Mean Age of Mother, 1970–2000

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Abstract

Objectives—This report presents trends in the mean age of mothers giving birth for the United States for the last three decades. Data are presented by live-birth order, race, Hispanic origin, and State of residence of the mother.

Methods—Descriptive tabulations and graphs of the trends in the mean age of mother are discussed.

Results—The mean age of mother has increased steadily in the United States over the last three decades. Mothers having their first and second live births had the largest increase in mean age. Among racial and Hispanic origin subgroups, Japanese women had the highest mean age in 2000. Puerto Rican women had the lowest mean age. Massachusetts had the highest mean age in 2000 and Mississippi had the lowest.

Keywords: mean age • birth order • race and Hispanic origin • State-specific mean age

Introduction

Data on the age of mothers have been collected and published from the birth registration system of the United States for many decades. One measure that generates considerable interest among researchers and particularly the public is the typical age at which women have children. Often the interest is specifically in the "average" age of women having their first child.

The mean age figures, published here in detail for the first time, are shown for the years 1970–2000. Data by State are shown for 1970, 1980, 1990, and 2000. Data by detailed race and Hispanic origin begin with 1989, when the Hispanic reporting area was nearly complete, and go through 2000. Mean age of mother for selected countries are shown for 1970 and 2000. Information about change in the mean age of mother over these various time periods is displayed as absolute change in years.

The mean age of mother is the arithmetic average of the mother's age at time of the birth. For this report the mean age is computed directly from the frequency of births by age of mother in the United States (approximately 4 million annually). Consequently, the measure
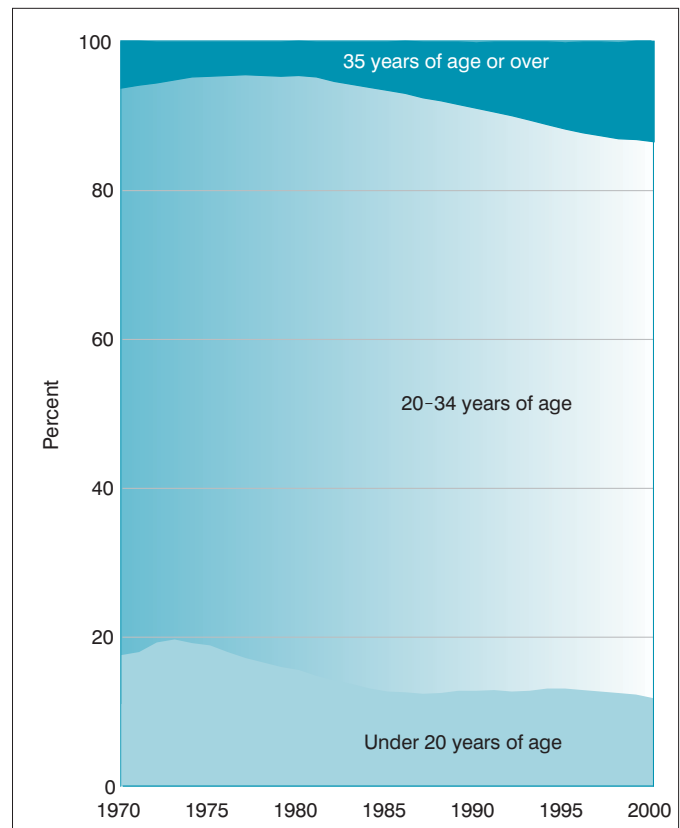
Figure 1. Percent of all live births by age of mother, 1970–2000

is affected by age patterns in childbearing and by the age distribution of the population of women within the childbearing years. The age distribution of women giving birth has changed from 1970 to 2000 with relatively fewer mothers under 20 years of age and more mothers 35 years and over (figure 1).

Median age of mother is a related measure to the mean and is published elsewhere (1). The median age of the mother is the middle point if mothers ages were arranged from the lowest to highest. Published medians are computed using the birth rates of women in 5-year age groups, from 10–14 years to 45–49 years of age (1,2). The median is the more useful measure when it is appropriate to minimize the influence of outliers, i.e., births to the youngest and oldest women. Another measure, age-specific birth rates, can also be used to describe the age pattern of childbearing of women over time. However, mean age at birth is more easily compared over time and across population groups than age-specific birth rates. It is also easier to interpret than either age-specific birth rates or median age at birth. For a more detailed explanation of the difference between the mean and median age of mother and the calculation of these measures see the Technical Notes.

Results and Discussion

Mean age of mother, 1970–2000

The mean age of mother in the United States was 24.6 in 1970 and rose to 27.2 in 2000, an increase of 2.6 years. The mean age at first birth was 21.4 in 1970 and rose to 24.9 in 2000, an increase of 3.5 years.

In contrast, the median age of mother was 25.4 in 1970 and 27.1 in 2000. The median age at first birth was 22.1 in 1970 and 24.6 in 2000. In 1990 the mean was higher than the median, remained higher through 1998, but was only slightly higher in 1999 and 2000 (table 1, figure 2, and table I in the Technical Notes).

Figure 2 shows that in most years, the mean and median ages were not identical. In the 1970s the mean age was lower than the median, while in the 1990s the mean was slightly higher (see the Technical Notes for a more detailed explanation of these differences).

Mothers are older

The mean age of mothers increased 2.6 years in the past three decades. This increase occurred despite the fact that over one-half of all births still occur to women in their twenties. The lowest mean age was for the years 1973 and 1974 (24.4 years of age).

The increase in the mean age for women having their first live birth from 1970 to 2000 was 3.5 years. The largest increase in mean age was for women having their second live birth (3.6 years). Mean age at third, fourth, and fifth and higher order increased 2.6, 1.6, and 0.4 years, respectively (table 1).

