

Asthma Outcomes: An Analysis of Medication Adherence and Health Care Utilization by Sociodemographics



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Background

- Asthma affected an estimated 27 million individuals in the United States as of 2022, making it one of the most prevalent respiratory conditions nationwide.¹
- Asthma outcomes are known to vary across sociodemographic groups with disparities evident in asthma control, medication adherence, and acute care utilization.^{2,3}
- Disease management programs (DMPs) and value-based insurance design (V-BID) aim to improve asthma outcomes through guideline-based medication use, improved adherence, and reduced avoidable acute care utilization.^{4,5}
- Poorly controlled asthma is associated with use of high-acuity health care services, including emergency department (ED) visits and hospitalizations, contributing to substantial clinical and economic burden.^{4,6}

Objectives

- Examine differences in asthma medication selection, adherence, and acute care utilization between sociodemographic groups.
- Compare asthma treatment patterns, adherence, and acute care use by DMP participation.

Methods

- Members aged ≥12 years with ≥12 months of continuous enrollment 7/1/2022-6/30/2024 were included. Eligible individuals had ≥1 asthma diagnosis (ICD-10 J45*) and ≥1 pharmacy claim for an inhaled corticosteroid (ICS), long-acting beta agonist (LABA), ICS/LABA combination, leukotriene receptor antagonist (LTRA), long-acting muscarinic receptor antagonist (LAMA), or FDA-approved asthma biologic.
- Asthma severity was assigned into three categories, mild (J45.2*, J45.3*), severe (J45.4*, J45.5*), and Misc (J45.90*, J45.990, J45.991, J82.83).
- Race was self-reported. Socioeconomic status was measured using social vulnerability (SVI) data at the census tract level. Members were assigned to quartiles based on the density of vulnerable households.
- Members were considered as enrolled in the Disease Management Program (DMP) for asthma if they had a program open for 12 months since first medication and met program participation requirements. Those not meeting all criteria were excluded.
- Distribution of asthma severity and medication selection were assessed by demographics (race and SVI) and DMP status.
- Medication adherence was measured using the proportion of days covered (PDC) among those members receiving ICS alone or in combination.
- Acute care service utilization was assessed by performing descriptive analysis on medical claims.
- Distribution of medication selection by asthma severity was evaluated.

