

King County COVID-19 Deaths: 2020-2022

Report produced on December 6th, 2023

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Background

Public Health-Seattle & King County (PHSKC) tracks all deaths due to COVID-19 to understand the populations most impacted by the COVID-19 pandemic in King County, Washington. Since the beginning of the COVID-19 pandemic in 2020, PHSKC collaborated with the Washington State Department of Health (WA DOH) to develop surveillance systems to identify and classify deaths due to COVID-19. This report provides an in-depth look at deaths due to COVID-19 among King County residents since the first deaths due to COVID-19 occurred in late February 2020 through the end of 2022.

This report has two sections: the first section, Key Findings, summarizes all deaths due to COVID-19 reported to PHSKC and examines patterns by age, race/ethnicity, geography, and vaccination status. The second section uses death certificate data and provides additional context, including analyses of leading causes of death, predisposing conditions, excess deaths, and contributing factors.

Definitions used in this report

Confirmed and suspected deaths due to COVID-19 are defined as deaths among persons who tested positive for COVID-19 with a molecular based test (e.g., PCR) or an antigen (Ag) based test. To be a

confirmed death, decedents must have tested positive for COVID-19 and have COVID-19 (or some similar terms) listed on their death certificate. Suspected deaths are defined as decedents who died of natural causes and tested positive within 28 days of death. These deaths are investigated to verify the timing of the laboratory test and date of death, and to review the death certificate information to determine the correct classification (i.e., confirmed, suspect, or ruled out).

Probable deaths due to COVID-19 are defined as decedents with COVID-19 (or similar keywords) listed on their death certificate, but who do not have a reported positive test for COVID-19. Probable deaths have not been included in official COVID-19 death counts based on definitions in effect from 2020-2022. However, the definition of deaths due to COVID-19 changed to include these deaths effective January 1, 2023, based on updated guidance from the Counsel of State and Territorial Epidemiologists (CSTE) that has been adopted by WA DOH¹. The new death definition is based off of death certificate data alone and include confirmed and probable deaths. This report will describe probable deaths. Future reports may review death reporting changes with the new 2023 definition.

More information about these definitions can be found in the Technical Notes section of the Appendix.

Data sources

Several data systems are used to identify and analyze deaths due to COVID-19 in this report. Death certificate data from Washington Health and Life Events System includes demographic information, death date, cause of death, and location of death for all decedents in King County. Communicable disease surveillance data from Washington Disease Reporting System includes electronic lab reporting data, case investigation data, and demographic data for all individuals who meet COVID-19 case definition. Washington State Immunization Information System data is the state registry of all individuals who have been vaccinated for COVID-19.

Death certificate data are useful because they can provide insight into populations that are the most severely impacted by COVID-19. They contain information on underlying and contributing causes of death which is not reported in PHSKC's COVID-19 surveillance data.

The findings in this report include overall counts since the first COVID-19 death in King County in February 2020 through December 2022. This report also includes changes over time, by year of the pandemic (2020, 2021, 2022) and by periods or "phases" characterized by relative increases in COVID-19 outcomes. These 8 pandemic phases include Winter/Spring 2020, Summer 2020, Fall 2020, Alpha (the time during which the Alpha variant was dominant), Delta (the time during which the Delta phase was dominant), Omicron 1 (the first surge in which the Omicron variant was dominant), Omicron 2, and Omicron 3. Exact dates for each phase can be found in Supplemental Table 1. Deaths by phase can be found in Supplemental Figure 1c.

King County deaths due to COVID-19: Key Findings

How many King County residents died due to COVID-19 since the pandemic began?

Since February 29, 2020, when the first COVID-19 death was reported in King County, until December 31, 2022, PHSKC reported 3416 deaths were due to COVID-19. Of those deaths:

- 82.6% (n = 2822) tested positive for COVID-19 and had a death certificate noting that COVID-19 contributed to death. These are considered “confirmed” deaths due to COVID-19.
- 17.4% (n = 594) tested positive for COVID-19 within 28 days of death and died of a natural disease but did *not* have COVID-19 listed on their death certificate as a contributing cause. These are considered “suspect” deaths due to COVID-19.
- An additional 239 deaths had COVID-19 listed on their death certificate but had no documented positive COVID-19 test. These are considered “probable” deaths due to COVID-19.

Table 1: COVID-19 deaths in King County by classification

	2020*	2021	2022	Total
Confirmed deaths	1,088	906	828	2,822
Suspected deaths	68	140	386	594
Total deaths due to COVID-19	1,156	1,046	1,214	3,416
Probable deaths**	68	62	109	239

*First deaths in 2020 occurred in late February

**Probable deaths are not included in official counts for 2020-2022

The number of deaths due to COVID-19 was highest during 3 phases of the pandemic: Early 2020 (the beginning of the pandemic), late 2020, and the first Omicron phase (early 2021). There was a peak of 275 deaths in April 2020, 276 deaths in December 2020, and 257 deaths in January 2022. The number of deaths has fluctuated throughout the pandemic, and the average number of weekly deaths is 79 (SD = 57). Figure 1 shows all confirmed and suspected deaths due to COVID-19 by month. While more deaths occurred in 2022 than 2021 and 2020, more of the deaths that occurred in 2022 were suspected deaths due to COVID-19 than in 2021 and 2020, whereas 2021 and 2020 had more confirmed deaths. Supplemental Figures 1a-b show deaths by week and month throughout the pandemic.

Figure 1 shows all confirmed and suspected deaths due to COVID-19 by month.

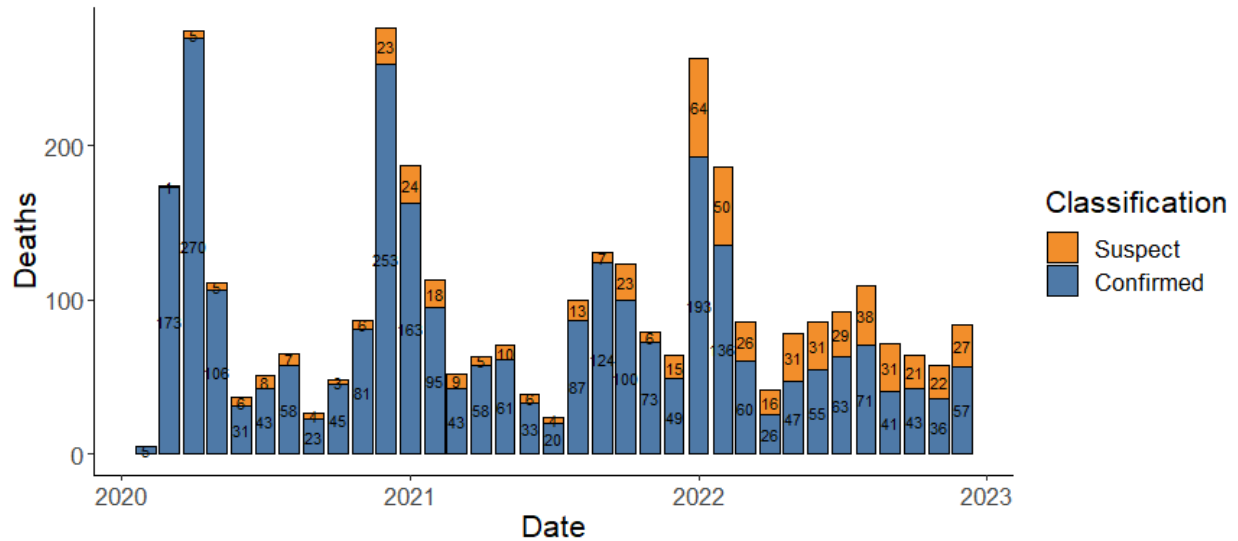


Figure 1: King County deaths by month: 2020-2022

What groups have the highest burden of deaths due to COVID-19?

Age

Most deaths are among older residents. Residents aged 80+ years have accounted for approximately half of all deaths due to COVID-19.

- 94% (n = 3221) of the 3416 deaths have been among people aged 50 years and older.
- Among those aged 50 years and older, 9% (n = 290) have been among residents aged 50-59 years, 17% (n = 539) have been among residents aged 60-69 years, 25% (n = 804) have been among residents aged 70-79 years, and 49% (n = 1588) have been among residents aged 80 and older.
- The median age of death for deaths due to COVID-19 is 78 years. This has changed slightly over time: the median age in 2020 was 81 years (IQR 19), in 2021 was 74 years (IQR 23), and in 2022 was 79 years (IQR 20). Median ages were lowest during the Alpha (March 1, 2021 to July 7, 2021) and Delta (July 8, 2021 to November 26, 2021) phases; younger age groups, especially 30-39 years, 40-49 years, and 50-59 years, took up a larger share of all deaths in these phases compared to other phases. Median ages of deaths for deaths due to COVID-19 over time can be found in Supplemental Figures 2a-b.

Figure 2 shows deaths by age group: 47% of all deaths have been among residents aged 80 years and older.

