

COVID-19 Cases, Hospitalizations, and Deaths by Vaccination Status

Washington State Department of Health

May 25, 2022



Washington State Department of
Health

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DATA NOTES:

- On April 20, 2022, DOH updated COVID-19 vaccination language, changing the terms “initiating vaccination” and “fully vaccinated” to “initiated primary series” and “completed primary series.” This change in language allows for better differentiation between original vaccine series and boosters.
 - In the coming weeks we will update this report to include information about booster doses and COVID-19 case rates for children 5-11 years old.
 - Beginning June 1, 2022, this report will be updated biweekly instead of weekly.
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Summary

Unvaccinated 12-34 year-olds in Washington are

- 1.7 times more likely to get COVID-19 compared with 12-34 year-olds who have completed the primary series.
- 3.6 times more likely to be hospitalized with COVID-19 compared with 12-34 year-olds who have completed the primary series.

Unvaccinated 35-64 year-olds are

- 1.9 times more likely to get COVID-19 compared with 35 - 64 year-olds who have completed the primary series.
- 3.9 times more likely to be hospitalized with COVID-19 compared with 35 - 64 year-olds who have completed the primary series.

Unvaccinated 65+ year-olds are

- 2.8 times more likely to get COVID-19 compared with 65+ year-olds who have completed the primary series.
- 3.4 times more likely to be hospitalized with COVID-19 compared with 65+ year-olds who have completed the primary series.
- 4.3 times more likely to die of COVID-19 compared with 65+ year-olds who have completed the primary series.

Background

Vaccination is a critical tool for containing the COVID-19 pandemic. COVID-19 vaccines are highly effective and greatly reduce the risk of severe illness, hospitalization, and death from COVID-19. Approximately 70% of the eligible Washington population ages 5 and older has completed the primary series and is protected from experiencing these serious outcomes. However, many remain unvaccinated and case rates are currently very high. Vaccination rates also vary across the state and between age and demographic groups, leaving some populations particularly vulnerable.

Although COVID-19 vaccines work well to prevent severe illness and death among those exposed to the virus, a small percentage of people who have completed the primary series will still get COVID-19. Even highly effective vaccines cannot prevent all infections. However, because the vaccine offers strong protection against the most serious outcomes of COVID-19, increasing vaccination rates is key to limiting severe COVID-19 cases and saving lives.

This report provides an overview of confirmed and probable COVID-19 cases, hospitalizations, and deaths by vaccination status. The purpose is to provide a comprehensive look at the impact of vaccination on COVID-19 in Washington state. This report breaks vaccination status into three categories:

- **Completed primary series:** those who have reached 2 weeks after receiving the final recommended dose of the primary series of an authorized COVID-19 vaccine.
- **Partially vaccinated:** those who have received one or more doses of an authorized vaccine but have not reached the full 14 days after the final dose of the primary series.
- **Unvaccinated:** those who have not received any dose of a COVID-19 vaccine.

Individuals are not considered to have completed the primary series until two weeks have passed since receiving their final dose because of the time required for the body to build protection. Use of 'completed primary series' in this report differs from 'breakthrough' used elsewhere in Washington State Department of Health reports. Additional details on these differences are provided in the methods section at the end of this report.

The Omicron variant is the dominant COVID-19 strain in Washington and the U.S. More variants are appearing worldwide, so it is more urgent than ever to ensure that everyone who is eligible gets vaccinated against COVID-19. As of May 17, 2022, 16% of eligible Washingtonians had not yet initiated the primary series. The percentage of individuals who completed the primary series is now increasing only modestly, rising by less than 1% from May 10- May 17, 2022.

Trends in COVID-19 case and hospitalization rates by vaccination status and age group

