

COVID-19 Impact on Pennsylvania Deaths



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This research brief updates a prior release (September 2021) by the Independent Fiscal Office (IFO) that used preliminary data to estimate the impact of COVID-19 on total resident deaths for 2020 and 2021. These updated estimates are based on recent data releases from the U.S. Centers for Disease Control and Prevention (CDC), National Safety Council and the Pennsylvania Department of Health.

Table 1 displays final Pennsylvania death data prior to the onset of the COVID-19 pandemic for 2017 to 2019, updated figures for 2020 and estimates for 2021 based on full-year, preliminary data. After three years of relatively flat total death counts, the 2020 data show an increase of roughly 21,600 deaths from 2019, followed by a projected decline of 600 in 2021. For 2021, estimated deaths by category are based on weekly provisional counts for the entire year.

| | 2017 | 2018 | 2019 | 2020 | 2021 |
|------------------------|----------------|----------------|----------------|----------------|----------------|
| Total Deaths | 135,656 | 134,702 | 133,983 | 155,546 | 154,960 |
| Overdoses | 5,178 | 4,262 | 4,251 | 5,089 | 5,300 |
| Homicides | 790 | 785 | 721 | 1,041 | 1,140 |
| Suicides | 2,023 | 2,017 | 1,887 | 1,720 | 1,730 |
| Vehicle Accidents | 1,343 | 1,348 | 1,195 | 1,247 | 1,330 |
| Non-Vehicle Accidents | <u>8,121</u> | <u>7,207</u> | <u>7,369</u> | <u>8,173</u> | <u>8,080</u> |
| Residual Deaths | 118,201 | 119,083 | 118,560 | 138,276 | 137,380 |
| Trend Residual Deaths | | | | <u>118,500</u> | <u>118,500</u> |
| Excess Deaths | | | | 19,776 | 18,880 |

Source: Total deaths from U.S. Centers for Disease Control and Prevention. Vehicle Accidents for 2020 and 2021 are based on data from the National Safety Council. All other categories from the Pennsylvania Department of Health. Calculations and estimates for 2021 by the IFO.

To compute additional deaths that may be due to COVID-19, the analysis removes five categories that are not directly related to COVID-19 (but may be indirectly related) and can be readily quantified: overdoses, homicides, suicides, vehicle accidents and non-vehicle accidents. For 2020, the latest data reveal a notable uptick in homicides (+320, 44.4%), overdoses (+838, 19.7%) and non-vehicle accidents (+804, 10.9%). For 2021, estimates are based on (1) Pennsylvania Department of Health data through September (suicides, accidents and homicides) and December (overdoses) and (2) National Safety Council data through November (vehicle accidents). Recent data suggest that vehicle accident deaths increased further in 2021 (+6.6%) after an uptick in 2020 (+4.4%).

The removal of these five categories yields “residual” deaths, which are due to various medical ailments such as heart disease, organ failure, cancer and COVID-19. For 2017 to 2019, residual deaths ranged from roughly 118,200 to 119,100 and are relatively stable and predictable. Based on those data, the analysis assumes that residual deaths for 2020 and 2021 would have been 118,500 in the absence of COVID-19.

The difference between actual (2020) or estimated (2021) residual deaths and the baseline amount (118,500) is the additional or excess deaths that may be attributable to COVID-19, either directly or indirectly. This analysis revises down the September 2021 estimate for excess deaths in 2020 by about 930 (-4.5%) to 19,800. The estimate for 2021 is revised up by over 12,200 (+183.9%) to 18,900 excess deaths due to the unforeseen emergence of the Delta variant, and to a lesser extent Omicron, in the fall and winter.

For Pennsylvania, the CDC estimates 17,933 COVID-19 deaths in 2020 and approximately 19,720 in 2021. For 2020, the excess deaths figure from Table 1 is higher than CDC COVID-19 deaths (+1,843) because the pandemic likely caused other deaths from heart attacks, strokes and other medical conditions that would have been detected and treated in normal years, but were not due to the pandemic conditions, and were not characterized as a COVID-19 death by the CDC. Conversely, computed excess deaths are slightly lower than projected CDC COVID-19 deaths in 2021 (-840) due to (1) the likelihood that some deaths of medically compromised individuals in 2020 were pulled forward one year in time and (2) a general reduction in deaths from flu, pneumonia or other communicable diseases in 2021.

