Report

Pew Hispanic Center

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Social & Demographic Trends

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U.S. Population Projections: 2005–2050

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Executive Summary

If current trends continue, the population of the United States will rise to 438 million in 2050, from 296 million in 2005, and 82% of the increase will be due to immigrants arriving from 2005 to 2050 and their U.S.-born descendants, according to new projections developed by the Pew Research Center.

Of the 117 million people added to the population during this period due to the effect of new immigration, 67 million will be the immigrants themselves and 50 million will be their U.S.-born children or grandchildren.

Among the other key population projections:

- Nearly one in five Americans (19%) will be an immigrant in 2050, compared with one in eight (12%) in 2005. By 2025, the immigrant, or foreign-born, share of the population will surpass the peak during the last great wave of immigration a century ago.
- The major role of immigration in national growth builds on the pattern of recent decades, during which immigrants and their U.S.-born children and grandchildren accounted for most population increase. Immigration's importance increased as the average number of births to U.S.-born women dropped sharply before leveling off.
- The Latino population, already the nation's largest minority group, will triple in size and will account for most of the nation's population growth from 2005 through 2050. Hispanics will make up 29% of the U.S. population in 2050, compared with 14% in 2005.
- Births in the United States will play a growing role in Hispanic and Asian population growth; as a result, a smaller proportion of both groups will be foreign-born in 2050 than is the case now.
- The non-Hispanic white population will increase more slowly than other racial and ethnic groups; whites will become a minority (47%) by 2050.
- The nation's elderly population will more than double in size from 2005 through 2050, as the baby-boom generation enters the traditional retirement years. The number of working-age Americans and children will grow more slowly than the elderly population, and will shrink as a share of the total population.

The Center's projections are based on detailed assumptions about births, deaths and immigration levels—the three key components of population change. All

these assumptions are built on recent trends. But it is important to note that these trends can change. All population projections have inherent uncertainties, especially for years further in the future, because they can be affected by changes in behavior, by new immigration policies, or by other events. Nonetheless, projections offer a starting point for understanding and analyzing the parameters of future demographic change.

The Center's report includes an analysis of the nation's future "dependency ratio"—the number of children and elderly compared with the number of working-age Americans. There were 59 children and elderly people per 100 adults of working age in 2005. That will rise to 72 dependents per 100 adults of working age in 2050.

The report also offers two alternative population projections, one based on lower immigration assumptions and one based on higher immigration assumptions.

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Barry Edmonston of the University of Victoria and Carl Haub of the Population Reference Bureau reviewed this report in draft form. Felisa Gonzales prepared the graphics and verified the accuracy of the reported numbers and figures. The authors appreciate their contributions, and are solely responsible for the data, analysis and writing in this report.

A Note on Terminology

The terms "Hispanic" and "Latino" are used interchangeably in this report.

The terms "whites" "blacks" and "Asians" are used to refer to the non-Hispanic components of each population.

"Children" refers to people ages 17 and younger.

"Working-age" refers to people ages 18 64.

"Elderly" refers to people ages 65 and older.

"Foreign-born" refers to an individual who is not a U.S. citizen at birth or, in other words, who is born outside the U.S., Puerto Rico or other U.S. territories and whose parents are not U.S. citizens. The terms "foreign-born" and "immigrant" are used interchangeably.

The terms "unauthorized immigrants," "undocumented immigrants" and "illegal immigrants" are used interchangeably.

This report uses the following definitions of the first, second and third-and-higher generations:

First: Foreign-born or immigrant.

Second: U.S. native (born in the United States or territories), with at least one first-generation parent.

Third-and-higher: U.S. native (born in the United States or territories), with both parents native-born.

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Overview

If current trends continue, the demographic profile of the United States will change dramatically by the middle of this century, according to new population projections developed by the Pew Research Center.[1]

The nation's population will rise to 438 million in 2050, from 296 million in 2005, and fully 82% of the growth during this period will be due to immigrants arriving from 2005 to 2050 and their descendants. (Figure 1)

Of the 117 million people added to the population during this period due to the effect of new immigration, 67 million will be the immigrants themselves, 47 million will be their children and 3 million will be their grandchildren.

The Center's projections indicate that nearly one in five Americans (19%) will be foreign born in 2050, well above the 2005 level of 12%, and also surpassing the historic peaks for immigrants as a share of the U.S. population—14.8% in 1890 and 14.7% in 1910. (Figure 2)

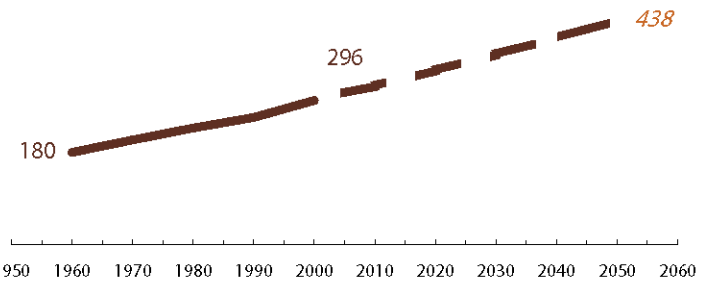
By 2050, the nation's racial and ethnic mix will look quite different than it does now. Non-Hispanic whites, who made up 67% of the population in 2005, will be 47% in 2050. Hispanics will rise from 14% of the population in 2005 to 29% in 2050. Blacks were 13%

Table 1
U.S. Population, Actual and Projected: 2005 and 2050

	2005	2050
Population (in millions)	296	*438*
Share of total		
Foreign born	12%	*19%*
Racial/Ethnic Groups		
White	67%	*47%*
Hispanic	14%	*29%*
Black	13%	*13%*
Asian	5%	*9%*
Age Groups		
Children (17 and younger)	25%	*23%*
Working age (18–64)	63%	*58%*
Elderly (65 and older)	12%	*19%*

Note: All races modified and not Hispanic; American Indian/ Alaska Native not shown. See "Methodology."
Source: Pew Research Center, 2008

Figure 1
U.S. Population, Actual and Projected: 1960-2050
(in millions)



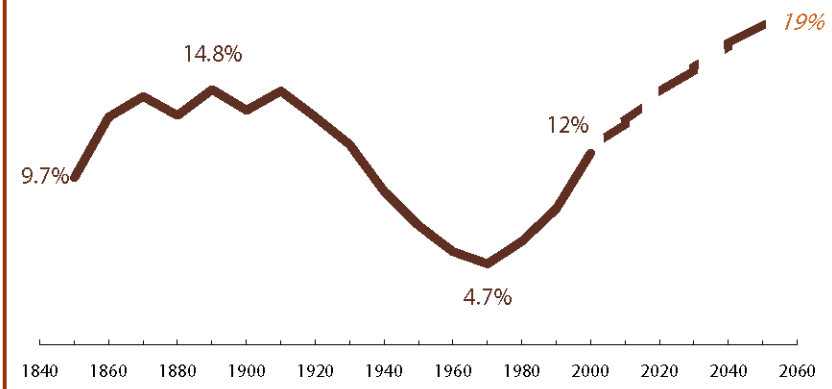
Note: Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

[1] The projections are based on a starting point of 2005, and build up to 2050 in five-year increments, so do not include totals for individual years. The Census Bureau's most recent national population estimate, for July 1, 2007, is 301.6 million, and was released on Dec. 27, 2007.

of the population in 2005 and will be roughly the same proportion in 2050. Asians, who were 5% of the population in 2005, will be 9% in 2050.

Immigration is projected to be the key driver of national population growth in the coming half century, but it is important to note that possible future changes in immigration policy or other events could substantially alter the projected totals. These projections are based on trends over the past half century, during which immigration, both authorized and unauthorized, has played an escalating role in U.S. population growth. From 1960 to 2005, new immigrants and their U.S.-born descendants accounted for 51% of population increase. In the later part of that period, from 1980 to 2005, new immigration accounted for 58% of the 68 million additional people.

Figure 2
Foreign-Born Share of U.S. Population, Actual and Projected: 1850–2050
(% of total)



Note: Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008; Gibson and Jung (2006)

For the period from 2005-2050, new immigrants and their descendants will account for 82% of population increase. The contribution of new immigration to population change was derived by comparing our main projection with an alternative projection that assumes no new immigrants arrive after 2005. (See Contribution of Immigration to Population Change in Appendix.)

The heightening role of immigration contrasts with a decrease in fertility in recent decades. The average number of births per woman has declined markedly since the late 1950s, from more than 3.5 then to about 2 now. Also, a smaller proportion of women are of childbearing age now, compared with earlier decades. These two changes have made immigration a more prominent factor in population growth.

Methods and Assumptions

The Center's projections for the period from 2005 to 2050 are based on detailed assumptions about patterns in births, deaths and immigration—the three building blocks of population change. (See Methodology Box and Appendix.) All population projections have built in uncertainties, especially for years further in the future, because they are based on assumptions about future behavior. In

addition, these uncertainties can multiply because key aspects of population change are often interrelated—for example, a decline in immigration could also lead to a decline in the birthrate because immigrants tend to have larger families than do native born residents.

The Center has developed three different population projections for 2050, but the body of this report presents findings from the main projection (figures from projections based on lower or higher immigration levels are set forth in a section that starts on page 23). These projections consolidate and build upon past trends, present conditions, and factors affecting future behavior.

None of the projections should be treated as predictions. The country's policies may change, as may the factors that influence birth, death and immigration rates. Even given these caveats, however, population projections are an important analytical tool for planners. A rise or decline in the overall population—as well as in particular age groups—will have important impacts on the nation's tax base and workforce. Demographic change has major implications for government spending in key areas such as schools, health programs, community services, infrastructure and Social Security. Projections also provide business with a basis upon which to make judgments about future markets. And they are of increasing interest because of the role that population may play in climate change and other environmental concerns.

A Note on Methodology

The Center's projections use well established demographic methods and models to carry the population forward in time. The models and assumptions are disaggregated by race and by Hispanic origin, as are many projection models (e.g., Census Bureau, 2000). With regard to immigration, the Center's projections also incorporate methods developed by Edmonston and Passel (1992, 1994) that differentiate the population by generation, i.e., the first generation (foreign-born), the second generation (U.S. natives with at least one immigrant parent) and the third-and-higher generations (U.S. native children of two U.S. native-born parents). For more detail, see the "Methodology" Appendix to this report.

When incorporating birth estimates into the projections, the Center has assumed that the overall fertility rate will remain near the level it has been for the past three decades, with differing rates by race and ethnicity (Appendix, Figure A2). Birthrates are assumed to be well above average for immigrants, slightly above average overall for the second generation (U.S. natives with at least one immigrant parent) and below average for subsequent generations born in the United States. The Center's fertility rate projections are virtually identical to those

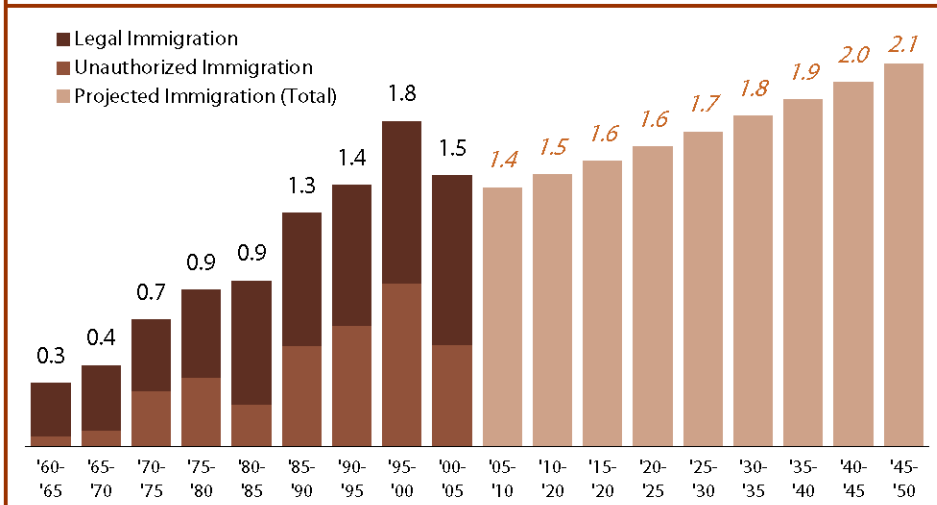
of the Social Security trustees and slightly lower than those of the Census Bureau. (Census Bureau, 2004; Social Security Administration, 2007).

As for death rates, life expectancy is assumed to improve somewhat for all groups throughout the period covered by these projections. (Appendix, Figure A3) The Center's projections employ Census Bureau assumptions about life expectancy gains, which are higher than those of the Social Security Trustees.

Immigration to the United States has risen rapidly and steadily for decades as a result of increasing globalization and population movements, changes in U.S. immigration laws, the growing linkages of immigrant families within this country to communities abroad and labor market factors. Not only have the numbers of new U.S. immigrants increased over recent periods, but the rate of immigration also has risen steadily, whether measured from 1930, 1960 or 1980. In the face of these strong and persistent trends, most U.S. government projections, whether done by the Census Bureau (1996, 2000, 2004) or the Social Security Administration (2007) have assumed constant or even decreasing numbers of immigrants, implying sharp and sometimes immediate declines in the rate of immigration. As a result, official projections over the last several decades have consistently underestimated actual population growth.

The Pew Research Center projections have assumed that the annual immigration level, now about 1.4 million people, will increase slowly by 1% per year, reaching 2.1 million immigrants in 2050. (Figure 3)

Figure 3
Actual and Projected Immigration: 1960–1965 through 2045–2050
(average annual immigrants in millions)



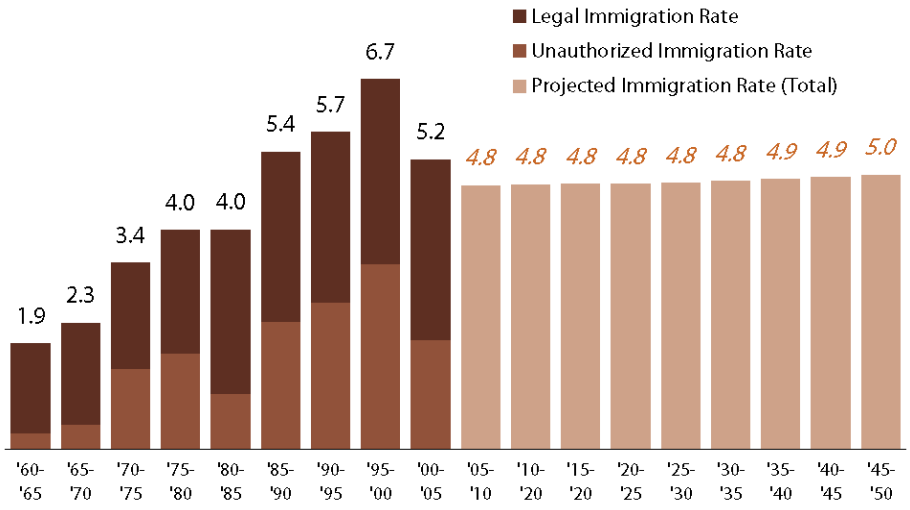
Note: Unauthorized migration is net; legal immigration is arrivals only. Totals shown are rounded.
Projections for 2005–2050 indicated by light brown bars.
Source: Pew Research Center, 2008

This rate of growth is in line with, but somewhat slower than, the growth trends of the last several decades. These immigration levels are slightly higher than those

projected by either the Census Bureau or the Social Security Trustees in the short run and substantially higher toward the end of the projection horizon.

