75 Title V Anniversary Celebration

Youth Mortality in the United States, 1935-2007:

Large and Persistent Disparities in Injury and Violent Deaths

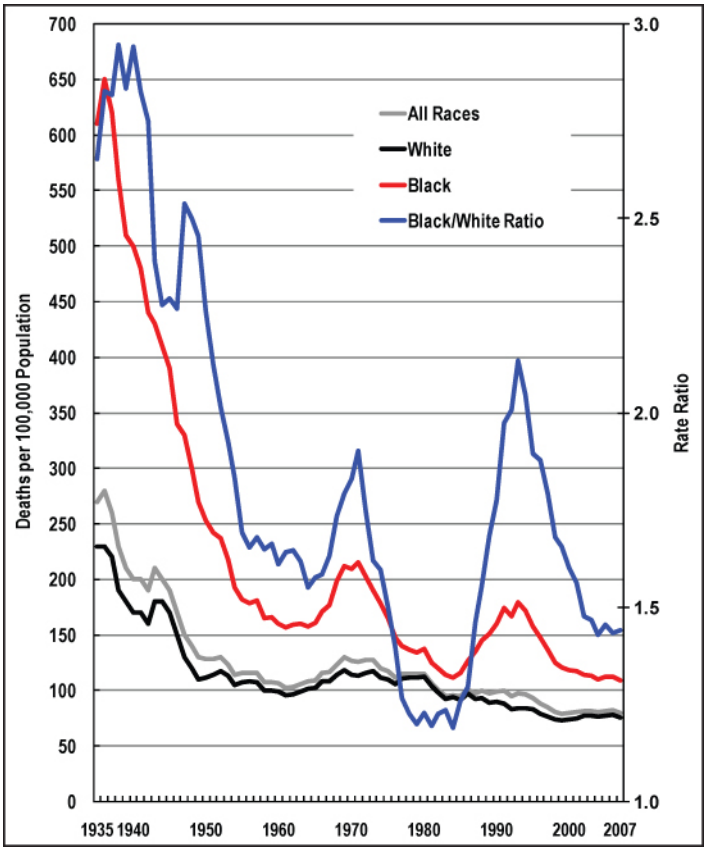



Gopal K. Singh, PhD
U.S. Department of Health and Human Services
Health Resources and Services Administration
Maternal and Child Health Bureau

U.S. Department of Health and Human Services
HRSA
Health Resources and Services Administration

Adolescents and young adults aged 15 to 24 years, henceforth referred to as youth, are a sizable demographic group, with a population of approximately 43 million or 14.1% of the U.S. population (1, 2). Premature deaths among youth, especially from such preventable causes as homicide, suicide, and motor vehicle crashes, exact an enormous toll each year on the years of potential life lost (1, 3).

Figure 1: Death Rates for Adolescents and Young Adults Aged 15-24 Years by Race, United States, 1935-2007



Although infant and child mortality and mortality among the general population have declined consistently since 1935, youth mortality has not seen a similar decline in the past five decades (1, 3, 4). In fact, in the past 25 years, youth mortality declined only at a modest pace and remained essentially unchanged among black youth (1, 3). Today's youth face many important social and health challenges. Not only do they have higher rates of poverty and extreme poverty, but they are also much more likely than people in other age groups to have higher rates of unemployment and to lack health insurance coverage (2, 5). Youth are also more likely than other groups to experience higher levels of social disruption and lack of social integration because of their higher rates of economic deprivation, migration, and lower rates of social participation and civic engagement (5). Rates of mortality from homicide, motor vehicle accidents, and firearm injuries from among youth exceed those for the other age groups (3, 4). Youth also have the highest crime victimization and arrest rates and have higher likelihood of smoking, heavy and binge drinking, illicit drug use, and injury-related visits to hospital emergency departments than individuals in other age groups (3, 5).

In this brief report, we analyze long-term trends in U.S. youth mortality rates according to sex, race/ethnicity, state of residence, and cause of death by using both historical and the latest national vital statistics data (1, 3, 4, 6). As shown below, the overall trend in youth mortality has been driven by trends in three leading causes of death: unintentional injuries, homicide, and suicide.

Trends in Youth Mortality by Sex and Race

The long-term trend in youth mortality between 1935 and 2007 is rather difficult to characterize, as the death rate for those aged 15-24 years showed a decreasing trend from 1935 though 1961, a slightly increasing trend in the 1960s, and then again a decreasing trend until 1998. Youth mortality has changed very little in the past 10 years (Figure 1).

Prior to World War II, male youth had an approximately 25% higher mortality rate than female youth. However, during World War II, both the relative and absolute risks of mortality among young males rose markedly. From 1945 through 2007, the youth mortality rate had been two to three times higher for males than for females. In 2007, the mortality rate for male youth was 116.1 deaths per 100,000 population, 2.8 times higher than the rate for female youth (42.1).

