

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: December 22, 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

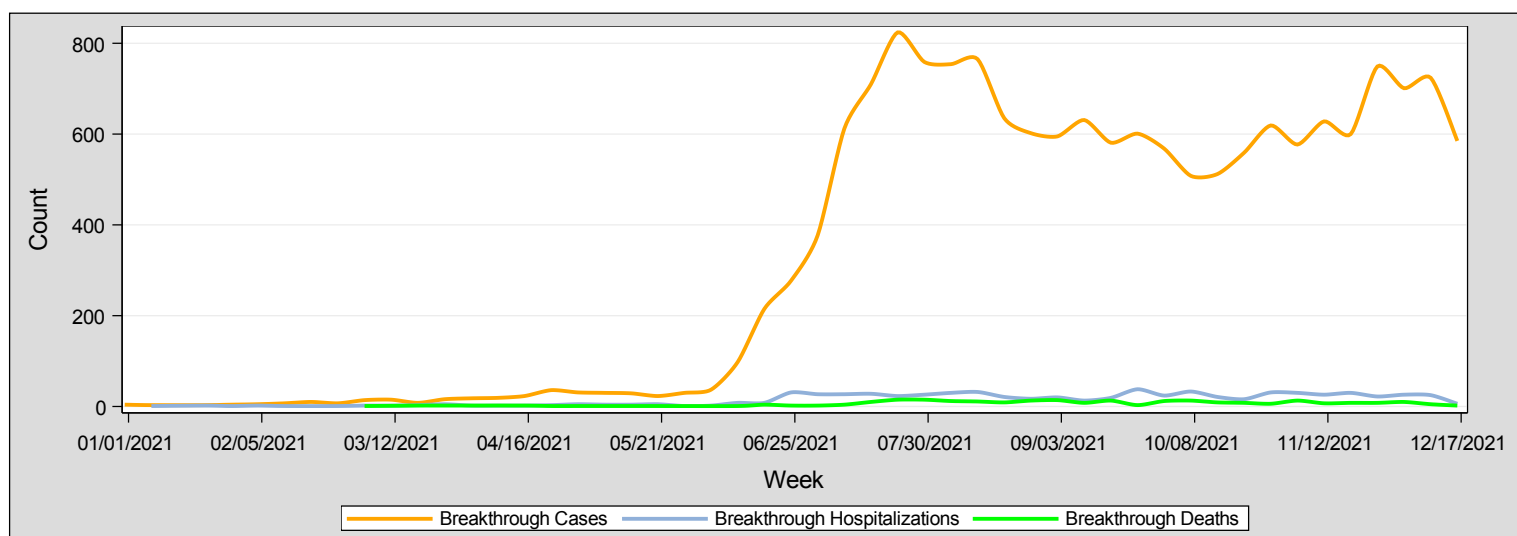


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

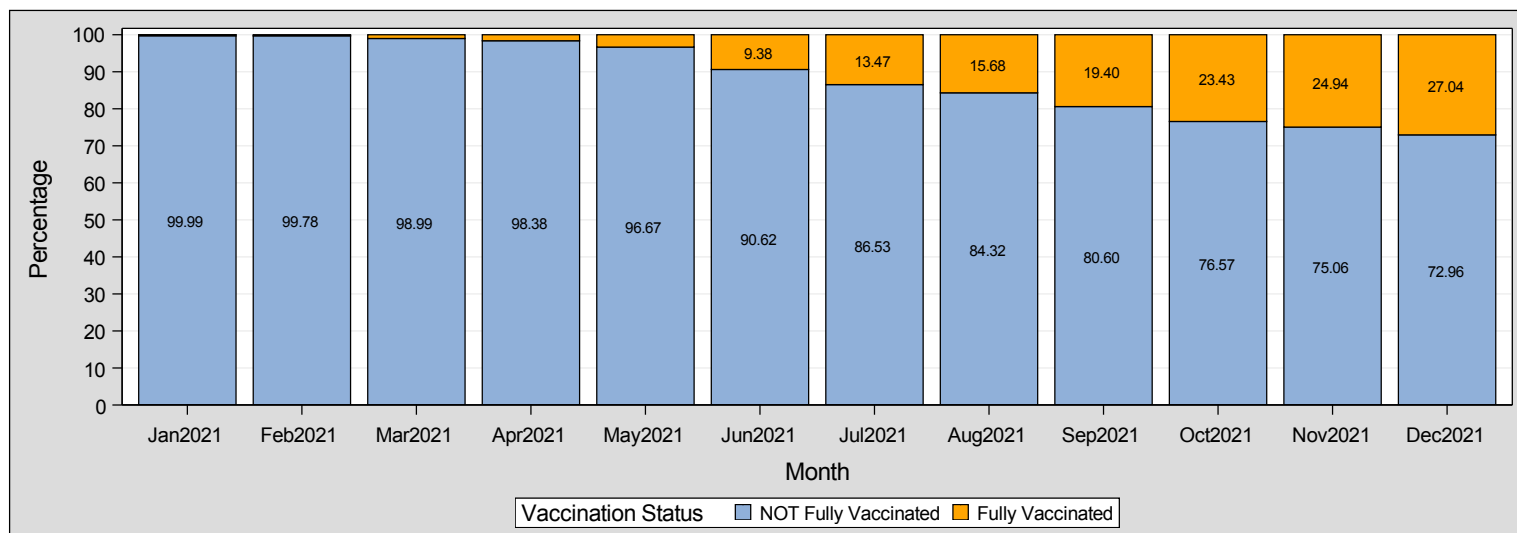


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	16739	100
Age (in years)		
5-17	418	2
18-24	1099	7
25-49	7476	45
50-64	4147	25
65+	3599	22
Gender		
Male	7485	45
Female	9180	55
Unknown	74	0
Race/Ethnicity		
Hispanic	3447	21
White	6724	40
Black	1164	7
API	1885	11
AEA	25	0
Other	733	4
Unknown	2761	16
Travel History		
Yes	1392	8
No	7925	47
Unknown	7422	44
Hospitalization		
Yes	830	5
No	9078	54
Unknown	6831	41
Death		
Yes	246	1
No	2308	14
Unknown	14185	85
Vaccine Type		
Pfizer	12096	72
Unknown	148	1
Moderna	4471	27
Janssen	24	0
Underlying Conditions		
Yes	4278	26
No	12461	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
1166075	16739	1152099	339119	1435	29435

* 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>	830	100
Age (in years)		
5-17	1	0
18-24	5	1
25-49	74	9
50-64	139	17
65+	611	74
Gender		
Male	475	57
Female	354	43
Unknown	1	0
Race/Ethnicity		
Hispanic	110	13
White	486	59
Black	85	10
API	71	9
AEA	2	0
Other	23	3
Unknown	53	6
Travel History		
Yes	45	5
No	429	52
Unknown	356	43
Death		
Yes	216	26
No	135	16
Unknown	479	58
Vaccine Type		
Pfizer	550	66
Unknown	20	2
Moderna	259	31
