

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



## Weekly Vaccine Breakthrough Case Report - March 10, 2022

### Background

Data for the weekly breakthrough case report will include data through the most recent Sunday and the report will be published on Thursdays.<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> Vaccine breakthrough cases that result in hospitalization or death are reported to Centers for Disease Control and Prevention (CDC).

This report includes only those vaccine breakthrough cases which 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.<sup>3</sup>

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>4</sup> 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 2.8 million people in Oregon who have completed a primary COVID-19 vaccine series and the more than 1.5 million people in Oregon who have received a booster dose.

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<sup>1</sup> 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.

<sup>2</sup> 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>.

<sup>3</sup> As case counts increased dramatically during the Omicron surge, our database was unable to match the entire volume of reported cases. Oregon Health Authority (OHA) is working towards alternative methods to identify vaccination status for all reported cases in a timely manner regardless of surge.

<sup>4</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*.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



## COVID-19 cases by vaccination status

### Weekly summary

During the week of February 27–March 5, there were 4,104 cases of COVID-19 reported to public health. Of these, 2,436 (59.4%) were unvaccinated, 1,667 (40.6%) were vaccine breakthrough cases, and 1 had an unknown vaccination status. Of all vaccine breakthrough cases, 776 (46.6%) were fully vaccinated and boosted. The median age of all vaccine breakthrough cases was 55 years. There were 24 (1.4%) breakthrough cases among residents of care facilities, senior living communities or other congregate living settings. There were 427 (25.6%) cases in persons 65 or older. There were 61 (3.7%) 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 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	Cases with known vaccination status	Percent of cases with known vaccination status	Breakthrough cases	Percent breakthrough cases
2022-01-29	44,380	44,345	99.9	21,993	49.6
2022-02-05	29,396	29,302	99.7	14,270	48.7
2022-02-12	18,060	18,020	99.8	8,828	49.0
2022-02-19	9,875	9,859	99.8	4,649	47.2
2022-02-26	5,583	5,573	99.8	2,637	47.3
2022-03-05	4,104	4,103	100.0	1,667	40.6

### Cumulative summary

Overall, there have been 194,613 vaccine breakthrough cases identified in Oregon. Of all vaccine breakthrough cases, 44,883 (23.1%) were fully vaccinated and boosted at the time of infection. The median age of breakthrough cases is 41 years (range: 5-108). There were 2,631 (1.4%) breakthrough

