MONTANA COMMUNICABLE DISEASE EPIDEMIOLOGY

Interim Analysis of COVID-19 cases in Montana (as of 10/1/2021)

This report is an interim epidemiological review of COVID-19 cases in Montana. Data is analyzed based on information available as of October 1, 2021. Current case count at the time of analysis is:

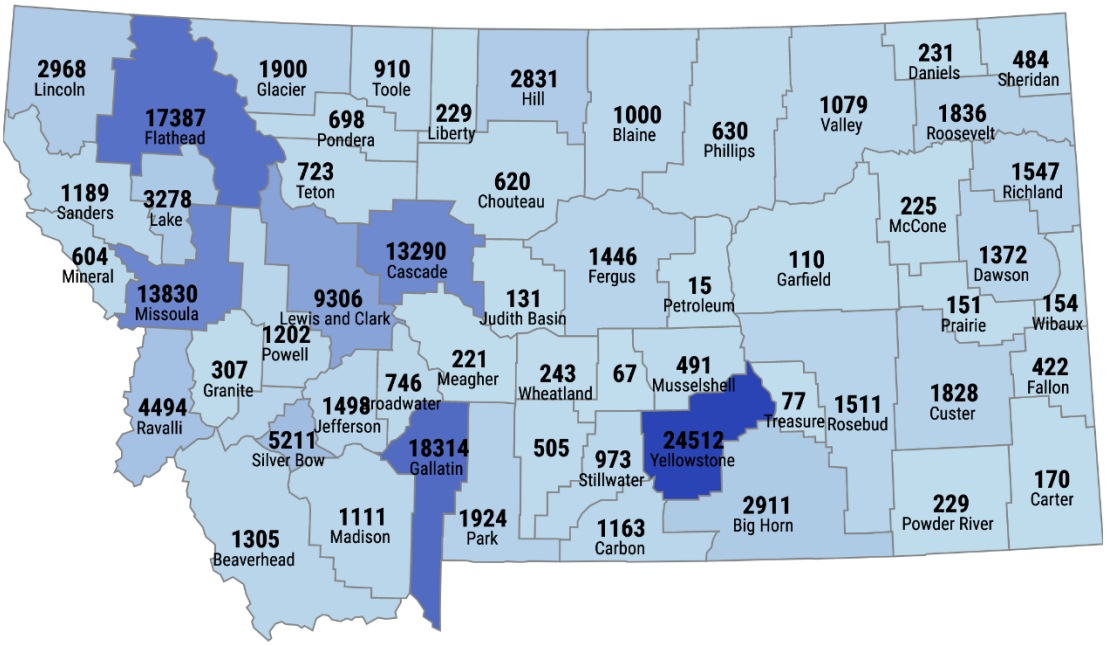
Case Count = 153,052

This report is completed using data that is available during the time of analysis and there may be a delay between current case count and this report, due to rapidly changing updates. When data is limited to available information, number of cases included in analysis is indicated in graphs.

Geographic Distribution

There are 153,052 cases of COVID-19 reported from all 56 counties in Montana. Most cases are reported in more populous counties. Yellowstone County and Gallatin County are the most impacted to date, reporting 16% and 12% of all reported cases, respectively. Flathead (11%), Cascade (9%), and Missoula County report more than 10,000 cases each (Figure 1).

*Figure 1: Map of Reported Montana COVID-19 cases**

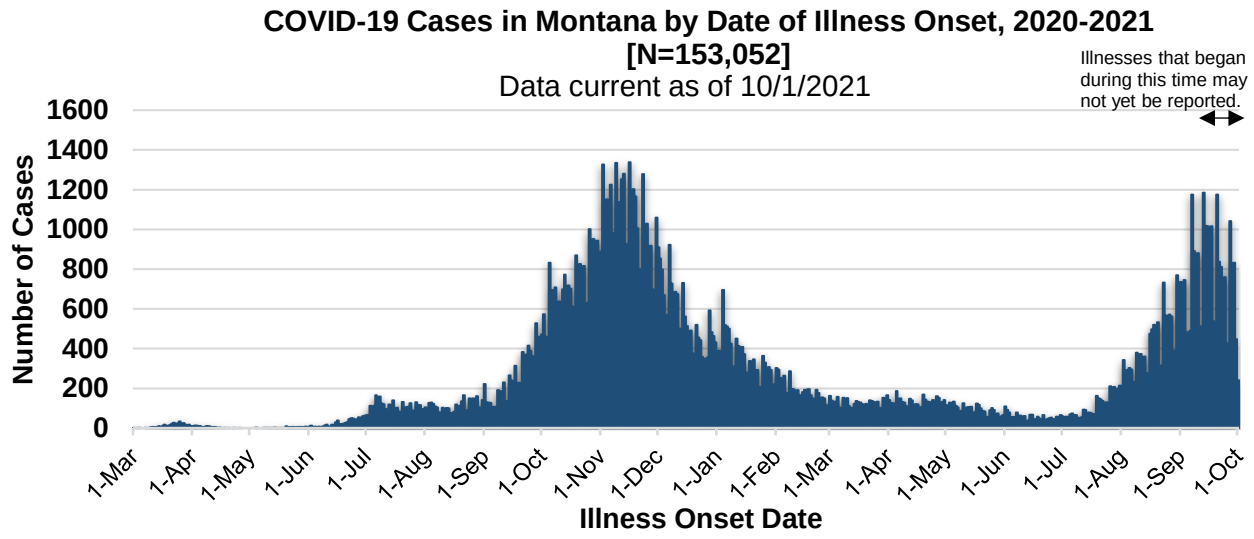


**Cases reported on the map initially included residents of other states who were tested and isolated in Montana. As COVID-19 is widespread across the United States, the map does not include out-of-state residents who test positive in Montana to align with CSTE residency guidelines that classify cases by the individual's state of residence. This is standard practice for all communicable diseases to ensure accurate data for Montana.*

