

**Contributors:**

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**Introduction:**

Asthma cannot be cured, but it can be controlled. With appropriate disease management, people with asthma can prevent asthma symptoms, during the day and night, and maintain normal activity levels. People whose asthma is adequately managed should not experience sleep disruption or miss days of school or work because of their asthma. Finally, they should have minimal need for emergency department visits or hospitalizations because of their asthma. The following chapter provides a report of surveillance measures of asthma control and the clinical management activities for achieving asthma control.

**Key Findings:**

- 21.2% of children with current asthma and 38.7% of adults with current asthma had asthma symptoms on  $\geq 9$  days in the past 30 days.
- For adults with current asthma, the prevalence of frequent asthma symptoms, difficulty sleeping due to asthma symptoms, activity limitations due to asthma, frequent asthma emergency department visits, and having an asthma hospitalization were all significantly higher among those with a household income  $< \$50,000$  compared to those with a household income  $\geq \$50,000$ .
- The prevalence of having an asthma hospitalization during the past 12 months was 13.8 times higher for children less than 10 years compared to children 10-17 years—a statistically significant difference.
- Only 40.2% of children with current asthma and 27.0% of adults with current asthma have ever received an asthma action plan.
- Only 40.4% of children with current asthma and 33.8% of adults with current asthma met the national treatment guideline recommendation of at least 2 routine asthma care visits during 12 months.
- Only 35.0% of children with current asthma and 42.8% of adults with current asthma met the national treatment guideline recommendation of receiving an annual influenza vaccination.

**Key Recommendations:**

- Continue to administer the Asthma Callback Survey in Michigan for children and adults with asthma to gain precision in estimates of asthma control and clinical management and evaluate trends in these measures.
- Direct public health efforts toward improving asthma control and clinical management for children and adults of lower socioeconomic status living in Michigan.

**The Asthma Initiative of Michigan (AIM)**

AIM is a collaborative effort involving multiple partners from public and private sectors across the state and is committed to reducing the burden of asthma documented in this report. For information about AIM's priorities and interventions, please review the strategic plan for the initiative: *Asthma in Michigan 2010: A Blueprint for Action*. (<http://www.getastmahelp.org/reports.asp>)

**Data Sources:**

Michigan Asthma Callback Survey  
Michigan Department of Community Health

**Methods:**

Since 2005, Michigan has conducted the Asthma Callback Survey. Respondents to the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) who reported that they or the randomly selected child in their household had ever been diagnosed with asthma (Lifetime Asthma) were asked if they would be willing to participate in a follow-up interview on asthma. Those who agreed were called back within two weeks and a standardized questionnaire about asthma was administered. This report provides results of several measures of asthma control and clinical management among those with current asthma, both children and adults, from the Asthma Callback Survey. Current asthma is defined using two questions:

Adult Survey

1. Have you ever been told by a doctor, nurse, or health professional that you had asthma? (Lifetime Asthma)
2. Do you still have asthma? (Current Asthma)

Child Survey

1. Have you ever been told by a doctor, nurse, or health professional that {child's name} had asthma? (Lifetime Asthma)
2. Does {child's name} still have asthma? (Current Asthma)

Current asthma prevalence is the proportion of respondents who report "yes" to both questions 1 and 2 on the respective surveys.

Respondents to the MiBRFSS provide the eligible respondents for the Asthma Callback Survey. MiBRFSS data are collected quarterly by telephone interview of a sample of landline telephone numbers using list-assisted, random-digit dialed methodology.

Three-year combined estimates of asthma control and clinical management for adults ( $\geq 18$  years) are provided for 2005-2007 by both demographic and socioeconomic characteristics: age group, race, sex, household income, and education. Comparable analysis is also presented for children ( $< 18$  years) with data provided by an adult respondent acting as the proxy for the selected child in the household.

**Methods, continued:**

Indicators of asthma control and clinical management were constructed based on the 2007 Guidelines for the Diagnosis and Management of Asthma: Expert Panel Report 3 (EPR-3).<sup>\*</sup> For the measure of children and adults with current asthma who have taken a long term control medication in the past 3 months, medications were identified using the list of acceptable primary therapies for long term control of asthma by the National Consortium for Quality Assurance (NCQA), Health-care Effectiveness Data and Information Set (HEDIS) Technical Specifications for 2007. These included Inhaled Corticosteroids, Mast Cell Stabilizers, Leukotriene Modifiers, Methylxanthines, and certain combination therapies.

Analyses of the Asthma Callback Survey data were accomplished using SAS-Callable SUDAAN (Version 10.0), a software designed for analysis of multi-stage sample surveys. In comparing estimates between groups, non-overlapping 95% confidence intervals indicate a statistically significant difference between the two groups compared. Global tests for independence between groups were conducted using  $\chi^2$  tests, where a p-value <0.05 was considered statistically significant.

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<sup>\*</sup>NHLBI. Guidelines for the Diagnosis and Management of Asthma: Expert Panel Report 3. NIH Publication Number 08-4051. August 2007. [www.nhlbi.nih.gov/guidelines/asthma](http://www.nhlbi.nih.gov/guidelines/asthma)

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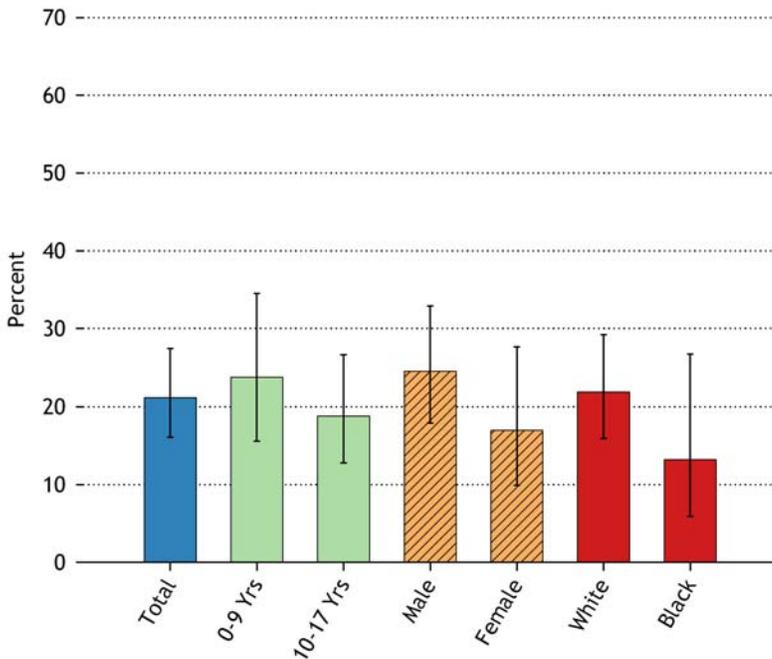


For more information about the Asthma Initiative of Michigan, visit: [www.getastmahelp.org](http://www.getastmahelp.org) or call 1.866.EZLUNGS (1.866.395.8647).

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### ASTHMA SYMPTOMS—CHILDREN

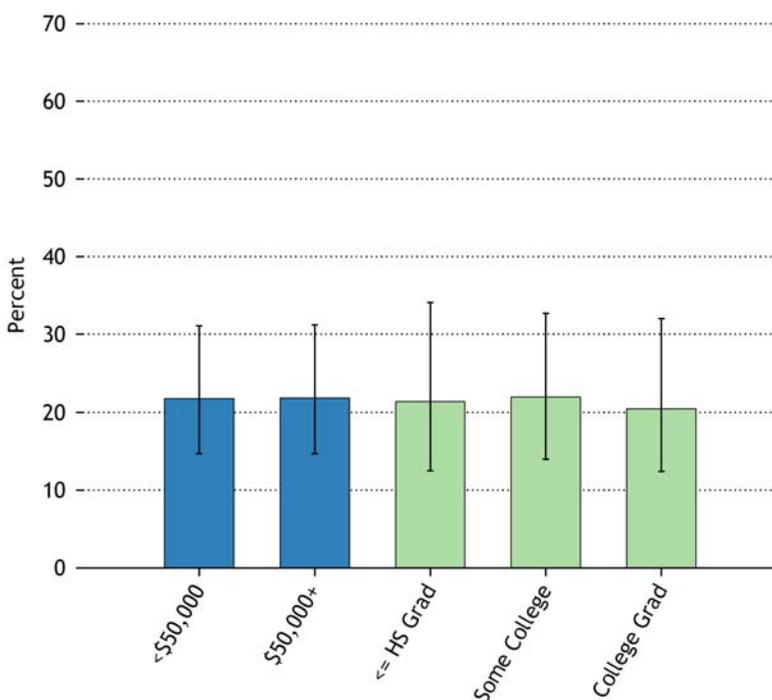
#### 1. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Asthma Symptoms on $\geq 9$ Days During Past Month<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by no or few asthma symptoms.

- 21.2% of children with current asthma had asthma symptoms on 9 or more days during the past month.
- There were no significant differences in the prevalence of frequent symptoms for children with current asthma between age, sex, and race groups.

#### 2. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Asthma Symptoms on $\geq 9$ Days During Past Month<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of frequent symptoms for children with current asthma between household income or respondent education groups.

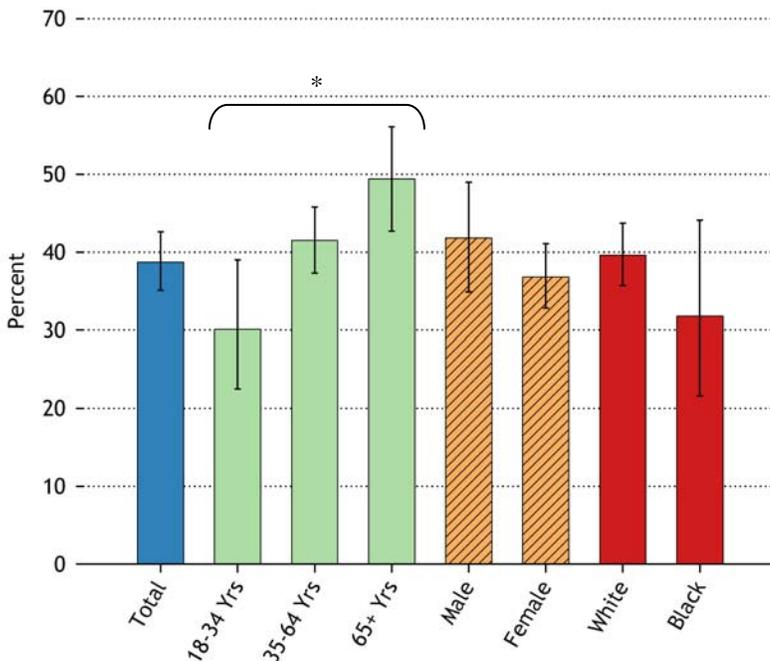
**Data Notes:**

Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported  $\geq 9$  days to the following question, "During the past 30 days, on how many days did {child's name} have symptoms of asthma?" Symptoms on  $\geq 9$  days during the past month is consistent with "Not Well Controlled" or "Very Poorly Controlled" asthma according to national treatment guidelines.

ASTHMA SYMPTOMS—ADULTS

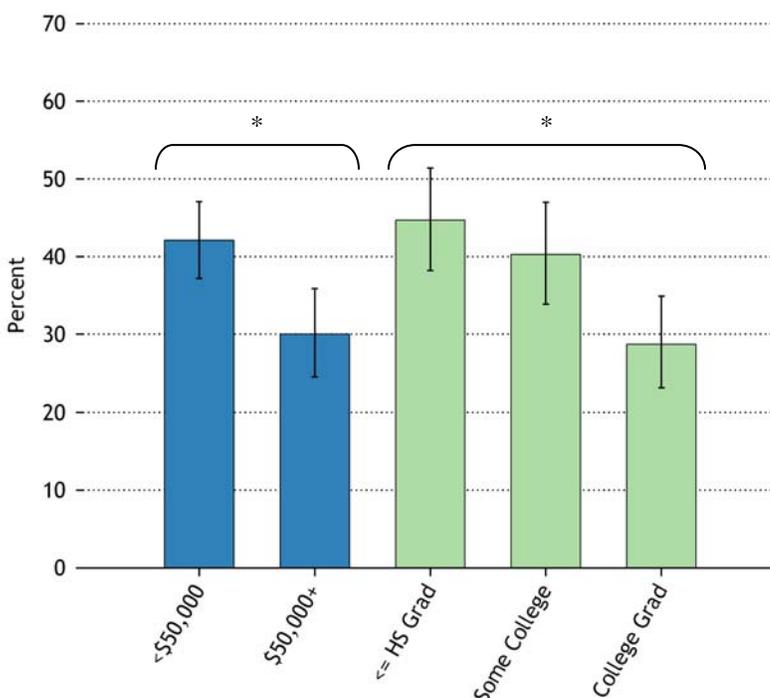
3. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Asthma Symptoms on ≥9 Days During Past Month<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by no or few asthma symptoms.

- 38.7% of adults with current asthma had asthma symptoms on 9 or more days during the past month.
- The prevalence of frequent symptoms were significantly higher (64.1%) among adults 65 years and older compared to adults 18-34 years .
- There were no significant differences in the prevalence of frequent symptoms for adults with current asthma between sex and race groups.

4. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Asthma Symptoms on ≥9 Days During Past Month<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of frequent symptoms was
  - ⇒ significantly higher (40.3%) among adults with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year.
  - ⇒ significantly higher (55.7%) among adults who had completed high school or less compared to those who were college graduates.

Data Notes:

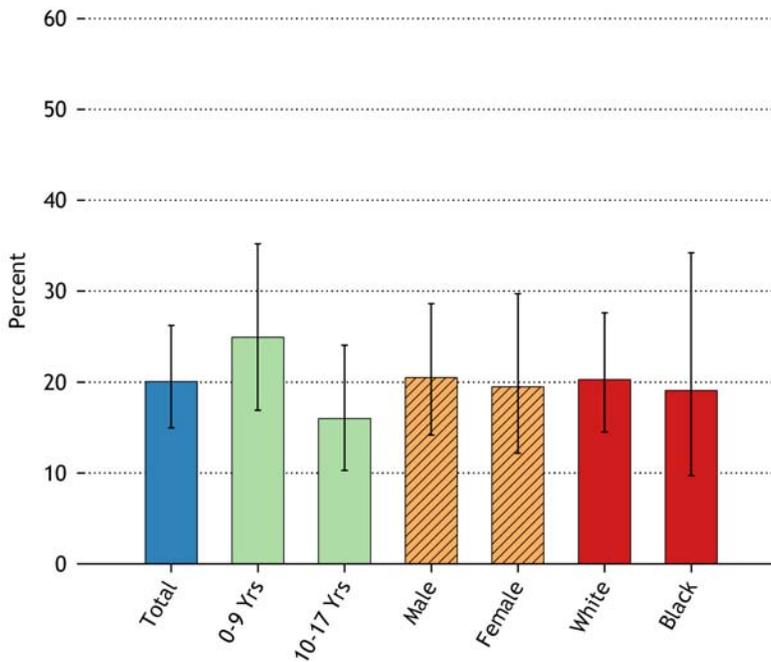
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported ≥9 days to the following question, “During the past 30 days, on how many days did you have symptoms of asthma?” Symptoms on ≥9 days during the past month is consistent with “Not Well Controlled” or “Very Poorly Controlled” asthma according to national treatment guidelines.

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

**DIFFICULTY SLEEPING DUE TO ASTHMA SYMPTOMS—CHILDREN**

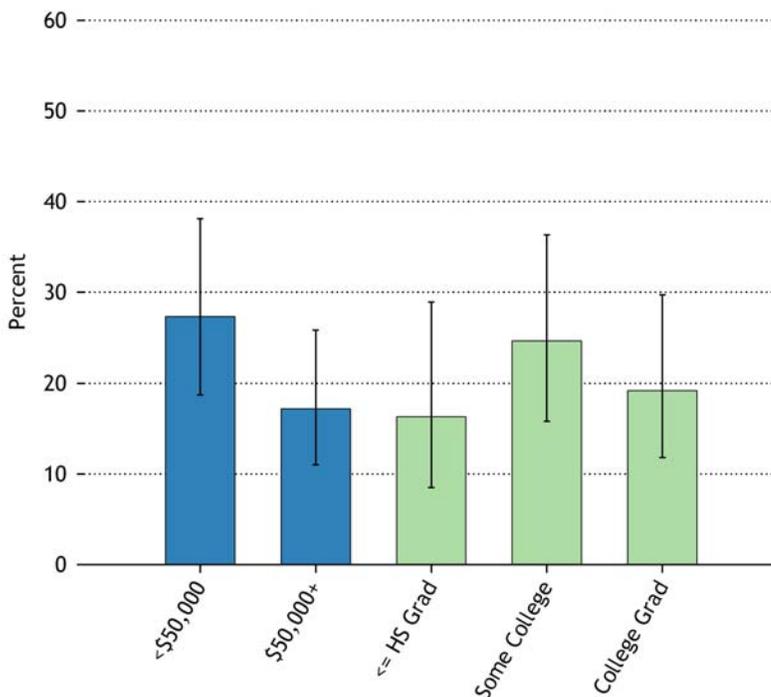
**5. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Difficulty Sleeping due to Asthma Symptoms<sup>3</sup> on  $\geq 2$  Days During Past Month by Demographic Characteristics, Michigan, 2005-2007**



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by no or few sleep disturbing asthma symptoms.

