



# Death Rates for US Women Ages 15 to 54

## Some Unexpected Trends

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**Recent trends in death rates among US women ages 15 to 54 reveal that rates among non-Hispanic whites are rising for many causes of death. These rising causes include accidental poisoning (linked to the epidemic of prescription opioids), suicide, and obesity- and smoking-related diseases. Specific changes in behavior might reduce some of these death rates, but the range of rising causes of death among white women suggests a need for a broader perspective on the social determinants of health. Unhealthy behaviors often arise and persist within certain social and economic contexts, and such behaviors resist improvement or are replaced by other unhealthy behaviors unless those contexts change.**

This brief is part of the Urban Institute's social determinants of health initiative—understanding what it takes to improve the health of people and communities.

## Why Focus on Women?

This brief focuses on mortality trends for non-Hispanic white American women ages 15 to 54. This group has enjoyed very low death rates for several reasons: adult death rates are much lower than those of the elderly, women's death rates are lower than men's, and whites have lower death rates than blacks. Yet recent research shows women's long-standing death rates are changing; Kindig and Cheng (2013), for example, report increases in women's mortality in 42.8 percent of American counties (versus a rise in male mortality rates in 3.4 percent of counties). So why should rising death rates among white adult women receive a lot of attention?

First, death rates are an extreme indicator of population health. If death rates for a group are rising, it is highly likely that the health of that population is worsening, thus affecting a much larger group of people than those who die. Moreover, the social context of health and survival is integrally related to the health outcomes of adult women, who are crucial to the social fabric of their families, communities, and local economies. When that social fabric is damaged, women's health outcomes suffer, and when maternal-age women's health outcomes suffer, the social fabric can be further damaged.

Second, we know that death rates before age 50 explain a large share of the low life expectancy Americans experience compared with people from other industrialized countries (Ho 2013). A change in death rates at younger ages has more influence on life expectancy than a change at older ages. This influence is seen most obviously with declines in infant mortality, which increase overall life expectancy. It follows that the documented declines in life expectancy for disadvantaged groups of white women may be driven by changes in the death rates of these women in mid-adulthood (Olshansky et al. 2012). In addition, worsening health among women ages 15 to 54 suggests that when this generation reaches its elder years—when death rates are much higher—the rise in death rates might be substantially higher than expected.

To learn more about mortality trends for American women, we examined death rates reported by the Centers for Disease Control and Prevention for 113 distinct causes of death. Next, as explain in appendix A, we recategorized these 113 causes into 13 groups. We then calculated death rates from these 13 groups of causes of death in 1999 and 2011 for non-Hispanic black and non-Hispanic white women ages 15 to 54. Our rates are age-standardized to the 2000 US population to account for changes in the distribution of women within this broad age category between 1999 and 2011. Non-Hispanic white women have been a frequent subject of mortality studies because their death rates are rising. Non-Hispanic black women provide a useful context because their death rates, despite decreasing, remain much higher than white women's. In the future, we plan to examine trends by cause of death for Hispanic women and other racial minorities.

