

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: December 9, 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

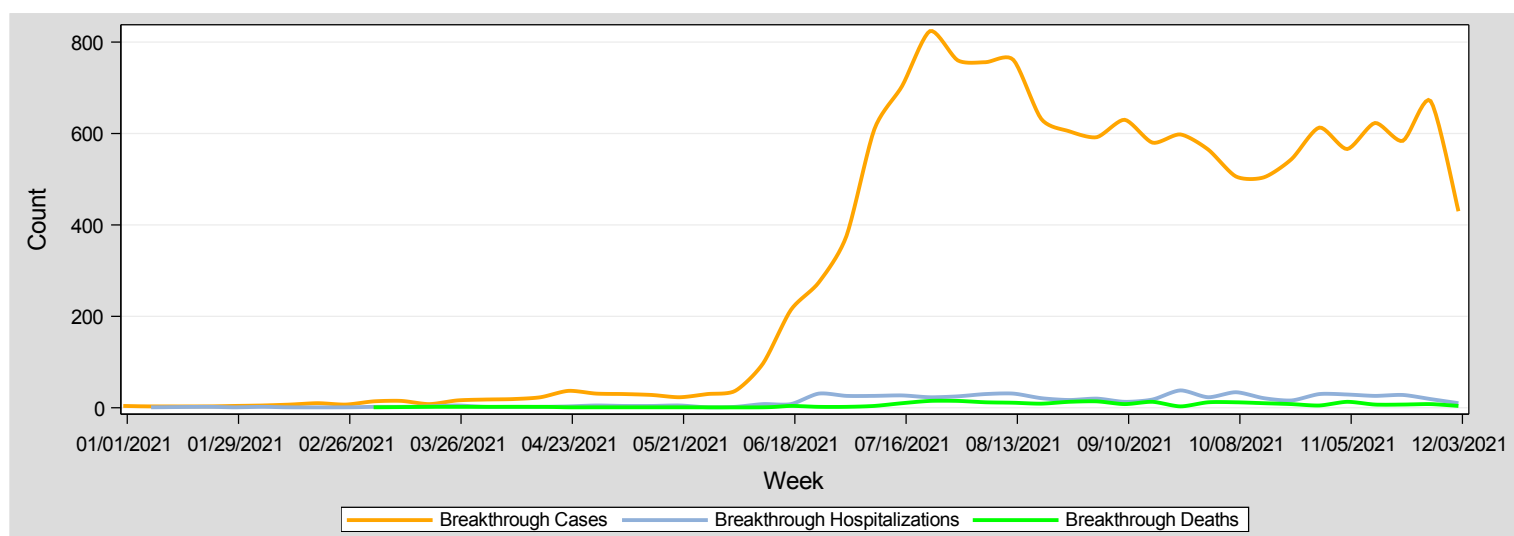


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

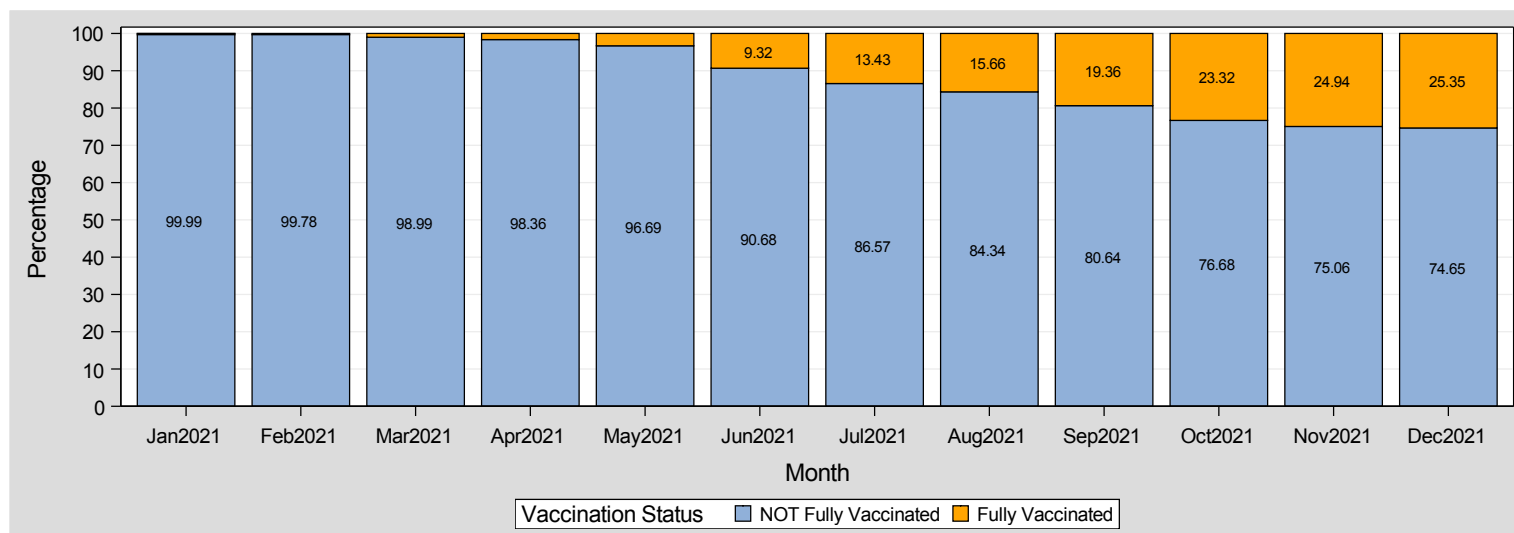


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	14990	100
Age (in years)		
5-17	360	2
18-24	948	6
25-49	6576	44
50-64	3763	25
65+	3343	22
Gender		
Male	6721	45
Female	8201	55
Unknown	68	0
Race/Ethnicity		
Hispanic	3086	21
White	6010	40
Black	1029	7
API	1692	11
AEA	58	0
Other	651	4
Unknown	2464	16
Travel History		
Yes	1274	8
No	7180	48
Unknown	6536	44
Hospitalization		
Yes	767	5
No	8256	55
Unknown	5967	40
Death		
Yes	231	2
No	2212	15
Unknown	12547	84
Vaccine Type		
Pfizer	10921	73
Unknown	133	1
Moderna	3924	26
Janssen	12	0
Underlying Conditions		
Yes	3910	26
No	11080	74

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
1139407	14990	1178767	333686	1316	28308

* 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>	767	100
Age (in years)		
5-17	1	0
18-24	4	1
25-49	72	9
50-64	125	16
65+	565	74
Gender		
Male	445	58
Female	321	42
Unknown	1	0
Race/Ethnicity		
Hispanic	104	14
White	446	58
Black	77	10
API	67	9
AEA	5	1
Other	22	3
Unknown	46	6
Travel History		
Yes	40	5
No	404	53
Unknown	323	42
Death		
Yes	203	26
No	132	17
Unknown	432	56
Vaccine Type		
Pfizer	511	67
Unknown	18	2
Moderna	237	31
Janssen	1	0
Underlying Conditions		
