Weekly COVID-19 Breakthrough Infections Report
Clark County, Nevada

Date: October 21, 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.

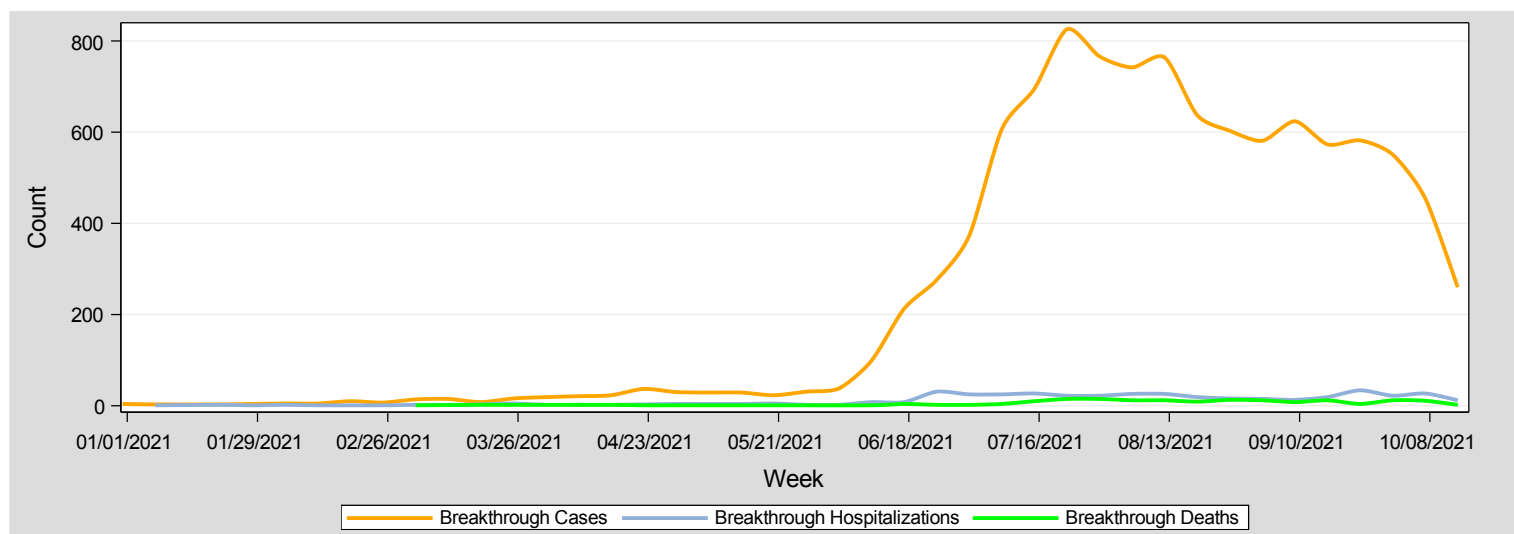### Figure 1:Trends in Breakthrough Cases, Deaths and Hospitalizations

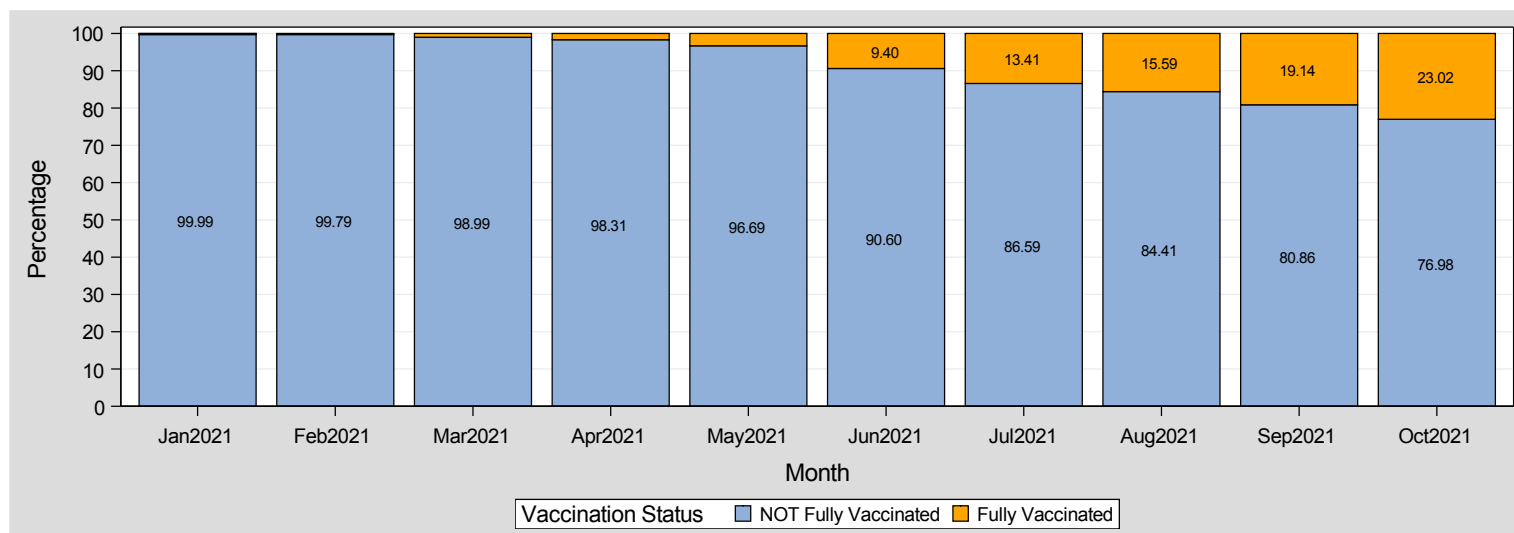### Figure 2:Percentage of Cases among 12 Years and Older By Vaccination Status

