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Introduction:

Asthma prevalence is the proportion of individuals in a population who have asthma at a given point in time or during a given time period. It is often used to describe the scope of asthma in a population. The following chapter describes the population with asthma in Michigan over time using various datasets.

Key Findings:

- In 2007, 9.5% (232,500) of children had current asthma.
- In 2007, 9.5% (724,400) of adults had current asthma. This has not demonstrated a significant trend over seven years of measurement.
- Prevalence of current asthma increases with age group among children but decreases with age group among adults.
- Current asthma is more common among female adults than male adults, but more common among male children than female children.
- In 2007, current asthma prevalence was significantly higher for black adults compared to white adults.
- Current asthma is more common among adults of low educational attainment and low income.
- The prevalence of current asthma among adults is not equally distributed across Michigan's local public health regions.

Key Recommendation:

- Michigan should improve its ability to collect information on the number of people with asthma in all populations, particularly for young children, race/ethnicity groups, and small geographic areas.

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 Behavioral Risk Factor Survey
Michigan Youth Tobacco Survey
Michigan Department of Community Health
Michigan Youth Risk Behavior Survey
Michigan Department of Education

Methods:

Michigan prevalence estimates for asthma are based on self-report, population-based surveys using two questions:

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)

Lifetime asthma prevalence is the proportion of respondents who report "yes" to question 1. Current asthma prevalence is the proportion of respondents who report "yes" to both questions 1 and 2.

Michigan's asthma surveillance system uses the Michigan Behavioral Risk Factor Survey (BRFS) as its primary source of prevalence estimates. These data are collected quarterly by telephone interview of a sample of landline telephone numbers using list-assisted, random-digit dialed methodology. Data from this survey provide the detailed lifetime and current asthma prevalence analysis presented in this report; attack prevalence (the proportion of respondents who have had an asthma episode/attack in the past 12 months) is not included.

Annual estimates of asthma prevalence for adults (≥ 18 years) are provided for 2003-2007 by sex, race/ethnicity, education, and household income. Adult asthma prevalence is also reported by local public health region for the combined years 2005-2007.

The BRFS is also the source for estimates of prevalence of asthma among children (< 18 years) by asking the adult respondent to act as the proxy for a selected child in the household. Annual estimates of prevalence for children are provided for 2003-2007 by sex, race/ethnicity, proxy's education, and household income.

Analyses of the BRFS data was accomplished using SAS-Callable SUDAAN (Version 10.0), a software designed for analysis of multi-stage sample surveys. In comparing prevalence estimates between unordered groups, non-overlapping 95% confidence intervals indicate a statistically significant difference between the two groups compared. For time and ordered group trend analyses, t-tests of linear trend were conducted, where a p value < 0.05 was considered a statistically significant trend. For detailed methodology of the Michigan BRFS, review the annual reports available at <http://www.michigan.gov/brfs>.

Methods, continued:

Additionally, asthma prevalence questions are included on Michigan's Youth Tobacco Survey (YTS) and the Youth Risk Behavior Survey (YRBS). Both of these are school-based, self-administered surveys. Despite changes in which asthma questions were asked from year to year, each survey consistently asked the lifetime asthma question. The YTS is administered to middle and high school students, with data available for 2001 and 2003 (all), and 2007 (high school only). The YRBS is administered to high school students during odd-numbered years, with data available for 2003, 2005, and 2007.

From these surveys, estimates of lifetime asthma prevalence for children are provided in this report by sex and race/ethnicity, where available. YTS and YRBS are designed to estimate the annual prevalence of asthma for school children statewide. Sample sizes for each of these surveys are inadequate to assess the prevalence of asthma for smaller geographic areas. In comparing prevalence estimates between unordered groups, non-overlapping 95% confidence intervals indicate a statistically significant difference between the two groups compared. For more information about the YTS, go to http://www.cdc.gov/tobacco/Data_statistics/surveys/nys/ and for more information about the YRBS, go to <http://www.cdc.gov/yrbs/>.

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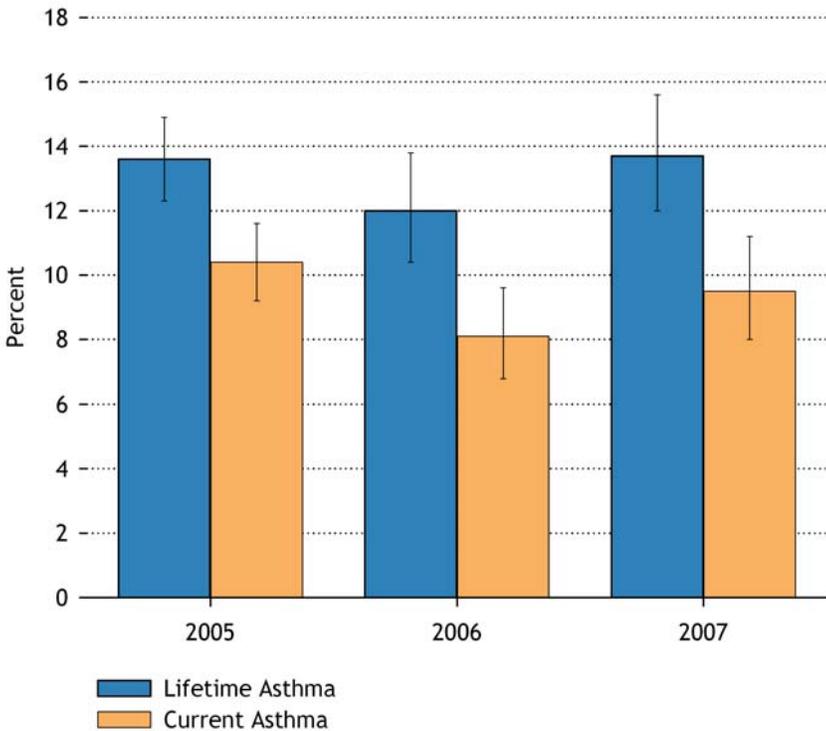
Wasilevich EA, Lyon-Callo S, Rafferty A, Fussman C, Wasilevich MJ. "Asthma Prevalence." Epidemiology of Asthma in Michigan. Bureau of Epidemiology, Michigan Department of Community Health, 2009.



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

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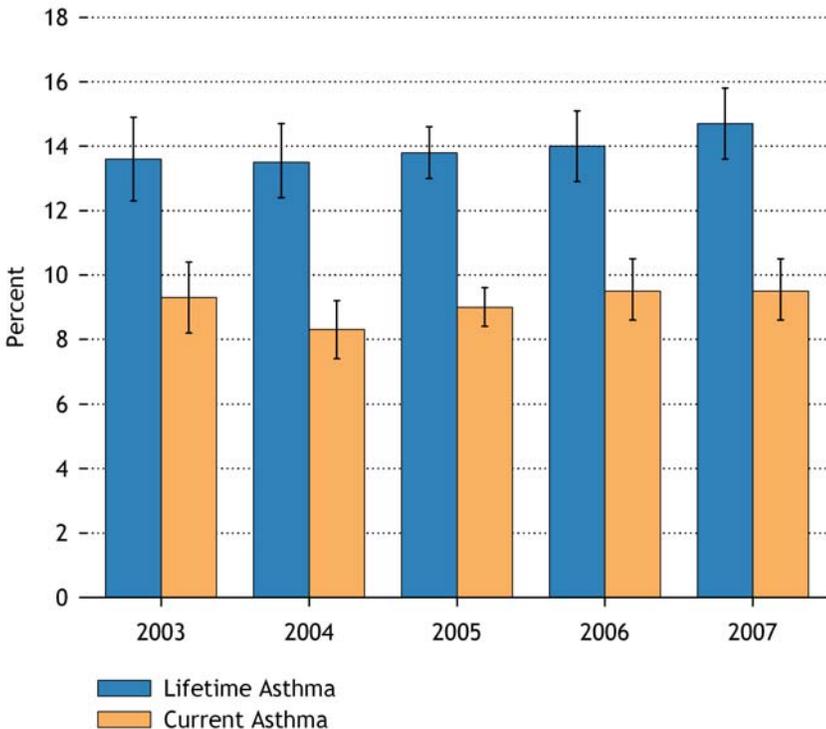
1. Prevalence of Lifetime and Current Asthma¹ for Children² (<18 Years), Michigan, 2005-2007



In 2007,

- 13.7% (335,200) of children had been told by a health professional at some point in their life that they had asthma.
- 9.5% (232,500) of children had current asthma.

