

COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



Breakthrough case report - December 9, 2021

Background

Data for the weekly breakthrough case report will include data through the most recent Sunday and the report will be published on Thursdays.¹ Vaccine breakthrough cases are defined as instances in which an individual tests positive for COVID-19 at least 14 days following the completion of any COVID-19 vaccine series.² Vaccine breakthrough cases that result in hospitalization or death are reported to CDC.

This report includes only those vaccine breakthrough cases which are reported to public health following a positive test result. Many vaccine breakthrough cases are believed to experience no symptoms or minimal symptoms.³ These cases are unlikely to undergo testing for COVID-19 and be reported to public health. Therefore, the true number of vaccine breakthrough cases is unknown. The number of vaccine breakthrough cases must be interpreted within the context of the nearly 2.5 million people in Oregon who have completed a COVID-19 vaccine series.

COVID-19 cases in vaccinated and unvaccinated people

Weekly summary

During the week of November 28–December 4, there were 6,496 cases of COVID-19. 4,507 (69.4%) were unvaccinated and 1,989 (30.6%) were vaccine breakthrough cases. The median age of breakthrough cases was 43 years. 44 (2.2%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 367 (18.5%) cases were 65 or older. There were 64 (3.2%) cases aged 12-17.

¹ The weekly summary, Figure 1, and Figure 2 use the date that cases are reported to OHA, to provide information on the most recently identified cases. All other dates in this report use specimen collection date to align with the breakthrough case definition.

² This definition is consistent with the CDC's definition, available here: <https://www.cdc.gov/vaccines/covid-19/downloads/COVID-vaccine-breakthrough-case-investigations-Protocol.pdf>

³ Bergwerk, M., Gonen, T., Lustig, Y., Amit, S., Lipsitch, M., Cohen, C., Mandelboim, M., Gal Levin, E., Rubin, C., Indenbaum, V. and Tal, I., 2021. Covid-19 breakthrough infections in vaccinated health care workers. *New England Journal of Medicine*.

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OHA publishes the most up-to-date information about cases from the most recently completed MMWR week. However, not all information about a case's vaccination status may be available at the time of publication. Table 1 includes updated totals of COVID-19 cases by vaccine breakthrough status for the previous six weeks.

Table 1. COVID-19 cases by vaccine breakthrough status over the previous 6 weeks

MMWR week ending	Total cases	Breakthrough cases	Percent breakthrough case
2021-10-30	8,223	2,407	29.3
2021-11-06	6,757	2,109	31.2
2021-11-13	5,901	1,710	29.0
2021-11-20	5,855	1,853	31.6
2021-11-27	4,122	1,288	31.2
2021-12-04	6,496	1,989	30.6

Cumulative summary

Overall, there have been 47,687 vaccine breakthrough cases identified in Oregon. The median age of breakthrough cases is 47 years (range: 11-106). 1,652 (3.5%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 11,256 (23.6%) cases were 65 or older. There have been a total of 1,338 (2.8%) cases aged 12-17. Breakthrough cases have been reported in all 36 counties.

Cases of COVID-19 are much more common in unvaccinated⁴ individuals than in vaccinated individuals (Figure 1). The rate of COVID-19 cases among unvaccinated individuals in the most recent week was more than 3.5 times the rate of COVID-19 cases among those who are fully vaccinated. Community spread remains elevated throughout the state and is particularly high in areas with lower vaccination rates. As COVID-19 cases have increased across Oregon, vaccine breakthrough cases have also

⁴ Unvaccinated persons are defined as people who have not received an approved COVID-19 vaccine, or who have not completed a COVID-19 vaccine series.