Epidemiological Data

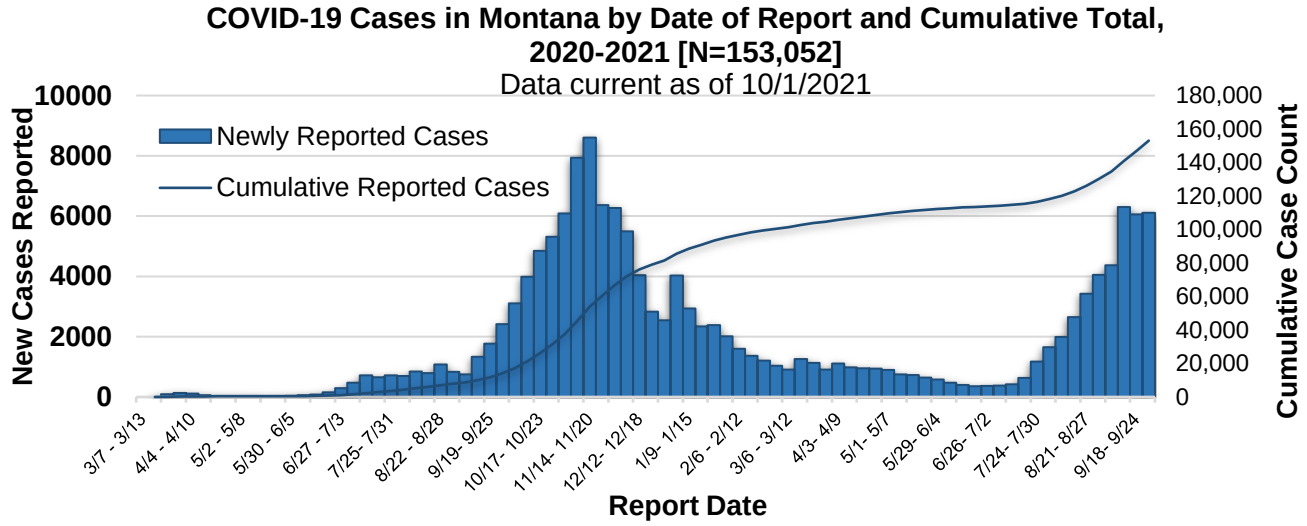
A total of 153,052 cases were reported as of 10/1/2021. Illness onset date is used when available. When onset date is not available, collection date is used to calculate an estimated onset date (Figure 2). Illness onsets that occurred within the past 10 days may not yet be reported due to lag time between illness onset, seeking healthcare for testing, and receiving test results.

Figure 2: Epi Curve for Montana COVID-19 cases



The first COVID-19 case in Montana was reported on 3/11/2020 (Figure 3). An early peak occurred in late March 2020 and then subsided. By June, case reports grew again and peaked in November when weekly new cases have averaged 7,000 new reports. For most of early 2021, case reports remained at a constant, slow decline. By July 2021, case reports began to increase again, showing exponential growth since then. Weekly case reports during the last three weeks in September remained at about 6,000 reported cases, compared to a low weekly average of 400 new cases in June since the fall peak.

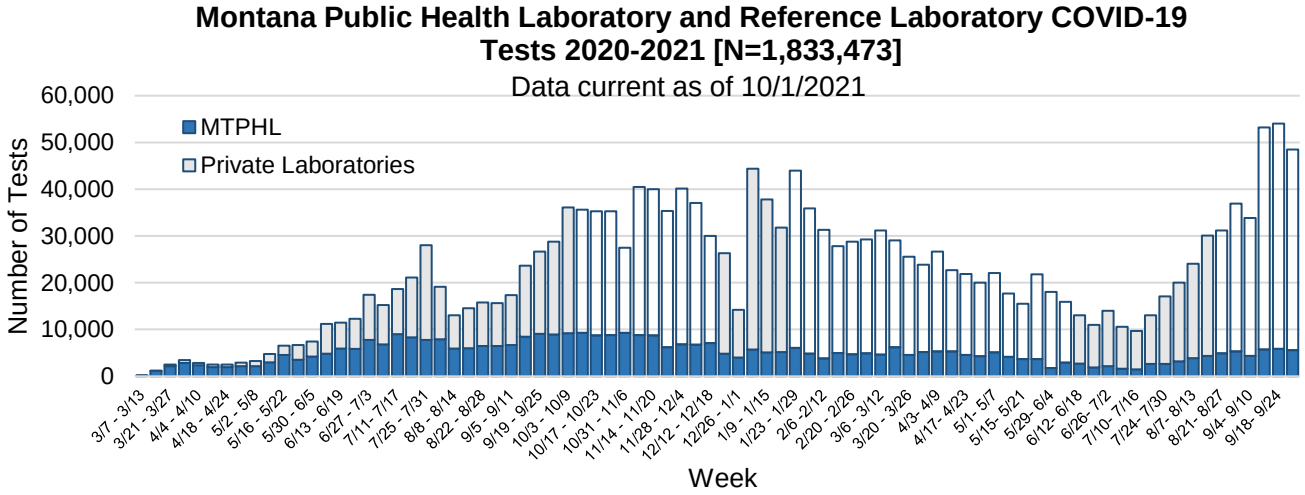
Figure 3: Cumulative reported cases for COVID-19 in Montana



