Trends in Asthma Prevalence and Health Care Use in Rhode Island

Data Brief

Rhode Island Asthma Control Program
Center for Preventive Services
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Asthma is a chronic respiratory disease characterized by airway inflammation and hyper-responsiveness that affects both children and adults. It is the most common chronic disease among children in the United States (U.S.), often persisting into adulthood. While asthma cannot be cured, it can be managed with medications, including corticosteroids for long-term control and short-acting adrenergic β_2 receptor agonists for quick relief of asthma symptoms. However, the use of these medications to manage asthma in a manner concordant with current clinical guidelines from the National Health, Lung, and Blood Institute is not routine, resulting in exacerbations of asthma symptoms that can result in emergency department (ED) visits and inpatient hospitalizations.[1]

Nearly 26 million people in the U.S. have asthma; of these an estimated 21 million are adults ages 18 and older and 4.5 million are children.[2] Asthma prevalence is higher in adults (8.0%) than in children (6.5%), and higher in females (9.7%) than males (6.2%).[3] The burden of asthma falls disproportionately on African- Americans and Hispanics. Most of the observed racial/ethnic disparities in adverse asthma outcomes stem from environmental and structural inequities (i.e., inequitable exposure of poor and minority populations to environmental hazards such as air pollution), as well as neighborhood-level economic and social stressors (i.e., discriminatory policies in housing), and an inequitable health care system that are strongly correlated with race and ethnicity.[4,5,6,7,8,9]

This brief provides data on trends in adult and child asthma prevalence and asthma-related health care use in Rhode Island. The Rhode Island Asthma Control Program uses data briefs to assess the burden of asthma, and to monitor and evaluate the impact and effectiveness of the strategies implemented from 2019 to 2023 through funding from the Centers for Disease Control and Prevention. Data briefs are distributed to public health partners, policy makers, and health care providers to improve asthma outcomes and reduce costs to individuals and health care systems in Rhode Island.

