

3 Local Social Environment and Women's Risk for Heart Disease Mortality

Most contemporary heart disease prevention efforts focus on changing the behavior of individuals regarding lifestyle factors: dietary habits, leisure-time physical activity, and tobacco use.¹ Health promotion programs that focus on behavioral risk factors have been effective among adults who are highly educated, fully employed, and highly motivated to improve their health (i.e. among relatively privileged populations). However, the lifestyle approach to heart disease prevention has serious limitations for people who are at highest risk: namely, rural residents, the working class, and the poor. These groups, unfortunately, have greater exposure to risk factors such as cigarette smoking, physical inactivity, high-fat diets, and psychological stress. These groups also face substantial social, economic, and geographic barriers to risk factor reduction.

A holistic alternative to the lifestyle approach to heart disease prevention focuses on broad improvements in local social environments, recognizing that the social environment provides

the context within which individuals are exposed to structural risk factors (poverty, social isolation, stressful working environments) and adopt detrimental behaviors (cigarette smoking, physical inactivity, poor diets).^{2,3} Under this model, primary prevention of heart disease can be achieved through communitywide improvements in the social environment, including full employment in healthy work environments, access to affordable healthy foods and recreational facilities, freedom from bigotry and discrimination, and opportunities for social interaction and participation in civic life.⁴

In this section of the atlas, we examined several aspects of local social environments that are relevant for primary and secondary prevention of heart disease mortality. The four indicators of the quality of the social environment that we examined were: race or ethnicity-specific population distributions, local economic resources, social isolation of elderly women, and medical care resources.

¹ U.S. Department of Health and Human Services. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. DHHS Pub. No.(PHS) 91-50212. Washington DC: U.S. Government Printing Office, 1991.

² Sclar ED. Community economic structure and individual well-being: a look behind the statistics. *International Journal of Health Services* 1980; 10:563-579.

³ Armstrong D, Barnett E, Casper M, Wing S. Community occupational structure, medical and economic resources, and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998; 8(3):184-191.

⁴ Wing S. Social inequalities in the decline of coronary mortality. *American Journal of Public Health* 1988; 78:1415-1416.

The first set of maps depicts the *population distribution* for each of the racial and ethnic groups for whom heart disease mortality data were analyzed. There are dramatic patterns of spatial concentration of racial and ethnic minorities in particular localities and regions within the United States. Geographic segregation and concentration of particular racial and ethnic groups are important predictors of access to economic opportunities, social services, and medical care resources.

Local economic resources for all counties in the United States were examined through the use of a summary index composed of three measures: white collar employment, unemployment, and family incomes. Local economic resources often determine the availability of resources for healthful living, including safe and affordable foods and recreational facilities.

In general, women in the United States have both longer life expectancy and fewer economic assets than with men. Conse-

quently, the problem of *social isolation of elderly women* is substantial. Social isolation of women can limit social interaction, social support, access to necessities of daily living, access to routine social and health services, and access to acute (emergency) medical care.⁵ Three measures of women's social isolation were examined: poverty, living alone, and mobility or self-care limitations.

Finally, *medical care resources*, particularly those related to treatment and rehabilitation of patients with heart disease, were examined. Lack of local availability of medical care resources often means prohibitively expensive and time-consuming travel to a physician or hospital in a distant location for a patient with heart disease.^{6,7} We examined local availability of three specific heart disease care resources: cardiovascular disease specialty physicians, coronary care unit beds, and cardiac rehabilitation units.

⁵ Kaplan GA, Salonen JT, Cohen RD, Brand RJ, Syme SL, Puska P. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from Eastern Finland. *American Journal of Epidemiology* 1988; 128(2):370-380.

⁶ Behringer B. Health care services in Appalachia, in Couto RA, Harris G, Simpson NK (eds); *Sowing Seeds in the Mountains: Community-Based Coalitions for Cancer Prevention and Control*. Bethesda, MD: National Cancer Institute; 1994:62-80.

⁷ Whiteis DG. Third world medicine in first world cities: capital accumulation, uneven development and public health. *Social Science and Medicine* 1998;47:795-808.

In 1990, there were 127,470,455 women of all ages, races, and ethnicities living in counties across the United States.¹ Each racial and ethnic group has its own unique geographic pattern of population distribution. The distinctive patterns reflect differences in migration histories, social and economic opportunities, political conditions, immigration rates, cultural preferences, and fertility rates.

The United States population is becoming more diverse by race and Hispanic origin. For example, from 1994 to 1995 the population of Asian and Pacific Islanders increased 3.8%, the Latino population increased 3.5%, and the black, American Indian, and Alaska Native populations increased 1.5% while the white population increased only 0.8%.² Population projections from the Bureau of the Census suggest that by 2050 the white non-Hispanic population may comprise 52.5% of the United States population compared with its 1990 level of 75.7%. Latinos may be the second largest group comprising 22.5% of the population, followed by blacks (15.7%), Asian and Pacific Islanders (10.3%) and American Indians and Alaska Natives (1.1%).³

It is important to remember that in this book, populations defined by race (Asians and Pacific Islanders, American Indians and Alaska Natives, African Americans, and whites) are not

mutually exclusive of the population defined by Hispanic origin. In other words, each of the four race groups includes women of Latina ethnicity; similarly, the Hispanic population includes women of all races. The population totals for “all women” result from the sum of the population totals for each of the four race groups.

Recent migration patterns within the United States have been characterized as responses to the following three forces: 1) a movement away from rural areas into the cities, 2) a counter-movement away from cities and suburbs to nearby non-metropolitan counties, and 3) interregional movements predominantly from east to west but increasingly from north to south and from California to the north and east.⁴

The maps in this section portray two dimensions of the population distribution for each of the racial and ethnic groups. Counties are categorized according to the number of women of each racial and ethnic group as well as the percentage of women in the county who belong to each racial and ethnic group. These two dimensions allow the reader to identify the counties with the largest populations of women for each racial and ethnic group while also noting where each racial and ethnic group is most heavily concentrated.

¹ Bureau of the Census. *We the American women*. Washington DC: U.S. Government Printing Office, September 1993.

² Deardorf KE and Montgomery P. National population trends. In U.S. Bureau of the Census, current population reports, series p23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office, 1995.

³ Day JC. National population projections. In U.S. Bureau of the Census, current population reports, series p23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

⁴ Paterson JH. *North America*. Oxford: Oxford University Press, 1994, pp.58-60.

American Indian and Alaska Native Women

According to the Bureau of the Census, in 1990 there were 1,959,234 American Indians and Alaska Natives living in the United States.¹ With over 500 federally recognized tribes, there is substantial geographic, cultural, historical and linguistic diversity among American Indian and Alaska Native peoples. The tribes also vary in size, with only four tribes having greater than 100,000 members: Cherokee, Navajo, Chippewa and Sioux.²

In 1990, nearly one-half the American Indian and Alaska Native population lived in the West, 29% lived in the South, 17% lived in the Midwest and 6% lived in the Northeast.¹ The concentration of American Indians and Alaska Natives in the West and the small population sizes in the Northeast reflect the effects of the Indian Removal Bill passed in 1830, which mandated the removal of all Indians east of the Mississippi River.³ Many of the tribal nations from the East were forced to resettle in what is now Oklahoma. In 1990, Oklahoma was the state with the largest population of American Indians and Alaska Natives. More than one half of the American Indian and Alaska Native population lived in just six states—all located in the West: Oklahoma, California, Arizona, New Mexico, Alaska, and Washington.² The tribal nations currently residing in the East are descendants of small bands of Indians who escaped removal and managed to remain on their native lands. The largest American Indian populations in the East are located in New York and North Carolina.³

The map (opposite page) depicts the county distribution of the population of American Indian and Alaska Native women ages

35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were American Indian or Alaska Native (labeled *proportion* on the legend) are displayed. Counties were assigned to one of nine categories based on both population size and proportion of women who were American Indian or Alaska Native. Counties of the lightest color on the map had fewer than 5,000 American Indian and Alaska Native women who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of American Indian and Alaska Native women. A detailed guide to interpreting this map can be found on page 31.

Counties with the highest proportions of American Indian and Alaska Native women were located primarily in the following western states: Alaska, Arizona, New Mexico, Utah, North Dakota, South Dakota, and Montana. None of the counties in the United States had populations of American Indian and Alaska Native women that were larger than 50,000. The vast majority of United States counties had populations of American Indian and Alaska Native women that were smaller than 5,000 and comprised less than 10% of the population of women. This pattern reflects the fact that a) only 22.3% of the American Indian and Alaska Native population live on reservations² and b) most of the 314 reservations and trust lands have populations of fewer than 1,000 (only 10 reservations had populations greater than 7,000; see table). With the exception of Los Angeles and Phoenix, American Indian and Alaska Native women live predominantly in non-metropolitan areas.

