

Interim Analysis of COVID-19 cases in Montana (as of 4/17/2020)

This report is an interim epidemiological review of COVID-19 cases in Montana. Data is analyzed based on information available as of April 17, 2020 at 10:00 p.m. Current case count at the time of analysis is:

Case Count = 426

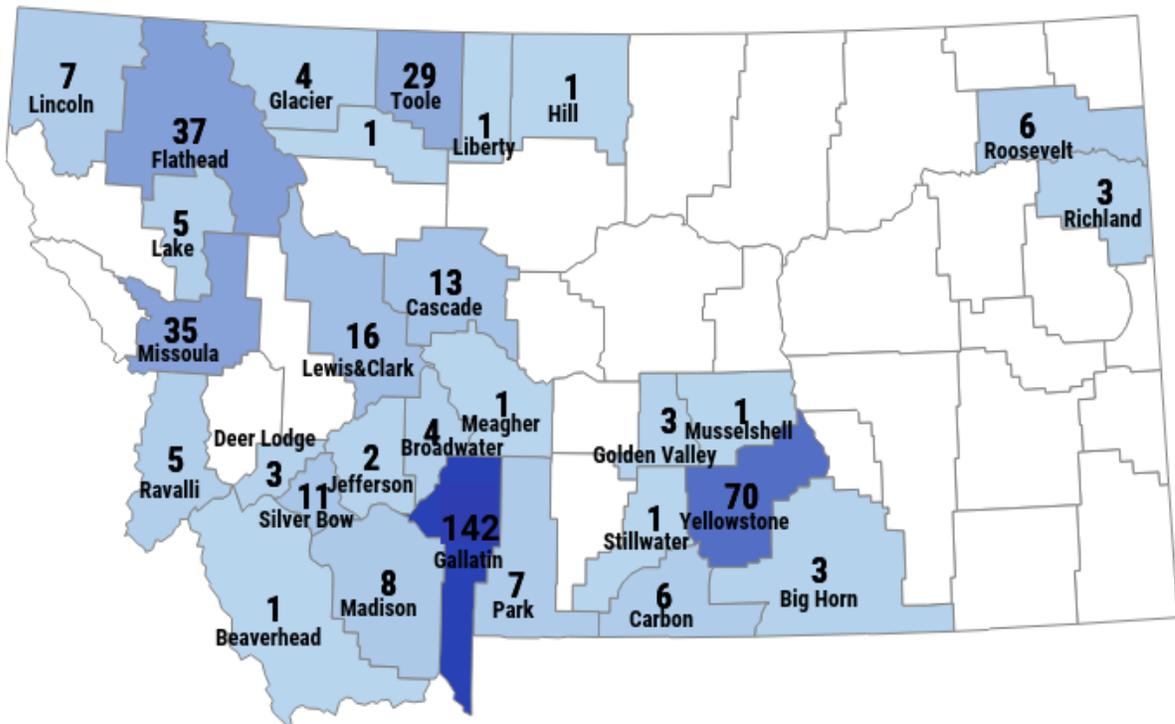
This report is completed using data that is available during the time of analysis and there may be a delay between current case count and this report, due to rapidly changing updates. When data is limited to available information, number of cases included in analysis is indicated in graphs.

Geographic Distribution

There are 426 cases reported in Montana. There are 29 counties with reported cases. Gallatin County reports the most cases (33%), followed by Yellowstone (16%), Flathead (9%), and Missoula (8%) counties (Figure 1). Most cases are reported in more populous counties. Of the more rural counties, Toole and Gallatin counties are particularly impacted by COVID-19, reporting 40% of all COVID-19 cases in Montana.

Figure 1: Map of Reported Montana COVID-19 cases

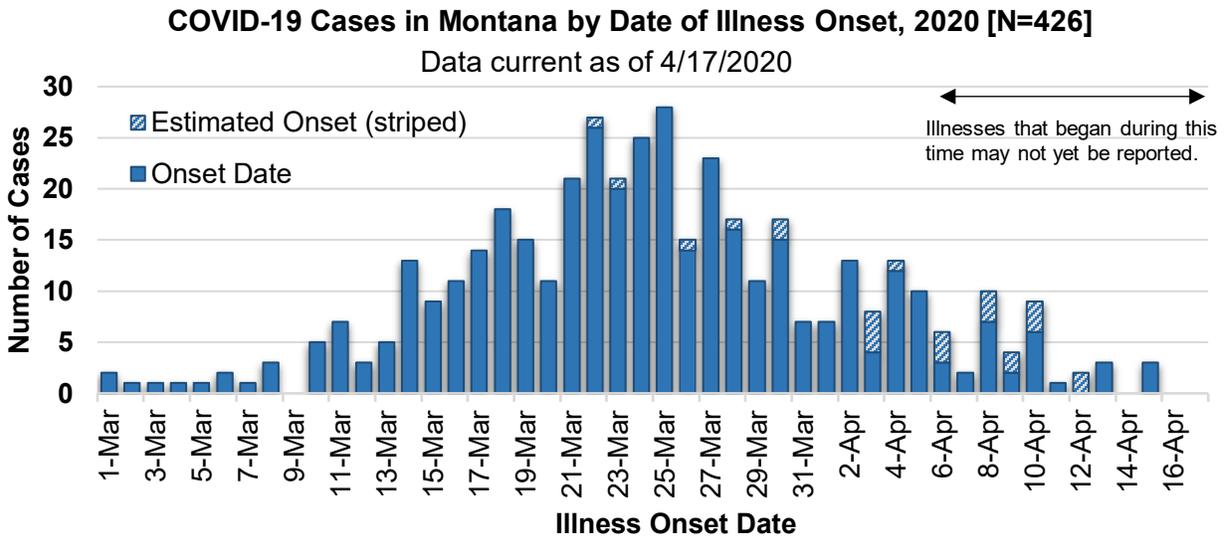
Figure 1. Reported COVID-19 Cases – Montana, April 17, 2020