Laboratory Data

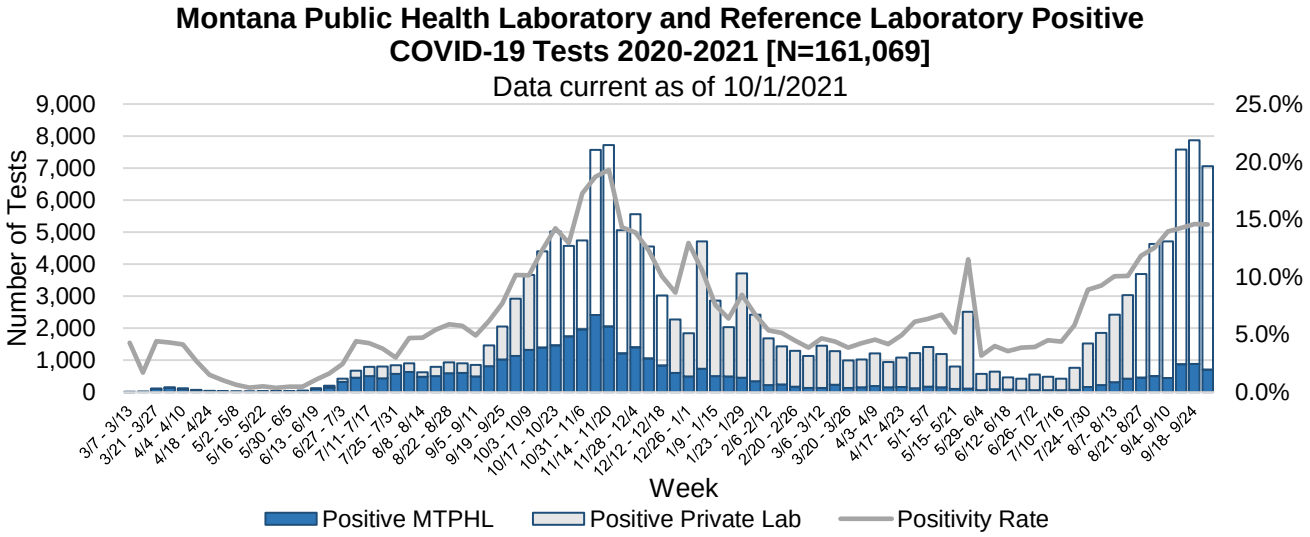
COVID-19 testing was initially available solely through the CDC. COVID-19 PCR testing capability was implemented by the Montana Public Health Laboratory (MTPHL) on March 9, 2020. Private laboratories began implementing COVID-19 testing in the weeks following. Private laboratories include reference laboratories and those in smaller hospital labs performing point-of-care (POC) testing. A total of 1,833,473 tests have been completed to date. In November 2020, an average of 36,000 tests were completed weekly (Figure 4). An average of 47,000 COVID tests have been conducted weekly in September 2021.

Figure 4: Total Laboratory Testing for COVID-19 in Montana



To date, 161,069 positive tests have been resulted through MTPHL and private laboratories. The overall positivity rate for all laboratory testing to date is about 8.8% and has varied over time, from a low of <1% in May 2020 to a high of 19% in mid-November 2020. Average positivity has declined in 2021, averaging 4% during most weeks* but has increased to 14% for each week in September (Figure 5).

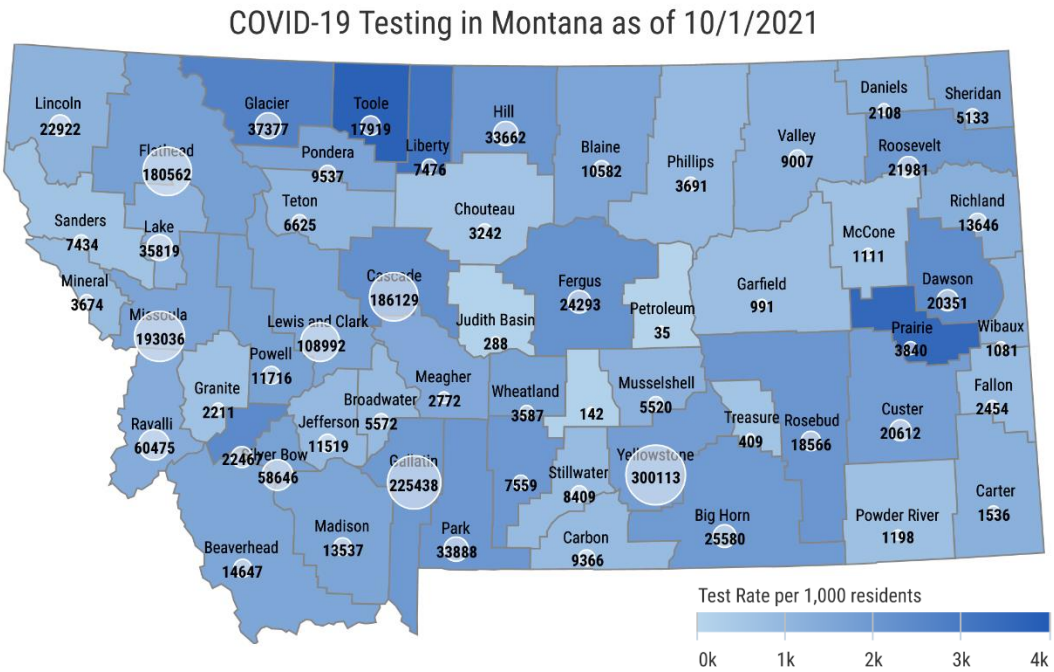
Figure 5: Positive Laboratory Tests for COVID-19 in Montana



*Please note, the increase in positivity for week ending 5/28 was a result of reporting lag during which previously missing positive laboratory reports had been migrated into the reporting system.