With the Center's immigration assumption, the rate of immigration remains roughly constant over the 45-year projection horizon at 0.48% per year, or just under five immigrants per 1,000 population for each year. The rate is slightly below the rate for the first half of this decade and equal to the average for the last 35 years. (Figure 4)

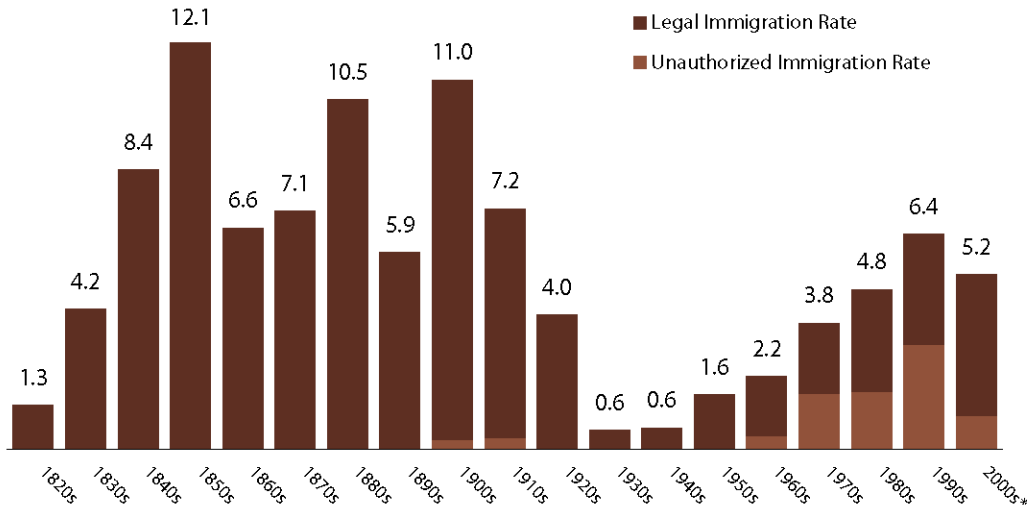
Figure 4
Actual and Projected Immigration Rate: 1960–1965 through 2045–2050
(average annual immigrants per 1,000 population)



Note: Unauthorized migration is net; legal immigration is arrivals only. Rates shown are rounded.
Projections for 2005–2050 indicated by light brown bars.
Source: Pew Research Center, 2008

The decades-long pattern of steady increases has been interrupted recently by year-to-year variation, including a spike in 1998-2001, a sharp decline in 2002-2004 (Passel and Suro, 2005), followed by a return to the long-term average in the last several years. The relatively steady growth of the last 70 years contrasts with substantial fluctuations that occurred in the 19th and early 20th centuries. (Figure 5)

Figure 5
Immigration Rate, by Decade: 1820s through 2000s*
(average annual immigrants per 1,000 population)



Note: Unauthorized migration is net; legal immigration is arrivals only. Rates shown are rounded.
* 2000–2005 only.
Source: Pew Research Center, 2008

Short-term fluctuations are likely to continue to occur, but the Center's projections assume that those variations will be less important than the long-term trends. Although the rate is held steady in the Center's projections, the number of new immigrants rises as the nation's total population goes up. The projections also assume that several hundred thousand foreign-born residents will leave each year, which is in keeping with trends of the past several decades. Reflecting recent trends, the Center's projections include a mix of new arrivals of legal permanent residents and unauthorized, or illegal, migrants, although the two groups are not broken out separately.

The issue of illegal immigration has become highly contentious in recent years. Last summer, Congress tried but failed to pass a comprehensive reform bill, and the debate over how to change immigration policies has become a major topic of the current presidential campaign. It is possible that a future Congress will enact laws that would sharply cut immigration flows. This has happened before. The Immigration Act of 1924 (along with an economic depression and a world war) drastically reduced immigrants as a share of the U.S. population from a 20th century peak of 14.7% in 1910 to a low of 4.7% in 1970.

This report offers two alternative population projections in addition to its main projection. The alternatives are based on immigration levels roughly 50% above

and 50% below the baseline projection, but use the same fertility and mortality assumptions as the baseline projection. Under the lower-immigration scenario, the population would rise to 384 million in 2050, and new immigration would account for 71% of growth during the projections period. Under the higher-immigration scenario, the population would go up to 496 million, and new immigration would account for 87% of the increase. The baseline projection shows the population will rise to 438 million, and new immigration will account for 82% of the increase.

Population Trends

The Center's main projection indicates that the nation's population will grow 48% over the 2005–2050 period. That growth rate is lower than the 64% increase in the nation's population from 1960 through 2005. The projected annual growth rate of 0.9% equals that of the 1980s but is lower than the pace of growth during other decades since the 1960s.

The Center's projections also indicate that between 2005 and 2050 the number of elderly will increase more rapidly than either the number of children or working-age adults.[2] Immigration and births to immigrants in the United States will be responsible for all growth of other age groups but will have little impact on the number of elderly, which is affected mainly by the aging of the post-World War II baby-boom generation.

The relationship between the size of the working-age population, on the one hand, and the young and elderly on the other hand, is sometimes referred to as a nation's "dependency ratio." The Center's projections show that the dependency ratio, which was 59 young and elderly for every 100 people of working age in 2005, will rise to 72 dependents per 100 people of working age in 2050. That means the costs per worker to support the young and elderly would go up. Under a lower-immigration scenario, the ratio would rise even higher, to 75 dependents per 100 people of working age. Under a higher-immigration scenario, it would be 69 dependents per 100 working-age people.

In terms of international comparisons, the United States will continue to be the world's third most populous nation in 2050, behind India and China, each with more than a billion people (United Nations, 2007). The projected annual growth rate for the United States will continue to exceed that in most other developed nations, which are growing at a slower pace, if at all. European countries generally are growing at no more than 0.5% a year, and some are losing population.

[2] Working age adults are defined as 18–64 years old.

As is true in the United States, the immigrant populations in many other developed nations have been growing rapidly in recent decades. The United States has a larger foreign-born population than any other country, but U.S. immigrants were a smaller share of the 2005 population (12%) than those in a few countries with long histories of receiving immigrants—including Australia at 20% or Canada with 19% (United Nations, 2006). Although immigrants are a larger share of the U.S. population than in most of Europe, some countries have a share of immigrants approaching that of the United States, including France (11%) and the United Kingdom (9%).

This report begins by presenting the baseline projection for the total population from 2005 to 2050. The next sections go into detail about the projected estimates for key segments of the population, including the foreign born, Hispanics, blacks, Asians, non-Hispanic whites, working-age adults, children and the elderly. This report then examines how these changes will affect the size of the potential workforce relative to the number of elderly and young people. A final section presents the results of two alternative projections. This overview concludes with a summary of major projections.

Racial and Ethnic Groups

In the Center's projections, each person is included in only one race or Hispanic category. These projections assume that definitions of race and ethnic categories will remain fixed and that self-identification does not change over time. In reality, the growing numbers of births to parents of different racial and ethnic groups, as well as changing social norms about racial and ethnic self-identification, are serving to blur the boundaries of racial/ethnic categories. Consequently, the future sizes of race/ethnic groups could be higher or lower than the projection values even if the underlying demographic assumptions about the future prove to be correct.

Key Projections

Population and Immigration

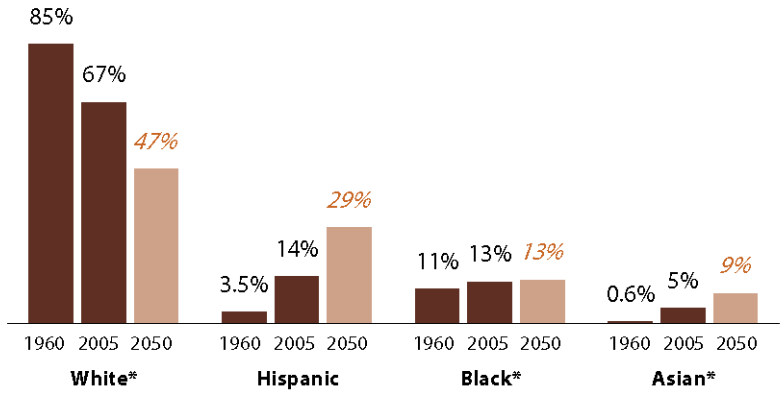
- Between 2005 and 2050, the nation's population will increase to 438 million from 296 million, a rise of 142 million people that represents growth of 48%.
- Immigrants who arrive after 2005, and their U.S.-born descendants, account for 82% of the projected national population increase during the 2005–2050 period.

- Of the 117 additional people attributable to the effect of new immigration, 67 million will be the immigrants themselves and 50 million will be their U.S.-born children and grandchildren
- The nation's foreign-born population, 36 million in 2005, is projected to rise to 81 million in 2050, growth of 129%.
- In 2050, nearly one in five Americans (19%) will be an immigrant, compared with one in eight now (12% in 2005).
- The foreign-born share of the nation's population will exceed historic highs sometime between 2020 and 2025, when it reaches 15%. The historic peak share was 14.7% in 1910 and 14.8% in 1890.
- Births in the United States will play a growing role in Hispanic and Asian population growth, so a diminishing proportion of both groups will be foreign-born.

Racial and Ethnic Groups

- The Hispanic population, 42 million in 2005, will rise to 128 million in 2050, tripling in size. Latinos will be 29% of the population, compared with 14% in 2005. (Figure 6) Latinos will account for 60% of the nation's population growth from 2005 to 2050.

Figure 6
Population by Race and Ethnicity, Actual and Projected: 1960, 2005 and 2050
(% of total)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Projections for 2050 indicated by light brown bars.
Source: Pew Research Center, 2008

- The black population, 38 million in 2005, will grow to 59 million in 2050, a rise of 56%. In 2050, the nation's population will be 13.4% black, compared with 12.8% in 2005.

- The Asian population, 14 million in 2005, will grow to 41 million in 2050, nearly tripling in size. In 2050, the nation's population will be 9% Asian, compared with 5% in 2005. Most Asians in the United States were foreign born in 2005 (58%), but by 2050, fewer than half (47%) will be.

- The white, non-Hispanic population, 199 million in 2005, will grow to 207 million in 2050, a 4% increase. In 2050, 47% of the U.S. population will be non-Hispanic white, compared with 67% in 2005.

Age Groups

- The working-age population—adults ages 18 to 64—will reach 255 million in 2050, up from 186 million in 2005. This segment will grow more slowly over the projection period (37%) than the overall population. Future immigrants and their descendants will account for all growth in this group.

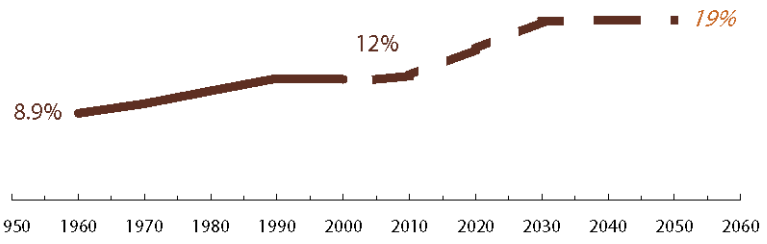
- Among working-age adults, the foreign-born share, 15% in 2005, will rise to 23% in 2050. The Hispanic share, 14% in 2005, will increase to 31% in 2050. The non-Hispanic white share, 68% in 2005, will decline to 45% in 2050.

- The nation's population of children ages 17 and younger will rise to 102 million in 2050, up from 73 million in 2005. The child population will grow more slowly in future decades (39%) than will the overall population. Future immigrants and their descendants will account for all growth in this population segment.

- Among children, the share who are immigrants or who have an immigrant parent will rise to 34% in 2050 from 23% in 2005. The share of children who are Hispanic, 20% in 2005, will rise to 35% in 2050. Non-Hispanic whites, who make up 59% of today's children, will be 40% of children in 2050.

- The nation's elderly population—people ages 65 and older—will grow to 81 million in 2050, up from 37 million in 2005. This group will grow

Figure 7
Elderly Share of U.S. Population, Actual and Projected: 1960–2050
(% of total)

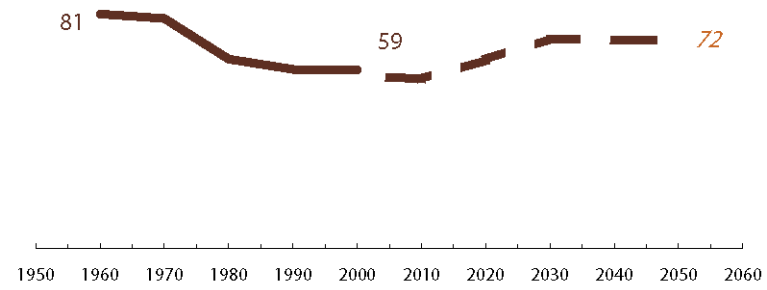


Note: Elderly are ages 65 and older. Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

more rapidly than the overall population, so its share will increase to 19% in 2050, from 12% in 2005. (Figure 7) Immigration will account for only a small part of that growth.