Table 2 provides an age breakdown for (1) total deaths from 2017 to 2021 and (2) the difference in 2020 and 2021 compared to the latest pre-COVID average (2018 and 2019). Due to the preliminary nature of the data, the analysis shows total deaths by age group and does not attempt to apportion out excess deaths by cause of death. However, the five categories itemized separately in Table 1 comprise a little more than one-tenth of total deaths in a typical year. Hence, the overall change in total deaths by age group still provides meaningful insights into the impacts of COVID-19.

| Age | Total Deaths | | | | | Change vs Pre-COVID Avg. | |
|---------------------|----------------|----------------|----------------|----------------|----------------|--------------------------|---------------|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2020 | 2021 |
| Under 25 | 2,615 | 2,337 | 2,197 | 2,292 | 2,490 | 25 | 223 |
| 25-44 | 6,546 | 6,108 | 5,946 | 6,916 | 7,670 | 889 | 1,643 |
| 45-64 | 23,077 | 22,563 | 22,484 | 25,074 | 27,560 | 2,551 | 5,037 |
| 65-74 | 23,623 | 23,932 | 24,032 | 29,063 | 31,490 | 5,081 | 7,508 |
| 75-84 | 31,434 | 31,595 | 32,337 | 37,719 | 37,340 | 5,753 | 5,374 |
| Over 84 | <u>48,329</u> | <u>48,143</u> | <u>46,957</u> | <u>54,475</u> | <u>48,410</u> | <u>6,925</u> | <u>860</u> |
| Total Deaths | 135,656 | 134,702 | 133,983 | 155,546 | 154,960 | 21,204 | 20,618 |

Note: Age categories do not sum to total because they exclude deaths where age is unknown. Final two columns represent the change compared to the pre-COVID-19 average for 2018 and 2019.

Source: U.S. Centers for Disease Control and Prevention. Calculations and estimates for 2021 by the IFO.

Due to the stable nature of short-term demographic trends, a simple projection for 2020 and 2021 would assume no change in the number of deaths from the 2018 to 2019 average across all age groups. The (preliminary) data show the following outcomes for 2020 and 2021:

- For residents under age 25, deaths increased both years, but the net increase is attributable to the uptick in homicides and overdoses.

- For residents age 25 to 44, deaths increased by 889 in 2020 (actual, 14.8%) and 1,643 in 2021 (estimate, 27.3%). However, over half of the change is explained by the increase in deaths due to homicides and overdoses.
- For residents age 45 to 64, deaths increased by 2,551 (11.3%) for 2020 and 5,037 (22.4%) for 2021. The increase in homicides and overdoses explains roughly 10% of the increase across the two years. For this age group, most of the increase appears to be directly related to COVID-19 or indirectly related (e.g., lack of regular medical check-ups, aversion to hospitals or other medical offices during the pandemic).
- For residents age 65 to 74, deaths increased by 5,081 (21.2%) for 2020 and 7,508 (31.3%) for 2021. For this age group, nearly all of the increase appears to be directly or indirectly related to COVID-19.
- For residents age 75 to 84, deaths increased by 5,753 (18.0%) for 2020 and 5,374 (16.8%) for 2021. Based on the small decline in those figures, some deaths may have occurred one year earlier than would occur under normal conditions.
- For residents age 85 and older, deaths increased by 6,925 (14.6%) for 2020 and 860 (1.8%) for 2021 compared to the recent pre-COVID average. In terms of overall number of deaths, that trend suggests that many COVID-19 deaths in 2020 would have occurred in 2021 under normal conditions.
- The final data for 2020 show that residents age 65 and older were affected most by COVID-19. If the significant increase in homicides (320) and overdoses (838) in 2020 are removed from the data (which largely impact those under age 65), then the 65 and older age cohort comprised roughly 89% of higher deaths in 2020 compared to the latest pre-COVID trends.

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