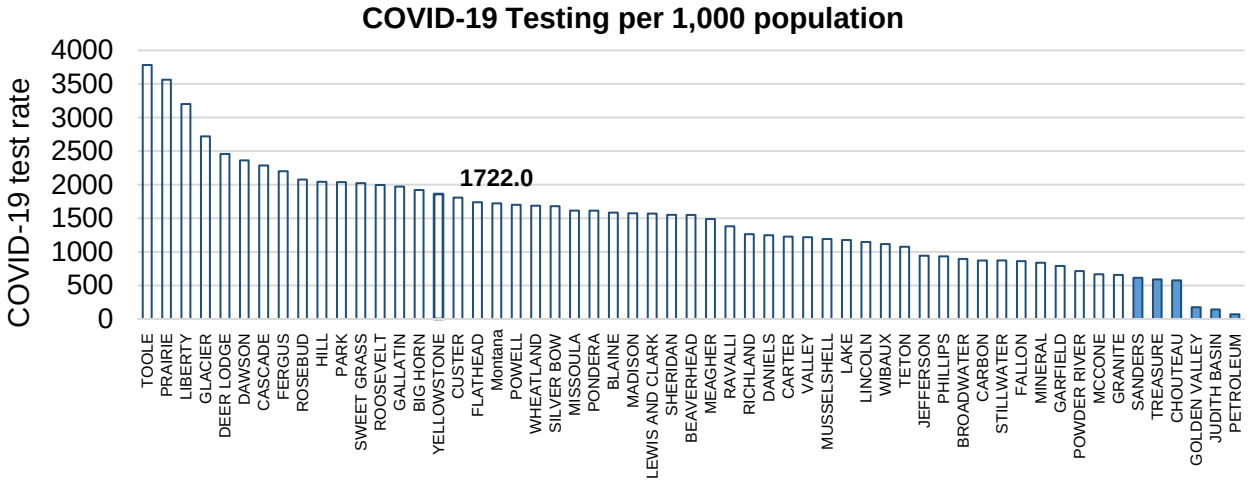
Of all COVID-19 tests conducted in Montana, most were from persons tested in Yellowstone County (16%), followed by Gallatin (12%), Missoula (10%), Flathead (10%), and Cascade (10%) counties (Figure 6). Lab testing data is displayed for county of residence when known. When county of residence is unknown, the county of the facility collecting the test was used. Positive case reports are reflected in Figure 1 and are always counted by county of residence.

Figure 6: COVID-19 Total Tests and Test Rate in Montana



Counties with the highest COVID testing rates are Toole (3,784/1,000), Prairie (3,566/1,000), Liberty (3,299/1,000), Glacier (2,718/1,000), and Deer Lodge (2,458/1,000) counties (Figure 6 & 7). The average COVID testing rate for Montana is 1,722/1,000 population.

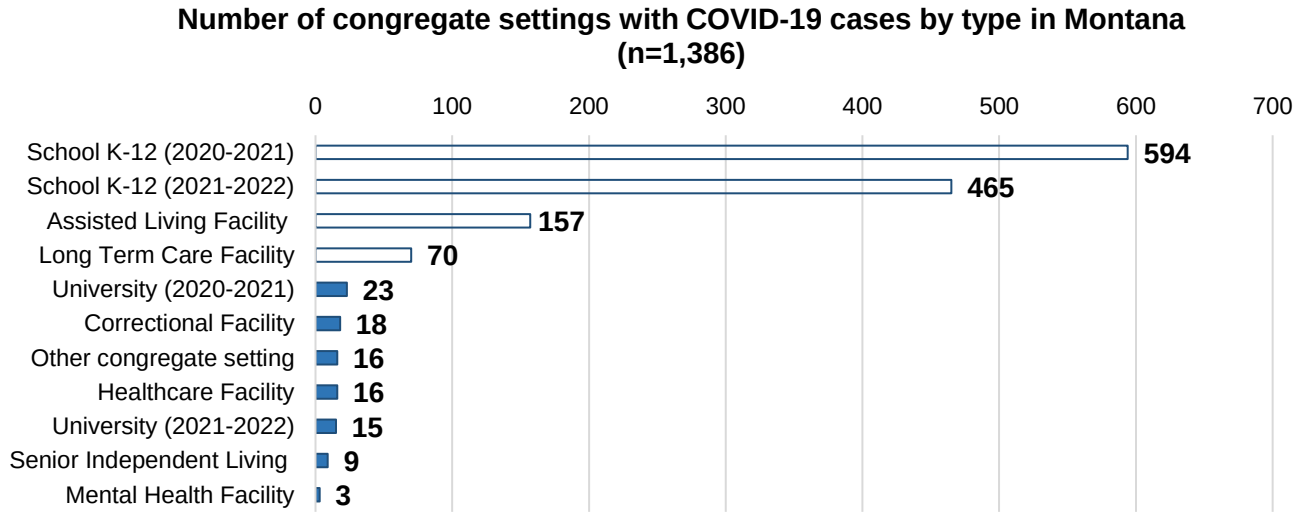
Figure 7: Ranked COVID Test Rate by County in Montana