- 20.1% of children with current asthma had difficulty sleeping due to asthma symptoms on 2 or more days during the past month.
- There were no significant differences in the prevalence of frequent sleep disturbing symptoms for children with current asthma between age, sex, and race groups.

**6. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Difficulty Sleeping due to Asthma Symptoms<sup>3</sup> on  $\geq 2$  Days During Past Month by Socioeconomic Characteristics, Michigan, 2005-2007**



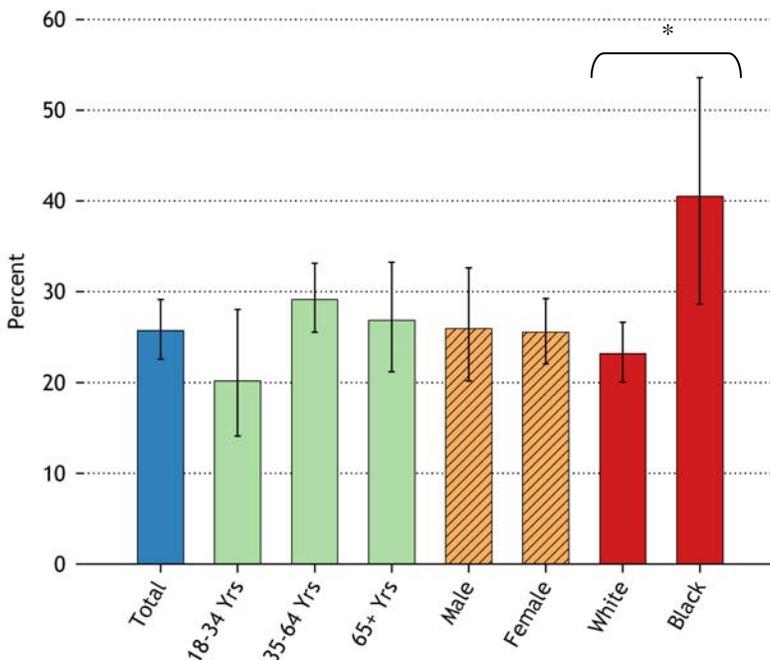
- There were no significant differences in the prevalence of frequent sleep disturbing symptoms for children with current asthma between household income or respondent education groups.

**Data Notes:**  
 Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported  $\geq 2$  days to the following question, "During the past 30 days, on how many days did symptoms of asthma make it difficult for {child's name} to stay asleep?" Sleep disturbing symptoms on  $\geq 2$  days during the past month is consistent with "Not Well Controlled" or "Very Poorly Controlled" asthma according to national treatment guidelines.

### DIFFICULTY SLEEPING DUE TO ASTHMA SYMPTOMS—ADULTS

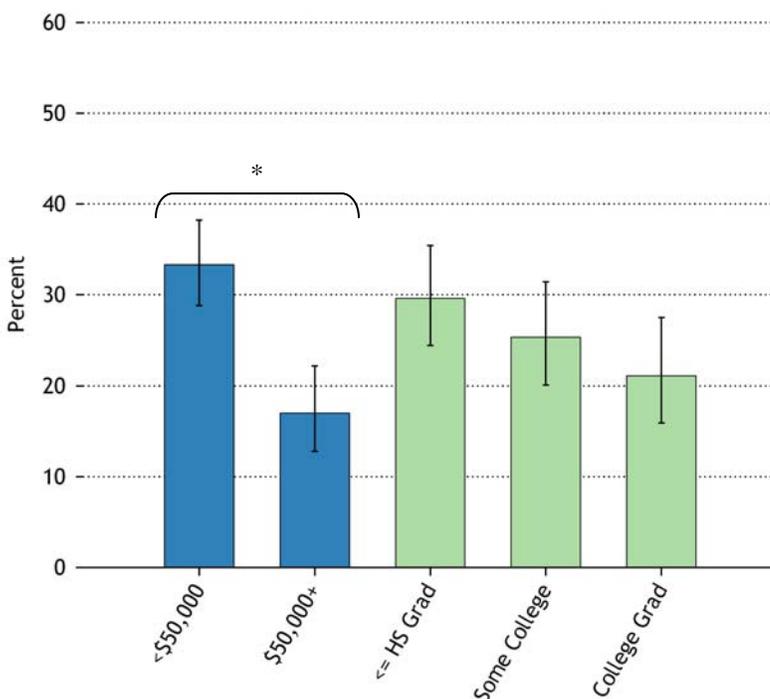
7. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by no or few sleep disturbing asthma symptoms.

- 25.7% of adults with current asthma had difficulty sleeping due to asthma symptoms on 2 or more days during the past month.
- The prevalence of frequent sleep disturbing symptoms was significantly higher (74.6%) among black adults compared to white adults.
- There were no significant differences in the prevalence of frequent sleep disturbing symptoms for adults with current asthma between age or sex groups.

8. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of frequent sleep disturbing symptoms was 2 times higher among adults with a household income <math>< \\$50,000</math> per year compared to those with a household income of <math>\geq \\$50,000</math> per year—a statistically significant difference.
- There was no significant difference in the prevalence of frequent sleep disturbing symptoms for adults with current asthma between respondent education groups.

**Data Notes:**

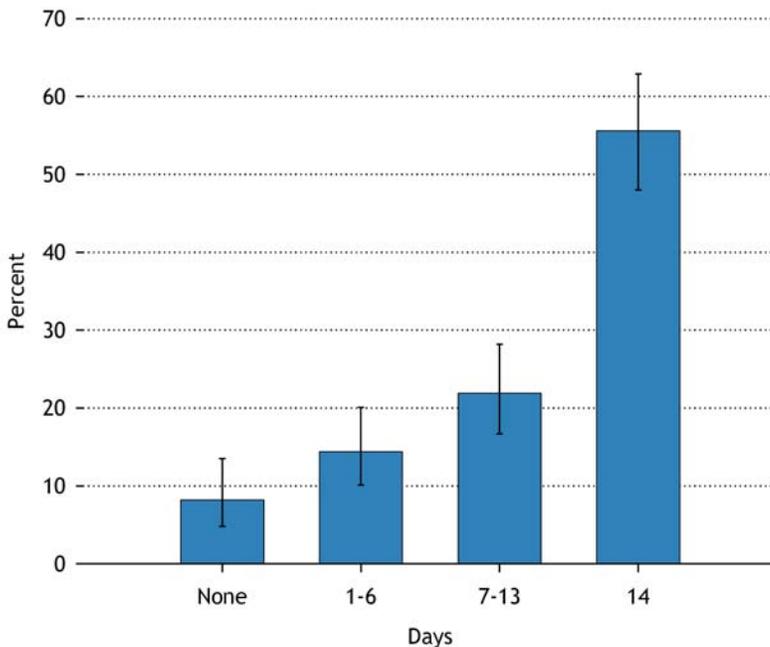
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported  $\geq 2$  days to the following question, “During the past 30 days, on how many days did symptoms of asthma make it difficult for you to stay asleep?” Sleep disturbing symptoms on  $\geq 2$  days during the past month is consistent with “Not Well Controlled” or “Very Poorly Controlled” asthma according to national treatment guidelines.

\*  $\chi^2$  Test for independence between groups, p-value < 0.05.

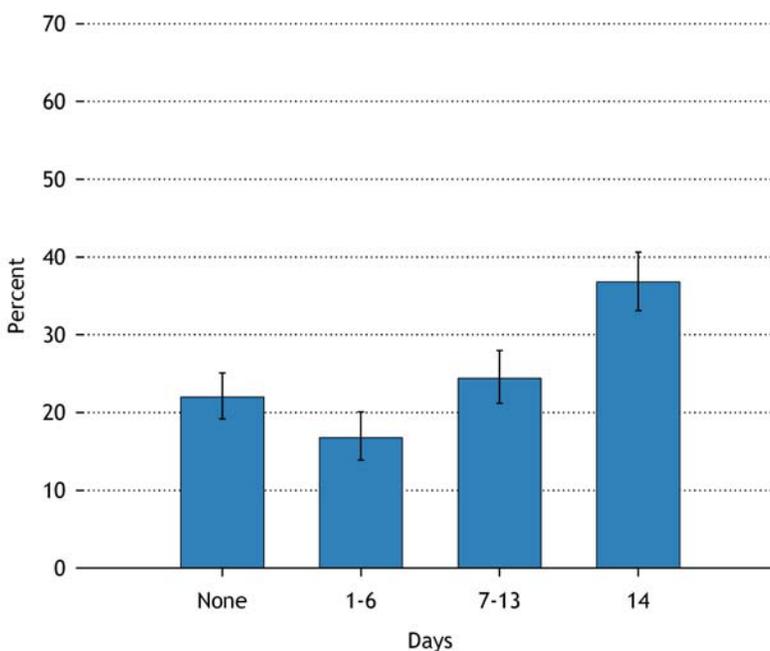
### ASTHMA SYMPTOM-FREE DAYS

#### 9. Distribution of the Number of Symptom-Free Days During Past 2 Weeks<sup>1</sup> Among Children<sup>2</sup> (<18 Years) with Current Asthma<sup>3</sup>, Michigan, 2005-2007



- 55.6% of children with current asthma experienced 14 asthma symptom-free days during the past 2 weeks.
- 8.2% of children with current asthma had asthma symptoms every day of the last 2 weeks.

#### 10. Distribution of the Number of Symptom-Free Days During Past 2 Weeks<sup>1</sup> Among Adults (≥18 Years) with Current Asthma<sup>3</sup>, Michigan, 2005-2007



- 36.8% of adults with current asthma experienced 14 asthma symptom-free days during the past 2 weeks.
- 22.0% of adults with current asthma had asthma symptoms every day of the last 2 weeks.
- The prevalence of having no symptom-free days was 2.7 times higher for adults with current asthma compared to children with current asthma.

**Data Notes:**

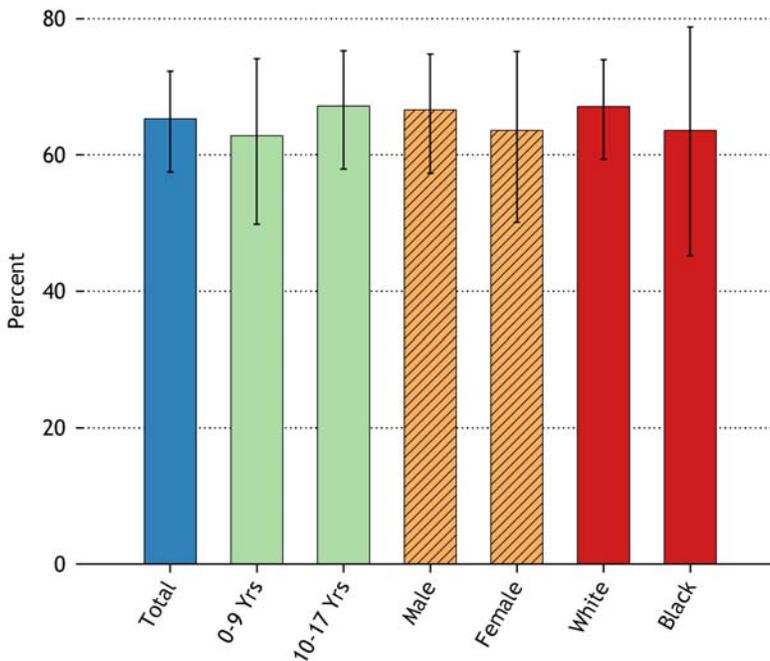
Source: Asthma Callback Survey, MDCH

1. Response to the following question, "During the past two weeks, on how many days was/were {child's name/you} completely symptom free, that is no coughing, wheezing, or other symptoms of asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Current asthma is defined as a positive response to both lifetime and current asthma questions.

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### USUAL ACTIVITIES LIMITED DUE TO ASTHMA—CHILDREN

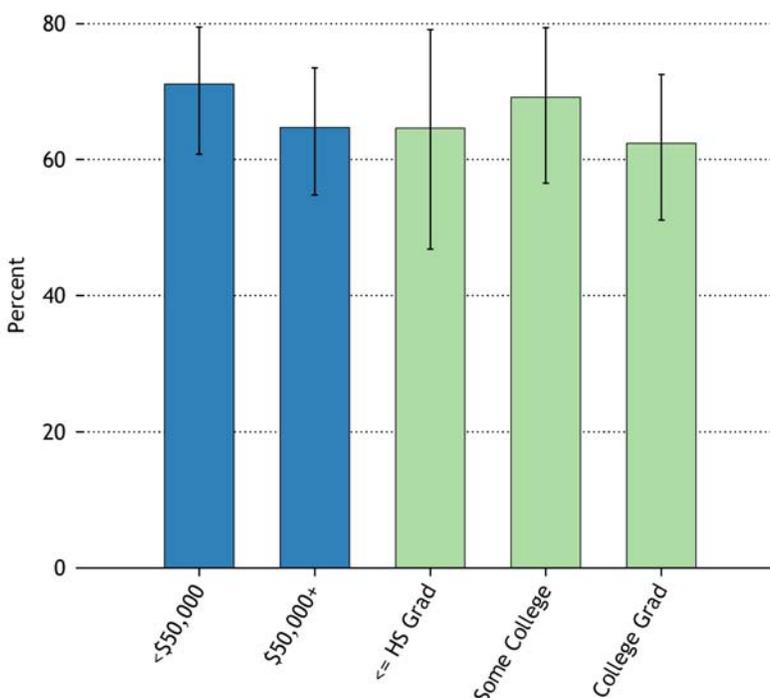
#### 11. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> whose Usual Activities were Limited During Past 12 Months<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by participation in all activities, including exercise.

- 65.3% of children with current asthma experienced limited usual activities due to asthma during the past 12 months.
- There were no significant differences in the prevalence of limited usual activities for children with current asthma between age, sex, and race groups.

#### 12. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> whose Usual Activities were Limited During Past 12 Months<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



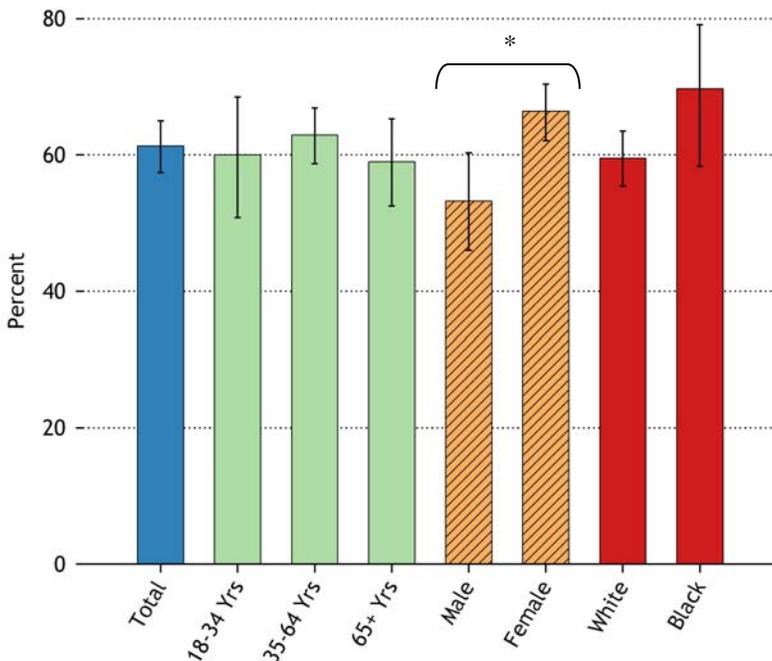
- There were no significant differences in the prevalence of limited usual activities for children with current asthma between household income or respondent education groups.

**Data Notes:**  
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported “a little”, “a moderate amount”, or “a lot” to the following question, “During the past 12 months, would you say {child’s name} limited {his/her} usual activities due to asthma not at all, a little, a moderate amount, or a lot?”

USUAL ACTIVITIES LIMITED DUE TO ASTHMA—ADULTS

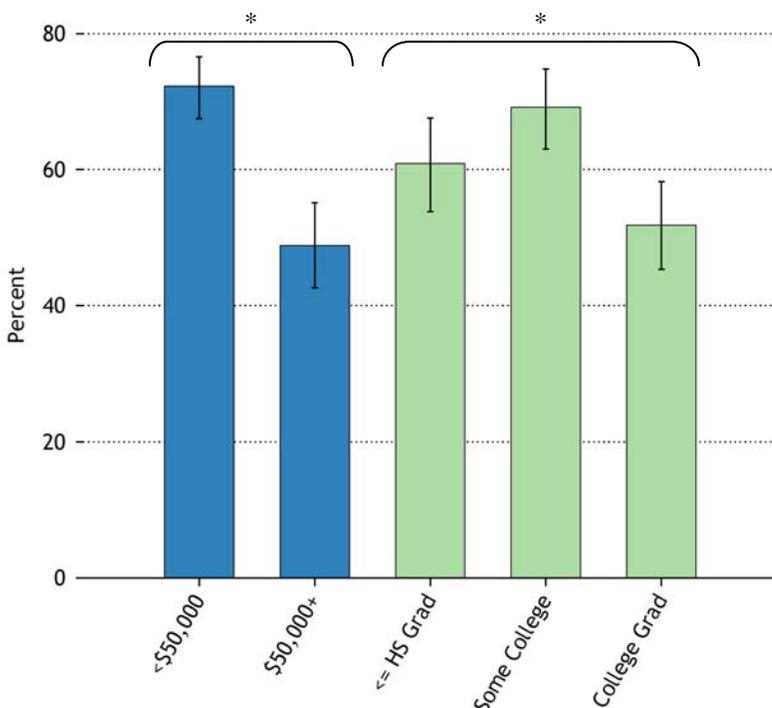
13. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> whose Usual Activities were Limited During Past 12 Months<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by participation in all activities, including exercise.

