

Targeting Asthma in Michigan The Healthy People 2010 Objectives

September, 2003

What are the *Healthy People 2010* objectives?

Sponsored by the U.S. Department of Health and Human Services, the *Healthy People 2010* initiative is a comprehensive set of disease prevention and health promotion objectives for the nation to achieve over the first decade of the new century. Created by scientists both inside and outside of government, it identifies a wide range of public health priorities and specific, measurable objectives. It can be used by many different people, states, communities, professional organizations, and others to help them develop programs to improve health.

Why do we use the *Healthy People 2010* objectives as a benchmark?

The *Healthy People 2010* objectives are national benchmarks. They are used widely at the national, state, and community level. In utilizing these objectives for asthma, Michigan can direct its efforts to achieving national goals, compare its asthma burden to others, and measure progress over time in achieving the objectives.

What are the *Healthy People 2010* objectives relating to asthma?

Objective	2010 Asthma Targets
1-9a. Reduce hospitalization rates for three ambulatory-care-sensitive conditions: pediatric asthma , uncontrolled diabetes, and immunization preventable pneumonia and influenza.	< 18 Years: 17.3 / 10,000
24-1. Reduce asthma deaths.	< 5 Years: 1 / million 5-14 Years: 1 / million 15-34 Years: 2 / million 35-64 Years: 9 / million ≥ 65 Years: 60 / million
24-2. Reduce hospitalizations for asthma.	< 5 Years: 25 / 10,000 5-64 Years ^b : 7.7 / 10,000 ≥ 65 Years ^b : 11 / 10,000
24-3. Reduce emergency department visits for asthma.	< 5 Years: 80 / 10,000 5-64 Years: 50 / 10,000 ≥ 65 Years: 15 / 10,000
24-4. Reduce activity limitations among persons with asthma.	10% ^b
24-5. Reduce the number of school or workdays missed by persons with asthma due to asthma. ^a	c
24-6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.	30% ^b
24-7. Increase the proportion of persons with asthma who receive appropriate asthma care according to the NAEPP Guidelines. ^a Measured as persons with asthma who receive: <ul style="list-style-type: none"> ◆ written asthma management plans from health care provider. ◆ instruction on how to use a prescribed inhaler properly. ◆ education about recognizing early signs & symptoms of asthma episodes and how to respond properly, with lessons on peak flow monitoring for those using daily therapy. ◆ medication regimens that prevent the need for more than 1 canister of short acting inhaled beta agonists per month for relief of symptoms. ◆ follow-up medical care for long-term management after a hospitalization due to asthma. ◆ assistance with assessing and reducing exposure to environmental risk factors. 	c

a. Developmental objective.

b. Age adjusted to the year 2000 U.S. standard population.

c. 2010 target not identified.

How do Michigan and the United States compare to the *Healthy People 2010* targets for asthma?

Objective	Age Group	HP 2010 Target	United States ^a	Michigan ^a
1-9a. Reduce pediatric asthma hospitalization rate. (Rate per 10,000)	< 18 Years	17.3	21.4 ¹	26.6 ⁶
24-1. Reduce asthma deaths. (Rate per million)	< 5 Years	1	2.1 ²	< 5 deaths ^e
	5-14 Years	1	3.3 ²	3.5 ⁷
	15-34 Years	2	5.5 ²	6.1 ⁷
	35-64 Years	9	15.2 ²	16.8 ⁷
	≥ 65 Years	60	65.8 ²	54.8 ⁷
24-2. Reduce hospitalizations for asthma. (Rate per 10,000)	< 5 Years	25	53.6 ³	48.4 ⁶
	5-64 Years	7.7 ^b	13.6 ^{b,3}	13.6 ^{b,6}
	≥ 65 Years	11 ^b	21.2 ^{b,3}	15.2 ^{b,6}
24-3. Reduce emergency department visits for asthma. (Rate per 10,000)	< 5 Years	80	150.0 ⁴	Data not available
	5-64 Years	50	71.1 ⁴	
	≥ 65 Years	15	29.5 ⁴	
24-4. Reduce activity limitations among persons with asthma.	c	10% ^b	20% ^{b,5}	Data not available
24-5. Reduce number of school/work days missed due to asthma.	c	d	Data not available	Data not available
24-6. Increase number who receive formal asthma education.	c	30% ^b	13.8% ^{b,5}	Data not available
24-7. Increase number who receive appropriate asthma care.	c	d	Data not available	Data not available

Notes: a. Latest data available that is comparable to the *Healthy People 2010* targets.
b. Age adjusted to the year 2000 U.S. standard population.
c. No specified age group.
d. 2010 target not identified.
e. Insufficient data to compute a stable rate. (Number of deaths < 5, but > 0)

Sources: All national data available at the Data 2010 website: <http://wonder.cdc.gov/data2010/>.