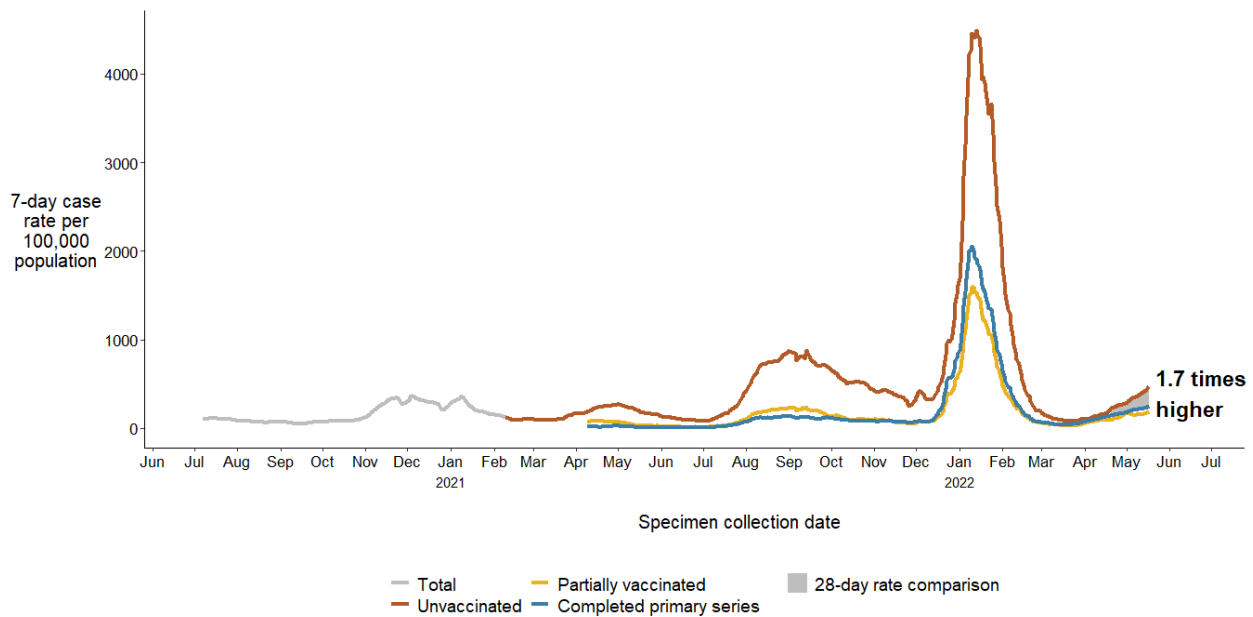
The following graphs show the 7-day COVID-19 case, hospitalization and death rates by age group for people who are unvaccinated, people who are partially vaccinated, and people who have completed the primary series. The difference between rates in the unvaccinated population compared to the population of those who have completed the primary series during the grayed out 28-day time period is shown in text on each graph.

There is a large difference in cases and hospitalizations between the unvaccinated population and the population of those who have completed the primary series across all age groups. This difference has become greater since January of this year. The rapid increase in cases starting in mid-December 2021 is related to the following events:

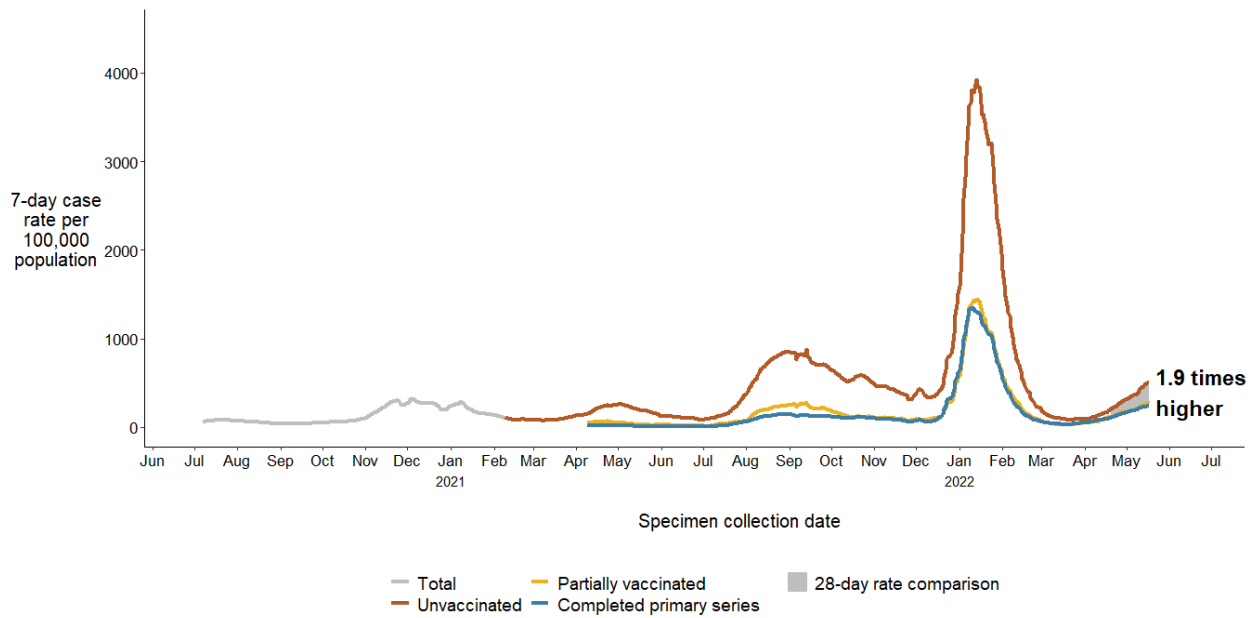
- The Omicron variant became the predominant strain in Washington state
- Gatherings increased in size and number because of holiday celebrations.

