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A Comparison of the Mortality Experience of U.S. Adults Estimated With the 2006–2018 National Health Interview Survey Linked Mortality Files and the Annual U.S. Life Tables

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Abstract

Background—Linking data is a powerful mechanism to provide policy-relevant information. The National Center for Health Statistics' Data Linkage Program produces linked mortality files (LMFs) for research by linking data from the National Center for Health Statistics' surveys, including the National Health Interview Survey (NHIS), to mortality data from the National Death Index. Assessing the accuracy of the linked data is an important step in ensuring its analytic use. This report compares the cumulative survival probabilities estimated with the 2006–2018 NHIS LMFs to those from the annual U.S. life tables.

Methods—Cumulative survival probabilities for 13 annual NHIS LMF cohorts were derived using the Kaplan–Meier product limit method, and cumulative survival probabilities were computed for the U.S. population using information from annual U.S. life tables. The survival probabilities were calculated at various lengths of follow-up for each age-race-ethnicity-sex group of each NHIS cohort and for the U.S. population.

Data sources—Survey data from 2006 through 2018 NHIS sample adults were linked to death certificate data from the National Death Index. The survival probabilities of each NHIS cohort were compared with the corresponding probabilities of the U.S. population using the U.S. life tables.

Conclusion—Overall, the survival probabilities estimated with the NHIS LMFs were similar to those for the U.S. population. Thirty-four statistically significant differences were observed between the NHIS LMF estimates and corresponding U.S. life tables across all age groups, sex and race and ethnicity categories, and follow-up intervals. By race and ethnicity category, non-Hispanic Black adults had 14 statistically significant differences in survival probabilities, non-Hispanic White adults had 11 statistically significant differences, and Hispanic adults had 9 statistically significant differences. The results of this analysis can be used as a resource to support empirical findings and inference for mortality studies using LMFs.

Keywords: record linkage • survival probabilities • life expectancy • National Death Index

Introduction

The National Center for Health Statistics (NCHS) serves as the nation's principal health statistics agency, whose mission is to collect, analyze, and disseminate timely, relevant, and accurate health data and statistics to inform the public and guide program and policy decisions to improve the health of the American people. NCHS conducts large national population surveys, including the National Health and Nutrition Examination Survey (1) and the National Health Interview Survey (NHIS) (2), as well as healthcare provider surveys, to collect important information about the health of the U.S. population. Through the NCHS Data Linkage Program, data from these surveys are linked to a variety of sources, including mortality data from the National Death Index (NDI), healthcare use data from the Centers for Medicare & Medicaid Services' administrative records, and federal housing program participation records from the U.S. Department of Housing and Urban Development (3). The linked data expand the scientific use of surveys and enable richer analysis than would be possible with each data source alone.

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NCHS collects mortality information for deceased survey participants by linking their personal identifiers to NDI (4). These linked mortality files (LMFs) offer the opportunity to study the associations between mortality and a variety of health factors that are collected as part of the surveys. The high quality of sociodemographic, health, and mortality information available from the linked survey and NDI data have supported over 1,000 PubMed-indexed scientific publications (5). For example, analyses have ranged from examining deaths associated with underweight, overweight, and obesity (6,7) to air pollution exposure and heart disease (8) and educational differentials in U.S. adult mortality (9).

Although LMFs produced by NCHS' data linkage activities are a frequently used resource, they have limitations. Because mortality status of survey participants is not obtained through direct report, but rather through both deterministic and probabilistic methods (4), error is introduced because of false positive (type I) and false negative (type II) matches. These errors can occur when a living NHIS participant is incorrectly linked to an NDI record (false positive), or when a deceased NHIS participant is not linked to a mortality record or is linked to the wrong record, in which case, the follow-up time is incorrect. The linkage algorithm used in the creation of LMFs was designed to minimize type I (false positive) and type II (false negative) errors. The type I error was estimated to be 2% and the type II error was estimated to be 1% (4). Even so, understanding the impact of those errors is crucial for future research findings based on LMFs.

To assess how well mortality was identified in LMFs, NCHS conducted a comparative analysis of the mortality experience of the 2006–2018 NHIS LMF cohorts with that of the U.S. population.

Methods

Data sources

NHIS

NHIS is a nationally representative, cross-sectional household interview survey that serves as a key source of information on the health of the U.S. civilian noninstitutionalized population (2). It is a stratified multistage sample survey with primary sampling units of counties or adjacent counties, secondary sampling units of clusters of houses, and tertiary sampling units of households and people within households. The survey includes information collected from a "sample adult" (aged 18 or over) and "sample child" (aged 17 or under, if the family includes children) (2). Information about the sample adult is self reported unless they are physically or mentally unable to provide it, in which case a knowledgeable proxy can answer. This comparative analysis included only sample adults and not sample children or other surveyed individuals from the selected family. The response rate for the Sample Adult component for the NHIS years used in this analysis ranged from a high of 70.8% in 2006 to a low of 53.0% in 2017 (10).

Before 2007, NHIS collected full nine-digit Social Security Numbers (SSNs) from survey participants. However, in an attempt to address participants' increasing refusal to provide SSNs and consent for linkage, NHIS began, in 2007, to collect only the last four digits of SSNs and added an explicit consent to linkage question for those who refused to provide an SSN. This procedural change was a significant contributor to the development of the enhanced linkage algorithm, which is detailed below.

NDI

NDI is a centralized database of U.S. death record information on file in state vital statistics offices. Working with these state offices, NCHS established NDI as a resource for epidemiologists and other health and medical investigators to obtain mortality follow-up information on their study participants (11). NDI became operational in 1981 and includes death record information for people who died in the United States or a U.S. territory from 1979 onward. The records, which are added to the NDI file annually, include detailed information on the underlying and multiple causes of death.

NDI contains identifying information for each death to conduct linkages. The identifiers from NDI that are used in the linkage with the survey data are SSN, first name, middle initial, last name, father's surname, month of birth, day of birth, year of birth, sex, race and ethnicity, state or country of birth, and state of residence.

LMF

The linkage of NCHS survey data and NDI records was reviewed and approved by the NCHS Research Ethics Review Board. The Ethics Review Board, which functions similarly to an Institutional Review Board, is an appointed ethics review committee that ensures research involving human participants and the welfare of study participants conforms to federal regulations. For the most recent NHIS LMFs, data from NHIS participants were linked to NDI data. Each survey participant's record was screened to determine if it had at least one of the following combinations of identifying data elements:

1. SSN (nine digits [SSN9] or last four digits [SSN4]), last name, and first name
2. SSN (SSN9 or SSN4), sex, month of birth, day of birth, and year of birth
3. Last name, first name, month of birth, and year of birth

Survey participant records that did not meet these minimum data requirements were considered ineligible for record linkage. Linkage eligibility rates varied by year, ranging from a low of 92.0% for the 2007 NHIS to a high of 97.8% for the 2016 NHIS. More information on the linkage methodology can be found in the Linkage Methodology and Analytic Considerations report (4).

To account for changes in the collection of personally identifiable information for NHIS, potential demographic shifts among the survey population, and changes in survey sample design, an enhanced linkage methodology was adopted to link the survey and NDI data for the production of the LMF (the algorithms used for previous linkages were based on the methods described in Appendix A of the "National Death Index User's Guide," with slight modifications made by the Data Linkage Program at NCHS) (12). The enhanced linkage algorithm consisted of two passes

through the data. First, a deterministic match was conducted using the survey participant's SSN, as provided in the survey interview. If the survey-provided SSN matched the SSN from NDI, then other identifying information was used to validate the match. Matches that met these criteria were included in a data set of gold standard matches, referred to as the "truth deck." Once the deterministic match was completed, a second pass was conducted using probabilistic matching techniques that included other identifiers as inputs but did not include SSN. The probabilistic matching step of the enhanced linkage algorithm followed the Fellegi–Sunter method, which is the seminal methodology used for record linkage (13). This method estimates the likelihood that a given pair is a true match and then uses that estimate to select the most probable match between a survey record and an NDI record. Records were linked and then scored based on the combination of a specific set of match variables. Pairs were selected that were believed to represent the same individual between the data sources. The pair having the highest estimated match probability score was kept provided it was above the linkage cut-off. The linkage algorithm used to create the LMF had a combined type I (living survey participants identified as deceased, or false positive links) and type II (survey participants who are deceased but identified as alive because of nonlinkage, or false negative links) error rate below 3% (4).

The final LMF includes information on date of death and causes of death. Two versions of the LMF were created, a partially synthetic public-use version and a restricted-use version. The restricted-use version was used for this analysis and can be accessed through the NCHS Research Data Center (14).

U.S. life tables

Each year, NCHS publishes period life tables for the United States based on age-specific death rates for that year. Rates are based on final mortality data for the year, intercensal population estimates (for 2006–2009) (15) or July 1 population estimates based on the 2010 decennial census (for 2010–2019) (16), and Medicare data for people aged 66–99 (15,16). The period (or current) life table presents survival probabilities for a hypothetical cohort if it experienced the age-specific death rates observed for the U.S. population for each year throughout its lifetime. Sex-specific death rates for Hispanic, non-Hispanic Black (subsequently, Black), and non-Hispanic White (subsequently, White) adults were available from 2006 through 2019 (15–28).

Analytic sample

For this mortality experience analysis, the analytic sample was restricted to 2006–2018 NHIS sample adults who were eligible for mortality follow-up, were aged 18 or over at the time of interview, and died or were censored as of December 31, 2019. The analytic sample was further restricted to Hispanic (of any race), Black, and White adults to correspond with the race and ethnicity groups available from the U.S. life tables. Original NHIS sample weights were adjusted for linkage eligibility to reflect the size and composition of the U.S. general population and mitigate potential bias based on linkage eligibility (29).

Mortality identification

All-cause mortality data for the restricted-use LMFs were used for the analysis. Length of follow-up was calculated as the time from participant interview until death (for those determined to have died on or before December 31, 2019) or, for those assumed to be alive, until December 31, 2019. Follow-up time was calculated using the exact date (month, day, and year) of the NHIS interview and of death (or until December 31, 2019, for those assumed alive).

Statistical methods

Descriptive statistics for the NHIS cohorts are presented in Tables 1–4. Tables 1 and 2 include unweighted counts. Tables 3 and 4 include weighted percentages of survey participants and decedents by age group. The confidence intervals for the weighted percentages were assessed for alignment with the NCHS data presentation standards for proportions (30).

NHIS survival probabilities

The survival probabilities of each annual NHIS cohort was compared with the corresponding probabilities of the U.S. population (comparing, for example, the mortality experience of the 2006 NHIS cohort through 2019 with that of the population, as represented by the corresponding single-year U.S. life table, from 2006 through 2019) to compare the estimated life expectancy from NHIS with those of the U.S. population.

Using the Kaplan–Meier product limit method, cumulative survival probabilities and standard errors, accounting for the complex survey design, were calculated for each year of NHIS by sex (male, female), race and ethnicity (Hispanic, Black, and White), and age group (18–29, 30–39, 40–49, 50–59, 60–69, 70–79, and 80 and over) for a total of 42 age-race-ethnicity-sex groups. The Kaplan–Meier calculations were made using the SUDAAN KAPMEIER procedure to take into account eligibility-adjusted sample weights and the complex survey design of NHIS (31). The weighted Kaplan–Meier estimate for the survival function is computed according to the following formula (32):

$$\hat{S}(t) = \prod_{h=1}^{r} \left(1 - \frac{D_{(h)}}{N_{(h)}}\right)^{I(t_{(h)} \le t)}$$

where

$S(t)$ = the probability that survival is longer than t
r = number of deaths
h = time interval
$D_{(h)}$ = the number of deaths that occurred during time interval h
$N_{(h)}$ = individuals known to have survived time interval h
I = the individual who is at risk if $(t_{(h)} \le t)$
$t_{(h)}$ = time point $t + h$, during which at least one death occurred

U.S. survival probabilities

Survival probabilities were calculated for each age-race-ethnicity-sex group from the U.S. life tables using

the midpoint of each age group for age at baseline for NHIS. For the NHIS age group 80 and over, the corresponding survival probability from the U.S. life tables was for people aged 84, which was the median age for NHIS participants aged 80 and over. For each group, information for each year in the follow-up period was obtained from the corresponding U.S. life tables and used to calculate the cumulative survival probabilities. The survival probabilities for the U.S. population were calculated from successive life tables rather than from the initial (survey year) life table to account for the decrease in U.S. death rates that occurred over most of the follow-up period.

Cumulative survival probability, ${}_nP_0$ (the expected proportion surviving n years), is computed using information from the successive life tables according to the following formula (33):

$$ {}_nP_0 = \prod_{i=0}^{n-1}[1 - {}_1q_{a+i,s+i}] $$

where

n = number of years of follow-up
i = years from baseline
a = midpoint of age group for age at baseline in the NHIS year
s = NHIS year (2006, 2007, ... , or 2018)
$x = a + i$
$y = s + i$
${}_1q_{x,y}$ = probability that people in a given race-ethnicity-sex group alive at age x will die within 1 year according to the U.S. life tables for year y.

Survival probabilities were calculated at 2, 5, 10, and 13 years of follow-up (where available) for each age-race-ethnicity-sex group. For NHIS age-race-ethnicity-sex groups where the follow-up interval contained no deaths, the survival probability from the previous interval was carried over. These results are presented in Tables 5–17.

Assessment of differences

Because of comparisons made between many age-race-ethnicity-sex groups, assessment of differences in survival probabilities between NHIS cohorts and the U.S. population statistical significance was assessed using an α-level of 0.01, rather than the typical α-level of 0.05, to maintain a more conservative threshold. This approach was similar to the one used in the previous mortality experience analysis (33). Consequently, a Kaplan–Meier survival probability computed for an age-race-ethnicity-sex group for each year of NHIS was considered to be statistically significantly different from the corresponding survival probability computed from U.S. life tables if the probability for the U.S. population fell outside the 99% confidence interval around the Kaplan–Meier estimate. Additionally, relative standard errors were assessed for all Kaplan–Meier estimates by comparing the size of the standard error with the estimate. Those where the relative standard error was greater than 30% are noted.

Results

Descriptive statistics of the NHIS cohorts included in the analysis are provided in Tables 1–4. Table 1 displays the unweighted number of sample adults included in the analysis from each NHIS cohort from 2006 through 2018 by sex and race and ethnicity for all age groups combined. The total linkage eligible unweighted sample size by cohort included in the analysis ranged from a low of 19,806 in 2008 to a high of 33,552 in 2014.

Table 2 shows unweighted sample sizes by age group (for age at interview) for each NHIS cohort, while Table 3 shows the distribution of adults by age group using weighted percentages. For all cohorts, 50% or more of the adults were aged 18–49, though this decreased steadily with successive cohorts (with weighted percentages decreasing from 60% for the 2006 NHIS to 53.5% for the 2018 NHIS).

