

COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



Breakthrough case report - October 7, 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 September 26–October 02, there were 10,411 cases of COVID-19. 7,869 (75.6%) were unvaccinated and 2,542 (24.4%) were vaccine breakthrough cases. The median age of breakthrough cases was 46 years. 49 (1.9%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 614 (24.2%) cases were 65 or older. There were 91 (3.6%) 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
2021-08-28	16,206	3,065	18.9
2021-09-04	13,765	2,961	21.5
2021-09-11	13,989	2,894	20.7
2021-09-18	11,968	2,821	23.6
2021-09-25	11,549	2,490	21.6
2021-10-02	10,411	2,542	24.4

Cumulative summary

Overall, there have been 28,075 vaccine breakthrough cases identified in Oregon. The median age of breakthrough cases is 48 years (range: 12-106). 1063 (3.8%) breakthrough cases were residents of care facilities, senior living communities or other congregate living settings. 7,052 (25.1%) cases were 65 or older. There have been a total of 628 (2.2%) 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 approximately 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 increased, but at a much lower rate than in the unvaccinated. Vaccination remains the most effective tool to reduce the spread of COVID-19.

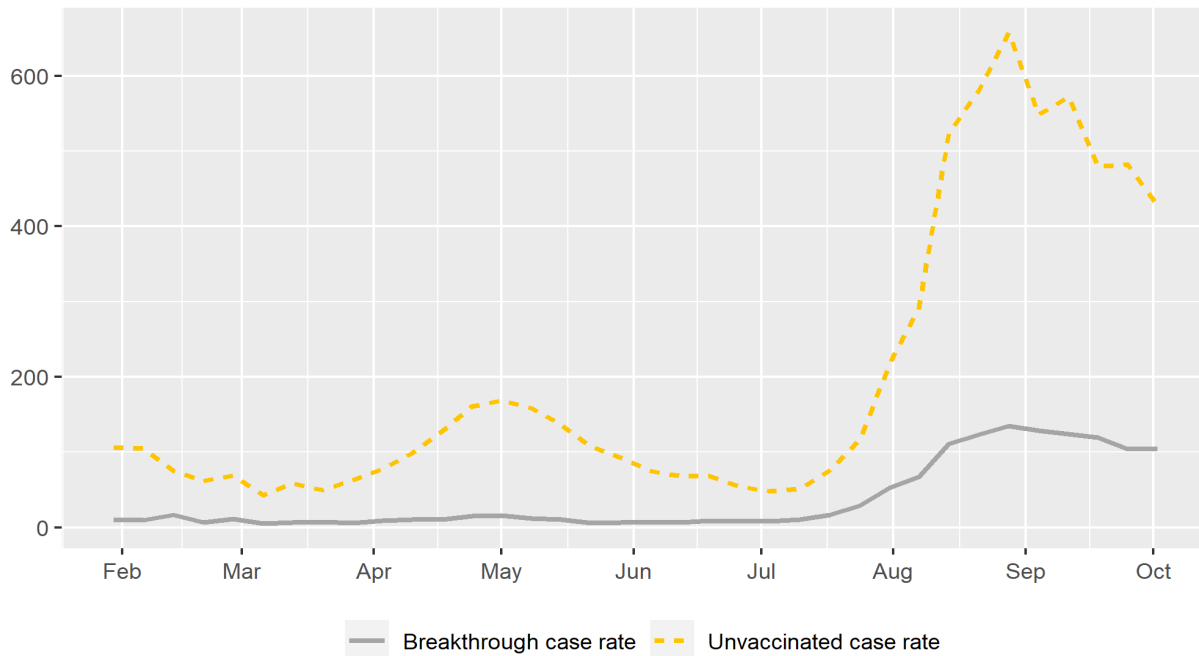
⁴ Unvaccinated persons are defined as people who have not received an approved COVID-19 vaccine, or who have not completed a COVID-19 vaccine series.

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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 highly effective at preventing severe COVID-19 illness and death. Relatively few breakthrough cases have been hospitalized, and even fewer have died (Figure 2, Table 2).

To date, 4.5% of all known breakthrough cases have been hospitalized (n=1263), and only 0.8% have died (n=237). The median age of the people who have died is 81 (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 Tables 2 and 3 to appear higher than in reality. These figures are not vaccine breakthrough hospitalization or death rates and should not be interpreted as such.

Table 3 provides the proportion of vaccine breakthrough cases who have died with COVID-19. More than 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.

