
An analysis of alcohol usage, attitudes, and beliefs among college undergraduates at Case Western Reserve University

Prepared by Thomas A. Rehman, MA
MPH Candidate, School of Medicine
Case Western Reserve University

April 20, 2009

In partial fulfillment of the requirements of
MPHP 652 - *Public Health Capstone Experience*

Capstone Advisory Committee

Mendel Singer, PhD - Committee Chair
Scott Frank, MD, MS - Committee Member
Janice J. Gerda, PhD - Site Representative
Jes Sellers, PhD - Site Representative

Table of Contents

Executive Summary	2
Project Overview	3
Objectives	3
Background & Significance	4
Methods	6
<i>Overview</i>	6
<i>Survey Design and Measures</i>	7
<i>Population and Site</i>	8
Demographic Data	9
Results	12
<i>Age of initiation and drinking behavior over the past 30 days</i>	12
<i>Average and past year alcohol usage</i>	18
<i>Policy enforcement issues</i>	22
<i>Attitudes and beliefs regarding enforcement</i>	26
<i>Beliefs on drinking culture at CWRU</i>	32
<i>Results of the AUDIT and logistic regression</i>	34
Discussion and Policy Implications	37
Strengths and Limitations	41
Conclusion	43
Acknowledgements	43
References	44

Executive Summary

This report describes the results of the Alcohol Usage, Behaviors, and Beliefs Survey (the AUBBS). The AUBBS is a cross-sectional survey research instrument designed to obtain information from the Case Western Reserve University student population. 4021 undergraduates at CWRU (all aged 18 years or older) were invited by email to participate in the first administration of the AUBBS. The survey was administered online in March 2009. 1246 students initiated surveys; of those, 93% (n=1158) completed the entire AUBBS.

Of the respondents, 69.1% reported consuming alcohol at least once in the past 30 days, while 54.1% of the respondents reported drinking alcohol 2 or more times per month on average. Rates of underage drinking were lower, but still substantial: 58.3% of underage students reported drinking at least once in the past 30 days, while 42.4% reported drinking alcohol 2 or more times per month on average. Potential alcohol use problems were identified in 36.7% of the respondents, according to the WHO Alcohol Use Disorder Identification Test.

Age was correlated with average alcohol use. Younger students reported drinking greater volume per drinking day, but fewer drinking days on average; older students showed an opposite pattern. Greek membership was also correlated with increased rates of drinking and underage drinking. Encounters with underage Resident Assistants consuming alcohol were reported by 52.8% of the respondents, and open-text responses suggested that underage drinking may be highly prevalent among Resident Assistants. Further research is recommended to explore the prevalence of underage drinking among Resident Assistants and the specific influence of Greek membership on alcohol usage at CWRU; continued surveillance of the study population is necessary to assess the effect of any interventions implemented as a result of this study.

Project Overview

The purpose of this project was to gather and analyze current information on alcohol use among college undergraduates at Case Western Reserve University. To accomplish this goal, the Alcohol Usage, Behaviors, and Beliefs Survey (AUBBS) was designed. The AUBBS was initially based on questions drawn from the Campus Health Online Risk Evaluation Survey,¹ the Alcohol Use Disorders Identification Test, the Youth Risk Behavior Surveillance System, the National College Health Risk Behavior Survey, and the CAGE Screening Tool. Some questions were modified to make their content appropriate for the population being studied, while additional questions were developed to address interests of the primary stakeholders in this project, such as the Office of Housing, Residence Life, and Greek Life (HRLGL) and the University Counseling Service. The AUBBS was administered in March 2009 as a web-based survey emailed to the undergraduate student population. The overall response rate was approximately 30%. This data will be of value in providing recent, institution-specific, and non-anecdotal information on campus alcohol use, allowing evidence-based policies and interventions to be developed to address student health concerns.

Objectives

1. To develop and implement an alcohol usage survey instrument specific to Case Western Reserve University.
2. To describe alcohol usage among undergraduate students at Case Western Reserve University.
3. To investigate undergraduate student attitudes toward alcohol policy at Case Western Reserve University.

¹ The CHORES tool was developed by Claire Boettler, another student in the Master of Public Health Program at Case Western Reserve University.

Background & Significance

The U.S. Census Bureau estimates that as of October 2007, there were almost 29.5 million 18-24 year olds in the United States (Population and household economic topics). Of these, approximately 10.3 million were enrolled in some sort of college or university undergraduate program (ibid.). College life provides these students with “greatly expanded opportunities for self-governance and independence” (Cooper 101). This rapid expansion in personal freedom is recognized as essential to the development of students, but it also provides the ideal environment to experiment with alcohol. Subsequently, it is perhaps unsurprising that studies show alcohol consumption is an ubiquitous part of the collegiate experience. A review of the literature conducted by Prendergast in 1994 indicated as much as 85% of college students had drunk alcohol within the last year, with rates varying between institutions (electronic source; page number not available). Ranges for overall past-year drinking rates vary from 78% to 91% depending on the study, with one study placing the prevalence of alcohol consumption at 97% at a specific institution (ibid.).

More recent data gathered by the College Alcohol Study, administered by the Harvard School of Public Health most recently in 1999, shows similar problematic trends. The College Alcohol Study found an annual drinking percentage of over 80% among a national sample of 14,810 undergraduate students (O’Malley and Johnson 25-26). Studies also suggest that 18-24 year old college students are more likely to drink than their non-college-attending peers (Hingson et al. 140; Slutske 321).

Heavy episodic drinking, also known as binge drinking, is one of the most commonly-known drinking problems within the college student population (Wechsler et al. 199). Heavy episodic drinking has many definitions, but can be generally summarized as the consumption of

five or more drinks (for men) or four or more drinks (for women) in a single sitting (ibid.). Throughout the 1990s, studies were conducted which presented a bleak outlook on student binge drinking; one suggested that as much as 40% of the respondents had engaged in binge drinking within the two weeks prior to taking the survey (O'Malley and Johnston 25). Further studies have linked binge drinking to specific factors such as residency in Greek housing (Wechsler et al. 208). As is obvious, binge drinking by its very nature implies a large amount of alcohol consumption, which carries several health risks.

The long-term risks associated with alcohol are fairly well known and include liver damage, pancreatitis, ulcers, vomiting, diarrhea, malnutrition, and heart failure (Babor et al. 7). Among college students, estimates have suggested that as many as 1400 students die every year due to alcohol-related injuries, though it is notable that the methodology suggests this is likely an underestimate (Hingson et al. 139). While this death toll may seem rather low compared to other causes of death in our society, it is important to also consider annual estimates of 500,000 students injured, 400,000 engaging in unprotected sexual intercourse, 100,000 engaging in non-consensual sexual intercourse, and 630,000 being assaulted, pushed, or hit, all as a result of alcohol consumption (Hingson et al. 141). Keeping in mind the total population of approximately 10 million college students described above, these numbers paint a stark picture of the effects of alcohol usage on the collegiate population. These estimates are somewhat dated; they still, however, serve to underscore the serious problem of alcohol usage on college campuses.

As a result, alcohol consumption has long been nationally recognized as an issue facing colleges. In 1989, 67% of college presidents identified alcohol as a problem on their campuses (Presley, Meilman, and Leichter 82). The U.S. government also "identified binge drinking

among college students as a major public health problem” (Slutske 321). Henry Wechsler also contends binge drinking is a “major public health problem at college” (Wechsler and Nelson 2). While significant research has been done on a national scale, it can be challenging to translate national trends in collegiate alcohol use into policy solutions for a single institution. Aggregate national data combines vastly different campus populations, and may not accurately reflect the situation on an individual campus. Every institution has specific factors which affect alcohol use by its students, and each campus is different (Presley, Meilman, and Leichliter 83). While it is certain that alcohol use is a factor at CWRU,² specific data on the actual rates of alcohol use on the CWRU campus is sparse. The data collected with the AUBBS provides institution-specific information of a higher quality, improving student services and health.

Methods

Overview

This study was reviewed by the Case Western Reserve University Institutional Review Board and was deemed exempt under 45 Code of Federal Regulations part 46.101(b)(2). Data was collected for two weeks in March 2009. The entire adult undergraduate student population (n=4021) was invited by email to participate in the survey. The survey company StudentVoice, with whom the institution has an existing contract, was utilized to administer the survey. Each email address received a unique link to the survey and StudentVoice’s software allowed targeted reminders to be sent to non-responsive students once during the survey period. The unique targeted link for each email address allowed students to leave a survey and return at a later time to complete it, simply by following the same link. Of the study population, 31% responded to

² Violations of Case Western Reserve University’s alcohol policy are the situation most frequently documented by the staff members of the Office of Housing, Residence Life, and Greek Life (Begley).

the survey (n=1246) with 93% of that group completing the entire survey (n=1158; ~29% of study population). Students were offered an incentive opportunity to participate in a drawing for ten \$20.00 gift cards to either Starbucks or Chipotle, depending on their preference.

Survey Design and Measures

The AUBBS is divided into three major sections: Demographic Information, Alcohol Usage, and Policy and Enforcement. The content of the AUBBS was developed from the Campus Health Online Risk Evaluation Survey (CHORES) administered at CWRU in April 2008, and incorporates, with minor modification, measures from the Centers for Disease Control and Prevention's National Collegiate Health Risk Behavior Survey and Youth Risk Behavior Surveillance System. Standard demographic information on race, ethnicity, sex, age, marital status and living arrangements was collected, as well as additional information on respondents such as academic performance, field of study, year in college, and membership in Greek organizations. The AUBBS integrates both the CAGE Screening Tool and the World Health Organization's Alcohol Use Disorders Identification Test into its Alcohol Usage section, allowing for two alternative methods of screening the respondents.

In addition to the alcohol measures already present, additional questions were added to the Alcohol Usage section to address stakeholder interests, including the rate of playing "drinking games", preferred types of alcohol, preferred venues for consumption, and method of acquiring alcohol. The Policy and Enforcement Section was developed entirely for the AUBBS and addresses individual campus concerns, including the prevalence of "fake IDs" on campus, the prevalence of enforcement figures such as Resident Assistants engaging in underage drinking, and student attitudes towards current policies and procedures. The completed

instrument was 69 questions long and took an estimated 10-15 minutes to complete. Most answers were multiple choice and all questions offered respondents an opportunity to decline to answer.

Population and Site

Case Western Reserve University is a private research university located in University Circle, approximately four miles east of downtown Cleveland, Ohio. For the 2008-2009 school year, the university enrolled 4356 undergraduate students and 5458 professional and graduate students for a total enrollment of 9814 (“Common Data Set” B-1). The university is somewhat unusual for having more graduate and professional students than it has undergraduates, contributing to a unique campus environment.

Students from all 50 U.S. states and 80 countries are represented in the campus population (“Case at a glance”). 78% of undergraduates (or approximately 3400 students) reside in college-owned, -operated, or -affiliated housing (“Common Data Set” F-1); this measure includes Greek housing, undergraduate residence halls,³ and campus-operated apartment buildings. First-year and second-year students are primarily overseen by undergraduate students (or “Resident Assistants”), while older students living in campus apartment are overseen by graduate staff members. Greek students have multiple options for residency; some may live in a chapter-owned house, in a building leased by their chapter from CWRU, or on a floor set aside for Greek students in a traditional residence hall. Greek students may also elect not to live with their Greek chapter, though regulations governing this behavior vary from chapter to chapter.

³ It is worth noting that the preferred terminology within higher education at CWRU is “residence hall” and not dormitory; however, this research uses these terms equally to ensure that both the study subjects and the audience are not confused.

Undergraduate and graduate staff members are supervised by full-time, live-in residence life staff members who hold master's-level education in a related discipline.

Case Western Reserve University is well-ranked nationally, with noted centers of excellence in Health Law, International Law, Biomedical Engineering, and Medicine (“Case in national rankings” 1-2). The undergraduate degree program is ranked 41st nationally as of 2008 and 25th on the “Best Value” scale, according to U.S. News & World Report (“Case in national rankings” 1). Undergraduate students at CWRU are informally known as being highly competitive, extremely academically competent, and driven to succeed, and many enter the university with plans of future graduate study.⁴

Demographic Data

Table 1 contains a summary of the demographic features of the survey respondents. Because some respondents did not complete the survey or all questions within the survey, the total number of respondents may vary between questions. Students who completed only a portion of the survey were not excluded from the dataset. Missing data and “Prefer not to respond” answers are not reported except when the amounts are unusually high or otherwise noteworthy, and they are not included in calculation of percentages. Almost all respondents (~99%) were full-time students and had never been married, and so these measures have been excluded from the table below.

