# Age-adjusted labor force participation rates, 1960–2045

*A proposed new age-adjusted labor force participation rate eliminates the effect of changes in the age distribution; according to the new criterion, increases in women's labor force participation from 1960–2000 would have been even greater if shifts in the age distribution had not occurred*

Robert F. Szafran

Current labor force participation rates in the United States, particularly for women, are very different from what they were in 1960. Among the usual reasons given for the disparity are cultural, economic, and social changes in educational attainment, the person's age at marriage, childbearing, divorce, retirement, Social Security and pension benefits, and gender role expectations. Had none of these things changed, however, alterations in labor force participation rates would still have been observed, because participation in the labor force varies by age and the age distribution of the population changed significantly during the period in question, due to changes in fertility, migration, and mortality.[1] As exceptionally large cohorts of the population move into age categories that have above-average labor force participation rates, the labor force participation rate for the entire population moves up. Similarly, when those large cohorts move into age categories with below-average participation rates, the overall participation rate goes down. The same thing happens in reverse as exceptionally small cohorts move into age categories with above- or below-average participation in the labor force.

The effect of cultural, economic, and social changes on labor force participation could be better assessed if a way of measuring changes in participation were developed that eliminated the effect of demographic shifts in the age structure. One method for eliminating the confounding effect of a changing age distribution on changes in labor force participation is to focus, not on changes in the participation rate of the entire population, but on changes in the participation rate of specific age groups. This approach would examine, for example, how the participation rate of 20-to-24-year-olds changed over time, then how the rate for 25-to-29-year-olds changed, and so on through the age distribution. A difficulty with such a method is that it yields not one summary measure of participation for a society at any single point in time, but rather a group of participation rates—as numerous as the number of age groups into which the population is divided.

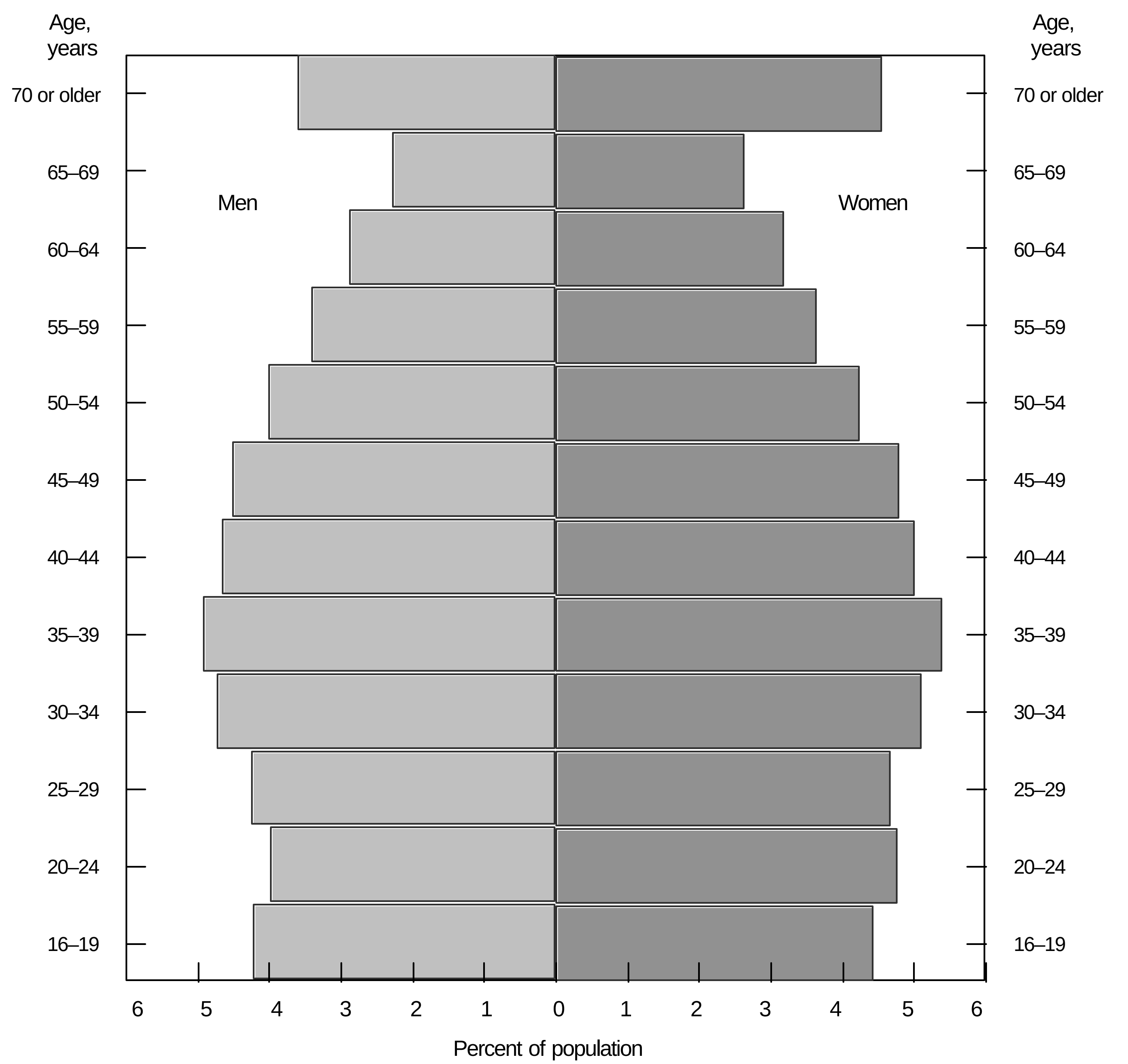
Demographers encounter similar problems, because basic demographic processes, such as fertility, migration, and mortality, also vary strongly by age. While abandoning neither crude indicators of these demographic rates (for example, the crude death rate), which ignore the confounding factor of age, nor age-specific rates (such as age-specific death rates), which provide no summary figure for the entire population, demographers long ago adopted age-adjusted rates (for instance, the age-adjusted death rate) as a means of summarizing a demographic process for an entire population.[2] Put simply, adjustment produces an

Robert F. Szafran is a professor in the Department of Sociology, Stephen F. Austin State University, Nacogdoches, Texas. E-mail: rszafran@sfasu.edu.

overall population rate by applying age-specific rates for a given society at a given point in time against a "standard" age distribution. In this way, the rate at which a particular demographic process occurs in two different populations can be compared as if both populations had the same age distribution.

Adopting this approach, the analysis presented in this article calculates age-adjusted labor force participation rates for the total, the male, and the female populations of the United States for each year from 1960 through 2000, as well as hypothetical rates at 5-year intervals from 2005 through 2045. The "standard" age distribution used in these calculations is the age distribution in 1960. Using the adjusted rates shows how overall participation rates would have changed during those years if the baby-boom cohorts were not "marching through" the U.S. population distribution, the population were not "graying," and other age-shifting demographic changes were not happening.[3] Adopting the terminology used by demographers, the analysis that follows will refer to the traditionally calculated participation rates which do not

**Chart 1. Population distribution for 1960**



control for differences in the age distribution as *crude participation rates*, to distinguish them from the *age-adjusted participation rates*.

## The analysis

The formula for the crude labor force participation rate for a particular year *t* is

$$\text{LFPR}_t = 100 \times A_t / B_t,$$

where *A* is the number of adult civilian noninstitutionalized persons in the labor force and *B* is the number of persons in the adult civilian noninstitutionalized population.[4] A similar formula for the overall labor force participation rate uses information about the age groups that make up the population:

$$\text{LFPR}_t = 100 \times \sum( C_t \times D_t)/ \sum D_t,$$

In this formula, *C* is the proportion of a particular age group in the labor force and *D* is the number of persons in the age group in the population. Each summation is done over all the age groups that make up the population. The age-adjusted labor force participation rate is then given by

$$\text{AALFPR}_t = 100 \times \sum (C_t \times D_{1960})/ \sum D_{1960}.$$

This is the same as the previous formula, except that the number of persons in each age group is taken from the 1960 population distribution.[5]

The formulas for the crude and age-adjusted labor force participation rates require the number of persons in the population and the number of persons in the labor force, broken down by age and sex. For the years 1960 through 2000, these numbers were taken from *Employment and Earnings*.[6]

Because the age-adjusted rates presented herein always tell us what the labor force participation rate would be if the age structure of the population remained as it was in 1960, it is important to take a close look at that 1960 age structure. Chart 1 shows a 1960 population distribution. Three things should be noted. First, the length of each bar represents that particular age-and-sex group's percentage of the adult civilian noninstitutionalized population, and not the group's percentage of the total U.S. population. Second, while 5-year age groups are the norm, the youngest age group represents just 4 years, and the oldest is open ended.[7] Third, even considering just the 5-year age groups, one sees plainly that the chart does not resemble a pyramid, narrow at the top and broad at the base, which one often associates with an age distribution. For this 1960 distribution, the most notable deviation from the pyramidal shape is the smaller-than-expected number of persons aged 20 to 34, a result of the low number of births in the United States in the late 1920s and the 1930s.

For comparison purposes, the population distributions in 1980 and 2000 and hypothetical distributions for 2020 and 2040 are presented in chart 2.[8] The movement of the baby-boom cohorts through the distribution and the growth in the elderly share of the population are clearly evident.

