

# COVID-19 Breakthrough Report

Oregon's Monthly Surveillance Summary



## Monthly Vaccine Breakthrough Case Report - June 2022

### Background

Monthly breakthrough case reports include data through the last day of the most recent complete calendar month and are published on the first Thursday of every month.<sup>1</sup> 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 primary COVID-19 vaccine series.<sup>2</sup>

This report includes only those vaccine breakthrough cases that are reported to public health following a positive test result. People who have tested positive through at-home tests are not included in this report. Reported cases are automatically matched with our statewide immunization database to verify COVID-19 vaccination status.

Many vaccine breakthrough cases are believed to experience no symptoms or minimal symptoms and, therefore, are unlikely to undergo testing for COVID-19 and be reported to public health.<sup>3</sup> For this reason, the true number of vaccine breakthrough cases is unknown. The number of reported vaccine breakthrough cases must be interpreted within the context of the more than 2.9 million people in Oregon who have completed a primary COVID-19 vaccine series and the almost 1.7 million people who have received a booster dose.

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<sup>1</sup> The monthly summary, Figure 1, and Figure 2 use the date that cases are reported to Oregon Health Authority (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.

<sup>2</sup> This definition is consistent with the Centers for Disease Control and Prevention (CDC) definition, available here: <https://www.cdc.gov/vaccines/covid-19/downloads/COVID-vaccine-breakthrough-case-investigations-Protocol.pdf>.

<sup>3</sup> 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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## COVID-19 cases by vaccination status

### Monthly summary

During the month of June 2022, there were 45,843 cases of COVID-19 reported to OHA. Of these, 19,923 (43.5%) were unvaccinated, 25,907 (56.5%) were vaccine breakthrough cases, and 13 (0.0%) had an unknown vaccination status. Of all vaccine breakthrough cases in June, 10,644 (41.1%) were fully vaccinated and boosted. The median age of all vaccine breakthrough cases was 51 years. There were 334 (1.3%) breakthrough cases among residents of care facilities, senior living communities or other congregate living settings. There were 6,428 (24.8%) cases in persons 65 or older. There were 814 (3.1%) cases aged 12-17.

OHA publishes the most up-to-date information available about cases from the most recently completed calendar month. 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 three months.

**Table 1. COVID-19 cases by vaccine breakthrough status in the previous 3 months**

Month	Total cases	Cases with known vaccination status	Percent of cases with known vaccination status	Breakthrough cases	Percent breakthrough cases
April 2022	18,543	18,520	99.9	10,055	54.3
May 2022	44,328	44,309	100.0	23,353	52.7
June 2022	45,843	45,830	100.0	25,907	56.5

### Cumulative summary

Overall, 259,450 vaccine breakthrough cases have been identified in Oregon. Of these, 78,313 (30.2%) were fully vaccinated and boosted at the time of infection. The median age of breakthrough cases is 42 years (range: 5-108). There have been 3,541 (1.4%) breakthrough cases among residents of care facilities, senior living communities or other congregate living settings. 45,058 (17.4%) cases have been 65 or older. There have been a total of 15,542 (6%) cases aged 12-17.

