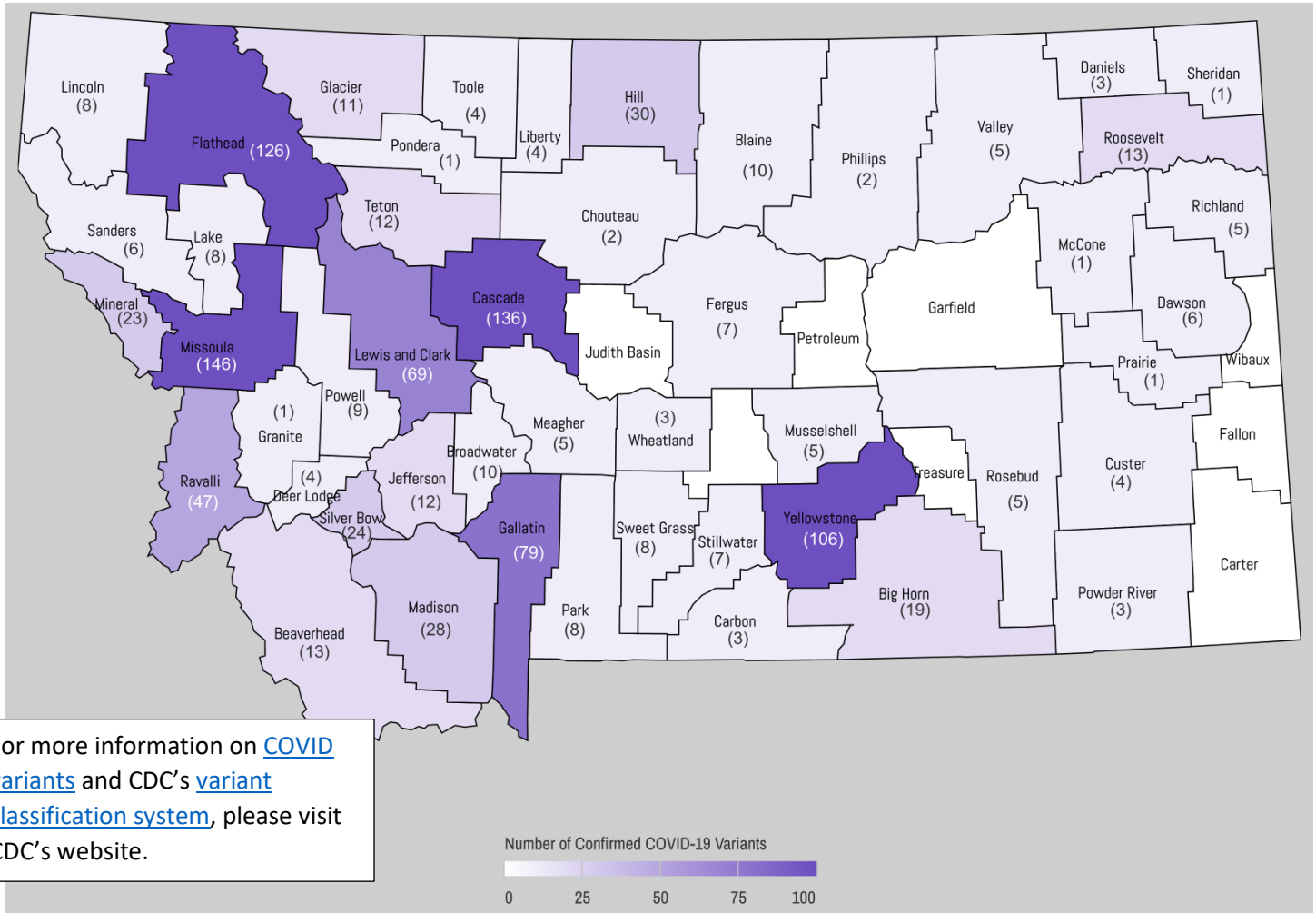


COVID-19 Variants Identified in Montana

Updated 8/24/2021

This map includes the counties where variants of concern and variants of interest have been detected in Montana. The tables detail the types of variants detected, the classification of variant, and the counties in which they were detected. Delta continues to be the dominant variant in Montana. During the first two weeks of August, 58 samples collected have been sequenced so far, all of which are the Delta variant. Variants of concern or interest have been detected in 48 counties.

Figure 1. Total COVID Variants Identified in Montana, by County, 8/24/21 (n=1043)



For more information on [COVID variants](#) and CDC's [variant classification system](#), please visit CDC's website.

