# A Changing Nation: Population Projections Under Alternative Immigration Scenarios 

## Population Estimates and Projections

## Current Population Reports

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## INTRODUCTION

Higher international immigration over the next four decades would produce a faster growing, more diverse, and younger population for the United States. In contrast, an absence of migration into the country over this same period would result in a U.S. population that is smaller than the present. Different levels of immigration between now and 2060 could change the projection of the population in that year by as much as 127 million people, with estimates ranging anywhere from 320 to 447 million U.S. residents.

Beyond influencing the number of people in the population, immigration patterns over the next four decades will also shape the racial and ethnic composition of the population. In 2016, Asians were the fastest-growing racial group in the nation, and immigration was the primary driver behind the growth in this group. If immigration increases, the Asian alone population could grow by as much as 162 percent between 2016 and 2060 and go from 5.7 percent of the total U.S. population to 10.8 percent. The future size of this population is particularly sensitive to immigration. Under a scenario with no immigration, the Asian alone population in the United States would decline over time, representing just 4.5 percent of the total population in 2060.

Regardless of immigration, the population is expected to continue to age between now and 2060. Low fertility rates coupled with large cohorts of baby boomers reaching their "golden years" are expected to shift the age distribution of the population so that the share of
the population aged 65 and older exceeds the share of the population under the age of 18. The timing of this shift, however, will vary depending on the amount of immigration that occurs. High immigration levels will delay this milestone more than a decade relative to scenarios with lower levels of migration.

The 2017 National Projections main series, released in September 2018, present one scenario for the future population. ${ }^{1}$ These projections will only hold true if the assumptions about births, deaths, and migration match the actual trends in these components of population change. International migration is difficult to project because political and economic conditions are nearly impossible to anticipate, yet factor heavily into migration movements into and out of a country. While we do not attempt to predict future policy or economic cycles, we do recognize the uncertainty surrounding migration and the impact that different migration outcomes could have on the future population. To account for this, we have produced three alternate sets of projections that use the same methodology and assumptions for fertility, mortality, and emigration, but differ in the levels of immigration that they assume: high, low, and zero immigration. This report compares the results from the three alternative scenarios of projections and the main series, focusing on differences in the pace at which the U.S. population grows, diversifies, and ages.

[^0]U.S. Department of Commerce u.s. CENSUS bureau
census.gov

## 2017 NATIONAL POPULATION PROJECTIONS ALTERNATIVE SCENARIOS

The results in this report are based on the 2017 National Population Projections, which are the third set of projections based on the 2010 Census, and cover the period from 2017 to 2060. The 2017 National Population Projections include projections of the resident population by age, sex, race, Hispanic origin, and nativity (whether people were born in the United States or another country). They are based on official population estimates through 2016. This series uses the cohort-component method, which projects the three components of population change-fertility, mortality, and international migration-separately for each birth cohort based on historical trends. The base population is advanced each year using projected survival rates and net international migration. New birth cohorts are added to the population by applying the annual projected fertility rates to the female population.

The main series of projections, released in September 2018, assumes that future international migration will mirror recent historical trends; this is the "middle" migration assumption. In addition to the main series, we also produced three alternative scenarios that are "what if" exercises, examining how the U.S. population would change if future patterns of immigration differ radically from historical trends. For each of the three scenarios described below, the fertility, mortality, and
emigration assumptions are the same as those used in the main series; the only component that differs is immigration.

Zero immigration scenario. Assumes that immigration into the United States falls to zero (the theoretical minimum). Under this scenario, there is no immigration, but we still allow for emigration out of the United States. This offers the most dramatic picture of demographic change.

High immigration scenario. Assumes immigration increases by 50.0 percent compared with levels from 2011 to 2015 for all projected years. This scenario shows what the outcome would be if we were underestimating immigration by half in the main series.

Low immigration scenario. Assumes that immigration rates are roughly cut in half from their 2011 to 2015 levels. This scenario is not strictly 50.0 percent less, but is log symmetrical to the values for the high migration scenario. As a result, the projected migration rates vary between 40 and 50 percent less than those projected for the main series in any of the given years, starting with 2017.

For more information on the data and methodology, see the report on the 2017 National Population Projections: Methodology and Assumptions <www.census.gov/programs-surveys/popproj /technical-documentation/methodology.html>.

## HIGHLIGHTS FROM THE 2017 NATIONAL POPULATION PROJECTIONS

## Population Growth

- Over the next four decades, the population is expected to increase from its 2016 level in
two out of the three alternative scenarios. In the high scenario, the population will increase by 124 million, reaching 447 million in 2060. In the low scenario, the 2060 population is projected to be 376 million, representing an increase of 53 million people.
- Under a zero immigration scenario, the population is projected to increase until 2035, at which point the population would peak at 333 million. After that, the population is projected to decline through 2060, when it could reach a low of 320 million.
- In the main series of projections, the population is projected to reach the 400 million milestone in 2058. This threshold is crossed 15 years earlier in the high scenario and is not attained in either the low or zero immigration scenario.
- The average annual growth in the population is 2.8 million people in the high scenario, compared to 1.8 million in the main series, 1.2 million in the low, and -78 thousand in the zero immigration scenario.


## Population Diversity

- The share of the population that is White alone is projected to decline in all scenarios of population projections between 2016 and 2060. For the high, middle, and low scenarios, the number of residents classified as White alone actually increases from the 2016 values, but these increases are outpaced by increases in the other racial and ethnic groups.
- The non-Hispanic White alone population is projected to decline in all scenarios between 2016 and 2060. In 2016, there were an estimated 198 million individuals in this group. In the high scenario, this number is projected to decrease by 11 million in 2060 to 187 million. The

2060 projection for this group in the low scenario is 174 million, a decrease of 24 million; and in the zero scenario, it is 163 million. The non-Hispanic White alone population is projected to decrease the most between 2016 and 2060 in the zero immigration scenario ( 35 million).

- The Two or More Races group is the fastest-growing racial group between 2016 and 2060 in all projection scenarios. In 2016, just under 8.5 million residents were classified as more than one race. This number is projected to more than double for all scenarios. The zero immigration scenario, with a projected 160 percent increase, has the smallest Two or More Races population in 2060 (22 million). In contrast, the high immigration scenario has the largest increase (216 percent or 18 million) and the largest Two or More Races population in 2060 (27 million).
- Projected changes in the foreign-born population between 2016 and 2060 vary across the scenarios and are consistent with the immigration assumptions used. In the high immigration scenario, the percentage of the population that is foreign-born is projected to increase from 13.6 percent
to 21.6 percent. In the low, it remains relatively stable at just under 14 percent through 2060; and in the zero immigration scenario, it decreases to a historic low of 4.6 percent.


## Population Aging

- The population aged 65 and older is projected to surpass the population under the age of 18 in size in all immigration scenarios. The date at which this occurs is earliest in the zero immigration scenario (2029), followed by the low immigration scenario (2031), and then the high (2045).
- By 2030, more than 20 percent of the U.S. population will be aged 65 and older. In the high scenario, this milestone is reached in 2028. For the low scenario, it occurs in 2026; and in 2025 for the zero scenario.
- The number of children (ages $0-17$ ) is projected to decline in both the low and zero immigration scenarios. In 2016, there were an estimated 74 million children in the population. By 2060, this is projected to decline to 59 million in the zero scenario and to 73 million in the low scenario. Conversely, the child population is projected to increase to just under 91 million by 2060 in the high scenario.


