Substance Abuse in Boston 2011

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BOSTON PUBLIC HEALTH COMMISSION

Building a Healthy Boston

Acknowledgements

Introduction

According to the 2009 National Survey on Drug Use and Health, approximately 21.8 million Americans ages 12 and over reported being illicit drug users. Illicit drugs include drugs such as heroin, cocaine (including crack), marijuana, hallucinogens, inhalants, prescription-drugs used for nonmedical reasons and abuse of common over-the-counter medications such as cough syrup. An additional 130 million also reported being current drinkers of alcohol (1).

Substance abuse encompasses all races/ethnicities, males and females, age groups from youth to seniors, high school and college students, employed and unemployed adults, individuals with and without an education, and other characteristics (1).

Marijuana is the most abused illicit drug in the U. S. with 14.6 million drug users. On a regular basis, 2.4 million Americans use cocaine and 13 million Americans are reported to have an alcohol drinking problem (1).

Prescription drug abuse is now considered to be the fastest growing substance abuse problem in the US with approximately 5.3 million Americans using prescription pain medication for nonmedical reasons (2).

The health consequences of substance abuse are many and can include:

- Cancer
- Cardiovascular disease
- Dementia
- Hepatitis B and C
- HIV/AIDS
- Liver diseases
- Lung disease
- Mental disorders
- Miscarriage and stillbirth among pregnant women, and birth defects among children
- Psychiatric disorders such as depression, anxiety, and suicide
- Risky sexual behaviors such as unprotected sex resulting in sexually transmitted infections (STIs)
- Stroke
- Unintentional injuries
- Violence
- Premature death

In 2007, among individuals with a substance abuse problem, 1.7 million received treatment in an outpatient rehabilitation facility, 1.0 million in an inpatient rehabilitation facility, 889,000 in an outpatient mental health center, 779,000 as an inpatient in a hospital, 593,000 in a private doctor's office, 523,000 in a hospital emergency room, and 302,000 in a prison or jail (3).

Preventing and treating substance abuse conditions can be challenging for a number of reasons. Some of these reasons include the difficulty of diagnosing and treating individuals who have both drug and alcohol abuse problems concurrently, providers who may not be aware of the signs and symptoms of substance abuse, especially in patients who may not appear to be 'typical substance users', lack of routine screening for substance abuse, societal stigma, unwillingness of substance

abusers to talk about their problem, lack of health care coverage or not enough coverage, and inadequate funding for treatment beds and facilities (3,4).

In addition to personal health consequences, the effect of substance abuse also results in negative outcomes for both individuals and society. For example, the total overall costs of substance abuse in the US, including loss productivity as well as costs related to health and crime, has been estimated to exceed $416 billion a year for illicit drugs and alcohol (5). Many lives are also lost every year. According to national preliminary death data for 2009, 76,855 people in the US died from alcohol, alcohol liver disease, and drugs in 2009 (6). However, numbers do not adequately describe the far reaching or full range of destructive outcomes of substance abuse, such as family dysfunction, job loss, failure in school, domestic violence, and child abuse.

- This report provides data on the experience of Boston's youth and adults who use and abuse drugs and alcohol, the extent to which they use those substances, the specific types of drugs commonly used, behavioral patterns, and utilization of treatment facilities. It is an effort to better understand the substance abuse experience of the Boston population so that more effective monitoring and development of targeted responses can be identified and implemented with the overall goal of reducing substance abuse among Boston residents.

Caution is advised when attempting to generalize across data sources. There are many systemic factors specific to each data source that do not directly relate to the level of abuse in the larger population, but may contribute to changes seen in the data. For example, changes in treatment admissions numbers could reflect changes in demand for treatment or could reflect changes in the treatment system's capacity to admit certain types of clients. To what extent systemic factors influence totals and subpopulation differences observed within a data source is difficult to determine and often unknown. Conclusions drawn from the data sources are subject to such limitations. At best, the data presented here offer a partial picture of Boston's collective drug abuse experience.

References

1. Substance Abuse and Mental Health Services Administration. (2010). *Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of National Findings* (Office of Applied Studies, NSDUH Series H-38A, HHS Publication No. SMA 10-4586Findings). Rockville, MD.

2. National Prevention Council, *National Prevention strategy*, Washington, DC: US Department of Health and Human Services, Office of the Surgeon General, 2011.

3. Briefing on Substance Use, Treatment, and Recovery in the United States. http://www.pfr.samhsa.gov/docs/Briefing_Substance_Use_Treatment.pdf
 Accessed June 1, 2011.

4. US Department of Health and Human Services, National Institute of Health, National Institute on Alcohol Abuse. Alcohol Alert. Number 76, July 2008, pp1-5.

5. NIDA InfoFacts.: Understanding Drug Abuse and Addiction. http://www.drugabuse.gov/Infofacts/understand.html   Accessed June 1, 2011.

6. National Vital Statistics Report. Deaths: Preliminary Data for 2009. http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_04.pdf   Accessed June 20, 2011.

EXECUTIVE SUMMARY

In Boston, Mayor Thomas M. Menino and the Boston Public Health Commission have made the reduction of substance abuse a public health priority. Monitoring substance abuse patterns and abuse-related outcomes is essential to measuring the progress of the public health response to this priority.

Substance Abuse in Boston 2011 provides a broad picture of alcohol and drug misuse and abuse among Boston residents. The report focuses on data from select sources including surveys, substance abuse mortality, hospital admissions, emergency department visits, and treatment admissions in an effort to describe patterns and trends of specific substance abuse-related health experiences among Boston residents.

The most recent survey data show Boston's youth compare favorably to youth in Massachusetts and the United States overall when assessing patterns of alcohol and drug use. Even though similar percentages of students reported being offered, sold or given drugs on school property in 2009:

- Compared to students across Massachusetts, Boston public high school students were less likely to report drinking alcohol during the past month and using marijuana during the past month.

- Compared to students across the US, Boston high school students were less likely to report using cocaine during the past month, ever having used methamphetamine, and ever having used inhalants (e.g., glue, contents of an aerosol can) to get high.

- Compared to students across the US and Massachusetts, Boston high school students were less likely to report binge drinking (having five or more alcoholic drinks in a row within a couple of hours) during the past month, ever having used cocaine, and ever having used ecstasy.

- Among Boston high school students, the percentage reporting ever having used ecstasy decreased from 7% in 2001 to 3% by 2009. Additionally, the percentage reporting ever having used other hard drugs has remained relatively low over time, between 2% and 3% for heroin, cocaine, and methamphetamine.

Among Boston residents of all ages, the most recent mortality data reveal progress and sustained improvement:

- After increasing 67% from 2000 to 2007, the age-adjusted substance abuse mortality rate decreased 19% from 2007 to 2008.

- Both the alcohol abuse and drug abuse mortality rates peaked in 2006 then decreased from 2006 to 2008, 31% and 46% respectively.

- After peaking in 2006 and 2007, the heroin/opioid mortality rate decreased 32% from 2007 to 2008.

- The cocaine mortality rate decreased 34% from 2006 to 2008.

Similarly, the most recent hospital admissions data reveal progress and sustained improvement:

- After increasing 12% from 2002 to 2007, the age-adjusted substance abuse hospitalization rate decreased 10% from 2007 to 2009.

- Both the alcohol abuse and drug abuse hospitalization rates peaked in 2007 then decreased 12% and 10%, respectively, from 2007 to 2009.
- After peaking in 2007, the cocaine hospital admissions rate decreased 30% from 2007 to 2009.

However, hospital emergency department visit data suggest additional need for improvement:

- The substance abuse emergency department visit rate (not including ED visits that resulted in hospital admissions) increased 30% from 2002 to 2009.
- Both the alcohol abuse and drug abuse emergency department visit rates increased during this period.

Boston Emergency Medical Services (BEMS) will often administer naloxone (Narcan®) in an effort to reverse the effects of an opioid overdose (e.g., restart breathing). BEMS data reveal success in saving lives of individuals who overdosed on opioids:

- In 2009, 96% of BEMS Narcan® administrations led to successful overdose reversals, saving as many as 361 lives.
- In 2010, 85% of Narcan® administrations led to successful reversals, saving as many as 188 lives.

In addition to BEMS administration, an innovative public health prevention strategy has opioid treatment providers now training opioid users, their families and friends on how to recognize an opioid overdose, perform rescue breathing and administer nasal naloxone.

Patterns and trends within the substance abuse treatment admissions data could reflect changes in demand (i.e., the number of residents seeking treatment), changes in treatment capacity (i.e., the availability of treatment slots or beds for potential clients) and/or changes in other treatment access factors (e.g., affordability). Together, these types of factors limit the ability to draw conclusions from observed treatment admissions rate changes. For this reason, the following treatment data summary is presented without assignment of progress.

Though the overall treatment admission rate has been relatively stable for seven years (2003 to 2010), rates for Black residents and Latino residents decreased 45% and 36%, respectively, during the past decade. As a result, treatment rates were similar among Black, Latino and White residents by 2010.

For this report, drug-specific treatment data were compiled by totaling the number of client admissions citing a given drug as either the client's primary, secondary or tertiary drug of abuse. During the past decade, heroin and alcohol were most often cited as drugs of abuse among Boston treatment client admissions. Among client admissions in 2010, 56% cited heroin, 50% cited alcohol, 29% cited cocaine (including crack), 14% cited marijuana, 11% cited benzodiazepines and 10% cited other (non-heroin) opioids as drugs of abuse. Other drugs (e.g., methamphetamine, club drugs) were each cited by less than 1% of all treatment client admissions.

From 2001 to 2010, the overall heroin treatment admissions rate has been fairly stable while the alcohol treatment admissions rate decreased 34%, the cocaine treatment admissions rate decreased 31%, the marijuana treatment rate decreased 40%, the benzodiazepines admissions rate increased 83%, and the other (non-heroin) opioid treatment admissions rate increased 58%.

The entire *Substance Abuse in Boston 2011* can be found on the Boston Public Health Commission's website at www.bphc.org.

NOTE TO READERS

What do we mean by substance abuse?

In our society substances including drugs and alcohol are used both medically and recreationally. Drug misuse occurs when illegal drugs are used or legal drugs are used in a non-medically prescribed manner. The point at which drug misuse is considered drug abuse is rather subjective. For purposes of this report, all misuse is considered abuse. Since alcohol is legal and used recreationally, alcohol misuse or abuse was determined on a data source basis. For hospital emergency department data, hospital admissions data, and mortality data, drug and alcohol abuse was determined by the presence of relevant ICD-9-CM codes (hospital ED visits or hospital admissions) or ICD-10 codes (mortality) identified among multiple levels of diagnosis/cause codes in the electronic case records in the relevant electronic database. Often, these codes do not identify intent of drug/alcohol use and stringent determination of whether the substance was misused or abused is not possible. No further review of case records was conducted to determine causality.

For this report, drug and alcohol abuse data definitions include codes beyond poisonings (e.g., codes referring to mental and behavioral disorders due to substance use). As a result, drug and alcohol poisonings/overdoses are subsets (not reported in this report) of drug and alcohol abuse definitions used. In addition, ICD codes (i.e., hospital diagnostic codes and cause of death codes) often lack specificity in identifying certain drugs. As a result, drug categories (e.g., heroin/opioids) were used in certain instances to help produce reliable statistics. For a listing of codes used to identify drug and alcohol abuse, please refer to the glossary.

How do we determine if one percentage (point estimate) is higher or lower than another?

To determine whether two percentages, or point estimates, are different from one another, one cannot look only at the percentages themselves. One must determine whether the differences between two percentages are "statistically significant." Statistical significance is a mathematical term used to describe the likelihood that a particular number or rate reflects reality. This term comes into play when researchers measure a particular characteristic of a sample or subset of a group or population, and then use that result to describe the entire group or population.

In this report, one of the data sources cited is a survey called the Boston Behavioral Risk Factor Surveillance Survey (BBRFSS). This is a telephone-based survey in which a number of Boston residents were asked to respond to a series of questions. The entire population of Boston was not called to participate in this survey, as this would not have been feasible or cost-effective. The survey data were collected among a random sample of adults within a random sample of Boston households. The resulting data were used to represent the entire adult population for the city of Boston and are described as percentages or point estimates. These numeric values are further described by a numeric range called a confidence interval. The confidence interval describes the likelihood that the true percentage falls within the range of values given, and thus describes the error around the percentage estimate. To compare two percentage estimates and determine whether one is higher or lower than the other, one must look at both the percentage estimates and their associated confidence intervals.

For example, in the Overall Drug and Alcohol section of this report, there is a measure of self-reported heavy alcohol consumption by Boston neighborhood from the BBRFSS (Figure 2.66). The percentage of Boston residents overall reporting heavy alcohol consumption was 8%, while for Charlestown the percentage was 10%. The confidence interval for Boston was 6.3%-10.3%; for Charlestown, the confidence interval was 1.5%-19.2%. Although the percentage estimates are numerically different (Boston 8%, Charlestown 10%), the overlapping confidence intervals indicate that these percentages are statistically similar.

Throughout this report, confidence intervals were calculated for all survey data including data from the Boston Behavioral Risk Factor Surveillance System (BBRFSS), Youth Risk Behavior Survey (YRBS), and Boston Youth Survey (BYS). To determine whether a percentage was higher or lower than another percentage, the confidence intervals were calculated and compared. If the confidence intervals did not overlap, the two percentage estimates were reported as different (one was "higher" or "lower" than the other). If the confidence intervals overlapped, the percentage estimates were reported as similar to one another and no further comparison was made.

What do the terms "insufficient sample size" and "n<5" mean?

In the section notes, the phrase *insufficient sample size* is used to describe data points that are not presented. This occurs when the stratification of survey data by population groups results in a sample that is too low to calculate reliable point estimates. In addition, to protect the confidentiality of respondents, data are not presented when a sample size is too small.

The notation, *n<5*, is used when there are fewer than five occurrences of an event (for example, births, deaths, new cases of a disease) and thus a rate could not be presented. In some instances, combining several years of data increased sample size to a level that allowed data to be reported.

Why do we sometimes combine several years of data?

In certain instances, when there were fewer than five cases or an insufficient sample size in a given year, we combined data from two or more years in order to permit the calculation and presentation of a rate or point estimate. In this report, the title of a chart indicates whether two or more years of data have been combined.

How do we define neighborhood boundaries in this report?

Neighborhoods can be defined in a number of ways. In this report, zip codes and census tracts are used to identify neighborhood boundaries since this information is often collected with Boston health data. Most graphs presenting neighborhood data use neighborhood definitions based on zip codes, but graphs presenting death data rely on census tracts to define neighborhoods.

Why are some of the data older than other data?

The most recent data available are used in this report. Some data are older than other data. The availability of data varies by source. Several factors play a role in determining when data are available including the frequency of data collection, the post-collection cleaning and verification process, and resources available to manage and analyze the data.

Table of Contents

Youth Drug and Alcohol Use

According to the most recent annual report by the Substance Abuse and Mental Health Services Administration (SAMSHA), in 2009, 10% of youth in the US ages 12 to 17 were reported to be illicit drug users. Marijuana was the most commonly used illicit drug among this age group, followed by illegal use of prescription drugs (1).   Rates of marijuana use by youth are increasing and fewer youth think there is great risk from smoking marijuana on a weekly basis (1).

Marijuana continues to be a major focus of substance abuse prevention among youth because it is considered a "gateway drug", that is a drug that introduces youth to drug intoxication and influences them to try one of the more highly addictive drugs such as heroin or crack cocaine (2).

More youth are also using prescription drugs to get high because they mistakenly view them as safer than illegal drugs. In the US, youth ages 12 to 17 have the second highest annual rate of prescription drug abuse, and young adults, ages 18 to 25, have the highest (3). In 2007, one of every nine young persons in the US was provided with prescriptions for some of the same types of medication such as pain killers, sedatives, and stimulants like Ritalin that are being abused (4).

Alcohol remains the most widely used drug among youth in the US. According to the 2009 National Survey on Drug Use and Health, 4.6% of youth ages 12 to 17 met the criteria for alcohol dependence or alcohol abuse in 2009. (1) Although youth, like adults, abuse alcohol, their drinking behavior is different than that of adults. Youth are more likely to abuse alcohol by binge drinking (i.e., drinking five or more alcoholic drinks in one sitting) (5). While approximately 50% of the alcohol consumed by adults occurs while binge drinking, 90% of the alcohol consumed by youth occurs while binge drinking (6).

The immediate effects of alcohol misuse/abuse due to binge drinking include:

- Unintentional injuries, especially injuries emanating from motor vehicle accidents. Drinking while driving is a large problem among youth and the cause of serious and potentially life threatening problems for adolescents and young adults. During 2002-2004, there was an average of 230,000 alcohol-related ED visits among underage youth (7).
- Violence, including intimate partner violence and sexual assault.
- Risky sexual behaviors, especially unprotected sex.   Such behaviors can result in unintended pregnancy and sexually transmitted diseases.
- Alcohol poisoning, which is the result of high blood alcohol levels and can cause, among other conditions, unconsciousness, coma, or death.

The Youth Drug and Alcohol Use section that follows provides a snapshot of illicit drug use and drinking behaviors among Boston public high school students. Patterns of treatment in hospital emergency rooms and in hospitals as an inpatient are also included. Data are provided by age, gender, race/ethnicity, and other demographics, where possible, to further provide an understanding of drug and alcohol use among Boston youth.

Figure 1.1 Perception of Drug Use Being a Problem Among Youths by Neighborhood, 2008
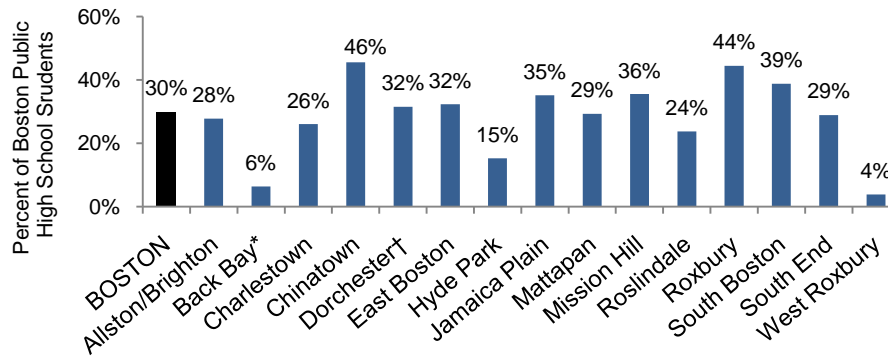

* Includes Beacon Hill, Downtown, North End, and West End
† North and South Dorchester combined
DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

Close to one in three Boston high school students reported that drug use was a problem within their neighborhood.
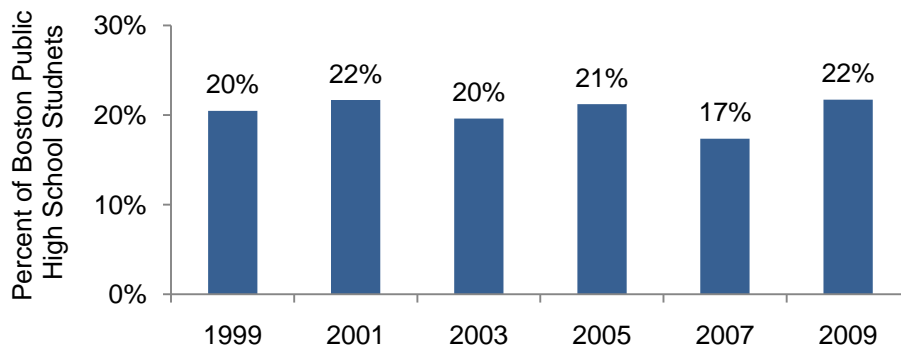
Figure 1.2 Lifetime Marijuana Use, 1999, 2001, 2003, 2005, 2007 and 2009
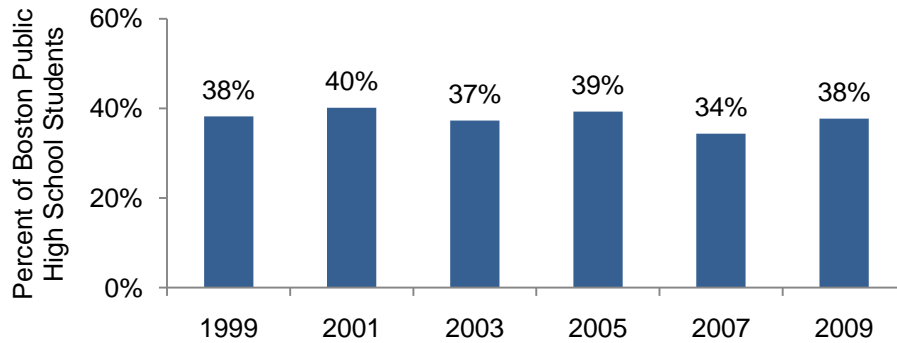
DATA SOURCE: Youth Risk Behavior Survey 1999, 2001, 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

The level of Boston public high school students who reported ever having used marijuana remained relatively consistent across all data years shown with more than one in three students reporting use during their lifetime. There were no significant differences in reported lifetime marijuana use across years.
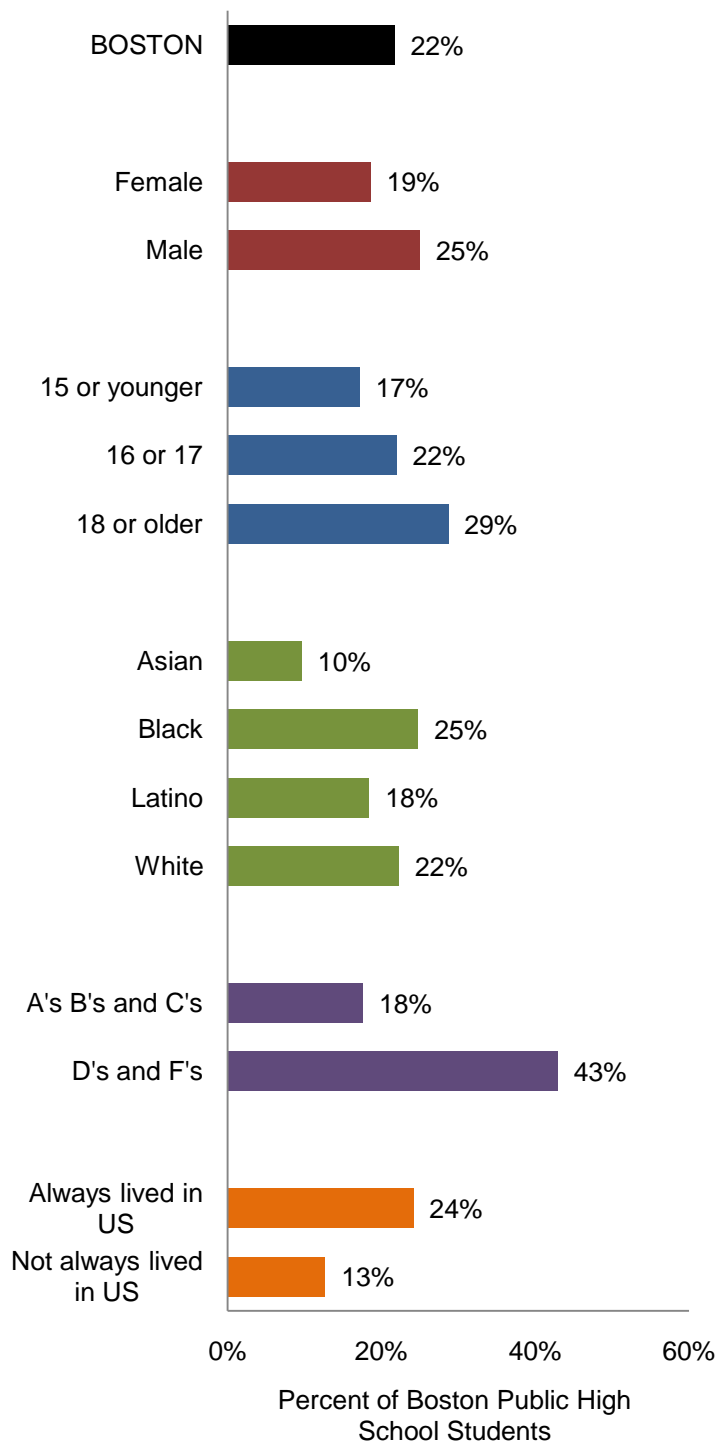
Figure 1.3 Past Month Marijuana Use, 1999, 2001, 2003, 2005, 2007 and 2009

DATA SOURCE: Youth Risk Behavior Survey 1999, 2001, 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Recent marijuana use remained relatively consistent across all years shown with about one in five Boston public high school students reporting past month use. There were no significant differences in reported past month marijuana use across years.

Figure 1.4 Past Month Marijuana Use by Selected Indicators, 2009

Indicator	Percent
BOSTON	22%
Female	19%
Male	25%
15 or younger	17%
16 or 17	22%
18 or older	29%
Asian	10%
Black	25%
Latino	18%
White	22%
A's B's and C's	18%
D's and F's	43%
Always lived in US	24%
Not always lived in US	13%

Percent of Boston Public High School Students

In 2009, 22% of Boston public high school students reported using marijuana in the past month.

The percentage of male students who reported using marijuana in the past month was statistically similar to that of female students.

Across age groups, the percentage of students who reported using marijuana in the past month was statistically similar.
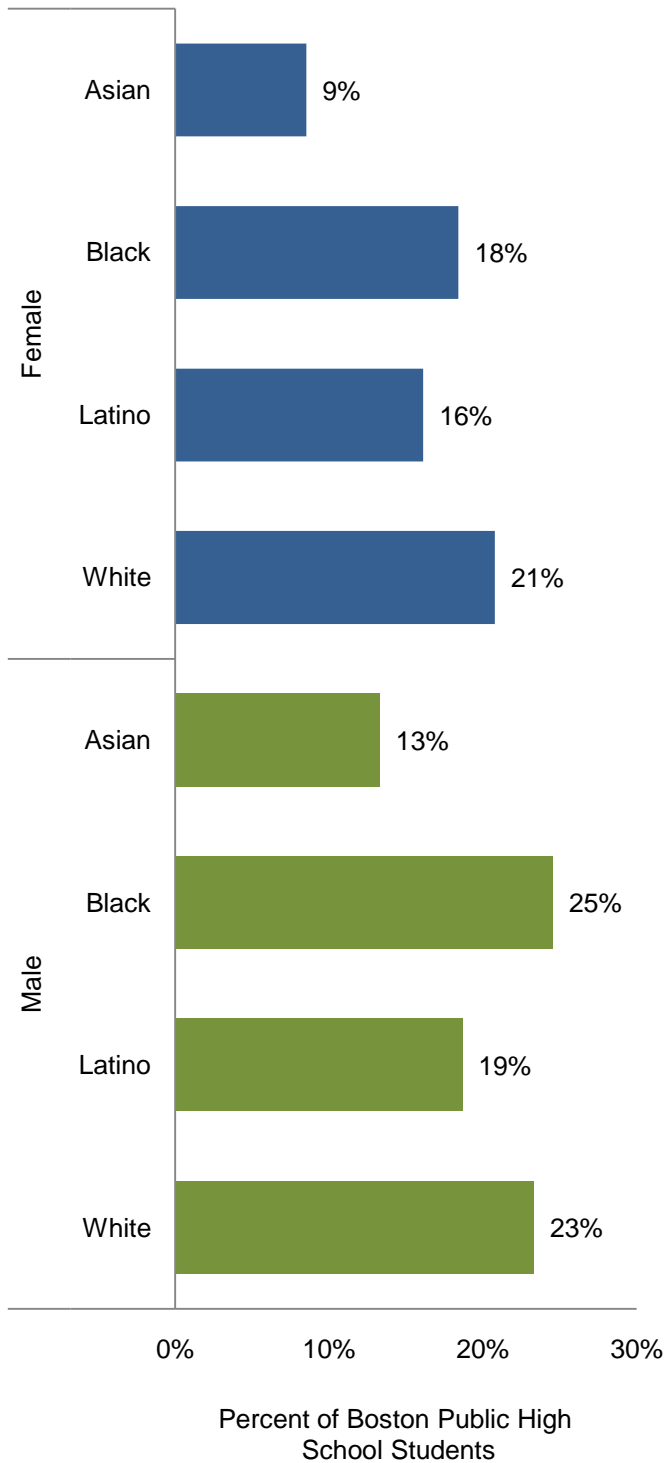
A lower percentage of Asian students reported using marijuana in the past month compared to Black and White students.

A higher percentage of students receiving mostly D's and F's in school reported past month marijuana use compared to students receiving mostly A's, B's and C's

A lower percentage of students who have not always lived in the US used marijuana in the past month compared to students who have always lived in the US.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Figure 1.5 Past Month Marijuana Use by Race/Ethnicity and Gender, 2007 and 2009 Combined

A lower percentage of Asian female high school students reported using marijuana in the past month compared to Black and White female high school students. A lower percentage of male Asian high school students reported using marijuana in the past month compared to Black male high school students. There were no other gender-specific significant differences in past month marijuana use among the remaining groups of students.

DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Please see the end of this report for **Notes and Data Analysis**.

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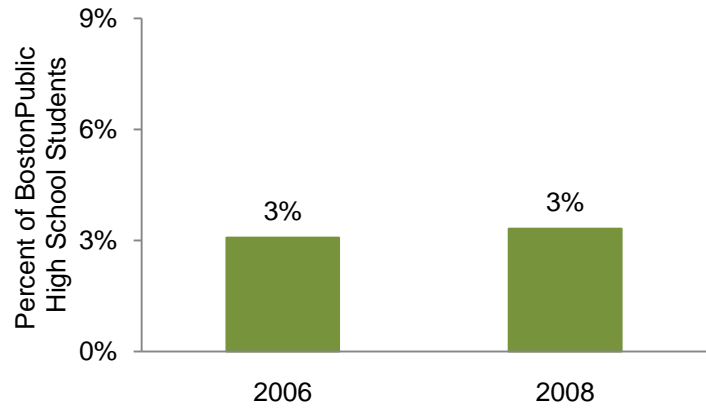**Figure 1.6 Select Risky Behaviors by Past Month Marijuana Use, 2009**
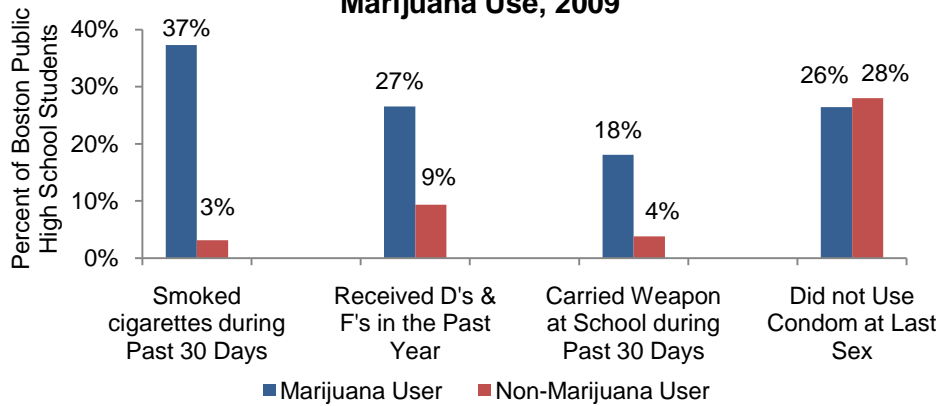
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Many health risk behaviors are associated with marijuana use. Compared to students who didn't use marijuana, higher percentages of past month marijuana users also reported smoking cigarettes during the past month, receiving mostly D's and F's during the past year and carrying a weapon on school property during the past month. There was no significant difference in reported condom use during last sexual intercourse among sexually active marijuana users and non-marijuana users.
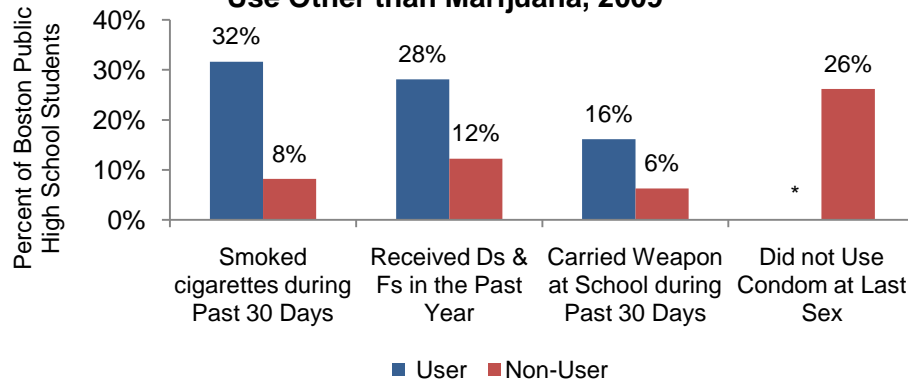
In both 2006 and 2008, only 3% of Boston public high school students reported past month other illegal drug use (excluding marijuana).