Mean age by race and Hispanic origin

Table 2 shows the mean age of mother by race and Hispanic origin by live birth order for the years 1989–2000. The mean age for all groups for all live birth orders increased during this time period (figure 3). In 1989 Chinese women had the highest mean age of 30.4 years, but in 2000 Japanese women had the highest mean age at 31.8 years. Puerto Rican women had the lowest mean age in 1989
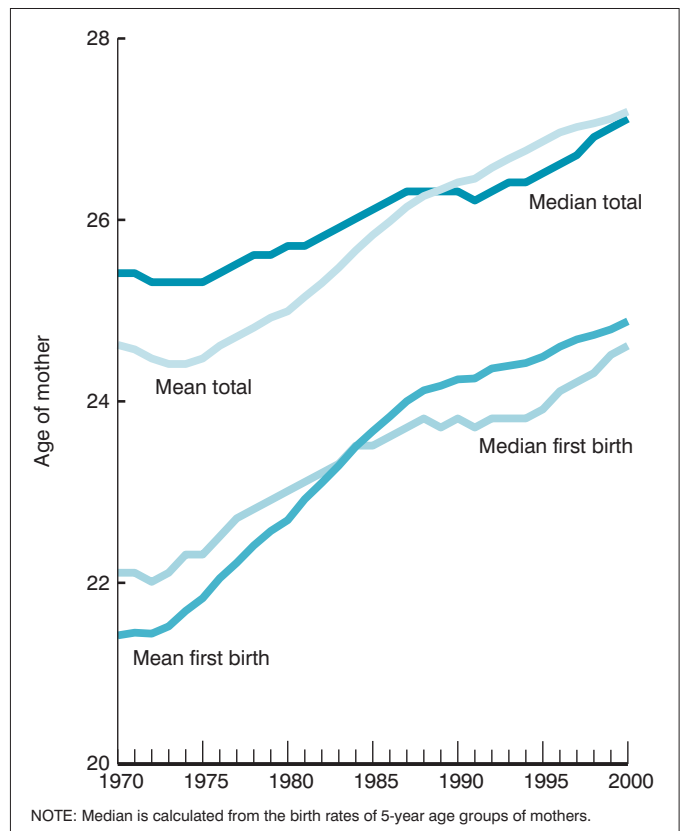

NOTE: Median is calculated from the birth rates of 5-year age groups of mothers.

Figure 2. Mean and median age of mother by live birth order, 1970–2000
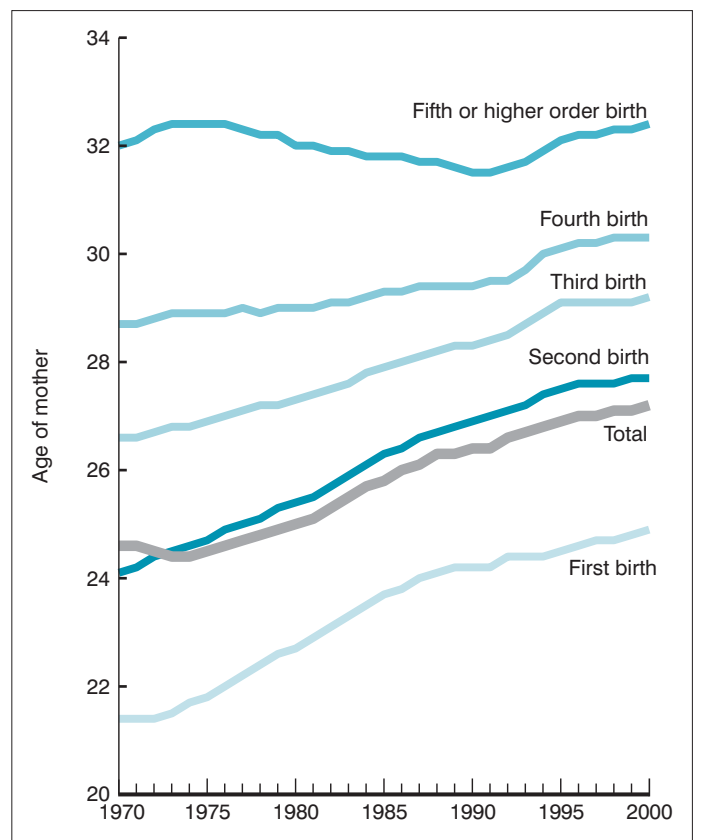

Figure 3. Mean age of mother by live birth order, 1970–2000

and 2000 (24.3 and 25.0 years, respectively). American Indian women had the lowest mean age at first live birth in both 1989 and 2000 (21.3 and 21.6 years, respectively). Japanese and Chinese women had the highest mean ages in all live birth orders from 1989 to 2000 (data for 2000 in figure 4).

Mean age at first live birth by State

Mean age of mother at first live birth varies considerably by State (table 3 and figure 5). In 1970 the lowest mean age was for Arkansas at 20.2 years. The mean ages for Connecticut, Massachusetts, and New York was 22.5 in 1970, 2.3 years higher than Arkansas. In 2000 Mississippi had the lowest mean age, 22.5 years, while Massachusetts had the highest at 27.8, a difference of 5.3 years.

Several factors affect variations in mean age by State. States with higher proportions of births to younger women have a lower mean age. Teenage women are the most likely to be having first births and thus State teenage birth rates play a role in variations in the mean age at first live birth by State. Compositional factors can also affect variations in means by State. In general, black, Hispanic, and American Indian women have lower mean ages than non-Hispanic white and Asian or Pacific Islander women (table 2). States with higher proportions of black, Hispanic, and American Indian women can be expected to have lower mean ages.

