older people often preserve a history of migration that was prevailing in the decades when they were in their 20s and 30s.

This section explores three dimensions of residents' origins: immigration from abroad, migration from another U.S. state, and native-Californian by birth. After examining these individually, we then assemble a composite image of the changing origins of the California population.

## Foreign-Born Origin

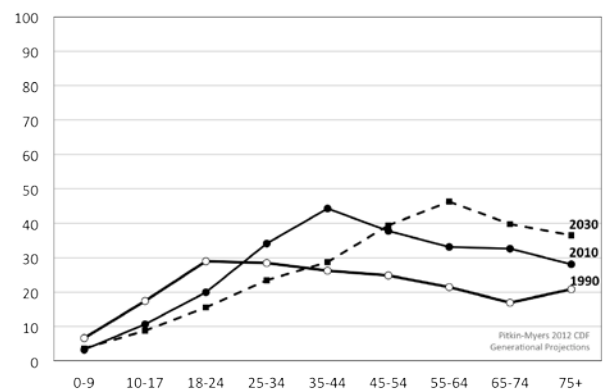
In 1990, immigration was still a relatively new event, which meant that most of the foreign-born were still in young ages. As seen in Exhibit 5.1, the age with the highest share of residents who were foreign born in 1990 was 18 to 24. Fully 29.0% of these young adults were foreign-born. Twenty years later, in 2010, the highest foreign-born share was found at ages 35 to 44 (44.3%), while in 2030 the highest share is projected for ages 55 to 64 (46.4%). The aging of this peak follows the aging of the earlier cohort with the highest foreign-born share, because the rate of immigration began slowing after 1990 and subsequent young cohorts in California were not composed of as many foreign-born.

Overall, it is striking how large a share—over one third—of the California middle-aged residents are foreign-born. Meanwhile, among youth the foreign-born share is dropping and among the elderly there is a virtual doubling. In fact, just at ages 65 to 74, we find that the foreign-born share has already increased from 17.5% to 32.6%, with a further increase projected to 39.7% by 2030.

## Origins in Other U.S. States

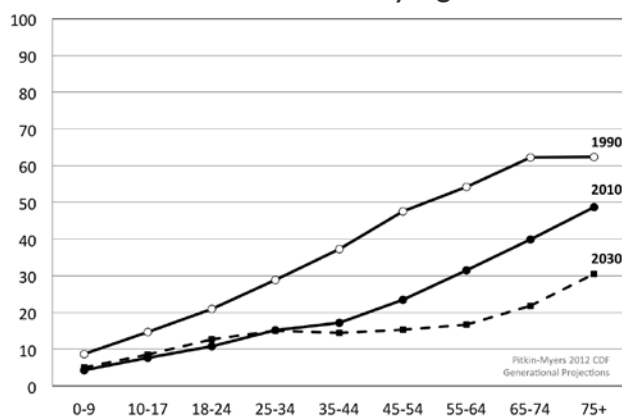
The changes in foreign-born prevalence are accompanied by a different set of changes among residents who are migrants to California from other states in the nation. These former residents of Iowa, Texas, or New York are much more prevalent at older ages, although their numbers are rapidly falling. Among

Exhibit 5.1: Percent Foreign Born By Ages



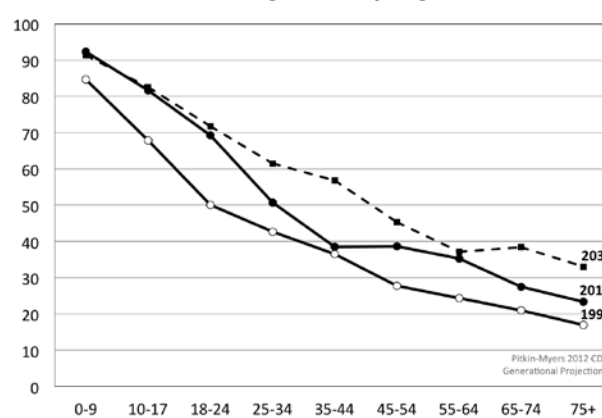
Source: Census Bureau IPUMS, Pitkin-Myers CDF 1.2 Generational Projections

Exhibit 5.2: Other U.S. Born By Age



Source: Census Bureau IPUMS, Pitkin-Myers CDF 1.2 Generational Projections

Exhibit 5.3: Homegrown By Age



Source: Census Bureau IPUMS, Pitkin-Myers CDF 1.2 Generational Projections

residents ages 65 to 74 in 1990, 62.2% were born in another state, while that drops in 2010 to 39.9% and is projected to decline to 21.5% by 2030 (Exhibit 5.2). Combined with the finding above about growing foreign-born prevalence at older ages, we are witnessing a great reshaping of the identity and background of the state's elderly population.

### The California Born

What is the most common origin at young ages is native birth in California, the creation of a homegrown generation raised in this state. As seen in Exhibit 5.3, it always has been much more common for children and young adults to be born in the state where they now reside. However, in 1990, half of the residents ages 18 to 24 were California natives (50.0%), and it was progressively lower in older age groups. By 2010, this share had increased markedly, reaching 69.2% of those aged 18 to 24. This change reflected the dramatic slowdown in migration after 1990, while the older age groups were slower to be affected because many of their members were already resident in 1990.

The age contour of the homegrown share slopes downward at a relatively steady rate, with one exception that is illuminating. In 2010, the share at ages 35 to 44 appears to be depressed by 5 to 8 percentage points. A prior study of the homegrown identified this cohort as suffering losses during the economic recession of the 1990s that was much more severe in California than the rest of the nation (Myers, Pitkin and Ramirez 2009). At that time, the unemployment rate in California was 9.6%, compared to 7.5% for the nation as a whole, a differential of 2 points,

and the unemployment burden fell heaviest on the youngest, most migration prone adults (Myers et al, 2011: Figure 3). In addition, the extraordinary boom in California house prices created another incentive for this cohort of adults to exit, 10 years later, in the early 2000s, when the cohort was in its 30s, because they had grown frustrated by their inability to purchase homes. The combined effect was to drive out a sizable number of California's grown children who sought employment and housing in other states. In the current period, the ill effects of the Great Recession are more evenly spread, with fewer safe havens to attract outmigrants, and the crash in California housing prices has reduced that difference as well. Accordingly, we should not expect to witness as great an exodus from the current cohort of young adults.

### The Combined Origin Profiles by Age and Race-Ethnicity

The three major origin groups can be combined in one exhibit for each of the age groups, as shown in Exhibit 5.4, comparing the origin profile in 2030 to the one in 2010. The information displayed is identical to that shown for those years in the preceding exhibits, but it permits comparisons of the three origins. The foreign-born shares of each age group are shown at the top of the chart and the homegrown at the bottom. In between, the light-shaded portion represents the shares born in other states of the U.S. That area is much larger at older ages, but between 2010 and 2030 it grows ever smaller. Over time, we also see how the foreign-born shares are anticipated to shift toward older ages. And the homegrown shares rise ever higher at younger ages.

The same origin profiles have been prepared for each of the four major race-ethnic groups, comparing the four as projected for 2030 (Exhibit 5.5). The White and Black profiles exhibit much larger shares that were born in other states than is true of Latinos and Asians. Yet even among Whites and Blacks we see that this “other U.S.” component is prominent only above age 65, reflecting migration to California more than 40 years earlier. Conversely, among Latinos and Asians we find that the great majority are foreign-born, although this is most common above age 25 for Asians and above age 35 for Latinos. Very few California residents among these two race-ethnic groups were born in other states.

