



2011



# Healthy Kids Colorado Survey Report

Presented by the Colorado  
Department of Education  
&  
Colorado Coalition  
for Healthy Schools







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## INTRODUCTION AND BACKGROUND

In Colorado, the Healthy Kids Colorado Survey (HKCS) is used to collect information on health related attitudes and behaviors among Colorado youth. This survey is conducted every other year in randomly selected schools as part of the Centers for Disease Control and Prevention's (CDC) Youth Risk Behavior Surveillance System. The HKCS is a self-administered questionnaire that consists primarily of questions from the nationally administered Youth Risk Behavior Survey (YRBS) with additional risk and protective factor questions from the Communities That Care Survey. In 2011, Colorado achieved sufficient participation from selected schools and students that data were able to be weighted and can be considered representative of Colorado students in grades 6-12. Weighted data were also achieved in 2005 and 2009 for high school students (grades 9-12) however, this is the first year for which weighted data on middle school students (grades 6-8) is available. The statewide HKCS effort is funded through the Colorado Department of Education with support from the Colorado Department of Human Services, Division of Behavioral Health and the Colorado Department of Public Health and Environment; and is administered through OMNI Institute. This group is known collectively as the State Survey Coordination Team.



Data collected from this effort are highly valued in Colorado and will be used to:

- Determine the prevalence of health related attitudes and behaviors
- Examine the co-occurrence of health related attitudes and behaviors
- Increase public awareness about issues that impact youth
- Educate leaders to shape effective public policy
- Monitor how health related attitudes and behaviors change over time
- Provide state level data to allow for comparison to local and national level data
- Identify areas for health promotion efforts and prevention programming
- Improve school health education policies and programs
- Bring funding into the state and local communities
- Monitor progress toward achieving national and state health objectives such as Healthy People 2020, the Colorado Winnable Battles<sup>1</sup>, and goals set by other state initiatives

The Healthy Kids Colorado Survey is also available for local communities, districts and schools to administer at the local level to better understand the health related attitudes and behaviors of their students. The HKCS provides important opportunities for communities to obtain meaningful localized surveillance data which can help schools, districts and their surrounding communities assess needs and develop school and district health policies. Survey results may also be used to develop legislation or to support grant writing efforts providing districts with more resources to expand healthy schools. Furthermore, the state level data provides an important comparison point for school districts to understand how they compare

<sup>1</sup>Colorado's Winnable Battles consist of key public health and environmental issues where an impact can be made to improve the health of citizens and to protect the environment. In 2011, Colorado identified ten Winnable Battles to address within the next five years. Each Winnable Battle includes select key indicators; indicators that align with HKCS domains are denoted throughout this report. Winnable Battles information can be accessed at: <http://www.cdphe.state.co.us/hs/winnable.html>

against the state as a whole with regards to student health. These comparisons allow schools, districts and local communities to use data driven decision making to track their success as well as adjust local priorities when needed. The local HKCS is available for administration throughout the school year, and is coordinated through OMNI Institute with support from the Colorado Department of Human Services, Division of Behavioral Health. In 2011 alone, over 65,000 students in 165 schools across 37 school districts voluntarily participated in a local administration of the HKCS.

This report highlights the HKCS results from the statewide administration of the 2011 high school and middle school efforts separately. Preceding these findings, the report provides an explanation of key terms related to data analyses and reporting.

## Explanation of Terms

This report contains a number of key terms related to data analyses and reporting that are described below.

The state HKCS uses a sampling approach in order to achieve representative student data within Colorado. **Sampling** is a way to collect information on a sub-set of a population with the goal of statistically adjusting the results to represent that larger population.

Sampling is often used when it is impractical or impossible to include every person from the larger population in a study; for example, it would be cost-prohibitive to survey every single high school student in Colorado. In these situations, a sampling frame, representing the total population is used to select a sub-set of participants; in this case, schools and students. Assuming high enough participation from the selected schools and students, results can be weighted to be representative of the larger population. All HKCS results presented in this report are based on weighted data. **Weighted data** analysis is a method by which raw survey data (e.g., data collected from Colorado students at public high schools selected to the sample frame) are adjusted to represent the population from which the sample was drawn (e.g., all Colorado public high school students). Adjustments are made according to key demographic characteristics (race, ethnicity, sex and grade); responses are adjusted based on the individual participant's demographic characteristics to align results with the demographic characteristics of the population. For example, if the proportion



of 9th graders in the sample were smaller than the proportion of 9th graders in the population, responses from 9th graders would be weighted more heavily to account for the underrepresentation of 9th graders in the sample. Weighting data in this way increases the likelihood that the results are generalizable to, and can be considered representative of, the larger population.

In order to weight data so that the results are representative of the larger population, the survey **response rate** needs to be sufficiently high. For the YRBS, the CDC sets the response rate at a minimum of 60% in order to weight the data. The overall response rate is calculated by multiplying school participation (the actual number of schools that participated out of the total number that were selected to participate) by student participation (the actual number of students that participated out of the total number of students in selected classrooms). In 2011, Colorado achieved an overall response rate of 67% for the high school sample and 69% for the middle school sample, allowing the data to be reliably weighted.

Throughout this report, results from various statistical tests are presented to indicate significant differences in behaviors over time and between groups. **Logistic regression** analyses were used to test for significant trends in the prevalence of select behaviors surveyed in 2005, 2009 and 2011 (e.g., if the prevalence of smoking increased or decreased significantly over this time period). Trend analyses include weighted data from these three years and control for other variables including sex, race/ethnicity and grade in the population, making the tests sensitive to detecting a statistical difference. In the report, results from a regression analyses are referred to as a "trend



over time”, signaling that all three time points of data were included in the analysis<sup>2</sup>.

**Independent-samples t-tests** were used to make comparisons between two sets of responses, such as two time points (2009 vs. 2011) or comparing Colorado results to national results. This test compares the mean, or average, value of the respondents of one group (Colorado sample) to the mean value of respondents from another group (national sample) for a given item to see if the means are significantly different from one another. Results from a t-test analysis are reported as a “significant difference”, signaling that only two sets of responses were included in the analysis.

**Chi-square tests**, in contrast, used responses that are classified into dichotomous categories (e.g., yes/no, female /male) to test for significant relationships, or associations between two items. These analyses tested whether the observed frequencies of responses in the two categories differed significantly from the frequencies that would be expected if there were no association between the two items. For example, a chi-square test can be used to evaluate whether rates of reported depression differ by sex. If these items are not related, then the frequencies of depression (those meeting criteria vs. those who do not) are expected to be about equal for males and females. If depression is associated with sex, then the frequency of depression reported by males would be significantly lower than the frequency of depression reported by females, or vice versa. In this report, chi-square analyses are presented to test for differences in reported behaviors between males and females, between select race/ethnicities, as well as to test for statistical associations between select behaviors and experiences (e.g., substance use

and grades in school<sup>3</sup>). It is important to note that these analyses cannot be used to tell if a relationship between variables is causal; they can only be used to tell whether two variables are associated. For example, if chi-square results indicate a relationship between watching 3 hours of television a day and eating vegetables, this does not mean that watching TV caused students to eat more vegetables, just that students who report frequent TV watching were also more likely to report eating vegetables.

All of these analyses tested whether differences in responses were statistically significant. **Statistical significance** simply means that an observed difference in the sample data is probably not due to chance alone, but reflects a true difference that exists in the population. For a given item, if the prevalence of one behavior is 65.0% for males and 68.0% for females, this difference of three percentage points could reflect a true difference between males and females in the population, or the difference could simply reflect chance variation between males and females in this particular sample that does not exist in the population from which the sample was drawn. For this reason, researchers report **probability values**, or **p-values**, along with their results. These values reflect the probability that an observed difference in the sample does not exist in the population. By convention, researchers use a probability value of .05 or 5% as the cut-point for statistical significance. A p-value less than .05 means the probability that the difference observed in the sample is due to chance is less than 5%. Researchers tend to think that differences with a p-value greater than .05 are too likely to have been due to chance rather than a real difference in the population, therefore they do not consider these differences to be statistically significant. Throughout this report, statistical significance is noted when p-values are less than .05. In addition, **95% confidence intervals**, indicated by the bracketed lines in each bar in the graphs, are included. These values represent the upper and lower limits of what one could confidently expect to be the true percentage values in the population. In other words, if the survey were administered to 100 samples of youth, one would expect that 95% of the time, or for 95 samples, the prevalence of a given behavior or experience would fall between the upper and lower limits of the 95% confidence interval.



<sup>2</sup>All regression results were provided by the CDC, and can be accessed online at <http://apps.nccd.cdc.gov/youthonline/App/Default.aspx>.

<sup>3</sup>Chi-square analyses were conducted by OMNI Institute and values may vary by a small percentage from values obtained from the CDC due to slight differences in the methods used to test statistical significance. In this report, significance was based on the chi-square result in the event of a discrepant finding.

A frequently overlooked issue has to do with whether a difference is **meaningful** beyond being simply statistically significant. That is, even small differences can be **statistically significant** but have little **practical significance**. For example, if there is a statistically significant increase in a reported behavior, but that behavior is only reported by 2% of the total population, addressing that behavior may be less important than addressing a non-significant change in an unhealthy behavior that is reported by 60% of the population. Therefore, this report examines whether a difference is statistically significant and, if so, the size of the difference is also assessed to decide whether the divergence between sets of responses is meaningful.



## Colorado and National Youth Risk Behavior Survey Participants

On a biennial basis, the Centers for Disease Control and Prevention (CDC) randomly selects approximately 40 public high schools across Colorado to administer the Healthy Kids Colorado Survey (HKCS). As described in the explanation of terms section, random sampling allows the state to gather data from a subset of students and weight their results such that they are representative of all Colorado public high school students. In the fall of 2011, a total of 1,523 students from 33 out of the 40 selected public high schools throughout Colorado participated in the HKCS. The school response rate was 83% and student response rate was 81% yielding an overall response rate of 67% which allowed the data to be reliably weighted.

This means that results can be generalized to the underlying population of all public high school students in Colorado. Given that results are weighted, findings for 2011 are able to be compared to results from 2009 and 2005, which also achieved weighted data. Results from the 2007 administration did not achieve high enough participation to reliably weight the data and are therefore not presented as a comparison in this report.

In addition to the 2011 Colorado administration of the HKCS, the high school version of the YRBS was also conducted nationally in 42 different states and 21 large urban school districts. Over 15,000 students participated in the national survey, allowing the national data to be weighted and considered representative of all high school students in the U.S. (Table 1). These data provide a useful comparison to the 2011 Colorado data and help illuminate where Colorado students may be healthier or at greater risk than their national peers.

The number of students who completed the Colorado high school version of the HKCS increased slightly across the years for which weighted data is available (2005, 2009 and 2011), and the overall response rates over time have increased substantially. Participation rates at both the school and student levels impact the overall response rate. The Centers for Disease Control and Prevention sets a minimum response rate of 60% in order to weight the data and consider it representative of public high school students.

**Table 1: Colorado HKCS and U.S. YRBS Participation in 2005, 2007 and 2011**

HKCS Survey Module	2005		2009		2011	
	N	Overall Response Rate	N	Overall Response Rate	N	Overall Response Rate
Colorado High School HKCS	1,498	60%	1,511	62%	1,523	67%
National High School YRBS	13,917	67%	16,410	71%	15,425	71%



## HKCS Instrument and Key Domains

The high school version of the HKCS administered in the fall of 2011 marked the first time that Colorado used a single consolidated HKCS instrument. In prior years, the HKCS included two separate state modules, one containing YRBS questions, and the other containing risk and protective factor questions from the Communities That Care Survey. Administration of these two modules required that a double sample of classes within selected schools participated such that each module had high enough student participation. Starting in the summer of 2010, the State Survey Coordination Team began working to consolidate the HKCS modules in order to streamline administration efforts but still meet the needs of multiple initiatives. In 2009, Colorado was unsuccessful in obtaining weighted data on the risk and protective factor module, and neither module achieved weighted data in 2007. Consolidation into one instrument was driven by many factors, including increasing the likelihood that weighted data on all HKCS questions would be obtained in any given year. Other reasons for consolidating the HKCS into one instrument included: minimizing the burden on schools that may be asked to participate in multiple surveys; ensuring that multiple data collection efforts were successful in obtaining the data required by funders; and allowing for data that is directly comparable between the state and schools and districts that participate in a local administration of the HKCS. The consolidated instrument contains questions that fall in the following domains:

- Physical Activity, Nutrition and Health
- Alcohol, Tobacco and Other Substance Use
- Personal Safety, Unintentional Injuries and Violence
- Mental Health
- Sexual Health
- School, Family and Future Aspirations

In the following sections, demographic information on the high school weighted sample is presented followed by the 2011 HKCS results. Comparisons to 2009 and 2005 are presented wherever possible as well as a discussion of any significant differences or similarities with the 2011 national data to better understand how Colorado youth compare to the nation in health behaviors. This is followed by a presentation of statistically significant differences between different demographic subpopulations within the state (e.g., gender and race/ethnicity). Following the prevalence sections, statistically significant associations or relationships between selected behaviors measured by the survey are presented. Finally, results on risk and protective factor prevalence and significant associations linking risk and protective factors with other health behaviors are discussed. Risk and protective factors are the characteristics that increase or decrease, respectively, the likelihood that youth will engage in unhealthy behaviors. This is the first year for which Colorado has weighted data on risk and protective factors.







## HEALTHY KIDS COLORADO SURVEY: HIGH SCHOOL RESULTS



*High School  
Results*

### Demographics

Results from the HKCS were weighted to be reflective of the statewide student enrollment in Colorado public high schools. This yielded a weighted sample that reflected slightly more males than females, a majority of White students (with a sizeable proportion of Hispanic/Latino students), and somewhat more students from early high school grade levels (i.e., 9th and 10th grade) than later grade levels. As described in the Explanation of Terms section, weighting data is a process by which the demographic characteristics of the HKCS participants are compared to the population they were designed to represent (all Colorado public middle school students). Responses are then adjusted to align the respondent population with the true population. This means that demographic groups that were under-represented in the HKCS survey may be weighted more heavily (inflated) in the final dataset. These adjustments can be seen in the tables below in cases where the number of respondents does not match

to the weighted percentage in the final dataset. The demographics of Colorado's enrolled student population and the distribution within the sample are examined further below.

### Participation by Gender

The gender distribution of survey respondents (Table 2) closely mirrors the gender distribution of both the overall Colorado school enrollment as well as the 2009 and 2005 samples. In Colorado, the gender distribution for all public high school students for the 2011 school year was 51.05% male and 48.95% female, very similar to the gender distribution for the weighted 2011 sample<sup>4</sup>.

**Table 2: HKCS Participation by Gender**

Sex	2005 HKCS		2009 HKCS		2011 HKCS	
	N	Weighted %	N	Weighted %	N	Weighted %
Male	786	50.9	721	51.3	767	51.0
Female	700	49.1	784	48.7	712	49.0
Missing	12	N/A	6	N/A	44	N/A
<b>Total</b>	<b>1,498</b>	<b>100.0</b>	<b>1,511</b>	<b>100.0</b>	<b>1,523</b>	<b>100.0</b>

<sup>4</sup>Colorado Department of Education, Fall 2011 Pupil Membership, <http://www.cde.state.co.us/cdereval/rv2011pmlinks.htm>.

## Participation by Race/Ethnicity

Statewide, a majority of students identified as White (58.8%) and over one-quarter (29.1%) identified as Hispanic/Latino for the 2011 school year<sup>5</sup>. The 2011 HKCS data were weighted such that a majority of students were White, with Hispanic/Latino students comprising slightly over one-quarter of the sample (Table 3).

The percentage of students who participated in the HKCS by racial/ethnic group matches what would be expected based on the demographic profile of Colorado students. The number of participating Hispanic/Latino students was large enough to permit statistical comparisons to non-Hispanic White students on self-reported health behaviors. Statistically significant differences between these two subgroups are noted throughout the section on demographic trends. The number of participants

from other racial/ethnic groups was too low (below 100) to facilitate generalizable comparisons. For this reason, these estimates are not presented in the report. In order to allow for comparisons among additional racial/ethnic groups, these populations would need to be over-sampled in future surveillance efforts.

## Participation by Grade Level

The grade-level distribution within the sample was skewed somewhat by grade, as there were more 9th grade respondents than any other grade, and the percentage of respondents generally decreased as grade level increased. Statewide public school enrollment for the 2011 school year had a 9th, 10th, 11th, and 12th grade-level distribution of 25.6%, 24.9%, 24.2% and 25.2%, respectively<sup>6</sup>. Therefore, HKCS data were weighted to more closely mirror this distribution (Table 4).

**Table 3. HKCS Participation by Race/Ethnicity**

Race/Ethnicity	2005 HKCS		2009 HKCS		2011 HKCS	
	N	Weighted %	N	Weighted %	N	Weighted %
White*	1004	68.3	912	66.2	883	61.2
Hispanic/Latino	308	23.2	367	23.1	385	26.9
Black*	49	5.8	74	6.1	49	5.2
All other races*†	81	1.8	79	2.6	59	3.3
Multi-Racial**	49	1.0	66	2.0	65	3.5
Missing	7	N/A	13	N/A	82	N/A
<b>Total</b>	<b>1,498</b>	<b>100.0</b>	<b>1,511</b>	<b>100.0</b>	<b>1,523</b>	<b>100.0</b>

\*Not Hispanic;

†Racial/ethnic categories with fewer than 50 respondents including Asian, Native Hawaiian/Pacific Islander and American Indian/Alaska Native;

\*\*Individuals who identified as more than one race. According to CDC guidelines, students who are multi-racial and Hispanic are counted as Hispanic/Latino.

**Table 4. HKCS Participation by Grade**

Grade Level	2005 HKCS		2009 HKCS		2011 HKCS	
	N	Weighted %	N	Weighted %	N	Weighted %
9th	521	28.5	452	27.5	422	26.2
10th	479	25.5	381	25.5	373	25.4
11th	303	23.6	406	24.1	385	24.1
12th	183	22.4	264	22.7	301	24.1
Ungraded/Other*	0	0.0	2	0.1	3	0.2
Missing	12	N/A	6	N/A	82	N/A
<b>Total</b>	<b>1,498</b>	<b>100.0</b>	<b>1,511</b>	<b>100.0</b>	<b>1,523</b>	<b>100.0</b>

\*The Ungraded/Other category represents students who did not indicate a grade level.

<sup>5,6</sup>bid.



## Prevalence Rates

This section of the report displays prevalence rates, or the proportion of students who reported a given behavior, for each of the major behavior domains measured by the HKCS. In addition to the 2011 prevalence, significant trends over time (2005 to 2011), differences between survey years (2009 and 2011) as well as differences compared to the nation are noted<sup>7</sup>. Differences described in the following sections represent *statistically significant* differences ( $p < .05$ ). If a statistically significant difference was not found, the narrative states that there was no difference.

## Physical Activity, Nutrition and Health

Students were asked about a variety of health behaviors including questions that measure frequency of physical activity, participation on sports teams, watching television and video game/computer use. The HKCS also asked students about their perception of their own weight and whether they are trying to lose weight. Nutrition questions measured dietary behaviors including the consumption of fruits and vegetables and how often students ate breakfast and drank soda.

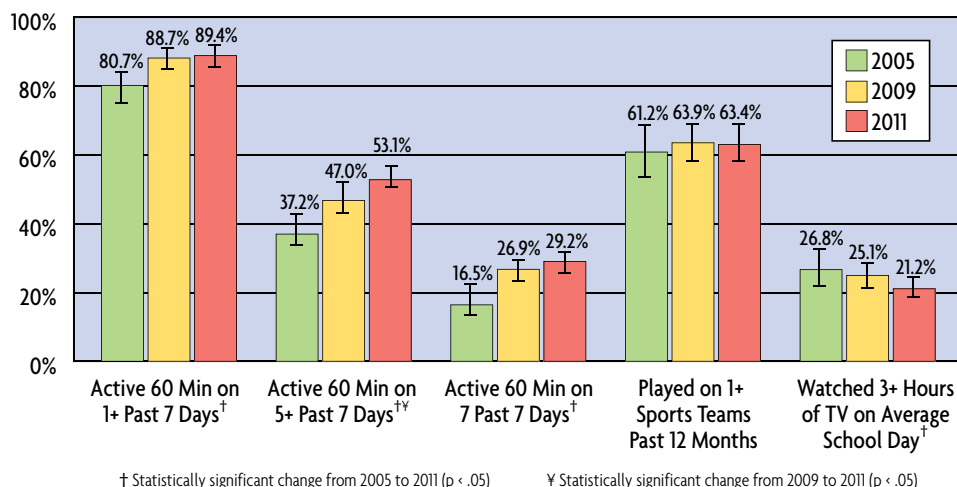
Close to 90% of Colorado students reported participating in some physical activity (at least 60 minutes for 1 or more of the past 7 days) in the week prior to the survey, and over 60% reported playing

on a sports team in the past year. As shown in Figure 1, Colorado students showed an increasing trend in physical activity from 2005 to 2011. This was true for any activity (60 minutes for at least 1 day out of the past 7 days), moderate activity (60 minutes on 5+ days of the past 7 days), and daily activity (60 minutes on 7 of the past 7 days).

Compared to the nation, Colorado students were more likely to engage in any physical activity (at least 60 minutes for 1 or more of the past 7 days) in the week prior to the survey (86.2% nationally), but did not differ from the nation in the amount of activity (60 min. of activity on 5+ or all 7 days of the past week). Throughout this report, students who participated in at least 60 minutes of physical activity on all 7 of the past 7 days is used as the primary benchmark for physical activity. This matches the CDC's recommendations for physical activity for youth in grades 9-12<sup>8</sup>.

Colorado students were asked how much time they spend watching television or playing video games on an average school day. A total of 21.2% of students reporting watching three or more hours of television on an average school day in 2011, a decreasing trend in television use from 2005 (Figure 1). A slightly higher percentage of students (24.1%) reported playing video games or using the computer for non-school related activities on an average school day in 2011. Video game and computer use showed a statistically significant increase compared to 2009 (18.4%)<sup>9</sup>. Compared to the nation, students

Figure 1: HS Prevalence of Behaviors Related to Physical Activity in 2005, 2009 and 2011



<sup>7</sup>National data and national vs. state level comparisons can be accessed from CDC's Youth Online interactive tool: <http://apps.nccd.cdc.gov/youthonline/App/Default.aspx>

<sup>8</sup><http://apps.nccd.cdc.gov/cdi/IndDefinition.aspx?IndicatorDefinitionID=3>

in Colorado were statistically less likely to report watching TV for 3 or more hours on an average school day (32.4% nationally) or playing video or computer games for 3 or more hours on an average school day (31.1% nationally).

Figure 2 shows comparisons of students' weight classifications. Youth overweight and obesity represents a key area in Colorado's Winnable Battles campaign<sup>10</sup>. Based on Body Mass Index (BMI), less than 20% of students were classified as either overweight or obese in 2011<sup>11,12</sup>. In comparison, nearly 25% of students perceived themselves as slightly or very overweight, and 39.6% of students reported that they were currently trying to lose weight. While there was no change in the percentage of students that were classified as overweight in comparison to prior years, there was a significant decreasing trend in the prevalence of obesity.

In 2011, Colorado students were statistically less likely to be overweight or obese based on BMI compared to the nation (15.2% overweight and 13.0% obese nationally). Additionally, Colorado students were less likely to perceive themselves as overweight or obese than students in the nation (29.2%)<sup>13</sup>.

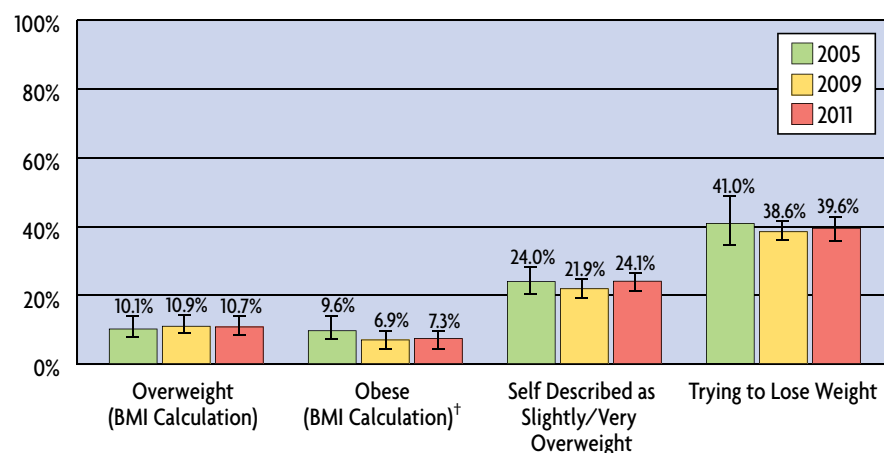
The HKCS also asked students about dietary habits to assess students' general nutrition. In 2011, Colorado made several updates to the questions on diet. These

updates included collapsing questions that asked about individual vegetable consumption to a single question about all vegetables and included a new question about how often students ate breakfast. Because of these changes, trends in nutrition are not graphed in this section as several variables do not have comparable data from past years.

Overall, over 90% of Colorado students reported eating any fruit and vegetables (ate fruit/vegetables at least 1 time in the past 7 days). Colorado students were more likely to report eating any fruit compared to students nationally (88.3%). A total of 15.5% of Colorado youth reported eating 5 or more servings per day of fruits and vegetables during the past week (Figure 3).

Colorado students were also asked about drinking soda (not including diet soda) and eating breakfast. In 2011, 75.8% of students reported drinking soda at least once in the past 7 days, and 23.0% reported drinking soda one or more times per day. There was no difference in any soda consumption (at least one soda in the past 7 days) compared to students nationally, however Colorado students were less likely to report drinking 1 or more sodas per day compared to the nation (27.8%). Finally, a total of 39.1% of Colorado students reported that they ate breakfast on all 7 days in the past week<sup>14</sup>.

**Figure 2: HS Prevalence of Overweight, Obesity, Perception of Weight and Weight Loss Behavior in 2005, 2009 and 2011**



<sup>10</sup>-The Colorado Winnable Battles target is to decrease the percentage of 9th-12th graders who are overweight or obese to 17% by 2016.

<sup>11</sup>BMI is calculated based on students' self-reported height and weight. For the purposes of this report, overweight refers to students in the 85th-95th percentile for BMI and obese refers to students above the 95th percentile. BMI calculations control for age, race and gender.

<sup>12</sup>In 2011, the CDC changed the way that weight was calculated. Students were no longer required to bubble in the leading zero for weight. In the past, the weight from a student who bubbled in "9" and then "8" for their weight without bubbling in the leading "0" would have been edited out. CDC now assumes a leading "0" so that student gets a weight of 98 pounds. This led to a slight revision in the prevalence of overweight and obese for 2005 and 2009 and percentages may not match prior reports.

<sup>13</sup>The national version of the survey did not ask about trying to lose weight therefore a comparison is not available.

<sup>14</sup>This question does not have comparable data at the national level or over time.



Figure 3: HS Prevalence of Behavior Related to Nutrition (Past 7 Days) in 2011

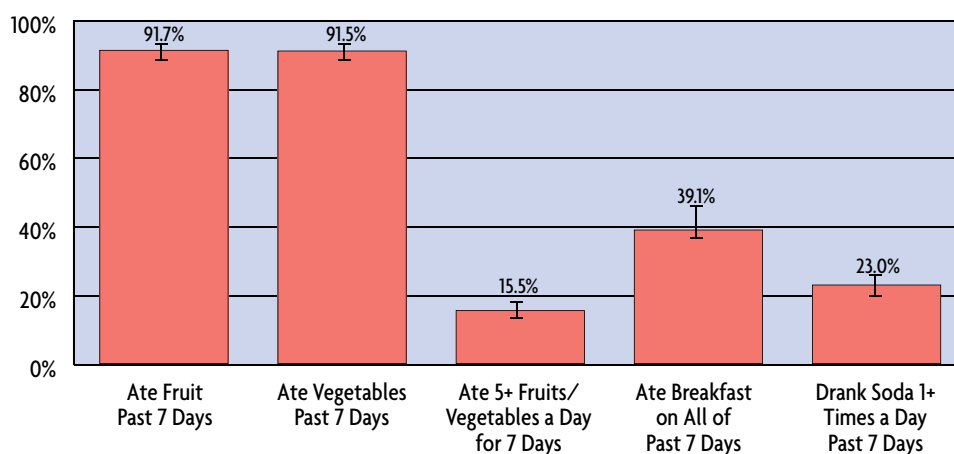
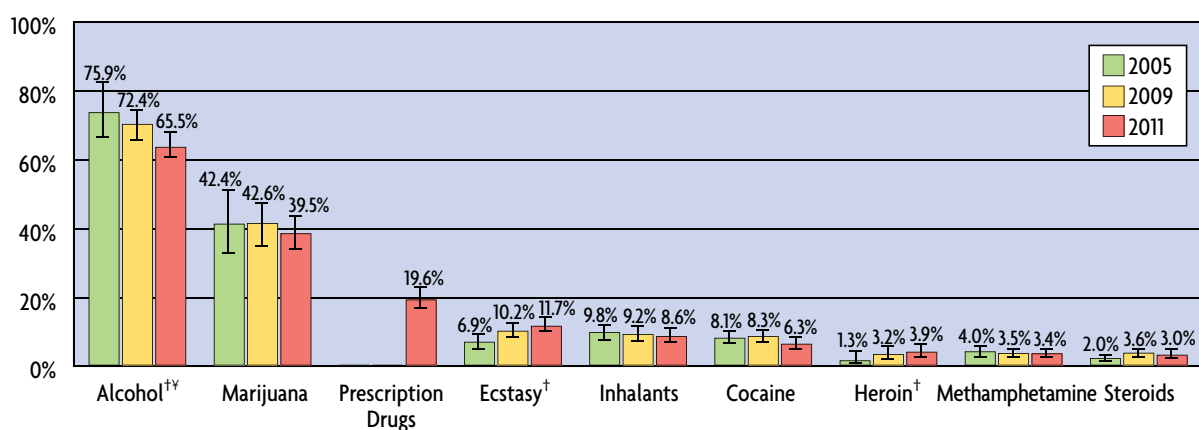


Figure 4: HS Prevalence of Lifetime Substance Use in 2005, 2009 and 2011



<sup>†</sup> Statistically significant change from 2005 to 2011 ( $p < .05$ )

<sup>‡</sup> Statistically significant change from 2009 to 2011 ( $p < .05$ )

## Alcohol, Tobacco and Other Substance Abuse

Students were asked to report how many times they have used various illicit substances in their lifetime (ever used) as well as in the 30 days prior to the survey (current use). In 2011, Colorado added additional questions to the substance use section to better understand some of the factors that may influence youths' decisions to use different substances. These factors, such as perceived peer substance use, communication with parents about substance use, perceived risk of use and perceived access are presented for the first time in this report<sup>15</sup>.

Figure 4 shows the prevalence of lifetime substance use among Colorado youth in 2005, 2009 and 2011. In all three administrations, the most commonly reported substance was alcohol, followed by

marijuana. In 2011, Colorado added a question about prescription drug use, which asked if youth have ever taken a prescription drug (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin or Xanax) without a doctor's prescription. The 2011 HKCS results indicate that prescription drug misuse was the third most commonly reported substance, excluding cigarettes<sup>16</sup>, with 19.6% of Colorado high school youth reporting use of prescription drugs. At a much lower rate, Colorado youth also reported use of ecstasy, inhalants, cocaine, heroin, methamphetamine and non-prescription steroids in their lifetime.

In general, reported lifetime substance use has remained relatively stable over time, however there have been a few significant changes. First, students were less likely to report lifetime alcohol use, with a significant decreasing trend from nearly 76% in 2005 to less than 66% in 2011. In contrast, there

<sup>15</sup>These data do not have comparable data points at the national level or over time.

<sup>16</sup>The 2011 HKCS instrument did not ask about lifetime cigarette use.

were increasing trends in the use of ecstasy and heroin from 2005 to 2011. Although these results were statistically significant, it is important to note that a relatively small percentage of students overall reported lifetime use for these substances, compared to a much larger percentage of students who report use of alcohol and marijuana.

Compared to national results, Colorado students were *less* likely to report lifetime alcohol (70.8% nationally) and inhalant (11.4% nationally) use. However, Colorado students were *more* likely to indicate ecstasy use compared to students nationally (8.2%). Colorado was not different than the nation for lifetime use of other substances.

In addition to lifetime use, students were asked to report current use (30 days prior to the survey) for a subset of substances including alcohol, cigarettes and other tobacco products, and marijuana. Additionally, more detailed questions related to age of first use, frequency of use, and access were asked for select substances. Current alcohol use, specifically binge drinking, as well as current cigarette use represents key areas in Colorado's Winnable Battles campaign<sup>17</sup>.

The most common substances that students reported using in the 30 days prior to the survey were alcohol, marijuana and cigarettes. Figure 5 illustrates the percentage of youth reporting current use for these substances in 2005, 2009 and 2011. Similar to lifetime use, the prevalence of alcohol use and binge drinking showed a significant decreasing trend from 2005 to 2011. Likewise, the prevalence of chewing tobacco use in the last 30 days was significantly lower in 2011 compared to 2009. Past 30 day use of cigarettes and marijuana did not differ significantly over time.

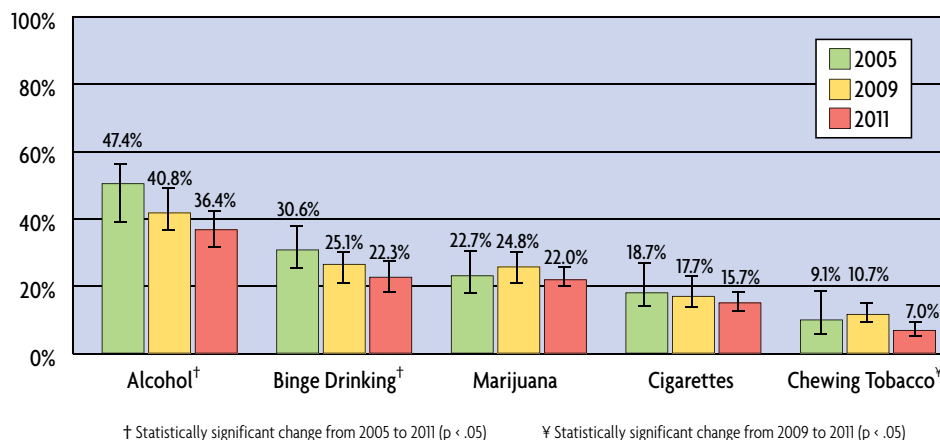
Nationally, students exhibited similar rates of substance use. There were no differences in 30 day use for any reported substances between students in Colorado and the rest of the nation.