All States and the District of Columbia had significant increases in the mean age at first birth from 1970 to 2000 (figure 5). Eight States and the District of Columbia reported an increase of more than 4 years. Massachusetts reported the greatest increase in mean age at first birth, 5.3 years, from 22.5 to 27.8, while Utah reported the smallest increase, 1.9 years.

In the more recent period, from 1990 to 2000, only Alaska declined significantly in mean age at first birth, declining less than 1 year from 24.4 years to 24.1. Forty-five States and the District of Columbia had significant increases in mean age in this decade. Six States, Massachusetts, Michigan, Virginia, North Carolina, New Jersey, and New Hampshire and the District of Columbia had absolute increases of 1 year or more of age.

Mean age at first birth for developed countries

The mean age at first birth varies considerably across developed nations (table 4). According to the latest available data for selected countries, the mean age in 2000 ranged from 24 in the Slovak Republic to 29 in Switzerland (3–5). Increases in mean age at first birth from 1970 to 2000 for the selected countries shown here range from 2 to 4 years. The United States ranks in the top one-half of this distribution, with an increase of 3.5 years. A recent report showed that most developed countries have experienced an increase in the mean age at first birth over the last 30 years (6).

[1]Persons of Hispanic origin may be of any race.
[2]Includes Aleuts and Eskimos.
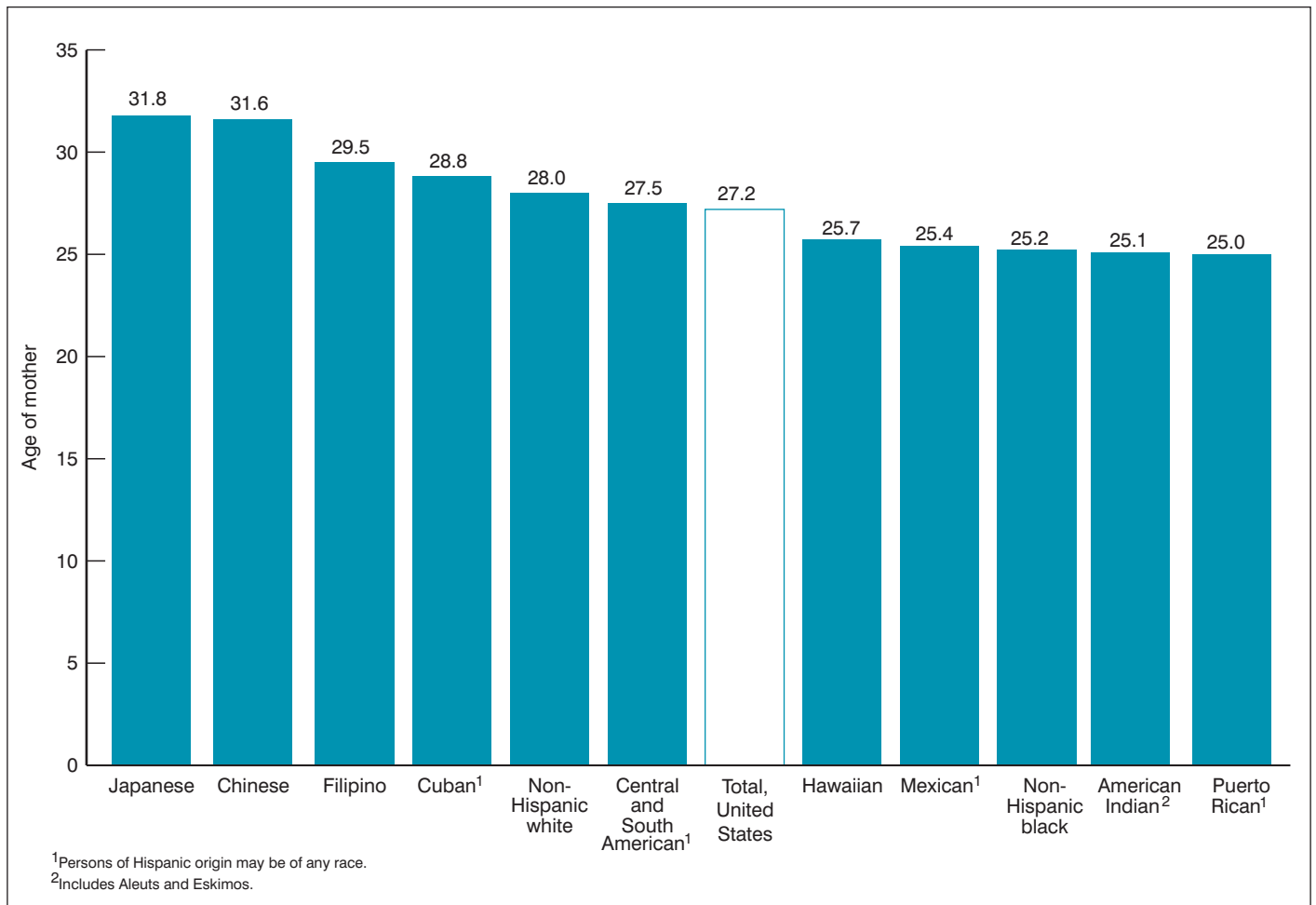
Figure 4. Mean age of mother by race and Hispanic origin of mother, 2000
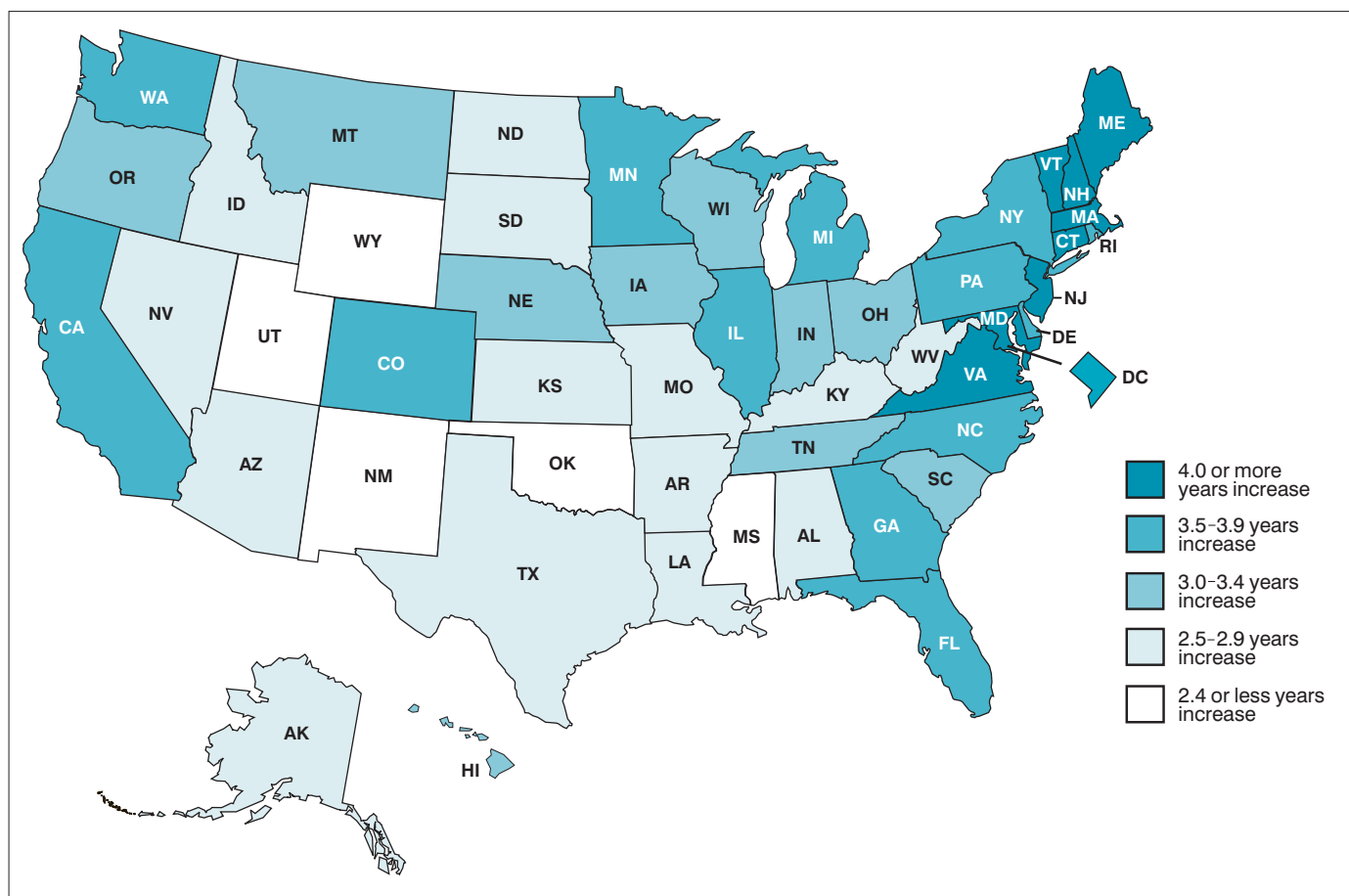
Figure 5. Absolute change in mean age of mother at first live birth, 1970–2000

