

**HEALTHY BROOKLINE
VOLUME XVII**



YOUTH RISK BEHAVIOR SURVEY
Brookline Department of Public Health
2016

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Executive Summary for Healthy Brookline Volume XVII

Introduction

Healthy Brookline Volume XVII, part of the Brookline Department of Public Health's annual assessment of the health status of the Brookline community, provides updated information on Brookline youth's risk behaviors. Data was gathered from the *Brookline High School Health Survey* given to Brookline students in grades 7-12 during March and April 2015. (Previous editions of *Healthy Brookline* involving youth risk behavior include Volumes IV, VIII, XI, XIV and XV.)

Brookline High School Health Survey is based on a national initiative, the *Youth Risk Behavior Survey (YRBS)*, which was developed by the Centers for Disease Control and Prevention in 1990 to monitor priority health risk behaviors that contribute markedly to the leading causes of death, disability, and social problems among youth and adults in the United States. These behaviors, often established during childhood and early adolescence, include:

- Alcohol and other drug use;
- Tobacco use;
- Unhealthy dietary habits;
- Inadequate physical activity;
- Sexual practices that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection;
- Actions that contribute to unintentional injuries and violence.

The *YRBS* is administered biannually both state and nationwide, and provides national data representative of high school students in public and private schools in the United States, as well as data representative of the state and local school districts in which it is administered. This range of information allows *Healthy Brookline XVII* to:

- Suggest the prevalence of health risk behaviors;
- Assess whether health risk behaviors appear to increase, decrease, or stay the same over time;
- Examine the co-occurrence of health risk behaviors;
- Provide comparable national, state, and local data;
- Provide comparable data among subpopulations of youth.

The *Brookline High School Health Survey* also includes questions pertaining to risk and protective factors taken from the National Institute of Health's *Monitoring the Future, MTF*, survey.

Methodology

All of the students who were present at Brookline High School (BHS) on the days the *Brookline High School Health Survey* was given in March and April of 2015 participated during their advisory period: 1,446 students in grades 9 – 12. The middle school health survey from March 2015 included 936 students in grades 7-8 throughout Brookline's eight K - 8 Schools. (Students in the 6th grade were not surveyed.) The results for the Brookline sample were compiled in the summer and fall of 2015.

The national and statewide surveys of the *YRBS*, to which the Brookline sample is compared, were administered during the spring of 2013. Both used a multi-stage clustering sampling design to produce randomly selected, representative samples of students. The national *YRBS* included data from 13,633 questionnaires from 148 public and private schools, grades 9 – 12. (There is no national survey for the middle school level.) The Massachusetts *YRBS* included 8,514 students in 121 schools. Students taking the middle school survey represented 6th, 7th and 8th grades. The school and student participation at both levels was voluntary and anonymous. Because of the high student and school response rates, the results of this survey can be generalized to apply to all public high schools across Massachusetts.

Summary of Results

Alcohol Use

Some measures of alcohol use among 9th – 12th graders appeared to continue to decline, with only binge drinking rates remaining somewhat constant from 2013 to 2015.

- Lifetime use rates were 62% in 2011, 56% in 2013, and 47% in 2015.
- First use of alcohol before age 13 decreased from 12% in 2013 to 6% in 2015.
- Reported use of alcohol during the month prior to the survey was 35% in 2013, as compared to 27% in 2015.
- Among Brookline 9th – 12th graders, 19% reported binge drinking in the month prior to the survey in 2013, as compared to 18% in 2015. Students who reported recent binge drinking also reported higher rates of depression (64%) compared to the general student population of 20%.
- Rates of reported drinking during the school day were 5% in 2013 and 2% in 2015.
- Twelfth graders reported significantly higher rates of several behaviors than 9th graders, including lifetime and recent use, as well as recent binge drinking
- Twelfth graders also reported significantly higher rates of driving in a car with a driver under 21 who had been drinking, 12%, as compared with 2% of 9-11th graders.
- Males reported higher rates than females of first use of alcohol under age 13 and recent binge drinking, and similar to females in alcohol use in the past 30 days.
- There was little difference between males and females in reporting alcohol use in the past 30 days.

Among 7th and 8th graders, most of the measures of alcohol appeared to continue to decline from 2011 to 2015.

- Lifetime use rates were 22% in 2011, 15% in 2013 and 11% in 2015.
- Rates of first use of alcohol before age 13 decreased from 15% in 2011 to 11% in 2013 and 6% in 2015.
- Rates of recent use of alcohol in the past 30 days were 8% in 2011, 6% in 2013, and 4% in 2015.

For most comparable alcohol use indicators, Brookline 9th – 12th graders reported lower rates than state and national levels. Rates were similar for recent binge drinking. Brookline 7th and 8th graders reported lower rates of lifetime alcohol use and similar rates of recent alcohol use in comparison to students on the statewide survey. National data are not collected at the middle school level, so there is none to compare.

Marijuana Use

Reported rates among Brookline 9th – 12th graders from 2011 to 2015 continued to decline over the past four years.

- Rates of having ever used marijuana declined from 41% in 2011 to 34% in 2013, and 27% in 2015.
- The reported rates of first using marijuana before age 13 declined from 5% in 2011 to 2% in 2013 and 1% in 2015. Students who started using marijuana at younger ages reported higher rates of depression.
- Reported use of marijuana during the month before the survey declined from 25% in 2011 to 21% in 2013 and 16% in 2015. Students who reported recent marijuana use also reported higher rates of depression (51%) than the general student population (20%).
- Students who reported using marijuana 100 or more times in their lives declined from 7% in 2011 and 2013 to 4% in 2015.
- Twelfth graders reported higher rates than 9th graders in most behaviors,-- 47% of seniors reported having ever used marijuana compared to 7% of freshman, and 32% of seniors reported recent use compared to 4% of freshman.
- Males reported higher rates than females in all categories. with 17% of males reporting recent use compared to 13% of females, and 6% of males reported using over 100 times compared to 2% of females.

Among Brookline 7th and 8th graders, most of the measures of marijuana use decreased from 2011 to 2015, except for use before the age of 13.

- Lifetime use rates were 6% in 2011, 5% in 2013, and 2% in 2015.
- Rates of marijuana use before age 13 were 2% in 2011 and 2013, and 1% in 2015.
- Reported use of marijuana in the month prior to the survey was 1% in 2015, lower than the 4% rate in 2011 and 2013.

Brookline 9th – 12th graders' rates of marijuana use on all indicators were lower than state and national levels except marijuana use during the school day (both BHS and MA 5%).

Brookline 7th and 8th graders' rates were lower than statewide levels.

Other Illegal Drug Use

Among 9th – 12th graders, most measures of the use of other illegal drugs remained relatively low in Brookline; reported usage was at or below 4% for all the illegal drugs surveyed. Rates of several drugs decreased among high school students, including cocaine, heroin, and hallucinogens.

- Reported rates of cocaine use decreased from 4% in 2013 to 1% in 2015, and the rates of heroin use decreased from 3% to 1% over the same time period.
- The reported use of hallucinogens decreased from 2013 (8%) to 2015 (3%).

- The use of prescription drugs without a prescription also decreased, from 7% to 4% for amphetamines (ie. Adderal, Ritalin, etc.), steroids from 3% to 1%, and depressants (i.e. Valium, Xanax,) from 4% to 2%.
- Similarly, males reported significantly higher rates of use than females in all categories except prescription painkillers and over-the-counter drugs.

For students in grades 7th – 8th the reported rates of illegal drug use remain relatively low with little change from 2013 to 2015.

- Cocaine, <1%
- Inhalants, 2%
- Use without a prescription: steroids, 2%; amphetamines (Ritalin, Adderall, Concerta) 1%; and painkillers (percocet, oxycodine, or vicodin) 1%.
- Eighth graders reported higher rates of use of cocaine, Ritalin (and the other amphetamines), and prescription painkillers than 7th graders.

The rate of cocaine use among Brookline 9th – 12th graders' was considerably lower than state and national figures. Levels of heroin use were comparable with Brookline and Massachusetts 1%. National rates were at 2%. There was no comparable Massachusetts middle school data.

Tobacco

Tobacco use among Brookline 7th – 12th graders remains relatively low. For the first time, the survey asked students about their use of electronic cigarettes, and reported rates of use were comparable to tobacco cigarettes.

Grades 9th - 12th rates of use declined in most indicators from 2013 to 2015.

- The rate of first use of tobacco before age 13 declined from 5% to 2%.
- The rate of lifetime cigarette smoking declined from 26% in 2013 to 15% in 2015.
- Smoking in the past 30 days declined from 10% to 5%.
- The rate of recent use of chewing tobacco, snuff, or dip decreased from 4% in 2013 to 2% in 2015.

At the 7th and 8th grade level, the reported rate of lifetime use of tobacco and/or electronic cigarettes was 3%.

- The survey question for *recent use* changed in the 2015 survey to include both tobacco cigarettes and electronic cigarettes; the combined reported rate was 1%, as compared to 3% in 2013 for tobacco cigarettes only.
- Use of chewing tobacco was 2% in 2013, and 1% in 2015. The use of other forms of tobacco (ie: flavored products, cigarillos) remained constant at 4%.

At the high school level, Brookline's recent use of tobacco rates (5%) were lower than the state (11%) and national rates(15.7%). Recent use of chewing tobacco, snuff, and dip was lower as well --Brookline 2%, state 5%, national 8.8%. The Brookline 7th – 8th grade rate of lifetime use (3%) was lower than the state rate (9%) and reported recent cigarette smoking was lower than reported state use (1% compared to 3%).

Violence Related Behavior

BHS students reported fewer violence-related risk behaviors than their MA and US counterparts in several categories:

- The number of BHS students who reported being bullied at school in the past 12 months decreased from 17% in 2011 and 16% in 2013 to 9% in 2015.
- High school students reported having been electronically bullied in the past 12 months at a rate of 6%, as compared to 11% in 2013.
- The percentage of BHS students who reported sexual contact against their will remains relatively constant at 7% in 2011 and 2013, and 8% in 2015. Similarly, the percentage of students who report being physically hurt on purpose by a boyfriend or girlfriend remained constant at 5% in 2013 and 2015.
- The prevalence of BHS students that reported hearing derogatory remarks regarding sexual orientation at school remained the same in 2015 as 2013 (68%).
- Students who self-identify as Gay, Lesbian, Bisexual or Questioning (or Not Sure) were more likely to report being bullied at school and/or electronically, and reported missing school at least once in the past month. Among non-heterosexual students, 14% report being bullied in the past year (compared to 9% of heterosexual students).

Among Brookline 7th and 8th graders:

- 13% of middle school students report having been electronically bullied in the past 12 months as compared to 16% in 2011. (The question was left off the survey in 2013.) This rate is similar to the MA rate of electronic bullying in middle school grades (14%).
- The percentage of 7th and 8th grade students reporting sexual contact against their will in 2015 was 2%, as compared to 4% in 2011 and 6% in 2013.
- Nineteen percent of students report having been in a physical fight in the past 12 months, as compared to 23% in 2013.
- In grades seven and eight, the rate of students reporting hearing derogatory remarks regarding sexual orientation at school continued to decrease, from 80% in 2011 to 59% in 2013 and 54% in 2015.

Sexual Behavior

The rate of Brookline High School students who reported ever having had sexual intercourse continued to decline.

- In 2015, 21% of BHS students reported ever having had sexual intercourse, compared with 27% in 2011, 23% in 2013. This rate is considerably lower than both the 2013 MA rate of 38% and US rate of 46%.
- In 2015, more BHS males (23%) than females (19%) reported having ever had sexual intercourse.
- Twelfth graders reported significantly higher lifetime rates than ninth graders -- 47% of seniors, 20% of juniors, 15% of sophomores, and 6% of freshman.
- Among sexually active BHS students, condom use during sexual intercourse was down in 2015 -- 62%, compared to 74% in 2011 and 75% in 2013.

- In 2015, 17% of BHS seniors reported engaging in sexual activity after using alcohol that they wouldn't have if they hadn't been drinking, compared with 15% of juniors, 4% of sophomores, and 2% of freshman.
- In 2015, 8% of BHS students reported having had sexual contact against their will, compared to 7% in 2013.

The rate of Brookline 7th and 8th graders in 2015 who reported ever having sexual intercourse also declined.

- Two percent of Brookline 7th-8th grade students reported having ever had sexual intercourse compared to 6% in 2013 and 2011.
- Among middle school students, 4% reported ever having participated in oral sex.

Mental Health

The rate of BHS students who reported having felt overwhelming stress or anxiety during the past 12 months rose from 75% in 2013 to 82% in 2015. Schoolwork was listed as the number one cause of stress by a majority of BHS students in grades 9-11.

In senior year, schoolwork emerged as the primary cause of stress for 38% of seniors, followed by worries about the future (31%). Family issues rank higher as the number one source of stress for more than twice as many gay, lesbian and bisexual students than for straight students.

- Females report markedly more stress (91%) than males (72%).
- Students who identify as Black reported lower rates of stress (70% as compared to 79% of White and Asian students) and higher rates of depression (26% as compared to 22% of White students and 23% of Asian students.)
- The rate of BHS students who reported feeling suicidal was 18% in 2015 compared to 20% in 2013, and reported rates of having seriously considered suicide in the past 12 months and making a plan has remained constant at 2% since 2013.
- Females also report higher rates of depression, with 32% reporting symptoms of depression, compared to 17% of males.
- BHS students identifying as LGBTQ were more likely to report symptoms of depression than heterosexual students (lesbian and gay --51%, bisexual -- 67%, and questioning -- 41% heterosexual --21%).
- Among females, 27% saw a mental health professional either outside of school, in school, or both, compared to 16% of males.
- Among females, 16% saw only a mental health professional outside of school, 5% only saw a mental health professional at BHS, and 6% saw both.
- Among males 8% saw only a mental health professional outside of school, 3% only saw a mental health professional at BHS, and 3% saw both.

At the middle school level, the percentage of 7th-8th grade students who reported experiencing overwhelming stress or anxiety in the past year increased from 69% in 2013 to 79% in 2015.

- More females reported overwhelming stress or anxiety than males (86% and 73%, respectively).

- Among 7th-8th grade students, 14% report symptoms of depression over the past year. More females (22%) reported this than male (15%). A higher percentage of 8th graders reported the symptom of depression (21%) than 7th graders (15%).
- Among 7th-8th grade students, 14% report ever having attempted self-harm (i.e. cutting, burning) compared to 12% in 2013.
- Among Brookline 7th and 8th grade students, 4% reported having EVER attempted suicide. The prevalence did not vary by grade. More males had ever attempted suicide (4%) than females (3%).

The 2013 Massachusetts state survey showed 1% of state middle school students (6th-8th) reported attempting suicide in the past 12 months.

Body Weight and Dietary Behaviors

This survey asked students about their perceived body weight. Students were not asked about their actual body weight.

- Similar to prior years, 23% of BHS students in 2015 described themselves as slightly overweight or very overweight. This is compared to 29% and 31% for Massachusetts and nationally, respectively.
- Females (28%) were more likely to describe themselves as slightly or very overweight compared to males (17%).
- Over the past twelve months, 3% report that they vomited or took laxatives and 6% report that they fasted to lose or maintain weight.
- Seniors were more likely to report that they rarely or never ate a balanced diet (13%) as compared to 9% of juniors, 8% of sophomores, and 6% of freshman.

Among 7th and 8th graders, 23% describe themselves as slightly overweight or very overweight, and 32% reported that they were currently trying to lose weight.

- The rates were similar among 7th-8th grade females (23%) and males (22%).
- Over the past twelve months, 4% of 7th-8th graders reported that they vomited or took laxatives, and 5% reported that they fasted to lose or maintain weight.

Physical Activity

The survey asks student about the number of days in the past week they exercised.

- Among 7th-8th graders, the reported rate for participating in one hour of cardiovascular activity for at least three days in the past week was 85% .
- Among BHS students,48% reported that they participated on at least one BHS sports team in the past 12 months.
- Among BHS students, 40% reported participating in one hour of cardiovascular activity for at least three days in the past week, as compared to 36% in 2013.

At the high school level, Brookline's rates of participation in one hour or more of cardiovascular activity for at least three days in the past week was lower than the MA rate of 44%, and the national rate of 47%.

Use of Technology for Recreational Purposes

The survey questions pertaining to the use of technology were updated to reflect the increase in technology platforms and viewing options.

- In 2015, 39% of BHS students report using technology for non-school related work for three or more hours a day, as compared to 33% in 2013.
- 16% report watching three or more hours of TV/Netflix/Hulu, etc. on an average school day, up from 13% (TV only) in 2013.
- Students who reported mostly C's or above were more likely to use technology for non-school related work for three or more hours a day, as compared students who reported mostly A's and B's.

Among 7th-8th graders, 19% report watching three or more hours of TV/Netflix/Hulu, etc. on an average school day, as compared to 14% in 2013.

- 33% of 7th-8th graders reported spending three or more hours per average school day using a computer for non-school related activities similar to 2013 (34%).

Perceptions of Parental Disapproval

Students' perceptions of the level of parental disapproval affected their reported rates of use of alcohol and other drugs.

BHS students who believed their parents disapproved of their use of alcohol used less alcohol on all indicators.

- Students who perceived no parental disapproval or slight parental disapproval were far more likely to have ever tried alcohol than those who perceived strong disapproval (79% and 74% respectively as compared to 22%), and far more likely to have reported recent use (58% and 49% as compared to 10% who perceived strong parental disapproval).
- Of those who perceived no parental disapproval, 40% reported *recent binge drinking*, compared to 26% of those who perceived only slight parental disapproval, 8% of those who perceived parental and 4% of those who perceived strong parental disapproval.

Students who believed their parents disapproved of their use of marijuana also used less.

- Of those who perceived no parental disapproval, 43% had *recently used marijuana*, compared with 34% of those who perceived slight parental disapproval, 18% who perceived parental disapproval, and 7% who perceived strong parental disapproval.
- Of those who perceived no parental disapproval, 16% reported *heavy marijuana use*, compared with 8% of those who perceived slight parental disapproval, 4% who perceived parental disapproval, and 2% who perceived strong parental disapproval.

Brookline 7th and 8th graders who believed their parents disapproved of their use of alcohol, marijuana or cigarettes used less of those drugs.

- Students who perceived no parental disapproval (34%) or slight parental disapproval (17%) were far more likely to have recently used alcohol than those who perceived disapproval (4%) and strong disapproval (1%).

- Students who believed their parents disapproved of their use of marijuana also used less. Of those who perceived no parental disapproval, 28% had recently used marijuana compared with 13% of those who perceived slight parental disapproval, 3% who perceived parental disapproval and 0.1% of those who perceived strong parental disapproval.

Perception of Accessibility

While for most substances there was little change in the perception of accessibility, the percentage of BHS students who believed it would be “fairly easy” or “very easy” to access cigarettes, was 57% in 2015, down from 70% in 2013.

- Among BHS students, 72% believed it would be “fairly easy” or “very easy” to access alcohol, followed by marijuana (53%), amphetamines (27%) and painkillers without a prescription (23%), hallucinogens (11%), cocaine (9%), and heroin (3%).
- When responding to ease of access to, 9th graders had the lowest percentage of fairly or very easy access. The percentage increased among 10th and 11th graders, with the 12th graders having the highest percentage for all substances except painkillers, which ranged from 22% to 25% for all four grades.
- 37% of seniors believed it would be “fairly easy” or “very easy” to access amphetamines, and 18% believed it would be “fairly easy” or “very easy” to access cocaine.

Resiliency and Protective Factors

The survey includes questions pertaining to protective factors including, participation in athletics and other physical activity, extra-curricular activities, academic performance, and having an adult to talk to about problems. This report looks at correlations between health risk behaviors and protective factors.

- The rate of students reporting participation on at least one BHS athletic team was 58%. Participation on a sports team did not appear to be a protective factor. In fact, students who participated on three teams were twice as likely to have engaged in binge drinking in the past 30 days than students who did not participate on any team (24% as compared to 12%)
- The rates of students participating in volunteer work were 49% and extracurricular activities was 77%. Participation in volunteer work and extracurricular activities appeared to have no protective effect.
- The rate of BHS students reporting that they received mostly A’s, Bs, and C’s was 95%. There appeared to be little correlation between academic performance and reported rates of alcohol use and binge drinking.
- Students who reported heavy marijuana use (more than 10 times in the past month) reported lower grades.
- The rate of students who said they had an adult to talk in the school with about problems was 2015 67%.
- Among BHS students, those who identified as Black and Hawaiian/other Pacific Islander had the highest rates of adults to talk to at school (84% and 80%) as compared to 67% of white students, 64% of Asian students, and 50% of American Indian/Alaskan Native students.

- Students who reported having an adult to talk to at school or at home reported lower rates of binge drinking and marijuana use than those who reported that they did not have an adult to talk to. Females reported higher rates of volunteering, and participating in extracurricular activities. Males, on the other hand, reported higher rates of participating on at least one BHS athletic team.

The only question asked on the middle school survey related to protective factors was about the number of school or community sports teams on which students participate. Similar to the high school data, there was little or no protective effect provided for middle school students by participation on athletic teams. In fact, in some cases it was just the opposite.

- Participation on any number of teams was associated with *higher* rates of recent alcohol use.
- Students on two teams reported *higher* rates of lifetime marijuana rates.
- Participation on three or more teams was associated with a *higher* feeling of pressure to use drugs.
- There were no significant effects on either recent cigarette smoking or lifetime use of prescription painkillers.

2009, 2011, 2013, and 2015 Brookline Health Survey Responses by Grade and Sex

High School:

	2009	2011	2013	2015
Grade			Total: 1,184	
9 th grade	366	341	N/A	480
10 th grade	327	353	N/A	415
11 th grade	312	308	N/A	254
12 th grade	275	267	N/A	321
Gender				
Female	649	627	N/A	768
Male	639	632	N/A	678

Middle School:

	2009	2011	2013	2015
Grade				
7 th grade	356	370	N/A	471
8 th grade	337	385	N/A	461
Gender				
Female	363	359	N/A	473
Male	339	372	N/A	463

High School by Race:

Race	Number of Responses
American Indian/Alaskan Native	36
Asian	311
Black	140
Hawaiian/ Pacific Islander	12
White	891

Sexual Orientation	Number of Responses
Bisexual	69
Gay/Lesbian	38
Heterosexual	1265
Not sure (questioning)	87

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9 th -12 th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
ALCOHOL USE						
Lifetime alcohol use	62	62	56	47	63	66
Alcohol use, past 30 days	38	36	35	27	36	35
Alcohol use before age 13	12	11	12	6	11	19
Binge drinking, past 30 days	24	21	19	18	19	21
Drinking during school day, past 30 days	7	5	5	2	3 *(On school property)	5 *(On school property)
Drinking after driving, past 30 days	6	4	3	N/A	7	10
Riding in vehicle with driver who had been drinking and was over 21	15 (Driver age not specified)	12 (over age 21)	11 (over age 21)	12 (over age 21)	18 *(Driver age not specified)	22 *(Driver age not specified)
Riding in vehicle with driver who had been drinking and was under 21		9	6	4		
MARIJUANA USE						
Lifetime marijuana use	39	41	34	27	41	41
Lifetime marijuana use, over 100 times	8	7	7	4	N/A	N/A
Marijuana use, before age 13	4	5	2	1	7	9
Marijuana use, past 30 days	24	25	21	16	25	23

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9 th -12 th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
Marijuana use during school day, past 30 days	9	9	9	5	5 *(On school property)	N/A
OTHER ILLEGAL DRUG USE						
Lifetime cocaine use	6	3	4	1	4	6
Lifetime heroin use	4	2	3	1	1	2
Lifetime use of Ritalin, Adderall, Concerta, amphetamines without a prescription	8 ‡(Lifetime use of methamphetamines, Ritalin, Adderall, Concerta without Rx)	7	7	4	2 *(methamphetamine only)	3 *(methamphetamine only)
Lifetime steroid use without a prescription	4	2	3	1	2	3
Lifetime use of hallucinogens, LSD, mushrooms, Ketamine, ecstasy	8 ‡(Lifetime use of inhalants, LSD, PCP, mushrooms, Ketamine, Rohypnol, GHB)	6	8	3	5 *(ecstasy only)	7 *(Lifetime use of hallucinogens, not including ecstasy) 7 *(Lifetime use of ecstasy)
Lifetime use of prescription painkillers to get high (Percocet, Oxycontin, Oxycodone, Vicodin)	7 ‡(Lifetime painkiller use to get high)	6	6	2	13	18 *(Includes depressants)

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9th-12th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
Lifetime use of depressants to get high (Klonopin, Valium, Xanax, Ativan)	N/A	N/A	4	2	N/A	Combined with prescription painkiller usage
Lifetime OTC cough/cold medicine use (to get high)	6	5	4	5	5	N/A
Lifetime medical treatment for overdose	3	4	6	2	N/A	N/A
TOBACCO						
Ever tried smoking, even just a puff	26 ‡(Tried smoking a whole cigarette)	26	26	15	32 *(even one or two puffs)	41 *(even one or two puffs)
Ever tried smoking electronic cigarettes, even just a puff	N/A	N/A	N/A	14	N/A	N/A
Started smoking tobacco cigarettes before age 13	5	5	5	2	5	9
Started smoking electronic cigarettes before age 13	N/A	N/A	N/A	1	N/A	N/A
Smoking, past 30 days	16	11	10	5	11	16
Smoking at school, past 30 days	8	5	5	2	3 *(on school property)	4 *(on school property)

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9th-12th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
Use of chewing tobacco, snuff, dip, past 30 days	7	4	4	2	5	9
Tried to quit smoking cigarettes (% of smokers)	35	38	39	27	58	48
VIOLENCE-RELATED BEHAVIORS						
Carried a gun, past 30 days	6	3	4	1	3	6
Carried weapon (such as knife or club) at school, past 30 days	9	5	4	2	3 *(gun, knife, or club)	5 *(gun, knife, or club)
Skipped school because felt unsafe, past 30 days	8	4	5	4	5	7
Heard prejudiced language/remarks made towards gay, lesbian, or bisexual students, past 30 days	67	72	68	68	N/A	N/A
Bullied at school, past 12 months	21‡ ‡(At least 1 time)	17‡ ‡(answered Yes)	16	9	17	20
Been electronically bullied, past 12 months	N/A	10	11	6	14 *(Cyberbullying)	15
Sexual contact against one's will	10	7	7	8	9 *(Sexual assault)	7 *(Forced sexual intercourse)

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9 th -12 th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
Girlfriend or boyfriend hit, slap, or physically hurt you on purpose, past 12 months	N/A	4	5	5/ % out of those dated	8 (Dating violence)	10 *(Among those who had dated or went out with someone)
MENTAL HEALTH						
Felt overwhelming stress or anxiety occasionally or frequently, past 12 months	66	79	75	82	N/A	N/A
Felt sad or hopeless for 2 or more weeks	N/A	N/A	N/A	25	22	28
Felt suicidal, past 12 months	20	19	20	18	12 *(seriously consider suicide)	17 *(seriously consider suicide)
Seriously considered suicide and made a suicide plan, past 12 months	3	3	2	2	11 *(made a plan)	14 *(made a plan)
Attempted suicide that resulted in medical treatment, past 12 months	2	<1	<1	1	2	3
SEXUAL BEHAVIOR						
Ever had sexual intercourse	32	27	23	21	38	47
Sexual intercourse before age 13	7	2	3	1	3	6
Three or more sexual partners	12	9	7	6	9 *(4 or more partners)	15 *(4 or more partners)

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9th-12th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
Usually use a condom during sexual intercourse (among sexually active students)	78	74	75	62	58 *(used at last intercourse)	59 *(used at least intercourse)
Engaged in sexual activity after using alcohol that you wouldn't have if you weren't drinking	16	13	14	8	24 *(Alcohol or drug use at last intercourse)	22 *(Alcohol or drug use at last intercourse)
BODY WEIGHT AND DIETARY BEHAVIORS						
Describe self as slightly or very overweight	22	20	22	23	29	31
Fasted for 24 hours or more to lose or maintain weight, past month	8 ‡(past year)	7	11	6	10	13
Took diet pills, powders, or liquids without Dr.'s advice to lose or maintain weight, past month	2 ‡(past year)	2	3	2	3	5
Vomited or took laxatives to lose or maintain weight, past 12 months	N/A	4 ‡(past month)	3	3	4	4

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9th-12th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
PHYSICAL ACTIVITY						
Participated in 60 minutes of cardiovascular activity for at least 5 of the 7 days	58 ‡(participated in cardiovascular exercise at least 3 times a week for 5 or more of past 12 months)	50	36	40	44	47
Participated in exercise to strengthen or tone muscles at least for at least 3 of the past 7 days	45 ‡(participated in toning exercises at least 3 times per week for at least 30 minutes for 5 or more of past 12 months)	53	45	47	77 ‡(aerobic activity at least 20 minutes 3 days per week)	52
Participated on at least 1 BHS sports team in the past 12 months	57	61	53	58	60 *(school or community)	54 *(school or community)
Watched 3 or more hours of TV on an average school day --- Used a computer for non-school related work for 3 or more hours (i.e. videogames, Facebook, surfing the web), on an average school day	25 ‡(Watched 3 or more hours of TV or played computer/video games on an average school day)	15 (TV) --- 35 (Computer/Video games)	13 (TV) --- 33 (Computer, phone other handheld device)	16 (TV/Netflix/Hulu) --- 39 (Technology for recreational purposes)	25 (TV) --- 39 (Computers/Video games)	33 (TV) --- 41 (Computer/Video games)

2015 High School Survey Questions	Brookline 2009 (9 th -12 th) %	Brookline 2011 (9 th -12 th) %	Brookline 2013 (9 th -12 th) %	Brookline 2015 (9th-12th) %	State 2013 (9 th -12 th) %	U.S. 2013 (9 th -12 th)
PROTECTIVE FACTORS						
Received mostly A's, B's, and C's	94	96	86	95	91	N/A
Participated in volunteer work (at least 1 hour/month)	48	48	47	49	49	N/A
Participated in organized extra-curricular activities (at least 1 day in past week)	64	65	64	77	N/A	N/A
Has teacher or other adult in school with whom one can talk about problem	65	64	62	67	70	N/A

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7th-8th) %	State 2013 (7 th -8 th) %
ALCOHOL USE					
Lifetime alcohol use	25	22	15	11	18
Alcohol use, past 30 days	11	8	6	4	6
Alcohol use before age 13	19	15	11	6	N/A
Riding vehicle with driver who had been drinking	18	8	8	11	N/A
Felt pressured to drink alcohol	14	9	8	3	N/A
MARIJUANA USE					

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7 th -8 th) %	State 2013 (7 th -8 th) %
Lifetime marijuana use	8	6	5	2	8
Marijuana use before age 13	5	2	2	1	N/A
Marijuana use, past 30 days	6	4	4	1	3
Felt pressured to use marijuana	10	10	6	3	N/A
OTHER ILLEGAL DRUG USE					
Lifetime cocaine use	2	1	2	<1	6 *(combination of these three questions into one on state survey)
Lifetime use of Ritalin, Adderall, Concerta, Amphetamines without a prescription	N/A	2	1	1	
Lifetime steroid use without a prescription	2	1	1	2	
Lifetime use of sniffing glue, spray cans, paints, or sprays to get high	6	6	4	2	N/A
Lifetime use of prescription painkiller to get high (Percocet, Oxycontin, Vicodin)	N/A	1	2	1	4
Lifetime use of prescription drugs that are not student's	N/A	N/A	2	2	4
Felt pressure to try any drugs	8	8	4	3	N/A
TOBACCO					
Ever tried smoking, even just a puff	11	9	5	3	9
Ever tried smoking electronic cigarettes, even just a puff?	N/A	N/A	N/A	3	N/A

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7th-8th) %	State 2013 (7 th -8 th) %
Started smoking before age 13	5	5	3	2	4
Started smoking electronic cigarettes before age 13	N/A	N/A	N/A	1	N/A
Smoking either tobacco or electronic cigarettes, past 30 days	5	2	3	1	3
Use of chewing tobacco, snuff, dip, past 30 days	3	2	2	1	N/A
Use of other forms of tobacco (smoke-free, dissolvable, cigarillos, flavored cigarettes)	5	2	4	4	N/A
Felt pressured to use tobacco products	10	9	7	4	N/A
VIOLENCE-RELATED BEHAVIOR					
Ever carried a weapon (gun, club, or knife)	82	16	15	15	N/A
Access to a gun	N/A	5	5	3	N/A
Physical fight in the past 12 months	N/A	27	23	19	N/A
Ever in a physical fight requiring treatment by doctor or nurse	7	5	5	4	N/A
Sexual contact against one's will	N/A	4	6	2	N/A
Deliberately hit, slapped, or physically hurt by boyfriend or girlfriend, past year	N/A	6	3	1	N/A

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7 th -8 th) %	State 2013 (7 th -8 th) %
Heard prejudiced language/remarks made towards gay, lesbian, or bisexual students, past 30 days	N/A	80 *(location not specific)	59 *(at school) --- 55 *(outside of school)	54 *(at school) --- 61 *(outside of school)	N/A
Electronically bullied, past 12 months	22	16	N/A	13	14
SUICIDAL BEHAVIOR					
Felt overwhelming stress or anxiety occasionally or frequently, past 12 months	N/A	71	69	79	N/A
Ever seriously thought about killing self	11	11	12	14	8 *(Seriously considered suicide)
Ever made a plan about how to kill self	9	7	10	10	N/A
Ever attempted suicide	4	3	4	4	1 ‡(in past year)
Ever attempted self-harm (i.e. cutting, burning)	10	10	12	14	14 ‡(in past year)
SEXUAL BEHAVIOR					
Ever had sexual intercourse	8	6	6	2	N/A
Sexual intercourse before age 13	4	4	3	1	N/A
Three or more sexual partners	3	3	2	1	N/A
Usually use a condom during sexual intercourse (among sexually active students)	67	65	70	68	N/A
Know what oral sex is	85	84	79	83	N/A
Participated in oral sex	9	8	5	4	N/A

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7 th -8 th) %	State 2013 (7 th -8 th) %
Felt pressured to have oral sex	9	7	7	5	N/A
Felt pressured to have sexual intercourse	15	7	9	4	N/A
BODY WEIGHT AND DIETARY BEHAVIORS					
Describe self as slightly or very overweight	22	22	23	23	24
Fasted for 24 hours or more to lose or maintain weight, past 30 days	8	6	5	5	9 *(State survey question combined fasting, vomiting, taking pills, or taking laxatives)
Took diet pills, powders, or liquids without Dr.'s advice to lose or maintain weight, past month	2	1	2	1	
Ever vomited or taken laxatives to lose or maintain weight	5	2	4	3	
Currently trying to lose weight	34	34	35	32	N/A
PHYSICAL ACTIVITY					
Participated in at least 60 minutes of activity for at least 5 of the past 7 days (increased heart rate and breathed hard)	48	51	50	52	52 * Also asked: Aerobic activity at least 20 mins on 3 or more of the past 7 days (77%)

2015 Middle School Survey Questions	Brookline 2009 (7 th -8 th) %	Brookline 2011 (7 th -8 th) %	Brookline 2013 (7 th -8 th) %	Brookline 2015 (7th-8th) %	State 2013 (7 th -8 th) %
Watched 3 or more hours of TV on an average school day	18	16	14	19	24
Used a computer for non-school related work for 3 or more hours (i.e. video games, Facebook, surfing the web), on an average school day	15	28	34	33	36

Alcohol Use

Each year in the United States, approximately 88,000 deaths result from the excessive use of alcohol.¹ Alcohol is a factor in approximately 36% of all deaths from motor vehicle crashes.² Among youth, the use of alcohol and other drugs additionally has been linked to unintentional injuries, physical fights, academic and occupational problems, and illegal behavior.³ In 2013, 18% of students reported riding with a driver who had been drinking alcohol and 7% reported driving after drinking in the past 30 days.⁴

Long-term alcohol misuse also is associated with liver disease, cancer, cardiovascular disease, and neurological damage, as well as psychiatric problems such as depression, anxiety, and antisocial personality disorder.⁵ Each year, approximately 4,400 people under the age of 21 die as a result of underage drinking. This includes about 1,900 deaths from car accidents, 1,600 homicides, 300 suicides, and hundreds of other deaths due to accidents like falls, burns and drowning.⁶

Alcohol use by youths has been linked to delinquent behaviors, such as stealing, illicit drug use, and problems in school. Research also indicates that early drinkers are more likely than nondrinkers to engage in delinquent behaviors.⁷ The way young people drink also results in harm to self and others including: risky sexual behavior; physical and sexual assaults; potential deleterious effects on the developing brain; problems in school, at work, and with the legal system; various types of injury; car crashes; homicide and suicide; and death from alcohol poisoning.⁸

In the United States, 17 million people--about 1 in every 12 adults--abuse alcohol or are alcohol dependent. In general, more men than women are alcohol dependent or have alcohol problems, and alcohol problems are highest among young adults ages 18-29.⁹

Relatively new research indicates that the developing adolescent brain may be particularly susceptible to long-term negative consequences from alcohol use. Recent studies show that alcohol consumption has the potential to trigger long-term biological changes that may have detrimental effects on the developing adolescent brain, including cognitive impairment.¹⁰

Adolescents' attitudes about the risks associated with substance use are often closely related to their substance use, with an inverse association between drug use and risk perceptions (i.e., as the prevalence of risk perceptions decreases, the prevalence of drug use increases).¹¹ Nationally, only 39% of adolescents perceived great risk from having five or more drinks of alcohol once or twice a week.¹²

Nationally, alcohol use has continued to decline among high school seniors, with past-month use falling from 43.5% to 37.4% and alcohol binge drinking (defined as 5 or more drinks in a row in the past 2 weeks) declining from 25.2% to 19.4% in 2014.¹³

In this report the following definitions were used:

Lifetime alcohol use: Any consumption of alcohol during one's life, other than a few sips.

Recent alcohol use: One or more alcoholic drinks on at least one of the 30 days prior to the survey.

Binge drinking: Five or more alcoholic drinks in a row, within a couple of hours, on at least one day during the month prior to the survey.

The Brookline Middle School and High School (BHS) 2015 Health Surveys asked 7th - 8th or 9th – 12th grade students, respectively, to report on their patterns of alcohol use, including lifetime and recent use, as well as age of first use. The High School survey included questions about binge drinking and alcohol use during the school day. Students were also asked about riding with a driver (both under age 21 or over 21) who had been drinking.

References

¹ - Stahre M, Roeber J, Kanny D, Brewer RD, Zhang X. [Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States.](#) *Prev Chronic Dis* 2014;11:130293.

² - U.S. Department of Transportation. [Fatality Analysis Reporting System \(FARS\) Web-based Encyclopedia.](#)

³ - Substance Abuse and Mental Health Services Administration. [The relationship between mental health and substance abuse among Adolescents.](#) Rockville, MD: Substance Abuse and Mental Health Services Administration, 1999.

⁴ – Massachusetts Department of Elementary and Secondary Education. *2013 Health and Risk Behaviors of Massachusetts Youth.* 2014

⁵ - Naimi TS, Brewer RD, Mokdad A, Denny C, Serdula MK, Marks JS. Binge drinking among US adults. *JAMA* 2003;289:70-75.

⁶ - The National Institute on Alcohol Abuse and Alcoholism. *Underage Drinking.* National Institute of Health, 2013. Retrieved December 2015. Published March 2007. Retrieved October 2011.

⁷ - Office of Applied Studies. (2004). *Results from the 2003 National Survey on Drug Use and Health: National findings* (DHHS Publication No. SMA 04–3964, NSDUH Series H–25). Rockville, MD: Substance Abuse and Mental Health Services Administration. <http://oas.samhsa.gov/2k5/alcDelinquent/alcDelinquent.htm>

⁸ - NIH fact sheet *Underage Drinking* <http://www.nih.gov/about/researchresultsforthepublic/UnderageDrinking.pdf>

⁹ – National Institute on Alcohol Abuse and Alcoholism. (2014) *Alcohol Use Disorder* [online]. Retrieved December 2015, from <http://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/alcohol-use-disorders>

¹⁰ - U.S. Department of Health and Human Services. *The Surgeon General's Call to Action To Prevent and Reduce Underage Drinking.* U.S. Department of Health and Human Services, Office of the Surgeon General, 2007. (<http://www.surgeongeneral.gov/topics/underagedrinking/calltoaction.pdf>)

¹¹ - Palmgreen, P., & Donohew, L. (2006). Effective mass media strategies for drug abuse prevention campaigns. In Z. Sloboda & W. J. Bukoski (Eds.), *Handbook of drug abuse*

prevention (pp. 27-43, Part II, Handbooks of Sociology and Social Research series). New York: Springer US.

¹² - Office of Applied Studies. (2014). *Results from the 2013 National Survey on Drug Use and Health: National findings* (DHHS Publication No. SMA 14-4863, NSDUH Series H-48). Rockville, MD: Substance Abuse and Mental Health Services Administration.

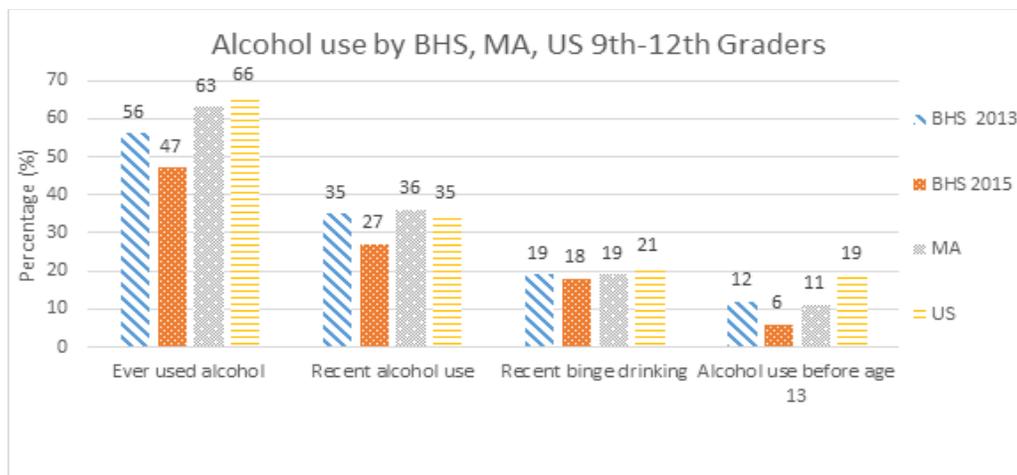
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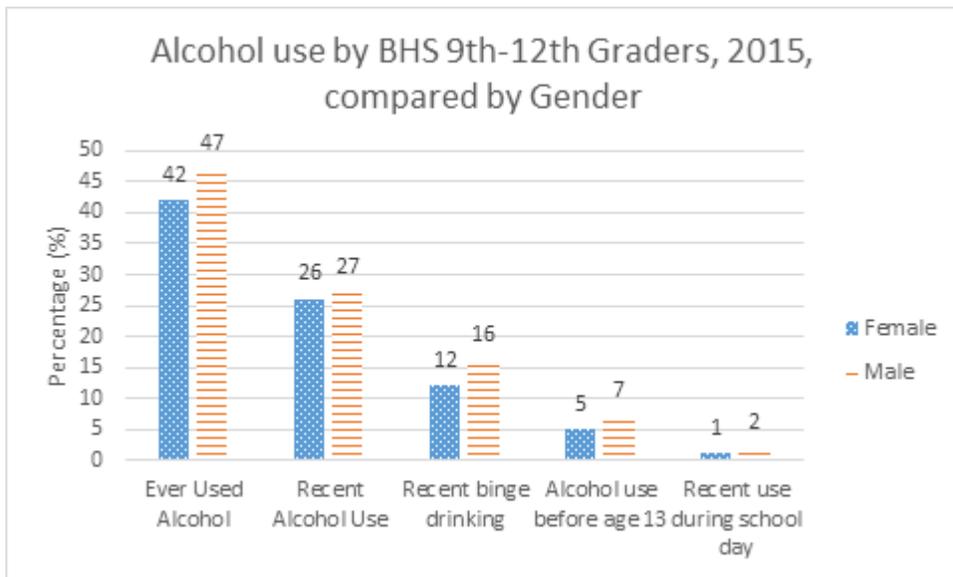
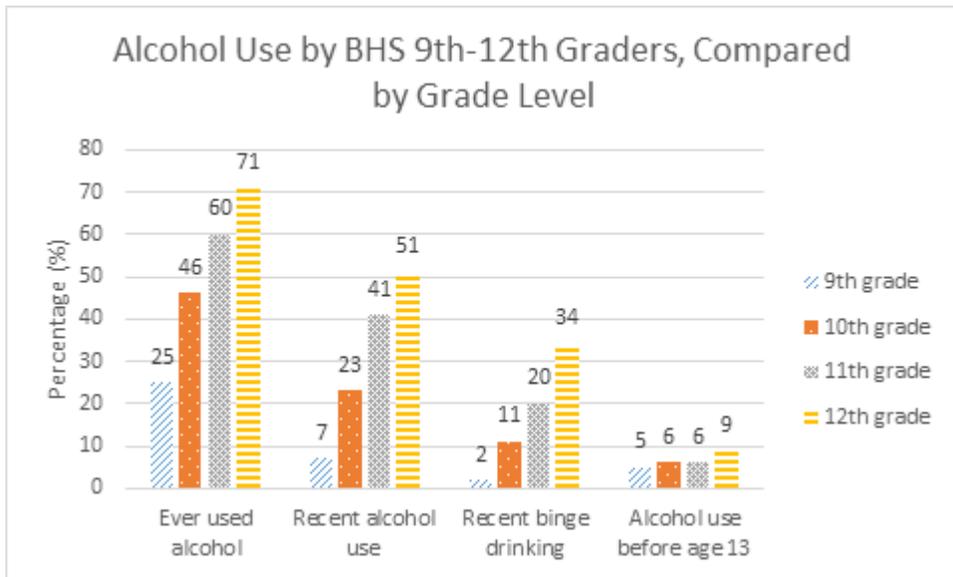
¹³. National Institutes of Health (2014). *NIDA InfoFacts: High School and Youth Trends*. [Online] Retrieved on December 2015 from <http://www.nida.nih.gov/infofacts/hsyouthtrends.html>.

