# High-risk Drinking among College Students in Maryland: Identifying Targets for Intervention

***Results of the First Annual Maryland College Alcohol Survey (MD-CAS)***

**July 2014**

A Report from

THE MARYLAND COLLABORATIVE
TO REDUCE COLLEGE DRINKING AND RELATED PROBLEMS

*www.marylandcollaborative.org*

## About the Maryland Collaborative to Reduce College Drinking and Related Problems

The Maryland Collaborative to Reduce College Drinking and Related Problems began in 2012 with funding from the Maryland Department of Health and Mental Hygiene. The purpose of the Maryland Collaborative is to bring together Maryland colleges and universities toward a shared goal—to reduce excessive drinking among college students, by creating environments that support student and community health, safety, and success.

More information about the Maryland Collaborative can be found at www.marylandcollaborative.org.

## Contacts

Amelia M. Arria, PhD
Director, Center on Young Adult Health and Development (CYAHD)
University of Maryland School of Public Health
Department of Behavioral and Community Health
2387 School of Public Health Building, College Park, MD 20742
aarria@umd.edu

David Jernigan, PhD
Director, Center on Alcohol Marketing and Youth (CAMY)
Johns Hopkins Bloomberg School of Public Health
Department of Health, Behavior and Society
624 N. Broadway, Room 292, Baltimore, MD 21205
djernigan@jhsph.edu

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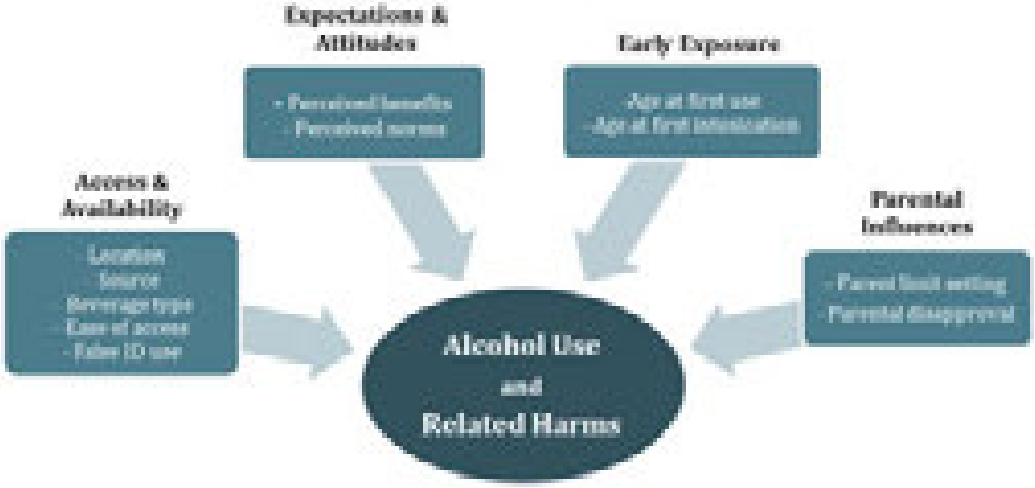
# EXECUTIVE SUMMARY

In 2013, ten Maryland college and university presidents came together to form the Governance Council of the Maryland Collaborative to Reduce College Drinking and Related Problems, with a shared commitment to achieving a measurable reduction in excessive drinking on their campuses and throughout the state. Lack of a standard system for measuring the nature and extent of the problem at each school was a significant barrier to attaining this goal. Where measurement was happening, participating schools were using different metrics to assess drinking and related adverse consequences at their institutions, making it difficult to address problems on a statewide level. For this reason, and with support from the Maryland Department of Health and Mental Hygiene, the Maryland Collaborative set out to design and implement a measurement system that could provide information about the nature and extent of alcohol use and related problems at each school and the risk factors at each school. This information was regarded as indispensable for two key purposes: 1) to refine and target effective intervention strategies at salient risk factors; and 2) to measure the eventual impact of interventions on reducing excessive drinking.

This report describes the process of creating and administering the Maryland College Alcohol Survey (MD-CAS), and provides the aggregate results of the data collected from students in the first year of the survey (2014). Ten schools participated in the first annual MD-CAS; aggregate results from 4,209 students from nine of those schools are presented in this report.

The survey was designed to measure levels of alcohol use and excessive drinking, the alcohol-related consequences that drinkers experience, and the harms students experience as a result of other students' drinking. As shown in Figure 1, the survey included questions on suspected risk factors for excessive drinking relating to: 1) access and availability; 2) attitudes and expectations about use of alcohol and its perceived benefits; 3) early exposure to alcohol; and 4) parental influences. Doing this permits the participating schools to quantify the contribution of these risk factors and target interventions to address salient issues.

**Figure 1. Suspected risk factors for college drinking measured in MD-CAS**



## Key Findings

College drinking is a national problem to which few college campuses are immune. Although some progress has been made in identifying potential targets for intervention, on average at the national level there is little evidence of measurable change. The Maryland Collaborative fully recognizes the widespread and costly nature of this problem and is committed to assisting schools in their efforts to implement interventions that target both high-risk environments and high-risk students. It is only through comprehensive approaches that involve multi-level, multi-component strategies that measurable change can be expected.

### *Prevalence*

The prevalence of high-risk drinking among Maryland undergraduates is in line with expectations from other similar surveys on college campuses across the U.S. Nearly half (47%) of students surveyed in MD-CAS engaged in binge drinking at least once during the past month (defined for males as consuming five or more drinks in a row or within a couple of hours, and four or more for females). Among past-month drinkers in MD-CAS, 70% binge drank, with the average maximum number of drinks on any occasion being eight for men and five for women. In this report, we classified students as "high-risk" drinkers if they binge drank one to four times during the past month and "very high-risk" drinkers if they binge drank more than four times during the past month. These groups comprised 28% and 20% of the entire sample, respectively.

To place these findings in a national context, it is helpful to recall that in the most recent Monitoring the Future survey,[1] 35% of full-time U.S. college students engaged in binge drinking during the past two weeks. Direct comparisons between MD-CAS results and any prior national surveys are problematic due to a variety of methodological differences and therefore do not necessarily reflect a meaningful difference in binge drinking rates between college students in Maryland and the U.S. overall. In the case of Monitoring the Future, the discrepancy is likely attributable at least in part to differences in the time frame referenced (i.e., binge drinking during the past month versus past two weeks) and the types of schools included (i.e., four-year institutions versus a combination of two- and four-year institutions).

### *Direct Consequences*

Alcohol consumption was related to experiencing a wide variety of negative consequences. Among students who drank during the past year, 34% blacked out, 14% were hurt or injured, 13% drove a car when they had been drinking, 8% damaged property, and 7% were taken advantage of sexually. Nearly one in four past-year drinkers (24%) missed class or performed poorly on a test as a result of drinking. Not surprisingly, the level of drinking was directly correlated with the number of negative consequences experienced. For instance, more than one in four high-risk drinkers and more than half of very high-risk drinkers experienced four or more negative consequences from drinking. Based on their scores on a screening test, approximately one in three past-month drinkers would benefit from at least brief advice from a clinical professional to reduce their alcohol consumption.

### *"Harms Due to Others' Drinking" or "Secondhand" Consequences*

In addition to resulting in direct consequences, excessive drinking can have secondhand effects on others. Many students experienced adverse consequences during the past year as a result of other students' drinking, including having to "babysit" or take care of another student who was drunk (54%), experiencing interruptions in their sleep (54%) or studying (42%), being insulted or humiliated (22%), getting into serious arguments or quarrels (22%), or experiencing unwanted sexual advances (15% overall; 17% of females) or sexual assault (2%).

### *Risk Factors for High-risk Drinking*

#### Access and Availability

Ease of access to alcohol contributes to high-risk drinking, and approximately 90% or more of the students said that alcohol is easy or very easy to obtain—regardless of their own level of drinking. With regard to social availability, high- and very high-risk drinkers were more likely to live in off-campus housing or apartments and less likely to live at home, relative to students with less risky drinking patterns. Regardless of where they lived, 68% of past-month drinkers reported drinking at an off-campus party, and 17% had taken advantage of free unlimited drinks at fraternity/sorority parties. A quarter of underage students who drank during the past month used a false ID to access alcohol during this period, and of these, 91% were high-risk or very high-risk drinkers. Half or more of students perceived it unlikely or very unlikely that local police, their school, or their parents would be notified if they were caught using a false ID to access alcohol.

#### Expectations and Attitudes

Overestimating the amount that others consume is a known risk factor for excessive drinking, because it is a reflection of the idea that excessive drinking is "normal." Similarly, believing that alcohol consumption has benefits (e.g., reduces stress or facilitates social interactions) is also associated with greater levels of drinking, despite the fact that many of these perceived benefits are exaggerated. The survey data showed that Maryland students both overestimated the alcohol consumption of their peers and believed that alcohol had several personal and social benefits such as "helping people make friends." These beliefs were most inflated among high-risk and very high-risk drinkers. Moreover, nearly half (49%) of the very high-risk group reported their friends consumed a large quantity of drinks (seven or more) on a typical drinking day. This group was also significantly more likely than the other risk groups to report that their friends expect them to drink seven or more drinks on a drinking day.

## Early Exposure

Research shows that the earlier one begins to drink, the more likely it is that they will experience problems due to drinking later in life. The results revealed that many Maryland undergraduates enter college with pre-established drinking patterns. Students who began drinking early in their lives and who became intoxicated prior to coming to college were more likely to drink excessively in college. For example, a majority of students in the very high-risk group (65%) and almost half of the high-risk group (47%) were 16 years old or younger when they had their first drink. Nearly three-quarters of the very high-risk drinkers had gotten drunk prior to age 18, as compared with 25% of the moderate-risk drinkers.

### Parental Influences

Consistent with the findings of research studies, and contrary to common assumptions about "forbidden fruit," students whose parents did not allow them to drink alcoholic beverages during high school were far *less* likely than other students to drink excessively in college. For example, over three-quarters of low-risk drinkers (83%) said their parents did not permit them to consume alcoholic drinks during high school, compared with 38% of very high-risk drinkers. Students in the lowest-risk drinking category had parents who were more disapproving of drinking in college, compared with parents of very high-risk students.

## Recommendations

### *Interventions*

The high prevalence of particular risk factors observed from the MD-CAS survey findings can guide choices about future interventions. Students with high-risk drinking histories can and should be identified early to mitigate the likelihood of numerous alcohol-related consequences they will experience in college. Access to alcohol can be reduced through effective enforcement of existing laws, and implementation of strategies such as social host ordinances can reduce high-risk drinking in off-campus housing. The Maryland Collaborative is actively working to implement these and other evidence-based strategies on college campuses and in communities across the state. Additionally, parents need to know the importance of not permitting underage drinking in high school and of continued dialogue with their children as they make their way through college. To this end, the Maryland Collaborative is developing a parent-focused website to facilitate these conversations.

### *Next Steps*

The MD-CAS data provide an unprecedented, comprehensive look at the proportion of Maryland college students who are engaging in excessive drinking and highlight risk factors for excessive drinking, some of which might be common across campuses and others that might be unique to each campus. This information can refine existing approaches and guide the development of tailored interventions best suited to address salient issues. Annual administration of the survey will document how excessive drinking changes over time as a way of measuring the impact of those interventions. Future iterations of the survey might explore additional risk factors such as stress, depression, student need for and use of services, place of last drink, and price paid for drinks.

The MD-CAS data provides schools in the Maryland Collaborative with an opportunity to take a data-driven approach to addressing excessive drinking on a statewide level and in their choices of interventions for their respective campuses. This report, in combination with the Maryland Collaborative's *Guide to Best Practices*,[2] represents a critical step towards making measurable progress in reducing excessive drinking on college and university campuses in Maryland.

# INTRODUCTION

College drinking has been recognized for decades as a serious public health problem. During college, a variety of factors converge to increase the risk for excessive drinking, including widespread availability of alcohol, newfound independence, and different peer influences. Layered onto these factors is the natural developmental propensity for risk-taking behavior that characterizes young adulthood.

Excessive drinking during college often leads to a variety of acute consequences that can affect students' safety, health, well-being, and academic success. For some students, high-risk drinking patterns persist into adulthood and can result in longer-term health problems, serious accidents, family instability, and underemployment. More broadly, college student alcohol use has radiating effects on other students, campus climates, and the communities that surround them.

As this report shows, excessive drinking has produced a wide-range of substantial damages and costs to schools. Some examples of monetary costs include property damage or vandalism, lost tuition due to failure or students dropping out, increased demand of college personnel (i.e., counseling) to address alcohol-related issues, and legal/judicial costs against schools for liability.[3,4] A study by Wechsler et al.[5] found that property damage to school buildings, residence halls, restrooms, etc. are especially costly issues, with 33% of administrators reporting "moderate" problems and 53% reporting "major" problems with campus property damages. These types of problems also radiate to the surrounding community, where quality of neighborhood life is threatened with secondhand effects like nuisance, noise, litter, vandalism, etc.[6] Non-monetary costs could include disruption of campus life and diminished reputation.[7] One Midwestern institution estimates that expenses and lost revenue due to high-risk drinking totaled up to $21 million for their 2011-2012 school year, which does not include lost academic and employment opportunities, injuries and illness, and most importantly, lives lost.[8]

Few college campuses are immune from the problems caused by college student drinking—it is a national problem. And although some progress has been made in identifying potential targets for intervention, on average little measurable change is evident. The State of Maryland fully recognizes the widespread and costly nature of this problem and is committed to assisting schools in their efforts to implement interventions that target both high-risk environments and high-risk students. It is only through comprehensive approaches that involve multi-level, multi-component strategies that measurable change can be expected.

To formalize this commitment, the Maryland Collaborative to Reduce College Drinking and Related Problems was established in 2012 with funding from the Maryland Department of Health and Mental Hygiene via the Maryland Alcohol and Drug Abuse Administration. Two primary goals were set: 1) to measurably reduce the current level of excessive alcohol use and alcohol-related harms among all schools in Maryland by assisting schools in implementing evidence-based, multi-level, and multi-component interventions on campuses and in the community; and 2) to mobilize and sustain the commitment of campus and community leaders toward this goal. Public health experts from the University of Maryland School of Public Health and the Johns Hopkins Bloomberg School

of Public Health were tasked with lending scientific expertise to the initiative. Their expertise guides the decision-making of schools to select individual-level interventions, campus policies, and changes in drinking environments on and around campuses that are evidence-based and most likely to reduce the harms of college drinking. Such an approach works synergistically by detecting and intervening with high-risk students early in their college careers, changing expectations and attitudes toward alcohol use, and creating an environment that promotes safe choices.

In its first year, the Maryland Collaborative completed a structured assessment of campus administrators' perceptions of the problem, the relevant campus resources, barriers and challenges affecting their ability to address it, and existing strategies being implemented.[9] In parallel, the Collaborative developed a *Guide to Best Practices*[2] based on the latest scientific knowledge of evidence-based practices. One of the key conclusions from the first year was that Maryland, not unlike almost all other states, lacked a systematic method for measuring college student drinking and related harms and that this was a necessary precursor to detecting any progress or change that might occur in response to specific alcohol-related strategies. To gain a preliminary understanding of the prevalence of excessive drinking among Maryland college students, Maryland Collaborative staff worked with federal officials to analyze data from the National Survey on Drug Use and Health (NSDUH).[9] Those analyses showed that underage full-time college students in Maryland were more likely to report drinking alcohol during the past year than underage students in other states (83% versus 75%, respectively), but that the prevalence of past-year alcohol use was comparable for students 21 and older (88% versus 88%). These data showed that binge drinking (consuming four or five drinks in a row or within two hours for females and males, respectively) characterized 41% of underage and 50% of legal age full-time college student past-year drinkers. These estimates were similar between students in Maryland and students residing elsewhere.

A major goal of the second year of the Maryland Collaborative was to design and implement a measurement system that could yield more refined baseline estimates of alcohol use and related harm, as well as an understanding of the major "drivers" or risk factors for excessive drinking among Maryland college students. Such a system would inform each participating campus about the magnitude and nature of alcohol-related problems on their own campus as well as identifying specific targets for interventions. Because it would be administered annually, the measurement system would also enable schools to monitor any changes in the problem over time—in effect, providing them with an annual progress report to evaluate whether the strategies they are implementing are having the desired impact on reducing the problem. Tracking progress is essential for improving the effectiveness of interventions. Finally, measurement system data can estimate the proportion of students who are at the highest level of need for an alcohol intervention or referral to treatment, and thus can assist administrators in making relevant resource allocation decisions about such services.