Results

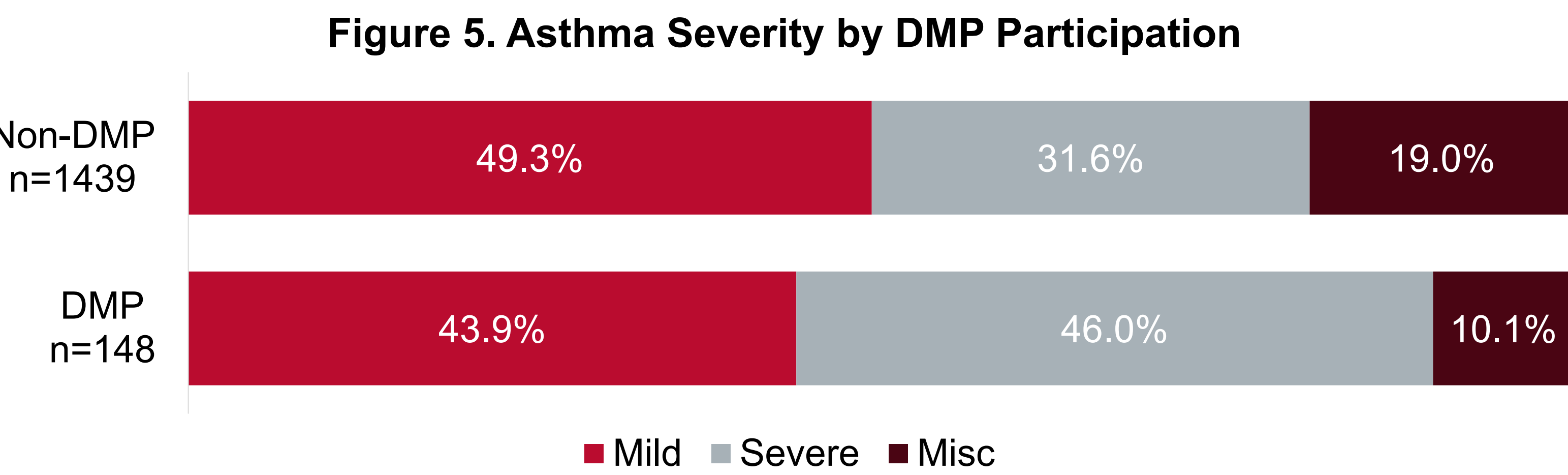
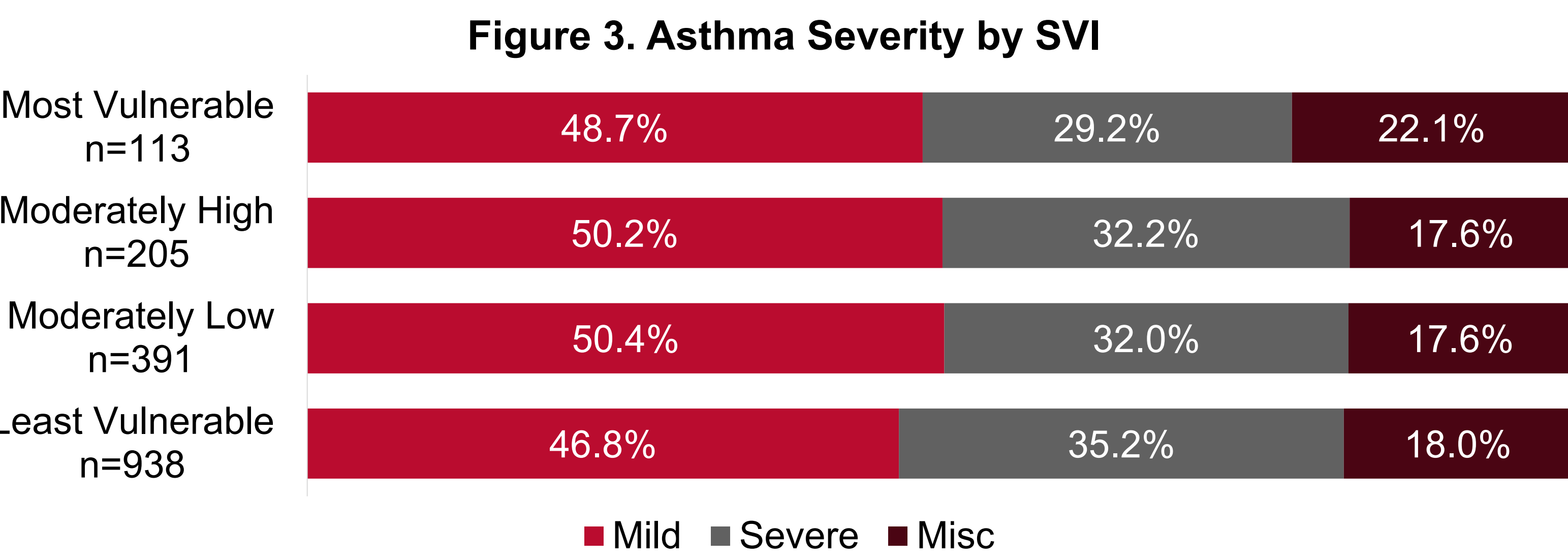