Epidemiological Data

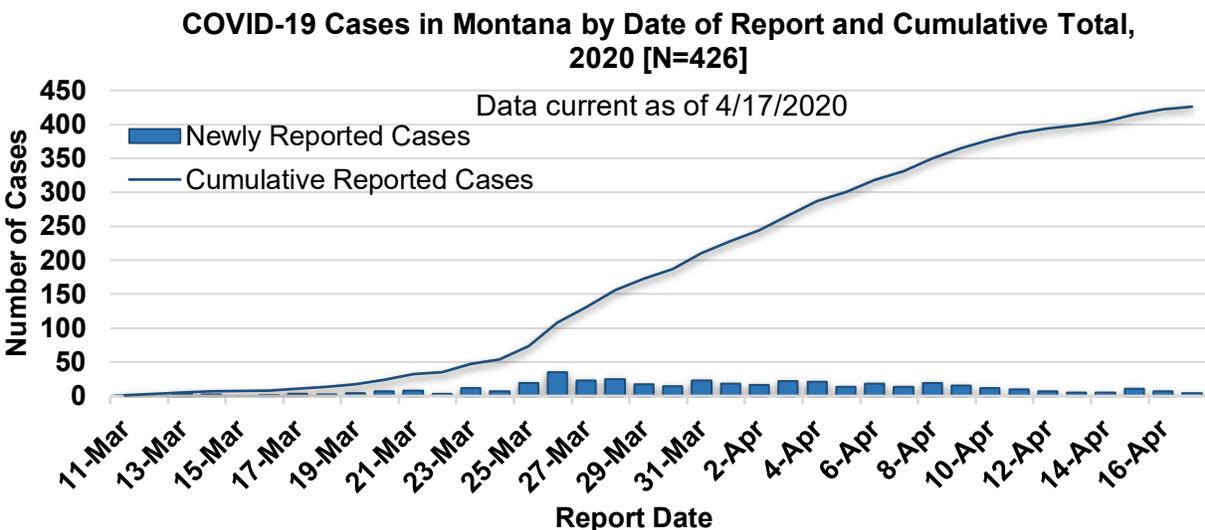
A total of 426 cases were reported as of 4/17/2020. Illness onset date is available for most reported cases. When onset date is not available, collection date is used to calculate an estimated onset (Figure 2). Illness onsets that occurred within 10 days may not yet be reported, due to a lag time between illness onset, seeking a provider to get tested, and receiving test results.

Figure 2: Epi Curve for Montana COVID-19 cases



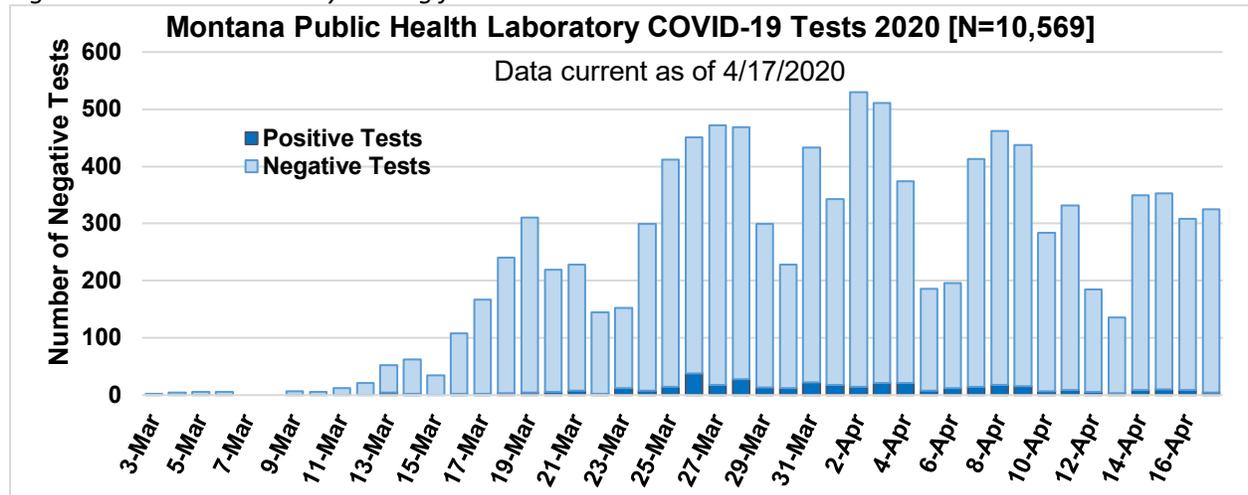
The first COVID-19 case in Montana was reported on 3/11/2020. Since then, the number of new cases has climbed to 426 in five weeks (Figure 3). It took 13 days to reach 100 reported cases. After the first 100 cases, growth has remained steady, increasing by 100 cases for every five days until reaching 300 case reports. Since then, the growth rate has slowed, taking nine days to reach 400 cases. Reports of COVID-19 continue to increase in Montana, but the rate of increase appears to have slowed.

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



The Montana Public Health Laboratory (MTPHL) continues to receive specimens for COVID-19 testing. In the most recent week, MTPHL processed an average of 280 specimens daily, reaching an average positivity rate of about 3% (Figure 4). This is down compared to the previous week, when an average of 330 specimens were tested every day yielding a 4% positivity rate. In total, MTPHL has tested 10,569 samples for COVID-19 since the first reported illness and 399 of those were positive. Some of these tests are repeat specimens to check for clearance of the virus. In addition, several other laboratories perform COVID-19 testing for Montana residents that are not reflected in the table below.

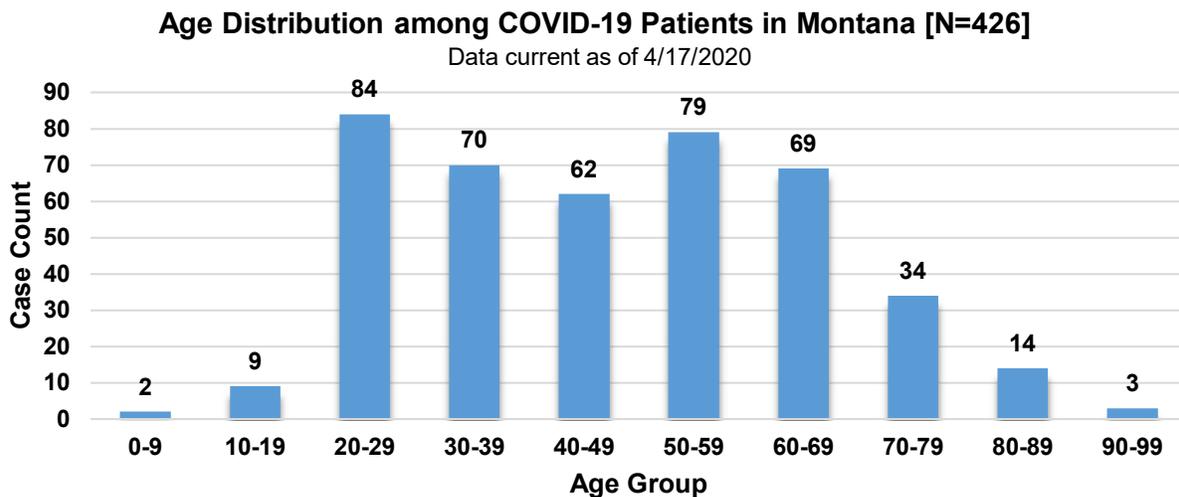
Figure 4: MTPHL Laboratory Testing for COVID-19