Ten Reservations with the Largest Numbers of American Indians and Alaska Natives: 1990

Navajo (AZ, NM, UT*)	143,405
Pine Ridge (NE, SD*)	11,182
Fort Apache (AZ)	9,825
Gila River (AZ)	9,116
Papago (AZ)	8,480
Rosebud (SD*)	8,043
San Carlos (AZ)	7,110
Zuni Pueblo (AZ, NM)	7,073
Hopi (AZ*)	7,061
Blackfeet (MT)	7,025

* includes trust lands

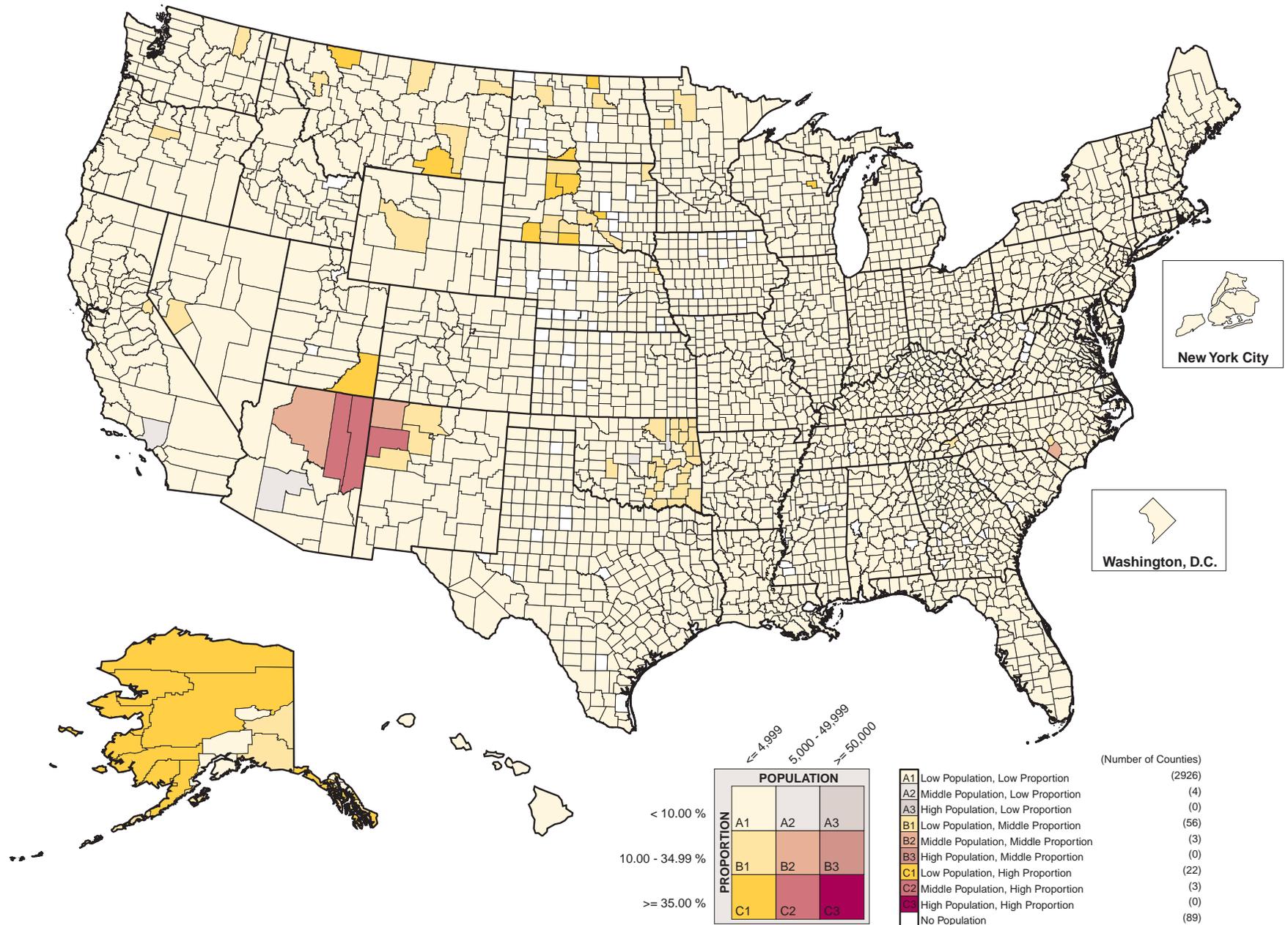
¹ Paisano EL. The American Indian, Eskimo, and Aleut population. In U.S. Bureau of the Census, Current Population Reports, Series P23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

² Bureau of the Census. *We the first Americans*. Washington DC: U.S. Government Printing Office: September 1993.

³ Snipp CM. *American Indians: The First of This Land*. New York: Russel Sage Foundation, 1989.

Geographic Distribution of Population
1995

American Indian and Alaska Native Women
Ages 35 Years and Older

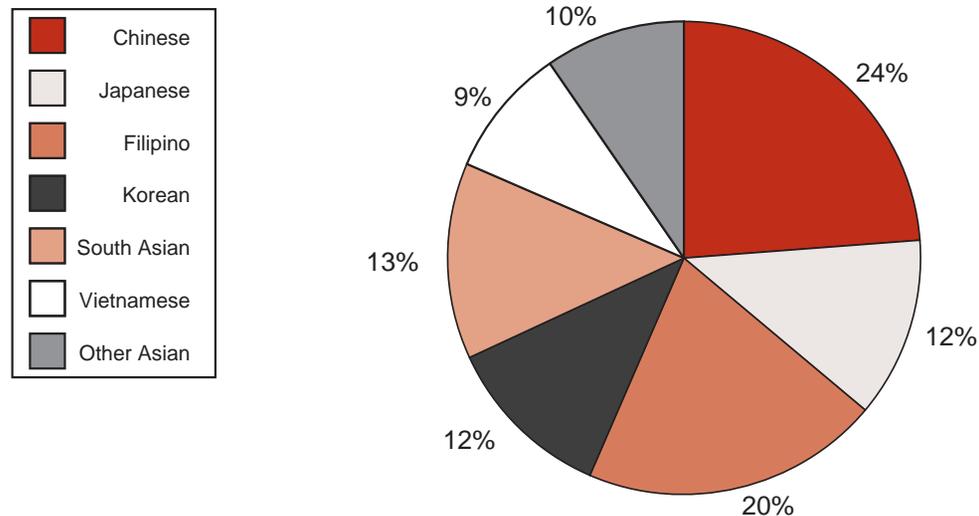


Asian and Pacific Islander Women

The Asian and Pacific Islander population in the United States is diverse in ethnicity, language, and country of origin. The 1990 Census counted 7.3 million Asians and Pacific Islanders, who comprised about 3% of the total population.¹ Asians and Pacific Islanders in the United States reside predominantly in metropolitan areas and are also more likely to reside in central cities than non-Hispanic whites.¹

Asians of various ethnicities comprise 95% of the total Asian and Pacific Islander population.² About one-half of Asians in the United States are of Chinese, Japanese, or Korean ethnicity (Figure 3.1). Other significant groups include Filipinos, South Asians (Indians, Pakistanis, Bangladeshis, and Sri Lankans), and Vietnamese. Overall, 66% of Asians were born in foreign countries, but the percent of foreign-born individuals varies considerably by ethnicity. In 1990, only 32% of persons of Japanese ancestry were foreign-born.²

Figure 3.1
Asian Populations in the
United States, 1990



¹ Bennett CE, Martin B. The Asian and Pacific Islander Population, pp.48-49, in U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

Pacific Islanders comprise approximately 5% of the total Asian and Pacific Islander population. Most Pacific Islanders were Hawaiian (58%) in 1990, followed by Samoan (17%), Guamanian (14%) and all other (11%).³ Pacific Islanders reside predominantly in the western United States; in 1990 75% of Pacific Islanders lived in either Hawaii or California. Only 13% of Pacific Islanders living in the United States in 1990 were born outside the United States.

The map (opposite page) depicts the county distribution of the population of Asian and Pacific Islander women ages 35 years and older in 1995. Numbers of women (labeled *population* on the legend) and the proportion of all women who were Asian or Pacific Islander (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were Asian or Pacific Islander. Counties with the lightest color on the map had fewer than 5,000 Asian and Pacific Islander women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of Asian and Pacific Islander women. A detailed guide to interpreting this map can be found on page 31.

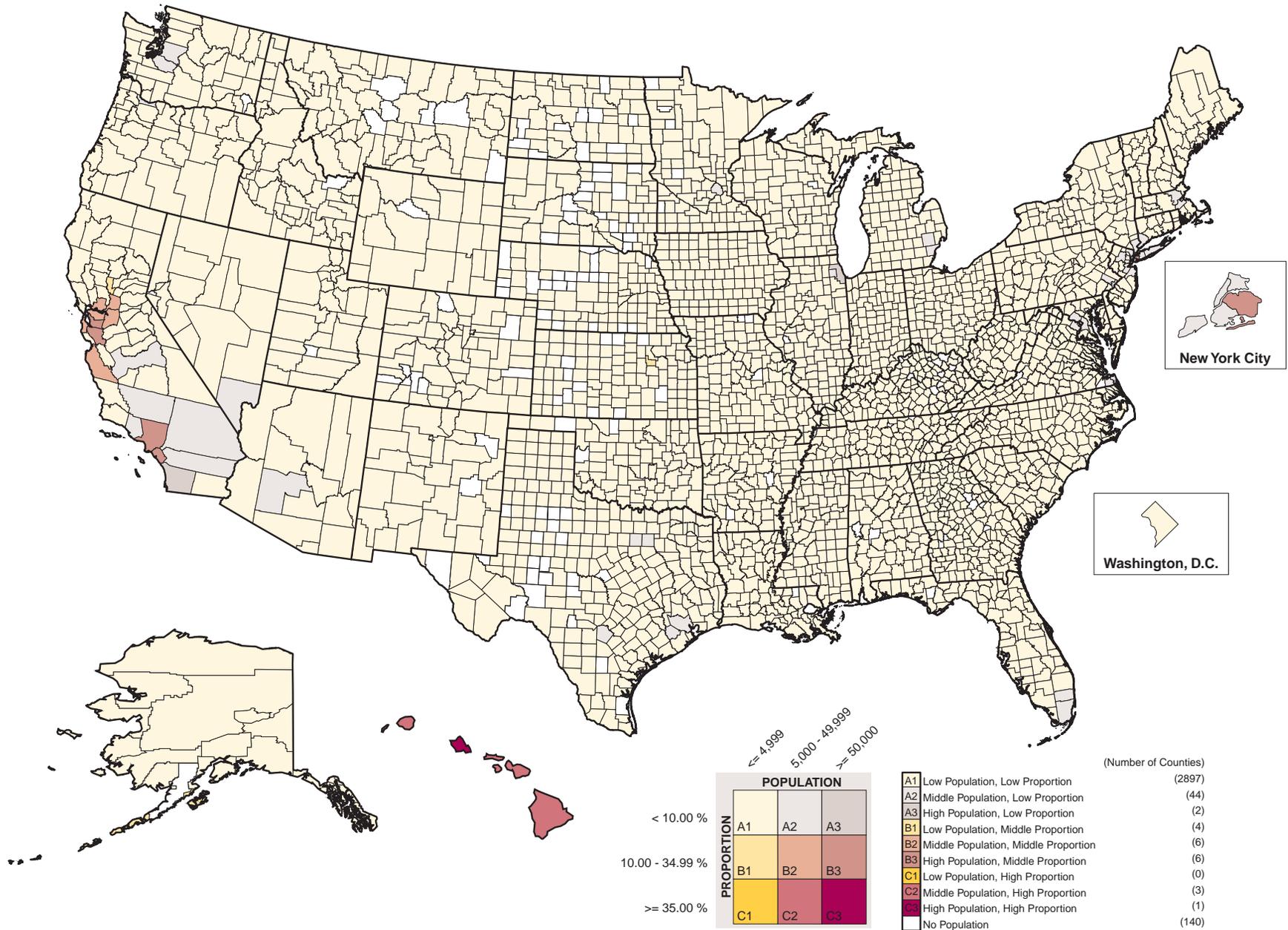
Although only 140 counties in the U.S. had no Asian or Pacific Islander women ages 35 years and older in 1995, the great majority of counties (n=2897) were included in the lowest category of both population size and proportion. High proportions of Asian and Pacific Islander women were found in Hawaii, several counties in California, and Queens County, New York (part of New York City). Moderately sized populations of Asian and Pacific Islander women resided in several metropolitan areas, including New York City, Boston, Washington, Miami, Houston, Dallas, and Seattle.