¹Healthcare Cost and Utilization Project 2001, AHRQ;

²National Vital Statistics System-Mortality 2000, CDC, NCHS.

³National Hospital Discharge Survey 1999, CDC, NCHS.

⁴National Hospital Ambulatory Medical Care Survey 1995-1997, CDC, NCHS.

⁵National Health Interview Survey 1994-1996, CDC, NCHS.

⁶Michigan Inpatient Database 2000, MDCH.

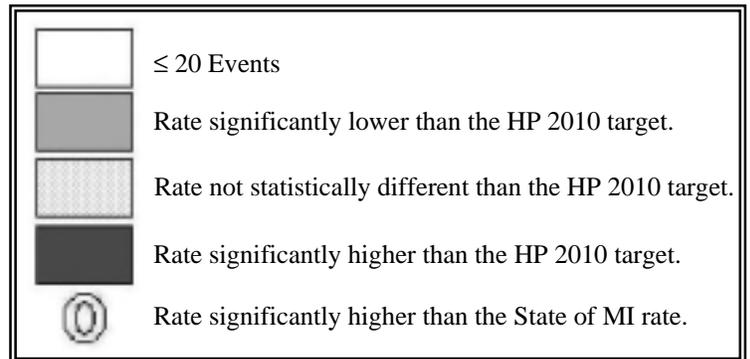
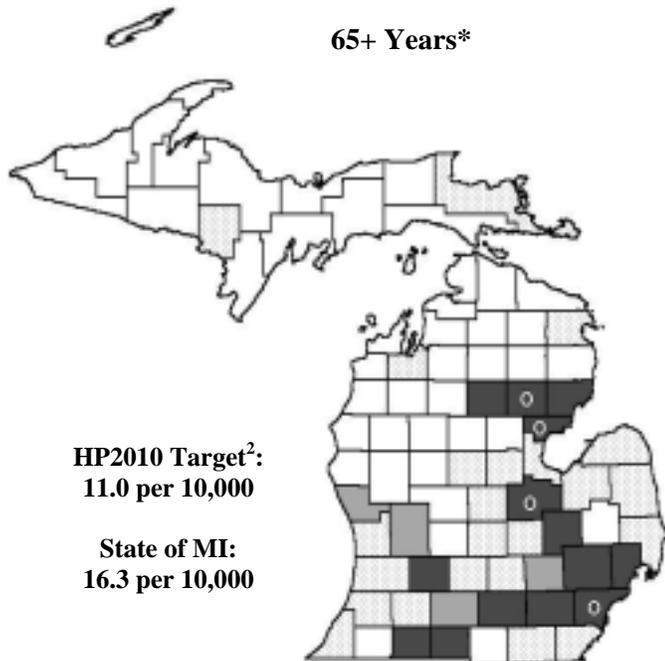
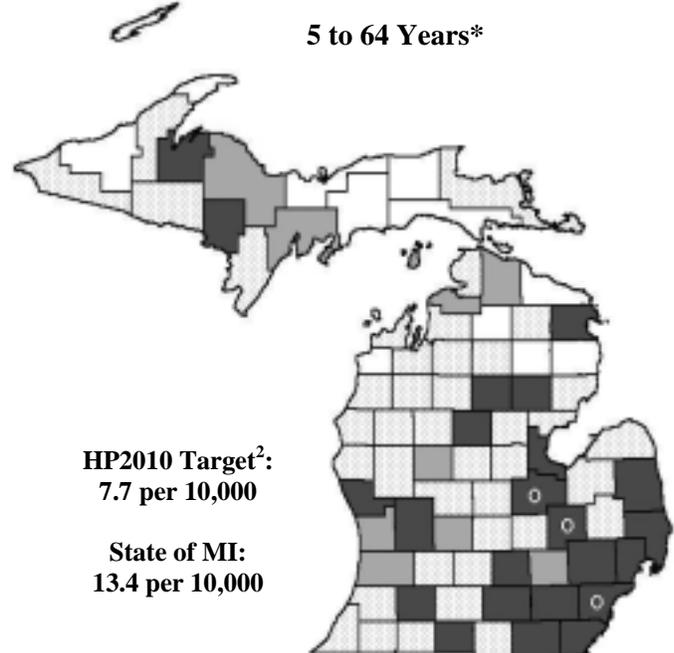
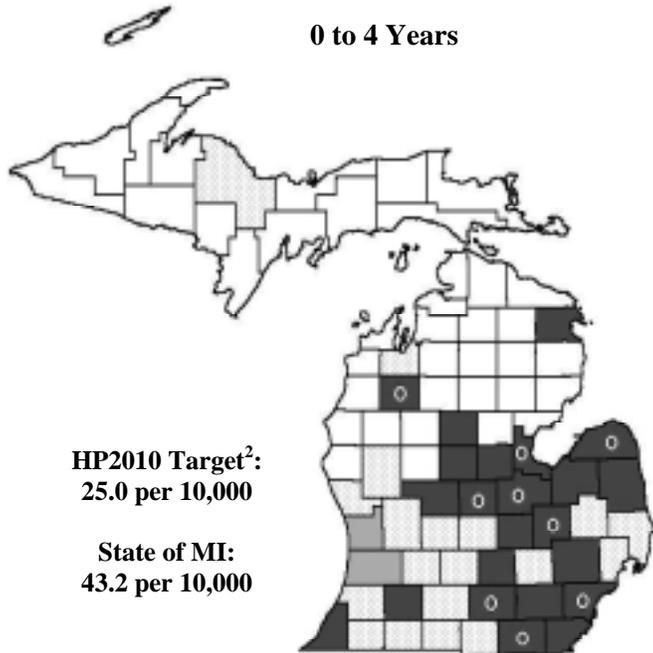
⁷Michigan Resident Death File 2001, MDCH.

