



Health Status of American Indians in Massachusetts, 2001-2009

Health Survey Program, Bureau of Health Information, Statistics, Research and Evaluation
Massachusetts Department of Public Health, 2010

The goal of this bulletin is to enhance existing knowledge about the health status of American Indians living in the state of Massachusetts.

Little is known about this group of state residents.

Exploring whether there are disparities in health status and health care access among American Indian adults by sex, age, educational level, and type of health care coverage will aid outreach to American Indians in Massachusetts.

INTRODUCTION

Based upon Census estimates, 20,000 MA residents report being American Indian by race and an additional 25,000 report being American Indian in combination with one or more other races. This bulletin is a continuation of the Department of Public Health's attempt to analyze the health status of American Indians¹ with the goal of improving health and reducing health disparities for this population. It presents key health indicators from the Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), comparing American Indians to all other Massachusetts residents as well as providing trend data where available. Indicators examined include general health status, prevalence of chronic disease, prevalence of risk/protective factors, and access to health care. Data on preventive health measures such as screening and immunization are not presented here due to the small sample size and resulting statistical instability of the estimates for American Indians.

TERMS, DEFINITIONS AND METHODOLOGY

In this bulletin, the term significant is used to indicate statistical significance at the $p < 0.05$ level. Similarly, where higher/lower or more/less likely are used, these terms refer to statistically significant differences between the two groups. American Indian refers to respondents who self-identified their race as (1) American Indian alone or (2) as American Indian plus one or more other races but who said that American Indian best describes their race.

Married refers to respondents who said they were currently married. Those who said they were divorced, widowed, separated, never married, or a member of an unmarried couple were combined into not married.

Employed refers to respondents who stated they were currently employed for wages or self-employed. Those who responded that they were currently out of work for <1 year, out of work for >1 year, a homemaker, a student, retired, or unable to work were combined into not employed. Only those ages 18-64 were considered for analysis of employment status.

All data presented are aggregates of three years data in order to increase the sample size and stability of the estimates for American Indians. For all trend data, data smoothing, a method to deal with fluctuations in the annual estimates over time due to small sample size, was accomplished by using three-year moving averages. Two different time periods are used for analysis in this bulletin. The time period 2007-2009 is used to show the most current data, and trend data is presented for the years 2001-2009 in order to show whether or not the prevalence of an indicator has changed over the past decade. Trend data is displayed graphically only where there is a statistically significant change over time in at least one group. Margins of error are shown in parentheses following point estimates in the text. These are presented in lieu of confidence intervals for ease of interpretation. All margins of error presented are at the 95% confidence level. All percentages presented are crude percentages (i.e. not adjusted to account for other factors which may affect the outcome such as age or sex). All odds presented are adjusted to control for the effect of age, sex and level of education.

A more thorough description of methodology can be found at the end of the bulletin.

DEMOGRAPHICS

From 2007-2009, 430 respondents identified as American Indian. A significantly larger percent of respondents identified as American Indian who were male, had lower educational attainment, were not currently married and were currently unemployed as compared to all other MA residents. 62.1% of American Indian respondents in our sample from 2007-2009 were from the seven cities of Boston, Fall River, Lawrence, Lowell, New Bedford, Springfield and Worcester. These seven cities are all among the top ten cities and towns with the largest population of American Indians.¹ Table 1 presents a comparison of demographic characteristics of the respondents who identified as American Indians and all other MA residents for 2007-2009.

Table 1: Demographic Characteristics of American Indians and All Other Residents in Sample, 2007-2009

	American Indians		All Other Residents	
	%	95% CI	%	95% CI
Gender				
Male	62.4	55.1 - 69.7	47.6	46.9 - 48.3
Female	37.6	30.3 - 44.9	52.4	51.7 - 53.1
Age Group				
18-24	14.7	5.7 - 23.8	11.0	10.3 - 11.7
25-44	39.9	31.6 - 48.3	37.5	36.8 - 38.2
45-64	27.6	21.1 - 34.0	33.8	33.2 - 34.4
65+	17.8	12.8 - 22.8	17.7	17.3 - 18.0
Education				
< High School	20.9	14.7 - 27.1	7.1	6.8 - 7.5
High School	35.4	26.7 - 44.0	24.6	24.0 - 25.2
College 1-3 yrs	22.6	16.4 - 28.8	23.4	22.8 - 24.0
College 4+ yrs	21.2	14.1 - 28.2	44.8	44.2 - 45.5
Marital Status				
Married	32.5	22.7 - 42.3	59.0	58.1 - 59.9
Not married	67.5	57.7 - 77.3	41.0	40.1 - 41.9
Employment Status (ages 18-64 only)				
Employed	56.9	46.9 - 67.0	75.2	74.4 - 75.9
Unemployed	43.1	33.0 - 53.1	24.8	24.1 - 25.6