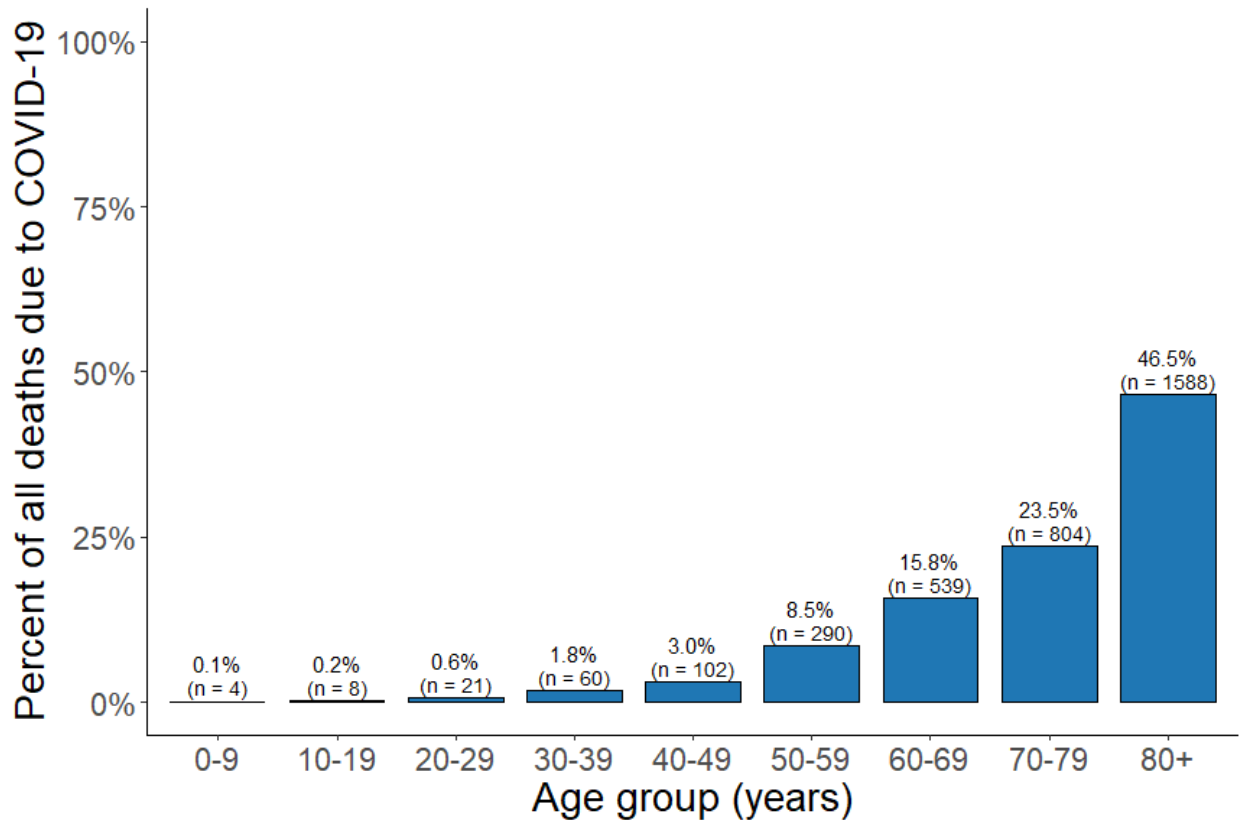


Figure 2: deaths due to COVID-19 in each age group from February 2020 - December 2022

Race/ethnicity

The highest number of deaths due to COVID-19 have occurred among non-Hispanic White residents (referred to in this report as White), but when comparing proportions, communities of color are disproportionately affected.

- When estimating disparities, we need to account for different underlying age distributions by group. King County's White population has an older age distribution than other racial and ethnic groups. Estimates that account for these distributions are called **age-adjusted** estimates. Supplemental Figure 5a shows age distributions by race/ethnicity group in King County.
- Black, Hispanic, Native Hawaiian/Pacific Islander (NHPI), American Indian/Alaskan Native (AIAN), and other or multiracial communities have all experienced a disproportionately high burden of deaths due to COVID-19 throughout the pandemic, while White and Asian communities have experienced lower burden of deaths due to COVID-19 than their population proportion.
- These disparities have changed over time and were most pronounced in 2021: Supplemental Figures 6a-b show the age standardized differences between the percent of deaths due to COVID-19 and the population percent by year and by phase over the course of the COVID-19 pandemic.

Figure 3 shows the age standardized differences between the percent of deaths due to COVID-19 and the population percent. Differences that are below zero represent groups that have a percent of deaths

due to COVID-19 that are smaller than their proportion of the population. Differences that are above zero represent groups that have a percent of deaths due to COVID-19 that are larger than their proportion of the population, and have therefore experienced a disproportionately high burden of deaths due to COVID-19. Crude differences in COVID-19 percent from population percent by race/ethnicity can be found in Supplemental Figure 5b.



Figure 3: Age standardized differences in COVID-19 percent from population percent, by race/ethnicity. AIAN: American Indian/Alaskan Native; NHPI: Native Hawaiian/Pacific Islander; Multi/Other: Other race or multiple races

Geography

Deaths due to COVID-19 have had the highest impact in South King County. Regions refer to each decedent’s primary address.

- Death rates are the highest in the Auburn, Kent, and Federal Way region, followed by the region that includes Burien, Renton, Tukwila, and SeaTac.
- Death rates vary by region in King County. This may be due to a number of reasons, including the social and economic makeup of these regions, which is related to social determinants of health. Areas with higher social vulnerability were more impacted by COVID-19 outcomes.

- Death rates by region have remained consistent over time, but disparities were greatest between the regions with the highest and lowest rates in 2020 (a difference of 73.7 deaths per 100,000 residents). Supplemental Figures 4a-b show regional rates by year and phase.

Figure 4a shows the 10 King County regions used in this analysis.

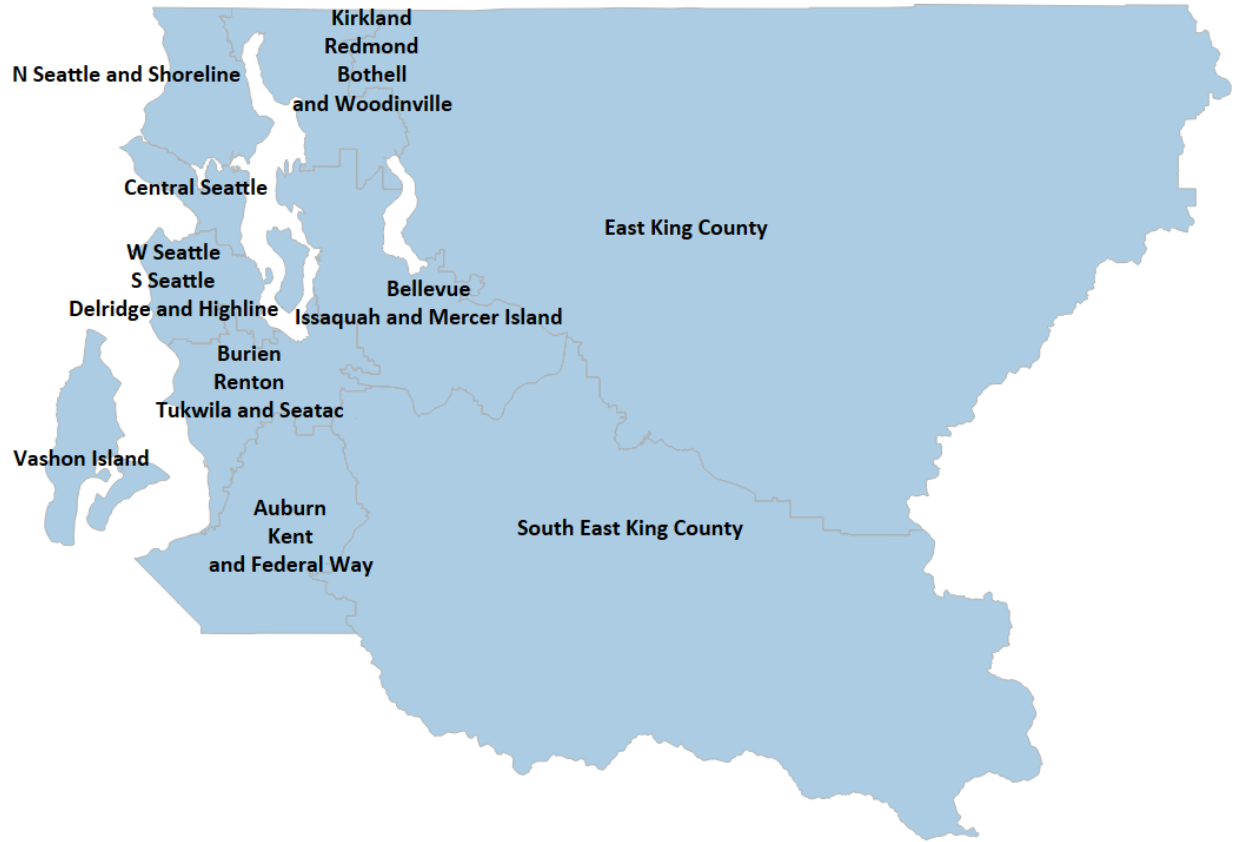


Figure 4a: King County divided into 10 regions

Figure 4b shows the death rate per 100,000 King County residents from 2020 - 2022 in each region. The highest rates are in Auburn, Kent and Federal Way while the lowest rates are on Vashon Island.

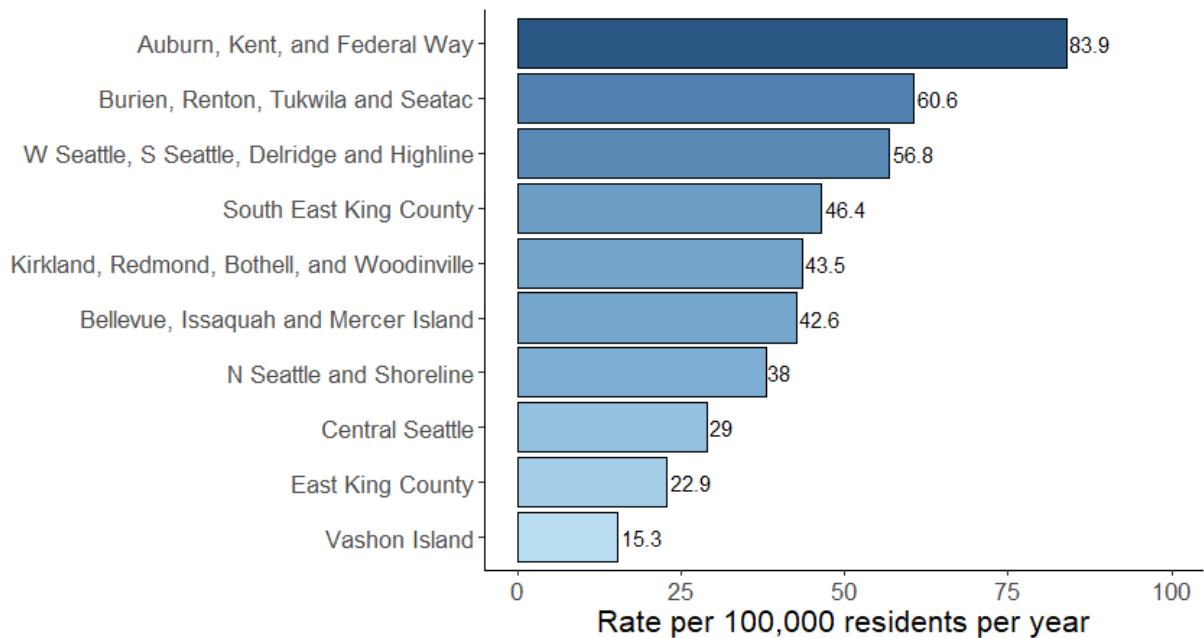


Figure 4b: Average death rate per 100,000 per year in King County regions: 2020-2022

Vaccination status

COVID-19 vaccines were first administered in Washington State in December 2020. All residents aged 65 years and older were authorized to receive the vaccines in January 2021, and all residents aged 16 years and older in April 2021. Younger residents aged 12-15 years and 5-11 years became eligible later May and October 2021, respectively. Vaccines for children aged 6 months-4 years were authorized in June 2022. On June 15, 2021, 70% of King County residents aged 16+ years completed the primary COVID-19 vaccine series. In this report, “unvaccinated” refers to residents who have received 0 doses of any COVID-19 vaccine; “vaccinated, not up to date” refers to residents who have received at least 1 dose of a COVID-19 vaccine, but had not received all recommended doses; and “up to date” refers to residents who had received all recommended doses of COVID-19 vaccine at the time of death. As vaccine and booster eligibility changed over time, vaccination status was determined based on the date of death for each decedent.

