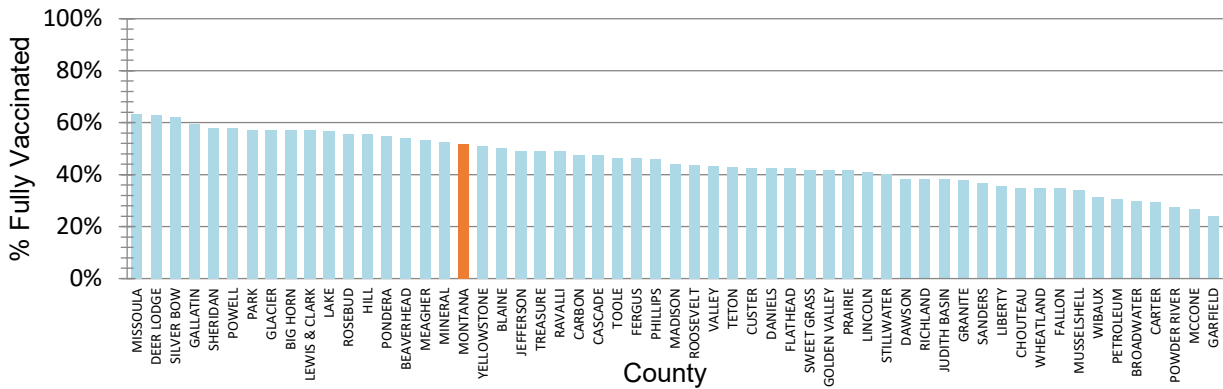


Figure 4. Percent of Eligible Montanans (5+ years) Fully Vaccinated by County – Montana, 12/10/2021



Variant and Breakthrough Cases

Figure 6 displays the percentage of the most common SARS-CoV-2 lineages detected each week, among all samples sequenced that were collected that week. There were 8,165 samples that were sequenced and their lineages were reported to [GISAID](#) since September 2020; figure 5 displays the number of specimens sequenced by week. A variant is a lineage that has one or more mutations that differentiate it from other lineages in circulation. Currently, Delta and Omicron (B.1.1.529) are the only Variants of Concern circulating in the US. **There have been no Omicron variants detected in Montana at this time.** Of specimens collected and sequenced in November and December, 1782/1786 (99%) are Delta. Delta has been the predominant variant in Montana since July 2021.

Figure 5. Number of COVID-19 samples sequenced by collection date, Montana 12/14/2021 [n=8,165]