Factors affecting mean age at birth

Since 1970 the data in this report show that the mean age of mother for all births and the mean age at first birth increased 2.6 and 3.5 years, respectively. The fact that the rise has been widespread, occurring for each birth order, race and Hispanic origin group, and all States, supports the idea that there has been a real change in the reproductive behavior of women in the United States.

Several factors may account for the upward trend in mean age at birth apart from an upward shift in the age structure of the population of women. Education and career have been reported as important factors in women's decisions to delay marriage and motherhood (7). From 1970 to 2000, the percent of women having completed 4 or more years of college nearly tripled while the female labor force participation rate increased 39 percent (8). Contraceptive use at first intercourse, particularly condom use, rose dramatically between the 1970s and 1990s (9). These concurrent trends can contribute to the delay of a first birth and subsequently to older ages at second and higher order births. The effect of economic cycle, social support, marriage squeeze, and marital disruption, are additional factors to be considered in under-standing the postponement of childbearing.

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List of Detailed Tables

Table 1. Mean age of mother and absolute change by live birth order: United States, 1970–2000

Year	Total[1]	1st	2d	3d	4th	5th and higher order
2000	27.2	24.9	27.7	29.2	30.3	32.4
1999	27.1	24.8	27.7	29.1	30.3	32.3
1998	27.1	24.7	27.6	29.1	30.3	32.3
1997	27.0	24.7	27.6	29.1	30.2	32.2
1996	27.0	24.6	27.6	29.1	30.2	32.2
1995	26.9	24.5	27.5	29.1	30.1	32.1
1994	26.8	24.4	27.4	28.9	30.0	31.9
1993	26.7	24.4	27.2	28.7	29.7	31.7
1992	26.6	24.4	27.1	28.5	29.5	31.6
1991	26.4	24.2	27.0	28.4	29.5	31.5
1990	26.4	24.2	26.9	28.3	29.4	31.5
1989	26.3	24.2	26.8	28.3	29.4	31.6
1988	26.3	24.1	26.7	28.2	29.4	31.7
1987	26.1	24.0	26.6	28.1	29.4	31.7
1986	26.0	23.8	26.4	28.0	29.3	31.8
1985	25.8	23.7	26.3	27.9	29.3	31.8
1984	25.7	23.5	26.1	27.8	29.2	31.8
1983	25.5	23.3	25.9	27.6	29.1	31.9
1982	25.3	23.1	25.7	27.5	29.1	31.9
1981	25.1	22.9	25.5	27.4	29.0	32.0
1980	25.0	22.7	25.4	27.3	29.0	32.0
1979	24.9	22.6	25.3	27.2	29.0	32.2
1978	24.8	22.4	25.1	27.2	28.9	32.2
1977	24.7	22.2	25.0	27.1	29.0	32.3
1976	24.6	22.0	24.9	27.0	28.9	32.4
1975	24.5	21.8	24.7	26.9	28.9	32.4
1974	24.4	21.7	24.6	26.8	28.9	32.4
1973	24.4	21.5	24.5	26.8	28.9	32.4
1972	24.5	21.4	24.4	26.7	28.8	32.3
1971	24.6	21.4	24.2	26.6	28.7	32.1
1970	24.6	21.4	24.1	26.6	28.7	32.0
Absolute change 1970–2000	2.6	3.5	3.6	2.6	1.6	0.4

[1]Includes birth order not stated.

Table 2. Mean age of mother and absolute change by race and Hispanic origin of mother and live birth order: United States, 1989–2000

Years and origin/race of mother	Total[1]	1st	2d	3d	4th	5th and higher order
Non-Hispanic white						
2000	28.0	25.9	28.6	30.0	31.3	33.4
1999	27.9	25.8	28.5	30.0	31.2	33.4
1998	27.9	25.7	28.5	30.0	31.2	33.4
1997	27.8	25.6	28.4	30.0	31.2	33.3
1996	27.7	25.5	28.4	30.0	31.2	33.3
1995	27.6	25.4	28.3	29.9	31.1	33.2
1994	27.5	25.4	28.2	29.8	31.0	33.0
1993	27.4	25.3	28.0	29.6	30.8	32.8
1992	27.3	25.2	27.9	29.3	30.5	32.7
1991	27.1	25.1	27.7	29.2	30.5	32.5
1990	27.1	25.0	27.6	29.1	30.3	32.5
1989	27.0	25.0	27.5	29.0	30.3	32.5
Absolute change 1989–2000	1.0	0.9	1.1	1.0	1.0	0.9
Non-Hispanic black						
2000	25.2	22.3	25.5	27.2	28.2	30.5
1999	25.1	22.2	25.5	27.1	28.2	30.5
1998	25.0	22.2	25.4	27.0	28.2	30.4
1997	25.0	22.1	25.4	27.0	28.2	30.4
1996	24.9	22.0	25.3	27.0	28.1	30.3
1995	24.8	21.9	25.3	27.0	28.0	30.2
1994	24.7	21.8	25.1	26.7	27.8	30.0
1993	24.6	21.8	24.9	26.5	27.6	29.7
1992	24.5	21.8	24.7	26.2	27.4	29.6
1991	24.4	21.7	24.6	26.2	27.4	29.6
1990	24.4	21.7	24.6	26.3	27.4	29.7
1989	24.3	21.6	24.6	26.3	27.5	29.8
Absolute change 1989–2000	0.9	0.7	0.9	0.9	0.7	0.7
American Indian						
2000	25.1	21.6	24.7	27.0	29.0	31.7
1999	25.0	21.5	24.7	26.9	28.7	31.6
1998	24.9	21.4	24.6	26.9	28.9	31.4
1997	25.0	21.4	24.6	27.0	28.9	31.5
1996	25.0	21.4	24.7	27.0	28.8	31.2
1995	24.9	21.3	24.7	27.0	28.7	31.3
1994	24.9	21.3	24.6	26.8	28.4	31.1
1993	24.9	21.4	24.4	26.6	28.4	30.9
1992	24.9	21.3	24.3	26.4	28.1	30.8
1991	24.8	21.2	24.2	26.4	28.0	30.8
1990	24.9	21.3	24.2	26.3	28.0	30.9
1989	24.8	21.3	24.1	26.2	28.0	30.9
Absolute change 1989–2000	0.3	0.3	0.6	0.8	1.0	0.8
Chinese						
2000	31.6	30.1	32.7	34.0	34.2	35.3
1999	31.6	30.2	32.7	34.0	34.1	35.5
1998	31.6	30.2	32.6	33.9	34.7	35.2
1997	31.3	29.9	32.4	33.8	34.6	35.9
1996	31.2	29.8	32.3	33.5	34.4	35.8
1995	31.1	29.8	32.1	33.5	34.2	35.3
1994	31.0	29.6	32.0	33.3	34.3	36.2
1993	30.8	29.5	31.8	33.1	33.8	35.6
1992	30.7	29.4	31.7	33.0	34.0	35.2
1991	30.5	29.2	31.4	33.0	33.4	35.4
1990	30.5	29.1	31.2	32.3	33.2	34.8
1989	30.4	29.1	31.3	32.8	33.7	34.7
Absolute change 1989–2000	1.2	1.0	1.4	1.2	0.5	0.6

See footnote at end of table.

Table 2. Mean age of mother and absolute change by race and Hispanic origin of mother and live birth order: United States, 1989–2000—Con.