Overall, 1660 people died due to COVID-19 before June 15, 2021, the date when primary vaccine series completion proportion reached 70% of the King County population aged 16+ years. These deaths represent 48.6% of all deaths due to COVID-19 from 2020-2022. Of the 1719 deaths that occurred on or after June 15, 2021, 44% have been among unvaccinated residents. Since the introduction of the vaccine, unvaccinated residents are still dying at higher rates than residents who have received at least one dose of any COVID-19 vaccine.

- 71% (n = 2423) of decedents were unvaccinated against COVID-19, meaning they had not received any doses of any COVID-19 vaccine. 69% (n = 1660) of these deaths occurred before

June 15, 2021. Age-adjusted rates among unvaccinated residents were 2.5 deaths per 100,000 residents per day for both 2021 and 2022.

- 44% (n = 761) of decedents who died due to COVID-19 after June 15, 2021 were vaccinated, not up to date with COVID-19 vaccines, meaning they had received at least 1 dose of a COVID-19 vaccine, but had not received all recommended doses. Age-adjusted rates in the vaccinated, not up to date group are 0.12 deaths per 100,000 residents per day in 2021 and 0.30 deaths per 100,000 residents per day in 2022.
- 12% (n = 204) of decedents who died after June 15, 2021 were up to date for COVID-19 vaccinations, meaning they had received all recommended doses of COVID-19 vaccine at the time of death. Age-adjusted rates in the vaccinated group are 0.04 deaths per 100,000 residents per day in 2021 and 0.15 deaths per 100,000 residents per day in 2022. Among decedents who were up to date for COVID-19 vaccinations, 94% (n = 369) were over the age of 50 years; older age is a risk factor for COVID-19 death, even among people who are up to date on COVID-19 vaccinations.

Other vulnerable groups

Some groups in King County are at high risk for COVID-19, but data on these groups and about COVID-19 in these groups are limited.

Residents living in long-term care facilities, such as nursing homes, adult family homes, or assisted living facilities, are at especially high risk for death due to COVID-19.

- From the beginning of the pandemic through the end of 2022, 1196 deaths due to COVID-19 have occurred among residents of long term care facilities. This represents 35% of all King County deaths over the same timeframe. Residents of long term care facilities (such as nursing homes and assisted living facilities) may be at higher risk of COVID-19 complications given older age, underlying comorbidities, and higher SARS-CoV-2 transmission risk due to the congregate settings.

People who are experiencing homelessness have an elevated risk for severe COVID-19 outcomes and experience a disproportionately high burden of deaths due to COVID-19.

- Since the onset of the pandemic, 104 deaths have occurred among King County residents experiencing homelessness. This represents 3% of all King County deaths. An estimated 45,790 people in King County aged 12 years and above experienced homelessness or housing stability in the previous 12 months, as of January 31, 2022².
- More information about COVID-19 among King County residents experiencing homelessness is available in this report: [COVID-19 among King County residents experiencing homelessness](#).

What comorbidities existed among those who died due to COVID-19?

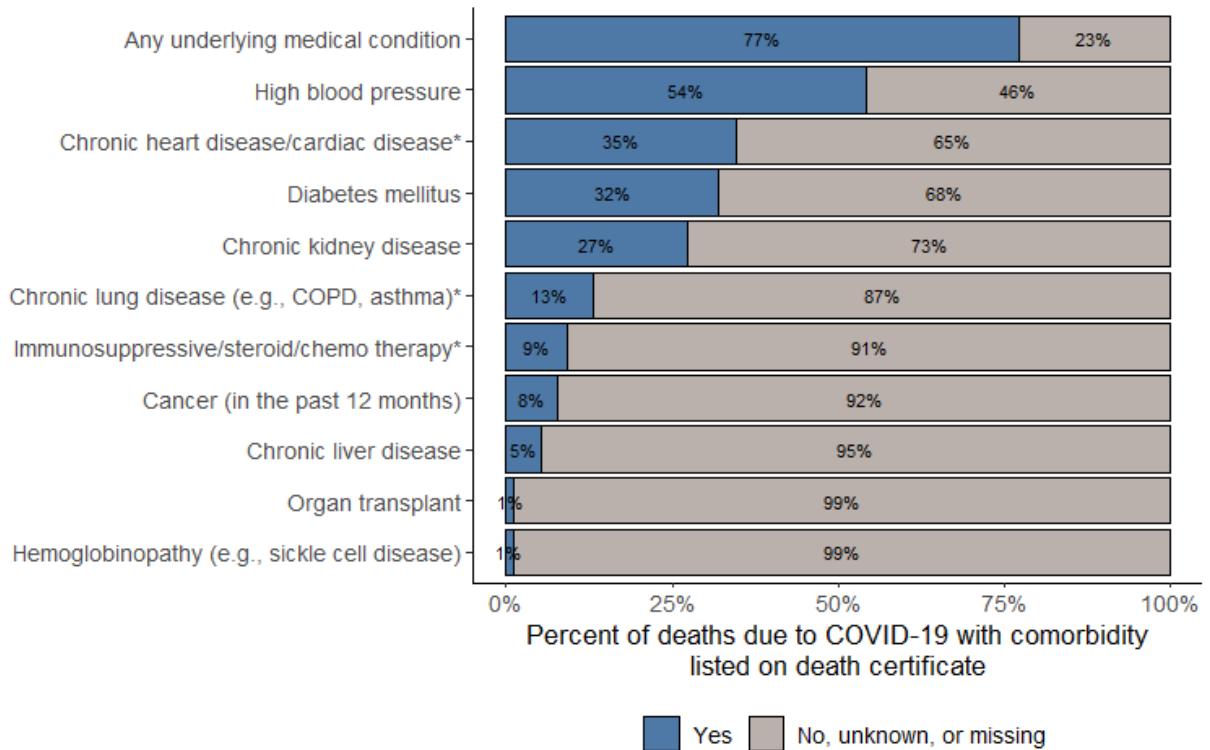
Individuals with comorbidities may be at higher risk of death from COVID-19. Characterizing the most common comorbidities listed on decedents' medical records can help provide further insight into which conditions may be associated with a higher risk for death from COVID-19. More information about how certain conditions can affect COVID-19 outcomes can be found on the CDC's website:

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>.

'Confirmed' and 'suspect' deaths due to COVID-19 require a positive COVID-19 test result. Death investigations were conducted on all deaths due to COVID-19 from February 2020 until September 2022, when investigation capacity became limited. Investigations included manual review of decedents' medical records to identify comorbidities that were present at the time of death. While information extracted from medical records from decedents has some limitations, including missing data and overlapping definitions (i.e., cardiac disease and chronic heart disease), this information can show generally what kinds of comorbidities were present among decedents.

- 77.2% of deaths due to COVID-19 in King County had at least one comorbidity listed on the medical record. The average number of comorbidities across all King County deaths due to COVID-19 was 4.2.
- High blood pressure (54% of decedents), chronic heart disease and/or cardiac disease (35% of decedents), and diabetes mellitus (32% of decedents) were the most common comorbidities.

Figure 6: Comorbidities listed on medical records among deaths due to COVID-19 in King County



*Immunosuppressive/steroid/chemo therapy refers to medical records that refer to any steroid therapy, chemotherapy, or immunosuppressive therapy, condition, or disease. Chronic heart disease/cardiac disease refers to any medical records that refer to chronic heart disease and/or cardiac disease. Chronic lung disease refers to any type of chronic lung disease captured on medical records, including asthma, COPD, emphysema, etc.

Figure 6: Percent of comorbidities among deaths due to COVID-19

A closer look at King County COVID-19 deaths using death certificate data

Death certificates list up to 4 causes that directly lead to death and up to 20 additional conditions that contribute to death in some capacity, either directly or indirectly. There is one underlying cause of death, which is defined as the disease or injury that initiated the chain of events that led directly and inevitably to death.

King County obtains death certificate data via the Washington Health and Live Event System, which is maintained by WA DOH. Death certificates undergo a certification/validation process from the National Center for Health Statistics to ensure consistency in the way causes of death are reported. More information on Washington State death certificate data is available from WA DOH:

<https://doh.wa.gov/sites/default/files/2022-02/422-155-WADeathFileDataUsersGuide.pdf>.

COVID-19 was a leading cause of death in King County annually from 2020-2022.

Since the start of the COVID-19 pandemic, COVID-19 has been among the top causes of death nationally and locally. Each year of the pandemic, COVID-19 has been ranked in the top 5 underlying causes of death for King County, though the rank has changed over time. In 2020, the first year of the pandemic, COVID-19 was the third leading cause of death in King County, after heart disease and cancer. Since then, COVID-19 has been the fourth leading cause of death in 2021 and the fifth leading cause of death in 2022. The number of death certificates with COVID-19 as the underlying cause of death have also decreased by year, with 969 in 2020, 729 in 2021, and 510 in 2022. This report uses underlying cause of death from the death certificate data to analyze the leading causes of death in King County, so COVID-19 death counts differ from deaths due to COVID-19 reported by PHSKC (which require a positive COVID-19 test).

Several other causes of death have also changed over this time frame. Cerebrovascular diseases increased from the 7th leading cause of death in 2020 to the 4th leading cause in 2022. Accidents and unintentional injuries were the 10th leading cause of death in 2021 and the ninth leading cause in 2020, but was not on the top-10 list in 2020. This may be in part due to community mitigation measures and COVID-19-related stay-at-home measures that were in place at the time.

Table 2 shows the top 10 underlying causes of death in King County for each year of the COVID-19 pandemic. This analysis is based on decedents with COVID-19 listed as the underlying cause of death only, and does not take into account 'suspect' deaths due to COVID-19, as defined by Washington State DOH. Data are aggregated by the National Center for Health Statistics' List of 113 Selected Causes of Death³.

