REPORT TO THE MAYOR

for submission to
THOMAS M. MENINO
MAYOR
CITY OF BOSTON

as prepared for
THE BOSTON PUBLIC HEALTH COMMISSION
David Mulligan, Chair

by
THE BOSTON PUBLIC HEALTH COMMISSION
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THE HEALTH OF BOSTON 2002

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PREFACE

In 1995, the Legislature passed and the Governor signed legislation establishing the Boston Public Health Commission and requiring it to submit annual reports on various matters related to public health in the city of Boston:

Sect. 8. (b) ... *the commission shall prepare and file with the mayor, the president of the city council and the city clerk an annual assessment of the public health needs of the city. The annual public health assessment shall include an evaluation of existing local, state and federal programs and services to address the public health needs of the city and the adequacy of funding sources available for such programs and services, an assessment of programs, services and other activities provided by private public health providers to address the public health needs of the city, including identification of all vulnerable populations in the city, the performance of providers under contract with the commission in accordance with this act, and proposals by the commission to enlarge or enhance its response to the public health needs of the city including new, expanded or revised programs or services to be provided by the commission or by public health providers under contract with it for the ensuing fiscal year.*

The *Health of Boston 2002* is the sixth in a series of annual reports in response to this legislation.

ACKNOWLEDGMENTS

The following persons contributed significantly to this report: John Auerbach, MBA, Executive Director, Barbara Ferrer, PhD, MPH, Deputy Director, and John Rich, MD, MPH, Medical Director, members of the Executive Office of the Boston Public Health Commission; Sara Helen Ayanian, BA, Research Associate/Report Production Assistant, Dwight Cathcart, PhD, Senior Technical Writer and Editor, Gregory L. Miller, MPH, Research Associate, May Ruth Yamate, MS, Epidemiologist, Phyllis D. Sims, MS, Senior Research Associate/Reports Coordinator, members of the Reports Unit, Mary Ostrem, DrPH, Director, Research Office; Mark Fehr, BS, Data Manager, Julia Gunn, RN, MPH, Nurse Epidemiologist, Kristen Gurba, MPH, Project Manager, Suzanne Strickland, MPH, Prevention Coordinator, Pat Tormey, RN, MPH, Communicable Disease Program Manager, Scott Troppy, MPH, Data Manager, M. Anita Barry, MD, MPH, Director, Communicable Disease Control Division; Erin Christiansen, BA, Program Assistant, Kim Wolski, MPH, Director, Childhood Injury Prevention Program; Kerith Jane Conron, MPH, LGBT Health Coordinator, Lesbian, Gay, Bisexual, and Transgender Health.

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THE HEALTH OF BOSTON 2002

INTRODUCTION

Welcome to the Health of Boston 2002

This report is presented by the Boston Public Health Commission, the nation's first health department, with a history that spans more than two hundred years. The Boston Public Health Commission can trace its roots to Paul Revere, the nation's first health officer. Since that time, Boston has continued to pioneer public health strategies that save lives and improve the quality of life.

> "A healthy city starts with healthy people. And, as we know from experience, preventive health care is one of the best strategies we have."
>
> ***Thomas M. Menino***
> *Mayor of Boston*

The *Health of Boston 2002* is a comprehensive report that looks at the major causes of death as well as why people in Boston are hospitalized. It includes a large section on the surveillance and prevention of communicable diseases such as HIV/AIDS. In accordance with its mission of disease prevention, the Boston Public Health Commission includes in the *Health of Boston 2002* data on health behaviors such as smoking. And it includes a section on access to health care, focusing in this edition on the health of lesbian, gay, bisexual, and transgender persons and on selected characteristics of the uninsured. The assessment of trends in all of these areas can enable individuals and health care professionals to devise strategies that reduce illness and enhance the well-being of Boston residents.

Current, Relevant, User-Friendly

This report contains the most up-to-date information available on the health of Bostonians. It is designed to be as easy as possible to read and is meant to be used by residents who want to learn more about the health of their neighborhoods, by researchers, by health care providers, and by those who make public policy in the city. The *Health of Boston* continually expands its sources of information, keeping the information fresh, and providing readers with a multi-dimensional view of health in Boston.

A Tool for Health Promotion

Data is a powerful tool that can tell a story in a very clear way. Readers are encouraged to use the information in this report for a range of purposes; for example, to apply for new funding for projects and programs, as the basis of community priority-setting, or at the workplace to devise new outreach plans. For more specific data requests, please call the Research Office at (617) 534-4757.

Organization of This Report

Each edition of the *Health of Boston* differs in some respects from its predecessors. Every year this report highlights certain points of interest and updates readers on the annual surveillance of standard health indicators.

In this year's report, readers will find new data made available after the release of the *Health of Boston 2001* last summer, a look at trends, a greatly expanded section on infectious diseases and the Commission's activities related to bioterrorism, and a special report on health and access issues in Boston's lesbian, gay, bisexual, and transgender (LGBT) communities. *Access to Health Care*, formerly published as a separate report, is being presented as a part of the *Health of Boston* for the first time with the 2002 edition.

This year's *Access to Health Care* offers information on Boston's uninsured residents from two surveys: the Behavioral Risk Factor Surveillance System Survey and The Massachusetts Health Care Finance and Policy 2000 Health Insurance Status of Massachusetts Residents Survey.

Background information for a few health topics are found in this edition of the report. For more detailed background information on health topics such as childbearing, asthma, cardiovascular disease, cancer, stroke, diabetes, substance abuse, and violence, see the *Health of Boston 2001*.

Testing for the statistical significance of findings reported in the *Health of Boston* is introduced with this edition of the report. In the *Health of Boston 2002*, results of the testing are presented for data about mortality, health-related quality of life measures, and uninsured access indicators from the Behavioral Risk Factor Surveillance System Survey. Future editions will incorporate significance testing and other data analysis for additional topics. For more information, see Technical Notes and Glossary.

Publications produced by the BPHC Research Office can be obtained by calling (617) 534-4757. They may also be accessed from the BPHC web site at www.bphc.org.

Data Issues

The most recent Boston data available from most sources are from the year 2000. However, the time span reported for the health indicators included in this report varies. Mortality and birth data presented by neighborhood in this report are based on census tracts; data on hospitalization, lead poisoning, and communicable diseases are based on ZIP codes.

Rates are calculated using the Boston population as reported in the 2000 US census and population estimates from the Massachusetts Institute for Social and Economic Research (MISER) of the University of Massachusetts and from the Massachusetts Department of Public Health (MDPH). Rates provided by other sources may use different population bases. Data in this report are presented using counts, percentages, and age-specific and age-adjusted rates. The Technical Notes provide details on these and related issues.

A Caution About Mortality Data

Because of changes made by international and national health organizations in the way data are collected and categorized, and the use of new population denominators in calculating rates, mortality rates in earlier reports cannot be compared with similar data from 1999 and 2000 in the Health of Boston 2002. A brief summary of these issues follows. For more information, see the Technical Notes and Glossary.

Comparing Age-Adjusted Mortality Rates within this Report with Rates in Reports from Past Years

In most cases, age-adjusted mortality rates for the years presented in this report are not comparable with age-adjusted mortality rates presented in earlier editions or in earlier BPHC presentations and reports. This is due to the following changes that occurred after the older materials were prepared:

- revision of the International Classification of Disease Manual used for classifying causes of death
- adoption of a new population standard used in calculating age-adjusted mortality rates

- use of the 2000 US census and population estimates in calculation of age-adjusted mortality rates

See Technical Notes and the Glossary for further discussion.

Comparing Age-Adjusted Mortality Rates Within This Report Only

In this report, most mortality charts include age-adjusted data for the individual years 1995-1998, and age-adjusted data for 1999 and 2000 presented individually. Although all age-adjusted mortality rates in this report were calculated using the new population standard, age-adjusted mortality rates for 1999 and 2000 are not comparable to age-adjusted mortality rates for earlier years. This is because of the revision to the International Classification of Disease Manual, which became effective with 1999 mortality data. The age-adjusted rates for 1999 and 2000 *are* comparable to each other.

See Technical Notes and the Glossary for further discussion.

Comparing Age-Specific Mortality Rates Within This Report with Rates in Reports From Past Years

In most cases, age-specific mortality rates for the year 2000 presented in this report cannot be compared with age-specific mortality rates in earlier editions of the *Health of Boston* reports. This is due to:

- revision of the International Classification of Disease Manual used for classifying causes of death.
- use of the 2000 US census and population estimates in calculation of age-adjusted mortality rates.

See Technical Notes and the Glossary for further discussion.

A Caution About Infectious Disease Incidence Data

Because of the use of new population denominators in calculating rates, infectious disease incidence rates in earlier reports are not comparable to the 1999 and 2000 incidence rates. A brief summary of these issues follows. For more information, see the Technical Notes and Glossary.

Comparing Infectious Disease Incidence Rates Within This Report With Rates in Reports from Past Years

Infectious disease incidence rates for the years presented in this report are not comparable to infectious disease incidence rates in earlier editions of the *Health of Boston*, or to earlier BPHC presentations and reports. This is due to the use of new population data from the year 2000 US census, and the use of population estimates in the calculation of incidence rates.

See Technical Notes and the Glossary for further discussion.

A Caution About Birth Data

Because of the use of new population denominators in calculating rates, birth rates in earlier reports are not comparable to rates in this report. A brief summary of these issues follows. For more information, see the Technical Notes and the Glossary.

Comparing Birth Rates Within This Report With Rates in Reports From Past Years

Birth rates for the years presented in this report are not comparable to birth rates in earlier editions of the *Health of Boston* or in earlier BPHC presentations and reports because of the use of new year 2000 US census data and population estimates in the calculation of birth rates.

A Caution About Hospitalization Data

Because of the use of age-adjusted hospitalization rates in the *Health of Boston 2002* and the use of new population denominators in calculating rates, hospitalization rates in earlier reports are not comparable to hospitalization rates in this report. A brief summary of these issues follows. For more information, see the Technical Notes and the Glossary.

Comparing Hospitalization Rates Within This Report With Rates in Reports From Past Years

Hospitalization rates for the years presented in this report are not comparable to hospitalization rates in earlier editions of the *Health of Boston* or in earlier BPHC presentations and reports. This is due to the following changes:

- use of the year 2000 US census and population estimates in calculation of hospitalization rates
- presentation of age-adjusted rates

See Technical Notes and the Glossary for further discussion.

Race and Ethnicity

There are limitations associated with race and ethnicity data. National, state, and local health data sources usually make available data for only a few large racial and ethnic groups, and the classifications they use are not always consistent with each other; caution should be used in comparing racial and ethnic data from different sources. The categories generally used in the *Health of Boston 2002* are non-Hispanic White (“White”), non-Hispanic Black (“Black”), Asian/Pacific Islander ("Asian"), and Hispanic or Latino ("Hispanic"). One exception to this can be found in the Demographics section of the *Health of Boston 2002* where the Boston population chart by sex and by race/ethnicity includes Asians separate from Native Hawaiian and other Pacific Islanders, Alaska Native/American Indian, and the categories “two or more races” and “some other race.” All data used in this report except those taken from death certificates are self-reported. When population data are needed to calculate age-specific rates and age-adjusted rates, the year 2000 US census and population estimates that count Hispanics as a distinct group, separate from Whites, Blacks, and Asian/Pacific Islanders, are used.

Another exception is found in the Hospitalization and Childhood Asthma Hospitalization sections of this report where data presented by race/ethnicity may include Hispanics in White, Black, and Asian categories in addition to a separate Hispanic category. This is attributable to inconsistencies across hospitals in the reporting of race/ethnicity.

In considering the racial and ethnic designations used in this report for Boston-specific data, several things should be kept in mind: (1) The concept of race has different meanings in different cultures. (2) Race is not a biological, but rather a social construction. (3) The meanings of racial designations—White, Black, Asians—are subject to historical, cultural, and political forces. (4) Finally, racial designations can be notably inaccurate in describing what they are called upon to describe. The term Black, for example, includes a variety of people who might describe themselves as African American, African, Caribbean, or Haitian.

In the charts which present data by race and ethnicity and in the text which discusses health problems among racial and ethnic populations, it should be kept in mind that, as the CDC has said, "race and ethnicity are not risk factors [for disease]—they are markers used to better understand risk factors." Race is often a proxy for such factors as socioeconomic status, inadequate access to health care, and racial discrimination. Information on race and ethnicity is included in this report because it can assist public health efforts to recognize disparities between groups for a variety of health outcomes.

Racial Designations and the 2000 Census

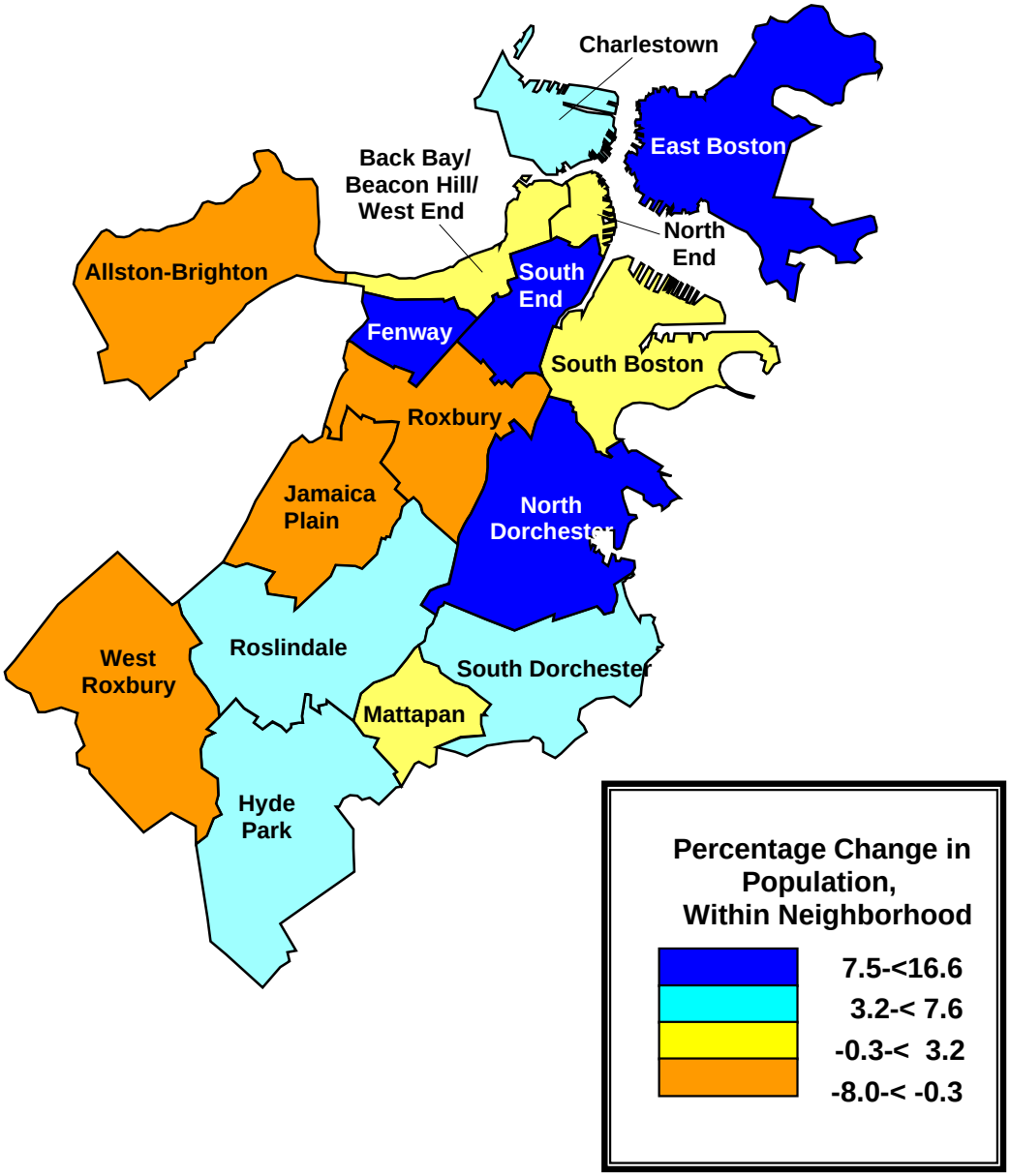
The racial designations, or categories, used in the 2000 census differ from the designations used in the 1990 census and in data derived from it, like the 1990 Modified Age-Race-Sex File for Boston census tracts used in previous editions of the *Health of Boston*. For a discussion of this issue and its impact on the data presented in this report, see Technical Notes and the Glossary.

SUMMARY OF CAUTIONS

1. The population numbers in the Demographics section of this report come from the year 2000 US census.
2. Population figures used elsewhere in the report to calculate rates come from the year 2000 US census; population estimates for 1991-1998 come from the Massachusetts Institute for Social and Economic Research (MISER) at the University of Massachusetts; and the 1999 preliminary population estimate comes from the Massachusetts Department of Public Health.
3. Racial and ethnic designations used in Demographics are drawn from the year 2000 US census.
4. The year 2000 standard US population used in calculating age-adjusted rates is not the same as the population numbers from the year 2000 census.
5. None of the age-adjusted rates presented in this report are comparable to age-adjusted rates presented in earlier editions of the *Health of Boston* or earlier BPHC reports and presentations. Age-adjusted rates for 1999 and 2000 presented in this report are not comparable to age-adjusted rates for earlier years presented in this report.

DEMOGRAPHICS

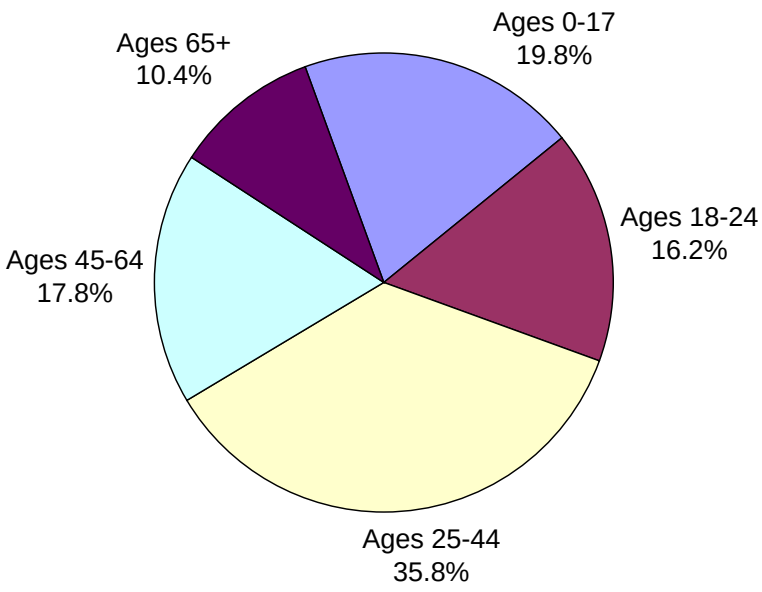
Change in Boston's Population By Neighborhood, 1990-2000



DATA SOURCE: US Department of Commerce, Bureau of the Census, American Fact Finder, Census 2000 Redistricting Data
CALCULATIONS AND MAP PREPARATION:
Boston Public Health Commission, Research Office

Population by Age, Boston, 2000

N= 589,141

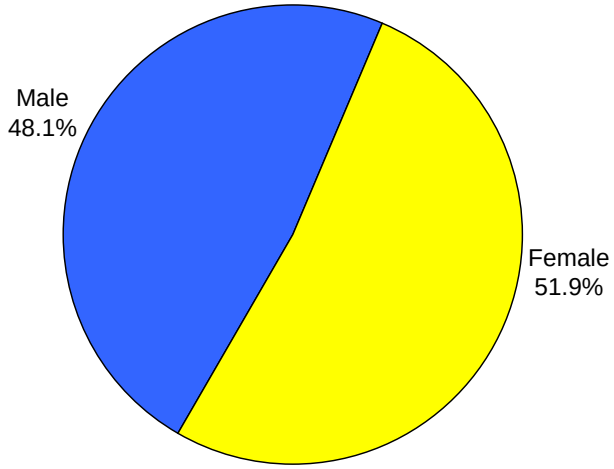


DATA SOURCE: Census 2000, US Department of Commerce, Bureau of the Census, SF-1 File, American FactFinder
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Almost three-quarters of the Boston population is under age 45. Residents ages 25-44 represent the greatest proportion of the total Boston population, and those ages 65 and over the smallest.

Population by Sex, Boston, 2000

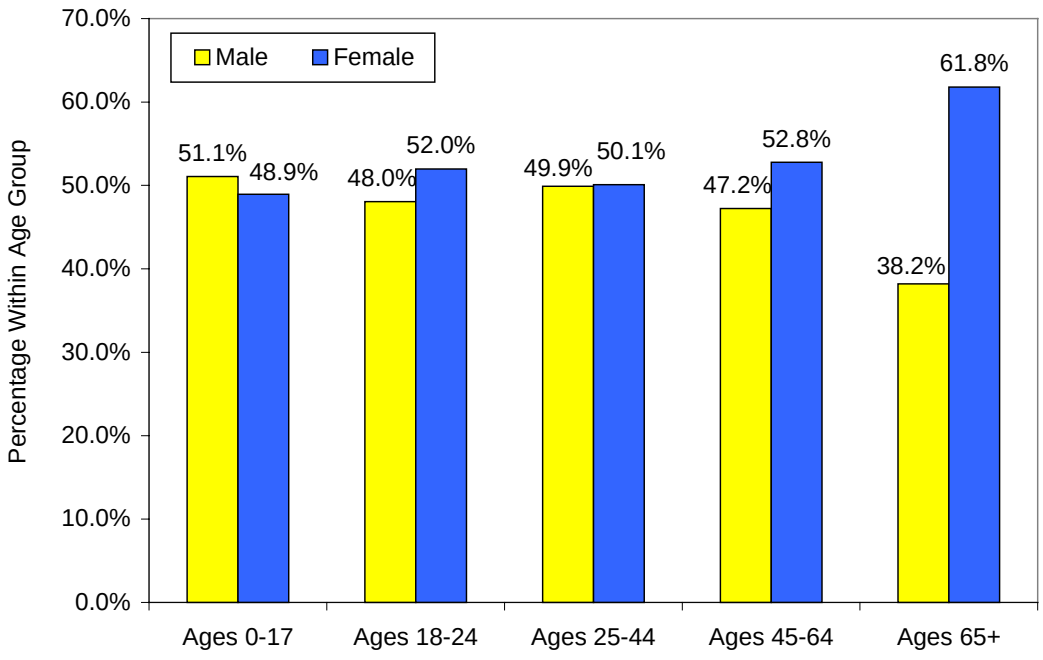
N= 589,141



DATA SOURCE: Census 2000, US Department of Commerce, Bureau of the Census, SF-1 File, American FactFinder
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Slightly more than half of the Boston population of 589,141 persons is female. This is about the same proportion as for Massachusetts overall.
- The Boston 2000 population by sex remains unchanged from 1990.

Population by Sex by Age, Boston, 2000



DATA SOURCE: Census 2000, US Department of Commerce, Bureau of the Census, SF-1 File, American FactFinder
DATA ANALYSIS: Boston Public Health Commission, Research Office

- In the Boston population, females comprise a greater percentage than men of every age group except ages 0-17. A slightly higher number of males than females is born each year.
- In young adulthood, the population is almost evenly split between males and females.
- Because of higher mortality rates for males throughout life, among people ages 65 and over, there are one-and-a-half times as many females as males.

Population by Race/Ethnicity by Age Group, One Race Only, Boston, 2000

	Ages 0-17	Ages 18-24	Ages 25-44	Ages 45-64	Ages 65+	All Ages
White	26.6%	58.3%	54.3%	54.0%	69.4%	49.5%
Black	38.9%	16.2%	21.3%	26.7%	18.4%	23.8%
Hispanic	24.9%	14.0%	14.7%	11.0%	4.9%	14.4%
Asian	6.9%	9.9%	8.0%	6.9%	6.2%	7.5%
Native Hawaiian/Pacific Islander	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Alaskan Native/American Indian	0.4%	0.2%	0.2%	0.3%	0.2%	0.3%
Other Race	2.3%	1.4%	1.3%	1.1%	0.9%	4.5%

DATA SOURCE: Census 2000, US Department of Commerce, Bureau of the Census, SF-1 File, American FactFinder
DATA ANALYSIS: Boston Public Health Commission, Research Office

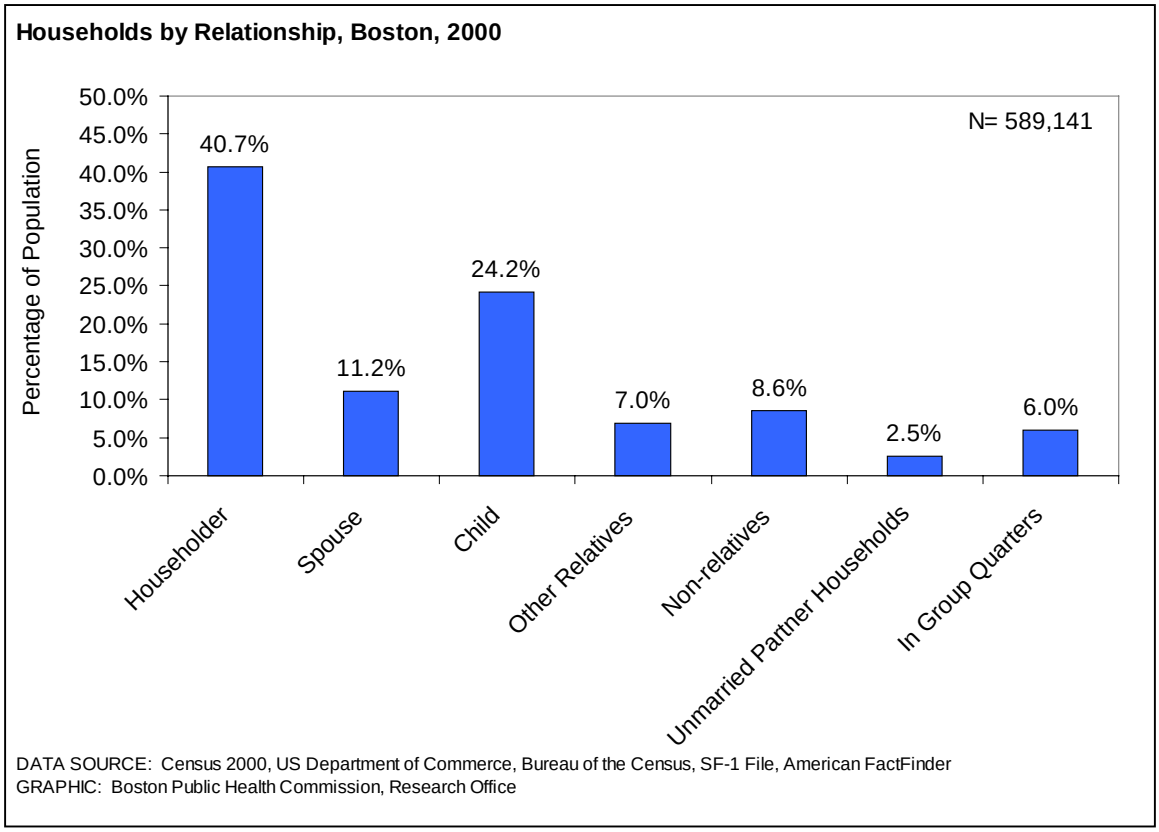
- Boston's older population is predominantly White. Over 50% of Boston residents ages 18-64 and nearly 70% of ages 65 and over are White. However, only 26.6% of Boston residents ages 0-17 are White.
- The greatest percentage of residents ages 0-17 (almost 40%) is Black. The smallest percentage of Black residents is found among ages 18-24.
- At ages 0-17, almost 25% of Boston residents are Hispanic, while among ages 18-24 and ages 25-44, 14.0% and 14.7% are Hispanic. Of Boston residents 65 and over, only 4.9% are Hispanics.
- In all Boston age groups except ages 18-24, Asian residents account for less than 9% of the population. They account for slightly more than 6% of ages 65 and over.
- Native Hawaiians/Pacific Islanders and Alaska Native/American Indian residents account for less than 1% of each age group.

Neighborhood	Total Population 1990	Total Population 2000	Percentage Change 1990-2000
Allston-Brighton	70,284	69,648	-0.9
Back Bay/Beacon Hill/West End	35,690	36,235	1.5
Charlestown	14,718	15,195	3.2
East Boston	32,941	38,413	16.6
Fenway	27,333	29,823	9.1
Hyde Park	32,644	34,420	5.4
Jamaica Plain	32,032	29,482	-8.0
Mattapan	19,585	19,724	0.7
North Dorchester	77,348	83,212	7.6
North End	12,152	12,114	-0.3
Roslindale	33,185	35,047	5.6
Roxbury	53,828	50,349	-6.5
South Boston	29,433	29,938	1.7
South End	30,926	33,502	8.3
South Dorchester	43,663	45,291	3.7
West Roxbury	27,239	26,108	-4.2
TOTAL	**574,283**	**589,141**	**2.6**

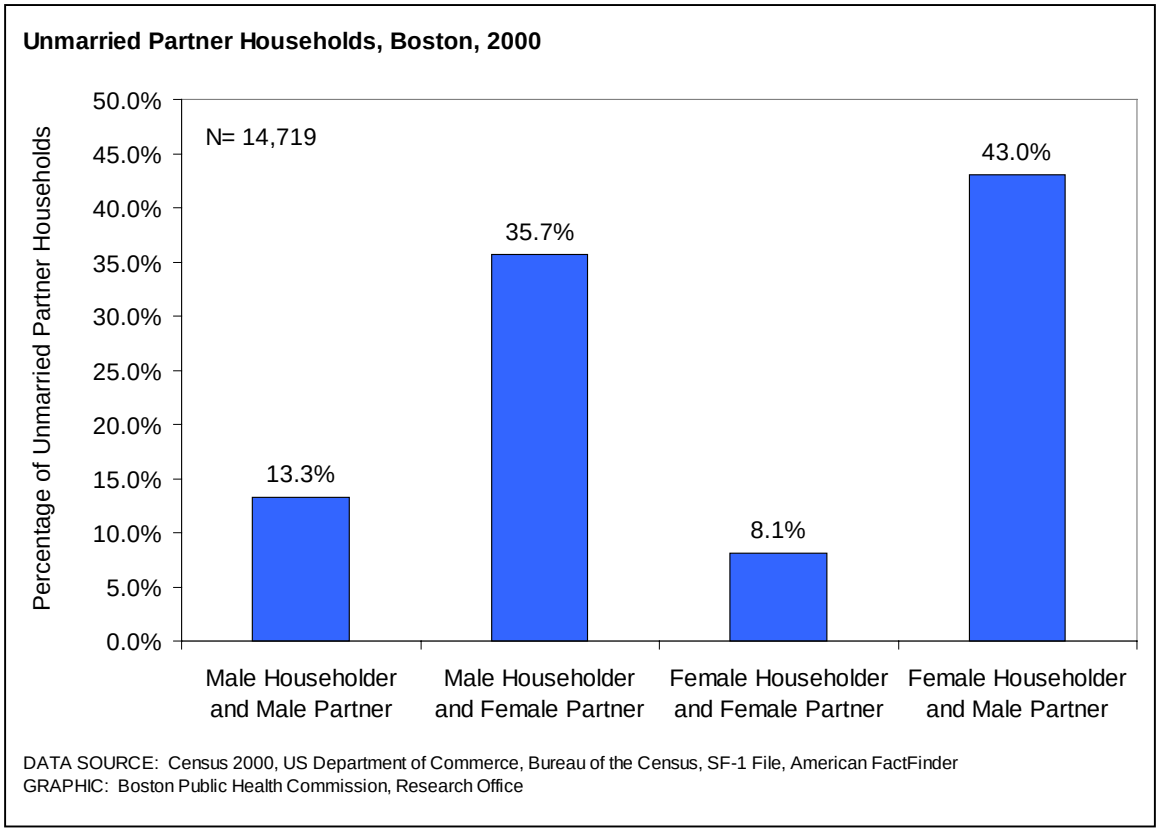
NOTE: Neighborhoods are defined in the *Health of Boston 2000 and* may not match other definitions. The total for Boston includes also the Harbor Islands and homeless populations counted by the census.
DATA SOURCE: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder
CALCULATIONS: Boston Public Health Commission, Research Office

- Between 1990 and 2000, Boston's overall population increased 2.6%. However, across Boston neighborhoods, population changes between 1990 and 2000 ranged from a 16.6% increase in East Boston to an 8.0% decrease in Jamaica Plain.

- Eleven of Boston's 16 neighborhoods experienced an increase in population between 1990 and 2000.

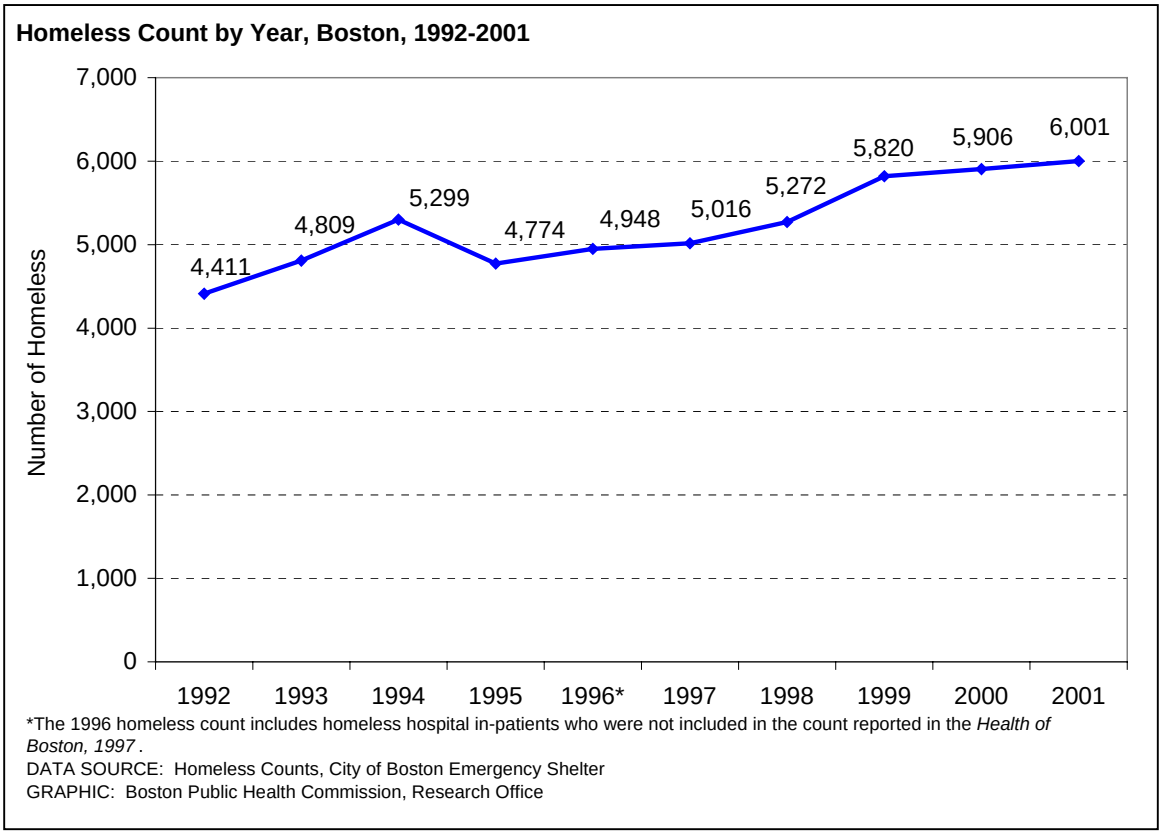


- Householders (the person in whose name a home is owned, being purchased, or rented) and children accounted for the largest numbers of Boston household members. Spouses and nonrelatives were the next largest groups of household members.



- Unmarried-partner households represent 2.5% of Boston's population. Female householders with male partners and male householders with female partners account for the majority of unmarried partner households. However, almost one-fifth of unmarried-partner households are composed of partners of the same sex.

HOMELESS RESIDENTS



- Homeless people in Boston are counted in a citywide census in December every year by the City Emergency Shelter Commission.

- There were 6,001 homeless people residing either in shelters or on the street in December 2001. This represented a 1.6% increase over December 2000.

- In the ten-year period 1992-2001, the number of people who were homeless increased 36.0%. The only decline during this period was in 1995, when the number of homeless people in Boston fell almost 9.9% compared with the number in 1994.

HEALTH-RELATED QUALITY OF LIFE MEASURES

Introduction

Health status was traditionally defined by the absence of disease or infirmity; however, today health professionals view health not only as the absence of disease, but as a state of optimal physical, mental, and social well-being. Health-Related Quality of Life (HRQOL) measures include indicators which assess overall physical and mental health status, as well as the presence or absence of social support systems. According to the Centers for Disease Control and Prevention (CDC), HRQOL indicators about perceived physical and mental health are considered useful and valid indicators of service needs and intervention outcomes. (1) HRQOL indicators are an important component of health surveillance systems.

The Behavioral Risk Factor Surveillance System (BRFSS), a CDC-initiated annual health survey of adults ages 18 and older, includes a core set of survey questions related to quality of life measures. HRQOL findings from the BRFSS for Boston residents are presented in the following section.

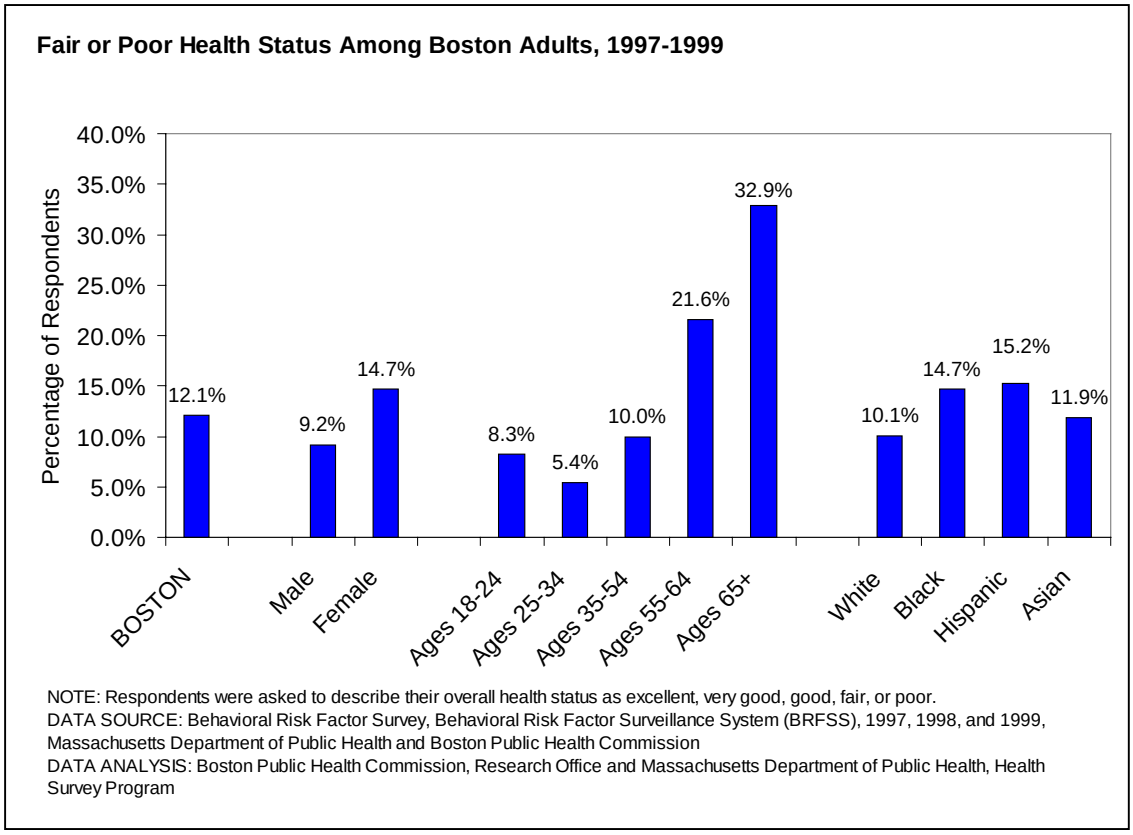
The BRFSS has been conducted in Massachusetts since 1986 by the Massachusetts Department of Public Health. In 1999, the Boston Public Health Commission collaborated with the state health department to survey an additional sample of Boston residents. HRQOL results from Boston residents participating in the 1997, 1998, and 1999 Massachusetts BRFSS, and the 1999 Boston BRFSS sample, are presented in this section by sex, age, and race/ethnicity.

The text accompanying the following charts notes statistically significant findings only. Statistically significant findings are those that are unlikely to be attributable to chance, instead representing, typically with 95% confidence, real differences between groups or real associations between them. See Technical Notes for additional information.

Reference

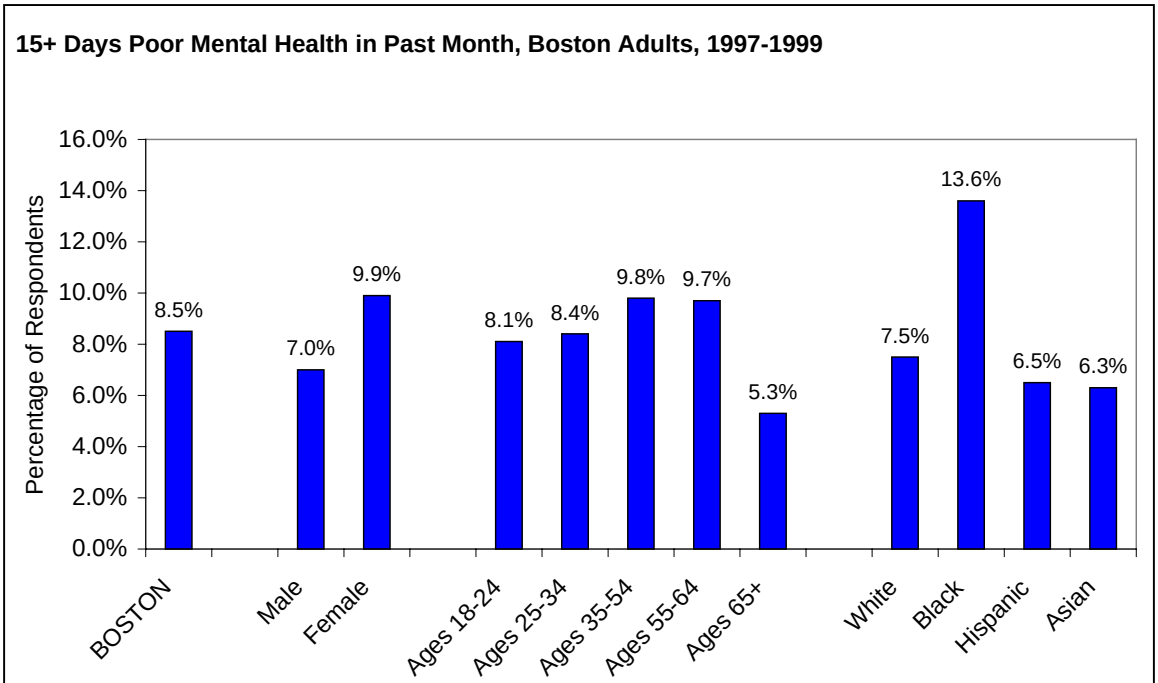
1. Centers for Disease Control and Prevention. Measuring Healthy Days. Atlanta, Georgia: CDC, November 2000.

Fair or Poor Health Status Among Boston Adults



- During the period 1997-1999, a significantly higher percentage of Boston women than Boston men reported having only fair or poor health.
- The percentage reporting fair or poor health was significantly higher among adults ages 55 and over.
- A significantly higher percentage of Blacks and Hispanics reported fair or poor health, compared with Whites.

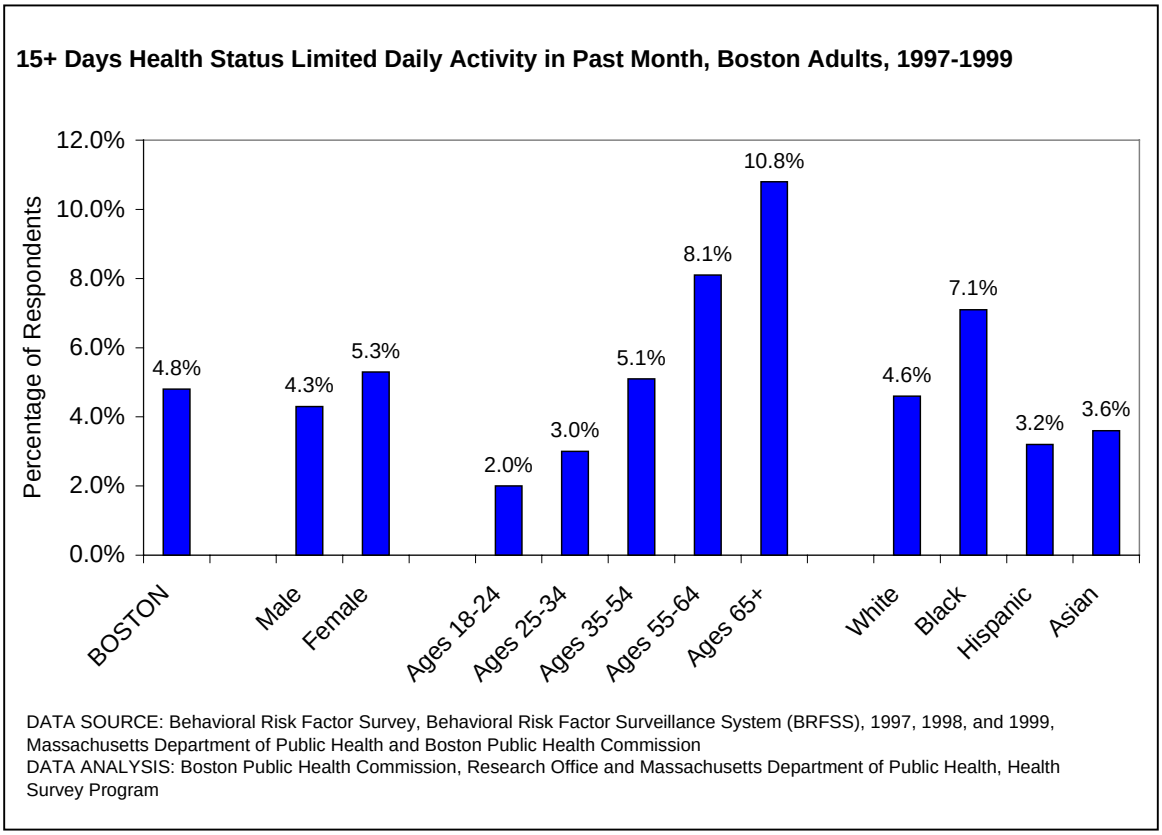
Fifteen or More Days of Poor Mental Health in Past Month



DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1997, 1998, and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

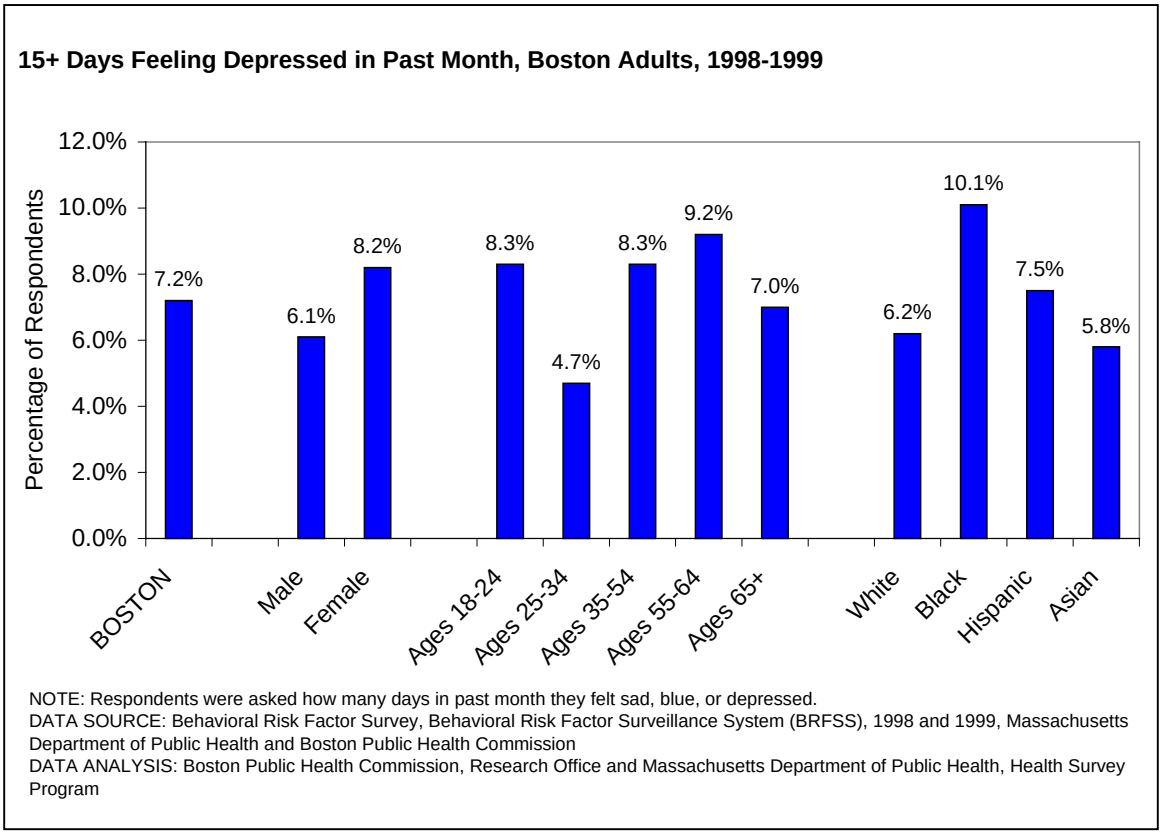
- During 1997-1999, 8.5% of Boston adults said they had experienced 15 or more days of poor mental health in the previous month.
- A significantly higher percentage of Boston women than Boston men reported 15 or more days of poor mental health.
- The highest percentage of poor mental health in the previous month was reported by Black Boston residents. Their level of reported poor mental health was significantly higher than the levels reported by other race/ethnicity groups.

Fifteen or More Days When Daily Activities Were Limited in Past Month by Poor Physical or Mental Health



- During 1997-1999, 4.8% of Boston adults said they had been limited in their daily activities by poor physical or mental health for 15 or more days in the previous month.
- The percentage of Boston adults who were limited in their daily activities by poor physical or mental health for 15 days or more increased significantly with age, but not all comparisons were statistically significant.

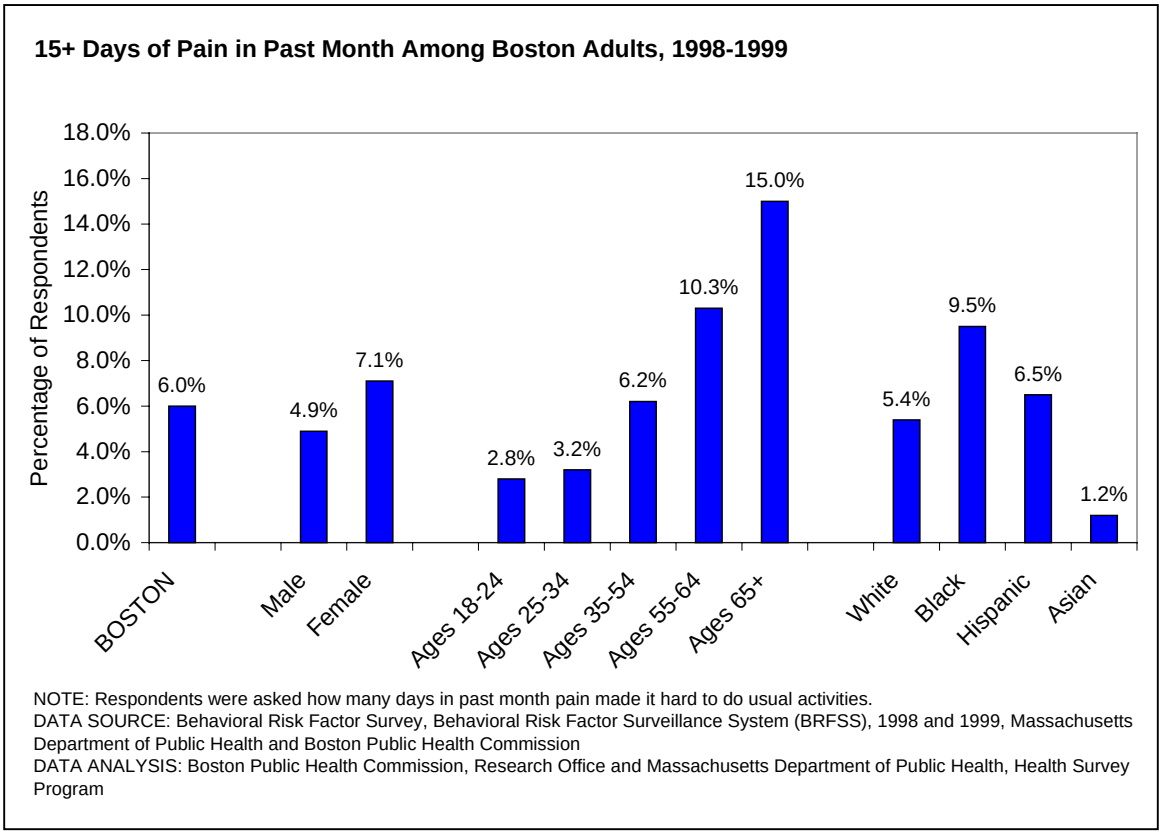
Fifteen or More Days Feeling Depressed in Past Month



NOTE: Respondents were asked how many days in past month they felt sad, blue, or depressed.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1998 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1998-1999, 7.2% of Boston adults said they felt sad, blue, or depressed for 15 or more days of the previous month.
- A higher percentage of Boston women than men reported feeling depressed for 15 or more days.
- A higher percentage of Black adults than White adults reported feeling depressed for 15 or more days of the previous month.

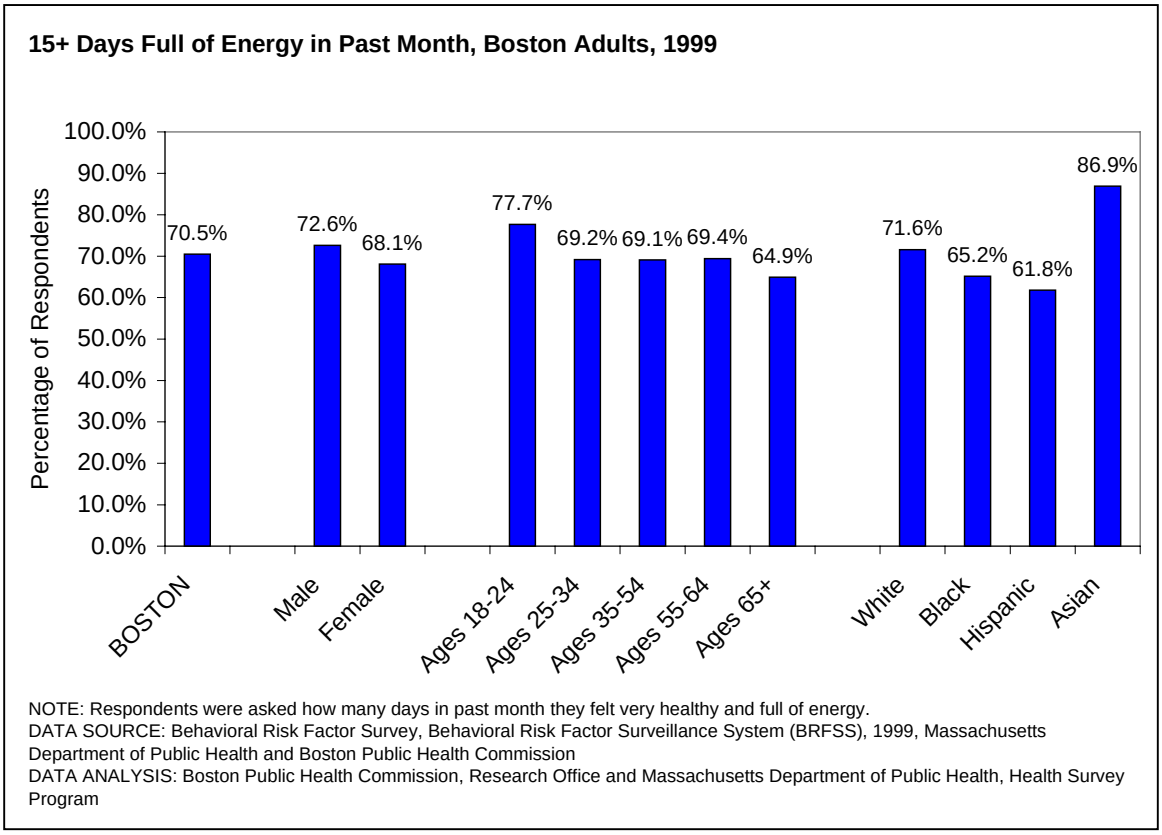
Fifteen or More Days of Pain in Past Month



NOTE: Respondents were asked how many days in past month pain made it hard to do usual activities.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1998 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1998-1999, 6.0% of Boston adults stated that they had experienced pain that made it hard to do their usual activities for 15 or more days of the past month.
- The percentage of Boston adults reporting 15 or more days of pain that made it hard to do their usual activities was significantly higher among those ages 35 and over than among younger people.
- A significantly lower percentage of Asians than members of other race/ethnicity groups said they had had 15 or more days of pain in the previous month.

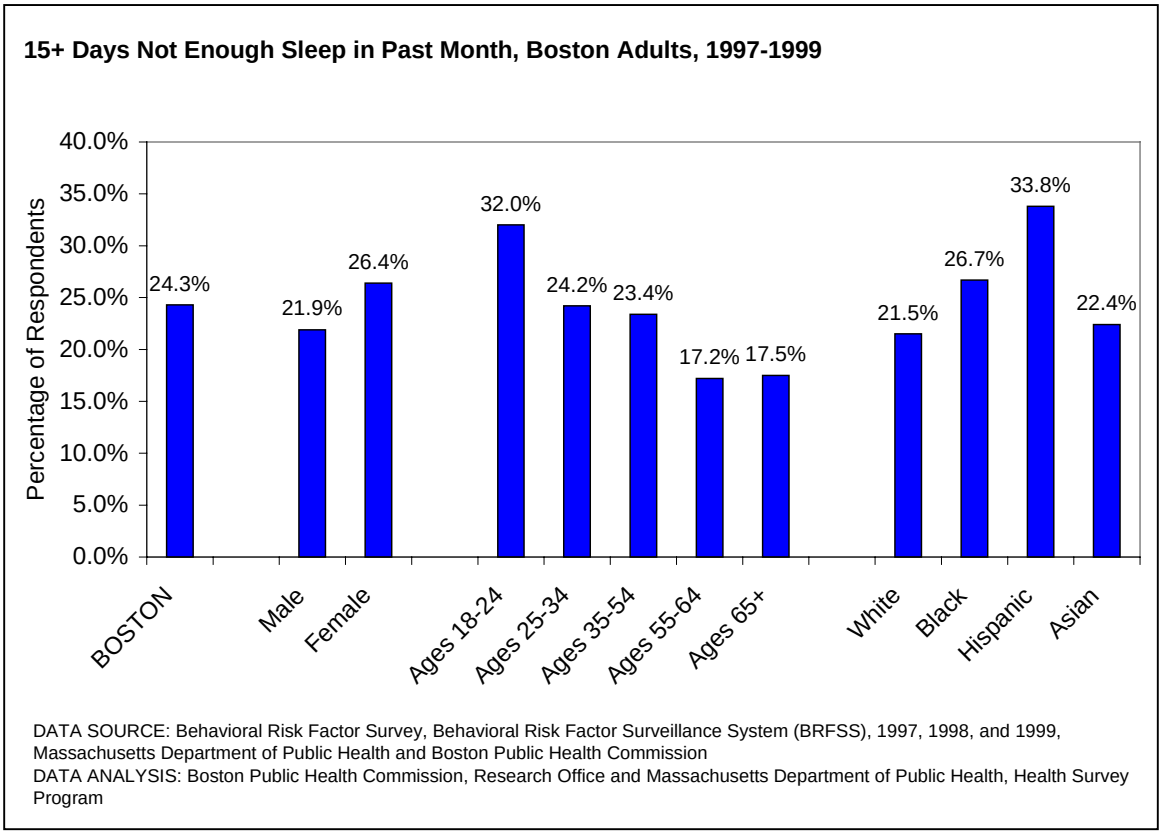
Fifteen or More Days Feeling Full of Energy in Past Month



NOTE: Respondents were asked how many days in past month they felt very healthy and full of energy.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- In 1999, a large majority (70.5%) of Boston adults said they had felt full of energy for 15 or more days of the previous month.
- A significantly higher percentage of Asians than Blacks and Hispanics reported having felt full of energy for 15 or more days of the past month.