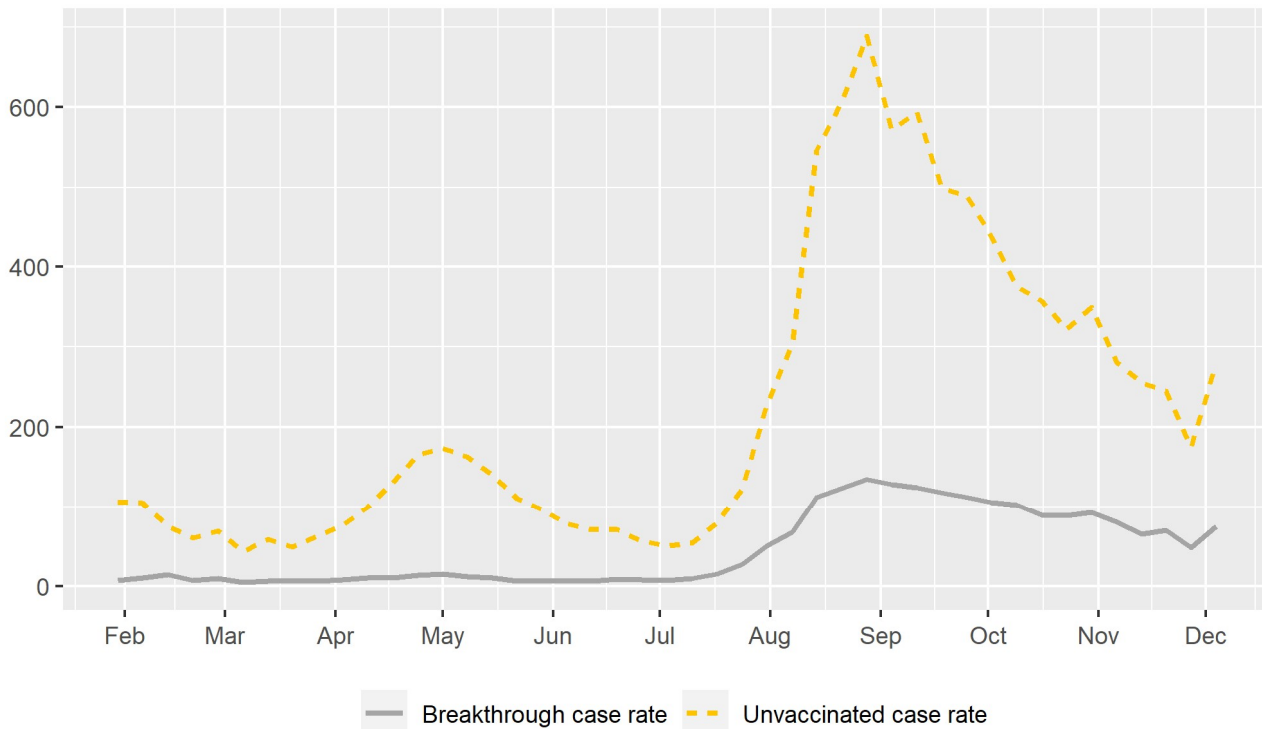
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increased, but at a much lower rate than in the unvaccinated. Vaccination remains the most effective tool to reduce the spread of COVID-19.

Figure 1. COVID-19 cases per 100,000 per week, by vaccination status



Vaccine breakthrough cases and severity

The Pfizer, Moderna and Johnson & Johnson COVID-19 vaccines are all highly effective at preventing severe COVID-19 illness and death. Table 2 includes totals of breakthrough cases by vaccine manufacturer and severity. Relatively few breakthrough cases have been hospitalized, and even fewer have died (Figure 2).⁵

⁵ A death is considered to be related to COVID-19 in any of the following circumstances: a) death of a confirmed or probable COVID-19 case within 60 days of the earliest available date among exposure to a confirmed case, onset of symptoms, or date of specimen collection for the first positive test; b) death from any cause in a hospitalized person during admission or in the 60 days following discharge AND a COVID-19-positive laboratory diagnostic test at any time since 14 days prior to hospitalization; or c)

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Table 2. COVID-19 Breakthrough cases by vaccine manufacturer and severity⁶

Vaccine manufacturer	Primary series completed	Cases	Hospitalizations	Deaths	Cases per 100,000 vaccinated
Pfizer	1,516,207	24,326	925	288	1,604.4
Moderna	942,153	12,835	588	154	1,362.3
Johnson & Johnson/Janssen	233,161	5,715	294	81	2,451.1

death of someone with a COVID-19-specific ICD-10 code listed as a primary or contributing cause of death on a death certificate, regardless of the dates of diagnosis or death