Yes	518	68
No	249	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	886	94	33	92	12	86
Epsilon	4	0	2	6	1	7
Gamma	15	2

* 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>	231	100
Age (in years)		
25-49	7	3
50-64	21	9
65+	203	88
Gender		
Male	151	65
Female	80	35
Race/Ethnicity		
Hispanic	27	12
White	156	68
Black	27	12
API	17	7
AEA	2	1
Other	1	0
Unknown	1	0
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	5
Alpha	1	0
Unknown	217	94
Hospitalization		
Yes	203	88
Unknown	20	9
No	8	3
Vaccine Type		
Pfizer	171	74
Unknown	4	2
Moderna	56	24
Underlying Conditions		
Yes	127	55
No	104	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
1139407	231	1178767	6051	20	513

* 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	518	68
	No	249	32
Hypertension	Yes	326	N/A
Immunocompromised	Yes	33	N/A
Chronic Heart Disease	Yes	159	N/A
Chronic Liver Disease	Yes	14	N/A
Chronic Kidney Disease	Yes	97	N/A
Diabetes	Yes	209	N/A
Neurologic/Neurodevelopmental	Yes	51	N/A
Chronic Lung Disease	Yes	140	N/A
Historically Healthy	Yes	69	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	127	55
	No	104	45
Hypertension	Yes	89	N/A
Immunocompromised	Yes	12	N/A
Chronic Heart Disease	Yes	46	N/A
Chronic Liver Disease	Yes	3	N/A
Chronic Kidney Disease	Yes	31	N/A
Diabetes	Yes	56	N/A
Neurologic/Neurodevelopmental	Yes	11	N/A
Chronic Lung Disease	Yes	36	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).