Year and origin/race of mother	Total[1]	1st	2d	3d	4th	5th and higher order
Japanese						
2000	31.8	30.6	32.7	33.7	34.6	35.6
1999	31.6	30.3	32.5	33.9	34.6	36.0
1998	31.6	30.3	32.4	33.5	34.5	35.0
1997	31.5	30.2	32.3	33.5	34.1	35.8
1996	31.2	29.8	32.1	33.5	34.2	35.5
1995	31.1	29.6	32.1	33.4	33.6	35.1
1994	31.0	29.6	31.9	32.9	33.9	34.4
1993	30.9	29.5	31.7	33.1	33.7	34.9
1992	30.9	29.6	31.7	32.9	33.6	34.9
1991	30.6	29.1	31.4	32.8	33.1	35.2
1990	30.4	29.1	31.2	32.3	33.2	34.0
1989	30.3	28.9	31.3	32.2	32.3	34.5
Absolute change 1989–2000	1.5	1.7	1.4	1.5	2.3	1.1
Hawaiian						
2000	25.7	22.6	25.8	28.2	29.4	31.6
1999	25.6	22.7	25.6	28.1	29.3	31.6
1998	25.6	22.6	25.9	28.0	29.4	31.6
1997	25.5	22.6	25.8	27.8	29.1	31.2
1996	25.5	22.5	25.9	27.8	29.2	30.7
1995	25.5	22.4	25.9	27.8	29.1	31.2
1994	25.2	22.1	25.6	27.7	28.6	30.7
1993	25.3	22.3	25.5	27.1	28.7	30.9
1992	25.1	22.3	24.9	27.0	28.7	30.6
1991	25.1	22.1	25.0	27.3	28.7	30.9
1990	25.0	22.2	25.1	27.0	28.4	30.7
1989	25.0	22.2	25.1	26.9	28.3	30.6
Absolute change 1989–2000	0.7	0.4	0.7	1.3	1.1	1.0
Filipino						
2000	29.5	27.3	30.3	32.1	33.3	34.9
1999	29.4	27.1	30.2	32.0	33.1	35.1
1998	29.4	27.2	30.2	31.9	33.1	34.2
1997	29.3	27.1	30.1	31.9	33.1	34.3
1996	29.2	26.9	30.1	32.0	32.9	34.5
1995	29.2	26.9	30.1	31.9	33.0	34.5
1994	29.1	27.0	29.9	31.7	32.8	34.5
1993	29.0	26.9	29.7	31.6	32.9	34.0
1992	29.0	26.9	29.6	31.6	32.8	34.5
1991	28.9	26.7	29.6	31.4	32.6	34.6
1990	28.8	26.8	29.4	31.2	32.1	34.3
1989	28.8	26.8	29.4	31.2	32.6	34.2
Absolute change 1989–2000	0.7	0.5	0.9	0.9	0.7	0.7
Mexican						
2000	25.4	22.2	25.3	27.8	29.7	32.2
1999	25.4	22.1	25.2	27.7	29.6	32.2
1998	25.3	22.1	25.1	27.6	29.5	32.2
1997	25.2	22.0	25.1	27.6	29.6	32.1
1996	25.2	22.0	25.0	27.5	29.5	32.2
1995	25.1	21.9	24.9	27.5	29.5	32.1
1994	25.1	21.9	24.9	27.4	29.4	32.0
1993	25.1	21.9	24.8	27.3	29.2	31.9
1992	25.1	21.9	24.7	27.2	29.1	31.9
1991	25.0	21.8	24.7	27.2	29.0	31.8
1990	25.1	21.9	24.7	27.1	29.0	31.8
1989	25.1	21.9	24.6	27.1	29.0	31.8
Absolute change 1989–2000	0.3	0.3	0.7	0.7	0.7	0.4

See footnote at end of table.

Table 2. Mean age of mother and absolute change by race and Hispanic origin of mother and live birth order: United States, 1989–2000—Con.

Year and origin/race of mother	Total[1]	1st	2d	3d	4th	5th and higher order
Puerto Rican						
2000	25.0	22.4	25.5	27.2	28.4	30.5
1999	24.9	22.2	25.4	27.2	28.2	30.5
1998	24.8	22.1	25.4	27.1	28.3	30.4
1997	24.8	22.1	25.3	27.1	28.3	30.3
1996	24.7	22.0	25.3	27.1	28.1	30.1
1995	24.6	21.9	25.2	26.9	28.1	30.0
1994	24.6	21.9	25.1	26.9	28.0	29.7
1993	24.6	22.0	25.0	26.6	27.8	29.9
1992	24.5	22.0	24.8	26.5	27.7	29.7
1991	24.4	22.0	24.6	26.4	27.8	29.7
1990	24.4	21.9	24.6	26.5	27.7	29.9
1989	24.3	21.8	24.5	26.4	27.8	30.0
Absolute change 1989–2000	0.7	0.6	1.0	0.8	0.6	0.5
Cuban						
2000	28.8	26.5	29.8	31.6	32.7	33.8
1999	28.7	26.4	29.7	31.3	32.7	33.8
1998	28.6	26.3	29.5	31.4	32.7	33.5
1997	28.4	26.1	29.4	31.2	32.0	33.4
1996	28.3	26.2	29.2	31.0	32.3	33.2
1995	28.2	25.9	29.2	31.1	31.7	33.4
1994	28.1	25.9	29.0	30.8	31.7	32.3
1993	28.1	26.1	28.9	30.5	31.5	32.5
1992	27.9	25.9	28.8	30.3	31.0	32.3
1991	27.8	25.7	28.4	30.1	31.0	32.3
1990	27.6	25.6	28.3	30.0	31.1	31.3
1989	27.3	25.3	28.1	29.8	30.6	31.4
Absolute change 1989–2000	1.5	1.2	1.7	1.8	2.1	2.4
Central and South American						
2000	27.5	24.8	28.0	30.0	31.3	33.3
1999	27.5	24.6	27.9	29.9	31.3	33.4
1998	27.4	24.6	27.8	29.9	31.2	33.4
1997	27.4	24.6	27.8	29.9	31.2	33.2
1996	27.3	24.6	27.7	29.7	31.3	33.1
1995	27.2	24.5	27.6	29.6	31.1	33.1
1994	27.2	24.6	27.5	29.5	30.8	32.8
1993	27.1	24.6	27.3	29.3	30.6	32.9
1992	27.1	24.6	27.2	29.2	30.6	32.6
1991	27.0	24.5	27.1	29.2	30.4	32.6
1990	27.0	24.5	27.1	29.1	30.5	32.6
1989	27.0	24.5	27.1	29.1	30.6	32.5
Absolute change 1989–2000	0.5	0.3	0.9	0.9	0.7	0.8