In the upcoming analysis, while the age distribution of the population is kept as it was in 1960 when calculating age-adjusted labor force participation rates, the rates at which individual age groups participate in the labor force are allowed to change. As is well known, the pattern of participation in the labor force by age changed from 1960 through 2000, particularly for women. Chart 3 shows the age-specific participation rates for the total U.S. population in 1960, 1980, and 2000, the pattern of men's participation by age for those same 3 years, and the corresponding patterns for women.

## Age-adjusted and crude rates, 1960–2000

This section discusses what the U.S. labor force participation rates from 1960 through 2000 would have been if the age-specific participation rates had changed as they actually did from 1960 through 2000 (see chart 3), but the age structure of the population had remained as it was in 1960 (see chart 1).[9]

Table 1 shows both the crude labor force participation rates and the age-adjusted labor force participation rates for the total U.S. population, for men, and for women from 1960 through 2045. Chart 4 presents the same information in graphic form. Of course, the crude rates and the age-adjusted rates for 1960 are identical because both rates use the 1960 age distribution. After 1960, the crude and the age-adjusted rates differ because the crude rates reflect the changing U.S. age distribution while the age-adjusted rates always use the 1960 age distribution. (The data in table 1 and chart 4 for the years after 2000 will be discussed in a later section.)

Looking first at the differences between the crude and the age-adjusted rates for the total population, one finds that two things stand out. First, both rates document substantial increases in labor force participation from 1960 through 2000. Second, the age-adjusted rates are consistently higher than the crude rates. By the late 1960s, the difference between the rates had reached approximately a full percentage point, a gap that essentially remained through the end of the period. What the differences mean is that shifts in the age distribution of the population from 1960 to 2000 were actually pushing the labor force participation rate downward. While the overall rates rose substantially from 1960 to 2000 because increases in age-specific participation rates more than compensated for this downward pressure from age shifts, the crude labor force participation rate would have been almost a full percentage point higher during most of the period if the age distribution of the population had remained what it was in 1960. The next section examines which specific demographic changes were exerting the downward pressure o n the participation rate; first, however, it is necessary to consider differences in crude and age-adjusted rates for men and then for women.

Both the crude and age-adjusted labor force participation rates for men document a decline in men's labor force participation between 1960 and 2000. (See table 1 and chart 4.) But while the crude rate and the age-adjusted rate began and ended the 40-year period similarly to one another, they did not follow identical paths from start to finish. Throughout the 1960s, the difference between the crude and age-adjusted rates increased, with the age-adjusted rates higher. This trend indicates that age shifts in the population were pushing the crude participation rate down. The difference between the rates peaked in 1971, when the age-adjusted rate was 1.4 percentage points higher than the crude rate; then the difference between the two rates gradually declined until the rates were almost identical in the 1990s. There is some evidence that, in the very last years of that decade, age shifts in the population were again starting to exert downward pressure on the crude participation rate for men, as the age-adjusted participation rate finished the period three-tenths of a percentage point higher.

The dramatic increase in women's labor force participation is documented by both the crude and the age-adjusted participation rates. (See table 1 and chart 4.) Not only do the women's rates show a large change from 1960 through 2000, but they also point up a substantial difference between the results of the two methods of calculating participation rates. The rates gradually grew apart through the 1960s, 1970s, and most of the 1980s. The age-adjusted rate was always higher, indicating that age shifts in the population were pushing the crude participation rate down. That the overall participation rate for women went up despite this downward pressure