Fifteen or More Days with Not Enough Sleep in Past Month

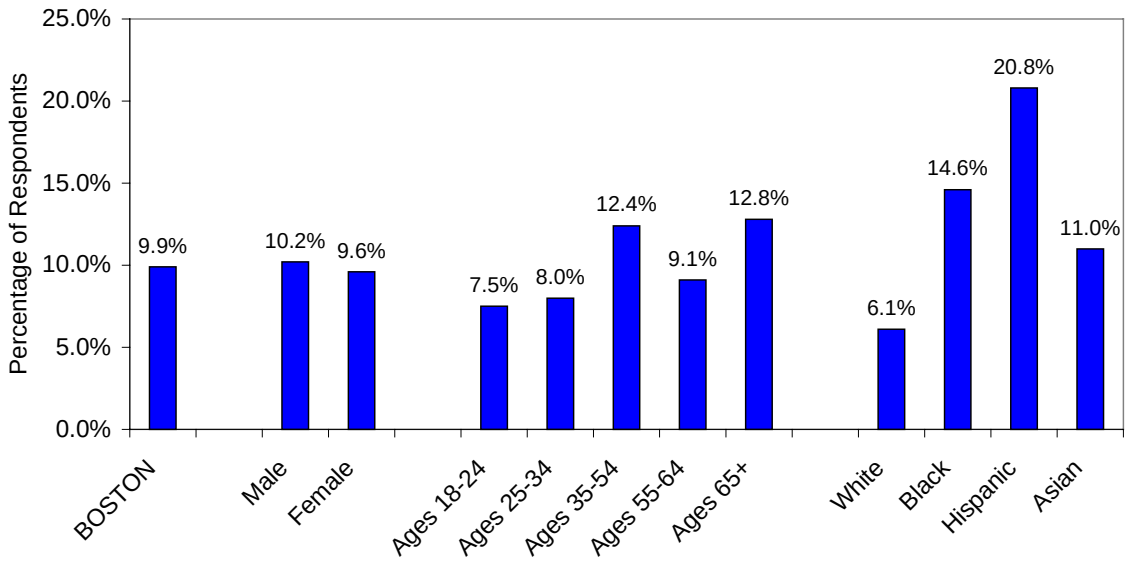


DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1997, 1998, and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1997-1999, nearly one quarter (24.3%) of Boston adults felt that they had not gotten enough sleep for at least 15 days in the previous month.
- A significantly higher percentage of women than men felt that they had not gotten enough sleep for 15 or more days during the previous month.
- A significantly higher percentage of Hispanics reported a lack of sufficient sleep for 15 or more days in the previous month, compared with other race/ethnicity groups.

Rarely or Never Get Needed Emotional Support

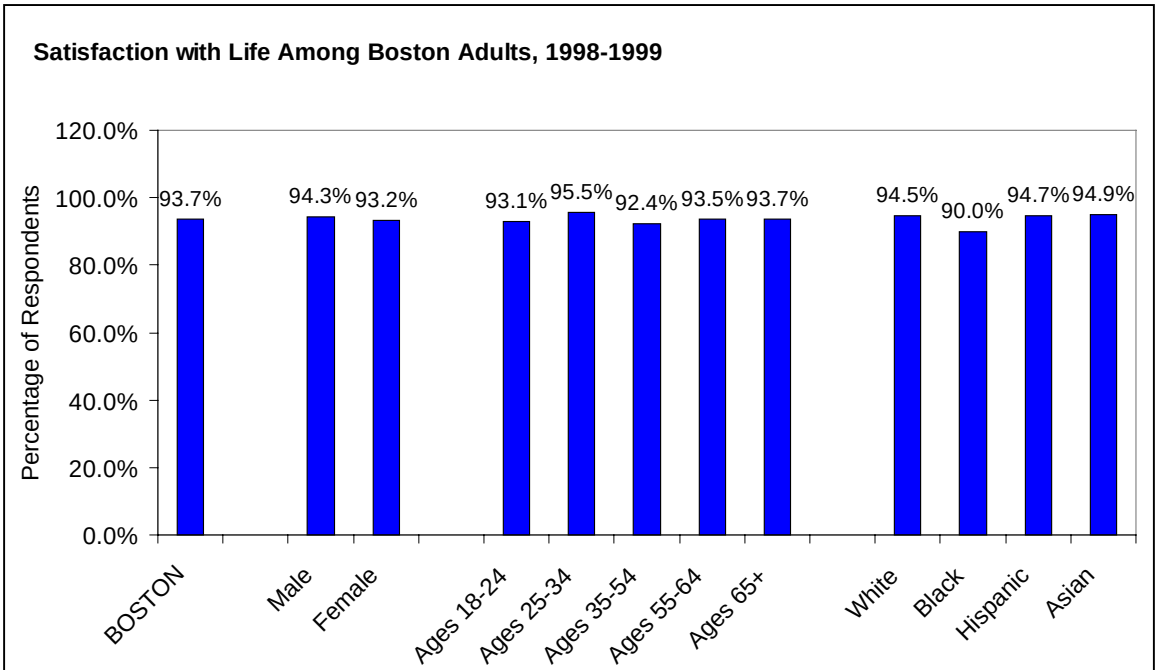
Rarely or Never Get Needed Emotional Support, Boston Adults, 1998-1999



NOTE: Respondents were asked how often they get the social and emotional support they need.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1998 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1998-1999, one tenth (9.9%) of Boston adults said that they rarely or never get needed social or emotional support.
- A significantly higher percentage of Hispanics and Blacks than Whites reported rarely or never getting social or emotional support when needed.

Satisfaction with Life

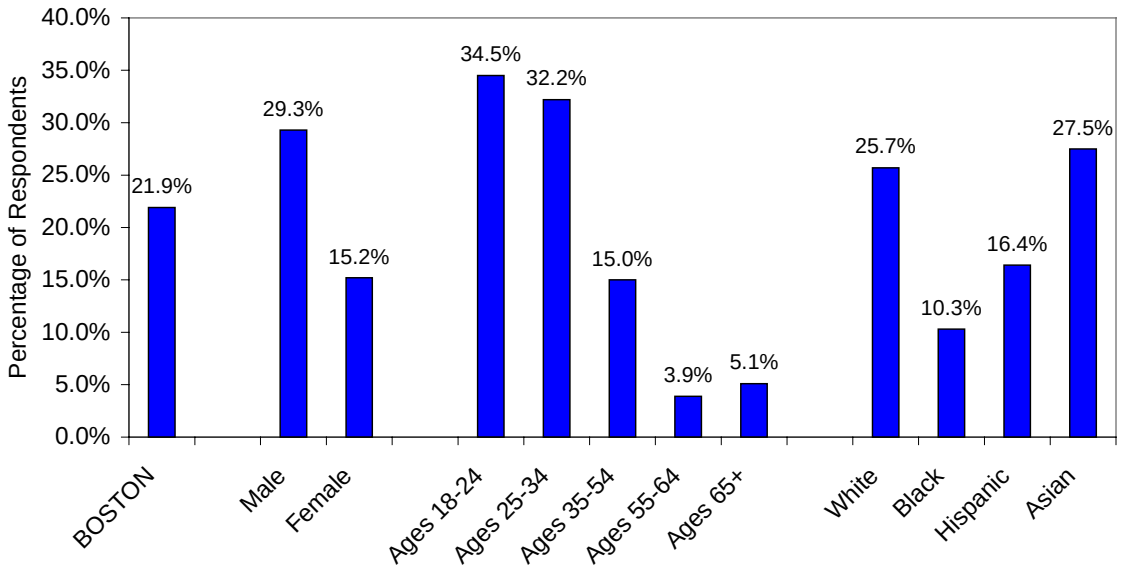


NOTE: Respondents were asked in general how satisfied they are with their lives. Percentages indicate those who reported being satisfied or very satisfied.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1998 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1998-1999, the vast majority (93.7%) of Boston adults reported feeling satisfied or very satisfied with their lives.
- A significantly lower percentage of Black adults than Hispanics or Whites stated that they were satisfied or very satisfied with their lives.

Binge Drinking in Past Month

Binge Drinking in Past Month by Boston Adults, 1997 and 1999

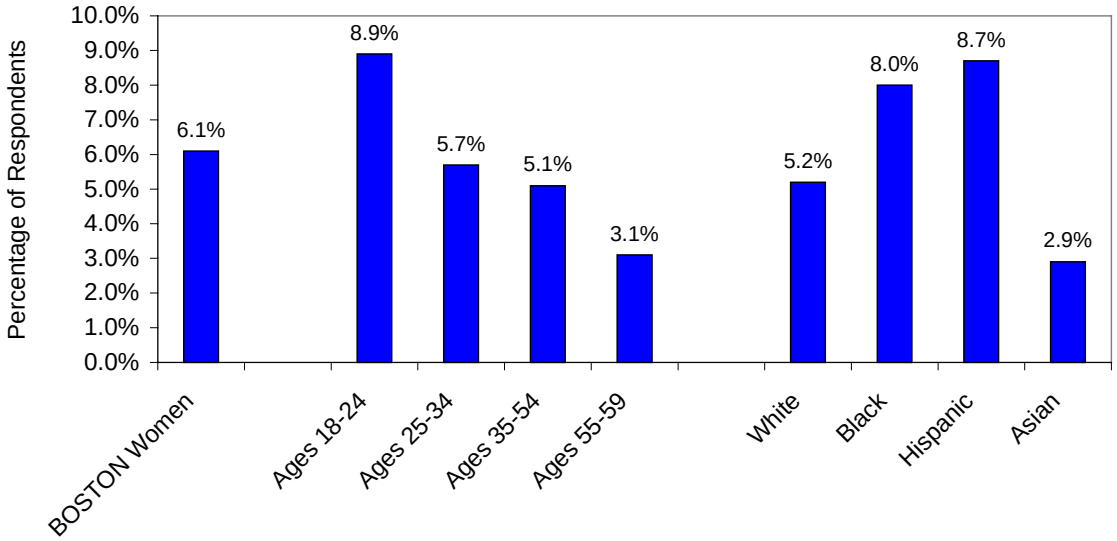


NOTE: Binge drinking was defined as consuming 5 or more drinks on one occasion.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1997 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1997 and 1999, over one fifth of Boston adults (21.9%) reported binge drinking on at least one occasion during the previous month.
- A significantly higher percentage of men than women reported binge drinking in the past month.
- The percentage of Boston adults reporting binge drinking in the previous month decreased significantly with age, but not all comparisons were statistically significant.
- A significantly higher percentage of Boston Whites reported binge drinking, in comparison with Blacks and Hispanics. (The differences between Asians and Black or Hispanic Boston adults appear to be even larger but were not statistically significant.)

Intimate Partner Abuse in Past Year

Intimate Partner Abuse in Past Year Among Boston Women, 1998-1999



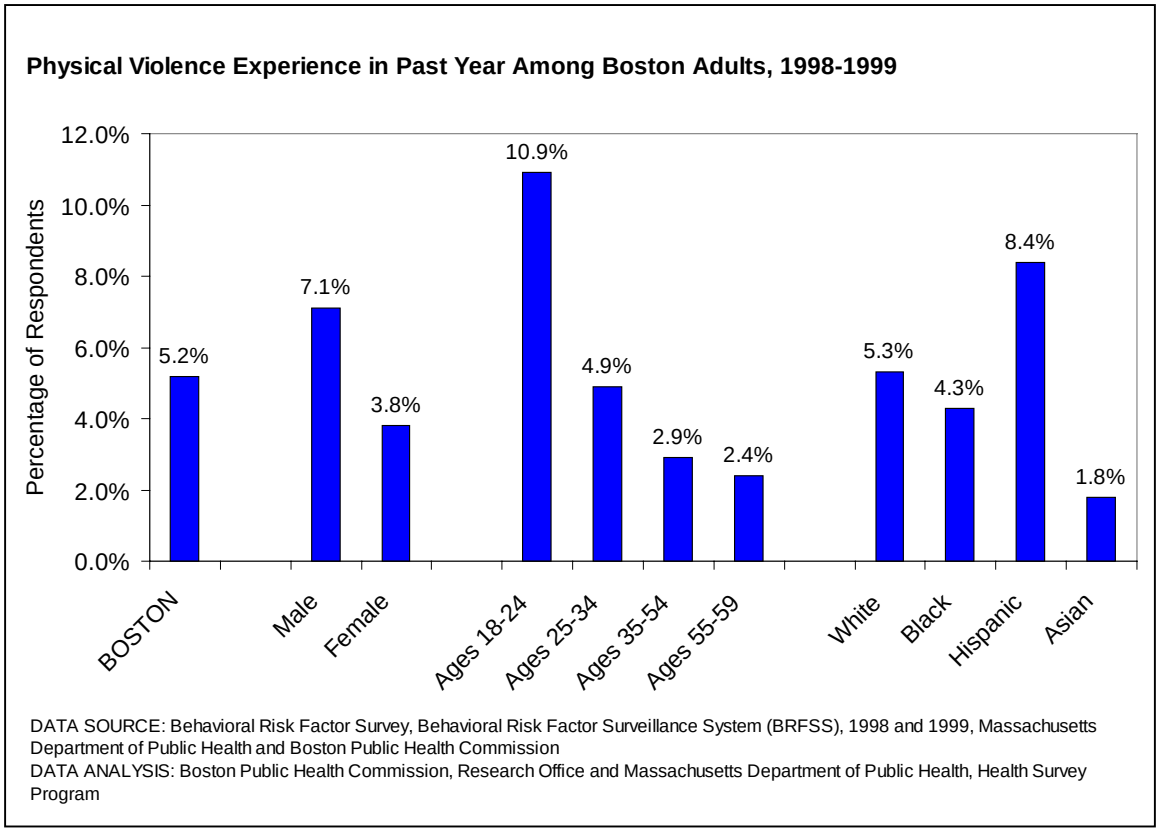
NOTE: Intimate partner abuse was defined as having been physically hurt, threatened, or controlled by a current or ex-husband, live-in partner, boyfriend, or girlfriend in the past year.
DATA SOURCE: Behavioral Risk Factor Survey, Behavioral Risk Factor Surveillance System (BRFSS), 1998 and 1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Boston Public Health Commission, Research Office and Massachusetts Department of Public Health, Health Survey Program

- During 1998-1999, 6.1% of Boston women ages 18-59 said they had experienced intimate partner abuse in the past year. Intimate partner abuse was defined as having been physically hurt, threatened, or controlled by a current or ex-husband, live-in partner, boyfriend, or girlfriend in the past year.

- A higher percentage of women ages 18-24 reported experiencing intimate partner abuse than women ages 55-59.

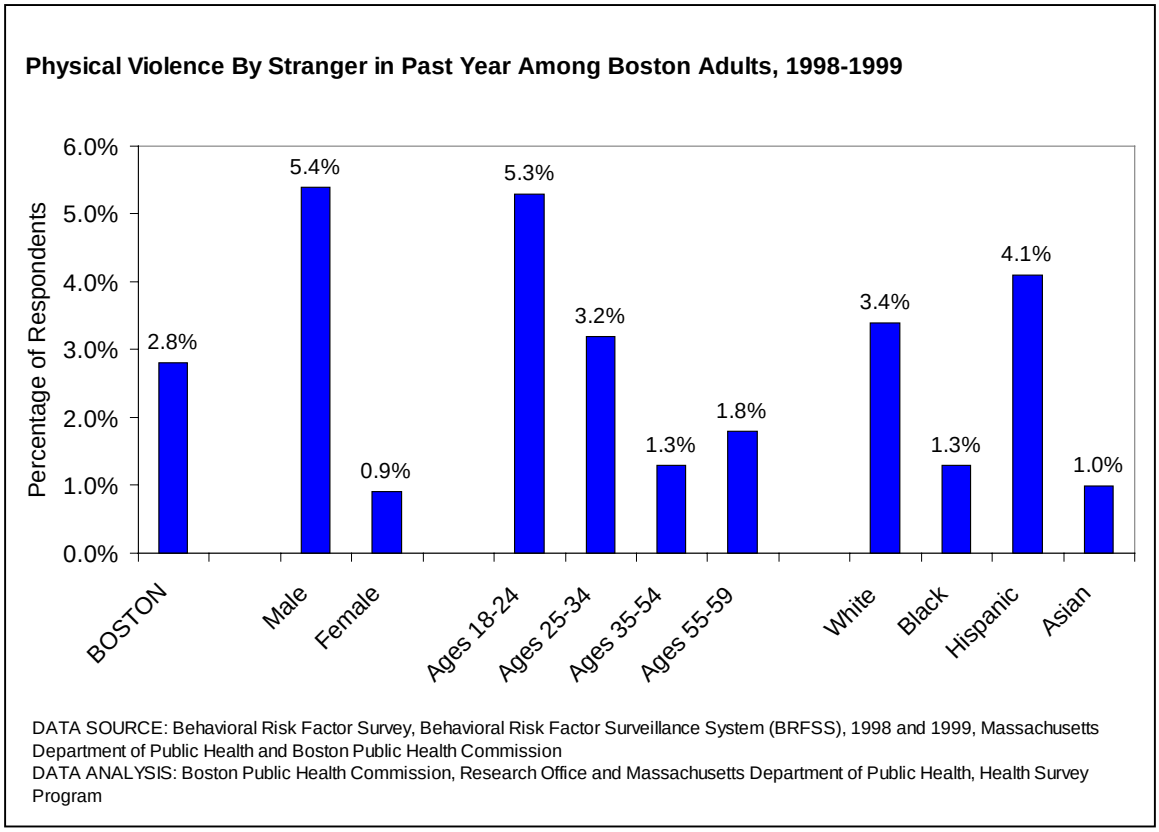
- A significantly higher percentage of Hispanic women reported intimate partner abuse in the past year, compared with Asian women.

Physical Violence Experience in Past Year



- During 1998-1999, 5.2% of Boston adults ages 18-59 said they had experienced physical violence in the past year.
- The experience of physical violence in the previous year was reported significantly more frequently by men than by women.
- A significantly higher percentage of adults ages 18-24 said they had experienced physical violence in the past year than people in other age groups.
- A significantly higher percentage of Hispanics reported experiencing physical violence than Blacks or Asians.

Physical Violence by Stranger in Past Year



- During 1998-1999, 2.8% of Boston adults ages 18-59 stated that they had experienced physical violence perpetrated by a stranger in the past year.
- A significantly higher percentage of men than women reported experiencing physical violence perpetrated by a stranger in the past year.

HOSPITALIZATION

Data about hospitalization can be very useful in assessing the health status of a population. In interpreting hospitalization data, it is important to remember that the total number of hospitalizations may include multiple hospitalizations of some individuals. In other words, it is not a count of individuals hospitalized, but rather of hospitalizations.

Rates of hospitalization and the reasons for hospitalization vary by sex, age, and race/ethnicity, as well as by socioeconomic status and other characteristics. (1,4,5,6)

The number of inpatient hospitalizations has declined over time, as has the number of days patients spend in the hospital. (1,2,3) This is the result of changes in the health care environment, including an increase in outpatient and same-day surgeries, treatment advances, such as new drug therapies and technology, changes in third-party reimbursement, and a shift to alternative patient care settings. (2,3) While Massachusetts patients are admitted to hospitals less often and stay for shorter durations, the hospital stays that do occur are more costly and the types of cases more complex than in the past. (3)

Of the 32 million hospital discharges in the US in 1999, six diagnoses accounted for 13.3 million or 41.6% of all discharges. These diagnoses were heart disease (4.5 million), delivery (3.8 million), pneumonia (1.4 million), cancer (1.3 million), psychoses (1.3 million), and fractures (1.0 million). (1)

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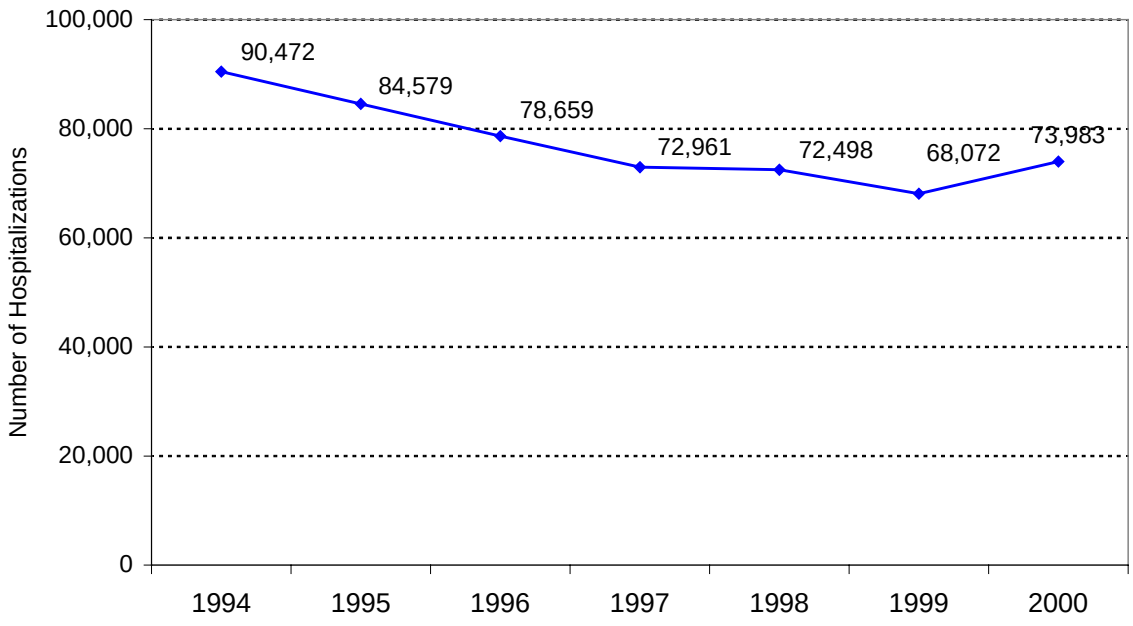
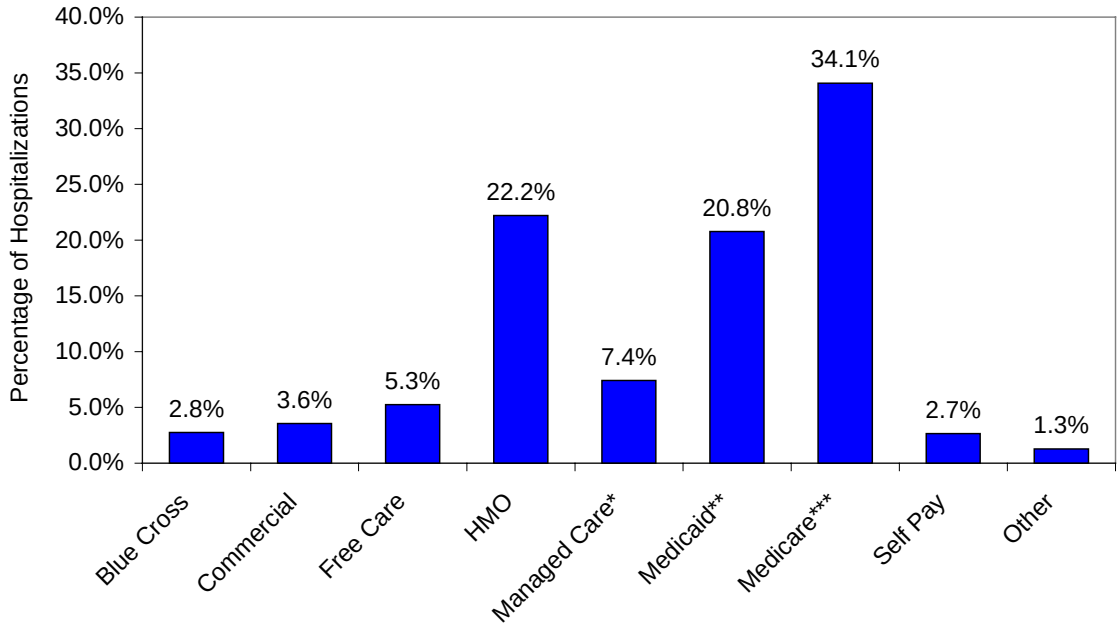
Hospitalizations by Year, Boston, 1994-2000



DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy; 1994-1996 discharge data, Massachusetts Health Data Consortium, Inc.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Like the trends in state and national hospitalizations, Boston hospitalizations have generally declined over the past several years, although an increase occurred between 1999 and 2000.
- Between 1994 and 2000, the number of hospitalizations of Boston residents declined 18.2%, from 90,472 to 73,983 hospitalizations.
- From 1999 to 2000, an 8.7% increase in hospitalizations of Boston residents occurred. However, it is too soon to determine if that increase marks the beginning of an upward trend, or is only a one-year fluctuation.

Hospitalizations by Payer, Boston, 2000

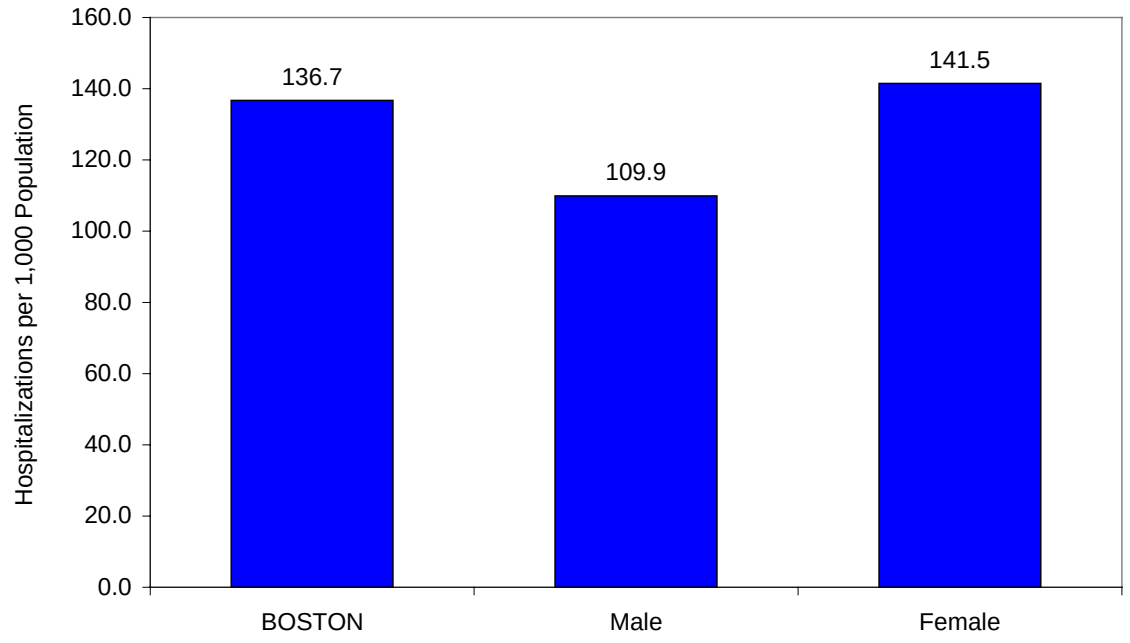


* Excluding Medicaid and Medicare managed care
**Including Medicaid managed care
*** Including Medicare managed care
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Of the 73,983 hospitalizations by Boston residents during 2000, public payers such as Medicare, Medicaid, and the Uncompensated Care Pool (also called Free Care) paid for the largest percentage of hospitalizations.

- Medicare paid for about one third of the hospitalizations by Boston residents, HMOs, 22.2%, and Medicaid, 20.8%.

Hospitalization Age-Adjusted Rates by Sex, Boston, 2000

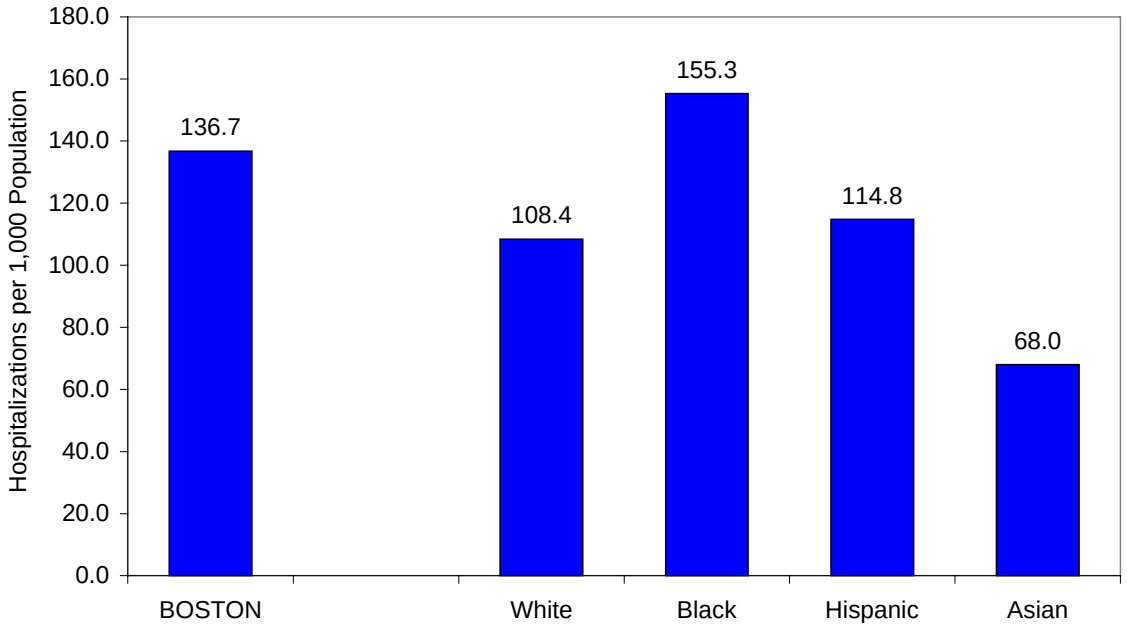


NOTE: These rates are age-adjusted to the 2000 US standard population.
DATA SOURCES: 2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- In 2000, the hospitalization rate for Boston men was 19.6% lower than the overall Boston rate, and the rate for Boston women, 3.5% higher.

- The hospitalization rate for Boston women in 2000 was 28.8% greater than for Boston men. This disparity is largely due to hospitalization of women for pregnancy and pregnancy-related conditions.

Hospitalization Age-Adjusted Rates by Race/Ethnicity, Boston, 2000



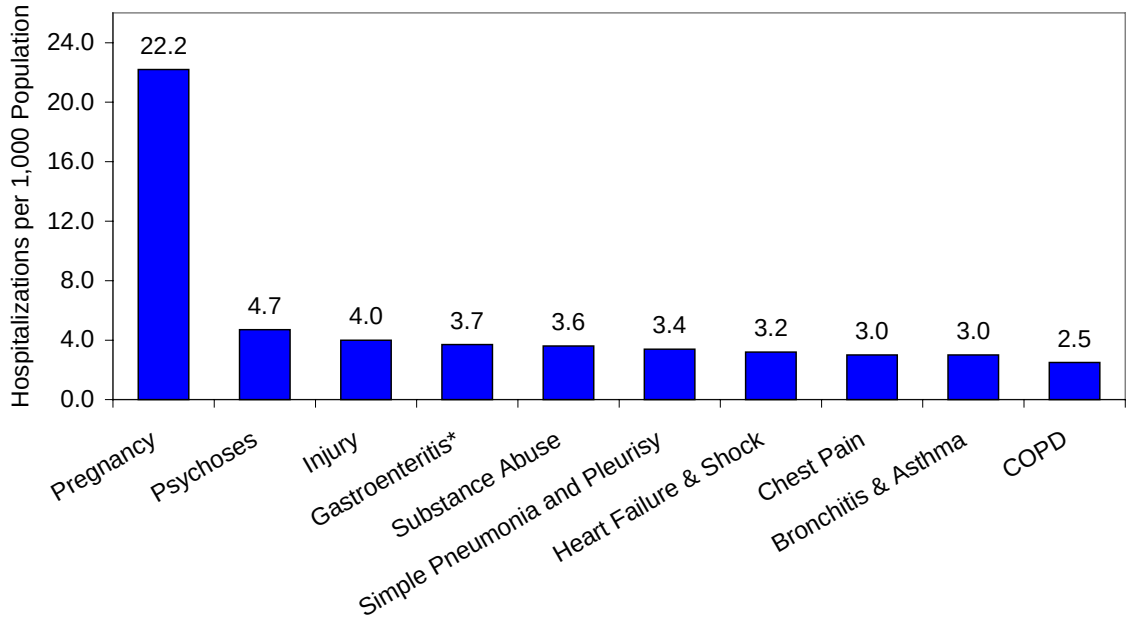
NOTE: These rates are age-adjusted to the 2000 US standard population.
DATA SOURCES: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

NOTE: Racial/ethnic information in the hospital discharge data should be interpreted with caution because it is not collected consistently by Massachusetts hospitals. Hispanics may be found in any of the above categories, depending on the individual hospital's reporting practices.

- In 2000, among races/ethnicities in Boston, Black residents had the highest hospitalization rate, and Asians, the lowest.

- The hospitalization rate for Blacks was 35.3% greater than the rate for Hispanics, 43.3% greater than the rate for Whites, and 126.1% times greater than the rate for Asians. It was also 13.6% greater than the hospitalization rate for Boston overall.

Leading Causes of Hospitalization Age-Adjusted Rates, Boston, 2000



NOTE: These rates are age-adjusted to the 2000 US standard population; newborns have been excluded.
* Also includes esophagitis and miscellaneous digestive disorders.
DATA SOURCES: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Ten leading causes accounted for 37.1% of all hospitalizations of Boston residents in 2000.
- Pregnancy and pregnancy-related conditions were the number one reason for hospitalizations of Boston residents, with a rate of 22.2 hospitalizations per 1,000 population. This category represents all deliveries as well as pregnancies with problems requiring hospitalization.
- The second and third highest hospitalization rates were for psychoses (a group of severe mental disorders) and injury.
- Other leading causes of hospitalization among Boston residents were gastroenteritis, substance abuse, simple pneumonia and pleurisy, chest pain, bronchitis and asthma, and chronic obstructive pulmonary disease (COPD).

Leading Causes of Hospitalization Age-Adjusted Rates by Sex, Boston, 2000

Male		Female	
Cause of Hospitalization	Hospitalizations per 1,000 Population	Cause of Hospitalization	Hospitalizations per 1,000 Population
Substance Abuse	5.5	Pregnancy	22.2
Psychoses	4.5	Psychoses	4.8
Injury	3.8	Gastroenteritis*	4.1
Simple Pneumonia and Pleurisy	3.7	Injury	3.2
Heart Failure and Shock	3.3	Simple Pneumonia and Pleurisy	3.2
Gastroenteritis*	3.1	Bronchitis and Asthma	3.2
Chest Pain	3.1	Uterine Procedures	3.1
Bronchitis and Asthma	2.7	Heart Failure and Shock	3.1
COPD	2.6	Chest Pain	3.0
Cellulitis	2.5	COPD	2.4

NOTE: These rates are age-adjusted to the 2000 US standard population; newborns have been excluded.

*Also includes esophagitis and miscellaneous digestive disorders.

DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population.

DATA ANALYSIS: Boston Public Health Commission, Research Office

- For 2000, with the exception of pregnancy-related reasons for hospitalization and uterine procedures, the ten leading reasons for hospitalization and their associated rates were similar for both males and females.

- Respiratory conditions such as simple pneumonia and pleurisy, bronchitis and asthma, and COPD together accounted for three of the ten leading causes for both males and females.

- Males accounted for 41.8% of hospitalizations in 2000. Substance abuse was the leading reason for hospitalization, and psychoses, the second leading reason. The hospitalization rate for substance abuse was 66.7% greater than the rate for heart failure and shock.

- Females accounted for 58.2% of all hospitalizations by Boston residents. Pregnancy was, overwhelmingly, the leading reason for hospitalization with a rate five to nine times that of the remaining nine leading causes.

- As with males, psychoses was the second leading reason for hospitalization of females. However, the hospitalization rate for psychoses was 6.7% higher for females than for males. It was also 54.8% greater than the rates for heart failure and shock or for uterine procedures.

- Substance abuse was not among the ten leading causes of hospitalization for females.

Leading Causes of Hospitalization Age-Adjusted Rates by Race/Ethnicity, Boston, 2000

White	
Cause of Hospitalization	**Hospitalizations per 1,000 Population**
Pregnancy	13.6
Psychoses	4.2
Substance Abuse	3.4
Simple Pneumonia and Pleurisy	3.0
Injury	2.8

Black	
Cause of Hospitalization	**Hospitalizations per 1,000 Population**
Pregnancy	29.9
Injury	6.1
Heart Failure and Shock	4.7
Gastroenteritis*	4.6
Bronchitis and Asthma	4.5

Hispanic	
Cause of Hospitalization	**Hospitalizations per 1,000 Population**
Pregnancy	29.5
Chest Pain	4.4
Gastroenteritis*	4.2
Bronchitis and Asthma	3.9
Injury	3.2

Asian	
Cause of Hospitalization	**Hospitalizations per 1,000 Population**
Pregnancy	17.5
Simple Pneumonia and Pleurisy	1.7
Gastroenteritis*	1.6
Psychoses	1.4
Uterine Procedures	1.4

*Also includes esophagitis and miscellaneous digestive disorders.

NOTE: These rates are age-adjusted to the 2000 US standard population; newborns have been excluded.

DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population.

DATA ANALYSIS: Boston Public Health Commission, Research Office

NOTE: Racial/ethnic information in the hospital discharge data should be interpreted with caution because it is not collected consistently by Massachusetts hospitals. Hispanics may be found in any of the above categories, depending on the individual hospital's reporting practices.

- Leading causes of hospitalization for Boston residents in 2000 differed across racial/ethnic groups. However, rates were greatest for Blacks and for Hispanics. They were lowest for Asians. Among the five leading reasons for hospitalization, pregnancy was first for all races/ethnicities.

- Psychoses (a group of severe mental disorders) were the second leading reason for hospitalization for Whites, injury the second leading cause for Blacks, chest pain the second leading cause for Hispanics, and simple pneumonia and pleurisy the second leading cause for Asians.

- Bronchitis and asthma were among the leading causes for Blacks and Hispanics. Bronchitis and asthma hospitalization rates were 15.4% higher for Blacks than for Hispanics. Simple pneumonia and pleurisy were among the leading causes for Whites and for Asians, but the rate for Whites was 76.5% higher.

- Heart failure and shock were a leading reason for hospitalization among Blacks.

- Gastroenteritis was among the leading causes for all races/ethnicities except Whites. Rates were highest for Blacks.

UNINTENTIONAL INJURIES

Introduction

Unintentional injuries, the leading cause of death among people ages 1-34 in the United States, constitute a major public health problem. (1) Yet it is estimated that 90% of all unintentional injuries are preventable. (2) ("Unintentional injury" includes such events as fires, falls, unintentional poisonings, motor vehicle crashes, and pedestrians injured by motor vehicles.) Each year more than 90,000 people die of unintentional injuries, and there are approximately 31 million emergency department visits attributable to these injuries. (3) It has been estimated that injuries account for 12% of all medical spending in the United States. (4) Falls are the leading cause of non-fatal emergency department visits for all age groups, followed by motor vehicle-related injuries. (5)

In the United States, more children die from unintentional injuries every year than from all childhood diseases combined. In any given year, 20-25% of all children sustain an injury serious enough to require medical attention, a school absence, and/or bed rest. (6)

In 1998, over 5,800 children under age 15 died from unintentional injuries. Each year approximately 120,000 children suffer permanent disabilities, and more than 14 million sustain injuries serious enough to require medical attention. (2) These injuries have financial, emotional, and societal costs. For every dollar spent on prevention, money is saved in direct medical costs and other costs to society.

Social and demographic characteristics—age, gender, race, and economic status—influence injury risk. Younger children, males, people of color, and poor children suffer disproportionate injury risk. (2) Racial disparities are largely the result of higher levels of impoverished living and environmental conditions such as substandard housing among racial and ethnic groups other than White.

The major unintentional risk areas for children are traffic injuries, which include children who are motor vehicle occupants, pedestrians, or bicyclists; drowning; fires and burns; suffocation; poisoning; choking; and falls.

Motor vehicle crashes are the leading cause of death among children. Every 90 seconds in this country, a child is killed or injured in a motor vehicle. In 1998, nearly half of all children under 5 who were killed in motor vehicle crashes were riding unrestrained. Correctly used child safety seats reduce the risk of death about 71% for infants and about 54% for children ages 1 to 4. (7)

Adolescents are at highest risk of motor vehicle injury or death because of developmental immaturity, high levels of risk behavior such as failing to wear seat belts and speeding, and driving inexperience. In Boston from 1995 through 1999, adolescents ages 15-19 accounted for 88% of all motor vehicle deaths. (8)

Childhood falls account for an estimated 2 million emergency department visits each year. (9) Falls are the leading cause of hospitalization for children in both Boston and in Massachusetts. The majority of falls occur at home. Boston has experienced an 83% reduction in childhood window falls since the 1993 inception of a window fall prevention program. (10)

Nationwide, in 1999, nearly 5,000 pedestrians died of traffic-related injuries, and another 85,000 sustained nonfatal injuries, with children ages 15 and younger accounting for 12% of all pedestrian fatalities and 32% of all nonfatal pedestrian injuries. People ages 65 and older accounted for 22% of all pedestrian deaths and approximately 8% of nonfatal pedestrian injuries. (11) The risk of deaths from falls is highest in the older age groups.

Since the 1999 inception of a citywide pedestrian education campaign, Boston has experienced an overall drop in the yearly average number of pedestrians struck by motor vehicles who require transport to the hospital.

Boston

In Boston in 1995-1999, males ages 0-19 accounted for 80% of injury fatalities. Overall, male children and adolescents experienced twice the number of injury hospitalizations as female children and adolescents. This drives an average overall annual injury hospitalization rate for children living in Boston to almost twice the statewide rate. (8)

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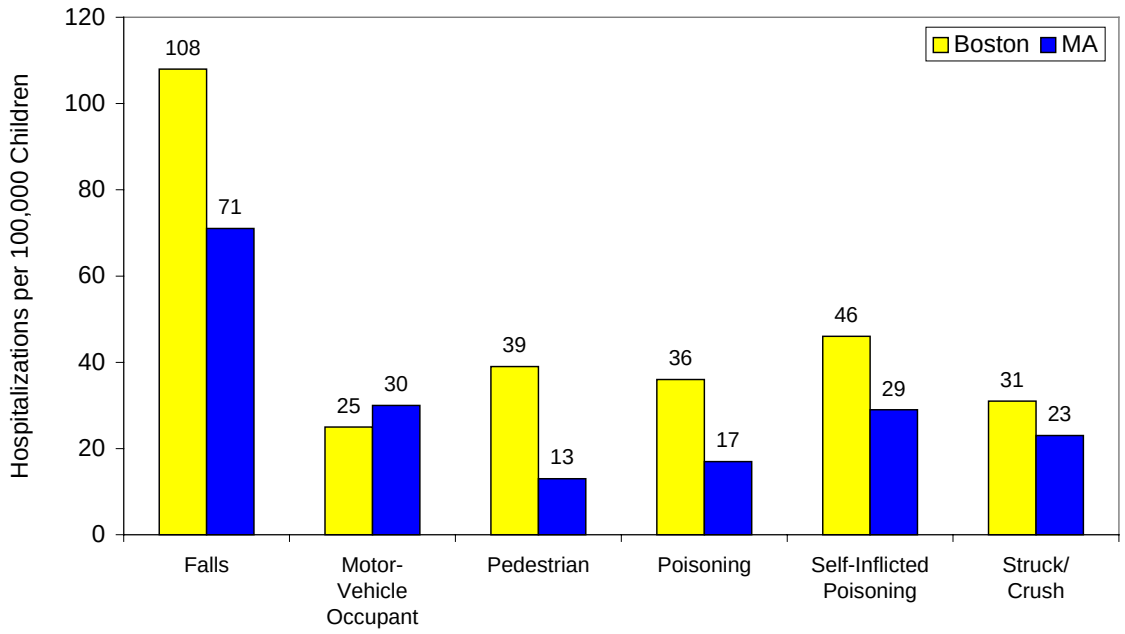
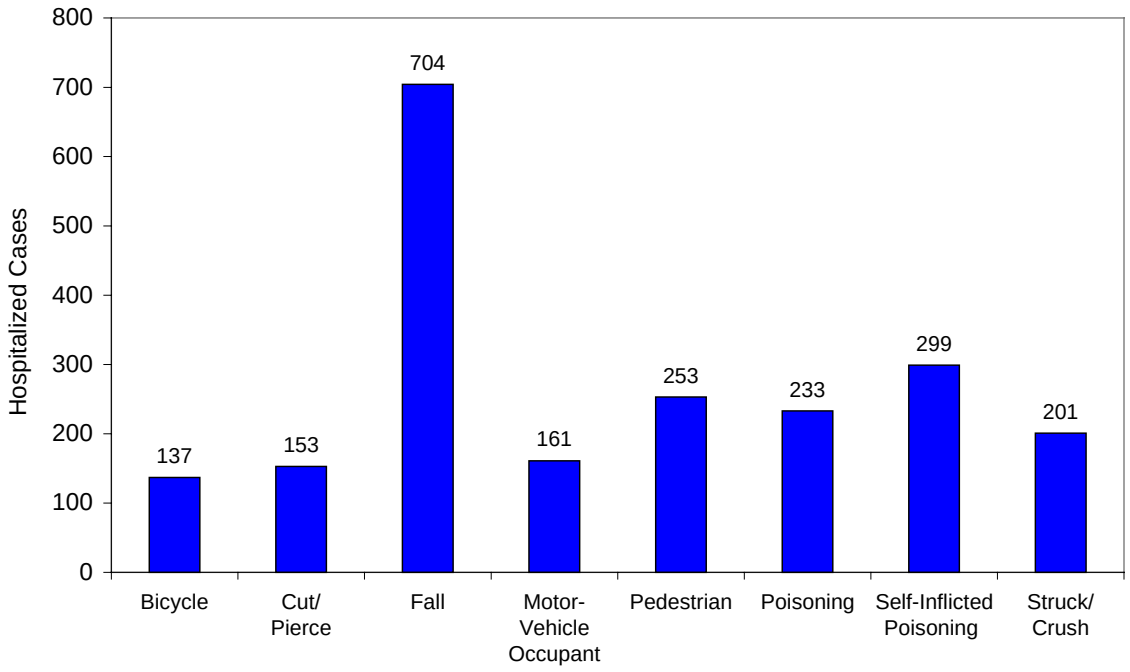
Injury Hospitalization Rates Among Children Ages 0-19, Boston and Massachusetts, 1995-1999



DATA SOURCE: Massachusetts Hospitalization Discharge Database, Massachusetts Department of Public Health Injury Surveillance Program
GRAPHIC: Boston Public Health Commission, Research Office

- Boston injury hospitalization rates for children are higher than statewide rates for most injuries, with the exception of those for motor vehicle occupant injuries.
- Falls are the leading cause of injury hospitalization both in Boston and in Massachusetts.
- The total average annual injury hospitalization rate for children living in Boston is almost twice the statewide rate (518.8 per 100,000 versus 297.0 per 100,000).

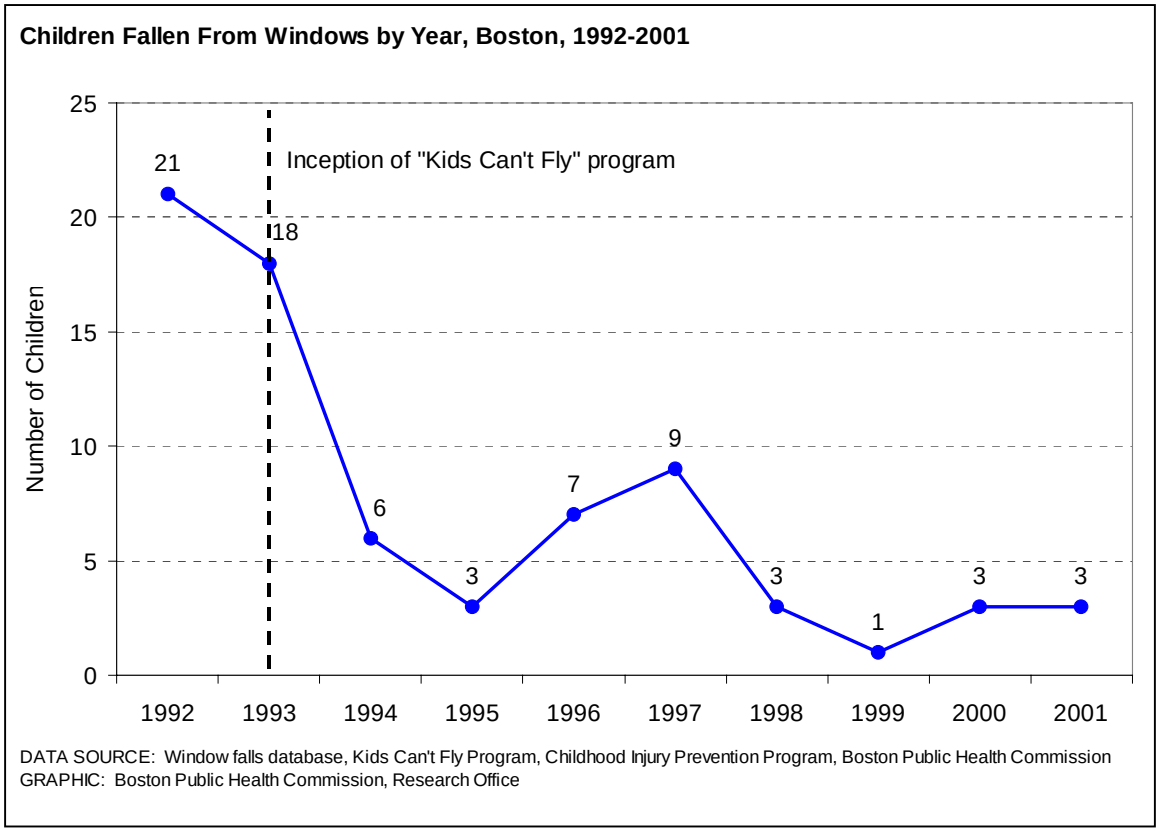
Causes of Injury Hospitalizations Among Children Ages 0-19, Boston, 1995-1999



DATA SOURCE: Massachusetts Hospital Discharge Database, Massachusetts Department of Public Health Injury Surveillance Program
GRAPHIC: Boston Public Health Commission, Research Office

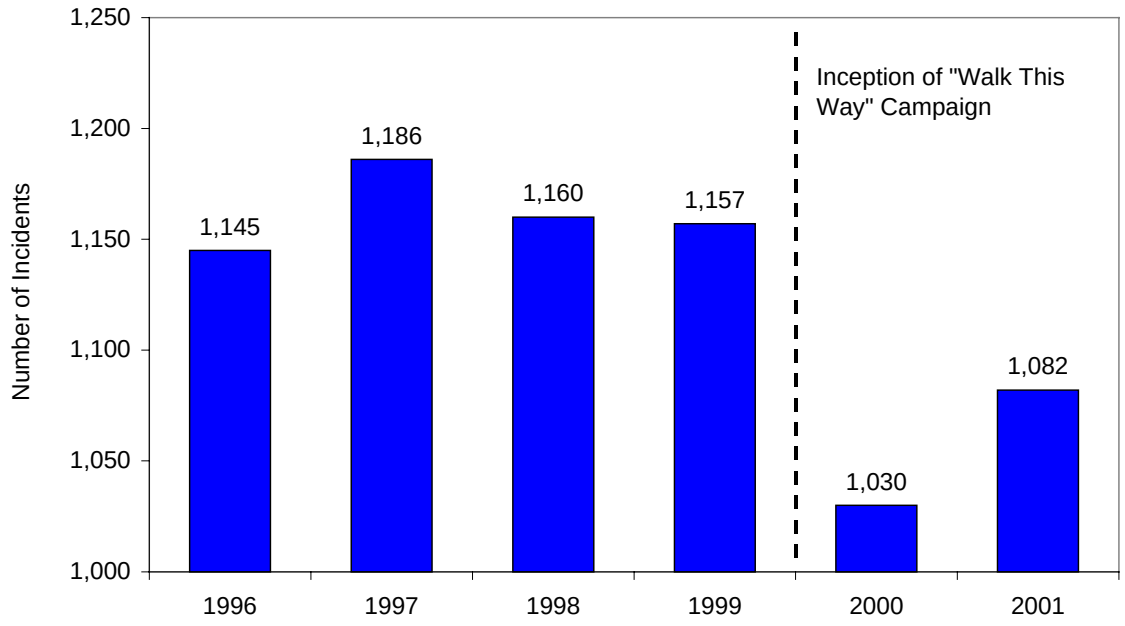
- The leading cause of hospitalization of Boston children during the time period 1995-1999 was falls, followed by self-inflicted poisoning and pedestrian injuries. Different injury patterns emerge when hospitalizations are examined by age group.

- Among Boston residents under age 20, those ages 15-19 experience the highest number of injury hospitalizations.



- In 1993 the "Kids Can't Fly" window fall prevention program was initiated citywide. The following year, Boston experienced a 67% decline in the number of children who fell from windows.
- Boston had an 83% decrease between 1993 and 2001 in the number of children who fell from windows.

Motor Vehicle/Pedestrian Incidents With Boston Emergency Medical Services Ambulance Transport, 1996-2001



DATA SOURCE: Motor-vehicle/pedestrian database, Boston Emergency Medical Services, Boston Public Health Commission
GRAPHIC: Boston Public Health Commission, Research Office

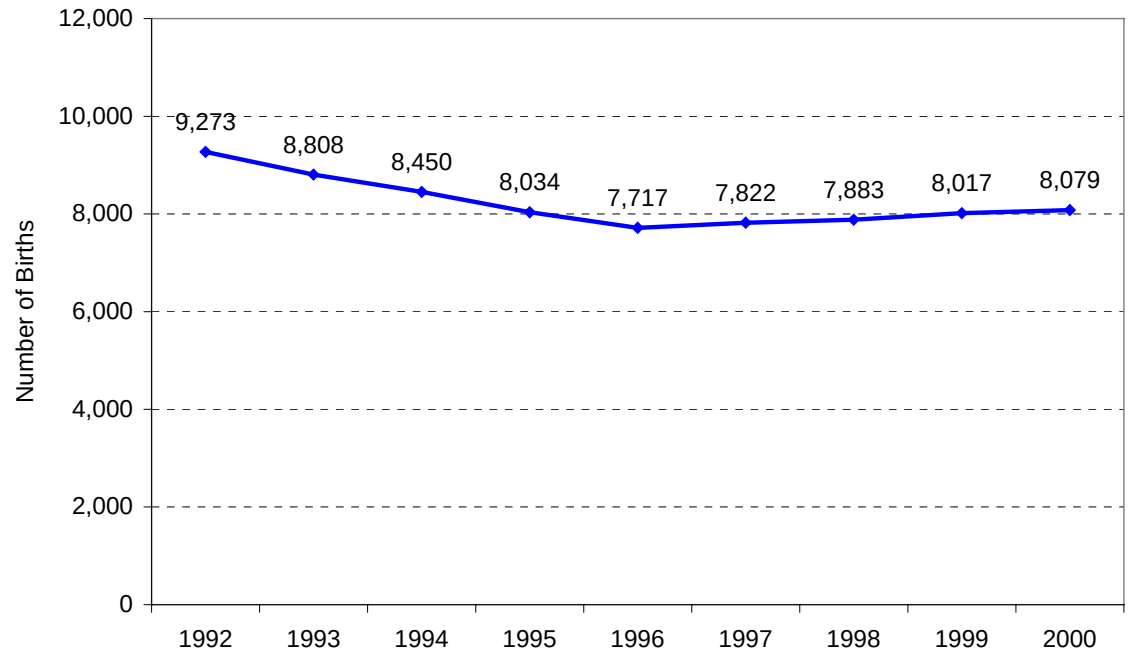
- During 1996-1999, an average of 1,162 Boston pedestrians were struck by motor vehicles each year.
- At the end of 1999, the Boston Pedestrian Protection Program “Walk This Way” was initiated. In 2000, the average number of pedestrians struck by motor vehicles declined 11% from the pre-campaign average.
- In 2001, there was a 3.7% increase over the number of pedestrians struck by motor vehicles compared with the year 2000. However, the number of struck pedestrians in 2001 was still 7.0% lower than the pre-campaign level.

CHILDBEARING

Frequently, health outcomes related to childbearing are used as indicators of the health status of a population. Birth rates are influenced by a number of complex factors such as socioeconomic status, access to health care, and religious and cultural values. Racial/ethnic disparities exist in all aspects of childbearing health outcomes, especially in overall birth rates, adolescent birth rates, low birthweight rates, and infant mortality rates.

This section on childbearing includes information on birth rates, birth rates by ancestry of the mother, birth rates by age and race/ethnicity, low birthweight births, and infant mortality.