Historically, black youth have had substantially higher deaths rates than white youth. However, the black/white disparity in youth mortality decreased over time, from a relative mortality risk of 2.9 in 1940 to 1.4 in 2007. Except for a period stretching from the late 1960s through the early 1970s and between 1984 and 1993 when there was a steep rise in mortality, the mortality rate for black youth declined sharply between 1935 and 2007 (Figure 1). In 2007, the mortality rate for black youth was 109.4 deaths per 100,000 population, 44% higher than the rate for white youth (75.9). As for the largest race-sex differential in 2007, young black males with a rate of 168.2 deaths per 100,000 population had a 4.1 times higher mortality rate than young white females (41.3).

Figure 2: Leading Causes of Death among Youth Aged 15-24, United States, 2007

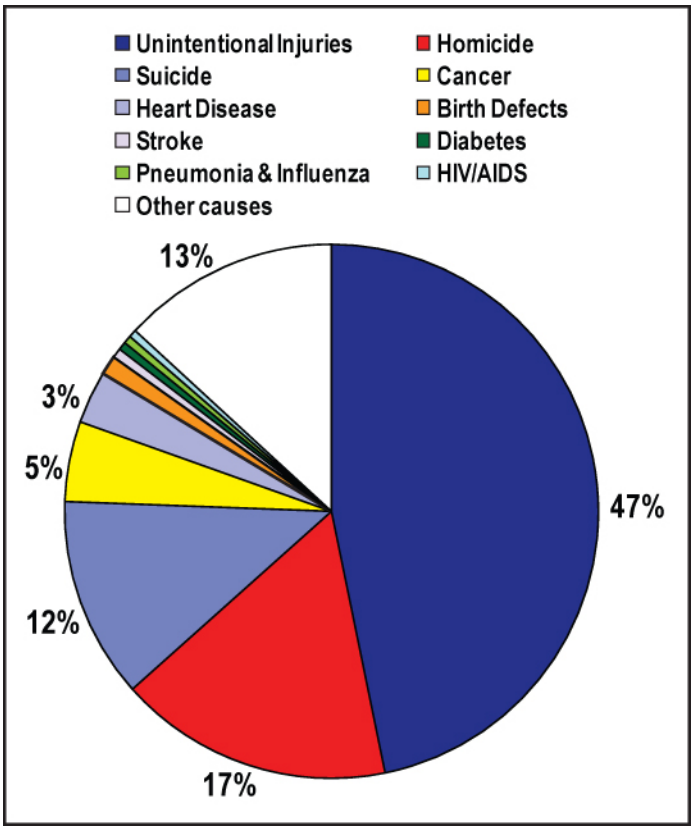
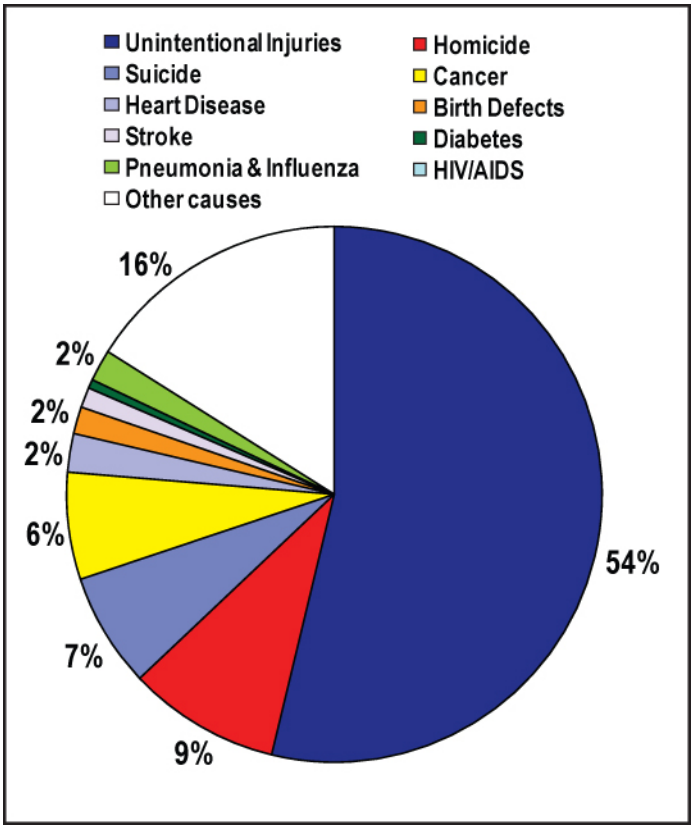


Figure 3: Leading Causes of Death among Youth Aged 15-24, United States, 1970



Leading Causes of Youth Mortality

Unintentional injuries, homicide, and suicide were the top three leading causes of death of American youth in both 1970 and 2007 (Figures 2 and 3). Cancer and heart disease were the other two prominent causes of death. Deaths from motor vehicle accidents accounted for more than two-thirds of all unintentional injury deaths in 2007 (4). Homicide and suicide accounted for relatively more youth deaths and unintentional injury fewer deaths in 2007 than in 1970. In 2007, homicide ranked as the leading cause of death among black youth, whereas unintentional injuries were the leading cause of death for non-Hispanic whites, Hispanics, American Indians/Alaska Natives, and Asian/Pacific Islanders.