This report describes the planning, design, development, and implementation of the initial component of the new measurement system[a]—a general student survey called the Maryland College Alcohol Survey (MD-CAS). It involved collecting data from a random sample of full-time

[a] It is anticipated that the complete measurement system will involve collecting indicators of alcohol-related harms from administrative sources in the state as well as conducting surveys with particular high-risk groups such as students who are at risk for dropping out of college or experiencing academic-related difficulties.

college students ages 18 to 25 at ten schools participating in the Maryland Collaborative during the 2014 Spring semester using a standardized measurement tool. Excessive drinking is a complex problem, and MD-CAS was designed to capture the many factors that contribute to and result from excessive alcohol use during college. The survey was designed using items from existing standard surveys and instruments to measure quantity and frequency of alcohol use, as well as alcohol-related consequences (See *Survey Planning and Implementation*).

This initial data collection effort provides baseline estimates for the prevalence of several important measures of excessive drinking—including underage drinking, binge drinking, and high risk for alcohol dependence—and the magnitude of alcohol-related problems, which can then be used in the future as pre-intervention estimates to evaluate the impact of interventions. MD-CAS is an integral part of this collaborative effort of schools in the state of Maryland to address excessive drinking among their students and promote student health, safety, and success.

# SURVEY PLANNING AND IMPLEMENTATION

## Overview

This section summarizes the planning activities and decisions made by schools with respect to implementation of the student survey. The section also describes the methods for sampling, recruiting, and collecting data from students. In total, the online survey yielded usable data from 4,209 students. Results are described in *Survey Findings*.

## Planning for the Survey

Maryland Collaborative staff at the University of Maryland School of Public Health Center on Young Adult Health and Development (hereafter referred to as "CYAHD") were tasked with assisting schools in their effort to implement the survey and served as the Data Coordinating Center for the project. This initiative required a great deal of cooperation among schools to make decisions about the methods, timing, and content of the student survey. CYAHD staff had initial conversations and meetings with key contacts at each of the ten Maryland Collaborative schools (see Table 1), including the Vice President of Student Affairs, an Alcohol, Tobacco, and Other Drug (ATOD) Center Director where one existed, and Health/Wellness Center personnel.[b] At these meetings, the current status of the measurement of alcohol use and related problems on their campus was reviewed and ideas were presented regarding a proposed measurement plan. Several potential challenges and issues were discussed, such as lack of resources, conflicts with existing survey research activities, skepticism about student participation, representativeness, and validity of student survey data. Discussions with the key contacts helped to alleviate these concerns by adapting procedures that were valid and reliable and offering flexibility on leadership and timing for survey implementation.

Although a few schools wanted to have more "hands-on" involvement, most did not have sufficient resources to devote to survey implementation. Thus the idea of CYAHD acting as a centralized Data Coordinating Center became an attractive option and provided economies of scale that made data collection extremely cost-effective. A general meeting of all schools was held after these initial conversations on November 7, 2013 at the University of Maryland College Park. At this meeting, schools began sharing their ideas about the strategies that would be best for their own school's implementation plan for the student survey, including plans for recruitment, sampling, survey administration, publicity campaigns, and incentives. The survey questions were also discussed in detail, so that schools had the opportunity to add specific response options or questions that were particularly relevant for their students. Feedback received from the schools regarding various aspects of survey activities and the content of the survey itself was invaluable.

At that meeting, Maryland Collaborative staff described the content and length of the proposed survey, its overlap with content in other standard surveys such as the National College Health Assessment (NCHA), CORE Alcohol and Other Drug Survey, and National Survey on Drug Use and Health (NSDUH), its unique features, and the proposed plan for implementation. By the end of this

[b] The U.S. Naval Academy opted to conduct their own in-house survey, per federal regulations regarding data collection efforts.

meeting, schools developed campus-specific implementation plans that described their initial thoughts about procedures, timing, promoting the survey on their campus, and offering monetary incentives for survey completion (depending on budgetary constraints). After the meeting, campus leaders reported back to their respective campus teams to finalize their campus implementation plans.

**Table 1. Summary of the ten schools that participated in MD-CAS**

| Collaborative schools prioritized for participation in MD-CAS | | Survey type |
|---|---|---|
| Private Four-year | Johns Hopkins University | Online |
| | Loyola University Maryland | Online |
| | McDaniel College | Online |
| | Notre Dame of Maryland University | Online |
| Public Two-year | Allegany College of Maryland | Online |
| Public Four-year | Frostburg State University | Online |
| | Towson University | Paper |
| | University of Maryland Baltimore County | Online |
| | University of Maryland College Park | Online |
| | University of Maryland Eastern Shore | Online |

The schools made the final decisions regarding incentives, timing, survey method, strategies for promoting the survey, and any special additions to the survey. All but two schools provided some form of incentive (see Table 2). All schools agreed to end the survey before spring break, but the length of time that the survey was active varied from ten to 33 days. All but one school chose to randomly sample students from the Registrar's Office and use the online data collection method developed by Maryland Collaborative staff, with the one remaining school opting to use a paper/pencil survey administration method with students completing the survey during regularly scheduled class sessions (see Table 1).[c] Six schools chose to implement some type of "publicity campaign" prior to the release of the survey for the purposes of promoting student participation. Schools benefited from the marketing/design expertise at Frostburg State University, which provided a generic logo for MD-CAS designed by in-house graphic designers. CYAHD staff created template publicity campaign scripts that could be formatted for each school (see Table 3 for promotion strategies used by each school). One school chose to supplement the survey with two unique questions of interest to their campus. Recruitment and follow-up emails to engage student participants were scripted initially by Maryland Collaborative staff and refined and approved by each school.

[c] The data from the Towson University students are not included in this report due to the potential differences in the results by method of survey administration, but a special report has been prepared for them.

**Table 2. Incentive offered, by school**

| School | Incentive type | Chances of winning |
|---|---|---|
| Allegany College of Maryland | None | None |
| Frostburg State University | $50 gift card to the Frostburg State University Bookstore | One-in-10 chance* |
| Johns Hopkins University | $10 gift card to Chipotle and one grand prize of $100 Visa gift card | One-in-10 chance |
| Loyola University Maryland | $10 gift card to Chipotle | One-in-10 chance |
| McDaniel College | $25 credit on McDaniel 1Card account | One-in-15 chance |
| Notre Dame of Maryland University | None | None |
| Towson University | $25, $50, $75, and $100 to the Towson University bookstore | Chance to win one of 4 gift cards** |
| University of Maryland Baltimore County | $50 gift card to the University of Maryland Baltimore County bookstore | One-in-54 chance* |
| University of Maryland College Park | $50 gift card to Barnes and Noble | One-in-10 chance* |
| University of Maryland Eastern Shore | $10 gift card to the University of Maryland Eastern Shore bookstore | One-in-20 chance |

**These schools implemented a no-incentive survey once funds designated for incentives were exhausted.*
***Implemented paper/pencil survey and provided raffle tickets to participants.*

**Table 3. Campus strategies to promote MD-CAS**

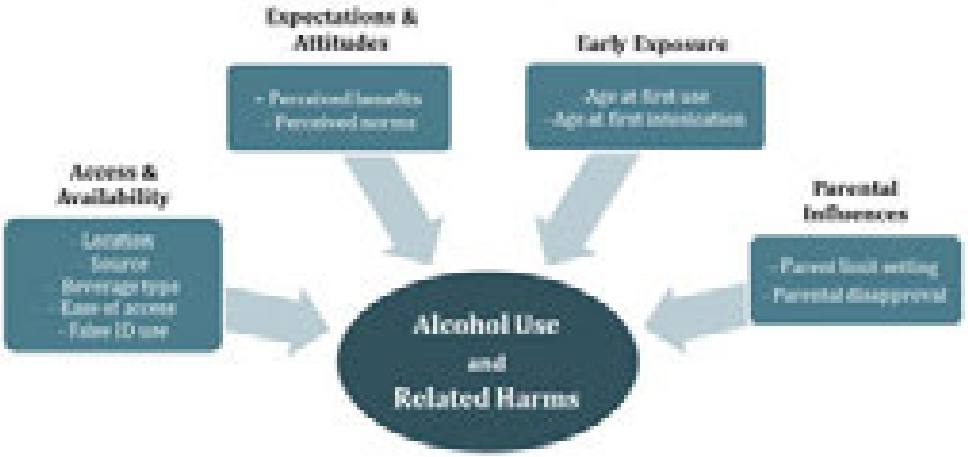
| School | Type(s) of publicity | Mode of publicity | Sent on behalf of |
|---|---|---|---|
| Allegany College of Maryland | Email message promoting survey and requesting participation | Student listserv message | Vice President of Student and Legal Affairs |
| Frostburg State University | Email message with graphic promoting survey and requesting participation; posting information about survey in a school publication; and campus activity newsletters | Student, faculty, and staff listserv messages | Assistant Vice President for Student and Educational Services and Student Activities Office |
| Loyola University Maryland | Email message promoting survey and requesting participation | Student listserv message | Vice President for Student Development and Dean of Students |
| McDaniel College | Email message promoting survey and requesting participation | Student listserv message | Wellness Center |
| Notre Dame of Maryland University | Email message promoting survey and requesting participation | Student listserv message | Vice President for Student Life |
| University of Maryland Baltimore County | Message promoting survey and requesting participation posted on forum about campus activities | School website | Office of Student Affairs |

*Note: The remaining four schools did not formally send out messages to students prior to the survey.*

## Designing the Survey

The student survey was designed to fulfill two major goals: 1) to estimate the level of alcohol use and excessive drinking, consequences, and harms to others; and 2) to understand the association between risk factors and high-risk drinking. Risk factors having a high degree of association with excessive drinking can then be targeted for interventions (see Figure 1).

**Figure 1. Suspected risk factors for college drinking measured in MD-CAS**




With respect to alcohol use and high-risk drinking, MD-CAS used reliable and valid questions from existing assessment tools. Quantity and frequency of alcohol use as well as a host of alcohol-related consequences were measured.

As shown in Figure 1, the survey also included questions to assess the following suspected risk factors for excessive drinking: 1) access and availability; 2) attitudes and expectations about use of alcohol and its perceived benefits; 3) early exposure to alcohol; and 4) parental influences.

Input on questions for the survey came from the CYAHD and Johns Hopkins teams, as well as the schools themselves. The challenge was to balance survey comprehensiveness with brevity to minimize respondent burden. The survey was tested in-house with research assistants prior to fielding it and refined as needed to ensure that the average time of survey completion was 10 to 11 minutes.

MD-CAS was programmed for web-based survey administration by CYAHD staff using Qualtrics survey software. In addition, a paper version was designed using TeleForm software, which creates optically scannable data collection forms that eliminated the need for manual data entry. The online version was more advanced with automated skip patterns and survey logic. The paper version relied on participants to follow skip pattern directions.

## Gaining Institutional Review Board (IRB) Approval

Although the survey did not involve the collection of any personally identifying student information, it was still necessary to gain IRB approval to ensure that the survey data collection procedures met federal requirements for human subjects protection. CYAHD staff initially submitted a full application through the University of Maryland College Park IRB, which was approved on January 13, 2014. Local IRB applications were also submitted for three schools (Loyola University Maryland, Notre Dame of Maryland University, and Towson University). Other schools had provisions for reciprocity or authorization agreements with the University of Maryland College Park's IRB, thereby precluding the need for a full application to the local IRB (University of Maryland Baltimore County, Johns Hopkins University, McDaniel College, University of Maryland Eastern Shore, Frostburg State University, and Allegany College of Maryland).

There were many challenges to the IRB process, especially with having to reconcile the concerns and wishes of multiple IRBs, as well as dealing with multiple reviews occurring simultaneously. Because the priority was to maintain momentum, temporary "best guesses" were made about how campus implementation plans should be revised until schools were able to confirm them. Several IRB amendments were submitted soon afterwards to reflect changes to campus implementation plans (e.g., changes to incentive structure, number of follow-up emails, etc.) and all plans were ultimately approved by the relevant IRBs.

## Sampling of Students and Eligibility Criteria

Only full-time students between the ages of 18 and 25 were eligible to participate. Target sample sizes were computed for each school to provide sufficient statistical power to detect a change in the prevalence of binge drinking, with a 4% margin of error. For the purposes of power analyses, we assumed an average prevalence of 40% of students engaging in binge drinking during the past year. To determine the number of students to sample for recruitment, we assumed an expected response rate of 20% and inflated each school's target sample size accordingly. Thus, some smaller schools conducted a census of their entire eligible student population, whereas other schools had to select a random sample of students to recruit for the survey. Where necessary, random sampling was performed by either CYAHD staff or the school (depending on the school's preference) using email addresses for all students meeting eligibility criteria at that school. No other student information was used in the sampling or recruitment process.

## Survey Data Collection

Schools began implementing the online surveys in February 2014. Surveys remained open between ten and 33 days, depending on each school's preference. The goal was to finish data collection prior to the beginning of spring break to avoid the influence of spring break drinking, which tends to be unusually heavy for some students. Follow-up recruitment emails were sent at various times and days of the week, based on a pre-determined schedule for each school. The total number of emails sent to each school's sample was between three and ten, per each school's preference. The school that opted to use the paper version of the survey began recruiting participants in a classroom

setting during regularly scheduled class session in February 2014. Participants were reminded in both oral instructions and the written consent form about voluntary participation and anonymity.

For eight of the nine schools participating in the online survey, recruitment emails were sent by CYAHD staff, originating from a dedicated email account, via a Microsoft Word mail merge feature that uses the email service Outlook. Of those eight schools, six created temporary email addresses for that purpose, reflecting the MD-CAS username (md-cas@SCHOOL.edu) and the school's domain name. School-specific email addresses were helpful in order to prevent a participant from thinking emails were spam/junk mail. CYAHD staff managed the email accounts for each school. Two of the nine schools conducting online surveys were unable to create temporary email addresses, so surveys were sent from a designated University of Maryland College Park email account (md-cas@umd.edu) for those schools. To ensure that participants who completed the survey did not receive unnecessary reminders about the survey, all reminder emails were sent only to those participants who had not yet completed the survey. A high priority "last chance email" was sent the day before survey closure. The one remaining school sent its own recruitment emails via their undergraduate student listserv, and therefore all students received every reminder email regardless of whether they had already participated or not. However, checks were set up in the online survey system to prevent students from taking the survey more than once.

Response rates for each school were calculated each week and reports were prepared to monitor recruitment progress at each school. Key contacts were informed each week of their school's progress via email or phone. During this time, schools were able to identify whether they had any additional funds to increase their sample size by offering incentives to more participants. Two schools increased their budgets to encourage more participant responses. Three schools chose to implement a second phase, no-incentive survey once funds designated for incentives were exhausted.

Eight schools offered incentives for participating in MD-CAS. Each of these schools offered a lottery with varying chances to win a gift card (chances, amounts, and gift card location are shown in Table 2). Incentive distribution to "winners" was managed by either CYAHD or the school, depending on the school's preference.

## Data Management and Analyses

Survey data were electronically merged into one dataset containing a code to identify the student's school. Data were inspected for outliers and invalid responses and analyzed with SPSS, a statistical analysis package. Inclusion criteria were established to omit 547 surveys that either had low reliability (e.g., extremely short completion time, implausible responses on alcohol use items, conflicting responses on inter-related items, or missing all data on alcohol use) or failed to meet the original eligibility criteria (i.e., under age 18, over age 25, or not enrolled full time), resulting in a final sample size of 4,209 surveys from the nine schools participating in the online survey. Because participants were permitted to skip questions they did not wish to answer, the amount of missing data varies on any given item. Descriptive statistics were computed to produce prevalence estimates. Analysis of variance (ANOVA) and chi-square test of independence were used to compare groups on consequences and suspected risk factors.

