



# Adult versus child asthma home visiting program data

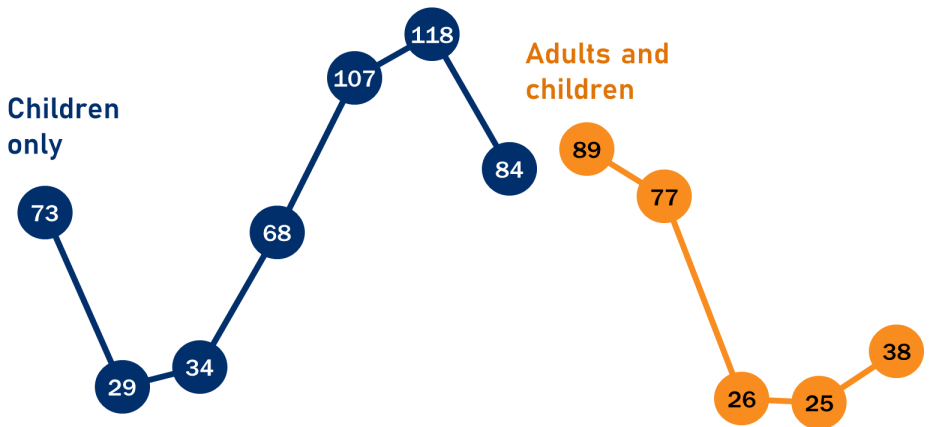
## Report Highlights

- The Montana Home Visiting Program (MAP) provides both adults and children with asthma education and tools for successful asthma self-management.
- In-person home visiting is available at nine sites while virtual home visiting is open to all 56 counties within the state.
- Between 2018 and 2022, **75% of children** and **60% of adult** program participants had well controlled asthma upon completion of the program, an increase from a baseline of 35% and 17% respectively.
- Children and adults who completed the program had over an **80% decrease** in both urgent care and emergency department visits by the end of the program.

## Background

The Montana Asthma Home Visiting Program (MAP) was created in 2011 to provide free asthma education to children with uncontrolled asthma and their caregivers. In 2018, the program expanded to include adult participants. The program includes six visits over the course of one year with a trained healthcare provider. The first visit gathers baseline measurements and a home environmental assessment to discover any potential asthma triggers. Montana residents diagnosed with asthma must meet qualifications to be eligible for the MAP. Residents must have had either an asthma-related emergency department visit, hospitalization, or an unscheduled medical office visit or they must have had an Asthma Control Test score of less than 20 in the last year. If requirements are not met, direct referral from a healthcare provider may still qualify.<sup>1</sup> From July 2011 to June 2022, 707 children aged 0-17 years have enrolled in the MAP, while 61 adults aged 18+ have enrolled since 2015 (Figure 1). This report displays demographic and outcomes data from participants who began the program after 2018 and completed before the end of 2022.

Figure 1. Number of participants in the MAP program between 2011 and 2022.



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2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022