² Bureau of the Census. *We the Americans: Asians*. Washington DC: U.S. Government Printing Office: September 1993.

³ Bureau of the Census. *We the Americans: Pacific Islanders*. Washington DC: U.S. Government Printing Office: September 1993.

Geographic Distribution of Population
1995

Asian and Pacific Islander Women
Ages 35 Years and Older



The 1990 United States census counted almost 30 million blacks, who comprised 12% of the total population.¹ Most African American people in the United States today are descended from West Africans who were forcibly relocated to work as slaves in European colonies in the Caribbean and North America from the sixteenth to the nineteenth centuries. A small proportion of U.S. blacks are recent immigrants from Africa. The geographic distribution of the African American population today reflects the original settlement of early African migrants in the South as well as more recent internal migrations to northeastern and midwestern cities.² Today most blacks nationwide live in metropolitan areas (83.8%), but a substantial proportion of African Americans in the South live either in non-metropolitan areas (28.0%) or outside of central cities (27.9%).³

The map (opposite page) depicts the county distribution of the population of black women ages 35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were black (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were African American.

Counties of the lightest color on the map had fewer than 5,000 black women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of African American women. A detailed guide to interpreting this map can be found on page 31.

Black women are the second most numerous and geographically dispersed group of women in the nation, and they composed 35% or more of the total population of women in 205 counties in 1995. These counties included the cities of Memphis, Atlanta, Washington DC, New York City, and Detroit and a number of smaller metropolitan and rural counties in the southern states of Louisiana, Arkansas, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia. Outside the South, African American women resided predominantly in moderate to large metropolitan areas, including Chicago, Los Angeles, San Francisco, and St. Louis. A substantial number of counties nationwide had no African American women residents in 1995 (n=398), and a majority (n=1,916) had low populations as well as low proportions of Black women.

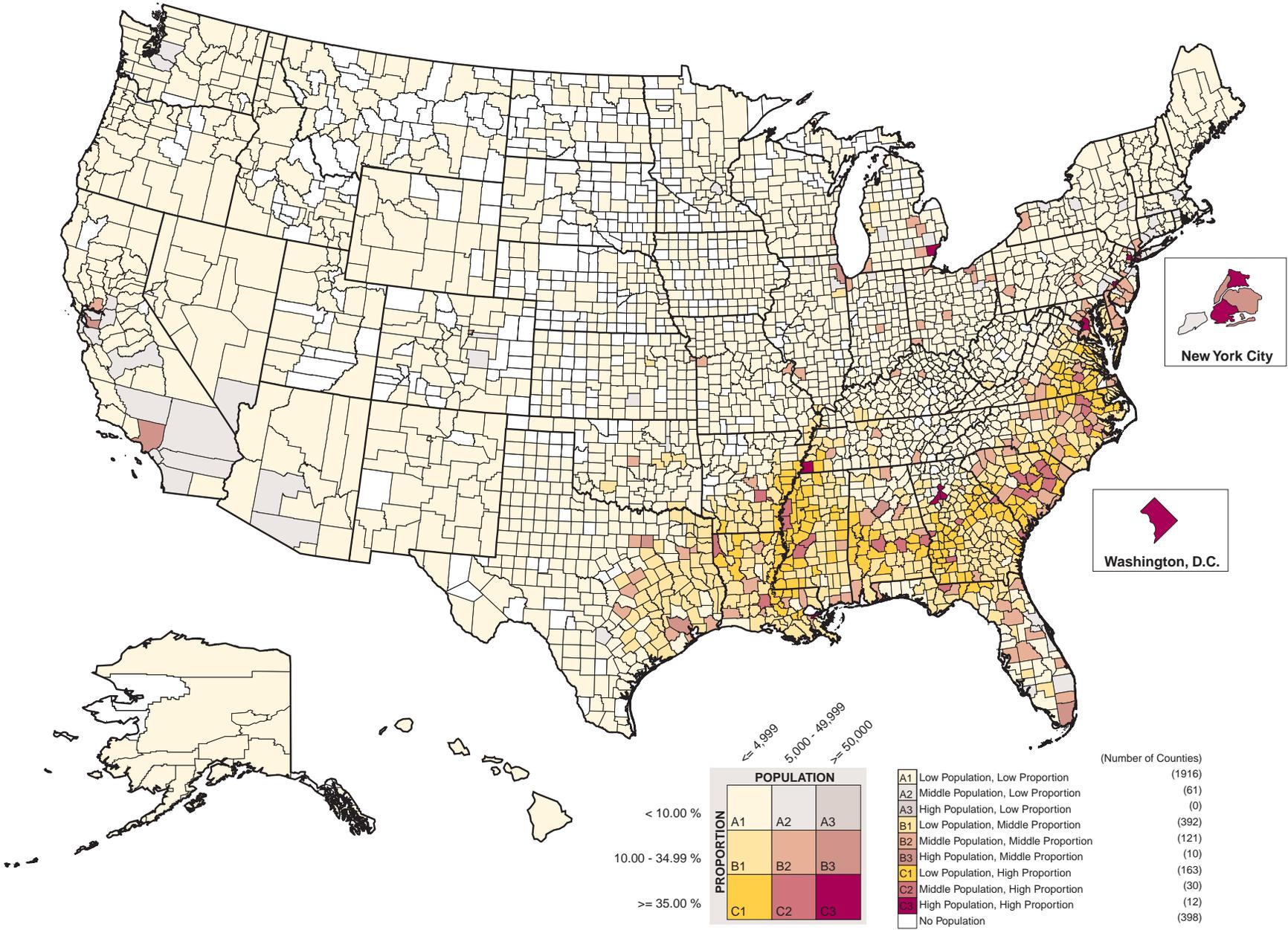
¹ Bennett CE, DeBarros KA. The Black Population. pp.44-45, In U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

² Smallwood AD. *The Atlas of African-American History and Politics: From the Slave Trade to Modern Times*. Boston: McGraw Hill, 1998.

³ Bureau of the Census. *We the Americans: Blacks*. Washington DC: U.S. Government Printing Office: September 1993.

Geographic Distribution of Population
1995

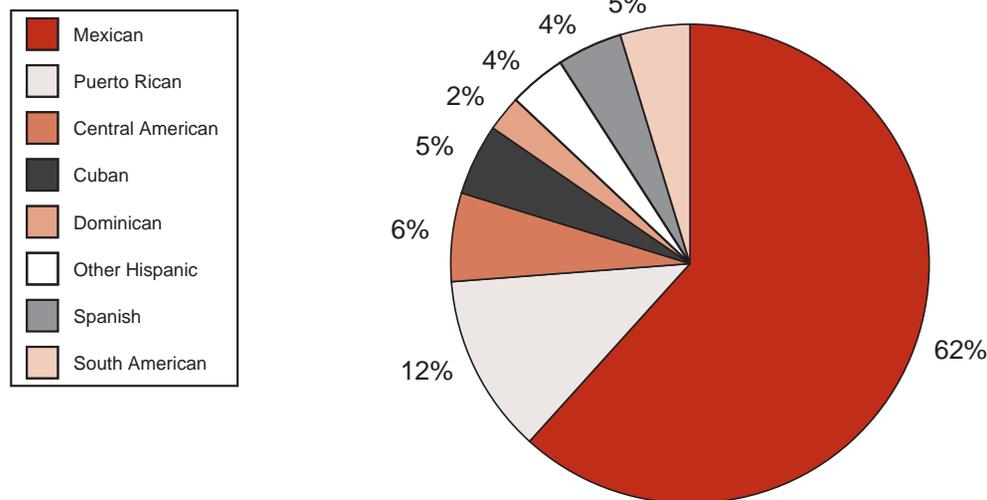
Black Women
Ages 35 Years and Older



Hispanic Women

The terms “Hispanic” or “Latino/a,” as defined by the Federal Office of Management and Budget, refer to persons of Spanish culture or origin, regardless of race. This population in the United States includes people who refer to themselves as Chicana/o, Puerto Rican, and Cuban, among many other designations.¹ In 1993 there were 22.8 million persons of Latino origin, comprising nearly 9% of the total population.² The Hispanic population is diverse in ethnicity, culture, and country of origin. As shown in Figure 3.2, most Latinos in the United States are of Mexican origin (61.2%), followed by Puerto Rican origin (12.1%), and Central American origin (6%).³ Of all Hispanics in the United States in 1990, the majority were native born (64.2%), and an additional 9.4% were naturalized citizens.³

Figure 3.2
Hispanic Populations in the United States, 1990



¹ Oboler S. Hispanics? That’s what they call us, pp 3-5, In Delgado R, Stefancie J (eds). *The Latino/a Condition*. New York: New York University Press: 1998.

