

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: January 20, 2022

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

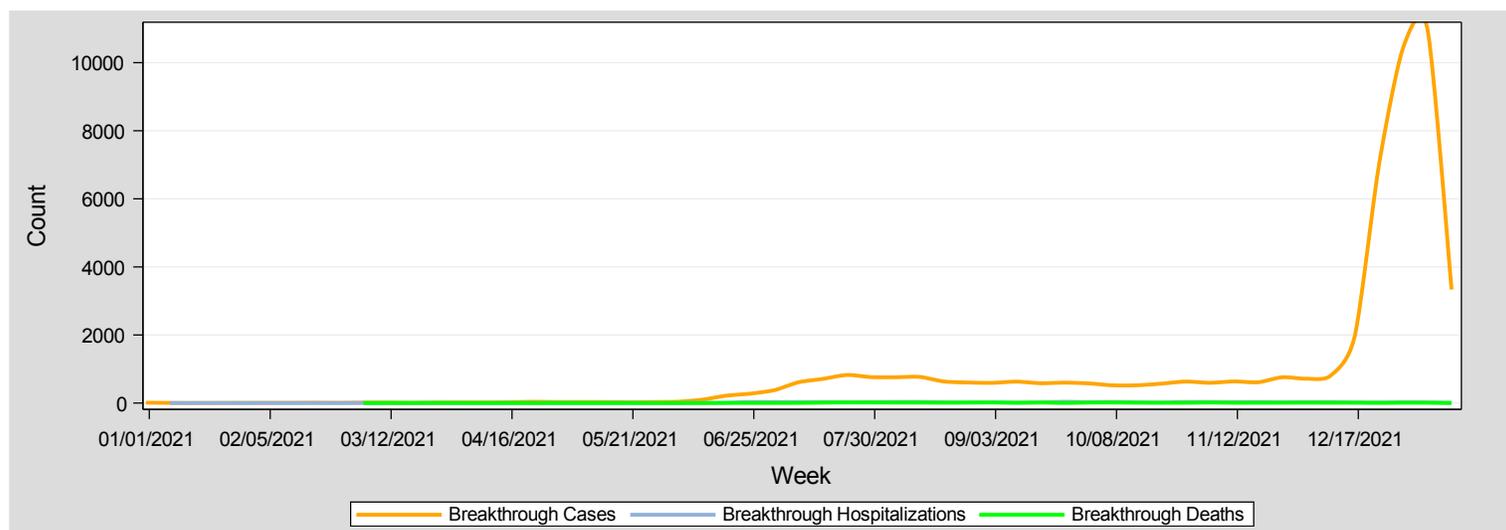


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

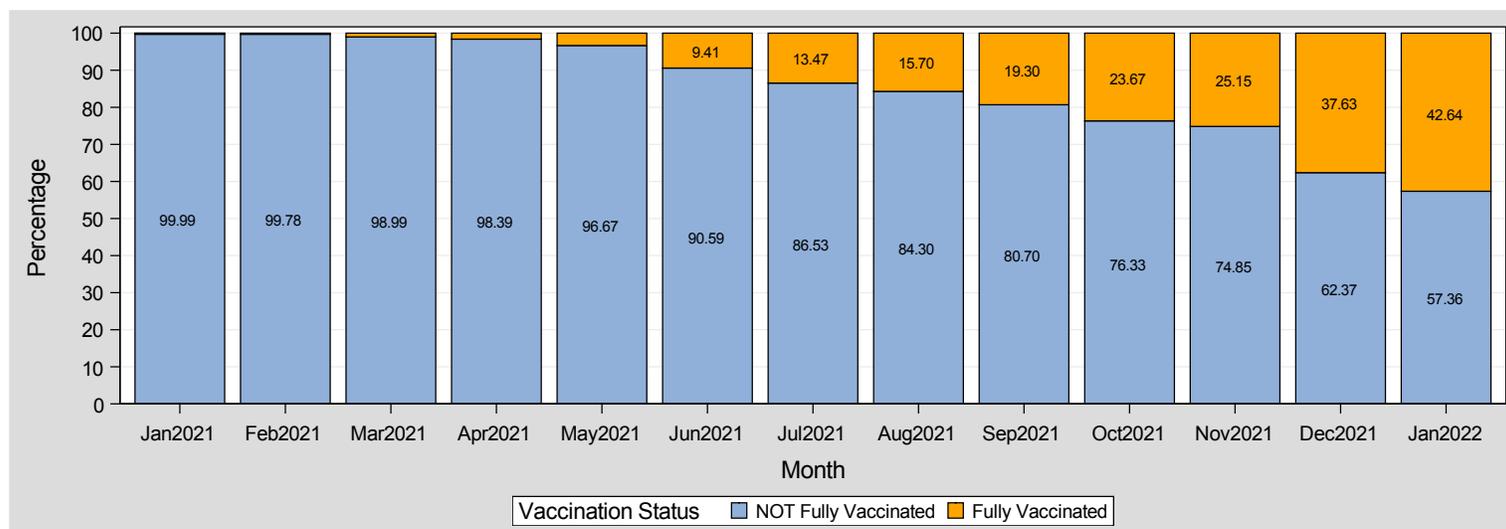


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	50443	100
Age (in years)		
5-17	2875	6
18-24	5132	10
25-49	23967	48
50-64	11231	22
65+	7238	14
Gender		
Male	21393	42
Female	28683	57
Unknown	367	1
Race/Ethnicity		
Hispanic	10014	20
White	15068	30
Black	3735	7
API	6013	12
AEA	35	0
Other	4875	10
Unknown	10703	21
Travel History		
Yes	1759	3
No	10629	21
Unknown	38055	75
Hospitalization		
Yes	919	2
No	12049	24
Unknown	37475	74
Death		
Yes	282	1
No	2913	6
Unknown	47248	94
Vaccine Type		
Pfizer	35896	71
Unknown	383	1
Moderna	13971	28
Janssen	193	0
Underlying Conditions		
Yes	5371	11
No	45072	89

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
1215472	50443	1102702	393149	4150	35653

* 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>	919	100
Age (in years)		
5-17	1	0
18-24	8	1
25-49	83	9
50-64	162	18
65+	665	72
Gender		
Male	519	56
Female	399	43
Unknown	1	0
Race/Ethnicity		
Hispanic	120	13
White	543	59
Black	97	11
API	79	9
AEA	2	0
Other	24	3
Unknown	54	6
Travel History		
Yes	48	5
No	492	54
Unknown	379	41
Death		
Yes	239	26
No	144	16
Unknown	536	58
Vaccine Type		
Pfizer	596	65
Unknown	21	2
Moderna	301	33
Janssen	1	0
Underlying Conditions		
Yes	617	67
