Introduction and Background

Health disparities based on race or ethnicity have long been documented and many factors contribute to health disparities in Massachusetts, including access to health care, behavioral risk factors, family history, social determinants of health, including income, education, environmental and occupational conditions, language barriers, social and cultural factors, and discrimination in the health care setting. These issues translate into a variety of disparities based on race and ethnicity.

Information presented in this report can guide the Commonwealth's efforts to improve the health of all residents. The Massachusetts Department of Public Health analyzed the data for this report as part of its role in supporting the Massachusetts Health Disparities Council.

About the Massachusetts Health Disparities Council

The Health Disparities Council was officially created as a part of the Massachusetts health care reform law passed in 2006. The Council arose from the recognition that addressing disparities in health requires a broad convening of stakeholders who can bring their expertise and perspective in order to develop actionable solutions to a complex problem. Its mission and intended purpose, as stated in the enabling legislation, is to:

- make recommendations to reduce and eliminate racial and ethnic disparities in access to quality health care and in health outcomes within the commonwealth, including disparities related to breast, cervical, prostate and colorectal cancers, strokes, and heart attacks, heart disease, diabetes, infant mortality, lupus, HIV/AIDS, asthma, and other respiratory illnesses.
- consider environmental, housing and other relevant matters contributing to these disparities.
- make recommendations to increase racial and ethnic diversity in the health care workforce, including doctors, nurses and physician assistants.

Currently co-chaired by Senator Susan Fargo and Representative Byron Rushing, membership of the Council includes the following:

State government representation
- Attorney General
- Department of Public Health, Commissioner
- Department of Public Health, Director of the Office of Health Equity
- Executive Office of Health and Human Services, Secretary

- Massachusetts House of Representatives, (3 members)
- Massachusetts Senate, (3 members)
- MassHealth, Director

Community representation
- Eight community members from areas disproportionately affected by health disparities. These members are equally nominated by the Speaker of the House and the Senate President.

Associations, local boards of health and health care representation
18 additional people are appointed by the co-chairs, from a list of nominees submitted by each of the following organizations:
1. American Cancer Society, Massachusetts Division
2. American Heart Association, Massachusetts Affiliate
3. Blue Cross Blue Shield of Massachusetts
4. Boston Medical Center Corporation
5. Boston Public Health Commission
6. Brigham and Women's/Faulkner Hospitals
7. Dana Farber Cancer Institute
8. Harvard School of Public Health, Program to Eliminate Health Disparities
9. Massachusetts Association of Health Plans
10. Massachusetts Association of Public Health Nurses
11. Massachusetts General Hospital
12. Massachusetts Hospital Association
13. Massachusetts League of Community Health Centers
14. Massachusetts Medical Society
15. Massachusetts Public Health Association
16. Massachusetts School Nurse Organization
17. Springfield Health Department
18. Worcester Health Department

For more information on the Health Disparities Council, visit http://www.mass.gov/hdc/.

Health Disparities

What are Disparities?

The terms "health disparities" and "health inequalities" are familiar to many health policy-makers. "Disparities…are potentially avoidable differences in health (or in health risks that policy can influence) between groups of people who are more and less advantaged socially…"[1]
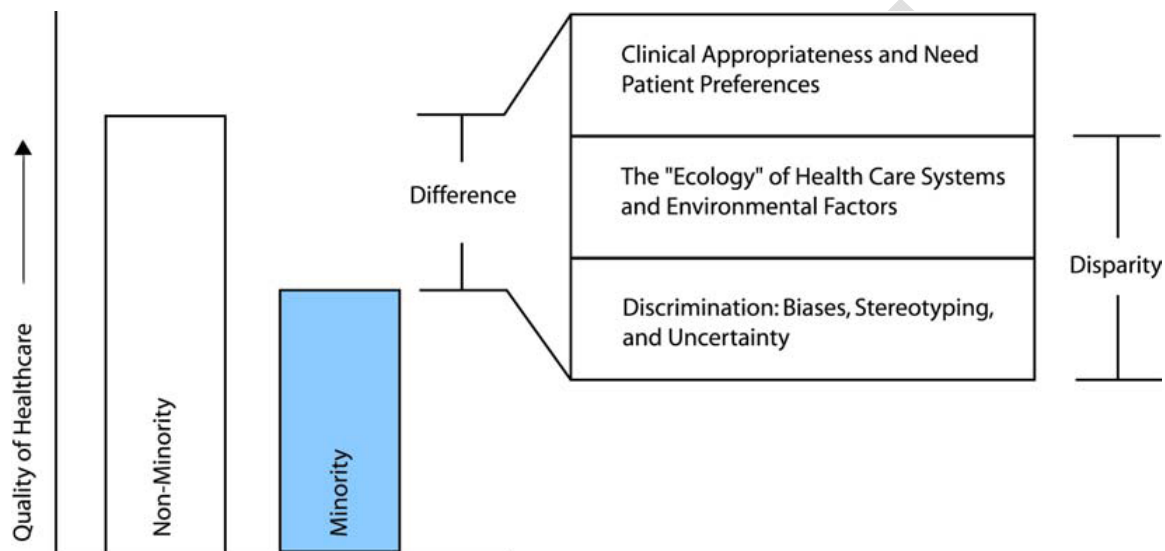
Differences, Disparities, and Discrimination: Populations with Equal Access to Healthcare. SOURCE: Gomes and McGuire, 2001 as Printed in (Institute of Medicine 2002)

Historical Overview

Over the course of its history, the United States has experienced dramatic improvements in overall health and life expectancy largely due to initiatives in public health, health promotion, disease prevention, and chronic care management. Our ability to prevent, detect and treat diseases in their early stages has allowed us to target and reduce premature and costly morbidity and mortality. Despite interventions that have improved the overall health of the majority of Americans, racial and ethnic minorities (Blacks, Hispanic/Latinos, American Indian/Alaska Native, Asian/Pacific Islanders) have benefited less from these advances. As a result of this and other causes, certain racial and ethnic minorities tend to suffer poorer health outcomes than whites from many major diseases (such as cardiovascular disease, cancer, diabetes, etc.) in the United States. These differences in health outcomes have been termed *racial and ethnic disparities in health*. Similarly, research has highlighted that minorities also may receive lower quality of care than whites in the health care setting—even when confounders such as stage of

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[1] Braveman, P. 2006. "Health disparities and health equity: concepts and measurement." *Annu Rev Public Health* 27 : 167-94.

presentation and comorbidities are controlled for—and they have the same level of health insurance. These differences in quality are called *racial and ethnic disparities in health care.*

Despite great improvements in health and longevity, racial and ethnic minorities and other disadvantaged populations have benefited less from these advances than other Americans; as a result, they suffer disproportionately from preventable and treatable conditions such as cardiovascular disease, diabetes, asthma, cancer, among others, leading to disparities in health.

The Institute of Medicine's 2001 study *Crossing the Quality Chasm*[2] identified equity as one of six critical domains of high-quality care. *Equity*, the study said, is achieved by providing care that does not vary in quality by personal characteristics such as ethnicity, gender, geographic location, and socioeconomic status. In its subsequent report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare,*[3] the Institute of Medicine detailed the evidence on disparities and provided a policy framework, part of which called for collection of race-ethnicity data and public reporting of disparities. *Unequal Treatment* found that even with the same insurance and socioeconomic status, and when comorbidities, stage of presentation and other confounders are controlled for, minorities often receive a lower quality of health care than do their white counterparts.

Not unrelated to these activities, the Agency for Healthcare Research and Quality (AHRQ) began publishing the *National Healthcare Disparities Report*, a comprehensive, national report on disparities in the use and quality of healthcare services. The AHRQ report states that during the period from 2000 to 2005, disparities had not diminished and in fact in some areas had increased.

WHERE DISPARITIES ARE FOUND	EXAMPLES FROM RESEARCH
Utilization of cardiac diagnostic and therapeutic procedures in the Emergency Department	African-Americans being referred less than whites for cardiac catheterization and bypass grafting
Administration of analgesia for pain control	African-Americans and Latinos receiving less pain medication than whites for long bone fractures in the Emergency Department and for cancer pain on the floors
Surgical treatment of lung cancer	African-Americans receiving less curative surgery than whites for non-small cell lung cancer
Referral to renal transplantation	African-Americans with end-stage renal disease being referred less to the transplant list than whites

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[2] Institute of Medicine. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, D.C.: National Academy Press.
[3] Institute of Medicine. 2002. *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, D.C.: National Academy Press.