Table 4 shows the weighted percentage of adults who were identified as deceased within each age category for the NHIS cohorts. Across all survey years, the weighted percentage of decedents increased as age increased, and age group 80 and over had the highest percentages. As expected, the 2006 cohort had the highest percentage of decedents for each age group across all NHIS years, with percentages decreasing for more recent survey years.

Tables 5–17 display survival probabilities for Hispanic, Black, and White men and women for the 2006–2018 NHIS cohorts. Confidence intervals for the NHIS cohort survival probabilities, which were used to determine whether the survival probabilities between the U.S. life table and the NHIS estimates were significant at the α = 0.01 level, are also included. (Note that for follow-up intervals where no deaths were observed among NHIS participants, survival probabilities and standard errors are not calculated.) Overall, the estimates are similar unless noted by a section symbol, which indicates that the estimate showed a statistically significant difference.

Out of over 1,400 comparisons, 34 showed statistically significant differences across 13 NHIS cohorts. For two cohorts (2013 [Table 12] and 2018 [Table 17]), no statistically significant differences in survival probabilities were observed between the LMF and the corresponding U.S. life tables. Only one significant difference was noted in the 2009 NHIS cohort (10-year probability for Hispanic men aged 40–49, Table 8), the 2014 NHIS cohort (2-year probability for Hispanic men aged 18–29, Table 13), the 2016 NHIS cohort (2-year probability for Black men aged 50–59, Table 15), and the 2017 NHIS cohort (2-year probability for Hispanic women aged 40–49, Table 16).

Nearly one-half (14 out of 34) of the significant differences in survival probabilities occurred among Black adults. For Black women, the most consistent pattern of significant differences occurred in the 2007 NHIS cohort among women aged 40–49 for the 5-, 10-, and 12-year probabilities (Table 6). Significant differences in the 2007 cohort also were seen for the 5-year probability in those aged 18–29 and for the 12-year probability in those aged 30–39. Other significant differences for Black women occurred in those aged 30–39 for the 2- and 5-year probabilities in the 2010 cohort (Table 9), and for 2- and 5-year probabilities in the 2011 cohort (Table 10). No consistent patterns were observed among Black men, where significant differences were seen in the 10- and 11-year probabilities in those aged 40–49 in the 2008 NHIS cohort (Table 7), in the 2-year probability in

those aged 50–59 in the 2016 NHIS cohort (Table 15), and in the 10-year probability in those aged 60–69 in the 2007 NHIS cohort (Table 6).

Slightly less than one-third (11 out of 34) of the significant differences in survival probabilities occurred among White adults. For White women, no consistent pattern of significant differences by age were observed. Differences were seen in the 2- and 9-year probabilities in those aged 30–39 in the 2010 NHIS cohort (Table 9), the 5-year probability for those aged 50–59 and the 10- and 11-year probabilities for those aged 80 and over in the 2008 NHIS cohort (Table 7), the 7-year probability for those aged 50–59 and the 2-year probability for those aged 70–79 in the 2012 NHIS cohort (Table 11), the 10- and 11-year probabilities for those aged 80 and over in the 2008 NHIS cohort (Table 7), and the 12- and 13-year probabilities for those aged 80 and over in the 2006 (Table 5) and 2007 (Table 6) NHIS cohorts, respectively. For White men, the only statistically significant differences occurred for the 13-year probability for those aged 80 and over in the 2006 NHIS cohort (Table 5) and for the 4-year probability for those aged 30–39 in the 2015 NHIS cohort (Table 14).

Slightly more than one-quarter (9 out of 34) of significant differences in survival probabilities occurred among Hispanic adults. For Hispanic women, the most consistent pattern of significant differences occurred in the 2007 NHIS cohort among women aged 80 and over for the 10- and 12-year probabilities (Table 6). Another significant difference for Hispanic women occurred in the 2-year probability for those aged 40–49 in the 2017 NHIS (Table 16). For Hispanic men, significant differences occurred in the 2-year probability for those aged 18–29 in the 2014 NHIS cohort (Table 13), in the 11-year probability for those aged 30–39 in the 2008 NHIS cohort (Table 7), in the 10-year probability for those aged 40–49 in the 2009 NHIS cohort (Table 8), in the 2-year probability for those aged 50–59 in the 2006 NHIS cohort (Table 5), in the 4-year probability for those aged 70–79 in the 2015 NHIS cohort (Table 14), and in the 2-year probability for those aged 80 and over in the 2010 NHIS cohort (Table 9).

Statistically significant differences between the NHIS cohorts and the U.S. life tables were most common for age group 30–39, with nine significantly different survival probabilities. The number decreased for older age groups: seven significantly different survival probabilities were observed for age group 40–49 in the 2007 (Table 6), 2008 (Table 7), 2009 (Table 8), and 2017 (Table 16) cohorts; four for age group 50–59 in the 2006 (Table 5), 2008 (Table 7), 2012 (Table 11), and 2016 (Table 15) cohorts; one for age group 60–69 in the 2007 (Table 6) cohort, and two for age group 70–79 in the 2012 (Table 11) and 2015 (Table 14) cohorts. Eight significantly different survival probabilities were observed for age group 80 and over in the 2006 (Table 5), 2007 (Table 6), 2008 (Table 7), and 2010 (Table 9) cohorts, and three for age group 18–29 in the 2007 (Table 6), 2012 (Table 11), and 2014 (Table 13) cohorts. The NHIS cohort more commonly had a lower estimated survival probability (19 significant differences) when compared with the U.S. life tables than a higher estimated survival probability (15 significant differences). By follow-up interval, nine significantly different survival probabilities were observed within 2 years of follow-up, nine between 4 and 7 years, and 16 at 9 years or more.

Figures 1–3 show survival probabilities for White, Black, and Hispanic men and women aged 50–59 (Figure 1), 60–69 (Figure 2), and 70–79 (Figure 3) from the 2006 NHIS cohort over the 13-year follow-up period. In general, the survival of each age-race-ethnicity-sex group of the NHIS cohort corresponds closely to that expected based on the U.S. life table survival probabilities.

Discussion

This analysis compared the mortality experience of the 2006–2018 NHIS cohorts (determined through linkage of survey data to NDI) with that of the U.S. population (using vital statistics). Overall, the survival probabilities estimated with the NHIS LMFs were similar to those for the U.S. population. No clear pattern of statistically significant differences was observed across all age groups, sex and race and ethnicity categories, or follow-up intervals.

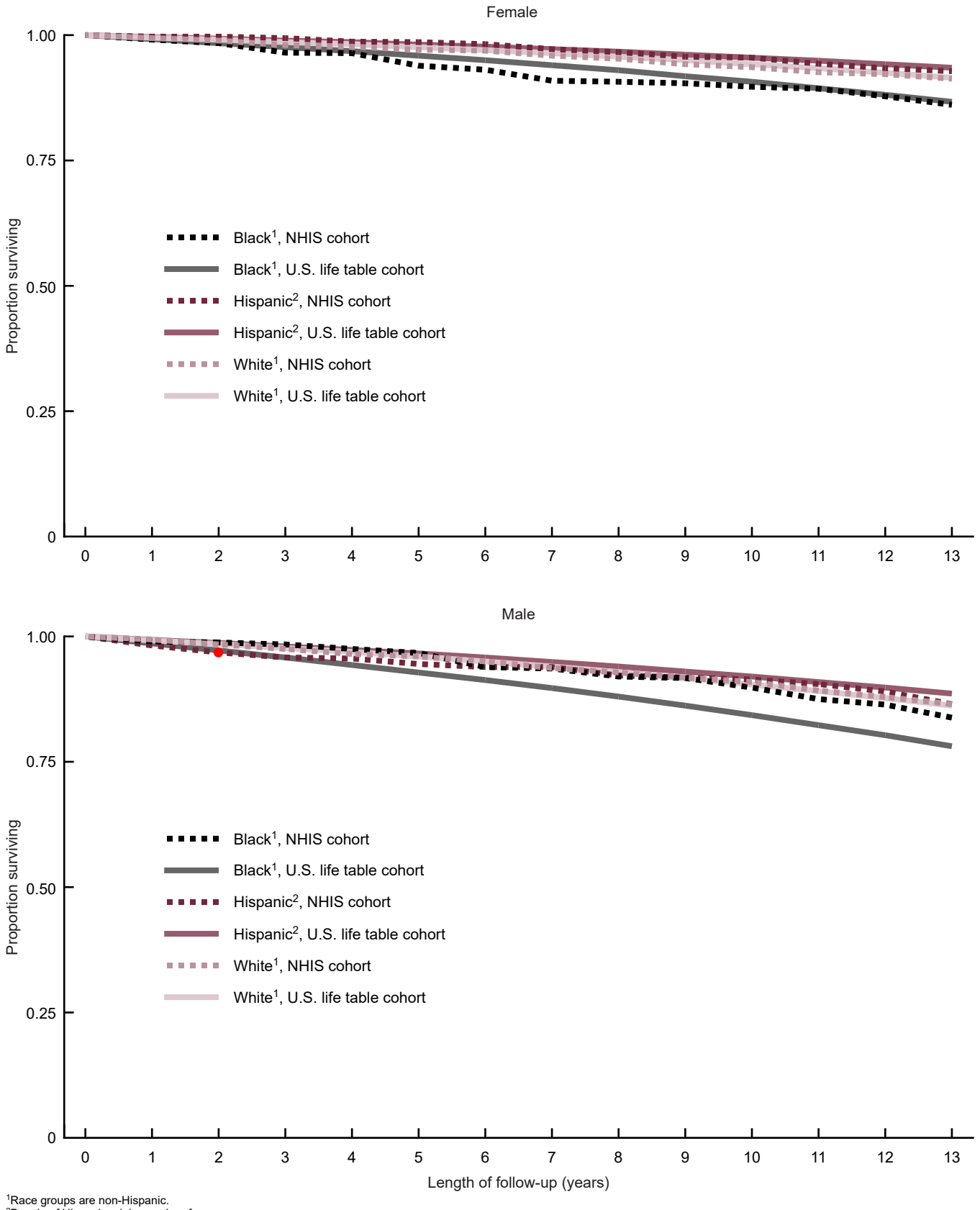
Some differences between survival probabilities estimated from the NHIS cohorts compared with the U.S. population are expected because of the survey sample design. NHIS is designed to be representative of the U.S. civilian noninstitutionalized population, which excludes institutionalized individuals (for example, those institutionalized because of incarceration, disability, or old age) and active-duty service members. Institutionalized individuals have lower survival probabilities, on average, compared with those who are not institutionalized (34). Statistically significant differences would be expected, therefore, among groups that are more likely to be institutionalized, such as those aged 80 and over. Higher rates of institutionalization because of incarceration may also contribute to significant differences between survival probabilities (35).

Another potential factor that could contribute to differences between NHIS and U.S. survival probabilities is the exclusion of NHIS participants from mortality linkage because of insufficient identifying information. However, linkage eligibility was at least 92% for all NHIS cohorts. Additionally, the analysis used linkage eligibility-adjusted survey weights, which should mitigate potential bias by sample design variables (29).

Errors in the mortality linkage represent another potential source of bias in the estimation of survival probabilities for the NHIS cohorts. Errors in linkage can occur because of false positive (survey participants identified as deceased who are alive, representing a type I error) or false negative (survey participants who are deceased but identified as alive due to nonlinkage, representing a type II error) links. Linkage errors could contribute to differences between the NHIS cohorts and the U.S. survival probabilities. However, the linkage algorithm used in this analysis was highly accurate, with a combined type I and II error rate below 3% (4).

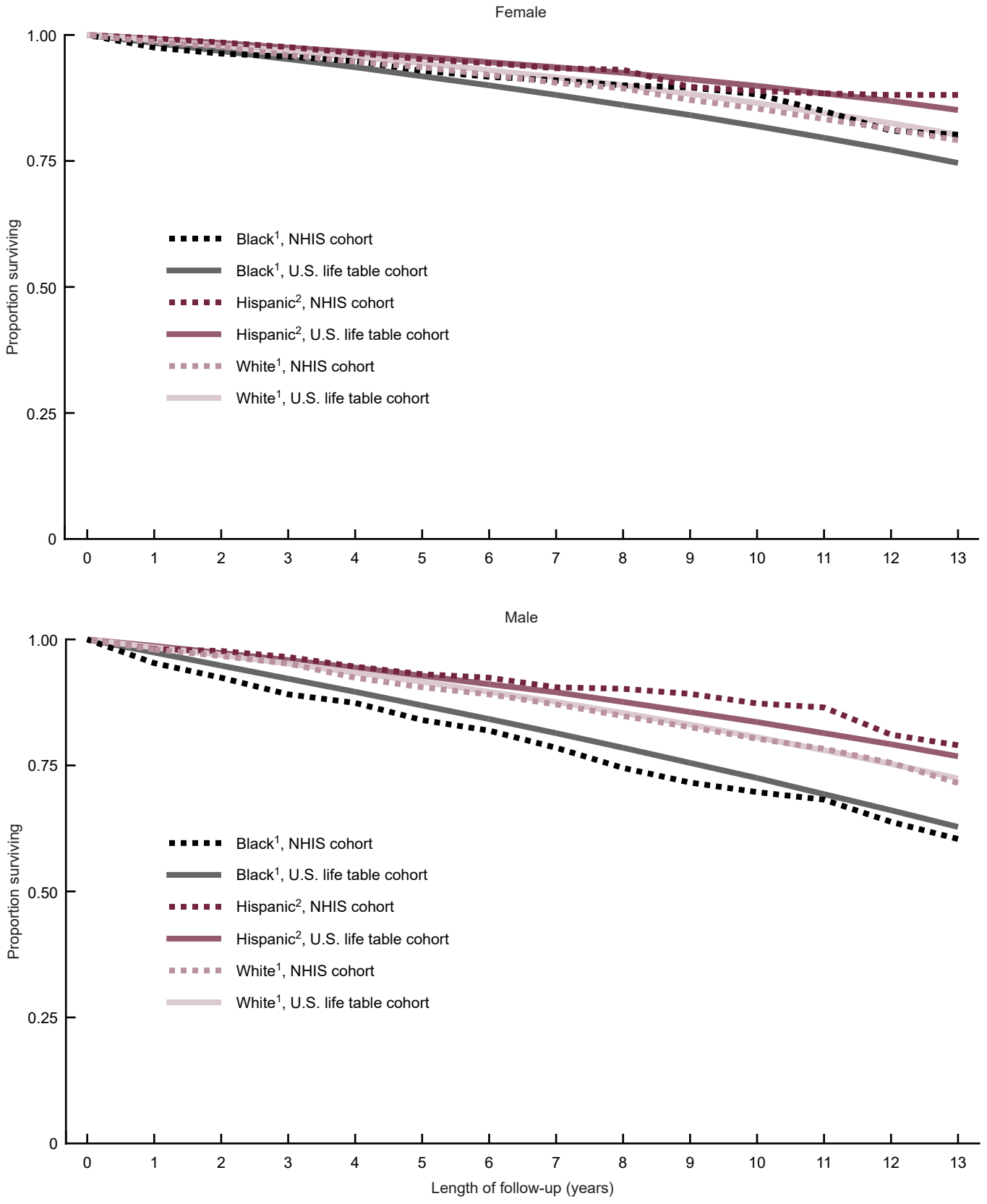
LMFs developed by the NCHS Data Linkage Program are a unique resource to conduct outcome studies designed

