

# Binge Drinking

INDICATORS ON CHILDREN AND YOUTH



Binge drinking among high schoolers declined during the 2000s, and is now at record low levels; however, as of 2015, nearly one in five (17 percent) 12th-graders reported this behavior.

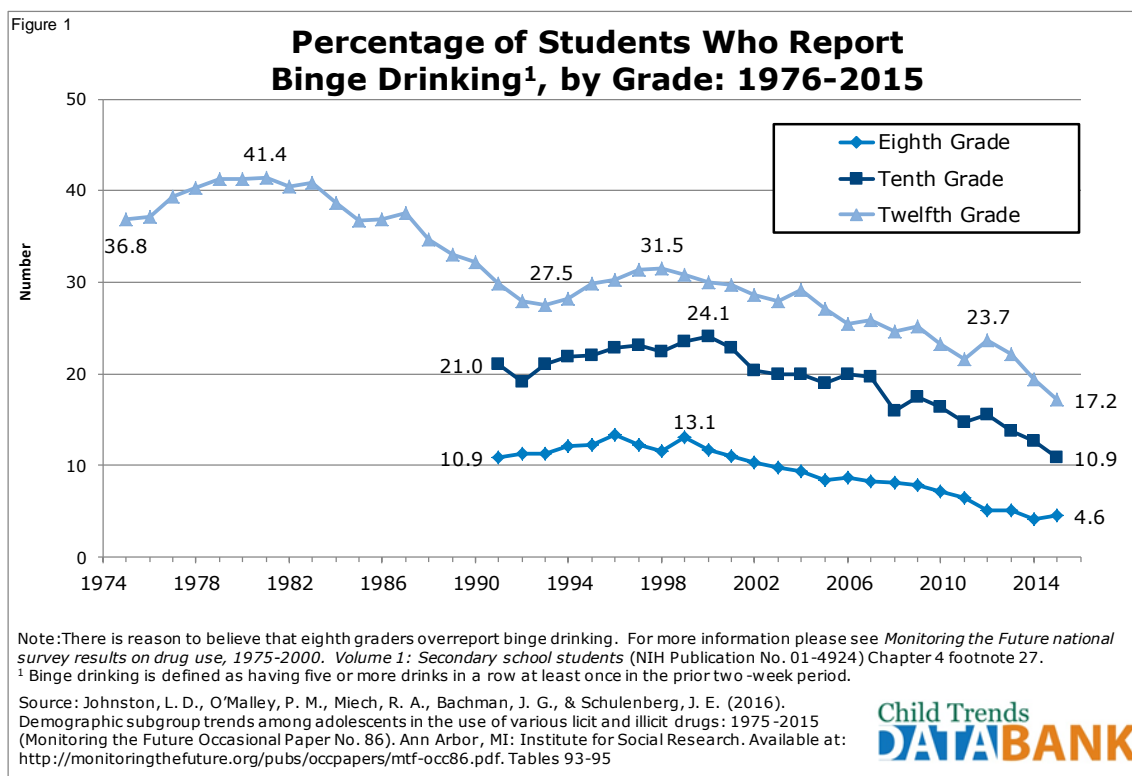
## Importance

Binge drinking is a common form of alcohol consumption among adolescents.<sup>1</sup> Alcohol use among youth is associated with a wide variety of other risky behaviors and poor outcomes, including unprotected sexual intercourse, vulnerability to coerced sexual activity, the use of marijuana, and poor academic performance.<sup>2,3</sup> Binge drinking, in particular, is associated with poor school performance, and involvement in other health risk behaviors, such as riding with a driver who has been drinking, cigarette smoking, sexual activity, being a victim of dating violence, attempting suicide, and using illicit drugs.<sup>4</sup> Consuming larger quantities of alcohol is also associated, among young women, with benign breast disease, a risk factor for cancer.<sup>5</sup> In 2014, according to the Fatality Analysis Reporting System, 26 percent of young drivers who were involved in fatal crashes had alcohol in their system.<sup>6</sup>

Alcohol use among adolescents is also related to an increased risk of alcohol dependence in adulthood. Binge drinking can contribute to many health disorders, including cancer, liver, pancreatic and cardiovascular diseases, as well as to a variety of gastrointestinal problems, neurological disorders and reproductive system disorders.<sup>7</sup> Contextual risk factors associated with adolescent drinking include having alcoholic parents; a lack of parental support, monitoring, and communication; and having peers who drink.<sup>8,9</sup>