Students were also asked about their use of substances on school property. In 2011, a total of 5.3% of youth indicated that they had drank alcohol on school property in the past 30 days, while 6.0% reported that they used marijuana on school property. There was no change in the prevalence of these behaviors over time, and no differences compared to the national sample of students. In 2011, a total of 17.2% of students reported that they had been offered, sold, or given an illegal drug by someone on school property in the 12 months prior to the survey, which was a significant decrease from 2009. Furthermore, Colorado students were statistically less likely to report being offered, sold or given an illegal drug on school property compared to students nationally (25.6%).

Students were asked additional questions related to age of first use, access to substances, and frequency of use for select substances presented above. A total of 8.9% of Colorado youth reported smoking a whole cigarette before age 13, which was a significant decrease from 12.3% in 2005. In 2011, the majority of students reported that they obtained cigarettes through borrowing or bumming them (27.6%), followed by someone else buying them (27.4%) or buying them in a store or gas station (19.2%).

Similarly, 9% of Colorado youth reported trying marijuana for the first time before age 13<sup>18</sup>. In 2011, the subset of students who reported past 30 day marijuana use indicated that they got their marijuana by someone giving it to them (39.6%), followed by some other way (30.9%). Of these students, the vast majority indicated that they used marijuana by smoking it (88.7%).

Figure 5: HS Prevalence of Past 30 Day Substance Use in 2005, 2009 and 2011



<sup>17</sup>The Colorado Winnable Battles targets are to decrease the percentage of 9th – 12th graders who report binge drinking in the past 30 days to 20%, and to reduce the percentage of adolescents who are current smokers to 16% by 2016.

<sup>18</sup>This question was not asked on prior HKCS surveys, therefore comparisons to prior years cannot be made.



Students were less likely to report drinking alcohol for the first time before age 13 in 2011 (19.4%) compared to 2005 (27.1%), though a much larger percentage of students tried alcohol before age 13 compared to cigarettes or marijuana. In 2011, the majority of students who reported current alcohol use reported that they accessed alcohol by someone giving it to them (36.9%), followed by giving someone money to buy it for them (33.7%). This subset of students also indicated that when they drank, they usually drank alcohol at another person's home (65.7%) or at their own home (21.6%) during the past year.

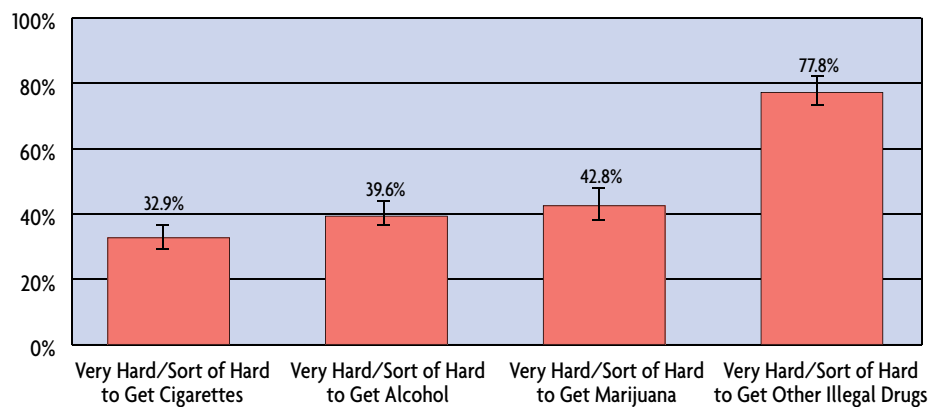
As noted above, several additional questions related to substance use were also asked on the 2011 survey. The following section outlines key findings across the three most commonly reported substances (alcohol, marijuana and cigarettes). First, students were asked about how easy it would be for them to get cigarettes, alcohol, marijuana or other drugs. As shown in Figure 6, students felt that cigarettes were the easiest substance to access. As expected, students perceived that it was much harder to access other illegal drugs compared to cigarettes, alcohol and marijuana, which may be one factor that influences the likelihood of use.

Students were also asked how much people risk harming themselves (physically or in other ways) if they smoke cigarettes, use alcohol, or use marijuana. As shown in Figure 7, almost the opposite trend from ease of access is seen. Students perceive that smoking cigarettes has the greatest risk of harm, followed by alcohol use and marijuana use. Of particular interest is that only 37.4% of high

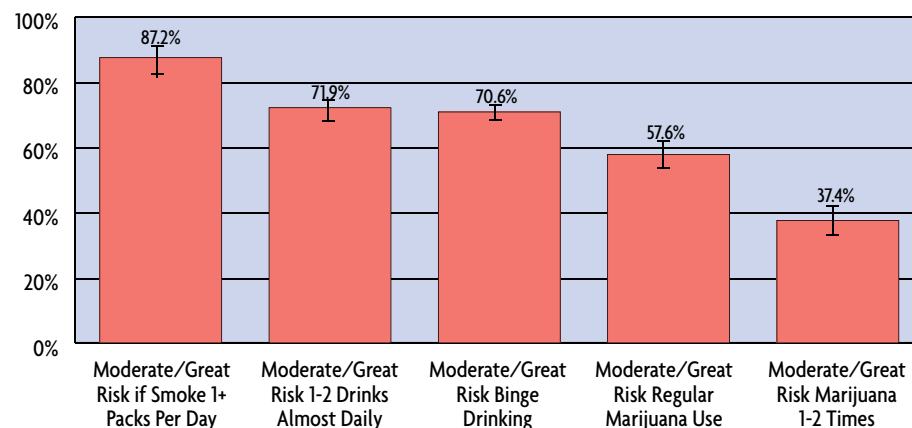
school youth feel that there is moderate or great risk of using marijuana one or two times.

Students were asked how wrong their parents would feel it would be for them to smoke cigarettes, drink alcohol regularly, or use marijuana. Not surprisingly, the majority of youth felt that their parents think it is wrong or very wrong for them to smoke cigarettes (90.8%), drink alcohol regularly (82.4%), or use marijuana (86.8%). In comparison, youth were less likely to think that it was wrong or very wrong for someone their age to drink alcohol regularly (61.2%) or use marijuana (60.0%).

**Figure 6: HS Ease of Access to Cigarettes, Alcohol, Marijuana and Other Drugs in 2011**

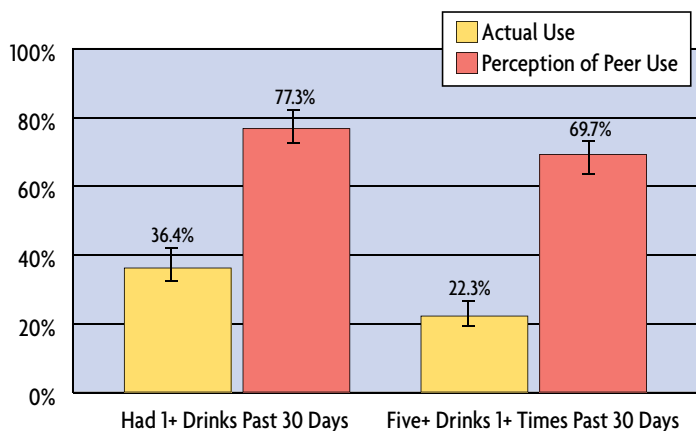


**Figure 7: HS Perception of Risk of Cigarette, Alcohol and Marijuana Use in 2011**



Specific to alcohol, youth were asked how often they think a typical student at their school drank, or engaged in binge drinking behaviors. As shown in Figure 8, perception of peer use of alcohol is significantly higher than actual reported use.

Figure 8: HS Perceived vs. Actual Alcohol Use in 2011



Finally, youth were asked questions about different ways that they may be protected from or exposed to messaging about substance use. First, approximately half of Colorado high school students (51.1%) reported that they had talked with a parent in the past year about tobacco, alcohol or drug use. Almost three-quarters of students (74.9%) reported that they heard, read or watched an advertisement *preventing* substance use a lot or sometimes during the past year, while 39.7% reported that they heard, read or watched an advertisement *promoting* substance use a lot or sometimes. In Colorado, the recent availability of medical marijuana dispensaries prompted the addition of a few questions specific to medical marijuana. A total of 42.1% of Colorado high school youth reported that they knew someone with a medical marijuana license or card.

## Personal Safety, Unintentional Injuries and Violence

One of the leading causes of unintentional injury among Colorado youth is driving after drinking alcohol or riding with a driver who was drinking. Figure 9 displays the percentages of Colorado students in 2005, 2009 and 2011 who reported engaging in these behaviors.

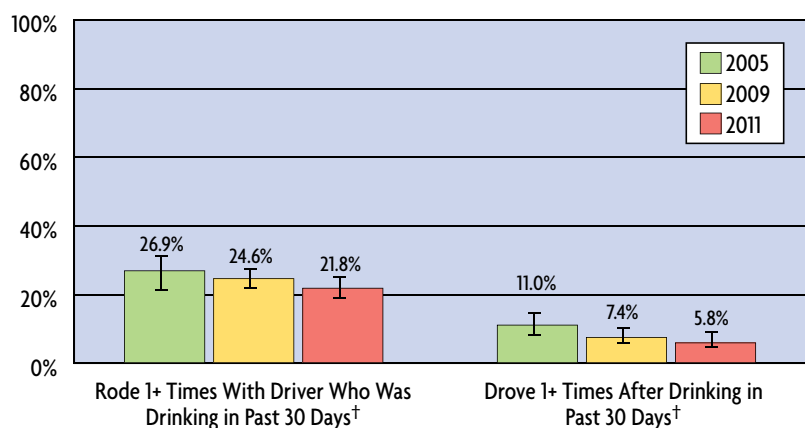
In all three administration years, results indicate that students were more than twice as likely to ride with someone who had been drinking than to drive themselves after drinking alcohol. Colorado students show a significant decreasing trend in the prevalence of both riding with a driver who was drinking and driving after drinking from 2005 to 2011. Furthermore, Colorado students (5.8%) were significantly less likely to drive after drinking compared to the national sample of students (8.2%). There was not a significant difference between Colorado students and students nationally for riding with a driver who had been drinking.

In 2011, Colorado added questions about driving after using marijuana, or riding with a driver who had used marijuana. Similar to riding with a drinking driver, 23.6% of Colorado youth reported that they rode in a car in the 30 days prior to the survey with a driver who had been using marijuana.

Students were also asked if they had driven a car or other vehicle in the past 30 days after using marijuana. Compared to students who reported drinking and driving (5.8%), a significantly higher percentage reported driving after using marijuana (11.3%). Because this is the first time these questions were included on the HKCS, comparisons to other years cannot be made until additional years of data are collected. Likewise, the national version of the survey does not include questions about driving after marijuana use.

The HKCS also included questions about a number of violence-related behaviors, both on and off school property, including weapon possession and associated threats and injuries, physical fighting

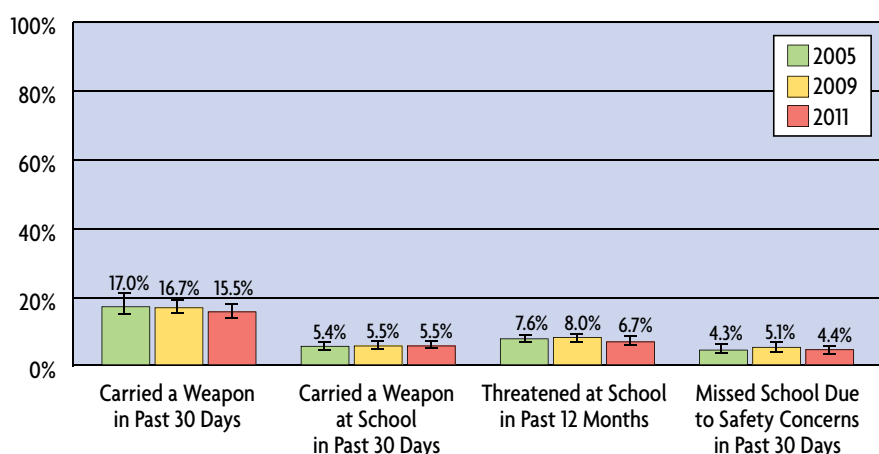
Figure 9: HS Prevalence of Drinking and Driving Behaviors in 2005, 2009 and 2011



† Statistically significant change from 2005 to 2011 ( $p < .05$ )



**Figure 10: HS Prevalence of Behaviors Related to Personal Safety in 2005, 2009 and 2011**



and bullying, as well as partner violence and forced sexual intercourse.

Overall, 15.5% of students reported carrying a weapon in the 30 days prior to the survey, while 5.5% of students reported carrying a weapon on school property. A total of 6.7% of students reported that they had been threatened or injured with a weapon on school property in the 12 months prior to the survey, and 4.4% of Colorado students reported missing school in the 30 days prior to the survey due to safety concerns. There were no statistically significant differences for any of these behaviors among Colorado students over time (2005 to 2011). Additionally, Colorado's prevalence rates on these items were not significantly different from the nation.

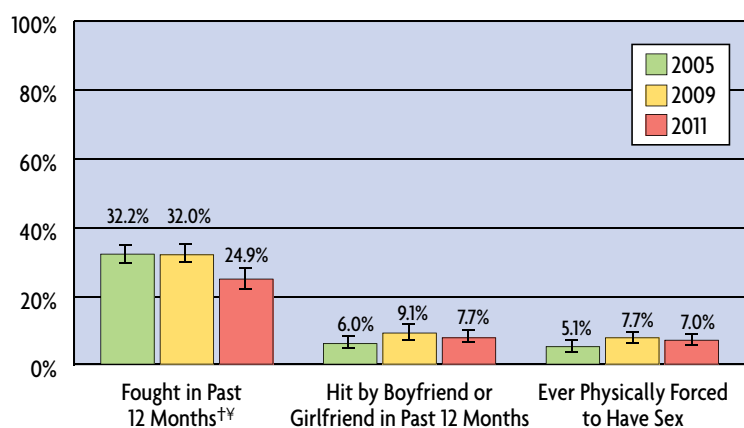
Figure 11 displays information regarding physical fighting and violence. Nearly one in four students reported engaging in a physical fight in the 12 months prior to taking the survey. This represented a significant difference compared to 2009, as well as a significant decreasing trend in physical fighting over time (2005 to 2011). Furthermore, in 2011, Colorado students (24.9%) were less likely to report physical fighting compared to youth nationally (32.8%).

In addition to physical fighting, youth were also asked if they had been bullied on school property or electronically bullied in the

12 months prior to the survey. A total of 19.3% of students reported that they had been bullied on school property, while 14.4% reported that they had been electronically bullied<sup>19</sup>. The prevalence of bullying did not differ between Colorado students and students nationwide.

A total of 7.7% of Colorado youth reported that they had been hit by a boyfriend or girlfriend in the past 12 months. A similar percentage (7.0%) indicated that they had ever been forced to have sex. Although both of these behaviors had shown a significant increase between 2005 and 2009, there were no significant differences from 2009 to 2011. Compared to the national sample of students, Colorado youth were less likely to report being hit by a boyfriend or girlfriend (9.4% nationally), but did not differ in the prevalence of forced sex.

**Figure 11: HS Prevalence of Behaviors Related to Physical Fighting and Violence in 2005, 2009 and 2011**



<sup>†</sup> Statistically significant change from 2005 to 2011 ( $p < .05$ )

<sup>‡</sup> Statistically significant change from 2009 to 2011 ( $p < .05$ )

<sup>19</sup>Bullying on school property was added to the survey in 2009. There was no significant difference between 2009 and 2011 results. Electronic bullying was added to the survey in 2011, therefore comparisons to other years are not available at this time.

## Mental Health

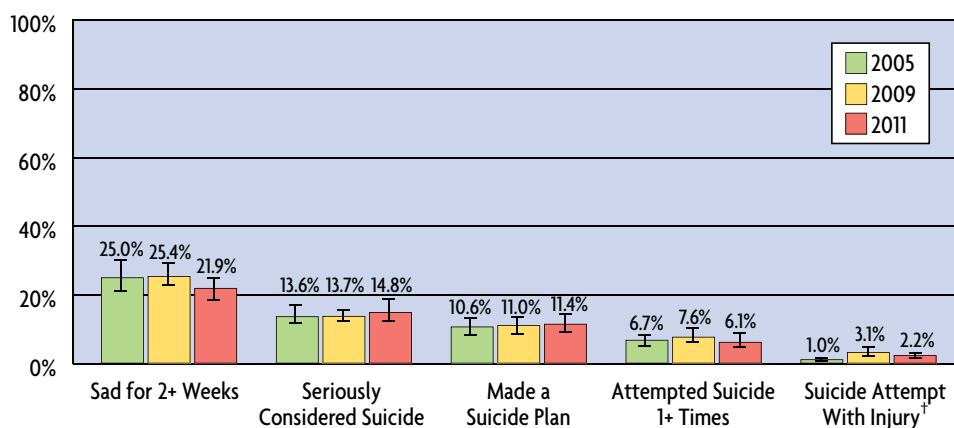
The questions on the HKCS that pertain to mental health measure sadness<sup>20</sup>, suicidal ideation (serious contemplation of suicide), attempted suicide and the severity of those attempts. Suicide is the leading cause of death among Colorado youth aged 15-24<sup>21</sup>, and attempted suicide is a key area in Colorado's Winnable Battles campaign<sup>22</sup>. In 2011, 21.9% of students reported feelings of sadness or depression, and 14.8% reported seriously considering suicide. A total of 6.1% of Colorado students reported that they had attempted suicide at least once in the past 12 months. Overall, there were not significant differences in the prevalence of depressive symptoms (sadness), suicidal ideation or suicide attempts

less likely to feel depressed in the 12 months prior to the survey (28.5% nationally), but were not significantly different on any of the other mental health questions.

## Sexual Health

Students were asked about a variety of sexual behaviors<sup>23</sup> including lifetime sexual activity, age of first sexual intercourse, number of lifetime partners, number of recent partners, contraception and substance use prior to the most recent sexual encounter. Addressing unintended pregnancy among high school students is a key area in Colorado's Winnable Battles campaign<sup>24</sup>.

**Figure 12: HS Prevalence of Depression and Suicide in 2005, 2009 and 2011**



† Statistically significant change from 2005 to 2011 ( $p < .05$ )

between 2005 and 2011. Although there were not significant changes in other mental health behaviors, Colorado students showed an increasing trend in the likelihood of sustaining an injury as a result of a suicide attempt from 2005 to 2011 (Figure 12). While this is a statistically significant difference, this change should be interpreted with caution as a very small number of students report this behavior in any given year. Additionally, it should be noted that the percentage of students experiencing injuries from a suicide attempt is still very low. When compared to national data, Colorado students were significantly

In Colorado, 40.8% of high school students reported lifetime sexual activity, or having sex at least once in their life, while nearly 32% reported current sexual activity, or having sex with at least one person in the three months prior to the survey. The prevalence of lifetime sexual activity ranged from 22.8% of students in 9th grade

to 61.1% of students in 12th grade; while current sexual activity ranged from 17.4% in 9th grade to 49.7% of students in 12th grade. Colorado students did not differ significantly from the nation on either item. Less than 14% of students reported having sex with 4 or more people in their life, and less than 4% reported having sex before age 13. There were no significant changes over time for any of these behaviors among Colorado students. Colorado students were less likely to report having sex before age 13 compared to the national sample of youth (6.2%).

<sup>20</sup>Sadness/depression is measured as the percentage of students who report that they felt sad or hopeless almost every day for two weeks or more in a row within the past year that they stopped doing some usual activities.

<sup>21</sup>Death Certificates, Health Statistics Section, Colorado Department of Public Health and Environment; 2011.

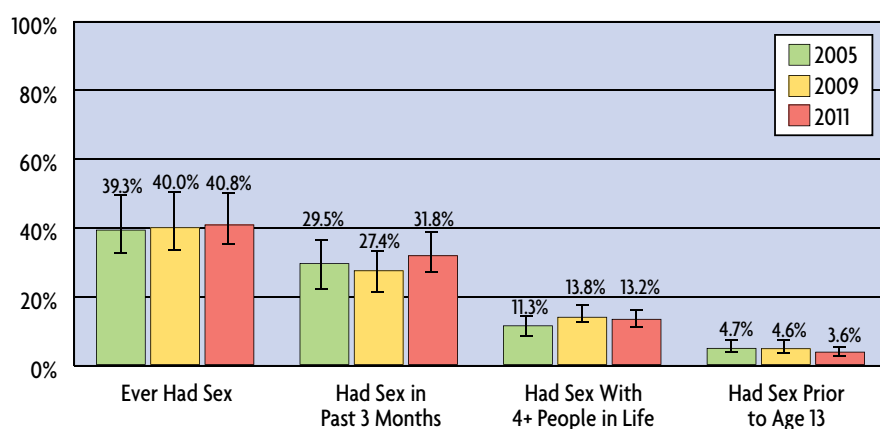
<sup>22</sup>The Colorado Winnable Battles target is to decrease the percentage of 9th -12th graders who attempted suicide in the past 12 months to 5% by 2016.

<sup>23</sup>All questions on the HKCS pertaining to sexual activity specifically ask about sexual intercourse. Other sexual activity behaviors are not asked on the survey.

<sup>24</sup>The Colorado Winnable Battles target is to increase the percentage of sexually active high school students using an effective method of birth control (defined as use of Depo-Provera (or any injectable), birth control pills, Nuva Ring (or any birth control ring), implanon (or any implant), or any IUD before last sexual intercourse) to prevent pregnancy to 30% by 2016.



Figure 13: HS Prevalence of Sexual Behaviors in 2005, 2009 and 2011

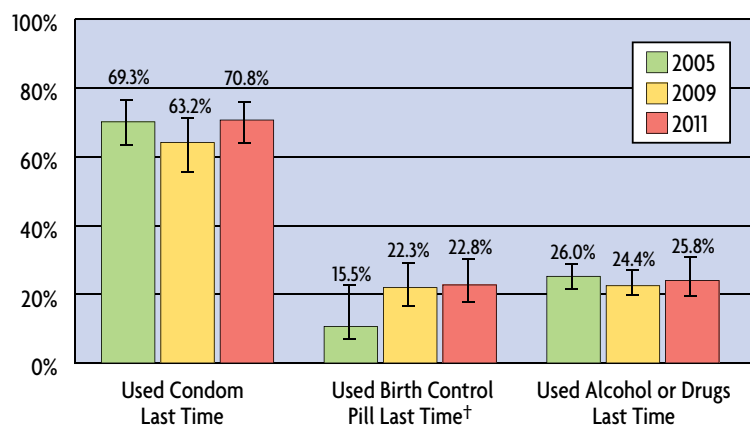


Among the 31.8% of students who reported that they were currently sexually active in 2011 (i.e. reported having sex within the past 3 months), 93.0% reported use of any method to prevent pregnancy. Approximately 70% of these students reported using a condom during their last sexual intercourse; while 29.1% reported use of birth control pills, Depo-Provera, Nuva Ring, implanon, or any IUD<sup>25</sup>, and over one-fifth (22.8%) reported using a birth control pill to prevent pregnancy. There was a significant increasing trend in the prevalence of birth control use over time, including use of birth control pills (15.5% in 2005 to 22.8% in 2011), and use of both condoms and birth control pills or Depo-Provera together (6.6% in 2005 to 15.8% in 2011). In 2011, one-quarter of sexually active students reported using alcohol or drugs prior to their last sexual encounter. The prevalence of this behavior has not changed over time. Specific trends

by gender for sexual activity and related behaviors are explored in the following section on demographic trends. In comparison to national results, Colorado students were more likely to report use of any method to prevent pregnancy (87.1% nationally), condom use (60.2% nationally), and use of birth control pills, Depo-Provera, Nuva Ring, Implanon, or IUD (23.3% nationally).

Finally, students were also asked whether or not they received HIV and AIDS education in school. In 2011, 80.2% of students reported receiving HIV/AIDS education in school. This was not significantly different from 2005 (84.9%) or 2009 (81.9%), nor did it differ from national results (84.0%).

Figure 14: HS Prevalence of Contraception and Substance Use Among Sexually Active Students in 2005, 2009 and 2011



† Statistically significant change from 2005 to 2011 ( $p < .05$ )

Note: This figure represents the 31.8% of students who report current sexual activity.

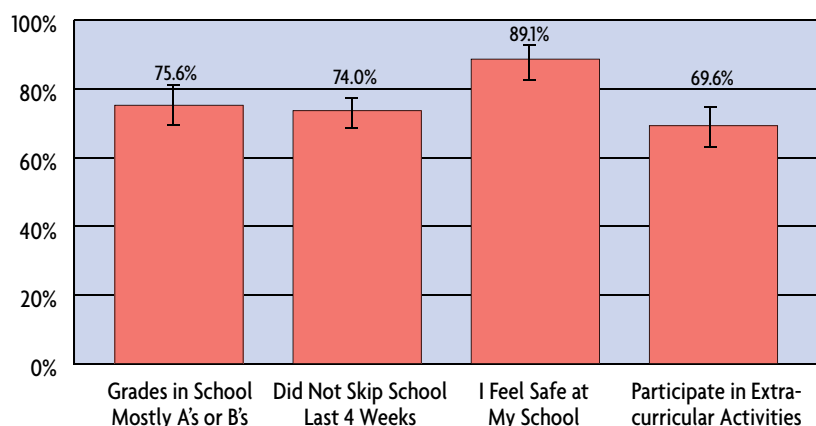


<sup>25</sup>This is the indicator that is used for the Colorado Winnable Battles target.

## School, Family and Future Aspirations

In 2011, Colorado consolidated two instruments that had previously been jointly administered as the HKCS into a single HKCS instrument. As noted in the introduction, the consolidation into one instrument helped to minimize the burden on schools and students, while at the same time ensuring that Colorado had a better chance of getting representative data on all of the important questions on these two instruments. As a result of this change, Colorado has weighted data for a number of questions related to school, family and future aspirations for the first time<sup>26</sup>. These questions can be used to better understand some of the factors that influence the attitudes and health behaviors of Colorado students in addition to the behaviors presented above.

Figure 15: HS School Experiences in 2011

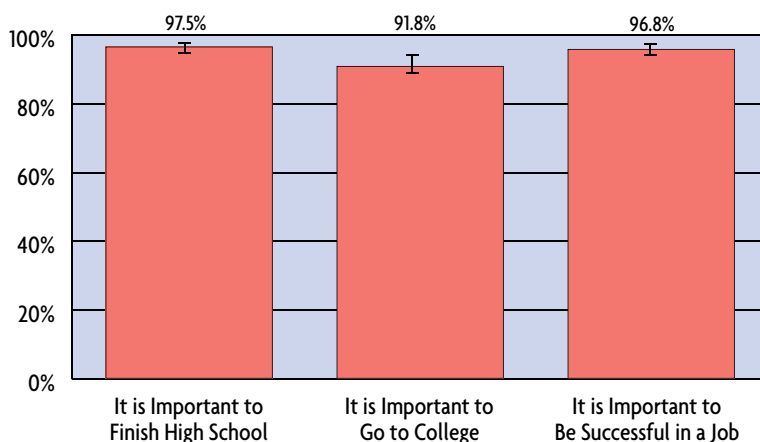


safe at their school. Approximately 70% of Colorado students reported that they participated in an extracurricular activity such as sports, band, drama or student government.

A majority of students (70.5%) reported that their classes were fairly, quite or very interesting, while over three-quarters of Colorado students (77.8%) thought that the things they were learning would be fairly, quite or very important for later in life. Close to 70% felt that the school work they are assigned

is sometimes, often or almost always meaningful and important. The vast majority of students (88.6%) reported that they sometimes, often or almost always tried to do their best work in school, and 73.3% reported that they sometimes, often, or almost always enjoyed being in school. As shown in Figure 16, almost all students reported that it is important for them to finish high school (97.5%), go to college (91.8%) and be successful in a job (96.8%).

Figure 16: HS Future Aspirations in 2011

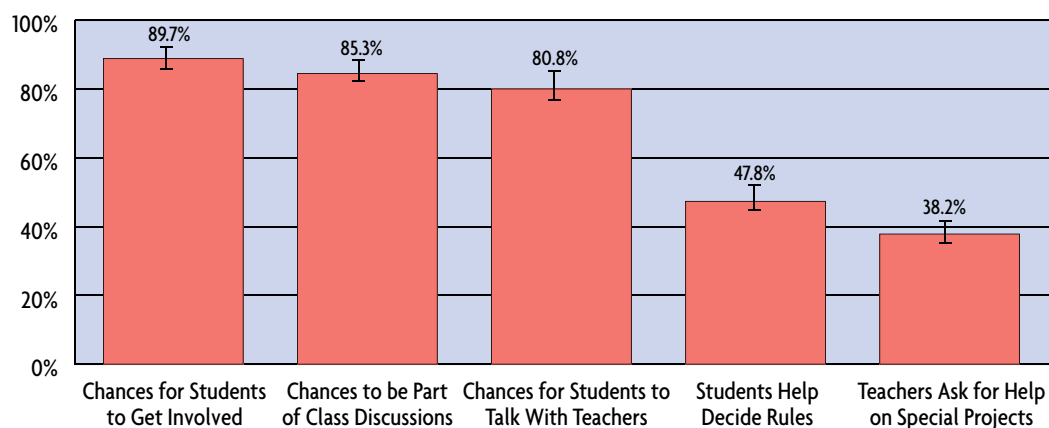


First, students were asked about their experiences at school, including questions about their grades, participation in extracurricular activities, and their teachers and classes. Overall, 75.6% of Colorado students described their grades as A's or B's over the past year, and less than 4% of students reported that their grades were D's or F's. The majority of students (74.0%) had not skipped or cut school during the past month, and close to 90% reported that they felt

Students were asked a series of questions about opportunities for pro-social involvement at school, such as working on special projects, talking to a teacher one on one, and having opportunities to get involved in activities. Close to 90% of Colorado students reported that there are chances for students to get involved in school activities outside of class. Likewise, a majority of students felt like they had lots of chances to be part of class discussions (85.3%) and to talk with a teacher one-on-one (80.8%). Fewer students reported that students have lots of chances

<sup>26</sup>Because this is the first year of data, results in this sub-section are not compared to prior years. These questions are not asked on the national version of the survey, therefore national comparisons are also not available.

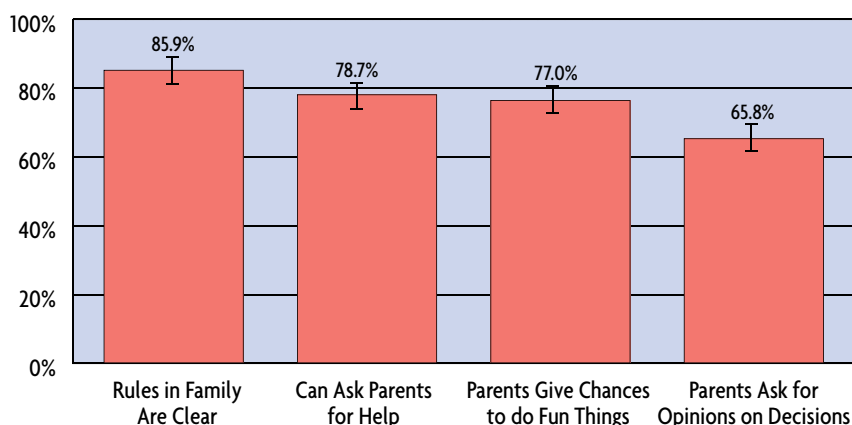
Figure 17: HS Opportunities for Pro-Social Involvement at School in 2011



to help decide things like class activities and rules (47.8%), or that teachers ask for help on special class projects (38.2%).

Finally, students were asked about their home life. A total of 85.9% of students felt that the rules in their family are clear, and 78.7% reported that they could ask their parent or guardian for help if they had a personal problem. Similarly, 77.0% of students felt that their parents give them lots of chances to do fun things with them, and 65.8% reported that their parents or guardians ask for their opinion before family decisions are made.

Figure 18: HS Opportunities for Pro-Social Involvement at Home in 2011





## Demographic Trends

In order to better understand the health behaviors of different student sub-populations in Colorado, additional analyses were conducted to test the significance of differences observed between groups<sup>27</sup>. The following sections outline results by gender (male and female) and by race/ethnicity (Non-Hispanic White and Hispanic/Latino<sup>28</sup> for each of the behavior domains measured by the HKCS. Differences and similarities between the Colorado student population of males and females, as well as Hispanic/Latino and non-Hispanic White students, are presented first, followed by a comparison of those same sub-groups within the national sample. Graphs are provided for Colorado data points in sections where a number of significant differences exist<sup>29</sup>. In addition, text denoting significant differences is included when data are not graphed. For behaviors that were not significantly different between sub-groups, please refer to the prevalence section above for overall student results.

### Physical Activity, Nutrition, Health and Gender

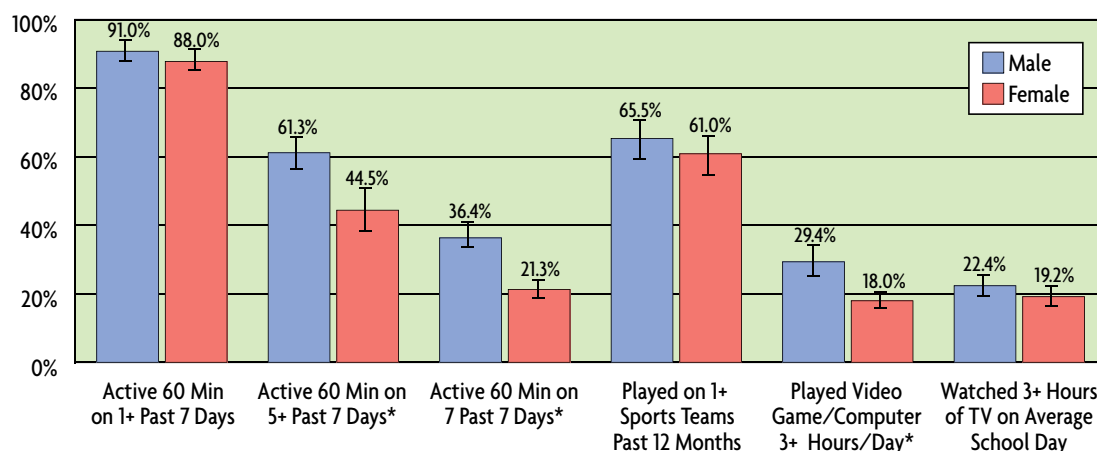
Figure 19 illustrates gender differences in Colorado in 2011 regarding diet and exercise. Overall,

approximately 90% of all students, regardless of gender, reported that they engaged in some physical activity<sup>30</sup> in the 7 days prior to the survey. There was no difference between males and females in participation in sports teams. However, males were more likely than females to report engaging in moderate and daily physical activity (60 minutes of exercise per day on 5 or more of the past 7 days and 7 of the past 7 days). In Colorado, males were also more likely to spend 3 or more hours per day playing video games or using the computer, though there was no difference between males and females in television use.