In 2007, the youth mortality rate per 100,000 population was highest for non-Hispanic blacks (112.6), followed by American Indians/Alaska Natives (103.3), Hispanics (77.4), non-Hispanic whites (74.5), and Asian/Pacific Islanders (43.2) (Figure 4). Compared to non-Hispanic whites, the 2007 unintentional injury mortality rate was significantly higher for American Indians/Alaska Natives and significantly lower for non-Hispanic blacks, Hispanics, and Asian/Pacific Islanders. Youth homicide rates were 13.9 times higher for non-Hispanic blacks, 5.0 times higher for Hispanics, 2.7 times higher for American Indians/Alaska Natives, and 1.28 times higher for Asian/Pacific Islanders than for non-Hispanic whites. Compared to non-Hispanic whites, youth suicide rates were 83% higher for American Indians/Alaska Natives and 44%, 35%, and 22% lower for non-Hispanic blacks, Hispanics, and Asian/Pacific Islanders, respectively. Cancer mortality was 31% higher among Hispanic youth than among non-Hispanic white youth.

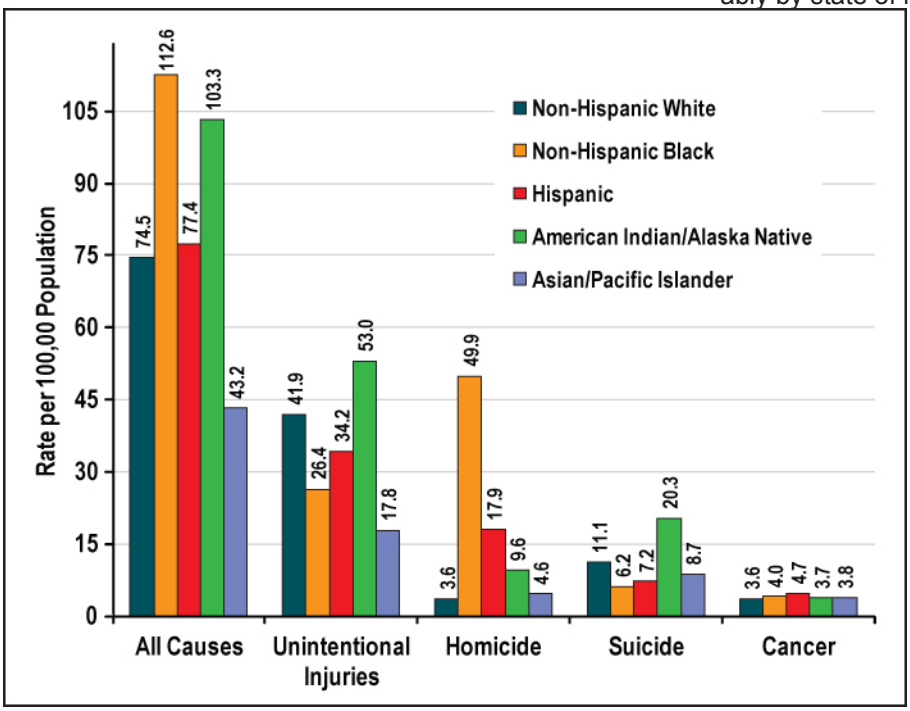
Trends in Youth Mortality from Unintentional Injuries, Homicide, Suicide, and HIV/AIDS

During 1969-1992, youth mortality from unintentional injuries fell by 48% from a rate of 72.1 deaths per 100,000 population in 1969 to 37.5 in 1992 (Figure 5). However, since 1992, there has been no change in youth mortality from unintentional injuries for the total population and for white males and females. Unintentional injury mortality among black youth showed a consistently downward trend, and declined by 65% between 1969 and 2007.

Youth homicide rates remained stable between 1969 and 1983 and then rose steeply until 1993, the year during which the homicide rate peaked among the American youth (Figure 6). Between 1984 and 1993, the youth homicide rate doubled for the total population and nearly tripled for

black males. Since 1993, the homicide rates for all youth and for black youth have fallen by approximately 50%. Although racial inequalities in youth homicide rates have declined over time, black youth in 2007 had a homicide rate of 48.3 per 100,000 population, still 7.1 times higher than the homicide rate (6.8) for white youth. Moreover, young black males had a homicide rate of 86.7, 25 times higher than the rate for white females (3.5).