Figure 1.7 Past Month Illegal Drug Use Other Than Marijuana, 2006 and 2008

DATA SOURCE: Boston Youth Survey, 2006 and 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

Figure 1.8 Selected Risky Behaviors by Illegal Drug Use Other than Marijuana, 2009

Percent of Boston Public High School Students

- Smoked cigarettes during Past 30 Days: User 32%, Non-User 8%
- Received Ds & Fs in the Past Year: User 28%, Non-User 12%
- Carried Weapon at School during Past 30 Days: User 16%, Non-User 6%
- Did not Use Condom at Last Sex: User *, Non-User 26%

■ User   ■ Non-User

* Insufficient sample size for users
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

In 2009, 10% of Boston public high school students reported having used illegal drugs other than marijuana during their lifetime (data not shown). A higher percentage of students who had used illegal drugs other than marijuana also reported smoking cigarettes during the past month and receiving poor grades in comparison to students who hadn't used other drugs. The percentage of students who reported carrying a weapon at school during the past month was statistically similar between those who had used other illegal drugs and those who hadn't.
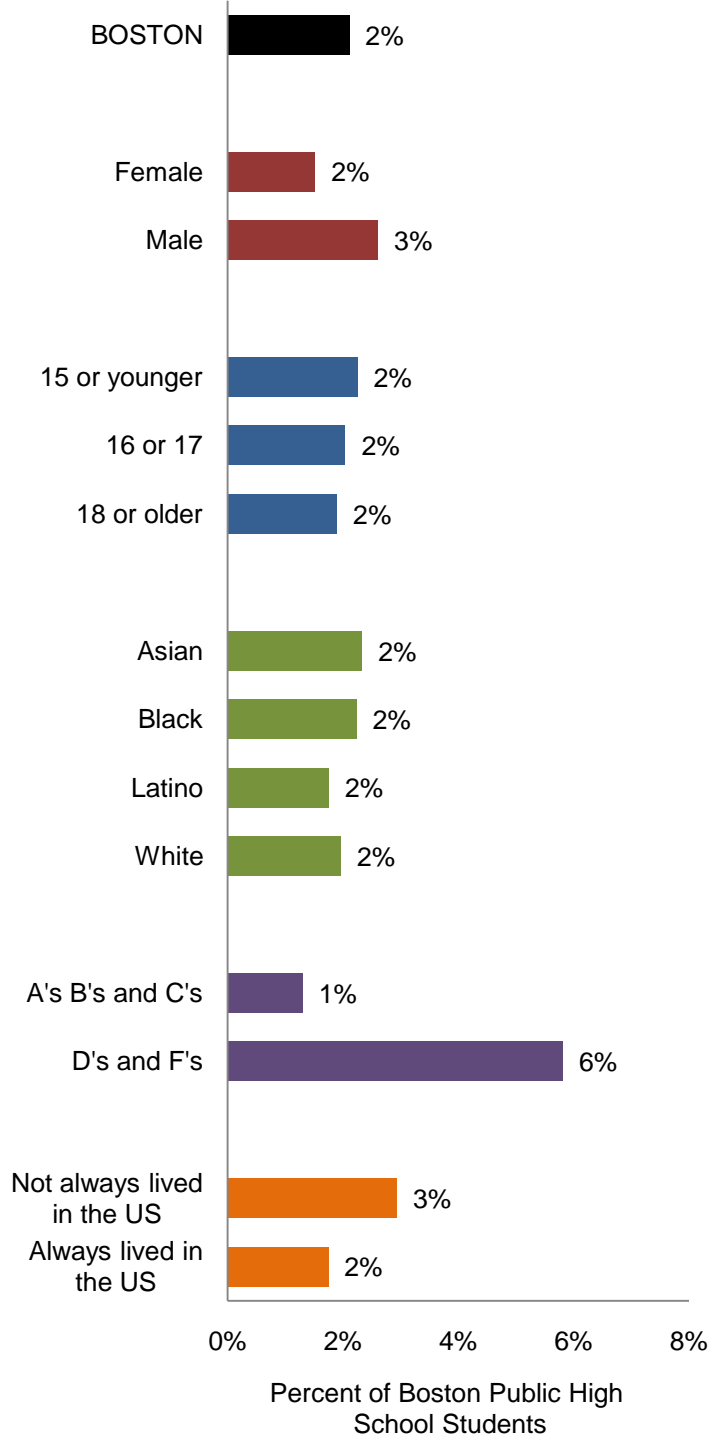
Figure 1.9 Lifetime Heroin Use, 1999, 2001, 2003, 2005, 2007, 2009
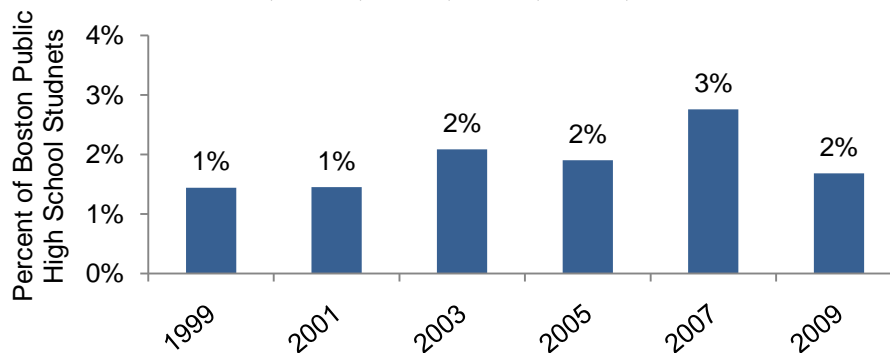
Percent of Boston Public High School Studnets

- 1999: 1%
- 2001: 1%
- 2003: 2%
- 2005: 2%
- 2007: 3%
- 2009: 2%

DATA SOURCE: Youth Risk Behavior Survey 1999, 2001, 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Between 1% and 3% of Boston public high school students reported ever using heroin. The percentage reporting heroin use was statistically similar across the years shown.

Figure 1.10 Lifetime Heroin Use by Selected Indicators, 2003, 2005, 2007 and 2009 Combined

BOSTON — 2%

Female — 2%
Male — 3%

15 or younger — 2%
16 or 17 — 2%
18 or older — 2%

Asian — 2%
Black — 2%
Latino — 2%
White — 2%

A's B's and C's — 1%
D's and F's — 6%

Not always lived in the US — 3%
Always lived in the US — 2%
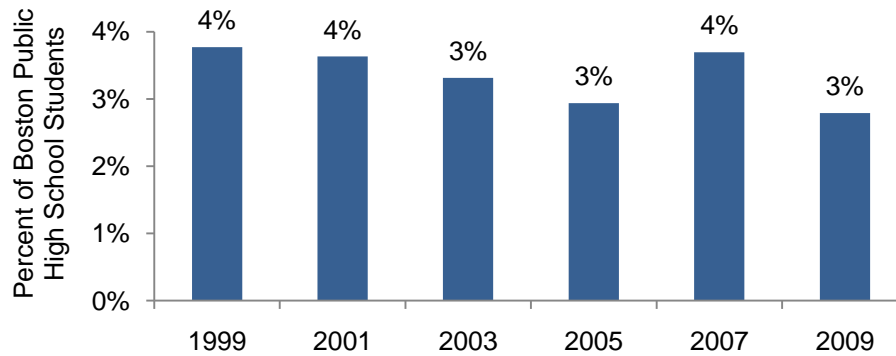
Percent of Boston Public High School Students

During the combined years of 2003, 2005, 2007, and 2009, 2% of Boston public high school students reported ever having used heroin.

A higher percentage of students who received mostly D's and F's reported having used heroin compared to students who received mostly A's, B's and C's.

There were no significant differences in reported heroin use by gender, race/ethnicity, age, or years living in the US.

DATA SOURCE: Youth Risk Behavior Survey 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

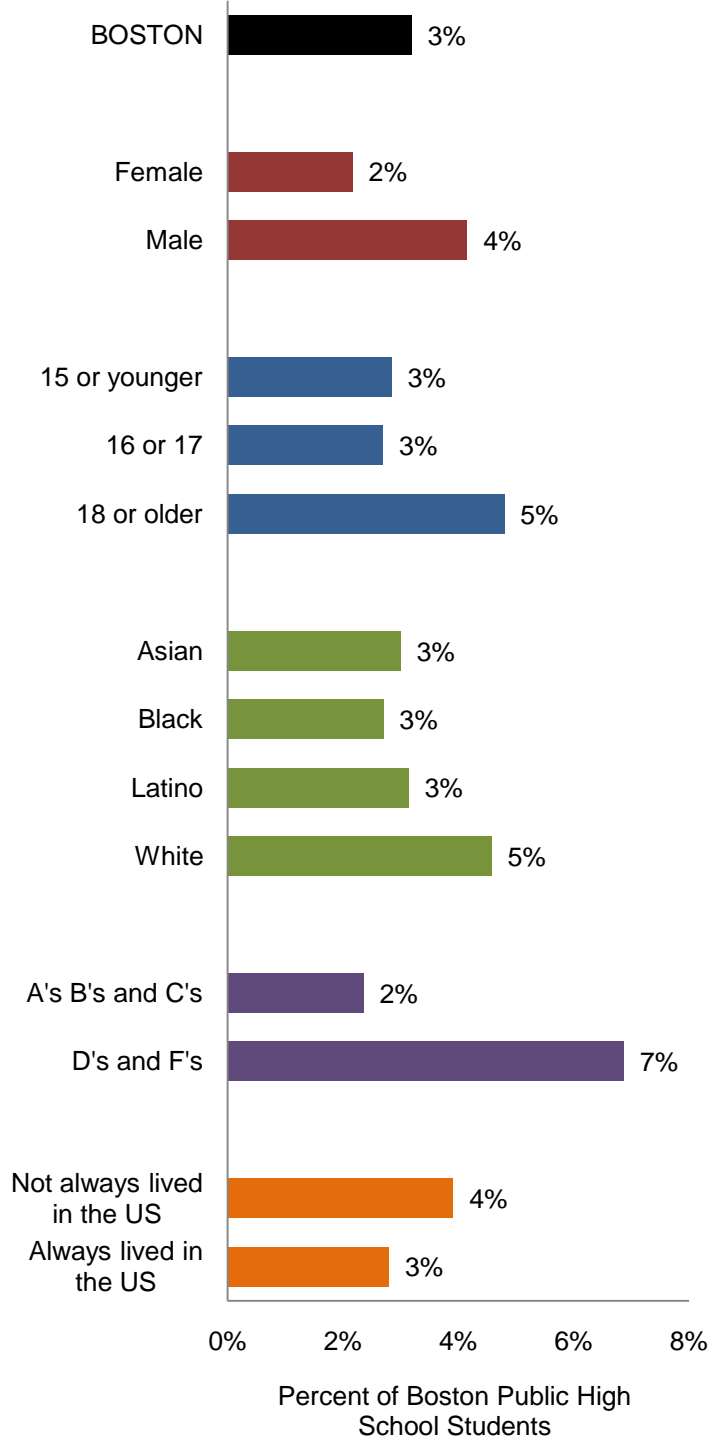Please see the end of this report for **Notes and Data Analysis**.

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**Figure 1.11 Lifetime Cocaine Use,
1999, 2001, 2003, 2005, 2007 and 2009**

DATA SOURCE: Youth Risk Behavior Survey 1999, 2001, 2003, 2005, 2007, 2009, Youth Risk
Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Lifetime cocaine use remained consistent across all years with 3% to 4% of Boston public
high school students reporting use. There were no significant differences in reported lifetime
cocaine use across years.

Figure 1.12 Lifetime Cocaine Use by Selected Indicators, 2003, 2005, 2007 and 2009 Combined
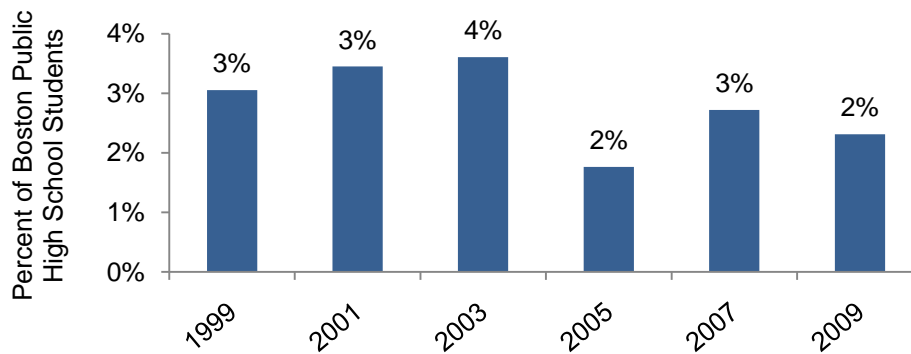

During the combined years of 2003, 2005, 2007, and 2009, 3% of Boston public high school students reported ever having used cocaine.

A higher percentage of students who received mostly D's and F's in school reported having used cocaine compared to students who received mostly A's, B's, and C's.

There were no significant differences in reported lifetime cocaine use by gender, age, race/ethnicity, and years living in the US.

DATA SOURCE: Youth Risk Behavior Survey 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Please see the end of this report for **Notes and Data Analysis**.

**Figure 1.13 Lifetime Methamphetamine Use,
1999, 2001, 2003, 2005, 2007, and 2009**

DATA SOURCE: Youth Risk Behavior Survey 1999, 2001, 2003, 2005, 2007, 2009, Youth Risk
Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Lifetime methamphetamine use remained fairly consistent across all data years with 2% to
4% of Boston public high school students reporting ever having used. There were no
significant differences in reported lifetime methamphetamine use across years.

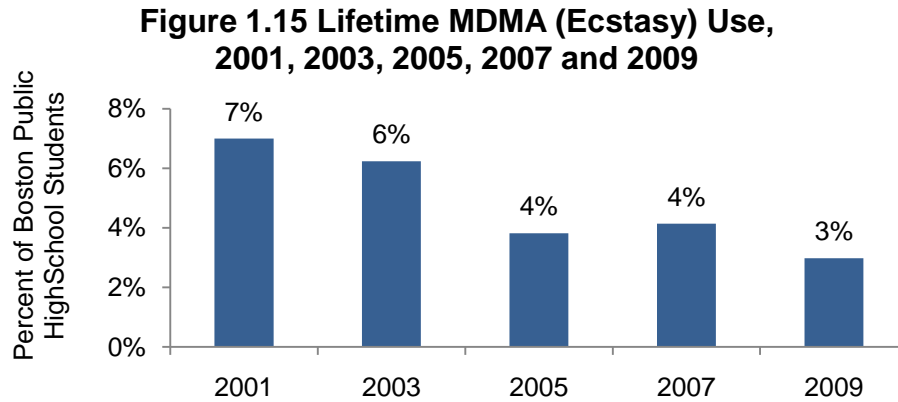## Figure 1.14 Lifetime Methamphetamine Use by Selected Indicators, 2003, 2005, 2007 and 2009 Combined
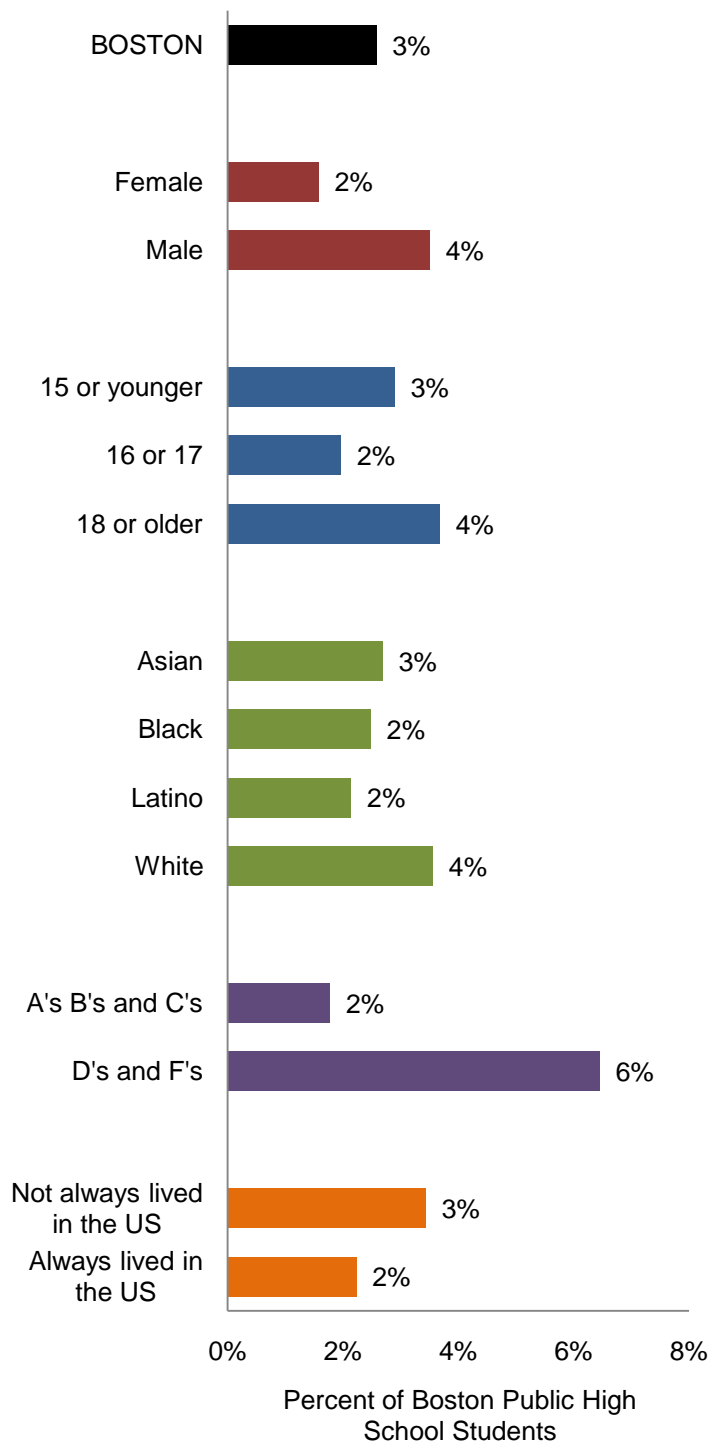
During the combined years of 2003, 2005, 2007, and 2009, 3% of Boston public high school students reported ever having used methamphetamine.

A higher percentage of students who received mostly D's and F's in school used methamphetamine compared to students who received mostly A's, B's, and C's.

There were no significant differences in reported lifetime methamphetamine use by gender, age, race/ethnicity, and years living in the US.

DATA SOURCE: Youth Risk Behavior Survey 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

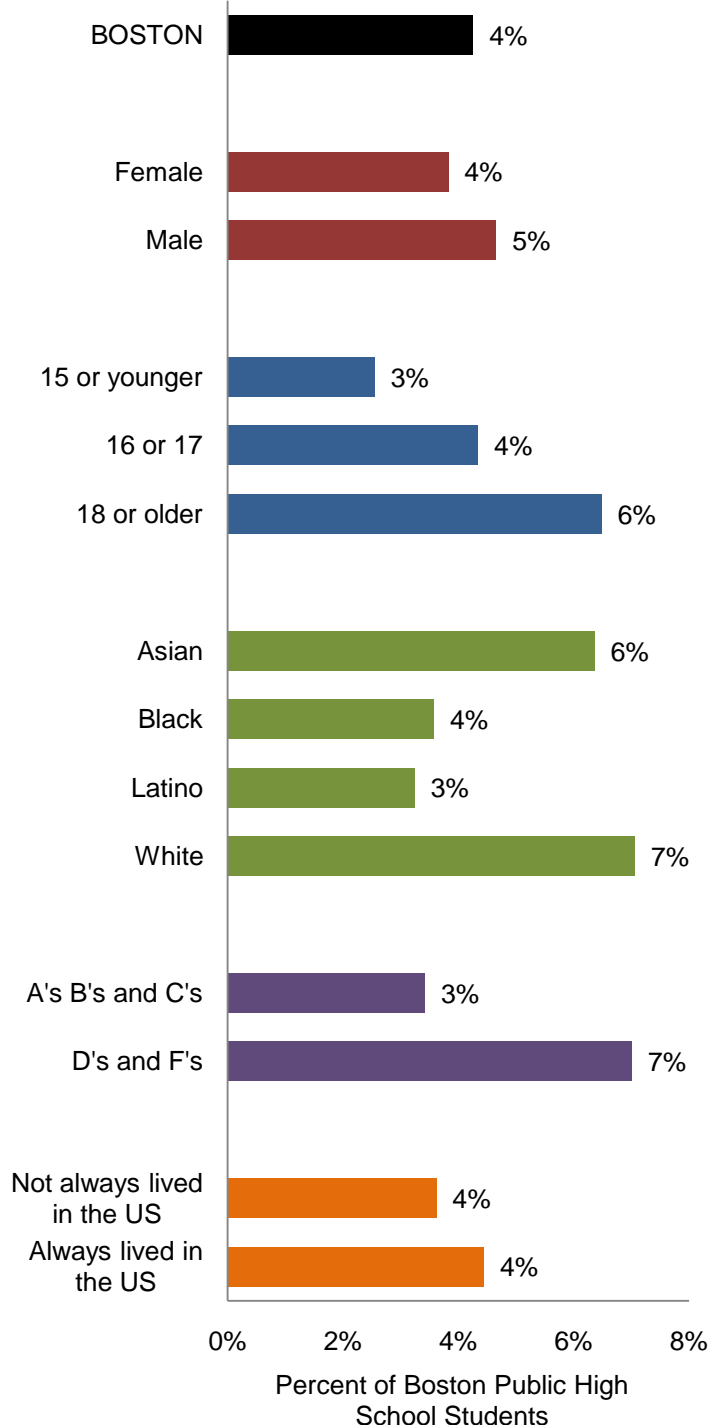**Figure 1.15 Lifetime MDMA (Ecstasy) Use, 2001, 2003, 2005, 2007 and 2009**

DATA SOURCE: Youth Risk Behavior Survey 2001, 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

The percentage of Boston high school students who reported ever having used ecstasy decreased significantly from 7% in 2001 to 3% in 2009.

Figure 1.16 Lifetime MDMA (Ecstasy) Use by Selected Indicators, 2003, 2005, 2007 and 2009 Combined

Indicator	Percent
BOSTON	4%
Female	4%
Male	5%
15 or younger	3%
16 or 17	4%
18 or older	6%
Asian	6%
Black	4%
Latino	3%
White	7%
A's B's and C's	3%
D's and F's	7%
Not always lived in the US	4%
Always lived in the US	4%

Percent of Boston Public High School Students

During the combined years of 2003, 2005, 2007, and 2009, 4% of Boston public high school students reported ever having used MDMA (ecstasy).

A higher percentage of students ages 18 years or older reported having used ecstasy compared to students ages 15 years or younger.

Also, a higher percentage of students who received mostly D's and F's in the past year reported having used ecstasy compared to students who received mostly A's, B's, and C's.

A lower percentage of Latino students have used ecstasy compared to Asian and White students.

There were no significant differences in reported lifetime ecstasy use by gender and years living in the US.

DATA SOURCE: Youth Risk Behavior Survey 2003, 2005, 2007, 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

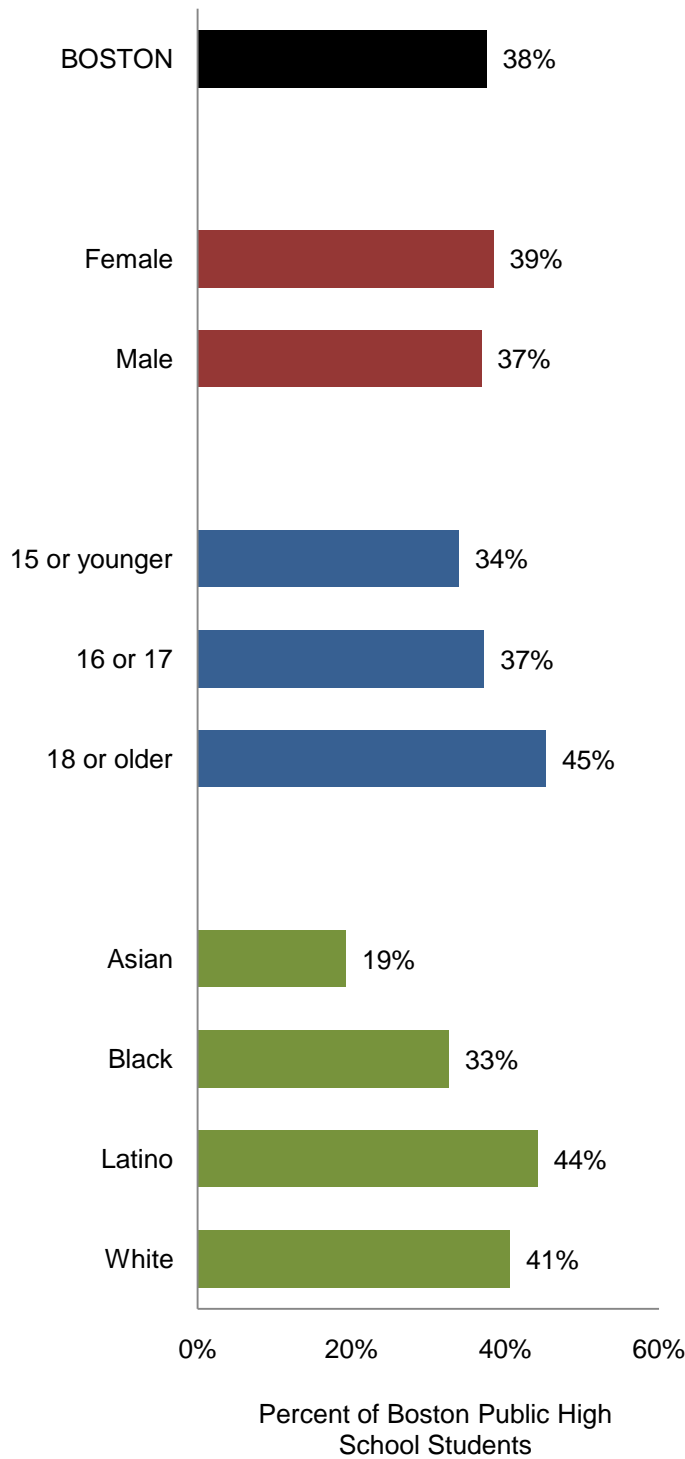**Figure 1.17 Lifetime Alcohol Use by Selected Indicators, 2009**
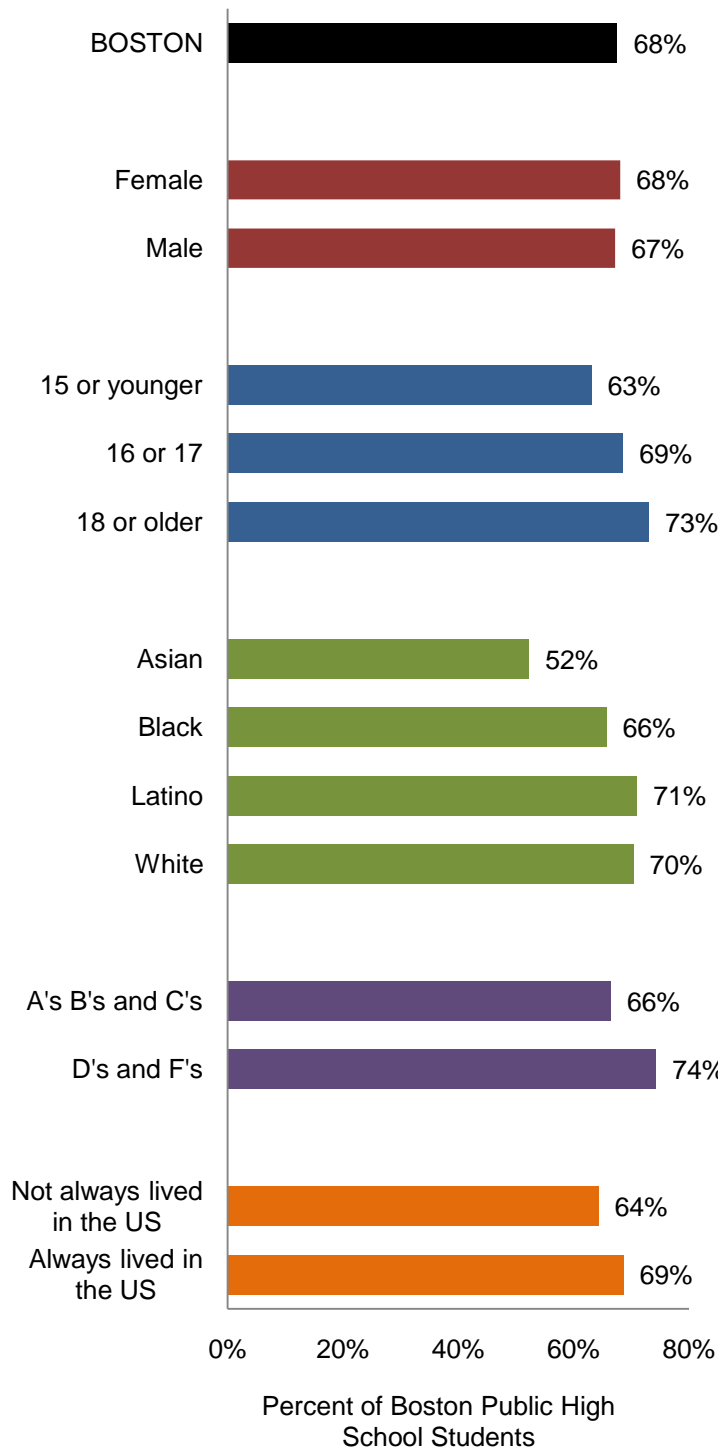
In 2009, nearly seven in ten Boston public high school students reported ever drinking alcohol.