Nationally, males were more likely than females to report any physical activity, as well as moderate and daily activity and participation in sports teams. Males were also more likely to report video game and computer use compared to females however, there was no difference nationally between genders for watching television.

Related to nutrition, there were no significant differences between males and females in fruit or vegetable consumption during the past week. There was also no difference between genders for eating breakfast on all 7 days of the past week. However, males were more likely to drink at least one can of soda per day (26.8%) compared to females (17.9%).

Figure 19: HS Prevalence of Physical Activity in Colorado by Gender



\*Statistically significant difference ( $p < .05$ )

<sup>27</sup>Chi-square analyses were conducted by OMNI Institute and results may vary slightly from results published by the CDC due to differences in statistical tests.

<sup>28</sup>Fewer than 100 students identified themselves as Black, American Indian/Alaska Native, Asian, or Native Hawaiian/Pacific Islander, respectively. Therefore, the sample sizes of these groups were too small to support statistical comparisons.

<sup>29</sup>Graphs and text notations are not provided for National results. These data can be accessed via the CDC <http://apps.nccd.cdc.gov/youthonline/App/Results.aspx?TT=&OUT=&SID=HS&QID=&LID=XX&YID=&LID2=&YID2=&COL=&ROW1=&ROW2=&HT=&LCT=&FS=&FR=&FG=&FSL=&FRL=&FGL=&PV=&TST=&C1=&C2=&QP=&DP=&VA=&CS=&SYID=&EYID=&SC=&SO=>

<sup>30</sup>At least 60 minutes of a physical activity that increased their heart rate or made them breathe hard during the 7 days prior to the survey.

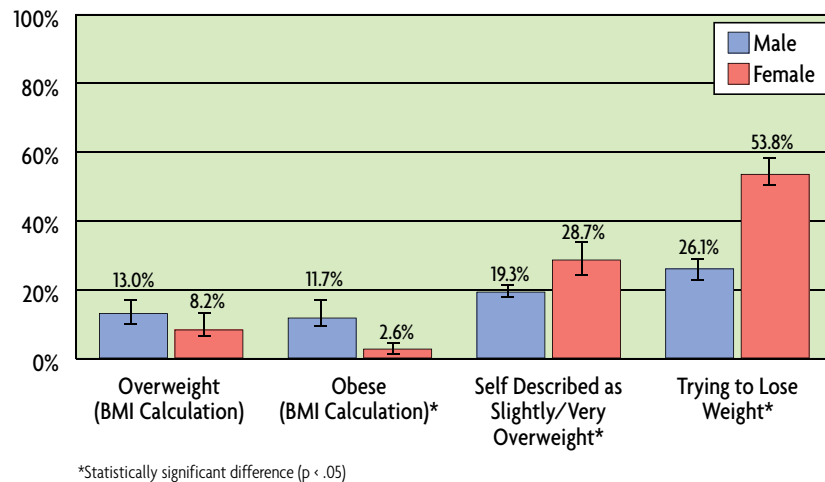
Nationally, females were more likely to eat fruits and vegetables at least once during the past week, but males reported eating more servings of fruits and vegetables per day<sup>31</sup>. Similar to Colorado, males nationally were also more likely to report drinking soda during the past week.

The data provided in Figure 20 illustrate gender differences regarding body perception and weight loss behavior. Females were significantly more likely than males to view themselves as slightly or very overweight compared to males, and were also more likely to report that they were trying to lose weight. This is particularly interesting given that there was not a significant difference between males and females in the prevalence of overweight, and males were significantly more likely to be obese as calculated by the BMI. This indicates that females who are not actually overweight may be more likely to experience negative perceptions of their body. These same gender differences were also seen at the national level.

## Physical Activity, Nutrition, Health and Race/Ethnicity

There were several differences in physical activity for non-Hispanic White students and Hispanic students.

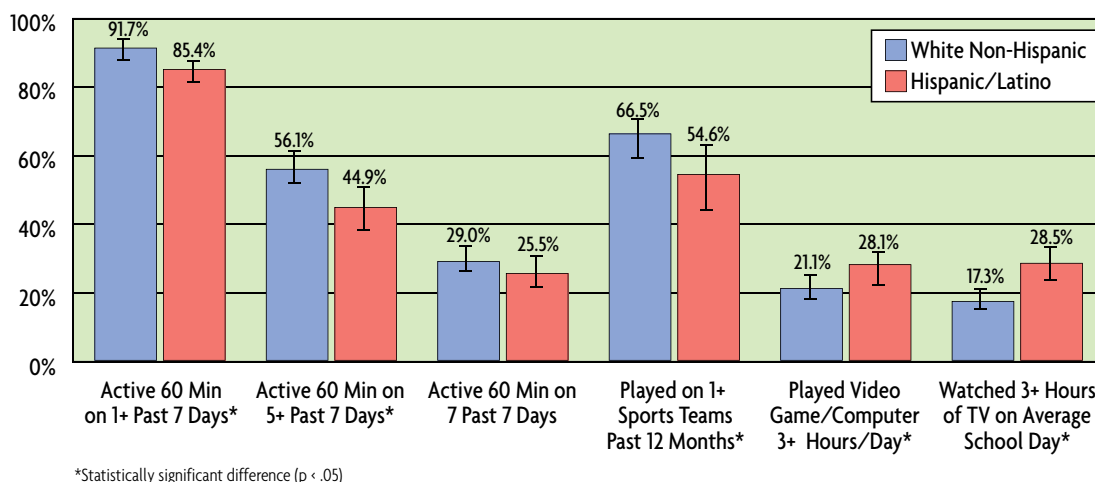
**Figure 20: HS Prevalence of Physical Health Indicators in Colorado by Gender**



First, although a majority of all students reported engaging in some physical activity, White students were more likely to engage in any physical activity (at least 60 minutes in the past 7 days), and more likely to report playing on at least one sports team. White students were also more likely to engage in moderate physical activity (60 minutes or more on 5 or more of the past 7 days), though there was no difference between White and Hispanic students in daily physical activity (60 minutes or more on all 7 of the past 7 days). Hispanic/Latino students were more likely to report watching television for 3 or more hours per day, and spending 3 or more hours per day playing video games or using the computer.

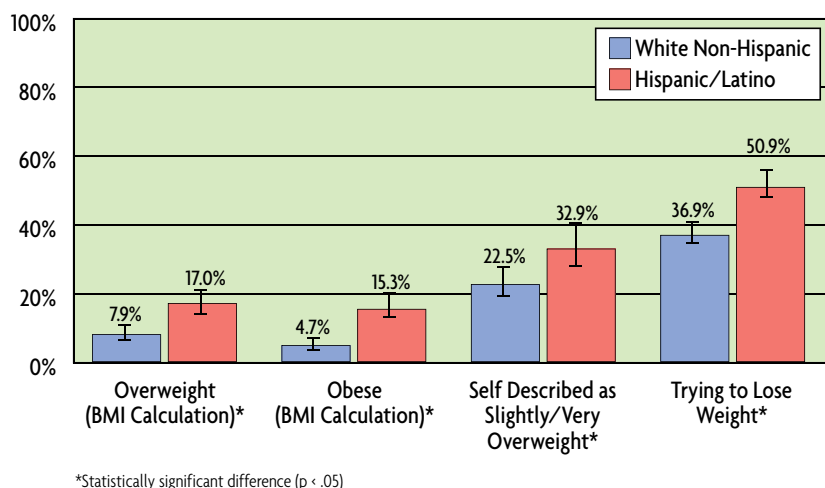
Nationally, similar patterns of physical activity were found. White (non-Hispanic) students were more likely to report engaging in some physical activity, moderate activity and heavy activity and were also

**Figure 21: HS Prevalence of Physical Activity in Colorado by Race/Ethnicity**



<sup>31</sup>At least 2 servings of fruit and/or vegetables per day during the past 7 days.

**Figure 22: HS Prevalence of Physical Health Indicators in Colorado by Race/Ethnicity**



more likely to play on sports teams. Conversely, Hispanic students were more likely to report watching television and playing computer/video games.

In Colorado, Hispanic/Latino students were more likely to be both overweight and obese, as calculated by the BMI, compared to non-Hispanic White students. Further, Hispanic/Latino students were more likely to perceive themselves as overweight, and were more likely to report that they were trying to lose weight.

In addition, non-Hispanic White students were more likely to report eating fruit (93.7%) and vegetables (93.8%) at least once in the past week compared to Hispanic/Latino students (87.8% and 86.6% respectively), although there were no differences between the groups in the frequency of eating fruits and vegetables (servings per day). Finally, while there were no differences between the groups in drinking soda, White students were more likely to report

eating breakfast every day during the past week (45.8%) than their Hispanic/Latino peers (27.1%).

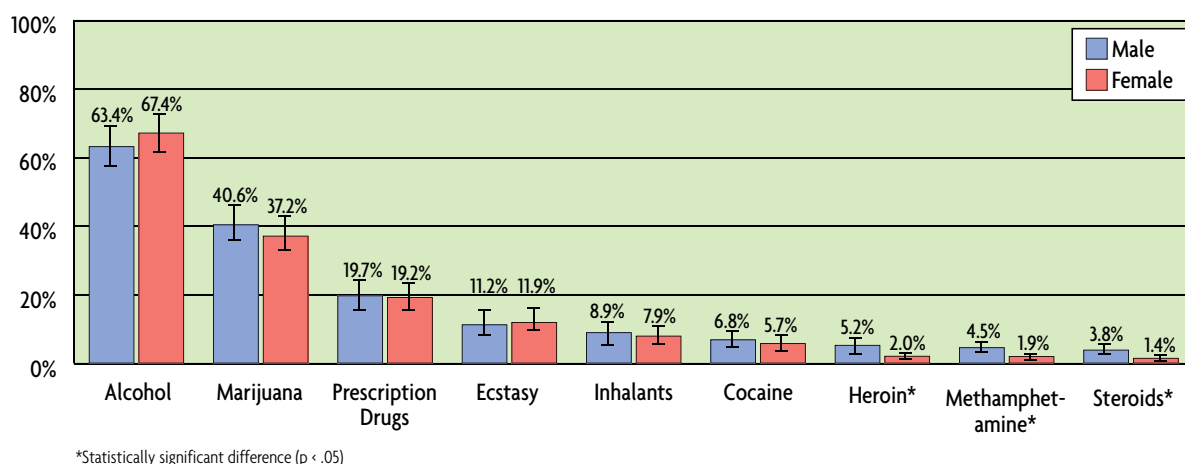
Nationally, Hispanic/Latino students were more likely to be both overweight and obese as calculated by BMI, and were more likely to perceive themselves as overweight. Nationally, there were no differences between non-Hispanic White and Hispanic students in eating fruit at least once in the past week, while White students were more likely to eat vegetables at least once in the past week.

## Substance Use and Gender

As shown in Figures 23 and 24, there were few gender differences related to substance use. There were no significant differences between males and females for lifetime substance use for most substances including alcohol, marijuana, prescription drugs, cocaine, inhalants or ecstasy. However, males were more likely to report ever trying heroin, steroids and methamphetamine compared to females. Males were also more likely to report drinking alcohol prior to the age of 13 (23.3%) than females (15.1%).

Similarly, few differences between males and females were found for current substance use. There were no statistically significant differences between males and females for current alcohol use (past 30 days), binge use (5+ drinks in one sitting), marijuana use or cigarette use. However, males were more likely to report using other tobacco products (chewing tobacco, snuff or dip) in the past 30 days (11.1%)

**Figure 23: HS Prevalence of Lifetime Substance Use in Colorado by Gender**





than females (1.8%). There was no difference between males and females in use of any substances on school property, and no differences in the likelihood of being offered an illegal drug on school property.

Nationally, slightly different patterns were reported between males and females for lifetime and current substance use. With the exception of alcohol, prescription drugs and inhalants, males were more likely than females to report lifetime use of all substances. There was no difference nationally between male and female students for ever trying alcohol or for taking

prescription drugs without a doctor's prescription.

Nationally, females were more likely to report ever using inhalants. Males were also more likely to report past 30 day use of cigarettes, other tobacco products and marijuana, as well as more likely to report binge drinking compared to females. There was no difference

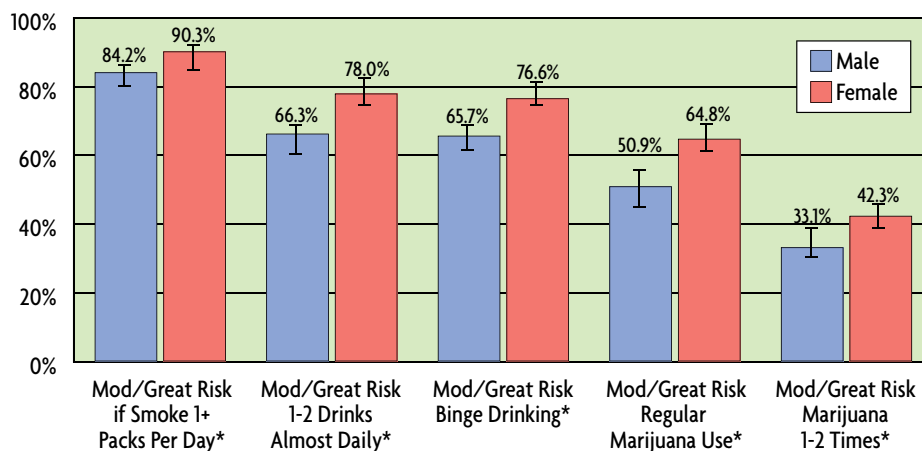
between these groups for current alcohol use (having at least one drink in the past 30 days). Males were also more likely than females to report being offered, sold or given drugs by someone at school.

Colorado students were also asked about a number of variables that research has demonstrated are related to the likelihood of substance abuse. There were no significant differences between male and female students related to how easy they felt it would be to access cigarettes, alcohol, marijuana or other illegal drugs. However, several significant differences existed between these groups for perception of risk of different substances. Females were more likely to report moderate or great risk of harm related to the use of cigarettes (smoking 1+ pack/day), alcohol (1-2 drinks daily and binge drinking), and marijuana (trying marijuana 1 or 2 times and regular marijuana use) compared to male students.

Few differences existed between male and female students in their perception of how wrong their parents would feel it is for them to smoke cigarettes

or use marijuana. However, female students were more likely to report that their parents thought it was wrong or very wrong for them to use alcohol (84.6%) compared to male students (80.4%). Females were also more likely to report that they talked with a parent in the past year about alcohol, tobacco or other substance use (54.4%) compared to male students (48.0%). Finally, students were also asked how wrong they think it is for someone their age to drink alcohol or use marijuana. There were no differences between genders for either of these variables.

**Figure 24: HS Perception of Risk of Substance Use in Colorado by Gender**



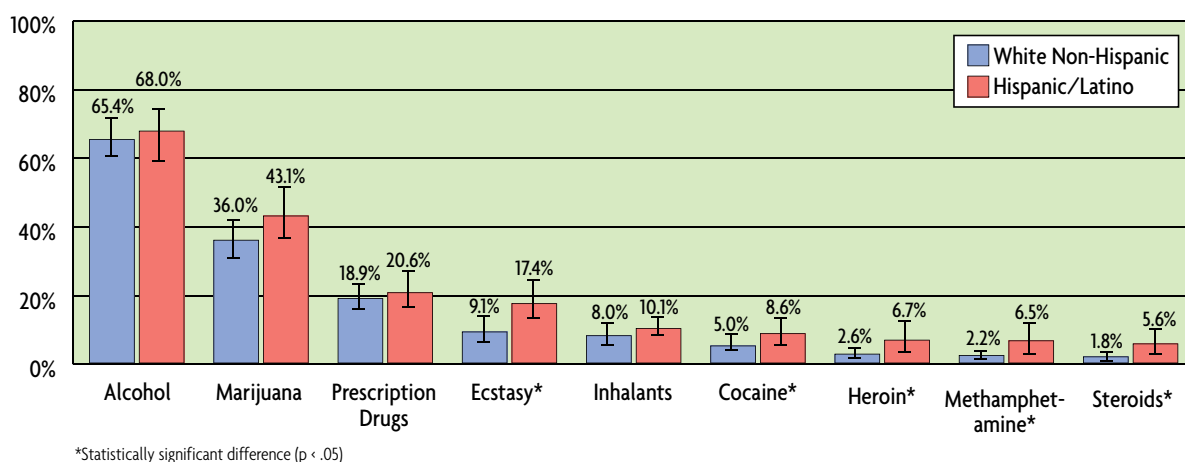
\*Statistically significant difference ( $p < .05$ )

## Substance Use and Race/Ethnicity

As shown in Figures 25 and 26, differences in the substance use of racial/ethnic groups also were examined. In Colorado, there were no differences between groups regarding reported lifetime (ever) substance use for alcohol, marijuana, inhalants or prescription drugs. However, Hispanic/Latino students were more likely to report lifetime use of cocaine, heroin, methamphetamine, ecstasy and steroids compared to White students. Additionally, Hispanic/Latino students were more likely to report having been offered, sold or given substances at school (20.2% Hispanic, 15.6% White).

Fewer differences existed between these groups for current substance use. There were no differences between non-Hispanic White and Hispanic students for past 30 day use of cigarettes, other tobacco products, alcohol, binge drinking, or marijuana. Although there were no differences in actual use, Hispanic students were more likely to report trying cigarettes (13.3%), alcohol (25.2%) and marijuana

Figure 25: HS Prevalence of Lifetime Substance Use in Colorado by Race/Ethnicity



(14.5%) before age 13 compared to White students (6.7%, 15.5% and 5.9% respectively), and were also more likely to report drinking alcohol (7.3% Hispanic, 3.5% White) and using marijuana (8.8% Hispanic, 4.4% White) on school property.

Nationally, slightly different patterns emerged between Hispanic/Latino and White students. In the national sample, there was no difference between groups in the prevalence of lifetime alcohol, heroin, methamphetamine or steroids. White students were more likely to report lifetime use of prescription drugs without a doctor's prescription, while Hispanic students were more likely to report lifetime use of marijuana, cocaine, inhalants and ecstasy. Similar to Colorado, Hispanic students were also more likely to have been offered, sold or given an illegal drug on school property. For past 30 day use, there was no difference in the prevalence of smoking cigarettes between these two groups, however White students were more likely to report using other tobacco products such as chewing tobacco, snuff

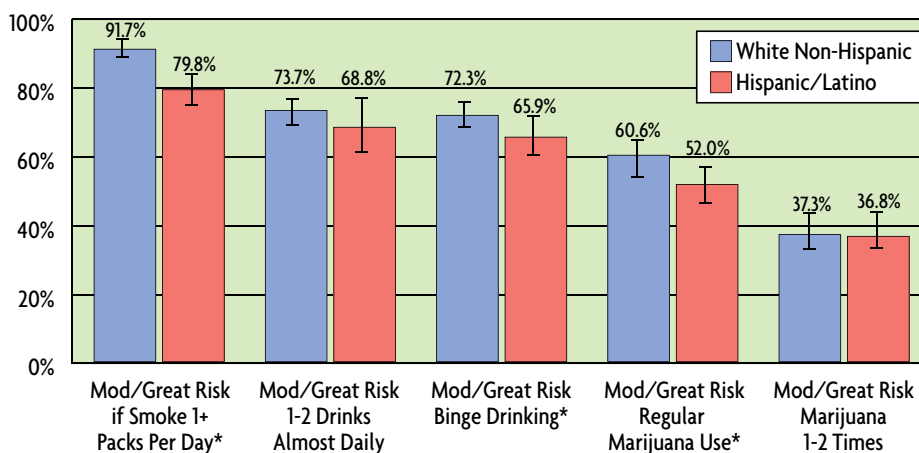
or dip. Similar to Colorado, there was no difference in current alcohol use, binge drinking or marijuana use, although Hispanic students were more likely to report trying both substances prior to age 13, and using both substances on school property.

In Colorado, there were no differences between White and Hispanic students in their perceptions of ease of access for cigarettes, alcohol, marijuana or other illegal drugs. However, students differed in their perception of risk related to the use of these substances. Specifically, non-Hispanic White students were more likely to report that there was moderate or great risk associated with smoking cigarettes (1+ pack/day), binge drinking, and regular use of marijuana compared to Hispanic students. There were no differences between these groups in the perceived risk of regular alcohol use (1-2 drinks/day) or in trying marijuana once or twice.

There were no differences between White and Hispanic students related to how wrong they think it is for students their age to drink alcohol or use

marijuana. There were also no differences between groups for how wrong their parents think it is for them to smoke cigarettes, drink alcohol or use marijuana. However, White students were more likely to report that they talked with a parent about alcohol, tobacco or other substance use in the past year (54.3%), compared to Hispanic students (46.8%).

Figure 26: HS Perception of Risk Substance Use in Colorado by Race/Ethnicity



## Unintentional Injury, Personal Safety, Violence and Gender

In 2011, Colorado male and female students differed significantly on several items measuring unintentional injuries and violence. Although there was no difference between male and female students in riding with a driver who was drinking alcohol or using marijuana, males were significantly more likely to report driving after drinking and driving after using marijuana. These state data are consistent with those at the national level for driving after alcohol use<sup>32</sup>.

Males were statistically more likely to report carrying a weapon both on and off school property and to report being threatened or injured with a weapon on

school property. Males were also more likely to report physical fighting. However, there was no difference between males and females in staying home from school because they felt unsafe. Females were more likely to report being bullied on school property and to experience electronic bullying compared to males.

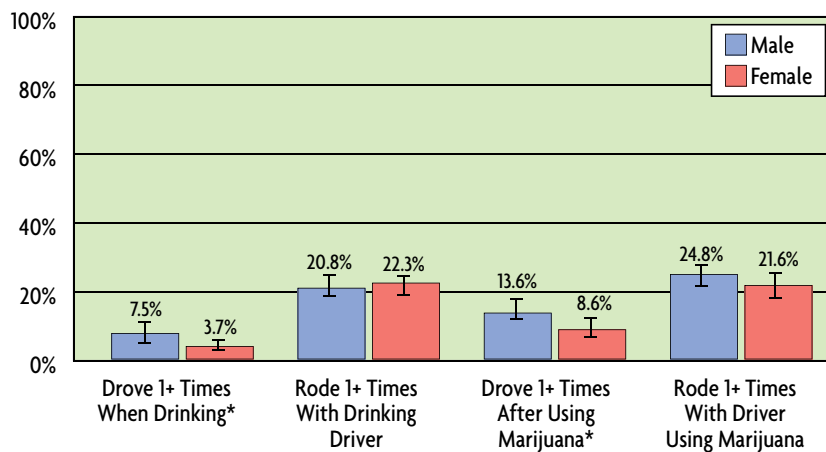
Finally, there was no difference between males and females in having had experienced inter-partner violence<sup>33</sup>, while females were almost twice as likely to have been physically forced to have sexual intercourse compared to males.

Differences between males and females in Colorado mirror differences seen between males and females nationally.

## Unintentional Injury, Personal Safety, Violence and Race/Ethnicity

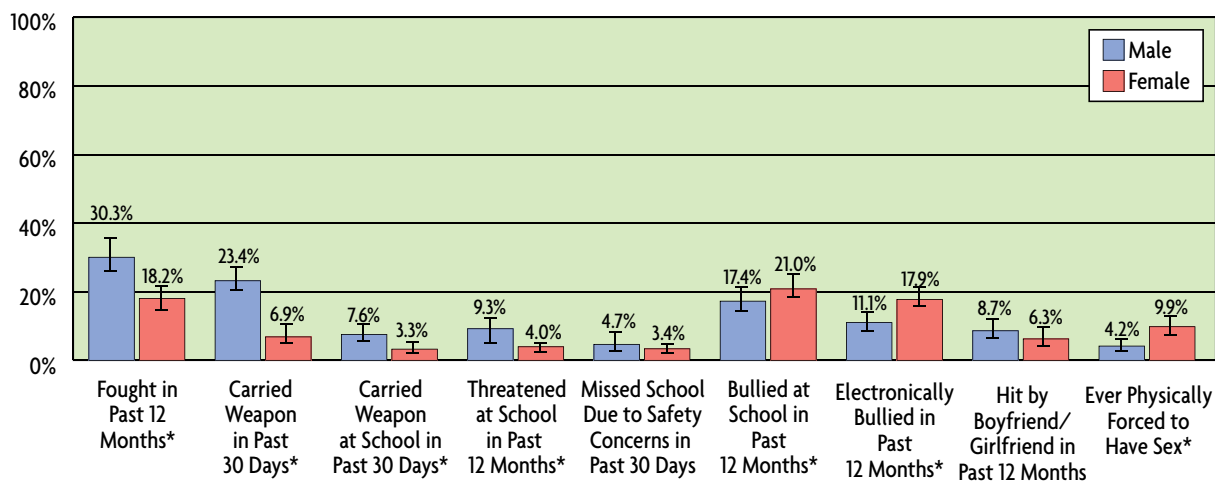
The same variables were analyzed to test for differences between Hispanic/Latino students and non-Hispanic White students. Several items related to unintentional injuries and violence differed by race/ethnicity in 2011, as they did by gender. There was no difference in the prevalence of driving after drinking between Hispanic/Latino and non-White Hispanic

Figure 27: HS Prevalence of Substance Use and Driving Behaviors in Colorado by Gender



\*Statistically significant difference ( $p < .05$ )

Figure 28: HS Prevalence of Personal Safety and Violence in Colorado by Gender



\*Statistically significant difference ( $p < .05$ )

<sup>32</sup>Riding/driving after using marijuana are not asked on the national survey.

<sup>33</sup>Inter-partner violence refers to having been hit, slapped or physically hurt on purpose by their partner (girlfriend/boyfriend),

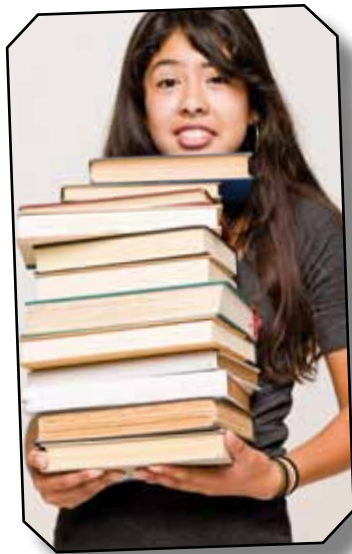


students however, Hispanic/Latino students were more likely to report riding in a car with someone who had been drinking (27.3%) than non-Hispanic White students (19.7%). There were no differences between groups for riding with a driver who had been using marijuana or driving after using marijuana. This differed slightly at the national level with Hispanic/Latino students being more likely to report both driving after drinking and riding in a car with someone who had been drinking.

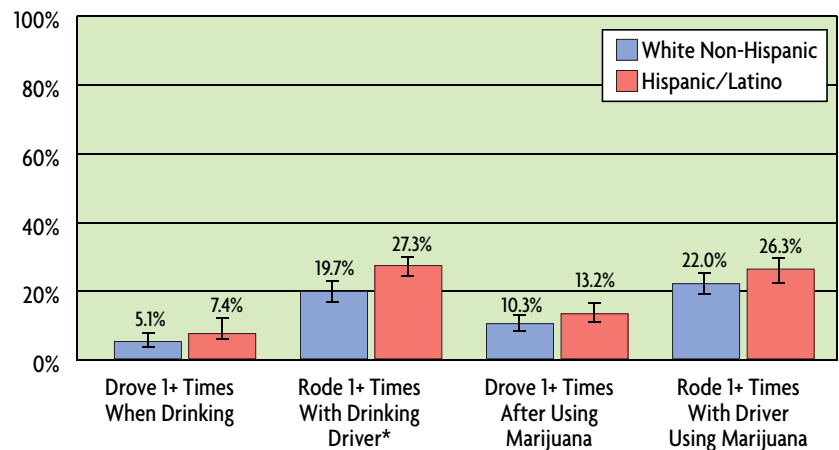
In Colorado, Hispanic/Latino students were also more likely to report being involved in a physical fight in the past year, being threatened with a weapon on school property and missing school because they felt unsafe as compared to White students. Additionally, Hispanic/Latino students reported higher rates of inter-partner violence than their non-Hispanic White peers however, there were no differences between

the groups for forced sexual intercourse. There were also no significant differences between these two groups for being bullied on school property in the past year, being electronically bullied or carrying a weapon both on and off school property.

Nationally, similar findings were found between these two groups. In the national sample, Hispanic/Latino students were also more likely to be in a physical fight, to report being threatened with a weapon, and to report missing school because they felt unsafe. Additionally, Hispanic/Latino students were also more likely to report inter-partner violence. As in Colorado, there were no differences between the two groups reporting forced sexual intercourse however, non-Hispanic White students were more likely to report having been bullied on school property in the past year and having been electronically bullied as compared to their Hispanic/Latino counterparts.

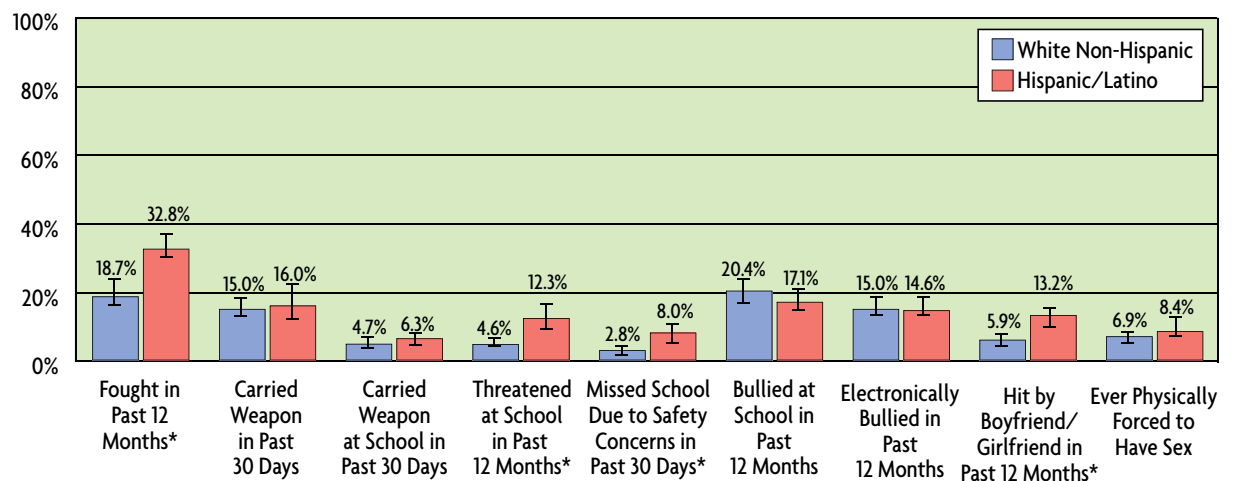


**Figure 29: HS Prevalence of Substance Use and Driving Behaviors in Colorado by Race/Ethnicity**



\*Statistically significant difference ( $p < .05$ )

**Figure 30: HS Prevalence of Personal Safety and Violence in Colorado by Race/Ethnicity**

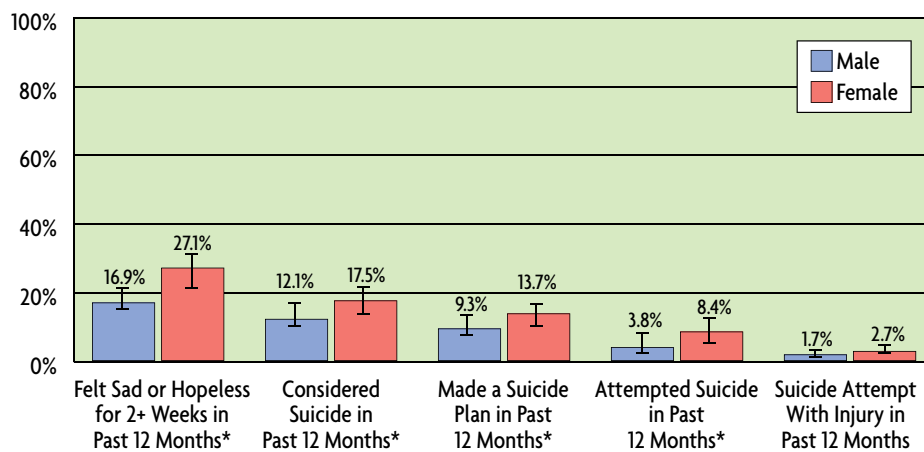


\*Statistically significant difference ( $p < .05$ )

## Mental Health and Gender

The HKCS results show significant differences between male and female students on mental health measures of depression and suicide risk. Females were more likely to experience depression in the past year than were males<sup>34</sup>. In addition, females were more likely than males to report that they seriously considered attempting suicide, made a suicide plan and actually attempted suicide in the past 12 months. However, there was no difference between males and females in the prevalence of suicide attempts that resulted in injury. Nationally, females were more likely than males to report experiencing all items related to mental health, suicide risk and suicide attempts.