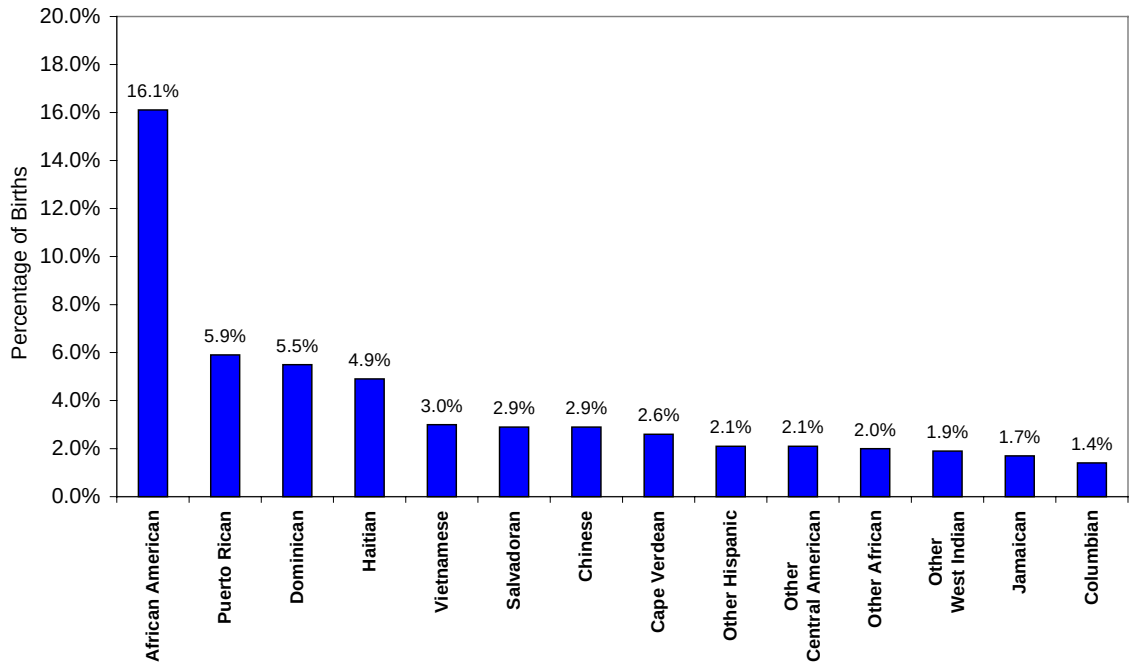
Births Overall by Year, Boston, 1992-2000



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

- In 2000, there were 8,079 live births to Boston residents, making it the fourth year in a row in which the number of live births to Boston residents increased.
- Between 1992 and 1996, births decreased 16.8%. Since that point, however, Boston births have increased 4.7%.

Births by Ancestry of Mother, Boston, 2000



NOTE: Births of 100 or more in each category were included in the chart.
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

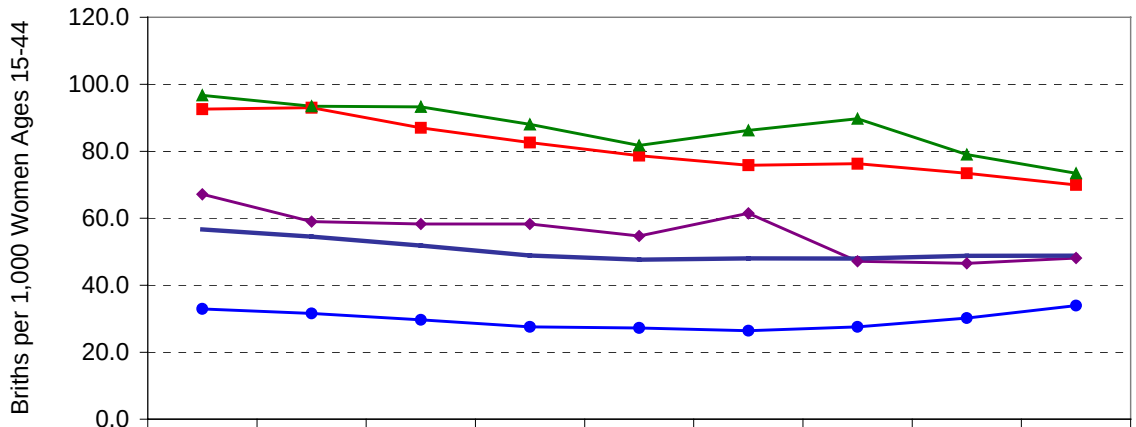
- Together, birth to women in the ancestry groups shown in this chart total slightly more than half of all Boston births in 2000. Twenty-five ancestry groups, each with a very small number of births, made up the rest.

- Among Boston women who gave birth in 2000, the largest single ancestry group was African-American women, with 16.1% of all Boston births.

- Among Hispanic ancestry groups in Boston, the largest group of women to give birth were women of Puerto Rican ancestry, followed by Dominicans and Salvadorans. Combined, these three groups of women represented 65.9% of all Boston Hispanic births.

- Among Asian ancestry groups in Boston, the largest group of women giving birth in 2000 were of Vietnamese ancestry, followed by Chinese women. Combined, these two groups represented 70.5% of all Boston Asian births.

Birth Rates Among Women Ages 15-44 by Year and Race/Ethnicity of the Mother, Boston, 1992-2000



	1992	1993	1994	1995	1996	1997	1998	1999	2000
White	33.0	31.6	29.7	27.6	27.3	26.4	27.6	30.2	33.9
Black	92.6	93.0	87.0	82.6	78.7	75.9	76.3	73.5	69.9
Hispanic	96.7	93.4	93.3	88.0	81.8	86.2	89.7	79.0	73.5
Asian	67.2	59.0	58.3	58.3	54.7	61.5	47.2	46.6	48.1
Boston	56.7	54.6	51.8	48.9	47.6	48.0	48.0	48.8	48.9

DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Boston's birth rate (the number of births to women ages 15-44 per 1,000 women in that age range) was 48.9 in 2000, similar to the rate in 1999 (48.8).

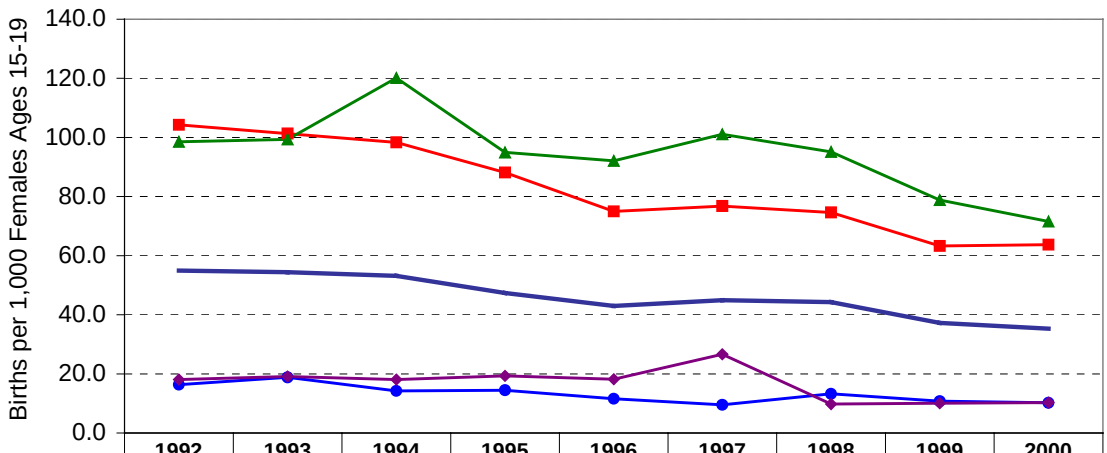
- In each of the years from 1992 through 2000, the birth rate for White women ages 15-44 was lower than the rates for women of all other racial and ethnic groups. Between 1992 and 2000, the birth rate for whites increased slightly, by 2.7%.

- Between 1992 and 2000, Black women had the second largest decline in birth rates (24.5%) of all racial and ethnic groups; however, the birth rate among Blacks in 2000 was still more than twice as high as the birth rate among White women.

- From 1992 through 2000, the birth rate for Hispanic women was the highest of the rates for women of all racial and ethnic groups. The Hispanic birth rate decreased 24.0% between 1992 and 2000.

- During 1992-1997, birth rates among Asian women were higher than birth rates for Boston overall and during 1992-2000 higher than the birth rates among White women. From 1992 through 2000, birth rates among Asian women declined 28.4%. This was the largest decline among all racial and ethnic groups.

Birth Rates Among Adolescents Ages 15-19 by Year and Race/Ethnicity of the Mother, Boston, 1992-2000



	1992	1993	1994	1995	1996	1997	1998	1999	2000
White	16.3	18.8	14.2	14.5	11.6	9.5	13.3	10.8	10.2
Black	104.3	101.3	98.3	88.1	75.0	76.8	74.6	63.3	63.7
Hispanic	98.5	99.3	120.1	94.9	92.1	101.1	95.1	78.8	71.6
Asian	18.1	19.2	18.1	19.3	18.2	26.6	9.8	10.1	10.3
Boston	54.9	54.4	53.2	47.4	43.0	44.9	44.3	37.3	35.3

DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

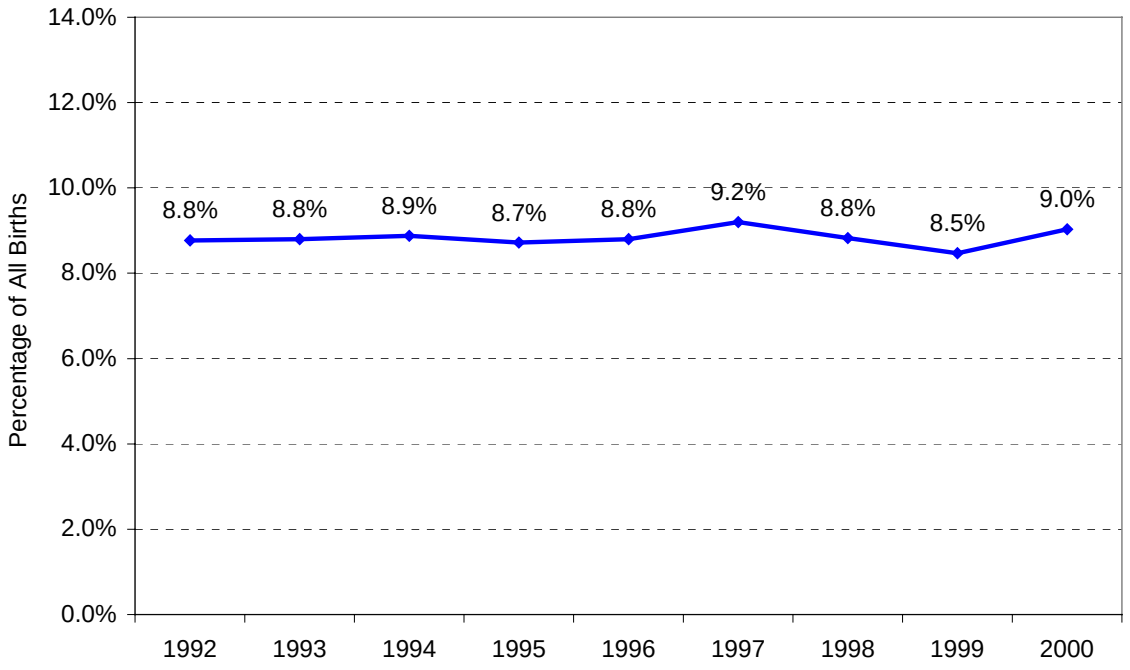
- Births to adolescents ages 15-19 accounted for 9.7% of the 8,079 Boston births in 2000, compared with 9.5% in 1999. This is the fourth year in a row that the percentage of Boston births that were to adolescents has been below eleven percent.

- Similar to the national trend, Boston adolescent birth rates have declined since 1992. Between 1992 and 2000, they declined 35.7%. In 2000, the Boston adolescent birth rate was 35.3 per 1,000 adolescents ages 15-19. This rate is 23.3% lower than the Healthy People 2010 target of no more than 46.0 births per 1,000 adolescents.

- Adolescent birth rates continue to be substantially higher among Hispanics (71.6 per 1,000) and Blacks (63.7 per 1,000) than Whites (10.2 per 1,000) and Asians (10.3 per 1,000). The 2000 rate for Hispanics showed a decrease of 9.1% from 78.8 in 1999, and for Whites, a decrease of 5.6%. Both Blacks and Asians experienced very slight increases.

- Large declines in adolescent birth rates have occurred in all race/ethnicity groups between 1992 and 2000. Whites and Blacks experienced decreases of 37.4% and 38.9%, respectively. The Hispanic adolescent birth rate fell 27.3% during this period, while for Asians, the decrease over time was 43.1%.

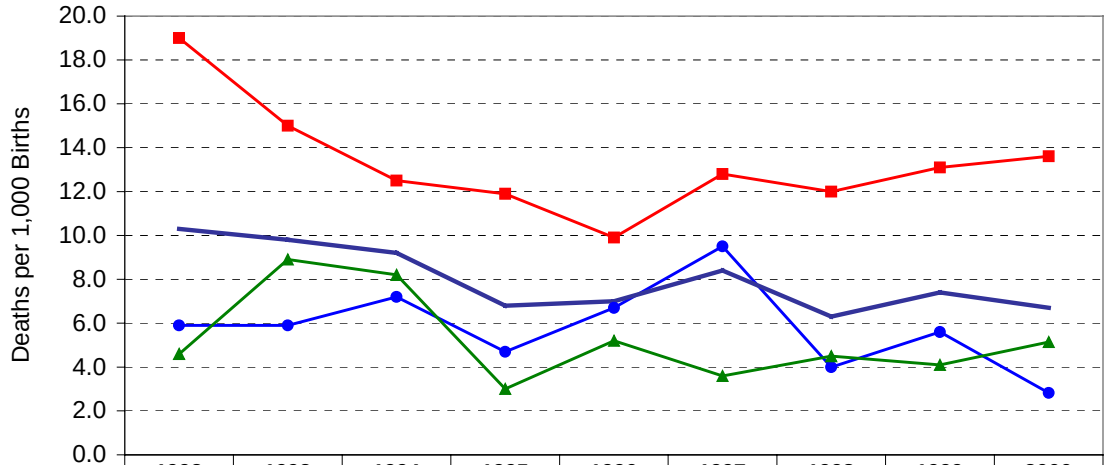
Low Birthweight Births as Percentage of All Births by Year, Boston, 1992-2000



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

- In 2000, 727 births to Boston residents (or 9.0% of births) were low birthweight (LBW); these infants weighed less than 2,500 grams (5.5 pounds) at delivery.
- The Healthy People 2010 goal is to reduce low birthweight rates to 5.0%. In 2000, the Boston LBW rate was 80.0% above that goal.
- Between 1992 and 2000, the LBW rate for Boston births fluctuated from a low of 8.5% in 1999 to a high of 9.2% in 1997.
- Low birthweight (LBW) births increased from 8.5% of Boston births in 1999 to 9.0% in 2000. This was a 5.9% increase.

Infant Mortality Rates by Race/Ethnicity, Boston, 1992-2000



	1992	1993	1994	1995	1996	1997	1998	1999	2000
White	5.9	5.9	7.2	4.7	6.7	9.5	4.0	5.6	2.8
Black	19.0	15.0	12.5	11.9	9.9	12.8	12.0	13.1	13.6
Hispanic	4.6	8.9	8.2	3.0	5.2	3.6	4.5	4.1	5.1
Boston	10.3	9.8	9.2	6.8	7.0	8.4	6.3	7.4	6.7

NOTE: The 1998 IMR for Black infants includes 4 deaths reported late.
DATA SOURCE: Boston resident deaths and live births, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

There were 54 Boston infant deaths during 2000, 5 fewer than in 1999.

- Large disparities in infant mortality rates (IMRs) continue to exist. Boston's Black infants have by far the highest IMRs among all Boston race/ethnicity groups. The Black infant mortality rate in 2000 was almost five times that of White infants, the city's largest IMR disparity since 1986.

- Overall infant mortality rates have, over the long term, declined in Boston. The 2000 IMR for Black infants was 13.6 deaths per 1,000 live births, a 28.4% decrease from a high of 19.0 in 1992. However, the downward trend for Black infant mortality ended in 1997 and has remained higher every year since that point.

- The year 2000 IMR for White infants (2.8 deaths per 1,000) represented a 52.5% decrease from the 1992 rate of 5.9 and the lowest rate recorded during the nine-year period 1992-2000. In 2000, Hispanic infants had an IMR of 5.1 deaths per 1,000, a 10.9% increase since 1992.

- Several factors contribute to the disparites observed for IMRs between Black and White infants: (1) a higher percentage of Black infants than infants of other races and ethnicities are born at extremely low birthweights, where survival is unlikely regardless of race/ethnicity; (2) this percentage has increased in recent years; and (3) the IMR for White infants declined at the same time the rate for Black infants rose. The combination widened the IMR gap between Black and White rates. The racial disparity between Black and White infants is not attributable to differences in survival at a given weight: birthweight-specific mortality in Boston is similar across racial and ethnic groups.

CHILDHOOD ASTHMA HOSPITALIZATION

Asthma is a chronic respiratory disease which affects the bronchioles, tiny tubes which bring air in and out of the lungs. During an asthma episode, the bronchioles become swollen and constricted and fill with thick mucous, making it hard to breathe. Asthma attacks or episodes are caused by triggers such as pets, cockroaches, fungi and molds, cold viruses, certain air pollutants, house dust mites, and environmental tobacco smoke. (1)

Treatment for asthma includes medical management and environmental control. Medications act to decrease swelling and mucous production and to relax the tightened airway muscles.

The number of asthma cases is especially high among low-income and minority children living in urban areas. (2,3,4) According to the American Lung Association, an estimated 77,300 children in Massachusetts have asthma, including 7,706 who live in Suffolk County. (5)

The consequences of inappropriate or inadequate management of asthma are many, including hospitalizations, emergency room visits, days missed from work or school, limitations in activity, disability, and death. (3,6,7,8)

Asthma hospitalizations are very common among children. In 1999, children and adolescents under the age of 15 accounted for about 40% of all asthma hospitalizations in the US. (8) After age 15, hospitalizations due to asthma are unusual. (3) Male children tend to have higher asthma hospitalization rates than female children, especially in the younger age groups. (2) NOTE: In interpreting asthma hospitalization data, it is important to remember that some hospitalizations may represent multiple hospitalizations by the same individual.

Nationally, between 1998 and 1999 hospitalization rates for asthma increased for children and adolescents under the age of 15 from a rate of 2.8 hospital discharges per 1,000 population to 3.2 per 1,000, a 14% increase. (8)

Asthma occurs in disproportionate rates among people of different racial/ethnic and cultural backgrounds, with poverty and other socioeconomic characteristics greatly influencing the risk for asthma hospitalization.(2, 3, 4, 7, 8) Black children are hospitalized for asthma at a rate 3 times higher than the rate for White children. They are also 4 times more likely to be treated in the emergency room for asthma than White children. (4)

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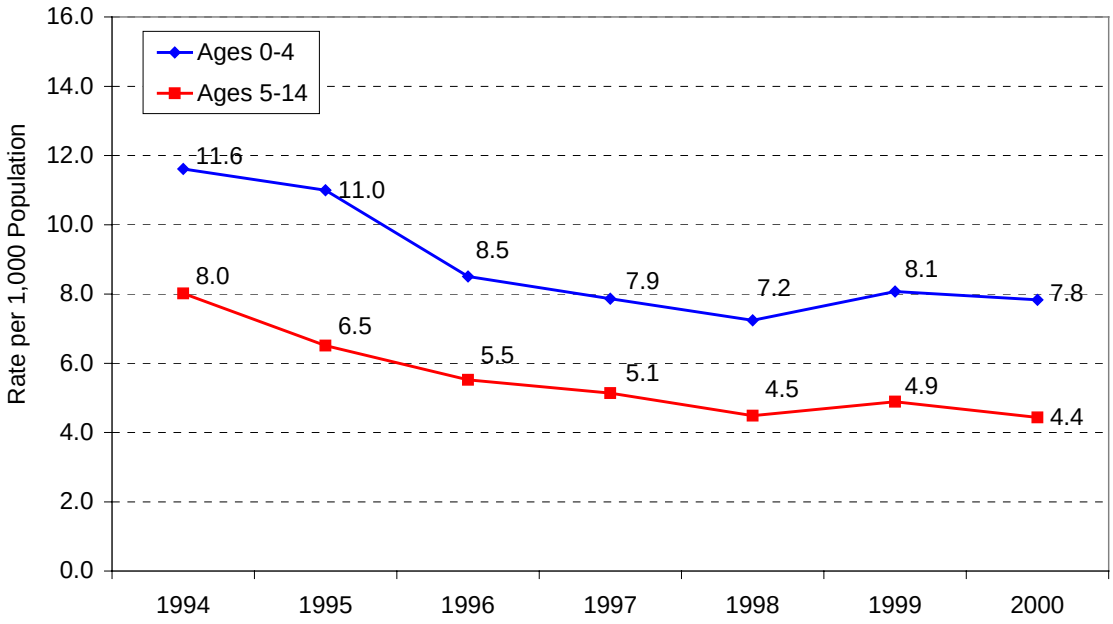
Asthma Hospitalization Rates Among Children Ages 0-4 and 5-14, Boston, 1994-2000



DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy; 1994-1996 discharge data, Massachusetts Health Data Consortium, Inc. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

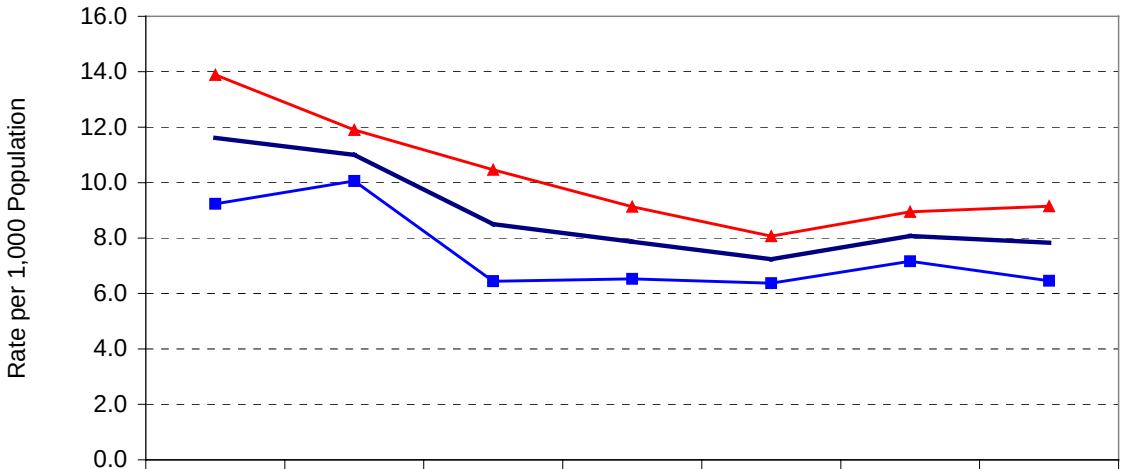
- Nationally, asthma continues to be a major health problem, especially among children. The Centers for Disease Control and Prevention estimates that asthma affects 15 million people in the US, a third of them children. Asthma is the most common chronic disease among children.

- Children under age 5 are disproportionately affected by asthma and have higher asthma hospitalization rates than most other age groups.

- Over time, however, asthma hospitalization rates in Boston among children ages 0-4 have declined. Between 1994 and 2000, the rate among these children declined 32.8%. There was a 12.5% increase in the rate between 1998 and 1999.

- A similar pattern is found among children ages 5-14. Among these children, the hospitalization rate declined 45.0% between 1994-2000, although there was an 8.9% increase between 1998 and 1999.

Asthma Hospitalization Rates Among Children Under Age 5 by Sex and Year, Boston, 1994-2000



	1994	1995	1996	1997	1998	1999	2000
Boston	11.6	11.0	8.5	7.9	7.2	8.1	7.8
Male	13.9	11.9	10.5	9.1	8.1	8.9	9.1
Female	9.2	10.1	6.4	6.5	6.4	7.2	6.5

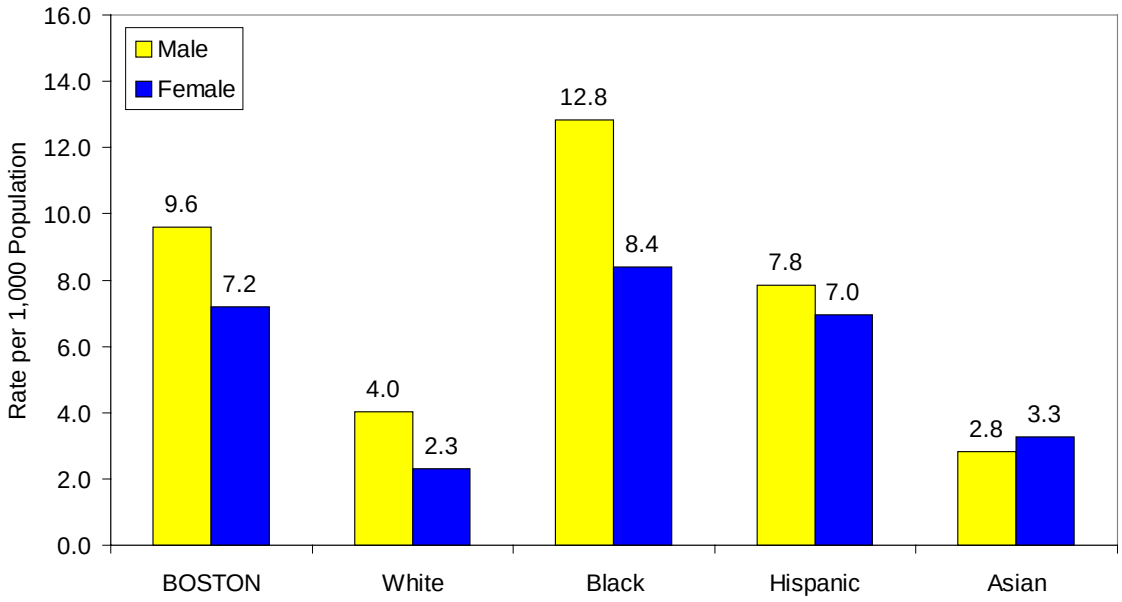
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy; 1994-1996 discharge data, Massachusetts Health Data Consortium, Inc. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- The hospitalization rate among males under age 5 was consistently higher than the rate for females under age 5 for the period between 1994 to 2000. The rate for males in 1994 was 51.1% higher than the rate for females. This disparity narrowed to 17.8% in 1995, widened again in 1996, narrowed in 1997 and 1998, and then widened to 40.0% in 2000.

- The asthma hospitalization rate among males under age 5 declined 41.7% between 1994 and 1998. By 2000, it had increased again, by 12.3%. Between 1994 and 2000, the overall Boston rate for male children under age 5 declined 34.5%.

- The asthma hospitalization rate among females under age 5 rose 9.8% between 1994 and 1995 and fell 30.4% from 1994 to 1996, fluctuating slightly thereafter until 2000. Between 1994 and 2000, the overall Boston rate for female children under age 5 declined 29.3%.

Asthma Hospitalization Average Annual Rates Among Children Under Age 5 by Sex and Race/Ethnicity, Boston, 1997-2000



NOTE: Ten percent of asthma hospitalizations for males and fourteen percent for females were of unknown race/ethnicity.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

NOTE: Race/ethnicity information in the hospital discharge data should be interpreted with caution because it is not collected consistently by Massachusetts hospitals. Hispanics may be found in any of the above categories, depending on the individual hospital's reporting practices.

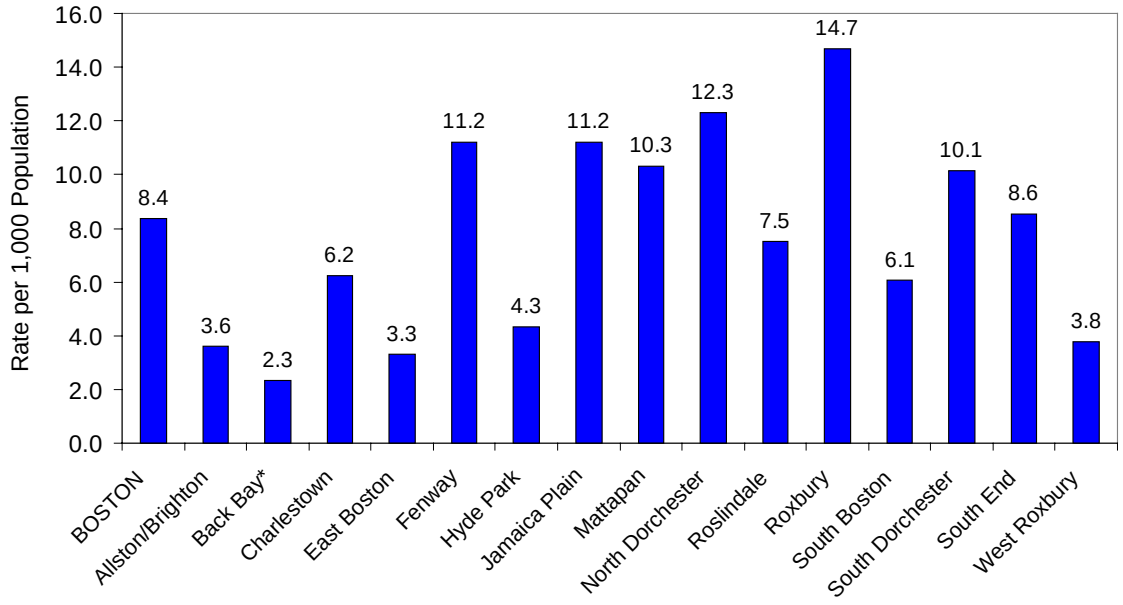
- During 1997-2000, males under age 5 of all races/ethnicities, with the exception of Asians, had higher hospitalization rates for asthma than females.

- The disparity in asthma hospitalization rates among male children under age 5 and also among female children under age 5 was greatest between Black and White children. However, asthma hospitalization rates for both Black males and females were greater than those of other races/ethnicities. After Blacks, Hispanics had the second highest rates. Asians and Whites of both sexes experienced the lowest asthma hospitalization rates.

- Among males, the asthma hospitalization rate for Blacks was 4.6 times greater than for Asian males, 3.2 times greater than for White males, 1.6 times greater than for Hispanics, and a third greater than for Boston males overall. Among females, the asthma hospitalization rate for Blacks was 3.7 times the rate for Whites, 2.5 times the rate for Asians, 1.2 times the rate for Hispanics, and almost a fifth greater for Boston females overall.

- The disparity between the sexes within race/ethnicity was greatest for Whites and for Blacks, where the asthma hospitalization rate for White males was 73.9% higher than the rate for White females, and the rate for Black males, 52.4% higher than the rate for Black females. The asthma hospitalization rate for Asian females was 17.9% higher than the rate for Asian males.

Asthma Hospitalization Average Annual Rates Among Children Under Age 5 by Neighborhood,* Boston, 1997-2000

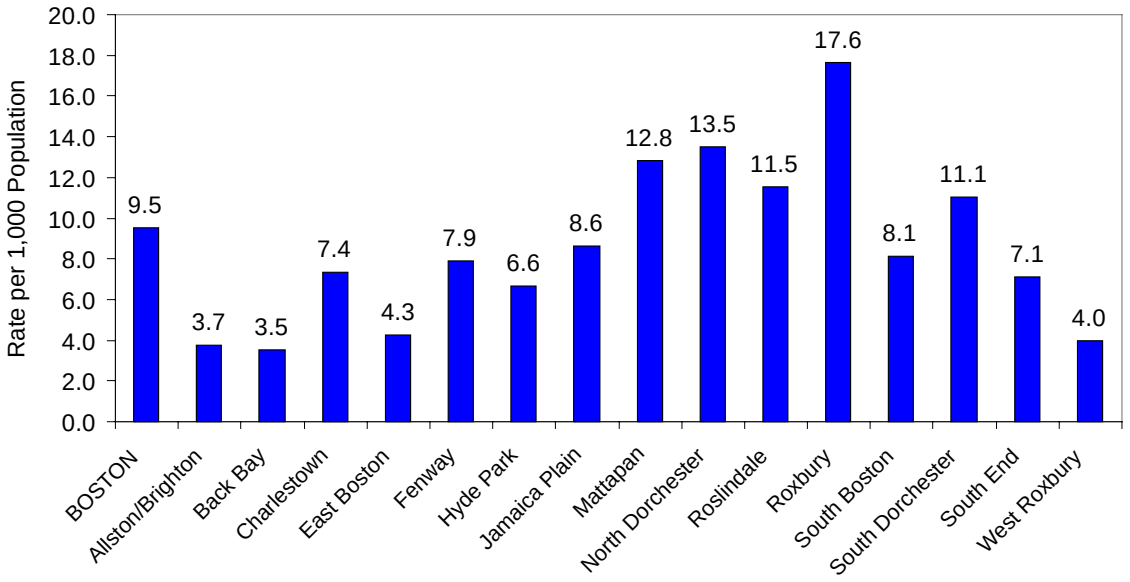


*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US 2000 Census for resident popualation by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Among children under age 5, those living in Roxbury had the highest rate of hospitalization for asthma (75.0% above the overall Boston rate), followed by those living in North Dorchester, the Fenway, and Jamaica Plain.

- Children under age 5 living in the Back Bay had the lowest rate (72.6% below the overall Boston rate), followed by East Boston, Allston/Brighton, and West Roxbury.

Asthma Hospitalization Average Annual Rates Among Males Under Age 5 by Neighborhood,* Boston, 1997-2000

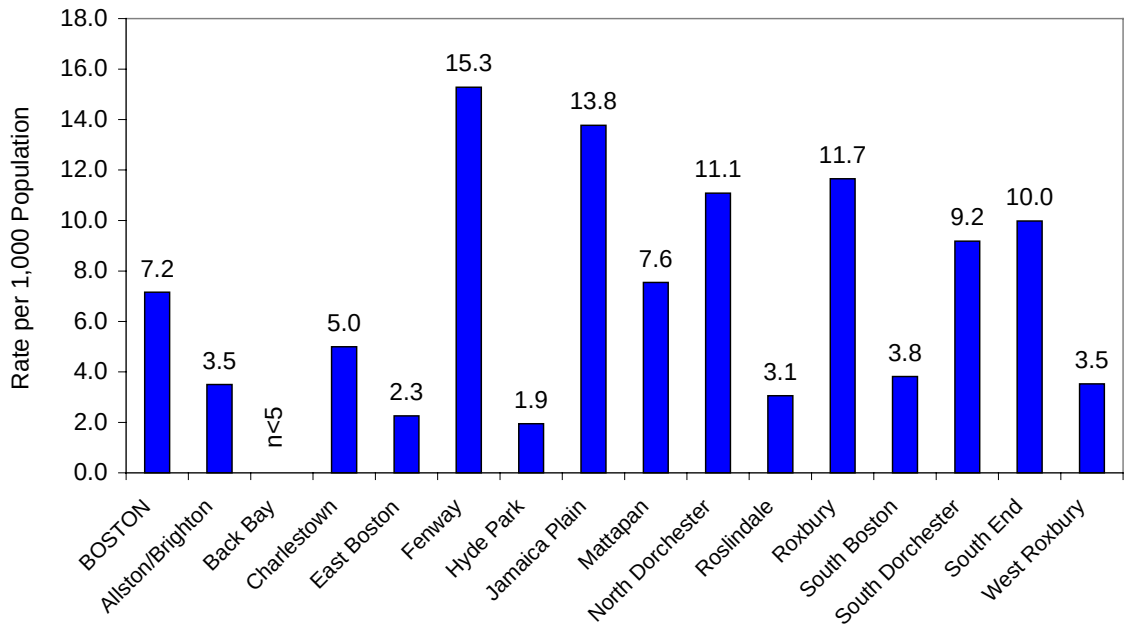


*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US 2000 Census for resident popualation by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Among male children under age 5, those living in Roxbury had the highest rate of hospitalization for asthma (85.3% above the overall Boston rate), followed by those living in North Dorchester and Mattapan.

- Male children under age 5 living in the Back Bay had the lowest rates (63.2% below the overall Boston rate), followed by Allston/Brighton and West Roxbury.

Asthma Hospitalization Average Annual Rates Among Females Under Age 5 by Neighborhood,* Boston, 1997-2000

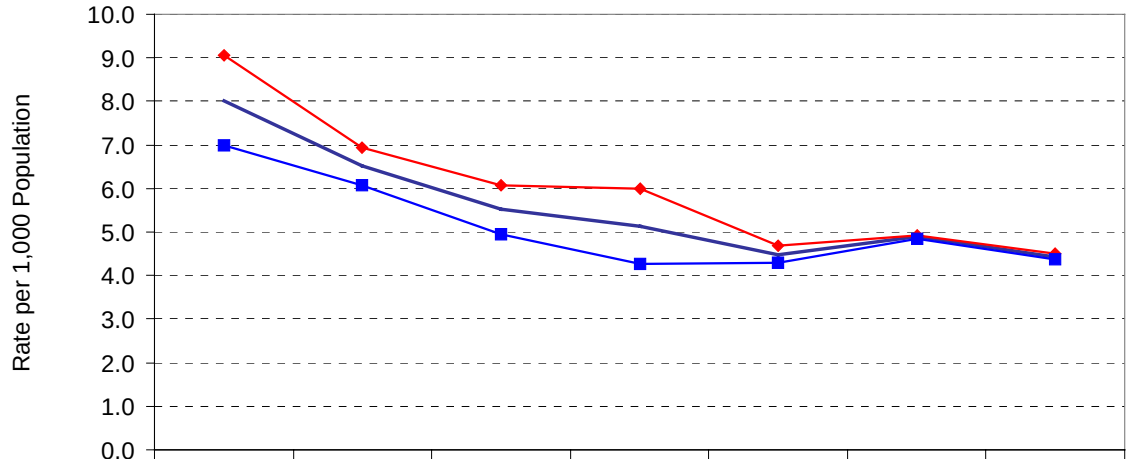


*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Ofice

- Among female children under age 5, those living in the Fenway had the highest rate of hospitalization for asthma (more than twice the overall Boston rate), followed by those living in Jamaica Plain and Roxbury.

- Female children under age 5 living in Hyde Park had the lowest rates (73.6% below the overall Boston rate), followed by East Boston and Roslindale. Those living in the Back Bay had too few hospitalizations to calculate a rate.

Asthma Hospitalization Rates Among Children Ages 5-14 by Sex and Year, Boston, 1994-2000



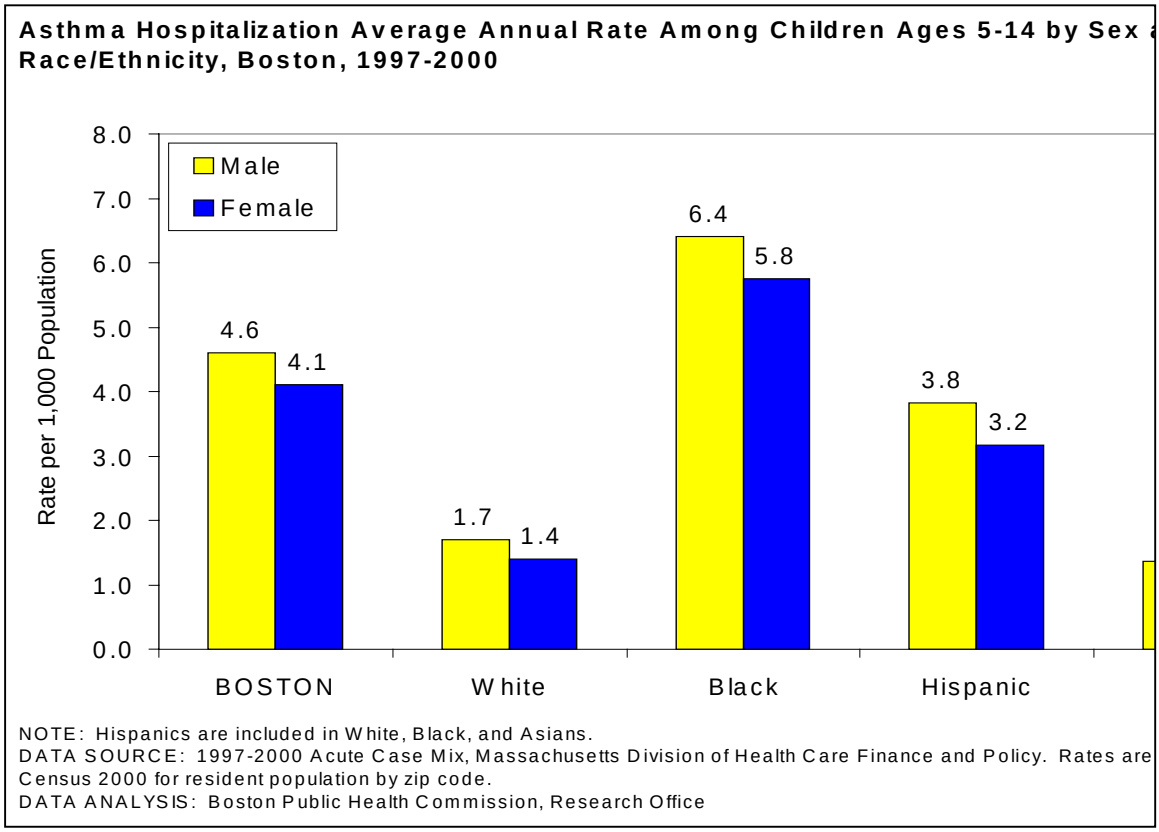
	1994	1995	1996	1997	1998	1999	2000
BOSTON	8.0	6.5	5.5	5.1	4.5	4.9	4.4
Male	9.1	6.9	6.1	6.0	4.7	4.9	4.5
Female	7.0	6.1	5.0	4.3	4.3	4.8	4.4

DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy; 1994-1996 discharge data, Massachusetts Health Data Consortium, Inc. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- The rate of hospitalization for asthma among children ages 5-14 in Boston declined between 1994 and 2000 by 45.0%, reaching its lowest point in 2000 after a slight increase in 1999.

- The rate for male children ages 5-14 was consistently higher than the rate for female children over the entire period 1994-2000. The rate for males in 1994 was 30.0% higher than the rate for females, a disparity that was almost eliminated by 2000. Both experienced slight increases in 1999 before continuing to decline in 2000.

- Over the whole 7-year period, the rate for male children ages 5-14 dropped 50.5%, and the rate for female children fell 37.1%.



NOTE: Racial/ethnic information in the hospital discharge data should be interpreted with caution because it is not collected consistently by Massachusetts hospitals. Hispanics may be found in any of the above categories, depending on the individual hospital's reporting practices.

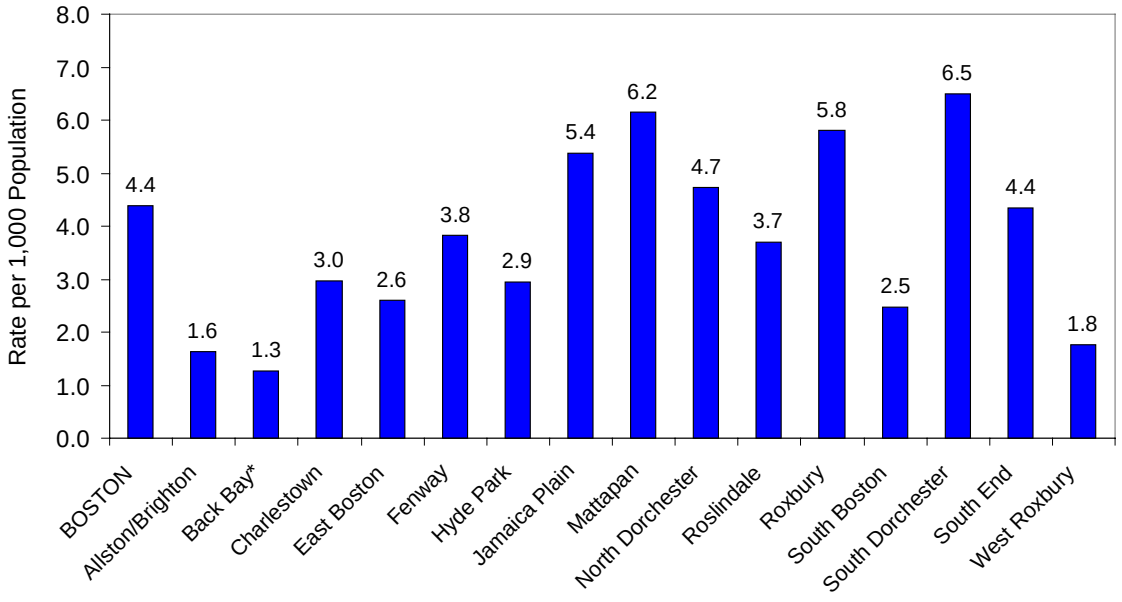
- During 1997-2000, males age 5-14 had higher hospitalization rates for asthma than females, irrespective of race or ethnicity. Six percent of asthma hospitalizations for males and seven percent for females were of unknown race/ethnicity. (Data not shown.)

- The disparity in asthma hospitalization rates among male children ages 5-14 and also among female children ages 5-14 was greatest between Black and Hispanic children. Asians and Whites experienced the lowest asthma hospitalization rates.

- Among males, the asthma hospitalization rate for Blacks was 4.6 times greater than for Asian males, 3.8 times greater than for White males, 1.7 times greater than for Hispanics, and almost forty percent greater than for Boston males overall. Among females, the asthma hospitalization rate for Blacks was 4.5 times greater than for Asian females, 4.1 times greater than for White females, 1.8 times greater than for Hispanic females, and about forty percent greater than for Boston females overall.

- The disparity between the sexes within each race/ethnicity was greatest for Whites and for Hispanics, where the asthma hospitalization rate for White males was 21.4% higher than for White females and the rate for Hispanic males 18.8% higher than for Hispanic females.

Asthma Hospitalization Average Annual Rates Among Children Ages 5-14 by Neighborhood,* Boston, 1997-2000

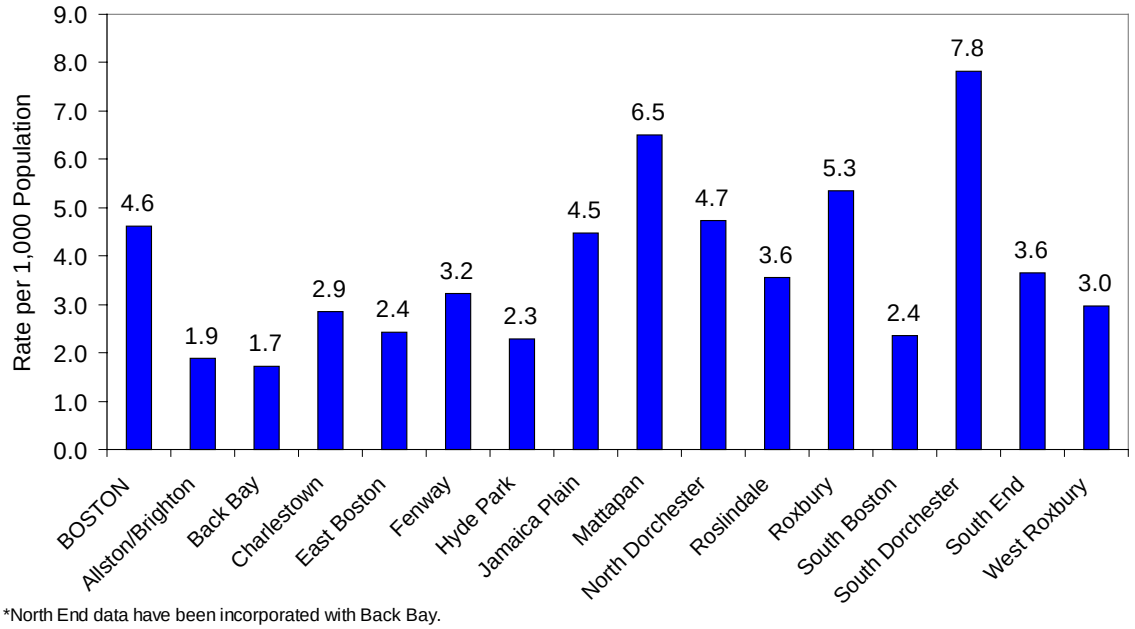


*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US 2000 Census for resident popualation by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Among children ages 5-14, those living in South Dorchester had the highest rate of hospitalization for asthma (47.7% above the overall Boston rate), followed by those living in Mattapan, Roxbury, and Jamaica Plain.

- Children ages 5-14 living in the Back Bay had the lowest rate (70.5% below the overall Boston rate), followed by Allston/Brighton and West Roxbury.

Asthma Hospitalization Average Annual Rates Among Males Ages 5-14 by Neighborhood,* Boston, 1997-2000

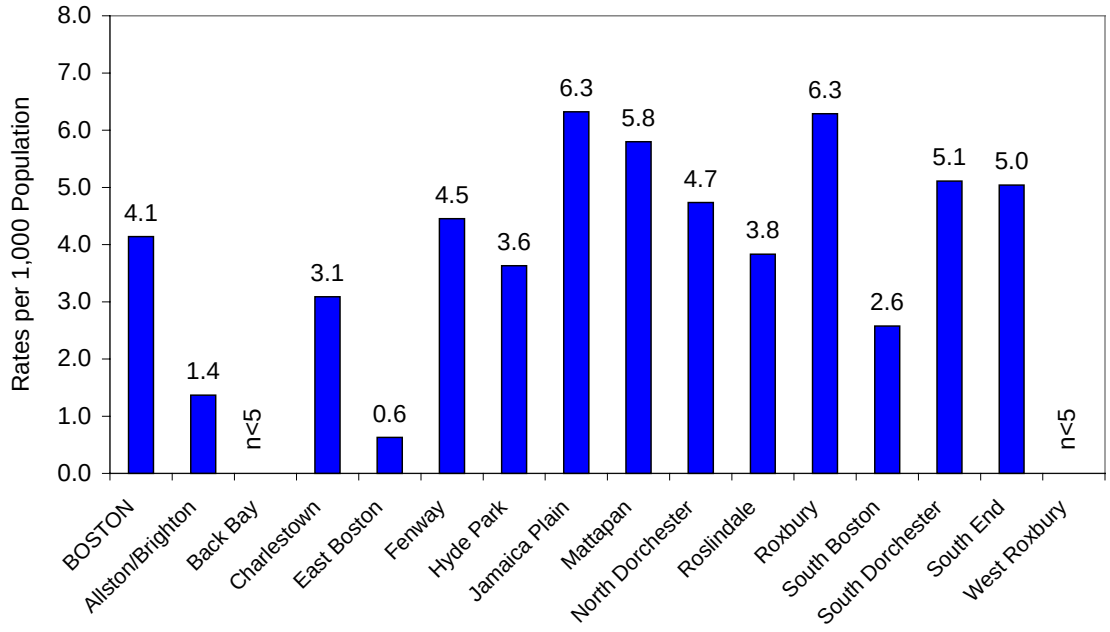


*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Among male children ages 5-14, those living in South Dorchester had the highest rate of hospitalization for asthma (69.6% above the overall Boston rate), followed by those living in Mattapan and Roxbury.

- Male children ages 5-14 living in the Back Bay had the lowest rate (63.0% below the overall Boston rate), followed by Allston/Brighton and Hyde Park.

Asthma Hospitalization Average Annual Rates Females Ages 5-14 by Neighborhood,* Boston, 1997-2000



*North End data have been incorporated with Back Bay.
DATA SOURCE: 1997-2000 Acute Case Mix, Massachusetts Division of Health Care Finance and Policy. Rates are calculated using the US Census 2000 for resident population by zip code.
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Among female children ages 5-14, those living in Jamaica Plain and Roxbury had the highest rate of hospitalization for asthma (each neighborhood had the same rate, 53.7% above the overall Boston rate), followed by those living in Mattapan and South Dorchester.

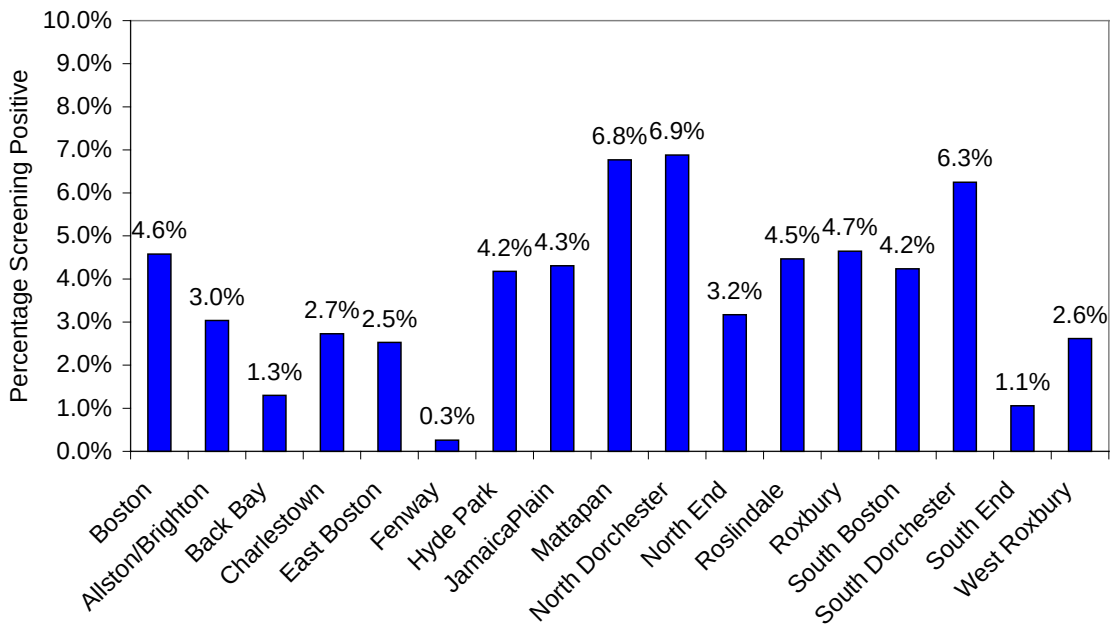
- Female children ages 5-14 living in East Boston had the lowest rates (85.4% below the overall Boston rate, followed by Allston/Brighton and South Boston. Those living in West Roxbury and the Back Bay had too few hospitalizations to calculate a rate.

CHILDHOOD LEAD POISONING

Childhood lead poisoning is one of the most common pediatric health problems in the US, and it is entirely preventable. Most children with elevated blood lead levels (BLLs) have no symptoms, and many are undiagnosed and untreated. According to the Centers for Disease Control and Prevention, approximately 1 million children in the US have elevated blood lead levels high enough to affect their health adversely.

Exposure to excessive levels of lead, especially for children under the age of 6, can cause brain damage; affect a child's growth and development; cause hearing problems, headaches, and appetite loss; damage kidneys; and result in learning and behavioral problems. (3)

Prevalence of Elevated Blood Lead Levels* by Neighborhood, Boston, 2001



*Blood lead level of 10ug/dL or higher.
DATA SOURCE: Lead Screening Data, Boston Public Health Commission, Office of Environmental Health
DATA ANALYSIS: Boston Public Health Commission, Office of Environmental Health

- In 2001, 24,536 Boston children under age 6 were screened for elevated blood lead levels. Of the children screened, 1,123 (4.6%) had blood levels of 10 micrograms per deciliter (µg/dL) or higher. Children with capillary blood sample test results between 10 and 14 µg/dL have been included in this report. Only venous blood sample test results were reported here previously.

- The number of Boston children with blood lead levels of 10 µg/dL or higher has been declining since 1993, when 18.6% of children had blood lead levels at that level or higher. In 2000, this percentage was 5.3%. Between 2000 and 2001, the percentage of children with blood lead levels of 10 µg/dL or higher declined by 13.2%. The Healthy People 2010 goal is to have no elevated blood lead levels among children.

- In 2001, the prevalence of elevated blood lead levels in children was highest in North Dorchester (6.9%), followed by Mattapan (6.8%). Two other neighborhoods, South Dorchester (6.3%) and Roxbury (4.7%), also had a higher percentage of children with elevated blood lead levels than Boston overall.

COMMUNICABLE DISEASE CONTROL: SURVEILLANCE AND PREVENTION

West Nile Virus

The Boston Public Health Commission's response to the threat of West Nile Virus (WNV) included education, utilizing a community development approach and public relations efforts, larvaciding—using an insecticide to kill larva—to control mosquitoes, and surveillance to detect the virus in mosquitoes, birds, and humans. Most of these efforts were undertaken in collaboration with surrounding communities. Although there were no reported cases of WNV infection among Boston residents in 2001, three cases were reported in other parts of Massachusetts.

Surveillance and Follow-up

In 2001, surveillance involved the reporting of dead birds, with targeted testing throughout the duration of the mosquito season. In Boston, 339 dead birds were reported, and 103 were tested for WNV. Of the birds that were tested, 30 (29%) were positive for WNV.

Mosquito pools were also tested for WNV. No mosquito pools tested positive for WNV, but one pool of *Coquillettidia perturbans* tested positive for Eastern Equine Encephalitis (EEE). EEE is also transmitted by mosquitoes, but unlike most WNV infections, EEE is associated with significant morbidity.

BPHC's Communicable Disease Control Division (CDC) operated an active surveillance program for human cases. Area hospitals were contacted each week to identify potential cases of WNV throughout the duration of the mosquito season.

Education

The cornerstone of the education campaign was a neighborhood mobilization effort that informed Boston residents how to protect themselves from mosquito bites using source reduction and personal protection. Source reduction involves removing standing water, which mosquitoes need to breed. Personal protection means taking measures to prevent mosquito bites, such as wearing protective clothing and using insect repellent. Nine community-based organizations were asked to identify strategies for reducing exposure to the virus by conducting a local assessment of the areas in which residents resided, locating potential mosquito breeding sites, and developing innovative strategies to educate residents in culturally and linguistically appropriate ways.

In addition, a slide presentation was developed for use by community outreach workers to train neighborhood groups in all aspects of WNV prevention. These workers and volunteers in turn educated community members. Community partners attended hundreds of local events, visited dozens of churches, elderly housing facilities, nursing homes, crime watch groups and schools, canvassed hundreds of local business establishments from pizza parlors to laundromats, and personally relayed information about personal protection and source reduction to thousands of Boston residents.

BPHC and its community partners engaged in extensive public information efforts. The information campaign began in May with the mailing of 80,000 WNV brochures in the water bills of Boston residents. Other efforts included the distribution of approximately 72,000 fact sheets throughout the city, a radio show

targeting seniors, three cable program appearances, and news features on Channel 5, Channel 7, NECN, Fox 25, and WB 56. Information was also available through an automated phone line and a website. BPHC staff attended over 50 events, concentrating on those that attracted an elderly audience, the segment of the population most at risk for serious complications from WNV. Staff distributed information, promotional items, and insect repellent to the attendees of these events.

Information dissemination efforts included distributing a total of 71,775 leaflets in the following languages: English, Spanish, Portuguese, Haitian Creole, Cape Verdean Creole, Chinese, Vietnamese, Khmer, and Russian. In addition to door-to-door distribution, fliers were made available at sites such as the Elderly Commission, the Health Connection (Boston's Public Health Van, operated by Family and Community Support), School Based Health Centers, senior centers, public libraries, community health centers, Boston Area Health Education Center, Harvard Vanguard health centers, YMCAs, day camps, the Mayor's movies, concert series in Boston Common, City Hall Plaza and Columbus Park, and other city-sponsored events. In addition, 4,600 educational leaflets were hung on residential doors in Dorchester, Grove Hall, Roxbury, and Dudley Square.

Collaboration with Surrounding Communities

As part of a regional approach, BPHC participated in a state planning effort that developed a document entitled *Recommendations for Reducing the Risk of Mosquito-Borne Encephalitis*. This effort began on December 4, 2000, with a general meeting that described the problem and organized work groups (Surveillance, Pesticide Risk Assessment, Intervention Efficacy, and Communication). BPHC staff both chaired and participated in these efforts, which ultimately resulted in a comprehensive state response plan.

In addition to participating in the development of the state plan, BPHC participated in regional planning by meeting monthly with health departments from Newton, Brookline, and Cambridge. This approach grew to include Arlington, Belmont, Chelsea, Everett, Medford, Needham, Quincy, Revere, Somerville, Watertown, Wayland, and Wellesley. Together with the respective Mosquito Control Programs, efforts were coordinated and resources shared, resulting in clear, consistent prevention messages through the region.

Larvaciding

To reduce the adult mosquito population, larvacide was applied to all catch basins throughout the city by Basic City Services. Larvacide targets mosquitoes before they hatch and ultimately reduces the number of adult mosquitoes, which spread the virus. Although pesticide spraying would only have been deployed in the event of imminent human disease, the intent of this approach was to concentrate on preventing the breeding of mosquitoes and reducing the likelihood that pesticides would need to be used to control an adult mosquito population.

