Interim Analysis of COVID-19 cases in Montana (as of 4/10/2020 10pm)

This report is an interim epidemiological review of COVID-19 cases in Montana. Data is analyzed based of information available as indicated by time stamp. The current case count at the time of analysis is:

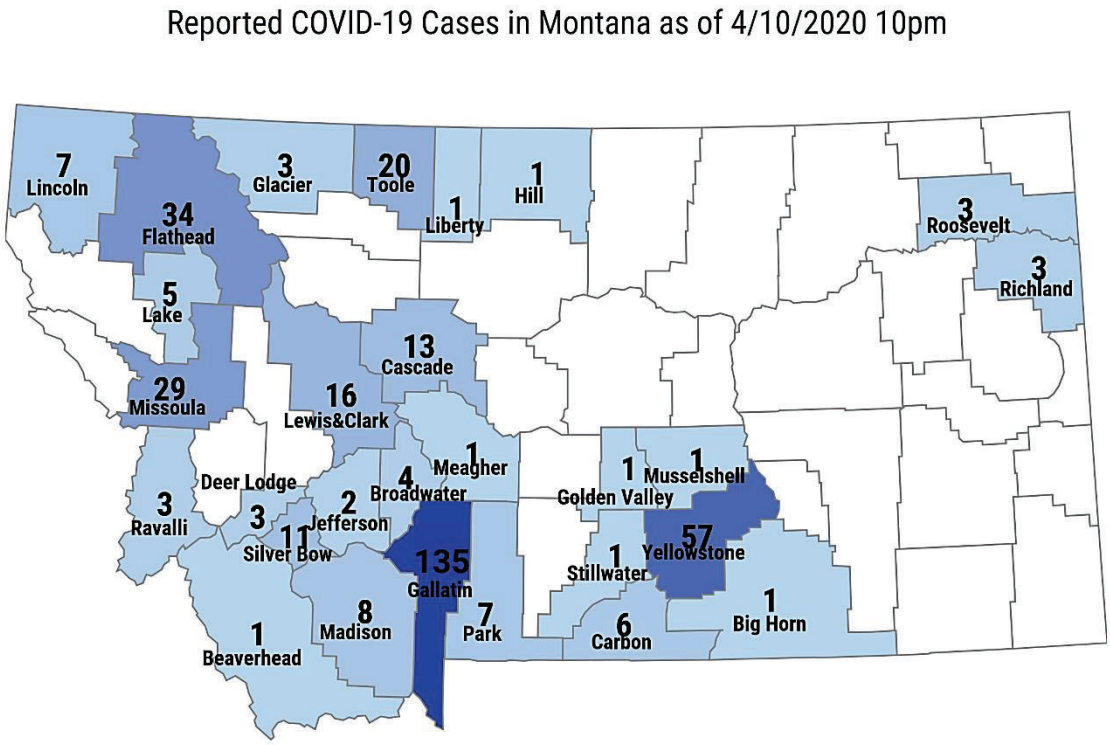
Case Count = 377

This is a fast-moving situation and new data becomes available throughout the day. 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 377 cases reported in Montana. There are 28 counties with reported cases. Gallatin County reports the most cases (36%), followed by Yellowstone (15%), Flathead (9%) and Missoula (8%) Counties (Figure 1). Most cases are reported in more populous counties. Of the more rural counties, Toole County is particularly impacted by COVID-19.

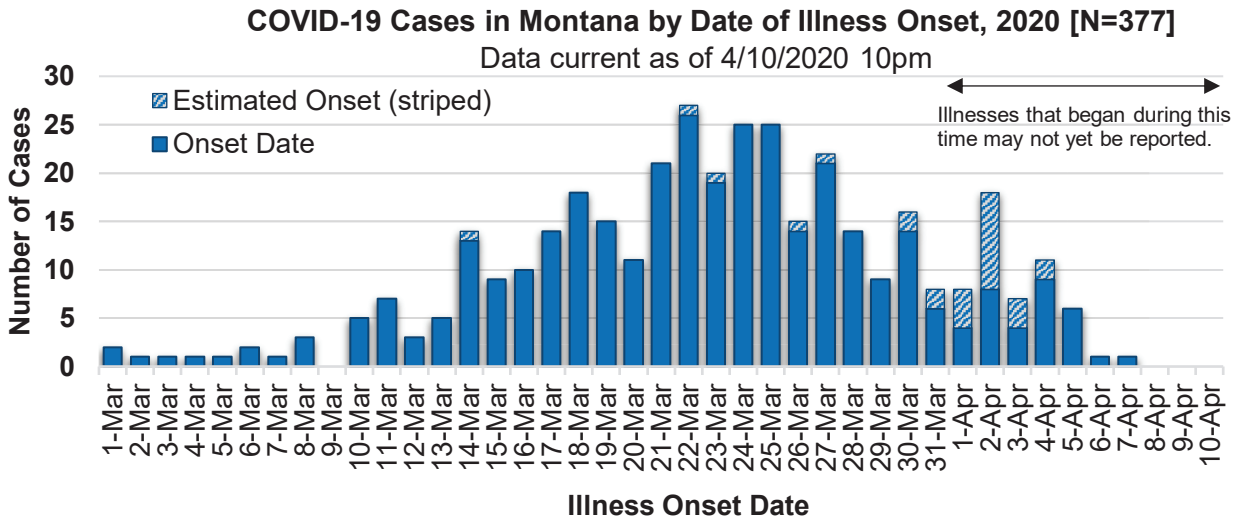
Figure 1: Map of Reported Montana COVID-19 cases