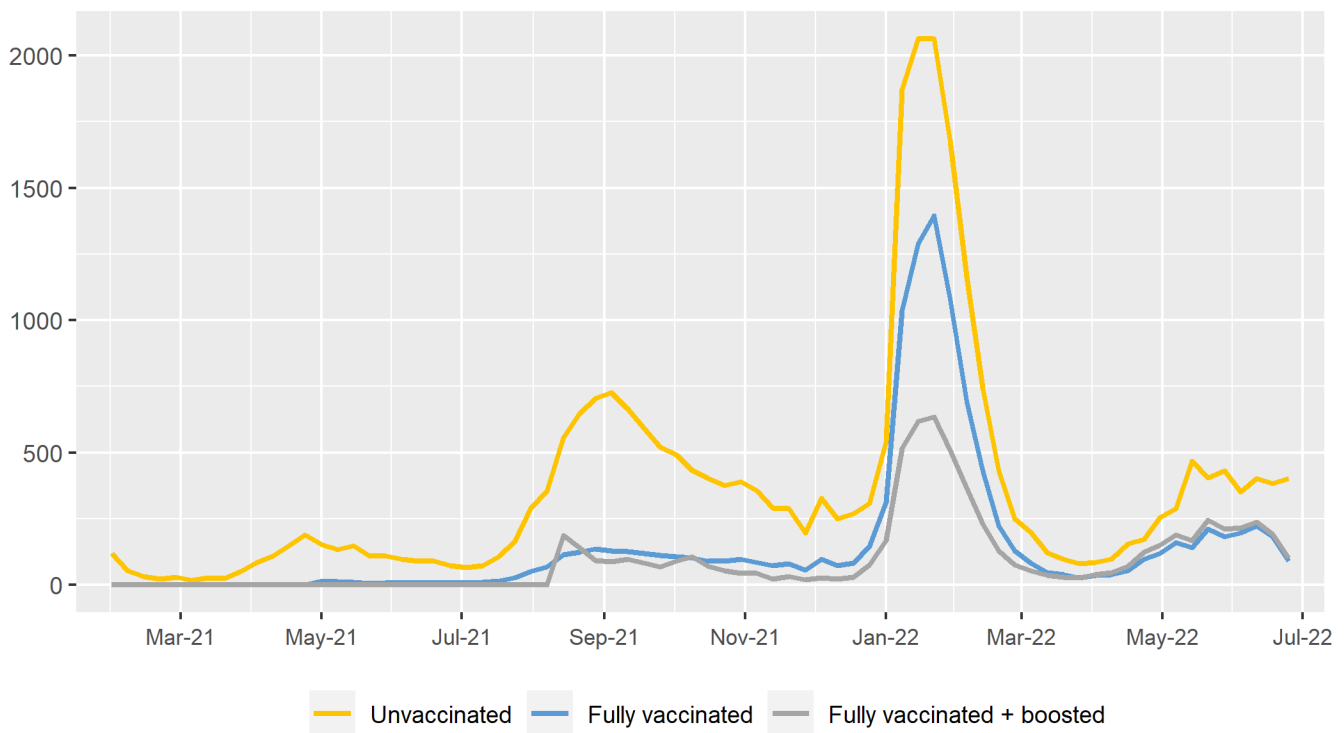
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The incidence of COVID-19 is much higher in unvaccinated<sup>4</sup> individuals than in vaccinated individuals (Figure 1). The rate of COVID-19 cases among unvaccinated individuals in June was more than twice the rate among those who were fully vaccinated and boosted. COVID-19 continues to circulate throughout Oregon. Vaccination, including boosting, remains the most effective tool to reduce the spread of COVID-19.

**Figure 1. Incident COVID-19 cases per 100,000 per week in adults, by vaccination status<sup>5</sup>**



<sup>4</sup> 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.

<sup>5</sup> Cases with unknown vaccination status were excluded from this figure.

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## 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).<sup>6</sup>

**Table 2. COVID-19 breakthrough cases by vaccine manufacturer and severity<sup>7</sup>**

Primary series vaccine manufacturer	Primary series completed	Cases	Hospitalizations	Deaths	Cases per 100,000 vaccinated
Pfizer	1,696,134	148,199	3,373	786	8,737.5
Moderna	984,724	77,697	2,251	483	7,890.2
Johnson & Johnson/Janssen	246,969	22,607	913	192	9,153.8

<sup>6</sup> 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.

