

eAppendix

Life expectancies were estimated using standard methods for creating abridged life tables, with eleven age groups in ten-year increments after age 5 (0-1, 1-4, 5-14, 15-24, . . . , 85+). We calculated the contribution of each age group and cause-of-death to the difference in life expectancy between 2014 and 2015 within each race-ethnicity and gender group using the methods developed by Arriaga. Briefly, the contribution of a particular age group is both a direct function of the change in age-specific mortality rates at that age plus an additional contribution resulting from the fact that mortality changes at a given age will produce additional survivors at older ages, given by the formula below:

$${}_n\Delta_x = \left[\underbrace{l_x^{2015}/l_0^{2015}}_{\text{fraction of survivors}} \times \overbrace{\left(\frac{{}_nL_x^{2014}}{l_x^{2014}} - \frac{{}_nL_x^{2015}}{l_x^{2015}} \right)}^{\text{direct effect}} \right] + \overbrace{\left[\frac{T_{x+n}^{2014}}{l_{x+n}^{2014}} \times \frac{\frac{l_x^{2015}l_{x+n}^{2014}}{l_x^{2014}} - l_{x+n}^{2015}}{l_0^{2015}} \right]}^{\text{indirect effect + interaction}}$$

where ${}_n\Delta_x$ is the total contribution for a given age interval between x and $x+n$, l_x is number alive at age x , L_x is the person-years lived in interval, and T_x is the person-time lived beyond age x .

The contribution ${}_n\Delta_x^i$ of each cause of death i within a given age group is a function of the difference between the two time periods in the proportion of deaths due to a given cause:

$${}_n\Delta_x^i = {}_n\Delta_x \times \frac{\overbrace{\left({}_np_x^{i,2014} \times {}_nr_x^{2014} \right) - \left({}_np_x^{i,2015} \times {}_nr_x^{2015} \right)}^{\text{difference in share of deaths for cause } i}}{\underbrace{{}_nI_x^{2014} - {}_nI_x^{2015}}_{\text{overall mortality rate difference}}}$$

where ${}_n\Delta_x$ is the total contribution for an age group, ${}_np_x^i$ is the proportion of deaths within age group x due to cause i , and ${}_nr_x$ is the overall age-specific death rate. The total difference in life expectancy at birth is the net sum of the age-cause components:

$$\sum_i {}_n\Delta_x^i = {}_n\Delta_x, \text{ and } e_0^{2014} - e_0^{2015} = \sum_x {}_n\Delta_x = \sum_x \sum_i {}_n\Delta_x^i$$

The total difference in life expectancy at birth between 2014 and 2015 is the sum of the age-cause specific components. The total contribution of a given age group to the change in life expectancy is

equal to the sum of its contributions across all causes of death. Likewise, the contribution of a particular cause of death is the sum of its contributions across age groups.

eTable 1: Age-adjusted mortality rates for selected causes of death, 2014 and 2015, by gender and race-ethnicity.

Cause of Death ^a	Age-Adjusted Death Rate per 100,000 Population ^b					
	Non-Hispanic Black			Non-Hispanic White		
	2014	2015	Change (%) ^c	2014	2015	Change (%) ^c
Women						
Cardiovascular diseases	239.2	239.9	0.7 (0.3)	181.0	185.1	4.1 (2.3)
Cancers	160.8	156.6	-4.2 (-2.6)	142.7	140.6	-2.1 (-1.5)
Diabetes	34.0	32.8	-1.2 (-3.5)	14.6	14.9	0.3 (2.1)
Alzheimer's disease	24.5	30.0	5.5 (22.4)	29.9	34.4	4.5 (15.1)
Influenza and pneumonia	13.9	13.7	-0.2 (-1.4)	13.4	13.8	0.4 (3)
Human Immunodeficiency Virus	5.6	5.3	-0.3 (-5.4)	0.3	0.3	0.0 (0.0)
Chronic lower respiratory disease	23.8	24.3	0.5 (2.1)	42.5	44.4	1.9 (4.5)
Liver disease	5.1	5.5	0.4 (7.8)	7.4	7.9	0.5 (6.8)
Kidney disease	22.5	22.9	0.4 (1.8)	10.0	10.1	0.1 (1.0)
Motor vehicle crashes	5.8	6.3	0.5 (8.6)	6.5	6.8	0.3 (4.6)
Unintentional poisoning	6.6	7.1	0.5 (7.6)	11.8	13.0	1.2 (10.2)
Suicide	2.1	2.1	0.0 (0.0)	7.5	7.8	0.3 (4.0)
Homicide	4.9	5.1	0.2 (4.1)	1.6	1.7	0.1 (6.2)
All other causes	182.5	179.4	-3.1 (-1.7)	165.5	164.2	-1.3 (-0.8)
Men						
Cardiovascular diseases	349.8	350.3	0.5 (0.1)	266.4	268.4	2.0 (0.8)
Cancers	237.5	231.0	-6.5 (-2.7)	197.7	194.3	-3.4 (-1.7)
Diabetes	43.9	45.1	1.2 (2.7)	23.4	23.8	0.4 (1.7)
Alzheimer's disease	18.9	21.3	2.4 (12.7)	21.5	24.9	3.4 (15.8)
Influenza and pneumonia	20.2	20.3	0.1 (0.5)	17.6	17.6	0.0 (0.0)
Human Immunodeficiency Virus	12.3	11.6	-0.7 (-5.7)	1.5	1.4	-0.1 (-6.7)
Chronic lower respiratory disease	37.6	38.5	0.9 (2.4)	49.7	50.5	0.8 (1.6)
Liver disease	10.1	10.2	0.1 (1.0)	14.1	14.6	0.5 (3.5)
Kidney disease	29.7	31.4	1.7 (5.7)	15.2	15.2	0.0 (0.0)
Motor vehicle crashes	18.2	19.9	1.7 (9.3)	16.2	17.0	0.8 (4.9)
Unintentional poisoning	13.7	16.7	3.0 (21.9)	21.5	24.7	3.2 (14.9)
Suicide	9.7	10.0	0.3 (3.1)	25.8	26.6	0.8 (3.1)
Homicide	32.3	37.6	5.3 (16.4)	3.3	3.6	0.3 (9.1)
All other causes	226.2	225.8	-0.4 (-0.2)	199.0	199.7	0.7 (0.4)