Epidemiological Data

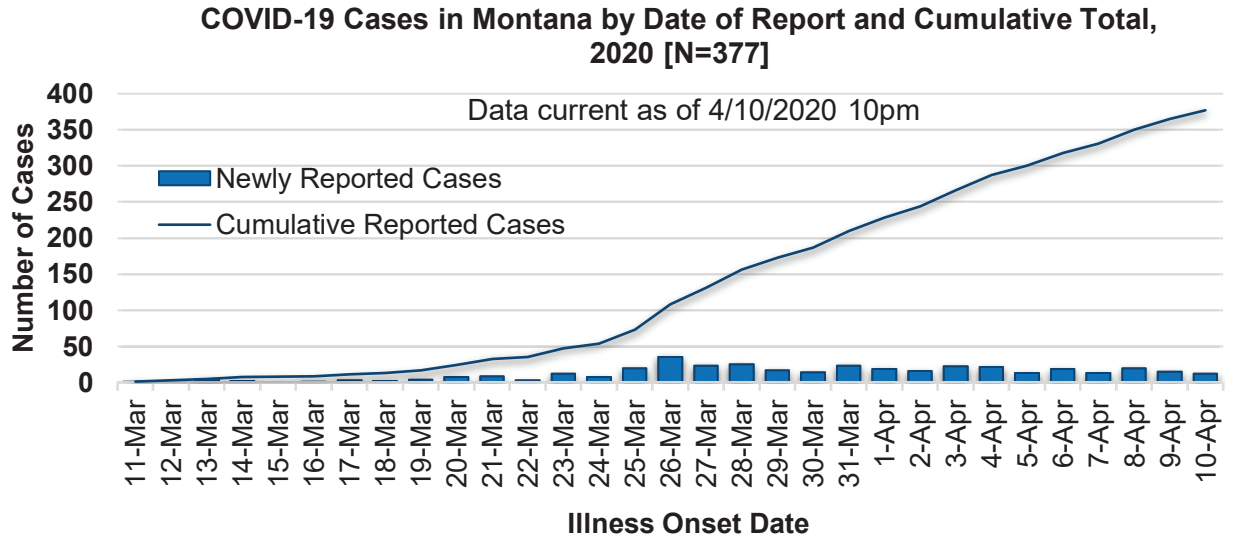
A total of 377 cases were reported as of 4/10/2020 at 10pm. Illness onset date is available on most reported cases. When onset date is not available, collection date is used to calculate an estimated onset (Figure 2). Illness onsets that occurred within 10 days may not yet be reported, due to a lag time between illness onset, seeking a provider to get tested, and receiving test results.

Figure 2: Epi Curve for Montana COVID-19 cases



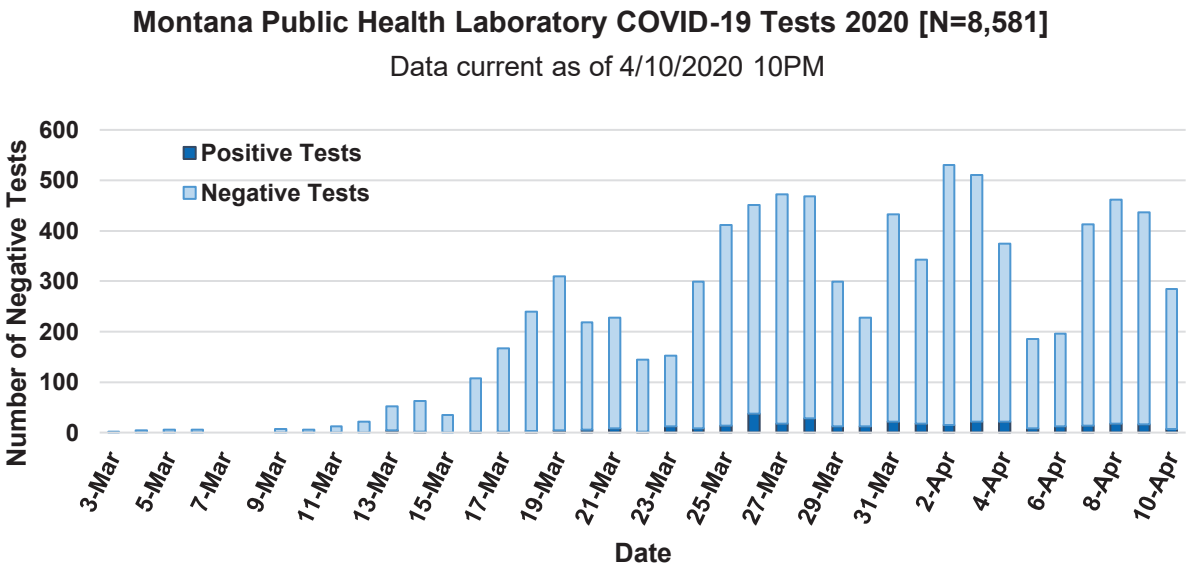
The first COVID-19 case was reported on 3/11/2020 in Montana. Since then, the number of new cases has climbed to 377 cases in one month (Figure 3). It took 13 days to reach 100 reported cases. After the first 100 cases, growth has remained steady and increasing by another 100 cases for every 5 days. An even slower rate of growth had been detected for most recent case reports. Reports of COVID-19 continue to increase in Montana, but do not appear to grow exponentially.

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



The Montana Public Health Laboratory continues to receive specimens for COVID-19 testing. In the last two weeks, the laboratory processed an average of 370 specimens daily, reaching an average positivity rate of about 4.5% (Figure 4). In total, the laboratory has tested 8,581 samples for COVID-19 since the first reported illness and 349 of those were found positive. Some of these tests are repeat specimens to check for cure of illness. Additional laboratories perform COVID-19 testing for Montana residents.

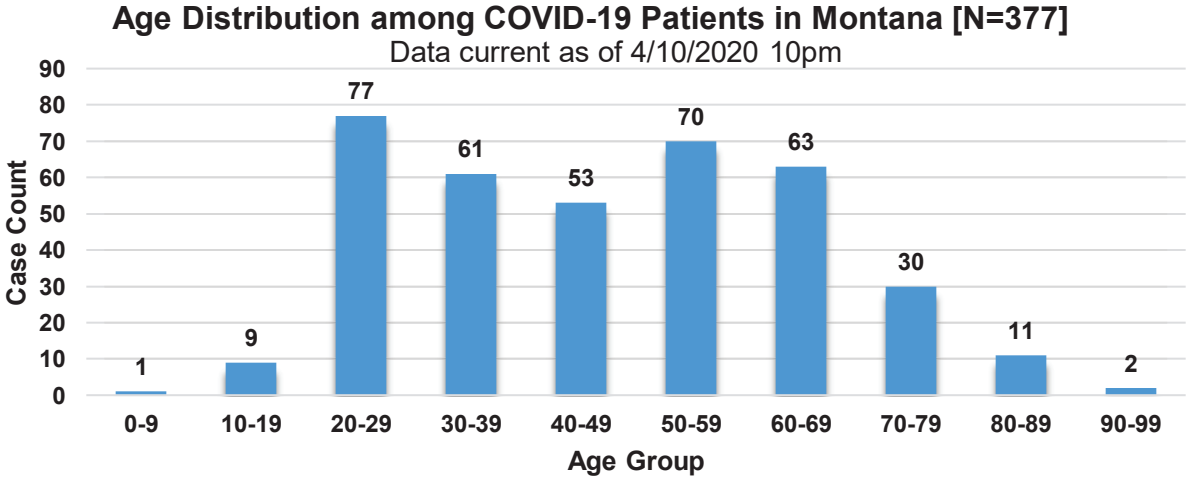
Figure 4: MTPHL Laboratory Testing for COVID-19