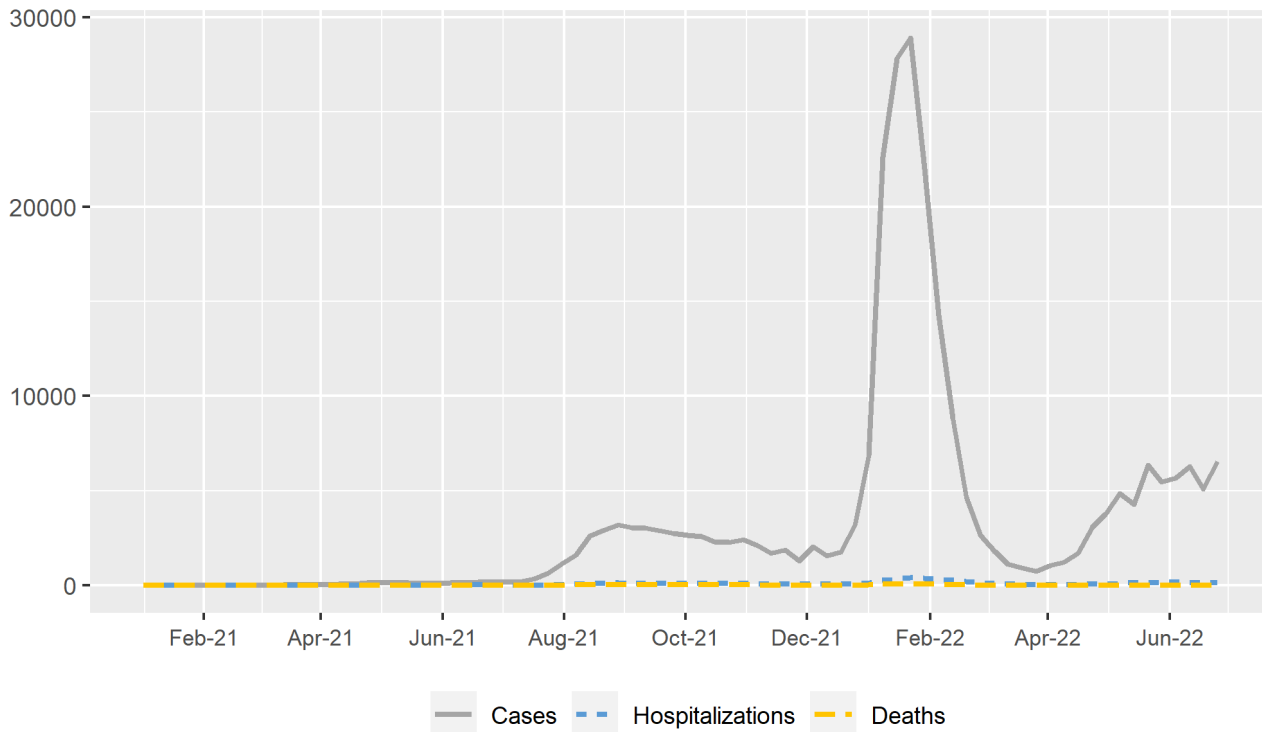
<sup>7</sup> Table 2 provides the number of cases per 100,000 vaccinated individuals by primary series vaccine manufacturer. Because this figure does not account for the time that each person has been fully vaccinated, it is not a true rate and should not be interpreted as such.

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



Individuals who are fully vaccinated and boosted have the lowest risk of severe illness and death.<sup>8</sup> Table 3 shows the total number of cases, hospitalizations, and deaths by vaccination status. An individual is considered fully vaccinated and boosted if they received an additional dose of any COVID-19 vaccine at least 5 months after completing a Pfizer or Moderna primary series or at least 2 months after completing a Johnson & Johnson initial dose. If a person has completed a primary series but has not received a valid booster at the time of infection, the individual is categorized as fully vaccinated.

<sup>8</sup> <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalizations-vaccination>.

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**Table 3. COVID-19 cases in adults, by vaccination status and severity<sup>9</sup>**

Case type	Cases	Hospitalizations	Deaths
Fully vaccinated + boosted	76,711	1,656	281
Fully vaccinated	156,187	4,833	1,180
Unvaccinated	294,701	16,020	4,134

To date, 2.6% of all known breakthrough cases have been hospitalized (n=6,814), and only 0.6% have died (n=1,468).<sup>10</sup> The median age of the people who have died is 80 (range: 23-108). 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 4, 5 and 6 provide detailed vaccine breakthrough severity data by age, race and ethnicity. The risk of both hospitalization and death increases with age.

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<sup>9</sup> Cases with unknown vaccination status are excluded from this table. This table also excludes unvaccinated cases prior to January 1, 2021. Based on vaccine rollout in Oregon, this approximates the first date that a breakthrough case could have occurred.

