

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

Washington State Department of Health

September 29, 2021



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For more information or additional copies of this report:

Disease Control and Health Statistics
Public Health Outbreak Coordination, Information, and Surveillance
1610 NE 150th Street, MS: K17-9
Shoreline, WA 98155

Phone: 206-418-5700 (24-hour contact for local health jurisdictions only)

Email: DOH-PHOCIS-Surveillance@doh.wa.gov

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Summary

Unvaccinated 12-34 year-olds in Washington are

- 6 times more likely to get COVID-19 compared with fully vaccinated 12-34 year-olds.
- 26 times more likely to be hospitalized with COVID-19 compared with fully vaccinated 12-34 year-olds.

Unvaccinated 35-64 year-olds are

- 5 times more likely to get COVID-19 compared with fully vaccinated 35-64 year-olds.
- 20 times more likely to be hospitalized with COVID-19 compared with fully vaccinated 35-64 year-olds.

Unvaccinated 65+ year-olds are

- 4 times more likely to get COVID-19 compared with fully vaccinated 65+ year-olds.
- 10 times more likely to be hospitalized with COVID-19 compared with fully vaccinated 65+ year-olds.
- 9 times more likely to die of COVID-19 compared with fully vaccinated 65+ year-olds.

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 two-thirds of the eligible Washington population is fully vaccinated and 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 fully vaccinated people 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:

- **Fully vaccinated:** those who have reached 2 weeks after receiving the final recommended dose 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.
- **Unvaccinated:** those who have not received any dose of a COVID-19 vaccine.

Individuals are not considered fully vaccinated until two weeks have passed since receiving their final dose because of the time required for the body to build protection. Use of 'fully vaccinated' 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.

With the emergence of the Delta variant as the dominant COVID-19 strain in Washington and the U.S., and with additional variants appearing worldwide, it is more urgent than ever to ensure that everyone who is eligible gets vaccinated against COVID-19. As of September 20, 2021, 26.4% of eligible Washingtonians had not yet initiated vaccination. The percentage of fully vaccinated individuals is now increasing only modestly, rising by less than 1% from September 13- September 20, 2021.

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

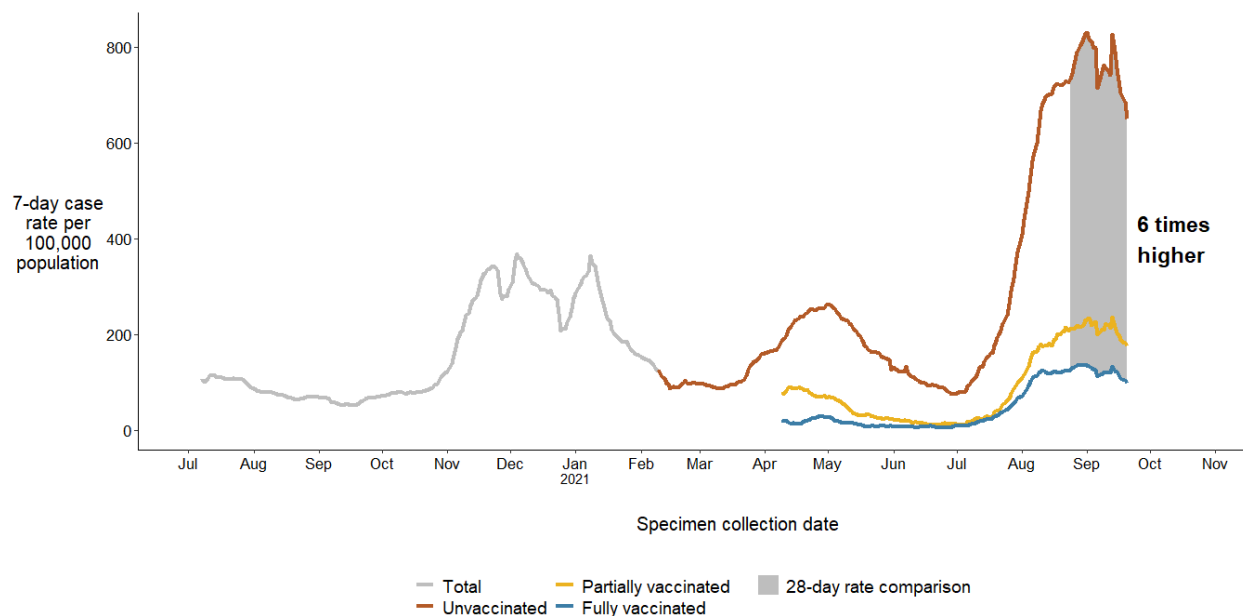
The following graphs show the 7-day COVID-19 case, hospitalization and death rates by age group for people who are unvaccinated, people who are partially vaccinated, and people who are fully vaccinated. The difference between rates in the unvaccinated population compared to the fully vaccinated population 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 unvaccinated and fully vaccinated populations across all age groups. This difference has become greater since July of this year. The rapid increase in cases in July 2021 correlates to several events that occurred in a close time frame from the end of June to the beginning of July, including:

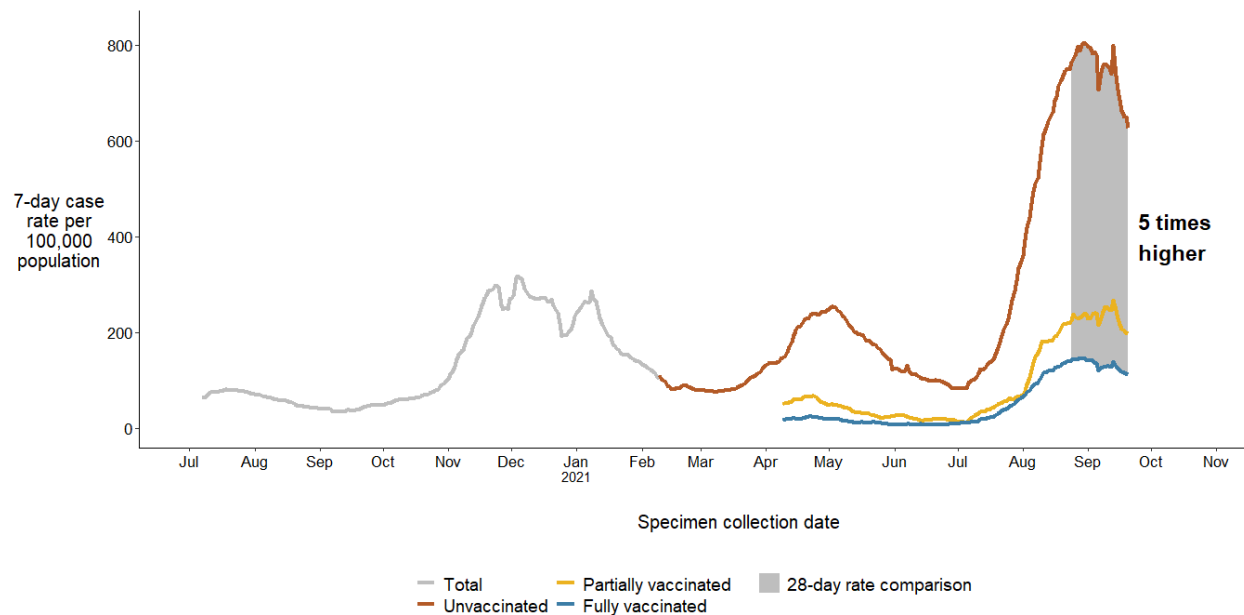
- The Delta variant became the predominant strain in Washington state
- Statewide recommendations were relaxed for gatherings and mask use in public places, and
- Gatherings increased in size and number because of the heat wave and summer holiday celebrations.