Age and Demographic Distribution

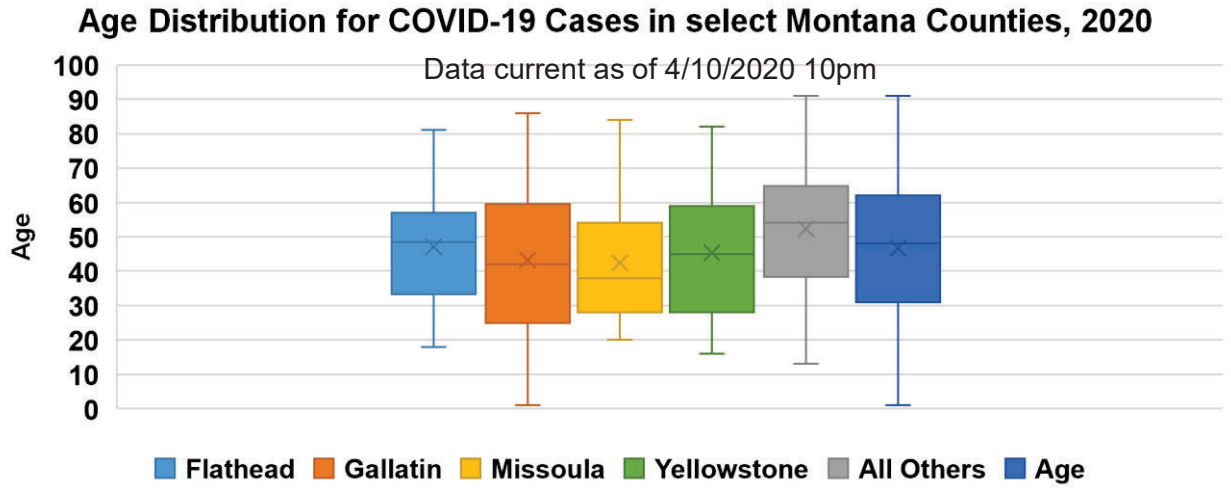
Persons between 20-29 years old account for 20% of all reported COVID-19 cases in Montana. The next most common age group is 50-59 years old (19%) followed by those who are 60-69 years old (17%) (Figure 5). The median age for all cases is 48 years of age with a range between 1-91 years of age. Fifty percent of cases are between 31-62 years of age.

Figure 5: Age Distribution for COVID-19 cases in Montana



In the four counties with most cases accounting for 2/3 of all reported cases, the age distribution shows some slight variations. Gallatin, Missoula and Yellowstone Counties report slightly younger ages compared to the state average and half of their cases are between mid-twenties and late fifties (Figure 6). Missoula's cohort is the youngest, with the median age at 38 years old. The age distribution in Flathead County is comparable to the state average. All other counties that comprise the other third of reported cases, show a much older age distribution, with half of the cases being older than 53 years old.

Figure 6: Age Distribution for COVID-19 cases in select Montana Counties

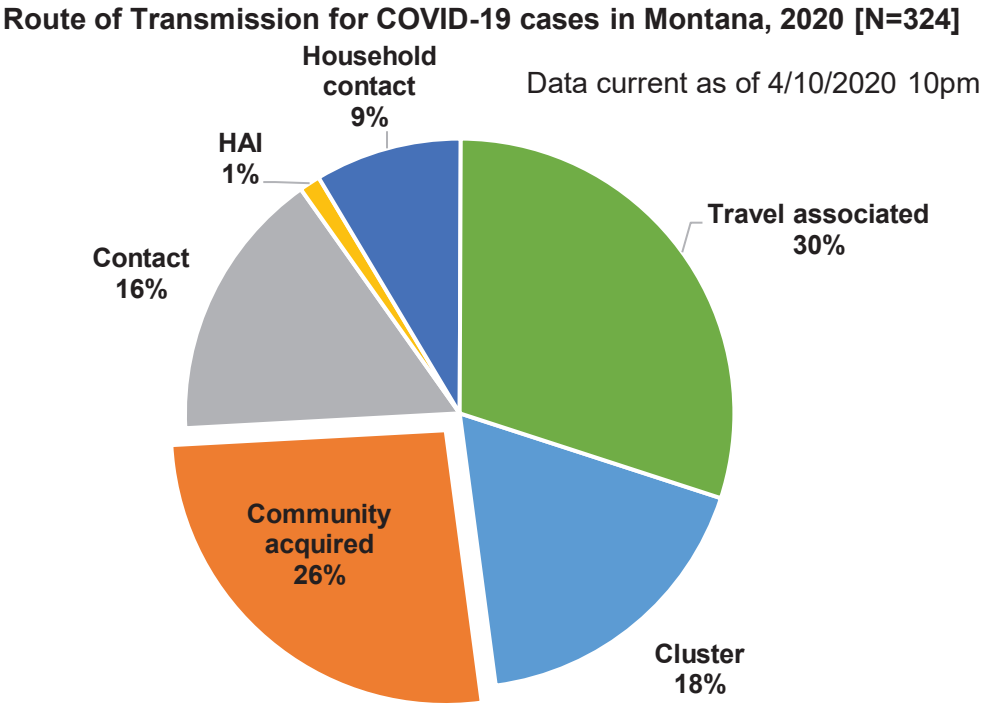


Persons infected with COVID-19 are equally distributed among men and women, with 50% of cases being male and 50% being female. Of 323 (86%) cases with known race, 94.4% of persons identify as white and 3.7% as Native American. Others cases identify as 0.3% African American, 0.4% Asian, 0.3% Hispanic, 0.3% Hawaiian and 0.6% as other race. Native Americans are not disproportionally impacted by COVID-19 in Montana at this time.

Transmission Characteristics

There are 28 counties reporting COVID-19 cases and even though 15 of those counties indicate that at least one person acquired the virus in the community, only five counties report widespread community acquired transmission occurring in their county. Of all data available, 26% of all cases with known transmission information likely acquired the virus in the community, most of those are in Gallatin and Yellowstone Counties. Thirty percent of reported cases likely acquired the virus through travel-related exposures, nearly one out of five was part of a cluster and one out of six were identified as a contact to a known case (Figure 7).