# COVID-19 Breakthrough Report

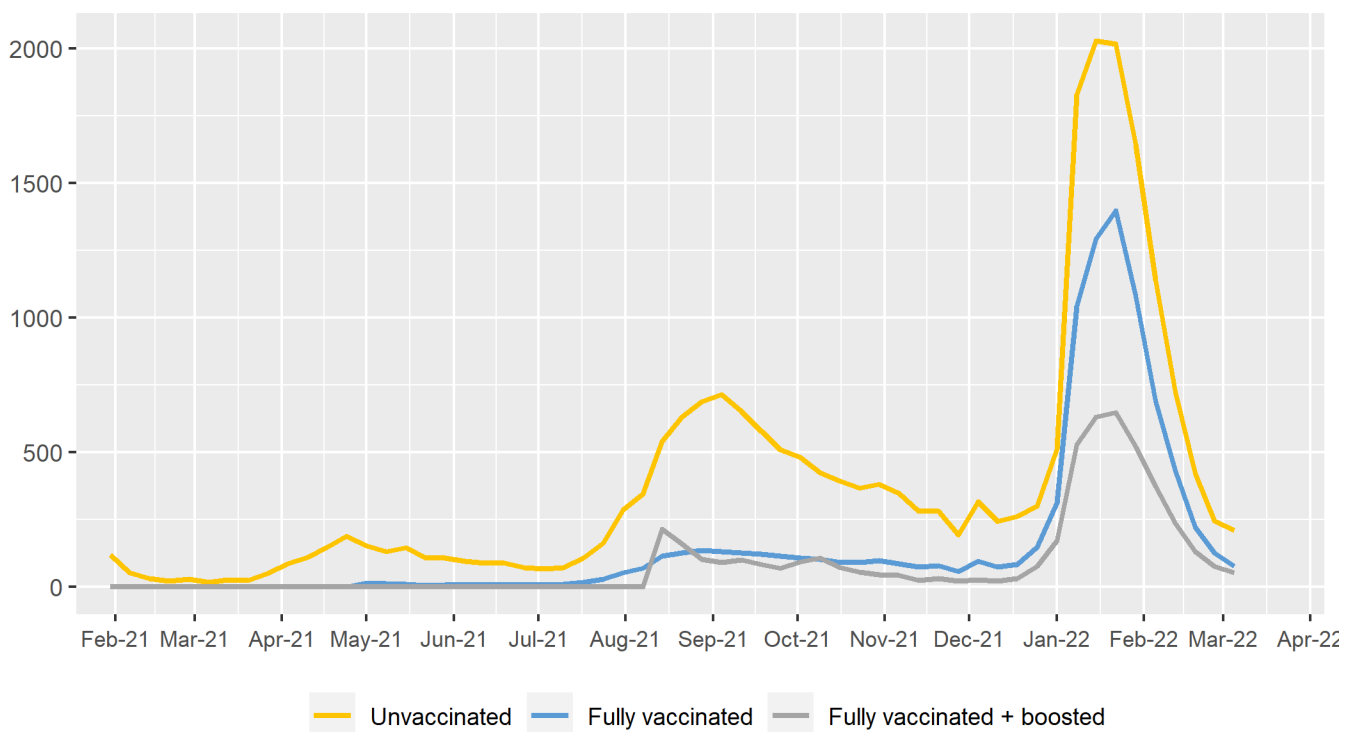
Oregon's Weekly Surveillance Summary



cases among residents of care facilities, senior living communities or other congregate living settings. 30,003 (15.4%) cases were 65 or older. There have been a total of 13,044 (6.7%) cases aged 12-17.

Cases of COVID-19 are much more common in unvaccinated<sup>5</sup> individuals than in vaccinated individuals (Figure 1). The rate of COVID-19 cases among unvaccinated individuals in the most recent week was approximately 2.8 times the rate of COVID-19 cases among those who are fully vaccinated and 4 times the rate of COVID-19 cases among those who are fully vaccinated and boosted. Community levels of COVID-19<sup>6</sup> remain high throughout much of the state. 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>7</sup>**



<sup>5</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>6</sup> <https://www.cdc.gov/coronavirus/2019-ncov/science/community-levels.html>.

<sup>7</sup> Cases with unknown vaccination status were excluded from this figure.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



## 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>8</sup>

**Table 2. COVID-19 Breakthrough cases by vaccine manufacturer and severity<sup>9</sup>**

Primary series vaccine manufacturer	Primary series completed	Cases	Hospitalizations	Deaths	Cases per 100,000 vaccinated
Pfizer	1,657,075	115,233	2,442	552	6,954.0
Moderna	969,795	60,315	1,652	332	6,219.4
Johnson & Johnson/Janssen	244,222	19,025	727	146	7,790.0

<sup>8</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.

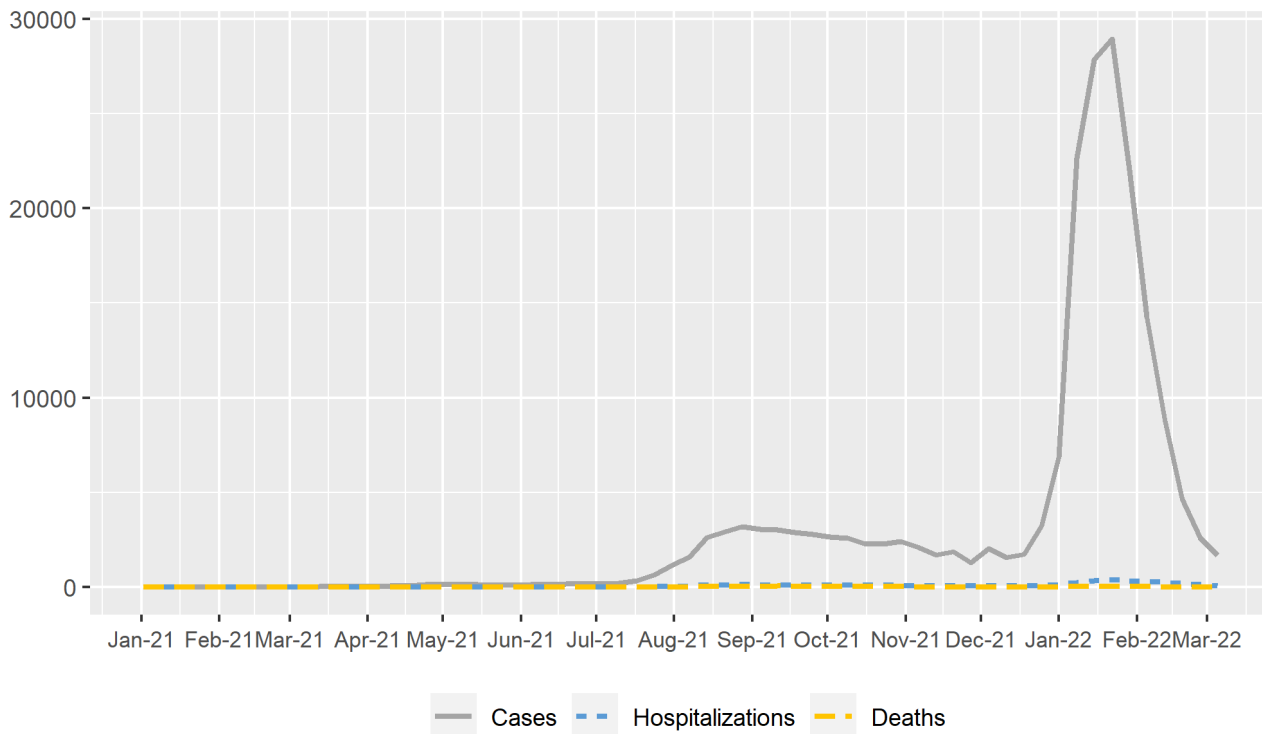
<sup>9</sup> Table 2 provides the number of cases per 100,000 vaccinated individuals by primary series vaccine manufacturer. Because this figure does not account for the time that each person has been fully vaccinated, it is not a true rate and should not be interpreted as such.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