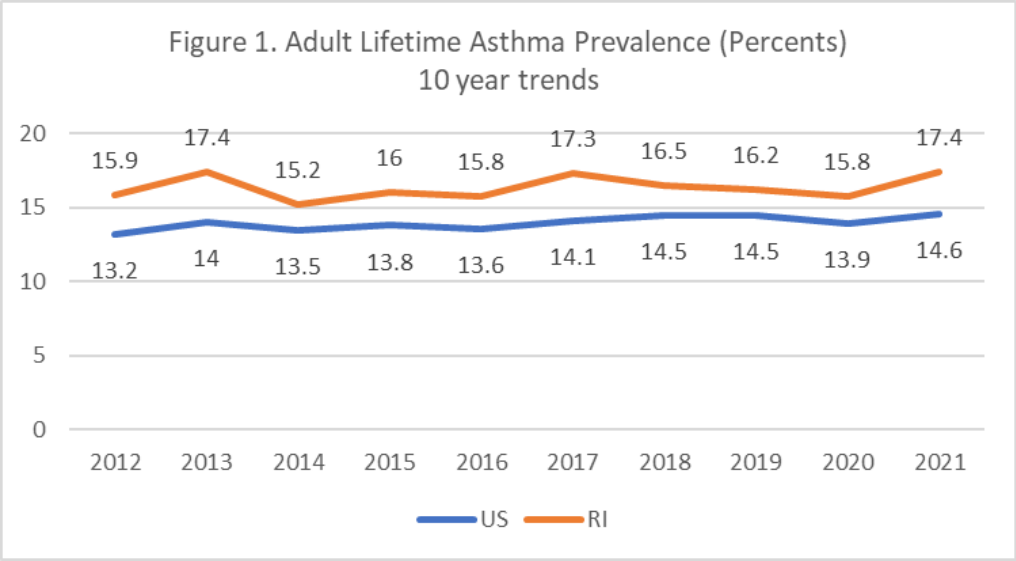
Asthma Prevalence

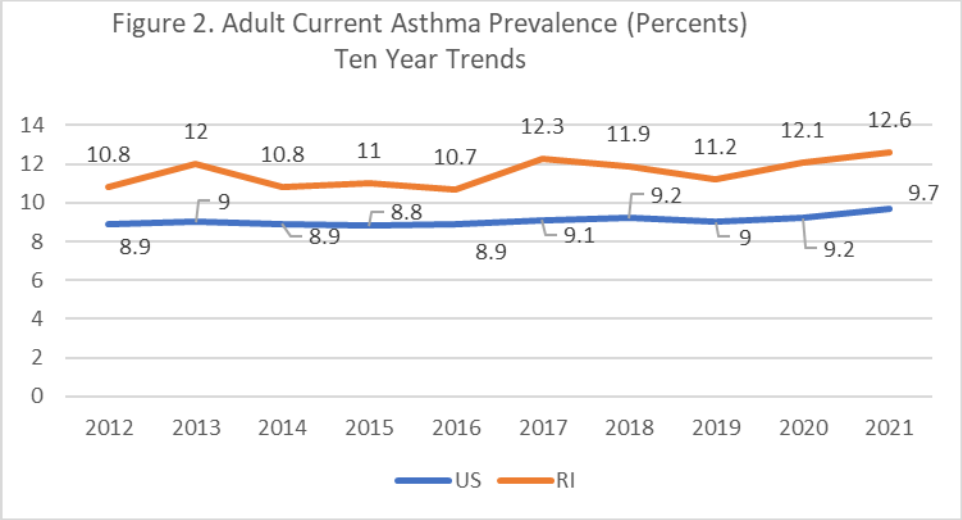
Ten-year trends in adult and child asthma prevalence from the 2012 to 2021 Behavioral Risk Factor Surveillance System (BRFSS) are shown in Figures 1 to 4. Prevalence data are weighted to be representative of the population sampled. In 2011 BRFSS data collection changed to a dual-mode landline and cellphone survey and a new weighting methodology (raking) with the addition of cell phone only respondents.

Additional asthma prevalence data from the 2022 Rhode Island BRFSS also are shown. The COVID-19 pandemic caused profound interruptions in healthcare access and delivery. Asthma prevalence for 2020 and 2021 may reflect pandemic-related declines in access to healthcare and diagnosis of new asthma cases not evident in 2022.[10]

<u>Adult Self-Reported Asthma Prevalence</u>

Adult lifetime and current asthma prevalence showed modest changes over ten years. Lifetime asthma prevalence ranged from 13% in 2012 to close to 15% in 2021 nationally, and from 16% in 2012 to 17% in 2021 in Rhode Island. Current asthma prevalence ranged from 9% in 2012 to close to 10% in 2021 nationally, and from nearly 11% in 2012 to close to 13% in 2021 in Rhode Island. Adult prevalence of lifetime and current asthma were consistently higher in Rhode Island than in the U.S. in each year shown.