A lower percentage of Asian students than Latino students reported ever drinking alcohol.

There were no other significant differences in reported lifetime alcohol use by race/ethnicity and no significant differences by gender, age, grades received, or years living in the US.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Figure 1.18 Past Month Alcohol Use by Selected Indicators, 2009

In 2009, approximately four in ten Boston public high school students reported drinking alcohol within the past month.

There were no significant differences in reported past month alcohol use by gender or age.

A lower percentage of Asian students compared to Latino and White students reported past month alcohol use.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Please see the end of this report for **Notes and Data Analysis**.

Figure 1.19 Past Month Binge Drinking by Selected Indicators, 2009
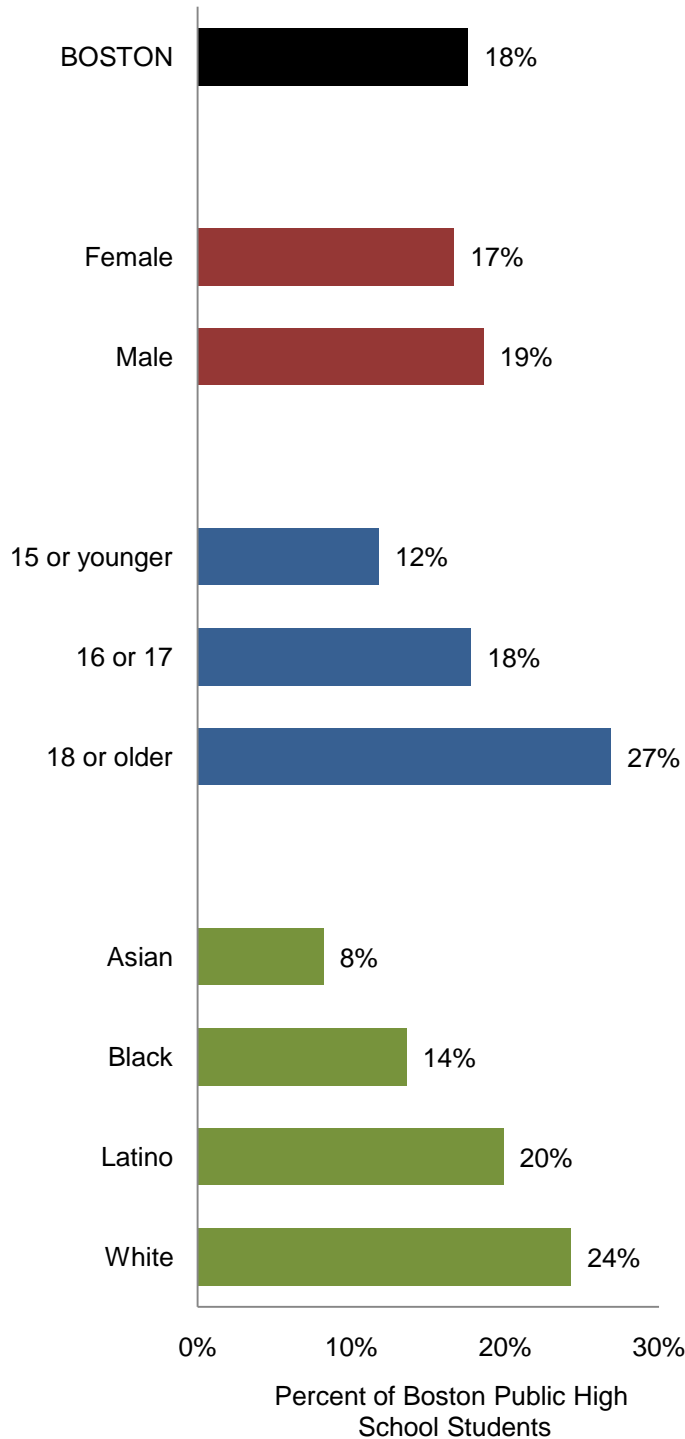
In 2009, nearly one in five Boston public high school students reported binge drinking (drinking five or more alcoholic drinks within a couple of hours) during the past month.

There was no significant difference in binge drinking between males and females.

A higher percentage of students ages 18 or older reported binge drinking compared to students ages 15 or younger.

A lower percentage of Asian students reported binge drinking than White and Latino students.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

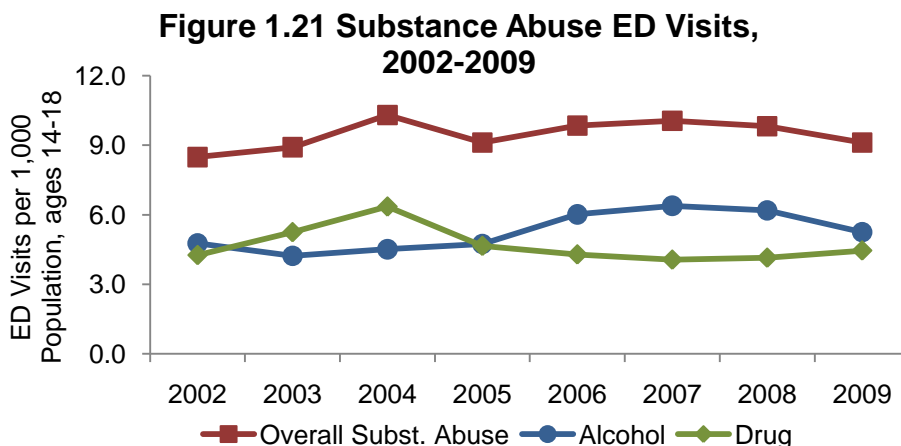**Figure 1.20 Selected Risky Behaviors by Binge Drinking Status, 2009**

Percent of Boston Public High School Students

- Smoked cigarettes during Past 30 Days: Binge Drinker 33%, Non-Binge Drinker 5%
- Received Ds & Fs in the Past Year: Binge Drinker 23%, Non-Binge Drinker 11%
- Carried Weapon at School during Past 30 Days: Binge Drinker 16%, Non-Binge Drinker 5%
- Did not Use Condom at Last Sex: Binge Drinker 30%, Non-Binge Drinker 25%

■ Binge Drinker ■ Non-Binge Drinker
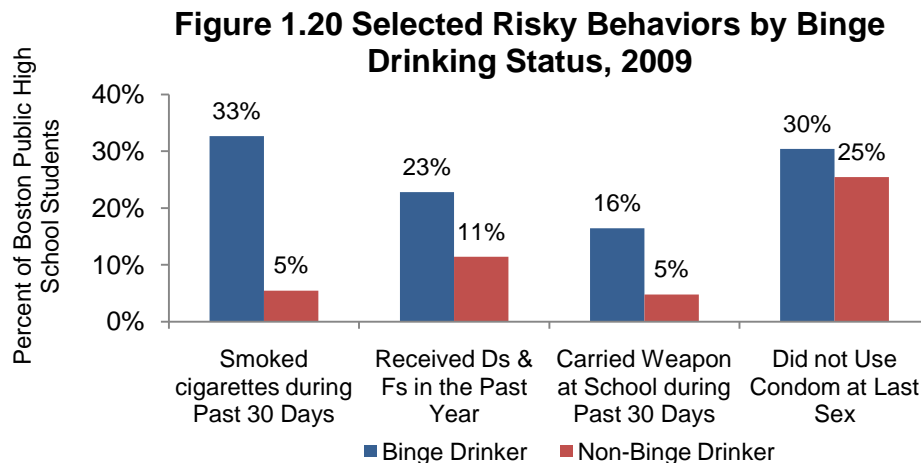
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

In 2009, a higher percentage of students who had reported binge drinking during the past month also reported smoking cigarettes, receiving poor grades and carrying a weapon at school during the past 30 days compared to students who hadn't binged. There was no significant difference in the use of condoms during last sex by binge drinking status.

Figure 1.21 Substance Abuse ED Visits, 2002-2009

ED Visits per 1,000 Population, ages 14-18

■ Overall Subst. Abuse ● Alcohol ◆ Drug

DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

The substance abuse rates (including drug and alcohol) of ED visits for youths ages 14 to18 have remained fairly stable from 2002 to 2009. Between 2002 and 2004, the rate of substance abuse ED visits (drug and/or alcohol visits) for Boston youths ages 14 to18 increased 21%, resulting in the highest level during the period shown. Similarly, the drug abuse ED visits rate peaked in 2004. The highest level of alcohol abuse ED visits occurred in 2007, having increased 33% from 2002 to 2007.
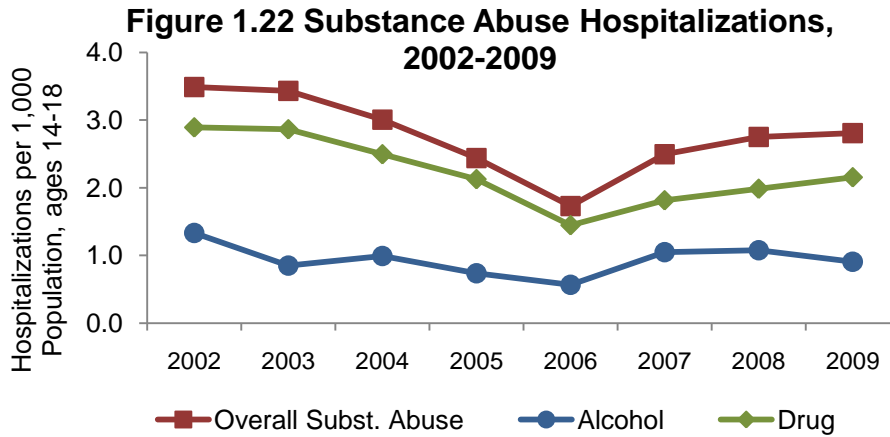
Please see the end of this report for **Notes and Data Analysis**.

Figure 1.22 Substance Abuse Hospitalizations, 2002-2009

DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

The rate of substance abuse hospitalizations for Boston youths ages 14 to 18 decreased from 3.1 per 1,000 population in 2002 to 1.7 in 2006 then increased to 2.8 by 2009. During this period, the rate of alcohol hospitalizations was consistently lower than the rate of drug hospitalizations.

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Overall Drug Abuse

Substance abuse (illicit drug use, nonmedical use of prescription drugs, abuse of over-the-counter medication, and abuse of alcohol) continues to be a major health problem among adults in the U.S and is projected to double from almost 3 million adults with substance abuse disorders during 2002-2006 to nearly 6 million by 2020 (1).

Substance abuse varies by race/ethnicity, age, gender, education, employment status and other sociodemographic characteristics.   For example, among adults in the US, a higher percentage of current (past month) substance abuse is reported by American Indians and Native Alaskans and Black Americans than by other races/ethnicities (2).

In 2009 in the US, 7.1 million adults ages 18 to 25 and 12.2 million adults ages 26 and over reported being current drugs users. Among adults ages 18 to 25, 18% reported marijuana as the major drug of current use followed by non-medical use of prescription drugs. About 2% reported current use of hallucinogens and less than 2% reported current use of cocaine (1).   However, illicit drug use is not just a problem among young adults. During 2006-2008, an estimated 4.3 million adults ages 50 or over reported having used an illicit drug in the past year. Marijuana was reported as the most frequent illicit drug used in the past year followed by nonmedical use of prescription drugs (3).

Among adults in the US, rising rates of non-medical use of prescription drugs (especially narcotic pain relievers) is a major cause of concern. Between 1998 and 2008, non-medical use of narcotic pain relievers increased by 400% (4).

A higher percentage of non-medical use of prescription drugs is reported for adults ages 18 to 25 than for any other adult age group (5).

Polydrug abuse (use of multiple drugs) is common among individuals engaged in non-medical use of prescription drugs. Polydrug abuse occurs when nonmedical use of prescription or illicit drugs are used in combination. Often alcohol is used with one or more drugs (6). Such mixing of substances can produce lethal consequences requiring immediate emergency treatment and at times, can result in death to the user.

The Overall Drug and Alcohol Abuse section of this report provides some insight into the types and extent of substances that are misused and abused among the Boston population. Included here are overall drug and alcohol indicators as well as drug-specific indicators that present the types and extent of drugs commonly used, alcohol drinking behavior, some negative consequences of substance abuse including hospital emergency room visits and inpatient stays, substance abuse treatment admissions, and drug and alcohol mortality. Such data will assist in further development and implementation of initiatives to address and reduce the substance abuse problem among Boston residents.
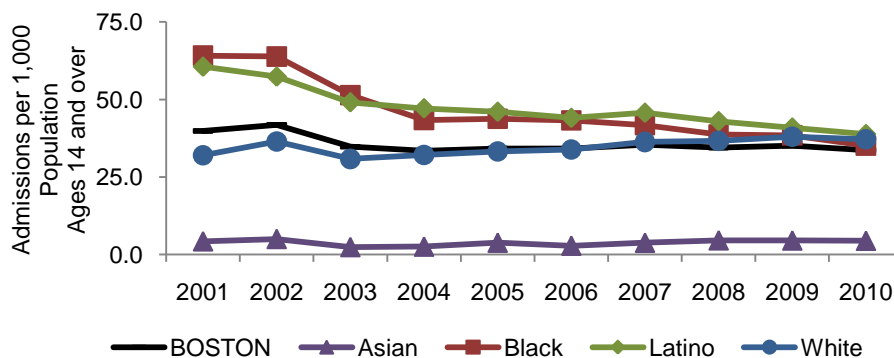
Figure 2.1 Substance Abuse Treatment Admissions, 2001-2010
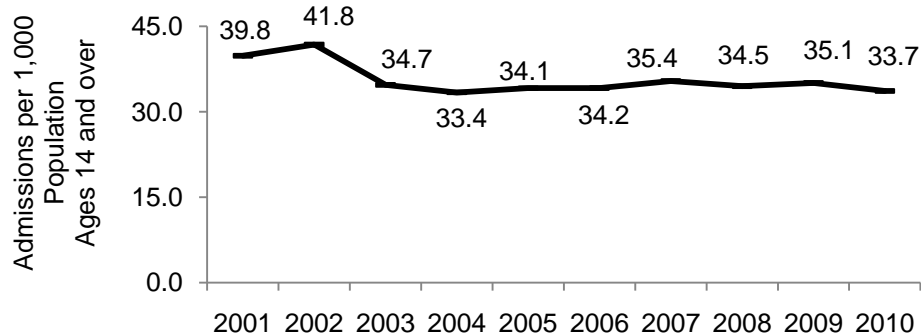
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse Finance and Policy

From 2002 to 2004, the rate of substance abuse treatment admissions for Boston residents decreased 20%. From 2003 to 2010, the rate of substance abuse treatment admissions for Boston residents remained relatively stable, ranging between 33.4 and 35.4 admissions per 1,000 population.
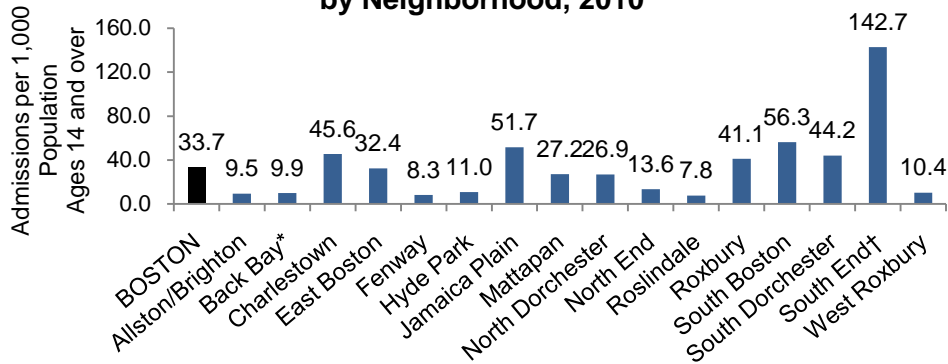
Figure 2.2 Substance Abuse Treatment Admissions by Race/Ethnicity, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Among Boston residents ages 14 years and over, Black and Latino residents had the highest overall rates of substance abuse treatment admissions compared to Asian and White residents in 2001. However from 2001 to 2010, the rate for Black residents declined 45% and the rate for Latino residents declined 36%. By 2010, the rates for Black, Latino and White residents were similar while the rate for Asian residents remained much lower than the others.

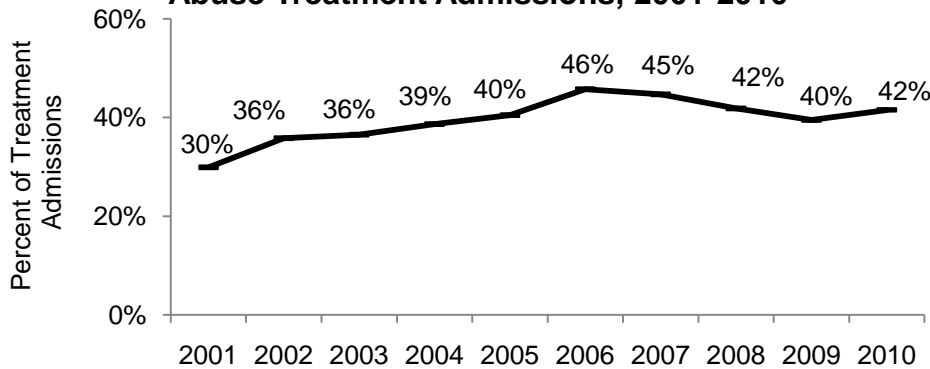### Figure 2.3 Substance Abuse Treatment Admissions by Neighborhood, 2010

* Back Bay includes Beacon Hill and the West End
† South End includes Chinatown
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

In Boston, substance abuse treatment admission rate varies by neighborhood. In 2010, six neighborhoods had a treatment admissions rate higher than the overall Boston rate: Charlestown, Jamaica Plain, Roxbury, South Boston, South Dorchester and the South End. The South End rate was more than four times the overall Boston rate. This high rate in the South End reflects the high rate of admission to treatment facilities by homeless residents who reside at the shelters in the South End.

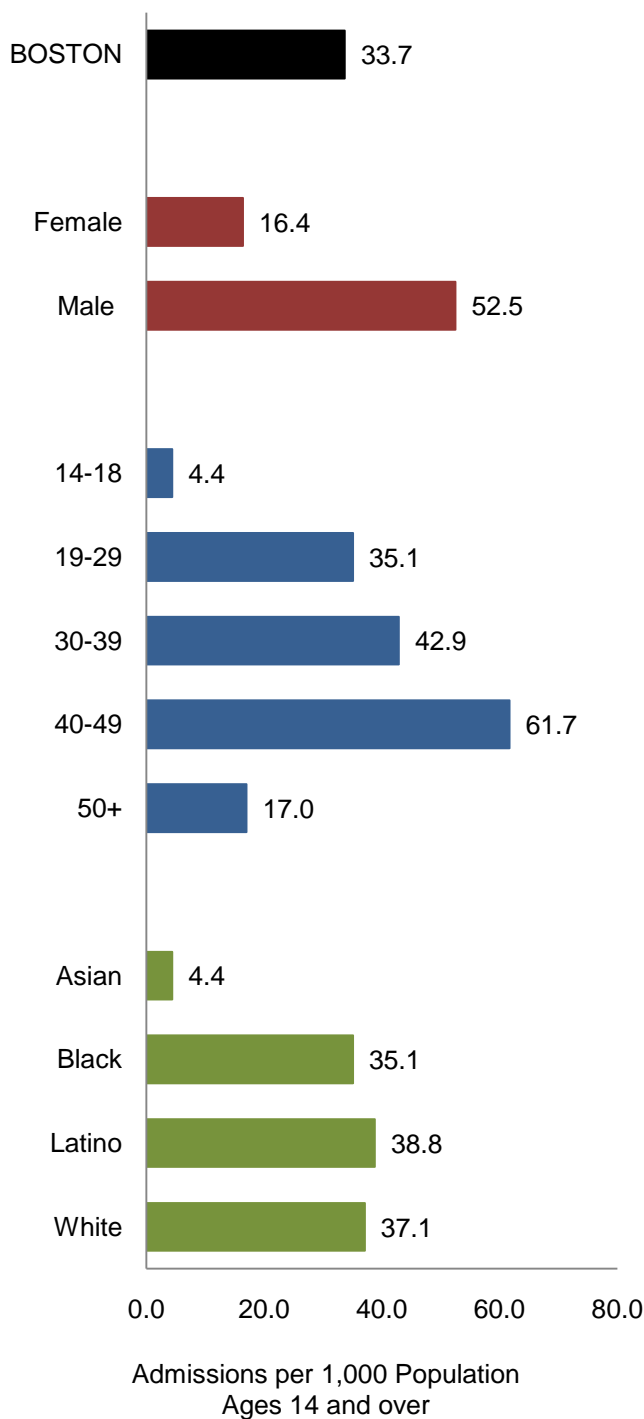### Figure 2.4 Homelessness Among Substance Abuse Treatment Admissions, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

From 2001 to 2006, the percentage of substance abuse treatment admissions of homeless clients increased 53% (from 30% to 46%).

In 2006, nearly half of all admissions were of homeless clients. By 2010, the percentage of homeless client admissions had decreased to 42%.

Figure 2.5 Substance Abuse Treatment Admissions by Selected Indicators, 2010

Admissions per 1,000 Population
Ages 14 and over

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Among Boston residents, substance abuse treatment admissions varied substantially by gender, age and race/ethnicity.

In 2010, the substance abuse treatment admissions rate for Boston overall was 33.7 admissions per 1,000 population.

The rate for males was more than three times the rate for females.

In general, admissions rates increased with age until ages 50 and older. Adults ages 40 to 49 had the highest treatment admissions rate among all age groups.

Treatment admissions rates for Black, Latino and White residents were similar. All three were approximately eight to nine times the rate for Asian residents.

In 2010, the majority of all treatment admissions cited heroin as the primary drug of abuse.

Though one-third of admissions cited alcohol as the primary drug, one-half of all admissions cited alcohol as either primary, secondary or a tertiary drug of abuse.

While only 5% of admissions cited cocaine (including crack) as the primary drug, nearly five times as many additional admissions cited cocaine as either the secondary or a tertiary drug of abuse.

Of all admissions, 14% cited marijuana and 10% cited other (non-heroin) opioids as either primary, secondary or tertiary drugs of abuse.

Figure 2.6 Substance Abuse Treatment Admissions by Primary Drug, Secondary/Tertiary Drug, 2010
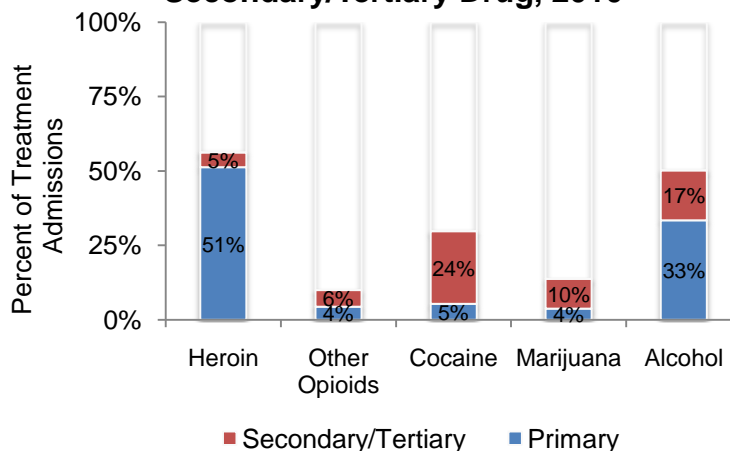
DATA SOURCE: MassachusettsDepartment of Public Health, Bureau of Substance Abuse

Figure 2.7 Substance Abuse ED Visits 2002-2009

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health
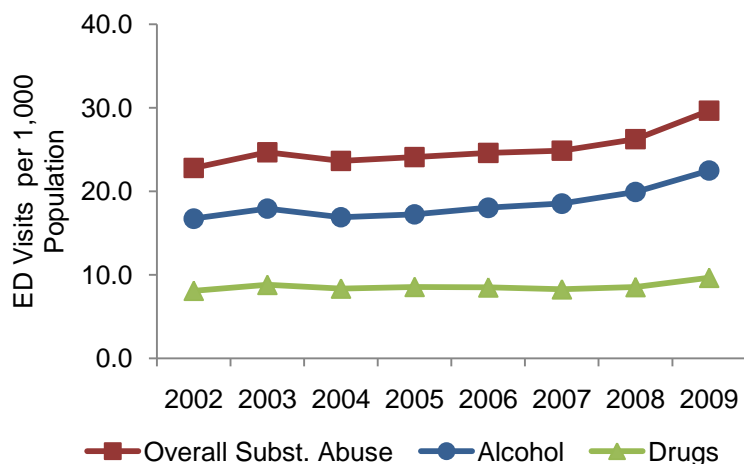
The overall substance abuse ED visit rate for Boston residents increased 30% from 22.8 (visits per 1,000 population) in 2002 to 29.7 in 2009. ED visit rates for both alcohol and drugs increased during these years as well. Between 2002 and 2009, the alcohol abuse ED visit rate increased 35% and the drug abuse rate increased 19%.

Please see the end of this section for **Notes and Data Analysis**.

The overall substance abuse hospitalization rate remained relatively stable between 2002 and 2009. From 2002 to 2007, the rate increased 12% then from 2007 to 2009 decreased by 10% back to the previous 2002 level. The alcohol and drug abuse hospitalization rates followed a similar pattern as the overall substance abuse rate.

Figure 2.8 Substance Abuse Hospitalizations, 2002-2009
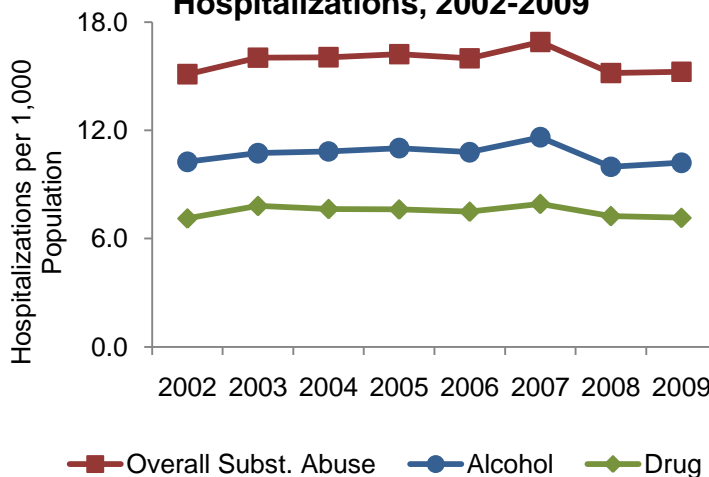
DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care

Figure 2.9 Substance Abuse Mortality, 2000-2008

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health
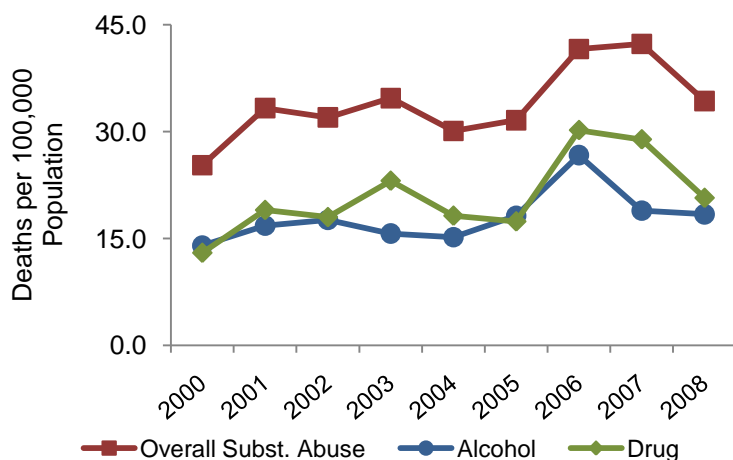
The age-adjusted substance abuse mortality rate increased 67% from 2000 to 2007 then decreased 19% from 2007 to 2008. This decline appears more attributable to a decrease in the number of drug abuse deaths as opposed to alcohol abuse deaths.

Both the alcohol abuse and drug-abuse mortality rates peaked in 2006 then from 2006 to 2008 decreased 31% and 46%, respectively.

Please see the end of this section for **Notes and Data Analysis**.

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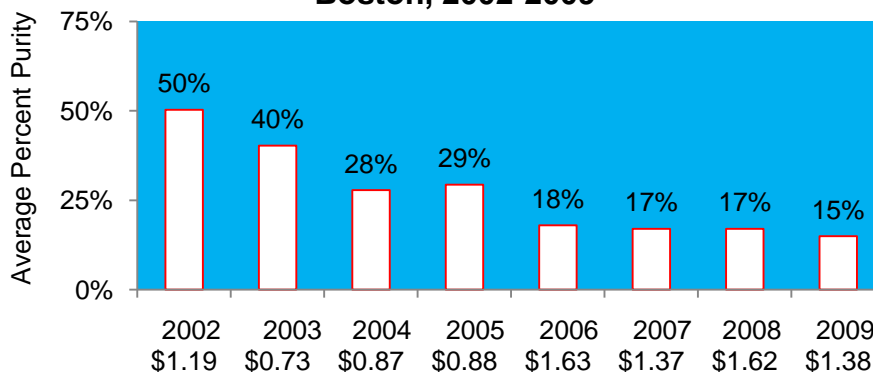
Heroin

Heroin is an opiate drug that is synthesized from morphine, a naturally occurring substance extracted from the seed pod of the Asian opium poppy plant. As such, heroin is considered a semi-synthetic opioid. Heroin usually appears as a white or brown powder or as a black sticky substance known as "black tar heroin." Heroin can be injected, snorted/sniffed, or smoked—routes of administration that rapidly deliver the drug to the brain. All three methods can lead to addiction and other severe health problems (1).

A range of treatment options exist for heroin addiction, including medications and behavioral therapies. Treatment usually begins with medically assisted detoxification to help patients withdraw from the drug safely. Medications such as clonidine and buprenorphine can be used to help minimize symptoms of withdrawal. However, detoxification alone has not been shown to be effective in preventing relapse. In order to help prevent relapse drugs such as methadone, buprenorphine and naltrexone are often used in addition to cognitive behavioral therapies which promote techniques that support drug independence (1, 2).
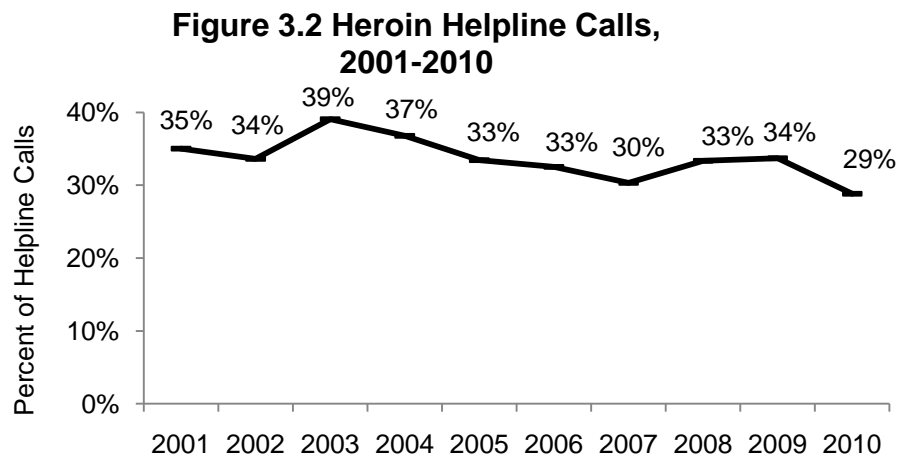
Common street terms for heroin include "Big H", "China White", "Mexican Brown" and "Smack" (2). The drug remains readily available throughout New England in all forms: bag ($6-$50); bundle ($65-$300); gram ($45-$90); ounce ($1,300-$3,000); kilo ($50,000-$80,000); and cylinder shaped bullets/fingers of approximately 7 to10 gram quantities. According to the DEA's Domestic Monitoring Program, street-level purchases of heroin in Boston are predominantly South American in origin and distributed in clear or colored glassine or wax packets.   Past documented supplying sources have routed through New York, Miami and Houston (3).