**Chart 2. Population distributions, 1980 and 2000, and hypothetical, 2020 and 2040**

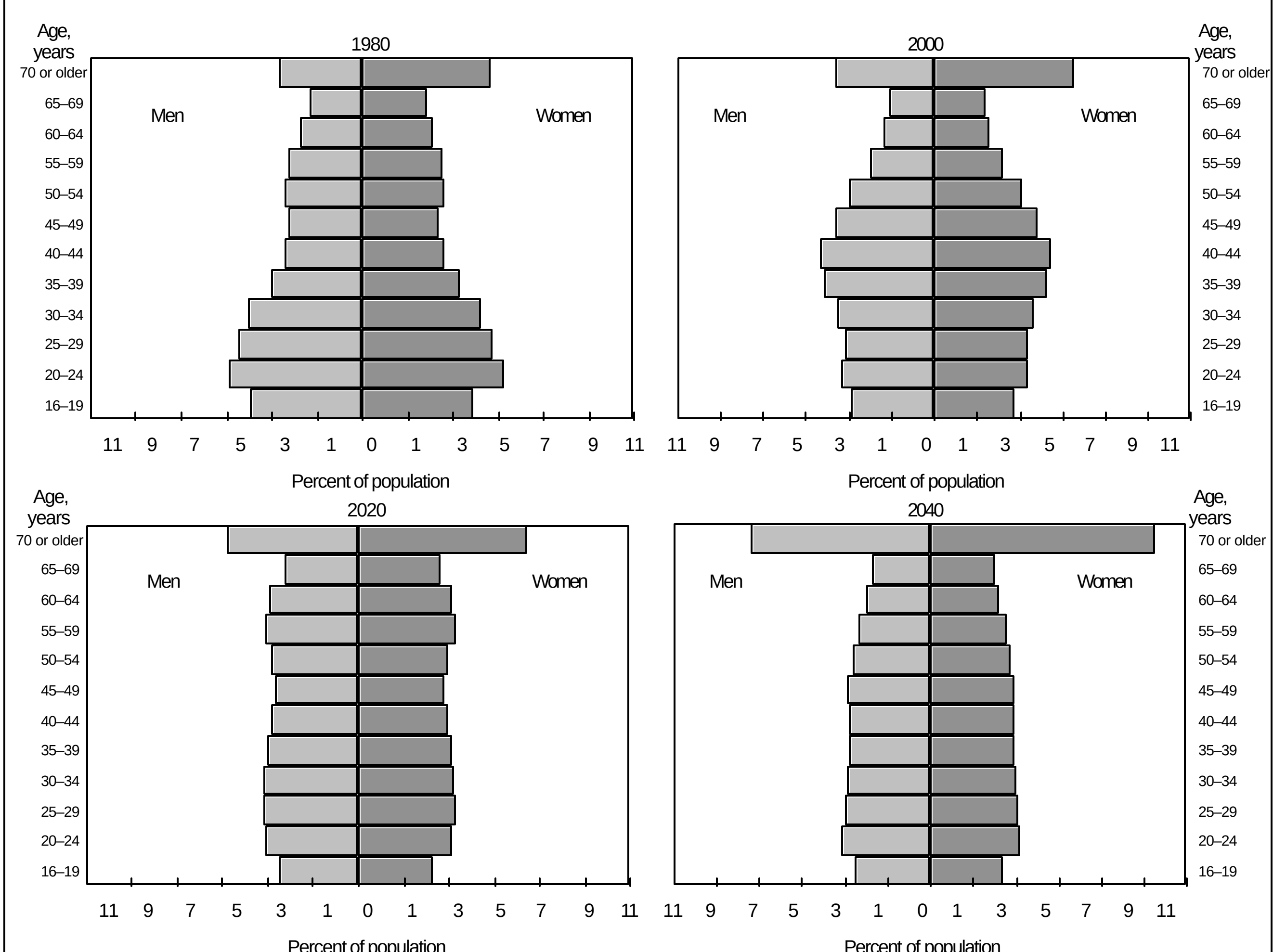


**Chart 3. Age-specific labor force participation rates, 1960–2000**

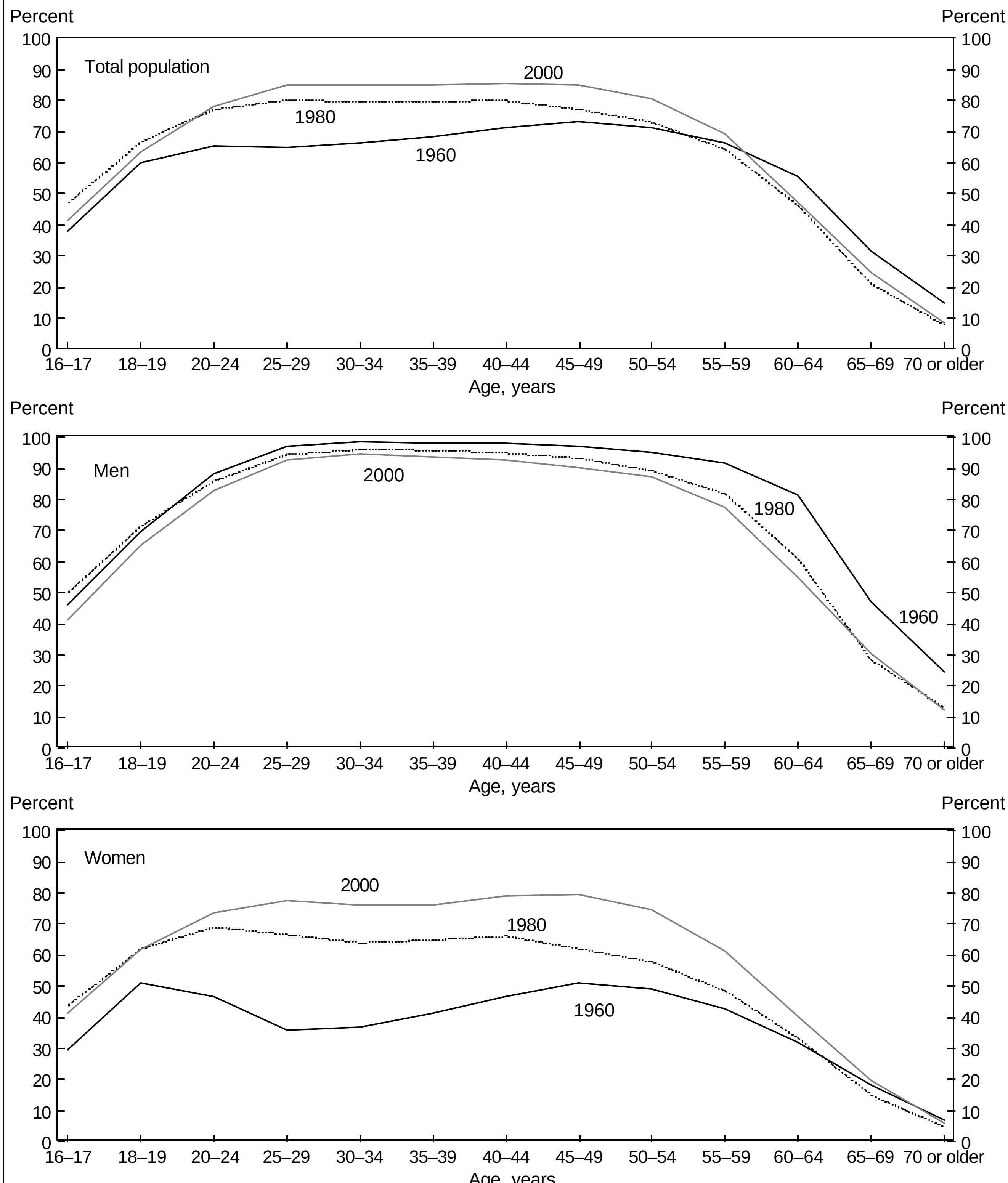
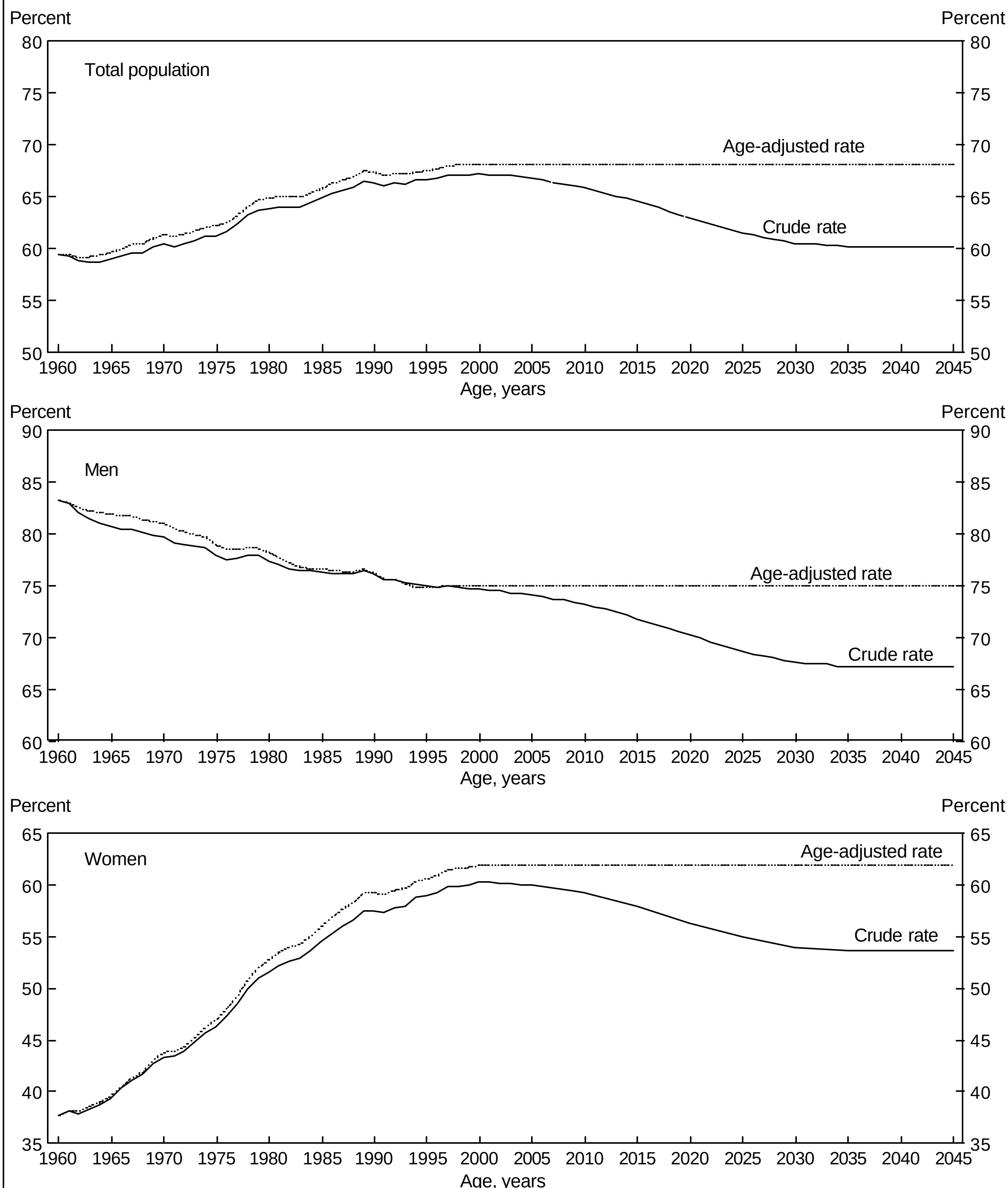


**Chart 4. Labor force participation rates, 1960–2000, and hypothetical, 2005–2045**



testifies to the strength of social factors pushing age-specific participation rates up. By 1987, the gap between the crude and age-adjusted rates had reached 1.7 percentage points, a level at which it essentially remained for the rest of the century. The demographic forces that were pushing the crude labor force participation rates downward paused, but did not reverse, during the 1990s. The fact that the age-adjusted rates for women have been substantially higher than the crude rates for the last several decades indicates that, while much has been made of the increased participation of women in the labor force, the increase would have been even greater had the age distribution of the population not changed during the last 40 years of the 20th century.

## Demographics and participation,1960–2000

When the differences between the crude participation rate and the age-adjusted participation rate for individual years are decomposed into age-group effects, the effects of birth cohorts moving through the age structure can be identified. The crude labor force participation rate LFPR for a given year $t$ can be expressed as a function of the age-adjusted labor force participation rate AALFPR for that year, plus the effects on the crude rate introduced by each age group:

$$\mathrm{LFPR}_t = \mathrm{AALFPR}_t + \Sigma\,(P_t - P_{1960})\,(C_t - \mathrm{AALFPR}_t).$$

In this formula, $P$ is the proportion of the adult civilian noninstitutionalized population in a particular age category, and $C$ is the labor force participation rate for that age category. The summation is done over all the age groups that make up the population.

As the formula shows, two factors determine the influence of an age group on the crude participation rate: the age group's current size, compared with its size in 1960, and the age group's current labor force participation rate, compared with the current age-adjusted participation rate for the entire population. Exceptionally large and exceptionally small cohorts have more of an effect on the crude participation rate, but whether their effect is to raise or lower the overall participation rate depends on whether those exceptionally sized cohorts are currently in age categories with above-average or below-average participation rates.[10]

Using the preceding formula, table 2 shows how much upward or downward pressure each age group exerted on the crude rate, compared with the situation in 1960, for the total population, for men, and for women. As before, a discussion of hypothetical rates after the year 2000 is reserved for a later section.

As regards the total population, the table shows the effects of three consecutive 20-year groups of birth cohorts on labor force participation rates: the depression/World War II birth cohorts (those born between 1927 and 1946), the baby-boom birth cohorts (born between 1947 and 1966), and the Generation X birth cohorts (born between 1967 and 1986). The Depression/World War II and Generation X cohorts are relatively small, whereas the baby-boom cohorts are relatively large. The Generation X cohorts were passing through the 16-to-17-year-old age category during the 1990s. The 16-to-17-year-old age group usually pulls down the crude labor force participation rate, because 16- and 17-year-olds have a low rate of participation in the labor force. The more persons in the age category, the more the crude rate is pulled down; the fewer persons in the age category, the less the crude rate is pulled down. Because the Generation X cohorts consist of relatively few persons, they do not pull the crude rate down as far as 16- and 17-year-olds did in 1960, the base year of the analysis. The effect of the small Generation X cohorts passing through the 16-to-17-year-old age category during the 1990s is to raise the crude participation rate above what it would have been if 16- and 17-year-olds were as relatively numerous in the 1990s as they were in 1960. The largest such impact can be seen in 1992, when the small number of 16- and 17-year-olds pushed the crude rate up four-tenths of a percentage point. Of course, in 1992, other age groups were exerting their own pressures on the crude rate.[11]

When small cohorts are at ages with low labor force participation, they push the crude rate up. At ages with high participation, they have the opposite effect. In 1976, the four age categories making up 30-to-49-year-olds were composed entirely of cohorts from the depression or World War II. Compared with the situation in 1960, these smaller-than-average cohorts in traditionally high-participation age categories exerted less of an upward push on the overall labor force participation rate, resulting in a 1.0-point decline in the crude rate.