Treatment of patients hospitalized with pneumonia and congestive heart failure	African-Americans receiving less optimal care than whites when hospitalized for these conditions
Outcomes of myocardial infarction	Elderly African-American women having the highest adjusted in-hospital mortality

The examples provided here not only highlight lapses in quality of care, but also have significant clinical consequences and are directly linked to known racial/ethnic disparities in health outcomes.

What causes racial-ethnic disparities; the role of social determinants.
Research has shown that minority Americans have poorer health outcomes (compared to whites) from preventable and treatable conditions such as cardiovascular disease, diabetes, asthma, cancer, and HIV/AIDS, among others. Multiple factors contribute to these racial and ethnic disparities in health.

First and foremost, there is little doubt that social determinants disproportionately impact minority populations, and thus contribute to their poorer health outcomes. Social determinants refer to non-medical factors, including personal characteristics such as income, education, occupation, or social position, as well as community factors including neighborhood safety, pollution, availability of fresh groceries, density of package stores, and the built environment (including parks, and characteristics that lend themselves to "walkability"). For example, disparities often exist in education and stable employment, which represent two primary routes out of poverty for all people. Minority communities also tend to disproportionately share the burden of housing and food insecurity. A recent report by Susan Eaton and Sara Abiola from the Charles Hamilton Houston Institute for Race and Justice at Harvard law School further notes the effects of segregation on health disparities. The report explains, "…a growing body of work in social determinants of health suggests that residential racial and ethnic segregation — in part the result of racial discrimination — sits at the beginning of a long, twisted chain of conditions and events leading to poor health among men, women, and children."[4]

Second, lack of access to care also takes a significant toll, as uninsured individuals are less likely to have a regular source of care, are more likely to report delaying seeking care, and are more likely to report that they have not received needed care—all resulting in avoidable hospitalizations, emergency hospital care, and adverse health outcomes.

In addition to the existence of racial and ethnic disparities in *health,* there has also been research supporting the existence of racial/ethnic disparities in the *quality of care* for those with access to the health care system. Despite great improvements in health and longevity, racial and ethnic minorities and other disadvantaged populations have benefited less from

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[4] Eaton, S. and S. Abiola. 2009. Getting under the skin: Using Knowledge about Health Inequities to Spur Action. Cambridge, MA: Charles Hamilton Houston Institute for Race and Justice at Harvard Law School. Available from: http://www.charleshamiltonhouston.org/Publications/Item.aspx?id=100018; .

health care quality advances than other Americans; as a result, they suffer disproportionately from preventable and treatable conditions such as cardiovascular disease, diabetes, asthma, cancer, among others, leading to disparities in health. The root causes of disparities in care are complex and multifactorial. *Unequal Treatment* groups them into three basic areas of health system-level factors, care-process variables, and patient-level variables:

Health System-Level Factors	Care-Process Variables	Patient-Level Variables
These include issues related to the complexity of the health care system and how it may be poorly adapted and disproportionately difficult to navigate for minority patients or those with limited-English proficiency.	These include issues related to health care providers, including stereotyping, the impact of race/ethnicity on clinical decision-making, and clinical uncertainty due to poor communication.	These include patient's mistrust, poor adherence to treatment, and delays in seeking care.[5]

Why produce a report on disparities?
According to an article by Trivedi, et al on creating State Minority Report Cards, "…report cards provide transparent public information and a clear incentive for improved performance."[6] Therefore, in order to support the work of the Massachusetts Health Disparities Council, we have developed a "Disparities Report Card for Massachusetts."

About the Report

In 2009, the Health Disparities Council convened the Report Card Working Group (RCWG) from its membership to take the lead on producing a first of its kind analysis of health disparities. The working group researched report card design, content, and usage in other states. Council members were involved throughout the process in deciding which of the leading health concerns to focus on and the criteria for the inclusion of health indicators. The final design and content was produced by the Massachusetts Department of Public Health.

The report identifies major categories of health disparities, followed by the health measures or indicators, and finally the statistics behind the health disparities. Indicators were included based on the following criteria:

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[5]Institute of Medicine. 2002. *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, D.C.: National Academy Press.
[6] Trivedi, A.N., B. Gibbs, L. Nsiah-Jefferson, J.Z. Ayanian, and D. Prothrow-Stith. 2005. "Creating a state minority health policy report card." *Health Aff (Millwood)* 24 (2): 388-96.

- Availability of data (measures and statistics)
- Known instances of disparities
- Size of disparities
- Amenable to intervention
- Presence of policies which would impact disparity (social policies)

As envisioned by the members of the former Legislative Commission, the Health Disparities Council and the public, *Disparities in Health* provides clarity around where disparate health outcomes are occurring, transparency of process and decisions to reduce disparities, and proffer solutions for attaining equity in health for all members of the Commonwealth. What sets the Massachusetts report apart from other similar reports is the in-depth analysis on multiple factors. In addition to looking at disparities based on race, this report examines whether there are further disparities when race is combined with income, education or other co-morbid conditions.

This report is divided into three main sections.

1. *Leading Health Indicators* – presents standard health indicators by race and ethnicity. In most instances, these indicators are leading causes of death and illness for all residents in the Commonwealth but in some cases, health indicators are included in this section because they reflect deep disparities. Some data shown do not represent current disparities in health but are shown to provide context.
2. *An In-Depth Review of Selected Chronic Diseases* – includes data on asthma, cardiovascular disease, diabetes, and obesity. These four chronic conditions are leading causes of illness in Massachusetts.
3. *Social Determinants of Health* – begins to examine how certain community factors that affect health may or may not be tied to race. As an initial foray into social determinants at the community level, we examine the location of tobacco retailers to determine whether there is a correlation with certain racial and ethnic groups. It is worth noting that other indicators considered to be social determinants of health – such as income and education – are addressed in section two.

Notes to the Reader

Tables
All, tables, maps or other representations of data are called "Figures." Within the figure, information is given on the source of the data and when applicable, whether the data shown have statistically significant differences. For the tables, statistical significance testing was done by comparing to the White rate. Pink shading (darker shading) means the difference is significantly worse than the White population; green shading (lighter shading) means the difference is significantly better than the White population. Where there is an

asterisk (*) instead of a number, that means there was insufficient data to provide a stable estimate.

Abbreviations
Common abbreviations used in this report include:

BRFSS: Behavioral Risk Factor Surveillance System. This is a common data source used throughout Health of Massachusetts. It is conducted both at the federal level and here in Massachusetts by the Department of Public Health. For more information on this survey, see Data Sources in the Appendix.

CDC: US Centers for Disease Control and Prevention

MDPH: Massachusetts Department of Public Health

YRBS: Youth Risk Behavior Survey. This survey is also conducted at the state and federal level. For more information on the YRBS, see Data Sources at the end of the report.

Definitions
Prevalence: the percentage of a population that is affected with a particular disease at a given time.

Incidence: the number of new cases of a particular disease within a population during a specified time period.

Hospital Observation Days: Visits to the hospital outpatient department in which the patient is not admitted.

Race and Ethnicity
We use the following mutually exclusive categories: White, Black, American Indian, Asian, and Hispanic. The Hispanic category includes persons of Hispanic ethnicity regardless of their race. The full expression of these categories is White Non-Hispanic, Black Non-Hispanic, American Indian Non-Hispanic, Asian / Pacific Islander Non-Hispanic, and Hispanic.

Limitations
There are some limitations that should be considered when interpreting results from the Behavioral Risk Factor Surveillance System (BRFSS), one of the major sources of data for this report:
- The health characteristics estimated from the BRFSS pertain to the adult population, aged 18 years and older, who live in households and have a landline telephone.
- All data collected by the BRFSS are based on self-report from the respondents. By its nature, self-reported data may be subject to error.

- The survey is administered in three languages: English, Spanish and Portuguese. There are more than 100 languages spoken in Massachusetts, therefore the survey under-represents many linguistic minorities in the state. To increase the number of respondents who belong to racial and/or ethnic minority groups, the cities of Boston, Worcester, Springfield, Lawrence, Lowell, Fall River, and New Bedford are over-sampled in the survey.

For more information on BRFSS and its methodology, please visit
http://www.mass.gov/dph/hsp.

Acknowledgements

Leading Health Indicators: A Broad Overview of Disparities in Massachusetts

Disparities among people of different races and ethnicities exist across a broad range of public health categories. Of nearly 50 major indicators presented here, roughly two-thirds demonstrate a disparity.

To understand this table, take note of the following information:

Trends:
↑ or ↓ shows whether the indicator is statistically higher or lower between the time periods 2001-2004 and 2005-2008. If there is no arrow, the trend is stable.

Racial and ethnic differences:
For this and all tables in this report, significance testing was done by comparing to the White rate.

