

# Centenarians: 2010

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## *2010 Census Special Reports*

By Julie Meyer  
Issued December 2012  
C2010SR-03

## Acknowledgments

This report was prepared by **Julie Meyer**, Statistician, Age and Special Populations Branch, under the general direction of **Amy Symens Smith**, Chief of the Age and Special Populations Branch, and **Karen Humes**, Assistant Division Chief for Special Population Statistics, Population Division. **Enrique Lamas**, Associate Director for Demographic Programs, and **Nancy Potok**, Deputy Director and Chief Operating Officer at the U.S. Census Bureau, provided overall direction.

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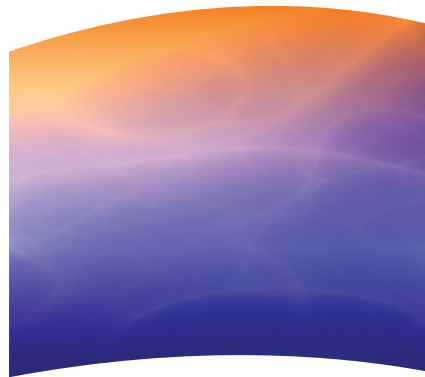
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**U.S. Department of Commerce**

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Acting Secretary

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## INTRODUCTION

Centenarians, or people aged 100 or older, are both rare and distinct from the rest of the older population. This report provides an updated portrait of the centenarian population based on age, sex, race, Hispanic origin, and living arrangements information collected during the 2010 Census. It also describes the geographic distribution of this population. The characteristic profile and geographic distribution of centenarians are compared with those of other age groups in the older population to illustrate how centenarians are distinct. Although some comparisons over time are included in this report, these are limited due to variations in data quality across censuses.

Any study of the centenarian population must take into account data quality issues, since they have in the past, and continue to be, obstacles to obtaining a clear picture of this population. Examples of issues affecting centenarian data include deliberate age misreporting by the respondent (e.g., age exaggeration), form or question design problems, and misallocation of extreme ages during data processing. In addition, the relatively small number of people in a population, as is the case with centenarians, can cause data to be particularly sensitive to these data issues. More information describing centenarian data quality is included at the end of this report.

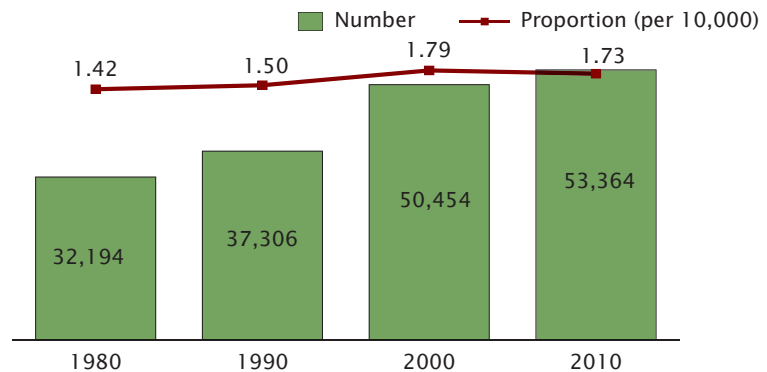
## NUMBERS, PROPORTIONS, AND TRENDS OVER TIME

Centenarians make up a very small portion of the total population. Figure 1 shows that, in 2010, there were just 53,364 centenarians in the United States, or 1.73 centenarians per 10,000 people in the total population. Even among the older population, centenarians are rare. Of those aged 70 and older, only 0.19

Figure 1.

### Centenarians and Their Proportion of Total Population: 1980 to 2010

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Source: U.S. Census Bureau, *2010 Census Summary File 1*; *Census 2000 Summary File 1*; *1990 Census of Population, General Population Characteristics, United States (1990 CP-1-1)*; *1980 Census of Population, General Population Characteristics, United States (1980 PC80-1-B1)*.

percent (or 19 per 10,000) were centenarians, while 6.5 percent were in their 90s, 33.6 percent were in their 80s, and 59.6 percent were in their 70s.

The centenarian share of the total population is smaller than that for other developed countries. The U.S. proportion, 1.73 centenarians per 10,000 people, is lower than the proportion in Sweden (1.92 per 10,000), the United Kingdom (1.95 per 10,000), and France (2.70 per 10,000) (Statistics Sweden, 2010; Human Mortality Database, 2012). The U.S. proportion is about half the level found in Japan, 3.43 per 10,000 (Statistics Bureau of Japan, 2011).

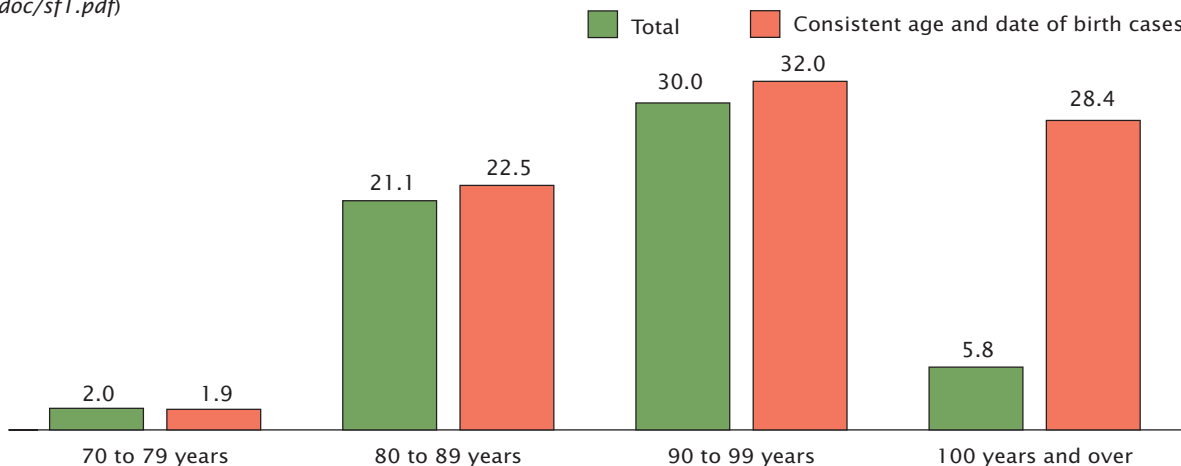
In the period 1980 to 2010, the centenarian population experienced a larger percentage increase than did the total population. The number of centenarians increased from 32,194 to 53,364, resulting in a 65.8 percent increase, while the total population increased 36.3 percent. Consequently, the centenarian share of the total U.S. population increased from 1.42 per 10,000 in 1980 to 1.73 per 10,000 in 2010.

Since 2000, census data showed a modest 5.8 percent increase in centenarians, while the total population increased 9.7 percent and those in their 80s and 90s increased at much higher rates (21.1 percent and 30.0 percent, respectively) (Figure 2). As mentioned in the introduction, data quality issues have affected centenarian data in many ways over time, making comparisons of centenarians across censuses difficult. Analysis by Humes and Velkoff (2007) concluded that the Census 2000 centenarian count was too high. Further analysis leading to the 2010 Census indicated that the elevated Census 2000 centenarian count was impacted in great measure by the familiar combination of a specific census relationship reporting error and an associated error in the procedures that assign an age to those with blank or invalid ages by using that relationship information (Spencer, 1987). New diagnostic tools introduced during the 2010 Census dress rehearsal in 2008 led to pinpointing and adjusting the specific allocation procedures involved in over-allocation of extreme ages in order to minimize

Figure 2.

### Percent Change by Selected Older Age Group: 2000 to 2010

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Note: For Census 2000, consistent age and date of birth data is defined as the condition when the difference between the reported age and the age calculated from the reported date of birth is fewer than 4 years. For the 2010 Census, consistent age and date of birth data is defined more strictly as the condition when the difference between the reported age and the age calculated from the reported date of birth is fewer than 2 years.

Source: U.S. Census Bureau, 2000 and 2010 Census unpublished tabulations.

the effect on the centenarian population in 2010. Since these procedures were improved for the 2010 Census, this inconsistency of procedure between the censuses resulted in the appearance of a relatively small increase of 5.8 percent shown for the centenarian population between 2000 and 2010. The actual change was likely larger.