## POPULATION GROWTH

The projected change in the population depends on what assumptions are made about the fertility, mortality, and migration behaviors of that population in the future. Changing the assumptions about any one of these components will alter the projected size and composition of the population over time. For the alternative population projections, we have developed three scenarios where we increase, decrease, and eliminate immigration. These complementary projections provide information on how different immigration trends could shape the U.S. population through 2060.

Comparing population growth over time from all of the scenarios reveals patterns that are consistent with the different immigration assumptions used (Table 1 and Figure 1). Higher immigration produces more population growth relative to the main series of projections, and lower immigration produces diminished growth. In the main series of population projections, the U.S. population is projected to increase by 25 percent between 2016 and 2060, from 323 million to 404 million. In a higher immigration scenario, the 2060 population is projected to grow to 447 million, an increase of 38 percent over the 2016 value.

Table 1.
Projected U.S. Population by Immigration Scenario: 2016 to 2060
(Numbers in thousands)

| Year | Main series | Alternative immigration scenario |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Low | High | Zero |
| Numeric change: 2016 to 2060 . | 81,356 | 53,099 | 123,738 | -3,422 |
| Percent change: 2016 to 2060 . . | 25.18 | 16.43 | 38.29 | -1.06 |
| 2016 | 323,128 | 323,128 | 323,128 | 323,128 |
| 2017 | 325,511 | 325,024 | 326,243 | 324,048 |
| 2018 | 327,892 | 326,909 | 329,366 | 324,943 |
| 2019 | 330,269 | 328,782 | 332,499 | 325,809 |
| 2020 | 332,639 | 330,640 | 335,638 | 326,641 |
| 2021 | 334,998 | 332,477 | 338,781 | 327,434 |
| 2022 | 337,342 | 334,289 | 341,921 | 328,183 |
| 2023 | 339,665 | 336,071 | 345,056 | 328,884 |
| 2024 | 341,963 | 337,820 | 348,179 | 329,533 |
| 2025 | 344,234 | 339,532 | 351,287 | 330,128 |
| 2026 | 346,481 | 341,213 | 354,384 | 330,675 |
| 2027 | 348,695 | 342,849 | 357,464 | 331,157 |
| 2028 | 350,872 | 344,439 | 360,521 | 331,573 |
| 2029 | 353,008 | 345,979 | 363,552 | 331,920 |
| 2030 | 355,101 | 347,467 | 366,552 | 332,198 |
| 2031 | 357,147 | 348,901 | 369,517 | 332,408 |
| 2032 | 359,147 | 350,281 | 372,445 | 332,549 |
| 2033 | 361,099 | 351,607 | 375,335 | 332,624 |
| 2034 | 363,003 | 352,881 | 378,186 | 332,636 |
| 2035 | 364,862 | 354,104 | 380,999 | 332,587 |
| 2036 | 366,676 | 355,277 | 383,775 | 332,478 |
| 2037 | 368,448 | 356,404 | 386,514 | 332,314 |
| 2038 | 370,179 | 357,485 | 389,219 | 332,096 |
| 2039 | 371,871 | 358,524 | 391,892 | 331,827 |
| 2040 | 373,528 | 359,522 | 394,536 | 331,510 |
| 2041 | 375,152 | 360,484 | 397,154 | 331,146 |
| 2042 | 376,746 | 361,411 | 399,748 | 330,739 |
| 2043 | 378,314 | 362,308 | 402,324 | 330,293 |
| 2044 | 379,861 | 363,178 | 404,885 | 329,810 |
| 2045 | 381,390 | 364,026 | 407,437 | 329,295 |
| 2046 | 382,907 | 364,856 | 409,984 | 328,752 |
| 2047 | 384,415 | 365,672 | 412,529 | 328,183 |
| 2048 | 385,918 | 366,477 | 415,078 | 327,592 |
| 2049 | 387,419 | 367,274 | 417,635 | 326,983 |
| 2050 | 388,922 | 368,068 | 420,202 | 326,358 |
| 2051 | 390,431 | 368,862 | 422,783 | 325,720 |
| 2052 | 391,947 | 369,657 | 425,381 | 325,072 |
| 2053 | 393,473 | 370,455 | 427,998 | 324,416 |
| 2054 | 395,009 | 371,258 | 430,634 | 323,753 |
| 2055 | 396,557 | 372,068 | 433,290 | 323,084 |
| 2056 | 398,118 | 372,884 | 435,966 | 322,412 |
| 2057 | 399,691 | 373,708 | 438,663 | 321,737 |
| 2058 | 401,277 | 374,540 | 441,379 | 321,061 |
| 2059 | 402,874 | 375,380 | 444,114 | 320,384 |
| 2060 | 404,483 | 376,226 | 446,866 | 319,706 |

[^1]Figure 1.
U.S. Population 1900-2016, Population Projections 2017-2060 by Immigration Scenario (In millions)

The U.S. population would shrink under a zero immigration scenario.


Lower levels of immigration would reduce the growth in the population, so that by 2060 the population is projected to only increase by 16 percent to 376 million. Under the scenario with no immigration, the population is projected to shrink from its 2016 value by 1.1 percent down to 320 million people in 2060 (Figure 2).

Figure 2.
Projected Population Change Between 2016 and 2060 by Immigration Scenario

Population change between 2016 and 2060 ranges from -3.4 to 123.7 million, depending on immigration.


[^2]The zero immigration scenario offers the most dramatic picture of demographic change. This assumption is hypothetical, and shows what would happen to the existing U.S. population if it did not grow through immigration. Births are the only way for the population to grow in the zero immigration model, but the population can decrease through deaths and emigration (Table 2). Between 2016 and 2038 in this scenario, the number of births and deaths are projected to converge, with births declining and deaths increasing. In 2039, the number of deaths is projected to be larger than the number of births; and natural increase (the difference between births and deaths) becomes negative for the first time (Figure 3). Negative natural increase produces a shrinking population in the zero immigration scenario, with annual declines starting in 2035 and continuing at an accelerated pace through 2060.