^a *International Classification of Diseases, Tenth Revision* (ICD-10) categories taken from National Center for Health Statistics list of 113 selected causes of death: Cardiovascular diseases (I00-I78); Cancers (C00-C97); Diabetes (E10-E14); Alzheimer's disease (G30); Influenza and pneumonia (J09-J18); Human immunodeficiency virus (B20-B24); Chronic lower respiratory disease (J40-J47); Liver disease (K70,K73-K74); Kidney disease (N00-N07,N17-N19,N25-N27); Motor vehicle crashes (V02-V04,V09.0,V09.2,V12-V14,V19.0-V19.2,V19.4-V19.6,V20-V79,V80.3-V80.5,V81.0-V81.1,V82.0-V82.1,V83-V86,V87.0-V87.8,V88.0-V88.8,V89.0,V89.2); Unintentional poisoning (X40-X49); Suicide (*U03,X60-X84,Y87.0); Homicide (*U01-*U02,X85-Y09,Y87.1); All other causes (all other codes). Available from: <http://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2011.pdf>.

^b Age-adjusted to the year 2000 US standard million (authors' calculations). Race and Hispanic origin were classified by the funeral director for death certificates and self-reported for population estimates, and were reported separately on the death certificate in accordance with standards set forth by the US Office of Management and Budget.

^c Calculated as [(2015 rate—2014 rate)/(2014 rate)]×100.

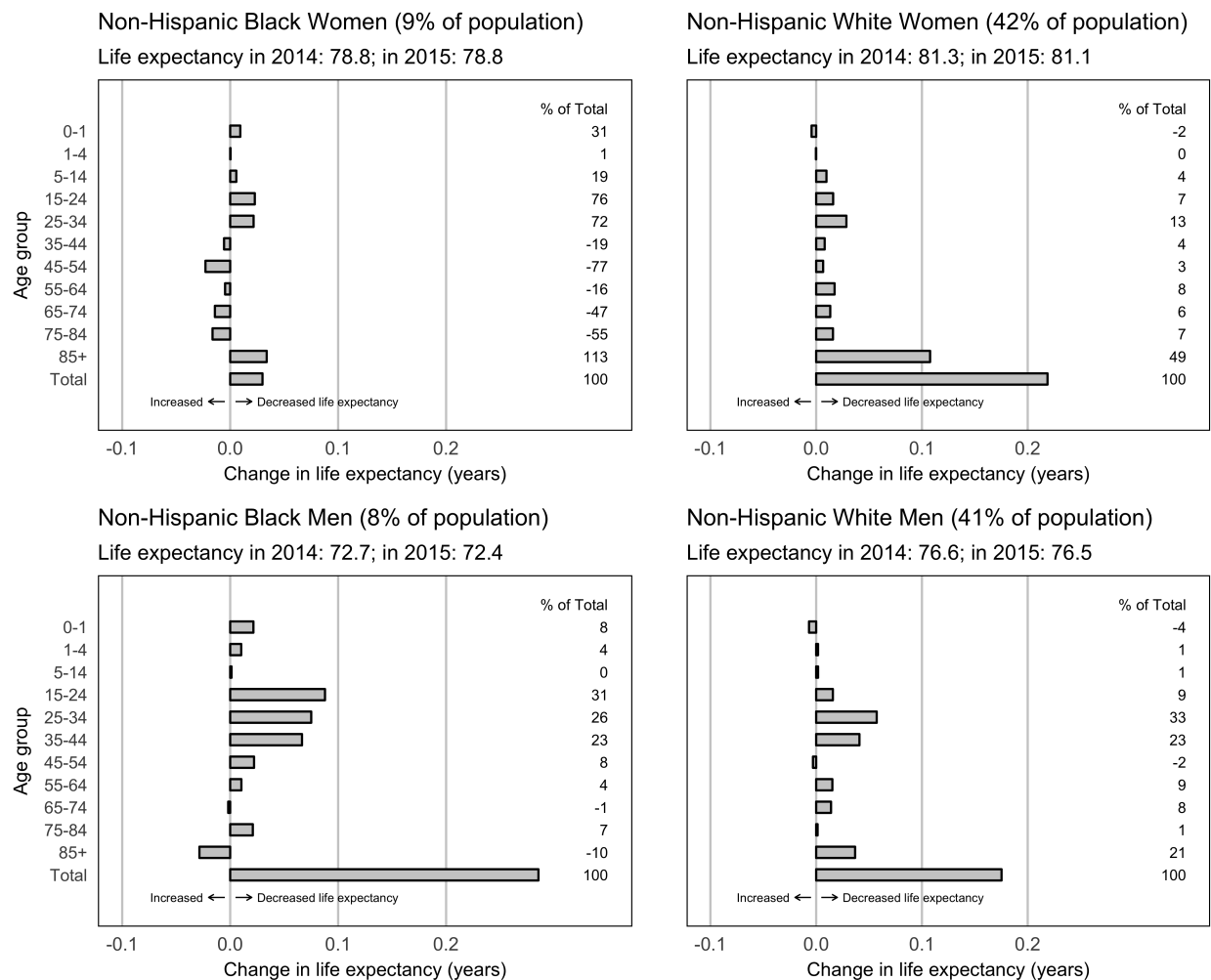
eTable 2: Age-specific mortality rates in 2014 and 2015, by gender and race-ethnicity.