Age and Demographic Distribution

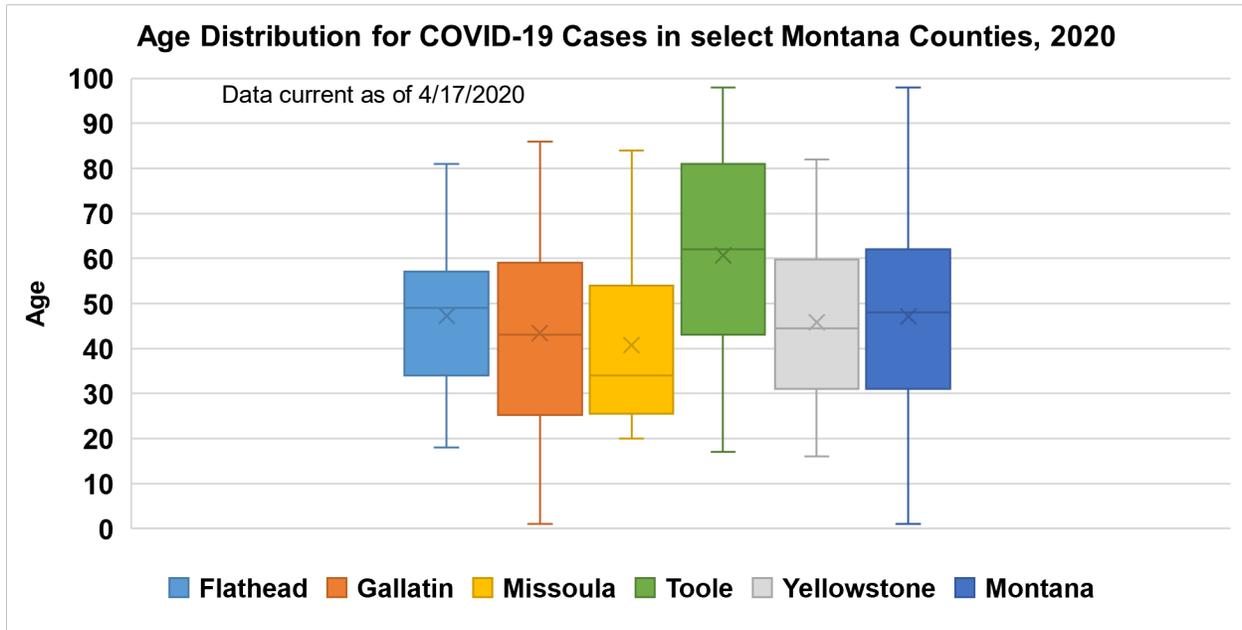
Persons between 20-29 years of age account for 20% of all reported COVID-19 cases in Montana. The next most common age group is 50-59 years (19%) followed by those who are 30-39 years (16%) and 60-69 years (16%) (Figure 5). The median age for all cases is 48 years of age with a range between 1-98 years. Fifty percent of cases are between 31-62 years of age.

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



In the five counties with more than 20 reported cases, the age distribution shows some slight variations. Gallatin 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 a median age of 34 years old. The age distribution in Flathead County is slightly older than the state average. Toole County has the oldest cohort and half of the cases are older than 61 years.

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



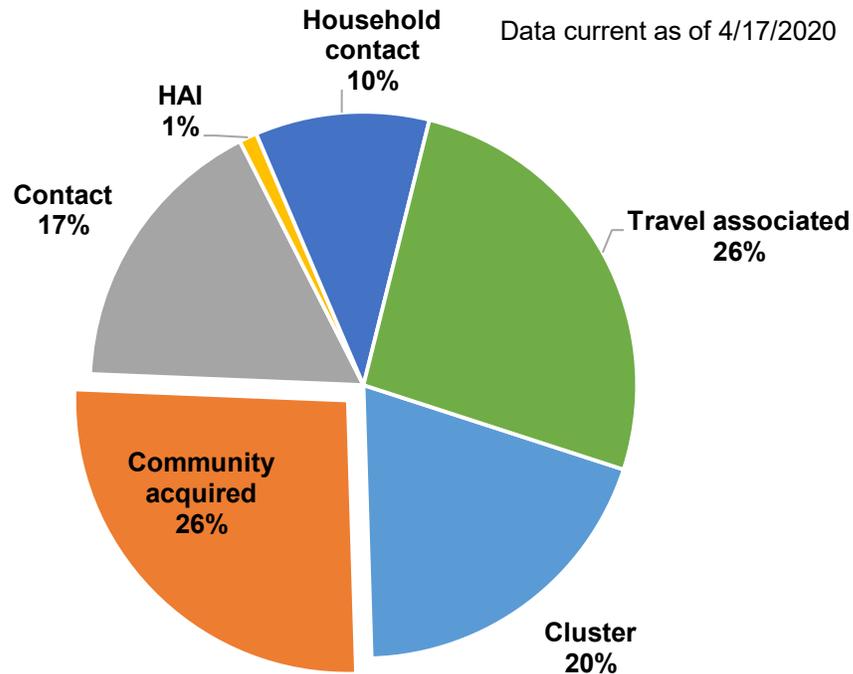
Persons infected with COVID-19 are nearly equally distributed among men and women, with 52% of cases reported as female and 48% reported as male. Of 381 (89%) cases with known race at the time of report, 93% of persons identify as white and 5% as Native American. Other races making up 0.2% of the cases identify as African American, Asian, Hispanic, Hawaiian, or other race. Native Americans are not disproportionately impacted by COVID-19 in Montana at this time.