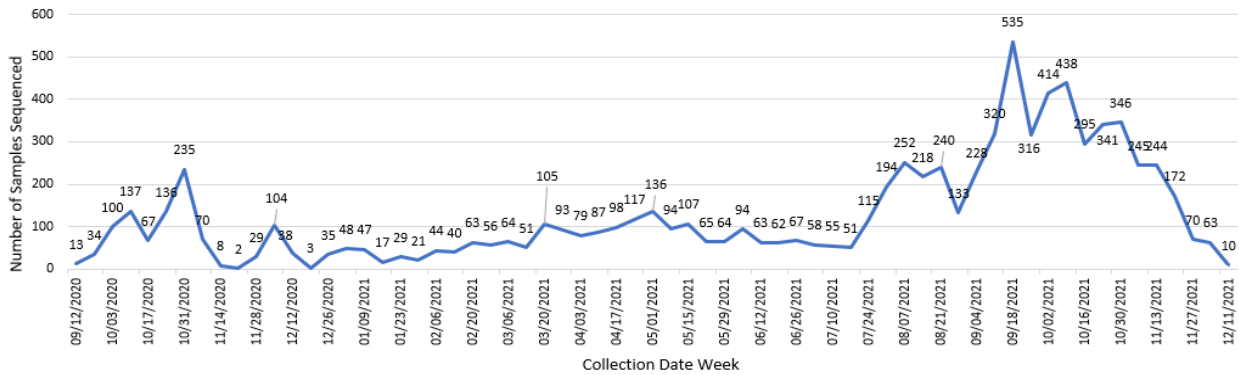
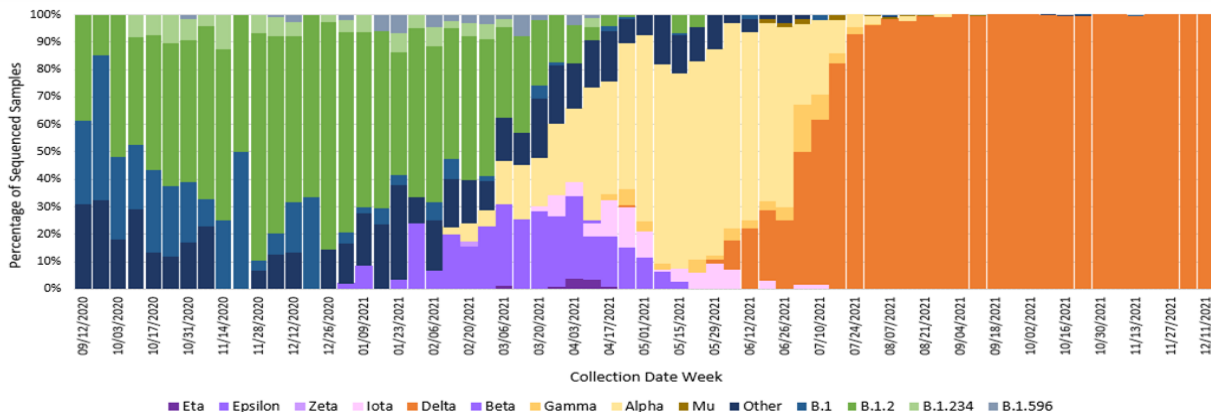


Figure 6. Percent of COVID-19 variants in sequenced samples by collection date, Montana 12/14/2021



A breakthrough COVID-19 infection is defined as a positive SARS-CoV-2 specimen 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 12/14/21, Montana reports 15,591 cases of confirmed breakthrough disease, which includes 883 hospitalizations and 276 deaths. Over the past 8 weeks (October 16 – December 10) the number of cases among unvaccinated individuals was 3.9 times higher than the number of cases among vaccinated individuals; the number of hospitalizations and deaths among unvaccinated individuals were 4.5 and 3.1 times higher, respectively, compared to vaccinated individuals.

Hospitalizations and Deaths and Vaccination Status

COVID-19-related hospitalizations and deaths were analyzed between **April 1 and December 10** to review vaccination status. Since the beginning of April this year, 84% of Montanans who were hospitalized and 77% of those who died were unvaccinated at the time of infection (Table 4). Of the 5,347 individuals who were hospitalized during this time period, 89 (2%) were <18 years old, 781 (15%) were 18 to 44 years old, 1,847 (35%) were 45 to 64 years old and 2,630 (49%) were ≥ 65 years old.

Additionally, COVID-19-related hospitalization and death data from **October 16 – December 10** (last 8 weeks) were analyzed to review vaccination status. Eighty-two percent of Montanans who were hospitalized and 76% of those who died had not received a COVID-19 vaccine (Table 5). Of the 1,552 individuals who were hospitalized during this time period, 32 (2%) were <18 years old, 172 (11%) were 18 to 44 years old, 525 (34%) were 45 to 64 years old and 823 (53%) were ≥ 65 years old.

Table 4. Vaccination status of COVID-19 hospitalizations and deaths – April 1 to December 10, 2021

| | HOSPITALIZATIONS | DEATHS |
|--|-----------------------|--------------------|
| TOTAL REPORTED | 5,347 | 1196 |
| UNVACCINATED | 4,465 (84%) | 926 (77%) |
| VACCINATED (BREAKTHROUGH CASE) | 882 (16%) | 270 (23%) |
| UNVACCINATED AGE RANGE IN YEARS (MEDIAN AGE) | <1-102 (62) | 23-103 (70) |
| VACCINATED AGE RANGE IN YEARS (MEDIAN AGE) | 16-101 (74) | 20-101 (81) |

