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The life tables in this report have been updated to reflect correct birth and death counts in the estimation of q_x at age zero.

United States Life Tables by Hispanic Origin

Vital and Health Statistics

Series 2, Number 152

October 2010



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

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Data Evaluation and Methods Research

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

Hyattsville, Maryland
October 2010
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Objectives

This report presents complete period life tables by Hispanic origin, race for the non-Hispanic white and non-Hispanic black populations, and sex for the United States based on age-specific death rates in 2006.

Methods

The methods used to estimate the probability of death for ages 0–80 for the Hispanic population and 0–65 for the non-Hispanic white and non-Hispanic black populations are the same as those used in annual U.S. life tables since 1997, with an important modification. Age-specific death rates are first corrected for racial and ethnic misclassification on U.S. death certificates. To address the effects of age misstatement at the oldest ages, the methodology used to estimate mortality for ages 66 and over for the non-Hispanic white and non-Hispanic black populations is the same as that used to estimate the annual life tables since 2005. For the Hispanic population, the probability of death for ages over 80 is estimated as a function of non-Hispanic white mortality with the use of the Brass relational logit model.

Results

Life expectancy at birth for the total population in 2006 was 77.7 years; 80.6 years for the Hispanic population, 78.1 years for the non-Hispanic white population, and 72.9 years for the non-Hispanic black population. The Hispanic population has a life expectancy advantage at birth of 2.5 years over the non-Hispanic white population and 7.7 years over the non-Hispanic black population. Although seemingly paradoxical, these results are consistent with the findings of numerous studies which show a Hispanic mortality advantage despite this population's lower socioeconomic status. Nonetheless, the procedures used in this report to correct for racial and ethnic misclassification and age misstatement are not error free and therefore some of the observed advantage may still be a function of data artifact. This report does not address other factors that may explain the Hispanic mortality advantage.

Keywords: survival • death rates • Hispanic origin • race

United States Life Tables by Hispanic Origin

by Elizabeth Arias, Ph.D., Division of Vital Statistics

Introduction

In 2006, the Hispanic population represented 15 percent of the total U.S. population and is the largest ethnic minority population in the United States, having surpassed in number the non-Hispanic black population. As a result, considerable interest and demand for the production of reliable vital statistics for this population, including mortality measures such as life expectancy exist. Unfortunately, data quality problems prevented the production of reliable U.S. life tables for this population until now. Specifically, two data quality issues needed to be addressed. The first is race and Hispanic origin misclassification on U.S. death certificates, which leads to the underestimation of death rates for minority populations including the Hispanic population (1–3). The second involves the misstatement of age at the oldest ages in both vital statistics and census data. Research shows that age misstatement leads to underestimates of mortality at the oldest ages (4,5). The latest research on the quality of race and Hispanic origin classification on U.S. death certificates shows that classification has improved for the Hispanic population and relatively minor

adjustments are required to correct for the effects of misclassification (2,3). Moreover, recent research on Hispanic mortality patterns has produced information that can be used to address the problem of age misstatement at the oldest ages for this population.

This report presents complete period life tables for the total Hispanic population in 2006, based on a new methodology that addresses the data issues that previously prevented the estimation of reliable life tables for this population. For comparison, complete period life tables are also estimated for the non-Hispanic white and non-Hispanic black populations. The methods used to estimate the probability of death for ages 0–80 for the Hispanic population and 0–65 for the non-Hispanic white and non-Hispanic black populations are the same as those used in annual U.S. life tables since 1997, with an important modification. Age-specific death rates are first corrected for racial and ethnic misclassification on U.S. death certificates. The correction factors used are classification ratios that reflect the net difference in assignment of a specific race and Hispanic origin category between vital registration and census population classification systems (2,3). These classification ratios were

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generated from a comparison of self-reported race and ethnicity on the Current Population Survey (CPS) to proxy reported race and ethnicity on the death certificates of linked CPS-death certificate records for a sample of CPS respondents (2,3). While these ratios represent the most current and robust measures of racial and ethnic misclassification on U.S. death certificates to date, they are not error free. Further, they do not correct for the possibility that some Hispanic deaths may be missed in the U.S. vital statistics system as a result of the return migration of foreign born Hispanic persons. It is important to note however that there is no conclusive evidence in support of a data artifact effect resulting from return migration.

To address the effects of age misstatement at the oldest ages, the methodology used to estimate mortality for ages 66 and over for the non-Hispanic white and non-Hispanic black populations is the same as that used to estimate the annual life tables since 2005 for the total population and the populations classified by race as white or black. For the Hispanic population,

the probability of death for ages over 80 is estimated as a function of non-Hispanic white mortality with the use of the Brass relational logit model. As will be discussed thoroughly, it was not possible to use the same methodology to estimate mortality at the oldest ages for the Hispanic population as was used for the non-Hispanic white and non-Hispanic black populations because of the lack of reliable Medicare data for the former.

Background

The Hispanic Population in the United States

According to the American Community Survey, persons self-identified as Hispanic numbered approximately 45.4 million and represented 15.1 percent of the total U.S. population in 2007 (Table A). The Office of Management and Budget's (OMB) standards on the collection of racial and ethnic information defines "Hispanic" as "a person of Cuban,

Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race" (6). As a result, it is a diverse population, although the overwhelming majority (64.5 percent) is of Mexican origin. The other groups in order of size are: Puerto Rican (9.1 percent), Central American (7.9 percent), "other" Hispanic (5.7 percent), South American (5.6 percent), Cuban (3.5 percent), Dominican (2.8 percent), and Spaniard (1.0 percent). The "other" group includes persons who did not provide a country of origin. A review of the ancestry of this group shows that most people in this category are third generation or higher persons of Mexican origin in the southwest who no longer identify with a specific Hispanic origin country. Within the Central American category, the majority population is of Salvadoran origin, which alone makes up 3.2 percent of the total Hispanic population, followed by the population of Guatemalan ancestry (2 percent). The South American population is more evenly distributed by country, with Colombians, Ecuadorians, and Peruvians having the largest numbers.

Table A. Selected demographic and socioeconomic characteristics by Hispanic origin subgroup and race for the non-Hispanic white and non-Hispanic black populations

| Demographic characteristics | Hispanic | | | | | | | | | Non-Hispanic | |
|---|------------|------------|------------------|-----------|-----------|----------|------------------|------------------|----------------|--------------|------------|
| | Total | Mexican | Puerto Rican | Cuban | Dominican | Spaniard | Central American | South American | Other Hispanic | White | Black |
| Population estimate ¹ | 45,432,158 | 29,318,971 | 4,127,728 | 1,572,138 | 1,249,471 | 454,299 | 3,592,810 | 2,544,070 | 2,572,671 | 198,420,355 | 36,397,922 |
| Percent of total population | 15.1 | 9.7 | 1.4 | 0.5 | 0.4 | 0.2 | 1.2 | 0.8 | 0.9 | 65.9 | 12.1 |
| Percent of Hispanic population | 100.0 | 64.5 | 9.1 | 3.5 | 2.8 | 1.0 | 7.9 | 5.6 | 5.7 | ... | ... |
| Median age ¹ | 27.4 | 25.7 | 29.0 | 41.4 | 29.4 | 36.1 | 29.5 | 34.1 | 27.3 | 40.8 | 31.9 |
| Percent aged 65 and over ¹ | 5.5 | 4.3 | 6.9 | 19.0 | 6.2 | 12.3 | 3.8 | 7.1 | 7.9 | 15.5 | 8.6 |
| Total fertility rate ² | 3.0 | 3.1 | 2.2 | 1.6 | --- | --- | ³ 3.0 | ³ 3.0 | --- | 1.9 | 2.1 |
| Infant mortality rate ⁴ | 5.4 | 5.3 | 8.0 | 5.1 | --- | --- | ³ 4.5 | ³ 4.5 | --- | 5.6 | 13.4 |
| Percent U.S. born ¹ | 60.9 | 61.2 | (⁵) | 39.3 | 41.0 | 84.3 | 33.4 | 31.1 | 83.2 | 96.1 | 92.3 |
| Percent foreign born ¹ | 39.1 | 38.8 | (⁵) | 60.7 | 59.0 | 15.7 | 66.6 | 68.9 | 16.8 | 3.9 | 7.7 |
| Socioeconomic characteristics | | | | | | | | | | | |
| Percent with bachelor's degree or higher ¹ | 12.6 | 8.7 | 15.3 | 25.3 | 14.9 | 28.7 | 11.3 | 30.6 | 16.4 | 30.4 | 17.2 |
| Median family income in U.S. dollars ¹ | 43,240 | 41,350 | 43,578 | 52,978 | 36,245 | 64,749 | 43,101 | 54,435 | 49,011 | 70,399 | 41,567 |
| Poverty rate ¹ | 18.9 | 20.5 | 21.3 | 10.7 | 25.0 | 9.4 | 16.3 | 10.0 | 15.2 | 6.1 | 21.2 |

... Not applicable.

--- Data not available.

¹Figure is the average of 3-year estimates from the American Community Survey data collected January 2006–December 2008.

²Martin JA, Hamilton BE, Sutton PD, et al. Births: Final data for 2006. National vital statistics reports; vol 57 no 7. Hyattsville, MD: National Center for Health Statistics. 2009.

³Estimates are for Central and South American combined. Data is not available to estimate these indicators separately for the two groups.

⁴Mathews TJ, MacDorman MF. Infant mortality statistics from the 2006 period linked birth/infant death data set. National vital statistics reports; vol 58 no 17. Hyattsville, MD: National Center for Health Statistics. 2010.

⁵The Puerto Rican population is considered U.S.-born, whether born on the U.S. mainland or the island of Puerto Rico.

The national origin diversity of the Hispanic population is compounded by diversity in other characteristics (see [Table A](#) for selected indicators). Some groups are predominantly U.S.-born and others foreign-born. For instance, while 61 percent of the Mexican origin population is U.S.-born, 69 percent of the South American population is foreign-born. Likewise, while most subgroups have a very young age structure, some have relatively old age structures. This is especially the case for the Cuban origin population, which has a median age of 41 years with 19 percent of the population aged 65 and over, making it older than the non-Hispanic white population. Age structure coupled with current fertility rates highlight that some groups will continue to grow rapidly, irrespective of immigration rates, while others, like the Cuban population, will decline unless there is new and substantial immigration from Cuba. Finally, there is diversity in socioeconomic status as well. While most subgroups face relatively poor socioeconomic conditions, as measured by median family income, educational attainment, and family poverty rates, a few groups fair relatively well in comparison to the majority population as indicated in [Table A](#).

An interesting similarity among the Hispanic subgroups for which data are available is the very low infant mortality rates, despite socioeconomic characteristics that would suggest a demographic profile similar to that of the non-Hispanic black population. With the exception of the Puerto Rican population, all Hispanic subgroups have lower infant mortality rates than the non-Hispanic white population, despite its considerably higher socioeconomic status. This finding precludes the results in this report.

Race and Hispanic Origin Reporting on U.S. Death Certificates

There are two important reasons why U.S. life tables by Hispanic origin have not been available until now. First, until recently, coverage of the U.S. Hispanic population in the U.S.

mortality statistics system was incomplete. A Hispanic origin item was added to the U.S. Standard Death Certificate for the first time in 1989, but it was not adopted by every state until 1997 (2,3). By 1997 all states included a Hispanic origin item on the death certificate and reporting rates were over 99 percent (2,3). Second, early evaluation studies of the quality of race and Hispanic origin reporting on U.S. death certificates revealed a significant degree of misclassification of such, leading to the underestimation of death rates for the Hispanic population (1,7). Death rates, which are the foundation of the period life table, are based on two distinct data sources. The numerator of a death rate is derived from death counts (usually from vital statistics), while the denominator of a death rate is derived from population estimates (usually from a census or survey). Because death certificates and population censuses employ distinct race and Hispanic origin reporting procedures, there is the potential for inconsistencies among the numerators and denominators of race and Hispanic origin specific death rates (2,3).

The latest research to evaluate race and Hispanic origin reporting on U.S. death certificates found that the misclassification of race and Hispanic origin on death certificates in the United States accounts for a net underestimate of 5 percent for total Hispanic deaths, 1 percent for total non-Hispanic black deaths, and a net overestimate of less than one-half of a percent for non-Hispanic white deaths (2,3). These results are based on a comparison of self-reported race and Hispanic origin on the CPS to race and Hispanic origin reported on the death certificates of a sample of decedents in the National Longitudinal Mortality Study (NLMS) who died in the period 1990–1998 (2,3). NLMS consists of an annual series of CPS and decennial census files dating from years 1973 and 1978–1998, linked to National Vital Statistics System (NVSS) mortality data for the years 1979–1998. Each linked record contains race and Hispanic origin information from both the CPS and death certificates (2,3).

NLMS linked records are used to estimate sex-age-specific ratios of CPS race and Hispanic origin counts to death certificate counts (2,3). The CPS to death certificate ratio, or “classification ratio,” is specifically the ratio of the weighted count of self-reported race and ethnicity on the CPS to the weighted count of the same racial and ethnic category on the death certificates of the sample of NLMS decedents described above. It can be interpreted as the net difference in assignment of a specific race and Hispanic origin category between the two classification systems and used as a correction factor for race and Hispanic origin misclassification on death certificates (2,3). The assumption is made that the race and ethnicity reported by a CPS respondent is more reliable than proxy reporting of race and ethnicity conducted by a funeral director who has little personal knowledge of the decedent. Further, public policy embodied in the 1997 OMB standards mandates that self-identification should be the standard used for the collection and recording of racial and ethnic information (6).

Age Misstatement at the Oldest Ages and Use of Medicare Data

Numerous studies have shown that at the oldest ages—approximately ages 80 and over depending on the population—death rates based on vital registration and census data are unreliable due to age misstatement (4,5). Age misstatement has been found in both census and vital registration data and can consist of age exaggeration (usually at the oldest ages), age understating (more common at younger ages), or a combination of both (4). Age exaggeration at the oldest ages has been found to be more pronounced in the black population resulting mainly from underregistration of black births for older cohorts (5). Research also indicates that age misstatement at the oldest ages is significant for some Latin American populations for the same reasons (8). Irrespective of the type of age misstatement, the general effect has been found to be the underestimation of

mortality at the oldest ages (4).

Medicare data have been traditionally employed in the estimation of U.S. decennial life tables and in the estimation of U.S. annual life tables since 1997, although their use has been restricted to the total population and populations classified by race as white or black (5). Medicare data are considered to be more accurate than vital statistics and census data at the oldest ages because Medicare enrollees must have proof of age in order to enroll (9). However, the reliability of Medicare data beyond age 100 declines because of the small percentage of persons who enrolled at the start of the Medicare program and for whom it was not possible to verify exact age (5). More problematic, however, is that Medicare data are completely unreliable for the Hispanic population, as well as for populations other than white or black (9–11).

Medicare data derive its racial and ethnic information from the Social Security Administration (SSA). Racial and ethnic information is collected by SSA when individuals apply for a social security card. In 1936–1980 applicants were given three race choices on the SS–5 form consisting of the terms “white,” “negro,” or “other,” and no ethnicity choice (11). Based on the 1977 OMB racial and ethnic reporting standards, SSA revised the SS–5 application form in 1980 by expanding the race categories and adding ethnicity in the form of Hispanic origin (12). The new racial and ethnic categories include white (non-Hispanic), black (non-Hispanic), Asian or Pacific Islander (API), American Indian or Alaska Native (AIAN), and Hispanic (11). As a result, racial and ethnic information about current Medicare enrollees consists of a combination of pre-1980 and post-1980 racial and ethnic classification systems with enrollees falling into any of the following categories: white (including Hispanic and non-Hispanic), black (including Hispanic and non-Hispanic), AIAN, API, Hispanic, other, and unknown (11).

This classification system makes it difficult to correctly identify Hispanic enrollees in the Medicare data. A linkage between NLMS and 5 years of

Medicare data (1991–1995) was used to explore the consistency of racial and ethnic self-identification between the two systems. The evaluation revealed significantly different results for the Hispanic population and the non-Hispanic white and non-Hispanic black populations. For instance, only 8 percent of CPS self-identified Hispanic respondents are classified as Hispanic in the Medicare database. The majority, 79 percent, are classified as white.

On the other hand, the evaluation of the NLMS-Medicare linked data revealed very high agreement between the two datasets for the non-Hispanic white and non-Hispanic black populations. For example, 98 percent of CPS self-identified non-Hispanic white respondents were classified as white in the Medicare database and 95 percent of CPS self-identified non-Hispanic black respondents were classified as black in the Medicare database. The evaluation also found that it is possible to use Medicare data to estimate old-age mortality for both the white and black racial groups, irrespective of Hispanic origin as has been done traditionally, and to estimate old-age mortality for the non-Hispanic segments of these populations. For example, 96 percent of respondents classified as white in the Medicare database had self-identified as non-Hispanic white in the CPS and 97 percent of respondents classified as black in the Medicare database had self-identified as non-Hispanic black in the CPS. In other words, close to 100 percent of both the white and black records in the Medicare database are made up of individuals who self-identified as non-Hispanic white or non-Hispanic black in the CPS.

Methods

Data Used for Calculating Life Table Functions

The data used to prepare the U.S. life tables by Hispanic origin include vital statistics final death counts, census population estimates, and death and population counts for Medicare

beneficiaries aged 66–100 from the Centers for Medicare & Medicaid (CMS).

Vital statistics data—Death counts used for computing the life tables presented in this report are final numbers of deaths for 2006 collected from death certificates filed in state vital statistics offices and reported to the National Center for Health Statistics (NCHS) as part of the NVSS. Race and Hispanic origin are reported separately on the death certificate.

The U.S. Standard Death Certificate was revised in 2003 and the race and Hispanic origin items reflect the mandate of the OMB 1997 “Revision of the Race and Ethnic Standards for Federal Statistics and Administrative Reporting” (6). This revision allowed individuals to report more than one race and increased the race choices from four to five by separating the Asian and Pacific Islander groups (6,12,13). The 1997 standards replaced the OMB 1977 standards, which only allowed the reporting of a single race with four choices, including white, black, AIAN, and API (14). In 2006, 25 states were compliant with the 1997 revised standards but 25 others continued to collect racial and ethnic data according to the 1977 standards. In order to attain uniformity and comparability during the transition period until all states implement the 1997 standards, multiple-race responses are “bridged” back to the 1977 single-race standards. The bridging procedure is the same as that used to bridge multiple-race population estimates (13,15).

Population data—Data used for computing the life tables in this report represent the population residing in the United States, enumerated as of April 1, 2000 and estimated as of July 1, 2006. These estimates were produced under a collaborative arrangement with the U.S. Census Bureau and are based on the 2000 census counts by age, race, Hispanic origin, and sex, modified to be consistent with the OMB 1977 standards (14). The modification is the same as that used to bridge multiple-race responses on death certificates (13).

Medicare data—Data from the Medicare program are used to supplement vital statistics and census

data for ages 66–100 for the non-Hispanic white and non-Hispanic black populations. As noted above, Medicare data are considered more reliable for the estimation of mortality at the oldest ages because of the proof of age requirement. Medicare coverage of the American population aged 65 and over is extensive and is especially reliable for the white and black populations, as discussed above (10).

Nonetheless, Medicare data suffer from the effects of “phantom records,” which lead to the overestimation of the number of people over age 90 or so. For example, the number of people aged 90 and over is greater in Medicare data than in census data (9,10). Phantom records arise as a result of some Medicare enrollees being registered more than once or because a Medicare enrollee’s death is not reported (9). To address this problem, the Medicare data used were restricted to the records of Medicare enrollees who are also eligible for Social Security or Railroad Retirement income benefits. This eliminates approximately 3 percent of records from the full Medicare file (9).

To estimate the probability of death for the Medicare population for the non-Hispanic white and non-Hispanic black populations in 2006, age-specific number of deaths and population counts by sex and race for the population aged 66–100 from the 2006 Medicare file were used. The data file is created by CMS for SSA, which, under a special agreement, shares the files with NCHS.

Preliminary Adjustment of the Data

Adjustments for unknown age—An adjustment is made to account for the small proportion of deaths each year for which age is not reported on the death certificate. The number of deaths in each age category is adjusted proportionally to account for those with not-stated ages. The following factor is used to make the adjustment. This factor (F) is calculated for the total and each sex group within a racial and ethnic population for which life tables are constructed:

$$F = \frac{D}{D^a}, \quad [1]$$

where D is the total number of deaths and D^a is the total number of deaths for which age is stated. F is then applied by multiplying it times the number of deaths in each age group. **Table B** shows values for F by sex used to adjust mortality data for the Hispanic, non-Hispanic white, and non-Hispanic black populations in 2006.

Adjustment for misclassification of race and Hispanic origin on death certificates—The NLMS-based classification ratios discussed above are used to adjust age-specific number of deaths for ages 1–95 and over. Age-specific adjusted counts of death are estimated for the total Hispanic, non-Hispanic white, and non-Hispanic black populations and by sex for each group as follows:

$${}_nD_x^F = {}_nD_x^F * {}_nCR_x, \quad [2]$$

where ${}_nD_x^F$ is age-specific number of deaths adjusted for unknown age as

described above, ${}_nCR_x$ are the age-specific classification ratios used to correct for the misclassification of race and Hispanic origin on death certificates, and ${}_nD_x$ are final age-specific counts of death adjusted for age, race, and Hispanic origin misclassification. **Table C** shows values of the sex- and age-specific classification ratios (${}_nCR_x$) by Hispanic origin and race for the non-Hispanic population (black and white).

