

4 National Maps of Heart Disease Mortality among Men

In this section, national geographic disparities in heart disease death rates are presented for all men, Asian and Pacific Islander men, American Indian and Alaska Native men, black men, Hispanic men, and white men. Men ages 35 years and older who resided in the United States during 1991 to 1995 were the study population. Each national map portrays spatially smoothed heart disease death rates for all counties, including Alaska, Hawaii, and the District of Columbia.

To aid in visualization, Hawaii, New York City, and the District of Columbia are shown separately on each map, at a larger scale than the 48 contiguous states. Because of its very large land area, Alaska is shown at a smaller scale than the other states. The distribution of county heart disease death rates for each group of men was divided into quintiles (five categories with an equal number of counties) for the purposes of mapping. Counties in the highest quintile of heart disease mortality are dark teal on the maps, and counties in the lowest quintile are light teal.

On the maps for African Americans, Asian and Pacific Islanders, American Indians and Alaska Natives, and Latinos, heart disease death rates were not calculated for most counties nationwide. These counties are labeled “insufficient data” on the maps. In these counties and their surrounding areas, there were fewer than 20 heart disease deaths among men of the specified racial or ethnic group over our five-year study period. For these areas of very low population and infrequent heart disease deaths, statistically reliable death rates could not be calculated (see Appendix B for more details).

For part of the study period, Oklahoma and New Hampshire did not collect data on Hispanic origin on death certificates. Consequently, we were unable to report heart disease death rates for Latino men in these states. During 1991-1993, “unknown” Hispanic origin was recorded on approximately 23 percent of death certificates for men ages 35 years and older in New York City. Therefore, the heart disease death rates we report for Latinos in New York City may be underestimates (see page 149 for details).

Heart Disease Mortality – All Men

Overall, men aged 35 years and older in the United States experienced a heart disease death rate of 675 per 100,000 population during 1991-1995. However, there was considerable variation in the magnitude of heart disease death rates among the 3,103 counties for which data were available. Rates for counties ranged from 377 to 1,102 deaths per 100,000, and the heart disease death rate at the midpoint of the top quintile (938 per 100,000) was nearly twice as high as the midpoint of the lowest quintile (490 per 100,000). The frequency distribution graph (Figure 4.1) illustrates the range of geographic variation in death rates. The color bar along the x-axis of the graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among all men.

On the map (opposite) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

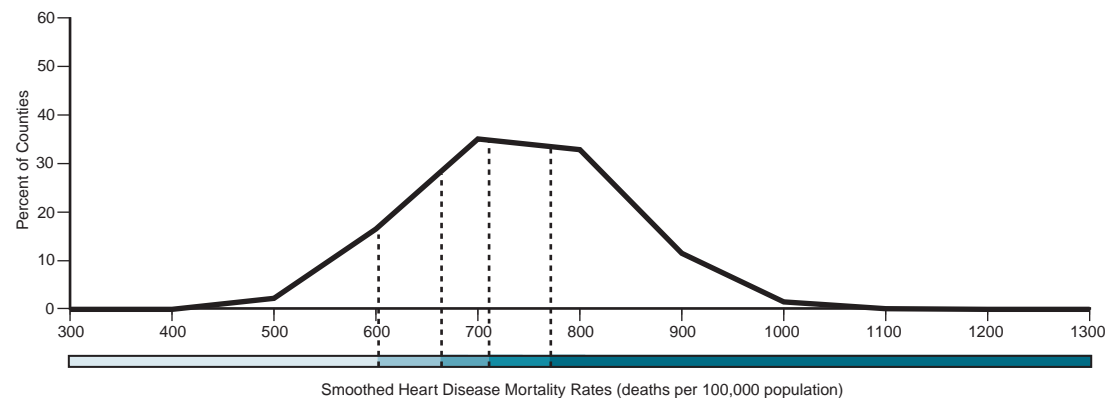
There was a clear east-west gradient in levels of heart disease mortality among men during 1991-1995. Counties in the top two quintiles were located primarily within Appalachia, the

Ohio-Mississippi River Valley, the Mississippi Delta, and the eastern Piedmont and coastal regions of Georgia, South Carolina, and North Carolina. In Florida, most counties experienced rates in the lowest two quintiles, while several of the northern counties had rates in the higher quintiles. Most counties in the Pacific Northwest and Rocky Mountain areas of Colorado and New Mexico were in the lowest quintile. Alaskan and Hawaiian counties had rates in the lowest two quintiles. Men who live in the upper Midwest, New England, and much of Texas experienced intermediate-level rates of heart disease mortality during 1991-1995.