Though natural increase does not become negative in any of the other scenarios, it is projected to decline in all of them. Large baby boom cohorts will be entering older ages where mortality rates are higher. This is expected to produce a higher number of deaths, especially between 2020 and 2050. At the same time, fertility rates are expected to remain low, with only slight increases in births projected over the time series. A faster increase in deaths relative to births decreases the pace of

Table 2.
Projected Change in the U.S. Population From Births, Deaths, and Migration ${ }^{1}$ by Immigration Scenario: 2019 to 2060
(Numbers in thousands)

| Scenario | $\begin{array}{r} 2019 \text { to } \\ 2020 \\ \hline \end{array}$ | $\begin{array}{r} 2029 \mathrm{to} \\ 2030 \end{array}$ | $\begin{array}{r} 2039 \text { to } \\ 2040 \end{array}$ | $\begin{array}{r} 2049 \text { to } \\ 2050 \end{array}$ | $\begin{array}{r} \hline 2059 \text { to } \\ 2060 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Total Population Change |  |  |  |  |  |
| Main series | 2,370 | 2,093 | 1,657 | 1,503 | 1,609 |
| Low scenario | 1,858 | 1,488 | 999 | 794 | 847 |
| High scenario | 3,139 | 3,000 | 2,644 | 2,567 | 2,752 |
| Zero scenario | 832 | 278 | -318 | -625 | -678 |
| International Migration |  |  |  |  |  |
| Main series | 1,010 | 1,064 | 1,098 | 1,110 | 1,118 |
| Low scenario | 542 | 616 | 653 | 671 | 687 |
| High scenario | 1,711 | 1,736 | 1,766 | 1,767 | 1,763 |
| Zero scenario | -393 | -279 | -237 | -206 | -174 |
| Natural Change ${ }^{2}$ |  |  |  |  |  |
| Main series | 1,360 | 1,028 | 558 | 394 | 491 |
| Low scenario | 1,315 | 871 | 345 | 123 | 160 |
| High scenario. | 1,428 | 1,264 | 878 | 800 | 988 |
| Zero scenario | 1,225 | 557 | -81 | -419 | -504 |
| Births |  |  |  |  |  |
| Main series | 4,112 | 4,162 | 4,196 | 4,304 | 4,397 |
| Low scenario | 4,063 | 3,990 | 3,951 | 3,978 | 3,977 |
| High scenario. | 4,186 | 4,421 | 4,564 | 4,794 | 5,027 |
| Zero scenario. | 3,965 | 3,645 | 3,461 | 3,324 | 3,135 |
| Deaths |  |  |  |  |  |
| Main series | 2,752 | 3,134 | 3,638 | 3,910 | 3,906 |
| Low scenario | 2,748 | 3,118 | 3,606 | 3,855 | 3,817 |
| High scenario | 2,757 | 3,157 | 3,686 | 3,994 | 4,039 |
| Zero scenario. | 2,741 | 3,087 | 3,542 | 3,743 | 3,639 |

[^3]population growth through natural increase. Migration offsets this decline in natural increase in all but the zero immigration scenario. In the main series, migration becomes a larger source of population growth than natural increase starting in 2030. In the

Iow immigration scenario, migration outpaces natural increase as the leading contributor to population growth starting in 2035; and in the high immigration scenario, migration levels are always assumed to be higher than natural increase.

Figure 3.
Natural Increase ${ }^{1}$ and Net International Migration by Immigration Scenario: 2017 to 2060

Net international migration surpasses natural increase as the leading contributor to population growth in all migration scenarios.

- Natural increase _ Net international migration


| Thousands | High | igrati | cenari |  | Thousands | Zero immigration scenario |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2,000 |  |  |  |  | 2,000 |  |  |  |  |
| 1,500 |  |  |  |  | 1,500 |  |  |  |  |
| 1,000 |  |  |  |  | 1,000 |  |  |  |  |
| 500 |  |  |  |  | 500 |  |  |  |  |
| 0 |  |  |  |  | 0 |  |  |  |  |
| -500 |  |  |  |  | -500 |  |  |  |  |
| $-1,000_{2017}$ | 2027 | 2037 | $\frac{1}{2047}$ | $\frac{1}{2057}$ | $-1,000 \frac{1}{2017}$ | $\frac{1}{2027}$ | $\frac{1}{2037}$ | $\frac{1}{2047}$ | $\frac{1}{2057}$ |

${ }^{1}$ Natural increase is births minus deaths during a specified time period.
Source: U.S. Census Bureau, 2017 National Population Projections.

## HOW DO THE SAME FERTILITY AND MORTALITY ASSUMPTIONS PRODUCE DIFFERENT BIRTHS AND DEATHS?

The same fertility and mortality assumptions are used in the main series and three alternate scenarios of population projections, yet the projected values for births and deaths are different. How is this possible?

This happens because the fertility and mortality inputs used in the projections are rates. We project age-specific fertility rates and age-specific mortality rates and apply these to the projected population to produce births and deaths. The differences seen in the births and deaths are not because the fertility and mortality assumptions have changed, but instead stem from changes in the population to which they are applied.

Using fertility as an example, let's assume that there are 104.3 births for every 1,000 women in the population aged 25-29. If we project that there
are 10,000 women in the population and apply our assumed rate, we would get a projection of 1,043 births. Doubling the number of women in that age group, say through increased migration, while maintaining the same rate would produce double the number of births: 2,086 . This is a simple illustration to show how the same fertility assumption can yield a very different number of projected births. Each scenario includes the same rates as inputs for fertility and mortality, but the births and deaths are different because the migration assumptions change the population. This is what is happening in the alternate projection scenarios.

Fertility and mortality rates used in the projections are available to download at <www.census.gov /data/datasets/2017/demo/popproj/2017 -popproj.html>.

See <www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_01.pdf>.

Annual growth in the population across the scenarios follows the expected pattern based on the immigration assumptions used (Table 3): the average annual growth in the population is 2.8 million people ( 0.74 percent) in the high scenario, compared to 1.8 million ( 0.51 percent) in the main series, 1.2 million ( 0.35 percent) in the low, and -78 thousand ( -0.02 percent) in the zero scenario. Though the amount of people added to the population each year varies, the scenarios (excluding zero immigration) follow similar growth trajectories. For all scenarios, the annual increases in the population are largest in the early years of the time series. For example, in the high scenario, the
population is projected to increase by 3.1 million people ( 0.94 percent) between 2019 and 2020. One decade later, the projected growth drops to 3.0 million ( 0.83 percent). Between 2039 and 2040, the population is projected to increase by 2.6 million ( 0.67 percent). Growth remains relatively stable after this through 2060. The same pattern of decreasing growth followed by stabilization from 2040 to 2060 occurs in the main series and low scenario. This is because the pattern largely reflects the population changes stemming from declining natural increase. While the alternate migration assumptions change the level of immigration, they do so evenly over the time series and, therefore,
do not change the general pattern of population growth in the projections.

## POPULATION DIVERSITY

Changing our assumptions about immigration over the next four decades impacts the composition of the projected population with respect to nativity in expected ways (Table 4). In the main series of projections, we estimated a 3.6 percentage-point increase in the share of the U.S. population that is foreign-born between 2016 and 2060. In 2016, 14 percent of the population was foreign-born, compared to a projected 17 percent in 2060. The number of foreign-born in the nation in the main series was projected

Table 3.