# SURVEY FINDINGS

## Sample Characteristics and Representativeness

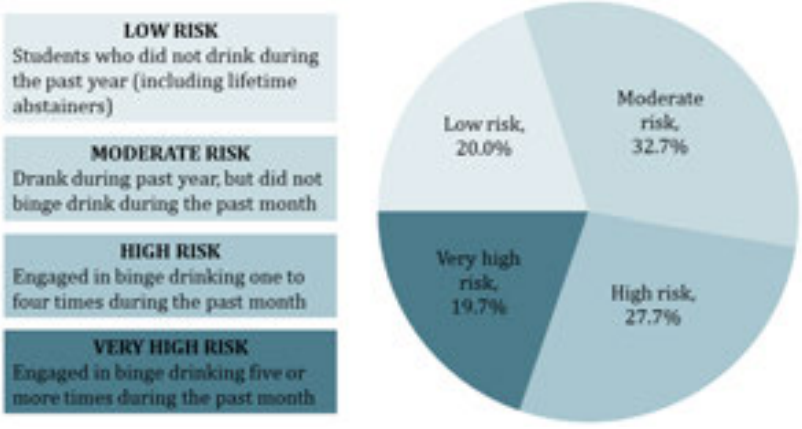
The final dataset consisted of 4,209 surveys with an average response rate across campuses of 23%. The age of the sample ranged from 18 to 25 years old, with the majority of respondents (63%) being younger than 21 and a mean age across the entire dataset of 20 years old. With respect to racial diversity, 61% of the sample self-identified as White, 16% Black, and 12% Asian/Pacific Islander. Eleven percent self-identified as some other group or endorsed multiple categories. Six percent self-identified as Hispanic. With respect to gender, females were predominantly represented in the sample (65%). Preliminary analyses indicate that the samples are for the most part representative of the race and gender distribution of each school's population.

## Alcohol Use and High-risk Drinking

A majority of students consumed at least one drink during the past year (80%). A little more than two-thirds of the total sample (68%) drank alcohol during the past 30 days. Nearly half of students (47%) met criteria for "binge" drinking during the past month—defined for females as having four or more drinks on one occasion and five or more drinks for males. Binge drinking was even more common among past-month drinkers (70%).

Four meaningfully distinct and mutually exclusive groups of students were derived for comparison purposes. As can be seen in Figure 2, one in five students (20%) either abstained from drinking during their lifetime or during the past year. This group is denoted as "low-risk" drinkers. The second category was comprised of students (33%) who drank alcohol but did not binge drink during the past month. The remaining two groups both binge drank within the past month. High-risk drinkers, 28% of the sample, binge drank one to four times during the past month and very high-risk drinkers, 20% of the sample, binge drank five or more times during the past month. These "risk groups" were compared with regard to the presence of suspected risk factors (see *Risk Factors for High-risk Drinking*). For the purposes of deriving and analyzing these risk groups, underage drinkers and legal-age drinkers were treated the same.

**Figure 2. Alcohol use risk group definitions and prevalence among students**



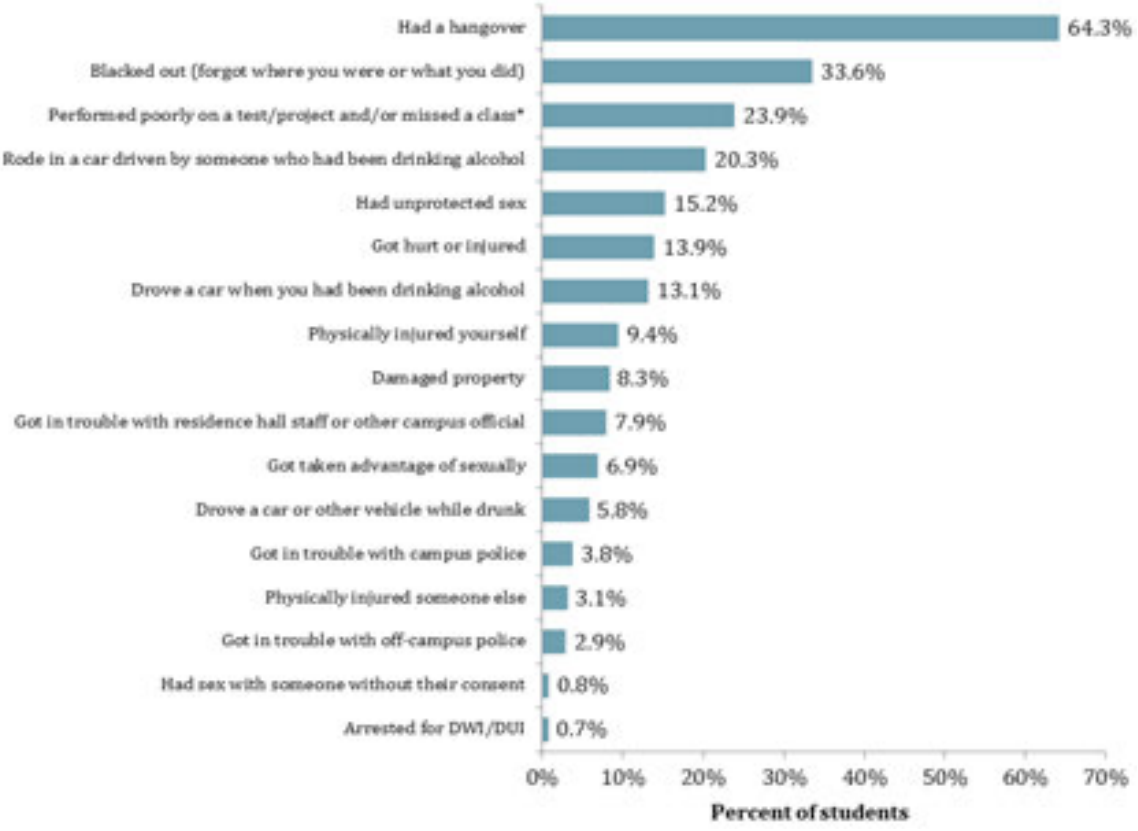

*Note: Binge drinking is defined as drinking five or more drinks (for males, four or more drinks for females) in a row or within a couple hours.*

The types of alcohol that past-month drinkers consumed the most were liquor (82%) and beer (72%). The proportion of past-month drinkers who consumed extreme-strength alcohol such as Everclear® during the past month (12%) was much higher than is reflected in the market share of the product.[10] Overall, 15% consumed alcohol with "energy drinks" during the past month. Appendix Tables A3 and A5 describe these results.

## Risk for Alcohol Use Disorders

One of the purposes of the survey was to identify the proportion of Maryland college students who meet criteria for some level of intervention, including treatment for alcohol dependence. For this purpose, a screening tool called the Alcohol Use Disorders Identification Test (AUDIT)—comprised of ten questions—was included in MD-CAS. The findings revealed that approximately one out of four students would benefit from at least brief clinical advice to reduce their drinking (see Appendix Table A4). Of past-month drinkers, 68% scored in "Zone 1," indicating that no immediate clinical intervention is indicated. In these cases, preventive actions or monitoring is helpful to maintain a low-risk status. More than one-quarter of students (27%) fell into Zone 2 (an AUDIT score between 8 and 15), indicating that clinical advice focused on reduction of hazardous drinking is warranted. A minority of students fell into Zones 3 and 4 (an AUDIT score of 16 to 19 or 20+, respectively), indicating a need for brief counseling and continued monitoring (4%) or further diagnostic evaluation for alcohol dependence (1%).

**Figure 3. Direct consequences of drinking experienced by students during the past year, among past-year drinkers**




**Performing poorly on a test or project was reported by 9.0% of students. Missing a class was reported by 21.9% of students.*

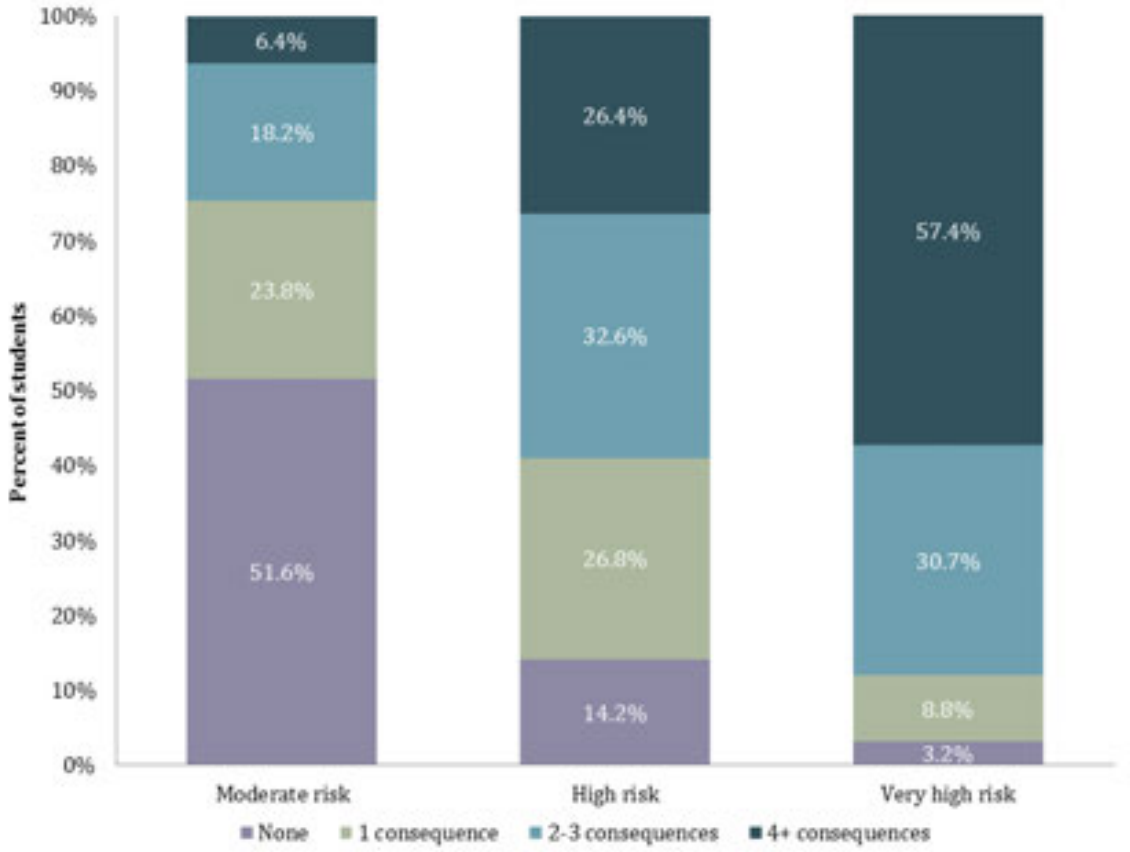
## Alcohol-related Harm

Alcohol-related harm was measured by experiences related directly to one's own drinking as well as negative experiences resulting from other students' drinking. The prevalence of a variety of direct consequences is shown in Figure 3. Notably, one-third of students who drank during the past year reported blacking out (34%), 14% were hurt or injured, 13% drove a car when they had been drinking, 8% damaged property, and 7% were taken advantage of sexually. Academic-related consequences from drinking—missing class due to drinking and/or performing poorly on a test—were the third most common consequence reported (24%).

### *Number of Direct Consequences Experienced by Different Types of Student Drinkers*

Not surprisingly, the level of drinking was directly related to the number of negative consequences experienced. The vast majority (88%) of the very high-risk drinkers experienced two or more negative consequences as a result of their own drinking, compared with more than half (59%) of the high-risk drinkers and a quarter of the moderate-risk drinkers (25%).

**Figure 4. Number of direct consequences of drinking experienced during the past year, by risk group, among past-year drinkers**

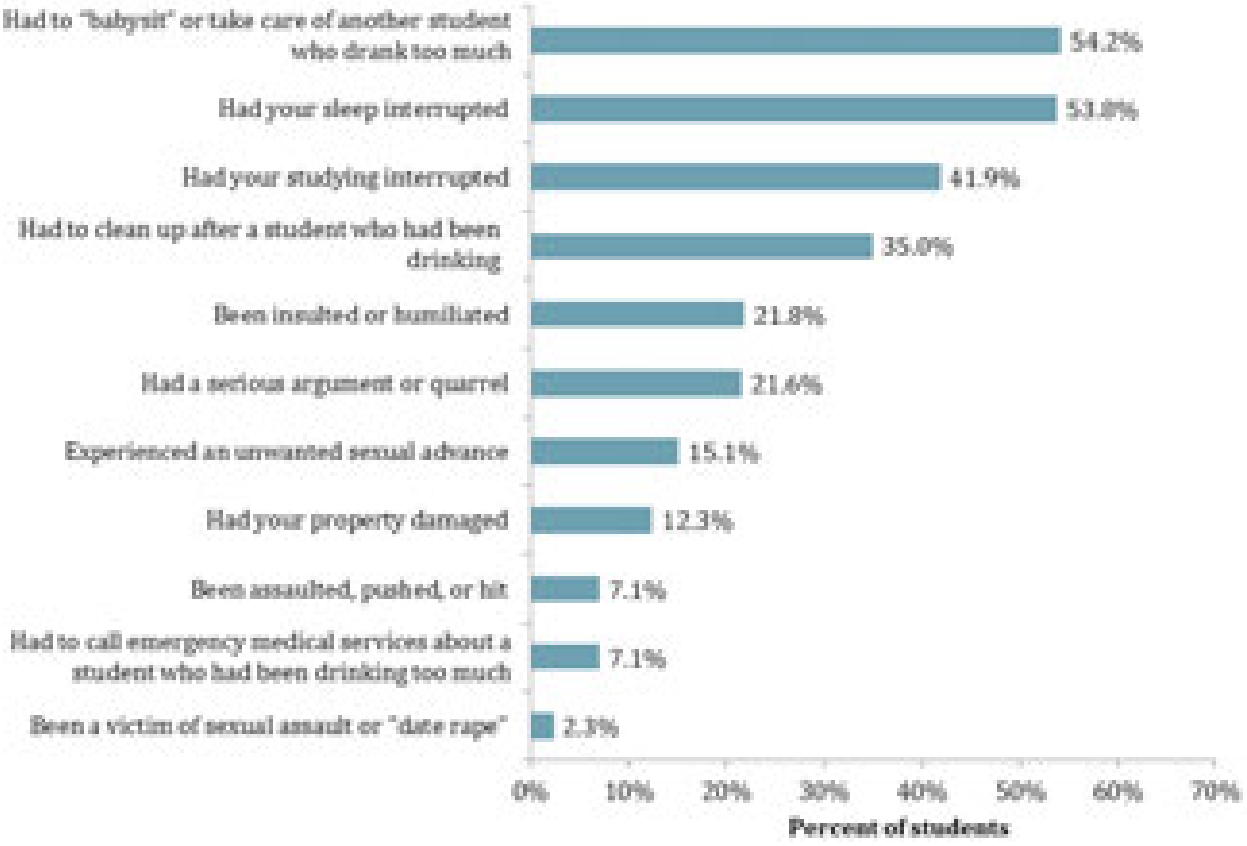



*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

## *Harms Due to Other Students' Alcohol Consumption*

Figure 5 shows the prevalence of various "harms to others"—that is, harms students experienced as a result of someone else's drinking rather than directly from their own drinking behavior. Close to half of students said that they had their sleep or studying interrupted (54% and 42%, respectively). Many students experienced insults or humiliation (22%) or arguments (22%). Sexually-related consequences—that is, unwanted sexual advances or sexual assault—were reported by 15% and 2% of students, respectively. Notably, additional analyses showed that the likelihood of experiencing harms from these consequences was positively correlated with one's own drinking level. For example, very high-risk students experienced an average of four of these types of consequences compared with two among the low-risk students (see Appendix Tables A6 and A7).

