

COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



Breakthrough case report - December 23, 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 more than 2.7 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 December 12–December 18, there were 5,388 cases of COVID-19. 3,806 (70.6%) were unvaccinated and 1,582 (29.4%) were vaccine breakthrough cases. The median age of breakthrough cases was 40 years. 16 (1%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 230 (14.5%) cases were 65 or older. There were 73 (4.6%) 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
2021-11-13	5,898	1,713	29.0
2021-11-20	5,855	1,859	31.8
2021-11-27	4,119	1,294	31.4
2021-12-04	6,479	2,050	31.6
2021-12-11	4,974	1,532	30.8
2021-12-18	5,388	1,582	29.4

Cumulative summary

Overall, there have been 50,882 vaccine breakthrough cases identified in Oregon. The median age of breakthrough cases is 47 years (range: 11-106). 1,701 (3.3%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 11,769 (23.1%) cases were 65 or older. There have been a total of 1,470 (2.9%) 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 4 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.

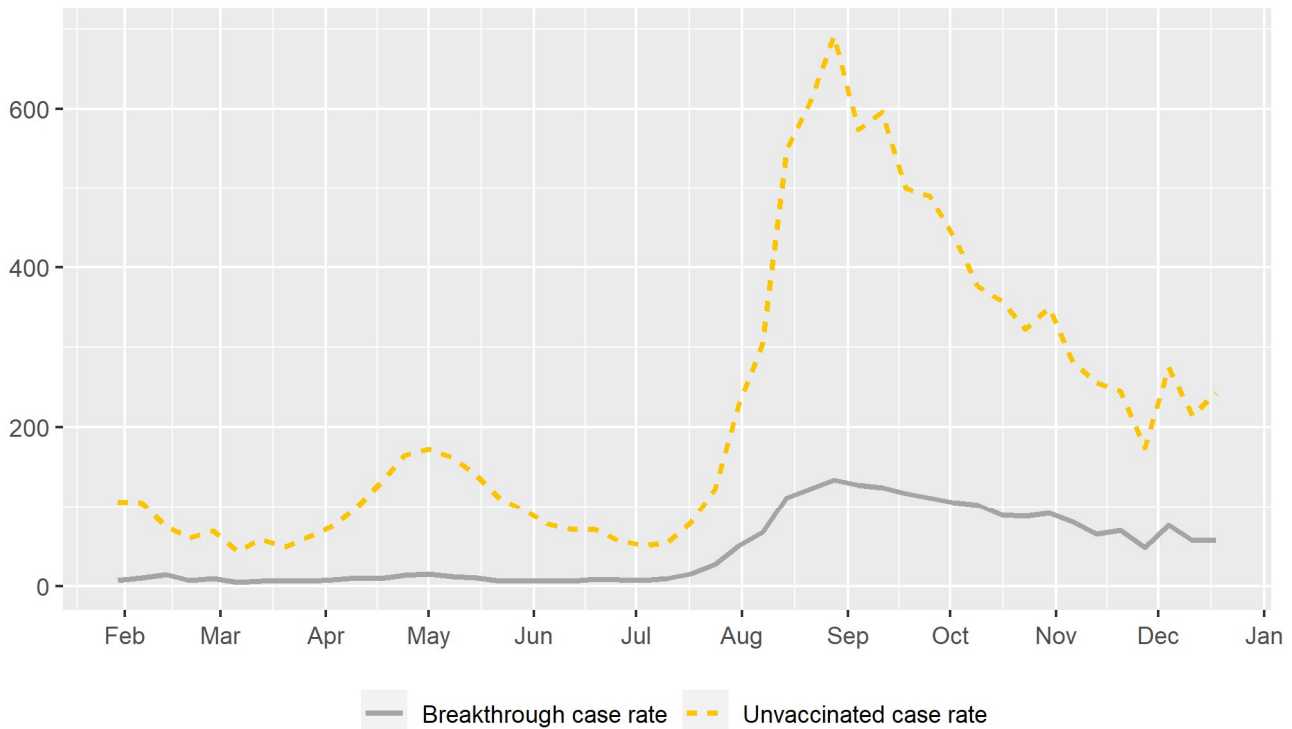
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increased, but at a much lower rate than in the unvaccinated. Vaccination remains the most effective tool to reduce the spread of COVID-19.

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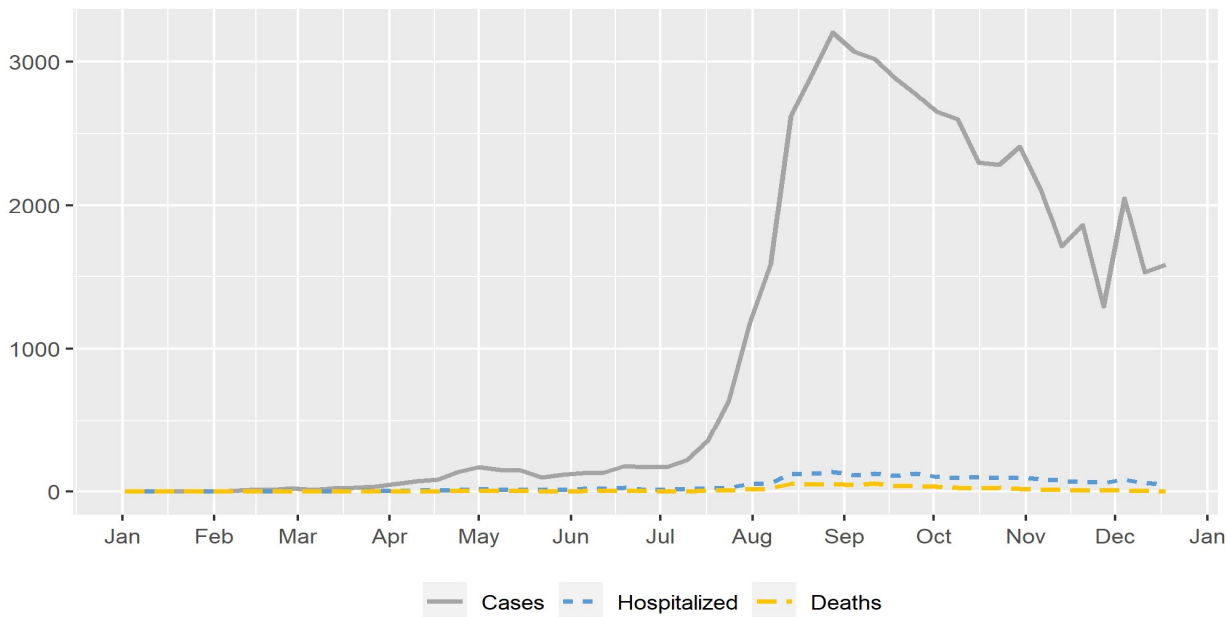
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Table 2. COVID-19 Breakthrough cases by vaccine manufacturer and severity⁶