Figure 4: Youth Mortality by Major Causes of Death and Race/Ethnicity, United States, 2007



Between 1969 and 1994, the youth suicide rate increased by over 70% for the total population and white youth and by 57% for black youth (Figure 7). Since 1994, suicide mortality has shown a downward trend for both white and black youth. However, the suicide rates for all youth and white youth in 2007 were still significantly higher than their corresponding rates in 1969. Compared to black youth, white youth had a 24% higher risk of suicide in 1969, but a 73% higher risk of suicide in 2007. Young white females, who did not differ from young black females in their suicide risk in 1969, had two times higher risk of suicide than black females in 2007 (data not shown).

HIV/AIDS was the sixth leading cause of death among youth in the early 1990s. Between 1987 and 1994, HIV/AIDS mortality increased by 30% for all youth but by 94% for black youth. Between 1994 and 2007, HIV/AIDS mortality was reduced by 75-80% for the total youth population and for white and black youth (Figure 8). However, in 2007, young black males had an 8 times higher risk and young black females a 16 times higher risk of HIV/AIDS mortality than their white counterparts.

Geographic Disparities in All-Cause Mortality and Mortality from Unintentional Injuries, Homicide, and Suicide

During 2005-2007, the youth mortality rate varied considerably by state of residence, ranging from a high of 130.8 per 100,000 population for Louisiana and 124.7 for Alabama to a low of 49.4 for Rhode Island and 54.2 for Massachusetts. Youth mortality was highest in the Southeast and lowest in New England. During 2005-2007, the unintentional injury mortality rate varied from a low of 14.5 for the District of Columbia to a high of 74.0 for Wyoming (Figure 9). The geographic pattern in unintentional injury mortality among youth reflects the pattern in deaths from motor vehicle crashes, which tends to be significantly higher in the Mountain and Southeastern states and lower in the New England and Middle Atlantic states.

Youth suicide rates were substantially higher in the Mountain and Midwestern states than in the Northeast (Figure 10). The youth suicide rate in 2005-2007 ranged from a low of 2.9 for the District of Columbia to a high of 32.6 for Alaska. Geographic patterns in suicide mortality have remained essentially unchanged during the past five decades, with residents in the Western states always being at a substantially higher risk of suicide than their counterparts in the Northeastern United States (6). During 2005-2007, youth homicide mortality was substantially higher in the Southeastern, Southwestern, and Middle Atlantic states and lower in New England, with the rate ranging from a low of 1.8 in North Dakota to a high of 65.7 in the District of Columbia (Figure 11). When compared with 1991-1993, the period during which youth homicides peaked in the United States, a decline in rates can be seen for a number of states in 2005-2007 (Figure 12). Note that the geographic patterns in youth homicides were generally similar in 1991-1993 and 2005-2007.

Figure 5: Youth Unintentional Injury Mortality Rates by Race, United States, 1969-2007