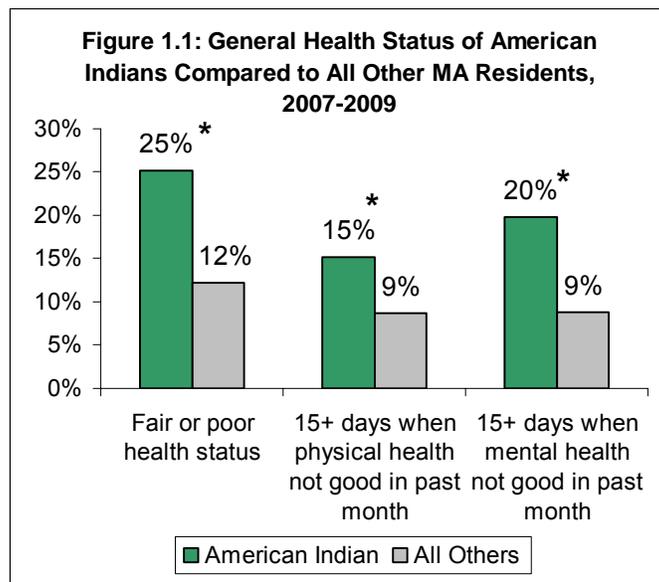
Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009
 %=weighted percent

GENERAL HEALTH STATUS AND QUALITY OF LIFE

General health status is a self-rated assessment of one’s perceived health, which may be influenced by all aspects of life, including behaviors, the physical environment and social factors. Self-assessed health status is a predictor of morbidity and mortality. General health status is useful in determining unmet health needs, identifying disparities among subpopulations, and characterizing the burden of chronic disease within a population². A person’s perceived physical and mental health can be used to measure the effects of numerous disorders, short- and long-term disabilities and diseases. Perceived quality of life can help guide policies and interventions to improve health and fulfill unmet health needs³.

Respondents were asked to (1) describe their overall health as excellent, very good, good, fair or poor; (2) report the number of days during the past month that their physical health had not been good; and (3) report the number of days during the past month they would describe their mental health as not good. Results from these questions

are reported below for American Indians and all other residents.



Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009

* statistically significant difference

The results in Figure 1.1 show that during the time period 2007-2009 American Indians were more likely than other MA residents to report fair or poor general health status, and to report more days when physical and mental health were not good

- 25.2% (± 6.1%) of American Indians reported fair or poor general health status compared to 12.2% (± 0.4%) of all other residents. **After accounting for differences in age, sex and education between the two groups, the odds of having fair or poor health were still 1.8 times higher among American Indians than all other residents.**
- 15.1% (± 4.6%) of American Indians had 15 or more days of poor physical health in the past month compared to 8.6% (± 0.3%) of all others. **The odds of having 15+ days of poor physical health in the past month were 1.6 times higher among American Indians than all other residents, even after controlling for age, sex and education level differences in the two groups.**
- 19.7% (± 6.6%) of American Indians had 15 or more days of poor mental health in the past month compared to 8.8% (± 0.4%) of all other residents. **The odds of having 15+ days of poor mental health in the past month were 2.2 times higher among American Indians than all other residents, even after controlling for age, sex and education level differences in the two groups.**

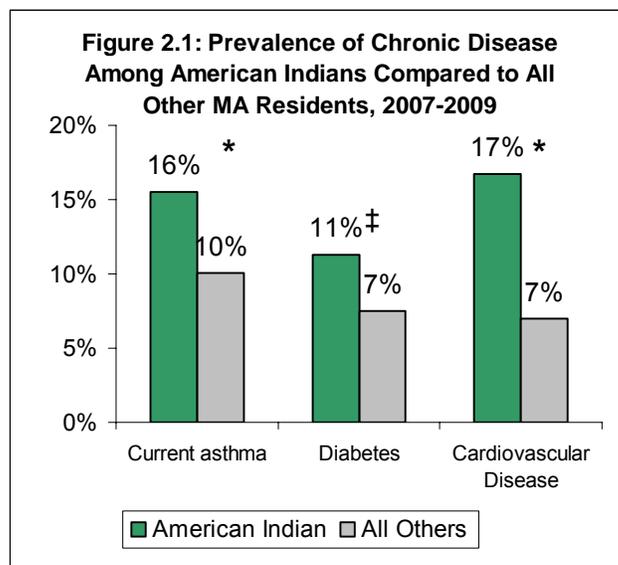
These differences persist over time; since 2001, the prevalence of each of these three indicators remained relatively stable among both American Indians and all other residents (data not shown).