Alcohol Use

High School Data

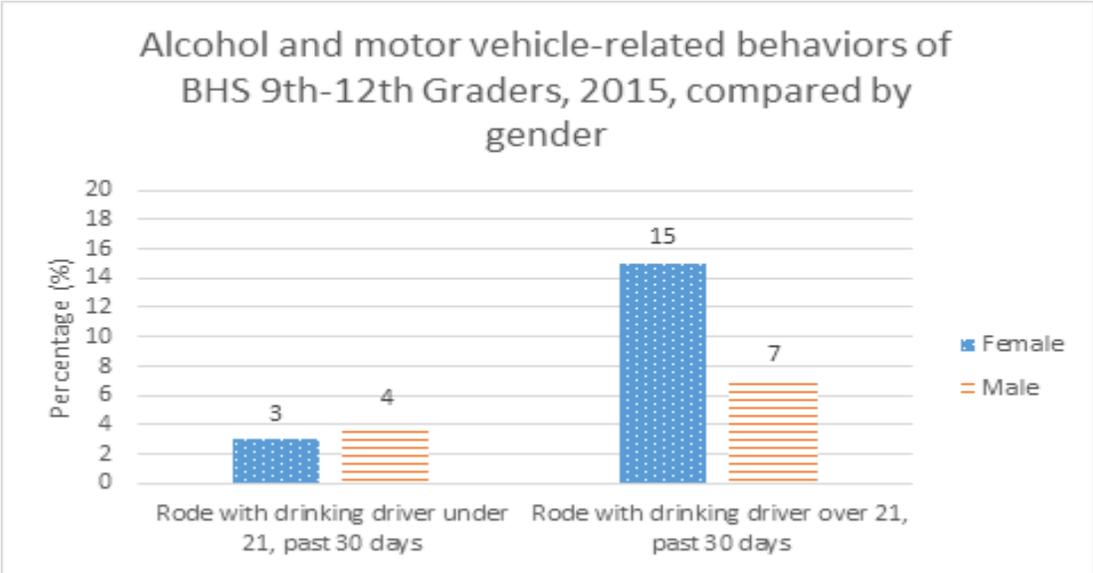
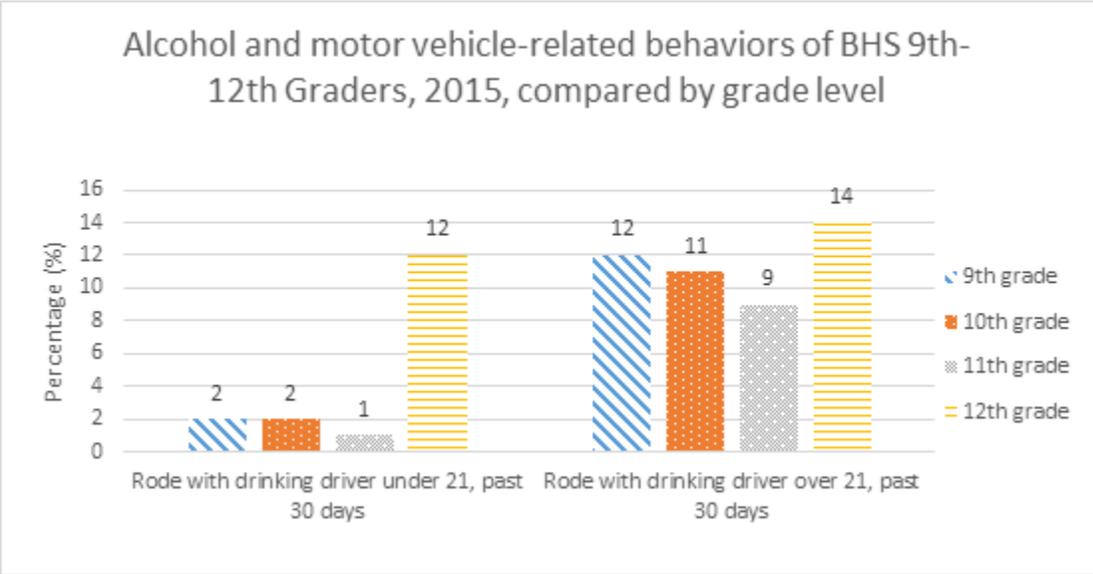
- In 2015, 47% of BHS 9th – 12th graders reported having used alcohol in their lifetime. There was a range of 25% of 9th graders to 71% of 12th graders in 2015. The figures for the state and US were considerably higher than Brookline’s average, 63% and 66%, respectively.
- The prevalence for females’ lifetime use of alcohol was 42%, as compared to males’ lifetime use of 47%.
- Six percent of BHS students reported using alcohol before the age of 13, as compared to 12% of students in the last survey (2013). This is lower than the state (11%) and US (19%) rates. Twelve percent of Brookline males reported alcohol use before age 13, significantly more than females (9%).
- Twenty-seven percent of 2015 BHS students reported alcohol use in the 30 days prior to the survey, as compared to 19% of 2013 students. The US rate was 35%, as compared to the Massachusetts rate of 36%. There is a difference across grades at BHS, with 7% of 9th graders and 51% of 12th graders reporting recent drinking.
- In 2015, the reported prevalence of binge drinking within the month prior to the survey for Brookline 9th – 12th graders was 18%, as compared to 19% for the State, and 21% for the US. The 2013 BHS rate was 19%. Recent binge drinking rates across grade levels were 2% for 9th graders, 11% for 10th graders, 20% for 11th graders, and 34% for 12th graders, with a difference from 9th to 12th grades. Prevalence for males was higher than those for females, 16% and 12%, respectively.
- Two percent of BHS students reported having at least one drink during the school day, as compared to 5% in 2013. This is similar to state and national figures (3% and 5%, respectively), although the question is worded differently on those surveys to ask if students have been drinking on school property, rather than during the school day.



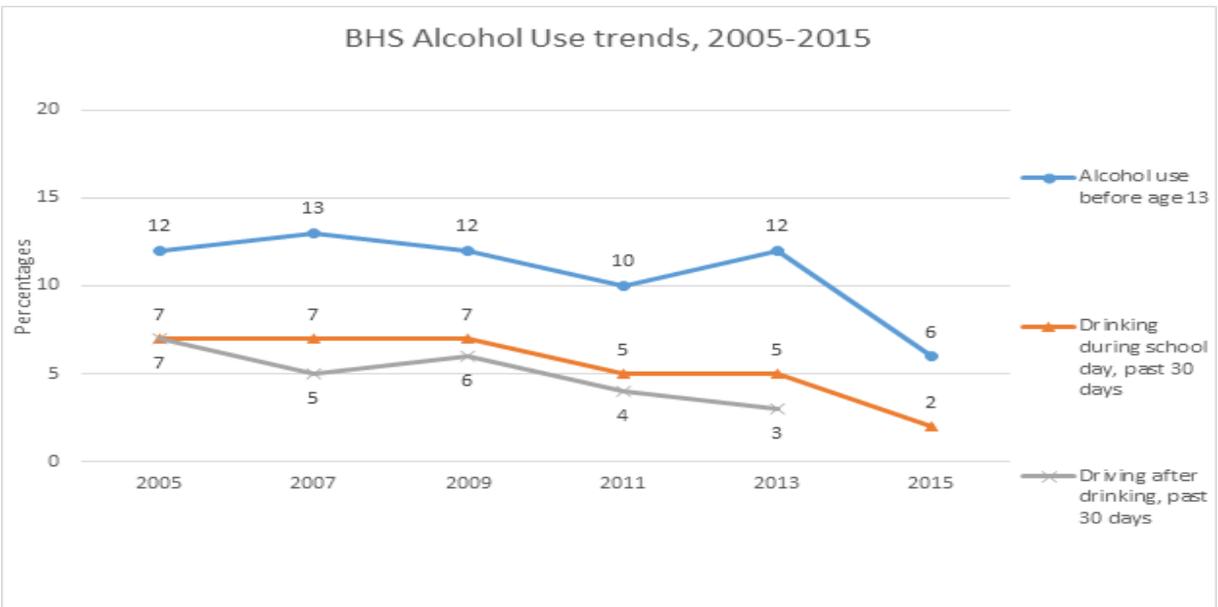
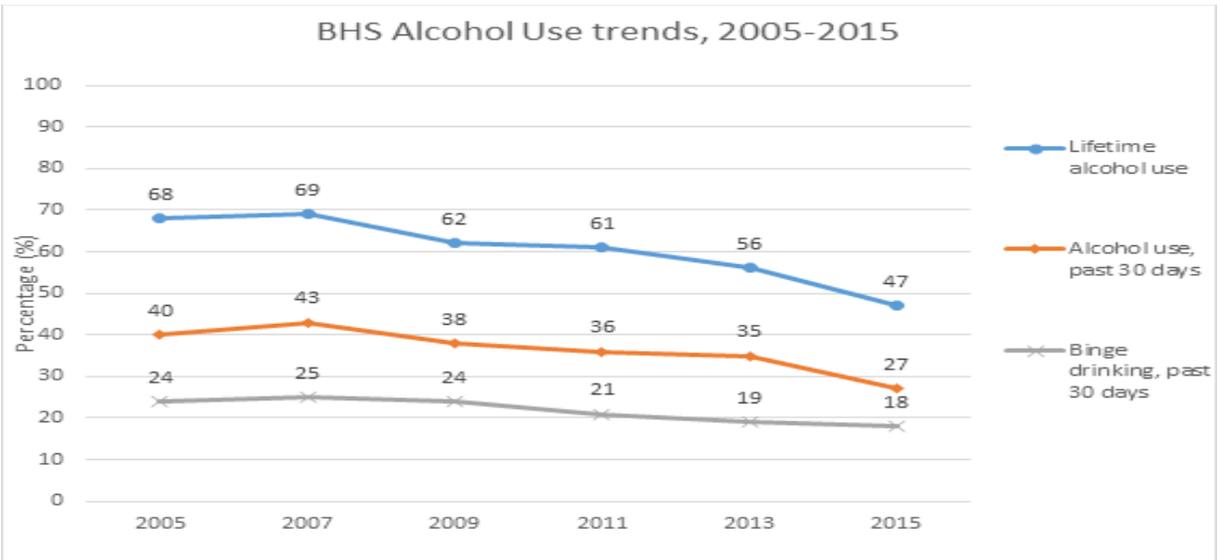


- The 2015 survey asked two questions about riding with a driver who had been drinking alcohol, distinguishing whether the driver was younger than or older than 21 years of age. Four percent of BHS students reported driving with a person younger than 21 who had been drinking, as compared to 12% who rode with someone over 21.
- Four percent of males reported riding with underage drivers who had been drinking, as compared to 3% of females. However, 15% of females reported riding with drivers over 21 years who had been drinking, more than males (7%).

- The prevalence of riding with underage drivers who had been drinking varied by grade, from 2% of 9th graders, 2% of 10th graders, 1% of 11th graders, and 12% of 12th graders (riding with drivers under 21) and from 12% of 9th graders, 11% of 10th graders, 9% of 11th graders, and 14% of 12th graders (riding with drivers over age 21 who had been drinking).



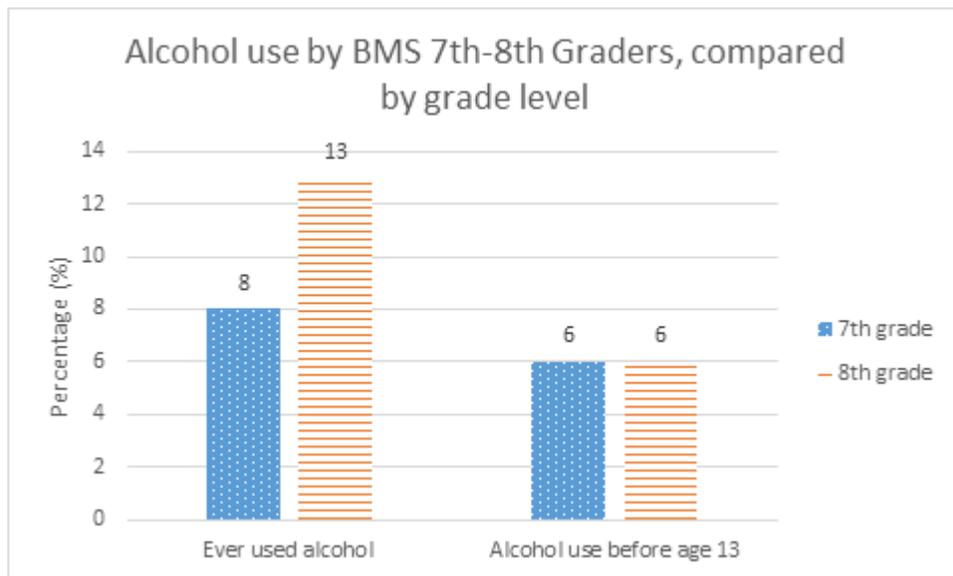
The trend line data show that lifetime and recent drinking, as well as drinking before age 13 and driving after drinking, have all decreased since 2005, when data was first collected from 9th – 12th graders at BHS. Prevalence of binge drinking has decreased since 2005, as well as drinking during the school day.

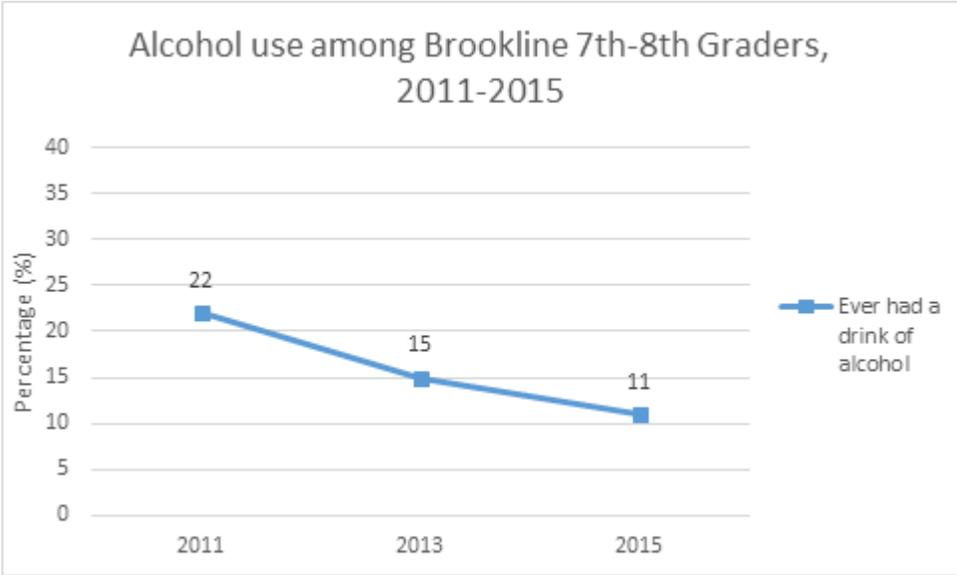
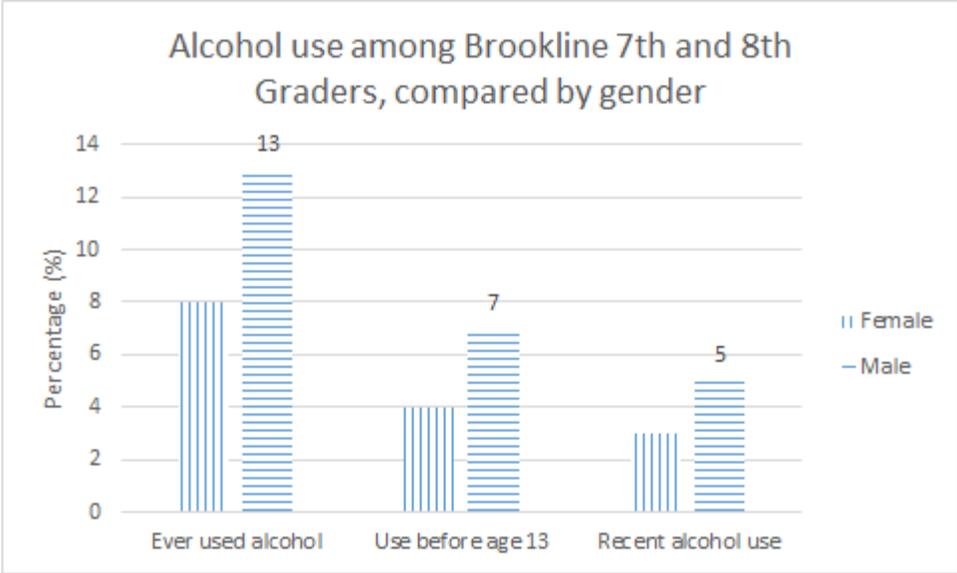


Middle School Data

Note: There are no US middle school data for comparison.

- Reported lifetime use of alcohol among Brookline middle school students was 15% in 2013 and 11% in 2015. In Massachusetts, the lifetime use rate was 18% in 2015.
- Eighth graders were more likely to have ever used alcohol than 7th graders (13% and 8%, respectively).
- In 2015, 6% of 7th and 8th graders reported using alcohol before the age of 13, as compared to 11% in 2013.
- Four percent of 7th and 8th graders reported using alcohol in the 30 days prior to the survey in 2015, compared to 6% in 2013. The prevalence for MA middle school students was 6% in 2013.





Illegal Drug Use

Drug abuse and addiction have enormous negative consequences for individuals and for society. Estimates of the total overall costs of illicit drug abuse in the United States, including productivity and health- and crime-related costs, approximate \$700 billion.¹ More importantly, the use of illegal drugs can have a devastating impact on a person's health and safety, including injury, violence, unwanted sexual contact, teen pregnancy, school failure, and delinquency.

Marijuana, the most commonly abused illegal drug in the United States, can seriously affect adolescents in a number of ways. The short-term effects can include impaired short-term memory, attention, judgment, and other cognitive functions; difficulty in thinking and problem solving; loss of coordination and balance; and increased heart rate.² Students who smoke marijuana get lower grades and are less likely to graduate from high school, compared with their nonsmoking peers.³ A number of studies have shown an association between chronic marijuana use and increased rates of anxiety, depression, and schizophrenia. Some of these studies have shown that the age at which marijuana is first used is an important risk factor, with early use a marker of increased vulnerability to later problems. Chronic marijuana use, especially in a very young person, may also be a marker of risk for mental illnesses - including addiction - for those with genetic or environmental vulnerabilities (such as early exposure to stress or violence). Currently, there is evidence linking marijuana use and schizophrenia and/or related disorders.⁴

Recent research has shown the presence, in both mainstream and sidestream smoke of marijuana cigarettes, of known carcinogens and other chemicals implicated in respiratory diseases (similar to tobacco smoke).⁵

Evidence from both real and simulated driving studies indicates that marijuana can negatively affect a driver's attentiveness, perception of time and speed, and ability to draw on information obtained from past experiences.⁶ Youth who use marijuana are also more likely to drink alcohol, and a study from the National Highway Traffic Safety Administration found that while a moderate dose of marijuana alone was shown to impair driving performance, the effects of even a low dose of marijuana combined with alcohol were greater than for either drug alone.⁷

Many other illegal drugs are also used by a small percentage of adolescents in the United States, ranging from cocaine, heroin, and hallucinogens (e.g., LSD, peyote, psilocybin, and PCP), to over-the-counter and prescription drugs (used without a doctor's prescription). There are numerous negative physiological effects (e.g., irregular heartbeat, high body temperature, depressed brain function) associated with these drugs, and users may be at greater risk for developing a number of psychological problems (e.g., anxiety disorders, phobias, depression).^{8,9} While rates of use for harder drugs remain low among high school students, nationally as well as in Massachusetts there is a growing heroin epidemic. Early onset of use, and heavy marijuana use in adolescence put teens at risk of later becoming adult heroin users.

According to the most recent national Monitoring the Future (MTF) study (2014), there was a decrease of annual prevalence of any illicit drug use among 8th, 10th, and 12th graded in 2014, although this decrease was not statistically significant.¹¹ The main drugs that annual use declined for include both marijuana and synthetic marijuana, narcotics other than heroin, ecstasy, hallucinogens other than LSD, OTC cough and cold medicines, amphetamine use without prescription, Ritalin, Adderall, Salvia, and prescribed psychotherapeutic drugs.¹¹ However, there are few illicit drugs that annual use remained steady with no change from the previous survey.

These drugs include inhalants, tranquilizers, LSD, cocaine, heroin, methamphetamine and crystal methamphetamine, sedatives, rohypnol, ketamine, and anabolic steroids.¹¹

Because most drug users use marijuana either by itself or in combination with other substances, marijuana typically drives the trends in estimates of any illicit drug use. Not surprisingly, then, the trends shown in the national MTF survey in annual use of marijuana mirror the trends for annual use of any illicit drug in all three grades. Annual use of marijuana among 8th graders decreased from 12.7% in 2013 to 11.7% in 2014, and from 29.8% in 2013 to 27.3% in 2014 among 10th graders. For 12th graders, annual use decreased from 36.4% in 2013 to 35.1% in 2014. Past month use of marijuana decreased by 0.5% among 8th graders, by 1.4% among 10th graders, and by 1.6% among 12th graders, from 2013 to 2014. These national data on marijuana use are of particular concern since trends in the perception of harm of smoking marijuana also have been declining over the same period of time. Prior research indicates that declines in these perceptions are predictive of increases in use.¹⁰

After marijuana, prescription and over-the-counter medications account for most of the top illegal drugs abused by 12th graders in the past year. On the positive side, according to the national MTF study, past-year non-medical use of Vicodin by 10th graders declined from 4.6% in 2013 to 3.4% in 2014 and the decrease in the use of Vicodin by high school seniors reported last year was slight, as use decreased by 0.5% from 2013 to 2014.¹¹ The abuse of stimulants remains a cause for alarm. For example, 8.1% of high school seniors reported past year use of amphetamines in 2014, down from 9.2% in 2013.¹¹ However, use of Adderall in the past year slightly increased among 10th graders (4.4 in 2013 to 4.6 in 2014). Also, past year use of Adderall among 12th graders remains high at 6.8%.

The 2015 Brookline High School Health Survey asked questions about lifetime rates of a variety of illicit drugs, as well as rates of current drug use (marijuana or other) and age of first use. In addition, students were asked to report if they used marijuana during the school day and if they drove a car or other vehicle after having used marijuana or drugs other than alcohol or marijuana. The Brookline Grades 7 and 8 Health Survey asked questions about lifetime and recent marijuana use, age of first use of marijuana, and lifetime use of other illegal drugs.

In this report, the following definitions were used:

Lifetime use: Any use during one's life.

Recent use: Any use within the 30 days prior to the survey.

Heavy use: Reported use 100 or more times in one's life.

Prescription painkillers: Use of prescription opiates (such as Percocet, Oxycontin, or Vicodin), to get high.

Ritalin, Adderall or Concerta, or any other amphetamines: Use of these drugs without a doctor's prescription.

Cocaine use: Use of any form of cocaine, including powder, crack or freebase.

Steroid use: Use of steroids (pills or shots) without a doctor's prescription.

References

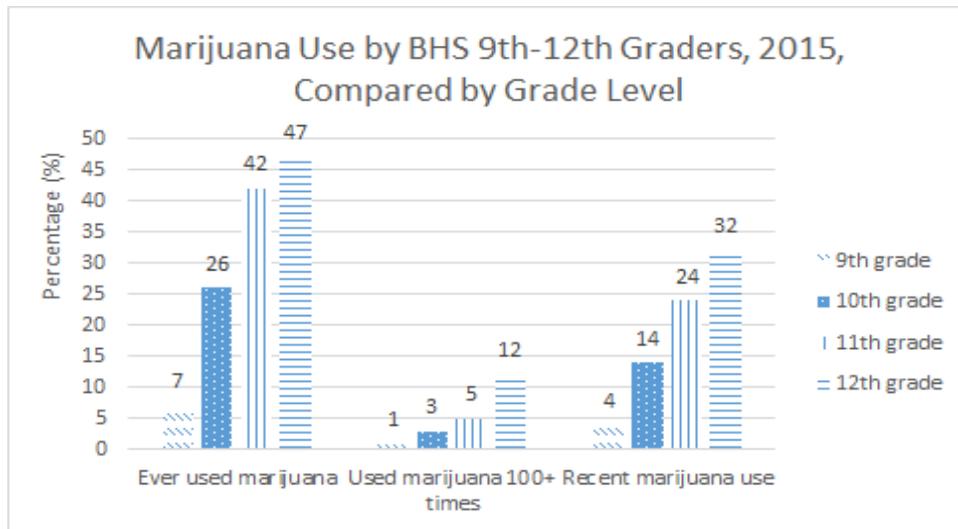
- ¹ National Institute on Drug Abuse (2015). *Trends & Statistics*. National Institute of Health, [Online] Retrieved December 2015. <http://www.drugabuse.gov/related-topics/trends-statistics>
- ² National Institute on Drug Abuse (2010). *Research Report Series – Marijuana Abuse*. [Online] Retrieved December 2015 from <http://www.nida.nih.gov/ResearchReports/Marijuana/Marijuana3.html>.
- ³ Lynskey, M. & Hall, W. The effects of adolescent cannabis use on educational attainment: A review. *Addiction* 95(11): 1621-1630, 2000.
- ⁴ Moore TH, Zammit S, Lingford-Hughes A, et al. Cannabis use and risk of psychotic or affective mental health outcomes: A systematic review. *Lancet* 370 (9584):319–328, 2007.
- ⁵ Moir, D., Rickert, W. S., Levasseur, G., Larose, Y., Maertens, R., White, P., & Desjardins, S. (2008). A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. *Chemical Research in Toxicology*, 21(2), 494-502. Retrieved December 2015 from <http://www.ncbi.nlm.nih.gov/pubmed/18062674>.
- ⁶ National Institutes of Health (2010). *NIDA InfoFacts: Drugged Driving*. [On-line] Retrieved December 2015 from <http://drugabuse.gov/infofacts/driving.html>.
- ⁷ National Highway Traffic Safety Administration (NHTSA) Notes. Marijuana and alcohol combined severely impede driving performance. *Annals of Emergency Medicine* 35(4):398-399, 2000.
- ⁸ National Institute on Drug Abuse. Prescription Medications. [online] Retrieved on December 2015 from <http://www.drugabuse.gov/drugs-abuse/prescription-medications>.
- ⁹ Wu, Li-Tzy, Ringwalt, CL, Mannelli, P, Patkar, AA. Prescription Pain Reliever Abuse and Dependence among Adolescents: A Nationally Representative Study. *Journal of the American Academy of Child and Adolescent Psychiatry* 47(9):1020-1029, 2008.
- ¹⁰ Office of National Drug Control Policy (December 2011). Monitoring the Future Study Highlights. [online] Retrieved on December 2015 from http://www.whitehouse.gov/sites/default/files/ondcp/Blog/2011_monitoring_the_future.pdf.
- ¹¹ Johnston, L.D., O'Malley, P.M., Miech, R.A., Bachman, J.G., & Schulenberg, J.E. (2015). *Monitoring the Future national survey results on drug use, 1975-2014: 2014 Overview, Key Findings on Adolescent Drug Use*. NIH Publication.

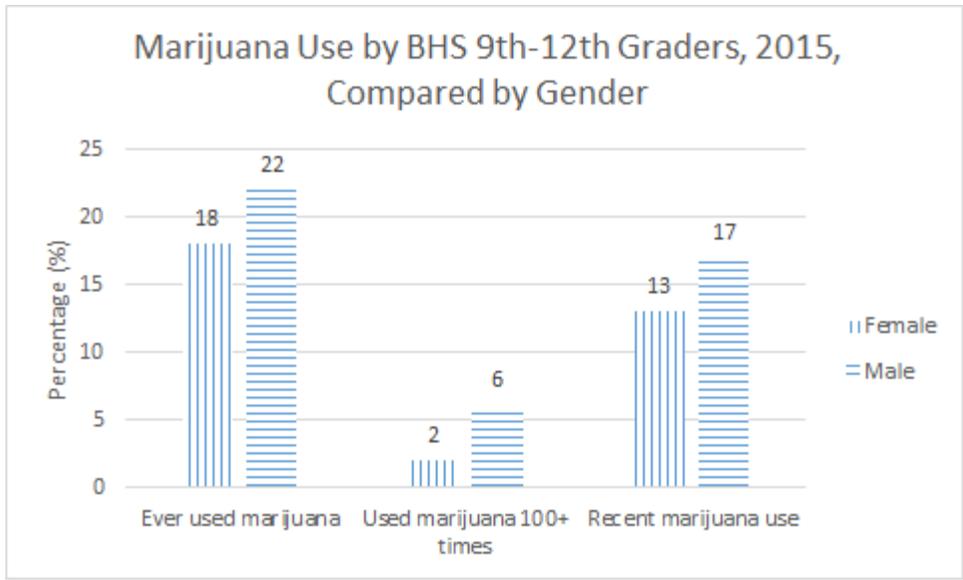
Marijuana Use

High School Data

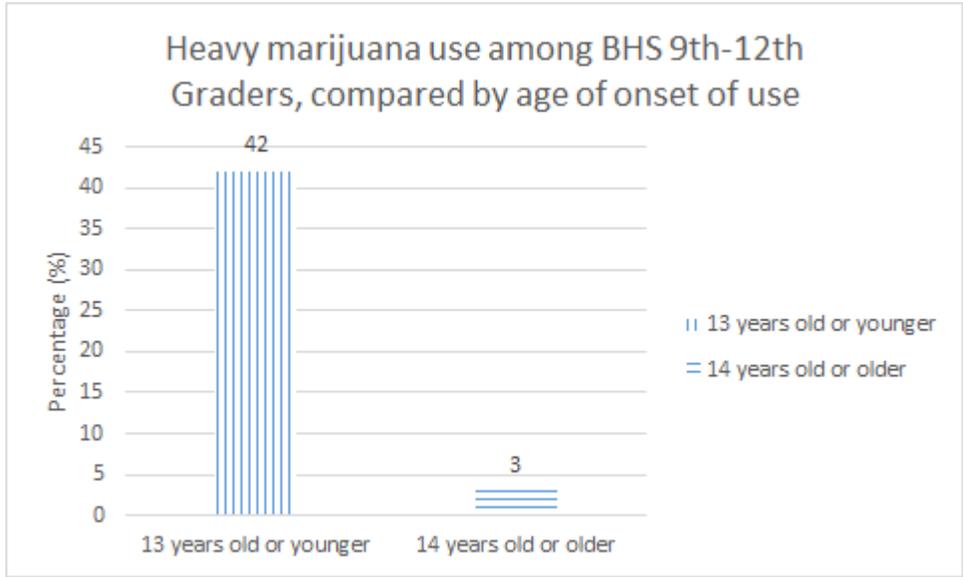
Note: In every reported behavior related to marijuana, males used more than females. Twelfth graders reported higher rates than 9th graders in all behaviors, except first use of marijuana before age 13 years.

- In 2015, 27% of Brookline students in grades 9 – 12 reported having used marijuana at some time during their lifetime, compared to 37% in 2013. Across grades, 7% of 9th graders, 26% of 10th graders, 42% of 11th graders and 47% of 12th graders reported ever having tried marijuana. This is an increase from 9th to 12th grades. More males (22%) reported use than females (18%).
- In 2015, 4% of BHS students reported using marijuana 100 or more times. Males' prevalence are three times higher than females' (6% and 2%, respectively). There is also a large difference across grades in reporting lifetime use of marijuana 100 or more times, from 1% of 9th graders to 12% of 12th graders.
- The percent of students reporting first use of marijuana before age 13 was 1% in 2015, down one percentage point from 2013. This is considerably less than the statewide (7%) and national (9%) rates. There is little difference between the prevalence in males (1%) and females (0.2%).
- The rate of use of marijuana in the month prior to the survey was 16% in 2015, as compared to 21% in 2013. The 2013 Massachusetts rate was 25% and the 2013 national rate was 24%. Across grade levels, there is a striking difference, with 4% of 9th graders and 32% of 12th graders acknowledging recent use. Seventeen percent of males and 13% of females reported recent use.

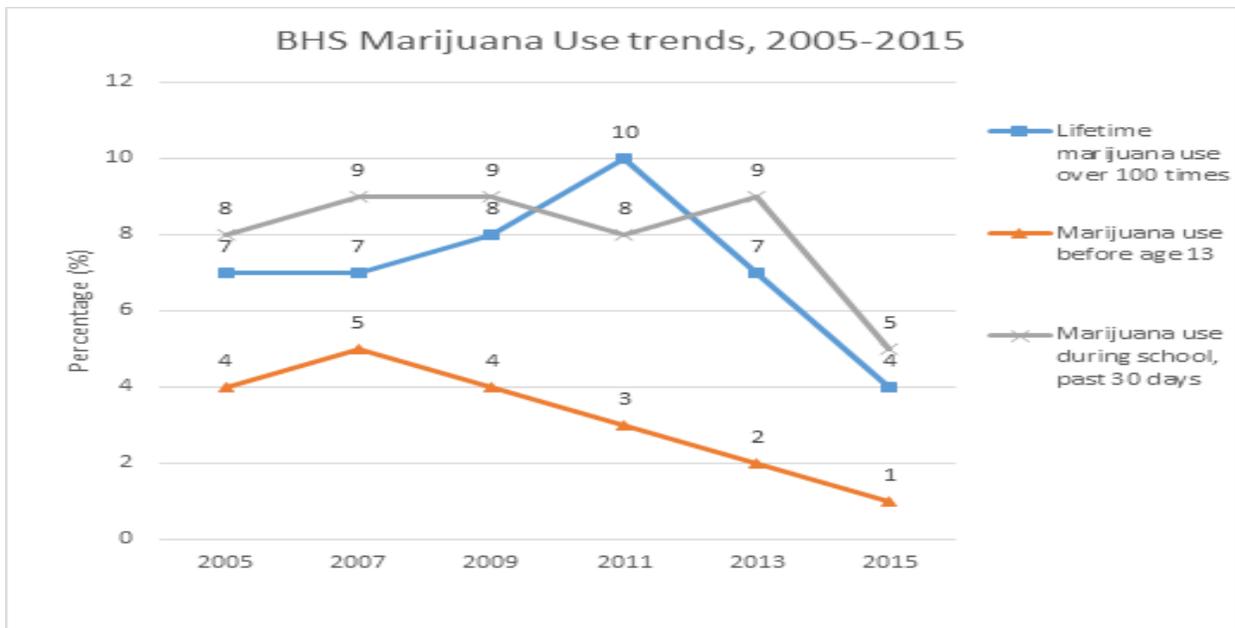
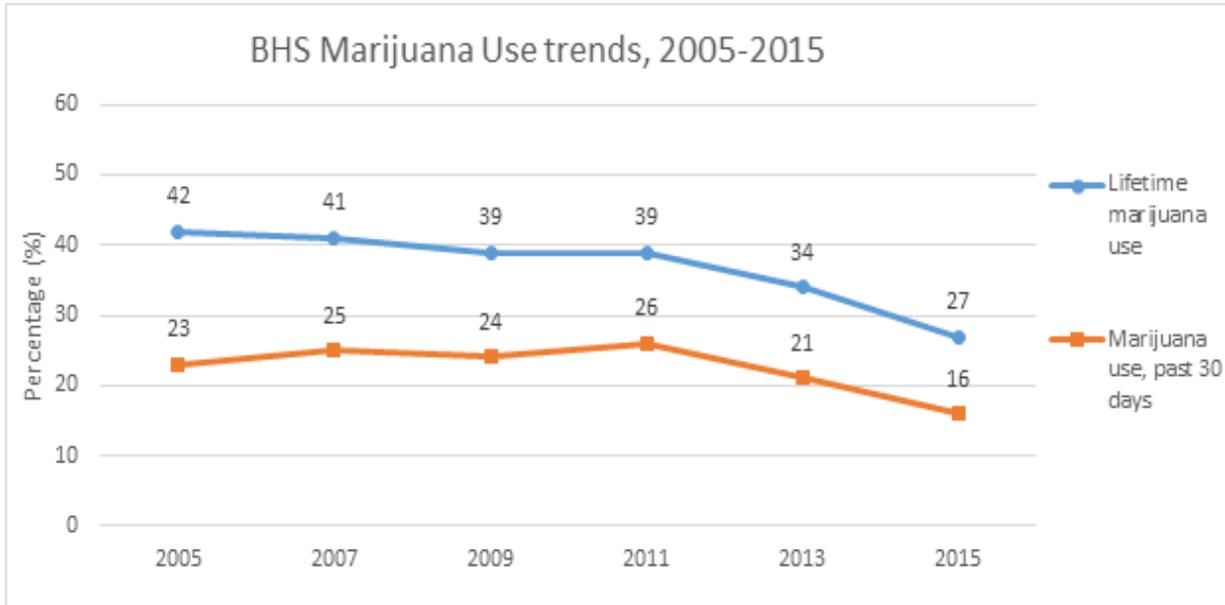




- 42% of those students who had initially smoked marijuana at age 13 years or younger reported heavy lifetime usage of marijuana (100+ times), as compared to 3% of those who had initially smoked marijuana at 14 years or older.



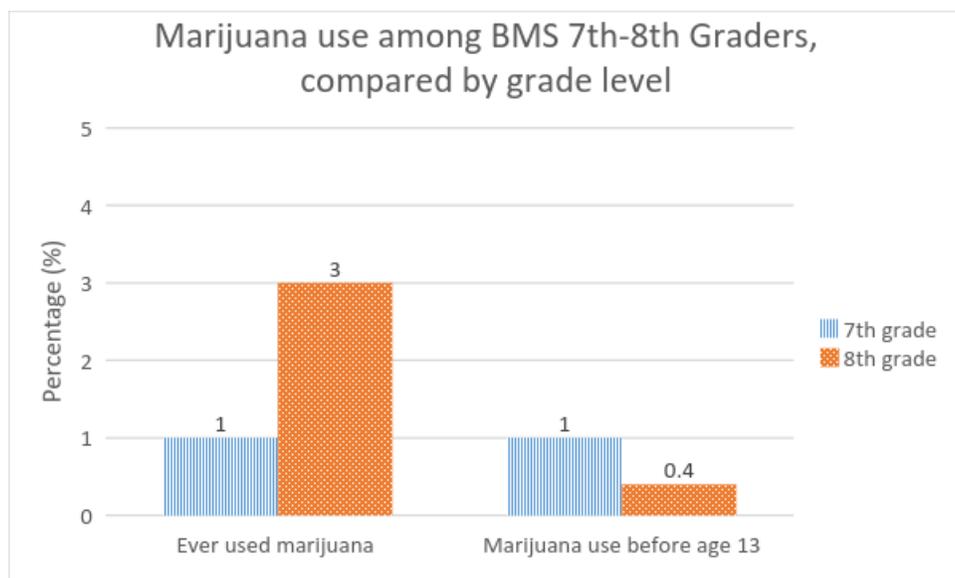
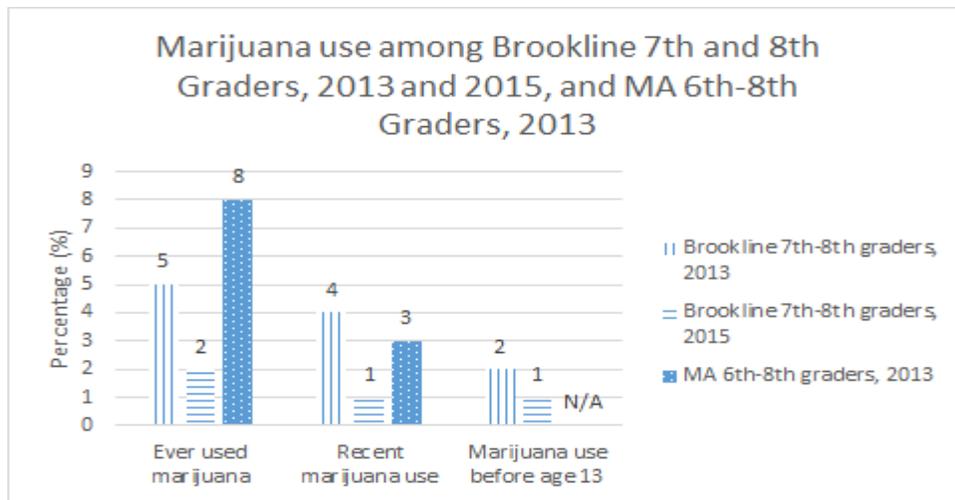
Trend line data indicate a decrease in the prevalence of students who have ever used marijuana or recent use. There has been a steady decrease in lifetime use of over 100 times, recent use during the school day, and initial use before the age of 13.