COVID-19 Cases

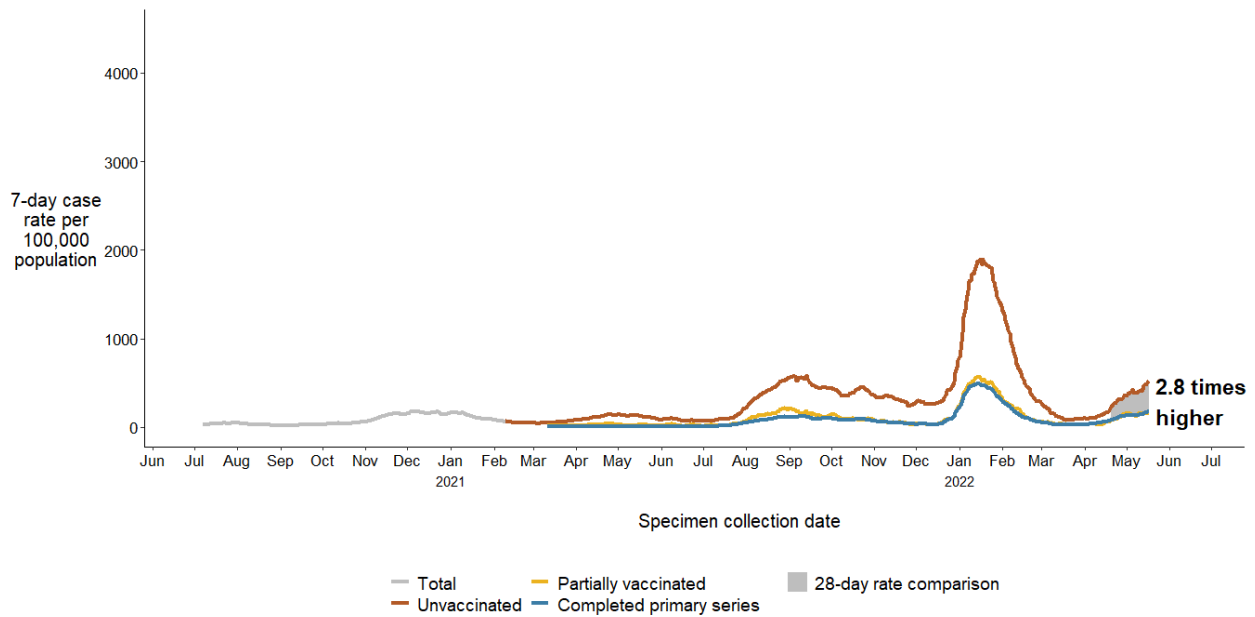
COVID-19 case rates among 12-34 year-old individuals are 1.7 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 case rates among 35-64 year-old individuals are 1.9 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 case rates among 65+ year-old individuals are 2.8 times higher in the unvaccinated population than in the population of those who have completed the primary series



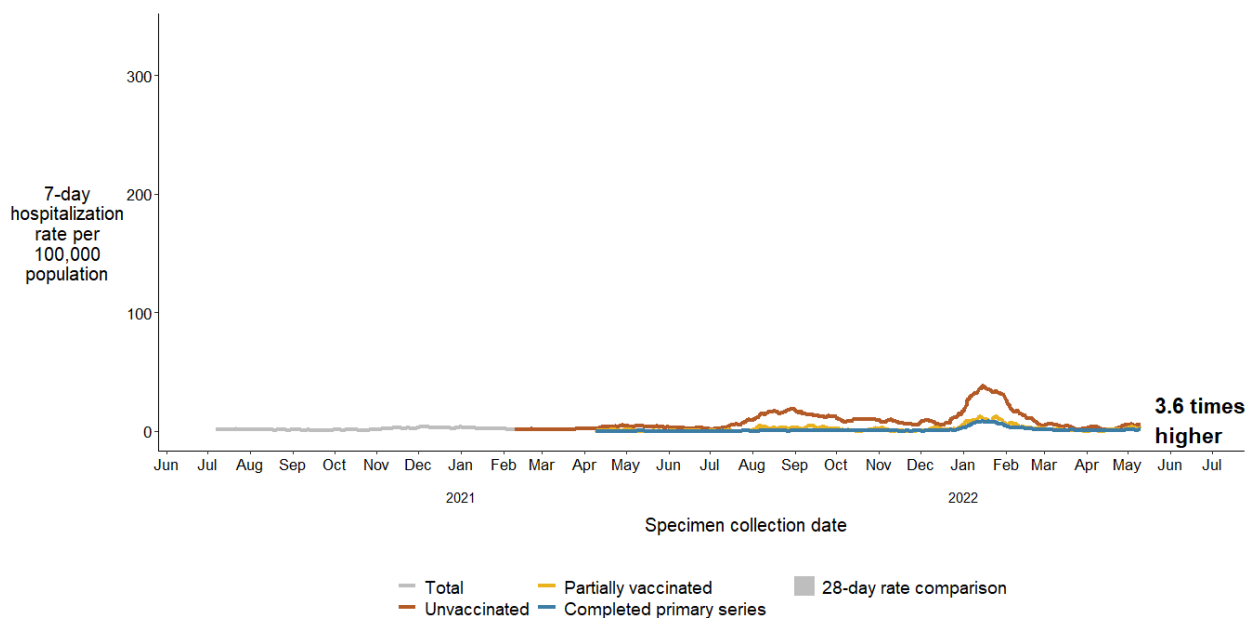
COVID-19 case rates per 100,000 population from April 20 to May 17, 2022