- 61.3% of adults with current asthma experienced limited usual activities due to asthma during the past 12 months.
- The prevalence of limited usual activities due to asthma was significantly higher (24.8%) among female adults compared to male adults.
- There were no significant differences in the prevalence of limited usual activities due to asthma for adults with current asthma between age or race groups.

14. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> whose Usual Activities were Limited During Past 12 Months<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of limited usual activities due to asthma were
  - ⇒ significantly higher (48.2%) among adults with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year.
  - ⇒ significantly higher (33.6%) among adults with some college education compared to those who were college graduates.

Data Notes:

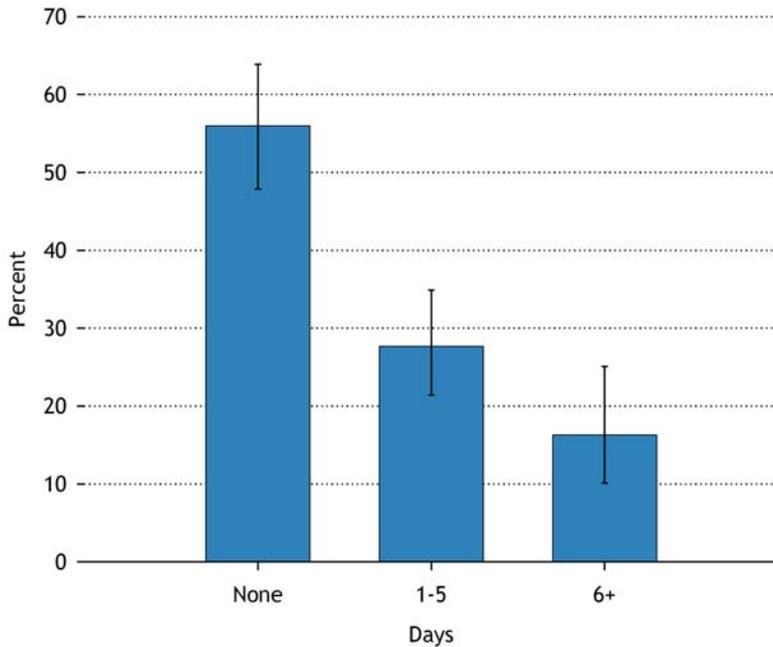
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported “a little”, “a moderate amount”, or “a lot” to the following question, “During the past 12 months, would you say you limited your usual activities due to asthma not at all, a little, a moderate amount, or a lot?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

NUMBER OF SCHOOL/WORK DAYS MISSED DUE TO ASTHMA

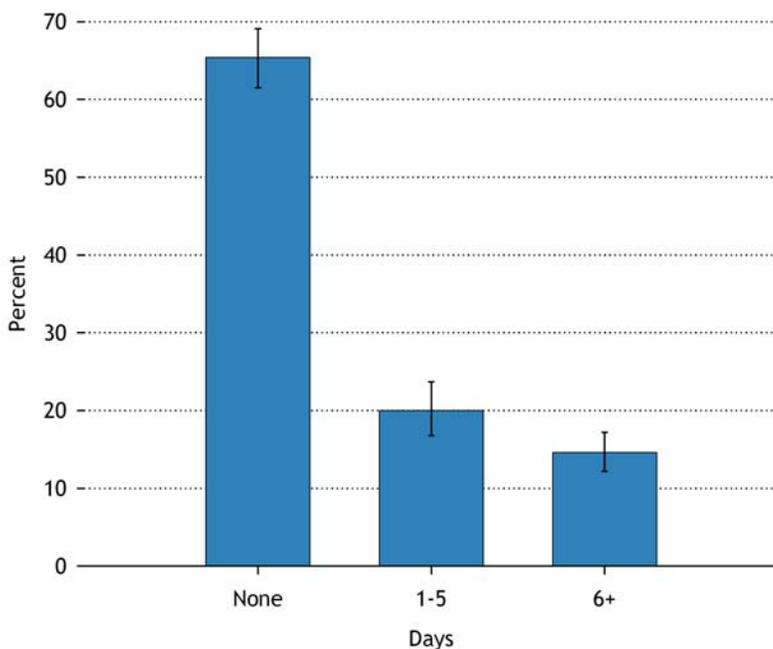
15. Percent Distribution of the Number of Missed School Days Due to Asthma During Past 12 Months<sup>1</sup> Among Children<sup>2</sup> in Grades K-12 with Current Asthma<sup>3</sup>, Michigan, 2005-2007



According to national treatment guidelines, the overarching goal of therapy is to achieve asthma control, defined, in part, by normal attendance at school or work.

- 16.3% of children with current asthma missed 6 or more school days due to asthma in the past 12 months due to asthma.
- 56.0% of children with current asthma missed no school days due to asthma in the past 12 months due to asthma.

16. Percent Distribution of the Number of Days of Missed Work or Usual Activities Due to Asthma During Past 12 Months<sup>4</sup> Among Adults (≥18 Years) with Current Asthma<sup>3</sup>, Michigan, 2005-2007



- 14.6% of adults with current asthma missed 6 or more work days or usual activities due to asthma in the past 12 months.
- 65.4% of adults with current asthma missed no work days or usual activities due to asthma in the past 12 months.

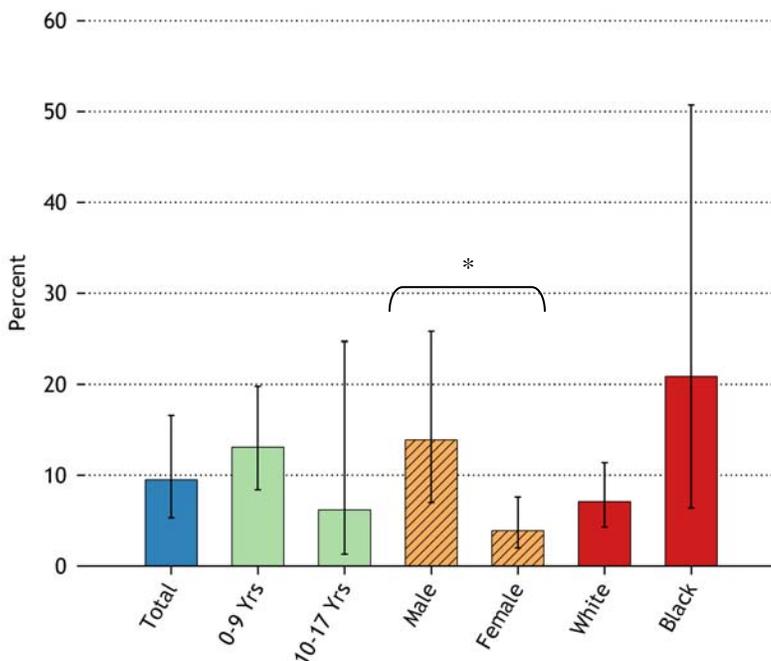
**Data Notes:**  
 Source: Asthma Callback Survey, MDCH

1. Response to the following question, "During the past 12 months, about how many days of school did {child's name} miss because of {his/her} asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Current asthma is defined as a positive response to both lifetime and current asthma questions.
4. Response to the following question, "During the past 12 months, how many days were you unable to work or carry out your usual activities because of your asthma?"

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### ASTHMA EMERGENCY DEPARTMENT/URGENT CARE VISITS—CHILDREN

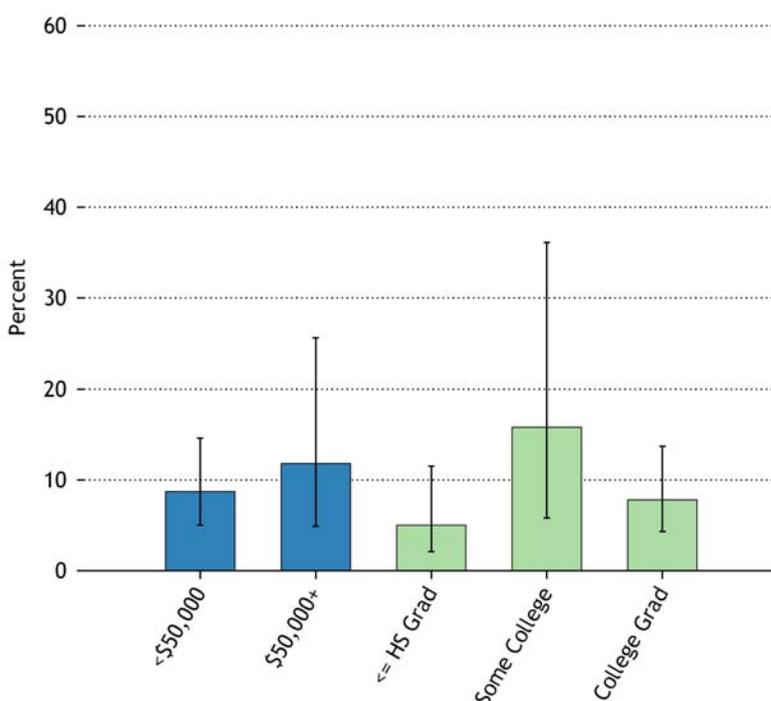
17. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



It is a goal of asthma therapy that persons with asthma experience minimal or no emergency department visits.

- 9.5% of children with current asthma visited the emergency department or urgent care center for asthma 2 or more times during the past 12 months.
- The prevalence of visiting the emergency department or urgent care center for asthma 2 or more times during the past 12 months was 3.6 times higher for male children compared to female children—a statistically significant difference.
- There were no significant differences in the prevalence of frequent asthma emergency department or urgent care center visits for children with current asthma between age or race groups.

18. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of frequent asthma emergency department or urgent care center visits for children with current asthma between household income or respondent education groups.

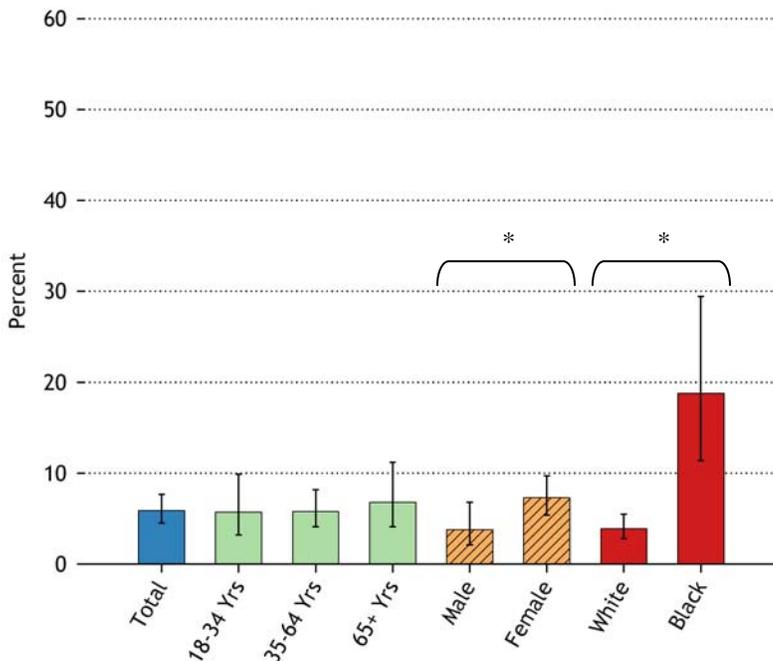
**Data Notes:**  
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported ≥2 times to the following question, “During the past 12 months, how many times did {child’s name} visit an emergency room or urgent care center because of {his/her} asthma?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

ASTHMA EMERGENCY DEPARTMENT/URGENT CARE VISITS—ADULTS

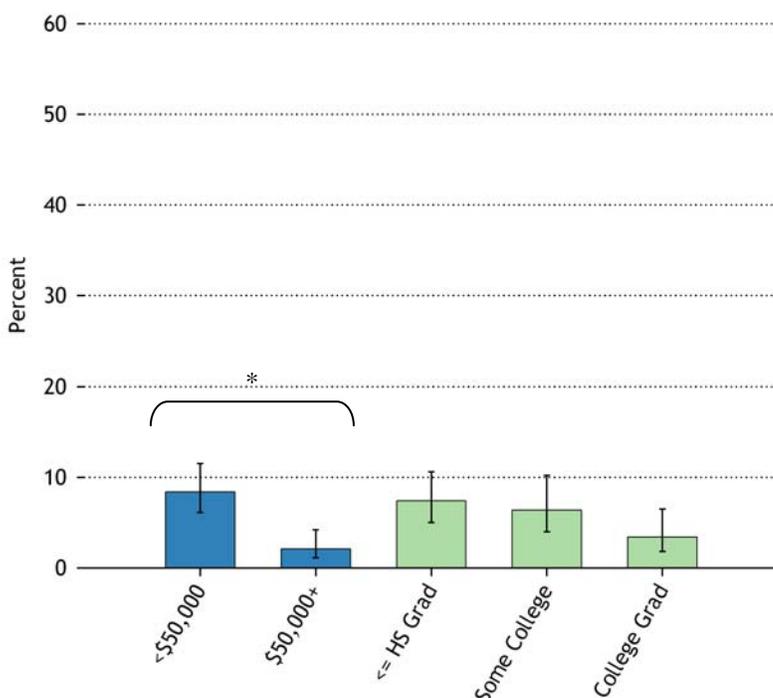
19. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



It is a goal of asthma therapy that persons with asthma experience minimal or no emergency department visits.

- 5.9% of adults with current asthma visited the emergency department or urgent care center for asthma 2 or more times during the past 12 months.
- The prevalence of frequent asthma emergency department or urgent care center visits was
  - ⇒ almost 2 times higher among female adults compared to male adults—a statistically significant difference.
  - ⇒ 4.8 times higher among black adults compared to white adults—a statistically significant difference.
- There were no significant differences in the prevalence of frequent asthma emergency department or urgent care center visits for adults with current asthma between age groups.

20. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of frequent asthma emergency department or urgent care center visits was 4 times higher among adults with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year—a statistically significant difference.
- There were no significant differences in the prevalence of frequent asthma emergency department or urgent care center visits for adults with current asthma between respondent education groups.

Data Notes:

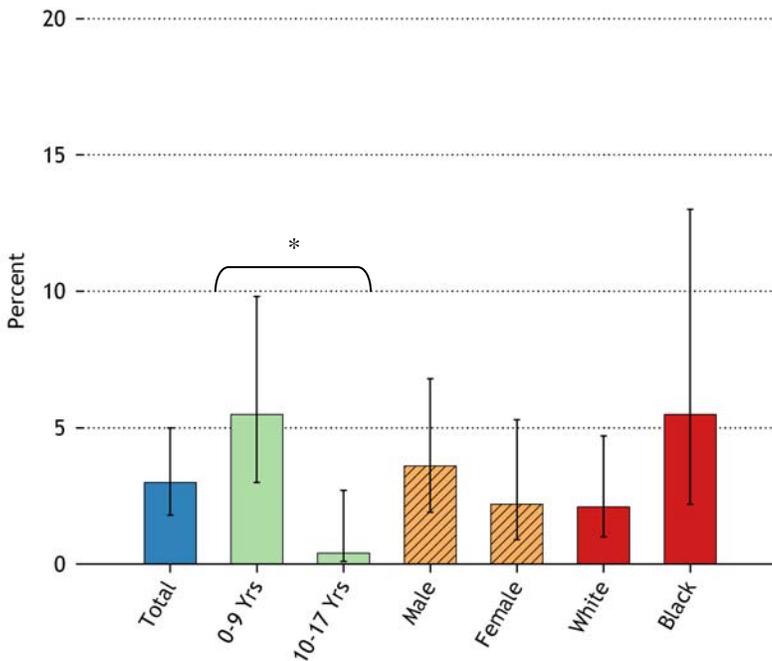
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported ≥2 times to the following question, “During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### ASTHMA HOSPITALIZATIONS—CHILDREN

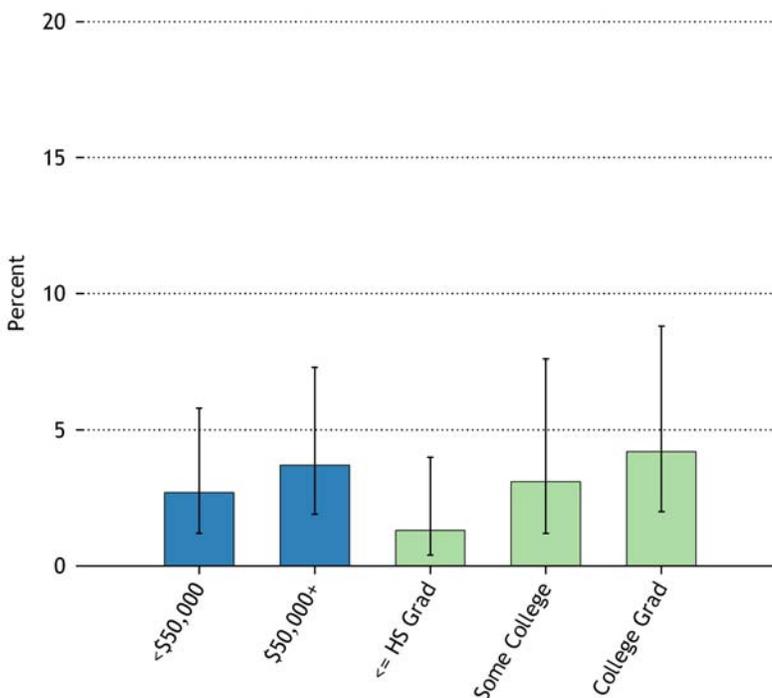
21. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had ≥1 Hospitalization for Asthma During Past 12 Months<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



It is a goal of asthma therapy that persons with asthma experience minimal or no hospitalizations.