To account for this quality issue and obtain a better picture of change for the centenarian population over the past decade, data from only the respondents reporting high-quality age and date of birth information (i.e., those respondents who reported a consistent age and date of birth on their census form) were compared.<sup>1</sup> This comparison showed that centenarians with

<sup>1</sup> For Census 2000, consistent age and date of birth data is defined as the condition when the difference between the reported age and the age calculated from the reported date of birth is fewer than 4 years. For the 2010 Census, consistent age and date of birth data is defined more strictly as the condition when the difference between the reported age and the age calculated from the reported date of birth is fewer than 2 years.

these highest quality age and date of birth data increased by 28.4 percent between 2000 and 2010. This percentage increase was similar to that of other age groups in the older population. It was lower than the 32.0 percent increase for people in their 90s, higher than the 22.5 percent increase for people in their 80s, and much higher than the 1.9 percent increase for those in their 70s.<sup>2</sup>

### CHARACTERISTICS

Centenarians are concentrated in the “youngest” centenarian ages. In 2010, over half (62.5 percent) of the 53,364 centenarians were age 100 or 101. Ninety-two percent were 100 to 104 years old. This is consistent with the average life expectancy for people age 100, which was 2.4 years in 2010 (Murphy et al., 2012). Super-centenarians, those 110 years or

<sup>2</sup> Percent growth of a given age group is also driven by the size of the population aging into that age group.

older, numbered 330 nationwide or just 0.6 percent of the centenarian population. Caution is recommended when interpreting data for super-centenarians since data quality generally declines as age increases within the centenarian age category. (See data quality discussion later in this report.)

### Sex

Due to sex differences in mortality over the lifespan, the proportion of females in the population increases with age. This is especially true in the oldest ages, where the percentage female increases sharply (Figure 3). In 2010, 55.3 percent of those in their 70s were female, 61.9 percent of those in their 80s were female, 72.2 percent of those in their 90s were female, and 82.8 percent of centenarians were female.

The sex ratio is a measure that describes the balance of males and females in a population. It represents the number of males per 100 females. A sex ratio above 100



indicates more males than females in a population. A sex ratio below 100 indicates more females than males in a population. Figure 3 shows that for those in their 70s, the sex ratio was 81.0 males per 100 females. For those in their 80s, it was 61.6 males per 100 females. For those in their 90s, the sex ratio dropped to 38.6 males per 100 females. For every 100 centenarian females, there were only 20.7 centenarian males.

### Race, Hispanic Origin, and Sex<sup>3</sup>

The 2010 Census shows that centenarians are less diverse than the

<sup>3</sup> *The Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity*, issued by the Office of Management and Budget (OMB) in 1997, is available at <[www.whitehouse.gov/omb/fedreg/1997standards.html](http://www.whitehouse.gov/omb/fedreg/1997standards.html)>. OMB requires federal agencies to use a minimum of two ethnicities: Hispanic or Latino and Not Hispanic or Latino. Hispanic origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as Hispanic, Latino, or Spanish may be any race. "Hispanic or Latino" refers to a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.

total U.S. population. In 2010, 82.5 percent of centenarians were White alone, compared with 72.4 percent White alone in the total population (Table 1).<sup>4</sup> Of the centenarian population, 12.2 percent were Black or African American alone, compared with 12.6 percent in the total population.<sup>5</sup> The Asian alone share of the centenarian population was 2.5 percent, while its share of the total population was 4.8 percent. Those who were Some Other Race alone in 2010 made up 1.3 percent of centenarians but 6.2 percent of the total population. Those answering Two or More Races in the 2010 Census constituted 1.0 percent of the centenarian population, but 2.9 percent of the total population. Those who were American Indian and Alaska

<sup>4</sup> As a matter of policy, the Census Bureau does not advocate the use of the *alone* population over the *alone-or-in-combination* population or vice versa. The use of the *alone* population in this report does not imply that it is a preferred method of presenting or analyzing data. Data on race from the 2010 Census can be presented and discussed in a variety of ways.

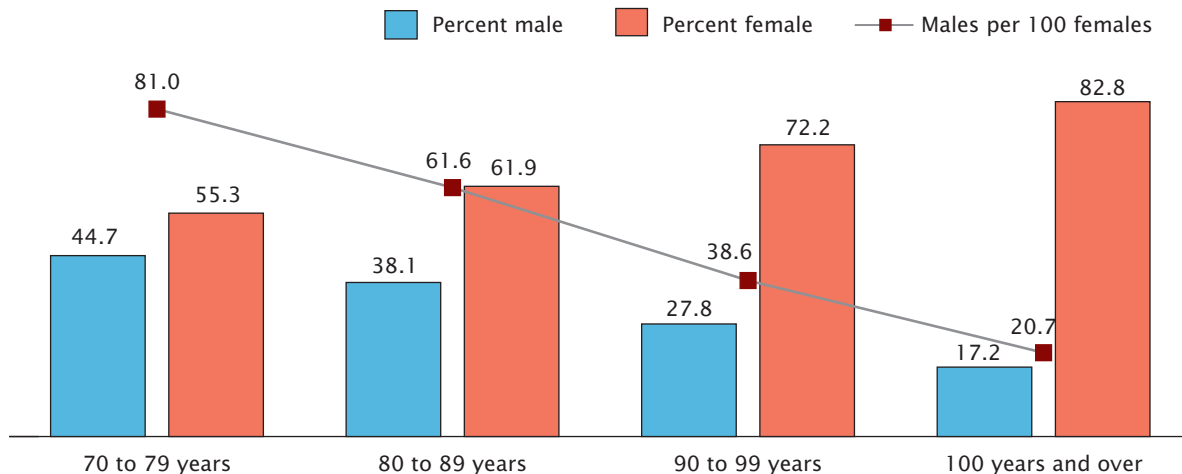
<sup>5</sup> The terms "Black or African American" and "Black" are used interchangeably in this report.

Native alone made up 0.5 percent of centenarians, while this group constituted 0.9 percent in the total population. Of the population 100 and older, 0.1 percent was Native Hawaiian and Other Pacific Islander alone, while this group made up 0.2 percent of the total population. Among centenarians, 5.8 percent were Hispanic. Of the total population, the percentage Hispanic was 16.3 percent.

Even among age groups within the older population, in general, as age increases, the population becomes less diverse with an increasing percentage in each age group of the older population that is White alone and not Hispanic. This pattern establishes itself for those in their 70s, 80s, and 90s. However, there is a departure from this pattern for centenarians. For example, of people in their 70s, 84.1 percent were White alone. This increases to 87.6 percent among those in their 80s and 88.5 percent among those in their 90s. For centenarians, the percentage White alone decreases

Figure 3.  
**Percent Distribution by Sex and Sex Ratios for Selected Older Age Groups: 2010**

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Source: U.S. Census Bureau, 2010 Census Summary File 1.

Table 1.

**Population by Race and Hispanic Origin for Selected Older Age Groups: 2010**(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))

Race and Hispanic origin	Total population		70 to 79 years		80 to 89 years		90 to 99 years		100 years and over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>Total population</b> .....	<b>308,745,538</b>	<b>100.0</b>	<b>16,595,961</b>	<b>100.0</b>	<b>9,363,786</b>	<b>100.0</b>	<b>1,819,610</b>	<b>100.0</b>	<b>53,364</b>	<b>100.0</b>
<b>RACE</b>										
One Race .....	299,736,465	97.1	16,426,479	99.0	9,288,661	99.2	1,807,321	99.3	52,816	99.0
White .....	223,553,265	72.4	13,965,501	84.1	8,206,290	87.6	1,610,445	88.5	43,999	82.5
Black or African American .....	38,929,319	12.6	1,469,106	8.9	669,471	7.1	130,727	7.2	6,516	12.2
American Indian and Alaska Native .....	2,932,248	0.9	89,194	0.5	33,325	0.4	5,207	0.3	255	0.5
Asian .....	14,674,252	4.8	605,478	3.6	262,015	2.8	43,482	2.4	1,324	2.5
Native Hawaiian and Other Pacific Islander .....	540,013	0.2	13,512	0.1	4,840	0.1	747	—	44	0.1
Some Other Race .....	19,107,368	6.2	283,688	1.7	112,720	1.2	16,713	0.9	678	1.3
Two or More Races .....	9,009,073	2.9	169,482	1.0	75,125	0.8	12,289	0.7	548	1.0
<b>HISPANIC OR LATINO</b>										
Hispanic or Latino .....	50,477,594	16.3	1,210,950	7.3	536,916	5.7	82,093	4.5	3,089	5.8
Not Hispanic or Latino .....	258,267,944	83.7	15,385,011	92.7	8,826,870	94.3	1,737,517	95.5	50,275	94.2

— Percentage rounds to 0.0.