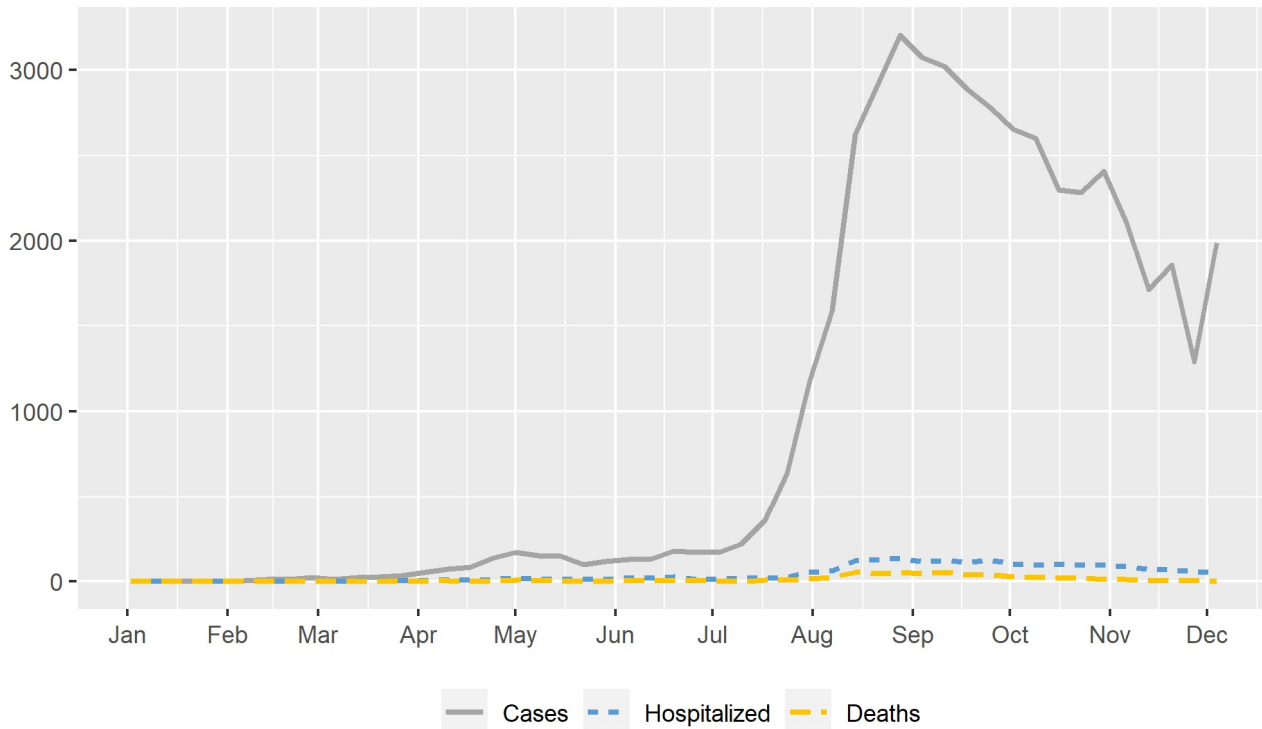
⁶ Table 2 provides the number of cases per 100,000 vaccinated individuals by vaccine manufacturer. Because this figure does not account for the time that each person has been fully vaccinated, it is not a true rate and should not be interpreted as such.

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Figure 2. COVID-19 breakthrough cases, hospitalizations and deaths, by week



To date, 4.4% of all known breakthrough cases have been hospitalized (n=2,090), and only 1.2% have died (n=580).⁷ The median age of the people who have died is 81 (range: 34-103). It is important to note that not all vaccine breakthrough cases are reported to public health, which may cause the proportions in the following section to appear higher than in reality. These figures are not vaccine breakthrough hospitalization or death rates and should not be interpreted as such.