- 3.0% of children with current asthma had at least 1 hospitalization for asthma the past 12 months.
- The prevalence of having an asthma hospitalization during the past 12 months was 13.8 times higher for children less than 10 years compared to children 10-17 years—a statistically significant difference.
- There were no significant differences in the prevalence of having an asthma hospitalization for children with current asthma between sex or race groups.

22. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had ≥1 Hospitalization for Asthma During Past 12 Months<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of having an asthma hospitalization for children with current asthma between household income or respondent education groups.

**Data Notes:**

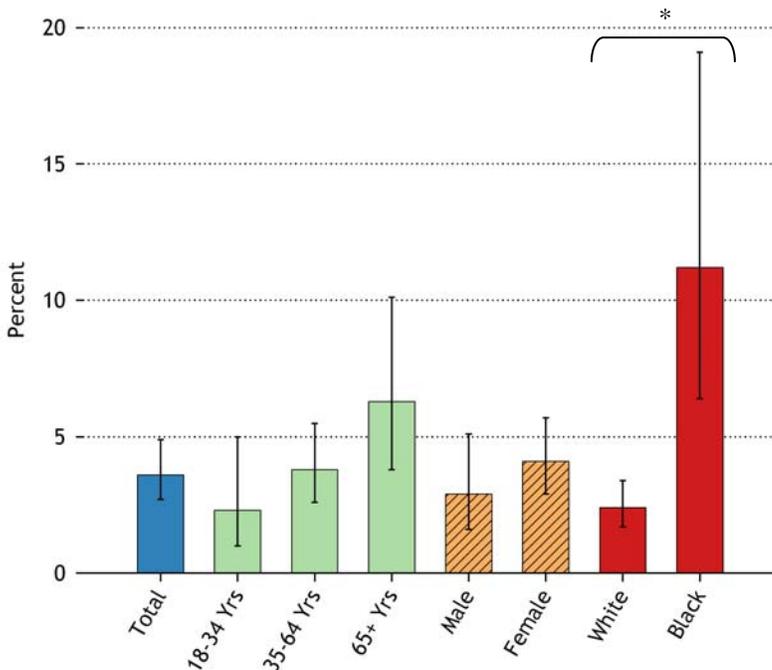
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Responded “yes” to the following question, “During the past 12 months, that is since [1 year ago today], has {child’s name} had to stay overnight in a hospital because of {his/her} asthma? Do not include an overnight stay in the emergency room.”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

ASTHMA HOSPITALIZATIONS—ADULTS

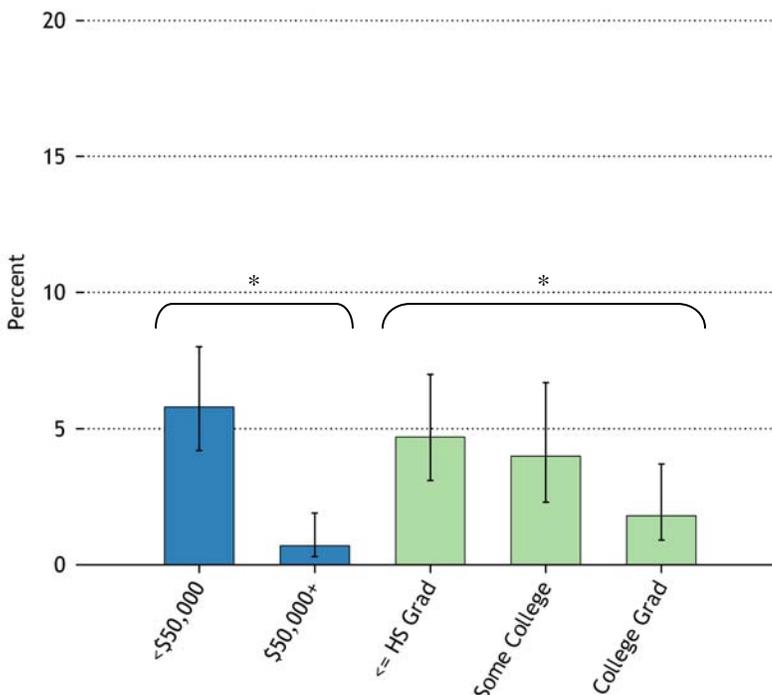
23. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥1 Hospitalization for Asthma During Past 12 Months<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



It is a goal of asthma therapy that persons with asthma experience minimal or no hospitalizations.

- 3.6% of adults with current asthma had at least 1 hospitalization for asthma the past 12 months.
- The prevalence of having an asthma hospitalization during the past 12 months was 4.6 times higher among black adults compared to white adults—a statistically significant difference.
- There were no significant differences in the prevalence of having an asthma hospitalization during the past 12 months for adults with current asthma between age groups.

24. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥1 Hospitalization for Asthma During Past 12 Months<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of having an asthma hospitalization during the past 12 months was ⇒ 8.3 times higher among adults with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year—a statistically significant difference.  
⇒ significantly different between respondent education groups for adults with current asthma.

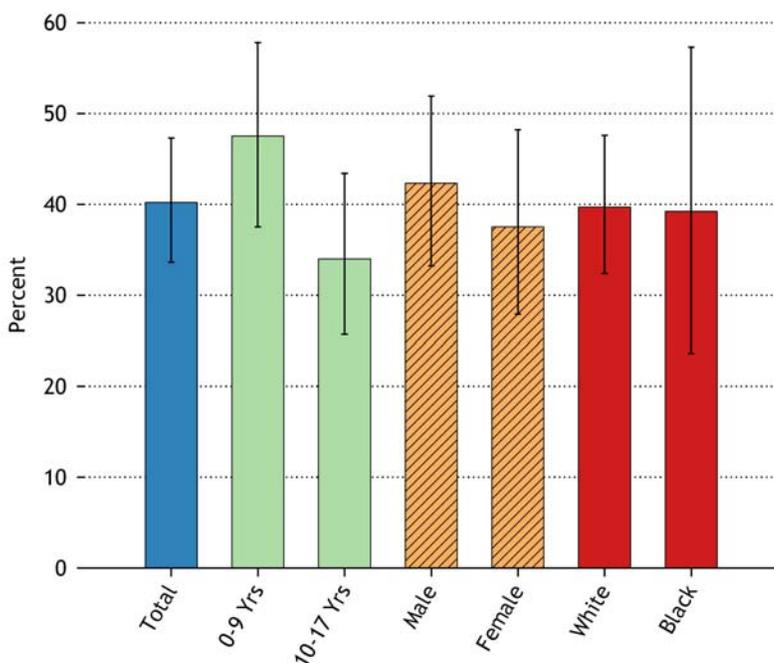
**Data Notes:**  
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Responded “yes” to the following question, “During the past 12 months, that is since [1 year ago today], have you had to stay overnight in a hospital because of your asthma? Do not include an overnight stay in the emergency room.”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### ASTHMA ACTION PLANS—CHILDREN

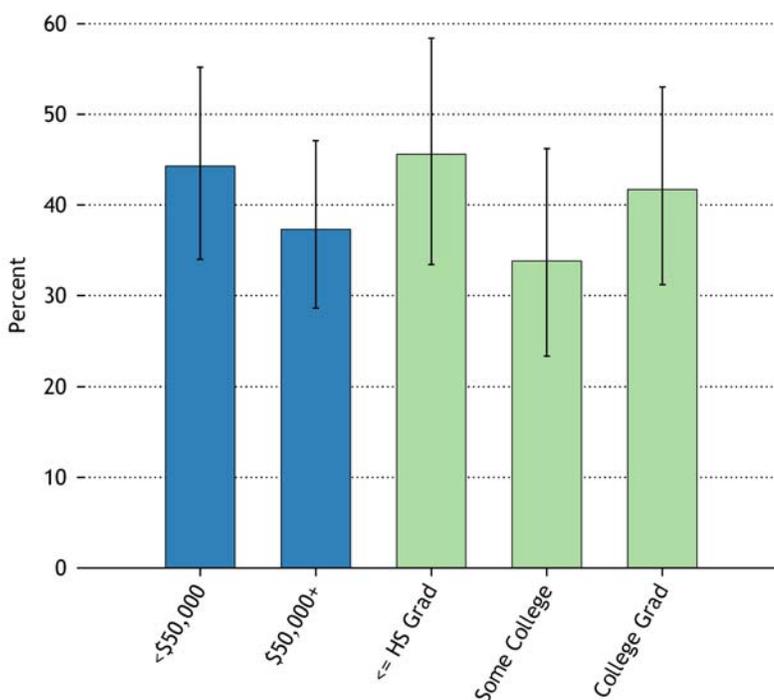
25. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who Ever Received an Asthma Action Plan<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



Developing a written asthma action plan in partnership with the patient is a key clinical activity for the management of asthma.

- 40.2% of children with current asthma had received an asthma action plan at some point in their life.
- There were no significant differences in the prevalence of having received an asthma action plan for children with current asthma between age, sex, or race groups.

26. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who Ever Received an Asthma Action Plan<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of having received an asthma action plan for children with current asthma between household income or respondent education groups.

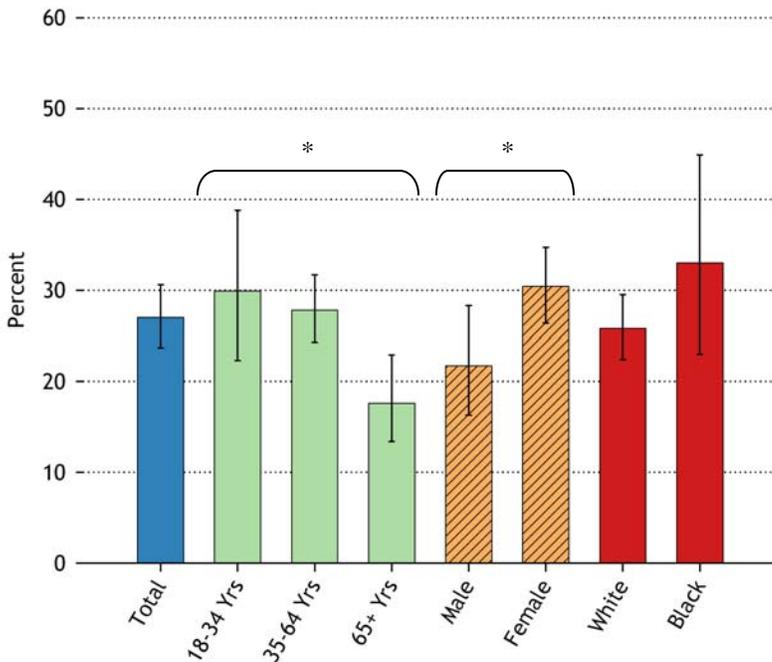
**Data Notes:**

Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Responded "yes" to the question, "An asthma action plan, or asthma management plan, is a form with instructions about when to change the amount or type of medicine, when to call the doctor for advice, and when to go to the emergency room. Has a doctor or other health professional ever given you or {child's name} an asthma action plan?"

### ASTHMA ACTION PLANS—ADULTS

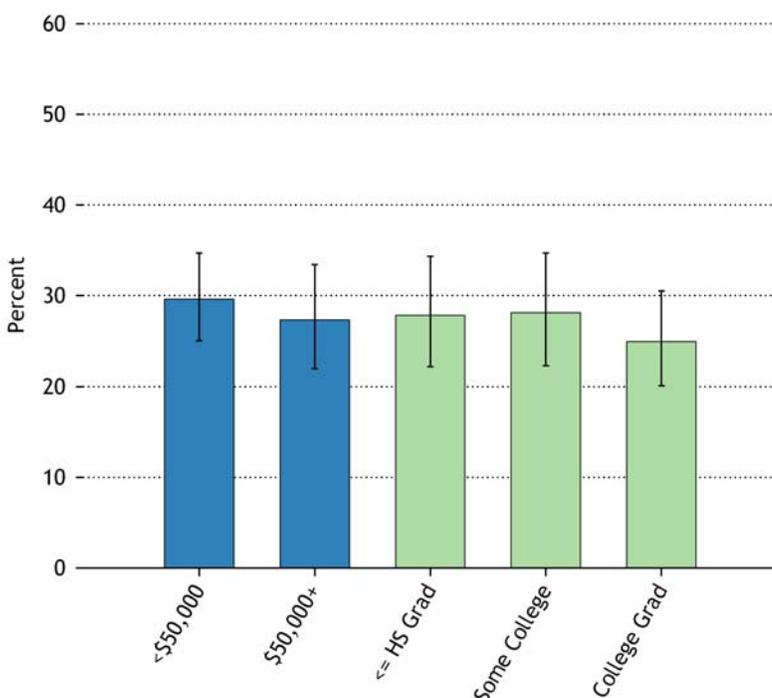
#### 27. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who Ever Received an Asthma Action Plan<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



Developing a written asthma action plan in partnership with the patient is a key clinical activity for the management of asthma.

- 27.0% of adults with current asthma had received an asthma action plan at some point in their life.
- The prevalence of having received an asthma action plan was
  - ⇒ significantly higher (69.9%, 58.0%) among adults 18-34 years and 35-64 years compared to adults 65 years and older.
  - ⇒ significantly higher (40.1%) among female adults compared to male adults.
- There were no significant differences in the prevalence of having received an asthma action plan for adults with current asthma between race groups.

#### 28. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who Ever Received an Asthma Action Plan<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of having received an asthma action plan for adults with current asthma between household income or respondent education groups.

**Data Notes:**

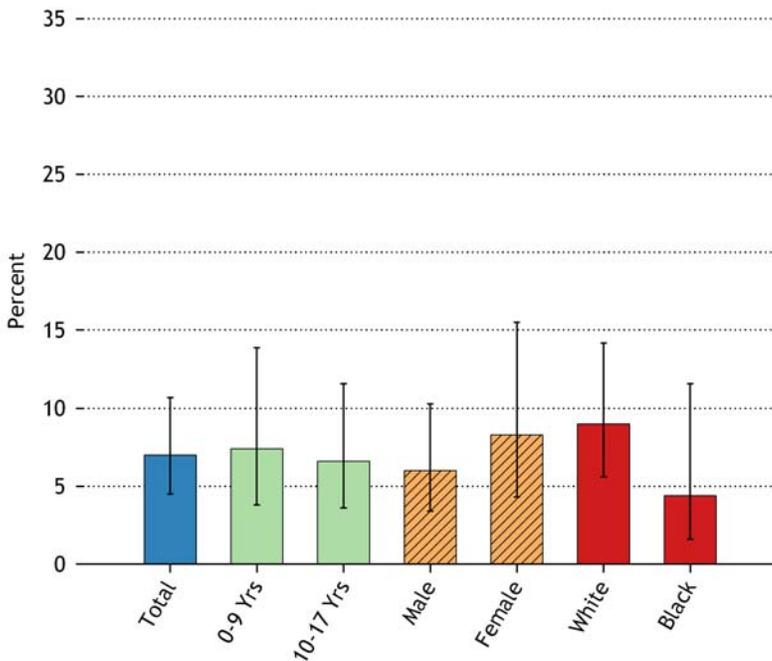
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Responded “yes” to the question, “An asthma action plan, or asthma management plan, is a form with instructions about when to change the amount or type of medicine, when to call the doctor for advice, and when to go to the emergency room. Has a doctor or other health professional ever given you an asthma action plan?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### ASTHMA MANAGEMENT CLASS—CHILDREN

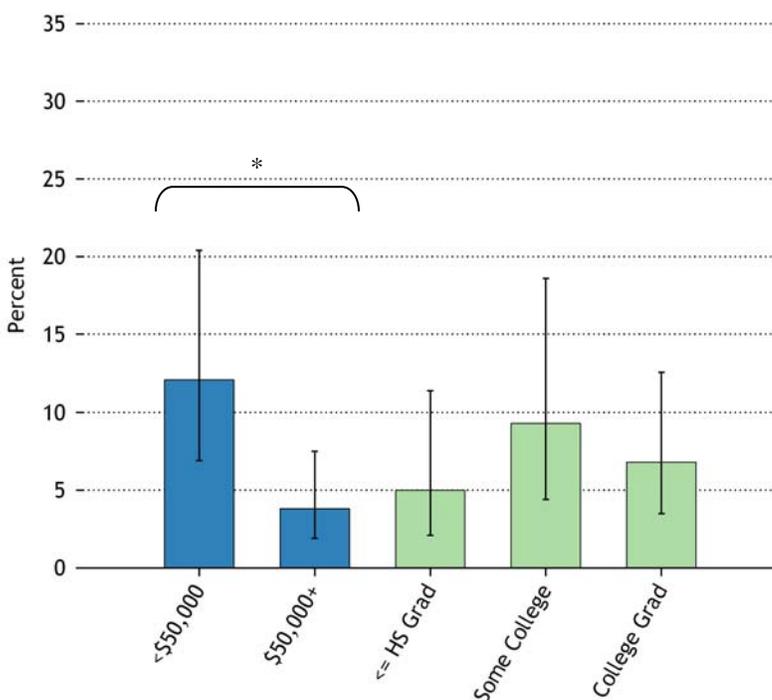
#### 29. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who have Ever Taken an Asthma Management Class<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



Providing self-management education is a key clinical activity for the management of asthma.