Source: U.S. Census Bureau, 2010 Census Summary File 1.

to 82.5 percent. The opposite pattern exists for the other race groups and Hispanics. There is a decrease in percentage for these groups as age increases. For example, the percent Black alone was 8.9 percent for those in their 70s. It decreases to 7.1 percent for those in their 80s, and increases slightly to 7.2 percent for those in their 90s. The percentage Black alone for centenarians increases to 12.2 percent. Similarly, the percentage Hispanic among those in their 70s is 7.3 percent. This decreases to 5.7 percent for those in their 80s, and 4.5 percent for those in their 90s. The percent Hispanic increases to 5.8 percent for centenarians. This anomalous result for centenarians is, in part, likely due to data quality issues. To shed light on these inconsistencies for centenarians, a brief comparison with Census 2000 data may be useful.

Since this decade's centenarian population is essentially the surviving portion of last decade's nonagenarians, an examination of the race and Hispanic-origin composition for people in their 90s in Census 2000 can aid in interpretation. For people in their 90s in Census 2000, the percent White alone was 89.0 percent, the

percent Black alone was 7.7 percent, and the percent Hispanic was 3.5 percent. Additionally, in Census 2000, a similar abrupt break in the pattern of race and Hispanic-origin composition appears uniquely for centenarians.

Given the marked shift in composition for centenarians in 2010 as well as the inconsistent composition for this same group of people in the prior census when they were in their 90s, the anomalous findings for centenarians are likely due more to data quality issues than an actual unique racial and ethnic diversity among centenarians. (See the data quality discussion later in this report.) The race and Hispanic-origin composition for the centenarian population is likely similar to the composition for those in their 90s.

Sex ratios for centenarians differed significantly across race and Hispanic origin groups. The race groups with the highest sex ratios were also those with extremely small numbers of centenarians. This is true especially for the Native Hawaiian and Other Pacific Islander alone population, which had 44 centenarians nationwide (76.0 centenarian males per 100 centenarian females) and the American Indian

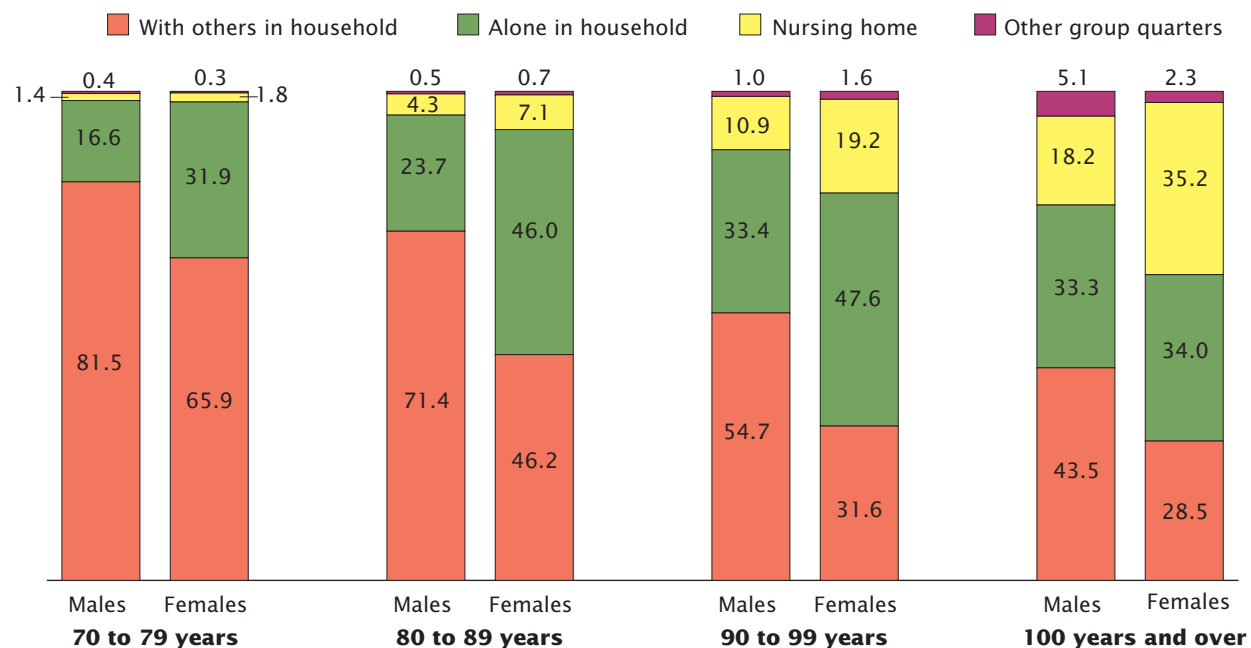
and Alaska Native alone population, which had 255 centenarians (65.6 centenarian males per 100 centenarian females). Because of the small numbers, one should be cautious when interpreting data for these groups. Those with the next highest sex ratios were centenarians reporting Some Other Race alone or Two or More Races, which had around 50 centenarian males per 100 centenarian females each. The Asian alone population was the race group with the next highest sex ratio, 39.1 centenarian males per 100 centenarian females. The Black alone and White alone populations had the lowest centenarian sex ratios among the race groups. The Black alone centenarian population had 21.3 males per 100 females, while the White alone centenarian population had 19.3 males per 100 females. Hispanic centenarians had a relatively high sex ratio of 41.6 males per 100 females, while non-Hispanic centenarians had a sex ratio of 19.6 males per 100 females.

**Living Arrangements**

As people get older, the likelihood of widowhood and disability increases, and living arrangements change as a result. A comparison

Figure 4.  
**Living Arrangements of Selected Older Age-Sex Groups: 2010**

(In percent. For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Notes: A group quarters is a place where people live or stay, in a group living arrangement, that is owned or managed by an entity or organization providing housing and/or services for residents. Percentages may not sum to 100.0 due to rounding.

Source: U.S. Census Bureau, 2010 Census unpublished tabulation.

across the older age groups illustrates this and is presented in Figure 4. In 2010, the majority of people in their 70s were living with others in a household, especially males (81.5 percent of males and 65.9 percent of females). However, as age increases, a mix of living arrangements becomes apparent. Most people in their 80s were living at home, although the situation was different for men and women. Women were about equally likely to be living at home alone (46.0 percent) as they were to be living at home with others (46.2 percent). Men in their 80s, on the other hand, were much more likely to be living in a household with others (71.4 percent) than living alone at home (23.7 percent). Of people in their 90s, there was a noticeable

percentage living in nursing homes (10.9 percent for males and 19.2 percent for females). Still, the women in this age group were likeliest to live alone at home (47.6 percent), while the majority of men in this age group were living at home with others (54.7 percent). Centenarian females were slightly more likely to live in a nursing home (35.2 percent) than alone at home (34.0 percent). Centenarian males, however, were still most likely to be living with others in a household (43.5 percent) than any other living arrangement. About the same percentage of male centenarians as female centenarians lived alone in the home (33.3 percent and 34.0 percent, respectively).