Figure 1. Survival probabilities for adults aged 50–59, by race and ethnicity and sex: 2006 National Health Interview Survey Linked Mortality File and U.S. life table



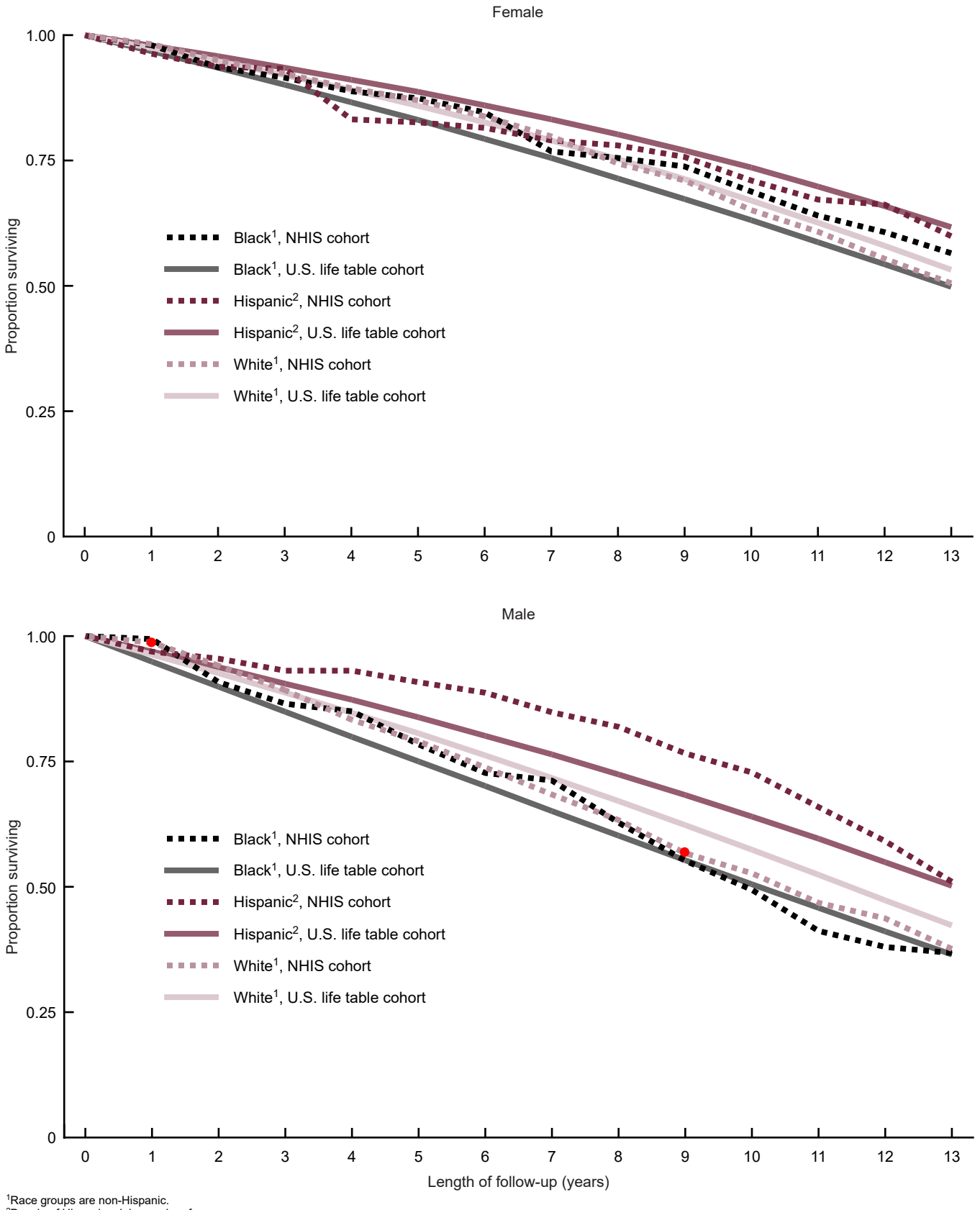
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.
NOTES: NHIS is National Health Interview Survey. For NHIS age-race-ethnicity-sex groups where the follow-up interval contained no deaths, the survival probability from the previous interval was carried forward. A red dot indicates a statistically significant difference in survival probabilities at the α = 0.01 level. For the NHIS cohort, age is age at interview. For the U.S. population, age is the midpoint of the age group.
SOURCES: National Center for Health Statistics, 2006 National Health Interview Survey Linked Mortality Files and 2006 U.S. life tables.

Figure 2. Survival probabilities for adults aged 60–69, by race and ethnicity and sex: 2006 National Health Interview Survey Linked Mortality File and U.S. life table



[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.
NOTES: NHIS is National Health Interview Survey. For NHIS age-race-ethnicity-sex groups where the follow-up interval contained no deaths, the survival probability from the previous interval was carried forward. For the NHIS cohort, age is age at interview. For the U.S. population, age is the midpoint of the age group.
SOURCES: National Center for Health Statistics, 2006 National Health Interview Survey Linked Mortality Files and 2006 U.S. life tables.

Figure 3. Survival probabilities for adults aged 70–79, by race and ethnicity and sex: 2006 National Health Interview Survey Linked Mortality File and U.S. life table



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NOTES: NHIS is National Health Interview Survey. For NHIS age-race-ethnicity-sex groups where the follow-up interval contained no deaths, the survival probability from the previous interval was carried forward. A red dot indicates a statistically significant difference in survival probabilities at the α = 0.01 level. For the NHIS cohort, age is age at interview. For the U.S. population, age is the midpoint of the age group.
SOURCES: National Center for Health Statistics, 2006 National Health Interview Survey Linked Mortality Files and 2006 U.S. life tables.

to investigate the association of a wide variety of health factors with mortality using data that are representative of the civilian, noninstitutionalized population. The survey data have information on health behaviors, health conditions, socioeconomic status, and healthcare access and use, while mortality data have information on date and cause of death. Linkage of these two sources allows for the construction of longitudinal events to provide valuable information for research into the health and well-being of the U.S. population. This study found few statistically significant differences by sex, race and ethnicity, or age group between LMFs and the U.S. life tables, suggesting that LMFs can be used as a resource for researchers and policymakers in further understanding adult mortality trends and patterns.

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Table 1. Unweighted number of National Health Interview Survey sample adults, by race and ethnicity, sex, eligibility, and National Health Interview Survey cohort: 2006–2018 Linked Mortality Files

Race and ethnicity, sex, and eligibility	NHIS cohort												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Linkage-eligible sample adults included												
Total	22,035	21,200	19,806	25,455	24,880	30,002	31,490	31,443	33,552	30,796	30,339	24,612	23,266
Black female[1]	2,413	2,220	2,020	2,709	2,637	2,968	3,167	3,089	2,959	2,762	2,236	1,690	1,725
Black male[1]	1,453	1,365	1,264	1,687	1,805	1,948	2,026	2,116	2,021	1,774	1,365	1,224	1,190
Hispanic female[2]	2,214	2,254	1,994	2,775	2,814	3,183	3,165	3,265	3,298	3,100	2,088	1,781	1,774
Hispanic male[2]	1,871	1,776	1,559	2,303	2,277	2,556	2,623	2,568	2,642	2,407	1,647	1,400	1,333
White female[1]	7,727	7,382	7,146	8,735	8,452	10,392	11,248	11,071	12,313	11,200	12,258	10,026	9,229
White male[1]	6,357	6,203	5,823	7,246	6,895	8,955	9,261	9,334	10,319	9,553	10,745	8,491	8,015
	Sample adults not included												
Ineligible and insufficient data	849	838	603	497	395	671	561	699	699	543	541	478	499
Other race[1–3]	1,391	1,355	1,372	1,779	1,882	2,341	2,474	2,415	2,446	2,333	2,148	1,652	1,652

[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.
[3]Adults of races other than Hispanic, Black, and White.

NOTE: NHIS is National Health Interview Survey.

SOURCE: National Center for Health Statistics, National Health Interview Survey Linked Mortality Files.

Table 2. Unweighted numbers of National Health Interview Survey sample adults, by age at National Health Interview Survey interview and National Health Interview Survey cohort: 2006–2018 Linked Mortality Files

Age (years) at NHIS interview	NHIS cohort												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
All ages	22,035	21,200	19,806	25,455	24,880	30,002	31,490	31,443	33,552	30,796	30,339	24,612	23,266
18–29	4,399	4,026	3,663	4,812	4,830	5,622	5,762	5,702	5,903	5,086	5,006	3,951	3,293
30–39	4,046	3,838	3,514	4,508	4,411	5,201	5,369	5,332	5,542	5,065	4,607	3,798	3,637
40–49	4,185	3,996	3,635	4,651	4,365	5,218	5,194	5,092	5,316	4,777	4,271	3,500	3,383
50–59	3,735	3,584	3,484	4,458	4,250	5,121	5,635	5,588	5,992	5,403	5,331	4,207	3,886
60–69	2,603	2,750	2,589	3,401	3,442	4,373	4,834	4,851	5,368	5,116	5,603	4,466	4,415
70–79	1,838	1,819	1,718	2,139	2,124	2,667	2,784	2,981	3,374	3,259	3,402	2,979	3,007
80 and over	1,229	1,187	1,203	1,486	1,458	1,800	1,912	1,897	2,057	2,090	2,119	1,711	1,645

NOTE: NHIS is National Health Interview Survey.

SOURCE: National Center for Health Statistics, National Health Interview Survey Linked Mortality Files.

Table 3. Weighted percent distribution of National Health Interview Survey cohort, by age at National Health Interview Survey interview and survey year: 2006–2018 Linked Mortality Files

Age (years) at NHIS interview	NHIS cohort												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
All ages	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
18–29	21.7	22.0	22.1	21.8	22.1	21.9	21.5	21.3	21.3	21.0	20.8	21.1	20.6
30–39	18.0	17.6	17.1	17.1	16.9	16.7	16.6	16.6	16.4	16.8	17.1	16.8	16.8
40–49	20.3	19.8	19.4	19.2	18.6	18.3	17.8	17.4	17.0	16.6	16.0	15.8	16.1
50–59	17.4	17.1	17.8	17.8	17.6	17.8	18.1	18.3	18.0	18.1	17.8	17.3	16.7
60–69	11.1	12.0	11.9	12.3	13.0	13.4	14.0	14.1	14.4	14.4	15.3	15.2	15.9
70–79	7.1	7.2	7.1	7.2	7.2	7.3	7.5	7.8	8.2	8.3	8.3	9.0	9.1
80 and over	4.5	4.3	4.6	4.6	4.5	4.6	4.7	4.6	4.5	4.7	4.7	4.8	4.8

NOTE: NHIS is National Health Interview Survey.

SOURCE: National Center for Health Statistics, National Health Interview Survey Linked Mortality Files.

Table 4. Weighted percentage of decedents, by age at National Health Interview Survey interview and National Health Interview Survey cohort: 2006–2018 Linked Mortality Files

Age (years) at NHIS interview	NHIS cohort												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
18–29	1.6	1.4	1.3	1.3	1.1	0.9	0.8	0.7	0.7	0.3	0.2	0.2	0.0
30–39	2.9	2.1	1.9	2.2	2.0	1.3	1.2	1.0	0.9	0.5	0.4	0.2	0.3
40–49	5.3	5.7	4.1	4.0	3.5	3.0	2.9	2.0	1.7	1.1	1.2	0.8	0.3
50–59	11.8	10.9	9.8	8.7	8.1	6.5	6.1	4.4	3.8	2.7	2.6	1.6	1.0
60–69	25.4	22.4	20.1	16.8	15.9	12.4	11.2	8.8	8.2	6.2	4.3	2.9	1.8
70–79	55.5	46.4	42.4	40.5	35.9	29.1	26.2	19.8	17.3	13.9	10.0	6.8	3.9
80 and over	83.7	80.1	76.7	74.3	67.7	62.7	55.6	50.2	42.7	33.0	26.2	16.6	10.7

0.0 Quantity more than zero but less than 0.05.

NOTE: NHIS is National Health Interview Survey.

SOURCE: National Center for Health Statistics, National Health Interview Survey Linked Mortality Files.