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

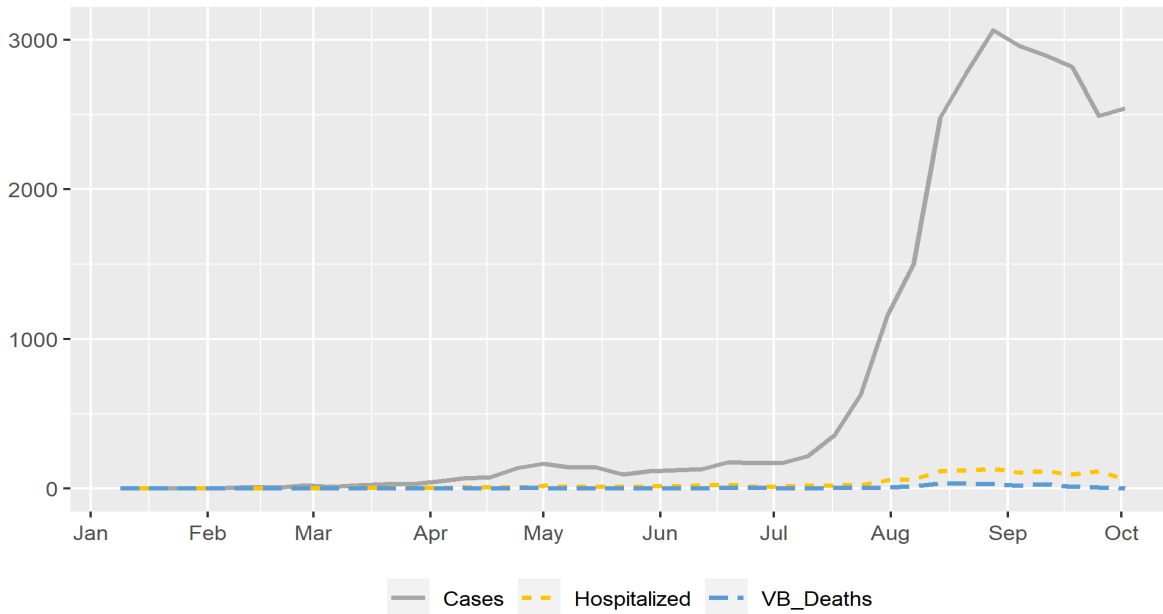


Table 2. COVID-19 breakthrough cases by age group and severity

AgeGroup	Breakthrough cases	Breakthrough hospitalizations	Breakthrough deaths
10-19	1,181	7	0
20-29	3,997	25	0
30-39	4,834	37	2
40-49	4,702	54	3
50-59	4,298	111	9
60-69	3,981	253	32
70-79	3,106	351	62
80+	1,976	425	129
Total	28,075	1,263	237

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Table 3. COVID-19 deaths by week, by breakthrough case status^{5 6}

Month	Total COVID-19 deaths	Vaccine breakthrough deaths	Percent vaccine breakthrough deaths
March 2021	117	4	3.4
April 2021	103	6	5.8
May 2021	176	14	8.0
June 2021	69	7	10.1
July 2021	64	12	18.8
August 2021	407	95	23.3
September 2021	544	95	17.5

⁵ Data in Table 3. will be updated monthly and will reflect cases from the previous month.

⁶ 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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COVID-19 variants

Table 4. COVID-19 breakthrough cases associated with variants of concern⁷

Overall, 6.5% 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)	995

Table 5. COVID-19 breakthrough cases associated with variants being monitored

Subtype	Cases
Alpha (B.1.1.7)	147
Beta (B.1.351)	16
Gamma (P.1)	62
Epsilon (B.1.427/B.1.429)	38
Iota (B.1.526)	29

⁷ 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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Table 6. COVID-19 breakthrough cases by county of residence⁸

County	Cases
Baker	118
Benton	551
Clackamas	2412
Clatsop	213
Columbia	262
Coos	315
Crook	169
Curry	96
Deschutes	2151
Douglas	945
Gilliam	1-9
Grant	41
Harney	56
Hood River	216
Jackson	1550
Jefferson	187
Josephine	972
Klamath	338

⁸ Counties that have a total of fewer than 10 cases will be reported as 1-9 cases.

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County	Cases
Lake	37
Lane	3336
Lincoln	354
Linn	856
Malheur	197
Marion	2866
Morrow	88
Multnomah	4308
Polk	585
Sherman	10
Tillamook	229
Umatilla	662
Union	174
Wallowa	72
Wasco	263
Washington	2788
Wheeler	1-9
Yamhill	645