## Projected Rate of Population Change by Immigration Scenario: 2016 to 2060

(Numbers in thousands)

| Year | Main series |  | Alternative immigration scenario |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Low |  | High |  | Zero |  |
|  | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Average change per year: 2016 to 2060 | 1,849 | 0.51 | 1,207 | 0.35 | 2,812 | 0.74 | -78 | -0.02 |
| 2020. | 2,370 | 0.72 | 1,858 | 0.56 | 3,139 | 0.94 | 832 | 0.26 |
| 2025 | 2,271 | 0.66 | 1,712 | 0.51 | 3,109 | 0.89 | 596 | 0.18 |
| 2030 | 2,093 | 0.59 | 1,488 | 0.43 | 3,000 | 0.83 | 278 | 0.08 |
| 2035 | 1,859 | 0.51 | 1,223 | 0.35 | 2,813 | 0.74 | -50 | -0.01 |
| 2040 | 1,657 | 0.45 | 999 | 0.28 | 2,644 | 0.67 | -318 | -0.10 |
| 2045 | 1,529 | 0.40 | 848 | 0.23 | 2,552 | 0.63 | -515 | -0.16 |
| 2050 | 1,503 | 0.39 | 794 | 0.22 | 2,567 | 0.61 | -625 | -0.19 |
| 2055 | 1,548 | 0.39 | 809 | 0.22 | 2,656 | 0.62 | -668 | -0.21 |
| 2060............... | 1,609 | 0.40 | 847 | 0.23 | 2,752 | 0.62 | -678 | -0.21 |

[^4]Table 4.
Projected Size of the Foreign-Born Population by Immigration Scenario: 2016 to 2060
(Numbers in thousands)

| Year | Main series |  |  | Low scenario |  |  | High scenario |  |  | Zero scenario |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Population |  | Percent foreignborn | Population |  | Percent foreignborn | Population |  | Percent foreignborn | Population |  | Percent foreignborn |
|  | Total | Foreignborn |  | Total | Foreignborn |  | Total | Foreignborn |  | Total | Foreignborn |  |
| 2016 | 323,128 | 43,845 | 13.57 | 323,128 | 43,845 | 13.57 | 323,128 | 43,845 | 13.57 | 323,128 | 43,845 | 13.57 |
| 2020 | 332,639 | 46,703 | 14.04 | 330,640 | 44,815 | 13.55 | 335,638 | 49,536 | 14.76 | 326,641 | 41,037 | 12.56 |
| 2025 | 344,234 | 50,270 | 14.60 | 339,532 | 46,129 | 13.59 | 351,287 | 56,481 | 16.08 | 330,128 | 37,846 | 11.46 |
| 2030 | 355,101 | 53,783 | 15.15 | 347,467 | 47,464 | 13.66 | 366,552 | 63,261 | 17.26 | 332,198 | 34,825 | 10.48 |
| 2035 | 364,862 | 57,104 | 15.65 | 354,104 | 48,642 | 13.74 | 380,999 | 69,797 | 18.32 | 332,587 | 31,718 | 9.54 |
| 2040 | 373,528 | 60,156 | 16.10 | 359,522 | 49,600 | 13.80 | 394,536 | 75,991 | 19.26 | 331,510 | 28,486 | 8.59 |
| 2045 | 381,390 | 62,894 | 16.49 | 364,026 | 50,303 | 13.82 | 407,437 | 81,780 | 20.07 | 329,295 | 25,121 | 7.63 |
| 2050 | 388,922 | 65,310 | 16.79 | 368,068 | 50,760 | 13.79 | 420,202 | 87,134 | 20.74 | 326,358 | 21,660 | 6.64 |
| 2055 | 396,557 | 67,434 | 17.00 | 372,068 | 51,016 | 13.71 | 433,290 | 92,061 | 21.25 | 323,084 | 18,179 | 5.63 |
| 2060 | 404,483 | 69,333 | 17.14 | 376,226 | 51,147 | 13.59 | 446,866 | 96,611 | 21.62 | 319,706 | 14,775 | 4.62 |
| $\begin{array}{r} \text { Change: } \\ 2016 \text { to } \\ 2060 \ldots \\ \hline \end{array}$ | 81,356 | 25,488 | 3.57 | 53,099 | 7,303 | 0.03 | 123,738 | 52,766 | 8.05 | -3,422 | -29,070 | -8.95 |

Source: U.S. Census Bureau, 2017 National Population Projections.
to increase by 25 million, or 58 percent, from 44 million in 2016 to 69 million in 2060 . The high immigration scenario produces a larger projected foreign-born population in 2060 than the main series. Under our assumption of high immigration, 97 million individuals, (22 percent of the population) are projected to be
foreign-born in 2060. This is a 120 percent increase in the foreignborn population between 2016 and 2060. Under the low immigration scenario, the projected increase of 7 million, or 17 percent, in the foreign-born population is much lower, and the share of the population that is foreign-born remains relatively stable at around

14 percent for all years between 2016 and 2060. The zero scenario, which assumes that no new international migrants enter the nation between 2016 and 2060, projects a predictable decline in the foreign-born population to 15 million or 4.6 percent of the total U.S. population in 2060.

Figure 4.

## Percentage of the U.S. Population That Is Foreign-Born: 1850 to 2016, Projected 2017 to 2060

A high immigration scenario would produce a historic-high share of foreign-born in the United States in 2060.


Source: U.S. Census Bureau, 2017 National Population Projections; 2016 American Community Survey; and 1850-2000 Historical Statistics on the Foreign-Born Population

Figure 4 illustrates the impact that different immigration assumptions could have on the projected foreign-born population. Consistent with our assumptions about immigration, higher immigration produces a larger share of foreign-born in the population. In both the main series and the high scenario, the share of the population in 2060 that is foreign-born is projected to exceed the historic high of 14.8 percent. Conversely, the zero immigration scenario projects the share of the population that is foreign-born will decline to 4.6 percent in 2060, lower than the historic low of 4.7 percent.

Though we assume different levels of immigration in our alternative scenarios, each of the scenarios
with immigration assumes the same country of origin distribution for the immigrants as was included in the main series. For example, we did not increase migration from Asian nations any more than we did for other nations. Changing just the level of migration has implications for the race and ethnic makeup of the country in the coming decades, but there are some patterns that persist regardless of immigration scenario.

In all immigration scenarios, we are projecting declines in the share of the total U.S. population that is White (Figure 5). The amount of decline varies across scenarios, with assumptions of higher migration producing populations that have lower
percentages of people reported as White. At the start of the projection period, 77 percent of the U.S. population was White alone. In the main series, the share of the population that is White alone is projected to decline 8.9 percentage points to 68 percent of the population in 2060. These percentage-point declines between 2016 and 2060 are larger in the high scenario and smaller in the low and zero scenarios. In 2060, the projected share of the population that is White alone ranges from 67 percent in the high scenario to 72 percent in the zero scenario.

The number of individuals identifying as White alone is expected to increase over time, with the declining share of the population

Figure 5.

## Percentage-Point Change in the Race Distribution of the U.S. Population Between 2016 and 2060 by Immigration Scenario

Changing immigration levels has a large impact on the share of the population that is Asian alone.

in this group resulting from faster growth in the other races. In contrast, the non-Hispanic White alone population is projected to decline in all scenarios between 2016 and 2060 (Table 5). In 2016, there were an estimated 198 million individuals in this group. In the high scenario, this number is projected to decrease by 11 million ( 5.5 percent) to 187 million in 2060. The 2060 projection for this group in the low scenario is 174 million, representing a decrease of 24 million (12 percent), and in the zero immigration scenario it is 163 million. The non-Hispanic White alone population is projected to decrease the most between 2016 and 2060 in the zero immigration scenario ( 35 million or 17 percent). In all but the zero immigration scenario, the share of the population that is non-Hispanic White
alone is expected to decline to less than 50 percent by 2060, falling from 61 percent in 2016 to 46 percent in the low scenario, 44 percent in the main, and 42 percent in the high. In the zero immigration scenario, 51 percent of the U.S. population is projected to be non-Hispanic White alone in 2060.