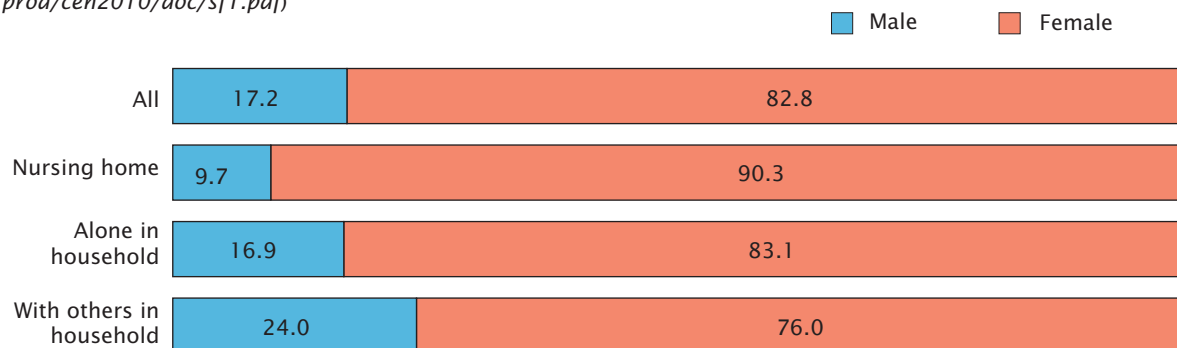
The sex distribution of centenarians varies across living arrangements

(Figure 5). Overall, the percentage female among centenarians was 82.8 percent. However, centenarians living with others in a household were only 76.0 percent female while centenarians living in nursing homes were 90.3 percent female. Those living alone in the household were 83.1 percent female. Some of these differences may arise from variation in widowhood and disability in the population by sex.

A comparison of centenarian living arrangements across race and Hispanic-origin groups shows considerable differences in the living arrangements of each group's oldest members (Figure 6). Centenarians who are White alone or non-Hispanic had the highest likelihood of living alone (36.4 percent and 35.0 percent, respectively), while

Figure 5.  
**Sex by Selected Living Arrangement for Centenarians: 2010**

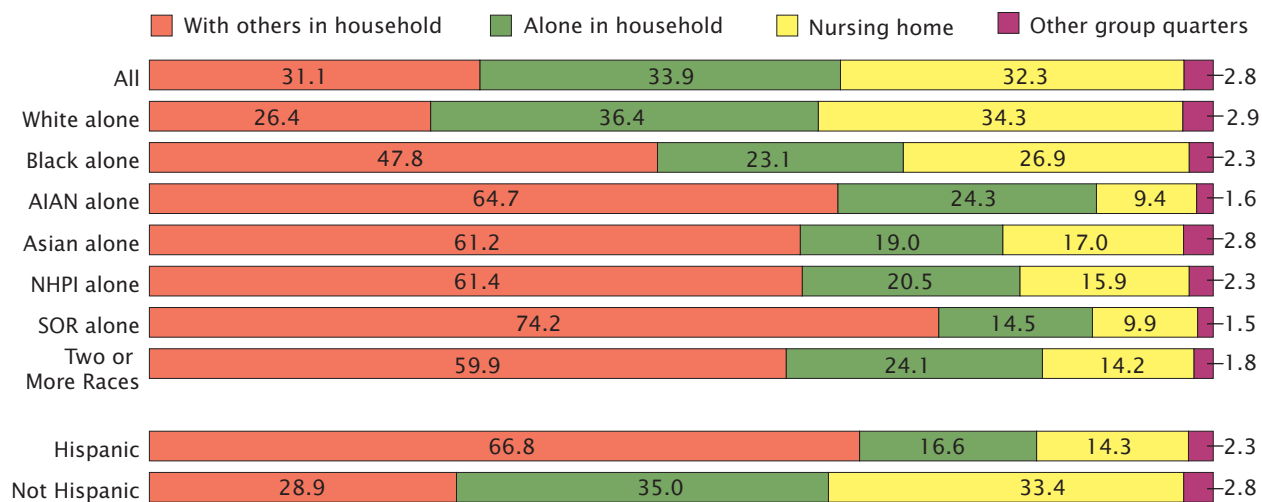
(In percent. For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Source: U.S. Census Bureau, 2010 Census unpublished tabulation.

Figure 6.  
**Living Arrangements of Centenarians by Race and Hispanic Origin: 2010**

(In percent. For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Notes: A group quarters is a place where people live or stay, in a group living arrangement, that is owned or managed by an entity or organization providing housing and/or services for residents. Black refers to Black or African American; AIAN refers to American Indian and Alaska Native; NHPI refers to Native Hawaiian and Other Pacific Islander; SOR refers to Some Other Race. Percentages may not sum to 100.0 due to rounding.

Source: U.S. Census Bureau, 2010 Census unpublished tabulation.

centenarians reporting Some Other Race alone, Hispanic, or Asian alone were the least likely to be living alone in the home (14.5 percent, 16.6 percent, and 19.0 percent, respectively). Centenarians with

the highest likelihood of living with others in households were Some Other Race alone (74.2 percent), Hispanic (66.8 percent), and American Indian and Alaska Native alone (64.7 percent). The groups with the

lowest percentage who were living with others in the household were White alone (26.4 percent) and Not Hispanic (28.9 percent). The groups with the highest percentage living in a nursing home were White alone

(34.3 percent) and Not Hispanic (33.4 percent). The groups with the lowest percentage of centenarians living in nursing homes were American Indian and Alaska Native alone (9.4 percent) and Some Other Race alone (9.9 percent).

The race distribution of centenarians varies across living arrangements. Generally, centenarians living with others in households

were a more racially diverse population than centenarians living alone in households and those living in nursing homes (Figure 7). Among those centenarians living with others in households, 70.2 percent were White alone, 18.8 percent were Black alone, and 4.9 percent were Asian alone. In contrast, among those centenarians living alone, 88.6 percent were White alone, 8.3 percent were Black alone, and 1.4

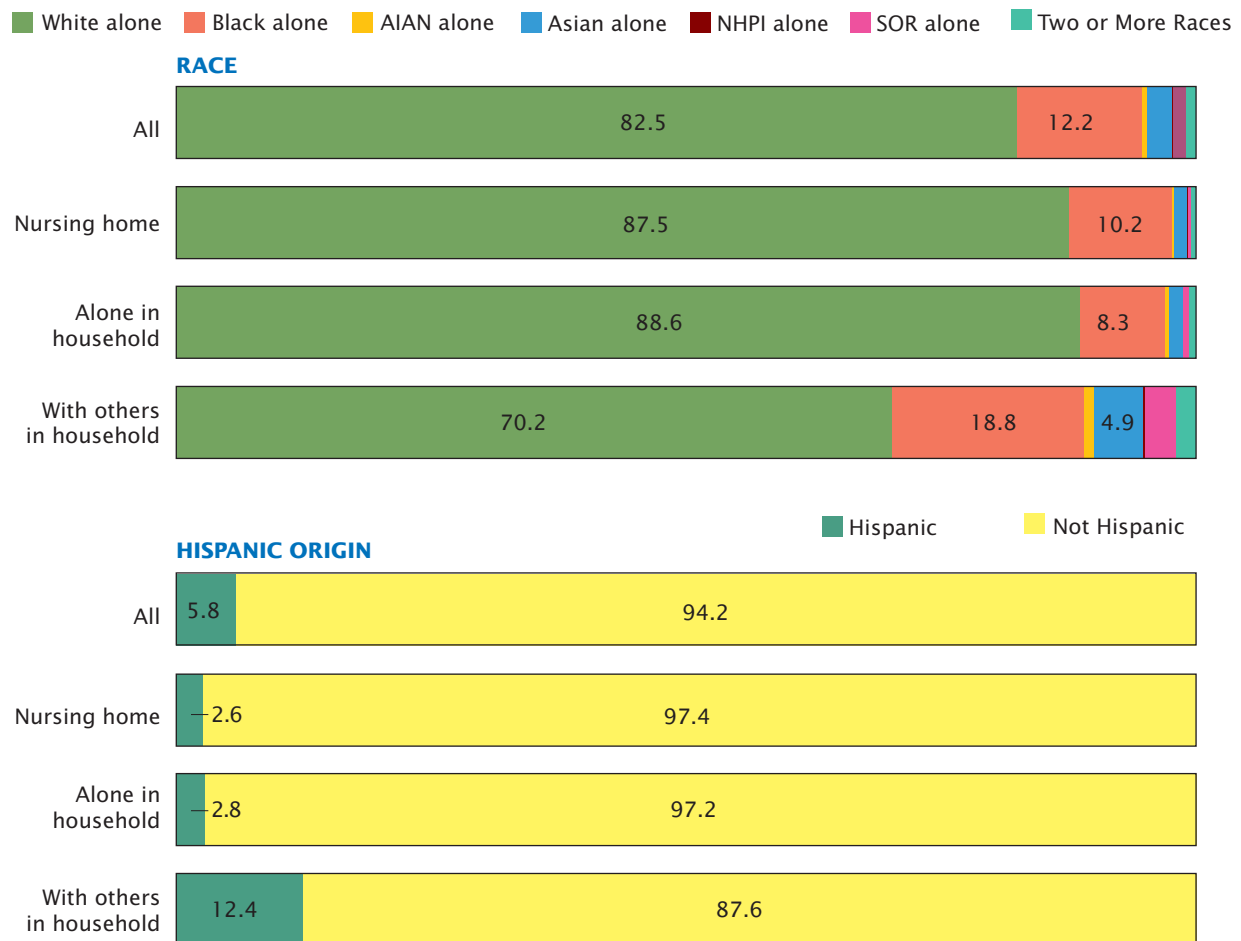
percent were Asian alone. Among those living in nursing homes, 87.5 percent were White alone, 10.2 percent were Black alone, and 1.3 percent were Asian alone.

