

Weekly COVID-19 Breakthrough Infections Report

Clark County, Nevada

Date: October 28, 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

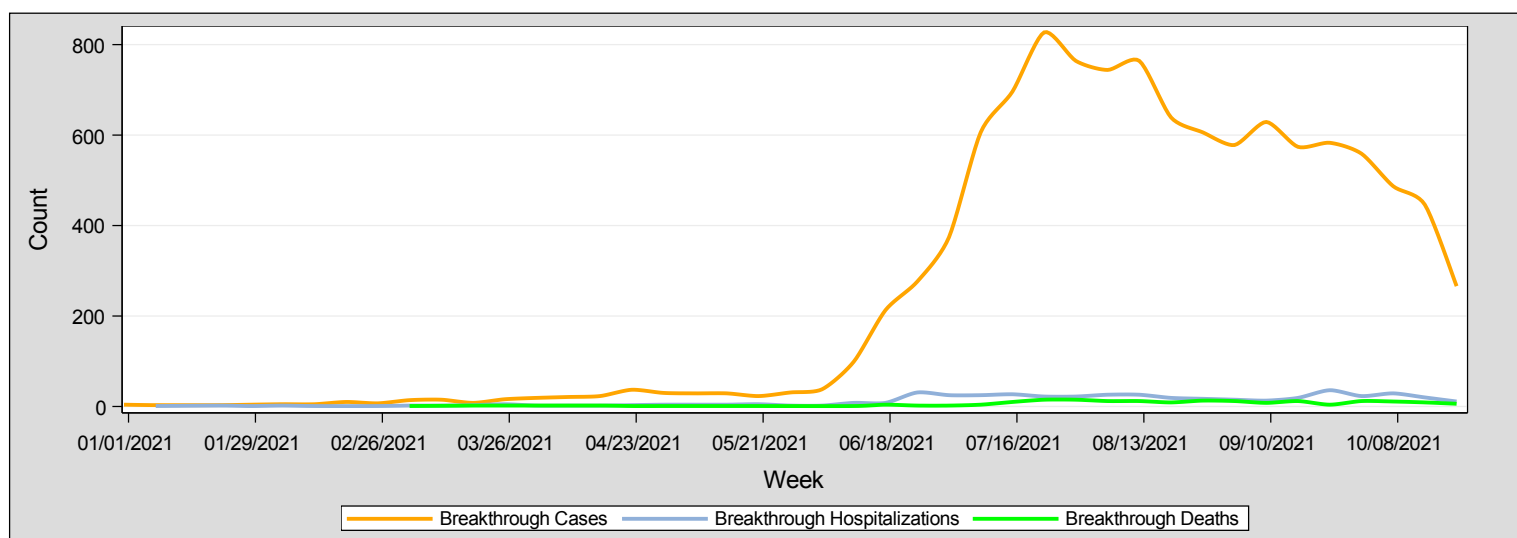


Figure 2: Percentage of Cases among 12 Years and Older By Vaccination Status

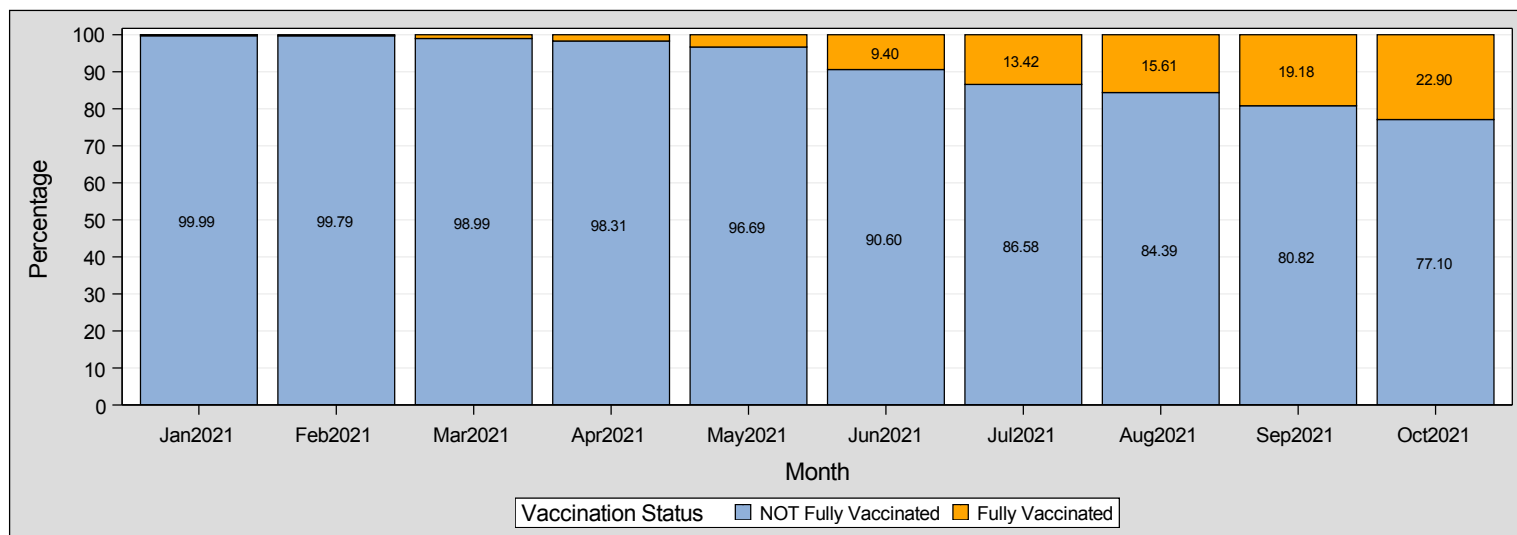


Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	<i>Overall</i>	
	<i>N</i>	<i>%</i>
<i>All</i>	11104	100
Age (in years)		
5-17	209	2
18-24	670	6
25-49	4729	43
50-64	2831	25
65+	2665	24
Gender		
Male	4999	45
Female	6046	54
Unknown	59	1
Race/Ethnicity		
Hispanic	2120	19
White	4291	39
Black	763	7
API	1234	11
AEA	18	0
Other	511	5
Unknown	2167	20
Travel History		
Yes	963	9
No	4987	45
Unknown	5154	46
Hospitalization		
Yes	566	5
No	5858	53
Unknown	4680	42
Death		
Yes	183	2
No	1841	17
Unknown	9080	82
Vaccine Type		
Pfizer	8180	74
Unknown	82	1
Moderna	2833	26
Janssen	9	0
Underlying Conditions		
Yes	2840	26
No	8264	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
1117221	11104	1200953	320003	994	26646

* 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>	566	100
Age (in years)		
18-24	3	1
25-49	45	8
50-64	91	16
65+	427	75
Gender		
Male	328	58
Female	237	42
Unknown	1	0
Race/Ethnicity		
Hispanic	74	13
White	327	58
Black	67	12
API	45	8
AEA	1	0
Other	17	3
Unknown	35	6
Travel History		
Yes	32	6
No	297	52
Unknown	237	42
Death		
Yes	160	28
No	106	19
Unknown	300	53
Vaccine Type		
Pfizer	385	68
Unknown	11	2
Moderna	169	30
Janssen	1	0
Underlying Conditions		
Yes	369	65
No	197	35

Table 4: Variants of Concern (VOC) among Breakthrough cases, hospitalizations and deaths