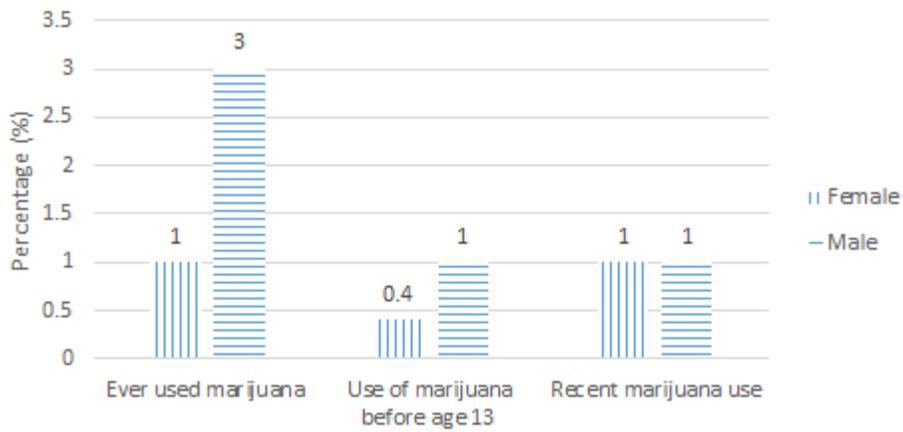
Middle School Data

Note: There are no US middle school data for comparison.

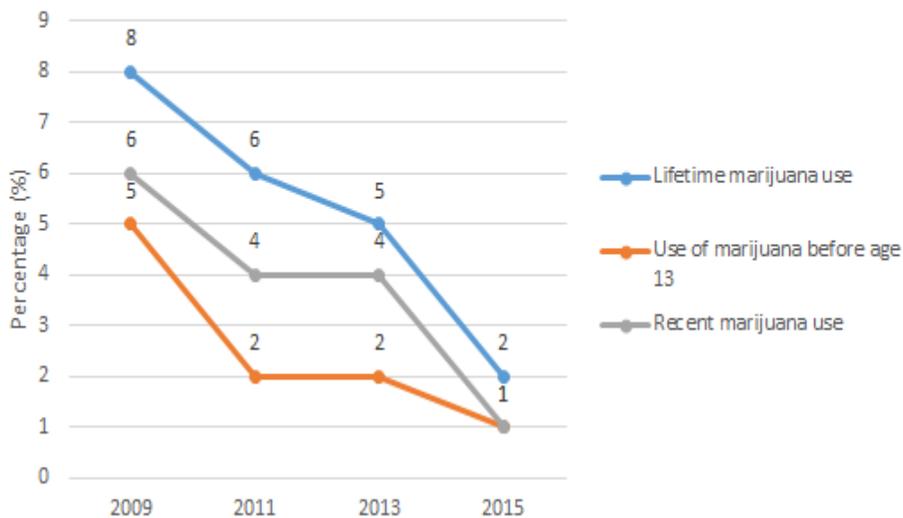
- In 2015, 2% of Brookline 7th and 8th graders reported ever having smoked marijuana, as compared to 5% in 2013. In 2013, across the state, the rate was 8%. Among 8th graders, the rate was 3%, higher than 7th graders, 1%.
- In 2015, the prevalence of Brookline middle school students who reported smoking marijuana in the month before the survey was 1%, which was lower than the rate in 2013, 4%. The statewide rate was 3% in 2013.
- The percentage of students reporting having used marijuana before age 13 was 1% in 2015, down from 2% in 2013.



Marijuana use among Brookline 7th-8th Graders, compared by gender



Marijuana use among Brookline 7th-8th Graders, 2011-2015

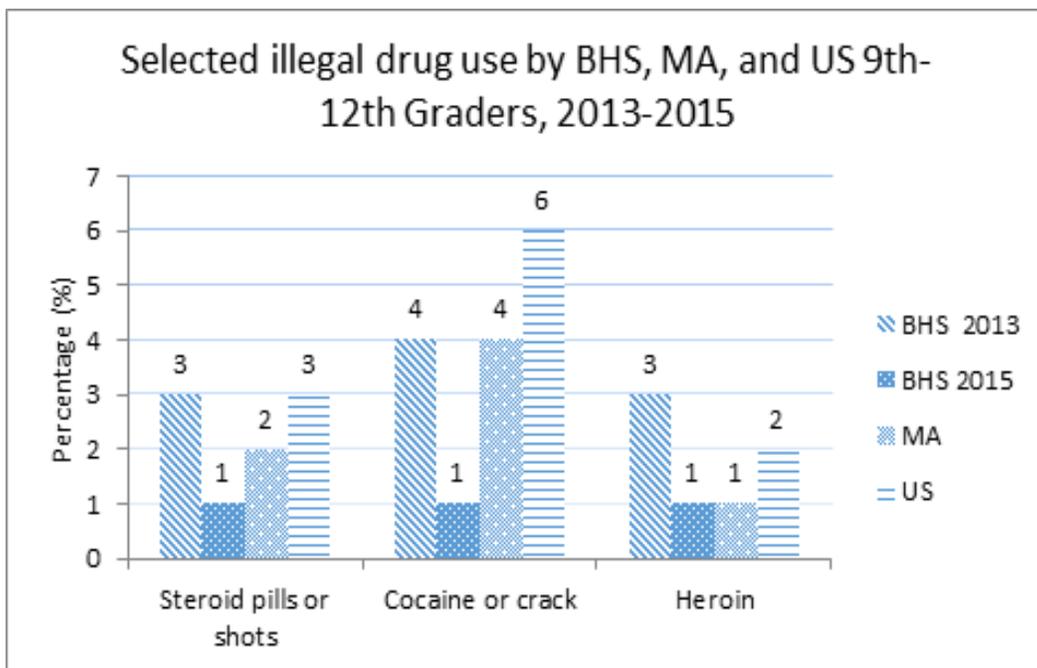


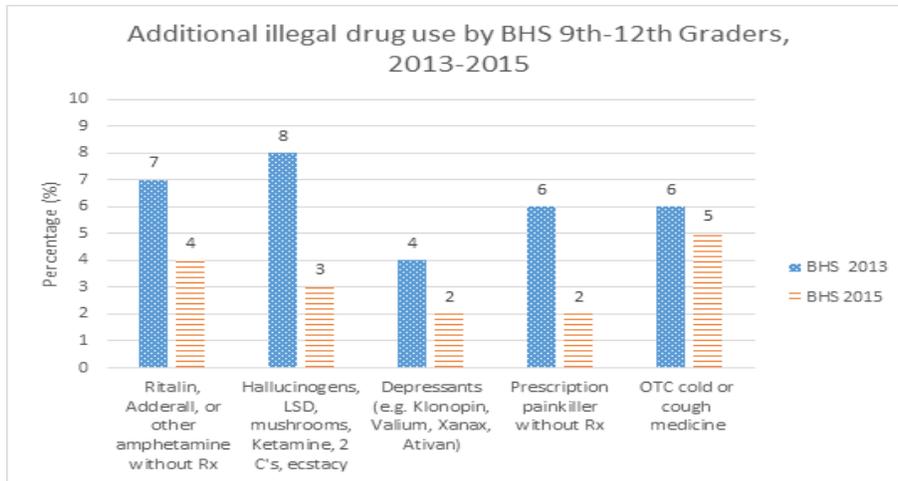
Other Illegal Drug Use

High School Data

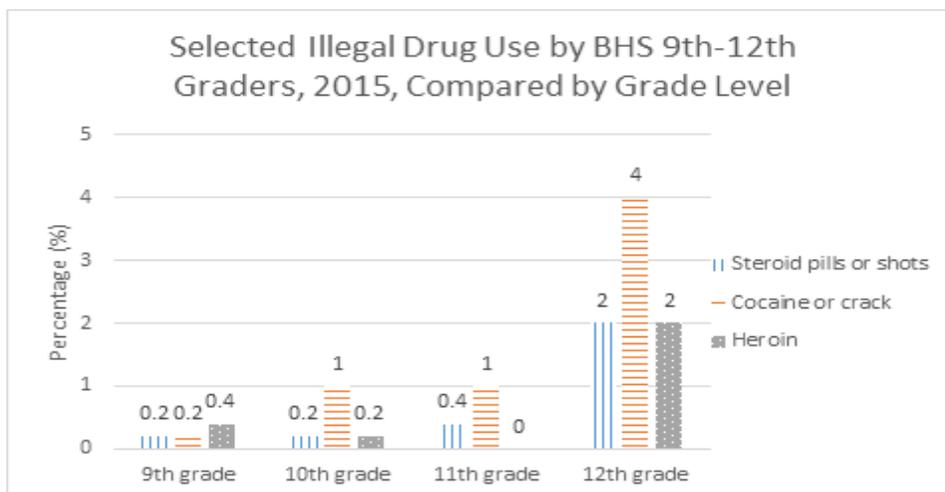
Note: The only comparable questions on the state and national surveys are about cocaine, heroin and steroids.

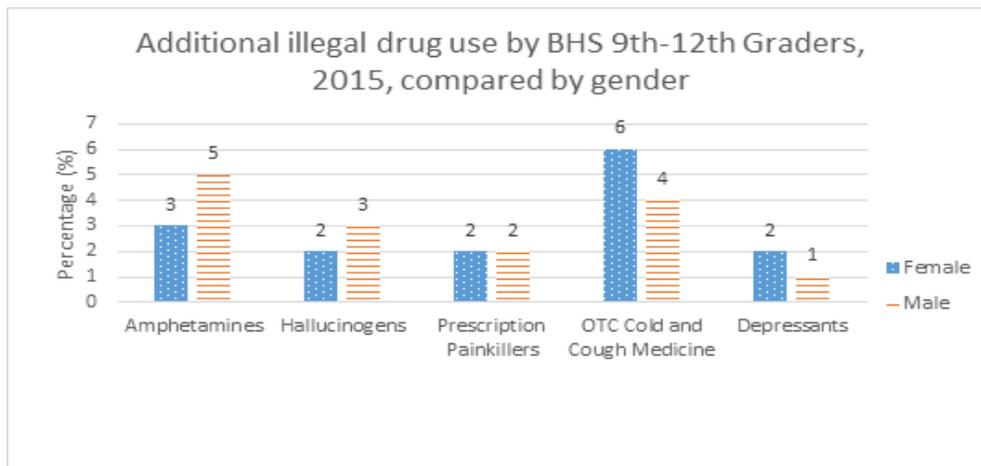
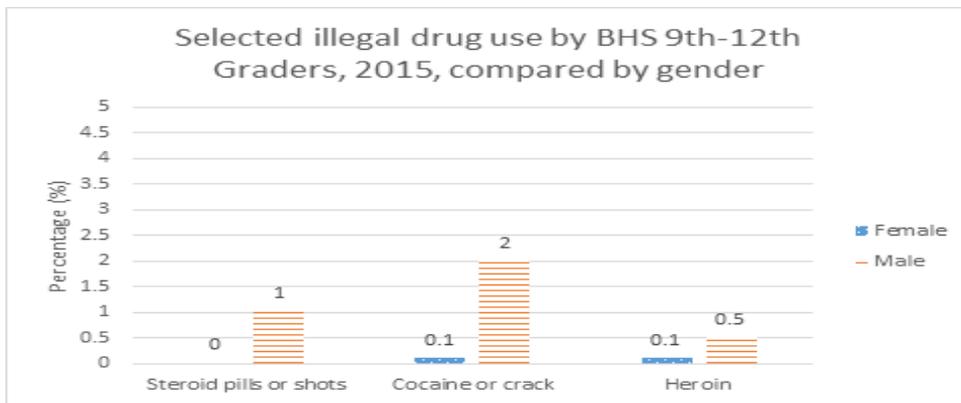
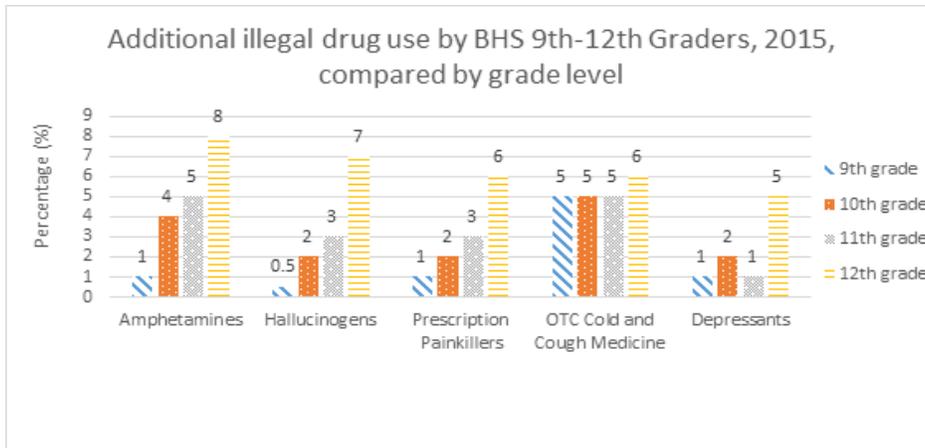
- The reported rate of cocaine use by Brookline 9th - 12th graders decreased from 4% to 1%. State level was 4% and national level was 6%. There was an increase in use across grade levels, from 0.2% among 9th graders to 4% among 12th graders. Two percent of males and 0.1% of females reported use.
- Heroin use was reported by 1% of BHS students in 2015, a decrease from 2% in 2013. State and national rates were 1% and 2%, respectively. Rates varied by grade (0.4% for 9th graders, 0.2% for 10th graders, 0% for 11th graders, 2% for 12th graders). More males (0.5%) reported using heroin than females (0.1%).
- Use of steroids without a prescription by BHS 9th - 12th graders also decreased from 3% in 2013 to 1% in 2015, similar to state and national rates (2% and 3%, respectively). One percent of males and 0% of females used steroids. Use increased by grade, from 0.2% in 9th graders to 2% in 12th graders.





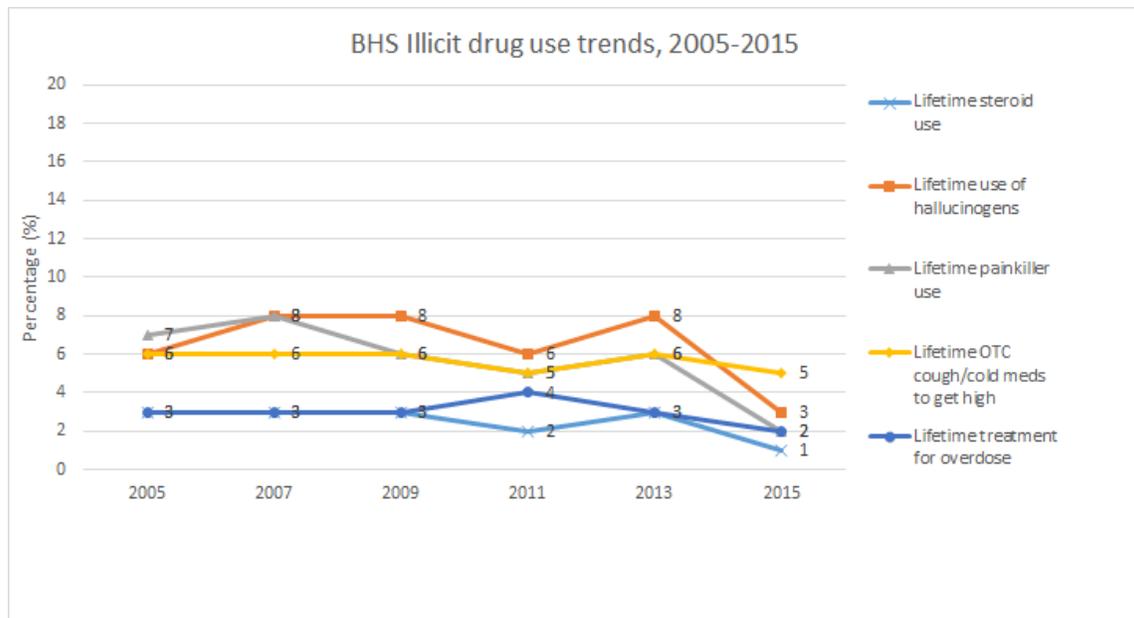
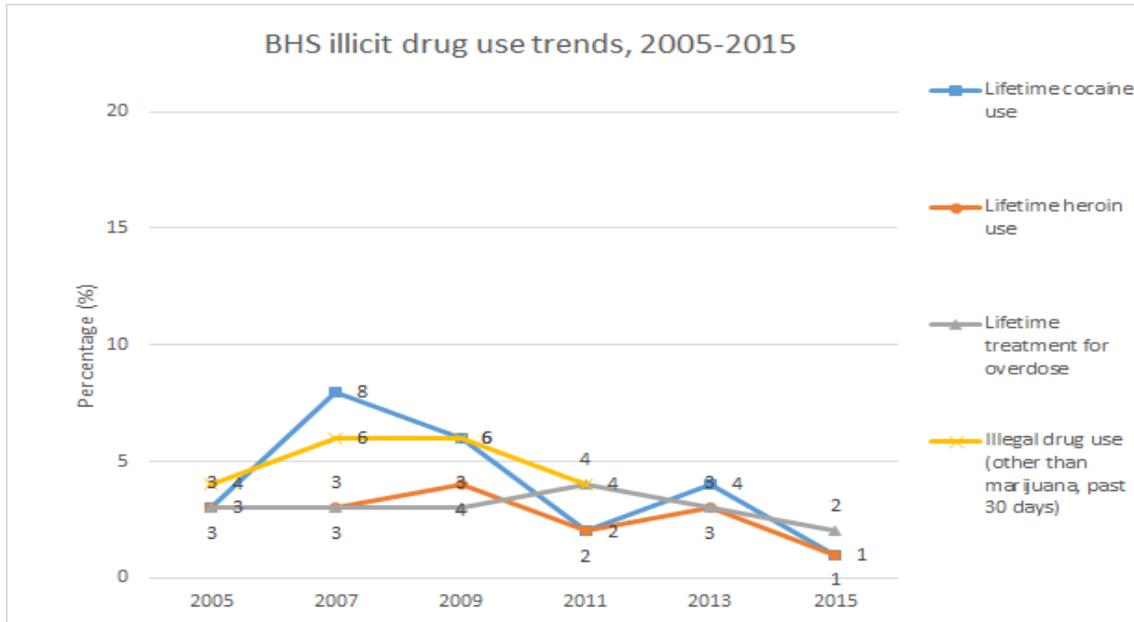
- Four percent of BHS students used Ritalin, Adderall, or Concerta or other amphetamines without a doctor’s prescription in 2015. In 2013, the rate was 7%. There was a difference between genders (females, 3% and males, 5%), and across grades, with freshmen reported at 1%, sophomores at 4%, juniors 5%, and seniors 8%.
- In 2015, 2% of students at BHS used prescription painkillers (e.g., Percocet, Oxycontin, Oxycodone, or Vicodin) “to get high,” as compared to 6% in 2013. The word “prescription” was inserted into the question for the current survey. There was no difference between genders (2%). There was also an increase from 9th (1%) to 12th (6%) grades.
- Hallucinogens, such as LSD, mushrooms, Ketamine, and ecstasy, were used by 3% of students in 2015. The 2013 percentage was 8%. Males (3%) were more likely to have used them as females (2%). 0.5% of freshmen reported use, as compared to the 7% of seniors who said they had used hallucinogens.
- Use of over-the-counter cold or cough medicines was reported at 5% in 2015 and 4% in 2013, with 5% of 9th graders reporting use and 6% of 12th graders.





- There was a decrease in the prevalence of recent use of all illegal drugs from 2013 to 2015.

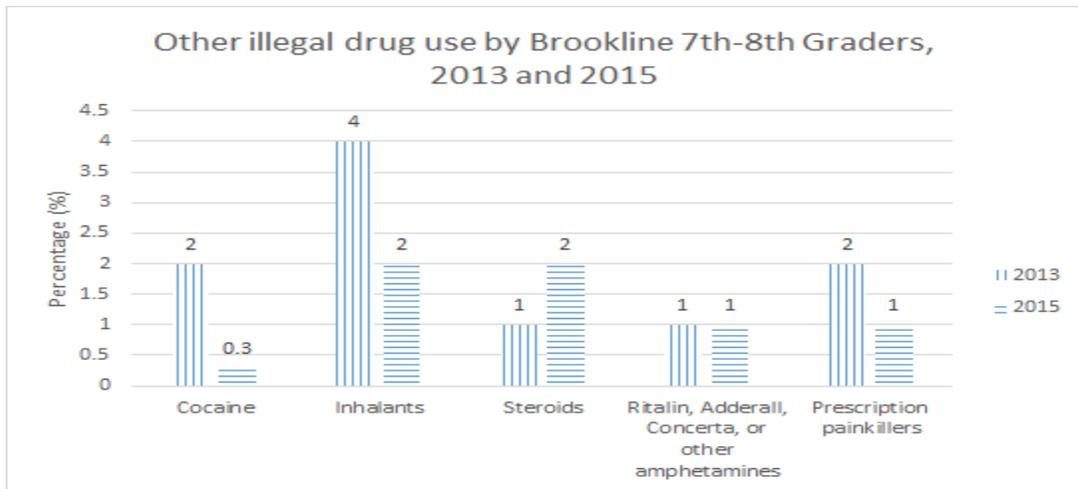
- Trend line data indicate a decrease in the prevalence of lifetime use of cocaine and steroids since 2007, the highest point of use. Heroin use rates declined from 2005. Prevalence of recent use of illegal drugs other than marijuana decreased from the 2007 prevalence, as well.



Middle School Data

Note: There are no Massachusetts or US middle school data for comparison.

- Among Brookline middle school students, 1% reported ever having used Ritalin, Adderall, Concerta or other amphetamines without a doctor's prescription. In 2013, 1% reported having ever used those drugs without a doctor's prescription. Eighth graders reported higher rates of use (4%) than 7th graders (1%). Prevalence among females and males were about the same (3% and 2%, respectively).
- 1% of Brookline middle school students reported that they had used prescription painkillers to get high. Two percent of 8th graders reported use, higher than the reported 0% of 7th graders. Usage varied little across genders.
- Lifetime use rates of other illicit drugs among Brookline middle school students changed little since 2013:
 - Cocaine: 0.3% in 2015 (2% in 2013)
 - Inhalants: 2% in 2015 (4% in 2013)
 - Steroids (pills or shots, without prescription): 2% in 2015 (1% in 2013)



- In the statewide middle school survey, several illicit drugs were put together in one question, including cocaine, inhalants, amphetamines, methamphetamines, and steroids, and the reported rate of use was 6% in 2015.

Tobacco Use

Tobacco use is the leading *preventable* cause of disease, disability and death in the United States. Each year, an estimated 480,000 people die prematurely from smoking or exposure to secondhand smoke, and another 16 million have a serious illness caused by smoking. In 2013, more than 21.3% of Americans age 12 and older reported current use of tobacco, including cigarettes, cigars, smokeless tobacco, and pipe tobacco.^{1, 2} Tobacco use is responsible for one in every five deaths in the United States. In addition, for every person who dies from smoking, 30 more people suffer from at least one serious tobacco-related illness.² Tobacco-related health problems such as heart disease, cancer, stroke, and chronic respiratory illness are the leading causes of death each year. Since tobacco decreases lung function, even with short-term use, it can increase absenteeism among students. Additionally, smokeless tobacco use (chewing tobacco or snuff) causes oral cancer and other health problems.³

Tobacco use among young people poses especially serious risks. Adolescent tobacco use not only threatens health, but it is also associated with drinking and illegal drug use, and with poor school performance. Research indicates that the earlier young people begin to smoke the greater their permanent lung damage and the more likely they are to become heavily addicted.⁴ Since 1997, cigarette use among adolescents has continued to decline. Declines in other tobacco products actually rebounded from the mid-2000s to 2010, but declines were again noted in the 2011 Monitoring the Future survey.⁵ Still, about one-fifth (20.8%) of U.S. high school students have used some form of tobacco in the past year.⁶

Indicators of cigarette smoking have significantly declined among Massachusetts high school students since 2003 (e.g., a decrease from 21% to 16% for smoking in the past 30 days). However, about 50% of youth who start smoking as adolescents will continue to smoke for 15 – 20 years.⁷ Unfortunately, the prevalence of smokeless tobacco use has risen from 4% in 2003 to 5% in 2013.⁸

The Massachusetts Education Reform Law of 1993 made it illegal for students, school staff, and visitors to smoke or use tobacco products on school property at any time. Since then, the proportion of adolescent smokers reporting that they had smoked on school property has dropped, though the state average is still higher than the national average.

Brookline is a smoke-free community, and town law now states that smoking is illegal in restaurants and lounges, public places and retail establishments, most worksites, and within 400 feet of Brookline High School buildings. Tobacco retailers must have permits to sell tobacco and are periodically monitored to determine whether they are selling tobacco to minors. Additionally, in 2014 Brookline raised the legal age for purchase tobacco products to 21, and in 2015 the town passed a warrant article to include e-cigarettes in all town tobacco regulations.

The 2015 Brookline High School Health Survey asked students to report their history and current use of cigarettes, both on and off school property. The survey also asked questions about their recent use of smokeless and other types of tobacco, and about their attempts to quit smoking, as well as age of first use. The Brookline Grades 7 and 8 Health Survey asked similar questions, plus questions about how they accessed cigarettes.

In this report the following definitions were used:

Lifetime cigarette use: Smoking a cigarette, even just a puff, in one’s lifetime. *Note:* This is a change since the previous surveys (2009 and earlier), made to match the wording of the state and national surveys.

Recent cigarette smoking: Any cigarette smoking in the 30 days before the survey.

Recent use of chewing tobacco, snuff or dip: Any use of these products in the 30 days before the survey.

Recent use of other forms of tobacco: Any use of tobacco other than the above, such as smoke-free and dissolvables (like Snus and Orbs), tip cigars, cigarillos, or other flavored cigars (like Phillies Blunt or Black and Mild).

References

¹ National Institute on Drug Abuse. NIDA InfoFacts: Cigarettes and Other Tobacco Products. [online] retrieved on November 23, 2015 from <http://www.drugabuse.gov/infofacts/tobacco.html>.

² Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011.

³ Public Health Service. (1986). *The health consequences of using smokeless tobacco: A report of the advisory committee to the Surgeon General*. (NIH Publication No. 86-2874). Bethesda, MD: U.S. Department of Health and Human Services.

⁴ Public Health Service (1994). *Preventing tobacco use among young people: A report of the Surgeon General*. (DHHS Publication No. 0455-B-02). Washington, DC: U.S. Government Printing Office.

⁵ Johnston, L. D., O’Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2014). *Monitoring the Future national results on adolescent drug use: Overview of key findings, 2013*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.

⁶ SAMHSA, Center for Behavioral Health Statistics and Quality. *National Survey on Drug Use and Health, 2014*. [online] Retrieved on November 23, 2015 from <http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf>.

⁷ Lukas, Scott E. From presentation, “Adolescent Drug and Alcohol Abuse, Addiction and Treatment,” given October 30, 2007. Waltham, MA.

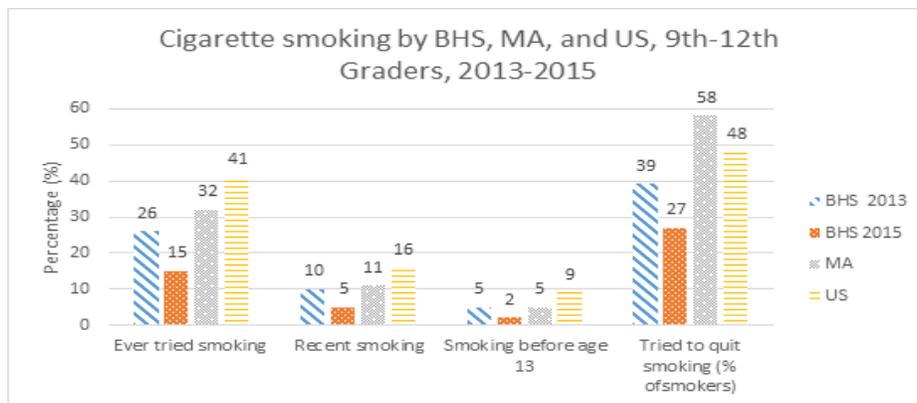
⁸ MA Department of Elementary and Secondary Education (2015). *2014 Health and Risk Behaviors of Massachusetts Youth*. www.doe.mass.edu/cnp/hprograms/yrbs.

Tobacco Use

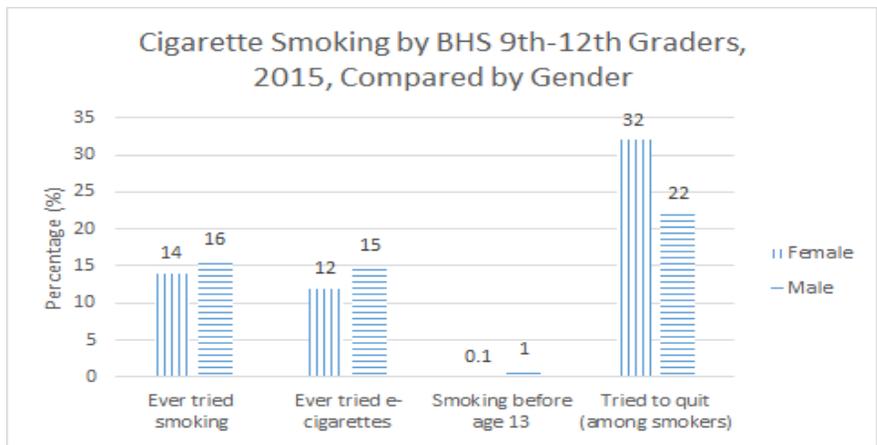
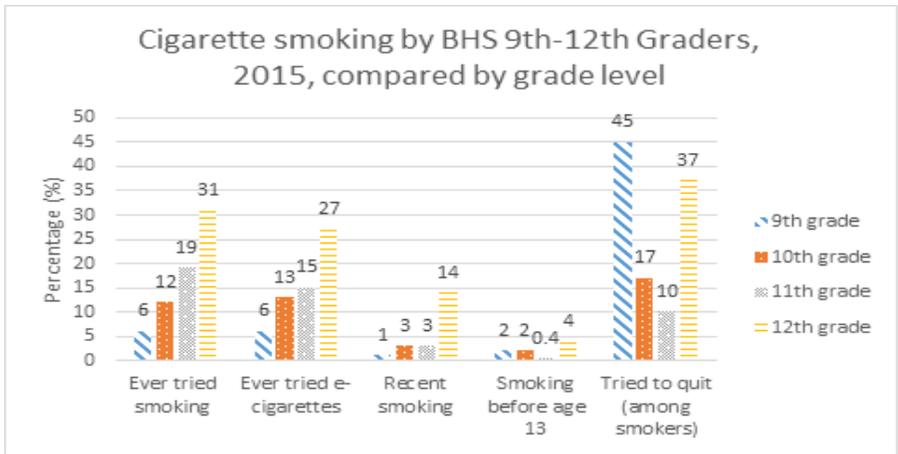
For the first time the survey asked students about their use of electronic cigarettes, (e-cigarettes).

High School Data

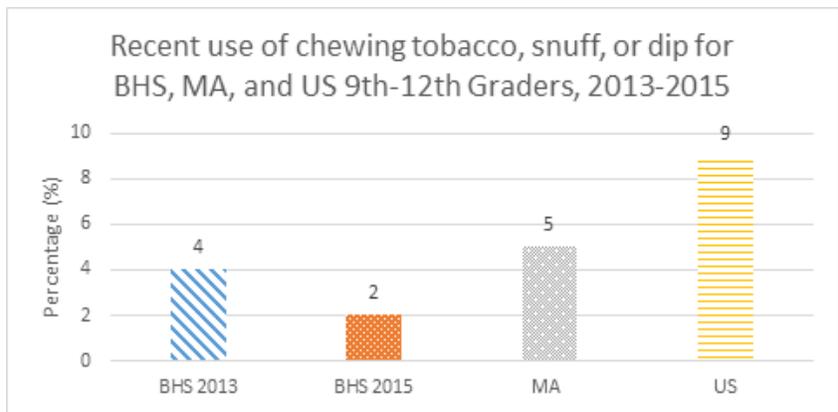
- The percentage of BHS students who have ever smoked a cigarette, even just a puff, was 15% in 2015, down from 26% in 2013. The statewide and national figures were 32% and 41%, respectively. Across grade levels, the rate for seniors (31%) was higher than that for freshmen (6%).
- The prevalence of students who started to smoke cigarettes before age 13 years decreased in 2015 to 2%. This is down from 5% in 2013. 2% of 9th graders, 2% of 10th graders, 0.4% of 11th graders, and 4% of 12th graders reported starting to smoke cigarettes before age 13 years.
- The prevalence of students in grades 9 – 12 who reported smoking at least once during the month prior to the survey decreased from 10% in 2013 to 5% in 2015. This remains lower than the statewide (11%) and national (16%) rates. The prevalence was similar across genders (4% of females, 5% of males), but varied across grades from 9th (1%) to 12th (4%) grades.
- In 2015, 27% of BHS smokers had tried to quit smoking cigarettes at least once, as compared to 39% in 2013. 22% of males have tried to quit as compared to 32% of females. Across grade levels, 45% of 9th graders, 17% of 10th graders, 10% of 11th graders and 37% of 12th graders who are current smokers have tried to quit.

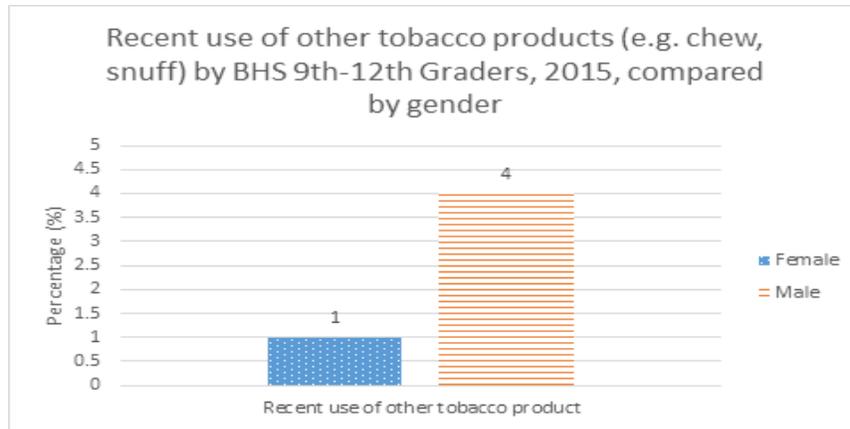


- Lifetime use of e-cigarettes increased by grade and varied by gender: 6% of 9th graders, 13% of 10th graders, 15% of 11th graders, and 27% of 12th graders reported use of e-cigarette during their lifetime. 12% of females and 15% of males reported use of e-cigarettes in their lifetime.

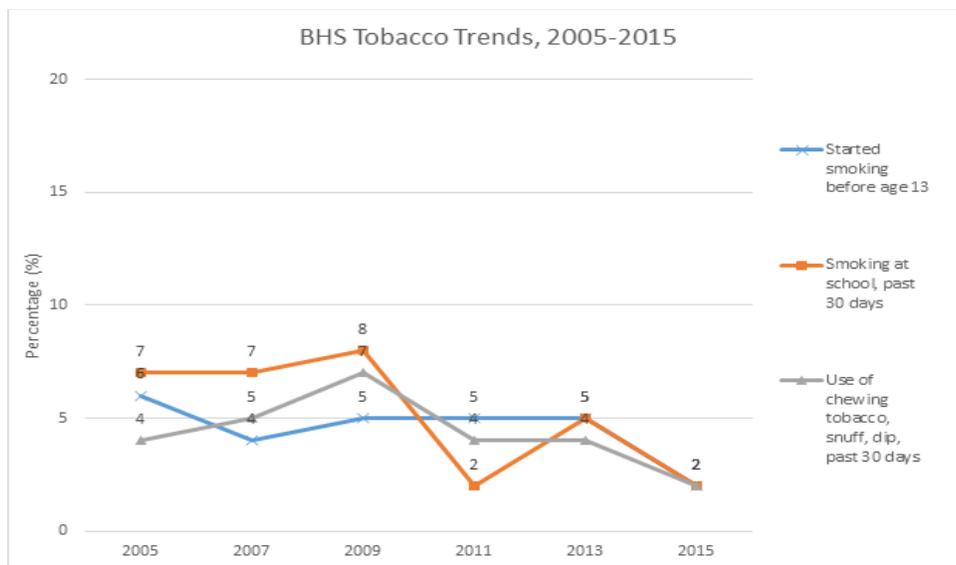


- Recent use of chewing tobacco, snuff or dip by Brookline 9th - 12th graders was relatively low in 2015 at 2%, a decrease from 4% in 2013. State and national figures were considerably higher (5% and 9%, respectively). Prevalence was higher among males (4%) than females (1%).





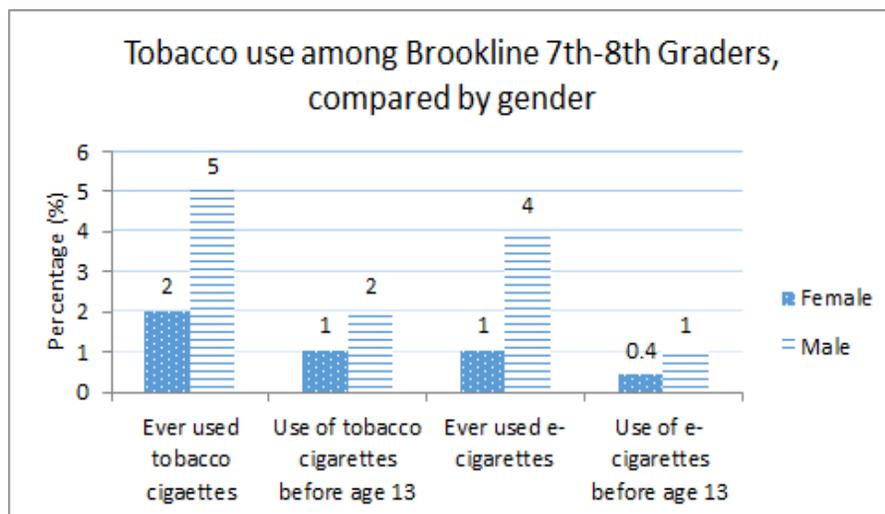
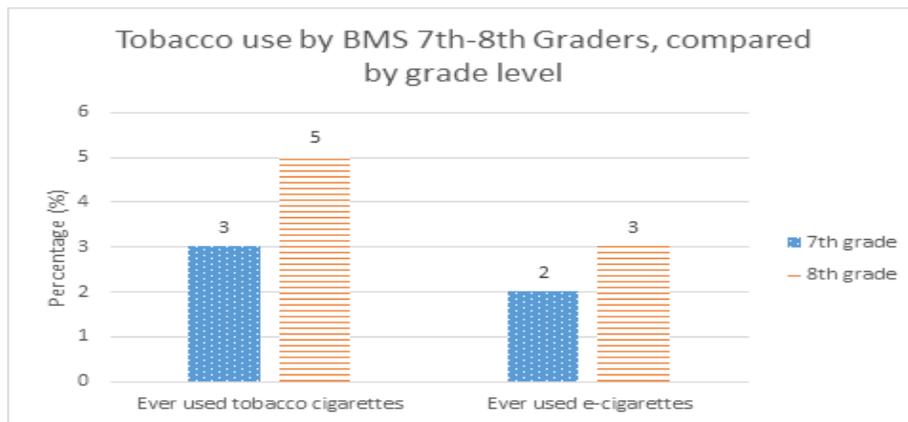
Trend lines show that initiating cigarette smoking before age 13, recent smoking at school, and recent use of chewing tobacco, snuff, and dip in the past 30 days have decreased from 2005 levels.

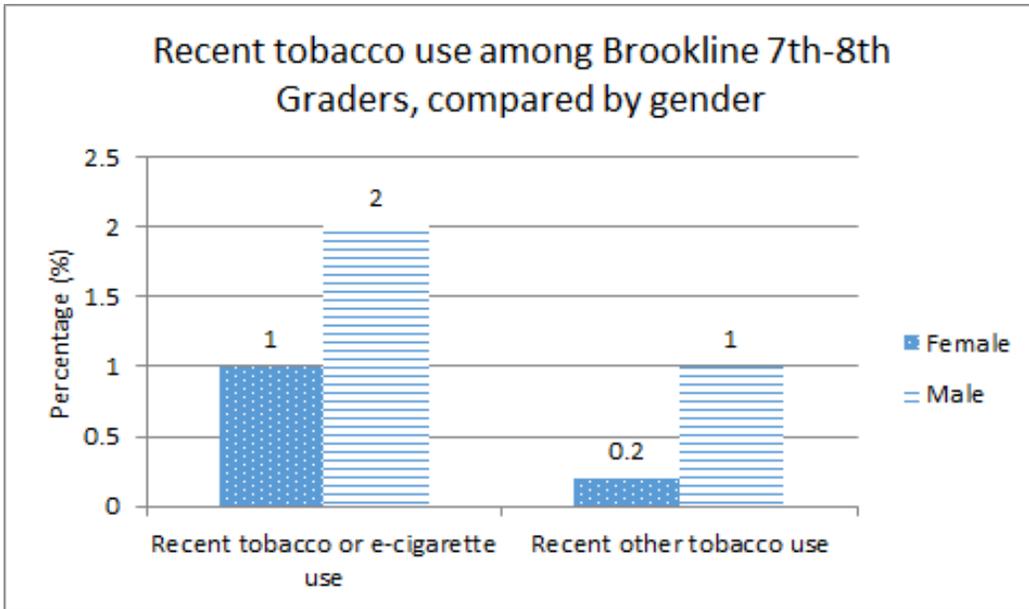


Middle School Data

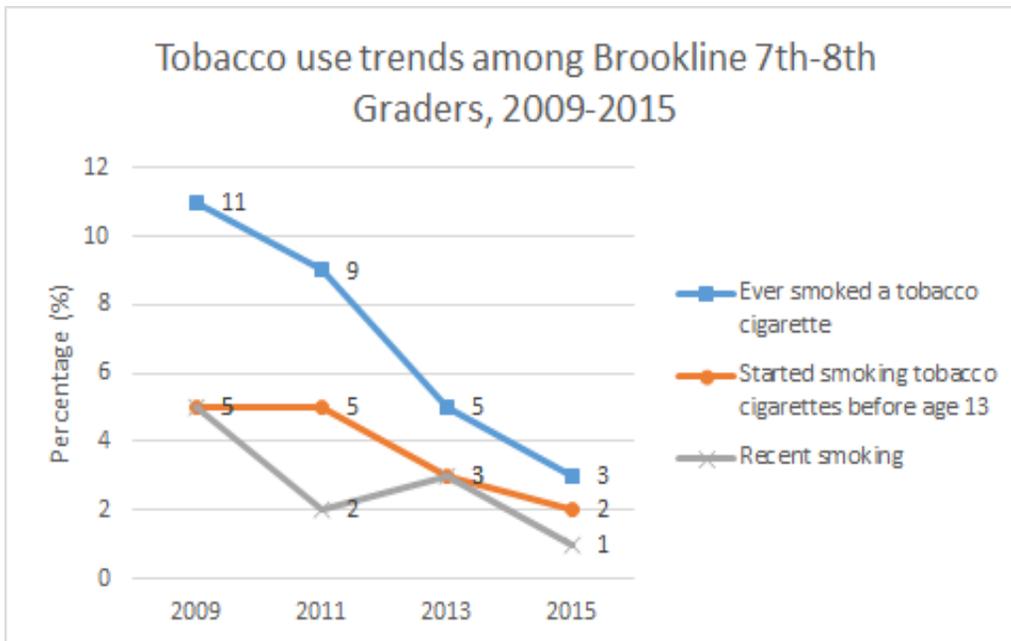
- There was a decline in the percentage of students who reported ever tried smoking a cigarette from 2013 (5%) to 2015 (3%). 3% of 7th graders responded that they had tried tobacco cigarettes, while 5% of 8th graders responded that they had tried tobacco cigarettes.
- There was a decrease in the number of students who reported having smoked either a tobacco cigarette or e-cigarette at least once in the last month from 2015 (1%). This is a new question for 2015, so there is no comparable data from previous years.