## What Do the Death Rates Tell Us?

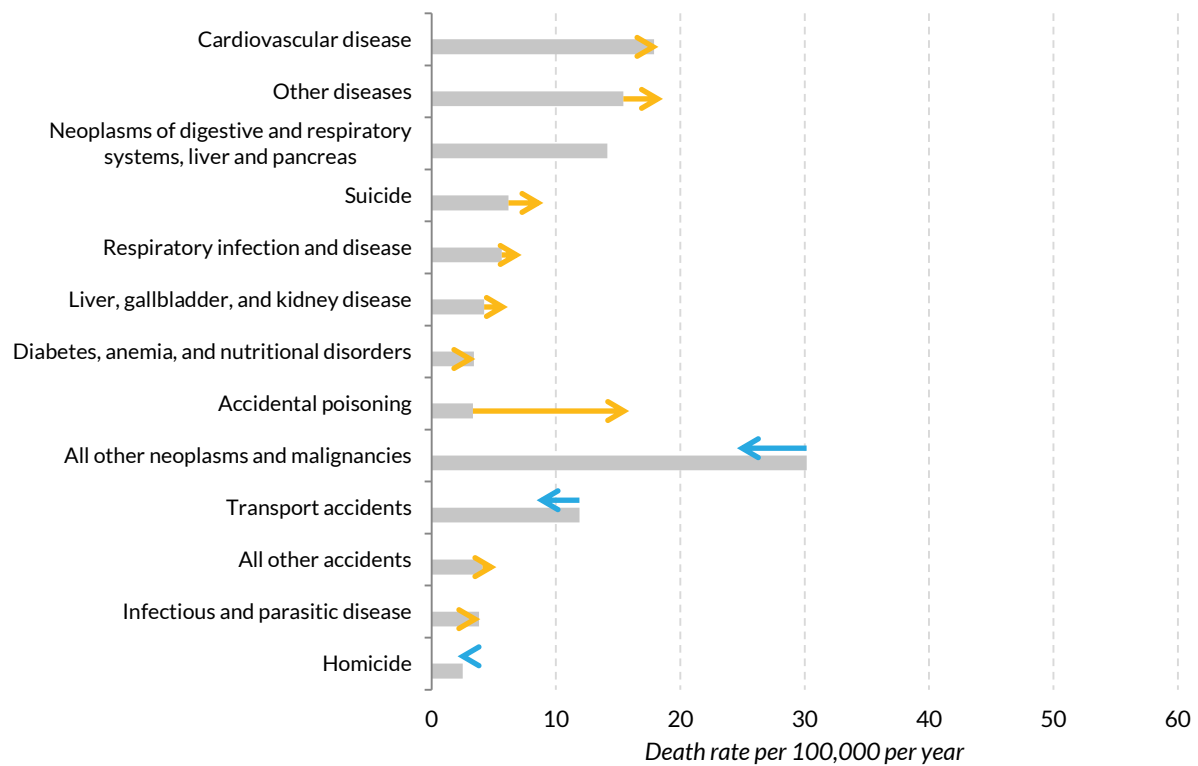
### Death Rates for Non-Hispanic White Women Spiked

Death rates rose substantially in 7 of the 13 groups of causes of death among white women, decreased substantially for 3 other groups, and remained about the same for 3 groups (see figure 1). For example, in 1999, the standardized death rate for non-Hispanic white women from respiratory infection and disease causes was 5.6 per 100,000 women; by 2011 it had risen to 7.2 deaths per 100,000 women, an increase of 1.6 deaths per 100,000 per year. In contrast with this comparatively modest increase, death rates from accidental poisoning increased more than all other causes combined, zooming from 3.3 to 15.9 deaths per 100,000 women, an increase of 12.6. This large increase is generally attributed to accidental poisonings from prescription opioids (Paulozzi and Annest 2007). The Centers for Disease Control and Prevention (2013) reports, for example, that more than 6,600 women (of all races) died from prescription painkiller overdoses in 2010, more than five times as many women as in 1999.

We further grouped causes of death into two broad categories. The top group of eight categories we deemed most consistent with social trends most likely to be worsening (especially for adult women), such as drug use, obesity and lack of exercise, smoking, and general stress. Though increases in deaths from accidental poisonings stand out, they account for only half the total increase in deaths among white women—factors other than climbing rates of substance use were involved. So even if we ignore the rise in deaths resulting from the prescription opioid drug epidemic, death rates among white women are rising.

The bottom group of five categories we deemed more consistent with positive trends, such as general improvements in medical care and auto safety and declining murder rates. Within this group, a few causes of death decreased, especially the broad class of cancers less associated with smoking, such as breast cancer and leukemia. Fatal transport accidents and homicides also went down. Across the causes of death that went down, the total is -9.6 deaths per 100,000. Unfortunately, these improvements were more than offset by the causes of death trending higher, so there was a net rise of 13.6 deaths per 100,000.

**FIGURE 1**  
**Trends in Death Rates for Non-Hispanic White Women**  
*Ages 15 to 54, 1999 and 2011*



Source: Vital statistics on mortality for 1999 and 2011.

Note: Gray bars show death rates in 1999, and colored arrows show trends to 2011.

