

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: December 29, 2021

Breakthrough cases are U.S. residents with a SARS-CoV2 RNA or antigen detected on respiratory specimen collected greater than or equal to 14 days after completing the primary series of an FDA authorized COVID-19 vaccine (i.e., complete vaccination). Complete vaccination is two doses of the Pfizer or Moderna vaccine or one dose of the Johnson and Johnson (Janssen) vaccine.

Exclusion Criteria: The persons who were recently positive for COVID-19, defined as a positive <45 days prior to the current positive test under investigations were excluded.

Given the large number of people being vaccinated in the United States and the high level of ongoing SARS-CoV-2 circulation, thousands of symptomatic vaccine breakthrough cases are expected, even if the vaccines remain as effective as demonstrated during the clinical trials.

Following data have been obtained by matching COVID-19 cases information from Trisano (SNHD's surveillance system) to immunization records from Nevada WebIZ (Immunization database). Data is considered preliminary and subject to change.

Figure 1: Trends in Breakthrough Cases, Deaths and Hospitalizations

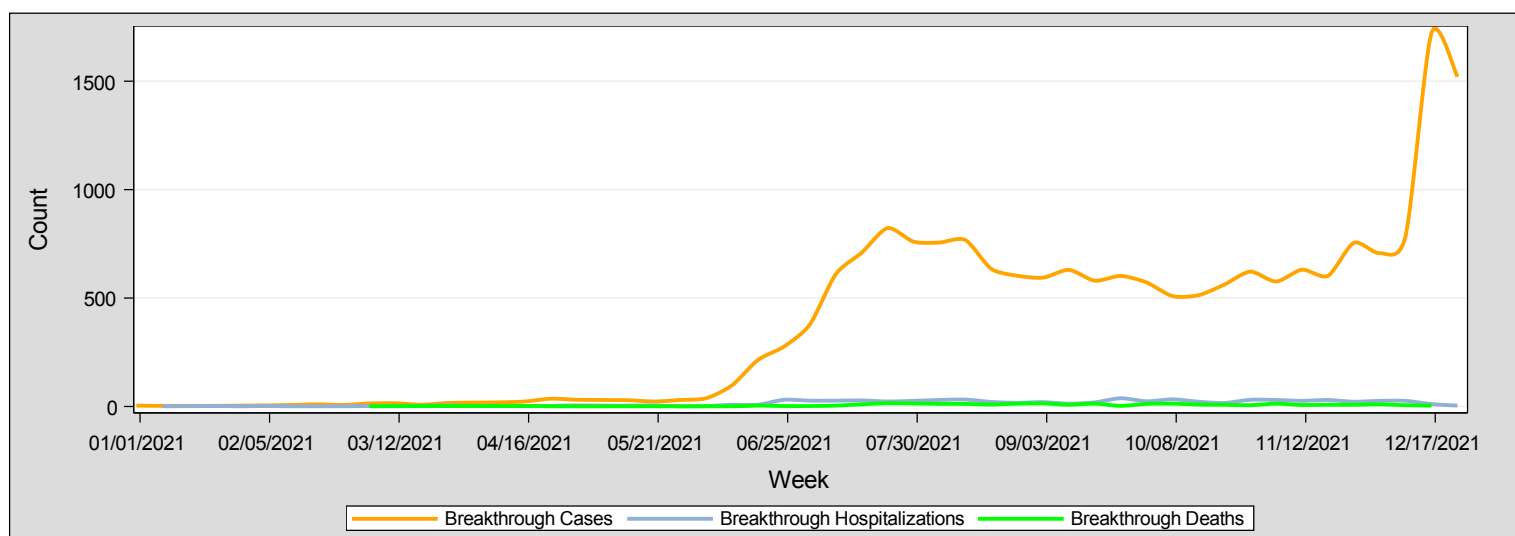