- 3% of 7th and 8th graders students reported that they had tried e-cigarettes in their lifetime. Of those who responded, 2% of 7th graders reported trying e-cigarettes, while 3% of 8th graders reported the same behavior. This is a new question in 2015, so there is no comparable data from previous years.
- 2% of 7th and 8th grade students reported having started smoking cigarettes before age 13, which is down from 3% in 2013.
- 1% of 7th and 8th grade students reported having started smoking e-cigarettes before age 13. This is a new question in 2015, so there is no comparable data for previous years.
- Recent use of chewing tobacco, snuff, or dip among middle school students remained low at 1% (2% in 2013). Rate of use by 8th graders (3%) was higher than 7th graders (1%).
- Past month use of other forms of tobacco (e.g., smoke-free and dissolvables, tip cigars, cigarillos, or flavored cigars) was 4%. This is the same as in 2013.





- Trend lines show a decrease in lifetime use of tobacco cigarettes from 2009 to 2015 (11% to 3%). There are also overall decreases in smoking tobacco cigarettes before the age of 13 and recent tobacco cigarette use from 2009 to 2015.



Violence-Related Behaviors

Violence related behaviors such as carrying weapons, fighting, and bullying, pose serious risks to the health and safety of young people. Nationally, homicide is the third leading cause of death for young people aged 15 to 24 (behind only unintentional injury and suicide).¹ In the United States in 2013, there were an average of over 12 youth (age 10-24) homicide victims per day.¹ The homicide rate is highest among those aged 20-24 years old.⁹ Nationally, 51.5% of adolescent suicide deaths involve the use of a firearm.² According to the Massachusetts Youth Risk Behavior Survey report, 20% of Massachusetts high school students reported involvement in a physical fight in 2013³.

According to the American Academy of Pediatrics, adolescents are more likely to experience sexually violent crimes than any other age group⁴. Sexual violence, including sexual coercion and assault, can have a devastating impact on healthy psychological development.⁵ Teen dating violence has serious long-term consequences, both in itself and as a possible precursor to adult domestic violence. On college campuses it is estimated that the percentage of completed or attempted rape among women in college is between 20% and 25%, and 9 in 10 victims knew their offender. Nearly three quarters of those rapes (72%) happened when the victims were so intoxicated they were unable to consent or refuse. (National Sexual Violence Resource Center *Campus Sexual Assault Fact Sheet*, 2015)

In the past several years, national, state, and local attention has been directed towards the bullying of young people. Bullying is generally defined as the repeated and intentional intimidation, harassment, or physical harm of victims who are perceived as unable to defend themselves.⁸ A large government initiative directed towards children, parents, and educators began in 2010.⁶ The American Academy of Pediatrics maintains that bullying is not merely a normal part of growing up and can lead to serious physical and mental health consequences.⁷ Nationally, 20% of high school students report being bullied in the past 12 months on school property.⁸ Lesbian, Gay, bi-sexual and transgendered students are more like to experience bullying in school and to avoid going to school because they feel unsafe.

Attention has been paid to the internet, cell phones, and social networking as emerging venues for electronic bullying or cyberbullying. Cyberbullying is when a person under 18 years old is tormented, threatened, harassed, humiliated, embarrassed, or otherwise targeted by another child under 18 years old using the internet or other digital technology including cell phones.⁶ Cyberbullying is different from in-person bullying in several ways. It allows for anonymity, rapid information dissemination, separation of the victim and perpetrator, and has a lack of adult oversight.

The 2015 Brookline High School and Middle School Health Surveys asked questions about bullying, electronic bullying, weapon-carrying, physical fighting, perceived safety at school, and dating violence. Perceived safety questions included questions about witnessing derogatory remarks made about gay, lesbian, bisexual, and transgendered people. For the report of forced sexual contact, see the Sexual Behaviors section.

In this report, the following definitions were used:

Past 12 months or past year: Participation in the reported behavior at least once during the 12 months prior to the survey

Recent or past month: Participation in the reported behavior on at least one of the 30 days prior to the survey.

Ever: Participation in the reported behavior at any time during the student's lifetime.

Electronic Bullying: Bullied through e-mail, chat rooms, instant messaging, websites, or texting (cell phones)

Carried a weapon: The high school survey—all non-firearm weapons like knives or clubs. The middle school survey—inclusive of all weapons including firearms like guns.

References

¹ David-Ferdon C, Simon TR, Spivak H, Gorman-Smith D, Savannah SB, Listenbee RL, Iskander J; Centers for Disease Control and Prevention (CDC) 2015. CDC grand rounds: preventing youth violence. *Morbidity and Mortality Weekly Report*, 64(7), 171-174.

² Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS) [Online]. (2015). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). www.cdc.gov/ncipc/wisqars. [Accessed: December 2015]

³ Massachusetts Department of Education and Massachusetts Department of Public Health. (2013) *Health and Risk Behaviors of Massachusetts Youth*.

⁴ American Academy of Pediatrics (2008). Care of the Adolescent Sexual Assault Victim. *Pediatrics*, 122 (2) pp 462-470.

⁶ Department of Health and Human Services, Department of Education, and Department of Justice. www.stopbullying.gov Accessed: December 2015.

⁷ American Academy of Pediatrics (2009). Role of the Pediatrician in Youth Violence Prevention, *Pediatrics*, 124 (1) pp 393-402.

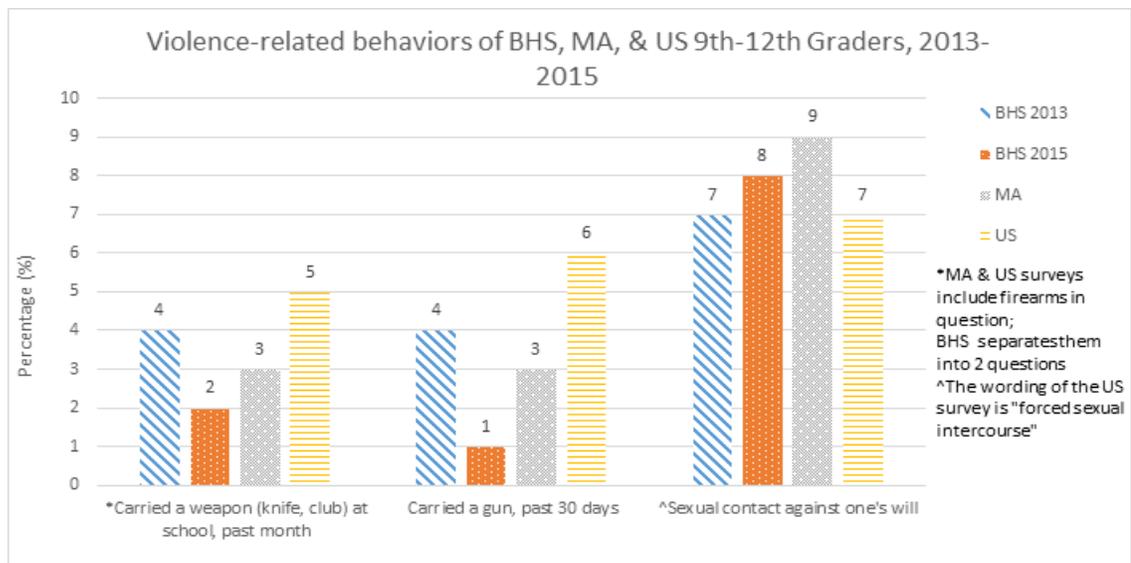
⁸ Centers for Disease Control and Prevention. [2013] Youth Risk Behavior Survey. Available at: www.cdc.gov/yrbs.

⁹ Parks, SE, Johnson LL, McDaniel DD, Gladden M; Centers for Disease Control and Prevention (2014). Surveillance for violent deaths - National Violent Death Reporting System, 16 states, 2010. *Morbidity and Mortality Weekly Report Surveillance Summary*, 63(1): 1-33.

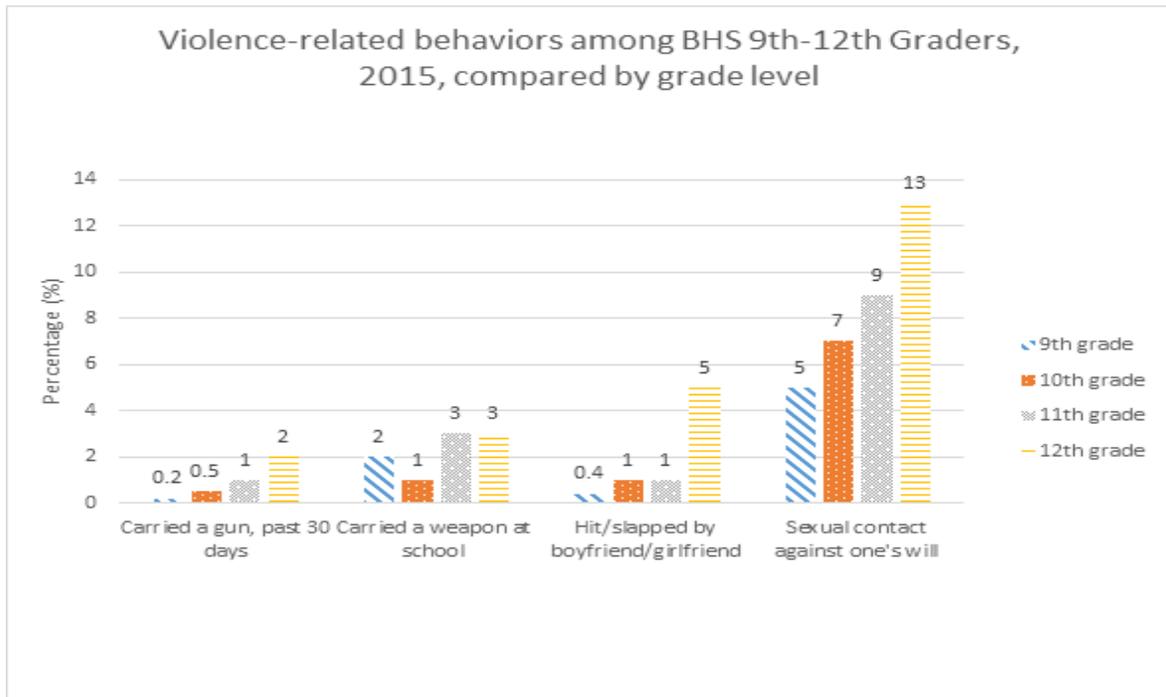
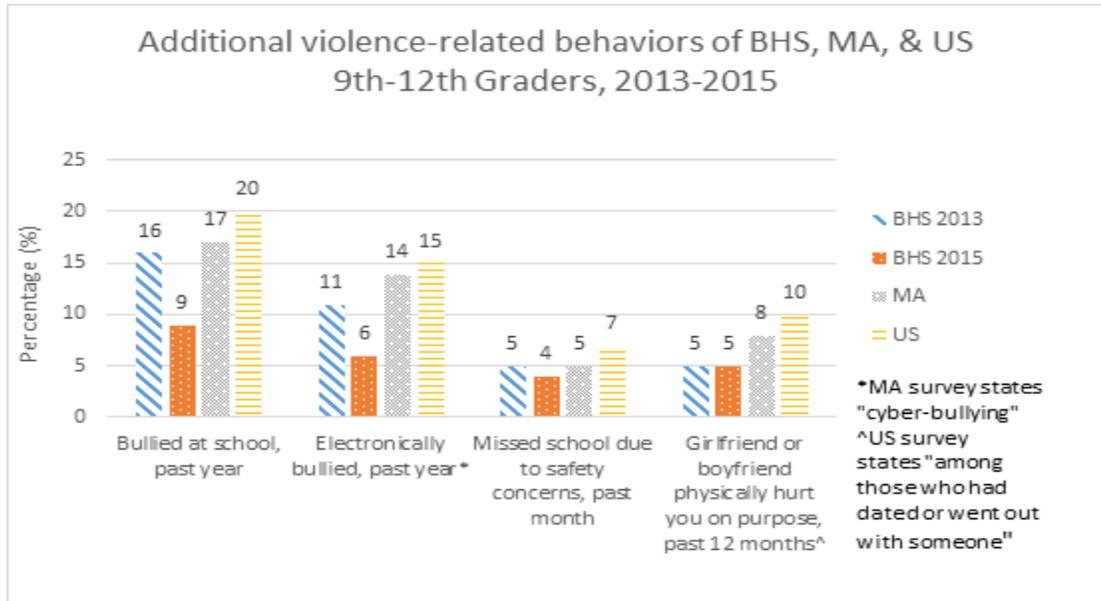
Violence-Related Behaviors

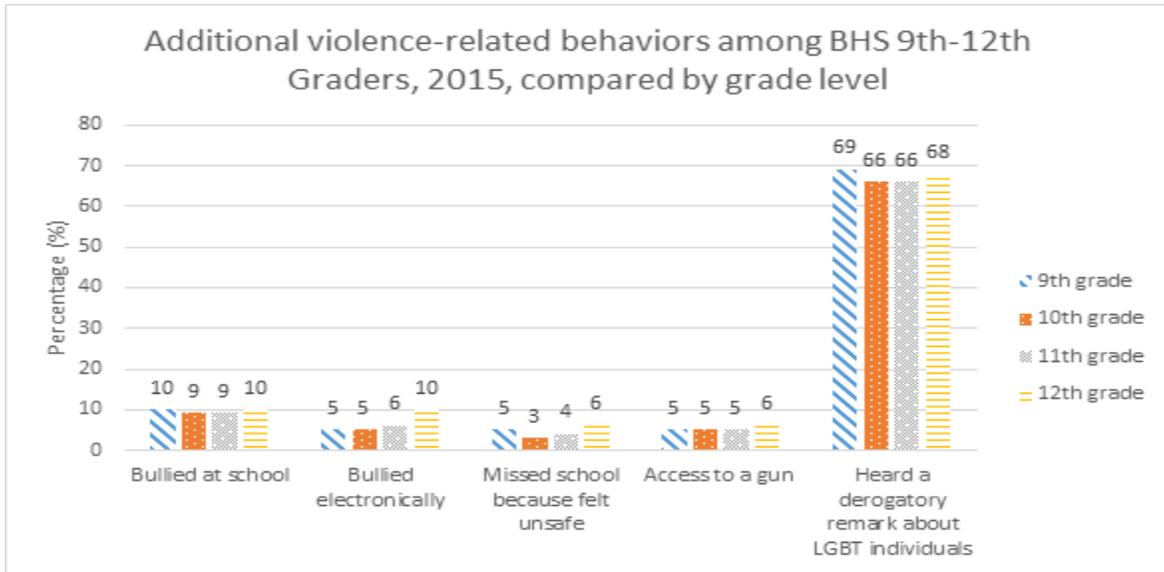
High School Data

- The 2015 overall prevalence for BHS students having carried a weapon (like a knife or club) on school property within the 30 days prior to the survey was 2%. This has declined from 4% in 2013. Across grade levels, the prevalences were 1% for 9th graders, 1% for 10th graders, 3% for 11th graders, and 3% for 12th graders. The prevalences by gender were 1% of females and 2% of males.
- One percent of BHS students reported having carried a gun in the past month. This has declined from 4% in 2013. In 2013, state and national figures were 3% and 6%, respectively. Five percent of BHS students reported having access to a gun. Across grade levels, the rates were 0.2% for 9th graders, 0.5% for 10th graders, 1% for 11th graders, and 2% for 12th graders. The prevalences by gender were 0.2% of females and 1% of males.
- Four percent of BHS students reported missing school because of feeling unsafe in the past month. This is a decline from 5% in 2013. It is comparable to the state (5%) and national (7%) prevalence. Across grade levels, the prevalences were 5% for 9th graders, 3% for 10th graders, 4% for 11th graders, and 6% for 12th graders. The prevalences by gender were 5% of females and 4% of males.
- There was a decline in those reported having been bullied at school in the past year, from 16% in 2013 to 9% in 2015. There was also a decline in those reporting being bullied electronically in the past year from 11% in 2013 to 6% in 2015. Across grade levels, the prevalences were 10% for 9th graders, 9% for 10th graders, 9% for 11th graders, and 10% for 12th graders. The prevalences by gender were 10% of females and 8% of males.

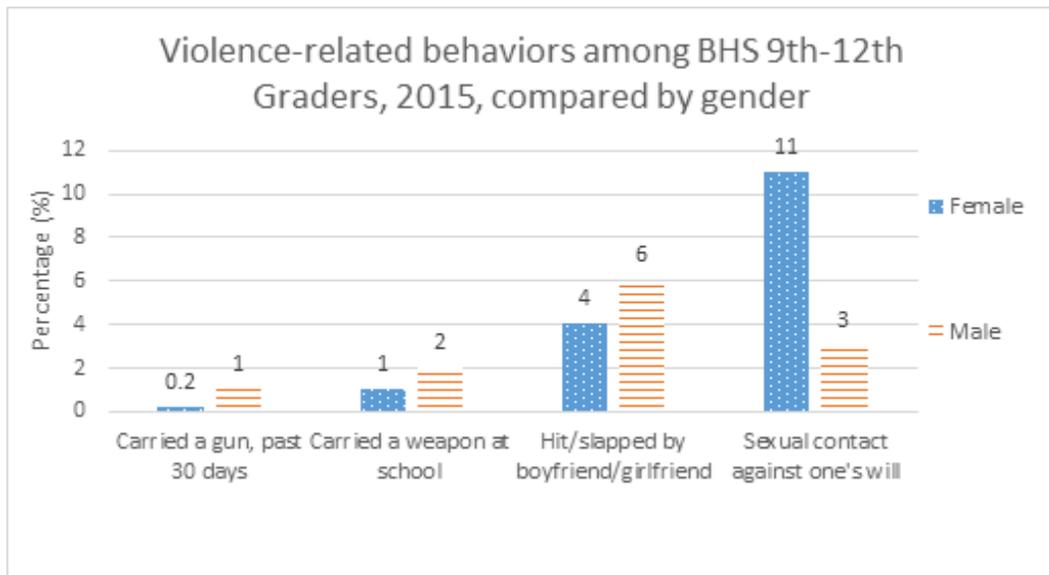


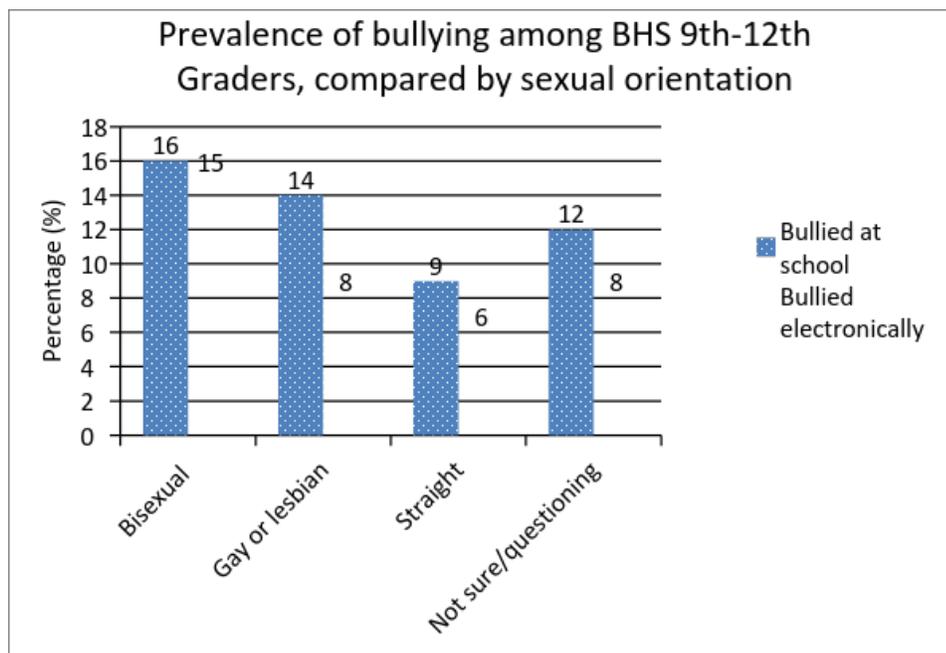
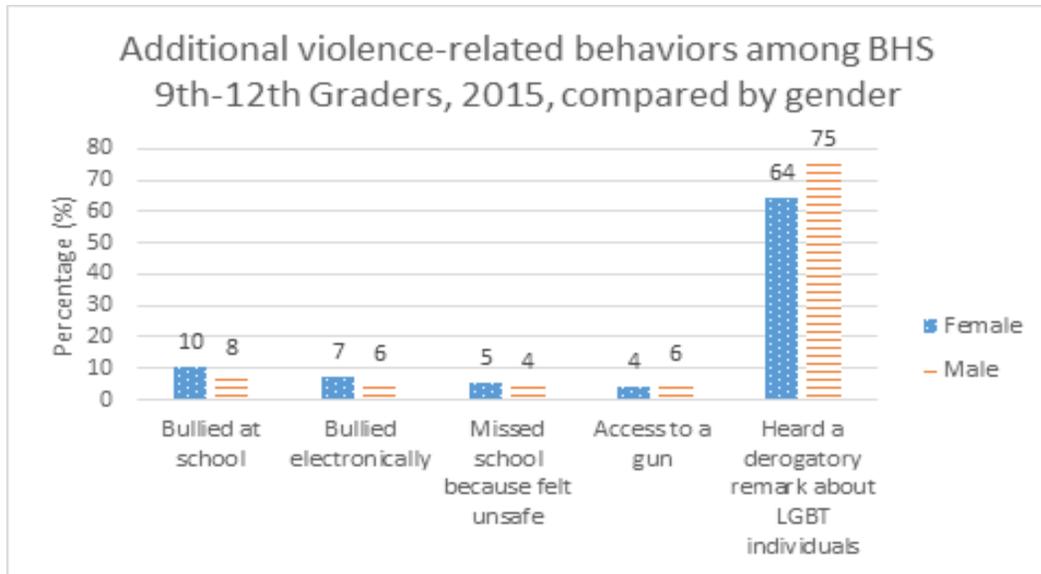
Among BHS students, 8% reported having experienced sexual contact against their will, with the rate increasing by each grade level, 5% of freshman as compared to 13% of seniors. 5% reported having been physically hurt on purpose by a boyfriend or girlfriend.



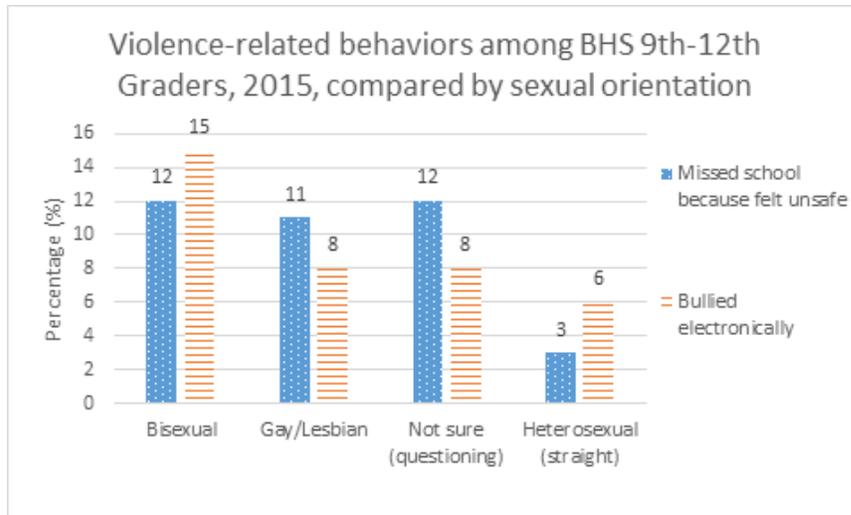


- The prevalence of BHS students reporting hearing derogatory remarks regarding sexual orientation at school remained the same in 2015 as 2013 (68%). The rates were similar among grade levels. The rates are 9th graders (69%), 10th graders (66%), 11th graders (66%), and 12th graders (68%). Males reported hearing derogatory remarks about LGBT students more often than females (75% for males, 64% for females).

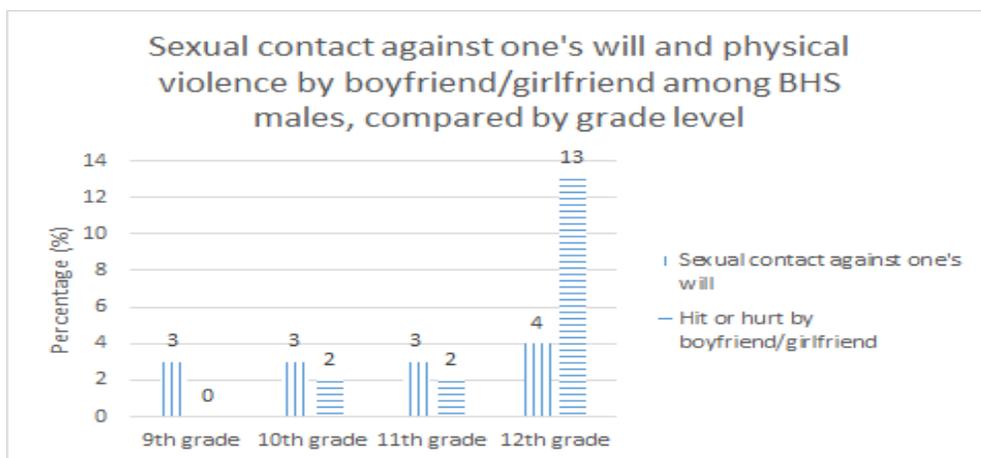
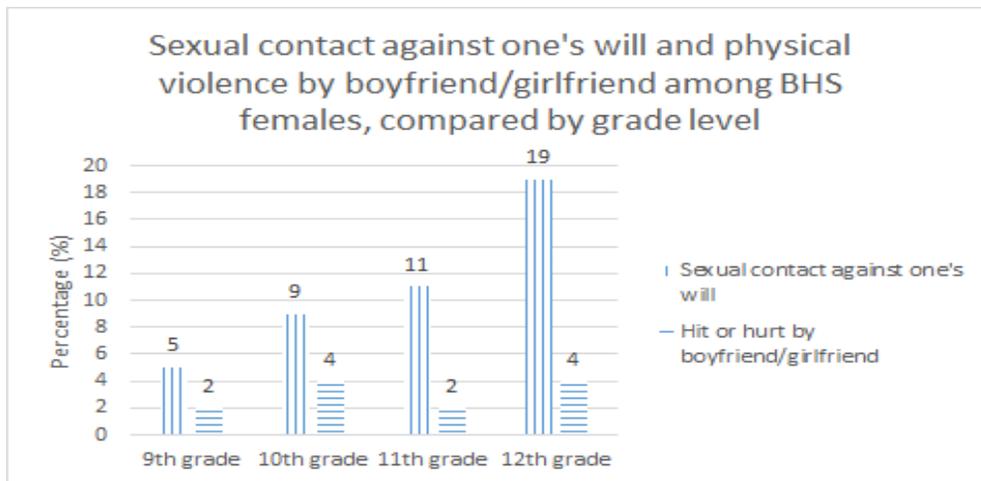




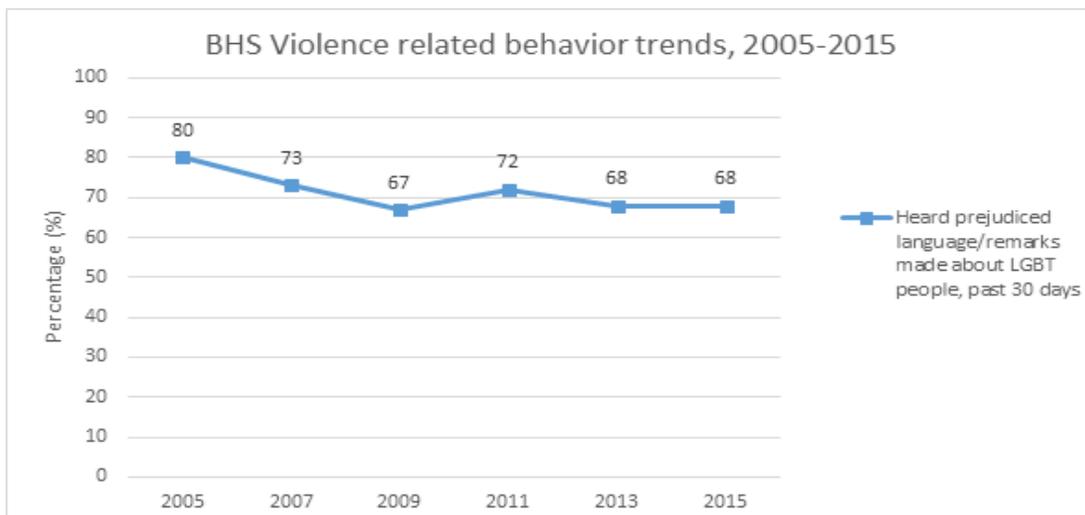
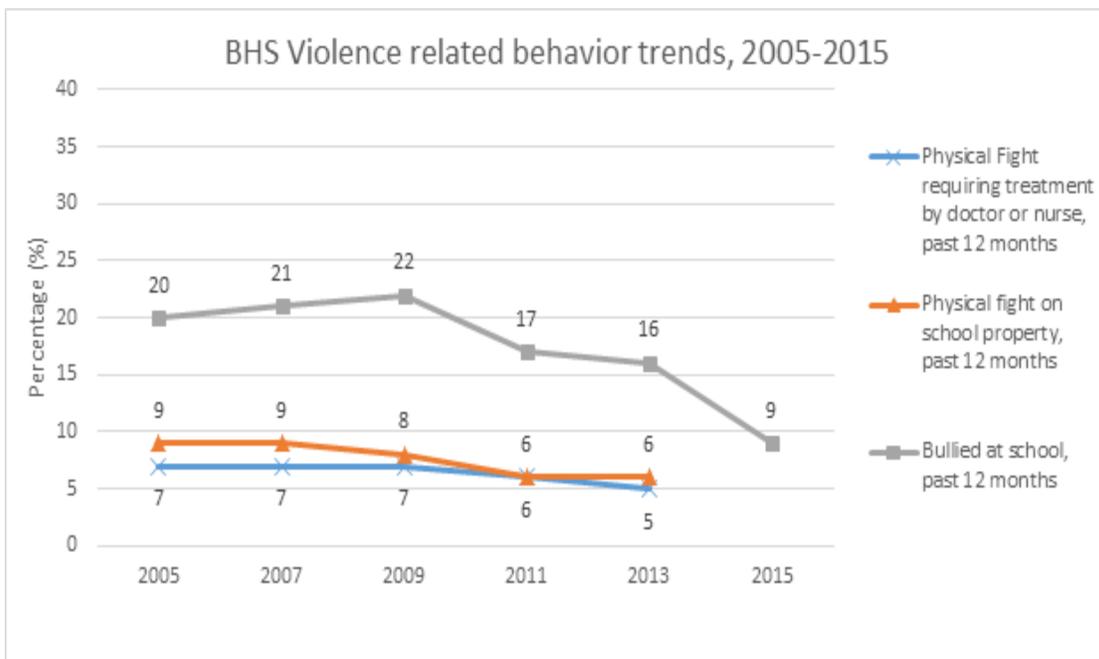
- Students who self-reported as Gay, Lesbian, Bisexual or Questioning (or Not Sure) were more likely to report being bullied at school, electronically, and report missing school at least once in the past month. Fourteen percent of non-heterosexual students report being bullied in the past year (compared to 9% of heterosexual students).



- The prevalence of sexual contact against one's will increases as grade increases among females, but remains steady for males. Physical violence by boyfriend/girlfriend increases as grade increases among males, but no such correlation is found with females.



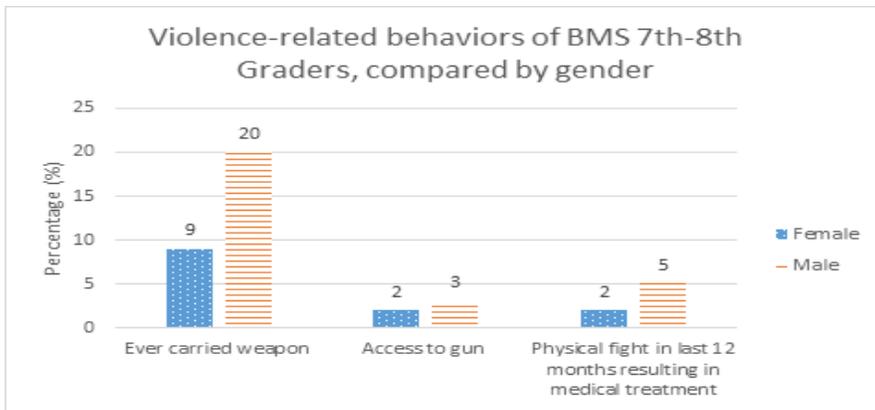
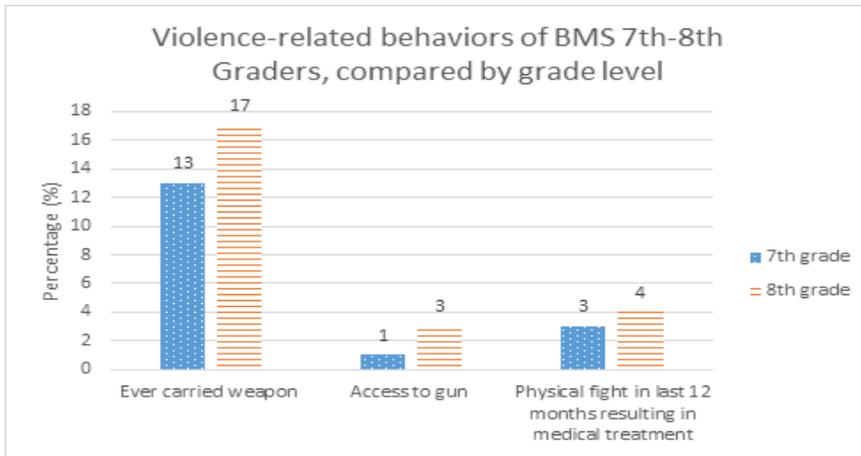
- There is a downward trend in being bullied at school. There is no change in the recent reports of having heard prejudiced language/remarks made about LGBT people in the past month. However, the LGBTQ population at BHS experiences a higher prevalence of bullying, both in school and electronically, than the heterosexual population.



Middle School

Note: There are no US middle school data for comparison. There is minimal state data.

- Fifteen percent of Brookline 7th-8th grade students reported having *ever* carried a weapon (including gun, knife, or club). This is the same as the prevalence in 2013.
- Four percent of Brookline 7th-8th grade students report having *ever* been in a physical fight that resulted in injury and required medical treatment. More males (5%) reported physical fights resulting in medical treatment than females (2%).
- Three percent of middle school students report having access to a gun. This is a decline from 2013 (5%). More males have access to a gun (3%) than females (2%). More 8th graders (3%) report access to a gun compared to 7th graders (1%).
- 13% of middle school students reported electronic bullying in 2015.



- Fifty-four percent of 7th and 8th grade students reported hearing negative comments about gay, lesbian, bisexual, or transgendered people at school in the past 30 days. 61% of 7th and 8th graders reported having negative comments towards gay, lesbian, or bisexual students while outside of school. The in-school comments has decreased from 2013 (59%), while hearing comments outside of school has increased from 2013 (55%).

Sexual Behavior

Many adolescents engage in sexual activity that may pose a serious threat to their health and their plans for the future. Early sexual activity, multiple sexual partners, and the lack of condom or other contraceptive use are associated with unintended pregnancy and sexually transmitted diseases (STDs), including Human Immunodeficiency Virus (HIV), the virus that causes AIDS.

Each year in the United States almost 625,000 adolescent females become pregnant. Most of these pregnancies occur with teenagers, ages 15-19 years old.¹ The rate of teen pregnancy and also teen abortion are lower now than they have been in the past 40 years. Most of the decline has been attributed to increased contraceptive use, although a small portion is due to a reduction in sexual activity.² Massachusetts has one of the lowest teen birth rates in the country, 37% of adolescents. However, in 2010, there were over 8,400 teen pregnancies in the Commonwealth.¹

Sexually transmitted diseases contribute to illness and death among adolescents, young adults, and newborns. According to the Center for Disease Control, one half of the twenty million new STD infections each year occur among young persons between the ages of 15 and 24.³ Adolescent females are more susceptible than older women are to STDs and may suffer severe consequences from STDs, including pelvic inflammatory disease, ectopic pregnancy, infertility, and cervical cancer.⁴

Research has shown that formal, comprehensive sexual education programs that instruct students on the value of postponing sexual activity and the correct use of condoms are successful in delaying the onset of sexual activity and increasing condom use among youth.⁵ Clear parent-adolescent communication can also be a strong deterrent to risky sexual behavior among youth. It is important that families communicate their values and expectations regarding sexual behavior to adolescents. Several recent studies have demonstrated that parent-teenager discussions about sexuality and sexual risk were associated with lower rates of adolescent risk behavior.^{6,7}

The 2015 Brookline High School Health Survey posed questions about age at first sexual intercourse, number of sexual partners, forced sexual contact, condom usage and sexual behavior that occurred after alcohol use.

The 2015 Brookline Middle School Health Survey posed questions about oral sex, age of first sexual intercourse, number of sexual partners, condom usage, and pressure to have oral sex and sexual intercourse.

In this report, the following definitions were used:

Ever: Participated in the behavior or expressed the feelings/thoughts at any time in the student's life

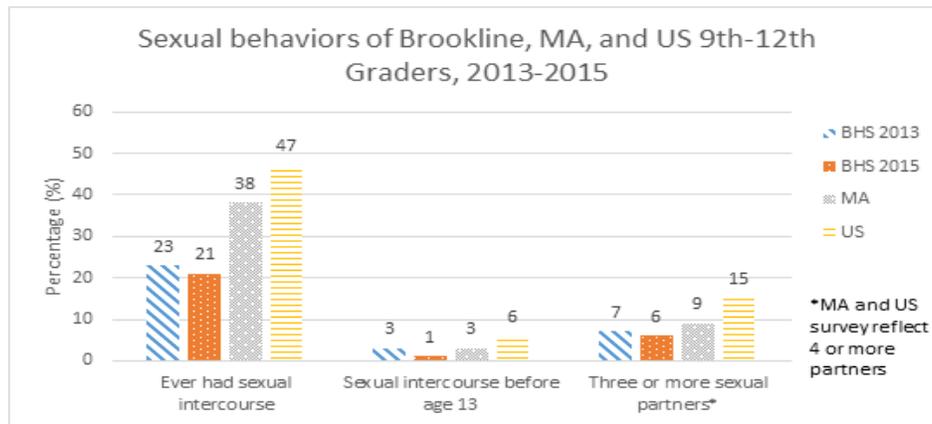
References

- 1 Kost, K. and Henshaw, S. (2014). U.S. teenage pregnancies, births and abortions, 2010: National and state trends and trends by age, race and ethnicity. Guttmacher Institute. (Updated May 2014). Accessed November 29, 2015 from <http://www.guttmacher.org/pubs/USTPtrends10.pdf>
- 2 Santelli JS et al., Explaining recent declines in adolescent pregnancy in the United States: the contribution of abstinence and improved contraceptive use, *American Journal of Public Health*, 2007, 97(1):150–156.
- 3 "Adolescents and Young Adults." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 08 Oct. 2015. Web. 03 Dec. 2015.
- 4 Centers for Disease Control and Prevention. (2015) 2014 Sexually Transmitted Disease Surveillance. Atlanta, GA. Available online: <http://www.cdc.gov/std/stats14/default.htm>
- 5 Mueller TE, Gavin LE, Kulkarni A., (2008) The association between sex education and youth's engagement in sexual intercourse, age at first intercourse, and birth control use at first sex. *J Adolesc Health* 42(1).
- 6 Hadley, W., Brown, L., Lescano, C., Kell, H., Spalding, K., DiClemente, R., Donenberg., et al. (2009). Parent-adolescent sexual communication: Associations of condom use with condom discussions. *AIDS Behavior*. 13(5): 997-1004.
- 7 Blake, S., Simkin, L., Ledsky, R., Perkins, C., Calabrese, J., (2001) Effects of a parent-child communications intervention on young adolescents' risk for early onset of sexual behavior. *Family Planning Perspectives*. 33: 52-62.

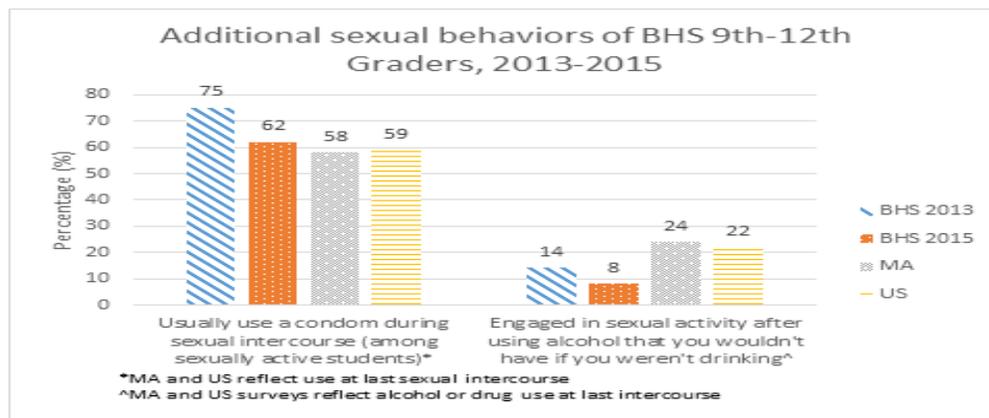
Sexual Behavior

High School Data

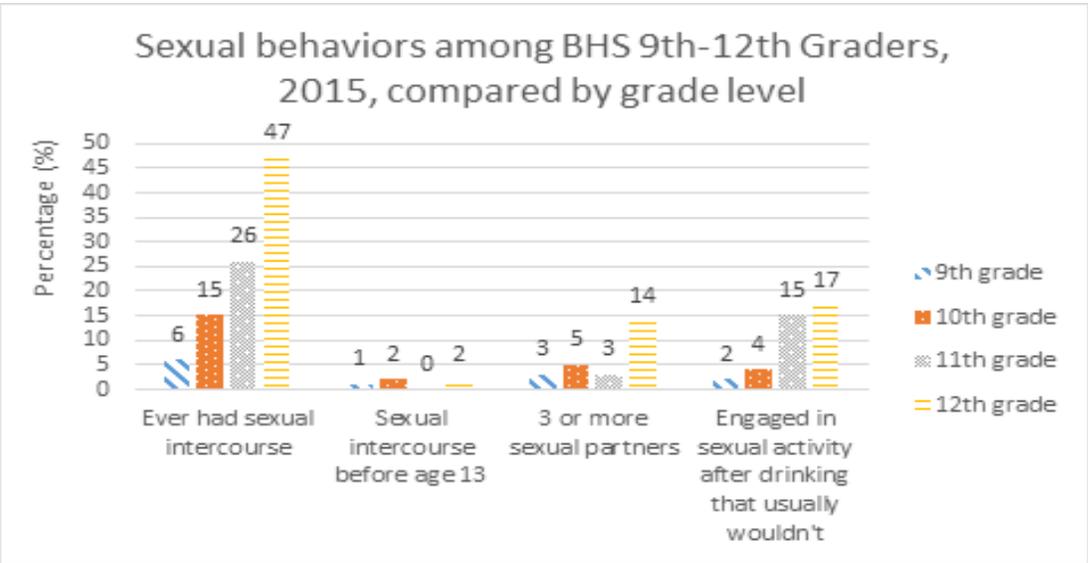
- The percentage of 9th-12th grade BHS students in 2015 who had ever had sexual intercourse was 21%. This is a decrease from 23% in 2013. This rate is considerably lower than 2013 state and national values (38% and 47%, respectively).
- In 2015, 1% of BHS students reported having had sexual intercourse before age 13. This is lower than the 2013 prevalence. The state and national figures were 3% and 6%, respectively. Males had a higher percentage of reporting sexual intercourse before age 13 (2%), compared to females (1%).
- Six percent of BHS students reported having had three or more sexual partners. This is lower than in 2013 (7%). The state and national survey collects data about students who have had four or more sexual partners, with rates of 9% and 15%, respectively. Males had a higher prevalence of reporting three or more sexual partners (7%) than females (4%).