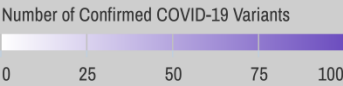


Table 1. Cumulative SARS-CoV-2 variants detected in Montana by classification, 8/24/2021

Variant Classification	Classification Explanation	Number
Variant of Interest (VOI)	A variant with specific genetic markers associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.	156
Variant of Concern (VOC)	A variant for which there is evidence of an increase in transmissibility, more severe disease (increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.	887
Variant of High Consequence	A variant of high consequence has clear evidence that prevention measures or medical countermeasures have significantly reduced effectiveness relative to previously circulating variants.	0
Total		1043

Table 2. Cumulative SARS-CoV-2 variants detected in Montana by location and lineage, MTPHHS, 8/24/2021

County	Variants of Concern			Variants of Interest				Total # Cases
	B.1.1.7 Alpha	B.1.617.2 Delta	P.1 Gamma	B.1.427 Epsilon	B.1.429 Epsilon	B.1.525 Eta	B.1.526 Iota	
Beaverhead	4	7	0	2	0	0	0	13
Big Horn	4	13	2	0	0	0	0	19
Blaine	9	1	0	0	0	0	0	10
Broadwater	9	1	0	0	0	0	0	10
Carbon	2	1	0	0	0	0	0	3
Cascade	68	50	3	8	3	0	4	136
Chouteau	1	0	0	1	0	0	0	2
Custer	2	1	0	0	1	0	0	4
Daniels	0	3	0	0	0	0	0	3
Dawson	1	4	0	0	1	0	0	6
Deer Lodge	3	0	1	0	0	0	0	4
Fergus	2	5	0	0	0	0	0	7
Flathead	74	29	5	6	0	2	10	126
Gallatin	43	19	3	0	8	1	5	79
Glacier	6	1	3	0	1	0	0	11
Granite	0	0	0	0	0	0	1	1
Hill	19	3	0	1	3	0	4	30
Jefferson	9	2	0	0	1	0	0	12
Lake	6	1	0	0	1	0	0	8
Lewis & Clark	33	21	0	4	1	0	10	69
Liberty	1	2	0	0	1	0	0	4
Lincoln	1	2	0	2	3	0	0	8
Madison	7	10	6	2	3	0	0	28
McCone	1	0	0	0	0	0	0	1
Meagher	0	1	2	2	0	0	0	5
Mineral	12	11	0	0	0	0	0	23
Missoula	77	43	10	5	3	2	6	146
Musselshell	2	3	0	0	0	0	0	5
Park	4	2	0	0	0	0	2	8
Phillips	0	0	0	0	2	0	0	2
Pondera	1	0	0	0	0	0	0	1
Powder River	3	0	0	0	0	0	0	3
Powell	3	1	0	2	0	0	3	9
Prairie	0	0	0	0	1	0	0	1
Ravalli	43	0	1	0	0	0	3	47
Richland	2	2	0	0	1	0	0	5
Roosevelt	2	0	0	0	11	0	0	13
Rosebud	0	5	0	0	0	0	0	5
Sanders	3	1	0	0	1	0	1	6
Sheridan	0	0	0	1	0	0	0	1
Silver Bow	5	4	1	13	1	0	0	24
Stillwater	7	0	0	0	0	0	0	7
Sweet Grass	7	0	0	0	1	0	0	8
Teton	5	6	0	1	0	0	0	12
Toole	2	2	0	0	0	0	0	4
Valley	3	1	0	0	1	0	0	5
Wheatland	1	2	0	0	0	0	0	3
Yellowstone	65	37	1	0	2	0	1	106
Total	552	297	38	50	51	5	50	1043
Percentage	53%	28%	4%	5%	5%	<1%	5%	

Note: The distribution of variants can be influenced by local testing capabilities. As a result, the data in table 2 may not reflect a standardized, statewide sample of variants. Data above are collected in collaboration with partners including, MSU, UM, Fyr Diagnostics, CDC, and other national reference labs.

Table 3. Outcome of patients infected with SARS-CoV-2 variants in Montana, by lineage, 8/24/2021

	Variant lineage	Not Hospitalized	Hospitalized	Percentage Hospitalized	Deceased
Variants of Concern	B.1.1.7 Alpha	419	40	8.7%	6
	B.1.617.2 Delta	202	38	15.8%	5
	P.1 Gamma	24	6	20.0%	1
Variants of Interest	B.1.427 Epsilon	43	3	6.5%	0
	B.1.429 Epsilon	43	2	4.4%	1
	B.1.525 Eta	3	0	0.0%	0
	B.1.526 Iota	39	3	7.1%	0

Data in table 3 show the hospitalization and death status for cases where that information is recorded in Montana’s communicable disease database (n=865). Sixteen percent of cases infected with the Delta variant (B.1.617.2) were hospitalized and 5 died.

SARS-CoV-2 sequencing results are also reported to GISAID, which promotes the rapid sharing of data from all influenza viruses and the coronavirus causing COVID-19. These results do not contain county-level geography for all specimens, so the data in table 2 are the subset of the results reported to GISAID captured in table 4. A summary table of all the sequencing performed on SARS-CoV-2 specimens from Montana and reported to GISAID is below. More information about GISAID is available here: <https://www.gisaid.org>

Table 4. Cumulative SARS-CoV-2 specimens sequenced in Montana by lineage, reported to GISAID, 8/24/2021

Sequences not of concern or interest	Variants of Concern				Variants of Interest				Total # Sequenced
	B.1.1.7 Alpha	B.1.351 Beta	B.1.617.2 Delta	P.1 Gamma	B.1.427 Epsilon	B.1.429 Epsilon	B.1.525 Eta	B.1.526 Iota	
897*	777	1	424	49	98	100	6	63	2415
37%	32%	<1%	18%	2%	4%	4%	<1%	3%	

* Includes recently reported sequencing results on specimens collected prior to 2/1/2021

Viruses constantly change through mutation. A variant has one or more mutations that differentiate it from other variants in circulation. As expected, multiple variants of SARS-CoV-2 have been documented in the US and globally throughout this pandemic.