CHRONIC DISEASE

The prevalence of chronic disease is an important indicator of health status in a population. Here, the prevalence of current asthma, cardiovascular disease and diabetes in American Indians and all other residents is compared. Diabetes includes all types of diabetes and cardiovascular disease includes heart disease (e.g. angina, heart attack) or stroke.

All respondents were asked if a doctor had ever told them that they had diabetes or pre-diabetes (defined as a blood glucose level that is higher than normal but not yet diabetic). Women who reported that they had diabetes only during

pregnancy (gestational diabetes) were categorized as not having diabetes. All respondents were asked if a doctor, nurse, or other health care professional had ever told them that they had asthma. Those who reported ever having asthma were then asked if they currently have asthma. All respondents ages 35 and older were asked about whether a doctor, nurse, or other health professional had ever told them that they had had a myocardial infarction (“MI,” also called a “heart attack”), angina, or a stroke.



Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009

*statistically significant difference (p<0.05)

‡ borderline statistically significant difference (0.05<p<0.10)

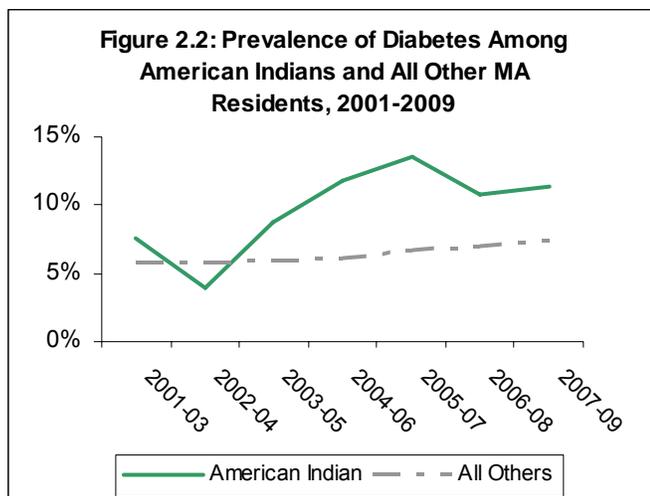
The results in Figure 2.1 show that during the time period 2007-2009 American Indians were more likely than other MA residents to report having a chronic disease such as asthma, diabetes and cardiovascular disease.

In 2007-2009:

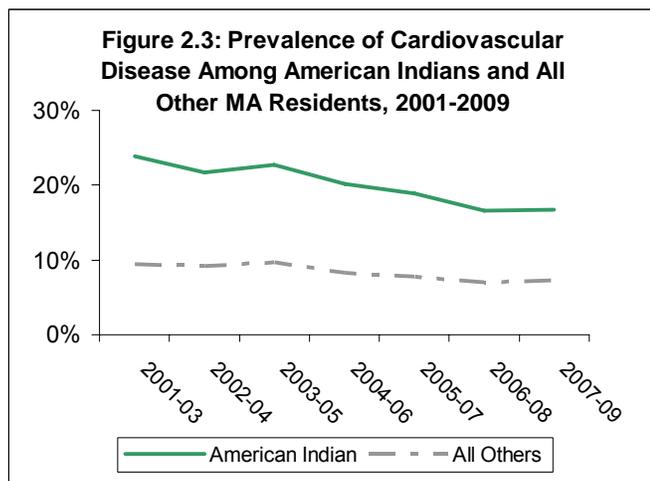
- 15.5% (± 5.1%) of American Indians had asthma compared to 10.0% (± 0.4%) of all other residents. **After accounting for differences between the two groups in age, sex and education, the odds of having asthma were 1.6 times higher for American Indians than for all other residents.**
- 11.3% (± 3.9%) of American Indians had diabetes compared to 7.5% (± 0.3%) of all other residents. **The odds of having diabetes showed a borderline significant difference (p=0.06) between American Indians and all**

other residents after controlling for age, sex and education level differences in the two groups.