Table 2: Top 10 causes of death in King County: 2020 - 2022

	2020		2021		2022	
Rank	Cause of death	Deaths	Cause of death	Deaths	Cause of death	Deaths
1	Diseases of the heart	2,614	Diseases of the heart	2,717	Diseases of the heart	2,781
2	Malignant neoplasms	2,199	Malignant neoplasms	2,330	Malignant neoplasms	2,395
3	COVID-19	969	Alzheimer's disease	918	Alzheimer's disease	973
4	Alzheimer's disease	904	COVID-19	729	Cerebrovascular diseases	520
5	Diabetes mellitus	446	Diabetes mellitus	486	COVID-19	514
6	Chronic lower respiratory diseases	428	Cerebrovascular diseases	456	Diabetes mellitus	462
7	Cerebrovascular diseases	394	Chronic lower respiratory diseases	368	Chronic lower respiratory diseases	451
8	Chronic liver disease and cirrhosis	299	Chronic liver disease and cirrhosis	330	Chronic liver disease and cirrhosis	285
9	Pneumonitis due to solids and liquids	188	Pneumonitis due to solids and liquids	174	Accidents (unintentional injuries)	185
10	Influenza and pneumonia	185	Accidents (unintentional injuries)	170	Pneumonitis due to solids and liquids	174

How many excess deaths have occurred since the start of the COVID-19 pandemic?

Excess deaths can provide insight about how the pattern of deaths has changed since the onset of the COVID-19 pandemic through the end of 2022. Excess deaths may occur from any cause, and the COVID-19 pandemic may have affected patterns of deaths from other causes. This analysis uses information about all the deaths that occurred in the years preceding the pandemic to estimate how many deaths were predicted to occur in the absence of COVID-19. Excess deaths are the number of deaths that actually occurred that were greater than the number of deaths that were predicted to occur.

- Before the COVID-19 pandemic, of the 104 weeks from January 2018 through December 2019, 11 weeks had excess deaths compared to 2015-2017.
- After the onset of the COVID-19 pandemic, the 156 weeks from January 2020 through December 2022, 86 weeks had excess deaths.
- In total, the number of excess deaths during the COVID-19 pandemic (January 2020 through December 2022) compared to 2015-2017 is between 2110 and 5872.
- The figure below shows an increase in excess deaths at the start of 2020, which corresponds to the onset of the COVID-19 pandemic.

While this analysis cannot determine how many excess deaths are attributable to COVID-19, it can show changes in deaths from all causes since the pandemic started.

Figure 5 shows weekly deaths (in blue) compared to the average predicted number of weekly deaths (in orange) and the upper bound of predicted weekly deaths (in red). Weeks with excess deaths are indicated with a red plus sign. The start of the COVID-19 pandemic (which was officially declared on March 11, 2020) is indicated with a black line.

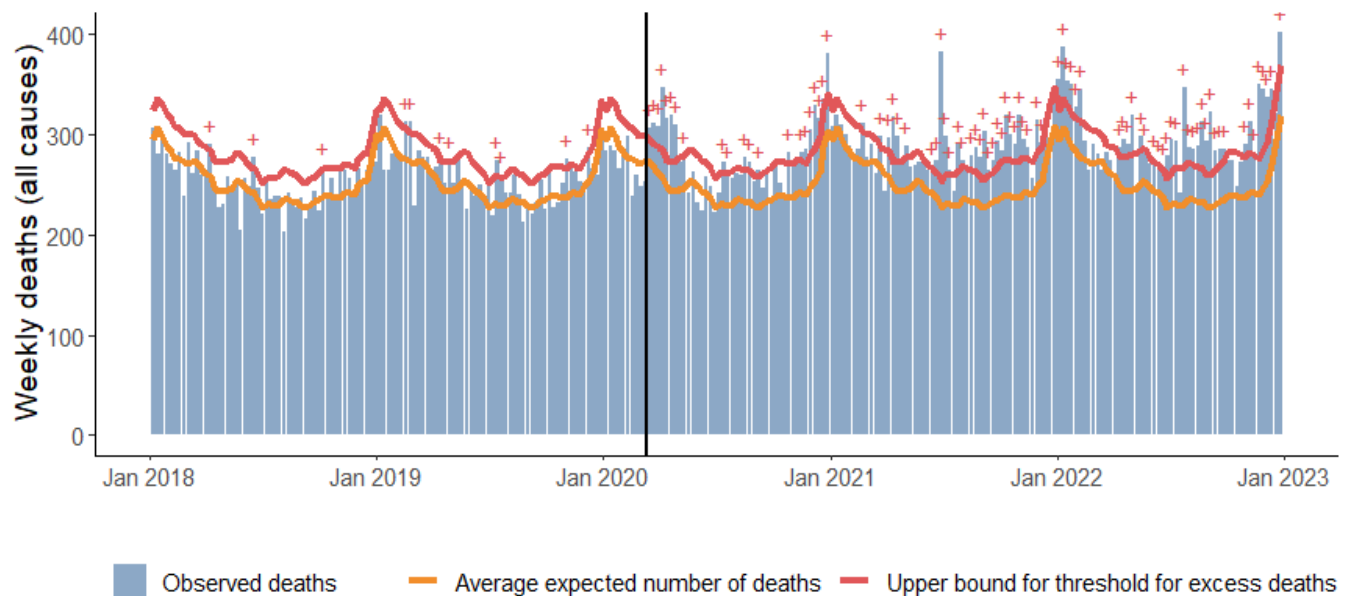


Figure 5: Excess deaths: 2018-2022

Among deaths due to COVID-19, what other factors contributed to death?

To examine factors contributing to deaths, this report takes all deaths due to COVID-19 (confirmed and suspected) reported by PHSKC and matches each death with its death certificate to find additional insight into the death.

Among all deaths due to COVID-19 for which certified/validated cause-of-death data exists (3244 out of 3416 deaths reported to PHSKC):

- 162 reported only one cause of death. Of these, 19 reported COVID-19 as the only cause of death. Most (522) reported 4 causes of death, including COVID-19.
- 1986 (61%) reported COVID-19 as the underlying cause of death and 1258 (39%) reported COVID-19 as a contributing cause of death. These categories are mutually exclusive.
- The most reported causes of death besides COVID-19 among deaths due to COVID-19 were respiratory-related causes, such as pneumonia and respiratory failure.

Figure 7 shows top causes of death that were listed on death certificates in addition to COVID-19. This figure should be interpreted with caution as causes of death are not necessarily independent of each other; ICD-10 coding rules require that some causes of death be reported together (for instance, hypertension and nicotine use).

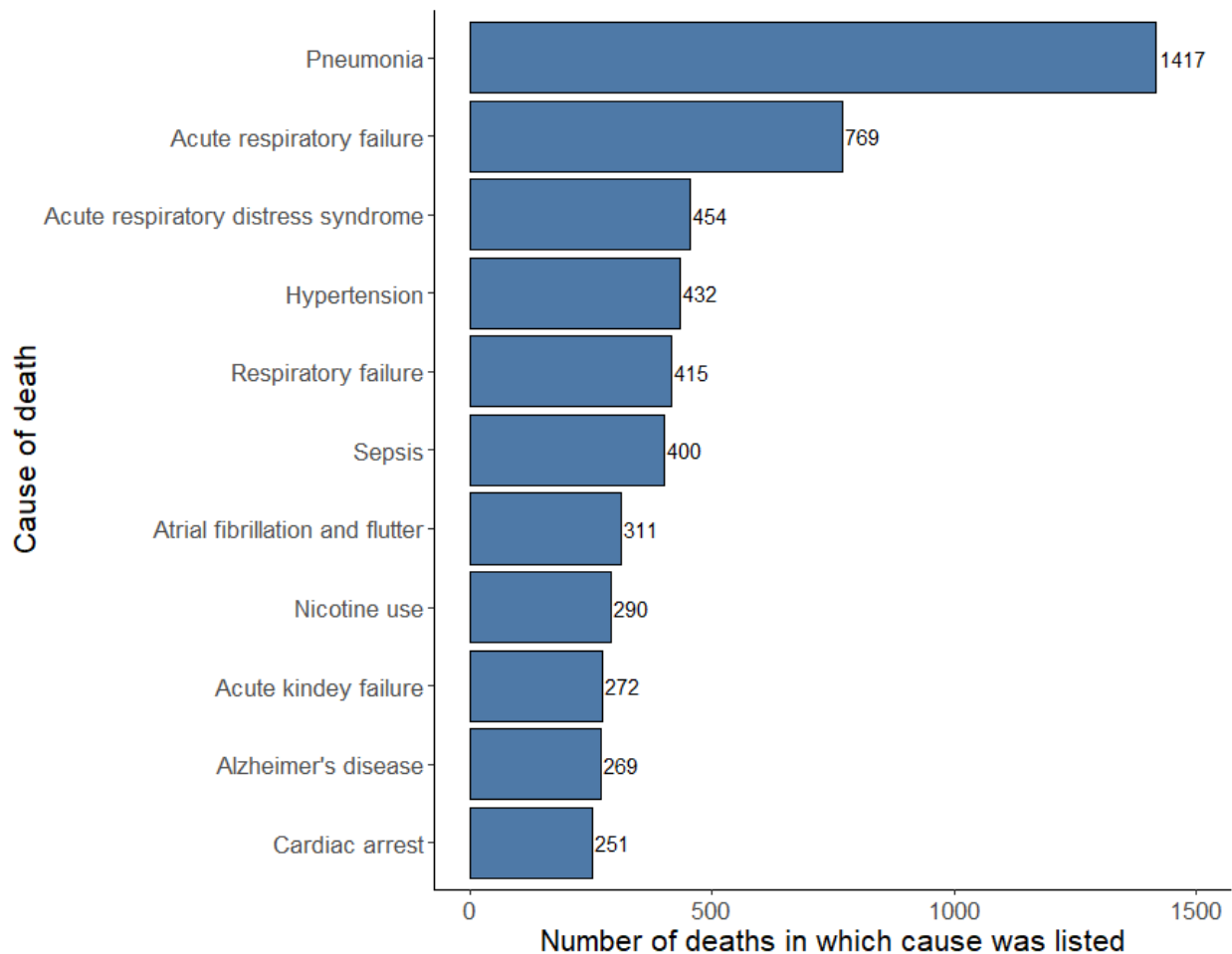


Figure 6: Top causes of death listed on death certificates in addition to COVID-19

Appendix

Technical Notes

How does King County define which deaths are due to COVID-19?

All deaths among persons with COVID-19 from February 2020 to September 2022 were manually reviewed by PHSKC investigators. Death certificates as well as recent medical records were reviewed to determine if decedents meet criteria for a COVID-19 death.