Correction for racial and ethnic misclassification of infant deaths is addressed by using infant death counts and live birth counts from the 2005 and 2006 linked birth/infant death data files rather than the traditional birth and death data files (16,17). In the linked file, each infant death record is linked to its corresponding birth record so that the race and ethnicity reported on the birth record can be ascribed to the infant death record (16,17). As a result, racial- and ethnic-specific infant mortality rates estimated with the linked file do not suffer from the problem of racial and ethnic discrepancies between the numerator and denominator of the rate. A ratio of infant mortality rates based on the traditional birth and death data files to infant mortality rates based on the linked birth/infant death data file shows that using the traditional files overestimates the infant mortality rate by 2 percent for Hispanic infants, 2 percent–4 percent for non-Hispanic black infants, and less than 1 percent for non-Hispanic white infants (see ratios for age 0 in **Table C**). Because the probability of death at age 0 used to calculate the life table uses live births in the denominator (procedure described

Table B. Values for F used to adjust for not-stated age based on 2006 mortality data

| Hispanic origin, race, and sex | Total deaths | Total deaths for which age was not stated | F |
|--------------------------------|--------------|---|------------|
| Hispanic | 133,004 | 36 | 1.00027074 |
| Male | 74,250 | 29 | 1.00039072 |
| Female | 58,754 | 7 | 1.00011916 |
| Non-Hispanic white | 1,944,617 | 92 | 1.00004731 |
| Male | 947,966 | 72 | 1.00007596 |
| Female | 996,651 | 20 | 1.00002007 |
| Non-Hispanic black | 286,581 | 19 | 1.00006630 |
| Male | 146,729 | 11 | 1.00007497 |
| Female | 139,852 | 8 | 1.00005721 |

Table C. Classification ratios by Hispanic origin, race for the non-Hispanic white and non-Hispanic black populations, age, and sex

| Age | Hispanic | | | Non-Hispanic white | | | Non-Hispanic black | | |
|--------------------------|---------------------|---------------------|---------------------|--------------------|--------|--------|--------------------|--------|---------------------|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| All ages | 1.0501 | 1.0415 | 1.0614 | 0.9960 | 0.9954 | 0.9966 | 1.0055 | 1.0066 | 1.0043 |
| ¹ 0 | 1.0206 | 1.0222 | 1.0181 | 1.0019 | 0.9938 | 1.0122 | 1.0325 | 1.0435 | 1.0189 |
| 1–14 | ² 0.9198 | ² 1.0000 | ² 0.7994 | 0.9930 | 0.9869 | 1.0011 | 1.0200 | 1.0000 | ² 1.0689 |
| 15–24 | 0.9650 | 0.9770 | 0.9290 | 1.0032 | 1.0040 | 1.0010 | 0.9997 | 0.9996 | 1.0000 |
| 25–34 | 1.0189 | 1.0542 | 0.9288 | 0.9975 | 0.9872 | 1.0212 | 1.0043 | 1.0034 | 1.0060 |
| 35–44 | 1.0803 | 1.0863 | 1.0657 | 0.9902 | 0.9864 | 0.9971 | 1.0066 | 1.0081 | 1.0045 |
| 45–54 | 1.0501 | 1.0152 | 1.1208 | 0.9938 | 0.9943 | 0.9930 | 1.0023 | 1.0144 | 0.9880 |
| 55–64 | 1.0260 | 1.0291 | 1.0216 | 0.9932 | 0.9915 | 0.9958 | 1.0135 | 1.0174 | 1.0087 |
| 65–74 | 1.0700 | 1.0640 | 1.0779 | 0.9950 | 0.9961 | 0.9935 | 1.0036 | 0.9979 | 1.0095 |
| 75–84 | 1.0473 | 1.0316 | 1.0651 | 0.9967 | 0.9964 | 0.9971 | 1.0040 | 1.0058 | 1.0023 |
| 85–94 | 1.0468 | 1.0261 | 1.0614 | 0.9978 | 0.9975 | 0.9979 | 1.0083 | 1.0101 | 1.0072 |
| 95 and over | 1.1277 | 1.1700 | 1.1000 | 0.9981 | 0.9927 | 0.9998 | 0.9979 | 1.0300 | 0.9881 |

¹Ratios for age 0 are estimated as the ratio of infant mortality rates based on the traditional death and birth files to the infant mortality rate based on the 2006 linked birth/infant death data file and only shown for illustration purposes; see text for details.

²Ratio is unreliable because either the unweighted number of Current Population Survey deaths or the unweighted number of death certificate deaths or both are based on fewer than 20 deaths.

below), it is preferable to use the linked birth/infant death data file. Further, the classification ratios derived from the NLMS are unreliable for this age category as a result of extremely small sample sizes.

Interpolation of P_x and D_x —Anomalies, both random and those associated with reporting age at death, can be problematic when using vital statistics and census data by single years of age to estimate the probability of death (5,18). Graduation techniques are often used to eliminate these anomalies and to derive a smooth curve by age. Beer’s ordinary minimized fifth difference formula is used to obtain smoothed values of P_x and D_x from 5-year age groupings of nP_x from ages 0–99 and nD_x from ages 5–99, and where nD_x has first been adjusted for not-reported age and race and Hispanic origin misclassification on the death certificate (18).

Calculation of the Probability of Dying, q_x

Calculation of complete period life tables starts with the estimation of age-specific probabilities of death (q_x) which are a function of age-specific death rates, D_x/P_x . Death rates are derived from the number of deaths throughout a calendar year (D_x) and the midyear population (P_x) in that calendar year.

Calculation of q_0 —Calculated using a birth cohort method that employs a separation factor (f) defined as the proportion of infant deaths in year t occurring to infants born in the previous year ($t - 1$). f is estimated by categorizing infant deaths by date of birth. The probability of death is then calculated as

$$q_0 = \frac{D_0(1-f)}{B^t} + \frac{D_0(f)}{B^{t-1}}, \quad [3]$$

where D_0 is the number of infant deaths from the 2006 linked birth/infant death

data file, B^t is the number of live births from the 2006 linked birth/infant death data file, and B^{t-1} is the number of live births from the 2005 linked birth/infant death data file. **Table D** shows separation factors and numbers of births for 2005–2006.

Calculation of vital statistics (q_x) for ages 1–99—Calculated assuming that l_x (number of survivors at exact age x in the life table population) declines linearly between x and $x + 1$ (i.e., that deaths between exact age x and $x + 1$ occur on average at age $x + 1/2$). This simplification is generally considered acceptable when age intervals are 1 year in length (5). Under this assumption, $l_x = L_x + 1/2 d_x$, where L_x is the average life table population at risk of dying between ages x and $x + 1$ and d_x is the number of deaths occurring between age x and $x + 1$. q_x is then

$$q_x = \frac{d_x}{l_x} = \frac{d_x}{L_x + \frac{1}{2}d_x}$$

Table D. Births in 2005 and 2006, deaths in 2006 of infants born in 2005 and 2006, and separation factors by Hispanic origin, race for the non-Hispanic white and non-Hispanic black populations, and sex: United States

| | Hispanic | | | Non-Hispanic white | | | Non-Hispanic black | | |
|-------------------------------------|------------|---------|---------|--------------------|-----------|-----------|--------------------|---------|---------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| Births | | | | | | | | | |
| 2005 | 985,513 | 503,489 | 482,024 | 2,279,959 | 1,170,614 | 1,109,345 | 583,764 | 296,240 | 287,524 |
| 2006 | 1,039,079 | 530,875 | 508,204 | 2,308,654 | 1,184,310 | 1,124,344 | 617,260 | 314,607 | 302,653 |
| Deaths in 2006 of infants born in: | | | | | | | | | |
| 2005 | 675 | 379 | 294 | 1,559 | 887 | 683 | 972 | 533 | 436 |
| 2006 | 4,947 | 2,731 | 2,218 | 11,325 | 6,441 | 4,873 | 7,269 | 3,985 | 3,287 |
| Separation factor (f) | 0.120 | 0.122 | 0.117 | 0.121 | 0.121 | 0.123 | 0.118 | 0.118 | 0.117 |

One can make the same assumption for the observed population [i.e., that the observed population aged x at risk of dying at the beginning of the year (N_x) declines linearly between ages x and $x + 1$]. Under this assumption, $N_x = P_x + \frac{1}{2} D_x$, where P_x is the midyear population or average observed population at risk of dying between ages x and $x + 1$ and D_x is the observed number of deaths occurring between ages x and $x + 1$. q_x is calculated as

$$q_x = \frac{D_x}{N_x} = \frac{D_x}{P_x + \frac{1}{2} D_x} \quad [4]$$

For $x = 1-99$, D_x is the Beer's smoothed number of deaths adjusted for not-stated age and race and Hispanic origin misclassification on the death certificate and P_x is the Beer's smoothed population at risk of dying between ages x and $x + 1$.

Probability of Dying at the Oldest Ages for the Non-Hispanic White and Non-Hispanic Black Populations

As noted above, Medicare data are used to supplement vital statistics data for the estimation of q_x at the oldest ages because it is more accurate as proof of age is required for enrollment in the Medicare program. Medicare data are used here to estimate the probability of dying for ages 66–100 for the non-Hispanic white and non-Hispanic black populations. The method described in this section was first developed to estimate mortality for ages 66–100 for the 1999–2001 U.S. decennial life tables and the U.S. annual life tables beginning with year 2005 for the total population and the white and black racial groups (19,20). Annual life tables for years 2000–2004 were revised with this methodology and republished (20). As discussed in the “Data Used for Calculating Life Table Functions” section, it is possible to use Medicare data for the non-Hispanic white and non-Hispanic black populations as well as the total black and white populations irrespective of Hispanic origin.

For ages 66–94, the probability of dying was obtained by blending vital statistics (q_x^V) with Medicare (q_x^M) through a weighting process that gives gradually declining weight to vital statistics data and gradually increasing weight to Medicare data. For ages 95–100, Medicare (q_x^M) is used exclusively. For ages 66–100, q_x is estimated as

$$q_x = \frac{1}{30} [(95 - x) q_x^V + (x - 65) q_x^M],$$

when $x = 66, \dots, 94$,

and

$$q_x = q_x^M, \text{ when } x = 95, \dots, 100, \quad [5]$$

where q_x is a combination of q_x^V and q_x^M , q_x^V is the probability of dying calculated with formula 4, and q_x^M is the probability of dying based on Medicare data.

The third component of the Heligman-Pollard (HP) model was then used to smooth the probabilities of death for ages 66–100 obtained above and also to extrapolate the probabilities of deaths for ages over 100. The HP model is a nonlinear model consisting of three components and eight parameters, where

$$\frac{q_x}{1 - q_x} = A^{(x+B)^C} + D \exp[-E(\log x - \log F)^2] + GH^x.$$

Parameter A measures mortality in the first year of life, parameter B measures the rate of change in mortality from birth to the first year of life, and parameter C measures the rate of mortality decline in childhood. Parameters D , E , and F measure the location, width, and height of the “accident hump” and parameters G and H measure mortality levels and changes for ages approximately 40 and over (19,20).

A nonlinear weighted least squares model, with weights,

$$w_x = \frac{1}{q_x^2},$$

was used to fit the third component of the HP model in the age range 65–100. The model was estimated as

$$\frac{q_x}{1 - q_x} = GH^x. \quad [6]$$

Predicted \hat{q}_x was then estimated as

$$\hat{q}_x = \frac{\hat{G} \hat{H}^x}{1 + \hat{G} \hat{H}^x}, \quad [7]$$

where \hat{G} and \hat{H} are the predicted parameters given by fitting model 6. Predicted parameters for the non-Hispanic white and non-Hispanic black populations in 2006 are presented in Table E. Although reliable data-based probabilities of death for older ages are only available through ages 100 or so, q_x was extrapolated to age 130 in order to estimate the life table population until no survivors remain. This information is then used to estimate L_x for ages 100–130, which is used to close the table with the age category 100 and over, combined (discussed below).

To ensure a smooth transition from vital q_x^V and predicted \hat{q}_x the two were blended from ages 66–74 with a graduating process:

$$q_x = \frac{1}{10} [(75 - x) q_x^V + (x - 65) \hat{q}_x],$$

when $x = 66, \dots, 74$. [8]

Probability of Dying at the Oldest Ages for the Hispanic Population

As previously noted, Medicare data are unreliable for the Hispanic population because of the

Table E. Estimated parameters G and H used for predicting q_x from ages 66–130: Non-Hispanic white and non-Hispanic black populations

| | Non-Hispanic white | | | Non-Hispanic black | | |
|---------------|--------------------|-----------|-----------|--------------------|-----------|-----------|
| | Total | Male | Female | Total | Male | Female |
| G | 0.0000125 | 0.0000173 | 0.0000064 | 0.0000984 | 0.0001990 | 0.0000449 |
| H | 1.1118 | 1.1100 | 1.1190 | 1.0855 | 1.0792 | 1.0939 |

inconsistencies in the Medicare racial and ethnic classification system. As a result, it was necessary to use other methods to estimate mortality at the oldest ages for this population. Past age 80 mortality estimates based strictly on vital statistics for the Hispanic population are too low, despite correction for ethnic misclassification on the death certificate.

A couple of estimation strategies were tested in order to estimate mortality for ages over 80 for the Hispanic population. First, the third component of the HP model was fit to vital statistics data and the predicted parameters were then used to extrapolate mortality for ages over 80. Several age ranges in which age-specific mortality patterns appear reasonable were used to fit the model, including ages 45–80, 55–80, and 65–80. The 65–80 age range produced the best statistical fit, however, the resulting predicted probabilities of death for ages 81–100 remained unrealistically low, with Hispanic to non-Hispanic white mortality ratios declining progressively with age from about 80 percent at age 75 to about 65 percent at ages 100 and over.

A consistent finding across diverse studies has been that Hispanic mortality in the adult and advanced ages varies between approximately 80 percent and 89 percent of that of the non-Hispanic white population (2,3,21,22). Two studies that used Medicare data to compare Hispanic to non-Hispanic white mortality by using a name-based algorithm to identify Hispanic persons in the Medicare-NUMIDENT SSA database, found age-specific ratios of Hispanic to non-Hispanic white mortality at ages 65 and over to consistently be around 85 percent (21,22). While not without limitations, these findings are based on the most reliable data available about age-specific mortality at the oldest ages.

The second estimation method tested, the Brass relational logit model, takes advantage of the relationship between Hispanic and non-Hispanic white mortality identified by the mentioned studies and is one that has been widely and successfully used to predict the mortality of one population relative to another at the older ages

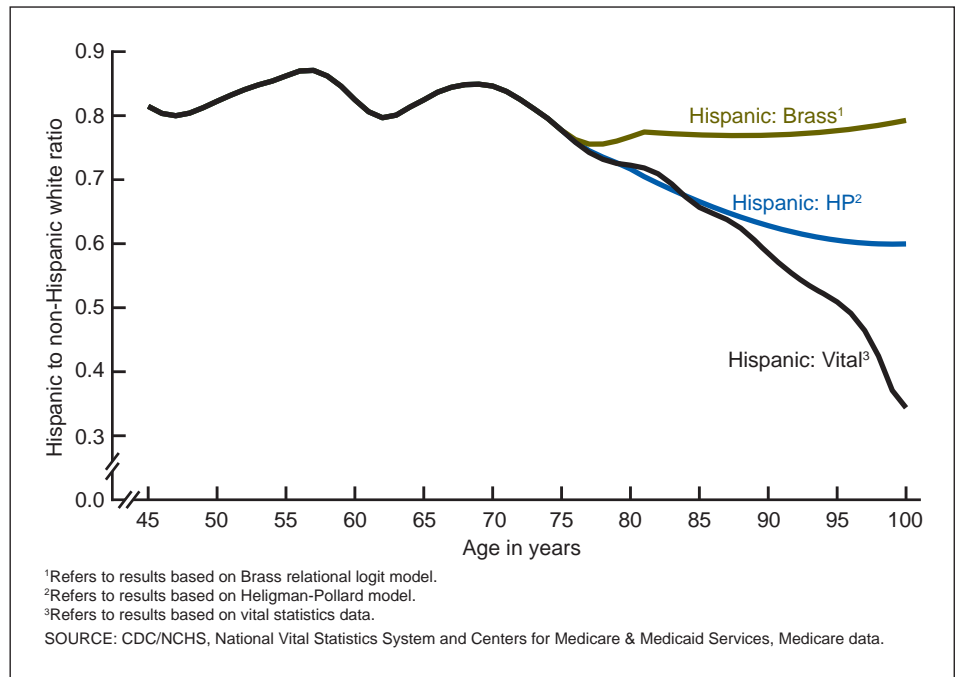


Figure 1. Hispanic to non-Hispanic white age-specific mortality ratios for males: United States, 2006

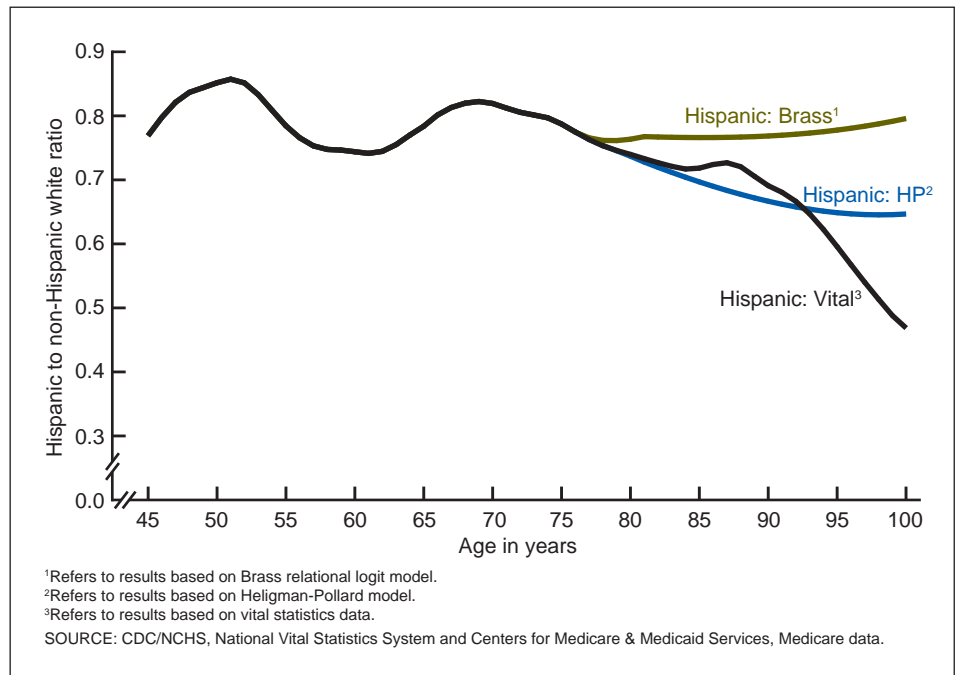


Figure 2. Hispanic to non-Hispanic white age-specific mortality ratios for females: United States, 2006

(23–26). Using the age-specific mortality pattern of the non-Hispanic white population as the “standard,” Brass’ relational logit model is used to predict Hispanic mortality in the older ages. The “standard” is fit to Hispanic data in the age interval 45–80 and the predicted parameters are used to

estimate the probabilities of death for ages 76–100. This method allows the relationship between the two populations in the younger ages to be carried over to the older ages (23–26). Figures 1 and 2 show age-specific ratios of Hispanic to non-Hispanic white probabilities of death, where the Hispanic estimates are

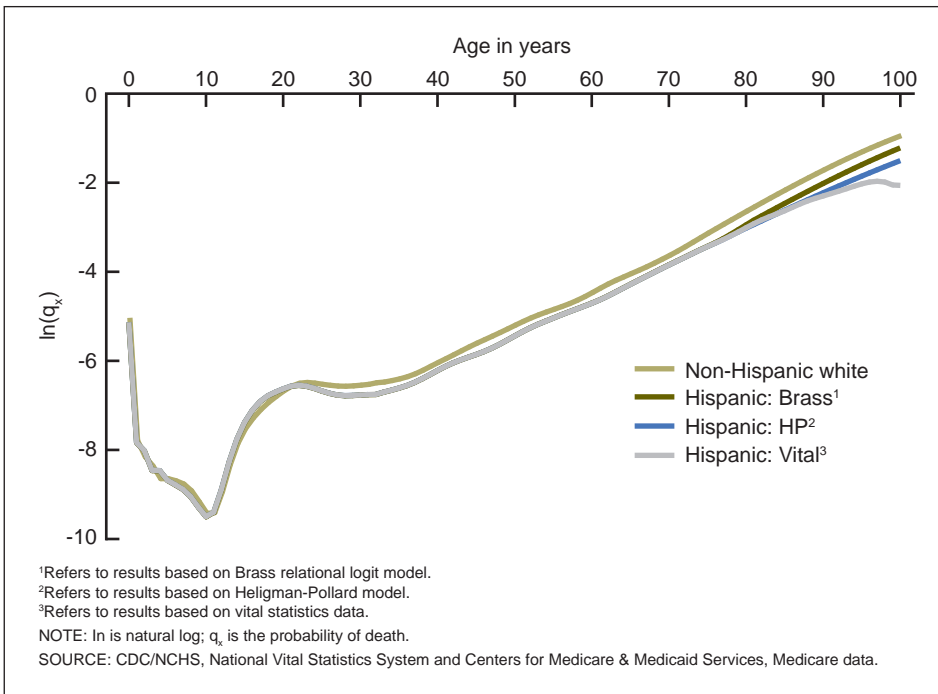


Figure 3. Male age pattern of mortality: United States, 2006

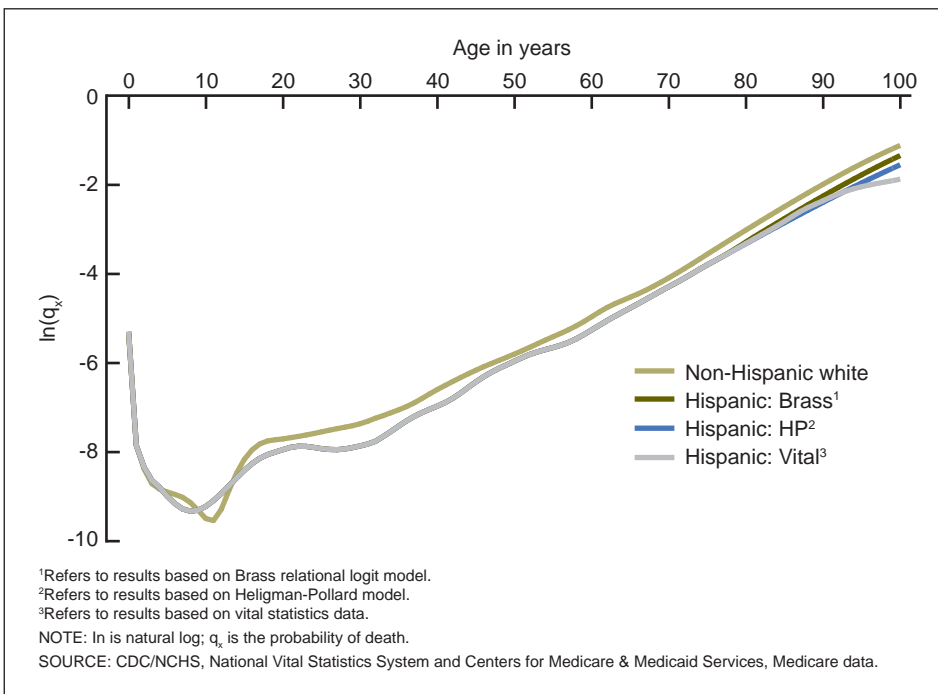


Figure 4. Female age pattern of mortality: United States, 2006

based respectively on vital statistics, the Brass relational logit model, and the HP model, and the non-Hispanic estimates are based on the method described in the previous section. Hispanic mortality estimates based on the Brass logit model maintain the relative difference with the non-Hispanic white population in the

oldest ages consistent with the findings of the two studies that estimated Hispanic mortality directly from Medicare data (21,22). A comparison of the sex and age patterns of mortality for the age range 0–100 between the non-Hispanic white and Hispanic populations based on the Brass model,

the HP model, and vital statistics reveals that the Brass model produces the most realistic mortality pattern for the Hispanic population (Figures 3 and 4). The Brass relational logit model with the non-Hispanic white population as the standard was therefore used to estimate mortality for ages 80 and over for the Hispanic population.