Additional Information

- **24-3:** Although Michigan does not have data available to compute asthma emergency department visit rates comparable to the *Healthy People 2010* targets, the Michigan Behavioral Risk Factor Surveillance Survey (2001), conducted by the Michigan Department of Community Health, provides a period prevalence estimate. Among adults (≥ 18 years) reporting that they have current asthma, 18.8% reported having 1 or more visits to the Emergency Room or Urgent Care Center for treatment of asthma in the past 12 months.
- **24-4:** Michigan does not have data available to determine the proportion of all persons with asthma that experience activity limitations comparable to the *Healthy People 2010* target. However, an estimate can be determined for the adult population from the Michigan Behavioral Risk Factor Surveillance Survey (2001). Among adults (≥ 18 years) who stated that they had current asthma, 34.1% reported limitations in their activities due to physical, mental, or emotional problems or required the use of special equipment for a health problem.
- **24-5:** This is a developmental objective and therefore does not have an operational definition. Results from the Michigan Behavioral Risk Factor Surveillance Survey (2001) indicate that adults with asthma (≥ 18 years) experienced an average of 10.3 days of restricted activities due to their asthma.

Have any Michigan counties attained the *Healthy People 2010* targets for asthma hospitalization rates?

County Level Attainment of the *Healthy People 2010* Targets for Rates of Asthma Hospitalization¹
(Objective 24-2) by Age Group, Michigan, 1998 to 2000.



- ❑ The asthma hospitalization rates for Wayne and Saginaw counties are significantly higher than the State of Michigan rate, regardless of age group.
- ❑ Depending on age group, between 2 and 9 Michigan counties have successfully met the *Healthy People 2010* targets for asthma hospitalization rates.

¹ Source: Michigan Inpatient Database, 2000, MDCH.

² Objective 24-2. Reduce hospitalizations for asthma, age groups 0-4, 5-64, and 65+.

*Rates were age adjusted to the year 2000 U.S. standard population.