- **Pink shading** (or the darker shading) shows that the difference is significantly "worse" than the White population. Depending on the variable, "worse" could be higher or lower than the White rate.
- **Green shading** (or the lighter shading) shows that the difference is significantly "better" than the White population. Again, depending on the variable, "better" could be either higher or lower than the White rate.

Key:
na   not available
n<5   Because of cell suppression rules, data with less than 5 events are not shown.
*   There was insufficient data to provide a stable estimate.

Sources:
- Mortality data presented are from the MDPH Death File, derived from information on the death certificate held by the MDPH Registry of Vital Records. Unless otherwise noted, death data are age-adjusted and include deaths to people of all ages.
- Health behavior data are from the MDPH BRFSS. Data shown are percent of those surveyed after standard age adjustment. Unless otherwise noted, behavior data are for adults 18 and older.
- Hospitalization data come from the acute care databases from the Division of Health Care Finance and Policy. Data are age-adjusted and include hospitalizations to people of all ages.
- Natality data are from the MDPH Birth File, derived from information on the birth certificate held by the MDPH Registry of Vital Records.

Figure 1. Leading Health Indicators

Data Element	Statewide Total 2001-2004	Statewide Total 2005-2008		White 2001-2004	White 2005-2008		Black 2001-2004	Black 2005-2008		Hispanic 2001-2004	Hispanic 2005-2008		Asian 2001-2004	Asian 2005-2008	American Indian 2001-2004	American Indian 2005-2008		# Type
AIDS & HIV																		
AIDS & HIV deaths	3.41	2.34	↓	1.95	1.26	↓	18.66	13.28	↓	13.91	9.33	↓	0.48	0.58	n<5	n<5		Rate per 100K
Tested for HIV, in lifetime	46.6	40.6	↓	44.8	38.2	↓	64.5	59		57.5	53		35	33.6	*	*		Percent
Asthma																		
Asthma deaths	1.16	0.79	↓	0.98	0.66	↓	3.23	2.66		3.02	1.55		1.02	0.66	n<5	n<5		Rate per 100K
Asthma hospitalizations	137.39	148.28	↑	106.9	112.8	↑	342.9	363.4	↑	339.4	310.7	↓	65.68	72.61	37	78.31	↑	Rate per 100K
Births / Natality																		
Infant mortality rate	4.92	4.88		4.04	4.03		11.99	10.69		6.91	7.22		2.89	2.76	n<5	n<5		Rate per 1000 live births
Sudden infant death syndrome (SIDS)	0.45	0.46		0.34	0.35		1.35	1.09		0.63	0.76		*	*	n<5	n<5		Rate per 1000 live births
Low birthweight (< 2,500 g or 5.5 lbs)	7.52	7.86		6.91	7.23	↑	11.99	11.64		8.32	8.19		7.57	8.17	6.37	11.42	↑	Percent
Caesarean deliveries	28.38	33.33	↑	29.16	34.65	↑	30.17	34.15	↑	24.72	28.17	↑	25.13	30.16	↑	27.61	29.92	Percent
Cancer																		
All cancer deaths	194.74	181.47	↓	197.9	184.8	↓	221	204.8		106.6	104.1		105.2	106.3	92.38	90.67		Rate per 100K
Breast cancer deaths (female)	25.25	21.84	↓	25.93	22.19	↓	28.11	29.68		12.46	11.99		7.85	8.01	9.69	4.42		Rate per 100K
Had a mammogram, past 2 years (female 40+)	83.3	84.6		83.2	84.8		83.3	84.2		86.1	86.2		73.1	76.2	*	*		Percent
Cervical cancer deaths (female)	1.53	1.33		1.46	1.27		2.1	2.3		2.48	1.37		1.78	1.25	n<5	n<5		Rate per 100K

Data Element	Statewide Total 2001-2004	2005-2008		White 2001-2004	2005-2008		Black 2001-2004	2005-2008		Hispanic 2001-2004	2005-2008		Asian 2001-2004	2005-2008		American Indian 2001-2004	2005-2008	# Type
Pap smear, past 3 years (female)	85.7	83.9		86.1	84	↓	84.9	84.8		87.4	83.2		69.2	81		*	*	Percent
Colorectal cancer deaths	19.59	16.45	↓	19.89	16.53	↓	22.45	20.12		9.1	10.83		10.32	11.05		10.98	n<5	Rate per 100K
Sigmoidoscopy/colonoscopy test, past 5 years (50+)	49.4	60.7	↑	50.2	61.3	↑	50	61.9		38.2	51.5	↑	31.1	52.1		*	*	Percent
Lung cancer deaths	53.91	51.25	↓	55.44	53.09	↓	52.56	50.01		20.71	17.25		29.94	27.93		19.64	18	Rate per 100K
Prostate cancer deaths (male)	26.57	23.00	↓	26.29	22.89	↓	55.89	42.25		15.23	16.84		6.2	9.56		n<5	n<5	Rate per 100K
Prostate specific antigen (PSA) test, past year (male)	59.1	60.5		59.7	61.3		50.3	59.8		54.3	52		*	46.5	↑	*	*	Percent
Cardiovascular																		
Diagnosed with hypertension (high blood pressure), lifetime	23.4	25.9	↑	24.2	26.8	↑	29	30.2		18	22		3.6	8.9	↑	*	*	
Cardiovascular disease deaths	260.07	216.99	↓	261.7	219.3	↓	301.7	250.6	↓	166.9	128.4	↓	120.8	107.1		131.1	138.8	Rate per 100K
Coronary heart disease deaths	131.82	109.98	↓	133.7	112.2	↓	137.7	116.6	↓	79.09	61.44	↓	55.12	45.82		80.09	62.1	Rate per 100K
All circulatory system disease deaths	261.29	218.09	↓	262.9	220.4	↓	303.9	253.3	↓	167.7	129.2	↓	122.7	107.7		131.1	140.5	Rate per 100K
Deaths																		
All Causes	772.95	706.47		774.7	711.4	↓	934.2	833.4	↓	539.1	483.2	↓	392.8	363.7		436.9	385.2	Rate per 100K
Diabetes																		
Diabetes deaths	19.58	15.88	↓	18.53	14.92	↓	41.76	34.95		30.92	25.92		19	9.04	↓	16.87	15.36	Rate per 100K
Have pre-diabetes	n/a	4.7		n/a	4.6		n/a	5.3		n/a	5.6		n/a	*		*	*	Percent

Data Element	Statewide Total			White			Black		Hispanic		Asian		American Indian		# Type
	2001-2004	2005-2008		2001-2004	2005-2008		2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	
Had or have diabetes	5.8	6.8	↑	5.7	6.4	↑	8.7	10.6	6.8	8.7	3.3	4.9	*	*	Percent
Gestational diabetes	3.27	3.86	↑	2.94	3.47	↑	3.93	4.26	3.47	3.82	5.9	7.17 ↑	3.28	4.13	Percent
Disability															
Reported a disability	18.9	21.1	↑	19.4	21.6	↑	16.2	19	17.8	20.4	5.2	8.4	*	*	Percent
Drugs and alcohol															
Used drugs, past month	7.2	8.1		7.5	8.5		6.8	*	4.3	*	*	*	*	*	Percent
Heavy drinking, past month	7.1	6.2	↓	7.6	6.6	↓	5.8	4.4	4.4	4.3	2.9	1.2	*	*	Percent
Opioid-related deaths	7.5	9.11	↑	7.87	10.04	↑	7.57	7	8.72	8.63	0.78	0.41	n<5	6.18	Rate per 100K
Health status and health care															
Have fair or poor health	12.5	12.6		11.4	11.2		12.7	17.6 ↑	26	25.9	6	5	*	*	Percent
Needed to see doctor but couldn't due to cost, past yr	7.4	7.4		6.3	6		13.5	13	15.9	17.5 ↑	5.5	6.2	*	*	Percent
"Never", "rarely" "some-times" gets emotional support needed	21	19.7		18.1	17.3		36.7	33.5	39.2	31.1	43.3	33.6	*	*	Percent
15+ days sad, past month	7.2	7		6.7	6.5		10.6	10.4	12.6	11.7	*	*	*	*	Percent
"Dissatisfied" or "very dissatisfied" with life	5.6	5.6		5.1	5.1		7.5	12.2	9.3	7.2	*	4.3	*	*	Percent
Influenza															
Had a flu shot, past year (65+)	72.2	73.5		72.9	74.1		56.4	59.4	67.1	67.7	*	76.4	*	*	Percent