The Brass relational logit model expresses the age-specific mortality pattern of a population of interest as a function of the age-specific mortality pattern of a “standard” population and is expressed as

$$\hat{Y}(x) = \alpha + \beta Y^S(x), \quad [9]$$

where $\hat{Y}(x)$ is the predicted logit of the probability of death (q_x) in the population of interest, i.e.,

$$\text{logit}[q_x] = \ln \left[\frac{q(x)}{1-q(x)} \right],$$

$Y^S(x)$ is the logit of the probability of death (q_x^S) in the standard population, i.e.,

$$\text{logit}[q_x^S] = \ln \left[\frac{q_x^S}{1-q_x^S} \right],$$

α is the predicted parameter that measures the level of mortality of the population of interest relative to the standard population, and β is the predicted parameter that measures the slope of the mortality function of the population of interest relative to the standard population (23–26). Table F shows values of predicted α and β and their standard errors.

Ordinary least squares regression was used to fit equation 9 in the age range 45–80. The resulting predicted parameters α and β were then used to estimate the predicted probability of death for ages 76–130 in the Hispanic population. \hat{q}_x was predicted to age 130 in order to estimate the life table population until no survivors remain, as was done for the non-Hispanic white and non-Hispanic black populations. This information is then used to estimate L_x for ages 100–130, which is used to close the table with the age category 100 and over, combined (discussed in the following section).

Table F. Estimated Brass relational logit model parameters α and β

| | Total | SE | Male | SE | Female | SE |
|--------------------|---------|-------|---------|-------|---------|-------|
| α | -0.3690 | 0.027 | -0.3675 | 0.036 | -0.3377 | 0.037 |
| β | 0.9671 | 0.006 | 0.9627 | 0.008 | 0.9789 | 0.008 |

NOTE: SE is standard error.

Predicted \hat{q}_x is estimated by transforming its logit [$\hat{Y}(x)$] back as follows:

$$\hat{q}_x = \frac{\exp[\hat{Y}(x)]}{1 + \exp[\hat{Y}(x)]} = \frac{\exp[\alpha + \beta Y^*(x)]}{1 + \exp[\alpha + \beta Y^*(x)]} \quad [10]$$

To ensure a smooth transition from vital q_x^V and predicted \hat{q}_x , the two were blended from ages 76–80 with a graduating process:

$$q_x = \frac{1}{6} [(81-x)q_x^V + (x-75)\hat{q}_x],$$

when $x = 76, \dots, 80.$ [11]

Finally, to close the table at age 100 and over (combined), ${}_{\infty}q_{100}$ is set equal to 1.0 because all survivors to this age will die at some point in the open-ended age interval. Once q_x is obtained for each single year of age, the other life table functions are easily calculated.

Calculation of Remaining Life Table Functions for All Groups

Survivor function (l_x)—The life table radix (l_0) is set at 100,000. For ages greater than 0, the number of survivors remaining at exact age x is calculated as

$$l_x = l_{x-1}(1 - q_{x-1}). \quad [12]$$

Decrement function (d_x)—The number of deaths occurring between age x and $x + 1$ is calculated from the survivor function:

$$d_x = l_x - l_{x+1} = l_x q_x. \quad [13]$$

Note that ${}_{\infty}d_{100} = {}_{\infty}l_{100}$ since ${}_{\infty}q_{100} = 1.0$.

Person-years lived (L_x)—Person-years lived for ages 1–99 is calculated assuming that the survivor function declines linearly between age x and $x + 1$. This gives the formula

$$L_x = \frac{1}{2}(l_x + l_{x+1}) = l_x - \frac{1}{2}d_x. \quad [14]$$

For $x = 0$, the separation factor f is used to calculate L_0 :

$$L_0 = f l_0 + (1 - f) l_1. \quad [15]$$

Finally, ${}_{\infty}L_{100}$ is estimated as the sum of the extrapolated L_x values for ages 100–130.

Person-years lived at and above age x (T_x)—Calculated by summing L_x values at and above age x :

$$T_x = \sum_{x=0}^{\infty} L_x. \quad [16]$$

Life expectancy at age x (e_x)—Calculated as

$$e_x = \frac{T_x}{l_x}. \quad [17]$$

Results

Life Expectancy by Hispanic Origin and Race

Tables 1–9 show complete life tables by Hispanic origin, race (white and black) for the non-Hispanic population, and sex for 2006. Table G

Table G. Expectation of life by age, sex, Hispanic origin, and race for the non-Hispanic white and non-Hispanic black populations: United States, 2006

| Age | All origins | | | Hispanic | | | Non-Hispanic white | | | Non-Hispanic black | | |
|---------------|-------------|------|--------|----------|------|--------|--------------------|------|--------|--------------------|------|--------|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| 0 | 77.7 | 75.1 | 80.2 | 80.6 | 77.9 | 83.1 | 78.1 | 75.6 | 80.5 | 72.9 | 69.3 | 76.3 |
| 1 | 77.2 | 74.7 | 79.7 | 80.0 | 77.4 | 82.5 | 77.5 | 75.1 | 79.9 | 72.9 | 69.3 | 76.2 |
| 5 | 73.3 | 70.8 | 75.8 | 76.1 | 73.5 | 78.6 | 73.6 | 71.1 | 75.9 | 69.0 | 65.4 | 72.3 |
| 10 | 68.4 | 65.8 | 70.8 | 71.2 | 68.5 | 73.7 | 68.6 | 66.2 | 71.0 | 64.1 | 60.5 | 67.4 |
| 15 | 63.4 | 60.9 | 65.9 | 66.2 | 63.6 | 68.7 | 63.7 | 61.2 | 66.0 | 59.2 | 55.6 | 62.5 |
| 20 | 58.6 | 56.1 | 61.0 | 61.4 | 58.9 | 63.8 | 58.9 | 56.5 | 61.1 | 54.4 | 50.9 | 57.6 |
| 25 | 53.9 | 51.5 | 56.1 | 56.7 | 54.2 | 58.9 | 54.1 | 51.9 | 56.3 | 49.8 | 46.5 | 52.8 |
| 30 | 49.2 | 46.9 | 51.3 | 51.9 | 49.6 | 54.0 | 49.4 | 47.2 | 51.4 | 45.2 | 42.0 | 48.0 |
| 35 | 44.4 | 42.2 | 46.4 | 47.1 | 44.8 | 49.1 | 44.6 | 42.5 | 46.6 | 40.6 | 37.6 | 43.3 |
| 40 | 39.7 | 37.6 | 41.7 | 42.4 | 40.2 | 44.3 | 39.9 | 37.9 | 41.8 | 36.1 | 33.2 | 38.7 |
| 45 | 35.2 | 33.1 | 37.0 | 37.7 | 35.6 | 39.5 | 35.3 | 33.4 | 37.1 | 31.8 | 28.9 | 34.3 |
| 50 | 30.7 | 28.8 | 32.5 | 33.2 | 31.2 | 34.9 | 30.9 | 29.0 | 32.6 | 27.7 | 24.9 | 30.0 |
| 55 | 26.5 | 24.7 | 28.0 | 28.8 | 26.9 | 30.4 | 26.6 | 24.8 | 28.1 | 23.9 | 21.3 | 25.9 |
| 60 | 22.4 | 20.7 | 23.8 | 24.6 | 22.8 | 26.0 | 22.4 | 20.8 | 23.8 | 20.3 | 18.0 | 22.1 |
| 65 | 18.5 | 17.0 | 19.7 | 20.6 | 19.0 | 21.7 | 18.5 | 17.1 | 19.7 | 17.0 | 15.0 | 18.4 |
| 70 | 14.9 | 13.6 | 15.9 | 16.8 | 15.4 | 17.7 | 14.8 | 13.6 | 15.9 | 13.9 | 12.2 | 15.0 |
| 75 | 11.6 | 10.4 | 12.3 | 13.3 | 12.1 | 14.1 | 11.5 | 10.4 | 12.3 | 11.0 | 9.7 | 11.9 |
| 80 | 8.7 | 7.8 | 9.3 | 10.2 | 9.2 | 10.8 | 8.7 | 7.8 | 9.2 | 8.7 | 7.6 | 9.3 |
| 85 | 6.4 | 5.7 | 6.8 | 7.6 | 6.8 | 8.0 | 6.3 | 5.6 | 6.7 | 6.7 | 5.9 | 7.1 |
| 90 | 4.6 | 4.1 | 4.8 | 5.6 | 5.0 | 5.7 | 4.5 | 4.0 | 4.7 | 5.0 | 4.5 | 5.3 |
| 95 | 3.2 | 2.9 | 3.3 | 4.0 | 3.5 | 4.0 | 3.2 | 2.8 | 3.3 | 3.8 | 3.5 | 3.9 |
| 100 | 2.3 | 2.0 | 2.3 | 2.8 | 2.5 | 2.8 | 2.2 | 2.0 | 2.2 | 2.8 | 2.6 | 2.8 |

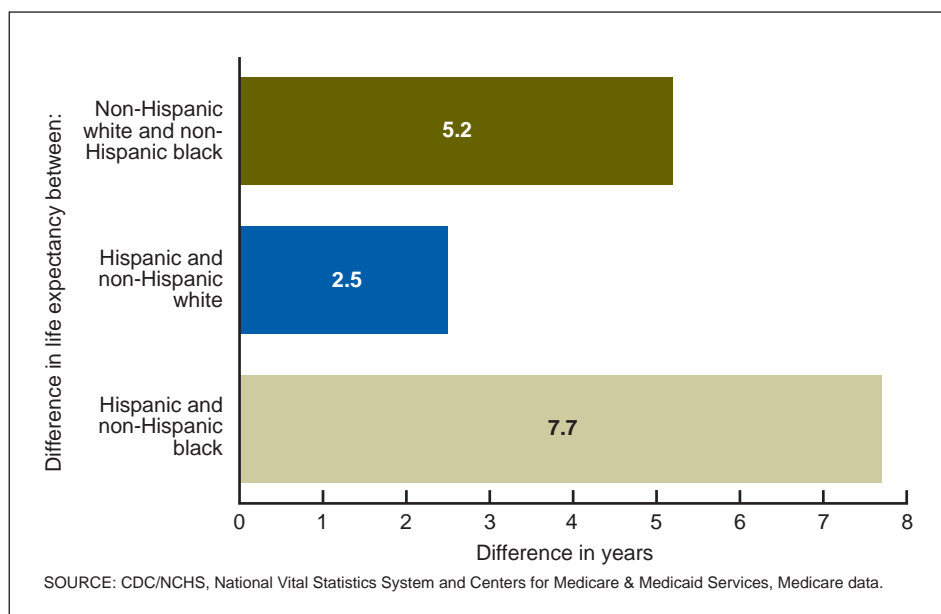


Figure 5. Difference in life expectancy at birth: United States, 2006

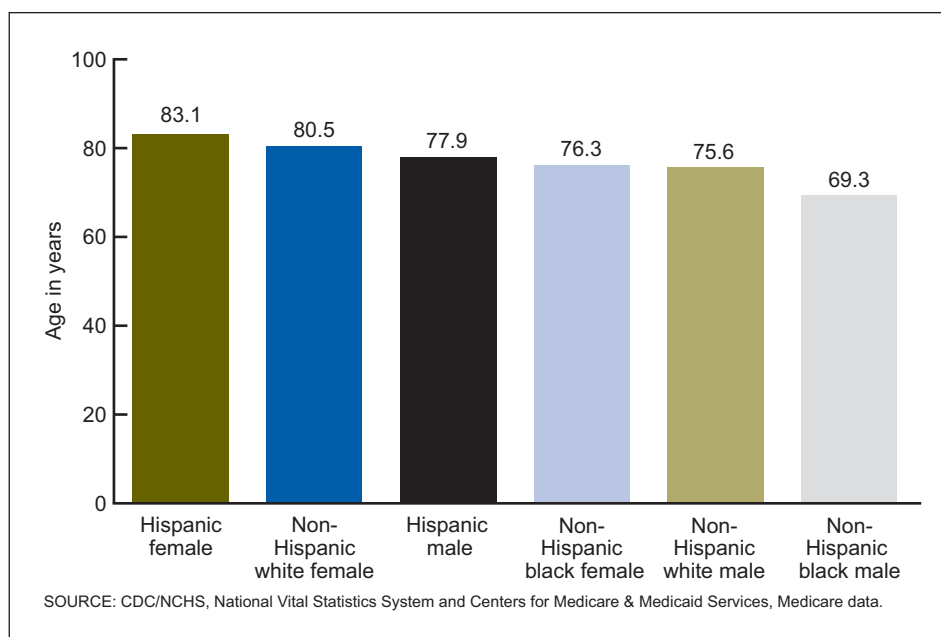


Figure 6. Life expectancy at birth, by Hispanic origin, race, and sex: United States, 2006

summarizes life expectancy by age, Hispanic origin, race, and sex. Life expectancy at birth for 2006 represents the average number of years that a group of infants would live if the infants were to experience throughout life the age-specific death rates prevailing in 2006. Life expectancy at birth for the total population in 2006 was 77.7 years (27). Life expectancy was 80.6 years for the Hispanic population, 78.1 years for

the non-Hispanic white population, and 72.9 years for the non-Hispanic black population. The Hispanic population has a mortality advantage at birth of 2.5 years over the non-Hispanic white population and 7.7 years over the non-Hispanic black population (Figure 5).

Among the six Hispanic origin-race-sex groups (Figure 6), Hispanic females

have the highest life expectancy at birth (83.1 years), followed by non-Hispanic white females (80.5 years), Hispanic males (77.9 years), non-Hispanic black females (76.3 years), non-Hispanic white males (75.6 years), and non-Hispanic black males (69.3 years). The smallest differential is between Hispanic and non-Hispanic white females, with Hispanic females having an advantage of 2.6 years. The largest differential is between Hispanic females and non-Hispanic black males, with Hispanic females having a life expectancy at birth 13.8 years greater.

The Hispanic population has higher life expectancy than the non-Hispanic white and non-Hispanic black populations at every age from birth until approximately age 95 when Hispanic male and non-Hispanic black male life expectancy is equal at 3.5 years (Table G). At age 65, Hispanic females have the highest life expectancy (21.7 years), followed by non-Hispanic white females (19.7 years), Hispanic males (19.0 years), non-Hispanic black females (18.4 years), non-Hispanic white males (17.1 years), and non-Hispanic black males (15.0 years). This pattern changes by age 85 when Hispanic females still have the highest life expectancy (8.0 years), but are immediately followed by non-Hispanic black females (7.1 years), Hispanic males (6.8 years), non-Hispanic white females (6.7 years), non-Hispanic black males (5.9 years), and non-Hispanic white males (5.6 years). The crossover at the oldest ages between the non-Hispanic white and non-Hispanic black populations has been observed for some time now when comparing age-specific mortality between the white and black populations. It is not clear whether the mortality crossover is due to a data artifact or reflects a real advantage for the black population at the oldest ages (25).

In 2006, the female to male advantage in life expectancy at birth, or the sex gap, was 5.1 years for the total population (27). The sex gap increased from 2 years to 7.8 years between 1900 and 1975 and then declined to reach a low of 5.0 in 2004 (27). In 2006, there was noticeable variability in the sex gap in life expectancy at birth by Hispanic

Table H. Number surviving by age, sex, Hispanic origin, and race for the non-Hispanic white and non-Hispanic black populations: United States, 2006

| Age | All origins | | | Hispanic | | | Non-Hispanic white | | | Non-Hispanic black | | |
|-----|-------------|---------|---------|----------|---------|---------|--------------------|---------|---------|--------------------|---------|---------|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| 0 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| 1 | 99,329 | 99,266 | 99,395 | 99,455 | 99,410 | 99,503 | 99,441 | 99,380 | 99,505 | 98,656 | 98,553 | 98,762 |
| 5 | 99,216 | 99,144 | 99,291 | 99,351 | 99,296 | 99,408 | 99,342 | 99,275 | 99,412 | 98,477 | 98,364 | 98,603 |
| 10 | 99,147 | 99,068 | 99,229 | 99,292 | 99,229 | 99,358 | 99,278 | 99,206 | 99,354 | 98,374 | 98,247 | 98,517 |
| 15 | 99,065 | 98,972 | 99,164 | 99,209 | 99,132 | 99,290 | 99,205 | 99,119 | 99,296 | 98,259 | 98,113 | 98,427 |
| 20 | 98,747 | 98,524 | 98,982 | 98,896 | 98,658 | 99,149 | 98,912 | 98,727 | 99,107 | 97,831 | 97,453 | 98,239 |
| 25 | 98,253 | 97,797 | 98,739 | 98,444 | 97,979 | 98,965 | 98,450 | 98,053 | 98,871 | 97,115 | 96,370 | 97,901 |
| 30 | 97,759 | 97,099 | 98,461 | 98,046 | 97,403 | 98,787 | 97,978 | 97,391 | 98,592 | 96,282 | 95,150 | 97,441 |
| 35 | 97,213 | 96,371 | 98,105 | 97,630 | 96,821 | 98,569 | 97,451 | 96,694 | 98,239 | 95,309 | 93,817 | 96,801 |
| 40 | 96,495 | 95,466 | 97,579 | 97,058 | 96,072 | 98,205 | 96,764 | 95,829 | 97,735 | 94,060 | 92,240 | 95,853 |
| 45 | 95,397 | 94,112 | 96,740 | 96,198 | 94,947 | 97,642 | 95,713 | 94,528 | 96,937 | 92,259 | 90,076 | 94,381 |
| 50 | 93,750 | 92,082 | 95,478 | 94,915 | 93,372 | 96,671 | 94,149 | 92,587 | 95,757 | 89,558 | 86,775 | 92,223 |
| 55 | 91,352 | 89,083 | 93,681 | 92,999 | 90,975 | 95,242 | 91,891 | 89,766 | 94,073 | 85,524 | 81,619 | 89,189 |
| 60 | 88,057 | 85,054 | 91,119 | 90,392 | 87,642 | 93,351 | 88,751 | 85,957 | 91,616 | 80,194 | 74,952 | 85,072 |
| 65 | 83,251 | 79,346 | 87,200 | 86,649 | 83,059 | 90,392 | 84,060 | 80,421 | 87,773 | 73,171 | 66,394 | 79,421 |
| 70 | 76,661 | 71,652 | 81,662 | 81,079 | 76,401 | 85,803 | 77,527 | 72,808 | 82,297 | 64,679 | 56,515 | 72,131 |
| 75 | 67,331 | 61,057 | 73,449 | 73,087 | 67,177 | 78,849 | 68,180 | 62,212 | 74,089 | 54,142 | 44,793 | 62,561 |
| 80 | 54,201 | 46,859 | 61,175 | 62,030 | 55,064 | 68,584 | 54,932 | 47,834 | 61,750 | 41,435 | 31,848 | 50,078 |
| 85 | 37,805 | 30,371 | 44,685 | 47,154 | 39,498 | 53,963 | 38,265 | 30,958 | 45,056 | 27,835 | 19,480 | 35,489 |
| 90 | 20,898 | 15,034 | 26,183 | 30,063 | 23,049 | 35,855 | 21,016 | 15,183 | 26,253 | 15,459 | 9,636 | 20,904 |
| 95 | 7,991 | 4,895 | 10,685 | 14,488 | 9,745 | 18,014 | 7,900 | 4,821 | 10,553 | 6,531 | 3,548 | 9,339 |
| 100 | 1,737 | 850 | 2,460 | 4,522 | 2,523 | 5,772 | 1,656 | 795 | 2,351 | 1,876 | 873 | 2,785 |

origin and race. The gap was 4.9 years for the non-Hispanic white population, 5.2 years for the Hispanic population, and 7.0 years for the non-Hispanic black population.

Finally, the Hispanic mortality advantage is also illustrated in the effect produced on life expectancy at birth when race and Hispanic origin are decoupled. To date, U.S. life tables have been produced by race (white and black), irrespective of Hispanic origin. When Hispanic origin is excluded from the two race groups and only the non-Hispanic segments are included, life expectancy at birth declines. For example, for the black population, irrespective of Hispanic origin, life expectancy at birth was 73.2 years in 2006 (27). However, it declined to 72.9 years when only the non-Hispanic segment of the black population is included. Similarly, life expectancy for the white population, irrespective of Hispanic origin, was 78.2 years in 2006 (27) and declined to 78.1 years when only the non-Hispanic segment of the white population is included. The effect of the Hispanic mortality advantage on race-specific life expectancy is also observed for each race-sex group.