Figure 3.1 Heroin Purity and Price, Greater Boston, 2002-2009

SOURCE: Domestic Monitoring Program, Drug Enforcement Agency

From 2002 to 2009, the average purity level of street-level heroin in greater Boston decreased from 50% to 15%. From 2006 to 2009, the price of heroin remained well above the 2003 to 2005 level while the purity level remained well below levels observed from 2002 to 2005. By comparison, the average price of a 100% pure milligram of heroin in 2009 was 57% higher than in 2005 and the average purity level was 48% lower.

Please see the end of this report for **Notes and Data Analysis**.

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**Figure 3.2 Heroin Helpline Calls,
2001-2010**

DATA SOURCE: Massachusetts Substance Abuse Information and Education Helpline

Calls by Boston residents to the substance abuse helpline with heroin mentions ranged from a high of 39% in 2003 to a low of 29% in 2010. Between 2005 and 2009, the percentage of heroin helpline calls remained relatively stable.

**Figure 3.3 Heroin Treatment Admissions,
2001-2010**
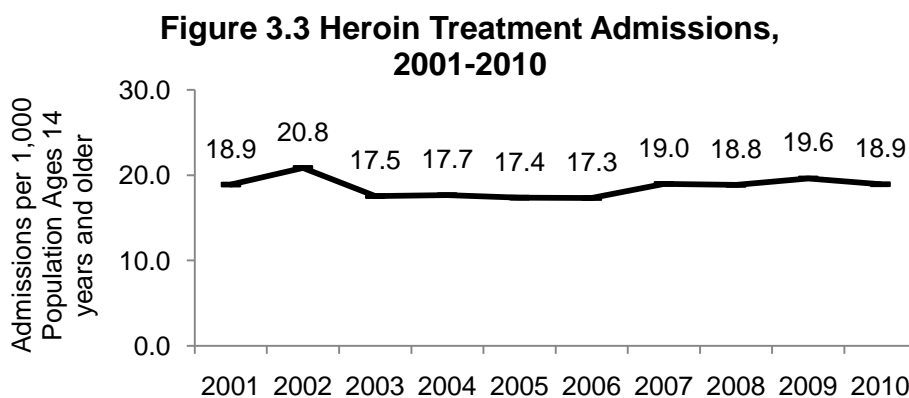
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

The heroin treatment admissions rate for Boston residents has remained relatively stable since 2001. The rate reached a peak of 20.8 admissions per 1,000 population in 2002.

Please see the end of this report for **Notes and Data Analysis**.

**Figure 3.4 Heroin Treatment
Admissions by
Selected Indicators, 2010**
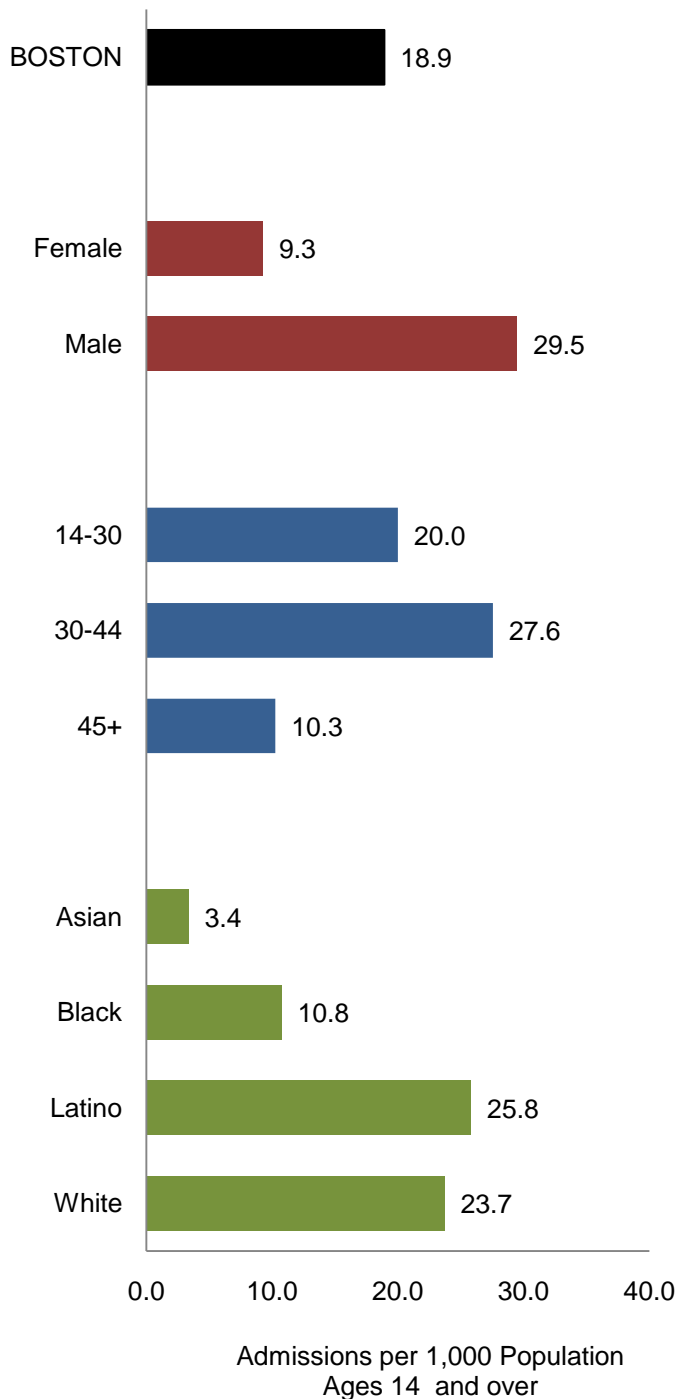
BOSTON	18.9
Female	9.3
Male	29.5
14-30	20.0
30-44	27.6
45+	10.3
Asian	3.4
Black	10.8
Latino	25.8
White	23.7

Admissions per 1,000 Population
Ages 14 and over

In 2010, the heroin treatment admissions rate for Boston overall was 18.9 admissions per 1,000 population.

The heroin treatment rate for males was more than three times the rate for females.

The heroin treatment admissions rate for residents ages 30 to 44 was higher than the rate for residents under the age of 30, and nearly three times the rate for residents 45 years and over.

The heroin treatment rate for Latino residents and White residents was more than twice the rate for Black residents. Asian residents had the lowest heroin treatment admissions rate.

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Figure 3.5 Heroin Treatment Admissions by Age, 2001-2010
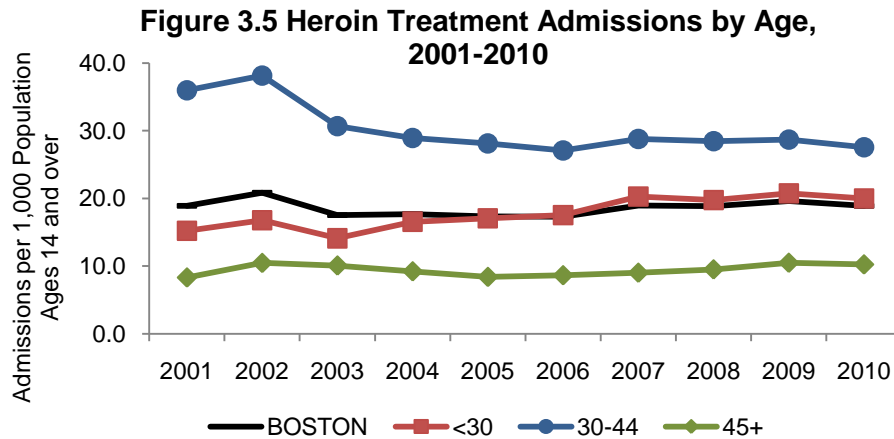
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Though it decreased 28% from 2002 to 2010, the heroin treatment admissions rate for Boston residents 30 to 44 years of age remained highest among age groups across all years from 2001 to 2010. In 2010, the heroin treatment admissions rate for residents ages 30 to 44 was roughly 1.4 times the rate for residents under the age of 30, and three times the rate for residents ages 45 and over.

From 2003 to 2010, the heroin admissions rate for the under 30 age group increased 42%.
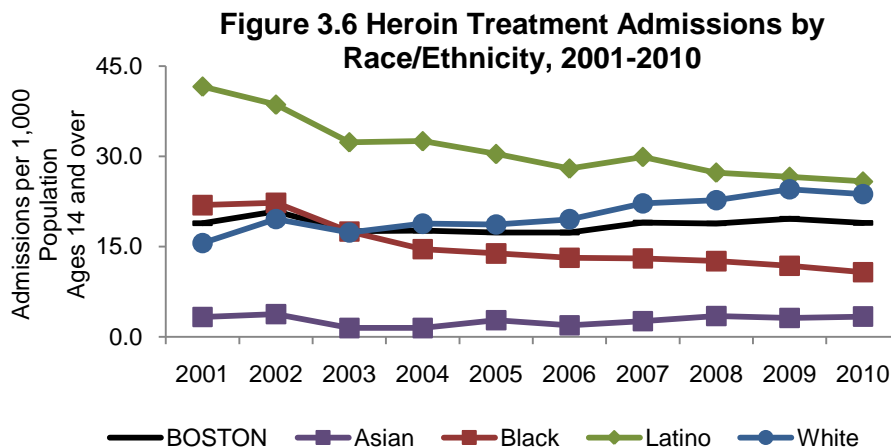
Figure 3.6 Heroin Treatment Admissions by Race/Ethnicity, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

From 2001 to 2010, the Latino heroin treatment admissions rate was highest among racial/ethnic groups.   In 2010, the rate for Latino residents was almost eight times the rate for Asian residents, more than twice the rate for Black residents, and very similar to the rate for White residents. Between 2001 and 2010, the heroin treatment admissions rates for Latino and Black residents decreased 38% and 51%, respectively, while the rate for White residents increased 52%.
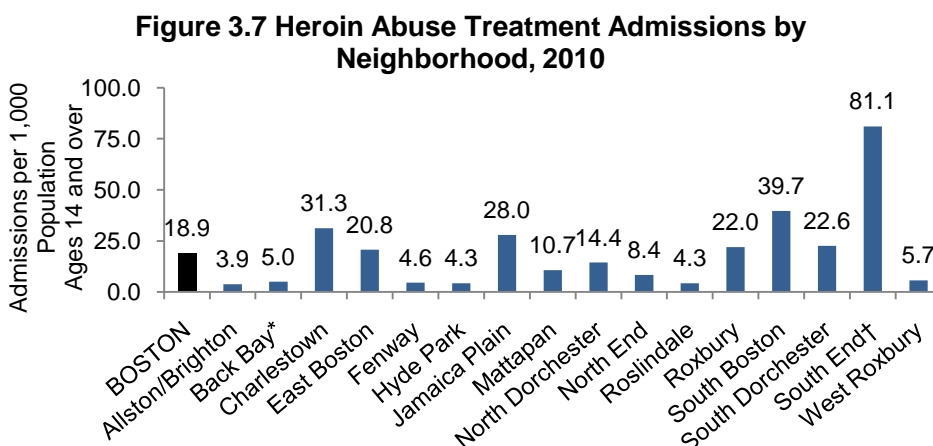
Figure 3.7 Heroin Abuse Treatment Admissions by Neighborhood, 2010

*Includes Beacon Hill, Downtown, and the West End
†Includes Chinatown
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

In 2010, the heroin treatment admission rate for Boston overall was 18.9 admissions per 1,000 population. Of all the Boston neighborhoods, the South End had the highest rate (81.1 per 1,000 population), which was over four times the rate for Boston overall. Allston/Brighton had the lowest rate (3.9 admissions per 1,000 population).

Figure 3.8 Primary Route of Heroin Administration Among Heroin Primary Drug Treatment Admissions, Boston, 2001-2010
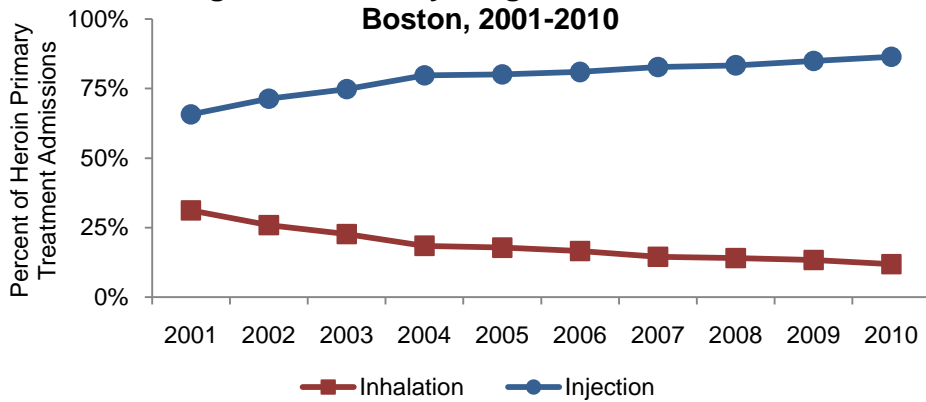
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

The most common route of heroin administration among clients admitted primarily for heroin treatment is through injection. In 2001, 66% of primary heroin client admissions reported that their primary route of heroin administration was through injection. The percentage primarily injecting the drug increased 30% from 2001 to 2010 when nearly nine in ten heroin primary admissions (86%) reported injecting heroin. Conversely, the percentage of admissions reporting inhalation, the second most common route of heroin administration, decreased over the years shown.

Figure 3.9 IDU Primary Administration Route Among Heroin Primary Drug Treatment Admissions, by Race/Ethnicity, 2001-2010
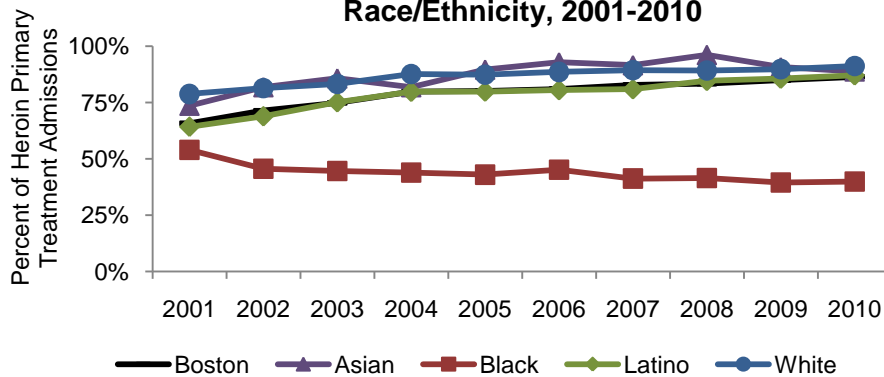

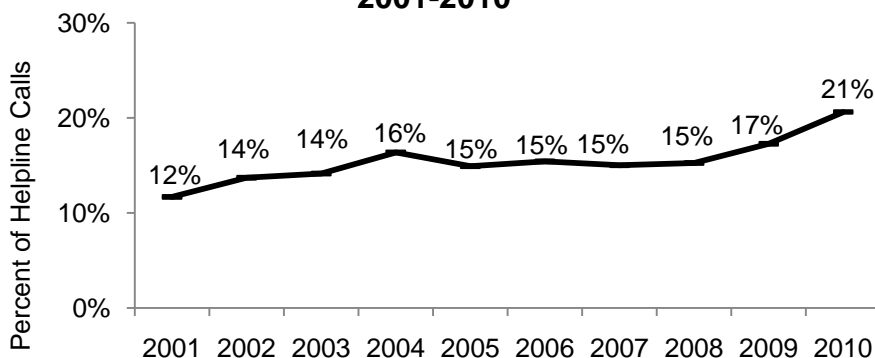DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

From 2001 to 2010, the percentage of injection or intravenous drug use (IDU) as primary route of drug administration among primary heroin treatment admissions increased 21% for Asian, 16% for White, and 36% for Latino client admissions. Within the same time frame, the percentage of primary route IDU decreased 26% among Black client admissions.

Other Opioids (Excluding Heroin)

Prescription medications such as narcotic analgesics (pain relievers with sedative properties) are highly beneficial treatments for a variety of health conditions. Opioids are narcotic analgesics that work by binding to opioid receptors in the nervous system. Though there are competing definitions, opioids in this report include opiates (drugs that contain chemical compounds directly from the opium poppy), semi-synthetic opioids (drugs synthetically derived from chemical compounds found in the opium poppy) and other fully synthetic drugs that bind to opioid receptors and often share similar chemical properties and pain relieving effects as opiates and semi-synthetics. Heroin is considered a semi-synthetic opioid. For purposes of this report, examples of other (non-heroin) opioids include oxycodone (e.g., OxyContin®, Percocet®), hydrocodone (e.g., Vicodin®), codeine, methadone, morphine, and fentanyl. When misused, that is taken in a manner or dosage other than what was prescribed, prescription pain relievers can produce a euphoric 'high' as well as serious adverse health effects, including addiction and overdose.

As with heroin, addiction to other opioid pain relievers can be chemically treated. Medications for effective treatment such as methadone, buprenorphine, and naltrexone have been drawn from research on treating heroin addiction. Naloxone (e.g., Narcan®) is often used to successively reverse opioid overdoses.

Figure 3.10 Other Opioids Helpline Calls, 2001-2010

DATA SOURCE: Massachusetts Substance Abuse Information and Education Helpline

The percentage of other (non-heroin) opioids helpline calls by Boston residents increased 75% from 2001 to 2010. The percentage of other opioids helpline calls remained constant from 2005 to 2008 (15%), but increased 40% from 2008 to 2010.

Figure 3.11 Other Opioid Treatment Admissions 2001-2010

Admissions per 1,000 Population Ages 14 and Over

Year	Rate
2001	2.1
2002	2.5
2003	2.4
2004	2.3
2005	2.5
2006	2.5
2007	2.8
2008	3.2
2009	3.6
2010	3.4
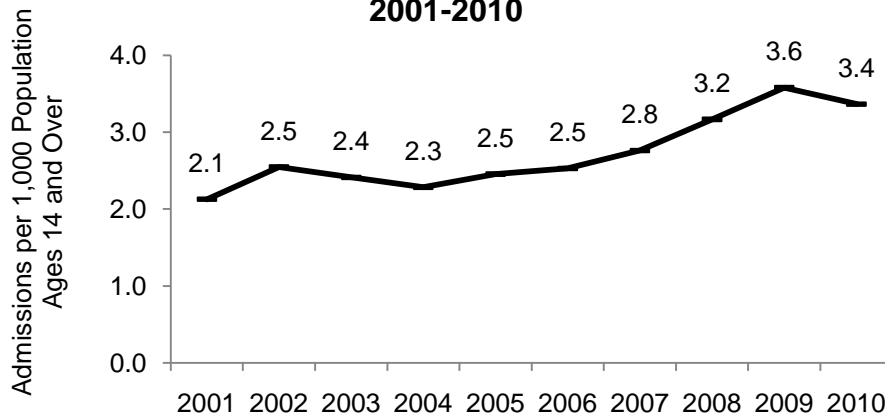
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Though still relatively low, the other opioids (excluding heroin) treatment admissions rate increased 62% from 2001 to 2010 for Boston residents. From 2004 to 2009, the rate increased 57% before decreasing 6% from 2009 to 2010.

Please see the end of this report for **Notes and Data Analysis**.

Figure 3.12 Other Opioids Treatment Admissions by Selected Indicators 2010

Indicator	Value
BOSTON	3.4
Female	2.1
Male	4.8
Ages 14-29	4.0
Ages 30-44	4.3
Ages 45+	1.9
Asian	*
Black	1.1
Latino	1.3
White	5.3
Allston/Brighton	1.8
Back Bay**	0.9
Charlestown	6.5
East Boston	4.8
Fenway	1.1
Hyde Park	1.4
Jamaica Plain	4.8
Mattapan	1.3
North Dorchester	2.5
North End	1.2
Roslindale	1.2
Roxbury	2.7
South Boston	9.4
South Dorchester	3.8
South End†	10.5
West Roxbury	0.7

Admissions per 1,000 Population
Ages 14 and Over

*Insufficient sample size for Asians
**Back Bay includes Beacon Hill and the West End.
†South End includes Chinatown.
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

In 2010, Boston's other opioids (i.e., excluding heroin) treatment admissions rate was 3.4 admissions per 1,000 population.

The male treatment admissions rate was more than two times the female rate.

The other opioids treatment admissions rate for residents in age groups 14-29 and 30-44 was 2.1 times higher and 2.3 times higher, respectively, than the rate for residents in the 45+ age group.

Among racial/ethnic groups, White Boston residents experienced the highest treatment admissions rate, more than four times the rate for Black residents and Latino residents.

Among neighborhoods, the South End and South Boston had the highest rates of treatment admissions for other opioids, while West Roxbury and Back Bay had the lowest rates.
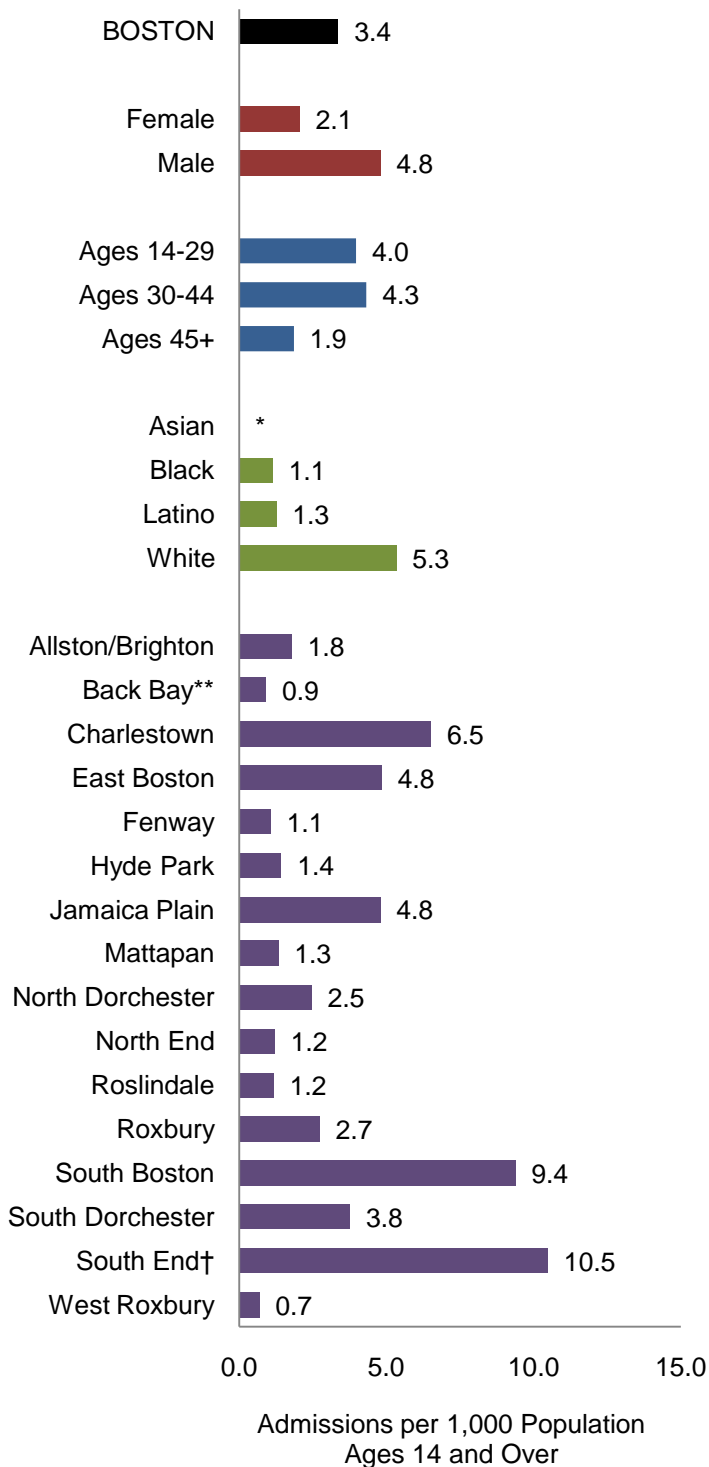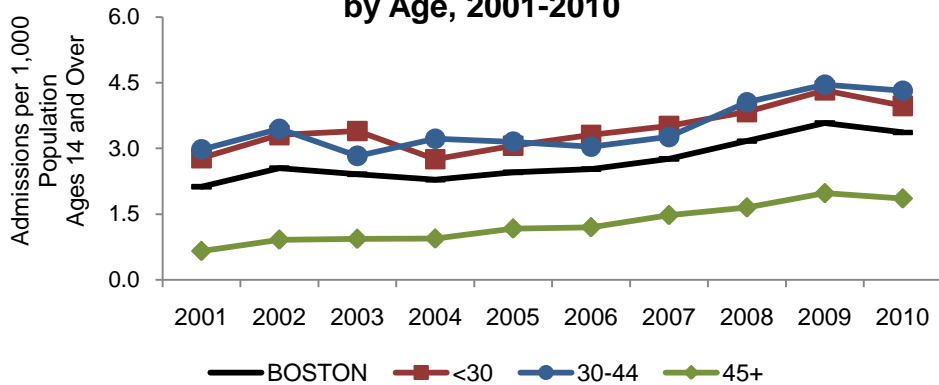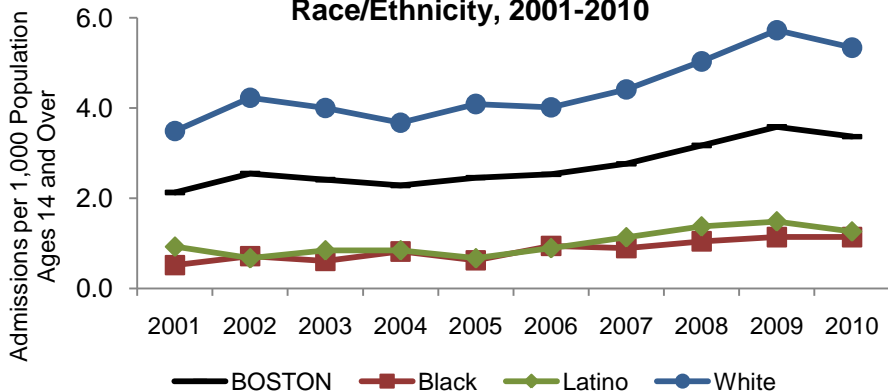
Figure 3.13 Other Opioids Treatment Admissions by Age, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Among Boston residents, the other opioids (excluding heroin) treatment admissions rate increased for all age groups from 2001 to 2010. For all years, rates were higher for the <30 and 30-44 age groups, than for the 45+ age group. Treatment admissions rates for Boston residents increased 58% between 2001 and 2010.

Figure 3.14 Other Opioids Treatment Admissions by Race/Ethnicity, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

From 2001 to 2010, the other opioids (excluding heroin) admissions rate increased for all three racial/ethnic groups: Black residents by 119%, White residents by 53%, and Latino residents by 35%. From 2009 to 2010, the rates for Latino and White residents decreased slightly while the rate for Black residents was stable. The rate for Asians is not presented due to the small numbers of admissions.

Boston Emergency Medical Services (Boston EMS) maintains a database of narcotic related illness (NRI) cases. Compared to 2009, there were 267 more Boston EMS narcotic related illness cases in 2010, an increase of 36%.

Figure 3.15 Boston EMS Narcotic Related Illness (NRI) Cases, 2009 and 2010
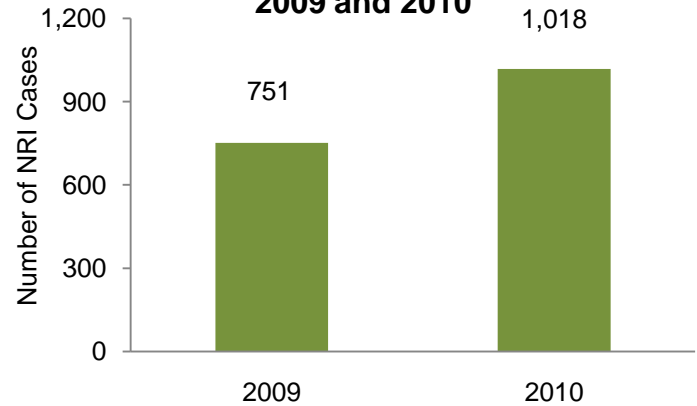
DATA SOURCE: Boston Public Health Commission, Boston Emergency Medical Services

Figure 3.16 Boston EMS Narcotic Related Illness (NRI) Cases by Age and Gender, 2009 and 2010
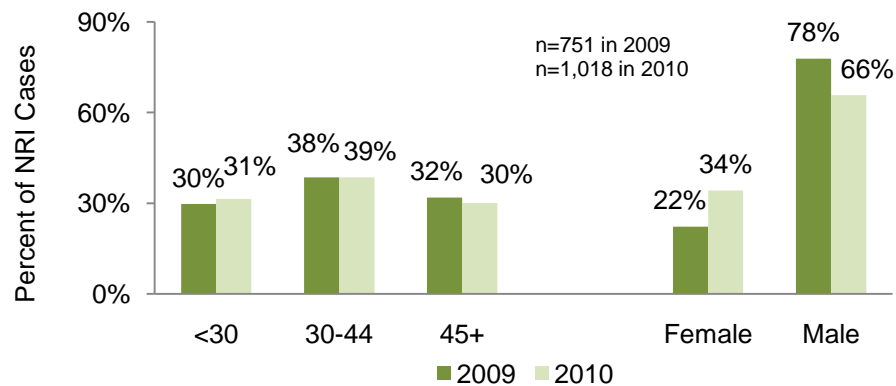
DATA SOURCE: Boston Public Health Commission, Boston Emergency Medical Services

The percentage of Boston EMS narcotic related illness cases within the City of Boston indicated a similar pattern across age groups, from 2009 to 2010. Although males represent the majority of cases for both 2009 and 2010, data for 2010 suggest rising usage among women.

In 2009, 96% of the Boston EMS Narcan® administrations led to successful overdose reversals, saving as many as 361 lives. In 2010, 85% of Narcan® administrations led to successful reversals, saving as many as 188 lives.