## Methods

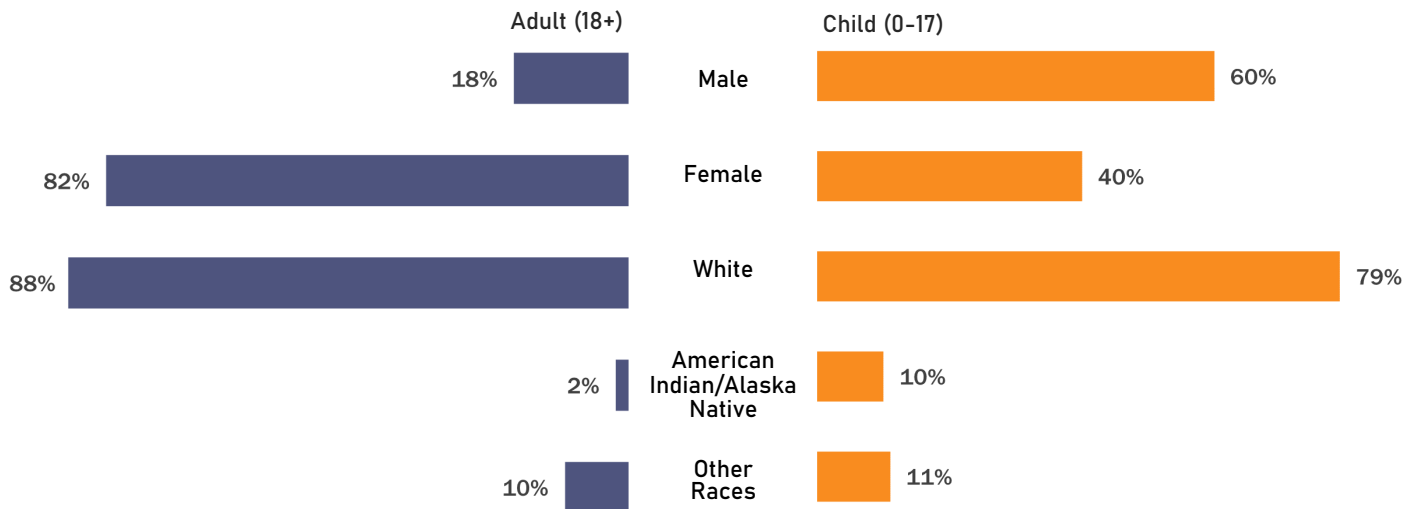
The Montana Asthma Control Program (MACP) collects deidentified participant data from MAP delivery sites in a web-based data system. Completion of the program requires all six visits be completed, while four of six visits are considered sixty percent completion. “Controlled asthma” is defined as an Asthma Control Test (ACT) score of 20 or higher by the participant. “Good knowledge” is an Asthma Knowledge Test (AKT) score of 10 or higher. Demographic information, the number of emergency department visits, urgent care visits, and days missed from work or school due to asthma are all self-reported by participants.

Analysis was conducted using collected questionnaire responses from both adults and children throughout the program. Data were collected at the first, the 4th (six months), and the last visit (12 months) and were used to compare outcomes and calculate completion rates.

## Demographics and Referrals

After adults were introduced into the program in 2018, there have been 61 adults and 194 children enrolled from 2018 to 2022 for a total of 255 participants. Three out of five (60%) child participants were male, while male participants only made up less than one of five (18%) adult participants. The majority of participants were white (88% of adults and 79% of children). Only 2% of adults and 10% of children were American Indian or Alaska Native (Table 1).

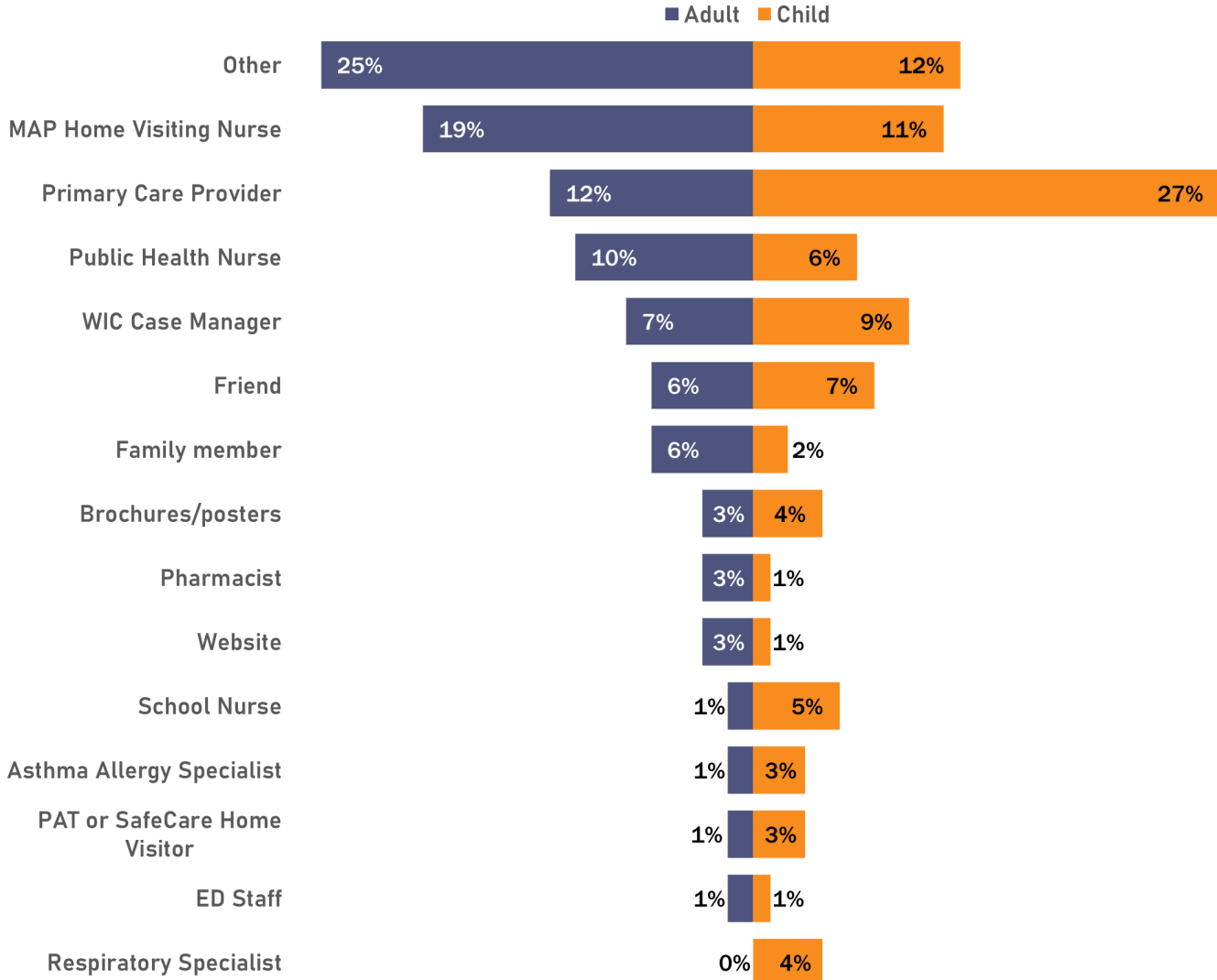
Table 1. Demographics for *adult* and *child* MAP participants, 2018-2022.