Another consistent pattern projected in all migration scenarios is the multiple race population growing faster than single race groups between 2016 and 2060. In 2016, just under 8.5 million residents were classified as more than one race. This number is projected to more than double for all scenarios. The zero immigration scenario, with a projected 160 percent increase, has the smallest Two or More Races population in 2060 (22 million). In contrast, the
high immigration scenario has the largest increase in this category (216 percent or 18 million) and the largest Two or More Races population in 2060 (27 million).

Of the single race groups, the Asian population is impacted the most by the varying assumptions of immigration. In the main series, the Asian alone population was projected to increase from 18 million in 2016 to 37 million in 2060. This is an increase of 101 percent. Whereas the Asian population is projected to double in the main series, the low scenario projects slower growth with an increase of 11 million or 60 percent. In the high scenario, the Asian alone population in 2060 is projected to be 2.6 times larger than it was in 2016, representing a growth of 30 million or 162 percent. The zero scenario provides an interesting

Table 5.

## Projected Race and Hispanic Origin by Immigration Scenario: 2016 to 2060

(Numbers in thousands)

| Characteristic | Estimate |  | Change: 2016 to 2060 |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 2016 | 2060 | Number | Percent |
| Main series, total population | 323,128 | 404,483 | 81,355 | 25.2 |
| One race | 314,648 | 379,228 | 64,580 | 20.5 |
| White | 248,503 | 275,014 | 26,511 | 10.7 |
| Non-Hispanic White | 197,970 | 179,162 | -18,808 | -9.5 |
| Black or African American | 43,001 | 60,690 | 17,689 | 41.1 |
| American Indian and Alaska Native | 4,055 | 5,583 | 1,528 | 37.7 |
| Asian. | 18,319 | 36,815 | 18,496 | 101.0 |
| Native Hawaiian and Other Pacific Islander | 771 | 1,125 | 354 | 45.9 |
| Two or More Races. | 8,480 | 25,255 | 16,775 | 197.8 |
| Hispanic or Latino. | 57,470 | 111,216 | 53,746 | 93.5 |
| Alternative Net Migration Scenarios |  |  |  |  |
| Low scenario, total population. . | 323,128 | 376,226 | 53,098 | 16.4 |
| One race | 314,648 | 352,003 | 37,355 | 11.9 |
| White | 248,503 | 259,559 | 11,056 | 4.4 |
| Non-Hispanic White | 197,970 | 173,886 | -24,084 | -12.2 |
| Black or African American | 43,001 | 56,696 | 13,695 | 31.8 |
| American Indian and Alaska Native | 4,055 | 5,377 | 1,322 | 32.6 |
| Asian. | 18,319 | 29,336 | 11,017 | 60.1 |
| Native Hawaiian and Other Pacific Islander | 771 | 1,035 | 264 | 34.2 |
| Two or More Races. | 8,480 | 24,223 | 15,743 | 185.6 |
| Hispanic or Latino. | 57,470 | 100,039 | 42,569 | 74.1 |
| High scenario, total population | 323,128 | 446,866 | 123,738 | 38.3 |
| One race | 314,648 | 420,106 | 105,458 | 33.5 |
| White | 248,503 | 298,198 | 49,695 | 20.0 |
| Non-Hispanic White. | 197,970 | 187,068 | -10,902 | -5.5 |
| Black or African American | 43,001 | 66,675 | 23,674 | 55.1 |
| American Indian and Alaska Native | 4,055 | 5,892 | 1,837 | 45.3 |
| Asian. . | 18,319 | 48,074 | 29,755 | 162.4 |
| Native Hawaiian and Other Pacific Islander | 771 | 1,268 | 497 | 64.5 |
| Two or More Races. | 8,480 | 26,760 | 18,280 | 215.6 |
| Hispanic or Latino. | 57,470 | 127,978 | 70,508 | 122.7 |
| Zero scenario, total population | 323,128 | 319,706 | -3,422 | -1.1 |
| One race | 314,648 | 297,699 | -16,949 | -5.4 |
| White | 248,503 | 228,680 | -19,823 | -8.0 |
| Non-Hispanic White. | 197,970 | 163,326 | -34,644 | -17.5 |
| Black or African American | 43,001 | 48,712 | 5,711 | 13.3 |
| American Indian and Alaska Native | 4,055 | 4,955 | 900 | 22.2 |
| Asian. | 18,319 | 14,511 | -3,808 | -20.8 |
| Native Hawaiian and Other Pacific Islander | 771 | 842 | 71 | 9.2 |
| Two or More Races. | 8,480 | 22,007 | 13,527 | 159.5 |
| Hispanic or Latino. | 57,470 | 77,691 | 20,221 | 35.2 |

[^5] 2010 Census are modified. For more information, see <https://www2.census.gov/programs-surveys/popest/technical-documentation /methodology/modified-race-summary-file-method/mrsf2010.pdf>.

Source: U.S. Census Bureau, 2017 National Population Projections.

## PROJECTING RACIAL DIVERSITY

The 2017 National Projections are calculated using race categories consistent with the 1997 Office of Management and Budget (OMB) revised standards for the classification of federal data on race and ethnicity. The five primary race categories are:

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Black or African American: A person having origins in any of the black racial groups of Africa. ${ }^{1}$

American Indian and Alaska Native (AIAN): A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including countries such as Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Native Hawaiian and Other Pacific Islander (NHPI): A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. ${ }^{2}$

Since the 2000 Census, individuals have been able to self-identify with one or more racial groups. Additionally, individuals are asked to self-identify their ethnicity as either Hispanic or not Hispanic. Therefore, official U.S. Census Bureau estimates are produced for the 31 combinations of race groups and two ethnic groups, creating a total of 62 possible race and Hispanic origin categories. In

[^6]our population projection publications, we tabulate race data for single race groups (e.g., White alone) as well as for race categories either alone or in combination with another racial group (e.g., White alone or in combination). Some Census Bureau tabulations also present the race and Hispanic origin data side-by-side to provide mutually exclusive race and Hispanic origin population groups (e.g., Hispanic, non-Hispanic White, non-Hispanic Black, etc.) which add to the total population.

We understand that the projected future racial and ethnic diversity of the nation depends on which tabulations are employed to present the race and Hispanic origin distributions of the U.S. population, and therefore we present these data in several ways. In our tabulations, we present one approach where the percentage of the U.S. population that is "White" (defined as non-Hispanic White alone) in the main series is projected to decrease from 61 percent in 2016 to 44 percent in 2060. In another tabulation, we present the "White" population as White alone or in combination, regardless of Hispanic origin, which represents a larger share of the overall population and is projected to have a smaller decrease over time, from 79 percent in 2016 to 74 percent in 2060 . One of the challenges with using the alone or in combination groups as a comparative statistic, however, is that there is overlap with them and they do not sum up to the total population because people identifying with more than one race are counted in more than one category.

In addition, there are other caveats to keep in mind when considering the projected future racial and ethnic diversity of the nation. Such caveats do not apply to demographic characteristics that have a biological basis and can be measured objectively, such as age and sex (Hogan et al., 2015). The racial

## PROJECTING RACIAL DIVERSITY-Con.

and ethnic groups that we have currently defined for future population projections are based upon current conceptual definitions. They are understood to be sociopolitical constructs and subject to change over time, as they did in 1997 when OMB issued revised federal standards for race and ethnicity. Since the first census in 1790, the Census Bureau has collected information on race/ethnicity and the census form has reflected changes in society and in the way the Census Bureau classifies race and ethnicity. Today, the Census Bureau collects race and ethnic data following OMB guidelines, and these data are based upon self-identification.