⁴ Here I speak from experience and knowledge gained as a Housing, Residence Life, and Greek Life staff member at CWRU.

Age	
18	12.7% (n=156)
19	24.7% (n=303)
20	24.1% (n=296)
21	22.4% (n=275)
22	12.9% (n=159)
≥23	3.2% (n=39)
Year in College	
1st	26.1% (n=320)
2nd	24.6% (n=302)
3rd	23.3% (n=286)
4th	23.0% (n=283)
≥5th	3.0% (n=37)
Sex	
Male	52.4% (n=642)
Female	47.6% (n=584)
Race/Ethnicity	
White or Caucasian, non-Hispanic	77.0% (n=915)
Asian	14.5% (n=172)
Other, non-Hispanic	3.4% (n=41)
Black or African American	2.5% (n=30)
White or Caucasian Hispanic	1.1% (n=13)
Other, Hispanic	1.1% (n=13)
Native Hawaiian or Pacific Islander	.3% (n=4)
American Indian or Alaskan Native	.1% (n=1)
Residence	
Dormitory or residence hall	62.5% (n=762)
Fraternity or sorority house	11.8% (n=144)
College-operated apartments	5.0% (n=61)
Off-campus housing	17.1% (n=209)
Parent or guardian's home	3.2% (n=39)
Other	.4% (n=5)
Greek	
Yes	34.0% (n=412)
No	66.0% (n=800)
Average GPA⁵	
GPA Range	2.000 - 4.000
Average Credit Hours Being Taken	
Credit Hour Range	0 - 29

Table 1: Demographic Characteristics of Survey Respondents

⁵ 9.7% of the respondents (n=118) answered with “Prefer not to respond” to this question, a noteworthy amount.

Race and sex demographics from the AUBBS were compared from data gathered from the Case Western Reserve University Common Data Set to generate Figures 1 and 2. As shown from these graphs, the survey somewhat over-represents the non-Hispanic White population, as well as the female population. However, it is important to note that the Common Data Set is lacking race/ethnicity data for over 600 students; the inclusion of accurate data for these students would affect how well this race data represents the general CWRU population.

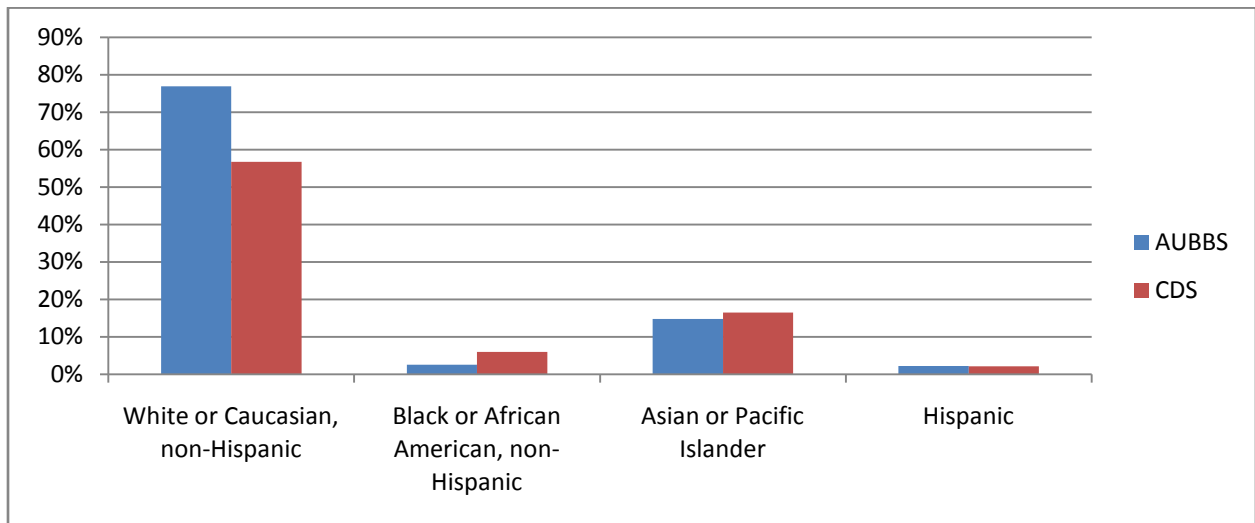


Figure 1: Comparison of AUBBS and CWRU Common Data Set Racial Data

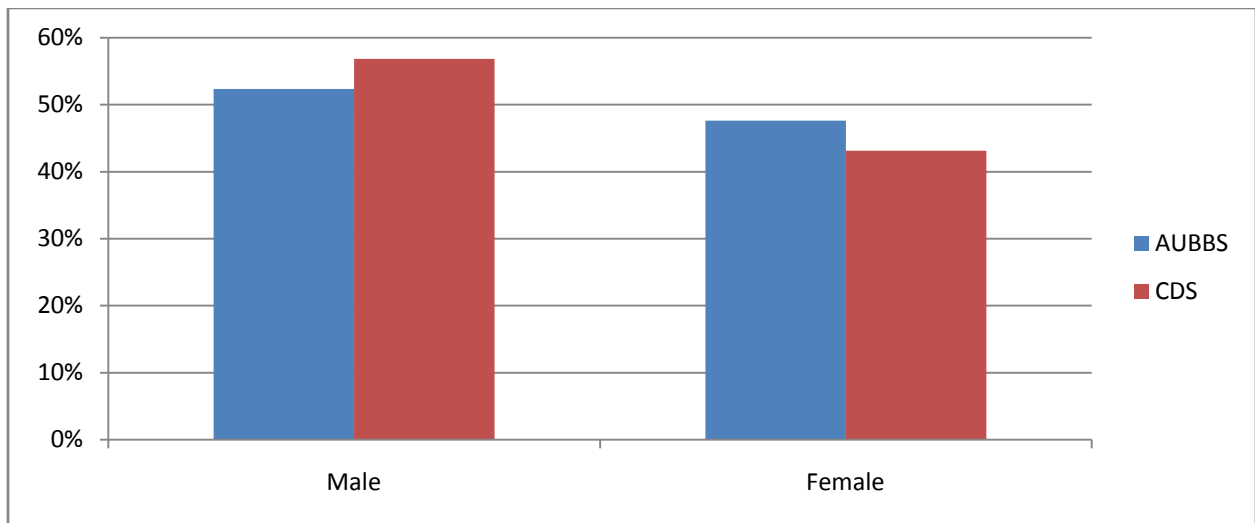


Figure 2: Comparison of AUBBS and CWRU Common Data Set Sex Data

Results

Age of initiation and drinking behavior over the past 30 days

Several questions on the AUBBS gauged current student drinking behaviors. For this section, students were told to consider a drink to equal one 12 oz. beer, one 4 oz. glass of wine, or one 1 oz. shot of 80 proof or higher liquor. Binge drinking was defined as having 5 or more drinks (for males) or 4 or more drinks (for females) in two hours or less, adopting the standard established by the National Institute for Alcohol Abuse and Alcoholism (“What colleges need to know” 2). A question on age of initiation excluded respondents who denied any alcohol usage in their lifetime from further measures and populated appropriate responses in the final data set.

Figure 3 shows a breakdown of the self-reported initiation age from survey respondents. Of the respondents, 17.3% (n=208) denied ever having consumed alcohol, excluding small amounts for religious ceremonies. Of the remaining, only 3% (n=36) initiated at or above the current minimum legal drinking age in the United States of America (set by state law at 21 years old in every U.S. state).⁶

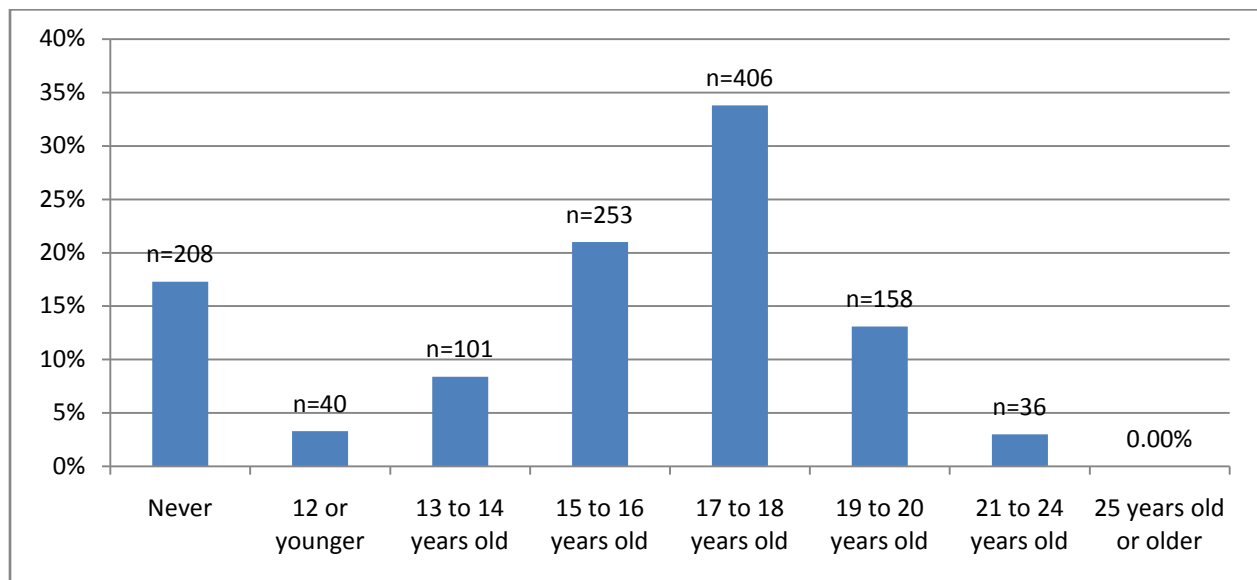


Figure 3: Reported Age of Alcohol Initiation among CWRU Undergraduates

⁶ It is possible that initiation took place in a locale with a lower MLDA or prior to the creation of the current MLDA.

Figure 4 below shows student responses to questions regarding their past 30 day drinking behavior. The categories are number of days at least one drink of alcohol was consumed, the number of days the student binged according to the above NIAAA definition, the number of days a drinking game was played, and the number of days a student vomited or passed out from alcohol usage.