A Note on Methods

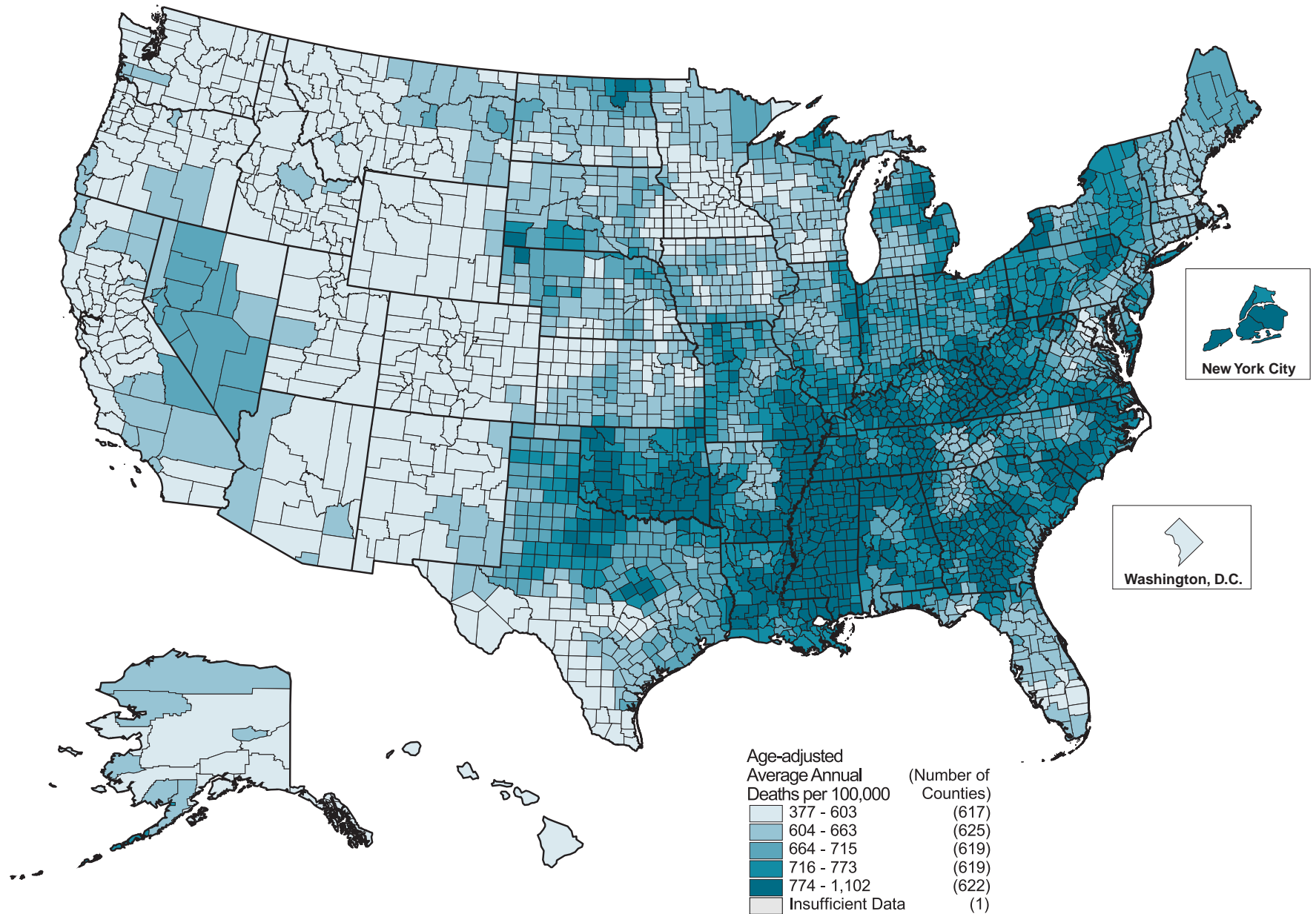
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 U.S. population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and to create the map can be found in Appendix B.

Figure 4.1
Frequency distribution of smoothed heart disease death rates for counties, all men, ages 35 and older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

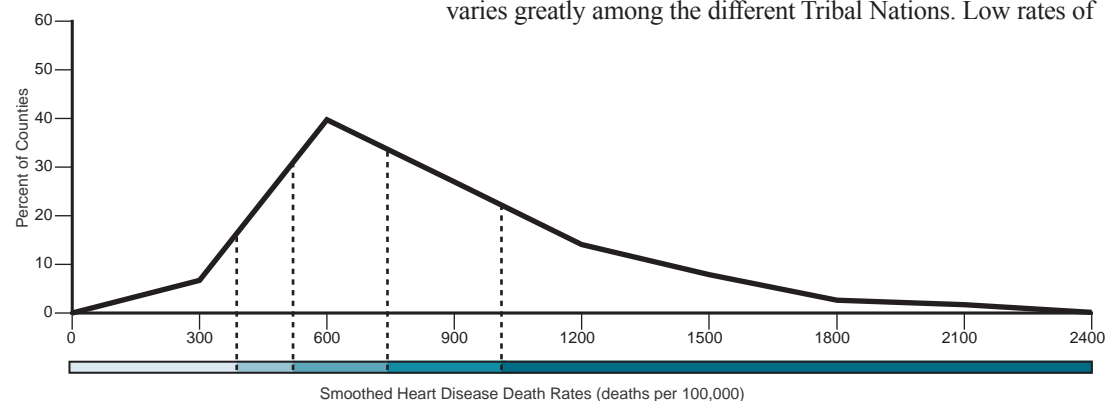
All Men
Ages 35 Years and Older



Heart Disease Mortality – American Indian and Alaska Native Men

American Indian and Alaska Native men comprised 0.6 percent of all men aged 35 years and older in the United States in 1991. For the period 1991-1995, the heart disease death rate for American Indian and Alaska Native men was 465 per 100,000 population. Considerable geographic variation in the burden of heart disease mortality was evident across the 531 counties for which data were available (Figure 4.2). Rates for counties ranged from 130 to 2,195 per 100,000. There was more than a fivefold difference in the heart disease death rate at the midpoint of the top quintile compared with the midpoint of the lowest quintile (1,594 deaths per 100,000 vs. 435 deaths per 100,000). The color bar along the x-axis of the graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among American Indian and Alaska Native men. On the map (opposite), counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

