

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: December 2, 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

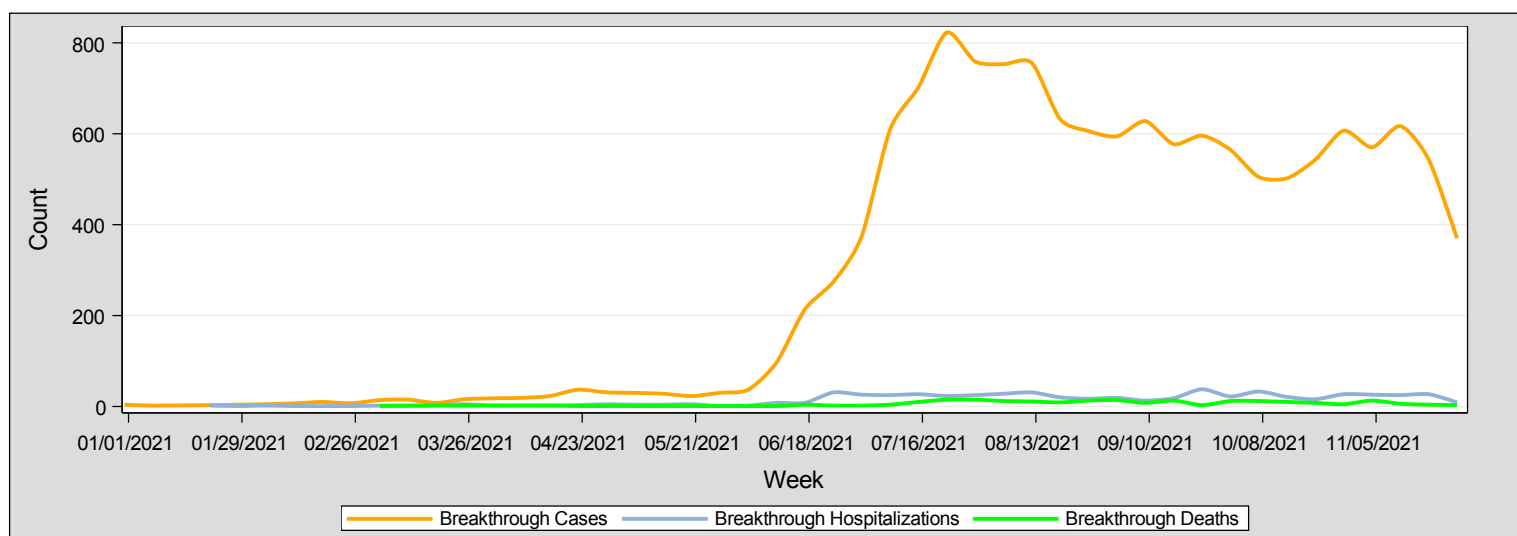


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

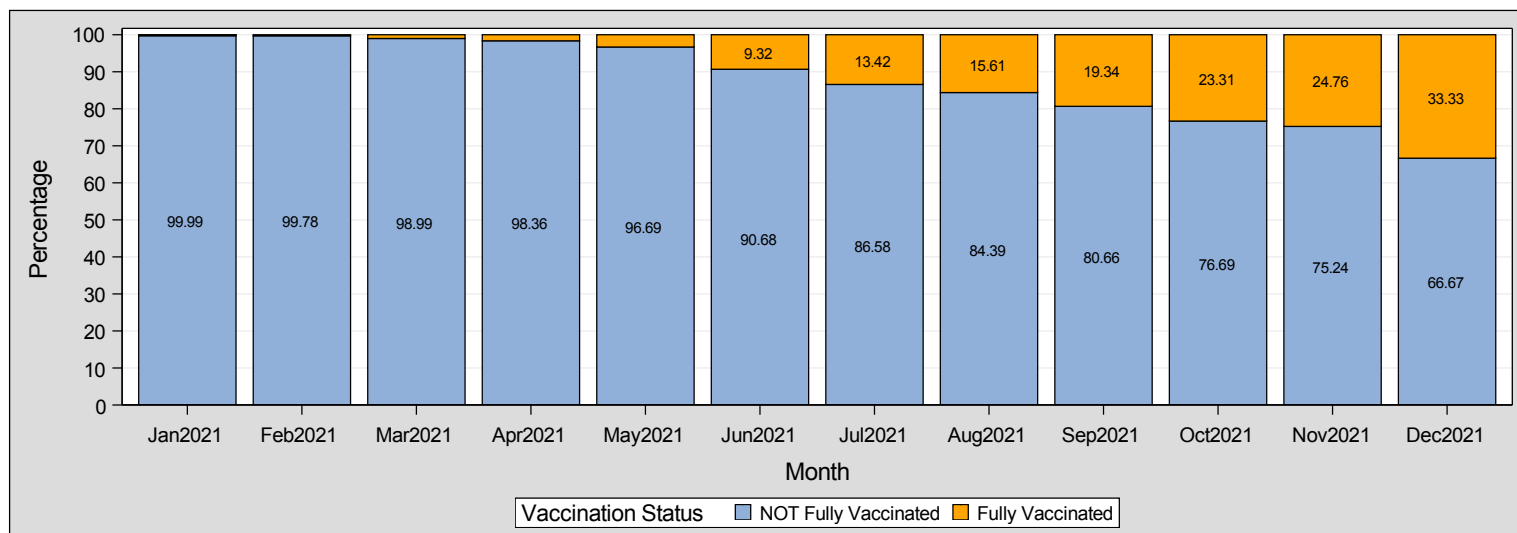


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	14187	100
Age (in years)		
5-17	325	2
18-24	883	6
25-49	6170	43
50-64	3583	25
65+	3226	23
Gender		
Male	6386	45
Female	7735	55
Unknown	66	0
Race/Ethnicity		
Hispanic	2893	20
White	5688	40
Black	972	7
API	1586	11
AEA	24	0
Other	615	4
Unknown	2409	17
Travel History		
Yes	1201	8
No	6745	48
Unknown	6241	44
Hospitalization		
Yes	731	5
No	7772	55
Unknown	5684	40
Death		
Yes	218	2
No	2148	15
Unknown	11821	83
Vaccine Type		
Pfizer	10371	73
Unknown	119	1
Moderna	3686	26
Janssen	11	0
Underlying Conditions		
Yes	3680	26
No	10507	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
1145939	14187	1172235	330982	1238	28235

* 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>	731	100
Age (in years)		
5-17	1	0
18-24	4	1
25-49	68	9
50-64	120	16
65+	538	74
Gender		
Male	424	58
Female	306	42
Unknown	1	0
Race/Ethnicity		
Hispanic	100	14
White	427	58
Black	73	10
API	65	9
AEA	3	0
Other	20	3
Unknown	43	6
Travel History		
Yes	40	5
No	382	52
Unknown	309	42
Death		
Yes	192	26
No	127	17
Unknown	412	56
Vaccine Type		
Pfizer	487	67
Unknown	18	2
Moderna	225	31
Janssen	1	0
Underlying Conditions		