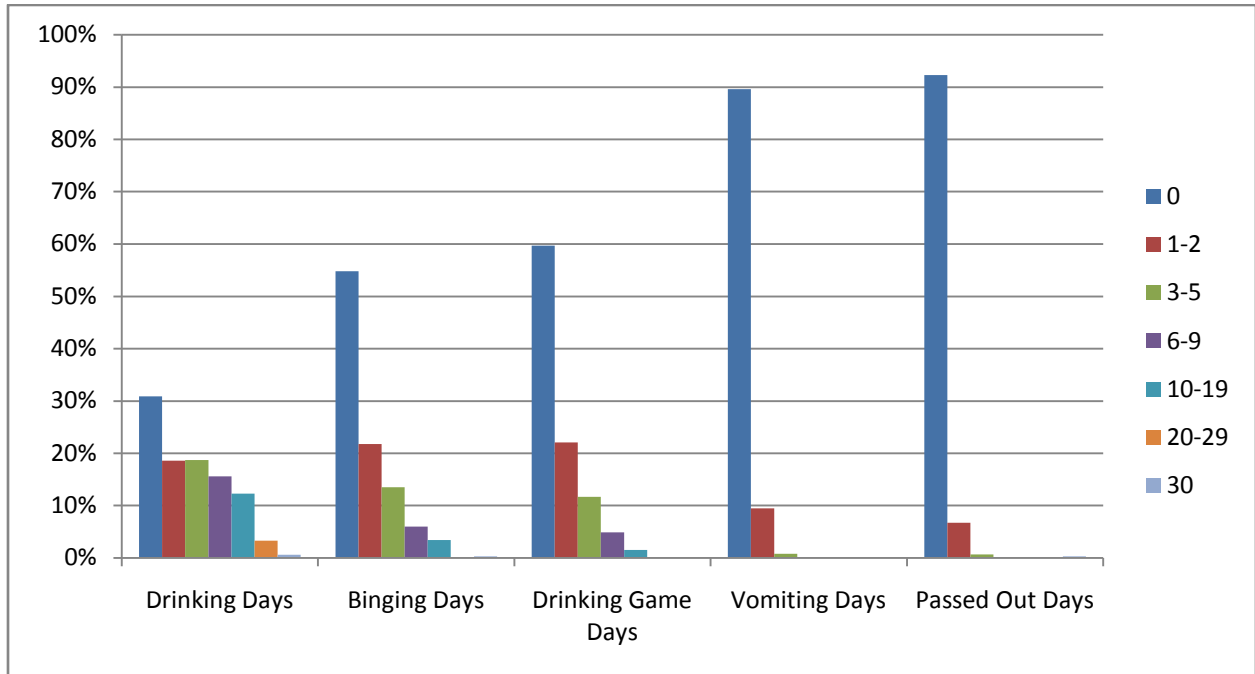


Figure 4: Past 30 Day Alcohol Usage Among CWRU Undergraduates

Notably, these results indicate that a majority of respondents consumed an alcoholic drink at least once in the past 30 days, and that binge drinking and participation in drinking games is frequent among the undergraduate population. This supports prior national research suggesting drinking among college students is highly prevalent; only approximately one-third of the respondents (30.9%, n=369) denied drinking alcohol in the past 30 days. This is despite the fact the underage survey sample (all of whom are prohibited from drinking alcohol) is much higher (n=755), suggesting underage drinking is also prevalent at CWRU. Figures 5 & 6 explore the underage drinking rates in more detail by examining the underage respondents as a subgroup

of the total survey population.

Of the underage respondents, only 23.4% denied having tried alcohol, meaning roughly 3 out of every 4 underage survey respondents had tried alcohol at least once in their life. As depicted in both Figures 3 and 5, the most common age range for alcohol initiation is the 17-18 year old bracket, which corresponds with the average age of all first-year, first-time students at CWRU (“Common Data Set” F-1). This may indicate most CWRU students have their first experience with alcohol while beginning studies here, although this age range also overlaps with the final year of high school for most students.

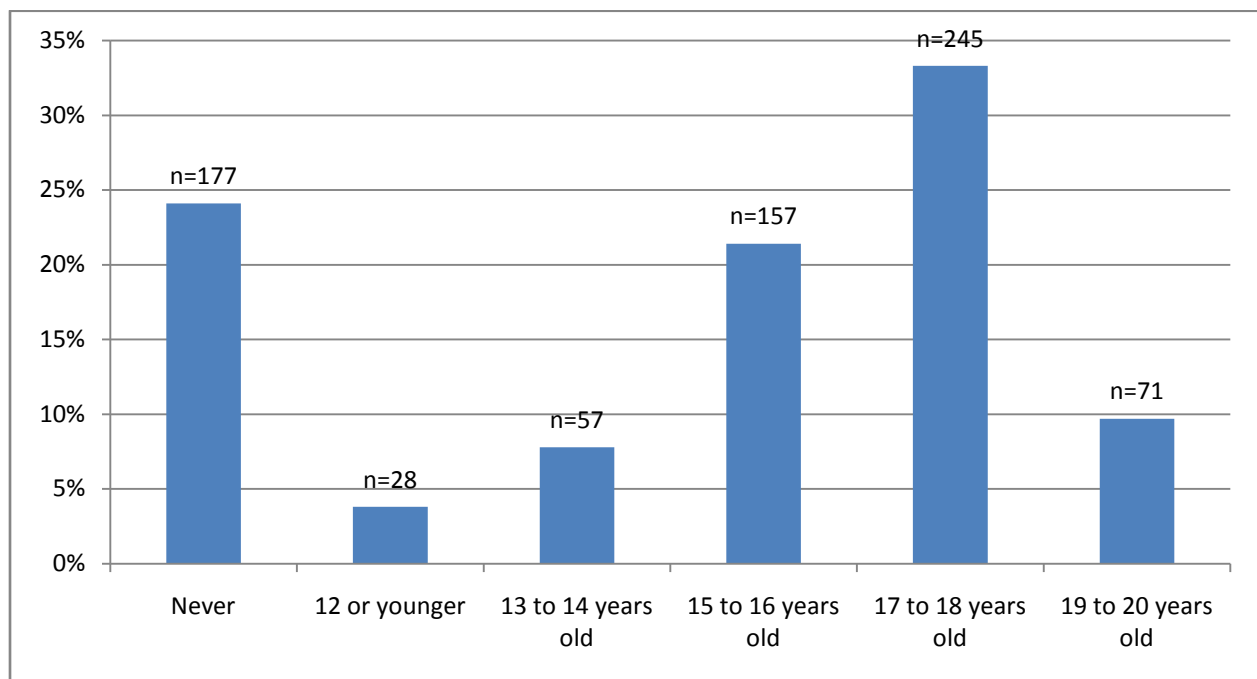


Figure 5: Reported Age of Alcohol Initiation Among CWRU Undergraduates under 21 years of age

Figure 6 compares the under-21 and over-21 age groups in the five major measures of past 30 day alcohol usage described originally in Figure 4. This figure presents the total percentage of students who have engaged in the specified behavior, even once, in the past 30 days. As may be expected, more of the population over 21 had participated in all of the alcohol-related measures over the past 30 days. However, the difference between the over 21 and under

21 populations in more severe past 30 day measures of alcohol consumption, such as vomiting and passing out due to alcohol, was smaller than the difference between more general measures such as simple consumption or bingeing. Chi-square testing revealed an association between age and consumption ($p < .001$), age and binge drinking ($p < .001$), and age and participation in drinking games ($p < .05$); there was no significant correlation between age and the other two measures. This may suggest that the minimum legal drinking age prevents drinking and bingeing, but is less successful at reducing the deleterious effects of alcohol consumption.

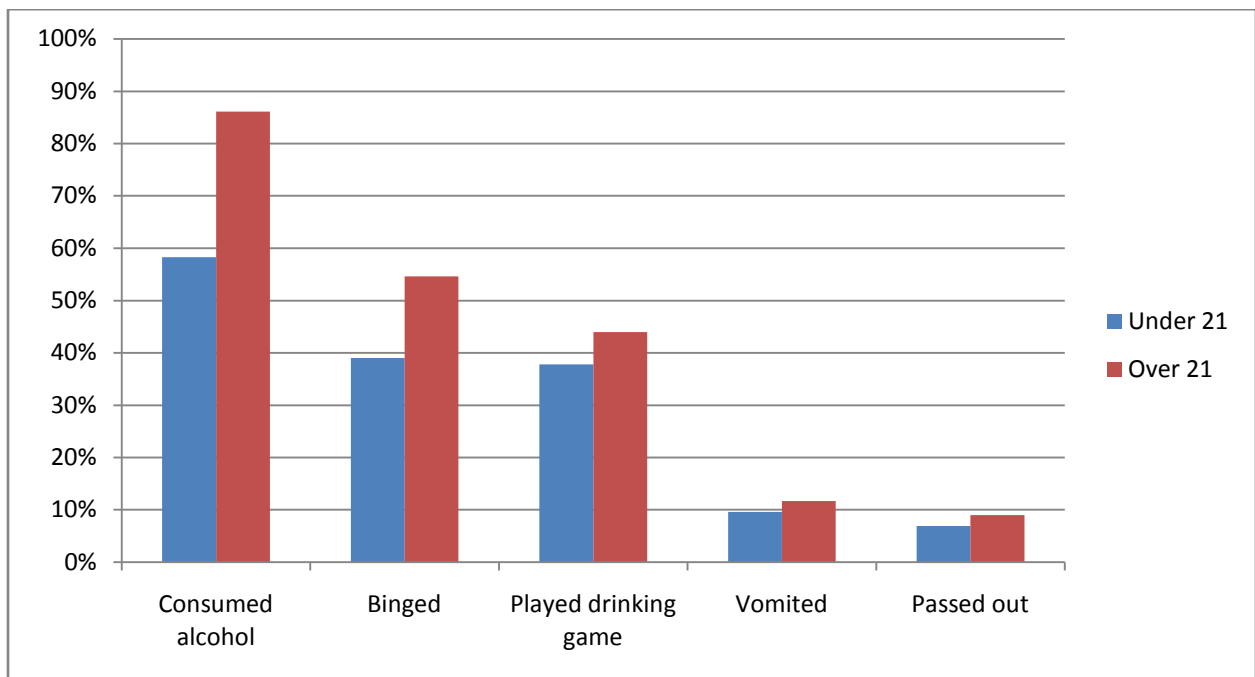


Figure 6: Comparison of Under 21 and Over 21 Age Groups for Past 30 Day Measures

Sex was correlated with whether or not a student binged in the past 30 days ($p < .01$) and whether or not he or she had passed out in the past 30 days ($p < .05$). In each case, a larger percentage of male students reported these events than female students. Notably, the same percentage of male and female students had consumed alcohol in the past 30 days (approximately 69% for both sexes). Year in college was also positively correlated with drinking ($p < .001$), bingeing ($p < .001$), and drinking game participation ($p < .05$). Since age and

year in college are inherently related, these correlations are unsurprising.

Residency strongly affected past 30 day alcohol usage, with correlations observed for alcohol consumption, binge drinking, and playing drinking games ($p < .001$). In general, students living in off-campus or Greek housing were more likely to have engaged in any of these three activities than students living elsewhere. Notably, students living in Greek housing had the highest rate of individuals participating in drinking games in the past 30 days. Figure 7 shows the breakdown of residency and past 30 day alcohol usage.

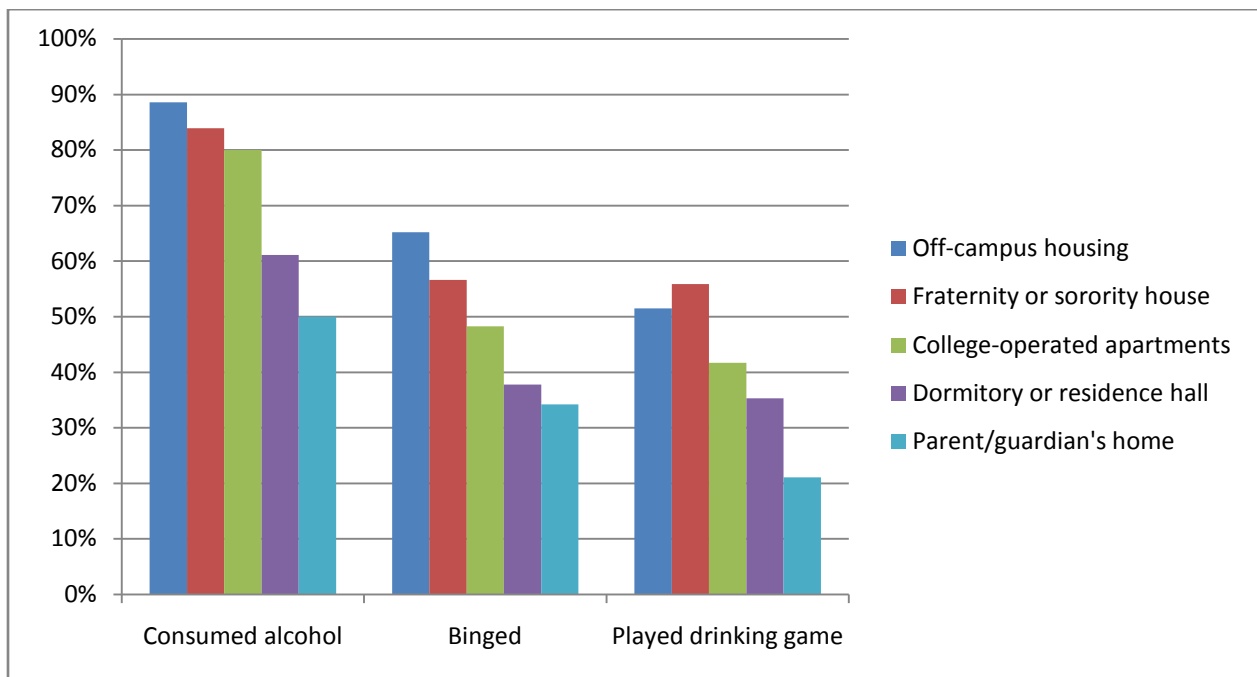


Figure 7: Breakdown of Significant Correlations between Residency and Past 30 Day Alcohol Usage

Greek membership was correlated with alcohol consumption, binge drinking, and drinking game participation for the past 30 days ($p < .001$). In each case, Greek students had a higher percentage of participation in these activities than non-Greek students. It is important to note that first-year students cannot fully participate in the Greek system at CWRU. Male students can pursue Greek membership in their first semester while female students must wait until their second semester; however, residency in Greek housing is restricted to second-year and

older students. Since first-year students cannot fully participate in the Greek system, it is important to control for the effects of age/year in college in examining this correlation. However, when students in their first year are excluded, the same correlations appear at the same significance level, indicating that the association is independent of the difference between first year students and the rest of the student body.