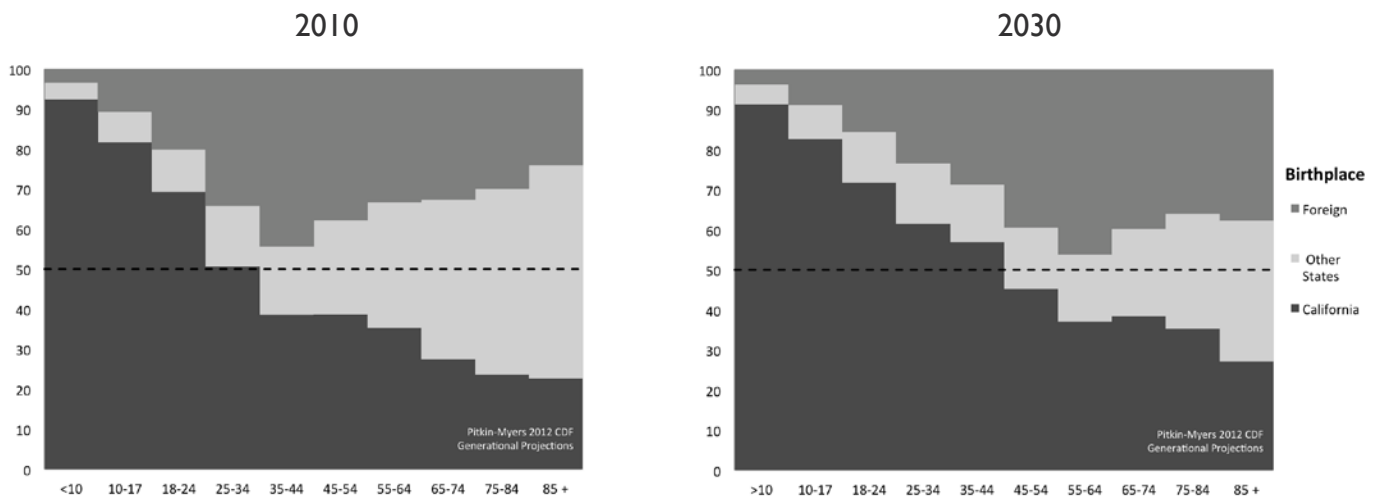
The increase in the homegrown population is striking among all four race-ethnic groups. By 2030, we anticipate that the California-born will constitute a majority of all White and Black residents younger than 75, all Latino residents younger than 45, and all Asian and Pacific Islander residents younger than 25. Among Latinos the changes have been especially swift. For example, at ages 25 to 34, only 29.7% were California born in 2000, but this increased to 46.4% in 2010 and is projected to be 64.8% in 2020 and 68.9% in 2030 (data not shown in the exhibit). Meanwhile, the age group that is 20 years older, ages 45 to 54 in 2030, is anticipated to increase its California-born share to roughly the level where the 25 to 34 year-olds were in 2010.

## A New Era of Homegrown Majority in California

What the origin profiles demonstrate is that California has entered a new era of settlement. Migration from other states has subsided, as has immigration, and the previously settled residents have given birth to a new generation that is native Californian. We have entered the new era of the homegrown majority, not just among total population, but also among young adults and even the middle-aged. The significance of this change is many-fold. The new generation of workers, taxpayers, and homebuyers will have been California-educated with the support of California taxpayers, unlike in past decades when many workers were imported from other states or nations.

Analysis shows that these native Californians are more committed to the state, with out-migration rates that are one-third as high as for California residents who were born in other states and of the same age (Myers, Pitkin and Ramirez 2009). Birth in California implies that one’s parents also live here, rooting people by their family networks, as well as by their networks of childhood friends. The future of California is now anchored by this homegrown settlement.

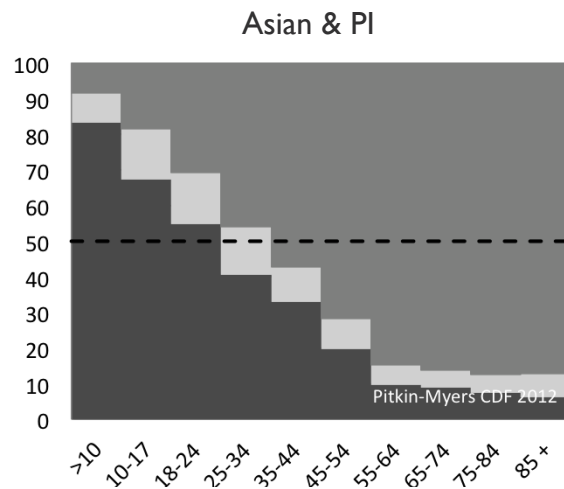
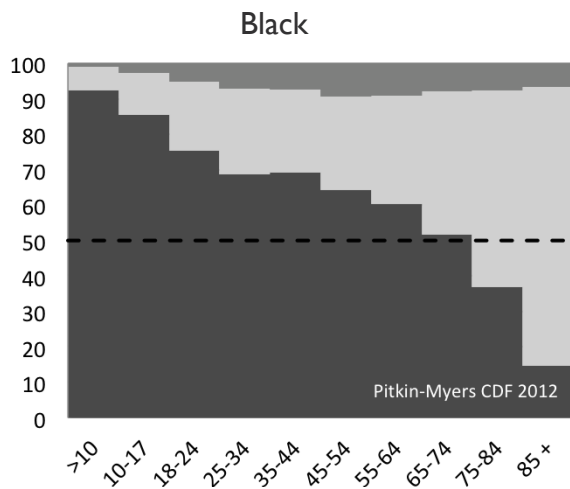
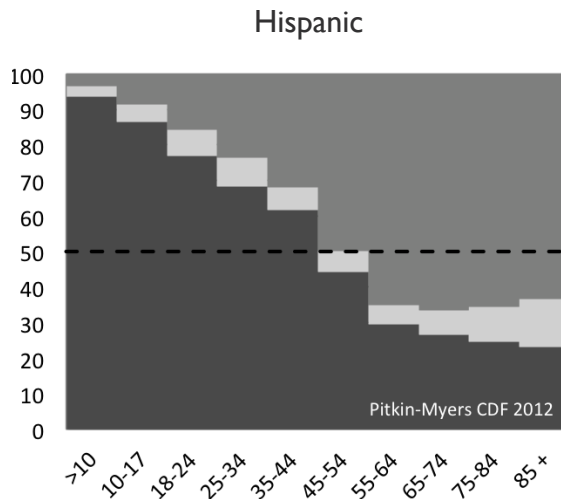
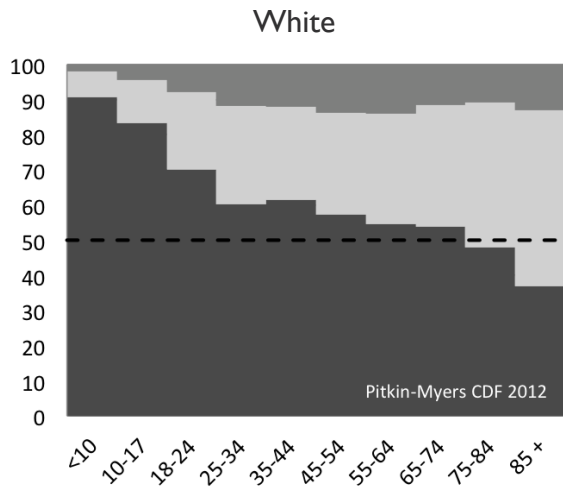
Exhibit 5.4: Origins By Age, 2010 and 2030



Source: Pitkin-Myers CDF 12 Generational Projections



Exhibit 5.4: Origins By Age and Race in 2030



Source: Pitkin-Myers CDF 12 Generational Projections

# 6 Changes in California's Working Age Population

One of the major implications of the population projections is with regard to the future workforce of California. How much will the working age population increase and what will be the composition of this growth? This question has great import for the economic future of California. Here we address two key age ranges: “working age” residents are in the prime ages of 25 to 64; “training age” residents are ages 18 to 24 and preparing to enter the prime working age.

The number and characteristics of working age population has major significance, because this group is the source of the labor force and the provider of replacement workers for the retiring older generation. The prime working age population provides the labor force that drives the economy. This group contains the most productive workers and residents in their highest earning years. These are the principal taxpayers, the biggest consumers, and the bulk of the homebuyers. Changes in the working age population thus have broad implications for California's future.

Separately, we will focus also on the number and characteristics of youths and young adults, ages 18 to 24. This group is often termed working age, but as will be explained, they are more often in training or apprenticeships and entry-level positions: they are preparing to join the workforce. The quality of their preparation is subject to public policy intervention

and has great importance because these youths and young adults are at the optimum age to be trained to become productive members of the labor force. The number and characteristics of these “training age” residents of California thus deserve special attention.

In this section, the working age population is compared between 1990 and 2010, and then with the 2030 projection. The main focus is on the growth in the number of working age residents, comparing the coming 20 years of growth to the last 20 years. This growth can be partitioned by its origins, whether foreign-born or native-born, with the latter divided between the children of immigrants (second generation) or those of the third and higher generation. Alternatively, growth in working age residents also can be partitioned by place of birth, dividing the native-born between those born in California or elsewhere in the U.S. Consistent with findings reported in Section 5, above, we find here that the homegrown population is by far the greatest sector of future growth in the working age population. Closer examination is then given to changes in the the race and ethnicity of these homegrown California working age residents.

Following that working age analysis, we then conduct similar investigation of the training age residents. These young recruits are truly the cutting edge of California's emerging future.

## Exhibit 6.1: Immigrant Generation of the Working Age Population and its Growth

### Working Age 25 to 64

	Number (thousands)			Share of Total		
	1990	2010	2030	1990	2010	2030
Native, Third or Higher	10,411	10,425	10,201	66.9	52.7	44.3
Native, Second	1,087	1,929	5,124	7.0	9.7	22.2
Foreign-Born	4,059	7,433	7,722	26.1	37.6	33.5
Total Working Age	15,557	19,786	23,047	100.0	100.0	100.0

	Growth 1990 to 2010		Growth 2010 to 2030	
	Number (thousands)	Share	Number (thousands)	Share
Native, Third or Higher	14	0.3	-223	-6.9
Native, Second	842	19.9	3,195	98.0
Foreign-Born	3,374	79.8	289	8.9
Total Working Age	4,230	100.0	3,260	100.0

Source: Census Bureau, Pitkin Myers CDF 2012

### When is Working Age or Training Age?

There is frequent ambiguity about what constitutes “working age,” and so the definitions employed here deserve explanation. The term working age is often used to convey the age range within which people are typically employed in the labor force. Virtually all definitions define the upper limit of working age as 64, even though a sizable share of people work at least part-time beyond that age. Given that Medicare and other benefits often start at age 65, or full Social Security at 67, the conventional upper limit of 64 has general usefulness. Seniors of ages 65 and older are supported in their entitlements by working age residents who are the principal taxpayers.