Age group	Age-specific rate per 100,000 in unvaccinated individuals	Age-specific rate per 100,000 in individuals who completed the primary series	Impact
12-34	1,418.9	823.5	1.7 times higher in unvaccinated
35-64	1,518.4	782.5	1.9 times higher in unvaccinated
65+	1,614.5	572.1	2.8 times higher in unvaccinated

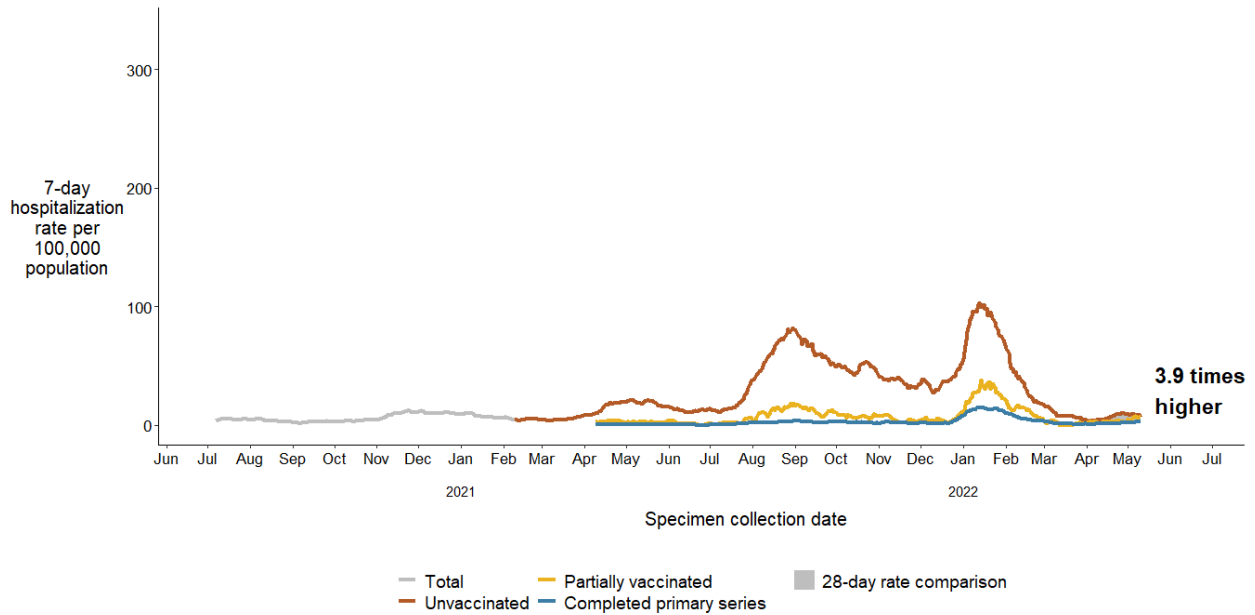
- Case rates are calculated using population data for the specified age group