Transmission Characteristics

There are 29 counties reporting COVID-19 cases and even though 14 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 current 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. Twenty-six percent of reported cases likely acquired the virus through travel-related exposures, which is down compared to the previous week, when 30% of cases were considered travel-associated. 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

Route of Transmission for COVID-19 cases in Montana, 2020 [N=379]

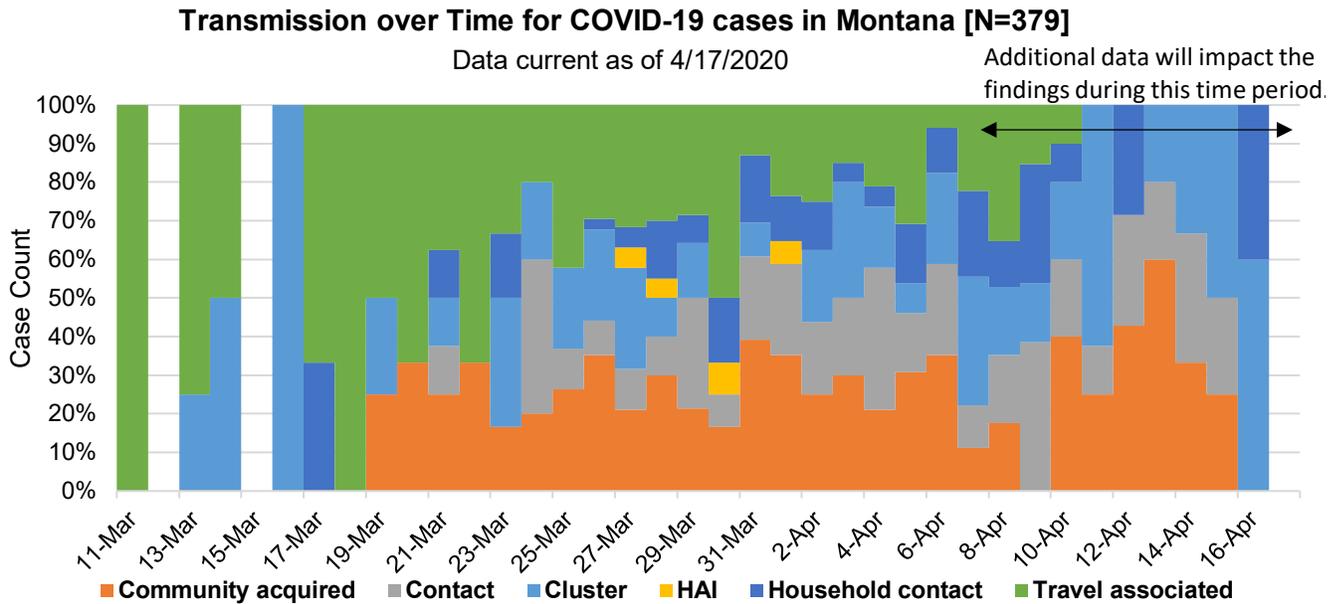


Data unavailable and currently under investigation for 47 (11%) persons.

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

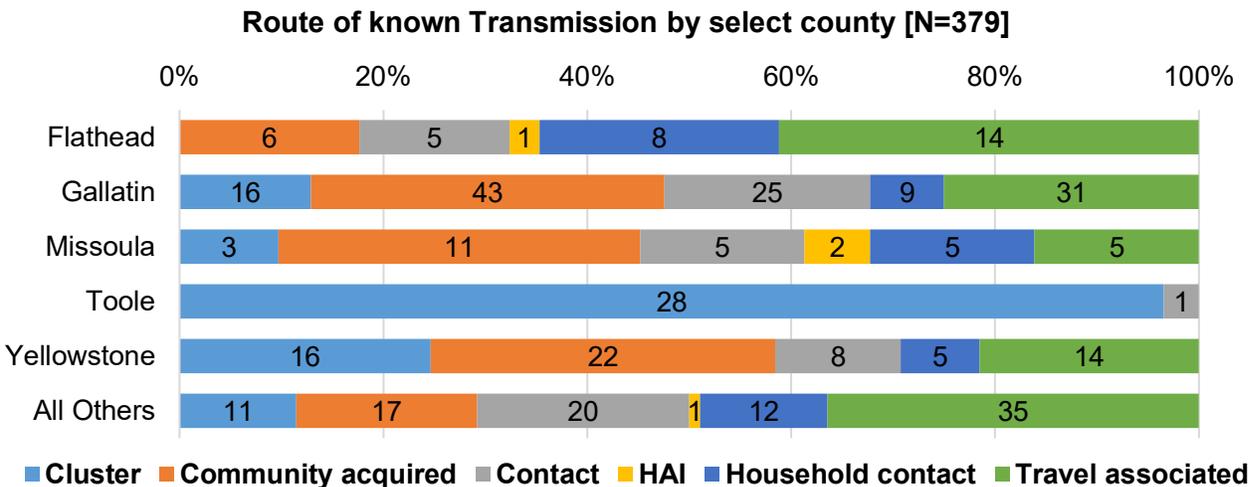
Transmission changes over time can indicate effective public health efforts, such as timely investigations, thorough contact findings, and measures to reduce community-acquired transmission. Transmission information is generally unknown for newly reported cases under investigation. The percent of community-acquired cases has steadily contributed to disease counts. There has been a relative slight uptick in community-acquired cases reported in recent weeks (Figure 8). Travel-related cases contributed to the majority of cases early in the outbreak but had little influence on recent new case reports. Contact and particularly 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 five counties with more than 20 reported cases indicate that travel-associated transmission accounts for around 20% of cases in Gallatin, Missoula, and Yellowstone Counties and over 40% for new cases in Flathead County. About one third of cases in Gallatin, Missoula, and Yellowstone Counties are attributable to community-acquired transmission. Contact and household contact investigations contribute to a fair number of new cases in these four counties. To date, all cases in Toole county are related to an ongoing cluster of illnesses. In addition, some significant cluster activity noted in Yellowstone County, Gallatin, and Missoula counties (Figure 9). Cases reported in all other counties except those five, were mostly travel-related, but are also the result of contact and household contact investigations and community spread noted as well.