There is less agreement about the lower limit of working age. The Bureau of Labor Statistics defines it as starting at 16. However, it is more common to define working age as the Census Bureau does as beginning at 18. This convention may be based on the assumption that people start working after completing high school. Or it may simply be based on the notion that teenagers are able-bodied enough to help with farm labor or other manual tasks. Whether or not young people have the capability of working, it may not be in the public interest to rely on their employment to support other members of society.

In the contemporary economy young people ages 18 to 24 require extended training to perform useful roles. Many are enrolled in college or other training programs, and even more should be so. When young people are employed, it is often as interns or apprentices, in entry-level trainee positions, or in part-time capacities. For these reasons, it is useful to distinguish these young adults, ages 18 to 24, as being of “training age” rather than of prime working age.<sup>13</sup> Because they are about to join the prime-age workforce, those of training age have special importance. This group of young adults deserves attention as a separate category for close attention.

### Generational Make-Up of the Working Age

The working age population grew by 4.2 million from 1990 to 2010, and is projected to grow only moderately less (3.3 million) in the coming 20 years. There have already been dramatic changes in the generational origins of the working age population.

In the past the foreign-born share was increasing, but in the future increases are projected in the second generation. From 1990 to 2010 the foreign-born share rose from 26.1% to 37.6% of the working age population (Exhibit 6.1). However, a decline is projected in this share through 2030, falling to 33.5%.

Instead in the future the share that is second generation is projected to increase, rising from 9.7% in 2010 to 22.2% of the working age group in 2030.

In the past, the largest share of the working age population was native-born of third or higher generation residence in the U.S. However, this share declined from 66.9% in 1990 to barely half (52.7%) in 2010 and is projected to decline further to 44.3% in 2030.

The generations' changing shares of the working age group in different decades result from sharply different contributions to growth in different periods. In the last 20 years, the foreign-born accounted for almost 80.0% of the growth in working age residents in California (Exhibit 6.1). However, in the coming 20 years, the foreign-born share of growth is projected to be only 9% of total growth. Instead of a gain of 3.3 million working age in the last 20 years, the next 20 years are expected to see only an increase of only 290 thousand in foreign-born of working age.

The native-born, third or higher generation contributed very little growth in the last 20 years and is projected to see a small loss in the working ages in the coming 20 years.

In their stead, the native-born, second generation, i.e., the children of immigrants, are projected to become the new, major source of growth in working age Californians. This new generation can be expected to add 3.2 million members to the working age population and account for virtually all of the growth (98%) in the working age population between 2010 and 2030.

### Place-of-Birth Origins of the Working Age

Further attention is due the distinction within the working age residents who are native-born, separating those who are native Californians from those born in other parts of the U.S.

California-born residents are distinctive and worthy of separate attention, as in Section 5. The Californian-born are more rooted in the state, with outmigration that is two-thirds lower, than are native-born from other states. They are anchored by family and networks of school friends, and their entire education has been accomplished in this state (with rare exceptions). The California-born are truly a homegrown resource that will support the future economy of the state.

The California-born already were the largest component of the working age population in 2010 (41.2%)

Exhibit 6.2: California Origins of the Working Age Population and its Growth

#### Working Age 25 to 64

	Number (thousands)			Share of Total		
	1990	2010	2030	1990	2010	2030
California-Born	5,502	8,148	11,801	35.4	41.2	51.2
Other US Born	5,996	4,206	3,524	38.5	21.3	15.3
Foreign-Born	4,059	7,433	7,722	26.1	37.6	33.5
Total Working Age	15,557	19,786	23,047	100.0	100.0	100.0

	Growth 1990 to 2010		Growth 2010 to 2030	
	Number (thousands)	Share	Number (thousands)	Share
California-Born	2,646	62.6	3,653	112.0
Other US Born	-1,791	-42.3	-681	-20.9
Foreign-Born	3,374	79.8	289	8.9
Total Working Age	4,230	100.0	3,260	100.0

Source: Census Bureau, Projections, Pitkin Myers CDF 2012

**Exhibit 6.3: Immigrant Generation of the Training Age Population and its Growth**  
**Training Age 18 to 24**

	Number (thousands)			Share of Total		
	1990	2010	2030	1990	2010	2030
Native, Third or Higher	1,997	2,013	1,965	60.4	50.8	48.1
Native, Second	351	1,156	1,486	10.6	29.2	36.3
Foreign-Born	960	792	638	29.0	20.0	15.6
Total Training Age	3,308	3,961	4,089	100.0	100.0	100.0

	Growth 1990 to 2010		Growth 2010 to 2030	
	Number (thousands)	Share	Number (thousands)	Share
Native, Third or Higher	16	2.4	-48	-37.2
Native, Second	805	123.3	330	257.8
Foreign-Born	-168	-25.7	-154	-120.6
Total Training Age	653	100.0	128	100.0

Source: Census Bureau, Pitkin Myers CDF 2012

and this number is projected to increase to a majority (51.2%) in 2030 (Exhibit 6.2). Meanwhile, those from other U.S. states are in decline: their projected share of 15.3% in 2030 will be less than half what it was in 1990.

The California-born already accounted for a large share of the growth in the working age group in the last 20 years (63%). The 2.6 million increase more than offset the 1.8 million decrease among native-born from other states. However, in the coming 20 years the California-born are projected to assume a pre-eminent role. Their 3.7 million increase amounts to 112% of all the growth among the working age, because it offsets both the continued decline in working age residents born in other states and the very slow growth of the foreign-born. The unavoidable implication of these projections is that future growth of California's labor force will increasingly rely on our homegrown residents.

### Special Attention to the Training Age Residents

The projections for the workers in training ages, 18 to 24, underscore these findings. In fact, the generational changes occur earliest for the younger segment, and we see in Exhibit 6.3 that the foreign-born share already declined by 2010 to 20.0%, barely half the foreign born share of all working ages. Over

the coming 20 years the foreign-born share is projected to fall to only 15.6% of the training age group. Meanwhile, the second generation make up 29.2% of the training age population, three times that of all working age, and the share is projected to rise to 36.3% in 2030.

Simply stated, the second generation accounted for all the growth in the training age group over the last 20 years and is projected to do so over the next 20 years. In fact, in the coming period, the other segments are expected to decline, meaning that without the growth of the second generation (by 330 thousand), the total training age population would shrink. As it is, the growth of the total training age population is projected to subside from 653 thousand in the last 20 years to only 128 thousand projected in the coming 20 years.

This underscores how vital the second generation will be both as a source of labor force and as the major source for replenishing the work force that would otherwise be depleted through increasing numbers of retirements.

California-born status also has already increased sharply among young training age residents. We see in Exhibit 6.4 that the California-born share was already 50.1% in 1990 and climbed to 69.2% by 2010,

## Exhibit 6.4: California Origins of the Training Age Population and its Growth

### Training Age 18 to 24

	Number (thousands)			Share of Total		
	1990	2010	2030	1990	2010	2030
California-Born	1,657	2,741	2,934	50.1	69.2	71.7
Other US Born	691	427	518	20.9	10.8	12.7
Foreign-Born	960	792	638	29.0	20.0	15.6
Total Training Age	3,308	3,961	4,089	100.0	100.0	100.0

	Growth 1990 to 2010		Growth 2010 to 2030	
	Number (thousands)	Share	Number (thousands)	Share
California-Born	1,084	166.1	192	150.0
Other US Born	-264	-40.4	90	70.6
Foreign-Born	-168	-25.7	-154	-120.6
Total Training Age	653	100.0	128	100.0

Source: Census Bureau, Pitkin Myers CDF 2012

which is about that same share as projected in 2030. Over the last 20 years the growth in California-born dominated all growth in the training age population, with an increase of 1.1 million while there were declines among both the other U.S. and the foreign born. Looking forward 20 years, much less growth overall is expected in this age group, but the California-born are projected to dominate.

Thus we arrive at a similar conclusion for the California born and for the second generation, the two dominant growth groups, which, it should be understood, overlap in membership. Yet the growth of the California-born is greater because it draws on population members who are both third and second generation.