**Figure 5. Harms to others: Consequences experienced during the past year as a result of other students' drinking**



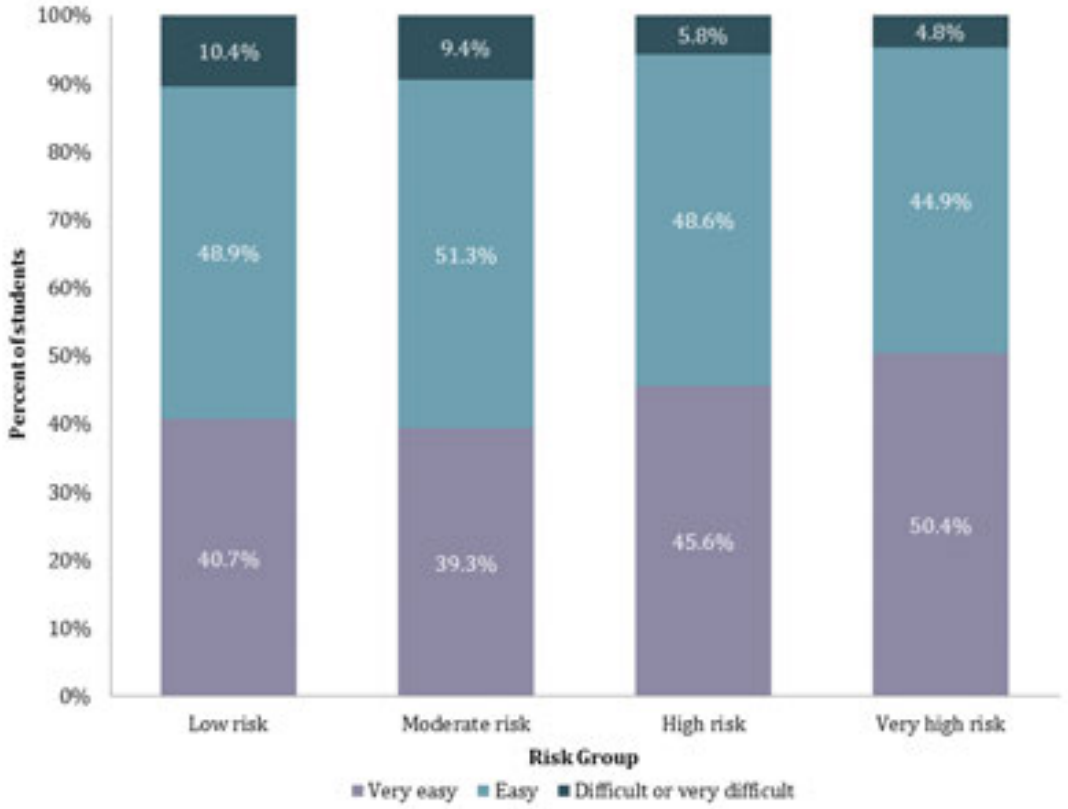
# Risk Factors for High-risk Drinking

## *Access and Availability*

### Ease of Access

Regardless of their drinking behavior, the overwhelming majority of students reported that alcohol was either easy or very easy for them to obtain. The proportion who said "very easy" was greatest among very high-risk drinkers (50%).

**Figure 6. Ease of access to alcohol, by risk group**




*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

### Use of False IDs

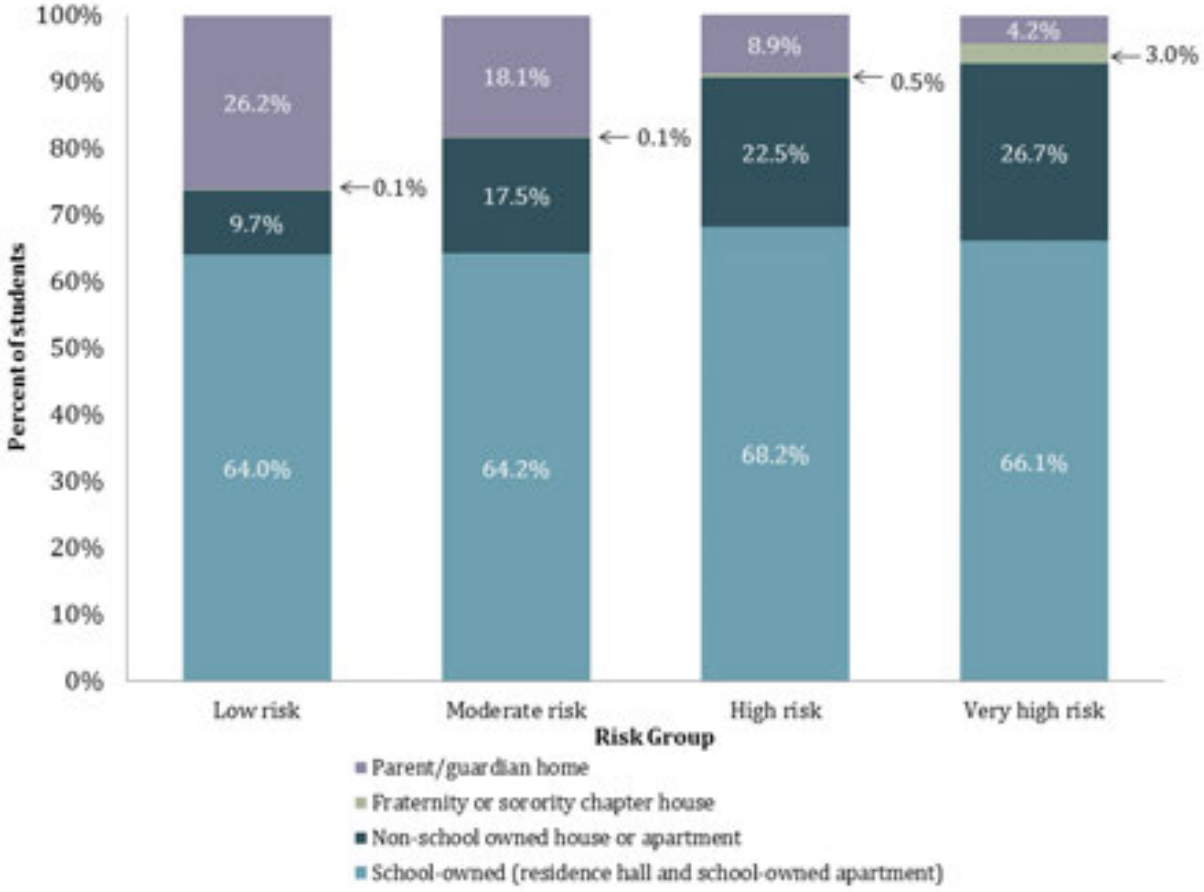
One-quarter of underage students who drank during the past month used a false ID to access alcohol during this period; of those, the vast majority (91%) was high- or very high-risk drinkers. Looking at all the underage drinkers, false ID use was much more prevalent among very high-risk drinkers (49%) than high-risk drinkers (23%), but somewhat rare among moderate-risk drinkers (8%). Together, these results illustrate that, while false ID use features prominently in the landscape of underage drinking, it is particularly salient for the highest-risk drinkers. Many students perceived it to be somewhat unlikely or very unlikely that the local police, their school, or their parents would be notified if they were caught using a false ID to access alcohol (50%, 53%, and 56%, respectively; see Appendix Figure A4).

### Social and Economic Availability of Alcohol

A higher proportion of high-risk drinkers (23%) and very high-risk drinkers (27%) lived in off-campus housing or apartments in comparison with low- (10%) or moderate-risk drinkers (18%). The high-risk (1%) and very high-risk groups (3%) were also more likely than low- or moderate-risk drinkers (both 0.1%) to live in fraternity or sorority chapter houses. Sixty-eight percent of past-month drinkers drank alcohol at an off-campus party during the past 30 days, and 17% took advantage of free unlimited drinks at a fraternity or sorority party during the past 30 days. Twenty-three percent of past-month drinkers took advantage of happy hour price promotions at local bars during the past 30 days, while 20% (including 10% of underage drinkers) drank during other low-priced promotions such as ladies' nights or drink specials.

Not only are students who live in off-campus housing and those who are members of Greek organizations more likely to be high-risk drinkers themselves, but they are also likely to be providing alcohol to other students at parties they host. More than one in five underage students (21%) took advantage of free unlimited drinks provided at a fraternity or sorority party during the past month, and a similar percentage of all students received free unlimited drinks at a private party (see Appendix Table A9.1). These findings highlight the possibility that students in off-campus or Greek housing might be contributing substantially to the overall social milieu that facilitates excessive drinking, even for students residing on campus.

**Figure 7. Place of residence, by risk group**

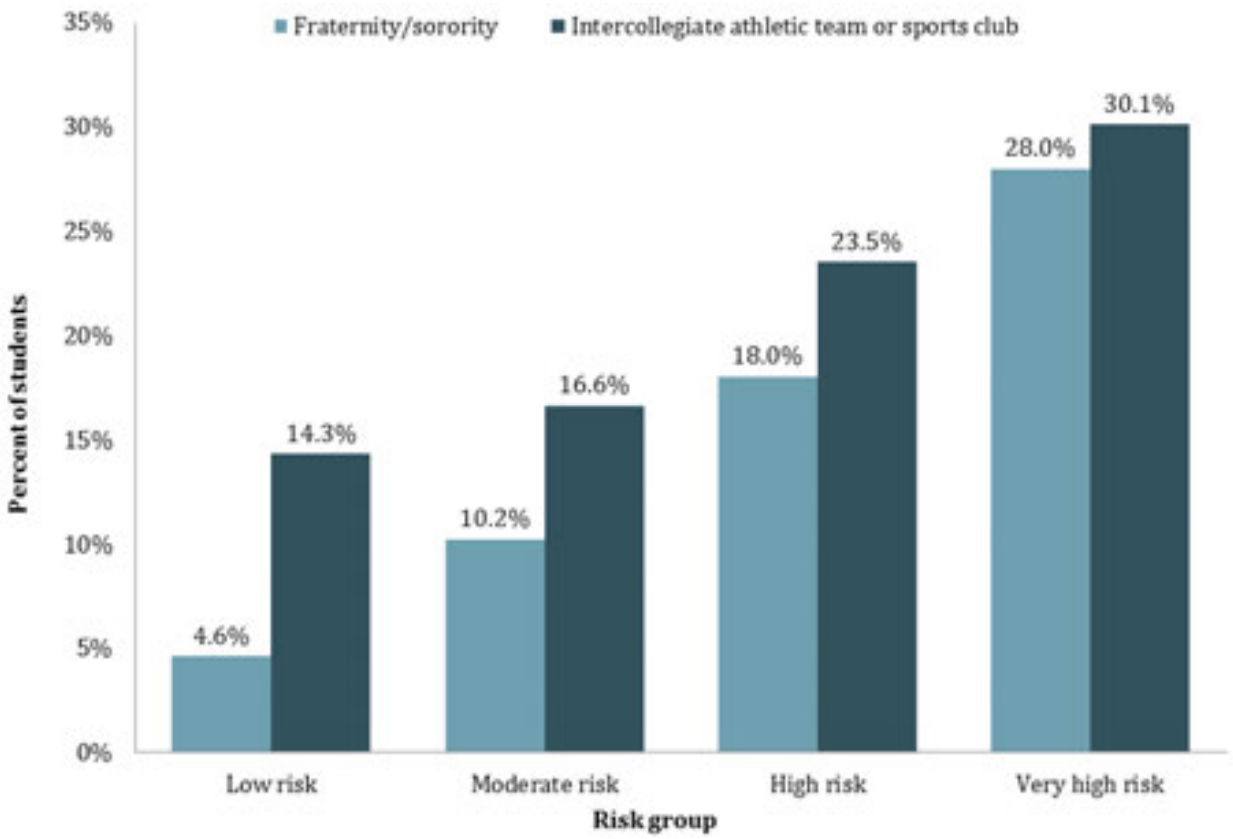



*Note: Students were categorized into one of four risk groups (low, moderate, high, very high) based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

### Greek Membership and Athletic Team Involvement

Confirming the results of prior studies, risk for excessive drinking was associated with being a member of a Greek organization or an athlete. As shown in Figure 8, 28% of the very high-risk drinkers were members of a Greek organization compared with 5% of low-risk students. While this association is not unexpected, it is important to note that most students in the two highest-risk groups were not athletes or members of Greek organizations.

**Figure 8. Greek membership and athletic team involvement, by risk group**




*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

## *Expectations and Attitudes*

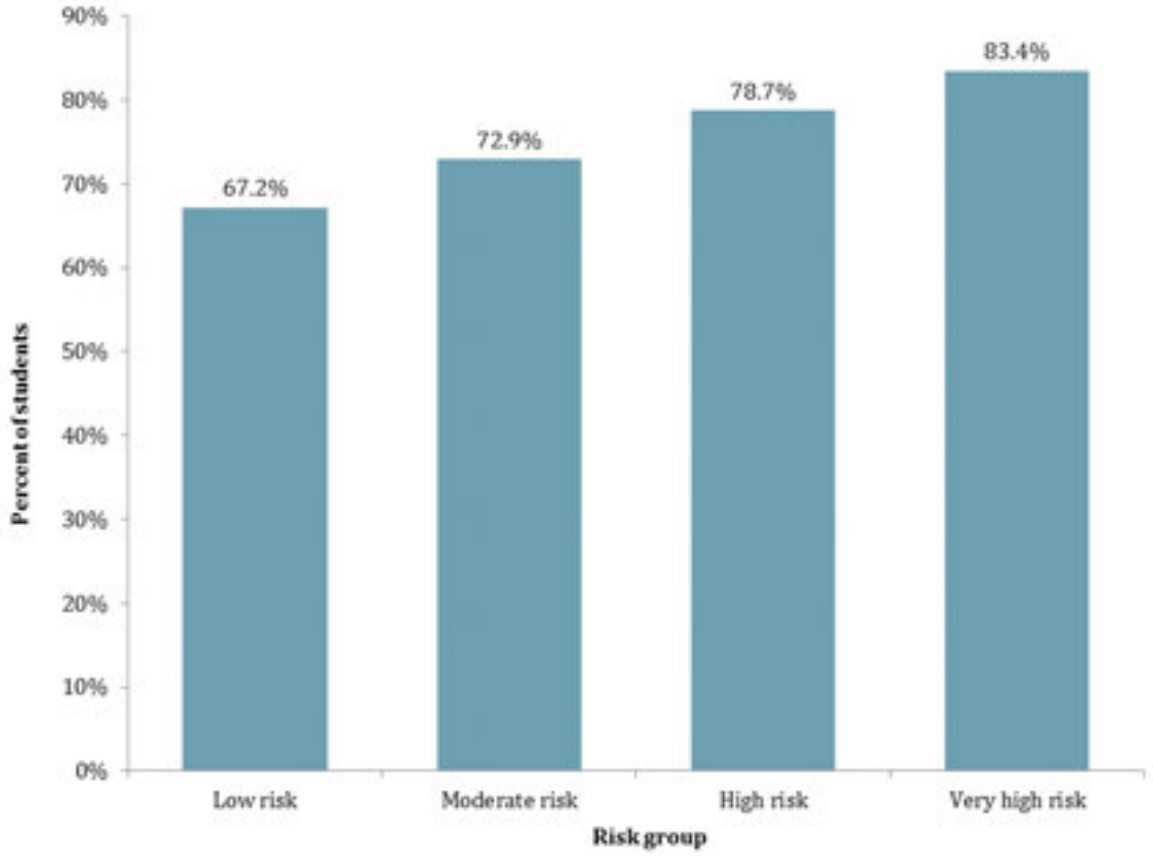
### Perceived Norms

Consistent with prior research studies,[11-13] overestimation of how much others drink is related to excessive drinking among Maryland college students. A substantial proportion of students overestimated both how much alcohol their peers were consuming (quantity) and how often alcohol was consumed (frequency). What is most striking is that so many students (75%)—regardless of their drinking level—had an inflated perception about how much their peers are drinking. This discrepancy is likely to have an overall dampening effect on students' ability to realistically assess their own drinking habits and recognize when their drinking is becoming

excessive or problematic. The proportion of students who overestimated the number of drinks their peers would typically consume ranged from 67% in low-risk students to 83% in the very high-risk drinkers.

Perceptions about how often peers consume alcohol were similarly unrealistic (76% overestimated the number of days their peers were drinking, overall). Interestingly, lower risk students had slightly more unrealistic perceptions (80%) of frequency than the other risk groups (73% to 77%). This finding was unexpected and highlights that correcting perceptions related to quantity of drinking might be a more salient risk factor than drinking frequency.

**Figure 9. Perceived norms: Percent of students who overestimate the number of drinks their peers consume, by risk group**




*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

*To understand what students perceive to be "normal" drinking behavior among their peers, the survey asked students about the number of drinking days (frequency) and the number of drinks per drinking day (quantity) that would be typical for students at their school during the past month. These responses were later compared against students' actual drinking patterns at each school, based on how they characterized their own past-month drinking pattern (i.e., past-month frequency and quantity) in the survey. Students' perceptions were then coded as a "high estimate" if their perception exceeded the median value (i.e., 50th percentile) for their peers' self-reported drinking patterns at their own school. Because men tend to consume more drinks than women on a given occasion, comparisons of perceived and actual alcohol quantities were conducted separately for men and women.*

### Perceived Benefits

To understand students' perceptions about the positive aspects of drinking alcohol, students were asked how strongly they agreed or disagreed with each of eight statements about both their own beliefs about drinking alcohol and their perceptions about what their close friends think about drinking. Some statements included "Drinking alcohol is fun," "Drinking alcohol makes it easier to deal with stress," and "Most of my close friends think drinking alcohol makes it easier to relax." Responses were scored from one to five (strongly disagree to strongly agree) and summed to create an overall index of perceived benefits, with the total possible score ranging from eight to 40. The score on this scale differed between the two highest-risk groups (27 and 31) and the low- to moderate-risk groups (18 and 24; see Appendix Table A8.3).