Figure 7: Known Routes of Transmission for Montana COVID-19

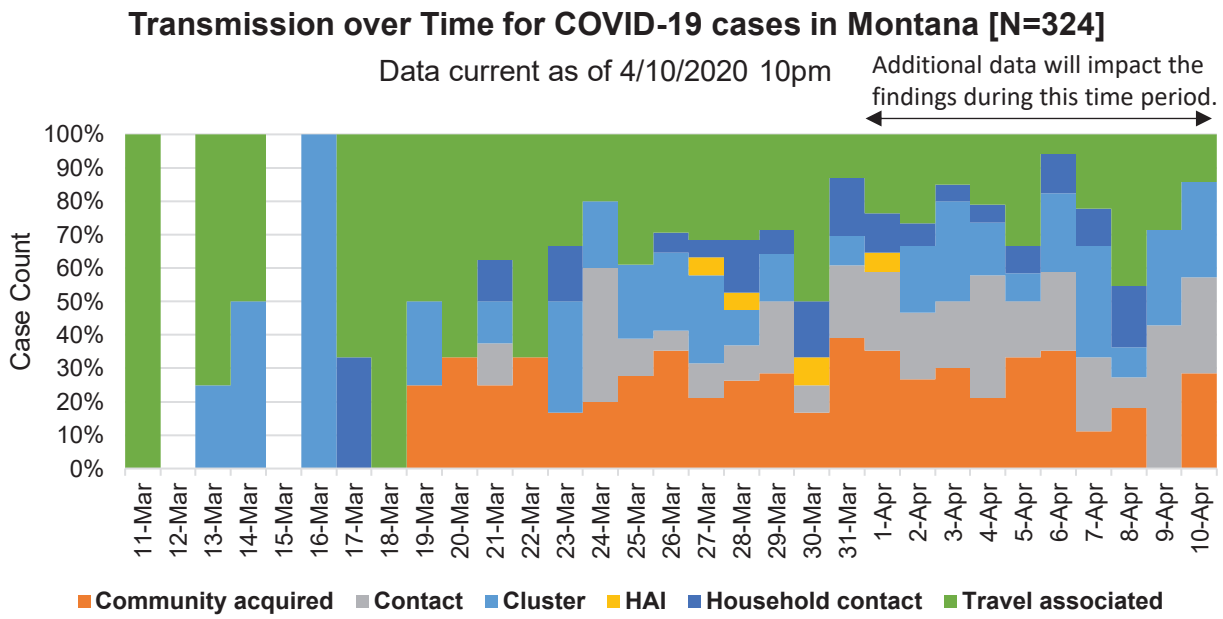


Under Investigation: Data unavailable and currently under investigation for 53 (14%) persons.

CATEGORY	DEFINITION
TRAVEL ASSOCIATED	Case traveled out-of-state during the incubation period
COMMUNITY ACQUIRED	Case was unable to be linked with other known cases
CONTACT	Contact to a case not in their household and not part of a known cluster
HOUSEHOLD CONTACT	Household contact to a confirmed case
CLUSTER	Case is part of a known cluster
HAI	Healthcare-associated infection
UNDER INVESTIGATION	Likely route of transmission is still under investigation

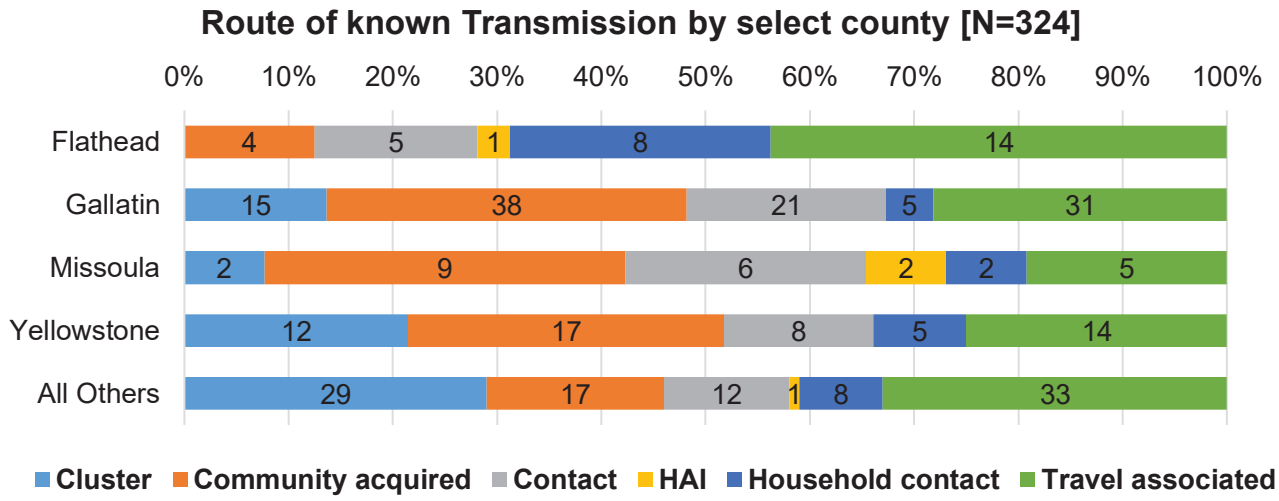
Monitoring transmission changes over time can indicate effective public health efforts, such as timely investigations, thorough contact findings and measures to reduce community-acquired transmission. Transmission information is unknown for newly reported cases under investigation. The percent of community-acquired cases has contributed to disease counts, but has remained proportionally steady since it was first noted in Montana, indicating there has not been a relative increase in community-acquired cases in recent weeks (Figure 8). Travel-related cases contributed to the majority of cases early in the outbreak, but new cases attributed to travel are declining in Montana relatively. Contact and cluster investigations have increasingly added to the case counts, indicating that disease control efforts through local public health staff is identifying those infected and isolating them appropriately.

Figure 8: Percent of known transmission contributing to COVID-19 Montana cases



The four counties with the largest number of cases indicate that travel-associated transmission account for around 20-30% of cases in Gallatin, Missoula and Yellowstone Counties and nearly 44% for new cases in Flathead County. About one third of cases in Gallatin, Missoula and Yellowstone Counties are attributable to community-acquired transmission, contributing to the higher case counts. Contact and household contact investigations contribute to a fair number of new cases in these four counties, with some cluster activity in Gallatin County and Yellowstone County (Figure 9). Cases reported in all other counties except those four, were initially mostly travel related, but are now primarily driven by contact and cluster investigations, with little community spread indicated.

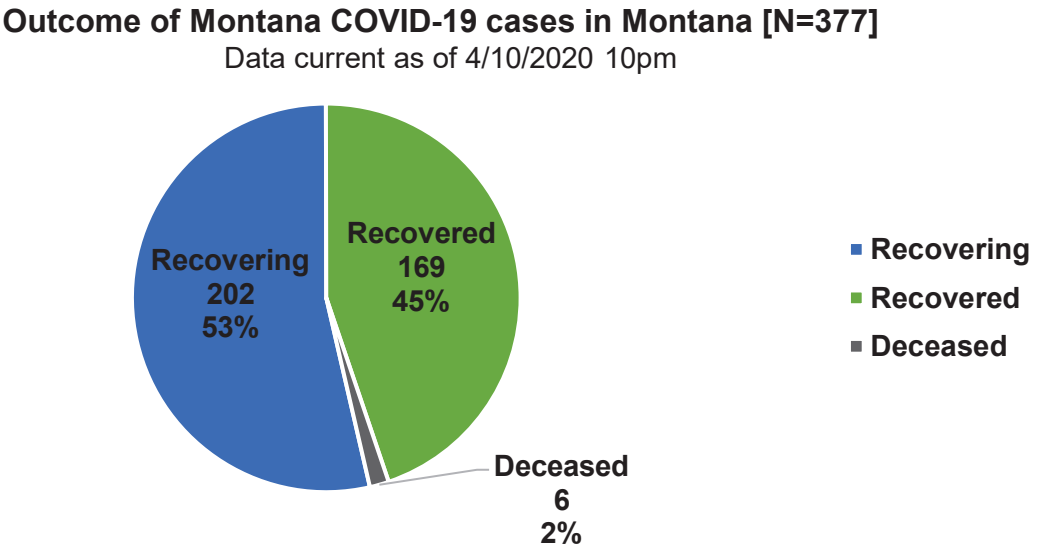
Figure 9: Breakdown of known transmission for select counties