### Racial and Hispanic Make-Up of California's Homegrown

So important is the rise of the California-born population that we examine it a little more closely for both working age and training age residents. Who are these new homegrown contributors to the workforce—specifically, what is their race or ethnic identity? For this assessment we compare the racial and Hispanic composition in 2010 and 2030 (Exhibit 6.5). In general, the white share is receding among the training age and working age. By 2030, it is

projected that only 23.5% of the training age population will be White, while that will be true of 36.1% of those in working age group. In contrast the major group growing is Latino. By 2030, it is projected that 58.1% of the training age group will be Latino, as will be 46.0% of the working ages.

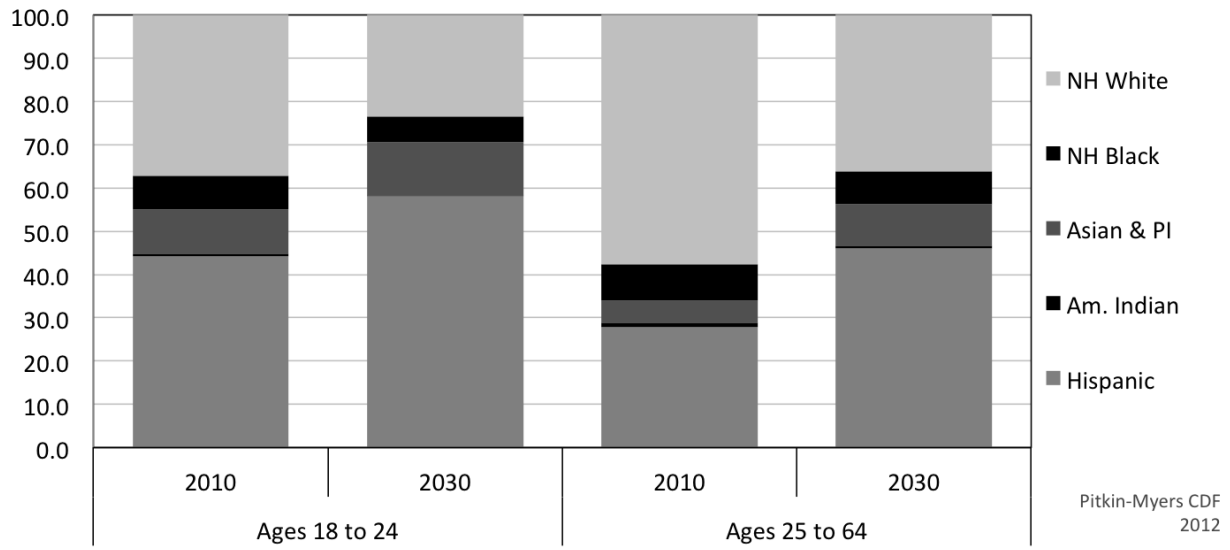
Overall, these findings indicate that California's work force and economy will be increasingly dependent on Latinos. With Latinos' large share of the training age population in particular, it will likely prove necessary to include Latinos as a central part of any plan to facilitate job training or to promote educational opportunity.

### Conclusion

Workforce changes projected for the coming 20 years look very different from those seen in the last 20 years. Where the growth has been among the foreign-born, now growth is almost all among native Californians, many but not all of whom are the children of immigrants. Many are Latino, but not all. In view of the soaring senior ratio discussed above in Section 3, the future will require contributions from productive, well-trained young workers of every sort.



Exhibit 6.5 California-Born Racial and Hispanic Composition, Working & Training Ages, 2010 and 2030



Source: Pitkin-Myers CDF 12 Generational Perspectives

# 7 A Composite Portrait: Putting the Pieces Together

Previous sections of this report have focused on specific population segments, children, working age, seniors, the foreign born, and those born in California. This section provides an overview of how the different segments fit together, a snapshot of the 2010 population “from 30,000 feet.” It then compares this snapshot with one of the situation two decades earlier, in 1990, and one projected ahead for 2030. Together, these snapshots provide a time-sequence graphic summary of California’s coming generational transition.

They show how three large demographic waves, the products of past episodes of rapid growth, shape the projections of California’s population for the coming decades: native-born baby boomers driving the coming increase in retirement-age seniors relative to the population in prime working age, immigrants who came in the surge in the 1980s and 1990s now dominating a more settled and aging foreign-born population, and the large cohort of children born in the 1990s and early 2000s forming the basis for a new and rising homegrown majority in the state.

## 2010

These composite snapshots of the generations take the form of “age-nativity pyramids” for California, starting with 2010 (middle graph in Exhibit 7.1). Modeled after the widely used age-sex population pyramid, the age-nativity pyramid shows five-year age segments, from the youngest at the bottom to

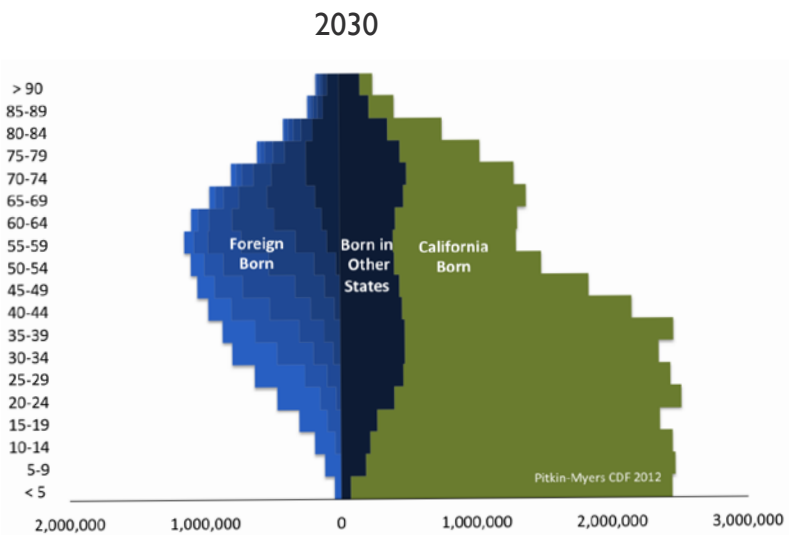
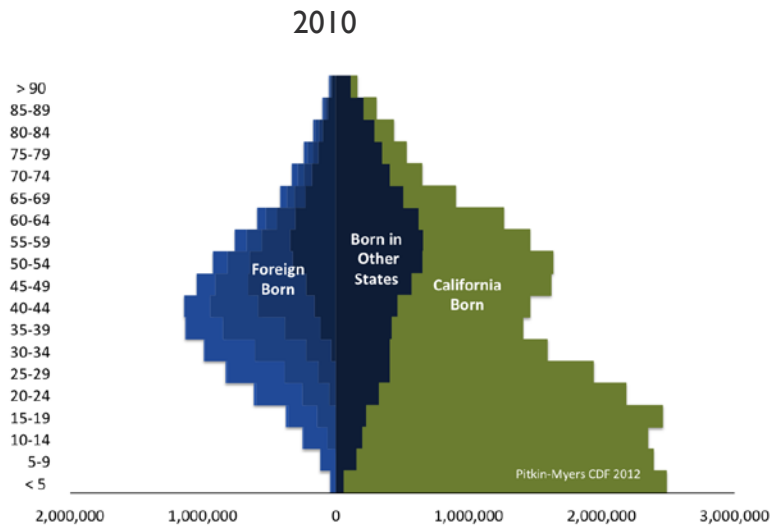
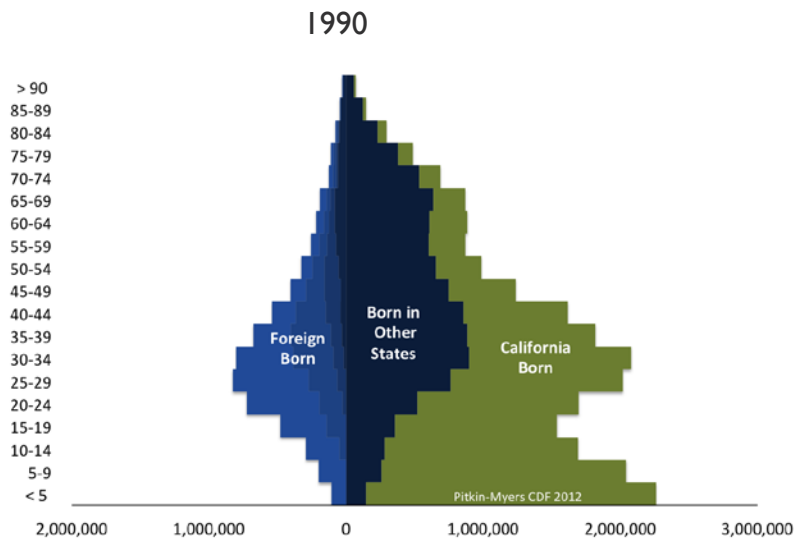
the oldest at the top. The central vertical line divides the population by nativity, with the foreign-born to the left and native-born on the right. Within the foreign-born, the shading denotes decade of arrival, ranging from the most recent in the lightest tone to the earliest (and now longest resident) in the darkest. Among the native-born, those born in California (shown in light green) are distinguished from natives of other states.