Variants of concern (VOC)	Breakthrough Cases	Percent(%)		Percent(%)		Percent(%)	
		of Breakthrough Cases	Breakthrough Hospitalizations	of Breakthrough Hospitalizations	Breakthrough Deaths	of Breakthrough Deaths	
Alpha	36	4	1	3	1	8	
Delta	846	94	30	91	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>	183	100
Age (in years)		
25-49	7	4
50-64	16	9
65+	160	87
Gender		
Male	115	63
Female	68	37
Race/Ethnicity		
Hispanic	21	11
White	127	69
Black	21	11
API	10	5
AEA	1	1
Unknown	3	2
Variant of concern (VOC)		
Epsilon	1	1
Delta	11	6
Alpha	1	1
Unknown	170	93
Hospitalization		
Yes	160	87
No	6	3
Unknown	17	9
Vaccine Type		
Pfizer	135	74
Unknown	3	2
Moderna	45	25
Underlying Conditions		
Yes	96	52
No	87	48

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
1117221	183	1200953	5780	16	481

* 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	369	65
	No	197	35
Hypertension	Yes	218	N/A
Immunocompromised	Yes	26	N/A
Chronic Heart Disease	Yes	114	N/A
Chronic Liver Disease	Yes	11	N/A
Chronic Kidney Disease	Yes	66	N/A
Diabetes	Yes	142	N/A
Neurologic/Neurodevelopmental	Yes	38	N/A
Chronic Lung Disease	Yes	96	N/A
Historically Healthy	Yes	51	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	96	52
	No	87	48
Hypertension	Yes	65	N/A
Immunocompromised	Yes	10	N/A
Chronic Heart Disease	Yes	31	N/A
Chronic Liver Disease	Yes	2	N/A
Chronic Kidney Disease	Yes	23	N/A
Diabetes	Yes	38	N/A
Neurologic/Neurodevelopmental	Yes	10	N/A
Chronic Lung Disease	Yes	24	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).