Vaccine manufacturer	Primary series completed	Cases	Hospitalizations	Deaths	Cases per 100,000 vaccinated
Pfizer	1,563,870	26,224	1,010	336	1,676.9
Moderna	948,592	13,816	646	174	1,456.5
Johnson & Johnson/Janssen	236,163	6,108	325	88	2,586.3

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



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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To date, 4.4% of all known breakthrough cases have been hospitalized (n=2,242), and only 1.3% have died (n=648).⁷ The median age of the people who have died is 81 (range: 29-103). 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.

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

Age group	Breakthrough cases	Breakthrough hospitalizations	Breakthrough deaths
12-19	2,516	14	0
20-29	7,295	49	1
30-39	9,151	75	2
40-49	8,693	112	10
50-59	7,805	218	24
60-69	7,082	467	96
70-79	5,113	609	169
80+	3,227	698	346
Total	50,882	2,242	648

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 4. COVID-19 breakthrough case severity by race⁸

Race	Cases	Hospitalizations	Deaths
> 1 race	482	17	2
American Indian/Alaska Native	672	33	7
Asian	1,252	43	15
Black	799	52	13
Not Available	12,518	299	140
Other	3,690	140	51
Pacific Islander	113	4	1
White	31,356	1,654	419
Total	50,882	2,242	648

Table 5. COVID-19 breakthrough case severity by ethnicity

Ethnicity	Cases	Hospitalizations	Deaths
Hispanic	3,855	100	15
Not Hispanic	27,106	1,438	355
Unknown	19,921	704	278
Total	50,882	2,242	648

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	906	192	21.2
October 2021	641	175	27.3
November 2021	292	67	22.9

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 7.7% 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
Omicron (B.1.1.529)	4
Delta (B.1.617.2)	1,914

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.

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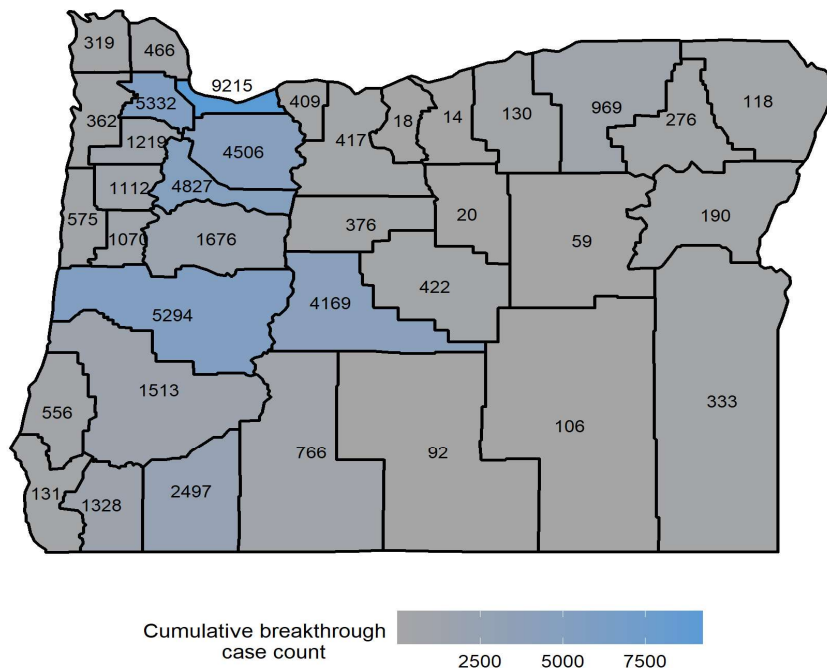
Breakthrough cases by county

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 December 12 and December 18. 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	190	1-9
Benton	1070	33
Clackamas	4506	162
Clatsop	319	14
Columbia	466	19
Coos	556	18
Crook	422	1-9
Curry	131	1-9
Deschutes	4169	131
Douglas	1513	43
Gilliam	14	1-9
Grant	59	0
Harney	106	1-9
Hood River	409	1-9
Jackson	2497	67
Jefferson	376	1-9
Josephine	1328	28
Klamath	766	11

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	92	0
Lane	5294	123
Lincoln	575	10
Linn	1676	59
Malheur	333	1-9
Marion	4827	153
Morrow	130	0
Multnomah	9215	300
Polk	1112	41
Sherman	18	0
Tillamook	362	13
Umatilla	969	16
Union	276	1-9
Wallowa	118	0
Wasco	417	1-9
Washington	5332	249
Wheeler	20	1-9
Yamhill	1219	52