Of the 255 participants, 61% (155) resided in five of Montana’s counties: Flathead, Gallatin, Hill, Lewis & Clark, and Richland. The other 100 participants were spread among 16 different counties. Upon entry into MAP, participants report all ways in which they were referred to the program. Excluding the “Other” option, as the write in option has only been available since 2020, over a quarter (27%) of child participants were referred by a primary care provider, with a MAP home visiting nurse as the second most common referral method at 11%. Nearly one in five (19%) adults were referred by a MAP home visiting nurse, while 12% were referred by a primary care provider. Other methods of referral for both children and adults are presented in Figure 2.



Figure 2. Excluding "other", both **adults** and **children** were most commonly referred to the program by a MAP Home Visiting Nurse or a Primary Care Provider.



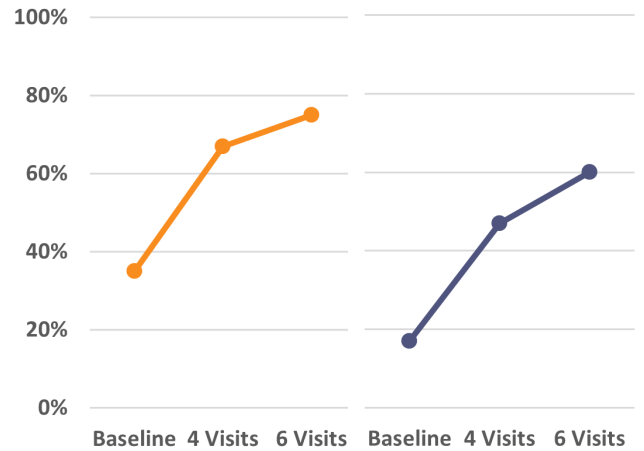
## Home Visiting Outcomes

Of the 255 participants (194 children and 61 adults), 125 participants (95 children and 30 adults) had a 60% completion rate (4 of 6 visits). Only 25% of child participants and 39% of adult participants completed all six visits. The following charts follow those 71 participants (44 children and 27 adults) who had a full completion rate (6 of 6 visits).