Data Element	Statewide Total			White			Black			Hispanic			Asian			American Indian		# Type
	2001-2004	2005-2008		2001-2004	2005-2008		2001-2004	2005-2008		2001-2004	2005-2008		2001-2004	2005-2008		2001-2004	2005-2008	
Injury																		
Fall-related deaths	3.73	5.5	↑	3.79	5.66	↑	2.33	3.72		2.52	3.56		3.61	3.96		n<5	n<5	Rate per 100K
Motor vehicle related deaths	8.28	6.56	↓	8.47	6.72	↓	8.23	6.88		7.67	6.04		5.63	3.65		n<5	n<5	Rate per 100K
"Nearly always" or "always" wears seat belt	81.9	88.7	↑	81.6	88.7	↑	75.7	88.1	↑	84.3	88.3		89.9	94.5		*	*	Percent
Obesity																		
Overweight or obese (BMI >25)	54.1	57.1	↑	54.1	56.6	↑	64.3	68.9		59.8	64		28.5	34.4		*	*	Percent
5+ servings / day of fruits and vegetables	29.4	28.1		29.8	28.5		25.1	24.3		25.7	21.8		28.1	34		*	*	Percent
Regular physical activity (30 minute sessions 5+ times/week)	51.8	52		53.4	53.7		44.5	41.7		39.7	43		42.5	42		*	*	Percent
Oral health																		
Had dental visit, past year	78.1	77.2		79.6	78.8		74.3	66.3	↓	66.7	68.3		73.6	73		*	*	Percent
Lost 5+ teeth due to decay or disease	16.6	14.5	↓	17.1	14.8	↓	13.1	17.9		16.2	12	↓	3.1	3.8		*	*	Percent
Suicide																		
Suicide deaths	6.37	7.05	↑	6.84	7.67	↑	4.04	4.19		3.14	4.19		4.59	3.96		10.57	n<5	Rate per 100K
Tobacco																		
Smoking (smokes regularly)	14.4	12.6		14.6	13	↓	12.2	10.8		13.6	11.8		8.3	4		*	*	Percent

Data Element	Statewide Total		White		Black		Hispanic		Asian		American Indian		# Type
	2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	2001-2004	2005-2008	
Violence													
Homicide deaths	2.88	2.76	1.08	1.14	14.21	17.35	7.27	5.63	2.4	0.93	7.57	n<5	Rate per 100K
Experienced sexual violence, in lifetime	na	10.5	na	10.6	na	12.6	na	8.9	na	*	*	*	Percent

An In-Depth Review of Selected Chronic Diseases

Asthma

Asthma is a common and growing public health problem that impacts the lives of many individuals in the United States and Massachusetts. Nationally, the prevalence of asthma has been increasing since 1980 across all age, gender and racial groups. In Massachusetts, the prevalence of asthma is one of the highest in the country.[7]

In most cases, the exact cause of asthma is unknown. While there is no cure for asthma, asthma can be controlled, and people with asthma are able to sleep through the night, go to work and school, and live normal active lives. However, in Massachusetts a small portion of people with asthma have good control of their condition.[8]

This review of asthma examines combined data for the years 2005 – 2008 and highlights by race and Hispanic ethnicity the prevalence of asthma by socioeconomic status, asthma deaths and hospitalizations as well as by associated health behaviors or environmental factors, health consequences and finally clinical care and outcomes among those with current asthma.

Mortality: Figure 2 below shows that Blacks of all ages have a significantly higher death rate as a result of having asthma than the other groups reported. Compared to Whites, the death rate for Blacks is almost 4 times greater.

Hospital Utilization: The data below shows that in Massachusetts, Blacks and Hispanics of all ages have approximately 3.5 times and 2.9 times more Emergency Department (ED) visits than Whites. We see very similar differences between the groups for asthma related inpatient hospitalizations and hospital observation stays.

Health Behaviors or Environmental Factors: There are about 335 substances known to cause or may cause or exacerbate asthma symptoms. These include certain chemicals, allergens (mold, pet dander, dust mites, mice, and cockroaches), tobacco smoke and viral respiratory infections.[9] In Figure 2, Hispanic and American Indian adults who currently have asthma, have lower rates of physical activity in a 30 day period than Whites, Blacks or Asians. However, Blacks living with asthma have the lowest rate of regular physical activity.

Health Consequences: Among adults living with asthma, Blacks, Hispanics and American Indians are more likely to report fair or poor health and Hispanics are also more likely to report poor mental health for 15 or more days as well as be overweight or obese.

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[7] Moorman J. Rudd RA, Johnson C, King M, Minor P, Bailey C, Scalia M, and Akinbami L. National surveillance for asthma – United States, 1980-2004. Centers for Disease Control and Prevention, MMWR. October 19, 2007. 56(SS-08; 1-54).

[8] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 119.

[9] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 121.

Figure 2. Asthma

| Asthma | | | | | | | |
Indicator	White	Black	Hispanic	Asian	American Indian	*#Type*	*Years*
Prevalence							
<u>Adults</u>							
Ever Had Asthma	15.1	15.5	**17.3**	**8.3**	20.6	Percent	2005-2008
Currently Have Asthma	9.9	10.8	11.1	**6.2**	**16.9**	Percent	2005-2008
<u>Youth <18</u>							
Ever Had Asthma	12.6	22.2	**18.6**	*	*	Percent	2005-2008
Currently Have Asthma	8.6	*	11.4	*	*	Percent	2005-2008
Prevalence by Socio-Economic Status							
<u>Adults</u>							
<u>Annual Household Income</u>							
Income level <$35,000	14.5	12.8	11.8	*	21.0	Percent	2005-2008
Income level $35,000-$74,999	9.4	8.2	10.2	*	*	Percent	2005-2008
Income level >$75,000	8.5	6.5	7.2	7.2	26.9	Percent	2005-2008
<u>Education</u>							
Less than High school education	17.8	13.8	**11.8**	*	*	Percent	2005-2008
High school education	10.3	11.3	11.2	*	*	Percent	2005-2008
Some college or more	9.2	10.5	9.4	**6**	14.8	Percent	2005-2008
<u>Insurance Status (Ages 18-64 Years)</u>							
MassHealth	12.4	13	13.4	*	*	Percent	2005-2008
Private Insurance	7.5	7.2	7.7	**4.5**	*	Percent	2005-2008
Uninsured	9.2	*	**4.3**	*	*	Percent	2005-2008
Mortality							
<u>All Ages</u>							
Mortality (Primary Cause of Death)	0.7	**2.7**	1.6	0.7	*	Rate per 100K	2005-2008
Hospital Utilization							
<u>All Ages</u>							
ER visits	422.3	**1459.6**	**1219.9**	**158.1**	**186.9**	Rate per 100K	2005-2008
Inpatient hospitalizations	112.8	**363.4**	**310.7**	**72.6**	**78.3**	Rate per 100K	2005-2008
Hospital observations stays	24.8	**75.0**	**69.3**	**13.4**	**14.1**	Rate per 100K	2005-2008
Associated health behaviors or environmental factors (among those with current asthma)							
<u>Adults</u>							
Regular physical activity	47.6	**33.5**	40.1	*	*	Percent	2005-2008
Any physical activity in past 30 days	74.2	70.0	**53.8**	80.6	**52.7**	Percent	2005-2008
Currently smoke regularly	21.8	23.3	23.0	*	36.9	Percent	2005-2008

Asthma							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Years*
Exposure to 1 or more of these asthma triggers at home: tobacco smoke, mold, cockroaches, mice, rats, pets, gas, wood stove, carpeting	94.8	*	**99.0**	*	*	Percent	2006-2008
Youth (<18) Exposure to 1 or more of these asthma triggers at home: tobacco smoke, mold, cockroaches, mice, rats, pets, gas, wood stove, carpeting	95.6	*	*	89.9	*	Percent	2006-2008
Health Consequences (among those with current asthma)							
Adults							
Fair or poor health	22.2	**34.2**	**40.0**	*	**44.4**	Percent	2005-2008
Poor mental health 15+ days	15.9	18.5	**22.1**	*	28.9	Percent	2005-2008
Also overweight or obese	62.4	71.4	**74.5**	47.5	70.4	Percent	2005-2008
Also have disability (total)	38.9	40.6	43.6	*	59.4	Percent	2005-2008
Clinical Care and Outcomes (among those with current asthma)							
Adults							
Flu shot in last year	49.3	46.6	43.2	60.7	40.8	Percent	2006-2008
"Not well controlled" or "Very poorly controlled asthma"	71.5	*	79.2	*	*	Percent	2006-2008
Report receiving some form of asthma self-management education	51.4	*	47.3	*	*	Percent	2006-2008

Cardiovascular Disease

Diseases of the heart and blood vessels, together called cardiovascular disease or CVD, kill more people in Massachusetts and the nation than any other disease. In 2007, CVD caused one of every threes deaths in Massachusetts.[10]

Risk factors directly related to heart disease and stroke, including high blood pressure, high cholesterol, diabetes, and obesity are on the rise and highly prevalent among Massachusetts residents, especially among minority populations.[11]

This review of cardiovascular disease examines combined data for the years 2005 – 2008 and highlights by race and Hispanic ethnicity the prevalence of CVD by socioeconomic status, CVD associated deaths and hospitalizations as well as by health behaviors or environmental factors, health consequences and finally clinical care and outcomes among those living with cardiovascular disease.

