

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: December 16, 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

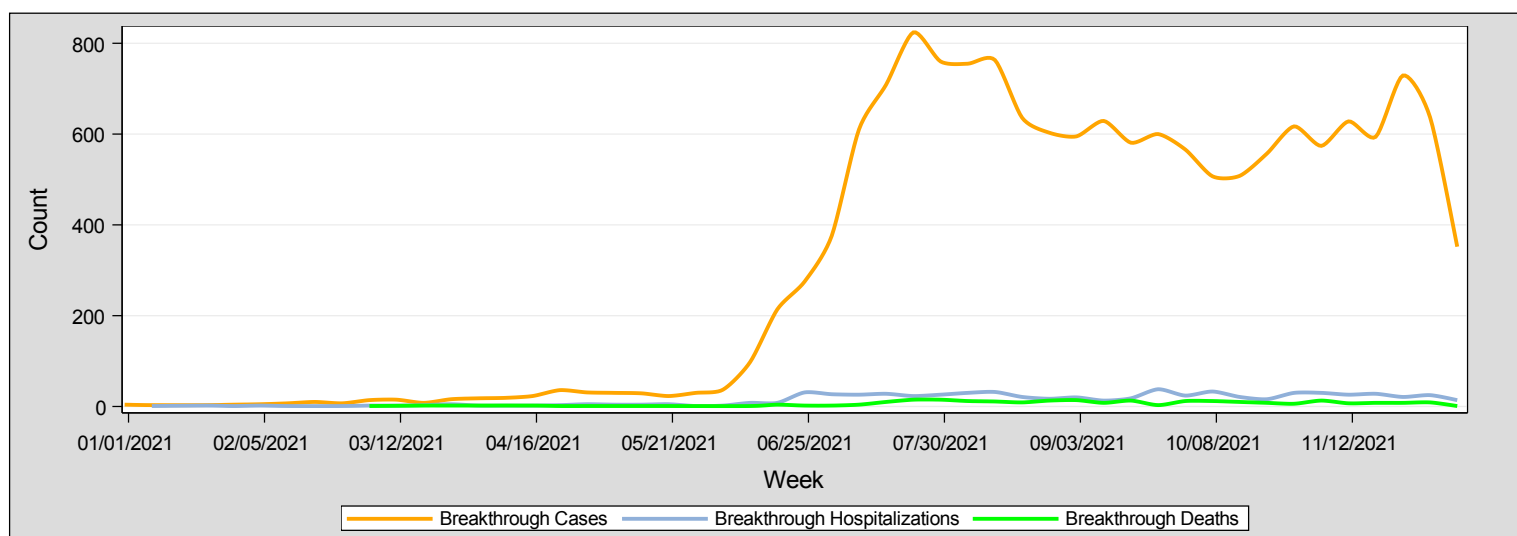


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

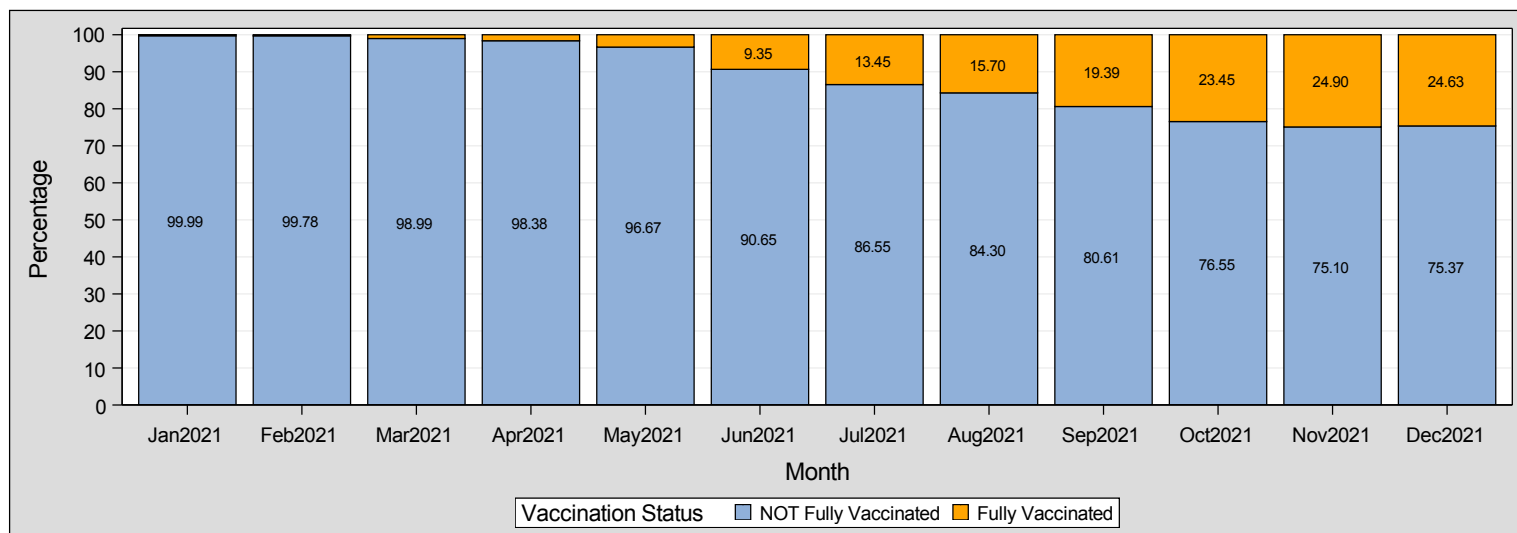


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	15669	100
Age (in years)		
5-17	390	2
18-24	999	6
25-49	6894	44
50-64	3929	25
65+	3457	22
Gender		
Male	6991	45
Female	8609	55
Unknown	69	0
Race/Ethnicity		
Hispanic	3250	21
White	6287	40
Black	1078	7
API	1770	11
AEA	25	0
Other	669	4
Unknown	2590	17
Travel History		
Yes	1334	9
No	7527	48
Unknown	6808	43
Hospitalization		
Yes	803	5
No	8651	55
Unknown	6215	40
Death		
Yes	240	2
No	2264	14
Unknown	13165	84
Vaccine Type		
Pfizer	11380	73
Unknown	140	1
Moderna	4134	26
Janssen	15	0
Underlying Conditions		
Yes	4096	26
No	11573	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
1154037	15669	1164137	336234	1358	28883

* 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>	803	100
Age (in years)		
5-17	1	0
18-24	4	0
25-49	72	9
50-64	131	16
65+	595	74
Gender		
Male	463	58
Female	339	42
Unknown	1	0
Race/Ethnicity		
Hispanic	105	13
White	471	59
Black	82	10
API	70	9
AEA	2	0
Other	22	3
Unknown	51	6
Travel History		
Yes	44	5
No	414	52
Unknown	345	43
Death		
Yes	210	26
No	135	17
Unknown	458	57
Vaccine Type		
Pfizer	536	67