## Trends

The proportion of 12<sup>th</sup>-graders who reported binge drinking peaked in the early 1980s at 41 percent, before falling sharply through the rest of the 1980s and early 1990s, except for a small increase between 1985 and 1987. The rate of 12<sup>th</sup>-grade binge-drinkers rose again throughout the 1990s, from a low of 28 percent in 1991 to a high of 32 percent in 1998, before resuming a downward trend throughout the last decade. Between 2000 and 2015, the proportion of students in grades eight, ten, and twelve who reported binge drinking declined by 58, 52, and 42 percent, respectively. (Figure 1)



## Differences by Age

Twelfth-graders are nearly four times as likely to report heavy drinking as eighth-graders. In 2015, 17 percent of twelfth-graders reported binge drinking, compared with 11 percent of tenth-graders, and 5 percent of eighth-graders.<sup>10</sup> (Figure 1)

## Differences by Gender

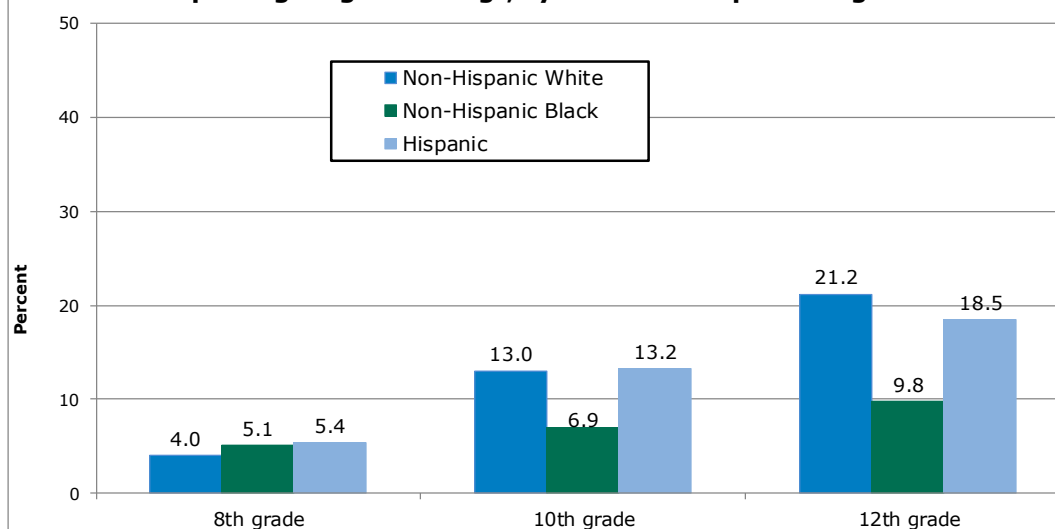
At eighth and tenth grades, roughly equal proportions of boys and girls engage in binge drinking. However, by twelfth grade, boys are more likely than girls to have five or more drinks on one occasion (19 and 15 percent, respectively, in 2015). (Appendix 1)

## Differences by Race and Hispanic Origin<sup>11</sup>

In 2015, Hispanic students were more likely than black students to engage in heavy drinking at all three grade levels. In eighth grade, white students were equally likely to engage in heavy drinking as black students, while in tenth and twelfth grade they were more likely to do so than black students. Moreover, in eighth grade, white students were less likely than Hispanic students to drink heavily (four and five percent, respectively), but in twelfth grade they were more likely to do so (21 and 19 percent, respectively). Hispanics and whites were equally likely to drink heavily in tenth grade. (Figure 2)

Figure 2

### Percentage of Students in Eighth<sup>1</sup>, Tenth, and Twelfth Grades Reporting Binge Drinking<sup>2</sup>, by Race and Hispanic Origin: 2015