Figure 31: HS Prevalence of Mental Health Symptoms in Colorado by Gender



\*Statistically significant difference ( $p < .05$ )

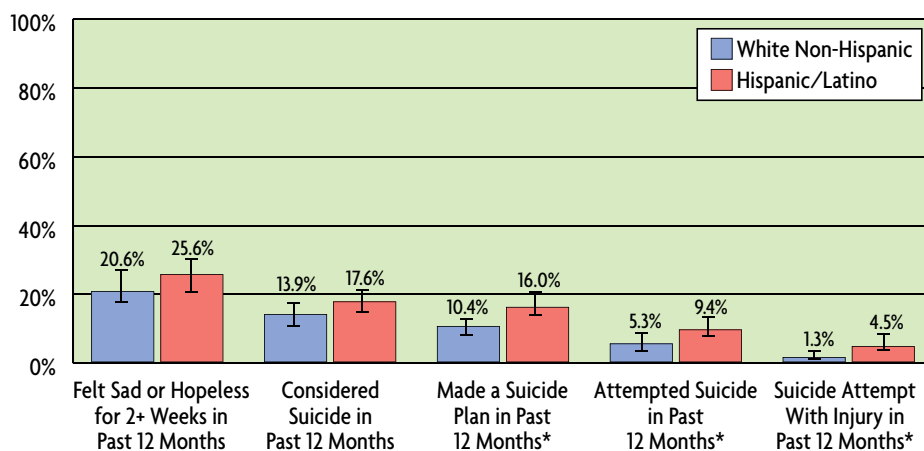


## Mental Health and Race/Ethnicity

There were a number of differences between Hispanic/Latino students and non-Hispanic White students on measures of mental health. Hispanic/Latino students were significantly more likely to report making a plan to attempt suicide, trying to commit suicide and sustaining an injury as a result of a suicide attempt during the 12 months before the survey. There was no difference between the two groups on having experienced depression in the past year or having seriously considered suicide. This differs from the national results in that Hispanic/Latino students were more

likely to report depression in addition to the other significant differences on the mental health measures noted for Colorado.

Figure 32: HS Prevalence of Mental Health Symptoms in Colorado by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

<sup>34</sup>Depression is defined as feelings of sadness or hopelessness for two or more weeks in the past 12 months.

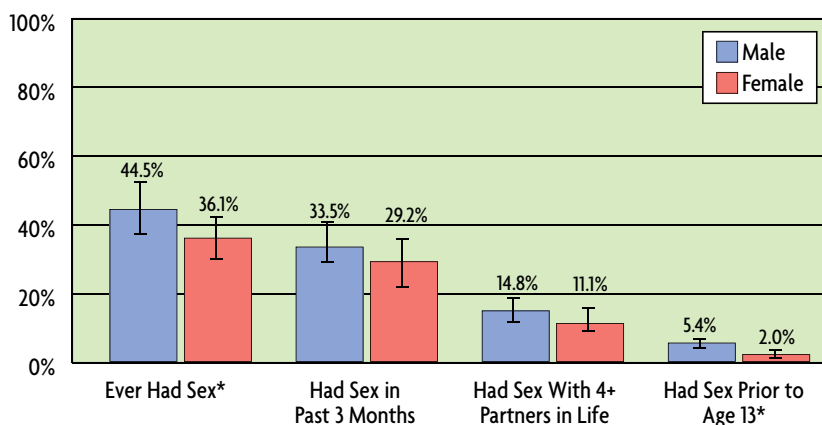
## Sexual Behavior and Gender

Some differences were found between males and females for reported sexual behaviors, including having ever had sexual intercourse and age of first sexual intercourse. Males were more likely than females to report having ever had sex, as well as having had sex before the age of 13. Despite this, there was no difference between males and females in the prevalence of current sex, or having had four or more partners.

Likewise, over 90% of both male and female students who were currently sexually active reported using some method of birth control to prevent pregnancy during their last sexual intercourse. Of this subset

Nationally, slightly different patterns were found between males and females. Males were more likely to report having ever had sex, having had sex before age 13, and were more likely to report having 4 or more partners. Similar to Colorado, there were no differences nationally between males and females for current sexual activity. Among the subset of sexually active students, males were more likely to report use of any birth control method and condom use, while females were more likely to report use of birth control pills, Depo-Provera, Nuva Ring, implanon, IUD, or other similar birth control methods. Nationally, males were also more likely than females to report using alcohol or drugs before their last sexual encounter.

**Figure 33: HS Prevalence of Sexual Activity in Colorado by Gender**



\*Statistically significant difference ( $p < .05$ )

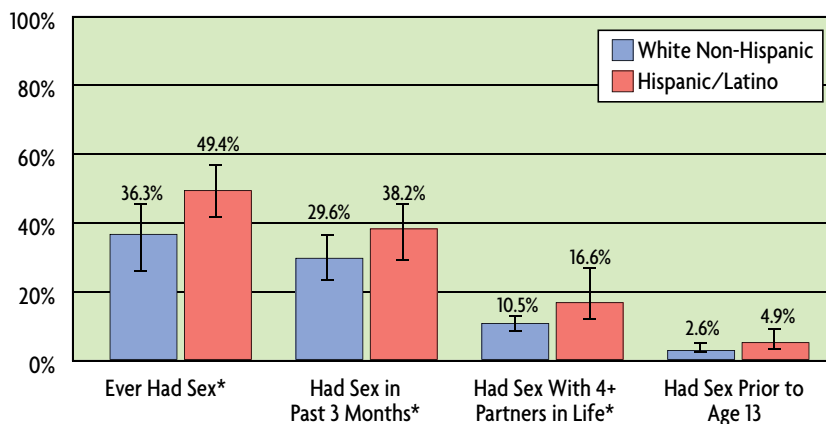
of students, males (75.4%) were more likely than females (64.4%) to report condom use, while females were more likely to report use of birth control pills, Depo-Provera, Nuva Ring, implanon, IUD, or other similar birth control methods (38.5% females, 21.7% males). Of the subset of males and females who reported having had sex within the past 3 months, there was no difference between genders in using alcohol or drugs prior to having sex. Finally, there was no difference between males and females for having been taught about HIV/AIDS in school.

## Sexual Behavior and Race/Ethnicity

There were several differences by race/ethnicity for reported sexual behaviors. Hispanic/Latino students were more likely than non-Hispanic White students to report having ever had sex, having had sex in the past 3 months, and having multiple partners (having had four or more partners during their life). However, there was not a significant difference between groups in reported sex before the age of 13. Of the students who reported current sexual activity, there were

no differences between groups in having reported using some method of birth control to prevent pregnancy during their last sexual intercourse. Of

**Figure 34: HS Prevalence of Sexual Activity in Colorado by Race/Ethnicity**



\*Statistically significant difference ( $p < .05$ )



this subset of students however, non-Hispanic White students were more likely report use of birth control pills (28.4% White, 11.1% Hispanic), or birth control pills, Depo-Provera, Nuva Ring, implanon, IUD, or other similar birth control methods during their last sexual intercourse (34.7% White, 18.8% Hispanic). There was no difference between these groups for reported condom use during their last sexual intercourse. There was also no difference between groups for reported use of alcohol or other drugs prior to their last sexual encounter.

Nationally, Hispanic/Latino students were more likely to report having ever had sex, having had sex before the age of 13, and having had sex with 4 or more partners compared to non-Hispanic White students. Although there was no difference in current sex between these two groups, non-Hispanic White students were more likely to report having used some method of birth control to prevent pregnancy during their last sexual intercourse and specifically, White students were more likely to report the use of birth control pills, Depo-Provera, Nuva Ring, implanon, IUD, or other similar birth control methods as compared to Hispanic/Latino students. There was no reported difference between groups on condom use during their last sexual intercourse.

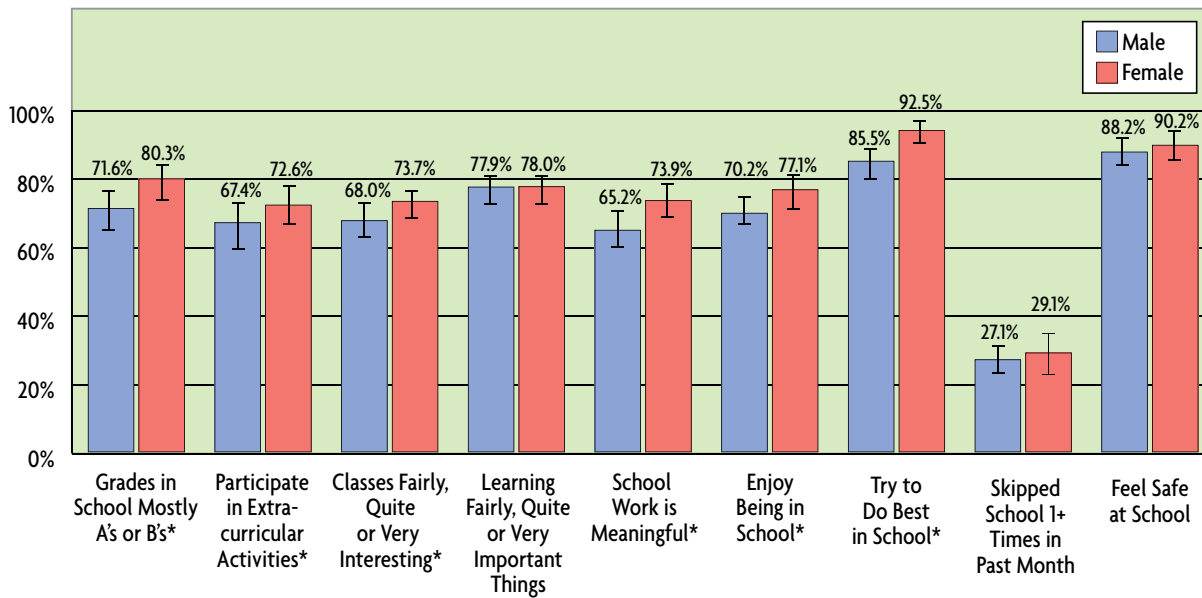
Finally, in Colorado, Hispanic/Latino students were less likely than non-Hispanic White students to report having been taught about HIV/AIDS in school (77.2% Hispanic/Latino students were taught compared to 82.9% White students). This difference was also found at the national level.

## School, Family, Future Aspirations and Gender

As described earlier, Colorado added several questions to the HKCS in 2011 that measure school, family and future aspirations among high school youth. These questions are not included on the national version of the survey, therefore comparisons to national trends are not presented in this section.

Colorado male and female students differed significantly on several items related to school. Females were more likely to report getting A or B grades in school compared to males, and were more likely to report participating in an extracurricular activity such as sports, band, drama or student government. Female students were also more likely to report that their classes were fairly, quite or very interesting, and were more likely to report that their school work was sometimes, often or almost always meaningful and important. Female students were

Figure 35: HS School Experiences in Colorado by Gender



\*Statistically significant difference ( $p < .05$ )

more likely to report that they sometimes, often or almost always tried to do their best in school and that they enjoyed being in school compared to male students. There was no difference between genders for thinking that the things they were learning in school would be important later in life, for skipping at least one day of school, or for reporting that they feel safe at school. Although almost all students reported high future expectations, female students were more likely than male students to think that it was important to finish high school (98.8% female, 96.3% male), to go to college (94.4% female, 89.4% male), and to be successful in a job (98.2% female, 95.4% male).

Students were also asked about opportunities for pro-social involvement at school. There were no differences between male and female students for these items, including having chances to be involved in activities outside the classroom, chances to talk with teachers, feeling that students could help decide activities and rules, and that teachers ask for help with special projects. The only significant difference was for having chances to be a part of class discussions. Female students were more likely to report that they had lots of chances to be a part of class discussions (88.3%) compared to males (82.8%).

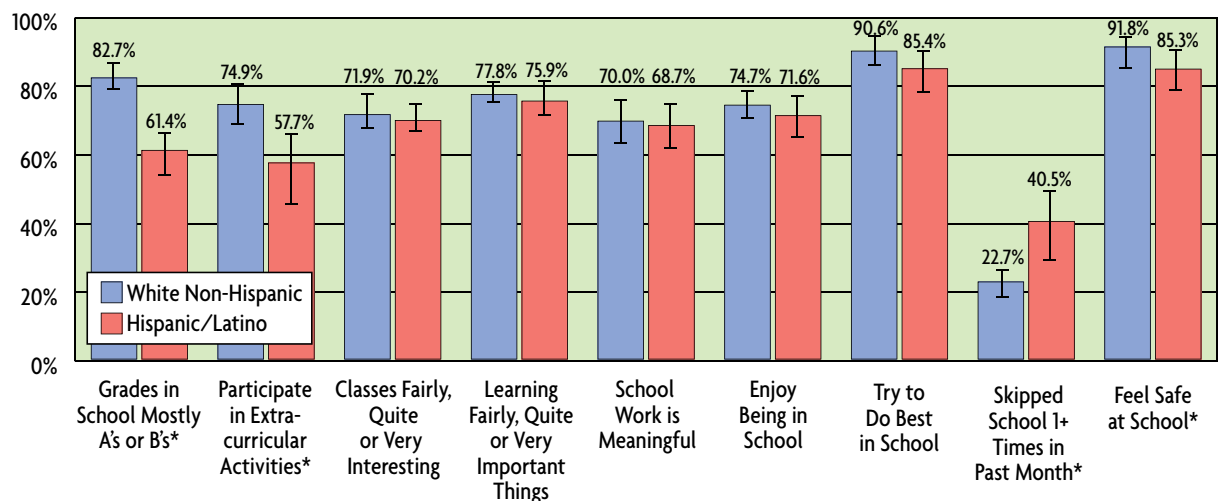
Finally, students were asked about their home life. There were no significant differences between male and female students for any of these questions. A similar percentage of male and female students felt that the rules in their family were clear, that they could ask their parents for help, that their parents give them chances to do fun things, and that their parents ask for their opinions about important decisions.

## School, Family, Future Aspirations and Race/Ethnicity

As shown in Figure 36, slightly different patterns emerged between race/ethnicity than was found for gender. In Colorado, non-Hispanic White students were more likely to report getting A or B grades in school compared to Hispanic/Latino students. White students were also more likely to report feeling safe at school, and to participate in extracurricular activities. Hispanic students were more likely to report skipping school on at least one day during the past month.

There were no differences between non-Hispanic White students and Hispanic students for any of the items measuring importance and interest in school. A similar percentage of White and Hispanic students thought that their classes were interesting, and that the things they were learning would be important later in life. Students across these racial/ethnic groups also felt that the school work was meaningful and important, that they tried to do their best work in school, and that they enjoyed being in school. Though the vast majority of all students had high future expectations, significant differences between non-Hispanic White and Hispanic students were found. White students were more likely to think that it is important to finish high school (98.6% White, 96.0% Hispanic) and important to be successful in a job (98.3% White, 94.8% Hispanic). There was no difference between these two groups for thinking it is important to go to college.

Figure 36: HS School Experiences in Colorado by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

As shown in Figure 37 several differences were also found between groups for opportunities for pro-social involvement at school. White students were more likely to report that they had lots of chances to get involved in sports, clubs, and other school activities, and were also more likely to report that they had chances to be a part of class discussions and to talk with teachers one-on-one compared to Hispanic students. There were no differences between White and Hispanic students for reporting that students help to decide on class activities and rules, or for reporting that teachers ask for help on special projects.

Finally, few differences emerged between groups related to pro-social involvement at home. There were no differences in students feeling like they could ask their parents for help with a problem or for feeling like parents ask for their opinions on important decisions. However, White students were more likely to report that the rules in their family are clear (88.5%) compared to Hispanic students (80.3%) and also more likely to report that parents give them chances to do fun things (79.4% White, 73.5% Hispanic).

## Associations Between Youth Behaviors

This section of the report examines whether select behaviors and experiences reported by Colorado's high school students are statistically associated with, or related to, one another. As noted earlier, these analyses cannot be used to tell if a relationship between variables is *causal*; they can only be used

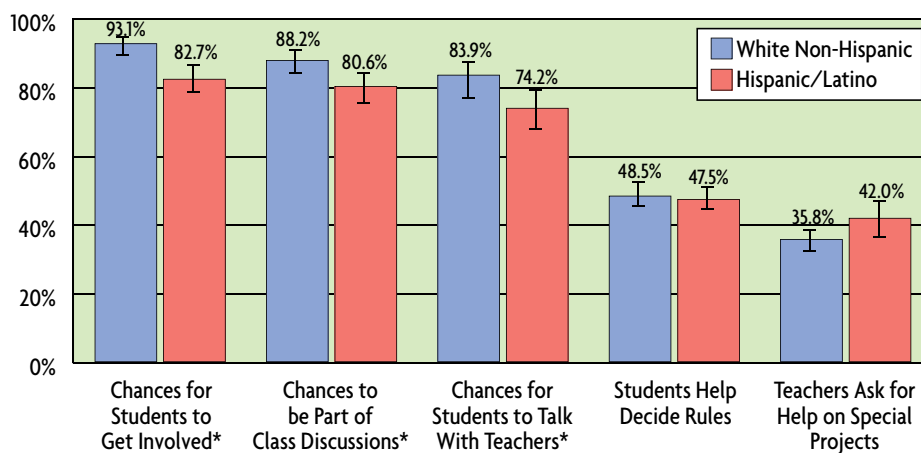
to tell whether two variables are *associated*. For example, if chi-square results indicate a relationship between watching 3 hours of television a day and eating vegetables, this does not mean that watching TV caused students to eat more vegetables, just that students who report frequent TV watching were also more likely to report eating vegetables.

Research shows that when students engage in positive behaviors, such as eating healthy foods and being physically active, the risk for other problem behaviors may be reduced. Conversely, research has shown that students who engage in risky behaviors in some domains (e.g., fighting, substance use) are at a higher risk of engaging in other risk behaviors (e.g., risky sexual activity) or experiencing other problematic outcomes (e.g., mental health issues). By understanding how these behaviors and experiences are related to one another, schools and other youth-serving agencies can identify specific populations of youth that may benefit from particular types of, or more intensive, interventions or programs.

Chi-square tests of independence were used to evaluate whether one behavior or experience is significantly related to another, using the 2011 weighted dataset. Specific relationships of interest were tested among subsets of eleven items (those that were tested are in parenthesis) in the domains of:

- Physical activity and nutrition (Engaging in at least 60 minutes of physical activity for 7 of the last 7 days, Eating five or more fruits and vegetables per day in the past 7 days, and Being overweight or obese according to the Body Mass Index);

Figure 37: HS Pro-Social Involvement at School in Colorado by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )



- Substance use (Binge drinking [having five or more drinks at least one time in the past 30 days], Current marijuana use [past 30 days]);
- Sexual activity (Had sex with at least one partner in the past 3 months);
- Safety, injury, and violence (Bullied at school at least once in the past 12 months);
- Mental health (Feeling sad for 2 weeks or more in the past 12 months, Seriously considered suicide in the past 12 months); and
- School (Participated in extracurricular activities, Grades in school mostly A's or B's).

These eleven items were selected because they: a) represent important health and risk behaviors that are frequently examined in research; b) together provide a comprehensive picture of adolescent behavior and health across a number of key domains; and c) allow investigation of interesting and informative patterns of relationships among sets of risk and health-promoting behaviors. Given the large number of items, only associations that achieved statistical significance are reported below. However, there may be other statistically significant associations among HKCS items that were not tested in these analyses.

When interpreting these findings, it is important to consider the magnitude of reported differences. While difference may be statistically significant, the magnitude may be small and, therefore, should be attributed less practical or meaningful significance. Further, some of these behaviors have low prevalence rates, meaning that the group of students experiencing or reporting a particular behavior is small. Thus, even when the reported percentages in these associations are high, it is important to remember that these associations are based on a small number of students. In order to help interpret these situations, the “base rate,” or number of students who reported a given behavior, is included underneath the graph for each behavior of interest.

In each graph within this section, two groups are created for the primary behavior of interest (e.g., those who reported fighting and those who did not) that is listed in the subheading for the section: those students who responded “yes,” and those students who responded “no.” Then, the percentage of each of these two groups who responded “yes” to other behaviors of interest (e.g., being bullied) is listed horizontally under the graph (the x-axis). Because the prevalence rates of each behavior vary, the

percentages representing associations between the same variables in different graphs also vary.

For example, in Figure 38, 29.2% of the total sample of students reported participating in high levels of physical activity (60 minutes or more of physical activity every day during the past week). Of that 29.2%, 79.2% reported also participating in extracurricular activities in the past year, compared to 66.0% of the students who did not report high levels of physical activity (70.8% of the total sample). This difference in participating in extracurricular activities was significantly different between the two groups of students who did and did not have high levels of physical activity, reflecting a significant association between physical activity and extracurricular activities. In contrast, when participation in extracurricular activities is the primary behavior of interest (as in Figure 47), the two groups being tested consist of those who participated in activities (69.6% of students) compared to those who did not (30.4% of students). It is possible that even though physical activity was associated with participation in extracurricular activities in the prior test, extracurricular activities may not be associated with physical activity when participation in extracurriculars is the primary behavior. This is



because a different group of students make up the “base rate” of students who participated in either behavior, and may not be the same students across behaviors. In this case, a significant difference was still found, meaning that students who participated in extracurricular activities in the past year were also more likely to report high levels of physical activity (33.2% of the 69.6%) compared to those that did not participate in extracurriculars (20.2% of the 30.4%).

## Physical Activity, Nutrition and Health

Behaviors related to physical activity (engaging in at least 60 minutes of physical activity every day for the past week), and nutrition and physical health (regularly eating fruits and vegetables, being overweight or obese calculated in relation to BMI) were tested for associations with measures of substance use, sexual activity, safety, injury and violence, school engagement and mental health.

### Physical Activity

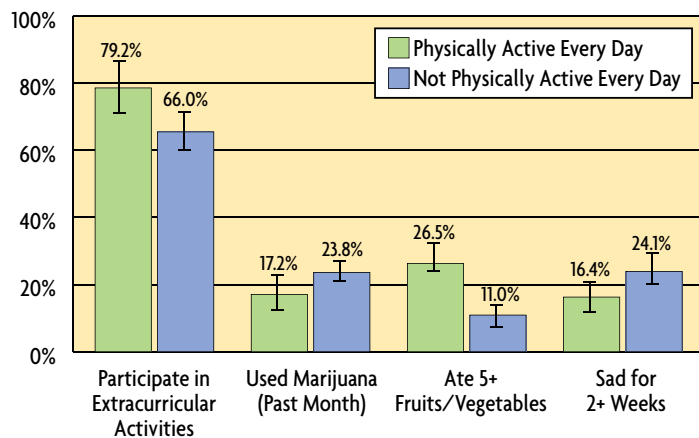
Figure 38 divides Colorado students into two categories, those who reported daily (60+ minutes per day) physical activity, and those who did not. Each individual bar reflects the percentage of

students in each of those categories who also reported select behaviors and experiences identified above. Of the ten items examined, four were associated with daily physical activity, meaning that students who participated in daily physical activity were more or less likely to report select behaviors and experiences than students who did not.

Students who reported higher levels of physical activity (60 minutes or more of physical activity every day during the past week) were more likely to also report several positive behaviors compared to students who did not engage in daily physical activity. Physically active students were more likely to report participation in extracurricular activities and eating 5 or more fruits and vegetables per day. These students were also less likely to experience depressive symptoms (feeling sad for 2 or more

weeks in the past year) and to use marijuana. Daily physical activity was not significantly associated with the other behaviors of interest.

**Figure 38: HS Significant Associations Between Regular Physical Activity and School, Substance Use, Nutrition, and Mental Health**

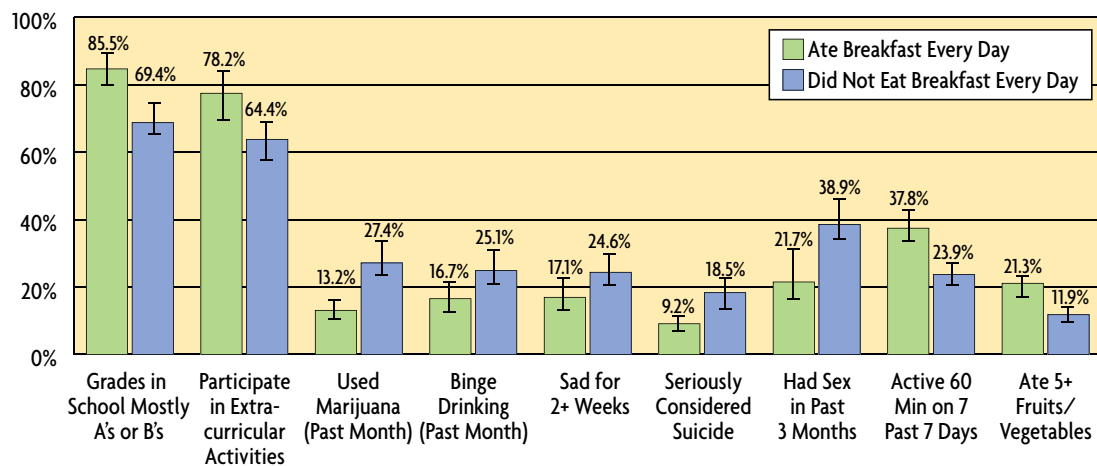


Note: In 2011, 29.2% of Colorado students reported being physically active for 60 minutes or more in 7 of the past 7 days. All comparisons above reflect statistically significant differences ( $p < .05$ ).

### Nutrition and Obesity

Few differences existed between students who reported eating 5 or more fruits and vegetables per day and those who did not. The only significant association was that students who reported eating fruits and vegetables were also more likely to report being physically active every day; 49.7% of students who ate fruits and vegetables were physically active compared to 25.4% who ate less than 5 fruits and vegetables per day.

**Figure 39: HS Significant Associations Between Eating Breakfast and School, Substance Use, Mental Health, Sexual Activity, Other Physical Activity, and Nutrition**



Note: In 2011, 39.1% of Colorado students reported eating breakfast every day during the past 7 days. All comparisons above reflect statistically significant differences ( $p < .05$ ).

Similarly, students who were overweight (defined as being in the 85-95th percentile for BMI) or obese (defined as being in the 95th percentile or greater for BMI) did not have any significant differences compared to students who were not overweight or obese for any variables tested.

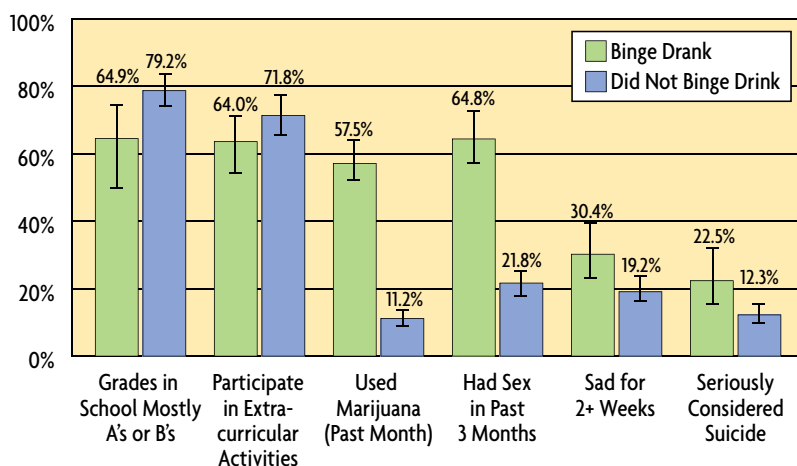
In 2011, Colorado added a question asking students how many days they ate breakfast during the past week. In subsequent analyses, students who reported eating breakfast every day were significantly associated with many other health and risk behaviors and experiences. Specifically, students who ate breakfast every day were more likely to be physically active every day, eat 5 or more fruits and vegetables per day, participate in extracurricular activities, and

report mostly A or B grades. These students were less likely to report binge drinking, marijuana use, current sexual activity, feeling sad and considering suicide compared to students who did not eat breakfast every day. Eating breakfast was not associated with being overweight or obese among this sample of students, nor was it associated with experiencing bullying.

## Substance Use

Associations between select substance use behaviors and sexual activity, safety, injury and violence, mental health, physical activity, nutrition and health, and school were tested.

**Figure 40: HS Significant Associations Between Binge Drinking and School, Other Substance Use, Sexual Activity, and Mental Health**

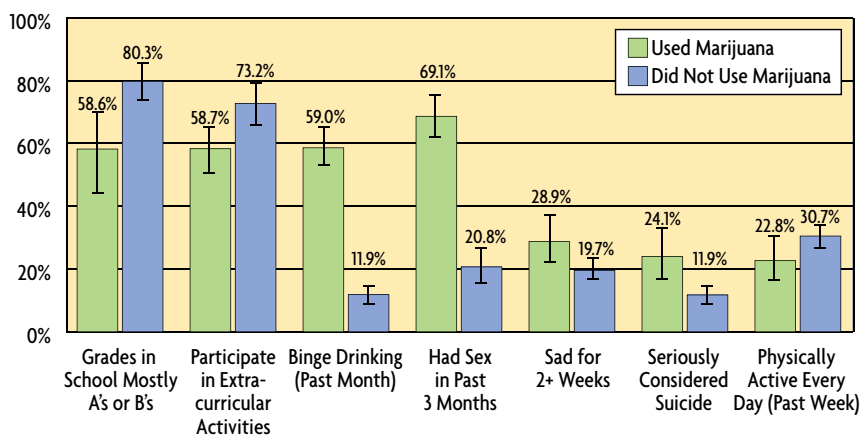


Note: In 2011, 22.3% of Colorado students reported binge drinking in the past 30 days. All comparisons above reflect statistically significant differences ( $p < .05$ ).

### Binge Drinking

Students who reported that they engaged in binge drinking (having five or more drinks in one sitting in the past 30 days) were less likely to report having A or B grades in school, or participating in extracurricular activities compared to those students who did not report binge drinking. Notably, over half of the students who reported binge drinking also used marijuana; similarly, over half of the students who reported binge drinking were also currently sexually active. Students reporting binge drinking were also at greater risk for depression as evidenced by significantly higher rates of sadness and prevalence of considering suicide.

**Figure 41: HS Significant Associations Between Marijuana Use and School, Other Substance Use, Sexual Activity, Mental Health, and Physical Activity**



Note: In 2011, 22.0% of Colorado students report using marijuana in the past 30 days. All comparisons above reflect statistically significant differences ( $p < .05$ ).

### Marijuana

Similar to the patterns seen with binge drinking, students who report use of marijuana in the past 30 days were less likely to report A or B grades in school or participating in extracurricular activities. Likewise, the most striking differences were seen for binge drinking and current sexual activity; close to 60% of students who used marijuana also reported binge drinking compared to 12% of students who did not use marijuana, and close to 70% reported current sexual activity



compared to 21% of students who did not use marijuana. There were also significant associations between marijuana use and feeling sad and considering suicide. Finally, the rate of regular physical activity (at least 60 minutes every day for the past week) was lower among students who used marijuana compared to those who did not.

## Safety, Injury and Violence

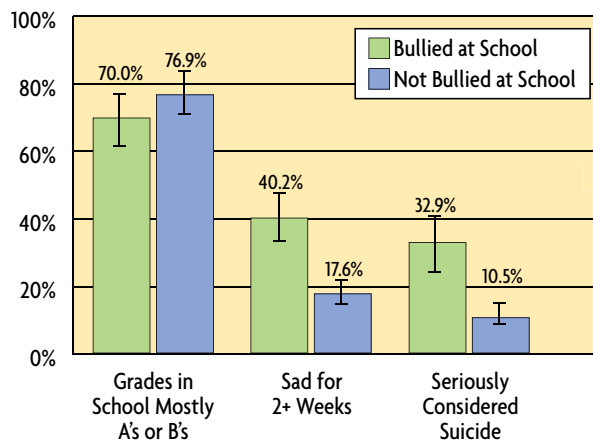
### Bullying

Having been bullied in school in the past year was primarily associated with mental health symptoms. One-third of students who were bullied reported that they had seriously considered suicide in the past year compared to 10% of students who were not bullied. Similarly, 40% of bullied students felt sad for two or more weeks in a row compared to less than 20% of students who did not experience bullying. Bullying was also associated with grades in school; students who experienced bullying were less likely to report getting A or B grades compared to students who were not bullied.

### Mental Health

Two items reflecting risk for depression were tested with other behaviors: feeling sad for two weeks or more in the past 12 months (which is a symptom criterion for a diagnosis of depression) and seriously considering suicide in the past 12 months (suicidal ideation).

**Figure 42: HS Significant Associations Between Bullying at School, and Mental Health**



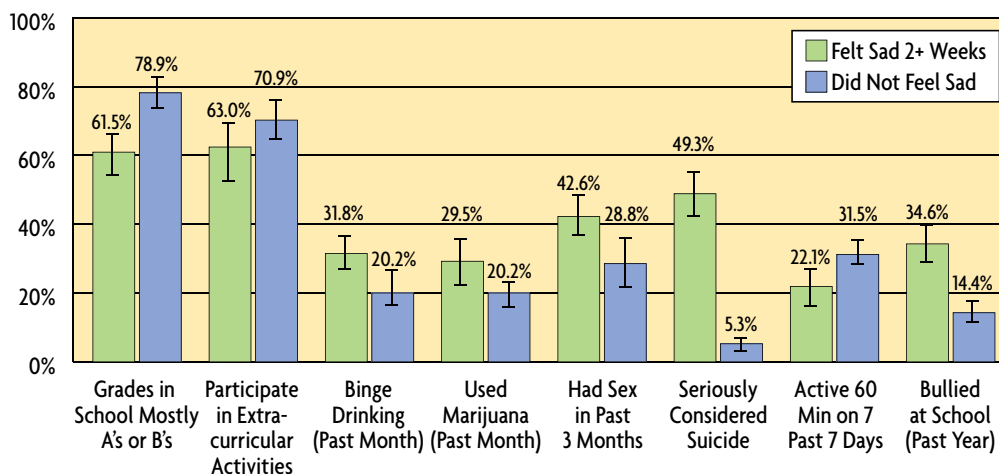
Note: In 2011, 19.3% of Colorado students reported being bullied at school in the past 12 months. All comparisons above reflect statistically significant differences ( $p < .05$ ).

### Depression

Colorado students who reported feeling sad for two weeks or more also reported significantly higher rates of considering suicide compared to students who did not feel sad. In addition, a much higher proportion of students who felt sad also experienced being bullied within the past year compared to students who did not report sadness. Approximately 30% of Colorado students who felt sad also engaged in binge drinking and marijuana use, and over 40% reported being sexually active.



**Figure 43: HS Significant Associations Between Sadness and School, Substance Use, Sexual Activity, Other Mental Health, Physical Activity, and Bullying**



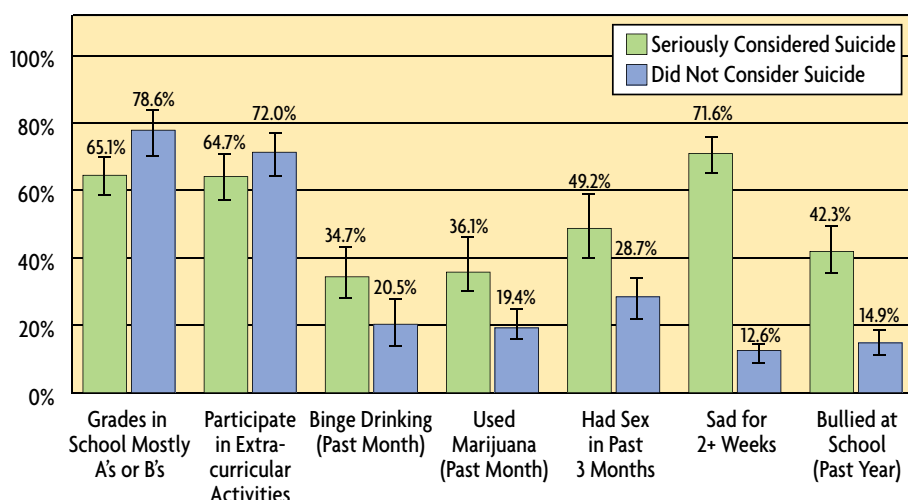
Note: In 2011, 21.9% of Colorado students reported feeling sad for at least two weeks in the past year. All comparisons above reflect statistically significant differences ( $p < .05$ ).