Yes	484	66
No	247	34

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	8
Delta	884	94	33	92	11	85
Epsilon	4	0	2	6	1	8
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>	218	100
Age (in years)		
25-49	7	3
50-64	21	10
65+	190	87
Gender		
Male	140	64
Female	78	36
Race/Ethnicity		
Hispanic	27	12
White	149	68
Black	26	12
API	14	6
AEA	1	0
Unknown	1	0
Variant of concern (VOC)		
Epsilon	1	0
Delta	11	5
Alpha	1	0
Unknown	205	94
Hospitalization		
Yes	192	88
Unknown	19	9
No	7	3
Vaccine Type		
Pfizer	160	73
Unknown	4	2
Moderna	54	25
Underlying Conditions		
Yes	115	53
No	103	47

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
1145939	218	1172235	5995	19	511

* 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	484	66
	No	247	34
Hypertension	Yes	303	N/A
Immunocompromised	Yes	32	N/A
Chronic Heart Disease	Yes	146	N/A
Chronic Liver Disease	Yes	14	N/A
Chronic Kidney Disease	Yes	85	N/A
Diabetes	Yes	194	N/A
Neurologic/Neurodevelopmental	Yes	49	N/A
Chronic Lung Disease	Yes	125	N/A
Historically Healthy	Yes	67	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	115	53
	No	103	47
Hypertension	Yes	78	N/A
Immunocompromised	Yes	11	N/A
Chronic Heart Disease	Yes	39	N/A
Chronic Liver Disease	Yes	3	N/A
Chronic Kidney Disease	Yes	26	N/A
Diabetes	Yes	50	N/A
Neurologic/Neurodevelopmental	Yes	11	N/A
Chronic Lung Disease	Yes	30	N/A
Historically Healthy	Yes	4	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).