2. Prevalence of Lifetime and Current Asthma¹ for Adults (≥18 Years), Michigan, 2003-2007



In 2007,

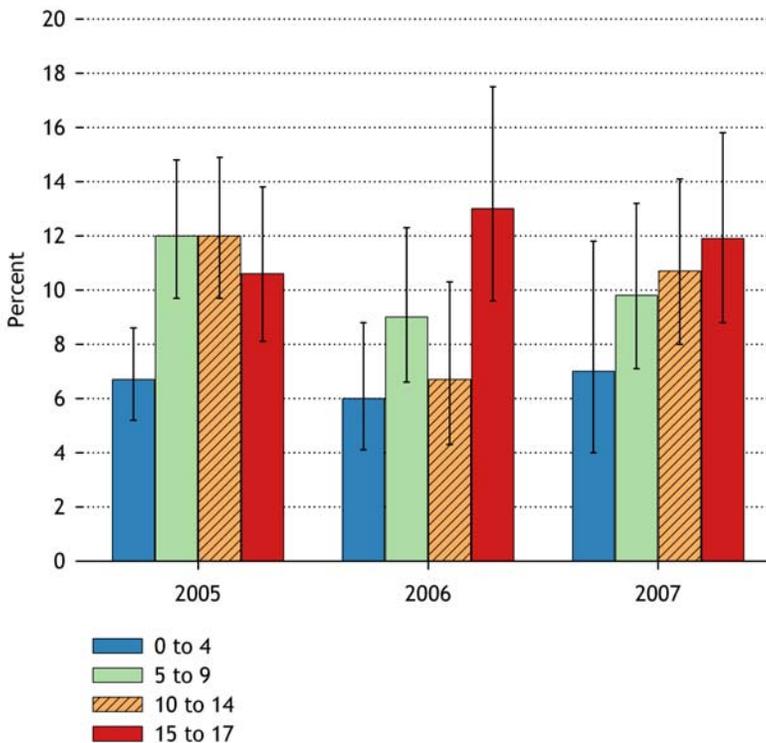
- 14.7% (1,120,900) of adults had been told by a health professional at some point in their life that they had asthma.
- 9.5% (724,400) of adults had current asthma.

- Between 2001 and 2007³, the prevalence of lifetime asthma among adults was significantly increasing over time. (p<0.01)⁴ Comparing the 2001 and 2007 prevalence estimates, the percent increase was 7.2%.
- Between 2001 and 2007³, there was no significant trend over time in the prevalence of current asthma among adults.⁴

Data Notes:
Source: Behavioral Risk Factor Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Data for 2001 and 2002 not shown.
4. t-test for linear trend in ordered estimates.

**3. Prevalence of Current Asthma¹ for Children² (<18 Years)
By Age Group, Michigan, 2005-2007**



In 2007,

- 7.0% (44,300) of children age 0 to 4 years had current asthma.
- 9.8% (64,300) of children age 5 to 9 years had current asthma.
- 10.7% (74,700) of children age 10 to 14 years had current asthma.
- 11.9% (54,700) of children age 15 to 17 years had current asthma.
- In 2006, as age increased, current asthma prevalence for children increased. ($p < 0.05$)³ In 2007, a similar trend was nearly statistically significant. ($p = 0.054$)³ For 2006, the prevalence estimate for children aged 15-17 years was 2.2 times that of those aged 0-4 years.

4. Prevalence of Current Asthma¹ for Adults (≥18 Years) By Age Group, Michigan, 2003-2007

Age Group	2003	2004	2005	2006	2007
18 - 24 Years	12.0 (7.7-16.3)	9.1 (6.1-13.3)	10.3 (8.0-13.3)	10.5 (7.2-15.1)	12.6 (8.9-17.4)
25 - 34 Years	7.9 (5.3-10.5)	9.4 (7.1-12.4)	9.7 (8.1-11.6)	10.6 (8.1-13.8)	10.2 (7.7-13.3)
35 - 44 Years	8.5 (6.1-10.9)	6.4 (5.0-8.3)	9.5 (8.2-10.9)	9.6 (7.8-11.8)	10.0 (8.0-12.3)
45 - 54 Years	10.3 (7.8-12.8)	8.8 (7.0-10.9)	8.2 (7.1-9.4)	9.3 (7.7-11.1)	8.4 (6.9-10.2)
55 - 64 Years	9.2 (6.6-11.8)	9.0 (7.0-11.4)	8.1 (7.0-9.4)	10.5 (8.6-12.8)	10.0 (8.5-11.8)
65 - 74 Years	8.7 (5.7-11.7)	9.2 (7.1-11.8)	9.0 (7.6-10.7)	7.7 (5.8-10.2)	8.5 (6.8-10.5)
75+ Years	8.4 (5.3-11.5)	6.7 (4.7-9.6)	8.0 (6.5-9.8)	6.7 (5.0-9.0)	5.8 (4.5-7.5)

In 2007,

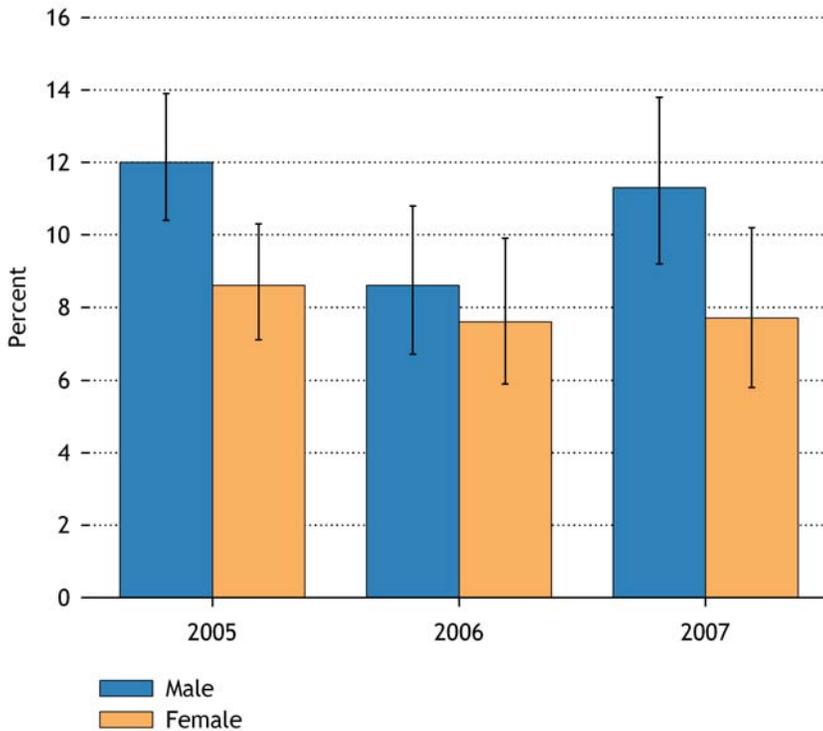
- 12.6% (122,700) of adults age 18 to 24 years had current asthma.
- 5.8% (36,300) of adults age 75 years and older had current asthma.
- In 2006 and 2007, as age increased, current asthma prevalence for adults decreased. ($p < 0.05$ for each)³ Comparing prevalence estimates for adults aged 18-24 years and 75+ years during 2007, the percent decrease was 54%.
- Between 2001 and 2007⁴, there was no significant trend over time in the prevalence of current asthma within any age group.³

Data Notes:

Source: Behavioral Risk Factor Survey, MDCH

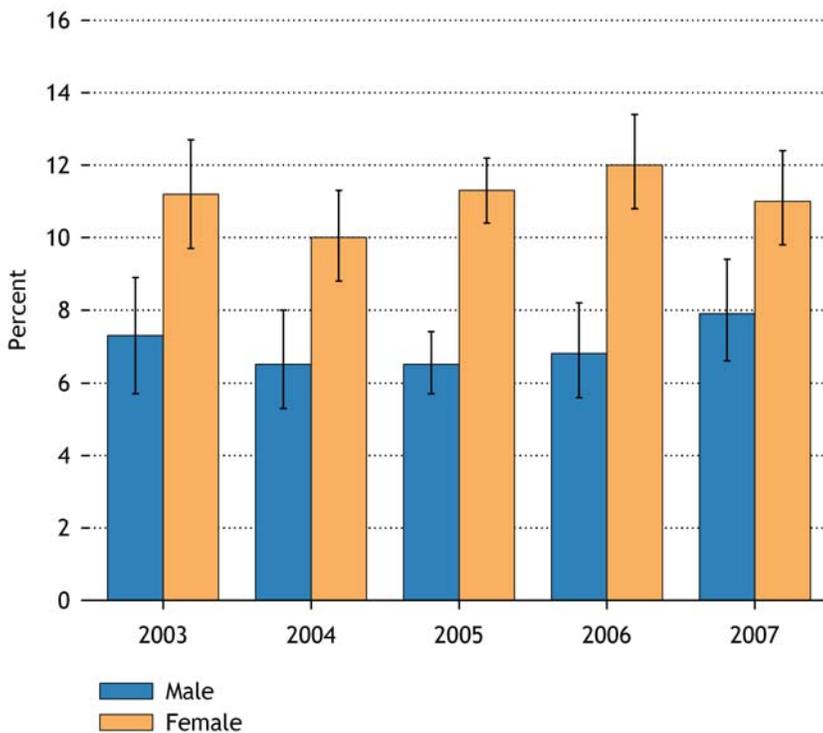
1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. t-test for linear trend in ordered estimates.
4. Data for 2001 and 2002 not shown.

5. Prevalence of Current Asthma¹ for Children² (<18 Years), By Sex, Michigan, 2005-2007



- In 2007, 11.3% (141,600) of male children and 7.7% (91,900) of female had current asthma.
- Asthma prevalence among children is over 10% higher in males compared to females in all three years. In 2005, current asthma prevalence for children was 40% higher for male children compared to female children—a statistically significant difference.³

6. Prevalence of Current Asthma¹ for Adults (≥18 Years), By Sex, Michigan, 2003-2007



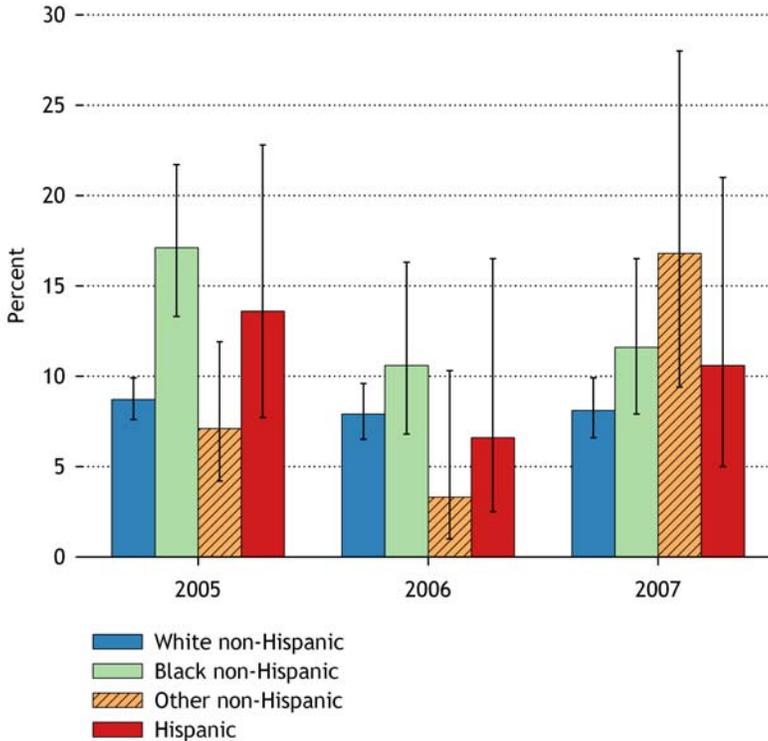
- In 2007, 7.9% (292,800) of adult males and 11.0% (431,000) of adult females had current asthma.
- Asthma prevalence among female adults is at least 40% higher than the prevalence among male adults for all years.
- Current asthma prevalence for adults is significantly higher for females compared to males, regardless of year.³
- Between 2001 and 2007⁴, there was no significant trend over time in the prevalence of current asthma for either male or female adults.⁵

Data Notes:

Source: Behavioral Risk Factor Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Statistical significant differences between prevalence estimates was determined by whether their 95% confidence intervals overlap. Non-overlapping confidence intervals indicates a statistically significant difference.
4. Data for 2001 and 2002 not shown.
5. t-test for linear trend in ordered estimates.

7. Prevalence of Current Asthma¹ for Children² (<18 Years) By Race/Ethnicity, Michigan, 2005-2007

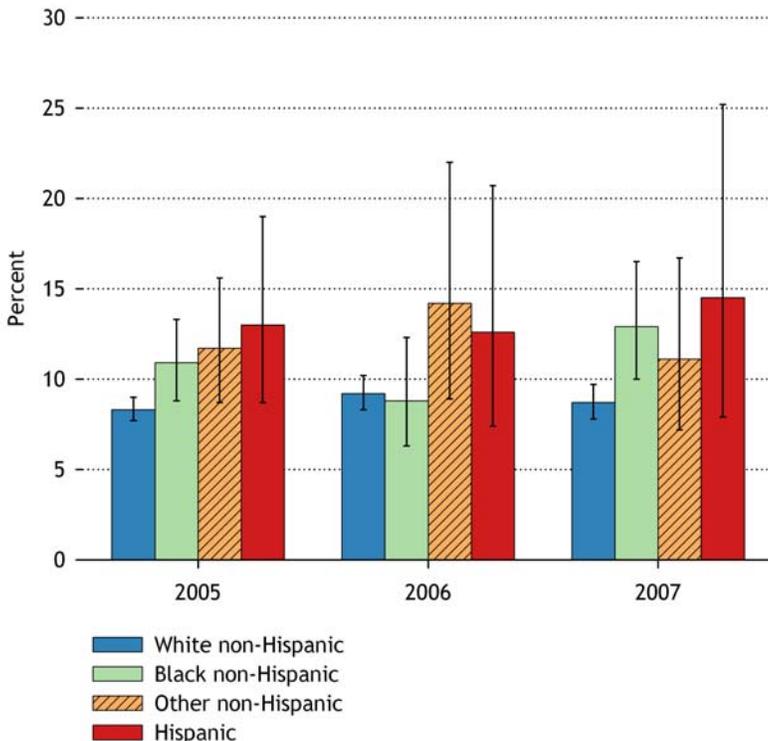


In 2007,

- 8.1% of non-Hispanic White children had current asthma.
- 11.6% of non-Hispanic Black children had current asthma.
- 10.6% of Hispanic children had current asthma.
- Current asthma for children did not differ significantly by race/ethnicity.³

- In 2005, the prevalence of current asthma for black children was nearly 2 times that for white children. This is a statistically significant difference.³

8. Prevalence of Current Asthma¹ for Adults (≥18 Years) By Race/Ethnicity, Michigan, 2005-2007



In 2007,

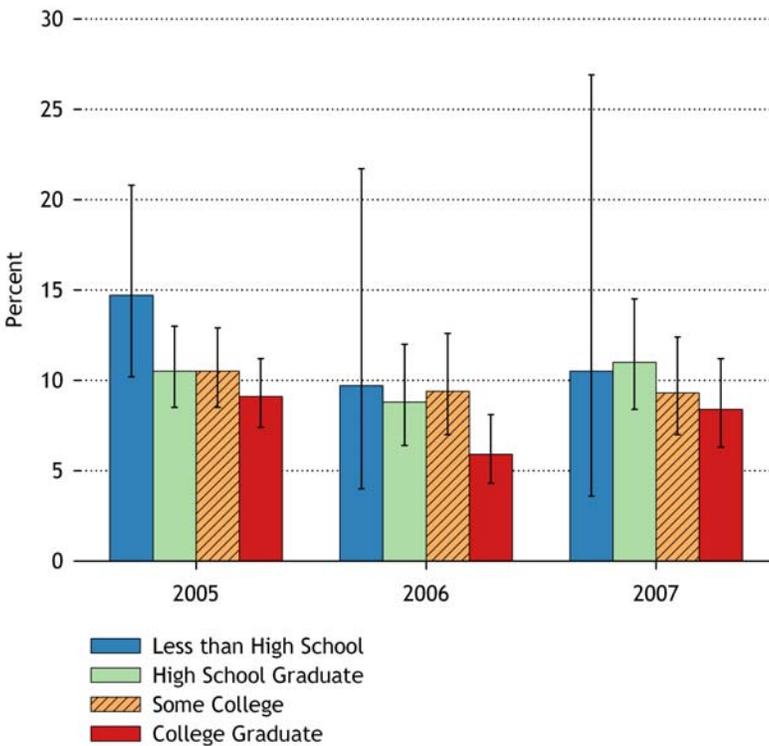
- 8.7% of non-Hispanic white adults had current asthma.
- 12.9% of non-Hispanic black adults had current asthma.
- 14.5% of Hispanic adults had current asthma.
- The prevalence of current asthma for black adults was 48% higher than that for white adults. This is a statistically significant difference.³

Data Notes:

Source: Behavioral Risk Factor Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Statistical significant differences between prevalence estimates was determined by whether their 95% confidence intervals overlap. Non-overlapping confidence intervals indicates a statistically significant difference.