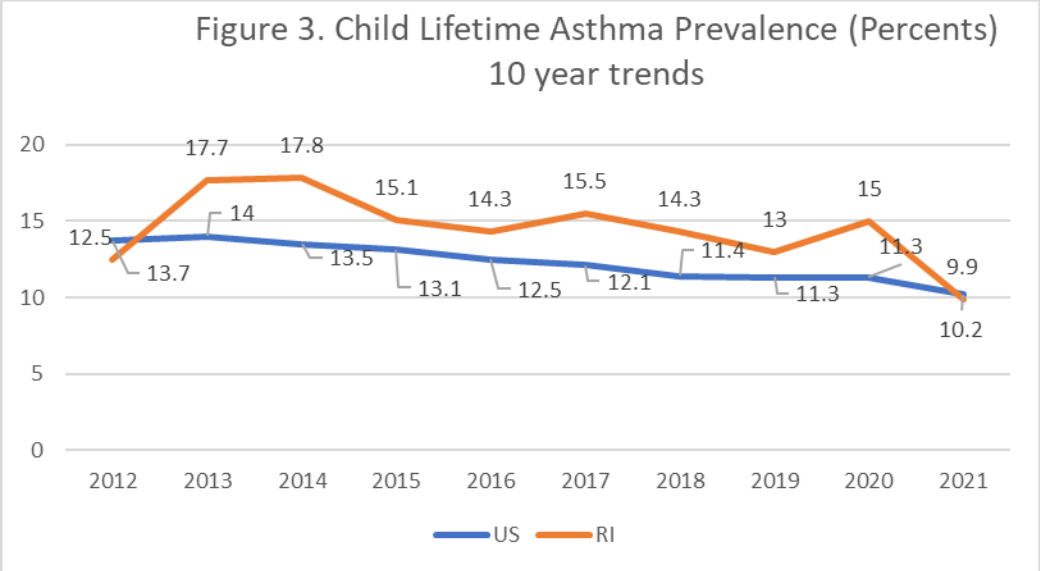




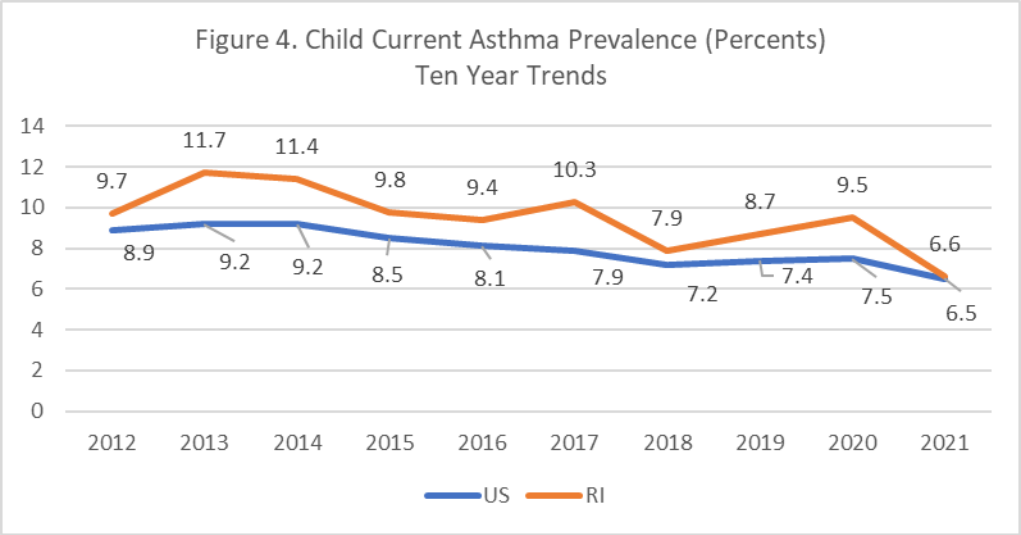
Rhode Island BRFSS data

- In 2022 adult lifetime asthma prevalence was 18.3% and current asthma prevalence was 13.3%, which were higher than what was observed in 2020 and 2021 when COVID-19 and variants of the virus were present in the US and in other countries worldwide.

Child Asthma Prevalence



The prevalence of asthma among U.S. children decreased over ten years ranging from 13.7% in 2012 to 10.2% in 2021 (Figure 3). Current asthma prevalence also decreased between 2012 and 2021 (Figure 3. 8.9% to 6.5%, respectively). In Rhode Island, current asthma prevalence among children decreased from close to 10% in 2012 to an estimated 6.6% in 2021. The prevalence of lifetime and current asthma were consistently higher in Rhode Island than in the U.S. in each year shown.



Rhode Island BRFSS data

- In 2022, child lifetime asthma prevalence was 13.6% and current asthma prevalence was 8.1%; both are significantly higher than what was observed in 2021 (Lifetime: 9.9% and Current: 6.6%, respectively) when new variants of COVID-19 were a concern worldwide.
- Lifetime and current asthma prevalence in children in 2022 were lower than what was observed in 2020 (15.0% and 9.5%, respectively), when the World Health Organization declared COVID-19 a pandemic.

