

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: January 6, 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

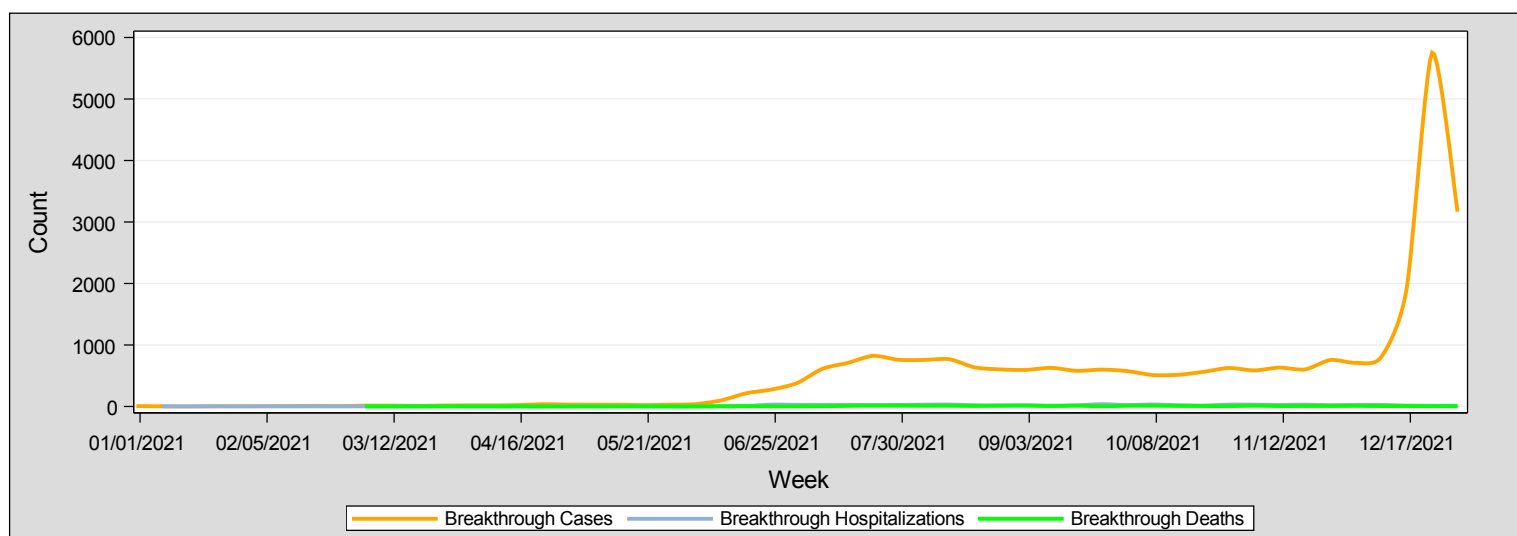


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

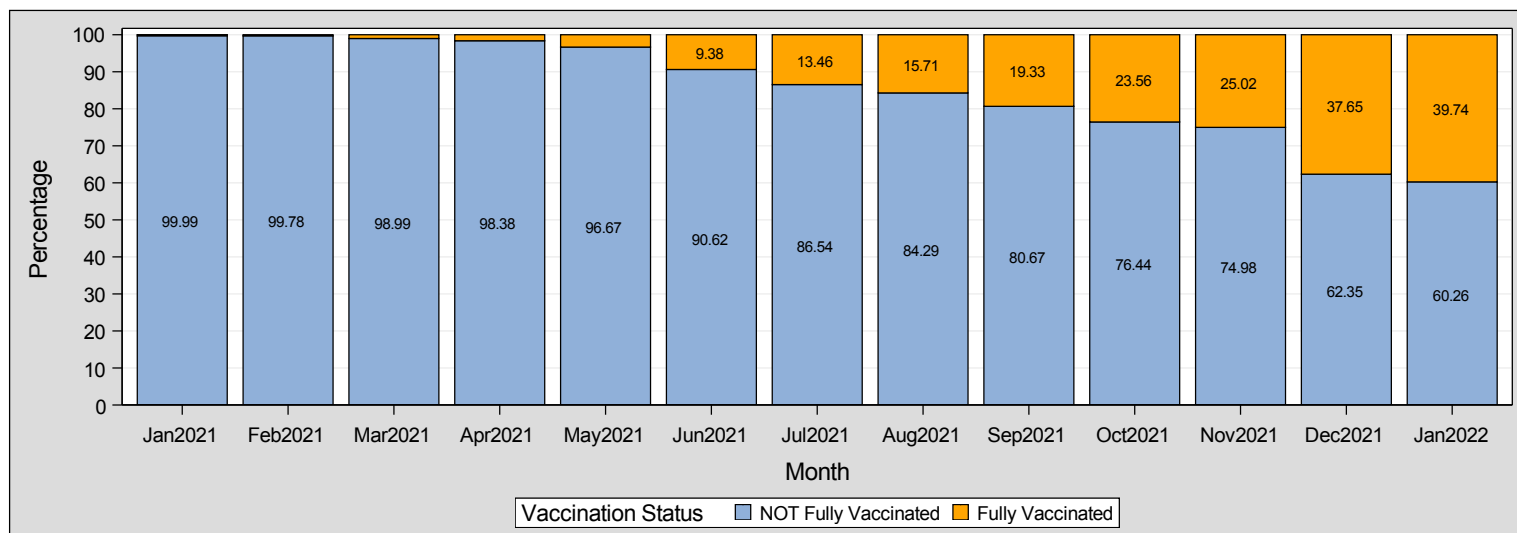


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	27205	100
Age (in years)		
5-17	964	4
18-24	2524	9
25-49	12903	47
50-64	6264	23
65+	4550	17
Gender		
Male	11830	43
Female	15222	56
Unknown	153	1
Race/Ethnicity		
Hispanic	5408	20
White	9526	35
Black	2038	7
API	3202	12
AEA	27	0
Other	2021	7
Unknown	4983	18
Travel History		
Yes	1572	6
No	9078	33
Unknown	16555	61
Hospitalization		
Yes	873	3
No	10376	38
Unknown	15956	59
Death		
Yes	261	1
No	2572	9
Unknown	24372	90
Vaccine Type		
Pfizer	19477	72
Unknown	220	1
Moderna	7433	27
Janssen	75	0
Underlying Conditions		
Yes	4759	17
No	22446	83

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
1202658	27205	1115516	356148	2262	31927

* 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>	873	100
Age (in years)		
5-17	1	0
18-24	6	1
25-49	80	9
50-64	150	17
65+	636	73
Gender		
Male	494	57
Female	378	43
Unknown	1	0
Race/Ethnicity		
Hispanic	116	13
White	519	59
Black	89	10
API	73	8
AEA	2	0
Other	23	3
Unknown	51	6
Travel History		
Yes	48	5
No	461	53
Unknown	364	42
Death		
Yes	229	26
No	140	16
Unknown	504	58
Vaccine Type		
Pfizer	573	66
Unknown	21	2
Moderna	278	32