Bioterrorism

For the past several years, the Boston Public Health Commission has been preparing a number of responses to the multiple threats posed by bioterrorism. Efforts have included surveillance, investigation, follow-up, and educational activities. Although no cases of anthrax occurred in Boston following the September 11 terrorist attack and subsequent dissemination of anthrax spores through the mail, heightened concern related to these national events resulted in additional bioterrorism response activities in the Communicable Disease Control Division and throughout the Commission.

Surveillance and Follow-up

Prior to September 11, 2001, BPHC had developed a bioterrorism surveillance system based on input from members of the city's Surveillance Task Force (a group composed of area health care providers, public health officials, and emergency responders, to address issues associated with bioterrorism). The surveillance system provides automatic daily monitoring of volume data from 11 acute care sites and identifies sites that exceed a pre-set threshold. Any site that exceeds its threshold is automatically contacted, and an initial assessment is completed. The assessment is analyzed for any unusual activity or clusters of illness.

Shortly after the first cases of anthrax were publicized nationally, several sites reported exceeding threshold on a regular basis. Closer examination of the cause of the increase in volume revealed that "worried well" individuals were visiting these sites in an attempt to obtain prescriptions for antibiotics or to obtain nasal swabs to detect anthrax. This information provided direction for educating the public about issues related to anthrax, such as advising people not to flock to city emergency departments and the problems resulting from taking unnecessary antibiotics.

As of December 31, 2001, Boston Emergency Medical Services (EMS), in conjunction with the Boston Police Department, had responded to 940 calls involving suspicious substances, with particular concern about anthrax. Contact information was obtained by Boston EMS at the time of the call, and BPHC's Communicable Disease Control Division (CDC) staff followed up with 303 persons regarding test results and education. In addition, CDC public health nurses responded to 163 bioterrorism-related telephone calls from the community.

Education

Clinicians

Following the September 11 attack, information about bioterrorism was provided to clinicians in several forms. As developments occurred, clinical advisories were sent to area health care providers at hospitals, health centers, college health services, and other public health organizations. Targeted groups included emergency care providers, infectious disease physicians, primary care providers, and neighborhood health centers. Individuals were contacted via e-mail and/or fax. Advisories were also accessible on BPHC's public web site.

BPHC provided training to clinicians on bioterrorism issues. The sessions were conducted by clinicians from the Surveillance Task Force. To date, approximately 30 training sessions have been conducted,

reaching about 500 local-area providers. Clinicians attending this training also received an informational booklet on bioterrorism. Satellite broadcasts from the federal Centers for Disease Control and Prevention were made available to area providers. Key BPHC clinical personnel received training about bioterrorism issues such as the recognition of symptoms and techniques for containment of disease. In addition, non-clinical BPHC staff received instruction on characteristics of biological agents and prevention/harm reduction measures, in order to prepare the Commission to mobilize a range of trained public health professionals in the event of a biological threat or attack.

General Public

BPHC provided several options for the public to obtain bioterrorism information: a website (http://www.bphc.org): a 24 hour automated information line with message capability and emergency contact information (617-534-2362); fact sheets on bioterrorism, anthrax, botulism, brucellosis, plague, Q fever, smallpox, tularemia, and viral hemorrhagic fevers. The bioterrorism fact sheets were available in English, Spanish, Portuguese, Haitian Creole, Cape Verdean, Creole, Russian, Vietnamese, Chinese, and Khmer. A collaborative effort with Partners Health Care produced a full-color brochure in 5 languages. There were approximately 1,000 visits to the BPHC bioterrorism website and 267 visits to the clinical advisory web page. As of December 31, 2001, the information line had received 208 calls.

A slide show presentation that discussed basic issues of bioterrorism, including various agents, prevention measures, and what was being done by the city to prepare for a possible attack, was made available on request.

Infectious Diseases

Introduction

Infectious diseases are illnesses caused by various organisms, including bacteria, viruses, protozoa, parasites, fungi, and others. They can be transmitted directly from person to person or from animal to person, or through vectors such as insects, contaminated food or water, or infected objects. Prevention of infectious diseases depends on the particular disease, and its mode of transmission. Frequent handwashing is the single most effective way to prevent the transmission of many infectious diseases.

The Boston Public Health Commission Communicable Disease Control Division (CDC) is responsible for surveillance and control of over 50 communicable diseases, such as enteric infections, hepatitis A, tuberculosis, and various vaccine-preventable illnesses, required to be reported to local health departments by state law. In Boston, CDC investigates over 2,000 reported cases of communicable diseases annually and provides education and public health measures to limit the spread of disease. In addition, the program conducts follow-up in response to outbreaks to better understand their source and help prevent them from recurring.

Enteric Infections

Enteric disease, or foodborne illness, is caused by consuming contaminated food or water. Enteric disease may also be transmitted person-to-person (fecal-oral). Enteric diseases are caused by a variety of organisms, including bacteria, viruses, and parasites, and affect the gastrointestinal system. Infants, the elderly, and persons with weakened immune systems are at the highest risk of serious infection. Enteric illness can occur sporadically or in outbreaks.

In the United States, there are an estimated 76 million cases of foodborne illnesses and 5,200 related deaths every year. (1) In a review of foodborne illness outbreaks from 1993 through 1997, Salmonella bacteria was found to account for a majority of the cases. (2) The Centers for Disease Control and Prevention estimate that 1.4 million cases of salmonellosis occur each year in the US. (3)

Campylobacter infections are among the most common enteric illnesses, with about 2.4 million persons affected each year. (4) Although all age groups are at risk of developing disease, infants and young adults are at increased risk of exposure to the bacteria and resulting illness.

Hepatitis

Hepatitis A

Hepatitis A is a liver disease caused by the hepatitis A virus (HAV) and causes only acute (short term) infection. Since 1995, the incidence of hepatitis A in the US has been 12 per 100,000 population. (5)

HAV infection is primarily spread person-to-person by the fecal-oral route. Individuals at greatest risk include household and sexual contacts of infected persons, people traveling to areas where HAV infections are common, and men who have sex with men. A vaccine to prevent HAV infection was introduced in the late 1990s.

Hepatitis B

Hepatitis B is a liver disease caused by the hepatitis B virus (HBV) and causes both acute and chronic infection. There are an estimated 1.25 million persons with chronic HBV infection in the US. (6) Death due to chronic liver disease occurs in 15-25% of those with chronic HBV infection. (6)

HBV is primarily spread through unprotected sex with an infected person, sharing needles for injection drug use, or from an infected mother to her baby during birth. In 1982, a vaccine was introduced for the prevention of HBV infection. The number of new cases of HBV infection has declined because of routine vaccination of children and adolescents. (6)

Hepatitis C

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). Hepatitis C is the most commonly reported bloodborne infection in Boston. In the US, an estimated 3.9 million persons are infected with HCV, with 2.7 million people having chronic infection. (7) In Massachusetts, 100,000 people are estimated to be infected with HCV. (8)

Substance abuse, in particular, injection drug use, is the most significant risk factor associated with HCV infection. It is estimated that 80-90% of injecting drug users are positive for HCV. (9) Other significant risk factors for HCV infection include a history of transfusions prior to 1992 and unprotected sexual contact with multiple partners. (10)

Often there are no symptoms associated with HCV infection. There is no vaccine to prevent HCV infection.

Tuberculosis

Tuberculosis is a bacterial infection, which primarily affects the lungs. It is transmitted through airborne droplets created by activities such as sneezing, coughing, or spitting. Some people develop “active tuberculosis” (TB disease) which is usually associated with symptoms such as prolonged cough, chest pain, fatigue, fever, and weight loss. TB disease can be transmitted from person to person. Other people with TB have latent infection, which does not cause symptoms and cannot be transmitted.

Nationally, tuberculosis rates continue to decline. In 2000, the incidence of tuberculosis in the US was 5.8 cases per 100,000. Persons ages 25-44 account for 34% of cases. In adults, the rate of tuberculosis in men is twice the rate in women. In 2000, 78% of all US tuberculosis cases occurred among people of color. (11)

In Massachusetts in the year 2000, there were 285 cases, an incidence rate of 4.5 per 100,000. There were 15 more cases of tuberculosis in 2000 compared with 1999. (8) Persons ages 25-44 accounted for 38% of the cases. In 2000, 31% occurred among White residents, with 69% occurring in Black, Hispanic, Asian, and other race/ethnicity groups. In Massachusetts, 72% of tuberculosis cases were in foreign-born persons, compared with 46% nationally. (11)

Vaccine Preventable Illness/Meningitis

Vaccine-preventable diseases are those which can be prevented through immunization. Examples of vaccine-preventable diseases include polio, influenza, measles, mumps, and pertussis. Transmission depends on the specific disease and may include airborne transmission via direct contact with an infected individual, or through his/her body fluids (such as blood), or through ingestion.

Pertussis

Also known as "whooping cough," pertussis is an acute bacterial disease involving the respiratory tract. It is transmitted from person to person through direct contact with airborne droplets from mucous membranes. A characteristic symptom of pertussis is prolonged and severe coughing spasms, which may persist for weeks.

Since the 1990s there has been an increase in the incidence of pertussis in the US. The illness occurs most commonly in children under age 10. However, there has been an increase in the number of cases among persons age 10 or older that is likely related to waning vaccine immunity. (12)

Varicella

Varicella, which is commonly known as the "chicken pox," is a highly contagious viral infection transmitted person-to-person by direct contact, or through airborne droplets from coughing or sneezing. Symptoms include a skin rash of blister-like lesions, usually on the face, scalp, or trunk of the body. A safe and effective vaccine against varicella is now part of routine childhood immunization and has led to markedly decreased varicella cases.

In the US, an estimated 4 million cases of varicella (chickenpox) occur annually. The majority of varicella cases occur among children under age 15. Children ages 1-4 account for 38% of cases. With the increased use of varicella vaccine, the number of cases is expected to decline. (13) Because varicella is now included in the routine childhood immunization schedule, this is expected to occur rapidly.

Meningitis

Meningitis is an infection of the tissues surrounding the brain and spinal cord, and can be caused by bacteria, viruses, fungi, or parasites. Meningitis can range from a mild illness that resolves without specific treatment, to a very severe illness that may result in brain damage, hearing loss, or learning disability.

A major cause of bacterial meningitis is *Neisseria meningitidis*, which causes both sporadic disease and outbreaks. Persons at risk for infection include infants and young children, household contacts of persons with infection, and college freshmen who live in dormitories. Between 1993 and 1998, incidence of meningococcal diseases was 1.1 cases per 100,000 in New England. (14)

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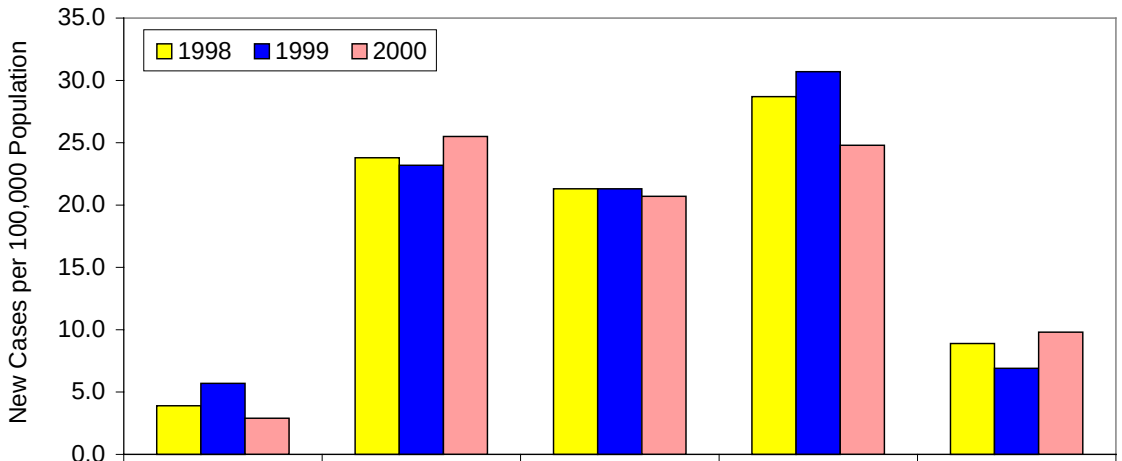
Enteric Infections

Enteric Disease* Incidence Rates by Year, Boston, 1998-2000



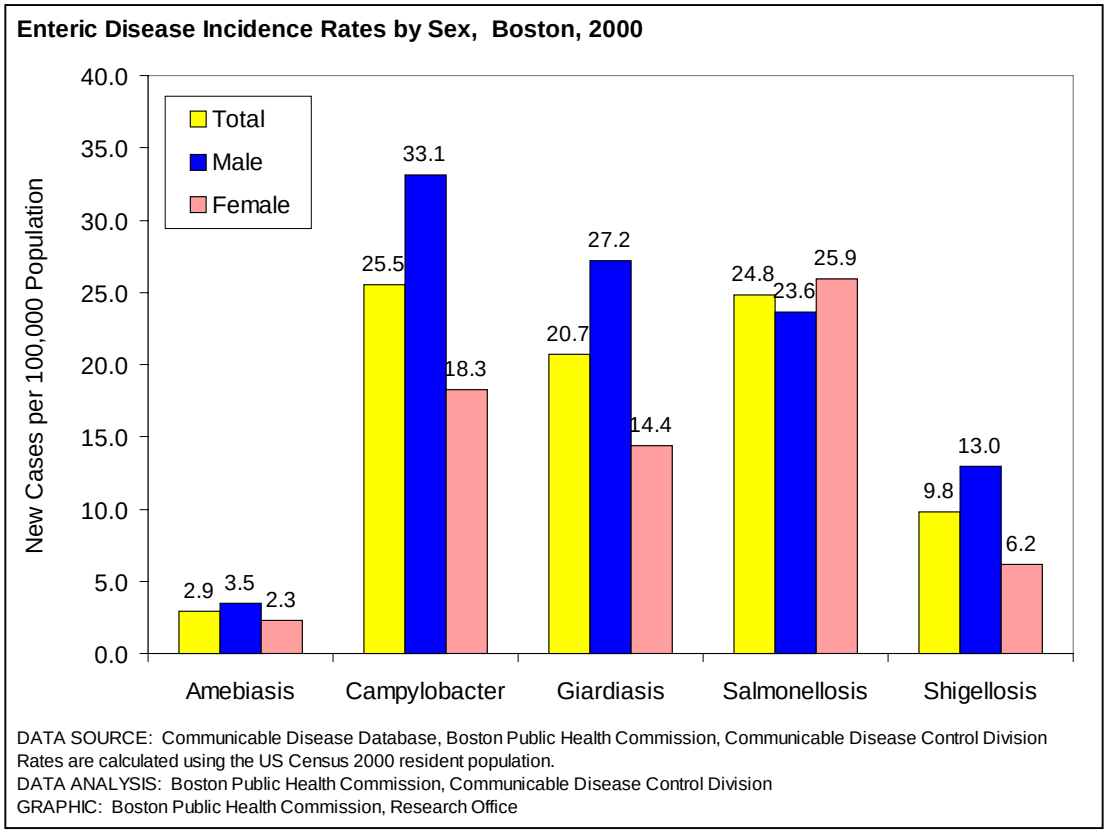
	Amebiasis	Campylobacter	Giardiasis	Salmonellosis	Shigellosis
1998	3.9	23.8	21.3	28.7	8.9
1999	5.7	23.2	21.3	30.7	6.9
2000	2.9	25.5	20.7	24.8	9.8

*Fewer than 15 cases of the following enteric diseases were reported to the BPHC CDC in 1998-2000: E. coli 0157:H7, cyclospora, cryptosporidiosis, food poisoning, listeriosis, other parasitic illness, typhoid fever, and yersiniosis.
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

Note: Individual enteric diseases are defined in the Glossary.

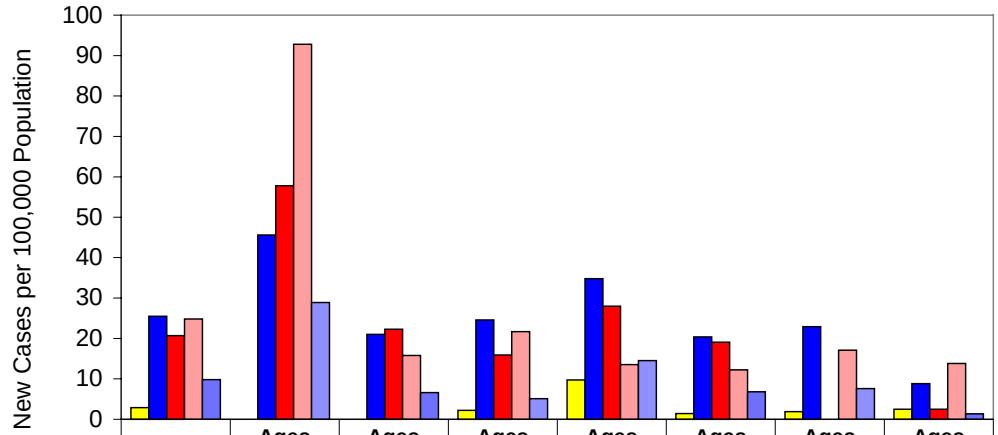
- From 1998 to 2000, the incidence rate of giardiasis remained fairly stable.
- Incidence of campylobacter and shigella infection slightly increased.
- The incidence rates of salmonellosis and amebiasis slightly decreased.



Note: Individual enteric diseases are defined in the Glossary.

- In 2000, the incidence of enteric diseases in males was almost twice that in females except for salmonellosis.

Enteric Disease Incidence Rates by Age Group, Boston, 2000



	BOSTON	Ages 0-9	Ages 10-19	Ages 20-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60+
Amebiasis	2.9	0	0	2.2	9.7	1.4	1.9	2.5
Campylobacter	25.5	45.6	21	24.6	34.8	20.4	22.9	8.8
Giardiasis	20.7	57.8	22.3	15.9	28	19.1	0	2.5
Salmonellosis	24.8	92.8	15.8	21.7	13.5	12.2	17.1	13.8
Shigellosis	9.8	28.9	6.6	5.1	14.5	6.8	7.6	1.3

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division.
Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

Note: Individual enteric diseases are defined in the Glossary.

- In 2000 in Boston, the highest incidence rate of any enteric disease was for campylobacter infection, closely followed by salmonella infection.
- In 2000, the rates of enteric diseases were highest in those ages 0-9 and 30-39.

Enteric Disease Incidence Rates by Neighborhood, Boston, 2000

	New Cases per 100,000 Population				
	Amebiasis	**Campylobacter**	**Giardiasis**	**Salmonellosis**	**Shigellosis**
BOSTON	2.9	25.5	20.7	24.8	9.8
Allston Brighton	1.4	24.4	11.5	21.5	5.7
Back Bay/Beacon Hill	2.8	41.4	19.3	16.6	5.5
Charlestown	6.6	32.9	65.8	39.5	0.0
East Boston	0.0	20.8	5.2	13.0	13.0
Fenway	6.7	16.8	23.5	13.4	3.4
Hyde Park	0.0	0.0	14.5	23.2	5.8
Jamaica Plain	6.8	61.1	23.7	40.7	13.6
Mattapan	0.0	5.1	30.4	15.2	30.4
North Dorchester	1.2	19.2	13.2	25.2	10.8
South Dorchester	2.2	13.2	11.0	24.3	4.4
North End	0.0	16.5	24.8	33.0	0.0
Roslindale	2.9	25.7	17.1	22.8	5.7
Roxbury	6.0	29.8	41.7	23.8	7.9
South Boston	0.0	16.7	10.0	30.1	0.0
South End	9.0	50.7	41.8	50.7	35.8
West Roxbury	3.8	30.6	15.3	15.3	3.8

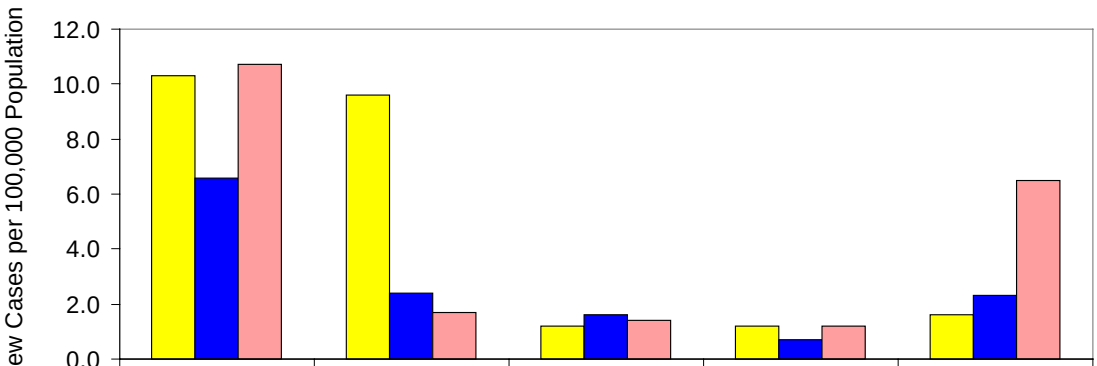
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division.
Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

Note: Individual enteric diseases are defined in the Glossary.

- In 2000, the incidence of amebiasis, salmonellosis, and shigellosis was greatest in the South End, and incidence of campylobacter infection was highest in Jamaica Plain.
- In 2000, the South End had higher incidence rates than overall Boston rates for all enteric diseases. Shigellosis was almost four times as high in the South End, compared with the rate observed in the city as a whole.
- The high annual incidence of giardiasis in Charlestown was the result of a small outbreak in that neighborhood in October, 2000.

Vaccine-Preventable Diseases and Meningitis

Vaccine-Preventable Diseases and Meningitis Incidence Rates by Disease by Year, Boston, 1998-2000



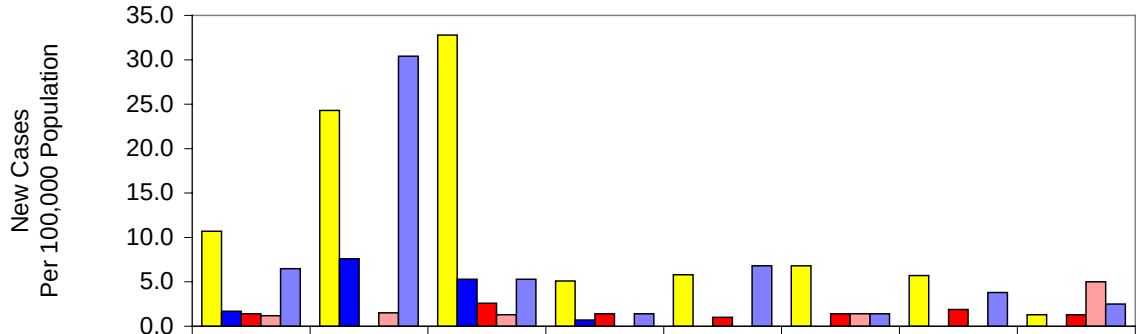
	Pertussis	Varicella	Neisseria meningitidis*	Other Bacterial Meningitis**	Viral Meningitis
1998	10.3	9.6	1.2	1.2	1.6
1999	6.6	2.4	1.6	0.7	2.3
2000	10.7	1.7	1.4	1.2	6.5

NOTE: Fewer than 10 cases of measles, mumps and rubella were reported in years 1998-2000.
*Includes invasive disease
**Includes *H. influenzae* , and all other reported bacterial pathogens
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

Note: Individual vaccine-preventable diseases are defined in the Glossary.

- Pertussis was the most common of this group of vaccine-preventable diseases reported in Boston during the time period 1998-2000.
- From 1998 to 2000, the incidence rate of varicella decreased 82.3%, and the incidence rate of viral meningitis increased 4.1 times. The increase in viral meningitis is likely due to improved reporting related to West Nile Virus surveillance.

Vaccine-Preventable Diseases and Meningitis Incidence Rates by Disease by Age Group, Boston, 2000



	BOSTON	Ages 0-9	Ages 10-19	Ages 20-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60+
Pertussis	10.7	24.3	32.8	5.1	5.8	6.8	5.7	1.3
Varicella	1.7	7.6	5.3	0.7	0.0	0.0	0.0	0.0
Neisseria meningitidis**	1.4	0.0	2.6	1.4	1.0	1.4	1.9	1.3
Other Bacterial Meningitis**	1.2	1.5	1.3	0.0	0.0	1.4	0.0	5.0
Viral Meningitis	6.5	30.4	5.3	1.4	6.8	1.4	3.8	2.5

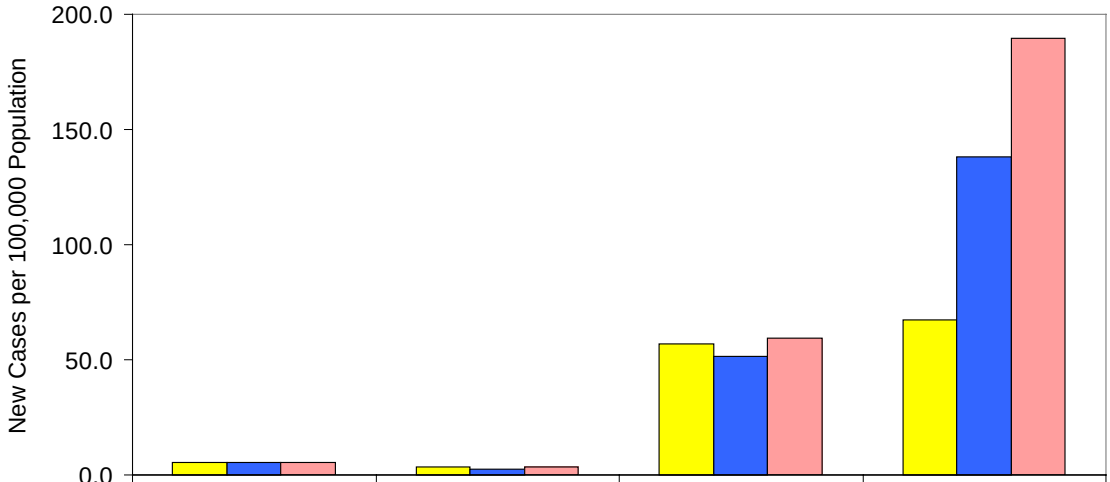
*Includes invasive disease
**Includes *H. influenzae* , and all other reported bacterial pathogens
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

Note: Individual vaccine preventable diseases are defined in the Glossary.

- Boston incidence rates for both vaccine-preventable diseases and Neisseria meningitis were highest in children and adolescents in the year 2000.
- The rate of pertussis was over 2.3 times as high in children ages 0-9 and 3.1 times as high in adolescents ages 10-19 as the overall Boston rate. This increased incidence in adolescents is likely due to waning vaccine immunity.
- The varicella rate in children ages 0-9 was almost 4.5 times as high as the overall Boston rate and in adolescents ages 10-19 over 3.1 times as high as the overall Boston rate.
- The rate of viral meningitis was almost 4.7 times as high in children ages 0-9 as the overall Boston rate. Children in this age group are more likely to have increased contact with other young children, and may be less likely to implement disease prevention measures such as handwashing.

Hepatitis

Hepatitis Incidence Rates by Year, Boston, 1998-2000

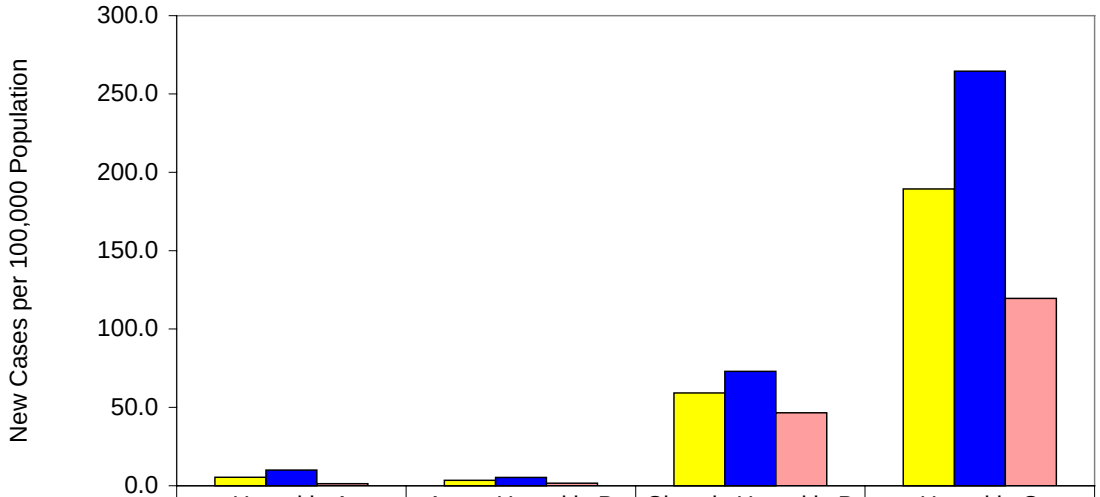


	Hepatitis A	Acute Hepatitis B	Chronic Hepatitis B	Hepatitis C
1998	5.5	3.4	56.8	67.4
1999	5.2	2.6	51.3	138.2
2000	5.4	3.4	59.2	189.4

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- Between 1998 and 2000, hepatitis A and B incidence rates have remained relatively stable, while hepatitis C rates have increased, probably largely due to improved screening and reporting. Hepatitis C was the most commonly reported hepatitis, with incidence rates nearly 2-3 times as high as the second most common, chronic hepatitis B.

Hepatitis Incidence Rates by Sex, Boston, 2000

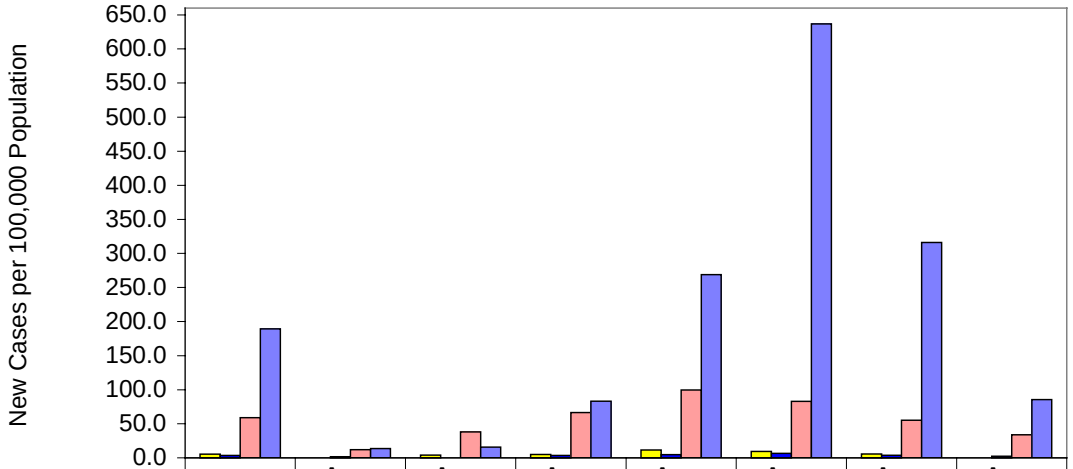


	Hepatitis A	Acute Hepatitis B	Chronic Hepatitis B	Hepatitis C
BOSTON	5.4	3.4	59.2	189.4
Male	9.9	5.3	73.0	264.5
Female	1.3	1.6	46.5	119.5

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 2000, the incidence rate for all reported types of hepatitis was higher in males than in females.
- The incidence rate for hepatitis A was 7.6 times higher in males than in females.
- The incidence rate of acute hepatitis B was 3.3 times higher in males than in females, while the incidence rate of chronic hepatitis B was 1.6 times higher in males than in females.
- The incidence rate of hepatitis C in males was 2.2 times higher than the rate in females.

Hepatitis Incidence Rates by Age Group, Boston, 2000

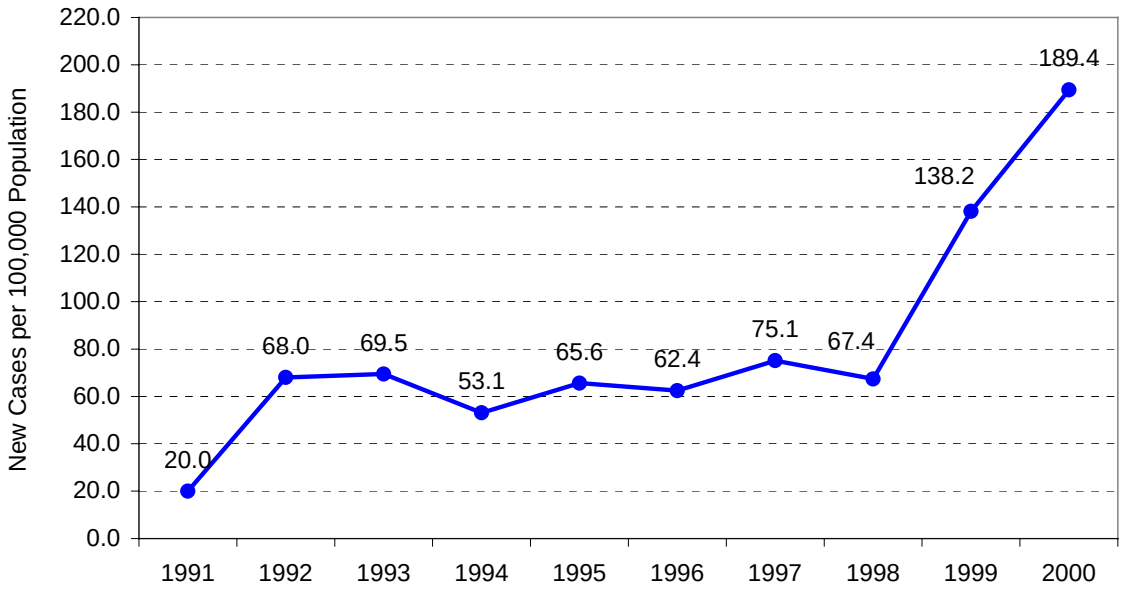


	BOSTON	Ages 0-9	Ages 10-19	Ages 20-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60+
Hepatitis A	5.4	0.0	3.9	5.1	11.6	9.5	5.7	0.0
Acute Hepatitis B	3.4	1.5	0.0	3.6	4.8	6.8	3.8	2.5
Chronic Hepatitis B	59.2	12.2	38.1	66.6	99.6	83.0	55.3	33.9
Hepatitis C	189.4	13.7	15.8	83.2	268.8	636.9	316.3	85.4

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 2000, the hepatitis A incidence rate was highest among those ages 30-39.
- The incidence of acute hepatitis B was highest among those ages 40-49, while the younger age groups had lower incidence rates. This decreased incidence is a reflection of more hepatitis B immunization in younger age groups.
- In 2000, the chronic hepatitis B incidence rate was highest among those ages 30-39.
- In 2000, the incidence rate of hepatitis C was higher than both the hepatitis A and hepatitis B rates for all age categories, excluding those ages 10-19. The incidence rate of hepatitis C was highest among those ages 40-49.

Hepatitis C Incidence Rates by Year, Boston, 1991-2000

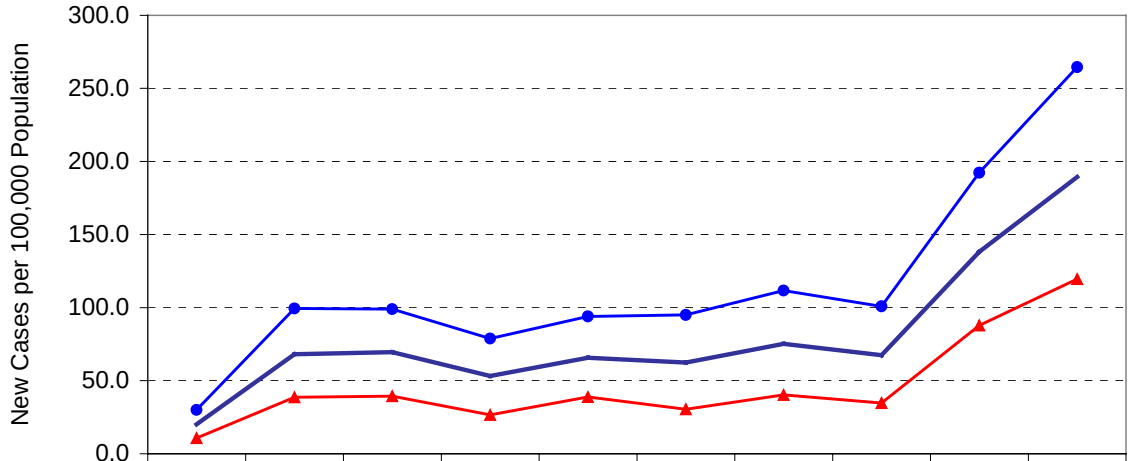


NOTE: Cases reflect year of report, not year of diagnosis.
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- Between 1991 and 1998, the incidence rate of hepatitis C in Boston gradually increased. Between 1998 and 1999, the incidence rate more than doubled and increased again in 2000.

- This trend may be due to increased hepatitis C screening rather than a real increase in disease incidence. Education efforts have been undertaken by the Boston Public Health Commission through outreach on the city's needle exchange van, and staff training at jails, Department of Youth Services facilities, and community health centers. As a result, there is greater awareness about hepatitis C risk factors, symptoms, and populations at risk, leading to increased screening and detection of disease.

Hepatitis C Incidence Rates by Sex by Year, Boston, 1991-2000

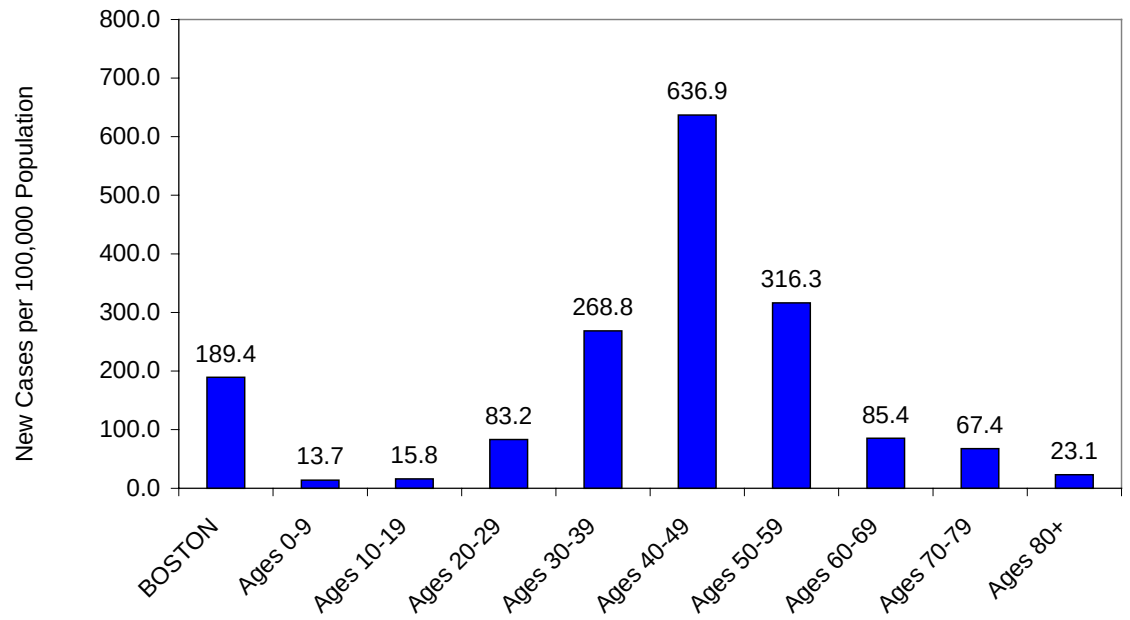


	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BOSTON	20.0	68.0	69.5	53.1	65.6	62.4	75.1	67.4	138.2	189.4
Male	30.0	99.3	99.0	78.8	93.9	95.0	111.6	100.8	192.3	264.5
Female	10.7	38.6	39.3	26.5	38.8	30.5	40.2	34.7	87.8	119.5

NOTE: Cases reflect year of report, not year of diagnosis.
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- For all years 1991-2000, the incidence rate of hepatitis C was 2-3 times as high in males as in females. This may reflect the demographics of the injection drug user population, since injection drug use is a major risk factor for hepatitis C.

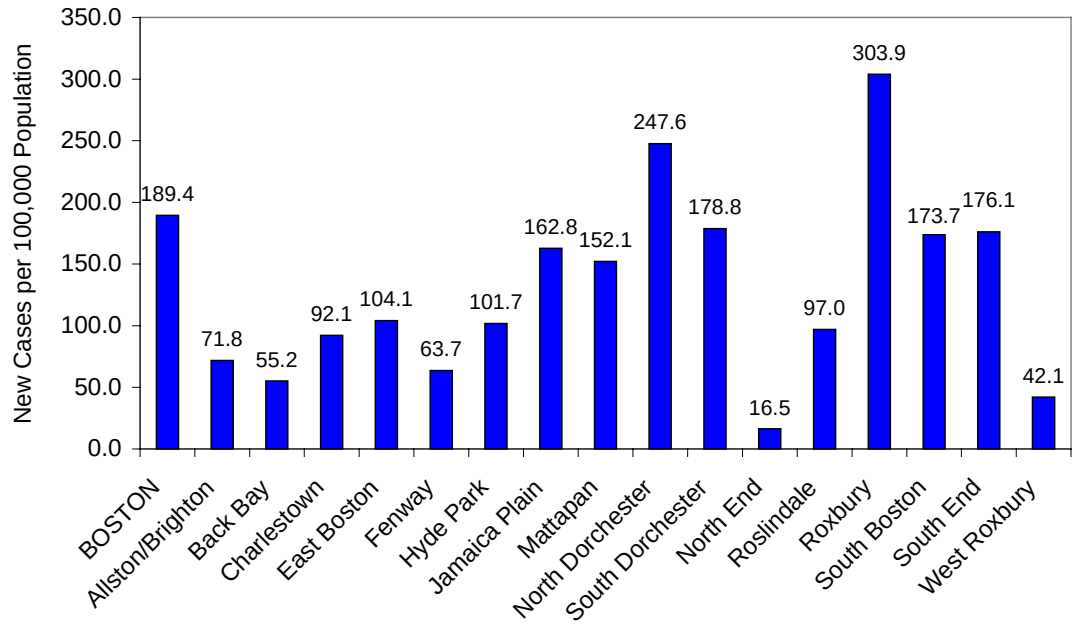
Hepatitis C Incidence Rates by Age Groups, Boston, 2000



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 2000, the highest incidence rate of hepatitis C was among those ages 40-49. This incidence rate was 3.4 times greater than the overall incidence rate. This may be due in part to increased screening in populations within this age range.

Hepatitis C Incidence Rates by Neighborhood, Boston, 2000



NOTE: Cases reflect year of report, not year of diagnosis.
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division.
Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

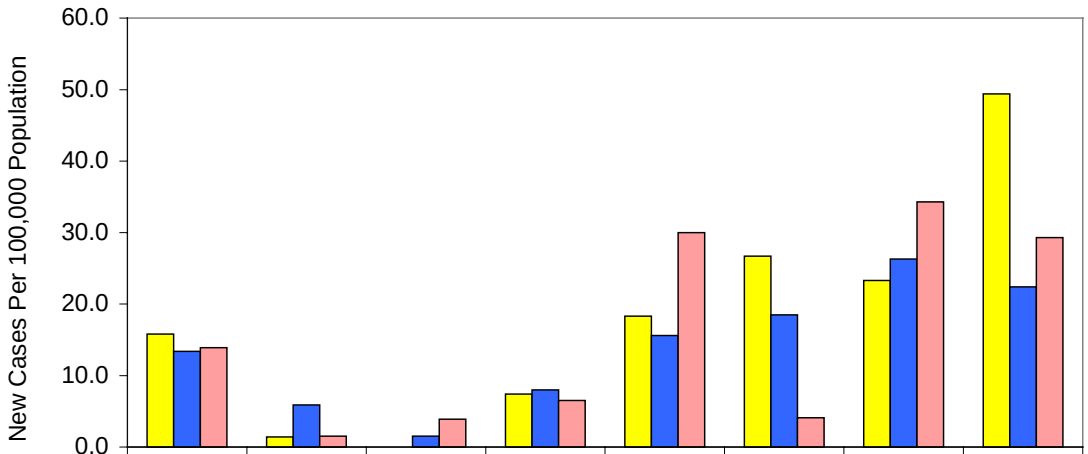
- In 2000, the highest incidence rate of hepatitis C among Boston's neighborhoods was in Roxbury. That rate was 1.6 times as high as the incidence rate for Boston overall.

- The incidence rate for North Dorchester was the second highest and 1.3 times as great as the rate for Boston overall.

- The hepatitis C incidence rates for the remaining Boston neighborhoods were all below the rate for Boston overall.

Tuberculosis

Tuberculosis Incidence Rates by Age Group by Year, Boston, 1998-2000

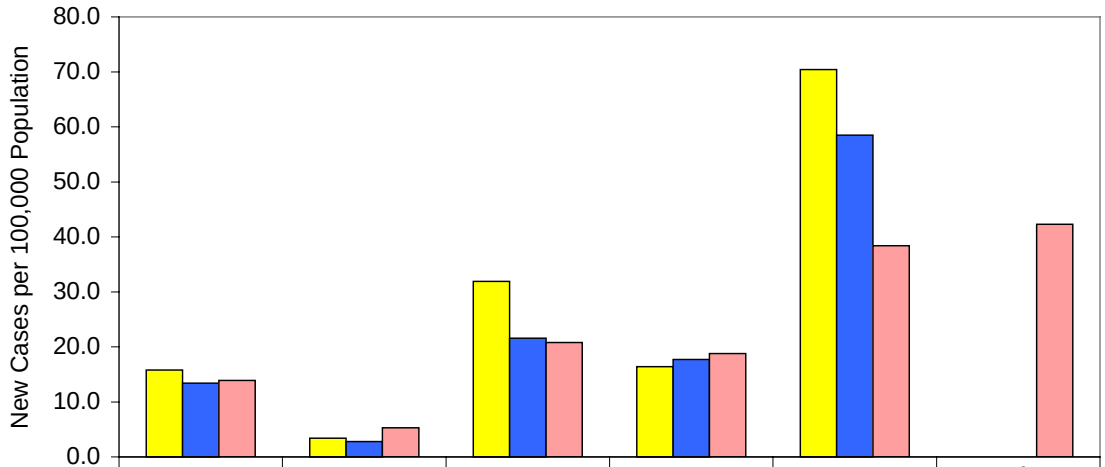


	BOSTON	Ages 0-9	Ages 10-19	Ages 20-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60+
1998	15.8	1.4	0.0	7.4	18.3	26.7	23.3	49.4
1999	13.4	5.9	1.5	8.0	15.6	18.5	26.3	22.4
2000	13.9	1.5	3.9	6.5	30.0	4.1	34.3	29.3

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- For 1998-2000, the highest incidence rate of TB was among those ages 50 and over, and the lowest was among those under age 19.

Tuberculosis Incidence Rates by Race/Ethnicity by Year, Boston, 1998-2000



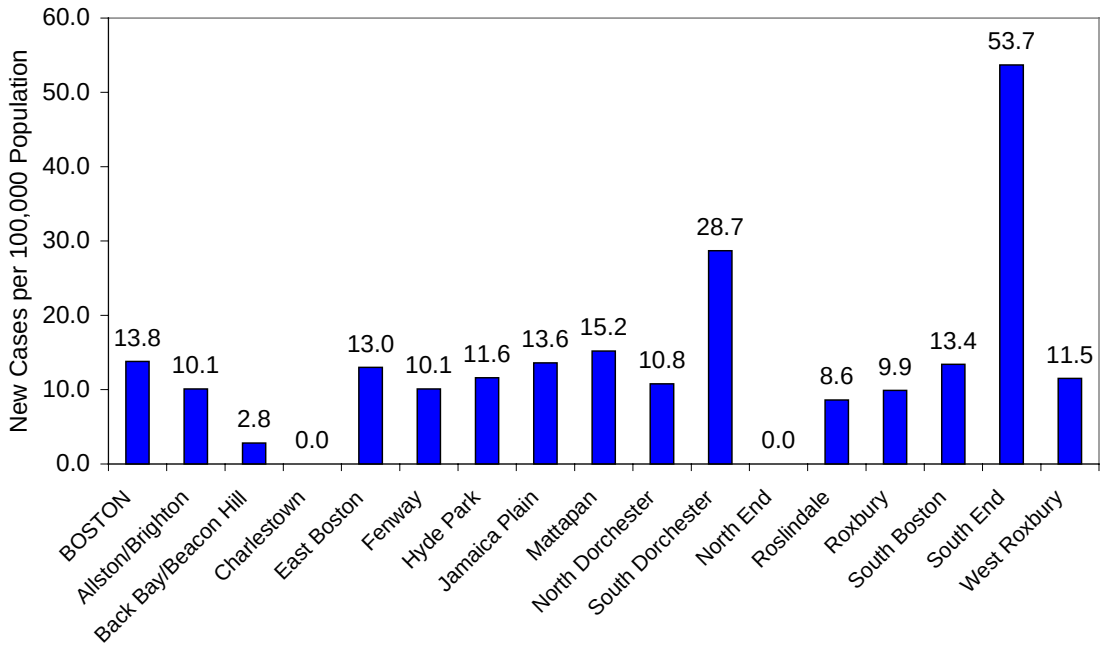
	BOSTON	White	Black	Hispanic	Asian	Native American
1998	15.8	3.4	31.9	16.4	70.4	0.0
1999	13.4	2.8	21.6	17.7	58.5	0.0
2000	13.9	5.3	20.8	18.8	38.4	42.3

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- For all years 1998-2000, the highest incidence rates of tuberculosis (TB) were among Asians. Their rate, however, declined 45.5% over the three year period.

- Incidence of TB in Blacks decreased by 34.8%, in Whites increased by 55.9%, and in Hispanics increased by 14.6%. Disparities in rates may be due to immigration of foreign-born individuals from countries with high rates of tuberculosis.

Tuberculosis Incidence Rates by Neighborhood, Boston, 2000

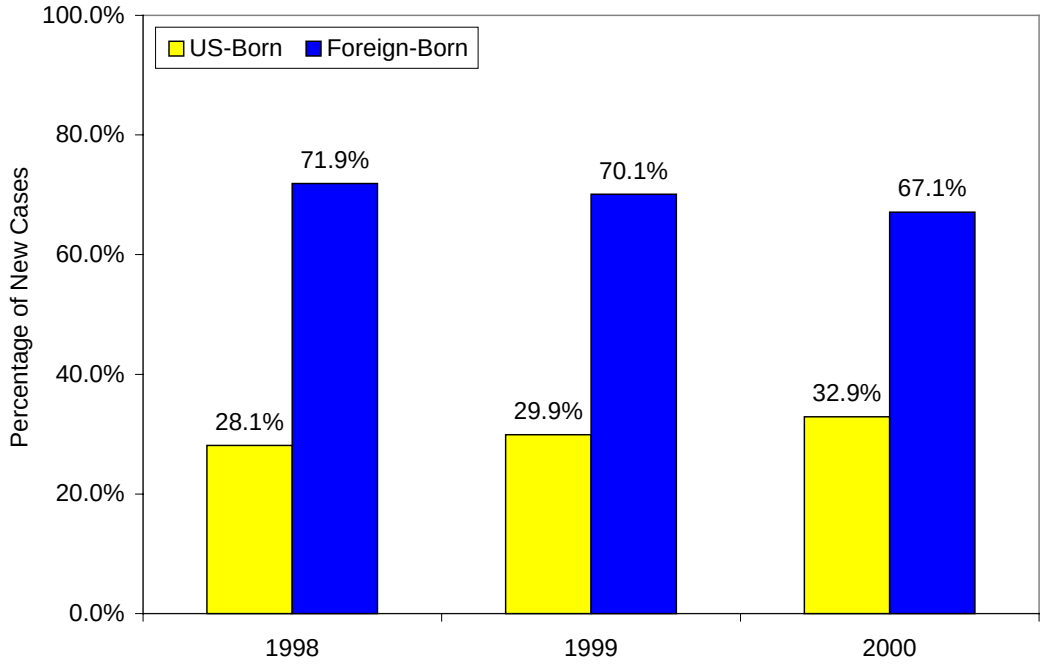


DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division.
Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 2000 the highest incidence rate of TB was in the South End. This incidence rate was almost 3.9 times that of the overall Boston rate. South Dorchester and Mattapan also had rates higher than the Boston rate. This may be due to more homeless and foreign-born persons living in these neighborhoods.

- Charlestown and the North End had no reported cases of tuberculosis in 2000.

Tuberculosis Cases by Place of Birth, Boston, 1998-2000



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 1998-2000, over two-thirds of new TB cases were among foreign-born individuals. However, the percentage of all cases that occurred among the foreign-born Boston residents decreased 6.7% between 1998 and 2000, while the percentage of TB cases that were among the US-born residents increased 17.1%.

Sexually Transmitted Diseases*

Introduction

More than 25 disease can be transmitted sexually. Chlamydia, gonorrhea, and syphilis are the most common sexually transmitted diseases (STDs). Of the 15 million new STD cases annually in the United States, 25% are among adolescents. (1).

Chlamydia is a bacterial disease which can damage a woman's reproductive organs. Because symptoms of chlamydia are mild or absent, serious complications, including infertility, can occur "silently" before a woman ever recognizes a problem. In 2000, 702,093 cases of chlamydia were reported in the US, with the rate in women four times that in men. For both sexes, individuals ages 15-19 had the highest incidence rates of chlamydia. The incidence rate for chlamydia increased 2.3% between 1999 and 2000, but this increase may be partially explained by expanded screening efforts, more sensitive diagnostic tests, and increased reporting. (2)

Gonorrhea is an STD that, if left untreated, can cause serious problems, including infertility, in both women and men. Gonorrhea is a common cause of pelvic inflammatory disease (PID) in women. In 2000, a total of 358,995 cases of gonorrhea were reported in the US, with the rate in men slightly higher than that among women. Among women, those ages 15-19 had the highest rate of infection, while among men, those ages 20-24 had the highest rate. Gonorrhea incidence has been steady since 1998, with approximately 132 new cases per 100,000 population. (3)

Syphilis is a bacterial disease that, if left untreated, can have health complications. Pregnant women can pass on the disease to their newborns, resulting in infant death, preterm delivery, low birthweight, deafness, and seizures. In 2000, 31,575 cases of all stages of syphilis were reported in the US, with 5,979 cases (2.2 cases per 1,000) of primary and secondary (P&S) syphilis, reflecting fairly recent transmission. In men, the rate of P&S syphilis was 1.5 times the rate in women, with recent outbreaks reported among men who have sex with men. The rate of reported P&S syphilis among African Americans was 21 times the rate reported in Whites. (4)

Women, adolescents, and people of color are disproportionately affected by STDs such as chlamydia, gonorrhea, and syphilis. (1,2,3,4) Up to 40 percent of women with untreated chlamydia will develop pelvic inflammatory disease (PID), and 20% of those women with PID will become infertile. Women who have chlamydia are also 3-5 times more likely than women without chlamydia to become infected with HIV if exposed. (1) The presence of an STD increases the risk of HIV transmission (1,2,3,4). Gonorrhea is also a major cause of PID and subsequent infertility and a major cause of ectopic (tubal) pregnancies.

Reported STD rates are generally higher among Blacks and Hispanics than Whites. (1,2, 3,4) This disparity is partly due to more complete reporting by public clinics, whose served populations are disproportionately people of color, to inadequate access to health care, and to inadequate STD prevention outreach efforts. (1)

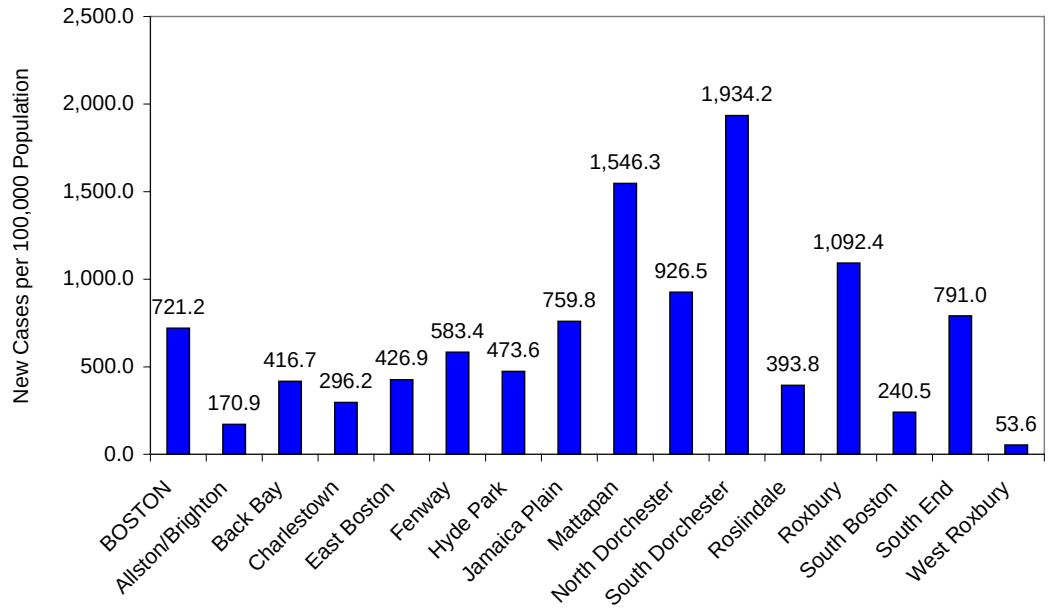
As with many other infections, the actual number of STD cases is unknown. STDs are difficult to track, and many people with STDs do not have symptoms and therefore remain undiagnosed. (1) These facts may account for much of the observed differences between men and women and between racial/ethnic groups in reported rates of sexually transmitted disease.

*For information on HIV/AIDS, please refer to the section on HIV/AIDS, immediately following.

References

1. Centers for Disease Control and Prevention. Tracking the Hidden Epidemics 2000: Trends in STDs in the United States.
2. Centers for Disease Control and Prevention. STD Surveillance 2000. National Profile - Chlamydia. Available from http://www.cdc.gov/std/stats/2000Chlamydia.htm. Accessed 2/25/2002
3. Centers for Disease Control and Prevention. STD Surveillance 2000. National Profile - Gonorrhea. Available from http://www.cdc.gov/std/stats/2000Gonorrhea.htm. Accessed 2/25/2002
4. Centers for Disease Control and Prevention. STD Surveillance 2000. National Profile - Syphilis. Available from http://www.cdc.gov/std/stats/2000Syphilis.htm. Accessed 2/25/2002

Sexually Transmitted Disease* Incidence Rates by Neighborhood, Boston, 2000



*Sexually Transmitted Diseases include chlamydia, syphilis, and gonorrhea.
DATA SOURCE: Selected STDs for Boston Report, Massachusetts Department of Public Health, STD Division. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- In 2000, South Dorchester had the highest incidence rate of STDs, 2.7 times as high as the overall Boston rate.
- North Dorchester, Mattapan, Roxbury, Jamaica Plain, and the South End also had incidence rates higher than the Boston rate.
- In 2000, West Roxbury had Boston's lowest incidence rate of STDs.

HIV/AIDS

Introduction

Human Immunodeficiency Virus (HIV) is the organism that causes Acquired Immune Deficiency Syndrome (AIDS). People become infected with HIV through sexual contact, contact with infected blood, or at birth, when infection can be transmitted from mother to baby. The virus can also be transmitted to infants through breast-feeding.