Are there differences between blacks and whites in Michigan in meeting the *Healthy People 2010* targets for asthma hospitalization rates?

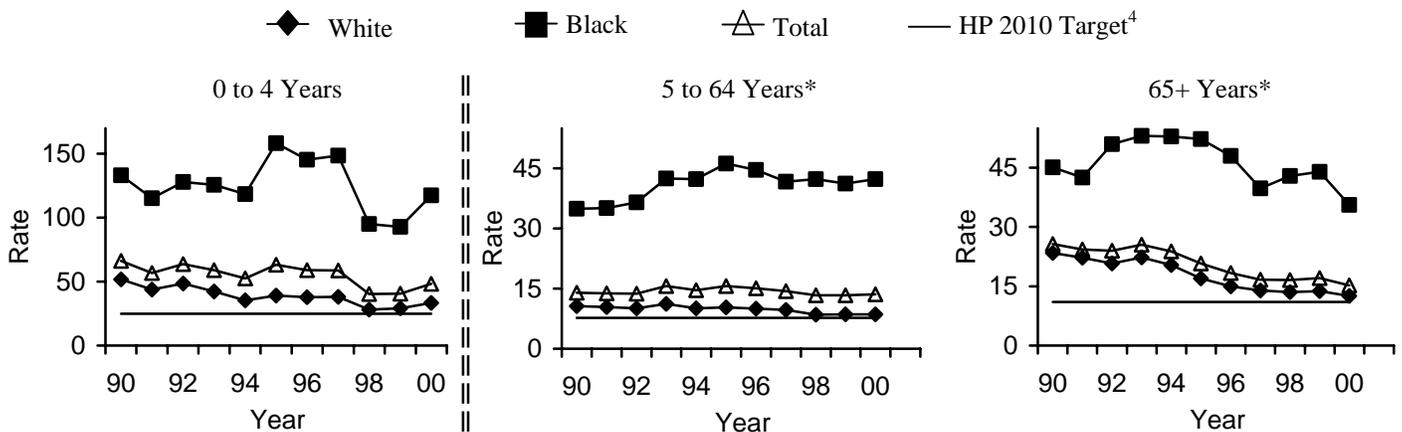
Rates of Asthma Hospitalization¹ (per 10,000) by Race^{2,3} and Age Group, Compared to *Healthy People 2010* Target for Objective 24-2, Michigan, 2000.

Age Group	HP 2010 Target ⁴	Total	White	Black	Rate Ratio
					Black vs. White (95% CI)
0 to 4 Years	25	48.4	33.4	117.4	3.5 (3.3, 3.8)
5 to 64 Years*	7.7	13.6	8.6	42.3	4.9 (4.8, 5.1)
65+ Years*	11	15.2	12.6	35.6	2.8 (2.5, 3.1)

¹ Source: Michigan Inpatient Database 2000, MDCH.
² For records that are missing data on race, race was assigned based on the 1990 census population.
³ Insufficient data to compute a stable rate for races other than white or black.
⁴ Objective 24-2. Reduce hospitalizations for asthma, age groups 0-4, 5-64, and 65+.
 *Age adjusted to the year 2000 U.S. standard population.

- For both blacks and whites, and each age group, asthma hospitalization rates for the year 2000 are significantly higher than the *Healthy People 2010* target.
- Blacks have significantly higher asthma hospitalization rates than whites in all age groups. Hospitalization rates for blacks are about 3 to 5 times the rates of whites.

Rates of Asthma Hospitalization¹ (per 10,000) by Year, Age Group, and Race^{2,3}, Compared to *Healthy People 2010* Target for Objective 24-2, Michigan, 1990 to 2000.