Table 5. Cumulative survival probabilities at 2, 5, 10, and 13 years of follow-up for the U.S. population, compared with those for the 2006 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			13 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]												
18–29	†	†	†	0.995	0.996	(0.983–0.999)	0.990	0.992	(0.975–0.997)	0.986	0.991	(0.974–0.997)
30–39	0.996	0.998	(0.986–0.999)	0.991	0.996	(0.980–0.999)	0.980	0.989	(0.968–0.996)	0.971	0.976	(0.946–0.989)
40–49	0.992	0.994	(0.965–0.999)	0.980	0.990	(0.966–0.997)	0.954	0.975	(0.949–0.988)	0.934	0.963	(0.933–0.980)
50–59	0.984	0.984	(0.955–0.994)	0.959	0.939	(0.889–0.967)	0.907	0.897	(0.832–0.937)	0.867	0.861	(0.798–0.906)
60–69	0.968	0.963	(0.877–0.989)	0.918	0.929	(0.849–0.967)	0.819	0.882	(0.805–0.930)	0.746	0.802	(0.707–0.869)
70–79	0.935	0.936	(0.853–0.973)	0.831	0.874	(0.792–0.926)	0.631	0.688	(0.584–0.771)	0.498	0.565	(0.463–0.654)
80 and over	0.843	0.883	(0.737–0.950)	0.619	0.636	(0.458–0.770)	0.298	0.337	(0.195–0.485)	0.159	0.283	(0.152–0.430)
Black male[1]												
18–29	0.994	0.993	(0.921–0.999)	0.988	0.991	(0.938–0.998)	0.976	0.985	(0.943–0.996)	0.968	0.974	(0.931–0.990)
30–39	0.994	0.996	(0.953–0.999)	0.985	0.989	(0.953–0.997)	0.968	0.976	(0.936–0.991)	0.953	0.976	(0.936–0.991)
40–49	0.988	0.988	(0.895–0.998)	0.971	0.979	(0.913–0.995)	0.933	0.953	(0.883–0.981)	0.902	0.922	(0.837–0.964)
50–59	0.972	0.988	(0.952–0.997)	0.928	0.967	(0.909–0.988)	0.843	0.898	(0.831–0.939)	0.781	0.838	(0.742–0.901)
60–69	0.948	0.924	(0.822–0.969)	0.869	0.840	(0.734–0.907)	0.725	0.697	(0.599–0.776)	0.628	0.604	(0.504–0.690)
70–79	0.899	0.908	(0.709–0.973)	0.750	0.784	(0.605–0.888)	0.505	0.494	(0.342–0.630)	0.365	0.368	(0.231–0.506)
80 and over	0.783	0.862	(0.611–0.956)	0.511	0.645	(0.386–0.816)	0.200	0.325	(0.119–0.552)	0.093	‡0.228	(0.060–0.459)
Hispanic female[2]												
18–29	0.999	0.996	(0.966–0.999)	0.998	0.996	(0.966–0.999)	0.996	0.996	(0.970–0.999)	0.994	0.993	(0.970–0.998)
30–39	0.998	0.998	(0.990–0.999)	0.997	0.996	(0.978–0.999)	0.992	0.994	(0.980–0.998)	0.988	0.986	(0.963–0.994)
40–49	0.997	0.998	(0.974–0.999)	0.991	0.992	(0.978–0.997)	0.980	0.983	(0.960–0.993)	0.970	0.967	(0.916–0.987)
50–59	0.993	0.997	(0.969–0.999)	0.981	0.986	(0.948–0.996)	0.955	0.955	(0.905–0.979)	0.935	0.928	(0.861–0.964)
60–69	0.984	0.985	(0.915–0.997)	0.957	0.952	(0.859–0.984)	0.899	0.889	(0.763–0.950)	0.851	0.881	(0.758–0.944)
70–79	0.958	0.937	(0.806–0.981)	0.887	0.826	(0.628–0.925)	0.736	0.710	(0.546–0.824)	0.617	0.599	(0.456–0.716)
80 and over	0.881	0.913	(0.718–0.975)	0.691	0.671	(0.447–0.821)	0.365	0.421	(0.218–0.612)	0.198	0.334	(0.163–0.514)
Hispanic male[2]												
18–29	0.997	0.996	(0.981–0.999)	0.994	0.989	(0.947–0.997)	0.988	0.983	(0.942–0.995)	0.984	0.979	(0.940–0.993)
30–39	0.997	0.998	(0.983–0.999)	0.993	0.998	(0.983–0.999)	0.984	0.990	(0.961–0.997)	0.977	0.982	(0.954–0.992)
40–49	0.994	0.996	(0.980–0.999)	0.985	0.979	(0.939–0.993)	0.965	0.951	(0.905–0.975)	0.948	0.940	(0.895–0.966)
50–59	0.988	§0.968	(0.921–0.987)	0.966	0.945	(0.883–0.974)	0.920	0.914	(0.838–0.955)	0.886	0.865	(0.770–0.923)
60–69	0.973	0.977	(0.854–0.996)	0.928	0.931	(0.831–0.972)	0.836	0.873	(0.760–0.935)	0.768	0.790	(0.670–0.870)
70–79	0.938	0.955	(0.801–0.990)	0.838	0.908	(0.768–0.965)	0.640	0.728	(0.584–0.829)	0.502	0.510	(0.366–0.637)
80 and over	†	†	†	0.592	0.856	(0.404–0.973)	0.258	‡0.276	(0.080–0.518)	0.120	0.187	(0.054–0.382)
White female[1]												
18–29	0.998	0.997	(0.980–0.999)	0.997	0.993	(0.978–0.997)	0.993	0.991	(0.976–0.996)	0.990	0.988	(0.974–0.994)
30–39	0.998	0.998	(0.990–0.999)	0.995	0.994	(0.985–0.998)	0.987	0.985	(0.970–0.992)	0.981	0.976	(0.958–0.987)
40–49	0.995	0.998	(0.984–0.999)	0.988	0.990	(0.979–0.995)	0.971	0.973	(0.957–0.983)	0.956	0.965	(0.947–0.977)
50–59	0.991	0.989	(0.977–0.995)	0.976	0.971	(0.955–0.981)	0.942	0.936	(0.915–0.952)	0.915	0.913	(0.890–0.932)
60–69	0.979	0.977	(0.955–0.988)	0.944	0.936	(0.907–0.956)	0.865	0.854	(0.818–0.884)	0.802	0.791	(0.753–0.825)
70–79	0.948	0.950	(0.920–0.969)	0.859	0.870	(0.831–0.901)	0.670	0.651	(0.589–0.706)	0.532	0.505	(0.445–0.561)
80 and over	0.857	0.879	(0.832–0.914)	0.631	0.652	(0.594–0.704)	0.281	0.310	(0.260–0.361)	0.132	§0.184	(0.143–0.229)

See footnotes at end of table.

Table 5. Cumulative survival probabilities at 2, 5, 10, and 13 years of follow-up for the U.S. population, compared with those for the 2006 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group—Con.

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			13 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
White male[1]												
18–29	0.997	0.996	(0.989–0.999)	0.992	0.995	(0.988–0.998)	0.985	0.988	(0.977–0.993)	0.978	0.979	(0.965–0.988)
30–39	0.996	0.996	(0.985–0.999)	0.991	0.990	(0.978–0.996)	0.979	0.976	(0.957–0.987)	0.969	0.966	(0.945–0.978)
40–49	0.993	0.995	(0.983–0.998)	0.981	0.981	(0.969–0.989)	0.953	0.959	(0.941–0.972)	0.931	0.935	(0.914–0.952)
50–59	0.985	0.984	(0.971–0.991)	0.960	0.960	(0.941–0.972)	0.904	0.909	(0.885–0.928)	0.862	0.865	(0.835–0.890)
60–69	0.969	0.967	(0.942–0.982)	0.916	0.905	(0.875–0.928)	0.806	0.803	(0.765–0.835)	0.724	0.715	(0.672–0.753)
70–79	0.926	0.941	(0.906–0.963)	0.806	0.790	(0.727–0.840)	0.574	0.527	(0.467–0.583)	0.423	0.376	(0.320–0.433)
80 and over	0.807	0.790	(0.712–0.849)	0.536	0.506	(0.427–0.580)	0.191	0.213	(0.152–0.282)	0.075	§0.125	(0.077–0.186)

† No comparison was made because no deaths occurred by the follow-up interval.
‡ Relative standard error greater than 0.3.
§ The probability for the U.S. population falls outside the 99% confidence interval for the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2006 U.S. life tables.

Table 6. Cumulative survival probabilities at 2, 5, 10, and 12 years of follow-up for the U.S. population, compared with those for the 2007 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			12 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]												
18–29	0.998	0.991	(0.896–0.999)	0.996	§0.983	(0.932–0.995)	0.991	0.981	(0.933–0.994)	0.988	0.978	(0.933–0.993)
30–39	†	†	†	0.992	0.998	(0.982–0.999)	0.980	0.993	(0.977–0.998)	0.975	§0.993	(0.977–0.998)
40–49	0.992	0.982	(0.950–0.993)	0.981	§0.953	(0.907–0.977)	0.955	§0.902	(0.848–0.937)	0.942	§0.886	(0.832–0.923)
50–59	0.985	0.991	(0.965–0.997)	0.959	0.957	(0.920–0.977)	0.907	0.883	(0.795–0.934)	0.881	0.856	(0.768–0.912)
60–69	0.969	0.973	(0.909–0.992)	0.920	0.928	(0.869–0.961)	0.822	0.791	(0.689–0.863)	0.775	0.756	(0.661–0.828)
70–79	0.935	0.978	(0.932–0.993)	0.833	0.858	(0.760–0.918)	0.633	0.675	(0.562–0.764)	0.545	0.602	(0.474–0.708)
80 and over	0.846	0.793	(0.657–0.880)	0.624	0.608	(0.455–0.730)	0.302	0.346	(0.218–0.478)	0.201	0.291	(0.171–0.422)
Black male[1]												
18–29	0.995	0.996	(0.950–0.999)	0.988	0.988	(0.920–0.998)	0.977	0.975	(0.907–0.993)	0.971	0.975	(0.907–0.993)
30–39	0.994	0.994	(0.963–0.999)	0.986	0.990	(0.956–0.997)	0.968	0.983	(0.945–0.994)	0.958	0.974	(0.935–0.990)
40–49	0.989	0.996	(0.976–0.999)	0.972	0.981	(0.937–0.994)	0.935	0.946	(0.888–0.974)	0.914	0.924	(0.860–0.959)
50–59	0.973	0.966	(0.920–0.986)	0.931	0.937	(0.876–0.968)	0.845	0.860	(0.785–0.910)	0.804	0.834	(0.753–0.891)
60–69	0.950	0.959	(0.901–0.983)	0.872	0.933	(0.856–0.970)	0.728	§0.846	(0.745–0.909)	0.664	0.769	(0.659–0.848)
70–79	0.902	0.891	(0.762–0.952)	0.756	0.770	(0.635–0.860)	0.510	0.546	(0.412–0.661)	0.414	0.436	(0.289–0.574)
80 and over	0.786	0.780	(0.520–0.910)	0.520	0.538	(0.277–0.741)	0.204	0.340	(0.129–0.565)	0.125	‡0.272	(0.085–0.502)
Hispanic female[2]												
18–29	†	†	†	†	†	†	†	†	†	0.994	0.999	(0.992–1.000)
30–39	0.998	0.998	(0.983–0.999)	0.997	0.997	(0.984–0.999)	0.992	0.985	(0.958–0.994)	0.990	0.981	(0.953–0.992)
40–49	0.997	0.994	(0.966–0.999)	0.992	0.991	(0.961–0.998)	0.980	0.990	(0.961–0.997)	0.974	0.975	(0.927–0.991)
50–59	0.993	0.992	(0.953–0.998)	0.982	0.977	(0.938–0.991)	0.955	0.940	(0.880–0.970)	0.942	0.933	(0.874–0.965)
60–69	0.984	0.993	(0.918–0.999)	0.957	0.962	(0.858–0.990)	0.901	0.941	(0.843–0.978)	0.871	0.928	(0.841–0.969)
70–79	0.959	0.974	(0.897–0.993)	0.890	0.941	(0.843–0.978)	0.739	0.759	(0.611–0.857)	0.662	0.656	(0.495–0.777)
80 and over	0.882	0.882	(0.758–0.945)	0.691	0.691	(0.526–0.808)	0.369	§0.580	(0.421–0.710)	0.251	§0.442	(0.269–0.602)
Hispanic male[2]												
18–29	†	†	†	†	†	†	0.988	0.992	(0.932–0.999)	0.986	0.987	(0.944–0.997)
30–39	0.997	0.986	(0.914–0.997)	0.993	0.986	(0.914–0.997)	0.984	0.983	(0.919–0.996)	0.980	0.982	(0.921–0.996)
40–49	0.994	0.996	(0.957–0.999)	0.985	0.986	(0.900–0.998)	0.965	0.980	(0.916–0.995)	0.954	0.970	(0.911–0.990)
50–59	0.987	0.991	(0.945–0.998)	0.966	0.962	(0.901–0.985)	0.921	0.916	(0.834–0.959)	0.898	0.906	(0.829–0.949)
60–69	0.973	0.983	(0.903–0.997)	0.929	0.958	(0.875–0.986)	0.838	0.861	(0.744–0.927)	0.795	0.787	(0.646–0.877)
70–79	0.940	0.978	(0.899–0.995)	0.842	0.867	(0.647–0.954)	0.645	0.614	(0.406–0.768)	0.553	0.553	(0.354–0.713)
80 and over	0.836	0.890	(0.705–0.962)	0.598	0.649	(0.372–0.827)	0.263	0.464	(0.182–0.707)	0.161	‡0.317	(0.085–0.585)
White female[1]												
18–29	†	†	†	0.997	0.998	(0.973–0.999)	0.993	0.992	(0.977–0.997)	0.991	0.992	(0.977–0.997)
30–39	0.998	0.999	(0.993–1.000)	0.995	0.995	(0.982–0.998)	0.987	0.976	(0.952–0.988)	0.983	0.974	(0.951–0.986)
40–49	0.995	0.996	(0.989–0.998)	0.988	0.987	(0.973–0.994)	0.970	0.966	(0.946–0.979)	0.961	0.956	(0.935–0.971)
50–59	0.991	0.993	(0.985–0.997)	0.976	0.980	(0.966–0.988)	0.942	0.943	(0.913–0.962)	0.925	0.921	(0.891–0.943)
60–69	0.980	0.981	(0.967–0.990)	0.944	0.945	(0.920–0.962)	0.866	0.846	(0.803–0.880)	0.826	0.809	(0.766–0.845)
70–79	0.949	0.956	(0.924–0.974)	0.861	0.866	(0.827–0.896)	0.672	0.674	(0.625–0.719)	0.581	0.595	(0.544–0.643)
80 and over	0.858	0.864	(0.823–0.897)	0.634	0.663	(0.608–0.713)	0.284	0.319	(0.262–0.376)	0.175	§0.232	(0.179–0.289)

See footnotes at end of table.

Table 6. Cumulative survival probabilities at 2, 5, 10, and 12 years of follow-up for the U.S. population, compared with those for the 2007 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group—Con.

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			12 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
White male[1]												
18–29	0.997	0.997	(0.978–0.999)	0.993	0.995	(0.980–0.998)	0.984	0.981	(0.957–0.992)	0.980	0.979	(0.956–0.990)
30–39	0.996	0.997	(0.988–0.999)	0.991	0.995	(0.987–0.998)	0.979	0.986	(0.971–0.993)	0.972	0.982	(0.967–0.991)
40–49	0.993	0.995	(0.988–0.998)	0.981	0.980	(0.965–0.989)	0.954	0.953	(0.930–0.969)	0.939	0.937	(0.913–0.955)
50–59	0.985	0.983	(0.968–0.991)	0.959	0.962	(0.942–0.976)	0.903	0.907	(0.871–0.934)	0.876	0.881	(0.844–0.910)
60–69	0.969	0.964	(0.943–0.977)	0.917	0.925	(0.900–0.944)	0.808	0.821	(0.784–0.852)	0.756	0.757	(0.712–0.795)
70–79	0.927	0.933	(0.896–0.957)	0.809	0.797	(0.742–0.842)	0.578	0.549	(0.489–0.605)	0.476	0.480	(0.421–0.537)
80 and over	0.809	0.802	(0.721–0.861)	0.540	0.541	(0.465–0.612)	0.194	0.187	(0.129–0.254)	0.107	0.130	(0.081–0.191)

§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
† No comparison was made because no deaths occurred by the follow-up interval.
‡ Relative standard error greater than 0.3.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2007 U.S. life tables.