Students who reported feelings of persistent sadness were less likely to participate in regular physical activity and extracurricular activities compared to those who did not experience sadness, and were less likely to report A or B grades in school.

## Suicidal Ideation

Similar associations were found for students who seriously considered suicide during the past year as compared to students who reported feeling sad. Compared to students who did not contemplate suicide, students who had seriously considered suicide over the last year were more likely to report a number of risks including being bullied, alcohol (binge drinking) and marijuana use, frequent sadness, and current sexual activity. These students were also less likely to report A or B grades in school or participate in extracurricular activities compared to their peers who did not report suicidal ideation.

**Figure 44: HS Significant Associations Between Suicidal Ideation and School, Substance Use, Sexual Activity, Other Mental Health, and Bullying**



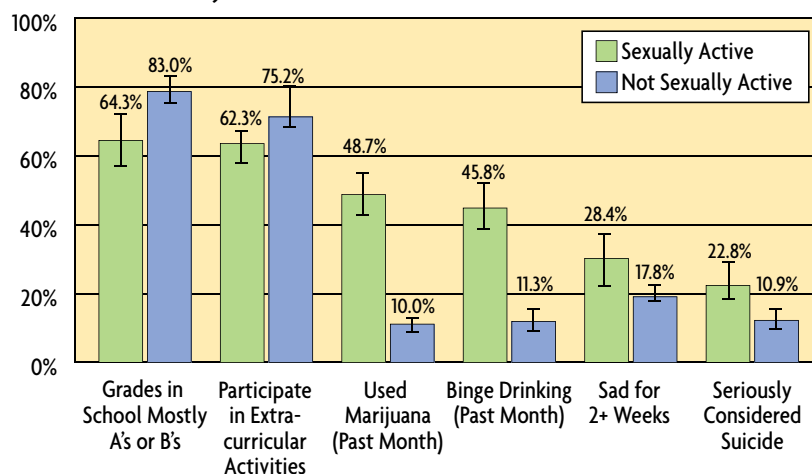
Note: In 2011, 14.8% of Colorado students reported seriously considering suicide in the past year. All comparisons above reflect statistically significant differences ( $p < .05$ ).



## Sexual Activity

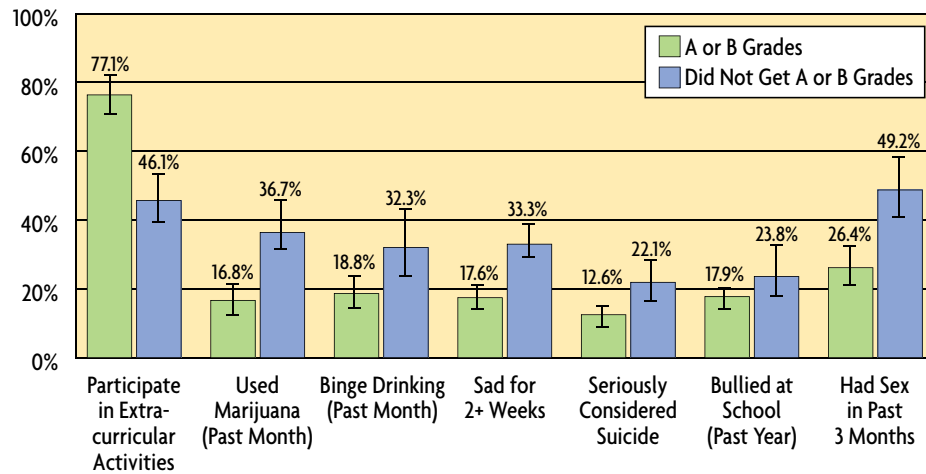
Six behaviors were associated with current sexual activity (having at least one partner in the past 3 months). Close to half of sexually active students reported use of alcohol (binge drinking) and marijuana compared to approximately 10% of those not sexually active. Sexually active students were also more likely to have felt sad and considered suicide compared to students not reporting current sexual activity. Students who were not sexually active were more likely to report A or B grades in school, and having participated in extracurricular activities.

**Figure 45: HS Significant Associations Between Current Sexual Activity and School, Substance Use, and Mental Health**



Note: In 2011, 31.8% of Colorado students reported current sexual activity (having had sex in the past three months). All comparisons above reflect statistically significant differences ( $p < .05$ ).

**Figure 46: HS Significant Associations Between Grades in School and Other School, Substance Use, Mental Health, Bullying, and Sexual Activity**



Note: In 2011, 75.6% of Colorado students reported getting A or B grades. All comparisons above reflect statistically significant differences ( $p < .05$ ).

## School Achievement and Activities

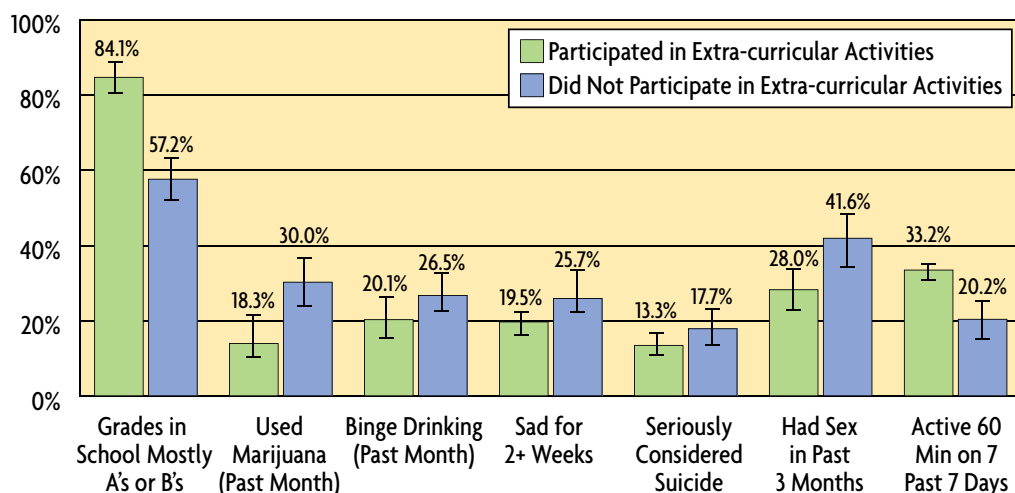
### Grades in School

Seven behaviors were associated with getting A or B grades in school. Of note, over three-quarters of students who got A or B grades also participated in extracurricular activities compared to less than half of students who did not get A or B grades. Students with these grades were also less likely to report binge drinking, using marijuana, and having sex. Students with A or B grades were also less likely to report being bullied on school property, feeling sad for 2 weeks or more, and seriously considering suicide compared to their peers who did report getting A or B grades.

### Participation in Extracurricular Activities

Students were also asked if they participated in any extracurricular activities such as sports, band, drama or student government. Close to 85% of students who participated in extracurricular activities reported having A or B grades in school compared to 57% who did not participate in extracurriculars. Students who participated in extracurricular activities were also less likely to report binge drinking, using marijuana, feeling sad and considering suicide, and having sex in the past three months. Students who participated in extracurricular activities were also more likely to report being physically active for at least 60 minutes every day during the past week.

**Figure 47: HS Significant Associations Between Participation in Extra-curricular Activities, Other School, Substance Use, Mental Health, Sexual Activity, and Physical Activity**



Note: In 2011, 69.6% of Colorado students reported participating in extra-curricular activities. All comparisons above reflect statistically significant differences ( $p < .05$ ).



## Prevalence of Risk and Protective Factors

Risk and protective factors are characteristics that increase or decrease the likelihood that an individual will engage in unhealthy behaviors. **Risk factors**, such as having parents with favorable attitudes toward substance use, put youth at higher risk for substance use and delinquency compared to youth for whom the risk factor is not present. Conversely, **protective factors**, such as having opportunities to participate in positive school activities, serve as a buffer against risks, making it less likely that the youth will engage in unhealthy behaviors.

The risk and protective factors measured by the HKCS are based on Hawkins and Catalano's Risk and Protective Factor framework<sup>35</sup>, a leading research model used to study youth prevention and outcomes. According to this framework, there are many domains in which youth can experience risk and protection. The HKCS includes questions that assess risk and protection in four domains: community, school, family, and the peer-individual domain. Within these domains, the HKCS measures six risk factors and two protective factors<sup>36</sup>. This subset of factors was selected by the State Survey Coordination Team and represents indicators that are required for federal reporting across state level initiatives, as well as indicators that were prioritized as important to monitor in Colorado.

Each factor is measured by a scale-- a group of questions that have been scientifically validated as measures of the same underlying construct. For example, the scale that measures the risk factor Low Perceived Risks of Substance Use includes four questions that ask how harmful it is to use different substances. Items that were reported in

earlier sections of this report, specifically from the substance use, family and school sections comprise the different risk and protective factors. A student's responses to all the questions that make up a scale are averaged to create a mean scale score. From there, the distribution of all students' mean scores on each factor are examined and compared to a national **cut-point**; the cut-point is a number used as a critical threshold for that factor. Research has shown that students who score above the cut-point for a risk factor are more likely to engage in associated unhealthy behaviors. Students who score above the cut-point for protective factors are less likely to engage in these behaviors.

The figures in this section show the percentage of Colorado high school students whose scores are **above the cut-point for each factor**. This means that instead of showing the percentage of students who report a particular behavior, these figures instead show the percentage who experience risk or protection based on a set of responses to the question in the scale; that is, those that are above the cut-point. Ultimately, it is desirable to have a small percentage of students above the cut-point for risk factors and a large percentage above the cut-point for protective factors. This type of distribution would indicate that Colorado students experience less risk and more protection against risk compared to nationally-established scores. Please see Appendix IV for additional descriptions of the risk and protection domains, scales, and items.

The risk and protective factor profile for Colorado high school students can help inform programs and policies aimed at decreasing unhealthy behaviors among youth. For example, a high proportion of students above the cut-point for a given risk factor, or a low proportion of students above the cut-point for a given protective factor, may signal an area of concern and target for intervention. Schools and communities are encouraged to identify and implement evidence based programs that are known to reduce risk factors and promote protective factors. Consistent with the risk and protective factor framework, those programs and policies that serve to decrease the proportion of youth who experience risk factors and increase the proportion who experience protective factors are likely to increase positive outcomes among youth.



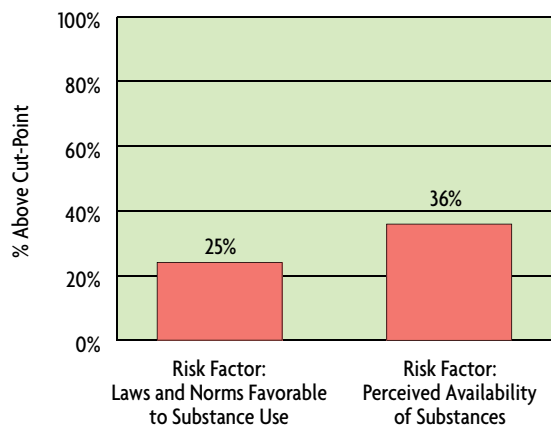
<sup>35</sup>Hawkins J. D., Catalano R. F., & Miller J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112(1), 64-105.

<sup>36</sup>The full Risk and Protective Factor framework includes a total of 34 factors; 23 risk factors and 11 protective factors.

## Community Domain

The HKCS includes two risk factor scales assessing students' perceptions of community problems that increase risk for unhealthy outcomes. These measures indicated that about a quarter of Colorado students experienced risk (were above the cut-point) on Laws and Norms Favorable to Substance Use; that is, these students perceived their community to be relatively tolerant of youth using alcohol, tobacco, or other substances. In addition, more than a third of students experienced risk related to perceiving that alcohol, tobacco, and other substances are readily available and relatively easy to obtain in their communities.

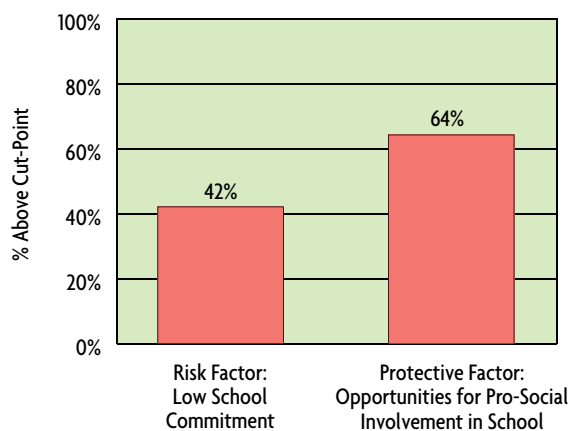
**Figure 48: HS Percent of Students Above the Cut-Point for Risk Factors in the Community Domain**



## School Domain

Positive involvement and higher achievement and engagement in school are associated with lower risk of substance use, delinquency and other unhealthy behaviors. Figure 49 displays the percentages of students who were above the cut-point for one risk factor—Low School Commitment—and one protective factor—Opportunities for Pro-Social Involvement in School. Over 40% of student participants experienced risk related to low commitment to school, meaning that this group of students responded to questions in a way that indicated that they were not interested or engaged in school activities. At the same time, nearly two-thirds of students experienced protection in this domain; indicating that they have a number of opportunities to engage in positive school activities, such as special classroom projects, sports and clubs, and are a part of classroom decision-making. This distribution means that even though some students are at an increased risk for unhealthy behaviors because they are not engaged at school, a majority of students also report experiencing protection in this domain, thereby increasing students' resilience against unhealthy outcomes.

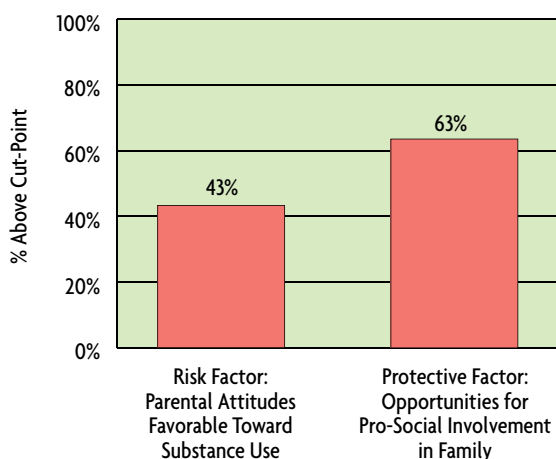
**Figure 49: HS Percent of Students Above the Cut-Point for Risk and Protective Factors in the School Domain**



## Family Domain

The HKCS measured a risk and a protective factor in the family domain. Over 40% of students experienced risk as a result of Parental Attitudes Favorable toward Substance Use, suggesting that a large proportion of Colorado youth perceive that their parents are accepting of alcohol, marijuana or other substance use. An even larger percentage of students (63%) experienced protection in this domain; meaning that many students feel that their parents involve them in family processes. As with the risk and protection profile in the school domain, the fact that a large proportion of students are above the cut-point for family protective factors suggest that some students who experience risk in the family domain are more likely to be resilient in the face of risk because they also experience the protective influence of having opportunities for positive involvement in their families.

**Figure 50: HS Percent of Students Above the Cut-Point for Risk and Protective Factors in the Family Domain**

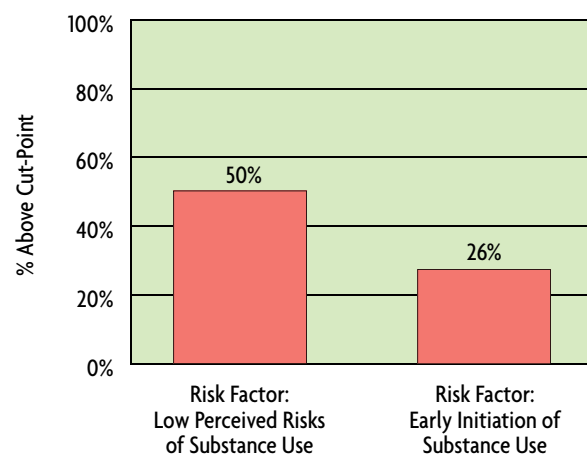


## Peer-Individual Domain

The HKCS measured two factors pertaining to individual characteristics that put youth at risk for engaging in unhealthy behavior. Half of all students scored above the risk cut-point on Low Perceived Risks of Substance Use. Over a quarter of students were above the cut-point for the risk associated with having first used substances at a young age. This profile suggests that while the majority of Colorado high school students do not report having first used substances at a young age, half perceive that there

are few risks associated with substance use. This high proportion of students above the cut-point on Low Perceived Risks of Substance Use is particularly concerning, because studies have shown that when perceptions of risk decrease, substance use behavior increases<sup>37</sup>.

**Figure 51: HS Percent of Students Above the Cut-Point for Risk and Protective Factors in the Peer-Individual Domain**



## Combined Risk

Experiencing multiple risk factors increases the likelihood that students will have unhealthy outcomes, such as criminal behavior, substance use, and poor mental health. The risk factor scores can be aggregated to get a sense of the proportion of participants who may be at greatest risk by virtue of experiencing problems in multiple areas and domains. Following the Social Development Research Group's recommended method (see Appendix IV), the percentage of youth who were above the cut-point on four or more of the six risk factors was calculated. Results indicated that a quarter of students experience risk on four of the six risk factor scores described above. Because the HKCS includes only two protective factors, an aggregate protective factor score was not calculated and is not presented in this report.

<sup>37</sup>Monitoring the Future, 2010

## Associations with Risk and Protective Factors

The risk and protective factor framework suggests that certain factors should be significantly related to, or associated with, select behaviors and experiences. This section of the report assesses whether Colorado's high school students' risk and protective factors are significantly associated with other behaviors and experiences. These tests of association are similar to the associations among single behaviors and experiences presented earlier in the report (e.g., the association between having been bullied at school in the past year and alcohol use), but differ in the sense that the relationship being tested is between a cluster of behaviors and experiences, assessed by multiple items—the risk or protective factor—and individual behaviors and experiences (e.g., the association between Low School Commitment and alcohol use).

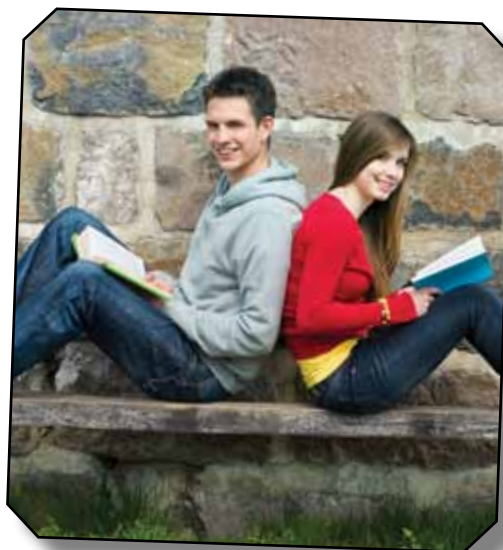
As discussed earlier in this report, a significant association simply indicates that two variables are related to one another, but it does not speak to the nature of that relationship. Significant associations between variables may reflect a causal relationship (e.g., perceiving few risks associated with alcohol causes an individual to use alcohol), but they *cannot* confirm the *direction of the causation* (e.g., using alcohol may cause the individual to perceive alcohol use as low risk) or whether causation is unidirectional (i.e., one variable causes the other) or bidirectional (i.e., each variable exerts an influence on the other). A significant association between two variables could also reflect a situation in which a third variable causes the first two. Other types of analyses used in research studies (versus surveillance studies such as the HKCS) are better suited for testing the causal relationship between two variables. Indeed, research studies have found that certain risk and protective factors have a causal impact on youth outcomes<sup>38</sup>.

Across the wide spectrum of risk and protective factors, certain factors are more likely to be associated with those behaviors and experiences that are most closely related to that factor than other, less closely related behaviors and experiences. For example, the risk factor Early Initiation of Substance Use is more likely to be related to substance use in the past 30 days than to students' aspirations for the future. The more proximal a perception or behavior

is to the risk or protective factor, the more likely it is to be associated with that factor. However, the effects of possessing certain risk and protective factors can be far-reaching. Even though early substance use and career planning may not be directly related, using substances for the first time at a young age could diminish one's goals for a future career.

To examine whether Colorado high school students' risk and protective factors (e.g., early initiation of substance use) are associated with proximal (e.g., current substance use) and more distal behaviors and experiences (e.g., future aspirations), chi-square tests of independence were used to evaluate associations between risk and protective factors and a diverse set of individual behaviors and experiences. Unlike the item level association section, these individual behaviors and experiences were not uniformly tested across each risk and protective factor. Instead, the individual behaviors that were most likely to be associated with the larger domain were selected and tested. Risk and protective factor associations were assessed in three domains:

- Factors pertaining most closely to School (low commitment to school, opportunities for pro-social involvement at school),
- One factor pertaining most closely to Family (opportunities for pro-social involvement in one's family), and
- Factors pertaining most closely to Substance use (perceived availability of substances, laws and norms favorable to substance use, parental attitudes toward substance use, and perceived risk of harm associated with substance use).



<sup>38</sup>Catalano, R. F., Haggerty, K.P., Oesterle, S., Fleming, C. B., & Hawkins, J. D. (2004). The importance of bonding to school for healthy development: Findings from the Social Development Research Group. *The Journal of School Health*, 74, 151–162.



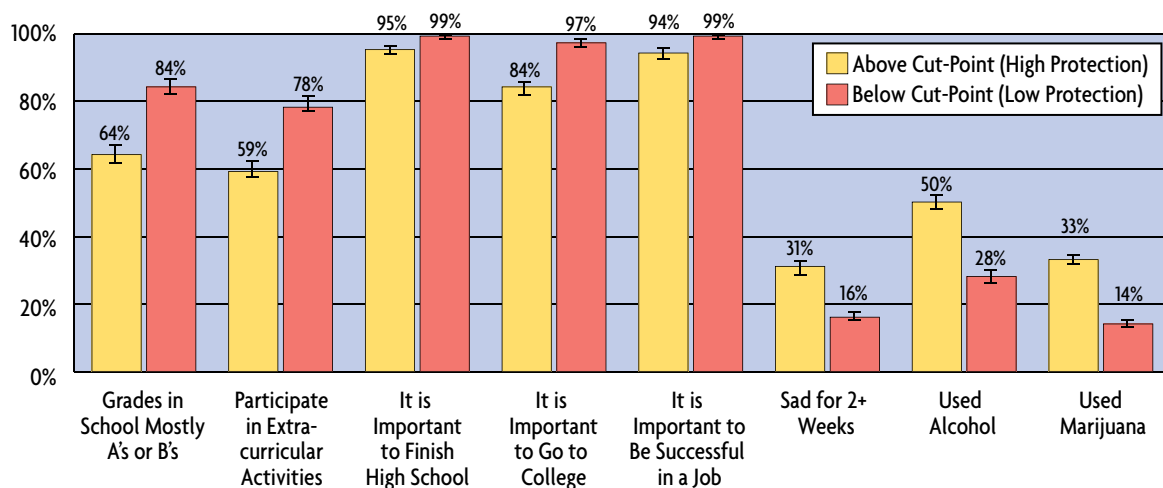
## School Associations

One risk factor (Low School Commitment) and one protective factor (Opportunities for Pro-Social Involvement at School) were assessed for significant association with school-related behaviors and experiences (grades, participation in extracurricular activities, and aspirations for future college and a career), as well as those less closely related to school (depression, alcohol use, marijuana use, and having been bullied). As displayed in Figure 52, students who scored above the cut-point on Low School Commitment were significantly less likely to get good grades, participate in extracurricular activities, and have high expectations for future achievement compared to students who scored below the cut-point. Students less engaged in school were also more likely to have been depressed and to have used alcohol and marijuana than other students.

However, there was no association between Low School Commitment and having been bullied. In other words, students' engagement in school was not related to whether or not they had experienced bullying in the past year.

Conversely, students who scored above the cut-point on Opportunities for Pro-Social Involvement at School were significantly more likely to get good grades, participate in extracurricular activities, and value finishing high school and going to college compared to students who scored below the cut-point. Students who reported many opportunities to participate in positive school activities were less likely to have been depressed, to have used marijuana, and to have been bullied than other students. Opportunities for Pro-Social Involvement at School was not associated with whether or not students valued having a successful job or used alcohol.

**Figure 52: HS Associations Between Low School Commitment and Grades, Extracurricular Participation, Future Aspirations, Depression, and Substance Use**



**Figure 53: HS Associations Between Opportunities for Pro-Social Involvement at School and Grades, Extracurricular Participation, Future Aspirations, Depression, Substance Use, and Bullying**

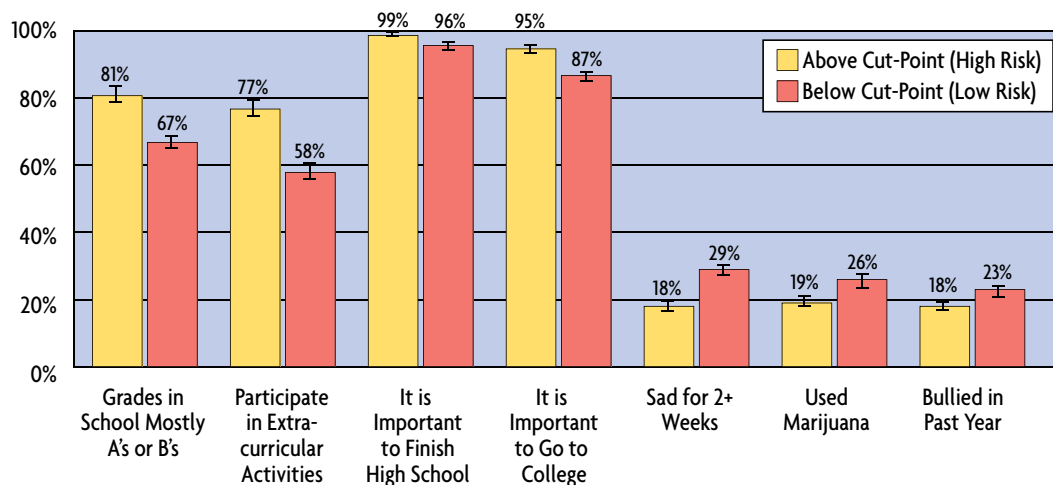
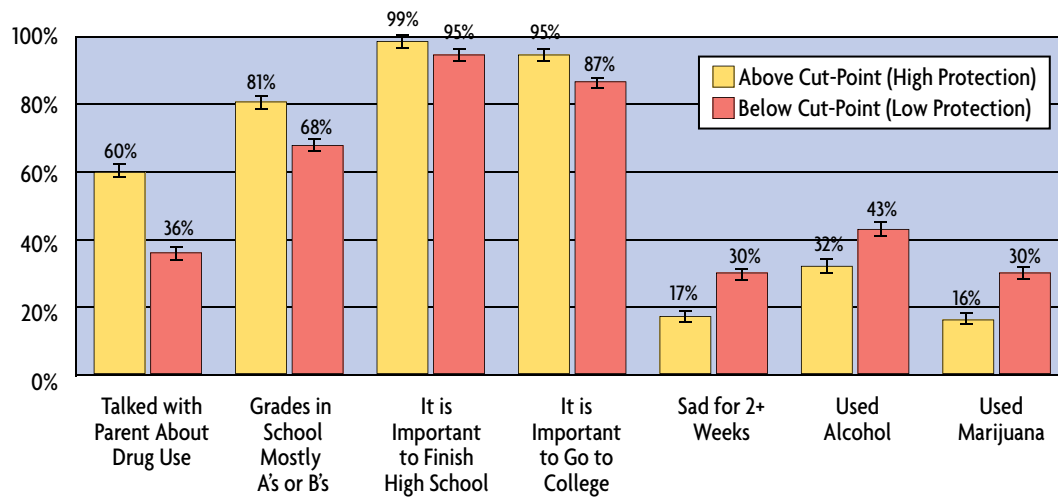


Figure 54: HS Associations Between Opportunities for Pro-Social Involvement in the Family and Talking with Parents about Substance Use, Grades, Future Aspirations, Depression, and Substance Use



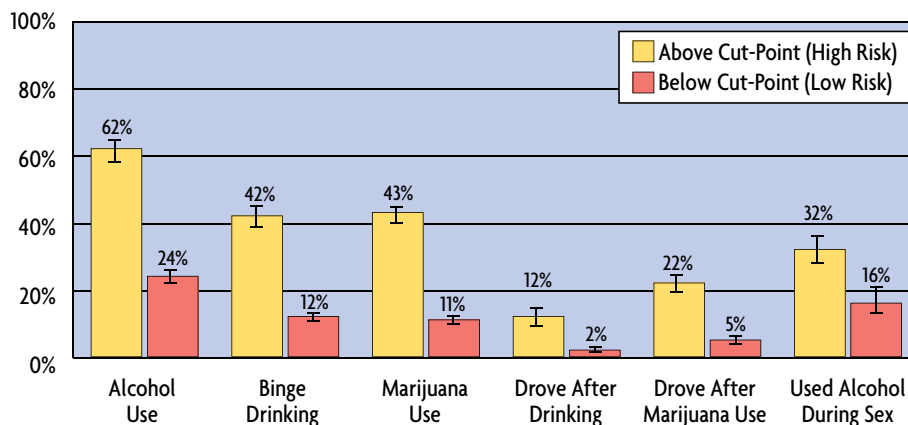
## Family Associations

Figure 54 shows significant associations between the protective factor in the family domain—Opportunities for Pro-Social Involvement in Family—and a number of behaviors and experiences. Compared to students who reported having few opportunities for positive involvement in their families, students who reported having many opportunities were more likely to have talked with a parent about substance use, report A or B grades, and value finishing high school and going to college. They were also less likely to have been depressed and to have used alcohol and marijuana.

## Substance Use Associations

Four risk factors related most directly to substances were tested for associations with substance-related behaviors, as well as behaviors and experiences less closely related to substances, including risky sexual behavior, grades, and future aspirations. In this section, figures are presented in pairs: the first figure displays associations between the risk factor and substance use behavior; and the second figure displays associations between the risk factor and behaviors and experiences less closely related to substances.

Figure 55: HS Associations Between Perceived Availability of Substances and Substance Use, Risky Driving, and Alcohol Use During Sex



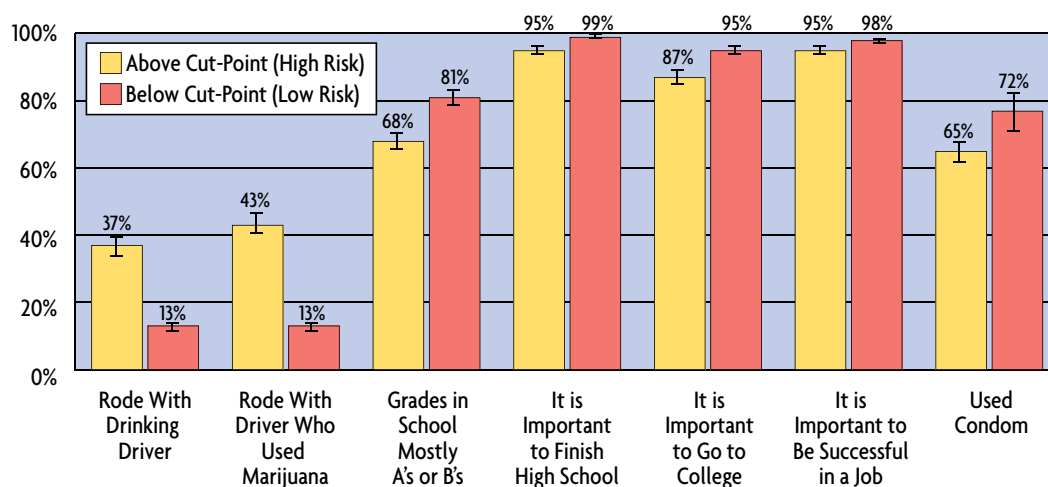
Students who perceived substances to be readily available and easy to obtain were more likely to use alcohol, binge drink, use marijuana, drive after drinking, and drive after using marijuana compared to students who perceived substances to be more difficult to obtain. Those students who scored above the risk cut-point and who were sexually active were also more likely to have used alcohol during sex.

For behaviors less closely related to substances, students who scored above the risk cut-point on Perceived Availability of Substances were more likely to report riding with drivers who had been drinking and riding with drivers who had been using marijuana compared to those below the cut-point. They were less likely to get good grades and value finishing high school, going to college, and having a successful job.

Sexually active students above the cut-point were less likely to report using a condom than sexually active students below the cut-point.

The pattern of associations with Laws and Norms Favorable to Substance Use is the same as the pattern of associations with Perceived Availability of Substances. Students above the risk cut-point (students who perceived their community to be relatively tolerant of youth using alcohol, tobacco, or other substances) were more likely to use alcohol, binge drink, use marijuana, drive after drinking, and drive after using marijuana than students below the risk cut-point. Those students who scored above the risk cut-point and who were sexually active were also more likely to have used alcohol during sex.