GPA was also associated with past 30 day alcohol consumption ($p < .01$), binge drinking ($p < .001$), and drinking game participation ($p < .001$). In general, as the percentage of individuals reporting these behaviors increased, the GPA decreased, as shown in Figure 8. The chosen ranges of GPA below are quartiles of the reported GPA dataset.

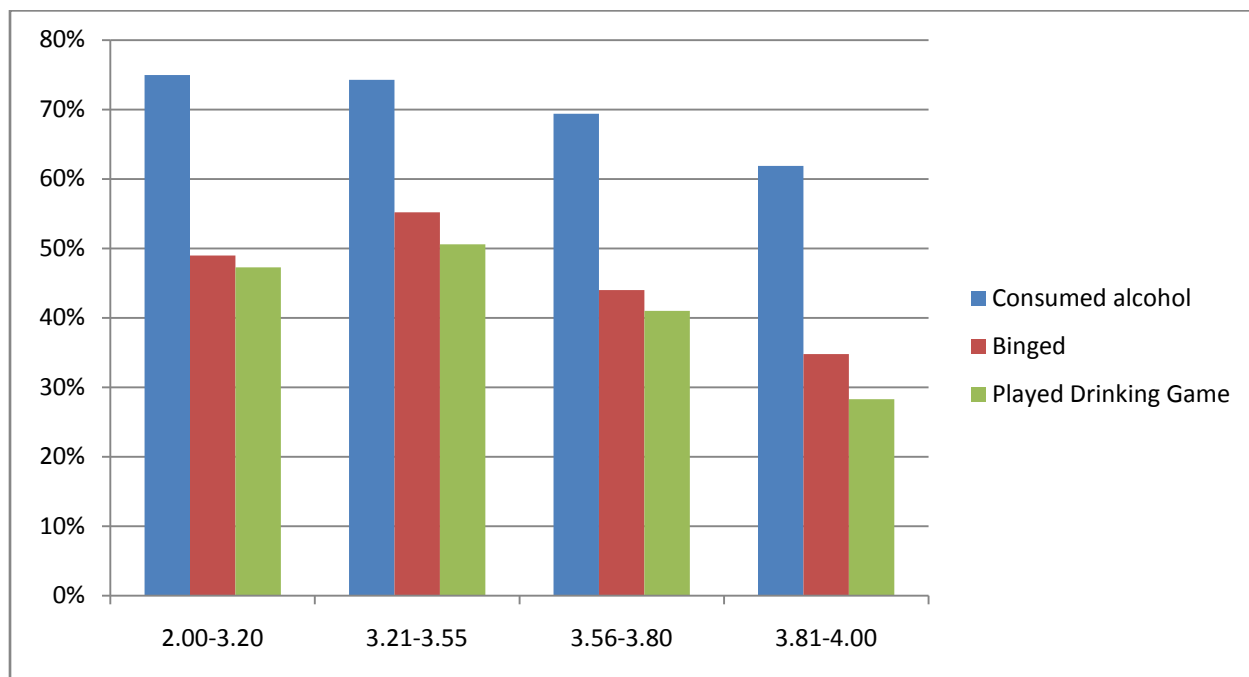


Figure 8: Significant Changes in Past 30 Day Alcohol Use vs. Student Grade Point Average

Because first-year students may have higher cumulative GPAs than their peers (since they would only have completed one semester of grading when the AUBBS was administered), it is possible that the results above are reflective of lower bingeing and drinking game percentages in the younger population. However, no significant association was observed between age and

GPA, which eliminates this as a possible source of a spurious relationship.

Average and past year alcohol usage

Six questions on the AUBBS addressed drinking behavior on larger timescales. Three questions asked respondents for averages without giving specific timeframes, while the remaining three questions asked for alcohol usage and outcomes over the past year. Figure 9 shows the breakdown of average drinking and bingeing responses. As can be seen, a majority of respondents stated that they never engage in binge drinking (43.8% or n=522), though 30.3% (n=361) report bingeing twice a month or more. Drinking alcohol an average of 2-4 times a month was the most common drinking rate reported, with 29.4% (n=351) of the respondents (or roughly 1 in 3) drinking at this rate.

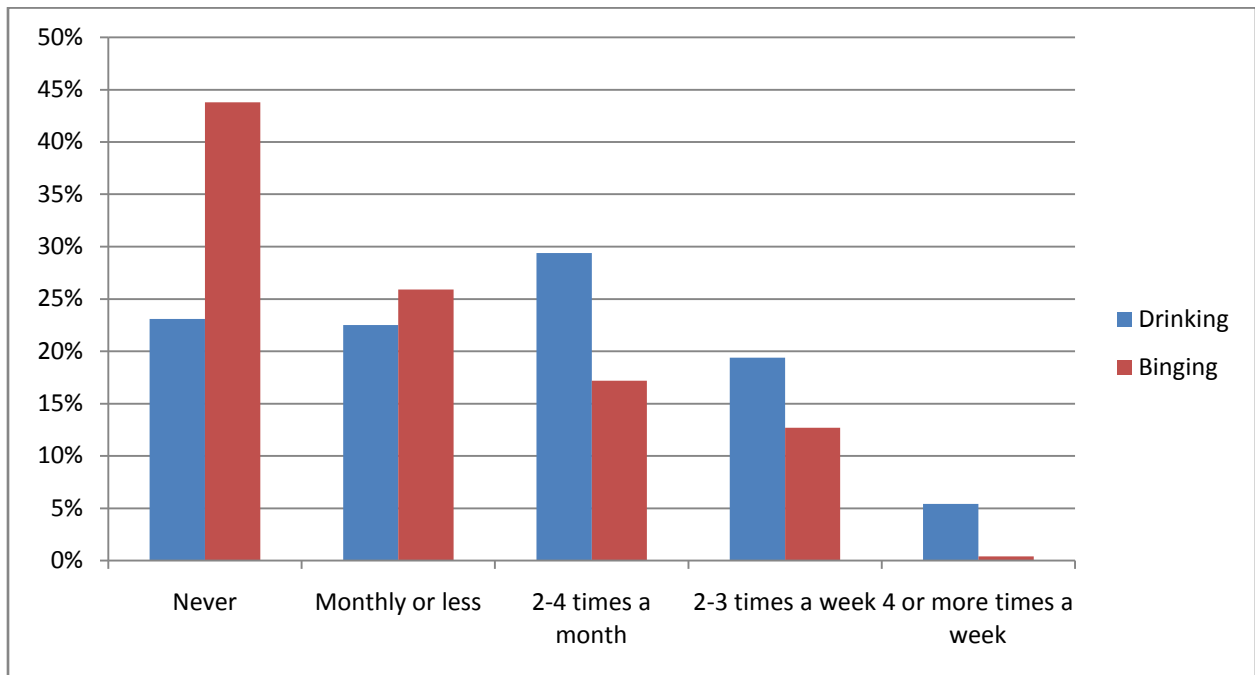


Figure 9: Reported Average Drinking and Bingeing Rates, CWRU Undergraduates

Students also reported the average number of drinks they consumed per drinking day; only students who reported having consumed alcohol at least once in their life were included in

this measure. Of those students indicating they have tried alcohol at least once in the past, 70.2% (n=676) stated they consumed 4 or less drinks per drinking day; 5% (n=48) reported consuming 10 or more drinks per average drinking day. The small amount of drinkers who indicated consuming 10 or more drinks per drinking day may be explained by underage students engaging in heavy drinking infrequently, in an effort to take advantage of relatively rare opportunities to consume. Chi-square testing revealed an association between age and average drinking rate ($p < .001$) and age and average number of drinks per drinking day ($p < .001$). Table 2 elaborates on this association.

Age	Percentage of respondents drinking two times per week or more, on average	Percentage of drinkers consuming five or more drinks per drinking day, on average
18	10.00%	42.60%
19	16.70%	34.90%
20	18.20%	33.30%
21	38.50%	23.60%
≥22	39.60%	19.80%

Table 2: Age Effects on Average Drinking Frequency and Amounts, CWRU Undergraduates

As shown in Table 2, as age increases, the number of students who drink two or more times a week increases. However, the percentage of drinking students reporting consuming five or more drinks per drinking day decreases as age increases. This seems to suggest that older students drink more frequently, but in less quantity, while younger students drink less frequently and in greater quantity. Average drinking days also varied by sex ($p < .001$), year in college ($p < .001$), residency ($p < .001$), Greek status ($p < .001$), and GPA ($p < .001$); average number of drinks consumed per drinking day varied by year in college ($p < .001$), sex ($p < .001$), and GPA ($p < .001$). In both of these cases, variance by year in college is expected because an association between age and the variable in question is also present.

Students reported past year averages for passing out, vomiting, and receiving medical

care. Only 1.3% (n=16) reporting having received medical care due to drinking in the past year, despite higher numbers showing signs of alcohol intoxication such as vomiting or passing out. Vomiting an average of “Monthly or less” for the past year was reported by 35.3% (n=419) of the respondents, while 16.2% (n=193) reported passing out an average of “Monthly or less” in the same year. However, relatively few students reported vomiting more frequently than “Monthly or less” (1.8%, n=21) or passing out more frequently than “Monthly or less” (1.6%, n=18). These numbers suggest that serious signs of alcohol intoxication among the undergraduate population do occur, but only occasionally for most undergraduates. They also indicate only a very small amount of the population showing signs of serious alcohol intoxication (those vomiting and passing out) are receiving proper medical care for these symptoms, as is warranted by existing residential policies. Current CWRU protocols for residential staff members warrant medical evaluation of any student showing signs of intoxication accompanied by vomiting.

Past year averages of vomiting due to alcohol usage were correlated with Greek status ($p < .01$); this is described more thoroughly in Figure 10. A slightly higher percentage of non-Greek respondents reported vomiting from alcohol on a regular basis (2-4 times a month), but a much larger percentage of Greek respondents reported vomiting from alcohol an average of “Monthly or less”. It is difficult to interpret these results in light of the relatively small respondent population (of either group) who reported vomiting more than “Monthly or less” on average. However, it is one of multiple signs uncovered in this study suggesting Greek students are more likely to drink and to suffer deleterious effects from their drinking.