<sup>10</sup> 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 cases by age group and severity

Age group	Breakthrough cases	Breakthrough hospitalizations	Breakthrough deaths
0-9	258	1	0
10-19	22,991	73	0
20-29	45,997	287	3
30-39	49,157	405	7
40-49	44,037	411	22
50-59	36,407	724	75
60-69	29,044	1,348	215
70-79	19,743	1,692	384
80+	11,815	1,873	762
Total	259,450	6,814	1,468

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**Table 5. COVID-19 breakthrough case severity by race<sup>11</sup>**

<b>Race</b>	<b>Breakthrough cases</b>	<b>Breakthrough hospitalizations</b>	<b>Breakthrough deaths</b>
> 1 race	3,959	44	4
American Indian/Alaska Native	3,196	88	10
Asian	10,113	185	27
Black	5,287	191	29
Not Available	71,481	773	311
Other	22,624	453	103
Pacific Islander	318	10	2
White	142,472	5,070	982
Total	259,450	6,814	1,468

<sup>11</sup> 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 identified as "Other" race also self-identified as Hispanic or Latino.



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**Table 6. COVID-19 breakthrough case severity by ethnicity**

<b>Ethnicity</b>	<b>Breakthrough cases</b>	<b>Breakthrough hospitalizations</b>	<b>Breakthrough deaths</b>
Hispanic	23,474	397	46
Not Hispanic	140,767	4,835	900
Unknown	95,209	1,582	522
Total	259,450	6,814	1,468

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Table 7 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 expected as the proportion of the population which is fully vaccinated increases and may also be associated with waning immunity and the proportion of the population which has not received a booster dose.

**Table 7. COVID-19 deaths by month, by breakthrough case status**

<b>Month</b>	<b>Total COVID-19 deaths</b>	<b>Breakthrough deaths</b>	<b>Percent breakthrough deaths</b>
April 2021	121	6	5.0
May 2021	223	19	8.5
June 2021	117	15	12.8
July 2021	97	16	16.5
August 2021	605	134	22.1
September 2021	930	196	21.1
October 2021	658	175	26.6
November 2021	410	93	22.7
December 2021	341	80	23.5
January 2022	606	210	34.7
February 2022	635	242	38.1
March 2022	234	107	45.7
April 2022	83	29	34.9
May 2022	134	81	60.4
June 2022	109	57	52.3

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## COVID-19 variants

**Table 8. COVID-19 breakthrough cases associated with variants of concern<sup>12</sup>**

Overall, approximately 6.7% of positive molecular specimens in Oregon have been sequenced. Omicron is currently the dominant variant circulating in Oregon. 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	Breakthrough Cases
Omicron (B.1.1.529)	2,634
Delta (B.1.617.2)	2,554
Omicron (BA.1)	112
Omicron (BA.2)	636
Omicron (BA.2.12.1)	106
Omicron (BA.4)	12
Omicron (BA.5)	7

**Table 9. COVID-19 breakthrough cases associated with variants being monitored**

Subtype	Breakthrough Cases
Alpha (B.1.1.7)	154
Beta (B.1.351)	17

<sup>12</sup> As of September 29, 2021, 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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Subtype	Breakthrough Cases
Gamma (P.1)	63
Epsilon (B.1.427/B.1.429)	40
Iota (B.1.526)	31

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## Breakthrough cases by county

Figure 3 and Table 10 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>.