PHSKC and Washington State Department of Health (WA DOH) classify deaths due to COVID-19 into three categories:

- **Confirmed:** the deceased person tested positive for COVID-19 and had a death certificate noting that COVID-19 contributed to death. If the death certificate listed COVID-like symptoms (respiratory failure, pneumonia, etc.), the positive test had to be within 60 days of the death to be a confirmed death due to COVID-19. If COVID-19 was specifically listed on the death certificate, the positive test could be from any time.
- **Suspected:** the deceased person tested positive for COVID-19 within 28 days of death and died of a natural cause, but did not have COVID-19 listed on their death certificate as a contributing cause.
- **Probable:** COVID-19 was listed on the death certificate, the decedent died of a natural cause, but the decedent did not have a record of testing positive for COVID-19 within 28 days of death.

Deaths where the decedent died of non-natural causes, such as traffic accidents, overdose, homicide, or suicide, are excluded for COVID-19 death reporting, even if the decedent had a positive confirmatory test. Unless otherwise specified, the deaths due to COVID-19 in this report refer to confirmed and suspected deaths due to COVID-19. Death classifications are based on guidance from WA DOH and these definitions may change if national case classifications change.

Figure 8 shows all confirmed, suspect, and probable deaths due to COVID-19 by month.

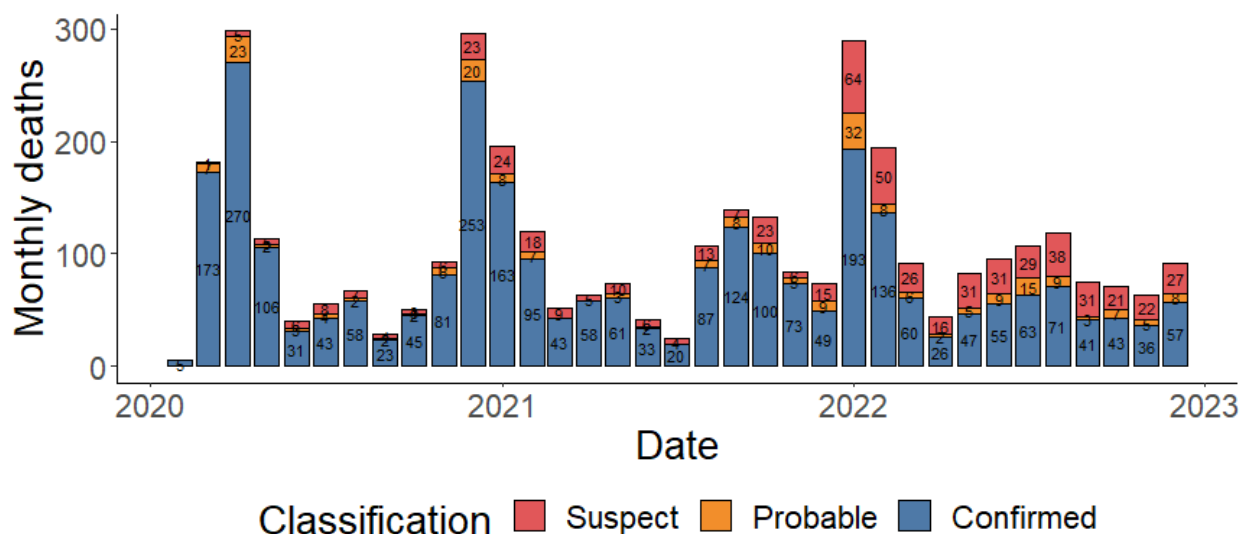
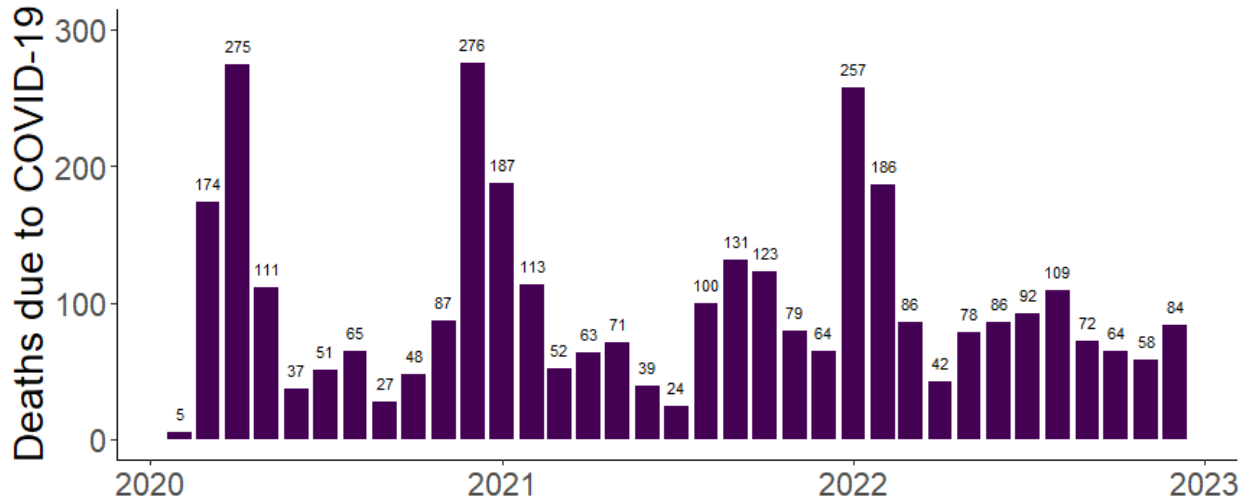


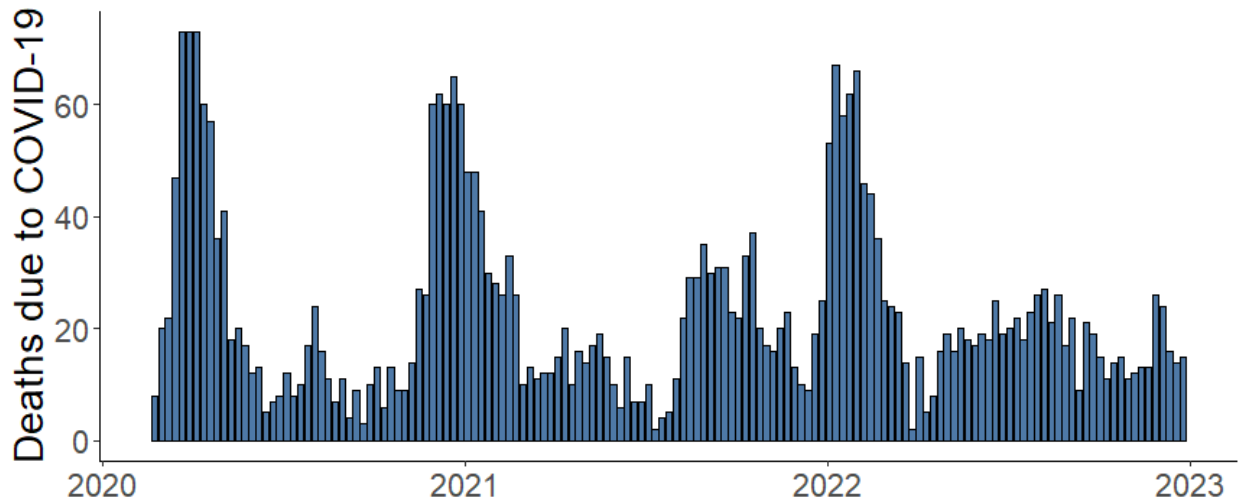
Figure 8: All confirmed, suspected, and probable deaths due to COVID-19 by month

Supplemental Tables and Figures

Supplemental Figure 1a: Monthly deaths due to COVID-19 from February 2020 - December 2022



Supplemental Figure 1b: Weekly deaths due to COVID-19 from February 2020 - December 2022