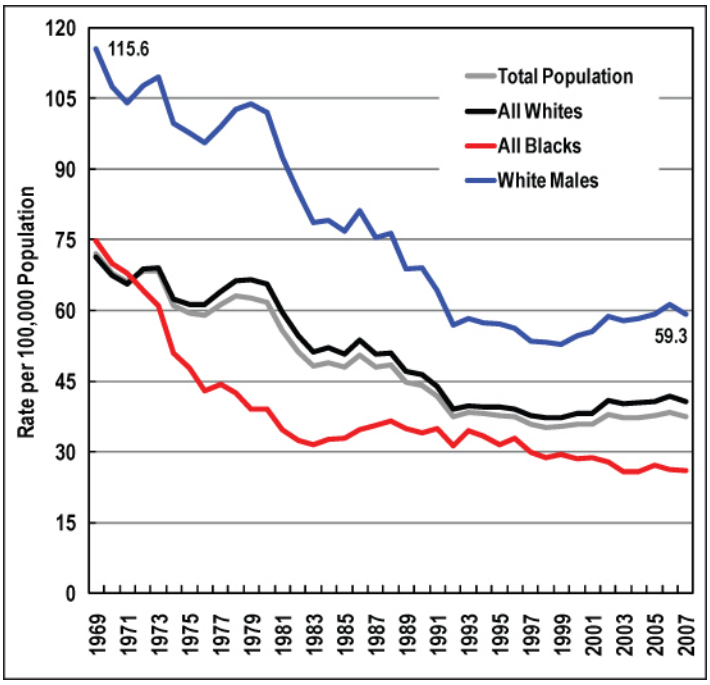


Figure 6: Youth Homicide Rates by Race, United States, 1969-2007

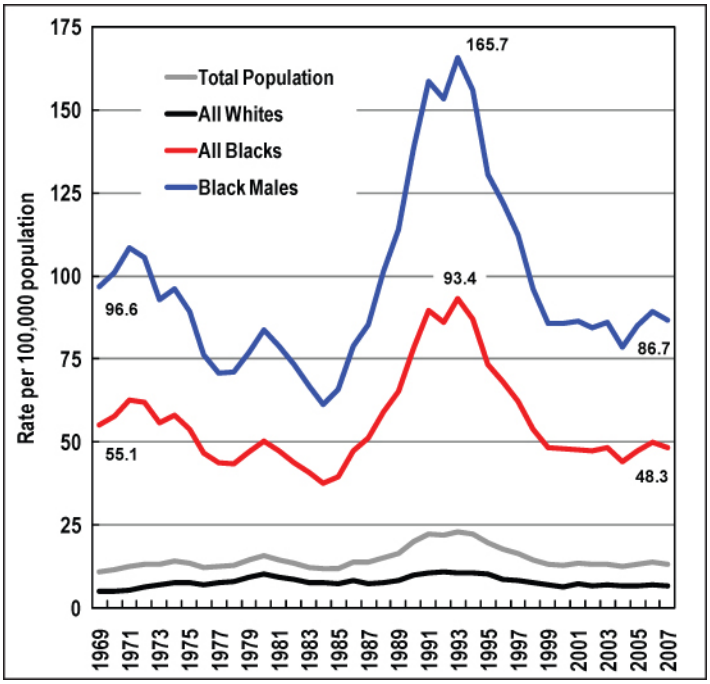
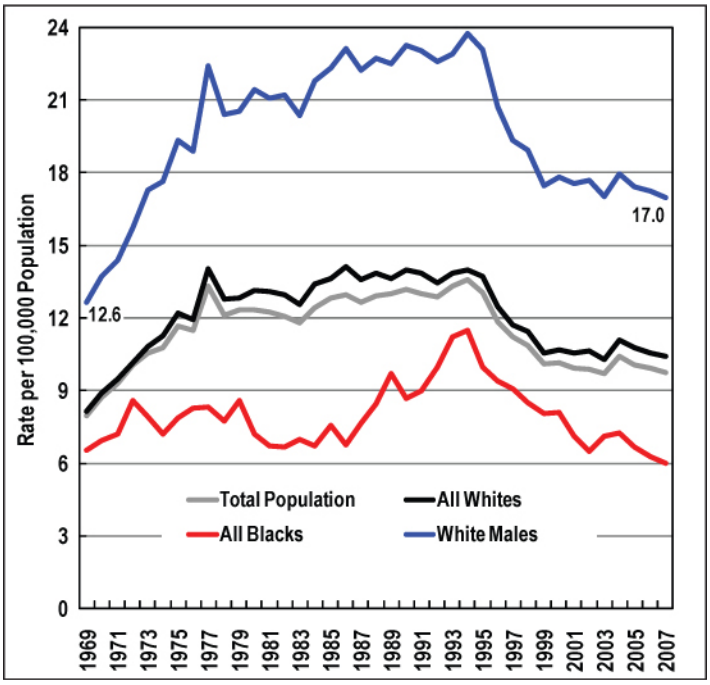


Figure 7: Youth Suicide Rates by Race, United States, 1969-2007



Discussion

Substantial racial/ethnic and geographic disparities in youth mortality exist, with black youth having a 1.4 times higher overall mortality rate but an 8 times higher risk of mortality from homicides and HIV/AIDS than their white counterparts. Some of the race and sex disparities in youth mortality are quite remarkable, such as a 25-fold greater risk of homicide among young black males compared to young white females or a 16-fold higher risk of HIV/AIDS mortality for black females compared to white females. Currently, the youth mortality rates for all states as well as for all major racial/ethnic groups fall short of the Healthy People 2010 target of 40 deaths per 100,000 population (7). In fact, the national youth mortality rate in 2007 was twice the rate set for the 2010 objective.

The long-term trend in youth mortality has been characterized by two countervailing trends: a consistently downward trend in mortality from unintentional injuries and a fluctuating but slightly upward trend in mortality from homicide and suicide. Several factors such as motor vehicle safety improvements, mandatory seat belt use, efforts to reduce drinking and driving, lower speed limits and increased enforcement, and increased availability of statewide trauma systems have been suggested as factors responsible for the long-term decline in unintentional injury mortality due to motor vehicle crashes (8). While individual-level factors such as lack of social support, low levels of familial attachment and social integration, living alone, drug and alcohol abuse, mental health problems, interpersonal conflicts, marital disruption, joblessness, and low socioeconomic status have been associated with increased risk of

suicide and sometimes of homicide victimization, trends in several features of the broader social environment such as socioeconomic deprivation, high unemployment rate, lack of economic opportunity, poor housing, and geographic and social isolation, may be related to temporal trends and geographic variation in youth suicide and homicide rates (9-11). Injury and violence prevention programs designed to improve the health of the youth population should, therefore, also include policies that emphasize investment in improving the broader social and economic conditions and social integration indicators.