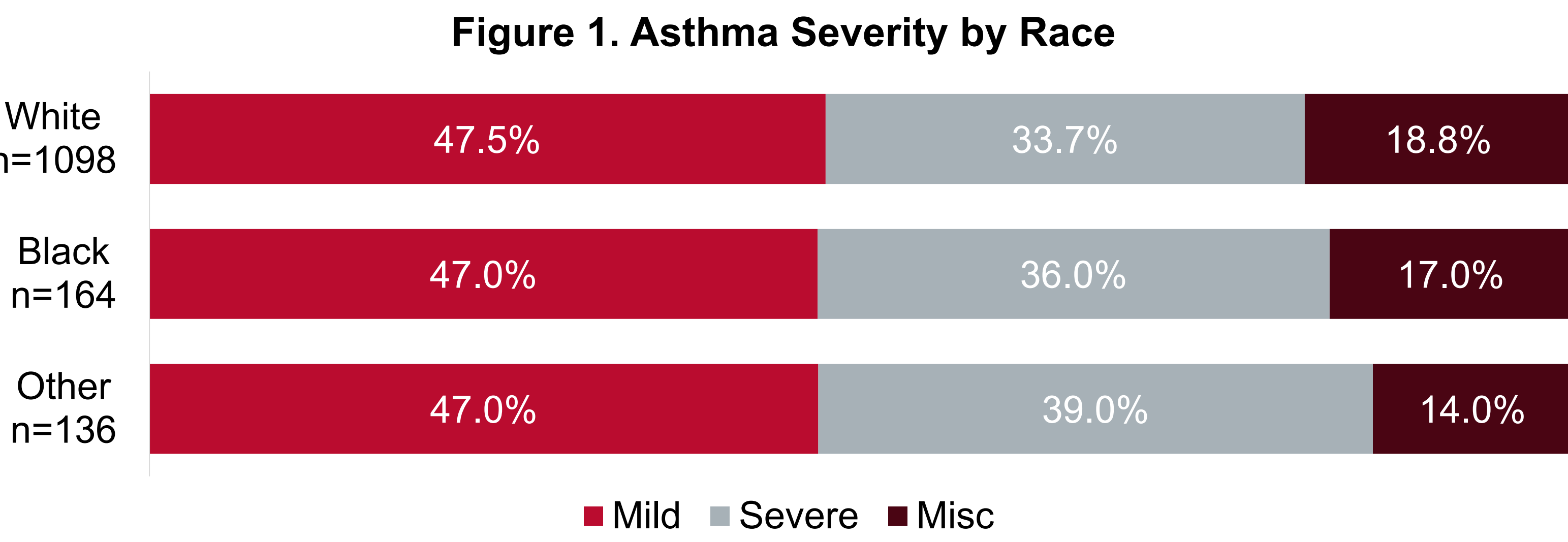
