

CHANGES IN ASTHMA-RELATED HEALTHCARE RESOURCE USE IN ASTHMA PATIENTS IN THE UNITED STATES DURING THE COVID-19 PANDEMIC

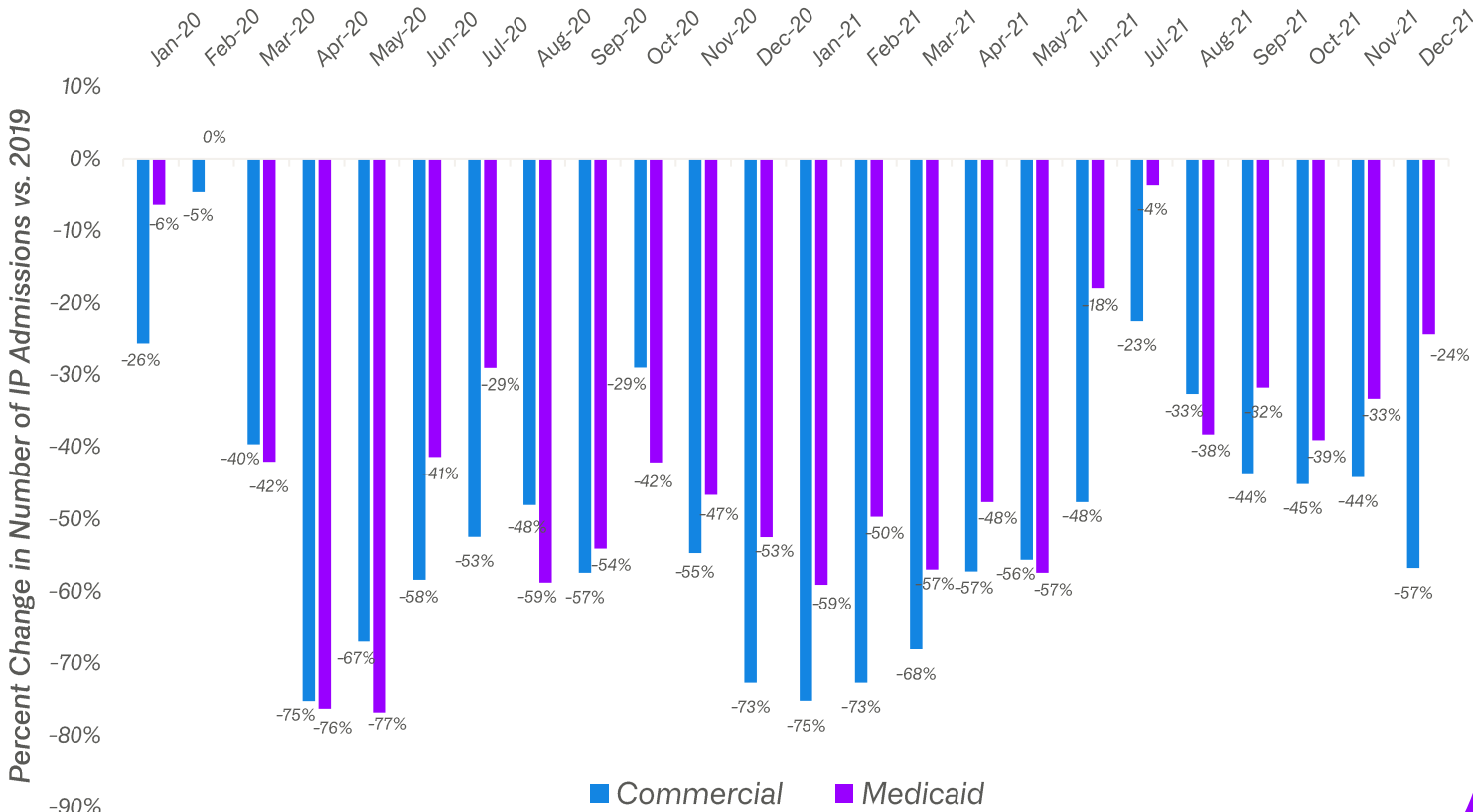
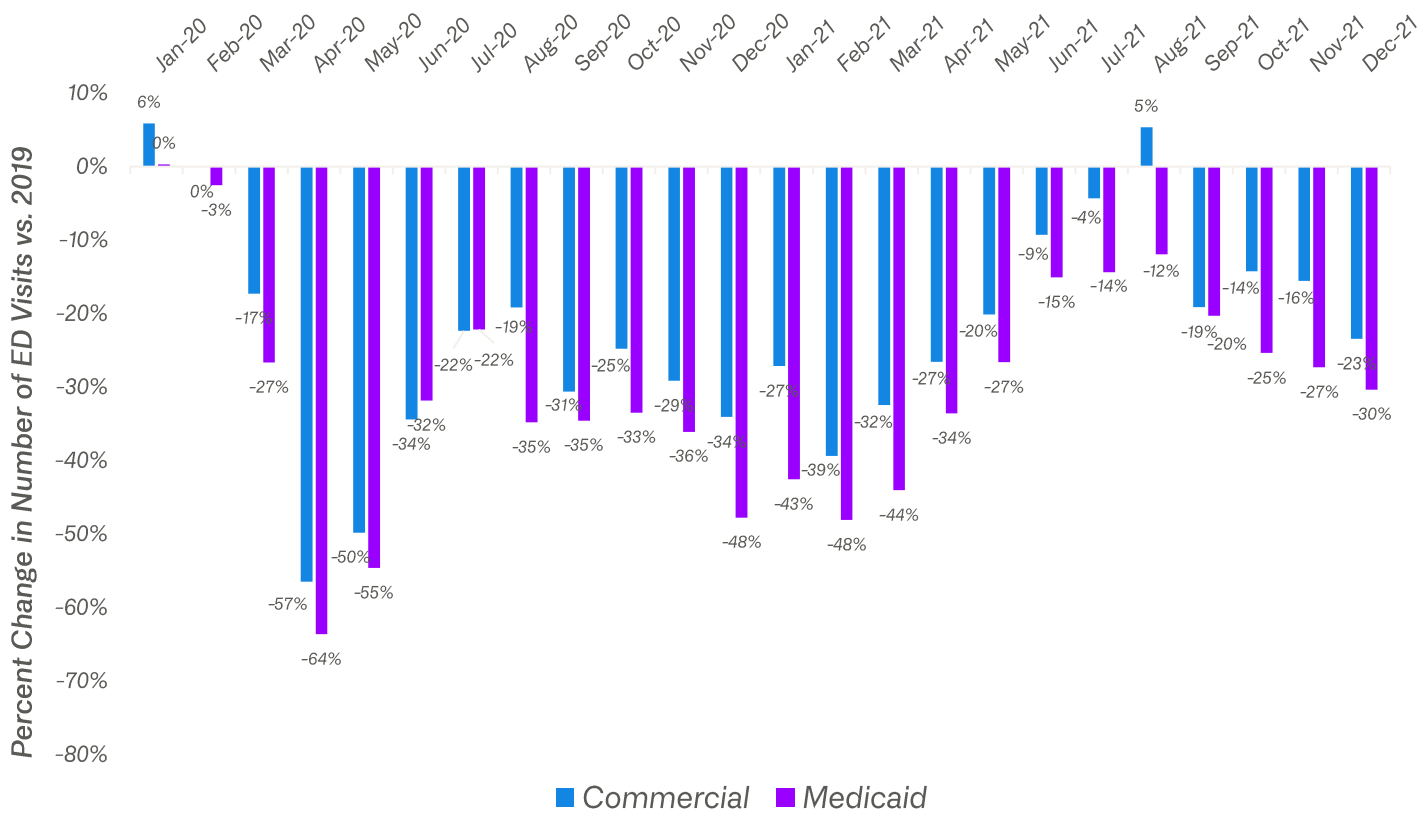
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Study Summary