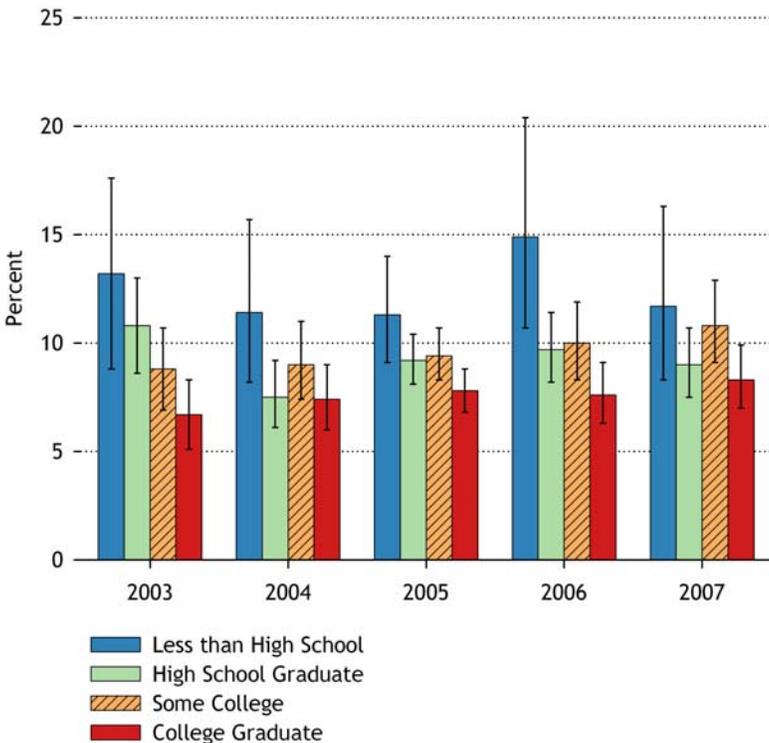
9. Prevalence of Current Asthma¹ for Children² (<18 Years)
By Respondent Education, Michigan, 2005-2007



In 2007,

- 10.5% of adult respondents who had not graduated high school responded that the child had current asthma. This is 25% higher than the prevalence for those in the highest educational attainment group.
- 11.0% of adult respondents who had graduated high school responded that the child had current asthma.
- 9.3% of adult respondents who had some college education responded that the child had current asthma.
- 8.4% of adult respondents who had graduated college responded that the child had current asthma.
- There was no significant trend in the prevalence of current asthma with increasing educational attainment of the respondent, regardless of year.³

10. Prevalence of Current Asthma¹ for Adults (≥18 Years) By Education, Michigan, 2003-2007



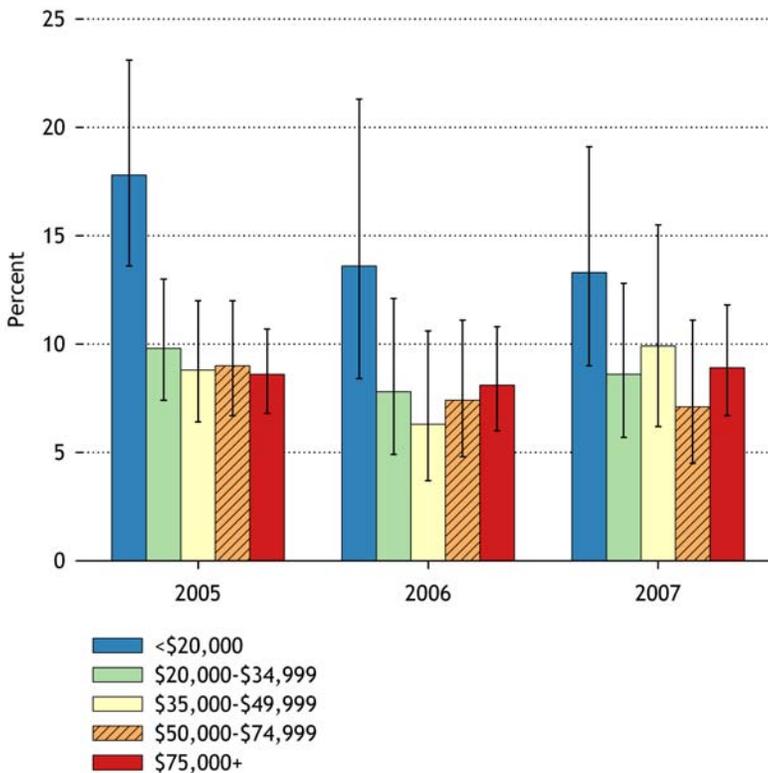
In 2007,

- 11.7% of adults who had not graduated high school had current asthma. This is 41% higher than the prevalence for those in the highest educational attainment group.
- 9.0% of adults who were high school graduates had current asthma.
- 10.8% of adults who had some college education had current asthma.
- 8.3% of adults who were college graduates had current asthma.
- In 2003, 2005, and 2006, as educational attainment increased, current asthma prevalence for adults decreased. (p<0.05 for each)³

Data Notes:
Source: Behavioral Risk Factor Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. t-test for linear trend in ordered estimates.

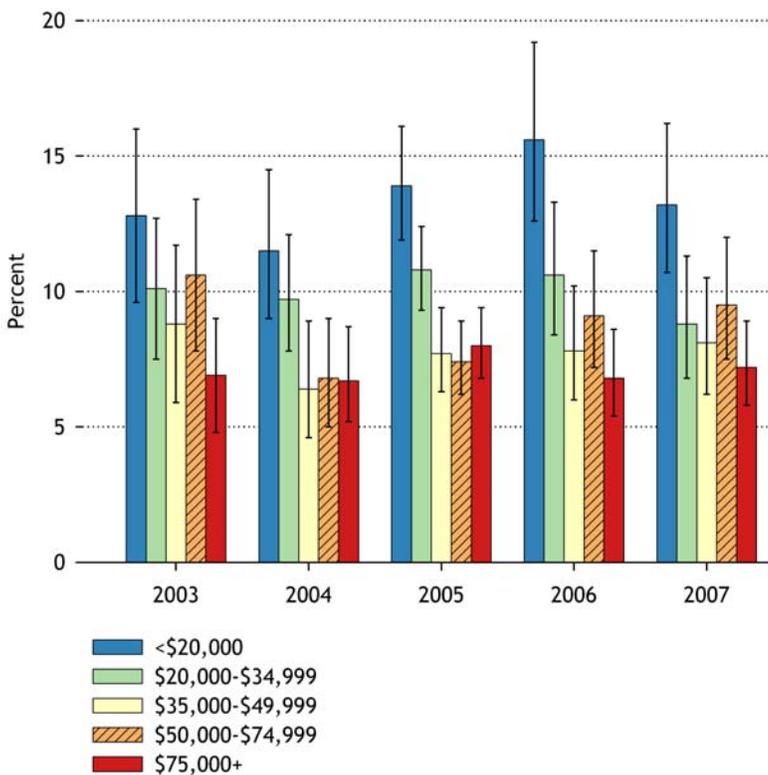
11. Prevalence of Current Asthma¹ for Children² (<18 Years)
By Household Income, Michigan, 2005-2007



In 2007,

- 13.3% of children with a household income of less than \$20,000 had current asthma. This is 49% higher than the prevalence for those in the highest household income group.
- 8.9% of children with a household income of \$75,000 or more had current asthma.
- There was no significant trend in the prevalence of current asthma with increasing household income, regardless of year.³