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

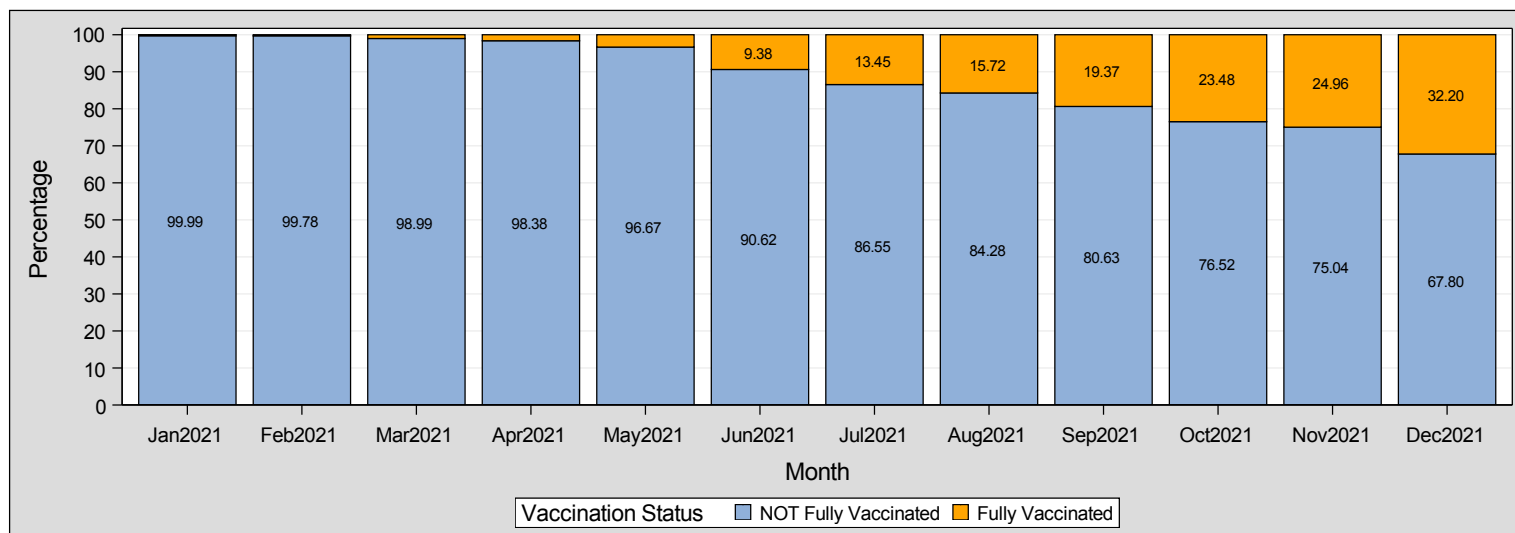


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	19501	100
Age (in years)		
5-17	526	3
18-24	1471	8
25-49	8974	46
50-64	4715	24
65+	3815	20
Gender		
Male	8661	44
Female	10757	55
Unknown	83	0
Race/Ethnicity		
Hispanic	3962	20
White	7630	39
Black	1374	7
API	2187	11
AEA	26	0
Other	1018	5
Unknown	3304	17
Travel History		
Yes	1465	8
No	8390	43
Unknown	9646	49
Hospitalization		
Yes	845	4
No	9619	49
Unknown	9037	46
Death		
Yes	249	1
No	2391	12
Unknown	16861	86
Vaccine Type		
Pfizer	14057	72
Unknown	173	1
Moderna	5234	27
Janssen	37	0
Underlying Conditions		
Yes	4458	23
No	15043	77

Table 2: Breakthrough Case Rates

Fully Vaccinated Population*	Vaccinated Cases	Unvaccinated Population	Unvaccinated Cases	Vaccinated Case Rate per 100K population	Unvaccinated Case Rate per 100K population
1181406	19501	1136768	344184	1651	30277

* Please note that the numbers reported for fully vaccinated in the above table may not reflect the total number of completed doses reported on the SNHD dashboard. The CDC considers people to be fully vaccinated 2 weeks after their second dose in a 2-dose series, such as the Pfizer or Moderna vaccines, or 2 weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.