Figure 3.17 Boston EMS Overdose Reversal Among Naloxone (Narcan®) Administrations, 2009 and 2010

DATA SOURCE: Boston Public Health Commission, Boston Emergency Medical Services

Please see the end of this report for **Notes and Data Analysis**.

**Figure 3.18 Heroin/Opioid ED Visits,
2002-2009**
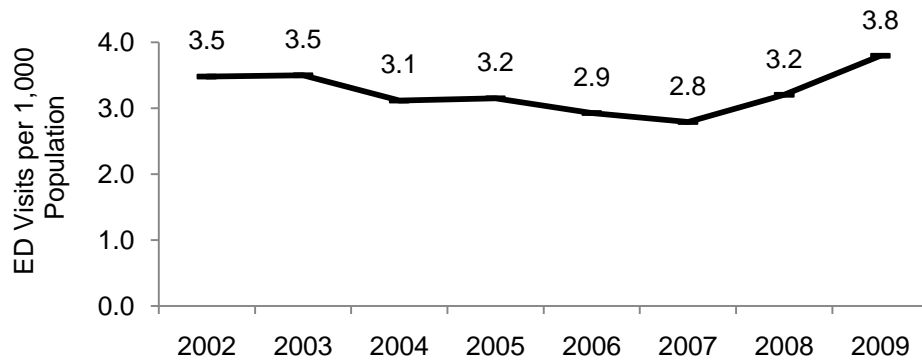
DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

The rate of heroin/opioid ED visits by Boston residents remained relatively stable from 2002 to 2009. From 2002 to 2007, the rate decreased 20% but then increased 36% from 2007 to 2009.

**Figure 3.19 Heroin/Opioid Hospitalizations,
2002-2009**
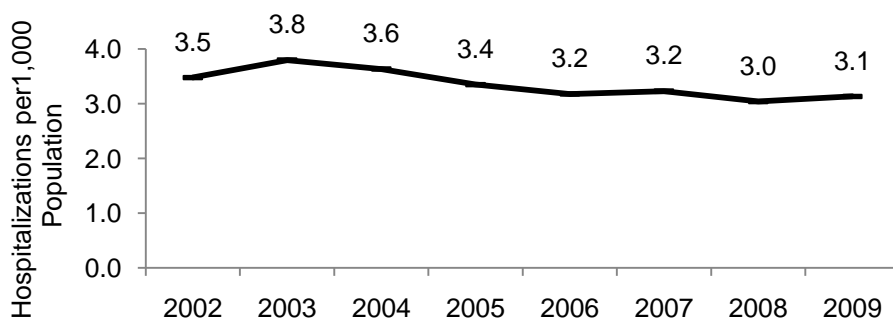
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

Heroin/opioid hospitalizations have remained relatively stable from 2002 to 2009. The highest rate occurred in 2003 (3.8 per 1,000 population) and the lowest rate in 2008 (3.0 per 1,000 population).

Figure 3.20 Heroin/Opioid Mortality, 2000-2008
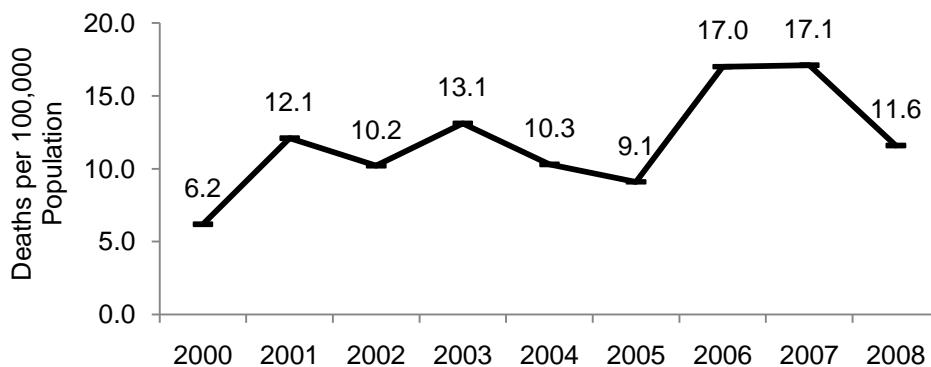
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

After peaking in 2006 and 2007, the heroin/opioid mortality rate decreased 32% from 2007 to 2008. The rate in 2008 (11.6 per 100,000 population) was at a level similar to what was observed earlier in the decade, but was 87% above the 2000 level (6.2 per 100,000).

Figure 3.21 Heroin/Opioid Mortality by Age, 2006-2008 Combined
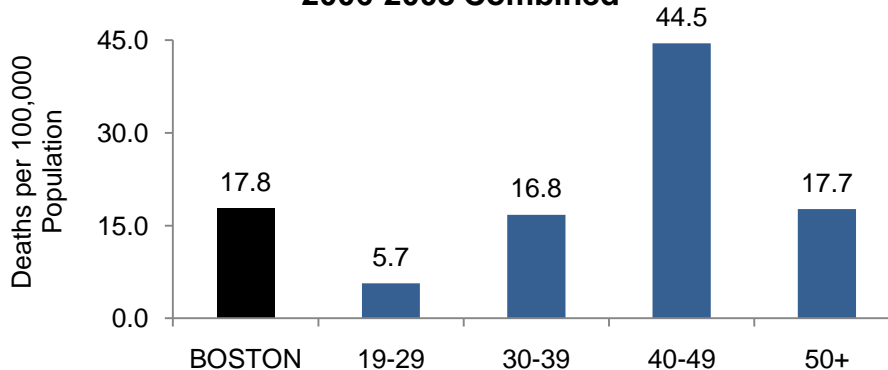
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2006 to 2008, residents ages 40 to 49 had the highest heroin/opioid mortality rate (44.5 deaths per 100,000 population) while residents ages 19 to 29 had the lowest mortality rate (5.7 deaths per 100,000 population).

The heroin/opioid mortality rate for Boston male residents was three times the rate for female residents.

Figure 3.22 Heroin/Opioid Mortality by Gender, 2006-2008 Combined
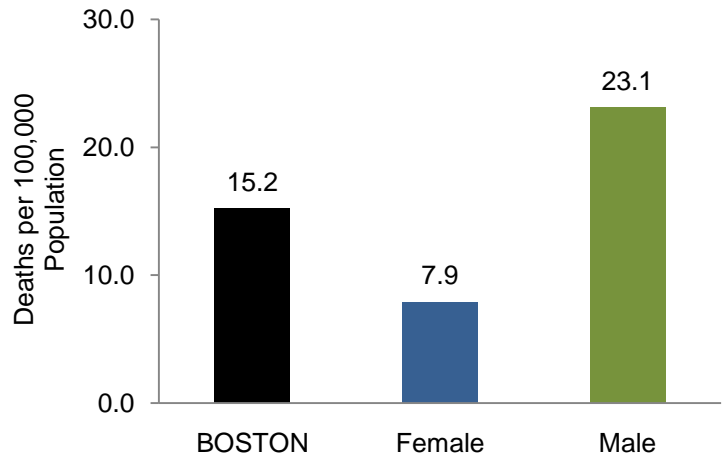
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Figure 3.23 Heroin/Opioid Mortality by Race/Ethnicity, 2006-2008 Combined
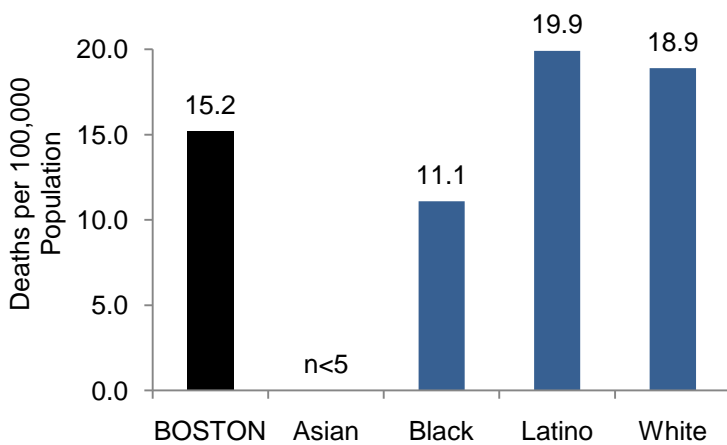
During 2006 to 2008, Latino and White residents had the highest heroin/opioid mortality rates among all Boston residents. Their rates were nearly twice the rate for Black residents.

There were too few heroin/opioid-related Asian deaths to permit the calculation of a rate.
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Figure 3.24 Heroin/Opioid Mortality by Neighborhood, 2006-2008 Combined
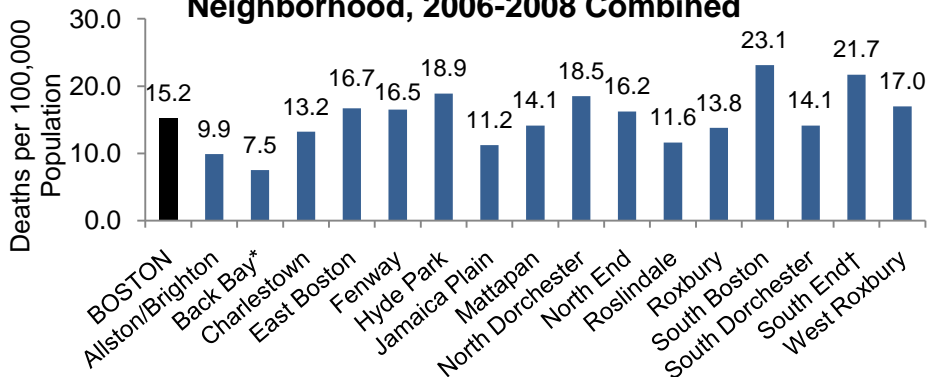
*Includes Beacon Hill, Downtown, and the West End
†Includes Chinatown
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2006 to 2008, South Boston had the highest average annual heroin/opioid mortality rate among Boston neighborhoods. It was 52% higher than the overall Boston rate. In addition to South Boston, seven neighborhoods had a heroin/opioid mortality rate higher than the overall Boston rate: East Boston, Fenway, Hyde Park, North Dorchester, the North End, the South End and West Roxbury.

References

1. NIDA InfoFacts: Heroin. http://www.nida.nih.gov/infofacts/heroin.html Accessed November 15, 2010.

2. Heroin Facts & Figures. http://www.whitehousedrugpolicy.gov/drugfact/heroin/index.html Accessed November 15, 2010.

3. Drug Enforcement Agency (DEA), New England Field Division, Greater Boston, July-December, 2010.

Cocaine

Cocaine is a highly addictive stimulant drug. The powdered, hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Crack is cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. Regardless of the form, a user can experience acute cardiovascular or cerebrovascular emergencies, such as a heart attack or stroke, which could result in sudden death (1).

Currently, there are no FDA-approved medications for treating cocaine addiction; thus, developing a medication to treat cocaine and other forms of addiction remains one of NIDA's top research priorities. Several compounds are currently being investigated for their safety and efficacy, including a vaccine that would sequester cocaine in the bloodstream and prevent it from reaching the brain. At present, treatment for cocaine addiction primarily consists of behavioral therapies (1).

Common street terms for cocaine hydrochloride include "Blow", "C", "Marching Powder" and "Nose Candy" (1). The drug is available throughout New England in the following quantities: gram ($50-100); ounce ($1,100-1,400); ¼ kilogram; ½ kilogram; kilo ($29,000-35,000) (2). Slang terms for Crack include "Freebase", "Rooster" and "Tornado" (1). It is sold on the streets in vials, "dime bags" and "rocks" and the pricing is as follows: rock ($10-80), gram ($10-50), ounce ($800-1,400) (2).
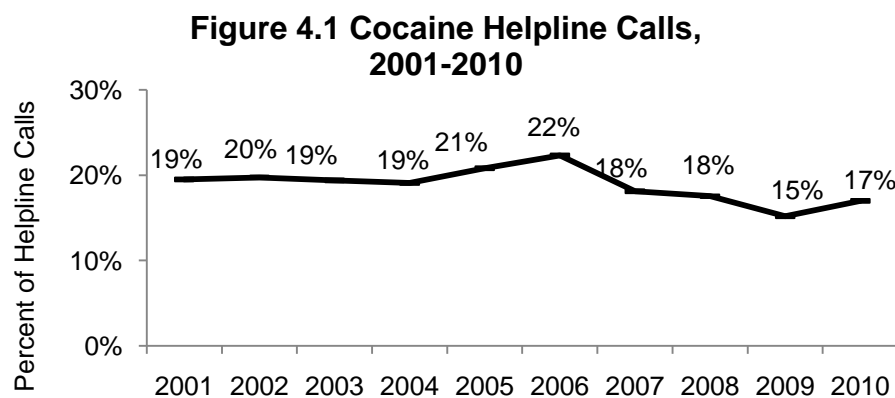
Figure 4.1 Cocaine Helpline Calls, 2001-2010

DATA SOURCE: Massachusetts Substance Abuse Information and Education Helpline

The percentage of cocaine helpline calls made by Boston residents fluctuated between 15% and 22% from 2001 to 2010. The highest and lowest percentage of cocaine helpline calls occurred in 2006 and 2009, respectively. There was a slight increase in the percentage of calls from 2009 to 2010 (from 15% to 17%).

Figure 4.2 Cocaine Treatment Admissions, 2001-2010
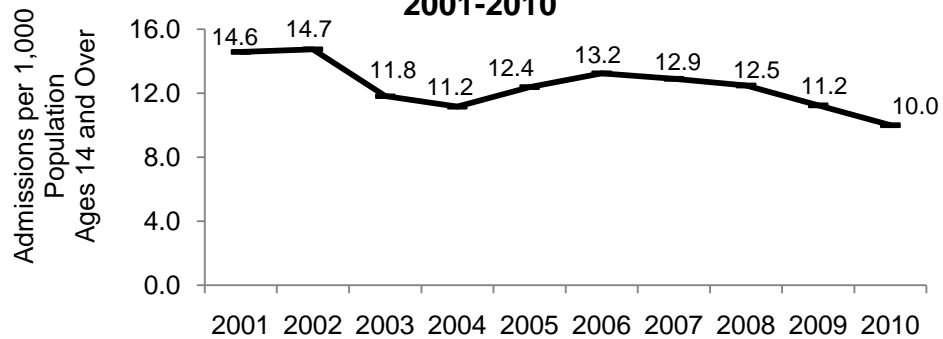
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

After experiencing a 23% decrease from 2001 to 2004, the Boston cocaine treatment admissions rate increased slightly before experiencing a gradual decline that resulted in the lowest rate for the decade (10.0 admissions per 1,000 population) in 2010. From 2006 to 2010, the cocaine treatment admissions rate decreased 24%.

Figure 4.3 Cocaine Treatment Admissions by Age, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Among age groups, Boston residents ages 30 to 44 had the highest cocaine treatment admissions rate from 2001 to 2010. During that period the cocaine treatment admissions rate decreased 55% for Boston residents ages 30 to 44. Over the same time period, the rate remained relatively stable for age groups 14-29 and 45+.

Please see the end of this report for **Notes and Data Analysis**.

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Figure 4.4 Cocaine Treatment Admissions by Selected Indicators, 2010

Category	Admissions per 1,000
BOSTON	10.0
Female	6.0
Male	14.3
Ages 14-29	7.7
Ages 30-44	15.3
Ages 45+	8.0
Asian	0.7
Black	14.7
Latino	11.9
White	9.3
Allston/Brighton	2.2
Back Bay*	1.9
Charlestown	9.9
East Boston	8.0
Fenway	1.8
Hyde Park	3.2
Jamaica Plain	15.2
Mattapan	11.3
North Dorchester	8.4
North End	2.9
Roslindale	1.8
Roxbury	15.2
South Boston	14.6
South Dorchester	14.0
South End†	45.0
West Roxbury	1.8

Admissions per 1,000 Population
Ages 14 and Over

* Back Bay includes Beacon Hill and the West End
† South End includes Chinatown
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

In 2010, the cocaine treatment admissions rate for Boston residents was 10.0 admissions per 1,000 population.

The rate for male residents was 2.4 times the rate for female residents.

The cocaine treatment admissions rate for Boston residents in age group 30-44 was two times and 1.9 times the rates for residents in age groups 14-29 and 45+, respectively.

Black residents experienced the highest rate of treatment admissions for cocaine followed by Latino and White residents. Asian residents experienced the lowest rate of treatment admissions.

Residents of the South End had the highest rate of cocaine treatment admissions (45.0 admissions per 1,000 population) among neighborhoods. That rate was 4.5 times the rate for Boston overall. Residents of the Fenway, Roslindale, and West Roxbury had the lowest rates.
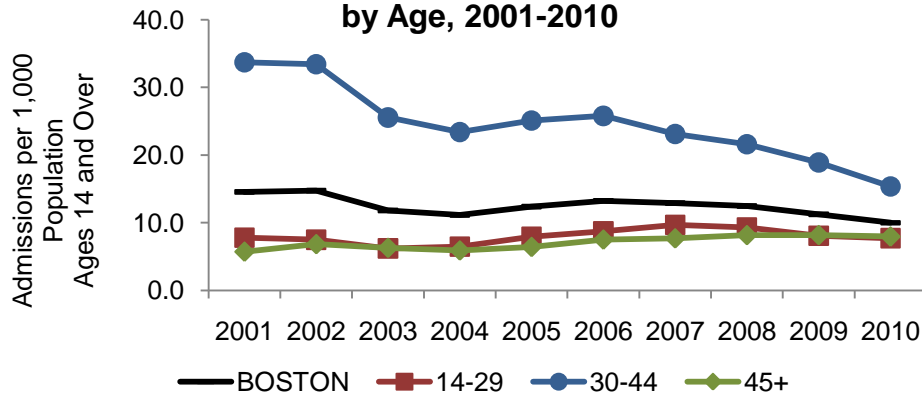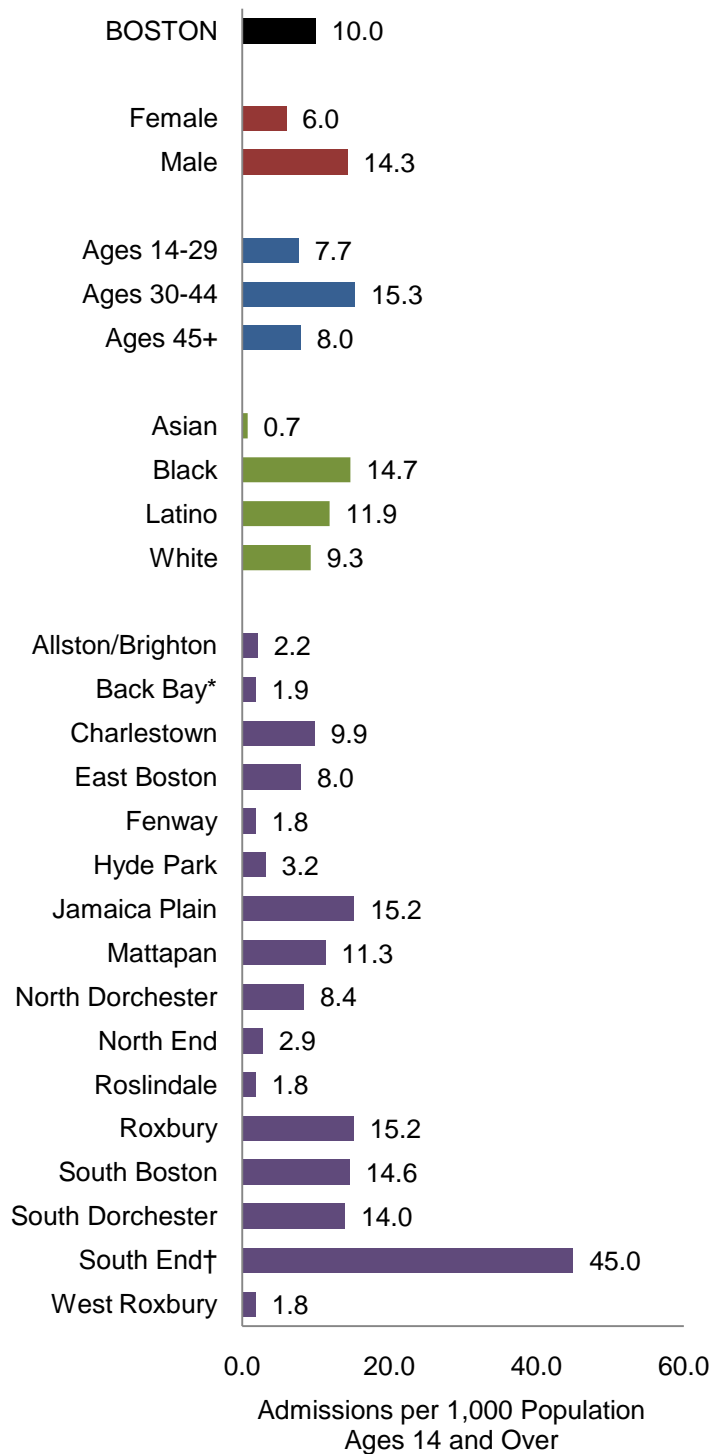
Figure 4.5 Cocaine Treatment Admissions by Race/Ethnicity, 2001-2010
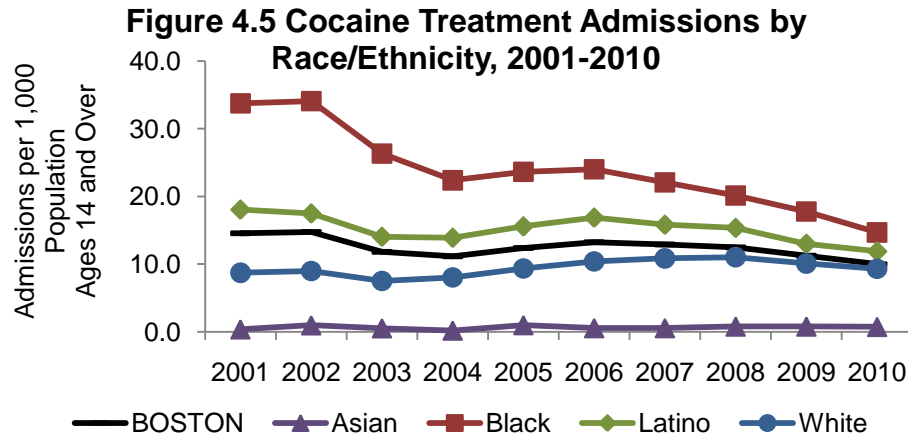
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

For the entire 2001-2010 period, Boston Black residents had the highest cocaine treatment admissions rate, and Latino residents had the the second highest. From 2001 to 2010, the cocaine treatment admissions rate decreased for Black Boston residents by 57% and for Latino Boston residents by 34%. Over the same time period, the cocaine treatment admissions rate remained relatively stable for Asian and White Boston residents.
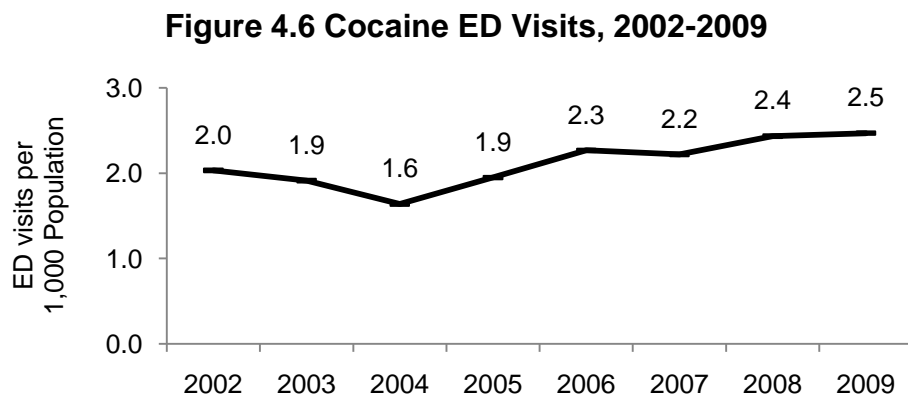
Figure 4.6 Cocaine ED Visits, 2002-2009

DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

Though at a low level, the Boston rate of cocaine ED visits increased 56% from 1.6 visits per 1,000 population in 2004 to 2.5 visits per 1,000 by 2009.

Figure 4.7 Cocaine Hospitalizations, 2002-2009
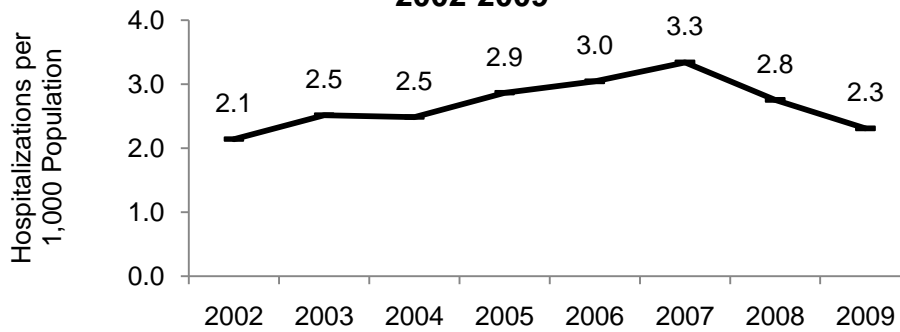
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

.The cocaine hospitalization rate increased 57% from 2002 to 2007 then decreased 30% from 2007 to 2009.

Figure 4.8 Cocaine Mortality, 2000-2008
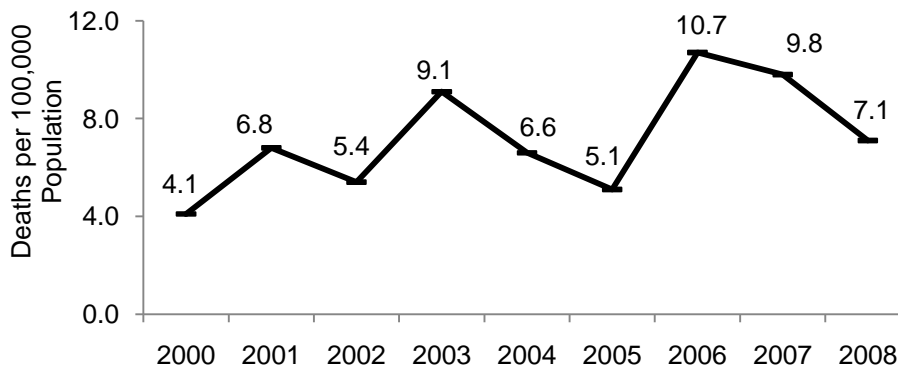
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Boston's cocaine mortality rate has fluctuated from 2000 to 2008. In 2006, the cocaine mortality rate reached a peak of 10.7 deaths per 100,000 population. From 2006 to 2008, the rate decreased 34%.

Please see the end of this report for **Notes and Data Analysis**.

Figure 4.9 Cocaine Mortality by Age, 2006-2008 Combined
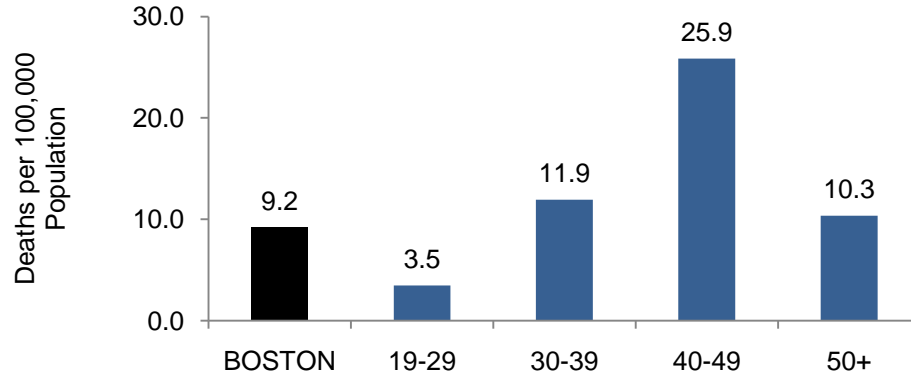
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Boston residents ages 40 to 49 had the highest average annual cocaine mortality rate during 2006-2008. The rate was between two and three times that of the 30-39 and 50+ age groups. Residents ages 19 to 29 had the lowest mortality rate.

Figure 4.10 Cocaine Mortality by Gender, 2006-2008 Combined
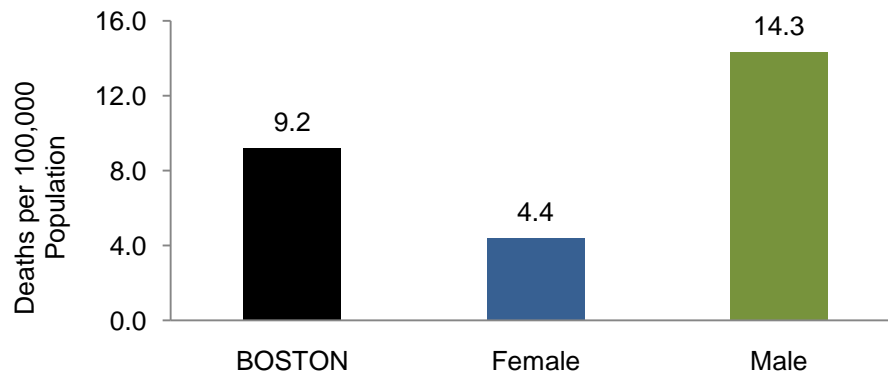
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2006-2008, the average annual cocaine mortality rate for Boston male residents was three times the rate for female residents.

Figure 4.11 Cocaine Mortality by Race/Ethnicity, 2006-2008 Combined
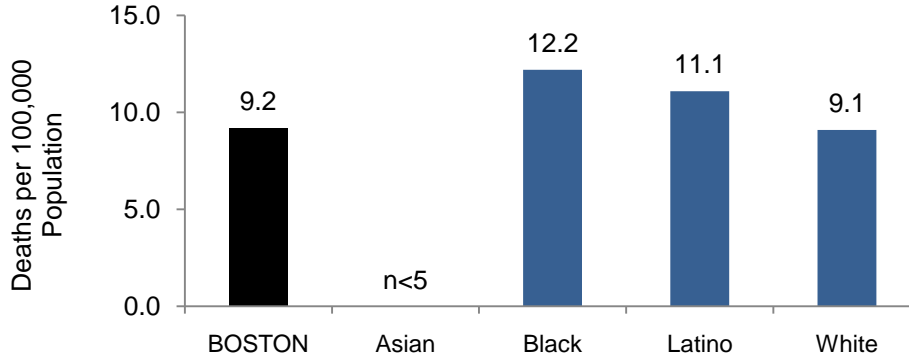
There were too few cocaine-related deaths for Asians to permit calculation of a rate.
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2006 to 2008, Boston Black residents had the highest average annual cocaine mortality rate followed by Latino residents.