- 7.0% of children with current asthma or an adult in their household have taken an asthma management class at some point in their life.
- There were no significant differences in the prevalence of having taken an asthma management class for children with current asthma between age, sex, or race groups.

#### 30. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who have Ever Taken an Asthma Management Class<sup>3</sup> by Socio-economic Characteristics, Michigan, 2005-2007



- The prevalence of having taken an asthma management class was 3.2 times higher for children with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year—a statistically significant difference.
- There was no significant difference in the prevalence of having taken an asthma management class for children with current asthma between respondent education groups.

**Data Notes:**

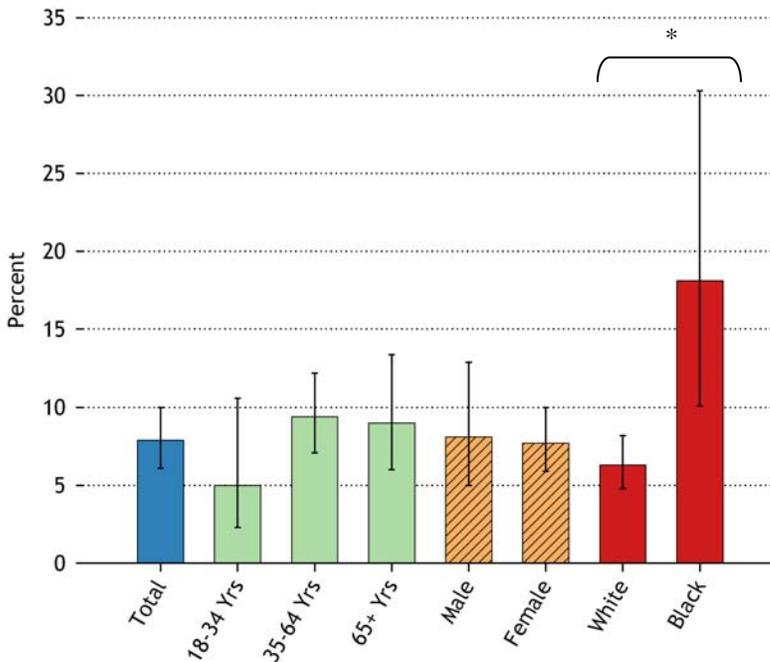
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Responded “yes” to the question, “Have you or {child’s name} ever taken a course or class on how to manage {his/her} asthma?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### ASTHMA MANAGEMENT CLASS—ADULTS

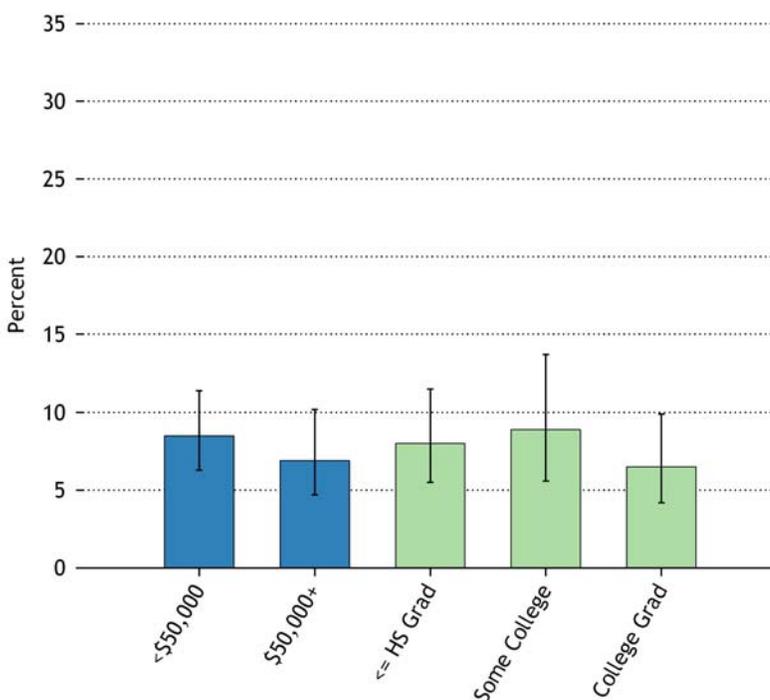
31. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who have Ever Taken an Asthma Management Class<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



Providing self-management education is a key clinical activity for the management of asthma.

- 7.9% of adults with current asthma have taken an asthma management class at some point in their life.
- The prevalence of having taken an asthma management class was 2.9 times higher among black adults compared to white adults—a statistically significant difference.
- There were no significant differences in the prevalence of having taken an asthma management class for adults with current asthma between age and sex groups.

32. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who have Ever Taken an Asthma Management Class<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007

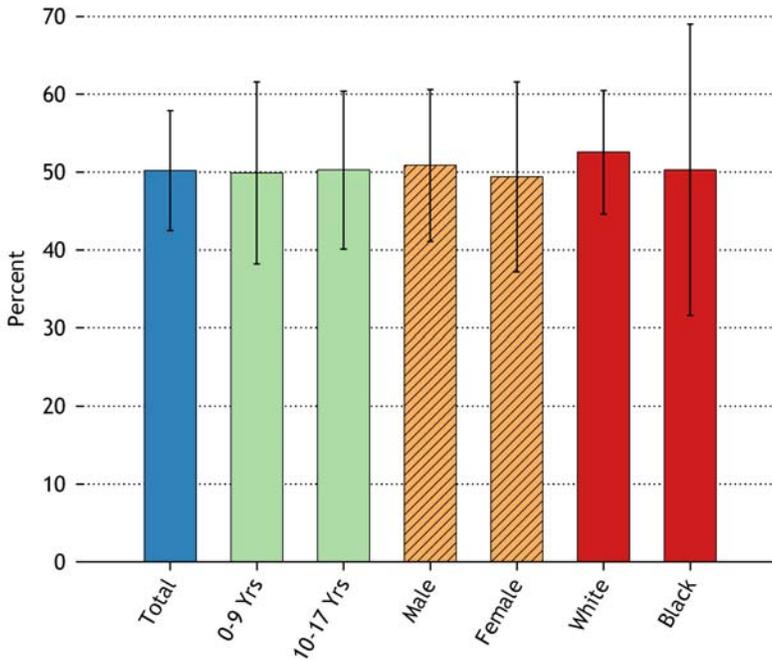


- There were no significant differences in the prevalence of having taken an asthma management class for adults with current asthma between household income or respondent education groups.

**Data Notes:**  
Source: Asthma Callback Survey, MDCH  
1. Current asthma is defined as a positive response to both lifetime and current asthma questions.  
2. Responded “yes” to the question, “Have you ever taken a course or class on how to manage your asthma?”  
\*  $\chi^2$  Test for independence between groups, p-value <0.05.

ADVISED TO MODIFY ENVIRONMENT TO IMPROVE ASTHMA—CHILDREN

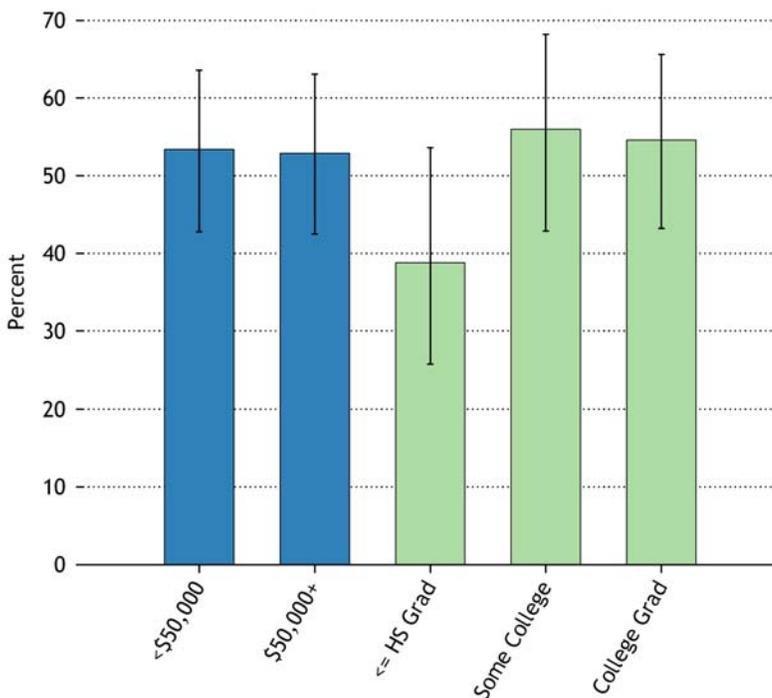
33. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who were Ever Advised to Modify their Environment to Improve their Asthma<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



Recommending measures to control exposure to asthma triggers is a key clinical activity for the management of asthma.

- 50.2% of respondents for children with current asthma or an adult in their household have been advised by a health professional to modify the child’s environment to improve their asthma at some point in their life.
- There were no significant differences in the prevalence of having been advised to modify the environment to improve asthma for children with current asthma between age, sex, or race groups.

34. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who were Ever Advised to Modify their Environment to Improve their Asthma<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007

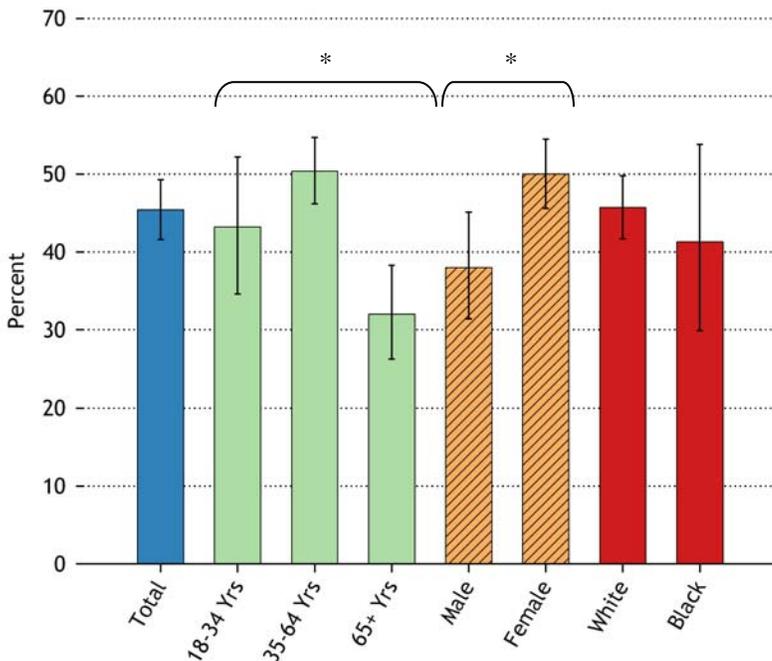


- There were no significant differences in the prevalence of having been advised to modify their environment to improve asthma for children with current asthma between household income or respondent education groups.

**Data Notes:**  
 Source: Asthma Callback Survey, MDCH  
 1. Based on proxy responses from adult respondent in the household.  
 2. Current asthma is defined as a positive response to both lifetime and current asthma questions.  
 3. Responded “yes” to the question, “Has a health professional ever advised you to change things in {child’s name} home, school, or work to improve {his/her} asthma?”

ADVISED TO MODIFY ENVIRONMENT TO IMPROVE ASTHMA—ADULTS

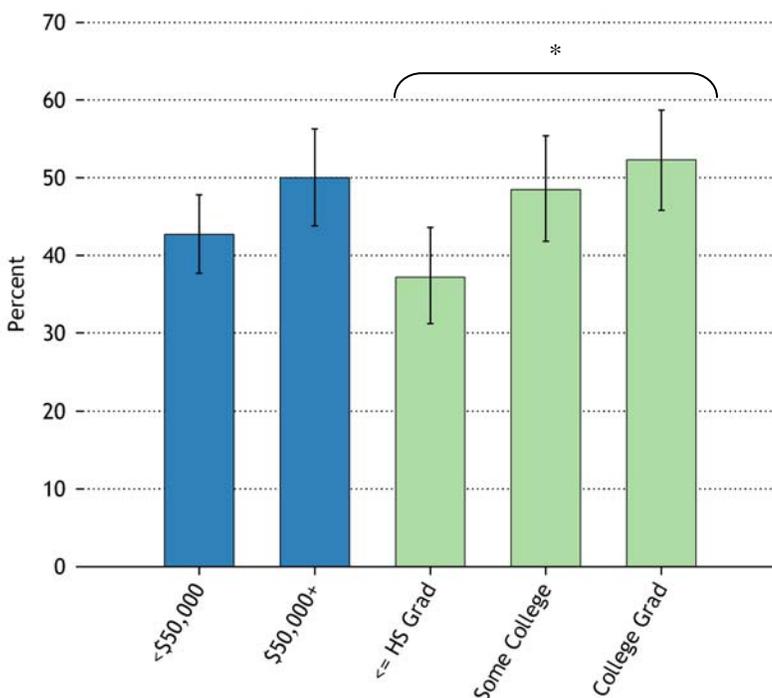
35. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who were Ever Advised to Modify their Environment to Improve their Asthma<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



Recommending measures to control exposure to asthma triggers is a key clinical activity for the management of asthma.

- 45.4% of adults with current asthma have been advised by a health professional to modify their environment to improve their asthma at some point in their life.
- The prevalence of having been advised to modify their environment to improve asthma was
  - ⇒ significantly higher (57.5%) among adults 35-64 years compared to adults 65 years and older.
  - ⇒ significantly higher (32.6%) among female adults compared to male adults.
- There were no significant differences in the prevalence of having been advised to modify their environment to improve asthma for adults with current asthma between age or sex groups.

36. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who were Ever Advised to Modify their Environment to Improve their Asthma<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007

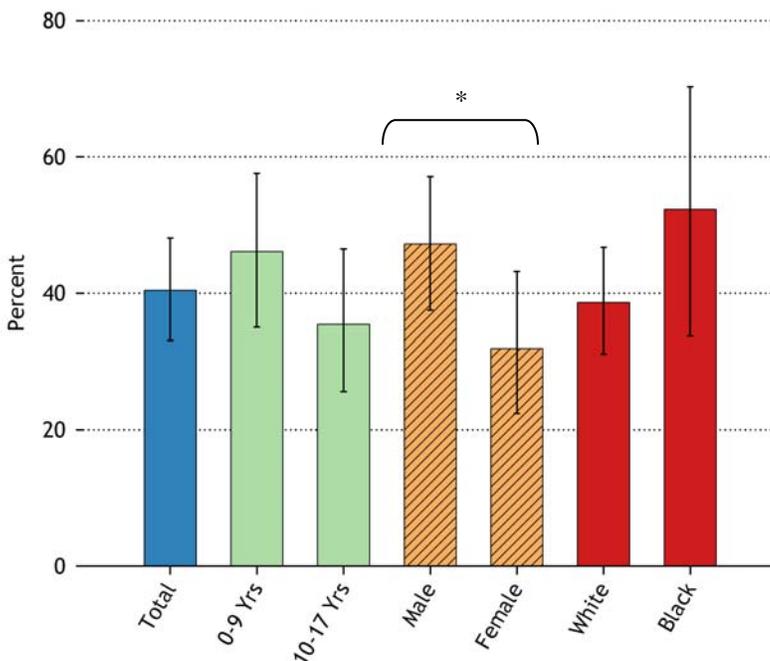


- The prevalence of having been advised to modify their environment to improve asthma was significantly higher (40.6%) among adults who were college graduates compared to those graduating from high school or less education.
- There were no significant differences in the prevalence of having been advised to modify their environment to improve asthma for adults with current asthma between household income groups.