Survivorship by Hispanic Origin and Race

Table H shows the number of survivors out of 100,000 persons born alive (l_x) by age, Hispanic origin, and race (white and black) for the non-Hispanic population and sex. In 2006, 99.3 percent of all infants born in the United States survived the first year of life (27). In comparison, 99.5 percent of Hispanic infants survived the first year of life; 99.4 percent of non-Hispanic white infants survived. On the other hand, 98.7 percent of non-Hispanic black infants survived the first year of life. In 2006, 37.8 percent of the life table cohort survived to age 85, however, survival at the oldest ages varied significantly by Hispanic origin and race. While 47.2 percent of the Hispanic population survived to age 85, 38.3 percent of the non-Hispanic white population, and only 27.8 percent of the non-Hispanic black population did so.

Among the six Hispanic origin-race-sex groups (Table H), Hispanic females have the highest median age at death with approximately 50.5 percent surviving to age 86. The next group with the highest median age at death is

non-Hispanic white females with 48.7 percent surviving to age 84. The next group is Hispanic males, with 49.2 percent surviving to age 82, followed by non-Hispanic black females with 50.0 percent surviving to age 80, non-Hispanic white males with 50.9 percent surviving to age 79, and finally non-Hispanic black males with 49.7 percent surviving to age 73 years. The median age at death for non-Hispanic black males is 13 years less than that of Hispanic females.

The Hispanic mortality advantage as seen through age-specific survival rates (Figure 7) is mostly concentrated in the adult and very old ages. Between ages 1 and 16, non-Hispanic white females have a very slight advantage over Hispanic females with higher survival rates. But, beginning with age 17, Hispanic females take the lead with progressively higher age-specific survival rates. Similarly, non-Hispanic white males have slightly higher survival rates than Hispanic males over the age range 1–30, with the highest advantage for non-Hispanic white males in the age range 20–27 or so. After age 30, Hispanic males regain the advantage with progressively higher age-specific

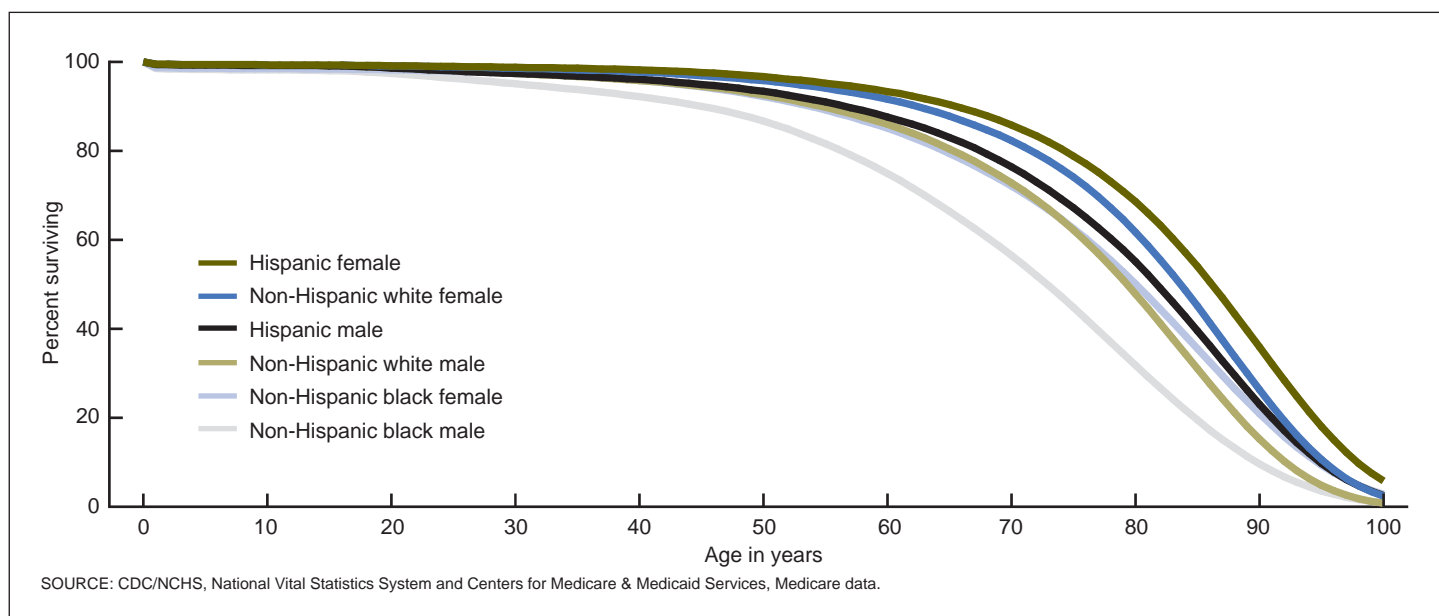


Figure 7. Percentage surviving, by Hispanic origin, race, age, and sex: United States, 2006

survival rates, which taper somewhat at the very oldest ages.

Discussion

This report presents the first ever U.S. life tables by Hispanic origin and race for the non-Hispanic white and non-Hispanic black populations. The data quality problems that had prevented their production in the past—ethnic misclassification on the death certificate and age misstatement at the oldest ages—were addressed in this study as robustly as possible given available data and methods. The results show that the Hispanic population has higher life expectancy at birth and at almost every subsequent age than the non-Hispanic white and non-Hispanic black populations. The finding of higher life expectancy for the Hispanic population seems paradoxical because on average the Hispanic population has lower socioeconomic status than the non-Hispanic white population. Given the relationship between socioeconomic status and mortality, a mortality profile similar to that of the non-Hispanic black population would seem more likely for the Hispanic population.

This seemingly paradoxical result has been found in numerous research studies using a variety of data sources, including state and national vital

statistics, local surveys, and national linked mortality follow-up surveys, such as the NLMS and the National Health Interview Survey–Multiple Cause of Death (NHIS–MCD) linked data. All such studies have consistently found a Hispanic mortality advantage over the non-Hispanic white population even when differences in demographic and socioeconomic characteristics are taken into account (21,22,28–32). Research into the causes of this paradox has been extensive although not conclusive (21,22,28–32).

Three sets of explanations have been proposed: data artifact, migration effects, and cultural effects (28). There are three data problems that may lead to the appearance of a Hispanic mortality advantage. One type consists of incongruence between ethnic classification in the numerators and denominators of death rates. This type of data artifact affects vital statistics because the classification or reporting procedures used in the two distinct data sources (vital registration and census population estimates) may differ. A second type of data artifact is age misstatement, which tends to depress mortality rates at older ages, as previously discussed. Finally, a third type of data artifact is the problem of differential record linkage success rates in linked datasets, such as the NLMS and NHIS–MCD, which may

disproportionately undercount Hispanic deaths and therefore lead to a false appearance of a Hispanic mortality advantage in mortality follow-up studies that rely on record linkage to identify mortality status because unlinked records are presumed alive (28).

To produce the U.S. national life tables by Hispanic origin presented in this report, the two types of data artifacts that affect vital statistics data—incongruence in ethnic classification between numerators and denominators of death rates and age misstatement—were thoroughly and robustly addressed. It was not possible to address differential linkage rates. However, because only linked records were used to assess the quality of racial and ethnic reporting on death certificates, linkage errors would only affect the classification ratios to the extent that incorrectly unlinked records differed from linked records in the rate of agreement between CPS and death certificate racial and ethnic classifications. No definitive evidence of differential linkage rates by race or ethnicity in the NLMS exists (3).

The two other sets of explanations—migration effects and cultural effects—may indeed explain the Hispanic mortality advantage, but are impossible to test with vital statistics data and are beyond the purview of this study. It has been hypothesized that the

lower observed mortality of the Hispanic population could be a function of migrant selectivity for better health (the healthy migrant effect) or return migration of ill migrants (the salmon bias effect) whose deaths are missed in the U.S. vital statistics system (28). There is as yet no conclusive evidence to support either of these migration effects as the explanations of the Hispanic mortality advantage, although the most recent research that directly tests the salmon bias effect found that foreign-born Hispanic emigrants (or return migrants) did have higher mortality but its magnitude was too small to explain a significant portion of the Hispanic mortality advantage (22). Finally, cultural effects in the form of family structure, lifestyle behaviors, and social networks may also explain the Hispanic mortality advantage by conferring a protective barrier against the vicissitudes of minority status and low socioeconomic conditions. However, there is as yet no conclusive evidence that the cultural effect explains the Hispanic mortality advantage (28).

The life tables presented in this report have some limitations. First, the classification ratios used to correct for racial and ethnic misclassification on U.S. death certificates are based on CPS data that pertain only to the noninstitutionalized population of the United States. Second, they are based on deaths that occurred in the period 1990–1998. To the degree that there were important changes in the reporting of race and ethnicity on death certificates in subsequent years, the resulting tables are biased. Third, while there is no conclusive evidence in support of the salmon bias effect, the possibility remains that Hispanic deaths are missed in the U.S. vital statistics system due to return migration and therefore the resulting death rates are biased irrespective of correction for ethnic misclassification.

Finally, a significant limitation present in U.S. life tables constructed for the total Hispanic population is that these life tables may mask important differences between the various Hispanic subgroups that make up this population. As noted in the “Background” section, the Hispanic

population varies by national origin group, nativity status, socioeconomic status, and important demographic characteristics, such as age structure and fertility. Hispanic life tables presented in this report will tend to reflect the mortality profile of the Mexican-American population, which makes up 64.5 percent of the total Hispanic population in the United States. Similarly, it is possible that mortality profiles for the Hispanic population differ by nativity status, particularly if migrant selectivity or return migration play a role in the Hispanic mortality advantage. As a result, the next steps that need to be taken to better portray the mortality of the Hispanic population in the United States is to produce life tables by Hispanic origin subgroup and nativity status.

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Table 1. Life table for the Hispanic population: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table1.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.005446 | 100,000 | 545 | 99,521 | 8,060,110 | 80.6 |
| 1-2 | 0.000391 | 99,455 | 39 | 99,436 | 7,960,590 | 80.0 |
| 2-3 | 0.000285 | 99,417 | 28 | 99,402 | 7,861,154 | 79.1 |
| 3-4 | 0.000195 | 99,388 | 19 | 99,378 | 7,761,751 | 78.1 |
| 4-5 | 0.000182 | 99,369 | 18 | 99,360 | 7,662,373 | 77.1 |
| 5-6 | 0.000148 | 99,351 | 15 | 99,343 | 7,563,013 | 76.1 |
| 6-7 | 0.000130 | 99,336 | 13 | 99,330 | 7,463,670 | 75.1 |
| 7-8 | 0.000116 | 99,323 | 12 | 99,317 | 7,364,340 | 74.1 |
| 8-9 | 0.000104 | 99,312 | 10 | 99,306 | 7,265,023 | 73.2 |
| 9-10 | 0.000092 | 99,301 | 9 | 99,297 | 7,165,716 | 72.2 |
| 10-11 | 0.000087 | 99,292 | 9 | 99,288 | 7,066,420 | 71.2 |
| 11-12 | 0.000097 | 99,284 | 10 | 99,279 | 6,967,132 | 70.2 |
| 12-13 | 0.000135 | 99,274 | 13 | 99,267 | 6,867,853 | 69.2 |
| 13-14 | 0.000208 | 99,260 | 21 | 99,250 | 6,768,586 | 68.2 |
| 14-15 | 0.000309 | 99,240 | 31 | 99,225 | 6,669,336 | 67.2 |
| 15-16 | 0.000426 | 99,209 | 42 | 99,188 | 6,570,111 | 66.2 |
| 16-17 | 0.000543 | 99,167 | 54 | 99,140 | 6,470,923 | 65.3 |
| 17-18 | 0.000650 | 99,113 | 64 | 99,081 | 6,371,783 | 64.3 |
| 18-19 | 0.000737 | 99,049 | 73 | 99,012 | 6,272,702 | 63.3 |
| 19-20 | 0.000802 | 98,976 | 79 | 98,936 | 6,173,690 | 62.4 |
| 20-21 | 0.000866 | 98,896 | 86 | 98,853 | 6,074,754 | 61.4 |
| 21-22 | 0.000925 | 98,811 | 91 | 98,765 | 5,975,901 | 60.5 |
| 22-23 | 0.000951 | 98,719 | 94 | 98,672 | 5,877,136 | 59.5 |
| 23-24 | 0.000939 | 98,625 | 93 | 98,579 | 5,778,464 | 58.6 |
| 24-25 | 0.000902 | 98,533 | 89 | 98,488 | 5,679,885 | 57.6 |
| 25-26 | 0.000857 | 98,444 | 84 | 98,402 | 5,581,397 | 56.7 |
| 26-27 | 0.000819 | 98,359 | 81 | 98,319 | 5,482,995 | 55.7 |
| 27-28 | 0.000793 | 98,279 | 78 | 98,240 | 5,384,676 | 54.8 |
| 28-29 | 0.000785 | 98,201 | 77 | 98,162 | 5,286,436 | 53.8 |
| 29-30 | 0.000792 | 98,124 | 78 | 98,085 | 5,188,274 | 52.9 |
| 30-31 | 0.000802 | 98,046 | 79 | 98,007 | 5,090,189 | 51.9 |
| 31-32 | 0.000814 | 97,967 | 80 | 97,928 | 4,992,182 | 51.0 |
| 32-33 | 0.000827 | 97,888 | 81 | 97,847 | 4,894,255 | 50.0 |
| 33-34 | 0.000879 | 97,807 | 86 | 97,764 | 4,796,407 | 49.0 |
| 34-35 | 0.000934 | 97,721 | 91 | 97,675 | 4,698,644 | 48.1 |
| 35-36 | 0.000999 | 97,630 | 98 | 97,581 | 4,600,969 | 47.1 |
| 36-37 | 0.001072 | 97,532 | 105 | 97,480 | 4,503,388 | 46.2 |
| 37-38 | 0.001159 | 97,427 | 113 | 97,371 | 4,405,908 | 45.2 |
| 38-39 | 0.001260 | 97,314 | 123 | 97,253 | 4,308,537 | 44.3 |
| 39-40 | 0.001373 | 97,192 | 133 | 97,125 | 4,211,284 | 43.3 |
| 40-41 | 0.001496 | 97,058 | 145 | 96,986 | 4,114,159 | 42.4 |
| 41-42 | 0.001630 | 96,913 | 158 | 96,834 | 4,017,173 | 41.5 |
| 42-43 | 0.001771 | 96,755 | 171 | 96,670 | 3,920,339 | 40.5 |
| 43-44 | 0.001920 | 96,584 | 185 | 96,491 | 3,823,669 | 39.6 |
| 44-45 | 0.002082 | 96,398 | 201 | 96,298 | 3,727,178 | 38.7 |
| 45-46 | 0.002255 | 96,198 | 217 | 96,089 | 3,630,880 | 37.7 |
| 46-47 | 0.002445 | 95,981 | 235 | 95,863 | 3,534,791 | 36.8 |
| 47-48 | 0.002657 | 95,746 | 254 | 95,619 | 3,438,927 | 35.9 |
| 48-49 | 0.002894 | 95,492 | 276 | 95,354 | 3,343,308 | 35.0 |
| 49-50 | 0.003157 | 95,215 | 301 | 95,065 | 3,247,955 | 34.1 |
| 50-51 | 0.003452 | 94,915 | 328 | 94,751 | 3,152,890 | 33.2 |
| 51-52 | 0.003769 | 94,587 | 357 | 94,409 | 3,058,139 | 32.3 |
| 52-53 | 0.004086 | 94,231 | 385 | 94,038 | 2,963,730 | 31.5 |
| 53-54 | 0.004382 | 93,846 | 411 | 93,640 | 2,869,692 | 30.6 |
| 54-55 | 0.004662 | 93,434 | 436 | 93,216 | 2,776,052 | 29.7 |
| 55-56 | 0.004952 | 92,999 | 460 | 92,768 | 2,682,836 | 28.8 |
| 56-57 | 0.005271 | 92,538 | 488 | 92,294 | 2,590,067 | 28.0 |
| 57-58 | 0.005620 | 92,050 | 517 | 91,792 | 2,497,773 | 27.1 |
| 58-59 | 0.006019 | 91,533 | 551 | 91,258 | 2,405,982 | 26.3 |
| 59-60 | 0.006484 | 90,982 | 590 | 90,687 | 2,314,724 | 25.4 |
| 60-61 | 0.007018 | 90,392 | 634 | 90,075 | 2,224,037 | 24.6 |
| 61-62 | 0.007629 | 89,758 | 685 | 89,415 | 2,133,962 | 23.8 |

Table 1. Life table for the Hispanic population: United States, 2006—Con.Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table1.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|---|-----------------------------------|---|---|--|--------------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62–63 | 0.008337 | 89,073 | 743 | 88,702 | 2,044,547 | 23.0 |
| 63–64 | 0.009131 | 88,330 | 807 | 87,927 | 1,955,845 | 22.1 |
| 64–65 | 0.009997 | 87,524 | 875 | 87,086 | 1,867,918 | 21.3 |
| 65–66 | 0.010937 | 86,649 | 948 | 86,175 | 1,780,832 | 20.6 |
| 66–67 | 0.011969 | 85,701 | 1,026 | 85,188 | 1,694,657 | 19.8 |
| 67–68 | 0.013092 | 84,675 | 1,109 | 84,121 | 1,609,469 | 19.0 |
| 68–69 | 0.014322 | 83,567 | 1,197 | 82,968 | 1,525,348 | 18.3 |
| 69–70 | 0.015670 | 82,370 | 1,291 | 81,725 | 1,442,380 | 17.5 |
| 70–71 | 0.017094 | 81,079 | 1,386 | 80,386 | 1,360,655 | 16.8 |
| 71–72 | 0.018615 | 79,693 | 1,484 | 78,951 | 1,280,269 | 16.1 |
| 72–73 | 0.020322 | 78,210 | 1,589 | 77,415 | 1,201,317 | 15.4 |
| 73–74 | 0.022257 | 76,620 | 1,705 | 75,768 | 1,123,903 | 14.7 |
| 74–75 | 0.024396 | 74,915 | 1,828 | 74,001 | 1,048,135 | 14.0 |
| 75–76 | 0.026621 | 73,087 | 1,946 | 72,114 | 974,134 | 13.3 |
| 76–77 | 0.028991 | 71,142 | 2,062 | 70,110 | 902,019 | 12.7 |
| 77–78 | 0.031773 | 69,079 | 2,195 | 67,982 | 831,909 | 12.0 |
| 78–79 | 0.035066 | 66,884 | 2,345 | 65,712 | 763,927 | 11.4 |
| 79–80 | 0.038878 | 64,539 | 2,509 | 63,284 | 698,216 | 10.8 |
| 80–81 | 0.043196 | 62,030 | 2,679 | 60,690 | 634,931 | 10.2 |
| 81–82 | 0.048024 | 59,350 | 2,850 | 57,925 | 574,241 | 9.7 |
| 82–83 | 0.052933 | 56,500 | 2,991 | 55,005 | 516,316 | 9.1 |
| 83–84 | 0.058312 | 53,509 | 3,120 | 51,949 | 461,311 | 8.6 |
| 84–85 | 0.064202 | 50,389 | 3,235 | 48,772 | 409,362 | 8.1 |
| 85–86 | 0.070642 | 47,154 | 3,331 | 45,489 | 360,590 | 7.6 |
| 86–87 | 0.077674 | 43,823 | 3,404 | 42,121 | 315,102 | 7.2 |
| 87–88 | 0.085342 | 40,419 | 3,449 | 38,694 | 272,981 | 6.8 |
| 88–89 | 0.093691 | 36,970 | 3,464 | 35,238 | 234,286 | 6.3 |
| 89–90 | 0.102764 | 33,506 | 3,443 | 31,784 | 199,049 | 5.9 |
| 90–91 | 0.112606 | 30,063 | 3,385 | 28,370 | 167,264 | 5.6 |
| 91–92 | 0.123262 | 26,677 | 3,288 | 25,033 | 138,894 | 5.2 |
| 92–93 | 0.134772 | 23,389 | 3,152 | 21,813 | 113,861 | 4.9 |
| 93–94 | 0.147178 | 20,237 | 2,978 | 18,748 | 92,048 | 4.5 |
| 94–95 | 0.160513 | 17,259 | 2,770 | 15,873 | 73,300 | 4.2 |
| 95–96 | 0.174809 | 14,488 | 2,533 | 13,222 | 57,427 | 4.0 |
| 96–97 | 0.190090 | 11,956 | 2,273 | 10,819 | 44,205 | 3.7 |
| 97–98 | 0.206373 | 9,683 | 1,998 | 8,684 | 33,385 | 3.4 |
| 98–99 | 0.223665 | 7,685 | 1,719 | 6,825 | 24,702 | 3.2 |
| 99–100 | 0.241964 | 5,966 | 1,444 | 5,244 | 17,876 | 3.0 |
| 100 and over | 1.000000 | 4,522 | 4,522 | 12,632 | 12,632 | 2.8 |