Table 7. Cumulative survival probabilities at 2, 5, 10, and 11 years of follow-up for the U.S. population, compared with those for the 2008 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			11 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]												
18–29	†	†	†	†	†	†	0.991	0.992	(0.939–0.999)	0.989	0.992	(0.939–0.999)
30–39	0.997	0.991	(0.943–0.998)	0.992	0.984	(0.932–0.996)	0.980	0.977	(0.931–0.992)	0.978	0.974	(0.928–0.991)
40–49	0.993	0.990	(0.948–0.998)	0.981	0.972	(0.910–0.991)	0.956	0.938	(0.869–0.971)	0.950	0.938	(0.869–0.971)
50–59	0.985	0.997	(0.985–0.999)	0.960	0.966	(0.895–0.989)	0.907	0.888	(0.804–0.937)	0.895	0.878	(0.795–0.929)
60–69	0.970	0.972	(0.929–0.989)	0.922	0.916	(0.856–0.951)	0.824	0.809	(0.717–0.874)	0.801	0.781	(0.686–0.850)
70–79	0.937	0.949	(0.871–0.980)	0.836	0.855	(0.753–0.918)	0.637	0.655	(0.525–0.757)	0.593	0.596	(0.466–0.704)
80 and over	0.850	0.787	(0.660–0.871)	0.627	0.625	(0.487–0.736)	0.303	0.411	(0.274–0.543)	0.250	0.329	(0.212–0.451)
Black male[1]												
18–29	†	†	†	0.988	0.996	(0.954–0.999)	0.977	0.984	(0.931–0.996)	0.974	0.984	(0.931–0.996)
30–39	†	†	†	0.986	0.995	(0.947–0.999)	0.968	0.991	(0.955–0.998)	0.963	0.991	(0.955–0.998)
40–49	†	†	†	0.973	0.997	(0.962–0.999)	0.936	§0.985	(0.951–0.996)	0.926	§0.977	(0.935–0.992)
50–59	0.974	0.985	(0.954–0.995)	0.933	0.959	(0.912–0.981)	0.848	0.902	(0.827–0.945)	0.828	0.877	(0.799–0.926)
60–69	0.951	0.957	(0.837–0.989)	0.875	0.855	(0.742–0.921)	0.731	0.700	(0.571–0.796)	0.700	0.645	(0.524–0.743)
70–79	0.906	0.933	(0.816–0.976)	0.761	0.741	(0.593–0.842)	0.513	0.497	(0.365–0.615)	0.465	0.491	(0.360–0.610)
80 and over	0.791	0.866	(0.570–0.964)	0.525	0.549	(0.229–0.784)	0.206	‡0.297	(0.074–0.566)	0.163	0.297	(0.074–0.566)
Hispanic female[2]												
18–29	†	†	†	0.998	0.998	(0.984–0.999)	0.995	0.995	(0.982–0.998)	0.995	0.995	(0.982–0.998)
30–39	†	†	†	†	†	†	0.992	0.996	(0.960–0.999)	0.991	0.995	(0.968–0.999)
40–49	0.997	0.997	(0.971–0.999)	0.992	0.994	(0.967–0.999)	0.980	0.988	(0.958–0.996)	0.977	0.988	(0.958–0.996)
50–59	0.993	0.986	(0.933–0.997)	0.982	0.967	(0.921–0.987)	0.956	0.941	(0.884–0.970)	0.949	0.935	(0.880–0.965)
60–69	0.985	0.996	(0.950–0.999)	0.959	0.967	(0.911–0.988)	0.902	0.897	(0.798–0.949)	0.888	0.880	(0.784–0.935)
70–79	0.960	0.961	(0.837–0.991)	0.893	0.929	(0.884–0.957)	0.743	0.735	(0.616–0.822)	0.705	0.724	(0.605–0.812)
80 and over	0.883	0.920	(0.726–0.978)	0.698	0.731	(0.451–0.883)	0.371	0.393	(0.190–0.591)	0.309	0.365	(0.173–0.561)
Hispanic male[2]												
18–29	0.997	0.995	(0.973–0.999)	0.994	0.995	(0.974–0.999)	0.988	0.993	(0.975–0.998)	0.987	0.992	(0.973–0.997)
30–39	0.997	0.995	(0.974–0.999)	0.993	0.985	(0.948–0.996)	0.984	0.962	(0.904–0.985)	0.982	§0.955	(0.898–0.980)
40–49	0.994	0.991	(0.959–0.998)	0.986	0.984	(0.951–0.995)	0.966	0.970	(0.920–0.989)	0.961	0.970	(0.920–0.989)
50–59	0.988	0.989	(0.936–0.998)	0.967	0.970	(0.919–0.989)	0.921	0.940	(0.882–0.970)	0.910	0.932	(0.865–0.967)
60–69	0.974	0.981	(0.909–0.996)	0.931	0.919	(0.758–0.975)	0.841	0.861	(0.716–0.935)	0.820	0.839	(0.690–0.920)
70–79	0.941	0.982	(0.880–0.997)	0.845	0.930	(0.765–0.980)	0.649	0.749	(0.550–0.870)	0.603	0.732	(0.533–0.857)
80 and over	0.838	0.761	(0.443–0.912)	0.605	0.506	(0.214–0.740)	0.265	‡0.283	(0.036–0.618)	0.210	0.283	(0.036–0.618)
White female[1]												
18–29	0.999	0.998	(0.975–0.999)	0.997	0.997	(0.980–0.999)	0.993	0.994	(0.983–0.998)	0.992	0.994	(0.983–0.998)
30–39	0.998	0.997	(0.979–0.999)	0.995	0.995	(0.981–0.998)	0.987	0.993	(0.981–0.997)	0.985	0.993	(0.981–0.997)
40–49	0.995	0.993	(0.981–0.998)	0.988	0.987	(0.974–0.994)	0.970	0.969	(0.952–0.980)	0.966	0.966	(0.948–0.978)
50–59	0.991	0.980	(0.955–0.991)	0.976	§0.953	(0.925–0.971)	0.941	0.922	(0.893–0.944)	0.933	0.912	(0.881–0.934)
60–69	0.980	0.980	(0.964–0.989)	0.945	0.957	(0.939–0.970)	0.867	0.874	(0.838–0.902)	0.848	0.857	(0.821–0.886)
70–79	0.950	0.946	(0.913–0.966)	0.862	0.864	(0.825–0.896)	0.674	0.666	(0.613–0.713)	0.629	0.631	(0.576–0.681)
80 and over	0.859	0.879	(0.835–0.912)	0.635	0.656	(0.594–0.711)	0.284	§0.348	(0.293–0.403)	0.226	§0.283	(0.232–0.336)

See footnotes at end of table.

Table 7. Cumulative survival probabilities at 2, 5, 10, and 11 years of follow-up for the U.S. population, compared with those for the 2008 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group—Con.

Race and ethnicity–sex–and age group (years)	2 years			5 years			10 years			11 years		
	U.S. population.	NHIS cohort	99% CI (NHIS)	U.S. population.	NHIS cohort	99% CI (NHIS)	U.S. population.	NHIS cohort	99% CI (NHIS)	U.S. population.	NHIS cohort	99% CI (NHIS)
White male[1]												
18–29	0.997	0.994	(0.974–0.998)	0.993	0.991	(0.973–0.997)	0.984	0.978	(0.945–0.991)	0.982	0.977	(0.945–0.991)
30–39	0.996	0.995	(0.979–0.998)	0.991	0.989	(0.973–0.995)	0.978	0.977	(0.956–0.988)	0.975	0.973	(0.952–0.985)
40–49	0.993	0.993	(0.983–0.997)	0.981	0.975	(0.958–0.985)	0.954	0.950	(0.929–0.965)	0.947	0.947	(0.926–0.962)
50–59	0.985	0.988	(0.973–0.995)	0.959	0.961	(0.942–0.974)	0.903	0.910	(0.884–0.930)	0.889	0.899	(0.872–0.920)
60–69	0.970	0.970	(0.949–0.982)	0.918	0.910	(0.878–0.933)	0.810	0.794	(0.753–0.830)	0.784	0.772	(0.730–0.808)
70–79	0.928	0.929	(0.898–0.951)	0.811	0.810	(0.757–0.852)	0.580	0.573	(0.508–0.632)	0.530	0.524	(0.458–0.585)
80 and over	0.812	0.805	(0.730–0.861)	0.544	0.540	(0.451–0.621)	0.195	0.215	(0.152–0.286)	0.147	0.157	(0.104–0.221)

† No comparison was made because no deaths occurred by the follow-up interval.
‡ Relative standard error greater than 0.3.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2008 U.S. life tables.

Table 8. Cumulative survival probabilities at 2, 5, and 10 years of follow-up for the U.S. population, compared with those for the 2009 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex, and age group (years)	2 years			5 years			10 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]									
18–29	†	†	†	0.996	0.996	(0.977–0.999)	0.990	0.983	(0.924–0.996)
30–39	0.997	0.996	(0.980–0.999)	0.992	0.963	(0.734–0.995)	0.980	0.953	(0.775–0.991)
40–49	0.993	0.993	(0.964–0.998)	0.982	0.979	(0.950–0.991)	0.957	0.933	(0.887–0.961)
50–59	0.985	0.978	(0.943–0.992)	0.960	0.958	(0.917–0.979)	0.907	0.909	(0.851–0.945)
60–69	0.971	0.983	(0.950–0.994)	0.924	0.915	(0.856–0.950)	0.827	0.818	(0.736–0.876)
70–79	0.939	0.923	(0.818–0.969)	0.839	0.832	(0.719–0.903)	0.640	0.639	(0.522–0.735)
80 and over	0.852	0.917	(0.823–0.962)	0.630	0.724	(0.588–0.822)	0.304	0.454	(0.292–0.603)
Black male[1]									
18–29	0.995	0.991	(0.923–0.999)	0.989	0.986	(0.934–0.997)	0.976	0.966	(0.911–0.987)
30–39	0.994	0.994	(0.964–0.999)	0.986	0.986	(0.955–0.996)	0.967	0.978	(0.936–0.992)
40–49	0.990	0.982	(0.894–0.997)	0.974	0.968	(0.901–0.990)	0.936	0.940	(0.875–0.972)
50–59	0.976	0.960	(0.862–0.988)	0.935	0.917	(0.834–0.959)	0.850	0.807	(0.711–0.874)
60–69	0.952	0.962	(0.904–0.985)	0.877	0.908	(0.833–0.950)	0.734	0.788	(0.700–0.853)
70–79	0.907	0.920	(0.767–0.974)	0.764	0.790	(0.627–0.887)	0.517	0.498	(0.314–0.657)
80 and over	0.797	0.755	(0.173–0.955)	0.530	0.588	(0.217–0.831)	0.210	0.350	(0.133–0.579)
Hispanic female[2]									
18–29	†	†	†	†	†	†	0.995	0.996	(0.982–0.999)
30–39	0.998	0.997	(0.984–0.999)	0.997	0.996	(0.985–0.999)	0.992	0.990	(0.975–0.996)
40–49	0.997	0.998	(0.989–0.999)	0.992	0.993	(0.979–0.998)	0.980	0.989	(0.969–0.996)
50–59	0.993	0.994	(0.962–0.999)	0.982	0.985	(0.955–0.995)	0.956	0.970	(0.932–0.987)
60–69	0.985	0.986	(0.934–0.997)	0.960	0.967	(0.914–0.988)	0.903	0.921	(0.857–0.957)
70–79	0.963	0.971	(0.888–0.993)	0.896	0.916	(0.827–0.960)	0.746	0.724	(0.582–0.825)
80 and over	0.890	0.954	(0.807–0.989)	0.703	0.693	(0.422–0.856)	0.373	0.413	(0.191–0.624)
Hispanic male[2]									
18–29	0.997	0.997	(0.971–0.999)	0.994	0.996	(0.977–0.999)	0.988	0.995	(0.975–0.999)
30–39	0.997	0.998	(0.983–0.999)	0.993	0.991	(0.967–0.997)	0.984	0.983	(0.954–0.994)
40–49	0.995	0.991	(0.967–0.998)	0.986	0.974	(0.944–0.988)	0.966	§0.936	(0.886–0.964)
50–59	0.988	0.997	(0.980–0.999)	0.967	0.972	(0.918–0.991)	0.921	0.919	(0.836–0.961)
60–69	0.975	0.954	(0.875–0.983)	0.932	0.935	(0.853–0.972)	0.843	0.817	(0.703–0.891)
70–79	0.942	0.943	(0.847–0.979)	0.848	0.890	(0.761–0.951)	0.653	0.745	(0.602–0.843)
80 and over	0.844	0.922	(0.805–0.970)	0.613	0.740	(0.506–0.875)	0.267	0.433	(0.234–0.617)
White female[1]									
18–29	0.999	0.999	(0.994–1.000)	0.997	0.996	(0.987–0.999)	0.992	0.988	(0.976–0.994)
30–39	0.998	0.999	(0.991–1.000)	0.994	0.993	(0.984–0.997)	0.987	0.984	(0.970–0.992)
40–49	0.995	0.995	(0.980–0.999)	0.988	0.986	(0.969–0.993)	0.971	0.971	(0.953–0.982)
50–59	0.991	0.988	(0.979–0.994)	0.976	0.976	(0.964–0.985)	0.941	0.935	(0.915–0.951)
60–69	0.980	0.981	(0.968–0.989)	0.946	0.949	(0.925–0.965)	0.869	0.870	(0.835–0.897)
70–79	0.951	0.958	(0.932–0.974)	0.864	0.868	(0.826–0.900)	0.676	0.673	(0.623–0.718)
80 and over	0.862	0.871	(0.832–0.902)	0.638	0.669	(0.615–0.717)	0.284	0.312	(0.259–0.366)
White male[1]									
18–29	0.997	0.999	(0.996–1.000)	0.993	0.996	(0.985–0.999)	0.984	0.987	(0.973–0.993)
30–39	0.996	0.997	(0.985–0.999)	0.991	0.993	(0.982–0.997)	0.978	0.977	(0.956–0.988)
40–49	0.993	0.993	(0.978–0.998)	0.981	0.988	(0.974–0.994)	0.954	0.962	(0.942–0.975)
50–59	0.985	0.985	(0.970–0.993)	0.959	0.963	(0.943–0.975)	0.902	0.910	(0.883–0.932)
60–69	0.970	0.966	(0.946–0.979)	0.919	0.920	(0.890–0.942)	0.812	0.809	(0.768–0.843)
70–79	0.930	0.923	(0.884–0.950)	0.814	0.787	(0.737–0.829)	0.584	0.530	(0.464–0.591)
80 and over	0.816	0.793	(0.716–0.851)	0.548	0.485	(0.405–0.561)	0.196	0.178	(0.125–0.238)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2009 U.S. life tables.