### Asthma Control

The asthma control test is a series of five questions administered to the participant asking about asthma symptoms, how often they experienced shortness of breath, self-assessed control rating, how often they used their rescue inhaler, and how much time asthma kept them from completing tasks at work, school or at home. All questions are on a scale of one to five. Answers are then totaled and if the participant has a score of 20 or more, the participant is considered as having well controlled asthma. 35% of children started their initial visit with controlled asthma, increasing to 75% by the 6th visit. Adults, similarly, started at 17% having control of their asthma. By the final visit, 60% of adults had well controlled asthma. (Figure 3).

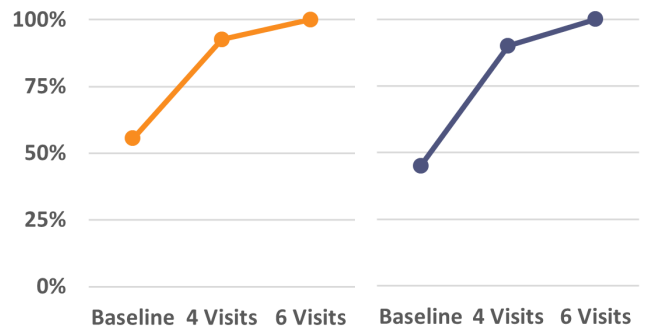
Figure 3. Over half of **children** and **adults** had well controlled asthma by the end of the program.



### Inhaler Technique

Participants demonstrate their inhaler technique while the home visitor assess whether the technique is good. Over half (56%) of children demonstrated good inhaler technique at baseline, which increased to 100% by the 6th visit. Among adult participants, 45% demonstrated good inhaler technique at baseline, and similarly, by the 6th visit, 100% of adults demonstrated good inhaler technique (Figure 4).

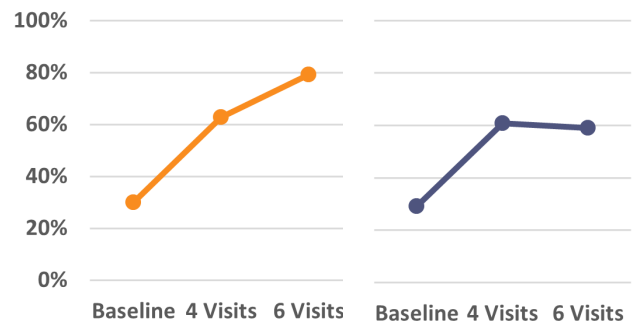
Figure 4. All **adults** and **children** had good inhaler technique upon completion of the program.



### Asthma Knowledge

Participants were asked 11 questions to assess their familiarity with asthma symptoms, triggers, allergens, and medications. A “good asthma knowledge” rating is a score of 10 or higher on the test. Among child participants, 30% scored a good knowledge test score at baseline, which increased to 79% by the final visit. The proportion of adults with good asthma knowledge score at baseline was 29%, increasing to 61% by the 4th visit, but slightly decreasing by the 6th visit. Overall, 59% of adults finished the program with a good asthma knowledge score (Figure 5).

Figure 5. **Children** showed a continued increase in asthma knowledge, while **adults** had an overall increase as the program progressed.

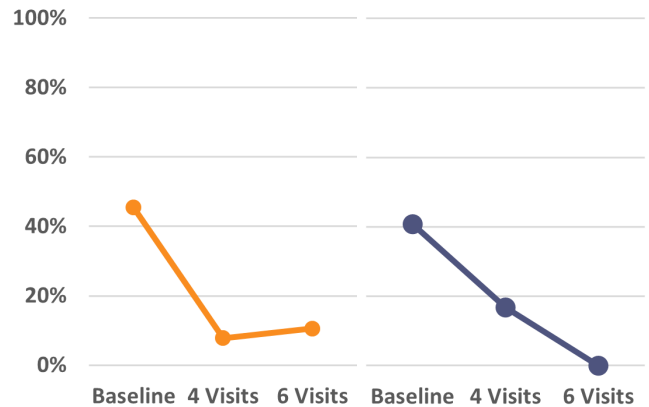


### Emergency Department

Upon entry into MAP, participants report the number of asthma-related emergency department (ED) visits they had within the previous six months. 45% of children at baseline had been to the emergency department within the past six months, ranging from one to two visits per person, and dropping to only 11% by the end of the program with only five visits within the last six months.