- The dependency ratio—the number of people of working age, compared with the number of young and elderly—will rise sharply, mainly because of growth in the elderly population. There were 59 children and elderly people per 100 adults of working age in 2005. That will rise to 72 dependents per 100 adults of working age in 2050. (Figure 8)

Figure 8
Total Dependency Ratio, Actual and Projected: 1960–2050
(children and elderly per 100 persons of working age)



Note: Children are ages 17 or younger. Working ages are 18 to 64. Elderly are ages 65 and older. Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

Alternative Projection Scenarios

- Under a lower-immigration scenario, the total population would rise to 384 million, the foreign-born share would stabilize at 13% and the Hispanic share would go up to 26% in 2050.

- Under a higher-immigration scenario, the total population would rise to 496 million, the foreign-born share would rise to 23% and the Hispanic share would go up to 32% in 2050.

- Under a lower- or higher-immigration scenario, the dependency ratio would range from 75 dependents per 100 people of working age to 69 dependents per 100 people of working age. Both of these ratios are well above the current value of 59 dependents per 100 people of working age.

Population Projections

Between 2005 and 2050, the nation's population is projected to rise by 142 million, an increase of 48%. During those 45 years, it will expand from 296 million to 438 million. By contrast, the U.S. population rose by 116 million people between 1960 and 2005, which was a 64% increase.

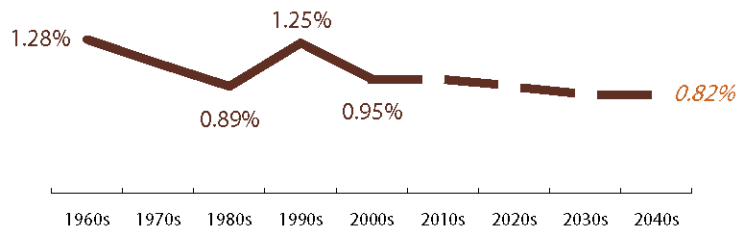
Nearly all of the increase from 2005 to 2050 will be due to new immigrants and their U.S.-born descendants. They will account for 82% of the nation's population growth, or 117 million additional people by 2050. Of those new residents, 67 million will be the immigrants themselves, 47 million will be their U.S.-born children and 3 million will be their U.S.-born grandchildren. That means new immigrants themselves will account for 47% of population growth during the projections period.

Only 25 million of the growth over the 2005–2050 period, or 18%, can be attributed to the resident population in 2005 and its descendants.

The Center's population totals, calculated in five-year increments, were based on underlying demographic assumptions about births, deaths and immigration. They combine to yield an average annual growth rate of 0.9% over the 45-year horizon of the projections.

The nation's annualized growth rate has been somewhat higher than that in recent years, with upturns in the 1960s that resulted from high fertility and in the 1990s that mainly reflected elevated immigration levels. The Center's projections show somewhat less variation in future growth rates, because of underlying assumptions that immigration levels will rise slowly and that fertility will be stable. Under this scenario, the nation's population would double in 80 years. (Figure 9)

Figure 9
Average Annual Growth Rate of U.S. Population by Decade, Actual and Projected: 1960s through 2040s
(% of initial population)



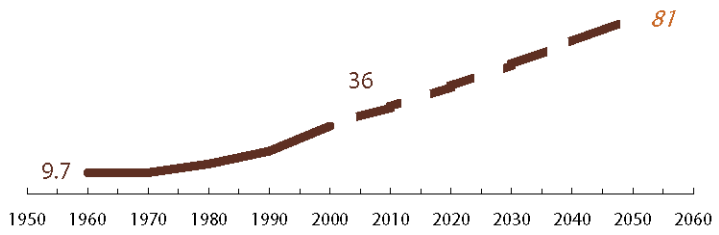
Note: Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

Foreign-born Population

The nation's foreign-born population, 36 million in 2005, is projected to rise to 81 million in 2050. The 129% rise during the 2005–2050 period is a sharper increase than for the population overall. In 2050, nearly one in five Americans (19%) will be an immigrant, compared with one in eight now. (Figure 10)

The number of foreign-born residents in the United States already is at a record number but is a somewhat smaller share of the population than a century ago. The foreign-born population was 12% of the total in 2005.[3] At its previous peak, the percentage of foreign-born residents fluctuated from 13% to 15% for 60 years between 1860 and 1920 (Gibson and Jung, 2006 and Figure 2).

Figure 10
Foreign-Born Population, Actual and Projected: 1960–2050
(in millions)

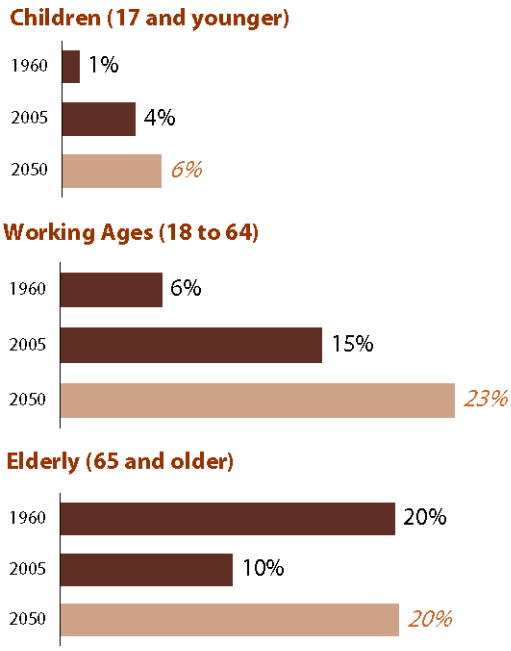


Note: Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

Pew Research Center projections indicate that the proportion of immigrants will exceed historical highs (14.7% in 1910 and 14.8% in 1890) sometime between 2020 and 2025, when 15% of the population will be foreign born.

Because most people immigrate as working-age adults, the foreign-born population is more heavily concentrated in the 18–64 age group than is the native population. In this country, about four out of five immigrants (81%) are ages 18–64. That share will decline slowly as the foreign-born population ages, reaching 73% in 2050. By contrast, only 60% of native-born residents were ages 18–64 in 2005, a share that will decrease to 55% by 2050. Thus, the foreign-born share of the working-age

Figure 11
Foreign-Born Share for Age Groups, Actual and Projected: 1960, 2005 and 2050
(% of age group)



Note: Projections for 2050 indicated by light brown bars.
Source: Pew Research Center, 2008.

[3] The foreign born population was 12.7% of the total in 2007, according to the Census Bureau's Current Population Survey.

population will grow to 23% in 2050 from 15% in 2005.

Immigrants' children and grandchildren born in the United States will account for all growth in the population ages 17 and younger. Most children of immigrants are born in the United States (about four of five) and therefore are U.S. natives. For this reason, the number of foreign-born children will remain relatively low throughout the projection period.

Very few people immigrate at older ages, so new immigration will have little immediate impact on the size of the elderly population. However, as younger immigrants age into the elderly group, they will make up a growing share of that population. In 2050, 16 million of the projected 81 million elderly will be foreign born, about 20%; in 2005, only 10% of the 37 million elderly were foreign born. (Figure 11)

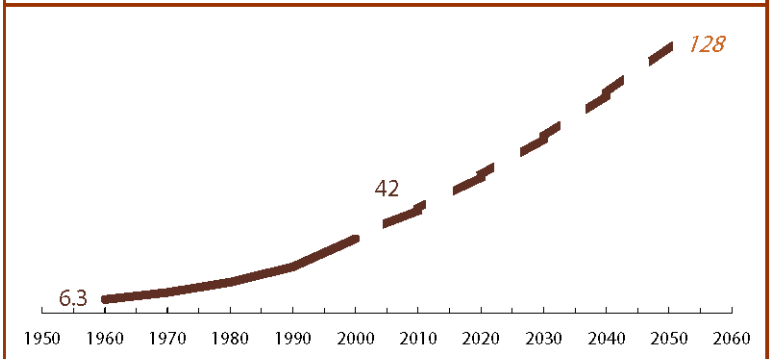
Racial and Ethnic Groups

Hispanic

The Hispanic population, 42 million in 2005, will rise to 128 million in 2050, tripling in size. Latinos will be 29% of the population, compared with 14% in 2005.[4] As the fastest growing major race or ethnic group, the Hispanic population will account for 60% of the nation's growth during the 2005–2050 period. (Figure 12)

New immigrants and their descendants account for most of the projected Latino growth (74%), but the growth is mainly due to births in the United States. However, the Latino population is relatively young and has a higher than average fertility rate, so its growth would continue to outpace that of other groups even without new immigration. Growth of the current Hispanic population will add 22 million new U.S. residents by 2050, a 52% increase.

Figure 12
Hispanic Population, Actual and Projected: 1960–2050
(in millions)



Note: Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

[4] The Latino population in 2007 was 47 million, based on the Census Bureau's October Current Population Survey, and Hispanics were 15.5% of the total population.

Although the Hispanic population will grow more quickly than the total number of U.S. residents, its growth rate will moderate—from 3.1% per year for 2005–10 to 2.0% per year for 2045–50. The reduced growth rate will be due, in part, to the increasing proportion of the Latino population born in the United States, because U.S.-born Hispanics have lower fertility rates than do first-generation Hispanics.

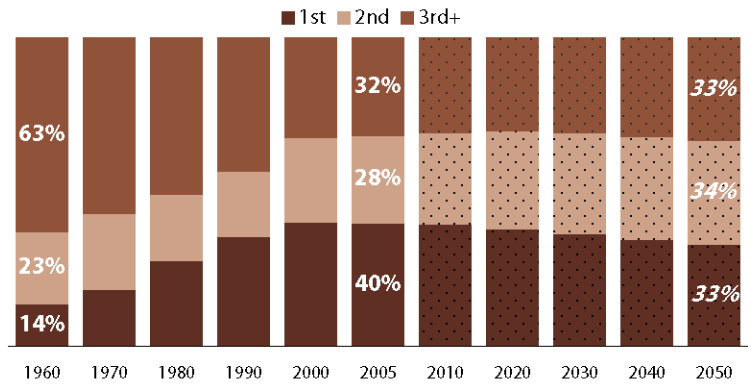
The Hispanic population already is mainly U.S. born (60%), and that proportion is projected to rise (to 67% in 2050) because of changes in the sources of growth. In a reversal of past trends, the number of births to Latino women will grow more rapidly than the number of new Latino immigrants. For a period of three decades, beginning in the early 1970s, new Hispanic immigrants had considerably outnumbered births to Latino mothers. As a result, the percent foreign-born among Hispanics increased from only 14% in 1960 to 40% in 2005.

However, this pattern of Latino births and immigration shifted during the current decade: From 2000 to 2005, there were more Hispanic births than new immigrants. The Center's projections are that Hispanic births will grow much more rapidly than Hispanic immigration, so that by 2045–50 there will be almost twice as many Latino births as new Latino immigrants.

Accompanying this change will be a substantial shift in the generational composition of the Hispanic population. By 2050, the foreign-born share will drop to 33%. The second generation, which represented 23% of Hispanics in 1960 and has grown to 28% in 2005, will continue to increase. In 2050, 34% of Hispanics will be U.S.-born children with at least one immigrant parent.

The third-and-higher generations had accounted for a majority of Hispanics in 1960 (63%), but this had dropped to 32% in 2005 due to the large influx of immigrants. But as the share of births to U.S.-born Latinos increases, the third-and-higher generations will continue to grow. By 2050, all three generational groups of Hispanics will be roughly the same size. (Figure 13)

Figure 13
Hispanic Population by Generation, Actual and Projected: 1960–2050
(% in each generation)

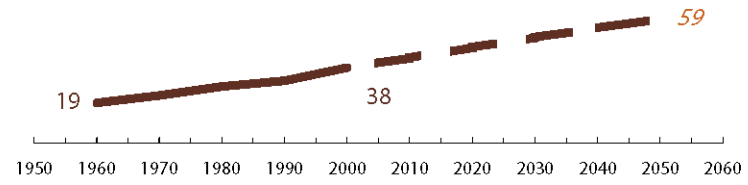


Note: First generation is foreign-born; second generation is U.S.-born children with at least one immigrant parent; third generation is U.S.-born of U.S.-born parents. Projections for 2005–2050 indicated by dotted bars.
Source: Pew Research Center, 2008

Non-Hispanic Race Groups

From 2005 to 2050, the black population will grow by about 56%, but as a share of the nation's population it will be stable.[5] By 2050, the nation's population will be 13% black, about the same share as in 2005. In 2000, the Hispanic and black populations were nearly the same size; by 2005, the number of Hispanics (42 million) exceeded the size of the black population (38 million). The gap will continue to grow because of sustained Latino immigration. In 2050, there will be more than twice as many Hispanics as blacks (128 million compared with 59 million). (Figure 14)

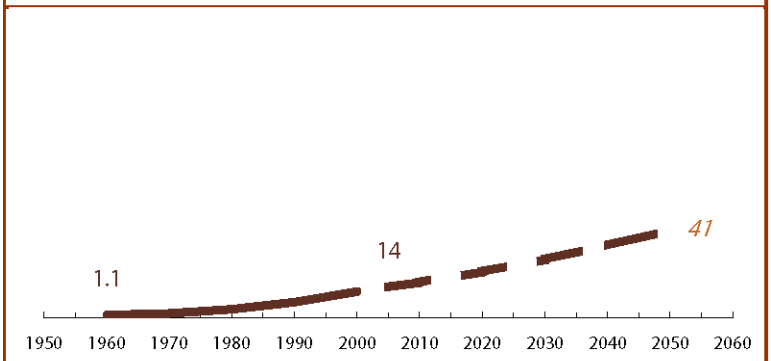
Figure 14
Black* Population, Actual and Projected: 1960–2050
(in millions)



Note: * Black, not Hispanic (modified). See "Methodology." Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

The Asian population will grow almost as fast as the Hispanic population in percentage terms, almost tripling from 14 million in 2005 to 41 million in 2050. (Figure 15) In 1960, Asians represented a minuscule 0.6% of the total population. By 2005, the share of Asians had grown to 5%; by 2050, it will be 9%. Nearly all of the future growth in the Asian population (94%) will be due to immigrants arriving after 2005 and their descendants. But arrivals of new immigrants will play a declining role in Asian population change, and births in the United States to immigrants and their

Figure 15
Asian* Population, Actual and Projected: 1960–2050
(in millions)