COVID-19 Hospitalizations

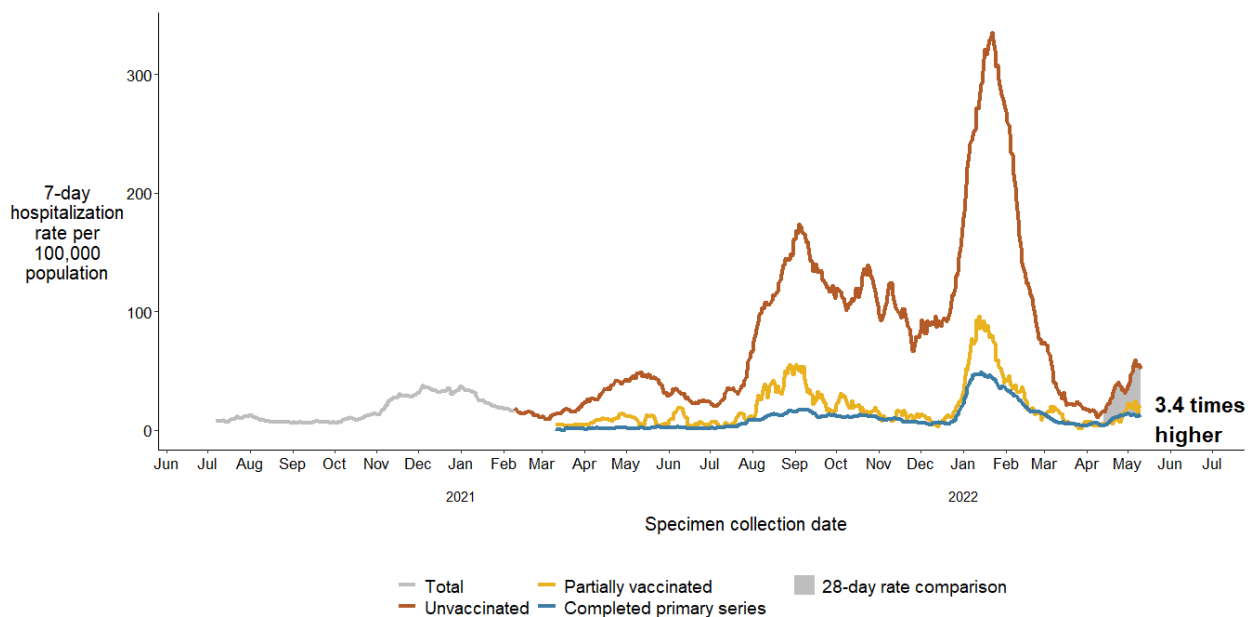
COVID-19 hospitalization rates among 12-34 year-old individuals are 3.6 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 hospitalization rates among 35-64 year-old individuals are 3.9 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 hospitalization rates among 65+ year-old individuals are 3.4 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 hospitalization rates per 100,000 population from April 13 to May 10, 2022

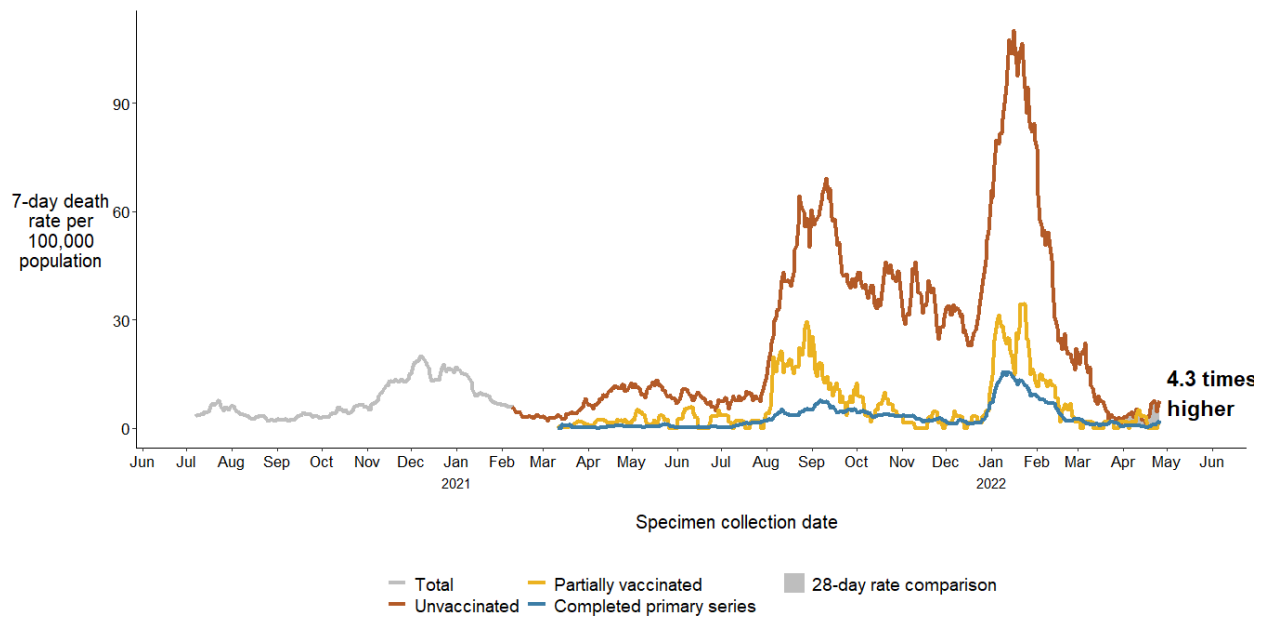
Age group	Age-specific rate per 100,000 in unvaccinated individuals	Age-specific rate per 100,000 in individuals who completed the primary series	Impact
12-34	19.1	5.3	3.6 times higher in unvaccinated
35-64	45.1	11.7	3.9 times higher in unvaccinated
65+	223.9	65.9	3.4 times higher in unvaccinated

- Case rates are calculated using population data for the specified age group

COVID-19 Deaths

Deaths are only shown for Washingtonians 65 years old and older due to the relatively smaller number of deaths in other age groups and associated instability in rates when assessing by vaccination status.