Mortality: Figure 3 shows that Hispanic and Asian adults have significantly lower death rates due to either cardiovascular or coronary heart disease than White adults and Hispanics have a significantly lower death rate due to stroke than Whites. Blacks have the highest death rates as a result of either stroke or cardiovascular disease.

Hospital Utilization: One indicator of the economic burden of heart disease and stroke on the Commonwealth is inpatient hospitalization charges. Although the prevalence of cardiovascular diseases has declined in recent years, total inpatient hospital charges have increased annually. In 2007, charges for CVD approached $3.5 billion, presenting nearly one-third of the total hospital charges for that year.[12] Figure 3 shows that among people with cardiovascular disease, Black and Hispanic adults have significantly higher hospital utilization rates than White adults while Asian adults have the lowest. Blacks have almost twice as many Emergency Department (ED) visits as Whites and over four times as many as Asians. Asians have the fewest ED visits of the racial, ethnic groups reported.

Health Behaviors or Environmental Factors: Black and Hispanic adults who have CVD are less likely than White adults to have had any physical activity in the past 30 days (Figure 3) and Hispanic adults are least likely to take an aspirin regularly.

Health Consequences: The harmful effects of heart disease and stroke profoundly manifest themselves in patients diagnosed with diabetes. Complications from CVD not only occur at earlier stages but also cause premature death for those with diabetes.[13] Figure 3 shows that among adults living with cardiovascular disease and compared to Whites, Blacks are more likely to report having poor mental health for 15 or more days, being overweight or obese, and are almost twice as likely to have diabetes. Hispanics are more likely report fair to poor health and to also have diabetes, when compared to Whites.

Clinical Care and Outcomes: Among people living with cardiovascular disease, Asian adults had the highest flu vaccination rate in the last year.

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[10] Massachusetts Department of Public Health. Massachusetts Deaths 2007.

[11] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 127.

[12] Massachusetts Division of Health Care Finance and Policy 2009. *Inpatient Hospital Case Mix and Charge Data, fiscal Year 2007*.

[13] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 129.

Figure 3. Cardiovascular Disease

Cardiovascular Disease							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Year(s)*
Prevalence							
<u>Adults</u>							
Diagnosed cardiovascular disease	6.4	**8.8**	**8.6**	5.0	*	Percent	2005-2008
High blood pressure	24.3	**35.3**	**26.7**	**16.6**	*	Percent	2005, 2007
High cholesterol	32.1	29.4	40.7	28.6	*	Percent	2005, 2007
Prevalence by Socio-Economic Status							
<u>Adults</u>							
<u>Annual Household Income</u>							
Income level <$35,000	9.7	10.0	9.3	*	*	Percent	2005-2008
Income level $35,000-$74,999	6.1	9.9	7.6	*	*	Percent	2005-2008
Income level >$75,000	5.0	*	*	*	*	Percent	2005-2008
<u>Education</u>							
Less than High school education	11.7	12.9	11.0	*	*	Percent	2005-2008
High school education	7.0	9.7	6.5	*	*	Percent	2005-2008
Some college or more	5.7	7.1	6.9	4.4	*	Percent	2005-2008
<u>Insurance Status</u>							
MassHealth	8.2	13.4	10.5	*	*	Percent	2005-2008
Private Insurance	4.5	*	*	*	*	Percent	2005-2008
Uninsured	8.1	5.2	8.8	*	*	Percent	2005-2008
Mortality							
Stroke Mortality	36.3	**45.8**	**26.8**	30.4	*	Rate per 100K	2005-2008
Cardiovascular Mortality	219.3	**250.6**	**128.4**	**107.1**	*	Rate per 100K	2005-2008
Coronary Heart Disease Mortality	112.2	115.6	**61.4**	**45.8**	*	Rate per 100K	2005-2008
Hospital Utilization							
<u>Adults</u>							
Emergency Department visits	352.5	**688.3**	**473.4**	**158.9**	*	Rate per 100K	2005-2008
Inpatient hospitalizations	1397.8	**1947.9**	**1516.8**	**658.6**	*	Rate per 100K	2005-2008
Hospital observations stays	121.3	**150.4**	**128.0**	**48.4**	*	Rate per 100K	2005-2008
Associated health behaviors or environmental factors (among those with cardiovascular disease)							
<u>Adults</u>							
Eat 5 or more servings of fruits and vegetables a day	27.2	*	24.7	40	*	Percent	2005, 2007
Regular physical activity	44.9	42.9	31.1	39.9	*	Percent	2005, 2007
Any physical activity in past 30 days	73.1	**48.9**	**52.0**	72.8	*	Percent	2005-2008
Currently smoke regularly	28.8	28.1	24.3	*	*	Percent	2005-2008

Cardiovascular Disease							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Year(s)*
Smoker in the home	44.0	56.2	53.5	46.3	*	Percent	2005-2008
Binge drinking (past month)	21.9	21.2	13.4	*	*	Percent	2005-2008
Take aspirin regularly	63.4	51.7	**32.4**	*	*	Percent	2005, 2007
Health Consequences (among those with cardiovascular disease)							
Adults							
Fair or poor health	38.6	38.2	**53.9**	*	*	Percent	2005-2008
Poor mental health 15+ days	16.1	**39.5**	25.7	*	*	Percent	2005-2008
Also overweight or obese	69.2	**89.2**	57.0	50.2	*	Percent	2005-2008
Also have diabetes	15.9	**30.6**	**24.2**	*	*	Percent	2005-2008
Also told have high blood pressure	51.8	47.7	53.2	48.9	*	Percent	2005, 2007
Also have high cholesterol	52.3	52.1	64.8	51.4	*	Percent	2005, 2007
Also have disability (total)	43.3	57.8	53.5	*	*	Percent	2005-2008
Clinical Care and Outcomes (among those with cardiovascular disease)							
Adults							
Flu shot in last year	40.4	55.6	45.3	**66.3**	*	Percent	2005-2008

Diabetes

Diabetes is one of the most costly chronic diseases in the US. It absorbs 25% of the Medicare budget and the American Diabetes Association estimates the nation's annual price tag for diabetes based on 2007 expenses is $174 billion. [14]

Diabetes is a disease where sugar accumulates in the blood (called "blood glucose") at much higher levels than normal. Poorly controlled blood glucose can lead to several serious complications including blindness, kidney failure, stroke, amputation of the lower leg, and heart attack. More than 300,000 people in Massachusetts have diagnosed diabetes and there may be an additional 100,000 undiagnosed individuals. [15]

This review of diabetes examines combined data for the years 2005 – 2008 and highlights by race and Hispanic ethnicity the prevalence of diabetes by socioeconomic status, diabetes related deaths and hospitalizations as well as by health behaviors or environmental factors, health consequences and finally clinical care and outcomes among those with living cardiovascular disease.

Figure 4 below shows that both Black and Hispanic adults report "had or have diabetes" at a rate two times that for White adults in Massachusetts. In addition, Black, Hispanic and Asian adults all have higher rates of gestational diabetes (diabetes during pregnancy) than White adults, with the Asian rate being two times greater than that of Whites.

Socio-economic Status: Figure 4 shows that in general, individuals with less income have higher rates of diabetes. Blacks in the middle income bracket shown below, have diabetes at twice the rate of Whites in the same income bracket. The figure also shows that individuals with less education have a greater chance of having diabetes and Blacks and Hispanics with "some college or more" have even greater disparity in diabetes with rates that are 2.5 and 2 times respectively, that of Whites with the same level of education. Hispanics with MassHealth insurance have diabetes at a rate that is over 3 times that of Whites who do not have insurance.

Mortality: In 2007, diabetes was the ninth leading cause of death in Massachusetts. [16] Figure 4 shows that among people with diabetes, Black and Hispanic adults have significantly higher death rates due to diabetes than White adults and that Asian adults have the lowest death rate of all the groups.