Janssen	1	0
Underlying Conditions		
Yes	564	68
No	266	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	895	94	34	92	12	86
Epsilon	4	0	2	5	1	7
Gamma	15	2
Omicron	3	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>	246	100
Age (in years)		
25-49	8	3
50-64	24	10
65+	214	87
Gender		
Male	161	65
Female	85	35
Race/Ethnicity		
Hispanic	29	12
White	167	68
Black	28	11
API	18	7
AEA	1	0
Other	1	0
Unknown	2	1
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	5
Alpha	1	0
Unknown	232	94
Hospitalization		
Yes	216	88
Unknown	23	9
No	7	3
Vaccine Type		
Pfizer	178	72
Unknown	5	2
Moderna	63	26
Underlying Conditions		
Yes	132	54
No	114	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
1166075	246	1152099	6167	21	535

* 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	564	68
	No	266	32
Hypertension	Yes	361	N/A
Immunocompromised	Yes	36	N/A
Chronic Heart Disease	Yes	178	N/A
Chronic Liver Disease	Yes	15	N/A
Chronic Kidney Disease	Yes	109	N/A
Diabetes	Yes	228	N/A
Neurologic/Neurodevelopmental	Yes	55	N/A
Chronic Lung Disease	Yes	155	N/A
Historically Healthy	Yes	73	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	132	54
	No	114	46
Hypertension	Yes	94	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	34	N/A
Diabetes	Yes	58	N/A
Neurologic/Neurodevelopmental	Yes	12	N/A
Chronic Lung Disease	Yes	38	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).