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*Even if we ignore the rise in deaths resulting from the prescription opioid drug epidemic, death rates among white women are rising.*

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## **Death Rates for Non-Hispanic Black Women Fell**

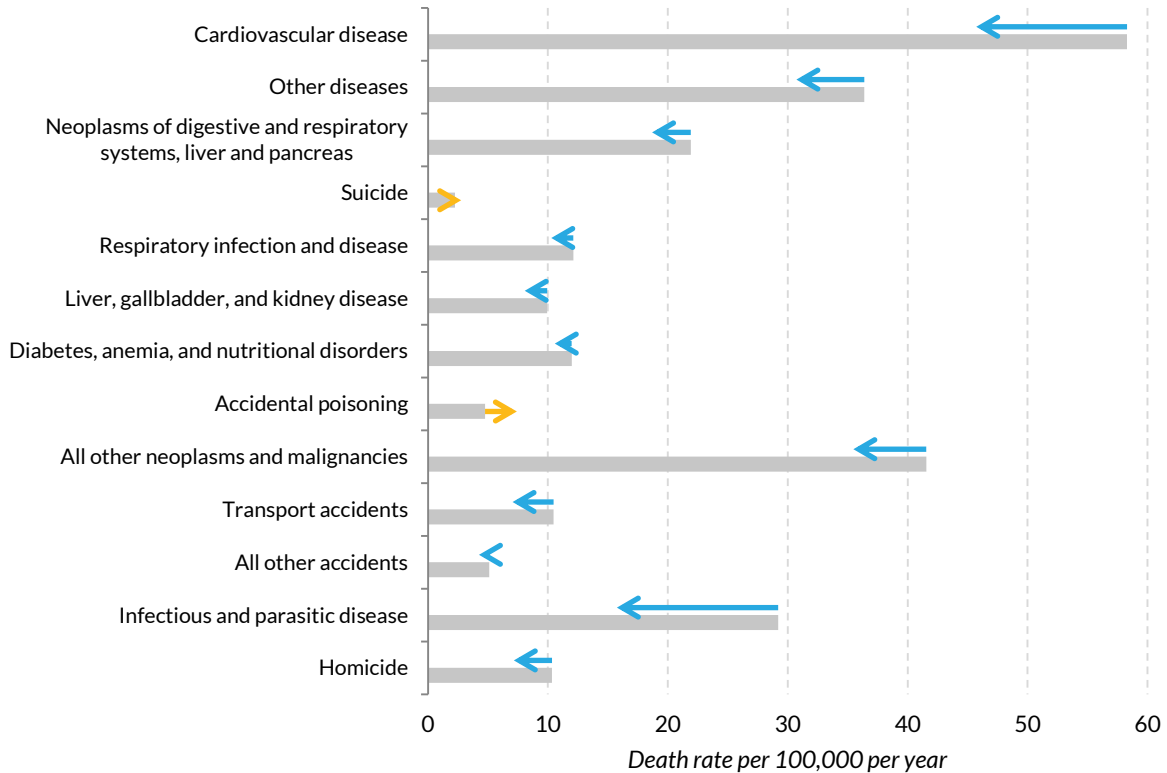
Death rates for non-Hispanic black women are shown in figure 2. Death rates from accidental poisoning for non-Hispanic black women also increased between 1999 and 2011 from 4.8 to 7.4 per 100,000 per year. This increase, however, was not nearly as much as it was for white women. In fact, the death rates from accidental poisoning are now much lower for blacks (7.4) than for whites (15.9). Deaths as a result of suicide for non-Hispanic black women also increased somewhat. Despite these negative trends, deaths from disease and other events decreased dramatically from 1999 to 2011. These decreases include a sharp decrease in death rates from cardiovascular disease from 58.3 to 45.7 deaths per 100,000 women per year. It appears that improvements in cardiovascular care for non-Hispanic black women more than offset any added risks from trends in obesity or smoking. For most other causes of death that were increasing for non-Hispanic white women (in the top group), we observed small declines in death rates for non-Hispanic black women.

Despite this decline, death rates for blacks remain higher than for whites overall and for most causes of death. With rates rising for white women as they fall for black women, however, the narrowing of the gap between these two racial groups has been significant. It would have been preferable if the convergence in mortality rates had come about exclusively from a steady decline in white death rates accompanied by an even steeper decline in death rates for blacks. One possible interpretation of these converging trends is that life stresses (and correlated behavioral responses) from family, economic, or other sources have been increasing for non-Hispanic white women more than for non-Hispanic black women; but these data do not provide clear proof for any interpretation. Non-Hispanic white women are a socially and geographically diverse group, so these results should not be taken as evidence that death rates are rising for all white women in the United States.

FIGURE 2

Trends in Death Rates for Non-Hispanic Black Women

Ages 15 to 54, 1999 and 2011



Source: Vital statistics on mortality for 1999 and 2011.

Note: Gray bars show death rates in 1999, and colored arrows show trends to 2011.