Outcomes

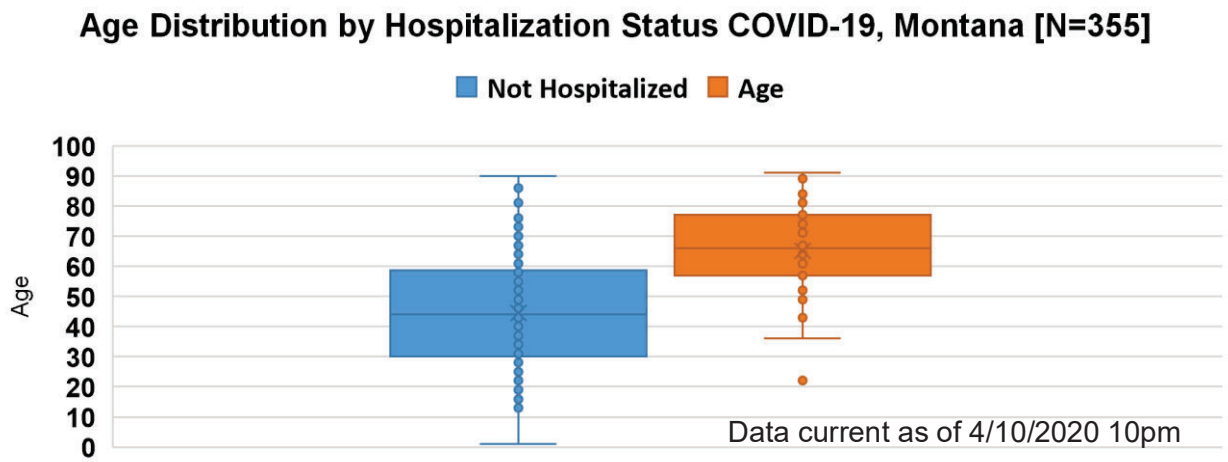
The current outcomes of COVID-19 cases in Montana depict the impact of the illness on the population. There are currently 202 persons actively infected and 169 persons who have recovered, meaning they have cleared the illness and are released from isolation (Figure 10). Six persons who were infected with COVID-19, have died. The counties reporting deaths are Toole (3), Missoula (1), Lincoln (1) and Madison (1) Counties. Persons who died were between 65 and 91 years of age. Half of them were female and half of them were male.

Figure 10: Current infections and illness outcomes for Montana COVID-19



Cases who ever had to be hospitalized for COVID-19 are generally much older than those not requiring hospitalization (Figure 11). To date, 45 persons have been hospitalized and their median age is 66, half of them are between 57 and 77 years old. This compares to those not requiring hospitalization with a median age of 44, where half of patients are between 30 and 59 years old.

Figure 11: Age Distribution among COVID-19 cases compared by known hospitalization status



End of report.

COVID-19 case summary -- Gallatin County, 2020

Current as of 4/10/2020 at 10:00 pm

The first cases of COVID-19, including one from Gallatin County were identified in Montana on March 13, 2020. This report provides some descriptive epidemiology of COVID-19 cases reported in Gallatin County. Data is subject to change as additional information is received.

Figure 1. Epi Curve of reported COVID-19 cases by date of onset of symptoms – Gallatin County, 2020

