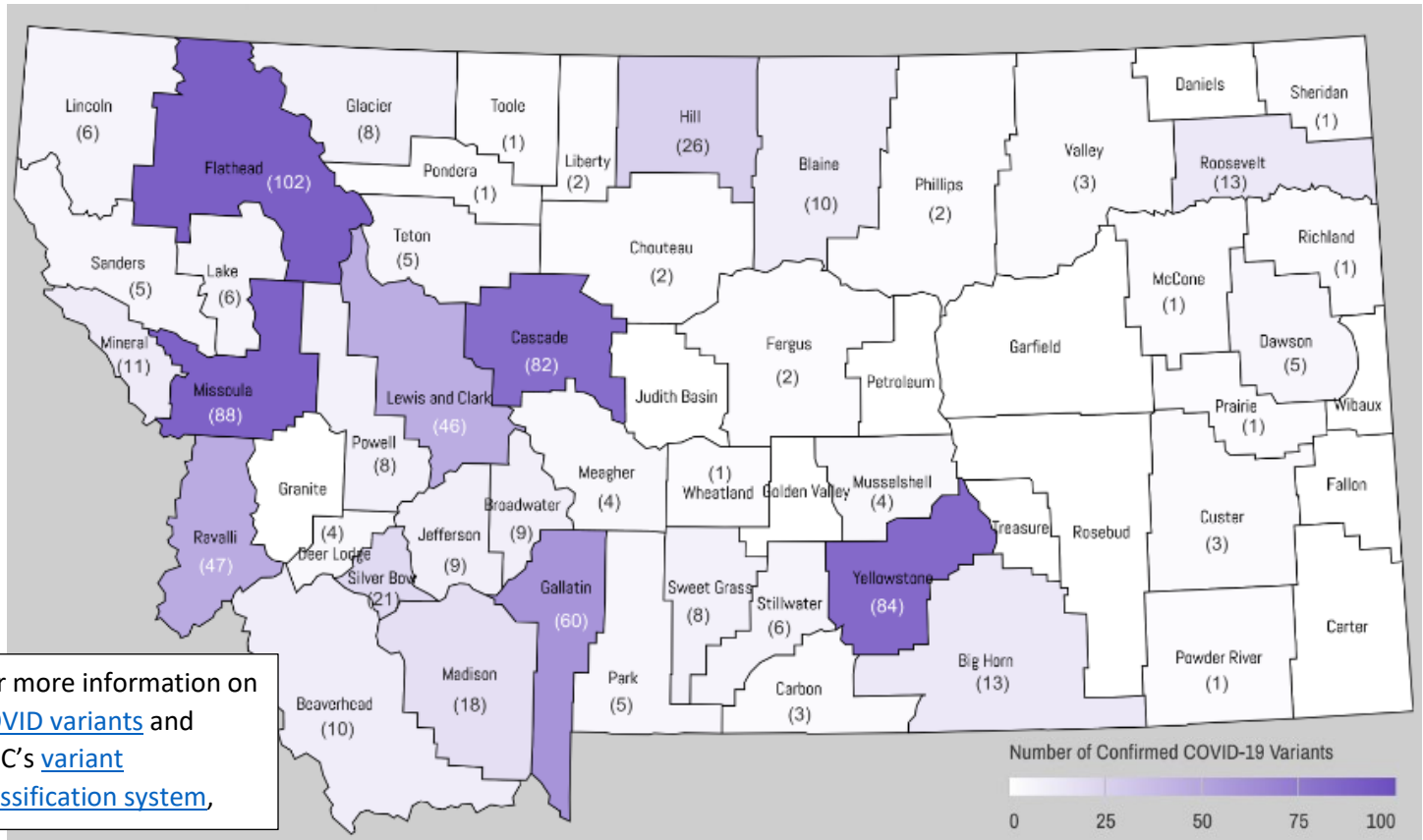


COVID-19 Variants Identified in Montana

Updated 7/20/2021

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. Last week MTPHHS reported 25 additional variants of concern, 14 (56%) were B.1.617.2 (Delta), 7 (28%) were B.1.1.7 (Alpha), and 4 (16%) were P.1 (Gamma). Variants of concern or interest have been detected in 45 counties.