Figure 4.2
Frequency distribution of smoothed heart disease death rates for counties, American Indian and Alaska Native men, ages 35 and older, 1991-1995



The American Indian and Alaska Native population in the United States is composed of many politically and culturally distinct Tribal Nations residing both in defined rural areas (in some cases reservations with limited political sovereignty) and in urban areas (see page 41 for a map of the geographic distribution of the American Indian and Alaska Native population of men). The map of heart disease death rates among American Indian and Alaska Native men suggests that risk for heart disease varies greatly among the different Tribal Nations. Low rates of

heart disease mortality were found in large metropolitan counties and surrounding areas (New York City, San Francisco, Los Angeles, and Chicago). Low rates of heart disease mortality were also experienced by men in some parts of Oklahoma (predominantly Cherokee Nation), Arizona, and New Mexico (predominantly Navajo Nation). High rates of heart disease mortality were experienced by men in South Dakota (predominantly Dakota Nation), Montana, and Minnesota (predominantly Chippewa Nation). An area of southeastern North Carolina is home to a large group of Lumbee Indians, who are not a federally recognized tribe. American Indian men in this area also experienced high rates of heart disease mortality. American Indian men in Utah and the Pacific Northwest, and Alaska Natives experienced intermediate rates of heart disease mortality.

A Note on Methods

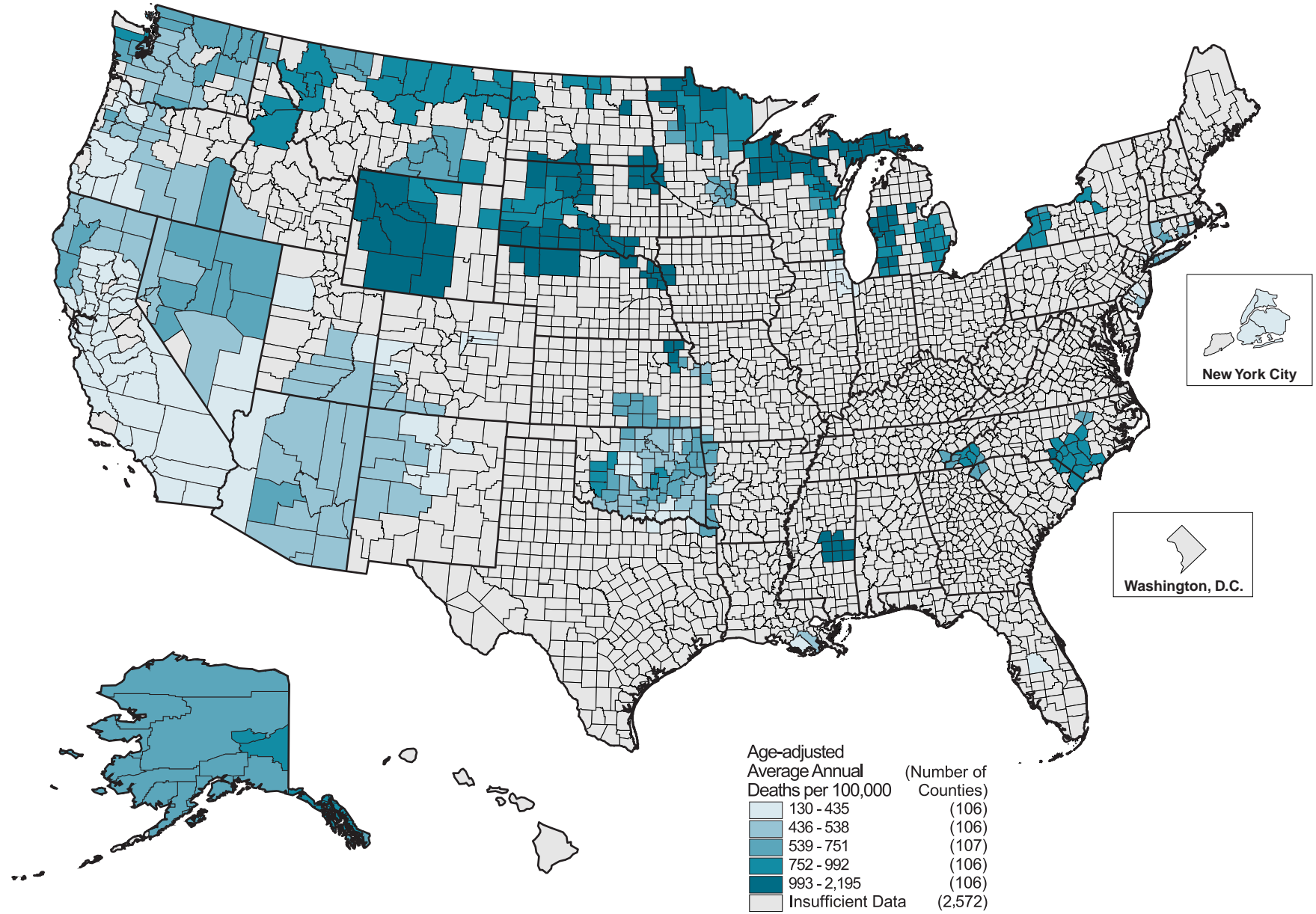
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that certain racial and ethnic minorities are sometimes misreported as “white” on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among American Indian and Alaska Native men could not be included in the data analyses for this report. Consequently, the true heart disease death rates for American Indian and Alaska Native men were probably higher during 1991-1995 than indicated in Figure 4.2 and the map. In addition, if misreporting of race on death certificates were a greater problem in certain parts of the country than in others, then the geographic patterns presented here could be biased.