Study Question: How did asthma-related ED visits and IP admissions in the United States change in patients with asthma during the COVID-19 pandemic?

Study Results: Asthma-related ED visits and IP admission decrease sharply following the implementation of stay-at-home orders in the U.S. These decreases persisted after stay-at-home measures and other COVID-19 mitigation strategies were relaxed beginning in June 2020.



Conclusion : Asthma-related HCRU decreased during the COVID-19 pandemic. These decreases may be attributable to stay-at-home orders and public health policies to mitigate COVID-19 during the 20-21 influenza season.

Background

- The COVID-19 pandemic caused changes in patterns of healthcare resource utilization (HCRU) as the result of stay-at-home orders and other COVID-19 mitigation strategies [1,2].
- Exposure to air pollution has been associated with increased risk of asthma-related healthcare resource utilization [3].
- Reductions in air pollution were also observed during COVID-19 stay-at-home orders which may have even further impacted HCRU in patients with chronic respiratory diseases such as asthma [4,5].

Objective

- To examine patterns of asthma-related HCRU in asthma patients during the COVID-19 pandemic.

Methods

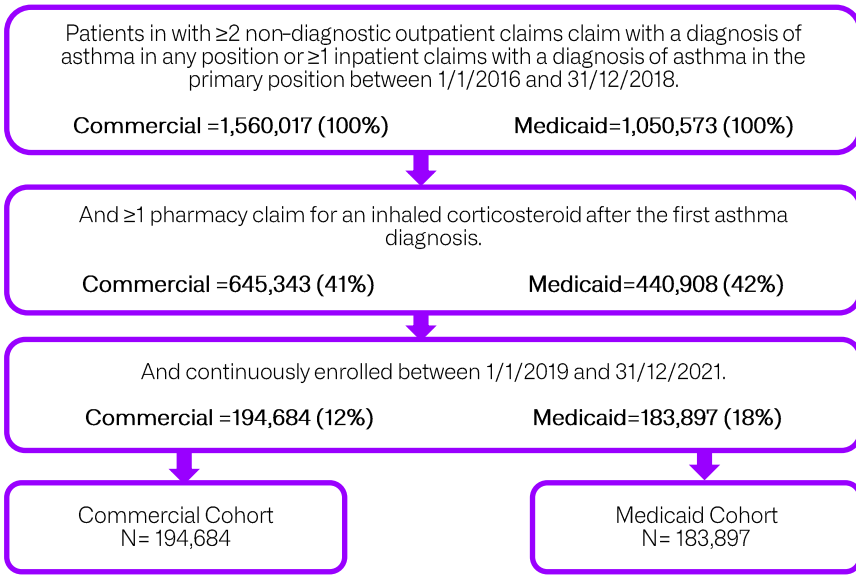
Study Design

- This study employed a retrospective observational cohort design within the Merative™ MarketScan® Commercial Claims and Encounters, Medicare, and Multi-State Medicaid Databases spanning 1 January 2016-31 December 2021 (Figure 1)
- Patients were required to have an inpatient claim or two outpatient claims with a diagnosis of asthma (ICD-10: J45) followed by a pharmacy claim for an inhaled corticosteroid between 1/1/2016 and 1/1/2019.
- Continuous enrollment was required from 1/1/2019 to 12/31/2021.

Outcomes

- Medical claims for asthma-related HCRU were identified as outpatient claims with an asthma diagnosis in any position or inpatient claims with an asthma diagnosis in the primary position.
- Number of asthma-related emergency department (ED) visits and inpatient (IP) admissions were measured monthly in the period from 1/1/2019 to 12/31/2021.
- Percent change in the number of asthma-related ED visits and IP admissions was measured monthly HCRU in 2020 and 2021 relative to the same month in 2019.

Figure 1. Patient Selection



Results

- This study included 194,684 Commercial and 183,897 Medicaid asthma patients. Mean age was 38 years (SD: 22.6) in Commercial and 19 years (SD:17.4) in Medicaid. Most Medicaid patients were less than 18 years while most of the Commercially insured patients were aged 18-64 (Table 1).
- Asthma-related emergency department (ED) visits decreased in April 2020 (57% in Commercial; 64% in Medicaid) and from 25-50% during the 2020-2021 influenza season in both populations (Summary Figure). Decreases in asthma-related ED visits were highest in patients <18 years (Figure 2).

Figure 2. Number of asthma-related ED visits per month by age group 2019-2021, A) Commercial B) Medicaid