[1]Includes live birth order not stated.

Table 3. Mean age of mother at first live birth by State, 1970, 1980, 1990, and 2000, and absolute change, 1970–2000: United States, each State, and territory

State	1970	1980	1990	2000	Absolute change, 1970–2000
United States	21.4	22.7	24.2	24.9	3.5
Alabama	20.5	21.6	22.8	23.3	2.8
Alaska	21.6	23.2	24.4	24.1	2.5
Arizona	21.2	22.3	23.5	23.8	2.6
Arkansas	20.2	21.3	22.2	22.7	2.5
California	21.8	23.2	24.5	25.3	3.5
Colorado	21.6	23.3	24.9	25.3	3.7
Connecticut	22.5	24.1	26.3	27.2	4.7
Delaware	21.4	22.7	24.5	25.0	3.6
District of Columbia	21.0	22.9	24.0	25.7	4.7
Florida	21.0	22.5	24.2	24.9	3.9
Georgia	20.7	22.2	23.5	24.4	3.7
Hawaii	22.4	23.8	25.0	25.5	3.1
Idaho	20.8	22.1	23.2	23.5	2.7
Illinois	21.5	22.7	24.3	25.1	3.6
Indiana	20.9	22.1	23.3	23.9	3.0
Iowa	21.3	22.6	24.0	24.4	3.1
Kansas	21.1	22.4	23.8	24.0	2.9
Kentucky	20.7	21.5	22.9	23.6	2.9
Louisiana	20.5	21.5	22.6	23.0	2.5
Maine	21.2	22.6	24.4	25.3	4.1
Maryland	21.6	23.1	25.3	26.1	4.5
Massachusetts	22.5	24.1	26.2	27.8	5.3
Michigan	21.2	22.7	23.9	25.0	3.8
Minnesota	22.0	23.4	25.2	25.9	3.9
Mississippi	20.3	21.0	21.9	22.5	2.2
Missouri	21.1	22.3	23.6	24.0	2.9
Montana	21.2	22.7	23.8	24.2	3.0
Nebraska	21.4	22.7	24.1	24.5	3.1
Nevada	21.3	22.6	23.8	24.2	2.9
New Hampshire	21.6	23.6	25.7	26.7	5.1
New Jersey	22.4	23.9	26.1	27.1	4.7
New Mexico	21.0	22.0	23.0	23.0	2.0
New York	22.5	23.8	25.6	26.4	3.9
North Carolina	20.8	22.1	23.5	24.5	3.7
North Dakota	21.5	22.6	24.2	24.3	2.8
Ohio	21.3	22.5	23.8	24.5	3.2
Oklahoma	20.7	21.7	22.8	23.1	2.4
Oregon	21.4	23.0	24.2	24.7	3.3
Pennsylvania	21.7	23.1	24.8	25.6	3.9
Rhode Island	22.1	23.4	25.1	25.9	3.8
South Carolina	20.6	21.8	23.1	23.7	3.1
South Dakota	21.1	22.3	23.6	23.7	2.6
Tennessee	20.7	22.0	23.1	23.8	3.1
Texas	20.9	22.1	23.3	23.7	2.8
Utah	21.4	21.9	22.9	23.3	1.9
Vermont	21.7	23.4	25.4	26.3	4.6
Virginia	21.4	23.0	24.7	25.7	4.3
Washington	21.5	23.2	24.7	25.3	3.8
West Virginia	20.8	21.7	22.8	23.5	2.7
Wisconsin	21.8	22.9	24.6	25.1	3.3
Wyoming	21.0	22.1	23.3	23.2	2.2
Puerto Rico	25.3	24.9	24.9	25.0	–0.3
Virgin Islands	25.3	25.6	25.9	26.3	1.0
Guam[1,2]	- - -	25.7	25.8	26.4	0.7
American Samoa[3]	- - -	- - -	- - -	27.6	NA
Northern Marianas[4]	- - -	- - -	- - -	27.9	NA

- - - Data not available.
NA Not applicable.
[1]Data are not available for Guam, 1970.
[2]Absolute change for Guam, 1980–2000.
[3]Data are not available for American Samoa, 1970, 1980, and 1990.
[4]Data are not available for Northern Marianas, 1970, 1980, and 1990.

NOTE: Difference of means was significant at $p < 0.05$ for United States, each State, and territory, 1970–2000.