Table 5. Vaccination status of COVID-19 hospitalizations and deaths – October 16 to December 10, 2021

| | HOSPITALIZATIONS | DEATHS |
|--|----------------------|--------------------|
| TOTAL REPORTED | 1,552 | 323 |
| UNVACCINATED | 1,267 (82%) | 245 (76%) |
| VACCINATED (BREAKTHROUGH CASE) | 285 (18%) | 78 (24%) |
| UNVACCINATED AGE RANGE IN YEARS (MEDIAN AGE) | <1-96 (64) | 23-103 (71) |
| VACCINATED AGE RANGE IN YEARS (MEDIAN AGE) | 17-101 (73) | 20-101 (80) |

| County name | Eligible population 5+ | Dose 1 | Dose 2 | Dose 3 | Fully Immunized | Total Doses Administered | Percent eligible with first dose (5+) | Percent Fully Vaccinated (5+) |
|----------------|------------------------|----------------|----------------|----------------|-----------------|--------------------------|---------------------------------------|-------------------------------|
| BEAVERHEAD | 9,091 | 5,268 | 4,231 | 1,774 | 4,919 | 11,273 | 58% | 54% |
| BIG HORN | 11,975 | 7,679 | 6,480 | 1,838 | 6,834 | 15,997 | 64% | 57% |
| BLAINE | 6,044 | 3,333 | 2,829 | 1,092 | 3,027 | 7,254 | 55% | 50% |
| BROADWATER | 6,092 | 2,179 | 1,600 | 705 | 1,830 | 4,484 | 36% | 30% |
| CARBON | 10,476 | 5,378 | 4,635 | 2,031 | 4,968 | 12,044 | 51% | 47% |
| CARTER | 1,141 | 356 | 316 | 137 | 337 | 809 | 31% | 30% |
| CASCADE | 76,124 | 40,262 | 32,206 | 11,697 | 36,008 | 84,165 | 53% | 47% |
| CHOUTEAU | 5,430 | 2,114 | 1,722 | 932 | 1,896 | 4,768 | 39% | 35% |
| CUSTER | 10,692 | 5,120 | 4,075 | 1,725 | 4,569 | 10,920 | 48% | 43% |
| DANIELS | 1,559 | 709 | 613 | 263 | 666 | 1,585 | 45% | 43% |
| DAWSON | 8,071 | 3,365 | 2,801 | 1,097 | 3,095 | 7,263 | 42% | 38% |
| DEER LODGE | 8,887 | 6,108 | 5,035 | 2,516 | 5,595 | 13,659 | 69% | 63% |
| FALLON | 2,646 | 1,022 | 872 | 329 | 918 | 2,223 | 39% | 35% |
| FERGUS | 10,495 | 5,232 | 4,478 | 2,001 | 4,854 | 11,711 | 50% | 46% |
| FLATHEAD | 99,993 | 49,297 | 38,542 | 15,372 | 42,647 | 103,211 | 49% | 43% |
| GALLATIN | 110,900 | 78,453 | 60,188 | 22,391 | 66,067 | 161,032 | 71% | 60% |
| GARFIELD | 1,188 | 307 | 241 | 70 | 284 | 618 | 26% | 24% |
| GLACIER | 12,447 | 10,006 | 6,596 | 2,325 | 7,110 | 18,927 | 80% | 57% |
| GOLDEN VALLEY | 788 | 358 | 297 | 101 | 329 | 756 | 45% | 42% |
| GRANITE | 3,218 | 1,399 | 1,115 | 419 | 1,223 | 2,933 | 43% | 38% |
| HILL | 14,914 | 9,279 | 7,044 | 2,850 | 8,308 | 19,173 | 62% | 56% |
| JEFFERSON | 11,819 | 6,429 | 5,423 | 2,364 | 5,821 | 14,216 | 54% | 49% |