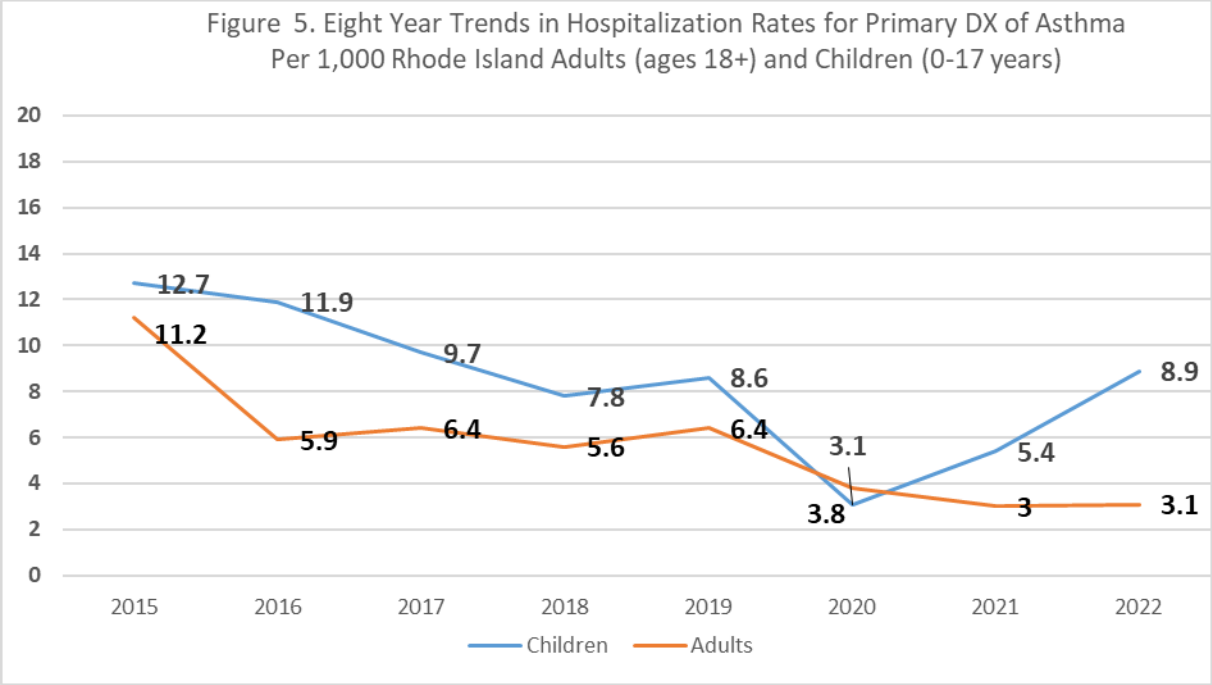
Trends in Asthma-Related Inpatient Hospital Stay and Emergency Department Visits

Costs due to asthma are substantial. Asthma costs about $50 billion each year in healthcare costs.[11] Recent national data from the CDC show that in 2020 there were 986,453 ED visits and 94,550 inpatient hospitalization where asthma was the first-listed diagnosis. ED visit rates for asthma as the first-listed diagnosis were 3.0 times higher for Black children (89.5 per 10,000

population) and 2.7 times higher for Black adults (80.6 per 10,000 population) than the asthma ED visit rate for the U.S. (29.8 per 10,000 population).[12]