Comparisons of centenarians across selected living arrangements also shows a noticeably larger percentage Hispanic among those centenarians living with others in households (12.4 percent) than

Figure 7.

**Race and Hispanic Origin by Selected Living Arrangement for Centenarians: 2010**

(In percent. For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Note: Black refers to Black or African American; AIAN refers to American Indian and Alaska Native; NHPI refers to Native Hawaiian and Other Pacific Islander; SOR refers to Some Other Race.

Source: U.S. Census Bureau, 2010 Census unpublished tabulation.

Table 2.

## Population by Selected Older Age Group for the United States, Regions, States, and Puerto Rico: 2010

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))

Area	Total	70 to 79 years		80 to 89 years		90 to 99 years		100 years and over	
	Number	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>United States . . .</b>	<b>308,745,538</b>	<b>16,595,961</b>	<b>5.4</b>	<b>9,363,786</b>	<b>3.0</b>	<b>1,819,610</b>	<b>0.59</b>	<b>53,364</b>	<b>0.0173</b>
<b>Region</b>									
Northeast . . . . .	55,317,240	3,128,472	5.7	1,971,291	3.6	407,519	0.74	12,244	0.0221
Midwest . . . . .	66,927,001	3,678,562	5.5	2,195,247	3.3	448,229	0.67	13,112	0.0196
South . . . . .	114,555,744	6,280,049	5.5	3,255,625	2.8	584,533	0.51	17,444	0.0152
West . . . . .	71,945,553	3,508,878	4.9	1,941,623	2.7	379,329	0.53	10,564	0.0147
<b>State</b>									
Alabama . . . . .	4,779,736	283,700	5.9	139,515	2.9	24,181	0.51	759	0.0159
Alaska . . . . .	710,231	22,040	3.1	9,258	1.3	1,398	0.20	40	0.0056
Arizona . . . . .	6,392,017	377,287	5.9	188,529	2.9	32,317	0.51	832	0.0130
Arkansas . . . . .	2,915,918	178,976	6.1	89,968	3.1	17,090	0.59	580	0.0199
California . . . . .	37,253,956	1,738,749	4.7	1,000,475	2.7	197,811	0.53	5,921	0.0159
Colorado . . . . .	5,029,196	224,376	4.5	119,141	2.4	23,023	0.46	593	0.0118
Connecticut . . . . .	3,574,097	194,915	5.5	131,224	3.7	30,209	0.85	930	0.0260
Delaware . . . . .	897,934	54,529	6.1	27,708	3.1	5,085	0.57	146	0.0163
District of Columbia . . . . .	601,723	27,301	4.5	16,201	2.7	3,663	0.61	156	0.0259
Florida . . . . .	18,801,310	1,384,221	7.4	772,905	4.1	139,153	0.74	4,090	0.0218
Georgia . . . . .	9,687,653	433,157	4.5	204,451	2.1	37,279	0.38	1,141	0.0118
Hawaii . . . . .	1,360,301	76,028	5.6	49,464	3.6	10,170	0.75	306	0.0225
Idaho . . . . .	1,567,582	80,384	5.1	42,051	2.7	8,585	0.55	220	0.0140
Illinois . . . . .	12,830,632	653,860	5.1	388,169	3.0	79,705	0.62	2,419	0.0189
Indiana . . . . .	6,483,802	345,121	5.3	197,754	3.0	38,093	0.59	1,083	0.0167
Iowa . . . . .	3,046,355	183,678	6.0	117,253	3.8	26,746	0.88	846	0.0278
Kansas . . . . .	2,853,118	152,100	5.3	94,892	3.3	20,743	0.73	626	0.0219
Kentucky . . . . .	4,339,367	245,042	5.6	125,100	2.9	21,825	0.50	596	0.0137
Louisiana . . . . .	4,533,372	236,505	5.2	121,662	2.7	20,731	0.46	594	0.0131
Maine . . . . .	1,328,361	86,531	6.5	49,571	3.7	9,666	0.73	298	0.0224
Maryland . . . . .	5,773,552	284,340	4.9	163,351	2.8	32,444	0.56	911	0.0158
Massachusetts . . . . .	6,547,629	354,593	5.4	231,894	3.5	50,258	0.77	1,520	0.0232
Michigan . . . . .	9,883,640	550,169	5.6	327,790	3.3	63,217	0.64	1,729	0.0175
Minnesota . . . . .	5,303,925	273,971	5.2	166,972	3.1	38,397	0.72	1,211	0.0228
Mississippi . . . . .	2,967,297	163,822	5.5	80,849	2.7	14,671	0.49	542	0.0183
Missouri . . . . .	5,988,927	348,708	5.8	193,616	3.2	37,751	0.63	1,166	0.0195
Montana . . . . .	989,415	59,823	6.0	33,148	3.4	7,040	0.71	175	0.0177
Nebraska . . . . .	1,826,341	100,727	5.5	62,714	3.4	13,901	0.76	501	0.0274
Nevada . . . . .	2,700,551	139,783	5.2	59,946	2.2	8,926	0.33	203	0.0075
New Hampshire . . . . .	1,316,470	71,360	5.4	41,038	3.1	8,462	0.64	232	0.0176
New Jersey . . . . .	8,791,894	476,177	5.4	296,548	3.4	60,527	0.69	1,769	0.0201
New Mexico . . . . .	2,059,179	116,134	5.6	57,860	2.8	10,087	0.49	284	0.0138
New York . . . . .	19,378,102	1,062,198	5.5	644,187	3.3	133,742	0.69	4,605	0.0238
North Carolina . . . . .	9,535,483	518,198	5.4	264,261	2.8	47,192	0.49	1,404	0.0147
North Dakota . . . . .	672,591	39,213	5.8	25,731	3.8	6,284	0.93	221	0.0329
Ohio . . . . .	11,536,504	668,889	5.8	397,707	3.4	74,664	0.65	1,891	0.0164
Oklahoma . . . . .	3,751,351	216,126	5.8	110,924	3.0	19,726	0.53	546	0.0146
Oregon . . . . .	3,831,074	211,795	5.5	124,365	3.2	26,849	0.70	677	0.0177
Pennsylvania . . . . .	12,702,379	788,868	6.2	513,878	4.0	101,049	0.80	2,510	0.0198
Rhode Island . . . . .	1,052,567	57,722	5.5	41,960	4.0	9,150	0.87	247	0.0235
South Carolina . . . . .	4,625,364	266,730	5.8	126,778	2.7	22,146	0.48	659	0.0142
South Dakota . . . . .	814,180	47,407	5.8	29,985	3.7	7,005	0.86	240	0.0295
Tennessee . . . . .	6,346,105	361,053	5.7	178,931	2.8	32,000	0.50	940	0.0148
Texas . . . . .	25,145,561	1,096,401	4.4	552,707	2.2	96,761	0.38	2,917	0.0116
Utah . . . . .	2,763,885	104,579	3.8	55,303	2.0	9,914	0.36	186	0.0067
Vermont . . . . .	625,741	36,108	5.8	20,991	3.4	4,456	0.71	133	0.0213
Virginia . . . . .	8,001,024	403,431	5.0	212,553	2.7	39,461	0.49	1,190	0.0149
Washington . . . . .	6,724,540	328,814	4.9	186,952	2.8	40,382	0.60	1,055	0.0157
West Virginia . . . . .	1,852,994	126,517	6.8	67,761	3.7	11,125	0.60	273	0.0147
Wisconsin . . . . .	5,686,986	314,719	5.5	192,664	3.4	41,723	0.73	1,179	0.0207
Wyoming . . . . .	563,626	29,086	5.2	15,131	2.7	2,827	0.50	72	0.0128
<b>Puerto Rico . . . . .</b>	<b>3,725,789</b>	<b>236,991</b>	<b>6.4</b>	<b>106,942</b>	<b>2.9</b>	<b>21,693</b>	<b>0.58</b>	<b>961</b>	<b>0.0258</b>