COVID-19 Cases

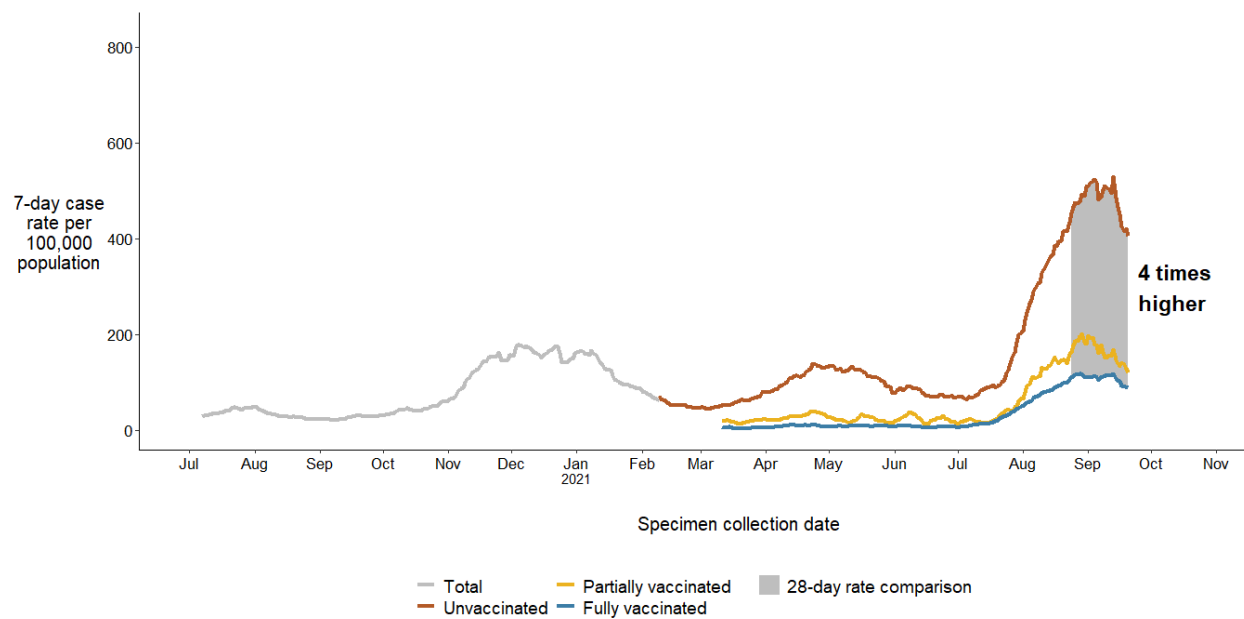
COVID-19 case rates among 12-34 year-old individuals are 6 times higher in the unvaccinated population than in the fully vaccinated population



COVID-19 case rates among 35-64 year-old individuals are 5 times higher in the unvaccinated population than in the fully vaccinated population



COVID-19 case rates among 65+ year-old individuals are 4 times higher in the unvaccinated population than in the fully vaccinated population