Table 2. Life table for Hispanic males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table2.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.005897 | 100,000 | 590 | 99,482 | 7,790,457 | 77.9 |
| 1-2 | 0.000395 | 99,410 | 39 | 99,391 | 7,690,975 | 77.4 |
| 2-3 | 0.000330 | 99,371 | 33 | 99,355 | 7,591,585 | 76.4 |
| 3-4 | 0.000212 | 99,338 | 21 | 99,328 | 7,492,230 | 75.4 |
| 4-5 | 0.000211 | 99,317 | 21 | 99,307 | 7,392,902 | 74.4 |
| 5-6 | 0.000170 | 99,296 | 17 | 99,288 | 7,293,596 | 73.5 |
| 6-7 | 0.000154 | 99,279 | 15 | 99,272 | 7,194,308 | 72.5 |
| 7-8 | 0.000139 | 99,264 | 14 | 99,257 | 7,095,036 | 71.5 |
| 8-9 | 0.000118 | 99,250 | 12 | 99,244 | 6,995,779 | 70.5 |
| 9-10 | 0.000093 | 99,239 | 9 | 99,234 | 6,896,535 | 69.5 |
| 10-11 | 0.000075 | 99,229 | 7 | 99,226 | 6,797,301 | 68.5 |
| 11-12 | 0.000083 | 99,222 | 8 | 99,218 | 6,698,075 | 67.5 |
| 12-13 | 0.000138 | 99,214 | 14 | 99,207 | 6,598,857 | 66.5 |
| 13-14 | 0.000257 | 99,200 | 25 | 99,187 | 6,499,651 | 65.5 |
| 14-15 | 0.000427 | 99,175 | 42 | 99,153 | 6,400,463 | 64.5 |
| 15-16 | 0.000623 | 99,132 | 62 | 99,101 | 6,301,310 | 63.6 |
| 16-17 | 0.000816 | 99,070 | 81 | 99,030 | 6,202,209 | 62.6 |
| 17-18 | 0.000993 | 98,990 | 98 | 98,940 | 6,103,179 | 61.7 |
| 18-19 | 0.001131 | 98,891 | 112 | 98,835 | 6,004,238 | 60.7 |
| 19-20 | 0.001229 | 98,779 | 121 | 98,719 | 5,905,403 | 59.8 |
| 20-21 | 0.001321 | 98,658 | 130 | 98,593 | 5,806,684 | 58.9 |
| 21-22 | 0.001403 | 98,528 | 138 | 98,459 | 5,708,091 | 57.9 |
| 22-23 | 0.001434 | 98,390 | 141 | 98,319 | 5,609,633 | 57.0 |
| 23-24 | 0.001406 | 98,248 | 138 | 98,179 | 5,511,314 | 56.1 |
| 24-25 | 0.001340 | 98,110 | 132 | 98,045 | 5,413,134 | 55.2 |
| 25-26 | 0.001263 | 97,979 | 124 | 97,917 | 5,315,090 | 54.2 |
| 26-27 | 0.001198 | 97,855 | 117 | 97,796 | 5,217,173 | 53.3 |
| 27-28 | 0.001153 | 97,738 | 113 | 97,682 | 5,119,376 | 52.4 |
| 28-29 | 0.001135 | 97,625 | 111 | 97,570 | 5,021,695 | 51.4 |
| 29-30 | 0.001140 | 97,514 | 111 | 97,459 | 4,924,125 | 50.5 |
| 30-31 | 0.001151 | 97,403 | 112 | 97,347 | 4,826,666 | 49.6 |
| 31-32 | 0.001163 | 97,291 | 113 | 97,234 | 4,729,319 | 48.6 |
| 32-33 | 0.001165 | 97,178 | 113 | 97,121 | 4,632,085 | 47.7 |
| 33-34 | 0.001227 | 97,065 | 119 | 97,005 | 4,534,964 | 46.7 |
| 34-35 | 0.001282 | 96,946 | 124 | 96,883 | 4,437,958 | 45.8 |
| 35-36 | 0.001345 | 96,821 | 130 | 96,756 | 4,341,075 | 44.8 |
| 36-37 | 0.001421 | 96,691 | 137 | 96,622 | 4,244,319 | 43.9 |
| 37-38 | 0.001524 | 96,554 | 147 | 96,480 | 4,147,696 | 43.0 |
| 38-39 | 0.001657 | 96,407 | 160 | 96,327 | 4,051,216 | 42.0 |
| 39-40 | 0.001815 | 96,247 | 175 | 96,159 | 3,954,889 | 41.1 |
| 40-41 | 0.001995 | 96,072 | 192 | 95,976 | 3,858,730 | 40.2 |
| 41-42 | 0.002183 | 95,880 | 209 | 95,776 | 3,762,754 | 39.2 |
| 42-43 | 0.002364 | 95,671 | 226 | 95,558 | 3,666,978 | 38.3 |
| 43-44 | 0.002530 | 95,445 | 241 | 95,324 | 3,571,420 | 37.4 |
| 44-45 | 0.002690 | 95,203 | 256 | 95,075 | 3,476,096 | 36.5 |
| 45-46 | 0.002857 | 94,947 | 271 | 94,812 | 3,381,020 | 35.6 |
| 46-47 | 0.003049 | 94,676 | 289 | 94,532 | 3,286,208 | 34.7 |
| 47-48 | 0.003285 | 94,387 | 310 | 94,232 | 3,191,677 | 33.8 |
| 48-49 | 0.003580 | 94,077 | 337 | 93,909 | 3,097,444 | 32.9 |
| 49-50 | 0.003932 | 93,741 | 369 | 93,556 | 3,003,535 | 32.0 |
| 50-51 | 0.004330 | 93,372 | 404 | 93,170 | 2,909,979 | 31.2 |
| 51-52 | 0.004757 | 92,968 | 442 | 92,747 | 2,816,809 | 30.3 |
| 52-53 | 0.005196 | 92,525 | 481 | 92,285 | 2,724,062 | 29.4 |
| 53-54 | 0.005621 | 92,045 | 517 | 91,786 | 2,631,777 | 28.6 |
| 54-55 | 0.006032 | 91,527 | 552 | 91,251 | 2,539,991 | 27.8 |
| 55-56 | 0.006467 | 90,975 | 588 | 90,681 | 2,448,740 | 26.9 |
| 56-57 | 0.006940 | 90,387 | 627 | 90,073 | 2,358,059 | 26.1 |
| 57-58 | 0.007420 | 89,760 | 666 | 89,427 | 2,267,985 | 25.3 |
| 58-59 | 0.007913 | 89,094 | 705 | 88,741 | 2,178,559 | 24.5 |
| 59-60 | 0.008447 | 88,389 | 747 | 88,015 | 2,089,817 | 23.6 |
| 60-61 | 0.009037 | 87,642 | 792 | 87,246 | 2,001,802 | 22.8 |
| 61-62 | 0.009720 | 86,850 | 844 | 86,428 | 1,914,556 | 22.0 |

Table 2. Life table for Hispanic males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table2.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|---|-----------------------------------|---|---|--|--------------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.010541 | 86,006 | 907 | 85,552 | 1,828,128 | 21.3 |
| 63-64 | 0.011514 | 85,099 | 980 | 84,609 | 1,742,576 | 20.5 |
| 64-65 | 0.012609 | 84,119 | 1,061 | 83,589 | 1,657,967 | 19.7 |
| 65-66 | 0.013794 | 83,059 | 1,146 | 82,486 | 1,574,378 | 19.0 |
| 66-67 | 0.015069 | 81,913 | 1,234 | 81,296 | 1,491,892 | 18.2 |
| 67-68 | 0.016447 | 80,679 | 1,327 | 80,015 | 1,410,596 | 17.5 |
| 68-69 | 0.017949 | 79,352 | 1,424 | 78,640 | 1,330,581 | 16.8 |
| 69-70 | 0.019590 | 77,927 | 1,527 | 77,164 | 1,251,941 | 16.1 |
| 70-71 | 0.021335 | 76,401 | 1,630 | 75,586 | 1,174,777 | 15.4 |
| 71-72 | 0.023184 | 74,771 | 1,734 | 73,904 | 1,099,191 | 14.7 |
| 72-73 | 0.025208 | 73,037 | 1,841 | 72,117 | 1,025,287 | 14.0 |
| 73-74 | 0.027433 | 71,196 | 1,953 | 70,220 | 953,171 | 13.4 |
| 74-75 | 0.029837 | 69,243 | 2,066 | 68,210 | 882,951 | 12.8 |
| 75-76 | 0.032292 | 67,177 | 2,169 | 66,092 | 814,741 | 12.1 |
| 76-77 | 0.035015 | 65,008 | 2,276 | 63,870 | 748,649 | 11.5 |
| 77-78 | 0.038310 | 62,732 | 2,403 | 61,530 | 684,779 | 10.9 |
| 78-79 | 0.042298 | 60,328 | 2,552 | 59,052 | 623,249 | 10.3 |
| 79-80 | 0.046949 | 57,777 | 2,713 | 56,420 | 564,197 | 9.8 |
| 80-81 | 0.052228 | 55,064 | 2,876 | 53,626 | 507,776 | 9.2 |
| 81-82 | 0.058095 | 52,188 | 3,032 | 50,672 | 454,150 | 8.7 |
| 82-83 | 0.063844 | 49,156 | 3,138 | 47,587 | 403,478 | 8.2 |
| 83-84 | 0.070120 | 46,018 | 3,227 | 44,405 | 355,891 | 7.7 |
| 84-85 | 0.076962 | 42,791 | 3,293 | 41,144 | 311,486 | 7.3 |
| 85-86 | 0.084411 | 39,498 | 3,334 | 37,831 | 270,342 | 6.8 |
| 86-87 | 0.092509 | 36,164 | 3,345 | 34,491 | 232,511 | 6.4 |
| 87-88 | 0.101298 | 32,818 | 3,324 | 31,156 | 198,020 | 6.0 |
| 88-89 | 0.110820 | 29,494 | 3,269 | 27,860 | 166,864 | 5.7 |
| 89-90 | 0.121116 | 26,225 | 3,176 | 24,637 | 139,004 | 5.3 |
| 90-91 | 0.132226 | 23,049 | 3,048 | 21,525 | 114,367 | 5.0 |
| 91-92 | 0.144189 | 20,001 | 2,884 | 18,559 | 92,842 | 4.6 |
| 92-93 | 0.157038 | 17,117 | 2,688 | 15,773 | 74,283 | 4.3 |
| 93-94 | 0.170803 | 14,429 | 2,465 | 13,197 | 58,509 | 4.1 |
| 94-95 | 0.185510 | 11,965 | 2,220 | 10,855 | 45,312 | 3.8 |
| 95-96 | 0.201175 | 9,745 | 1,960 | 8,765 | 34,457 | 3.5 |
| 96-97 | 0.217810 | 7,785 | 1,696 | 6,937 | 25,692 | 3.3 |
| 97-98 | 0.235415 | 6,089 | 1,433 | 5,372 | 18,756 | 3.1 |
| 98-99 | 0.253981 | 4,656 | 1,182 | 4,064 | 13,383 | 2.9 |
| 99-100 | 0.273487 | 3,473 | 950 | 2,998 | 9,319 | 2.7 |
| 100 and over | 1.000000 | 2,523 | 2,523 | 6,321 | 6,321 | 2.5 |

Table 3. Life table for Hispanic females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table3.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.004974 | 100,000 | 497 | 99,561 | 8,313,014 | 83.1 |
| 1-2 | 0.000386 | 99,503 | 38 | 99,483 | 8,213,453 | 82.5 |
| 2-3 | 0.000239 | 99,464 | 24 | 99,452 | 8,113,970 | 81.6 |
| 3-4 | 0.000178 | 99,440 | 18 | 99,432 | 8,014,518 | 80.6 |
| 4-5 | 0.000151 | 99,423 | 15 | 99,415 | 7,915,086 | 79.6 |
| 5-6 | 0.000124 | 99,408 | 12 | 99,402 | 7,815,671 | 78.6 |
| 6-7 | 0.000105 | 99,395 | 10 | 99,390 | 7,716,269 | 77.6 |
| 7-8 | 0.000093 | 99,385 | 9 | 99,380 | 7,616,879 | 76.6 |
| 8-9 | 0.000089 | 99,376 | 9 | 99,371 | 7,517,499 | 75.6 |
| 9-10 | 0.000091 | 99,367 | 9 | 99,362 | 7,418,128 | 74.7 |
| 10-11 | 0.000099 | 99,358 | 10 | 99,353 | 7,318,765 | 73.7 |
| 11-12 | 0.000112 | 99,348 | 11 | 99,342 | 7,219,412 | 72.7 |
| 12-13 | 0.000132 | 99,337 | 13 | 99,330 | 7,120,070 | 71.7 |
| 13-14 | 0.000157 | 99,324 | 16 | 99,316 | 7,020,739 | 70.7 |
| 14-15 | 0.000187 | 99,308 | 19 | 99,299 | 6,921,423 | 69.7 |
| 15-16 | 0.000222 | 99,290 | 22 | 99,279 | 6,822,124 | 68.7 |
| 16-17 | 0.000258 | 99,268 | 26 | 99,255 | 6,722,846 | 67.7 |
| 17-18 | 0.000290 | 99,242 | 29 | 99,228 | 6,623,591 | 66.7 |
| 18-19 | 0.000316 | 99,213 | 31 | 99,198 | 6,524,363 | 65.8 |
| 19-20 | 0.000334 | 99,182 | 33 | 99,165 | 6,425,165 | 64.8 |
| 20-21 | 0.000353 | 99,149 | 35 | 99,131 | 6,326,000 | 63.8 |
| 21-22 | 0.000371 | 99,114 | 37 | 99,095 | 6,226,869 | 62.8 |
| 22-23 | 0.000381 | 99,077 | 38 | 99,058 | 6,127,773 | 61.8 |
| 23-24 | 0.000379 | 99,039 | 38 | 99,020 | 6,028,715 | 60.9 |
| 24-25 | 0.000371 | 99,002 | 37 | 98,983 | 5,929,695 | 59.9 |
| 25-26 | 0.000361 | 98,965 | 36 | 98,947 | 5,830,711 | 58.9 |
| 26-27 | 0.000355 | 98,929 | 35 | 98,912 | 5,731,764 | 57.9 |
| 27-28 | 0.000353 | 98,894 | 35 | 98,877 | 5,632,852 | 57.0 |
| 28-29 | 0.000358 | 98,859 | 35 | 98,842 | 5,533,976 | 56.0 |
| 29-30 | 0.000370 | 98,824 | 37 | 98,806 | 5,435,134 | 55.0 |
| 30-31 | 0.000383 | 98,787 | 38 | 98,768 | 5,336,328 | 54.0 |
| 31-32 | 0.000401 | 98,750 | 40 | 98,730 | 5,237,560 | 53.0 |
| 32-33 | 0.000426 | 98,710 | 42 | 98,689 | 5,138,830 | 52.1 |
| 33-34 | 0.000474 | 98,668 | 47 | 98,645 | 5,040,141 | 51.1 |
| 34-35 | 0.000531 | 98,621 | 52 | 98,595 | 4,941,497 | 50.1 |
| 35-36 | 0.000599 | 98,569 | 59 | 98,539 | 4,842,902 | 49.1 |
| 36-37 | 0.000672 | 98,510 | 66 | 98,477 | 4,744,363 | 48.2 |
| 37-38 | 0.000744 | 98,443 | 73 | 98,407 | 4,645,886 | 47.2 |
| 38-39 | 0.000809 | 98,370 | 80 | 98,330 | 4,547,479 | 46.2 |
| 39-40 | 0.000873 | 98,291 | 86 | 98,248 | 4,449,149 | 45.3 |
| 40-41 | 0.000937 | 98,205 | 92 | 98,159 | 4,350,901 | 44.3 |
| 41-42 | 0.001013 | 98,113 | 99 | 98,063 | 4,252,742 | 43.3 |
| 42-43 | 0.001115 | 98,013 | 109 | 97,959 | 4,154,679 | 42.4 |
| 43-44 | 0.001254 | 97,904 | 123 | 97,843 | 4,056,720 | 41.4 |
| 44-45 | 0.001424 | 97,781 | 139 | 97,712 | 3,958,878 | 40.5 |
| 45-46 | 0.001615 | 97,642 | 158 | 97,563 | 3,861,166 | 39.5 |
| 46-47 | 0.001810 | 97,484 | 176 | 97,396 | 3,763,603 | 38.6 |
| 47-48 | 0.002004 | 97,308 | 195 | 97,210 | 3,666,207 | 37.7 |
| 48-49 | 0.002190 | 97,113 | 213 | 97,007 | 3,568,996 | 36.8 |
| 49-50 | 0.002371 | 96,900 | 230 | 96,785 | 3,471,990 | 35.8 |
| 50-51 | 0.002570 | 96,671 | 248 | 96,546 | 3,375,204 | 34.9 |
| 51-52 | 0.002788 | 96,422 | 269 | 96,288 | 3,278,658 | 34.0 |
| 52-53 | 0.002994 | 96,153 | 288 | 96,009 | 3,182,370 | 33.1 |
| 53-54 | 0.003174 | 95,865 | 304 | 95,713 | 3,086,361 | 32.2 |
| 54-55 | 0.003336 | 95,561 | 319 | 95,402 | 2,990,648 | 31.3 |
| 55-56 | 0.003495 | 95,242 | 333 | 95,076 | 2,895,246 | 30.4 |
| 56-57 | 0.003680 | 94,909 | 349 | 94,735 | 2,800,170 | 29.5 |
| 57-58 | 0.003919 | 94,560 | 371 | 94,375 | 2,705,435 | 28.6 |
| 58-59 | 0.004247 | 94,190 | 400 | 93,990 | 2,611,060 | 27.7 |
| 59-60 | 0.004672 | 93,790 | 438 | 93,570 | 2,517,071 | 26.8 |
| 60-61 | 0.005181 | 93,351 | 484 | 93,110 | 2,423,500 | 26.0 |
| 61-62 | 0.005754 | 92,868 | 534 | 92,601 | 2,330,391 | 25.1 |

Table 3. Life table for Hispanic females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table3.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.006387 | 92,333 | 590 | 92,039 | 2,237,790 | 24.2 |
| 63-64 | 0.007048 | 91,744 | 647 | 91,420 | 2,145,752 | 23.4 |
| 64-65 | 0.007735 | 91,097 | 705 | 90,745 | 2,054,331 | 22.6 |
| 65-66 | 0.008481 | 90,392 | 767 | 90,009 | 1,963,587 | 21.7 |
| 66-67 | 0.009326 | 89,626 | 836 | 89,208 | 1,873,578 | 20.9 |
| 67-68 | 0.010261 | 88,790 | 911 | 88,334 | 1,784,370 | 20.1 |
| 68-69 | 0.011303 | 87,879 | 993 | 87,382 | 1,696,036 | 19.3 |
| 69-70 | 0.012461 | 86,886 | 1,083 | 86,344 | 1,608,653 | 18.5 |
| 70-71 | 0.013684 | 85,803 | 1,174 | 85,216 | 1,522,309 | 17.7 |
| 71-72 | 0.015003 | 84,629 | 1,270 | 83,994 | 1,437,093 | 17.0 |
| 72-73 | 0.016522 | 83,359 | 1,377 | 82,670 | 1,353,100 | 16.2 |
| 73-74 | 0.018294 | 81,982 | 1,500 | 81,232 | 1,270,429 | 15.5 |
| 74-75 | 0.020291 | 80,482 | 1,633 | 79,665 | 1,189,197 | 14.8 |
| 75-76 | 0.022401 | 78,849 | 1,766 | 77,966 | 1,109,532 | 14.1 |
| 76-77 | 0.024578 | 77,083 | 1,895 | 76,135 | 1,031,566 | 13.4 |
| 77-78 | 0.027085 | 75,188 | 2,036 | 74,170 | 955,431 | 12.7 |
| 78-79 | 0.030020 | 73,151 | 2,196 | 72,053 | 881,261 | 12.0 |
| 79-80 | 0.033423 | 70,955 | 2,372 | 69,770 | 809,208 | 11.4 |
| 80-81 | 0.037310 | 68,584 | 2,559 | 67,305 | 739,438 | 10.8 |
| 81-82 | 0.041726 | 66,025 | 2,755 | 64,648 | 672,134 | 10.2 |
| 82-83 | 0.046354 | 63,270 | 2,933 | 61,804 | 607,486 | 9.6 |
| 83-84 | 0.051467 | 60,337 | 3,105 | 58,785 | 545,682 | 9.0 |
| 84-85 | 0.057111 | 57,232 | 3,269 | 55,598 | 486,898 | 8.5 |
| 85-86 | 0.063332 | 53,963 | 3,418 | 52,255 | 431,300 | 8.0 |
| 86-87 | 0.070181 | 50,546 | 3,547 | 48,772 | 379,046 | 7.5 |
| 87-88 | 0.077709 | 46,998 | 3,652 | 45,172 | 330,274 | 7.0 |
| 88-89 | 0.085969 | 43,346 | 3,726 | 41,483 | 285,101 | 6.6 |
| 89-90 | 0.095017 | 39,620 | 3,765 | 37,737 | 243,618 | 6.1 |
| 90-91 | 0.104909 | 35,855 | 3,762 | 33,974 | 205,881 | 5.7 |
| 91-92 | 0.115698 | 32,094 | 3,713 | 30,237 | 171,907 | 5.4 |
| 92-93 | 0.127439 | 28,380 | 3,617 | 26,572 | 141,669 | 5.0 |
| 93-94 | 0.140182 | 24,764 | 3,471 | 23,028 | 115,097 | 4.6 |
| 94-95 | 0.153975 | 21,292 | 3,278 | 19,653 | 92,069 | 4.3 |
| 95-96 | 0.168858 | 18,014 | 3,042 | 16,493 | 72,416 | 4.0 |
| 96-97 | 0.184866 | 14,972 | 2,768 | 13,588 | 55,923 | 3.7 |
| 97-98 | 0.202022 | 12,204 | 2,466 | 10,971 | 42,335 | 3.5 |
| 98-99 | 0.220340 | 9,739 | 2,146 | 8,666 | 31,364 | 3.2 |
| 99-100 | 0.239820 | 7,593 | 1,821 | 6,682 | 22,698 | 3.0 |
| 100 and over | 1.000000 | 5,772 | 5,772 | 16,016 | 16,016 | 2.8 |