Large cohorts have the reverse effects of small cohorts, lowering the overall participation rate when they move through age categories with low participation and raising the overall rate when they move through those with high participation. For example, during most of the 1960s and all of the 1970s, the 16-to-17-year-old age category was composed of baby-boom cohorts. These larger-than-average cohorts in a traditionally low-participation age category created more drag on the crude rate and caused it to drop during those years, usually by 0.1 or 0.2 percentage point. By contrast, in 1986, the four age categories making up 20-to-39-year-olds were composed entirely of baby boom cohorts. These larger-than-average cohorts in traditionally high-participation age categories exerted a greater upward push on the crude participation rate, causing it to rise by 1.0 point.

The effects of birth cohorts moving through the age

**Table 1. Crude and age-adjusted labor force participation rates, 1960–2000, and hypothetical from 2005 to 2045 at 5-year intervals**

| Year | Total population | | Men | | Women | |
|---|---|---|---|---|---|---|
| | Crude rate | Age-adjusted rate | Crude rate | Age-adjusted rate | Crude rate | Age-adjusted rate |
| 1960 | 59.4 | 59.4 | 83.3 | 83.3 | 37.7 | 37.7 |
| 1961 | 59.3 | 59.4 | 82.9 | 83.0 | 38.1 | 38.1 |
| 1962 | 58.8 | 59.1 | 82.0 | 82.5 | 37.9 | 38.1 |
| 1963 | 58.7 | 59.2 | 81.4 | 82.2 | 38.3 | 38.6 |
| 1964 | 58.7 | 59.4 | 81.0 | 82.1 | 38.7 | 39.0 |
| 1965 | 58.9 | 59.6 | 80.7 | 81.9 | 39.3 | 39.6 |
| 1966 | 59.2 | 60.0 | 80.4 | 81.8 | 40.3 | 40.5 |
| 1967 | 59.6 | 60.4 | 80.4 | 81.7 | 41.1 | 41.4 |
| 1968 | 59.6 | 60.5 | 80.1 | 81.4 | 41.6 | 41.9 |
| 1969 | 60.1 | 61.0 | 79.8 | 81.2 | 42.7 | 43.1 |
| 1970 | 60.4 | 61.3 | 79.7 | 81.0 | 43.3 | 43.8 |
| 1971 | 60.2 | 61.2 | 79.1 | 80.5 | 43.4 | 43.9 |
| 1972 | 60.4 | 61.4 | 79.0 | 80.2 | 43.9 | 44.4 |
| 1973 | 60.8 | 61.7 | 78.8 | 79.9 | 44.7 | 45.3 |
| 1974 | 61.2 | 62.1 | 78.7 | 79.7 | 45.6 | 46.3 |
| 1975 | 61.2 | 62.2 | 77.9 | 78.9 | 46.3 | 47.0 |
| 1976 | 61.6 | 62.5 | 77.5 | 78.5 | 47.3 | 48.1 |
| 1977 | 62.3 | 63.2 | 77.7 | 78.5 | 48.4 | 49.3 |
| 1978 | 63.2 | 64.1 | 77.9 | 78.7 | 50.0 | 50.9 |
| 1979 | 63.7 | 64.7 | 77.9 | 78.6 | 51.0 | 52.0 |
| 1980 | 63.8 | 64.9 | 77.4 | 78.2 | 51.6 | 52.8 |
| 1981 | 63.9 | 65.0 | 77.0 | 77.7 | 52.2 | 53.5 |
| 1982 | 64.0 | 65.0 | 76.6 | 77.2 | 52.6 | 54.0 |
| 1983 | 64.0 | 65.0 | 76.4 | 76.8 | 52.9 | 54.3 |
| 1984 | 64.4 | 65.4 | 76.4 | 76.6 | 53.6 | 55.1 |
| 1985 | 64.8 | 65.8 | 76.3 | 76.6 | 54.5 | 56.0 |
| 1986 | 65.3 | 66.3 | 76.2 | 76.5 | 55.3 | 56.9 |
| 1987 | 65.6 | 66.6 | 76.2 | 76.4 | 56.0 | 57.7 |
| 1988 | 65.9 | 67.0 | 76.2 | 76.4 | 56.6 | 58.3 |
| 1989 | 66.5 | 67.5 | 76.4 | 76.6 | 57.4 | 59.2 |
| 1990 | 66.4 | 67.4 | 76.1 | 76.2 | 57.5 | 59.2 |
| 1991 | 66.0 | 67.0 | 75.5 | 75.6 | 57.3 | 59.1 |
| 1992 | 66.3 | 67.3 | 75.6 | 75.6 | 57.8 | 59.5 |
| 1993 | 66.2 | 67.2 | 75.2 | 75.2 | 57.9 | 59.7 |
| 1994 | 66.6 | 67.4 | 75.1 | 74.8 | 58.8 | 60.4 |
| 1995 | 66.6 | 67.5 | 75.0 | 74.8 | 58.9 | 60.6 |
| 1996 | 66.8 | 67.7 | 74.9 | 74.9 | 59.3 | 60.9 |
| 1997 | 67.1 | 68.0 | 75.0 | 75.0 | 59.8 | 61.5 |
| 1998 | 67.1 | 68.1 | 74.9 | 75.0 | 59.8 | 61.6 |
| 1999 | 67.1 | 68.1 | 74.7 | 75.0 | 60.0 | 61.7 |
| 2000 | 67.2 | 68.2 | 74.7 | 75.0 | 60.2 | 61.9 |
| 2005 | 66.8 | 68.2 | 74.1 | 75.0 | 60.0 | 61.9 |
| 2010 | 65.9 | 68.2 | 73.2 | 75.0 | 59.2 | 61.9 |
| 2015 | 64.6 | 68.2 | 71.8 | 75.0 | 57.9 | 61.9 |
| 2020 | 63.0 | 68.2 | 70.2 | 75.0 | 56.3 | 61.9 |
| 2025 | 61.5 | 68.2 | 68.6 | 75.0 | 54.9 | 61.9 |
| 2030 | 60.5 | 68.2 | 67.6 | 75.0 | 54.0 | 61.9 |
| 2035 | 60.2 | 68.2 | 67.2 | 75.0 | 53.7 | 61.9 |
| 2040 | 60.1 | 68.2 | 67.2 | 75.0 | 53.7 | 61.9 |
| 2045 | 60.2 | 68.2 | 67.2 | 75.0 | 53.7 | 61.9 |

structure are not the only things evident in table 2. The oldest age category, 70 and older, can be seen to have an increasing effect on the crude labor force participation rate. This group's increasing size, coupled with its traditionally low labor force participation rate, has the effect of substantially lowering the crude labor force participation rate. In 2000, the group lowered the rate by 1.8 percentage points. The size of the 70-and-older group is, of course, affected by the size of birth cohorts reaching age 70, but it is also affected by increasing longevity. Thus, the effect on the participation rate of this group increases when large birth cohorts reach age 70, but does not decline when small cohorts reach 70, because even small cohorts have more survivors to age 70 than they typically did in the past.

The effects of demographic changes on labor force participation rates from 1960 through 2000 are not identical for men and women. In the 1960s, changes in men's age structure drove the crude labor force participation rate down, an effect attributable to baby-boom cohorts in the low-participation teen years, cohorts from the depression or World War II in the high-participation midadult years, and a growing share of the population in the low-participation category of age 70 and older. (See table 2.) Starting in the 1970s, however, the crude rate and the age-adjusted rate began converging, chiefly because the very large baby-boom cohorts in the high-participation midadult years and, by the 1980s, the small Generation X cohorts in the low-participation teen years were, at least temporarily, able to reduce the relative size and effect of the growing share of the male population aged 70 and older. By the early and mid-1990s, there was almost no difference in the crude and age-adjusted rates for men.

Large and small birth cohorts of women also moved through the teen, early adult, and middle-adult ages during those years. However, they had much less effect on the overall women's participation rate than did their male counterparts. (See table 2.) This was because the participation rates of women in the labor force, particularly before the 1980s, did not vary by age as much as did the rates for men. In 1960, for example, the age-specific participation rates for women from age groups 16–17 through 45–49 all fell within a range from 29.1 to 50.9, whereas the age-specific participation rates for men had a range more than twice as large—from 46.0 to 98.2. That is why the crude participation rate and the age-adjusted participation rate for women show very little difference during the 1960s. Eventually, the age-specific participation rates for women showed more variability, although they never matched the variability in the rates for men. However, by the 1980s and 1990s, when the age-specific rates for women began to draw further apart, thereby making it possible for large *and* small birth cohorts to have more of an effect on the overall participation rate, the proportion of women in the very low participation age category of 70 and older became so large that it overwhelmed (and still overwhelms) any cohort effect on the overall participation rate. Thus, from 1960 through 2000, the difference between the crude participation rate and the age-adjusted rate for women increased slowly, but steadily.

While crude labor force participation rates were driven higher and also lower by changes in the age structure of the population from 1960 through 2000, hypothetical population distributions through 2045 show that even greater changes may lie ahead.

## Age-adjusted and crude rates, 2000–45

With the use of Bureau of the Census midrange projections for the size of the U.S. resident population through 2045, broken down by sex and 5-year age categories,[12] crude labor force participation rates for the future were calculated. A comparison of these rates with hypothetical age-adjusted rates anticipates the effect of future demographic shifts in the U.S. population on labor force participation.