**Data Notes:**  
Source: Asthma Callback Survey, MDCH  
1. Current asthma is defined as a positive response to both lifetime and current asthma questions.  
2. Responded “yes” to the question, “Has a health professional ever advised you to change things in your home, school, or work to improve your asthma?”  
\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### ROUTINE ASTHMA CARE VISITS—CHILDREN

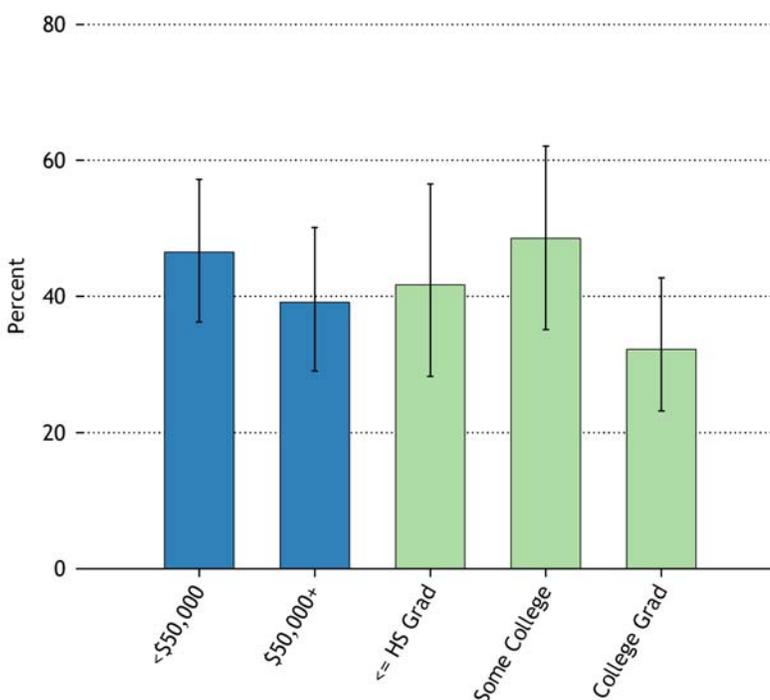
37. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had  $\geq 2$  Routine Asthma Care Visits During Past 12 Months<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, persons with asthma should visit their primary care provider for routine asthma care at least twice a year.

- 40.4% of children with current asthma had 2 or more routine asthma care visits during the past 12 months.
- The prevalence of having 2 or more routine asthma care visits during the past 12 months was 48% higher for male children compared to female children—a statistically significant difference.
- There were no significant differences in the prevalence of having 2 or more routine asthma care visits during the past 12 months for children with current asthma between age or race groups.

38. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had  $\geq 2$  Routine Asthma Care Visits During Past 12 Months<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of having 2 or more routine asthma care visits during the past 12 months for children with current asthma between household income or respondent education groups.

**Data Notes:**

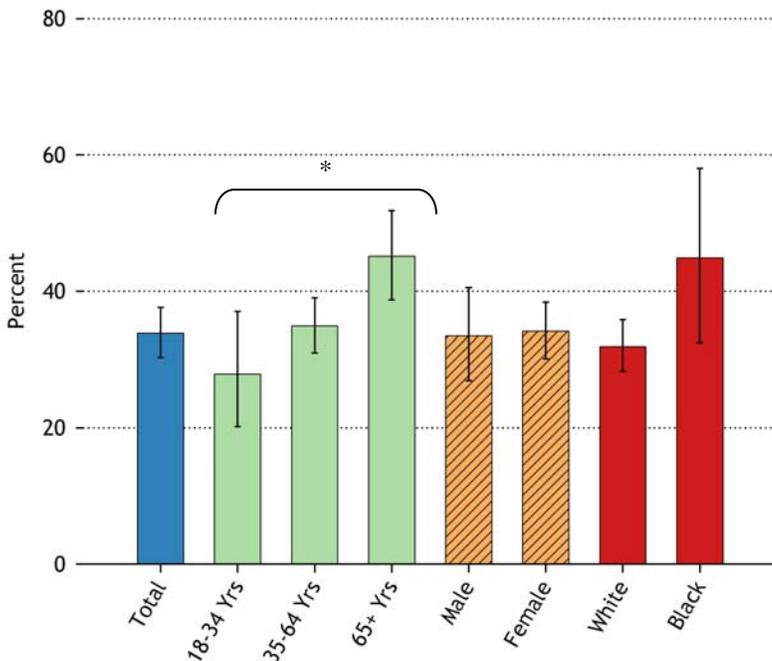
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported  $\geq 2$  times to the following question, “During the past 12 months, how many times did {child’s name} see a doctor or other health professional for a routine checkup for {his/her} asthma?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

ROUTINE ASTHMA CARE VISITS—ADULTS

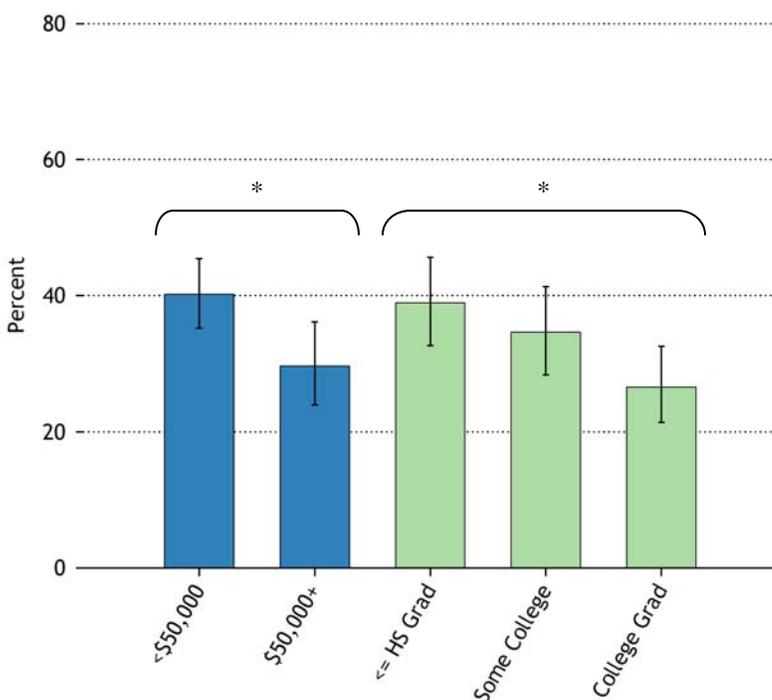
39. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥2 Routine Asthma Care Visits During Past 12 Months<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, persons with asthma should visit their primary care provider for routine asthma care at least twice a year.

- 33.8% of adults with current asthma had 2 or more routine asthma care visits during the past 12 months.
- The prevalence of having 2 or more routine asthma care visits during the past 12 months was significantly higher (61.6%) for adults aged 65 years and older compared to adults aged 18-34 years .
- There were no significant differences in the prevalence of having 2 or more routine asthma care visits during the past 12 months for adults with current asthma between sex or race groups.

40. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had ≥2 Routine Asthma Care Visits During Past 12 Months<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of having 2 or more routine asthma care visits during the past 12 months was
  - ⇒ 35.4% higher among adults with a household income <\$50,000 per year compared to those with a household income of ≥\$50,000 per year—a statistically significant difference.
  - ⇒ significantly different among respondent education groups.

Data Notes:

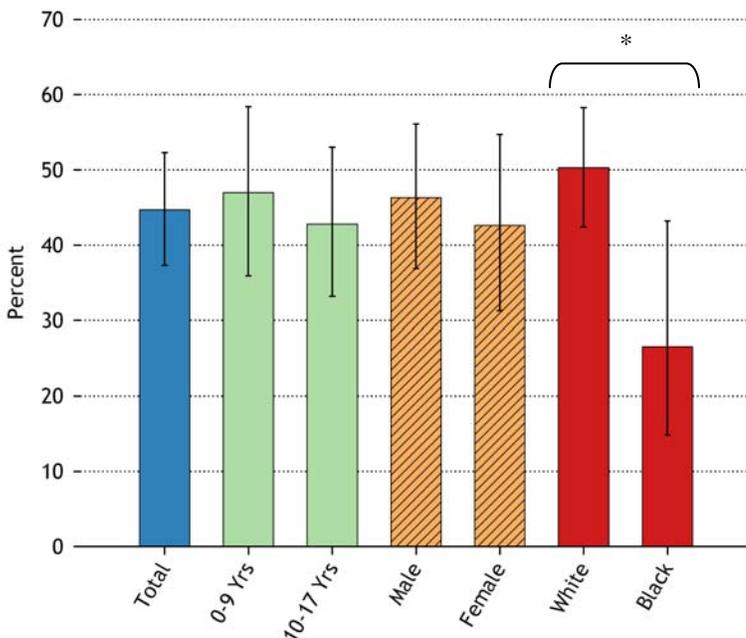
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported ≥2 times to the following question, “During the past 12 months, how many times did you see a doctor or other health professional for a routine checkup for your asthma?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

LONG TERM CONTROL MEDICATION USE—CHILDREN

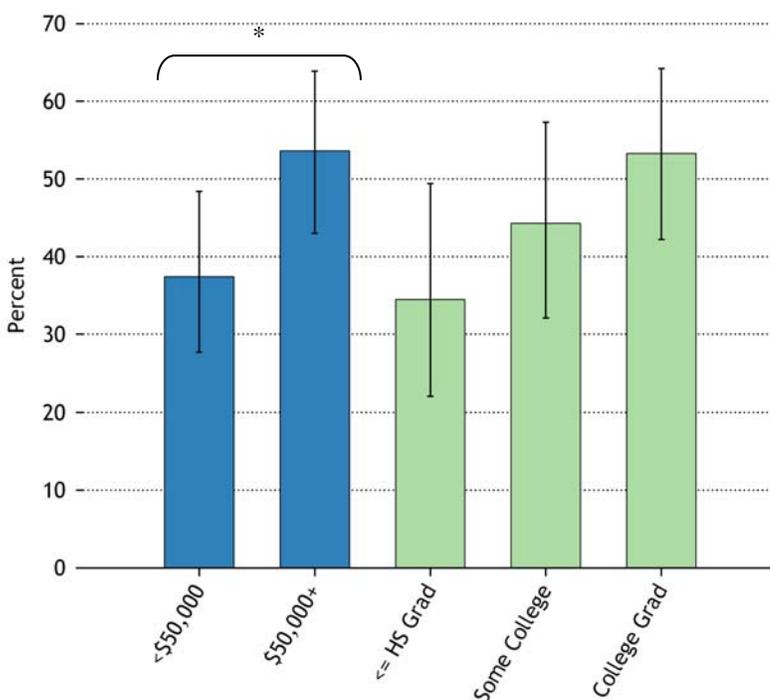
41. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Used a Long Term Control Medication<sup>3</sup> During Past 3 Months by Demographic Characteristics, Michigan, 2005-2007



Long term control medication is recommended for children with persistent asthma.

- 44.7% of children with current asthma had used a long term control medication during the past 3 months.
- The prevalence of using a long term control medication for children with current asthma was 1.9 times higher among white children compared to black children—a statistically significant difference.
- There were no significant differences in the prevalence of using a long term control medication for children with current asthma between age or sex groups.

42. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had Used a Long Term Control Medication<sup>3</sup> During Past 3 Months by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of using a long term control medication was significantly higher (43.3%) among children with a household income  $\geq$ \$50,000 per year compared to those with a household income of  $<$ \$50,000 per year—a statistically significant difference.
- There were no significant differences in the prevalence of using a long term control medication for children with current asthma between respondent education groups.

Data Notes:

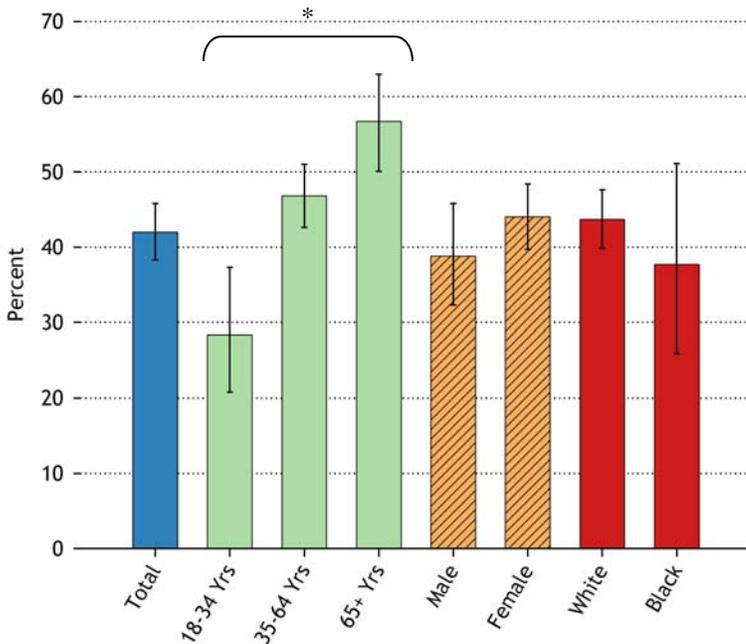
Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported using a long term control medication in the past 3 months. Long term control medications were identified using the list of acceptable primary therapies for long term control of asthma by the NCQA HEDIS Technical Specifications for 2007. These included Inhaled Corticosteroids, Mast Cell Stabilizers, Leukotriene Modifiers, Methylxanthines, and certain combination therapies.

\*  $\chi^2$  Test for independence between groups, p-value  $<$ 0.05.

LONG TERM CONTROL MEDICATION USE—ADULTS

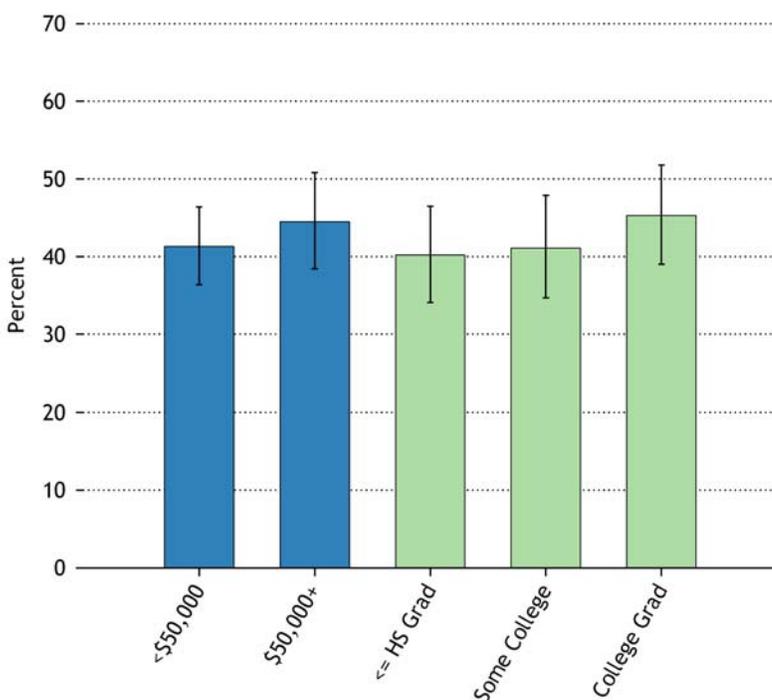
43. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Used a Long Term Control Medication<sup>2</sup> During Past 3 Months by Demographic Characteristics, Michigan, 2005-2007



Long term control medication is recommended for adults with persistent asthma.

- 42.0% of adults with current asthma had used a long term control medication during the past 3 months.
- The prevalence of using a long term control medication was 2 times higher for adults 65 years and older compared to adults 18-34 years—a statistically significant difference.
- There were no significant differences in the prevalence of using a long term control medication for adults with current asthma between sex or race groups.

44. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had Used a Long Term Control Medication<sup>2</sup> During Past 3 Months by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of using a long term control medication for adults with current asthma between household income or respondent education groups.

Data Notes:

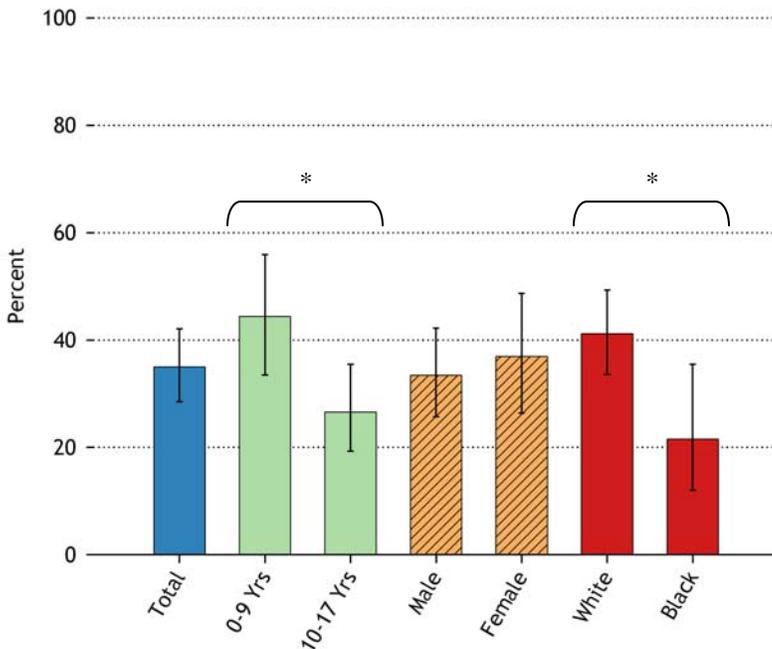
Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported using a long term control medication in the past 3 months. Long term control medications were identified using the list of acceptable primary therapies for long term control of asthma by the NCQA HEDIS Technical Specifications for 2007. These included Inhaled Corticosteroids, Mast Cell Stabilizers, Leukotriene Modifiers, Methylxanthines, and certain combination therapies.