Homicide, suicide, and unintentional injuries (including motor vehicle crashes) remain three of the most pressing health and social problems for the American youth. Besides cancer and heart disease, unintentional injury, homicide, and suicide are also the three most prominent causes of death in terms of years of potential life lost, and they disproportionately affect youth's chances of survival into productive, working ages and beyond. Given the huge disparities in mortality shown here, reductions in racial/ethnic and geographic disparities in youth mortality from homicide, suicide, and unintentional injuries must remain a national priority.

Figure 8: Youth HIV/AIDS Mortality Rates by Race, United States, 1969-2007

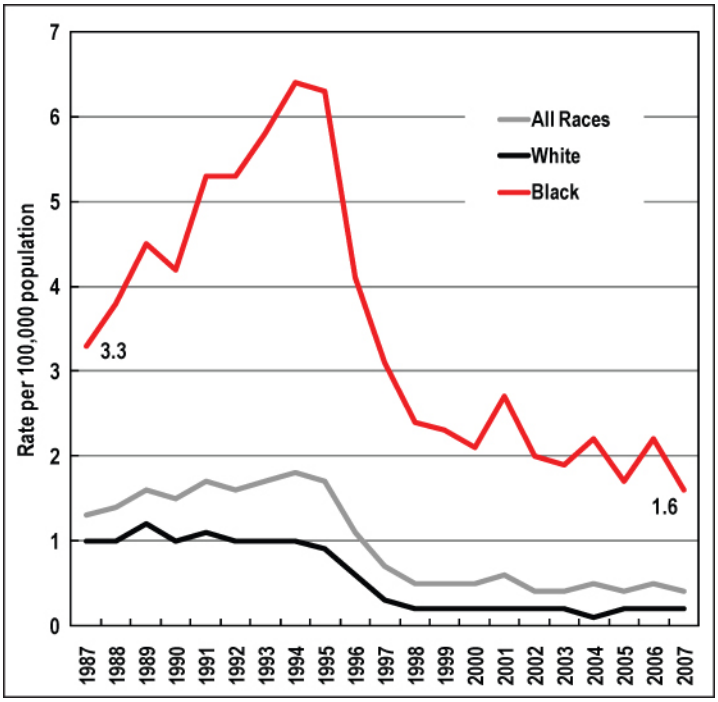


Figure 9: Youth Mortality Rate per 100,000 Population, Unintentional Injury, United States, 2005-2007