Age Group	Death Rate per 100,000 Population ^a					
	Non-Hispanic Black			Non-Hispanic White		
	2014	2015	Change (%) ^b	2014	2015	Change (%) ^b
Women						
00-01 years	1013.7	1025.6	11.9 (1.2)	450.8	445.4	-5.4 (-1.2)
01-04 years	34	34.1	0.1 (0.3)	20.2	20.1	-0.1 (-0.5)
05-14 years	15.1	15.9	0.8 (5.3)	9.8	11.2	1.4 (14.3)
15-24 years	44.2	48.0	3.8 (8.6)	37.4	40.0	2.6 (7)
25-34 years	93.7	98.1	4.4 (4.7)	73	78.6	5.6 (7.7)
35-44 years	203.5	202.0	-1.5 (-0.7)	143.2	145.1	1.9 (1.3)
45-54 years	472.2	464.5	-7.7 (-1.6)	325.0	327.0	2 (0.6)
55-64 years	999.8	997.5	-2.3 (-0.2)	653.5	661.2	7.7 (1.2)
65-74 years	1924.1	1912.9	-11.2 (-0.6)	1465.6	1475.2	9.6 (0.7)
75-84 years	4447.4	4420.7	-26.7 (-0.6)	4091	4115.4	24.4 (0.6)
85+ years	11854.7	11965.4	110.7 (0.9)	13322.4	13717.6	395.2 (3.0)
Men						
00-01 years	1184.7	1214.7	30 (2.5)	549.6	540.8	-8.8 (-1.6)
01-04 years	45.3	48.9	3.6 (7.9)	24.9	25.5	0.6 (2.4)
05-14 years	22.2	22.4	0.2 (0.9)	14.2	14.5	0.3 (2.1)
15-24 years	142.3	158.9	16.6 (11.7)	90.6	93.4	2.8 (3.1)
25-34 years	224.6	242.1	17.5 (7.8)	155.5	167.7	12.2 (7.8)
35-44 years	323.4	343.2	19.8 (6.1)	226.5	237.5	11.0 (4.9)
45-54 years	691.9	700.9	9.0 (1.3)	510.2	509.1	-1.1 (-0.2)
55-64 years	1649.2	1655.7	6.5 (0.4)	1084.4	1092.6	8.2 (0.8)
65-74 years	3109.9	3107.9	-2.0 (-0.1)	2172.0	2185.0	13.0 (0.6)
75-84 years	6295.6	6351.2	55.6 (0.9)	5509.7	5512.6	2.9 (0.1)
85+ years	13548.1	13359.3	-188.8 (-1.4)	15322.5	15561.9	239.4 (1.6)

^a Race and Hispanic origin were classified by the funeral director for death certificates and self-reported for population estimates, and were reported separately on the death certificate in accordance with standards set forth by the US Office of Management and Budget.

^b Calculated as $[(2015 \text{ rate} - 2014 \text{ rate}) / (2014 \text{ rate})] \times 100$.

eFigure 1: Contribution of age groups to the change in life expectancy between 2014 and 2015, by gender and race-ethnicity^a.



^a Race and Hispanic origin were classified by the funeral director for death certificates and self-reported for population estimates, and were reported separately on the death certificate in accordance with standards set forth by the US Office of Management and Budget.