Smoothed County Heart Disease Death Rates
1991-1995

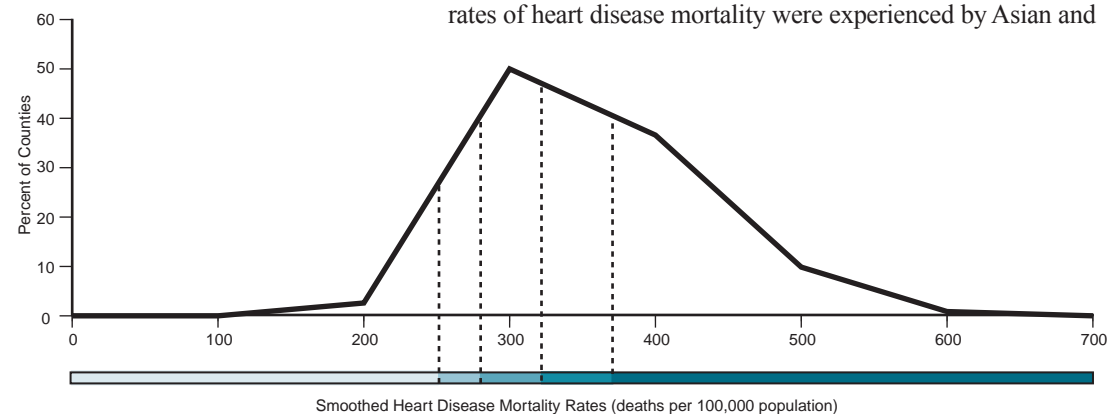
American Indian and Alaska Native Men
Ages 35 Years and Older



Heart Disease Mortality – Asian and Pacific Islander Men

The heart disease death rate among Asian and Pacific Islander men aged 35 years and older during 1991-1995 was 372 per 100,000. Asian and Pacific Islander men comprised 2.7 percent of all men in this age group in 1991. There were 344 counties for which there were sufficient data to calculate heart disease death rates for Asian and Pacific Islander men. There was a substantial difference in the level of heart disease mortality between the counties in the highest and lowest quintiles. The heart disease death rate at the midpoint of the top quintile (454 per 100,000) was two times higher than the midpoint of the bottom quintile (211 per 100,000). Rates for counties ranged from 172 to 537 per 100,000 (Figure 4.3). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among Asian and Pacific Islander men. On the map (opposite) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

Figure 4.3
Frequency distribution of smoothed heart disease death rates for counties, Asian and Pacific Islander men, ages 35 and older, 1991-1995



With the exception of Hawaii, the overwhelming majority of Asian and Pacific Islander men in the United States resided in metropolitan areas during 1991-1995 (see page 43 for a map of the geographic distribution of the Asian and Pacific Islander population of men). Low rates of heart disease mortality were observed for the Miami, Tampa-St.Petersburg, Cleveland, District of Columbia, and Minneapolis metropolitan areas. High rates of heart disease mortality were experienced by Asian and

Pacific Islander men in Hawaii, New York City, most of California, southern Arizona, Salt Lake City, and Detroit. Asian and Pacific Islander men in Texas, Denver, Chicago, and New Jersey experienced intermediate-level heart disease death rates.