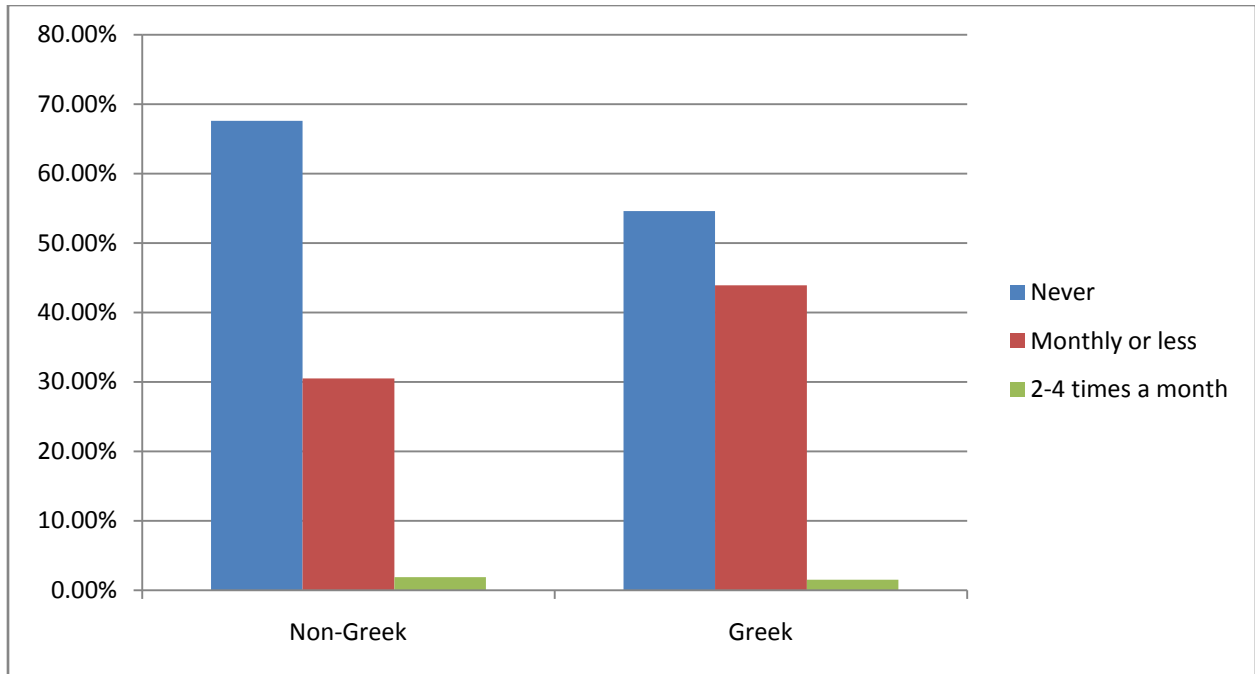


Figure 10: Past year vomiting averages for Greeks and non-Greeks, CWRU

Further investigation of the difference between Greek and non-Greek students revealed significant differences in alcohol usage between these two populations. Table 3 summarizes the differences in “regular drinking” among these two populations, where regular drinking is defined as consuming alcohol 2 or more times per month. As shown in Table 3, more Greek students are “regular drinkers” than non-Greek students, and more underage Greek students are “regular drinkers” than non-Greek students ($p < .001$). Chi-square testing demonstrated that these differences are statistically significant at the $p < .001$ level.

Percentage of...	Overall	Among Greek students	Among non-Greek students	χ^2 Sig.
Students who regularly drink	54.10%	67.20%	47.40%	$p < .001$
Underage students who regularly drink	42.40%	56.00%	35.60%	$p < .001$

Table 3: Drinking Rates Among Greeks vs. non-Greeks (Regular drinking defined as >2 times per month)

Policy enforcement issues

Two questions asked students whether or not they had encountered enforcement figures (“Resident Assistants” or RAs) engaging in underage drinking, and the venue that drinking took place in (“on campus” or “off campus”). The results are described in Figure 11. For these questions, on campus was defined as “all academic buildings, all residence halls operated by the school, and all Greek housing”. “Prefer not to respond” is reported here because a sizable quantity of respondents declined to answer these questions.

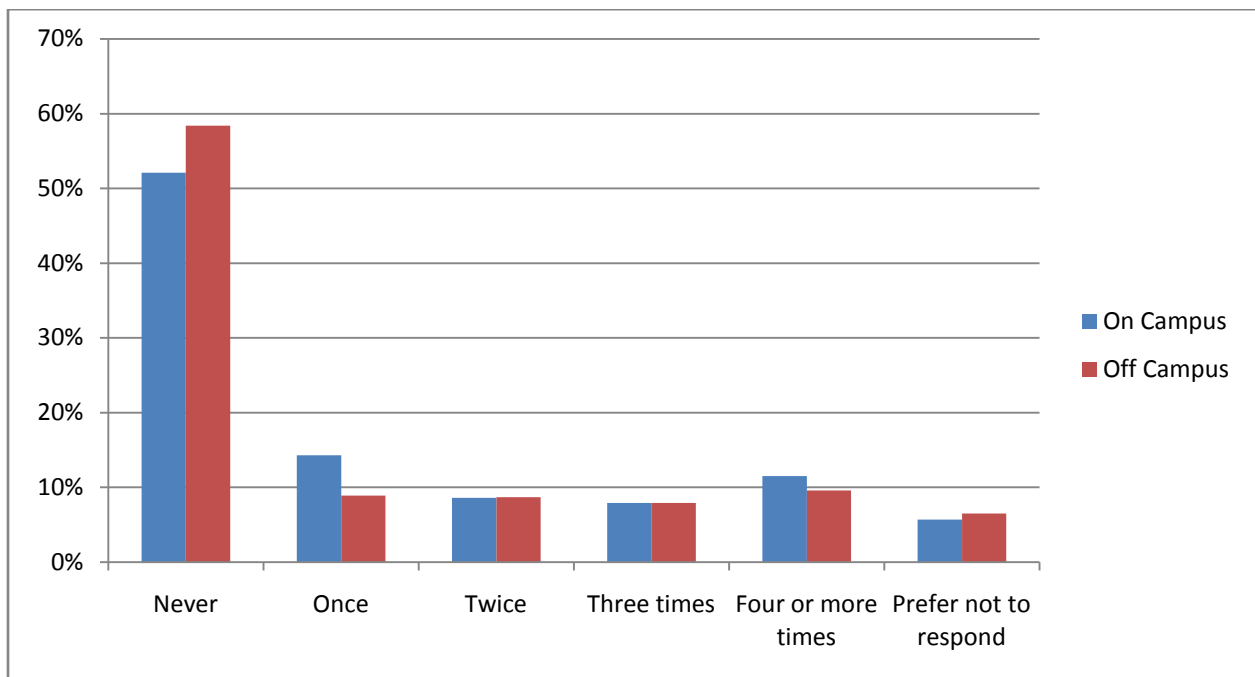


Figure 11: Encounters with Underage RA Drinking On-Campus and Off-Campus, CWRU

In order to clarify how many students have encountered an underage RA drinking, the percentage of students having ever encountered an underage RA drinking, both on-campus and off-campus, was calculated. Since some students have only encountered an underage RA drinking in one of the two possible venues, the final percentage reporting having encountered an underage RA drinking (52.8%, n=584) exceeds the total percentage reporting such encounters for either venue. This measure excludes as missing those respondents who answered “Prefer not to

respond”, per the standard method described in the Demographic Data section.

The survey instrument was originally designed to allow for an open numerical response to be attached to “Four or more times” for each of these questions, to better capture the actual number of encounters. However, the survey software allowed for any response to be entered into this field. This had the unintended consequence of creating an open-response text field where students could share their thoughts regarding underage RA drinking. Presenting the entirety of this data would be extremely challenging, so here is a small selection of some of the responses gathered from this accidental open-response field. Spelling and punctuation have been corrected as necessary and appropriate.

- “I often see RAs (both underage and otherwise) at parties.”
- “Happens all the time. They are human and want to have a life too.”
- “Happens all the freaking time.”
- “I dated one. Saw her drunk a bunch.”
- “Almost every time I drink.”
- “I’m an RA. This happens.”
- “RAs drink with their residents, but are much more responsible about it than school officials like to think.”
- “...the RAs frequently drank, including the alcohol they had confiscated from other students.”
- “I drink with one of my good friends who is an underage RA.”
- “Some of the people I regularly drink with are RAs.”
- One student reported the name of a current staff member, which is not reproduced here for ethical reasons.
- Several reported numbers such as “At least 10”, “Over 10”, “At least 8 times”, “Too many to count”, and so forth.

While the above results are not representative (by their very nature) they offer an interesting window into student beliefs and attitudes regarding underage consumption by Resident Assistants. Clearly, underage consumption among the Resident Assistants at CWRU is a serious problem. Even if the 52.8% of survey respondents who have encountered an underage RA drinking are not representative of the actual percentage in the population, the sheer absolute number of students (n=584) who have encountered RAs engaging in illegal behavior is serious

enough. However, there was a distinct lack of anger toward underage RAs in the open-response comments, suggesting that their behavior is tolerated with little regret. The tone of the student comments above largely seems to be factual, rather than upset or accusatory.

It is important to address the possibility of bias in these results. By the very nature of the Resident Assistant role, some students will view them with disdain. RAs are charged with enforcing policies that are not always popular. Because of this fact, some students may feel strong antipathy towards RAs. This antipathy could easily manifest itself in exaggerated descriptions of RA misconduct. Further, the open responses given in the example above seem to make little distinction between those staff members who are underage and those who are not. Student staff members who are over the minimum legal drinking age are welcome to consume alcohol in moderation, consistent with existing institutional policies. If the respondents to this survey did not discriminate between RAs who are above the legal drinking age and RAs under the legal drinking age, this percentage may overestimate the prevalence of encounters with underage RAs drinking alcohol.

The percentage of students reporting lifetime encounters with underage RAs drinking was associated with several other student characteristics, including year in college ($p < .001$), residency ($p < .001$), having been documented for alcohol usage at least once ($p < .001$), and Greek status ($p < .001$). Third-year students were most likely to have had at least one encounter with an underage RA drinking (63.4% of third-year students, $n=163$), while first-year students had the lowest percentage of encounters (37.5% of first-year students, $n=107$). This is not surprising; it is expected that a lifetime measure of encounters will show a correlation with a temporal measure (in this case, year in college). However, it is still telling that by the middle of their second semester at CWRU, over a third of the responding first-year students had encountered an

underage RA drinking somewhere on- or off-campus.

Students who had been documented for alcohol usage in the past were more likely to have encountered an underage RA drinking than students who had never been documented. 73.3% (n=162) of the students who reported having been documented for alcohol usage in the past had also encountered an underage RA drinking, compared to 47.7% (n=420) of those students who had not been documented. This may be explained if students who drink more often are more likely to both encounter underage RAs drinking and to be documented for alcohol consumption, linking these two variables through the common denominator of alcohol consumption. There are, however, serious questions on the effectiveness of the Student Conduct System when almost 75% of those who have been formally documented for alcohol consumption have also encountered an underage RA drinking.

Greek students were more likely to have at least one encounter with an underage RA drinking than non-Greeks. 67.6% of Greek students reported encountering an underage RA drinking at least once (n=252), compared to only 45.4% of non-Greek students (n=329). Residency was also correlated with encountering an underage RA drinking at least once, with students living in off-campus and Greek housing being more likely to have encountered an underage RA drinking at least once. Table 4 describes this distribution.

Percentage of students encountering underage RAs drinking by category of residence	
Fraternity or sorority house	72.4% (n=97)
Off-campus house or apartment	63.2% (n=117)
College-operated apartment buildings	58.5% (n=31)
College dormitory or residence hall	47.0% (n=325)
Parent/guardian's home	27.8% (n=10)

Table 4: Residency and Lifetime Underage RA Drinking Encounters

Here, it is interesting to compare the results in Table 4 with the results described previously in Figure 7. The two categories of residence which showed higher levels of past 30

day alcohol consumption as described in Figure 7 also showed higher levels of students who reported seeing an underage RA drinking. The results in Table 4 may suggest that underage Resident Assistants consume alcohol in off-campus and Greek venues more frequently than other venues. However, caution should be exercised in reading too much into these results; they describe only where the respondents live, not where or if they drink.

Further, the similarity between results described in Figure 7 and Table 4 may simply indicate that consumption of alcohol in general is correlated with lifetime encounters with an underage RA drinking. Chi-square testing confirmed this, demonstrating a correlation between average frequency of drinking and lifetime encounters with an underage RA drinking for both on-campus and off-campus measures ($p < .001$). While the results regarding underage RA drinking are provocative and worthy of further study, it is impossible to deduce a complete causal picture from the results presented herein. Despite this, however, the results also illuminate serious issues with underage consumption among CWRU Resident Assistants.