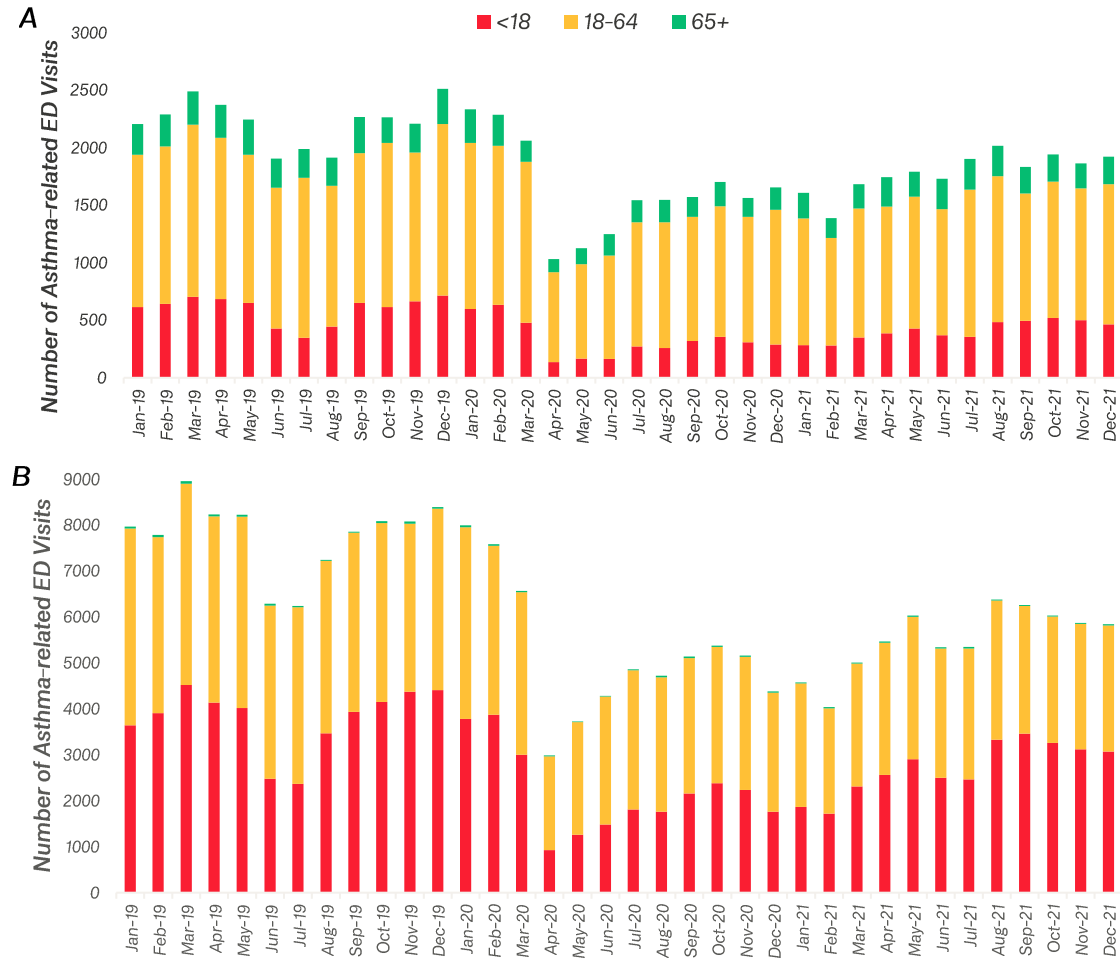


Figure 3. Number of asthma-related IP admissions per month by age group 2019-2021, A) Commercial B) Medicaid