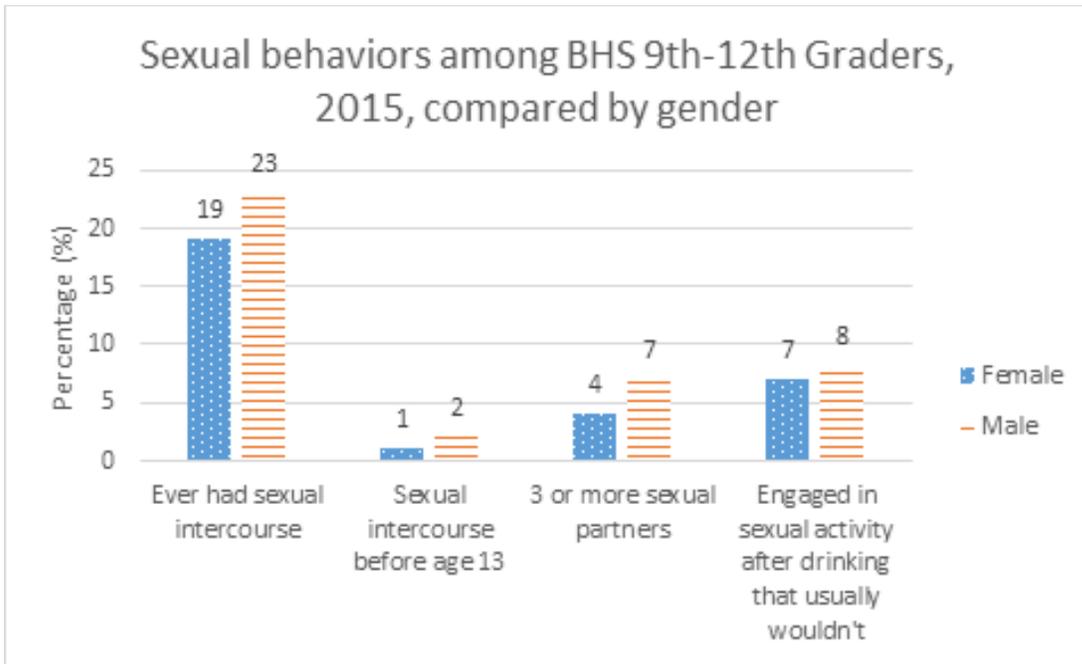


- In 2015, 62% of Brookline 9th-12th grade students that reported having had sexual intercourse reported that they or their partner *usually* use a condom when they have sex. 2013 state and national rates were 58% and 59%, respectively; however, the question in those surveys was specific to condom use at last intercourse.



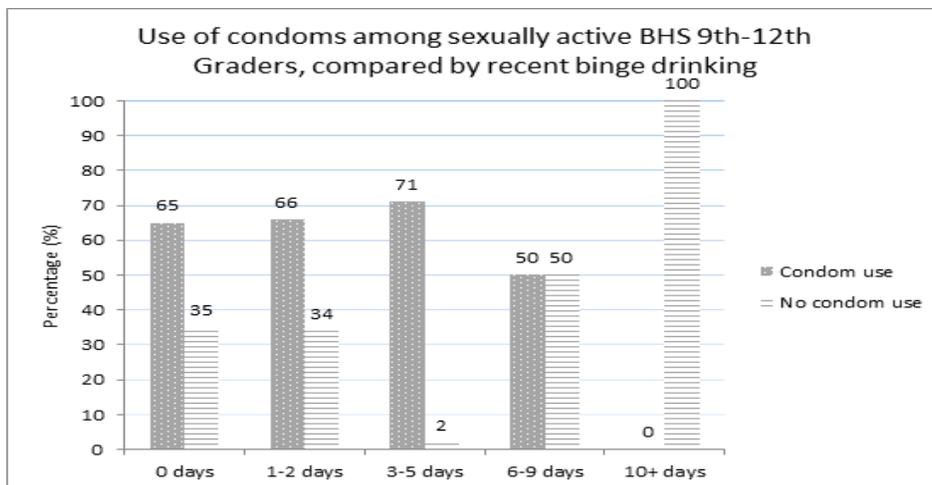
- Eight percent of BHS students reported having engaged in sexual activity after alcohol use that they otherwise would not have engaged in. These rates increase with grade level with 2% of 9th graders, 4% of 10th graders, 15% of 11th graders, and 17% of 12th graders reporting this activity. This coincides with the increased alcohol consumption in higher grades (see Alcohol Use section).
- Males have a higher prevalence of engaging in sexual activity after alcohol use that they otherwise would not have engaged in, compared to females (8% and 7%, respectively).
- In 2015, 8% of BHS students reported having had sexual contact against their will. This is an increase from 2013 (7%).
- The percentage of high school students reporting that they have ever had sexual intercourse increased steadily from the 9th grade through the 12th grade: 6% of 9th graders, 15% of 10th graders, 26% of 11th graders, and 47% of 12th graders. Males had a higher percentage of reporting that they had ever had sexual intercourse than females (23% and 19%, respectively).
- The number of students who reported three or more sexual partners was highest in the 12th grade: 9th grade-3%, 10th Grade-5%, 11th grade-3%, 12th grade-14%.





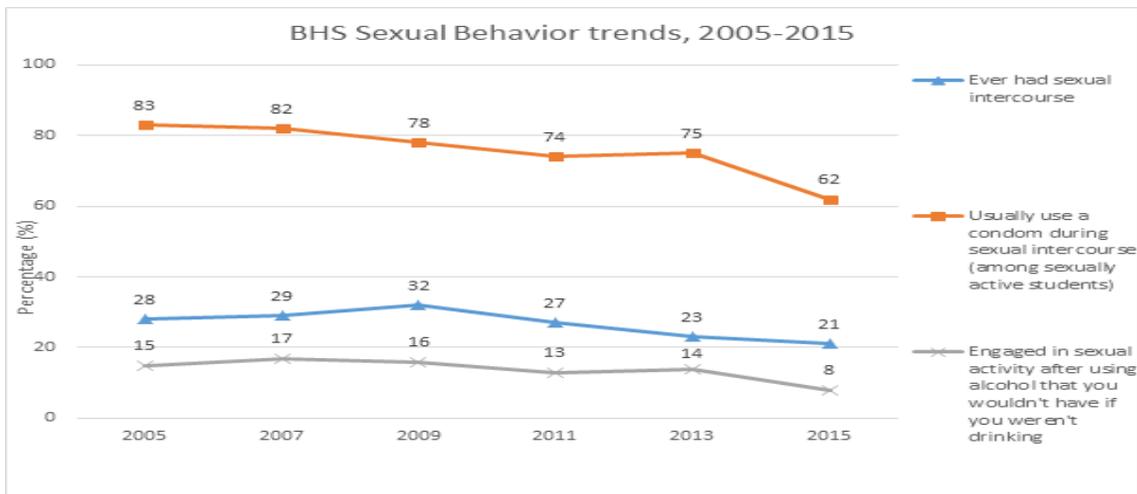
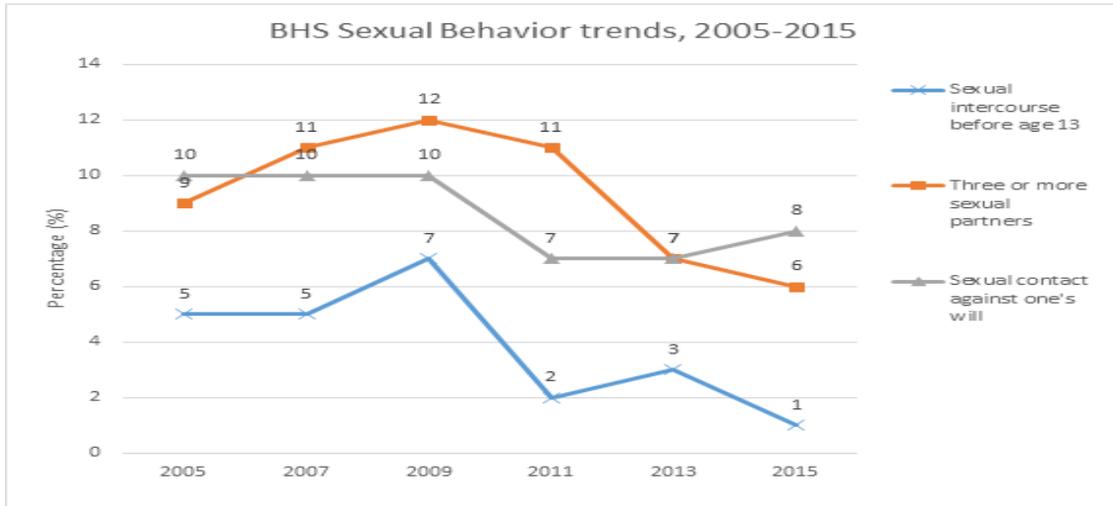
Recent binge drinking and condom use

- Students who engaged in binge drinking were less likely to use a condom.
- 65% of those who had not recently binge drank used a condom at last intercourse, compared with 66% of those who had recently binge drank 1-2 days
- 71% of those who had recently binge drank 3-5 days
- 50% of those who had recently binge drank 6-9 days



Trend line data show that there were decreases from 2005 to 2015 in the prevalence of students who reported having had sexual intercourse and having engaged in sexual activity under the influence of alcohol.

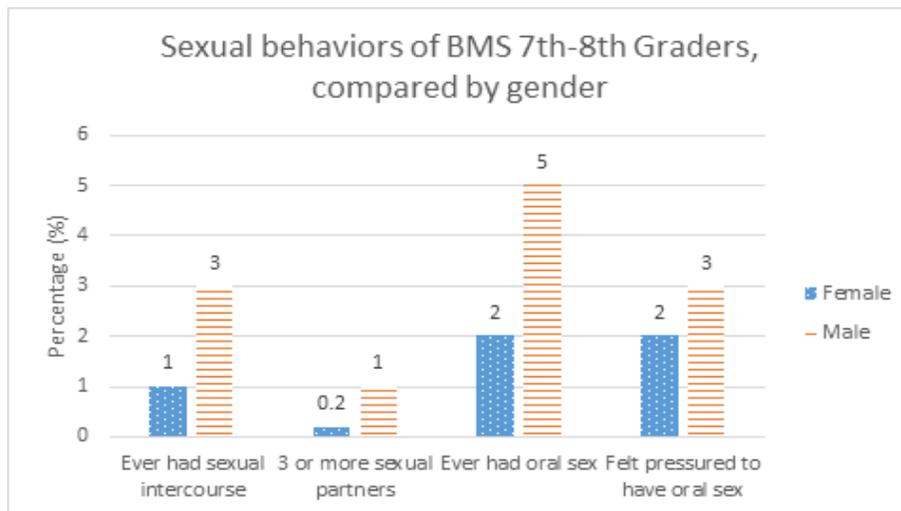
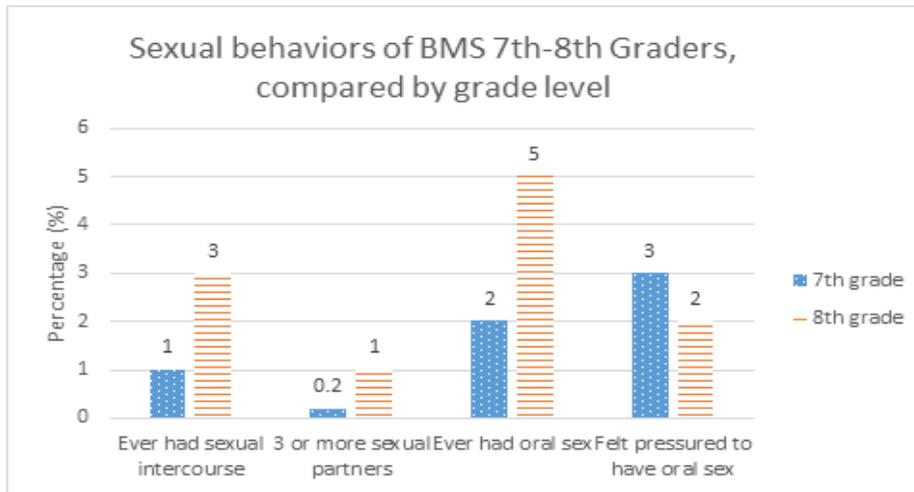
Additionally, there were decreases from 2013 to 2015 in sexual intercourse before age 13 and three or more sexual partners.



Middle School Data

Note: There are no US or state middle school data for comparison.

- Two percent of Brookline 7th and 8th graders reported having ever had sexual intercourse. Of those who had sexual intercourse, 68% reported using a condom at last intercourse.
- Most middle school students (83%) reported knowing about oral sex. 89% of 8th graders reported knowing what oral sex is, while 76% of 7th graders reported knowing what oral sex is. Males had a higher percentage of knowing what oral sex is (84%) than females (81%).
- Four percent of Brookline 7th and 8th grade students reported having participated in oral sex. More males than females reported having participated in oral sex (5% males, 2% females). Five percent of students reported feeling pressured to have oral sex with slightly more females than males reporting so (3% females, 2% males).



Mental Health

Nationally, youth suicide rates tripled in the second half of the 20th century.¹ As of 2013, suicide is the 2nd leading cause of death for young people aged 15-24 nationally.² One risk factor for youth suicide is undiagnosed, untreated, or undertreated mental illness. Other risk factors include bullying, physical or sexual abuse, stressful life events or losses, substance abuse, and easy access to lethal methods like firearms or weapons.^{3,4} When assessing suicidal thoughts, severity is broken down into the following categories: suicidal thoughts, planning how one would complete a suicide, and history of suicide attempts.⁵

Furthermore, LGBT youth show an increased incidence of suicidal thoughts, self-harm behaviors, and suicide.⁶ In addition to the risk factors previously mentioned, this population also has the additional risk of family rejection.⁷

High levels of stress are detrimental to both students' mental and physical health. While optimal levels of stress support learning and growth, when teens feel overstressed their ability to process information and function in school is impaired. Sleep patterns can be disturbed, as can the ability to make good decisions.⁸

The 2015 Brookline High School and Middle School Health Surveys elicited information about feelings of overwhelming stress and anxiety, as well as about suicidal thoughts, plans and attempts. The Middle School survey also asked about self-harm practices (like cutting or self-burning). Bullying data is reported in the Violence-Related Behavior section. Sexual abuse and dating violence is reported on in the Sexual Behavior section.

In this report, the following definitions were used:

Past 12 months or past year: Expressed the feelings or thoughts at least once during the 12 months prior to the survey

Ever: Expressed the feelings or thoughts at any time in the student's life

¹References

¹US Department of Health and Human Services (1990). Prevention '89/90: Federal programs and progress. Washington, DC: US Government Printing office.

²Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS) [Online]. (2013). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). www.cdc.gov/ncipc/wisquars. [Accessed: December 2015]

³Gould, M., Greeberg, T., Velting, D., Schaffer, D. (2006) Youth suicide: A review. The prevention Researcher. 13: p3-7.

⁴Centers for Disease Control and Prevention. Youth Suicide Webpage. (2015). http://www.cdc.gov/ViolencePrevention/suicide/youth_suicide.html [Accessed: December 2015]

⁵Bryan, Craig; Rudd David (2006). "Advances in the Assessment of Suicide Risk". *Journal of Clinical Psychology* **62** (2): 185–200

⁶Centers for Disease Control and Prevention. LGBT Youth. (2015). <http://www.cdc.gov/lgbthealth/youth.htm>

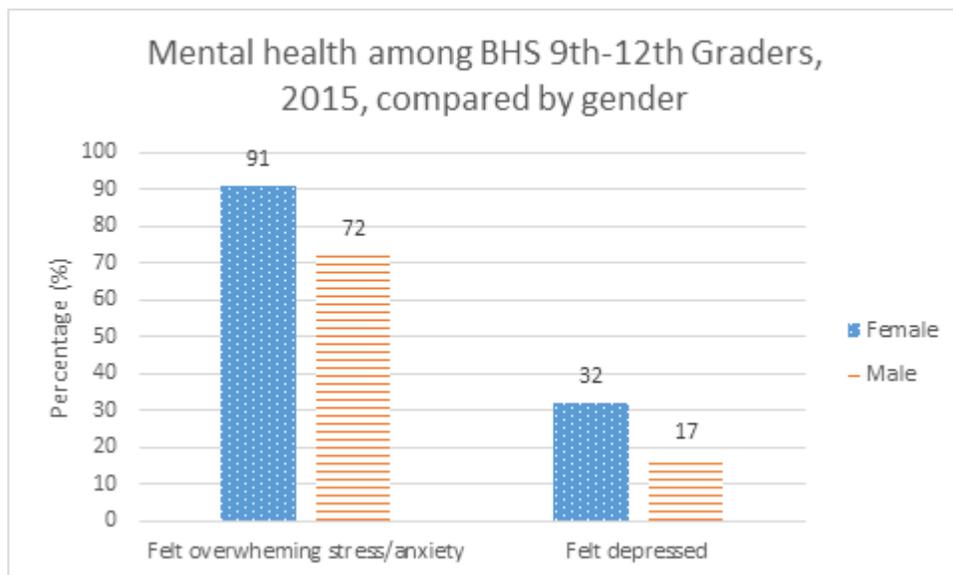
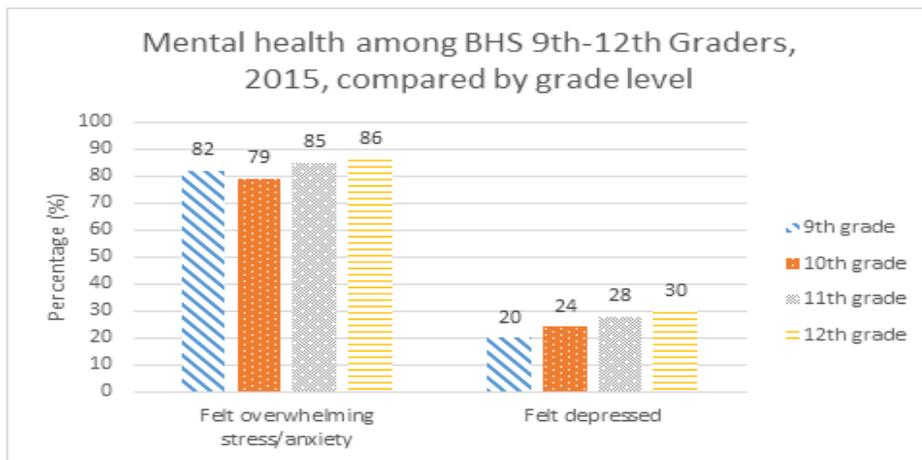
⁷Ryan, R., Huebner, D., Diaz, R., and Sanchez, J. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay and bisexual young adults. *Pediatrics*. 2009; 123: 346-352

⁸"Adolescents and Young Adults." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 08 Oct. 2015. Web. 03 Dec. 2015.

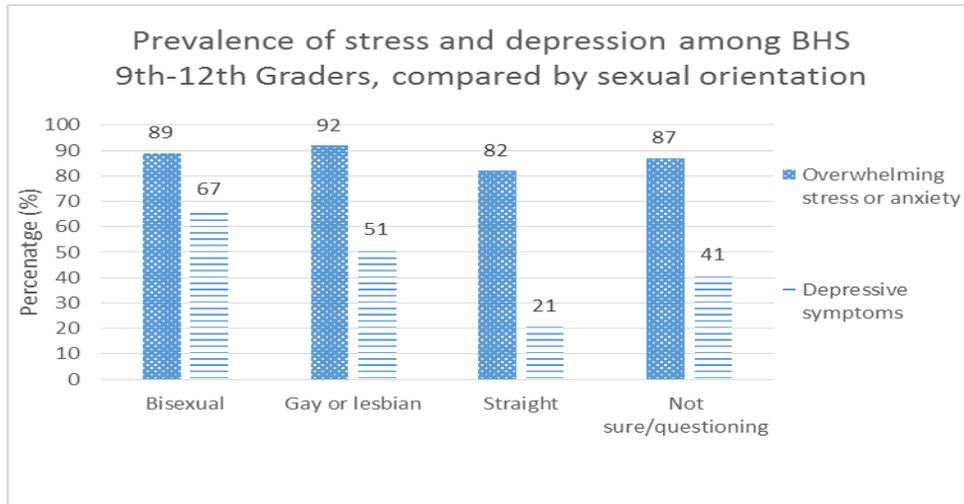
Suicide-Related Behaviors

High School Data

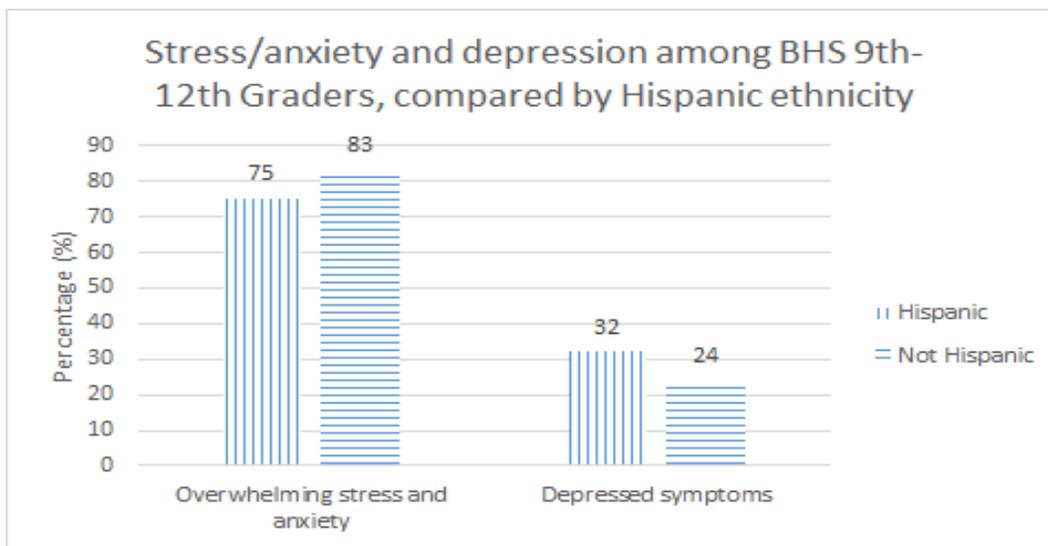
- In 2015, 82% of Brookline High School students reported feeling overwhelming stress or anxiety occasionally or frequently during the 12 months prior to the survey. This is an increase from the 2013 result of 75% of students. Feelings of stress or anxiety were higher in older grades (82% among 9th graders, 79% among 10th graders, 85% among 11th graders, and 81% for 12th graders). Females reported markedly more stress (91%) than males (72%).



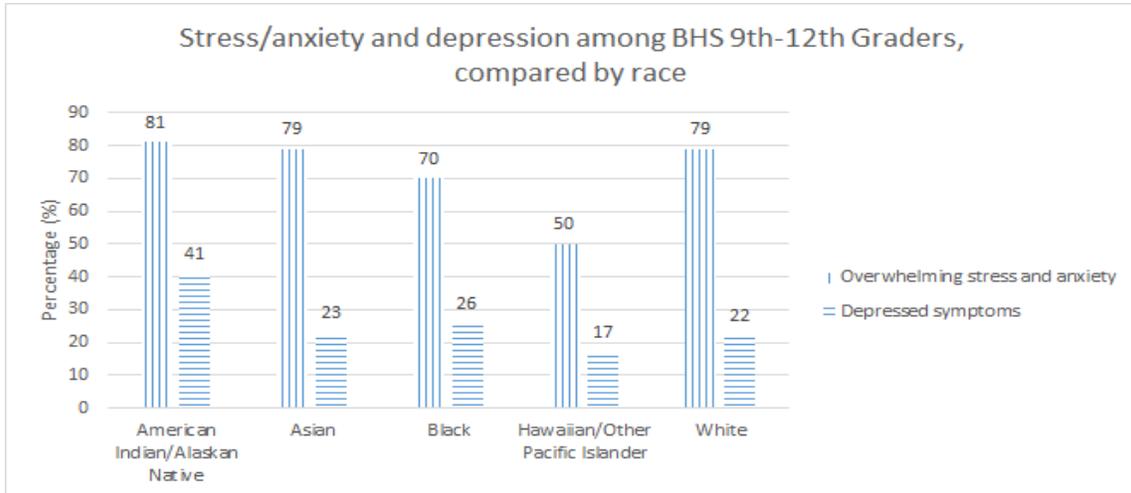
Bisexual, gay or lesbian, and questioning students report higher rates of both stress and depression, compared to heterosexual students.



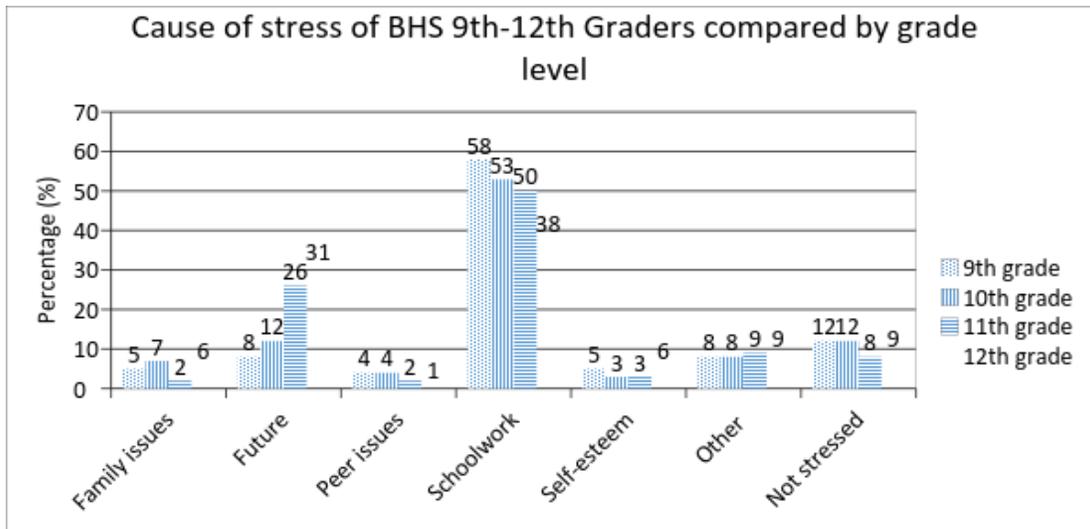
- 75% of those who identified as Hispanic felt overwhelming stress or anxiety in the past 12 months, compared with 83% of those who had not identified as Hispanic.
- 32% of those who identified as Hispanic felt depressive symptoms in the past 12 months, compared with 24% of those who had not identified as Hispanic.

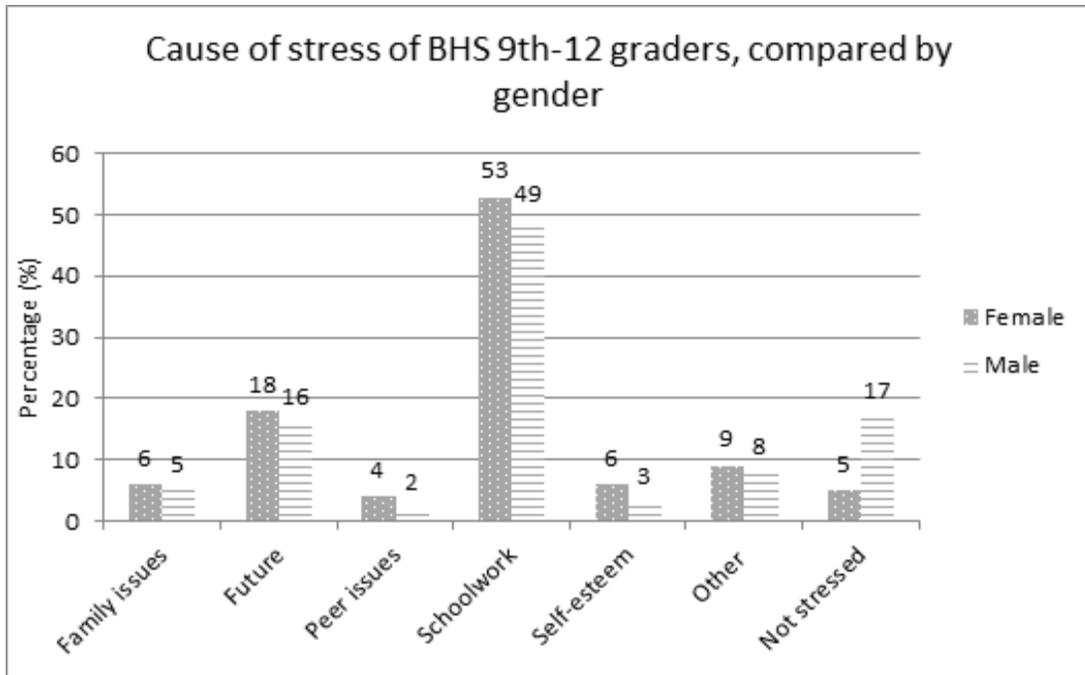


- Students who identified as American Indian/Alaskan native or Asian reported higher levels of overwhelming stress and anxiety in the past 12 months, as compared with students who identified as black, Hawaiian/other Pacific Islander, and white.
- Similarly, students who identified as American Indian/Alaskan native or black reported higher levels of depression, as compared with students who identified as Asian, Hawaiian/other Pacific Islander, and white.

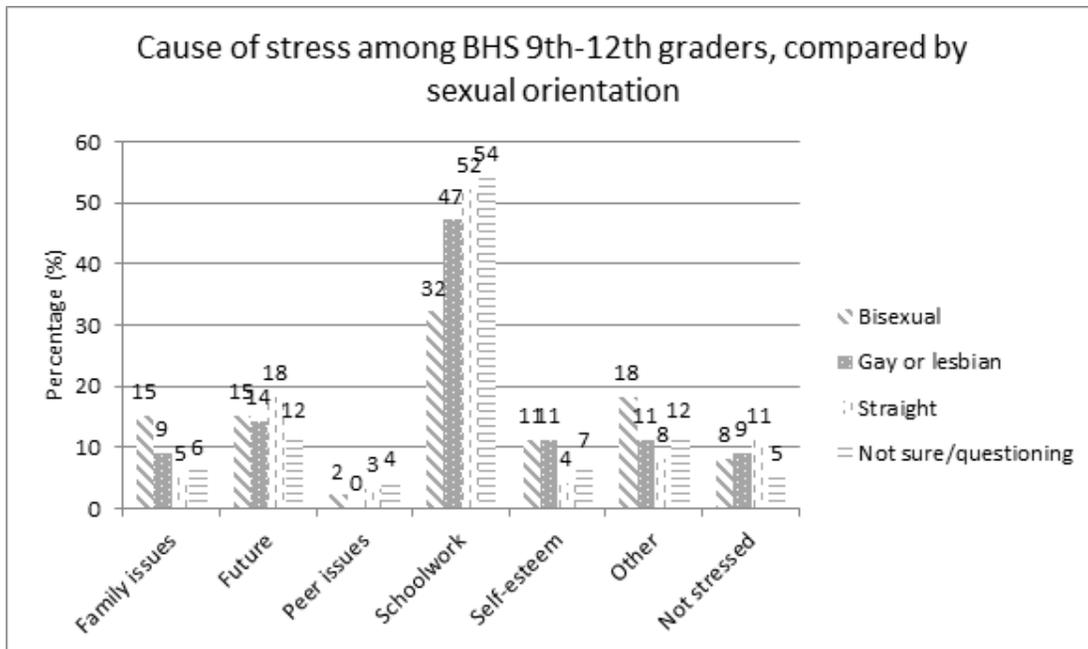


- Schoolwork was listed as the number one cause of stress by a majority of BHS students in grades 9-11. In senior year, schoolwork emerged as the primary cause of stress for 38% of seniors, followed by worries about the future (31%).

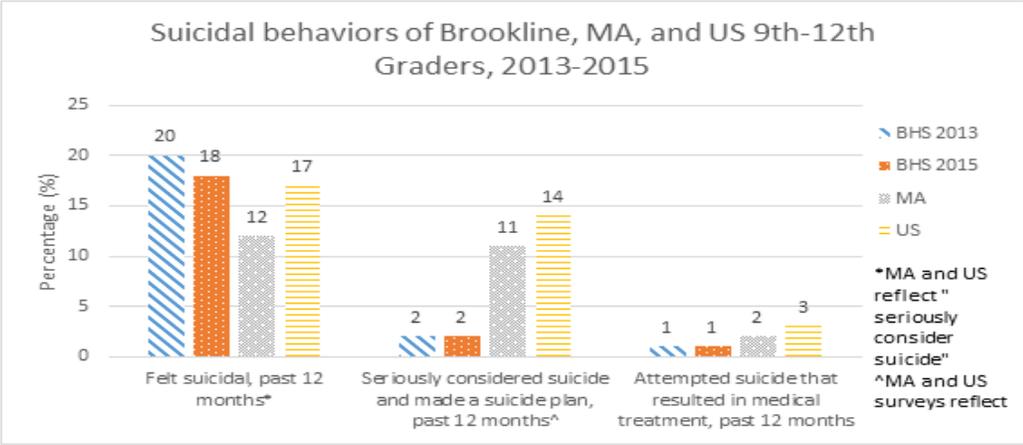




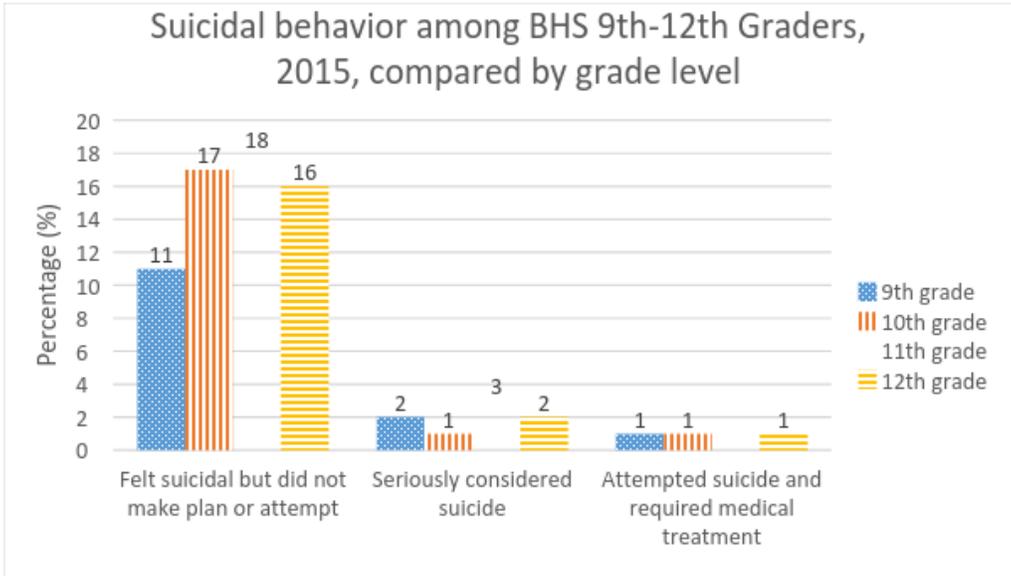
- Family issues rank higher as the number one source of stress for more than twice as many gay, lesbian and bisexual students than for straight students.



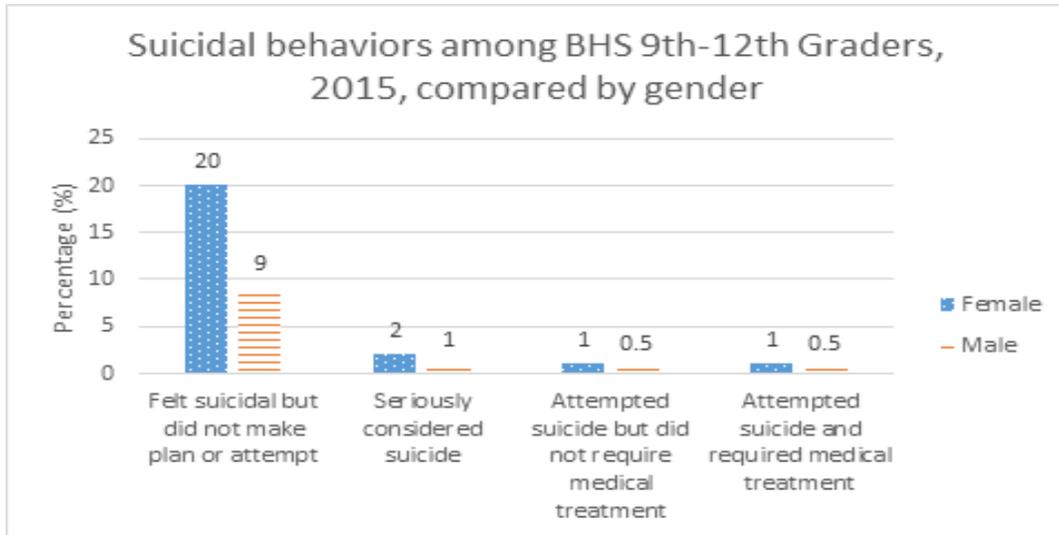
- Eighteen percent of Brookline High School students reported having felt suicidal in the 12 months prior to the survey, as compared to 20% in 2013.



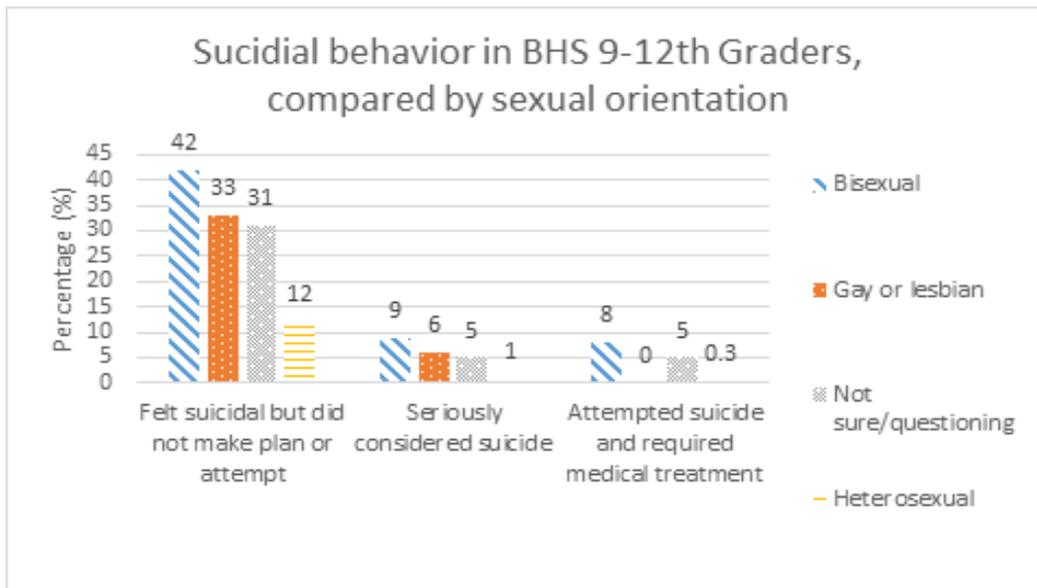
- The rate that BHS school students reported having seriously considered suicide and made a suicide plan within the year prior to the survey remained consistent at 2% in both 2013 and 2015. 2013 state and national rates were 11% and 14%, respectively. The state and national surveys asks specifically about making a plan. The Brookline survey asks about ideation, making a plan, and suicide attempts.
- The percentage of BHS students who attempted suicide within the year prior to the survey is 1% in 2015. This is similar to the prevalence in 2013 (<1%). The 2013 state and national figures were 2% and 3% respectively.
- The prevalence of feeling suicidal varied by grade level: 11% among 9th graders, 17% among 10th graders, 18% among 11th graders, and 16% among 12th graders.



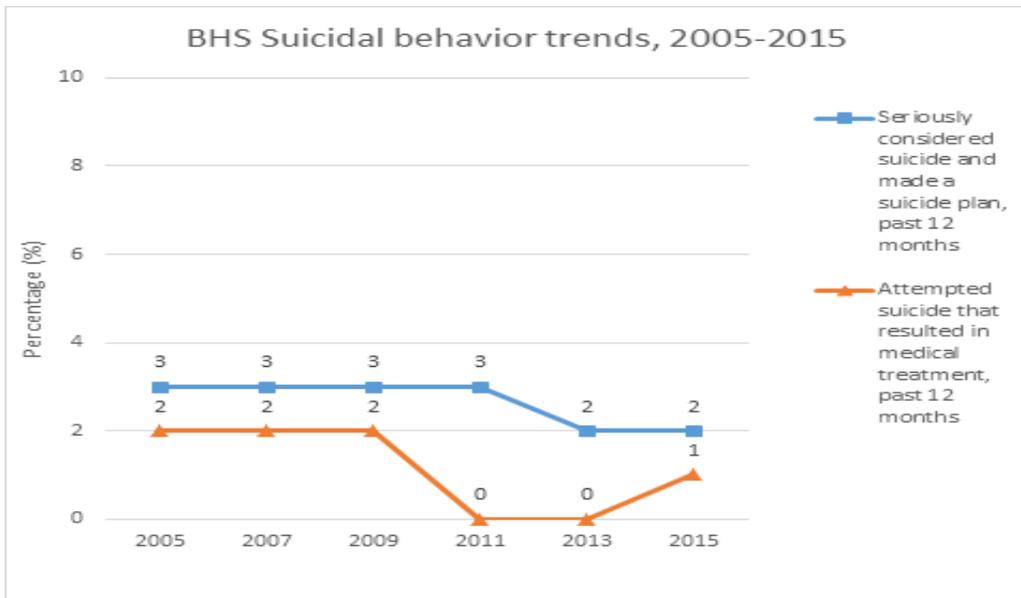
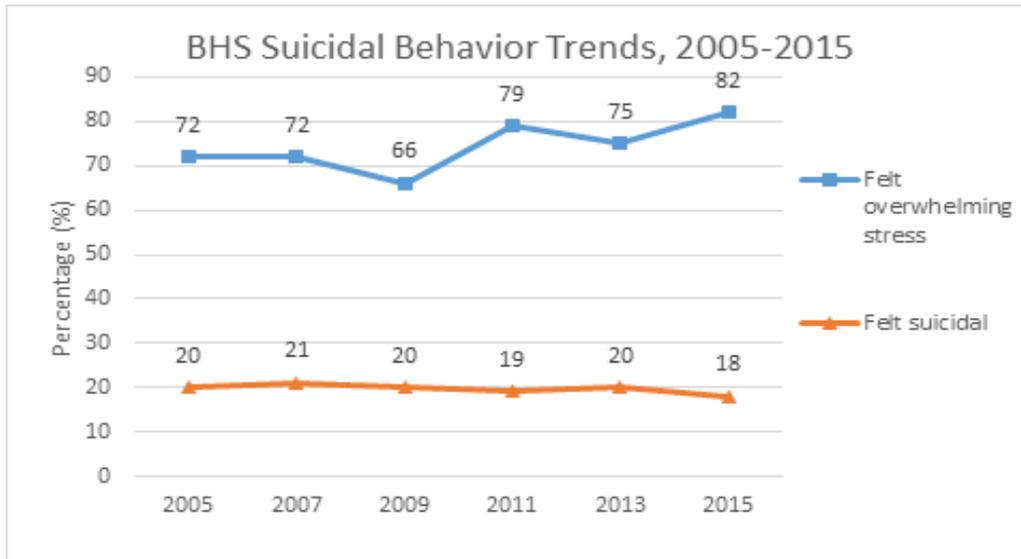
- Females were more likely to report feeling suicidal in the 12 months prior to the survey, as compared to males (20% of females; 9% of males).

