

COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



Breakthrough case report - October 28, 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.

COVID-19 cases in vaccinated and unvaccinated people

Weekly summary

During the week of October 17–October 23, there were 7,723 cases of COVID-19. 5,567 (72.1%) were unvaccinated and 2,156 (27.9%) were vaccine breakthrough cases. The median age of breakthrough cases was 48 years. 69 (3.2%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 523 (24.3%) cases were 65 or older. There were 91 (4.2%) cases aged 12-17.

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

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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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
2021-09-18	11,953	2,857	23.9
2021-09-25	11,536	2,613	22.7
2021-10-02	10,385	2,629	25.3
2021-10-09	9,123	2,560	28.1
2021-10-16	8,413	2,176	25.9
2021-10-23	7,723	2,156	27.9

Cumulative summary

Overall, there have been 35,424 vaccine breakthrough cases identified in Oregon. The median age of breakthrough cases is 48 years (range: 11-106). 1,307 (3.7%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 8,774 (24.8%) cases were 65 or older. There have been a total of 941 (2.7%) 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 increased, but at a much lower rate than in the unvaccinated. Vaccination remains the most effective tool to reduce the spread of COVID-19.

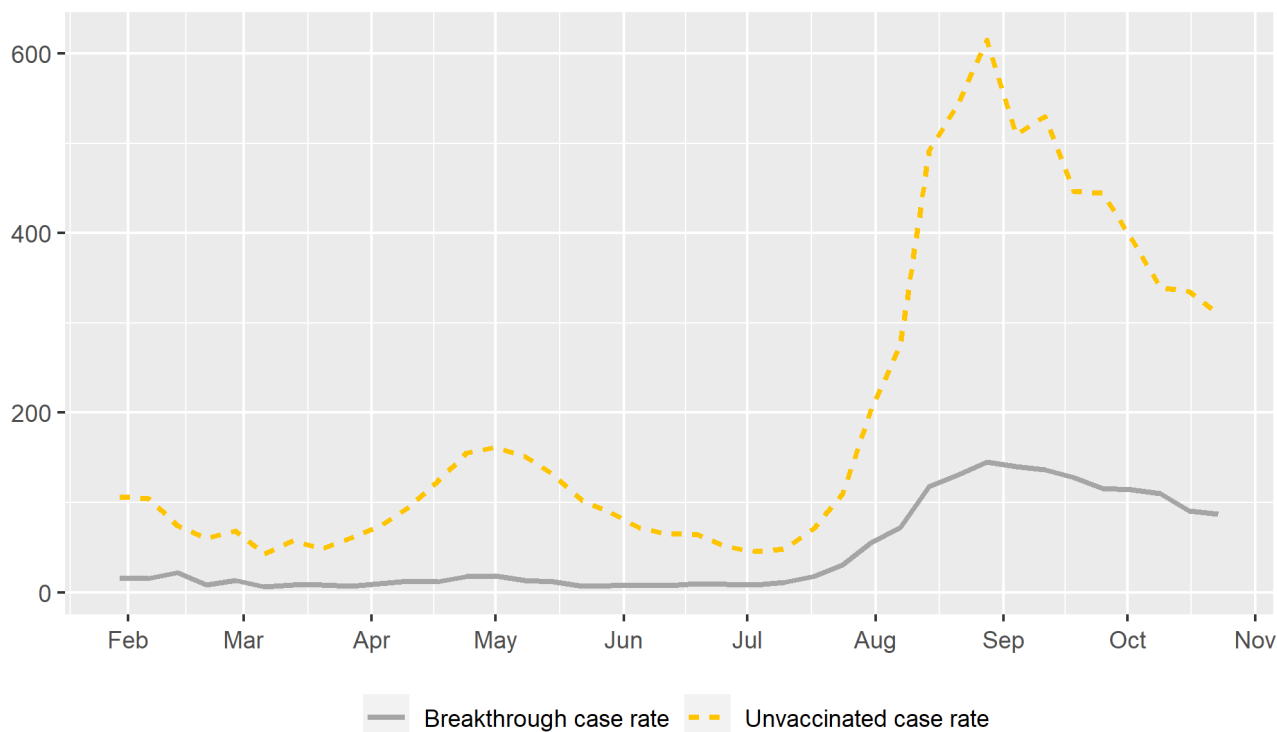
⁴ Unvaccinated persons are defined as people who have not received an approved COVID-19 vaccine, or who have not completed a COVID-19 vaccine series.