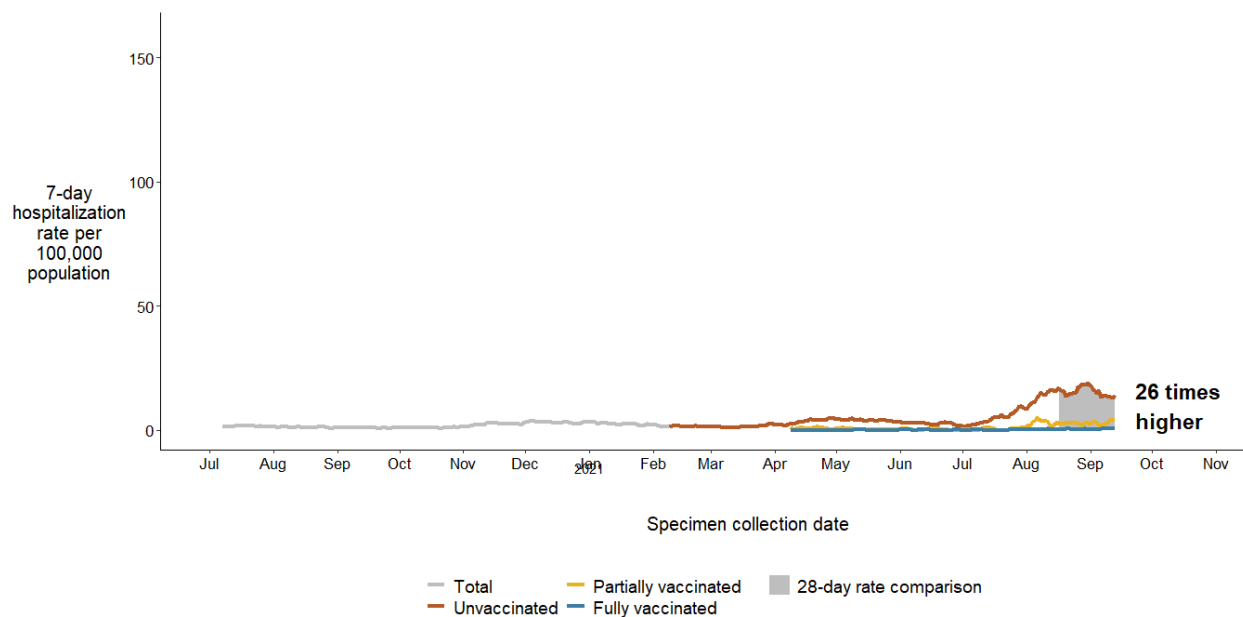


COVID-19 case rates per 100,000 population from August 24 to September 20, 2021

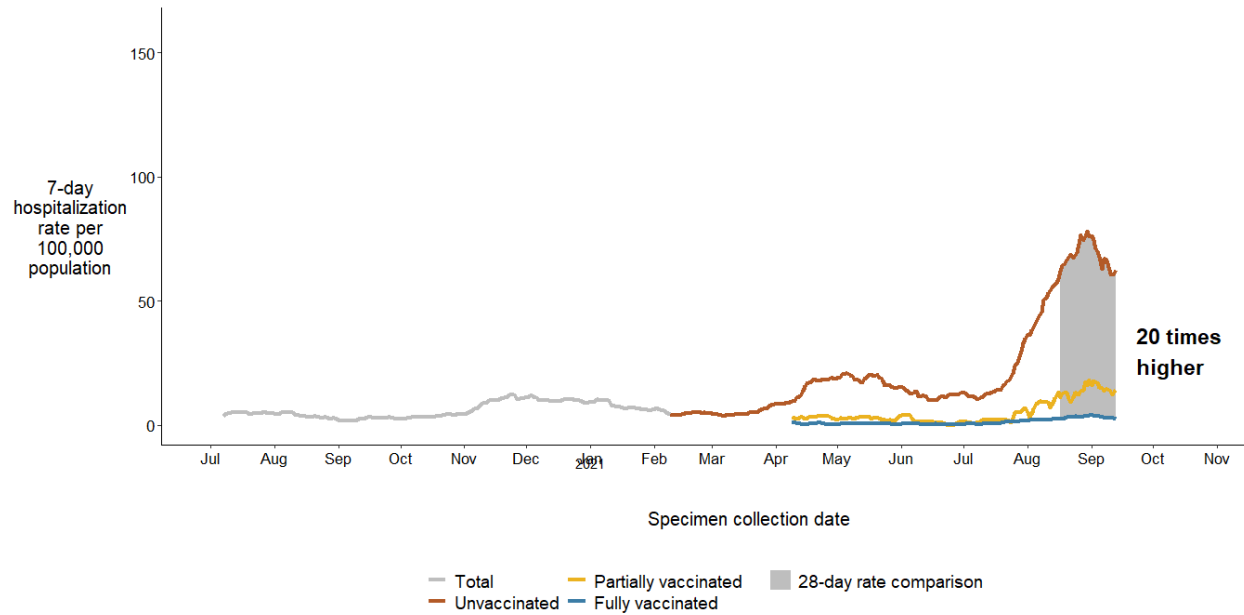
Age group	Rate per 100,000 in unvaccinated individuals	Rate per 100,000 in fully vaccinated individuals	Impact
12-34	2,881.9	489.4	6 times higher in unvaccinated
35-64	2,816.5	524.5	5 times higher in unvaccinated
65+	1,866.2	425.8	4 times higher in unvaccinated