A Note on Methods

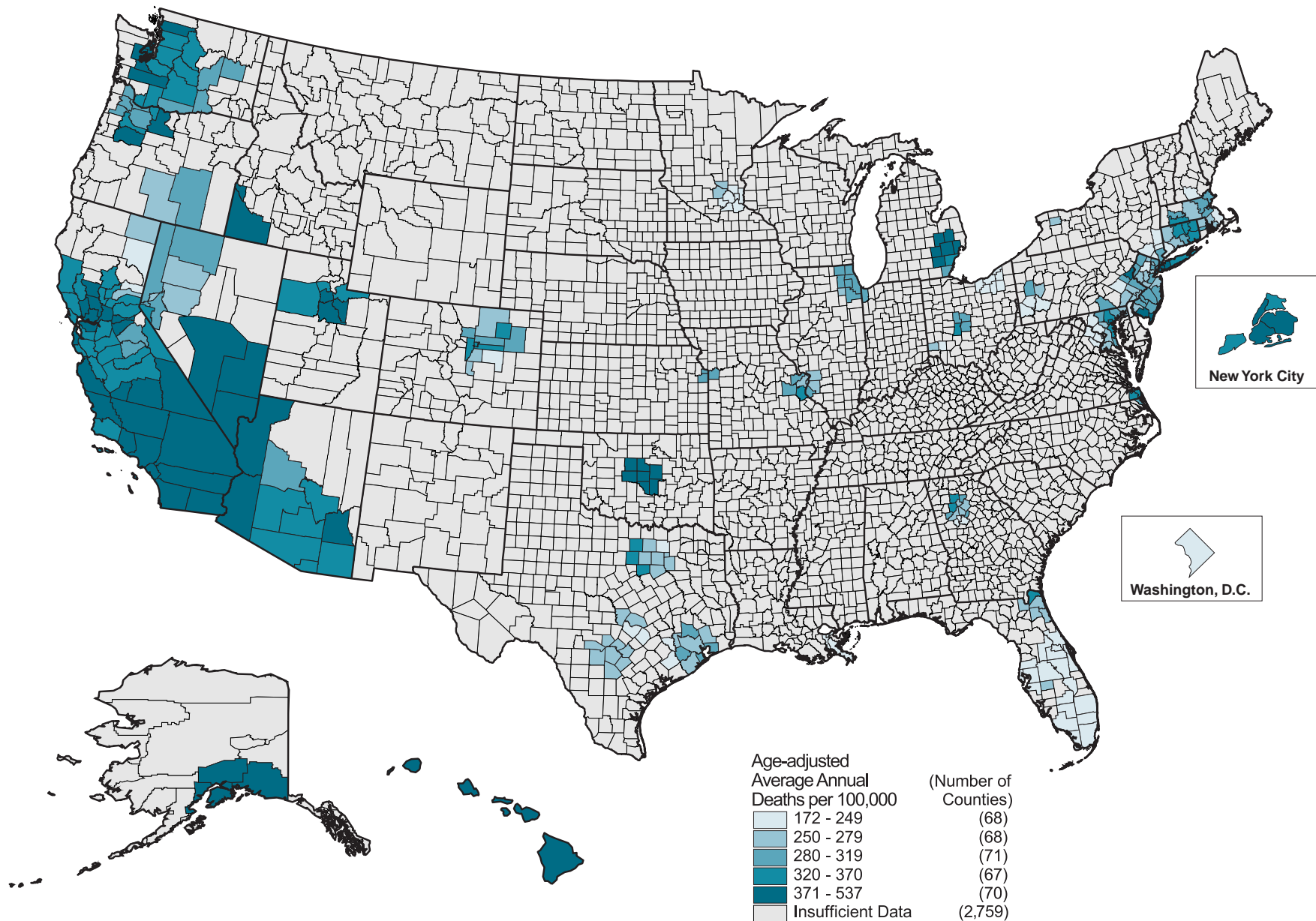
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that certain racial and ethnic minorities are sometimes misreported as “white” on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among Asian and Pacific Islander men could not be included in the data analyses for this report. Consequently, the true heart disease death rates for Asian and Pacific Islander men were probably higher during 1991-1995 than shown in Figure 4.3 and the map. In addition, if misreporting of race on death certificates were a greater problem in certain parts of the country than in others, then the geographic patterns presented here could be biased.

Smoothed County Heart Disease Death Rates
1991-1995

Asian and Pacific Islander Men
Ages 35 Years and Older



Heart Disease Mortality – Black Men

Blacks were the largest racial and ethnic minority group among men aged 35 years and older in 1991, comprising 9.4 percent of all men. Overall, African American men experienced a heart disease death rate of 841 per 100,000 during 1991-1995. However, the 1,946 counties for which sufficient data were available exhibited considerable variation in the magnitude of heart disease death rates for black men. Rates for counties ranged from 339 to 1,461 per 100,000 (Figure 4.4), and the heart disease death rate at the midpoint of the top quintile (1,207 per 100,000) was three times higher than the rate at the midpoint of the bottom quintile (534 per 100,000). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in men's heart disease death rates. On the map (opposite) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

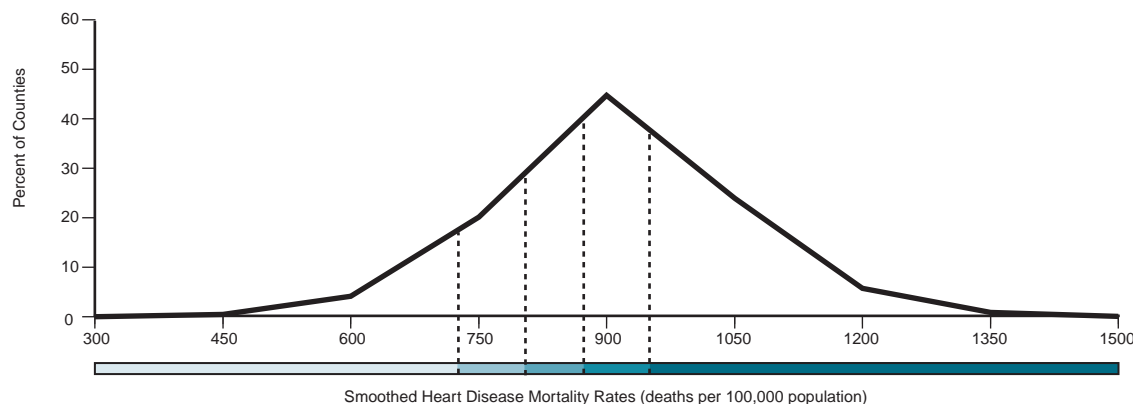
The map of heart disease mortality among African American men indicates that the counties in the top two quintiles were

concentrated primarily in the lower Mississippi River counties of Louisiana, Mississippi, and Arkansas, in rural counties throughout the South and Appalachia, and in the metropolitan areas of Chicago, St. Louis, Los Angeles, and Oklahoma City. Counties with the lowest rates of heart disease mortality for black men were found in Florida, New Mexico, northern California, the Pacific Northwest, and in the metropolitan areas of the District of Columbia, Denver, and Minneapolis. African American men in most of the Northeast and Midwest experienced intermediate rates of heart disease mortality during 1991-1995.