In order to calculate future participation rates, two assumptions had to be made. First, the percentage of the resident population that is civilian and noninstitutionalized is assumed to remain the same as it was in the year 2000. This assumption is made for each of the age and sex categories into which the population is divided. Second, the rates at which different age groups participate in the labor force is assumed to remain the same as they were in 2000. This second assumption enables one to see the effect of shifts in the age distribution without having those effects confounded by shifts in the rate at which individual age groups participate in the labor force. The reasonableness of such an assumption is examined later.

Table 1 and chart 4 show hypothetical crude and age-adjusted participation rates at 5-year intervals from 2005 through 2045 for the total population, for men, and for women. The age-adjusted rates are, of course, exactly the same as they were in the year 2000, because of the assumption that the age-specific participation rates do not change and because the 1960 age distribution of the population is being used as a constant reference. With the age-adjusted rates unchanging, what is of interest are the hypothetical crude rates and the gap between those rates and the age-specific rates.

On the basis of population projections and year-2000 age-specific participation rates, the crude labor force participation rate for the total population is expected to decline through the decade of the 2030s, due to shifts in the age distribution of the population. The crude rate, which stood at 67.2 in 2000, is anticipated to drop to 60.1 in 2040, even though the rates at which individual age groups participate in the labor force are assumed to remain constant over the period. The 5-year periods leading up to 2020 are expected to see progressively greater drops in the overall participation rate. Then, from 2020 through 2040, the declines are anticipated to decrease in magnitude, and, starting in the 2040s, shifts in the age distribution of the population are expected to begin raising the labor force participation rate.

The hypothetical men's and women's labor force participation rates follow patterns similar to the pattern for the total population. The women's rate, which was 60.2 in 2000, is expected to drop to a low of 53.7 in 2040, while the men's rate, which stood at 74.7 in 2000, is expected to drop to 67.2 in 2035. The only difference of note between the total, the women's, and the men's hypothetical rates is that the men's is anticipated to bottom out in 2035, while the lowest rates for women and for the total population are not expected to occur until 2040.

**Table 2. Age-group effects on labor force participation rates, 1960–2000, and hypothetical from 2005 to 2045 at 5-year intervals**

| Year | Crude rate | Age-adjusted rate | Age group 16–17 | 18–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70 or older |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total population** | | | | | | | | | | | | | | | |
| 1960 ....... | 59.4 | 59.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1961 ....... | 59.3 | 59.4 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 1962 ....... | 58.8 | 59.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.2 |
| 1963 ....... | 58.7 | 59.2 | –.1 | .0 | .0 | .0 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1964 ....... | 58.7 | 59.4 | –.2 | .0 | .1 | .0 | –.1 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1965 ....... | 58.9 | 59.6 | –.2 | .0 | .1 | .0 | –.1 | –.1 | .0 | –.1 | .0 | .0 | .0 | .0 | –.3 |
| 1966 ....... | 59.2 | 60.0 | –.1 | .0 | .1 | .0 | –.1 | –.1 | .0 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1967 ....... | 59.6 | 60.4 | –.1 | .0 | .1 | .0 | –.1 | –.2 | .0 | .0 | .0 | .0 | .0 | .0 | –.4 |
| 1968 ....... | 59.6 | 60.5 | –.2 | .0 | .1 | .0 | –.1 | –.2 | –.1 | .0 | .0 | .0 | .0 | .0 | –.4 |
| 1969 ....... | 60.1 | 61.0 | –.2 | .0 | .1 | .0 | –.1 | –.2 | –.1 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1970 ....... | 60.4 | 61.3 | –.2 | .0 | .2 | .1 | –.1 | –.3 | –.1 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1971 ....... | 60.2 | 61.2 | –.2 | .0 | .2 | .1 | –.2 | –.3 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1972 ....... | 60.4 | 61.4 | –.2 | .0 | .3 | .1 | –.1 | –.3 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1973 ....... | 60.8 | 61.7 | –.1 | .0 | .3 | .2 | –.1 | –.3 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.4 |
| 1974 ....... | 61.2 | 62.1 | –.1 | .0 | .4 | .2 | –.1 | –.3 | –.3 | –.2 | .0 | .0 | .0 | –.1 | –.3 |
| 1975 ....... | 61.2 | 62.2 | –.1 | .0 | .4 | .3 | –.1 | –.4 | –.3 | –.2 | .0 | .0 | .0 | –.1 | –.4 |
| 1976 ....... | 61.6 | 62.5 | –.1 | .0 | .4 | .3 | –.1 | –.4 | –.3 | –.2 | .0 | .0 | .0 | –.1 | –.4 |
| 1977 ....... | 62.3 | 63.2 | –.1 | .0 | .4 | .3 | .0 | –.4 | –.4 | –.2 | –.1 | .0 | .0 | –.2 | –.4 |
| 1978 ....... | 63.2 | 64.1 | –.1 | .0 | .4 | .3 | .0 | –.3 | –.4 | –.3 | –.1 | .0 | .0 | –.2 | –.5 |
| 1979 ....... | 63.7 | 64.7 | –.1 | .0 | .4 | .3 | .0 | –.3 | –.4 | –.3 | –.1 | .0 | .0 | –.2 | –.6 |
| 1980 ....... | 63.8 | 64.9 | .0 | .0 | .4 | .3 | .1 | –.3 | –.4 | –.3 | –.1 | .0 | .0 | –.1 | –.7 |
| 1981 ....... | 63.9 | 65.0 | .0 | .0 | .4 | .4 | .1 | –.3 | –.4 | –.4 | –.1 | .0 | .0 | –.1 | –.7 |
| 1982 ....... | 64.0 | 65.0 | .1 | .0 | .4 | .4 | .1 | –.2 | –.4 | –.4 | –.1 | .0 | .0 | –.1 | –.8 |
| 1983 ....... | 64.0 | 65.0 | .1 | .0 | .4 | .5 | .1 | –.2 | –.4 | –.4 | –.2 | .0 | .0 | –.1 | –.9 |
| 1984 ....... | 64.4 | 65.4 | .2 | .0 | .4 | .5 | .2 | –.1 | –.3 | –.4 | –.2 | .0 | .0 | –.1 | –1.0 |
| 1985 ....... | 64.8 | 65.8 | .2 | .0 | .3 | .5 | .2 | –.1 | –.3 | –.4 | –.2 | .0 | .0 | –.2 | –1.0 |
| 1986 ....... | 65.3 | 66.3 | .1 | .0 | .3 | .5 | .2 | .0 | –.3 | –.4 | –.2 | .0 | .0 | –.2 | –1.1 |
| 1987 ....... | 65.6 | 66.6 | .1 | .0 | .2 | .5 | .3 | .0 | –.2 | –.4 | –.2 | .0 | .0 | –.2 | –1.1 |
| 1988 ....... | 65.9 | 67.0 | .2 | .0 | .1 | .4 | .3 | .0 | –.2 | –.4 | –.2 | .0 | .1 | –.2 | –1.2 |
| 1989 ....... | 66.5 | 67.5 | .2 | .0 | .1 | .4 | .3 | .0 | –.1 | –.3 | –.2 | .0 | .1 | –.2 | –1.3 |
| 1990 ....... | 66.4 | 67.4 | .3 | .0 | .1 | .4 | .3 | .0 | –.1 | –.3 | –.2 | .0 | .1 | –.2 | –1.4 |
| 1991 ....... | 66.0 | 67.0 | .3 | .0 | .1 | .3 | .3 | .1 | .0 | –.3 | –.2 | .0 | .1 | –.2 | –1.5 |
| 1992 ....... | 66.3 | 67.3 | .4 | .0 | .1 | .2 | .3 | .1 | .0 | –.2 | –.2 | .0 | .1 | –.2 | –1.6 |
| 1993 ....... | 66.2 | 67.2 | .3 | .0 | .0 | .2 | .3 | .1 | .0 | –.2 | –.2 | .0 | .2 | –.1 | –1.7 |
| 1994 ....... | 66.6 | 67.4 | .3 | .0 | .1 | .1 | .2 | .1 | .1 | –.1 | –.2 | .0 | .2 | .0 | –1.6 |
| 1995 ....... | 66.6 | 67.5 | .2 | .0 | .0 | .1 | .2 | .1 | .1 | –.1 | –.2 | .0 | .3 | .0 | –1.7 |
| 1996 ....... | 66.8 | 67.7 | .2 | .0 | .0 | .1 | .1 | .1 | .1 | .0 | –.2 | .0 | .3 | .0 | –1.7 |
| 1997 ....... | 67.1 | 68.0 | .2 | .0 | .0 | .1 | .1 | .1 | .1 | .0 | –.1 | .0 | .3 | .1 | –1.7 |
| 1998 ....... | 67.1 | 68.1 | .2 | .0 | .0 | .0 | .0 | .1 | .2 | .0 | –.1 | .0 | .3 | .2 | –1.8 |
| 1999 ....... | 67.1 | 68.1 | .2 | .0 | .0 | .0 | –.1 | .1 | .2 | .0 | –.1 | .0 | .2 | .2 | –1.8 |
| 2000 ....... | 67.2 | 68.2 | .3 | .0 | .0 | –.1 | –.1 | .0 | .2 | .0 | .0 | .0 | .2 | .2 | –1.8 |
| 2005 ....... | 66.8 | 68.2 | .3 | .0 | .0 | –.1 | –.2 | –.2 | .1 | .1 | .1 | .0 | .1 | .2 | –1.7 |
| 2010 ....... | 65.9 | 68.2 | .3 | .0 | .0 | –.1 | –.3 | –.4 | –.2 | .0 | .1 | .0 | –.2 | –.1 | –1.7 |
| 2015 ....... | 64.6 | 68.2 | .4 | .0 | .0 | .0 | –.2 | –.4 | –.3 | –.2 | .1 | .0 | –.3 | –.6 | –2.1 |
| 2020 ....... | 63.0 | 68.2 | .4 | .0 | .0 | –.1 | –.2 | –.3 | –.3 | –.3 | –.1 | .0 | –.4 | –.9 | –3.0 |
| 2025 ....... | 61.5 | 68.2 | .4 | .0 | –.1 | –.2 | –.2 | –.3 | –.3 | –.3 | –.1 | .0 | –.4 | –1.1 | –4.2 |
| 2030 ....... | 60.5 | 68.2 | .3 | .0 | –.1 | –.2 | –.3 | –.3 | –.2 | –.3 | –.1 | .0 | –.2 | –1.0 | –5.4 |
| 2035 ....... | 60.2 | 68.2 | .3 | .0 | .0 | –.2 | –.3 | –.4 | –.2 | –.2 | –.1 | .0 | .0 | –.6 | –6.2 |
| 2040 ....... | 60.1 | 68.2 | .4 | .0 | .0 | –.1 | –.3 | –.4 | –.3 | –.2 | –.1 | .0 | .0 | –.4 | –6.4 |
| 2045 ....... | 60.2 | 68.2 | .4 | .0 | .0 | –.1 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | –.1 | –.4 | –6.3 |
| **Men** | | | | | | | | | | | | | | | |
| 1960 ....... | 83.3 | 83.3 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 1961 ....... | 82.9 | 83.0 | .1 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 1962 ....... | 82.0 | 82.5 | .1 | –.1 | .0 | .0 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1963 ....... | 81.4 | 82.2 | –.2 | .0 | .0 | –.1 | –.1 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1964 ....... | 81.0 | 82.1 | –.4 | .0 | .0 | –.1 | –.2 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1965 ....... | 80.7 | 81.9 | –.3 | –.1 | .0 | –.1 | –.2 | –.2 | .0 | –.1 | .0 | .0 | .0 | .0 | –.3 |
| 1966 ....... | 80.4 | 81.8 | –.3 | –.2 | .0 | .0 | –.3 | –.2 | .0 | –.1 | .0 | .0 | .0 | .0 | –.3 |