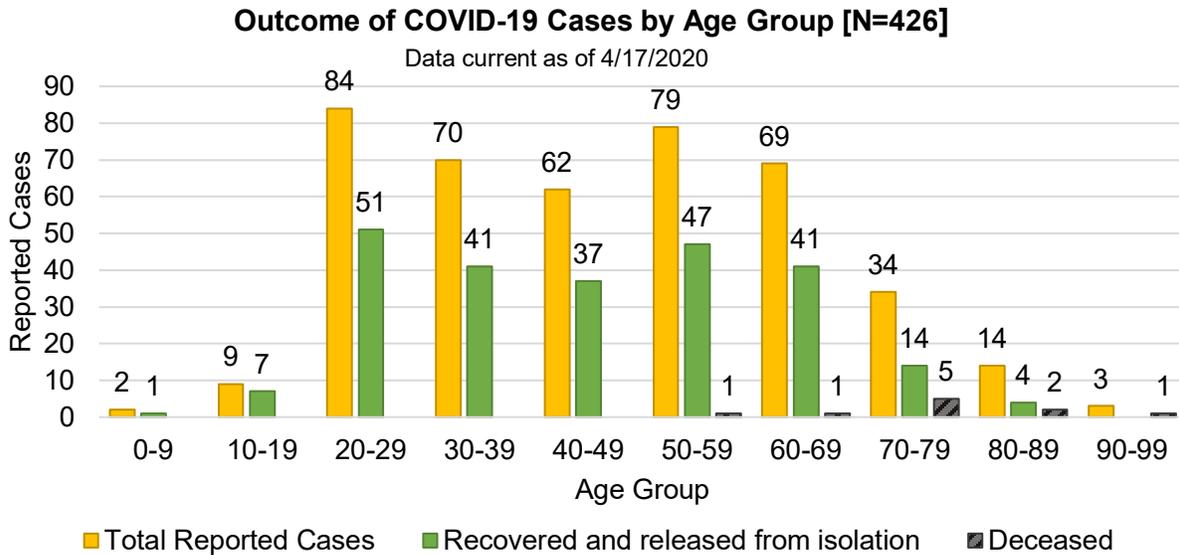
Figure 9: Breakdown of known transmission for select counties



Outcomes

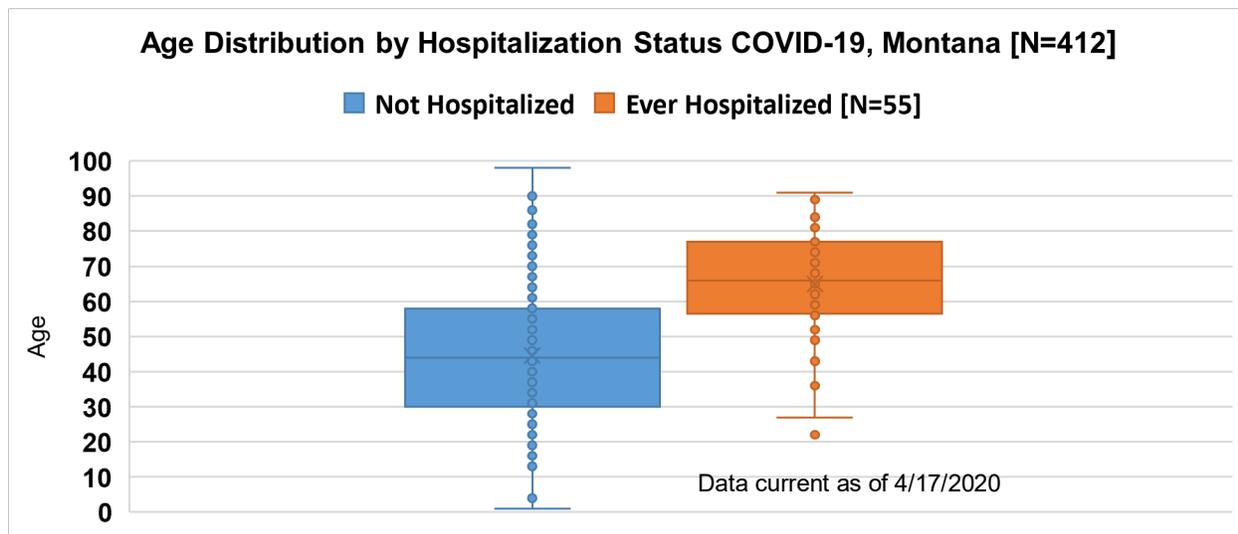
The current outcomes of COVID-19 cases in Montana depict the impact of the illness on the population. There are currently 173 persons actively infected and 243 persons who have recovered, meaning they have cleared the illness and are released from isolation (Figure 10). Ten persons who were infected with COVID-19, have died. The counties reporting deaths are Toole (4), Cascade, (1), Flathead (1), Lincoln (1), Madison (1), Missoula (1), and Yellowstone (1). Persons who died were between 52 and 91 years of age, and half were female.

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, 55 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 58 years old.

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



COVID-19 case summary -- Toole County Outbreak, 2020

Current as of 4/17/2020 at 10:00 pm

The first cases of COVID-19 directly related to Montana were identified on March 13, 2020 and the first identified from Toole County on March 25, 2020. This report provides some descriptive epidemiology of COVID-19 cases that are part of an identified cluster of cases reported in Toole County. Counties with at least one case included in this cluster include: Toole (29), Glacier (3), Pondera (1), Liberty (1), Cascade (1), Lewis and Clark (1), and Missoula (1). Data is subject to change as additional information is received.

Figure 1. Epi Curve of Reported COVID-19 Cases by Onset Date of Symptoms and Healthcare Worker Status* – Toole County, 2020 (N=37)

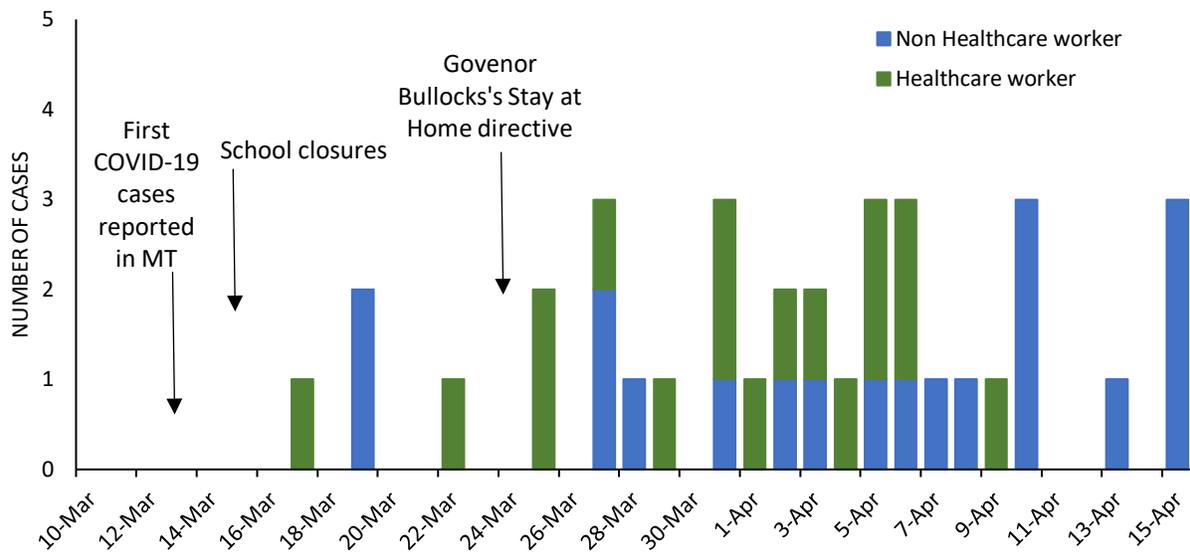


Figure 2. Epi Curve of Reported COVID-19 Cases by Date Reported to DPHHS and Healthcare Worker Status* – Toole County, 2020 (N=37)