In this figure, the California-boom generation (born in the 1990s and early 2000s) can be clearly seen in the under age 20 segments to the right, and the immigration surge generation in the bulge to the left, peaking at ages 35 to 44. Slightly higher, the relatively large post World War II Baby Boom generation is also visible in the bulge to the right, with the peak of the California-born segment at ages 45 to 54 and those from other states five years higher.

## 1990

This is quite a different portrait from observed for 1990. As shown in the top panel of Exhibit 7.1, the immigration surge generation can be seen in the midst of its growth, when it was newly arrived. At that time the foreign-born population was much younger on average than in 2010. Among the native-born, both segments of the Baby Boom generation were twenty years younger and their numbers were substantially larger than in 2010. By the latter date, the numbers had been whittled down by periods of

Exhibit 7.1: California Residents By Place of Birth in 1990, 2010, and 2030



Source: Census Bureau IPUMS, Pitkin Myers CDF 12. Generational Projections

out-migration, heavy in the 1990s and more moderate but still substantial after 2000.

Back in 1990 the beginning of the California baby boom is discernible in the youngest age segment. It is noteworthy that a fourth large generation is also visible in 1990, namely the migrants from other states who arrived during the 1950s. These residents can be seen in the bump at age 65-69 in the component that was born in other states. By 2010 this once prominent group was no longer visible in the age-nativity pyramid because of the cumulative impact of mortality as the cohort advanced in years.

## 2030

We can also trace all the cohorts forward in time to 2030, when they are 20 years older. The 2030 pyramid, on the bottom in Exhibit 7.1, shows them as climbing a ladder to a later stage in life. The Baby Boom and immigration surge generations will be older, with some shrinkage among the Boomers due to mortality. The homegrown, California baby boom generation will continue to mature, and its oldest members will near 40 years of age.

Since this pyramid is based on a projection, there is unavoidably some uncertainty about its exact shape. If immigration is higher than assumed in the projections, it would expand the foreign-born segment toward the left with more new arrivals, and if lower than projected would compact the segment toward the right. Similarly, any increase in fertility would expand the native-born segments to the right (but only in the recently born age groups). And any deviations from the assumed levels of domestic migration would have corresponding repercussions for shrinking California-born segments, if greater out-migration, or growing the Other-U.S.-born segments, if greater in-migration than currently assumed. However, barring large and unexpected shifts in the occurrence of migration and fertility, the main features and general shape of the 2030 population should resemble the pyramid in this figure.

It should be pointed out that one substantial change between 2010 and 2030 would be not affected by surprises in any of these areas. The projected spread at the top of the pyramid occupied by the old-old results

from continued modest declines projected in mortality rates combined with growing cohort sizes. For almost a century even the largest changes in elderly mortality rates have occurred gradually, so any change large enough, and sudden enough, to substantially change the projected increase in the oldest population by 2030 would be highly unusual.

## The Imprint of Different Histories of Settlement

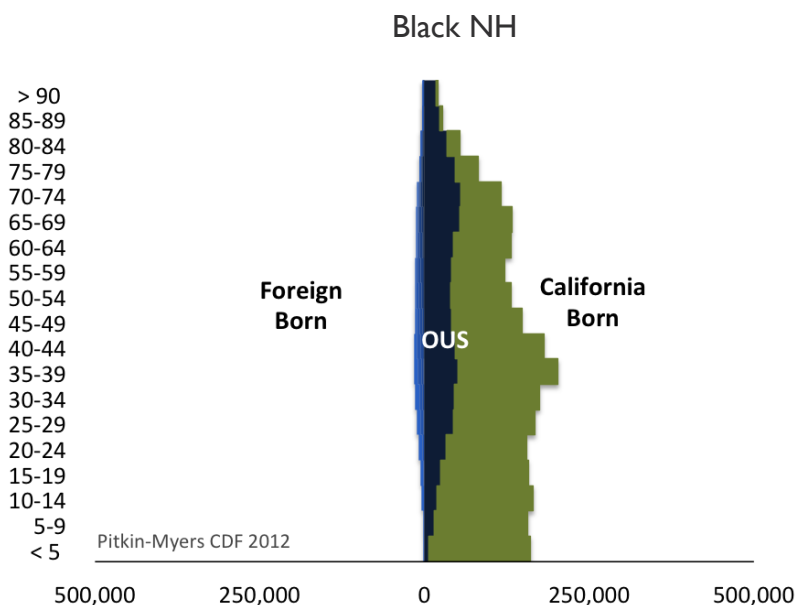
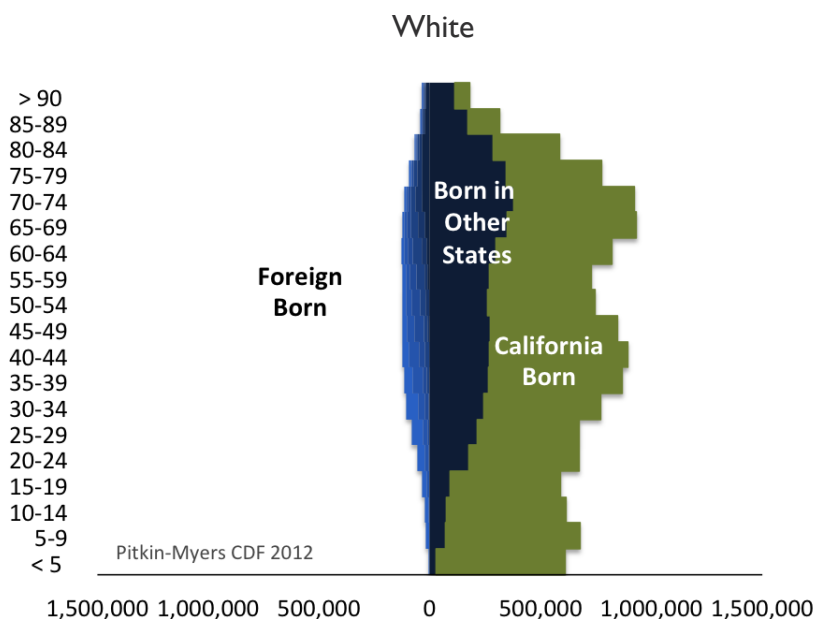
Each of the major race-ethnic groups in California has a different history of residence in the state, and this is reflected in their unique age-nativity profiles. Pyramids projected for each in 2030 are shown in Exhibit 7.2.

Whites and Blacks, at the left, are predominantly native-born populations with relatively small foreign-born numbers evident on the left-hand side. (Note that the horizontal axes for Blacks and Asians and Pacific Islanders are stretched so that each unit represents a third as many people as in the two upper graphs, for Whites and Hispanics.) White and Black pyramids both show relatively little variation from old to young ages and both reveal the Baby Boom and California baby boom generations as bulges in the age structure. The pyramid for Whites appears slightly top heavy, indicating an older population on average, while that for Blacks is somewhat broader below the middle.

On the facing page, in the second half of Exhibit 7.2, we see projected population structures with large numbers of immigrants. The foreign-born shares are relatively and in absolute numbers much larger than for the Whites and Blacks, and especially prominent for Asians. At the bottom of these pyramids, at younger ages, larger native and California-born numbers push the pyramids rightward. Since the parents of the young people near the base of each pyramid are to be found higher in the same pyramid, this tilt from top left to lower right graphically depicts a generational transition.

For Hispanics, the younger, California-born generation, is projected to outnumber the older and predominantly foreign-born generation, but for Asians, the relative sizes of the generations are projected to be the reverse, a result of much smaller family sizes and lower fertility rates among Asians.