Furthermore, recent research has shown that the official OMB definitions of racial and ethnic groups do not necessarily align with how many individuals see themselves and identify on census forms (Mathews et al., 2017). One challenge we currently face is how Americans view "race" and "ethnicity" differently than in decades past. In our diverse society, a growing number of people find the
current race and ethnic categories confusing, or they wish to see their own specific group reflected on the census questionnaire. Census Bureau research has found that over time, there have been a growing number of people, especially people of Hispanic, Caribbean, Middle Eastern, North African, or multiracial heritage who do not identify with any of the official OMB race categories. For example, an individual with Middle Eastern heritage, while defined as "White" by the current OMB standards, may not identify as White and instead identify with a different racial group or groups. Additionally, there is evidence showing that some people change their own racial identity over time (Liebler et al., 2017). These complexities have not been incorporated into our methodological assumptions about the future racial composition of the U.S. population and how that may change over time or how this could contribute to differences between what we are currently projecting and what may actually happen over the next four decades.
comparison point for examining changes in the size of the projected Asian population. All of the changes in the racial and ethnic composition in the population for the zero immigration scenario are the result of population momentum, or the births and deaths occurring to the population existing at the start of the projection period. In this scenario, the Asian alone population is projected to decline by 3.8 million or 21 percent between 2016 and 2060. The projected Asian growth in the other scenarios is driven entirely by immigration. Asians are assumed to have below-replacement fertility throughout the time series. Without immigration, their numbers will decline.

The Hispanic ${ }^{2}$ population is similarly impacted by changing assumptions of immigration, though to a lesser extent than the Asian population. In all scenarios with immigration, the Hispanic population is projected to increase in size between 2016 and 2060, with increases ranging from 43 million (low) to 71 million (high). High immigration scenarios project a larger share of the population to be Hispanic in 2060 than lower immigration scenarios; 29 percent of the U.S. population is projected to be Hispanic in the high immigration scenario compared to 27 percent in the low. In the zero immigration scenario, the share of the U.S. population

[^7]that is Hispanic is still projected to increase from 18 percent in 2016 to 24 percent in 2060; and the Hispanic population is projected to grow by 20 million, or 35 percent, during that time. The Hispanic population, in contrast to the Asian population, has higher levels of fertility, which allow that population to grow even in the absence of new migration into the country.

## POPULATION AGING

Projected increases in life expectancy coupled with low fertility produce an aging population in all of the projection scenarios (Tables 6a and 6b). By 2030, more than 20 percent of the U.S. population will be aged 65 and older. In the high scenario, this milestone

Table 6a.
Age Distribution of the Population by Immigration Scenario: 2016 to 2060
(Numbers in thousands)

| Age | 2016 | 2020 | 2030 | 2040 | 2050 | 2060 | Change: <br> 2016 to 2060 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | Number | Percent |
| Main series, total population | 323,128 | 332,639 | 355,101 | 373,528 | 388,922 | 404,483 | 81,355 | 25.18 |
| Under 18 years | 73,642 | 73,967 | 75,652 | 77,131 | 78,225 | 80,137 | 6,495 | 8.82 |
| 18 to 64 years | 200,241 | 202,621 | 206,311 | 215,571 | 225,023 | 229,670 | 29,429 | 14.70 |
| 65 years and over | 49,244 | 56,052 | 73,138 | 80,827 | 85,675 | 94,676 | 45,432 | 92.26 |
| Alternative Immigration Scenarios |  |  |  |  |  |  |  |  |
| Low scenario, total population ... | 323,128 | 330,640 | 347,467 | 359,522 | 368,068 | 376,226 | 53,098 | 16.43 |
| Under 18 years | 73,642 | 73,532 | 73,555 | 73,044 | 72,666 | 73,040 | -602 | -0.82 |
| 18 to 64 years | 200,241 | 201,169 | 201,238 | 206,637 | 211,552 | 211,772 | 11,531 | 5.76 |
| 65 years and over | 49,244 | 55,938 | 72,674 | 79,841 | 83,850 | 91,414 | 42,170 | 85.63 |
| High scenario, total population... | 323,128 | 335,638 | 366,552 | 394,536 | 420,202 | 446,866 | 123,738 | 38.29 |
| Under 18 years | 73,642 | 74,618 | 78,797 | 83,261 | 86,563 | 90,780 | 17,138 | 23.27 |
| 18 to 64 years | 200,241 | 204,799 | 213,922 | 228,970 | 245,228 | 256,517 | 56,276 | 28.10 |
| 65 years and over | 49,244 | 56,221 | 73,832 | 82,305 | 88,411 | 99,569 | 50,325 | 102.20 |
| Zero scenario, total population... | 323,128 | 326,641 | 332,198 | 331,510 | 326,358 | 319,706 | -3,422 | -1.06 |
| Under 18 years | 73,642 | 72,663 | 69,360 | 64,870 | 61,546 | 58,842 | -14,800 | -20.10 |
| 18 to 64 years | 200,241 | 198,265 | 191,090 | 188,770 | 184,610 | 175,974 | -24,267 | -12.12 |
| 65 years and over | 49,244 | 55,712 | 71,748 | 77,870 | 80,201 | 84,890 | 35,646 | 72.39 |

Source: U.S. Census Bureau, 2017 National Population Projections

Table 6b.
Age Distribution of the Population by Immigration Scenario: 2016 to 2060
(In percent)

| Age | 2016 | 2020 | 2030 | 2040 | 2050 | 2060 | Percentagepoint change: 2016 to 2060 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Main series, total population | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | X |
| Under 18 years | 22.79 | 22.24 | 21.30 | 20.65 | 20.11 | 19.81 | -2.98 |
| 18 to 64 years | 61.97 | 60.91 | 58.10 | 57.71 | 57.86 | 56.78 | -5.19 |
| 65 years and over | 15.24 | 16.85 | 20.60 | 21.64 | 22.03 | 23.41 | 8.17 |
| Alternative Immigration Scenarios |  |  |  |  |  |  |  |
| Low scenario, total population | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | X |
| Under 18 years | 22.79 | 22.24 | 21.17 | 20.32 | 19.74 | 19.41 | -3.38 |
| 18 to 64 years | 61.97 | 60.84 | 57.92 | 57.48 | 57.48 | 56.29 | -5.68 |
| 65 years and over | 15.24 | 16.92 | 20.92 | 22.21 | 22.78 | 24.30 | 9.06 |
| High scenario, total population | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | X |
| Under 18 years | 22.79 | 22.23 | 21.50 | 21.10 | 20.60 | 20.31 | -2.48 |
| 18 to 64 years | 61.97 | 61.02 | 58.36 | 58.04 | 58.36 | 57.40 | -4.57 |
| 65 years and over | 15.24 | 16.75 | 20.14 | 20.86 | 21.04 | 22.28 | 7.04 |
| Zero scenario, total population | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | X |
| Under 18 years | 22.79 | 22.25 | 20.88 | 19.57 | 18.86 | 18.40 | -4.39 |
| 18 to 64 years | 61.97 | 60.70 | 57.52 | 56.94 | 56.57 | 55.04 | -6.93 |
| 65 years and over.. | 15.24 | 17.06 | 21.60 | 23.49 | 24.57 | 26.55 | 11.31 |

[^8]Figure 6.