Congregate Settings

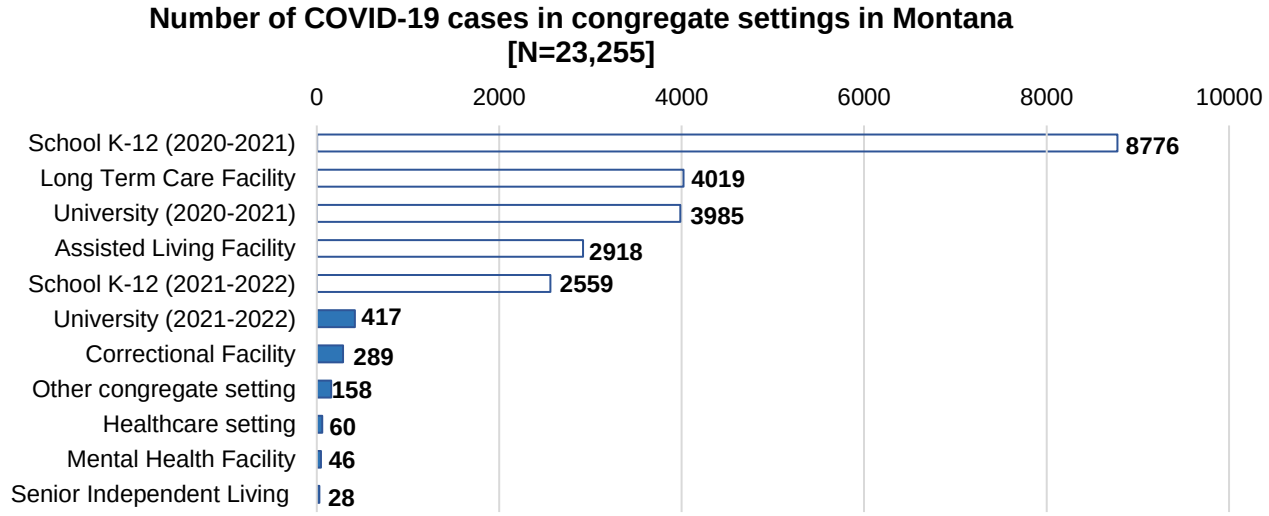
A congregate setting is an environment where a number of people reside, meet, or gather in close proximity for either a limited or extended period of time. Examples of congregate settings include homeless shelters, group homes, prisons, detention centers, schools, and workplaces. There are 1,386 congregate settings in Montana that have experienced a COVID-19 outbreak. Most outbreaks occur in schools, assisted living facilities (ALF) and long-term care facilities (LTCF), but outbreaks in other settings, such as correctional facilities, group homes, and mental health facilities have been reported (Figure 8).

Figure 8: Type and number of congregate settings experiencing a COVID-19 outbreak in Montana



A total of 23,255 cases can be attributed to outbreaks at congregate setting; most of them are residents, meaning people who reside at these locations (i.e. residents, inmates, students) versus staff, who frequent these settings as employees (i.e. nursing staff, jailors, teachers) (Figure 9). 550 persons with COVID-19 have died as part of outbreaks occurring at ALFs and LTCFs, which is about 27% of all COVID-19 reported deaths in the state.

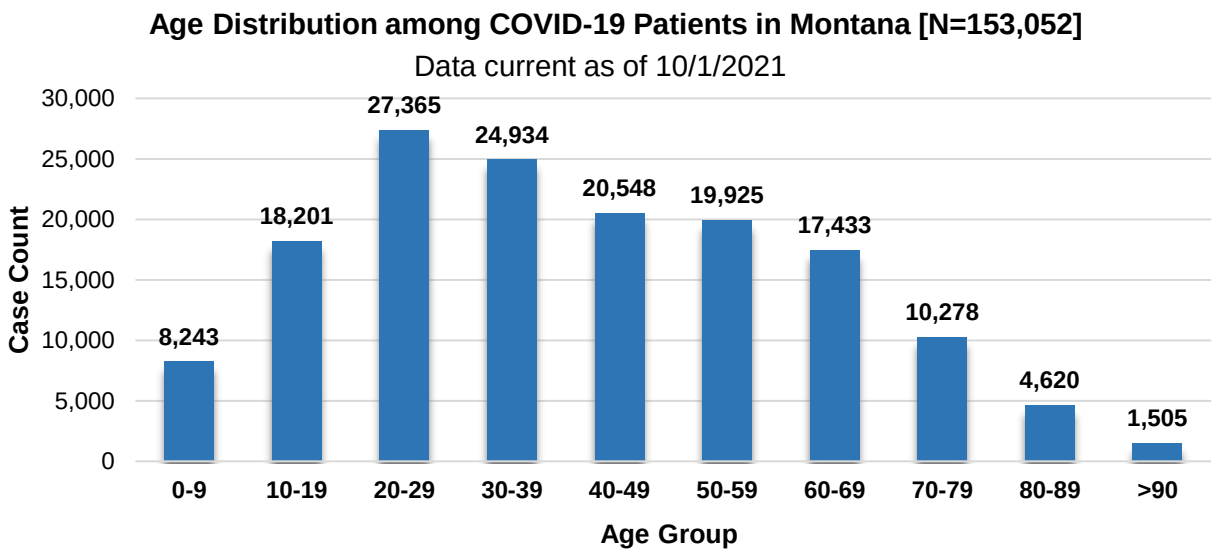
Figure 9: Number of COVID-19 residents and staff by type of congregate setting in Montana



Age and Demographic Distribution

To date, persons between 20-29 years of age account for 18% of all reported COVID-19 cases in Montana. The next most common age group is 30-39 years (16%), followed by 40-49 (13%) and 50-59 years (13%) (Figure 10). The median age for all cases is 39 years of age (range: <1-108 years). Fifty percent of cases are between 24-57 years of age.

Figure 10: Age Distribution for COVID-19 cases in Montana



Persons infected with COVID-19 are somewhat equally distributed among men and women, with 52% of cases reported as female and 48% reported as male. Of 123,647 (81%) persons with known race at the time of report, 81% identify as white and 9% as American Indian or Alaska Native. Other race was listed by 9% of persons, and less than 1% identified as either Black or African American, Asian, Native Hawaiian, or Pacific Islander each (Table 1). Ninety-six percent of all persons with ethnicity information available (n=103,849) identify as non-Hispanic or Latino and four percent as Hispanic or Latino. Native Americans make up about 7% of Montana's population, but represent 9% of reported COVID-19 cases in the state.