Janssen	1	0
Underlying Conditions		
Yes	593	68
No	280	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	896	94	34	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>	261	100
Age (in years)		
25-49	8	3
50-64	28	11
65+	225	86
Gender		
Male	169	65
Female	92	35
Race/Ethnicity		
Hispanic	30	11
White	180	69
Black	28	11
API	19	7
AEA	1	0
Other	1	0
Unknown	2	1
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	5
Alpha	1	0
Unknown	247	95
Hospitalization		
Yes	229	88
No	7	3
Unknown	25	10
Vaccine Type		
Pfizer	186	71
Unknown	5	2
Moderna	70	27
Underlying Conditions		
Yes	146	56
No	115	44

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
1202658	261	1115516	6266	22	562

* 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	593	68
	No	280	32
Hypertension	Yes	378	N/A
Immunocompromised	Yes	37	N/A
Chronic Heart Disease	Yes	190	N/A
Chronic Liver Disease	Yes	15	N/A
Chronic Kidney Disease	Yes	112	N/A
Diabetes	Yes	235	N/A
Neurologic/Neurodevelopmental	Yes	56	N/A
Chronic Lung Disease	Yes	166	N/A
Historically Healthy	Yes	79	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	146	56
	No	115	44
Hypertension	Yes	104	N/A
Immunocompromised	Yes	13	N/A
Chronic Heart Disease	Yes	52	N/A
Chronic Liver Disease	Yes	3	N/A
Chronic Kidney Disease	Yes	37	N/A
Diabetes	Yes	61	N/A
Neurologic/Neurodevelopmental	Yes	12	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).