Hospital Utilization: According to the Massachusetts Division of Health Care Finance and Policy, diabetes ranks fifth among causes of preventable hospitalizations for adults. [17] The data below shows that Black and Hispanic adults have almost 4 times and 3 times, respectively, more diabetes related emergency department visits than White adults as well as significantly higher hospital observation stays. Asians and Native Americans who have diabetes have significantly fewer emergency department visits than Whites; and Asians also have the lowest rates of inpatient hospitalizations and hospital observation stays.

Health Behaviors or Environmental Factors: Figure 4 shows that in general, Black, Hispanic and Asian adults who have diabetes report less physical activity than Whites. However, Hispanic adults living with diabetes are least likely to currently smoke.

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[14] Economic cost of diabetes in the US in 2002. American Diabetes Association. Diabetes Care 2003; 26(3); 917-932.

[15] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 123.

[16] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 125.

[17] Preventable Hospitalizations in Massachusetts: Update for Fiscal Years 1998 and 1999 (pdf) Division of Health Care Finance and Policy's report, 2002.

Health Consequences: As mentioned in the previous section on cardiovascular disease, the harmful effects of heart disease and stroke profoundly manifest themselves in patients with diabetes and complications from CVD occur at earlier stages and cause premature death for those with diabetes. Figure 4 shows that among adults living with diabetes Asians are least likely to report fair to poor health while Hispanics are most likely to report this. Compared to White adults, Hispanic adults are more likely to be overweight or obese and to have high cholesterol and Blacks living with diabetes are most likely to have high blood pressure.

Clinical Care and Outcomes: It is important to receive all types of preventive care for diabetes. Unfortunately, less than one fifth of persons with diabetes receive all of their preventive care and only half have reported taking a self-management course for their diabetes.[18]   Preventive care includes receiving annual foot exams, annual eye exams, flu and pneumonia vaccinations, tests for kidney disease, and regular HgA1c tests.[19] Data in the table below highlights that Hispanic adults are the least likely to have had an eye exam in the past year. Asian adults are most likely to attend diabetes education class and to have received a flu shot in the past year.

Figure 4. Diabetes

Diabetes							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Year(s)*
Prevalence							
Adults							
Had or have Diabetes	5.7	**12.8**	**13.1**	7.1	*	Percent	2005-2008
Prediabetes	3.8	5.0	5.6	*	*	Percent	2007-2008
Gestational Diabetes	3.5	**4.3**	**3.8**	**7.2**	4.2	Percent	2005-2008
Prevalence by Socio-Economic Status							
Adults							
Annual Household Income							
Income level <$35,000	9.5	**13.3**	**13.6**	11.0	*	Percent	2005-2008
Income level $35,000-$74,999	5.8	**11.7**	8.0	11.5	*	Percent	2005-2008
Income level >$75,000	4.0	8.0	*	*	*	Percent	2005-2008
Education							
Less than High school education	9.9	14.8	**15.8**	*	*	Percent	2005-2008
High school education	7.1	**12.2**	**12.1**	*	*	Percent	2005-2008
Some college or more	4.8	**12.7**	**9.3**	5.8	*	Percent	2005-2008
Insurance Status							
MassHealth	10.0	10.2	**18.7**	*	*	Percent	2005-2008
Private Insurance	4.7	**11.5**	5.7	5.0	*	Percent	2005-2008
Uninsured	5.7	6.6	9.0	*	*	Percent	2005-2008
Mortality							

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[18] Massachusetts Department of Public Health. Final Report of the Healthy Massachusetts disease Management and Wellness; Focus on diabetes. June 2009. http://www.mass.gov/Eeohhs2/docs/eohhs/healthymass/diabetes_recommendations.pdf
[19] Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 125.

Diabetes							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Year(s)*
Mortality (Primary Cause of Death)	14.9	**35.0**	**25.9**	**9.0**	15.4	Rate per 100K	2005-2008
Hospital Utilization							
<u>Adults</u> Emergency Department visits	111.3	**423.5**	**332.2**	**55.6**	**51.0**	Rate per 100K	2005-2008
Inpatient hospitalizations	113.2	**381.0**	**242.6**	**53.1**	92.6	Rate per 100K	2005-2008
Hospital observations stays	13.0	**58.6**	**33.4**	**9.4**	*	Rate per 100K	2005-2008
Associated health behaviors or environmental factors (among those with diabetes)							
<u>Adults</u> Eat 5 or more servings of fruits and vegetables a day	33.1	31.0	19.3	22.4	*	Percent	2005, 2007
Regular physical activity	46.6	41.8	**20.7**	**21.8**	*	Percent	2005, 2007
Any physical activity in past 30 days	73.5	**58.6**	**46.5**	83.2	*	Percent	2005-2008
Currently smoke regularly	24.1	17.6	**11.9**	*	*	Percent	2005-2008
Binge drinking (past month)	9.9	*	7.4	*	*	Percent	2005-2008
Health Consequences (among those with diabetes)							
<u>Adults</u> Fair or poor health	30.9	33.3	**65.6**	**15.0**	*	Percent	2005-2008
Poor mental health 15+days	15.9	21.0	19.5	*	*	Percent	2005-2008
Also overweight or obese	71.2	82.2	**84.0**	59.2	*	Percent	2005-2008
Also have heart disease	13.2	14.6	12.9	*	*	Percent	2005-2008
Also have had a stroke	3.6	5.9	4.6	*	*	Percent	2005-2008
Also told have high blood pressure	43.3	**59.3**	55.4	43.0	*	Percent	2005, 2007
Also have high cholesterol	50.8	46.2	**66.6**	*	*	Percent	2005, 2007
Also have disability (total)	36.8	42.6	45.4	*	*	Percent	2005-2008
Clinical Care and Outcomes (among those with diabetes)							
<u>Adults</u> Flu shot in last year	57.1	60.4	50.1	**81.7**	*	Percent	2005-2008
HbA1c testing at least twice in past year	80.8	82.9	82.3	87.0	*	Percent	2005-2008
Eye exam in past year	81.6	67.6	**67.3**	76.5	*	Percent	2005-2008
Medical provider has performed foot numbness exam in last year	70.2	62.6	53.3	87.5	*	Percent	2005-2008
Attended Diabetes Education Class or Course	37.6	33.2	42.4	**74.8**	*	Percent	2005-2008

Obesity

Trends in nutrition and physical activity behaviors are at the center of the growing obesity epidemic. Currently, more than half of Massachusetts adults are either overweight or obese and approximately 25% of high school youth are either overweight or at risk of becoming overweight. [20]

People who are overweight or obese are more likely to have type 2 diabetes, heart disease, stroke, gall bladder disease, and musculoskeletal disorders. The cost of obesity is high, but quantifying the exact figures has been difficult. A conservative estimate of annual obesity-related medical costs for Massachusetts is $1.8 billion in 2003 dollars.

This review of obesity examines combined data for the years 2005 – 2008 and highlights by race and Hispanic ethnicity the prevalence of obesity by socioeconomic status, associated health behaviors or environmental factors, health consequences and finally clinical care and outcomes among those who are overweight or obese.

Figure 5 shows that Asian adults have the lowest rates of overweight or obesity compared to White, Black and Hispanic adults. Compared to White youth, Black youth are twice as likely and Hispanic youth are 1.5 times as likely to be overweight or obese.

Socio-economic Status: Across the income gradient, Black and Hispanic adults are more likely to be overweight than White adults. Black and Hispanic adults with less than a high school education and those who have some college or more are more likely to be overweight compared to White adults. There is no statistically significant difference in the prevalence of overweight or obesity among White, Black or Hispanic adults who have a high school education.

Health Behaviors or Environmental Factors: Many Massachusetts adults and adolescents fall short of the Surgeon General's physical activity recommendations which encourage adults to get 30 minutes or more of moderate-intensity physical activity most days of the week.[21] Figure 5 shows that among people who are overweight or obese, Black and Hispanic adults have lower rates of regular physical activity or any physical activity in the last 30 days than White adults. Also among adults who are overweight or obese, Hispanic adults are least likely to eat 5 or more servings of fruits and vegetables a day. Asian adults report the lowest rates of smoking among the groups reported.

Health Consequences: Figure 5 highlights that Black adults who are overweight or obese are 1.5 times more likely to also report "fair to poor health" and "living with diabetes" than White adults. Among people who are overweight, Black adults are twice as likely as White adults to have also had a stroke. Hispanic adults who are overweight or obese are more likely than Whites to also report fair to poor health and having diabetes. In addition, Hispanics who are overweight or obese are 25% more likely than Whites to report poor mental health and 18% more likely to have high cholesterol. Asian adults are half as likely to report poor to fair health compared to the other groups, however Asian youth are the mostly likely to report that they perceive themselves as slightly or definitely overweight than other youth.