- 16.7% (± 6.1%) of American Indians had cardiovascular disease compared to 7.0% (± 0.3%) of all other residents. **The odds of having cardiovascular disease were 2.6 times higher among American Indians than all other residents, even after controlling for age, sex and education level differences in the two groups.**



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009

Trends in the prevalence of chronic disease since 2001 are different for American Indians and other residents, as shown in Figures 2.2 and 2.3.

Between 2001 and 2009:

- The prevalence of diabetes among both American Indians and all other residents increased. Among American Indians, the prevalence increased by an average of 13.9% per year, while among all other residents it increased more slowly (an average of 4.5% per year). (Fig 2.2)
- The prevalence of cardiovascular disease decreased among both American Indians and all other residents; however, this decrease was sharper among American Indians (an average of 6.2% per year) than all other residents (an average of 5.7% per year). The gap between the two populations is narrowing.(Fig 2.3)
- The prevalence of asthma remained relatively stable among both American Indians (~15%) and all other residents (~10%). (data not shown)

HEALTH BEHAVIORS/RISK FACTORS

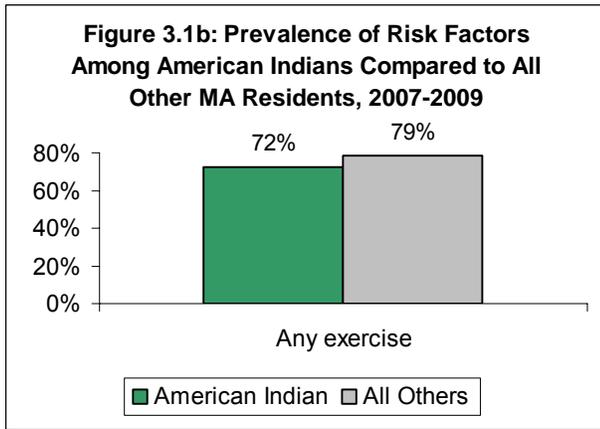
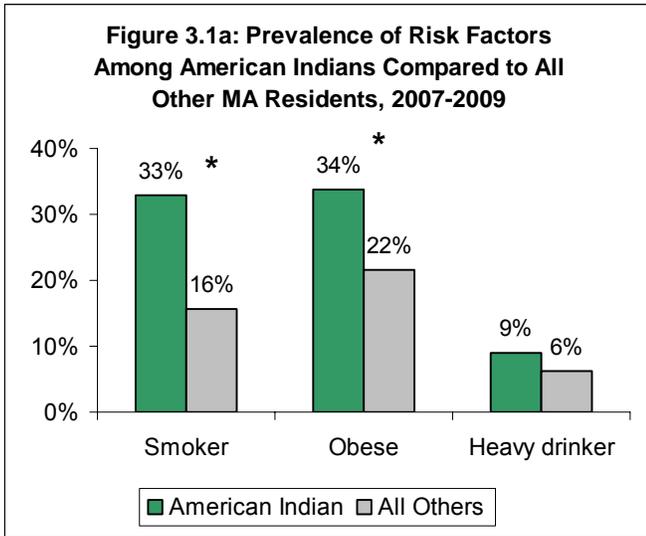
In this bulletin, four health behaviors are examined – any leisure time physical activity, current smoking, obesity and heavy drinking. The prevalence of these factors is important because they affect not only the current health status of a community, but may have lasting effects on future health status as well. All respondents were asked if they had participated in any physical activity, other than their regular job, in the past month. Presented here is the percentage of respondents who reported any leisure time physical activity. It is important to note that the following statistics do not specify the length of time respondents were active per period of physical activity, the number of days per week they were active, nor how intense the activity was.

A current smoker was defined as someone who has smoked at least 100 cigarettes in their lifetime and who currently smokes either some days or everyday.

All respondents were asked to report their height and weight. Respondents’ obesity status was categorized based on their Body Mass Index (BMI), which equals weight in kilograms divided by height in meters squared. Obesity was defined as having a BMI ≥30.0.

A drink of alcohol was defined as one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. Heavy drinking was defined as >60 drinks in the

past month for males or >30 drinks in the past month for females.



Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009

*statistically significant difference

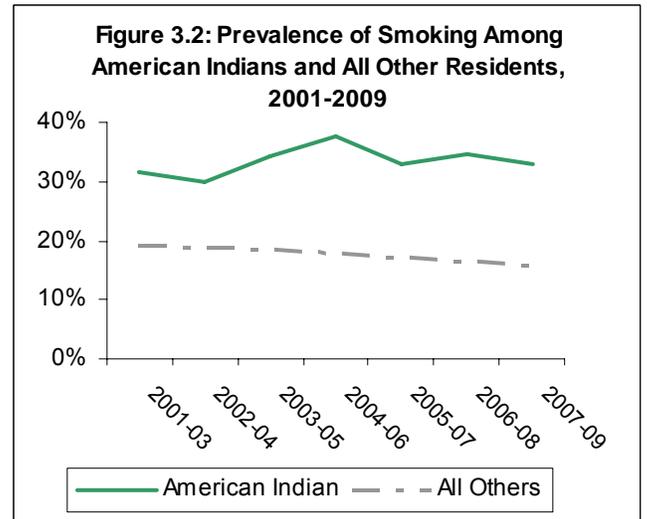
The results in Figure 3.1a and b show that during the time period 2007-2009, American Indians were more likely than other MA residents to smoke and be obese.

In 2007-2009:

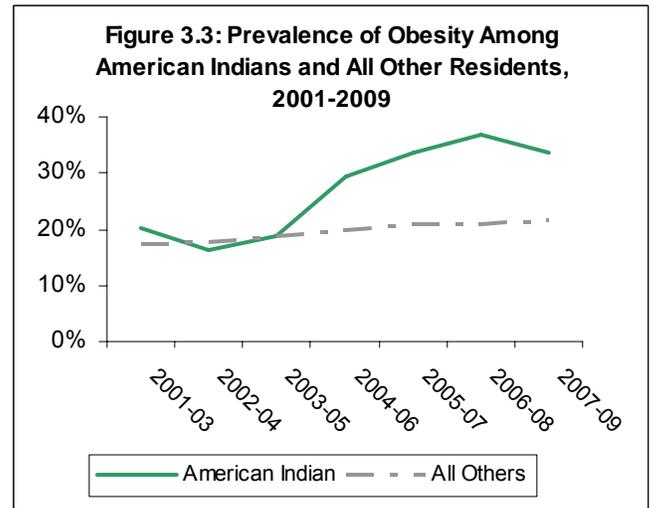
- There was no significant difference in the prevalence of any exercise or heavy drinking between American Indians and all other residents.
- 32.9% (± 8.9%) of American Indians were current smokers compared to 15.7% (±0.5%) of all other residents. **The odds of being a smoker were 1.9 times higher among American Indians than all other residents,**

even after controlling for age, sex and education level differences in the two groups.

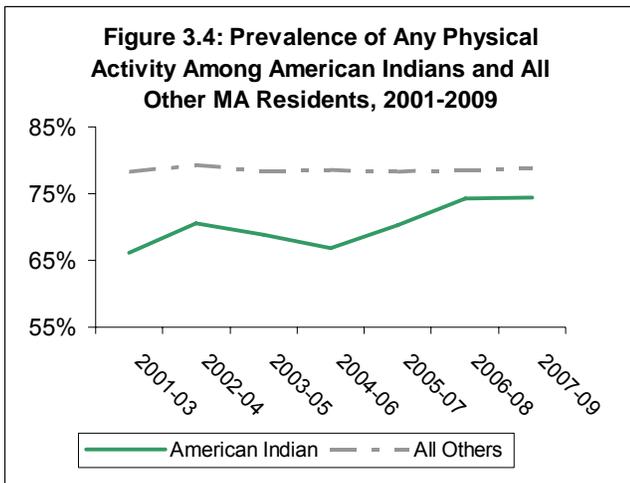
- 33.7% (± 8.2%) of American Indians were obese compared to 21.6% (± 0.6%) of all other residents. **After accounting for differences between the two groups in age, sex and education, the odds of being obese were still 1.6 times higher for American Indians than for all other residents.**



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009

Trends in smoking, obesity and physical activity from 2001-2009 are different for American Indians and other residents, as shown in Figures 3.2, 3.3 and 3.4.

Between 2001 and 2009:

- The prevalence of heavy drinking among American Indians fluctuated without any identifiable trend (data not shown).
- The prevalence of smoking among American Indians did not significantly change. Among all other residents, the prevalence of smoking decreased by an average of 3.1% per year. The gap between the two groups widened (Figure 3.2).
- The prevalence of obesity increased among both American Indians and all other residents; however, the increase was greater among American Indians (an average of 14.3% per year) than among all other residents (an average of 4.1% per year). The gap between the two groups widened (Figure 3.3).
- The prevalence of getting any physical activity increased among American Indians by an average of 1.4% per year while remaining stable among all other residents. Although the gap between the two groups has narrowed, the disparity persists (Figure 3.4).