Exhibit 7.2: California Residents by Race and Place of Birth in 2030



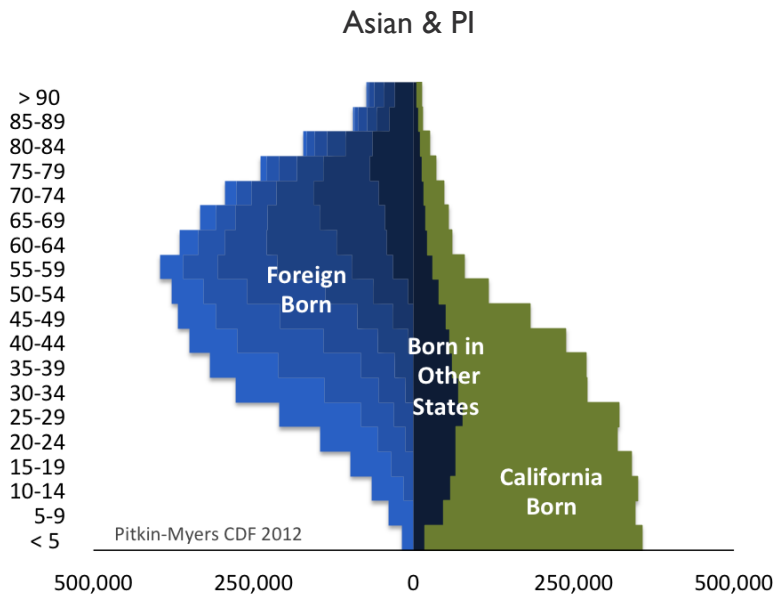
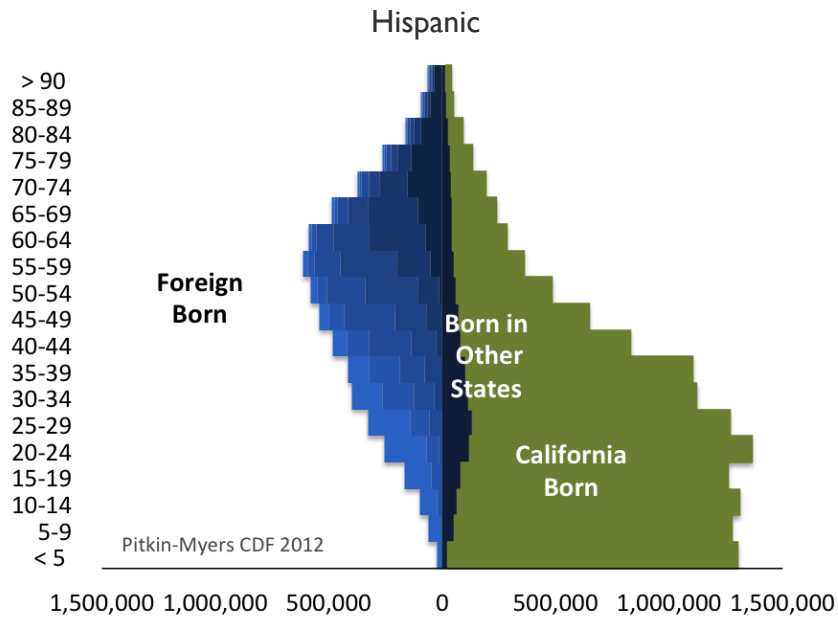
Source: Pitkin Myers CDF 12 Generational Projections

### Reflections on Common Heritage and Shared Destiny

The advantage of the age-nativity pyramid is that it affords a global overview of the California population, combining all the elements discussed elsewhere in this report. The newly discovered image of planet Earth from space led to a new perspective on environmental connectedness and shared fate. How might the fresh encounter with these composite overviews lead to new perceptions about California residents?

The pyramids certainly make plain the age structure and life-cycle that all hold in common. Each resident, no matter the birth place, is subject to the same aging and eventual mortality.

But there is another striking and significant commonality that is visible. Despite all the differences among the four race-ethnic pyramids projected for 2030, what stands out is the overwhelming dominance of the California-born shares at young ages. Concentrated as it will be among children and young



Source: Pitkin Myers CDF 12 Generational Projections

adults, the new homegrown majority will be a generation that shares a common heritage of birth and place.

With foresight, there is now an opportunity to nurture and strengthen the bond of this basic heritage through policies. It is hard to imagine that the identities defined by race and ancestral origin will rapidly fade. However, it is equally difficult to imagine that they will persist unmodified into the indefinite future. As they do fade, sooner or later, there is likely to be an opening for identities defined by birth and place to assume greater importance in people's lives.





# 8 Methodology and Questions and Answers

## 8 About the Generational Population Projections

In this section we give a description of the methodology and assumptions used to generate the generational population projections for California. We also provide a relatively less technical description of the methods and assumptions in a Q&A format. A more detailed description of the California Demographic Futures (CDF) model (but not the assumptions used in 2012) can be found in Pitkin and Myers (2011a).

### Methodology

The specific methods used here have been modified from those developed and used for previous population projections by the authors, notably of California population by nativity based on 1990 Census data (Myers and Pitkin 2001) and on 2000 Census data (Myers, Pitkin, and Park 2005). The same methods are used here and applied to the 2010 Census base population and have been extended to model the state of birth of the native-born population, whether in California or another state, in addition to nativity and immigrant generation. A more detailed description of the current model is given in Pitkin and Myers (2011a).

### Cohort Component Method

Population is modeled and projected using the cohort component method, which tracks the different kinds of demographic events or components that account for all population changes: births, or “fertility,” deaths, or “mortality,” and the numbers of immigrants and emigrants. A distinction is made between in-migrants

from outside the U.S., “immigration,” and migrants moving between California and other states, “domestic migration.”

A standard method of modeling and projecting population change, used e.g. by the U.S. Bureau of the Census (e.g., 2000) and State of California Department of Finance (DOF, 2007), tracks these components for birth cohorts, those people born in the same year (and of the same age), because per capita rates of demographic events vary greatly over the human life cycle. Fertility, for example, is nil for young children and men. There are also large differences across age groups in per capita rates of mortality and migration. For example, the number of deaths in the population increases when there are greater numbers of elderly with higher rates of mortality. By tracking the population of different birth cohorts as they age over time, the cohort component method can therefore model variations over time in the total numbers of births, deaths, and migrants more accurately than alternative short-cut methods.

There are also considerable differences in death rates both between the sexes and among races. In order to measure the impacts of these differences as the composition of the population shifts over time the cohort component model therefore also splits the population by sex, race, and Hispanic origin, thereby identifying the population in each of a thousand unique cohorts defined by birth cohort (or age), sex, and race or ethnicity in each year (i.e. 100 ages times 2 sexes times 5 or more race-ethnic groups).

If the future assumed component rates are specified in sufficient detail, this model can be applied to project a base population forward in time.

### Nativity and Generations

The cohort method we use to model the population of California extends the conventional model to identify the population further by nativity, i.e., whether native- or foreign-born; for the foreign-born, by year of arrival in the U.S.; and, for the native-born, by nativity of mother (defining the “second” and “third” generations) and by state of birth, California or other. We do this for two reasons.

First, there is evidence of substantial variations in demographic rates among nativity groups, by foreign-born duration of residence in the U.S., and by native-born state of birth.

- There are large differences in fertility between native-born and foreign-born women. Using vital statistics data (birth records) for California, we estimate that average lifetime fertility (the “total fertility rate”) for foreign-born Latinas between 2000 and 2008 was 71% higher than the rate for native-born Latinas, and there were substantial though smaller differences by nativity for non-Hispanic women.<sup>14</sup>
- Mortality rates are lower for foreign-born than native-born populations of the same ethnicity (Sevak and Schmidt 2008).<sup>15</sup>
- Ahmed and Robinson (1994) estimate large variation in rates of emigration from the U.S. by the foreign born, 19 % of the immigrants who had been in the U.S. less than ten years (at the start of the decade) compared with 9 % of those who had been in the U.S. ten to 19 years. (Although there are no reliable data on emigration of the native-born population, the rates are assumed to be much lower.)
- Rates of domestic migration vary by state of birth. For example, California residents who were born in other states were 2 to 5 times more likely as those born in California to move from California to another state between 1995 and 2000.

Second, a great deal of information on nativity and duration of residence in the U.S. is implicitly modeled but not retained or reported in the generally used cohort component method. Such information can therefore be made explicit and available to data users

simply by being separately tallied and reported. It is, in a very real sense, a by-product of the generally used cohort component method and can be utilized if the framework of the model is extended to capture it. In fact, the U.S. Census Bureau did this when it issued its first national population projections by nativity, though not by immigrant generation or year of arrival, and Passell and Edmonston (1994) developed projections of the U.S. population by nativity, immigrant generation, and origin.

### Temporal and Spatial Structure

The model starts from April 1, 2010, the date of the 2010 Census and projects the population to July 1 of 2010 and subsequent years through 2040 in one three month increment and then in one-year intervals with components of change determined by the assumptions described below.

The model is also run in simulation or calibration mode for 10 years starting from the April 1, 2000 Census 2000 base population. This is done for the purpose of calibrating the demographic rates to vital statistics data (births and deaths) for the period and to the changes in population recorded in the two censuses. The simulation results are also merged with 2010 1-Year American Community Survey estimates to estimate base-year population characteristics of birthplace and year of arrival for the total population. Data for 2010 thus have been synthesized from multiple data sources and, although they reflect the census, they may differ slightly from the American Community Survey estimates for population subgroups.

In addition to California, the model identifies the populations of two other regions, (1) the rest of the United States, with which California exchanges domestic migrants, and (2) the rest of the world, the source of immigrants and destination of emigrants. The population of the rest of the United States region is modeled in order to estimate the number of potential domestic migrants to California.

### Population Characteristics

The model identifies five mutually exclusive race and origin groups: 1) Hispanics and non-Hispanic 2) Whites, 3) Blacks, 4) American Indians, and 5) Asian and Pacific Islanders. This categorization follows

the Hispanic-dominant convention, meaning that all Hispanics are tallied first, and then the remaining population is identified by race. Thus, for the sake of brevity the qualifier “non-Hispanic” is implied even when it is not explicitly stated. These categories are combinations of those identified in the U.S. Office of Management and Budget standards of 1977 and are the same as the race-origin categories used in the California Department of Finance’s population projections and estimates prior to 2001.