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



Individuals who are fully vaccinated and boosted have an even lower risk of severe illness and death.<sup>10</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>10</sup> <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalizations-vaccination>.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



**Table 3. COVID-19 breakthrough cases in adults, by vaccination status and severity since January 2021<sup>11</sup>**

Case type	Cases	Hospitalizations	Deaths
Fully vaccinated + boosted	44,005	769	96
Fully vaccinated	137,301	4,017	934
Unvaccinated	257,138	14,348	3,524

To date, 2.5% of all known breakthrough cases have been hospitalized (n=4,826), and only 0.5% have died (n=1030).<sup>12</sup> The median age of the people who have died is 80 (range: 23-104). 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. Both the risk of hospitalization and death increase with age.

**Table 4. COVID-19 breakthrough cases by age group and severity**

Age group	Breakthrough cases	Breakthrough hospitalizations	Breakthrough deaths
0-9	154	1	0
10-19	19,123	45	0
20-29	35,996	190	2
30-39	37,578	269	5

<sup>11</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>12</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.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



<b>Age group</b>	<b>Breakthrough cases</b>	<b>Breakthrough hospitalizations</b>	<b>Breakthrough deaths</b>
40-49	33,413	283	13
50-59	27,121	518	47
60-69	20,658	1,010	158
70-79	12,879	1,218	278
80+	7,691	1,292	527
<b>Total</b>	<b>194,613</b>	<b>4,826</b>	<b>1,030</b>

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



**Table 5. COVID-19 breakthrough case severity by race<sup>13</sup>**

<b>Race</b>	<b>Breakthrough cases</b>	<b>Breakthrough hospitalizations</b>	<b>Breakthrough deaths</b>
> 1 race	1,364	33	2
American Indian/Alaska Native	2,479	68	8
Asian	6,613	118	20
Black	3,959	123	22
Not Available	56,890	623	218
Other	18,499	330	82
Pacific Islander	246	6	1
White	104,563	3,525	677
Total	194,613	4,826	1,030

**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	19,198	288	26
Not Hispanic	100,470	3,210	587
Unknown	74,945	1,328	417
Total	194,613	4,826	1,030

<sup>13</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 identify as "Other" race also self-identify as Hispanic or Latino.



# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



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 received a booster dose.

**Table 7. COVID-19 deaths by month, by breakthrough case status<sup>14</sup>**

Month	Total COVID-19 deaths	Breakthrough deaths	Percent breakthrough deaths
March 2021	126	4	3.2
April 2021	121	6	5.0
May 2021	222	19	8.6
June 2021	116	15	12.9
July 2021	95	16	16.8
August 2021	599	134	22.4
September 2021	918	197	21.5
October 2021	644	175	27.2
November 2021	398	93	23.4
December 2021	336	80	23.8
January 2022	469	163	34.8
February 2022	302	121	40.1

<sup>14</sup> Data in Table 7 will be updated monthly and will reflect cases from the previous month.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



## COVID-19 variants

**Table 8. COVID-19 breakthrough cases associated with variants of concern<sup>15</sup>**

Overall, approximately 6.1% of positive molecular specimens in Oregon have been sequenced. Omicron 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	Breakthrough Cases
Omicron (B.1.1.529)	2,077
Delta (B.1.617.2)	2,371

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

Subtype	Breakthrough Cases
Alpha (B.1.1.7)	153
Beta (B.1.351)	17
Gamma (P.1)	63
Epsilon (B.1.427/B.1.429)	40
Iota (B.1.526)	30

<sup>15</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.



# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



**Table 10. COVID-19 breakthrough cases by county of residence<sup>17</sup>**

<b>County</b>	<b>Cumulative cases</b>	<b>Cases in previous week</b>
Baker	538	1-9
Benton	5829	55
Clackamas	17560	133
Clatsop	1029	1-9
Columbia	1341	20
Coos	2130	20
Crook	1433	19
Curry	536	11
Deschutes	14489	121
Douglas	3487	43
Gilliam	35	0
Grant	150	0
Harney	231	1-9
Hood River	1112	25
Jackson	9726	95
Jefferson	1712	12
Josephine	3420	51
Klamath	2805	28

<sup>17</sup> Counties that have a total of fewer than 10 cases will be reported as 1-9 cases.

# COVID-19 Breakthrough Report

Oregon's Weekly Surveillance Summary



County	Cumulative cases	Cases in previous week
Lake	189	1-9
Lane	18726	186
Lincoln	2042	21
Linn	6336	57
Malheur	1109	1-9
Marion	17987	103
Morrow	431	1-9
Multnomah	38229	303
Polk	4169	31
Sherman	46	0
Tillamook	964	1-9
Umatilla	3657	15
Union	881	1-9
Wallowa	323	1-9
Wasco	1189	12
Washington	25923	234
Wheeler	56	0
Yamhill	4793	36