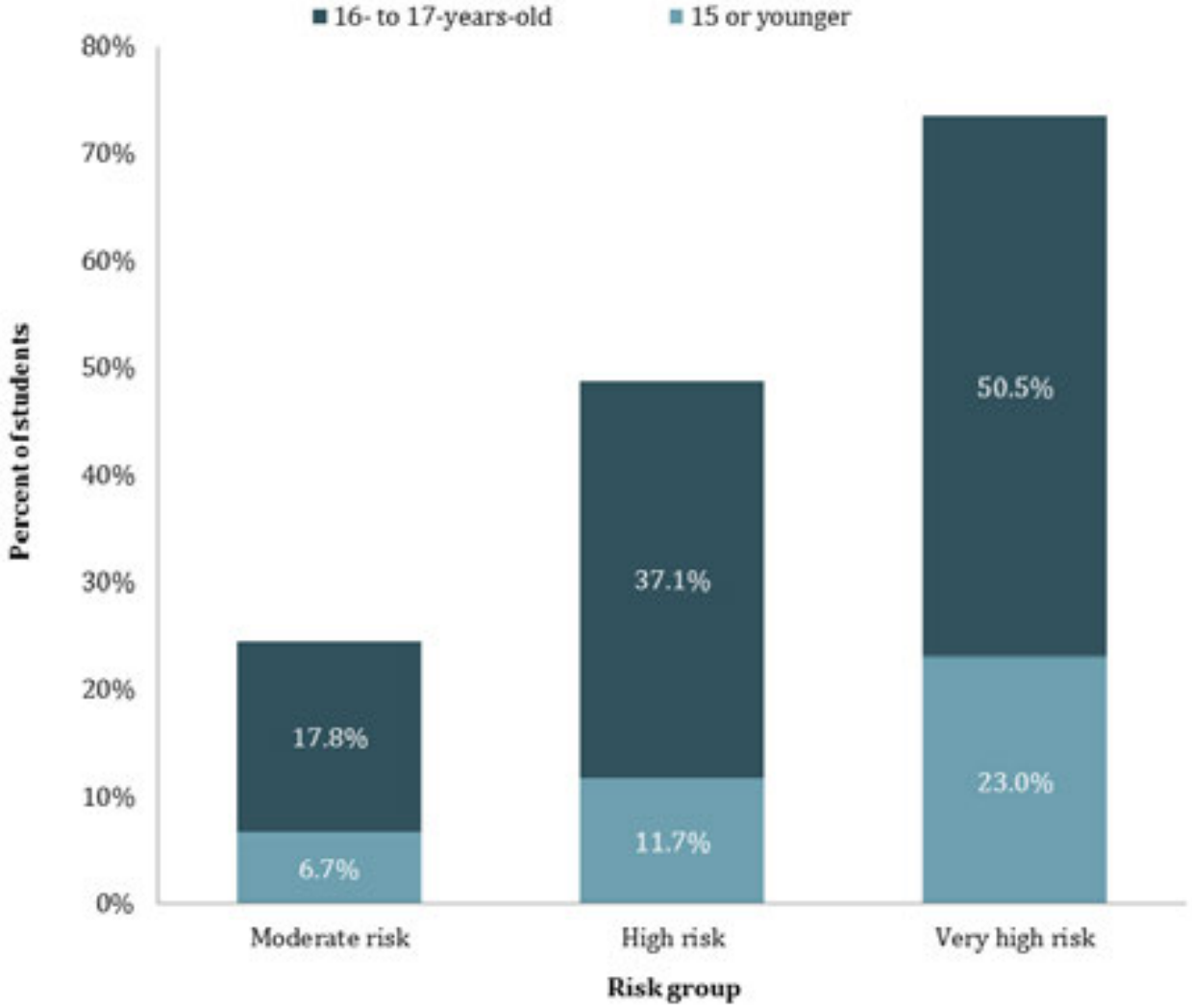
### Descriptive and Injunctive Norms

A student's perceptions about their peers' drinking behaviors are known as descriptive norms. Injunctive norms refer to how much one believes one's peers approve of a behavior—in this case, drinking alcohol. To tap into these constructs, students were asked how many drinks their close friends drink on a typical day and how many drinks their close friends expected them to drink on a typical day. Both of these measures had a clear positive association with excessive drinking (see Appendix Table A8.3). For example, students who said their friends consumed seven or more drinks on a typical drinking day were significantly overrepresented in the two higher-risk groups (49% of the very high-risk group and 14% of the high-risk group). Similarly, the higher-risk groups were also more likely than the lower-risk groups to say their friends expected them to consume large quantities of alcohol (three to six drinks or seven or more drinks). Moreover, the fact that very high-risk drinkers differed so dramatically from high-risk drinkers on these measures (e.g., four-fold difference in the proportion who said their friends expect them to consume seven or more drinks) was especially striking.

## *Early Exposure to Alcohol*

Many students enter college with already established drinking patterns. As expected, being intoxicated prior to the age of 18 was associated with greater risk for excessive drinking.[14,15] As can be seen in Figure 10, 23% of the very high-risk drinkers were first intoxicated before the age of 16, and an additional 51% were first intoxicated at either 16 or 17 years of age. These figures are in sharp contrast to the moderate-risk drinkers, only a quarter of whom were intoxicated before the age of 18.

**Figure 10. Percent of students who were first intoxicated before age 18, by risk group, among past-year drinkers**



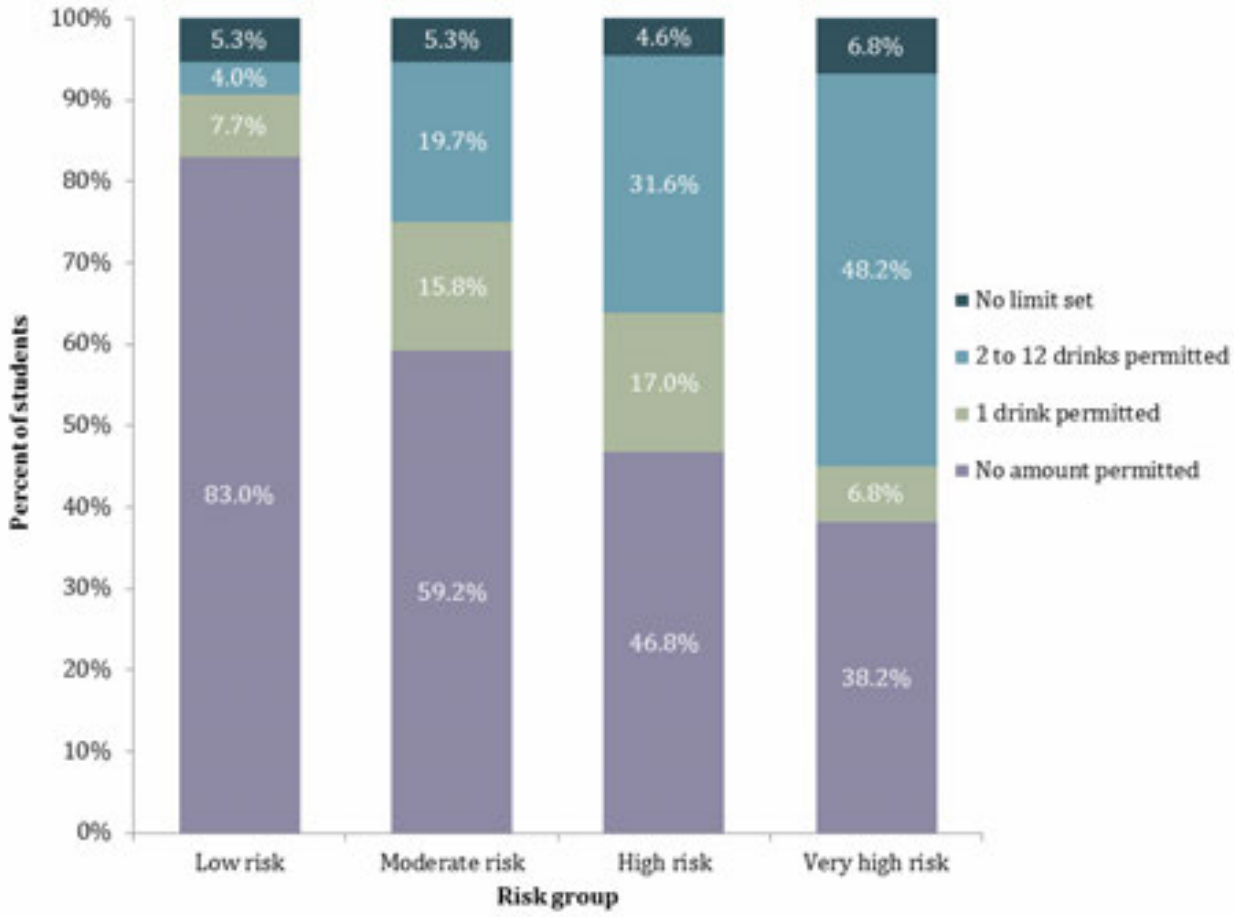

*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group. This figure includes only students who reported drinking during the past year.*

## *Parental Influences*

Research shows that students who have parents who set zero-tolerance rules during high school are much less likely to drink excessively in college.[16] The results of the MD-CAS survey supported the protective influence of parental limit setting as well as parental disapproval. Students were asked, "During your senior year of high school, how many drinks would your parents/guardians consider to be the upper limit for you to consume on any given occasion?" As shown in Figure 11, the degree of parental limit-setting is linearly related to the risk for excessive drinking. Over three-quarters of low-risk drinkers (83%) had parents who did not permit any quantity of alcohol consumption during high school, compared with 38% of very high-risk drinkers. Students were also

asked to rate their level of agreement or disagreement with three statements about their parents' attitudes toward their alcohol use: "My parents think it is okay if I drink alcohol on special occasions outside the home (e.g., a friend's party)", "My parents don't mind if I drink alcohol once in a while", and "My parents disapprove of me drinking alcohol under any circumstances". Responses were scored on a five-point scale, with higher scores indicating disapproving attitudes, and later summed to derive an overall score. Scores ranged from three to 15. The average score for the low-risk group was 11.5 compared with 6.3 for the very high-risk group (see Appendix Table A8.5).

**Figure 11. Parent limit setting reported by students, by risk group**




*Note: Students were categorized into one of four risk groups (low, moderate, high, very high), based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. See page 18 for a definition of each risk group.*

# GOING FORWARD

## Prioritizing High-risk Drinking as a Public Health Problem

These survey results are the most comprehensive Maryland-specific data yet produced on the extent and drivers of alcohol use and related problems among college and university student populations. Forty-seven percent of MD-CAS students engaged in binge drinking during the past month, which is defined as drinking five or more drinks (for males, four or more drinks for females) in a row or within a couple hours. Among students who drank alcohol during the past year, one-third experienced blackouts from their drinking, and one in four missed classes or performed poorly on academic work as a result of drinking. Approximately one in seven had unprotected sex or suffered an injury while drinking, while one in eight drove a car when they had been drinking.

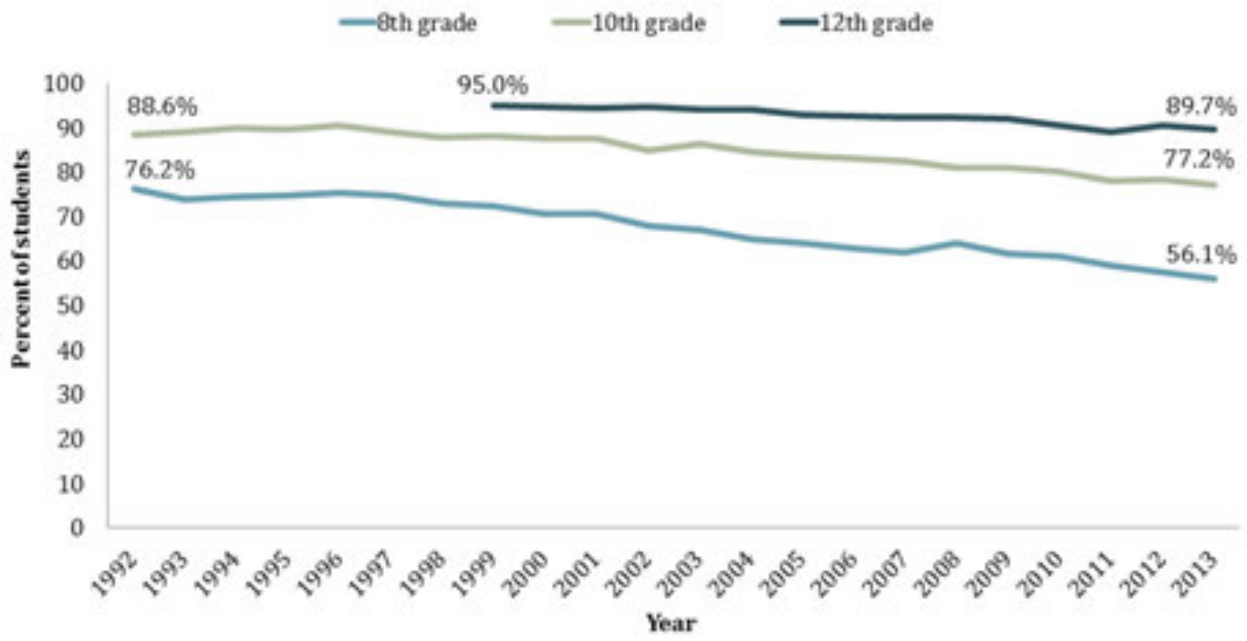
Harms from others' drinking were even more prevalent. More than half of all students had their sleep interrupted because of other students' drinking, and more than 40% had their studying interrupted. More than one in five students were in a serious fight or quarrel due to others' drinking; a similar proportion had been insulted or humiliated by another student who was drinking, while 15% experienced an unwanted sexual advance by a drinking student. Together, these results suggest that high-risk drinking has widespread negative consequences for drinkers and non-drinkers alike.

College drinking is best seen as a public health problem. Like other public health problems, it results from a convergence of individual-level behaviors and environmental factors that condition the individual's decisions to engage in behaviors. Reducing the problems associated with college drinking will require simultaneous attention to identifying high-risk individuals and changing environments that promote high-risk behavior.

## The Importance of Reducing Ease of Access to Alcohol

Nearly all students reported that alcohol was easy or very easy for them to obtain. There is no question that more efforts are needed to make access to alcohol more difficult for underage college students in Maryland. In contrast, there has been substantial progress nationally in reducing eighth and tenth graders' perceptions of easy access to alcohol, and some slight progress among twelfth graders (see Figure 12). Certainly more needs to be done in working with both commercial and social sources of alcohol to re-establish a view that regards excessive drinking as an unusual event as opposted to a routine activity—and to prevent underage drinking in any event.

**Figure 12. Percent of secondary school students reporting alcohol is easy or very easy to obtain**




*Source: Johnston LD, O'Malley PM, Miech RA, Bachman JG, Schulenberg JE. Monitoring the Future: National survey results on drug use, 1975-2013: 2013 overview: Key findings on adolescent drug use. Ann Arbor, MI: Institute for Social Research, The University of Michigan; 2014.*

## Using the Data to Refine Existing Interventions and Design New Ones

The data in this report provide valuable insights for evaluating existing interventions and designing new ones. The high prevalence of high-risk drinking—coupled with the fact that many students were first intoxicated during their high school years—suggests that more needs to be done with respect to reducing the ease of access to alcohol for underage students, screening for alcohol problems in the student population, and intervening in appropriate and effective ways with high-risk drinkers. These data call for an expansion of resources on college campuses to bolster and improve intervention services, as well as to cultivate closer relationships with community-based service providers and other community partners. At the same time, it is clear that the number of students who are currently in need of formal treatment for serious alcohol dependence is far less than the number who are drinking sporadically but in a high-risk manner that places themselves and others in harm's way. Therefore, interventions must also focus more broadly on the general student population and the environments in which they live and study.

This report highlights the importance of several risk factors that can be the target of comprehensive intervention strategies. It is clear that Maryland college students have misperceptions about the extent to which their peers are drinking in addition to having extremely favorable views about the perceived benefits of alcohol consumption. This finding speaks to the need to evaluate whether correcting these misperceptions will result in decreased use and less harm. Parent limit setting is strongly associated with drinking behaviors among Maryland college students—even though most

students are no longer living with their parents during the school year—indicating that the Maryland Collaborative's work must extend beyond college students to parents and families.

