



## REPORT HIGHLIGHTS

- Emergency department (ED) visits act as a key sign of **uncontrolled asthma**.
- Asthma-related ED visits in Montana have steadily decreased from **112** per 10,000 in 2019 to **82** per 10,000 in 2024.
- Among all age groups, individuals between **15-24 years** experience the highest visit rates, with females in this range showing the greatest burden. In contrast, the highest rates among males occur in children ages 0-4 years.
- Children saw a greater spike in asthma ED visits from August to October compared to the rest of the year.
- **Hill** and **Valley** Counties have the highest rates of ED visits by county of residence.

## CONTACT

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## BACKGROUND

Asthma remains one of the most common chronic respiratory conditions in the United States, affecting both children and adults and contributing to significant preventable illness<sup>1</sup>. Although asthma can often be effectively managed through appropriate clinical care, medication adherence, and control of environmental triggers, many individuals continue to experience severe symptoms that require urgent medical attention. Emergency department (ED) visits serve as a critical indicator of uncontrolled asthma and reflect gaps in access to care, medication management, environmental conditions, and overall asthma control within a community<sup>2</sup>.

Monitoring ED visits for asthma is an essential component of public health surveillance. These data provide timely insights into patterns of asthma morbidity, identify populations at increased risk, and highlight geographic or seasonal trends. Tracking ED utilization also supports the evaluation of state and local asthma programs, helping determine where targeted interventions, education efforts, or policy changes may be most needed.

This report examines trends in asthma-related ED visits over the combined years of 2019 to 2024, exploring variation by age, sex, geography, and time. By understanding when and where asthma exacerbations are leading to emergency care, public health practitioners, clinicians, and community partners can better focus prevention strategies aimed at reducing severe asthma episodes, improving quality of life, and minimizing avoidable healthcare use.

## METHODS

The Montana Hospital Discharge Data System (MHDDS), provided by the Montana Hospital Association (MHA), reports ED data from participating hospitals annually. ED data from county of residence for the years 2019 to 2024 were analyzed using the primary diagnosis of asthma ICD-10-CM codes (J45.0 to J46.9). United States Census data was used for population counts by state, county, age, and sex from 2019 to 2024. A total of 10,289 visits were recorded among Montana residents with these criteria. Additional demographic data, such as age and sex, were analyzed along with county of residence for each ED visit.

## ASTHMA CONTROL RESOURCES

- The Montana Asthma Control Program (MACP) provides the Montana Asthma home visiting Program (MAP) to anyone living in Montana with uncontrolled asthma. Visit [MAP homepage](#) for more details.
- MACP is committed to helping healthcare providers in the state improve their clinical outcomes by providing clinical quality improvement projects, spirometry training, and free asthma educational material. Visit MACP's [Improving Clinical Outcomes](#) site for more details.



# VARIATION IN MONTANA ASTHMA EMERGENCY DEPARTMENT VISITS

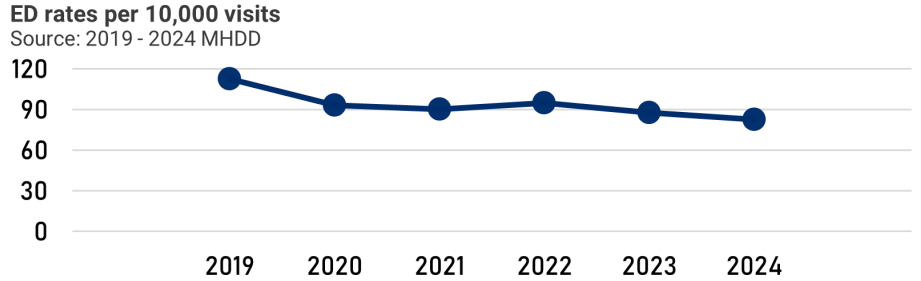
## ASTHMA ED VISIT TRENDS

In 2019, asthma was the primary reason for an ED visit in 2,003 records, or 112 per 10,000 visits. The number dropped to 93 in 2020; however, ED rates were shown to decrease nationwide in 2020 largely coinciding with COVID-19 public health and government policies implemented to limit viral transmission and prevent overburdening EDs<sup>3</sup>. In 2021 and 2022, ED visits increased to 90 and 95, respectively. After the slight increase, an overall decrease continued with 87 visits in 2023 and 82 in 2024. Figure 1 shows these asthma ED rates per 10,000 visits.