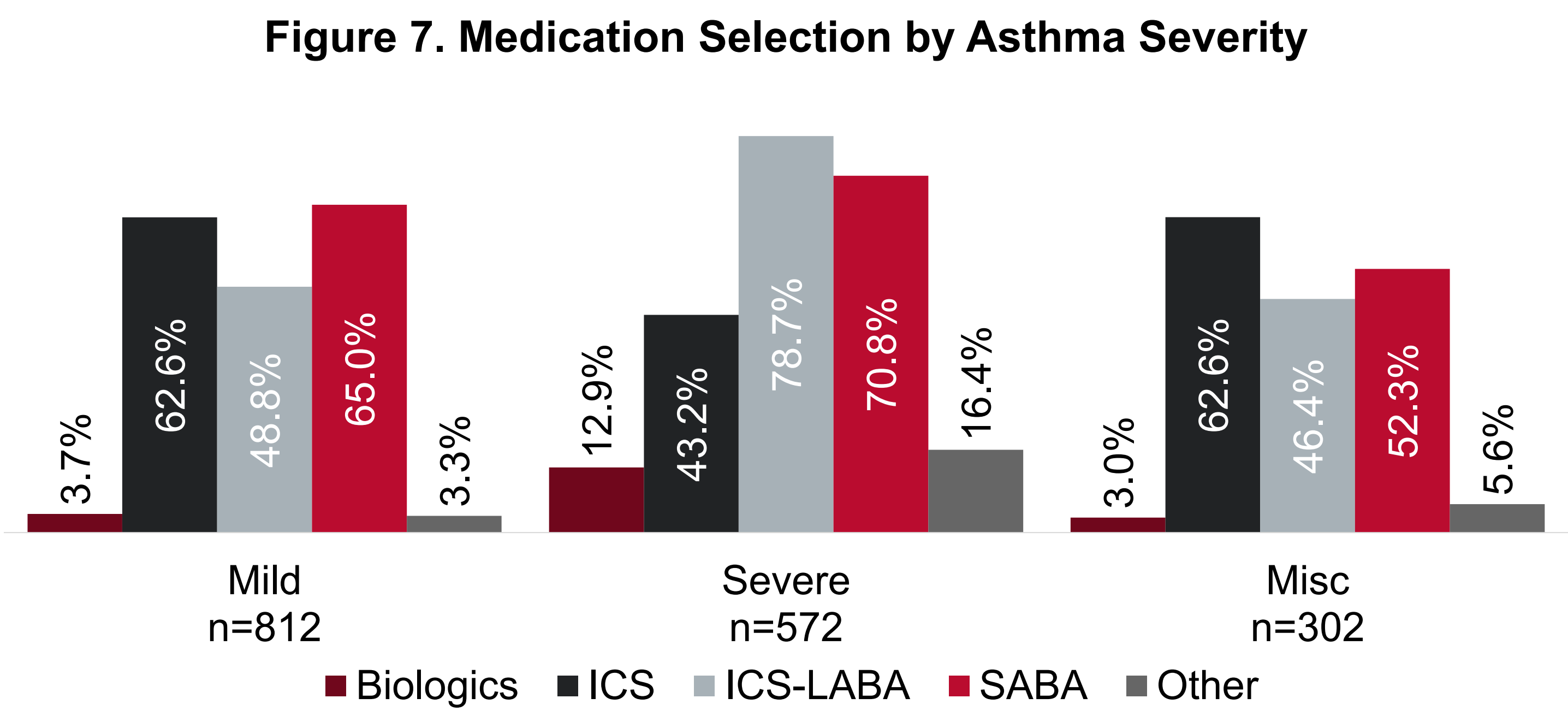
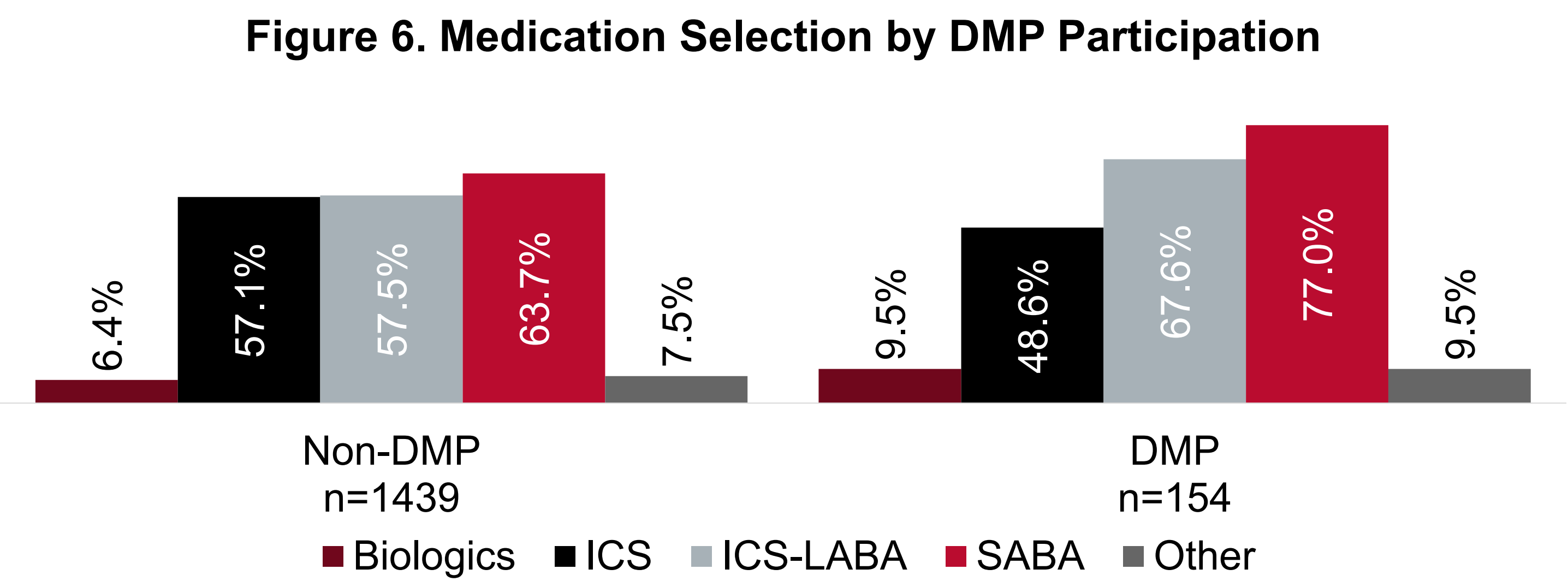