## Numeric Difference Between the Population Under 18 and the Population Aged 65 and Older by Immigration Scenario: 2016 to 2060

In all migration scenarios, the population aged 65 and older will be larger than the child population by 2060.


Note: Differences are calculated by subtracting the population aged 65 and older from the population aged 0 to 17 . Years with negative differences are years where the population aged 65 and older is larger than the population under the age of 18. Source: U.S. Census Bureau, 2017 National Population Projections.
is reached in 2028. For the low scenario, it occurs in 2026; and in 2025 for the zero scenario. The size of the population aged 65 and older is projected to exceed the population under the age of 18 in all immigration scenarios. The date at which this occurs is earliest in the zero immigration scenario (2029), followed by the low immigration scenario (2031), and then the high (2045) (Figure 6).

Looking at the zero immigration scenario relative to the other projection scenarios illustrates how immigration helps to slow the pace of aging by adding to the population at the younger ages. Between 2016 and 2060, the zero immigration scenario projects declines in all age groups below 65 years. The population under the age of 18 is projected to decline by 15 million or 20 percent between 2016 and 2060, while
the population aged 18 to 64 is projected to decline by 24 million (12 percent) over the same time period. In contrast, the population aged 65 and older is projected to nearly double between 2016 and 2060, increasing from 49 million in 2016 to 85 million in 2060. The share of the U.S. population that is aged 65 or older in the zero scenario is projected to increase from 15 percent in 2016 to 27 percent in 2060.

## SUMMARIZING THE AGE STRUCTURE OF A POPULATION

Demographers have a number of tools that they use to communicate the age structure of a population. Among the most common of these are median age, dependency ratios, and population pyramids.

Median age (Table 7) tells the age at which half of a population is older and half of the population is younger. An increase in median age, such as we see in each of the population projection scenarios, provides evidence of population aging. Differences in the amount of increase help us to see which of the immigration scenarios produce the oldest population. In 2016, median age for the United States was 37.9 years. By 2060, median age in the main series is projected to increase to 42.9 years. Projected increases in median age between 2016 and 2060 range from a low of 4.0 years in the high scenario to 7.8 years in the zero scenario. The zero immigration scenario, which has the largest increase in the share of the population over the age of 65 between 2016 and 2060, also has the highest median age in 2060, 45.7. Looking at median age over time can give some information on how the age of the population is changing, but it is just one summary measure and therefore does not provide a complete picture of a population's age distribution.

Dependency ratios (Table 8) are another summary measure used to describe age structure. Dependency ratios are an indicator of the potential burden of the dependent population, approximated by those under 18 years and those 65 years and over, on those in the working-age population. The ratios are calculated by dividing the number
of people in the dependent age groups by the number in the working ages and then multiplying by 100. Growth in the old age dependency ratio over time, as we see in each of these scenarios, is consistent with the larger shares of the population in the oldest ages relative to the share of the population in the adult ages. Similarly, the youth dependency ratio in each of the scenarios decreases between 2016 and 2060, consistent with the decreasing shares of the population in the youngest ages. The high immigration scenario, which has the largest projected youth population in 2060, has the largest youth dependency ratio (35.4), while the zero immigration scenario has the largest old-age dependency ratio in 2060 (48.2).

Population pyramids (Figure 7) differ slightly from the other two measures in that they are a visual tool for evaluating the age structure of the population. Population pyramids provide a comprehensive look at the age structure of the population by showing the share of the population in each age as opposed to providing a simple summary statistic like the other measures do. Looking at population pyramids from each of the scenarios for the same year shows the impact that migration has on the size of the population across age groups. The shape of the overall pyramid is similar for the main, low, and high scenarios, but the bars are longer in the high scenario relative to the others because there are more people in all age groups. In the zero immigration scenario, there is a narrowing of the base, which shows that the child and young adult population in this scenario is smaller in 2060 than the population in the older age groups.

Table 7.

| Year | Main series | Alternative immigration scenario |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Low | High | Zero |
| 2016 | 37.9 | 37.9 | 37.9 | 37.9 |
| 2020 | 38.5 | 38.6 | 38.4 | 38.8 |
| 2030 | 40.1 | 40.4 | 39.6 | 41.2 |
| 2040 | 41.5 | 42.0 | 40.8 | 43.3 |
| 2050 | 42.3 | 42.9 | 41.5 | 44.5 |
| 2060 | 42.9 | 43.7 | 41.9 | 45.7 |
| Change: 2016 to 2060 | 5.0 | 5.8 | 4.0 | 7.8 |

Source: U.S. Census Bureau, 2017 National Population Projections.

Table 8.
Projected Dependency Ratios by Immigration Scenario: 2020 to 2060

| Old-age dependency |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Year | Main series | Alternative immigration scenario |  |  |
|  |  | Low | High | Zero |
| 2020 | 27.7 | 27.8 | 27.5 | 28.1 |
| 2030 | 35.5 | 36.1 | 34.5 | 37.5 |
| 2040 | 37.5 | 38.6 | 35.9 | 41.3 |
| 2050 | 38.1 | 39.6 | 36.1 | 43.4 |
| 2060. | 41.2 | 43.2 | 38.8 | 48.2 |
| Youth dependency |  |  |  |  |
| Year | Main series | Alternative immigration scenario |  |  |
|  |  | Low | High | Zero |
| 2020 | 36.5 | 36.6 | 36.4 | 36.6 |
| 2030 | 36.7 | 36.6 | 36.8 | 36.3 |
| 2040 | 35.8 | 35.3 | 36.4 | 34.4 |
| 2050 | 34.8 | 34.3 | 35.3 | 33.3 |
| 2060.... | 34.9 | 34.5 | 35.4 | 33.4 |

Note: Dependency ratios are a measure of potential burden on the working-age population. Old-age dependency represents the population aged 65 and older divided by the working-age population ( 18 to 64 years old), and the youth ratio is the population aged 0 to 17 divided by the working-age population. These values are multiplied by 100.

Source: U.S. Census Bureau, 2017 National Population Projections.

A growing older population is not unique to the zero immigration scenario; all of the scenarios show projected increases in the size of the population that is aged 65 and older between 2016 and 2060. The largest increase is projected to occur in the high immigration scenario, where the population
in this age group is expected to increase by 50 million, or 102 percent, reaching just under 100 million in 2060. Larger increases in the higher immigration scenario are not unexpected since those migrants who enter the population and remain are aged forward throughout the time series.

Though the high immigration scenario shows the largest numeric and percentage increases in the population aged 65 and older, its increase in the share of the total population aged 65 and older between 2016 and 2060 is projected to be the smallest across the scenarios. By 2060, 22.3 percent of the U.S. population is projected to be aged 65 or older in the high scenario, compared to 23.4 in the main series, 24.3 in the low, and 26.6 in the zero.