Source: U.S. Census Bureau, 2010 Census Summary File 1.

those living alone (2.8 percent) and those living in a nursing home (2.6 percent).

## GEOGRAPHIC DISTRIBUTION

Comparing geographic patterns of age groups among the population 70 and over provides some information about where people are living as they age. According to 2010 Census data, there is an increasing tendency toward living in an urban area as one ages.<sup>6</sup> Among those aged 70 and over, centenarians are the likeliest to live in an urban area. Around 85.7 percent of the centenarian population lived in an urban area in 2010, compared with 84.2 percent of those in their 90s, 81.5 percent of those in their 80s, and 76.6 percent of those in their 70s.

A comparison among regions shows that while the West ranked second among the four regions when ranking on the total population, it ranked last among the regions

for number of centenarians.<sup>7</sup> The region with the most centenarians was the South (17,444), followed by the Midwest (13,112), Northeast (12,244), and West (10,564).

A comparison of states according to the size of their centenarian populations shows that states with the largest total populations generally also have the most centenarians. California had the largest number of centenarians (5,921) followed by New York, Florida, and Texas. Alaska had the fewest centenarians (40) followed by Wyoming, Vermont, and Delaware. See Table 2 and Figure 8 for information on all the states.

Comparing regions on the share of their populations made up of centenarians shows which had higher concentrations of centenarians. The Northeast and Midwest had proportions that were higher than the national average of 1.73 per 10,000 people, while the West and the South had proportions that were lower.

Although the Northeast region ranked highest overall, the individual states with the largest number of centenarians per 10,000 people were in the Midwest. North Dakota was the only state with more than 3 centenarians per 10,000 people in the state (3.29 per 10,000) followed by South Dakota, Iowa, and Nebraska. Three states had less than 1 centenarian per 10,000 people. All three were in the

<sup>7</sup> The Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The Midwest includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. The South includes Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. The West includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

West: Alaska, Utah, and Nevada. To contrast this with rankings for other age groups among the older population, the states with the highest percentage in their 70s were Florida, West Virginia, and Maine. The states with the lowest percentage in their 70s included Alaska and Utah. The states with the highest percentage of those in their 80s were Florida, Pennsylvania, and Rhode Island. The state that stood out as having a particularly low percentage of those in their 80s was Alaska (1.3 percent). The state with the highest percentage of those in their 90s was North Dakota while the state with the lowest percentage in their 90s was Alaska.

## DATA QUALITY

Data quality issues have affected census centenarian data for decades (Siegel and Passel, 1976; Spencer, 1987; Krach and Velkoff, 1999; Humes and Velkoff, 2007). The types of errors and the magnitude of their effect on centenarian data have varied from one census to another. Types of error include misreporting, form design issues, data capture or keying errors, and processing errors.

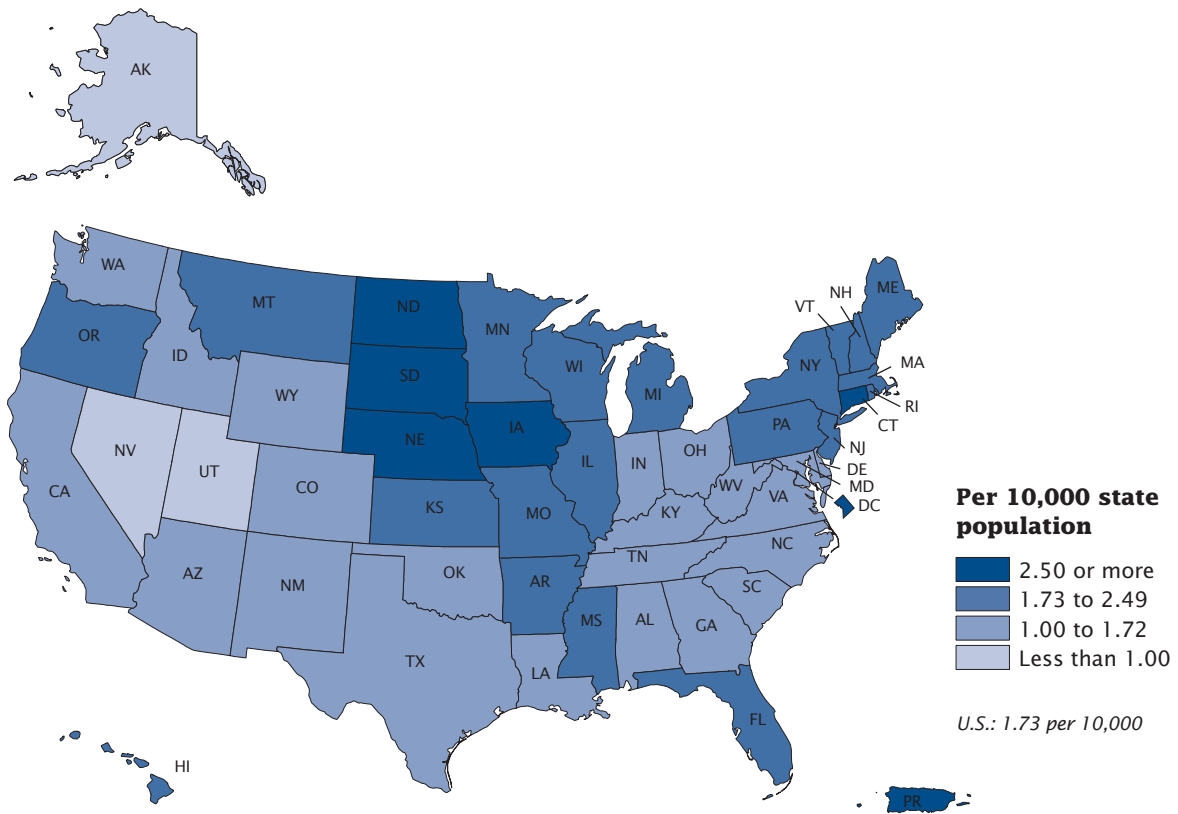
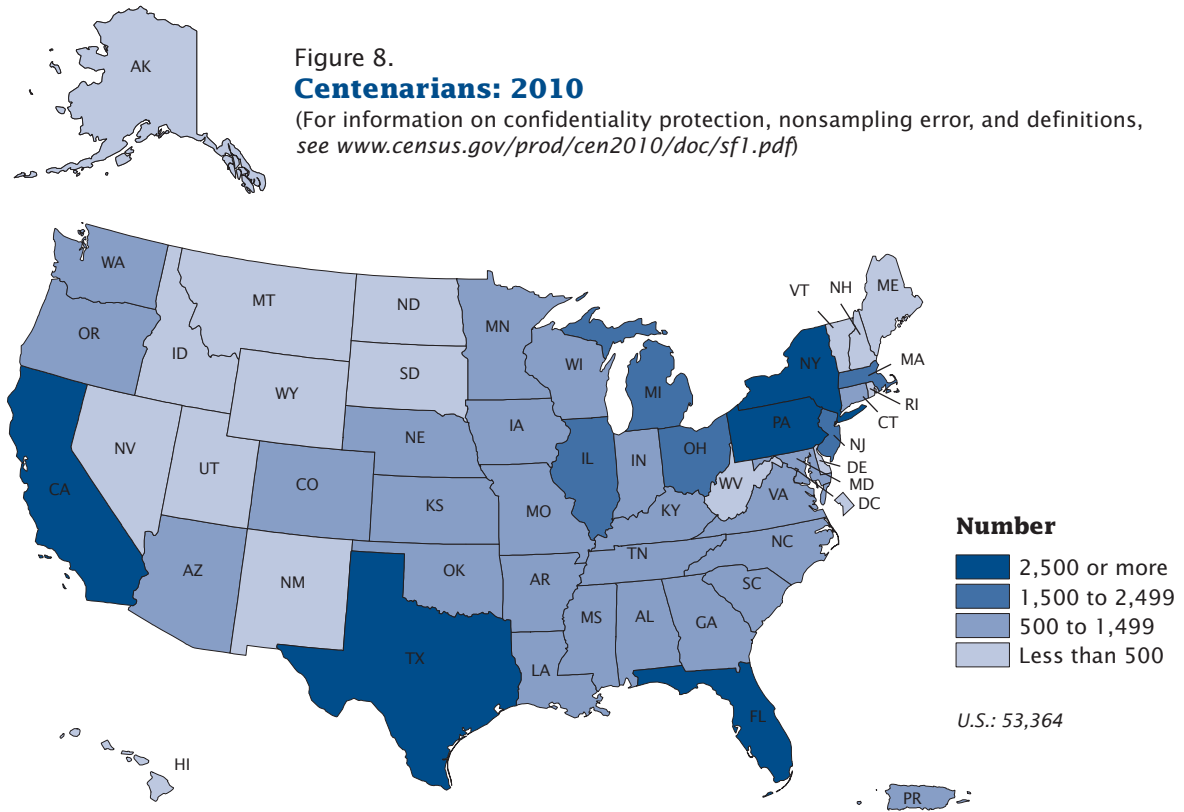
Misreporting occurs when a respondent does not answer the question accurately. With respect to centenarian data, it can result from illiteracy, cognition difficulties, proxy reporting (i.e., response by someone other than the person, such as a neighbor or healthcare provider), or simply a desire to attain the status of being a centenarian.