² Del Pinal J. The Hispanic Population, pp.46-47, In U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

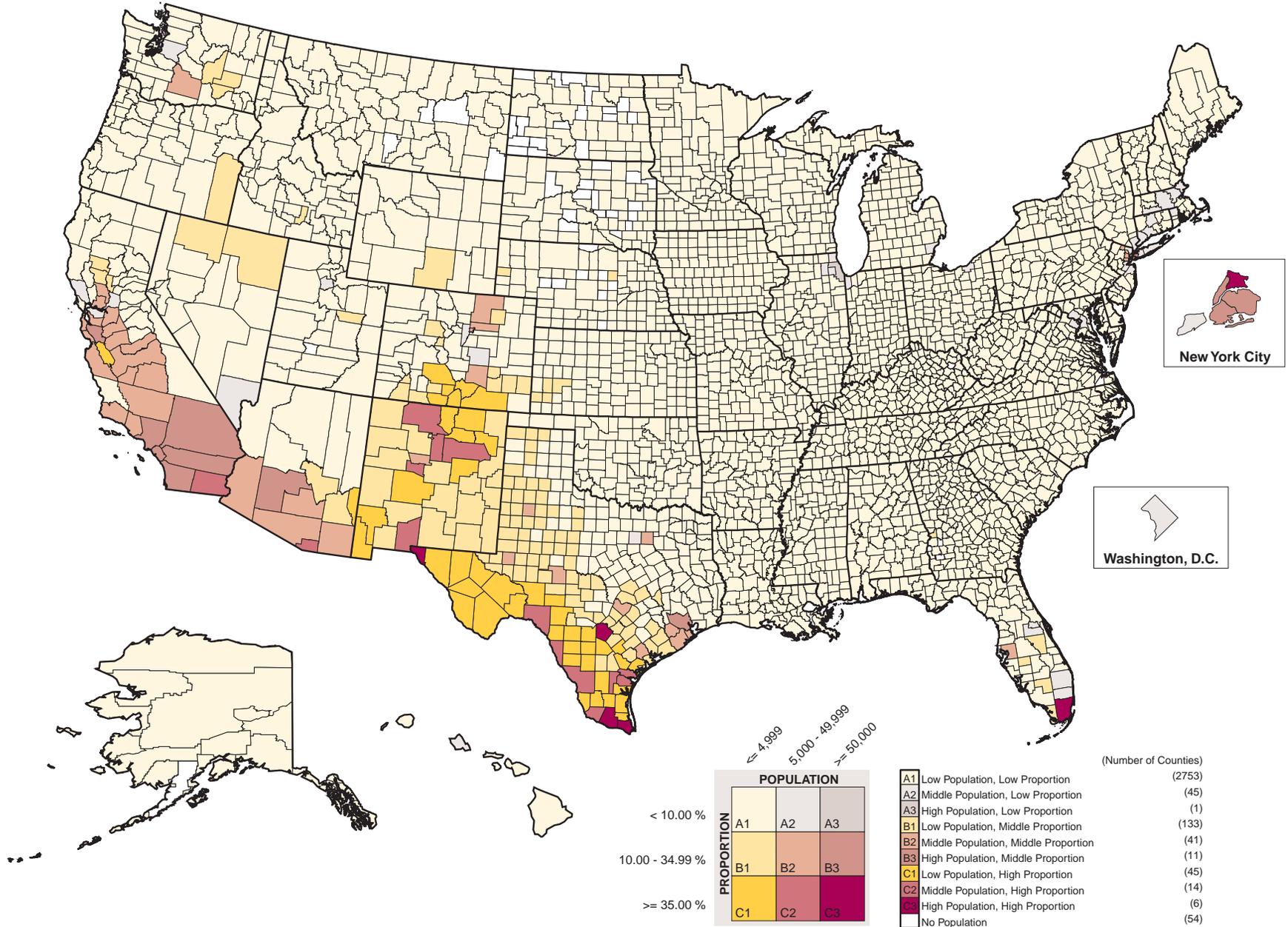
The map (opposite page) depicts the county distribution of the population of Latina women ages 35 years and older in 1995. It is important to remember that, in this book, the population of Hispanic women was defined to include women of all races. Similarly, the populations of women in each race group include some women of Latina origin. On the map, both numbers of women (labeled *population* on the legend) as well as the proportion of all women who were Hispanic (labeled *proportion* on the legend) are displayed. Counties were assigned to one of nine categories based on both population size and proportion of women who were Latina. Counties of the lightest color on the map had fewer than 5,000 Hispanic women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of Latina women. A detailed guide to interpreting this map can be found on page 31.

In 1995 there were six counties that had both a large population and a high proportion of Hispanic women. These included the Bronx in New York City, Miami, San Antonio, El Paso, and Brownsville. Several other counties in the Southwest, Florida, and the New York City metropolitan area had either moderate or large populations or proportions of Latina women. In California, large populations of moderate proportion were found in Los Angeles, San Francisco, and a number of agricultural counties in central California. In New Mexico, Hispanic women comprised at least 10% of all women in every county. Only 54 counties in the United States had no Latinas, but most counties (n=2753) had fewer than 5,000 Hispanic women in 1995.

³ Bureau of the Census. *We the Americans: Hispanics*. Washington DC: U.S. Government Printing Office, September 1993.

Geographic Distribution of Population
1995

Hispanic Women
Ages 35 Years and Older



Whites are the majority population in the United States, with white women (n=102,210,190) comprising 80% of women from all racial and ethnic groups combined in 1990.¹ Within the white population there is also a diversity of cultural and historical backgrounds. The diversity is reflected in the ancestry of the US population. Among the top 10 most frequently reported ancestry groups in the nation are the following subgroups of whites: Germans (23% of the total population), Irish (16%), English (13%), Italian (6%), French (4%) and Polish (4%). Populations of white women and men live in all counties across the nation, but many of the subgroups are heavily concentrated in specific regions. For example, more than half the nation's Italians are found in the northeast, half the Norwegians and Czechs in the Midwest, and more than 40 percent of the Scots-Irish are found in the South.²

The map (opposite page) depicts the county distribution of the population of white women ages 35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were white (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were white. Counties of the lightest color on the map had fewer than 5,000 white women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on

the map had greater numbers or proportions of white women. A detailed guide to interpreting this map can be found on page 31.

Regardless of population size, white women comprised at least 35% of the population in all but 25 of the counties in the United States, and there were no counties where white women accounted for fewer than 10% of the population. The states that had several counties where white women were fewer than 35% of all women included Alaska (where the majority of the population is Alaska Native), New Mexico and Arizona (where parts of the land belong to American Indian Tribal Nations), and several southern states with rural counties that are predominantly black.

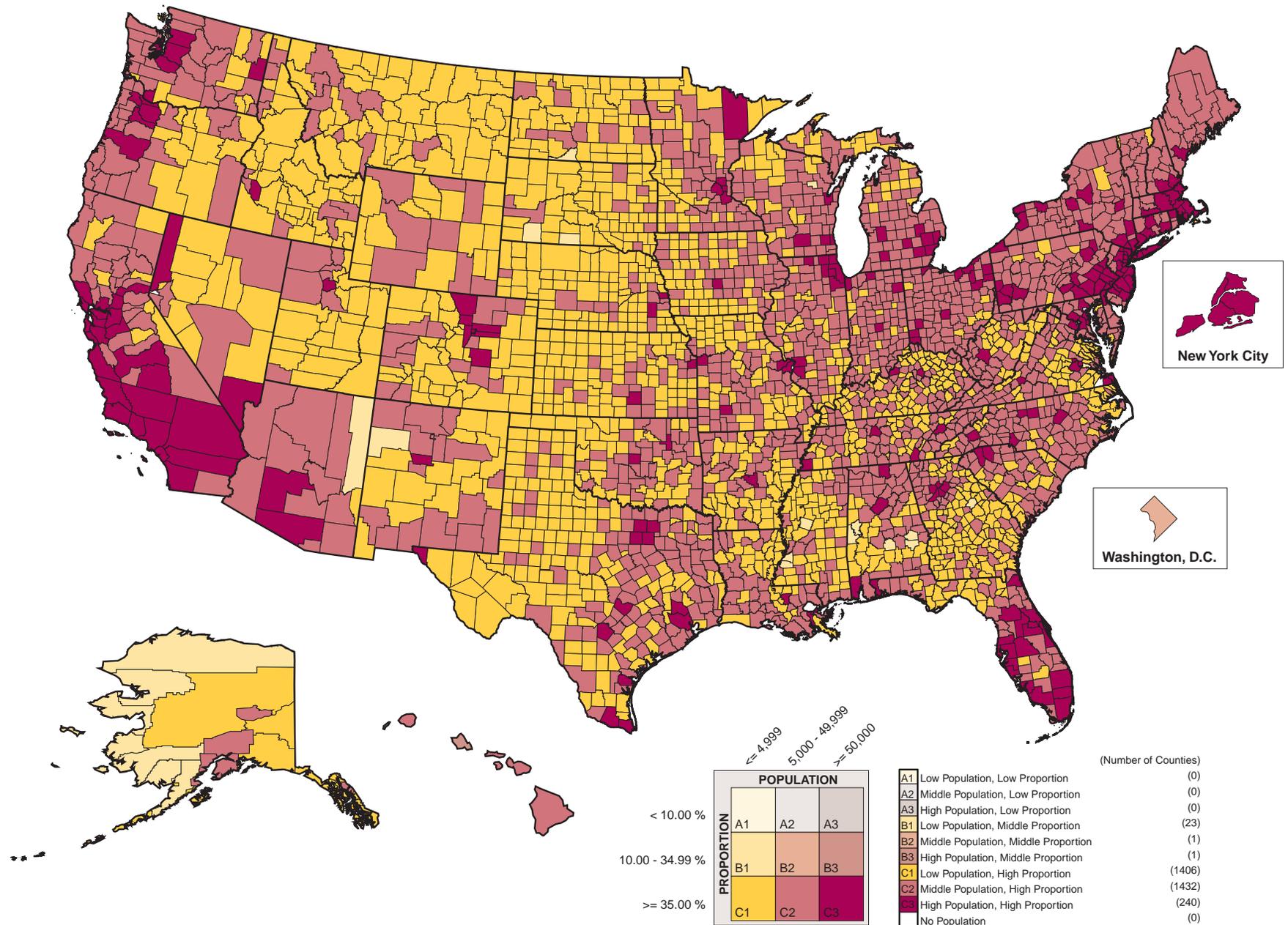
The distribution of population size among white women reflects the urban-rural population patterns in the United States. Counties with at least 50,000 white women were concentrated along the southern coast of California, the northeastern corridor along the Atlantic and southern Florida with growing clusters in the Northeast, Mid West, South, and Pacific Northwest. Surrounding each of the urban centers were counties in the mid-population range. Counties with fewer than 5,000 women were observed in the southern regions of Georgia and Alabama, the Mississippi Delta, and the interior of the country from the northwestern quadrant of Texas due north through the plains and up to the Dakotas.