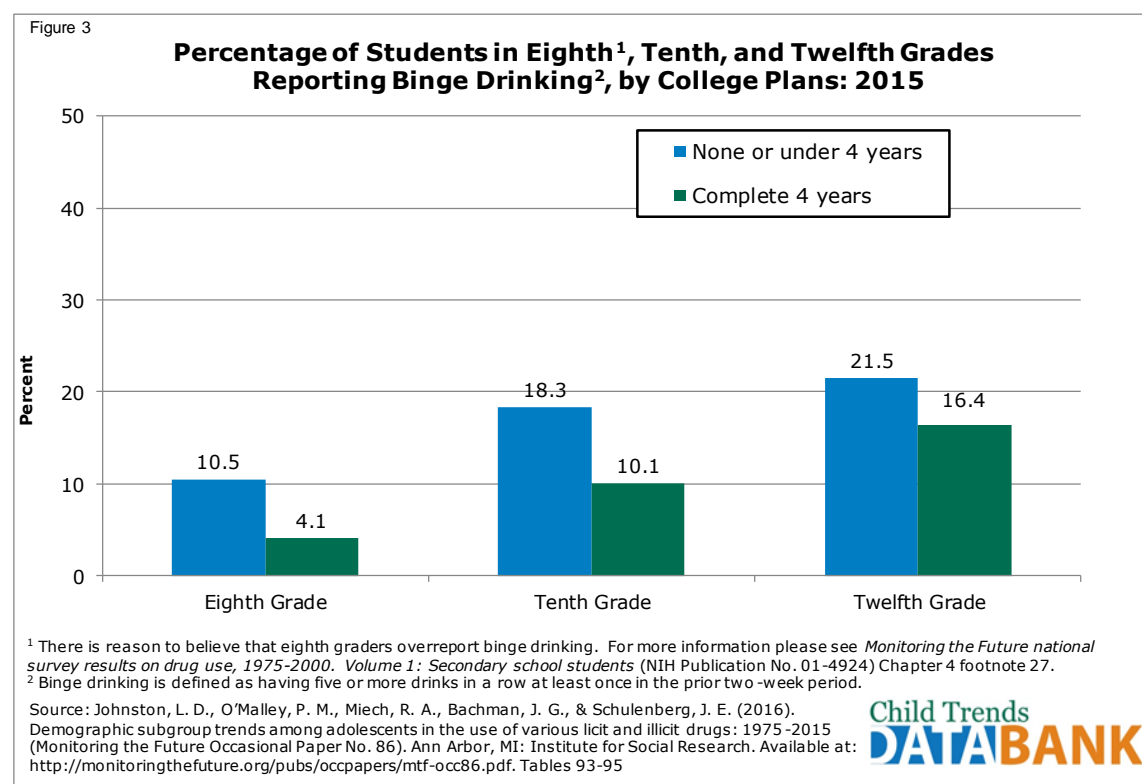
<sup>1</sup> There is reason to believe that eighth graders overreport binge drinking. For more information please see *Monitoring the Future national survey results on drug use, 1975-2000. Volume 1: Secondary school students* (NIH Publication No. 01-4924) Chapter 4 footnote 27.

<sup>2</sup> Binge drinking is defined as having five or more drinks in a row at least once in the prior two-week period.

Source: Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2016). Demographic subgroup trends among adolescents in the use of various licit and illicit drugs: 1975-2015 (Monitoring the Future Occasional Paper No. 86). Ann Arbor, MI: Institute for Social Research. Available at: <http://monitoringthefuture.org/pubs/occpapers/mtf-occ86.pdf>. Tables 93-95

## Differences by College Plans

Students are less likely to binge drink if they plan to complete four years or more of college than if they have no such plans. For instance, in 2015, 10 percent of tenth-graders who planned to complete four years of college reported binge drinking, compared with 18 percent who had no such plans. This relationship is stronger among younger students, though it is still evident in grade twelve. (Figure 3)





## State and Local Estimates

- 2015 estimates for binge drinking are available for high school students (grades 9-12) for select states and cities from the Youth Risk Behavior Survey (YRBS) at <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>
- For 2013-2014, state estimates for binge drinking among youth ages 12-17 and 18-25 (within the prior month) are available from the National Survey on Drug Use and Health at <http://www.samhsa.gov/data/sites/default/files/NSDUHsaePercents2014.pdf> . (Table 10).

NOTE: Estimates of drug use from the National Survey on Drug Use and Health (NSDUH), used to generate these state-level estimates, are generally lower than estimates generated by the Monitoring the Future Survey (MTF). Since the MTF was the source of the national estimates presented in this indicator, users should not make direct comparisons of estimates made from the two sources. For information on methodological differences in the surveys that may be causing these differences in estimates, see:

Harrison, L.D. (2001). Understanding the differences in youth drug prevalence rates produced by the MTF, NHSDA, and YRBS studies. *Journal of Drug Issues*, 31(3), pp. 665-694.

## International Estimates

International estimates of lifetime and 30-day binge drinking incidences are available from the European School Survey on Alcohol and Other Drugs (ESPAD) 2011 report, available at:

<http://www.espad.org/en/Reports--Documents/ESPAD-Reports/> (Tables 23a and 23b).