Table 4. Life table for the non-Hispanic white population: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table4.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.005589 | 100,000 | 559 | 99,509 | 7,806,508 | 78.1 |
| 1-2 | 0.000392 | 99,441 | 39 | 99,422 | 7,707,000 | 77.5 |
| 2-3 | 0.000252 | 99,402 | 25 | 99,390 | 7,607,578 | 76.5 |
| 3-4 | 0.000194 | 99,377 | 19 | 99,367 | 7,508,189 | 75.6 |
| 4-5 | 0.000157 | 99,358 | 16 | 99,350 | 7,408,821 | 74.6 |
| 5-6 | 0.000152 | 99,342 | 15 | 99,335 | 7,309,471 | 73.6 |
| 6-7 | 0.000145 | 99,327 | 14 | 99,320 | 7,210,136 | 72.6 |
| 7-8 | 0.000135 | 99,313 | 13 | 99,306 | 7,110,817 | 71.6 |
| 8-9 | 0.000118 | 99,299 | 12 | 99,294 | 7,011,510 | 70.6 |
| 9-10 | 0.000095 | 99,288 | 9 | 99,283 | 6,912,217 | 69.6 |
| 10-11 | 0.000076 | 99,278 | 8 | 99,274 | 6,812,934 | 68.6 |
| 11-12 | 0.000075 | 99,271 | 7 | 99,267 | 6,713,660 | 67.6 |
| 12-13 | 0.000109 | 99,263 | 11 | 99,258 | 6,614,393 | 66.6 |
| 13-14 | 0.000186 | 99,252 | 18 | 99,243 | 6,515,135 | 65.6 |
| 14-15 | 0.000292 | 99,234 | 29 | 99,219 | 6,415,892 | 64.7 |
| 15-16 | 0.000404 | 99,205 | 40 | 99,185 | 6,316,672 | 63.7 |
| 16-17 | 0.000507 | 99,165 | 50 | 99,140 | 6,217,487 | 62.7 |
| 17-18 | 0.000602 | 99,115 | 60 | 99,085 | 6,118,348 | 61.7 |
| 18-19 | 0.000686 | 99,055 | 68 | 99,021 | 6,019,263 | 60.8 |
| 19-20 | 0.000761 | 98,987 | 75 | 98,949 | 5,920,242 | 59.8 |
| 20-21 | 0.000838 | 98,912 | 83 | 98,870 | 5,821,292 | 58.9 |
| 21-22 | 0.000913 | 98,829 | 90 | 98,784 | 5,722,422 | 57.9 |
| 22-23 | 0.000963 | 98,739 | 95 | 98,691 | 5,623,638 | 57.0 |
| 23-24 | 0.000982 | 98,643 | 97 | 98,595 | 5,524,947 | 56.0 |
| 24-25 | 0.000977 | 98,547 | 96 | 98,498 | 5,426,352 | 55.1 |
| 25-26 | 0.000965 | 98,450 | 95 | 98,403 | 5,327,854 | 54.1 |
| 26-27 | 0.000957 | 98,355 | 94 | 98,308 | 5,229,451 | 53.2 |
| 27-28 | 0.000954 | 98,261 | 94 | 98,214 | 5,131,143 | 52.2 |
| 28-29 | 0.000960 | 98,167 | 94 | 98,120 | 5,032,928 | 51.3 |
| 29-30 | 0.000976 | 98,073 | 96 | 98,025 | 4,934,808 | 50.3 |
| 30-31 | 0.001000 | 97,978 | 98 | 97,929 | 4,836,783 | 49.4 |
| 31-32 | 0.001031 | 97,880 | 101 | 97,829 | 4,738,854 | 48.4 |
| 32-33 | 0.001079 | 97,779 | 106 | 97,726 | 4,641,025 | 47.5 |
| 33-34 | 0.001113 | 97,673 | 109 | 97,619 | 4,543,299 | 46.5 |
| 34-35 | 0.001163 | 97,565 | 113 | 97,508 | 4,445,680 | 45.6 |
| 35-36 | 0.001220 | 97,451 | 119 | 97,392 | 4,348,173 | 44.6 |
| 36-37 | 0.001291 | 97,332 | 126 | 97,269 | 4,250,781 | 43.7 |
| 37-38 | 0.001387 | 97,206 | 135 | 97,139 | 4,153,511 | 42.7 |
| 38-39 | 0.001511 | 97,072 | 147 | 96,998 | 4,056,372 | 41.8 |
| 39-40 | 0.001660 | 96,925 | 161 | 96,845 | 3,959,374 | 40.8 |
| 40-41 | 0.001819 | 96,764 | 176 | 96,676 | 3,862,530 | 39.9 |
| 41-42 | 0.001984 | 96,588 | 192 | 96,492 | 3,765,853 | 39.0 |
| 42-43 | 0.002167 | 96,396 | 209 | 96,292 | 3,669,361 | 38.1 |
| 43-44 | 0.002366 | 96,188 | 228 | 96,074 | 3,573,069 | 37.1 |
| 44-45 | 0.002579 | 95,960 | 247 | 95,836 | 3,476,995 | 36.2 |
| 45-46 | 0.002801 | 95,713 | 268 | 95,579 | 3,381,159 | 35.3 |
| 46-47 | 0.003029 | 95,444 | 289 | 95,300 | 3,285,581 | 34.4 |
| 47-48 | 0.003269 | 95,155 | 311 | 95,000 | 3,190,281 | 33.5 |
| 48-49 | 0.003530 | 94,844 | 335 | 94,677 | 3,095,281 | 32.6 |
| 49-50 | 0.003817 | 94,510 | 361 | 94,329 | 3,000,604 | 31.7 |
| 50-51 | 0.004132 | 94,149 | 389 | 93,954 | 2,906,275 | 30.9 |
| 51-52 | 0.004473 | 93,760 | 419 | 93,550 | 2,812,320 | 30.0 |
| 52-53 | 0.004835 | 93,340 | 451 | 93,115 | 2,718,770 | 29.1 |
| 53-54 | 0.005203 | 92,889 | 483 | 92,647 | 2,625,655 | 28.3 |
| 54-55 | 0.005576 | 92,406 | 515 | 92,148 | 2,533,008 | 27.4 |
| 55-56 | 0.005957 | 91,891 | 547 | 91,617 | 2,440,860 | 26.6 |
| 56-57 | 0.006368 | 91,343 | 582 | 91,052 | 2,349,243 | 25.7 |
| 57-58 | 0.006835 | 90,762 | 620 | 90,451 | 2,258,191 | 24.9 |
| 58-59 | 0.007398 | 90,141 | 667 | 89,808 | 2,167,739 | 24.0 |
| 59-60 | 0.008081 | 89,474 | 723 | 89,113 | 2,077,931 | 23.2 |
| 60-61 | 0.008910 | 88,751 | 791 | 88,356 | 1,988,819 | 22.4 |
| 61-62 | 0.009847 | 87,961 | 866 | 87,527 | 1,900,463 | 21.6 |

Table 4. Life table for the non-Hispanic white population: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table4.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.010827 | 87,094 | 943 | 86,623 | 1,812,935 | 20.8 |
| 63-64 | 0.011763 | 86,151 | 1,013 | 85,645 | 1,726,312 | 20.0 |
| 64-65 | 0.012662 | 85,138 | 1,078 | 84,599 | 1,640,668 | 19.3 |
| 65-66 | 0.013644 | 84,060 | 1,147 | 83,487 | 1,556,069 | 18.5 |
| 66-67 | 0.014668 | 82,913 | 1,216 | 82,305 | 1,472,582 | 17.8 |
| 67-68 | 0.015860 | 81,697 | 1,296 | 81,049 | 1,390,277 | 17.0 |
| 68-69 | 0.017242 | 80,401 | 1,386 | 79,708 | 1,309,228 | 16.3 |
| 69-70 | 0.018833 | 79,015 | 1,488 | 78,271 | 1,229,520 | 15.6 |
| 70-71 | 0.020620 | 77,527 | 1,599 | 76,728 | 1,151,249 | 14.8 |
| 71-72 | 0.022666 | 75,928 | 1,721 | 75,068 | 1,074,521 | 14.2 |
| 72-73 | 0.025034 | 74,207 | 1,858 | 73,278 | 999,454 | 13.5 |
| 73-74 | 0.027733 | 72,350 | 2,006 | 71,346 | 926,175 | 12.8 |
| 74-75 | 0.030756 | 70,343 | 2,163 | 69,261 | 854,829 | 12.2 |
| 75-76 | 0.034136 | 68,180 | 2,327 | 67,016 | 785,568 | 11.5 |
| 76-77 | 0.037808 | 65,852 | 2,490 | 64,607 | 718,552 | 10.9 |
| 77-78 | 0.041857 | 63,363 | 2,652 | 62,036 | 653,944 | 10.3 |
| 78-79 | 0.046320 | 60,710 | 2,812 | 59,304 | 591,908 | 9.7 |
| 79-80 | 0.051233 | 57,898 | 2,966 | 56,415 | 532,604 | 9.2 |
| 80-81 | 0.056637 | 54,932 | 3,111 | 53,376 | 476,188 | 8.7 |
| 81-82 | 0.062572 | 51,821 | 3,243 | 50,200 | 422,812 | 8.2 |
| 82-83 | 0.069084 | 48,578 | 3,356 | 46,900 | 372,613 | 7.7 |
| 83-84 | 0.076219 | 45,222 | 3,447 | 43,499 | 325,712 | 7.2 |
| 84-85 | 0.084024 | 41,775 | 3,510 | 40,020 | 282,213 | 6.8 |
| 85-86 | 0.092548 | 38,265 | 3,541 | 36,495 | 242,193 | 6.3 |
| 86-87 | 0.101841 | 34,724 | 3,536 | 32,956 | 205,698 | 5.9 |
| 87-88 | 0.111952 | 31,188 | 3,492 | 29,442 | 172,743 | 5.5 |
| 88-89 | 0.122930 | 27,696 | 3,405 | 25,994 | 143,301 | 5.2 |
| 89-90 | 0.134820 | 24,291 | 3,275 | 22,654 | 117,307 | 4.8 |
| 90-91 | 0.147667 | 21,016 | 3,103 | 19,465 | 94,653 | 4.5 |
| 91-92 | 0.161509 | 17,913 | 2,893 | 16,466 | 75,189 | 4.2 |
| 92-93 | 0.176380 | 15,020 | 2,649 | 13,695 | 58,722 | 3.9 |
| 93-94 | 0.192307 | 12,371 | 2,379 | 11,181 | 45,027 | 3.6 |
| 94-95 | 0.209307 | 9,992 | 2,091 | 8,946 | 33,846 | 3.4 |
| 95-96 | 0.227386 | 7,900 | 1,796 | 7,002 | 24,900 | 3.2 |
| 96-97 | 0.246539 | 6,104 | 1,505 | 5,352 | 17,897 | 2.9 |
| 97-98 | 0.266749 | 4,599 | 1,227 | 3,986 | 12,546 | 2.7 |
| 98-99 | 0.287983 | 3,372 | 971 | 2,887 | 8,560 | 2.5 |
| 99-100 | 0.310192 | 2,401 | 745 | 2,029 | 5,673 | 2.4 |
| 100 and over | 1.000000 | 1,656 | 1,656 | 3,645 | 3,645 | 2.2 |

Table 5. Life table for non-Hispanic white males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table5.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.006196 | 100,000 | 620 | 99,455 | 7,559,586 | 75.6 |
| 1-2 | 0.000393 | 99,380 | 39 | 99,361 | 7,460,131 | 75.1 |
| 2-3 | 0.000273 | 99,341 | 27 | 99,328 | 7,360,770 | 74.1 |
| 3-4 | 0.000222 | 99,314 | 22 | 99,303 | 7,261,442 | 73.1 |
| 4-5 | 0.000167 | 99,292 | 17 | 99,284 | 7,162,139 | 72.1 |
| 5-6 | 0.000167 | 99,275 | 17 | 99,267 | 7,062,855 | 71.1 |
| 6-7 | 0.000159 | 99,259 | 16 | 99,251 | 6,963,588 | 70.2 |
| 7-8 | 0.000148 | 99,243 | 15 | 99,236 | 6,864,337 | 69.2 |
| 8-9 | 0.000127 | 99,228 | 13 | 99,222 | 6,765,101 | 68.2 |
| 9-10 | 0.000099 | 99,216 | 10 | 99,211 | 6,665,879 | 67.2 |
| 10-11 | 0.000077 | 99,206 | 8 | 99,202 | 6,566,669 | 66.2 |
| 11-12 | 0.000078 | 99,198 | 8 | 99,194 | 6,467,467 | 65.2 |
| 12-13 | 0.000125 | 99,191 | 12 | 99,184 | 6,368,272 | 64.2 |
| 13-14 | 0.000228 | 99,178 | 23 | 99,167 | 6,269,088 | 63.2 |
| 14-15 | 0.000370 | 99,155 | 37 | 99,137 | 6,169,921 | 62.2 |
| 15-16 | 0.000517 | 99,119 | 51 | 99,093 | 6,070,784 | 61.2 |
| 16-17 | 0.000654 | 99,068 | 65 | 99,035 | 5,971,691 | 60.3 |
| 17-18 | 0.000792 | 99,003 | 78 | 98,964 | 5,872,656 | 59.3 |
| 18-19 | 0.000930 | 98,924 | 92 | 98,878 | 5,773,692 | 58.4 |
| 19-20 | 0.001064 | 98,832 | 105 | 98,780 | 5,674,814 | 57.4 |
| 20-21 | 0.001206 | 98,727 | 119 | 98,668 | 5,576,034 | 56.5 |
| 21-22 | 0.001339 | 98,608 | 132 | 98,542 | 5,477,366 | 55.5 |
| 22-23 | 0.001426 | 98,476 | 140 | 98,406 | 5,378,824 | 54.6 |
| 23-24 | 0.001451 | 98,336 | 143 | 98,264 | 5,280,418 | 53.7 |
| 24-25 | 0.001430 | 98,193 | 140 | 98,123 | 5,182,154 | 52.8 |
| 25-26 | 0.001391 | 98,053 | 136 | 97,984 | 5,084,031 | 51.9 |
| 26-27 | 0.001361 | 97,916 | 133 | 97,849 | 4,986,047 | 50.9 |
| 27-28 | 0.001338 | 97,783 | 131 | 97,717 | 4,888,198 | 50.0 |
| 28-29 | 0.001333 | 97,652 | 130 | 97,587 | 4,790,480 | 49.1 |
| 29-30 | 0.001344 | 97,522 | 131 | 97,456 | 4,692,893 | 48.1 |
| 30-31 | 0.001365 | 97,391 | 133 | 97,324 | 4,595,437 | 47.2 |
| 31-32 | 0.001391 | 97,258 | 135 | 97,190 | 4,498,113 | 46.2 |
| 32-33 | 0.001442 | 97,123 | 140 | 97,053 | 4,400,922 | 45.3 |
| 33-34 | 0.001465 | 96,982 | 142 | 96,911 | 4,303,870 | 44.4 |
| 34-35 | 0.001514 | 96,840 | 147 | 96,767 | 4,206,958 | 43.4 |
| 35-36 | 0.001573 | 96,694 | 152 | 96,618 | 4,110,191 | 42.5 |
| 36-37 | 0.001652 | 96,542 | 159 | 96,462 | 4,013,573 | 41.6 |
| 37-38 | 0.001761 | 96,382 | 170 | 96,297 | 3,917,111 | 40.6 |
| 38-39 | 0.001908 | 96,212 | 184 | 96,121 | 3,820,814 | 39.7 |
| 39-40 | 0.002085 | 96,029 | 200 | 95,929 | 3,724,693 | 38.8 |
| 40-41 | 0.002277 | 95,829 | 218 | 95,720 | 3,628,764 | 37.9 |
| 41-42 | 0.002479 | 95,610 | 237 | 95,492 | 3,533,045 | 37.0 |
| 42-43 | 0.002706 | 95,373 | 258 | 95,244 | 3,437,553 | 36.0 |
| 43-44 | 0.002957 | 95,115 | 281 | 94,975 | 3,342,308 | 35.1 |
| 44-45 | 0.003228 | 94,834 | 306 | 94,681 | 3,247,334 | 34.2 |
| 45-46 | 0.003507 | 94,528 | 331 | 94,362 | 3,152,653 | 33.4 |
| 46-47 | 0.003795 | 94,196 | 357 | 94,018 | 3,058,290 | 32.5 |
| 47-48 | 0.004107 | 93,839 | 385 | 93,646 | 2,964,273 | 31.6 |
| 48-49 | 0.004453 | 93,454 | 416 | 93,246 | 2,870,626 | 30.7 |
| 49-50 | 0.004839 | 93,037 | 450 | 92,812 | 2,777,381 | 29.9 |
| 50-51 | 0.005265 | 92,587 | 487 | 92,344 | 2,684,568 | 29.0 |
| 51-52 | 0.005717 | 92,100 | 527 | 91,837 | 2,592,225 | 28.1 |
| 52-53 | 0.006180 | 91,573 | 566 | 91,290 | 2,500,388 | 27.3 |
| 53-54 | 0.006628 | 91,007 | 603 | 90,706 | 2,409,098 | 26.5 |
| 54-55 | 0.007063 | 90,404 | 638 | 90,085 | 2,318,392 | 25.6 |
| 55-56 | 0.007502 | 89,766 | 673 | 89,429 | 2,228,307 | 24.8 |
| 56-57 | 0.007979 | 89,092 | 711 | 88,737 | 2,138,878 | 24.0 |
| 57-58 | 0.008521 | 88,381 | 753 | 88,005 | 2,050,141 | 23.2 |
| 58-59 | 0.009181 | 87,628 | 805 | 87,226 | 1,962,136 | 22.4 |
| 59-60 | 0.009985 | 86,824 | 867 | 86,390 | 1,874,911 | 21.6 |
| 60-61 | 0.010957 | 85,957 | 942 | 85,486 | 1,788,520 | 20.8 |
| 61-62 | 0.012058 | 85,015 | 1,025 | 84,502 | 1,703,034 | 20.0 |

Table 5. Life table for non-Hispanic white males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table5.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.013230 | 83,990 | 1,111 | 83,434 | 1,618,532 | 19.3 |
| 63-64 | 0.014378 | 82,879 | 1,192 | 82,283 | 1,535,098 | 18.5 |
| 64-65 | 0.015500 | 81,687 | 1,266 | 81,054 | 1,452,815 | 17.8 |
| 65-66 | 0.016729 | 80,421 | 1,345 | 79,748 | 1,371,761 | 17.1 |
| 66-67 | 0.018013 | 79,075 | 1,424 | 78,363 | 1,292,013 | 16.3 |
| 67-68 | 0.019480 | 77,651 | 1,513 | 76,895 | 1,213,650 | 15.6 |
| 68-69 | 0.021156 | 76,138 | 1,611 | 75,333 | 1,136,755 | 14.9 |
| 69-70 | 0.023071 | 74,528 | 1,719 | 73,668 | 1,061,422 | 14.2 |
| 70-71 | 0.025211 | 72,808 | 1,836 | 71,890 | 987,754 | 13.6 |
| 71-72 | 0.027672 | 70,973 | 1,964 | 69,991 | 915,864 | 12.9 |
| 72-73 | 0.030548 | 69,009 | 2,108 | 67,955 | 845,873 | 12.3 |
| 73-74 | 0.033841 | 66,901 | 2,264 | 65,769 | 777,918 | 11.6 |
| 74-75 | 0.037505 | 64,637 | 2,424 | 63,425 | 712,150 | 11.0 |
| 75-76 | 0.041549 | 62,212 | 2,585 | 60,920 | 648,725 | 10.4 |
| 76-77 | 0.045911 | 59,628 | 2,738 | 58,259 | 587,805 | 9.9 |
| 77-78 | 0.050707 | 56,890 | 2,885 | 55,448 | 529,546 | 9.3 |
| 78-79 | 0.055974 | 54,005 | 3,023 | 52,494 | 474,099 | 8.8 |
| 79-80 | 0.061752 | 50,982 | 3,148 | 49,408 | 421,605 | 8.3 |
| 80-81 | 0.068084 | 47,834 | 3,257 | 46,206 | 372,197 | 7.8 |
| 81-82 | 0.075014 | 44,577 | 3,344 | 42,905 | 325,991 | 7.3 |
| 82-83 | 0.082586 | 41,233 | 3,405 | 39,531 | 283,086 | 6.9 |
| 83-84 | 0.090847 | 37,828 | 3,437 | 36,110 | 243,555 | 6.4 |
| 84-85 | 0.099845 | 34,392 | 3,434 | 32,675 | 207,445 | 6.0 |
| 85-86 | 0.109626 | 30,958 | 3,394 | 29,261 | 174,770 | 5.6 |
| 86-87 | 0.120238 | 27,564 | 3,314 | 25,907 | 145,509 | 5.3 |
| 87-88 | 0.131725 | 24,250 | 3,194 | 22,653 | 119,603 | 4.9 |
| 88-89 | 0.144130 | 21,055 | 3,035 | 19,538 | 96,950 | 4.6 |
| 89-90 | 0.157491 | 18,021 | 2,838 | 16,602 | 77,412 | 4.3 |
| 90-91 | 0.171842 | 15,183 | 2,609 | 13,878 | 60,810 | 4.0 |
| 91-92 | 0.187210 | 12,574 | 2,354 | 11,397 | 46,932 | 3.7 |
| 92-93 | 0.203615 | 10,220 | 2,081 | 9,179 | 35,536 | 3.5 |
| 93-94 | 0.221066 | 8,139 | 1,799 | 7,239 | 26,356 | 3.2 |
| 94-95 | 0.239563 | 6,340 | 1,519 | 5,580 | 19,117 | 3.0 |
| 95-96 | 0.259092 | 4,821 | 1,249 | 4,196 | 13,537 | 2.8 |
| 96-97 | 0.279629 | 3,572 | 999 | 3,072 | 9,341 | 2.6 |
| 97-98 | 0.301131 | 2,573 | 775 | 2,186 | 6,268 | 2.4 |
| 98-99 | 0.323544 | 1,798 | 582 | 1,507 | 4,083 | 2.3 |
| 99-100 | 0.346798 | 1,216 | 422 | 1,005 | 2,575 | 2.1 |
| 100 and over | 1.000000 | 795 | 795 | 1,570 | 1,570 | 2.0 |