¹ Bureau of the Census. *General Population Characteristics: United States*. 1990 Census of Population. 1990 CP-1-1. Washington DC: Bureau of the Census, 1993.

² Bureau of the Census. We asked...You told us: Ancestry. Census Questionnaire Content, 1990 CQC-14. Washington DC: Bureau of the Census, February 1995.

Geographic Distribution of Population
1995

White Women
Ages 35 Years and Older



In the United States, uneven development has created a highly variable landscape of socioeconomic conditions and opportunities. Uneven economic development has resulted in a concentration of wealth and resources in some areas (usually large cities) and underdevelopment of other, predominantly rural areas.¹ Underdevelopment is an historical, political, and economic process by which wealth generated within a region (by the labor of its residents) is exported outside the region (by owners of firms, factories, and mines) rather than being reinvested within the region to benefit local communities.² Developed economic centers, including many large metropolitan areas, typically enjoy high levels of economic activity and economies of scale that result in increased median incomes and greater availability of public, social, cultural, and health services than in smaller urban and rural areas.³⁻⁷

Several studies have shown that, compared with high-resource areas, local communities with low levels of economic resources,

as measured by income, occupation, and education profiles, had higher rates of heart disease mortality from the 1960s to the 1980s, and were slower to experience the onset of decline in heart disease mortality in the 1960s and 1970s.^{3,8} Per capita government expenditures for employment, social, and health services were lower in these areas than in high economic resource areas.³

The uneven distribution of local economic resources within the United States poses significant barriers to the development of standardized community-wide programs and policies to reduce the burden of heart disease. Differences in the local economic infrastructure should be considered when community-based programs to prevent heart disease are being designed. Documentation of the geographic distribution of local economic resources may also suggest important directions for further research on the determinants of geographic inequalities in heart disease mortality among women.

¹ Fox K. Uneven regional development in the United States. *Review of Radical Political Economy* 1978;10:68-86.

² Lyson TA, Falk WW. Forgotten places: poor rural regions in the United States, in Lyson TA, Falk WW (eds); *Forgotten Places: Uneven Development in Rural America*. Lawrence, University of Kansas Press; 1993.

³ Armstrong D, Barnett E, Casper M, Wing S. Community occupational structure, medical and economic resources and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998;8:184-191.

⁴ Selar ED. Community economic structure and individual well-being: A look behind the statistics. *International Journal of Health Services* 1980;10:563-579.

⁵ Barnett E, Elmes GA, Braham VE, Halverson JA, Lee JY, Loftus S. *Heart Disease in Appalachia: An Atlas of County Economic Conditions, Mortality, and Medical Care Resources*. Prevention Research Center, West Virginia University, Morgantown, WV, June 1998.

⁶ Whiteis DG. Third world medicine in first world cities: capital accumulation, uneven development and public health. *Social Science and Medicine* 1998;47:795-808.

⁷ Behringer B. Health care services in Appalachia, in Couto RA, Harris G, Simpson NK (eds); *Sowing Seeds in the Mountains: Community-Based Coalitions for Cancer Prevention and Control*. Bethesda, MD: National Cancer Institute; 1994:62-80.

⁸ Wing S. Social inequalities in the decline of coronary mortality. *American Journal of Public Health* 1988;78:1415-1416.

The geographic distribution of local economic resources was examined in this report using a summary index based on three measures. *Median family income* has been used independently as an indicator of economic development by social scientists.¹ *Occupational structure* was measured by the proportion of employed workers in white collar jobs—i.e., managerial, professional, technical, sales, and administrative support positions. Occupational structure reflects the division of labor within a local population and the position of a local community in the larger national and international economies.² The *unemployment rate* is defined as the proportion of workers in the civilian labor force who currently are not employed and are also actively looking for work. It is a direct indicator of local economic opportunity and underdevelopment. A high unemployment rate negatively affects all members of the labor force, including those who are employed, by providing leverage for employers to keep wages and benefits low.^{3,4}

The three variables that composed the summary index of local economic resources (median family income, percent white collar employment, and percent unemployed) were all measured in 1990. Data for the index of local economic resources were obtained from the Area Resource File. Details about this data source can be found in Appendix B. The index was calculated by ranking all counties separately for each variable. For each variable, the counties were then categorized into deciles, and each decile was assigned a score ranging from zero to nine. Counties in the decile with the poorest economic conditions (lowest median income, lowest occupational structure, highest unemployment rate) were assigned a score of zero and counties in the decile with the most advantaged economic conditions were assigned a score of nine. For each county, the scores from the three variables were added together to arrive at the index score.

¹ Nielsen F, Alderson AS. The Kuznets curve and the great U-turn: income inequality in U.S. counties, 1970 to 1980. *American Sociological Review* 1997;62:12-33.

² Armstrong D, Barnett E, Casper M, Wing S: Community occupational structure, medical and economic resources and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998;8:184-191.

Values of the index score ranged from zero (counties that were in the lowest decile for all three dimensions of the index) to 27 (counties that were in the top decile for all three dimensions of the index). Counties were divided into five groups with roughly equal ranges of index values on the map. Dark colors represent counties with the least favorable local economic resource profiles, and light colors represent counties with the most favorable profiles.

A distinctive pattern was apparent for the geographic distribution of local economic resources in 1990. Clusters of counties with very unfavorable local economic resource profiles were found in several rural, underdeveloped regions of the country. These regions included Appalachia, the Mississippi Delta, the Texas border counties, and the Cotton Belt counties of the South. Unfavorable local economic resource profiles were found in many other counties as well, mostly in rural areas.

Clusters of counties with the most favorable local economic resource profiles were found in the metropolitan areas of the eastern seaboard from the District of Columbia, and north through the New York City metropolitan area to Boston. Metropolitan and surrounding counties in southern Florida, the San Francisco Bay area, and southern California also had very favorable local economic resource profiles in 1990.

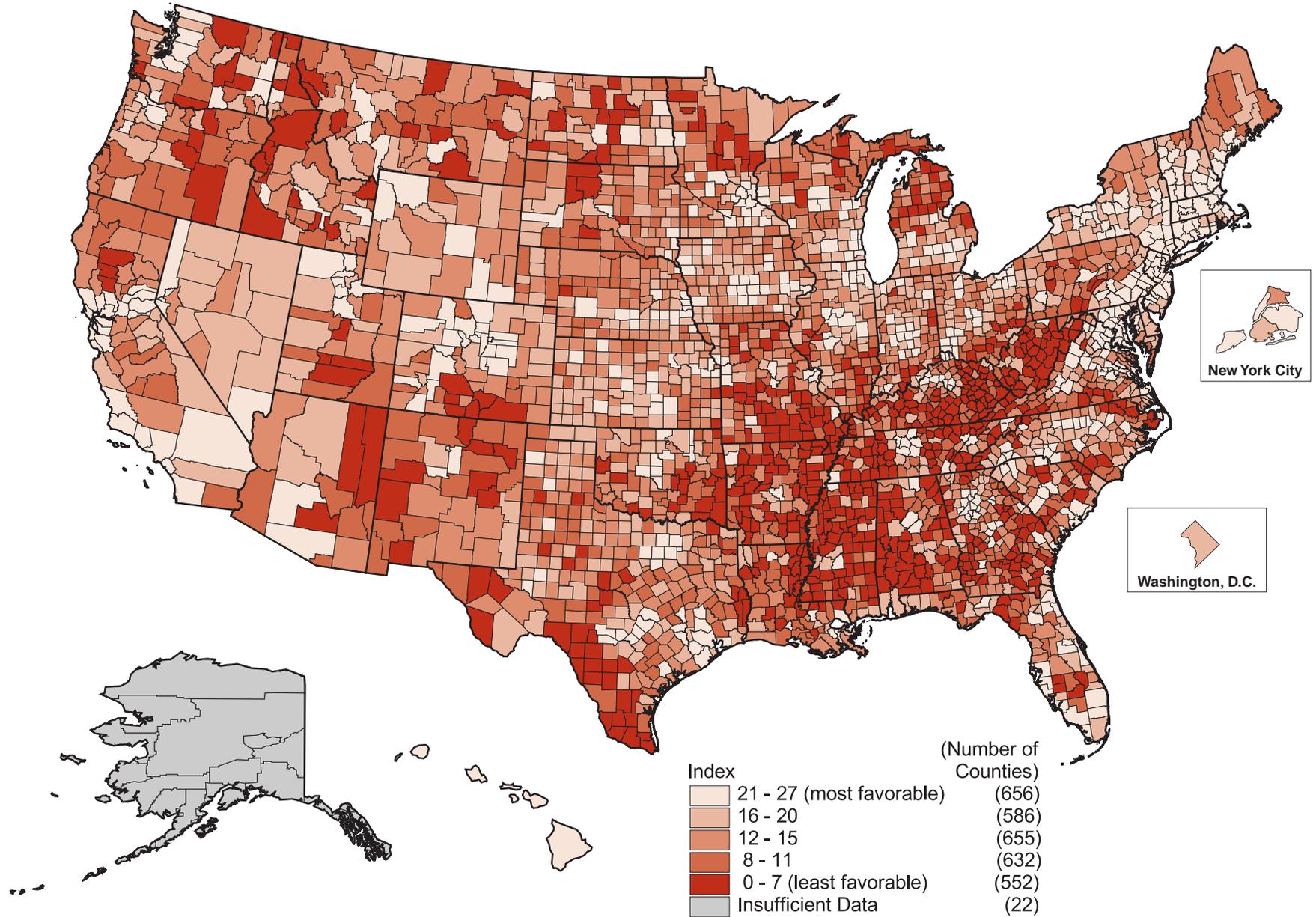
The contrast in levels of local economic resources between rural and metropolitan counties was most apparent in Appalachia and the South. In Kentucky, the cities of Lexington and Louisville had favorable local economic resource profiles, but rural counties to the east had very unfavorable profiles. The same contrast was evident for Nashville, Tennessee and Jackson, Mississippi and the surrounding rural counties.