Figure 1. Total COVID Variants Identified in Montana, by County, 7/20/21 (n=748)



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

Table 1. Cumulative SARS-CoV-2 variants detected in Montana by classification, 7/20/2021

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.	149
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.	599
Variant of High Consequence	A variant of high consequence has clear evidence that prevention measures or medical countermeasures (MCMs) have significantly reduced effectiveness relative to previously circulating variants.	0
Total		748

Table 2. Cumulative SARS-CoV-2 variants detected in Montana by location and lineage, MTPHHS, 7/20/2021

County	Variants of Concern			Variants of Interest				Total # Cases
	B.1.1.7 (Alpha/UK)	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	4		2				10
Big Horn	3	8	2					13
Blaine	9	1						10
Broadwater	9							9
Carbon	2	1						3
Cascade	60	6	1	8	3		4	82
Chouteau	1			1				2
Custer	2				1			3
Dawson	1	3			1			5
Deer Lodge	3		1					4
Fergus	2							2
Flathead	70	9	5	6		2	10	102
Gallatin	42	2	3		8	1	4	60
Glacier	6		1		1			8
Hill	18			1	3		4	26
Jefferson	7	1			1			9
Lake	5				1			6
Lewis & Clark	31	4		4	1		6	46
Liberty	1				1			2
Lincoln	1			2	3			6
Madison	4	3	6	2	3			18
McCone	1							1
Meagher			2	2				4
Mineral	11							11
Missoula	64	2	5	5	3	2	7	88
Musselshell	2	2						4
Park	4						1	5
Phillips					2			2
Pondera	1							1
Powder River	1							1
Powell	3			2			3	8
Prairie					1			1
Ravalli	43		1				3	47
Richland					1			1
Roosevelt	2				11			13
Sanders	3				1		1	5
Sheridan				1				1
Silver Bow	5	1	1	13	1			21
Stillwater	6							6
Sweet Grass	7				1			8
Teton	5							5
Toole	1							1
Valley	2				1			3
Wheatland	1							1
Yellowstone	63	18			2		1	84
Total	506	65	28	49	51	5	44	748
Percentage	68%	9%	4%	7%	7%	1%	6%	

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, 7/20/2021

	Variant lineage	Not Hospitalized	Hospitalized	Percentage Hospitalized	Deceased
Variants of Concern	B.1.1.7 (Alpha/UK)	389	37	8.7%	6
	B.1.617.2 (Delta)	43	12	21.8%	1
	P.1 (Gamma)	20	3	13.0%	1
Variants of Interest	B.1.427 (Epsilon)	42	3	6.7%	0
	B.1.429 (Epsilon)	43	2	4.4%	1
	B.1.525 (Eta)	3	0	0.0%	0
	B.1.526 (Iota)	34	3	8.1%	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=634). We continue to see nearly 1/4 of cases infected with the Delta variant (B.1.617.2) were hospitalized and 1 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, 7/20/2021

Sequences not of concern or interest	Variants of Concern				Variants of Interest					Total # Sequenced
	B.1.1.7 (Alpha/UK)	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)	P.2 (Brazil)	
483	713	1	115	38	74	66	6	71	1	1568
31%	45%	<1%	7%	2%	5%	4%	<1%	5%	<1%	

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 7/20/21, Montana reports 500 cases of confirmed breakthrough disease, this includes 51 hospitalizations and 10 deaths, 101/109 with subtyping performed are known to be infected with variants of concern or interest. These cases occurred in 38 different jurisdictions across the state.

Table 5. SARS-CoV-2 variants detected in Montana breakthrough cases by lineage, 7/20/2021

	Variants of Concern			Variants of Interest				Total # Variants
	B.1.1.7 (Alpha/UK)	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	64	12	7	5	6	2	5	101