Table 3: Population Characteristics of COVID-19 Breakthrough Hospitalizations

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	845	100
Age (in years)		
5-17	1	0
18-24	6	1
25-49	77	9
50-64	142	17
65+	619	73
Gender		
Male	482	57
Female	362	43
Unknown	1	0
Race/Ethnicity		
Hispanic	113	13
White	498	59
Black	85	10
API	72	9
AEA	2	0
Other	23	3
Unknown	52	6
Travel History		
Yes	45	5
No	441	52
Unknown	359	42
Death		
Yes	219	26
No	135	16
Unknown	491	58
Vaccine Type		
Pfizer	560	66
Unknown	20	2
Moderna	264	31
Janssen	1	0
Underlying Conditions		
Yes	571	68
No	274	32

Table 4: Variants of Concern (VOC) among Breakthrough cases, hospitalizations and deaths

Variants of concern (VOC)	Breakthrough Cases	Percent(%) of Breakthrough Cases	Breakthrough Hospitalizations	Percent(%) of Breakthrough Hospitalizations	Breakthrough Deaths	Percent(%) of Breakthrough Deaths
Alpha	34	4	1	3	1	7
Delta	893	94	34	92	12	86
Epsilon	4	0	2	5	1	7
Gamma	15	2
Omicron	4	0

* Please note that only limited number of specimens are sent for sequencing of VOCs compared to total number of COVID-19 cases/breakthrough cases.

Table 5: Population Characteristics of COVID-19 Breakthrough Deaths

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	249	100
Age (in years)		
25-49	8	3
50-64	25	10
65+	216	87
Gender		
Male	162	65
Female	87	35
Race/Ethnicity		
Hispanic	29	12
White	170	68
Black	28	11
API	19	8
AEA	1	0
Other	1	0
Unknown	1	0
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	5
Alpha	1	0
Unknown	235	94
Hospitalization		
Yes	219	88
Unknown	23	9
No	7	3
Vaccine Type		
Pfizer	180	72
Unknown	5	2
Moderna	64	26
Underlying Conditions		
Yes	136	55
No	113	45

Table 5: Breakthrough Death Rates

Fully Vaccinated Population	Vaccinated Deaths	Unvaccinated Population	Unvaccinated Deaths	Vaccinated Death Rate per 100K population	Unvaccinated Death Rate per 100K population
1181406	249	1136768	6202	21	546

* Please note that the numbers reported for fully vaccinated in the above table may not reflect the total number of completed doses reported on the SNHD dashboard. The CDC considers people to be fully vaccinated 2 weeks after their second dose in a 2-dose series, such as the Pfizer or Moderna vaccines, or 2 weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.

Table 6: Breakdown of COVID-19 Breakthrough Hospitalizations according to Underlying conditions

Variable	Outcome	N	%
Underlying Medical Condition	Yes	571	68
	No	274	32
Hypertension	Yes	362	N/A
Immunocompromised	Yes	36	N/A
Chronic Heart Disease	Yes	180	N/A
Chronic Liver Disease	Yes	15	N/A
Chronic Kidney Disease	Yes	109	N/A
Diabetes	Yes	231	N/A
Neurologic/Neurodevelopmental	Yes	55	N/A
Chronic Lung Disease	Yes	161	N/A
Historically Healthy	Yes	77	N/A

Table 7: Breakdown of COVID-19 Breakthrough Deaths according to Underlying conditions

Variable	Outcome	N	%
Underlying Medical Condition	Yes	136	55
	No	113	45
Hypertension	Yes	97	N/A
Immunocompromised	Yes	12	N/A
Chronic Heart Disease	Yes	48	N/A
Chronic Liver Disease	Yes	3	N/A
Chronic Kidney Disease	Yes	35	N/A
Diabetes	Yes	59	N/A
Neurologic/Neurodevelopmental	Yes	12	N/A
Chronic Lung Disease	Yes	40	N/A
Historically Healthy	Yes	5	N/A

- Notes:**
- * White, Black, Asian, and AEA are non-Hispanic. AEA=American Indian/Eskimos/Alaskan Natives & API=Asian Pacific Islander
 - * The report does not include breakthrough hospitalizations from State approved facilities as State is responsible for their investigation.
 - * The breakdown of underlying conditions are not mutually exclusive (i.e., a person can have more than one risk factor).