Among adult participants, 41% had visited the ED for asthma-related reasons within six months prior to starting the program, averaging five to six visits per person. By the end of the program, there were no asthma-related ED visits within the previous six months (Figure 6).

Figure 6. The percent of **children** and **adults** who had been to the emergency room for asthma-related reasons decreased or dropped to zero over 12 months.

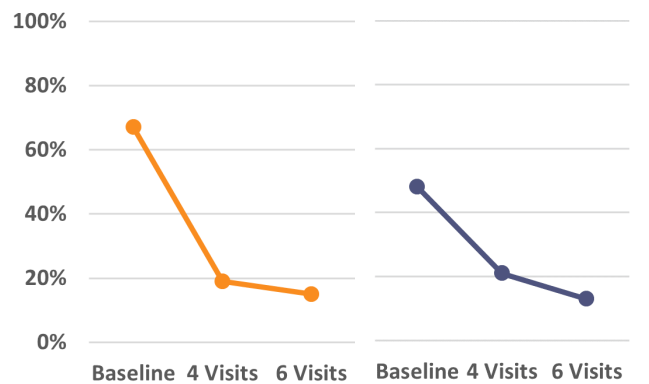


### Urgent Care

Urgent care visits in the last six months are another variable the program tracks. From 2018 to 2022, 73% of children had been to urgent care six months prior to baseline for asthma-related reasons. There were a total of 81 asthma-related urgent care visits among those participants, ranging from two to three visits from those participants. By the end of the program, only 16% of children had visited an urgent care for asthma-related reasons. Visits in the last six months were reduced to only 11 visits in total.

Over half of adults (56%) had been to the urgent care for asthma-related reasons within the previous six months entering the program. At baseline, there were 30 total visits among those adults, averaging two visits per person. After six visits, that number decreased to a little over 1 in 10 (13%) adults having asthma-related urgent care visits, with a total of only 4 visits (Figure 7).

Figure 7. The number of **children** and **adults** who visited urgent care for asthma decreased over 12 months.

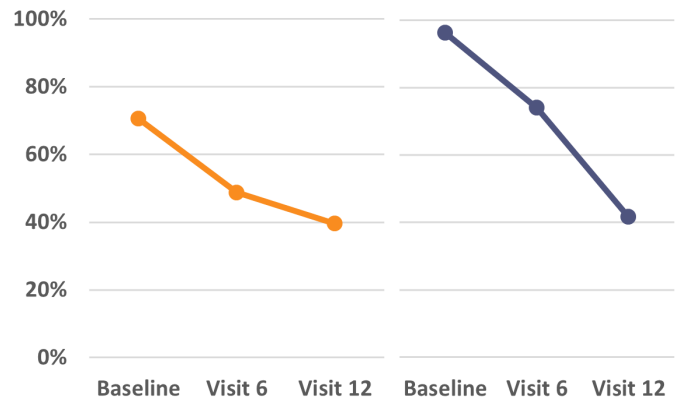


### Activity Interference

Participants reported the extent asthma symptoms had interfered with their normal activity during the past month. Upon entering the program, 70% of children reported at least some limitation or extreme limitation to normal activities due to asthma in the previous month. This percent dropped to 39% of children by the end of the program (Figure 8).

A high percentage of adults in the program (96%) reported interference to normal activities due to asthma in the past month upon entering the program. Over the course of the program, the percentage of participants reported activity interference dropped to less than half (42%).

Figure 8. Both **children** and **adults** saw a decrease in asthma symptoms interfering with normal activity over time.

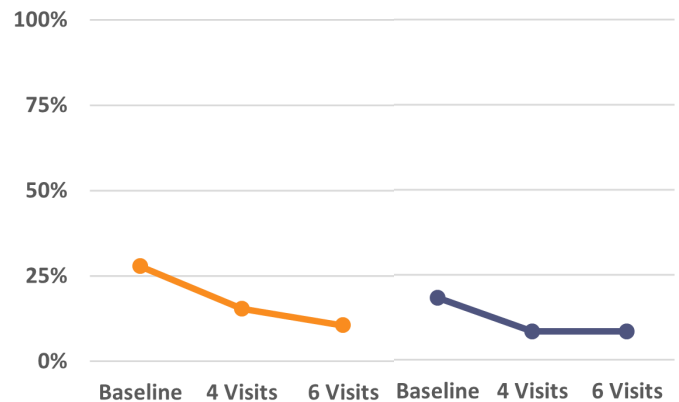


### Days Missed from School/Work

Children reported the number of school days they have missed due to asthma in the previous six months. The percent of children who reported missing one or more days of school due to asthma was over a quarter (28%) of children in the program. By the 6th visit, this decreased to 11% (Figure 9).