12. Prevalence of Current Asthma¹ for Adults (≥18 Years) By Household Income, Michigan, 2003-2007



In 2007,

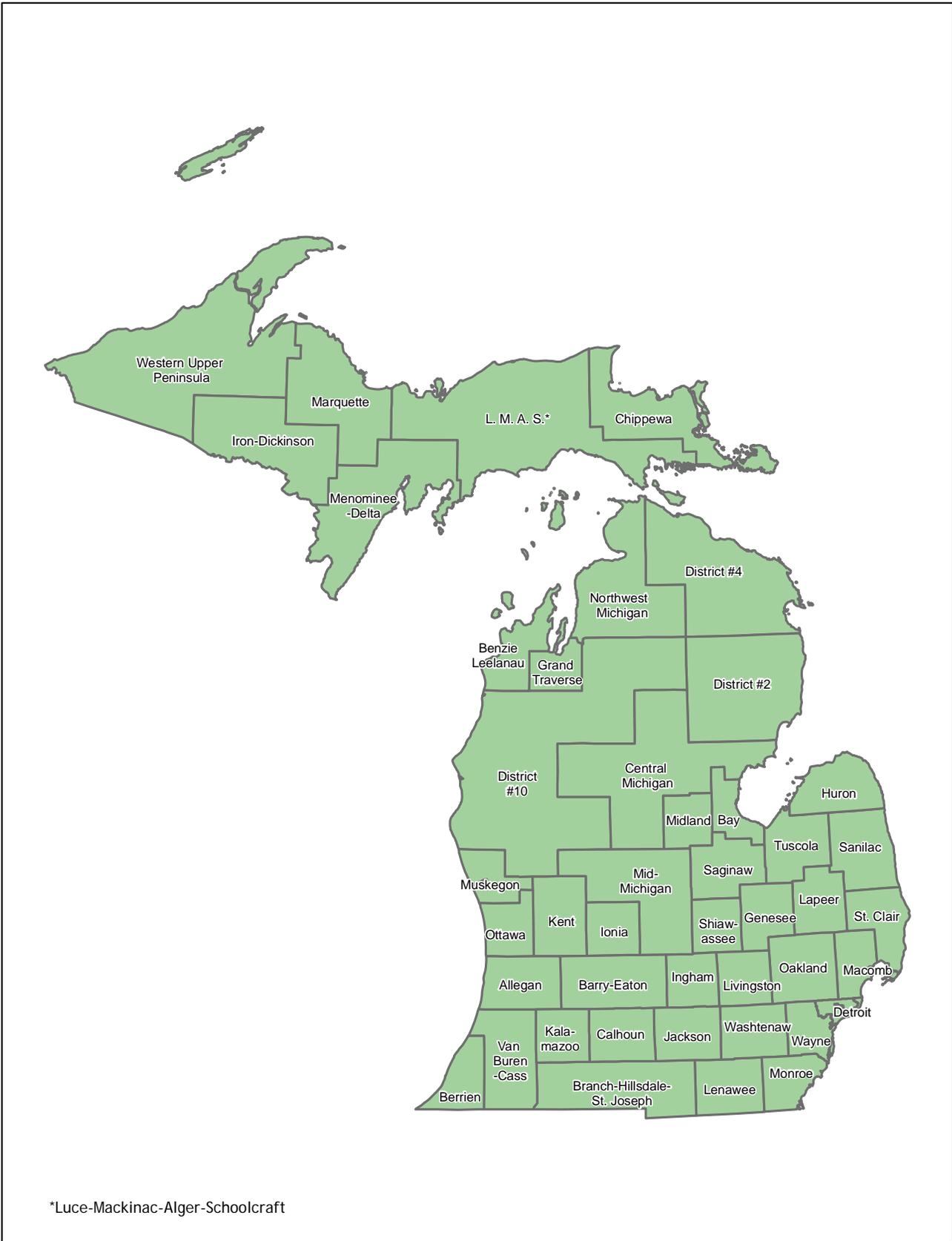
- 13.2% of children with a household income of less than \$20,000 had current asthma. This is nearly 2 times the prevalence for those in the highest household income group.
- 7.2% of children with a household income of \$75,000 or more had current asthma.
- In 2003, 2004, and 2007, as household income increased, current asthma prevalence for adults decreased significantly. ($p < 0.01$ for each)³

Data Notes:

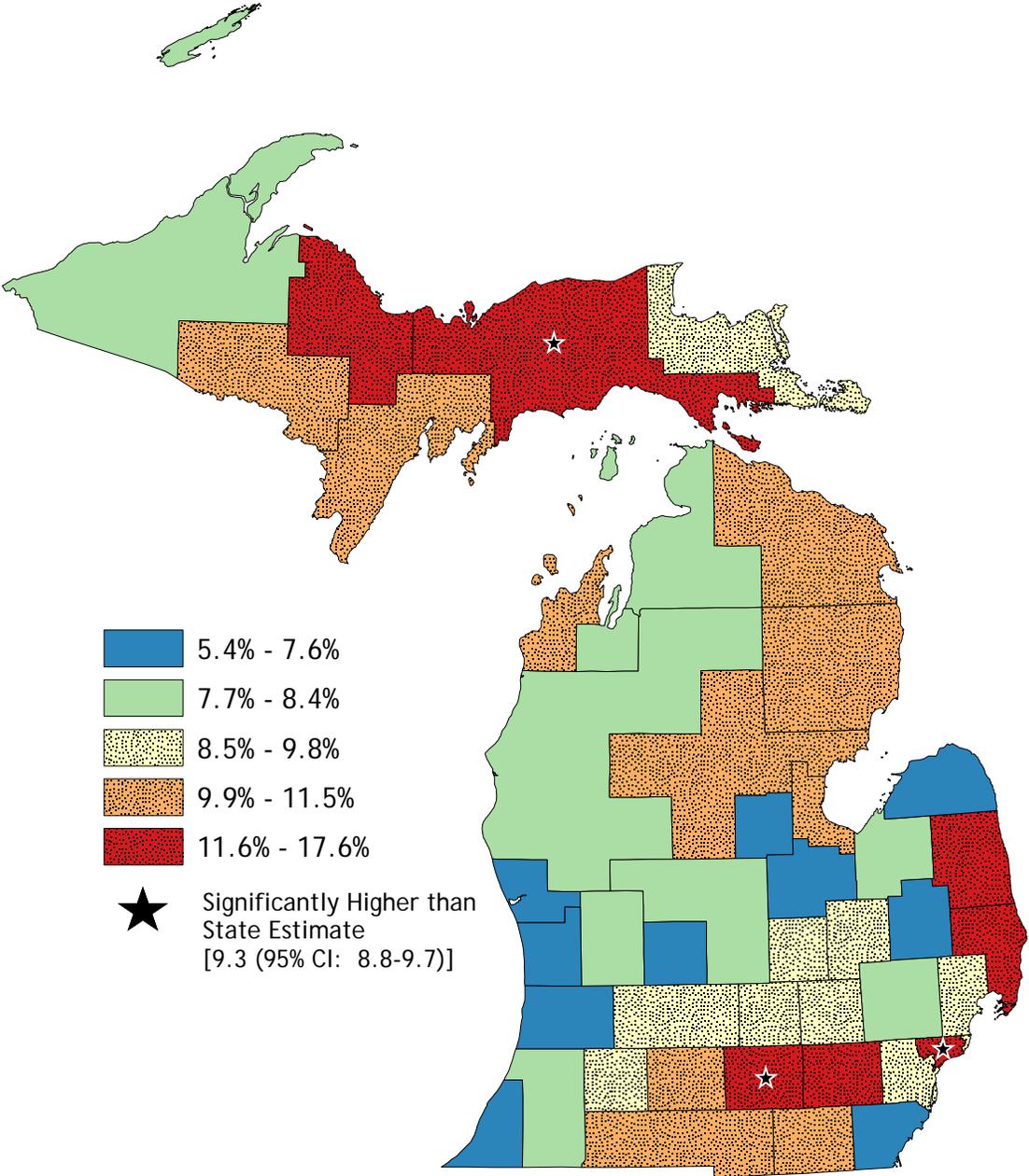
Source: Behavioral Risk Factor Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. t-test for linear trend in ordered estimates.