COVID-19 Hospitalizations

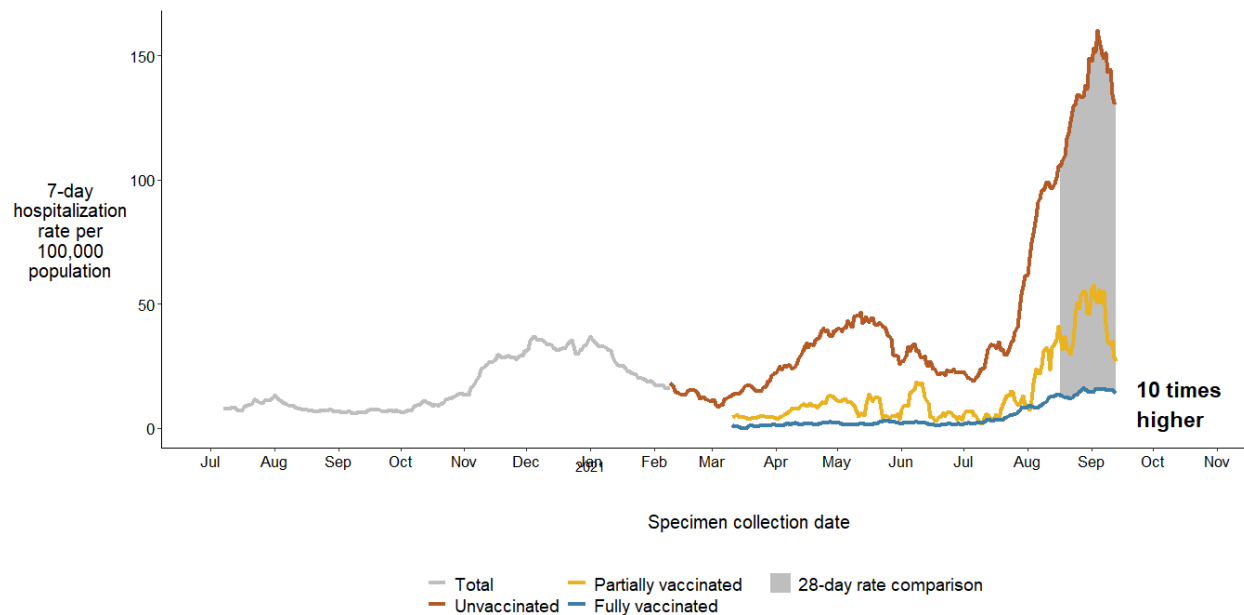
COVID-19 hospitalization rates among 12-34 year-old individuals are 26 times higher in the unvaccinated population than in the fully vaccinated population



COVID-19 hospitalization rates among 35-64 year-old individuals are 20 times higher in the unvaccinated population than in the fully vaccinated population



COVID-19 hospitalization rates among 65+ year-old individuals are 10 times higher in the unvaccinated population than in the fully vaccinated population



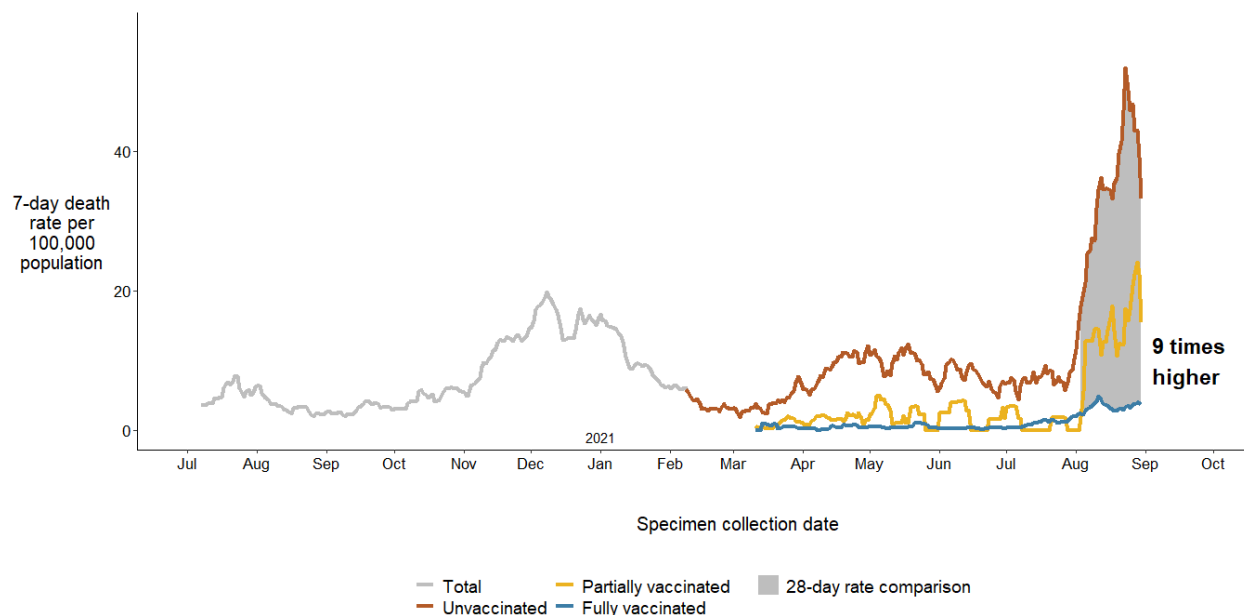
COVID-19 hospitalization rates per 100,000 population from August 17 to September 13, 2021

Age group	Rate per 100,000 in unvaccinated individuals	Rate per 100,000 in fully vaccinated individuals	Impact
12-34	66.3	2.5	26 times higher in unvaccinated
35-64	299.8	14.9	20 times higher in unvaccinated
65+	640.6	67.2	10 times higher in unvaccinated