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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) 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

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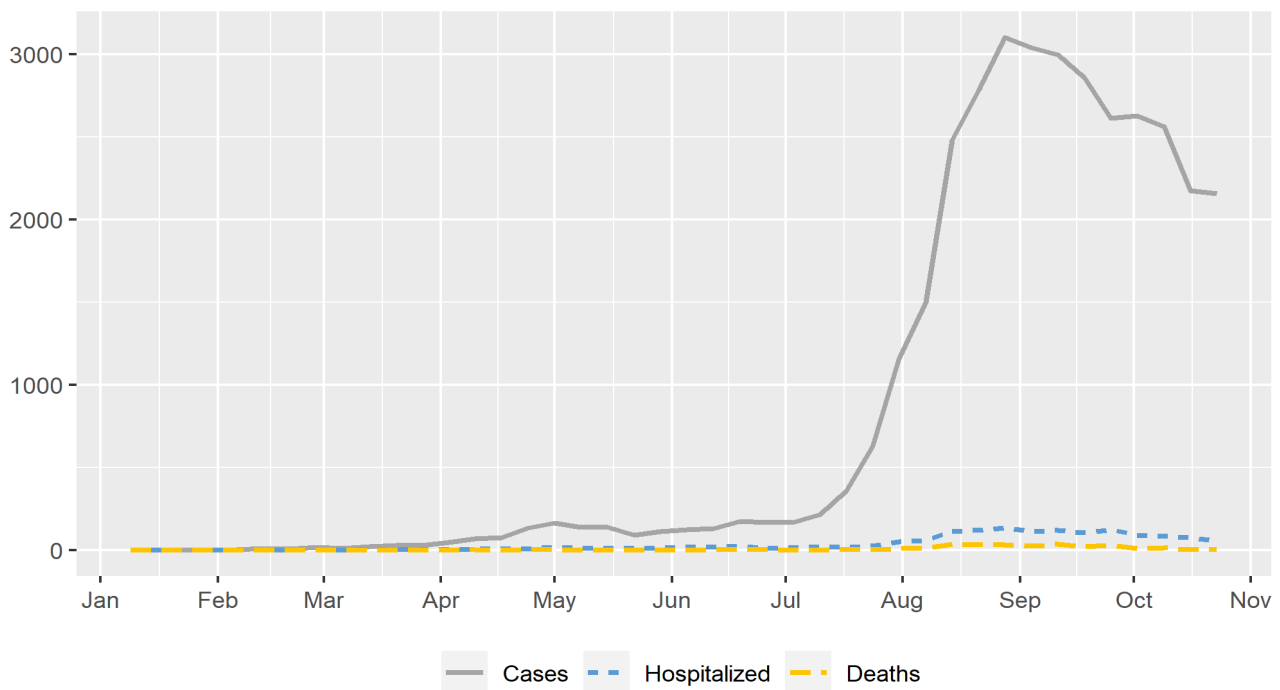
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Table 2. COVID-19 Breakthrough cases by vaccine manufacturer and severity⁶

Vaccine manufacturer	Primary series completed	Cases	Hospitalizations	Deaths	Cases per 100,000 vaccinated
Pfizer	1,448,209	17,606	663	172	1,215.7
Moderna	916,130	9,335	394	86	1,019.0
Johnson & Johnson/Janssen	221,157	4,279	226	48	1,934.8

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



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=1,547), and only 1% have died (n=350).⁷ The median age of the people who have died is 80 (range: 34-101). 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	1,646	11	0
20-29	4,946	29	0
30-39	6,102	45	2
40-49	5,924	70	7
50-59	5,448	141	12
60-69	5,080	319	55
70-79	3,822	432	96
80+	2,456	500	178
Total	35,424	1,547	350

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	331	11	2
American Indian/Alaska Native	475	20	4
Asian	818	30	8
Black	529	36	6
Not Available	8,991	199	73
Other	2,587	92	30
Pacific Islander	77	3	1
White	21,616	1,156	226
Total	35,424	1,547	350

Table 5. COVID-19 breakthrough case severity by ethnicity

Ethnicity	Cases	Hospitalizations	Deaths
Hispanic	2,632	68	12
Not Hispanic	18,078	987	194
Unknown	14,714	492	144
Total	35,424	1,547	350

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	118	4	3.4
April 2021	105	6	5.7
May 2021	182	15	8.2
June 2021	94	13	13.8
July 2021	81	16	19.8
August 2021	420	97	23.1
September 2021	649	130	20.0

