



September 2023

# Understanding the Washington Excess Mortality in 2020 and 2021 Report



## Report Overview

Excess Deaths During the COVID-19 Pandemic and 2021 Heat Dome, Washington State 2020 & 2021

### Report Authors:

Jon Downs, MPH  
Ian Painter, PhD  
Katie Hutchinson, PhD  
Sean Coffinger, MA

### For more information or additional copies of this report:

DOH DCHS  
Center for Health Statistics

[Read the report here](#)

The people of Washington state experienced two public health crises in 2020 and 2021. The COVID-19 pandemic occurred during both these years, and record-breaking temperatures known as the "heat dome" affected Washington in the summer of 2021. To review statistics from both years, a Washington State Department of Health (DOH) report investigated excess deaths from 2020 and 2021.

When examining the numbers, we learned important information about how COVID-19 and the heat dome did and didn't contribute to the excess mortality. We also see how both crises impacted some populations more than others.

The full report is available [on the DOH website](#).

# Defining Excess Death

Each year, DOH reports the number of deaths and the death rate of Washington residents. The figures are typically similar every year, so we can usually look at historical data to predict a certain number of expected deaths each year. When we compare this **expected** number to the **actual observed** number of deaths in a year, that difference is **excess** death.

[Read the full DOH report](#) for more detail about these calculations.

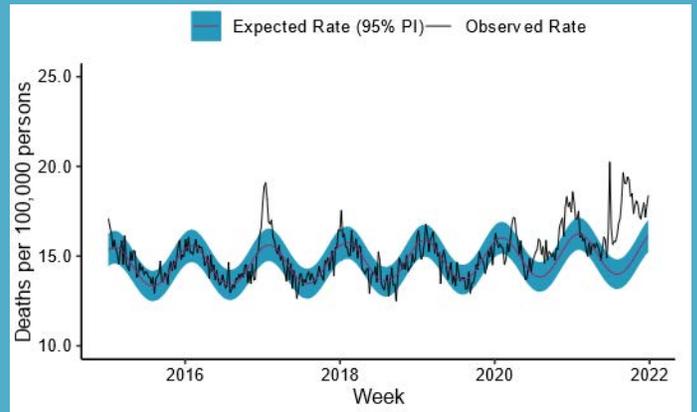


Figure 1. Observed and Expected Death Rate per 100,000 by Week, Washington, 2015-2022. With a few exceptions, the expected and observed rate were similar until 2020.

## COVID-19 Impact

The pattern of excess deaths compared to COVID-19 deaths was different in the two years we examined.

**In 2020, more COVID-19 deaths were reported than excess deaths.** This indicates COVID-19 deaths were offset by other kinds of death.

**In 2021, excess deaths were higher than deaths attributed to COVID-19 and the heat dome combined.** This could be due to undetected COVID-19 infections, an increased risk of death from chronic health conditions due to COVID-19 or excessive heat, or other unexpected impacts of life during the pandemic.

By race and ethnicity, 2020 excess death rates were highest in Hispanic, American Indian and Alaska Native, and Black populations. In 2021, we found the highest excess death rates in American Indian and Alaska Native persons, Hispanic persons, and persons of two or more races.

Read more about the relationship between excess death rates and COVID-19 death rates [in the full report](#).

## Heat Dome Impact

**The six weeks of the heat dome, June 20 to July 31, were among the deadliest weeks of 2020 and 2021 in Washington.** Heat waves and heat domes have become more common, and it is likely that this trend will continue.

During the heat dome, 157 deaths were attributed to heat-related causes. We found an even higher rate of excess death: 205 excess deaths each week, compared to an average of 133 excess deaths for all other weeks of 2021. This higher rate of excess death is not explained by reported COVID-19 deaths, because reported COVID-19 deaths were lower during the heat dome than the rest of the year.

Excess death rates for those aged 85 and older changed most during the heat. Additionally, American Indian, Alaskan Native, Hispanic, and Black populations were disproportionately impacted.

Read more about the relationship between excess death rates and COVID-19 death rates [in the full report](#).