## National Goals

Through its *Healthy People 2020* initiative, the federal government has set several national goals to reduce binge drinking among all age groups. One goal, based on the Monitoring the Future data, is to reduce the proportion of high school seniors who engaged in binge drinking in the last two weeks, from 25.2 percent in 2009 to 22.7 percent in 2020. A second goal, based on the National Survey on Drug Use and Health, is to reduce the proportion of 12- to 17-year-olds who engaged in binge drinking in the last month, from 9.5 percent in 2008 to 8.6 percent in 2020.

More information is available at:

[www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=40](http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=40)

(See goal SA-14)

## What Works to Make Progress on This Indicator

See “What Works for Preventing and Stopping Substance Abuse in Adolescents: Lessons From Experimental Evaluations and Interventions.” Available at [http://www.childtrends.org/wp-content/uploads/2013/03/Child\\_Trends-2008\\_05\\_20\\_FS\\_WhatWorksSub.pdf](http://www.childtrends.org/wp-content/uploads/2013/03/Child_Trends-2008_05_20_FS_WhatWorksSub.pdf)

Also, see Child Trends’ LINKS database (“Lifecourse Interventions to Nurture Kids Successfully”), for reviews of many rigorously evaluated programs, including the following which have been shown to be effective at reducing risky drinking behavior:

- Adolescent Alcohol Prevention Trial: [www.childtrends.org/?programs=adolescent-alcohol-prevention-trial-aapt](http://www.childtrends.org/?programs=adolescent-alcohol-prevention-trial-aapt)
- Adolescent Transitions Program – Comprehensive: [www.childtrends.org/?programs=adolescent-transitions-program-comprehensive](http://www.childtrends.org/?programs=adolescent-transitions-program-comprehensive)
- Alcohol Misuse Prevention Study (AMPS): [www.childtrends.org/?programs=alcohol-misuse-prevention-study-amps](http://www.childtrends.org/?programs=alcohol-misuse-prevention-study-amps)
- Alcohol Skills Training Program: [www.childtrends.org/?programs=alcohol-skills-training-program-2](http://www.childtrends.org/?programs=alcohol-skills-training-program-2)
- All Stars: [www.childtrends.org/?programs=all-stars](http://www.childtrends.org/?programs=all-stars)
- Behavioral Economic Supplement to Motivational Interventions: [www.childtrends.org/?programs=behavioral-economic-supplement-to-motivational-interventions](http://www.childtrends.org/?programs=behavioral-economic-supplement-to-motivational-interventions)
- Bicultural Competence Skills Program (BCSP): [www.childtrends.org/?programs=bicultural-competence-skills-program-bcsp](http://www.childtrends.org/?programs=bicultural-competence-skills-program-bcsp)
- Brief Alcohol Screening and Intervention of College Students (BASICS): [www.childtrends.org/?programs=brief-alcohol-screening-and-intervention-of-college-students-basics](http://www.childtrends.org/?programs=brief-alcohol-screening-and-intervention-of-college-students-basics)
- Brief Strategic Family Therapy (BSFT): [www.childtrends.org/?programs=10979](http://www.childtrends.org/?programs=10979)
- CHOICE: [www.childtrends.org/?programs=choice](http://www.childtrends.org/?programs=choice)
- Class Action – Project Northland Phase 2: [www.childtrends.org/?programs=class-action-project-northland-phase-2](http://www.childtrends.org/?programs=class-action-project-northland-phase-2)
- Communities That Care: [www.childtrends.org/?programs=communities-that-care](http://www.childtrends.org/?programs=communities-that-care)