13. Local Health Department Regions, Michigan



14. Prevalence of Current Asthma¹ for Adults (≥18 Years), By Local Health Department Region, Michigan, 2005-2007



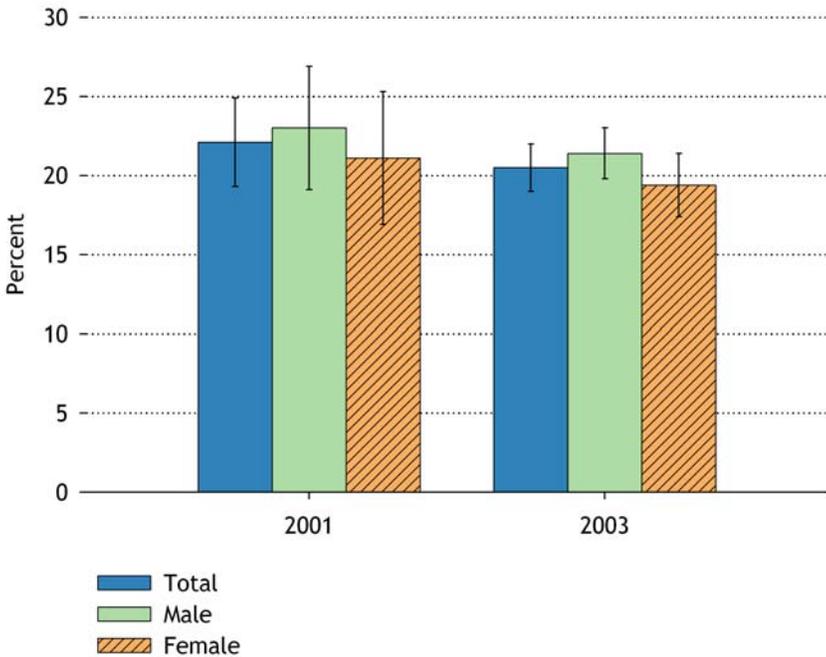
During 2005-2007, the local health department regions with an adult prevalence of current asthma significantly higher² than the state as a whole were:

- City of Detroit
- Jackson
- Luce-Mackinac-Alger-Schoolcraft

Data Notes:
 Source: Behavioral Risk Factor Survey, MDCH

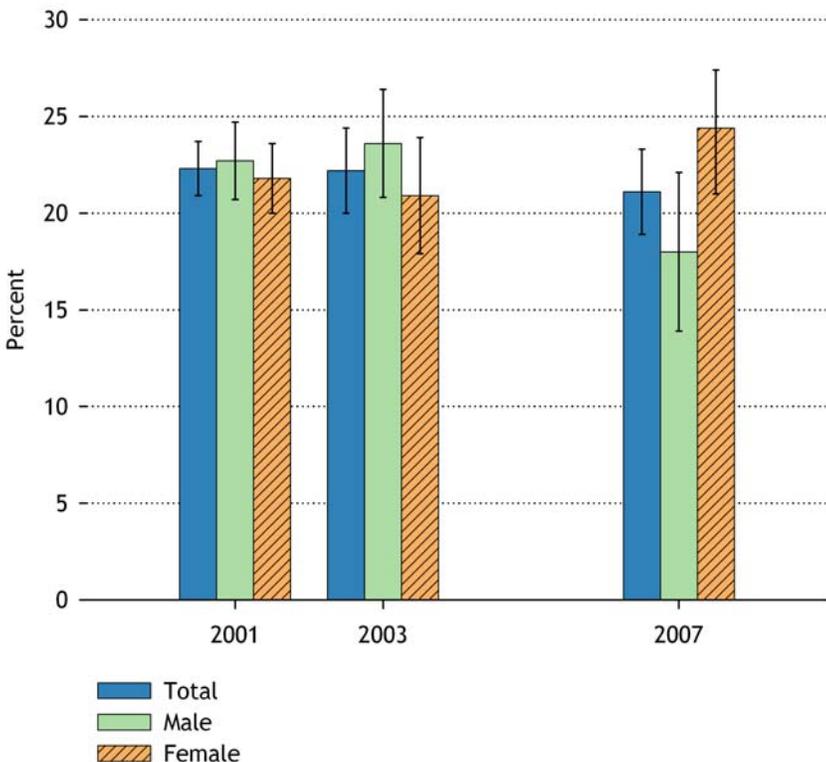
1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. The confidence interval for the local health department region prevalence estimate does not overlap with the prevalence estimate for the state as a whole.

15. Prevalence of Lifetime Asthma¹ for Middle School Children, Total and By Sex, Michigan, Youth Tobacco Survey, 2001 and 2003



- In 2003 for middle school children,
- 20.5% had been told by a health professional at some point in their life that they had asthma.
 - 21.4% of males and 19.4% of females had been told by a health professional at some point in their life they had asthma.
 - Lifetime asthma for middle school children did not differ significantly by sex, regardless of year.²

16. Prevalence of Lifetime Asthma¹ for High School Children, Total and By Sex, Michigan, Youth Tobacco Survey, 2001, 2003, and 2007

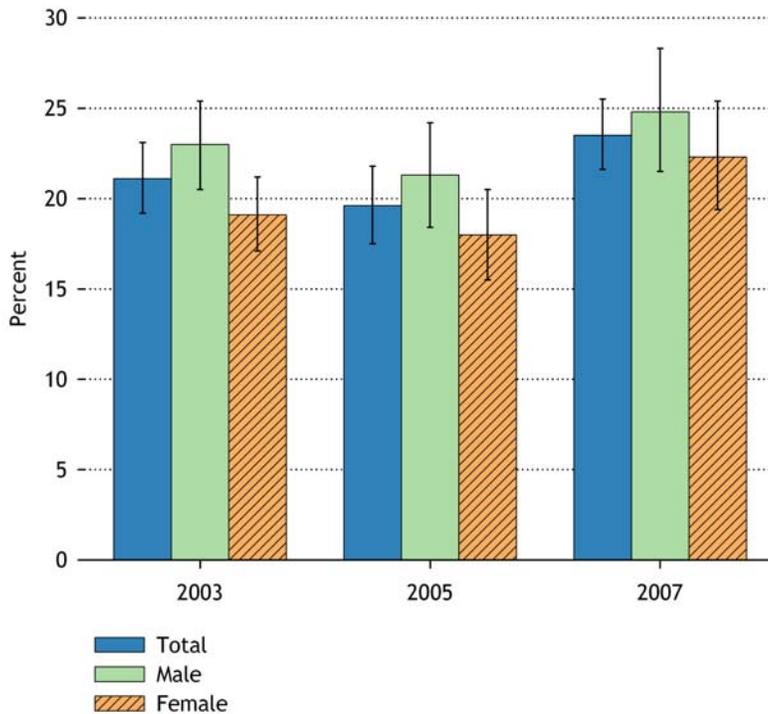


- In 2007 for high school children,
- 21.1% had been told by a health professional at some point in their life that they had asthma.
 - 18.0% of males and 24.2% of females had been told by a health professional at some point in their life that they had asthma.
 - Lifetime asthma for high school children did not differ significantly by sex, regardless of year.²

Data Notes:
Source: Youth Tobacco Survey, MDCH

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?"
2. Statistical significant differences between prevalence estimates was determined by whether their 95% confidence intervals overlap. Non-overlapping confidence intervals indicates a statistically significant difference.