COVID Breakthrough Cases

Breakthrough infection surveillance began in Montana on February 15, 2021. A breakthrough COVID-19 infection is defined as a positive SARS-CoV-2 RNA or antigen detection in a respiratory specimen that is collected ≥14 days after completing the primary COVID-19 vaccine series of an FDA-authorized COVID-19 vaccine. Depending on the specific vaccine administered, completion of series could be one or two doses of vaccine.

As of 8/24/21, Montana reports 1997 cases of confirmed breakthrough disease, this includes 151 hospitalizations and 33 deaths, 187/195 with subtyping performed are known to be infected with variants of concern or interest.

Table 5. SARS-CoV-2 variants detected in Montana breakthrough cases by lineage, 8/24/2021

	Variants of Concern			Variants of Interest				Total # Variants
	B.1.1.7 Alpha	B.1.617.2 Delta	P.1 Gamma	B.1.427 Epsilon	B.1.429 Epsilon	B.1.525 Eta	B.1.526 Iota	
Breakthrough Cases	68	87	12	5	6	2	7	187

Variant Trends

Of 1,865 samples sequenced and reported to [GISAID](#) since February 2021, 1,471 (79%) were identified as either a variant of concern or variant of interest. The most common variant identified overall (41% of all sequenced specimens) is B.1.1.7 (Alpha/UK). However, B.1.617.2 (Delta) is increasingly common in Montana in recent weeks and is now the predominant strain.

Figure 3 displays the percentage of each variant detected that week, among all samples sequenced that were collected that week. For example, the week ending May 1, 133 samples were sequenced and 91 (68%) were the Alpha variant (light yellow bar) and 10 (8%) were not variants of concern or interest (dark blue bar). During the first two weeks of August, 58 samples collected have been sequenced so far, and of those all have been Delta (dark orange bar).

The overall trends in variants show that, March through June, the Alpha variant was predominant. Beginning in July, the Delta variant has been detected more commonly among sequenced samples, and is currently the dominant variant in Montana. Not all samples have enough genetic material to be sequenced. The charts below reflect information on specimens that were sequenced and reported to GISAID.

Figure 2. Number of COVID-19 Samples Sequenced by Collection Date, Montana, 8/24/2021 (n=1922)

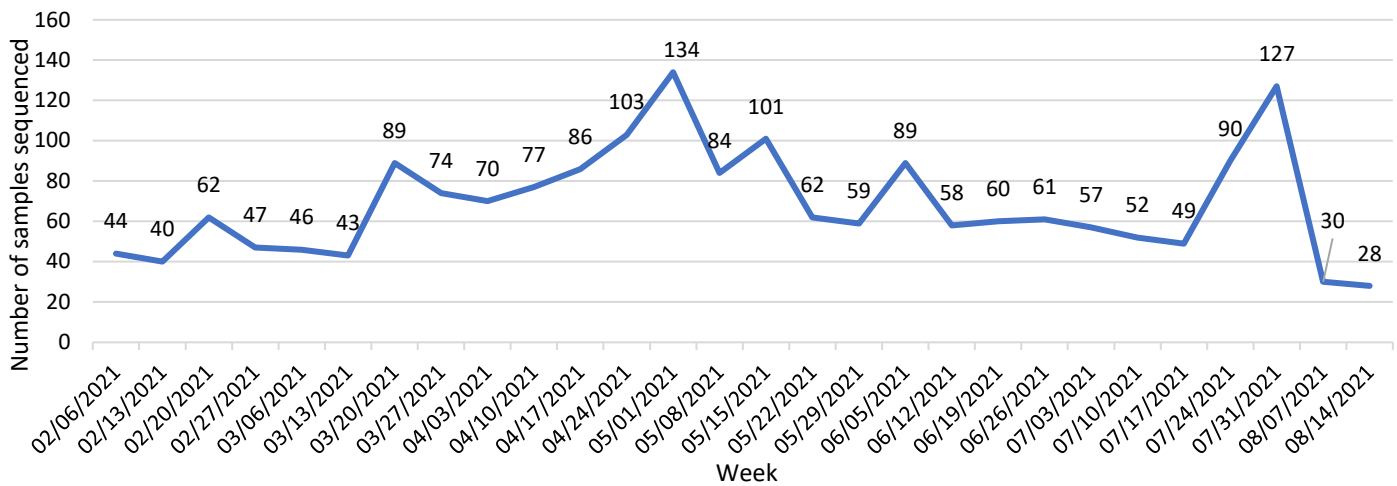


Figure 3. Percent of COVID-19 Variants in Sequenced Samples by Collection Date, Montana, 8/24/2021