**Figure 56: HS Associations Between Perceived Availability of Substances and Risky Passenger Behavior, Grades, Future Aspirations, and Risky Sexual Behavior**



**Figure 57: HS Associations Between Laws and Norms Favorable to Substance Use and Substance Use, Risky Driving, and Alcohol Use During Sex**

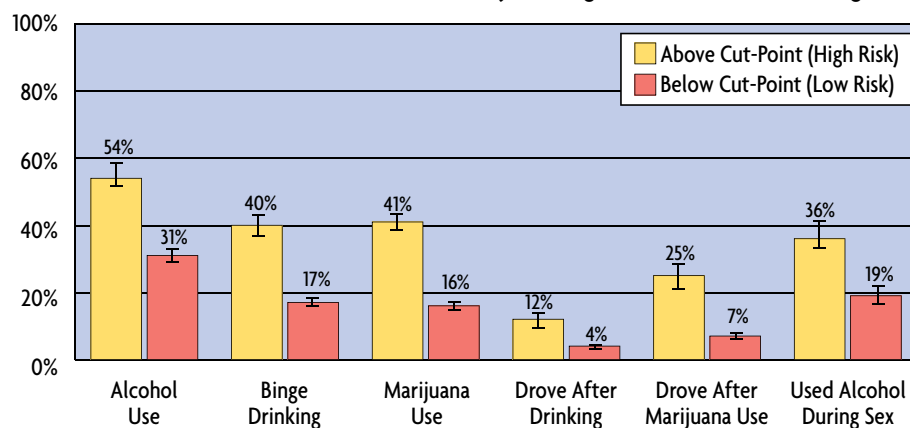


Figure 58: HS Associations Between Laws and Norms Favorable to Substance Use and Risky Passenger Behavior, Grades, Future Aspirations, and Risky Sexual Behavior

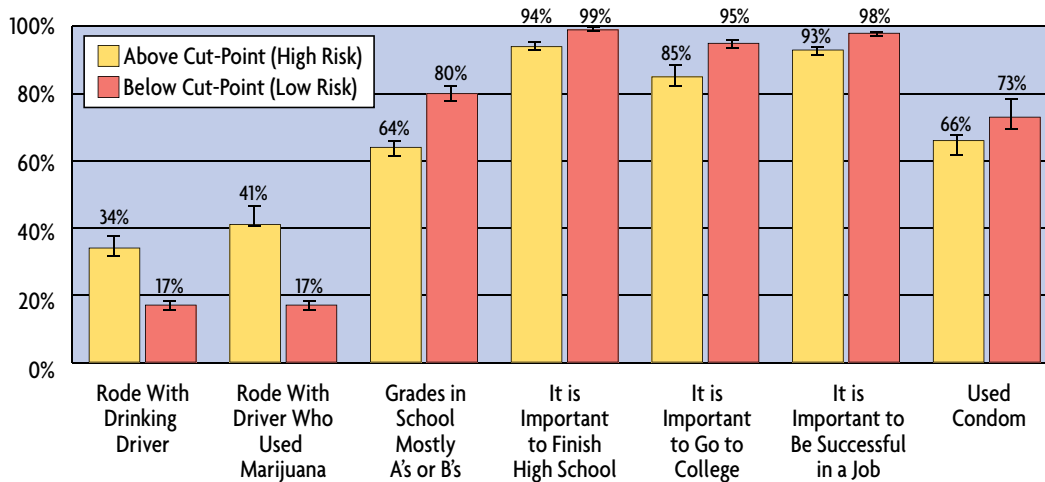
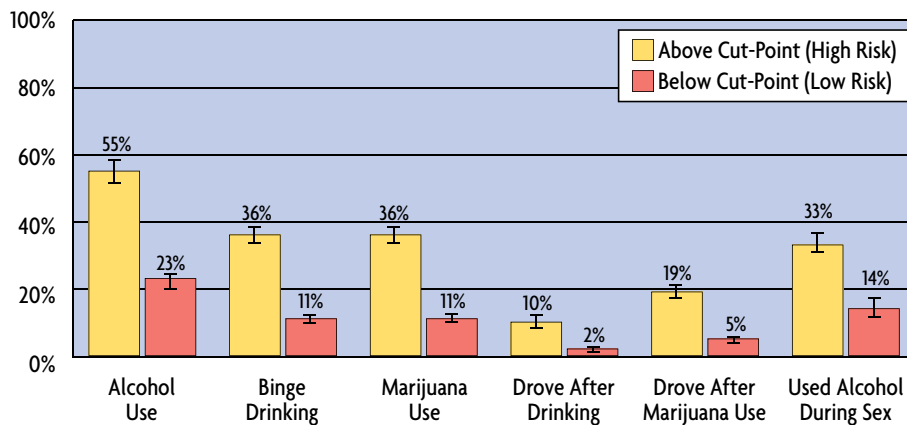


Figure 59: HS Associations Between Parental Attitudes Favorable Toward Substance Use and Substance Use, Risky Driving, and Alcohol Use During Sex



For behaviors less closely related to substances, students who scored above the risk cut-point on Laws and Norms Favorable to Substance Use were more likely to report riding with drivers who had been drinking and riding with drivers who had been using marijuana compared to those below the cut-point. They were less likely to get good grades and value finishing high school, going to college, and having a successful job. Sexually active students above the cut-point were less likely to report using a condom than sexually active students below the cut-point.

Students with parents who are more tolerant of youth substance use (youth above the cut-point on Parental Attitudes Favorable toward Substance Use) were more likely to use alcohol, binge drink, use marijuana, drive after drinking, and drive after using marijuana compared to students of parents who are less tolerant of youth substance use. Those students who scored above the risk cut-point and who were sexually active were more likely to have used alcohol during sex.



Figure 60: HS Associations Between Parental Attitudes Favorable Toward Substance Use and Risky Passenger Behavior, Grades, and Future Aspirations

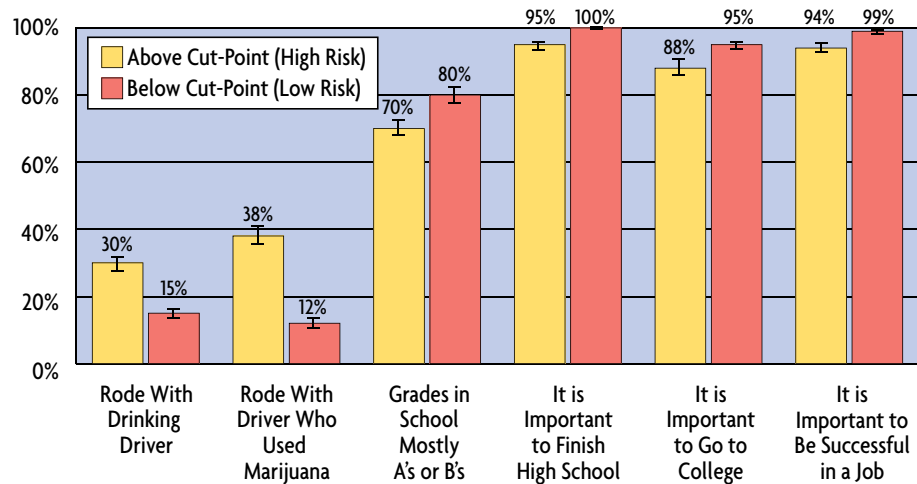
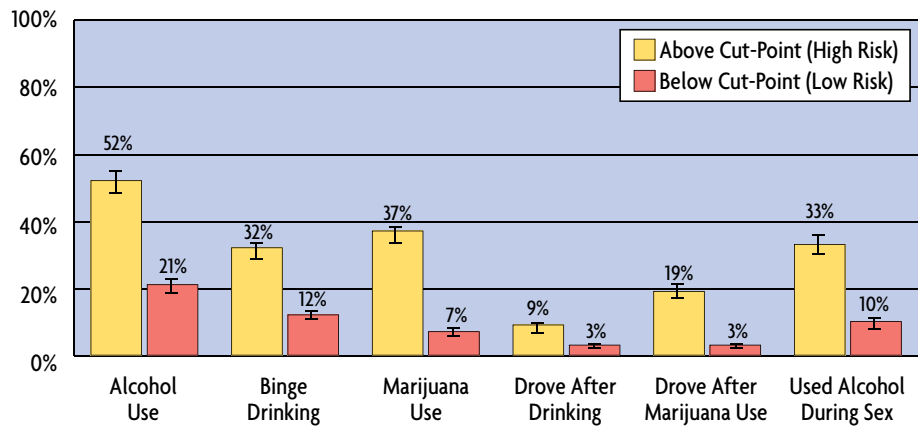


Figure 61: HS Associations Between Low Perceived Risks of Substance Use and Substance Use, Risky Driving, and Alcohol Use During Sex



For behaviors less closely related to substance use, those students above the risk cut-point on Parental Attitudes Favorable toward Substance Use were more likely to ride with a driver who had been drinking and ride with a driver who had been using marijuana, and less likely to get good grades and value finishing high school, going to college, and having a successful job. Parental Attitudes Favorable toward Substance Use was not associated with whether or not sexually active students used a condom.

The pattern of associations with Low Perceived Risks of Substance Use is the same as the pattern of associations with Parental Attitudes Favorable toward Substance Use. Students above the risk cut-point were more likely to use alcohol, binge drink, use marijuana, drive after drinking, and drive after using marijuana than students below the risk cut-point. Those students who scored above the risk cut-point and who were sexually active were more likely to have used alcohol during sex.

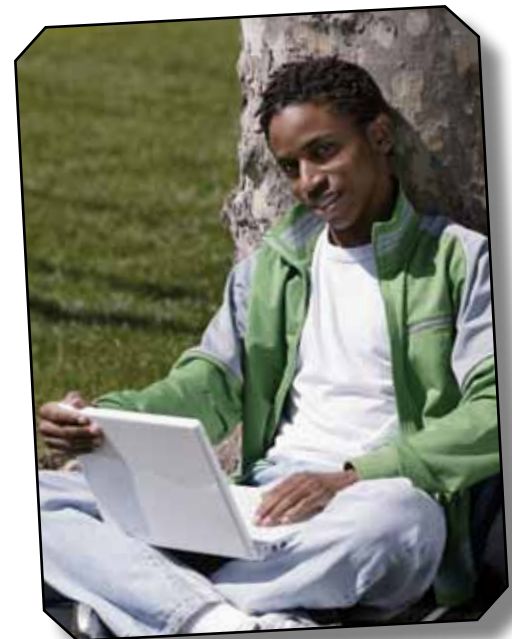
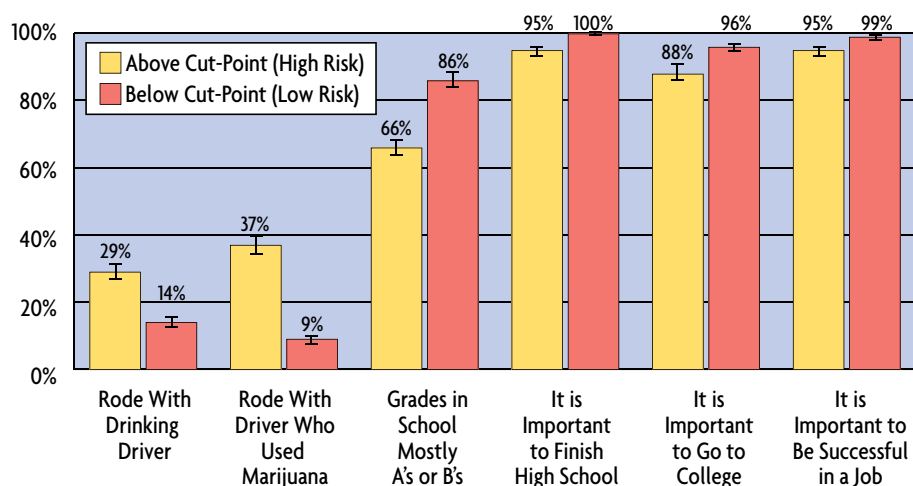


Figure 62: HS Associations Between Low Perceived Risks of Substance Use and Risky Passenger Behavior, Grades, and Future Aspirations



For behaviors less closely related to substance use, those students above the risk cut-point on Low Perceived Risks of Substance Use were more likely to ride with a driver who had been drinking and ride with a driver who had been using marijuana, and less likely to get good grades and value finishing high school, going to college, and having a successful job. Low Perceived Risks of Substance Use was not associated with whether or not sexually active students used a condom.

As noted earlier, half of Colorado youth meet the cut-point for Low Perceived Risks of Substance Use. The pattern of associations indicates that compared

to students who perceive substance use as risky, those who perceive substance use as relatively safe are more likely to engage in negative behaviors extending beyond just substance use, as well as hold perceptions that put them at an increased risk for unhealthy behaviors. Low Perceived Risks of Substance Use was not associated with some risky sexual behaviors, but this risk factor was significantly associated with grades and future aspirations, even though these are less closely related to substances.





## HEALTHY KIDS COLORADO SURVEY: MIDDLE SCHOOL RESULTS



### *Middle School Results*

2011 represents the first year for which weighted HKCS state middle school data is available. The administration of the HKCS/YRBS at the middle school level is optional for states and has only been conducted twice in Colorado<sup>39</sup>. Across the United States, a total of 16 states and the District of Columbia<sup>40</sup> also conducted a middle school YRBS. Because this administration is optional, these results are not representative of the nation, and instead are provided on a state by state basis. In Colorado, the State Survey Coordination Team felt it was important to collect representative data on this population in addition to the high school youth, and prioritized resources to support this effort. The results presented in this report offer an important snapshot of health related attitudes and behaviors among middle school students.

Similar to the high school effort, the Centers for Disease Control and Prevention (CDC) randomly selected 40 public middle schools across Colorado to administer the HKCS. As described in the explanation of terms section, random sampling allows the state to gather data from a subset of students and weight their results such that they are representative of all Colorado public middle school students. In the fall of 2011, a total of 1,614 students in 33 public middle

schools throughout Colorado participated in the HKCS. The school response rate was 83% and the student response rate was 81% yielding an overall response rate of 69% which allowed the data to be reliably weighted. This means that results can be generalized to the underlying population, or all public middle school students in Colorado.

The middle school instrument contains questions in the following domains:

- Physical Activity and Weight
- Alcohol, Tobacco and Other Drug Use
- Unintentional Injuries and Violence
- Mental Health
- Other Health Topics (Asthma and HIV)

In the following sections, demographic information on the middle school weighted sample is presented followed by the 2011 HKCS results. Comparisons of statistically significant differences between different demographic subpopulations within the state (e.g., gender and race/ethnicity) are presented alongside 2011 prevalence rates. As noted above, comparison to other years and to the nation are not available at the middle school level.

<sup>39</sup>The HKCS was administered in the 2007 state sample, however weighted data was not achieved. Therefore, results are not compared to this administration in this report.

<sup>40</sup>In addition, 3 territories, 1 tribal government and 13 local agencies conducted a MS YRBS.



## Demographics

Results from the middle school HKCS were weighted to be reflective of the statewide student enrollment in Colorado public middle schools. This yielded a weighted sample of slightly more males than females, a majority of White students (with a sizeable proportion of Hispanic/Latino students), and a larger percentage of students from 6th and 7th grades as compared to 8th grade. As described in the Explanation of Terms section, weighting data is a process by which the demographic characteristics of the HKCS participants are compared to the population they were designed to represent (all Colorado public middle school students). Responses are then adjusted to align the respondent population with the true population. This means that demographic groups that were under-represented in the HKCS survey may be weighted more heavily (inflated) in the final dataset. These adjustments can be seen in the tables below in cases where the number of respondents does not match to the weighted percentage in the final dataset. The demographics of Colorado's enrolled student population and the distribution within the sample are examined further below.

### Participation by Gender

The gender distribution of survey respondents (Table 1) was similar to the gender distribution of the overall Colorado middle school enrollment. In Colorado, the gender distribution for all public middle school students for the 2011 school year was 51.2% male and 48.8% female<sup>41</sup>. As slightly more female students participated in the HKCS, data were weighted to more closely match the school enrollment distribution.

**Table 1. MS HKCS Participation by Gender**

Sex	2011 HKCS	
	N	Weighted %
Male	786	51.5
Female	824	48.5
Missing	4	N/A
<b>Total</b>	<b>1,614</b>	<b>100.0</b>

## Participation by Race/ Ethnicity

Statewide, a majority of students in the 2011 school year identified as White (56.4%) and close to one third of students (31.6%) identified as Hispanic/Latino<sup>42</sup>. The 2011 middle school data were weighted to reflect similar proportions in the final dataset (Table 2).

The percentage of students who participated in the middle school HKCS by racial/ethnic group matches what would be expected based on the demographic profile of Colorado students. The number of Hispanic/Latino students that participated in the survey was large enough to permit statistical comparisons to non-Hispanic White students on self-reported health behaviors. Where statistically significant differences between these two subgroups are observable, this is noted throughout this report. The number of participants from all other racial/ethnic categories was too low (below 100) to facilitate generalizable comparisons between any additional sub-groups. For this reason, these estimates are not presented in the report. In order to allow for comparisons among additional racial/ethnic groups, these populations would need to be over-sampled in future surveillance efforts.

**Table 2. MS HKCS Participation by Race/Ethnicity**

Race/Ethnicity	2011 HKCS	
	N	Weighted %
White*	763	58.7
Hispanic/Latino	538	30.4
Black*	51	2.7
All other races*†	105	5.3
Multi-Racial*^	61	2.9
Missing	96	N/A
<b>Total</b>	<b>1,614</b>	<b>100.0</b>

\*Not Hispanic;

†Racial/ethnic categories with fewer than 50 respondents including Asian, Native Hawaiian/Pacific Islander and American Indian/Alaska Native;

^Individuals who identified as more than one race. According to CDC guidelines, students who are multi-racial and Hispanic are counted as Hispanic/Latino.

<sup>41</sup>Colorado Department of Education, Fall 2011 Pupil Membership, <http://www.cde.state.co.us/cdereval/rv2011pmlinks.htm>.

<sup>42</sup>Ibid.

## Participation by Grade Level

In Colorado, the 2011 statewide public school enrollment data indicated that the number of students in 6th, 7th and 8th grades decreased slightly as grade level increased. In the middle school sample, however, the number of participants in the HKCS increased with grade. Data were weighted to correct for this distribution in the final weighted dataset. As shown in Table 3 below, the weighted percentages match closely to statewide public school enrollment, which has a 6th, 7th, and 8th grade-level distribution of 34%, 33.3%, and 32.7%, respectively<sup>43</sup>.

**Table 3. MS HKCS Participation by Grade**

Grade	2011 HKCS	
	N	Weighted %
6th	433	33.4
7th	560	33.1
8th	594	32.9
Ungraded/Other*	11	0.7
Missing	16	N/A
Total	1,614	100.0

\*The Ungraded/Other category represents students who did not indicate a grade level.

## Middle School Prevalence Rates

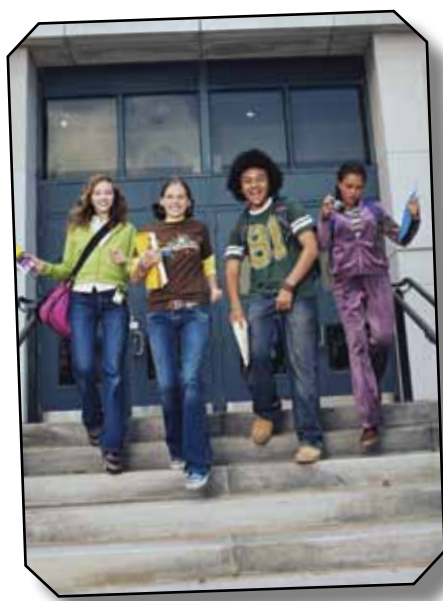
This section of the report provides prevalence rates, or the proportion of middle school students who reported a given behavior for each of the major behavior domains measured by the middle school HKCS. Middle school prevalence rates will be reported for all students as well as sub-groups broken down by gender and ethnicity. As noted above, 2011 marks the first time that weighted middle school data is available in Colorado, therefore comparisons to other years will be provided in future reports. Additionally, unlike high school data, middle school data are not collected at the national level therefore national comparisons are not available.



## Physical Activity, Health, Weight Behaviors and Gender

Students were asked about a variety of health behaviors including questions that measure frequency of physical activity, participation on sports teams, watching television and video game/computer use. The HKCS also asks students about their perception of their own weight and whether they are trying to lose weight<sup>44</sup>.

Overall, approximately 90% of Colorado middle school students participated in any physical activity (60 minutes for at least 1 day out of the past 7 days), while 62.2% engaged in moderate activity (60 minutes on 5+ days of the past 7 days), and 36.3% took part in daily activity (60 minutes on 7 of the past 7 days). Nearly three-quarters (73.0%) of all middle school students played on at least one sports team in the past twelve months. While there were no



<sup>43</sup>Ibid.

<sup>44</sup>Unlike the high school HKCS, BMI is not calculated for the middle school population as middle school students are not asked to self-report height or weight. Therefore, only questions related to perception of weight and weight loss behaviors are presented.

differences between genders in reporting any activity, moderate activity, or participation in sports teams, males were significantly more likely to report daily activity than females.

Students were also asked how much time they spend watching television or playing video or computer games. Approximately one-quarter of Colorado middle school students reported watching at least three hours of television on an average school day, while over one-fifth of students played video or computer games for three or more hours on an average school day. Although there was no difference between males and females for television watching, males were more likely to report video game or computer use as compared to females.

Colorado middle school students were asked to report on their perception of their own weight as well as any weight loss behavior they had engaged in. As shown in Figure 2, just over 20% of middle school students believed that they were slightly or very overweight. This did not differ significantly by gender; however females were significantly more likely to report trying to lose weight and fasting to lose weight compared to male students. There was no difference between males and females in taking diet pills to lose weight.

Figure 1: MS Prevalence of Physical Activity Behavior by Gender

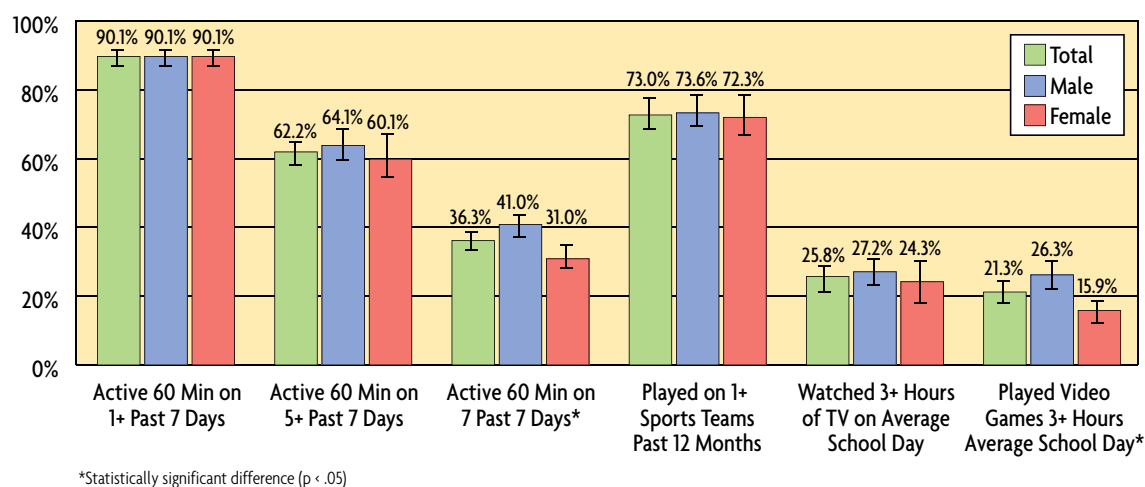
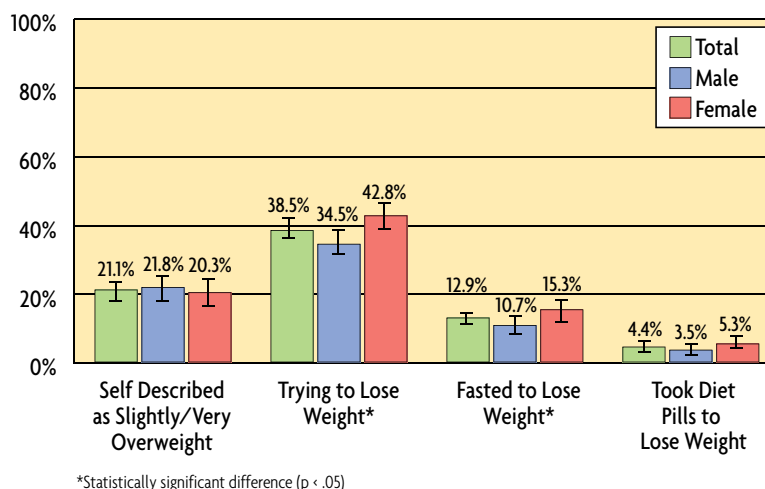


Figure 2: MS Prevalence of Perception of Weight and Weight Loss Behavior by Gender



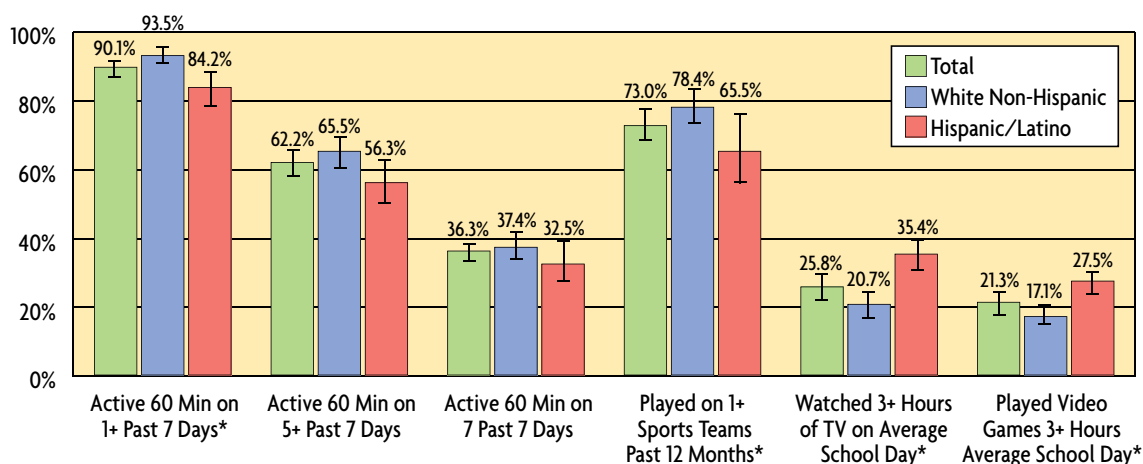
## Physical Activity, Health, Weight Behaviors and Race/Ethnicity

Several significant differences in physical activity and weight loss behaviors were found for middle school students by race/ethnicity. Non-Hispanic White students were more likely to be active for 60+ minutes on at least one day during the past week as well as play on at least one sports team in the past year as compared to Hispanic/Latino students. There were no differences by race/ethnicity for frequency of physical activity (active 60+ minutes on 5 of the past 7 days or 7 of the past 7 days). Hispanic/Latino students were more likely to report watching three or more hours of television on an average school day, and to report playing video games or using a computer for something that is not school work as compared to non-Hispanic White students.

Non-Hispanic White and Hispanic/Latino students also had significant differences across all of the items related to perception of weight and weight loss behaviors. Hispanic/Latino middle school students were more likely than non-Hispanic White students to perceive themselves as slightly or very overweight. Additionally, Hispanic/Latino students were also more likely to report that they were trying to lose weight, have fasted to lose weight, and reported taking diet pills to lose weight.

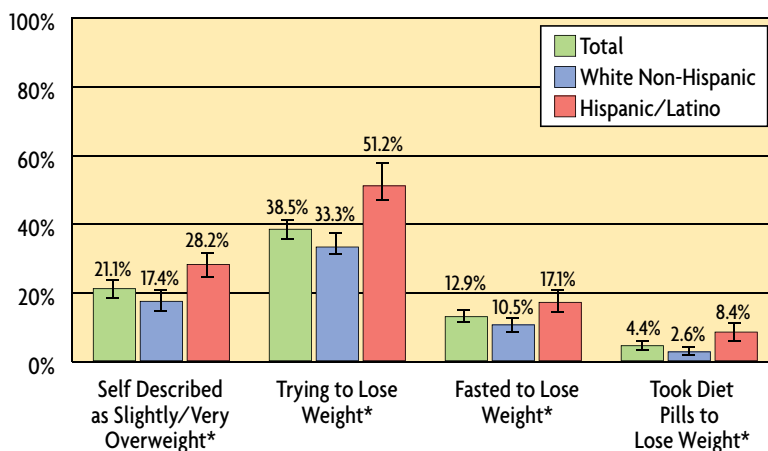


Figure 3: MS Prevalence of Physical Activity Behavior by Race/Ethnicity



\*Statistically significant difference (p < .05)

Figure 4: MS Prevalence of Perception of Weight and Weight Loss Behavior by Race/Ethnicity



\*Statistically significant difference (p < .05)



## Alcohol, Tobacco, Other Substance Use and Gender

Students were asked to report how many times they have used various illicit substances in their lifetime (ever used) as well as in the 30 days prior to the survey (current use). In addition to questions about substance use, middle school students were also asked how easy they felt it would be to obtain certain substances, how risky they believed it was to use these substances, and whether or not they perceived their peers to be using illicit substances. These results, broken out by gender and race/ethnicity, are presented below.

Overall, the four most common substances that Colorado middle school students report ever having tried are alcohol, cigarettes, inhalants and marijuana. More than 22% of students report having tried alcohol at least once in their lifetime, while 14.8% indicated lifetime cigarette use, 10.1% report having used inhalants and 9.8% have ever used marijuana. Middle school students also reported

having used prescription drugs without a doctor's prescription (5.2%), cocaine (3.1%) and steroids (2.4%) in their lifetime. There were no significant differences between male and female students for any of substance, with the exception of alcohol. Approximately one-quarter of male students (24.7%) reporting having tried alcohol compared to one-fifth of female students (19.9%).

The HKCS also asked middle school students to report current use (in the past 30 days) of alcohol, marijuana, cigarettes and chewing tobacco. Results indicate that 6.3% of students had one or more drinks in the 30 days prior to the survey, while just over 4% engaged in binge drinking (five or more drinks in one day). Similarly, 6.3% reported using marijuana, and less than 5% reported use of cigarettes or other tobacco products. There were no significant differences between male and female students on any of the current use questions.

Finally, students were asked a number of questions that pertain to where students drank, their perceived

Figure 5: MS Prevalence of Lifetime Substance Use by Gender

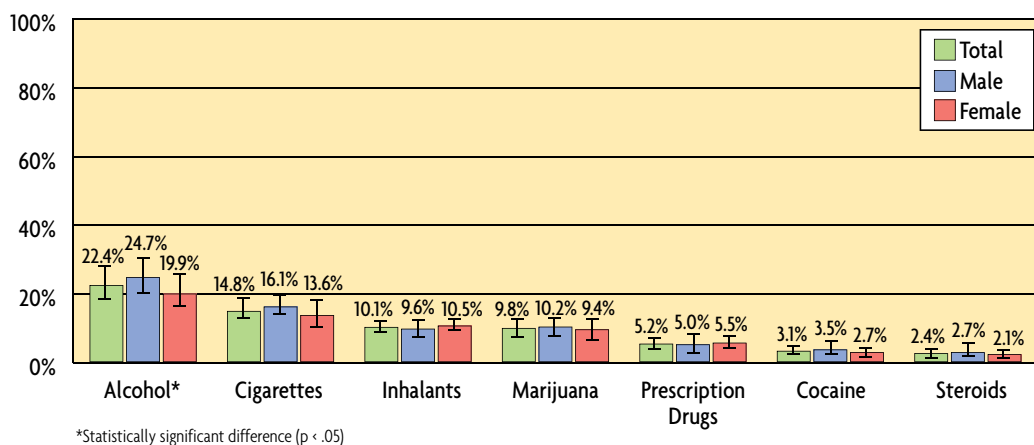
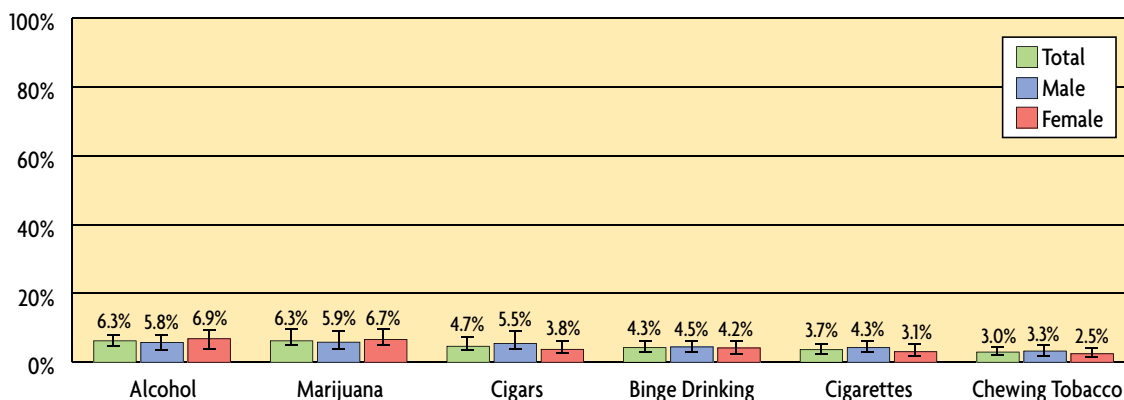


Figure 6: MS Prevalence of Past 30 Day Substance Use by Gender



ease of access to illicit substances, perception of risk associated with substance use, the prevalence of substance use by their peers, and if they talked with a parent about substance use during the past year.

First, students reported where they most often drank alcohol. Of the students that indicated drinking in the past 12 months, the two most common places that students indicated they drank were at another person's home (40.8%) and at their own home (36.6%). Students were also asked how easy they believe it is to access alcohol and marijuana. As shown in Figure 7, the majority of students believe that it is sort of or very hard to access alcohol or marijuana. Students generally believe that marijuana is harder to obtain than alcohol, with no significant difference between gender groups.

In general, the majority of middle school students in Colorado associate moderate or great risk with alcohol and marijuana use. Approximately 60% of middle school students believe there is moderate or great of risk in drinking one or two drinks almost daily, and in using marijuana once or twice. Close to 70% of students believe that there is moderate or great risk in binge drinking (having 5 or more drinks in a single sitting), and just over 80% believe that regular marijuana use poses a moderate or great risk. Although there was no difference between male and female in their perceived risk of alcohol use, females were significantly more likely to believe there is moderate or great risk with using marijuana.

Students were asked to report how wrong they thought it was to drink regularly and use marijuana, as well as how wrong their parents or guardians feel it would be for them to use these same substances. As shown in Figure 9, the vast majority of students believe it is wrong or very wrong to use alcohol and marijuana. An even greater percentage believes that their parents think it is wrong or very wrong for them to use these substances. Females were more likely to report that their parents

would feel it is very wrong/wrong to drink regularly, and were also more likely to believe that it is very wrong/wrong for someone their age to use marijuana. Nearly 45% of middle school students had talked with their parents about the dangers of alcohol, tobacco and other drug use. Females (49.1%) were significantly more likely to talk with their parents than males (41.1%).