The current federal standard identifies 31 race categories in addition to Hispanic and non-Hispanic origin, the 2007 DOF projections identify seven (Pacific Islander and Asian are now separately identified as well as a single non-Hispanic “multi-race” category) and the latest (2008) Census Bureau national projections have five individual races plus multi-race by Hispanic origin.

For purposes of projections, trends in demographic rates must be grounded in consistent historical trends that can be meaningfully traced from the past to present and into the future. There are too few observations of past births and deaths according to the new race categories identified by OMB in 1997 for this purpose. There are also unresolved questions about the consistency of the earlier data with the self-reported race data in the Census. Moreover many of the categories have populations that are too small to be reliably modeled and hence must be aggregated (as with the DOF projections). The need for population data on race that are comparable with earlier data is well recognized and has been filled by the National Center for Health Statistics “bridged” race estimates that translate the 2000 Census Summary File 1 detailed age-sex-race-origin data to the earlier race standards using a probabilistic assignment method.

Race and Hispanic origin for the population born after 4/1/2000 is also probabilistically assigned based on the mother’s race and origin, since e.g., some children of Hispanic women are not considered as Hispanic by the respondents, presumably because their father is not Hispanic, and conversely some children of non-Hispanic mothers are considered to be Hispanic. The probabilities for assigning race and origin to projected births are from the 2000 Census and based on the reported race and Hispanic origins of minor children and mothers living in the same household.

The resulting projections should not be thought of as measures of future racial self identification. That identification is fluid and will surely change due to patterns of intermarriage and evolving societal norms. Instead, the projections are an ascription of racial heritage and track the long-term evolution of major racial groups based on today’s norms.

The model splits the population into three immigrant generations: the foreign-born, the “first generation” or “immigrants”; the children of native-born mothers, the “second generation”; and children of native-born mothers, the “third generation.” Substantial ambiguity characterizes definition of the second generation, whether these are the children of two immigrant parents, of one immigrant and one native-born parent, or of an immigrant mother. We opt for the latter definition, primarily because there is much more complete and, presumably, accurate data on the mothers’ nativity than fathers’ in birth records.<sup>16</sup> (See also discussion of alternate definition of second generation in Section 4.)

The native-born population is also identified by state of birth, whether California or other state. For the population born before 4/1/2000, state of birth is based on 2000 Census data on place of birth. For those born after that date, it is determined by the modeled or projected location of birth, California or other U.S., recorded, and retained in later years as the cohort ages.

Immigrants’ period of arrival in the U.S. is identified by single years starting in 1980; those who arrived earlier are combined into a single category. For the population born before 4/1/2000, year of arrival is derived from the 2000 Census question “When did this person come to live in the United States?” For those born after that date, it is tallied by the modeled (simulated or projected) inflows of immigrants from abroad.<sup>17</sup>

#### Projections Assumptions

The following assumptions were made about future component rates and flows in the projections:

Births are projected by applying age, race, origin, and nativity-specific birth rates to the population of women of childbearing age. The rates assumed in future years are derived from the U.S. Census Bureau

(2000) projection middle series schedules. Differences between rates for native- and foreign-born women of the same race, Hispanic origin, and state of residence are calibrated to U.S. Vital Statistics reported births for 2000–2008 and held constant in future years.

Deaths are projected by applying age, race, Hispanic origin-specific mortality rates to the projected population. The rates assumed in future years are linked to the U.S. Census Bureau (2000) projection middle series schedules. The rates for California are calibrated to deaths by age and sex reported in U.S. Vital Statistics 2000–2009, and differences between the national and California rates are held constant in future years. The same rates are applied to the native- and foreign-born population.

Emigration is estimated for the foreign-born population based on per capita rates that vary by nativity, duration since entry, age, sex, race, and origin. These rates are from Ahmed and Robinson (1994).

Immigration is projected based on independent assumptions about future immigration to the U.S. and the share of U.S. immigrants that will come to California.

U.S. immigration is based on the results of our Delphi-style survey of immigration experts regarding total immigration flows anticipated in 2015 and 2025, 1.04 million and 1.15 million, respectively (Pitkin and Myers 2011b). The number of immigrants in each year through 2025 is interpolated between the estimated 2009 immigration of 790,000 and these two estimates. Thereafter it is held constant.

California's share of U.S. immigration is held constant at the shares estimated in the 2000–2010 calibration of the model, 17.4%.

Domestic migration rates between California and the rest of the U.S. are held constant at the levels estimated in the 2000–2010 calibration of the model, matching the average rates of the decade. The domestic migration rate schedules to and from California, by age, sex, race, Hispanic origin, nativity, and state of birth, are averages of the periods 1975–1980, 1985–1990, and 1995–2000 as calculated from the Censuses of 1980, 1990, and 2000 five-year mobility data.

## Questions and Answers

### About the California Demographic Futures (CDF) Generational Population Projections

#### **1. How do the Pitkin-Myers/USC population projections compare with those issued by the California Department of Finance through its Demographic Research Unit?**

Population projections issued in 2007 by the Demographic Research Unit of the California Department of Finance (DOF) remain the official forecasts for the state as of March 2012 although they will be updated later this year to account for the 2010 census results. The DOF projections indicate that the state's population will grow to 54.2 million 59.5 million by 2050. This compares with our projection of 51.2 million (8.3 million or 14% lower). Overall, the growth projected between 2010 and 2050 is 29% lower in our new projections than the 2007 DOF projections.

Projections to 2050 are inherently less certain than those for 2030 or other near-term dates. The year 2030 provides a good focus for comparing projections, because demographic changes are already substantial by that date, and also because the 20-year time horizon may be useful for a greater number of policy and planning applications. For 2030, the DOF projects a population of 49.2 million as compared with our projection of 44.8 million, which is 4.5 million (9 %) lower. Over the two decades 2010–2030 we project population growth at an average rate of 3.7 million per decade as compared with an average increase of 5.0 million per decade projected by the DOF.

Although the two projections are both made using a cohort component method and break the state's population out by age, sex, and race, their content differs in important ways. Our new projections are more current than those released by the DOF in 2007 and provide more population characteristics, including place of birth (California, other U.S. state, or abroad), mother's nativity or immigrant generation of those born in the U.S., and year of arrival in the U.S. of the foreign born population. The DOF provides greater geographic detail, with projections for every county in the state, and is expected to issue an updated set of projections later this year.



## 2. Why are the Pitkin-Myers/USC generational population projections lower than those issued by the DOF?

One source of difference between the two projections is that the base population for the DOF projections issued in 2007 is benchmarked to the 2000 Census count while the base population for our projection is benchmarked to the 2010 Census. This is approximately 1.8 million lower than the DOF projection for 2010. (Adjusted for estimated population growth between April 1 Census and the DOF projection for July 1, 2010.)

The second important difference appears to be that our projection incorporates lower future levels of immigration than the DOF. Although the DOF projection does not report separate components of population change, including migration, it does report that migration rates were developed for the decade of the 1990s. These rates are substantially above both the migration rates we estimate for that decade as well as those observed for the decade of the 2000s. According to the DOF, California received .7 million net migrants foreign and domestic combined, during the 1990s (State of California, Department of Finance 2005), while we estimate that domestic outmigration during that decade slightly exceeded net immigration, resulting in a small net outflow of under .1 million migrants. During the 2000-2010 decade we estimate that California gained a net of .3 million migrants, foreign and domestic combined.

Third, since births are projected based on per capita fertility rates, and the majority of immigrants to the state are of child-bearing age or younger, the higher levels of immigration expected under the DOF projections early in the projection period lead to larger numbers of births in later years, thereby compounding the effects of different levels of immigration.

## 3. How does the population growth projected by Pitkin and Myers compare with growth in earlier decades, i.e., 1990s and 2000s?

We project the population of California will increase by an average of 372 thousand per year between 2010 and 2030. These increases are marginally greater than seen in the 2000-2010 decade and even in the 1990-2000 decade, once the census figures are ad-

justed for the effect of increased population coverage in the 2000 Census.<sup>18</sup> In only two past decades did California experience substantially higher population growth. This occurred during the 1980s, when the population increased by over 6 million between censuses, and during the 1950s, when the increase was over 5 million. With these two exceptions, the CDF projections of growth in the state's population are in line with the increases recorded in five of the seven censuses since 1950.

## 4. How is immigration projected?

Immigration to California from abroad has varied widely in past decades, rising from less than 100 thousand a year during the 1950s to well over 400 thousand a year in the late 1980s and since declining to about 350 thousand a year in 1994-2001 and further to 200 thousand in 2009. (These are estimates of gross immigration; net immigration is lower due to emigration, or return migration.) Because of the recent steep decline in immigration, there is currently greater than usual uncertainty about its future course.