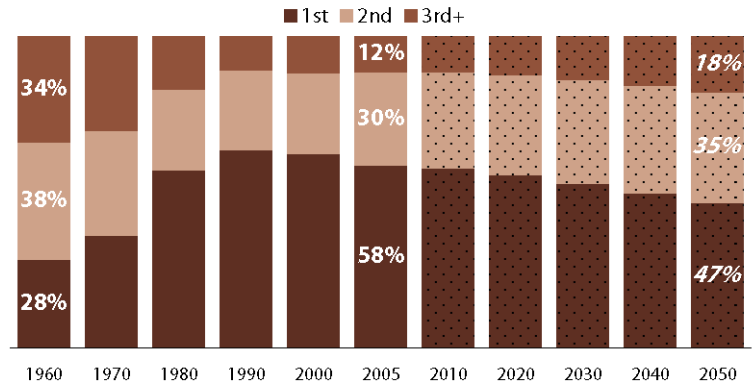
Note: * Asian and Pacific Islander, not Hispanic (modified). See "Methodology." Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

[5] All race groups are non-Hispanics only.

descendants will play a growing role. In 2005, most Asians in the United States (58%) were foreign born; by 2050, fewer than half (47%) will be foreign born. (Figure 16)

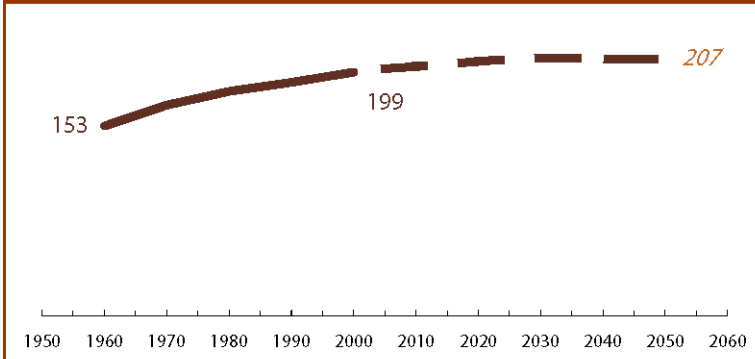
The white non-Hispanic population will grow much more slowly than any of the other groups because of low fertility rates and relatively low immigration. It is projected to rise by only 8 million, or 4%, over the 45-year period, with little change after 2025. As a result, the non-Hispanic white population's share of the total will continue the decrease that has occurred since 1960, when 85% of the population was white, non-Hispanic. By 2005, the share had dropped to 67% and it will decrease steadily to 51% in 2040 and 47% in 2050. (Figure 17)

Figure 16
Asian* Population by Generation, Actual and Projected: 1960–2050
(% in each generation)



Note: 1st generation is foreign-born; 2nd generation is U.S.-born children with at least one immigrant parent; 3rd+ generations are U.S.-born of U.S.-born parents. Projections for 2005–2050 indicated by dotted bars. * Asian and Pacific Islander, not Hispanic (modified). See "Methodology."
Source: Pew Research Center, 2008

Figure 17
White* Population, Actual and Projected: 1960–2050
(in millions)



Note: * White, not Hispanic (modified). See "Methodology." Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

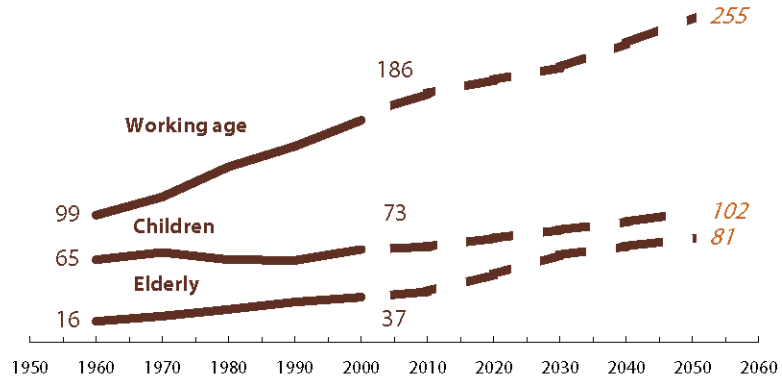
Age Groups

Working-age Adults

The working-age population—adults ages 18 to 64—will reach 255 million in 2050, up from 186 million in 2005. That is a 37% increase, a rate somewhat lower than for the population as a whole. At that time, working-age adults will be 58% of the population, down from 63% in 2005. (Figure 18)

Future immigrants and their descendants born in the United States account for all growth in the working-age population over this period, adding 76 million people to the 2050 size of this group. Absent new immigration, there would be a decline of 7 million people in this group.

Figure 18
Population by Age Group, Actual and Projected: 1960–2050
(in millions)

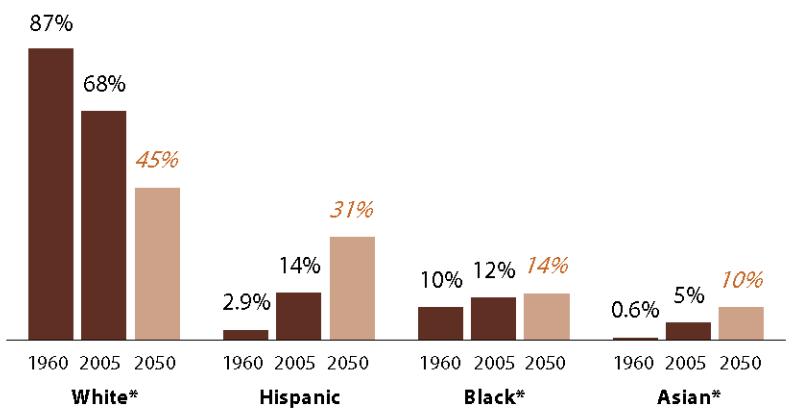


Note: Children are ages 17 or younger. Working ages are 18 to 64. Elderly are ages 65 and older. Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

Because immigration plays such a prominent role in future growth of the working-age population, the share of foreign-born residents in this segment will rise to 23% in 2050, compared with 15% in 2005. The Hispanic share of working-age adults, 14% in 2005, will more than double, to 31% in 2050. The non-Hispanic white share, 68% in 2005, will decline to 45% in 2050. (Figure 19)

It is important to note that not all working-age adults are in the labor force. Currently, more than three-quarters in the 18-to-64-age group are, but that could change depending on many economic and demographic factors. For example, a greater share of workers ages 50 and older may choose to stay in the labor force. Also, foreign-born Hispanic women now are much less likely to be in the work force than either U.S.-born Hispanic women or other U.S.-born women. If education levels of foreign-born Hispanic women continue to increase and their

Figure 19
Working-Age Population by Race and Ethnicity, Actual and Projected: 1960, 2005 and 2050
(% share of population ages 18 to 64)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Projections for 2050 indicated by light brown bars.
Source: Pew Research Center, 2008

fertility continues to fall, their low labor force participation rates could increase, as has happened with other groups.

Children

The nation's child population will rise to 102 million in 2050, from 73 million in 2005. The 39% increase is somewhat slower than for the population as a whole. Children will make up 23% of the population in 2050, compared with 25% in 2005.

Even though the projected increase in the child population is relatively modest, it stands in marked contrast to the much slower growth during the previous 45-year period (1960–2005). In 1960, there were 65 million children ages 17 and younger, making up more than a third (36%) of the population. That number grew by only 14%, to 73 million (or 25% of the population), in 2005. The slow growth during those years reflects the aging of the post-World War II baby boom, a period of high birthrates that lasted from 1946 to 1964. The baby-boom babies are now middle-aged adults, and the first of them will turn 65 years old in 2011.

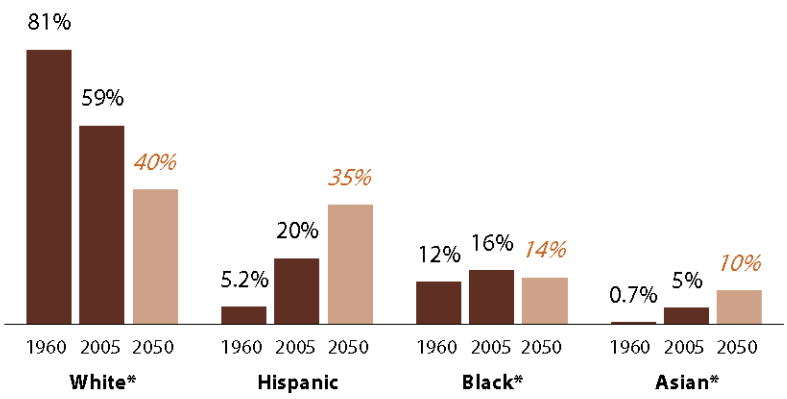
All of the projected increase in the population ages 17 and younger through 2050 will be due to the arrival of new immigrants and the children born to them in the United States. By 2050, 36 million children will be descendants of immigrants who arrived after 2005. Absent new immigration, there would be a decline of 8 million people in this age group.

Immigrants do not generally arrive as children, nor do immigrant families tend to bring large numbers of children with them from other countries. Instead, the pattern is that young adults immigrate and have children after they arrive. Consequently, the vast majority (94%) of these 102 million young people in 2050 will be born in the United States.

Because immigrants on average have more children than native-born U.S. residents, the share of U.S. children who are children of immigrants—the first and second generations combined—will increase. In 2050, one child in three (34%) will be an immigrant or the son or daughter of an immigrant, compared with almost one in four (23%) in 2005.

The share of children who are Hispanic will rise markedly, from 20% in 2005 to 35% in 2050. Non-Hispanic whites, who made up 59% of children in 2005, are projected to be 40% of children in 2050. (Figure 20)

Figure 20
Child Population by Race and Ethnicity, Actual and Projected: 1960, 2005 and 2050
(% share of population 17 and younger)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Projections for 2050 indicated by light brown bars.
Source: Pew Research Center, 2008

Elderly

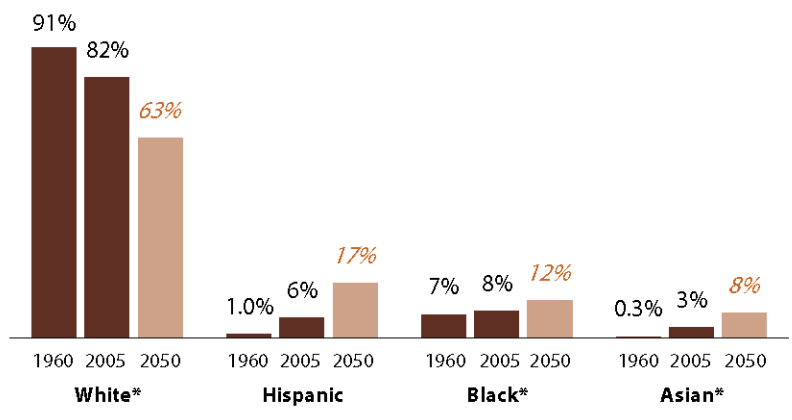
The nation's elderly population—people ages 65 and older—is projected grow to 81 million in 2050, from 37 million in 2005. This group will grow more sharply than other segments because of the aging of the generation born during the post-World War II baby boom. The last of the baby boomers turns 65 in 2029. Among all age groups, projections about the size of the elderly population are least uncertain because the vast majority already are part of the U.S. population.

The elderly have accounted for 12% to 13% of the population since 1990; this range is higher than at any time in the nation's history. With each successive decade, the percentages will increase so that by 2050 the elderly will represent 19% of the population. By way of comparison, in Florida, the state with the highest proportion of elderly residents, 17% are in that age group today (Census Bureau 2006).

The proportion of Hispanics in the elderly population will almost triple, from 6% to 17%, between 2005 and 2050 but will be substantially less than the proportion of Hispanics in younger age groups.

The racial/ethnic composition of the elderly population will change as the overall population does, but the changes lag behind those of younger age groups. Thus, non-Hispanic whites will remain a majority of the elderly, but their share will drop markedly to 63% in 2050, compared with 82% in 2005. The proportions of other race groups in the elderly population will increase over the projections horizon. The share of blacks will grow from 8% in 2005 to 12% in 2050; the share of Asians will grow from 3% to 8%. (Figure 21)

Figure 21
Elderly Population by Race and Ethnicity, Actual and Projected: 1960, 2005 and 2050
(% share of population ages 65 years and older)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Projections for 2050 indicated by light brown bars.
Source: Pew Research Center, 2008

Dependency Ratio

The dependency ratio is a demographic and economic indicator that compares the size of non-working-age groups—children and the elderly—with that of the working-age population.[6] A higher number of elderly or children relative to the number of workers translates into higher costs per worker to pay for all government programs, including those targeted at the young and old such as schools and Social Security.

In 2005, there were 59 elderly people and children for every 100 Americans of working ages. In 2050, assuming current trends continue, that dependency ratio will rise to 72. The main reason for the increase is that the elderly population will grow more rapidly over the next four decades than the working-age population. Most of the increase in the number of elderly will occur by 2030 as the baby-boom generation enters the retirement years. The ratio of children to working-age people, on the other hand, will change little.

The elderly dependency ratio was 20 people ages 65 and over for every 100 people ages 18 to 64 in 2005. That ratio has risen slightly since 1960 (from 16 per 100) and will increase rapidly (to 32 per 100) until 2030, when the

[6] A true "dependency" ratio would compare workers with non-workers. Projections of this kind of ratio would require additional assumptions about future labor force participation levels.

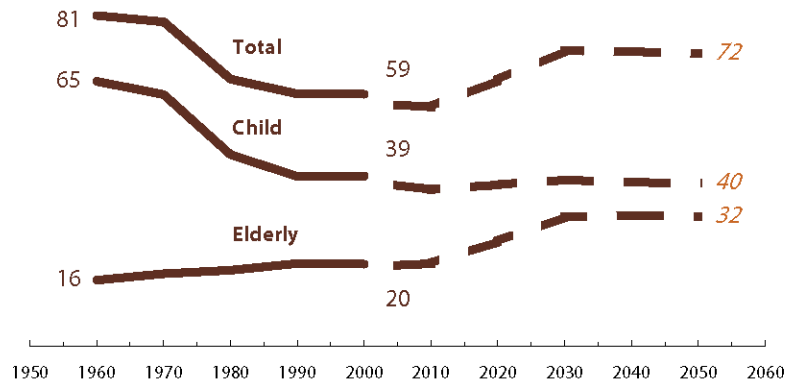
youngest of the baby boomers turns 66. The elderly dependency ratio will level off at 32 elderly per 100 people of working age through 2050.

A very different pattern emerges with regard to the child dependency ratio. It is projected to be stable in coming decades, at about 40 children for every 100 people of working age. The major driver of this ratio is not the level of immigration but the average number of children per woman, which is projected to change little in the future.