Table 1: Population Characteristics of COVID-19 Breakthrough Cases

	Overall N	%
All	10601	100
Age (in years)		
5-17	193	2
18-24	639	6
25-49	4491	42
50-64	2705	26
65+	2573	24
Gender		
Male	4757	45
Female	5787	55
Unknown	57	1
Race/Ethnicity		
Hispanic	1999	19
White	4074	38
Black	731	7
API	1169	11
AEA	16	0
Other	488	5
Unknown	2124	20
Travel History		
Yes	913	9
No	4674	44
Unknown	5014	47
Hospitalization		
Yes	539	5
No	5496	52
Unknown	4566	43
Death		
Yes	170	2
No	1729	16
Unknown	8702	82
Vaccine Type		
Pfizer	7822	74
Unknown	79	1
Moderna	2691	25
Janssen	9	0
Underlying Conditions		
Yes	2676	25
No	7925	75

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
1117257	10601	1200917	318022	949	26482

* 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

	Overall N	%
All	539	100
Age (in years)		
18-24	3	1
25-49	40	7
50-64	85	16
65+	411	76
Gender		
Male	310	58
Female	228	42
Unknown	1	0
Race/Ethnicity		
Hispanic	72	13
White	314	58
Black	64	12
API	40	7
AEA	1	0
Other	16	3
Unknown	32	6
Travel History		
Yes	30	6
No	279	52
Unknown	230	43
Death		
Yes	151	28
No	102	19
Unknown	286	53
Vaccine Type		
Pfizer	370	69
Unknown	9	2
Moderna	159	29
Janssen	1	0
Underlying Conditions		
Yes	341	63
No	198	37

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	36	4	1	3	1	8
Delta	817	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

	Overall	
	N	*%*
All	170	100
Age (in years)		
25-49	6	4
50-64	15	9
65+	149	88
Gender		
Male	107	63
Female	63	37
Race/Ethnicity		
Hispanic	20	12
White	119	70
Black	20	12
API	9	5
AEA	1	1
Unknown	1	1
Variant of concern (VOC)		
Epsilon	1	1
Delta	11	6
Alpha	1	1
Unknown	157	92
Hospitalization		
Yes	151	89
No	6	4
Unknown	13	8
Vaccine Type		
Pfizer	124	73
Unknown	3	2
Moderna	43	25
Underlying Conditions		
Yes	89	52
No	81	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
1117257	170	1200917	5724	15	477

* 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	341	63
	No	198	37
Hypertension	Yes	196	N/A
Immunocompromised	Yes	26	N/A
Chronic Heart Disease	Yes	105	N/A
Chronic Liver Disease	Yes	10	N/A
Chronic Kidney Disease	Yes	62	N/A
Diabetes	Yes	127	N/A
Neurologic/Neurodevelopmental	Yes	38	N/A
Chronic Lung Disease	Yes	89	N/A
Historically Healthy	Yes	50	N/A

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

Variable	Outcome	N	%
Underlying Medical Condition	Yes	89	52
	No	81	48
Hypertension	Yes	58	N/A
Immunocompromised	Yes	9	N/A
Chronic Heart Disease	Yes	28	N/A
Chronic Liver Disease	Yes	2	N/A
Chronic Kidney Disease	Yes	17	N/A
Diabetes	Yes	36	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 exlusive (i.e., a person can have more than one risk factor).