- Event-Specific Prevention: [www.childtrends.org/?programs=event-specific-prevention](http://www.childtrends.org/?programs=event-specific-prevention)
- Family Matters: [www.childtrends.org/?programs=family-matters](http://www.childtrends.org/?programs=family-matters)
- Focus on Youth Plus ImPACT (FOY+ImPACT): <http://www.childtrends.org/?programs=9591>
- Friendly PEERsuasion: [www.childtrends.org/?programs=friendly-peersuasion](http://www.childtrends.org/?programs=friendly-peersuasion)
- Guiding Good Choices (GGC): [www.childtrends.org/?programs=guiding-good-choices](http://www.childtrends.org/?programs=guiding-good-choices)
- Life Skills Training (LST): [www.childtrends.org/?programs=life-skills-training-lst](http://www.childtrends.org/?programs=life-skills-training-lst)
- LionsQuest Skills for Adolescence: [www.childtrends.org/?programs=lionsquest-skills-for-adolescence](http://www.childtrends.org/?programs=lionsquest-skills-for-adolescence)
- Motivational Brief Intervention for High-Risk College Student Drinkers: [www.childtrends.org/?programs=motivational-brief-intervention-for-high-risk-college-student-drinkers](http://www.childtrends.org/?programs=motivational-brief-intervention-for-high-risk-college-student-drinkers)
- Multidimensional Family Therapy (MDFT): [www.childtrends.org/?programs=multidimensional-family-therapy-mdft](http://www.childtrends.org/?programs=multidimensional-family-therapy-mdft)
- Positive Action Program : [www.childtrends.org/?programs=positive-action-program](http://www.childtrends.org/?programs=positive-action-program)
- Positive Youth Development Program: [www.childtrends.org/?programs=positive-youth-development-program](http://www.childtrends.org/?programs=positive-youth-development-program)
- Project ALERT: [www.childtrends.org/?programs=project-alert](http://www.childtrends.org/?programs=project-alert)
- Project Northland: [www.childtrends.org/?programs=project-northland](http://www.childtrends.org/?programs=project-northland)
- Project STAR: [www.childtrends.org/?programs=project-star-formerly-the-midwestern-prevention-project](http://www.childtrends.org/?programs=project-star-formerly-the-midwestern-prevention-project)
- Project Towards No Drug Abuse: [www.childtrends.org/?programs=project-towards-no-drug-abuse](http://www.childtrends.org/?programs=project-towards-no-drug-abuse)
- Reconnecting Youth: [www.childtrends.org/?programs=reconnecting-youth](http://www.childtrends.org/?programs=reconnecting-youth)
- Returning Educated African-American and Latino Men to Enriched Neighborhoods (REAL MEN): [www.childtrends.org/?programs=returning-educated-african-american-and-latino-men-to-enriched-neighborhoods-real-men-2](http://www.childtrends.org/?programs=returning-educated-african-american-and-latino-men-to-enriched-neighborhoods-real-men-2)
- SafeERteens: [www.childtrends.org/?programs=saferteens](http://www.childtrends.org/?programs=saferteens)
- STARS (Start Taking Alcohol Risks Seriously) for Families: [www.childtrends.org/?programs=stars-start-taking-alcohol-risks-seriously-for-families](http://www.childtrends.org/?programs=stars-start-taking-alcohol-risks-seriously-for-families)





- Strong African American Families (SAAF): [www.childtrends.org/?programs=strong-african-american-families-saaf](http://www.childtrends.org/?programs=strong-african-american-families-saaf)
- Support to Reunite, Involve, and Value Each Other (STRIVE): <http://www.childtrends.org/?programs=support-to-reunite-involve-and-value-each-other-strive>
- Teen Intervene: [www.childtrends.org/?programs=teen-intervene](http://www.childtrends.org/?programs=teen-intervene)
- The Gatehouse Project: [www.childtrends.org/?programs=the-gatehouse-project](http://www.childtrends.org/?programs=the-gatehouse-project)
- The Strengthening Families Program (10-14): [www.childtrends.org/?programs=strengthening-families-program-for-parents-and-youth-10-14](http://www.childtrends.org/?programs=strengthening-families-program-for-parents-and-youth-10-14)
- Thinking Not Drinking: [www.childtrends.org/?programs=thinking-not-drinking](http://www.childtrends.org/?programs=thinking-not-drinking)
- Utrecht Coping Power Program: [www.childtrends.org/?programs=utrecht-coping-power-program](http://www.childtrends.org/?programs=utrecht-coping-power-program)

## Related Indicators

- Drunk Driving: <http://www.childtrends.org/?indicators=drunk-driving>
- Heavy Drinking Among Parents: <http://www.childtrends.org/?indicators=heavy-drinking-among-parents>
- Substance-Free Youth: <http://www.childtrends.org/?indicators=substance-free-youth>

## Definition

Students were asked whether they had imbibed five or more drinks in a row at least once in the two-week period prior to the survey. Dropouts and students who were absent on the day of the survey are not included in the results. For detailed analysis of how those omissions may affect results, see: Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2016). *Monitoring the Future national survey results on drug use, 1975-2015. Volume I: Secondary school students*. Appendix A. Ann Arbor: Institute for Social Research, The University of Michigan. Available at [http://monitoringthefuture.org/pubs/monographs/mtf-vol1\\_2015.pdf](http://monitoringthefuture.org/pubs/monographs/mtf-vol1_2015.pdf)