A Note on Methods

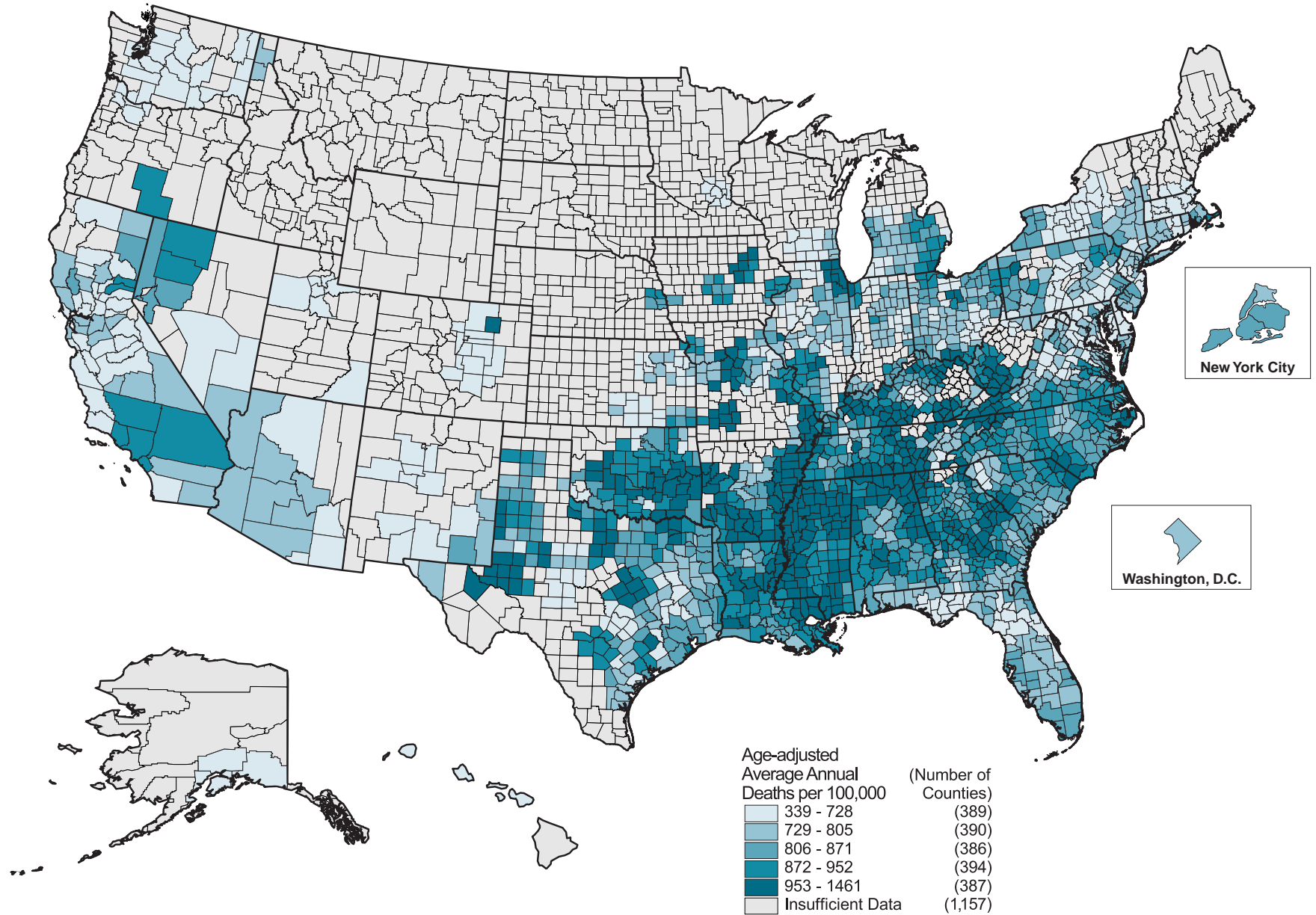
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

Figure 4.4
Frequency distribution of smoothed heart disease death rates for counties, black men, ages 35 and older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