To address this uncertainty in selecting the migration input component of our projections, in April 2011 we conducted a Delphi-style survey of ten researchers in the field of immigration on their expectations for the number of immigrants to the U.S. Collective expert opinion was sought as an independent guide for the projections. According to this panel, the mean expected 2015 level of gross immigration to the U.S. in 2015 is 89 % of the 2000 peak. This represents a substantial increase from 2009, which was at 73 % of the 2000 level. By 2025 the mean expected level of U.S. immigration reaches 97 % of 2000.

We then estimated California's share of total immigration to the U.S. This reached a high of 39 % in 1988 and 1989. Since then this share has declined steadily. Our projections assume that it will stabilize near its current level of 17 % of U.S. immigration.

Together, these assumptions imply that gross immigration to California will increase from a low of 199 thousand in 2009 to an annual average of 232 thousand in 2015 and 262 thousand in 2025, in all a 30 % increase but still well below the level of the late 1980s.



## 5. What do the Generational Projections assume about domestic migration between California and other states?

For more than two decades California has been losing migrants on net to other states. Outmovers outnumbered in-movers by an average of 281 thousand a year in the 1990-2000 decade and an estimated 161 thousand a year between 2000 and 2010. Our projections incorporate an assumption that per capita rates of moving to and from California will be maintained at their 2000-2010 levels. However, when these rates are applied to the changing composition of the California population, they yield ever smaller numbers of outmigrants, falling to fewer than 10 thousand outmigrants a year by 2030. This projected shift is caused by declining numbers of the non California U.S.-born population in California, a segment with much higher rates of out-moving than the California-born and foreign-born populations. In addition, this decline is compounded by the aging of this population because rates of migration are lower at older ages than earlier in life.

## 6. How are births and deaths projected?

Births and deaths are projected using per capita rates of fertility and mortality that allow for variations by sex, age, and race as well as nativity. These rates are first benchmarked to actual births and deaths recorded by the California vital statistics system in 2000-2009 and then projected to change in the future in proportion to the corresponding (middle series) rates used by the U.S. Census Bureau (2008) in its most recent projections of the U.S. population.

Due to the aging of the population, these per capita rates lead to a 34 % increase in the annual number of deaths between 2010 and 2030 and 64 % by 2040. The number of births, however, remains relatively stable in a range between 522 and 545 thousand a year during the entire period of projection. This reflects the relative lack of population increase in age groups of women most likely to have births

## 7. Are the Pitkin-Myers/USC generational projections benchmarked to 2010 Census counts?

Yes. However important data were not collected in the most recent census. Data on nativity and migration not in the 2010 Census are derived from two other principal sources, the 2000 Census and the 2010 American Community Survey (ACS).

The generational projections are calibrated starting with population counts from the 2000 Census, with detail by age, sex, race, nativity, including whether or not born in California, year of arrival in the U.S., for the foreign born, and detail on immigrant generation (mother's nativity, from the Current Population Survey) of the native born population. The CDF model simulates annual population changes forward from 2000 to April 1, 2010, with components of change calibrated to vital records counts of births and deaths and estimates of immigration and domestic migration from the annual 2001-2010 ACS; the immigration and domestic migration components are further calibrated to match 2010 Census counts.

The resulting simulated population for April 1, 2010, with full detail by age, sex, race, nativity, year of arrival, state of birth, and immigrant generation, is then scaled to match the 2010 Census (SF1) population by age, sex, and race. This population is then projected 3 months forward to July 1, 2010, using the CDF model, and is then benchmarked (controlled) to estimates from the 2010 ACS (PUMS) of nativity, place of birth, and year of arrival cross-classified by sex and race.<sup>19</sup>

## 8. How many race categories are identified in the Pitkin-Myers/USC projections?

Like DOF, we treat Hispanic/Latino as if it were a race, and subtract Latinos from the other race categories. A particular challenge for projections is the presence of multiracial populations because they were not recorded in earlier decades and they are likely to be changing into the future. For projection purposes it is useful to reassign non-Hispanic multiracial populations to five major race categories. These same categories are used in the bridged-race population estimates put out by the National Center for Health Statistics for use in calculating birth and death rates. Since bridged-race estimates for the 2010 Census had not been released as of March 2012, we used approximate estimates based on available 2010 Census SF1 tables. In the present context the five race categories may be thought of as projections of predominant racial heritage, not future identity.



# Endnotes

1. The terms Hispanic and Latino are used interchangeably in this report. The federal data system categorizes data most often by the term Hispanic, while public discussions in California more often uses Latino. This report uses both terms.
2. The 10-year increases and estimates of immigration are calculated from official Census counts, which may not account for all the residents actually present. If we take account of increases in population coverage between censuses, that alters the apparent growth and immigration and could imply that increases during the 1980-1990 decade were somewhat higher than shown and those in the following decade somewhat lower.
3. We noted the trend toward reduced immigration as early as 2001 and projected it to continue. See Myers and Pitkin 2001.
4. The historical annual series of California births is maintained by the Demographic Research Unit of the California Department of Finance. Retrieved from <http://www.dof.ca.gov/research/demographic/reports/projections/births/>
5. Sometimes people as young as 16 or 18 are assumed to be working age, but that is more appropriate in cases of farm labor or other manual occupations. People younger than 25 in our modern post-industrial economy are more often engaged in education, apprenticeships and part-time work. Those ages 18 to 24 should be considered of training age and not expected to bear the burden of supporting the elderly.
6. Pitkin and Myers, 2011, "Survey of Expert Opinion on Future Level of Immigration to the U.S. in 2015 and 2025 Summary of Results" A Demographic Futures report of the USC Population Dynamics Research Group, May 2011 url [http://www.usc.edu/schools/price/futures/pdf/2011\\_Pitkin-Myers\\_Delphi.pdf](http://www.usc.edu/schools/price/futures/pdf/2011_Pitkin-Myers_Delphi.pdf). See also Section 8.....
7. Myers and Pitkin (2001)
8. The smaller numbers at the top of each column show the numbers of foreign born who arrived in the first three (or six) months of the current year.
9. The majority of immigrants arrive as young adults or children, but some are older or even elderly. As time passes, the surviving members of the cohort on average are younger than those who die, and as a result the average age of the survivors is slightly reduced below what would be calculated by summing their average age at time of arrival and the subsequent amount of elapsed time.
10. Even though they are native-born, the children live in immigrant families. The youngest grow up to resemble the characteristics of native-born with native parents, yet they always retain this close bond with the immigrant generation.
11. The Generational Projections identify the second generation as U.S.-born children with foreign-born mothers, since the vital statistics fertility rates used in the CDF model are tracked by women's nativity.
12. The model estimates (for 2010) and projections (to 2030 and 2040) are used as the basis for estimating the more expansive second generation population defined as the population with at least one foreign-born parent. The estimates shown here are based on the observed ratios of the second generation populations according to the two definitions in the Current Population Survey (2000-2002 average); these ratios are calculated and applied separately for each race and birth cohort group. For 2010, the resulting estimate is 21% (1.56 million) higher than the modeled-defined second generation population of 8.86 million. The second generation population for 1990 is estimated as fractions of the total native-born population in the various birth cohorts jointly defined by race and age. For older cohorts, these shares are taken from the 1970 Census (Integrated Public Use Microdata Sample data), which recorded parents' nativity, and for younger cohorts, the shares are from the Current Population Survey (2000-2002 average).
13. This classification does not ignore the fact that adults older than 24 also may be engaged in job training or that those younger than 25 may already be working full-time in demanding jobs. Rather the age groupings are intended to capture the bulk of those engaged in the different sets of activities.
14. Johnson (2007) finds some variation for earlier years but his results for 2005 are very similar to these.
15. Due to the limitations of data for calibrating mortality rates, the CDF model does not reflect differences in mortality rates by nativity as it does for other components.
16. According to the 2004 Current Population Survey, fewer U.S. adults age 18 or older are classified as second generation under the strict two-parent rule (14.6%) than under the looser, one-parent definition (20.8%). The mother-based definition yields an intermediate prevalence of second generation status (17.6%).
17. The census data on immigrant arrivals provide a more inclusive count than arrivals recorded by the Office of Immigration Statistics. The latter source only includes legally admitted residents, omitting the unauthorized arrivals and also omitting temporary residents whose visa status is for purposes of education, temporary employment, or the like.
18. Net coverage of the population increased by approximately 2% in the 2000 Census relative to the 1990 Census. We estimate that the relative increase in coverage in California was slightly greater and accounted for over 700 thousand of the 4.1 million increase in total population recorded between the 1990 and 2000 Censuses.
19. Although it would be possible to obtain estimates of birthplace and exact year of entry by exact age from the 2010 ACS microdata, the sampling variability is much greater than the corresponding (cohort) estimate from the 2000 Census 5% microdata (PUMS). We therefore believe that the modeled updates of the age by birthplace by year of arrival distributions are more reliable than the corresponding direct detailed estimates from 2010 ACS. Observed differences between the simulation results and the Census may be explained by changes in coverage between the 2000 and 2010 Censuses.

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