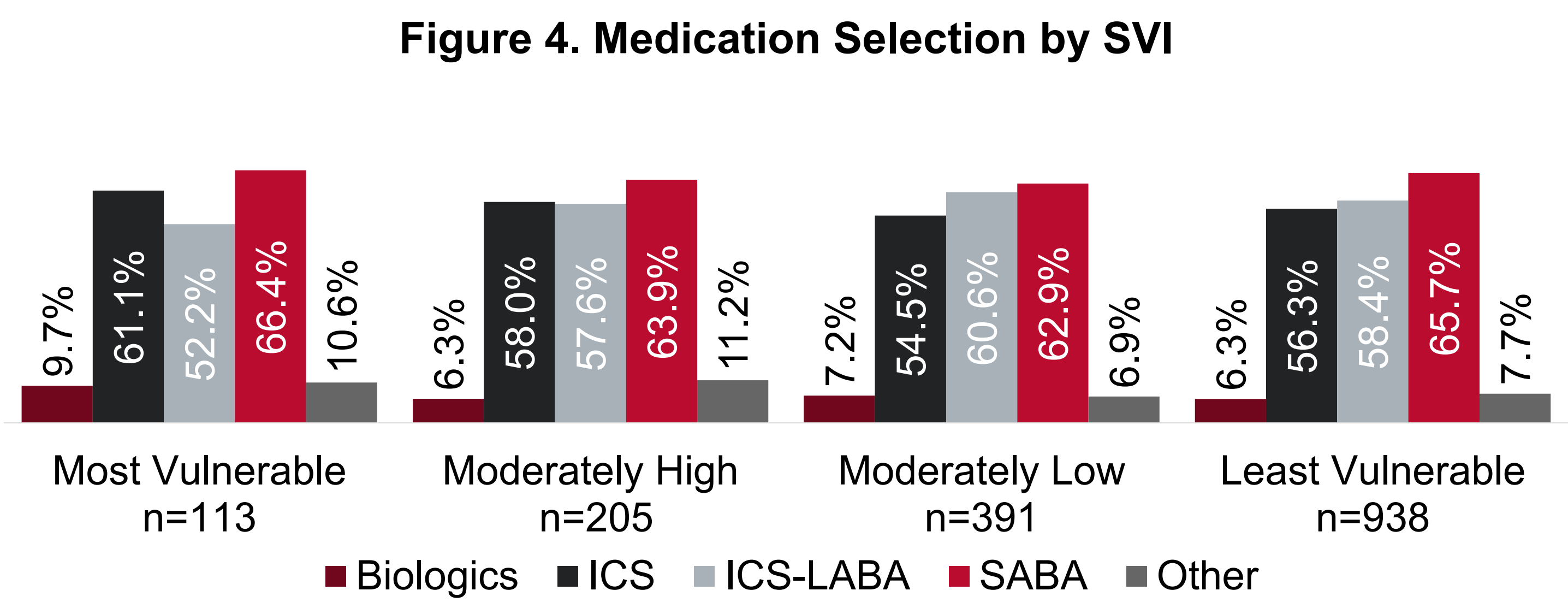
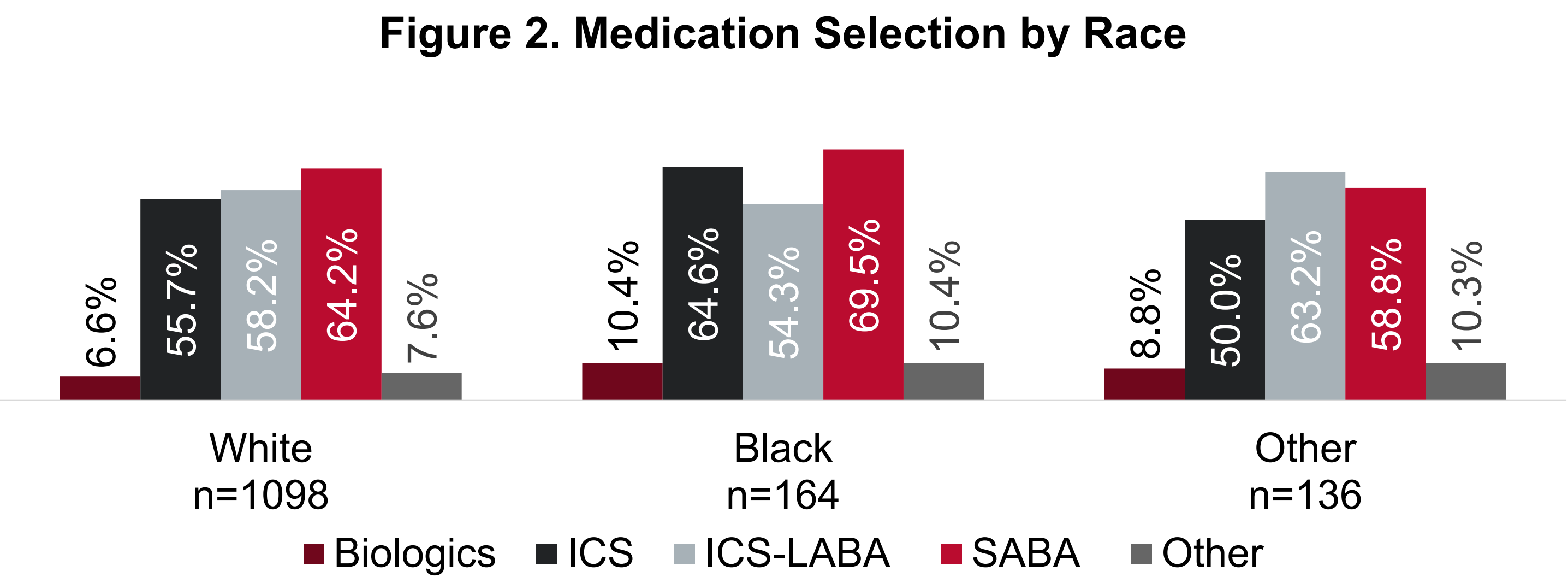