Table 9. Cumulative survival probabilities at 2, 5, and 9 years of follow-up for the U.S. population, compared with those for the 2010 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			9 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]									
18–29	0.998	0.999	(0.989–1.000)	0.996	0.998	(0.988–0.999)	0.992	0.995	(0.979–0.998)
30–39	0.997	§0.988	(0.957–0.996)	0.992	§0.977	(0.939–0.991)	0.983	0.972	(0.935–0.988)
40–49	0.993	0.993	(0.972–0.998)	0.982	0.984	(0.961–0.993)	0.963	0.955	(0.918–0.975)
50–59	0.985	0.982	(0.947–0.994)	0.961	0.945	(0.900–0.970)	0.919	0.902	(0.856–0.934)
60–69	0.972	0.991	(0.970–0.997)	0.925	0.923	(0.878–0.952)	0.850	0.833	(0.763–0.883)
70–79	0.940	0.956	(0.904–0.980)	0.840	0.882	(0.797–0.933)	0.683	0.694	(0.589–0.777)
80 and over	0.852	0.852	(0.736–0.920)	0.632	0.585	(0.438–0.705)	0.364	0.329	(0.206–0.457)
Black male[1]									
18–29	0.995	0.996	(0.955–0.999)	0.989	0.994	(0.968–0.999)	0.979	0.984	(0.955–0.995)
30–39	0.994	0.993	(0.966–0.998)	0.986	0.969	(0.901–0.990)	0.971	0.966	(0.900–0.988)
40–49	0.991	0.998	(0.980–0.999)	0.975	0.980	(0.951–0.992)	0.945	0.951	(0.911–0.973)
50–59	0.977	0.977	(0.943–0.991)	0.937	0.928	(0.876–0.959)	0.871	0.856	(0.786–0.904)
60–69	0.953	0.970	(0.917–0.989)	0.879	0.886	(0.812–0.932)	0.766	0.737	(0.646–0.809)
70–79	0.908	0.945	(0.857–0.980)	0.767	0.834	(0.700–0.912)	0.570	0.609	(0.435–0.744)
80 and over	0.799	0.871	(0.687–0.950)	0.534	0.645	(0.480–0.770)	0.263	0.402	(0.239–0.559)
Hispanic female[2]									
18–29	0.999	0.997	(0.982–0.999)	0.998	0.996	(0.983–0.999)	0.996	0.993	(0.977–0.998)
30–39	0.999	0.998	(0.989–0.999)	0.997	0.992	(0.976–0.997)	0.993	0.991	(0.975–0.997)
40–49	0.997	0.999	(0.990–1.000)	0.992	0.987	(0.960–0.996)	0.983	0.985	(0.959–0.995)
50–59	0.993	0.988	(0.953–0.997)	0.982	0.981	(0.949–0.993)	0.962	0.962	(0.916–0.983)
60–69	0.985	0.985	(0.949–0.996)	0.960	0.939	(0.875–0.970)	0.917	0.888	(0.799–0.939)
70–79	0.963	0.976	(0.908–0.994)	0.898	0.891	(0.788–0.946)	0.784	0.750	(0.609–0.846)
80 and over	0.890	0.923	(0.758–0.977)	0.709	0.606	(0.368–0.777)	0.440	0.446	(0.245–0.629)
Hispanic male[2]									
18–29	0.998	0.997	(0.985–0.999)	0.995	0.996	(0.986–0.999)	0.989	0.990	(0.971–0.996)
30–39	†	†	†	0.993	0.993	(0.962–0.998)	0.986	0.985	(0.961–0.994)
40–49	0.995	0.987	(0.956–0.996)	0.987	0.980	(0.950–0.992)	0.971	0.964	(0.931–0.982)
50–59	0.988	0.967	(0.909–0.988)	0.967	0.955	(0.909–0.978)	0.932	0.928	(0.864–0.962)
60–69	0.975	0.976	(0.916–0.993)	0.933	0.951	(0.880–0.980)	0.864	0.879	(0.802–0.927)
70–79	0.943	0.961	(0.860–0.989)	0.850	0.809	(0.637–0.905)	0.698	0.649	(0.479–0.776)
80 and over	0.847	§0.699	(0.479–0.840)	0.620	0.574	(0.326–0.759)	0.331	0.438	(0.220–0.638)
White female[1]									
18–29	0.998	0.998	(0.992–0.999)	0.997	0.995	(0.988–0.998)	0.993	0.990	(0.980–0.995)
30–39	0.998	§0.993	(0.979–0.997)	0.994	0.989	(0.975–0.995)	0.988	§0.977	(0.957–0.987)
40–49	0.996	0.995	(0.986–0.998)	0.988	0.985	(0.973–0.992)	0.975	0.973	(0.958–0.983)
50–59	0.991	0.994	(0.988–0.997)	0.975	0.972	(0.957–0.981)	0.948	0.944	(0.924–0.959)
60–69	0.981	0.982	(0.966–0.990)	0.947	0.943	(0.923–0.958)	0.888	0.882	(0.854–0.904)
70–79	0.951	0.952	(0.927–0.969)	0.865	0.851	(0.813–0.882)	0.720	0.696	(0.653–0.734)
80 and over	0.861	0.880	(0.840–0.910)	0.640	0.654	(0.602–0.701)	0.348	0.375	(0.323–0.427)
White male[1]									
18–29	0.997	0.995	(0.976–0.999)	0.993	0.994	(0.975–0.998)	0.985	0.989	(0.973–0.995)
30–39	0.996	0.998	(0.973–0.999)	0.991	0.996	(0.981–0.999)	0.980	0.985	(0.972–0.992)
40–49	0.993	0.990	(0.977–0.996)	0.982	0.977	(0.960–0.987)	0.961	0.959	(0.937–0.973)
50–59	0.985	0.987	(0.973–0.993)	0.959	0.960	(0.942–0.972)	0.914	0.909	(0.885–0.929)
60–69	0.970	0.970	(0.952–0.981)	0.920	0.919	(0.894–0.938)	0.837	0.825	(0.788–0.856)
70–79	0.931	0.923	(0.885–0.948)	0.815	0.811	(0.761–0.851)	0.635	0.610	(0.550–0.664)
80 and over	0.816	0.849	(0.790–0.892)	0.552	0.559	(0.478–0.633)	0.254	0.275	(0.207–0.347)

§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
† No comparison was made because no deaths occurred by the follow-up interval.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2010 U.S. life tables.

Table 10. Cumulative survival probabilities at 2, 5, and 8 years of follow-up for the U.S. population, compared with those for the 2011 National Heath Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			8 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]									
18–29	†	†	†	0.996	0.999	(0.995–1.000)	0.993	0.998	(0.991–0.999)
30–39	0.997	§0.982	(0.946–0.994)	0.992	§0.976	(0.938–0.991)	0.985	0.972	(0.936–0.988)
40–49	0.993	0.992	(0.963–0.998)	0.983	0.989	(0.965–0.997)	0.969	0.977	(0.926–0.993)
50–59	0.986	0.986	(0.965–0.994)	0.961	0.971	(0.944–0.985)	0.931	0.956	(0.925–0.974)
60–69	0.972	0.964	(0.918–0.984)	0.926	0.914	(0.856–0.949)	0.871	0.865	(0.798–0.910)
70–79	0.941	0.930	(0.865–0.964)	0.841	0.819	(0.705–0.893)	0.727	0.725	(0.615–0.808)
80 and over	0.853	0.912	(0.810–0.960)	0.634	0.676	(0.550–0.774)	0.428	0.460	(0.331–0.580)
Black male[1]									
18–29	0.995	0.994	(0.929–0.999)	0.989	0.991	(0.950–0.998)	0.982	0.982	(0.934–0.995)
30–39	0.994	0.993	(0.954–0.999)	0.986	0.982	(0.939–0.994)	0.974	0.977	(0.938–0.992)
40–49	0.991	0.982	(0.941–0.994)	0.975	0.974	(0.937–0.989)	0.954	0.962	(0.922–0.981)
50–59	0.977	0.982	(0.932–0.995)	0.938	0.941	(0.890–0.968)	0.890	0.903	(0.849–0.939)
60–69	0.954	0.968	(0.926–0.986)	0.880	0.899	(0.833–0.940)	0.796	0.839	(0.760–0.895)
70–79	0.910	0.927	(0.831–0.969)	0.768	0.837	(0.720–0.908)	0.622	0.677	(0.553–0.773)
80 and over	0.802	0.785	(0.579–0.898)	0.539	0.524	(0.315–0.696)	0.324	0.327	(0.144–0.524)
Hispanic female[2]									
18–29	†	†	†	0.998	0.998	(0.983–0.999)	0.996	0.998	(0.983–0.999)
30–39	†	†	†	0.997	0.998	(0.991–0.999)	0.994	0.997	(0.988–0.999)
40–49	0.997	0.996	(0.974–0.999)	0.992	0.986	(0.947–0.996)	0.986	0.981	(0.945–0.994)
50–59	0.993	0.993	(0.967–0.998)	0.982	0.974	(0.947–0.987)	0.968	0.963	(0.932–0.980)
60–69	0.985	0.971	(0.917–0.990)	0.961	0.961	(0.908–0.983)	0.930	0.942	(0.890–0.969)
70–79	0.964	0.953	(0.883–0.981)	0.899	0.905	(0.815–0.952)	0.817	0.828	(0.717–0.898)
80 and over	0.891	0.921	(0.781–0.973)	0.709	0.696	(0.515–0.821)	0.508	0.538	(0.350–0.693)
Hispanic male[2]									
18–29	0.998	0.995	(0.965–0.999)	0.994	0.994	(0.971–0.998)	0.990	0.991	(0.969–0.997)
30–39	0.997	0.997	(0.970–0.999)	0.993	0.994	(0.975–0.998)	0.988	0.992	(0.973–0.997)
40–49	0.995	0.998	(0.978–0.999)	0.987	0.979	(0.949–0.992)	0.976	0.965	(0.931–0.982)
50–59	0.988	0.983	(0.959–0.993)	0.968	0.954	(0.912–0.976)	0.942	0.940	(0.897–0.966)
60–69	0.975	0.982	(0.933–0.995)	0.934	0.959	(0.905–0.982)	0.883	0.919	(0.848–0.957)
70–79	0.945	0.933	(0.812–0.977)	0.853	0.883	(0.746–0.948)	0.742	0.747	(0.604–0.845)
80 and over	0.853	0.865	(0.521–0.968)	0.625	0.758	(0.423–0.915)	0.401	0.548	(0.300–0.740)
White female[1]									
18–29	0.998	0.997	(0.987–0.999)	0.997	0.996	(0.987–0.999)	0.994	0.992	(0.979–0.997)
30–39	0.998	0.998	(0.984–0.999)	0.994	0.995	(0.986–0.998)	0.990	0.989	(0.978–0.995)
40–49	0.996	0.998	(0.994–0.999)	0.988	0.992	(0.984–0.996)	0.979	0.979	(0.967–0.987)
50–59	0.991	0.992	(0.982–0.997)	0.975	0.976	(0.961–0.986)	0.955	0.951	(0.932–0.965)
60–69	0.981	0.987	(0.977–0.992)	0.947	0.950	(0.936–0.962)	0.905	0.903	(0.883–0.919)
70–79	0.952	0.953	(0.928–0.969)	0.866	0.861	(0.828–0.889)	0.762	0.767	(0.725–0.803)
80 and over	0.862	0.841	(0.800–0.874)	0.640	0.655	(0.606–0.700)	0.418	0.412	(0.362–0.462)
White male[1]									
18–29	0.997	0.997	(0.990–0.999)	0.993	0.993	(0.983–0.997)	0.987	0.991	(0.981–0.995)
30–39	0.996	0.995	(0.984–0.998)	0.990	0.993	(0.982–0.997)	0.983	0.988	(0.976–0.994)
40–49	0.993	0.990	(0.978–0.996)	0.982	0.976	(0.959–0.985)	0.967	0.962	(0.944–0.975)
50–59	0.985	0.984	(0.973–0.991)	0.958	0.960	(0.943–0.973)	0.926	0.923	(0.903–0.940)
60–69	0.971	0.970	(0.954–0.980)	0.920	0.914	(0.889–0.933)	0.860	0.859	(0.832–0.883)
70–79	0.932	0.949	(0.924–0.966)	0.817	0.826	(0.785–0.860)	0.685	0.683	(0.635–0.726)
80 and over	0.820	0.873	(0.813–0.914)	0.555	0.554	(0.480–0.621)	0.321	0.330	(0.265–0.397)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2011 U.S. life tables.