Tables 3, 4 and 5 provide detailed vaccine breakthrough severity data by age, race and ethnicity. Both the risk of hospitalization and death increase with age.

⁷ Cumulative deaths reported here reflect all breakthrough cases known to have died since January 1, 2021. There may be a lag of several weeks between when an individual dies and when their death appears in this report. Increases in cumulative deaths between this and subsequent reports should not be interpreted as individuals who have died within the past week.

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Table 3. COVID-19 breakthrough cases by age group and severity

Age group	Breakthrough cases	Breakthrough hospitalizations	Breakthrough deaths
12-19	2,318	14	0
20-29	6,715	42	0
30-39	8,468	69	2
40-49	8,118	103	9
50-59	7,359	201	21
60-69	6,705	418	89
70-79	4,891	580	156
80+	3,113	663	303
Total	47,687	2,090	580

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Table 4. COVID-19 breakthrough case severity by race⁸

Race	Cases	Hospitalizations	Deaths
> 1 race	442	15	2
American Indian/Alaska Native	630	32	7
Asian	1,134	40	13
Black	734	47	12
Not Available	11,843	281	129
Other	3,432	125	41
Pacific Islander	104	4	1
White	29,368	1,546	375
Total	47,687	2,090	580

Table 5. COVID-19 breakthrough case severity by ethnicity

Ethnicity	Cases	Hospitalizations	Deaths
Hispanic	3,567	91	13
Not Hispanic	25,077	1,338	323
Unknown	19,043	661	244
Total	47,687	2,090	580

⁸ During the case investigation, people are asked to self-report their race, ethnicity, tribal affiliation, country of origin, or ancestry. As of October 2021, 42,423 (80.8%) of the 52,483 persons who identify as "Other" race also self-identify as Hispanic or Latino.

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Table 6 provides the proportion of vaccine breakthrough cases who have died with COVID-19. Approximately 80% of vaccine breakthrough deaths have occurred in patients 70 years and older. The proportion of vaccine breakthrough cases who have died with COVID-19 has increased over time. This trend is likely multifactorial and may be associated with increased COVID-19 transmission in our communities, increased disease severity associated with infection caused by the Delta variant and waning immunity over time in elderly populations.

Table 6. COVID-19 deaths by month, by breakthrough case status⁹

Month	Total COVID-19 deaths	Vaccine breakthrough deaths	Percent vaccine breakthrough deaths
March 2021	122	4	3.3
April 2021	111	6	5.4
May 2021	211	19	9.0
June 2021	108	15	13.9
July 2021	92	16	17.4
August 2021	585	131	22.4
September 2021	907	193	21.3
October 2021	532	144	27.1
November 2021	233	50	21.5

⁹ Data in Table 6 will be updated monthly and will reflect cases from the previous month.

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COVID-19 variants

Table 7. COVID-19 breakthrough cases associated with variants of concern¹⁰

Overall, approximately 7.1% of positive specimens in Oregon have been sequenced. Delta is currently the dominant variant circulating in Oregon. At this time, vaccine breakthrough cases appear to reflect the variants circulating in the community. Additional information on variants can be found here: <https://public.tableau.com/app/profile/oregon.health.authority.covid.19/viz/GISAIDVariantDashboardUpdated/OregonVariantDashboard>

Subtype	Cases
Delta (B.1.617.2)	1,834

Table 8. COVID-19 breakthrough cases associated with variants being monitored

Subtype	Cases
Alpha (B.1.1.7)	151
Beta (B.1.351)	17
Gamma (P.1)	63
Epsilon (B.1.427/B.1.429)	40
Iota (B.1.526)	30

¹⁰ As of September 29, OHA will align with CDC's classification of SARS-CoV-2 variants. Variant classification scheme defines four classes of SARS-CoV-2 variants: variants of concern, variants of interest, variants being monitored, and variants of high consequence. Delta is currently the only variant of concern in the United States.