Table 1. Adherence and Acute Care Utilization

	Adherence		Acute Care Utilization (services per 1000)		
	n	Mean PDC	Hospital Admissions	ED Visits	Urgent Care Visits
White†	680	34.7%	1.8	21.9	5.5
Black†	93	26.1%	24.4	54.9	6.1
Other	81	27.4%	0	0	0
Most Vulnerable	73	31.7%	17.7	26.5	0
Moderately High	127	31.6%	4.9	34.1	9.8
Moderately Low	252	32.1%	2.6	33.2	0
Least Vulnerable	542	33.9%	2.1	19.2	10.7
Non-DMP†	868	30.9%	4.2	25.7	6.9
DMP†	96	48.7%	0	20.3	13.5

†: p<0.005



Other includes: ICS-SABA, LABA, LTRA, SABA-SAMA

Discussion

- Asthma severity was comparable across racial cohorts (Figure 1). This finding differs from prior literature, which references racial differences in condition severity.^{2,3}
- Higher utilization of biologics, ICS without LABA, and SABA was observed in the Black compared to the White cohorts (Figure 2). These findings contrast with previous studies which showed reduced access to biologics among non-white populations.^{2,8,9}
- In contrast to prior studies, asthma severity (Figure 3) and medication selection (Figure 4) were mostly similar across levels of social vulnerability. Lack of difference may have been a result of participants being enrolled in the same health plan.^{2,3,8,9}
- Patients with severe asthma (Figure 5) were more likely to participate in the DMP than those with mild asthma, potentially due to higher healthcare utilization and perceived participation benefits in those with greater symptom burden. Medication selection data suggested adherence to clinical practice guidelines, with increased utilization of ICS-LABA therapy among the DMP participants (Figure 6).^{5,6}
- Patients in the White cohort demonstrated higher adherence to ICS therapies than those in the Black cohort (Table 1), which aligns with prior studies.^{2,3,5}
- DMP participation was associated with improved medication adherence (Table 1), which aligns with existing literature.⁴
- Acute care utilization was lower across hospital admissions and ED visits for those participating in DMP, which aligns with prior literature (Table 1).^{4,7}
- As expected, medication use differed across asthma severity levels, with ICS-LABA and SABA predominating in severe disease (Figure 7).

Limitations

- The percentage of patients not using guideline-based therapy was not assessed because patients may appear in more than one drug category.
- DMP cohort size and low utilization of acute care services limits the generalizability of these findings.

Conclusions

- Medication selection findings in severe asthma suggest alignment with clinical practice guidelines.
- DMP participants had higher adherence rates than non-DMP.

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