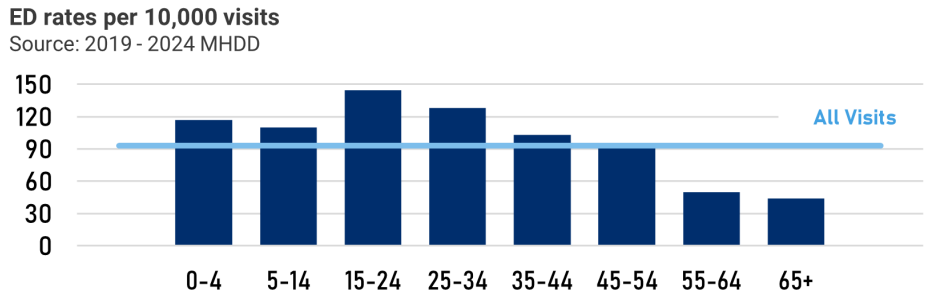
When analyzing demographics of asthma-related ED visits, those between 15 to 24 years of age had the highest rate of 145 visits per 10,000 people (Figure 2). When comparing male to female rates, females (of all ages) had an average rate of 111 visits per 10,000 people and males (of all ages) had an average rate of 87 visits per 10,000 people (data not shown). When data is separated into age categories between male and female asthma ED rates, male rates were highest in children and decreased with age (Figure 3). For females, the highest rates were between the ages of 15 to 24 years.

Asthma tends to peak in the months of April and September driven by high pollen counts, influenza and other respiratory illnesses, and an increased spread of those viruses during the school year. Children aged 0 to 17 years of age see a greater variation of ED visit rates for asthma from August to November, with the peak visit rates at 15.3 visits per 10,000 people in September (Figure 4). Adults 18 years of age and older see a much smaller peak in September, with October being the highest at 8.2 visits per 10,000 people.

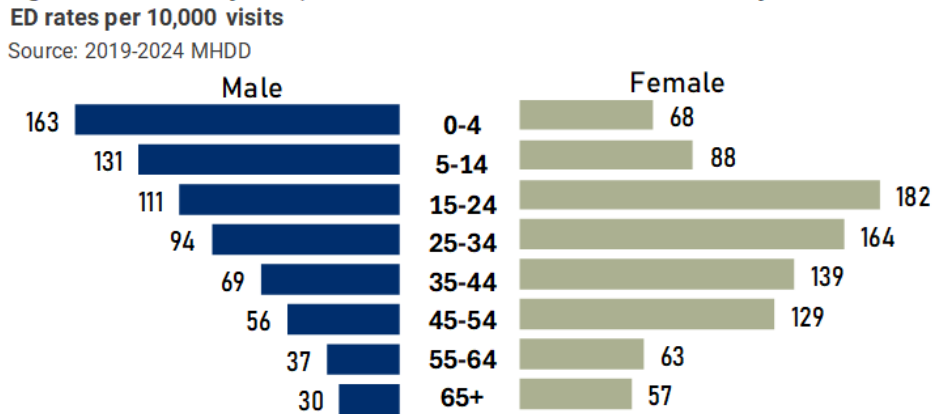
**Figure 1. Montana asthma emergency department visits have slowly decreased since 2019.**



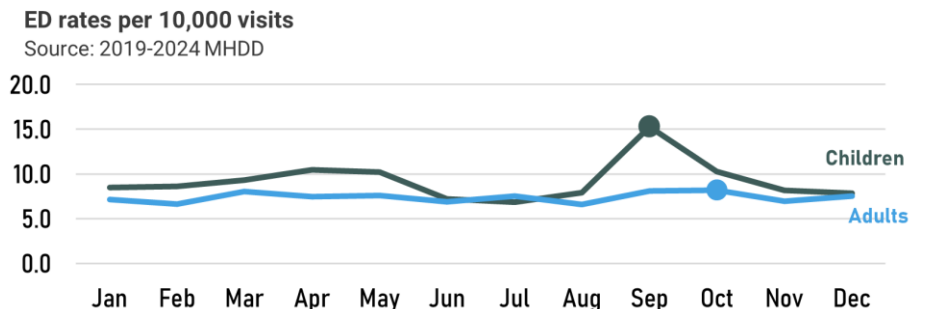
**Figure 2. Those between the ages of 15 to 24 years have the highest asthma ED visit rates.**