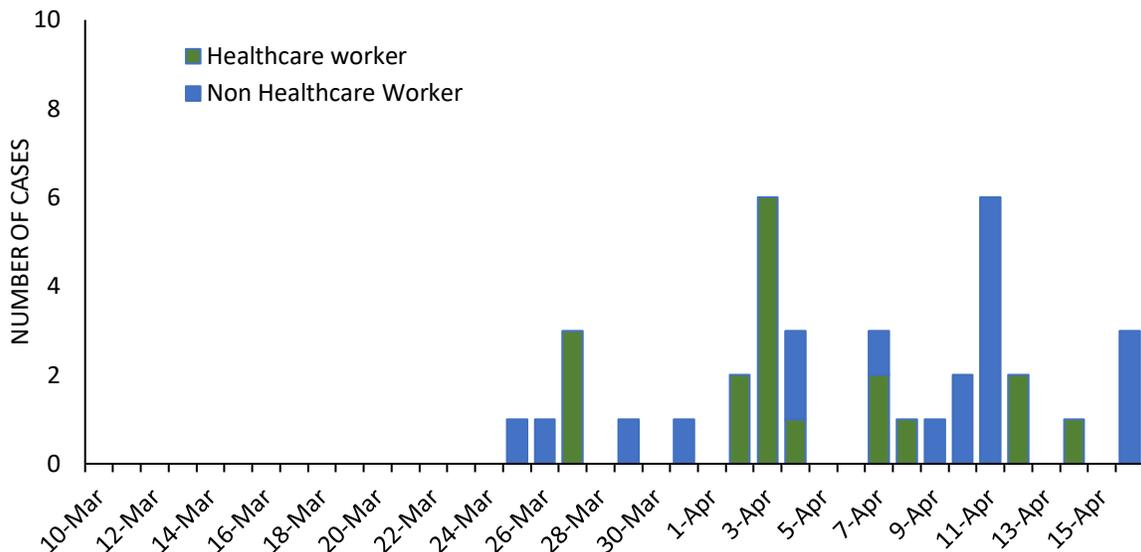


Figure 3. COVID-19 Cases by Sex – Toole County Outbreak, 2020

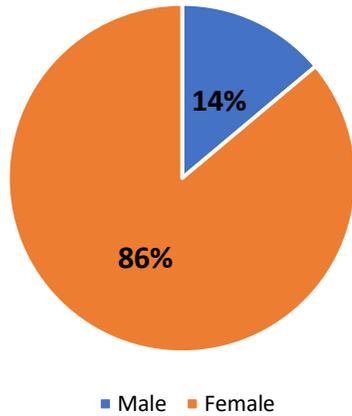
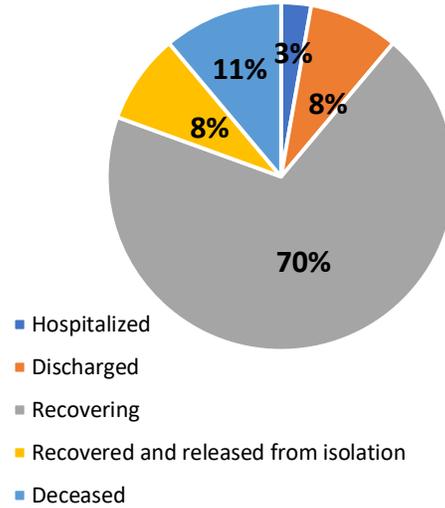


Figure 4. Current status of COVID-19 cases – Toole County outbreak, 2020

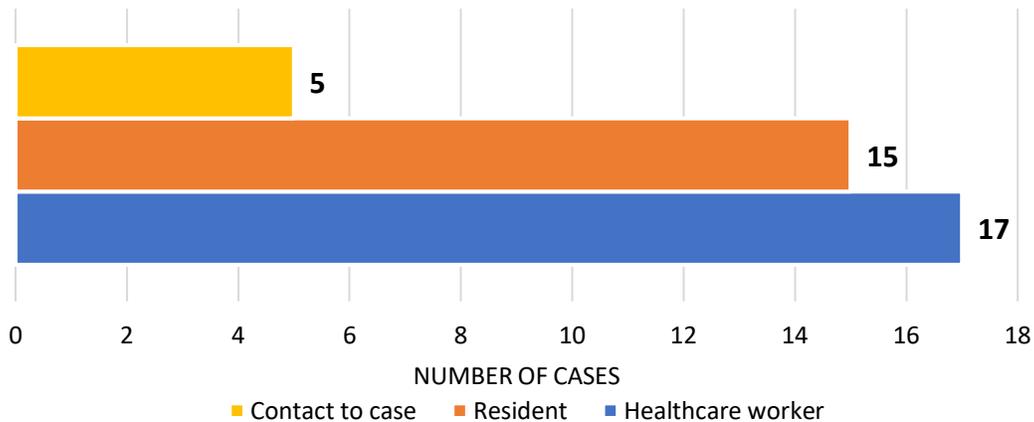


Approximately fourteen percent of cases are male, and 22% were hospitalized at some point due to illness (Figures 3,4). This is quite different from statewide reported cases where 12.9% of cases have been hospitalized and 50% are male.

The case fatality rate for this outbreak (11.4%) is far greater than the state (2.3%). This is likely related to the higher average age of cases when compared to that of cases in all of Montana (58.9 years vs. 48.0 years), as well as the complexities of underlying conditions present in this population.

Cases were further analyzed to classify outbreak cases. While the majority of cases were directly related to the outbreak setting, 13.5% were considered contacts who did not work or reside at the outbreak setting (Figure 5).

