

## VIEWPOINT

## The Leading Causes of Death in the US for 2020

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Supplemental content

**Vital statistics data** provide the most complete assessment of annual mortality burden and contribute key measurements of the direct and indirect mortality burden during a public health pandemic. While mortality statistics have historically been produced annually, the COVID-19 pandemic introduced a pressing need for the National Center for Health Statistics (NCHS) National Vital Statistics System (NVSS) to rapidly release reliable provisional mortality data. Provisional estimates indicate a 17.7% increase in the number of deaths in 2020 (the increase in the age-adjusted rate was 15.9%) compared with 2019, with increases in many leading causes of death.<sup>1</sup> The provisional leading cause-of-death rankings for 2020 indicate that COVID-19 was the third leading cause of death in the US behind heart disease and cancer.<sup>1</sup>

### Mortality Data From the NVSS

The NVSS collects, processes, tabulates, and disseminates vital statistics based on death certificates filed in the 50 states and the District of Columbia. Causes of death on death certificates are coded according to the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision*.<sup>2,3</sup> Cause-of-death data are based on the underlying cause of death, which is the disease or condition responsible for initiating the chain of events leading to death. Mortality statistics presented here are provisional, based on currently available death certificate data from the states to the NCHS as of March 21, 2021.

## The provisional leading cause-of-death rankings for 2020 indicate that COVID-19 was the third leading cause of death in the US behind heart disease and cancer.

Final mortality data will be available approximately 11 months after the end of the data year.

### Shifting Trends in Mortality

The provisional number of deaths occurring in the US among US residents in 2020 was 3 358 814, an increase of 503 976 (17.7%) from 2 854 838 in 2019 (Table). Historic trends in mortality show seasonality in the number of deaths throughout the year, with the number of deaths higher in the winter and lower in the summer. The eFigure in the Supplement shows that death counts by week from 2015 to 2019 followed a normal seasonal pattern, with higher average death counts in weeks 1 through 10 (n = 58 366) and weeks 35 through 52 (n = 52 892) than in weeks 25 through 34 (n = 50 227). In contrast, increased deaths

in 2020 occurred in 3 distinct waves that peaked during weeks 15 (n = 78 917), 30 (n = 64 057), and 52 (n = 80 656), with only the latter wave aligning with historic seasonal patterns.

### Trends in Leading Causes of Death

The Table also presents leading causes of death in the US for the years 2015 to 2020.<sup>4</sup> According to provisional data, in 2020, there were notable changes in the number and ranking of deaths compared with 2019.<sup>5</sup> COVID-19 was the third leading cause of death in 2020, with an estimated 345 323 deaths, and was largely responsible for the substantial increase in total deaths from 2019 to 2020. Substantial increases from 2019 to 2020 also occurred for several other leading causes. Heart disease deaths increased by 4.8%, the largest increase in heart disease deaths since 2012. Increases in deaths also occurred for unintentional injury (11.1%), Alzheimer disease (9.8%), and diabetes (15.4%). Influenza and pneumonia deaths in 2020 increased by 7.5%, although the number of deaths was lower in 2020 than in 2017 and 2018. From 2019 to 2020, deaths due to chronic lower respiratory disease declined by 3.4% and suicide deaths declined by 5.6%.

### Understanding Mortality in the Context of a Pandemic

Trends in mortality for leading causes of death are important indicators of shifting patterns in mortality.

During the COVID-19 pandemic, changes in leading causes provide insight into the direct and indirect effects of the pandemic on mortality burden. Most of the increase in deaths from 2019 to 2020 was directly attributed to COVID-19. However, increases were also noted for several other leading causes of death. These increases

may indicate, to some extent, underreporting of COVID-19, ie, limited testing in the beginning of the pandemic may have resulted in underestimation of COVID-19 mortality.<sup>6</sup> Increases in other leading causes, especially heart disease, Alzheimer disease, and diabetes, may also reflect disruptions in health care that hampered early detection and disease management. Increases in unintentional injury deaths in 2020 were largely driven by drug overdose deaths. Final mortality data will help determine the effect of the pandemic on concurrent trends in drug overdose deaths.

Provisional, national mortality data show that the COVID-19 pandemic substantially affected mortality in 2020. Early estimates of life expectancy at birth, based on provisional data for January to June 2020, show historic declines not seen since World War II

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Table. Number of Deaths for Leading Causes of Death, US, 2015-2020<sup>a</sup>

| Cause of death                     | No. of deaths by year |           |           |           |           |           |
|------------------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|
|                                    | 2015                  | 2016      | 2017      | 2018      | 2019      | 2020      |
| Total deaths                       | 2 712 630             | 2 744 248 | 2 813 503 | 2 839 205 | 2 854 838 | 3 358 814 |
| Heart disease                      | 633 842               | 635 260   | 647 457   | 655 381   | 659 041   | 690 882   |
| Cancer                             | 595 930               | 598 038   | 599 108   | 599 274   | 599 601   | 598 932   |
| COVID-19 <sup>b</sup>              |                       |           |           |           |           | 345 323   |
| Unintentional injuries             | 146 571               | 161 374   | 169 936   | 167 127   | 173 040   | 192 176   |
| Stroke                             | 140 323               | 142 142   | 146 383   | 147 810   | 150 005   | 159 050   |
| Chronic lower respiratory diseases | 155 041               | 154 596   | 160 201   | 159 486   | 156 979   | 151 637   |
| Alzheimer disease                  | 110 561               | 116 103   | 121 404   | 122 019   | 121 499   | 133 382   |
| Diabetes                           | 79 535                | 80 058    | 83 564    | 84 946    | 87 647    | 101 106   |
| Influenza and pneumonia            | 57 062                | 51 537    | 55 672    | 59 120    | 49 783    | 53 495    |
| Kidney disease                     | 49 959                | 50 046    | 50 633    | 51 386    | 51 565    | 52 260    |
| Suicide                            | 44 193                | 44 965    | 47 173    | 48 344    | 47 511    | 44 834    |

<sup>a</sup> Leading causes are classified according to underlying cause and presented according to the number of deaths among US residents. For more information, see the article by Heron.<sup>4</sup> Source: National Center for Health Statistics. National Vital Statistics System: mortality statistics (<http://www.cdc.gov/nchs/deaths.htm>). Data for 2015-2019 are final; data for 2020 are provisional.

<sup>b</sup> Deaths with confirmed or presumed COVID-19, coded to *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* code U07.1 as the underlying cause of death.

(1942-1943).<sup>7</sup> The effects of the pandemic are likely to continue through 2021 as well because COVID-19 has already caused more than 100 000 deaths this year. However, the effects of COVID-19

on mortality trends may be mitigated in 2021 given better detection and treatment options as well as increasing natural and vaccine-related immunity.

#### ARTICLE INFORMATION

**Published Online:** March 31, 2021.  
doi:10.1001/jama.2021.5469

**Conflict of Interest Disclosures:** None reported.

**Disclaimer:** The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

**Additional Contributions:** We are grateful for the efforts of vital statistics jurisdictions in their continued collaboration with the National Center for Health Statistics and provision of data during the COVID-19 pandemic. We thank the staff of the Division of Vital Statistics for coding and reviewing data, providing continuous database maintenance, and producing timely analysis.

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