

COVID-19 Impact on Pennsylvania Deaths



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In October 2021, the Independent Fiscal Office (IFO) will release demographic projections that will be incorporated into its annual five-year *Economic and Budget Outlook*. This research brief contains preliminary results from those projections that estimate the impact of COVID-19 on total resident deaths for 2020 and 2021. It is noted that these results are subject to revision as additional data are released. The IFO will update this analysis when full data for calendar year 2021 become available.

Table 1 displays final Pennsylvania death data prior to the onset of the COVID-19 pandemic for 2017 to 2019, preliminary figures for 2020 and estimates for 2021 based on data through September 2021. After three years of relatively flat total deaths, the 2020 data show an increase of roughly 22,500 deaths from 2019, followed by a projected decline of 14,000 in 2021. For 2020, the total deaths data are preliminary and will be revised. For 2021, total deaths data are based on data through September and assume the recent average of 2,560 deaths per week occurs for the remainder of the year.

	2017	2018	2019	2020	2021
Total Deaths	135,656	134,702	133,983	156,447	142,420
Overdoses	5,178	4,262	4,251	5,063	5,300
Homicides	790	785	721	1,041	1,180
Suicides	2,023	2,017	1,887	1,720	1,640
Vehicle Accidents	1,343	1,348	1,195	1,184	1,230
Non-Vehicle Accidents	<u>8,121</u>	<u>7,207</u>	<u>7,369</u>	<u>8,236</u>	<u>7,920</u>
Residual Deaths	118,201	119,083	118,560	139,203	125,150
Trend Residual Deaths				<u>118,500</u>	<u>118,500</u>
Excess Deaths				20,703	6,650

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 data reveal a notable uptick in homicides (+320, 44.4%), overdoses (+812, 19.1%) and non-vehicle accidents (+867, 11.8%). For 2021, the estimates are based on Pennsylvania Department of Health data through June (suicides, accidents, overdoses and homicides) and data through 2021 Q2 from the National Safety Council (vehicle accidents). The preliminary data suggest that the number of homicides will increase further in 2021 after a surge in 2020.

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 projected (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. The analysis estimates the following excess deaths: 20,700 (2020) and 6,650 (2021).

For Pennsylvania, the U.S. Centers for Disease Control and Prevention (CDC) estimates 17,875 COVID-19 deaths in 2020 and approximately 11,560 through September 2021. If the latest average of 30 COVID-19 deaths per day holds for the remainder of the year, then the CDC figure for total COVID-19 deaths for 2021 would be 14,320. The two-year total for CDC COVID-19 deaths would be 32,195. By comparison, the two-year excess deaths computed by the analysis is 27,353. The excess deaths figure from Table 1 is higher in 2020 than CDC COVID-19 deaths (+2,828) 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 much lower than projected CDC COVID-19 deaths in 2021 (-7,670) 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.

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 976 in 2020 (preliminary, 16.2%) and 1,243 in 2021 (projection, 20.6%). However, roughly two-thirds of the change is explained by the increase in deaths due to homicides and overdoses.
- For residents age 45 to 64, deaths increased by 2,957 (13.1%) for 2020 and 2,347 (10.4%) for 2021. The increase in homicides and overdoses explains roughly 15% 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 5,335 (22.2%) for 2020 and 4,578 (19.1%) 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 5,849 (18.3%) for 2020 and 2,284 (7.1%) for 2021. Based on the significant decline in those figures, some deaths may have occurred one year earlier than would occur under normal conditions. Moreover, total CDC COVID-19 deaths declined across the two years, and this age group reflects that general trend.
- For residents age 85 and older, deaths increased by 6,913 (14.5%) for 2020 but contracted by 2,500 (-5.3%) 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 preliminary 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 (812) in 2020 are removed from the data (which largely impact those under age 65), then the 65 and older age cohort comprised roughly 86% of higher deaths in 2020 compared to the latest pre-COVID trends.

Table 2
Pennsylvania Decedents by Age Group

Age	Total Deaths					Change vs Pre-COVID Avg.	
	2017	2018	2019	2020	2021	2020	2021
Under 25	2,615	2,337	2,197	2,368	2,420	101	153
25-44	6,546	6,108	5,946	7,003	7,270	976	1,243
45-64	23,077	22,563	22,484	25,481	24,870	2,957	2,347
65-74	23,623	23,932	24,032	29,317	28,560	5,335	4,578
75-84	31,434	31,595	32,337	37,815	34,250	5,849	2,284
Over 85	<u>48,329</u>	<u>48,143</u>	<u>46,957</u>	<u>54,463</u>	<u>45,050</u>	<u>6,913</u>	<u>-2,500</u>
Total Deaths	135,624	134,678	133,953	156,447	142,420	22,132	8,105

Note: Excludes 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.

For demographic projections, the IFO forecast assumes that the impact of COVID-19 will diminish in 2022, and in 2023, death rates will largely revert to historical rates observed prior to the COVID-19 pandemic. Those projections, and other statewide demographic projections, will be released at the end of October. That release will also incorporate the new U.S. Census Bureau data based on the 2020 decennial census.

Staff Acknowledgements

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