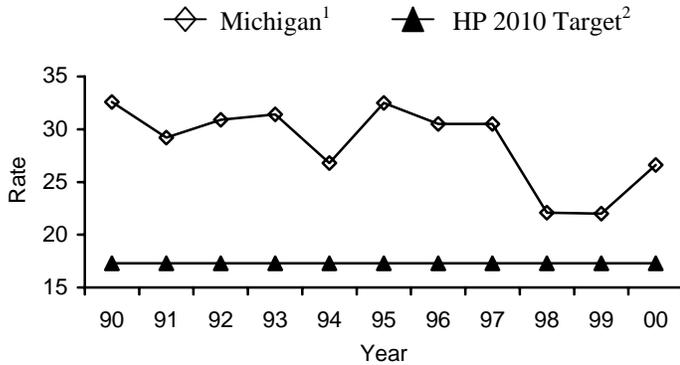


¹ Source: Michigan Inpatient Database 1990-2000, MDCH.
² For records that are missing data on race, race was assigned based on the 1990 census population.
³ Insufficient data to compute a stable rate for races other than white or black.
⁴ Objective 24-2. Reduce hospitalizations for asthma, age groups 0-4, 5-64, and 65+.
 *Age adjusted to the year 2000 U.S. standard population.

- The annual rates of asthma hospitalization in Michigan are significantly higher than the *Healthy People 2010* target rates for the state overall (Δ), for blacks (\blacksquare), for whites (\blacklozenge), and for each of the three age groups.
- Since 1990, there has been a significant overall decline in asthma hospitalization rates in Michigan (Δ) for children ages 0 to 4 years ($p < 0.05$) and adults ages 65 years or older ($p < 0.01$) toward the *Healthy People 2010* target rates.
- Asthma hospitalization rates for blacks (\blacksquare) are significantly greater than those for whites (\blacklozenge) for all years and age groups.
- Since 1990, there has been a significant overall decline in asthma hospitalization rates in Michigan for whites (\blacklozenge) ages 0 to 4 years, 5 to 64 years, and 65 years and older ($p < 0.01$). The difference between asthma hospitalization rates for whites and blacks, ages 5 to 64 years, demonstrates a significant overall **increase** since 1990 ($p < 0.05$).

Are Michigan pediatric hospitalization rates for asthma decreasing toward the *Healthy People 2010* target?

Asthma Hospitalization Rates (per 10,000), Compared to *Healthy People 2010* Target for Objective 1-9a, Age < 18 Years, Michigan, 1990 to 2000.



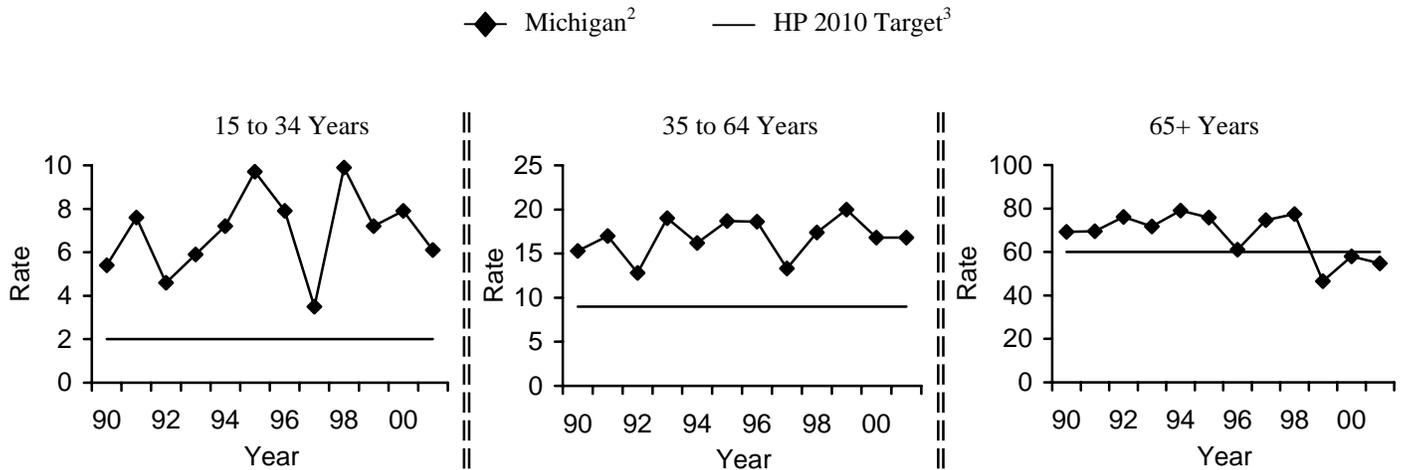
- ❑ All annual Michigan asthma hospitalization rates for children under 18 years are significantly greater than the *Healthy People 2010* target of 17.3/10,000 population.
- ❑ Since 1990, there has been a significant decline in asthma hospitalization rates for this age group in Michigan, toward the *Healthy People 2010* target rate ($p < 0.05$).