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[20]Massachusetts Department of Public Health. *Health of Massachusetts*. Boston, MA; April 2010, pg. 114.

[21] Physical activity and health: a report of the Surgeon General. US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Retrieved from http://www.cdc.gov/ncccdphp/sgr/sgr.htm. Updated 1999.

Figure 5. Obesity

Obesity							
Indicator	White	Black	Hispanic	Asian	American Indian	*#Type*	*Year(s)*
Prevalence							
Adults							
Overweight (BMI ≥25.0)	55.8	**69.3**	**67.1**	**36.4**	*	Percent	2005-2008
Obese (BMI ≥30.0)	19.6	**29.1**	**26.1**	**3.9**	*	Percent	2005-2008
Youth							
Overweight (85th percentile)	22.0	**40.6**	**35.4**	20.9	*	Percent	2007, 2009
Obese (95th percentile)	9.1	**19.8**	**15.1**	11.2	*	Percent	2007, 2009
Prevalence by Socio-Economic Status							
Adults							
Annual Household Income							
Income level <$35,000	58.9	**70.1**	**68.4**	**33.0**	*	Percent	2005-2008
Income level $35,000-$74,999	57.5	**73.7**	**67.4**	**39.0**	*	Percent	2005-2008
Income level >$75,000	54.3	**74.8**	**64.8**	**40.7**	*	Percent	2005-2008
Education							
Less than High school education	62.5	**77.3**	**72.3**	*	*	Percent	2005-2008
High school education	61.4	66.3	64.6	**42.9**	*	Percent	2005-2008
Some college or more	53.8	**70.9**	**62.8**	**35.0**	*	Percent	2005-2008
Insurance Status							
MassHealth	60.7	70.0	61.9	**40.5**	*	Percent	2005-2008
Private Insurance	55.7	**68.7**	**67.1**	**36.3**	*	Percent	2005-2008
Uninsured	55.6	**68.3**	**67.3**	40.3	*	Percent	2005-2008
Associated health behaviors or environmental factors (among overweight or obese)							
Adults							
Eat 5 or more servings of fruits and vegetables a day	24.3	24.0	**18.8**	32.6	*	Percent	2005, 2007
Regular physical activity	51.2	**41.1**	**40.6**	46.7	*	Percent	2005, 2007
Any physical activity in past 30 days	79.7	**70.2**	**58.3**	77.4	*	Percent	2005-2008
Currently smoke regularly	18.1	17.4	15.4	**6.1**	*	Percent	2005-2008
Youth (high school)							
2+ hours spent watching TV or playing video games (school day)	79.8	79.8	78.6	80.7	*	Percent	2007, 2009
7+ cans or bottles of soda in last week	25.3	24.8	24.3	*	*	Percent	2007, 2009
Eat 4 or more servings of fruits and vegetables a day	19.9	22.9	22.9	26.7	*	Percent	2007, 2009
Attends physical education class at least once per week	62.5	51.3	51.6	62.3	*	Percent	2007, 2009

Obesity							
Indicator	**White**	**Black**	**Hispanic**	**Asian**	**American Indian**	*#Type*	*Year(s)*
Physically active for a total of at least 60 minutes per day on five or more of the past seven days	33.3	25.1	27.0	30.7	*	Percent	2007, 2009
Health Consequences (among overweight or obese)							
Adults							
Fair or poor health	12.3	**20.5**	**34.8**	**5.9**	*	Percent	2005-2008
Poor mental health 15+days	9.1	12.6	**12.2**	*	*	Percent	2005-2008
Also have diabetes	7.4	**15.2**	**14.7**	12.3	*	Percent	2005-2008
Also have heart disease (adults 35+)	6.3	7.0	7.0	*	*	Percent	2005-2008
Also have had a stroke (adults 35+)	1.8	**4.3**	2.5	*	*	Percent	2005-2008
Also told have high blood pressure	29.6	**42.0**	33.7	28.0	*	Percent	2005, 2007
Also have high cholesterol	37.1	32.3	**45.1**	33.6	*	Percent	2005, 2007
Also currently have asthma	10.9	11.4	13.0	8.1	*	Percent	2005-2008
Also have disability (total)	22.6	23.0	26.9	*	*	Percent	2005-2008
Youth (high school)							
Stopped usual activities because of feeling sad or hopeless for 2 + weeks	25.8	32.1	30.6	23.3	*	Percent	2007, 2009
Perceive themselves as slightly or definitely overweight	72.9	65.8	69.9	**85.0**	*	Percent	2007, 2009
Clinical Care and Outcomes (among overweight or obese)							
Adults							
Flu shot in last year	35.8	34.6	36.6	42.1	*	Percent	2005-2008

Social Determinants of Health: Community Factors that Contribute to Health

The social determinants of health include how where we live, work, and play; what we have access to, including education and income contribute to our overall health. By looking at these factors, we can better understand the connections to health and develop recommendations and policies that improve conditions for everyone.

For *Disparities in Health*, the Massachusetts Department of Public Health undertook an analysis of tobacco retailers by community. This methodology will be tested and used to look at other community factors in the future.

Tobacco Retailers

Smoking remains the leading cause of preventable death in Massachusetts.[22] Analysis of Massachusetts BRFSS data indicates that, nearly 800,000 residents of Massachusetts continue to smoke and more than 8,000 residents die each year from smoking related causes,[23] including 1,000 who will die from illnesses attributable to second-hand smoke.[24]

While the burden of tobacco use in the Commonwealth is undoubtedly large, the exposure to tobacco advertising is not equally distributed in communities and neighborhoods across the state. All or nearly all tobacco retailers in Massachusetts have some form of in-store advertising of tobacco products. However, some communities have many more tobacco retailers than others.

As of December 31, 2010, the Massachusetts Tobacco Cessation and Prevention Program estimated that there were 8,838 tobacco retailers in the Commonwealth, or one retailer for every 718 residents. Communities with a greater proportion of non-Hispanic Whites tend to have more tobacco retailers per capita.

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[22] US Department of Health and Human Services. *The health consequences of smoking: a report of the Surgeon General.* Atlanta, GA: Centers for Disease Control and Prevention, Office on Smoking and Health, 2004. Accessed 9/5/2006 on website at http://www.cdc.gov/tobacco/sgr/sgr_2004/index.htm.

[23] *Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) Massachusetts 2006*. Boston, MA: Massachusetts Department of Public Health, Oct 1, 2004, p. 3. Accessed 5/15/2006 on website at http://www.mass.gov/dph/mtcp/reports/sammec_2004.pdf.

[24] US figure is 53,000 deaths from lung cancer and ischemic heart disease due to secondhand smoke exposure. Glantz, S.A. and W.W. Parmley. 1995. "Passive Smoking and Heart Disease: Mechanisms and Risk". *Journal of the American Medical Association* 273(13):1 1047-1053. MA figure is 1,196 based on proportion of US population.

Methods

We calculated the per capita number of tobacco retailers in 400 communities and neighborhoods. Although Massachusetts has only 351 cities and towns, the twelve largest communities by population[25] were divided into neighborhoods along boundaries defined by zip code. This method resulted in data for 339 cities and towns plus 61 neighborhoods within the largest cities. For the purposes of this report, we refer to these 400 geographic entities as communities.

To analyze communities by racial composition, we looked at the average non-White population across the state. Even though 20% of Massachusetts residents are non-White, the average city or town only has 3.6% of its residents identified as non-White (including Hispanic).

Median values for these 400 communities were computed for the percentage of non-White and Hispanics in the population (3.6%) and the number of tobacco retailers per capita (12.34 per 10,000 residents). Comparisons were made on the basis of these averages. A full two-thirds (68%) of these communities have tobacco retailer densities that are above the state median ($z = 2.4$, $p < .05$)

Community Analysis

Below are the fifty largest cities, towns, or city-subdivisions in the state. All of them have non-White populations larger than the statewide average.

Looking at the 25 largest communities – all of which have at least a 20% non-White population – 17 have higher rates of tobacco retailers than the statewide average.