To understand how fertility affects the child dependency ratio, consider that in the late 1950s, when women had an average 3.7 children, there were 65 children per 100 working-age Americans. By the mid 1970s fertility had dropped, and it has remained at about two children per woman for the past two decades.[7] As a consequence the child dependency ratio dropped to 42 children per 100 people of working age by 1990.

The current dependency ratio is lower than it has been for decades. It was 81 in 1960, during the post-World War II baby boom, and has been declining since then. (Figure 22)

Figure 22
Dependency Ratios—Total, Child and Elderly—
Actual and Projected:1960–2050
(children and elderly per 100 persons of working age)



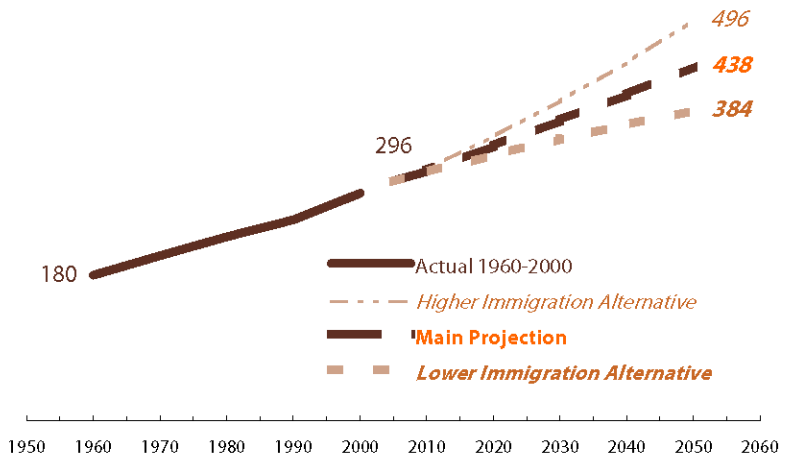
Note: Children are ages 17 or younger. Working ages are 18 to 64. Elderly are ages 65 and older. Projections for 2005–2050 indicated by broken line.
Source: Pew Research Center, 2008

[7] That rose to 2.1 in 2006, but it remains to be seen whether that increase will persist. The projections allow for that possibility.

Alternative Scenarios

This section examines how the population would change if immigration levels were lower or higher than current trends. The baseline projection for the overall population is 438 million in 2050. That could range from 384 million under a lower-immigration scenario, to 496 million if higher immigration levels prevailed. (Figure 23)

Figure 23
U.S. Population, Actual and Projected Under Alternative Scenarios: 1960–2050
(in millions)



Note: See "Methodology" for description of assumptions used in these scenarios.
Source: Pew Research Center, 2008

This baseline projection assumes annual immigration, authorized and undocumented, of about 1.4 million people a year, rising to 2.1 million by 2050; annual immigration would average 1.7 million per year over the entire 2005–2050 period. An alternative lower-immigration scenario assumes that levels would average about half that amount, or 900,000 per year; a higher-immigration scenario assumes that levels would average about 50% higher, or 2.6 million a year over the 45-year projection period.

These three immigration scenarios use the same mix of birth and death rates by age, race and ethnicity, but the projected numbers of births and deaths is a function of the projected population size.

Foreign Born. The nation's foreign-born population, which numbered 36 million in 2005, would grow to 49 million in 2050 even under a lower-immigration scenario. The proportion foreign born in the total population would stabilize at roughly the current level (12% to 13%).

Under a higher-immigration scenario, the foreign-born population would rise to 115 million by 2050, compared with 81 million under the baseline scenario. Instead of making up nearly one in five Americans (19%), as the baseline projection envisions, immigrants would be nearly one in four (23%). Under the baseline scenario, the foreign-born proportion of the population would exceed the

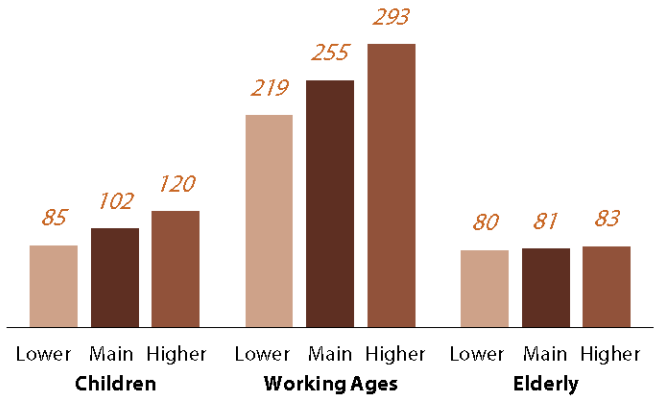
historic high by 2025; under the higher-immigration scenario, that would happen by 2015, when it would reach 15%.

Hispanic. The nation's Hispanic population, numbering 42 million and accounting for 14% of U.S. residents in 2005, would grow sharply under all immigration scenarios. Under the baseline projection, it would more than triple by 2050, reaching 128 million, or 29% of the total population.

Even under a lower-immigration scenario, the Hispanic population would more than double, reaching 98 million in 2050, or 26% of all U.S. residents. Under the higher-immigration alternative, the Latino population would increase to 159 million in 2050, or 32% of total residents.

Working Ages. Turning to the impact of immigration on different age groups, the scenarios diverge markedly after 2030 for working-age adults. (Figure 24) The baseline projection is that the number of adults ages 18 to 64 will rise from 186 million in 2005 to 255 million in 2050. The working-age population, now 63% of the total, would decline to 58%.

Figure 24
Projected Population in Major Age Groups Under Alternative Immigration Scenarios: 2050
(populations in millions)



Note: Children are ages 17 and younger. Working-ages are 18 to 64. Elderly are ages 65 and older. See "Methodology" for description of assumptions used in these scenarios.
Source: Pew Research Center, 2008

Under a lower-immigration scenario, the size of the potential labor force would grow to 219 million in 2050. Under a higher-immigration scenario, the population ages 18 to 64 would rise to 293 million. The working-age share of the population will not be affected significantly by the assumed level of future immigration. This group would account for about the same share of the total population (57% to 59%) under all three projections.

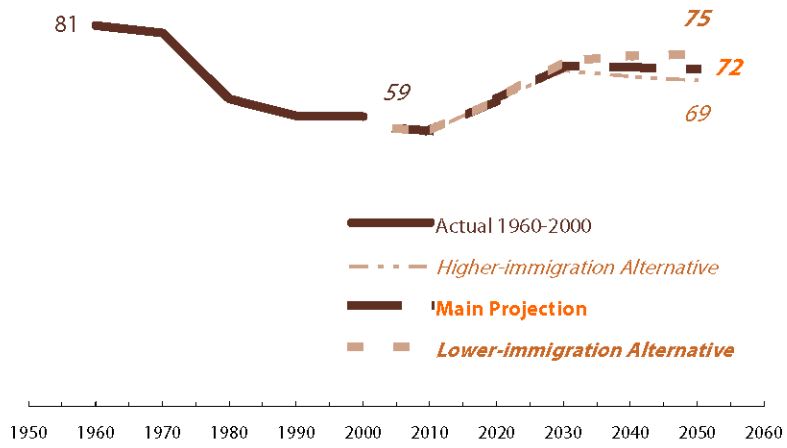
Children. For the child population, the baseline projection shows that there will be 102 million Americans younger than 18 in 2050, making up 23% of the population. That compares with 73 million, and 25% of the population, in 2005.

Under a lower-immigration scenario, the number of children would rise to 85 million and the proportion would be 22%. Under a higher-immigration scenario, the number would rise to 120 million and the share would be 24%.

Elderly. The size of the elderly population, 37 million in 2005, would be the least affected by differing immigration scenarios because few people migrate at older ages and some older immigrants leave. The number of elderly, 81 million in 2050 under the baseline scenario, would be 80 million under the lower-immigration alternative and 83 million under the higher-immigration alternative.

Dependency Ratios. The overall dependency ratio, which was 59 youths or elderly for every 100 people of working age in 2005, will rise to 72 in 2050 under the baseline projection. It would be slightly higher, 75, under the lower-immigration scenario, and slightly lower, 69, under the higher-immigration scenario. (Figure 25)

Figure 25
Dependency Ratio, Actual and Projected Under Alternative Scenarios: 1960–2050
(children and elderly per 100 persons of working age)

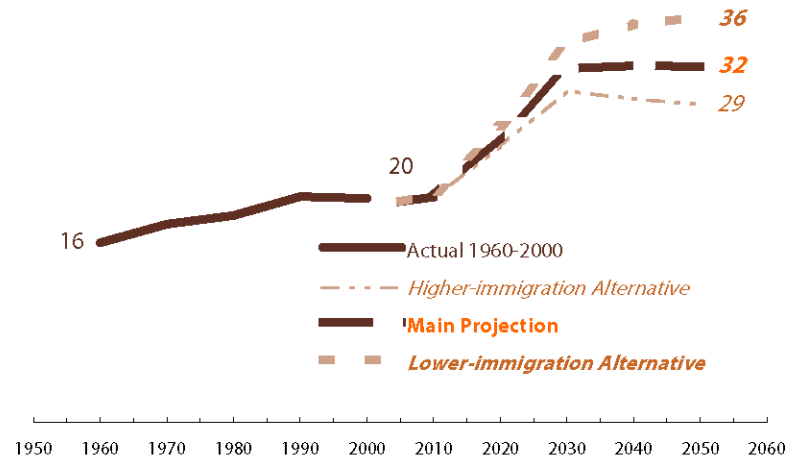


Note: Children are ages 17 and younger. Working-ages are 18 to 64. Elderly are ages 65 and older. See "Methodology" for description of assumptions used in these scenarios.
Source: Pew Research Center, 2008

The projected youth dependency ratio—that is, the number of children ages 17 and younger per 100 people of working age—would be relatively stable and change only slightly under differing immigration scenarios. It was 40 in 2005 and will stay in the range of 39 to 41 under all three scenarios.

The elderly dependency ratio is little affected by the assumed level of future immigration. As a result, the number of elderly people compared with the number of working-age people would rise substantially under all scenarios. The ratio would go up sharply until the youngest baby boomer reached 66 in 2030. In 2005, there were 20 elderly per 100 people of working age, which will rise to 32 under the baseline projection. Under the lower-immigration scenario, the ratio would reach 36 by 2050. Under the higher-immigration scenario, the ratio would be only slightly lower, 29 in 2050. (Figure 26)

Figure 26
Elderly Dependency Ratio, Actual and Projected Under Alternative Scenarios: 1960–2050
(persons ages 65 years and older per 100 persons ages 18 to 64)



Note: See "Methodology" for description of assumptions used in these scenarios.
Source: Pew Research Center, 2008.

Table 2

Actual and Projected U.S. Population for Total, Hispanic, and Foreign-Born Populations Under Alternative Immigration Scenarios: 1960–2050

Measure and Year	*Total Population*			*Foreign-Born Population*			*Hispanic Population*		
	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.
Population (in thousands)									
1960*	179,980	--	--	9,738	--	--	6,347	--	--
1970*	204,401	--	--	9,613	--	--	9,579	--	--
1980*	227,537	--	--	13,673	--	--	14,524	--	--
1990*	248,623	--	--	19,600	--	--	21,937	--	--
2000*	281,646	--	--	31,168	--	--	35,323	--	--
2005*	295,709	--	--	35,529	--	--	42,349	--	--
2010	309,653	311,661	307,645	39,987	41,756	38,217	49,347	50,363	48,332
2020	340,219	351,974	328,864	49,525	58,745	40,665	65,281	71,328	59,404
2030	371,822	395,970	348,812	59,670	76,714	43,587	83,689	96,270	71,610
2040	403,648	442,905	366,368	70,226	95,536	46,474	104,522	125,253	84,687
2050	438,153	495,643	383,532	81,299	115,368	49,339	127,778	158,525	98,357
Percent of Total Population									
1960*	100.0%	--	--	5.4%	--	--	3.5%	--	--
1970*	100.0%	--	--	4.7%	--	--	4.7%	--	--
1980*	100.0%	--	--	6.0%	--	--	6.4%	--	--
1990*	100.0%	--	--	7.9%	--	--	8.8%	--	--
2000*	100.0%	--	--	11.1%	--	--	12.5%	--	--
2005*	100.0%	--	--	12.0%	--	--	14.3%	--	--
2010	100.0%	100.0%	100.0%	12.9%	13.4%	12.4%	15.9%	16.2%	15.7%
2020	100.0%	100.0%	100.0%	14.6%	16.7%	12.4%	19.2%	20.3%	18.1%
2030	100.0%	100.0%	100.0%	16.0%	19.4%	12.5%	22.5%	24.3%	20.5%
2040	100.0%	100.0%	100.0%	17.4%	21.6%	12.7%	25.9%	28.3%	23.1%
2050	100.0%	100.0%	100.0%	18.6%	23.3%	12.9%	29.2%	32.0%	25.6%
Average Annual Growth Rate (percent of initial population)									
1960-70*	1.28%	--	--	-0.13%	--	--	4.20%	--	--
1970-80*	1.08%	--	--	3.59%	--	--	4.25%	--	--
1980-90*	0.89%	--	--	3.67%	--	--	4.21%	--	--
1990-2000*	1.25%	--	--	4.75%	--	--	4.88%	--	--
2000-05*	0.98%	--	--	2.65%	--	--	3.69%	--	--
2005-10	0.93%	1.06%	0.79%	2.39%	3.28%	1.47%	3.11%	3.53%	2.68%
2010-20	0.95%	1.22%	0.67%	2.16%	3.47%	0.62%	2.84%	3.54%	2.08%
2020-30	0.89%	1.18%	0.59%	1.88%	2.70%	0.70%	2.52%	3.04%	1.89%
2030-40	0.82%	1.13%	0.49%	1.64%	2.22%	0.64%	2.25%	2.67%	1.69%
2040-50	0.82%	1.13%	0.46%	1.47%	1.90%	0.60%	2.03%	2.38%	1.51%

Source: Pew Research Center, 2008. Actual population for 1960–2005; projections for 2005–2050. See text and "Methodology" for explanation of methods and assumptions.