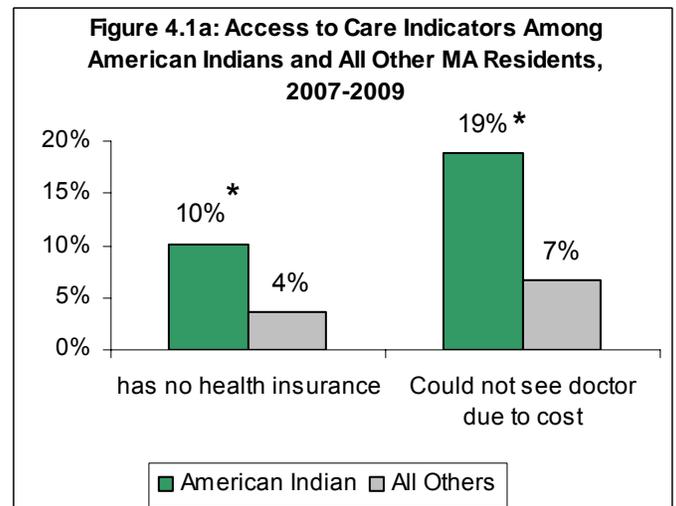
HEALTH CARE ACCESS AND UTILIZATION

Health insurance status is a key factor affecting access to health care. Adults who do not have health insurance are more likely to have poor health and are at greater risk for chronic diseases

than those with health insurance. Those without health insurance are less likely to access health care services, including preventative care, primary care, and tertiary care, and more likely to delay getting needed medical attention.^{4 5}

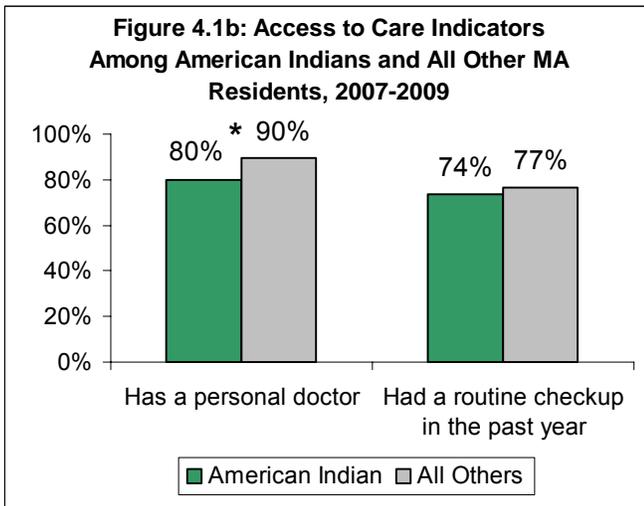
All respondents were asked if they had any type of health care coverage at the time of the interview. Those who indicated that they had no coverage were asked a follow-up question to be certain that they had considered all types of health care coverage. This included health care coverage from their employer or someone else’s employer, a plan that they had bought on their own, Medicare, MassHealth, CommonHealth, a MassHealth HMO, Commonwealth Care and coverage through the military or the Indian Health Service.

Other measures related to access and utilization of health care include being able to afford to see a doctor when needed, having a personal doctor, and having a routine annual checkup. All respondents were asked whether they were unable to see a doctor or other health care provider at any time in the past year due to cost. All respondents were also asked if they had a person that they thought of as their personal doctor or health care provider and whether they had visited a medical provider for a routine checkup in the past year. Results are presented here for American Indians and all other MA residents.



Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009

*statistically significant difference



Data Source: MA Behavioral Risk Factor Surveillance System, 2007-2009

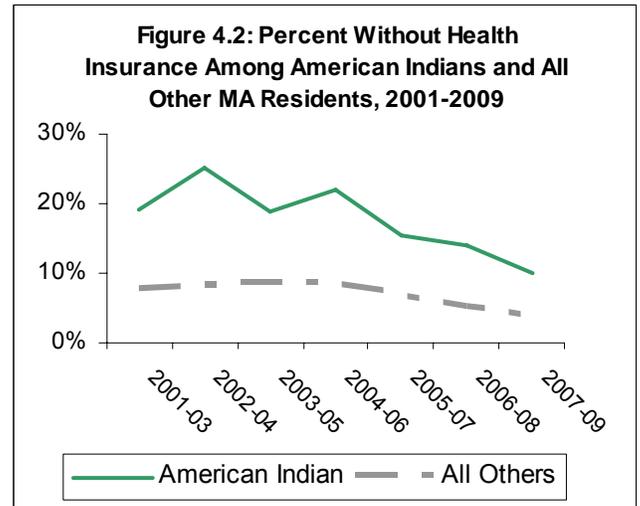
*statistically significant difference

The results in Figure 4.1a and b show that during the time period 2007-2009, American Indians were more likely than other MA residents to be unable to see a doctor due to cost.