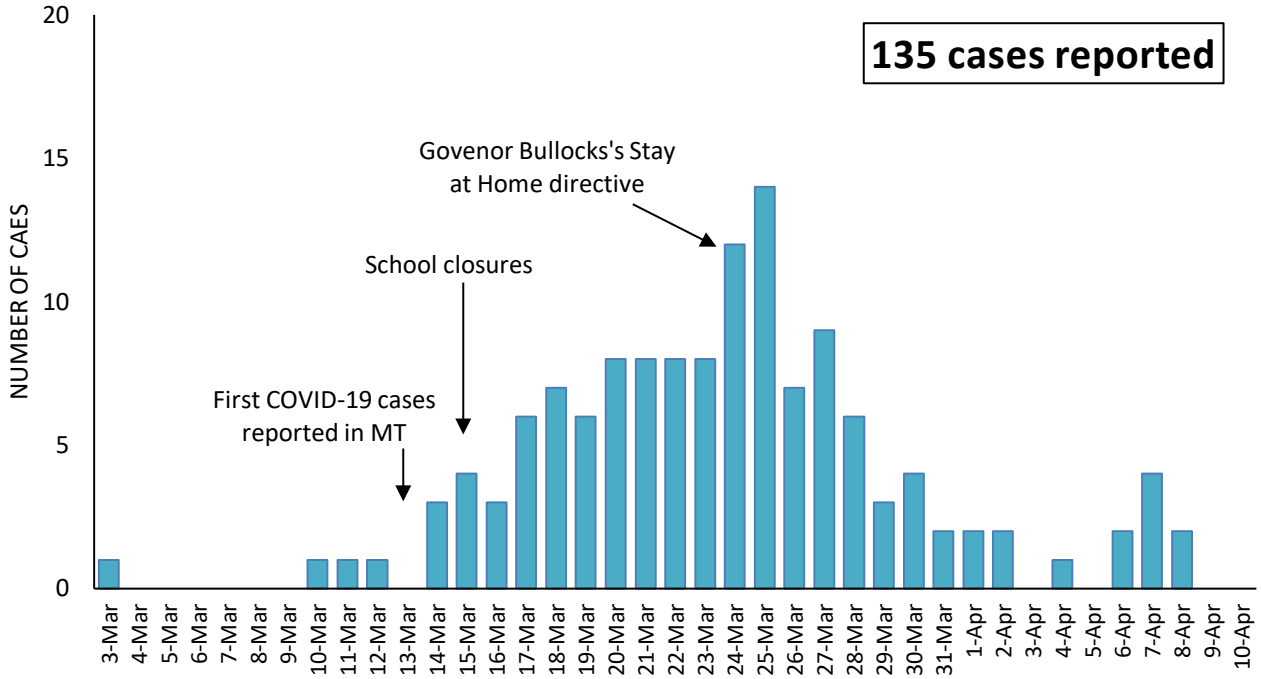


Figure 2. COVID-19 cases by age group – Gallatin County and Montana, 2020

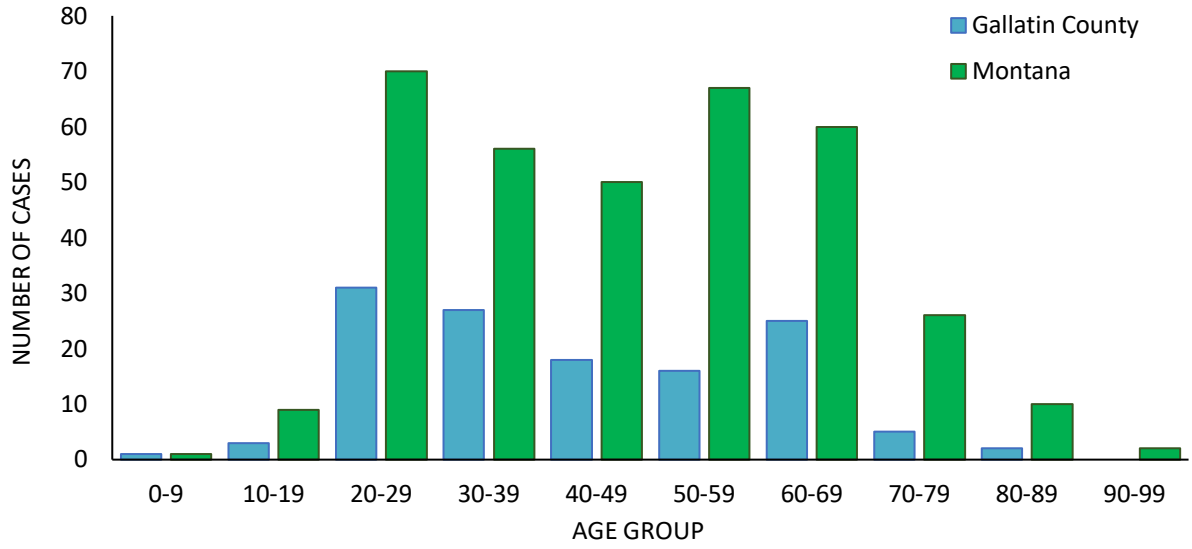


Figure 3. COVID-19 cases by sex – Gallatin County, 2020

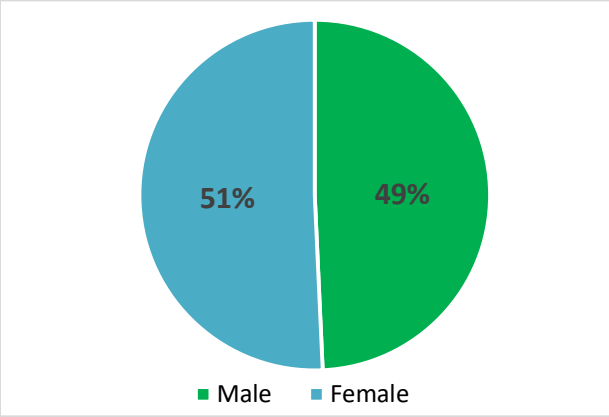
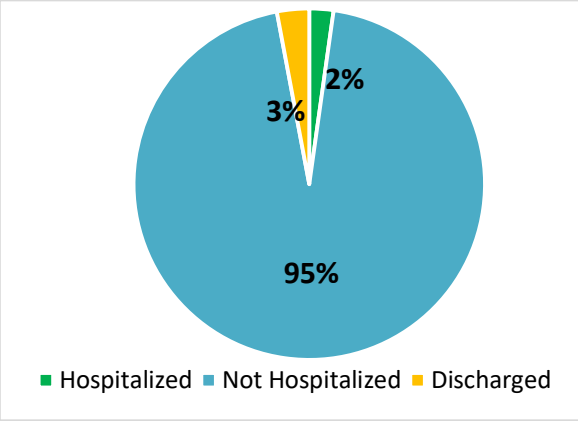


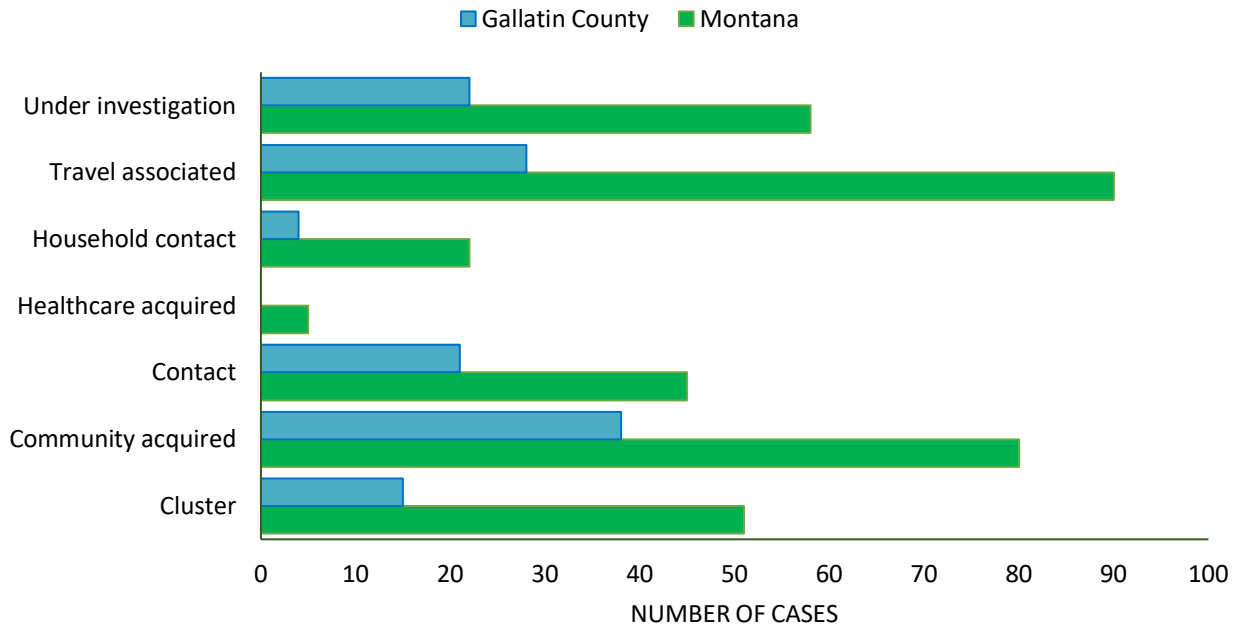
Figure 4. Hospitalization status of COVID-19 cases – Gallatin County, 2020



Approximately half of cases were male, and 5% were hospitalized at some point due to illness (Figures 3,4). Both trends are similar to those in Montana.