Table 3a

Actual and Projected U.S. Population by Broad Age Group
Under Alternative Immigration Scenarios: 1960–2050

Measure and Year	*Children (Ages 17 and younger)*			*Working Ages (18 to 64)*			*Elderly (Ages 65 and older)*		
	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.
Total Population (in thousands)									
1960*	64,537	--	--	99,406	--	--	16,037	--	--
1970*	70,276	--	--	113,882	--	--	20,244	--	--
1980*	64,500	--	--	137,502	--	--	25,535	--	--
1990*	63,889	--	--	153,612	--	--	31,122	--	--
2000*	72,517	--	--	174,137	--	--	34,992	--	--
2005*	73,298	--	--	185,727	--	--	36,684	--	--
2010	74,896	75,621	74,171	195,196	196,462	193,930	39,561	39,578	39,544
2020	81,473	85,784	77,244	205,889	213,238	198,809	52,857	52,953	52,810
2030	87,891	96,577	79,463	215,587	230,910	200,990	68,345	68,483	68,358
2040	94,231	107,227	81,689	234,433	260,244	209,850	74,984	75,435	74,830
2050	101,817	119,593	84,675	255,040	292,588	219,230	81,296	83,461	79,626
Percent of Total Population (of all ages)**									
1960*	35.9%	--	--	55.2%	--	--	8.9%	--	--
1970*	34.4%	--	--	55.7%	--	--	9.9%	--	--
1980*	28.3%	--	--	60.4%	--	--	11.2%	--	--
1990*	25.7%	--	--	61.8%	--	--	12.5%	--	--
2000*	25.7%	--	--	61.8%	--	--	12.4%	--	--
2005*	24.8%	--	--	62.8%	--	--	12.4%	--	--
2010	24.2%	24.3%	24.1%	63.0%	63.0%	63.0%	12.8%	12.7%	12.9%
2020	23.9%	24.4%	23.5%	60.5%	60.6%	60.5%	15.5%	15.0%	16.1%
2030	23.6%	24.4%	22.8%	58.0%	58.3%	57.6%	18.4%	17.3%	19.6%
2040	23.3%	24.2%	22.3%	58.1%	58.8%	57.3%	18.6%	17.0%	20.4%
2050	23.2%	24.1%	22.1%	58.2%	59.0%	57.2%	18.6%	16.8%	20.8%

Source: Pew Research Center, 2008. Actual population for 1960–2005 (*); projections for 2005–2050. See text and "Methodology" for explanation of methods and assumptions.
** All ages total shown in Table 2. -- Not applicable.

Table 3b

Actual and Projected U.S. Hispanic Population by Broad Age Group
Under Alternative Immigration Scenarios: 1960–2050

Measure and Year	*Children (Ages 17 and younger)*			*Working Ages (18 to 64)*			*Elderly (Ages 65 and older)*		
	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.
Hispanic Population (in thousands)									
1960*	3,326	--	--	2,853	--	--	168	--	--
1970*	4,478	--	--	4,710	--	--	392	--	--
1980*	5,770	--	--	8,124	--	--	630	--	--
1990*	7,695	--	--	13,187	--	--	1,055	--	--
2000*	12,384	--	--	21,206	--	--	1,734	--	--
2005*	14,324	--	--	25,769	--	--	2,256	--	--
2010	16,497	16,891	16,103	30,087	30,701	29,472	2,764	2,770	2,757
2020	21,018	23,454	18,621	39,802	43,397	36,329	4,461	4,477	4,455
2030	25,748	30,724	20,898	50,879	58,564	43,536	7,062	6,982	7,177
2040	30,724	38,177	23,494	63,704	77,180	50,817	10,094	9,896	10,376
2050	36,001	46,239	26,074	77,909	98,087	58,579	13,868	14,199	13,704
Percent of Hispanic Population (of all ages)**									
1960*	52.4%	--	--	45.0%	--	--	2.6%	--	--
1970*	46.7%	--	--	49.2%	--	--	4.1%	--	--
1980*	39.7%	--	--	55.9%	--	--	4.3%	--	--
1990*	35.1%	--	--	60.1%	--	--	4.8%	--	--
2000*	35.1%	--	--	60.0%	--	--	4.9%	--	--
2005*	33.8%	--	--	60.8%	--	--	5.3%	--	--
2010	33.4%	33.5%	33.3%	61.0%	61.0%	61.0%	5.6%	5.5%	5.7%
2020	32.2%	32.9%	31.3%	61.0%	60.8%	61.2%	6.8%	6.3%	7.5%
2030	30.8%	31.9%	29.2%	60.8%	60.8%	60.8%	8.4%	7.3%	10.0%
2040	29.4%	30.5%	27.7%	60.9%	61.6%	60.0%	9.7%	7.9%	12.3%
2050	28.2%	29.2%	26.5%	61.0%	61.9%	59.6%	10.9%	9.0%	13.9%

Source: Pew Research Center, 2008. Actual population for 1960–2005 (*); projections for 2005–2050. See text and "Methodology" for explanation of methods and assumptions.
** All ages Hispanic population shown in Table 2. -- Not applicable.

Table 3c

Actual and Projected U.S. Foreign-Born Population by Broad Age Group
Under Alternative Immigration Scenarios: 1960–2050

Measure and Year	*Children (Ages 17 and younger)*			*Working Ages (18 to 64)*			*Elderly (Ages 65 and older)*		
	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.	Main Projection	Higher Immig.	Lower Immig.
Foreign-Born Population (in thousands)									
1960*	635	--	--	5,945	--	--	3,159	--	--
1970*	809	--	--	5,734	--	--	3,070	--	--
1980*	1,446	--	--	9,244	--	--	2,982	--	--
1990*	2,040	--	--	14,877	--	--	2,684	--	--
2000*	3,275	--	--	24,492	--	--	3,401	--	--
2005*	3,158	--	--	28,650	--	--	3,720	--	--
2010	3,672	4,195	3,148	32,159	33,388	30,930	4,156	4,173	4,139
2020	4,328	6,332	2,370	39,035	46,160	32,180	6,161	6,254	6,116
2030	4,794	7,259	2,411	45,767	60,213	32,047	9,109	9,241	9,129
2040	5,331	8,065	2,687	52,480	74,625	31,507	12,415	12,846	12,279
2050	5,926	8,958	2,986	59,162	88,106	31,740	16,211	18,304	14,613
Percent of Foreign-Born Population (of all ages)**									
1960*	6.5%	--	--	61.0%	--	--	32.4%	--	--
1970*	8.4%	--	--	59.7%	--	--	31.9%	--	--
1980*	10.6%	--	--	67.6%	--	--	21.8%	--	--
1990*	10.4%	--	--	75.9%	--	--	13.7%	--	--
2000*	10.5%	--	--	78.6%	--	--	10.9%	--	--
2005*	8.9%	--	--	80.6%	--	--	10.5%	--	--
2010	9.2%	10.0%	8.2%	80.4%	80.0%	80.9%	10.4%	10.0%	10.8%
2020	8.7%	10.8%	5.8%	78.8%	78.6%	79.1%	12.4%	10.6%	15.0%
2030	8.0%	9.5%	5.5%	76.7%	78.5%	73.5%	15.3%	12.0%	20.9%
2040	7.6%	8.4%	5.8%	74.7%	78.1%	67.8%	17.7%	13.4%	26.4%
2050	7.3%	7.8%	6.1%	72.8%	76.4%	64.3%	19.9%	15.9%	29.6%

Source: Pew Research Center, 2008. Actual population for 1960–2005 (*); projections for 2005–2050. See text and "Methodology" for explanation of methods and assumptions.
** All ages foreign-born population shown in Table 2. -- Not applicable.

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Appendix A: Methodology

Overall Methodology

National projections are usually done with what is called the cohort-component model in which the initial population is carried forward into the future by adding new births, subtracting deaths, adding people moving into the country (immigrants), and subtracting people moving out (emigrants). The model used for the Pew projections is is a variant of the cohort-component method modified to incorporate immigrant generations by Edmonston and Passel (1992). In this application, five generation groups for U.S. residents are defined: (1) the foreign-born population, or the first generation; (2) the Puerto Rican-born population[8]; (3) the U.S.-born population of foreign (or mixed) parentage, or the second generation; (4) the U.S.-born population of Puerto Rican (or mixed) parents; and (5) the U.S-born population of U.S.-born parents. In simplifying to three generations, the third-and-higher generations group is defined as U.S. natives born to U.S.-native parents and is the sum of groups 2, 4 and 5.

In the projection methodology, each of the five generation groups is carried forward separately. Immigrants and emigrants enter and leave the first generation; migrants from Puerto Rico enter (and leave) the Puerto Rican-born population. [9] Births are assigned to generations based on the generation of the mother and a matrix allowing for cross-generational fertility. All births to first-generation women are assigned to the second generation; all births to the Puerto Rican-born population are assigned to the Puerto Rican parentage population. Most births to the second and third-and-higher generations are assigned to the third-and-higher generations, but some are assigned to the second generation to allow for mixed generation couples that include immigrants. Likewise, most births to women of Puerto Rican parentage are assigned to the third-and-higher generation, but some are assigned to the Puerto Rican parentage population to allow for mixed couples including Puerto Rican-born migrants. The generational assignment matrix (or G-matrix) is based on race/ethnic origin but is allowed to vary dynamically based on relative generational sizes.

For these projections, the entire population is divided into five mutually exclusive racial/ethnic groups: Hispanic origin; white, not Hispanic; black, not Hispanic; Asian and Pacific Islander, not Hispanic; and American Indian/Alaska Native, not

[8] About 5% to 15% of this population is persons born in other outlying areas and territories of the U.S. (including Guam and the U.S. Virgin Islands). We use this terminology for consistency with other sources and because of the dominance of the Puerto Rican population.

[9] Other small components of change measure persons who enter (and leave) the second and third-and-higher generations.

Hispanic. The report also includes a historical analysis using data developed with the same projection methods and estimates of the demographic components. The components are estimated so as to reproduce as closely as possible the decennial censuses from 1960 to 2000 and the 2005 population by age, sex, race/Hispanic origin and generation. The projections and historical analyses use five-year age groups up to 85 years and older by sex. The projections are done for five-year time steps from April 1, 2005 to April 1, 2050.

The remainder of this section describes the underlying data and assumptions for the projections and historical analyses. The first section treats the assumptions for the major demographic components of immigration, fertility and mortality for 2005–2050, with a particular emphasis on immigration. The next section presents the methods for defining and measuring the racial/ethnic groupings and the generational groups. Within each section, the data and the methods used to define the historical population and components of change are described. A more detailed treatment of the overall methods and especially the historical analysis is available (Passel, 2004).

Demographic Components

Demographic components of population change account for all additions and subtractions from the national U.S. population. Births and deaths are the largest of the components, but measurement of immigration is far more complicated because there are multiple channels of entry to and exit from the U.S. population. For some of the components, such as legal immigration, the available data are better, and accurate measurement is easier than for others, such as unauthorized or illegal immigration. The measurement methods differ among the immigration components, in part because of the nature of the data and in part because some of the immigration concepts dictate particular methods.

The demographic components included in the population projection model are:

Births (or fertility rates)
Deaths (or mortality rates)

Immigration
- Legal Immigration (including refugees and legalized aliens)
- Net Undocumented Immigration
- Emigration
- Net Movement from Puerto Rico
- Other Immigration Components

Immigration

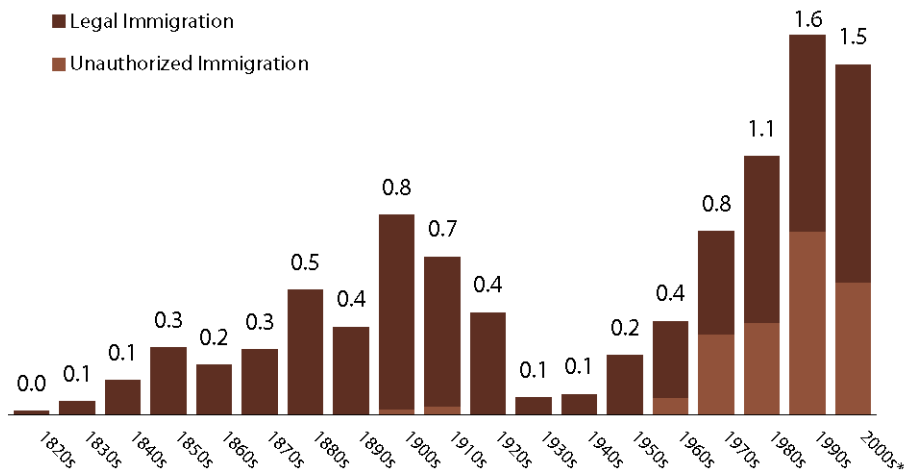
The immigration assumptions are critical for both the prospective projections and the historical analyses. Immigration increased substantially over the 1960–2000 period with particularly large increases for Hispanics and Asians. The rapid growth in the Hispanic population is attributable principally to immigrants and their descendants.

Background

Immigration has been the most difficult demographic component to forecast in the last several decade. It is directly affected by national policies and other events in ways that fertility and mortality are not. Although many of the social and economic factors affecting migration trends are reasonably well known, no broadly accepted theoretical framework can be readily applied in a projections framework (Howe and Jackson, 2005). Further, this component has proved quite difficult to measure even in historical analyses (Passel, 2001; Robinson, 2001).

Total immigration (legal plus unauthorized) has shown a steady upward trend since the 1930s, regardless of the period measured—the last 25, 50 or 75 years. Annual immigration has grown by about 4% per year since the early 1950s to the point where average gross annual immigration for 1995–2005 exceeded 1.6 million. Even with a significant drop during 2002–2004, possibly due to an economic slowdown and heightened security concerns, total immigration for 2000–2005 averaged almost 1.5 million per year (Passel and Suro, 2005). (Figure A1)

Figure A1
Immigration by Decade: 1820s through 2000s*
(average annual immigrants in millions)



Note: Unauthorized migration is net; legal immigration is arrivals only. Totals shown are rounded.
* 2000–2005 only.
Source: Pew Research Center, 2008

During the long period of immigration growth, immigration increased more rapidly than the total population, which averaged 1.2% annual growth over the entire period. As a result, the migration rate (defined as number of immigrants during a period per 1,000 population at the beginning) increased steadily. For 1930–1945, the migration rate was only 0.5 per 1,000, but by 1990–2005 it exceeded six immigrants per 1,000 population.