Asthma-Related Inpatient Hospitalizations, Rhode Island

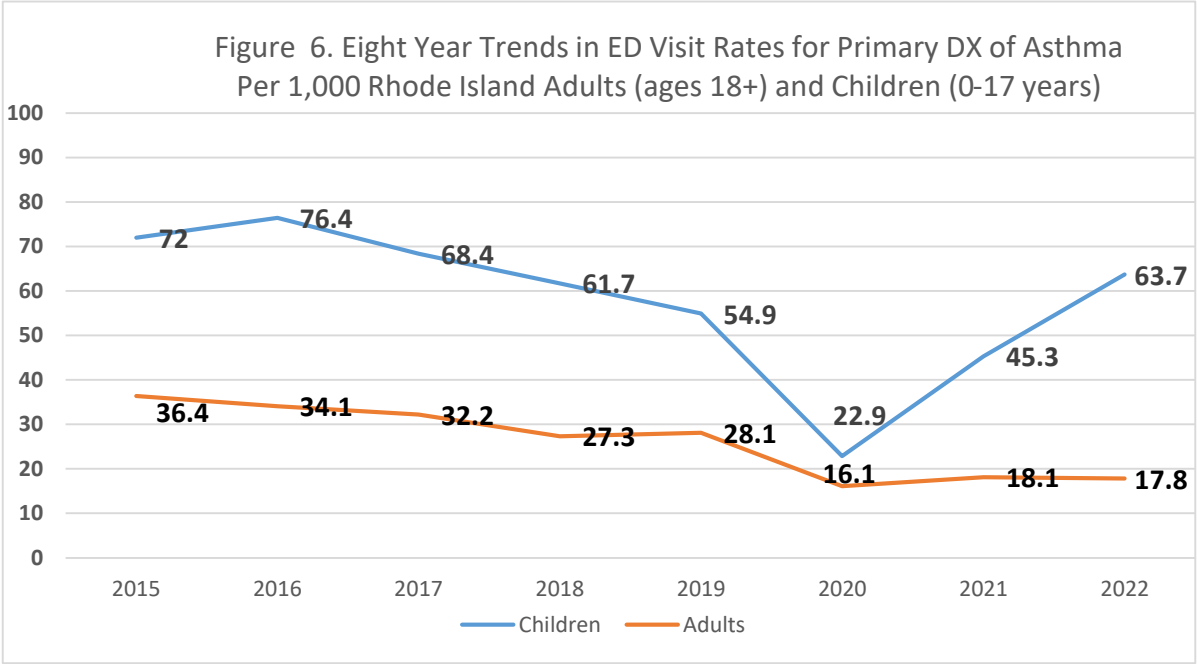
Inpatient hospitalization rates where asthma was the primary diagnosis decreased between 2015 and 2021 in Rhode Island (excluding 2020). The inpatient hospitalization rate for pediatric asthma went from 12.7 per 10,000 population in 2015 to 8.9 per 10,000 in 2022. Asthma-related hospital stays for adults also decreased from 11.2 per 10,000 population in 2015 to 3.1 per 10,000 population. See Figure 5.



Asthma-Related Emergency Department (ED) Visits, Rhode Island

ED visit rates where asthma was the first-listed diagnosis decreased over eight years for adults and children (Figure 6). The asthma ED visit rate for adults decreased from 36.5 per 10,000 population in 2015 to 17.8 in 2022 per 10,000 population. For children, the asthma ED visit rate decreased from 72.0 per 10,000 population to 63.7 per 10,000 population. Results for asthma-related pediatric ED visits and hospitalizations are promising! Since 2010, the Rhode Island Asthma Control Program has been implementing the Rhode Island Home Asthma

Response Program (HARP) with external partners. HARP is designed to decrease asthma-related ED visits and hospitalizations for children with poorly controlled asthma who have had an ED visit or inpatient hospital stay for asthma in the previous 12 months.



Limitations. ED visit rates in 2020 should be interpreted. The COVID-19 pandemic impacted asthma ED visits in the U.S. The impact was greater among children than adults, as ED visits among children were notably lower during the pandemic than before the pandemic.[13]
A second limitation is that Rhode Island's ED visit data do not include ICD-10 codes for urgent care. It is possible that some parents chose to go to an urgent care center when their child's asthma is not well controlled then to a hospital ED.