**Table 2. Continued—Age-group effects on labor force participation rates, 1960–2000, and hypothetical from 2005 to 2045 at 5-year intervals**

| Year | Crude rate | Age-adjusted rate | Age group | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16–17 | 18–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70 or older |
| **Men—Continued** | | | | | | | | | | | | | | | |
| 1967 ...... | 80.4 | 81.7 | –.3 | –.2 | .0 | .0 | –.3 | –.3 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1968 ...... | 80.1 | 81.4 | –.3 | –.2 | .0 | .1 | –.3 | –.3 | –.1 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1969 ...... | 79.8 | 81.2 | –.3 | –.2 | .0 | .1 | –.3 | –.4 | –.1 | –.1 | .0 | .0 | .0 | .0 | –.2 |
| 1970 ...... | 79.7 | 81.0 | –.3 | –.2 | .1 | .1 | –.3 | –.4 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.1 |
| 1971 ...... | 79.1 | 80.5 | –.3 | –.2 | .1 | .2 | –.3 | –.4 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.1 |
| 1972 ...... | 79.0 | 80.2 | –.3 | –.2 | .1 | .2 | –.2 | –.4 | –.3 | –.1 | .0 | .0 | .0 | .1 | .0 |
| 1973 ...... | 78.8 | 79.9 | –.3 | –.1 | .2 | .3 | –.2 | –.5 | –.3 | –.2 | .0 | .0 | .0 | .1 | .0 |
| 1974 ...... | 78.7 | 79.7 | –.3 | –.1 | .2 | .3 | –.1 | –.5 | –.3 | –.2 | .0 | .0 | .0 | .0 | .1 |
| 1975 ...... | 77.9 | 78.9 | –.3 | –.1 | .2 | .3 | –.1 | –.5 | –.4 | –.2 | –.1 | .0 | .0 | .0 | .1 |
| 1976 ...... | 77.5 | 78.5 | –.2 | –.1 | .3 | .4 | –.1 | –.5 | –.4 | –.3 | –.1 | .0 | .0 | .0 | .1 |
| 1977 ...... | 77.7 | 78.5 | –.2 | –.1 | .3 | .4 | .0 | –.5 | –.4 | –.3 | –.1 | .0 | .0 | –.1 | .1 |
| 1978 ...... | 77.9 | 78.7 | –.1 | –.1 | .3 | .4 | .0 | –.4 | –.4 | –.3 | –.1 | .0 | .0 | –.1 | .0 |
| 1979 ...... | 77.9 | 78.6 | –.1 | –.1 | .3 | .4 | .1 | –.4 | –.4 | –.4 | –.1 | .0 | .0 | –.1 | .0 |
| 1980 ...... | 77.4 | 78.2 | –.1 | –.1 | .3 | .4 | .1 | –.3 | –.4 | –.4 | –.1 | .0 | .0 | .0 | –.1 |
| 1981 ....... | 77.0 | 77.7 | .0 | –.1 | .3 | .4 | .2 | –.3 | –.4 | –.4 | –.2 | .0 | .0 | .0 | –.2 |
| 1982 ....... | 76.6 | 77.2 | .1 | –.1 | .3 | .5 | .2 | –.2 | –.4 | –.5 | –.2 | .0 | .0 | .0 | –.2 |
| 1983 ....... | 76.4 | 76.8 | .2 | –.1 | .3 | .5 | .2 | –.2 | –.4 | –.5 | –.2 | .0 | .0 | .0 | –.3 |
| 1984 ....... | 76.4 | 76.6 | .2 | .0 | .3 | .6 | .2 | –.1 | –.4 | –.5 | –.3 | .0 | .0 | .0 | –.4 |
| 1985 ....... | 76.3 | 76.6 | .2 | .0 | .3 | .6 | .3 | –.1 | –.3 | –.5 | –.3 | .0 | .0 | –.1 | –.4 |
| 1986 ....... | 76.2 | 76.5 | .2 | .0 | .2 | .6 | .3 | .0 | –.3 | –.5 | –.3 | .0 | .0 | –.1 | –.4 |
| 1987 ....... | 76.2 | 76.4 | .2 | .0 | .2 | .6 | .4 | .0 | –.2 | –.4 | –.3 | .0 | .1 | –.1 | –.5 |
| 1988 ....... | 76.2 | 76.4 | .2 | .0 | .2 | .5 | .4 | .0 | –.2 | –.4 | –.3 | .0 | .1 | –.1 | –.5 |
| 1989 ....... | 76.4 | 76.6 | .3 | .0 | .1 | .5 | .4 | .1 | –.1 | –.3 | –.3 | .0 | .1 | –.2 | –.6 |
| 1990 ....... | 76.1 | 76.2 | .4 | .0 | .1 | .4 | .4 | .1 | –.1 | –.3 | –.3 | –.1 | .1 | –.2 | –.7 |
| 1991 ....... | 75.5 | 75.6 | .4 | .0 | .1 | .4 | .4 | .1 | .0 | –.3 | –.3 | –.1 | .1 | –.1 | –.8 |
| 1992 ....... | 75.6 | 75.6 | .5 | .0 | .1 | .3 | .4 | .2 | .0 | –.2 | –.3 | –.1 | .1 | –.1 | –.9 |
| 1993 ....... | 75.2 | 75.2 | .4 | .0 | .1 | .2 | .3 | .2 | .0 | –.2 | –.2 | .0 | .2 | –.1 | –1.0 |
| 1994 ....... | 75.1 | 74.8 | .3 | .0 | .1 | .2 | .3 | .2 | .1 | –.1 | –.2 | .0 | .3 | .1 | –.9 |
| 1995 ....... | 75.0 | 74.8 | .3 | .0 | .1 | .2 | .2 | .2 | .1 | –.1 | –.2 | .0 | .3 | .1 | –1.0 |
| 1996 ....... | 74.9 | 74.9 | .3 | .0 | .0 | .1 | .2 | .2 | .1 | .0 | –.2 | .0 | .3 | .1 | –1.0 |
| 1997 ....... | 75.0 | 75.0 | .3 | .0 | .0 | .1 | .1 | .2 | .2 | .0 | –.1 | –.1 | .3 | .2 | –1.1 |
| 1998 ....... | 74.9 | 75.0 | .3 | .0 | .0 | .1 | .0 | .2 | .2 | .0 | –.1 | .0 | .2 | .2 | –1.2 |
| 1999 ....... | 74.7 | 75.0 | .3 | .0 | .0 | .0 | –.1 | .1 | .2 | .0 | –.1 | .0 | .2 | .2 | –1.2 |
| 2000 ....... | 74.7 | 75.0 | .3 | .0 | .1 | .0 | –.1 | .1 | .2 | .0 | .0 | .0 | .2 | .3 | –1.3 |
| 2005 ....... | 74.1 | 75.0 | .3 | .0 | .1 | –.1 | –.3 | –.2 | .1 | .1 | .0 | .0 | .1 | .2 | –1.2 |
| 2010 ....... | 73.2 | 75.0 | .4 | .0 | .1 | .0 | –.3 | –.4 | –.2 | .0 | .1 | .0 | –.1 | –.1 | –1.3 |
| 2015 ....... | 71.8 | 75.0 | .5 | .0 | .1 | .0 | –.3 | –.4 | –.3 | –.2 | .1 | .0 | –.3 | –.6 | –1.8 |
| 2020 ....... | 70.2 | 75.0 | .5 | .0 | .0 | .0 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | –.4 | –.8 | –2.8 |
| 2025 ....... | 68.6 | 75.0 | .5 | .0 | .0 | –.1 | –.3 | –.4 | –.3 | –.3 | –.2 | .0 | –.3 | –1.1 | –4.0 |
| 2030 ....... | 67.6 | 75.0 | .5 | .0 | .0 | –.2 | –.4 | –.4 | –.2 | –.2 | –.2 | .0 | –.1 | –1.0 | –5.2 |
| 2035 ....... | 67.2 | 75.0 | .5 | .0 | .0 | –.2 | –.4 | –.4 | –.2 | –.2 | –.1 | .0 | .0 | –.6 | –6.1 |
| 2040 ....... | 67.2 | 75.0 | .5 | .0 | .0 | –.1 | –.4 | –.5 | –.3 | –.2 | –.1 | .0 | .0 | –.4 | –6.3 |
| 2045 ....... | 67.2 | 75.0 | .5 | .0 | .0 | –.1 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | –.1 | –.4 | –6.1 |
| **Women** | | | | | | | | | | | | | | | |
| 1960 ....... | 37.7 | 37.7 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 1961 ....... | 38.1 | 38.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 1962 ....... | 37.9 | 38.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.2 |
| 1963 ....... | 38.3 | 38.6 | .0 | .0 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.2 |
| 1964 ....... | 38.7 | 39.0 | –.1 | .0 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1965 ....... | 39.3 | 39.6 | –.1 | .1 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1966 ....... | 40.3 | 40.5 | –.1 | .1 | .1 | .0 | .0 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | –.3 |
| 1967 ....... | 41.1 | 41.4 | –.1 | .1 | .2 | .0 | .0 | –.1 | .0 | .0 | .0 | .0 | .0 | .0 | –.4 |
| 1968 ....... | 41.6 | 41.9 | –.1 | .1 | .2 | .0 | .0 | –.1 | –.1 | .0 | .0 | .0 | .0 | .0 | –.4 |
| 1969 ....... | 42.7 | 43.1 | –.1 | .1 | .3 | .0 | .0 | –.1 | –.1 | .0 | .0 | .0 | .0 | .0 | –.4 |
| 1970 ....... | 43.3 | 43.8 | –.1 | .1 | .4 | .0 | .0 | –.1 | –.1 | –.1 | .0 | .0 | .0 | .0 | –.5 |
| 1971 ....... | 43.4 | 43.9 | –.1 | .1 | .4 | .0 | .0 | –.2 | –.1 | –.1 | .0 | .0 | .0 | .0 | –.5 |
| 1972 ....... | 43.9 | 44.4 | –.1 | .1 | .4 | .0 | .0 | –.2 | –.2 | –.1 | .0 | .0 | .0 | .0 | –.6 |
| 1973 ....... | 44.7 | 45.3 | .0 | .1 | .4 | .1 | .0 | –.2 | –.2 | –.1 | .0 | .0 | .0 | –.1 | –.6 |
| 1974 ....... | 45.6 | 46.3 | .0 | .1 | .5 | .1 | .0 | –.2 | –.2 | –.1 | .0 | .0 | .0 | –.1 | –.6 |