Cases were further analyzed to determine the likely source of transmission. The majority of Gallatin County COVID-19 cases (27%) are considered community acquired; however, a significant number of cases (20%) were associated with travel outside of Montana prior to onset of symptoms (Figure 5). In addition, 13% of cases were part of five clusters occurring in different settings. These include a worksite with nine cases; two office settings with two to four cases each; and two social events that contributed nine cases that occurred prior to Governor Bullock's Stay at Home Directive. While a number of cases were recognized in college students and tourists, it does not appear that spring break or visitors to ski areas contributed significantly to the cases in Gallatin County.

Figure 5. Likely transmission of COVID-19 cases – Gallatin County, 2020

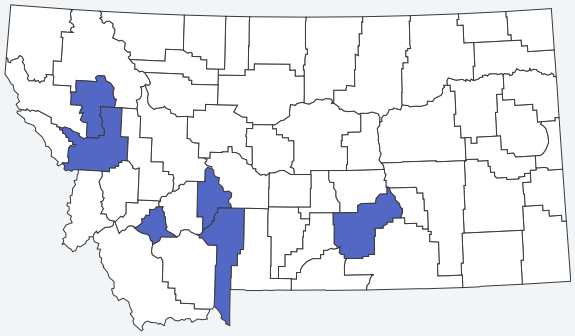


Attachment 2

MONTANA COVID-19 CASES

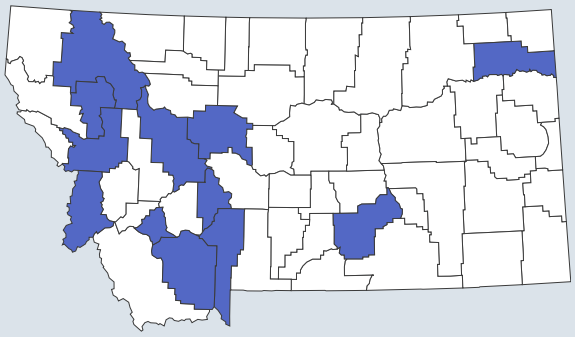
7 cases reported
6 counties

WEEK ENDING 3/13



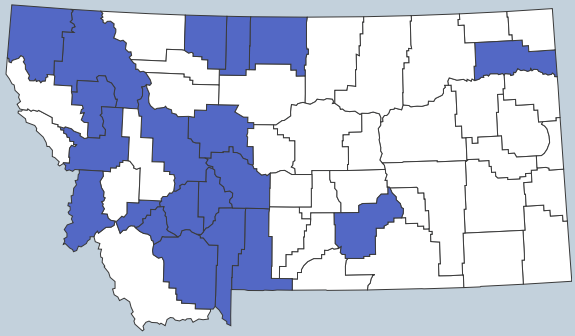
32 cases reported
12 counties

WEEK ENDING 3/20



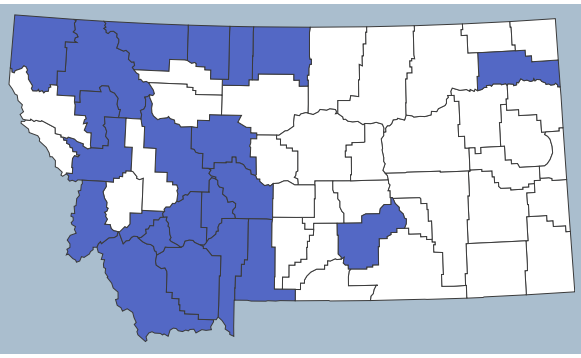
156 cases reported
20 counties

WEEK ENDING 3/27



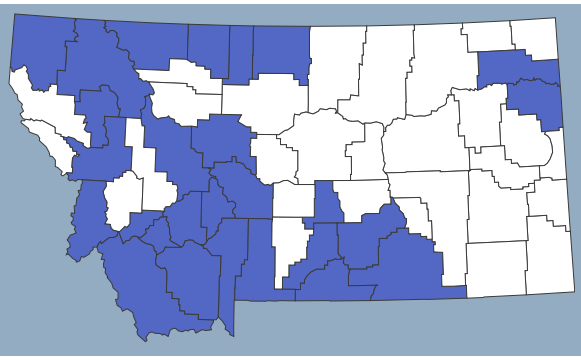
287 cases reported
24 counties

WEEK ENDING 4/3



387 cases reported
28 counties

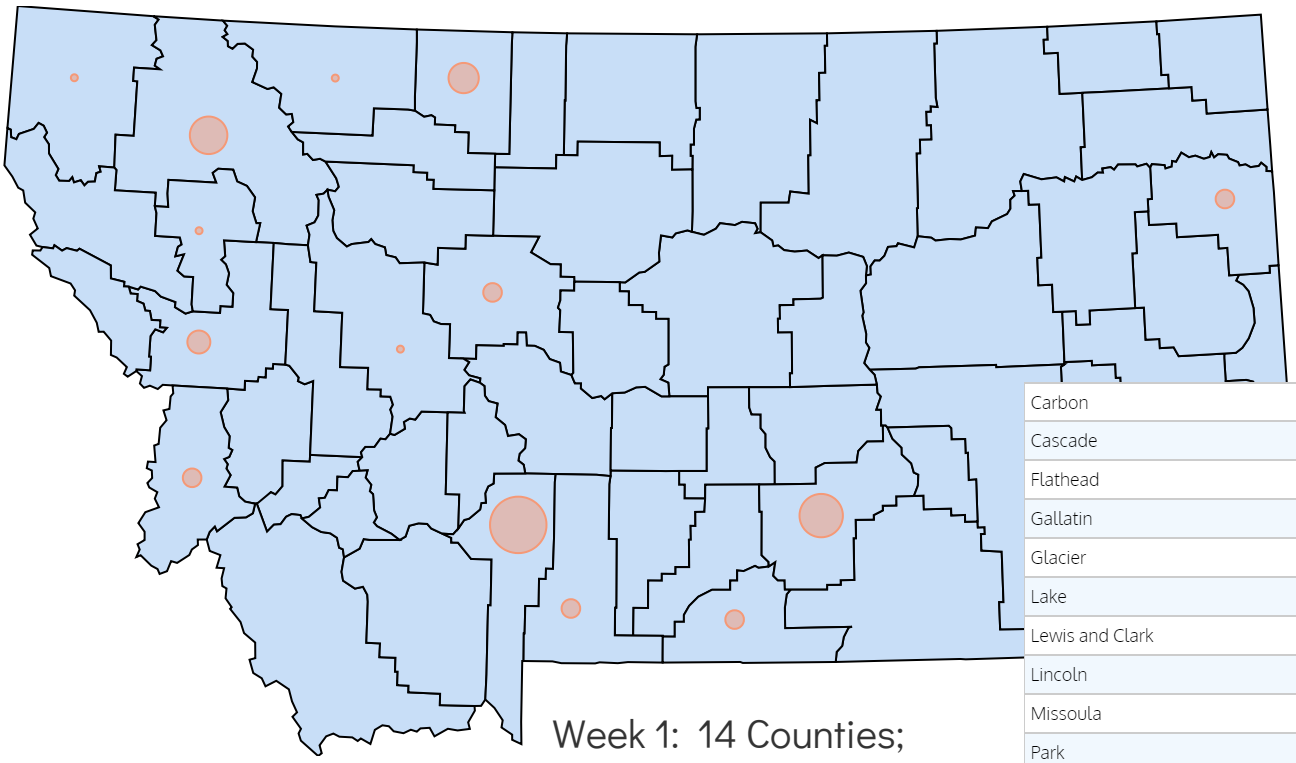
WEEK ENDING 4/10



Recent COVID-19 Cases

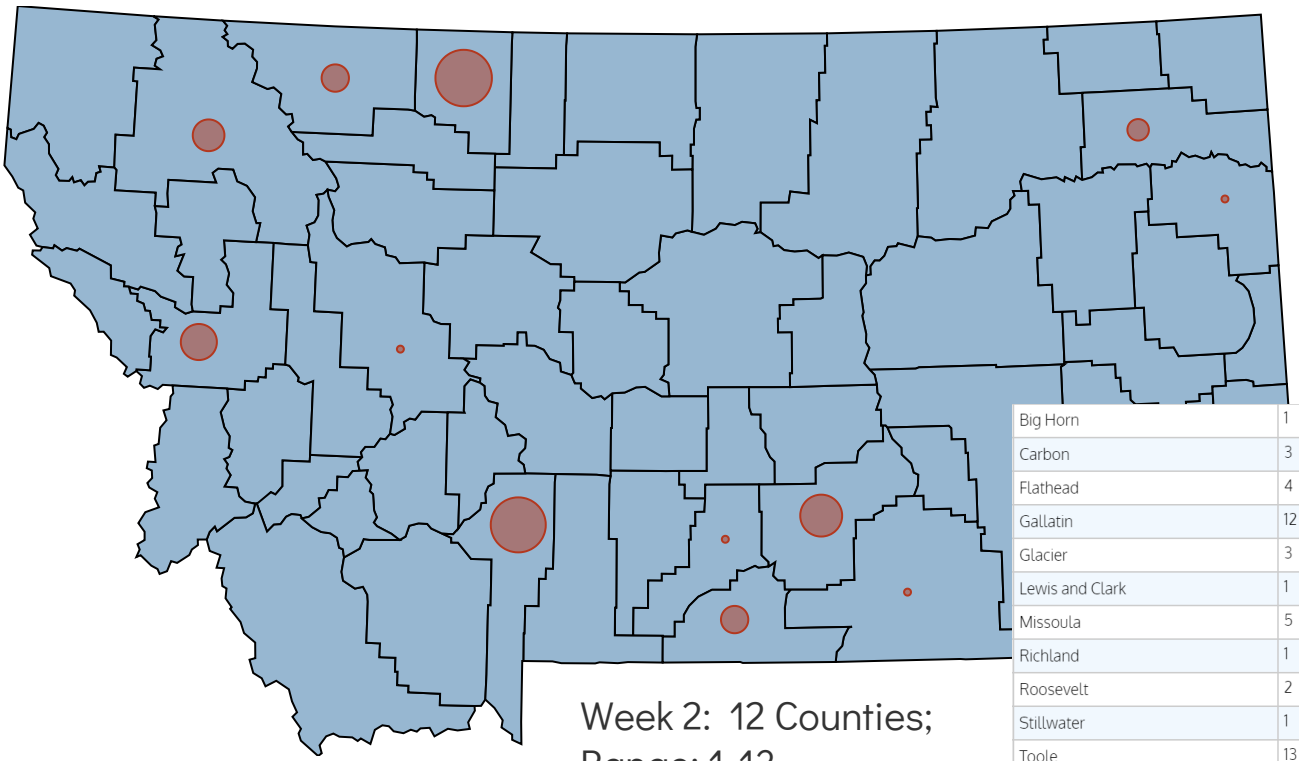