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[25] Boston, Cambridge, Lowell, Lynn, New Bedford, Quincy, Springfield, Worcester

Figure 6. Tobacco Retailer Rates for the 50 Largest Communities

	Community	% White	% non-White	Tobacco Retailers Per 10,000	Compared to Average of Tobacco Retailers (12.34 per 10,000)
1.	Boston - (02126) Mattapan	5.38%	94.62%	7.28	Below
2.	Boston - (02119/02120) Roxbury	6.26%	93.74%	12.29	Below
3.	Lawrence (01841)	29.29%	70.71%	21.06	**Above**
4.	Boston - (02122/02124) Dorchester	30.37%	69.63%	17.99	**Above**
5.	Springfield (01103/01105/01107)	31.51%	68.49%	25.13	**Above**
6.	Chelsea	40.61%	59.39%	16.25	**Above**
7.	Springfield (01108)	40.89%	59.11%	8.65	Below
8.	Boston - (02136) Hyde Park	42.47%	57.53%	8.13	Below
9.	Boston - (02128) East Boston	50.87%	49.13%	24.99	**Above**
10.	Boston - (02130) Jamaica Plain	52.32%	47.68%	9.18	Below
11.	Holyoke	55.04%	44.96%	20.08	**Above**
12.	Brockton (02301)	55.05%	44.95%	19.6	**Above**
13.	Lynn (01902)	56.24%	43.76%	22.9	**Above**
14.	Cambridge (02139/02142)	59.69%	40.31%	15.08	**Above**
15.	Lowell (01852)	63.21%	36.79%	13.66	**Above**
16.	Boston - (02115/02215) Fenway-Kenmore	69.45%	30.55%	11.35	Below
17.	Boston - (02134/02135) Allston/Brighton	69.63%	30.37%	11.63	Below
18.	Malden	72.36%	27.64%	14.38	**Above**
19.	New Bedford (02740)	73.45%	26.55%	15.94	**Above**
20.	Quincy (02170/02171)	74.27%	25.73%	16.23	**Above**
21.	Fitchburg	77.24%	22.76%	14.07	**Above**
22.	Somerville	77.66%	22.34%	17.04	**Above**
23.	Framingham	78.89%	21.11%	14.65	**Above**
24.	Amherst	79.31%	20.69%	6.31	Below
25.	Waltham	79.72%	20.28%	14.01	**Above**
26.	Everett	80.52%	19.48%	18.67	**Above**
27.	Brookline	80.59%	19.41%	7.35	Below
28.	Quincy (02169)	82.27%	17.73%	27.78	**Above**
29.	Revere	82.68%	17.32%	19.03	**Above**
30.	Leominster	83.29%	16.71%	12.11	Below
31.	Salem	84.12%	15.88%	16.58	**Above**
32.	Methuen	86.90%	13.10%	10.28	Below
33.	Medford	87.19%	12.81%	13.09	**Above**
34.	Haverhill	87.79%	12.21%	10.68	Below
35.	Marlborough	87.90%	12.10%	14.62	**Above**
36.	Chicopee	88.15%	11.85%	15	**Above**
37.	Woburn	90.06%	9.94%	12.08	Below

Community	% White	% non-White	Tobacco Retailers Per 10,000	Compared to Average of Tobacco Retailers (12.34 per 10,000)
38. Attleboro	90.61%	9.39%	17.59	**Above**
39. Arlington	91.35%	8.65%	6.84	Below
40. Taunton	92.77%	7.23%	14.65	**Above**
41. Pittsfield	93.05%	6.95%	13.32	**Above**
42. Westfield	93.15%	6.85%	15.47	**Above**
43. Chelmsford	93.30%	6.70%	12.11	Below
44. Barnstable	94.11%	5.89%	15.27	**Above**
45. Peabody	94.24%	5.76%	15.58	**Above**
46. Braintree	94.44%	5.56%	17.74	**Above**
47. Billerica	94.49%	5.51%	13.6	**Above**
48. Weymouth	95.42%	4.58%	16.67	**Above**
49. Plymouth	95.66%	4.34%	14.7	**Above**
50. Beverly	95.75%	4.25%	11.54	Below

Data Sources

Data used in this report came from the following sources:

Behavioral Risk Factor Surveillance System (BRFSS)
The Behavioral Risk Factor Surveillance System (BRFSS) is a continuous, random digit dial, landline-only telephone survey of adults ages 18 and older and is conducted in all states as 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. Each year, the BRFSS survey includes core questions designed by the CDC and administered by all states; optional modules designed by the CDC to be added at each state's discretion; and question sets designed in collaboration with other programs of MDPH. [More information on BRFSS Limitations is included in the Introduction and Background section of this report.]

BRFSS Adult and Child Asthma Call-back Survey
The Asthma Call-back Survey is a standardized questionnaire developed by the Centers for Disease Control and Prevention, administered by telephone. The survey examines the health, socioeconomic, behavioral and environmental predictors that relate to better control of asthma. It also characterizes the type of care and health care experiences of people with asthma. The data are collected every year in Massachusetts, beginning in 2006.
Respondents to the Behavioral Risk Factor Surveillance System who reported that they or the selected child in the household have ever been diagnosed with asthma were asked at the end of the interview if they would be willing to participate in a follow-up interview on asthma. Respondents who agreed to participate were called back within 2 weeks and administered the call-back survey. Adult proxies for the selected child include parents, legal guardians, grandparents, adult siblings, other relatives or non-related adults living in the selected child's household. http://www.cdc.gov/asthma/survey/brfss.html#callback.

Births
Natality data are based on information on birth data filed with the Massachusetts Registry of Vital Records and Statistics. The current file format was implemented in 1996 and includes demographic information about the parents, infant characteristics, pregnancy and prenatal care information, and medical information about the mother and infant.

Hospital Utilization
The Division of Health Care Finance and Policy (Division) collects patient-level data for Massachusetts acute care hospital inpatients, observation patients, and emergency department patients.
Hospitals report their data to the Division on a quarterly basis for the fiscal year beginning on October 1. The Division prepares the annual database for each of the three data types available to the public. Data submissions are edited, summarized, and returned to the submitting hospital to verify the accuracy of the records.

- **Emergency Department Database**: The Outpatient Emergency Department Database (ED) contains data elements that are similar to those contained in the inpatient and observation stay databases, with some additions relevant to the ED setting. Data elements include patient demographics, clinical characteristics, services provided, charges, and hospitals and practitioner information, as well as mode of transport.
- **Inpatient Discharge Database**: The Division collects case mix and charge data for all inpatients discharged from Massachusetts acute care hospitals. The Hospital Inpatient Discharge Database (HIDD) contains comprehensive

patient-level information including sociodemographics, clinic data, and charge data. It is used to establish reasonable and adequate rates, to enable hospitals to be grouped for comparing costs, to assist in the formulation of health care delivery and financing policy, and to assist in the provision and purchase of health care services.

- **Outpatient Observation Database**: The Division also collects case mix and charge data for all outpatient observation visits to Massachusetts acute care hospitals. The Outpatient Hospital Observation Discharge Database (OOA) contains comprehensive patient-level information, including socio-demographics, clinic data, and charge data. Data users include hospitals, strategic planners, policy makers, researchers, and program evaluators.

Mortality

Mortality data are based on information on death certificates filed with the Massachusetts Registry of Vital Records and Statistics. Physicians and medical examiners assign the cause of death through a system that acknowledges the possibility of multiple causes. Demographic information on the certificates, such as age, race, Hispanic ethnicity, gender, educational attainment, marital status, and occupation, is recorded by the funeral director based on information provided by an informant, usually a family member, or, in the absence of an informant, based on observation or omitted. Resident data include all deaths that occur to residents of the Commonwealth, regardless of where they happen. All data in this report are for Massachusetts residents (those with a permanent address in one of the 351 cities or towns). There is an exchange agreement among the 50 states, District of Columbia, Puerto Rico, US Virgin Islands, Guam, and Canadian provinces that provides for the exchange of copies of death records for persons dying in a state other than their state of residence. These records are used for statistical purposes only, and allow each state or province to track the deaths of its residents. The underlying cause of death is generated by the Super Mortality Medical Indexing, Classification, and Retrieval system (Super MICAR). This is a computer software algorithm developed by the National Center for Health Statistics and used by all US jurisdictions so that assignment of cause of death codes is consistent throughout the US.

Youth Risk Behavior Survey

The Massachusetts Department of Elementary and Secondary Education - in collaboration with the Centers for Disease Control and Prevention (CDC) and the Massachusetts Department of Public Health - conducts the Youth Risk Behavior Survey (YRBS) in randomly selected public high schools in every odd-numbered year. The YRBS focuses on the major risk behaviors that threaten the health and safety of young people. This anonymous written survey includes questions about tobacco use, alcohol and other drug use, sexual behaviors that might lead to unintended pregnancy or sexually transmitted disease, dietary behaviors, physical activity, and behaviors associated with intentional or unintentional injuries. Data from the YRBS provide accurate estimates of the prevalence of risk behaviors among public high school students in the Commonwealth, and are important for planning health education and risk prevention programs. YRBS results are not reported for individual districts, or towns or regions.