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 9 times higher in the unvaccinated population than in the fully vaccinated population



COVID-19 death rates per 100,000 population from August 03 to August 30, 2021

Age group	Rate per 100,000 in unvaccinated individuals	Rate per 100,000 in fully vaccinated individuals	Impact
65+	193.1	21.5	9 times higher in unvaccinated

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

COVID-19 cases from February 1 - September 20, 2021

Vaccination status	Number of COVID-19 cases (12+)	Percent of all COVID-19 cases (12+)	Percent of population (12+)
Fully vaccinated	43,172	13.9%	65.5%
Partially vaccinated	15,693	5%	8.1%
Unvaccinated	252,184	81.1%	26.4%

COVID-19 hospitalizations from February 1 - September 13, 2021

Vaccination status	Number of COVID-19 hospitalizations (12+)	Percent of all COVID-19 hospitalizations (12+)	Percent of population (12+)
Fully vaccinated	1,813	11%	64.9%
Partially vaccinated	1,028	6.3%	8%
Unvaccinated	13,597	82.7%	27.1%

COVID-19 deaths from February 1 - August 30, 2021

Vaccination status	Number of COVID-19 deaths (12+)	Percent of all COVID-19 deaths (12+)	Percent of population (12+)
Fully vaccinated	289	13.8%	63.6%
Partially vaccinated	160	7.6%	7.7%
Unvaccinated	1,643	78.5%	28.7%

COVID-19 cases, hospitalizations, and deaths in individuals who are fully vaccinated and unvaccinated by age

The tables below show cases, hospitalizations, and deaths in unvaccinated and fully vaccinated individuals through the last complete month of data. The tables highlight the difference between those who do not have any vaccine protection and those with full vaccine protection. 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 fully vaccinated persons in this age group compared with other age groups.
- As the percent of fully vaccinated individuals 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 fully vaccinated individuals will result in a decrease in the proportion of cases among unvaccinated individuals.
- A similar situation will occur as the percent of fully vaccinated individuals in other age groups increases.

COVID-19 cases in unvaccinated and fully vaccinated individuals in Washington state by age group, February - August, 2021

Age group	Number (%) cases in unvaccinated individuals	Number (%) cases in fully vaccinated individuals	Percent of population who are unvaccinated	Percent of population who are fully vaccinated
12-17	18,187 (93.8%)	592 (3.1%)	41.6%	43.7%
18-34	74,751 (86.1%)	7,979 (9.2%)	32.7%	55.2%
35-49	47,833 (80.8%)	7,914 (13.4%)	24.6%	64.7%
50-64	30,027 (75.8%)	6,791 (17.1%)	23.1%	68.6%
65+	12,295 (61.1%)	6,056 (30.1%)	17%	77.8%
State total (12+)	183,093 (81.3%)	29,332 (13%)	28.5%	63.7%

COVID-19 hospitalizations in unvaccinated and fully vaccinated individuals in Washington state by age group, February - August, 2021

Age group	Number (%) hospitalizations in unvaccinated individuals	Number (%) hospitalizations in fully vaccinated individuals	Percent of population who are unvaccinated	Percent of population who are fully vaccinated
12-34	1,834 (94.6%)	35 (1.8%)	34.9%	52.4%
35-64	6,374 (89%)	402 (5.6%)	23.9%	66.6%
65+	3,563 (71.4%)	963 (19.3%)	17%	77.8%
State total (12+)	11,771 (83.6%)	1,400 (9.9%)	28.5%	63.7%

COVID-19 deaths in unvaccinated and fully vaccinated individuals in Washington state by age group, February - August, 2021

Age group	Number (%) deaths in unvaccinated individuals	Number (%) deaths in fully vaccinated individuals	Percent of population who are unvaccinated	Percent of population who are fully vaccinated
12-64	681 (90.6%)	44 (5.9%)	28.8%	60.3%
65+	995 (71.7%)	252 (18.2%)	17%	77.8%
State total (12+)	1,676 (78.4%)	296 (13.8%)	28.5%	63.7%

(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 and fully vaccinated individuals in Washington state by county, February - August, 2021