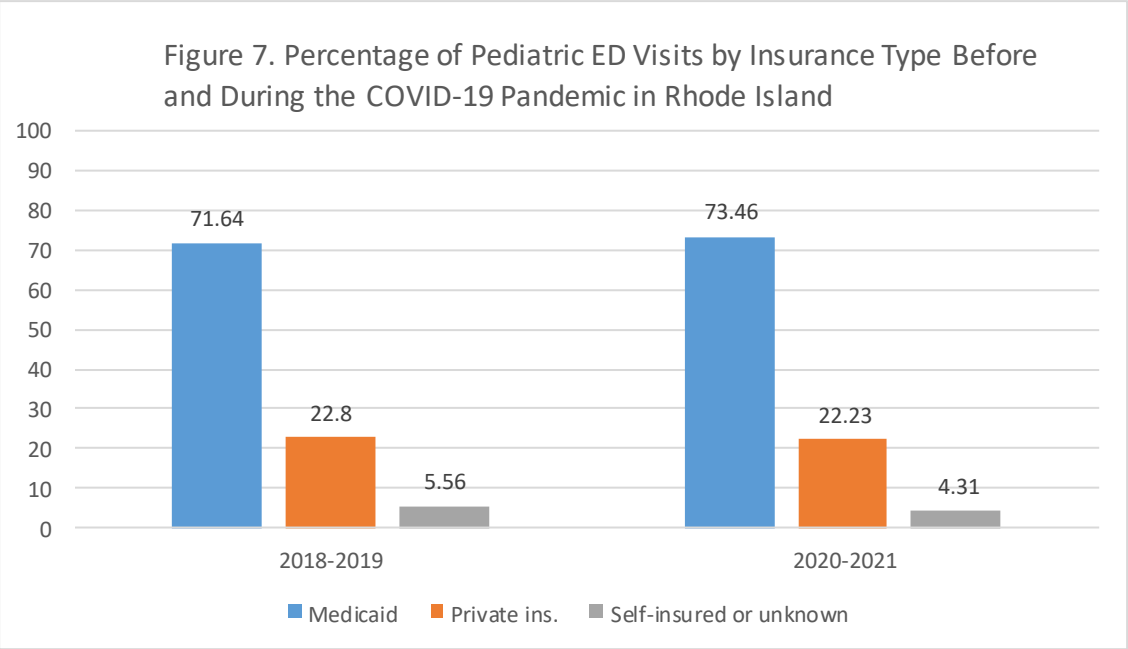
Addressing Disparities

The Rhode Island Department of Health's Asthma Control Program has a long history of using community-driven approaches to address disparities in pediatric asthma. The Home Asthma Response Program (HARP), described previously, is one example. HARP is an evidence-based multi-trigger, multicomponent intervention with an environmental focus. The target population is children with poorly or not well controlled asthma who live in the cities of Central Falls, Pawtucket, Providence and Woonsocket where 25% or more of children live at or

below the poverty level. Children residing in these four urban cities have consistently experienced higher rates of asthma-related ED visits and hospitalizations than children in all other cities and towns in the state. Most children enrolled in HARP are Medicaid-insured.

Children and their families enrolled in HARP are provided up to three intensive in-home visits with a certified asthma educator (AE-C) and community health worker (CHW). The AE-C and CHW provide asthma self-management education and conduct an environmental assessment of the home to identify environmental triggers that could exacerbate the child's asthma. Figure 7 compares pediatric asthma ED visit rates in Rhode Island where asthma was the primary diagnosis by insurance type in two time periods: 2018-2019 (pre-COVID-19 pandemic), 2020-2021 (height of the COVID-19 pandemic and continuing waves of COVID-19 variants). The two periods were compared as chronic stress, anxiety, and depression in children have been associated with asthma exacerbations in children with asthma. It is possible that stresses associated with COVID might exacerbate a child's asthma and result in a higher percentage of ED visits for asthma during the pandemic than before the pandemic. This may be especially the case for Medicaid-enrolled children (a proxy for living in a low income household). Lower income families in Rhode Island were significantly impacted by the pandemic, experiencing greater housing instability, food insecurity and stress related to family members in jobs with greater exposure to COVID-19 than higher income families.

Figure 7 shows that the percentage of ED visits for asthma by insurance type were similar before and during the COVID-19 pandemic in Rhode Island. Medicaid insured children had the highest percentage of pediatric ED visits for asthma in both time periods. The findings suggest that well-documented factors associated with disparities in pediatric asthma (e.g., poverty, poor housing quality, residential racial segregation) continue to be the drivers of pediatric ED visits for asthma. Children with poorly controlled asthma in the urban cities of Central Falls, Pawtucket Providence, and Woonsocket will continue to be a priority population for HARP.



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