Figure 7: MS Ease of Access by Gender

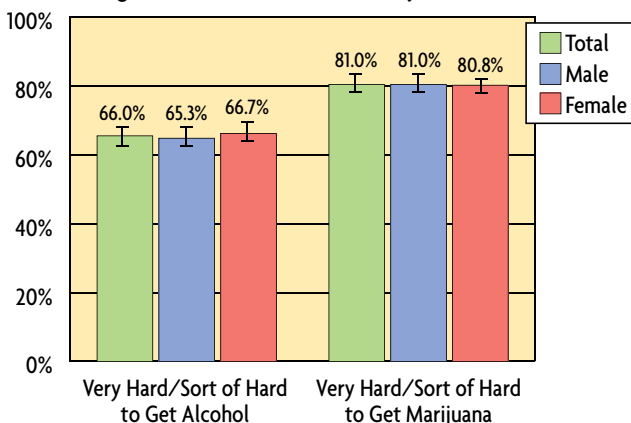
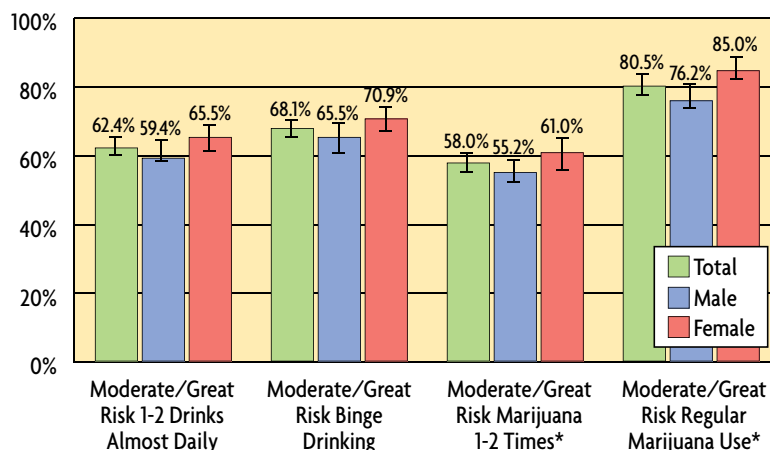
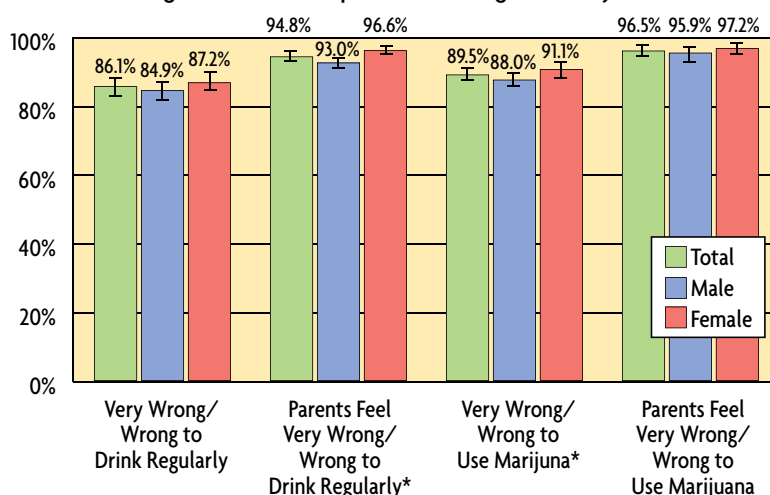


Figure 8: MS Perception of Risk by Gender



\*Statistically significant difference (p < .05)

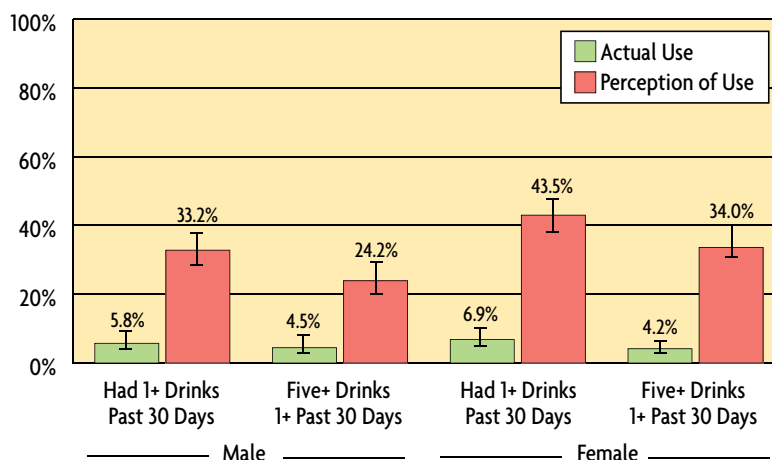
Figure 9: MS Perception of Wrongfulness by Gender



\*Statistically significant difference (p < .05)

Finally, students were also asked how many days in the past 30 days they thought a typical student at their school drank alcohol and how many days they thought a typical student at their school had 5 or more drinks of alcohol (binge drank). Figure 10 shows that students' perception of peer alcohol use is much higher than actual use. Furthermore, there was a significant difference between males and females on both perception questions, with females indicating higher perceived use of alcohol and binge drinking among their peers.

Figure 10: MS Perceived vs. Actual Alcohol Use by Gender

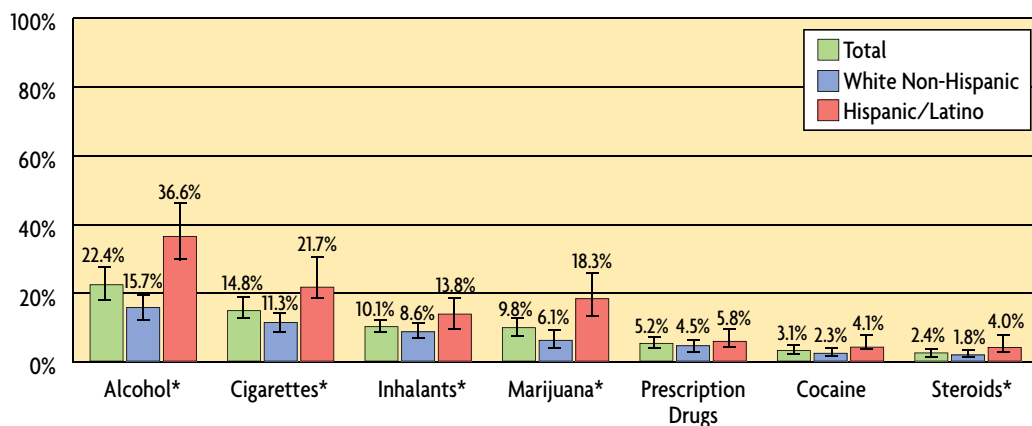


## Alcohol, Tobacco, Other Substance Use and Race/Ethnicity

Several significant differences related to substance use were found between non-Hispanic White students and Hispanic students, suggesting that Hispanic/Latino middle school students are at a higher risk for substance abuse compared to their non-Hispanic White peers. For lifetime substance use (ever used), Hispanic/Latino middle school students were significantly more likely to report use of alcohol, cigarettes, inhalants, marijuana and steroids. In fact, marijuana use was more prevalent among Hispanic youth than inhalants, a different pattern than shown by their non-Hispanic White peers. There were no differences between these groups for prescription drugs or cocaine.

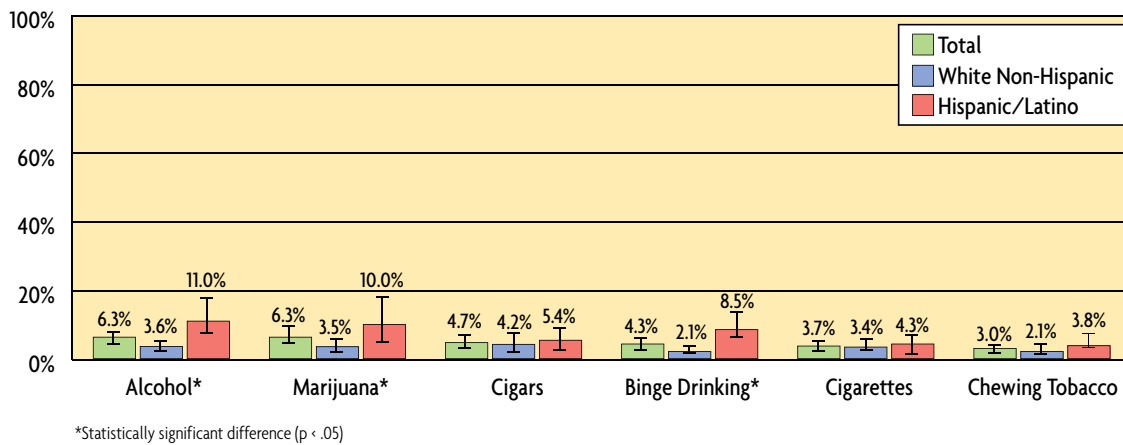


Figure 11: MS Prevalence of Lifetime Substance Use by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

Figure 12: MS Prevalence of Past 30 Day Substance Use by Race/Ethnicity



The disparities between non-Hispanic White and Hispanic/Latino students were also found for past 30 day (current) substance use. A total of 11% of Hispanic/Latino students reported having at least one drink in the past 30 days, compared to less than 4% of non-Hispanic White students. Similarly, 8.5% of Hispanic/Latino respondents engaged in binge drinking in the past 30 days while approximately 2% of non-Hispanic White students reported this behavior. Hispanic/Latino students were also more likely to report current marijuana use. There were no differences between these groups for current cigarette use, or for use of other tobacco products such as snuff or dip.

As noted above, students were also asked where they consumed alcohol in the last twelve months. The most common places that non-Hispanic White students reported drinking were at their own home (42.3%), followed by another person's home (39.3%) while Hispanic/Latino students indicated that they were more likely to drink at another person's house (42.8%) than at their own home (32.2%).

Differences between race/ethnicity were also found for questions about access to illicit substances as well as items related to students' perception of risk in using illicit substances. As noted above, two-thirds (66.0%) of all middle school youth believed that it would be hard or very hard for them to access alcohol if they wanted it, and this did not differ by race/ethnicity. However, perceived access to marijuana did differ by race/ethnicity, with a larger percentage of non-Hispanic White middle school students reporting that it would be hard or

Figure 13: MS Ease of Access by Race/Ethnicity

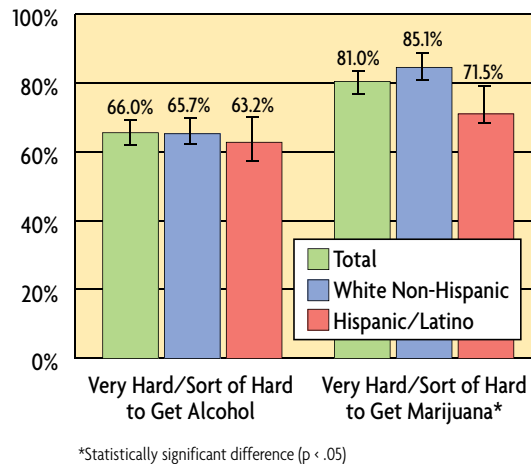
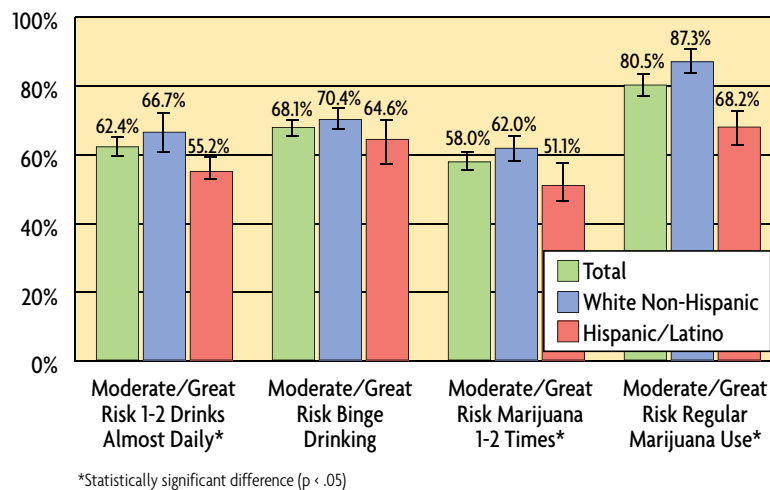


Figure 14: MS Perception of Risk by Race/Ethnicity

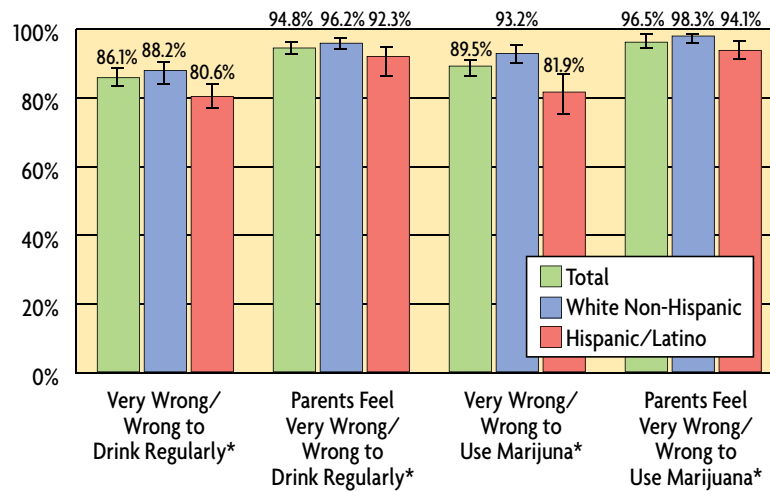


very hard for them to obtain marijuana as compared to Hispanic/Latino students.

Results also indicated that there were significant differences between groups on the perception of risk questions. Hispanic/Latino students were less likely to believe that there is moderate or great risk in drinking alcohol daily, using marijuana once or twice, and in regular marijuana use.

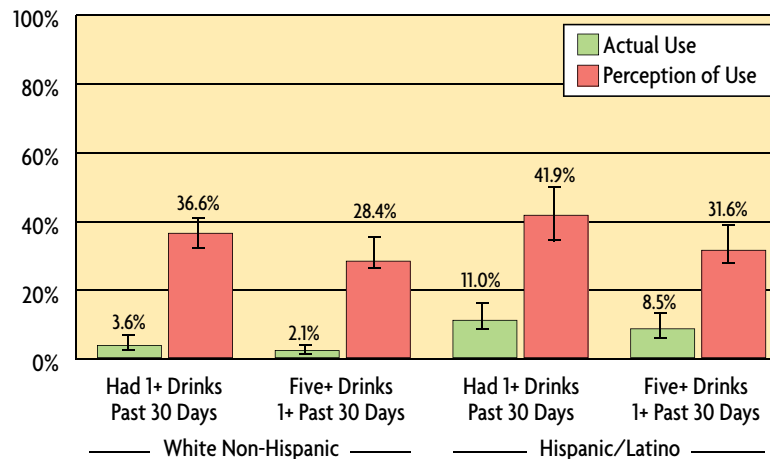


Figure 15: MS Perception of Wrongfulness by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

Figure 16: MS Perceived vs. Actual Alcohol Use by Race/Ethnicity



Students were also asked how wrong they think it is for someone their age to drink alcohol, and how wrong their parents think it is for them to drink alcohol. Overall, over 85% of all middle school students believed that it is wrong or very wrong for someone their age to drink alcohol and use marijuana, and approximately 95% believed that their parents would feel it is wrong or very wrong for them to use these substances. Non-Hispanic White students were significantly more likely to believe that it is wrong or very wrong for them to drink alcohol regularly and use marijuana. White students were also more likely to report that their parents would feel it is wrong or very wrong for them to drink alcohol and use marijuana. In addition, non-Hispanic White students were more likely to talk with their parents about the dangers of alcohol, tobacco and other drug use (51.3%) than their Hispanic/Latino peers (40.8%).

As noted above, students were asked if they thought a typical student at their school drank any alcohol or binge drank in the past 30 days. While the difference between actual and perceived use was still large, there were no differences between how often Hispanic/Latino students and their non-Hispanic White counterparts believed a typical student to be using alcohol.



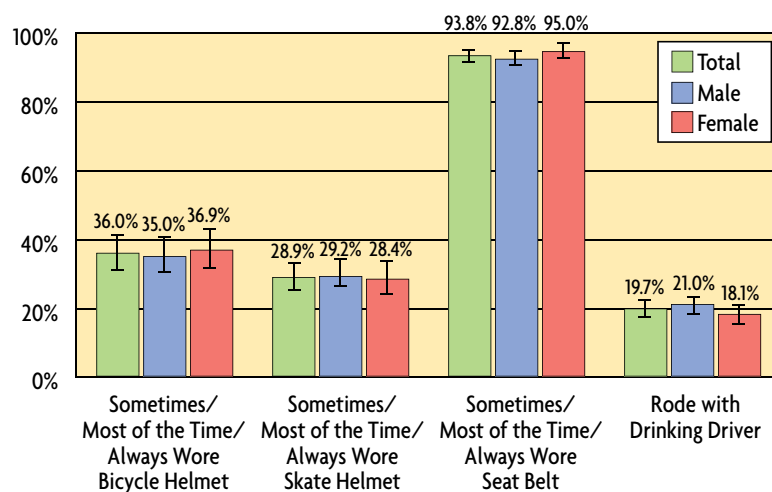
## Personal Safety, Unintentional Injuries, Violence and Gender

Middle school students were asked about behaviors known to place youth at risk for unintentional injuries, such as helmet use when biking or skateboarding, seat belt use, and riding with a driver who had been drinking alcohol. Middle school students were also asked about participation in physical fights, and if they had experienced bullying at school.

Overall, 36.0% of students reported sometimes, most of the time or always wearing a helmet when riding a bicycle, and 28.9% reported helmet use when rollerblading or skateboarding. Approximately 94% of Colorado students indicated that they sometimes, most of the time or always wore a seat belt in an automobile, while almost one in five (19.7%) had rode with a driver who had been drinking alcohol. There were no differences between males and females on any of these items.

The Healthy Kids Colorado Survey also includes questions about physical fighting and bullying. As shown in Figure 18, over 28% of students reported that they had carried a weapon such as a gun, knife, or club and nearly 44% of students had been in a physical fight at least once in their life. Less than 5% of students reported having been in a fight in which they had to be treated by a doctor or nurse.

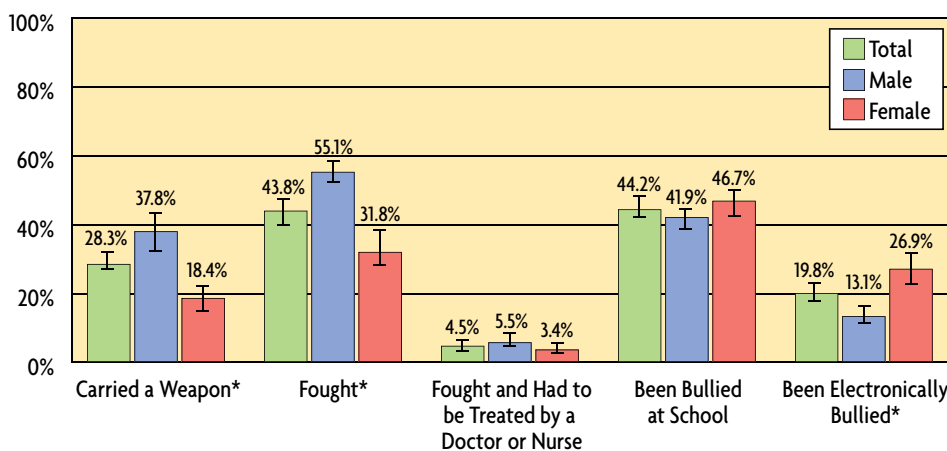
Figure 17: MS Prevalence of Personal Safety Behaviors by Gender



Significantly more males than females responded that they had carried a weapon and been in a physical fight at least once in their life.

Additionally, a total of 44.2% of middle school students reported that they had ever been bullied on school property and nearly 20% of students indicated that they had been electronically bullied, which includes being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting. While there was no difference between genders for experiencing bullying, female students were more likely than male students to report having ever been electronically bullied.

Figure 18: MS Prevalence of Behaviors Related to Physical Fighting and Bullying by Gender



\*Statistically significant difference ( $p < .05$ )

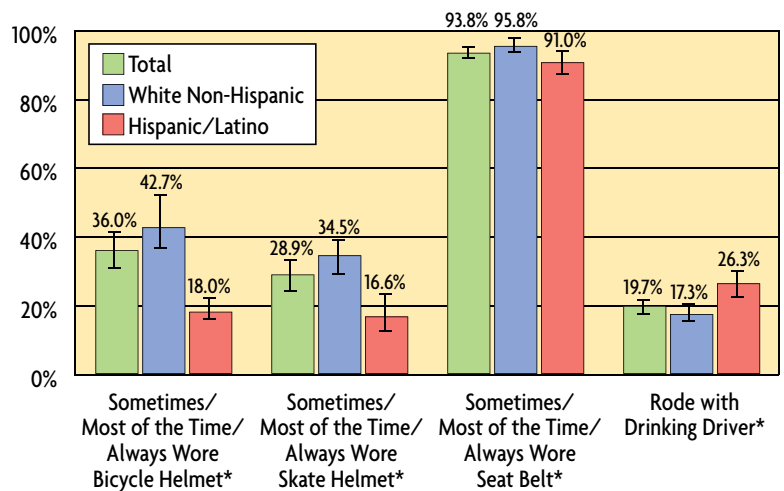
## Personal Safety, Unintentional Injuries, Violence and Race/Ethnicity

Significant disparities were found between non-Hispanic White and Hispanic/Latino students in behaviors related to unintentional injury and personal safety. Non-Hispanic White students were more likely to report sometimes, most of the time or always wearing a bicycle helmet, wearing a helmet when rollerblading or skateboarding, and wearing a seat belt.

Conversely, Hispanic/Latino students were more likely to report ever riding with a drinking driver compared to non-Hispanic White students.

Additionally, approximately half (49.4%) of Hispanic/Latino students reported that they had ever been in a physical fight as compared to 40.1% of non-Hispanic White students, though there were no differences between groups in needing treatment by a doctor or nurse after fighting. Non-Hispanic White students were more likely to report having been bullied at school as compared to Hispanic/Latino students. There were no differences between groups for having been electronically bullied, or having carried a weapon.

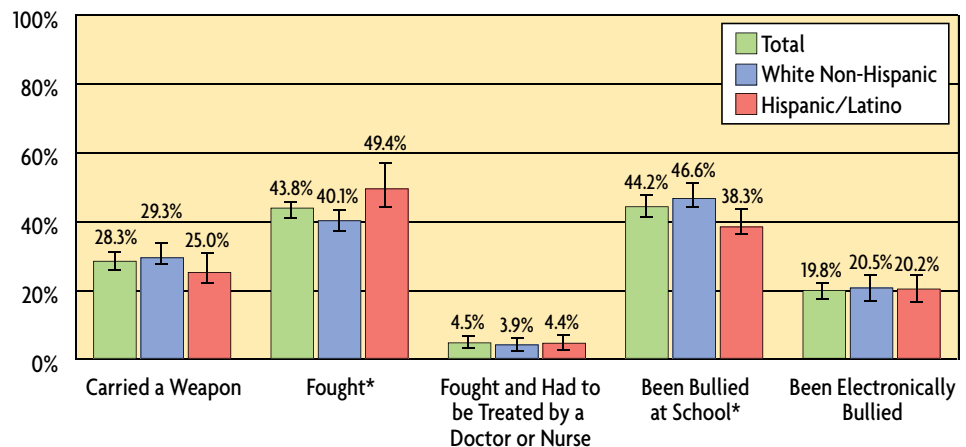
Figure 19: MS Prevalence of Personal Safety Behaviors by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )



Figure 20: MS Prevalence of Behaviors Related to Physical Fighting and Bullying by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

## Mental Health and Gender

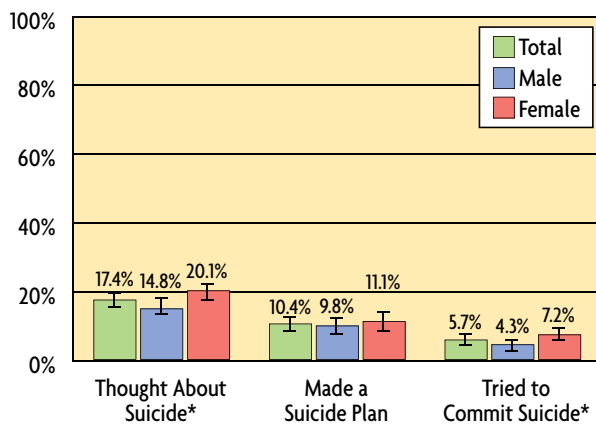
The questions on the HKCS that pertain to mental health measure suicidal ideation (serious contemplation of suicide), making a suicide plan, and attempting to commit suicide. In Colorado, 17.4% of middle school students reported having thought about suicide. About one in ten students (10.4%) made a suicide plan, and 5.7% attempted to commit suicide. Female students were more likely to report having thought about suicide as well as attempted to commit suicide.

## Mental Health and Race/Ethnicity

Significant disparities were also found between non-Hispanic White and Hispanic students across the mental health items. Almost one-quarter (24.3%) of Hispanic/Latino middle school students indicated that they had thought about suicide as compared to 14.1% of non-Hispanic White students. Hispanic/Latino respondents were also more likely to have made a suicide plan and report attempting suicide.

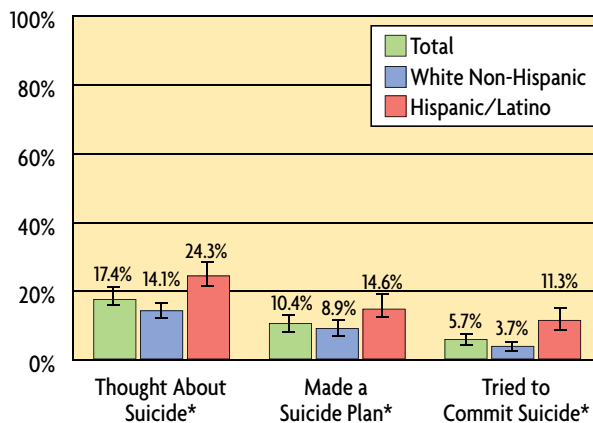


Figure 21: MS Prevalence of Suicide Risk by Gender



\*Statistically significant difference ( $p < .05$ )

Figure 22: MS Prevalence of Suicide Risk by Race/Ethnicity



\*Statistically significant difference ( $p < .05$ )

## Other Health Topics (Asthma and HIV Education)

Finally, the Healthy Kids Colorado Survey also asks whether students have ever been told that they have asthma by a doctor or nurse, as well as whether or not they have received HIV/AIDS education at their school. Overall, a total of 18.8% of middle school students had ever been told by a doctor or nurse that they had asthma. This did not differ significantly by gender (males, 20.0%; females, 17.3%) or by race/ethnicity (non-Hispanic White, 19.4%; Hispanic, 17.4%).

Students were also asked if they had received HIV/AIDS education in school. Overall, 38.6% of Colorado middle school students reported having been taught about HIV/AIDS in school. There were no differences between genders (male, 38.9%; female, 38.0%) or by race/ethnicity (non-Hispanic White, 38.4%; Hispanic, 42.2%).





## CONCLUSIONS, RECOMMENDATIONS AND APPENDICES



*Conclusions  
Recommendations  
Appendices*

### Conclusions

#### Physical Activity, Nutrition and Health

Overall, Colorado compares favorably to the nation in key behaviors related to physical activity, and prevalence rates for overweight and obesity among high school students. Colorado high school students were more likely to engage in any physical activity as compared to students nationally and were also less likely to report watching TV or playing video or computer games. Additionally, Colorado high school students were less likely to be overweight or obese based on BMI and also less likely to perceive themselves as overweight or obese. Colorado high school students were more likely to report eating any fruit compared to students nationally.

Many behaviors related to physical activity as well as the prevalence rates for overweight and obesity in Colorado high school youth have improved over time. Specifically, the prevalence of any physical activity, as well as the frequency of moderate and daily physical activity among Colorado high school students has increased since 2005. The prevalence of TV watching has declined over time, while video game and computer use has increased since 2009.

Among both high school and middle school students in Colorado, male students were more likely than female students to report daily physical activity, and also more likely to report playing video games or using the computer for 3 or more hours on an average school day. Non-Hispanic White students were more likely to report playing on sports teams and participating in any exercise compared to Hispanic/Latino students, while Hispanic/Latino students were more likely to report watching TV and playing video games or using the computer for 3 or more hours on an average school day.

#### Alcohol, Tobacco and Other Substance Use

Colorado high school students compare similarly to the nation in terms of substance use. While Colorado high school students were less likely to report lifetime alcohol and inhalant use compared to the nation, they were more likely to report use of ecstasy.

Colorado has shown gains in decreasing substance use among high school students over time within the most commonly abused substances. First, lifetime alcohol use, current alcohol use and binge drinking have steadily decreased since 2005. Additionally, the percentage of students who reported smoking a whole cigarette before the age of 13 and the

percentage who reported drinking alcohol for the first time before age 13 have also decreased since 2005. The prevalence of chewing tobacco use in the past 30 days has also decreased among high school students compared to 2009. In contrast, although the prevalence rates are low, there was an increase in the use of ecstasy and heroin among Colorado high school youth from 2005 to 2011. Additionally, almost 20% of Colorado high school students reported use of prescription drugs without a doctor's prescription.

Differences between demographic subgroups also existed. High school males were more likely to report having ever used heroin, steroids and



methamphetamines compared to females, and middle school males were more likely to report lifetime alcohol use compared to females. Additionally, high school males were more likely to report past 30 day use of chewing tobacco. Hispanic high school students were more likely than White students to report having used cocaine, heroin, methamphetamines and ecstasy, and Hispanic students in both high school and middle school were more likely to report steroid use. Additionally, Hispanic/Latino high school students were more likely to have been offered, sold or given drugs on school property as compared to their White counterparts.

Lastly, additional questions related to substance use were added to both the high school and middle school versions of the survey in 2011. These include questions about attitudes and perceptions that have

been shown to influence youth substance use. For example, Colorado youth think that their peers use alcohol and binge drink at more than twice the rate of actual use; suggesting a skewed perception of peer substance use. For both high school and middle school students, females were more likely than males to report that there is moderate or great risk associated with using marijuana as well as to report that their parents thought it was wrong or very wrong for them to use alcohol. High school females also associated greater risk with using cigarettes and alcohol. Female students in high school and middle school were also more likely to report that they talked to a parent about alcohol, tobacco or other substance use in the past year. Non-Hispanic White students in both high school and middle school were also more likely than their Hispanic/Latino counterparts to talk to their parents about substance use as well as to perceive that there was moderate or great risk associated with using marijuana regularly.

### **Personal Safety, Unintentional Injuries and Violence**

Colorado data indicates that high school students have similar health risks as students nationally for many behaviors related to unintentional injuries, violence and personal safety. There were no differences between students in Colorado and nationally for school safety questions, including weapon possession at school, bullying and electronic bullying. Additionally, there was not a difference in the prevalence of riding with a driver who had been drinking. However, Colorado youth were less likely to report physical fighting, inter-relationship violence, and driving after drinking as compared to youth nationally.

In Colorado, there were few differences over time in high school students that related to violence, harassment and personal safety with the exception of physical fighting which has decreased over time among Colorado high school youth. Both riding with a drinking driver and driving after drinking have decreased since 2005, although students are still twice as likely to report riding with a drinking driver than driving themselves after drinking. New HKCS questions indicated that a larger percentage of Colorado high school students report driving after smoking marijuana compared to driving after drinking, and similar rates to alcohol exist for riding with a driver who had used marijuana.

There were also differences among subgroups for behaviors related to unintentional injury, violence



and personal safety. High school males were more likely than females to drive after drinking alcohol and to drive after using marijuana. For both high school and middle school students, males were more likely to report having been in a fight and having carried a weapon. High school females were more likely to report having been bullied as compared to males, while females in both high school and middle school were more likely than males to report having been electronically bullied. There were also differences by race/ethnicity. Specifically, Hispanic/Latino students in high school and middle school were more likely to report riding with a drinking driver and having been in a physical fight compared to their non-Hispanic White peers. Hispanic high school youth were also more likely to report having been threatened or injured by a weapon on school property, to report missing school due to safety concerns and to report inter-partner violence. Lastly, White middle school students were more likely to report having been bullied at school as compared to their Hispanic counterparts.

### **Mental Health**

Colorado high school students compared similarly to the nation and over time for mental health indicators. Specifically, there were no differences between Colorado and students nationally in suicide-related

Among both high school and middle school students, females were more likely than males to have thought about/considered suicide as well as to have attempted suicide. Additionally, among high school students, females were more likely than males to report experiencing depressive symptoms and having made a plan to commit suicide. In Colorado, Hispanic students in both high school and middle school were more likely to have made a plan to commit suicide and to report attempting suicide than White students. Hispanic middle school youth were also more likely than their White counterparts to report having thought about suicide and high school Hispanic youth were more likely to report sustaining an injury as a result of a suicide attempt.

### **Sexual Health (High School Only)**

As with the mental health indicators, there were few differences between Colorado high school students and the nation, or over time on the items related to sexual behavior. Prevalence rates for students that reported ever having sex, reported current sexual activity and reported having sex with 4 or more people in their life did not differ from those of the nation. However, Colorado students were less likely to report having sex before age 13 compared to the national sample. There were no significant changes over time for any of these behaviors among Colorado high school students.



behaviors however, Colorado students were less likely to experience depressive symptoms (sadness) when compared to national data. Additionally, there were no changes over time for students in Colorado that reported depression, having seriously considered suicide, making a plan to commit suicide and actually attempting suicide. Although the prevalence is small, Colorado did see an increasing trend from 2005 in the likelihood of sustaining an injury as a result of a suicide attempt.

Of students that reported that they were currently sexually active, Colorado high school students were more likely to report condom use than students nationally as well as the use of both condoms and birth control pills or Depo-Provera together. In Colorado, there was an increasing trend in the prevalence of birth control use over time, including the use of birth control pills and the use of both condoms and birth control pills or Depo-

Provera together.

Lastly, differences between demographic groups existed among high school students. Males were more likely than females to report having ever had sex, as well as having had sex before the age of 13. Additionally, Hispanic/Latino students were more likely than non-Hispanic White students to report having ever had sex, having had sex in the past 3 months, and having multiple partners (having had four or more partners during their life).