Table 1: Race of COVID-19 Cases in Montana (N=89,856)

Race	Count	Percent
White	99,999	81%
American Indian or Alaska Native	10,577	9%
Native Hawaiian, Pacific Islander	198	<1%
Asian	517	<1%
Black or African American	742	<1%
Other	11,614	9%
TOTAL	**123,647**	

Transmission Characteristics

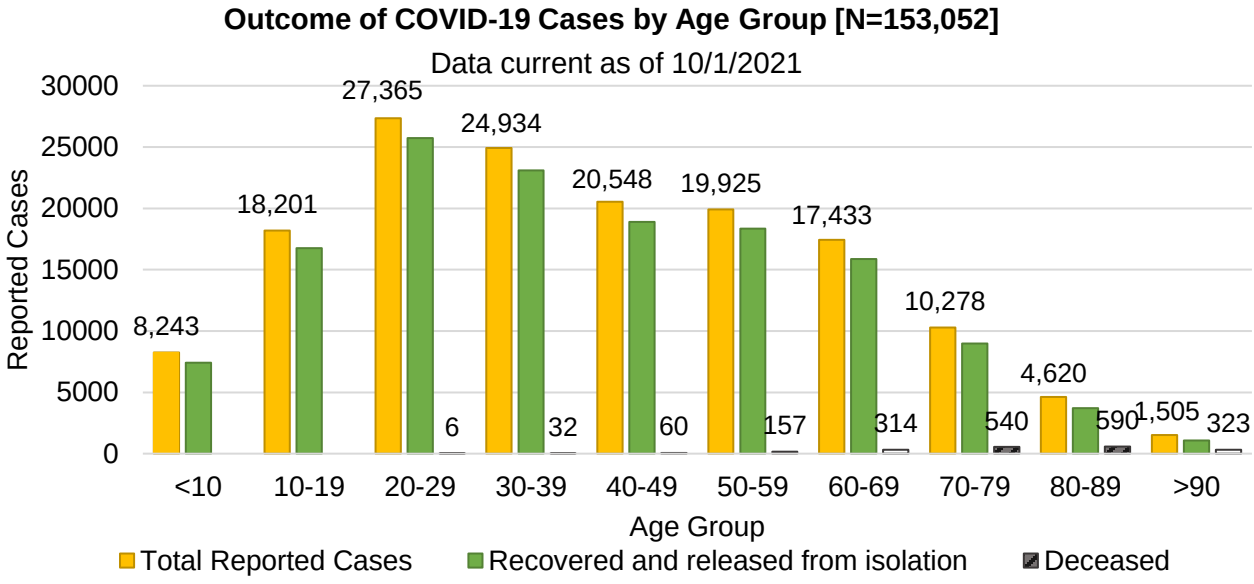
Data on disease transmission of recently diagnosed persons is limited, as the highest priority during case investigation is case follow up, contact tracing, and gathering essential information on cases. Data entry, particularly on supportive information such as exposure information and underlying conditions, are

available when enough resources allow for additional data entry. Transmission data is currently available for 50% of reported cases; about half of these cases were identified as a contact to another confirmed COVID-19 case. No exposure was identified for approximately one out of four (27%) cases. At the time of the report, one out of six (16%) persons reported a workplace exposure. These exposures are not mutually exclusive and do not directly determine where infection was acquired, but rather provide a broad overview of activities that nearly half of COVID-19 patients describe during the period of time they likely were infected with COVID-19.

Outcomes

The current outcomes of COVID-19 cases in Montana depict the impact of the illness on the population. There are currently 11,128 (7%) persons actively infected and 139,902 (91%) persons who have recovered, meaning they have cleared the illness and are released from isolation (Figure 11). There are 2,022 (1%) persons infected with COVID-19 who have died. Persons who died were between 24 and 103 years of age, with a median age of 78 years old. Fifty-six percent were male. For those who died, and race was known (n=1,981), 1,521 (77%) of them identified as white, 295 (15%) as Native American and 151 (8%) as other race or multi-race. Less than 1% identified as African American and less than 1% identified as Asian.

Figure 11: Current infections and illness outcomes for Montana COVID-19

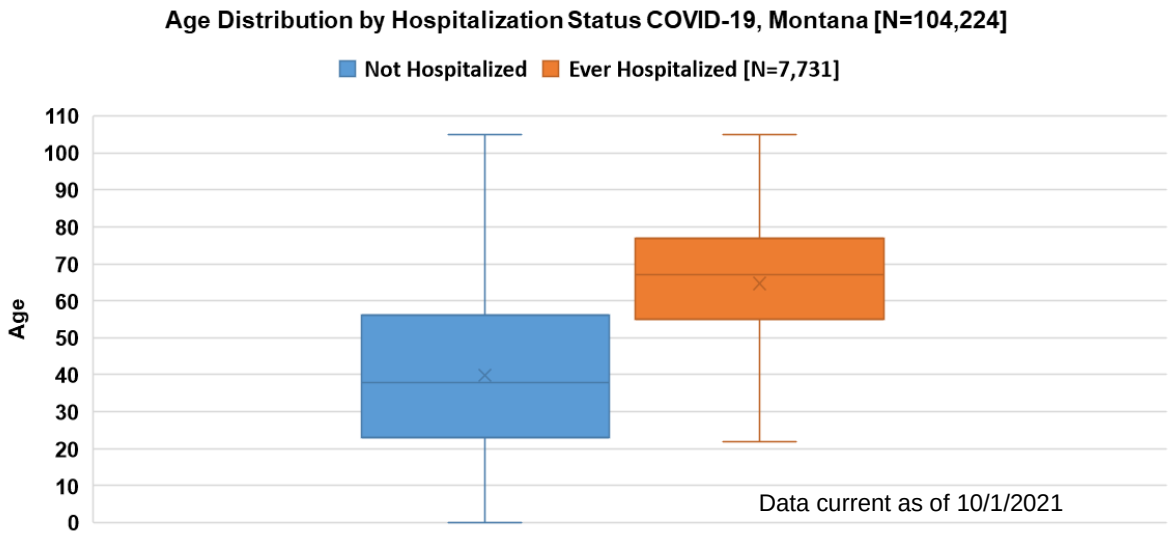


Persons who required hospitalization for COVID-19 are generally much older than those not requiring hospitalization (Figure 12). To date, 7,731 persons have been hospitalized with a median age of 67 years; half of them are between 55 and 77 years old. Those who did not require hospitalization have a median age of 38, and half of those cases are between 23 and 56 years old.