COVID-19 death rates among 65+ year-old individuals are 4.3 times higher in the unvaccinated population than in the population of those who have completed the primary series



COVID-19 death rates per 100,000 population from March 30 to April 26, 2022

Age group	Age-specific rate per 100,000 in unvaccinated individuals	Age-specific rate per 100,000 in individuals who completed the primary series	Impact
65+	29.8	6.9	4.3 times higher in unvaccinated

- Case rates are calculated using population data for the specified age group

Total number and percentage of COVID-19 cases, hospitalizations, and deaths by vaccination status

COVID-19 cases from February 01, 2021 - May 17, 2022

Vaccination status	Number of COVID-19 cases (12+)	Percent of all COVID-19 cases (12+)	Percent of population (12+)
Completed primary series	459,015	37.3%	78.5%
Partially vaccinated	48,421	3.9%	5.4%
Unvaccinated	722,615	58.7%	16%

COVID-19 hospitalizations from February 01, 2021 - May 10, 2022

Vaccination status	Number of COVID-19 hospitalizations (12+)	Percent of all COVID-19 hospitalizations (12+)	Percent of population (12+)
Completed primary series	11,358	26.4%	78.5%
Partially vaccinated	2,131	5%	5.4%
Unvaccinated	29,453	68.6%	16.1%

COVID-19 deaths from February 01, 2021 - April 26, 2022

Vaccination status	Number of COVID-19 deaths (12+)	Percent of all COVID-19 deaths (12+)	Percent of population (12+)
Completed primary series	2,188	28.4%	78.3%
Partially vaccinated	382	5%	5.5%
Unvaccinated	5,130	66.6%	16.2%

COVID-19 cases, hospitalizations, and deaths in unvaccinated individuals and individuals who have completed the primary series by age

The tables below show cases, hospitalizations, and deaths in unvaccinated individuals and individuals who have completed the primary series through the last complete month of data. The tables highlight the difference between those who do not have any vaccine protection and those with protection from completing the primary series. The population that is partially vaccinated is not represented in these tables.

- The proportion of cases, hospitalizations, and deaths in unvaccinated individuals is lowest among older age groups (65 years and older). This is most likely due to a higher percentage of persons in this age group who have completed the primary series compared with other age groups.
- As the percent of individuals who have completed the primary series in other age groups increases, the percent of cases among those who are unvaccinated is expected to decrease.
- If the exposure to COVID-19 stays the same, as more individuals are vaccinated, more cases, hospitalizations, and deaths will be in vaccinated individuals, as they will continue to make up more and more of the population. For example, if 100% of the population was vaccinated, 100% of cases would be among vaccinated people.
- An increase in the proportion of cases among individuals who completed the primary series will result in a decrease in the proportion of cases among unvaccinated individuals.
- A similar situation will occur as the percent of individuals completing the primary series in other age groups increases.

COVID-19 cases in unvaccinated individuals and individuals who completed the primary series in Washington state by age group, February, 2021 - April, 2022

Age group	Number (%) cases in unvaccinated individuals	Number (%) cases in individuals who completed the primary series	Percent of population who are unvaccinated	Percent of population who completed the primary series
12-17	70,340 (64%)	35,381 (32.2%)	30.2%	63.8%
18-34	206,088 (56.6%)	140,426 (38.5%)	18.7%	72.9%
35-49	137,211 (50.6%)	121,669 (44.9%)	14%	81.1%
50-64	84,670 (47.7%)	84,810 (47.8%)	14.8%	81.6%
65+	40,611 (41.8%)	51,899 (53.4%)	9.8%	85.6%
State total (12+)	538,920 (52.8%)	434,185 (42.6%)	16.2%	78.4%

COVID-19 hospitalizations in unvaccinated individuals and individuals who completed the primary series in Washington state by age group, February, 2021 - April, 2022

Age group	Number (%) hospitalizations in unvaccinated individuals	Number (%) hospitalizations in individuals who completed the primary series	Percent of population who are unvaccinated	Percent of population who completed the primary series
12-34	4,337 (78.4%)	938 (17%)	21.5%	70.7%
35-64	13,999 (75.9%)	3,542 (19.2%)	14.4%	81.3%
65+	10,137 (57.4%)	6,569 (37.2%)	9.8%	85.6%
State total (12+)	28,473 (68.4%)	11,049 (26.5%)	16.2%	78.4%

COVID-19 deaths in unvaccinated individuals and individuals who completed the primary series in Washington state by age group, February, 2021 - April, 2022

Age group	Number (%) deaths in unvaccinated individuals	Number (%) deaths in individuals who completed the primary series	Percent of population who are unvaccinated	Percent of population who completed the primary series
12-64	1,937 (81.9%)	341 (14.4%)	17.6%	76.6%
65+	3,212 (59.7%)	1,863 (34.6%)	9.8%	85.6%
State total (12+)	5,149 (66.5%)	2,204 (28.5%)	16.2%	78.4%

(Note: For tables showing hospitalizations by vaccination status and deaths by vaccination status, age groups are collapsed to protect privacy.)