## Data Source

Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2016). *Demographic subgroup trends among adolescents in the use of various licit and illicit drugs: 1975-2015* (Monitoring the Future Occasional Paper No. 86). Ann Arbor, MI: Institute for Social Research. Available at: <http://monitoringthefuture.org/pubs/occpapers/mtf-occ86.pdf>. Tables 93-95

## Raw Data Source

The Monitoring the Future Survey

<http://www.monitoringthefuture.org>

## Appendix 1 - Binge Drinking<sup>1</sup>: Percentage of Students in Grades 8, 10, and 12 who Report Having Had Five or More Drinks in a Row in the Previous Two Weeks: Selected Years, 1976-2015

	1976	1981	1986	1991	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Eighth-Graders<sup>2</sup></b>	-	-	-	10.9	12.3	11.7	8.4	8.7	8.3	8.1	7.8	7.2	6.4	5.1	5.1	4.1	4.6
<b>Gender</b>																	
<b>Male</b>	-	-	-	12.1	12.5	11.7	8.2	8.6	8.2	8.1	7.8	6.5	6.1	4.6	4.5	3.5	4.6
<b>Female</b>	-	-	-	9.5	12.1	11.3	8.6	8.5	8.2	8.0	7.7	7.8	6.5	5.5	5.7	4.6	4.6
<b>Race/Hispanic Origin<sup>3</sup></b>																	
<b>White</b>	-	-	-	-	12.1	13.0	9.0	8.4	8.0	7.8	7.7	7.1	6.2	4.9	4.2	4.2	4.0
<b>Black</b>	-	-	-	-	8.3	7.3	6.1	5.7	5.6	5.7	5.2	5.3	5.1	4.3	4.5	4.4	4.1
<b>Hispanic</b>	-	-	-	-	18.4	16.0	12.1	11.6	12.5	12.3	11.5	10.8	10.4	9.9	7.8	5.7	5.4
<b>Parental Education<sup>4</sup></b>																	
<b>Less than high school</b>	-	-	-	18.3	20.1	18.9	14.4	13.3	15.5	17.0	15.2	12.0	11.0	9.5	9.5	5.7	7.5
<b>Completed high school</b>	-	-	-	12.6	14.8	15.3	10.7	10.6	10.5	10.5	9.5	9.3	8.8	7.6	6.7	5.4	5.8
<b>Some college</b>	-	-	-	10.7	13.3	11.0	9.4	9.9	9.2	7.9	8.7	8.0	7.2	5.3	6.4	4.9	4.9
<b>Completed college</b>	-	-	-	8.8	9.3	8.2	6.4	6.7	5.5	5.7	5.3	5.7	4.6	3.8	3.0	3.4	3.1
<b>Graduate school</b>	-	-	-	8.8	8.7	9.5	5.0	5.9	5.0	4.7	4.7	4.3	4.1	2.0	3.9	3.0	3.6
<b>College Plans</b>																	
<b>None or under 4 years</b>	-	-	-	21.1	25.0	25.0	21.0	19.3	21.5	21.3	19.1	17.6	15.6	15.3	14.2	9.9	10.5
<b>Complete 4 years</b>	-	-	-	9.3	10.8	10.1	7.2	7.6	7.1	7.0	6.8	6.3	5.7	4.4	4.5	3.7	4.1