Figure 5. Classification of COVID-19 Cases – Toole County Outbreak, 2020



**A health care worker is defined by CDC as, "...emergency medical service personnel, nurses, nursing assistants, physicians, technicians, therapists, phlebotomists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care, but who could be exposed to infectious agents that can be transmitted in the healthcare setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer personnel)."*

Counties Reporting at least one COVID-19 Case with Trendline

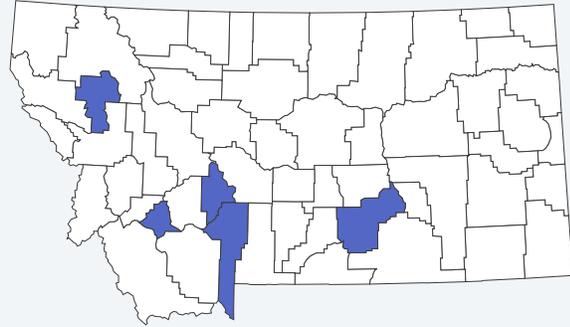
County	13-Mar	20-Mar	27-Mar	3-Apr	10-Apr	17-Apr	Trend
Beaverhead	0	0	0	1	0	0	
Big Horn	0	0	0	0	1	2	
Broadwater	1	0	1	2	0	0	
Carbon	0	0	0	1	5	0	
Cascade	0	0	7	4	2	0	
Deer Lodge	0	0	0	3	0	0	
Flathead	0	2	4	14	14	3	
Gallatin	1	3	42	55	34	7	
Glacier	0	0	0	1	2	1	
Golden Valley	0	0	0	0	1	2	
Hill	0	0	1	0	0	0	
Jefferson	0	0	2	0	0	0	
Lake	1	0	1	3	0	0	
Lewis and Clark	0	3	6	4	3	0	
Liberty	0	0	1	0	0	0	
Lincoln	0	0	3	3	1	0	
Madison	0	1	2	3	2	0	
Meagher	0	0	1	0	0	0	
Missoula	0	4	5	9	11	6	
Musselshell	0	0	0	1	0	0	
Park	0	0	1	5	1	0	
Pondera	0	0	0	0	0	1	
Ravalli	0	1	0	1	1	2	
Richland	0	0	0	0	3	0	
Roosevelt	0	1	0	0	2	3	
Silver Bow	1	0	8	2	0	0	
Stillwater	0	0	0	0	1	0	
Toole	0	0	4	8	8	9	
Yellowstone	1	4	18	15	19	13	
MONTANA	5	19	107	135	111	49	