Unknown	19	2
Moderna	247	31
Janssen	1	0
Underlying Conditions		
Yes	553	69
No	250	31

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	891	94	33	92	12	86
Epsilon	4	0	2	6	1	7
Gamma	15	2
Omicron	1	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>	240	100
Age (in years)		
25-49	8	3
50-64	23	10
65+	209	87
Gender		
Male	157	65
Female	83	35
Race/Ethnicity		
Hispanic	29	12
White	161	67
Black	28	12
API	18	8
AEA	1	0
Other	1	0
Unknown	2	1
Variant of concern (VOC)		
Epsilon	1	0
Delta	12	5
Alpha	1	0
Unknown	226	94
Hospitalization		
Yes	210	88
No	8	3
Unknown	22	9
Vaccine Type		
Pfizer	175	73
Unknown	4	2
Moderna	61	25
Underlying Conditions		
Yes	130	54
No	110	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
1154037	240	1164137	6118	21	526

* 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	553	69
	No	250	31
Hypertension	Yes	351	N/A
Immunocompromised	Yes	36	N/A
Chronic Heart Disease	Yes	173	N/A
Chronic Liver Disease	Yes	14	N/A
Chronic Kidney Disease	Yes	106	N/A
Diabetes	Yes	222	N/A
Neurologic/Neurodevelopmental	Yes	54	N/A
Chronic Lung Disease	Yes	150	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	130	54
	No	110	46
Hypertension	Yes	92	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	57	N/A
Neurologic/Neurodevelopmental	Yes	12	N/A
Chronic Lung Disease	Yes	37	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).