Figure 4.12 Cocaine Mortality by Neighborhood, 2006-2008 Combined
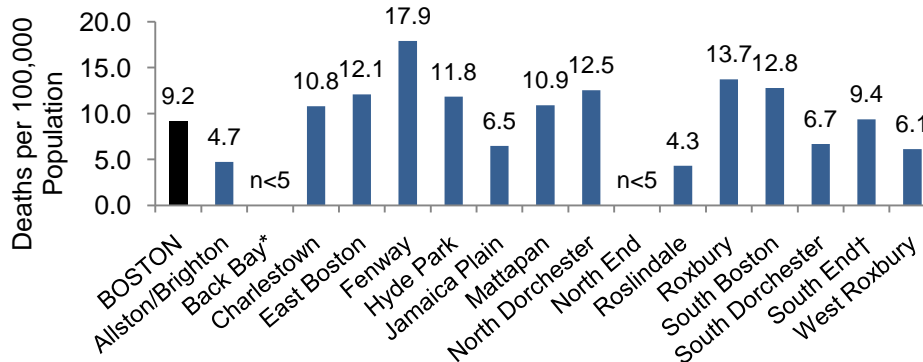
*Includes Beacon Hill, Downtown, and the West End
†Includes Chinatown
Rates are not presented for Back Bay and the North End due to the small number of deaths
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2006 to 2008, Fenway had the highest average annual cocaine mortality rate among Boston neighborhoods, and one that was almost twice the overall Boston rate. Roxbury and South Boston had the second and third highest cocaine mortality rates, respectively.

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References

1. Cocaine. http://www.nida.nih.gov/pdf/infofacts/Cocaine07.pdf Accessed November 15, 2010.

2. Drug Enforcement Agency (DEA), New England Field Division, Greater Boston, July-December, 2010.

Please see the end of this report for **Notes and Data Analysis**.

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Marijuana

Marijuana is the most commonly used illicit drug in the United States. It is a dry, shredded green and brown mix of leaves derived from the hemp plant Cannabis sativa. It is usually smoked as a cigarette (joint) or in a pipe (1). It is also smoked in blunts, which are cigars that have been emptied of tobacco and refilled with marijuana. Marijuana can also be mixed in food or brewed as a tea (2).

There are currently no medications available for treatment of marijuana abuse. However, recent discoveries about the workings of the brain's cannabinoid system offer promise for the development of medications to ease withdrawal symptoms, block the intoxicating effects, and help prevent relapse. Current marijuana treatment strategies focus on cognitive behavioral therapies (1).

There are many slang terms for marijuana that vary from city to city and from neighborhood to neighborhood. Some common names are: "pot," "grass," "herb," "weed," "Mary Jane," "reefer," "skunk," "boom," "gangster," "kif," "chronic," and "ganja" (2). Historically, Mexican marijuana has dominated the region, but supplies of domestically grown marijuana have increased steadily over the years. The drug is available in the following quantities: joint ($5); gram ($35-50); ounce ($250-400); pound ($500-7,000); hydroponic pound ($1,200-6,000) (3).

Figure 5.1 Marijuana Helpline Calls, 2001-2010
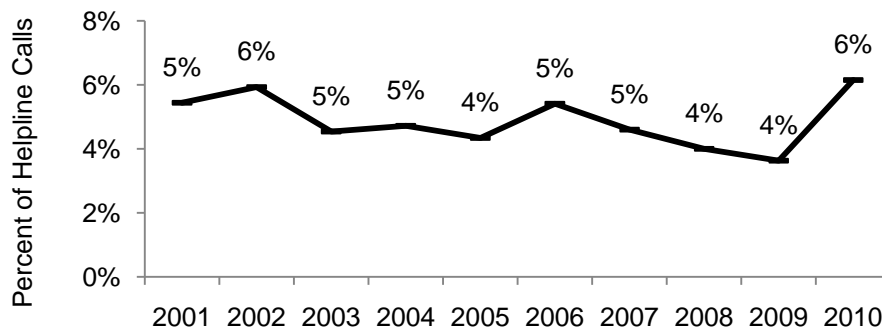
DATA SOURCE: Massachusetts Substance Abuse Information and Education Helpline

The percentage of marijuana helpline calls by Boston residents remained relatively stable from 2001 to 2010, ranging from 4% to 6%. The percentage of marijuana helpline calls was highest (6%) in 2002 and 2010.

Please see the end of this report for **Notes and Data Analysis**.

Figure 5.2 Marijuana Treatment Admissions by Selected Indicators, 2010

Indicator	Admissions per 1,000
BOSTON	4.6
Female	2.0
Male	7.5
14-18	3.0
19-29	6.3
30-39	5.5
40-49	6.5
50+	1.3
Asian	0.3
Black	8.0
Latino	6.0
White	3.6

Admissions per 1,000 Population
Ages 14 and over

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse
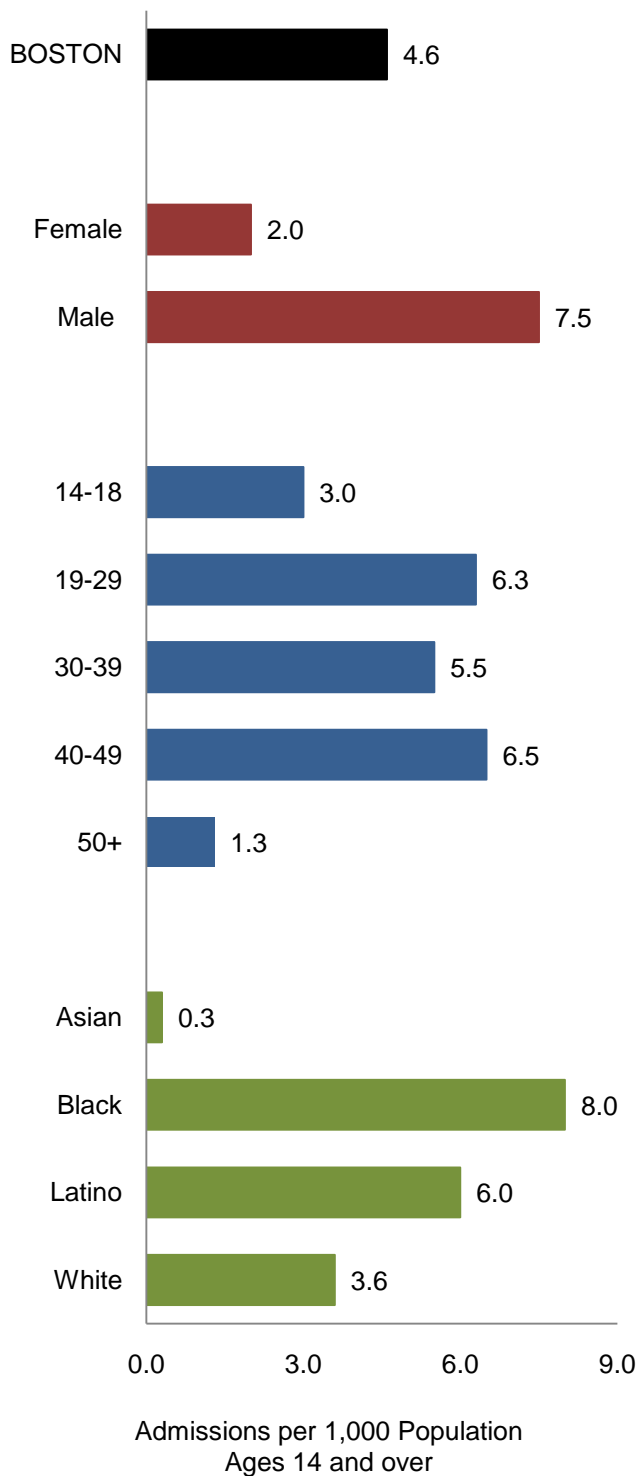
The Boston overall marijuana treatment admissions rate was 4.6 admissions per 1,000 population in 2010.

The rate for males was almost four times the rate for females.

Boston residents ages 19 to 29 and 40 to 49 had the highest treatment admission rates and residents ages 50 and over had the lowest rate.

Among racial/ethnic groups, Boston's Black residents had the highest marijuana treatment admissions rate and Latinos, the second highest. The rate for Black residents was nearly twice the rate for Boston overall.

References

1. NIDA InfoFacts: Marijuana http://www.nida.nih.gov/Infofacts/marijuana.html Accessed November 15, 2010.

2. Marijuana http://teens.drugabuse.gov/facts/facts_mj1.php Accessed November 15, 2010.

3. Drug Enforcement Agency (DEA), New England Field Division, Greater Boston, July-December, 2010.

Other Drugs

Benzodiazepines

Benzodiazepines are a class of drugs that are used in treating anxiety, insomnia, agitation, seizures, muscle spasms, and alcohol withdrawal (1). Benzodiazepines include clonazepam (Klonopin®), alprazolam (Xanax®), lorazepam (Ativan®), diazepam (Valium®), triazolam (Halcion®), and chlordiazepoxide (Librium®).The percentage of benzodiazepine calls to the helpline increased from 3% in 2001 to 5% in 2010. Though the proportion of benzodiazepines cited as primary drug among treatment client admissions remained low, under 1% from 2001 to 2009, the percentage of admissions citing benzodiazepines as either primary, secondary or tertiary drugs increased steadily from 5% in 2001 (n=1,027) to 11% by 2010 (n=1,878). During this period, the number of treatment admissions with benzodiazepines mentioned as primary, secondary, or tertiary drug increased 83%.

Methamphetamine

There were only 7 methamphetamine calls to the helpline in 2010. From 2001 to 2010, less than 1% of all treatment admissions identified methamphetamine as a primary, secondary, or tertiary drug of abuse.   The number of treatment admissions with methamphetamine cited as primary, secondary, or tertiary drug has ranged from a low of 36 admissions in 2001 to a high of 159 admissions in 2008. In 2010, 74 client admissions cited methamphetamine as a drug of abuse. The DEA reported that the cost of methamphetamine decreased from $150 -$250 per gram in July through December, 2009 to $90-$200 per gram in July through December, 2010.

MDMA (ecstasy) /Club Drugs

There were only three calls to the helpline during which MDMA was self-identified as a substance of abuse (less than 1% of all mentions) in 2010. The number of MDMA helpline calls peaked at 36 in 2001 and has declined since. The number of treatment admissions with 'club drugs' (including MDMA) cited as primary, secondary, or tertiary drug has ranged from a low of 14 admissions in 2007 to a high of 58 admissions in 2009.

The DEA reported that one MDMA tablet cost between $15 and $40 retail, with lower prices when purchasing in bulk (more than 50 dosage units) (exhibit 6). Distributed at "legitimate nightclubs and Rave parties," the DEA reported that MDMA remained widely available and is "primarily distributed and abused by teenagers and young adults".

Figure 6.1 Number of Poisoning Deaths Caused by Selected Other Drugs, 1999-2008
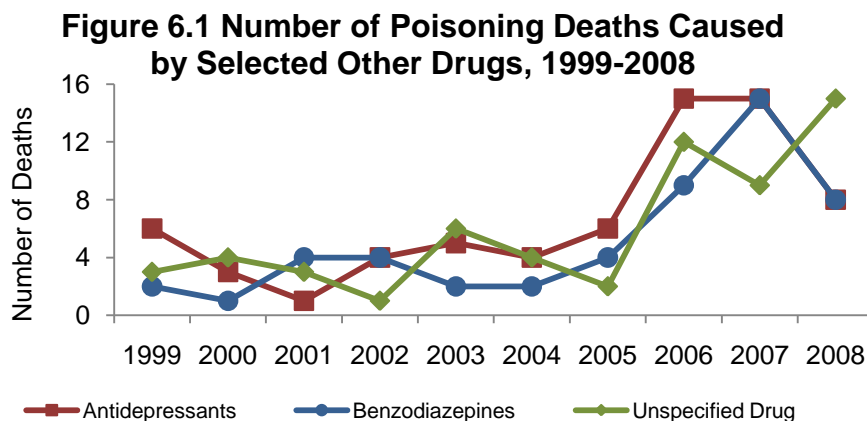
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

The number of drug poisonings resulting in antidepressant deaths, benzodiazepine deaths and unspecified drug deaths ranged from one to 15 during 1999 to 2008, for each drug type. The highest number of deaths caused by antidepressant poisonings was seen in 2006 and 2007 (n=15). In 2008, there were eight deaths caused by antidepressants. The highest number of deaths caused by benzodiazepines and unspecified drug poisonings was in 2007 and 2008, respectively.

Reference

1.Olkkola K.T., Ahonen J., Midazolam and other benzodiazepines. Handb Exp Pharmacol, 2008; (182)335-360.

Please see the end of this report for **Notes and Data Analysis**.

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Infectious Diseases Related Drug Use

Individuals who use illicit drugs and/or abuse alcohol are at a greater risk for a number of infectious diseases including hepatitis B and C, HIV/AIDS, TB, gonorrhea, syphilis, chlamydia, genital herpes, and trichomoniasis (1, 2, 3). As a result of this greater risk, especially for HIV/AIDS, and hepatitis B and C, many drug treatment facilities provide infectious disease screening for new patients (2). Infectious diseases among drug users can be contracted through the use of sharing needles or other drug equipment as well as by engaging in risky sexual behavior involving lack of condom use, or having multiple sexual partners while under the influence of drugs or alcohol.

Intravenous drug users (IDUs) are especially at risk of contracting Hepatitis C which is the leading cause of liver disease. Findings from some National Institute of Drug Abuse (NIDA) research indicate that most IDUs contract Hepatitis C within 3 years from when they start injecting drugs (1).

Figure 7.1 Hepatitis C Incidence, 1999-2010
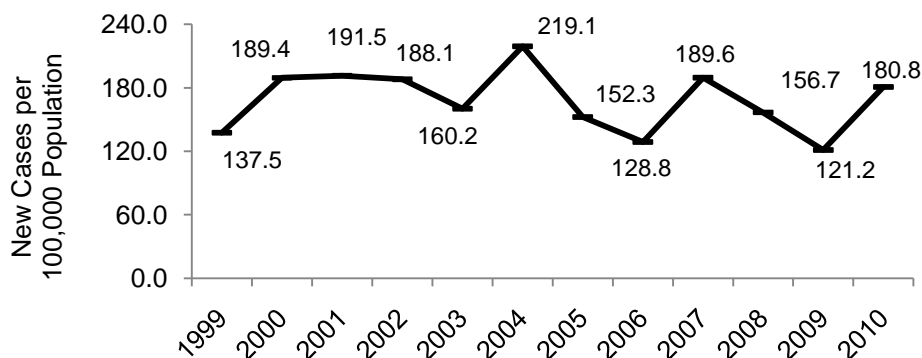
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease

Hepatitis C infection can occur a number of ways such as having unprotected sex with someone infected with Hepatitis C, receiving blood or blood products with a donor who is infected, and injecting street drugs or sharing a needle with some who is infected.

The reported hepatitis C incidence rate for Boston residents fluctuated from 1999 to 2010 but peaked in 2004 at 219.1 new cases per 100,000 population.

Figure 7.2 Hepatitis C Incidence by Age, 2009 and 2010
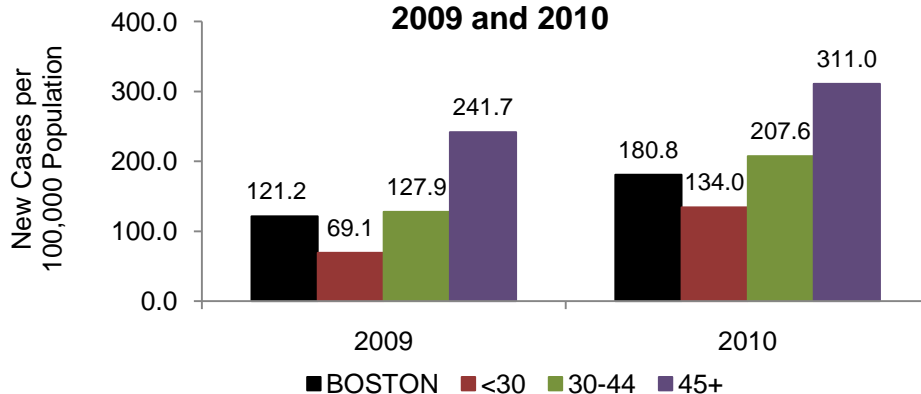
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease

The incidence rate for hepatitis C infection in both 2009 and 2010 was highest for Boston residents ages 45 and over with a rate almost twice that of Boston overall in 2009 and 2010. From 2009 to 2010, rates increased for all the age groups shown but the largest increase occurred for residents under the age of 30.

Figure 7.3 Hepatitis C Incidence by Gender, 2009 and 2010
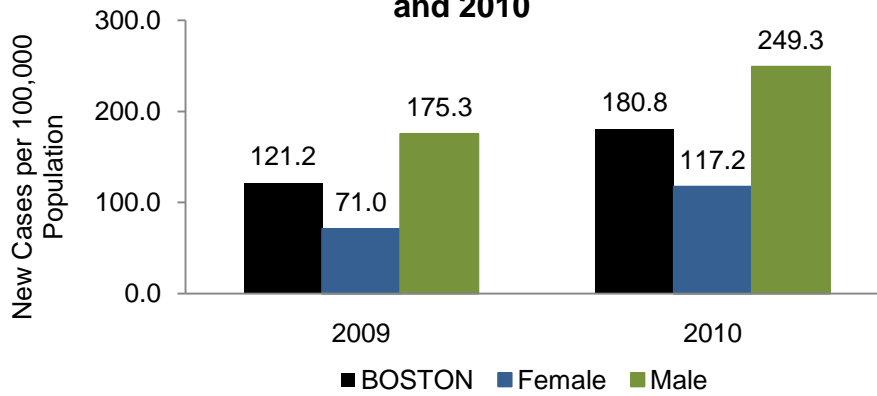
New Cases per 100,000 Population

- 2009: BOSTON 121.2, Female 71.0, Male 175.3
- 2010: BOSTON 180.8, Female 117.2, Male 249.3

■ BOSTON ■ Female ■ Male

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease

Gender differences among Boston residents for reported new cases of hepatitis C infection were seen in 2009 and 2010. The incidence rate for males was more than twice the rate for females in 2009 and 2010.

Figure 7.4 Hepatitis C Incidence by Neighborhood, 2010

New Cases per 100,000 Population

- BOSTON: 180.8
- Allston Brighton: 40.2
- Back Bay*: 82.7
- Charlestown: 401.4
- East Boston: 177.0
- Fenway: 87.2
- Hyde Park: 69.7
- Jamaica Plain: 95.0
- Mattapan: 172.4
- North Dorchester: 133.4
- Roslindale: 77.0
- Roxbury: 133.1
- South Boston: 293.9
- South Dorchester: 328.3
- South End †: 86.1
- West Roxbury: 65.1
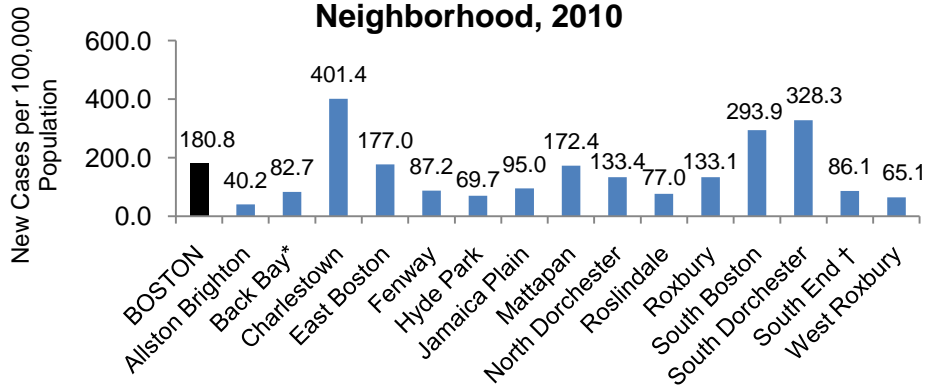
* Back Bay includes Beacon Hill and the West End
† South End includes Chinatown
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease

The highest incidence rates of reported hepatitis C infection among Boston neighborhoods in 2010 were in Charlestown, South Dorchester, and South Boston. The incidence rate for Charlestown, the neighborhood with the highest rate, was 2.2 times the overall Boston rate. All three neighborhoods had heroin/opioid hospitalization rates that were higher than Boston overall (data not shown).

Figure 7.5 HIV Cases by Exposure, 2006-2008 Combined

N=563

■MSM ■IDU ■MSM/IDU ■Hetero Sex ■Other ■Unknown

DATA SOURCE: AIDS Surveillance Program, Massachusetts Department of Public Health
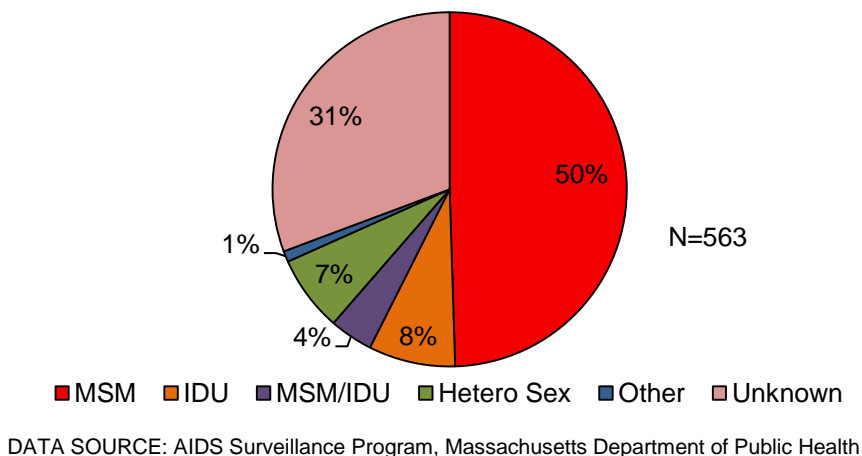
During 2006 to 2008, there were 563 reported cases of HIV infection among Boston residents. For half of all the cases (including unknown exposures), male with male sex was identified as the primary exposure category. Reported cases with intravenous drug use (IDU) and male-to-male sex together with IDU exposure categories combined accounted for 12%.

Figure 7.6 People Living with HIV/AIDS by Exposure, 2006-2008 Combined

N=5,339

■MSM ■IDU ■MSM/IDU ■Hetero Sex ■Other ■Unknown

DATA SOURCE: AIDS Surveillance Program, Massachusetts Department of Public Health
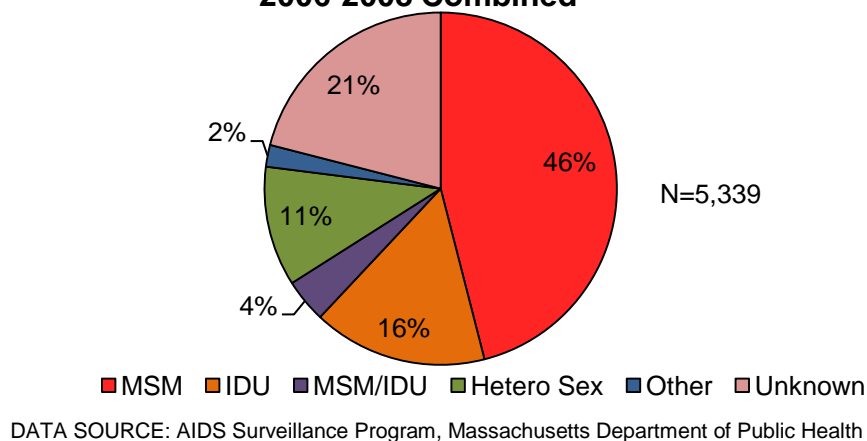
During 2006 to 2008, almost one in two Boston residents living with HIV/AIDS identified male-to-male sex as their main exposure category. Approximately one in ten identified 'hetero sex' as their main exposure category to the virus/disease and approximately one in five people identified as being unaware of how they were exposed to the virus.

Reported cases with intravenous drug use (IDU) and male-to-male sex together with IDU exposure categories combined accounted for 18% of Boston residents living with HIV/AIDS.

Please see the end of this report for **Notes and Data Analysis**.

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http://www.drugabuse.gov/PDF/Infofacts/DrugAIDS.pdf Accessed August 1, 2011.

2. Bakke O. Infectious diseases have alcohol link. http://www.add-resources.org/infectious-diseases-have-alcohol-link.4663171-76188.html Accessed August 1, 2011.

3. Infectious Disease Screening for Drug Abuse Patients.
http://www.addictiontreatmentmagazine.com/addiction-treatment/infectious-disease-screening-for-drug-abuse-patients Accessed August 1, 2011.

Alcohol

Along with illicit drug use and non-medical use of prescriptions, alcohol is also a major substance of abuse among adults. Almost 17.6 million adults in the US are considered to be alcoholics or to have problems with alcohol (1). A number of health problems can occur with long term and excessive drinking of alcohol, including, for example, dementia, cancer of the mouth, throat, esophagus, liver, colon, and breast, and cirrhosis (2).

A particular behavior pattern among some individuals, who drink is "binge drinking", which, although it is common across all age groups, tends to occur more frequently among young adults, ages 18-24 than among other adult age groups. It also tends to occur more frequently among males in that age group than females (3). Binge drinking involves a woman having four or more drinks on a single occasion and a man having five or more and can lead to other risky behaviors such as having unprotected sex or driving under the influence (2). Death is also not out of the realm of reality. According to the CDC, "Binge drinking happens more than 4 million times a day in the US among adults" (4).

The problem of alcohol abuse takes on even more significance when alcohol is used concurrently with other drugs - which is often the case. Concurrent use of alcohol and other drugs results in more severe substance abuse dependence, psychiatric disorders, and other health problems for people who use both together than for people who do not combine the use of alcohol with other drugs (5). Rates of concurrent alcohol and other drug use are highest for young adults ages 18-24, and adult men of all ages usually have more problems with concurrent alcohol and other drug use than women (5).

Please see the end of this report for **Notes and Data Analysis**.

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Figure 8.1 Adults with Binge Drinking in the Past Month by Selected Indicators, 2008

Indicator	Percentage
BOSTON	25%
18-29	38%
30-44	26%
45-59	17%
60+	7%
Asian	*
Black	18%
Latino	18%
White	32%
<$25,000	16%
$25K-<$50K	28%
$50,000+	31%

*Insufficient sample size for Asians
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission
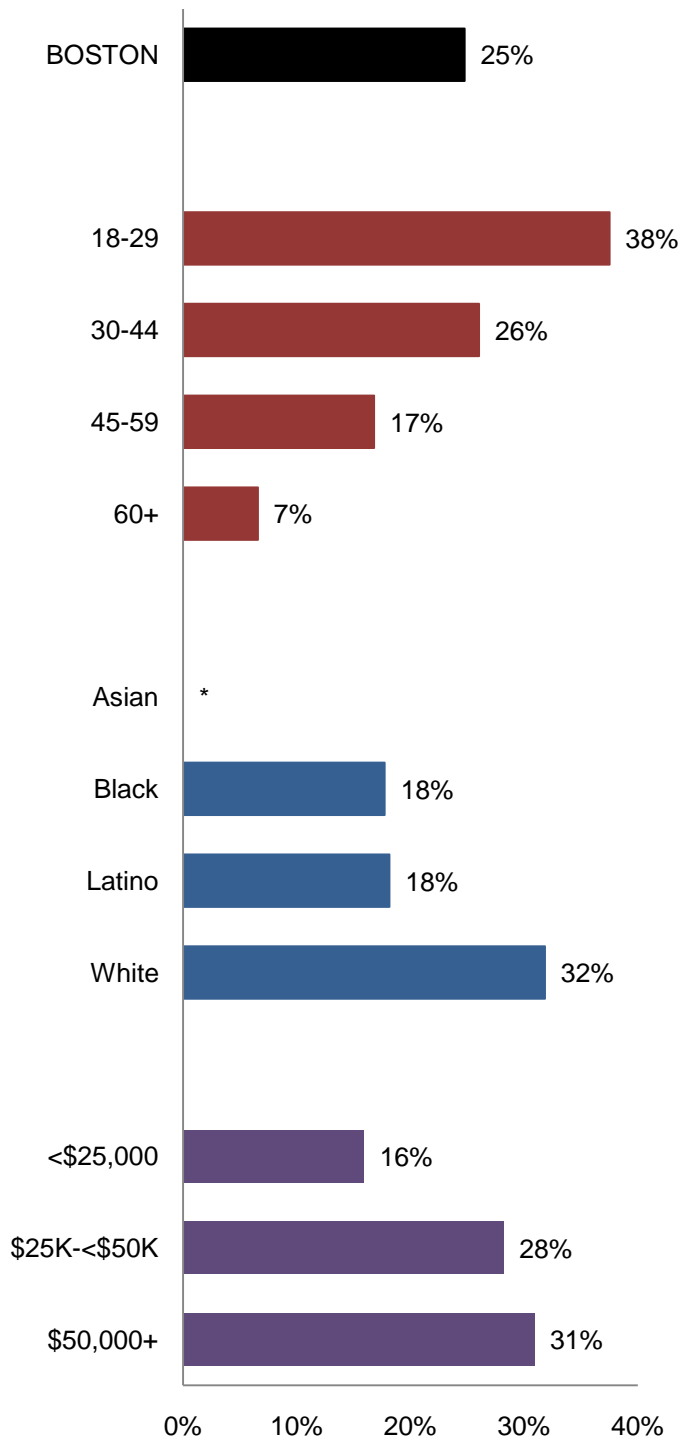
In 2008, 25% of Boston adults reported binge drinking (drinking 5 or more alcoholic drinks for men and four or more drinks for women) during the past month.

A higher percentage of adults in the 18-29 and 30-44 age groups engaged in binge drinking in the past month in comparison to adults in the 45-59 and 60+ age groups. Only 7% of adults ages 60 and over 'binged' in the past month. This percentage was significantly lower than all other age groups.

A higher percentage of White adults reported binge drinking than Black and Latino adults.

A significantly lower percentage of adults with an annual household income less than $25,000 'binged' in comparison to adults with a household income between $25,000 and $50,000, and those with income $50,000 and above.

There was no significant difference in reported condom use during last sexual intercourse among Boston adults who reported binge drinking in the past month and those who did not.

Figure 8.2 Condom Use by Binge Drinking Status in the Past Month, 2008
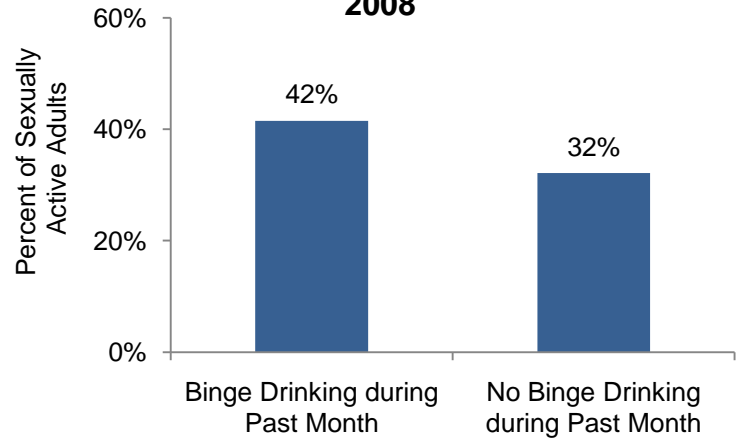
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Figure 8.3 Current Smoking by Binge Drinking Status in the Past Month, 2008
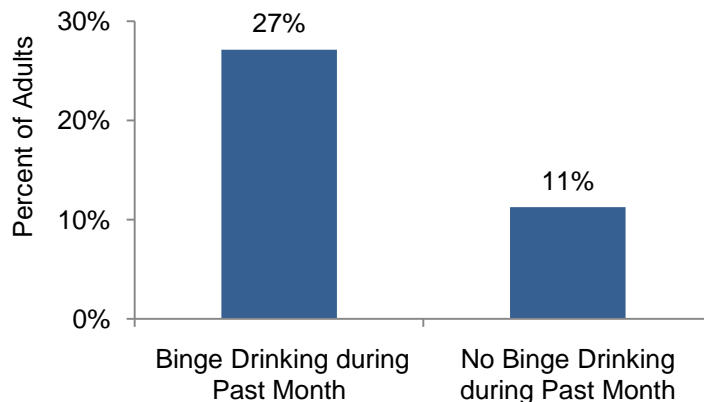
In 2008, 27% of Boston adults who reported binge drinking in the past month were also current smokers. However, only 11% of adults who reported not binge drinking in the past month were current smokers. This difference was significant.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Please see the end of this report for **Notes and Data Analysis**.