Over a period of years, most people who are infected with HIV develop AIDS as the virus damages the immune system. People are classified as having AIDS when their immune system shows significant damage by HIV, based upon blood tests (T-cell or CD4 counts) or when they develop certain infections or tumors related to infection with HIV.

HIV

The federal Centers for Disease Control and Prevention (CDC) national goal to reduce the number of new HIV infections in the US calls for a reduction in the number of new cases from an estimated 40,000 annually to 20,000 by 2004, with a particular focus on eliminating racial and ethnic disparities. (1)

During the past two decades, great strides have been made in HIV/AIDS prevention through widespread HIV counseling, community-level interventions and initiatives, and reduction in risk-taking behavior. New drug combinations to treat HIV have delayed the progression from HIV infection to AIDS for many HIV-positive Americans. (1)

According to the federal CDC, an estimated 70% of all new HIV infections are among men. Blacks and Hispanic persons, both males and females, account disproportionately for new HIV infections and AIDS cases. According to the 2000 US Census, Blacks represent only 12.3% of the US population, and Hispanics 12.5%. However, half of new infections with HIV occur among Black men, and 20% of new infections are among Hispanic men. Among women, Blacks account for an estimated 64% of new HIV infections, and Latinas, 18%. (1)

As of the end of 2000, approximately 800,000 to 900,000 persons were estimated to be infected with HIV in the United States. These numbers include only individuals who tested positive for HIV but had not developed AIDS. Whites accounted for 37.5%, Blacks 52.1%, Hispanics 8.3%, and Asian/Pacific Islanders and others, 1.0% of HIV infection cases. These percentages do not include 1,680 individuals whose race/ethnicity was unknown. (2)

AIDS

As of December 2000, 774,467 AIDS cases nationally have been reported to the federal CDC. Of those cases, 82% were among men, 16.8% among women, and 1.2% among children. Individuals ages 30-39 represented 44.6% of all AIDS cases. (2)

Racial and ethnic disparities exist, and the pattern of infection has changed: although during the early 1980s the majority of AIDS cases occurred among White men, AIDS cases among Blacks, Hispanics, and women have increased over time.

During 2000, 42,156 persons with AIDS were reported in the US. Black persons accounted for 47% of these cases, Whites 32%, Hispanics 19% and Asian/Pacific Islanders and Native American/Alaska natives, 1%. Of the cumulative cases of AIDS reported through 2000, 43% were White, 38% were Black, and 18% were Hispanic. (2).

In the US, men having sex with men (MSM) is still the most common transmission category for AIDS, followed by injection drug use and heterosexual contact. (2,4,5) Since 1996, declines in the number of new cases of AIDS have been largest in the MSM and injection drug use transmission categories. (4)

Beginning in 1996, large declines were reported in the US for both AIDS incidence and AIDS deaths. These declines are due in large part to the availability of new medications that delay the onset of AIDS in those with HIV infection and to increases in the lifespan of many who already have AIDS.

Of all AIDS cases reported from the beginning of the epidemic through December 31, 2000, approximately 60% have died. As of December 2000, there were about 322,866 persons in the US living with AIDS. (2)

For persons currently living with AIDS and HIV, the recent increase in average life expectancy resulting from improved treatment is often accompanied by a number of challenges. Among them are the difficulty and expense of complying with multiple and complex drug regimens, medication side effects that may result in a decrease in the quality of life, and antiretroviral drug resistance. (6)

In January 1999, Massachusetts began surveillance to identify people with HIV who have not yet developed AIDS. This system does not identify persons by name. The goal of this HIV surveillance is to better define the extent of the epidemic and to identify changes in groups of individuals at highest risk of infection. Advances in the treatment of HIV infection and the long length of time from infection to the development of AIDS limit the ability of AIDS surveillance alone in understanding the epidemic.

References

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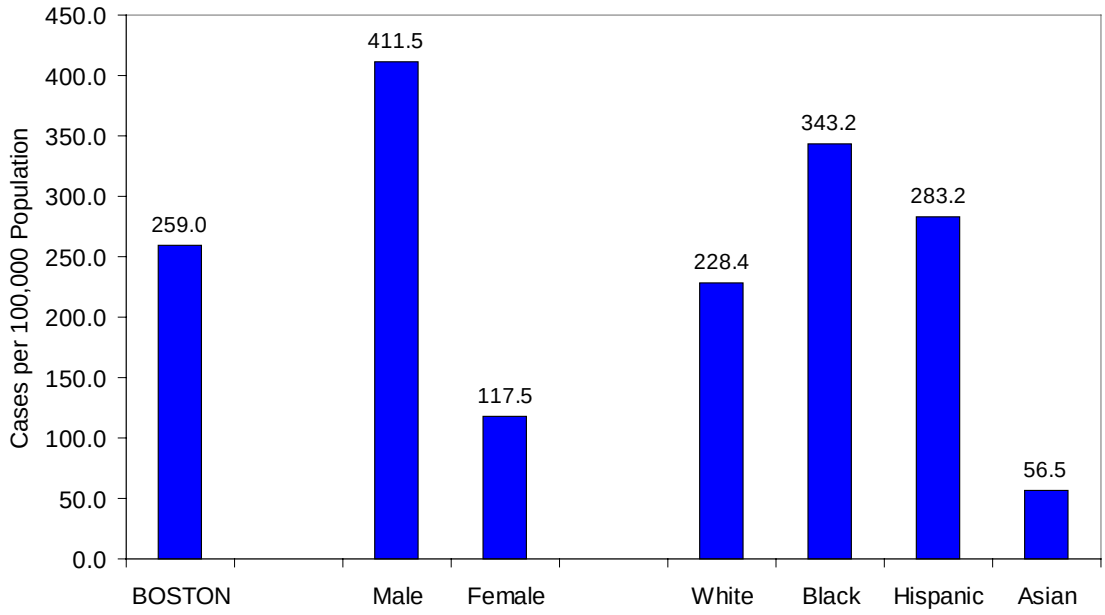
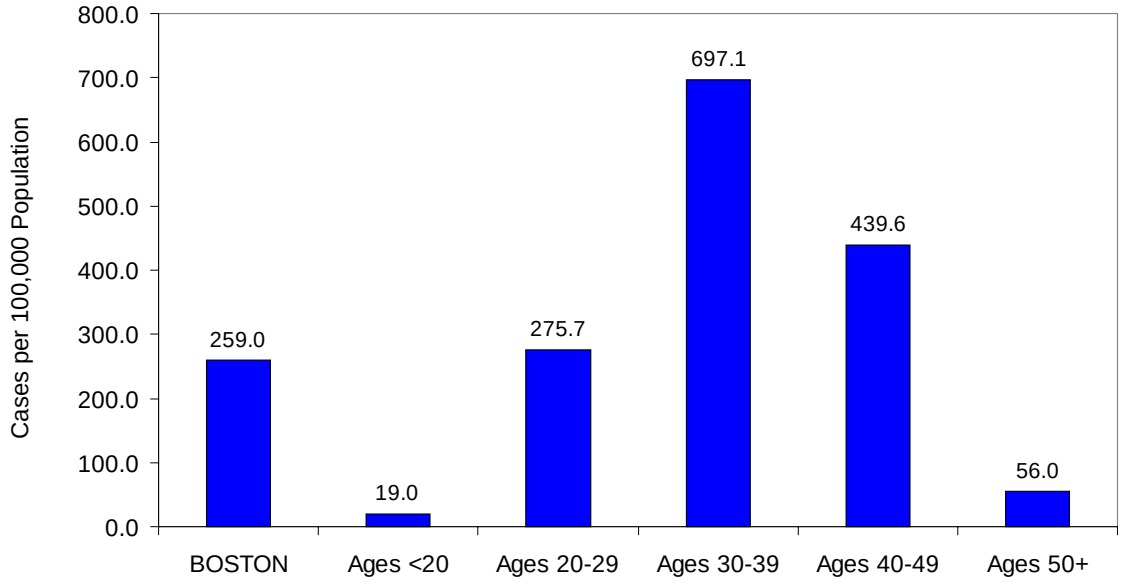
Cumulative HIV* Prevalence Rates by Sex and Race/Ethnicity, Boston, as of January 1, 2002



*HIV refers to HIV Alive Cases defined by the Massachusetts Department of Public Health.
DATA SOURCE: AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control, AIDS Surveillance Program. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- As of January 1, 2002, there were 1,526 reported HIV cases among Boston residents. However, this was probably an underreport, since it is believed that many who are HIV-infected have not been tested.
- As of January 1, 2002, the prevalence rate of HIV in males was 3.5 times that of women.
- Black Boston residents had the highest prevalence rate of HIV as of January 1, 2002, 1.3 times that of the Boston rate. The rate for Hispanics was also greater than the Boston rate, by 9.3%, except in 1998 when the rate among Hispanics fell slightly below the Boston rate.

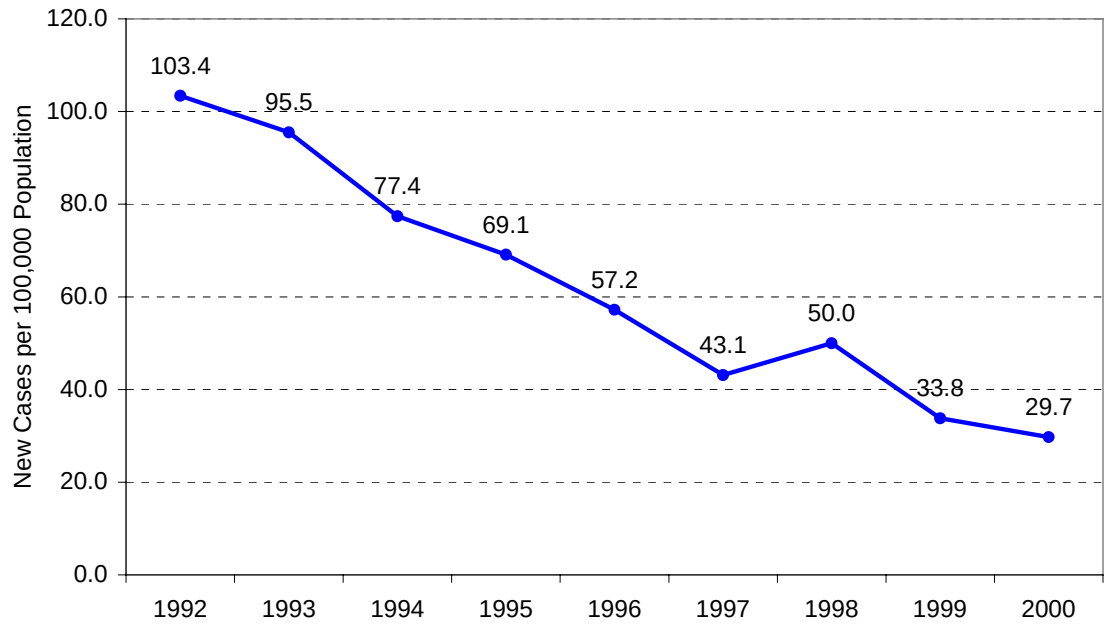
Cumulative HIV* Prevalence Rates by Age Group, Boston, as of January 1, 2002



*HIV refers to HIV Alive Cases defined by the Massachusetts Department of Public Health.
DATA SOURCE: AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control, AIDS Surveillance Program. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- As of January 1, 2002, the highest prevalence rate of reported HIV cases was among those ages 30-39, with a rate 2.7 times that of Boston overall. Those ages 40-49 had a rate 1.7 times that of the Boston rate, and those ages 20-29 had a rate 1.1 times that of the Boston rate.

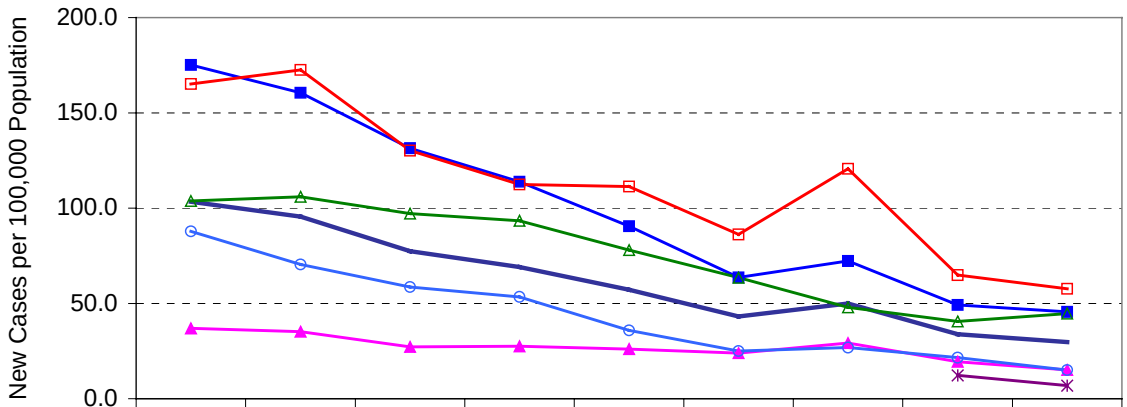
AIDS Incidence Rates by Year, Boston, 1992-2000



DATA SOURCE: AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- Between 1992 and 2000, the incidence rate of new AIDS cases in Boston declined 71.3%. This decline is believed to be attributable primarily to more effective treatment that delays the onset of AIDS once HIV infection has occurred.

AIDS Incidence Rates by Sex and Race/Ethnicity by Year, Boston, 1992-2000



	1992	1993	1994	1995	1996	1997	1998	1999	2000
BOSTON	103.4	95.5	77.4	69.1	57.2	43.1	50.0	33.8	29.7
Male	175.1	160.5	131.4	113.8	90.5	63.6	72.2	49.2	45.5
Female	36.9	35.2	27.2	27.5	26.0	23.9	29.2	19.4	15.1
White	87.8	70.4	58.6	53.4	35.8	25.0	26.8	21.5	15.0
Black	165.1	172.5	130.2	112.4	111.3	86.2	120.7	64.8	57.6
Hispanic	103.7	106.0	97.1	93.4	78.0	63.5	47.9	40.5	44.7
Asian	n<5	n<5	n<5	n<5	n<5	n<5	n<5	12.2	6.8

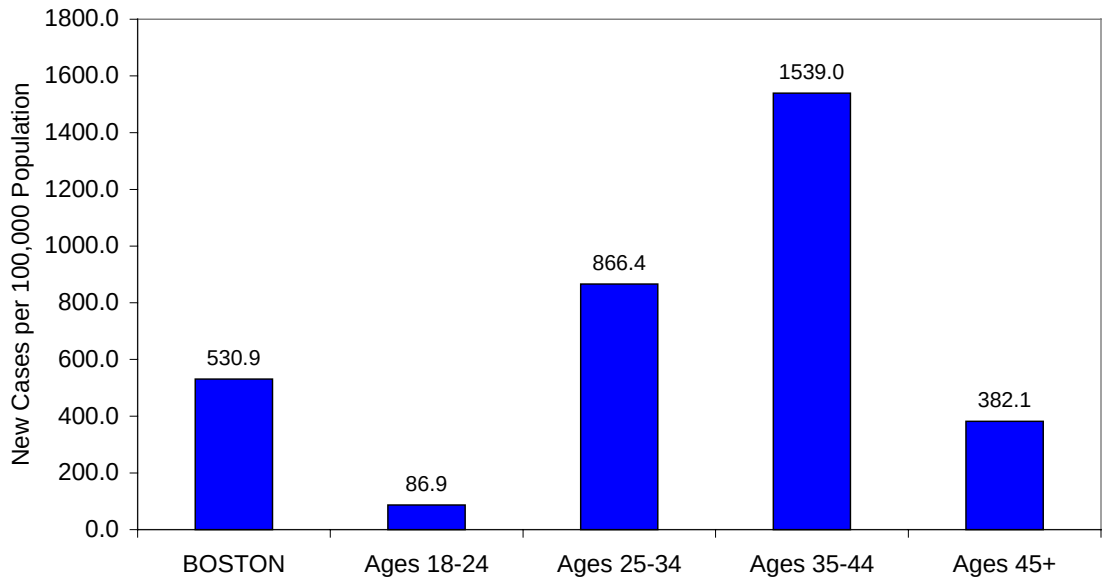
DATA SOURCE: AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- Between 1992 and 2000, the incidence rate of AIDS in males declined 74.0%. The incidence rate in females declined 59.1%.

- Between 1992 and 2000, the incidence rate of AIDS in White, Black, and Hispanic Boston residents significantly decreased. For Whites, the rate fell 82.9%, for Blacks 65.1%, and for Hispanics 56.9%. The incidence of AIDS in Asians remained essentially unchanged.

- During 1992-2000, the incidence rate of AIDS in both Black and Hispanic persons was higher than the overall Boston incidence rate, except in 1998 when the rate among Hispanics fell slightly below the Boston rate.

AIDS Incidence Rates by Age Group, Boston, 1992-2000



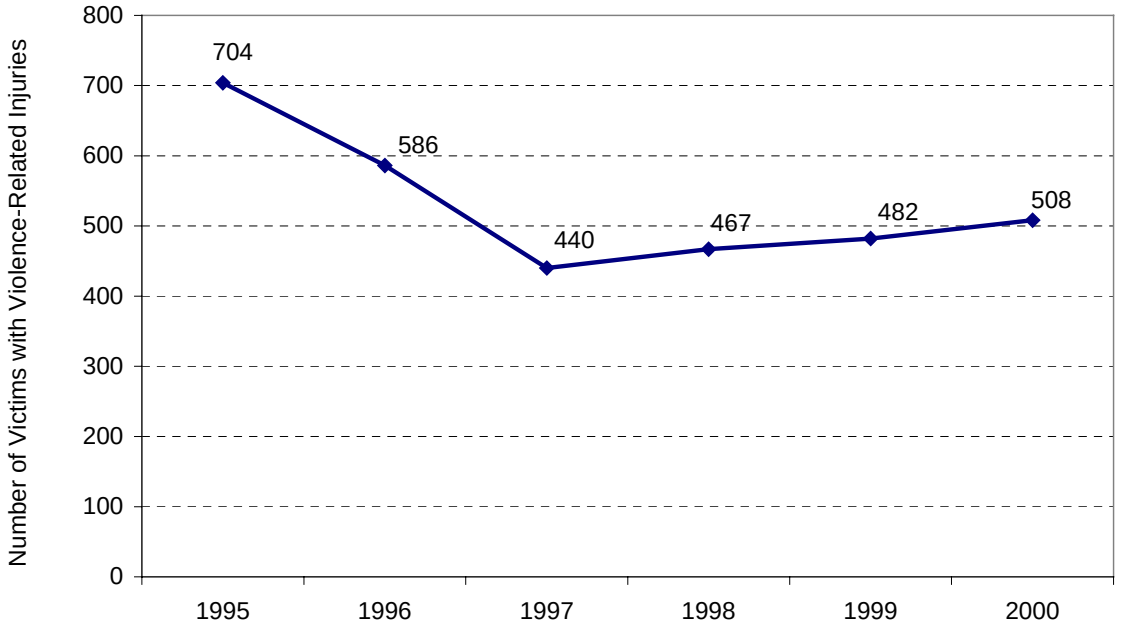
DATA SOURCE: AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission, Research Office

- For the period 1992-2000, the highest AIDS incidence rate was among those ages 35-44. This rate was 2.9 times that of the Boston rate.
- Those ages 25-34 also had rates higher than the Boston rate, by 1.6 times.

VIOLENCE

Violence-related injuries are defined in this report as intentional injuries inflicted by another person using a firearm, non-powder gun, sharp instrument, or other/unknown gun. Violence-related injuries are distinguished from accidental injuries and from self-inflicted injuries.

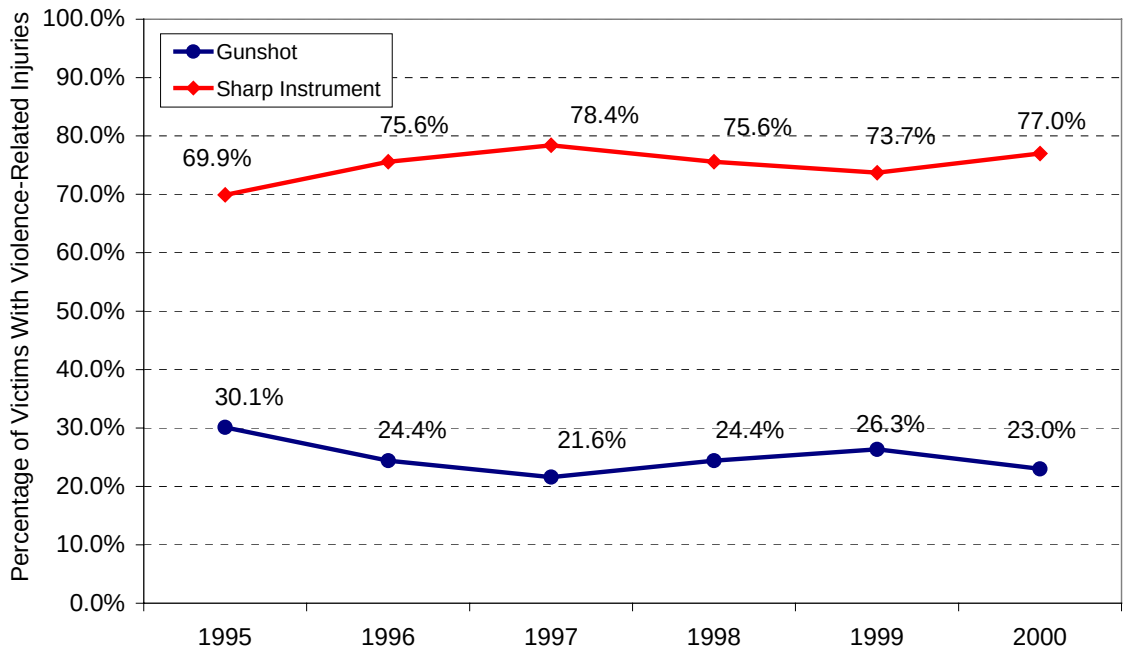
Victims of Violence-Related Injuries by Year, Boston, 1995-2000



DATA SOURCE: Weapons-Related Injury Surveillance System (ISP), Massachusetts Department of Health
GRAPHIC: Boston Public Health Commission, Research Office

- The number of Boston victims with violence-related injuries declined 37.5% between 1995 and 1997 but increased 15.5% between 1997 and 2000. Over the entire six-year period 1995-2000, the number of Boston victims with violence-related injuries declined 27.8%.

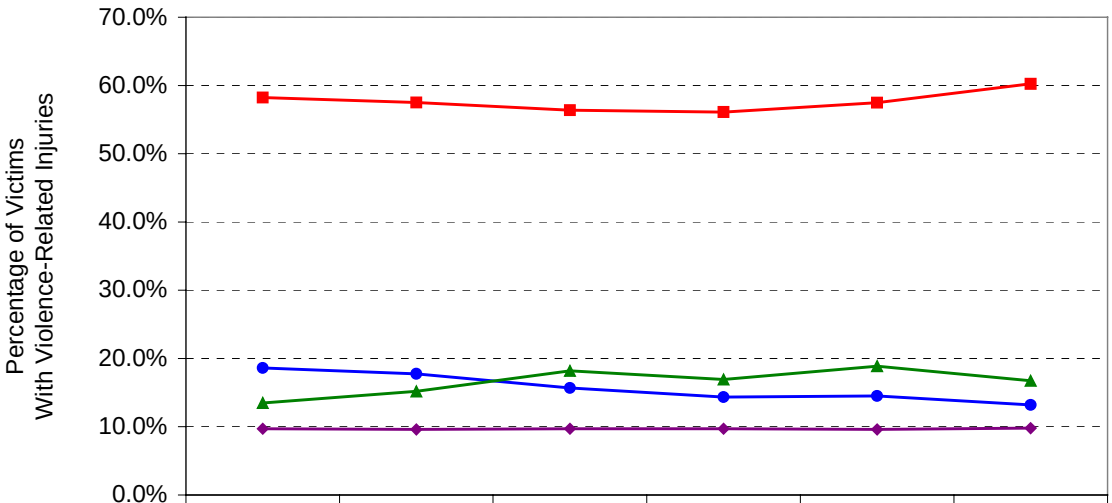
Victims of Violence-Related Gunshot and Sharp Instrument Injuries by Year, Boston, 1995-2000



DATA SOURCE: Weapons-Related Injury Surveillance System (ISP), Massachusetts Department of Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

- Sharp instrument injuries include those inflicted with knives, razors, and similar weapons.
- The percentage of Boston residents having sharp instrument injuries increased 10.2% between 1995 and 2000.
- Gunshot injuries among Boston residents decreased 23.6% between 1995 and 2000.

Victims of Violence-Related Injuries by Race/Ethnicity and Year, Boston, 1995-2000



	1995	1996	1997	1998	1999	2000
White	18.6%	17.7%	15.7%	14.3%	14.5%	13.2%
Black	58.2%	57.5%	56.4%	56.1%	57.5%	60.2%
Hispanic	13.5%	15.2%	18.2%	16.9%	18.9%	16.7%
Other	9.7%	9.6%	9.7%	9.7%	9.6%	9.8%

DATA SOURCE: Weapons-Related Injury Surveillance System (ISP), Massachusetts Department of Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

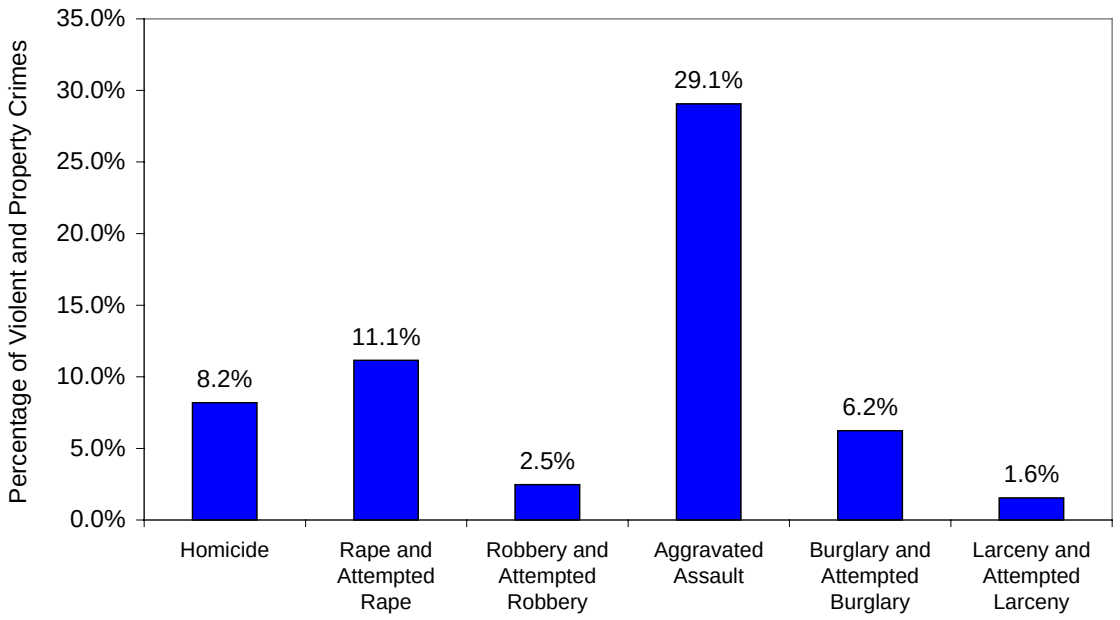
- Higher percentages of Black Boston residents than members of other races/ethnicities reported receiving violence-related injuries.

- The percentage of Boston victims who are Black declined 3.6% between 1995 and 1998. However, between 1998 and 2000, Blacks experienced an increase of 7.3% in these injuries.

- The percentage of Hispanic victims increased 34.8% between 1995 and 1997, fell in 1998, and increased again in 1999. Overall, the increase for Hispanic victims between 1995 and 2000 was 23.7%.

- The percentage of victims of violence who are White has continued to decline, resulting in an overall decrease of 29.0% between 1995 and 2000.

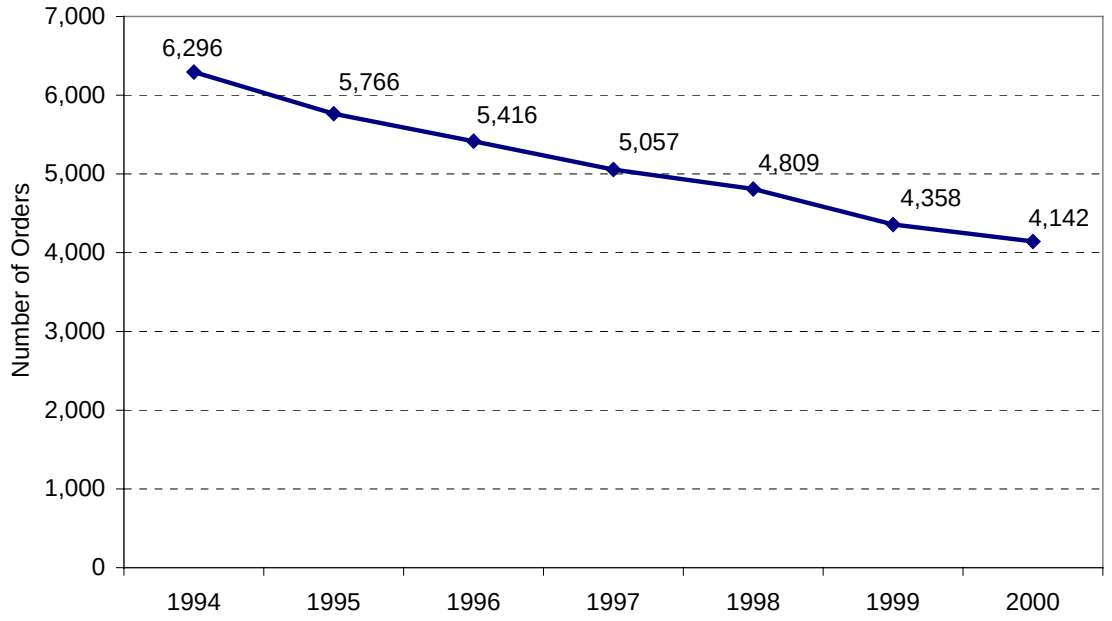
Violent and Property Crimes Related to Domestic Violence, Boston, January-November, 2001



NOTE: The crimes for which data are presented in this chart are called "Part 1 Crimes" by the Boston Police Department.
DATA SOURCE: Boston Police Department, Office of Research and Evaluation
GRAPHIC BY: Boston Public Health Commission, Research Office

- Domestic violence includes intimate partner violence and violence by other family members.
- There were 1,765 violent and property crimes related to domestic violence in Boston between January and November 2001. This was 5.2% less than during January-November 2000.
- Of all aggravated assaults in Boston documented by the Boston Police Department between January and November 2001, almost a third were related to domestic violence.
- Of all Boston rapes and attempted rapes, slightly more than 10% were related to domestic violence.
- Of all Boston homicides, about 8% were domestic-violence related.

Number of Restraining Orders by Boston Courts by Year, 1994-2000



NOTE: Data do not include emergency civil restraining orders. More than one restraining order may be issued against a defendant.
DATA SOURCE: Research and Planning Department, Administrative Services Division, Office of the Commissioner of Probation
GRAPHIC: Boston Public Health Commission, Research Office

- The number of restraining orders issued by Boston courts declined 5.0% between 1999 and 2000. There was a 34.2% drop in this number during the seven-year period 1994-2000.

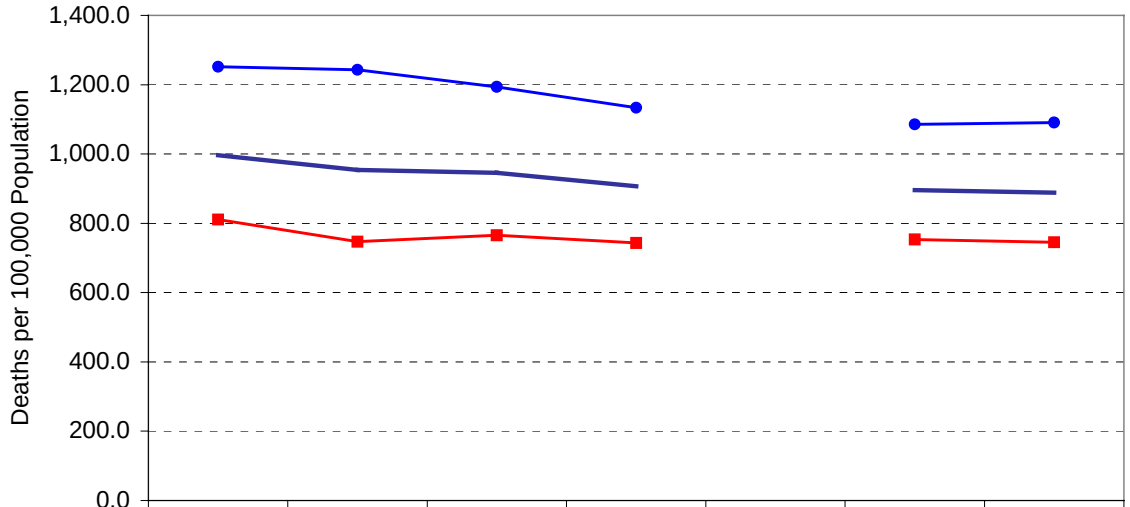
MORTALITY

In 2000, there were 4,500 deaths among Boston residents, similar to the number in 1999. In Boston, the overall age-adjusted mortality rate for 2000 was 888.4 deaths per 100,000. Nationally, the estimated age-adjusted mortality rate was 872.4 per 100,000. Boston's rate in 2000 was less than one percent lower than its rate in 1999 (895.9 per 100,000).

Of the 4,500 deaths in 2000 among Boston residents, males accounted for 2,110 (46.9%) and females 2,390 (53.1%). There were 3,177 deaths for Whites, 1,015 for Blacks, 172 for Hispanics, and 128 for Asians. Ages 65 and over accounted for the greatest number of Boston deaths (3,297) during 2000. The greatest number of the 4,500 deaths among Boston residents during 2000 were from North Dorchester (512 deaths), Roslindale (441 deaths), and Roxbury (417 deaths).

In Boston, the leading causes of death were heart disease, cancer, stroke, diabetes, nephritis, and septicemia. The ten leading causes of death accounted for 77.2% of all deaths in 1999 and 76.8% in 2000.

Overall (All Causes) Mortality Age-Adjusted Rates by Sex by Year, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
Male	1,252.2	1,243.2	1,193.8	1,133.7		1,085.5	1,091.1
Female	811.0	747.1	765.5	743.2		753.4	745.2
Boston	996.4	954.4	945.8	907.2		895.9	888.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

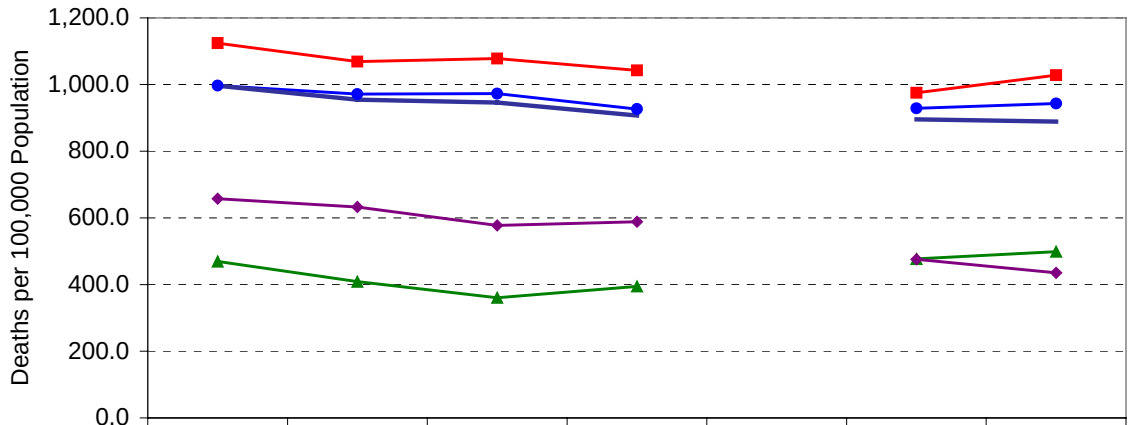
- The overall mortality rate for Boston residents started to decline in 1996. Between 1995 and 1998, the overall age-adjusted mortality rate declined from 996.4 deaths per 100,000 to 907.2 deaths per 100,000, a statistically significant decrease of 9.0%.

- The rate for 1999 was 895.9 deaths per 100,000 and for 2000, 888.4 deaths per 100,000, a nonsignificant change of less than one percent.

- Males had a significantly higher mortality rate than females for each year between 1995 and 2000. Their overall mortality rate was forty-four percent to sixty-six percent higher than the rate for females.

- For both males and females, overall age-adjusted mortality rates declined significantly between 1995 and 1998. For males, the decline was 9.5%, and for females, 8.4%. From 1999 to 2000, rates declined 1.1% for females, but increased slightly for males. The one-year changes between 1999 and 2000 were not statistically significant.

Overall (All Causes) Mortality Age-Adjusted Rates by Race/Ethnicity by Year, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	996.8	971.8	972.7	926.3		928.8	942.8
Black	1,124.5	1,068.8	1,078.3	1,042.3		975.5	1,028.1
Hispanic	468.9	408.5	360.2	394.4		476.4	498.7
Asian	657.6	632.6	577.4	588.2		475.8	434.7
Boston	996.4	954.4	945.8	907.2		895.9	888.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- During the period 1995-2000, age-adjusted mortality rates for Blacks were significantly higher than those for members of other race/ethnicity groups. For every year, rates for Blacks were significantly higher than for Hispanics or Asians, and in 1995, 1997, and 1998, they were significantly higher than the rates for Whites as well.

- Overall age-adjusted mortality rates for Hispanics and Asians were significantly lower than those for Whites for every year between 1995 and 2000. Hispanic rates were also significantly lower than those of Asians in 1996-1998.

- Between 1995 and 1998, overall mortality age-adjusted rates declined for all races/ethnicities. The decline was 7.1% for Whites, 7.3% for Blacks, 15.9% for Hispanics, and 10.6% for Asians. These drops did not, however, reach the level of statistical significance, except among Whites.

- From 1999 to 2000, overall mortality age-adjusted rates increased for Whites, Blacks, and Hispanics, but decreased for Asians. Blacks experienced the greatest increase, 5.4%, but again, none of these changes were statistically significant.

Leading Causes of Death Age-Adjusted Mortality Rates, Boston, 1999 and 2000

1999	
Leading Cause	**Deaths per 100,000 Population**
Heart Disease	226.6
Cancer (All)	221.9
Stroke	46.1
COPD	43.0
All Injuries Combined	40.0
Pneumonia/Influenza	32.4
Nephritis/Nephrosis	24.2
Diabetes	22.6
Septicemia	20.8
Substance Abuse	17.2

2000	
Leading Cause	**Deaths per 100,000 Population**
Cancer (All)	226.9
Heart Disease	211.1
Stroke	52.9
All Injuries Combined	38.0
COPD	34.5
Pneumonia/Influenza	31.1
Nephritis/Nephrosis	25.1
Septicemia	23.7
Diabetes	19.8
Substance Abuse	19.6

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- The leading causes of death among Boston residents were the same for 1999 and 2000. Heart disease, which was the number one cause of death for Boston residents in 1999, was the second cause of death in 2000, having been replaced by cancer.

- Between 1999 and 2000, age-adjusted mortality rates increased for some causes of death but decreased for others. The greatest increases were for stroke (14.8%) and substance abuse (14.0%). The greatest decreases were for COPD (19.8%), diabetes (12.4%), and heart disease (6.8%). The one year changes in rates were not statistically significant.

Leading Causes of Death Age-Adjusted Rates by Sex, Boston, 2000

Male		Female	
Causes of death	Deaths per 100,000 Population	Causes of death	Deaths per 100,000 Population
Cancer (All)	294.0	Cancer (All)	185.2
Heart Disease	274.5	Heart Disease	165.6
All Injuries Combined	56.1	Stroke	51.2
Stroke	55.3	COPD	33.2
Pneumonia/Influenza	44.5	Pneumonia/Influenza	25.3
COPD	36.7	Septicemia	20.7
Nephritis/Nephrosis	36.4	All Injuries Combined	20.6
Substance Abuse	31.1	Diabetes	20.1
Septicemia	26.8	Nephritis/Nephrosis	19.4
Diabetes	18.3	Alzheimer's Disease	17.1

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- For 2000, the leading causes of death were similar for both males and females, differing by the magnitude of their rates.
- Males accounted for 46.9% of all Boston deaths in 2000. Cancer was the leading cause of death, and heart disease, the second leading cause.
- The rates for cancer and heart disease among males were five to sixteen times as high as rates for the remaining leading causes shown. They were almost double the rates for females.
- Females accounted for 53.1% of all Boston deaths in 2000. For females, as for males, cancer was the leading cause of death, and heart disease, the second leading cause. Stroke was the third leading cause of death for females, but the fourth leading cause for males. However, the rate for females was 7.4% lower than for males.

Leading Causes of Death Age-Adjusted Rates by Race/Ethnicity, Boston, 2000

White	
Leading Causes	**Deaths per 100,000 Population**
Cancer (All)	240.8
Heart Disease	230.6
Stroke	52.8
COPD	43.0
All Injuries Combined	42.0

Black	
Leading Causes	**Deaths per 100,000 Population**
Cancer (All)	276.9
Heart Disease	224.8
Stroke	59.9
All Injuries Combined	55.4
Nephritis/Nephrosis	49.6

Hispanic	
Leading Causes	**Deaths per 100,000 Population**
Cancer (All)	128.1
Heart Disease	63.3
Stroke	62.9
Diabetes	52.2
All Injuries Combined	20.8

Asian	
Leading Causes	**Deaths per 100,000 Population**
Cancer (All)	112.8
Heart Disease	85.6
Stroke	53.6
COPD	21.7
All Injuries Combined	16.6

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- The leading causes of death in 2000 were similar across racial/ethnic groups in Boston. Cancer was the leading cause of death and heart disease the second leading cause for Whites, Blacks, Hispanics, and Asians.

- Blacks had the highest cancer mortality rates, and Whites the second highest. The cancer mortality rate for Blacks was 15.0% higher than for Whites. However, the cancer mortality rates for both Blacks and Whites were higher than rates for Hispanics and Asians.

- In addition to cancer, Blacks had higher mortality rates for injuries, nephritis/nephrosis, and HIV/AIDS (data not shown), than did Whites, Asians, and Hispanics. They also had the second highest rate for heart disease. Their mortality rate for injuries (55.4 deaths per 100,000) was almost three times the rate for Hispanics (20.8 deaths per 100,000), and more than three times the rate for Asians (16.6 deaths per 100,000).

- Hispanics had the highest mortality rate for stroke among all race/ethnicities and the highest rate for diabetes. In general, mortality rates for the leading causes, except heart disease and stroke, were lower for Asians than other race/ethnicities.

Leading Causes of Death by Age Groups, Age-Specific Rates, Boston, 2000

Age Group	Causes of Death	Age-Specific Rate
Ages 1-19	All Injuries Combined	9.6
	Homicide	5.2
	All Cancers	3.7
	Heart Disease	2.2
Ages 20-24	All Injuries Combined	39.9
	Drug-related	10.0
	Other Accidents	2.0
	Homicide	1.9
Ages 25-34	All Injuries Combined	36.9
	Homicide	12.0
	Drug-related	11.2
	Heart Disease	9.6
Ages 35-44	All Injuries Combined	53.2
	All Cancers	40.5
	Heart Disease	38.2
	Drug-related	32.4
	HIV/AIDS	27.8
Ages 45-54	All Cancers	190.4
	Heart Disease	118.0
	All Injuries Combined	44.1
	HIV/AIDS	28.3
Ages 55-64	All Cancers	372.9
	Heart Disease	212.0
	Stroke	41.4
	Septicemia	36.6
	Nephritis/Nephrosis	34.1
Ages 65-74	All Cancers	946.9
	Heart Disease	558.5
	COPD	122.0
	Stroke	102.7
	Nephritis/Nephrosis	96.3
Ages 75-84	All Cancers	1,476.4
	Heart Disease	1,361.0
	Stroke	346.0
	COPD	286.0
	Nephritis/Nephrosis	161.5
Ages 85+	Heart Disease	4,537.4
	All Cancers	2,057.1
	Stroke	1,445.9
	Pneumonia/Influenza	1,210.8
	COPD	658.3

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Many of the leading causes of death among Boston residents in 2000 were the same for most age groups. In general, mortality rates for the leading causes were progressively higher with age.

- Deaths due to "all injuries combined" include unintentional deaths (accidents), motor vehicle-related deaths, intentional deaths (homicide and suicide), and injuries with intent unknown at the time the death certificate was issued.

- All injuries combined was among the leading causes of death shown for all Boston age groups under age 55. It was the first leading cause of death for Boston residents ages 1-19, 20-24, 25-34, and 35-44. The highest rate (53.2 deaths per 100,000) was incurred by residents ages 35-44.

- HIV/AIDS was a leading cause of death for ages 35-44 and 45-54, and drug-related mortality was a leading cause for ages 20-24, 25-34, and 35-44.

- Cancer was one of the leading causes of death for all age groups except those between 20 and 34. It was the first leading cause of death for ages 45-54, 55-64, 65-74, 75-84, and the second leading cause for ages 85 and over.

- Heart disease was also a leading cause of death for all age groups except those ages 20-24. It was the second leading cause of death for ages 45-54, 55-64, and 65-74, and 75-84, but the first leading cause for ages 85 and above.

- Respiratory diseases such as chronic obstructive pulmonary disease (COPD) and pneumonia/influenza were among the leading causes of death for ages 65 and above. Stroke was a leading cause for ages 55-64, 65-74, 75-84, and 85 and over. Nephritis was the fifth leading cause for ages 55-64, 65-74, and 75-84.

Leading Causes of Death Age-Adjusted Rates by Neighborhood, Boston, 2000

Neighborhood	Leading Cause	Deaths per 100,000 Population
Allston/Brighton	Heart disease	191.1
	Cancer (all sites combined)	186.8
	COPD	38.9
	All injuries combined	34.1
	Stroke	33.4
Back Bay	Cancer (all sites combined)	199.5
	Heart disease	121.5
	Stroke	29.0
	COPD	25.5
Charlestown	Heart disease	272.5
	Cancer (all sites combined)	249.2
	Pneumonia/Influenza	51.6
	COPD	46.1
East Boston	Cancer (all sites combined)	228.1
	Heart disease	172.2
	All injuries combined	65.5
	Stroke	39.8
	COPD	35.3
Fenway	Cancer (all sites combined)	247.1
	Heart disease	236.4
	HIV/AIDS	62.4
	All injuries combined	56.1
Hyde Park	Cancer (all sites combined)	253.1
	Heart disease	223.4
	Stroke	48.4
	COPD	44.6
	All injuries combined	37.8
Jamaica Plain	Heart disease	271.4
	Cancer (all sites combined)	190.5
	Stroke	67.7
	Nephritis/Nephrosis	39.9
	All injuries combined	38.0
Mattapan	Cancer (all sites combined)	204.5
	Heart disease	194.7
	Stroke	93.7
	All injuries combined	51.2
	Septicemia	41.7
North Dorchester	Cancer (all sites combined)	258.9
	Heart disease	229.8
	All injuries combined	53.5
	Stroke	47.8
	Nephritis/Nephrosis	41.5
North End	Cancer (all sites combined)	163.3
	Heart disease	134.8
	Pneumonia/Influenza	32.9
Roslindale	Heart disease	181.4
	Cancer (all sites combined)	178.0
	Stroke	73.1
	Pneumonia/Influenza	52.3
	COPD	49.1
Roxbury	Cancer (all sites combined)	234.4
	Heart disease	206.9
	Stroke	64.4
	Nephritis/Nephrosis	51.4
	All injuries combined	50.3
South Boston	Heart disease	324.6
	Cancer (all sites combined)	294.2
	Stroke	87.0
	COPD	79.3
	All injuries combined	76.0
South Dorchester	Cancer (all sites combined)	237.0
	Heart disease	208.1
	Stroke	68.6
	All injuries combined	36.7
	COPD	32.2
South End	Cancer (all sites combined)	200.8
	Heart disease	162.5
	Stroke	44.2
	All injuries combined	40.5
	COPD	26.0
West Roxbury	Cancer (all sites combined)	222.5
	Heart disease	193.6
	Stroke	56.0
	Pneumonia/Influenza	36.1
	Nephritis/Nephrosis	33.9

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In 2000, heart disease and cancer were responsible for about half of all deaths of residents in most of Boston's 16 neighborhoods, and were ranked either first or second as the leading cause of death in every neighborhood.
- Cancer was the leading cause of death for 11 Boston neighborhoods. Among those, North Dorchester had the highest age-adjusted mortality rate (258.9 deaths per 100,000) and Hyde Park the second highest rate (253.1 deaths per 100,000). However, one neighborhood for which cancer was the second leading cause of death (South Boston) had the highest age-adjusted cancer mortality rate of all 16 neighborhoods (294.2 deaths per 100,000).
- Heart disease was the leading cause of death for 5 neighborhoods, with age-adjusted rates ranging from 324.6 deaths per 100,000 in South Boston to 121.5 deaths per 100,000 in the Back Bay.
- Stroke, pneumonia/influenza, COPD, and injuries (intentional and unintentional) were also among the leading causes of death for many Boston neighborhoods.

Heart Disease

Heart disease is the reduction of the blood supply to the heart, caused by the narrowing of the arteries. Heart disease is the leading cause of death in the United States. (1) Deaths from heart disease are higher among men than women and higher among Blacks than Whites. (1) Hispanics, American Indians/Alaska Natives, and Asian/Pacific Islanders have lower rates than Whites or Blacks. (1)

The risk factors for heart disease are high blood pressure, smoking, high blood cholesterol, being physically inactive, overweight, and having diabetes. (2) Other risk factors include increasing age, race, and having a family history of heart disease. (2) The more risk factors a person has, the greater the risk of developing heart disease.

In 2000, there were 1,067 deaths from heart disease in Boston.

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1. American Heart Association. 2002 Heart and Stroke Statistical Update. Dallas, Texas: American Heart Association, 2001. http://www.americanheart.org/downloadable/heart/1014832809466101319099012 3HS_State_02.pdf

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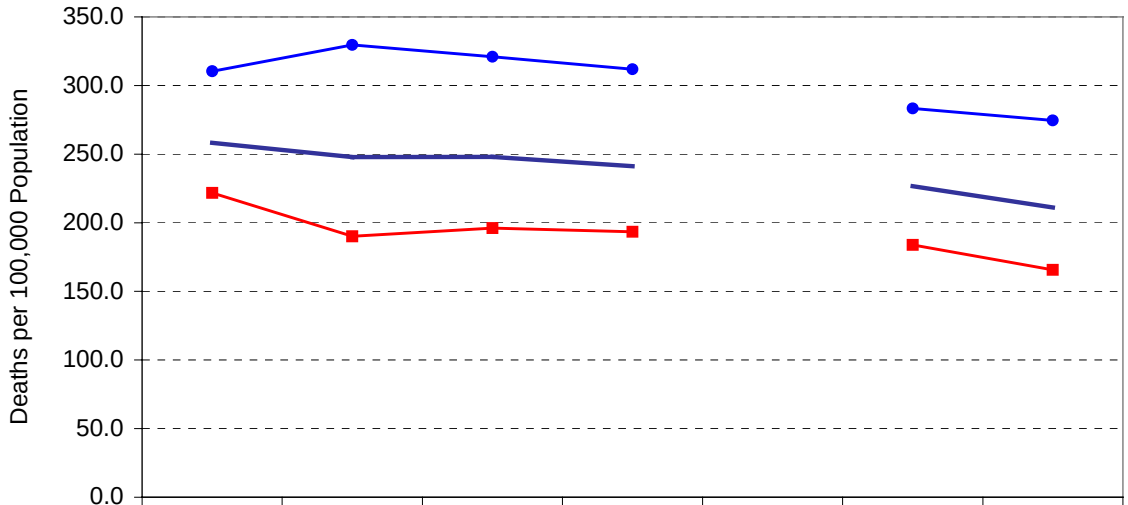
Heart Disease Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
Male	310.4	329.7	320.9	311.8		283.3	274.5
Female	221.7	190.1	196.1	193.4		183.8	165.6
BOSTON	258.2	247.9	248.0	241.2		226.6	211.1

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

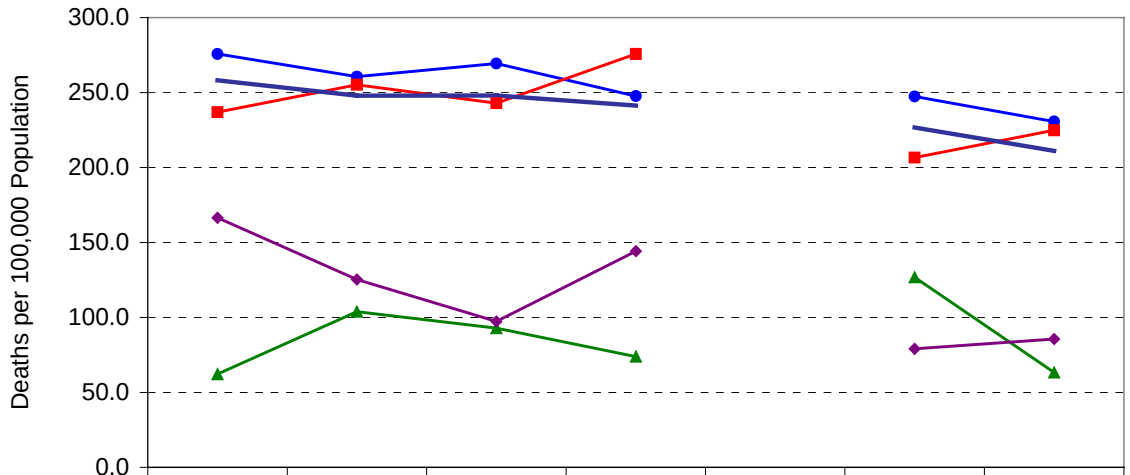
- Between 1995 and 1998, Boston's heart disease mortality rate declined 6.6%. Males experienced a decline of less than one percent, while females experienced a decrease of 12.8%. This decrease for Boston and the decreases for males and females were not statistically significant.

- From 1999 to 2000, the heart disease mortality rate declined 6.8% for Boston overall, 3.1% for males, and 9.9% for females. This decrease for Boston and the decreases for males and females were not statistically significant.

- During 1995-2000, males consistently had a higher heart disease mortality rate than females, a difference that was statistically significant across all the years. The rate for males was 1.4 to 1.7 times as high as the rate for females.

- In 2000, the heart disease mortality rate for males was 1.7 times as high as the rate for females and 30.0% higher than Boston's rate.

Heart Disease Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



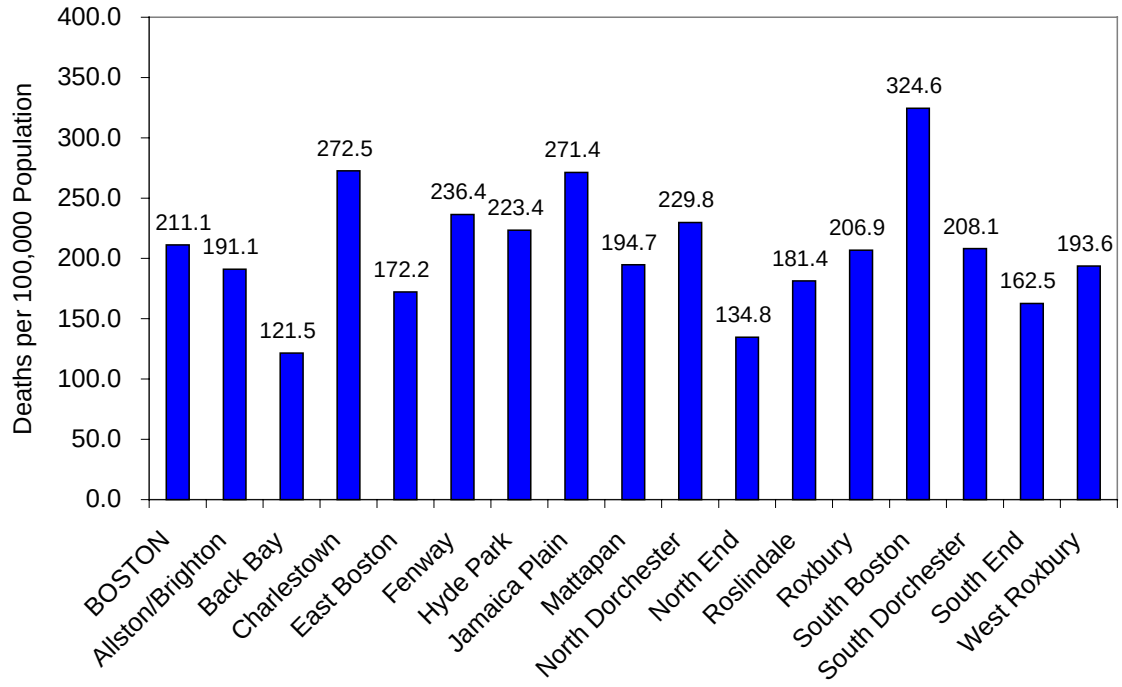
	1995	1996	1997	1998		1999	2000
White	275.6	260.5	269.3	247.6		247.3	230.6
Black	236.9	255.1	242.8	275.7		206.6	224.8
Hispanic	62.1	103.8	92.8	73.9		126.7	63.3
Asian	166.5	125.3	97.4	144.2		79.0	85.6
BOSTON	258.2	247.9	248.0	241.2		226.6	211.1

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Between 1995 and 1998, the heart disease mortality rate for Whites declined 10.2%. Heart disease mortality rates also declined for Asians (13.4%) but increased for Blacks and Hispanics. The highest increase occurred among Hispanics (19.0%). The heart disease mortality rate for Blacks increased 16.4%. The changes in the mortality rates were not statistically significant.
- Between 1995 and 1997, the heart disease mortality rate was highest among Whites. In 1998, the rate was highest among Blacks. During 1995-1998, Asians and Hispanics had mortality rates that were lower than Whites and Blacks, a difference that was statistically significant.
- In 1999 and 2000, heart disease mortality was again highest among Whites. That rate was 9.1% higher than the rate for Boston in 1999 and 9.2% higher in 2000. Blacks had the second highest rate for both 1999 and 2000. Asians had the lowest mortality rate in 1999 but the second lowest, after Hispanics, in 2000. The mortality rates for Asians and Hispanics were lower than Whites and Blacks, a difference that was statistically significant.
- From 1999 to 2000, heart disease mortality rates declined 6.8% for Whites and 50.0% for Hispanics; they increased 8.8% for Blacks and 8.4% for Asians. The one-year change in these rates were not statistically significant.

Heart Disease Mortality Age-Adjusted Rates by Neighborhood, Boston, 2000



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In 2000, heart disease was the second leading cause of death (cancer was first) for Boston residents, accounting for 23.7% of total deaths.

- The neighborhoods of South Boston, Charlestown, Jamaica Plain, the Fenway, North Dorchester, and Hyde Park had heart disease mortality rates that were higher than for Boston overall. In 2000, the rate for South Boston was the highest among Boston's neighborhoods, 53.8% higher than the overall Boston rate.

- Charlestown and Jamaica Plain had the second and third highest rates, 29.1% and 28.6% higher than the Boston rate. The rate for the Fenway was 12.0% higher, the rate for North Dorchester 8.9% higher, and the one for Hyde Park 5.8% higher than the Boston rate.