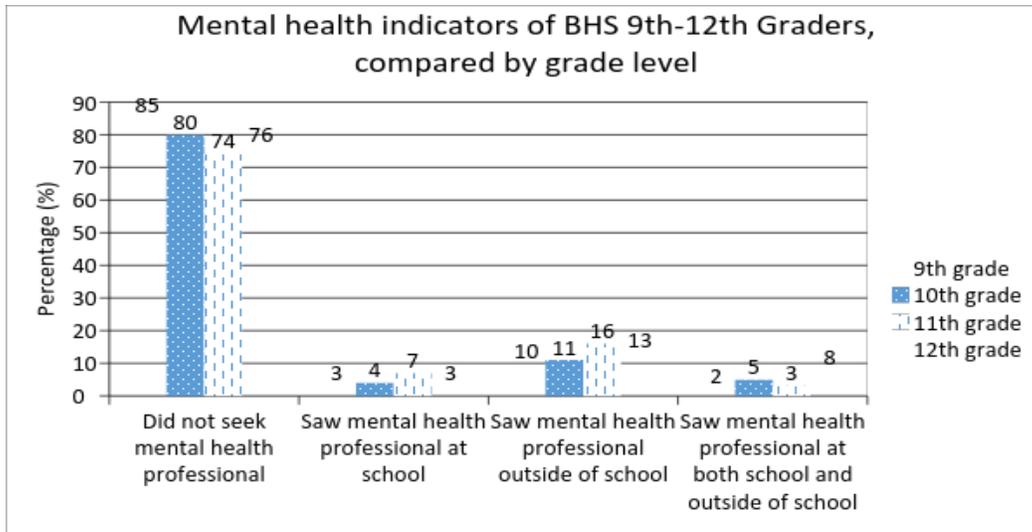


- Students who self-identified as Gay, Lesbian, Bisexual or Questioning (or Not Sure) were more likely to report symptoms of depression, suicidal thoughts, and suicidal attempts than students who identified as heterosexual.

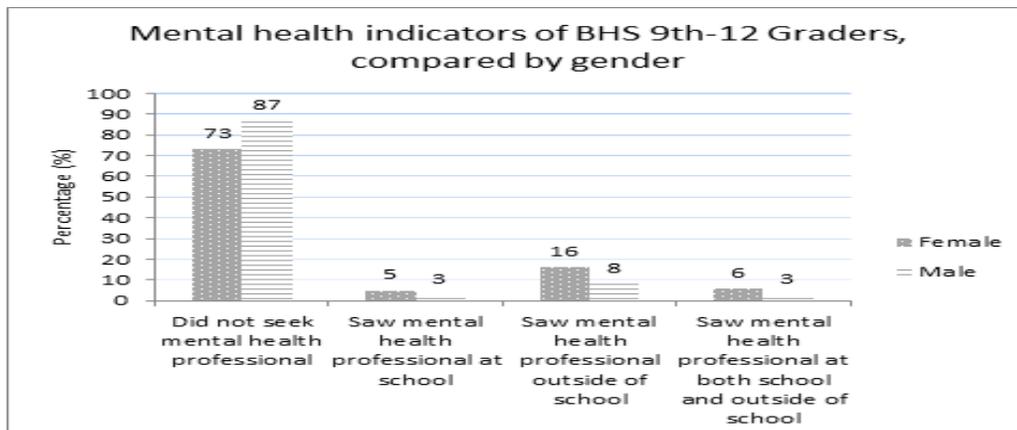


Trend line data show that there is an increase in students who report having had overwhelming stress or anxiety in the previous 12 months from 2005 to 2015. The other changes were not considerably different between 2005 and 2015, including rates of suicidal ideation, which have remained stable, and rates of suicide planning and suicide attempts, which have remained consistently low (3% or less).

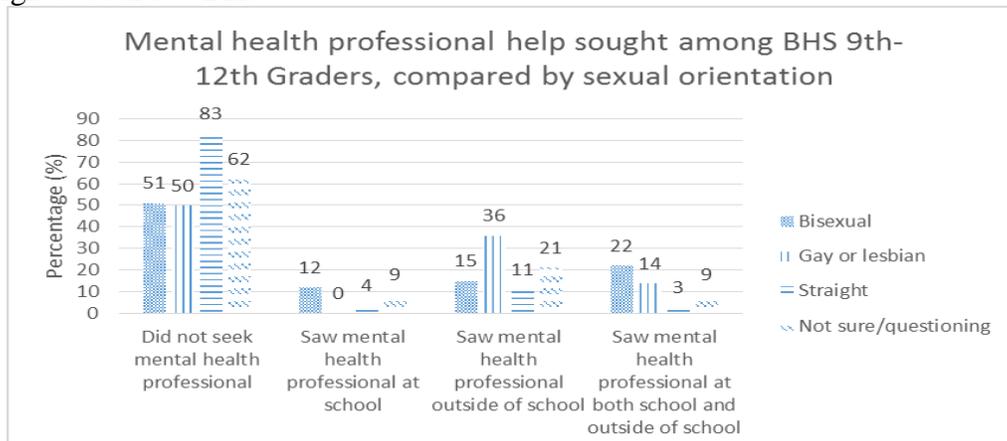




Among BHS students, females were more likely to seek mental health services than males both at school and outside of school.



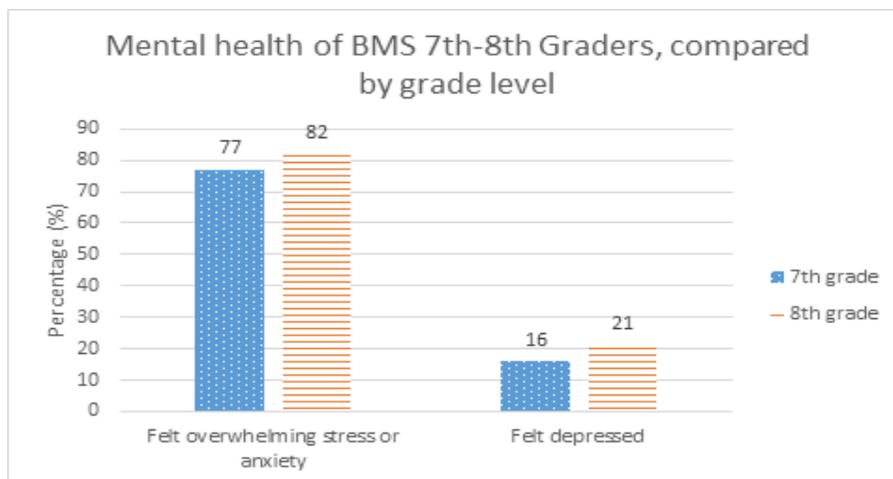
Bisexual, gay, lesbian, and questioning students were more likely to seek mental health services than straight students at BHS.

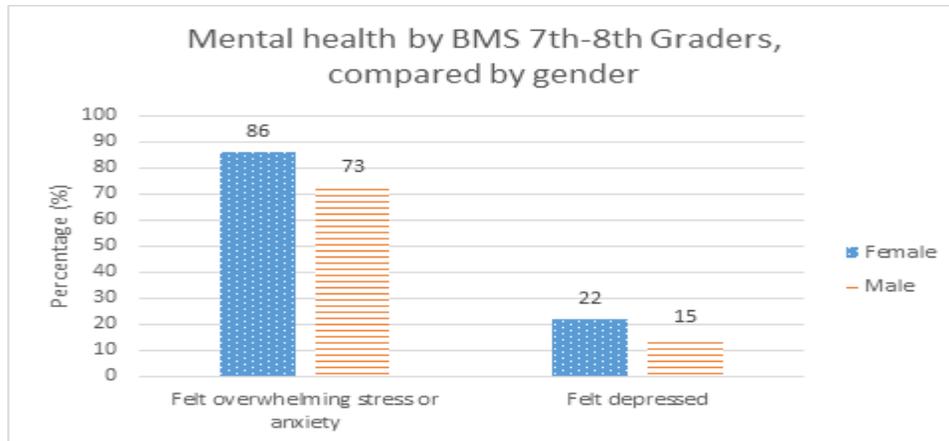


Middle School Data

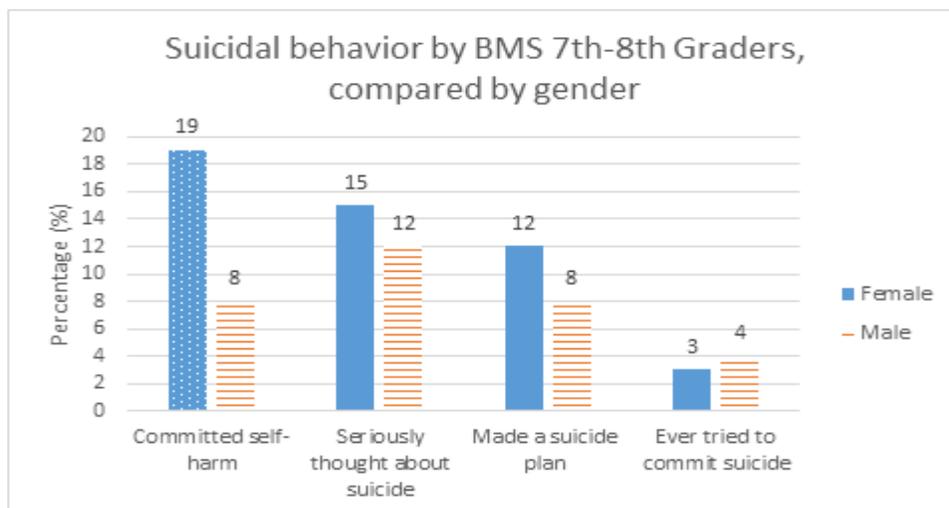
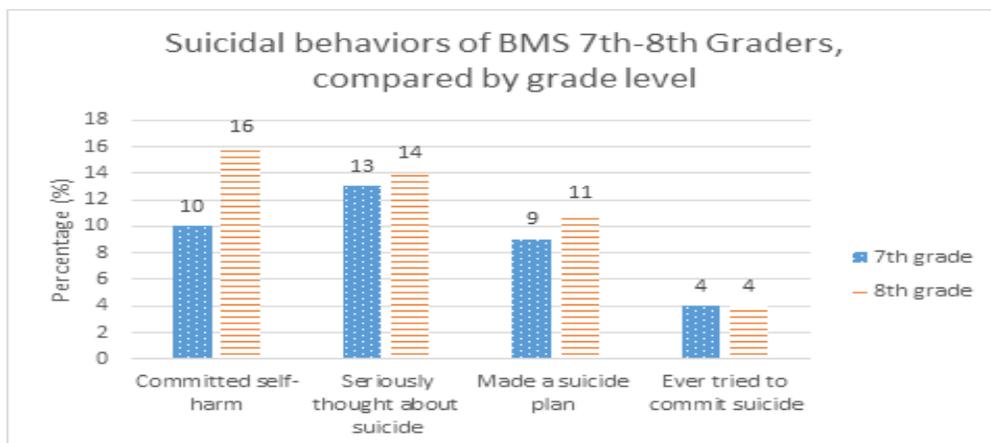
Note: There are no US middle school data for comparison. There is minimal state data, which is reported below.

- In 2015, 79% of Brookline 7th and 8th grade students reported feeling overwhelming stress or anxiety occasionally or frequently during the 12 months prior to the survey. More females reported overwhelming stress or anxiety than males (86% and 73%, respectively). The prevalence of overwhelming stress or anxiety was higher among 8th graders than 7th graders (82% and 77%, respectively).
- Fourteen percent of Brookline 7th and 8th grade students reported having ever had serious thoughts about suicide in 2015. Prevalence was higher among females (15%) than males (12%). A higher percentage of 8th graders reported having ever had serious thoughts about suicide (14%) than 7th graders (13%).
- The survey asked students about deliberate self-harm. Fourteen percent of students reported having attempted self-harm. More females (19%) reported having attempted self-harm than males (8%). A higher percentage of 8th graders reported having committed self-harm (16%) than 7th graders (10%).
- The survey asks about a common symptom of depression in the form of feeling sad or hopeless for 2 or more weeks. Fourteen percent of 7th-8th grade students reported this symptom of depression over the past year. More females (22%) reported this than male (15%). A higher percentage of 8th graders reported the symptom of depression (21%) than 7th graders (15%).





- Four percent of Brookline 7th and 8th grade students reported having EVER attempted suicide. The Massachusetts state survey shows 1% of state middle school students (6th-8th) reported attempting suicide in the past 12 months. The prevalence did not vary by grade. More males had ever attempted suicide (4%) than females (3%).



Physical Activity

In addition to proper nutrition and healthy eating habits, regular physical activity can help maintain a healthy body weight, muscle strength, and bone health.¹ Millions of Americans suffer from chronic illnesses that can be prevented or improved through regular physical activity, including coronary heart disease, diabetes, osteoporosis, certain cancers, and high blood pressure.^{2,6} Regular physical activity increases life expectancy⁶ and is associated with good mental health and self-esteem.¹

School physical education programs promote increased levels of physical activity and have been found to have a positive effect on the health and fitness of young people. In addition, there is evidence that participation in a health-related physical education program can have a positive effect on student achievement.⁷ A 2012 systemic review of 12,000 young people suggests that participation in physical activity has a positive relationship with academic performance.⁸

Young people have access to screens in the form of television, computers, and cell phones. Eliminating screen time altogether is nearly impossible with the necessity of the internet to complete homework assignments and to communicate. The American Academy of Pediatrics recommends that children age 2-18 limit non-educational screen time to 2 or fewer hours daily.⁹ They note not only poor school performance with high levels of screen time but also decreased physical activity and increased obesity rates.

The 2015 Brookline High and Middle School Student Health Surveys asked students to report on their participation in cardiovascular and strengthening exercises, TV usage, and technology usage. The 2015 survey asked about exercise in the past 7 days. Previous surveys (2005-2009) have asked about exercise in the previous 12 months. A question was also asked about participation in school athletics. The results of that question are reported in following section about Resiliency and Protective Factors.

In this report the following definitions were used:

Past week: Participation in the reported behavior at least once during the 7 days prior to the survey.

Average School Day: Participation in the reported behavior on a typical school day when school is in session.

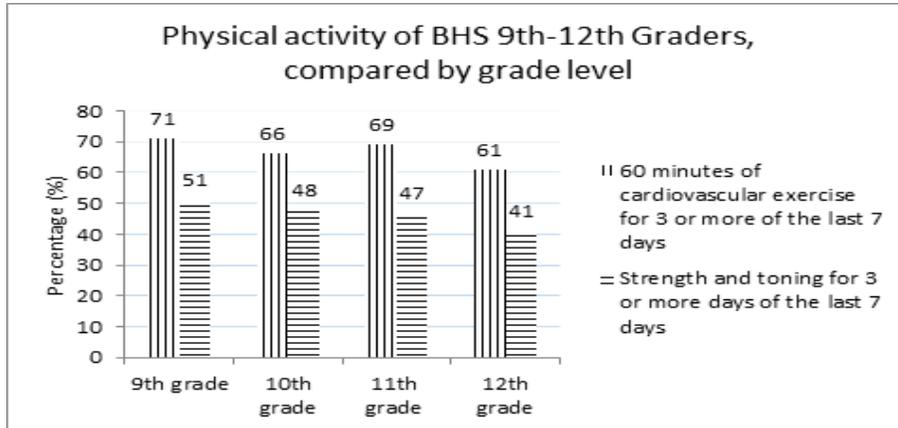
References

1. World Health Organization (2010). Global recommendations on physical activity for health. Switzerland. Available online http://www.who.int/dietphysicalactivity/factsheet_young_people/en/index.html
2. American Heart Association. (2011) Heart Disease and Stroke Statistics- 2011 Update. *Circulation*, 123. e18-e209.
3. Centers for Disease Control and Prevention. *National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014*. Atlanta, GA: US Department of Health and Human Services; 2014.
4. American Cancer Society. *Cancer Facts & Figures 2012*. Atlanta: American Cancer Society; 2012
5. National Institutes of Health (2010). *Physical Activity and Weight Control*. NIH Publication: 03-4031. Updated March 2010.
6. Samitz, G., Egger, M., Zwahlen, M. (2011). Domains of physical activity and all-cause mortality: systemic review and dose-response meta-analysis of cohort studies. *International Journal of Epidemiology*. 40 (5) 1382-1400.
7. Prosper, M. H., Moczulski, V. L., Qureshi, A., Weiss, M., & Bryars, T. (2009). Healthy for life/pe4me: Assessing an intervention targeting childhood obesity. *Californian Journal of Health Promotion*, 7(Special Issue), November 16, 2009.
8. Singh, A., Uijtdewilligen, L., Twisk, J., Mechelen, W., Chinapaw, M. (2012) Physical Activity and Performance at School: a systematic review of the Literature including a methodological Quality Assessment. *Archives of Pediatric and Adolescent Medicine*. 166 (1): 49-55.
9. AAP Policy Statement: Children, Adolescents, Obesity and the Media. (2011) *Pediatrics*. 128 (1): 201-208.

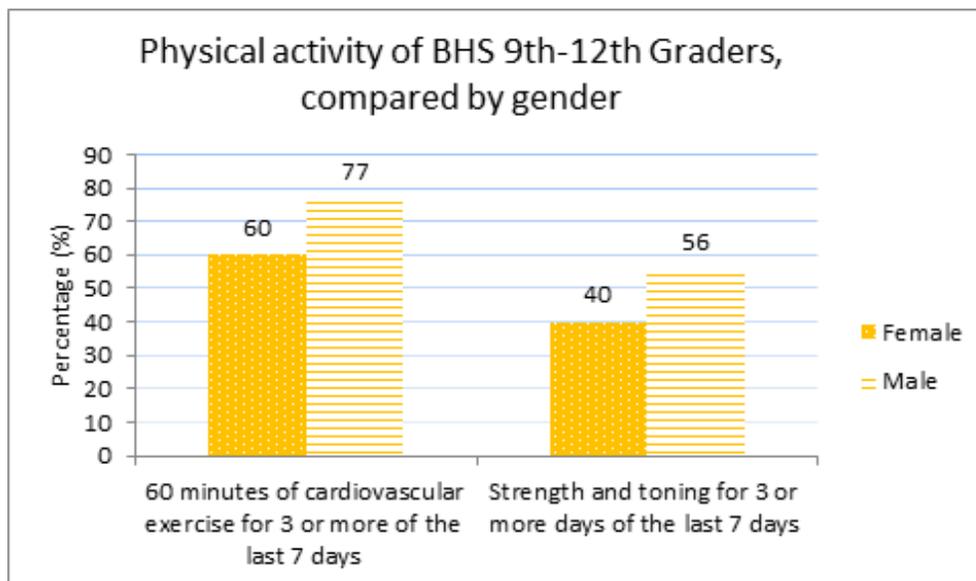
Physical Activity

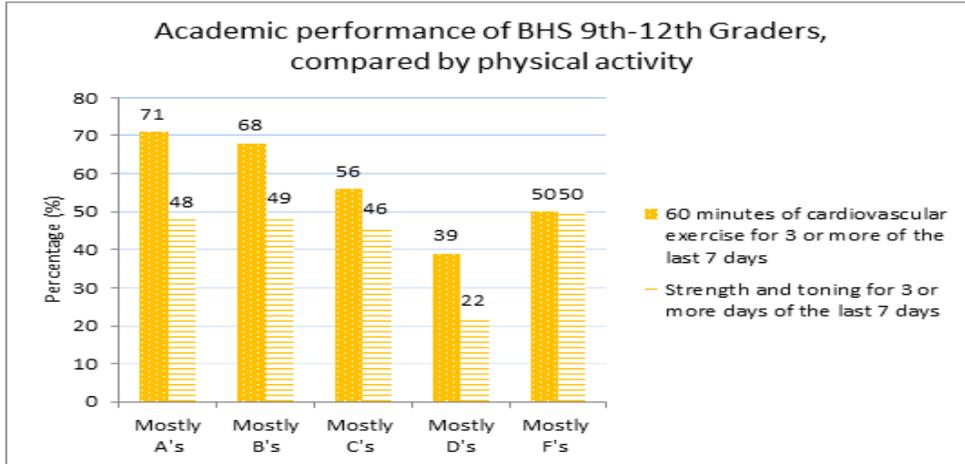
High School Data

- Sixty-eight percent of BHS students reported participating in 60 minutes of cardiovascular activity for at least 3 days in the past week. Forty-seven percent of students reported participating in strengthening or toning exercises for at least 3 days in the week prior to the survey.

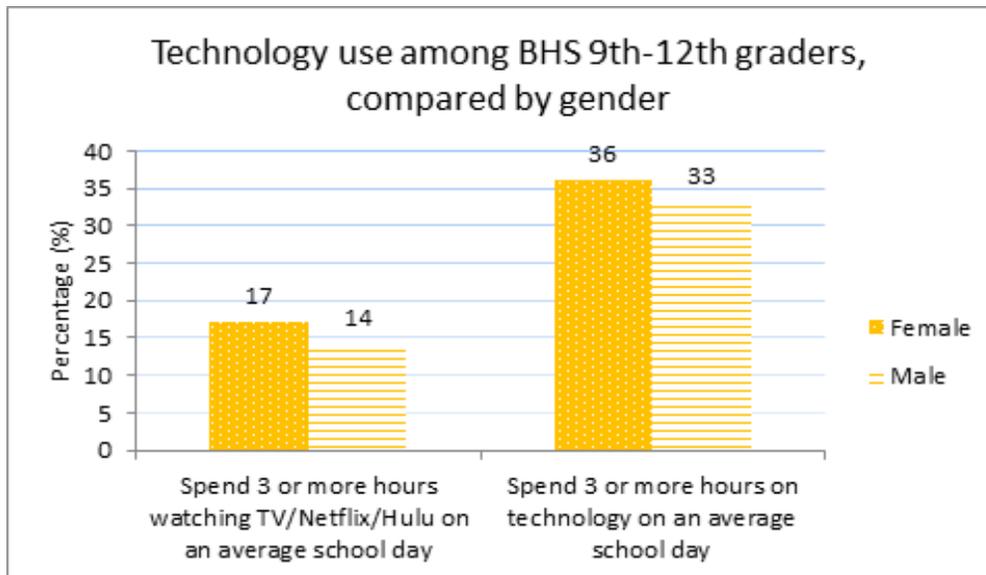


- 60% of females reported cardiovascular exercise (for 60 minutes a day for 3 of last 7 days). Males reported a rate of 77%. Activity levels varied by grade level (9th grade: 71%, 10th grade: 66%, 11th grade 69%, 12th grade 61%)
- For strengthening exercise, the reported prevalence for females was 40% and for males it was 56% (reporting strength exercises for at least 3 of the past 7 days). The values across grade levels were 9th grade (51%), 10th grade (48%), 11th grade (47%), and 12th grade (41%).

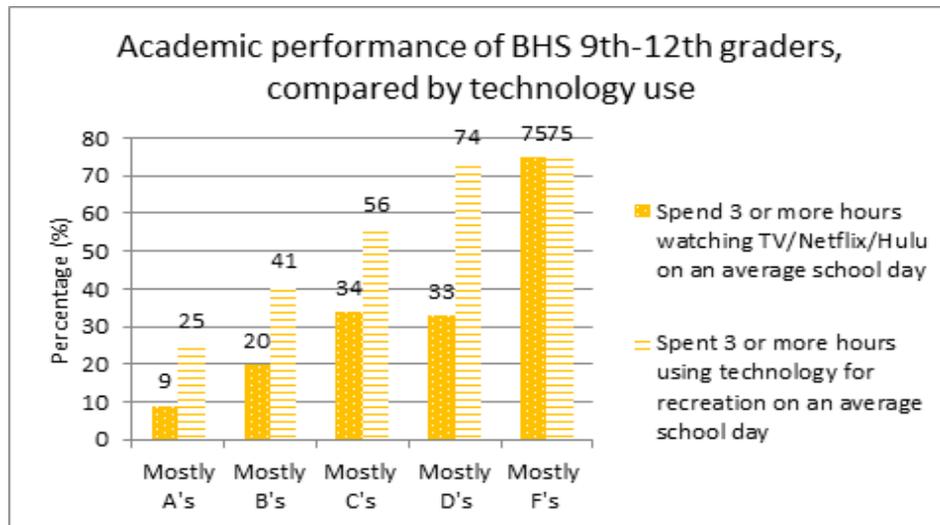




- Sixteen percent of BHS students reported spending 3 or more hours per average school day watching television.
- Thirty-nine percent of students reported spending 3 or more hours per average school day of using technology for recreational purposes.
- Prevalence of TV usage by gender were 17% for females and 14% for males. Prevalence of technology usage by gender were 36% for females and 33% for males.



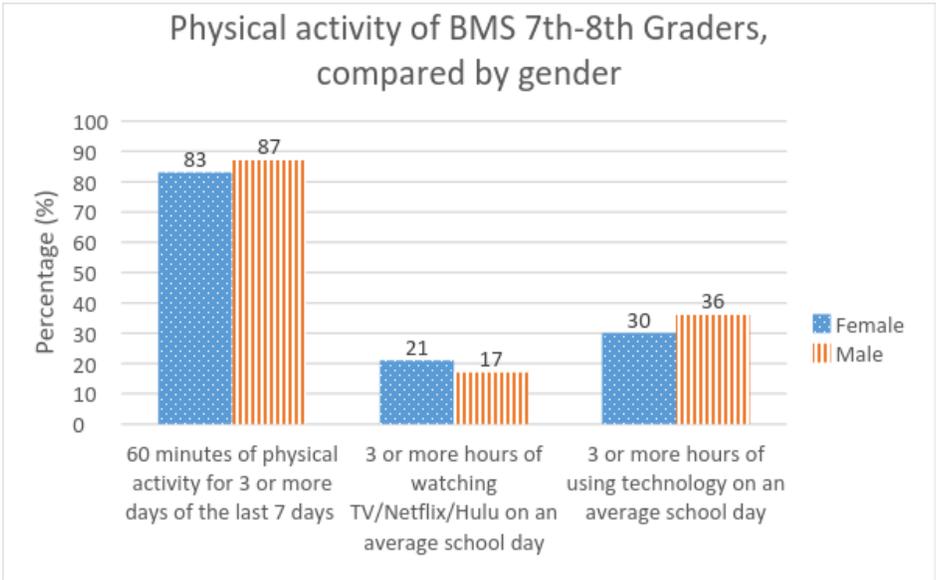
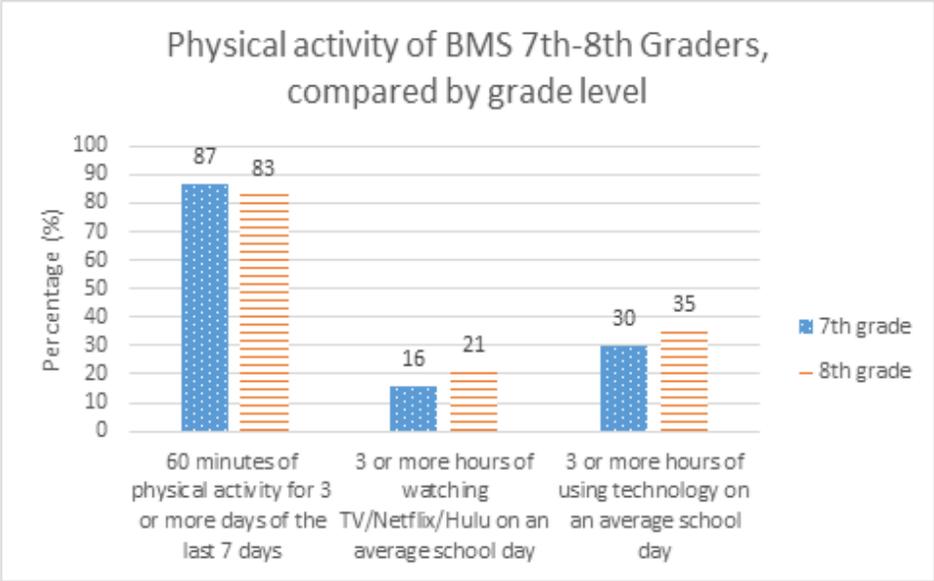
Students who reported mostly C's or below were more likely to use technology for non-school related work for three or more hours a day, as compared students who reported mostly A's and B's.



Middle School Data

Note: There are no US or state middle school data for comparison.

- Eighty-five percent of 7th-8th grade students reported participating in 60 minutes of cardiovascular activity for at least 3 days in the past week.
- Nineteen percent of middle school students reported watching 3 or more hours of TV during the average school day. Thirty-three percent reported using technology for recreational purposes for 3 or more hours during the average school day.
- Females and males had similar rates of TV watching, with 21% of females and 17% of males watching 3 or more hours on an average school day.
- Students in 8th grade reported watching more TV and using the computer more than 7th grade students. Percentages of students reporting 3 or more hours of daily TV were 16% for 7th grade and 21% for 8th grade. Percentages of computer/video game use for 3 or more hours on an average school day were 30% (7th grade) and 35% (8th grade).



Body Weight and Dietary Behaviors

Our culture is obsessed with physical appearances, weight, diet, and exercise, which can contribute to some healthy exercise and eating habits. But our obsessions can also lead to problematic relationships with food, body image. For teens, self esteem can be tied to body shape and weight. Even teens who are in the healthy weight range may feel overweight. This can lead to excessive or rigid exercise routines, and unhealthy dieting. An overemphasis on thinness during adolescence may contribute to some eating disorders such as anorexia nervosa and bulimia nervosa.⁸

Lifetime dietary patterns are established during childhood and adolescence. It is important for adolescents to adopt healthy eating and exercise habits in order to retain these habits for life. From 2011-2014, approximately 37% of adults and 17% of children and adolescents (ages 2-17) in the United States were categorized as obese⁹. Obesity in adolescence may persist into adulthood, increasing later risk for chronic conditions such as diabetes, heart disease, high blood pressure, stroke, and certain cancers.¹⁰ Obesity during adolescence is also related to psychological stress, depression, problems with family relations, and poor school performance.¹¹

The 2015 Brookline High and Middle School Health Surveys asked students questions about their perception of their own weight, dietary habits, and dieting practices.

In this report, the following definitions were used:

Past 12 months or past year: Participation in the reported behavior at least once during the 12 months prior to the survey.

Recent or past month: Participation in the reported behavior on at least one of the 30 days prior to the survey.

Ever: Participated in the behavior at any time in the student's life.

⁸ National Institute of Mental Health. (2011). Eating Disorders. NIH Publication No. 11-4901. Washington, DC: US Department of Health and Human Services. Available online:

<http://www.nimh.nih.gov/health/publications/eating-disorders/complete-index.shtml>

⁹ Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. NCHS data brief, no 219. Hyattsville, MD: National Center for Health Statistics. 2015.

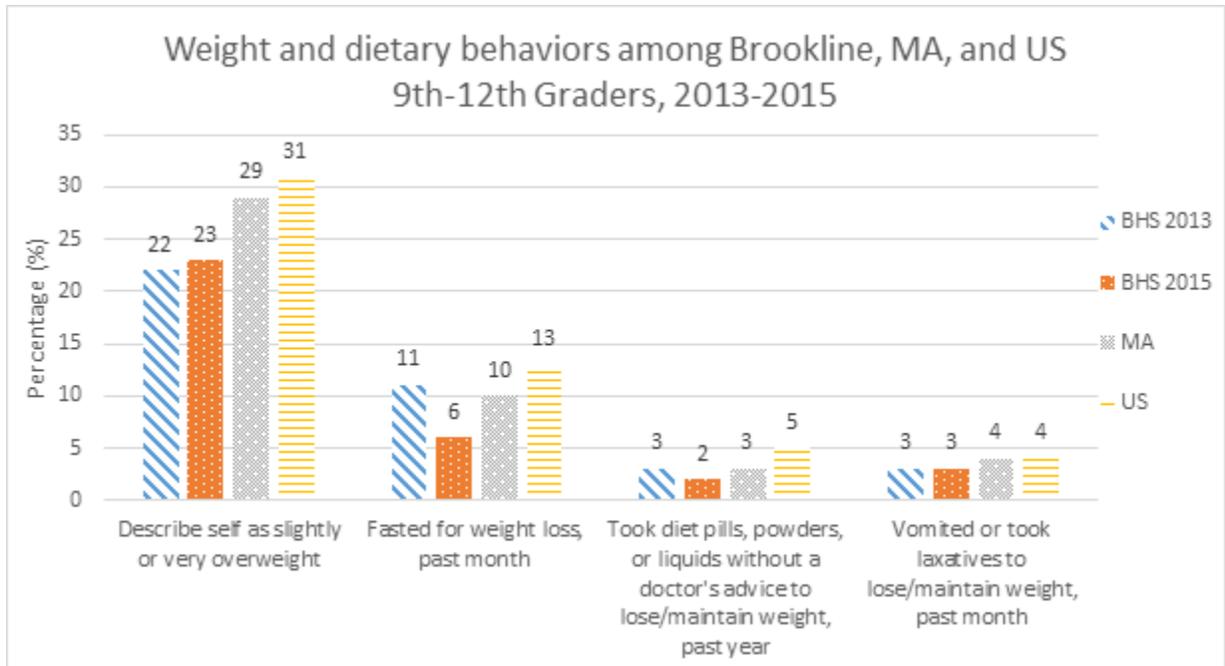
¹⁰ Office of the Surgeon General (US); Office of Disease Prevention and Health Promotion (US); Centers for Disease Control and Prevention (US); National Institutes of Health (US). The Surgeon General's Call To Action To Prevent and Decrease. Rockville (MD): Office of the Surgeon General (US); 2001. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK44206/>

¹¹ Swartz MB & Puhl R. Childhood obesity: a societal problem to solve. *Obesity Reviews* 2003; 4(1):57—71.

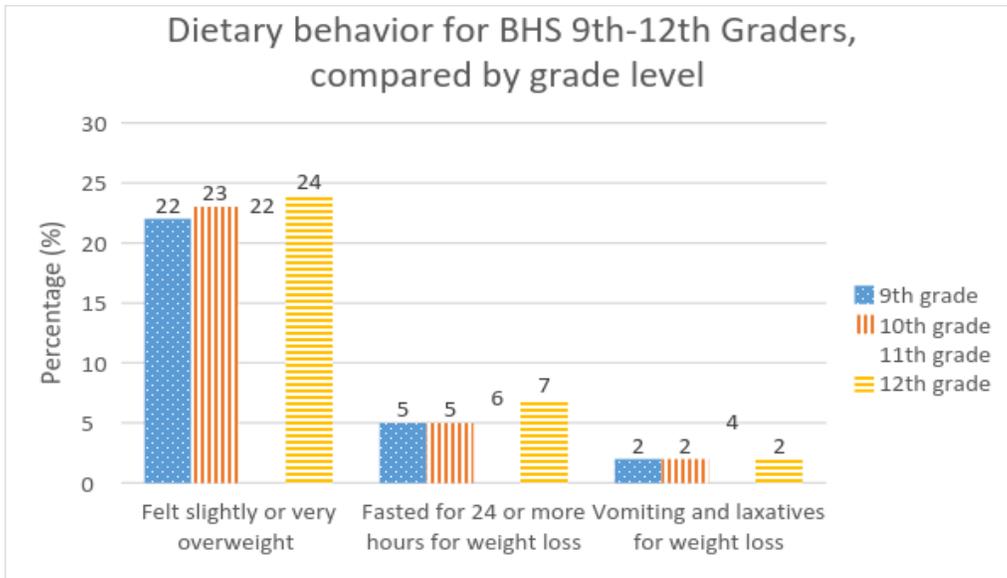
Body Weight and Dietary Behaviors

High School Data

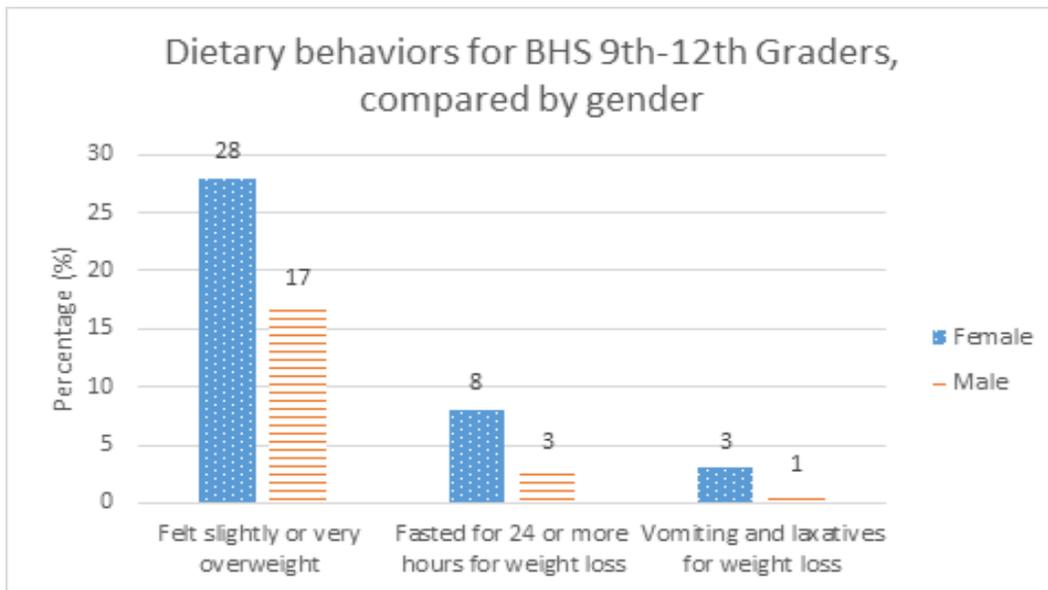
- Among BHS students, 23% described themselves as slightly or very overweight. This is compared to 29% and 31% for Massachusetts and nationally, respectively.



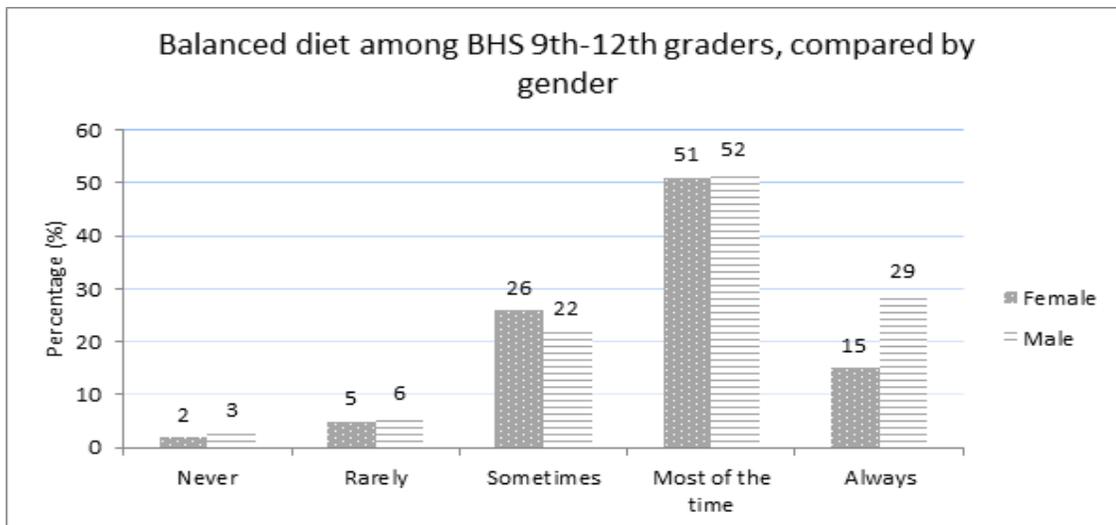
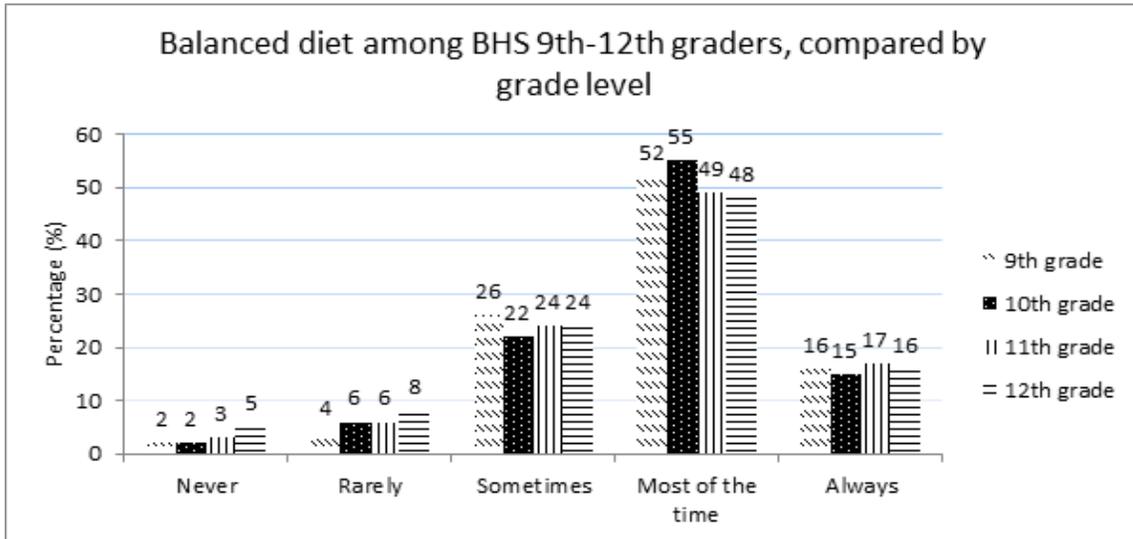
- Six percent of BHS students reported having fasted for 24 hours or more (for the purpose of weight loss) during the past 30 days. Two percent of BHS students reported taking diet pills, powders or liquids (not prescribed by a doctor) in the past month.
- The percentage of those who describe themselves as slightly or very overweight does not vary by grade: 9th grade- 22%, 10th grade-23%, 11th grade-22%, 12th grade-24%
- Prevalence of fasting for 24 or more hours for weight loss does not vary by grade: 5% of 9th grade, 5% of 10th grade, 6% of 11th grade, 7% of 12th grade
- Prevalence of purging (vomiting and laxatives) is similar by grade: 2% of 9th grade, 2% of 10th grade, 4% of 11th grade, 2% of 12th grade



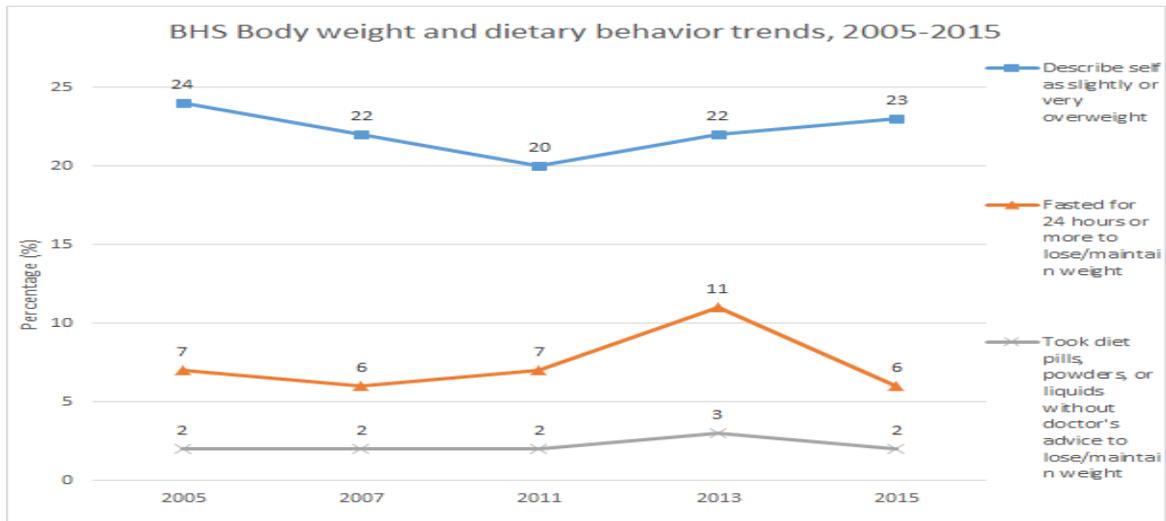
- Females (28%) were more likely to describe themselves as slightly or very overweight compared to males (17%).
- Females (3%) were also more likely to report purging (vomiting or laxative use), than males (1%). Females (8%) were more likely to report fasting than males (3%).