	1976	1981	1986	1991	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Tenth-Graders</b>	-	-	-	21.0	22.0	24.1	19.0	19.9	19.6	16.0	17.5	16.3	14.7	15.6	13.7	12.6	10.9
<b>Gender</b>																	
<b>Male</b>	-	-	-	26.4	26.3	29.8	22.0	22.9	20.9	16.6	18.8	17.9	16.5	16.4	14.7	13.1	11.3
<b>Female</b>	-	-	-	19.5	21.5	22.5	19.9	20.9	18.3	15.4	16.1	14.6	12.7	14.8	12.5	12.2	10.6
<b>Race/Hispanic Origin <sup>3</sup></b>																	
<b>White</b>	-	-	-	-	25.4	28.1	23.5	23.4	21.8	19.7	17.9	17.2	16.1	16.3	15.7	14.4	13.0
<b>Black</b>	-	-	-	-	13.3	12.9	11.0	11.2	10.0	9.8	9.8	10.7	9.4	8.2	8.6	7.5	6.9
<b>Hispanic</b>	-	-	-	-	26.8	28.3	26.0	24.6	20.1	19.6	20.6	22.2	19.7	17.1	16.9	15.0	13.2
<b>Parental Education<sup>4</sup></b>																	
<b>Less than high school</b>	-	-	-	25.7	30.5	27.5	24.1	22.7	22.0	20.6	25.7	22.8	17.6	20.5	17.8	15.4	13.9
<b>Completed high school</b>	-	-	-	26.0	26.7	29.4	23.6	25.4	22.6	17.8	19.6	19.5	17.1	17.3	15.1	14.0	11.9
<b>Some college</b>	-	-	-	21.7	24.6	26.1	21.0	22.9	20.7	16.6	18.4	16.3	15.8	15.0	13.6	13.7	12.1
<b>Completed college</b>	-	-	-	20.8	21.6	25.0	19.4	19.8	17.7	14.7	14.7	14.1	12.7	15.4	12.5	10.7	10.1
<b>Graduate school</b>	-	-	-	22.4	19.0	24.6	19.4	20.3	17.2	12.8	14.8	13.1	12.3	14.7	12.1	11.6	9.6
<b>College Plans</b>																	
<b>None or under 4 years</b>	-	-	-	33.0	37.5	39.3	34.0	33.0	30.7	29.1	29.9	30.5	27.1	25.9	21.7	24.3	18.3
<b>Complete 4 years</b>	-	-	-	20.8	21.5	24.2	19.3	20.5	18.2	14.4	16.1	14.6	13.4	14.6	12.8	11.4	10.1

	1976	1981	1986	1991	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Twelfth-Graders</b>	37.1	41.4	36.8	29.8	29.8	30.0	27.1	25.4	25.9	24.6	25.2	23.2	21.6	23.7	22.1	19.4	17.2
<b>Gender</b>																	
<b>Male</b>	47.9	51.6	46.1	37.8	36.9	36.7	32.6	28.9	30.7	28.4	30.5	28.0	25.5	27.2	26.1	22.3	19.3
<b>Female</b>	25.9	30.8	28.1	21.2	23.0	23.5	21.6	21.5	21.5	21.3	20.2	18.4	17.6	19.7	18.1	16.6	14.9
<b>Race/Hispanic Origin <sup>3</sup></b>																	
<b>White</b>	-	44.9	40.3	34.6	32.3	34.6	32.5	30.4	29.7	29.9	29.0	27.6	25.9	25.7	25.6	23.8	21.2
<b>Black</b>	-	17.1	16.4	11.7	14.9	11.5	11.3	11.4	11.5	10.9	12.0	13.1	11.3	11.3	12.5	11.3	9.8
<b>Hispanic</b>	-	34.8	30.8	27.9	26.6	31.0	23.9	23.3	22.5	21.5	22.6	22.1	20.8	21.8	22.4	20.4	18.5
<b>Parental Education <sup>4</sup></b>																	
<b>Less than high school</b>	34.1	37.0	31.7	26.8	26.6	25.1	19.4	25.4	20.4	21.3	23.2	20.1	17.9	23.6	21.5	19.0	17.2
<b>Completed high school</b>	41.1	43.2	37.9	29.9	31.2	29.2	28.3	25.8	27.3	23.0	24.6	24.6	21.1	23.9	23.1	20.1	17.1
<b>Some college</b>	36.4	42.4	37.9	30.4	29.5	30.5	27.6	26.5	24.8	25.1	27.6	23.3	23.2	24.3	23.9	19.2	17.4
<b>Completed college</b>	36.9	40.8	37.1	29.9	29.9	29.9	29.4	24.0	27.5	26.2	24.4	24.2	21.4	23.6	21.4	20.7	17.9
<b>Graduate school</b>	34.5	39.3	36.7	30.6	30.7	32.7	25.2	26.3	27.1	26.4	25.6	21.2	22.1	22.8	20.3	19.0	17.6
<b>College Plans</b>																	
<b>None or under 4 years</b>	41.8	46.7	41.3	34.4	35.2	35.7	34.3	32.3	30.8	31.5	31.3	32.1	27.4	27.5	29.2	24.0	21.5
<b>Complete 4 years</b>	31.5	37.4	34.1	27.9	27.8	27.6	25.1	23.7	24.7	23.2	23.8	21.2	20.4	22.6	20.6	18.3	16.4

"-" Indicates data not available.