³ Lyson TA, Falk WW (eds): *Forgotten places: uneven development in rural America*. Lawrence: University of Kansas Press, 1993.

⁴ Lobao LM. *Locality and inequality: farm and industry structure and socioeconomic conditions*. Albany: The State University of New York Press, 1990.

Local Economic Resource Index
1990

Total Population
All Ages



The majority of heart disease deaths among adult women of all racial and ethnic groups during 1991-1995 occurred among elderly women (60 years and older). Compared with young and middle-aged women, elderly women are at increased risk of heart disease mortality not just because of their age but also because of increased social vulnerability. Elderly women are more likely to live in poverty, to live alone, to suffer from physical disabilities, and to lack adequate social support compared with other demographic groups. Longer life expectancy among women than among men results in many women surviving longer than their spouses. Widowed, divorced, and single elderly women are particularly vulnerable to social isolation resulting from inadequate economic resources and from living alone.

Data on two dimensions of women's social isolation were obtained from the 1990 Special Tabulation on Aging compiled by the Bureau of the Census. This data set contains summary statistics for elderly women and men abstracted from the 1990 Census of Population and Housing.

Two indicators of women's social isolation were mapped: percent of women living alone, and the percent of women with mo-

bility or self-care limitations. *Living alone* was defined as an individual living in a household without a spouse, other family members, or friends. A *mobility limitation* was defined as a health condition, either physical or mental, that lasted for six months or more, that made it difficult to go outside the home alone. A *self-care limitation* was defined as a health condition, either physical or mental that lasted for six months or more, that made it difficult to take care of personal needs, such as dressing, bathing, or getting around inside the home.

To produce the maps of women's social isolation, we first excluded 32 counties with fewer than 100 women over the age of 60 years old in 1990. For each measure of women's social isolation, the distribution of county values was divided into quintiles (five categories with an approximately equal number of counties) respectively. These five categories were used to map each measure of women's social isolation. Dark colors on the maps indicate high prevalence of social isolation among women and light colors on the map indicate a relatively low prevalence of social isolation among women.

Elderly Women Living Alone

A study of social isolation and heart disease found a two- to threefold excess risk of death from heart disease for individuals who were socially isolated.¹ Living alone is an important indicator of social isolation for elderly women. Moreover, there also may be physiological conditions that result from social isolation, such as increased blood pressure, which is an important heart disease risk factor.¹

A study of women's economic status found that women who lived alone were at a significant economic disadvantage compared with women who did not live alone.² In addition, women who lived alone in rural areas had only 69% of the income levels of women in urban areas who lived alone.²

Living alone also contributes to women's risk for heart disease mortality by increasing barriers to medical care access. Women living alone are at greater risk during an emergency. Acute events such as chest pain, loss of breath, dizziness, and heart attacks are best treated with immediate intervention, which is less likely to occur if family and friends are not close at hand.

For this study, living alone was defined for the noninstitutionalized population aged 60 years and older as an individual living in a household without a spouse, other family members or friends. In the United States in 1990, 35.3% of all women aged 60 years and older lived alone.

Substantial geographic inequality in the percent of women living alone was observed, with county values ranging from 5.6% to 52.4%. Large areas of the country had high proportions of elderly women living alone, including much of the South, New England, and the Midwest. Regions of the country with proportionately large Hispanic populations, such as the Texas border region, the Southwest, California, and Florida, had lower proportions of elderly women living alone. The low proportions of elderly women living alone in areas that also have low levels of economic resources, such as native areas of Alaska and Hawaii and Hispanic areas of Texas and the Southwest may reflect local cultural norms and practices that encourage extended family households.

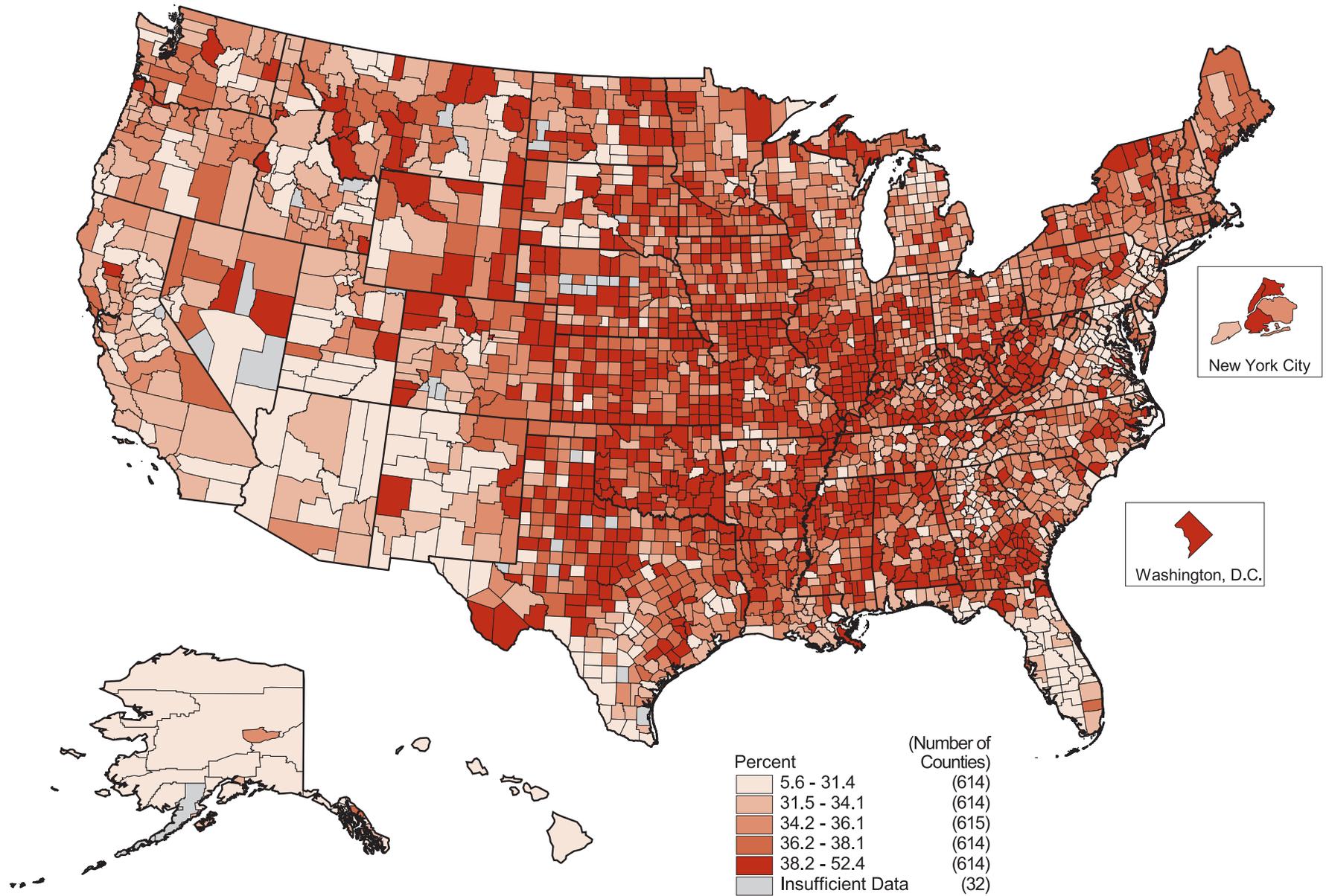
Central city counties of several large metropolitan areas, such as Washington DC and New York City, had high proportions of women living alone, whereas surrounding suburban counties had low proportions of women living alone. Most counties in Florida had very favorable conditions, with low proportions of women living alone. This may reflect greater numbers of retirement communities and nursing homes and the greater economic resources and better health status of elderly persons who migrate to Florida after retirement.

¹ Kaplan GA, Salonen JT, Cohen RD, Brand RJ, Syme SL, Puska P. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from eastern Finland. *American Journal of Epidemiology* 1988; 128(2): 370-380.

² Rogers CC. Changes in the social and economic status of women by metro-nonmetro residence. *Agriculture Information Bulletin* No. 732. Washington DC: Economic Research Service, US Department of Agriculture.