Table 6. Life table for non-Hispanic white females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table6.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|-------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 0-1 | 0.004950 | 100,000 | 495 | 99,566 | 8,045,444 | 80.5 |
| 1-2 | 0.000392 | 99,505 | 39 | 99,486 | 7,945,878 | 79.9 |
| 2-3 | 0.000229 | 99,466 | 23 | 99,455 | 7,846,392 | 78.9 |
| 3-4 | 0.000165 | 99,443 | 16 | 99,435 | 7,746,937 | 77.9 |
| 4-5 | 0.000146 | 99,427 | 14 | 99,420 | 7,647,502 | 76.9 |
| 5-6 | 0.000136 | 99,412 | 14 | 99,406 | 7,548,083 | 75.9 |
| 6-7 | 0.000129 | 99,399 | 13 | 99,392 | 7,448,677 | 74.9 |
| 7-8 | 0.000121 | 99,386 | 12 | 99,380 | 7,349,285 | 73.9 |
| 8-9 | 0.000108 | 99,374 | 11 | 99,369 | 7,249,904 | 73.0 |
| 9-10 | 0.000091 | 99,363 | 9 | 99,359 | 7,150,536 | 72.0 |
| 10-11 | 0.000075 | 99,354 | 7 | 99,351 | 7,051,177 | 71.0 |
| 11-12 | 0.000072 | 99,347 | 7 | 99,343 | 6,951,826 | 70.0 |
| 12-13 | 0.000092 | 99,340 | 9 | 99,335 | 6,852,483 | 69.0 |
| 13-14 | 0.000141 | 99,331 | 14 | 99,324 | 6,753,148 | 68.0 |
| 14-15 | 0.000209 | 99,317 | 21 | 99,306 | 6,653,824 | 67.0 |
| 15-16 | 0.000284 | 99,296 | 28 | 99,282 | 6,554,518 | 66.0 |
| 16-17 | 0.000351 | 99,268 | 35 | 99,250 | 6,455,237 | 65.0 |
| 17-18 | 0.000401 | 99,233 | 40 | 99,213 | 6,355,986 | 64.1 |
| 18-19 | 0.000429 | 99,193 | 43 | 99,172 | 6,256,774 | 63.1 |
| 19-20 | 0.000441 | 99,150 | 44 | 99,129 | 6,157,602 | 62.1 |
| 20-21 | 0.000449 | 99,107 | 44 | 99,084 | 6,058,473 | 61.1 |
| 21-22 | 0.000462 | 99,062 | 46 | 99,039 | 5,959,389 | 60.2 |
| 22-23 | 0.000475 | 99,016 | 47 | 98,993 | 5,860,350 | 59.2 |
| 23-24 | 0.000490 | 98,969 | 49 | 98,945 | 5,761,357 | 58.2 |
| 24-25 | 0.000507 | 98,921 | 50 | 98,896 | 5,662,411 | 57.2 |
| 25-26 | 0.000526 | 98,871 | 52 | 98,845 | 5,563,516 | 56.3 |
| 26-27 | 0.000546 | 98,819 | 54 | 98,792 | 5,464,671 | 55.3 |
| 27-28 | 0.000565 | 98,765 | 56 | 98,737 | 5,365,879 | 54.3 |
| 28-29 | 0.000584 | 98,709 | 58 | 98,680 | 5,267,142 | 53.4 |
| 29-30 | 0.000604 | 98,651 | 60 | 98,622 | 5,168,462 | 52.4 |
| 30-31 | 0.000631 | 98,592 | 62 | 98,561 | 5,069,840 | 51.4 |
| 31-32 | 0.000668 | 98,530 | 66 | 98,497 | 4,971,280 | 50.5 |
| 32-33 | 0.000715 | 98,464 | 70 | 98,429 | 4,872,783 | 49.5 |
| 33-34 | 0.000758 | 98,393 | 75 | 98,356 | 4,774,354 | 48.5 |
| 34-35 | 0.000809 | 98,319 | 80 | 98,279 | 4,675,998 | 47.6 |
| 35-36 | 0.000863 | 98,239 | 85 | 98,197 | 4,577,719 | 46.6 |
| 36-37 | 0.000927 | 98,155 | 91 | 98,109 | 4,479,522 | 45.6 |
| 37-38 | 0.001008 | 98,064 | 99 | 98,014 | 4,381,413 | 44.7 |
| 38-39 | 0.001111 | 97,965 | 109 | 97,910 | 4,283,399 | 43.7 |
| 39-40 | 0.001233 | 97,856 | 121 | 97,796 | 4,185,489 | 42.8 |
| 40-41 | 0.001360 | 97,735 | 133 | 97,669 | 4,087,693 | 41.8 |
| 41-42 | 0.001490 | 97,602 | 145 | 97,530 | 3,990,024 | 40.9 |
| 42-43 | 0.001629 | 97,457 | 159 | 97,378 | 3,892,495 | 39.9 |
| 43-44 | 0.001778 | 97,298 | 173 | 97,212 | 3,795,117 | 39.0 |
| 44-45 | 0.001935 | 97,125 | 188 | 97,031 | 3,697,906 | 38.1 |
| 45-46 | 0.002099 | 96,937 | 203 | 96,835 | 3,600,874 | 37.1 |
| 46-47 | 0.002269 | 96,734 | 219 | 96,624 | 3,504,039 | 36.2 |
| 47-48 | 0.002440 | 96,514 | 235 | 96,397 | 3,407,415 | 35.3 |
| 48-49 | 0.002617 | 96,279 | 252 | 96,153 | 3,311,019 | 34.4 |
| 49-50 | 0.002808 | 96,027 | 270 | 95,892 | 3,214,866 | 33.5 |
| 50-51 | 0.003016 | 95,757 | 289 | 95,613 | 3,118,974 | 32.6 |
| 51-52 | 0.003250 | 95,468 | 310 | 95,313 | 3,023,361 | 31.7 |
| 52-53 | 0.003516 | 95,158 | 335 | 94,991 | 2,928,048 | 30.8 |
| 53-54 | 0.003809 | 94,824 | 361 | 94,643 | 2,833,057 | 29.9 |
| 54-55 | 0.004124 | 94,462 | 390 | 94,268 | 2,738,414 | 29.0 |
| 55-56 | 0.004453 | 94,073 | 419 | 93,863 | 2,644,147 | 28.1 |
| 56-57 | 0.004803 | 93,654 | 450 | 93,429 | 2,550,283 | 27.2 |
| 57-58 | 0.005202 | 93,204 | 485 | 92,962 | 2,456,854 | 26.4 |
| 58-59 | 0.005680 | 92,719 | 527 | 92,456 | 2,363,893 | 25.5 |
| 59-60 | 0.006256 | 92,193 | 577 | 91,904 | 2,271,437 | 24.6 |
| 60-61 | 0.006961 | 91,616 | 638 | 91,297 | 2,179,533 | 23.8 |
| 61-62 | 0.007759 | 90,978 | 706 | 90,625 | 2,088,236 | 23.0 |

Table 6. Life table for non-Hispanic white females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table6.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.008576 | 90,272 | 774 | 89,885 | 1,997,611 | 22.1 |
| 63-64 | 0.009332 | 89,498 | 835 | 89,080 | 1,907,726 | 21.3 |
| 64-65 | 0.010041 | 88,663 | 890 | 88,218 | 1,818,645 | 20.5 |
| 65-66 | 0.010818 | 87,773 | 950 | 87,298 | 1,730,428 | 19.7 |
| 66-67 | 0.011635 | 86,823 | 1,010 | 86,318 | 1,643,130 | 18.9 |
| 67-68 | 0.012616 | 85,813 | 1,083 | 85,271 | 1,556,812 | 18.1 |
| 68-69 | 0.013784 | 84,730 | 1,168 | 84,146 | 1,471,540 | 17.4 |
| 69-70 | 0.015146 | 83,562 | 1,266 | 82,929 | 1,387,394 | 16.6 |
| 70-71 | 0.016696 | 82,297 | 1,374 | 81,610 | 1,304,465 | 15.9 |
| 71-72 | 0.018467 | 80,923 | 1,494 | 80,175 | 1,222,855 | 15.1 |
| 72-73 | 0.020503 | 79,428 | 1,629 | 78,614 | 1,142,680 | 14.4 |
| 73-74 | 0.022823 | 77,800 | 1,776 | 76,912 | 1,064,066 | 13.7 |
| 74-75 | 0.025453 | 76,024 | 1,935 | 75,056 | 987,154 | 13.0 |
| 75-76 | 0.028446 | 74,089 | 2,108 | 73,035 | 912,098 | 12.3 |
| 76-77 | 0.031722 | 71,981 | 2,283 | 70,840 | 839,063 | 11.7 |
| 77-78 | 0.035362 | 69,698 | 2,465 | 68,466 | 768,223 | 11.0 |
| 78-79 | 0.039403 | 67,233 | 2,649 | 65,909 | 699,757 | 10.4 |
| 79-80 | 0.043884 | 64,584 | 2,834 | 63,167 | 633,849 | 9.8 |
| 80-81 | 0.048849 | 61,750 | 3,016 | 60,242 | 570,682 | 9.2 |
| 81-82 | 0.054344 | 58,733 | 3,192 | 57,138 | 510,440 | 8.7 |
| 82-83 | 0.060418 | 55,542 | 3,356 | 53,864 | 453,302 | 8.2 |
| 83-84 | 0.067122 | 52,186 | 3,503 | 50,434 | 399,439 | 7.7 |
| 84-85 | 0.074512 | 48,683 | 3,627 | 46,869 | 349,004 | 7.2 |
| 85-86 | 0.082642 | 45,056 | 3,723 | 43,194 | 302,135 | 6.7 |
| 86-87 | 0.091572 | 41,332 | 3,785 | 39,440 | 258,941 | 6.3 |
| 87-88 | 0.101361 | 37,547 | 3,806 | 35,644 | 219,501 | 5.8 |
| 88-89 | 0.112067 | 33,741 | 3,781 | 31,851 | 183,857 | 5.4 |
| 89-90 | 0.123747 | 29,960 | 3,707 | 28,106 | 152,006 | 5.1 |
| 90-91 | 0.136458 | 26,253 | 3,582 | 24,461 | 123,900 | 4.7 |
| 91-92 | 0.150251 | 22,670 | 3,406 | 20,967 | 99,438 | 4.4 |
| 92-93 | 0.165172 | 19,264 | 3,182 | 17,673 | 78,471 | 4.1 |
| 93-94 | 0.181258 | 16,082 | 2,915 | 14,625 | 60,798 | 3.8 |
| 94-95 | 0.198538 | 13,167 | 2,614 | 11,860 | 46,173 | 3.5 |
| 95-96 | 0.217028 | 10,553 | 2,290 | 9,408 | 34,313 | 3.3 |
| 96-97 | 0.236733 | 8,263 | 1,956 | 7,285 | 24,906 | 3.0 |
| 97-98 | 0.257637 | 6,307 | 1,625 | 5,494 | 17,621 | 2.8 |
| 98-99 | 0.279711 | 4,682 | 1,310 | 4,027 | 12,127 | 2.6 |
| 99-100 | 0.302905 | 3,372 | 1,021 | 2,862 | 8,100 | 2.4 |
| 100 and over | 1.000000 | 2,351 | 2,351 | 5,238 | 5,238 | 2.2 |

Table 7. Life table for the non-Hispanic black population: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table7.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.013441 | 100,000 | 1,344 | 98,814 | 7,290,340 | 72.9 |
| 1-2 | 0.000720 | 98,656 | 71 | 98,620 | 7,191,526 | 72.9 |
| 2-3 | 0.000493 | 98,585 | 49 | 98,561 | 7,092,905 | 71.9 |
| 3-4 | 0.000325 | 98,536 | 32 | 98,520 | 6,994,345 | 71.0 |
| 4-5 | 0.000273 | 98,504 | 27 | 98,491 | 6,895,825 | 70.0 |
| 5-6 | 0.000261 | 98,477 | 26 | 98,464 | 6,797,334 | 69.0 |
| 6-7 | 0.000237 | 98,452 | 23 | 98,440 | 6,698,869 | 68.0 |
| 7-8 | 0.000214 | 98,428 | 21 | 98,418 | 6,600,430 | 67.1 |
| 8-9 | 0.000186 | 98,407 | 18 | 98,398 | 6,502,012 | 66.1 |
| 9-10 | 0.000154 | 98,389 | 15 | 98,381 | 6,403,614 | 65.1 |
| 10-11 | 0.000131 | 98,374 | 13 | 98,367 | 6,305,232 | 64.1 |
| 11-12 | 0.000134 | 98,361 | 13 | 98,354 | 6,206,865 | 63.1 |
| 12-13 | 0.000183 | 98,348 | 18 | 98,339 | 6,108,511 | 62.1 |
| 13-14 | 0.000287 | 98,330 | 28 | 98,316 | 6,010,172 | 61.1 |
| 14-15 | 0.000432 | 98,302 | 42 | 98,280 | 5,911,856 | 60.1 |
| 15-16 | 0.000591 | 98,259 | 58 | 98,230 | 5,813,576 | 59.2 |
| 16-17 | 0.000741 | 98,201 | 73 | 98,165 | 5,715,346 | 58.2 |
| 17-18 | 0.000883 | 98,128 | 87 | 98,085 | 5,617,181 | 57.2 |
| 18-19 | 0.001013 | 98,042 | 99 | 97,992 | 5,519,096 | 56.3 |
| 19-20 | 0.001133 | 97,942 | 111 | 97,887 | 5,421,104 | 55.3 |
| 20-21 | 0.001262 | 97,831 | 123 | 97,770 | 5,323,218 | 54.4 |
| 21-22 | 0.001395 | 97,708 | 136 | 97,640 | 5,225,448 | 53.5 |
| 22-23 | 0.001503 | 97,572 | 147 | 97,498 | 5,127,808 | 52.6 |
| 23-24 | 0.001573 | 97,425 | 153 | 97,348 | 5,030,310 | 51.6 |
| 24-25 | 0.001612 | 97,272 | 157 | 97,193 | 4,932,962 | 50.7 |
| 25-26 | 0.001643 | 97,115 | 160 | 97,035 | 4,835,768 | 49.8 |
| 26-27 | 0.001679 | 96,955 | 163 | 96,874 | 4,738,733 | 48.9 |
| 27-28 | 0.001716 | 96,793 | 166 | 96,709 | 4,641,859 | 48.0 |
| 28-29 | 0.001758 | 96,626 | 170 | 96,542 | 4,545,150 | 47.0 |
| 29-30 | 0.001808 | 96,457 | 174 | 96,369 | 4,448,608 | 46.1 |
| 30-31 | 0.001867 | 96,282 | 180 | 96,192 | 4,352,239 | 45.2 |
| 31-32 | 0.001935 | 96,102 | 186 | 96,009 | 4,256,047 | 44.3 |
| 32-33 | 0.002040 | 95,917 | 196 | 95,819 | 4,160,037 | 43.4 |
| 33-34 | 0.002103 | 95,721 | 201 | 95,620 | 4,064,218 | 42.5 |
| 34-35 | 0.002202 | 95,520 | 210 | 95,414 | 3,968,598 | 41.5 |
| 35-36 | 0.002312 | 95,309 | 220 | 95,199 | 3,873,184 | 40.6 |
| 36-37 | 0.002442 | 95,089 | 232 | 94,973 | 3,777,985 | 39.7 |
| 37-38 | 0.002601 | 94,857 | 247 | 94,733 | 3,683,012 | 38.8 |
| 38-39 | 0.002796 | 94,610 | 265 | 94,478 | 3,588,279 | 37.9 |
| 39-40 | 0.003023 | 94,345 | 285 | 94,203 | 3,493,801 | 37.0 |
| 40-41 | 0.003263 | 94,060 | 307 | 93,907 | 3,399,599 | 36.1 |
| 41-42 | 0.003519 | 93,753 | 330 | 93,588 | 3,305,692 | 35.3 |
| 42-43 | 0.003814 | 93,423 | 356 | 93,245 | 3,212,103 | 34.4 |
| 43-44 | 0.004159 | 93,067 | 387 | 92,874 | 3,118,858 | 33.5 |
| 44-45 | 0.004547 | 92,680 | 421 | 92,469 | 3,025,985 | 32.6 |
| 45-46 | 0.004953 | 92,259 | 457 | 92,030 | 2,933,515 | 31.8 |
| 46-47 | 0.005377 | 91,802 | 494 | 91,555 | 2,841,485 | 31.0 |
| 47-48 | 0.005854 | 91,308 | 535 | 91,041 | 2,749,930 | 30.1 |
| 48-49 | 0.006404 | 90,773 | 581 | 90,483 | 2,658,890 | 29.3 |
| 49-50 | 0.007030 | 90,192 | 634 | 89,875 | 2,568,407 | 28.5 |
| 50-51 | 0.007726 | 89,558 | 692 | 89,212 | 2,478,532 | 27.7 |
| 51-52 | 0.008465 | 88,866 | 752 | 88,490 | 2,389,320 | 26.9 |
| 52-53 | 0.009208 | 88,114 | 811 | 87,708 | 2,300,830 | 26.1 |
| 53-54 | 0.009909 | 87,303 | 865 | 86,870 | 2,213,121 | 25.4 |
| 54-55 | 0.010567 | 86,438 | 913 | 86,981 | 2,126,251 | 24.6 |
| 55-56 | 0.011241 | 85,524 | 961 | 85,043 | 2,040,270 | 23.9 |
| 56-57 | 0.011963 | 84,563 | 1,012 | 84,057 | 1,955,227 | 23.1 |
| 57-58 | 0.012714 | 83,551 | 1,062 | 83,020 | 1,871,170 | 22.4 |
| 58-59 | 0.013538 | 82,489 | 1,117 | 81,930 | 1,788,150 | 21.7 |
| 59-60 | 0.014480 | 81,372 | 1,178 | 80,783 | 1,706,220 | 21.0 |
| 60-61 | 0.015597 | 80,194 | 1,251 | 79,568 | 1,625,437 | 20.3 |
| 61-62 | 0.016876 | 78,943 | 1,332 | 78,277 | 1,545,868 | 19.6 |

Table 7. Life table for the non-Hispanic black population: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table7.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.018226 | 77,611 | 1,415 | 76,903 | 1,467,591 | 18.9 |
| 63-64 | 0.019488 | 76,196 | 1,485 | 75,454 | 1,390,688 | 18.3 |
| 64-65 | 0.020613 | 74,711 | 1,540 | 73,941 | 1,315,234 | 17.6 |
| 65-66 | 0.021691 | 73,171 | 1,587 | 72,378 | 1,241,293 | 17.0 |
| 66-67 | 0.022760 | 71,584 | 1,629 | 70,769 | 1,168,915 | 16.3 |
| 67-68 | 0.024071 | 69,955 | 1,684 | 69,113 | 1,098,146 | 15.7 |
| 68-69 | 0.025702 | 68,271 | 1,755 | 67,394 | 1,029,033 | 15.1 |
| 69-70 | 0.027620 | 66,516 | 1,837 | 65,598 | 961,639 | 14.5 |
| 70-71 | 0.029728 | 64,679 | 1,923 | 63,718 | 896,042 | 13.9 |
| 71-72 | 0.032027 | 62,756 | 2,010 | 61,751 | 832,324 | 13.3 |
| 72-73 | 0.034618 | 60,746 | 2,103 | 59,695 | 770,573 | 12.7 |
| 73-74 | 0.037529 | 58,643 | 2,201 | 57,543 | 710,878 | 12.1 |
| 74-75 | 0.040755 | 56,443 | 2,300 | 55,292 | 653,335 | 11.6 |
| 75-76 | 0.044287 | 54,142 | 2,398 | 52,943 | 598,042 | 11.0 |
| 76-77 | 0.047893 | 51,745 | 2,478 | 50,505 | 545,099 | 10.5 |
| 77-78 | 0.051778 | 49,266 | 2,551 | 47,991 | 494,593 | 10.0 |
| 78-79 | 0.055958 | 46,715 | 2,614 | 45,408 | 446,603 | 9.6 |
| 79-80 | 0.060455 | 44,101 | 2,666 | 42,768 | 401,194 | 9.1 |
| 80-81 | 0.065288 | 41,435 | 2,705 | 40,083 | 358,426 | 8.7 |
| 81-82 | 0.070479 | 38,730 | 2,730 | 37,365 | 318,343 | 8.2 |
| 82-83 | 0.076049 | 36,000 | 2,738 | 34,631 | 280,978 | 7.8 |
| 83-84 | 0.082020 | 33,262 | 2,728 | 31,898 | 246,347 | 7.4 |
| 84-85 | 0.088415 | 30,534 | 2,700 | 29,184 | 214,449 | 7.0 |
| 85-86 | 0.095257 | 27,835 | 2,651 | 26,509 | 185,264 | 6.7 |
| 86-87 | 0.102568 | 25,183 | 2,583 | 23,892 | 158,755 | 6.3 |
| 87-88 | 0.110373 | 22,600 | 2,494 | 21,353 | 134,864 | 6.0 |
| 88-89 | 0.118693 | 20,106 | 2,386 | 18,913 | 113,511 | 5.6 |
| 89-90 | 0.127550 | 17,719 | 2,260 | 16,589 | 94,598 | 5.3 |
| 90-91 | 0.136965 | 15,459 | 2,117 | 14,401 | 78,009 | 5.0 |
| 91-92 | 0.146958 | 13,342 | 1,961 | 12,362 | 63,608 | 4.8 |
| 92-93 | 0.157547 | 11,381 | 1,793 | 10,485 | 51,247 | 4.5 |
| 93-94 | 0.168748 | 9,588 | 1,618 | 8,779 | 40,762 | 4.3 |
| 94-95 | 0.180575 | 7,970 | 1,439 | 7,251 | 31,983 | 4.0 |
| 95-96 | 0.193039 | 6,531 | 1,261 | 5,901 | 24,732 | 3.8 |
| 96-97 | 0.206146 | 5,270 | 1,086 | 4,727 | 18,832 | 3.6 |
| 97-98 | 0.219900 | 4,184 | 920 | 3,724 | 14,105 | 3.4 |
| 98-99 | 0.234302 | 3,264 | 765 | 2,881 | 10,381 | 3.2 |
| 99-100 | 0.249345 | 2,499 | 623 | 2,187 | 7,500 | 3.0 |
| 100 and over | 1.000000 | 1,876 | 1,876 | 5,312 | 5,312 | 2.8 |