Table 11. Cumulative survival probabilities at 2, 5, and 7 years of follow-up for the U.S. population, compared with those for the 2012 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			7 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population.	NHIS cohort	99% CI (NHIS)
Black female[1]									
18–29	0.998	0.999	(0.995–1.000)	0.996	0.999	(0.994–1.000)	0.994	§0.999	(0.995–1.000)
30–39	0.997	0.996	(0.949–0.999)	0.992	0.991	(0.962–0.997)	0.988	0.986	(0.958–0.995)
40–49	0.994	0.996	(0.982–0.999)	0.983	0.989	(0.972–0.996)	0.974	0.988	(0.971–0.995)
50–59	0.986	0.990	(0.966–0.997)	0.961	0.966	(0.938–0.982)	0.941	0.947	(0.914–0.968)
60–69	0.972	0.974	(0.947–0.988)	0.926	0.915	(0.862–0.948)	0.890	0.873	(0.810–0.916)
70–79	0.941	0.964	(0.919–0.984)	0.843	0.836	(0.748–0.896)	0.769	0.756	(0.656–0.831)
80 and over	0.854	0.857	(0.684–0.939)	0.636	0.613	(0.431–0.753)	0.496	0.495	(0.346–0.628)
Black male[1]									
18–29	†	†	†	0.989	0.996	(0.979–0.999)	0.984	0.991	(0.957–0.998)
30–39	0.994	0.997	(0.985–0.999)	0.985	0.988	(0.948–0.997)	0.977	0.975	(0.932–0.991)
40–49	0.991	0.992	(0.922–0.999)	0.975	0.971	(0.929–0.988)	0.961	0.959	(0.912–0.981)
50–59	0.978	0.976	(0.938–0.991)	0.939	0.934	(0.884–0.963)	0.908	0.915	(0.864–0.947)
60–69	0.954	0.971	(0.924–0.989)	0.879	0.899	(0.836–0.938)	0.823	0.856	(0.786–0.905)
70–79	0.910	0.955	(0.888–0.982)	0.770	0.836	(0.733–0.902)	0.673	0.740	(0.614–0.830)
80 and over	0.803	0.783	(0.514–0.914)	0.542	0.569	(0.358–0.734)	0.392	0.353	(0.175–0.538)
Hispanic female[2]									
18–29	0.999	0.998	(0.987–0.999)	0.998	0.997	(0.989–0.999)	0.997	0.997	(0.989–0.999)
30–39	0.998	0.998	(0.982–0.999)	0.997	0.993	(0.980–0.998)	0.995	0.990	(0.976–0.995)
40–49	0.997	0.998	(0.981–0.999)	0.992	0.995	(0.981–0.999)	0.988	0.990	(0.973–0.996)
50–59	0.993	0.990	(0.939–0.998)	0.982	0.971	(0.922–0.989)	0.973	0.967	(0.920–0.987)
60–69	0.985	0.989	(0.970–0.996)	0.961	0.947	(0.871–0.978)	0.941	0.928	(0.854–0.965)
70–79	0.965	0.982	(0.899–0.997)	0.901	0.874	(0.712–0.948)	0.849	0.827	(0.680–0.911)
80 and over	0.894	0.893	(0.802–0.944)	0.713	0.742	(0.602–0.839)	0.579	0.625	(0.473–0.744)
Hispanic male[2]									
18–29	0.998	0.997	(0.991–0.999)	0.994	0.994	(0.987–0.998)	0.991	0.992	(0.980–0.996)
30–39	0.997	0.999	(0.988–1.000)	0.993	0.995	(0.979–0.999)	0.989	0.991	(0.970–0.997)
40–49	0.995	0.996	(0.981–0.999)	0.987	0.981	(0.957–0.992)	0.980	0.973	(0.942–0.987)
50–59	0.988	0.997	(0.966–0.999)	0.968	0.966	(0.922–0.985)	0.951	0.935	(0.883–0.964)
60–69	0.975	0.989	(0.927–0.998)	0.933	0.959	(0.906–0.982)	0.901	0.933	(0.880–0.963)
70–79	0.945	0.969	(0.918–0.988)	0.854	0.837	(0.735–0.903)	0.782	0.744	(0.625–0.831)
80 and over	0.854	0.847	(0.556–0.954)	0.628	0.630	(0.376–0.804)	0.475	0.522	(0.295–0.707)
White female[1]									
18–29	0.999	0.998	(0.993–0.999)	0.997	0.997	(0.991–0.999)	0.995	0.997	(0.990–0.999)
30–39	0.998	0.998	(0.993–0.999)	0.994	0.997	(0.993–0.999)	0.991	0.995	(0.986–0.998)
40–49	0.996	0.998	(0.995–0.999)	0.988	0.991	(0.982–0.996)	0.982	0.985	(0.973–0.992)
50–59	0.991	0.991	(0.980–0.995)	0.974	0.966	(0.954–0.975)	0.961	§0.947	(0.929–0.960)
60–69	0.981	0.983	(0.969–0.991)	0.948	0.941	(0.921–0.955)	0.921	0.913	(0.889–0.932)
70–79	0.952	§0.972	(0.953–0.983)	0.867	0.885	(0.854–0.909)	0.800	0.807	(0.768–0.840)
80 and over	0.863	0.870	(0.830–0.901)	0.642	0.654	(0.602–0.701)	0.492	0.522	(0.470–0.572)
White male[1]									
18–29	0.997	0.998	(0.987–0.999)	0.992	0.995	(0.986–0.998)	0.989	0.994	(0.985–0.998)
30–39	0.996	0.997	(0.991–0.999)	0.990	0.994	(0.987–0.997)	0.985	0.989	(0.978–0.994)
40–49	0.993	0.988	(0.973–0.995)	0.982	0.976	(0.961–0.986)	0.973	0.960	(0.941–0.973)
50–59	0.985	0.987	(0.975–0.993)	0.958	0.965	(0.950–0.975)	0.937	0.946	(0.928–0.959)
60–69	0.970	0.969	(0.950–0.980)	0.920	0.913	(0.888–0.932)	0.881	0.876	(0.849–0.899)
70–79	0.933	0.918	(0.884–0.943)	0.818	0.807	(0.762–0.844)	0.732	0.716	(0.665–0.760)
80 and over	0.821	0.826	(0.768–0.871)	0.558	0.526	(0.457–0.591)	0.395	0.391	(0.327–0.455)

§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
† No comparison was made because no deaths occurred by the follow-up interval.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2012 U.S. life tables.

Table 12. Cumulative survival probabilities at 2, 5, and 6 years of follow-up for the U.S. population, compared with those for the 2013 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years			6 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]									
18–29	0.998	0.998	(0.974–0.999)	0.996	0.996	(0.956–0.999)	0.995	0.996	(0.956–0.999)
30–39	0.997	0.995	(0.984–0.998)	0.992	0.993	(0.982–0.997)	0.990	0.992	(0.982–0.996)
40–49	0.994	0.991	(0.966–0.998)	0.983	0.978	(0.942–0.991)	0.979	0.976	(0.939–0.990)
50–59	0.986	0.986	(0.964–0.994)	0.961	0.961	(0.929–0.978)	0.951	0.960	(0.928–0.978)
60–69	0.972	0.977	(0.940–0.991)	0.925	0.935	(0.890–0.962)	0.908	0.918	(0.871–0.949)
70–79	0.942	0.927	(0.868–0.961)	0.843	0.829	(0.741–0.889)	0.807	0.798	(0.700–0.866)
80 and over	0.855	0.891	(0.789–0.945)	0.639	0.692	(0.586–0.776)	0.567	0.656	(0.546–0.746)
Black male[1]									
18–29	0.996	0.995	(0.940–0.999)	0.989	0.985	(0.917–0.997)	0.986	0.985	(0.917–0.997)
30–39	0.994	0.993	(0.968–0.998)	0.984	0.979	(0.935–0.993)	0.981	0.969	(0.923–0.988)
40–49	0.991	0.990	(0.965–0.997)	0.974	0.985	(0.960–0.994)	0.968	0.979	(0.949–0.991)
50–59	0.978	0.976	(0.941–0.990)	0.939	0.941	(0.884–0.970)	0.924	0.921	(0.862–0.956)
60–69	0.953	0.971	(0.932–0.988)	0.877	0.900	(0.840–0.939)	0.849	0.878	(0.815–0.921)
70–79	0.910	0.920	(0.807–0.968)	0.770	0.842	(0.702–0.920)	0.722	0.755	(0.622–0.847)
80 and over	0.806	0.894	(0.693–0.966)	0.546	0.601	(0.411–0.747)	0.467	0.538	(0.351–0.693)
Hispanic female[2]									
18–29	0.999	0.999	(0.993–1.000)	0.998	0.999	(0.993–1.000)	0.997	0.999	(0.993–1.000)
30–39	0.998	0.999	(0.993–1.000)	0.996	0.995	(0.980–0.999)	0.996	0.992	(0.977–0.997)
40–49	0.997	0.997	(0.986–0.999)	0.992	0.989	(0.972–0.996)	0.990	0.988	(0.970–0.995)
50–59	0.993	0.994	(0.979–0.998)	0.982	0.986	(0.965–0.994)	0.978	0.986	(0.965–0.994)
60–69	0.986	0.989	(0.954–0.997)	0.961	0.961	(0.908–0.984)	0.951	0.947	(0.891–0.975)
70–79	0.965	0.957	(0.867–0.986)	0.901	0.876	(0.794–0.927)	0.876	0.841	(0.744–0.903)
80 and over	0.895	0.869	(0.751–0.933)	0.713	0.717	(0.549–0.831)	0.647	0.685	(0.520–0.804)
Hispanic male[2]									
18–29	0.998	0.998	(0.987–0.999)	0.994	0.990	(0.966–0.997)	0.992	0.988	(0.965–0.995)
30–39	0.997	0.992	(0.958–0.998)	0.993	0.986	(0.960–0.995)	0.991	0.986	(0.960–0.995)
40–49	0.995	0.994	(0.981–0.998)	0.987	0.983	(0.961–0.993)	0.984	0.982	(0.959–0.992)
50–59	0.988	0.985	(0.937–0.996)	0.968	0.961	(0.911–0.983)	0.960	0.954	(0.904–0.978)
60–69	0.975	0.944	(0.846–0.980)	0.933	0.882	(0.769–0.941)	0.918	0.876	(0.764–0.937)
70–79	0.945	0.961	(0.894–0.986)	0.854	0.864	(0.710–0.939)	0.819	0.826	(0.685–0.908)
80 and over	0.856	0.949	(0.728–0.991)	0.629	0.695	(0.453–0.846)	0.552	0.642	(0.404–0.805)
White female[1]									
18–29	0.998	0.999	(0.991–1.000)	0.996	0.996	(0.988–0.998)	0.996	0.995	(0.986–0.998)
30–39	0.998	0.999	(0.996–1.000)	0.994	0.996	(0.990–0.998)	0.992	0.995	(0.989–0.998)
40–49	0.996	0.998	(0.994–0.999)	0.988	0.993	(0.985–0.997)	0.985	0.991	(0.982–0.995)
50–59	0.990	0.993	(0.987–0.996)	0.974	0.975	(0.963–0.983)	0.968	0.968	(0.954–0.978)
60–69	0.981	0.984	(0.972–0.991)	0.948	0.952	(0.934–0.965)	0.935	0.940	(0.920–0.956)
70–79	0.952	0.964	(0.944–0.977)	0.868	0.876	(0.842–0.903)	0.835	0.840	(0.805–0.870)
80 and over	0.864	0.859	(0.815–0.894)	0.643	0.613	(0.557–0.663)	0.567	0.536	(0.480–0.588)
White male[1]									
18–29	0.997	0.999	(0.991–1.000)	0.992	0.995	(0.986–0.998)	0.990	0.991	(0.978–0.996)
30–39	0.996	0.994	(0.980–0.998)	0.989	0.993	(0.980–0.998)	0.987	0.992	(0.979–0.997)
40–49	0.993	0.995	(0.989–0.998)	0.982	0.978	(0.965–0.987)	0.977	0.975	(0.961–0.984)
50–59	0.985	0.987	(0.975–0.993)	0.958	0.969	(0.955–0.979)	0.948	0.957	(0.940–0.969)
60–69	0.970	0.968	(0.950–0.980)	0.919	0.918	(0.894–0.937)	0.900	0.904	(0.879–0.925)
70–79	0.933	0.944	(0.918–0.961)	0.818	0.828	(0.788–0.862)	0.776	0.807	(0.764–0.842)
80 and over	0.823	0.776	(0.704–0.832)	0.559	0.508	(0.436–0.577)	0.476	0.450	(0.378–0.518)

[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2013 U.S. life tables.

Table 13. Cumulative survival probabilities at 2 and 5 years of follow-up for the U.S. population, compared with those for the 2014 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			5 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]						
18–29	†	†	†	0.996	0.997	(0.961–0.999)
30–39	0.997	0.993	(0.950–0.999)	0.991	0.986	(0.956–0.996)
40–49	0.994	0.988	(0.953–0.997)	0.983	0.972	(0.938–0.987)
50–59	0.986	0.993	(0.970–0.998)	0.961	0.957	(0.924–0.976)
60–69	0.972	0.978	(0.911–0.994)	0.924	0.903	(0.828–0.947)
70–79	0.942	0.930	(0.858–0.966)	0.844	0.854	(0.752–0.916)
80 and over	0.857	0.867	(0.738–0.935)	0.641	0.651	(0.521–0.754)
Black male[1]						
18–29	0.995	0.999	(0.993–1.000)	0.988	0.990	(0.895–0.999)
30–39	0.994	0.998	(0.983–0.999)	0.984	0.992	(0.929–0.999)
40–49	0.991	0.987	(0.931–0.997)	0.974	0.980	(0.932–0.994)
50–59	0.978	0.986	(0.954–0.995)	0.939	0.954	(0.915–0.975)
60–69	0.953	0.964	(0.923–0.983)	0.874	0.856	(0.787–0.903)
70–79	0.910	0.903	(0.811–0.951)	0.771	0.753	(0.619–0.846)
80 and over	0.812	0.765	(0.480–0.907)	0.549	0.562	(0.295–0.762)
Hispanic female[2]						
18–29	0.999	0.998	(0.980–0.999)	0.997	0.995	(0.972–0.999)
30–39	†	†	†	0.996	0.996	(0.980–0.999)
40–49	0.997	0.993	(0.975–0.998)	0.992	0.987	(0.968–0.995)
50–59	0.993	0.997	(0.964–0.999)	0.982	0.988	(0.963–0.996)
60–69	0.985	0.975	(0.931–0.991)	0.961	0.959	(0.912–0.981)
70–79	0.965	0.986	(0.945–0.996)	0.902	0.921	(0.844–0.961)
80 and over	0.896	0.903	(0.701–0.971)	0.715	0.808	(0.638–0.904)
Hispanic male[2]						
18–29	0.998	§0.990	(0.956–0.998)	0.994	0.990	(0.956–0.997)
30–39	0.997	0.998	(0.983–0.999)	0.992	0.989	(0.971–0.996)
40–49	0.995	0.997	(0.981–0.999)	0.987	0.995	(0.979–0.999)
50–59	0.988	0.986	(0.966–0.994)	0.968	0.960	(0.922–0.980)
60–69	0.975	0.989	(0.963–0.996)	0.933	0.926	(0.861–0.962)
70–79	0.946	0.980	(0.918–0.995)	0.855	0.881	(0.785–0.936)
80 and over	0.858	0.792	(0.522–0.919)	0.630	0.434	(0.215–0.636)
White female[1]						
18–29	0.998	0.997	(0.988–0.999)	0.996	0.994	(0.980–0.998)
30–39	0.998	0.995	(0.983–0.998)	0.994	0.993	(0.982–0.997)
40–49	0.995	0.991	(0.973–0.997)	0.988	0.985	(0.968–0.993)
50–59	0.990	0.991	(0.979–0.996)	0.974	0.970	(0.955–0.980)
60–69	0.981	0.982	(0.968–0.990)	0.948	0.935	(0.913–0.951)
70–79	0.952	0.946	(0.912–0.967)	0.868	0.847	(0.808–0.878)
80 and over	0.864	0.876	(0.836–0.907)	0.644	0.641	(0.584–0.693)
White male[1]						
18–29	0.997	0.994	(0.978–0.998)	0.992	0.993	(0.979–0.998)
30–39	0.996	0.996	(0.976–0.999)	0.989	0.990	(0.975–0.996)
40–49	0.993	0.991	(0.977–0.997)	0.982	0.983	(0.968–0.991)
50–59	0.985	0.985	(0.975–0.991)	0.958	0.960	(0.942–0.973)
60–69	0.970	0.961	(0.942–0.974)	0.919	0.918	(0.894–0.937)
70–79	0.933	0.948	(0.923–0.965)	0.819	0.840	(0.801–0.872)
80 and over	0.824	0.817	(0.759–0.861)	0.561	0.547	(0.477–0.611)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2014 U.S. life tables.