A decline in the share of the population under the age of 18 is also expected to occur across all immigration scenarios. In 2016, 22.8 percent of the U.S. population was under the age of 18 , but by 2060, this percentage is projected to drop to 20.3 in the high scenario, 19.8 in the middle, 19.4 in the low, and 18.4 in the zero. Aside from the zero immigration scenario, the low scenario is the only other scenario in which we are projecting numeric declines in the youth population. The population under the age of 18 is projected to decline by 602,000 (0.8 percent) between 2016 and 2060 in the low scenario. During this same time, it is projected to increase by 6.5 million ( 8.8 percent) in the main series and 17 million ( 23 percent) in the high scenario. Again, this pattern of change is not unexpected. Higher levels of migration bring in more people at the younger ages who add to the population both through their presence and through their fertility.

Figure 7.
United States Population by Age and Sex in 2060 by Immigration Scenario
Reduced immigration decreases the size of the child population in 2060.





Source: U.S. Census Bureau, 2017 National Population Projections.

## SUMMARY

Population projections are a useful planning tool, but their utility is limited by the extent to which the assumptions about population change reflect the actual trends that occur in the future. The alternative scenarios of projections discussed throughout this report are a way of examining the impact that changing our assumptions about one component of population change-immigra-tion-would have on the size and composition of the U.S. population in the years to come. Projecting international migration is challenging because it is influenced by political, economic, and social factors from both the sending and receiving nations. This creates a level of uncertainty that is not present in fertility and mortality. Creating projections with different migration scenarios is one way of addressing this uncertainty. By varying the levels of immigration, we get a range of potential outcomes for the size and composition of the U.S. population in the years to come. Different assumptions about international migration lead to changes in the projected growth of the total population, the racial and ethnic makeup of the population, and its age structure. Higher immigration produces a larger, younger, and more diverse population, while the absence of immigration over the next four decades will have the opposite result.

## DATA SOURCES AND METHODOLOGY

The projections in this report are the third series of national population projections based on the 2010 Census. They project the total U.S. population as of July 1 for the years 2017 to 2060, using official population estimates for 2016 as the base population. When both population estimates and projections are available, estimates are the preferred data. The universe is the resident population of the United States ( 50 states and the District of Columbia). The 2017 National Population Projections include projections of the resident population by age, sex, race, Hispanic origin, and nativity.

The projections were produced using a cohort-component method beginning with an estimated base population for July 1, 2016. In this method, the components of population change are projected separately for each birth cohort (persons born in a given year) based on past trends. For each year from 2017 to 2060, the population is advanced one year of age using the projected agespecific survival rates and levels of net international migration for that year. A new birth cohort is added to the population by applying the projected age-specific fertility rates to the female population. Births, adjusted for infant mortality and net international migration, form the new population under 1 year old. In its simplest form,
the cohort component method is expressed as:

$$
P_{t}=P_{t-1}+B_{t-1, t}-D_{t-1, t}+M_{t-1, t}
$$

Where:
$P_{t}=$ population at time t .
$P_{t-1}=$ population at time t-1.
$B_{t-1, t}=$ births in the interval from time $\mathrm{t}-1$ to time t .
$D_{t-1, t}=$ deaths in the interval from time t-1 to time t .
$M_{t-1, t}=$ net migration in the interval from time $\mathrm{t}-1$ to time t .

Projections produced through the cohort-component method are driven by assumptions regarding each of the components of change. In order to project the base population forward in this manner, separate projections of fertility, mortality, and net international migration are required to serve as inputs into the cohortcomponent model.

Historical mortality trends were calculated using the National Center for Health Statistics’ data on deaths and the U.S. Census Bureau's population estimates for 1989 to 2014. Fertility trends were calculated using the National Center for Health Statistics' birth data and the Census Bureau's estimates of the female population. The time series included data from 1990 to 2014. Trends in net international migration were primarily based on decennial census and American Community Survey estimates on foreign-born immigration for the period from 1980 to 2015 .

For more information on the data and methodology, see the report on 2017 National Population Projections: Methodology and Assumptions <www.census.gov /programs-surveys/popproj /technical-documentation /methodology.html>.

## DATA ACCURACY

The accuracy of the projections depend on the accuracy and validity of several data sources. First, the projections are based on the 2010 Census, which may contain nonsampling error because of errors in enumeration such as undercounting or overcounting different demographic groups. Nonsampling error may be a byproduct of how a questionnaire is designed, how respondents interpret questions, how able or willing respondents are to provide correct answers, and how accurately the answers are coded and classified. Technical documentation for the 2010 Census is available at <www.census.gov/prod /cen2010/doc/sf1.pdf>.

Second, the projections use administrative records from the National Center for Health Statistics on births and deaths. Reporting error on the birth or death certificates would affect the population projections because these data are used to calculate fertility rates and mortality rates for the population. Third, the projections use the American Community Survey to assign nativity to the base population and calculate immigration and
emigration rates of the foreignborn. Statistics that come from surveys are subject to nonsampling error, as noted above, as well as sampling error. The latter occurs because surveys measure the characteristics of a sample of people, instead of those of the entire population (as from a census). Sample-based estimates vary depending on the particular sample that is selected from the population, but all survey-based estimates attempt to approximate the actual figures from the population. Measures of the size of sampling error reflect variation in the estimates over all possible samples that could have been selected from the population using the same sampling, data collection, and processing methods. Technical documentation for the American Community Survey is available at <www.census.gov /programs-surveys/acs /methodology.html>.

Lastly, the projections did not attempt to predict future changes in policy or other factors, such as natural disasters or changing economic cycles, that might influence the population components and their magnitude of change. The projections are accurate only insofar as the assumptions about fertility, mortality, and net international migration hold true-assumptions that are based on historical trends. If the future trends or levels in fertility, mortality, or international migration differ radically from the historical patterns, then the population projections will be less accurate.

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[^0]:    ${ }^{1}$ The 2017 National Projections were initially released in December 2017, but were retracted when an error was identified in the mortality rates. A revised version was released in September 2018.

[^1]:    Source: U.S. Census Bureau, 2017 National Population Projections.

[^2]:    Source: U.S. Census Bureau, 2017 National Population Projections.

[^3]:    ${ }^{1}$ Migration refers to net international migration, the number of people entering the country minus the number leaving it.
    ${ }^{2}$ Natural change is the number of births added to the population minus the number of deaths. A positive number means that more births are projected than deaths (i.e., a natural increase in the population), whereas a negative number means more deaths are projected than births (i.e., a natural decrease in the population).

    Source: U.S. Census Bureau, 2017 National Population Projections.

[^4]:    Note: Rates for individual years refer to the size of population change between July 1 of the indicated year and July 1 of the preceding year. Source: U.S. Census Bureau, 2017 National Population Projections.

[^5]:    Note: Hispanic origin is considered an ethnicity, not a race. Hispanics may be of any race. Responses of "Some Other Race" from the

[^6]:    ${ }^{1}$ The terms "Black or African American" and "Black" are used interchangeably in this report.
    ${ }^{2}$ In this report, the acronym "NHPI" is sometimes used to refer to the Native Hawaiian and Other Pacific Islander population. The formal "Native and Other Pacific Islander" term generally is used in the tables and graphs.

[^7]:    ${ }^{2}$ The terms "Hispanic or Latino" and "Hispanic" are used interchangeably in this report.

[^8]:    X Not applicable.
    Source: U.S. Census Bureau, 2017 National Population Projections.