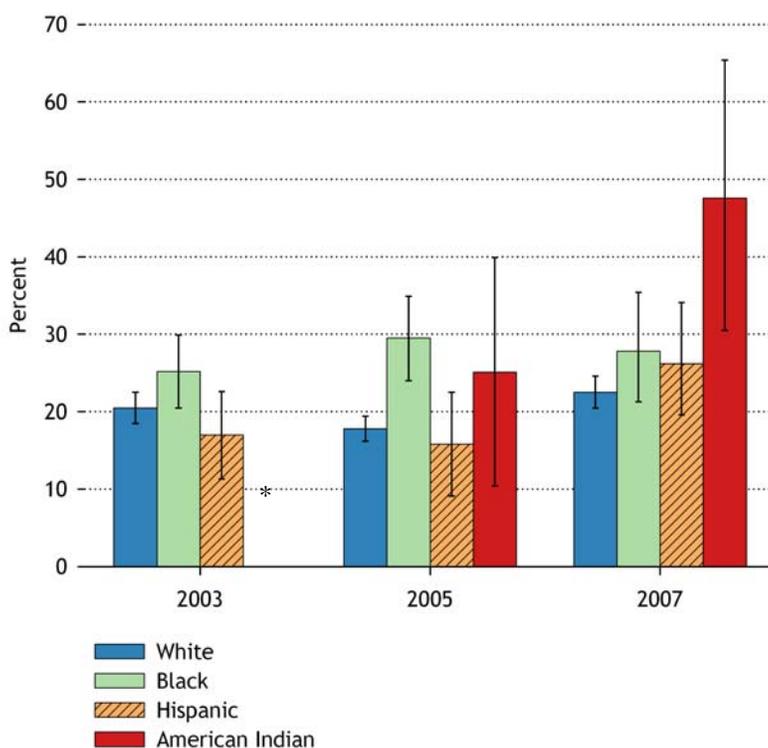
17. Prevalence of Lifetime Asthma¹ for High School Children, Total and By Sex, Michigan, Youth Risk Behavior Survey, 2003, 2005, and 2007



In 2007 for high school children,

- 23.5% had been told by a health professional at some point in their life that they had asthma. This is not significantly different from the estimate of lifetime asthma prevalence provided by the 2007 Youth Tobacco Survey for this age group.² (See Figure 16)
- 24.8% of males and 22.3% of females had been told during their lifetime by a health professional that they had asthma. These estimates are not significantly different from the estimates of lifetime asthma prevalence by sex provided by the 2007 Youth Tobacco Survey for this age group.² (See Figure 16)
- Lifetime asthma for high school children did not differ significantly by sex, regardless of year.²

18. Prevalence of Lifetime Asthma¹ for High School Children, By Race/Ethnicity, Michigan, Youth Risk Behavior Survey, 2003, 2005, and 2007



In 2007 for high school children,

- 22.5% of white children had been told by a health professional at some point in their life that they had asthma.
- 27.8% of black children had been told by a health professional at some point in their life that they had asthma.
- 26.2% of Hispanic children had been told by a health professional at some point in their life that they had asthma.
- 47.6% of American Indian children had been told by a health professional at some point in their life that they had asthma. This is over 2 times the prevalence for white children—a statistically significant

Data Notes:
Source: Youth Risk Behavior Survey, MDE

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?"
2. Statistical significant differences between prevalence estimates was determined by whether their 95% confidence intervals overlap. Non-overlapping confidence intervals indicates a statistically significant difference.

*Data not available.

Prevalence of Asthma¹ for Children² (<18 Years), Michigan³

		2005	2006	2007	
Lifetime Asthma	Total [Figure 1]	13.6 (12.3-14.9)	12.0 (10.4-13.8)	13.7 (12.0-15.6)	
Current Asthma	Total [Figure 1]	10.4 (9.2-11.6)	8.1 (6.8-9.6)	9.5 (8.0-11.2)	
	Age [Figure 3]	0 to 4 Years	6.7 (5.2-8.6)	6.0 (4.1-8.8)	7.0 (4.0-11.8)
		5 to 9 Years	12.0 (9.7-14.8)	9.0 (6.6-12.3)	9.8 (7.1-13.2)
		10 to 14 Years	12.0 (9.7-14.9)	6.7 (4.3-10.3)	10.7 (8.0-14.1)
		15 to 17 Years	10.6 (8.1-13.8)	13.0 (9.6-17.5)	11.9 (8.8-15.8)
	Sex [Figure 5]	Male	12.0 (10.4-13.9)	8.6 (6.7-10.8)	11.3 (9.2 - 13.8)
		Female	8.6 (7.1-10.3)	7.6 (5.9-9.9)	7.7 (5.8 - 10.2)
	Race/Ethnicity [Figure 7]	White Non-Hispanic	8.7 (7.6-9.9)	7.9 (6.5-9.6)	8.1 (6.6 - 9.9)
		Black Non-Hispanic	17.1 (13.3-21.7)	10.6 (6.8-16.3)	11.6 (7.9 - 16.5)
		Other Non-Hispanic	7.1 (4.2-11.9)	3.3 (1.0-10.3)	16.8 (9.4 - 28.0)
		Hispanic	13.6 (7.7-22.8)	6.6 (2.5-16.5)	10.6 (5.0 - 21.0)
	Respondent Education [Figure 9]	Less than High School	14.7 (10.2-20.8)	9.7 (4.0-21.7)	10.5 (3.6 - 26.9)
		High School Graduate	10.5 (8.5-13.0)	8.8 (6.4-12.0)	11.0 (8.4 - 14.5)
		Some College	10.5 (8.5-12.9)	9.4 (7.0-12.6)	9.3 (7.0 - 12.4)
		College Graduate	9.1 (7.4-11.2)	5.9 (4.3-8.1)	8.4 (6.3 - 11.2)
	Household Income [Figure 11]	<\$20,000	17.8 (13.6-23.1)	13.6 (8.4-21.3)	13.3 (9.0 - 19.1)
		\$20,000-\$34,999	9.8 (7.4-13.0)	7.8 (4.9-12.1)	8.6 (5.7 - 12.8)
		\$35,000-\$49,999	8.8 (6.4-12.0)	6.3 (3.7-10.6)	9.9 (6.2 - 15.5)
		\$50,000-\$74,999	9.0 (6.7-12.0)	7.4 (4.8-11.1)	7.1 (4.5 - 11.1)
		\$75,000+	8.6 (6.8-10.7)	8.1 (6.0-10.8)	8.9 (6.7 - 11.8)

Prevalence of Lifetime Asthma¹ for Children⁴ from School-Based Surveys^{5,6}, Michigan

Source	Age Group	Subgroup	2001	2002	2003	2004	2005	2006	2007
YTS ⁵	Middle School [Figure 15]	Total	22.1 (19.3-24.9)	*	20.5 (19.0-22.0)	*	*	*	*
		Male	23.0 (19.1-26.9)	*	21.4 (19.8-23.0)	*	*	*	*
		Female	21.1 (16.9-25.3)	*	19.4 (17.4-21.4)	*	*	*	*
	High School [Figure 16]	Total	22.3 (20.9-23.7)	*	22.2 (20.0-24.4)	*	*	*	21.1 (18.9-23.3)
		Male	22.7 (20.7-24.7)	*	23.6 (20.8-26.4)	*	*	*	18.0 (13.9-22.1)
		Female	21.8 (20.0-23.6)	*	20.9 (17.9-23.9)	*	*	*	24.2 (21.0-27.4)
YRBS ⁶	High School [Figures 17 and 18]	Total	*	*	21.1 (19.2-23.1)	*	19.6 (17.5-21.8)	*	23.5 (21.6-25.5)
		Male	*	*	23.0 (20.5-25.4)	*	21.3 (18.4-24.2)	*	24.8 (21.5-28.3)
		Female	*	*	19.1 (17.1-21.2)	*	18.0 (15.5-20.5)	*	22.3 (19.4-25.4)
		White	*	*	20.5 (18.5-22.5)	*	17.8 (16.2-19.4)	*	22.5 (20.5-24.6)
		Black	*	*	25.2 (20.5-29.9)	*	29.5 (24.0-34.9)	*	27.8 (21.3-35.4)
		Hispanic	*	*	17.0 (11.3-22.6)	*	15.8 (9.1-22.5)	*	26.2 (19.6-34.1)
		American Indian	*	*	*	*	25.1 (10.4-39.9)	*	47.6 (30.5-65.4)

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Based on proxy responses from adult respondent in the household.
3. Source: Michigan Behavioral Risk Factor Survey.
4. Based on self-report responses from child respondent.
5. Source: Michigan Youth Tobacco Survey.
6. Source: Michigan Youth Risk Behavior Survey.