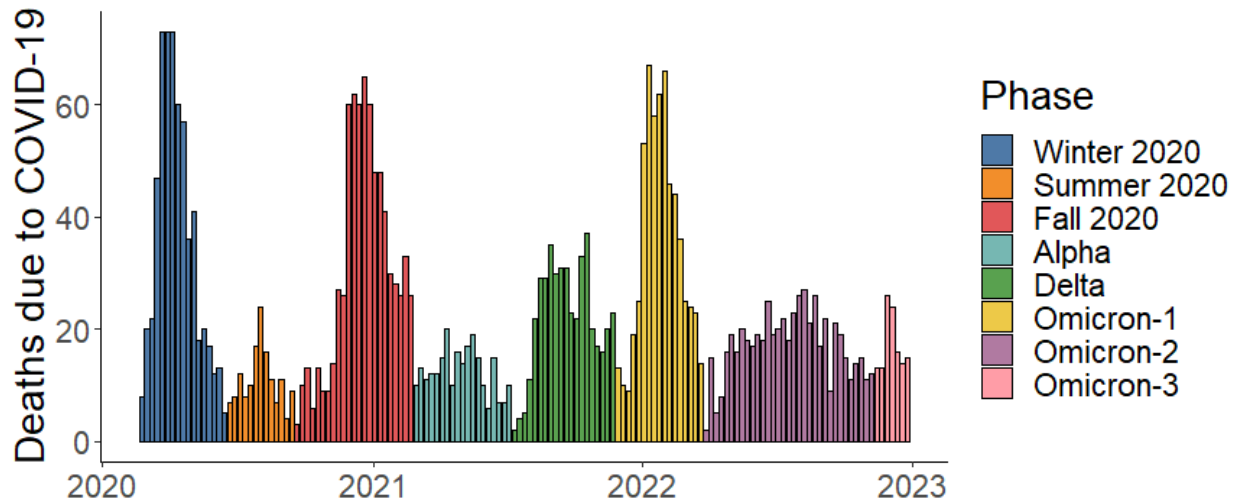


Supplemental Table 1: COVID-19 phases

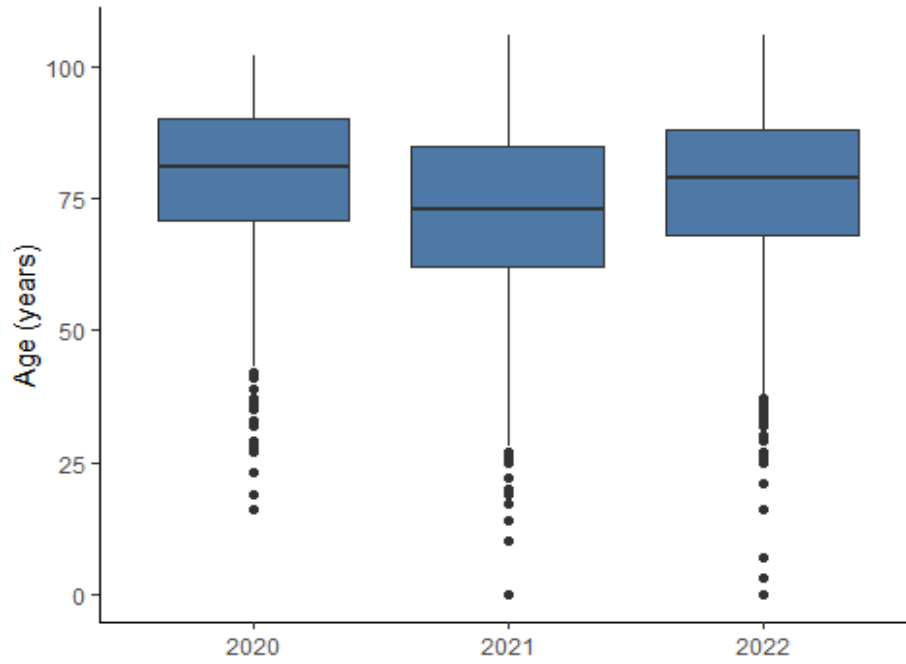
We divide the COVID-19 pandemic into time periods or “phases.” A COVID-19 phase can refer to the timeframe when either 1) a SARS-CoV-2 variant was the dominant variant circulating across King County, 2) a new surge of COVID-19, and/or 3) another significant change in the COVID-19 pandemic. Phases provide a way to compare different periods of the pandemic highlighting how COVID-19 outcomes have changed over time and how the current COVID-19 indicators compare to past time frames.

Phase	Start date	End date	Weeks
Winter/Spring 2020	2020-01-01	2020-06-17	24
Summer 2020	2020-06-18	2020-09-18	13
Fall 2020	2020-09-19	2021-02-28	23
Alpha	2021-03-01	2021-07-07	18
Delta	2021-07-08	2021-11-26	20
Omicron-1	2021-11-27	2022-03-27	17
Omicron-2	2022-03-28	2022-11-11	32
Omicron-3	2022-11-12	2023-05-11	25

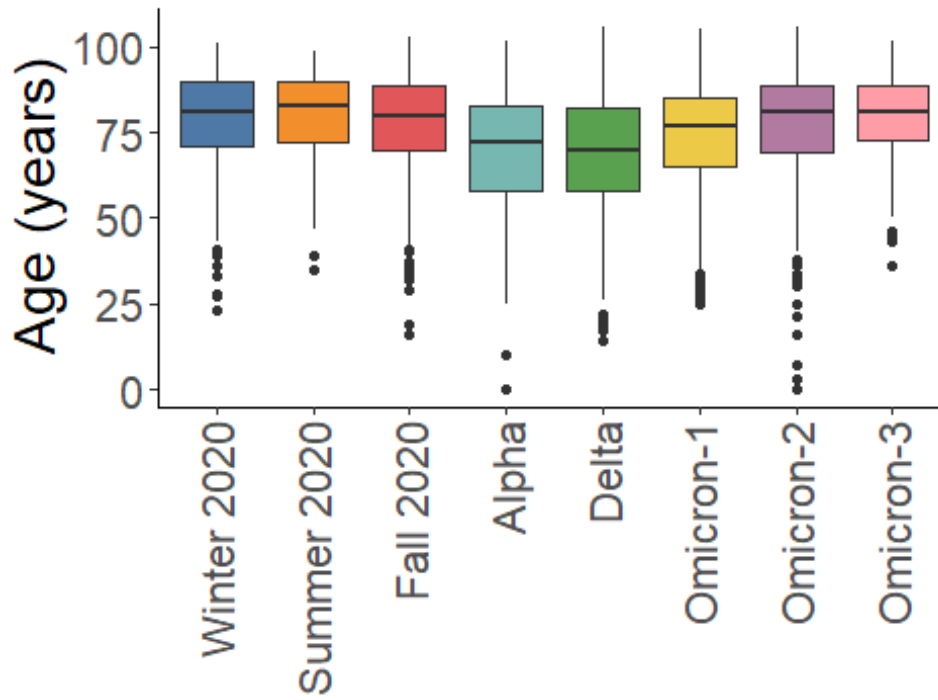
Supplemental Figure 1c: deaths due to COVID-19 by phase from February 2020 - December 2022



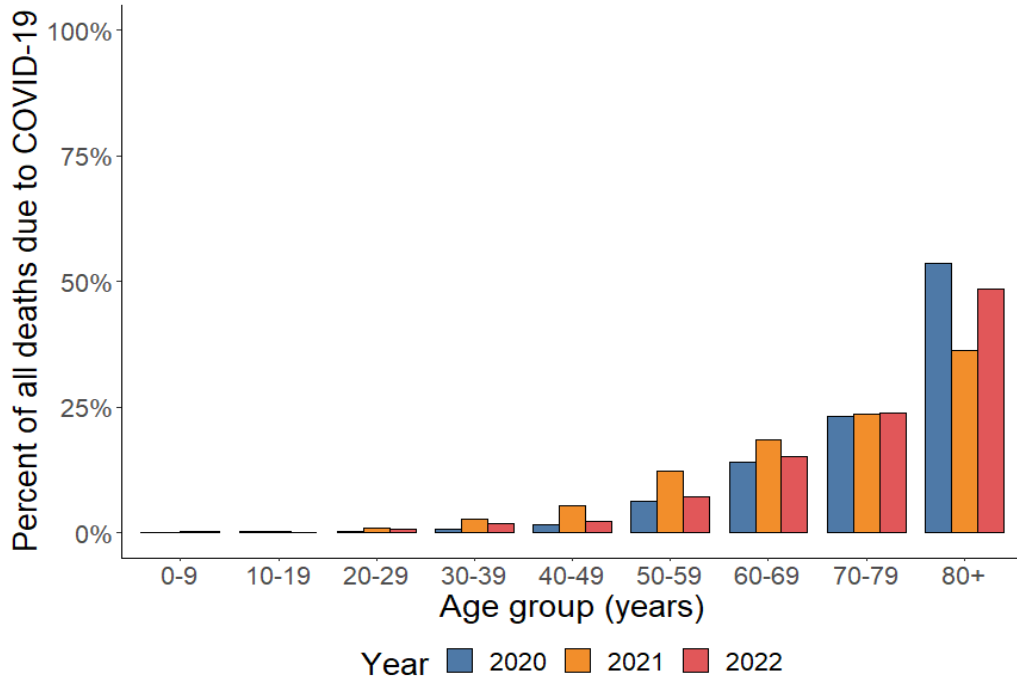
Supplemental Figure 2a: Age of deaths due to COVID-19 by year: February 2020 - December 2022



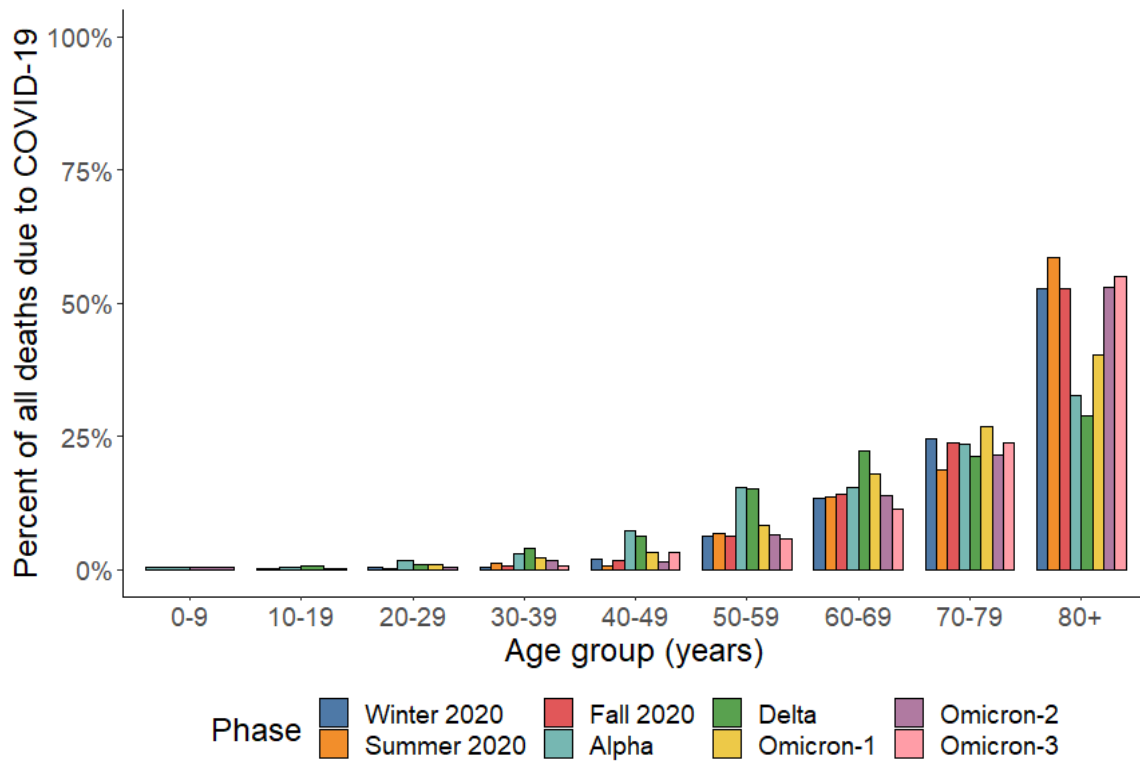
Supplemental Figure 2b: Age of deaths due to COVID-19 by year and phase: February 2020 - December 2022