- Frequency of balanced diet is similar between the genders. The differences were in the “sometimes” and “always” responses. Females had a great prevalence of reporting balanced diet sometimes compared to males (26% and 22%, respectively). Males had a greater prevalence of always having a balanced diet compared to females (29% and 15%, respectively).



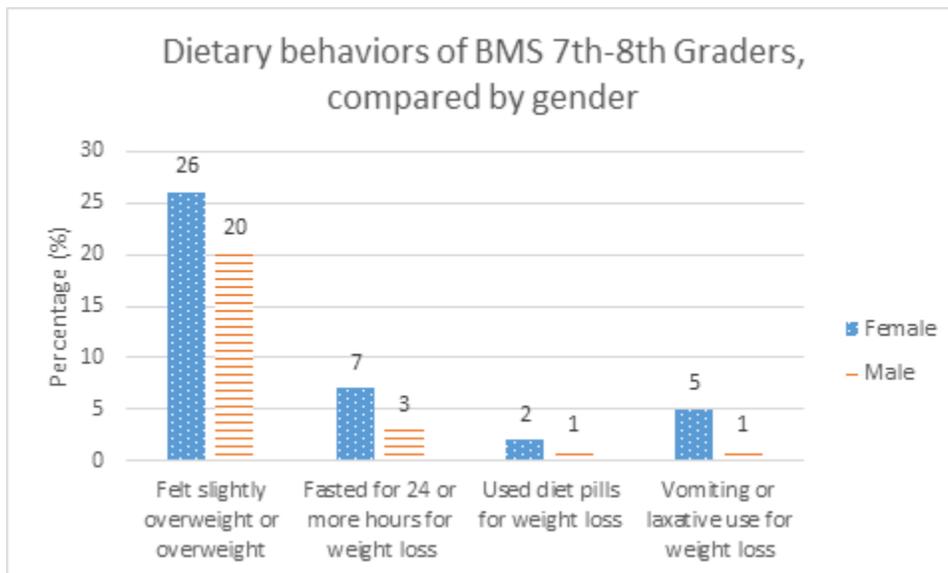
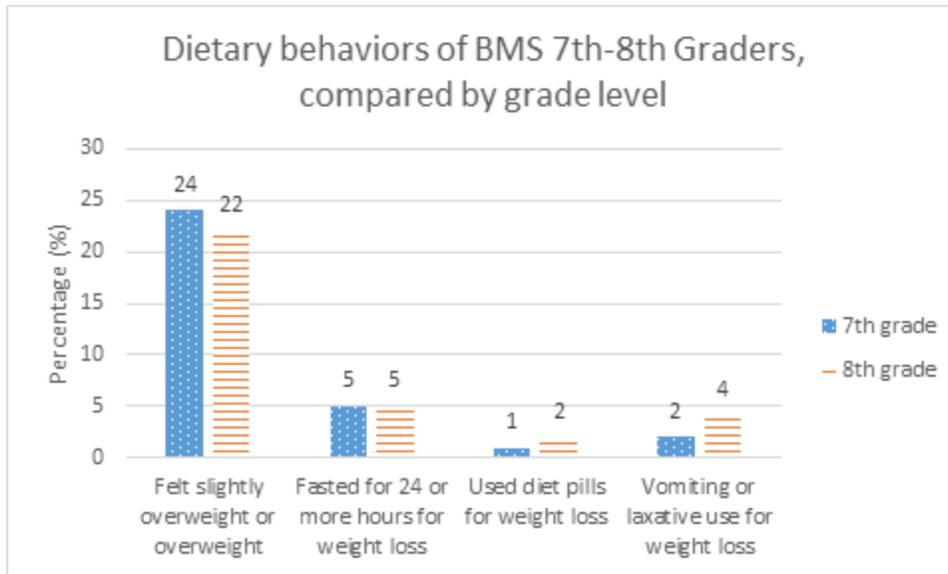
The trend line data show that there was a slight increase in those who described themselves as slightly or very overweight. There is a decrease in fasting for 24 or more hours for weight loss between 2013 and 2015. There is a slight decrease in those who reported using weight loss, powders, pills, or liquids without a prescription from 2013 to 2015.



Middle School

Note: There are no US or state middle school data for comparison.

- Among Brookline 7th and 8th graders, 23% described themselves as slightly or very overweight. 24% of 7th graders described themselves as slightly or overweight, while 22% of 8th graders described themselves as such. A higher percentage of females described themselves as slightly or very overweight (26%) compared to males (20%). Thirty-two percent of 7th-8th grade students reported currently trying to lose weight.
- Five percent of 7th-8th grade students reported having fasted to lose weight in the past month. 3% of Brookline 7th-8th grade females reported fasting in the past month compared to 3% of males. The prevalence of fasting was consistent between grades.
- One percent of middle school students reported using diet pills, powders, or liquid for weight loss in the past month. This was consistent between genders. Almost all of the students reporting this behavior were 8th grade students (8th was 2%, 7th was 1%).
- Three percent of students reported having ever vomited or taken laxatives for weight loss. This behavior was reported more often in females than males (5% and 1%, respectively). Most of the students reporting this behavior were 8th grade (4% vs 2%).



Attitudes and Perceptions

The attitudes and perceptions of teens, their peers and their families have the ability to affect teen drug use. Individual and environmental risk factors can also influence perceptions and, therefore, impact decision making. These factors may include low self-esteem, anxiety, abuse, peer pressure and school/family environment.¹ Youth perception of the risks of using a substance, the rate of use and availability of a substance, in addition to how their peers and parents feel about substance use can all affect their own rates of use. A recent survey by the Substance Abuse and Mental Health Services Administration found that as perceived risk of weekly or monthly use of marijuana decreased, the prevalence of past month marijuana use increased for youth 12 or older and 26 or older, compared to previous survey findings.¹¹ A perceived increase in risk or a decrease in social acceptance can lead to decreased teen use, whereas a perception of decreased risk and a higher level of acceptance can have the opposite effect.²

Nationally, overall illicit drug use was slightly lower in 2015 than 2013. Lifetime and recent marijuana use has decreased. Cocaine use, steroid use without a prescription, heroin use, amphetamine use, hallucinogen use, depressant use, and use of OTC medication to get high have decreased from 2013.

Some researchers believe that increases in drug abuse are related to lower perception of harm and fewer prevention messages aimed at youth.³ According to the results of the national Monitoring the Future Survey, of the illicit drugs, marijuana has the highest level of use and one of the lowest levels of perceived risk and disapproval of use.¹⁰ Although the prevalence of marijuana use decreased from a previous Monitoring the Futures study, the risk perception of regular marijuana was lower and overall perception moved towards greater acceptance.¹⁰ These relationships suggest that individuals who believe that the use of a particular drug involves risk of harm and/or who disapprove of its use are less likely to use that drug; indeed, strong correlations also exist at the individual level between use of a drug and attitudes and beliefs about that drug. Students who use a given drug are less likely to disapprove of its use and to see its use as dangerous.⁴

Parental attitudes regarding substance use can affect not only whether adolescents decide to use or not, but also how much they use. Adolescents whose parents feel it is wrong to use substances are less likely to use or use less than their peers.⁵ One study found that complete parental disapproval led to their children engaging in less drinking and binge drinking once they were in college.¹²

Perceived level of peer use can be a factor in adolescent substance use decision making. The higher the perception is of peers using, the higher the use tends to be. The desire to fit-in and conform to the group is more of a factor during the middle school years, making peer perception of use a significant factor in the inception of use for this age group.⁶ As youth get older and more independent, the influence of peers increases relative to other sources (e.g., parents) and appears to peak, at least for antisocial behavior, in the ninth grade.⁷ Negative peer pressure, in

the form of modeling behavior or forming norms and attitudes, may increase experimentation or use. This is especially true when combined with exposure to alcohol and other drugs, which has been shown to increase in the middle school years. For example, studies have shown a significant increase in marijuana use from 6th to 7th grades.^{8,9}

The 2015 BHS Health Survey included several measures of perceptions and attitudes among students. These included: (1) perception of harm of using substances, (2) approval or disapproval of peer drug use, (3) perception of parent approval or disapproval, (4) perceived accessibility of substances, and (5) use of substances in relation to parental approval or disapproval. The 7th and 8th Grade Health Survey also examined measures of perceptions and attitudes including: (1) perception of harm of using substances, (2) perception of parent approval or disapproval, (3) perceived accessibility of substances, and (4) use of substances in relation to parental approval or disapproval.

References

- ¹ Bejarano, J., Ahumada, G., Sanchez, G., Cadenas, N., de Marco, M., Hynes, M., and Cumsille, F. (2011). "Perception of Risk and Drug Use: An Exploratory Analysis of Explanatory Factors in Six Latin American Countries." *The Journal of International Drug, Alcohol and Tobacco Research*, Vol. 1, No. 1, 9–17. Bethesda, MD: National Institute on Drug Abuse.
- ² Adolescent Substance Abuse Knowledge Base. Factors of Teen Drug Use. <http://www.adolescent-substance-abuse.com/>
- ³ National Institute on Drug Abuse. (December 2010). *Drug Abuse at Highest Level in Nearly a Decade* [online]. Retrieved on March 5, 2012 from <http://www.drugabuse.gov/news-events/nida-notes/2010/12/drug-abuse-highest-level-in-nearly-decade>
- ⁴ Johnston, L.D., O'Malley, P.M., Bachman, J.G., & Schulenberg, J.E. (2006). Monitoring the Future national survey results on drug use, 1975-2006: Volume I, Secondary school students. NIH Publication.
- ⁵ Bahr, Stephen J., Hoffmann, John P., and Yang, Xiaoyan. (November 2005). "Parent and Peer Influence on the Risk of Adolescent Drug Use." *The Journal of Primary Prevention*, Vol.26, No.6, Published Online: 15 October 2005.
- ⁶ D'Amico, Elizabeth J., Ph.D., and McCarthy, Denis M., Ph.D. (2006). "Escalation and Initiation of Younger Adolescents' Substance Use: The Impact of Perceived Peer Use." *Journal of Adolescent Health*, 39: 481–487.
- ⁷ Berndt, T. J. (1979). Developmental changes in conformity to peers and parents. *Developmental Psychology*, 15, 608-616.
- ⁸ Dunu, Peace (2003). "Negative Peer Pressure and Youth Drug Use" [online]. Retrieved on April 10, 2012 from <http://www.aces.edu/urban/metronews/vol2no4/peerpressure.html>
- ⁹ Lashbrook, Jeffrey T. "Fitting In: Exploring the Emotional Dimension of Adolescent Peer Pressure." *Adolescence* / Winter, 2000.

¹⁰ Johnston, L.D., O'Malley, P.M., Miech, R.A., Bachman, J.G., & Schulenberg, J.E. (2015). Monitoring the Future national survey results on drug use, 1975-2014: 2014 Overview, Key Findings on Adolescent Drug Use. NIH Publication.

¹¹ SAMHSA, Lipari, R., RTI International, Kroutil, L.A., & Pemberton, M.R. (2015). Risk and Protective Factors and Initiation of Substance Use: Results from the 2014 National Survey on Drug Use and Health. NSDUH Data Review.

¹² Trudeau, Michelle. "With Drinking, Parent Rules Do Affect Teens' Choices." NPR, 31 May 2010. Web. 15 Dec. 2015. <<http://www.npr.org/templates/story/story.php?storyId=127222042>>.

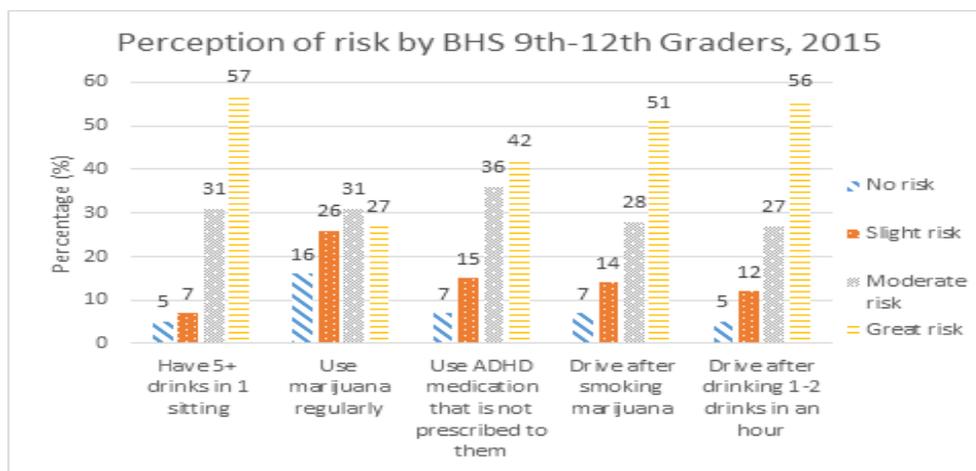
Attitudes and Perceptions about Drug Use

High School Data

Perception of Risk

The following section asks students to rate their perception of risk associated with certain behaviors.

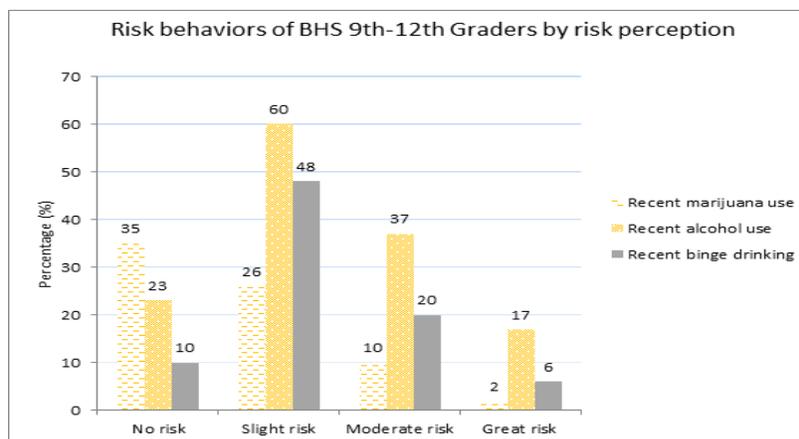
- Among BHS students, 88% perceived great or moderate risk associated with binge drinking, 79% driving after smoking marijuana and 83% driving after drinking 1-2 drinks in an hour.
- Among BHS student, 43% perceive only slight or no risk associated with regular marijuana use while 31% perceive moderate risk and 27% perceive great risk.



Perception of Risk Compared to Reported Alcohol and Marijuana Use

Students who reported moderate or great risk associate with certain behaviors reported lower rates of that behavior than those who perceived slight risk.

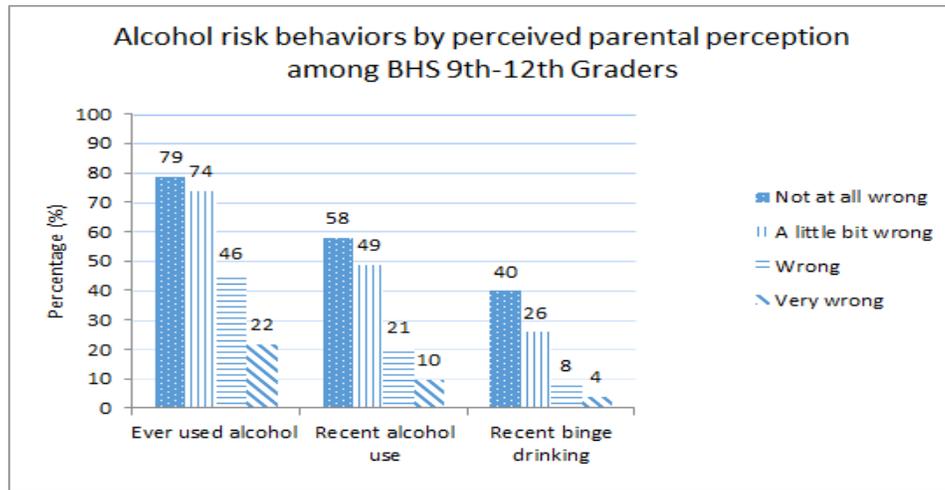
- In the case of recent marijuana use, reported use decreased with each increase in the perceived level of risk.



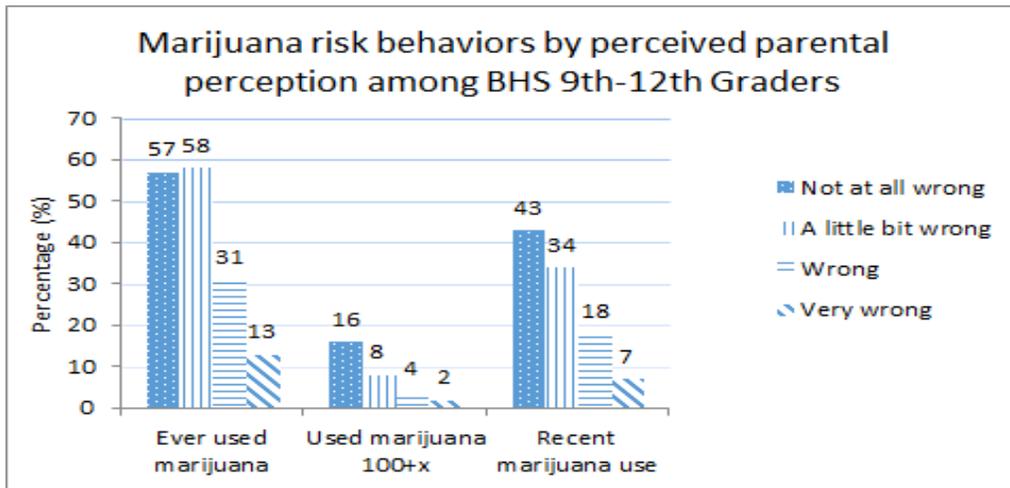
Perception of Parental Disapproval

Students' perceptions of the level of parental disapproval of their use affected their reported rates of use of alcohol and other drugs. BHS grade students who believed their parents disapproved of their use of alcohol used less alcohol on all indicators.

- Students who perceived no parental disapproval (58%) or slight parental disapproval (49%) were far more likely to have recently used alcohol than those who perceived disapproval (21%) and strong disapproval (10%).

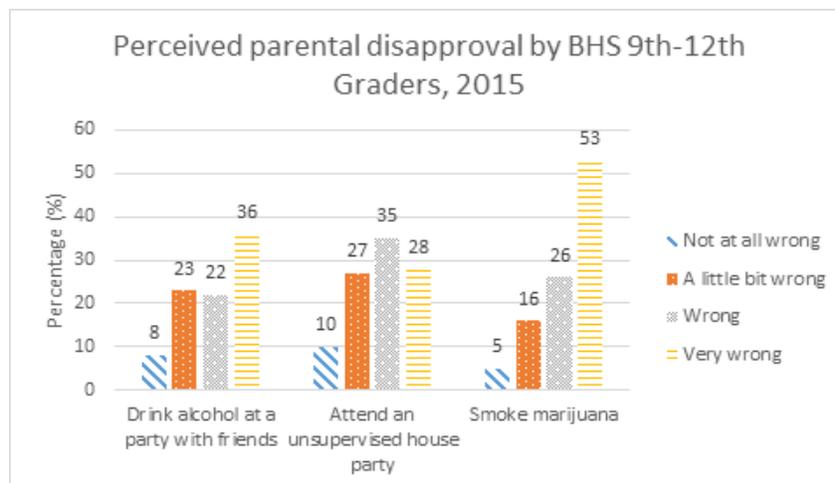
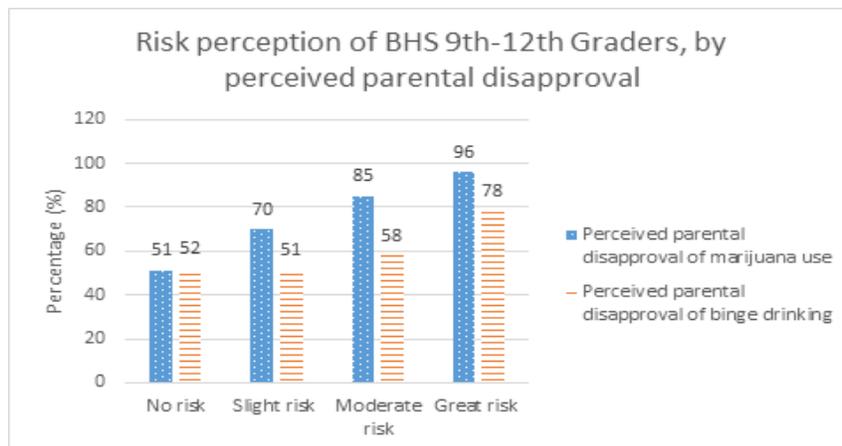


Students who believed their parents disapproved of their use of marijuana also used less on all indicators.

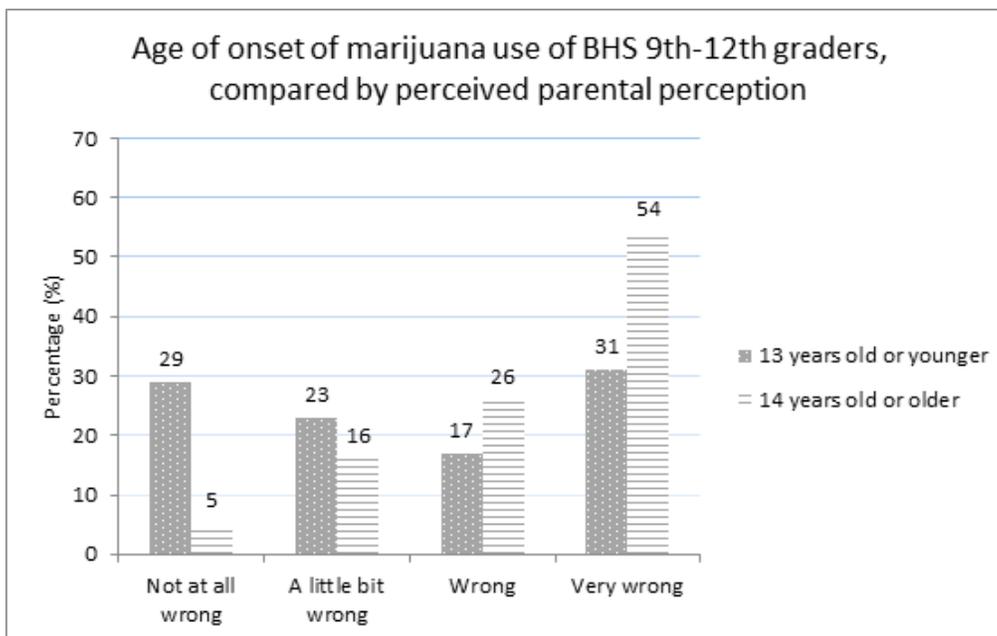


Perception of Risk and Perception of Parental Disapproval

- Students who believed there was “no risk” in engaging in a particular risk behavior reported lower rates of perceived parental “disapproval” of their engaging in that behavior. Conversely, more students who felt there was a “great risk” reported higher rates of parental “disapproval.” (Wrong, or very wrong)
- The following chart shows the percentages of students who believed that their parents disapproved of their use of marijuana and heavy alcohol use (binge drinking), broken down by how much risk they perceived to be associated with each drug. For example, 96% of students who believed there was a *great risk* of using marijuana also believed their parents would disapprove of using marijuana, whereas only 51% of students who believed there was *no risk* of using marijuana also believed their parents would disapprove of their using marijuana.



- Among those who have ever used marijuana, a greater proportion of those who started use at 13 years of age or younger perceived less parental disapproval as compared to those who started use at 14 years of age or older.

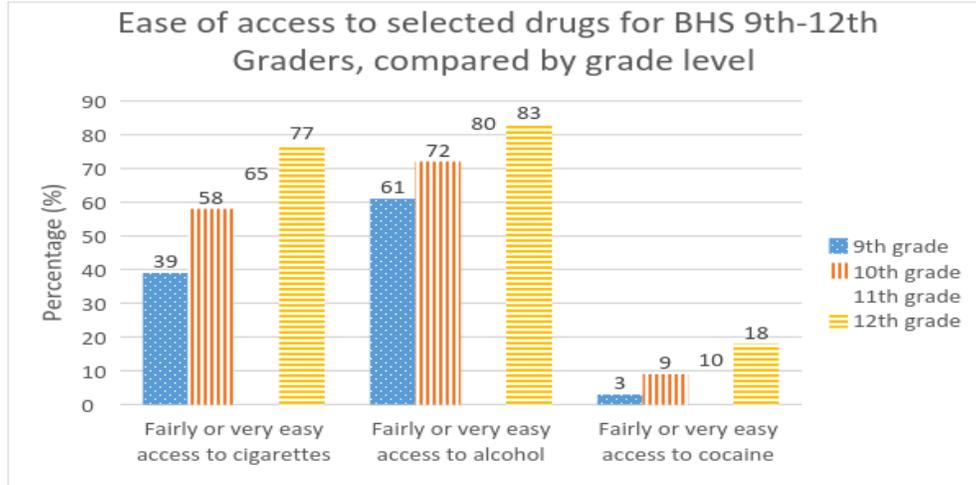


Perception of Access to Drugs

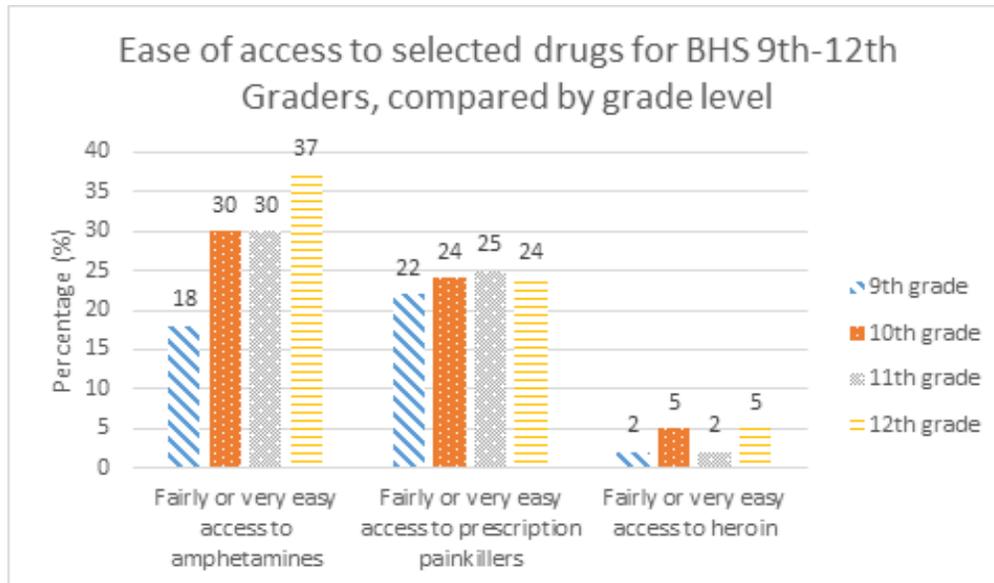
The following percentages of BHS students reported that it would be “fairly easy” or “very easy” to get these drugs:

Type of Drug	Fairly or Very Easy to Access
Cigarettes	57%
Alcohol	72%
Marijuana	53%
Cocaine	9%
Heroin	3%
Methamphetamines or Ritalin, Adderall, Concerta without a doctor’s prescription	27%
Prescription painkillers without a doctor’s prescription	23%
Hallucinogens (LSD/Mushrooms/2C’s/Ecstasy)	11%

- Generally, as grade level increased, perceived ease of access (responses of fairly or very easy access) of each type of drug increased. When asked about ease of access to cigarettes, alcohol, and cocaine, BHS 9th graders perceived the least ease of access, and the ease of access increased with grade level.



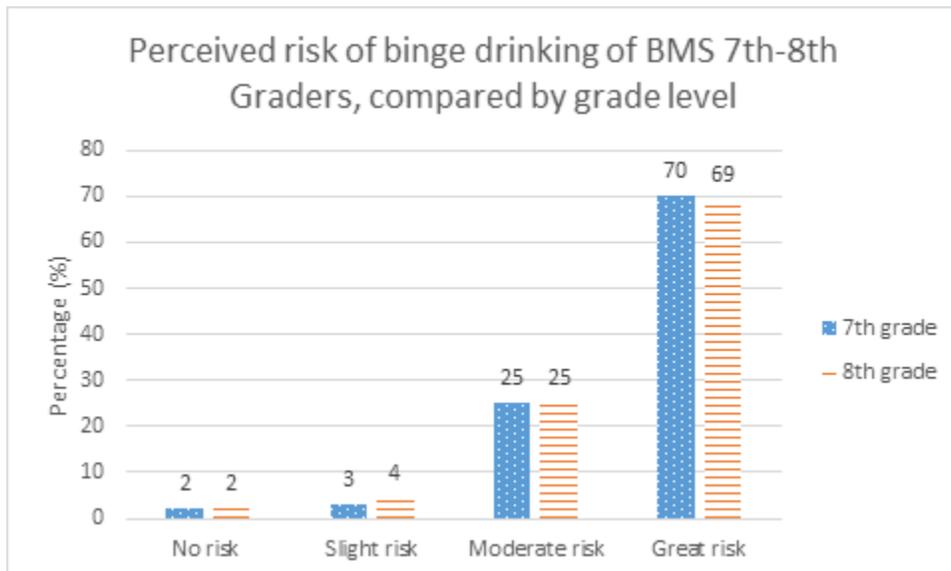
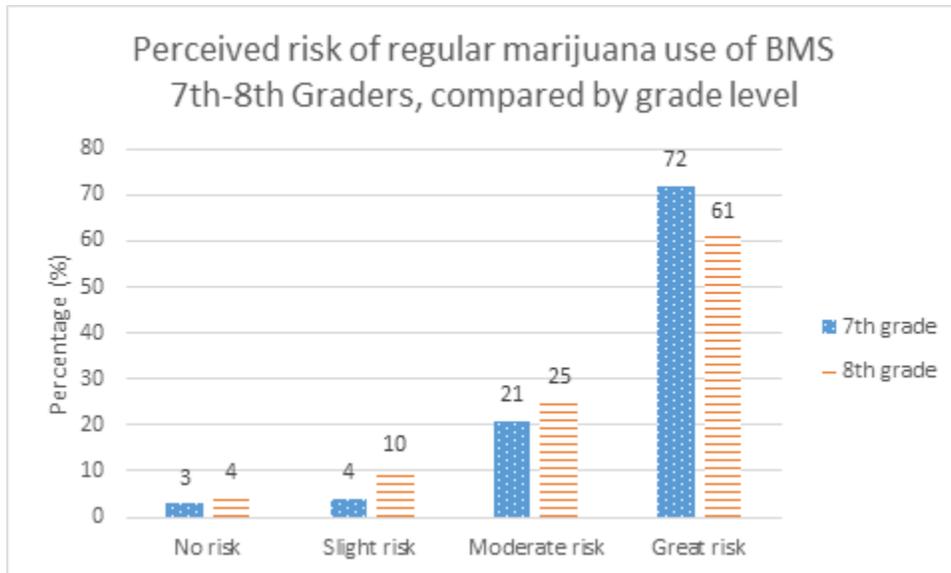
- When responding to ease of access to amphetamines, 9th graders had the lowest percentage of fairly or very easy access, 10th and 11th graders had the same percentage, and 12th graders had the highest percentage.
- When responding to ease of access to prescription painkillers, 9th graders had the lowest percentage of fairly or very easy access, the percentage increased among 11th graders, and 12th graders had the same percentage as 10th graders.
- There was no such apparent trend among ease of access to heroin. 9th and 11th graders had the lowest percentage, while 10th and 12th graders had the highest percentage of responses of fairly or very easy access to heroin.



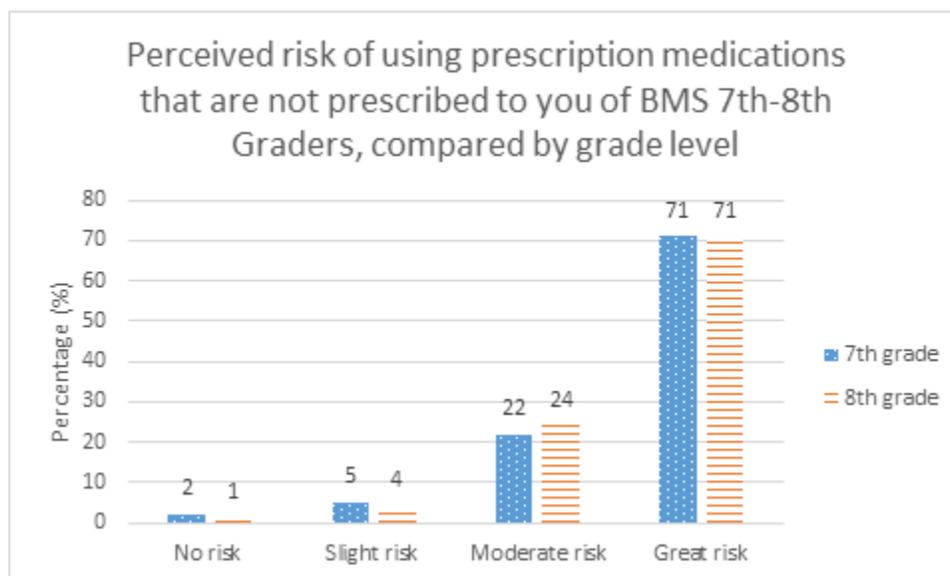
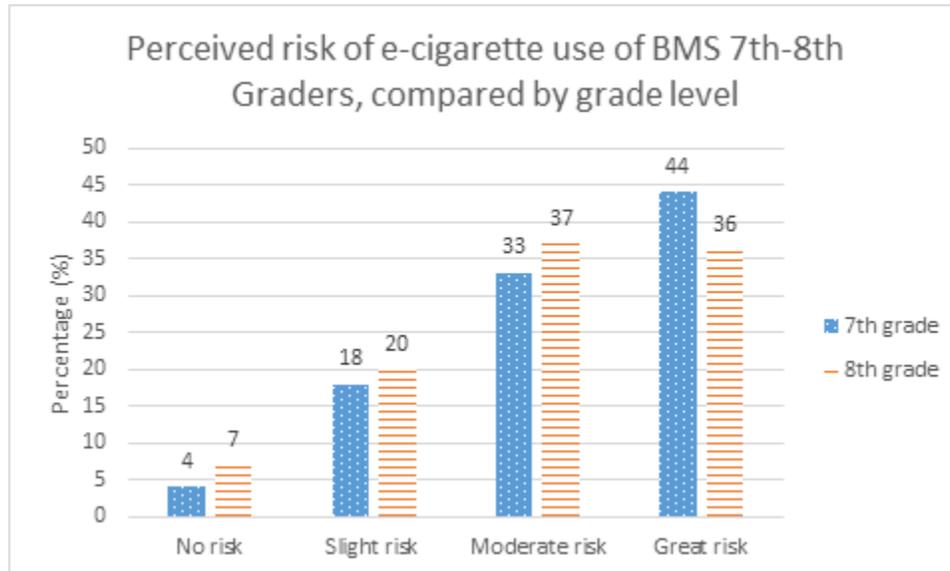
Middle School Data

Perception of Risk

- Over 90 % of Brookline 7th grade and 8th grade students believe that there is a moderate or great risk of harm from binge drinking, regularly use marijuana, and using prescription medications not prescribed to them.

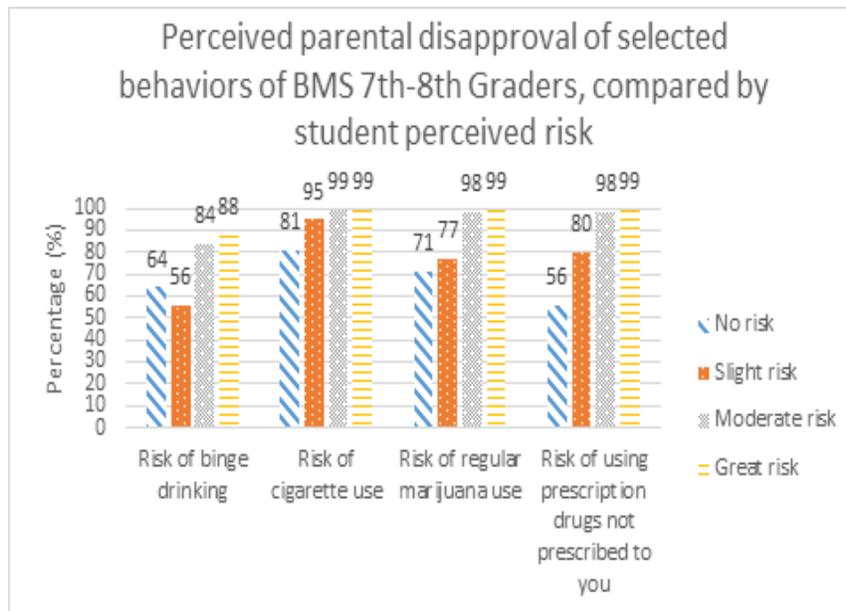


- Twenty seven percent of eighth graders perceived slight or no risk associated with the use of e-cigarettes.



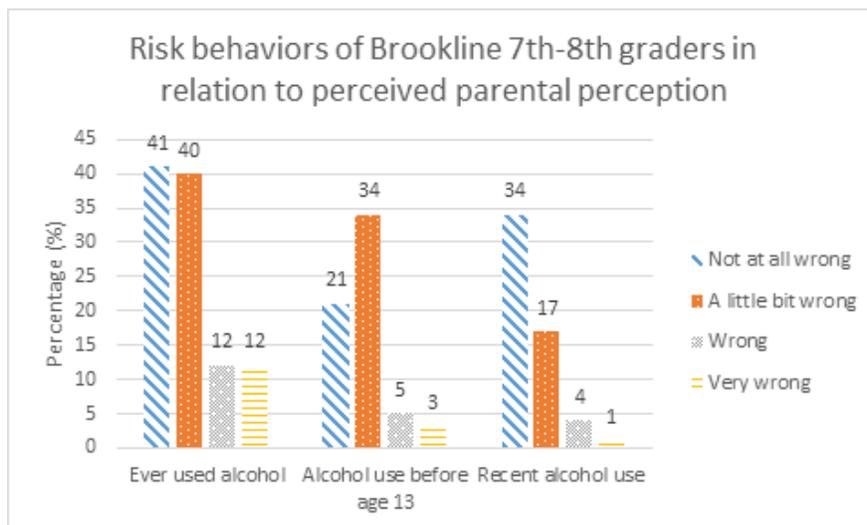
Perception of Parental Disapproval

- Across binge drinking, cigarette use, regular marijuana use, and prescription painkiller use that is not prescribed, there was correlation between student’s perceived “great risk” of harm and perceived parental disapproval. (Parental disapproval combines both “moderate” and “great” parental disapproval.)



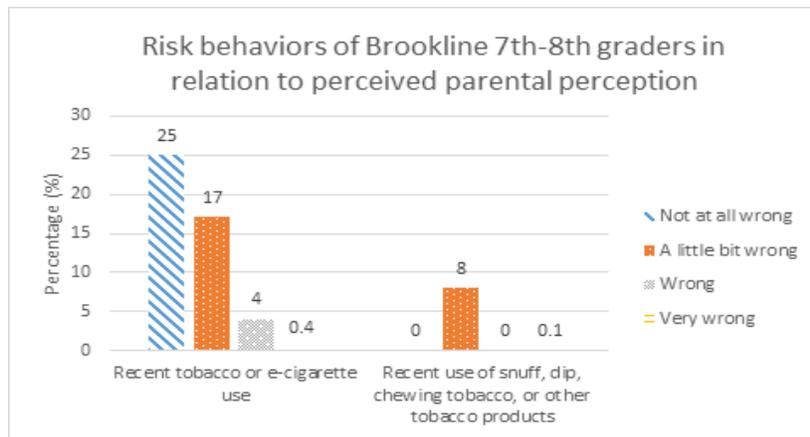
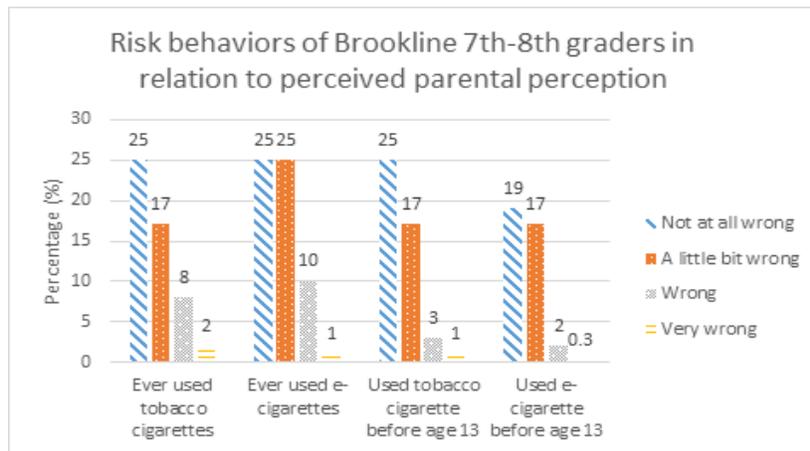
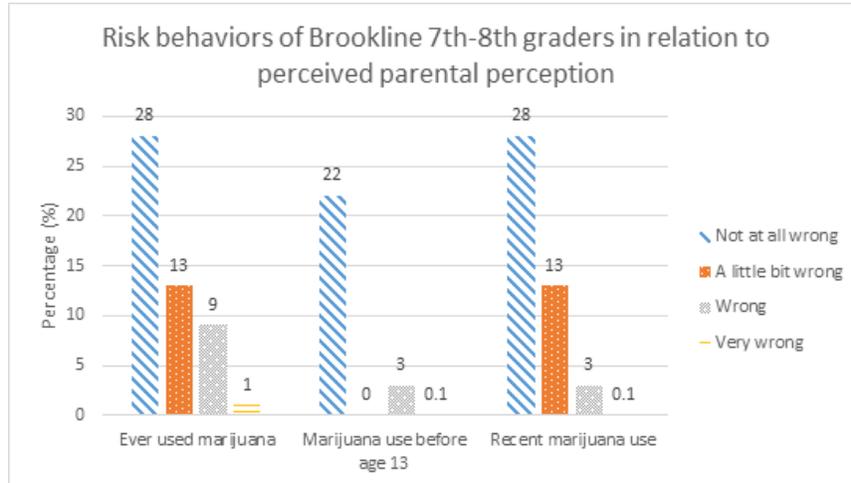
Perception of Parental Disapproval Compared to Reported Drug Use

- Brookline 7th and 8th graders who believed their parents disapproved of their use of alcohol, marijuana or cigarettes used less of those drugs.
- Brookline 7th and 8th grade students who believed their parents disapproved of their use of alcohol used less of alcohol on all indicators
- Students who perceived no parental disapproval (34%) or slight parental disapproval (17%) were far more likely to have recently used alcohol than those who perceived disapproval (4%) and strong disapproval (1%).