March 28 through April 10 by Illness Onset

Case data subject to revision as additional reports may be received.



Week 1: 14 Counties;
Range: 1-19

Carbon	2
Cascade	2
Flathead	8
Gallatin	19
Glacier	1
Lake	1
Lewis and Clark	1
Lincoln	1
Missoula	3
Park	2
Ravalli	2
Richland	2
Toole	5
Yellowstone	11

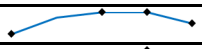
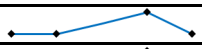
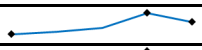
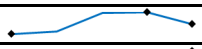
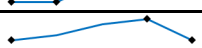
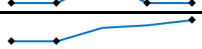
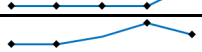


Week 2: 12 Counties;
Range: 1-13

Big Horn	1
Carbon	3
Flathead	4
Gallatin	12
Glacier	3
Lewis and Clark	1
Missoula	5
Richland	1
Roosevelt	2
Stillwater	1
Toole	13
Yellowstone	7

Attachment 3

Counties Reporting a COVID-19 Case with Trends

County	13-Mar	20-Mar	27-Mar	3-Apr	11-Apr	Trend
Beaverhead	0	0	0	1	0	
Big Horn	0	0	0	0	1	
Broadwater	1	0	2	1	0	
Carbon	0	0	0	1	5	
Cascade	0	3	4	4	2	
Deer Lodge	0	0	1	2	0	
Flathead	0	2	5	17	10	
Gallatin	1	7	50	53	24	
Glacier	0	0	0	1	2	
Golden Valley	0	0	0	0	1	
Hill	0	0	1	0	0	
Jefferson	0	0	2	0	0	
Lake	0	0	2	2	0	
Lewis and Clark	0	3	7	4	2	
Liberty	0	0	1	0	0	
Lincoln	0	0	3	3	1	
Madison	0	1	3	4	0	
Meagher	0	0	1	0	0	
Missoula	2	2	7	8	10	
Musselshell	0	0	0	1	0	
Park	0	0	2	4	1	
Ravalli	0	1	0	1	1	
Richland	0	0	0	0	3	
Roosevelt	0	1	0	0	2	
Silver Bow	1	1	8	1	0	
Stillwater	0	0	0	0	1	
Toole	0	0	4	11	5	
Yellowstone	1	4	21	12	19	
MONTANA	**6**	**25**	**124**	**131**	**90**