| JUDITH BASIN | 1,880 | 773 | 658 | 220 | 719 | 1,651 | 41% | 38% |
| LAKE | 29,280 | 18,829 | 15,406 | 6,163 | 16,561 | 40,398 | 64% | 57% |
| LEWIS & CLARK | 66,257 | 43,056 | 35,006 | 15,600 | 37,790 | 93,662 | 65% | 57% |
| LIBERTY | 2,234 | 835 | 692 | 359 | 790 | 1,886 | 37% | 35% |
| LINCOLN | 19,480 | 9,001 | 7,299 | 2,927 | 7,960 | 19,227 | 46% | 41% |
| MADISON | 8,589 | 4,226 | 3,364 | 1,573 | 3,785 | 9,163 | 49% | 44% |
| MCCONE | 1,562 | 438 | 410 | 167 | 419 | 1,015 | 28% | 27% |
| MEAGHER | 1,726 | 977 | 842 | 364 | 918 | 2,183 | 57% | 53% |
| MINERAL | 4,302 | 2,505 | 1,802 | 844 | 2,262 | 5,151 | 58% | 53% |
| MISSOULA | 115,881 | 81,314 | 67,622 | 28,534 | 73,511 | 177,470 | 70% | 63% |
| MUSSELSHELL | 4,458 | 1,639 | 1,330 | 450 | 1,521 | 3,419 | 37% | 34% |
| PARK | 15,969 | 10,703 | 8,250 | 3,373 | 9,143 | 22,326 | 67% | 57% |
| PETROLEUM | 483 | 158 | 138 | 53 | 147 | 349 | 33% | 30% |
| PHILLIPS | 3,675 | 1,823 | 1,386 | 735 | 1,686 | 3,944 | 50% | 46% |
| PONDERA | 5,389 | 3,406 | 2,594 | 1,099 | 2,952 | 7,099 | 63% | 55% |
| POWDER RIVER | 1,588 | 473 | 383 | 153 | 435 | 1,009 | 30% | 27% |
| POWELL | 6,534 | 4,026 | 3,025 | 828 | 3,789 | 7,879 | 62% | 58% |
| PRAIRIE | 994 | 448 | 393 | 203 | 415 | 1,044 | 45% | 42% |
| RAVALLI | 42,972 | 23,437 | 18,785 | 8,621 | 21,095 | 50,843 | 55% | 49% |
| RICHLAND | 10,310 | 4,230 | 3,291 | 1,239 | 3,952 | 8,760 | 41% | 38% |
| ROOSEVELT | 9,918 | 4,981 | 3,680 | 1,269 | 4,334 | 9,930 | 50% | 44% |
| ROSEBUD | 8,160 | 5,207 | 4,041 | 1,551 | 4,552 | 10,799 | 64% | 56% |
| SANDERS | 11,641 | 4,742 | 4,003 | 1,477 | 4,278 | 10,222 | 41% | 37% |
| SHERIDAN | 3,075 | 1,887 | 1,656 | 806 | 1,787 | 4,349 | 61% | 58% |
| SILVER BOW | 33,267 | 22,799 | 19,432 | 8,039 | 20,689 | 50,270 | 69% | 62% |
| STILLWATER | 9,451 | 4,164 | 3,275 | 1,431 | 3,812 | 8,870 | 44% | 40% |
| SWEET GRASS | 3,523 | 1,626 | 1,257 | 613 | 1,479 | 3,496 | 46% | 42% |
| TETON | 5,819 | 2,984 | 2,070 | 964 | 2,502 | 6,018 | 51% | 43% |
| TOOLE | 4,391 | 2,177 | 1,673 | 446 | 2,043 | 4,296 | 50% | 47% |
| TREASURE | 623 | 410 | 284 | 120 | 306 | 814 | 66% | 49% |
| VALLEY | 6,931 | 3,252 | 2,571 | 1,376 | 3,013 | 7,199 | 47% | 43% |
| WHEATLAND | 2,035 | 759 | 658 | 213 | 707 | 1,630 | 37% | 35% |
| WIBAUX | 898 | 326 | 274 | 50 | 282 | 650 | 36% | 31% |
| YELLOWSTONE | 153,378 | 87,512 | 72,289 | 27,199 | 78,268 | 187,000 | 57% | 51% |
| MONTANA | 1,020,663 | 598,776 | 481,178 | 193,088 | 529,207 | 1,273,042 | 59% | 52% |