Table 4. Mean age of mother at first live birth and absolute change for selected countries, 1970 and 2000

Countries	1970	2000	Absolute change, 1970–2000
Czech Republic.	22.5	24.9	2.4
Finland	24.4	27.4	3.0
Hungary	22.8	25.1	2.3
Iceland	21.3	25.5	4.2
Japan.	25.6	28.0	2.4
Netherlands	24.8	28.6	3.8
Slovak Republic.	22.6	24.2	1.6
Sweden	25.9	27.9	2.0
Switzerland	25.3	28.7	3.4
United States	21.4	24.9	3.5

SOURCES: Council of Europe. Recent Demographic Developments in Europe 2001. Council of Europe Publishing, Strasbourg, 2001. Statistics Bureau. Statistical Handbook of Japan 2001. Ministry of Public Management, Home Affairs, Ports, and Telecommunications, 2001. Japan Information Network. Women's Life Cycle (1983–2000). Released August 29, 2001. Available at: http://www.jinjapan.org/sta/stats/18WME11.html.

Technical Notes

Differences between mean and median age of mother

As mentioned in the introduction, the mean age of mother is the arithmetic average of mother's age at birth. The median age of the mother, on the other hand, is the middle point of the distribution of age at birth. Ranked in order of age of mother, 50 percent of the births would occur above and below the median age.

For this report, the mean is computed directly from the sum of all mother's ages divided by the number of mothers. Unlike the median age, which is a function of the rank order of the ages, the mean is affected by the numeric values of the ages. As a result, the mean is more sensitive to the distribution of births by age of mother than the median. For example, compare the age of mother at childbirth for the following distributions:

Distribution A—18, 19, 22, 23, 25, 26, and 28 years (mean = 23, median = 23).
Distribution B—15, 17, 20, 23, 25, 26, and 28 years (mean = 22, median = 23).

The median and mean age is the same in distribution A, but differ in distribution B. In both distributions, the median, the middle frequency in the distribution, is 23 years. However, the mean age in distribution A is 23 years while the mean in distribution B is 22 years. This occurs because age at childbirth in distribution B is more dispersed for those mothers below the median age (15–23 years) than above it (23–28 years). In distribution A, age at childbirth is equally dispersed about the median age (18–23 years and 23–28 years). Distribution B is therefore skewed towards births to younger women with the result that the mean age is less than the median age.

Figure 2 shows that the mean age of mother was less than the median age from 1970 to 1987. This indicates more frequent births to younger women than to older women. In 1990 the mean was higher than the median, remained through 1998, but was only slightly different in 1999 and 2000. The trends for mean and median age at first live birth are similar to those for all births. However, the transition happened several years earlier and the mean remained higher in 1999 and 2000. These trends in combination indicate more frequent births to older than younger women now compared with the mid-1980s and earlier years.

Significance testing

The number of births, while essentially a complete count and not subject to sampling error, may be affected by nonsampling errors in the registration process. The number of events that occurred can be thought of as one in a series of possible outcomes. When considered in this way, the number of births for analytical purposes is subject to random variation.

The difference between the two means, irrespective of sign (+/−), is defined as statistically significant (when N is relatively large) if the value exceeds the test statistic in the derived formula for Z below. This statistic equals 1.96 times the standard error of the difference between means.

Table I. Median age of mother and absolute change for total births and first live birth: United States, 1970–2000

Year	Total[1]	1st
2000	27.1	24.6
1999	27.0	24.5
1998	26.9	24.3
1997	26.7	24.2
1996	26.6	24.1
1995	26.5	23.9
1994	26.4	23.8
1993	26.4	23.8
1992	26.3	23.8
1991	26.2	23.7
1990	26.3	23.8
1989	26.3	23.7
1988	26.3	23.8
1987	26.3	23.7
1986	26.2	23.6
1985	26.1	23.5
1984	26.0	23.5
1983	25.9	23.3
1982	25.8	23.2
1981	25.7	23.1
1980	25.7	23.0
1979	25.6	22.9
1978	25.6	22.8
1977	25.5	22.7
1976	25.4	22.5
1975	25.3	22.3
1974	25.3	22.3
1973	25.3	22.1
1972	25.3	22.0
1971	25.4	22.1
1970	25.4	22.1
Absolute change 1970–2000	1.7	2.5

[1]Includes birth order not stated.

$$1.96 \sqrt{\left(\frac{s_1^2}{N_1}\right) + \left(\frac{s_2^2}{N_2}\right)}$$

where:

s_1 = first standard deviation
s_2 = second standard deviation
N_1 = first number of births
N_2 = second number of births

If the difference is less than or equal to this test statistic, then the difference would occur by chance 5 times out of 100 or more. Accordingly, we would conclude that the difference is not statistically significant at the 95-percent confidence level. If the difference is greater than this statistic, then the difference would occur by chance less than 5 times out of 100. The difference, we would therefore conclude, is statistically significant at the 95-percent confidence level.

Example:

Is the 2000 mean age at first birth of women in Ohio (24.5 years) significantly higher than the comparable 1990 statistic (23.8 years)?

The difference between the rates is 24.5 – 23.8 = 0.7. The statistic is then calculated as follows:

$$1.96\sqrt{\left(\frac{(5.38)^2}{67,621}\right) + \left(\frac{(5.83)^2}{60,643}\right)}$$

$$1.96\sqrt{\left(\frac{(28.94)}{67,621}\right) + \left(\frac{(33.99)}{60,643}\right)}$$

$$1.96\sqrt{(0.000428039) + (0.000560475)}$$

$$1.96\sqrt{0.000988514}$$

$$0.06$$

The difference between the two means (0.7) is greater than this statistic (0.06). Therefore, the difference is statistically significant at the 95-percent confidence level.

Contents

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