<sup>1</sup> Binge drinking is defined as having five or more drinks in a row at least once in the prior two-week period.

<sup>2</sup> There is reason to believe that eighth graders over-report binge drinking. For more information please see Monitoring the Future national survey results on drug use, 1975-2000. Volume 1: Secondary school students (NIH Publication No. 01-4924) Chapter 4 footnote 27.

<sup>3</sup> To derive percentages for each racial subgroup, data for the specified year and the previous year have been combined to increase subgroup sample sizes and thus provide the most stable estimates.

<sup>4</sup> Parental education is calculated by the Institute of Social Research as the average of the mother's and father's education. Averages that fall between two levels were rounded up by Child Trends to reflect the attainment of the most educated parent.

Source: Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2016). Demographic subgroup trends among adolescents in the use of various licit and illicit drugs: 1975-2015 (Monitoring the Future Occasional Paper No. 86). Ann Arbor, MI: Institute for Social Research. Available at: <http://monitoringthefuture.org/pubs/occpapers/mtf-occ86.pdf>. Tables 93-95

## Endnotes

<sup>1</sup> Centers for Disease Control and Prevention. (2015). *Underage drinking*. Fact Sheet. Retrieved from <http://www.cdc.gov/Alcohol/fact-sheets/underage-drinking.htm>

<sup>2</sup> Monti, P., Tevyaw, T., and Borsari, B. (2004/2005). Drinking among young adults: Screening, brief intervention, and outcome. *National Institute on Alcohol Abuse and Alcoholism: Focus on Young Adult Drinking*, 28 (4). Available at: <http://pubs.niaaa.nih.gov/publications/arh284/toc28-4.htm>. Some studies do not find an association between adolescent drinking and risky sexual behavior. For example, see Morrison, D. M., Gillmore, M. R., Hoppe, M. J., Gaylord, J., Leigh, B., C., and Rainey, D. (2003). Adolescent drinking and sex: Findings from a daily diary study. *Perspectives on Sexual Reproductive Health*, 35(4): 162-168. Available at <http://www.agisa.org/journals/toc/psrh3504toc.html>.

<sup>3</sup> White, H. and Jackson, K. (2004/2005) Social and psychological influences on emerging adult drinking behavior. *National Institute of Alcohol Abuse and Alcoholism: Focus on Young Adult Drinking*, 28(4). Available at: <http://pubs.niaaa.nih.gov/publications/arh284/182-190.pdf>

<sup>4</sup> Miller, J. W., Naimi, T. S., Brewer, R. D., and Jones, S. E. (2007). Binge drinking and associated health risk behaviors among high school students. *Pediatrics*, 119(1), 76-85.

<sup>5</sup> Berkey, C. S., Willett, W. C., Frazier, A. L., Rosner, B., Tamini, R. M., Rockett, H. R. H., and Colditz, G. A. (2010). Prospective study of adolescent alcohol consumption and risk of benign breast disease in young women. *Pediatrics*, 125(5), e1081-e1087.

<sup>6</sup> National Highway Traffic Safety Administration. (2015). *2014 Traffic Safety Factsheet YOUNG DRIVERS*. Available at: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812278>

<sup>7</sup> U.S. Department of Health and Human Services. (2000). *Healthy People 2010: Understanding and Improving Health*. Washington, DC: U.S. Government Printing Office, November 2000. Available at <http://www.healthypeople.gov/2010/document/pdf/uih/2010uih.pdf>

<sup>8</sup> Kuperman, S., Chan, G., Kramer, J.R., Bierut, L., Bucholz, K.K., Fox, L., Hesselbrock, V., Numberger, J.I., Reich, T., Reich, W., and Schuckit, M.A. (2005). Relationship of age of first drink to child behavioral problems and family psychopathology. *Alcoholism: Clinical and Experimental Research*, 29(10), 1869–1876.

<sup>9</sup> National Institute on Alcohol Abuse and Alcoholism. (1997). *Youth drinking: Risk factors and consequences*. (Alcohol Alert NO. 37). Available at <http://pubs.niaaa.nih.gov/publications/aa37.htm>



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<sup>10</sup> There is reason to believe that eighth-graders over-report binge drinking. For more information see *Monitoring the Future National Survey Results on Drug Use, 1975-2000. Volume 1: Secondary School Students* (NIH Publication No. 01-4924) Chapter 4, footnote 27.

<sup>11</sup> Hispanics may be any race. Estimates for whites or blacks in this report do not include Hispanics.