Further results will show correlations between encounters with underage RA drinking and various student attitudes. When evaluating these correlations it is important to keep in mind that general drinking is also correlated with these encounters, and student drinking behaviors may affect student attitudes towards existing institutional priorities (and vice versa).

Attitudes and beliefs regarding enforcement

Seven questions on the AUBBS dealt with student attitudes toward existing CWRU policies regarding alcohol. Students were asked to rank their agreement or disagreement with given statements on a five-point scale: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, or Strongly Agree.

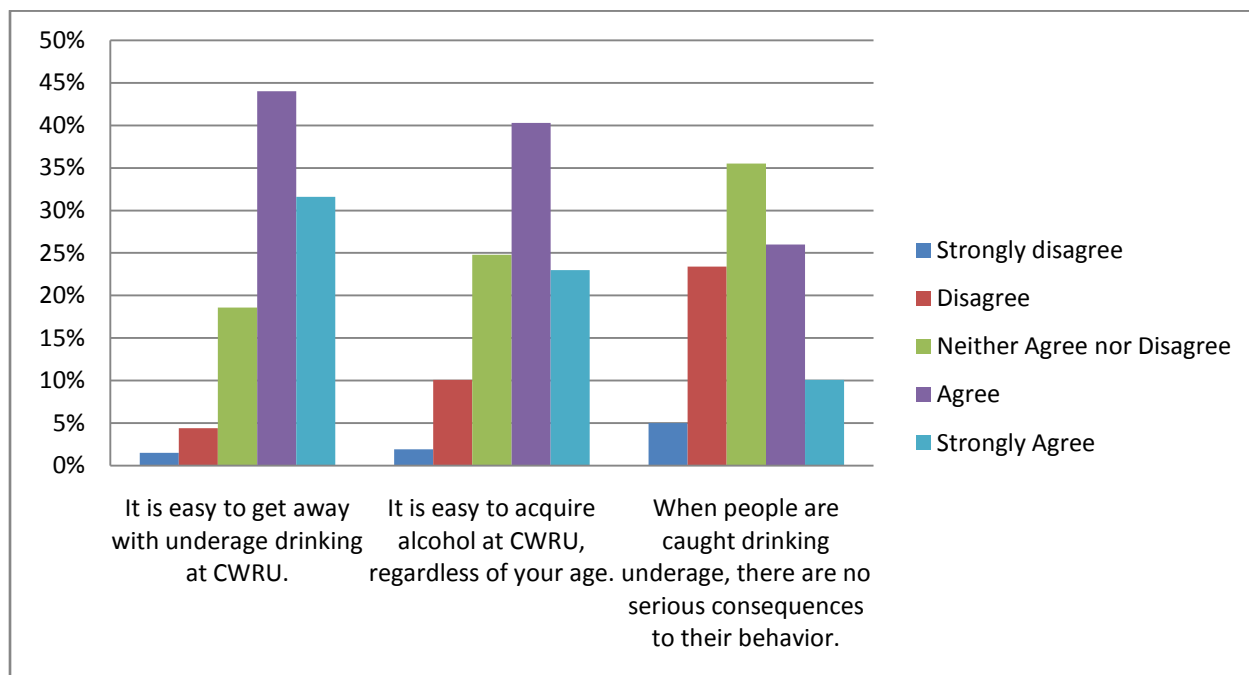


Figure 12: Student Attitudes toward Existing Alcohol Policies, CWRU

The first three questions (described in Figure 12) deal with the availability of alcohol on campus and the seriousness of existing consequences for underage consumption. As shown, a majority of students believed it is easy to acquire and consume alcohol on campus, regardless of existing policies. However, students appeared to be generally divided on whether or not there were serious consequences to underage consumption.

Chi-square testing revealed that students who had encountered an underage RA drinking were also more likely to believe it easy to drink underage at CWRU ($p < .05$) and more likely to believe it easy to acquire alcohol at CWRU regardless of age ($p < .001$). Testing also showed a potential correlation between encountering an underage RA drinking and believing there were no serious consequences to underage drinking (at a p-value of .10 or less); however, further data reduction and analysis could not reduce the p-value below .05. Figures 13 and 14 show how students who had encountered an underage RA drinking differed from those who did not.

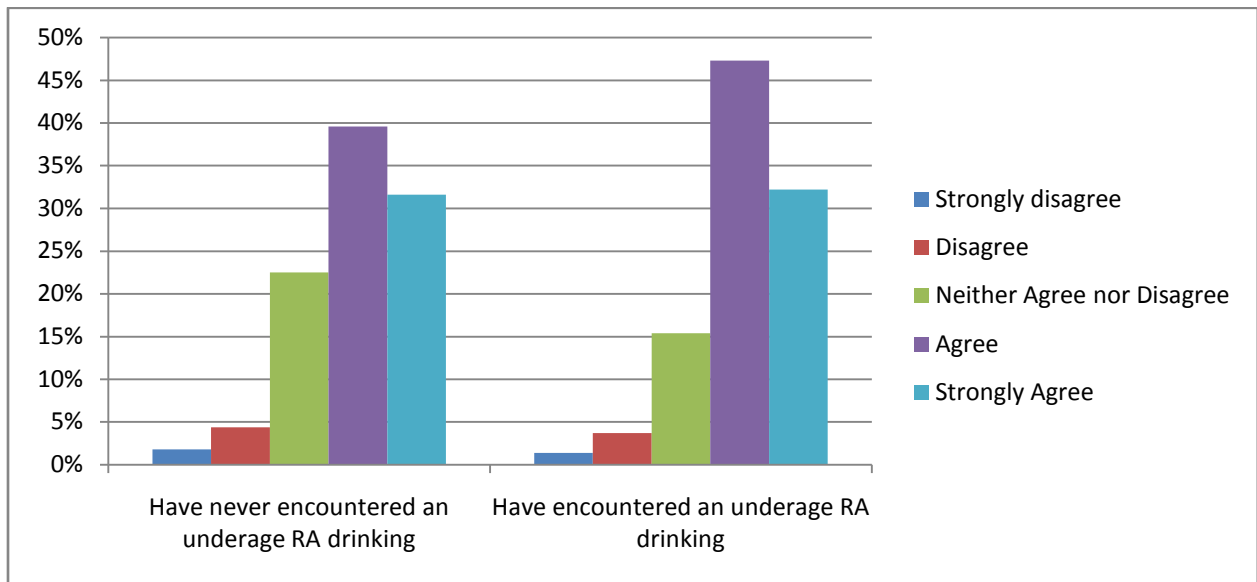


Figure 13: “It is easy to get away with underage drinking”
Breakdown by encounters with authority figures drinking underage

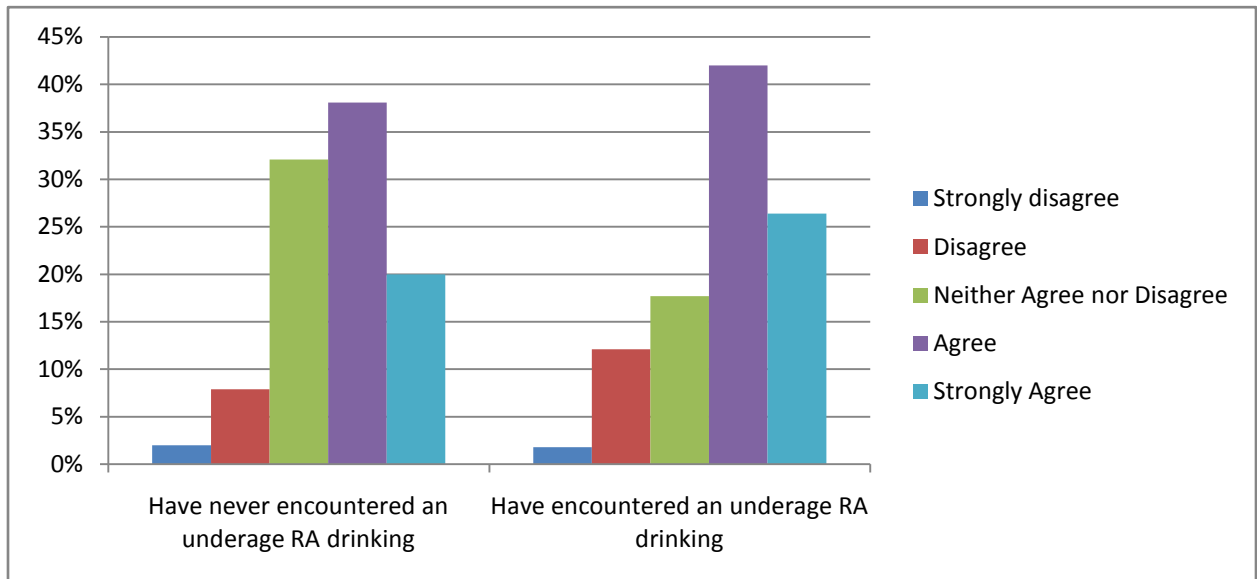


Figure 14: “It is easy to acquire alcohol regardless of age”
Breakdown by encounters with authority figures drinking underage

Greek students were more likely to agree it was easy to acquire alcohol on campus, regardless of age ($p < .01$). However, students who reported having been “written up” or documented by the Office of Housing, Residence Life, and Greek Life staff at least once since enrollment were more likely to disagree it was easy to drink underage ($p < .001$). They were also

more likely to disagree being caught drinking underage had no serious consequences ($p < .001$). This may suggest that students who are confronted about their drinking behaviors change their opinions about the practicality of these behaviors.

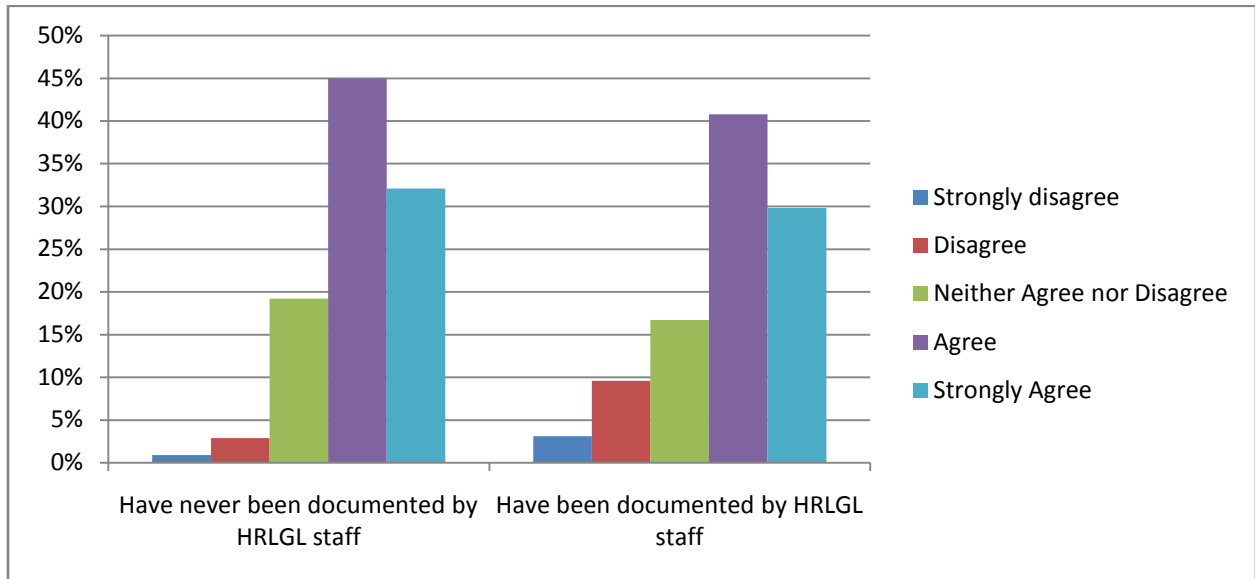


Figure 15: “It is easy to get away with underage drinking”
Breakdown by whether or not student has been documented by staff