Percent of the Elderly Population Living Alone
1990

All Women
Ages 60 and Older



Elderly Women with Mobility or Self-Care Limitations

Mobility limitations and self-care limitations are inherent health risk factors for women 60 years of age. A *mobility limitation* is defined as a health condition, either physical or mental that lasts for six months or more, that makes it difficult to go outside the home alone. A *self-care limitation* is defined as a health condition, either physical or mental that lasts for six months or more, that makes it difficult to take care of personal needs, such as dressing, bathing, and getting around inside the home. Mobility limitations may deter many elderly women from pursuing and maintaining regular preventative health care visits to hospitals or physicians offices. Self-care limitations may prevent elderly women from taking prescribed medications, eating regular meals and following physician's advice for mental and physical treatment.

In the United States in 1990, 19.8% of elderly women suffered from a mobility or a self-care limitation. Substantial geographic variation in the prevalence of mobility and self-care limitations was observed, with county values ranging from 2.4% to 40.4%. The midrange of the highest quintile (33.9%) was approximately four times higher than the midrange of the lowest

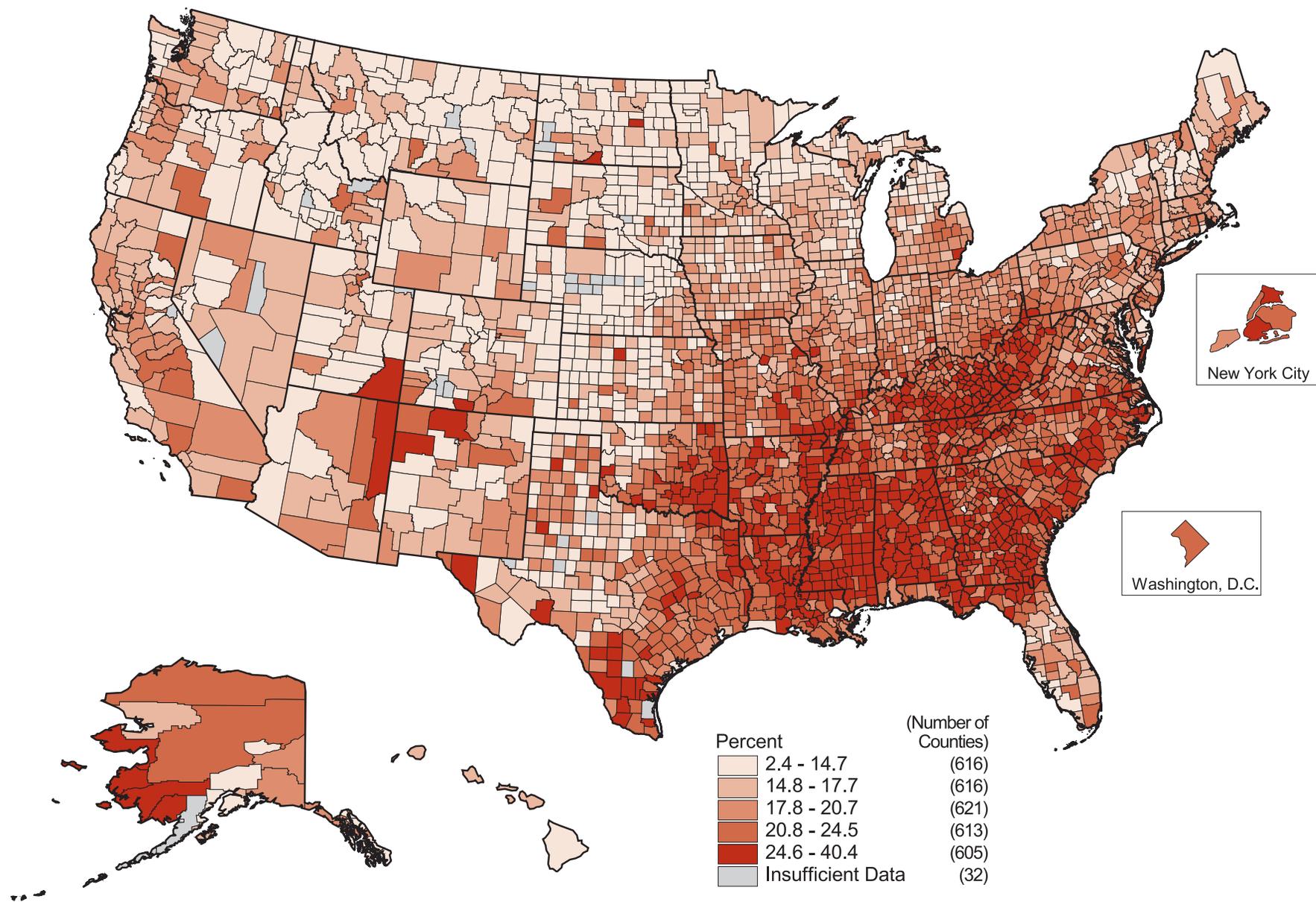
quintile (7.8%). Low proportions of women living with mobility or self-care limitations were found in counties in upper New England, the upper Midwest and most of the West, including Hawaii. An exception to this pattern was the Four Corners region of Arizona, New Mexico, Colorado, and Utah, a region with a large American Indian population, where high proportions of women living with mobility or self-care limitations were observed.

The highest proportions of elderly women living with mobility or self-care limitations were found in counties in the South, Central Appalachia, and the lower Midwest; in these regions, high proportions were found in rural and urban counties. Both New York City and Washington, DC, had high proportions of elderly women living with mobility or self-care limitations.

In general, high proportions of women living with mobility or self-care limitations may reflect high underlying levels of poverty and economic disadvantage, as well as a higher proportion of very elderly people (85 years and older) in those geographic areas. Among the elderly (60 years and older), the "oldest old" have the highest prevalences of mobility and self-care limitations.

Percent of the Elderly Population with Mobility or Self-Care Limitations
1990

All Women
Ages 60 and Older



The availability and accessibility of medical care resources play an important role in the secondary prevention of heart disease. The American Heart Association defines secondary prevention as “identifying and treating persons with established disease and those at very high risk of developing disease, and treating and rehabilitating patients who have had a heart attack to prevent a second cardiovascular event”.¹

There are currently a number of thrombolytic therapies (“clot busters”) that can save lives if administered within 12 hours after the onset of heart attack symptoms. In clinical studies thrombolytic drugs have been associated with an overall 25% to 30% reduction in mortality from acute myocardial infarction.² The greatest improvements in survival occur if drugs are given within 1 to 2 hours after the onset of symptoms. Invasive cardiac procedures (e.g. angioplasty, coronary artery bypass surgery, and cardiac stents) can also save lives and reduce disabilities related to heart disease if they are performed in a timely fashion.

The benefits of drug treatments and surgical procedures depend on widespread recognition of the signs and symptoms of a heart attack and rapid access to quality medical care facilities and health professionals. For many women in the United States, however, there are substantial barriers to receiving needed medical care. These barriers include poverty, lack of health insurance, rural isolation, social isolation, and absence of cardiac care physicians and facilities in their communities. Women of minority race or ethnic groups may be particularly disadvantaged in their access to medical care resources, given the geographic distribution of these populations, indicating these areas may be underserved.

Local availability of three specific medical care resources was examined: cardiovascular specialty physicians, coronary care unit beds, and cardiac rehabilitation units. County data on the availability of these resources were obtained from the Area Resource File (see Appendix B for details). County-specific data were not available for Alaska.

¹ American Heart Association. *1998 Heart and Stroke Statistical Update*. Dallas, TX: American Heart Association 1997.

² Ryan TJ, Anderson JL, Antman EM, et al. ACC/AHA Guidelines for the management of patients with acute myocardial infarction: executive summary. A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Management of Acute Myocardial Infarction). *Circulation* 1996; 94:2341-2350.

Cardiovascular Disease Specialty Physicians

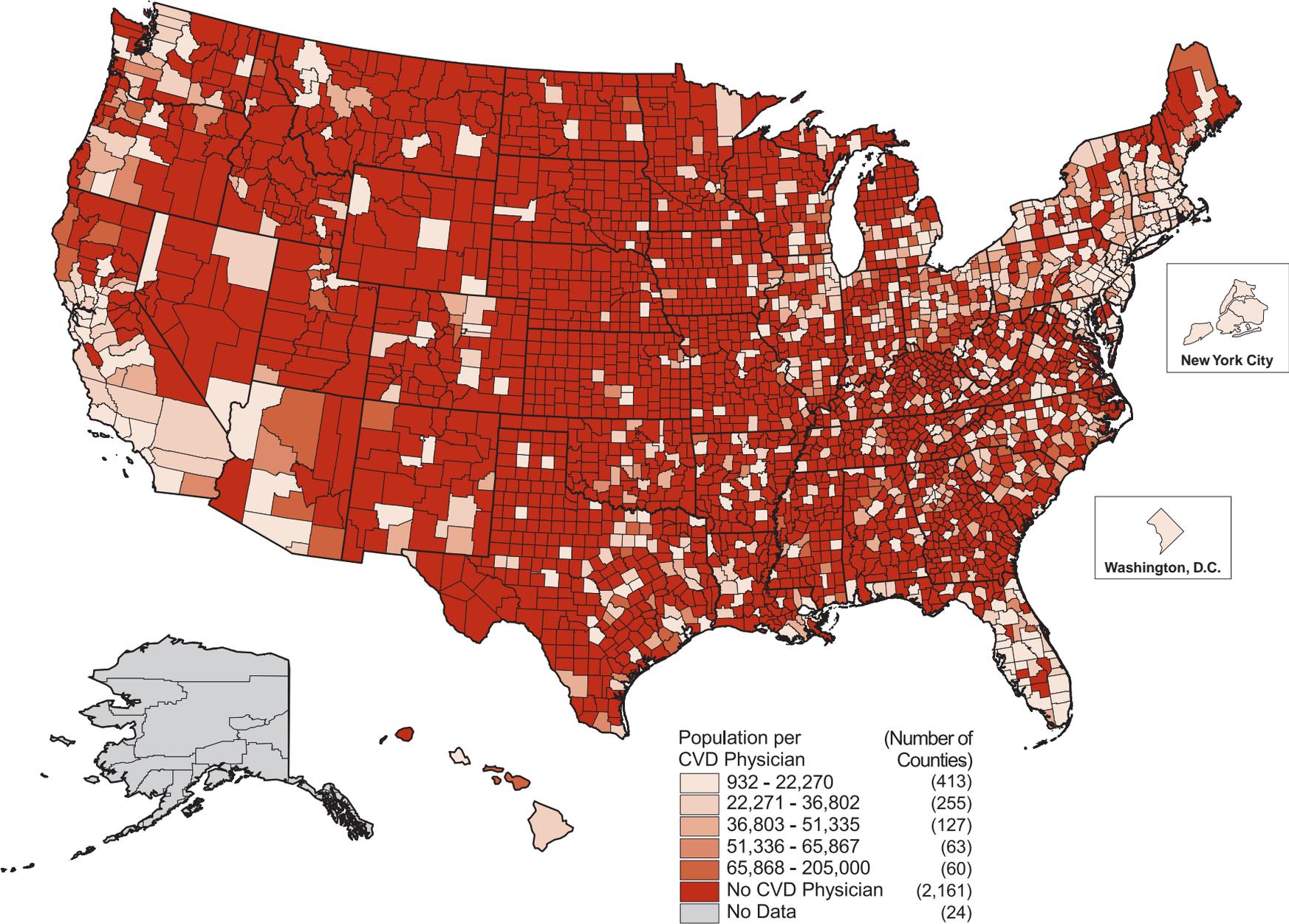
Cardiovascular disease (CVD) specialty physicians have specialized training in the diagnosis of heart disease, case management, medical and surgical treatment, and cardiac rehabilitation. Given their specialized training, the presence of CVD specialty physicians in a local community increases the availability of medical and surgical interventions for heart disease.