Students who believed their parents disapproved of their use of marijuana also used less.

- Of those who perceived no parental disapproval, 28% had recently used marijuana compared with 13% of those who perceived slight parental disapproval, 3% who perceived parental disapproval and 0.1% of those who perceived strong parental disapproval.

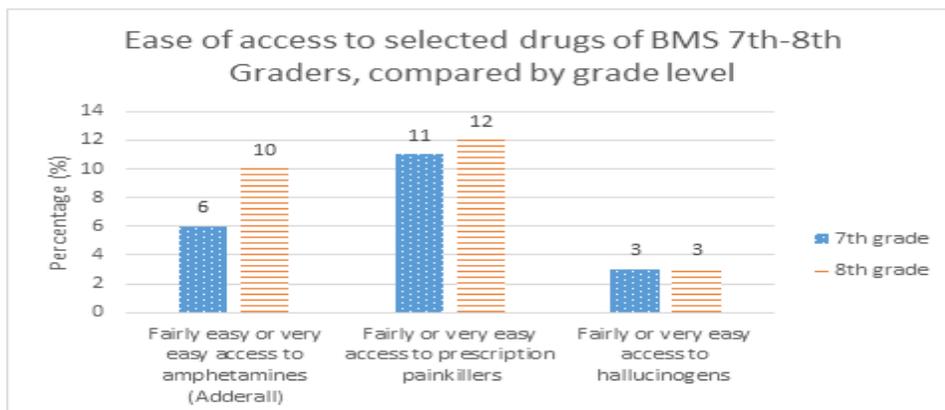
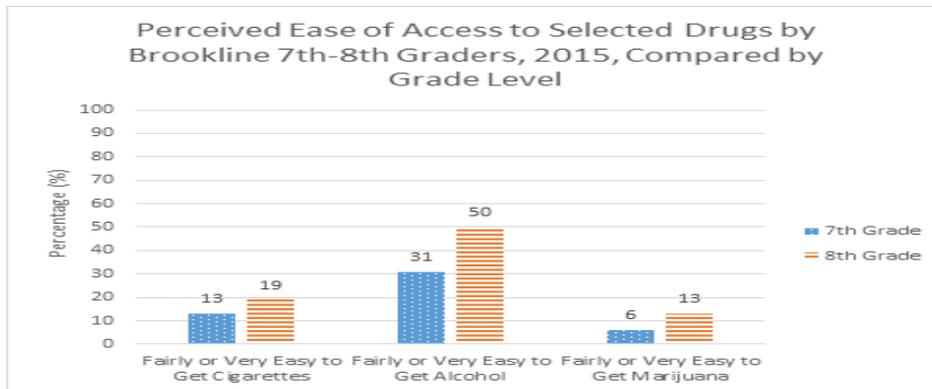


Perception of Access to Drugs

The following percentages of Brookline 7th and 8th graders reported that it would be “fairly easy” or “very easy” to get these drugs:

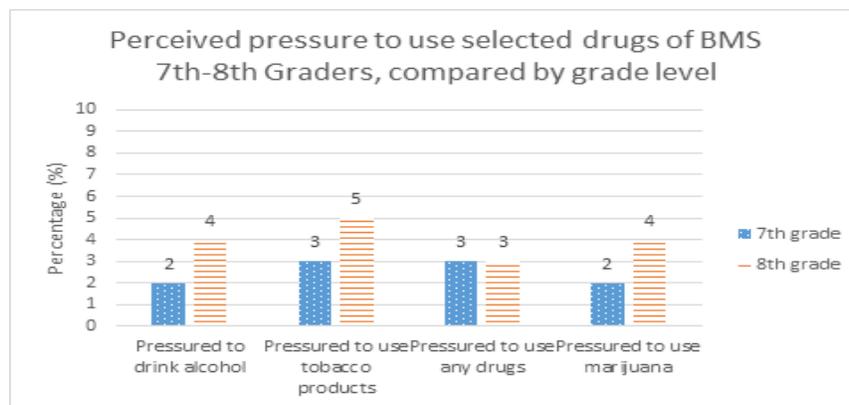
Type of Drug	Fairly or Very Easy to Access
Cigarettes or e-cigarettes	16%
Alcohol	41%
Marijuana	10%
Ritalin, Adderall, Concerta or other amphetamines without a doctor’s prescription	8%
Prescription pain killers in an illegal manner (such as Percocet, Oxycontin or Vicodin)	11%
Any other type of illegal drugs, such as cocaine, LSD, mushrooms, etc.	3%

- As grade level increased, perceived ease of access of each type of drug increased, other than cigarette or e-cigarette and other types of illegal drugs.
- There was an increase from 7th to 8th grade in ease of access of alcohol, marijuana, amphetamines, and prescription painkillers. There was a slightly greater ease of access to cigarettes or e-cigarettes. There was no difference between the grades in ease of access to other types of illegal drugs, such as cocaine, LSD, mushrooms, etc.



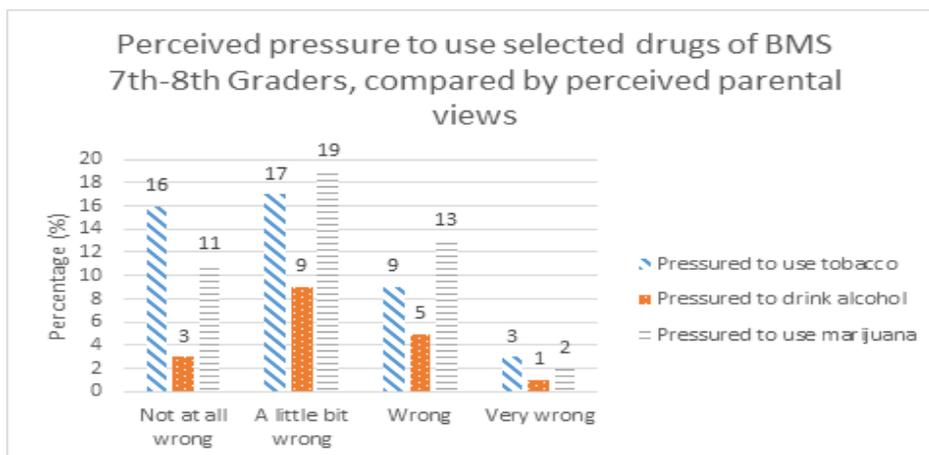
Perception of Pressure to Use

- Two percent of 7th grade students and four percent of 8th grade students reported feeling pressure to use alcohol or marijuana in 2015. Eighth graders reported higher prevalence than seventh graders.
- Three percent of 7th grade students and 5% of 8th grade students felt pressure to smoke cigarettes in 2015, similar to the prevalence in 2013. A higher percentage of 8th graders felt pressure to smoke than 7th graders.
- In 2015, 3% of 7th graders and 3% of 8th graders felt pressure to try any drugs.



Perception of Pressure to Use Compared to Perceived Parental Disapproval

- Student who reported that they perceive parental disapproval experience less pressure to use tobacco, alcohol or marijuana.



Resiliency and Protective Factors

It has been shown that young people who do not become involved in risk behaviors share a common set of characteristics, collectively called resiliency, that enable them to make healthy choices and avoid health risk behaviors. Children can become resilient through the interaction of protective factors found within themselves, their families, their schools, and their communities. Risk and protective factors include variables that operate at different stages of development and reflect different areas of influence, including the individual, family, peer, school, community, and societal levels.^{1,2,3} Strategies to prevent substance use or other risk behaviors generally are designed to reduce the influence of risk factors and enhance the effectiveness of protective factors.

Potential protective factors include academic achievement, a significant relationship with a parent or caregiver, a significant relationship with an adult member of the school community, and involvement in community service. Research has shown that these factors are associated with lower rates of risk behaviors, including emotional distress, suicidal ideation and behavior, violence, substance use, and early sexual initiation.⁴⁻⁷ Also, poor academic performance and classroom behavior have been associated with increased risk of later drug abuse.¹²

In addition, participation in extracurricular activities can positively influence a student's behavior. Compared to their peers, students who participate in extracurricular activities feel more connected to school, and therefore may be less likely to engage in risk behaviors.⁸⁻¹¹

The 2015 BHS Health Survey included several measures of potential protective factors among students. These included: (1) academic achievement, (2) perceived teacher or other adult support (in school or outside of school), (3) participation in volunteer work or community service, (4) participation in organized extracurricular activities, and (5) participation on Brookline High School athletic teams.

References

¹ Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112(1), 64-105.

² Robertson, E. B., David, S. L., & Rao, S. A. (2003, October). Preventing drug use among children and adolescents: A research-based guide for parents, educators, and community leaders (NIH Publication No. 04-4212(A), 2nd ed.). Bethesda, MD: National Institute on Drug Abuse. [Available as a PDF at <http://www.drugabuse.gov/pdf/prevention/RedBook.pdf>]

³ Bellatorre, A., Choi, K., Bernat, D. (2015). The influence of the social environment on youth smoking status. *Preventive Medicine*, 81, 309-313.

⁴ Resnick, M.D., Harris, L., & Blum, R. (1993). The impact of caring and connectedness on adolescent health and well-being. *Journal of Pediatric Child Health*, 29, S3-S9.

⁵ Franke, T. (2000). The role of attachment as a protective factor in adolescent violent behavior. *Adolescent and Family Health*, 1, 40-51.

⁶ Hawkins, J. Catalano, R., Kosterman, R., et al. (1999). Preventing adolescent health risk behaviors by strengthening protection during childhood. *Archives of Pediatric and Adolescent Medicine*, 153, 226-234

⁷ Kopak, A.M., Chen, A.C., Haas, S.A., Gillmore, M.R. (2012). The importance of family factors to protect against substance use related problems among Mexican heritage and White youth. *Drug and Alcohol Dependence*, 124, 34-41.

⁸ Neal, R.B. (1999). Participation in high school extracurricular activities: Investigating school effects. *Social Science Quarterly*, 80, 291-309.

⁹ Mahoney, J.L. (2000). School extracurricular activity participation as a moderator in the development of antisocial patterns. *Child Development*, 71, 502-516.

¹⁰ Northeastern University (2008, March 21). Can Involvement In Extra-curricular Activities Help Prevent Juvenile Delinquency?. *ScienceDaily*. Retrieved March 8, 2012, from <http://www.sciencedaily.com/releases/2008/03/080321174211.htm>

¹¹ Fredricks, J.A., Eccles, J.S. (2006). Is extracurricular participation associated with beneficial outcomes? Concurrent and longitudinal relations. *Developmental Psychology* 42(4), 698-713.

¹² National Institute on Drug Abuse. (2003). Preventing Drug Use among Children and Adolescents. Retrieved December 15, 2015, from <http://www.drugabuse.gov/publications/preventing-drug-abuse-among-children-adolescents/>.

Resiliency and Protective Factors

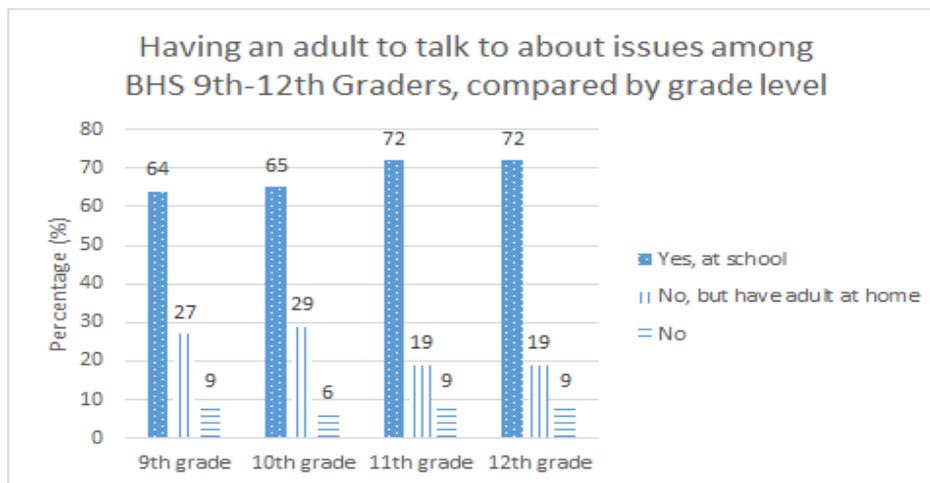
The survey includes questions pertaining to protective factors including, participation in athletics and other physical activity, extra-curricular activities, academic performance, and having an adult to talk to about problems. This report looks at correlations between health risk behaviors and protective factors.

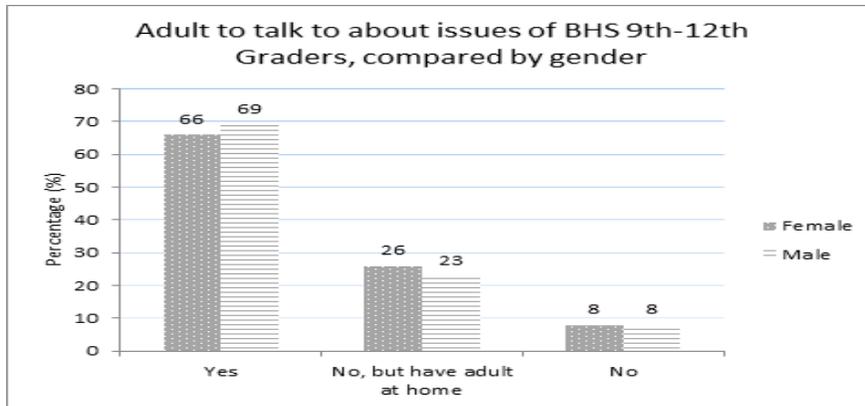
Cross tabulation of the Brookline Youth Health survey suggests that the Brookline data mirrors the research on the positive impact some protective factors have on adolescent risk behaviors, such as maintaining higher grades or having an adult in school or a parent or other adult outside of school to talk with.

However, there were other protective factors recognized in the research that seemed to have little or no protective effect in Brookline, including participation in volunteer work, participation in organized extracurricular activities and participation on school athletic teams. Adolescents' binge drinking, recent alcohol use, lifetime marijuana use, recent marijuana use, and heavy marijuana use were cross-tabulated with the identified protective factors.

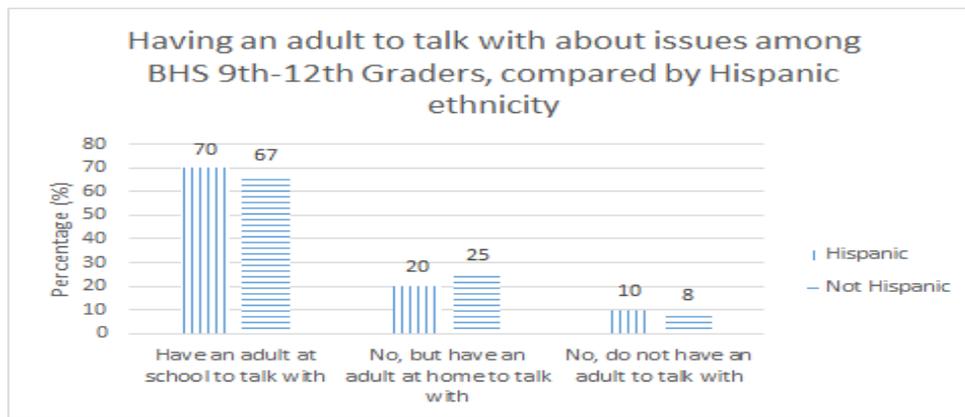
The survey asked students *if they had an adult to talk with about problems either at school, home, both school and home, or no adult.*

- 67% reported that they have at least one teacher or other adult in the school that they can talk to if they have a problem.
- 25% said that they don't have an adult in the school, but said they have a parent or other adult outside of school to whom they can talk
- 8% percent of students said they do not talk with any adult if they have a problem.

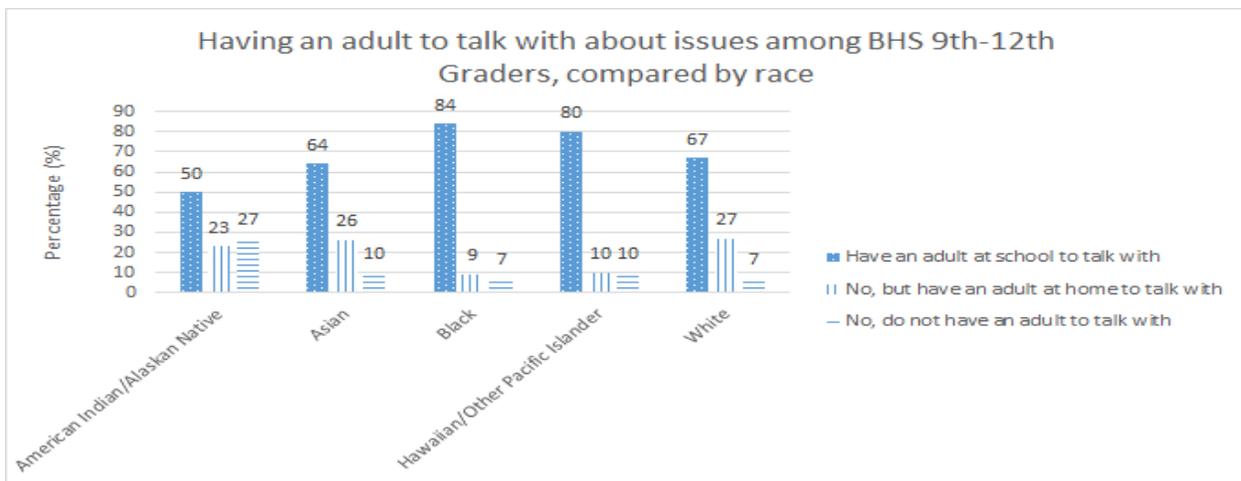




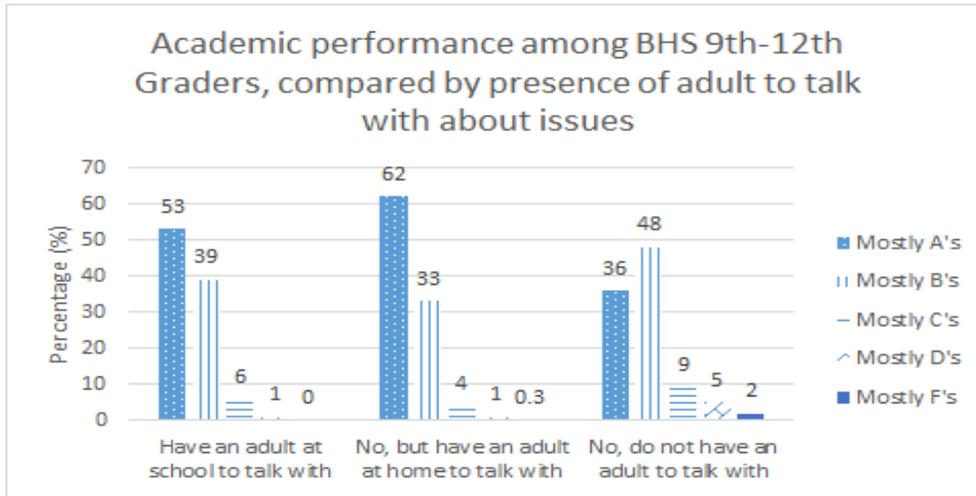
- 70% of those who identified as Hispanic reported having an adult to talk with at school, compared with 67% of those who identified as non-Hispanic.



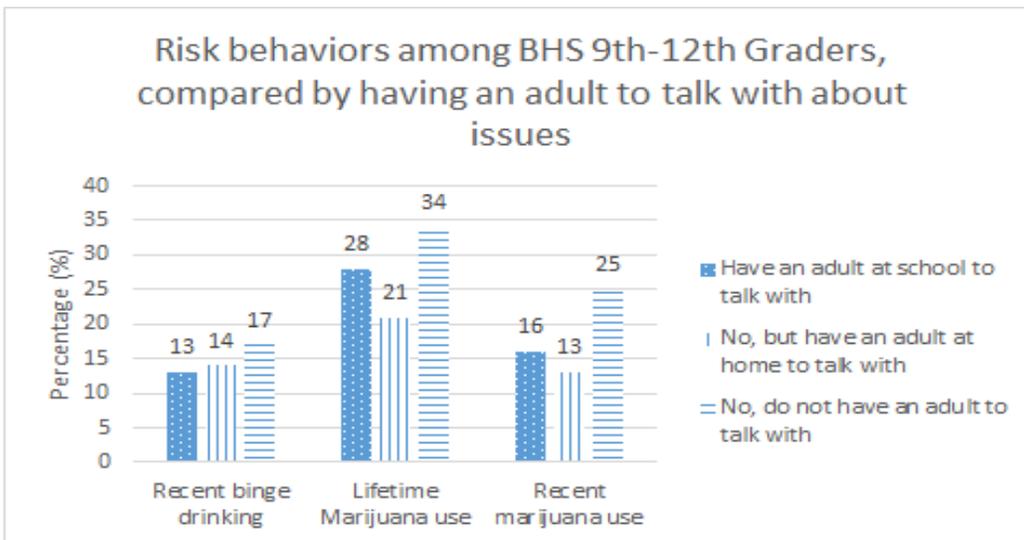
- 50% of those who identified as American Indian/Alaskan native reported having an adult to talk with at school, compared with 64% of those who identified as Asian, 84% of those who identified as black, 80% of those who identified as Hawaiian/Other Pacific Islander, and 67% of those who identified as white.



- Students who reported having an adult to talk with at school or at home reported higher academic performance (mostly A's and B's) as compared to those who do not have adult to talk with at school or home.

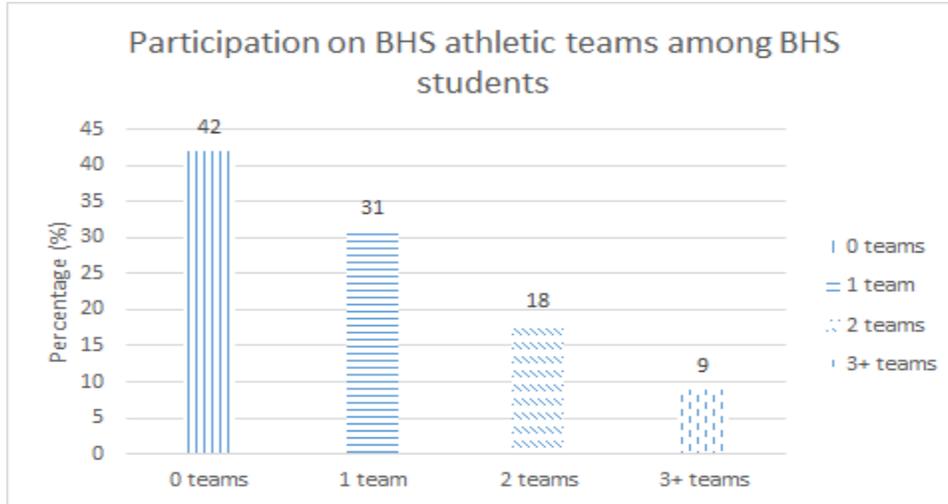


- Those who did not have an adult to talk with at school or home reported higher rates of binge drinking and marijuana use.



Physical Activity

- Fifty-eight percent of BHS students played on at least one school athletic team during the year prior to the survey.

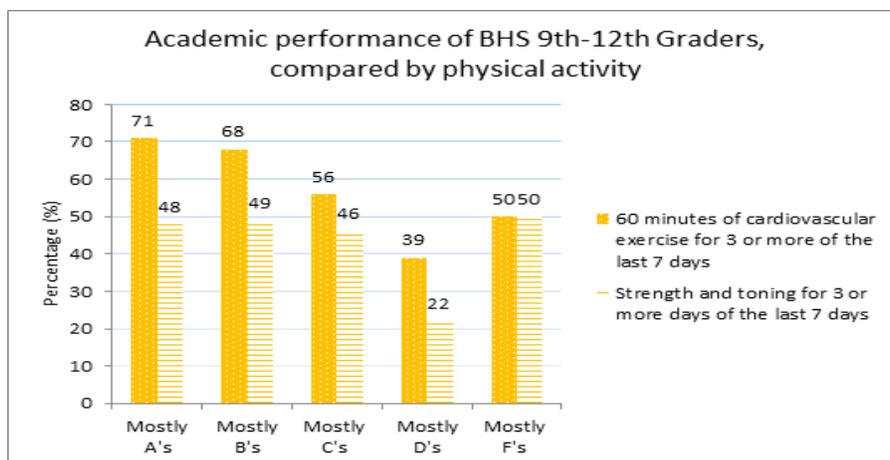


Physical activity

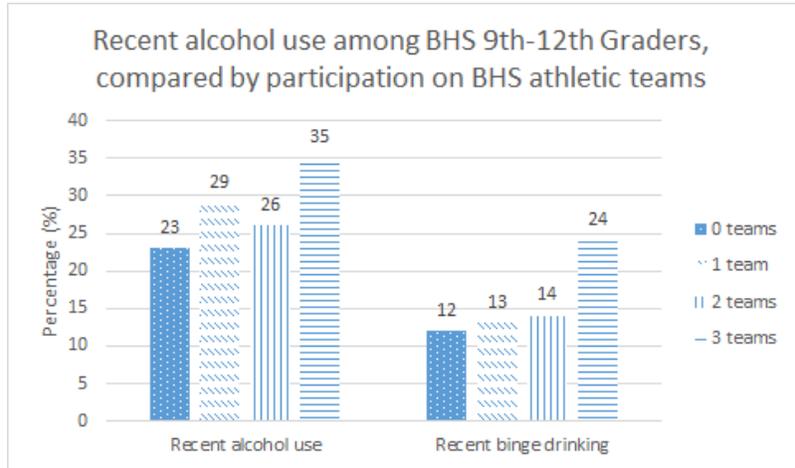
- Students who reported higher rates of physical activity also reported stronger academic performance. Of those who reported mostly A's, 71% reported 60 minutes of cardiovascular exercise for 3 or more of the last 7 days, compared to 39% of those who reported mostly D's and 50% who reported mostly F's.

Strength and toning

- Of those who reported mostly A's, 48% reported 60 minutes of strength and toning exercises for 3 or more of the last 7 days, compared to 22% of those who reported mostly D's and 50% who reported mostly F's.

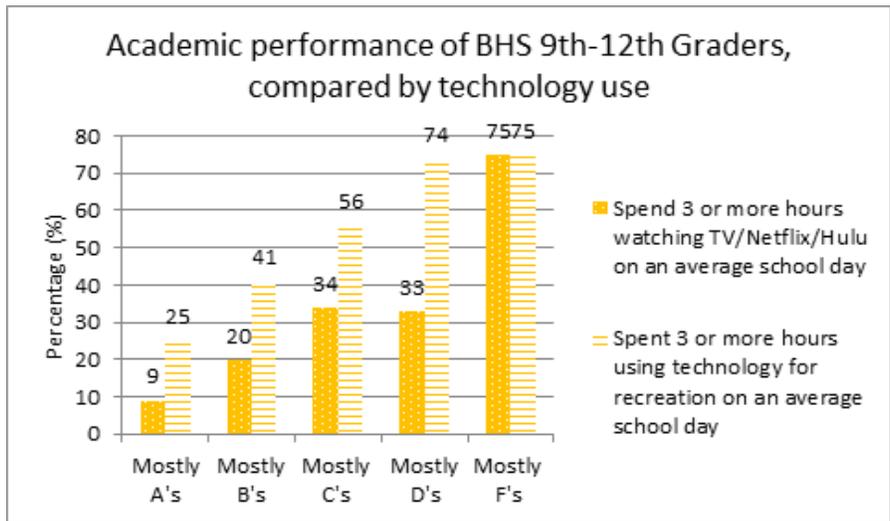


- Participation on an athletic team does not appear to be a protective factor. In fact, students who participated on 3 or more athletic teams had a binge drinking rate twice that of those who did not participate on an athletic team.

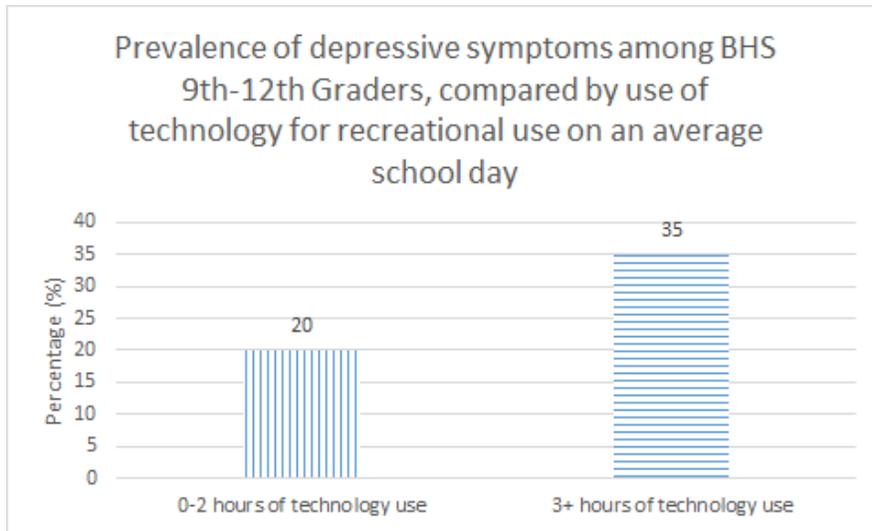


Use of Technology

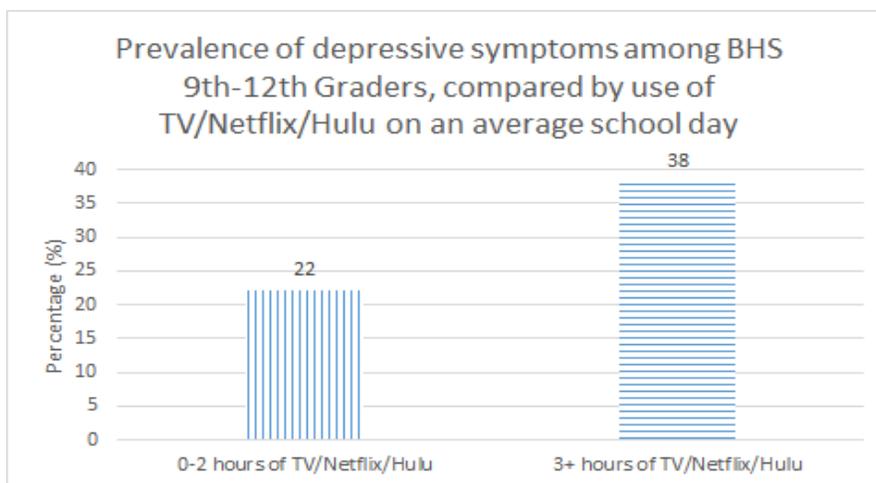
- Students who reported mostly A’s and B’s reported lower rates of technology use and TV/Netflix/Hulu watching on an average school day compared to those who reported mostly C’s and below.



- There appeared to be no correlation between the use of technology for recreational purposes or the numbers of hours spent watching TV/Netflix/Hulu, and student reported levels of stress.

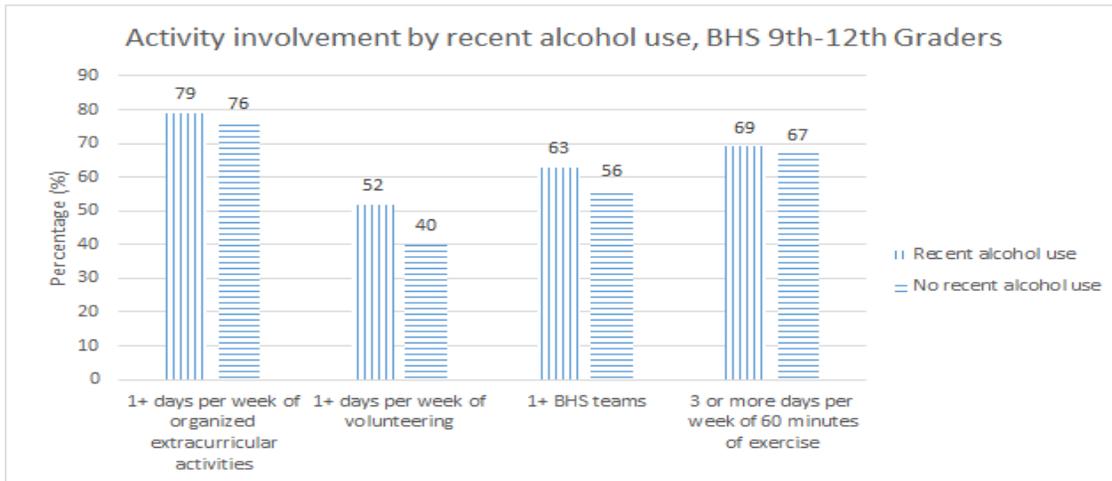


- Those who reported 3 or more hours of technology use for recreational purposes or 3 or more hours of TV/Netflix/Hulu on an average school day had higher rates of depression as compared to those who reported less than 3 hours of such use.

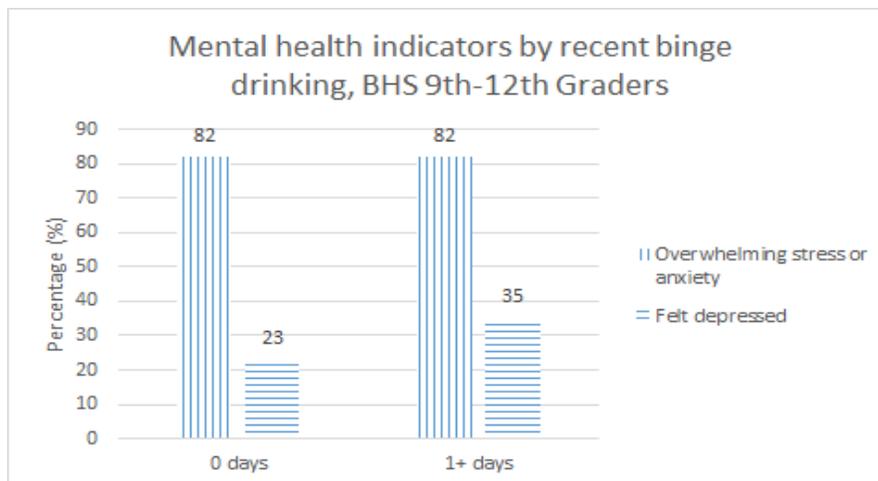


Alcohol use and protective factors

- Seventy-seven percent of students participated in organized extracurricular activities at least one day in week prior to the survey.
- There appears to be no protective factor for recent alcohol use associated with participation in extracurricular activities, volunteering, athletic teams, and exercise.

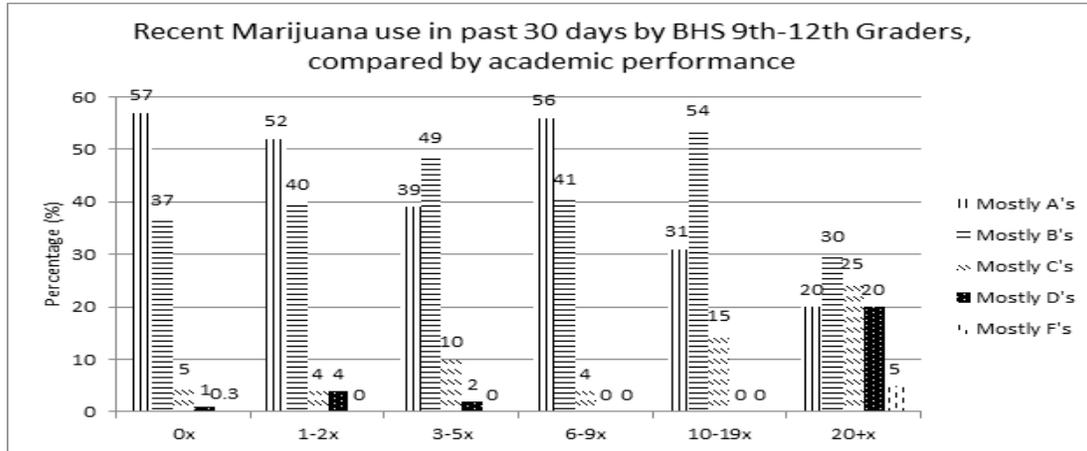


- BHS students who reported recent binge drinking had the same prevalence of overwhelming stress or anxiety as those who reported no binge drinking.
- Those who reported recent binge drinking had higher prevalence of depressive symptoms as compared those who reported no recent binge drinking.

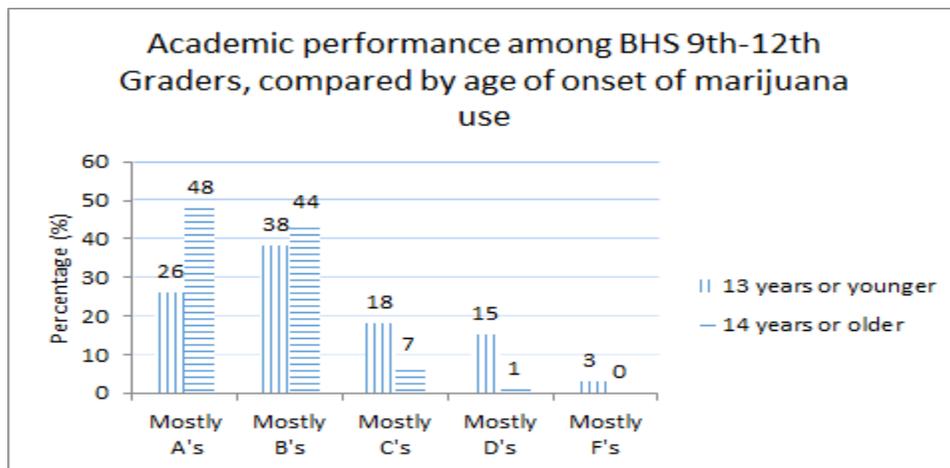


Marijuana use and protective factors

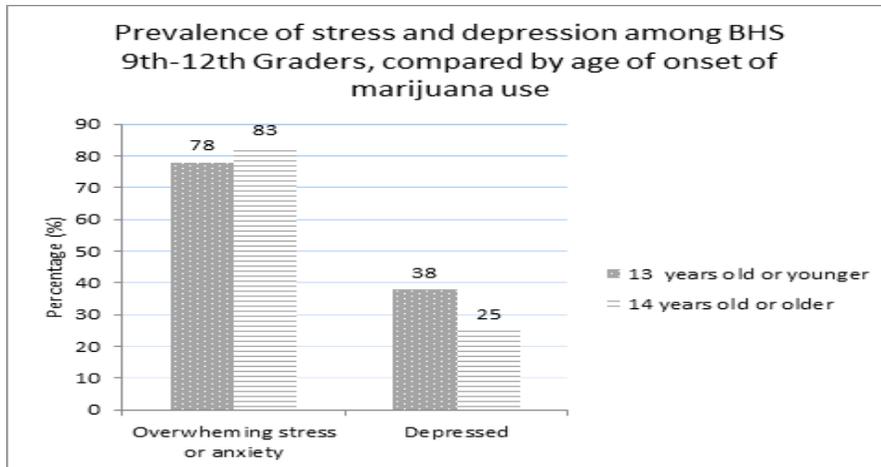
- Students who reported that they had not used marijuana in the past 30 days reported higher levels of academic performance, (mostly A's and B's, 94%). Heavy marijuana users reported significantly lower academic performance (mostly A's and B's, 50%).



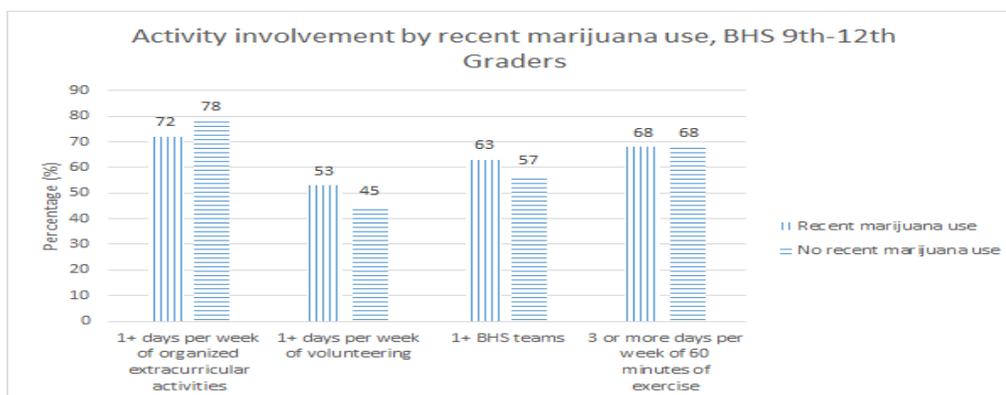
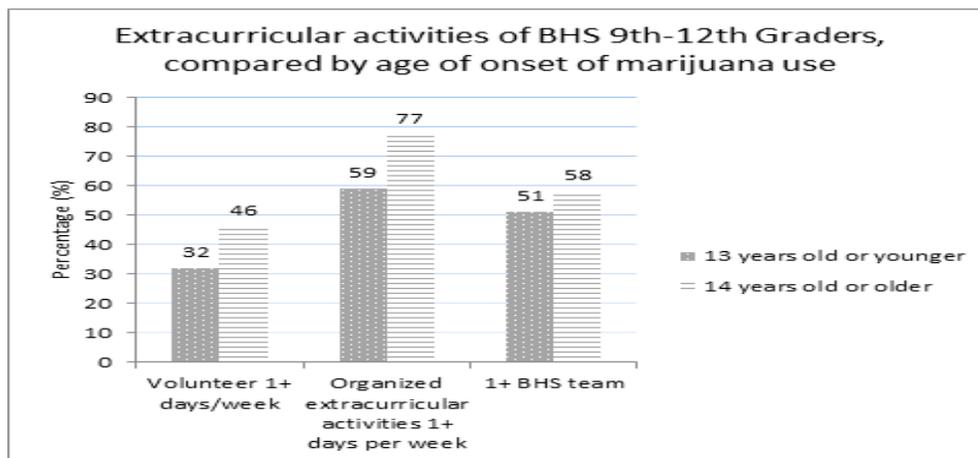
When comparing age of onset of marijuana use in BHS students, those who report starting marijuana at age 13 or younger had lower prevalence of A's and higher prevalence of C's, D's, and F's compared to those started smoking marijuana at age 14 or older.



There does not appear to be any correlation between reported stress and early onset of marijuana use. On the other hand, students who report use of marijuana before age 13 also report higher levels of depression (38%), as compared to those who start at age 14 or older (25%).



Students who started using marijuana before the age of 14 reported lower rates of involvement in extracurricular activities (volunteering, participation in organized extracurricular activities, playing on a sports team). There appears to be no protective factor for recent marijuana use associated with participation in extracurricular activities, volunteering, athletic teams, and exercise.



Appendix A: Report Limitations

The findings in this report are subject to limitations. First, these data apply only to youth who attend Brookline High School and Brookline Middle Schools and participated in the survey. Therefore, the data are not representative of all persons in this age group who live in Brookline. Second, all findings in this report are based on self-reported data. Interpretations of the results should be made with careful consideration of possible biases that may have resulted from the self-reported nature of the data. Despite assurances of confidentiality and requests for honesty, a small number of students may have been inclined to give misleading answers, either overestimating or underestimating their actual behaviors.