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### INFLUENZA VACCINE—CHILDREN

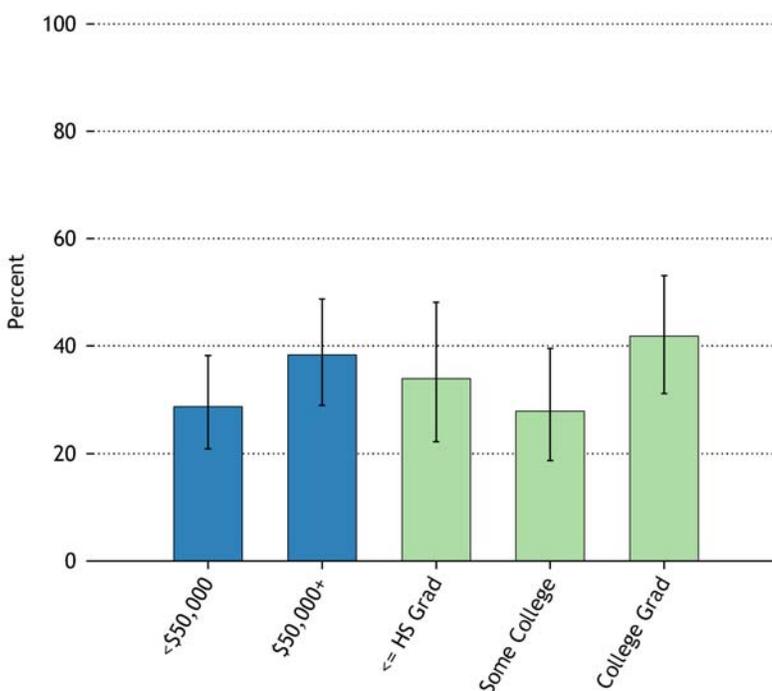
45. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had a Influenza Vaccine During Past 12 Months<sup>3</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, persons with asthma should receive an annual influenza vaccine, regardless of severity.

- 35.0% of children with current asthma had received an influenza vaccination during the past 12 months.
- The prevalence of having received an influenza vaccination during the past 12 months was
  - ⇒ 66.9% higher for children less than 10 years compared to children 10-17 years—a statistically significant difference.
  - ⇒ almost 2 times higher for white children compared to black children—a statistically significant difference.
- There was no significant difference in the prevalence of having received an influenza vaccination during the past 12 months for children with current asthma between sex groups.

46. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> who had a Influenza Vaccine During Past 12 Months<sup>3</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- There were no significant differences in the prevalence of having received an influenza vaccination during the past 12 months for children with current asthma between household income or respondent education groups.

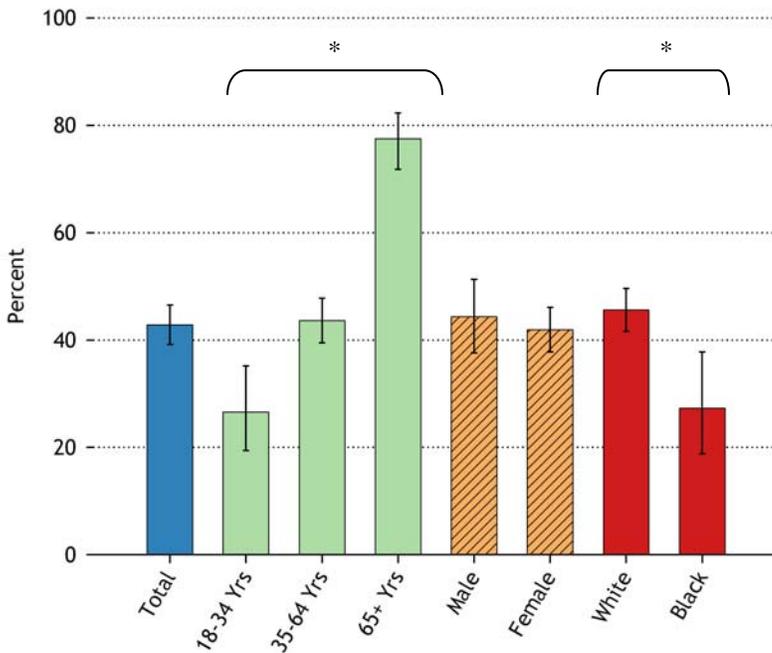
**Data Notes:**  
Sources: Asthma Callback Survey and MiBRFSS, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Responded “yes” to either of the following questions, “A flu shot is an influenza vaccine injected in your arm. During the past 12 months, did {child’s name} have a flu shot?” or “A flu vaccine that is sprayed in the nose is called FluMist. During the past 12 months, did {child’s name} have a flu vaccine that was sprayed in {his/her} nose?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

### INFLUENZA VACCINE—ADULTS

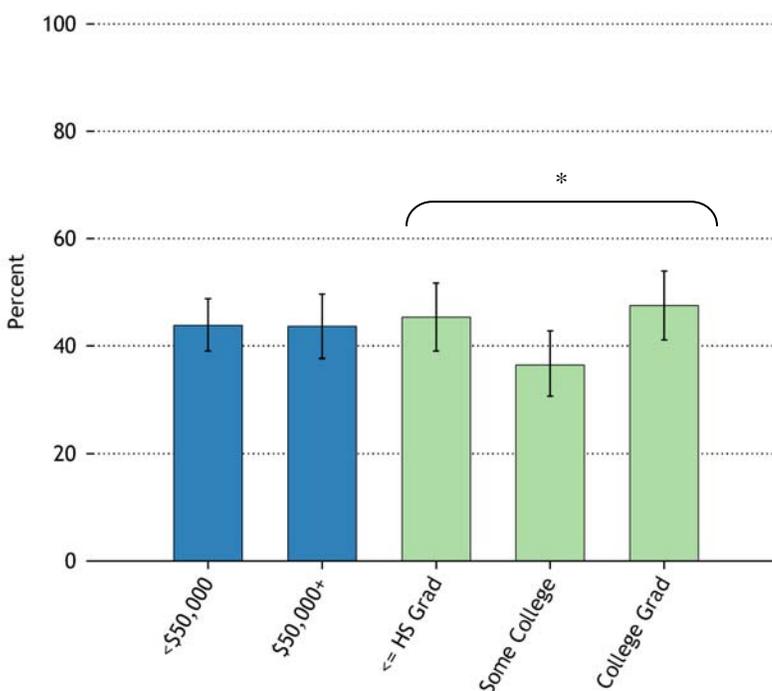
47. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had a Influenza Vaccine During Past 12 Months<sup>2</sup> by Demographic Characteristics, Michigan, 2005-2007



According to national treatment guidelines, persons with asthma should receive an annual influenza vaccine, regardless of severity.

- 42.8% of adults with current asthma had received an influenza vaccination during the past 12 months.
- The prevalence of having received an influenza vaccination during the past 12 months was
  - ⇒ 77.8% higher for adults 65 years and older compared to adults 35 to 64 years and 2.9 times higher compared to adults 18-34 years—statistically significant differences.
  - ⇒ 67.0% higher for white adults compared to black adults—a statistically significant difference.
- There was no significant difference in the prevalence of having received an influenza vaccination during the past 12 months for adults with current asthma between sex groups.

48. Percent of Adults (≥18 Years) with Current Asthma<sup>1</sup> who had a Influenza Vaccine During Past 12 Months<sup>2</sup> by Socioeconomic Characteristics, Michigan, 2005-2007



- The prevalence of having received an influenza vaccination during the past 12 months for adults with asthma was significantly different between respondent education groups. There was not a significant difference among household income groups.

**Data Notes:**

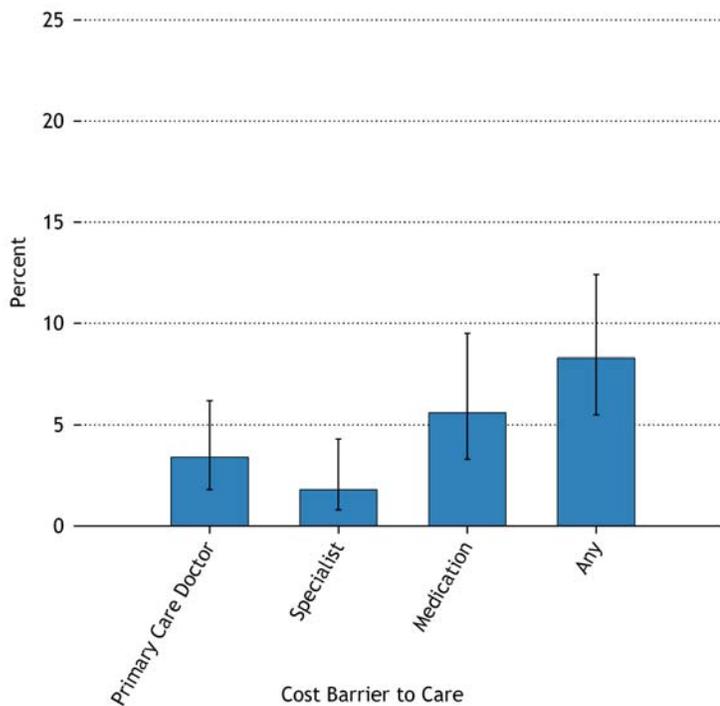
Sources: Asthma Callback Survey and MiBRFSS, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Responded “yes” to either of the following questions on the MiBRFSS, “A flu shot is an influenza vaccine injected in your arm. During the past 12 months, did you have a flu shot?” or “A flu vaccine that is sprayed in the nose is called FluMist. During the past 12 months, did you have a flu vaccine that was sprayed in your nose?”

\*  $\chi^2$  Test for independence between groups, p-value <0.05.

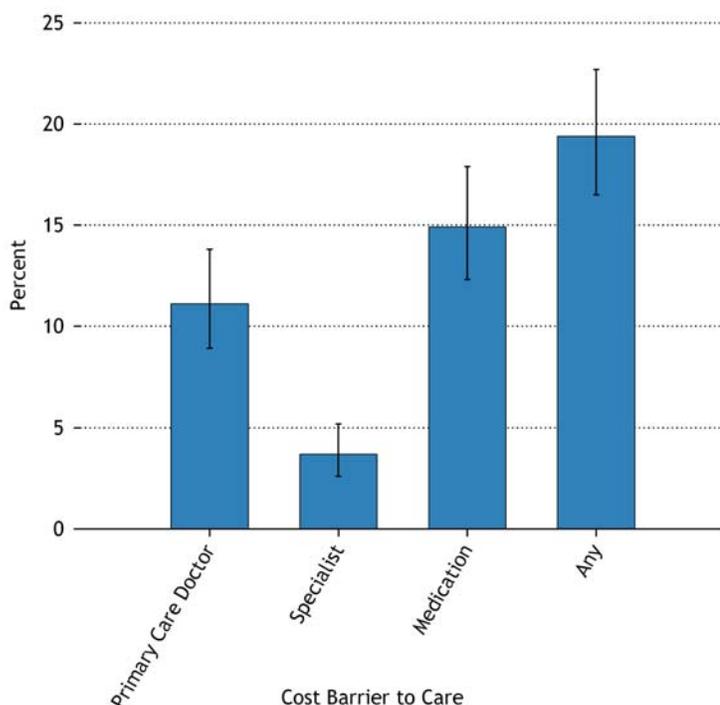
### COST BARRIERS TO CARE

49. Percent of Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> whose Experienced a Cost Barrier to Care During Past 12 Months by Type of Care<sup>3</sup>, Michigan, 2005-2007



- 8.3% of respondents for children with current asthma reported experiencing a cost barrier to their asthma care during the past 12 months.
- The most frequent type of cost barrier was related to medication; during the past 12 months, 5.6% respondents for children with current asthma reported needing asthma medication for the child but could not buy it because of cost.

50. Percent of Adults (≥18 Years) with Current Asthma<sup>2</sup> whose Experienced a Cost Barrier to Care During Past 12 Months by Type of Care<sup>3</sup>, Michigan, 2005-2007



- 19.4% of adults with asthma experienced a cost barrier to their asthma care during the past 12 months. This is significantly higher than the prevalence of cost barriers among children with current asthma.
- The most frequent type of cost barrier for adults is that related to medication; during the past 12 months, 14.9% of adults with current asthma needed asthma medication but could not buy it because of cost.

**Data Notes:**

Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Primary Care Doctor: Responded “yes” to the question, “Was there a time in the past 12 months when {child’s name/you} needed to see {his/her/your} primary care doctor for asthma but could not because of the cost?”  
Specialist: Responded “yes” to the question, “Was there a time in the past 12 months when you were referred to a specialist for {child’s name/your} asthma care but could not go because of the cost?”  
Medication: Responded “yes” to the question, “Was there a time in the past 12 months when {child’s name/you} needed medication for {his/her/your} asthma but you could not buy it because of the cost?”

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**Characteristics of Asthma Control for Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup>  
By Demographic Characteristics, Michigan, 2005-2007**

|  | Total            | Age Group        |                  | Sex              |                  | Race             |                  |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |                  | 0-9 Years        | 10-17 Years      | Male             | Female           | White            | Black            |
| Had Asthma Symptoms on ≥9 Days During Past Month [Figure 1]                            | 21.2 (16.1-27.5) | 23.8 (15.6-34.5) | 18.8 (12.8-26.7) | 24.6 (17.9-32.9) | 17.0 (9.9-27.7)  | 21.9 (15.9-29.2) | 13.2 (5.9-26.8)  |
| Had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month [Figure 5] | 20.1 (15.0-26.2) | 24.9 (16.9-35.2) | 16.0 (10.3-24.1) | 20.5 (14.2-28.6) | 19.5 (12.2-29.7) | 20.3 (14.5-27.6) | 19.1 (9.7-34.2)  |
| Usual Activities Limited During Past 12 Months [Figure 11]                             | 65.3 (57.5-72.3) | 62.8 (49.8-74.1) | 67.2 (57.9-75.3) | 66.6 (57.3-74.8) | 63.6 (50.1-75.2) | 67.1 (59.4-74.0) | 63.6 (45.2-78.8) |
| Had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months [Figure 17]              | 9.5 (5.3-16.6)   | 13.1 (8.4-19.8)  | 6.2 (1.3-24.7)   | 13.9 (7.0-25.8)  | 3.9 (2.0-7.6)    | 7.1 (4.3-11.4)   | 20.9 (6.4-50.7)  |
| Had ≥1 Hospitalization for Asthma During Past 12 Months [Figure 21]                    | 3.0 (1.8-5.0)    | 5.5 (3.0-9.8)    | 0.4 (0.1-2.7)    | 3.6 (1.9-6.8)    | 2.2 (0.9-5.3)    | 2.1 (1.0-4.7)    | 5.5 (2.2-13.0)   |

Number of Symptoms-Free Days During Past 2 Weeks [Figure 9]

|      |                  |
|------|------------------|
| None | 8.2 (4.8-13.5)   |
| 1-6  | 14.4 (10.1-20.1) |
| 7-13 | 21.9 (16.7-28.2) |
| 14   | 55.6 (48.0-62.9) |

Number of Missed School Days During Past 12 Months [Figure 15]

|      |                  |
|------|------------------|
| None | 56.0 (47.9-63.9) |
| 1-5  | 27.7 (21.4-34.9) |
| 6+   | 16.3 (10.1-25.1) |

**Characteristics of Asthma Control for Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup>  
By Socioeconomic Characteristics, Michigan, 2005-2007**

|  | Total            | Household Income |                  | Respondent Education   |                  |                  |
|--|------------------|------------------|------------------|------------------------|------------------|------------------|
|  |                  | <\$50,000        | ≥\$50,000        | ≤ High School Graduate | Some College     | College Graduate |
| Had Asthma Symptoms on ≥9 Days During Past Month [Figure 2]                            | 21.2 (16.1-27.5) | 21.8 (14.7-31.1) | 21.9 (14.7-31.2) | 21.4 (12.5-34.1)       | 22.0 (14.0-32.7) | 20.5 (12.4-32.0) |
| Had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month [Figure 6] | 20.1 (15.0-26.2) | 27.3 (18.7-38.1) | 17.2 (11.0-25.8) | 16.3 (8.5-28.9)        | 24.6 (15.8-36.3) | 19.2 (11.8-29.7) |
| Usual Activities Limited During Past 12 Months [Figure 12]                             | 65.3 (57.5-72.3) | 71.1 (60.8-79.5) | 64.7 (54.8-73.5) | 64.6 (46.8-79.1)       | 69.2 (56.5-79.4) | 62.4 (51.1-72.5) |
| Had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months [Figure 18]              | 9.5 (5.3-16.6)   | 8.7 (5.0-14.6)   | 11.8 (4.9-25.6)  | 5.0 (2.1-11.5)         | 15.8 (5.8-36.1)  | 7.8 (4.3-13.7)   |
| Had ≥1 Hospitalization for Asthma During Past 12 Months [Figure 22]                    | 3.0 (1.8-5.0)    | 2.7 (1.2-5.8)    | 3.7 (1.9-7.3)    | 1.3 (0.4-4.0)          | 3.1 (1.2-7.6)    | 4.2 (2.0-8.8)    |

Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.