- The Back Bay and the North End had the lowest heart disease mortality rates. They were 42.4% and 36.1% lower than the Boston rate.

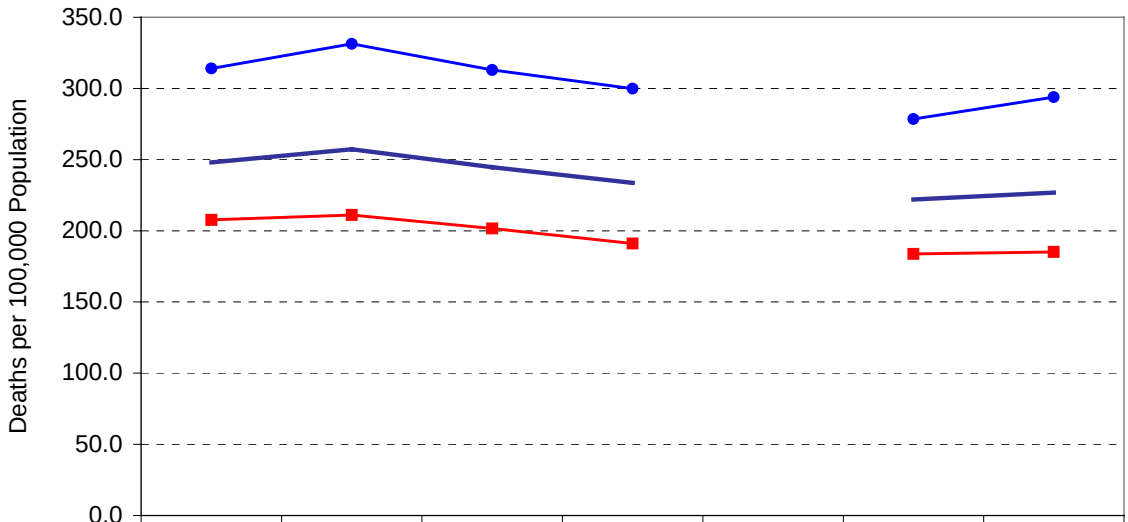
Cancer

Cancer occurs when organ cells proliferate abnormally. If left untreated, these abnormal cancer cells attack normal tissues and spread throughout the body. Cancer cells are able to break away from a malignant tumor and spread locally via the bloodstream or lymphatic system. This spreading is known as *metastasis.* Cancer is named according to the organ where it originates. It is one of the leading causes of death.

Primary prevention involves identifying and avoiding risk factors, which include cigarette smoking, alcohol consumption, ultraviolet radiation exposure (sun), occupational exposure to carcinogens, some viruses, poor diet, and physical inactivity.

In 2000 in Boston, there were 1,109 deaths due to cancer. The number of deaths for other years can be found in Appendix 1.

Cancer Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
Male	314.0	331.3	313.0	299.8		278.5	294.0
Female	207.7	211.1	201.6	191.0		183.7	185.2
BOSTON	248.1	257.3	244.7	233.7		221.9	226.9

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

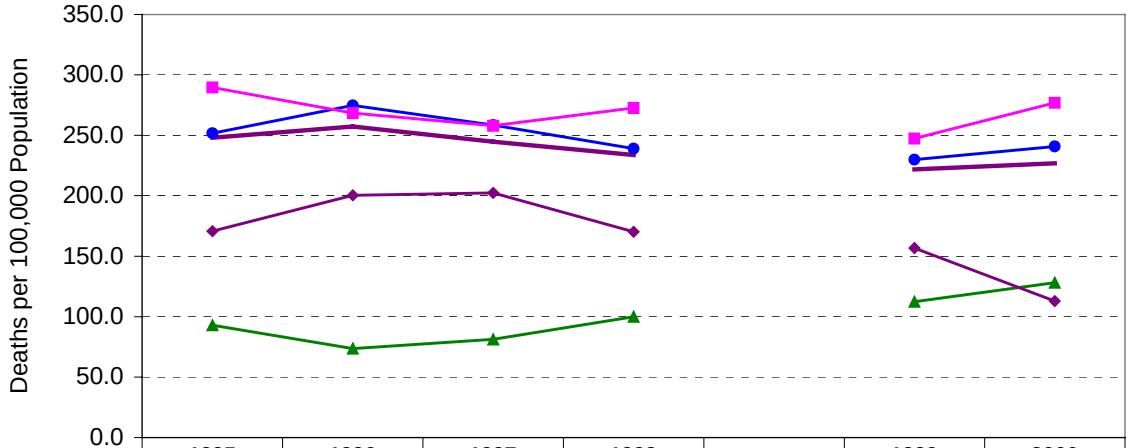
- The overall cancer mortality rate for Boston residents declined 5.8% between 1995 and 1998, going from 248.1 deaths per 100,000 to 233.7 deaths per 100,000. This change was not statistically significant. In 2000, the rate was 226.9 deaths per 100,000, an increase of 2.3% from 1999 (not statistically significant) and 43.0% above the Healthy People 2010 target of no more than 158.7 deaths per 100,000.

- During 1995-2000, overall cancer mortality rates for males were significantly higher than the rates for females. For each of the years shown, the rates for males were about one-and-a half times the rates for females, and these differences are statistically significant. These differences in rates by sex were statistically significant.

- Rates for males and females declined between 1995 and 1998. The decline was greater for females (8.0%) than for males (4.5%); neither was statistically significant.

- From 1999 to 2000, overall cancer mortality rates increased slightly for males and females. The increase was higher for males (5.6%) than for females (0.8%), but neither change in rate was statistically significant.

Cancer Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



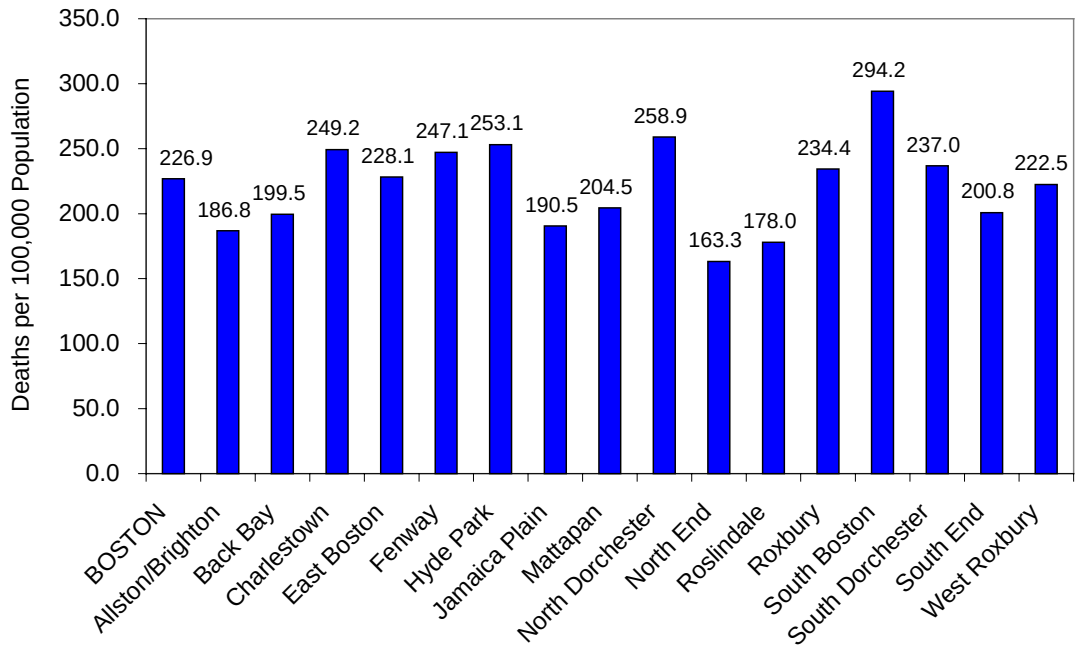
	1995	1996	1997	1998		1999	2000
White	251.7	274.8	258.6	239.0		229.8	240.8
Black	289.6	268.4	257.9	272.6		247.3	276.9
Hispanic	92.8	73.6	81.2	99.9		112.3	128.1
Asian	170.7	200.3	202.4	170.2		156.8	112.8
BOSTON	248.1	257.3	244.7	233.7		221.9	226.9

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- During 1995-2000, cancer mortality rates remained highest for Blacks and Whites. Hispanics had significiantly lower cancer mortality rates than either Blacks or Whites in every year in this time period. Asian rates were significantly lower than the Black rate in 1995, 1998, 1999, and 2000. Their rates were significantly lower than those for Whites in 1999 and 2000.
- Between 1995 and 1998, the cancer mortality rate for Whites and for Blacks declined, although the decline was slightly larger for Blacks (5.9%) than for Whites (5.0%). The rate for Hispanics rose 7.7%, and the rate for Asians remained almost unchanged. These changes were not statistically significant.
- In 2000, the cancer mortality rate was highest for Blacks, whose rate of 276.9 deaths per 100,000 was 22.0% higher than the rate for Boston and 15.0% higher than the rate for Whites. Whites had the second highest rate, 240.8 deaths per 100,000, which was 6.1% higher than the rate for Boston. These differences did not reach the level of statistical significance.
- Cancer mortality rates for Asians and Hispanics, however, were significantly lower (by forty-seven to sixty percent) than the rates for Whites and Blacks.
- From 1999 to 2000, mortality rates increased for all race/ethnicities, except Asians, whose rate declined by 28.1%. The rate increased for Blacks by 12.0%, for Whites by 4.8%, and for Hispanics by 14.1%.

Cancer Mortality Age-Adjusted Rates by Neighborhood, Boston, 2000



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

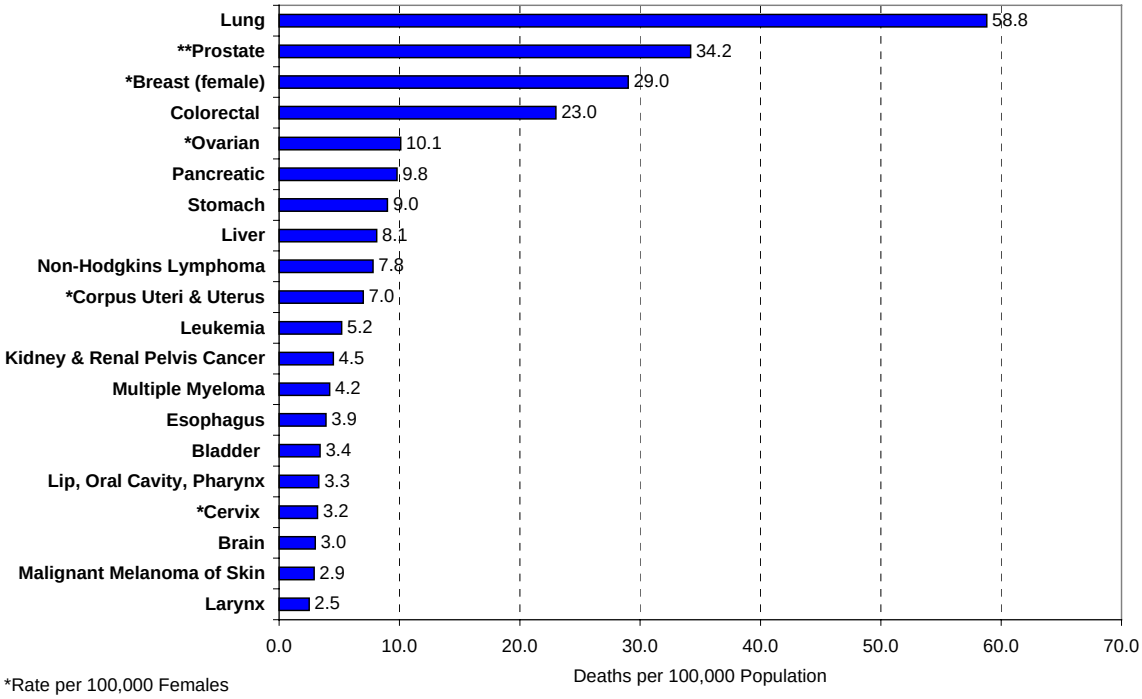
- In 2000, cancer was the leading cause of death (226.9 deaths per 100,000) among Boston residents. This is 43.0% above the Healthy People 2010 target of no more than 158.7 deaths per 100,000.

- Cancer mortality rates for several Boston neighborhoods were higher than the rate for Boston overall. South Boston had the highest rate among the 16 neighborhoods, and North Dorchester and Hyde Park, the second and third highest. Their rates were 29.7%, 14.1%, and 11.5% higher than the rate for Boston.

- Charlestown, the Fenway, South Dorchester, Roxbury, and East Boston also had cancer mortality rates that were higher than the rate for Boston. They ranged from 9.8% higher for Charlestown to less than one percent higher for East Boston.

- The North End and Roslindale had the lowest cancer mortality rates of all Boston neighborhoods. Their rates were 28.0% and 21.6% lower than the Boston rate.

Cancer Mortality Rates by Leading Types of Cancers, Boston, 2000



*Rate per 100,000 Females
**Rate per 100,000 Males
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Many types of cancer contributed to the overall cancer mortality rate for Boston residents in 2000. Mortality rates for almost all of them are higher than the Healthy People 2010 targets. The type of cancer with the highest mortality rate for Boston residents was lung cancer (58.8 deaths per 100,000), which is highly preventable, with approximately 85% of cases directly attributable to smoking. The Boston mortality rate for lung cancer was 2 to 24 times the rates for other types of cancer among Boston residents, and 31.3% above the Healthy People 2010 target of no more than 44.8 lung cancer deaths per 100,000.

- The cancers with the second and third highest mortality rates were prostate and female breast cancer. The Boston mortality rate for prostate cancer (34.2 deaths per 100,000 males) is 19.2% above the Healthy People 2010 target of no more than 28.7 prostate cancer deaths. The female breast cancer mortality rate (29.0 deaths per 100,000) exceeds the Healthy People 2010 target of no more than 22.2 breast cancer deaths by 30.6%.

- Colorectal cancer had the fourth highest mortality rate (23.0 deaths per 100,000), 65.5% higher than the Healthy People 2010 target of no more than 13.9 deaths per 100,000. Ovarian cancer had the fifth highest mortality rate (10.1 deaths per 100,000 females).

Stroke

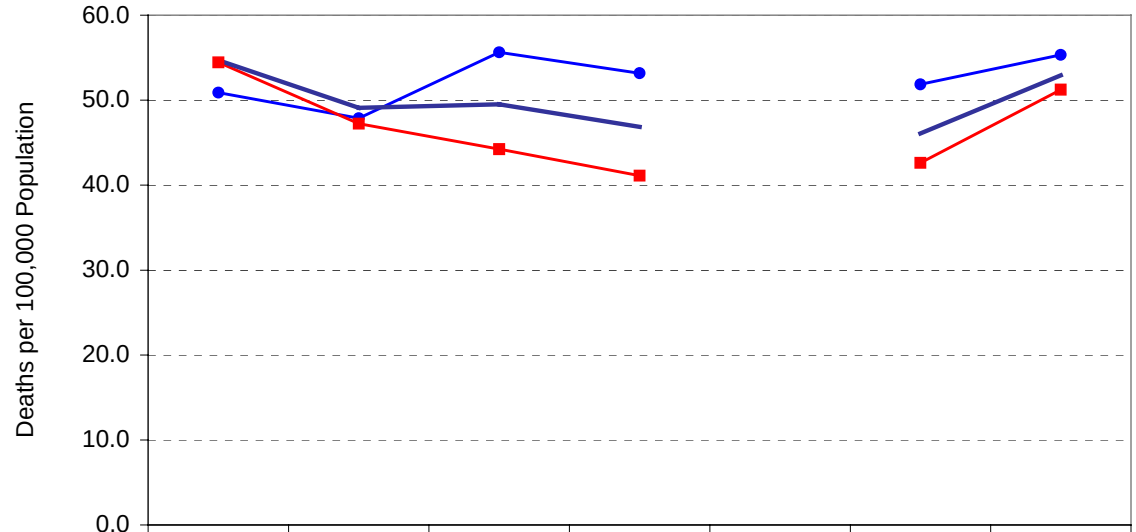
Stroke is a form of cardiovascular disease that affects blood vessels supplying blood to the brain. It is the third leading causes of death in the US and also a leading cause of long-term disability. (1,2) Risk factors for stroke include age, sex, race, family history, personal history of diabetes, high blood pressure, certain types of heart disease, high blood cholesterol, and having had a previous stroke. Certain behaviors also contribute to the risk of stroke, including smoking, excessive alcohol drinking, and being overweight or obese. (3)

In 2000 in Boston, there were 270 deaths from stroke. The number of deaths for other years can be found in Appendix 1.

References

1. American Heart Association. 2001 Heart and Stroke Statistical Update. http://www.americanheart.org/statistics/cvd.html.
2. American Heart Association. Stroke Statistics. http://www.americanheart.org/Heart_and_Stroke_A_Z_Guide/strokes.html.
3. National Stroke Association. Stroke Risk Factors and Their Impact. 2001. http://www.stroke.org/stroke_risk.cfm

Stroke Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



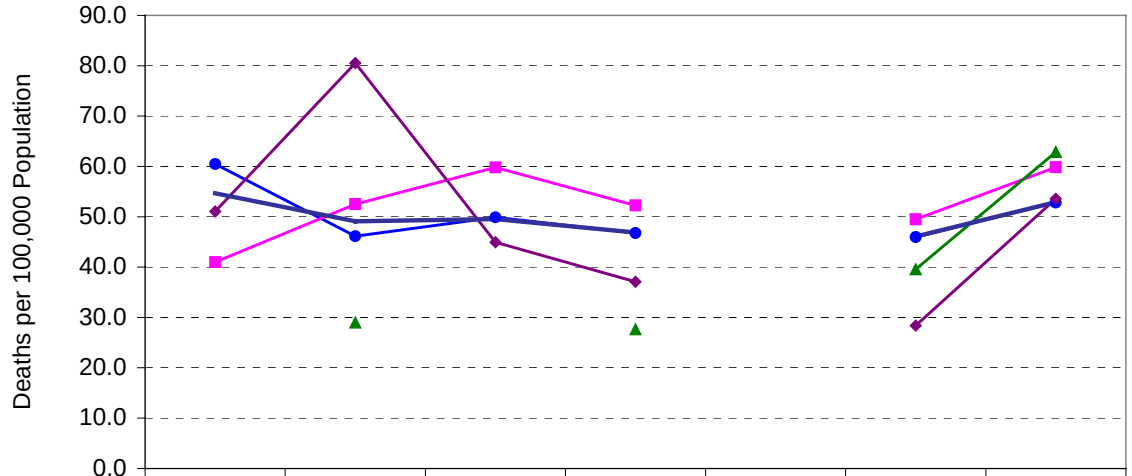
	1995	1996	1997	1998		1999	2000
Male	50.9	47.9	55.6	53.2		51.9	55.3
Female	54.4	47.2	44.2	41.1		42.6	51.2
BOSTON	54.7	49.1	49.5	46.9		46.1	52.9

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- The stroke mortality age-adjusted rate among Boston residents declined 14.3% between 1995 and 1998, which was not a statistically significant change over time.
- Except for 1995, males had a higher stroke mortality rate than females. Between 1996 and 1998, the stroke mortality rate among males was between 1.5% and 29.4% higher than the rate among females. These differences were not statistically significant.
- In 2000, the stroke mortality rate for males was 8.0% higher than for females, again not a statistically significant difference.
- Between 1999 and 2000, the stroke mortality rate increased for males and females. The increase among females was 20.2%, and for males was 6.6%. Boston's overall increase in stroke mortality was 14.8% between 1999 and 2000. None of these one-year changes in rates were statistically significant.

Stroke Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	60.5	46.1	49.9	46.8		46.0	52.8
Black	41.0	52.5	59.8	52.2		49.5	59.9
Hispanic	n<5	29.0	n<5	27.6		39.5	62.9
Asian	51.0	80.5	45.0	37.1		28.4	53.6
BOSTON	54.7	49.1	49.5	46.9		46.1	52.9

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Between 1995 and 1998, stroke mortality among Boston residents declined 14.3%, a nonsignificant change statistically. The stroke mortality rates for Whites and Blacks followed a similar trend, with the mortality rate for Whites declining 22.6%, and for Blacks and Asians, 27.3%. During the years 1995 and 1997, there were insufficient numbers of stroke-related deaths among Hispanics for calculation of a mortality rate. However, Hispanics saw a slight decrease of 4.8% in the stroke mortality rate between 1996 and 1998. All changes during this time period were nonsignificant statistically.

- In 2000, the stroke mortality rate was highest among Hispanics and Blacks, whose rates were 18.9% and 13.2% higher than the rate for Boston. The mortality rates for Whites was similar to the Boston rate of 52.9. The rate for Asians was 1.3% higher than the Boston rate. There were no statistically significant differences by race/ethnicity in stroke mortality in 2000.

Diabetes

Diabetes is a chronic disease that affects an estimated 16 million Americans, of whom 5.4 million are unaware that they have the disease. Approximately 18% of the US population ages 65 and over has diabetes. (1, 2) Diabetes is a leading cause of kidney failure, a leading cause of new cases of adult blindness, and the leading causes of non-traumatic lower-limb amputations. There are two main types of diabetes, Type 1, commonly diagnosed among children, and Type 2, commonly diagnosed among those over age 45, Blacks, Hispanics, Asians, and Native Americans, who have had gestational diabetes, individuals with a family history of diabetes, and those who are overweight or not exercising regularly.

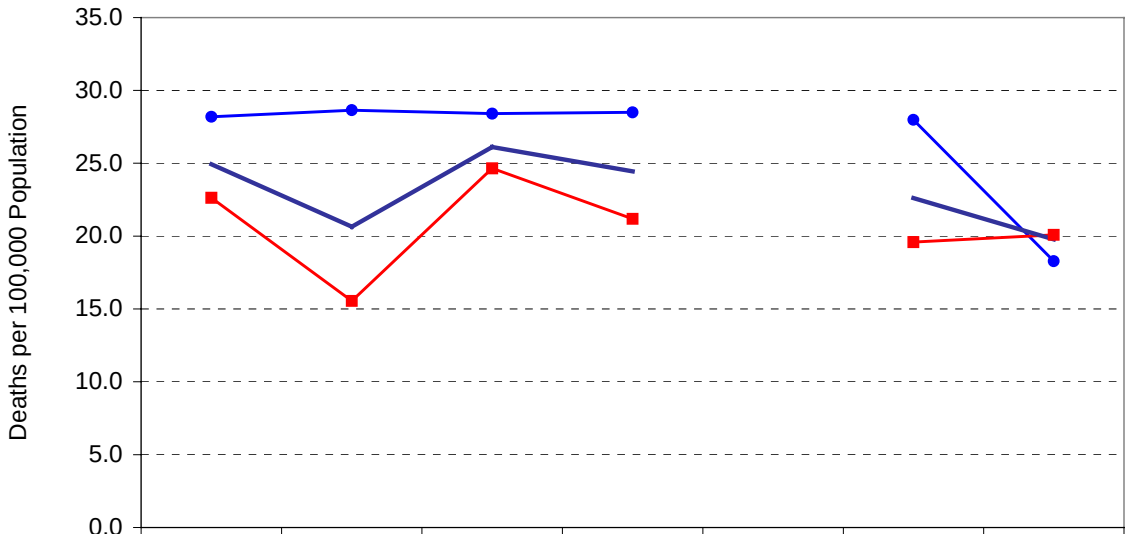
In Boston in 2000, there were 98 deaths due to diabetes. The number of deaths for other years can be found in Appendix 1.

References

1. American Diabetes Association. Diabetes Facts and Figures. 2000. http://www.diabetes.org/ada/facts.asp.

2. National Institutes of Health. Word on Health: Women with Diabetes Face Greater Risk of Heart Disease. 2000. http://www.nih.gov/news/WordonHealth/oct2000/story04.htm.

Diabetes Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



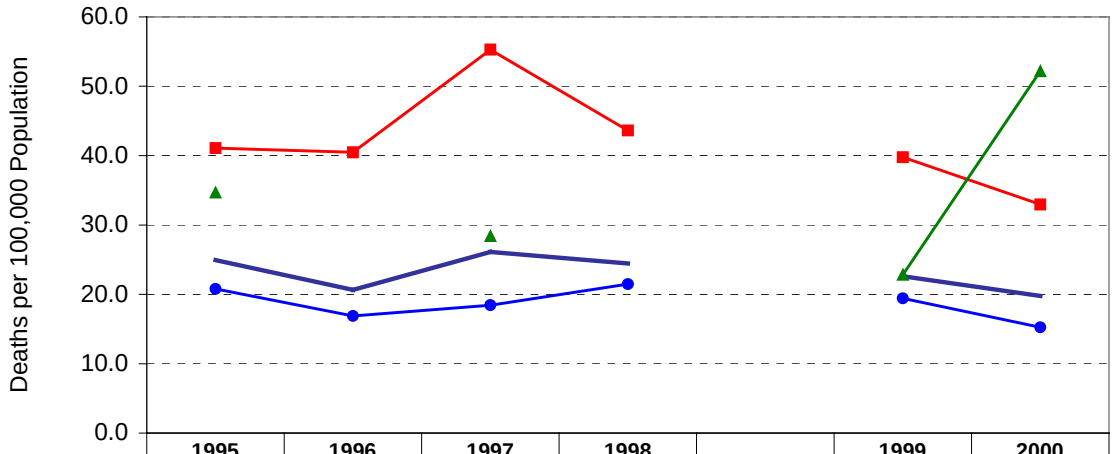
	1995	1996	1997	1998		1999	2000
Male	28.2	28.6	28.4	28.5		28.0	18.3
Female	22.6	15.6	24.6	21.2		19.6	20.1
BOSTON	24.9	20.6	26.1	24.5		22.6	19.8

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In 2000, the diabetes mortality rate for Boston residents (19.8 deaths per 100,000), was 12.4% less than in 1999 (a difference that was not statistically significant) and 56.0% below the Healthy People 2010 target of no more than 45.0 deaths per 100,000.
- From 1995 through 1998, diabetes mortality rates were consistently higher among males than among females, but this difference was not statistically significant. Between 1995 and 1998, the mortality rate for males was 1.2 to 1.8 times as high as the rate for females.
- Between 1995 and 1998, the diabetes mortality rate declined 6.2% for females, but increased 1.1% for males. These changes were not statistically significant.
- In 2000, the diabetes mortality rate for males was 9.0% lower than for females, a difference that was not statistically significant.
- From 1999 to 2000, the diabetes mortality rate declined 34.6% among males. The rate for females increased 2.6%. These changes in mortality rates were not statistically significant.

Diabetes Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	20.8	16.9	18.4	21.5		19.4	15.2
Black	41.1	40.5	55.3	43.6		39.8	33.0
Hispanic	34.7	n<5	28.4	n<5		22.9	52.2
Asian	n<5	n<5	n<5	n<5		n<5	n<5
BOSTON	24.9	20.6	26.1	24.5		22.6	19.8

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In most of the years shown, the diabetes mortality rate was highest for Blacks. They had significantly higher diabetes mortality rates than Whites in 1995-1997 and 1999.
- Between 1995 and 1998, Boston's mortality rate due to diabetes remained almost unchanged (an increase of 1.6%). The mortality rate rose 6.1% among Blacks and 3.4% among Whites, changes that were not statistically significant.
- In 1996 and 1998, there were too few diabetes deaths among Hispanics to calculate a mortality rate. In 1995 and 1997, the rate fell 18.2% (not statistically significant). Asians had too few deaths in each of the years 1995-1998; therefore, a rate could not be calculated.
- In 2000, diabetes mortality was highest among Hispanics. Blacks had the next highest rate, but the differences by race/ethnicity were not statistically significant. Among Asians, there were too few deaths from diabetes to permit a rate calculation.
- Between 1999 and 2000, rates declined for Boston overall and for Whites and Blacks and doubled among Hispanics. However, none of these one-year changes in rates were statistically significant.

Substance Abuse

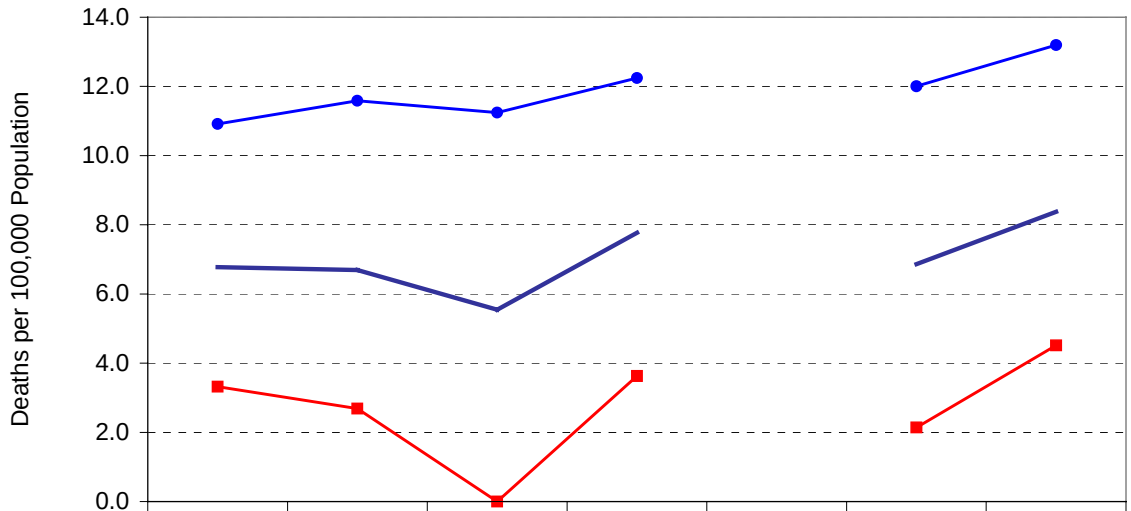
There are many adverse health consequences of alcohol and drug use. Substance use among pregnant mothers can lead to spontaneous abortions, fetal distress, preterm birth, lower birthweight, small size for gestational age, and delays in infants' physical and mental development. (1) Chronic heavy drinking can cause cirrhosis of the liver and cancers of the liver, esophagus, throat, and larynx. (2,3) Substance use can also adversely affect behavior, which in turn puts abusers at risk for accidents and injuries of all kinds, and for sexually transmitted diseases. (1,2,3,4,5)

Sixty-six drug-related deaths and 42 alcohol-related deaths occurred during 2000 among Boston residents. The number of deaths for other years can be found in Appendix 1.

References

1. Substance Abuse and Mental Health Services Administration. Substance Abuse Among Women in the United States. DHHS Publication No. (SMA) 97-3162. Rockville, MD; US Department of Health and Human Services, 1997.
2. Centers for Disease Control and Prevention. Health United States 1998, With Socioeconomic Status and Health Chartbook. Hyattsville, Maryland. 1998.
3. National Cancer Institute. Cancer Rates and Risk. National Institutes of Health. Fourth Edition, 1996.
4. Office of National Drug Control Policy. Data Snapshot: Drug Abuse in America, 1998. Office of National Drug Control Policy, May 1998.
5. National Institute on Alcohol Abuse and Alcoholism. Alcohol Alert No 37: Youth Drinking: Risk Factors and Consequences. Bethesda, MD: NIAAA, July 1997.

Alcohol-Related Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



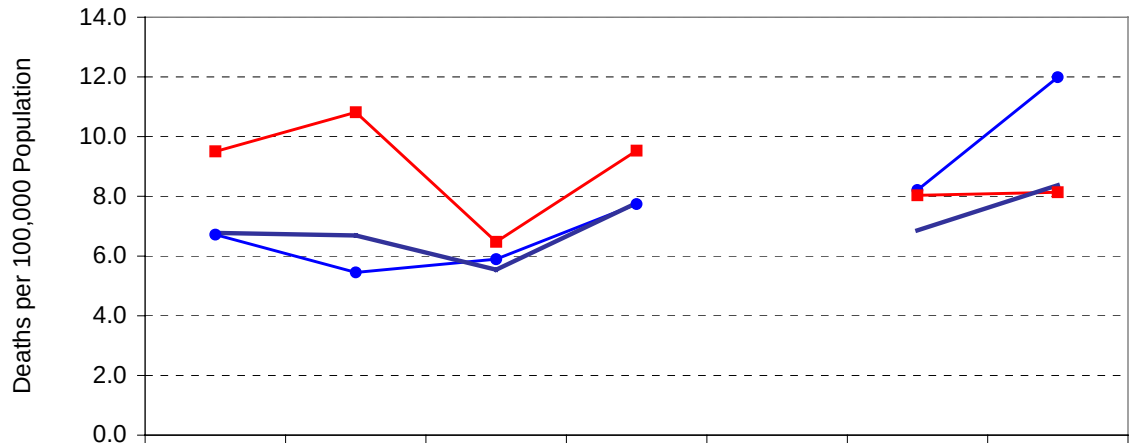
	1995	1996	1997	1998		1999	2000
Male	10.9	11.6	11.2	12.2		12.0	13.2
Female	3.3	2.7	0.0	3.6		2.1	4.5
BOSTON	6.8	6.7	5.5	7.8		6.9	8.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- During 1995-2000, alcohol-related mortality rates for males were three to five times as high as those for females. The difference in rates by sex was statistically significant in 1996, 1998, 1999, and 2000.
- From 1995 to 1998, the alcohol-related mortality rate increased for Boston overall by 14.7%, for males by 11.9%, and for females by 9.1%. These differences were not statistically significant.
- In 2000, the alcohol-related mortality rate for males was 2.9 times the rate for females, a difference that was statistically significant. Between 1999 and 2000, rates increased for both males and females, but these increases were not statistically significant. The increase was 10.0% for males, and 114.3% for females. The 21.7% increase for Boston overall was also not statistically significant.

Alcohol-Related Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	6.7	5.5	5.9	7.7		8.2	12.0
Black	9.5	10.8	6.5	9.5		8.0	8.1
Hispanic	n<5	n<5	n<5	n<5		n<5	n<5
Asian	n<5	n<5	n<5	n<5		n<5	n<5
BOSTON	6.8	6.7	5.5	7.8		6.9	8.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

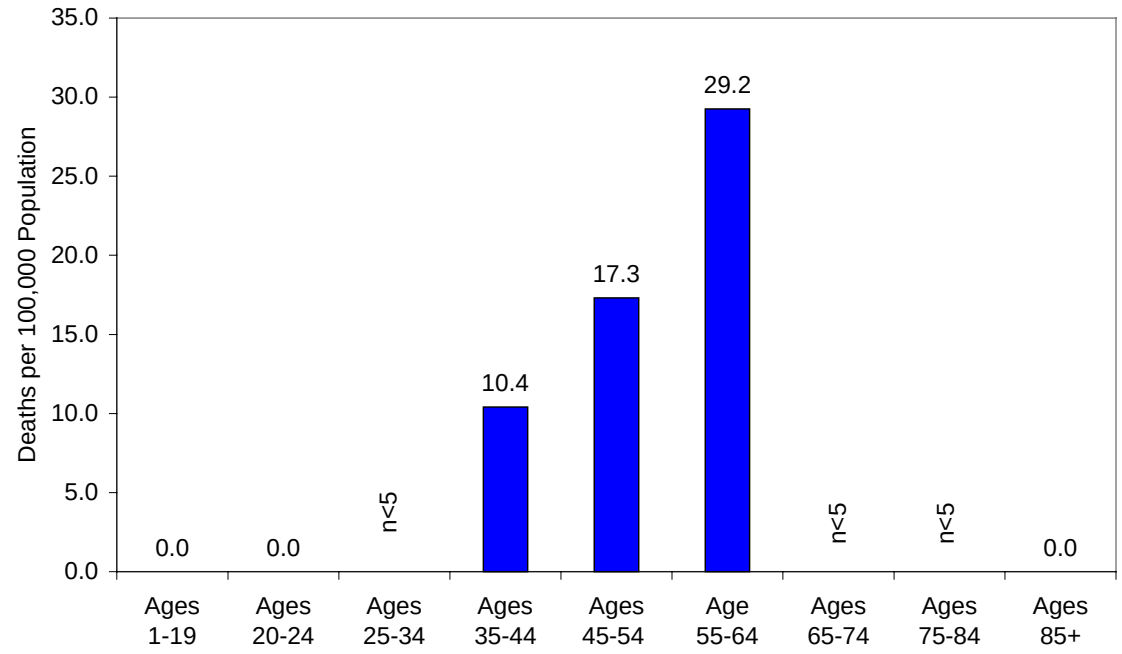
For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- From 1995 through 1997, the alcohol-related mortality rate for Boston residents fell slightly. Between 1997 and 1998, the rate increased 41.8%, and increased again between 1999 and 2000 (21.7%). These changes were not, however, statistically significant.

- Between 1995 and 1998, Whites experienced an increase of 14.9%, an increase that was not statistically significant, and Blacks experienced no change. The alcohol-related mortality rate for Blacks was higher than for Whites during each year between 1995 and 1998. (This difference was not statistically significant). Among Hispanics and Asians, there were too few alcohol-related deaths to permit rate calculations.

- In 2000, the alcohol-related mortality rate for Blacks was 32.5% lower than the rate among Whites. This difference did not however, reach the level of statistical significance. From 1999 to 2000, the White rate increased 46.3%, and the rate for Blacks increased 1.3%, neither of which was a statistically significant one-year change. There were too few alcohol-related deaths among Hispanics and Asians to calculate alcohol-related mortality rates for those groups.

Alcohol-Related Mortality Rates By Age Group, Boston, 2000



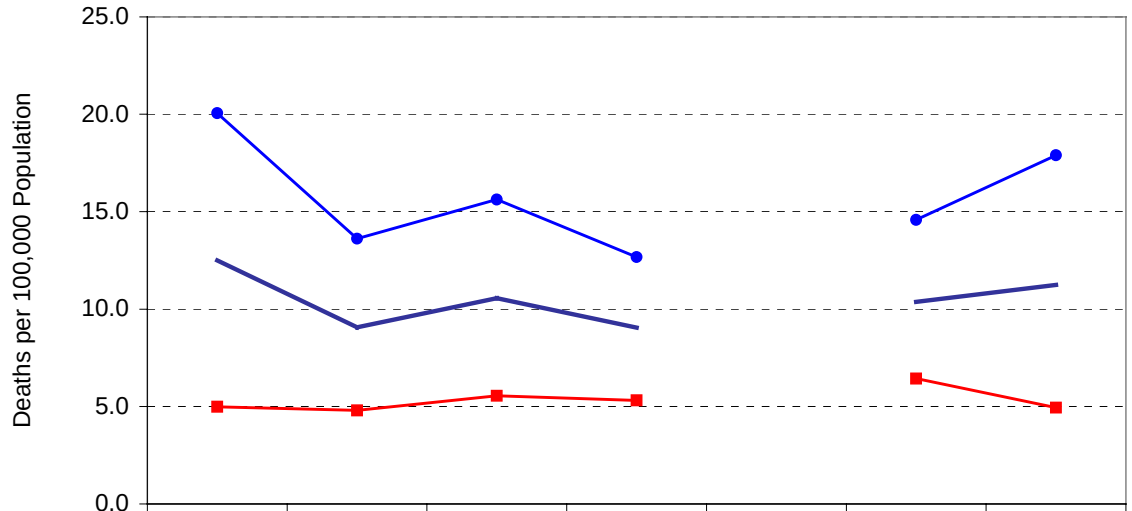
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In 2000, the alcohol-related mortality rate was highest for people ages 55-64. This age group had a rate 63.0% higher than those ages 45-54, and a rate 2.8 times higher than those ages 35-44.

- There were no cases of alcohol-related mortality among Boston residents ages 1-19, 20-24, or 85+. While ages 25-34, 65-74, and 75-84 had some deaths related to alcohol, the numbers were too small to calculate age-specific mortality rates.

Drug-Related Mortality Age-Adjusted Rates by Sex, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
Male	20.1	13.6	15.6	12.7		14.6	17.9
Female	5.0	4.8	5.6	5.3		6.4	4.9
BOSTON	12.5	9.1	10.6	9.0		10.4	11.3

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

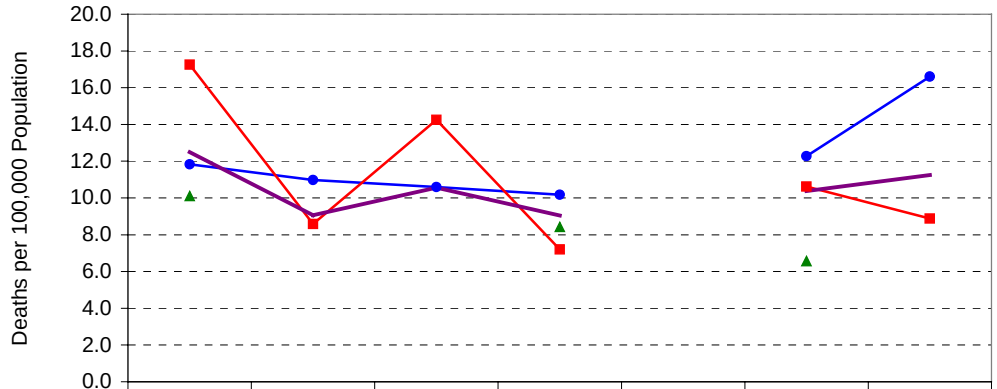
For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- During 1995-2000, drug-related mortality rates for males were two to four times higher than those for females, a difference that was statistically significant.

- From 1995 to 1998, the drug-related mortality rate decreased 28.0% for Boston overall, a decrease that was not statistically significant. The 36.8% decline for males and the 6.0% increase for females were also not statistically significant.

- In 2000, the drug-related mortality rate for males was almost four times the rate for females, a difference that was statistically significant. Between 1999 and 2000, rates increased for males but decreased for females. The increase was 22.6% for males, and there was a 23.4% decrease for females, changes which were not statistically significant.

Drug-Related Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	11.8	11.0	10.6	10.2		12.3	16.6
Black	17.3	8.6	14.2	7.2		10.6	8.9
Hispanic	10.1	n<5	n<5	8.4		6.6	n<5
Asian	n<5	n<5	n<5	n<5		n<5	n<5
BOSTON	12.5	9.1	10.6	9.0		10.4	11.3

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Between 1995 and 1998, the drug-related mortality rate for Boston residents declined 28.0%, a decrease which was not statistically significant.

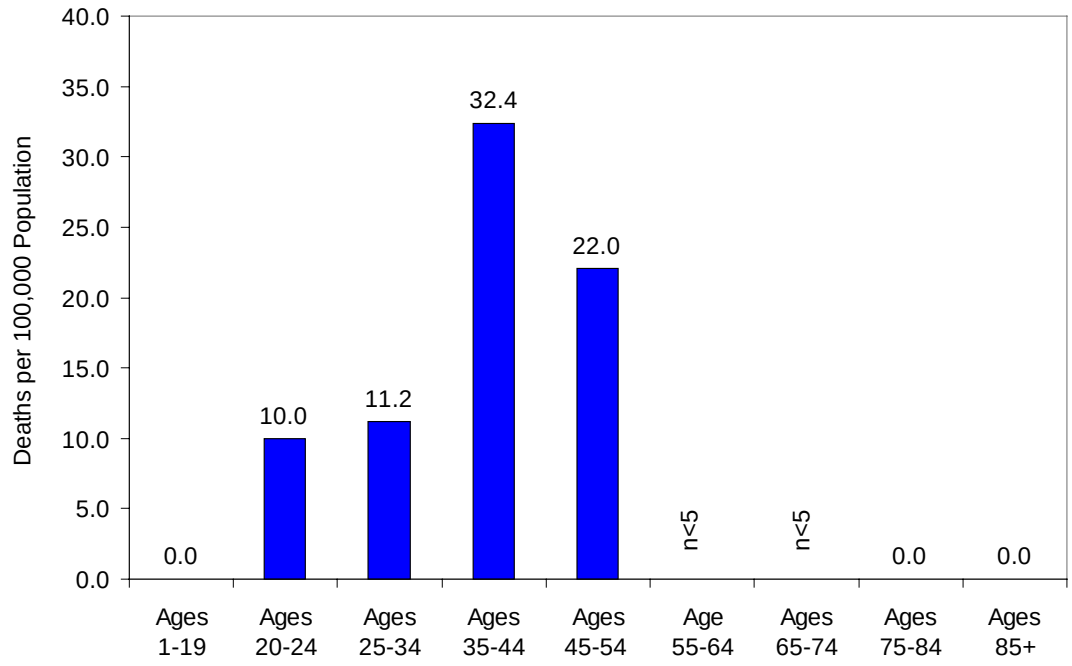
- Starting in 1996, the rate for Whites began decreasing. It was 13.6% lower in 1998 than it had been in 1995 (not a statistically significant difference). Despite this improvement, in 1999, drug-related mortality among Whites was 18.3% higher than the Boston overall rate; in 2000, it was 46.9% higher.

- Drug-related mortality rates for Blacks have fluctuated, making a trend less discernable. In 1995 and 1997, the rate for Blacks was higher than for Whites and Boston overall, although the differences were not statistically significant. The Black rate in 1995 was 46.6% higher than the rate for Whites, a statistically significant difference; the 34.0% difference in 1997 was not statistically significant.

- Rates for Hispanics are available for only three years: 1995, 1998, and 1999. In 1995, the drug-related mortality rate for Hispanics was 19.2% lower than the Boston rate, in 1998, 6.7% lower, and in 1999 36.5% lower. For all three years, Hispanic rates were the lowest of Boston's racial/ethnic groups. No rates are shown for Asians because there were fewer than 5 deaths attributed to drugs each year.

- Between 1999 and 2000, drug-related mortality rates increased for Boston overall and for Whites, but decreased for Blacks. The rates for Boston overall and for Whites rose 8.7% and 35.0%, respectively, but these increases were not statistically significant. The change in the drug-related mortality rate among Blacks between 1999 and 2000 was 16.0%, not a statistically significant decrease.

Drug-Related Mortality Rates By Age Group, Boston, 2000



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- In 2000, drug-related mortality was highest among individuals ages 35-44. This group had a rate 47.3% greater than those ages 45-54, 2.9 times as high as the rate among people ages 25-34, and 3.2 times as high as the rate among people ages 20-24.

- There were no cases of drug-related mortality among Boston residents ages 1-19, 75-84, or 85+, and too small a number to calculate rates among those ages 55-64 and 65-74.

Homicide and Suicide

Homicide disproportionately affects adolescents and young adults. Overall, it is the second leading cause of death among those ages 15-24. (1) However, for Blacks in this age group, homicide is the leading cause of death. (1) Among Hispanics, homicide is the second leading cause of death. (1) For Whites it is the fourth leading cause, and for Asian/Pacific Islanders and for American Indians and Alaska Natives, the third leading cause of death.

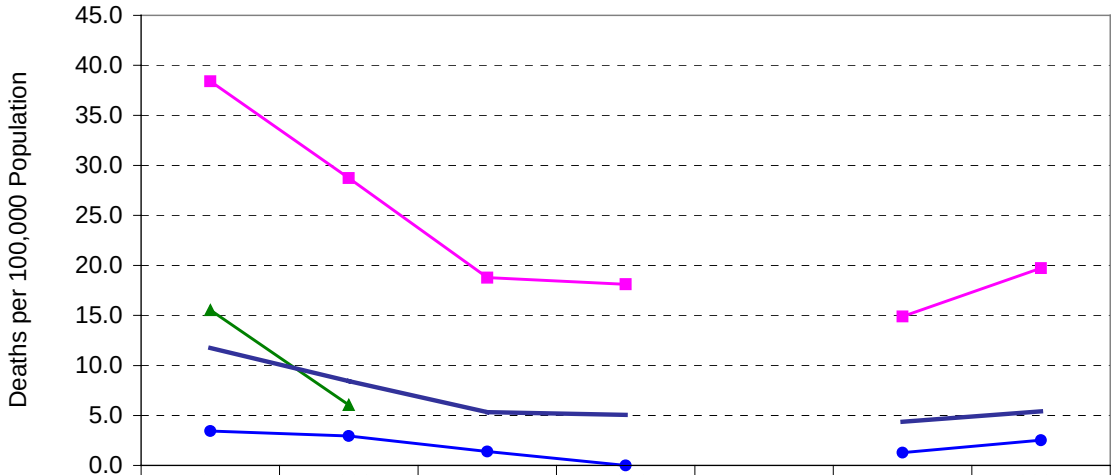
In the United States, the number of deaths from suicide is greater than the number of deaths from homicide. (1) Suicide is the eleventh leading cause of death, while homicide is fourteenth. Suicide is the third leading cause of death among those ages 15-24. (1) Among Whites, Asian/Pacific Islanders, and American Indians and Alaska Natives in this age group, suicide is the second leading cause of death. (1) For Blacks and Hispanics of this age group, suicide is the third leading cause of death.(1)

In 2000, for Boston, there were more deaths from homicide (42) than from suicide (34), the opposite of what is reported nationally.

Reference

1. NCHS National Vital Statistics System for numbers of deaths, U.S. Bureau of Census for population estimates. Statistics compiled using WISQARSTM produced by the Office of Statistics and Programming, NCIPC, CDC.

Homicide Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



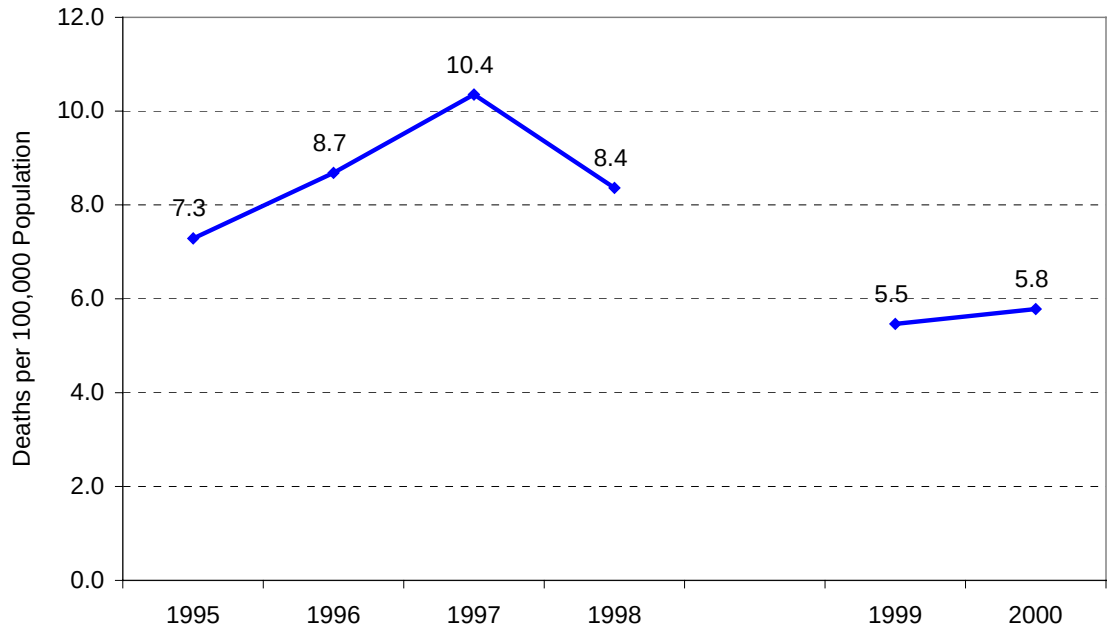
	1995	1996	1997	1998		1999	2000
White	3.4	2.9	1.4	0.0		1.3	2.5
Black	38.4	28.7	18.8	18.1		14.9	19.7
Hispanic	15.5	6.0	n<5	n<5		n<5	n<5
Asian	n<5	n<5	n<5	n<5		n<5	n<5
BOSTON	11.8	8.4	5.3	5.1		4.4	5.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Boston homicide mortality rates declined in 1996, 1997 and 1998. Between 1995 and 1998, the decline was 56.8%, a decline that was also significant.
- White residents of Boston had the lowest homicide mortality rates during 1995-2000, 53.7% to 73.6% lower than overall Boston rates. Homicide mortality rates for Black residents were substantially higher than overall Boston rates and were the highest of all racial/ethnic groups. The Black rates were significantly higher than those for Whites in every year between 1995 and 2000, and were significantly higher than the Hispanic rates in 1995 and 1996.
- Rates for Blacks declined 52.9% (a statistically significant difference) between 1995 and 1998, but they increased 32.2% between 1999 and 2000, and remained 8 to 13 times higher than the rates for Whites.
- Between 1999 and 2000, homicide mortality rates increased 22.7% for Boston overall, 92.3% for Whites, and 32.2% for Blacks. However, this one-year increase was not statistically significant.
- The homicide mortality rate for Hispanic Boston residents could be calculated for only the first two years during the period 1995-2000. In 1995, it exceeded the Boston rate by 31.4%. No rates are shown for Asians because there were fewer than 5 homicide deaths in each year.

Suicide Mortality Age-Adjusted Rates, Boston, 1995-2000



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- During the six-year period 1995-2000, there were 258 suicides among Boston residents. Between 1995 and 1998, suicide mortality rose 15.1%, a nonsignificant change statistically.

- In 1996 and 1997, the suicide rate increased, although not significantly. Between 1997 and 1998, the rate fell 19.2%, again a non-significant change statistically. In 2000, the suicide mortality rate for Boston was 5.8 deaths per 100,000, a statistically nonsignificant increase of 5.5% over the rate in 1999.

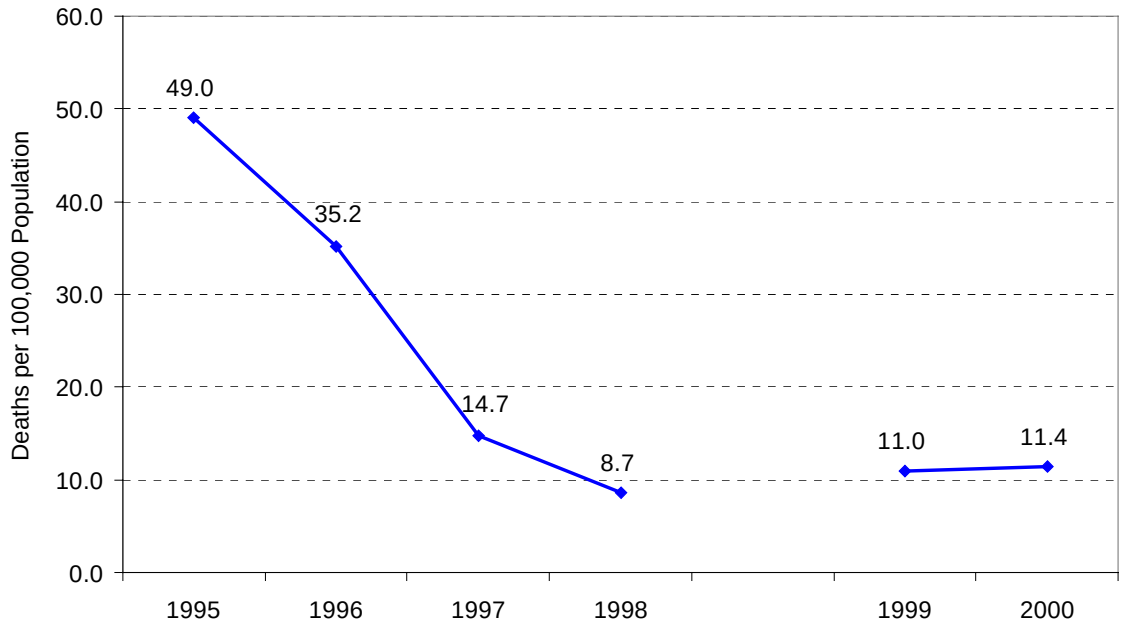
HIV/AIDS

Human Immunodeficiency Virus (HIV) is the organism that causes Acquired Immune Deficiency Syndrome (AIDS). People become infected with HIV through sexual contact, through needles that are contaminated with blood or at the time of birth when infection can be transmitted from mother to baby.

Most people who are infected with HIV go on to develop AIDS over a period of years as the virus damages the immune system. People are classified as having AIDS when their immune system shows signs of significant damage based upon blood tests (T-cell or CD4 counts) or when they develop an infection or tumor related to infection with HIV.

There were 59 HIV/AIDS deaths in Boston in 2000. The number of deaths for other years can be found in Appendix 1.

HIV/AIDS Mortality Age-Adjusted Rates, Boston, 1995-2000



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

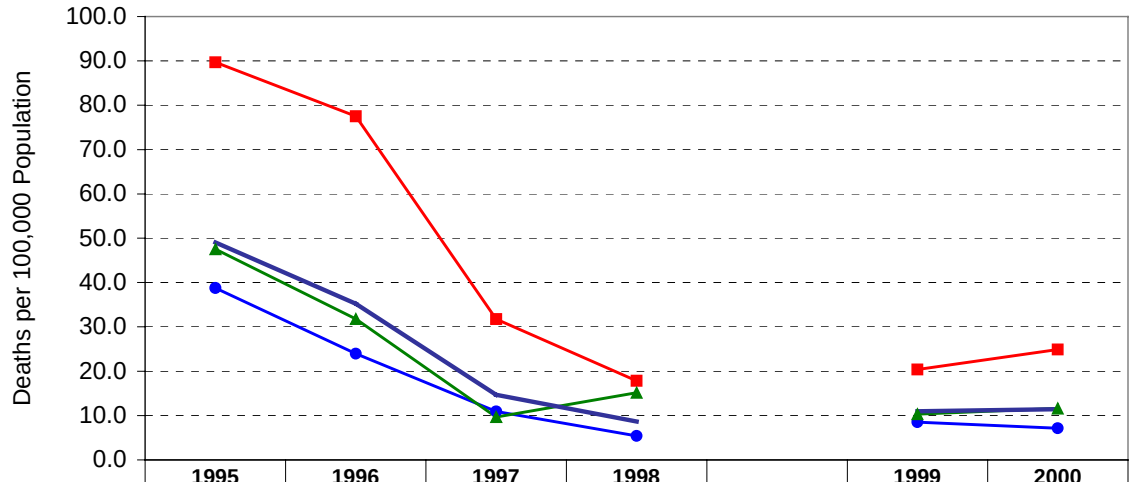
For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Due to advances in medical treatment and HIV/AIDS prevention, HIV/AIDS is no longer among the ten leading causes of mortality for Boston residents. During 2000, there were 59 HIV/AIDS deaths (one death more than in 1999).

- HIV/AIDS mortality age-adjusted rates for Boston have declined 82.2% since 1995. Between 1995 and 1998, the rate dropped from 49.0 deaths per 100,000 to 8.7 deaths, a statistically significant change.

- The year 2000 HIV/AIDS mortality rate was 11.4 deaths per 100,000, an increase of 3.6% over the 1999 rate. The change in rates between 1999 and 2000 was not statistically significant.

HIV/AIDS Mortality Age-Adjusted Rates by Race/Ethnicity, Boston, 1995-2000



	1995	1996	1997	1998		1999	2000
White	38.8	24.0	10.9	5.4		8.5	7.2
Black	89.7	77.5	31.8	17.8		20.4	24.9
Hispanic	47.5	31.8	9.7	15.2		10.3	11.6
Asian	n<5	n<5	n<5	n<5		n<5	n<5
BOSTON	49.0	35.2	14.7	8.7		11.0	11.4

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health. Rates are calculated using resident population estimates from MISER for 1991-1998, Massachusetts Department of Public Health 1999 Preliminary Population Estimates, and the US Census 2000 for resident population.
DATA ANALYSIS: Boston Public Health Commission, Research Office

For important information necessary to interpret the rates in this chart, see cautionary notes in Data Issues of the Introduction and Technical Notes in Appendix 2.

- Boston's highest HIV/AIDS mortality rates are among Blacks, whose rate was significantly higher than that of Whites for each year between 1995 and 2000 and was significantly higher than the rate for Hispanics for 1995, 1996, and 1997.