Table 8. Life table for non-Hispanic black males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table8.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.014466 | 100,000 | 1,447 | 98,724 | 6,928,521 | 69.3 |
| 1-2 | 0.000787 | 98,553 | 78 | 98,515 | 6,829,797 | 69.3 |
| 2-3 | 0.000470 | 98,476 | 46 | 98,453 | 6,731,282 | 68.4 |
| 3-4 | 0.000388 | 98,430 | 38 | 98,410 | 6,632,830 | 67.4 |
| 4-5 | 0.000283 | 98,391 | 28 | 98,377 | 6,534,419 | 66.4 |
| 5-6 | 0.000286 | 98,364 | 28 | 98,349 | 6,436,042 | 65.4 |
| 6-7 | 0.000274 | 98,335 | 27 | 98,322 | 6,337,692 | 64.4 |
| 7-8 | 0.000255 | 98,308 | 25 | 98,296 | 6,239,370 | 63.5 |
| 8-9 | 0.000215 | 98,283 | 21 | 98,273 | 6,141,075 | 62.5 |
| 9-10 | 0.000159 | 98,262 | 16 | 98,254 | 6,042,802 | 61.5 |
| 10-11 | 0.000110 | 98,247 | 11 | 98,241 | 5,944,547 | 60.5 |
| 11-12 | 0.000104 | 98,236 | 10 | 98,231 | 5,846,306 | 59.5 |
| 12-13 | 0.000181 | 98,226 | 18 | 98,217 | 5,748,075 | 58.5 |
| 13-14 | 0.000360 | 98,208 | 35 | 98,190 | 5,649,859 | 57.5 |
| 14-15 | 0.000611 | 98,173 | 60 | 98,143 | 5,551,668 | 56.6 |
| 15-16 | 0.000887 | 98,113 | 87 | 98,069 | 5,453,526 | 55.6 |
| 16-17 | 0.001143 | 98,026 | 112 | 97,970 | 5,355,457 | 54.6 |
| 17-18 | 0.001378 | 97,914 | 135 | 97,846 | 5,257,487 | 53.7 |
| 18-19 | 0.001579 | 97,779 | 154 | 97,701 | 5,159,641 | 52.8 |
| 19-20 | 0.001756 | 97,624 | 171 | 97,538 | 5,061,940 | 51.9 |
| 20-21 | 0.001940 | 97,453 | 189 | 97,358 | 4,964,401 | 50.9 |
| 21-22 | 0.002130 | 97,264 | 207 | 97,160 | 4,867,043 | 50.0 |
| 22-23 | 0.002282 | 97,057 | 221 | 96,946 | 4,769,883 | 49.1 |
| 23-24 | 0.002378 | 96,835 | 230 | 96,720 | 4,672,937 | 48.3 |
| 24-25 | 0.002431 | 96,605 | 235 | 96,487 | 4,576,217 | 47.4 |
| 25-26 | 0.002467 | 96,370 | 238 | 96,251 | 4,479,730 | 46.5 |
| 26-27 | 0.002507 | 96,132 | 241 | 96,012 | 4,383,479 | 45.6 |
| 27-28 | 0.002542 | 95,891 | 244 | 95,769 | 4,287,467 | 44.7 |
| 28-29 | 0.002581 | 95,647 | 247 | 95,524 | 4,191,697 | 43.8 |
| 29-30 | 0.002625 | 95,401 | 250 | 95,275 | 4,096,173 | 42.9 |
| 30-31 | 0.002675 | 95,150 | 255 | 95,023 | 4,000,898 | 42.0 |
| 31-32 | 0.002731 | 94,896 | 259 | 94,766 | 3,905,875 | 41.2 |
| 32-33 | 0.002854 | 94,637 | 270 | 94,501 | 3,811,109 | 40.3 |
| 33-34 | 0.002871 | 94,366 | 271 | 94,231 | 3,716,608 | 39.4 |
| 34-35 | 0.002959 | 94,096 | 278 | 93,956 | 3,622,377 | 38.5 |
| 35-36 | 0.003063 | 93,817 | 287 | 93,673 | 3,528,420 | 37.6 |
| 36-37 | 0.003191 | 93,530 | 298 | 93,380 | 3,434,747 | 36.7 |
| 37-38 | 0.003350 | 93,231 | 312 | 93,075 | 3,341,366 | 35.8 |
| 38-39 | 0.003545 | 92,919 | 329 | 92,754 | 3,248,291 | 35.0 |
| 39-40 | 0.003778 | 92,590 | 350 | 92,415 | 3,155,537 | 34.1 |
| 40-41 | 0.004030 | 92,240 | 372 | 92,054 | 3,063,122 | 33.2 |
| 41-42 | 0.004313 | 91,868 | 396 | 91,670 | 2,971,069 | 32.3 |
| 42-43 | 0.004661 | 91,472 | 426 | 91,259 | 2,879,399 | 31.5 |
| 43-44 | 0.005088 | 91,045 | 463 | 90,814 | 2,788,140 | 30.6 |
| 44-45 | 0.005586 | 90,582 | 506 | 90,329 | 2,697,326 | 29.8 |
| 45-46 | 0.006107 | 90,076 | 550 | 89,801 | 2,606,997 | 28.9 |
| 46-47 | 0.006657 | 89,526 | 596 | 89,228 | 2,517,196 | 28.1 |
| 47-48 | 0.007308 | 88,930 | 650 | 88,605 | 2,427,968 | 27.3 |
| 48-49 | 0.008101 | 88,280 | 715 | 87,923 | 2,339,362 | 26.5 |
| 49-50 | 0.009030 | 87,565 | 791 | 87,170 | 2,251,440 | 25.7 |
| 50-51 | 0.010084 | 86,775 | 875 | 86,337 | 2,164,270 | 24.9 |
| 51-52 | 0.011194 | 85,899 | 962 | 85,419 | 2,077,933 | 24.2 |
| 52-53 | 0.012277 | 84,938 | 1,043 | 84,417 | 1,992,514 | 23.5 |
| 53-54 | 0.013236 | 83,895 | 1,110 | 83,340 | 1,908,097 | 22.7 |
| 54-55 | 0.014079 | 82,785 | 1,165 | 82,202 | 1,824,757 | 22.0 |
| 55-56 | 0.014916 | 81,619 | 1,217 | 81,011 | 1,742,555 | 21.3 |
| 56-57 | 0.015823 | 80,402 | 1,272 | 79,766 | 1,661,545 | 20.7 |
| 57-58 | 0.016779 | 79,130 | 1,328 | 78,466 | 1,581,779 | 20.0 |
| 58-59 | 0.017858 | 77,802 | 1,389 | 77,107 | 1,503,313 | 19.3 |
| 59-60 | 0.019118 | 76,412 | 1,461 | 75,682 | 1,426,206 | 18.7 |
| 60-61 | 0.020624 | 74,952 | 1,546 | 74,179 | 1,350,524 | 18.0 |
| 61-62 | 0.022336 | 73,406 | 1,640 | 72,586 | 1,276,346 | 17.4 |

Table 8. Life table for non-Hispanic black males: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table8.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.024108 | 71,766 | 1,730 | 70,901 | 1,203,760 | 16.8 |
| 63-64 | 0.025687 | 70,036 | 1,799 | 69,137 | 1,132,858 | 16.2 |
| 64-65 | 0.027009 | 68,237 | 1,843 | 67,316 | 1,063,722 | 15.6 |
| 65-66 | 0.028211 | 66,394 | 1,873 | 65,458 | 996,406 | 15.0 |
| 66-67 | 0.029550 | 64,521 | 1,907 | 63,568 | 930,949 | 14.4 |
| 67-68 | 0.031258 | 62,614 | 1,957 | 61,636 | 867,381 | 13.9 |
| 68-69 | 0.033449 | 60,657 | 2,029 | 59,643 | 805,745 | 13.3 |
| 69-70 | 0.036040 | 58,628 | 2,113 | 57,572 | 746,102 | 12.7 |
| 70-71 | 0.038834 | 56,515 | 2,195 | 55,418 | 688,531 | 12.2 |
| 71-72 | 0.041799 | 54,321 | 2,271 | 53,185 | 633,113 | 11.7 |
| 72-73 | 0.045084 | 52,050 | 2,347 | 50,877 | 579,927 | 11.1 |
| 73-74 | 0.048710 | 49,703 | 2,421 | 48,493 | 529,050 | 10.6 |
| 74-75 | 0.052651 | 47,282 | 2,489 | 46,038 | 480,557 | 10.2 |
| 75-76 | 0.056865 | 44,793 | 2,547 | 43,519 | 434,520 | 9.7 |
| 76-77 | 0.061091 | 42,246 | 2,581 | 40,955 | 391,000 | 9.3 |
| 77-78 | 0.065610 | 39,665 | 2,602 | 38,364 | 350,045 | 8.8 |
| 78-79 | 0.070437 | 37,063 | 2,611 | 35,757 | 311,681 | 8.4 |
| 79-80 | 0.075591 | 34,452 | 2,604 | 33,150 | 275,924 | 8.0 |
| 80-81 | 0.081090 | 31,848 | 2,583 | 30,556 | 242,774 | 7.6 |
| 81-82 | 0.086950 | 29,265 | 2,545 | 27,993 | 212,218 | 7.3 |
| 82-83 | 0.093192 | 26,721 | 2,490 | 25,475 | 184,225 | 6.9 |
| 83-84 | 0.099832 | 24,230 | 2,419 | 23,021 | 158,749 | 6.6 |
| 84-85 | 0.106890 | 21,811 | 2,331 | 20,646 | 135,728 | 6.2 |
| 85-86 | 0.114383 | 19,480 | 2,228 | 18,366 | 115,083 | 5.9 |
| 86-87 | 0.122329 | 17,252 | 2,110 | 16,197 | 96,717 | 5.6 |
| 87-88 | 0.130746 | 15,141 | 1,980 | 14,152 | 80,520 | 5.3 |
| 88-89 | 0.139650 | 13,162 | 1,838 | 12,243 | 66,368 | 5.0 |
| 89-90 | 0.149057 | 11,324 | 1,688 | 10,480 | 54,126 | 4.8 |
| 90-91 | 0.158980 | 9,636 | 1,532 | 8,870 | 43,646 | 4.5 |
| 91-92 | 0.169432 | 8,104 | 1,373 | 7,417 | 34,776 | 4.3 |
| 92-93 | 0.180424 | 6,731 | 1,214 | 6,124 | 27,359 | 4.1 |
| 93-94 | 0.191964 | 5,516 | 1,059 | 4,987 | 21,235 | 3.8 |
| 94-95 | 0.204058 | 4,457 | 910 | 4,003 | 16,248 | 3.6 |
| 95-96 | 0.216711 | 3,548 | 769 | 3,163 | 12,245 | 3.5 |
| 96-97 | 0.229921 | 2,779 | 639 | 2,460 | 9,082 | 3.3 |
| 97-98 | 0.243685 | 2,140 | 522 | 1,879 | 6,622 | 3.1 |
| 98-99 | 0.257998 | 1,619 | 418 | 1,410 | 4,743 | 2.9 |
| 99-100 | 0.272848 | 1,201 | 328 | 1,037 | 3,333 | 2.8 |
| 100 and over | 1.000000 | 873 | 873 | 2,296 | 2,296 | 2.6 |

Table 9. Life table for non-Hispanic black females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table9.xls.

| Age | Probability of dying between ages x to $x + 1$ q_x | Number surviving to age x l_x | Number dying between ages x to $x + 1$ d_x | Person-years lived between ages x to $x + 1$ L_x | Total number of person-years lived above age x T_x | Expectation of life at age x e_x |
|-------|---|--------------------------------------|---|---|---|---|
| 0-1 | 0.012377 | 100,000 | 1,238 | 98,907 | 7,626,297 | 76.3 |
| 1-2 | 0.000622 | 98,762 | 61 | 98,732 | 7,527,390 | 76.2 |
| 2-3 | 0.000497 | 98,701 | 49 | 98,676 | 7,428,658 | 75.3 |
| 3-4 | 0.000248 | 98,652 | 24 | 98,640 | 7,329,982 | 74.3 |
| 4-5 | 0.000252 | 98,627 | 25 | 98,615 | 7,231,342 | 73.3 |
| 5-6 | 0.000225 | 98,603 | 22 | 98,591 | 7,132,727 | 72.3 |
| 6-7 | 0.000189 | 98,580 | 19 | 98,571 | 7,034,136 | 71.4 |
| 7-8 | 0.000164 | 98,562 | 16 | 98,554 | 6,935,565 | 70.4 |
| 8-9 | 0.000148 | 98,546 | 15 | 98,538 | 6,837,011 | 69.4 |
| 9-10 | 0.000141 | 98,531 | 14 | 98,524 | 6,738,473 | 68.4 |
| 10-11 | 0.000143 | 98,517 | 14 | 98,510 | 6,639,949 | 67.4 |
| 11-12 | 0.000154 | 98,503 | 15 | 98,495 | 6,541,439 | 66.4 |
| 12-13 | 0.000174 | 98,488 | 17 | 98,479 | 6,442,943 | 65.4 |
| 13-14 | 0.000204 | 98,471 | 20 | 98,461 | 6,344,464 | 64.4 |
| 14-15 | 0.000241 | 98,451 | 24 | 98,439 | 6,246,003 | 63.4 |
| 15-16 | 0.000283 | 98,427 | 28 | 98,413 | 6,147,564 | 62.5 |
| 16-17 | 0.000328 | 98,399 | 32 | 98,383 | 6,049,151 | 61.5 |
| 17-18 | 0.000377 | 98,367 | 37 | 98,348 | 5,950,768 | 60.5 |
| 18-19 | 0.000432 | 98,330 | 42 | 98,308 | 5,852,420 | 59.5 |
| 19-20 | 0.000493 | 98,287 | 48 | 98,263 | 5,754,112 | 58.5 |
| 20-21 | 0.000561 | 98,239 | 55 | 98,211 | 5,655,849 | 57.6 |
| 21-22 | 0.000633 | 98,184 | 62 | 98,153 | 5,557,637 | 56.6 |
| 22-23 | 0.000699 | 98,121 | 69 | 98,087 | 5,459,485 | 55.6 |
| 23-24 | 0.000752 | 98,053 | 74 | 98,016 | 5,361,398 | 54.7 |
| 24-25 | 0.000794 | 97,979 | 78 | 97,940 | 5,263,382 | 53.7 |
| 25-26 | 0.000838 | 97,901 | 82 | 97,860 | 5,165,441 | 52.8 |
| 26-27 | 0.000887 | 97,819 | 87 | 97,776 | 5,067,581 | 51.8 |
| 27-28 | 0.000938 | 97,733 | 92 | 97,687 | 4,969,805 | 50.9 |
| 28-29 | 0.000992 | 97,641 | 97 | 97,592 | 4,872,118 | 49.9 |
| 29-30 | 0.001054 | 97,544 | 103 | 97,493 | 4,774,526 | 48.9 |
| 30-31 | 0.001126 | 97,441 | 110 | 97,386 | 4,677,033 | 48.0 |
| 31-32 | 0.001212 | 97,331 | 118 | 97,273 | 4,579,647 | 47.1 |
| 32-33 | 0.001316 | 97,214 | 128 | 97,150 | 4,482,375 | 46.1 |
| 33-34 | 0.001412 | 97,086 | 137 | 97,017 | 4,385,225 | 45.2 |
| 34-35 | 0.001525 | 96,948 | 148 | 96,875 | 4,288,208 | 44.2 |
| 35-36 | 0.001641 | 96,801 | 159 | 96,721 | 4,191,333 | 43.3 |
| 36-37 | 0.001773 | 96,642 | 171 | 96,556 | 4,094,612 | 42.4 |
| 37-38 | 0.001934 | 96,470 | 187 | 96,377 | 3,998,056 | 41.4 |
| 38-39 | 0.002130 | 96,284 | 205 | 96,181 | 3,901,679 | 40.5 |
| 39-40 | 0.002353 | 96,079 | 226 | 95,966 | 3,805,498 | 39.6 |
| 40-41 | 0.002583 | 95,853 | 248 | 95,729 | 3,709,532 | 38.7 |
| 41-42 | 0.002816 | 95,605 | 269 | 95,471 | 3,613,803 | 37.8 |
| 42-43 | 0.003068 | 95,336 | 292 | 95,190 | 3,518,333 | 36.9 |
| 43-44 | 0.003343 | 95,043 | 318 | 94,885 | 3,423,143 | 36.0 |
| 44-45 | 0.003638 | 94,726 | 345 | 94,553 | 3,328,258 | 35.1 |
| 45-46 | 0.003948 | 94,381 | 373 | 94,195 | 3,233,705 | 34.3 |
| 46-47 | 0.004266 | 94,008 | 401 | 93,808 | 3,139,510 | 33.4 |
| 47-48 | 0.004597 | 93,607 | 430 | 93,392 | 3,045,702 | 32.5 |
| 48-49 | 0.004946 | 93,177 | 461 | 92,947 | 2,952,310 | 31.7 |
| 49-50 | 0.005323 | 92,716 | 493 | 92,470 | 2,859,363 | 30.8 |
| 50-51 | 0.005731 | 92,223 | 529 | 91,959 | 2,766,894 | 30.0 |
| 51-52 | 0.006173 | 91,694 | 566 | 91,411 | 2,674,935 | 29.2 |
| 52-53 | 0.006646 | 91,128 | 606 | 90,825 | 2,583,524 | 28.4 |
| 53-54 | 0.007141 | 90,523 | 646 | 90,199 | 2,492,699 | 27.5 |
| 54-55 | 0.007650 | 89,876 | 688 | 89,532 | 2,402,499 | 26.7 |
| 55-56 | 0.008190 | 89,189 | 730 | 88,823 | 2,312,967 | 25.9 |
| 56-57 | 0.008763 | 88,458 | 775 | 88,071 | 2,224,143 | 25.1 |
| 57-58 | 0.009357 | 87,683 | 820 | 87,273 | 2,136,073 | 24.4 |
| 58-59 | 0.009997 | 86,863 | 868 | 86,428 | 2,048,800 | 23.6 |
| 59-60 | 0.010720 | 85,994 | 922 | 85,533 | 1,962,372 | 22.8 |
| 60-61 | 0.011577 | 85,072 | 985 | 84,580 | 1,876,839 | 22.1 |
| 61-62 | 0.012575 | 84,087 | 1,057 | 83,559 | 1,792,259 | 21.3 |

Table 9. Life table for non-Hispanic black females: United States, 2006Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Series_Reports/sr02_152/Table9.xls.

| Age | Probability of dying between ages x to $x + 1$ | Number surviving to age x | Number dying between ages x to $x + 1$ | Person-years lived between ages x to $x + 1$ | Total number of person-years lived above age x | Expectation of life at age x |
|--------------|--|-----------------------------|--|--|--|--------------------------------|
| | q_x | l_x | d_x | L_x | T_x | e_x |
| 62-63 | 0.013658 | 83,030 | 1,134 | 82,463 | 1,708,700 | 20.6 |
| 63-64 | 0.014724 | 81,896 | 1,206 | 81,293 | 1,626,237 | 19.9 |
| 64-65 | 0.015733 | 80,690 | 1,270 | 80,056 | 1,544,944 | 19.1 |
| 65-66 | 0.016747 | 79,421 | 1,330 | 78,756 | 1,464,888 | 18.4 |
| 66-67 | 0.017728 | 78,091 | 1,384 | 77,398 | 1,386,132 | 17.8 |
| 67-68 | 0.018866 | 76,706 | 1,447 | 75,983 | 1,308,734 | 17.1 |
| 68-69 | 0.020217 | 75,259 | 1,521 | 74,498 | 1,232,751 | 16.4 |
| 69-70 | 0.021787 | 73,738 | 1,607 | 72,934 | 1,158,253 | 15.7 |
| 70-71 | 0.023541 | 72,131 | 1,698 | 71,282 | 1,085,318 | 15.0 |
| 71-72 | 0.025504 | 70,433 | 1,796 | 69,535 | 1,014,036 | 14.4 |
| 72-73 | 0.027754 | 68,637 | 1,905 | 67,684 | 944,501 | 13.8 |
| 73-74 | 0.030315 | 66,732 | 2,023 | 65,720 | 876,817 | 13.1 |
| 74-75 | 0.033188 | 64,709 | 2,148 | 63,635 | 811,097 | 12.5 |
| 75-76 | 0.036373 | 62,561 | 2,276 | 61,424 | 747,462 | 11.9 |
| 76-77 | 0.039654 | 60,286 | 2,391 | 59,091 | 686,038 | 11.4 |
| 77-78 | 0.043218 | 57,895 | 2,502 | 56,644 | 626,948 | 10.8 |
| 78-79 | 0.047087 | 55,393 | 2,608 | 54,089 | 570,303 | 10.3 |
| 79-80 | 0.051283 | 52,785 | 2,707 | 51,431 | 516,214 | 9.8 |
| 80-81 | 0.055831 | 50,078 | 2,796 | 48,680 | 464,783 | 9.3 |
| 81-82 | 0.060757 | 47,282 | 2,873 | 45,846 | 416,103 | 8.8 |
| 82-83 | 0.066087 | 44,409 | 2,935 | 42,942 | 370,258 | 8.3 |
| 83-84 | 0.071849 | 41,474 | 2,980 | 39,984 | 327,316 | 7.9 |
| 84-85 | 0.078072 | 38,494 | 3,005 | 36,992 | 287,332 | 7.5 |
| 85-86 | 0.084784 | 35,489 | 3,009 | 33,985 | 250,340 | 7.1 |
| 86-87 | 0.092015 | 32,480 | 2,989 | 30,986 | 216,355 | 6.7 |
| 87-88 | 0.099796 | 29,492 | 2,943 | 28,020 | 185,369 | 6.3 |
| 88-89 | 0.108157 | 26,548 | 2,871 | 25,113 | 157,349 | 5.9 |
| 89-90 | 0.117127 | 23,677 | 2,773 | 22,290 | 132,237 | 5.6 |
| 90-91 | 0.126735 | 20,904 | 2,649 | 19,579 | 109,946 | 5.3 |
| 91-92 | 0.137008 | 18,255 | 2,501 | 17,004 | 90,367 | 5.0 |
| 92-93 | 0.147974 | 15,754 | 2,331 | 14,588 | 73,363 | 4.7 |
| 93-94 | 0.159655 | 13,422 | 2,143 | 12,351 | 58,775 | 4.4 |
| 94-95 | 0.172072 | 11,279 | 1,941 | 10,309 | 46,424 | 4.1 |
| 95-96 | 0.185241 | 9,339 | 1,730 | 8,474 | 36,115 | 3.9 |
| 96-97 | 0.199176 | 7,609 | 1,515 | 6,851 | 27,642 | 3.6 |
| 97-98 | 0.213884 | 6,093 | 1,303 | 5,442 | 20,791 | 3.4 |
| 98-99 | 0.229367 | 4,790 | 1,099 | 4,241 | 15,349 | 3.2 |
| 99-100 | 0.245621 | 3,691 | 907 | 3,238 | 11,108 | 3.0 |
| 100 and over | 1.000000 | 2,785 | 2,785 | 7,870 | 7,870 | 2.8 |

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