At the time of this report, information on pre-existing and underlying conditions was available for 70% of hospitalized patients. Of hospitalized patients with data available, 75% indicated they have at least one pre-existing condition. Hypertension (35%) and diabetes (24%) were the most common reported conditions. These conditions are not mutually exclusive.

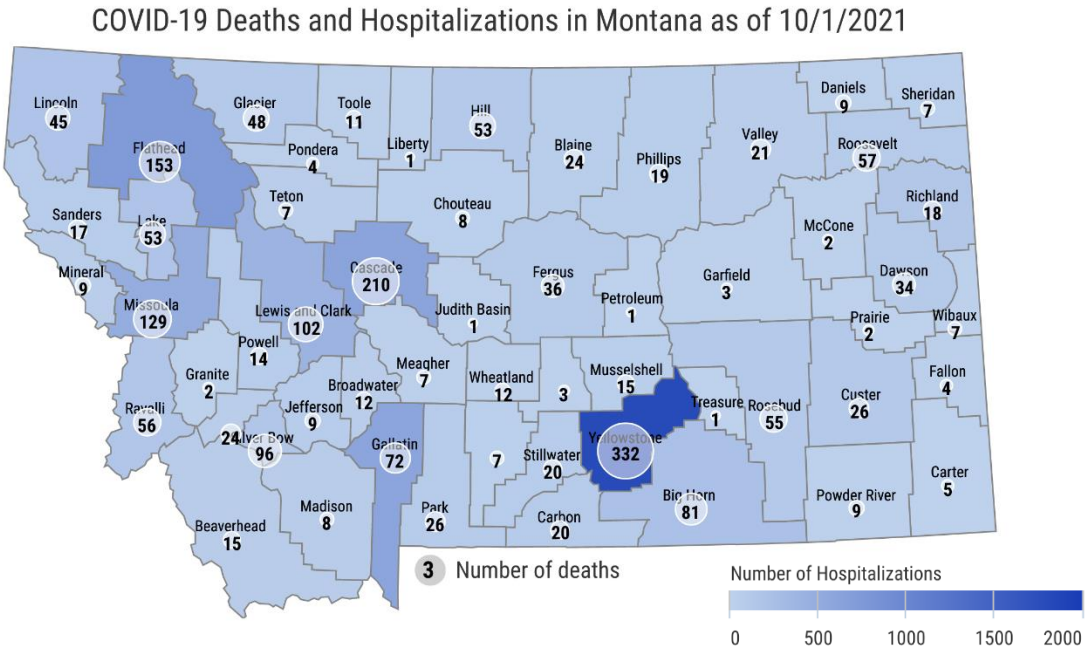
At the time of this report, information on pre-existing and underlying conditions was available for 64% of deceased patients. Of those who died, and data was available, 77% indicated they had at least one pre-existing condition. Hypertension was listed for 39% of deceased patients and diabetes was listed for 25% of patients. These conditions are not mutually exclusive.

Figure 12: Age Distribution among COVID-19 cases compared by known hospitalization status



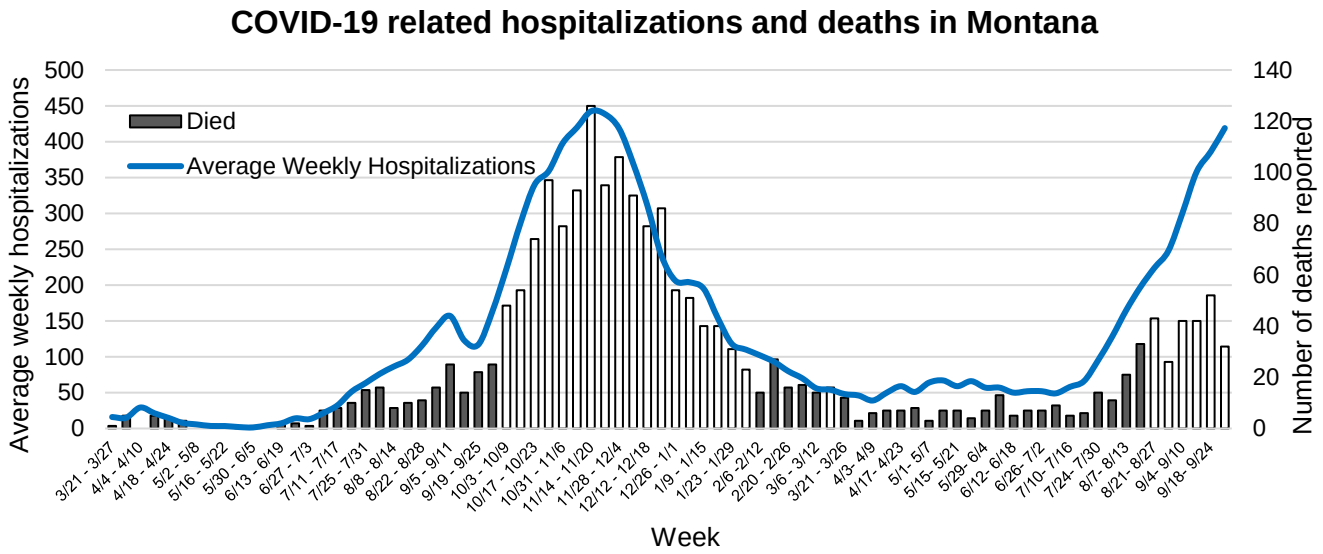
Reports of hospitalizations and deaths vary by county. Yellowstone County has reported the most cases, hospitalizations, and deaths during the outbreak so far. Counties reporting 100 or more deaths include Yellowstone (332), Cascade (210), Flathead (153), Missoula (129), and Lewis & Clark (102). Darker shading indicates higher number of persons hospitalized. Number of deaths reported by county are below (Figure 13).