Black Men
Ages 35 Years and Older

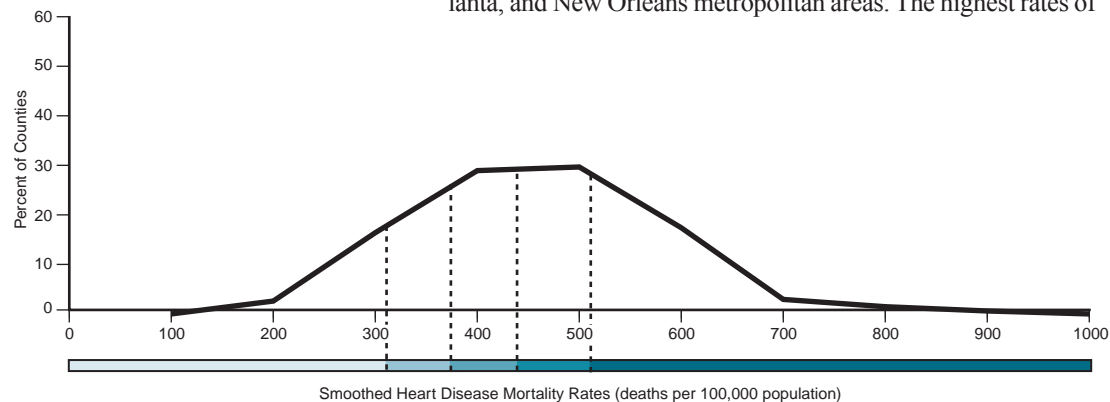


Heart Disease Mortality – Hispanic Men

Latinos were the second largest racial and ethnic minority group among men aged 35 years and older in 1991, comprising 6.5 percent of all men. For the period 1991-1995, the heart disease death rate for Hispanic men was 432 per 100,000 population. Considerable geographic variation in the burden of heart disease mortality was evident across the 810 counties for which data were sufficient to calculate a rate (Figure 4.5). Rates for counties ranged from 115 to 855 deaths per 100,000. There was a threefold difference in the heart disease death rate at the midpoint of the top quintile compared with the midpoint of the lowest quintile (683 deaths per 100,000 and 211 deaths per 100,000). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in men's heart disease death rates. On the map (opposite) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

The Latino population in the United States is concentrated in both rural (predominantly Southwest) and urban/metropolitan areas (see page 47 for the geographic distribution of the Hispanic population of men). The map of heart disease death rates among Latino men shows marked geographic variation. Low rates of heart disease mortality were experienced by men in northern California and the Pacific Northwest, northern Florida, and in the Boston, Minneapolis, Washington-Baltimore, Atlanta, and New Orleans metropolitan areas. The highest rates of

Figure 4.5
Frequency distribution of smoothed heart disease death rates for counties, Hispanic men, ages 35 and older, 1991-1995



heart disease mortality were experienced by men in eastern Pennsylvania, Miami, and in the rural areas of Texas, New Mexico, Arizona, Colorado, and California. Latinos in New York City, upstate New York, most of Florida, southern California, and some metropolitan areas of the Southwest such as Houston, Dallas, and Denver experienced intermediate-level rates of heart disease mortality.

A Note on Methods

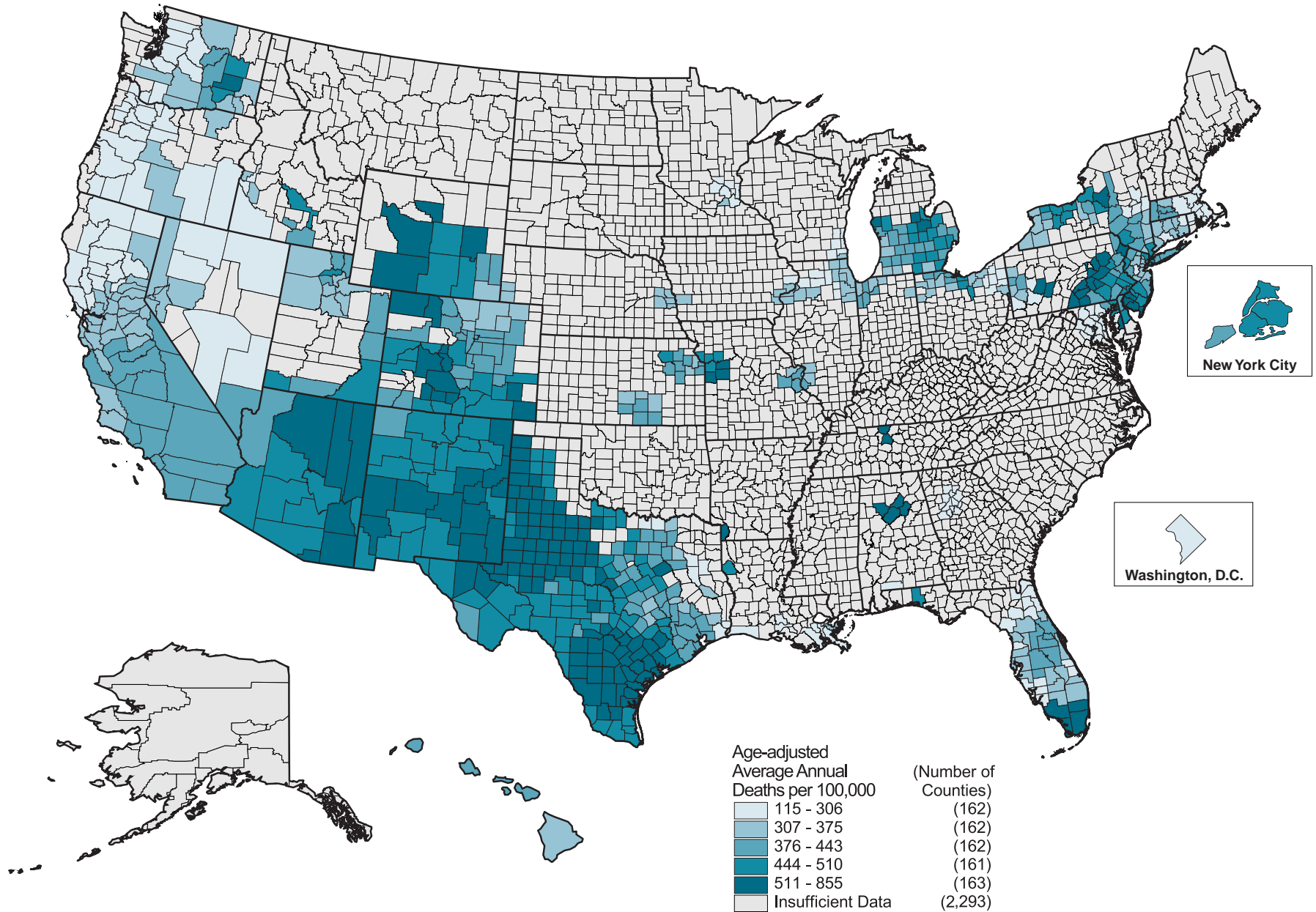
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that Hispanics are sometimes misreported as non-Hispanic on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among Latino men could not be included in the data analyses for this report. In New York City, approximately 23 percent of death certificates for men ages 35 and older recorded Hispanic origin as “unknown” during 1991-1993 (see page 149 for details). Consequently, the true heart disease death rates for Hispanic men were probably higher during 1991-1995 than shown in Figure 4.5 and this map. In addition, if misreporting of Hispanic origin on death certificates was a greater problem in certain parts of the country, then the geographic patterns presented here could be biased.