¹ Source: Michigan Inpatient Database 1990-2000, MDCH.

² Objective 1-9a. Reduce pediatric (<18 years) hospitalization rate.

Are Michigan mortality rates for asthma decreasing toward the *Healthy People 2010* target?

Asthma Mortality Rates (per 1,000,000), Compared to *Healthy People 2010* Target for Objective 24-1, Age > 14 Years¹, Michigan, 1990 to 2001.



¹ For age groups 0 to 4 and 5 to 14, there are insufficient data to compute stable annual rates. (Number of deaths < 5)

² Source: Michigan Resident Death File 1990-2001, MDCH.

³ Objective 24-1. Reduce asthma deaths, age groups 15 to 34, 35-64, and 65+.

- ❑ The annual rates of asthma mortality in Michigan are significantly higher than the *Healthy People 2010* target rate for adults ages 35 to 64.
- ❑ For adults age 65 years and older, asthma mortality rates in recent years have successfully met the *Healthy People 2010* target rate.

Summary and Recommendations

- ❑ Michigan's surveillance of asthma is incomplete, due to the lack of data systems available for analysis. It is important to acquire new sources of data, particularly emergency department information, to measure Michigan's progress toward meeting all the *Healthy People 2010* targets.
- ❑ For objectives where data are available, neither the United States nor Michigan have met all the *Healthy People 2010* targets for asthma.
- ❑ Michigan is demonstrating progress toward meeting the target asthma hospitalization rates overall and among whites. Conversely, asthma hospitalization rates for blacks ages 5 to 64 are moving away from the *Healthy People 2010* target.
- ❑ Recent data from Michigan counties reveal that 9 counties have met the target asthma hospitalization rate for persons age 5 to 64 years.
- ❑ The most recent mortality rates indicate that Michigan has met the target rate for adults age 65 years and older.
- ❑ Despite these encouraging results, there remains a dramatic racial disparity in asthma hospitalization rates of Michigan. Efforts to reduce the burden of asthma in Michigan must address this issue.

References

- U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.
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Methods

For hospitalization analyses, all in-patient hospitalizations were selected from the Michigan Inpatient Database (MIDB) where asthma was the primary reason for the stay (primary discharge diagnosis coded to ICD-9-CM codes 493.XX). These data represent the number of in-patient hospitalizations for asthma, not the number of individual people hospitalized for asthma. Age adjusted hospitalization rates are adjusted to the 2000 US standard population. All hospitalization rates are presented on a per 10,000 population basis. Hospitalization rates for geographic or demographic units with a small number of events (less than or equal to 20 events) or a small population size (less than 5,000 population) are not calculated because these rates exhibit considerable variation over time and from place to place.

For mortality analyses, all deaths were selected from the Michigan Resident Death File (MRDF) where asthma was the primary cause of death (underlying cause of death coded to ICD-9 493.XX or ICD-10 J45 or J46). Mortality rates are presented on a per 1,000,000 population basis. For demographic units with a small number of events (less than 5 deaths), mortality rates are not calculated.

Michigan rates are considered statistically different than the *Healthy People 2010* target if their 95% confidence intervals do not include the target rate. When comparing two Michigan rates, they are considered statistically different if their 95% confidence intervals do not overlap. The Spearman Correlation Coefficient is used to test for statistical trends in asthma hospitalization rates over time, with a p-value < 0.05 considered statistically significant. This method was chosen since it makes no assumption about the underlying distribution of the data analyzed and gives an overall test of monotonic increase or decrease of rates over time.

Suggested citation: Wasilevich EA, Lyon-Callo S. Targeting Asthma in Michigan, The Healthy People 2010 Objectives, Bureau of Epidemiology, Michigan Department of Community Health, 2003.

For more information about asthma and the Asthma Initiative of Michigan, please visit: www.getastmahelp.com

For more information about *Targeting Asthma in Michigan, The Healthy People 2010 Objectives* Fact Sheet, contact the Epidemiology Services Division at (517) 335-8806.

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