COVID-19 cases in unvaccinated individuals and individuals who completed the primary series in Washington state by county, February, 2021 - April, 2022

County	Number (%) cases in unvaccinated individuals	Number (%) cases in individuals who completed the primary series	Percent of population who are unvaccinated (12+)	Percent of population who completed the primary series (12+)
Adams	1,718 (67.8%)	701 (27.7%)	17.5%	78.5%
Asotin	2,320 (77.7%)	584 (19.6%)	48.2%	45.5%
Benton	21,020 (63.4%)	10,714 (32.3%)	29.3%	66.6%
Chelan	7,065 (57.7%)	4,700 (38.4%)	16.2%	78%
Clallam	4,997 (53.1%)	4,009 (42.6%)	21.2%	74.2%
Clark	34,713 (55.8%)	24,343 (39.1%)	22.6%	70.7%
Columbia	305 (67.2%)	132 (29.1%)	47.5%	48%
Cowlitz	10,688 (65.2%)	4,979 (30.4%)	27.4%	68.2%
Douglas	4,024 (58.9%)	2,524 (36.9%)	23.8%	71.8%
Ferry	728 (69.2%)	275 (26.1%)	49.5%	47.1%
Franklin	12,427 (67.4%)	5,289 (28.7%)	30%	65.5%
Garfield	175 (67.8%)	71 (27.5%)	43.9%	44.2%
Grant	10,191 (67.1%)	4,431 (29.2%)	27.7%	68.5%
Grays Harbor	6,959 (60.8%)	3,987 (34.9%)	26.3%	70%
Island	4,545 (58.2%)	2,855 (36.6%)	24%	70.2%
Jefferson	1,095 (44.5%)	1,261 (51.2%)	14.3%	81.8%
King	110,993 (40.2%)	151,914 (55%)	5.2%	89.6%
Kitsap	16,010 (52.5%)	13,023 (42.7%)	25.9%	69%
Kittitas	3,436 (61.7%)	1,861 (33.4%)	34.4%	59.7%
Klickitat	1,832 (72.4%)	618 (24.4%)	44.3%	52.4%
Lewis	8,941 (70%)	3,344 (26.2%)	36.3%	60.7%

County	Number (%) cases in unvaccinated individuals	Number (%) cases in individuals who completed the primary series	Percent of population who are unvaccinated (12+)	Percent of population who completed the primary series (12+)
Lincoln	1,138 (68.6%)	479 (28.9%)	39.5%	58.7%
Mason	5,367 (58.2%)	3,450 (37.4%)	27.2%	67.7%
Okanogan	3,651 (66%)	1,680 (30.4%)	24.9%	71.7%
Pacific	1,698 (62.4%)	897 (33%)	26.4%	67.5%
Pend Oreille	1,250 (74%)	385 (22.8%)	51.7%	42.7%
Pierce	80,538 (57.9%)	51,861 (37.3%)	25.8%	70%
San Juan	461 (45.4%)	524 (51.6%)	9.5%	88.5%
Skagit	9,048 (57.5%)	5,981 (38%)	19.7%	75.9%
Skamania	741 (68.4%)	303 (28%)	54.8%	44.7%
Snohomish	50,916 (47.2%)	52,212 (48.4%)	17.3%	78.9%
Spokane	46,804 (60.2%)	27,541 (35.4%)	29.1%	66.3%
Stevens	4,378 (73.5%)	1,355 (22.8%)	57.5%	38.7%
Thurston	19,182 (54.4%)	14,400 (40.9%)	20.7%	76%
Wahkiakum	268 (67.2%)	113 (28.3%)	40.1%	59.8%
Walla Walla	5,720 (59.2%)	3,522 (36.4%)	25.6%	67.7%
Whatcom	13,545 (48.5%)	13,078 (46.8%)	17.7%	77.5%
Whitman	2,914 (57.2%)	1,902 (37.3%)	46.7%	45.5%
Yakima	25,508 (63.9%)	12,640 (31.7%)	21.2%	72.2%
Unknown	1,611 (84.8%)	247 (13%)	NA%	NA%
State total	538,920 (52.8%)	434,185 (42.6%)	16.2%	78.4%

*To protect privacy, counts of less than 10 are not reported. Some additional values that could allow someone to calculate those small numbers are also not reported.

Methods

Data sources

There are three data sources for these metrics:

- Washington Disease Reporting System (WDRS)
- Washington Immunization Information System (WAIS)
- Washington Health and Life Events System (WHALES)

WDRS receives case, hospitalization, and death information for all COVID-19 cases in Washington residents. WAIS collects COVID-19 vaccination data from healthcare providers for people vaccinated in Washington. Not all federal correction facilities and federal healthcare organizations (e.g., Department of Defense and Veterans Administration facilities) submit data to WAIS. WAIS may not include vaccination data from all tribal health facilities.