Form design issues can also cause misreporting. They occur when the question or overall census form is confusing to the respondent. For example, in the 1970 Census, a form design that included FOSDIC (i.e., Film Optical Sensing Device for Input to Computers) circles confused some respondents and

<sup>6</sup> Census Bureau's Urban and Rural Classification: The Census Bureau's urban areas represent densely developed territory and encompass residential, commercial, and other nonresidential urban land uses. The Census Bureau identifies two types of urban areas: "urbanized areas" of 50,000 or more people and "urban clusters" of at least 2,500 and fewer than 50,000 people. "Rural" encompasses all population, housing, and territory not included within an urban area. The Census Bureau's urban and rural classification provides an important baseline for analyzing changes in the distribution and characteristics of urban and rural populations. The Census Bureau's urban areas also form the cores of metropolitan and micropolitan statistical areas, as defined by the Office of Management and Budget, and they are used in other agencies' and organizations' urban and rural classifications. More information about the Census Bureau's Urban-Rural Classification—including the criteria used to delineate urban areas, lists of urbanized areas and urban clusters, maps, and files providing relationships with other geographic areas—can be found on the Census Bureau's Web site at <[www.census.gov/geo/www/ua/2010urbanruralclass.html](http://www.census.gov/geo/www/ua/2010urbanruralclass.html)>.

Figure 8.  
**Centenarians: 2010**

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))

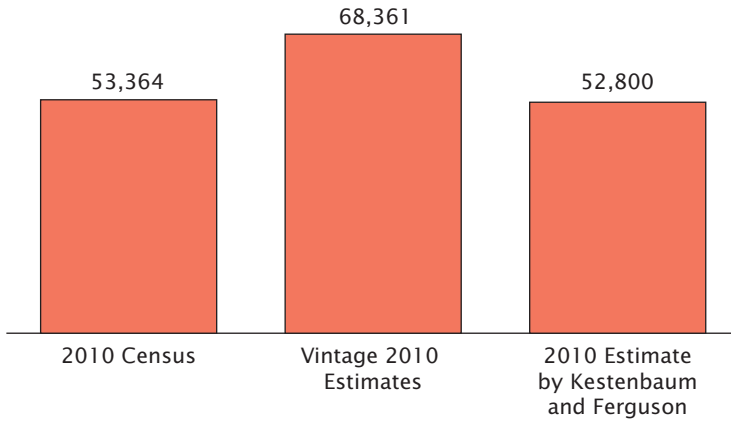


Source: U.S. Census Bureau, 2010 Census Summary File 1.



Figure 9.  
**Comparison of Centenarian Population From Alternative Sources: 2010**

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))



Note: Numbers for the 2010 Census and Vintage 2010 Estimates refer to April 1, 2010. Estimates by Kestenbaum and Ferguson refer to January 1.

Source: U.S. Census Bureau, *2010 Census Summary File 1*, Vintage 2010 Postcensal Estimates; Kestenbaum and Ferguson, 2005.

led them to mark the incorrect century for year of birth, resulting in an unexpectedly large number of people with centenarian ages in that year's census data (Siegel and Passel, 1976).

Data capture or keying errors affect data when the data keyer (i.e., a census employee who enters census responses into a database) or the automated data capture

program misinterprets or incorrectly records a census response. In Census 2000, a few centenarian ages resulted when dates of birth including months beginning with the digit "1" (e.g., January, October, or November) were reported by the respondent in the age entry box instead of the date of birth entry boxes. For example, a person may have written the date of birth

10-1-90 in the age entry area on the form. The automated capture program would have interpreted this as an age entry. Since the capture system was designed to record only the first three digits of an age response, it would then have captured this response as a false centenarian with age 101 (Humes and Velkoff, 2007).

Other issues occur during data editing and allocation procedures, which clean and fill in missing information. Analysis of centenarian data after Census 2000 indicated that the count of centenarians in 2000 was artificially high (Humes and Velkoff, 2007). This was due in large part to the already-documented combination of a specific relationship reporting error and procedures that based age allocations on those misreported relationship responses while maintaining consistency of relationships and ages among household members (Spencer, 1987). As illustrated in the examples above, many of the data quality issues affecting centenarian data result from a combination of the various types of errors rather than just one type.

Early analysis of the 2010 centenarian count indicates some consistency between the 2010 Census centenarian number and estimates from other sources (Figure 9). The 2010 comparison data in Figure 9 range from 52,800 (Kestenbaum and Ferguson, 2005) to 68,361 (U.S. Census Bureau, 2012).<sup>8</sup> The 2010 Census centenarian number, 53,364, is in the lower end of this range.

Census data quality can be further described by using information provided by the respondent to the two-part census age and date of birth question (Figure 10).

Figure 10.  
**Reproduction of the Question on Age and Date of Birth From the 2010 Census**

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))

**4. What is this person's age and what is this person's date of birth?**

*Please report babies as age 0 when the child is less than 1 year old. Print numbers in boxes.*

Age on April 1, 2010	Month	Day	Year of birth
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Source: U.S. Census Bureau, 2010 Census questionnaire.

<sup>8</sup> The U.S. Census Bureau's postcensal estimate is based on carrying Census 2000 data forward to 2010. It does not reflect the 2010 Census results.

This information can be used as an evaluation tool that categorizes the source and quality of census age responses into four main groups. See text box.