Growth in the scale of immigration can be linked to a number of factors. Major legislative changes in 1965, 1976, 1980 and 1990 greatly expanded legal immigration.[10] Unauthorized migration began to increase in the 1970s as a result of, among other factors, the United States ending a key temporary worker program with Mexico, changes in Mexican society and its economy, and increased entry to the U.S. by foreign nationals as temporary residents or tourists. Large and increasing numbers of unauthorized migrants began to settle permanently in the U.S. with their families, replacing what in previous decades had largely been circular temporary migration from Mexico. The buildup of a significant undocumented population led to the passage in 1986 of the Immigration Reform and Control Act (IRCA). This law had two major provisions—one that legalized about 2.6 million formerly illegal immigrants and a second that made it illegal for employers knowingly to hire unauthorized migrants. By the mid-1990s, however, the unauthorized population was growing rapidly. In 2006, an estimated 11.5 million to 12 million illegal immigrants were living in the United States, compared with 3 million to 5 million at the passage of IRCA 20 years earlier (Passel, 2006).

As the U.S. economy expanded rapidly in the late 1990s, large numbers of workers arrived, some as legal immigrants, many as unauthorized migrants and increasing numbers as legal temporary workers (Passel and Suro, 2005). In addition, larger numbers of people came to the United States for tourism or business purposes as part an increasingly globalized economy. Even though only a small fraction of the visitors settled in the United States as unauthorized migrants (i.e., "overstayers"), the numbers eventually reached significant levels—about 4 million to 5.5 million by 2005 (Passel, 2006a). Relatively easy and inexpensive international communication and travel facilitated the settlement of both legal and unauthorized migrants in the U.S. Although immigration to the U.S. has been trending upward for 75 years, most of the factors affecting current immigration have their roots within the last 25 to 35 years and point to this period as a basis for projecting immigration into the future.

[10] Other key legislation dealt with legal immigration in 1952, 1996 and 2001, but these laws did not markedly affect the overall numbers (Fix and Passel, 1994; U.S. Immigration and Naturalization Service, 2000: Appendix 1).

Legal and Net Unauthorized Immigration

Setting the assumptions for projected immigration involved two basic steps: (1) determining the level of current immigration to use as a launch point; and (2) setting a trajectory for the future course of immigration. The projection involves assumptions for the combined level of legal immigration and unauthorized migration. Emigration of legal immigrants is measured as a separate component, described below. Unauthorized migration, however, has been measured only as a net figure historically. Thus, the projection assumptions are formed for the total of legal in-migration and net unauthorized migration.

Current Immigration (2000–2010)

Total immigration for 2000–2005 was 7.4 million—an amount consistent with the increase in the total population from 281.6 million in 2000 to 295.7 million in 2005, and in the foreign-born population from 31.2 million to 35.5 million. However, within this period, there was considerable variability in annual immigration. Data from the March supplements to the Current Population Survey (CPS) and other sources showed that annual immigration for 2002–2003 was 20% to 30% lower than the peak values attained in 1998–2000 (Passel and Suro, 2005). After this marked drop in immigration, more recent data show a strong tendency toward recovery to the pre-boom immigration levels of the early 1990s. These analyses point to a value for 2005 legal and unauthorized immigration of slightly less than 1.4 million and an upward trend for 2004–2007. Combining this estimate with growth rates extrapolated from data for 1992–2004 gives a figure for immigration in 2005–2010 of just less than 7.1 million.

This immigration total for 2005–2010 is very slightly lower than the measured value for 1990–1995. In terms of the migration rate, the 2005–2010 estimate is 4.8 per 1,000, which is almost exactly the average for the five-year rates from 1970–1975 through 2000–2005. This migration rate is the starting point for projecting immigration over the 2010–2050 period.

Projected Immigration (2005–2050)

Ideally, immigration would be projected in a model-based framework with an underlying theoretical foundation using high quality data on the history of immigration and its determinants. Unfortunately, in spite of a considerable amount of recent research, virtually none of these items exists in a suitable form. There is a reasonable set of historic estimates of the total amount of immigration to the U.S. over the last 100 years or so. (See below for a description of how some of the key elements have been estimated.) Some recent work commissioned by the Social Security Administration brings together the literature on migration theory and migration determinants to address the issue of modeling and projecting immigration (Howe and Jackson, 2005; Jackson, 2006) and identifies six broad theoretical frameworks that could be used to develop projection models:

1. Policy framework—national immigration policy determines levels of immigration
2. Neoclassical framework—in a global labor market, labor will migrate toward higher wages if the wage differential is larger than the moving cost
3. World systems framework—immigration occurs when countries are incorporated in a global free market system; attitudinal shifts, remittances and community effects lead to "cumulative causation" and increasing levels of immigration
4. New economics framework—extended family economic units participate in a series of decisions and moves to maximize income, diversify income sources and insure against risk
5. Social network framework—networks of kin and other social contacts in both sending and receiving areas reduce costs and risks of migration, facilitating movement and settlement; momentum develops over time to increase migration
6. Dual labor market framework—segmentation of labor market in receiving countries sets up niches for immigrants and encourages migration.

Only the policy framework points to potential decreases in net immigration.

Over the long history where immigration to the U.S. has been measured (1820–2006), the migration rate[11] has averaged 4.4 immigrants per year per 1,000 U.S. residents. This estimate averages periods of very high immigration (e.g., 1850–1855 with a rate of 16.5 and 1905–1910 with a rate of 12.1) and periods of very low immigration (e.g., 1930–1950, when the rate was 0.3–0.7). For the period since major immigration reform was enacted in 1965, the migration rate has averaged 4.6 and since 1980, it has averaged 5.4.

Either of these historic time scales (40 or 25 years) offers a reasonable basis for extrapolating into the future. Major immigration reform in 1965 ushered in a new era of migration from virtually all parts of the world to the United States; a new migration regime encompassing significant numbers of unauthorized migrants reached maturity in the 1975–1985 period. As discussed above, the annual estimated migration rate of 4.8 immigrants per 1,000 population for 2005–2010 falls comfortably near the middle of the rates experienced over this time and represents a realistic launch value for the projections.

[11] Calculated for five-year periods.

The immigration assumption for a population projection can be implemented in many different ways. The migration rate is one such formulation, but future immigration levels would then depend on the exact implementation of other assumptions about fertility, mortality and even other migration components. Specifying future *levels* of immigration rather than future rates offers some advantages in programming of the projections; however, as noted above, the migration rate has some conceptual advantages. Accordingly, the immigration assumption for these Pew projections specifies the levels of immigration for each future period but in such a way as to maintain a relationship to the expected migration rate—that is, allowing immigration to change in concert with the population growth to maintain an approximately constant migration rate. To meet these conditions, immigration is assumed to increase by 5% from one five-year period to the next so that the migration rate will stay very close to the starting value of 4.8 and so that the assumption can be implemented easily within the context of the projection technology. With this assumption, immigration is projected to increase smoothly from 7.1 million (or just over 1.4 million per year) for the 2005–2010 period to 10.4 million (or just under 2.1 million per year) for 2045–2050. (See Figure 3.)

Historical Immigration (1960–2005)

Because previous analysis has uncovered problems with some of the historical measures, especially for the 1980s and 1990s (Passel, 2004), development of an accurate and consistent time series of data for legal immigration and net unauthorized immigration required application of the multigenerational projection methods and an iterative approach. First, historical measures of total net immigration (i.e., the components listed above) were developed by five-year period for 1960–2005 from Census Bureau and other official data sources. One major issue in creating this data series was the treatment of the large number of legal immigrants who acquired legal status under IRCA. The vast majority of these 2.6 million legal immigrants appear in official admission statistics when they received their "green cards" or during fiscal years 1989–1991. In reality, most arrived in the U.S. between 1970 and 1986. In our historical data series for immigration, they are assigned to actual periods of arrival, not to the 1989–1991 period.

Then, preliminary "projections" were done for each historical census to the next to assess the accuracy of the immigration figures for estimating the foreign-born population at the second census date; e.g., the foreign-born population from the 1960 Census was "projected" to 1970 using the initial estimates of immigration and then compared with the foreign-born population in the 1970 Census. To the extent that the projected population diverged from the population at the second census date, adjustments were made in the net immigration component. The projections were rerun until the immigration components agreed with the series of

population data from the 1960, 1970, 1980, 1990 and 2000 Censuses and the 2005 estimates derived from the Current Population Survey. Similar methods were used by Passel and Edmonston (1994) to generate a consistent set of immigration measures for 1900 through 1960.

This approach yields estimates of the components of immigration that are consistent with the foreign-born (and Puerto Rican-born) population by age-sex-race/ethnicity for the 1960–2005 period. Significant revisions to the existing "official" estimates of immigration[12] were required. For 1960–1970, the revised measure of immigration is about 15%, or 500,000 less than the previously used estimates.[13] For 1970–1980, the methods imply additional immigration of about 1 million, or 15% more than the previous estimates; this amount was added to net unauthorized migration. Larger numeric increases in the assumed levels of immigration are required for each of the next two decades—2.0 million in the 1980s and 3.3 million in the 1990s. Although immigration has grown with each decade, these revisions amount to significant changes in estimates of unauthorized migration—about one-quarter for the 1980s and one-third for the 1990s. While these changes are large, these levels of immigration *must* have occurred if the census and survey measures of the foreign-born population are to be consistent with immigration flows.

Emigration

Emigration of legal immigrants has proved to be another elusive component of population change. The measures used in the historical analysis incorporate revised measures based on variations of "residual" calculations using successive censuses to incorporate the detailed census figures on the foreign-born population. (See Passel, 2004, for a detailed description of the estimation methodology.) For each five-year period from 1960 through 2005, a set of emigration rates was developed relating the revised measures of emigration to estimates of the foreign-born population.

The emigration measures developed in this manner show steady increases in the number of foreign-born emigrants. However, much of the increased level of emigration seems to be related to the sizable increase in the population "at risk" of emigrating, i.e., the foreign-born population over the 1960–2005 period. Although the number of emigrants has increased, rates of emigration have decreased. In the 1960s about 1.6 million former immigrants left the country, representing rates of about 7% for each five-year period. For the 1995–2005 decade, emigration was

[12] To the extent that there are "official" estimates of total immigration, they appear as components of change in Census Bureau population estimates and demographic estimates used to measure census undercount (e.g., Robinson, 2001).

[13] In practice, this change was implemented by increasing the amount of emigration or out-migration since the estimated levels of legal and unauthorized migration are well supported by existing data.

more than 2.9 million but the rate of emigration had dropped to roughly 4.5% for each five-year period. (See Ahmed and Robinson, 1994, Mulder et al., 2002 and Passel, 2004, for previous research on this topic.)

Because of the relationship between foreign-born population size and emigration, the projection methodology used here employs a set of emigration rates applied to the foreign-born population rather than a fixed amount of migration out of the country by former immigrants. Since the historical data show steadily decreasing rates of emigration (even with increasing amounts of emigration out of the country), emigration rates within each racial ethnic group are assumed to decline in the projection, but at a decreasing rate, reaching slightly more than 2.5% overall for 2045–2050. With these rates, emigration amounts in the main projection increase from about 3.1 million in the 2000s to just under 4 million in the 2040s.

Remaining Immigration Components

Net Movement from Puerto Rico

Measuring movement between Puerto Rico and the U.S. is necessary in accounting for changes in the U.S. population. As included in Census Bureau estimates and projections, this movement is generally positive (i.e., into the United States) for children and for adults up to about age 35. For older ages, the component is generally negative, reflecting the propensity of former migrants to return to Puerto Rico after a period of time in the United States. The official estimates were incorporated as initial estimates into projections for 1960–2005. The iterative procedure described above for the immigration component showed that the Census Bureau's age and sex structure was essentially correct but that the level of movement into the U.S. had to be nearly doubled—from about 600,000 for 1960–2005 to 1.1 million—to account for growth in the Puerto Rican-born population living in the United States. For the Pew projections, the initial value for 2005–2010 is set to the average level for 1995–2005 and is assumed to increase at the same rate as overall immigration—by 5% for each subsequent five-year period.[14]

"Other" Immigration

The "Other Immigration" components are mostly small relative to the legal immigration, net unauthorized migration, and emigration—amounting to 300,000 to 500,000 per decade. They are: Net Change in Temporary Foreign Residents (called "Net Change in Foreign Students" for 1960–1980 by the Census Bureau); Net Movement of Civilian Citizens; Net Recruits and Deaths to the Armed Forces

[14] Most of the movement encompassed by this component represents Hispanics moving to the U.S. from Puerto Rico. However, there are small amounts for specific races representing movement from other outlying areas.

Overseas; and Emigration of U.S. Natives. The latter three mainly affect the native population. The first listed component consists entirely of the foreign born, however. These components have almost no impact on the historical analyses, but data from Census 2000 and the annual March supplements to the Current Population Surveys of 1995–2006 suggest that the change in temporary foreign residents was seriously underestimated for 1960–1995 and is probably about triple the average of 50,000 per five-year period in the official estimates for 1960–1995.[15] For the projections, all of these components for 2005–2010 are set to their average values for 1995–2005 and then assumed to increase by 5% in each subsequent five-year projection period.

Alternative Immigration Scenarios

Immigration levels are almost certain to fluctuate in the future and diverge from the baseline assumption. To encompass a reasonable range of alternatives for future immigration and to assess their impact on future population, two alternative scenarios were developed—one with higher levels of immigration and one with lower levels. In the higher-immigration scenario, all immigration components (except emigration rates) are set to 150% of the values in the baseline or main scenario. In the lower-immigration scenario, all of these components are set to 50% of the baseline values. For both the higher- and lower-immigration scenarios, emigration *rates* remain at the values projected for the baseline scenario.

Contribution of Immigration to Population Change

The contribution of immigration to population growth goes beyond the numbers of immigrants added to the population because once the immigrants have arrived in the country, many give birth to children in the U.S. In the long run, the immigrants themselves will die, but their U.S.-born offspring will have children themselves, followed by grandchildren and subsequent generations. The use of a population projection methodology permits measurement of future contributions of immigrants to long-run population growth as well as an assessment of the role of past immigration in population change.

In measuring the contribution of future immigration to the projected population in 2050 (or any other future date), an alternative population projection is carried out in which the various immigration components (i.e., legal immigration, net unauthorized immigration and "other" immigration) are set to zero. With this assumption, not only are no future immigrants added to the population, but there are no other contributions from these immigrants to population change through future births, deaths or emigration[16] as all of these components are computed by

[15] This component mainly affects the Asian population.

[16] Emigration *rates* are not set to zero because persons in the starting population will still emigrate during the projection horizon.

applying rates to the population. The difference between the "zero immigration" projection and the baseline projection represents the contribution of future immigrants to future population change.