The data also clearly show that Maryland students have easy access to alcohol and that a significant percentage of students below and above age 21 are getting alcohol for free at private parties or fraternity or sorority events. Addressing the social supply of alcohol as well as the use of false IDs in commercial alcohol outlets hold promise as environmental interventions.

## Using the Data to Track Progress

At this point, the data provide a more comprehensive snapshot of excessive alcohol use and related problems among Maryland's college students than has previously been available. Repeated administration of the survey over time will permit participating schools in the Maryland Collaborative to assess their progress in reducing key indicators, such as prevalence of high- or very high-risk drinking as well as drinking-related behaviors that increase the risk for harm to both drinkers and non-drinkers.

## Future Surveys

This first year of administration of MD-CAS has shown that such a survey can be done at a reasonable cost and with minimal effort by the individual campuses themselves. Future iterations of the survey should maintain consistent measures of alcohol use, consequences, harms from others' drinking, availability, and perceived norms, so that these measures can be used as indicators of progress. While keeping the survey brief, additional risk factors, such as stress and depression, as well as additional consequences, such as more detailed information on academic harms, could also be collected in future years. More information about students' need for services and their evaluation of services they have received would provide useful feedback as well. Using the survey to help identify environmental "hot spots" through measures such as place of last drink, prices paid for drinks, and perceptions of campus messages regarding alcohol will help schools better assess how to intervene in these environments. Finding more resources and refining the way incentives are used (e.g., denominations, chances of winning) could improve survey response rates, and thereby strengthen the representativeness of the data we collect.

Oversampling of particular high-risk groups such as athletes, white men, and fraternity/sorority members could help to provide more statistical power to conduct special analyses in those sub-populations to shed light on the problems and how to intervene in these populations. Supplementing the quantitative data collection with more qualitative exploration, for example through focus groups with key student sub-populations, could also provide useful insights for campus and student leadership efforts to address these problems.

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# APPENDIX

**Table A1. Sample characteristics**

| | *M* | SD |
|---|---|---|
| Age | 20.0 | 1.5 |
| | ***n*** | **%** |
| Age group | | |
| Less than 21 | 2642 | 62.8 |
| 21 to 25 | 1567 | 37.2 |
| Gender | | |
| Male | 1470 | 34.9 |
| Female | 2728 | 64.8 |
| Transgender | 11 | 0.3 |
| Race | | |
| White | 2581 | 61.4 |
| Black | 671 | 16.0 |
| Asian/Pacific Islander | 507 | 12.1 |
| Other or multiple | 445 | 10.6 |
| Ethnicity | | |
| Non-Hispanic | 3957 | 94.1 |
| Hispanic | 247 | 5.9 |

**Table A2. Alcohol use among the total sample**

| | *n* | % |
|---|---|---|
| Past-year use | 3367 | 80.2 |
| Past-year use among underage students | 1956 | 74.2 |
| Past-month use | 2836 | 67.6 |
| Past-month use among underage students | 1590 | 60.3 |
| Binge drinking during the past month* | | |
| Males | 774 | 53.2 |
| Females | 1199 | 44.3 |
| Total | 1973 | 47.3 |
| Frequency of drinking alcohol | | |
| Never | 940 | 23.0 |
| Monthly or less | 1125 | 27.5 |
| 2 to 4 times a month | 1117 | 27.3 |
| 2 to 3 times a week | 795 | 19.4 |
| 4 or more times a week | 113 | 2.8 |
| Typical number of drinks per drinking day | | |
| 0 | 832 | 20.4 |
| 1 or 2 | 1322 | 32.4 |
| 3 or 4 | 995 | 24.4 |
| 5 or 6 | 574 | 14.1 |
| 7 to 9 | 268 | 6.6 |
| 10 or more | 93 | 2.3 |
| Frequency of heavy drinking** | | |
| Never | 2125 | 52.0 |
| Less than monthly | 940 | 23.0 |
| Monthly | 566 | 13.9 |
| Weekly | 441 | 10.8 |
| Daily or almost daily | 11 | 0.3 |

**Binge drinking is defined as drinking five or more drinks (for males, four or more drinks for females) in a row or within a couple hours. This question was only asked of past-month drinkers. Students who did not drink during the past month were automatically counted as not binge drinking. Frequency of drinking, typical number of drinks per day, and frequency of heavy drinking were only asked of past-year drinkers. Students who did not drink during the past year were automatically counted as a "Never" or "zero" response.*

***Heavy drinking is defined as drinking six or more drinks on one occasion, regardless of gender.*

**Table A3. Alcohol use among past-month drinkers**

| | *n* | % |
|---|---|---|
| Binge drinking during the past month | | |
| Males | 774 | 75.0 |
| Females | 1199 | 67.5 |
| Total | 1973 | 70.3 |
| | ***M*** | **SD** |
| Typical number of drinks per drinking day | | |
| Males | 4.9 | 3.2 |
| Females | 3.3 | 2.0 |
| Total | 3.9 | 2.6 |
| Greatest number of drinks on one occasion during the past month | | |
| Males | 8.4 | 5.1 |
| Females | 5.3 | 3.2 |
| Total | 6.5 | 4.3 |
| | ***n*** | **%** |
| Types of beverages consumed during the past month* | | |
| Beer | 1961 | 71.5 |
| Wine/champagne | 1672 | 61.0 |
| Grain alcohol | 317 | 11.6 |
| Liquor (including bourbon, brandy, cordials, gin, rum, tequila, and vodka) | 2241 | 81.7 |
| Other alcohol beverages (including flavored alcohol beverages, alcohol mixed with cola or energy drinks, and "other") | 1887 | 68.8 |

**Responses for "other" were counted as such, even if the open-ended response indicated something that could be grouped under one of the other categories.*

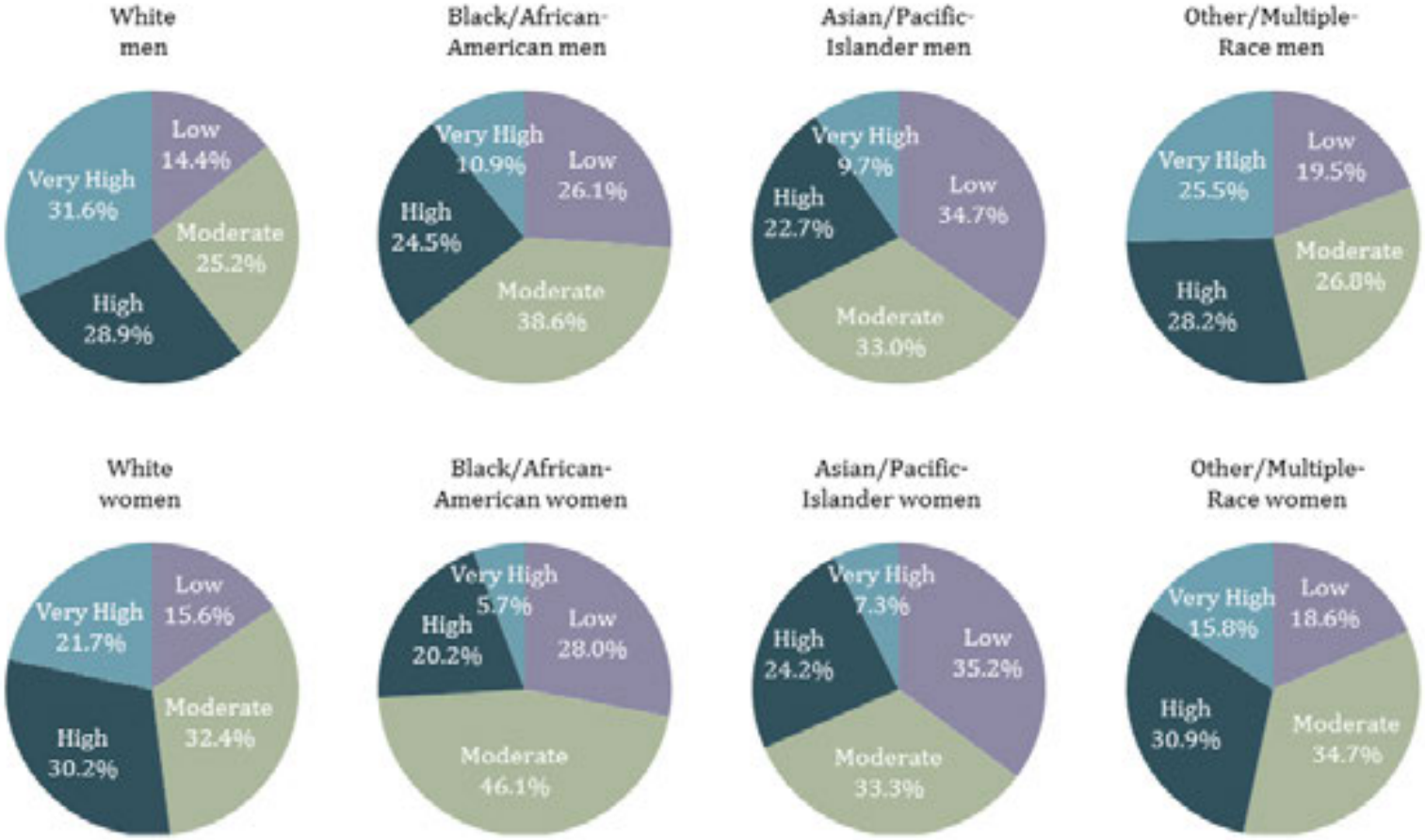
**Table A4. AUDIT score "risk zones"**

| **Among total sample** | ***n*** | **%** |
|---|---|---|
| Zone 1 (0 to 7) | 3033 | 74.4 |
| Zone 2 (8 to 15) | 862 | 21.2 |
| Zone 3 (16 to 19) | 125 | 3.1 |
| Zone 4 (20 or higher) | 54 | 1.3 |
| **Among past-year drinkers** | ***n*** | **%** |
| Zone 1 (0 to 7) | 2361 | 72.8 |
| Zone 2 (8 to 15) | 749 | 23.1 |
| Zone 3 (16 to 19) | 95 | 2.9 |
| Zone 4 (20 or higher) | 37 | 1.1 |
| **Among past-month drinkers** | ***n*** | **%** |
| Zone 1 (0 to 7) | 1851 | 68.1 |
| Zone 2 (8 to 15) | 738 | 27.1 |
| Zone 3 (16 to 19) | 94 | 3.5 |
| Zone 4 (20 or higher) | 37 | 1.4 |

*Note: The AUDIT, also known as the Alcohol Use Disorders Identification Test, is a ten item questionnaire that was originally designed by the World Health Organization (WHO) for use in clinical settings to help identify patients with hazardous or harmful alcohol consumption patterns, including alcohol dependence. Responses are scored on a 40-point scale. Scores are interpreted within four possible risk levels, or "zones", that correspond to different levels of recommended intervention:*

- *Zone 1: Low-risk drinking or abstinence (scores of 0 to 7). Provide alcohol education.*
- *Zone 2: Drinking exceeds low-risk guidelines (scores of 8 to 15). Provide simple advice.*
- *Zone 3: Harmful and hazardous drinking (scores of 16 to 19). Provide simple advice plus brief counseling and continued monitoring.*
- *Zone 4: Possible alcohol dependence (scores of 20 or higher). Refer to specialist for diagnostic evaluation and treatment.*

**Figure A1. Alcohol risk groups, by race and gender**




*Note: Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

**Table A5. Use of grain alcohol and alcohol mixed with energy drinks during the past month, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| Grain alcohol (e.g., Everclear®, Gemclear®) | 317 | 11.7 | 0 | 0.0 | 24 | 3.0 | 119 | 10.6 | 174 | 22.0 |
| Alcohol mixed with an energy drink | 414 | 15.2 | 0 | 0.0 | 27 | 3.3 | 139 | 12.4 | 248 | 31.3 |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

**Table A6. Consequences of alcohol use experienced during the past year, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| Number of past-year consequences due to your own drinking‡ | | | | | | | | | | | |
| None | 874 | 27.0 | n/a | n/a | 690 | 51.6 | 159 | 14.2 | 25 | 3.2 | B>C>D |
| 1 consequence | 687 | 21.2 | n/a | n/a | 318 | 23.8 | 300 | 26.8 | 69 | 8.8 | BC>D |
| 2-3 consequences | 850 | 26.2 | n/a | n/a | 243 | 18.2 | 366 | 32.6 | 241 | 30.7 | CD>B |
| 4 or more consequences | 832 | 25.7 | n/a | n/a | 85 | 6.4 | 296 | 26.4 | 451 | 57.4 | D>C>B |
| Number of past-year consequences due to other students' drinking^ | | | | | | | | | | | |
| None | 991 | 24.5 | 327 | 39.5 | 404 | 30.5 | 190 | 17.0 | 70 | 9.0 | A>B>C>D |
| 1 consequence | 490 | 12.1 | 96 | 11.6 | 194 | 14.6 | 136 | 12.2 | 64 | 8.2 | BC>D |
| 2-3 consequences | 1223 | 30.2 | 247 | 29.9 | 423 | 31.9 | 353 | 31.6 | 200 | 25.7 | BC>D |
| 4 or more consequences | 1344 | 33.2 | 157 | 19.0 | 305 | 23.0 | 438 | 39.2 | 444 | 57.1 | D>C>AB |
| Most frequently reported consequences | | | | | | | | | | | |
| Had a hangover (at least once) | 2083 | 64.3 | 0 | 0.0 | 491 | 36.8 | 880 | 78.5 | 712 | 90.6 | D>C>B |
| Had sleep interrupted by another student (at least once) | 2175 | 53.7 | 372 | 45.0 | 646 | 48.7 | 652 | 58.4 | 505 | 64.9 | D>C>AB |
| Had to "babysit" or take care of another student who drank too much (at least once) | 2192 | 54.2 | 253 | 30.6 | 587 | 44.3 | 745 | 66.7 | 607 | 78.0 | D>C>B>A |

*Note: Results were tabulated for the total number of consequences experienced and the top three most frequently reported consequences. Consequences due to your own drinking were asked only of past-year drinkers. Consequences due to others' drinking were asked universally regardless of drinking status.*

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

*†Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

*‡Past-year consequences due to your own drinking included: had a hangover, blacked out, performed poorly on a test/project, missed a class, rode in a car driven by someone who had been drinking alcohol, had unprotected sex, got hurt or injured, drove a car when drinking alcohol, physically injured self, damaged property, got in trouble with residence hall staff or other campus official, got taken advantage of sexually, drove a car or vehicle while drunk, got in trouble with campus police, physically injured someone else, got in trouble with off-campus police, had sex with someone without their consent, and got arrested for DWI/DUI.*

*^Past-year consequences due to your own drinking included: had to babysit or take care of another student who drank too much, had interrupted sleep, had interrupted studying, had to clean up after a student who had been drinking, been insulted or humiliated, had a serious argument or quarrel, experienced an unwanted sexual advance, had their property damaged, been assaulted/pushed/hit, had to call emergency medical services about a student who had been drinking too much, been a victim of sexual assault or "date rape."*

**Table A7. Average number of consequences experienced during the past year, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | SD | *M* | SD | *M* | SD | *M* | SD | *M* | SD | |
| Mean number of past-year consequences due to your own drinking | 2.4 | 2.7 | n/a | n/a | 1.0 | 1.5 | 2.5 | 2.3 | 4.6 | 3.1 | D>C>B |
| Mean number of past-year consequences due to other students' drinking | 2.7 | 2.4 | 1.9 | 2.1 | 2.1 | 2.1 | 3.1 | 2.4 | 4.1 | 2.6 | D>C>AB |

*Note: Results were tabulated for the total number of consequences experienced. Consequences due to your own drinking were asked only of past-year drinkers. This was not asked of any students in the "low-risk" group. Consequences due to others' drinking were asked universally regardless of drinking status.*