No	302	33

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	3	1	3	1	7
Delta	915	94	36	92	12	86
Epsilon	4	0	2	5	1	7
Gamma	15	2
Omicron	6	1

* 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>	282	100
Age (in years)		
25-49	9	3
50-64	30	11
65+	243	86
Gender		
Male	179	63
Female	103	37
Race/Ethnicity		
Hispanic	33	12
White	192	68
Black	29	10
API	22	8
AEA	1	0
Other	1	0
Unknown	4	1
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	4
Alpha	1	0
Unknown	268	95
Hospitalization		
Yes	239	85
No	9	3
Unknown	34	12
Vaccine Type		
Pfizer	195	69
Unknown	6	2
Moderna	80	28
Janssen	1	0
Underlying Conditions		
Yes	151	54
No	131	46

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
1215472	282	1102702	6412	23	581

* 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	617	67
	No	302	33
Hypertension	Yes	391	N/A
Immunocompromised	Yes	38	N/A
Chronic Heart Disease	Yes	201	N/A
Chronic Liver Disease	Yes	17	N/A
Chronic Kidney Disease	Yes	116	N/A
Diabetes	Yes	246	N/A
Neurologic/Neurodevelopmental	Yes	61	N/A
Chronic Lung Disease	Yes	171	N/A
Historically Healthy	Yes	85	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	151	54
	No	131	46
Hypertension	Yes	106	N/A
Immunocompromised	Yes	14	N/A
Chronic Heart Disease	Yes	52	N/A
Chronic Liver Disease	Yes	3	N/A
Chronic Kidney Disease	Yes	38	N/A
Diabetes	Yes	61	N/A
Neurologic/Neurodevelopmental	Yes	14	N/A
Chronic Lung Disease	Yes	45	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).