- In 2000, the rate for Blacks was 3.5 times the rate for Whites (a statisticially significant difference) and double the rate for Hispanics (a nonsignificant difference). From 1999 to 2000, HIV/AIDS mortality rates rose for Blacks and Hispanics, but declined for Whites. The increase was 22.1% for Blacks and 12.6% for Hispanics, and the drop for Whites was 15.3%. None of these one-year changes were statistically significant.

- Like the declining trend seen for Boston overall, between 1995 and 1998 there was a steep decline in deaths due to HIV/AIDS among all racial and ethnic groups. Whites had an 86.1% drop in HIV/AIDS mortality (statistically significant). The rate among Blacks fell 80.2 % (statistically significant), and among Hispanics, 68.0% (not statisically significant).

- For Asians, there were fewer than five deaths from HIV/AIDS for each year; therefore rates could not be calculated.

ACCESS TO HEALTH CARE

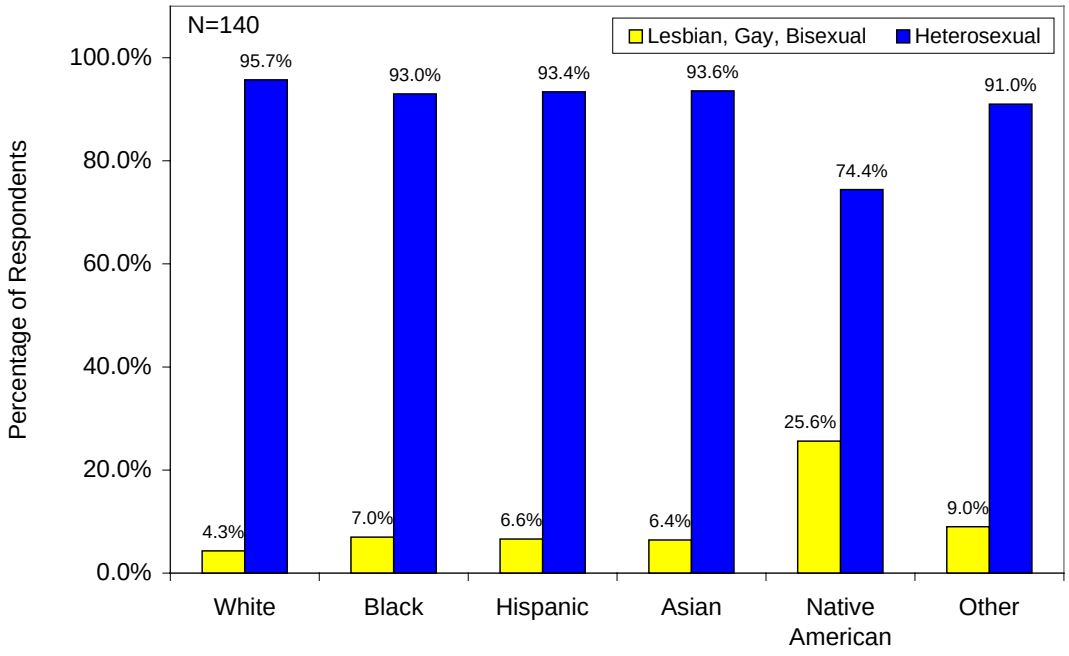
Part One: A Focus on Lesbian, Gay, Bisexual, and Transgender Health

Demographics

Boston is home to a large and diverse lesbian, gay, bisexual, and transgender (LGBT) population. An estimated 29,500 to 58,900 LGBT individuals (5% -10% of the 2000 Boston population, based upon prevalence figures from local, state, and national urban population studies [1, 2, 3, 4, 5]) live throughout the city. Same-sex households are found in every Boston neighborhood. (6)

LGBT individuals in Boston come from a variety of racial and ethnic backgrounds.

Lesbian, Gay, Bisexual Status Among High School Age Youth by Race/Ethnicity, Boston, 1997-1999



DATA SOURCE: Youth Risk Factor Survey, Boston Public Schools, Office of Research and Evaluation and Massachusetts Department of Public Health, 1997-1999
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

Almost 7% of Boston youth who completed the 1997-1999 Youth Risk Behavior Surveys report a lesbian, gay, bisexual sexual orientation and/or sexual contact with someone of the same sex. The percentage of Native American youth classified as lesbian, gay, or bisexual appears large, in part, because a relatively small number of Native American youth completed the survey, which produces statistical uncertainty as to the true percentage. (The Massachusetts Youth Risk Behavior Survey [YRBS] does not provide an option for transgender youth to self-identify. For this reason, information from the YRBS used in this chapter will refer to lesbian, gay, and bisexual youth and not to LGBT youth.)

Nationally, the incomes of LGBT persons fall along a continuum from low to high income. (7, 8) Many LGBT individuals are parents, raising biological children, adopted children, foster children, and the children

of relatives. In 1990, 26.5% of women in same-sex relationships who completed the census had given birth to at least one child. (8) This average hides variation among racial/ethnic communities; nationally, approximately 23% of white women in same-sex relationships had given birth, compared with 30% of Asian women, 43% of Hispanic women, 50% of Native American women, and 60% of African-American women. (8)

LGBT Definitions

There is considerable variety in the language used to define *lesbian, gay, bisexual,* and *transgender* among LGBT individuals, among researchers, and among public health agencies.

Sexual orientation is often described as being comprised of three elements: attraction, behavior, and identity. Many individuals have romantic or sexual relationships that correspond to their attractions, but attraction, behavior, and identity do not always match. A man who considers himself heterosexual or straight may occasionally have a sexual relationship with another man. A woman who has sexual relationships with women, but who also feels attraction for men, may identify as bisexual, lesbian, heterosexual, or in some other way. Language people use to describe their sexual orientation identity or partnerships is as diverse as the people who comprise the LGBT population. Refer to the glossary for further explanation of the words *lesbian, gay, bisexual,* and *heterosexual*.

Some people describe themselves as transgender when they experience a gender identity different from their birth sex. Gender identity is one's internal sense of whether one is male or female. For example, a person born into a male body, but who feels female and may live as a woman, may describe herself as transgender. Some transgender individuals alter their physical appearance through attire and/or the use of hormones and surgery to match their internal sense of gender. Transgender people, like non-transgender people, have relationships with men, women, or both and choose a spectrum of language to reflect their sexual orientation identity and partnership choices. Like many men who have relationships exclusively with men, a transgender man, whose gender identity is male, may use the word gay to describe his sexual orientation identity.

Transgender individuals use many words to describe the gender aspect of their identity, including *transgender*, *transsexual*, *male-to-female*, *female-to-male,* while others identify simply as men or women. (9, 10, 11, 12) In this report, the word "transgender" refers to both transgender and transsexual individuals. Within transgender communities, identity language and the conceptualization of gender and sex vary by age and cultural heritage. For instance, in some Native American populations, the term *two-spirited* refers to a gender that is neither exclusively male nor exclusively female. (13) Some individuals who express male *and* female genders, usually at different times and thus part-time, may describe themselves as *cross-dressers, female* or *male impersonators*, or *drag queens* or *drag kings*. Refer to the terms *gender identity* and *gender presentation* in the glossary for additional information.

People realize that they are LGBT at all different ages and are able to come out or live openly as an LGBT person at all different ages. The very real risk of violence and fear of discrimination, frequently based upon prior experience, prevents some LGBT individuals from sharing their LGBT status with others, including health providers. A belief that families will be shamed or will reject a gay family member are additional reasons why some LGBT individuals are unable or do not choose to live openly.

LGBT Health Issues

Social Stigma and Invisibility

Overview

A growing body of research indicates that there are many areas where health disparities exist between LGBT and non-LGBT populations. Several factors contribute to these disparities, the principal ones being social stigma, the invisibility of LGBT individuals to health practitioners, the invisibility of LGBT populations to institutions, and policy issues.

Social Stigma

The social stigma associated with being different has a negative impact on the health of LGBT populations. Violence and discrimination against those believed to violate gender norms (e.g. men perceived as feminine, women in same-sex relationships, transgender individuals) are common. Intolerance and hostility from neighbors, co-workers, families, and strangers may cause stress, shame, self-medication, and denial or hiding. Associations between victimization, discrimination, and negative health outcomes, especially in the areas of mental health, substance use, and sexual health have been well established. (14, 15, 16, 17, 18, 19)

Researchers using a representative group of US adults ages 25-74 have found that the odds of having any psychiatric disorder (i.e., major depression, generalized anxiety disorder, panic disorder, agoraphobia, alcohol dependence, or drug dependence) in the past year were significantly higher among individuals reporting any lifetime discriminatory event (e.g., being hassled by the police) or day-to-day experiences with discrimination (e.g., being called names or insulted). Differences between lesbian, gay, and bisexual people and heterosexuals in the frequency of mental health and substance abuse diagnoses (41.8% versus 21.2% had any psychiatric disorder) were largely attributed to discrimination. (19)

Invisibility to Health Practitioners

There are several provider-level factors that contribute to under-screening and missed opportunities for intervention that are likely to result in poor health outcomes. These include reluctance on the part of LGBT individuals to come out to providers, a lack of comfortable opportunities for LGBT individuals to come out, and a lack of comfort and knowledge among health care providers about LGBT health issues and concerns.

LGBT patients often fear a negative reaction from providers about their identity or behavior. (20, 21) Providers and health care staff have been particularly inaccessible to transgender individuals. In one Boston study, a youth stated, “I can’t even make it through the front door [of a health facility] without staff staring at me, laughing at me or whispering about my gender presentation.” (12)

The health of LGBT individuals can be seriously compromised when health care practioners are uninformed about LGBT issues. Lesbian and bisexual women may be at increased risk of cervical cancer and pelvic inflammatory disease if they do not receive cancer screening and testing for sexually transmitted diseases and infections. (22, 23) In one Seattle-based study, 9% of lesbian and bisexual women, who had not had a Pap test within two years, were told by providers that screening was unnecessary if they were not sexually active with men. (24) A study in North Carolina reported that women who found their providers to be

knowledgeable and sensitive about lesbian and bisexual women's health concerns were significantly more likely to have had a Pap smear within the last year. Women who experienced discrimination in the health care setting on the basis of age, race, socioeconomic status, or sexual orientation were significantly less likely to have had a Pap test in the past year. This finding suggests that lower-income, lower socio-economic status, lesbian, gay, bisexual women of color experience cumulative barriers to health care and ultimately poorer health outcomes. (25)

Ageism, sexism, racism, and undocumented immigrant status present additional obstacles to the receipt of health care by many LGBT individuals. Older LGBT adults are invisible within elder care systems, due, in part, to a broad social refusal to acknowledge the sexuality of older persons. Many LGBT individuals residing in Boston have multi-faceted identities (e.g., being an adolescent female, Asian, bisexual, and a recent immigrant) that require multiple forms of cultural competence.

Invisibility to Institutions

A lack of institutional cultural competence is a serious deterrent to good health for LGBT populations. Most noticeable is when a lack of familiarity with a population results in the denial of service. Invisibility within programming and routine data collection activities creates other types of problems. A lack of consistent and reliable data about LGBT populations nationally and locally limits the ability of health planners to organize, finance and deliver meaningful health promotion, health education, disease prevention, and treatment services.

Health institutions with residential facilities (e.g., drug treatment, homeless and domestic violence shelters, long-term care facilities) frequently offer sex-segregated group accommodations (e.g. male or female dormitories and restrooms). Transgender individuals are often denied services and shelter due to the inexperience of these facilities. In Boston, concern about institutional access has stimulated interest in training and protocol development, particularly at adult emergency homeless shelters. The Boston Public Health Commission's LGBT Health and Homeless Services programs and the Boston Emergency Shelter Commission have collaborated with several community based agencies: TransHealth and the GLBT Health Access Project at Justice Resource Institute, Boston Alliance of Gay, Lesbian, Bisexual and Transgender Youth (BAGLY), and Fenway Community Health to support shelters in improving the quality of service received by Boston's transgender homeless population.

Traditional sources of information, such as birth and death records, cancer registries, hospital records, and large health surveys do not note the sexual orientation or transgender status of patients, clients, and residents. These sources of information tell public health planners a great deal about health issues of men and women, teenagers and adults, and various racial/ethnic groups, but reveal nothing about the health of LGBT communities.

The state of Massachusetts has included questions about sexual orientation in the high school-based Youth Risk Behavior Surveillance Survey (YRBS) since 1995 and added sexual orientation to the adult Behavioral Risk Factor Surveillance Survey (BRFSS) in 2001. These surveys are an important step toward routine monitoring of the LGBT segment of the public's health. Findings enable the health needs of these communities to be assessed, an appropriate response to be mounted, and the impact of these efforts to be monitored. For example, analysis of YRBS data indicates that HIV instruction delivered by culturally-sensitive educators reduces sexual risk among Massachusetts's lesbian, gay, and bisexual youth. (26)

LGBT populations are frequently over-looked in health promotion or prevention activities as well. For instance, while smoking is much more common in these populations, images of LGBT individuals and relevant messages have been missing from publicly-funded smoking cessation and prevention campaigns. In the presence of heightened health risk, LGBT populations have a greater need for targeted health promotion activities; yet, in the general absence of prevention messages targeting LGBT individuals (HIV is an exception), high quality health and social services become even more important.

Policy Issues

According to several studies, LGBT individuals are less likely to have health insurance than others. (1, 27, 28) In fact, lesbian and bisexual women in Jamaica Plain are about twice as likely to be without health insurance as their heterosexual female neighbors. (1) A lack of health care coverage is associated with not obtaining necessary care. (29)

The absence of legal recognition of same-sex partnerships reduces access to health insurance and decreases the economic resources of lesbian, gay, and bisexual populations. The negative health impact of this discriminatory social policy is heightened among older lesbian, gay, and bisexual persons. Because same-sex couples are not eligible for Medicaid-related spousal benefits, or benefits associated with Social Security, they are at greater risk of economic deprivation and homelessness than heterosexual couples. (30) In order to protect a healthy spouse from financial devastation due to long-term care needs, there are Medicaid income and asset protections for legally married couples that are unavailable to same-sex couples. For example, the spouse of a person confined to a nursing home may reside in the couple's home until death without the state trying to recover the cost of care, but only if they are legally married. (30)

The establishment of parity in legal status for same-sex relationships (i.e., civil unions or marriage) would decrease barriers to health and health care for lesbian, gay, and bisexual people. Until this happens, changes in health policy, such as domestic partner benefits and a Medicaid-waiver filed by the state to extend benefits to older same-sex couples (31), are necessary to ensure that lesbian, gay, and bisexual people experience the same quality of health as heterosexual people.

Discrimination in employment and a lack of coverage for transgender health treatment by insurers are major barriers to good health for the transgender population. Discrimination against transgender persons in employment increases the likelihood that transgender individuals are unemployed and uninsured. Although the Massachusetts Commission Against Discrimination recently interpreted the state’s anti-discrimination and disability laws to be inclusive of transgender people, it will take time before this knowledge is disseminated to employers and discriminatory practices cease. (32)

Researchers in this field have established that lack of insurance, cost, caregiver insensitivity or hostility, fear of disclosing transgender status, and a lack of insurance coverage for specific services are reported barriers to accessing regular medical care. (27) Many aspects of care related to physically changing one’s body to match one’s gender identity (e.g., medically prescribed hormones, surgery, lab tests, and mental health care) are not consistently covered by health insurance. Discriminatory practices in health coverage result in higher personal costs for health care and decrease the economic resources of transgender people, both associated with poor health outcomes. (29)

Due to barriers within the health care system, many transgender individuals in urban areas, including Boston, acquire hormones of unknown quality on the street (12, 27, 33) and are not consistently able to

obtain necessary primary care. (Without training, physicians may not know to screen transgender men for ovarian or cervical cancer and to do so in manner interpreted by the patient as sensitive and respectful.) In addition to improved training of health providers, consistent and comprehensive insurance coverage will reduce barriers to health care and will improve the health of transgender persons.

Boston Public Health Commission LGBT Health Program

In June 2000, the Public Health Advisory Board of the Boston Public Health Commission approved eight recommendations to eliminate health disparities related to sexual orientation and gender identity in Boston. Shortly thereafter a staff person was hired to develop and to direct LGBT Health, one of several programs created to address the needs of particularly under-served communities. LGBT Health works at local, state, and national levels to make LGBT populations visible within health data collection activities, policy, and programming. Within the Boston Public Health Commission, LGBT Health provides technical support to increase the cultural competence of the institution and staff in order to make its facilities and service more accessible and health promotion activities more inclusive.

Health Issues Among LGBT Populations

With limited information about the health of LGBT populations, it is impossible to identify the leading causes of death and most common ailments experienced by LGBT populations. The health topics reviewed in this report are illustrations of how social stigma and invisibility contribute to health disparities. It is very likely that disparities exist in other areas of health. With the inclusion of questions about LGBT status in routine health data collection activities, and further research, additional disparities and influences on the heath of LGBT populations will be documented. Violence is purposefully located as the first health issue because it is the most extreme expression of societal disapproval of LGBT people.

Violence

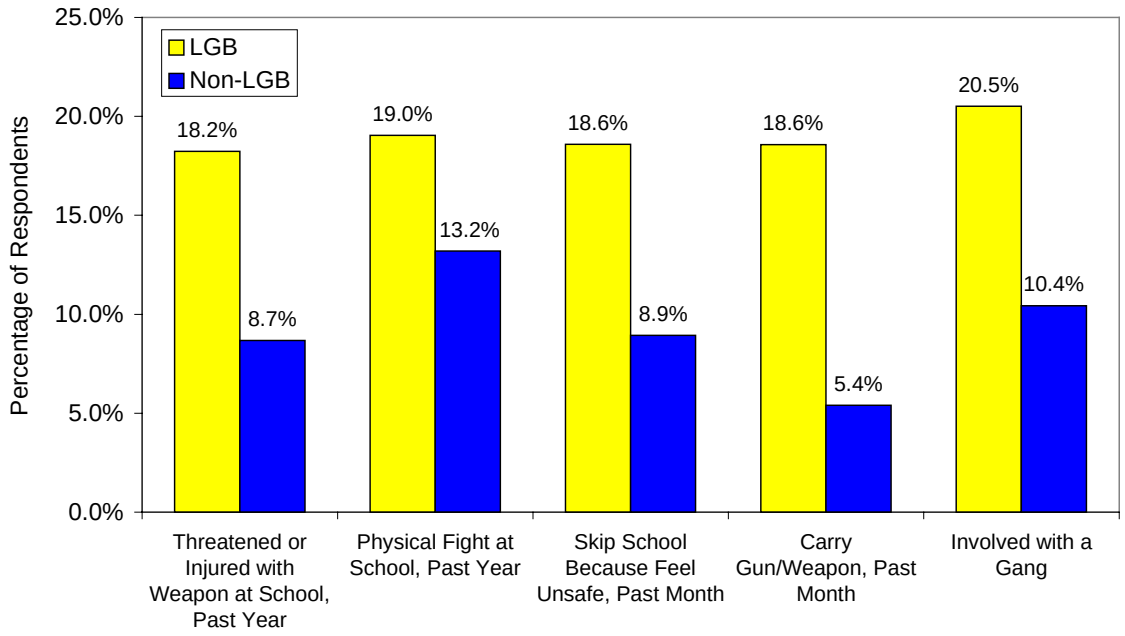
LGBT individuals are targeted for violence on the basis of the perpetrator's perception of the victim's sexual orientation and/or gender presentation. In 2000, 91 Boston-based incidents of verbal harassment, intimidation, and physical assault were reported to the Violence Recovery Program at Fenway Community Health. Reported acts of violence, for all populations, are believed to be an undercount of violent acts. Incidents were committed by strangers and acquaintances in both public and private places. (34)

In 1997 and 1999, Boston's lesbian, gay, and bisexual youth were more likely than their heterosexual peers to experience harassment and violence within schools and to skip school because they felt unsafe. These youth were also more likely to carry a gun and to report being involved with a gang. (3)

Youth who report same-sex attraction are more likely to experience violence, to witness violence, and to perpetrate violence than youth who report opposite-sex attraction only. However, these youth are no more likely to act violently towards others when their own victimization and exposure to violence are taken into account. Researchers concluded that prior victimization is largely the source of acts of violence committed by lesbian, gay, bisexual youth. (35) While unrecorded by YRBS, Boston's LGBT youth-serving professionals identify safety for transgender youth within schools, families, and neighborhood settings as a pressing concern. Therefore, efforts to decrease youth victimization should include transgender youth as well.

Boston's lesbian, gay, and bisexual youth are over three times (34.3% versus 9.8%) more likely to report experiences of dating violence than their heterosexual peers. (3) In a survey of Youth Pride 2000 participants, a Boston-based gay and straight pride rally for adolescents, 28.6% to 57.1% of lesbian, gay, bisexual, and heterosexual adolescents reported sexual abuse, physical abuse, emotional abuse, control, or fear for safety by a date. About the same number of lesbian, gay, and bisexual boys and girls and heterosexual girls reported each form of violence. Heterosexual adolescent males were the least likely to report feeling scared for their safety or sexual abuse. Lesbian, bisexual, and heterosexual adolescent females reported abuse by a male partner; lesbian, bisexual, and a small number of heterosexual adolescent females also reported abuse by female partners. The same pattern was true for adolescent males. (36)

School-Based Victimization and Risk of Violence of Boston High School Age Youth by LGB Status, Boston, 1997 and 1999



DATA SOURCE: Youth Risk Factor Survey, Boston Public Schools, Office of Research and Evaluation and Massachusetts Department of Public Health, 1997 and 1999
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

Bisexual adolescents were more likely to report two forms of dating violence. They were significantly more likely to be threatened with *outing* (disclosing a person's LGBT status to others without that person's consent) by a dating partner than were gay and lesbian adolescents. Bisexual females were significantly more likely to experience sexual abuse by a date or partner than heterosexual females. (34)

Findings indicate that teen dating violence programming delivered in lesbian, gay, bisexual and non-lesbian, gay, bisexual youth settings to adolescent females and males are likely to reach youth who may experience teen dating violence.

Domestic violence advocates identify the same patterns of power and control in non-transgender heterosexual relationships and LGBT relationships, suggesting that the incidence of violence may be similar.* However, there are some LGBT-specific barriers to seeking help and getting health services. Batterers may use the threat of outing as a way to control those that they abuse. LGBT individuals may be less likely to report abuse or to seek support due to fear of negative responses from health providers, law enforcement officials, and domestic violence service providers. In shelters, lesbian and bisexual women may face homophobia from staff and clients. Violence perpetuated by women against women may be perceived by authorities, as well as the general society, as less serious than violence committed by men against women. Transgender survivors of domestic violence are frequently denied shelter at women's facilities, and there are no domestic violence shelters in Boston for gay and bisexual male survivors of abuse.

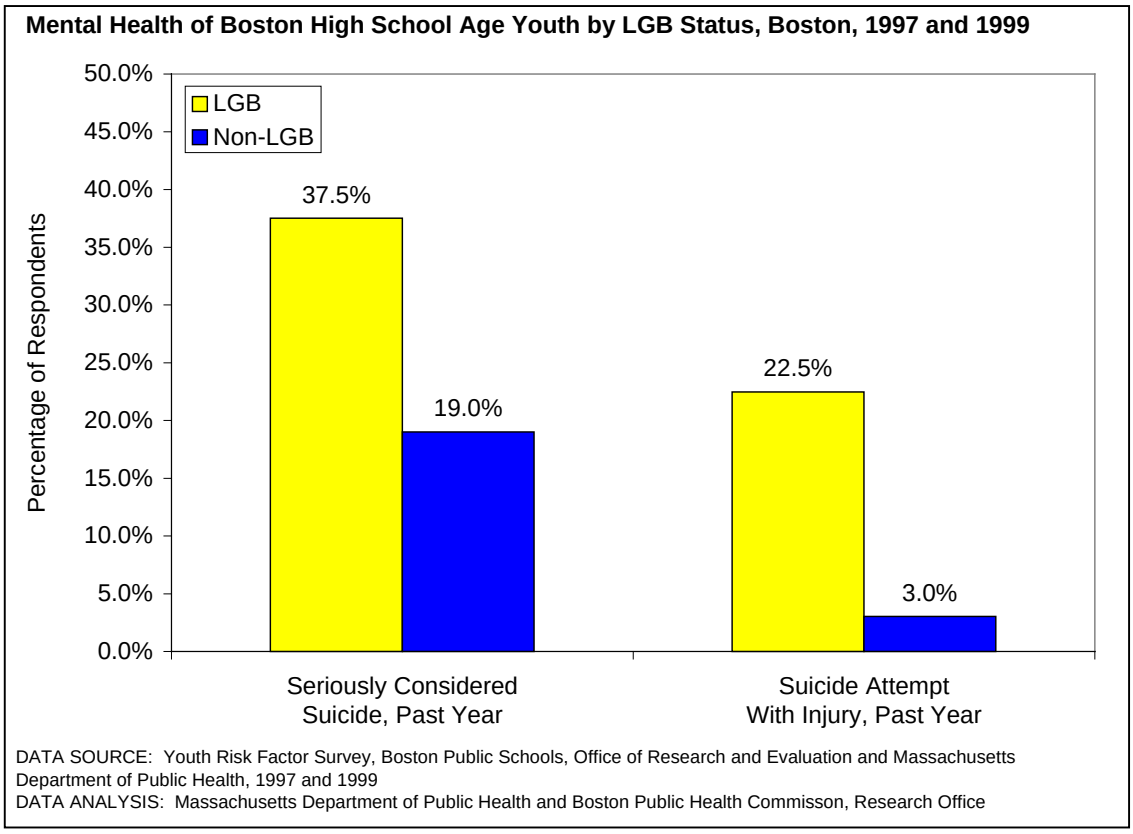
LGBT parents who are being abused by other adults may also fear the loss of children as a consequence of their seeking help. While Massachusetts courts respect the fitness of lesbian, gay, and bisexual parents, and the Massachusetts Commission Against Discrimination recently stated that transsexuals are covered under the state's anti-discrimination and disability laws, a general distrust of the legal system by LGBT individuals remains. In other states, sodomy laws have been used to remove children from lesbian, gay, bisexual parents. In Massachusetts, if the batterer is a biological parent and the victim has not legally adopted the child she or he has raised, the victim has no clear legal right to custody. Concerns about loss of child custody and distrust of legal and social services may reduce the likelihood of seeking help by LGBT survivors of intimate partner abuse.

Two organizations, The Network/La Red: Ending Abuse in Lesbian/Bisexual Women's and Transgender Communities and the Gay Men's Domestic Violence Project, provide temporary shelter in private houses, known as safe homes, for LGBT survivors of intimate partner abuse. These programs provide critical services, yet at current funding levels are unable to shelter all local LGBT survivors of violence who seek help.

* The extent to which intimate partner violence occurs in adult LGBT relationships is undocumented in the usual sources of crime statistics. Sexual orientation and transgender status are not asked of those who report experiences of violence to the police or on the National Crime Victimization Survey.

Mental Health

In Boston, lesbian, gay, bisexual youth are twice as likely to report that they have seriously considered suicide as heterosexual youth. Over one in five (22.5%) lesbian, gay, and bisexual adolescents in Boston Public Schools attempted suicide resulting in non-fatal injury. (3)



These disparities may decrease with age; however, additional research is necessary before definitive statements can be made. One national population-based survey found that men ages 17–39 who report male sex partners in the last year were more likely to report a lifetime prevalence of suicidal symptoms, particularly during adolescence than men who had only female sex partners. For example, 19.3% reported any suicide attempt as compared with 3.6% of men who had female partners only. Findings suggested an increased risk of recurrent depression for these men, but no elevated risk of other affective disorders (e.g., anxiety and bipolar disorders), which may be related to a small sample size (n=78) rather than a true absence of disparities. (37) Another national population-based study, the 1996 National Household Survey of Drug Abuse, with a slightly larger sample size, found that men who report male sex partners were more likely to meet diagnostic criteria for major depression and panic attacks than men who have sex with women. (38) Finally, in another large representative household survey, the 1990-1992 National Comorbidity Survey, male respondents who had sex with men and those who had sex with women were found to be living with comparable levels of anxiety disorders (15.0% versus 11.6%) and major depression (10.3% versus 7.2%) over the prior year. (39)

The small numbers of women with female partners who are represented in household samples also limit the ability of these studies to detect differences in mental health status between lesbian, bisexual, and heterosexual women. However, two population-based studies have confirmed that women who reported female sex partners are at least as likely as women who report male sex partners to meet diagnostic criteria for major depression or panic attack in the past year. (38, 39) In the 1996 National Household Study of Drug Abuse, these differences were not statistically significant (15.0% versus 8.4% for major depression) and (7.2% versus 3.8% for panic attack). (38) Women who reported female sex partners on the 1990-1992 National Comorbidity Survey were significantly more likely to meet criteria for major depression (34.5% versus 12.9%) and any anxiety disorder (40% versus 22.4%) than women who report male partners. (39) Depression may be mitigated by social support; one national convenience study found that lesbian women who reported social support were no more likely to report depression than were heterosexual women. (20)

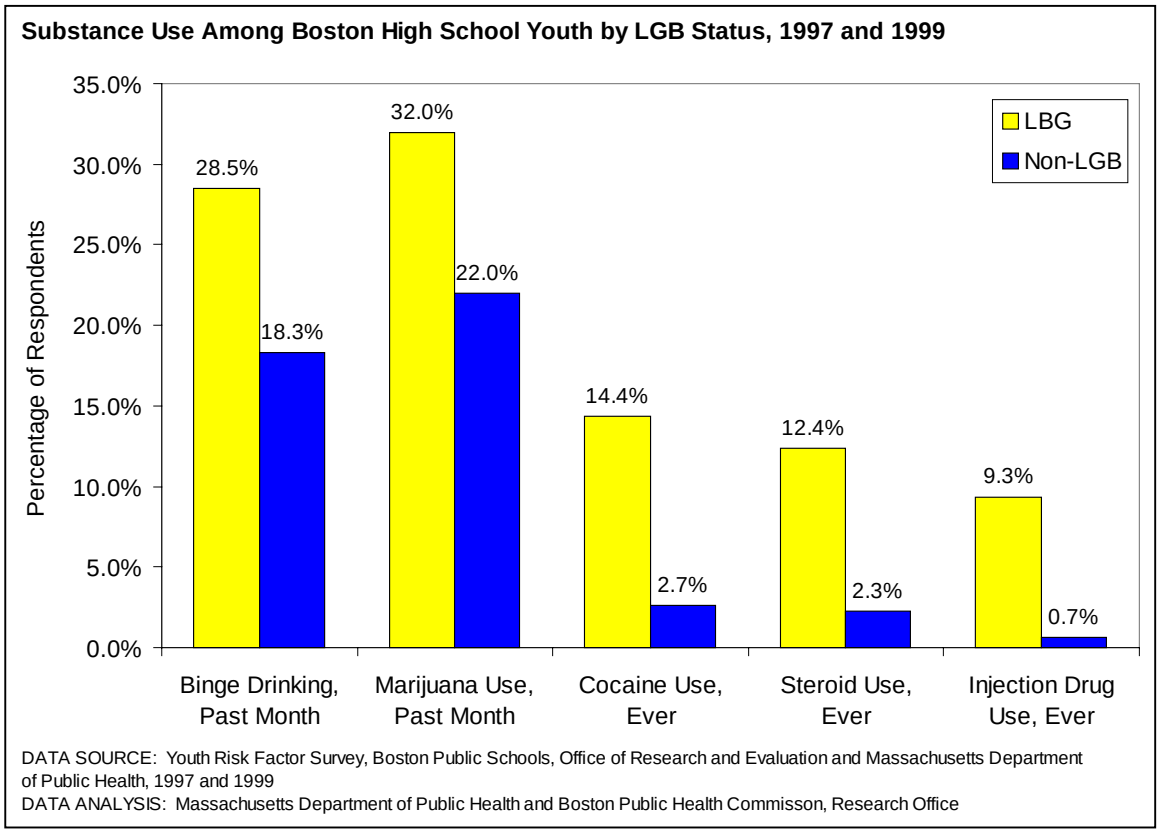
While there are no surveys of transgender health that are representative of the entire population, one San Francisco study including over five hundred transgender individuals documented a major need for transgender-informed mental health services. Roughly one out of five transgender women (male-to-female) and transgender men (female-to-male) reported a mental health hospitalization; 32% reported making a suicide attempt, and 55%-62% met screening criteria for depression. (33) Of 252 transgender individuals recruited in Washington, DC, 34.9% reported experiencing suicidal ideation. (27)

Programs targeting LGBT youth provide important opportunities for LGBT and “questioning” youth (adolescents who are unsure of their sexual orientation and/or gender identity) to connect with other youth with whom they identify and with positive adult role models. These include Boston Alliance of Gay, Lesbian, Bisexual and Transgender Youth (BAGLY), Gay Lesbian Bisexual Transgender Social Services (GLASS), and programs focused on LGBT youth at the Home for Little Wanderers, Men of Color Against AIDS (MOCAA), Massachusetts Asian AIDS Prevention Project, and the Latin American Health Institute (LHI), among others. After only two years, the Safe Schools Program has succeeded in assisting the development of Gay-Straight Alliances in the majority of Boston Public high schools, a school-based source of social support. Boston’s after-school programs offer another form of social support.

Substance Use

The prevalence of smoking is close to three times as high (30.9% compared with 11.7%) among Massachusetts lesbian, gay, and bisexual youth (4), twice as high among gay men (38), and somewhat higher among lesbian and bisexual women than among heterosexual peers. (41)

In 1997 and 1999, Boston lesbian, gay, and bisexual youth reported more frequent and heavier use of alcohol and drugs than their heterosexual peers.



While two national population-based studies, limited by small sample size, did not identify significantly greater drug or alcohol dependence by gay and bisexual men (39), the prevalence of use and abuse warrants attention. In these studies, which used similar measures of dependence, alcohol and drug dependence was similar between men who have had a male sex partner and those who have had a female partner. The one-year prevalence of alcohol dependence for men who have had a male sex partner was roughly 11%-12% and for men who reported only female sex partners, approximately 8%-12%. Drug dependence ranged from about 6% to 9% for men who partnered with men compared with 3%-4% of men who reported female partners only. (38, 39)

Periodic club drug use and heavy drug use may pose a disproportionate health risk for a portion of the LGBT population. Gay men in the San Francisco Bay Area who attend circuit parties appear to be generally heavy users of club drugs; in one study 75% reported the use of ecstasy at the last party, and 25% reported a recent episode of serious overuse. (42) A study of non-fatal heroin overdoses in San Francisco identified lesbian, gay, or bisexual status as a predictor of overdose. (43)

Several studies observe more frequent and heavier alcohol use by lesbians than by heterosexual women. (41) A 1997 Los Angeles probability study found that 4% of lesbians reported consuming three or more drinks almost every day, compared with 3% of bisexual women and 1% of heterosexual women. (28) Women who reported female sex partners on the 1996 National Household Survey of Drug Abuse were significantly more likely to meet criteria for drug (5% versus 1.3%) and alcohol (7% versus 2.2%) dependence than women with male sex partners only. (38)

NOTE: Portions of this page were revised February 21, 2003.

A high percentage of transgender adults in Washington, DC, reported problems with alcohol (34.1%) and drugs (36.1%), yet many (47%-64%) did not seek treatment. (27)

The prevalence of tobacco, alcohol and drug use by LGBT populations indicates a need for culturally informed substance abuse prevention and treatment programs. Disparities in lesbian, gay, and bisexual adolescent substance use highlight the importance of LGBT inclusion in prevention efforts targeting youth.

Several local treatment services are knowledgeable in serving LGBT populations: the Boston Public Health Commission, which recently added hormone injection needles to its needle exchange program, Fenway Community Health, Justice Resource Institute, and Victory Programs, among others.

Sexual Health

HIV/AIDS continues to affect LGBT populations, including men who have sex with men, transgender women (male-to-female), and LGBT injection drugs users. A seven-city HIV seroprevalence study of men who have sex with men revealed that, among men recruited from public venues, nearly a third of Black men in their twenties who have sex with men were HIV positive. Approximately seven percent of all men ages 15-22 who have sex with men tested in this study were HIV positive. (44) HIV seroprevalence studies of transgender women in Washington, DC, and San Francisco reflect an equally high prevalence of HIV infection (about a third appear to be living with HIV). (27,33)

In Boston, HIV infection among men is largely attributed to male-to-male sex (56.8% of all living cases of HIV and AIDS; up to 61.5% if cases attributed to male-to-male sex and/or injection drug use are included). (All figures reported here exclude prisoners.) Among White men in Boston living with HIV or AIDS, as of April 2001, 81% of cases were attributed to male-to-male sex (excluding men who have sex with men and inject drugs), whereas 28% of HIV/AIDS cases among Black men and 37% of cases among Hispanic men were attributed to male-to-male sex. (45)

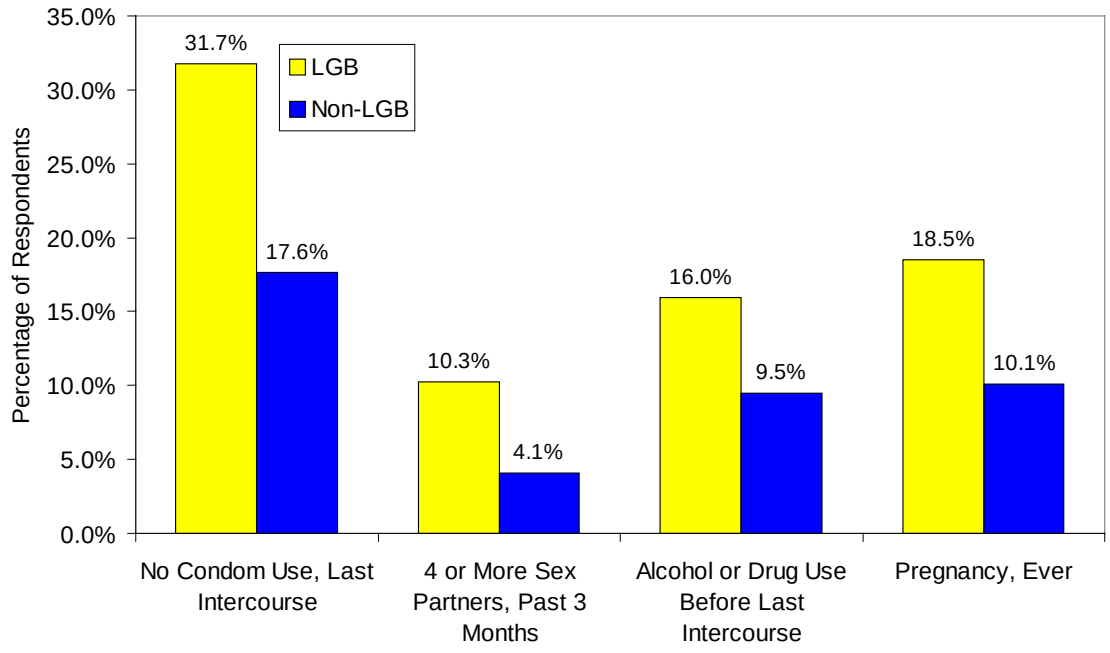
More White men are diagnosed and are currently living with HIV/AIDS in Boston; however, Black and Hispanic men are slightly over-represented among diagnosed male HIV/AIDS cases. Black men comprise 25.3% of the Boston population, but represent 32% of male HIV/AIDS cases. Hispanics comprise 14.4% of the city's population, but represent 17% of male HIV/AIDS cases in Boston. (45)

Increasing rates of sexual transmitted disease infection, other than HIV, among men who have sex with men, have prompted a call by health experts in California and Seattle, Washington, for routine STD risk assessment and screening for men who have sex with men. (46, 47) The presence of an STD increases the likelihood that HIV transmission will occur if one sexual partner is HIV positive. (48)

Sexual health is an often-overlooked concern for lesbian and bisexual women of all ages. Studies of women who have sex with women indicate that the majority have had at least one male sexual partner and that some continue to have sex with men. (22, 23, 24, 25) In addition, sexually transmitted diseases like human papilloma virus, which causes genital warts and is the cause of nearly all cases of cervical cancer, and bacterial vaginosis appear to be transmissible between women. (22, 24) In one Seattle-based study, human papilloma virus was detected among 6.1% of women who had had sexual relationships only with women. (24)

In Boston, lesbian and bisexual women and transgender individuals also live with HIV/AIDS, infected primarily through injection drug use and/or sex with men. Absent in existing data collection systems, the needs of these groups may go unnoticed and unmet. Likewise, the needs of individuals may go unmet if providers do not inquire about the sexual orientation, gender identity, and partners of their patients.

Pregnancy and STD Risk of Boston High School Age Youth by LGB Status, Boston, 1997 and 1999



DATA SOURCE: Youth Risk Factor Survey, Boston Public Schools, Office of Research and Evaluation and Massachusetts Department of Public Health, 1997 and 1999
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

Boston's lesbian, gay, bisexual youth are more likely to report sexual risk behavior and pregnancy than heterosexual youth.

Higher percentages of Boston's lesbian, gay, or bisexual youth reported first sexual intercourse at or before the age of 12 (20.8% versus 14%). (3) A significantly higher proportion of Massachusetts lesbian, gay, or bisexual youth also reported a history of sexual coercion compared with heterosexual youth. (4) A history of sexual violence is associated with a range of increased health risks and negative health outcomes. (14, 15, 17)

Conclusion

The lack of health data on gay, lesbian, bisexual, and transgender populations is a symptom of their invisibility to health care providers. It is also a serious barrier to improving the health of these persons. The data that are available show tremendous disparities in selected health outcomes. For example, gay, lesbian, bisexual and transgender persons are more likely to experience violence than their heterosexual peers, more likely to report that they have seriously considered suicide, and more likely to smoke.

Efforts to eliminate health disparities within the Boston LGBT community require additional research. Providers and health institutions should consider asking questions about sexual orientation, transgender status, partner status, and sexual behavior (where appropriate), while preserving confidentiality. The Boston Public Health Commission recently included these questions in the demographic section of its system-wide information system. Clients of BPHC may voluntarily share this information or decline to provide it. Although many public health professionals are hesitant to inquire about LGBT status, in confidential and anonymous research projects, disclosure of LGBT status has been high (49). In order to facilitate the disclosure of such information, institutions should establish written protocols guarding confidentiality and describing policies around data sharing. Providers should be trained to carry out these protocols properly. Boston has many partners in LGBT health, in city government, AIDS service organizations, community health centers, and community-based programs. In city government, Mayor Menino has designated staff focused on LGBT populations in Neighborhood Services, Boston Public Schools, the Boston Public Health Commission, and the Boston Police Department. There are a variety of community-based organizations offering a range of services. Unfortunately, many LGBT-serving agencies have received cuts in funding resulting from a reduction in the state AIDS services budget. These programs provide essential services to sustain the health of LGBT communities, and full funding will allow them to sustain and expand this important work.

Agencies that have not considered themselves knowledgeable or skilled in serving LGBT populations can play a critical role in completing a network of care within the city, particularly during this period of reduced health resources. Free cultural competence training, funded by the Massachusetts Department of Public Health, is provided by the Fenway Community Health Center, TransHealth at the Justice Resource Institute, and the Gay and Lesbian Youth Support Project (GLYS). Agencies may wish to designate staff to coordinate ongoing LGBT-specific technical assistance.

Boston's LGBT residents deserve access to skilled, convenient, and culturally appropriate neighborhood services. LGBT individuals with more than one identity or group membership (e.g., transgender and Latino and gay and elderly) deserve access to culturally competent care from providers and public health agencies. The more agencies that are competent in serving LGBT populations, the greater the likelihood that an individual will be able to obtain appropriate care. A citywide commitment to excellence and collaboration will make good health possible for all Bostonians.

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Part Two: Selected Characteristics of the Uninsured

Most residents at the national, state, and city level have at least some health insurance coverage. However, an estimated 14% of the US population (1), 5.9% of the state population (2), and between 7.4% (3) and 8.0% (2) of the Boston population are entirely uninsured. Furthermore, the rates of the overall uninsured mask disparities that may exist by race/ethnicity, age, educational attainment, income, marital status, and other characteristics, which could result in higher uninsured rates among subgroups of the population.

The following section describes some of the characteristics of the uninsured in Boston and Massachusetts populations. The findings are based on two surveys: the 2000 Health Insurance Status of Massachusetts Residents Survey by the Massachusetts Division of Health Care Finance and Policy and the Behavioral Risk Factor Surveillance System (BRFSS) Survey by the Massachusetts Department of Public Health and the Boston Public Health Commission. The 2000 Health Insurance Status of Massachusetts Residents Survey was based on a sample of 417 Boston households and 1,018 Boston residents. The Behavioral Risk Factor Surveillance System Survey for 1997-1999 was based on a sample of 3,499 Boston residents.

The findings from the two surveys differ somewhat in the percentage of uninsured Boston residents overall and by race/ethnicity.

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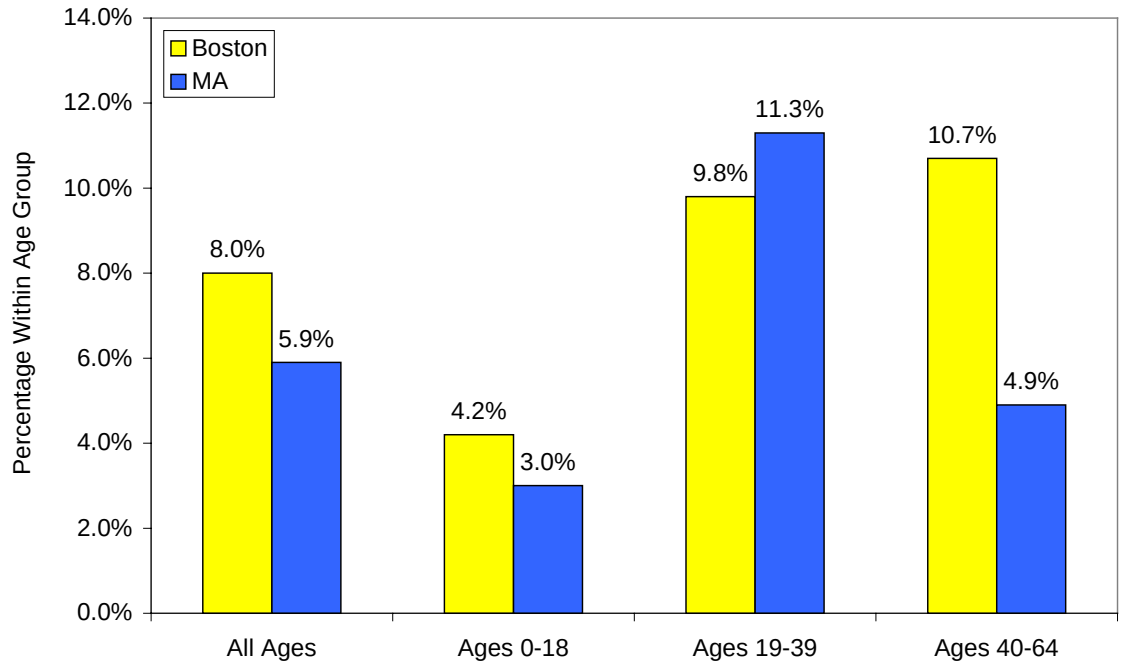
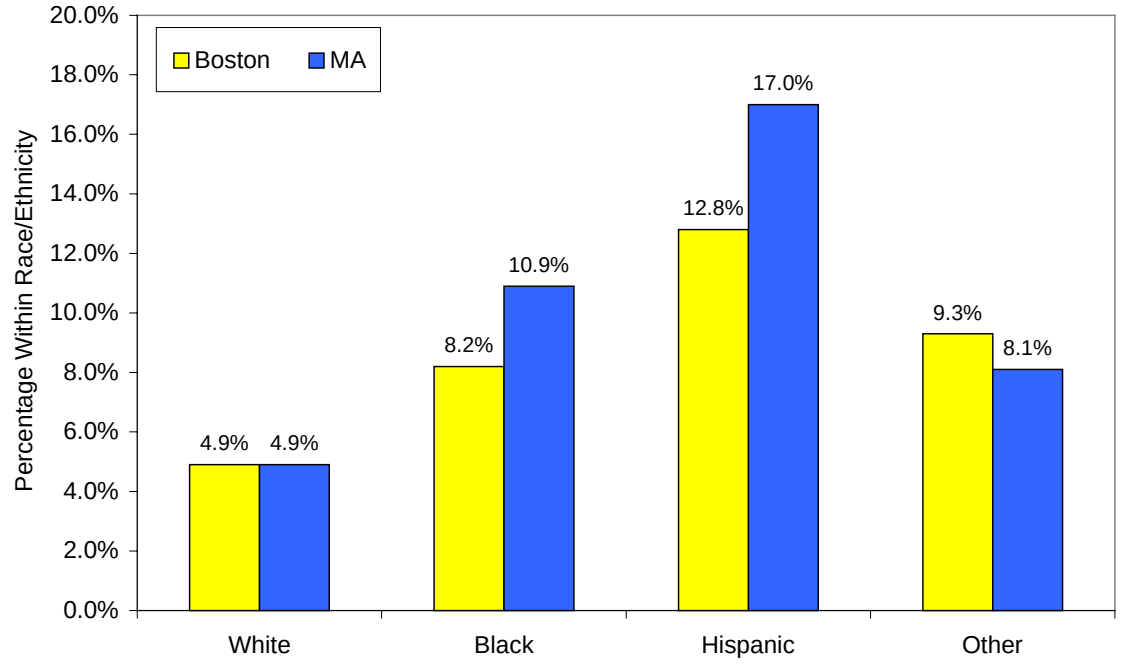
Uninsured Residents by Age Group, Boston and Massachusetts, July-December, 2000



DATA SOURCE: Access Update: Health Insurance Status of Boston Residents, October 2001, 2000 Health Insurance Status of Massachusetts Residents Survey, Division of Health Care Finance and Policy
GRAPHIC: Boston Public Health Commission, Research Office

- A higher percentage of Boston residents under the age of 65 are uninsured (8.0%) than Massachusetts residents under the age of 65 (5.9%).
- For Boston and Massachusetts, a higher percentage of the uninsured are found among residents ages 19 through 64 than among those ages 18 and under.
- The highest percentage of uninsured Boston residents is among those ages 40-64 (10.7%). This is double the percentage for Massachusetts residents overall (4.9%).
- The highest percentage of uninsured Massachusetts residents is among those ages 19-39 (11.3%). This is fifteen percent more than among Boston residents.

Uninsured Residents by Race/Ethnicity, Boston and Massachusetts, July-December, 2000



DATA SOURCE: Access Update: Health Insurance Status of Boston Residents, October 2001, 2000 Health Insurance Status of Massachusetts Residents Survey, Division of Health Care Finance and Policy
GRAPHIC: Boston Public Health Commission, Research Office

- A higher percentage of Hispanic Boston residents and Hispanic residents statewide under the age of 65 are uninsured than others of the same age. However, a higher percentage of Hispanics statewide (17.0%) are uninsured than in Boston (12.8%).

- For Boston and Massachusetts, Black residents under age 65 are the second most likely to be uninsured, but the percentage is 24.8% lower among Boston residents than among residents statewide.

- White Boston residents and residents statewide under age 65 are the least likely to be uninsured. The percentage of uninsured was the same for both Boston and Massachusetts (4.9%).

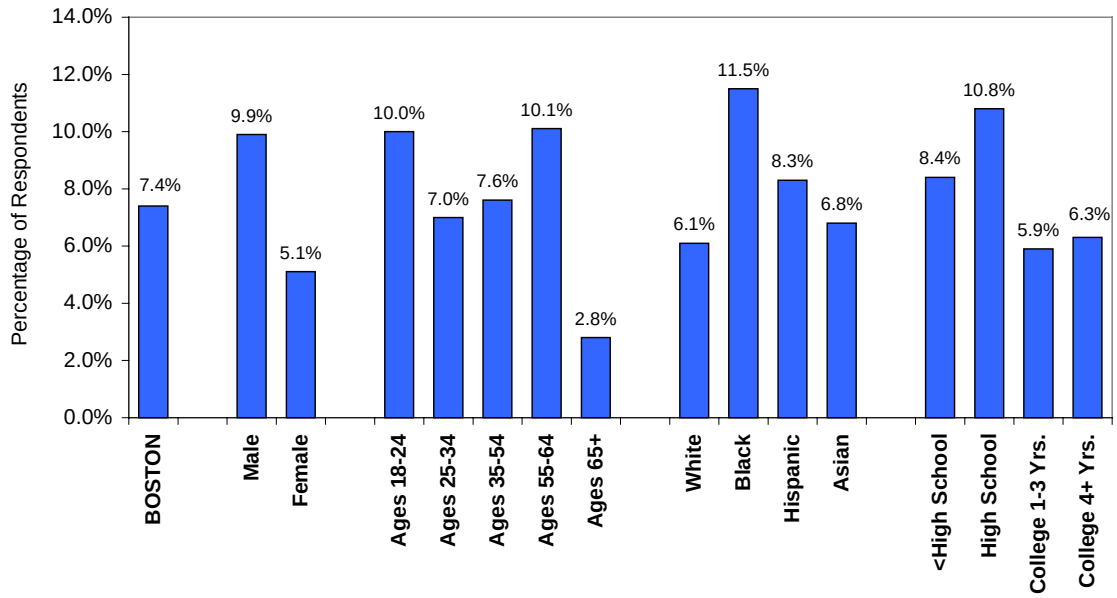
Uninsured Residents and Employment, Boston and Massachusetts, July-December, 2000

	Boston	Massachusetts
Employed Uninsured	70.9%	71.7%
Eligible for Health Insurance Through Employer	42.0%	25.4%
Working Part Time	38.6%	14.9%

DATA SOURCE: Access Update: Health Insurance Status of Boston Residents, October 2001, 2000 Health Insurance Status of Massachusetts Residents Survey, Division of Health Care Finance and Policy
GRAPHIC: Boston Public Health Commission, Research Office

- About seventy percent of uninsured residents, Boston and statewide, are employed.
- Almost forty percent of uninsured employed Boston residents work part-time, compared with 14.9% of residents statewide.
- Almost half of uninsured Boston residents and about a quarter of residents statewide, however, are eligible for health insurance through their employer.
- Uninsured employed residents statewide most often say cost is the reason for their not having insurance, while Boston residents most frequently cite “other unspecified” reasons for lack of health insurance coverage.

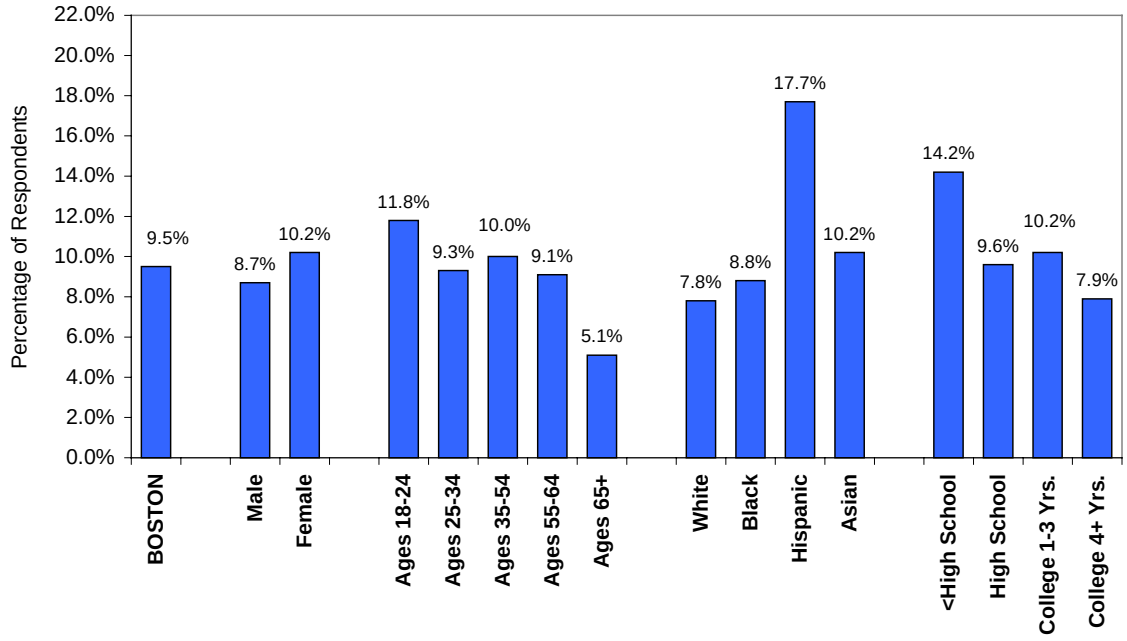
Individuals With No Health Insurance, Boston, 1997-1999



NOTE: The estimates given here for races and ethnicities differ slightly from the estimates for races and ethnicities in the chart titled Uninsured Residents by Race/Ethnicity, Boston and Massachusetts, July-December, 2000, given earlier in this report, because the data sources and time periods reported differ.
DATA SOURCE: Behavioral Risk Factor Survey, Behavorial Risk Factor Surveillance System (BRFSS), 1997-1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

- During 1997-1999, a significantly higher percentage of Boston men than Boston women were without health insurance.
- A significantly higher percentage of Black adults were without health insurance than White adults.
- A significantly lower percentage of adults ages 65 and over were without health insurance than other age groups.

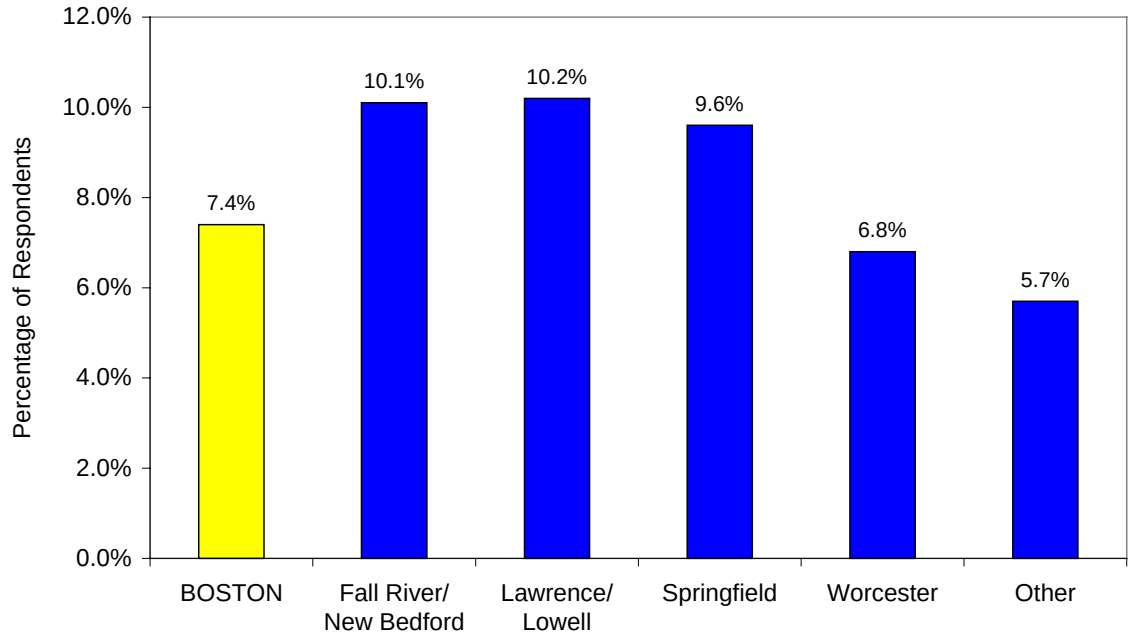
Individuals Who Could Not Afford to See a Doctor, Boston, 1997-1999



NOTE: Income shown represents household income.
DATA SOURCE: Behavioral Risk Factor Survey, Behavorial Risk Factor Surveillance System (BRFSS), 1997-1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

- During 1997-1999, nearly one in ten Boston adults had not seen a doctor when needed in the previous year due to cost (9.5%).
- A significantly lower percentage of adults ages 65 and over than adults less than 65 years old reported not having seen a doctor when needed due to cost.
- A significantly higher percentage of Hispanic adults, compared with other racial and ethnic groups, reported not having seen a doctor due to cost.