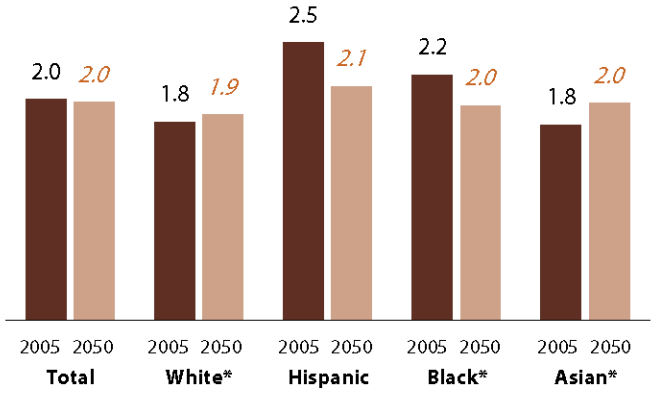
Following the work of Passel and Edmonston (1994), this same methodology can be used to assess the contribution of past immigration to past population change because the time series of historical populations has been developed with a population projection methodology. Thus, past immigration can be set to zero and a "projection" carried out to estimate what would have happened had there been no immigrants during the entire 1960–2005 period or during intervals within the period. This methodology works because the time series of population change has been reconstructed using a projection methodology based on *rates* of fertility, mortality and emigration rather than past *numbers* of births, deaths and emigrants.

Fertility

Projected Fertility, 2005–2050

The generational pattern of fertility for racial/ethnic groups is drawn from analysis of recent data from the June Fertility Supplements of the CPS for 1994–2004 and the historical analyses described below. Historical total fertility rates (TFR, defined as a measure of lifetime births per woman) of 1960–2004 for the first generation exceed the third-and-higher generations (for all racial/ethnic groups except blacks), with the second generation falling either roughly between the extremes or close to the level of the third-and-higher generations. This pattern is maintained throughout the projection horizon. (Figure A2) Over time, TFRs are assumed to move toward 2.0 (i.e., with increases for whites and Asians, decreases for the other groups) with a significantly faster rate of change for 2005–2025 than for 2025–2050. This assumption follows those used by the Census Bureau (2000, 2004) in recent projections. (Note that the ultimate TFRs are not forced to any specific value.)

Figure A2
Total Fertility Rate by Race and Ethnicity, Actual and Projected: 2005 and 2050
(lifetime children per woman)



Note: All races modified and not Hispanic (*); American Indian/ Alaska Native not shown. See "Methodology." Actual for 2005; projected for 2050.
Source: Pew Research Center, 2008

This series of complex assumptions involving some TFRs series trending upward and some downward with differences by race and generation ultimately results in little overall movement of the TFR, with total projected TFRs falling in a very

narrow range of 1.99 to 2.03 for the entire 2005–2050 period. Notwithstanding the more complex methodology, this result is very similar to the overall assumption made by the Social Security Trustees (2007) in their projections which do not incorporate any differences by race/ethnicity. The Social Security assumptions, based on global assumptions about fertility, were strongly endorsed by the 2007 Technical Panel on Assumptions and Methods (TPAM, 2008).

The overall TFR for Hispanics fell rapidly from 4.7 in the first half of the 1960s to 3.4 in the second. By 2005, the Hispanic TFR dropped further to 2.5 children per woman. This value is higher than for any of the race groups; white and Asian TFRs are about 1.8 and the black TFR is about 2.2. The higher rate for Hispanic women is, in large part, due to the relatively high fertility of Hispanic immigrants who have a TFR of about 2.8. Fertility rates are assumed to decrease overall by 2050, with Hispanic fertility for the 2040s reaching slightly more than 2.1. Part of the drop can be attributed to a higher share of native-born women in the childbearing ages by the 2040s.

Historical Fertility, 1960–2005

The first step in analyzing fertility for the projections was the development of a set of generational total fertility rates for each racial/ethnic group consistent with the historical data. The TFRs are constrained to meet a number of conditions: (1) the total number of births in each period[17] must agree with totals of registered births from the National Center for Health Statistics—by racial/ethnic group, when available; (2) survivors of the births that occurred in the 10 years before a census must equal the totals for the population under age 10 at the next census; and (3) the generational distribution of the survivors under age 10 must agree with the estimated population at the census, when available. An initial set of race/ethnic generational TFRs was developed from patterns in the June Fertility Supplements to the CPS for 1994–2004 and a similar set of TFRs estimated by Passel and Edmonston (1994) for 1960–1990.

In implementing the multigeneration projection methodology, a "G-matrix" is required to distribute the births of mothers in each generation to a generation for the children. Births to immigrant mothers go into the second generation, and all births to Puerto Rican-born women go into the Puerto Rican parentage population. For the second and third-and-higher generations, some births are distributed back to the second generation as a result of cross-generational childbearing of mixed couples made up of first and second generations or first and third-and-higher generations. This matrix is estimated for each race group using data on exogamous couples from the Current Population Surveys for 1995–2000. Analysis of the initial G-matrices showed a strong relationship between the

[17] Ten-year periods between censuses covering 1960–2000 and the five-year period from April 2000 through March 2005.

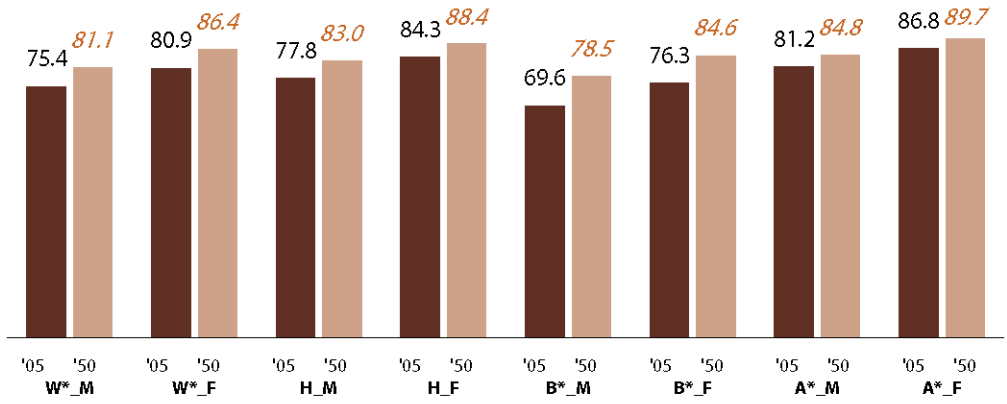
percentage of cross-generational births and the relative sizes of the generations. Accordingly, this relationship is built into the historical analyses and prospective projections to allow for dynamic changes in cross-generational marriage patterns.

Mortality

Age-sex-specific mortality rates for race groups in the prospective projection are drawn directly from Census Bureau (2000) projections; the same mortality rates are applied to all generations within a racial/ethnic group. Life expectancy at birth overall increases from 74.9 years for males in 2005 to 81.2 in 2050; for females, the change is from 80.7 to 86.7. These improvements are greater than those assumed in the Social Security Trustees' (2007) projections; its assumed values for life expectancy at birth in 2050 are 83.5 years for women and 79.4 years for men. The Census Bureau's assumptions, adopted wholesale for the Pew projections, are much closer to the recommendations of the technical panel (TPAM, 2008) than are the Social Security assumptions.

Life expectancy at birth for Hispanic men is projected to increase from 77.8 years in 2005 to 83.0 years in 2050. For Hispanic women, the projected change is from 84.3 years to 88.4. At each date for both sexes, Hispanic life expectancy at birth is exceeded only by that of Asians. (Figure A3)

Figure A3
Life Expectancy at Birth by Race and Ethnicity, Actual and Projected: 2005 and 2050
(years)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Actual for 2005; projected for 2050. W=White; B=Black; H=Hispanic; A=Asian/Pacific Islander; M=male; F=female.

Source: Pew Research Center, 2008

Definitions and Initial Census-Based Populations: 1960–2005

Racial/Ethnic Groups

The projections and historical analysis use five mutually exclusive and exhaustive race groups: Hispanic; white, not Hispanic; black, not Hispanic; American Indian/Alaska Native, not Hispanic; and Asian/Pacific Islander, not Hispanic. The basic population distributions are constructed from decennial census data for 1960–2000 and official population estimates for 2005. The age-sex-racial/ethnic-generation data were developed initially from tabulations of microdata obtained from the Integrated Public Use Microdata Samples (IPUMS) project. For 2005, the initial age-sex-race/ethnic distributions are from the Census Bureau's population estimates with generational information from the March 2005 CPS. None of the data sources provided complete information along all of the dimensions. Accordingly, initial approximations to the detailed distributions were developed and adjusted through an iterative process to produce population distributions consistent with the available data on the components of change and vice versa.

Hispanic Origin

The Hispanic population can be identified with the Hispanic origin variable as collected (without modification) in census data for 1990 and 2000 and in CPS data from 1995 onward. For 1980, there was a small amount of misreporting of Hispanic origin; the initial population for the historical analysis is based on a corrected version of these data developed by using additional information including data on ancestry, place of birth, surname, language and ethnicity of other household members. The net effect of the modification is to reduce the size of Hispanic population in 1980 by about 3%, or 400,000 persons.

The Hispanic origin variable in 1970 suffered from both a major overstatement in some categories and a rather serious overall understatement. The responses in the census showed about 1.5 million persons choosing the "Central or South American" category, whereas tests in the 1969 and 1971 Current Population Surveys showed about 1 million fewer. Further analyses of these data showed that the overstatement was most severe in central and southern states of the country, suggesting a complete misinterpretation of the question on the part of a large number of respondents. At the same time, the total from the Hispanic origin question was at least 500,000 lower than other measures of the Hispanic population, notwithstanding the roughly 1 million overstatement just noted.

For 1970, the Hispanic population for historical analysis was constructed using information in the census on place of birth, mother's and father's place of birth, mother tongue, Spanish surname, current residence, residence five years ago, mother tongue of parent(s), grandparents' place of birth and the same information about other household members. The final estimate of the Hispanic population in

1970 was adjusted to ensure consistency with the historic data series through an iterative process involving forward projections to 1980 and backward "projections" to 1960.

The 1960 Census did not include a variable directly identifying persons of Hispanic origin. The methods used to identify Hispanics in the 1970 data were also applied to 1960. Some minor adjustments were required because less information was available in 1960 for U.S. natives.

Race

Methods for classifying individuals by race and collecting racial information in the census have changed several times during the period covered by this analysis. Production of a consistent set of information in which all non-Hispanic persons are assigned to one of the four major race groups required some adjustments and modifications to each census and to the CPS for 2001 and later. In the censuses of 1970–2000, some persons did not choose one of the major races but opted for something different, resulting in assignment of "some other race." For 1980–2000, the Census Bureau developed procedures to reclassify these individuals and released aggregated data by age-sex-race/Hispanic origin on so called "modified" race groups in which all persons were assigned to the major races. A variant on these procedures was applied here to the IPUMS data. Specifically, individuals who were initially classified as "other" were reassigned into one of the four major groups on the basis of (in order): race of parent(s), place of birth, ancestry (first and second), language spoken in the home, race of other household members and, if needed, then a default assignment as white.

In the 1960 and 1970 Censuses, there was no overarching category corresponding to the Asian/Pacific Islander race group used in the 1980 Census and later data. These earlier censuses included some specific "race" groups, such as Chinese and Japanese, but no global category. Further, according to the definitions of the time, persons from South Asia (India, Pakistan, Bangladesh) were classified as "white." To bring these censuses in line with the subsequent ones, an "Asian" category was created from the reported data on race and the variables listed above used to assign Hispanic origin. After these assignments were done, a small number of individuals remained in the residual "other race" category. These were assigned to major race groups using a hierarchical procedure similar to that developed for 1980 and later.

Beginning with the 2000 Census and the 2001 CPS, individuals were permitted to choose more than one racial group. While only a small percentage of the non-Hispanic population chose two or more races (1.9% of non-Hispanics in Census 2000 and 1.8% in the 2006 American Community Survey or ACS), more than 4 million individuals were counted as multiracial. Individuals choosing more than one race were reassigned to one of the five race/Hispanic groups using a

hierarchical system: Hispanics; black; Asian or Native Hawaiian/Other Pacific Islander; white; and then American Indian/Alaska Native.

Generation

The historical analyses and projections use five generation groups:

Foreign-born Population or First Generation—individuals born outside the United States who were not U.S. citizens at birth.

Puerto Rican-born Population—U.S. citizens (at birth) born in Puerto Rico, U.S. territories, or other outlying areas.

Foreign- and Mixed-Parentage Population or Second Generation—U.S.-born citizens with one or both parents born outside the United States (including persons born as U.S. citizens in foreign countries with one or two foreign-born parents).

Natives of Puerto Rican Parentage or the Second Puerto Rican Generation—U.S.-born citizens with one or both parents born in Puerto Rico (including persons born as U.S. citizens in foreign countries with one or two Puerto Rican-born parents).

U.S. Natives with Native Parentage or Third-and-higher Generations—U.S.-born citizens with both parents born in the United States (including persons born as U.S. citizens in foreign countries with two U.S.-born parents).

The full array of generations can be obtained directly only from the 1960 and 1970 Censuses because these two include the questions on nativity, citizenship and parents' places of birth that are required to produce tabulations of these five generations. In censuses since 1970, the parental birthplace questions were dropped, so the 1980, 1990 and 2000 Censuses can provide direct data only for the foreign-born, Puerto Rican-born and native populations; the native population encompasses the second generation, natives of Puerto Rican-parentage and the third-and-higher generations. For 1980 and 1990, "projections" from 1960 and 1970 were used to produce an initial approximation to the full five generations. The native population at each census date was distributed to the more detailed generations using these projections.

For 2000, CPS data can provide a five-generation distribution by age, sex and race. However, these data are subject to substantial sampling variability because of the relatively small CPS sample size. So, the final population data for five generations in 2000 incorporate information from both the CPS and "projections" from 1970 to distribute the native population from Census 2000 to more detailed generations. For 2005, the March CPS again provides information for a fully

detailed tabulation of five generations by racial/ethnic group. Although the CPS sample size was expanded between 2000 and 2005, it is still small. The final age-sex-race/ethnic-generation distribution for the population in 2005 represents a combination of the projected population from 2000, the March CPS generational detail, the official Census Bureau population estimates by age-sex-race/ethnicity and information on native/Puerto Rican/foreign populations from the 2005 ACS. This estimate for 2005 is the starting population for the projections.