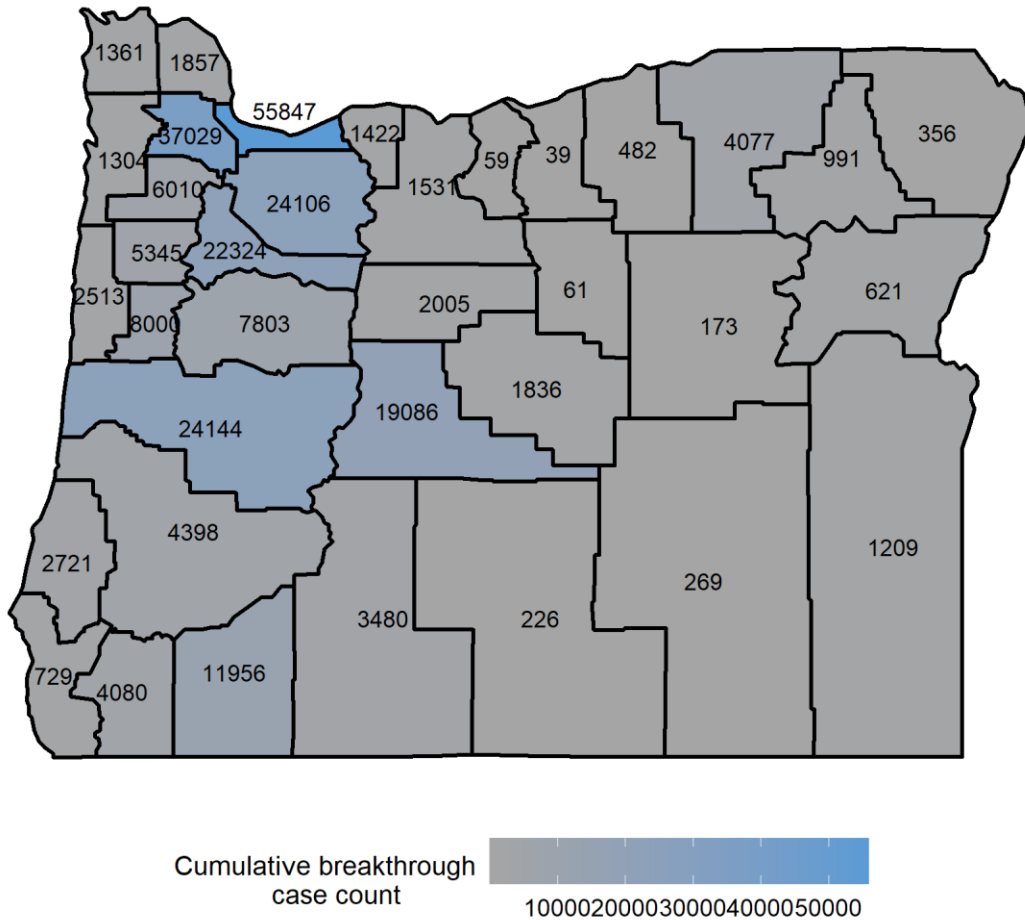
Table 10 provides both cumulative and monthly data. The “Cases in previous month” column references the number of vaccine breakthrough cases newly reported during the month of June. This count may not reflect the full number of vaccine breakthrough cases that occurred during this time, as breakthrough case ascertainment may lag up to several weeks.

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Figure 3. Map of COVID-19 breakthrough case cumulative counts, by county of residence<sup>13</sup>



<sup>13</sup> Counties that have a total of fewer than 10 cases will appear grey without a data label.

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Table 10. COVID-19 breakthrough cases by county of residence<sup>14</sup>

County	Cumulative cases	Cases in previous month
Baker	621	52
Benton	8000	874
Clackamas	24106	2438
Clatsop	1361	144
Columbia	1857	179
Coos	2721	297
Crook	1836	213
Curry	729	116
Deschutes	19086	1864
Douglas	4398	479
Gilliam	39	1-9
Grant	173	11
Harney	269	14
Hood River	1422	137
Jackson	11956	1139
Jefferson	2005	124
Josephine	4080	303
Klamath	3480	430

<sup>14</sup> Counties that have a total of fewer than 10 cases will be reported as 1-9 cases.

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<b>County</b>	<b>Cumulative cases</b>	<b>Cases in previous month</b>
Lake	226	17
Lane	24144	2180
Lincoln	2513	217
Linn	7803	594
Malheur	1209	57
Marion	22324	2063
Morrow	482	32
Multnomah	55847	6038
Polk	5345	550
Sherman	59	1-9
Tillamook	1304	149
Umatilla	4077	227
Union	991	52
Wallowa	356	16
Wasco	1531	145
Washington	37029	4233
Wheeler	61	1-9
Yamhill	6010	509