Prevalence of Asthma¹ for Adults (≥18 Years), Michigan²

		2003	2004	2005	2006	2007	
Lifetime Asthma	Total [Figure 2]	13.6 (12.3-14.9)	13.5 (12.4-14.7)	13.8 (13.0-14.6)	14.0 (12.9-15.1)	14.7 (13.6-15.8)	
Current Asthma	Total [Figure 2]	9.3 (8.2-10.4)	8.3 (7.4-9.2)	9.0 (8.4-9.6)	9.5 (8.6-10.5)	9.5 (8.6-10.5)	
	Age [Figure 4]	18 to 24 Years	12.0 (7.7-16.3)	9.1 (6.1-13.3)	10.3 (8.0-13.3)	10.5 (7.2-15.1)	12.6 (8.9-17.4)
		25 to 34 Years	7.9 (5.3-10.5)	9.4 (7.1-12.4)	9.7 (8.1-11.6)	10.6 (8.1-13.8)	10.2 (7.7-13.3)
		35 to 44 Years	8.5 (6.1-10.9)	6.4 (5.0-8.3)	9.5 (8.2-10.9)	9.6 (7.8-11.8)	10.0 (8.0-12.3)
		45 to 54 Years	10.3 (7.8-12.8)	8.8 (7.0-10.9)	8.2 (7.1-9.4)	9.3 (7.7-11.1)	8.4 (6.9-10.2)
		55 to 64 Years	9.2 (6.6-11.8)	9.0 (7.0-11.4)	8.1 (7.0-9.4)	10.5 (8.6-12.8)	10.0 (8.5-11.8)
		65 to 74 Years	8.7 (5.7-11.7)	9.2 (7.1-11.8)	9.0 (7.6-10.7)	7.7 (5.8-10.2)	8.5 (6.8-10.5)
		75+ Years	8.4 (5.3-11.5)	6.7 (4.7-9.6)	8.0 (6.5-9.8)	6.7 (5.0-9.0)	5.8 (4.5-7.5)
	Sex [Figure 6]	Male	7.3 (5.7-8.9)	6.5 (5.3-8.0)	6.5 (5.7-7.4)	6.8 (5.6-8.2)	7.9 (6.6-9.4)
		Female	11.2 (9.7-12.7)	10.0 (8.8-11.3)	11.3 (10.4-12.2)	12.0 (10.8-13.4)	11.0 (9.8-12.4)
	Race/Ethnicity [Figure 8]	White Non-Hispanic	*	*	8.3 (7.7-9.0)	9.2 (8.3-10.2)	8.7 (7.8-9.7)
		Black Non-Hispanic	*	*	10.9 (8.8-13.3)	8.8 (6.3-12.3)	12.9 (10.0-16.5)
		Other Non-Hispanic	*	*	11.7 (8.7-15.6)	14.2 (8.9-22.0)	11.1 (7.2-16.7)
		Hispanic	*	*	13.0 (8.7-19.0)	12.6 (7.4-20.7)	14.5 (7.9-25.2)
	Education [Figure 10]	Less than High School	13.2 (8.8-17.6)	11.4 (8.2-15.7)	11.3 (9.1-14.0)	14.9 (10.7-20.4)	11.7 (8.3-16.3)
High School Graduate		10.8 (8.6-13.0)	7.5 (6.1-9.2)	9.2 (8.1-10.4)	9.7 (8.2-11.4)	9.0 (7.5-10.7)	
Some College		8.8 (6.9-10.7)	9.0 (7.4-11.0)	9.4 (8.3-10.7)	10.0 (8.3-11.9)	10.8 (9.1-12.9)	
College Graduate		6.7 (5.1-8.3)	7.4 (6.0-9.0)	7.8 (6.8-8.8)	7.6 (6.3-9.1)	8.3 (7.0-9.9)	
Household Income [Figure 12]	<\$20,000	12.8 (9.6-16.0)	11.5 (9.0-14.5)	13.9 (11.9-16.1)	15.6 (12.6-19.4)	13.2 (10.7-16.2)	
	\$20,000-\$34,999	10.1 (7.5-12.7)	9.7 (7.8-12.1)	10.8 (9.3-12.4)	10.6 (8.4-13.3)	8.8 (6.8-11.3)	
	\$35,000-\$49,999	8.8 (5.9-11.7)	6.4 (4.6-8.9)	7.7 (6.3-9.4)	7.8 (6.0-10.2)	8.1 (6.2-10.5)	
	\$50,000-\$74,999	10.6 (7.8-13.4)	6.8 (5.0-9.0)	7.4 (6.2-8.9)	9.1 (7.2-11.5)	9.5 (7.5-12.0)	
	\$75,000+	6.9 (4.8-9.0)	6.7 (5.2-8.7)	8.0 (6.8-9.4)	6.8 (5.4-8.6)	7.2 (5.8-8.9)	

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Source: Michigan Behavioral Risk Factor Survey.

Prevalence of Current Asthma¹ for Adults (≥18 Years), By Local Health Department Region, Michigan, 2005-2007² [Figure 14]

Geographic Area	Current Asthma		
	N	%	95% Confidence Interval
Michigan Total	25,069	9.3	(8.8-9.7)
Region 1	10,403	9.8	(9.0-10.6)
Livingston	395	9.8	(7.0-13.4)
Macomb	1,562	8.5	(6.9-10.5)
Monroe	355	7.6	(5.1-11.3)
Oakland	2,707	7.8	(6.6-9.1)
St. Clair	417	11.8	(8.5-16.3)
Washtenaw	812	12.3	(9.5-15.9)
City of Detroit	1,818	13.0	(10.9-15.4)
Wayne exc. Detroit	2,301	9.7	(8.2-11.5)
Region 2	1,515	8.8	(7.3-10.7)
Genesee	1,088	9.2	(7.3-11.6)
Lapeer	224	6.0	(3.4-10.4)
Shiawassee	203	9.8	(6.1-15.6)
Region 3	712	12.5	(9.9-15.5)
Jackson	439	13.7	(10.5-17.6)
Lenawee	273	10.4	(6.6-16.1)
Region 4	1,576	9.2	(7.6-11.2)
Barry-Eaton	498	9.4	(6.8-12.7)
Mid-Michigan ³	562	8.4	(5.9-11.8)
Ingham	740	9.1	(6.8-12.1)
Region 5	1,382	10.5	(8.6-12.7)
Branch-Hillsdale-St. Joseph	373	11.5	(7.7-16.9)
Calhoun	373	11.5	(8.2-16.0)
Kalamazoo	636	9.3	(6.9-12.4)
Region 6	865	7.2	(5.3-9.7)
Van Buren-Cass	355	8.3	(5.1-13.3)
Berrien	510	6.3	(4.3-9.2)
Region 7	2,735	7.4	(6.2-8.7)
Allegan	277	6.0	(3.6-9.8)
Ionia	172	5.4	(2.6-11.0)
Kent	1,381	8.3	(6.6-10.5)
Mid-Michigan ³	562	8.4	(5.9-11.8)
Ottawa	681	6.6	(4.8-8.9)

Geographic Area	Current Asthma		
	N	%	95% Confidence Interval
Michigan Total	25,069	9.3	(8.8-9.7)
Region 8	1,317	7.7	(6.2--9.6)
District #10	830	8.2	(6.3-10.7)
Muskegon	487	7.0	(4.9-9.8)
Region 9	1,381	9.0	(7.3-11.0)
District #2	256	9.9	(6.5-14.8)
District #4	324	10.2	(6.5-15.5)
Northwest Michigan	409	8.1	(5.5-11.8)
Benzie-Leelanau	132	10.1	(4.9-19.6)
Grand Traverse	260	7.7	(4.6-12.5)
Region 10	1,255	8.8	(7.0-11.0)
Bay	282	10.2	(6.2-16.4)
Huron	101	5.5	(2.5-11.6)
Saginaw	596	7.6	(5.5-10.4)
Sanilac	131	14.9	(8.3-25.4)
Tuscola	145	7.8	(4.1-14.3)
Region 11	855	9.3	(7.2-11.8)
Central Michigan	585	10.6	(7.9-14.0)
Midland	270	6.6	(4.1-10.7)
Region 12	1,073	11.1	(9.0-13.6)
Luce-Mackinac-Alger-Schoolcraft	146	17.6	(10.7-27.5)
Western Upper Peninsula	227	8.2	(5.0-13.3)
Delta-Menominee	234	10.7	(6.9-16.1)
Chippewa	106	9.3	(4.2-19.4)
Dickinson-Iron	161	10.4	(5.4-19.1)
Marquette	199	11.7	(7.7-17.5)

1. Lifetime asthma is defined as a positive response to the question, "Have you ever been told by a doctor, nurse, or health professional that you had asthma?" Current asthma is defined as a positive response to both the lifetime asthma question and the question, "Do you still have asthma?"
2. Source: Michigan Behavioral Risk Factor Survey.
3. The Mid-Michigan District Health Department consists of Clinton, Gratiot, and Montcalm counties. Clinton and Gratiot are Region 4 counties, while Montcalm is a Region 7 county. All three counties were included in the Mid-Michigan estimate, but only the respective counties were included in the regional estimates.