MONTANA COVID-19 CASES

5 cases reported

5 counties

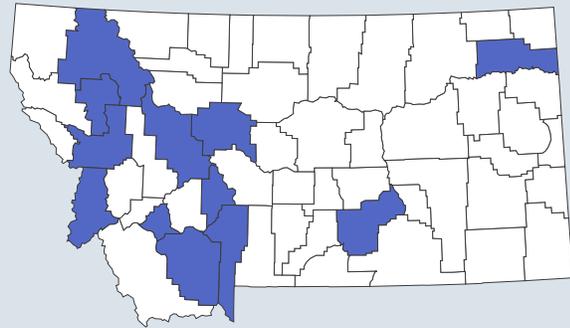
WEEK ENDING 3/13



24 cumulative cases reported

12 counties

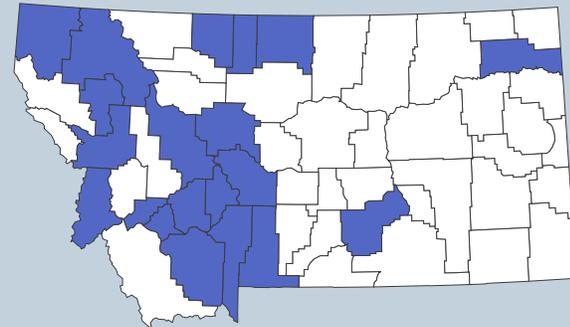
WEEK ENDING 3/20



131 cumulative cases reported

20 counties

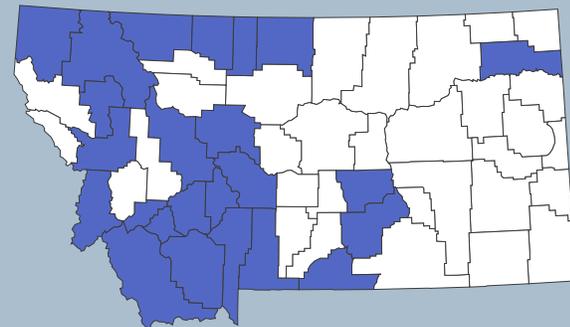
WEEK ENDING 3/27



266 cumulative cases reported

23 counties

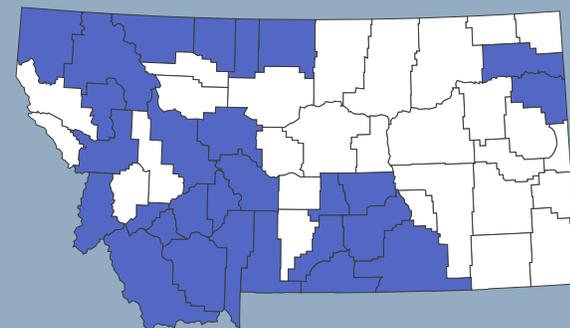
WEEK ENDING 4/3



377 cumulative cases reported

28 counties

WEEK ENDING 4/10

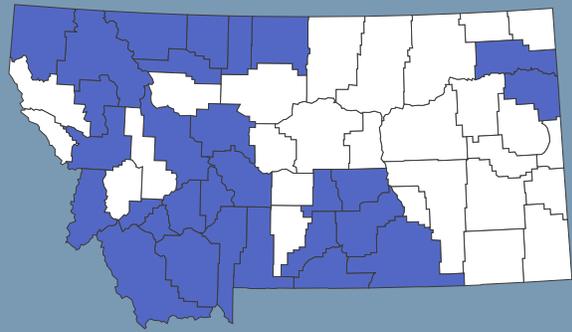


MONTANA COVID-19 CASES

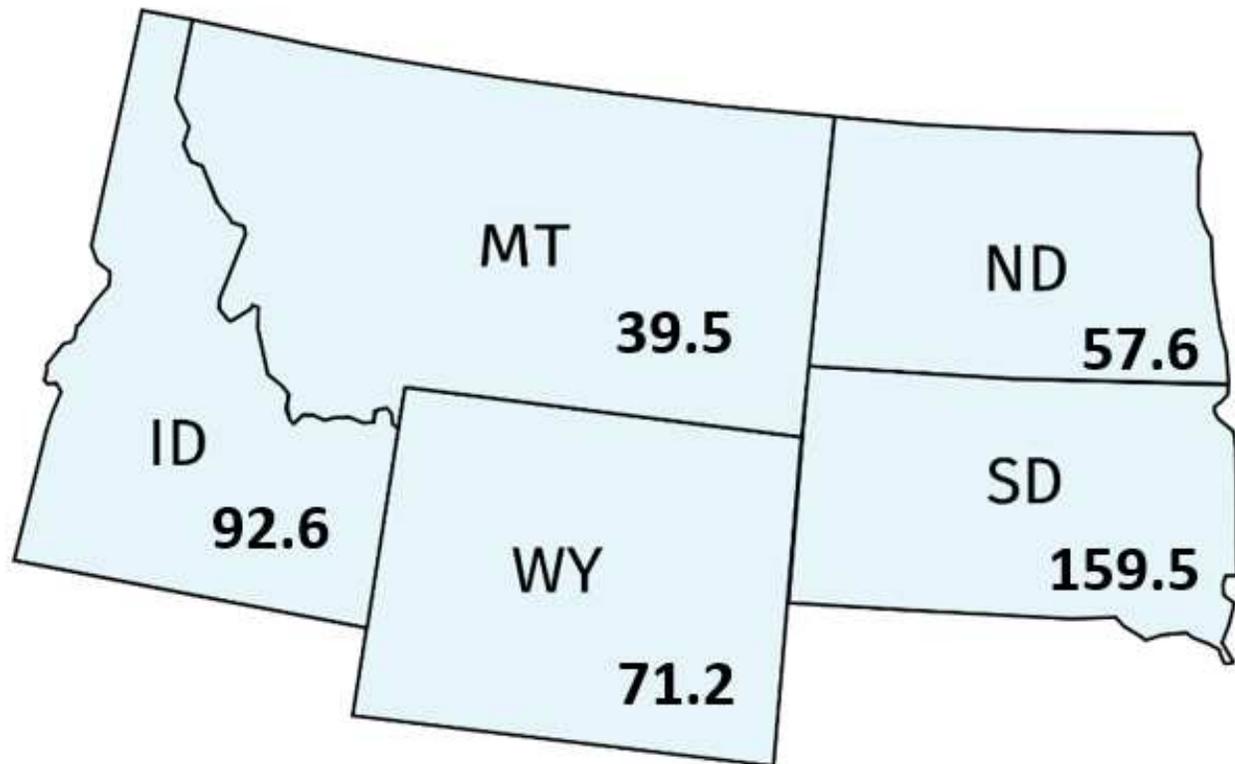
426 cumulative cases reported

29 counties

WEEK ENDING 4/17



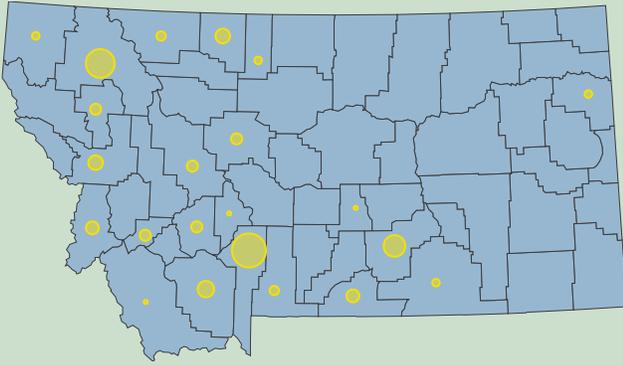
COVID-19 CASE RATES PER 100,000 POPULATION - MONTANA AND NEIGHBORING STATES, AS OF APRIL 17, 2020



Case counts based on CDC case reports as of April 17, 2020 and 2019 population estimates from the U.S. Census Bureau

MONTANA COVID-19 CASES

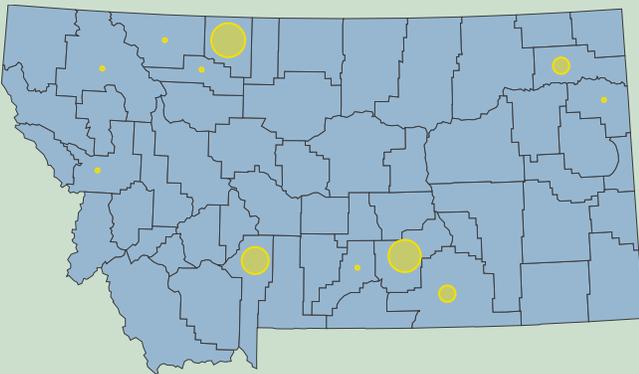
COVID-19 Cases by Onset -- March 21 - April 3, 2020



Cases: 230
Counties: 23
Range: 1-22

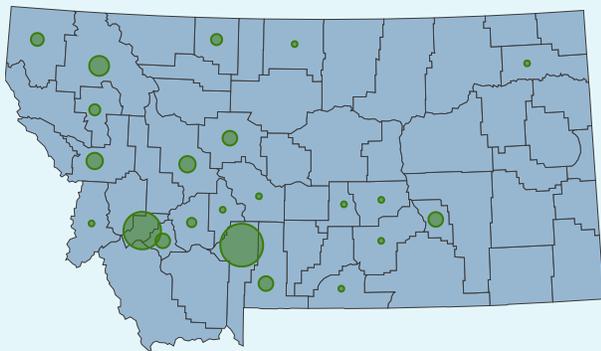
Note: each circle in a dot-proportion map represents the number of cases per county based on the range given above.

COVID-19 Cases by Onset -- April 4 - 17, 2020



Cases: 49
Counties: 11
Range: 1-15

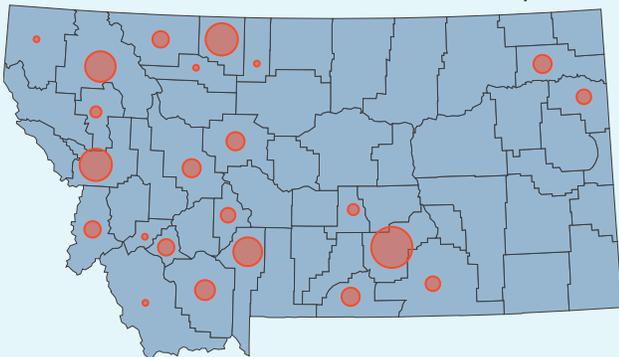
Recovered COVID-19 cases - Montana, April 17, 2020



Recovered: 243
Counties: 22
Range: 1-126

Recovered COVID-19 includes cases who have recovered and are released from isolation.

Active COVID-19 cases - Montana, April 17, 2020



Active: 173
Counties: 23
Range: 1-36

Active COVID-19 includes cases who are hospitalized or recovering but still remain in isolation.