In 1990, 70% of the counties in the United States had no CVD specialty physicians. For many counties in the western United States, the large expanse between counties that had and did not have CVD specialty physicians posed a serious obstacle to timely and appropriate cardiac care. Patients who lived in a county with no CVD specialty physicians often faced prohibitively expensive and time-consuming travel to a physician in a distant location. States with few counties that had CVD specialty physicians in 1990 included North Dakota, South Dakota,

Iowa, Nebraska, Kansas, Wyoming, and Montana. In the South, where rural areas were more densely populated than rural areas in the West, many counties also did not have CVD physicians in 1990. Many counties in the South, Midwest, and Northeast that did have CVD specialty physicians had high population to physician ratios, indicating that these areas were underserved.

Metropolitan counties throughout the United States were more likely to have favorable population to CVD specialty physician ratios than nonmetropolitan counties. The most favorable population to physician ratios were observed in the most highly urbanized and densely populated areas of the country—namely, the eastern seaboard from Boston to Washington, DC, industrial centers of the Midwest, southern California, the San Francisco Bay area, and much of Florida.

Total Population per Cardiovascular Disease (CVD) Specialty Physician
1990



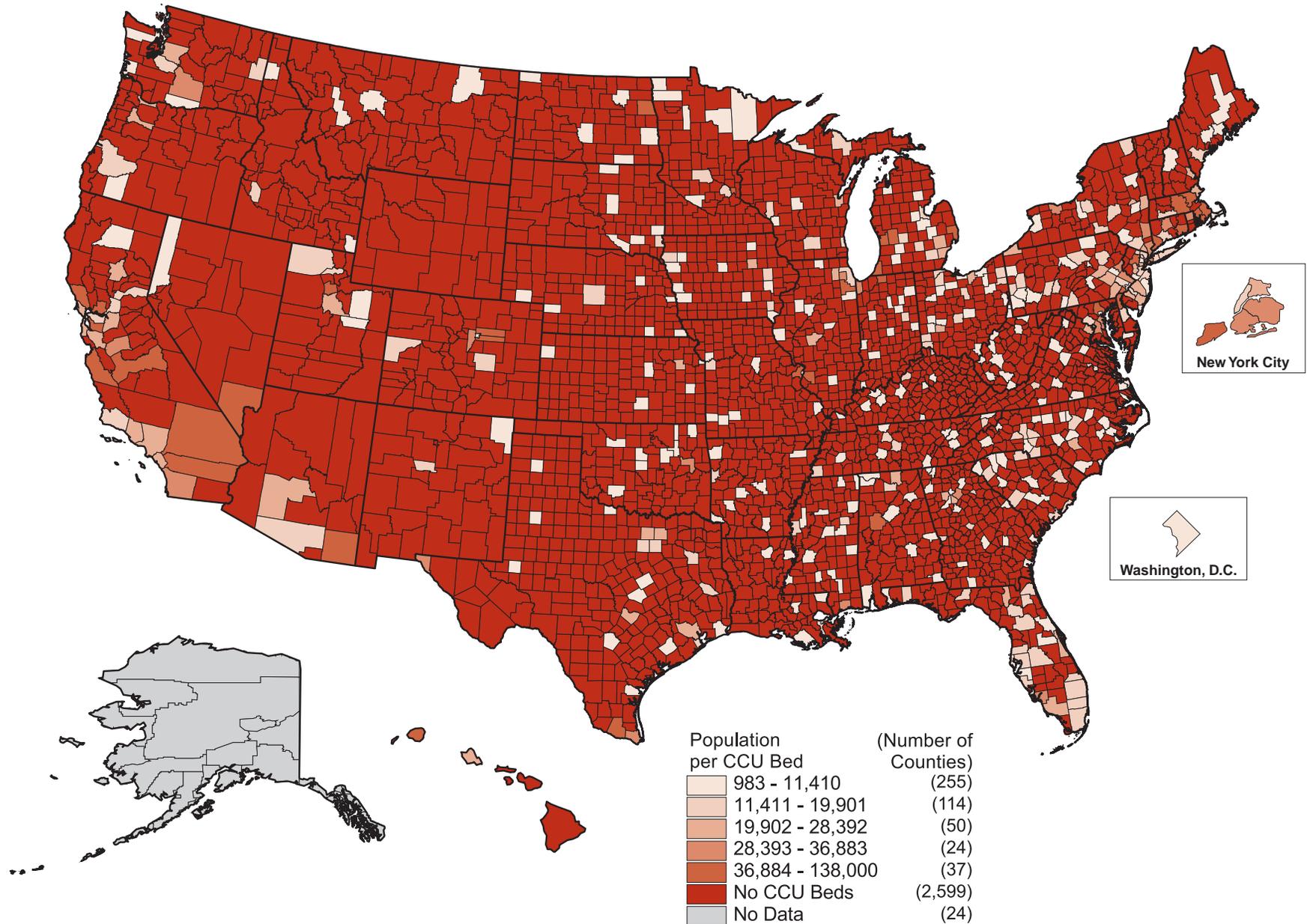
Coronary Care Unit Beds

The coronary care unit (CCU) is a vital component of medical care for acute myocardial infarction.¹ Intensive monitoring of cardiac patients for lethal arrhythmias is critical for the care of cardiac patients and has been shown to reduce hospital deaths by 30%. One method of measuring such care is through the availability of CCUs. However, in many communities where specialized CCUs are not available, cardiac patients may receive appropriate care in intensive care units equipped to conduct noninvasive monitoring of arrhythmias and invasive monitoring of arterial and pulmonary blood pressure. Trained staff and monitoring equipment should be available 24 hours per day.¹

In 1993, 84% of the counties in the United States did not have a single coronary care unit hospital bed. Large geographic expanses of the country were without coronary care units. Clusters of counties with coronary care unit beds were found in the metropolitan counties of the eastern seaboard, Florida, and north central and southern California, including Boston, New York, Philadelphia, Baltimore, and San Diego. Many of these metropolitan areas had high population to hospital bed ratios, however. The most favorable population to coronary care unit hospital bed ratios were found in several metropolitan areas, including Washington DC, Pittsburgh, Atlanta, Birmingham, San Antonio, and Reno.

¹Task Force on the Management of Acute Myocardial Infarction of the European Society of Cardiology. Acute myocardial infarction: pre hospital and in hospital management. *European Heart Journal* 1996; 17:43-63.

Total Population per Coronary Care Unit (CCU) Bed
1993



Cardiac Rehabilitation Units

Cardiac rehabilitation units are designed to provide rehabilitative services to patients who have serious heart disease or are recovering from a heart attack. Cardiac rehabilitation services are usually provided in general hospitals, and their main purpose is to lower the risk of complications and death from heart disease.¹ The goal for many patients in cardiac rehabilitation is to develop a tailored exercise program that will work toward increasing their strength and aerobic fitness, reducing their blood pressure and cholesterol levels, and maintaining their weight loss.

Cardiac rehabilitation units serve more than one individual at a time; therefore we mapped the total number of facilities offering cardiac rehabilitation services in each county instead of using the population ratio.

In 1993, a majority (60%) of U.S. counties did not have a cardiac rehabilitation unit. Counties with no availability of cardiac rehabilitation services were clustered in the South, the West, and rural areas throughout the country. Most counties in or near major metropolitan areas such as New York, Chicago, Los Angeles, and Miami had three or more cardiac rehabilitation units. Many metropolitan areas throughout the country had at least one cardiac rehabilitation unit. The concentration of cardiac rehabilitation services in metropolitan areas as opposed to nonmetropolitan areas meant that rural residents were faced with traveling long distances to receive rehabilitative care.

¹Agency for Health Care Policy and Research Cardiac Rehabilitation. *Clinical Practice Guidelines No.17*. AHCPR Publication No. 96-0672. Rockville, MD: October 1995.

Cardiac Rehabilitation Units (CRUs)
1993