There was no significant difference in the percentage of adults who reported having experienced physical and/or sexual assault as an adult among Boston residents who reported binge drinking in the past month, and those who did not.

Figure 8.4 Experienced Physical and/or Sexual Assualt as an Adult by Binge Drinking Status, 2008
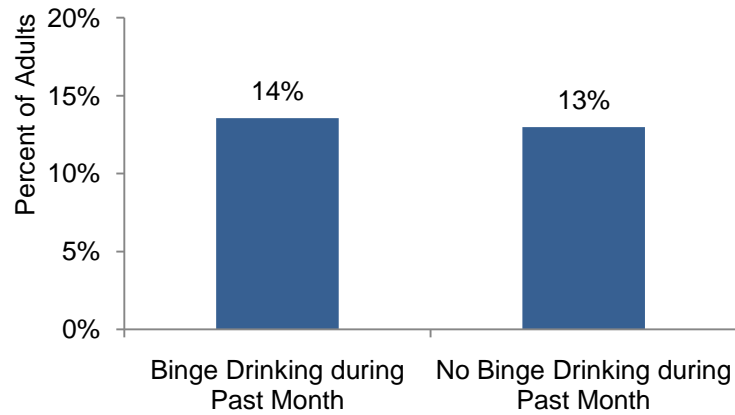
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Figure 8.5 Depressive Symptoms 15+ Days of Past Month by Binge Drinking Status, 2008

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission
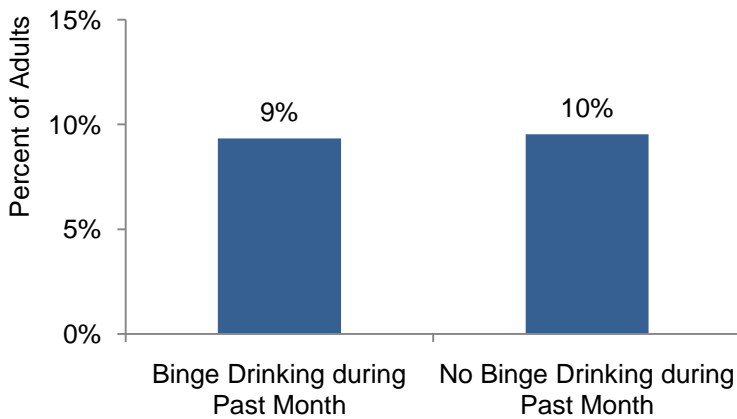
There was no significant difference in the percentage of adults with depressive symptoms (feeling sad, blue or depressed) for 15 days or more during the past month, between Boston adults who reported binge drinking and those who did not report binge drinking.

Heavy alcohol consumption is defined here as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.

In 2008, there was no significant difference in heavy alcohol consumption among males and females across age groups.

Figure 8.6 Adults with Heavy Alcohol Consumption in the Past Month by Gender and Age, 2008
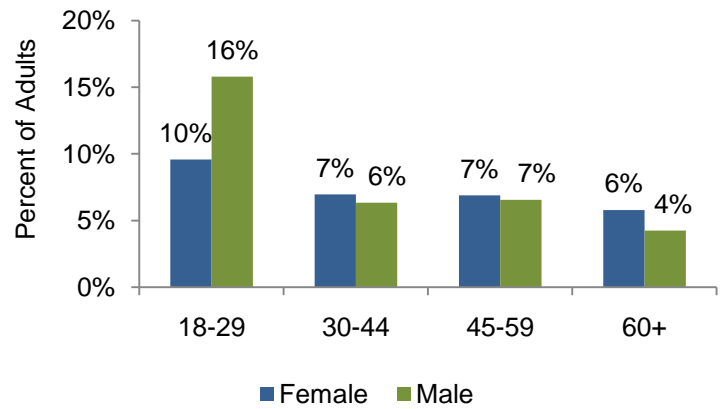
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Figure 8.7 Adults with Heavy Alcohol Consumption in Past Month by Race/Ethnicity and Income, 2008
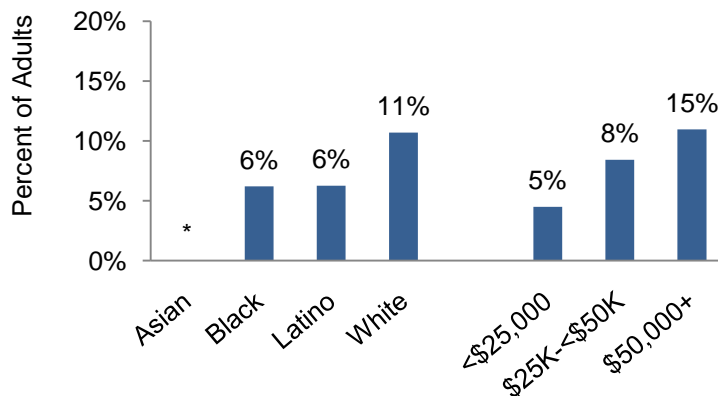
In 2008, there were no significant differences in heavy alcohol consumption by race/ethnicity. A lower percentage of adults with household income less than $25,000 engaged in heavy alcohol consumption compared to adults with household income $50,000 or more.

*Insufficient sample size for Asian residents
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

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There was no significant difference in condom use during last sexual intercourse between those who drank alcohol heavily in the past month and those who did not.

Figure 8.8 Condom Use by Heavy Alcohol Consumption Status in the Past Month, 2008
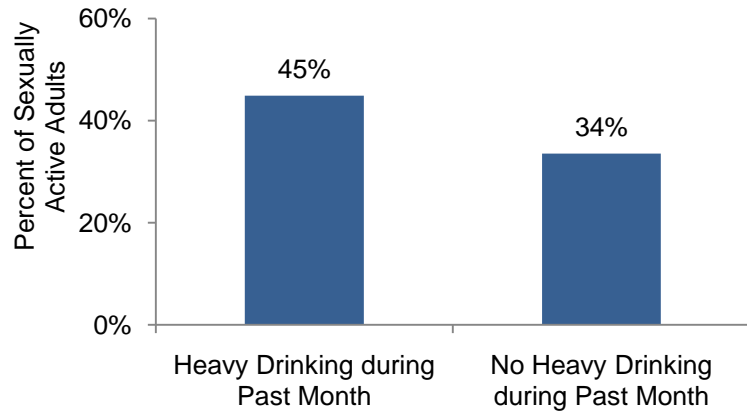
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

**Figure 8.9 Current Smoking by Heavy Alcohol Consumption Status in the Past Month, 2008**
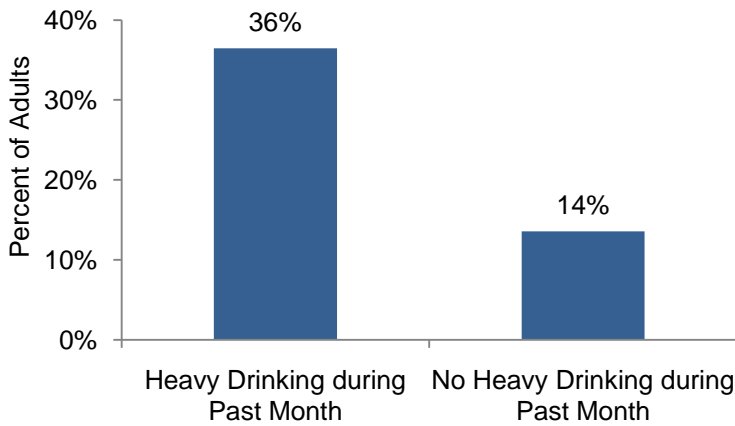
In 2008, 36% of adults reporting heavy alcohol consumption were current cigarette smokers. In contrast, a significantly lower percentage of adults who did not drink heavily were smokers (14%).

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

There was no significant difference between Boston adults with heavy alcohol consumption and those without in the percentage who experienced physical and/or sexual assault as an adult.

Figure 8.10 Experienced Physical and/or Sexual Assault as an Adult by Heavy Alcohol Consumption Status, 2008
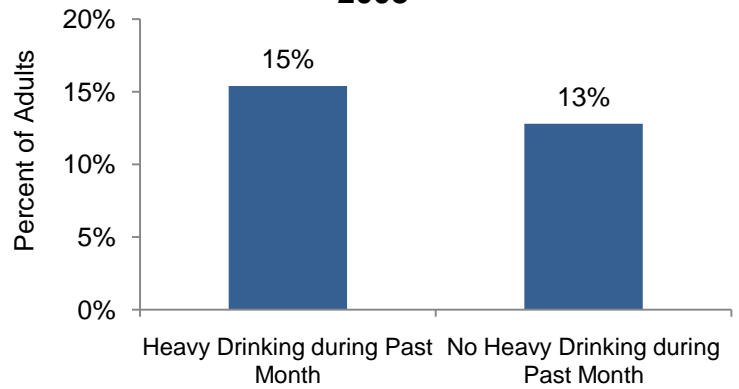
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Figure 8.11 Depressive Symptoms 15+ Days of Past Month by Heavy Alcohol Consumption Status, 2008
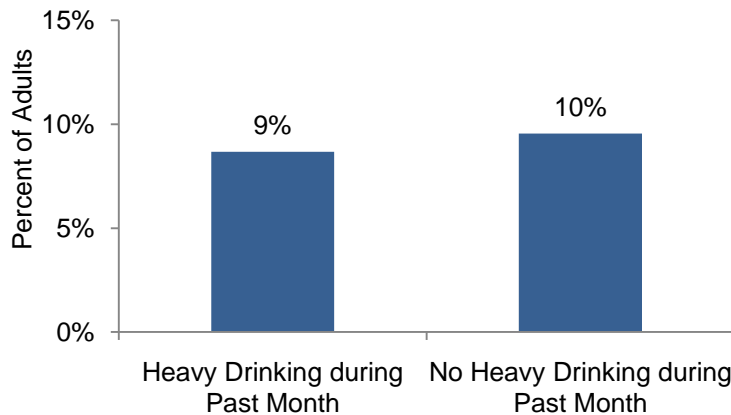
In 2008, there was no significant difference in adults who felt depressive symptoms (feeling sad, blue or depressed) for 15 days or more during the past month, between Boston adults with heavy alcohol consumption and those without.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Please see the end of this report for **Notes and Data Analysis**.

Figure 8.12 Adults with Heavy Alcohol Consumption in the Past Month by Neighborhood, 2008
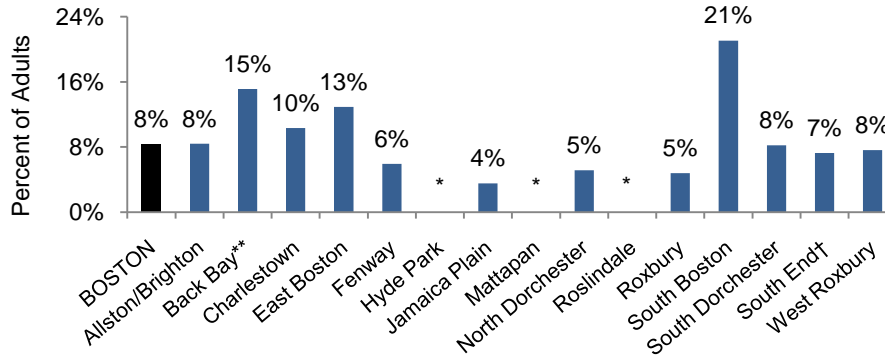
*Insufficient sample size for Hyde Park, Mattapan and Roslindale residents.
** Back Bay includes Beacon Hill, North End, and the West End.
† South End includes Chinatown.
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, 8% of Boston adults consumed heavy amounts of alcohol within the past month. Compared to Boston overall, a higher percentage of South Boston adults and a lower percentage of Jamaica Plain adults reported heavy alcohol consumption. The number of adults with heavy alcohol consumption in Hyde Park, Mattapan, and Roslindale were too small to report.

Figure 8.13 Alcohol Treatment Admissions, 2001-2010
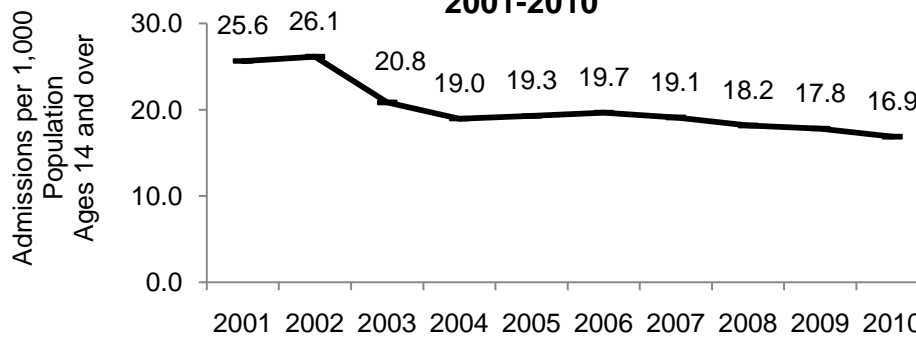
DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

The Boston alcohol treatment admissions rate for residents ages 14 and over decreased 34% from 25.6 admissions per 1,000 population in 2001 to 16.9 admissions in 2010.
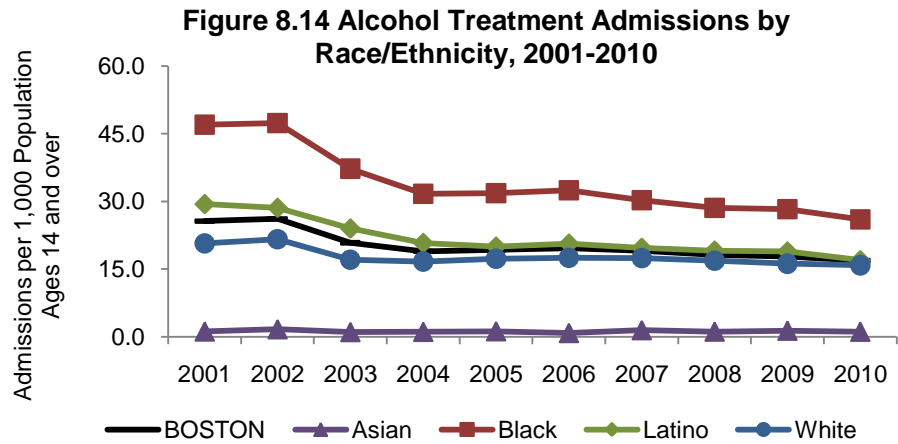
Figure 8.14 Alcohol Treatment Admissions by Race/Ethnicity, 2001-2010

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

The Boston alcohol treatment admission rate was highest for Black residents during the past decade. In 2010, the rate for Black residents was more than 1.5 times the rate for Latino and White residents and 26 times the rate for Asian residents.

From 2001 to 2010, the alcohol treatment admissions rate declined 45% for Black residents, 42% for Latino residents and 23% for White residents.
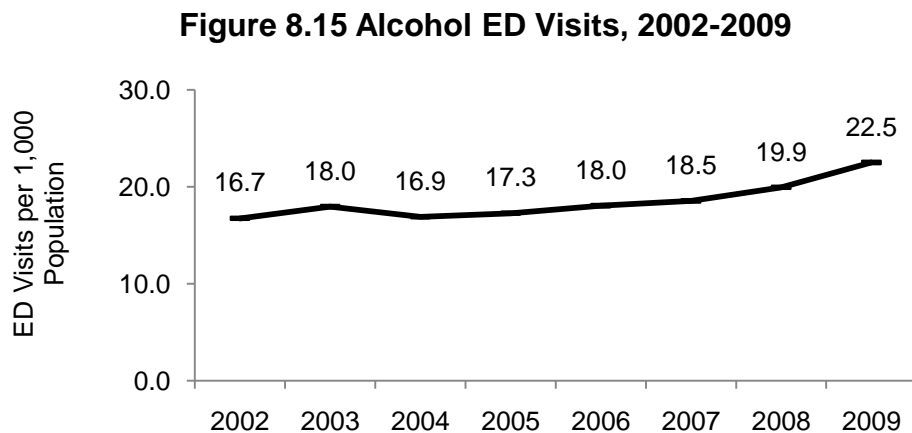
Figure 8.15 Alcohol ED Visits, 2002-2009

DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

From 2004 to 2009, Boston's alcohol ED visit rate increased 33%.

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Figure 8.16 Alcohol Hospitalizations, 2002-2009
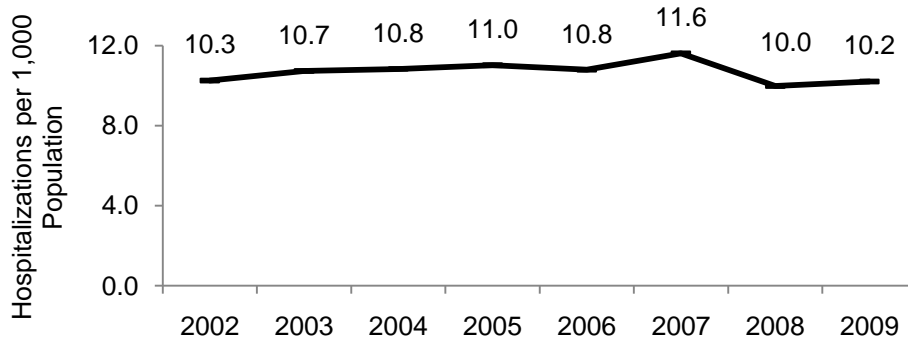
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

Between 2002 and 2009, alcohol hospitalizations for Boston residents remained relatively stable with a slight peak in 2007.

Figure 8.17 Cirrhosis Hospitalizations, 2002-2009
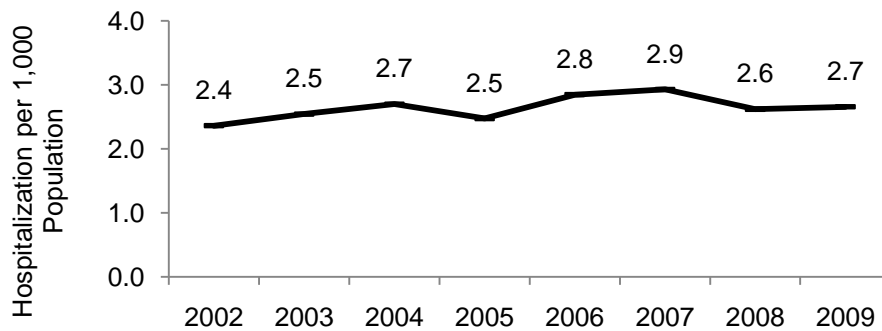
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

The rate of cirrhosis hospitalizations for Boston residents remained stable between 2002 and 2009, averaging 2.6 hospital admissions per 1,000 residents annually.

Figure 8.18 Alcohol Mortality, 2000-2008
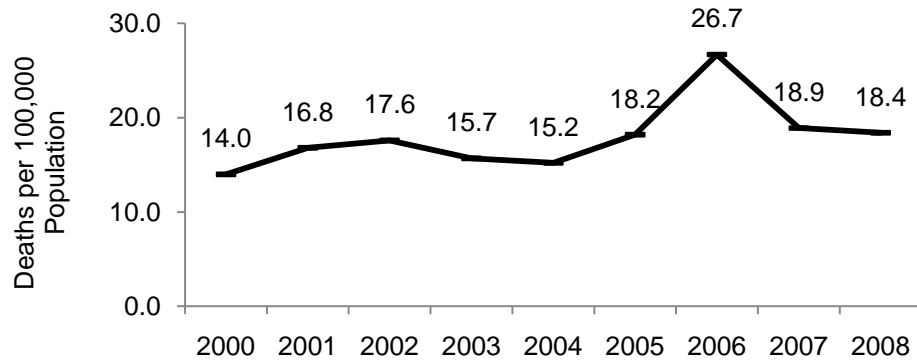
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2004 to 2006, Boston's alcohol mortality rate increased 76% before decreasing 31% from 2006 to 2008.

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Figure 8.19 Alcohol Mortality by Age, 2006-2008 Combined
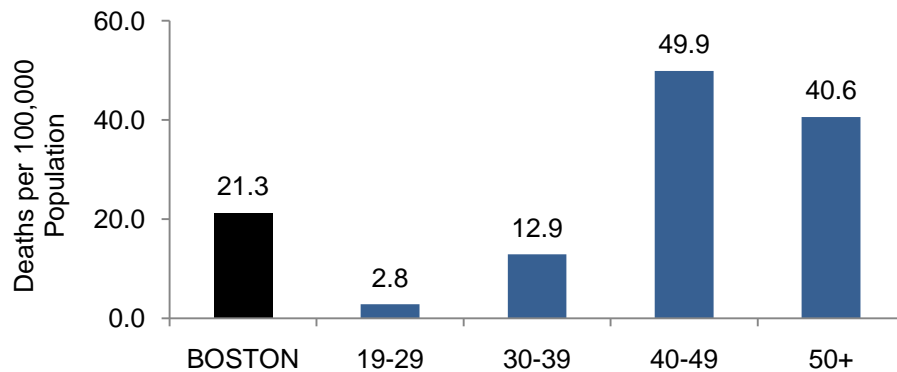
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Boston residents ages 40 to 49 and 50 years and older had the highest average annual alcohol mortality rates during the combined years of 2006 to 2008 The mortality rate for residents ages 40 to 49 was approximately 18 times the rate of residents ages 19 to 29.

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During the combined years of 2006 to 2008, the average annual alcohol mortality rate for Boston male residents was four times the mortality rate for female residents.

Figure 8.20 Alcohol Mortality by Gender, 2006-2008 Combined
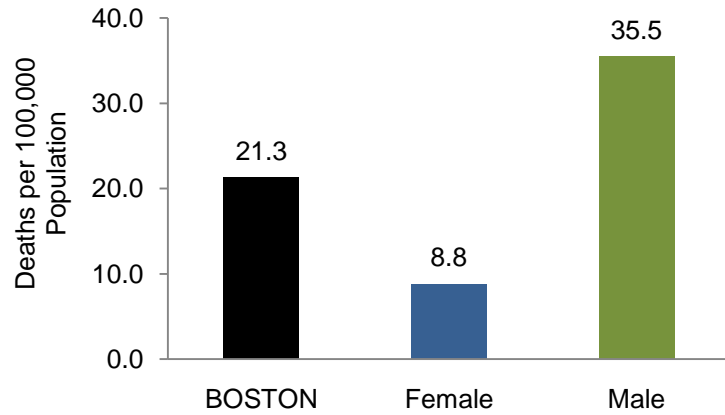
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Figure 8.21 Alcohol Mortality by Race/Ethnicity, 2006-2008 Combined

There were too few alcohol-related deaths for Asian residents to permit calculation of a rate.
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health
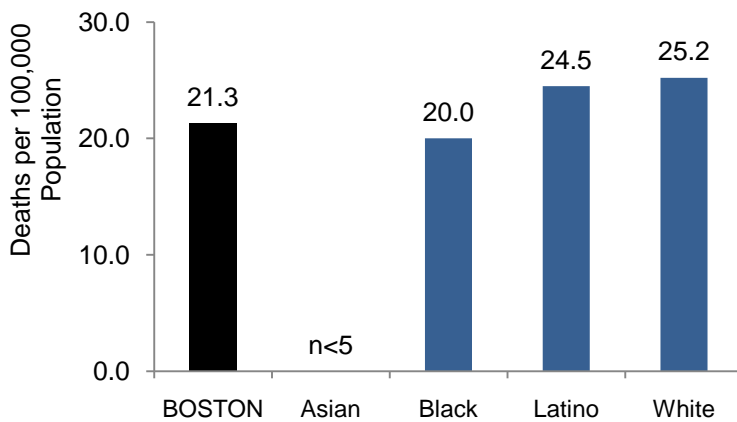
Boston White residents had the highest average annual alcohol mortality rate during 2006 to 2008 and Latino residents, the second highest. Black residents had the lowest alcohol mortality rate during the same time period.

Figure 8.22 Alcohol Mortality by Neighborhood, 2006-2008 Combined
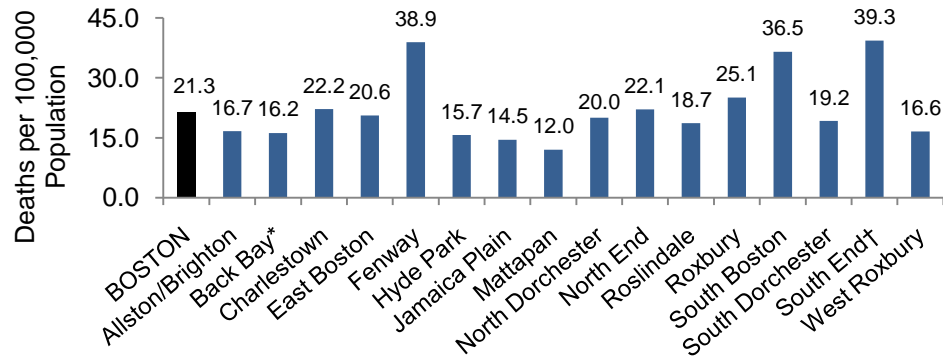
*Includes Beacon Hill, Downtown, and the West End
†Includes Chinatown
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During the combined years of 2006 to 2008, South End, Fenway, and South Boston had the highest average annual alcohol mortality rates among Boston neighborhoods. Their rates were between 71% and 85% higher than the overall Boston rate. Three other neighborhoods also had an alcohol mortality rate higher than the Boston rate: Charlestown, the North End, and Roxbury.

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http://www.cdc.gov/vitalsigns/BingeDrinking/LatestFindings.html Accessed July 8, 2011.

4. Centers for Disease Control. Vital Signs.
http://www.cdc.gov/vitalsigns/BingeDrinking/LatestFindings.html Accessed July 8, 2011.

5. US Department of Health and Human Services, National Institute on Health, National Institute of Alcohol Abuse and Alcoholism. Alcohol Alert. Number 76, July 2008.

Notes and Data Analysis

Youth Drug and Alcohol Use

Figure 1.1
NOTE: Survey question reads, "Thinking about your neighborhood, how much of a problem is people using or being addicted to drugs?"
DATA ANALYSIS: Harvard Youth Violence Prevention Center
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 1.2
NOTE: Survey question reads, "During your life, how many times have you used marijuana?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.3
NOTE: Survey question reads, "During the past 30 days, how many times did you use marijuana?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.4
NOTE: Survey question reads, "During the past 30 days, how many times did you use marijuana?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.5
NOTE: Survey question reads, "During the past 30 days, how many times did you use marijuana?" These data do not include persons whose gender and race/ethnicity were not reported.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.6
NOTE: Survey questions read, "During the past 30 days, how many times did you use marijuana?", "During the past 30 days, on how many days did you smoke cigarettes?", "During the past 12 months, how would you describe your grades?", "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?", "Now, thinking back about the last time you had sex, did you or your partner use a condom?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.7
NOTE: Survey question reads, "In the past 30 days, on how many days did you use any illegal drug other than marijuana? (For example, meth, heroin, cocaine, crack, ecstasy, or LSD.)
DATA ANALYSIS: Harvard Youth Violence Prevention Center
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 1.8
NOTE: Survey questions reads "During the past 30 days, on how many days did you smoke cigarettes?", "During the past 12 months, how would you describe your grades?", "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?", "Now, thinking back about the last time you had sex, did you or your partner use a condom?" "Drug Use other than Marijuana" was calculated as any use of cocaine, heroin, methamphetamine, ecstasy, illegal steroids, or inhalants during lifetime.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.9
NOTE: Survey question reads, "During your life, how many times have you used heroin (also called smack, junk or China White)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.10
NOTE: Survey question reads, "During your life, how many times have you used heroin (also called smack, junk or China White)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.11
NOTE: Survey question reads, "During your life, how many times have you used any form of cocaine, including powder, crack or freebase?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.12
NOTE: Survey question reads, "During your life, how many times have you used any form of cocaine, including powder, crack or freebase?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.13
NOTE: Survey question reads, "During your life, how many times have you used methamphetamines (also called speed, crystal, crank or ice)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.14
NOTE: Survey question reads, "During your life, how many times have you used methamphetamines (also called speed, crystal, crank or ice)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.15
NOTE: Survey question reads, "During your life, how many times have you used ecstasy (also called MDMA, E or X)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.16
NOTE: Survey question reads, "During your life, how many times have you used ecstasy (also called MDMA, E or X)?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.17
NOTE: Survey question reads, "During your life, on how many days have you had at least one drink of alcohol?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.18
NOTE: Survey question reads, "During the past 30 days, on how many days have you had at least one drink of alcohol?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.19
NOTE: Survey question reads, "During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.20
NOTE: Survey questions read, "During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?, "During the past 30 days, on how many days did you smoke cigarettes?", "During the past 12 months, how would you describe your grades?", "During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?", "Now, thinking back about the last time you had sex, did you or your partner use a condom?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.21
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 1.22
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Overall Drug and Alcohol Abuse

Figure 2.1
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.2
NOTE: Data are presented as crude rates. These data do not include persons whose race/ethnicity was not reported, except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.3
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.4
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.5
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.6
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.7
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.8
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2.9
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Heroin/ Opioids

Figure 3.1
DATA ANALYSIS: Domestic Monitoring Program, Drug Enforcement Agency
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 3.2
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.3
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.4
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.5
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.6
NOTE: Data are presented as crude rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.7
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.8
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.9
NOTE: These data do not include persons whose race/ethnicity was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.10
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.11
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.12
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.13
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.14
NOTE: Data are presented as crude rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.15
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.16
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.17
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.18
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.19
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.20
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.21
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.22
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose gender was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.23
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 3.24
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Cocaine

Figure 4.1
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.2
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.3
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported, except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.4
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.5
NOTE: Data are presented as crude rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.6
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.7
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.8
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.9
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported, except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.10
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose gender was not reported, except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.11
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 4.12
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Marijuana

Figure 5.1
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 5.2
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Other Drugs

Figure 6.1
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Infectious Diseases Related Drug Use

Figure 7.1
DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 7.2
DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 7.3
DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 7.4
Note: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 7.5
DATA ANALYSIS: AIDS Surveillance Program, Massachusetts Department of Public Health
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Figure 7.6
DATA ANALYSIS: AIDS Surveillance Program, Massachusetts Department of Public Health
GRAPHIC: Boston Public Health Commission Research and Evaluation Office

Alcohol

Figure 8.1
NOTE: Survey question reads, "Considering all types of alcoholic beverages, how many times during the last 30 days did you have X[CATI X=5 for men, X=4 for women] or more drinks on an occasion?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.2
NOTE: Survey questions read, "Now thinking back about the last time you had sex, did you or your partner use a condom?", "Considering all types of alcoholic beverages, how many times during the last 30 days did you have X[CATI X=5 for men, X=4 for women] or more drinks on an occasion?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.3
NOTE: Survey question reads, "Considering all types of alcoholic beverages, how many times during the last 30 days did you have X[CATI X=5 for men, X=4 for women] or more drinks on an occasion?" "Current smoking" was calculated as adults who have smoked at least 100 cigarettes in their life and reported smoking every day or some days.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.4
NOTE: Survey questions read, "Physical or sexual violence includes incidents involving a stranger, acquaintance, friend, family member, or someone you are in a relationship with. By physical or sexual violence we mean being pushed, slapped or hit, made to take part in any sexual activity when you didn't want to, or otherwise harmed by another person. During your lifetime as an adult, in other words since turning 18 years old, have you experienced any physical or sexual violence?", "Considering all types of alcoholic beverages, how many times during the last 30 days did you have X[CATI X=5 for men, X=4 for women] or more drinks on an occasion?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.5
NOTE: Survey questions read, "During the past 30 days, for about how many days have you felt sad, blue, or depressed?", "Considering all types of alcoholic beverages, how many times during the last 30 days did you have X[CATI X=5 for men, X=4 for women] or more drinks on an occasion?"
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.6
NOTE: Survey question reads, "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women. These data do not include persons whose gender and age were not reported.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.7
NOTE: Survey question reads, "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.8
NOTE: Survey questions read, "Now thinking back about the last time you had sex, did you or your partner use a condom?", "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.9
NOTE: Survey questions read, women "Current smoking" is calculated as adults who have smoked at least 100 cigarettes in their life and reported smoking every day or some days "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.10
NOTE: Survey questions read, "Physical or sexual violence includes incidents involving a stranger, acquaintance, friend, family member, or someone you are in a relationship with. By physical or sexual violence we mean being pushed, slapped or hit, made to take part in any sexual activity when you didn't want to, or otherwise harmed by another person. During your lifetime as an adult, in other words since turning 18 years old, have you experienced any physical or sexual violence?", "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.11
NOTE: Survey questions read, "During the past 30 days, for about how many days have you felt sad, blue, or depressed?", "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any

alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.12
NOTE: Survey question reads, "A drink of alcohol is a 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. During the past 30 days, how many days per week or per month did you have at least one drink or any alcoholic beverage?" Heavy alcohol consumption is calculated as having more than 60 alcoholic drinks during the past month for men and more than 30 drinks for women.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.13
NOTE: Data are presented as crude rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.14
NOTE: Data are presented as crude rates. These data do not include persons whose race/ethnicity was not reported except in the Boston overall rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.15
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.16
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.17
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.18
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.19
NOTE: Data are presented as crude rates. These data do not include persons whose age was not reported, except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.20
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose gender was not reported except in the overall Boston rate.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.21
NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 8.22
NOTE: Data are presented as age-adjusted rates.
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

TECHNICAL NOTES

Substance Related vs. Substance Misuse vs. Substance Abuse
Rates
Population
Racial and Ethnic Designations
Age-Adjusted Mortality
Boston Neighborhoods

Substance Related vs. Substance Misuse vs. Substance Abuse

In our society, substances including drugs and alcohol, are used both medically and recreationally. Drug misuse occurs when illegal drugs are used or legal drugs are used in a non-medically prescribed manner. The point at which drug misuse is considered drug abuse is rather subjective. For purposes of this report all misuse is considered abuse. Since alcohol is legal and used recreationally, alcohol misuse or abuse was determined on a data source basis.