All rates presented in this report are calculated using the Washington state population distribution based on the Office of Financial Management's (OFM) April 1, 2020 population estimates. To better reflect the true rates of COVID-19 cases, hospitalizations, and deaths in this report, calculations include only the 12 and older population because they are eligible to be vaccinated.

Definitions

All case, hospitalization, and death data reported are based on positive molecular or antigen test results. A COVID-19 case who completed the primary series is a person with a positive molecular or antigen test result and a specimen collection date two or more weeks after receiving the final dose of an authorized COVID-19 vaccine. An individual is considered to have completed the primary series two weeks after their second dose in a two-dose series, such as the Pfizer or Moderna vaccines, or two weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.

A COVID-19 hospitalization is a Washington resident who has been identified using case investigation data in WDRS or links with Rapid Health Information Network (RHINO) records as hospitalized with confirmed or probable COVID-19.

Deaths are reported to the state by health care providers, medical examiners or coroners, local health departments, or others to the official vital records database, WHALES. COVID-19 deaths included in this report are identified in WHALES where the cause of death was confirmed or suspected to have been COVID-19.

Completed primary series versus breakthrough cases:

- For reporting purposes, DOH and CDC use strict criteria to classify breakthrough cases, including requiring information about the vaccine lot number and other details. The [SARS-CoV-2 Vaccine Breakthrough Surveillance and Case Information Resource \(wa.gov\)](#) report has information about cases that meet the breakthrough case definition. The report is updated every Wednesday.
- Because the purpose of this report is to provide a more comprehensive look at the impact of vaccines on COVID-19, it therefore uses a broader definition of 'completed primary series' rather

than 'breakthrough case' to classify individuals. For this report, the determination of whether a person completed the primary series is based exclusively on data from the Washington Immunization Information System (WA IIS).

Timeframes

The first COVID-19 vaccines were administered in Washington in mid-December 2020. Full protection from the vaccine in those vaccinated early would occur about the first week in February. Therefore, we are reporting cases, deaths, and hospitalizations beginning with the month of February 2021.

It takes up to 8 days from specimen collection date for DOH to receive 90% of reported cases, 12 days for DOH to identify hospitalizations, and 28 days to identify deaths. For this reason, we report time periods differently for cases, hospitalizations, and deaths to ensure we have the most complete data.

Linking methods

All information on COVID-19 cases, hospitalizations, and deaths provided by this report use WDRS data linked to WA IIS COVID-19 vaccination data. The links are based on a comparison of the first name, last name, and date of birth of cases to the first name, last name, and date of birth of those with COVID-19 vaccination in WA IIS. Only exact matches on all three items are considered the same person. Missing or misspelled names and incorrect dates of birth may lead to some vaccinated persons being incorrectly classified as unvaccinated. COVID-19 cases with vaccines not reported to WA IIS as described above are considered unvaccinated in this report.

7-day rate calculations

Rates are calculated as the total number of cases or hospitalizations within the specified vaccination and age group with a specimen collection date during the 7-day period divided by the population that falls in the same age group with the same vaccination status at the beginning of the 7-day period.

For example,

7-day completed primary series COVID-19 case rates per 100,000 population among 12-34 year-old individuals on August 7, 2021 =

$$\frac{\text{Cases in 12-34 year-old individuals who completed the primary series with a specimen collection date August 1 - 7}}{\text{Number of 12-34 year-old individuals who completed the primary series in Washington as of August 1}} \times 100,000$$

To compare rates in the population of individuals who completed the primary series to the unvaccinated population, the rates for the most recent four-week (i.e., 28-day) period is calculated. The 28-day rate in the unvaccinated population is divided by the four-week rate in the population of individuals who completed the primary series to calculate a rate ratio. 28-day rates are used for this comparison to provide more stability in the comparison than if 7-day rates were used.

For example,

The rate ratio for those who completed the primary series and unvaccinated COVID-19 case rates per 100,000 population among 12-34 year-old individuals on August 7, 2021 =

28-day (July 11-August 7) case rate for unvaccinated 12-34 year-old individuals

28-day (July 11-August 7) case rate for 12-34 year-old individuals who completed the primary series

- The population of **who completed the primary series** is defined as the number of individuals who are determined to have completed the primary series in Washington state in the specified age group at the start of the time period.
- The **partially vaccinated** population is defined as the number of partially vaccinated individuals in Washington state in the specified age group at the start of the time period.
- The **unvaccinated** population is defined by subtracting the number of individuals who completed the primary series and partially vaccinated individuals for the specified age group and time period from the entire Washington state population 12 years and older.