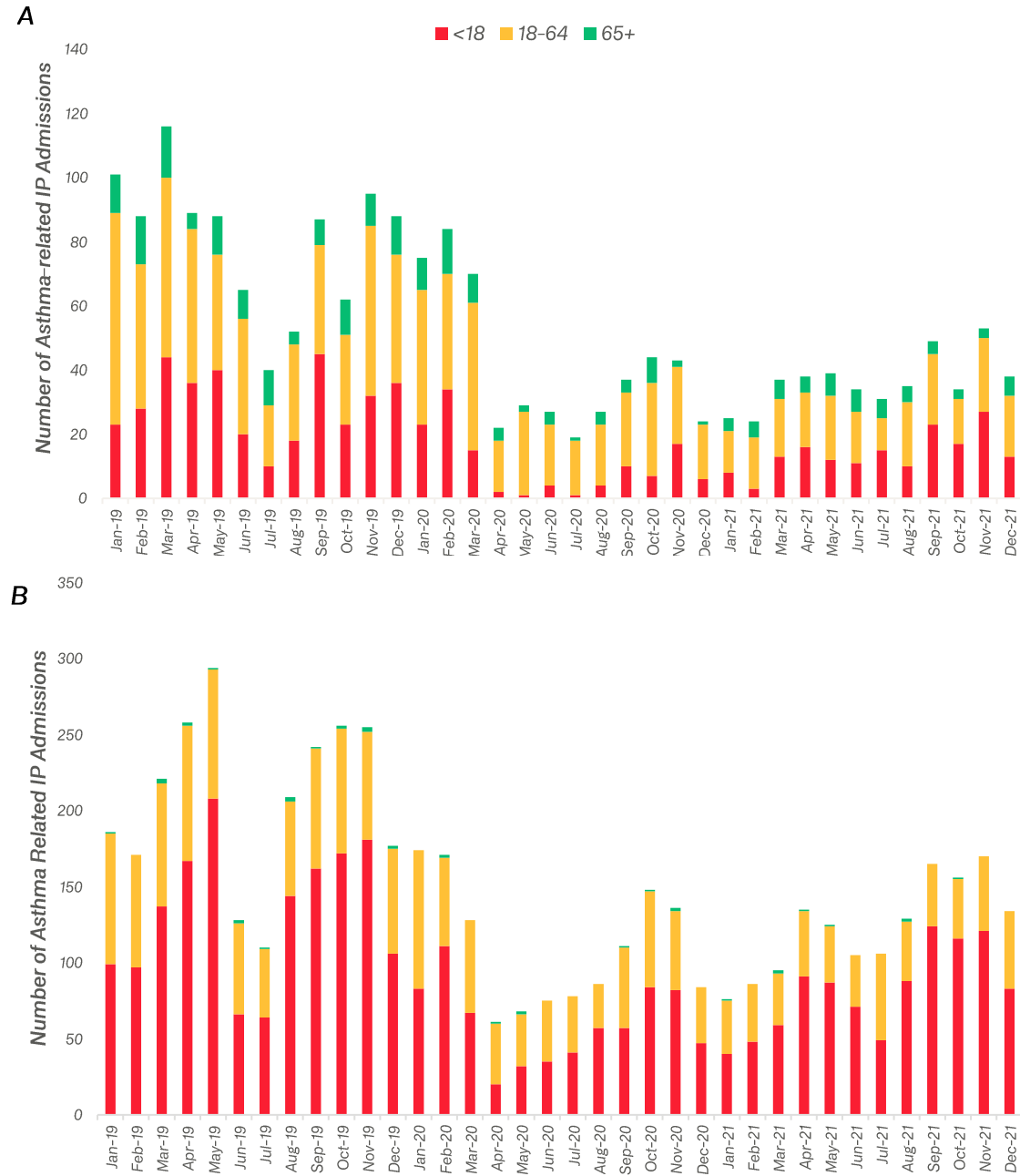


Table 1. Patient Characteristics

	Commercial		Medicaid	
	N=194,684		N=183,897	
	N/Mean	%/SD	N/Mean	%/SD
Age (Mean, SD)	37.98	22.6	19.63	17.4
Age Category (N, %)				
<18	58,266	29.9%	124,007	67.4%
18-64	116,497	59.8%	58,487	31.8%
65+	19,921	10.2%	1,403	0.8%
Sex (N, %)				
Male	83,463	42.9%	88,172	48.0%
Female	111,221	57.1%	95,725	52.1%
Region (N, %)				
Northeast	29,021	14.9%	-	-
North Central	57,217	29.4%	-	-
South	76,989	39.6%	-	-
West	31,001	15.9%	-	-
Unknown	456	0.2%	-	-
Race (N, %)				
White	-	-	80,908	44.0%
Black	-	-	74,721	40.6%
Hispanic	-	-	3,950	2.1%
Other	-	-	6,039	3.3%
Unknown	-	-	18,279	9.9%

Results, cont.

- Sharp decreases in asthma-related inpatient admissions also occurred in 2020 and 2021. In April 2020 inpatient admissions decreased 75% in both populations with a 55-75% reduction observed during the 2020-2021 influenza season in both populations (Summary figure).
- Asthma-related ED visits and IP admissions were more common in the Medicaid population than in the Commercially insured population (Figures 2 & 3).
- Number of asthma related ED visits and IP admissions decrease in 2020 and 2021 relative to 2019, with decreases observed in all age groups (Figures 2 & 3).

Limitations

- Patients in this study were Commercially or Medicaid-insured; results may not be generalizable to patients with other types of insurance or without health insurance coverage.
- Asthma diagnoses on claims may be misclassified, potentially resulting in misclassification of asthma-related utilization.
- We were not able to assess if the decreases in asthma-related utilization are due to decreased asthma symptoms or due to delays in seeking care.

Conclusions

- Asthma-related HCRU decreased during the COVID-19 pandemic. These decreases may be attributable to stay-at-home orders and public health policies to mitigate COVID-19 during the 2020-2021 influenza season.
- Though the magnitude of the decrease in asthma-related utilization was highest in 2020, decreases in asthma-related utilization persisted through the end of 2021.
- Further research is necessary to determine whether decreases in asthma-related utilization will continue through the 2021-2022 influenza season.

References

- [1] [MMWR Morb Mortal Wkly Rep](#). 2020; 69: 1250-1257
- [2] Real-world data and COVID-19 – How will your evidence generation strategy change in a post-pandemic era? ISPOR 2022, May 17.
- [3] [PLoS One](#). 2015; 10: e0138146.
- [4] [Sci Total Environ](#). 2020; 739: 1-4.
- [5] [Public Health](#). 2022 Oct;211:66-71.

Disclosure

All authors are employees of Merative. This study was funded by Merative.