**Table 2. Continued—Age-group effects on labor force participation rates,1960–2000, and hypothetical from 2005 to 2045 at 5-year intervals**

| Year | Crude rate | Age-adjusted rate | Age group | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 16–17 | 18–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70 or older |
| **Women—Continued** | | | | | | | | | | | | | | | |
| 1975 ....... | 46.3 | 47.0 | .0 | .1 | .5 | .2 | .0 | –.2 | –.2 | –.1 | .0 | .0 | .0 | –.2 | –.6 |
| 1976 ....... | 47.3 | 48.1 | .0 | .1 | .5 | .2 | –.1 | –.3 | –.3 | –.2 | .0 | .0 | .0 | –.2 | –.7 |
| 1977 ....... | 48.4 | 49.3 | .0 | .1 | .5 | .2 | .0 | –.3 | –.3 | –.2 | .0 | .0 | .0 | –.2 | –.7 |
| 1978 ....... | 50.0 | 50.9 | .0 | .1 | .5 | .2 | .0 | –.2 | –.3 | –.2 | .0 | .0 | .0 | –.2 | –.8 |
| 1979 ....... | 51.0 | 52.0 | .0 | .1 | .5 | .3 | .0 | –.2 | –.3 | –.2 | .0 | .0 | .0 | –.2 | –.9 |
| 1980 ....... | 51.6 | 52.8 | .0 | .1 | .5 | .3 | .0 | –.2 | –.3 | –.2 | –.1 | .0 | .0 | –.2 | –1.0 |
| 1981 ....... | 52.2 | 53.5 | .0 | .1 | .4 | .3 | .1 | –.2 | –.4 | –.3 | –.1 | .0 | .0 | –.2 | –1.1 |
| 1982 ....... | 52.6 | 54.0 | .0 | .0 | .4 | .4 | .1 | –.2 | –.4 | –.3 | –.1 | .0 | .0 | –.2 | –1.2 |
| 1983 ....... | 52.9 | 54.3 | .1 | .0 | .4 | .4 | .1 | –.2 | –.3 | –.3 | –.1 | .0 | .0 | –.1 | –1.3 |
| 1984 ....... | 53.6 | 55.1 | .1 | .0 | .4 | .4 | .1 | –.2 | –.3 | –.3 | –.1 | .0 | .0 | –.1 | –1.4 |
| 1985 ....... | 54.5 | 56.0 | .1 | .0 | .3 | .4 | .1 | –.1 | –.3 | –.3 | –.1 | .0 | .0 | –.2 | –1.4 |
| 1986 ....... | 55.3 | 56.9 | .1 | .0 | .2 | .4 | .2 | –.1 | –.3 | –.3 | –.1 | .0 | .0 | –.2 | –1.5 |
| 1987 ....... | 56.0 | 57.7 | .1 | .0 | .2 | .4 | .2 | –.1 | –.2 | –.3 | –.1 | .1 | .0 | –.2 | –1.6 |
| 1988 ....... | 56.6 | 58.3 | .1 | .0 | .1 | .4 | .2 | –.1 | –.2 | –.3 | –.1 | .1 | .0 | –.2 | –1.7 |
| 1989 ....... | 57.4 | 59.2 | .2 | .0 | .1 | .3 | .2 | .0 | –.1 | –.3 | –.1 | .1 | .1 | –.3 | –1.7 |
| 1990 ....... | 57.5 | 59.2 | .2 | .0 | .0 | .3 | .2 | .0 | –.1 | –.3 | –.2 | .1 | .1 | –.3 | –1.8 |
| 1991 ....... | 57.3 | 59.1 | .2 | .0 | .0 | .2 | .2 | .0 | .0 | –.3 | –.2 | .0 | .1 | –.2 | –1.9 |
| 1992 ....... | 57.8 | 59.5 | .3 | .0 | .0 | .2 | .2 | .1 | .0 | –.2 | –.2 | .0 | .1 | –.2 | –2.0 |
| 1993 ....... | 57.9 | 59.7 | .3 | .0 | .0 | .1 | .2 | .1 | .0 | –.2 | –.2 | .0 | .2 | –.2 | –2.1 |
| 1994 ....... | 58.8 | 60.4 | .2 | .0 | .0 | .1 | .2 | .1 | .0 | –.1 | –.2 | .0 | .2 | –.1 | –2.1 |
| 1995 ....... | 58.9 | 60.6 | .2 | .0 | .0 | .1 | .1 | .1 | .1 | –.1 | –.1 | .0 | .2 | –.1 | –2.2 |
| 1996 ....... | 59.3 | 60.9 | .2 | .0 | –.1 | .1 | .1 | .1 | .1 | .0 | –.1 | .0 | .3 | .0 | –2.2 |
| 1997 ....... | 59.8 | 61.5 | .2 | .0 | –.1 | .0 | .0 | .1 | .1 | .0 | –.1 | .0 | .3 | .0 | –2.2 |
| 1998 ....... | 59.8 | 61.6 | .2 | .0 | –.1 | .0 | .0 | .1 | .1 | .0 | –.1 | .0 | .3 | .1 | –2.3 |
| 1999 ....... | 60.0 | 61.7 | .2 | .0 | –.1 | .0 | –.1 | .0 | .2 | .0 | .0 | .0 | .2 | .2 | –2.2 |
| 2000 ....... | 60.2 | 61.9 | .2 | .0 | –.1 | –.1 | –.1 | .0 | .2 | .0 | .0 | .0 | .2 | .2 | –2.2 |
| 2005 ....... | 60.0 | 61.9 | .2 | .0 | .0 | –.1 | –.2 | –.2 | .1 | .1 | .1 | .0 | .1 | .2 | –2.0 |
| 2010 ....... | 59.2 | 61.9 | .2 | .0 | .0 | –.1 | –.2 | –.3 | –.2 | .0 | .1 | .0 | –.2 | –.1 | –1.9 |
| 2015 ....... | 57.9 | 61.9 | .3 | .0 | .0 | –.1 | –.2 | –.3 | –.3 | –.2 | .1 | .0 | –.3 | –.6 | –2.3 |
| 2020 ....... | 56.3 | 61.9 | .3 | .0 | –.1 | –.1 | –.2 | –.3 | –.3 | –.3 | .0 | .0 | –.4 | –.9 | –3.2 |
| 2025 ....... | 54.9 | 61.9 | .3 | .0 | –.1 | –.2 | –.2 | –.3 | –.3 | –.3 | –.1 | .0 | –.4 | –1.1 | –4.3 |
| 2030 ....... | 54.0 | 61.9 | .3 | .0 | –.1 | –.2 | –.3 | –.3 | –.3 | –.3 | –.1 | .0 | –.2 | –1.0 | –5.4 |
| 2035 ....... | 53.7 | 61.9 | .3 | .0 | –.1 | –.2 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | .0 | –.6 | –6.2 |
| 2040 ....... | 53.7 | 61.9 | .3 | .0 | –.1 | –.1 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | .0 | –.4 | –6.5 |
| 2045 ....... | 53.7 | 61.9 | .3 | .0 | –.1 | –.1 | –.3 | –.4 | –.3 | –.3 | –.1 | .0 | –.1 | –.4 | –6.4 |