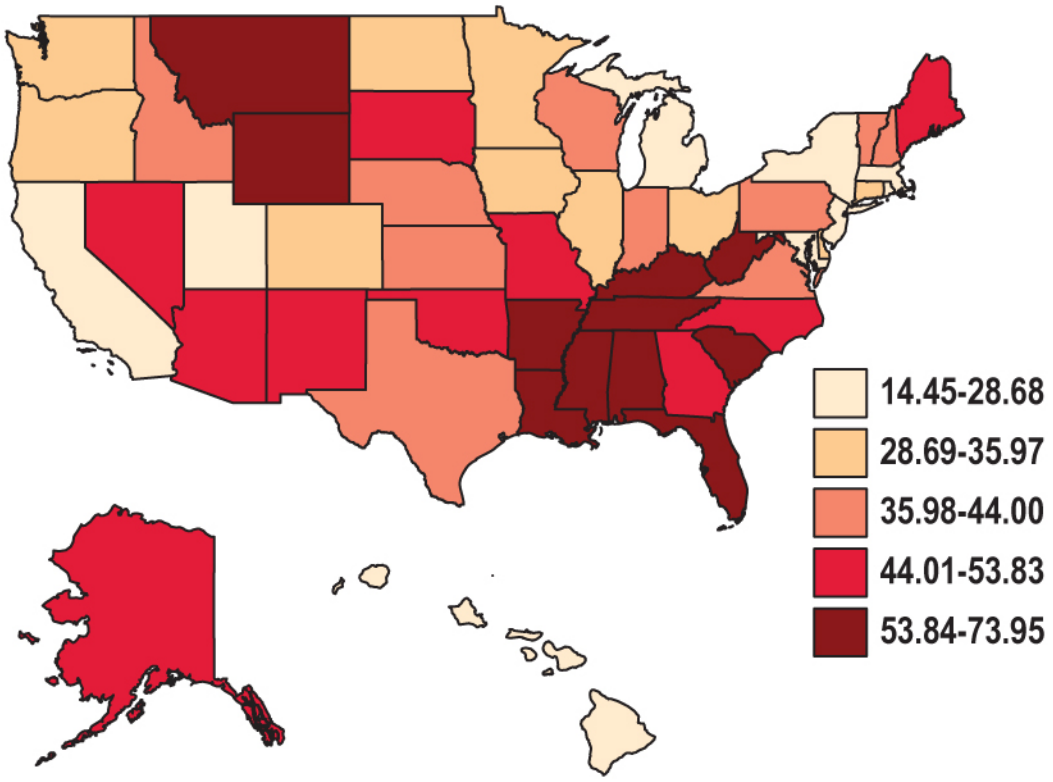


Figure 10: Youth Suicide Rate per 100,000 Population, United States, 2005-2007

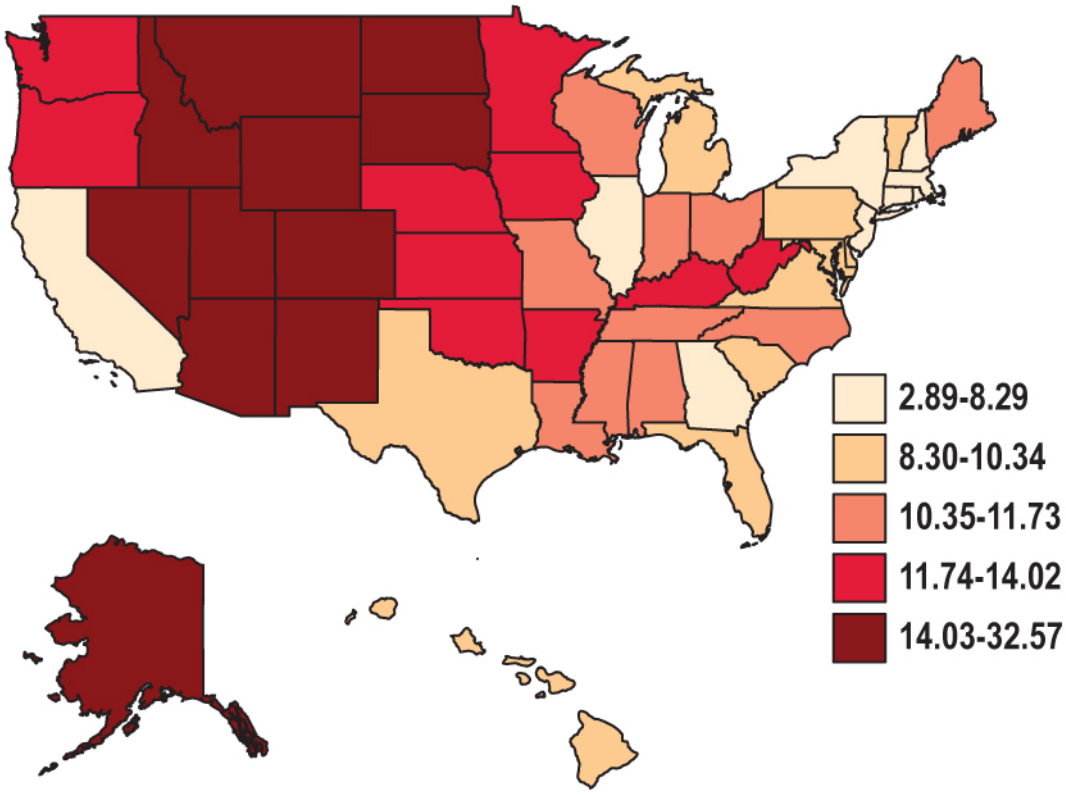


Figure 11: Youth Homicide Rate per 100,000 Population, United States, 2005-2007