## How Can We Understand and Respond to the Rise in Death Rates among White Adult Women?

The recent spike in white women’s mortality may be analogous, in part, to the spike in black mortality—including adult women’s mortality—that accompanied the rise of the crack epidemic in the late 1980s and early 1990s. If so, one might predict that this mortality epidemic will ebb in the same way that several causes of death associated with the crack epidemic subsequently ebbed (Fryer et al. 2013). Another parallel might be the apparently subsiding high death rates among Russian men from the alcohol epidemic (Pridemore et al. 2014). In both these examples, increases in death rates were associated with particular behaviors (drug and alcohol use). The appropriate public health responses to such spikes are targeted interventions for the affected groups.

Similarly, the findings on the causes of death among adult non-Hispanic white women point to the need for a strong public health focus on the misuse of prescription opioid drugs, as well as continued attention to reducing smoking and obesity. All three of these behavioral factors are directly implicated in the rise of this group's mortality from 1999 to 2011.

A more troubling possibility—aside from, or in addition to, individual behaviors—is that white women are experiencing a systematic reversal in the long-term trend of mortality decline. There have been such reversals before, like the broad-based and long-lasting rise in mortality that occurred in European cities during the 19th century (Szreter 1997). Under this more pessimistic scenario, the high, stagnant, or rising death rates we observe among adult women now may persist as these women age, causing a substantial lowering of overall life expectancy in the United States. And because death rates are an indicator of population health, such a reversal in the trend of mortality decline would necessarily reflect widespread deficits in population health.

The wide range of rising causes of death, particularly suicide and accidental poisonings from prescription opioid use, among white women suggests that a broader perspective on the social determinants of health is needed to understand this phenomenon. In this broader perspective, unhealthy behaviors—drug use, smoking, overeating—will often arise and persist within certain social and economic contexts and will resist improvement or be replaced by other unhealthy behaviors unless those contexts change. In other words, public health interventions aimed at individual behaviors may be ineffective when the determinants of the unhealthy behaviors are inextricably embedded in the social and economic context of individuals' lives. The well-known gradient between income and health may well play a role in rising death rates as white women undergo increasing inequality in education and income and consequently in their health outcomes and behaviors. Future studies might establish whether rising inequality can help explain why the causes of death that are increasing are the ones most plausibly correlated with stress, drug use, obesity, and smoking.

## Appendix A

The tabulations underlying the two figures in the brief are based on data extracted from CDC WONDER databases (<http://wonder.cdc.gov/>). We accessed data on death rates (including the component indicators of number of deaths and population at risk) of non-Hispanic white and non-Hispanic black women ages 15 to 54 for 1999 and 2011. We accessed these death rate data according to the 113 causes of death given by the *International Classification of Diseases* or ICD-10 (World Health Organization 2008).

The next step was to reduce the number of causes of death from the 113 causes of the ICD-10 (listed in the right column of table A.1) to one of our own causes comprising 13 categories (listed in the left column of table A.1).

We then standardized the death rates for 2011 to the 2000 population of women ages 15 to 54. The age distribution of women in this age range had shifted to older ages in 2011, which could have caused an artificial finding of higher death rates.

TABLE A.1

**Categorization of Causes of Death**

| <b>13 Groups of causes of death</b>         | <b>113 Causes of death from the ICD-10</b>  |
|---|---|
| Accidental poisoning                        | Accidental poisoning  |
| All other accidents                         | Falls<br>Accidental discharge of firearms<br>Accidental drowning and submersion<br>Accidental exposure to smoke, fire, and flames<br>Other and unspecified nontransport accidents and their sequelae<br>Legal intervention<br>Discharge of firearms, undetermined intent<br>Other and unspecified events of undetermined intent and their sequelae<br>Operations of war and their sequelae<br>Complications of medical and surgical care  |
| Cardiovascular disease                      | Acute rheumatic fever and chronic rheumatic heart diseases<br>Hypertensive heart disease<br>Hypertensive heart and renal disease<br>Acute myocardial infarction<br>Other acute ischemic heart diseases<br>Atherosclerotic cardiovascular disease, so described<br>Acute and subacute endocarditis<br>Diseases of pericardium and acute myocarditis<br>Heart failure<br>All other forms of heart disease<br>Essential hypertension and hypertensive renal disease<br>Cerebrovascular diseases<br>Atherosclerosis<br>Aortic aneurysm and dissection<br>Other diseases of arteries, arterioles, and capillaries<br>Other disorders of circulatory system |
| Diabetes, anemia, and nutritional disorders | Anemias<br>Diabetes mellitus<br>Malnutrition<br>Other nutritional deficiencies  |
| Homicide                                    | Assault (homicide) by discharge of firearms<br>Assault (homicide) by other and unspecified means and their sequelae   |