**Figure 3. Montana female asthma ED rates were highest between the ages of 15 to 24 years, where males were between 0 to 4 years.**

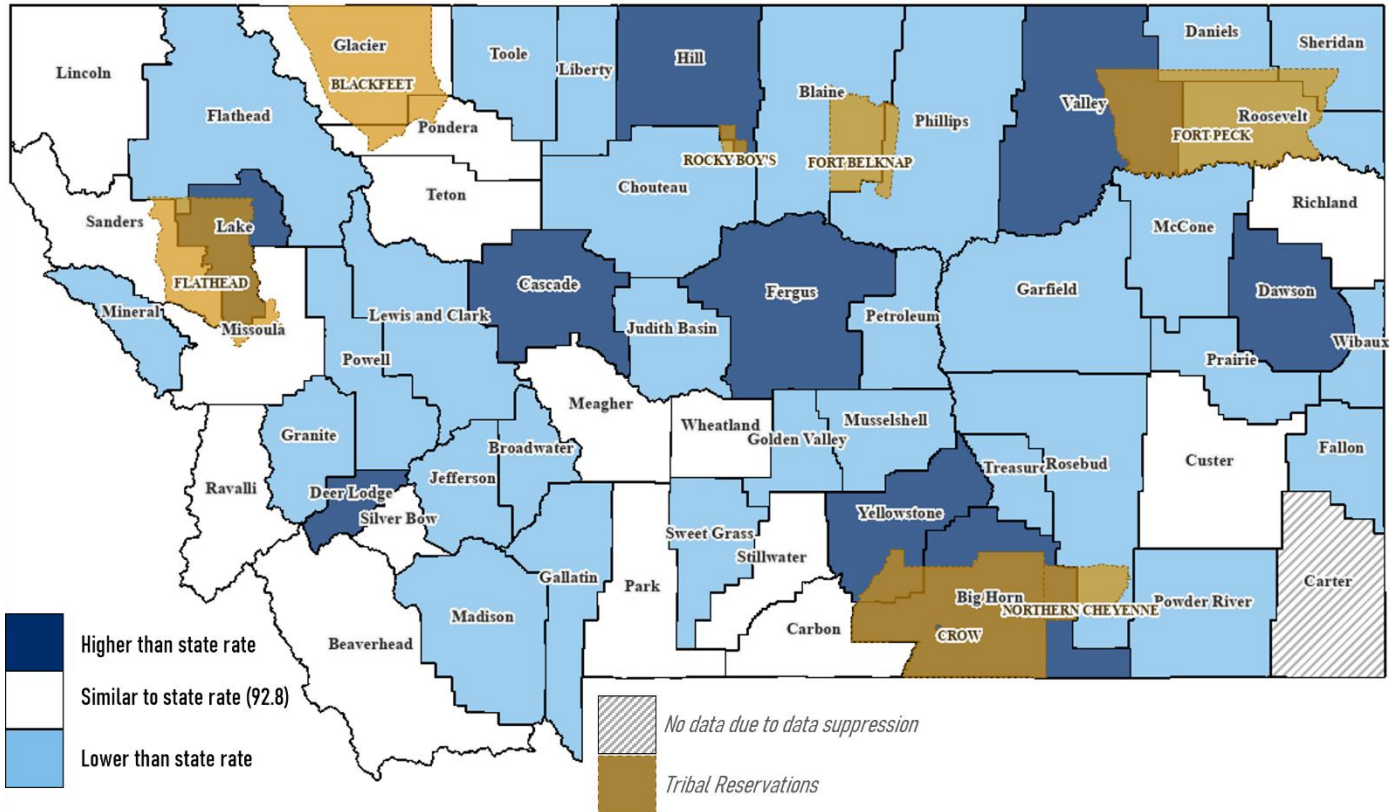


**Figure 4. Child ED visit rates show greater seasonal variations than adults.**



**Figure 5. Higher than state average asthma emergency department rates were seen in 9 of 56 counties.**

ED rates per 10,000 visits  
Source: 2019 - 2024 MHDD



From 2019 to 2024, the highest asthma-related ED visit rates by county of residence were Hill and Valley Counties (201.7 and 190.7 per 10,000 people, respectively), both counties sitting in the “Hi-Line” in the north central part of Montana. Nine total counties had rates statistically higher than the state average of 92.8 visits per 10,000 people. Fallon and Powder River Counties both had rates lower than 10 visits per 10,000 people, both located in the southeast of the state. A full table of county data can be found in the Appendix.