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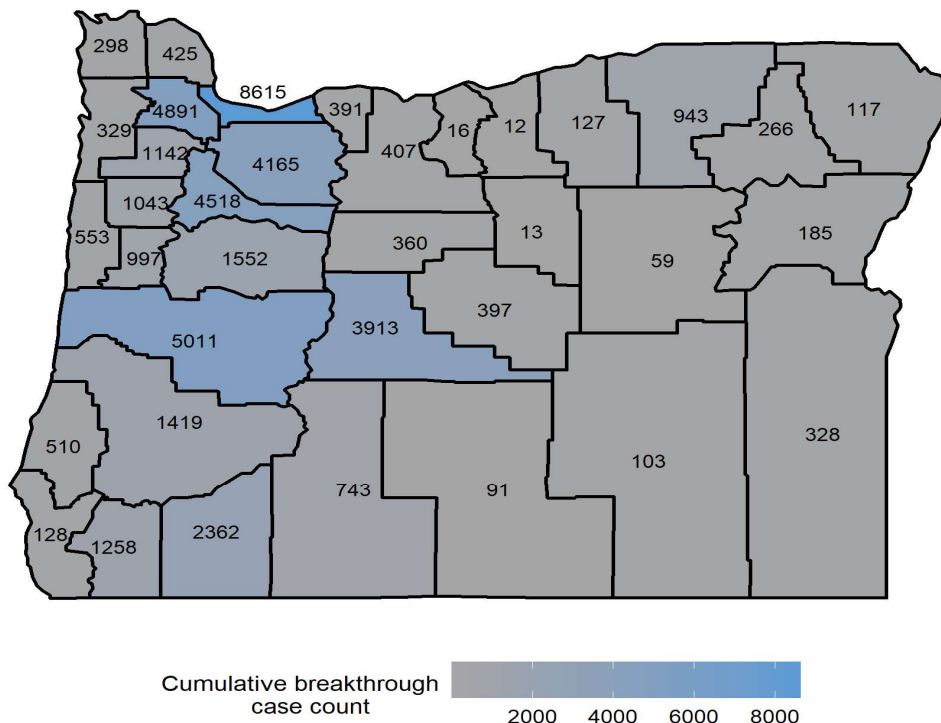
Breakthrough cases by county

Figure 3 and Table 9 show breakthrough cases by county. In general, cumulative breakthrough case counts correspond with the population size of each county. Additional information on cumulative cases can be found here:

<https://public.tableau.com/app/profile/oregon.health.authority.covid.19/viz/OregonCOVID-19TestingandOutcomesbyCounty/OregonsCOVID-19TestingandOutcomesbyCounty>

Table 9 provides both cumulative and weekly data. The “Cases in previous week” column references the number of vaccine breakthrough cases newly reported between November 28 and December 4. This count may not reflect the full number of vaccine breakthrough cases that occurred during this time, as breakthrough case ascertainment can lag by several weeks.

Figure 3. Map of COVID-19 breakthrough case cumulative counts, by county of residence¹¹



¹¹ Counties that have a total of fewer than 10 cases will appear grey without a data label.

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Table 9. COVID-19 breakthrough cases by county of residence¹²

County	Cumulative cases	Cases in previous week
Baker	185	1-9
Benton	997	52
Clackamas	4165	180
Clatsop	298	12
Columbia	425	19
Coos	510	31
Crook	397	22
Curry	128	1-9
Deschutes	3913	180
Douglas	1419	59
Gilliam	12	0
Grant	59	0
Harney	103	1-9
Hood River	391	23
Jackson	2362	109
Jefferson	360	18
Josephine	1258	47
Klamath	743	22

¹² Counties that have a total of fewer than 10 cases will be reported as 1-9 cases.

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County	Cumulative cases	Cases in previous week
Lake	91	1-9
Lane	5011	175
Lincoln	553	25
Linn	1552	71
Malheur	328	1-9
Marion	4518	149
Morrow	127	1-9
Multnomah	8615	385
Polk	1043	53
Sherman	16	0
Tillamook	329	14
Umatilla	943	1-9
Union	266	1-9
Wallowa	117	1-9
Wasco	407	10
Washington	4891	250
Wheeler	13	0
Yamhill	1142	47