Figure 13: COVID-19 Hospitalizations and Deaths by County



The number of persons who have died increased with the surge of new cases in late 2020, and then declined during the first few months of 2021 as fewer new cases were reported (Figure 14). Data is displayed by date of death. Average weekly hospitalizations due to COVID-19 peaked mid-November 2020, during the same time as the greatest numbers of new cases were reported. Average hospitalizations have steadily declined since December 2020. Hospitalizations remained stable in spring 2021 but have begun to increase again in July 2021 and continue to climb.

Figure 14: Reported COVID-19 related hospitalizations and deaths over time



Breakthrough Infections

Data from COVID-19 vaccination studies suggest that the efficacy of COVID-19 vaccines in preventing COVID-19 infection is likely 90-95% or better. In simple terms, this would suggest that if 100 fully vaccinated individuals were exposed to COVID-19, five to ten would be expected to develop disease. However, the calculation is more detailed. Vaccine efficacy is calculated as a measurement of how much a vaccine lowers the risk of an outcome, and can vary by the particular vaccine studied, the study size, or expected outcome (e.g., prevention of infection vs. prevention of severe outcomes).

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

As of 10/5/21, Montana reports 7,376 cases of confirmed breakthrough disease, which includes 422 hospitalizations and 88 deaths. Over the past 8 weeks (August 7 – October 1) the number of cases among unvaccinated individuals was 4.9 times higher than the number of cases among vaccinated individuals; the number of hospitalizations and deaths among unvaccinated individuals were 5.0 and 4.0 times higher, respectively, compared to vaccinated individuals.

Hospitalizations and Deaths and Vaccination Status

COVID-19 related hospitalization and death data **August 7 – October 1** (last 8 weeks) were analyzed to review vaccination status. Eighty-three percent of Montanans who were hospitalized and 80% of those who died had not received a COVID-19 vaccine (Table 2). Of the 1,810 individuals who were hospitalized during this time period, 30 (2%) were <18 years old, 312 (17%) were 18 to 44 years old, 617 (34%) were 45 to 64 years old and 851 (47%) were >65 years old.

Table 2: Vaccination status of reported COVID-19 hospitalizations and deaths – August 7 – Oct 1, 2021

	HOSPITALIZATIONS	DEATHS
TOTAL REPORTED	1,810	251
UNVACCINATED	1,506 (83%)	201 (80%)
VACCINATED (BREAKTHROUGH CASE)	304 (17%)	50 (20%)
UNVACCINATED AGE RANGE IN YEARS (MEDIAN AGE)	<1-99(60)	24-100 (70)
VACCINATED AGE RANGE IN YEARS (MEDIAN AGE)	16-101(74)	53-97 (82)

COVID-19 Variant Trends

A variant has one or more mutations that differentiate it from other variants in circulation. Multiple variants of SARS-COV-2 have been documented throughout this pandemic. There were 4,086 samples that were sequenced and had their lineages reported to GISAID since September 2020. CDC updated their COVID variant classification system recently. Delta is the only Variant of Concern at this time, and it is the dominant circulating strain in Montana. Of specimens collected and sequenced in September and October, 563/564 (99.9%) are Delta. Aside from Delta, all other former variants of concern and interest have been re-classified as Variants Being Monitored. The overall trends in variants shows that, March through June, the Alpha variant (light yellow) was predominant. Beginning in July, the Delta variant (dark orange) has been detected most often among sequenced samples and is currently the dominant variant in Montana.

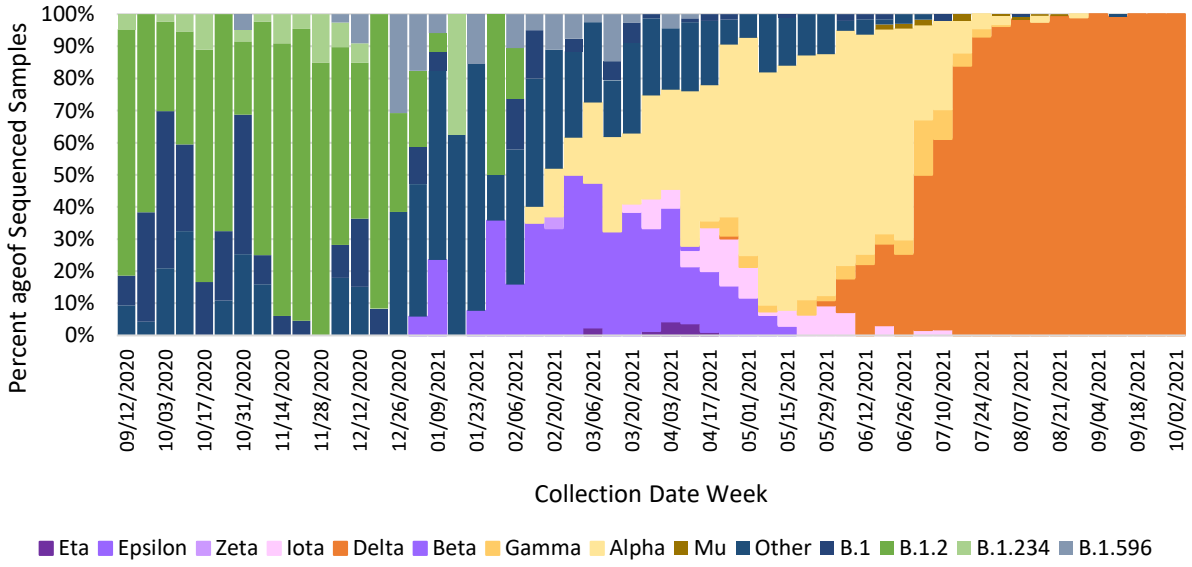



Figure 15: Percent of COVID-19 Variants in Sequenced Samples by Collection Date, Montana