**DISCUSSION**

Asthma-related ED visits are generally used as an indicator for asthma severity and control. Using demographic and geographical data from ED visits can help MACP target interventions toward groups, counties, or monthly periods with higher asthma rates. Young males showed higher ED visit rates for asthma, but decreased continuously over age, which can be due to reasons such as increased control, genetic or hormonal changes<sup>5</sup>, or they are less likely to seek healthcare for asthma as they age. Female asthma rates appear to spike between the ages of 15 to 24 years with studies showing similar hormonal changes being likely. Children under the age of 18 years saw spikes in ED visits due to asthma during the return to school months, with adults seeing a smaller spike in the fall, but with overall similar rates year-round. Counties with higher-than-average rates should be considered for programs like the MAP, however, counties with lower rates should not be excluded. Other data, such as prevalence rates of asthma, provider shortages, distance to care, and socio-economic factors should be reviewed for further analysis. Asthma education for school aged children during the beginning of the school year and recent implementation of stock albuterol in schools may help mitigate repeated ED



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visits for asthma. Counties with higher ED rates can provide insight to where education materials and MAP can be focused to help those with uncontrolled asthma.

## LIMITATIONS

The MHDDS data sets do not contain individual identifiers, meaning the data cannot be de-duplicated if individuals have multiple admissions or encounters during the time interval of interest. There are also no interstate data exchange agreements for Montana residents hospitalized out of state; therefore, any residents who may live on the Montana border and travel to another state for care are not included. The data also only includes data from participating hospitals and does not include Veteran’s Administration hospital at Fort Harrison, any Indian Health Service locations across the state, and the Montana State Psychiatric Hospital.

## REFERENCES

1. World Health Organization (WHO). Newsroom. *Asthma*. May 6, 2024. <https://www.who.int/news-room/fact-sheets/detail/asthma>
2. Centers for Disease Control and Prevention (CDC). Asthma Data, Statistics, and Surveillance. *Emergency Department Data (ED)*. May 14, 2019. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6923e1.htm>
3. Centers for Disease Control and Prevention (CDC). Morbidity and Mortality Weekly Report (MMWR). *Impact of the COVID-19 Pandemic on Emergency Department Visits – United States, January 1, 2019 – May 30, 2020*. June 3, 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6923e1.htm>
4. Montana Department of Public Health and Human Services and Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey (BRFSS) Data. 2019-2024.
5. Annals of Allergy, Asthma & Immunology. CME Reviews. Volume 134, Issue 4, P376-384. *Epidemiology of asthma across ages*. December 12, 2024.
6. United States Census Bureau. American Community Survey (ACS) Data. 2019-2024.

## APPENDIX

Table 1. ED Prevalence Rate (Per 10,000) By County

County	ED Rate	County	ED Rate	County	ED Rate
VALLEY	190.7	PARK	77.6	ROOSEVELT	40.5
HILL	189.4	TETON	76.0	TREASURE	40.2
YELLOWSTONE	120.3	SILVER BOW	75.8	PRAIRIE	36.3
DAWSON	118.3	MISSOULA	73.0	PHILLIPS	35.9
FERGUS	114.0	TOOLE	69.9	GOLDEN VALLEY	35.8
DEER LODGE	112.4	RAVALLI	67.9	GARFIELD	33.1
LAKE	111.5	PONDERA	66.5	MINERAL	32.9
BEAVERHEAD	104.5	ROSEBUD	65.1	BROADWATER	22.9
BIG HORN	103.4	MCCONE	64.6	POWELL	21.3
RICHLAND	93.2	BLAINE	63.7	JUDITH BASIN	19.4
CASCADE	93.1	WHEATLAND	62.9	PETROLEUM	19.4
STILLWATER	90.7	DANIELS	60.6	MADISON	16.4
LEWIS & CLARK	90.0	MUSSELSHELL	53.4	CHOUTEAU	15.4
CUSTER	85.9	GALLATIN	53.2	FALLON	13.4
LINCOLN	84.4	MEAGHER	50.4	POWDER RIVER	11.7
SWEET GRASS	83.3	FLATHEAD	49.7	SHERIDAN	11.5
GLACIER	82.0	LIBERTY	49.6	WIBAUX	10.8
SANDERS	81.7	GRANITE	46.4		
CARBON	79.6	JEFFERSON	45.7		