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 6.9% 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)	1,306

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

Subtype	Cases
Alpha (B.1.1.7)	148
Beta (B.1.351)	16
Gamma (P.1)	62
Epsilon (B.1.427/B.1.429)	38
Iota (B.1.526)	29

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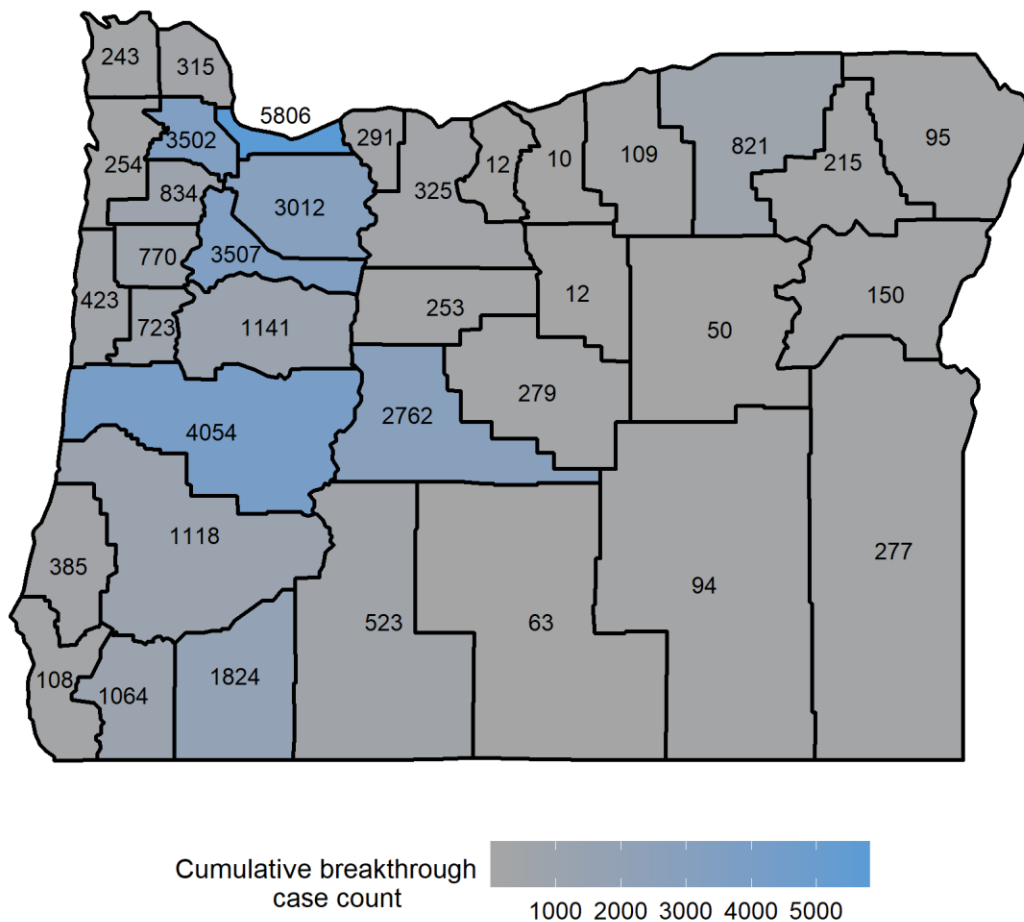
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Figure 3. Map of COVID-19 breakthrough case cumulative counts, by county of residence¹¹

In general, cumulative breakthrough case counts correspond with the population size of each county. Additional information on cumulative case counts can be found here:

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



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	150	13
Benton	723	63
Clackamas	3012	184
Clatsop	243	1-9
Columbia	315	15
Coos	385	17
Crook	279	34
Curry	108	1-9
Deschutes	2762	193
Douglas	1118	54
Gilliam	10	1-9
Grant	50	1-9
Harney	94	1-9
Hood River	291	25
Jackson	1824	89
Jefferson	253	25
Josephine	1064	25
Klamath	523	60
Lake	63	14

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
Lane	4054	217
Lincoln	423	26
Linn	1141	99
Malheur	277	16
Marion	3507	185
Morrow	109	1-9
Multnomah	5806	312
Polk	770	66
Sherman	12	1-9
Tillamook	254	1-9
Umatilla	821	48
Union	215	19
Wallowa	95	1-9
Wasco	325	27
Washington	3502	238
Wheeler	12	1-9
Yamhill	834	47