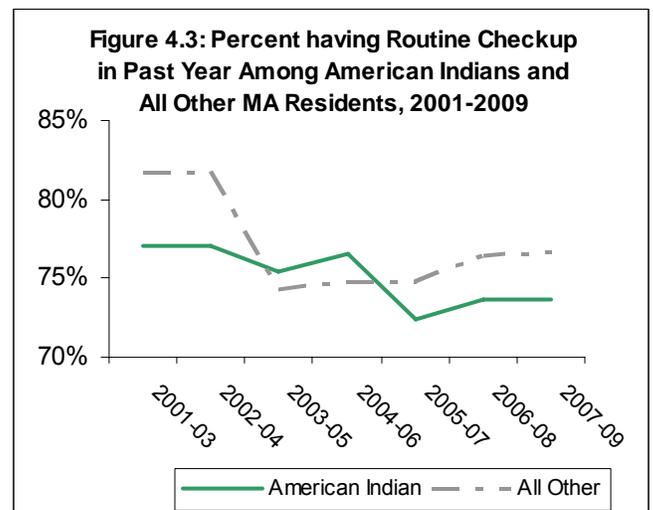
In 2007-2009:

- There was no significant difference in the prevalence of having a routine checkup in the past year between American Indians and all other residents.
- 18.8% (± 7.0%) of American Indians reported not being able to see a doctor or other health care provider at some point in the past year due to cost compared to 6.6% (± 0.4%) of all other residents. **The odds of not being able to see a doctor due to cost were 2.5 times higher for American Indians than for all other residents after controlling for age, sex and education.**
- 10.1% (± 6.1%) of American Indians had no health insurance compared to 3.7% (± 0.3%) of all other residents. **After accounting for differences in age, sex and education between the two populations, the odds of not having health insurance were not significantly different between American Indians and all other residents.** This indicates that the crude percentages are confounded by age, sex and level of education.
- 79.8% (± 8.5%) of American Indians had a personal doctor or health care provider compared to 89.5% (± 0.5%) of all other

residents. **After accounting for differences in age, sex and education between the two populations, the odds of having a personal doctor or health care provider were not significantly different between American Indians and all other residents.** This indicates that age, sex and level of education are confounding the crude percentages.



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009



Data Source: MA Behavioral Risk Factor Surveillance System, 2001-2009

Trends in having a routine checkup in the past year and not having health insurance from 2001-2009 are different for American Indians and other residents, as shown in Figures 4.2 and 4.3.

Between 2001 and 2009:

- The prevalence of having a personal physician and being unable to visit doctor due to cost remained relatively stable among both American Indians and all other residents (data not shown).
- The prevalence of not having health insurance decreased among both American Indians and all other residents; however, the decrease was steeper among American Indians than among all other residents.
- The prevalence of having a routine checkup in the past year decreased among American Indians by an average of 0.9% per year. There was no significant trend among all other residents.

CONCLUSION

This bulletin presents data on several important health indicators for American Indians residing in

MA, and highlights health disparities between American Indians and all Massachusetts residents. In general, health status, health behaviors and health care access are worse for American Indians than for other state residents for the latest time frame available, 2007-2009. These disparities persist over time. Analysis of time trends shows that even if in some areas (e.g. cardiovascular disease and physical activity), the gap between American Indians residing in MA and all other MA residents is narrowing, the gap in some health indicators is widening (e.g. diabetes, smoking and obesity). It is hoped that the information presented here, in conjunction with the earlier statewide report¹ can assist in addressing some of the disparities that exist in the American Indian population and aid statewide and local public health programs throughout the Commonwealth in identifying strategies for improving the health status of all residents.

Data Notes:

DATA SOURCE

All data presented are from the Behavioral Risk Factor Surveillance System (BRFSS), MA Department of Public Health.