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

†*Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

**Figure A2. Sexual-related consequences of drinking, by gender**

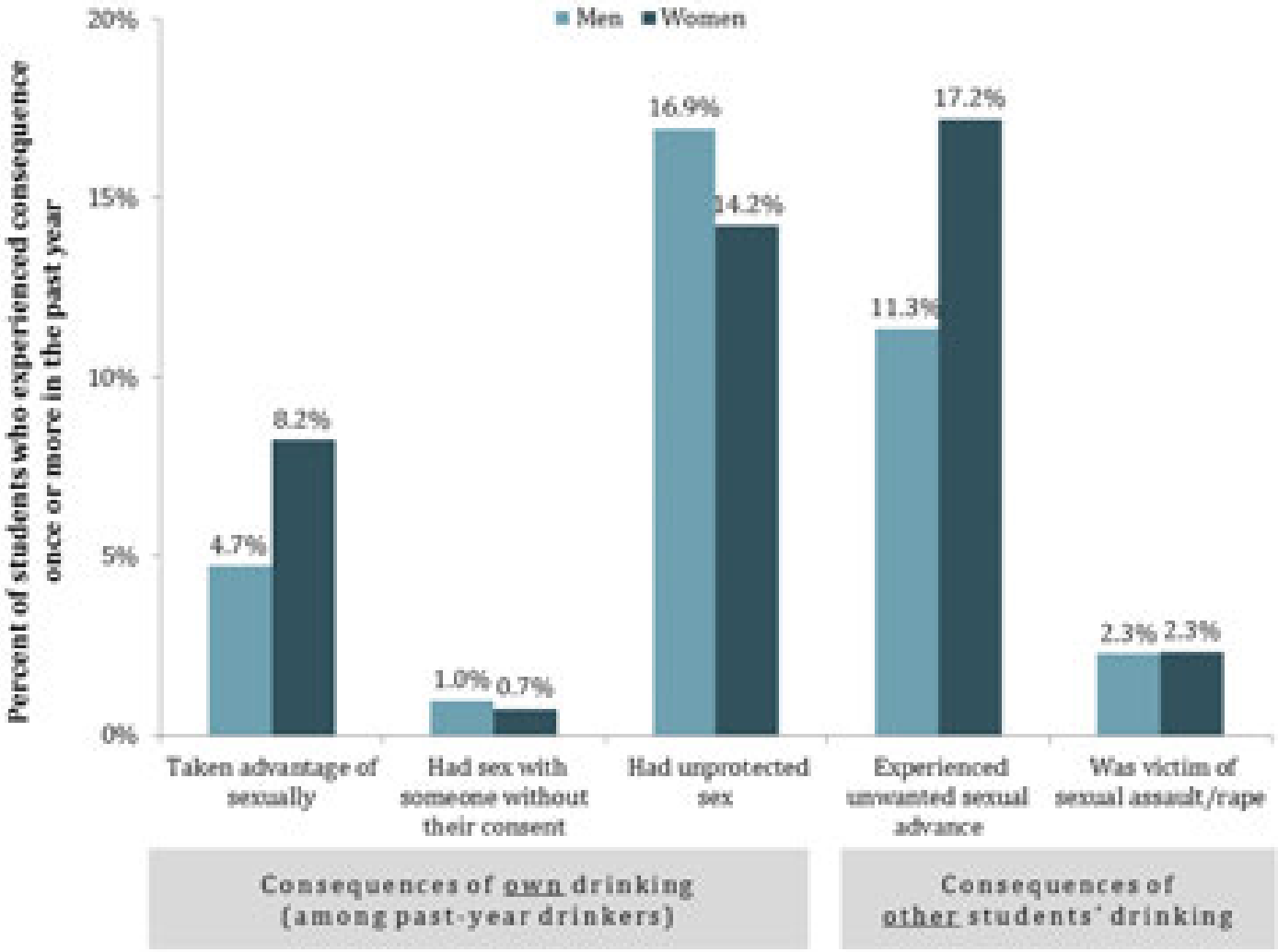
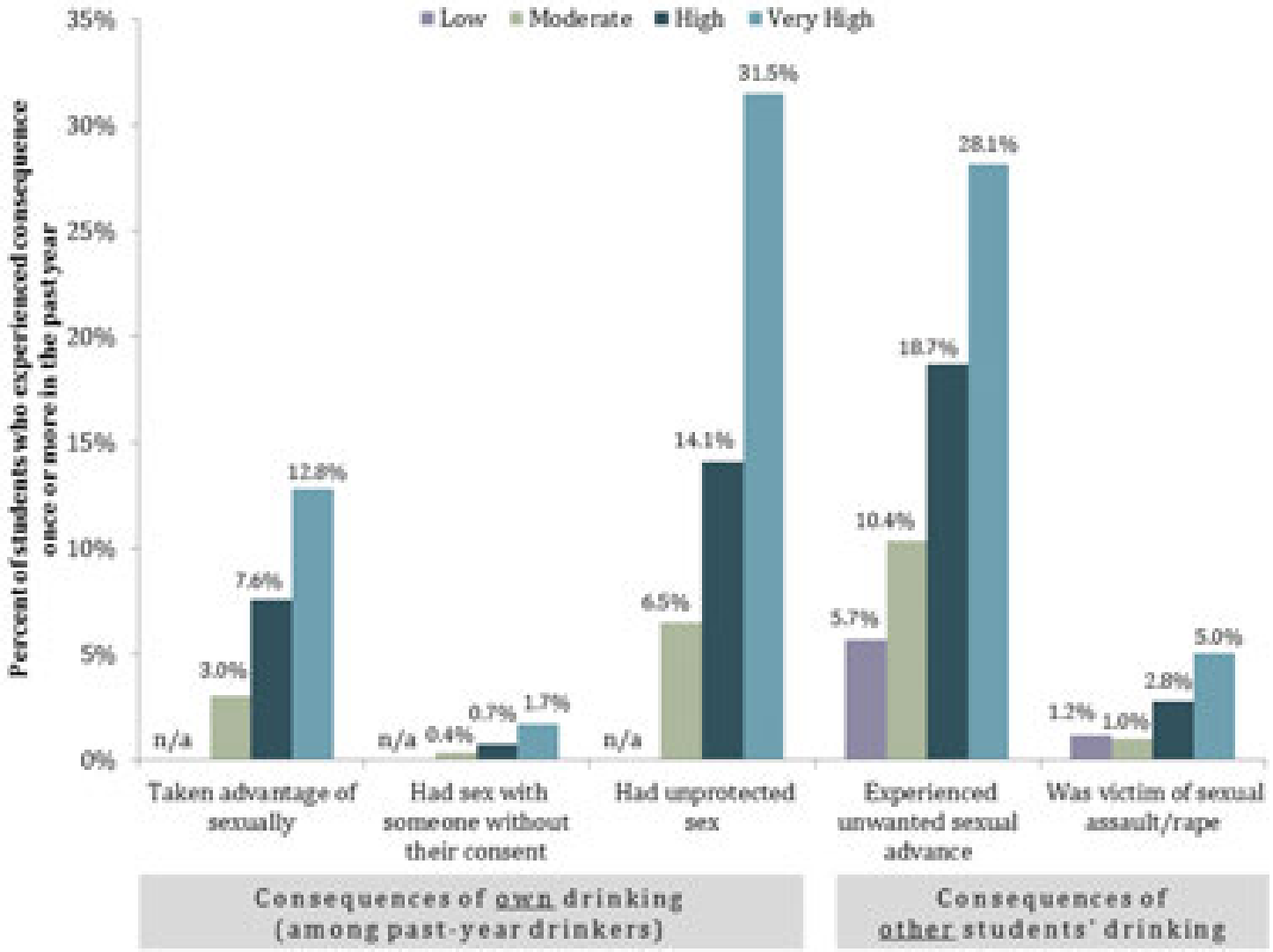


**Figure A3. Sexual-related consequences of drinking, by risk group**




*Note: Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month. Consequences due to your own drinking were asked only of past-year drinkers. Consequences due to others' drinking were asked universally regardless of drinking status.*

**Table A8.1. Risk factors for alcohol use: Demographics, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | |
| Gender | | | | | | | | | | | |
| Male | 1456 | 35.0 | 275 | 33.1 | 407 | 30.0 | 400 | 34.7 | 374 | 45.6 | D>ABC |
| Female | 2705 | 65.0 | 555 | 66.9 | 951 | 70.0 | 752 | 65.3 | 447 | 54.4 | ABC>D |
| | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | |
| Age | 20.0 | 1.5 | 19.4 | 1.4 | 20.2 | 1.6 | 20.2 | 1.5 | 20.1 | 1.4 | BCD>A |
| | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | |
| Age group | | | | | | | | | | | |
| Less than 21 | 2618 | 62.8 | 681 | 81.9 | 818 | 60.1 | 653 | 56.7 | 466 | 56.8 | A>BCD |
| 21 to 25 | 1549 | 37.2 | 151 | 18.1 | 544 | 39.9 | 499 | 43.3 | 355 | 43.2 | BCD>A |
| Race | | | | | | | | | | | |
| White | 2555 | 61.4 | 388 | 46.7 | 761 | 55.9 | 758 | 65.9 | 648 | 79.0 | D>C>B>A |
| Black | 659 | 15.8 | 181 | 21.8 | 290 | 21.3 | 141 | 12.3 | 47 | 5.7 | AB>C>D |
| Asian/Pacific Islander | 506 | 12.2 | 177 | 21.3 | 168 | 12.3 | 120 | 10.4 | 41 | 5.0 | A>BC>D |
| Other or multiple | 442 | 10.6 | 84 | 10.1 | 142 | 10.4 | 132 | 11.5 | 84 | 10.2 | ABCD |
| Ethnicity | | | | | | | | | | | |
| Non-Hispanic | 3918 | 94.1 | 796 | 95.9 | 1285 | 94.4 | 1066 | 92.6 | 771 | 94.0 | A>C |
| Hispanic | 244 | 5.9 | 34 | 4.1 | 76 | 5.6 | 85 | 7.4 | 49 | 6.0 | C>A |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

† *Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

**Table A8.2. Risk factors for alcohol use: Access and availability, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| Perceived accessibility of alcohol | | | | | | | | | | | |
| Very easy | 1756 | 43.5 | 335 | 40.7 | 520 | 39.3 | 509 | 45.6 | 392 | 50.4 | C>B, D>AB |
| Easy | 1972 | 48.8 | 403 | 48.9 | 678 | 51.3 | 542 | 48.6 | 349 | 44.9 | B>D |
| Difficult or very difficult | 312 | 7.7 | 86 | 10.4 | 124 | 9.4 | 65 | 5.8 | 37 | 4.8 | AB>CD |
| Fake ID use (among underage students) | | | | | | | | | | | |
| Used a fake ID during the past month | 400 | 26.1 | 0 | 0.0 | 35 | 7.9 | 146 | 22.8 | 219 | 49.0 | D>C>B |
| Place of residence | | | | | | | | | | | |
| Residence hall or school-owned apartment | 2709 | 65.6 | 528 | 4.0 | 867 | 64.2 | 777 | 68.2 | 537 | 66.1 | ABCD |
| Non-school owned house or apartment | 789 | 19.1 | 80 | 9.7 | 236 | 17.5 | 256 | 22.5 | 217 | 26.7 | CD>B>A |
| Parent/guardian's home | 596 | 14.4 | 216 | 26.2 | 245 | 18.1 | 101 | 8.9 | 34 | 4.2 | A>B>C>D |
| Fraternity or sorority chapter house | 33 | 0.8 | 1 | 0.1 | 2 | 0.1 | 6 | 0.5 | 24 | 3.0 | D>ABC |
| Living situation | | | | | | | | | | | |
| Live alone | 322 | 7.8 | 76 | 9.2 | 119 | 8.8 | 83 | 7.2 | 44 | 5.4 | AB>D |
| Live with roommates, housemates, suitemates | 3099 | 74.7 | 513 | 62.3 | 938 | 69.2 | 928 | 81.0 | 720 | 87.8 | D>C>B>A |
| Live with family (parents, siblings, relatives, host family) | 725 | 17.5 | 235 | 28.5 | 299 | 22.1 | 135 | 11.8 | 56 | 6.8 | A>B>C>D |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

† *Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

**Table A8.3. Risk factors for alcohol use: Expectations and attitudes, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Benefits of drinking alcohol** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | |
| Perceived benefits of drinking alcohol score‡ | 24.9 | 6.9 | 18.2 | 6.8 | 23.7 | 5.8 | 27.2 | 4.9 | 30.5 | 4.7 | D>C>B>A |
| **Injunctive norms** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | |
| Number of drinks close friends expect you to consume on a typical drinking day | | | | | | | | | | | |
| 0, 1, or 2 | 2240 | 53.9 | 808 | 97.3 | 1015 | 74.7 | 341 | 29.6 | 76 | 9.3 | A>B>C>D |
| 3 to 6 | 1435 | 34.5 | 19 | 2.3 | 324 | 23.9 | 704 | 61.2 | 388 | 47.3 | C>D>B>A |
| 7 or more | 484 | 11.6 | 3 | 0.4 | 19 | 1.4 | 106 | 9.2 | 356 | 43.4 | D>C>AB |
| **Descriptive norms^** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | |
| Perceived norm for alcohol quantity | | | | | | | | | | | |
| Low or accurate estimate | 995 | 24.6 | 270 | 32.8 | 358 | 27.1 | 238 | 21.3 | 129 | 16.6 | AB>C>D |
| High estimate | 3049 | 75.4 | 554 | 67.2 | 964 | 72.9 | 881 | 78.7 | 650 | 83.4 | D>C>AB |
| Perceived norm for alcohol frequency | | | | | | | | | | | |
| Low or accurate estimate | 956 | 23.6 | 162 | 19.6 | 301 | 22.7 | 285 | 25.5 | 208 | 26.7 | CD>AB |
| High estimate | 3094 | 76.4 | 664 | 80.4 | 1025 | 77.3 | 834 | 74.5 | 571 | 73.3 | AB>CD |
| Number of drinks close friends consume on a typical drinking day | | | | | | | | | | | |
| 0, 1, or 2 | 1455 | 34.9 | 592 | 71.3 | 638 | 46.9 | 179 | 15.5 | 46 | 5.6 | A>B>C>D |
| 3 to 6 | 2062 | 49.5 | 213 | 25.7 | 664 | 48.8 | 813 | 70.6 | 372 | 45.3 | C>BD>A |
| 7 or more | 647 | 15.5 | 25 | 3.0 | 59 | 4.3 | 160 | 13.9 | 403 | 49.1 | D>C>AB |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

† *Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

‡*Students were asked a series of eight items about possible benefits they might attribute to alcohol consumption (e.g., drinking alcohol is fun; drinking alcohol helps people make friends). Responses were scored on a 5-point scale (Strongly disagree=1, Strongly disagree=5) and summed to derive an overall score for perceived benefits (Cronbach's alpha=.891). Scores ranged from 8 to 40.*

^*To help understand what students perceive to be "normal" drinking behavior among their peers, the survey asked students about the number of drinking days (frequency) and the number of drinks per drinking day (quantity) that would be typical for students at their school during the past month. These responses were later compared against students' actual drinking patterns at each school, based on how they characterized their own past-month drinking pattern (i.e., past-month frequency and quantity) in the survey. Students' perceptions were then coded as a "high estimate" if their perception exceeded the median value (i.e., 50th percentile) for their peers' self-reported drinking patterns at their own school. Because men tend to consume more drinks than women on a given occasion, comparisons of perceived and actual alcohol quantities were conducted separately for men and women.*

**Table A8.4. Risk factors for alcohol use: Early exposure to alcohol, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| Age at first drink of alcohol | | | | | | | | | | | |
| 16 or younger | 1596 | 38.3 | 73 | 8.8 | 447 | 32.8 | 543 | 47.1 | 533 | 64.9 | D>C>B>A |
| 17- to 18-years-old | 1422 | 34.1 | 98 | 11.8 | 565 | 41.5 | 498 | 43.2 | 261 | 31.8 | CB>D>A |
| 19 or older | 535 | 12.8 | 47 | 5.6 | 350 | 25.7 | 111 | 9.6 | 27 | 3.3 | B>C>DA |
| Never drank in lifetime | 614 | 14.7 | 614 | 73.8 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | n/a |
| Total | 4167 | 100.0 | 832 | 100.0 | 1362 | 100.0 | 1152 | 100.0 | 821 | 100.0 | |
| Age at first intoxication | | | | | | | | | | | |
| 15 or younger | 430 | 10.3 | 15 | 1.8 | 91 | 6.7 | 135 | 11.7 | 189 | 23.0 | D>C>B>A |
| 16- to 17-years-old | 1112 | 26.7 | 27 | 3.2 | 243 | 17.8 | 427 | 37.1 | 415 | 50.5 | D>C>B>A |
| 18 or older | 1457 | 35.0 | 51 | 6.1 | 635 | 46.6 | 558 | 48.4 | 213 | 25.9 | CB>D>A |
| Never been intoxicated/drunk in lifetime | 1168 | 28.0 | 739 | 88.8 | 393 | 28.9 | 32 | 2.8 | 4 | 0.5 | A>B>C>D |
| Total | 4167 | 100.0 | 832 | 100.0 | 1362 | 100.0 | 1152 | 100.0 | 821 | 100.0 | |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