## School, Family and Future Aspirations (High School Only)

The data collected in this domain represents the first time weighted data is available on high school students in Colorado on these indicators. Additionally, most questions in this domain are not asked on the national survey and therefore, state and national comparisons are not provided. A majority of high school youth described their grades in school as A's or B's over the past year and close to 70% report that they participate in extra-curricular activities such as sports, band, drama or student government. Additionally, most students reported that the rules in their family are clear and that they could ask their parent or guardian for help if they had a personal problem. Finally, a vast majority of students also reported that it is important for them to finish high school, go to college and be successful in a job or career.

Differences between males and females, and Hispanic and White students were also reported. Females were more likely than males to report getting A or B grades in school and to report that school work was sometimes, often or almost always meaningful and important. Additionally, female students were more likely than male students to think that it was important to finish high school, to go to college, and to be successful in a job or career. Non-Hispanic White students were more likely to report getting A or B grades in school compared to their Hispanic/Latino peers. Additionally, White students were more likely to report feeling safe at school and had more chances to participate in extracurricular activities.

## Risk and Protective Factors (High School Only)

Colorado high school students' profile of risk and protective factors combine individual items described above into scales that have been shown to increase or decrease, respectively, the likelihood that students engage in risky behaviors. Results from the risk and protective factors are compared to a national cut-off score that indicates areas of strength for Colorado, as well as areas of concern. One promising aspect of the profile is that only a quarter of students scored above the risk cut-points for Laws and Norms Favorable to Substance Use and Early Initiation of Substance Use. However, one area of concern is the high proportion

of students—50%—who scored above the risk cut-point on Low Perceived Risks of Substance Use. Studies of national trends over time have shown that when youth perceive substance use as less risky, substance use increases.

Nearly two-thirds of Colorado high school students scored above the protection cut-points on Opportunities for Pro-Social Involvement in School and Opportunities for Pro-Social Involvement in Family. Although the HKCS is not designed to test whether experiencing these protective factors cause reductions in future unhealthy behaviors, existing research suggests that being engaged at school and in one's family does indeed cause a decrease in the likelihood that youth will be absent from school, engage in violent behavior, vandalize property, use substances, and engage in risky sexual behavior. Research also suggests that experiencing these protective factors causes an increase in the likelihood that youth will perform well academically and experience emotional well-being<sup>45,46</sup>. The associations found within this section support the likelihood that similar relationships between risk and protective factors and youth outcomes exist among Colorado students.



<sup>45</sup>Centers for Disease Control and Prevention (2009). *School Connectedness: Strategies for Increasing Protective Factors Among Youth*. Atlanta, GA: U.S. Department of Health and Human Services.

<sup>46</sup>Koball, Heather, et al. (2011). *Synthesis of Research and Resources to Support At-Risk Youth*, OPRE Report # OPRE 2011-22, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

## Recommendations

It is the recommendation of the Colorado Department of Education that schools utilize this data to inform the development and implementation of health and wellness programs in their schools that are in line with the Coordinated School Health model from the Centers for Disease Control and Prevention. Coordinated School Health is a framework that addresses eight components of school health, including Health Education, Physical Education and Activity, Health Services, Nutrition Services, Counseling, Psychological, and Social Services, Healthy and Safe School Environment, Health Promotion for Staff and Family/Community Involvement. It has been shown that a comprehensive approach to addressing student health, such as that outlined in the Coordinated School Health model, can improve health and educational outcomes.

The data from the state Healthy Kids Colorado Survey can be compared to local data, available through the local administration of the HKCS as well as other local data collection efforts, to improve the well-being of its students. Schools should utilize this data to make a case for creating a school health team in every school building, as well as coordinating school health messages, activities, programs. This data can also be used to advocate for funding for healthy students and safe schools, as well as implementing and enforcing policies related to physical activity, nutrition, mental health, tobacco-free schools and school safety. The implementation of such programs and policies has been proven to improve academic performance, attendance, and school connectedness.

### Future Survey Plans

Conducting the Healthy Kids Colorado Survey on a regular basis will provide valuable information on the health and behavior of Colorado youth. The next statewide survey administration will occur in the fall of the 2013-2014 school year and, subsequently, on a biennial basis. Data from the next administration will provide an additional year of statewide data that can be used to assess the variation of certain behaviors over time and analyze changes among subgroups of high school students. Continuing the successful collaboration between the Healthy Kids Colorado Survey Coordination Team and school administrators will result in a productive survey administration process and yield representative state data. HKCS will continue to offer local administration support to schools in the collection of data that is comparable to state and national results.

## Appendices

- I. Survey Administration
- II. Sample Selection
- III. Weighting Procedures
- IV. Risk and Protective Factors

### Appendix I – Survey Administration

The 2011 administration of the Healthy Kids Colorado Survey (HKCS) was coordinated by OMNI Institute with direction and oversight from the Colorado Departments of Education, Public Health and Environment, and Human Services, Division of Behavioral Health. In 2011, Colorado successfully completed both a high school and middle school administration of the HKCS. This was the third time in the past ten years that Colorado achieved weighted data at the high school level, and the first time that middle school data was achieved.

The high school HKCS consists of a total of 120 questions, including questions from the Youth Risk Behavior Survey (YRBS), questions from the Communities that Care Survey, and questions developed and selected by local stakeholders to address Colorado specific priorities. The middle school version of the HKCS contains 69 questions and consists primarily of questions from the YRBS, with a few additional questions reflecting local priorities. The YRBS is one component of the Youth Risk Behavior Surveillance System (YRBSS), which was developed in 1990 by the United States Centers for Disease Control and Prevention (CDC) 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. The questions from the Communities that Care Survey are based on the “risk and protective factor” framework that was developed by the Social Development Research Group. Additional survey items were developed and approved by the Colorado State Survey Coordination Team, which consists of individuals from the Colorado State Departments of Education, Public Health and Environment and Human Services (Division of Behavioral Health) and OMNI Institute.

Planning and recruitment for the 2011 administration began in the fall of 2010. The school recruitment process was a collaborative effort between OMNI

Institute and the Colorado Departments of Education, Public Health and Environment, and Human Services Division of Behavioral Health. In order to collect representative state-level data, high participation levels must be reached. Because Colorado is a local control state, selected schools and districts have the option to decline participation, which is a barrier to consistently achieving useable data from year to year.

Once a school agreed to participate, classrooms were selected from a master list of all classes during a given school period. OMNI Institute provided the schools with a template form for either active or passive parental consent form, dependent on the school district requirements, for which the schools were responsible for distributing and collecting from students' parents. Prior to their administration dates, OMNI Institute sent each school survey booklets and survey summary forms to be completed by survey administrators at each school (typically teachers or other school personnel).

To ensure confidentiality, students were instructed not to put their names or identifying information on the questionnaire, and completed surveys were placed in a sealed envelope. Once all students had submitted their surveys, survey administrators completed a survey summary form for each classroom to indicate the total number of students who participated, as well as the number who refused or were absent on administration day. All the surveys were then mailed to OMNI Institute in Denver, Colorado.

Upon receipt of completed survey materials, OMNI Institute cleaned and scanned all surveys and sent a data file to Westat, a contractor of the CDC, for further cleaning, weighting, and analysis. Westat provided a final data file and results report to OMNI Institute. OMNI Institute conducted additional analyses of these data, which were used in creating this report.

As noted in the introduction, local administration of the Healthy Kids Colorado Survey was also completed in the fall of 2011. Over 65,000 students in 165 schools across 37 school districts voluntarily participated in a local administration of the HKCS. Local administration typically utilizes a full census sample method, or surveying all students in a given school rather than drawing a scientific sample. For

this reason, data does not need to be weighted in order to be representative of students. All data from the local administration was submitted to OMNI Institute and was cleaned, analyzed and reported back to the local community.

## Appendix II – Sample Selection

### Sample Description

**School Level:** All regular public schools containing grades 9, 10, 11, or 12 were included in the high school sampling frame, and all regular public schools containing grades 6, 7 or 8 were included in the middle school frame. Schools were selected systematically with probability proportional to enrollment using a random start. This means that larger schools had a higher likelihood of selection into the sample. A total of 40 schools each were included in the final sample frame.

**Class Level:** All classes in a required subject or all classes meeting during a particular period of the day (i.e. 2nd period), depending on the school, were included in the sampling frame. Systematic equal probability sampling with a random start was used to select classes from each school that participated in the survey. This means that all classes in the identified subject or period had an equal chance of selection.

### High School Response Rates

Schools	83% 33 of the 40 sampled eligible schools participated.
Students	81% 1,523 usable questionnaires out of the 1,878 sampled students that submitted questionnaires.
Overall response rate	Overall response rate is calculated by multiplying the school response rate by the student response rate: $83\% * 81\% = 67\%^{47}$

<sup>47</sup>Overall response rate is computed as (number of participating schools/number of eligible sampled schools) \* (number of usable questionnaires/number of eligible students sampled in participating schools), rounded to the nearest integer.

## Middle School Response Rates

Schools	83% 33 of the 40 sampled eligible schools participated.
Students	83% 1,614 usable questionnaires out of the 1,935 sampled students that submitted questionnaires.
Overall response rate	Overall response rate is calculated by multiplying the school response rate by the student response rate: $83\% * 83\% = 69\%$

### Weighting

A weight has been associated with each questionnaire to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of nonresponse. The weight used for estimation is given by:

$$W = W1 * W2 * f1 * f2 * f3$$

**W1** = the inverse of the probability of selecting the school;

**W2** = the inverse of the probability of selecting the classroom within the school;

**f1** = a school-level nonresponse adjustment factor calculated by school size category (small, medium, large). The factor was calculated in terms of school enrollment instead of number of schools;

**f2** = a student-level nonresponse adjustment factor calculated by school;

**f3** = a poststratification adjustment factor calculated by gender within grade and by race/ethnicity.

### Use of the Weighted Results

The weighted results can be used to make important inferences concerning the health related attitudes and behaviors of all regular public school students in grades 6 through 12.

## Appendix III – Weighting Procedures

The weighting procedures described in this appendix were provided by the Centers for Disease Control and Prevention (CDC) in conjunction with their final data files. This appendix describes the procedures used to weight the HKCS data for Colorado.

### 2011 YOUTH RISK BEHAVIOR SURVEY State and Local Weighting Procedures

#### Purpose:

This document summarizes the procedures that are applied for weighting data from state and local Youth Risk Behavior Surveys (YRBS). It describes, in general, the weighting procedures that are applied in surveys for which the YRBS sampling software, PCSample, is used to select a sample. Weighting procedures for surveys that use other sample designs may differ from those described in this document. Questions regarding weighting procedures should be addressed to the statistician weighting the data for your state or local agency.

#### Introduction:

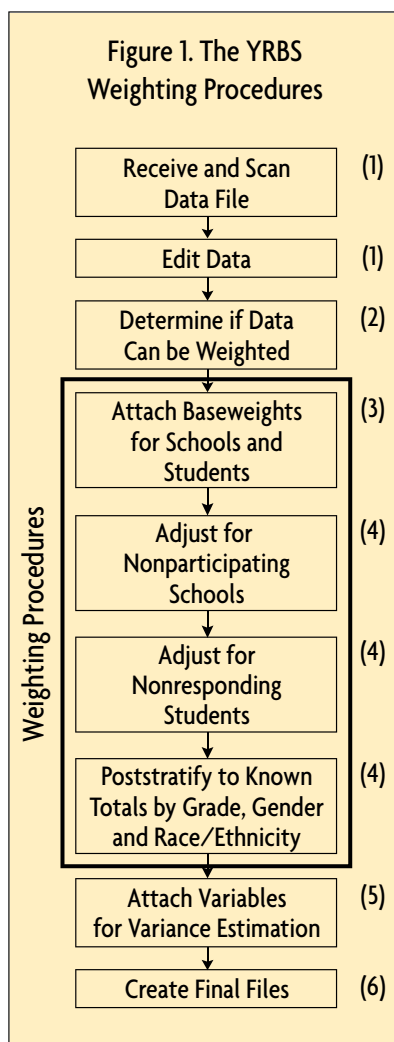
For most YRBS sites, it is impractical and scientifically unnecessary to administer the YRBS to every student in the population. PCSample selects representative samples of schools and classes within selected schools. The sample is designed so that every eligible student has an equal chance of selection.<sup>48</sup>

The sample is selected in two steps. In the first step, schools are selected with probability proportional to the enrollment of the school. In the second step, classes are selected within schools with equal probability. The questionnaire is administered to all students in sampled classes in the sampled schools. The objective of the weighting process is to develop sample weights that can be employed during analysis to generate results that accurately represent the entire student population of interest in the state or city. Unweighted results due to low response rate and/or poor sampling procedures can be used only to describe participating students.

<sup>48</sup>Detailed documentation of YRBS sampling procedures is provided in "PCSample Description and Operation." This document is available on request from Westat or CDC.



Figure 1 shows the steps that are used to weight state and local YRBS data from a standard sample selected by PCSample. Each of these steps is described in more detail in the following sections. The boxes in Figure 1 are numbered to correspond to the section numbers in this document. When non-standard procedures are used to select a state or local YRBS sample, the weighting procedures are tailored to that sample design.



## 1. Prepare the Data:

Completed computer-scannable questionnaires are scanned at Westat, a data file is created, and the file is sent to CDC to be edited. CDC edits the data for logical consistency and overall data quality and returns the edited file to Westat for weighting.

## 2. Determine if Data can be Weighted:

To determine if a YRBS data set can be weighted, all of the following conditions must be met:

- Legitimate sampling methods were used (i.e., every student has a known chance of selection and the probabilities of selection can be defined and computed for each sampled student);
- Enough documentation is available to calculate and attach weights (i.e., probabilities of selection can be defined and computed for each sampled student); and
- The overall response rate is at least 60 percent.

The first two conditions are basic requirements for computing the correct probabilities of selection and initial weights. Without this information, weighting is not possible regardless of the response rate. If the sample was selected using PCSample, and if the school and classroom selection procedures were applied properly, and if all work is well documented, these conditions are satisfied. Otherwise, the procedures used to select the sample must be documented completely and carefully.

There are two components to the overall response rate: a school response rate and a student response rate. Each of these response rates is calculated as follows:

$$\text{School Response Rate} = \frac{\text{Number of Participating Schools}}{\text{Number of Eligible Sample Schools}}$$

$$\text{Student Response Rate} = \frac{\text{Number of Usable Questionnaires}}{\text{Number of Eligible Students Sampled in Participating Schools}}$$

The overall response rate is calculated as:

$$\text{Overall Response Rate}^{49} = \left( \frac{\text{Number of Participating Schools}}{\text{Number of Eligible Sample Schools}} \right) * \left( \frac{\text{Number of Usable Questionnaires}}{\text{Number of Eligible Students Sampled in Participating Schools}} \right)$$

The number of usable questionnaires is determined after data have been edited. Only eligible schools and students are counted for determining response rates.

<sup>49</sup>Rounded to the nearest integer.

### 3. Attach Baseweights:

PCSample assigns base weights to each student record on the edited file. The weight is equal to the inverse of the probability that the student is selected for the survey. This weight can be thought of as the number of students in the population that are represented by each sampled student.

The weight for each sampled student is computed as follows:

$$\text{School Weight} = \text{School Weight} * \text{Within - School Weight}$$

The school weight is based on the probability of selection for the school; and the within-school weight is based on the probability of selection for classes within each sampled school. Each sampled student from a sample selected by PCSample has the same base weight, i.e., the sample is “self-weighting.”

### 4. Adjust the Weights:

Adjustments are made to the initial weights to remove bias from the estimates and reduce variability of the estimates. Westat’s standard weighting process for the YRBS involves three adjustments to the weights. Two adjustments are made to account for nonresponse in the sample and one adjustment is made to fine tune the weighted sample estimates to known population characteristics that can affect responses to survey questions. Each of these adjustments is summarized below.

The first adjustment accounts for nonparticipating schools that were sampled. This adjustment is made at the school level and accounts for entire schools that are sampled but are unable, or refuse, to participate. For this adjustment, schools are grouped into three categories based on size of school enrollment. Within each category, weights of refusing schools are distributed to the participating schools.

The second adjustment is made at the student-level and accounts for eligible students enrolled in sampled classes who do not submit a usable (e.g., students who are absent on the day the survey is administered, students who do not receive parental permission, students who refuse to participate, or questionnaires that fail the edit and quality control checks). Weights of these nonresponding students in sampled classes are given to responding students in the same class or in classes of a similar grade in the same school.

The final weighting step is to adjust weighted sample totals to known population totals for variables that

can affect responses to survey questions. Raking ratio estimation, also known as iterative poststratification or raking is used to adjust the weights to two sets of population totals simultaneously. The raking variables used are: (1) grade by gender and (2) race-ethnicity. Weighted sample frequencies in each raking variable are adjusted so that the weighted sample totals of grade by gender and race-ethnicity match the true population totals for the state or local area.

Additional technical details for these weighting steps are provided in Appendix A.

### 5. Attach Variables for Variance Estimates:

Weighted estimates and standard errors are calculated at CDC using SUDAAN. This is a special purpose computer application that calculates prevalence estimates and standard errors for data from complex surveys. To use this program, two variables must be defined for calculating standard errors. These variables identify the variance strata and the primary sampling units (PSUs). Variables identifying variance stratum (stratum) and PSU (PSU) are created at Westat following weighting.

Values of these variables are based on the procedures that were used to select the sample. In PCSample, schools are selected using implicit stratification that is based on school enrollment size. Sampling strata for SUDAAN consist of either a single certainty school or pairs (or triplets) of noncertainty schools. Pairs (or triplets) of noncertainty schools are grouped according to the order of sample selection. PSU’s are comprised of classes within schools for certainty strata and schools within pairs (or triplets) for noncertainty strata. More details on the definition of these variables is provided in Appendix A.

### 6. Create Final Files:

For surveys that are weighted, Westat creates a file for CDC that includes the record ID, the final weights, the variance stratum, and the PSU. The weight file contains all scanned records, including records that CDC subverted due to inconsistent responses. These ineligible records have zero weights, missing variance stratum, and missing PSU on the file.



## Technical Summary of YRBS Weighting

### Initial Weights:

Every eligible student is assigned a base weight, which is equal to the inverse of the probability of selection for the student. Student probabilities of selection are calculated from:

$$P(\text{Student is Selected}) = \frac{P(\text{School is Selected}) \times P(\text{Class is Selected}|\text{School is Selected})}{P(\text{Student is Selected}|\text{School and Class are Selected})}$$

For the YRBS, all students in sampled classes are selected so that

$$P(\text{Student is Selected}|\text{School and Class are Selected}) = 1$$

A baseweight is computed for each sampled student as:

$$\begin{aligned} \text{Student Baseweight} &= \frac{1}{P(\text{Student is Selected})} \\ &= \frac{1}{P(\text{School is Selected})} \\ &\quad \times \frac{1}{P(\text{Class is Selected}|\text{School is Selected})} \times 1 \\ &= \text{School Baseweight} \times \text{Within - School Baseweight} \end{aligned}$$

Schools are selected with probability proportional to size (PPS), with size defined as school enrollment size in the target grades. A baseweight is calculated for each school as:

$$\begin{aligned} \text{Baseweight for School } i &= \begin{cases} \frac{\Sigma \text{Measure of size of all noncertainty schools in the frame}}{n \times \text{measure of size assigned to school } i}, & \text{if school } i \text{ is selected with noncertainty} \\ 1, & \text{if school } i \text{ is selected with certainty} \end{cases} \\ \text{where } n &= \text{the number of noncertainty schools required in the sample.} \end{aligned}$$

The within-school weight is equal to the inverse of the conditional probability that the class is selected given the school is selected. PCSample determines this sampling rate so that the resulting probability of selection for each student is equal to the overall sampling rate. Using basic algebra, the required within-school weight can be shown to be equal to:

$$\text{Within - school baseweight for school } i = \frac{1}{f \times \text{Baseweight for school } i}$$

where

$$f = \text{the overall sampling rate} = \frac{\text{Adjusted Student Sample Size}}{\text{Frame Enrollment}}$$

and the adjusted student sample size is computed from the number of completes required, adjusted for school nonresponse, student nonresponse, and nonparticipation due to parental or student refusal.

The resulting overall student probability of selection is then

$$\begin{aligned} P(\text{Student is Selected}) &= P(\text{School is Selected}) \\ &\quad \times P(\text{Class is Selected}|\text{School is Selected}) \\ &= \frac{1}{\text{Baseweight for School } i} \times \frac{1}{\text{Within - School Baseweight for School } i} \\ &= \frac{1}{\text{Baseweight for School } i} \times f \times (\text{Baseweight for School } i) = f \end{aligned}$$

Thus, each student has the same probability of being selected for the sample, and the resulting sample is “self-weighting.”

When there are schools on the frame that have very small enrollments, it is possible that

$$f \times \frac{1}{\text{Baseweight for School } i} > 1$$

This occurs if the school probability of selection is so small that even if all students in the school are selected, the overall probability for students in the school will be less than the overall sampling rate,  $f$ . In this case, PCSample increases the measure of size for small schools so that the resulting probabilities of selection will be the same for all eligible students.

### Nonresponse Adjustments:

Each eligible student that is sampled represents students in the population, whether or not the eligible sampled student completes a questionnaire. In the weighting adjustments for nonresponse, students in the population that are represented by survey nonrespondents are reassigned to survey respondents. The reassignment attempts to match respondents and nonrespondents with respect to variables that affect response propensity.

Nonresponse adjustment for the YRBS is accomplished with two adjustment steps. The first adjustment accounts for schools that do not participate; and the second adjustment accounts for refusing students in participating schools.

### School Nonresponse Adjustment:

To adjust for school nonresponse, each sampled school is assigned to one of three groups based on school enrollment in the target grades: large schools, medium schools, and small schools. The groups are constructed so that each group has approximately

the same total enrollment. Within each group, school-level nonresponse adjustments are calculated as:

$$\text{School adjustment factor} = \frac{\sum_{\text{Eligible selected schools}} (\text{School baseweight} \times \text{School enrollment})}{\sum_{\text{Eligible selected schools}} (\text{School baseweight} \times \text{School enrollment})}$$

The adjusted school weight is calculated as:

$$\text{Adjusted school weight for School } i = \begin{cases} \text{Baseweight for school } i \times \text{School adjustment factor, if school } i \text{ participates} \\ 0, \text{ if school } i \text{ refuses} \end{cases}$$

Cells that have low frequencies (less than 3 schools) and cells that have very high adjustment factors (greater than 2.5) may be collapsed with other cells for calculating the final adjustments.

### Student Nonresponse Adjustment:

In schools that participate, sampled students may fail to complete a questionnaire for a variety of reasons including absence, refusal to participate, attendance at special functions outside the classroom, or lack of parental permission. Student nonresponse also arises when questionnaires fail the edit and quality control checks. The student-level nonresponse adjustment accounts for loss of sampled students in participating schools.

Adjustment cells for the student-level adjustment are based on classrooms within schools. Cells with low frequencies (less than 15 students) or very high adjustment factors (greater than 2.5) may be collapsed with other cells using criteria that take into account the school size category and the modal grade of the class. Within each adjustment cell, a student nonresponse adjustment factor is computed from:

$$\text{Student adjustment factor} = \frac{\sum_{\text{Eligible sampled students}} \text{Student weight}}{\sum_{\text{Usuable surveys}} \text{Student weight}}$$

Where Student weight =  
Adjusted school weight x Within-school weight

The resulting final adjusted student weights are:

$$\text{Adjusted student weight for student } i = \begin{cases} \text{Student weight for student } i \times \text{Student adjustment factor, if student } i \text{ responds} \\ 0, \text{ if student } i \text{ refuses} \end{cases}$$

### Raking:

The final weighting step adjusts the weights so that weighted sample estimates match known marginal population totals by grade and gender and by race-ethnicity. This technique is called raking. Raking is often used when marginal totals are known, but interior cell counts can only be estimated from the sample. The weights are adjusted to the first marginal distribution, or set of control totals, then the second, and so on. This sequence is repeated until the adjusted weights converge to the control totals in each dimension.

For the YRBS, adjustment cells for raking are based on classification of students by grade and gender and by race-ethnicity. The first raking dimension is by grade and gender, consisting of eight adjustment cells of males and females in each of grades 9, 10, 11, and 12. Each responding sampled student is assigned to an adjustment cell based on the grade and gender reported in the questionnaire.

The second raking dimension is by race-ethnicity. For most YRBS sites, race-ethnicity is grouped into at most three categories based on the race-ethnicity distribution in the population. Some sites with highly diverse race-ethnicity may have more than three categories. Each category must contain at least five percent of the race-ethnicity distribution. The remaining students not in these highly concentrated categories are placed in a separate category, “other”. This “other” category also includes students who reported more than one non-Hispanic race-ethnicity category on the questionnaire. Each responding sampled student is assigned to an adjustment cell based on the race-ethnicity reported in the questionnaire.

Control totals for each cell are provided by each state or local agency using school enrollment tabulations. Within each cell, adjustment factors are computed as:

$$\text{Ranking adjustment factor} = \frac{\text{Control total}}{\sum_{\text{Eligible responding students}} \text{Adjusted student weight}}$$

The final weight for each eligible responding student is computed as:

$$\text{Final weight} = \text{Ranking adjustment factor} \times \text{Adjusted student weight}$$



Sampled students reporting their grade as “Ungraded” or “Other” are not included in the poststratification adjustment. These students retain their weight from the nonresponse adjustment.

Occasionally a completed questionnaire may have missing responses for the grade, gender, and race-ethnicity items used in raking. For the raking step, missing responses for these questions are imputed so that all responding sampled students can be assigned to an appropriate adjustment cell. Hot-deck imputation is used, where students with missing items (recipients) are filled in with reported items from other students (donors). Donors and recipients are grouped into cells that are similar in auxiliary variables. For example, questions 37, 61, and 68 of the 2011 YRBS are generally used as auxiliary variables in imputing gender. Within each cell, donors and recipients are matched randomly. Values of these imputed variables are not included in the data file sent to the site.

#### Preparation for Variance Estimation:

Variances for the YRBS survey data are estimated at CDC using SUDAAN. Estimates of variability for data from complex sample designs require specialized methods designed specifically for this purpose. SUDAAN is a software package that was developed specifically to compute estimates and variances for data from complex sample designs.

To use this software, two additional variables are required that identify the sampling stratum (STRATUM) and primary sampling unit (PSU) assignments for participating schools and classes. Although not strictly part of the weighting adjustments, values of these variables depend on the sample design used for the survey.

In PCSample, schools are sorted prior to sampling based on enrollment size in the target grades. Very large schools are sampled with certainty. Noncertainty schools are sampled using systematic sampling with probability proportional to enrollment. Sampling strata for SUDAAN consist of either a single certainty school or pairs (or triplets) of noncertainty schools.

Within certainty schools, each class comprises a PSU, so that strata formed from certainty schools can have

several PSU's. Certainty schools in which only a single class is sampled are combined into strata with schools of similar size and locale.<sup>49</sup>

Noncertainty schools are grouped into pairs according to the order they are sampled.<sup>50</sup> If there are an odd number of noncertainty schools then the final group is a triplet. Each pair (or triplet) comprises a stratum for the noncertainty schools; and each school comprises a PSU.

## Appendix IV – Risk and Protective Factors

This appendix outlines the risk and protective factor items and scales represented in the HKCS and is accompanied by the survey items comprising each scale. Information is organized by domain. Scale scores, cut-off points, and combined risk and protective factor scores were calculated using procedures provided to OMNI Institute by analysts at the Social Development Research Group.<sup>51,52</sup> Differences in item wording and scale score construction are noted below.

### Community Domain

Risk Factors	
Perceived Availability of Drugs	Youth report that it would be easy for them to obtain cigarettes, alcohol, marijuana, or other illegal drugs. Perceived availability of drugs is a primary factor associated with greater risk of adolescent substance use.
Laws and Norms Favorable to Drug Use	Youth report that laws regulating alcohol and other drug sales and use are poorly enforced. Further, youth perceive that adults communicate that it is acceptable for minors to use alcohol or other drugs. Research has demonstrated that in communities where drug use is explicitly or implicitly condoned, youth are more likely to engage in drug use and other antisocial behavior.

<sup>49</sup>See description of method of “collapsed strata” in Cochran, William G., *Sampling Techniques*, Wiley, 1977, pp. 139-140.

<sup>50</sup>See the discussion of estimators for systematic sampling with unequal probabilities in Wolter, Kirk M. *Introduction to Variance Estimation*, Springer-Verlag, 1985, pp. 286-287.

<sup>52</sup>2010 Communities That Care Youth Survey Item Construct Dictionary: July 2010.

<sup>53</sup>Arthur, M. W., Briney, J. S., Hawkins, J. D., Abbott, R. D., Brooke-Weiss, B. L., & Catalano, R. F. (2007). Measuring risk and protection in communities using the Communities That Care Youth Survey. *Evaluation and Program Planning*, 30, 197–211.

## Family Domain

Risk Factors	
Parental Attitudes Favorable to Drug Use	Parents are tolerant of their youth's alcohol or drug use. In families where parents use illegal drugs, are heavy users of alcohol, or condone youths' use, youth are more likely to become drug abusers during adolescence. The risk is further increased if parents involve youth in their own drug (or alcohol) using behavior, for example, asking the youth to light the parent's cigarette or get a beer from the refrigerator.
Protective Factors	
Opportunities for Pro-Social Involvement in Family	Opportunities are present for children and youth to participate meaningfully in the responsibilities and activities of the family. Research has shown that youth who are involved in family decision-making engage in lower rates of delinquent behavior and substance use.

## School Domain

Risk Factors	
Low School Commitment	Youth report poor grades and that they do not enjoy being in school or find school work meaningful. Factors such as liking school, spending time on homework, perceiving the coursework as relevant, and expecting to attend college are associated with lower rates of drug use.
Protective Factors	
Opportunities for Pro-Social Involvement	Opportunities are available for youth to participate meaningfully in their classroom and school. When young people are given more opportunities for Pro-Social involvement, they are less likely to engage in drug use and other negative outcomes.

## Peer-Individual Domain

Risk Factors	
Early Initiation of Drug Use	Youth report that they first used alcohol and other drugs at an early age (prior to age 15). Research shows that the early incidence of drug use also predicts greater likelihood of later drug use and abuse, as well as other unhealthy behaviors.
Perceived Risk of Drug Use	Youth report that alcohol and drug use is not likely to cause people harm. A low perception of harm associated with drug use can make it more likely that youth will engage in drug use.

## Community Domain

### Risk Factor: Perceived Availability of Drugs

- If you wanted to get some beer, wine or hard liquor how easy would it be for you to get some?
- If you wanted to get some cigarettes, how easy would it be for you to get some?
- If you wanted to get some marijuana, how easy would it be for you to get some?
- If you wanted to get a drug like cocaine, LSD, amphetamines or any other illegal drug, how easy would it be for you to get some?

### Risk Factor: Laws and Norms Favorable to Drug Use\*

- If a kid drank alcohol in your neighborhood, or the area around where you live, would he or she be caught by the police?
- If a kid used marijuana in your neighborhood, or the area around where you live, would he or she be caught by the police?
- How wrong would most adults in your neighborhood, or the area around where you live, think it is for kids your age to drink alcohol?
- How wrong would most adults in your neighborhood, or the area around where you live, think it is for kids your age to smoke cigarettes?
- \*\*How wrong would most adults in your neighborhood, or the area around where you live, think it is for kids your age to use marijuana?

*\*Two questions from the CTC version of this scale are not included in this survey ("if a kid carried a handgun in your neighborhood, would he or she be caught by the police?" and "If a kid smoked a cigarette in your neighborhood, would he or she be caught by the police?"); the scale is calculated with five items.*

*\*\*This question from the CTC version of this scale states "smoke marijuana".*

## Family Domain

### Risk Factor: Parental Attitudes Favorable Towards

### Drug Use

- How wrong do your parents or guardians feel it would be for you to drink alcohol regularly (at least once or twice a month)?
- How wrong do your parents or guardians feel it would be for you to smoke cigarettes?
- \*\*How wrong do your parents or guardians feel it would be for you to use marijuana?

*\*\*This question from the CTC version of this scale states "smoke marijuana".*

Protective Factor: Opportunities for Pro-Social Involvement

- If I had a personal problem, I could ask my parents or guardians for help.
- My parents or guardians ask me what I think before most family decisions affecting me are made.
- My parents or guardians give me lots of chances to do fun things with them.

**School Domain**

Risk Factor: Low Commitment to School

- How often do you feel that the school work you are assigned is meaningful and important?
- How interesting are most of your courses to you?
- How important do you think the things you are learning in school are going to be for you later in life?
- Now thinking back over the past year in school, how often did you try to do your best work in school?
- Now thinking back over the past year in school, how often did you enjoy being in school?
- Now thinking back over the past year in school, how often did you hate being in school?
- During the LAST FOUR WEEKS how many whole days of school have you missed because you skipped or “cut”?

Protective Factor: Opportunities for Pro-Social Involvement

- In my school, students have lots of chances to help decide things like class activities and rules.
- Teachers ask me to work on special classroom projects.
- There are a lot of chances for students in my school to get involved in sports, clubs, and other school activities outside of class.
- There are lots of chances for students in my school to talk with a teacher one-on-one.
- There are lots of chances to be part of class discussions or activities.

**Peer-Individual Domain**

Risk Factor: Early Initiation of Drug Use\*

- How old were you when you had your first drink of alcohol other than a few sips?

- How old were you when you first began drinking alcohol regularly, that is, at least once or twice a month?
- \*\* How old were you when you smoked a whole cigarette for the first time?
- \*\*\*How old were you when you tried marijuana for the first time?

*\*The scale responses have been slightly modified from the original CTC version of the survey.*

*\*\*This question from the CTC version of this scale states “smoked a cigarette, even just a puff”.*

*\*\*\*This question from the CTC version of this scale states “How old were you when you first smoked marijuana?”.*

Risk Factor: Perceived Risks of Drug Use

- How much do you think people risk harming themselves (physically or in other ways) if they smoke one or more packs of cigarettes per day?
- How much do you think people risk harming themselves (physically or in other ways) if they have one or two drinks of an alcoholic beverage (beer, wine, liquor) nearly every day?
- \*How much do you think people risk harming themselves (physically or in other ways) if they use marijuana once or twice?
- \*\*How much do you think people risk harming themselves (physically or in other ways) if they use marijuana regularly?

*\*\*This question from the CTC version of this scale states “try marijuana”.*

*\*\*\*This question from the CTC version of this scale states “smoke marijuana”.*

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