Individuals With No Health Insurance by Selected Cities, Massachusetts, 1997-1999

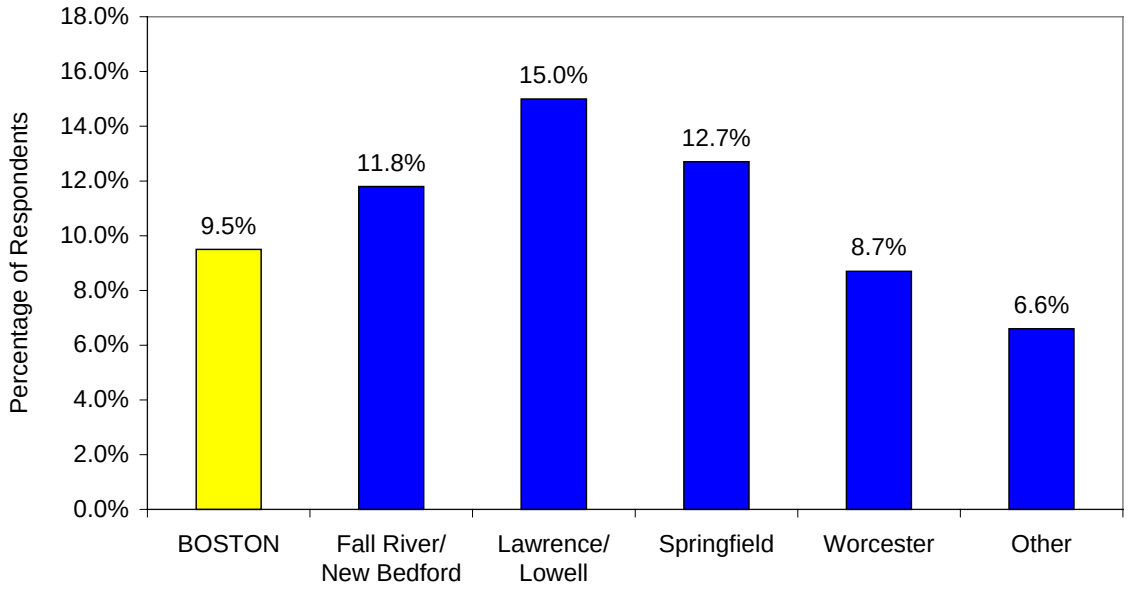


DATA SOURCE: Behavioral Risk Factor Survey, Behavorial Risk Factor Surveillance System (BRFSS), 1997-1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

- During the time period 1997-1999, statistical testing shows that similar percentages of Boston and statewide adults had no health insurance coverage (6.4% of adults in Massachusetts had no health insurance).

- Among the selected cities, the percentage of adults with no health insurance ranged from 6.8% in Worcester to 10.2% in Lawrence/Lowell.

Individuals Who Could Not Afford to See a Doctor by Selected Cities, Massachusetts, 1997-1999



DATA SOURCE: Behavioral Risk Factor Survey, Behavorial Risk Factor Surveillance System (BRFSS), 1997-1999, Massachusetts Department of Public Health and Boston Public Health Commission
DATA ANALYSIS: Massachusetts Department of Public Health and Boston Public Health Commisson, Research Office

- During 1997-1999, a significantly higher percentage of Boston adults than adults statewide said they had not visited a doctor in the past year when needed due to cost (7.6% of adults in Massachusetts had not visited a doctor in the past year when needed due to cost).
- Of the selected cities, the percentage of adults who had not visited the doctor when needed due to cost ranged from 8.7% in Worcester to 15.0% in Lawrence/Lowell.

APPENDIX 1

NUMBERS OF DEATHS FOR SELECTED CAUSES

Numbers of deaths for selected causes by race/ethnicity and sex, Boston, 1995-2000

Causes of death	1995	1996	1997	1998	1999	2000
Heart disease	1,247	1,196	1,201	1,185	1,138	1,067
White, non-Hispanic	999	933	948	887	888	802
Black, non-Hispanic	199	209	204	241	190	216
Hispanic	19	30	29	26	39	20
Asian/Pacific Islander	30	24	20	31	21	25
Other	0	0	0	0	0	4
Male	535	562	555	553	516	511
Female	712	634	646	632	622	556
Cancer (all sites combined)	1,128	1,158	1,094	1,058	1,057	1,109
White, non-Hispanic	820	861	801	742	740	764
Black, non-Hispanic	244	230	221	241	238	273
Hispanic	28	26	30	33	37	39
Asian/Pacific Islander	34	41	41	40	42	33
Other	n<5	0	n<5	n<5	0	0
Male	548	580	541	530	523	563
Female	580	578	553	528	534	546
Stroke	274	245	246	238	239	270
White, non-Hispanic	230	180	182	177	177	190
Black, non-Hispanic	33	41	51	44	43	52
Hispanic	n<5	8	n<5	9	12	13
Asian/Pacific Islander	9	15	9	8	7	15
Other	0	n<5	0	0	0	0
Male	86	80	97	94	91	97
Female	188	165	149	144	148	173
All injuries combined	290	230	262	215	225	226
White, non-Hispanic	139	128	155	134	148	130
Black, non-Hispanic	112	75	79	57	56	72
Hispanic	34	21	20	18	18	17
Asian/Pacific Islander	5	n<5	7	6	n<5	6
Other	0	n<5	n<5	0	0	1
Male	217	170	170	156	150	161
Female	73	60	92	59	75	65
Homicide	83	54	35	34	31	42
White, non-Hispanic	12	10	5	n<5	5	7
Black, non-Hispanic	60	39	25	26	23	31
Hispanic	11	5	n<5	n<5	n<5	n<5
Asian/Pacific Islander	0	0	n<5	0	n<5	n<5
Other	0	0	0	0	0	0
Male	70	44	28	31	23	35
Female	13	10	7	n<5	8	7

Number of deaths for selected causes by race/ethnicity and sex, Boston, 1995-2000

Causes of death	1995	1996	1997	1998	1999	2000
Suicide	42	46	55	50	31	34
White, non-Hispanic	23	37	43	37	23	25
Black, non-Hispanic	12	n<5	8	5	n<5	5
Hispanic	5	n<5	n<5	n<5	n<5	n<5
Asian/Pacific Islander	n<5	n<5	n<5	5	n<5	0
Other	0	0	0	0	0	0
Male	31	38	41	38	22	26
Female	11	8	14	12	9	8
COPD	169	155	167	157	212	172
White, non-Hispanic	134	129	145	130	171	148
Black, non-Hispanic	26	17	18	16	20	17
Hispanic	6	n<5	n<5	5	7	n<5
Asian/Pacific Islander	n<5	5	n<5	6	n<5	6
Other	0	0	0	0	0	0
Male	81	71	79	75	95	65
Female	88	84	88	82	104	107
Pneumonia/Influenza	234	255	256	268	173	163
White, non-Hispanic	185	224	205	225	139	137
Black, non-Hispanic	35	26	38	26	20	19
Hispanic	5	n<5	5	5	5	n<5
Asian/Pacific Islander	9	n<5	7	11	9	n<5
Other	0	0	n<5	n<5	0	0
Male	98	104	115	98	64	72
Female	136	151	141	170	109	91
Nephritis/Nephrosis	94	78	84	81	119	125
White, non-Hispanic	58	50	63	61	70	70
Black, non-Hispanic	27	20	26	17	40	46
Hispanic	5	n<5	n<5	n<5	5	5
Asian/Pacific Islander	n<5	6	n<5	n<5	n<5	n<5
Other	0	0	0	n<5	n<5	n<5
Male	41	36	50	27	55	66
Female	53	42	44	54	64	59
Septicemia	95	94	100	112	104	118
White, non-Hispanic	67	67	64	88	68	74
Black, non-Hispanic	21	23	30	19	30	38
Hispanic	5	n<5	n<5	n<5	n<5	n<5
Asian/Pacific Islander	n<5	n<5	5	n<5	n<5	n<5
Other	0	0	0	0	0	0
Male	42	43	34	50	42	51
Female	53	51	66	62	62	67

Number of deaths for selected causes by race/ethnicity and sex, Boston, 1995-2000

Causes of death	1995	1996	1997	1998	1999	2000
Diabetes	116	93	120	115	108	98
White, non-Hispanic	72	55	63	70	63	51
Black, non-Hispanic	32	34	47	38	36	31
Hispanic	9	n<5	8	n<5	7	14
Asian/Pacific Islander	n<5	n<5	n<5	n<5	n<5	n<5
Other	n<5	0	0	0	0	0
Male	49	49	49	52	52	36
Female	67	44	71	63	56	62
Substance abuse	96	80	80	80	90	108
White, non-Hispanic	55	50	53	51	62	81
Black, non-Hispanic	32	22	21	18	22	21
Hispanic	8	8	5	9	6	5
Asian/Pacific Islander	n<5	0	0	n<5	0	n<5
Other	0	0	n<5	0	0	0
Male	74	60	62	57	65	82
Female	22	20	18	23	25	26
Alcohol-related	29	30	24	30	31	42
White, non-Hispanic	18	15	17	17	21	31
Black, non-Hispanic	10	11	6	9	9	9
Hispanic	n<5	n<5	n<5	n<5	n<5	n<5
Asian/Pacific Islander	0	0	0	0	0	0
Other	0	0	0	0	0	0
Male	21	24	22	22	26	30
Female	8	6	n<5	8	5	12
Drug-related	67	50	56	50	59	66
White, non-Hispanic	37	35	36	34	41	50
Black, non-Hispanic	22	11	15	9	13	12
Hispanic	7	n<5	n<5	5	5	n<5
Asian/Pacific Islander	n<5	0	0	n<5	0	n<5
Other	0	0	n<5	0	0	0
Male	53	36	40	35	39	52
Female	14	14	16	15	20	14
HIV/AIDS	260	191	73	46	58	59
White, non-Hispanic	123	75	31	17	24	19
Black, non-Hispanic	109	93	36	22	27	33
Hispanic	27	22	6	7	6	7
Asian/Pacific Islander	n<5	n<5	0	0	0	0
Other	0	0	0	0	n<5	0
Male	220	149	63	39	43	42
Female	40	42	10	7	15	17

Number of deaths for selected causes by race/ethnicity and sex, Boston, 1995-2000

Causes of death	1995	1996	1997	1998	1999	2000
Total deaths	4,833	4,612	4,546	4,446	4,491	4,500
White, non-Hispanic	3,489	3,350	3,310	3,205	3,232	3,177
Black, non-Hispanic	1,037	967	969	953	959	1,015
Hispanic	179	164	140	151	171	172
Asian/Pacific Islander	125	126	122	133	126	128
Other	n<5	5	5	n<5	n<5	8
Male	2,325	2,271	2,163	2,094	2,070	2,110
Female	2,508	2,341	2,383	2,352	2,421	2,390

NOTE: As a result of changes adopted by federal and state agencies, the total number of deaths for 1999 and 2000 cannot be compared with the total number of deaths for the years before 1999. Data from 1995-1998 use ICD-9 coding, and data from 1999 and 2000 use ICD-10 coding. See Glossary for further information.
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health
DATA ANALYSIS: Boston Public Health Commission, Research Office

APPENDIX 2

TECHNICAL NOTES

TECHNICAL NOTES

The Technical Notes provide more detailed discussion of some of the technical terms, concepts, and sources used in the *Health of Boston 2002* than can be given in the graphics or in the glossary. Readers can call the Research Office at (617) 534-4757 for information on any of the subjects addressed here.

A. Rates

Four types of rates have been included in the *Health of Boston 2002*: *Crude Rates, Age-Specific Rates (ASR), Age-Adjusted Rates (AARs),* and *Incidence Rates.*

A *rate* is a measure of some event, disease, or condition in relation to a unit of population, in relation to a unit of time (typically one year).

Crude Rates are used to present data pertaining to the entire population, such as all of Boston, or to present data pertaining to an entire group within a population, such as all males or females. A crude rate is calculated by dividing the number of events for the entire population by the total population. It is usually calculated on the basis of every 100,000 people or, in the case of birth rates, every 1,000 females.

Age-Specific Rates (ASRs) are also used in this report. ASRs take into account the size and age distribution of the population. They enable the reader to compare different groups without being concerned that differences in health status are due to differences in the size of the groups or in the distribution of ages. An ASR is calculated by dividing the number of events among people in an age group by the number of people in that age group. ASRs for deaths and for communicable diseases are usually calculated on the basis of every 100,000 people.

Unless otherwise indicated, the age-specific rates provided in *Health of Boston 2002* are average annual rates. Average annual rates are calculated by dividing the age-specific rates by the number of years in the time period the data represent.

Age-Adjusted Rates (AARs) are used to present data for comparison among several populations, such as Boston neighborhoods, in which distribution of age can differ considerably. The calculation for AARs takes into account the differences in age distribution and adjusts for them.

The AAR is calculated by applying the age-specific rate in a population (for a specific event such as death) to a standard population (typically, and in this report, the 2000 US standard population). AARs are used in this report for Boston mortality data for overall Boston, for overall Boston mortality data by sex, by race/ethnicity, by neighborhoods, and for hospitalization data.

Incidence Rates are used to present data relating to reported **new** cases of disease during a specified time period and are usually calculated on the basis of every 100,000 people. Incidence rates may or may not be age- specific.

B. Statistical Significance

An array of statistical tools are available to determine whether findings, typically differences observed between groups or within a group over a period of time, are large enough that they are not likely to have been due to chance. Essentially, statistical significance testing provides an assessment of how reasonable it would be to conclude that an observed difference is real. It is not capable of overcoming other issues such as noncomparable samples or too few cases in a sample, but is a valuable guide to the interpretation of rates, proportions, and similar measures.

Statistical significance is only one measure of significance. There may be findings that have other important relevance clinically or for public health programs, regardless of statistical significance. An absence of statistical significance should not be used to imply an absence of other significance or to lessen the importance of any particular health care problem affecting Boston residents.

In this edition of the *Health of Boston*, 95% confidence intervals are used to assess the statistical significance of findings.

C. Confidence Intervals

A confidence interval is a range of values used to describe uncertainty around a data point such as an age-adjusted mortality rate. Confidence intervals are a measure of variability in the data.

A confidence interval is calculated based on a stated probability (usually 95%) that the confidence interval includes the real value of a data point estimate. In an example using an age-adjusted mortality rate, a 95% confidence interval would be described as having a 95% probability of including the real age-adjusted mortality rate. Generally, if confidence intervals around age-adjusted cancer mortality rates of different race/ethnicity groups, for example, overlap, the rates would be considered not significantly different. If the confidence intervals *do not* overlap, then the rates would be considered significantly different. The finding would be called statistically significant.

Confidence intervals provide a way of reporting the reliability of, for example, a rate or proportion. They also account for the difference between a sample from a population and the population itself.

D. Time Period Covered by the Report

In general, this report presents data from the years 1995 through 2000. Data for selected indicators may include a range of years or one year only, such as 1999 or 2000. Boston-specific mortality and selected morbidity data are presented for one year only, for part of the time span, or for the entire time span, either in aggregated form or year-by-year.

The selection of time periods to use depends largely on the availability and adequacy of the data. In analyzing subgroups within the Boston population, there must be enough events or occurrences, such as deaths or births, to provide interpretable rates. The BPHC Research Office does not calculate rates for fewer than five occurrences. The notation "n<5" in charts indicates there were fewer than five occurrences of a health condition, and therefore a rate was not considered calculable.

E. Population

Health status reports often use population statistics for analyzing health data. These population statistics may be drawn from two sources. The first is the census of the population taken every ten years by the federal government, a literal count of all people living in the United States. The second is estimates of the population made by the US Census Bureau or some other source in the intervening years.

Each source has its own advantages, and there are distinct reasons for choosing each one. The census provides the best available actual count of the population. Another important strength of the census is that it presents data to the level of small areas called census tracts, each of which has only a few thousand residents. Census tracts can be combined to produce neighborhood-level analyses.

However, while the 1990 census was the best estimate of the population for the early 1990s, with each passing year it becomes more remote from the population it was intended to represent. Changes in the population in the years following the census cannot be taken into account when using old census data, so this report utilizes population estimates. In this report the 2000 census population for Boston as well as population estimates for the years between the censuses have been used.

Population projections, or estimates, of the population, are developed by the Census Bureau and other institutions using sophisticated statistical methods. The results are designed to take into account in- and out-migration and other changes occurring in the population between census years. And yet, for the purposes of this report, estimates of population changes between census years have some drawbacks. They do not typically account for changes in the racial composition of a community, and they do not generally permit neighborhood-level analyses. Perhaps most importantly, even small errors in the accuracy of projections for neighborhoods or other population subgroups can result in large distortions in their rates.

Readers should note that the Boston Public Health Commission has used the Massachusetts population estimates from Massachusetts Institute for Social and Economic Research (MISER) for calculating rates for the years 1991-1998, and a preliminary population estimate developed by Massachusetts Department of Public Health (MDPH) calculations of rates for 1999.

To provide data on people of Hispanic ethnicity, who may be of any race, this report uses the 2000 US census for Boston census tracts, produced by the Bureau of the Census, and MISER and Massachusetts Department of Public Health population estimates, for denominators for rate calculations that require population data. This avoids the double-counting which would result if Hispanics were included in the White, Black, and Asian racial categories as well as in the Hispanic categories. However, for hospitalization data, Hispanics may be reported in the White, Black, Hispanic or Asian category, depending on the individual hospital's reporting practice. Hospitalization rate calculations by race/ethnicity that require population data for denominators may consequently be affected by these inconsistencies in reporting.

F. Population Estimates

Population estimates were used in calculating all crude, age-adjusted, and age-specific rates included in the *Health of Boston 2002* for years between the 1990 and 2000 US censuses. Two sources of population estimates for Boston were used, the population estimates from the Massachusetts Institute for Social and Economic Research (MISER) for 1991-1998 and those from the Massachusetts Department of Public Health for 1999.

Massachusetts Department of Public Health 1999 Boston Population Preliminary Estimate

MDPH used linear interpolation between the 1998 Massachusetts Institute for Social and Economic Research (MISER) population estimates and the MDPH 2000 population estimates to create 1999 population estimates. The Massachusetts Department of Public Health considers the Population 1999 file to be a draft estimate.

The MDPH Population 2000 file is a draft estimate as well. It is based upon the Massachusetts US Census file, which contains data on population and housing for the 351 towns, the state, and county records for Massachusetts abstracted from the *Census 2000 SF1* file (US Census, 2001).

Rates using MDPH draft population estimates should be interpreted with caution. Final 1999 and 2000 population estimates will be released later this year.

G. Racial and Ethnic Designations

Racial and ethnic designations are derived from the source of the data, including the US census, birth and death data from the Massachusetts Department of Public Health, and others. All racial or ethnic designations except death certificates are self-reported. In considering the racial or ethnic designations used in this report for Boston-specific data, several things should be kept in mind: (1) The concept of race has different meanings in different cultures. (2) Race is not a biological but a social construction. (3) The meanings of racial designations—White, Black, Asian/Pacific Islander—are subject to historical, cultural, and political forces. (4) Racial designations can be notably inaccurate in describing what they are called upon to describe. The term Black, for example, includes a variety of people who might describe themselves as African American, African, Caribbean, or Haitian.

In the charts which present data by race/ethnicity and in the text which discusses health problems among racial and ethnic populations, it should be kept in mind that, as the Centers for Disease Control and Prevention (CDC) has said, “race and ethnicity are not risk factors [for disease]—they are markers used to better understand risk factors.” Race is often a proxy for such factors as socioeconomic status, inadequate access to health care, and racial discrimination. Information on race and ethnicity is included in this report because it can assist public health efforts in recognizing disparities between groups in health outcomes.

Boston-specific data in this report are presented for each racial and ethnic subgroup when data are available and numbers are large enough to allow calculation of percentages or reliable rates. Few sources have data in large enough numbers to allow presentation of data about smaller groups such as the many ethnicities included in the category "Asian/Pacific Islander.”

The collection of race and ethnicity data varies with the data source. Some rely on observation and others on self-report. Some handle data on very small groups differently from others. Race and ethnicity on death certificates are usually reported by the funeral director, based on information provided by a relative or friend if available, while birth certificates are almost always based on self-report by the mother.

Since Hispanics can be of any race, the federal sources often report data for Blacks and Whites, including Hispanics in those categories. However, in the *Health of Boston 2002*, where references are made to race/ethnicity, the Boston data are presented with Hispanic ethnicity as a separate category, that is, Hispanics are not put into the categories "Black"or "White." Exceptions to this are the hospitalization and asthma hospitalization data by race/ethnicity.

H. Racial Designations and the 2000 Census

There were two important changes in the US census 2000. The first was that, for the first time, people were given the opportunity to identify themselves by more than one race. With this new way of asking the question, the US census was able to provide information on the number of people who said they were of two or more races. This change reflects a growing understanding that the categories of race are not separate and genetically distinct groups of people, but are instead changeable approximations, formed by history and geography and other social factors, and that many persons can find a variety of "races" in their backgrounds.

The second major change was that racial categories and the wording of the question were modified. For example, the census added "Latino" to the question about Spanish or Hispanic origin. It also added the term "African American" to the "Black or Negro" category, and "Native Hawaiian or other Pacific Islander" was taken out of the "Asian" category. Since the way the data was collected and the categories are new, the Census Bureau does not recommend comparing the population by race in 1990 with the population by race in 2000.

See also elsewhere in the Technical Notes and the Glossary.

I. Significant Recent Changes in the Way Age-Adjusted Mortality Data Are Presented in the *Health of Boston*

Age-Adjusted Rates and the Standard Population
Age-Adjusted Rates (AARs) are used to present data for comparison among several populations, such as Boston neighborhoods, in which distribution of age can differ considerably. The calculation for AARs takes into account the differences in age distribution and adjusts for them.

The AAR is calculated by applying the age-specific rate in a population (for a specific event such as death) to a standard population. A standard population is an estimate of the population in which the age, race, and sex distributions are known. Previously, the 1940 or 1970 US standard populations were usually used in reports of this kind. However, effective with 1999 mortality data, the year 2000 standard US population has been adopted for use in the *Health of Boston*. This new standard has also been adopted by federal, state, and local health organizations and agencies.

AARs calculated with the year 2000 US standard population are used in this report for Boston mortality rates overall, for mortality rates by sex, by race/ethnicity, and by neighborhood, and for hospitalization rates overall, by sex, and by leading causes.

The change from use of an older standard population to use of the 2000 US standard population has the effect of making rates calculated with one standard not comparable to rates calculated with the other. No mortality or hospitalization rates in this report can be compared with mortality or hospitalization data in earlier BPHC reports or presentations.

Revisions of the International Classification of Disease (ICD)

When this report refers to a particular disease, such as breast cancer, it assumes that all the sources of its data, and all those who read the report, agree on what "breast cancer" means. The International Classification of Disease (ICD) is a diagnosis coding system developed by the World Health Organization (WHO) and 10 international centers so that the meaning of medical terms on death certificates reported by physicians, medical examiners, and coroners can be standardized and grouped appropriately for statistical purposes. The purpose of the ICD and of WHO sponsorship is to promote the international comparability in the collection, classification, processing, and presentation of classification of diseases for all sorts of purposes, but specifically, in this report, for the purpose of mortality statistics. The effect of the ICD is to make Boston data, presented in this report, comparable to data from state and federal sources. New revisions of the ICD are implemented periodically so that the classification reflects advances in medical science. Nationally, in the past, International Classification of Disease codes, 9th revision (ICD-9), have been used to classify 1979-1998 data.

The International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) is used for categorizing and classifying morbidity data from inpatient and outpatient records of hospitals, physician offices, and other treatment facilities. It should not be confused with the International Classification of Disease (ICD), used for categorizing and classifying mortality data from death certificates, whose revision from ICD-9 to ICD-10 became effective with 1999 mortality data.

Mortality data for 2000, issued in the latter part of 2001 and used in the *Health of Boston 2002*, are the second release of data using the 10th revision of the ICD codes, or ICD-10. In consequence, and following the practice of the National Center for Health Statistics and the Massachusetts Department of Public Health, the Boston Public Health Commission must use the disease classification as defined by the ICD-10 codes in the presentation of mortality data for 2000.

The change from ICD-9 to ICD-10 means that causes of death classified according to the ICD-10 are not exactly comparable to causes of death classified according to ICD-9 and earlier revisions of the ICD. Mortality charts in this report present data for 1999 and 2000 as a line separated from data from earlier years.

In the Glossary, diseases presented in this report are defined with both ICD-9 and ICD-10 codes appended.

J. Neighborhoods

Census tracts are so small that there are often not a sufficient number of health-related events—such as deaths—to calculate reliable rates, particularly for individual years. Therefore, census tracts are combined into neighborhoods for the presentation of the mortality data. Zip codes are combined into neighborhoods for the presentation of asthma hospitalization data by neighborhood.

Some of Boston's neighborhoods are clearly defined. West Roxbury, for example, is bordered by the West Roxbury Parkway, the Stony Brook Reservation, and Dedham. The boundaries of most neighborhoods are less distinct for historical, political, or geographic reasons.

A goal for this report was to select geographic areas that were small enough to show the variation of health patterns throughout the city while being large enough to be statistically reliable. Neighborhood definitions were determined in consultation with residents, health care providers, and advocates throughout Boston. Where neighborhood definitions vary by data source, they are noted in the text. The definitions are the same as those used in *Health of Boston 2001* and other BPHC reports.

K. Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System is a survey developed by the Centers for Disease Control and Prevention. Participants are enrolled through random-digit-dialing and include a representative sample of non-institutionalized adults ages 18 years and older in households with telephones. This survey is conducted in all 50 states as a collaboration between the CDC and state health departments.

The Behavioral Risk Factor Surveillance Survey includes core CDC questions and additional questions requested by the state. The BRFSS is an annual survey; however, in order to control for seasonal bias, continuous monthly sampling is conducted. In 1999, additional surveys were administered to Boston residents. The analysis is performed for six regional clusters within Boston.

The survey includes questions which address the following areas of health: cancer screening, alcohol use, mental health, health status, elder health, quality of life, heart disease, chronic disease, access to care, immunization, injury control, smoking, violence, disability, oral health, and HIV/AIDS.

The 1999 Behavioral Risk Factor Surveillance Survey inclueded a sample of 2,731 Boston residents. Of these, 58.5% or 1,498 were female and 41.5% or 1,133 were male. The racial/ethnic distribution of the respondents included 1,597 (58.5%) Whites, 546 (19.9% Blacks, 372 (13.6%) Hispanics, and 128 (4.7%) Asians. Other races/ethnicities and unknown races/ethnicities accounted for the remaining 88 respondents (3.2%).

L. 2000 Health Insurance Status of Massachusetts Residents Survey

The 2000 Health Insurance Status of Massachusetts Residents Survey available from Massachusetts Health Care Finance and Policy was conducted by the Center for Survey Research, University of Massachusetts, Boston. The survey was conducted between June and December, 2000, using a sample based on a computer-generated random list of telephone numbers in Boston. Data were collected on 417 Boston households and on 1,018 individual Boston residents.

APPENDIX 3

DATA SOURCES

DATA SOURCES

AIDS Reporting System data (ARS). Currently contains data through January 1, 2002. Boston: Massachusetts Department of Public Health, Communicable Disease Control.

Acute Care Hospital Case Mix 1997-2000 [data file]. Boston: Massachusetts Division of Health Care Finance and Policy.

Acute Care Hospital Discharge Data [data file of 1994, 1995, and 1996 hospitalizations]. Boston: Massachusetts Health Data Consortium, Inc.

AIDS Reporting System Data, Massachusetts Department of Public Health, Bureau of Communicable Disease Control, AIDS Surveillance Program.

Behavioral Risk Factor Survey, 1997-1999. Behavioral Risk Factor Surveillance System (BRFSS). Boston: Massachusetts Department of Public Health and Boston Public Health Commission.

Boston resident births [data file, 1992-2000]. Boston: Massachusetts Department of Public Health, Bureau of Health Statistics and Research and Evaluation (BHSR), Registry of Vital Records and Statistics.

Boston resident deaths [data file, 1992-2000]. Boston: Massachusetts Department of Public Health, Bureau of Health Statistics and Research and Evaluation (BHSR), Registry of Vital Records and Statistics.

Communicable Disease Data, 2000. Boston Public Health Commission, Communicable Disease Control Division.

Census 2000, US Department of Commerce, Bureau of the Census, American Fact Finder.

Health Insurance Data, 2000 Health Insurance Status of Massachusetts Residents Survey. Boston: Health Care Finance and Policy, Massachusetts Department of Public Health.

Homeless Counts, 1992-2001. Boston: City of Boston, Emergency Shelter Commission.

Lead Screening Data, fiscal year 2001. Boston: Boston Public Health Commission, Office of Environmental Health, Boston Childhood Lead Poisoning Prevention Program.

Preliminary Draft Allocation and Interpolation of Census 2000 SF1 File and Massachusetts Institute for Social and Economic Research 1998 Population Estimate File. January 2002. Massachusetts Department of Public Health, Bureau of Health Statistics, Research and Evaluation, Division of Research and Epidemiology.

Population Estimate Files, 1991-1998, Massachusetts Institute for Social and Economic Research (MISER).

Restraining Orders Data, 1994-2000. Research and Planning Department, Administrative Services Division, Office of the Commissioner of Probation, City of Boston.

US Department of Health and Human Services. *Healthy People 2010* (Conference Edition, in Two Volumes). Washington, DC: January 2000.

Violent Crime Data Related to Domestic Violence, January-November 2001. Boston Police Department, Office of Research and Evaluation, City of Boston.

Weapon-Related Injury Data, 1995-2000. Boston: Massachusetts Department of Public Health, Weapon-Related Injury Surveillance System.

APPENDIX 4

GLOSSARY

GLOSSARY

The glossary includes explanations of terms, concepts, and sources used in this publication. Readers may call the Research and Technology Services at (617) 534-4757 for more information about any of the subjects addressed here.

To help the reader compare the data presented for specific health indicators in this report to data from other sources, the definitions provided below include the codes used to classify causes of hospitalization or death. The hospitalization codes are from the Diagnostic Related Grouping (DRG), based on version 8 of the Federal Grouper. The cause-of-death codes are from the International Classification of Diseases, 9th Revision, (ICD-9), and International Classification of Diseases: 10th Revision (ICD-10), products of the US Department of Health and Human Services.

AAR: See **Age-Adjusted Mortality Rate**

Acquired Immune Deficiency Syndrome (AIDS): See **HIV/AIDS**.

Adolescent Births: Births to females ages 10 to 19.

African American: All persons self-identified as being born in the US and of African descent. The numbers from the 2000 census used in the **Demographics** section use a different way of counting races and ethnicity and should not be compared with numbers drawn from earlier censuses.

Age-Adjusted Mortality Rate (AAR): The age-adjusted mortality rate is calculated by applying the age-specific mortality rates in a population to a standard population (typically, and in this report, the 2000 US population). The age-adjusted rate of one area or group can be compared to the age-adjusted rate of another area or group with confidence that differences in the rates of the two areas or groups do not stem from differences in the age structure of their populations. AARs are extensively used in the Healthy People 2010 goals. See Technical Notes for further information.

Age-Specific Mortality Rate (ASR): The number of deaths per year in a given age group per 100,000 people in that age group. See Technical Notes for further information.

Age-Specific Birth Rate: The number of live births in a population divided by the total female population for a specific age group and expressed per 1,000 persons. See Technical Notes for further information.

Alcohol-Related Deaths: Causes of death directly related to alcohol use/abuse, such as liver disease attributed to alcohol consumption, accidental alcohol overdose, etc. This category does *not* include deaths indirectly due to alcohol use, such as deaths due to injuries occurring while intoxicated or deaths caused by another person who was intoxicated. For pre-1999 data in this report, ICD-9 codes 291, 303, 305.0, 357.5, 425.5, 535.3, 571.0-571.3, 790.3, E860; for data from 1999 and later years ICD-10 codes F10, G31.2, G62.1, I42.6, K29.2, K70, R78.0, X45, X65, Y15.

Amebiasis: Parasitic infection of the intestine, spread through ingestion of fecally contaminated food or water. Transmission may occur sexually by fecal-oral contact. Symptoms are often mild and can include loose stools, stomach pain, and stomach cramping.

Asian: All persons self-identified as Asian or Pacific Islander (e.g., Chinese, Japanese, Hawaiians, Cambodians, Vietnamese, Asian Indians, Filipinos) who do not identify themselves as Hispanic. The numbers from the 2000 census used in the Demographics section use a different way of counting races and ethnicity and should not be compared with numbers drawn from earlier censuses.

Asthma and Bronchitis: Asthma is a chronic inflammatory condition defined by sudden periodic attacks of difficulty in breathing accompanied by wheezing caused by a spasm of the bronchial tubes. Bronchitis refers to inflammation of the mucous membrane of the bronchial tubes. DRG 96-98.

Behavioral Risk Factor Surveillance System (BRFSS): A random telephone survey of Massachusetts adults ages 18 years and older. The survey is sponsored by the Centers for Disease Control and Prevention (CDC) and is conducted annually in all 50 states. The BRFSS collects information regarding various health-related issues, such as behavior, attitudes, knowledge, access to health care, and opinions on health policy issues. The responses to the survey provide important information regarding the prevalence of risk factors that are responsible for causing premature death, illness, and disability among Massachusetts residents.

Birth Rate: The number of live births per year, per 1,000 women ages 15-44.

Birthweight: The weight of an infant at the time of delivery. It may be recorded in either grams or pounds/ounces. If recorded in pounds/ounces, it is converted to grams for use in this report based on the following formula: 1 pound = 453.6 grams; 1,000 grams = 2 pounds and 3 ounces.

Black: All persons self-identified as Black (e.g., African Americans, Haitians, West Indians) who do not identify themselves as Hispanic. The numbers from the 2000 census used in the Demographics section use a different way of counting races and ethnicity and should not be compared with numbers drawn from earlier censuses.

Blood Cholesterol: Cholesterol is a soft, waxy substance found among the lipids (fats) in the blood stream and cells. It is an important steroid because it comprises cell membranes, hormones, and tissues. However, levels of cholesterol in the blood that are too high are a major risk factor for coronary heart disease, which leads to a heart attack.

Blood Lead Levels: The amount of lead detected in the blood during the finger-stick screening or venous-confirmation blood tests. ("Venous" means "in or of the bloodstream or veins.")

Body Mass Index (BMI): Calculated by dividing a person's weight in kilograms by his or her height in meters squared (kg/m^2); a measure of the appropriateness of weight in relation to height. This calculation is used to screen and monitor populations in order to detect risks of health or nutritional disorders.

BMI is used differently with children than with adults and is plotted according to age and sex-specific charts. The 1995 BMI cutpoints for adults are as follows:

Overweight	BMI of 25.0 to 29.9
Obese	BMI of 30.0 or more

The Centers for Disease Control and Prevention states that a BMI of 30 is equivalent to one being approximately 30 pounds overweight.

In 1995 the World Health Organization released new guidelines adopted by Healthy People 2010 categorizing adult males and females as overweight. Standards utilized by Healthy People 2000 classified males and females separately, both of which had higher cutoffs.

Campylobacter: Infectious bacterial disease transmitted by the ingestion of undercooked poultry or pork, or contaminated milk or water. Transmission may also occur through contact with infected pets and farm animals. Illness typically lasts one week, and symptoms include diarrhea, cramping, abdominal pain, and fever within 2 to 5 days after exposure to the organism.

Cancer: A group of diseases characterized by uncontrolled growth and spread of abnormal cells. For pre-1999 data in this report, ICD-9 codes 140-208; for 1999 data and later years, ICD-10 C00-C97.

Specific types of cancer discussed in this report:
Breast Cancer (Female): For pre-1999 data in this report, ICD-9 code 174; for data from 1999 and later years, ICD-10 code C50.
Colorectal Cancer: For pre-1999 data in this report, ICD codes 153-154; for data from 1999 and later years, ICD-10 codes C18-C21.

Lung Cancer: For pre-1999 data in this report, ICD-9 code 162; for data from 1999 and later years, ICD-10 codes C33-C34.
Prostate Cancer: For pre-1999 data in this report, ICD-9 code 185; for data from 1999 and later years ICD-10 codes C61.

Cardiovascular Disease (CVD): A group of diseases that affect the heart, including high blood pressure, coronary heart disease, stroke, congestive heart failure, and congenital heart defects. For pre-1999 data in this report, ICD-9 codes 390-398, 402, 404, 410-429, 430-434, 436-438, 440; for data from 1999 and later years, ICD-10 codes I00-I09, I11, I13, I20-I51, I60-I69, I70.

Cellulitis: An infection of skin or connective tissues (an infection in or close to the skin) is usually controlled by body defense mechanisms. DRG 277-279.

Census 2000: The count of the population undertaken by the Census Bureau in 2000. At the time of publication of this report, national, state, and local numbers have been released. The census 2000 should not be confused with the year 2000 standard population, which is a set of population weights used to calculate age-adjusted rates.

Cerebrovascular Disease (Stroke): A set of diseases of the vascular system (which conveys blood throughout the body) that affect the supply of oxygen to the brain, thereby damaging brain cells. This category includes strokes. For pre-1999 data, ICD-9 codes 430-434, 436-438; for data from 1999 and later years, ICD-10 codes I60-I69. DRG 14 for hospitalization data.

Chlamydia: A sexually transmitted disease caused by any member of the genus *Chlamydia*.

Chronic Obstructive Pulmonary Disease (COPD): Diseases, including bronchitis, asthma, , emphysema, and allergies due to inhaled organic dust particles that decrease the ability of the lungs to perform their function (oxygenating the blood system). For pre-1999 COPD data in this report, ICD-9 codes 490-494, 496; for 1999 data, ICD-10 codes J40-J47.
For hospitalization-related charts and text in this report, the DRG code is 88.

Colon and Rectum: The two parts of the large intestine. The colon comprises the upper five or six feet of the large intestine, while the rectum comprises the remaining five to six inches. Together, they are the location of colorectal cancers.

Coronary Heart Disease: A disease of the heart caused by narrowing or blockage of the coronary arteries. For pre-1999 data in this report, ICD-9 codes 402, 410-417, 429.2; for data from 1999 and later years, ICD-10 codes I11, I20-I25, I26-I28, I51.6.

Colonoscopy: A visual screening examination, for colorectal cancer, of the full lining of the colon and rectum, parts of the large intestine.

Confidence Interval: The range within which lies the true value of a variable, based on a chosen probability. For example, given the probability 95%, one can be ninety-five percent certain that the true value lies between numbers X and Y. The range between X and Y is the confidence interval.

Death Rate: The number of deaths per year per 100,000 population.

Demographics: The statistical study of characteristics of human populations and of population distributions such as age, sex, and race/ethnicity.

Diabetes: A chronic metabolic disease characterized by inadequate insulin production by the pancreas. ICD-9-CM codes 250.0-250.9; for data from 1999 and later years, ICD-10 codes E10-E14.

Diagnostic Related Grouping (DRG) Codes: Codes used to group causes of hospitalization.

Drug-Related Deaths: Causes of death related to the use of drugs other than alcohol and tobacco, including direct physiological causes as well as some accidental deaths in which drug use/abuse is involved. Does *not* include deaths indirectly due to drug use, such as death due to injuries occurring while under the influence of drugs or deaths caused by another person under the influence of drugs. For pre-1999 data in this report, ICD-9 codes 292, 304, 305.2-305.9, E850-E858, E950.0-E950.5, E962.0, E980.0-E980.5; for data from 1999 and later years, ICD-10 codes F11.0-F11.5, F11.7-F11.9, F12.0-F12.5, F12.7-F12.9, F13.0- F13.5, F13.7-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0- F15.5, F15.7-F15.9, F16.0-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-F18.9, F19.0-F19.5, F19.7-F19.9, X40-X44, X60-X64, X85, Y10-Y14.

E-Codes: "E-codes" refer to the supplementary classification within ICD-9-CM of the external causes of injury and poisoning, such as environmental events, circumstances, and conditions. This is particularly helpful in planning intervention. E-codes are intended to be used as an addition to the main ICD code, which classifies the injury or poisoning by the biological system affected.

Gastroenteritis, Esophagitis, and Miscellaneous Digestive Disorders: Infection of the mucous membranes of the stomach and intestine.

Giardiasis: A parasitic infection that is transmitted person-to-person through hand-to-mouth contact of infected feces. Transmission may also occur through ingestion of fecal matter in recreational and drinking water. Symptoms include diarrhea, loose or watery stool, stomach cramps, and upset stomach.

Gonorrhea: A contagious catarrhal inflammation of the genital mucous membrane, transmitted chiefly by sexual intercourse and due to *Neisseria gonorrhoeae;* may involve the lower or upper genital tract, especially the urethra, endocervix, and Fallopian tubes, or spread to the peritoneum and rarely to the heart, joints, or other structures by way of the bloodstream.

Healthy People 2010 Goals and Objectives: Targets established by the US Public Health Service, in conjunction with the Centers for Disease Control and Prevention and the National Center for Health Statistics, to assist communities with health promotion and disease prevention efforts, and to establish health status goals to be met by the year 2010.

Heart Disease: A group of diseases affecting the heart, including valve and conductive disorders as well as hypertensive diseases. For pre-1999 data in this report ICD-9 codes 390-398, 402, 404, 410-429; for data from 1999 and later years, ICD-10 codes I00-I09, I11, I13, I20-I51.

Heart Failure and Shock: Heart failure occurs when the heart is unable to pump blood in an efficient manner. Shock results when the heart cannot pump blood adequately to the tissues and vital organs. DRG 127.

Hepatitis: A contagious viral disease that can be transmitted via sexual contact and/or activity. There are many strains of hepatitis, including hepatitis A, hepatitis B, hepatitis non-A non-B, hepatitis B (unknown carrier), hepatitis B (unverified carrier), hepatitis C, hepatitis D, or hepatitis unspecified.

Hepatitis A: Liver disease caused by infection of the Hepatitis A Virus (HAV). HAV is transmitted person-to-person through the fecal-oral route, most commonly through contaminated food or water. Onset is abrupt, and symptoms include jaundice, fatigue, abdominal pain, nausea, diarrhea, and fever. Infection does not become chronic.

Hepatitis B: Liver disease caused by infection with the Hepatitis B Virus (HBV). HBV is transmitted person-to-person through contact with blood and other bodily fluids. Symptoms include jaundice, abdominal pain, fatigue, and joint pain. Acute infection resolves over time. Chronic infection occurs in 90% of infants born with HBV, 20-50% of children less than 5 years old, and 1-10% of persons infected as adults.

Hepatitis C: Liver disease caused by infection with the Hepatitis C Virus (HCV). HCV is transmitted through blood-to-blood contact, most often through injection drug use. 80% of people infected with HCV will not develop any symptoms, which include jaundice, fatigue, dark urine, and abdominal pain. 75-85% of those infected with HCV will develop chronic liver disease.

Hispanic: Includes people of any race (Asian, Black, White, or Other) self-identified as Hispanic or Latino, such as Puerto Rican, Mexican, Cuban, Spanish, and Dominican. The numbers from the 2000 census used in the Demographics section use a different way of classifying race and ethnicity and should not be compared with numbers drawn from earlier censuses.

HIV/AIDS: The Human Immunodeficiency Virus (HIV) infection, which leads to Acquired Immune Deficiency Syndrome (AIDS) or other HIV infections. For pre-1999 data in this report ICD-9 codes 042-044; for data from 1999 and later years, ICD-10 codes B20-B24.

HIV+ or HIV Infected: Having tested positive for the antibodies to Human Immunodeficiency Virus (HIV), meaning that one is infected with the virus, with or without major related conditions. DRG 700-702, 704-708, 710-714.

Homeless: The federal government defines "homeless" to mean (1) an individual who lacks a fixed, regular, and adequate night-time residence; and (2) an individual who has a primary night-time residency that is (i) a supervised publicly or privately operated shelter designed to provide temporary living accommodations (including welfare hotels, congregate shelters, and transitional housing for the mentally ill); (ii) an institution that provides a temporary residence for individuals intended to be institutionalized; or (iii) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings. This term does not include any individual imprisoned or otherwise detained under an Act of Congress or a state law.

Homicide: A death intentionally caused by a person other than the deceased. For pre-1999 data in this report, ICD-9 codes E960-E969; for data from 1999 and later years, ICD-10 codes X85-Y09, Y87.1.

Hospitalization: A patient's continuous stay of one night or more in the hospital for observation, care, diagnosis, or treatment before being released by the hospital, or before death.

Human Immunodeficiency Virus (HIV): The virus that is responsible for causing AIDS.

ICD-9 Codes: Codes designed for the classification of morbidity and mortality information for statistical purposes and for the indexing of hospital records by disease and operations for data storage and retrieval. International Classification of Disease Codes, 9th Revision, Clinical Modification (ICD-9-CM) is based on the official version of the World Health Organization's 9th Revision, International Classification of Diseases (ICD-9). ICD-9 codes were used to classify mortality data from 1979 to 1998. ICD-9 classification has been replaced by ICD-10 classification. ICD-9CM codes are still used to classify mortality data.

ICD-10 Codes: Data from 1999 and later years is classified according to the International Classification of Disease Codes, 10th Revision (ICD-10), released by the World Health Organization in 2000 and adopted by the United States National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention. ICD-10 classification replaces ICD-9 classification. For more information on these codes and their use, see *Technical Notes* and http://www.cdc.gov/nchs/icd9.htm#ICD-10-CM**.**

IMR: See **Infant Mortality Rate**.

Incidence: The number of reported new cases of a particular disease over a period of time and in relation to the population in which it occurs.

Incident: A term used by Emergency Medical Services (EMS) to refer to an event leading to the dispatch of one or more Boston EMS units.

Infant Mortality Rate (IMR): The number of deaths at under one year of age per 1,000 live births.

Injury: Injury deaths include five categories: homicides, suicides, motor vehicle-related injuries, (other) unintentional injuries, and "undetermined" injuries (for which it was not determined on the death certificate whether the injury was intentional). The latter two categories are frequently presented together in this report. The determinations of intent are for purposes of medical record-keeping only. Each chart that includes data on injury deaths specifies exactly which types of injuries are included. For hospitalization-related charts and text in this report, injury is an aggregation of DRGs 280-282, Major Diagnostic Classification (MDC) 21, 22, and 24 which include for, example, surgical procedures performed due to injury, traumatic injury (open wounds, multiple fractures, limb reattachment), poisoning and toxic effects of drugs, and burns.

Lead Screening: The routine measurement of blood-levels in children to identify those who are lead poisoned.

Low Birthweight (LBW): Birthweight less than 2,500 grams (or 5.5 lbs).

Malignant Tumor: A tumor which has the ability to invade the surrounding tissues and to spread to other tissue and organ sites. Only malignant tumors are classified as cancers.

Mammogram: A test given to women to detect signs of breast cancer.

Median: Median is the middle value in a distribution. The median divides the total frequency into two parts. One half the cases fall below the median and one half fall above the median. This should not be confused with mean, which is the arithmetic average of a set of values.

Metabolic Disorders: A disruption in the biological process of breaking down food into a form useable by the body.

µg/dL: Micrograms per deciliter. A measurement unit for level of lead in a measured quantity of blood: a billionth of a gram in a tenth of a liter.

Moderate Physical Activity: Physical activity for 30 minutes, that does not cause sweating or hard breathing, on five or more of the seven previous days.

Morbidity: The proportion of illness, disease, or injury among a specific population in a geographical locality in a specific time period.

Mortality: Death, or the relative frequency of death per unit of population in a specific time period; death rate.

n<5: A notation used on charts in the *Health of Boston 2001* to indicate that in this health indicator there were fewer than five occurrences (for example, births, deaths, new cases) of a disease, and that a rate could not be calculated. See Technical Notes.

Neighborhood: One of 16 distinct geographical areas in Boston.

Neisseria meningitidis: Acute bacterial infection transmitted through direct contact, including respiratory droplets from nose to throat of infected people. Symptoms include sudden onset of fever, intense headache, nausea, vomiting, and stiff neck. Clinical syndromes include meningitis, sepsis, or pneumonia.

Newborns/Neonates: Infants from the time of their birth through the first 27 days of age. DRG 602-640 and "Not Classified" Category.

Pap Smear: A screening test to detect cancerous or precancerous conditions of the cervix.

Percentage Differences in AAR to Meet Healthy People 2010 Goal or Target: The percentage of the age-adjusted rate (AAR) for a given cause of death that would be required to meet the Healthy People 2010 targeted AAR, i.e., percent reduction = $(AAR_1 - AAR_2)/AAR_1 \times 1000$, where

AAR_1= the age-adjusted rate, for a specific cause of death
AAR_2= the Healthy People 2010 goal or target

Pertussis: Also known as "whooping cough," acute bacterial disease involving the respiratory tract, transmitted by direct contact with airborne droplets from mucous membranes. Symptoms include repeated coughing and expelling of mucous.

Pneumonia/Influenza: Bacterial or viral infections of the lungs that primarily affect the aged and persons with compromised immune systems. For pre-1999 data in this report ICD-9 codes 480-487; for 1999 data ICD-10 codes J10-J18.

Pregnancy: The condition of carrying a developing embryo or fetus in the uterus. DRG 370-384.

Psychoses: Acute mental disorders characterized by loss of contact with reality and personality disintegration. DRG 430.

Risk Factor: A characteristic or agent whose presence increases the *probability of occurrence* of a particular disease, injury, cause of death, or birth outcome. A risk factor does not necessarily cause the outcome.

Salmonellosis: Bacterial infection transmitted by ingestion of contaminated food including raw and undercooked eggs, meat, poultry, raw milk, and water. Symptoms include diarrhea, fever, and abdominal cramps.

Sexually Transmitted Disease: Infection spread by transfer of organisms from person to person during sexual contact.

Shigellosis: Acute bacterial disease of the large and small intestine transmitted by direct or indirect fecal-oral contact. Symptoms include diarrhea accompanied by fever, nausea, vomiting, and abdominal pain.

Shock: See **Heart Failure and Shock**.

Sigmoidoscopy: A screening test for colorectal cancer to examine the rectum and lower colon, parts of the large intestine.

Simple Pneumonia/Pleurisy: Bacterial or viral infection of the lungs and inflammation of the pleura, the membrane that covers both lungs. DRG 89-91.

Socioeconomics: The statistical study of the social and economic characteristics of a population, such as education and poverty levels.

Statistical Significance: A certain group of statistical tests determines whether findings accurately describe the population of interest or whether they can be explained by chance. If these tests identify the findings to be outside of the range of chance, they are considered to have achieved statistical significance. See Technical Notes for further information.

Standard Population: An estimate of the US population, in which the age, race, and sex distributions are known, resulting in a set of population weights used to calculate age-adjusted mortality rates. *Standard population* is not to be confused with population numbers from any particular census. In this report, the year 2000 US standard population is used to calculate age-adjusted mortality rates. See Technical Notes for further information.

Stroke (Cerebrovascular Disease): A stroke occurs when a blood vessel in the brain bursts or when the blood supply to part of the brain is interrupted. For pre-1999 data in this report, ICD-9 codes 430-434, 436-438; for 1999 data, ICD-10 codes I60-I69.

Substance Use and Abuse: Use or overuse of ingested substances both legal (such as alcohol) and illegal (such as cocaine). For pre-1999 alcohol related data in this report, ICD-9 codes 291, 303, 305.0, 357.5, 425.5, 535.3, 571.0-

571.3, 790.3, E860; for 1999 data, ICD-10 codes F10, G31.2, G62.1, I42.6, K29.2, K70, R78.0, X45, X65, Y15. For pre-1999 drug-related data in this report, ICD-9 codes 292, 304, 305.2-305.9, E850-E858, E950.0-E950.5, E962.0, E980.0-E980.5; for 1999 data, ICD-10 codes F11.0-F11.5, F11.7-F11.9, F12.0-F12.5, F12.7-F12.9, F13.0- F13.5, F13.7-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0- F15.5, F15.7-F15.9, F16.0-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-F18.9, F19.0-F19.5, F19.7-F19.9, X40-X44, X60-X64, X85, Y10-Y14. Hospitalization substance abuse data include alcohol and/or drug abuse, dependence, and detoxification and rehabilitation therapy (MDC code 20).

Suicide: The act of taking one's own life voluntarily and intentionally. ICD-9-CM codes E950.0-E959.9. For data from 1999 and later years, ICD-10 codes X60-X84, Y87.0.

Syphilis: An acute and chronic infectious disease caused by *Treponema pallidum* and transmitted by direct contact, usually through sexual intercourse. After an incubation period of 12 to 30 days, the first symptom is a chancre, followed by slight fever and other constitutional symptoms.

Tuberculosis (TB): A bacterial infection which primarily affects the lungs. TB is transmitted through airborne droplets from sneezing or coughing or spitting. People who are infected with latent TB are asymptomatic and cannot transmit the bacteria to others. People with TB disease experience symptoms including chronic cough, pain in the chest, coughing up blood or sputum, fatigue, weight loss, and fever.

Unintentional Injury: An injury that was accidental. ICD-9-CM codes E800.0-E809.9, E830.0-E949.9, E980.0-E989.9. The ICD-9-CM codes used by the Healthy People 2010 committee, and therefore used for the Boston rates for comparison with the Healthy People 2010 goals, are slightly different. They are E800.0-E949.9. For the data from 1999 and later years, ICD-10 codes V01.0, V01.1, V01.9, V05.0, V05.1, V05.9, V06.0, V06.1, V06.9, V09.1, V09.3, V09.9, V10.0, V10.1-V10.5, V10.9, V11.0-V11.5, V11.9, V15.0-V15.5, V15.9, V16.0-V16.5, V16.9, V17.0-V17.5, V17.9, V18.0-V18.5, V18.9, V19.3, V19.8, V19.9, V80.0-V80.2, V80.7-V80.9, V81.2-V81.9, V82.2-V82.9, V87.9, V88.9, V89.1, V89.3, V89.9, V90-V95, V96.0-V96.2, V96.8-V96.9, V97.0-V97.3, V97.8-V97.9, V98-V99, W00-X59, Y85.0, Y85.9, Y86.

Uterine Procedures (Uterine and Adnexa Procedures): For hospitalization-related charts and text in this report, uterine procedures is an aggregation of DRGs 354-359, codes for surgical procedures involving the uterus, ovaries, and/or fallopian tubes.

Varicella: Also known as chicken pox, a highly contagious viral infection transmitted by direct contact or through airborne droplets from coughing or sneezing. Symptoms include a skin rash of blister-like lesions, usually on the face, scalp, or trunk.

Vigorous Physical Activity: Physical activity that causes sweating and hard breathing and promotes cardiorespiratory fitness, for at least three days per week for 20 minutes or more per occasion.

Viral Meningitis: Viral infection resulting in inflammation of the tissues that cover the brain and spinal cord. The virus is transmitted through direct contact with respiratory secretions from an infected person. Symptoms include fever, severe headache, stiff neck, drowsiness or confusion, and nausea and vomiting. Also called aseptic meningitis.

Weighted Percentage: A value determined by assigning weights to individual measurements. Each value is assigned a nonnegative coefficient (weight).

White: All persons self-identified as White who do not identify themselves as Hispanic. The numbers from the 2000 census used in the Demographics section use a different way of counting races and ethnicity and should not be compared with numbers drawn from earlier censuses.

Youth Risk Behavior Surveillance System (YRBSS): A surveillance system developed by the Centers for Disease Control and Prevention (CDC) to monitor the prevalence of youth behaviors that influence health. The survey consists of representative samples of ninth- through twelfth-graders in the United States and the District of Columbia.

APPENDIX 5

HEALTHY PEOPLE 2010
GOALS AND OBJECTIVES

Healthy People 2010

Category and Objective:	Target
♦ **Infant Mortality Rates**	
Reduce deaths in infants <1 year old	4.5 per 1,000 live births
♦ **Low Birthweight**	
Reduce low birthweight rate	5.0 % of births
♦ **Teen Birth Rates**	
Reduce adolescent births	46 births per 1,000
♦ **Childhood Lead Poisoning**	0
♦ **Childhood Asthma**	
Reduce hospitalizations for children <5	25 per 10,000
♦ **STD**	
Reduce by Type:	
Chlamydia	
Males ages 15-24 attending STD clinics	3.0%
Females ages 15-24 attending STD/family planning clinics	3.0%
Gonorrhea	19 new cases per 100,000
Primary and secondary syphilis	0.2 new cases per 100,000
♦ **AIDS**	
Reduce AIDS among adolescents and adults	1.0 new cases per 100,000
♦ **Cancer**	
Reduce overall cancer death rate	158.7 deaths per 100,000
Reduce the lung cancer death rate	44.8 deaths per 100,000
Reduce breast cancer death rates	22.2 deaths per 100,000 females
Reduce cancer uterine cervix cancer death rates	2.0 deaths per 100,000 females
Reduce colorectal cancer death rates	13.9 deaths per 100,000
Reduce oropharyngeal cancer death rates	2.6 deaths per 100,000
Reduce prostate cancer death rates	28.7 deaths per 100,000 males
Reduce melanoma cancer death rates	2.5 deaths per 100,000
Screening	
Increase percentage of females who receive a Pap test:	
Females 18 and over who have ever received one	97%
Females 18 and over who received one in preceding 3 years	90 %
Increase percentage of females ages 40 and over who received a mammogram within past 2 years	70 %
Increase percentage of adults with colorectal cancer screening examination:	
Adults over age 50 who have ever received a sigmoidoscopy	50 %
Adults over age 50 who received a fecal occult blood test within past 2 years	50%

Category and Objective:	Target
• **Coronary Heart Disease (CHD)**	
Reduce CHD mortality rate	166 deaths per 100,000
Risk Factors:	
Reduce proportion of adults with high blood pressure	16 %
Reduce percentage of adults with high blood cholesterol	21%
♦ **Stroke**	
Reduce stroke mortality rate	48 deaths per 100,000
♦ **Diabetes**	
Reduce diabetes mortality rate	45 deaths per 100,000
Reduce rate of lower extremity amputations among diabetics	5 deaths per 1,000 per year
♦ **Substance Abuse**	
Reduce drug mortality rate	1 per 100,000
Reduce cirrhosis mortality rate	3 deaths per 100,000
Reduce cigarette smoking by adults	12 %
Reduce tobacco use by adolescents	21 %
Reduce binge drinking among adults ages 18 and over	6%
Reduce binge drinking among adolescents ages 12-17	3%
♦ **Violence**	
Reduce homicide mortality rate	3.2 homicides per 100,000
Reduce suicide mortality rate	6.0 deaths per 100,000
Reduce rate of suicide attempts by adolescents	12 month average of 1%
♦ **Nutrition**	
Increase the proportion of persons age 2 and older:	
Who consume at least two daily servings of fruit	75%
Who consume at least three daily servings of vegetables (at least 1/3 being dark green or deep yellow)	50%
Who consume at least 6 daily servings of grain products	50%
♦ **Physical Activity**	
Reduce the percentage of adults who engage in no leisure time physical activity	20%
Increase the percentage of adults who engage in regular, moderate physical activity daily for at least 30 minutes	30%
Increase the percentage of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of previous days	30%