## Epidemiology of Asthma in Michigan Chapter 5: Asthma Control and Clinical Management

### Characteristics of Clinical Asthma Management for Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> By Demographic Characteristics, Michigan, 2005-2007

|   | Total            | Age Group        |                  | Sex              |                  | Race             |                  |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|   |                  | 0-9 Years        | 10-17 Years      | Male             | Female           | White            | Black            |
| Ever Received and Asthma Action Plan [Figure 25]  | 40.2 (33.6-47.3) | 47.5 (37.5-57.8) | 34.0 (25.7-43.4) | 42.3 (33.2-51.9) | 37.5 (27.9-48.2) | 39.7 (32.4-47.6) | 39.2 (23.6-57.3) |
| Ever Taken an Asthma Management Class [Figure 29]   | 7.0 (4.5-10.7)   | 7.4 (3.8-13.9)   | 6.6 (3.6-11.6)   | 6.0 (3.4-10.3)   | 8.3 (4.3-15.5)   | 9.0 (5.6-14.2)   | 4.4 (1.6-11.6)   |
| Ever Advised to Modify their Environment [Figure 33]                                      | 50.2 (42.5-57.9) | 49.9 (38.2-61.6) | 50.3 (40.1-60.4) | 50.9 (41.1-60.6) | 49.4 (37.2-61.6) | 52.6 (44.6-60.5) | 50.3 (31.6-69.0) |
| Had ≥2 Routine Asthma Care Visits During Past 12 Months [Figure 37]                       | 40.4 (33.1-48.1) | 46.1 (35.0-57.6) | 35.4 (25.6-46.5) | 47.2 (37.5-57.1) | 31.9 (22.4-43.2) | 38.6 (31.1-46.7) | 52.3 (33.7-70.3) |
| Had Used a Long Term Control Medication During the Past 3 Months <sup>3</sup> [Figure 41] | 44.7 (37.3-52.3) | 47.0 (35.9-58.4) | 42.8 (33.2-53.0) | 46.3 (36.9-56.1) | 42.6 (31.3-54.7) | 50.3 (42.4-58.3) | 26.6 (14.8-43.2) |
| Had a Flu Vaccine During the Past 12 Months [Figure 45]                                   | 35.0 (28.5-42.1) | 44.4 (33.5-55.9) | 26.6 (19.3-35.5) | 33.4 (25.7-42.2) | 36.9 (26.4-48.7) | 41.2 (33.6-49.3) | 21.5 (12.0-35.5) |

Experienced a Cost Barrier to Care During Past 12 Months [Figure 49]

Barrier Type

|                     |                |
|---------------------|----------------|
| Primary Care Doctor | 3.4 (1.8-6.2)  |
| Specialist          | 1.8 (0.8-4.3)  |
| Medication          | 5.6 (3.3-9.5)  |
| Any                 | 8.3 (5.5-12.4) |

### Characteristics of Clinical Asthma Management for Children<sup>1</sup> (<18 Years) with Current Asthma<sup>2</sup> By Socioeconomic Characteristics, Michigan, 2005-2007

|   | Total            | Household Income |                  | Respondent Education   |                  |                  |
|---|------------------|------------------|------------------|------------------------|------------------|------------------|
|   |                  | <\$50,000        | ≥\$50,000        | ≤ High School Graduate | Some College     | College Graduate |
| Ever Received and Asthma Action Plan [Figure 26]  | 40.2 (33.6-47.3) | 44.3 (34.0-55.2) | 37.3 (28.6-47.1) | 45.6 (33.4-58.4)       | 33.8 (23.3-46.2) | 41.7 (31.2-53.0) |
| Ever Taken an Asthma Management Class [Figure 30]   | 7.0 (4.5-10.7)   | 12.1 (6.9-20.4)  | 3.8 (1.9-7.5)    | 5.0 (2.1-11.4)         | 9.3 (4.4-18.6)   | 6.8 (3.5-12.6)   |
| Ever Advised to Modify their Environment [Figure 34]                                      | 50.2 (42.5-57.9) | 53.4 (42.8-63.6) | 52.9 (42.5-63.1) | 38.8 (25.8-53.6)       | 56.0 (42.9-68.2) | 54.6 (43.2-65.6) |
| Had ≥2 Routine Asthma Care Visits During Past 12 Months [Figure 38]                       | 40.4 (33.1-48.1) | 46.5 (36.2-57.2) | 39.1 (29.1-50.1) | 41.7 (28.3-56.5)       | 48.5 (35.1-62.1) | 33.2 (23.2-42.7) |
| Had Used a Long Term Control Medication During the Past 3 Months <sup>3</sup> [Figure 42] | 44.7 (37.3-52.3) | 37.4 (27.7-48.4) | 53.6 (43.0-63.9) | 34.5 (22.1-49.4)       | 44.3 (32.1-57.3) | 53.3 (42.2-64.2) |
| Had a Flu Vaccine During the Past 12 Months [Figure 46]                                   | 35.0 (28.5-42.1) | 28.8 (20.9-38.2) | 38.3 (29.0-48.7) | 34.0 (22.2-48.1)       | 27.9 (18.7-39.5) | 41.8 (31.2-53.1) |

Source: Asthma Callback Survey, MDCH

1. Based on proxy responses from adult respondent in the household.
2. Current asthma is defined as a positive response to both lifetime and current asthma questions.
3. Reported using a long term control medication in the past 3 months. Long term control medications were identified using the list of acceptable primary therapies for long term control of asthma by the NCQA HEDIS Technical Specifications for 2007. These included Inhaled Corticosteroids, Mast Cell Stabilizers, Leukotriene Modifiers, Methylxanthines, and certain combination therapies.

## Epidemiology of Asthma in Michigan Chapter 5: Asthma Control and Clinical Management

### Characteristics of Asthma Control for Adults (≥18 Years) with Current Asthma<sup>1</sup> By Demographic Characteristics, Michigan, 2005-2007

|  | Total            | Age Group        |                  |                  | Sex              |                  | Race             |                  |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |                  | 18-34 Years      | 35-64 Years      | ≥65 Years        | Male             | Female           | White            | Black            |
| Had Asthma Symptoms on ≥9 Days During Past Month [Figure 3]                            | 38.7 (35.1-42.6) | 30.1 (22.5-39.0) | 41.5 (37.3-45.8) | 49.4 (42.7-56.1) | 41.8 (34.9-49.0) | 36.8 (32.8-41.1) | 39.6 (35.7-43.7) | 31.8 (21.6-44.1) |
| Had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month [Figure 7] | 25.7 (22.6-29.1) | 20.2 (14.1-28.0) | 29.1 (25.5-33.1) | 26.8 (21.2-33.2) | 25.9 (20.2-32.6) | 25.5 (22.1-29.2) | 23.2 (20.1-26.6) | 40.5 (28.6-53.6) |
| Usual Activities Limited During Past 12 Months [Figure 13]                             | 61.3 (57.4-65.0) | 60.0 (50.8-68.5) | 62.9 (58.7-66.9) | 59.0 (52.5-65.3) | 53.2 (46.0-60.3) | 66.4 (62.1-70.4) | 59.5 (55.4-63.5) | 69.7 (58.3-79.1) |
| Had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months [Figure 19]              | 5.9 (4.5-7.7)    | 5.7 (3.2-9.9)    | 5.8 (4.1-8.2)    | 6.8 (4.1-11.2)   | 3.8 (2.1-6.8)    | 7.3 (5.4-9.7)    | 3.9 (2.8-5.5)    | 18.8 (11.4-29.4) |
| Had ≥1 Hospitalization for Asthma During Past 12 Months [Figure 23]                    | 3.6 (2.7-4.9)    | 2.3 (1.0-5.0)    | 3.8 (2.6-5.5)    | 6.3 (3.8-10.1)   | 2.9 (1.6-5.1)    | 4.1 (2.9-5.7)    | 2.4 (1.7-3.4)    | 11.2 (6.4-19.1)  |

Number of Symptoms-Free Days During Past 2 Weeks [Figure 10]

|      |                  |
|------|------------------|
| None | 22.0 (19.2-25.1) |
| 1-6  | 16.8 (13.9-20.1) |
| 7-13 | 24.4 (21.2-28.0) |
| 14   | 36.8 (33.1-40.6) |

Number of Missed Days of Work or Usual Activities During Past 12 Months [Figure 16]

|      |                  |
|------|------------------|
| None | 65.4 (61.5-69.1) |
| 1-5  | 20.0 (16.8-23.7) |
| 6+   | 14.6 (12.2-17.2) |

### Characteristics of Asthma Control for Adults (≥18 Years) with Current Asthma<sup>1</sup> By Socioeconomic Characteristics, Michigan, 2005-2007

|  | Total            | Household Income |                  | Respondent Education   |                  |                  |
|--|------------------|------------------|------------------|------------------------|------------------|------------------|
|  |                  | <\$50,000        | ≥\$50,000        | ≤ High School Graduate | Some College     | College Graduate |
| Had Asthma Symptoms on ≥9 Days During Past Month [Figure 4]                            | 38.7 (35.1-42.6) | 42.1 (37.2-47.1) | 30.0 (24.6-35.9) | 44.7 (38.2-51.4)       | 40.3 (33.9-47.0) | 28.7 (23.2-34.9) |
| Had Difficulty Sleeping due to Asthma Symptoms on ≥2 Days During Past Month [Figure 8] | 25.7 (22.6-29.1) | 33.3 (28.8-38.2) | 17.0 (12.8-22.2) | 29.6 (24.4-35.4)       | 25.3 (20.1-31.4) | 21.1 (15.9-27.5) |
| Usual Activities Limited During Past 12 Months [Figure 14]                             | 61.3 (57.4-65.0) | 72.3 (67.5-76.6) | 48.8 (42.6-55.1) | 60.9 (53.8-67.6)       | 69.2 (63.0-74.8) | 51.8 (45.3-58.2) |
| Had ≥2 ED/Urgent Care Visits for Asthma During Past 12 Months [Figure 20]              | 5.9 (4.5-7.7)    | 8.4 (6.1-11.5)   | 2.1 (1.1-4.2)    | 7.4 (5.0-10.6)         | 6.4 (4.0-10.2)   | 3.4 (1.8-6.5)    |
| Had ≥1 Hospitalization for Asthma During Past 12 Months [Figure 24]                    | 3.6 (2.7-4.9)    | 5.8 (4.2-8.0)    | 0.7 (0.3-1.9)    | 4.7 (3.1-7.0)          | 4.0 (2.3-6.7)    | 1.8 (0.9-3.7)    |

Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.

## Epidemiology of Asthma in Michigan Chapter 5: Asthma Control and Clinical Management

### Characteristics of Clinical Asthma Management for Adults (≥18 Years) with Current Asthma<sup>1</sup> By Demographic Characteristics, Michigan, 2005-2007

|   | Total            | Age Group        |                  |                  | Sex              |                  | Race             |                  |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|   |                  | 18-34 Years      | 35-64 Years      | ≥65 Years        | Male             | Female           | White            | Black            |
| Ever Received and Asthma Action Plan [Figure 27]  | 27.0 (23.7-30.6) | 29.9 (22.3-38.8) | 27.8 (24.3-31.7) | 17.6 (13.4-22.9) | 21.7 (16.3-28.3) | 30.4 (26.4-34.7) | 25.8 (22.4-29.5) | 33.0 (23.0-44.9) |
| Ever Taken an Asthma Management Class [Figure 31]   | 7.9 (6.1-10.0)   | 5.0 (2.3-10.6)   | 9.4 (7.1-12.2)   | 9.0 (6.0-13.4)   | 8.1 (5.0-12.9)   | 7.7 (5.9-10.0)   | 6.3 (4.8-8.2)    | 18.1 (10.1-30.3) |
| Ever Advised to Modify their Environment [Figure 35]                                      | 45.4 (41.6-49.3) | 43.2 (34.6-52.2) | 50.4 (46.2-54.7) | 32.0 (26.3-38.3) | 38.0 (31.4-45.1) | 50.0 (45.6-54.5) | 45.7 (41.7-49.8) | 41.3 (29.9-53.8) |
| Had ≥2 Routine Asthma Care Visits During Past 12 Months [Figure 39]                       | 33.8 (30.3-37.6) | 27.9 (20.2-37.0) | 34.9 (31.0-39.0) | 45.1 (38.7-51.8) | 33.4 (26.9-40.5) | 34.1 (30.1-38.4) | 31.9 (28.3-35.8) | 44.9 (32.5-58.0) |
| Had Used a Long Term Control Medication During the Past 3 Months <sup>2</sup> [Figure 43] | 42.0 (38.3-45.8) | 28.4 (20.8-37.3) | 46.8 (42.6-51.0) | 56.7 (50.1-63.0) | 38.8 (32.3-45.8) | 44.0 (39.7-48.4) | 43.7 (39.8-47.6) | 37.7 (25.9-51.1) |
| Had a Flu Vaccine During the Past 12 Months [Figure 47]                                   | 42.8 (39.2-46.5) | 26.6 (19.4-35.2) | 43.6 (39.5-47.8) | 77.5 (71.8-82.3) | 44.3 (37.6-51.3) | 41.9 (37.8-46.1) | 45.6 (41.6-49.6) | 27.3 (18.8-37.8) |

Experienced a Cost Barrier to Care During Past 12 Months [Figure 50]

Barrier Type

|                     |                  |
|---------------------|------------------|
| Primary Care Doctor | 11.1 (8.9-13.8)  |
| Specialist          | 3.7 (2.6-5.2)    |
| Medication          | 14.9 (12.3-17.9) |
| Any                 | 19.4 (16.5-22.7) |

### Characteristics of Clinical Asthma Management for Adults (≥18 Years) with Current Asthma<sup>1</sup> By Socioeconomic Characteristics, Michigan, 2005-2007

|   | Total            | Household Income |                  | Respondent Education   |                  |                  |
|---|------------------|------------------|------------------|------------------------|------------------|------------------|
|   |                  | <\$50,000        | ≥\$50,000        | ≤ High School Graduate | Some College     | College Graduate |
| Ever Received and Asthma Action Plan [Figure 28]  | 27.0 (23.7-30.6) | 29.6 (25.0-34.7) | 27.3 (22.0-33.4) | 27.8 (22.2-34.3)       | 28.1 (22.3-34.7) | 24.9 (20.1-30.5) |
| Ever Taken an Asthma Management Class [Figure 32]   | 7.9 (6.1-10.0)   | 8.5 (6.3-11.4)   | 6.9 (4.7-10.2)   | 8.0 (5.5-11.5)         | 8.9 (5.6-13.7)   | 6.5 (4.2-9.9)    |
| Ever Advised to Modify their Environment [Figure 36]                                      | 45.4 (41.6-49.3) | 42.7 (37.7-47.8) | 50.0 (43.8-56.3) | 37.2 (31.2-43.6)       | 48.5 (41.8-55.4) | 52.3 (45.8-58.7) |
| Had ≥2 Routine Asthma Care Visits During Past 12 Months [Figure 40]                       | 33.8 (30.3-37.6) | 40.2 (35.2-45.4) | 29.7 (24.0-36.1) | 38.9 (32.6-45.6)       | 34.6 (28.4-41.3) | 26.6 (21.4-32.5) |
| Had Used a Long Term Control Medication During the Past 3 Months <sup>2</sup> [Figure 44] | 42.0 (38.3-45.8) | 41.3 (36.4-46.4) | 44.5 (38.4-50.8) | 40.2 (34.1-46.5)       | 41.1 (34.7-47.9) | 45.3 (39.0-51.8) |
| Had a Flu Vaccine During the Past 12 Months [Figure 48]                                   | 42.8 (39.2-46.5) | 43.8 (39.0-48.8) | 43.6 (37.7-49.6) | 45.3 (39.0-51.7)       | 36.5 (30.7-42.8) | 47.5 (41.1-53.9) |

Source: Asthma Callback Survey, MDCH

1. Current asthma is defined as a positive response to both lifetime and current asthma questions.
2. Reported using a long term control medication in the past 3 months. Long term control medications were identified using the list of acceptable primary therapies for long term control of asthma by the NCQA HEDIS Technical Specifications for 2007. These included Inhaled Corticosteroids, Mast Cell Stabilizers, Leukotriene Modifiers, Methylxanthines, and certain combination therapies.