For hospital emergency department data, hospital admissions data, and mortality data, drug and alcohol abuse was determined by the presence of relevant ICD-9-CM codes (hospital ED visits or hospital admissions) or ICD-10 codes (mortality) identified among multiple levels of diagnosis/cause codes in the electronic case records in the relevant electronic database. Drug and alcohol abuse data definitions include codes beyond poisonings (e.g., codes referring to mental and behavioral disorders due to substance use, codes referring to substance dependence). As a result, drug and alcohol poisonings/overdoses are subsets of drug and alcohol abuse definitions used. Additionally, these codes often do not identify intent of drug/alcohol use and stringent determination of whether the substance was misused or abused is not possible. Often other agency substance abuse reports present hospital and mortality data under "substance-related" headings instead of "substance abuse". For this report, drug and alcohol identification among diagnostic and causal codes were considered abuse. No additional review of case records was conducted to further determine intent or causality.

In addition, ICD codes (i.e., hospital diagnostic codes and cause of death codes) often lack specificity in identifying certain drugs. As a result, drug categories (e.g., heroin/opioids) were used in certain instances to help produce reliable statistics. For a listing of codes used to identify drug and alcohol abuse, please refer to the glossary.

Rates

A rate is a measure of some event, disease, or condition in relation to a population per unit of time, for instance, the number of deaths due to opioids per 100,000 population in a given year.

For substance abuse treatment admissions, hospital emergency department visits (ED) and hospital admissions, rates are based on the number of events (admissions or visits), not on number of unique individuals or unique residents as is the case with mortality rates. An individual may appear in treatment, ED and hospital data more than once during a given time period. This distinction is not routinely emphasized throughout the text in order to avoid potential distraction from the data interpretation being presented.

Three types of rates are presented in this report: crude rates, age-specific rates (ASRs), and age-adjusted rates (AARs).

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 substance abuse treatment rates, every 1,000 people.

Age-specific rates 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.

Age-adjusted rates 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 rates in a population for a specific event such as death to a standard population (typically, the 2000 US standard population). AARs are used for Boston mortality, hospital, and emergency department data.

New cases of a communicable disease such as hepatitis C are presented as incidence rates, which may be age-specific or crude. Incidence rates are usually reported on the basis of every 100,000 people per year.

Population

The national decennial census provides the best actual count of the US population. It presents data to the level of small areas called census tracts, each of which has only a few thousand residents, to larger areas such as zip codes. Census tracts or zip codes can be combined to produce Boston neighborhood-level analyses. Zip-code based populations from the 2000 US Census were used in calculating the rates of infectious diseases, hospitalizations, emergency department visits, and substance abuse treatment admissions presented in this report. Census tract based populations from the 2000 US Census were used in calculating death rates.

To provide data on people of Latino ethnicity, who may be of any race, this report uses the 2000 US Census. The census provides data on people of Latino ethnicity as well as data on people who are Black, Asian, and White, but not Latino. This avoids the double-counting that would result if Latinos were included in the White, Black, and Asian racial categories.

Racial and Ethnic Designations

The classification of race/ethnicity used in this report varies by data source. All racial and ethnic designations except those from the death certificate, some hospital discharge data, and some emergency department data are self-reported.

Several cautions should be kept in mind when using data reported by race/ethnicity. Race and ethnicity are social constructions, not biological facts. There is often more genetic variation between members of the same race than between members of different races. In addition, the meanings of these designations are highly subject to historical, cultural, and political forces. Not

only do these designations change over time, but there is also a very subjective element that influences who is considered a member of one group or another. The concept of race can be notably vague: the term "Black," for example, includes people describing themselves as African American, African, or Caribbean, groups with distinct histories and differing health risks.

Nevertheless, racial designations are useful in that they are nearly universally used by people in the United States to describe themselves, and they permit us to identify and address health inequities that exist across racial and ethnic groups.

Boston-specific data in this report are presented for each racial and ethnic subgroup when 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."

Since Latinos can be of any race, federal data sources often report Latino persons within the race categories Black or White. In *Substance Abuse in Boston 2011*, however, Latino ethnicity is presented alongside other racial/ethnic groups. Prior to 2008, Massachusetts' hospitalization and emergency department visits data by race/ethnicity was subject to variation in reporting practices by hospitals.

Age-Adjusted Mortality

The age-adjusted rate (AAR) of mortality is calculated by applying the age-specific rate for death in a population to the year 2000 standard US population and multiplying by 100,000.

The International Classification of Disease (ICD) is a coding system developed by the World Health Organization (WHO) and 10 international centers. The ICD system standardizes medical terms used on death certificates and groups them for statistical purposes. 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. It should not be confused with the International Classification of Disease 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 from death certificates are coded using ICD-10. The change from ICD-9 to ICD-10 means that causes of death classified according to the ICD-10 are not precisely comparable to causes of death classified according to ICD-9.

Boston Neighborhoods

Neighborhoods can be defined in a number of ways. In this report, zip codes and census tracts are used to identify neighborhood boundaries since this information is often collected with Boston health data. In *Substance Abuse 2011*, most charts presenting neighborhood data use neighborhood definitions based on zip codes. However, charts presenting death data rely on neighborhood definitions based on census tracts.

DATA SOURCES AND LIMITATIONS

Boston Behavioral Risk Factor Surveillance System (BBRFSS). Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission.

The Boston Behavioral Risk Factor Surveillance System (BBRFSS) is a system of telephone health surveys of adults ages 18 and over that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury.

The Boston Public Health Commission conducts an independent survey every other year modeled after the Boston Behavioral Risk Factor Surveillance System (BRFSS) survey. Over time, the survey has been modified by the Commission to be more reflective of health risk behaviors specific to the Boston population. However, the Boston version, now called the Boston Behavior Risk Factor Surveillance System (BBRFSS) survey, has maintained many standard core questions included in the BRFSS used by the State. Results from the survey are used by the Commission to plan and implement health initiatives; to identify health problems within a population; to identify racial/ethnic disparities in access to and utilization of health care, in risk behaviors, and selected health conditions; to establish and monitor health objectives; to support health-related legislative activities; to evaluate disease prevention activities and programs, and to assist in getting grants and other funding.

Boston Youth Survey (BYS), 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Centers for Disease Control.

The BYS is conducted every two years among Boston public high school students in grades 9-12. It results from a partnership among the City of Boston Office of Human Services, Boston Public Health Commission, and the Harvard Youth Violence Prevention Center. The survey contains questions covering a wide array of topics including violence perpetration, violence victimization, and perceptions of drug use.

Census 2000, US Department of Commerce, US Census Bureau, American FactFinder.

The US census is conducted every ten years. Census 2000 data were used in the calculation of rates for *Substance Abuse in Boston 2011.* Since the population data used for these rates did not change from year to year, the impact of actual year to year population changes on rates is largely unknown. As a result, observed rate changes over time may to some extent reflect actual changes in the underlying population. Though some data for the 2010 US census have been released, this report relies solely on 2000 census data in order to maintain consistency across indicators. Additionally, undercounts of certain subpopulations may occur when people, for example, undocumented immigrants, avoid being recorded in the census for fear of contact with the government or for other reasons.

Deaths. Massachusetts Department of Public Health, Center for Health Information, Statistics, Research, and Evaluation, Division of Research and Epidemiology, Registry of Vital Records and Statistics.

Death data used by the Boston Public Health Commission pertain only to Boston residents. Death records are completed with the assistance of an informant, typically a family member or funeral director, which may result in errors (for example, in race/ethnicity reporting) that would not occur in self-reported data.

Inconsistencies in the recording of immediate cause of death, intervening causes, and the underlying cause of death have been documented nationally, which may result in under- or over-reporting of certain causes. In order to minimize the impact of these inconsistencies and to maximize the scope of drug and alcohol identification, analyses for this report relied on consideration of 10 levels of cause of death. For ICD 10 codes used, please see Alcohol Abuse Deaths and Drug Abuse Deaths in the glossary.

Emergency Department Visits. Massachusetts Division of Health Care Finance and Policy.

The hospital emergency department data represent visits not individuals. The collection of race/ethnicity information differs by reporting hospital. Some facilities request self-reported information from patients while others have staff report patient race/ethnicity. Due to changes in reporting practices, race/ethnicity data for 2008 and 2009 cannot be compared to data for previous years. For ICD-9-CM diagnosis codes used to identify drug abuse and alcohol abuse emergency department visits, please see 'Drug Abuse Emergency Department Visits and Hospital Admissions' and 'Alcohol Abuse Emergency Department Visits and Hospital Admissions' in the glossary.

Helpline Calls. The Massachusetts Substance Abuse Information and Education Helpline, Health Resources In Action and Massachusetts Department of Public Health.

The Massachusetts Substance Abuse Information and Education Helpline provides callers with information about substance abuse, substance abuse treatment options, and referrals to treatment and related services. Although calls to the helpline may include inquiries for educational information, the overwhelming majority of calls represent attempts to access the substance abuse treatment system.

Hospitalizations. Acute Care Hospital Case Mix files. Massachusetts Division of Health Care Finance and Policy.

The hospital discharge data do not represent individuals but rather discharges from Massachusetts hospitals. In a given time period one individual could have multiple hospital discharges.

The collection of race/ethnicity information differs by reporting hospital. Some facilities request self-reported information from patients, while others have staff report patient race/ethnicity. Due to changes in reporting practices, race/ethnicity data for 2008 and 2009 cannot be compared to data for previous years.

For ICD-9-CM codes used to identify drug abuse and alcohol abuse hospital admissions please see Drug Abuse Emergency Department Visits and Hospital Admissions and Alcohol Abuse Emergency Department Visits and Hospital Admissions in the glossary.

Infectious Diseases:
Hepatitis C Incidence.   Boston Public Health Commission, Communicable Disease Control Division.
HIV/AIDS Cases. Massachusetts Department of Public Health, HIV/AIDS Surveillance

Data from communicable disease surveillance systems are limited by the degree to which people with a condition seek health care that results in testing and reporting to the system. Many such diseases are asymptomatic or mild, or are treated presumptively without formal testing, and for some conditions, reporting may be less than complete. All of these factors may contribute to underestimates of the frequency of disease and/or distortions in the pattern of disease seen in the reported data.

Narcotic Related Illness (NRI) cases and Narcan® Administrations. Boston Emergency Medical Services (BEMS), Boston Public Health Commission

The Boston EMS maintains a database of Narcotic Related Illness (NRI) cases with information uploaded immediately from the electronic Patient Care Reports (ePCR) generated by Boston EMS clinicians for each patient contact. These data include administrations of naloxone (Narcan®) and whether the suspected overdose was reversed.

Substance Abuse Treatment Admissions. Massachusetts Department of Public Health, Center for Community Health, Bureau of Substance Abuse Services.

The MDPH Bureau of Substance Abuse Services funds and licenses treatment facilities which submit data every year on the people they serve. The data reflect admissions, not individuals: an individual may be admitted for substance abuse treatment more than once.
For *Substance Abuse in Boston 2011*, drug-specific treatment admissions rates were derived from summing primary, secondary and tertiary drug identifications. This method of identifying relevant cases departs from the more traditional 'primary-drug-based' method of drug based identification and was adopted in an effort to more fully account for a specific drug's impact within the entire treatment client population.

It should be noted that this dataset provides information only about people who have been admitted for treatment of substance abuse problems, not the total number who are experiencing such difficulties.

Due to changes in case identification practices, counts and rates of substance abuse treatment admissions cannot be compared to data presented in previous BPHC reports.

Youth Risk Behavioral Surveillance System (YRBSS). Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC).

The Youth Risk Behavior Surveillance System (YRBSS) is a system of national school-based surveys conducted by the Centers for Disease Control and Prevention (CDC) every other year among public high school students in grades 9-12. It is currently conducted in 44 states and 22 cities. The survey contains questions related to risk behaviors such as unintentional injuries and violence, alcohol and drug use, tobacco use, and sexual behavior; unhealthy eating behaviors, physical inactivity; and the prevalence of obesity and asthma.

The Boston Public Health Commission uses results from the YRBSS to identify the prevalence of health risk behaviors among Boston youth, identify racial/ethnic disparities, plan and implement health initiatives, support health-related legislative activities, assist in getting grants and other funding, and other activities.

GLOSSARY

This glossary provides the reader with definitions of terms commonly used throughout this report.

Age-Adjusted Rate (AAR): 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 age-adjusted rate of one group can then be compared to the age-adjusted rate of another 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. The AAR is calculated by applying the age-specific rate in a population (for a specific event such as death) to a standard population. The year 2000 standard US population is used in this report.

Acquired Immune Deficiency Syndrome (AIDS): See HIV/AIDS.

African American: All persons identified as of African descent and do not self-identify as Latino.

Age-Specific Rate (ASR): The number of events such as deaths or diseases per year in a given age group per 100,000 people in that age group.

Age-Specific Hospitalization or Emergency Department Visit Rate: The number of hospitalizations or emergency department visits per year in a given age group per 1,000 people in that age group.

Alcohol: A colorless flammable liquid made by the fermentation of sugars and starches and widely used as a solvent and in drugs.

Alcohol Abuse Emergency Department Visits and Hospital Admissions: The alcohol abuse code definition for emergency department visits and hospital admissions is based on a definition used by the National Institute on Alcohol Abuse and Alcoholism (NIAAA)(1) and include the following ICD-9-CM codes: 291, 2910, 2911, 2912, 2913, 2914 , 2915, 2918, 2919, 303, 3030, 3039, 3050, 7903, E8600, E8609, 2652, 3575, 4255, 5353, 5710, 5711, 5712, 5713, 5714, 5715, 5716, 5718, 5719, 5723, 7903, and 9800 excessive levels of blood alcohol from the National Institute of Drug Abuse (NIDA). Multiple diagnosis levels were considered. Due to changes in case identification practices, counts and rates cannot be compared to data presented in previous BPHC reports.

Alcohol Abuse Deaths: Death induced by alcohol use/abuse, such as liver disease due to alcohol consumption, and accidental alcohol overdose. 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. The alcohol abuse death code definition is from National Vital Statistics Reports (2). ICD-10 codes E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K85.2, K86.0, R78.0, X45, X65, and Y15 are used across multiple cause levels to identify alcohol abuse deaths. Due to changes in case identification practices, counts and rates of alcohol abuse deaths cannot be compared to data presented in previous BPHC reports.

Asian: All persons identified as Asian or Pacific Islander (e.g., Chinese, Japanese, Hawaiians, Cambodians, Vietnamese, Asian Indians, and Filipinos) who do not also identify themselves as Latino.

Benzodiazepines: a class of drugs that are used in treating anxiety, insomnia, agitation, seizures, muscle spasms, and alcohol withdrawal. Benzodiazepines include clonazepam (Klonopin®), alprazolam (Xanax®), lorazepam (Ativan®), diazepam (Valium®), triazolam (Halcion®), and chlordiazepoxide (Librium®).

Binge Drinking: A pattern of drinking that brings a person's blood alcohol level to 0.08 grams percent or above. For adults, CDC and this report defines binge drinking as when men consume five or more drinks or when women consume four or more drinks on an occasion.

Black: All persons identified as Black (e.g., African Americans, Haitians, West Indians) who do not also identify themselves as Latino.

Boston Behavioral Risk Factor Surveillance System (BBRFSS): see *Data Sources and Limitations* and *Technical Notes* sections of this report.

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. ICD-10 codes I00-I09, I11, I13, I20-I51, I60-I69, and I70 are used in identifying CVD deaths for analysis.

Census 2000: The count of the entire American population undertaken by the US Census Bureau in 2000. 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.

Club Drugs: Drugs including MDMA (Ecstasy), GHB, Rohypnol, ketamine, methamphetamine, and LSD. are some of the club or party drugs being used by young adults at all-night dance parties such as "raves" or "trances," dance clubs, and bars.

Cocaine: A highly addictive stimulant drug derived from the leaves of the coca plant indigenous to South America. Illicit cocaine is usually distributed in a white powder form (or as off-white chunks) or in a rock crystal form known as crack. The powdered, hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Crack is cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. Crack cocaine is included within this report's cocaine indicators.

Codes (hospital and death): The hospital admissions diagnostic codes and emergency department visit diagnostic codes used in this report are from the International Classification of Diseases, 9th Revision Clinical Modification (ICD-9-CM) codes. The cause-of-death codes are from the International Classification of Diseases, 10th Revision (ICD-10), ICD-9-CM and ICD-10 are products of the World Health Organization (WHO).

Crack: See 'Cocaine'

Crude Rates: 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. 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. Also see the *Technical Notes* section of this report.

Death Rate: The number of deaths per year per 100,000 people.   This can be presented as an age-specific rate, crude rate, or age-adjusted rate.

Drug Abuse Emergency Department Visits and Hospital Admissions: The drug abuse code definition for emergency department visits and hospital admissions is based on a definition offered by the National Institute on Drug Abuse (NIDA)(3) and include the following ICD-9-CM codes: 292, 2920, 2921, 2922, 2928, 2929, 304, 3040, 3041, 3042, 3043, 3044, 3045, 3046, 3047, 3048, 3049, 305, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 9650, 9670, 9674, 9678, 9685, 9690, 9691, 9692, 9693, 9694, 9695, 9696, 9697, 9698, 9699, 9700, 9701, 9708, 9709, E850, E8500, E8501, E8502, E851, E852, E853, E8532, E854, E8540, E8541, E8542, E855 ,E8552 ,E858. In identifying relevant ICD-9-CM codes, multiple diagnosis levels were considered. Drug counts and rates cannot be compared to data presented in previous BPHC reports due to changes in case identification practices.

Drug Abuse Deaths: Deaths due to 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. This classification 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. The drug abuse death codes definition used is based on a drug-related death definition from National Vital Statistics Reports (4). ICD-10 codes D52.1, D59.0, D59.2, D61.1, D64.2, E06.4, E16.0, E23.1, E24.2, E27.3, E66.1, 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, G21.1, G24.0, G25.1, G25.4, G25.6, G44.4, G62.0, G72.0, I95.2, J70.2, J70.3, J70.5, K85.3, L10.5, L27.0, L27.1, M10.2, M32.0, M80.4, M81.4, M83.5, M87.1, R50.2, R78.1, R78.2, R78.3, R78.4, R78.5, X40-X44, X60-X64, X85, and Y10-Y14 are used across multiple cause levels for identifying drug abuse deaths. Due to changes in case identification practices, counts and rates of drug abuse deaths cannot be compared to data presented in previous BPHC reports.

Ecstasy (MDMA): A hallucinogen and stimulant that when ingested, prevents the brain from reabsorbing serotonin. This process results in a prolonged effect on the body. Because of its use in the night club "rave" scene, ecstasy is considered a club drug.

Heavy Alcohol Consumption (Heavy Drinking): A pattern of alcohol drinking defined in this report as consuming an average of more than two drinks per day for men and more than one drink per day for women during a one month period.

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.

Heroin: A white crystalline derivative of morphine which was commercially introduced in Germany in 1898. It is a highly addictive analgesic and has major effects on the central nervous system and impacts the endocrine and autonomic nervous systems.

Hispanic: See 'Latino'.

HIV/AIDS: The human immunodeficiency virus (HIV) infection, which leads to Acquired Immune Deficiency Syndrome (AIDS) or other HIV-related infections.

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.

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.

Hospitalization (hospital admissions or discharges): 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. Hospitalization data presented in this report represents only hospitalizations from acute, short-stay, non-federal hospitals.

Human Immunodeficiency Virus (HIV): The virus that is responsible for causing AIDS.

Incidence: The number of new cases of a particular disease over a period of time (usually a year) and in relation to the population in which it occurs.

Incidence Rates: Incidence rates are the number of new cases in a given time period divided by the number of people at risk in the population at the beginning of the study. Incidence rates are usually reported on the basis of every 100,000 people per year. New cases of a communicable disease such as hepatitis are presented as an incidence rate, which may be age-specific or crude.

Infectious Diseases: Infectious diseases are illnesses resulting from the presence of pathogenic microbial agents, such as viruses, bacteria, fungi, parasites, and prions. Transmission can occur from one person or species to another.

Insufficient Sample Size: In this report the phrase "insufficient sample size" is used on occasion when certain data points are not presented. This occurs when survey data are stratified by population groups and as a result, there is not a large enough sample (number of survey respondents or recorded health events) to allow the presentation of reliable point estimates. Data are also not presented if a sample size is too low to protect the confidentiality of the respondents.

Intentional Injury: Intentional injury arises from assault and battery, homicide, or suicide.

International Classification of Diseases,10th Revision (ICD-10) Codes: Mortality data used in this report from 1999 and later years are classified according to the International Classification of Diseases, 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 replaced ICD-9 classification. For more information on these codes and their use, see http://www.cdc.gov/nchs/icd9.htm#ICD-10-CM.

Intravenous Drug Use (IDU): A method of introducing a drug into the body using a needle and syringe, which is pierced through the skin and into the body (also called Injection Drug Use).

Latino: Includes people of any race (Asian, Black, White, or Other) identified as Hispanic or Latino (such as Puerto Rican, Mexican, Cuban, Spanish, or Dominican).

Marijuana: *Cannabis sativa L.* is the most commonly used illicit drug in the United States. It is a dry, shredded green and brown mix of leaves derived from the hemp plant Cannabis sativa thought to have originated in India, north of the Himalayan mountains. There are many variations of marijuana, depending on the parent seed, light conditions, temperature and the soil environment. These factors also determine the concentration of THC (tetra-hydrocannabinol), the pharmacologically active ingredient in the plant and cannabinol.

Methamphetamine: A central nervous system stimulant which is also used as a hydrochloric salt in the treatment of Attention Deficit Hyperactivity Disorder (ADHD).

MDMA: See 'Ecstasy'

Mortality: Death, or the relative frequency of death per unit of population in a specific time period.

n<5: A notation used to indicate that for this health indicator there were fewer than five occurrences (for example, deaths, new case of a disease) and therefore a rate could not be presented. Also see the *Note to Readers* section of this report.

Narcan® (naloxone): A drug that is administered to counter the effects of an opioid overdose. This drug has also been used as a part of emergency kits for heroin users and has been shown to reduce the mortality rate of opioid overdoses.

Neighborhood: One of 16 distinct geographical areas in Boston. See the *Technical Notes* section of this report.

Opiates: See 'Opioids'

Opioids: Drugs that bind to opioid receptors in the nervous system or gastrointestinal tract, and produce pharmacological effects including pain relief, sedation, constipation and respiratory depression. Though competing definitions exist, for this report opioids include opiates (drugs that contain chemical compounds directly from the opium poppy), semi-synthetic opioids (drugs synthetically derived from chemical compounds found in the opium poppy) and other fully synthetic drugs designed to have similar chemical properties and pain relieving effects as opiates. Examples of opioids include heroin, oxycodone (OxyContin®), hydrocodone, codeine, methadone, morphine, and fentanyl.

Population: The sum total of residents. Population statistics in this report are generated from the 2000 US census conducted by the federal government which provided a close to literal count of people living in the United States.

Sample Size: Sample size refers to the number of observations of a statistical sample. For survey data, the sample size refers to the number of people who responded to the survey. Also see definition for insufficient sample size.

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 that can be used to calculate age-adjusted rates. In this report, the year 2000 US standard population is used to calculate age-adjusted ED visit, hospitalization, and mortality rates.

Statistical Significance: The result of statistical tests that help determine to what extent findings accurately describe the population of interest or whether findings can be explained by chance.

Substance Abuse Deaths: Death in which drugs and/or alcohol played a causal role (see codes used in 'Alcohol Abuse Deaths' and 'Drug Abuse Deaths'). Due to changes in case identification practices, counts and rates of substance abuse deaths cannot be compared to data presented in previous BPHC reports.

White: All persons self-identified as White who do not also identify themselves as Latino.

Youth Risk Behavioral Surveillance System (YRBSS):   See *Data Sources and Limitations* and *Technical Notes* sections of this report.

References

1. Chen Y. Trends in Alcohol-Related Morbidity Among Short-Stay Community Hospital Discharges, United States, 1979-2006. Surveillance Report No. 84. National Institute on Alcohol Abuse and Alcoholism (NIAAA). August 2008.

2. National Vital Statistics Reports. Volume 58, No. 19, May 20, 2010, p. 120.

3. Assessing Drug Abuse Within and Across Communities. Community Epidemiology Surveillance Networks on Drug Abuse. NIH Pub No. 06-3614, September 2006, 53, 60-61.

4. National Vital Statistics Reports. Volume 58, No. 19, May 20, 2010, pp. 119-120.

Overall Event Counts (Boston Residents)

Overall Substance Abuse	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Treatment Admissions	NA	19,806	20,784	17,265	16,607	16,973	16,987	17,604	17,151	17,433	16,728
Helpline Calls	NA	5,202	4,540	4,247	4,217	3,409	3,253	2,348	2,801	2,647	1,790
Emergency Department Visits*	NA	NA	12,822	13,898	13,333	13,509	13,710	13,853	14,545	16,444	NA
Hospital Admissions*	NA	NA	8,276	8,806	8,741	8,702	8,557	9,018	8,102	8,161	NA
Mortality (Deaths)	134	178	168	184	159	165	215	220	176	NA	NA
Heroin/Opioids	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Heroin Treatment Admissions	NA	9,393	10,356	8,718	8,784	8,628	8,611	9,432	9,368	9,756	9,406
Other Opioids Treatment Admissions	NA	902	1,060	1,037	998	1,019	1,086	1,200	1,363	1,503	1,418
Heroin Helpline Calls	NA	1,822	1,527	1,660	1,552	1,140	1,058	712	934	892	516
Other Opioids Helpline Calls	NA	607	622	600	690	508	501	352	427	457	369
Heroin/Opioids ED Visits*	NA	NA	1,936	1,885	1,681	1,702	1,526	1,424	1,649	2,034	NA
Heroin/Opioids Hospital Admissions*	NA	NA	2,030	2,275	2,148	1,908	1,834	1,824	1,693	1,739	NA
Heroin/Opioids Mortality (Deaths)	36	71	59	75	58	51	92	92	63	NA	NA
Cocaine	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Treatment Admissions	NA	6,959	7,046	5,637	5,285	5,882	6,324	6,168	5,920	5,336	4,751
Helpline Calls	NA	1,014	896	823	805	709	726	425	491	402	304
Emergency Department Visits*	NA	NA	1,223	1,122	957	1,154	1,327	1,293	1,403	1,404	NA
Hospital Admissions*	NA	NA	1,244	1,449	1,419	1,597	1,668	1,817	1,470	1,226	NA
Mortality (Deaths)	25	39	30	52	36	30	58	55	38	NA	NA
Marijuana	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Treatment Admissions	NA	3,821	3,459	2,975	2,491	2,497	2,506	2,489	2,324	2,652	2,291
Helpline Calls	NA	283	269	193	199	148	176	108	112	96	110
Alcohol	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Treatment Admissions	NA	12,747	12,990	10,363	9,426	9,579	9,778	9,495	9,035	8,856	8,388
Helpline Calls	NA	2,740	2,310	1,958	2,034	1,722	1,683	1,286	1,425	1,308	898
Emergency Department Visits*	NA	NA	8,831	9,474	8,881	9,019	9,420	9,655	10,353	11,668	NA
Hospital Admissions*	NA	NA	4,582	4,765	4,689	4,799	4,553	4,980	4,163	4,217	NA
Mortality (Deaths)	70	86	89	79	76	89	137	96	91	NA	NA

*Emergency Department Visits and Hospital Admissions data reflect a fiscal year running October through September.
Note: With the exception of substance abuse deaths, an individual may experience more than one event. All non-mortality counts reflect the total number of events - not unique individuals.
For additional counts (e.g., subgroup), please contact the Boston Public Health Commission Office of Research and Evaluation.