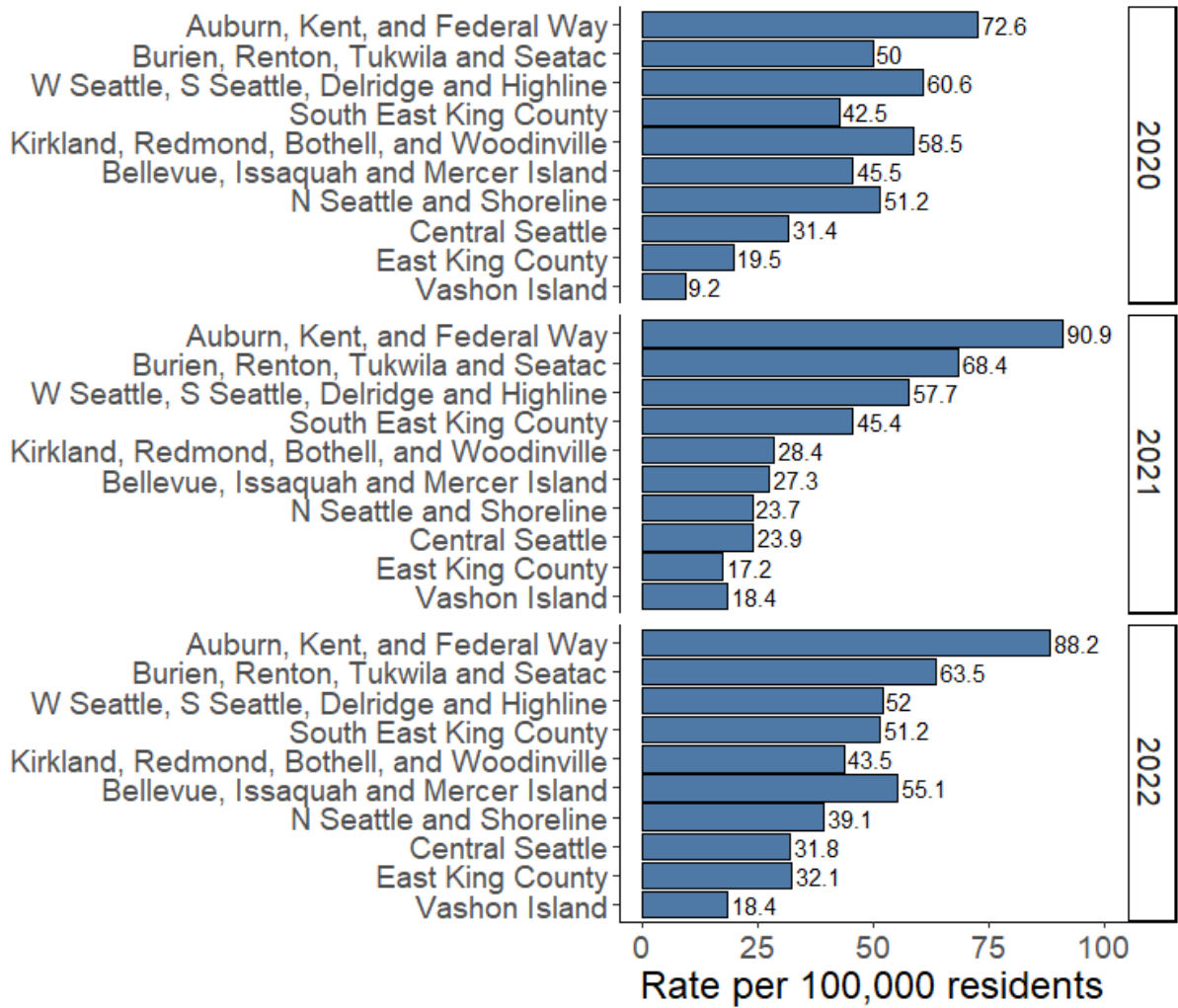
Supplemental Figure 3a: deaths due to COVID-19 by year in each age group from February 2020 - December 2022



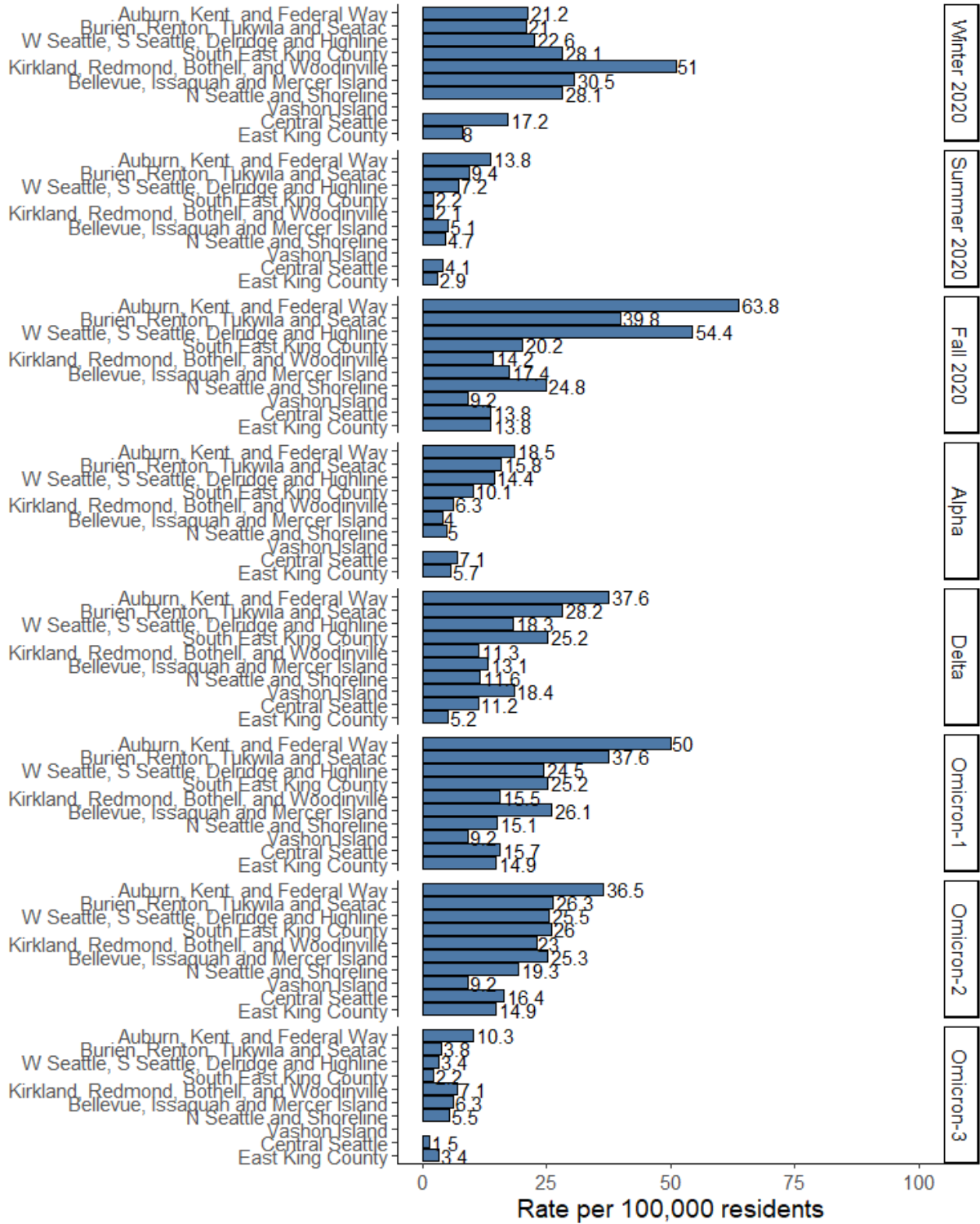
Supplemental Figure 3b: deaths due to COVID-19 by phase in each age group from February 2020 - December 2022



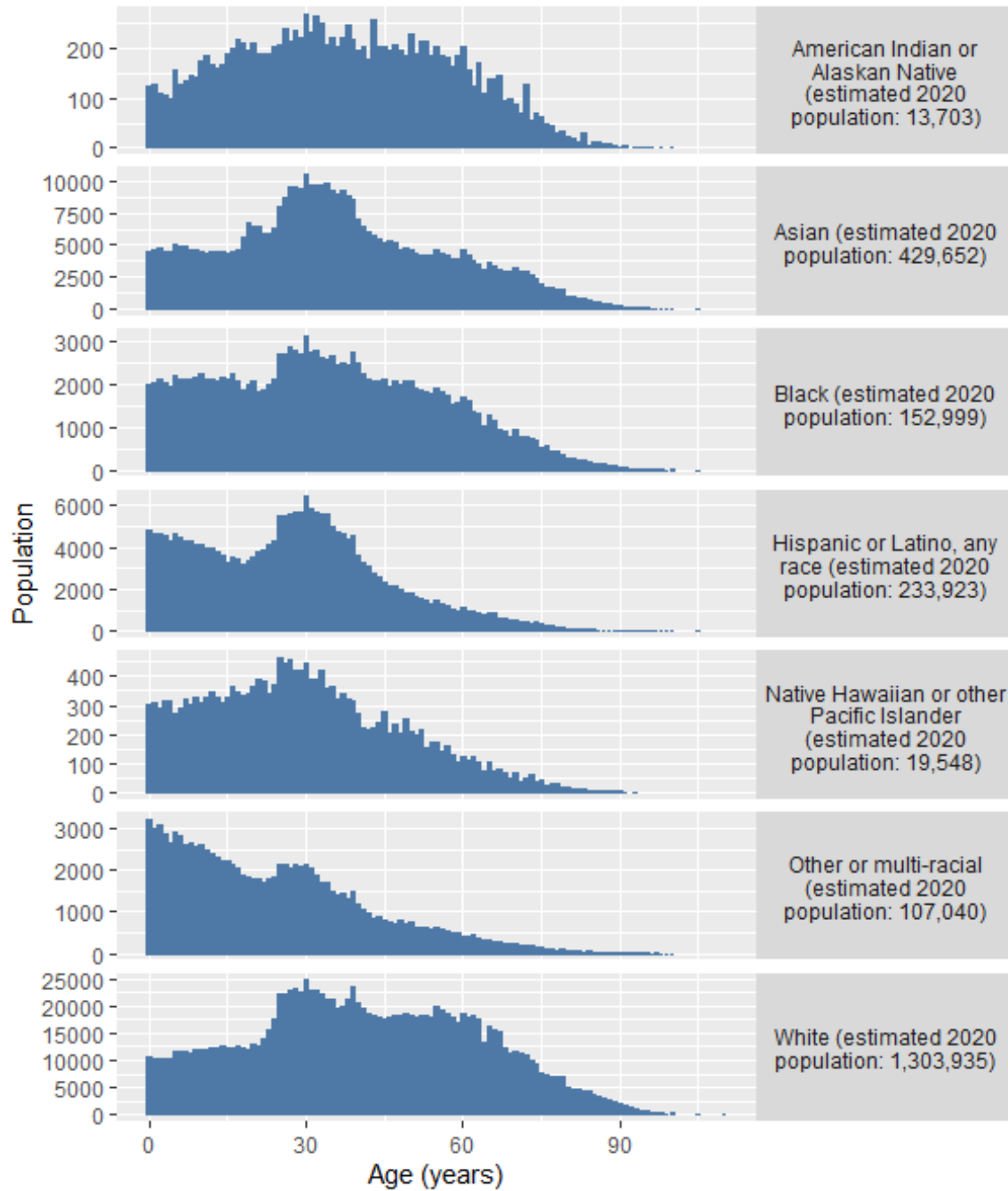
Supplemental Figure 4a: deaths due to COVID-19 by year in each King County region