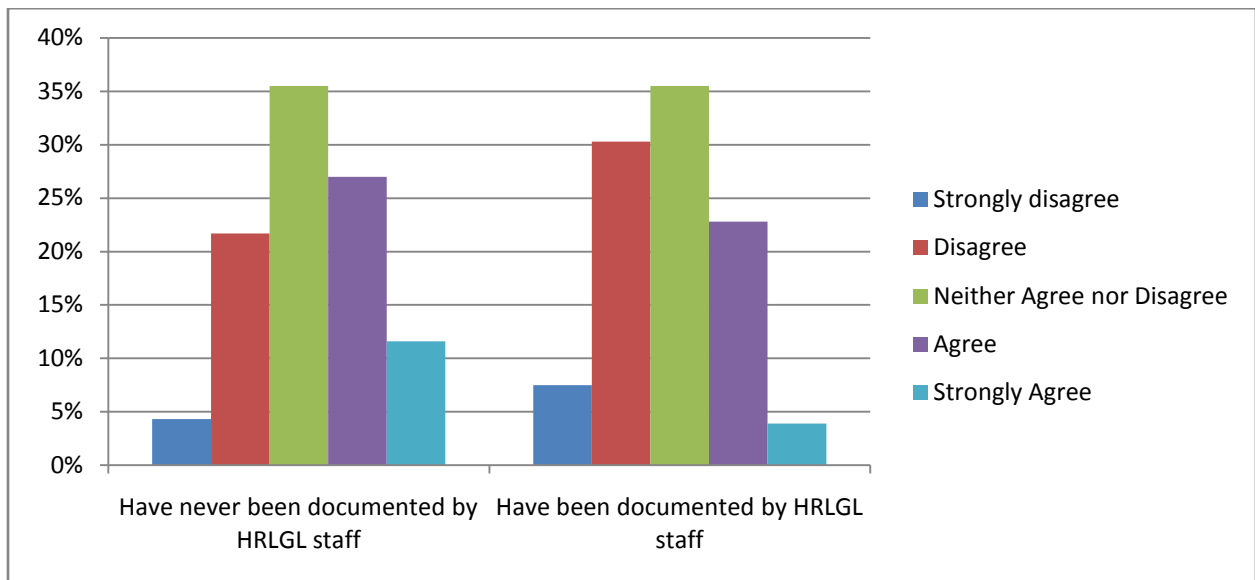


Figure 16: “There are no serious consequences to being caught drinking underage”
Breakdown by whether or not student has been documented by staff

Figure 17 describes questions dealing with student attitudes toward general institutional priorities regarding underage drinking. A majority of students believed the university should not

be concerned with underage drinking and should not do more to stop underage drinking on campus. This apathy seems to be consistent with reported student behaviors, which indicate that drinking is prevalent on campus.

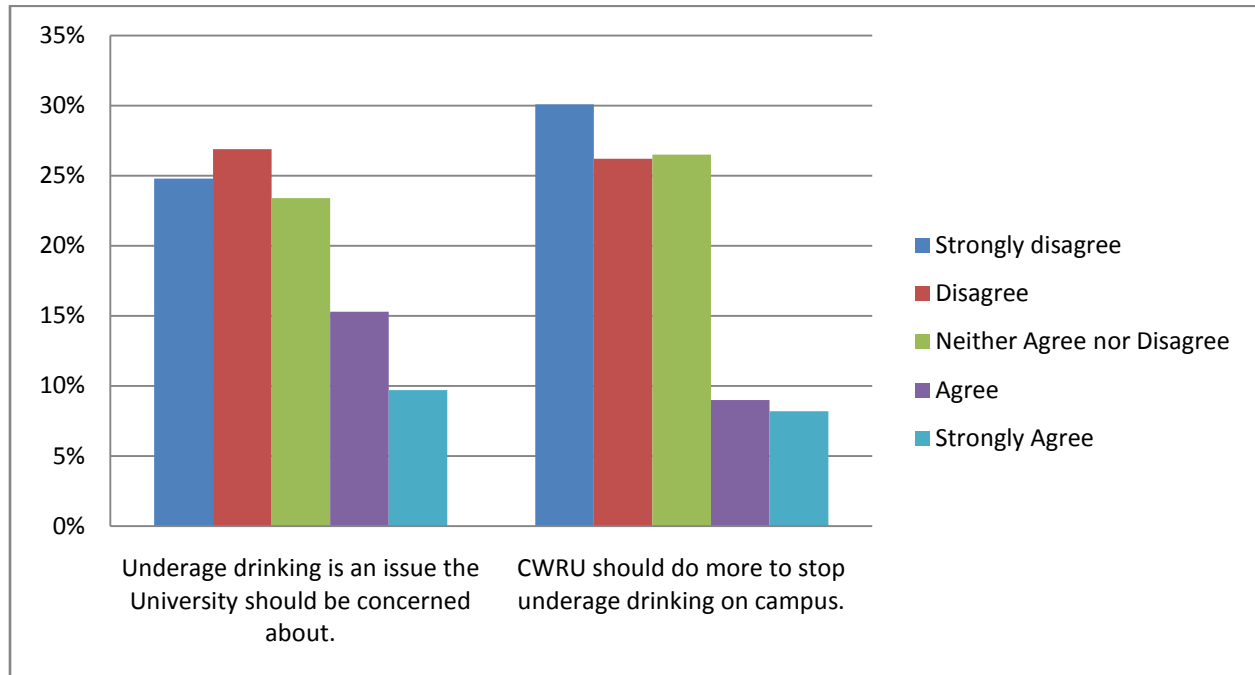


Figure 17: Student Opinions on Institutional Priorities, CWRU

Chi-square testing revealed that students who encountered an underage RA drinking are more likely to disagree that underage drinking is an important issue to the institution ($p < .001$) and that the institution should do more to stop underage drinking ($p < .001$). Greek students were also more likely to disagree that underage drinking is an important issue ($p < .05$) or that the institution should do more to stop it ($p < .01$). Students previously documented for alcohol consumption were more likely to disagree with both measures ($p < .001$) and differed strongly from the undocumented group, as shown in Figure 18 and 19. This is not surprising, but suggests that students are truthfully reporting whether or not they have been documented, lending credibility to this measure.

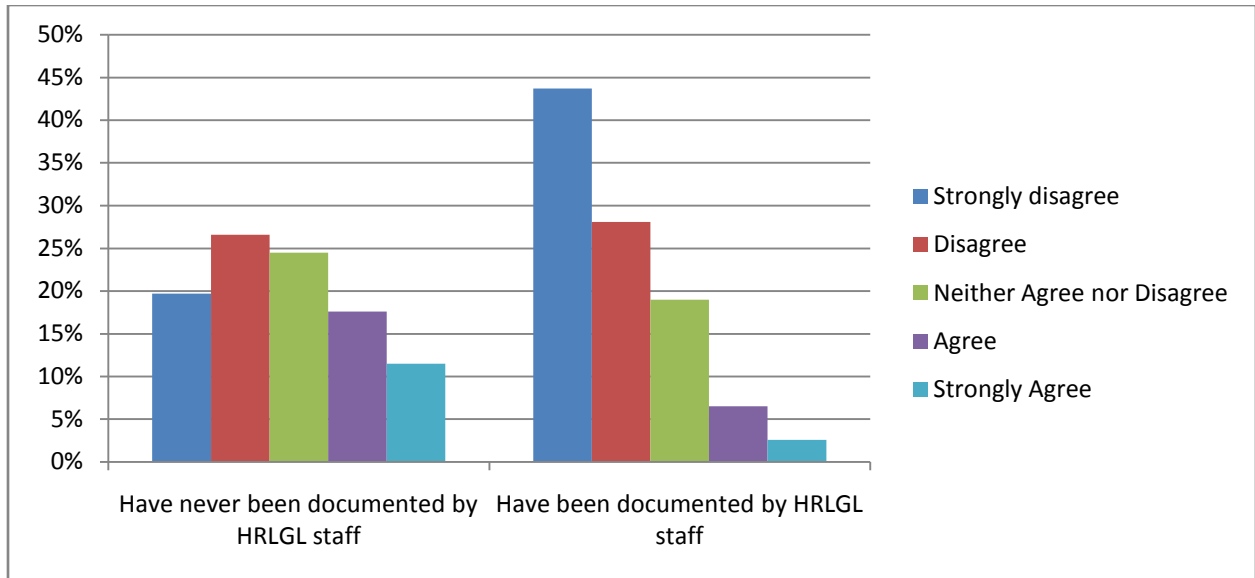


Figure 18: “The University should be concerned with underage drinking”
Breakdown by whether or not student has been documented by staff

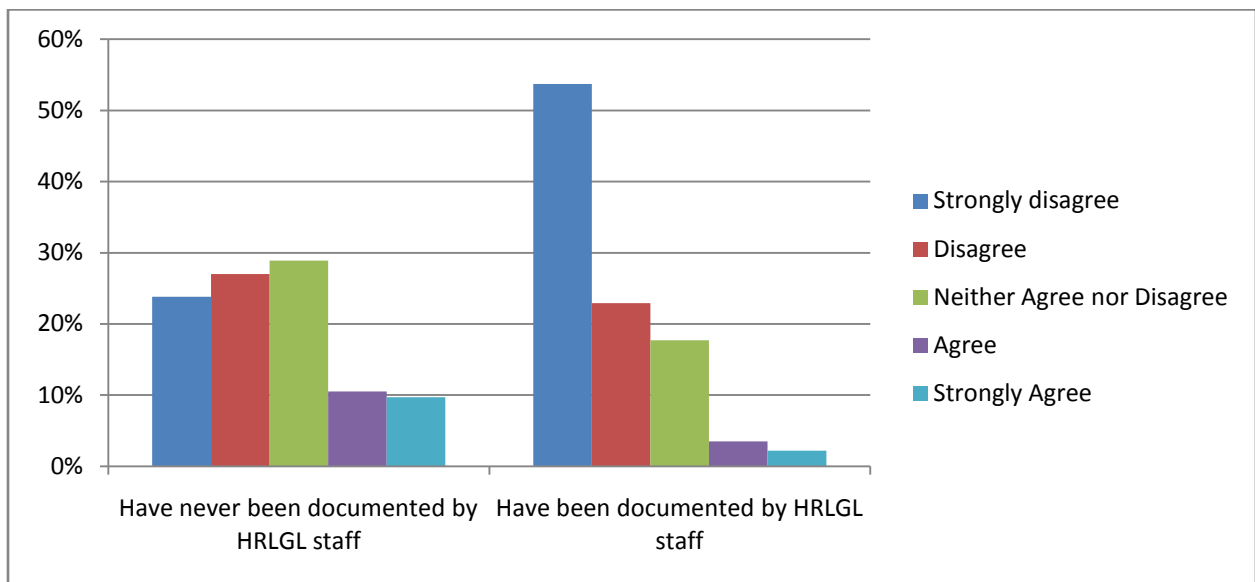


Figure 19: “The University should do more to stop underage drinking”
Breakdown by whether or not student has been documented by staff

The final two measures gauged student attitudes toward Resident Assistants. These questions are particularly relevant given the amount of students who reported encountering an underage RA drinking at some point since enrollment. As depicted in Figure 22, students do not believe engaging in or permitting underage drinking makes someone a good RA; however, the data suggests they are more reluctant to criticize a staff member for doing so.