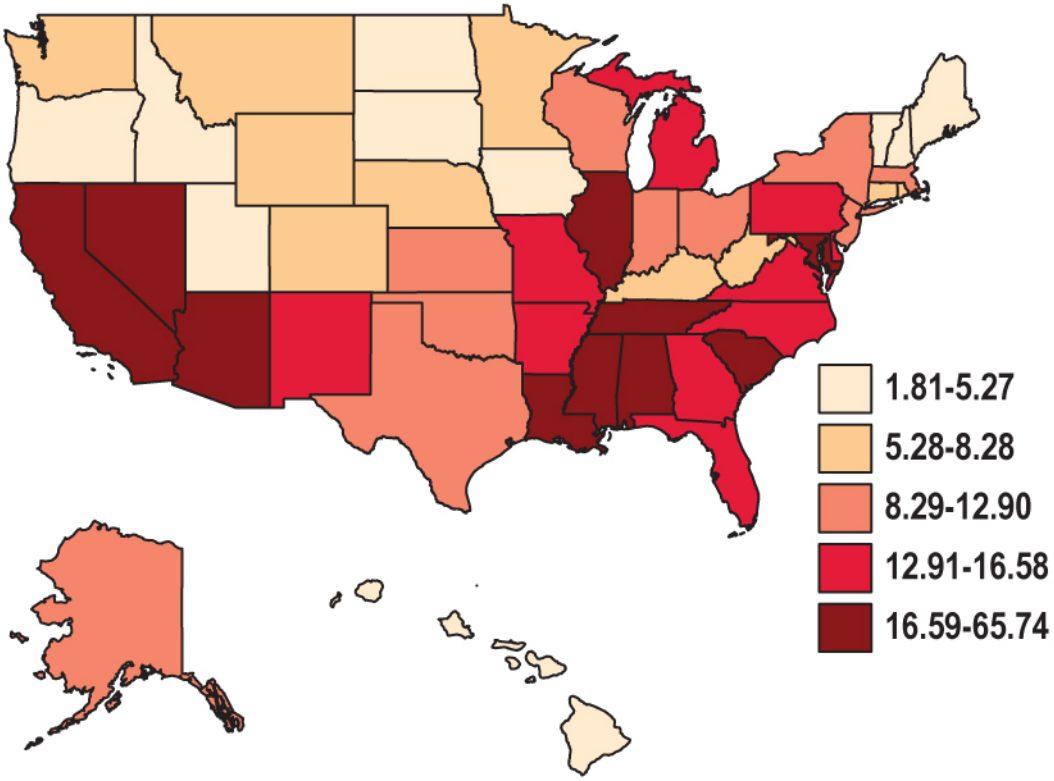
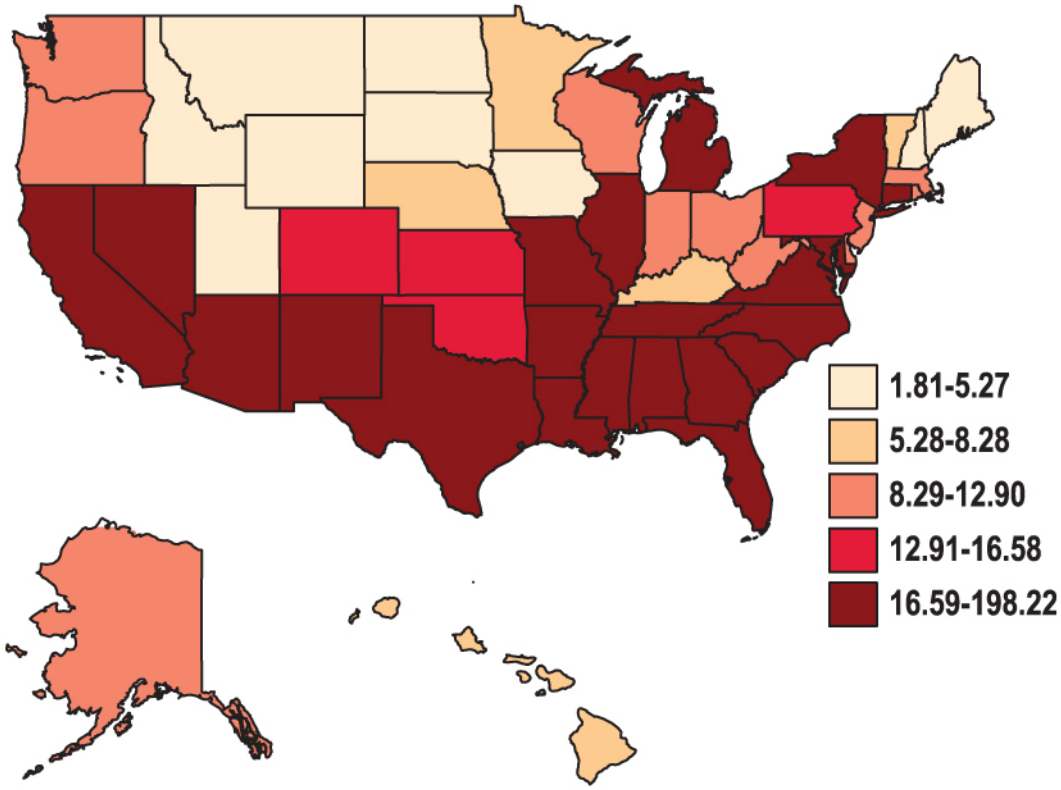


Figure 12: Youth Homicide Rate per 100,000 Population, United States, 1991-1993



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