County	Number (%) cases in unvaccinated individuals	Number (%) cases in fully vaccinated individuals	Percent of population who are unvaccinated (12+)	Percent of population who are fully vaccinated (12+)
Adams	545 (86.5%)	56 (8.9%)	37.2%	52.2%
Asotin	666 (88.8%)	65 (8.7%)	59.3%	36.2%
Benton	8,137 (83.5%)	1,185 (12.2%)	41.5%	49.6%
Chelan	2,117 (79.9%)	420 (15.9%)	27.2%	63.1%
Clallam	1,323 (78.5%)	298 (17.7%)	31.5%	62.1%
Clark	10,968 (81.4%)	1,685 (12.5%)	34.3%	57.8%
Columbia*	NA	NA	55.5%	36.2%
Cowlitz	4,551 (82.8%)	673 (12.2%)	39.3%	53.2%
Douglas	1,211 (79.7%)	227 (14.9%)	34.4%	56.4%
Ferry	222 (86%)	23 (8.9%)	56.3%	38.4%
Franklin	4,608 (87.2%)	482 (9.1%)	46.5%	43%
Garfield*	NA	NA	52.9%	30.3%
Grant	3,400 (85.9%)	398 (10.1%)	41.8%	49.6%
Grays Harbor	2,114 (81.7%)	347 (13.4%)	40%	52.5%
Island	1,194 (80.6%)	216 (14.6%)	34.7%	57.5%
Jefferson	268 (74.2%)	77 (21.3%)	22.7%	73%
King	38,232 (74.8%)	9,101 (17.8%)	17.7%	75.8%
Kitsap	5,004 (80.7%)	869 (14%)	39.8%	55.6%
Kittitas	1,416 (87.6%)	111 (6.9%)	43.9%	49.6%
Klickitat	432 (86.9%)	50 (10.1%)	50.1%	45.4%
Lewis	3,253 (87.5%)	332 (8.9%)	48.1%	44.4%

County	Number (%) cases in unvaccinated individuals	Number (%) cases in fully vaccinated individuals	Percent of population who are unvaccinated (12+)	Percent of population who are fully vaccinated (12+)
Lincoln	476 (86.9%)	60 (10.9%)	49.7%	45.7%
Mason	1,346 (82.9%)	203 (12.5%)	39.7%	53.5%
Okanogan	1,059 (83.6%)	158 (12.5%)	34.2%	58.7%
Pacific	527 (82.5%)	78 (12.2%)	40.2%	53.2%
Pend Oreille	363 (88.5%)	33 (8%)	60.4%	33.5%
Pierce	28,714 (85%)	3,240 (9.6%)	39.1%	54%
San Juan*	NA	NA	17.1%	77.6%
Skagit	2,755 (83.2%)	398 (12%)	30.7%	61.5%
Skamania*	NA	NA	61.3%	35.6%
Snohomish	16,759 (80.1%)	2,900 (13.9%)	28%	64.6%
Spokane	16,783 (83.9%)	2,160 (10.8%)	40.6%	51.9%
Stevens	1,350 (89.2%)	106 (7%)	64.6%	30.2%
Thurston	6,278 (82.1%)	990 (12.9%)	33.2%	59.9%
Wahkiakum*	NA	NA	46.6%	49.2%
Walla Walla	1,818 (77.7%)	406 (17.4%)	37.6%	54.6%
Whatcom	4,851 (79.8%)	863 (14.2%)	26.9%	65.7%
Whitman	1,252 (84.8%)	143 (9.7%)	55.2%	38.3%
Yakima	8,279 (85.8%)	887 (9.2%)	35.9%	53.2%
Unknown	237 (91.2%)	12 (4.6%)	NA%	NA%
State total	183,093 (81.3%)	29,332 (13%)	28.5%	63.7%

*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 fully vaccinated COVID-19 case 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 fully vaccinated 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.

Fully vaccinated 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 \(wa.gov\)](https://www.wa.gov/health/sars-cov-2-vaccine-breakthrough-surveillance-and-case-information-resource) 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 'fully vaccinated' rather than

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

For example,

The rate ratio for fully vaccinated and unvaccinated COVID-19 case rates per 100,000 population among 12-34 year-old individuals on August 7, 2021 =

$$\frac{\text{28-day (July 11-August 7) case rate for unvaccinated 12-34 year-old individuals}}{\text{28-day (July 11-August 7) case rate for fully vaccinated 12-34 year-old individuals}}$$

- The **fully vaccinated** population is defined as the number of individuals who are determined to be fully vaccinated 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 vaccinated and partially vaccinated individuals for the specified age group and time period from the entire Washington state population 12 years and older.