Adults entering the program were asked how many days of work were missed within the past six months due to asthma. 18% of adults starting the program reported to have missed one or more days of work in the last six months at the beginning of the program. By the end, the percentage decreased to 8% (Figure 9).

Figure 9. The percent of **children** and **adults** who missed school or work had an overall decrease for both groups over time.

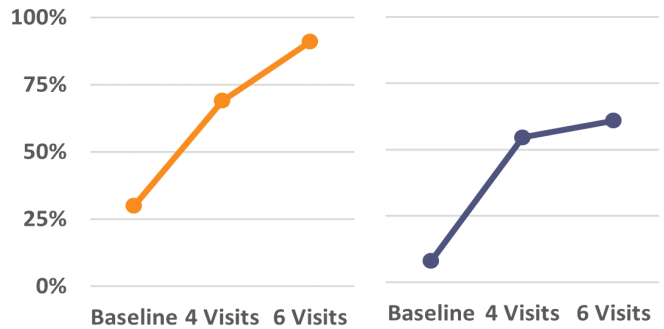




## Asthma Action Plan

An asthma action plan is a form completed between a physician and a patient that lists a patient’s medications, symptoms, triggers, and what to do in an emergency. Studies have shown that following a written asthma action plan can lead to fewer asthma attacks and better disease management. At the beginning of the program, 26% of children already had an asthma action plan, jumping to 89% by the 6th visit. Only 8% of adults had an asthma action plan at the beginning of the program, increasing to 61% by the final visit (Figure 10).

Figure 10. Almost 90% of **children** and 61% of **adults** had an asthma action plan available by the final visit.



## Discussion

The Montana Asthma Control Program has been training public health nurses and respiratory therapists who then can educate Montanans about their asthma for over 10 years. Asthma is a disease that can affect anyone at any age and the MAP allows those in the program to receive the knowledge and tools needed to manage their asthma and improve asthma control. The program has shown positive outcomes for adults and children after just 4 visits, and even better outcomes after the sixth (final) visit.

From 2018 to 2022, the program had an overall attrition rate of 72% with 76% of children and 61% of adults not finishing the full program. Unfortunately, the COVID-19 pandemic in 2020 stunted enrollment numbers, but 2022 has shown a slight increase in those enrollment numbers once again. To accommodate not only the increased demand for virtual accessibility during the pandemic, but also the need to reach more people across the frontier state, virtual home visiting options were introduced in 2020 and have been sustained since. More research is needed to assess the effectiveness of this method at higher enrollments and retention. The program can review methods of referral and focus more resources towards the most used referral methods, or areas of referrals that could potentially provide larger referral rates.

Participant numbers in the MAP are not meant to be a representation of the general Montana population. According to the Behavioral Risk Factor Surveillance System (BRFSS), 10% of adults and 5% of children were reported as currently having asthma<sup>2</sup> and only 58% of adults with asthma are considered to have well controlled asthma in 2020<sup>3</sup>. These data further demonstrate the need for the MAP to help focus the outreach process and show the benefits of the program to further reach more Montanans. A few of the Montana Asthma Control Program’s goals for the home visiting program include continue working with partners on expansion and supporting linkages between schools, the home visiting program, and health care providers. The MACP is committed to improving the quality of life for all Montanans with asthma, and actively considers health disparities and inclusion of the most vulnerable populations.

## Sources

1. Montana Department of Public Health and Human Services. Montana Asthma Control Program. Montana Home Visiting Program (MAP). 2018-2022.
2. Montana Department of Public Health and Human Services and Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey (BRFSS) Data. 2021.
3. Montana Department of Public Health and Human Services (MT DPHHS) and Centers for Disease Control and Prevention (CDC). Adult Asthma Call Back Survey (ACBS). 2020