†*Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different. Between-group comparisons were not conducted for the proportion of students who never drank in their lifetime, because, by definition, these proportions were equal to zero in the moderate, high, and very high groups.*

**Table A8.5. Risk factors for alcohol use: Parental influences, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parent limit setting** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | |
| Upper limit of consumption permitted by parents during high school | | | | | | | | | | | |
| No amount was permitted | 2295 | 56.6 | 688 | 83.0 | 785 | 59.2 | 524 | 46.8 | 298 | 38.2 | A>B>C>D |
| 1 drink permitted | 516 | 12.7 | 64 | 7.7 | 209 | 15.8 | 190 | 17.0 | 53 | 6.8 | BC>AD |
| 2 to 12 drinks permitted | 1024 | 25.3 | 33 | 4.0 | 261 | 19.7 | 354 | 31.6 | 376 | 48.2 | D>C>B>A |
| No limit set | 218 | 5.4 | 44 | 5.3 | 70 | 5.3 | 51 | 4.6 | 53 | 6.8 | ABCD |
| **Parental disapproval** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | ***M*** | **SD** | |
| Parental disapproval score‡ | 8.1 | 3.9 | 11.5 | 3.5 | 7.9 | 3.6 | 7.3 | 3.6 | 6.3 | 3.3 | A>B>C>D |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

†*Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

‡*Students were asked to rate their level of agreement or disagreement with three statements about their parents' attitudes toward their alcohol use: "My parents think it is okay if I drink alcohol on special occasions outside the home (e.g., a friend's party)," "My parents don't mind if I drink alcohol once in a while," and "My parents disapprove of me drinking alcohol under any circumstances." Responses were scored on a 5-point scale, with higher scores indicating disapproval attitudes, and later summed to derive an overall score (Cronbach's alpha=.939). Scores ranged from 3 to 15.*

**Table A8.6. Risk factors for alcohol use: Extracurricular activities, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | | Between group differences† |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| Fraternity/sorority | 614 | 14.8 | 38 | 4.6 | 139 | 10.2 | 207 | 18.0 | 230 | 28.0 | D>C>B>A |
| Intercollegiate athletic team or sports club | 861 | 20.7 | 119 | 14.3 | 225 | 16.6 | 270 | 23.5 | 247 | 30.1 | D>C>AB |
| Other student organization | 1808 | 43.5 | 442 | 53.2 | 619 | 45.5 | 481 | 41.8 | 266 | 32.4 | A>BC>D |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

†*Results of pairwise comparisons between the four risk groups are depicted for all differences that were statistically significant at p<.05. Letters not separated by a greater-than or less-than sign were not significantly different.*

**Table A8.7. Risk factors for alcohol use: Context of use, by age group**

| | Total | | Students under 21 | | Students ages 21 to 25 | |
|---|---|---|---|---|---|---|
| | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** |
| Drank at an off-campus party | 1895 | 67.5 | 1148 | 73.2 | 747 | 60.3 |
| Pre-gamed* | 1749 | 62.3 | 1024 | 65.3 | 725 | 58.6 |

*Note: During the past-month, among past-month drinkers.*

**Pre-gaming was defined as "drinking alcohol in your or someone else's residence before attending a social or other event."*

**Table A8.8. Risk factors for alcohol use: Context of use among past-month, underage, and legal-age drinkers, by risk group**

| | | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Students under 21 | Drank at an off-campus party | 1145 | 73.2 | 0 | 0.0 | 222 | 49.2 | 506 | 77.8 | 417 | 90.1 |
| | Pre-gamed | 1022 | 65.3 | 0 | 0.0 | 146 | 32.4 | 446 | 68.6 | 430 | 92.9 |
| | During the past 30 days, how did you usually get the alcohol you drank? | | | | | | | | | | |
| | Liquor store, convenience store, supermarket, discount store, or gas station | 323 | 21.1 | 0 | 0.0 | 30 | 6.8 | 108 | 16.9 | 185 | 41.4 |
| | Restaurant, bar or club | 316 | 20.7 | 0 | 0.0 | 29 | 6.5 | 107 | 16.7 | 180 | 40.3 |
| | Public event such as a concert or sporting event | 39 | 2.5 | 0 | 0.0 | 6 | 1.4 | 12 | 1.9 | 21 | 4.7 |
| | Gave someone else money to buy it for me | 630 | 41.2 | 0 | 0.0 | 101 | 22.7 | 288 | 45.1 | 241 | 53.9 |
| | Someone gave it to me | 1109 | 72.5 | 0 | 0.0 | 347 | 78.2 | 466 | 72.9 | 296 | 66.2 |
| | Took it from a store or family member | 61 | 4.0 | 0 | 0.0 | 15 | 3.4 | 25 | 3.9 | 21 | 4.7 |
| | I got it some other way | 179 | 11.7 | 0 | 0.0 | 55 | 12.4 | 77 | 12.1 | 47 | 10.5 |
| Students 21 to 25 | Drank at an off-campus party | 744 | 60.3 | 0 | 0.0 | 117 | 30.7 | 321 | 64.5 | 306 | 86.4 |
| | Pre-gamed | 721 | 58.5 | 0 | 0.0 | 93 | 24.4 | 308 | 61.8 | 320 | 90.4 |
| | During the past 30 days, how did you usually get the alcohol you drank? | | | | | | | | | | |
| | Liquor store, convenience store, supermarket, discount store, or gas station | 1051 | 86.1 | 0 | 0.0 | 268 | 70.9 | 447 | 90.5 | 336 | 96.6 |
| | Restaurant, bar or club | 898 | 73.6 | 0 | 0.0 | 225 | 59.5 | 379 | 76.7 | 294 | 84.5 |
| | Public event such as a concert or sporting event | 118 | 9.7 | 0 | 0.0 | 17 | 4.5 | 41 | 8.3 | 60 | 17.2 |
| | Gave someone else money to buy it for me | 86 | 7.0 | 0 | 0.0 | 11 | 2.9 | 23 | 4.7 | 52 | 14.9 |
| | Someone gave it to me | 383 | 31.4 | 0 | 0.0 | 93 | 24.6 | 153 | 31.0 | 137 | 39.4 |
| | Took it from a store or family member | 29 | 2.4 | 0 | 0.0 | 6 | 1.6 | 10 | 2.0 | 13 | 3.7 |
| | I got it some other way | 16 | 1.3 | 0 | 0.0 | 5 | 1.3 | 4 | 0.8 | 7 | 2.0 |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

**Table A9.1. Alcohol specials and promotions, by age group**

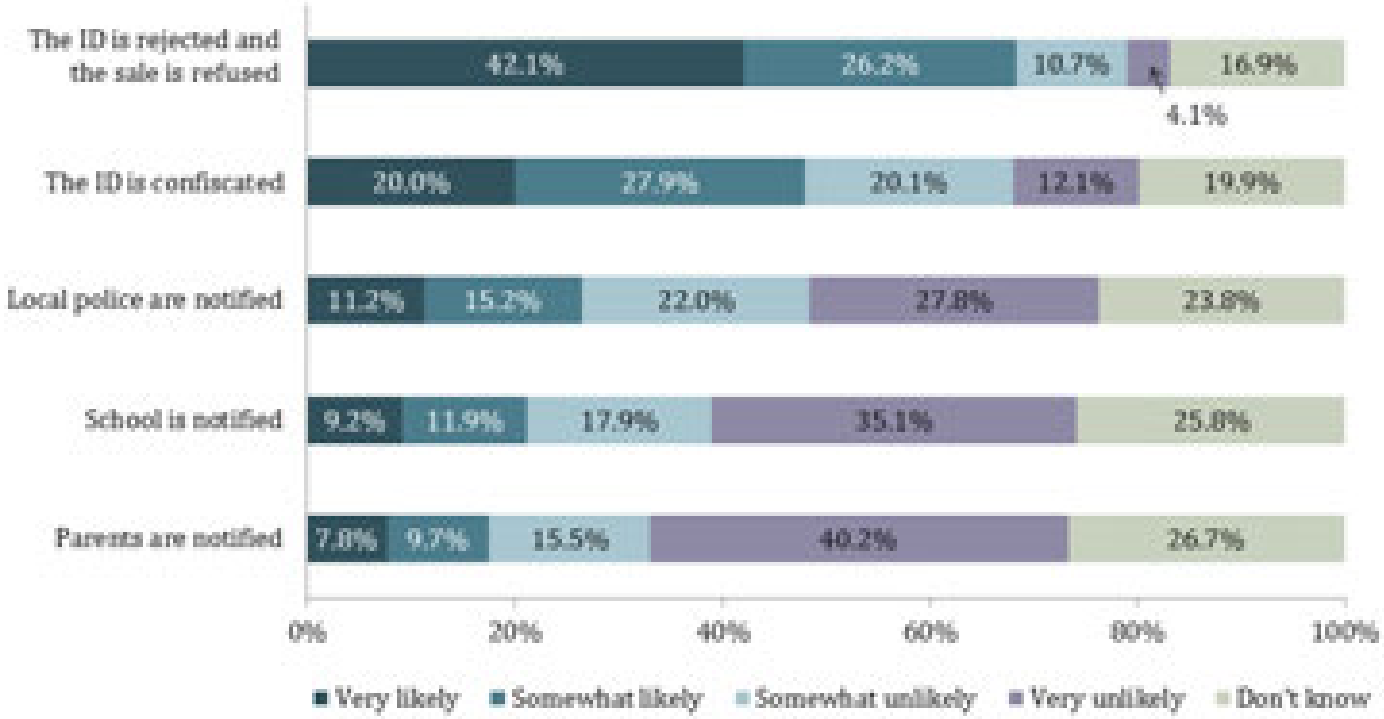
| During the past 30 days, have you taken advantage of any of the following? | Total | | Students under 21 | | Students ages 21 to 25 | |
|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % |
| Happy hours | 908 | 22.5 | 234 | 9.2 | 674 | 45.0 |
| Low-priced promotions at off-campus bars | 800 | 19.8 | 269 | 10.6 | 531 | 35.4 |
| Special promotions by beer companies | 266 | 6.6 | 76 | 3.0 | 190 | 12.7 |
| Special promotions by liquor companies | 274 | 6.8 | 79 | 3.1 | 195 | 13.0 |
| Cover charge for unlimited drinks at an off-campus bar | 399 | 9.9 | 165 | 6.5 | 234 | 15.6 |
| Small admission fee for unlimited drinks at a private party | 388 | 9.6 | 216 | 8.5 | 172 | 11.5 |
| Small admission fee for unlimited drinks at a fraternity or sorority party | 171 | 4.2 | 118 | 4.7 | 53 | 3.5 |
| Free unlimited drinks at a fraternity or sorority party | 681 | 16.9 | 533 | 21.0 | 148 | 9.9 |
| Free unlimited drinks at a private party | 922 | 22.9 | 590 | 23.3 | 332 | 22.2 |
| None of these | 2230 | 55.4 | 1602 | 63.2 | 628 | 42.1 |

**Table A9.2. Alcohol specials and promotions, by risk group**

| | | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Students under 21 | During the past 30 days, have you taken advantage of: | | | | | | | | | | |
| | Happy hours | 234 | 9.2 | 7 | 1.0 | 25 | 3.2 | 76 | 12.1 | 126 | 28.6 |
| | Low-priced promotions at off-campus bars (ladies night, all-you-can-drink, etc.) | 269 | 10.6 | 4 | 0.6 | 23 | 2.9 | 78 | 12.4 | 164 | 37.2 |
| | Special promotions by beer companies | 76 | 3.0 | 0 | 0.0 | 6 | 0.8 | 25 | 4.0 | 45 | 10.2 |
| | Special promotions by liquor companies | 79 | 3.1 | 1 | 0.1 | 3 | .4 | 22 | 3.5 | 53 | 12.0 |
| | Cover charge for unlimited drinks at an off-campus bar | 165 | 6.5 | 0 | 0.0 | 8 | 1.0 | 49 | 7.8 | 108 | 24.5 |
| | Small admission fee for unlimited drinks at a private party | 216 | 8.5 | 2 | 0.3 | 27 | 3.4 | 77 | 12.2 | 110 | 24.9 |
| | Small admission fee for unlimited drinks at a fraternity or sorority party | 118 | 4.7 | 1 | 0.1 | 21 | 2.7 | 41 | 6.5 | 55 | 12.5 |
| | Free unlimited drinks at a fraternity or sorority party | 533 | 21.0 | 2 | 0.3 | 85 | 10.7 | 234 | 37.1 | 212 | 48.1 |
| | Free unlimited drinks at a private party | 590 | 23.3 | 4 | 0.6 | 117 | 14.8 | 261 | 41.4 | 208 | 47.2 |
| Students 21 to 25 | During the past 30 days, have you taken advantage of: | | | | | | | | | | |
| | Happy hours | 674 | 45.0 | 2 | 1.3 | 141 | 26.6 | 264 | 54.5 | 267 | 79.7 |
| | Low-priced promotions at off-campus bars (ladies night, all-you-can-drink, etc.) | 531 | 35.4 | 2 | 1.3 | 80 | 15.1 | 203 | 41.9 | 246 | 73.4 |
| | Special promotions by beer companies | 190 | 12.7 | 0 | 0.0 | 18 | 3.4 | 65 | 13.4 | 107 | 31.9 |
| | Special promotions by liquor companies | 195 | 13.0 | 0 | 0.0 | 17 | 3.2 | 75 | 15.5 | 103 | 30.7 |
| | Cover charge for unlimited drinks at an off-campus bar | 234 | 15.6 | 0 | 0.0 | 17 | 3.2 | 77 | 15.9 | 140 | 41.8 |
| | Small admission fee for unlimited drinks at a private party | 172 | 11.5 | 0 | 0.0 | 12 | 2.3 | 56 | 11.6 | 104 | 31.0 |
| | Small admission fee for unlimited drinks at a fraternity or sorority party | 53 | 3.5 | 1 | 0.7 | 3 | 0.6 | 17 | 3.5 | 32 | 9.6 |
| | Free unlimited drinks at a fraternity or sorority party | 148 | 9.9 | 0 | 0.0 | 16 | 3.0 | 48 | 9.9 | 84 | 25.1 |
| | Free unlimited drinks at a private party | 332 | 22.2 | 3 | 2.0 | 43 | 8.1 | 145 | 30.0 | 141 | 42.1 |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*

**Figure A4. Perceived likelihood of consequences if caught using a false ID to purchase alcohol**




*Note: Among past-month drinkers. Students were asked about the likelihood of each consequence if they were caught using a false ID to purchase alcohol in the city or town where their school is located.*

**Table A10. False ID use among past-month, underage drinkers**

| | *n* | % |
|---|---|---|
| Used a fake ID for any reason during the past 30 days | 401 | 26.1 |
| During the past 30 days, for what purposes have you used a fake, altered, or borrowed ID? | | |
| To purchase alcohol for a private party | 140 | 9.2 |
| To get into a bar, club, or restaurant | 364 | 23.9 |
| To buy alcohol at a bar, club, or restaurant | 236 | 15.5 |
| To get into a private party | 15 | 1.0 |
| To purchase alcohol for myself and/or a small group of friends | 210 | 13.8 |

**Table A11. Perceived targeting of underage youth by alcohol advertising, by risk group**

| | Total | | A Low risk* | | B Moderate risk* | | C High risk* | | D Very high risk* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| Students agreeing that alcohol companies target underage youth with advertising | | | | | | | | | | |
| Among students under 21 | 945 | 37.2 | 318 | 47.1 | 299 | 37.7 | 194 | 30.7 | 134 | 30.4 |
| Among students ages 21 to 25 | 501 | 33.4 | 67 | 44.7 | 183 | 34.5 | 157 | 32.4 | 94 | 28.1 |
| Total | 1446 | 35.8 | 385 | 46.7 | 482 | 36.4 | 351 | 31.5 | 228 | 29.4 |

**Students were categorized into one of four risk groups, based on their responses to questions about their alcohol consumption patterns during the past month, past year, and lifetime. The risk groups were defined as follows: A) Low risk: never drank in lifetime, or drank in lifetime but not during the past year; B) Moderate risk: drank during the past year, but not the past month, or drank at least one day during the past month but did not binge drink; C) High risk: binge drank one to four days during the past month; and D) Very high risk: binge drank five or more days during the past month.*