<b>SOURCE OF FINAL AGE</b>	
<b>CONSISTENT AS REPORTED</b>	Reported age and calculated age from reported date of birth differed by fewer than two years (fewer than four years in Census 2000). Age responses in this category are considered the highest quality age responses.
<b>ASSIGNED</b>	Incomplete or inconsistent age and date of birth information was reported: an age without a date of birth, a date of birth without an age, or an inconsistent age and date of birth (i.e., age and date-of-birth-implied age differed by two or more years). Other information provided by the respondent, such as household relationship, was used to choose between inconsistent age and date of birth.
<b>ALLOCATED</b>	No valid age or date of birth information was reported. Age was allocated from nearby households using the “hot deck” method of allocation.
<b>SUBSTITUTED</b>	Data were not reported for any person in the household. The characteristics of people in another household of the same size were duplicated to fill in this household’s characteristics.

population to have had their age allocated because they did not respond or reported an invalid age, 1.9 percent for centenarians and 3.6 percent for the total population.

In Census 2000, there were more differences in age data quality between the centenarian and total populations. In 2000, only 69.3 percent of centenarian age data came from consistent age and date of birth information reported on the form, compared with 89.9 percent for the total population (Table 3). Additionally, 18.1 percent of centenarians obtained their centenarian age from procedures that allocated an age to respondents with a blank or invalid census age on their census form, while just 3.7 percent of the total population’s age responses came from this source. The Census 2000 centenarian age data, like the 2010 Census centenarian data, also had a higher assignment rate (12.0 percent) than the total population (5.2 percent).

The quality of centenarian age data improved between 2000 and 2010. Only 69.3 percent of the Census 2000 centenarian population’s age data came from fully reported and consistent age and date of birth responses on the census form (Table 3).<sup>9</sup> In 2010, this had increased to 84.1 percent. This

<sup>9</sup> This percentage would have been even lower if we had used the two-year difference quality measure that was used to evaluate the 2010 census data. Consequently, the percentage change between 2000 to 2010 would have been even larger.

Ideally, the 2010 Census centenarian and total populations should be similar in the source and quality of their age data. Any differences may give us insight into data quality issues. Indeed, 89.2 percent of the total population and 84.1 percent of centenarians reported the highest quality age and date of birth information on their census form

in 2010 (Table 3). There are some differences, however, for the other categories. Centenarians were more likely than the total population to be assigned their age due to incomplete or inconsistent age and date of birth reporting, 13.0 percent for centenarians and 5.3 percent for the total population. Centenarians were less likely than the total

Table 3.  
**Percent Distribution of Centenarian and Total Populations by Source of Final Age: 2000 and 2010**

(For information on confidentiality protection, nonsampling error, and definitions, see [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf))

Source of final age	2000		2010	
	Total population	Centenarians	Total population	Centenarians
Consistent as reported . . . . .	89.9	69.3	89.2	84.1
Assigned . . . . .	5.2	12.0	5.3	13.0
Allocated . . . . .	3.7	18.1	3.6	1.9
Substituted . . . . .	1.2	0.6	1.9	1.0

Source: U.S. Census Bureau, 2000 and 2010 Census unpublished tabulations.

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rate for centenarians in 2010 has become more consistent with that for other age groups in the older population. Another positive finding is that age allocation rates declined substantially between 2000 and 2010. An age may be assigned by census allocation procedures when a person's age is blank or invalid on their census form. In Census 2000, 18.1 percent of centenarian ages were allocated. This declined to 1.9 percent in the 2010 Census.

The high allocation rate for centenarians in 2000 resulted from the combination of a census relationship reporting error referred to as the “generational inversion” reporting error and the erroneous use of this faulty relationship value to allocate an age for this person. The generational inversion reporting error occurs when a person filling out their census form misunderstands the direction of the relationship being requested in the relationship question. For example, a householder fills out the form and places their own name and information in the response area for Person 1. Then, this person enters information in the Person 2 response area for another person in the household. The relationship question for Person 2 asks, “How is this person related to Person 1?” This is where the generational inversion relationship reporting error occurs. Sometimes, the respondent misunderstands the direction of the relationship that the question is intending to collect. If the householder is trying to fill out information for their biological child, the relationship response for Person 2 should be “biological son or daughter.” This is how Person 2 is related to Person 1. However, sometimes the householder will mistakenly choose “father or mother” as the relationship response for Person 2. In the special circumstance where this relationship cannot be

corrected because the information on the census form is incomplete, Person 2 also happens to have a missing or invalid age, and Person 1 has an older age (e.g., age 90), then allocation procedures would allocate an age difference to Person 2 that would be consistent with an age for a parent of Person 1. This set of conditions results in the allocation of an erroneous older, and sometimes centenarian, age for Person 2 with the faulty parent relationship (Spencer, 1987). New diagnostic tools introduced for the 2010 Census dress rehearsal review in 2008 helped to pinpoint the area of the allocation procedures that was producing most of these extreme ages. This allowed the Census Bureau to correct these procedures prior to processing the 2010 Census. Thus, the proportion of centenarians with an allocated age in 2010 dropped to 1.9 percent. As a result, a greater proportion of the 2010 Census centenarian count consists of responses of the highest quality.

## CONCLUSION

In summary, there were 53,364 centenarians in the United States in 2010, representing only 1.73 per 10,000 people in the total population. This proportion has increased slightly since 1980, when it was 1.42 per 10,000. Centenarians are overwhelmingly more likely to be female. They are less diverse in terms of race and Hispanic origin than the population overall, with a larger percentage White alone and a larger percentage non-Hispanic. They are more likely to live in urban areas than the other age groups in the older population. They also live in a much greater variety of living arrangements, including group quarters living such as nursing homes, than the rest of the older population. Lastly, they are in higher concentrations in the

Northeast and Midwest than in the other regions.

## ABOUT THE 2010 CENSUS

### Why was the 2010 Census conducted?

The U.S. Constitution mandates that a census be taken in the United States every 10 years. This is required in order to determine the number of seats each state is to receive in the U.S. House of Representatives. Age data are used to determine the voting age population (age 18 and older) for use in the legislative redistricting process.

### Why did the 2010 Census ask the question on age and date of birth?

The Census Bureau collects data on age to support a variety of legislative and program requirements. These data are also used to aid in the allocation of funds from federal programs, in particular to programs targeting the older population. This includes planning for hospitals, roads, and housing assistance. For example, the Department of Veterans Affairs uses census data to plan for nursing homes, hospitals, cemeteries, domiciliary services, and veterans benefits; the Department of Health and Human Services uses age data as part of the formula used to allocate funds for services to seniors with low incomes under the Older Americans Act; and the Equal Employment Opportunity Commission uses age data to enforce equal employment opportunities. These data are also used to forecast the number of people eligible for Social Security and Medicare benefits.

### How are data on age beneficial?

Federal, state, and local governments need information on age to implement, evaluate, and aid programs that plan and develop

services for older adults. These include, but are not limited to, the Equal Employment Opportunity Act, the Older Americans Act, the Nutrition Education Program, the Rehabilitation Act, the Long Term Care Ombudsman Services for Older Americans Program, and the Supportive Housing for the Elderly Program.

Other important uses for census data on age are in the planning and funding of services for the older population, such as health service centers, retirement homes, assisted living or skilled-nursing facilities, transportation availability, Social Security, and Medicare benefits. Census data can also be used by the private sector to determine business locations and advertising for goods and services targeting older adults, investment planning, employment opportunities, and specialized consumer needs. Researchers can use age data to project future population trends, assess mortality patterns, evaluate shifts in the geographic distribution of the older population, and plan ways to better serve the needs of a given community.

### FOR MORE INFORMATION

For more information on age in the United States, visit the U.S. Census Bureau's Internet site at [www.census.gov/population/age/](http://www.census.gov/population/age/).

Data on age from the *2010 Census Summary File 1* provide information at the national level and below and are available on the Internet at [factfinder2.census.gov/main.html](http://factfinder2.census.gov/main.html) and on DVD. Data on the centenarian population can be found in the *2010 Census Summary*

*File 1* tables PCT12 and the table series PCT12A-O.

Information on confidentiality protection, nonsampling error, and definitions is available on the Census Bureau's Internet site at [www.census.gov/prod/cen2010/doc/sf1.pdf](http://www.census.gov/prod/cen2010/doc/sf1.pdf).

For more information about the 2010 Census, including data products, call the Customer Services Center at 1-800-923-8282. You can also visit the Census Bureau's Question and Answer Center at [ask.census.gov](http://ask.census.gov) to submit your questions online.

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