Smoothed County Heart Disease Death Rates
1991-1995

Hispanic Men
Ages 35 Years and Older

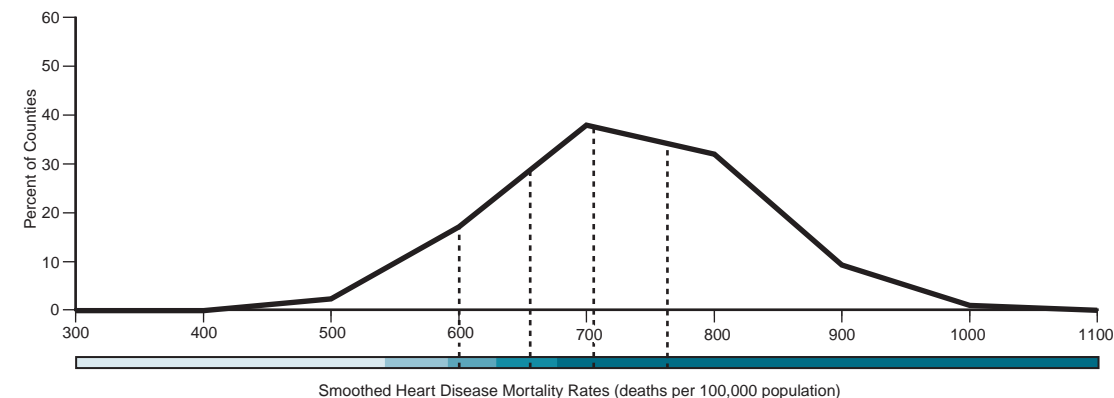


Heart Disease Mortality – White Men

White men comprised 87.3 percent of all men aged 35 years and older in 1991. Overall, the heart disease death rate among white men was 666 per 100,000 for the period 1991-1995. Substantial geographic variation in heart disease death rates was observed among the 3,100 counties for which sufficient data were available to calculate rates. There was a substantial difference in the level of heart disease mortality between the counties in the highest and lowest quintiles (Figure 4.6). The heart disease death rate at the midpoint of the top quintile (892 per 100,000) was nearly two times higher than the midpoint of the bottom quintile (489 per 100,000). Rates for counties ranged from 377 to 1,021 per 100,000. The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in men's heart disease death rates. On the map (opposite), counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest teal were in the highest-rate quintile, and counties of the lightest teal were in the lowest-rate quintile.

Figure 4.6
Frequency distribution of smoothed heart disease death rates for counties, white men, ages 35 and older, 1991-1995

A clear east-west gradient in heart disease death rates among white men was evident for 1991-1995, with the highest rates occurring predominantly in the eastern portion of the United States and the lowest rates occurring predominantly in the West.



Counties in the top two quintiles were located primarily within Appalachia, the Mississippi-Ohio River Valley, Mississippi Delta, and Piedmont and coastal regions of Georgia, South Carolina, and North Carolina. In Florida, most counties had rates in the bottom two quintiles but several northern counties had rates in the higher quintiles. Other areas of low heart disease death rates for white men in the South included the metropolitan areas of Atlanta, Raleigh-Durham, and the District of Columbia. Large sections of the northwestern states south through Colorado and New Mexico had counties in the lowest quintile of heart disease mortality. Alaska and Hawaii both had counties in the lowest quintiles. Along the border between Nevada and California and in southern California, intermediate levels of heart disease mortality among white men were observed.

A Note on Methods

Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 U.S. population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

Smoothed County Heart Disease Death Rates
1991-1995

White Men
Ages 35 Years and Older