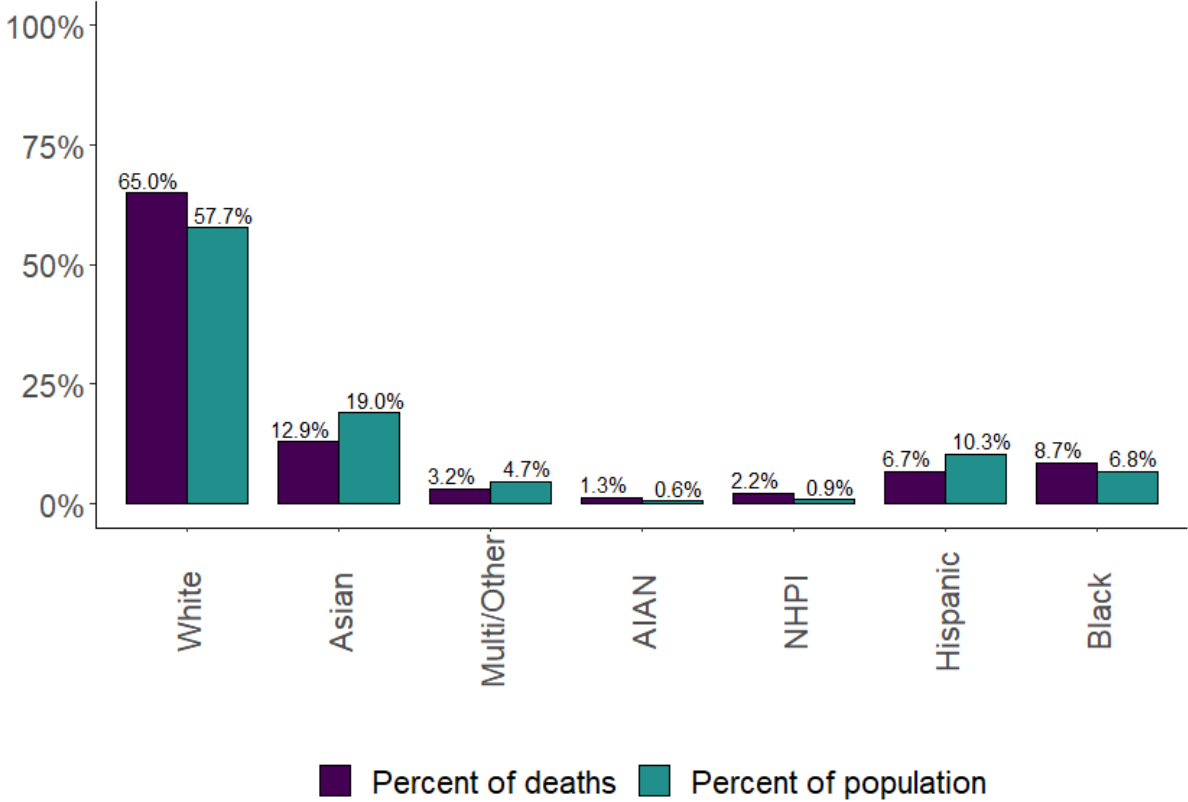
Supplemental Figure 4b: deaths due to COVID-19 by phase in each King County region



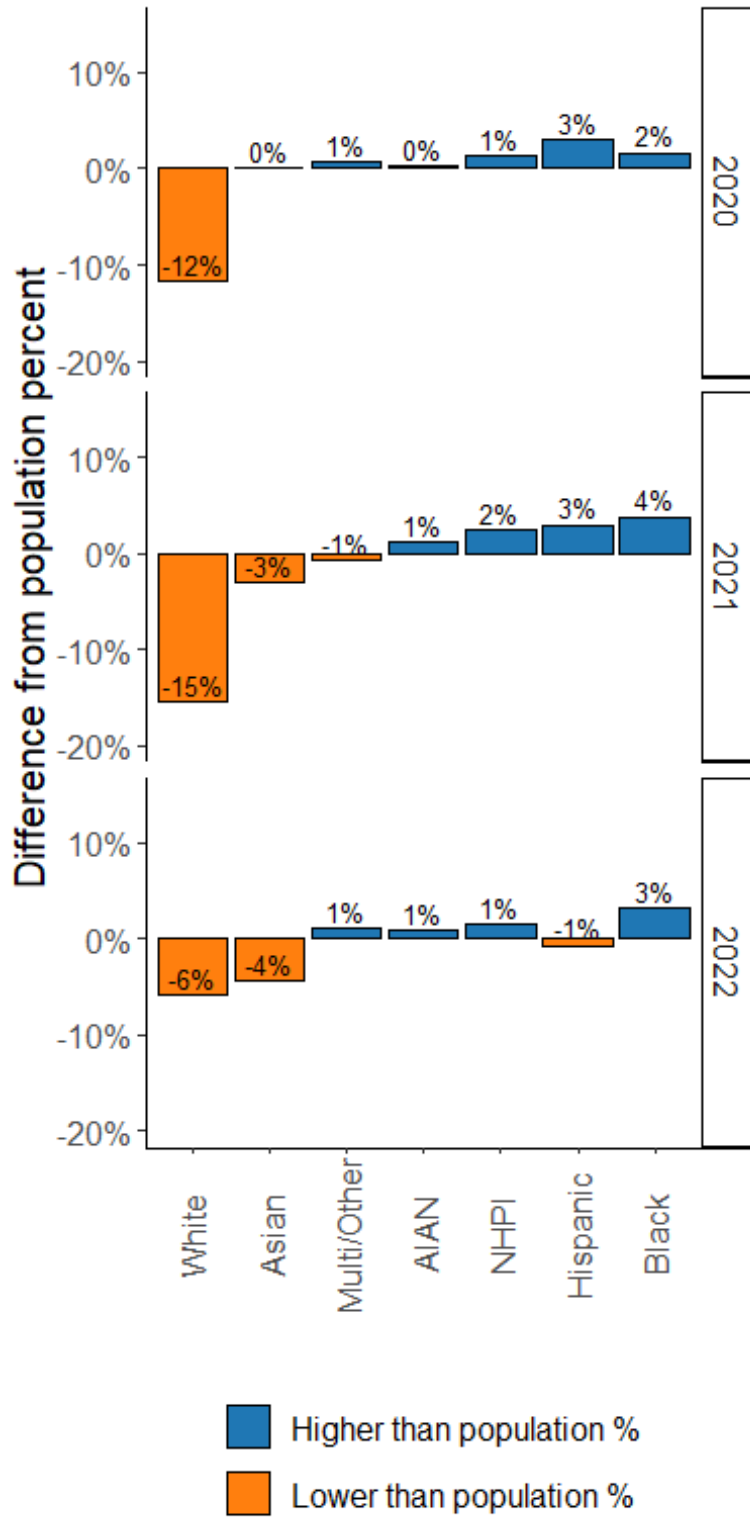
Supplemental Figure 5a: Age distribution by race/ethnicity group in King County, according to 2020 population estimates



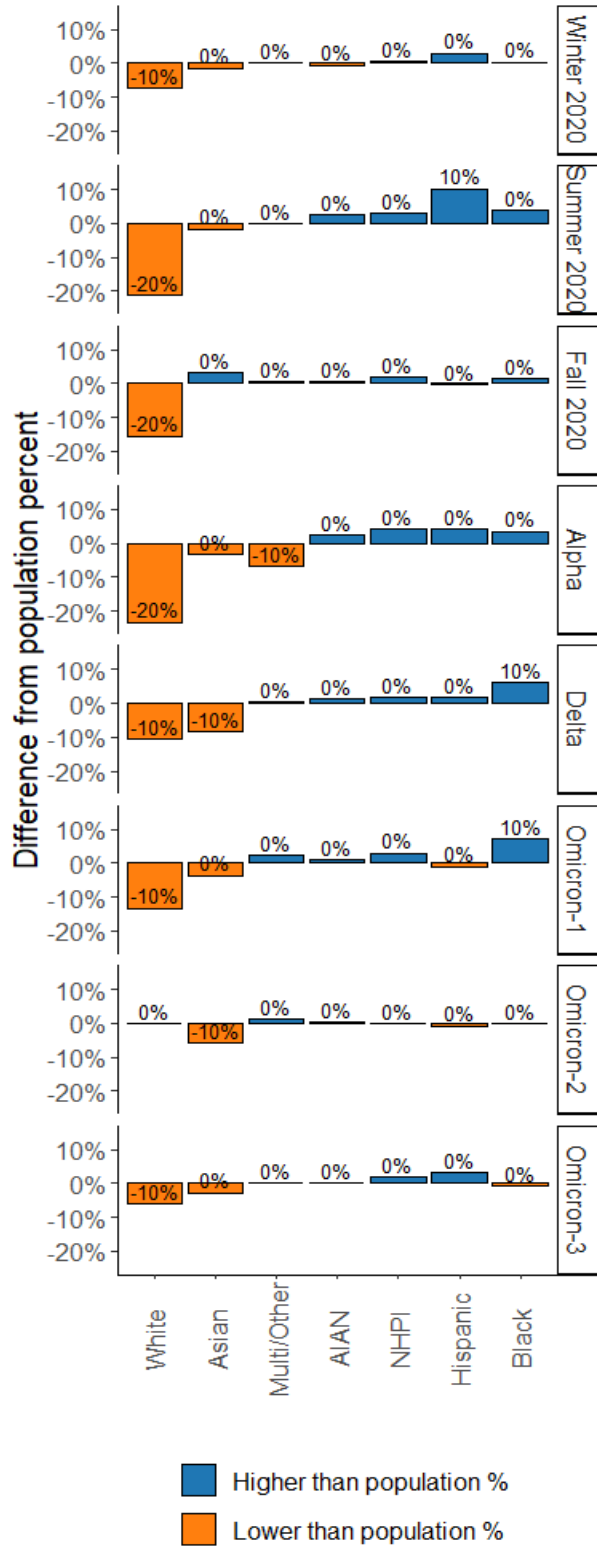
Supplemental Figure 5b: Unadjusted percentages of deaths due to COVID-19 and population distribution by race/ethnicity



Supplemental Figure 6a: Age standardized differences in COVID-19 percent from population of race/ethnicity, by year



Supplemental Figure 6b: Age standardized differences in COVID-19 percent from population of race/ethnicity, by phase



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