ABOUT BRFSS

The Behavioral Risk Factor Surveillance System (BRFSS) is a continuous, random-digit-dial, telephone survey of adults ages 18 and older and is conducted in all states as a collaboration between the federal Centers for Disease Control and Prevention (CDC) and state departments of health. The survey has been conducted in Massachusetts since 1986. The BRFSS collects data on a variety of health risk factors, preventive behaviors, chronic conditions, and emerging public health issues. The information obtained in this survey assists in identifying the need for health interventions, monitoring the effectiveness of existing interventions and prevention programs, developing health policy and legislation, and measuring progress toward attaining state and national health objectives. Readers should be aware that all data collected by the BRFSS are based on self-reported information from respondents.

Self-reported data may be subject to error for several reasons: an individual may have difficulty remembering events that occurred a long time ago or the frequency of certain behaviors; some respondents may over-report socially desirable behaviors or under-report behaviors they perceive to be less acceptable; and respondents may also report certain risks, behaviors and perceptions differently due to their respective cultural and linguistic backgrounds. Additionally, because the BRFSS surveys a randomly selected sample of Massachusetts adults, these results may differ from another random sample to some extent simply due to chance.

METHODS

The BRFSS data are **weighted** to take into account differences in probabilities of selection due to the telephone number, the number of telephones in a household, and the number of adults in a household. Adjustments are also made to account for non-response and non-coverage of households without landline telephones. All the weighting factors are multiplied together to get the final weight for each respondent so that the weighted BRFSS data represents the adult population of Massachusetts.

Statistical significance (at the 95% probability level) was considered as a basis when the terms “more likely”, “less likely”, “about the same”, “increase” or “decrease” were used. The difference between two percentages is statistically significant (with 95% probability) if the 95% confidence interval surrounding the two percentages does not overlap. The difference may still be statistically significant if the confidence intervals for the two percentages are minimally overlapping. In these cases an additional statistical test (Wald Chi Square) was used to determine whether the percentages were different (with 95% probability). Odds ratios were considered statistically significant if the 95% confidence interval did not contain 1.0.

Average Annual Percent Change (AAPC) shows how fast or slow a percentage has increased or decreased over the observed period of time. The AAPC is a measure used for the analysis of trends over time. This estimation assumes a linear change in the proportion of values over a certain time period. All AAPCs calculated in this bulletin were statistically tested (95% probability level) against the “null hypothesis”- the proportion

value is neither increasing nor decreasing over time. Joinpoint regression was used to calculate the AAPC and perform statistical testing.

The **odds** of an event happening is the probability that the event will happen divided by the probability that the event will not happen. The **odds ratio** is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group. Odds and odds ratios were calculated using proc surveylogistic in SAS v.9.1.3. All odds and odds ratios presented in this bulletin are adjusted for age, sex, and education level.

LIMITATIONS

Readers should be aware of some limitations of this data:

- The health characteristics estimated from the BRFSS pertain to the adult population, aged 18 years and older, who do not live in group quarters.
- American Indians are not oversampled in the survey; therefore, results are based on a relatively small sample size.
- In order to obtain a more representative sample and produce stable estimates, three years of data were aggregated for all analyses. This could result in missing annual changes.
- Identification of American Indians is not straightforward as a large percent are of mixed race. The definition utilized in this bulletin resulted in a total of 430 respondents identified as American Indian from 2007-2009 (there were a total of 699 respondents with any mention of American Indian race.)
- No tribal affiliation data is collected. There may be substantial differences between a particular tribal group and the American Indian population as a whole. The data currently does not allow for this analysis.

¹ Massachusetts. Department of Public Health. *The Health Status of American Indians/Native Americans in Massachusetts*. Boston: 2006. Available at http://www.mass.gov/?pageID=eohhs2terminal&L=4&L0=Home&L1=Consumer&L2=Community+Health+and+Safety&L3=Population+Health+Statistics&sid=Eeohhs2&b=terminalcontent&f=dph_research_epi_c_race_ethnicity&csid=Eeohhs2

² Centers for Disease Control and Prevention. (2000). *Measuring Healthy Days*. from <http://www.cdc.gov/hrqol/pdfs/mhd.pdf>.

³ Centers for Disease Control and Prevention. *Health-Related Quality of Life*. from <http://www.cdc.gov/hrqol/>.

⁴ *Self-assessed health status and selected behavioral risk factors among persons with and without health-care coverage. United States, 1994-1995*. MMWR. **47**(09): p. 176-180.

⁵ Weissman, J.S. & Epstein, A.M. (1993). *The insurance gap: does it make a difference?* Annual Review of Public Health, **14**, 243-270.