Year	Observed Excess Count	Reported COVID-19 Count	Reported Heat Dome Count	Difference
2020	2,930	3,757	--	-827
2021	7,367	6,327	157	+883

# Death Rate Declines and Vaccination Rate

We found that people who live in areas with the highest vaccination rates were **three times less likely to die** from COVID-19 than the areas with the lowest vaccination rates.

We compared excess deaths and COVID-19 vaccination rates at the census tract level. Census tracts with higher vaccination rates fared better than those with lower vaccination rates, most notably after vaccinations became available in Washington. This is consistent with other findings that COVID-19 vaccines, including boosters, reduce the risk of infection and death.

From the week of September 22, 2021 through the end of 2021, average weekly COVID-19 death rates were 0.70 deaths per 100,000 persons in the most vaccinated areas and 3.08 deaths per 100,000 persons in the least vaccinated areas.

[Read the full DOH report](#) for details about vaccination rate and COVID-19 death rate.

## On the right:

Figure 2: Washington Census Tracts by COVID-19 Vaccinations per Person as of December 31, 2021

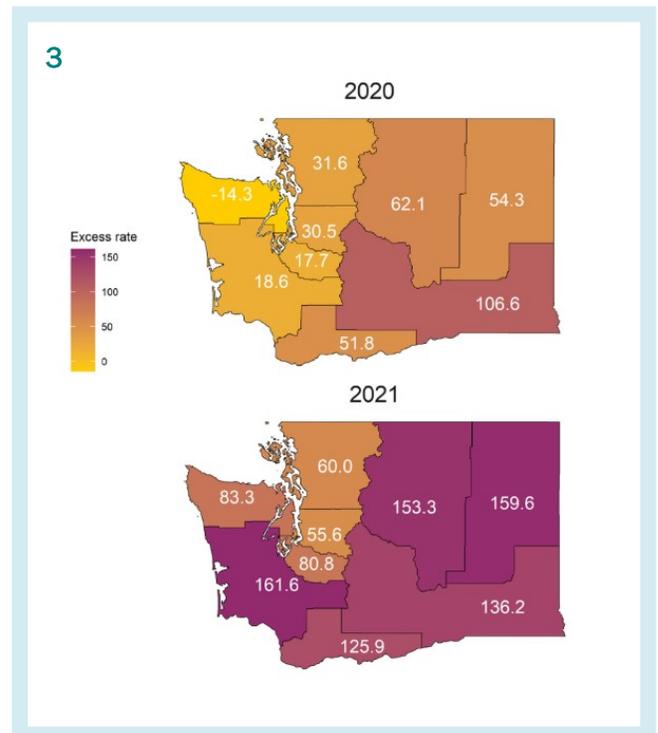
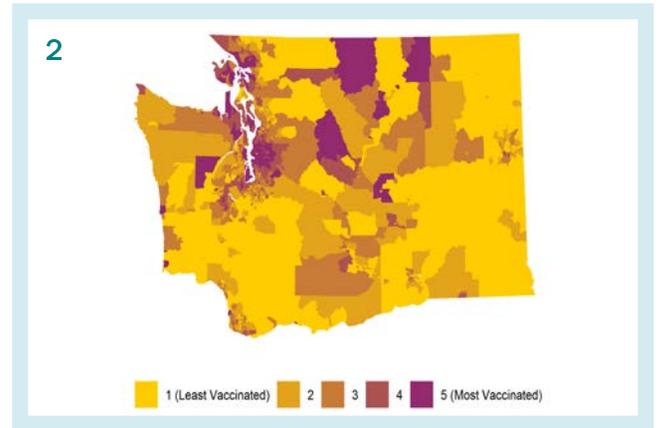
Figure 3. Excess Deaths per 100,000 Persons by Accountable Community of Health, 2020-2021

## Comparing the figures:

Our report found people who live in areas with high vaccination rates (shown in figure 2) were three times less likely to die from COVID-19 areas with the lowest vaccination rate (shown in figure 3).

422-244 September 2023

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email [civil.rights@doh.wa.gov](mailto:civil.rights@doh.wa.gov).



Center for Health Statistics  
Disease Control and Health  
Statistics  
Washington State  
Department of Health  
[CHSHealthStats@doh.wa.gov](mailto:CHSHealthStats@doh.wa.gov)  
360-236-3642