There is no mystery, of course, as to why these hypothetical participation rates decline through the first four decades of the 21st century and then begin to rise. The explanation lies in the growing relative size of the oldest age groups in the population. As noted earlier, larger cohorts in age categories with low participation push the crude participation rate downwards. For the first decade of the new century, the cohorts in the oldest age categories are made large not by exceptionally high numbers of births or immigrants, but by delayed mortality. By the second decade of the new century, the arrival of the baby-boom cohorts, plus the effect of increased longevity, swells the ranks of older Americans and drives the crude participation rate down even faster. The entry of the much smaller Generation X cohorts into the older age categories, coupled with the eventual deaths of the baby-boom cohorts, finally stops the decline. The shorter life expectancy of men accounts for why their participation rate bottoms out a little sooner than the women's rate does.

With such dramatic changes anticipated in future crude participation rates, the straight-line calculations for the age-adjusted rates look rather dull. As noted earlier, this is because they not only assume no changes in the age-specific participation rates between 2000 and 2045, but also use an unchanging age distribution of the population—namely, the 1960 age distribution. Is it realistic to assume that the rate at which particular age groups will participate in the labor force will remain unchanged? Almost certainly not! Increasing levels of education may decrease the participation rates of teens and those in their early twenties. Women in early, middle, and late adulthood may continue to increase their labor force participation rates. An increase in the minimum age at which one qualifies for Social Security or pension benefits may encourage large numbers of persons to stay in the labor force longer than is the custom now. The labor force participation rate of the elderly may rise due to improved health, reduced pension benefits, or an increased demand for older workers. The rates at which particular age groups participate in the labor force will almost certainly change from what they are now—and that is the very advantage of the age-adjusted labor force participation rate. The effects of the possible changes just described are likely to be lost in an examination of crude participation rates from 2000 to 2045, because they will be swamped by the effects of shifts in the age distribution of the population during those years. The age-adjusted rate holds the age structure constant, thereby permitting a clearer view of changes in participation, and not changes in participation conflated with changes in the age distribution.

THE RECOGNITION THAT THE AGING OF THE POPULATION will push labor force participation rates down is certainly not original to this article. What the article provides that is new is a metric by which to measure, compare, and separate out the effect of age shifts in the population from the effects of other things on labor force participation. The age-adjusted participation rate shows what the crude rate *would have been* if the relative sizes of the age groups that make up the population had stayed exactly as they were in 1960. For example, if persons 70 years of age and older make up just 8.2 percent of the adult civilian noninstitutionalized population in 2040, as they did in 1960, the crude labor force participation rate for the total population will be 6.4 percentage points higher than it otherwise would be, the rate for men will be 6.3 points higher, and the rate for women will be 6.5 points higher. (See table 2.)

In concluding this analysis, three points should be mentioned. First, the purpose of the analysis was not to identify the cultural, economic, and social reasons behind changes in labor force participation during the last four decades, but to more clearly assess how much change has taken place once the effects of shifts in the age structure have been separated out. When standardizing for age, one sees, for example, that the increase in women's labor force participation from 1960 through 2000 is even greater than previously reported. Second, crude labor force participation rates not just for men, but also for women and the total population, are expected to decline dramatically in the coming decades, due to the increasing share of the population that is age 70 and older and the very low labor force participation rates those age groups currently have and are likely to continue to have. A comparison of crude and age-adjusted participation rates over the next several decades will yield a better understanding of the diverse forces that shape the Nation's labor force. Finally, adjusted rates will facilitate comparisons of the labor force participation of various populations across time or national boundaries—populations that may have dramatically different age structures. □

## Notes

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[1] Several authors have noted the effect of the changing age structure on labor force participation. Particularly relevant to the analysis in this article are the following works of Howard N Fullerton, Jr.: "Labor force projections: the baby boom moves on," *Monthly Labor Review*, November 1991, pp. 31–44; "Labor force projections to 2008: steady growth and changing composition," *Monthly Labor Review*, November 1999, pp. 19–32; and "Labor force participation: 75 years of change, 1950–98 and 1998–2025," *Monthly Labor Review*, December 1999, pp. 3–12.

[2] For example, see George W. Barclay, *Techniques of Population Analysis* (New York, Wiley, 1958); and "National Center for Health Statistics, Data Definitions—Age-Adjustment," on the Internet at **http://www.cdc.gov/nchs/datawh/nchsdefs/ageadjustment.htm**.

[3] Fullerton uses this technique briefly in "Labor force participation" to project the labor force size and participation rate in 2025 if the age structure in that year were the same as it was expected to be in 2015.

[4] Labor force participation rates reported by the Bureau of Labor Statistics are based on the adult civilian noninstitutionalized population. Since 1947, *adult* has been defined as 16 years of age or older. In this article, all references to populations are to adult civilian noninstitutionalized populations, unless otherwise noted.

[5] The 1960 adult civilian noninstitutionalized population was chosen as the "standard" population for these calculations because it was not long after that the Bureau of Labor Statistics began reporting labor force participation rates for 5-year age groups (1959) and because it was before the very large baby-boom birth cohorts reached the age (16) when they were officially included in the definition of the adult civilian noninstitutionalized population. An alternative approach for selecting a standard population is to use a hypothetical age distribution consistent with the demographic characteristics of an industrial society, but free of the demographic and historical idiosyncracies that always mark the age distribution of any actual nation. While such an approach is not without merit, it was rejected because it would not permit comparisons with an actual point in our Nation's history. Age-adjusted demographic rates, such as the age-adjusted mortality rate, also use an actual age distribution as the standard, rather than a hypothetical age distribution. (See "Notice to

Readers: New Population Standard for Age-Adjusting Death Rates," *Morbidity and Mortality Weekly Report* (Atlanta, Centers for Disease Control, Feb. 19, 1999); on the Internet at **http://www.cdc.gov/mmwr/preview/mmwrhtml/00056512.htm**.

[6] The January issue of *Employment and Earnings* customarily reports the average number of persons in the population and the average number of persons in the labor force for the previous year, broken down by sex and by detailed age categories. However, for the years 1960, 1961, and 1962, such information did not appear until the September 1963 issue of the publication.

[7] Although *Employment and Earnings* reports labor force data separately for 16-to-17-year-olds and 18-to-19-year-olds, the two groups have been combined in the population distributions presented in this article in order to make them more comparable to the normal 5-year age groups. In calculating labor force participation rates, however, the two groups are considered separately.

[8] Population data for years after 2000 are from U.S. Bureau of the Census, Population Division, Population Projections Program; on the Internet at **http://www.census.gov/population/www/projections/natsum-T3.html** (updated Nov. 2, 2000).

[9] By using the 1960 age distribution as the standard, not only is the size of the age-sex groups not allowed to change, but also, the sex ratios within age groups and within the population as a whole become fixed. In the actual population, these sex ratios have changed since 1960 and will continue to change due to sex-related differences primarily in migration and mortality. Because men and women have different labor force participation rates, those changing sex ratios affect the relative contribution of men's and women's participation rates to that of the total population. This effect of the changing ratios on the total population rate is eliminated when the age-adjusted labor force participation rate is used.

[10] To understand the effect of the size of a cohort on the crude participation rate, think of the crude rate as the equilibrium point between opposing forces. Those age groups with participation rates higher than the age-adjusted rate are pushing the crude rate above the age-adjusted rate, while those with participation rates below the age-adjusted rate are dragging the crude rate below the age-adjusted rate. When a large cohort is in an age range with high participation rates, it provides more upward push than came from the comparable age range in 1960, with the result that the equilibrium point, or crude rate, is higher, whereas a small cohort in that same high participation age range provides less push than the comparable 1960 age group, with the result that the crude rate drops. Conversely, a large cohort in an age range with low participation provides more downward pressure on the crude rate than came from that group in 1960, whereas a small cohort in that same low-participation age range provides less drag than did the 1960 age group.

[11] The effects of the 18-to-19-year-olds and the 55-to-59-year-olds on labor force participation rates, as shown in table 2, are always close to zero. This is due, not to errors in calculation, but rather to these age groups having labor force participation rates very close to the age-adjusted rate for the population. An examination of the formula used to calculate age-group effects shows that a group's effect approaches zero if one of two conditions occurs: either the group's proportion of the population approaches the group's proportion in 1960, or the group's participation rate approaches the age-adjusted participation rate for the population.

[12] See note 8.