TABLE A.1 CONTINUED

| 13 Groups of causes of death           | 113 Causes of death from the ICD-10  |
|--|--|
| Infectious and parasitics              | Salmonella infections<br>Shigellosis and amebiasis<br>Certain other intestinal infections<br>Respiratory tuberculosis<br>Other tuberculosis<br>Whooping cough<br>Scarlet fever and erysipelas<br>Meningococcal infection<br>Septicemia<br>Syphilis<br>Acute poliomyelitis<br>Arthropod-borne viral encephalitis<br>Measles<br>Viral hepatitis<br>Human immunodeficiency virus (HIV) disease<br>Malaria<br>Other and unspecified infectious and parasitic diseases and their sequelae<br>Enterocolitis due to Clostridium difficile                           |
| Liver, gallbladder, and kidney disease | Alcoholic liver disease<br>Other chronic liver disease and cirrhosis<br>Cholelithiasis and other disorders of gallbladder<br>Acute and rapidly progressive nephritic and nephrotic syndrome<br>Chronic glomerulonephritis, nephritis and nephropathy not specified as acute or chronic, and renal sclerosis unspecified<br>Renal failure<br>Other disorders of kidney<br>Infections of kidney  |
| Other diseases                         | Meningitis<br>Parkinson's disease<br>Alzheimer's disease<br>Peptic ulcer<br>Diseases of appendix<br>Hernia<br>Hyperplasia of prostate<br>Inflammatory diseases of female pelvic organs<br>Pregnancy with abortive outcome<br>Other complications of pregnancy, childbirth, and the puerperium<br>Certain conditions originating in the perinatal period<br>Congenital malformations, deformations and chromosomal abnormalities<br>Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified<br>All other diseases (residual) |

TABLE A.1 CONTINUED

| 13 groups of causes of death  | 113 causes of death from the ICD-10   |
|---|---|
| Neoplasms of digestive and respiratory systems, liver, and pancreas | Malignant neoplasms of lip, oral cavity, and pharynx<br>Malignant neoplasm of esophagus<br>Malignant neoplasm of stomach<br>Malignant neoplasms of colon, rectum, and anus<br>Malignant neoplasms of liver and intrahepatic bile ducts<br>Malignant neoplasm of pancreas<br>Malignant neoplasm of larynx<br>Malignant neoplasms of trachea, bronchus, and lung  |
| All other neoplasms and malignancies                                | Malignant melanoma of skin<br>Malignant neoplasm of breast<br>Malignant neoplasm of cervix uteri<br>Malignant neoplasms of corpus uteri and uterus, part unspecified<br>Malignant neoplasm of ovary<br>Malignant neoplasm of prostate<br>Malignant neoplasms of kidney and renal pelvis<br>Malignant neoplasm of bladder<br>Malignant neoplasms of meninges, brain and other parts of central nervous system<br>Hodgkin's disease<br>Non-Hodgkin's lymphoma<br>Leukemia<br>Multiple myeloma and immunoproliferative neoplasms<br>Other and unspecified malignant neoplasms of lymphoid, hematopoietic, and related tissue<br>All other and unspecified malignant neoplasms<br>In situ neoplasms, benign neoplasms, and neoplasms of uncertain or unknown behavior |
| Respiratory infection and disease                                   | Influenza<br>Pneumonia<br>Acute bronchitis and bronchiolitis<br>Other and unspecified acute lower respiratory infections<br>Bronchitis, chronic and unspecified<br>Emphysema<br>Asthma<br>Other chronic lower respiratory diseases<br>Pneumoconioses and chemical effects<br>Pneumonitis due to solids and liquids<br>Other diseases of respiratory system  |
| Suicide   | Intentional self-harm (suicide) by discharge of firearms<br>Intentional self-harm (suicide) by other and unspecified means and their sequelae   |
| Transport accidents   | Motor vehicle accidents<br>Other land transport accidents<br>Water, air and space, and other and unspecified transport accidents and their sequelae   |

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