Table 14. Cumulative survival probabilities at 2 and 4 years of follow-up for the U.S. population, compared with those for the 2015 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			4 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]						
18–29	0.998	0.999	(0.990–0.999)	0.996	0.999	(0.990–1.000)
30–39	0.997	0.999	(0.992–1.000)	0.993	0.990	(0.946–0.998)
40–49	0.994	0.995	(0.965–0.999)	0.987	0.984	(0.957–0.994)
50–59	0.986	0.981	(0.935–0.995)	0.970	0.953	(0.903–0.978)
60–69	0.972	0.976	(0.942–0.990)	0.941	0.958	(0.923–0.978)
70–79	0.942	0.970	(0.926–0.988)	0.879	0.934	(0.866–0.968)
80 and over	0.859	0.860	(0.755–0.922)	0.715	0.718	(0.588–0.813)
Black male[1]						
18–29	0.995	0.993	(0.917–0.999)	0.990	0.991	(0.935–0.998)
30–39	0.994	0.996	(0.948–0.999)	0.987	0.996	(0.948–0.999)
40–49	0.990	0.990	(0.955–0.998)	0.979	0.974	(0.934–0.990)
50–59	0.978	0.972	(0.930–0.989)	0.953	0.950	(0.898–0.976)
60–69	0.952	0.960	(0.924–0.979)	0.900	0.908	(0.847–0.945)
70–79	0.911	0.927	(0.813–0.972)	0.819	0.858	(0.741–0.925)
80 and over	0.812	0.815	(0.602–0.921)	0.633	0.712	(0.514–0.841)
Hispanic female[2]						
18–29	0.999	0.999	(0.987–1.000)	0.998	0.998	(0.989–0.999)
30–39	0.998	0.998	(0.979–0.999)	0.997	0.998	(0.979–0.999)
40–49	0.997	1.000	†	0.994	0.999	(0.989–1.000)
50–59	0.993	0.996	(0.959–0.999)	0.986	0.987	(0.955–0.996)
60–69	0.986	0.988	(0.959–0.996)	0.970	0.977	(0.931–0.992)
70–79	0.965	0.987	(0.950–0.996)	0.925	0.918	(0.849–0.957)
80 and over	0.894	0.840	(0.510–0.956)	0.778	0.715	(0.484–0.856)
Hispanic male[2]						
18–29	0.997	0.994	(0.969–0.999)	0.995	0.993	(0.970–0.998)
30–39	0.997	0.996	(0.967–0.999)	0.994	0.994	(0.969–0.999)
40–49	0.995	0.992	(0.968–0.998)	0.990	0.991	(0.968–0.997)
50–59	0.988	0.994	(0.974–0.998)	0.975	0.989	(0.971–0.996)
60–69	0.975	0.969	(0.902–0.990)	0.948	0.952	(0.890–0.979)
70–79	0.946	0.986	(0.918–0.997)	0.888	§0.966	(0.902–0.988)
80 and over	0.858	0.861	(0.716–0.935)	0.708	0.731	(0.537–0.854)
White female[1]						
18–29	†	†	†	†	†	†
30–39	0.997	0.997	(0.987–0.999)	0.995	0.995	(0.986–0.998)
40–49	0.995	0.996	(0.986–0.998)	0.991	0.992	(0.981–0.997)
50–59	0.990	0.992	(0.982–0.996)	0.979	0.986	(0.975–0.992)
60–69	0.981	0.985	(0.972–0.992)	0.960	0.955	(0.937–0.968)
70–79	0.953	0.947	(0.919–0.966)	0.898	0.894	(0.860–0.920)
80 and over	0.864	0.880	(0.842–0.910)	0.719	0.760	(0.710–0.803)
White male[1]						
18–29	0.997	0.999	(0.997–1.000)	0.993	0.996	(0.989–0.999)
30–39	0.995	0.998	(0.992–0.999)	0.991	§0.996	(0.991–0.998)
40–49	0.993	0.993	(0.982–0.997)	0.986	0.989	(0.973–0.995)
50–59	0.984	0.989	(0.978–0.994)	0.967	0.967	(0.948–0.979)
60–69	0.970	0.969	(0.949–0.982)	0.936	0.929	(0.902–0.949)
70–79	0.933	0.919	(0.885–0.944)	0.859	0.854	(0.812–0.887)
80 and over	0.824	0.817	(0.751–0.866)	0.648	0.637	(0.562–0.702)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2015 U.S. life tables.

Table 15. Cumulative survival probabilities at 2 and 3 years of follow-up for the U.S. population, compared with those for the 2016 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years			3 years		
	U.S. population	NHIS cohort	99% CI (NHIS)	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]						
18–29	0.998	0.997	(0.964–0.999)	0.997	0.996	(0.971–0.999)
30–39	0.997	0.992	(0.954–0.998)	0.995	0.992	(0.954–0.998)
40–49	0.994	0.999	(0.986–1.000)	0.990	0.989	(0.940–0.998)
50–59	0.986	0.986	(0.936–0.997)	0.978	0.980	(0.933–0.994)
60–69	0.971	0.984	(0.909–0.997)	0.956	0.976	(0.919–0.993)
70–79	0.942	0.951	(0.891–0.978)	0.911	0.937	(0.872–0.970)
80 and over	0.861	0.911	(0.789–0.964)	0.789	0.816	(0.688–0.895)
Black male[1]						
18–29	†	†	†	†	†	†
30–39	0.993	0.995	(0.940–0.999)	0.990	0.992	(0.953–0.999)
40–49	0.990	0.997	(0.968–0.999)	0.984	0.994	(0.964–0.999)
50–59	0.978	§0.942	(0.866–0.975)	0.966	0.930	(0.859–0.966)
60–69	0.952	0.951	(0.894–0.977)	0.926	0.921	(0.857–0.957)
70–79	0.912	0.839	(0.659–0.928)	0.866	0.781	(0.608–0.885)
80 and over	0.813	0.926	(0.723–0.982)	0.722	0.823	(0.597–0.929)
Hispanic female[2]						
18–29	†	†	†	†	†	†
30–39	0.998	0.998	(0.977–0.999)	0.998	0.992	(0.943–0.999)
40–49	0.997	0.993	(0.920–0.999)	0.996	0.993	(0.920–0.999)
50–59	0.993	0.989	(0.960–0.997)	0.990	0.981	(0.945–0.993)
60–69	0.986	0.981	(0.924–0.995)	0.978	0.980	(0.924–0.995)
70–79	0.966	0.958	(0.825–0.990)	0.947	0.957	(0.827–0.989)
80 and over	0.895	0.898	(0.690–0.969)	0.839	0.845	(0.621–0.942)
Hispanic male[2]						
18–29	0.997	0.998	(0.980–0.999)	0.996	0.995	(0.980–0.999)
30–39	0.997	0.999	(0.990–1.000)	0.995	0.998	(0.990–0.999)
40–49	0.995	0.991	(0.955–0.998)	0.992	0.991	(0.955–0.998)
50–59	0.988	0.973	(0.882–0.994)	0.982	0.961	(0.881–0.987)
60–69	0.975	0.985	(0.933–0.997)	0.962	0.968	(0.906–0.989)
70–79	0.947	0.957	(0.843–0.988)	0.919	0.923	(0.797–0.972)
80 and over	0.858	0.861	(0.648–0.950)	0.784	0.783	(0.534–0.909)
White female[1]						
18–29	0.998	0.999	(0.998–1.000)	0.998	0.999	(0.998–1.000)
30–39	0.997	0.997	(0.988–0.999)	0.996	0.997	(0.988–0.999)
40–49	0.995	0.994	(0.981–0.998)	0.993	0.992	(0.980–0.997)
50–59	0.990	0.994	(0.987–0.997)	0.985	0.988	(0.978–0.994)
60–69	0.981	0.984	(0.974–0.990)	0.971	0.974	(0.962–0.982)
70–79	0.953	0.957	(0.933–0.972)	0.927	0.934	(0.907–0.953)
80 and over	0.864	0.877	(0.838–0.907)	0.794	0.797	(0.748–0.837)
White male[1]						
18–29	0.996	0.999	(0.995–1.000)	0.995	0.998	(0.994–0.999)
30–39	0.995	0.998	(0.985–0.999)	0.993	0.998	(0.985–0.999)
40–49	0.993	0.991	(0.980–0.996)	0.989	0.982	(0.963–0.991)
50–59	0.984	0.980	(0.967–0.988)	0.976	0.973	(0.959–0.983)
60–69	0.970	0.973	(0.962–0.981)	0.953	0.963	(0.951–0.972)
70–79	0.934	0.938	(0.913–0.956)	0.898	0.908	(0.876–0.932)
80 and over	0.825	0.819	(0.761–0.864)	0.737	0.741	(0.678–0.793)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2016 U.S. life tables.

Table 16. Cumulative survival probabilities at 2 years of follow-up for the U.S. population, compared with those for the 2017 National Health Interview Survey Linked Mortality File cohort–by race and ethnicity–sex–and age group

Race and ethnicity–sex–and age group (years)	2 years		
	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]			
18–29	†	†	†
30–39	0.996	0.998	(0.974–0.999)
40–49	0.993	0.989	(0.942–0.998)
50–59	0.986	0.990	(0.967–0.997)
60–69	0.971	0.964	(0.910–0.985)
70–79	0.943	0.930	(0.841–0.970)
80 and over	0.861	0.876	(0.739–0.944)
Black male[1]			
18–29	0.995	0.994	(0.962–0.999)
30–39	0.993	0.989	(0.929–0.998)
40–49	†	†	†
50–59	0.978	0.988	(0.937–0.998)
60–69	0.951	0.966	(0.893–0.989)
70–79	0.912	0.918	(0.827–0.962)
80 and over	0.811	0.892	(0.716–0.962)
Hispanic female[2]			
18–29	†	†	†
30–39	†	†	†
40–49	0.998	§0.988	(0.960–0.997)
50–59	0.993	0.997	(0.970–0.999)
60–69	0.986	0.993	(0.972–0.998)
70–79	0.966	0.971	(0.720–0.997)
80 and over	0.895	0.911	(0.647–0.980)
Hispanic male[2]			
18–29	0.997	0.997	(0.971–0.999)
30–39	†	†	†
40–49	†	†	†
50–59	0.988	0.963	(0.776–0.994)
60–69	0.975	0.940	(0.822–0.980)
70–79	0.948	0.949	(0.847–0.983)
80 and over	0.857	0.986	(0.818–0.999)
White female[1]			
18–29	0.998	0.999	(0.992–1.000)
30–39	0.997	0.999	(0.995–1.000)
40–49	0.995	0.997	(0.991–0.999)
50–59	0.990	0.992	(0.983–0.996)
60–69	0.981	0.987	(0.978–0.992)
70–79	0.954	0.954	(0.934–0.969)
80 and over	0.863	0.862	(0.820–0.896)
White male[1]			
18–29	0.997	0.995	(0.981–0.999)
30–39	0.995	0.997	(0.988–0.999)
40–49	0.993	0.989	(0.976–0.995)
50–59	0.985	0.980	(0.966–0.989)
60–69	0.969	0.970	(0.956–0.980)
70–79	0.935	0.943	(0.921–0.960)
80 and over	0.824	0.861	(0.811–0.899)

† No comparison was made because no deaths occurred by the follow-up interval.
§ The probability for the U.S. population falls outside the 99% confidence interval around the National Health Interview Survey probability.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort–age is age at interview. For the U.S. population–age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics–National Health Interview Survey Linked Mortality Files and 2017 U.S. life tables.

Table 17. Cumulative survival probabilities at 1 year of follow-up for the U.S. population, compared with those for the 2018 National Health Interview Survey Linked Mortality File cohort, by race and ethnicity, sex, and age group

Race and ethnicity, sex, and age group (years)	1 year		
	U.S. population	NHIS cohort	99% CI (NHIS)
Black female[1]			
18–29	†	†	†
30–39	0.998	0.998	(0.985–0.999)
40–49	†	†	†
50–59	0.993	0.994	(0.964–0.999)
60–69	0.986	0.983	(0.938–0.995)
70–79	0.972	0.978	(0.928–0.993)
80 and over	0.931	0.987	(0.842–0.999)
Black male[1]			
18–29	†	†	†
30–39	†	†	†
40–49	†	†	†
50–59	0.989	0.988	(0.942–0.997)
60–69	0.976	0.996	(0.971–0.999)
70–79	0.957	0.962	(0.874–0.989)
80 and over	0.905	0.902	(0.736–0.965)
Hispanic female[2]			
18–29	†	†	†
30–39	†	†	†
40–49	0.998	0.997	(0.970–0.999)
50–59	0.997	0.998	(0.979–0.999)
60–69	0.993	0.986	(0.835–0.998)
70–79	0.984	0.971	(0.843–0.995)
80 and over	0.949	0.973	(0.834–0.996)
Hispanic male[2]			
18–29	†	†	†
30–39	0.998	0.997	(0.963–0.999)
40–49	†	†	†
50–59	0.994	0.997	(0.962–0.999)
60–69	0.988	0.991	(0.942–0.998)
70–79	†	†	†
80 and over	0.930	0.850	(0.549–0.957)
White female[1]			
18–29	0.999	0.999	(0.995–1.000)
30–39	0.998	0.999	(0.996–1.000)
40–49	0.998	0.995	(0.984–0.998)
50–59	0.995	0.995	(0.985–0.998)
60–69	0.991	0.992	(0.982–0.996)
70–79	0.977	0.981	(0.966–0.990)
80 and over	0.933	0.945	(0.914–0.965)
White male[1]			
18–29	†	†	†
30–39	0.997	0.994	(0.979–0.998)
40–49	0.996	0.997	(0.992–0.999)
50–59	0.992	0.995	(0.982–0.998)
60–69	0.985	0.988	(0.978–0.993)
70–79	0.968	0.971	(0.954–0.982)
80 and over	0.913	0.906	(0.852–0.940)

† No comparison was made because no deaths occurred by the follow-up interval.
[1]Race groups are non-Hispanic.
[2]People of Hispanic origin may be of any race.

NOTES: NHIS is National Health Interview Survey. For the NHIS cohort, age is age at interview. For the U.S. population, age is the midpoint of the age group. CI is confidence interval.

SOURCES: National Center for Health Statistics, National Health Interview Survey Linked Mortality Files and 2018 U.S. life tables.

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