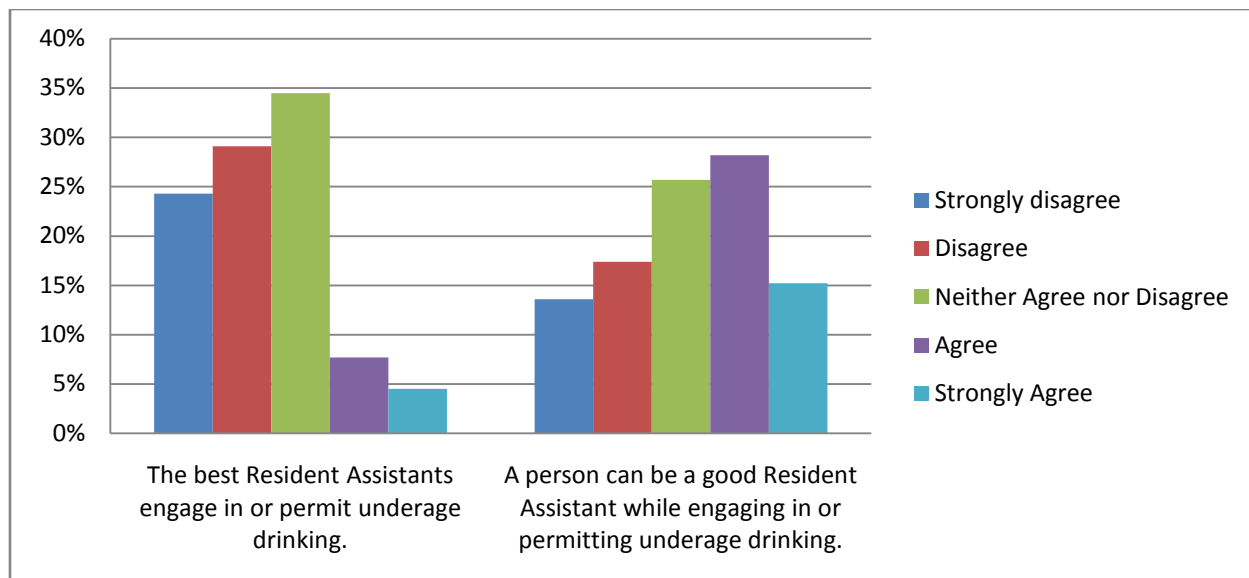


Figure 22: Student Opinions on Resident Assistant Ethics and Underage Drinking

Once again, encounters with underage RAs drinking were associated with these measures. Students who encountered an underage RA drinking were more likely to agree that the best staff members allow or engage in underage drinking ($p < .001$) and that someone could be a good RA while engaging in or permitting underage drinking ($p < .001$). Students who were documented for alcohol issues in the past were also more likely to agree with both of these statements ($p < .001$).

Beliefs on drinking culture at CWRU

The final questions of the AUBBS asked students to gauge the prevalence of several different categories of drinking behavior on campus. By comparing these percentages to the results of the AUBBS we can understand the accuracy of student beliefs regarding alcohol prevalence on campus.

Of the respondents, 97.9% ($n=1120$) stated they knew someone who had in the past or currently drank underage on-campus, while 96.7% ($n=1103$) stated the same thing for off-campus locations. Further, 75% ($n=844$) admitted to knowing someone who currently or in the

past possessed a counterfeit form of identification. (However, only 11.4% or n=129 admitted actually possessing such counterfeit identification, now or in the past). These statistics show that most students are aware of alcohol usage on campus; however, they do not provide information on how such knowledge may be skewed or incomplete.

Respondents were asked to estimate the percentage of all students at CWRU who regularly drink, the percentage of only underage students who regularly drink, the percentage of all Greek students who regularly drink, and the percentage of only underage Greek students who regularly drink. For the purposes of analysis, students who indicated they drink an average of 2-4 times a month or more are considered “regular drinkers”, as described above previously. T-tests were used to compare the mean student estimate with the values gained from the AUBBS. Results are summarized in Table 4.

	Mean of Student Estimates	AUBBS Results	p-value of difference
Percentage of students who regularly drink	58.53%	54.10%	p<.001
Percentage of underage students who regularly drink	50.78%	42.40%	p<.001
Percentage of Greek students who regularly drink	70.02%	67.20%	p<.001
Percentage of underage Greek students who regularly drink	64.74%	56.00%	p<.001

Table 4: AUBBS Percentages vs. Mean Student Estimates, with t-test results

As can be seen from this data, students consistently overestimated the prevalence of drinking on the campus. However, despite the t-test determining these differences to be statistically significant, the general accuracy of the CWRU students (as a whole) is fairly good. Estimates of overall drinking, and overall drinking among Greek students, were fairly accurate (off by less than 5%), while estimates of underage drinking were less accurate. Further, despite the differences in AUBBS data and student estimates, the mean student estimates for each

measure were all over 50%, suggesting the perception that “everyone is doing it” is present even if actual numbers are incorrect.

Results of the AUDIT and logistic regression

The World Health Organization’s Alcohol Use Disorders Identification Test (AUDIT) was integrated into the alcohol usage section of the AUBBS. The AUDIT is a ten-question multiple choice survey instrument designed over a two-decade period by the World Health Organization (Babor et al. 10). The ten questions on the AUDIT are divided into three domains: hazardous alcohol use, symptoms of dependence, and harmful alcohol use (Babor et al. 11). Each question on the AUDIT is scored between 0 and 4, and a score of 8 or more for the entire instrument is recommended as an indicator “of hazardous and harmful alcohol use, as well as possible alcohol dependence” (Babor et al. 19). A lower threshold of 7 can be utilized for female respondents to increase sensitivity in this group (ibid.).

The AUDIT can also be used to classify patients into one of four zones based on their score. Individuals in Zone 4 (with a score between 20 and 40) are recommended for immediate referral to a substance abuse specialist, while those in Zone 3 (between 16 and 19) are recommended for advice, brief counseling, and continued monitoring for alcohol-related symptoms (Babor et al. 22). Patients in Zone 2 (score between 8 and 15) are recommended to receive simple advice on alcohol usage from their healthcare provider, while those in Zone 1 show no signs of problem drinking (ibid.).

Student scores to the AUDIT were calculated for all respondents who answered all of the AUDIT questions on the survey. Female students scoring greater than 7 and male students scoring greater than 8 were flagged with a warning. Additionally, each respondent was classified

into one of the four AUDIT zones based on their scores, with the same scoring criterion used for both sexes in zone assignment. Of the students completing the AUDIT, 36.7% (n=343) were flagged with a warning, indicating “hazardous and harmful alcohol use, as well as possible alcohol dependence” (from above). Using the breakdown of zones described above, 11 students fell into Zone 4, 31 fell into Zone 3, and 262 fell into Zone 2, with the remaining 632 students falling into Zone 1.⁷

Use of the AUDIT warning flag as an outcome variable allowed for an exploratory logistic regression analysis to be performed. Potential adjustors were eliminated through backwards stepwise regression using the likelihood ratio method, with entry criterion of .05 and removal criterion of .10. Regression analyses were performed in SPSS 16.0. The following variables were initially entered into the model:

- Age
- Sex
- Year in college
- Residency
- Greek status
- Postgraduate plans
- Type of alcohol regularly consumed
- Method of acquiring alcohol
- Regular drinking location
- History of being documented
- GPA
- Past 30 day history of drinking, bingeing, vomiting, drinking games, and passing out
- History of encountering underage RAs drinking

The final model that emerged is fully described in Appendix A. Table 4 provides information on model validity. The c-statistic was calculated using the predicted probabilities of the model and SPSS’s ROC curve functionality.

⁷ The warning flag numbers will not exactly correlate to the zone numbers because the warning flag definition was sex-specific, while the definition of zones ignored sex.

Hosmer and Lemeshow Test Significance	Cox & Snell R2	Nagelkerke R2	C-Statistic	Overall % Predicted Correctly
0.950	0.418	0.572	0.894	80.80%

Table 5: Statistics on logistic regression model validity

The model coefficients, along with 95% confidence intervals for odds ratios, are available in Appendix A. Table 5 lists the variables in the model, along with the odds ratio and significance for each association.

Variable	Odds Ratio	Significance
Student is pre-law	2.610	0.024
Student is other pre-professional	4.466	0.002
Student is a regular beer drinker	1.774	0.050
Student has a friend of legal age buy them liquor	1.975	0.005
Student regularly drinks in a Greek house	2.140	0.002
Student regularly drinks in a university-owned apartment	1.886	0.021
Student regularly drinks at a public event	2.050	0.019
Student has been documented for alcohol since enrollment	2.432	0.001
Grade Point Average	0.390	0.002
Student has binged in the last 30 days	7.727	0.000
Student has played a drinking game in the last 30 days	2.164	0.005
Student has passed out in the last 30 days	14.451	0.000

Table 6: Variable associations from logistic regression model, with p-value

Many of these associations are unsurprising. For instance, bingeing, playing drinking games, and passing out were all associated with increased odds of receiving a warning score on the AUDIT. Since bingeing is one of the measures utilized by the AUDIT, an association between bingeing and receiving a poor score on the AUDIT should be expected. This model also suggests that students who regularly drink in Greek housing or the university-owned apartments are more likely to score poorly on the AUDIT than their peers. Given the associations revealed in this study between Greek status and drinking, this is also unsurprising. GPA is the only variable which offers a protective association; as GPA increases, the odds of receiving a poor score on the AUDIT decrease, as indicated by the odds ratio of less than 1 for GPA. This is consistent with other results described by this study, which demonstrate an association between

drinking behaviors and GPA.

It is important to remember this model is exploratory in nature. However, the model presents evidence that students living in Greek housing and university-owned apartments are more likely to engage in harmful drinking behaviors. The model also suggests that previous documentation by authority figures is associated with increased odds of harmful behavior. This may suggest that our methodology for locating and confronting instances of drinking on-campus is successful at targeting individuals at risk, but it does not mitigate that risk.

Discussion and Policy Implications

The AUBBS represents the first recent large-scale investigation into the drinking culture at Case Western Reserve University. As such, it serves a dual purpose of developing empirical information to validate existing “anecdotal” information possessed by staff members while also laying a framework for future research efforts. Housing and Residence Life staff members on campus have always acknowledged that drinking is prevalent among undergraduates, but beyond this general knowledge, information was largely limited to each staff member’s personal experience. Formation of policies and procedures from these experiences is possible, but can result in haphazard application of institutional values due to mismatches of reality and perception.

The AUBBS confirms that drinking among undergraduate students is prevalent, with over half the respondents characterized as regular drinkers. While this result is not surprising, it places a numerical value on what has previously been a “general consensus”. However, it is important to remember the results of the AUBBS may not be representative of the general CWRU population, and that they are also subject to various forms of bias (including bias

associated with the timing of the survey, described below). Students may be apt to underreport their drinking behavior on the survey due to its low social desirability; however, the increased response rate to this survey compared to the CHORES (which utilized a virtually identical format, presentation, and incentive) suggests students may be interested in “bragging” about their drinking exploits. If this is the case, the numbers reported herein may overstate the actual situation at the institution.

Three major policy conclusions can be drawn from the results of the AUBBS. The first, and perhaps the most important, is that there is a need for continued surveillance of the undergraduate population with regards to alcohol usage. The AUBBS, and to a lesser extent the CHORES, represent the first major exploration of alcohol usage at CWRU in recent memory. The information gained is of great value, but any policy changes that are generated on the basis of this data should be evaluated through a robust surveillance and evaluation framework. Utilizing the AUBBS to make policy changes is certainly a worthwhile endeavor, but undertaking such changes without the intent to evaluate their effects would negate the benefit of utilizing data to drive policy decisions in the first place.

Further, the AUBBS is not without limitations, some of which are discussed below. The AUBBS is an initial effort and was not extensively validated prior to widespread implementation. More work spent developing, testing, and streamlining the AUBBS will no doubt pay dividends in terms of the utility and reliability of the data it collects. Additionally, the AUBBS is a cross-sectional tool. It measures information at a single point in time, and cannot be utilized to establish temporal or causal relationships. Monitoring a more extensive cohort of students through repeated measurements will provide more substantial data and a more complete understanding of alcohol usage at CWRU.

The second policy conclusion evident from the AUBBS research presented here is that substantial attention must be paid to the undergraduate staff members responsible for enforcing existing alcohol policies. Clearly, many students have encountered Resident Assistants who are breaking the policies they are charged to enforce. It is difficult to speculate on the reasons for this, if for no other reason than the diversity of possible causes. Many students engage in underage drinking; this would suggest they find this behavior acceptable. If we draw Resident Assistants from this population - a population which regularly engages in underage drinking - it follows that some Resident Assistants will engage in this behavior as well. Further, while interesting correlations can be observed throughout the AUBBS data, we must be cautious in drawing conclusions on how underage drinking among staff members is affecting the general undergraduate population.

Nonetheless, it is ethically problematic at best to have a large quantity of students encountering policy enforcers violating the very rules they are charged to uphold. Combating this inconsistency should be a major focus for the institution. More stringent punishment of Resident Assistants who are caught engaging in underage drinking, along with an explicit statement of the institution's expectation on alcohol usage for Resident Assistants, would present a clear and unambiguous standard to staff members.

Currently, it is possible for students who have been caught drinking underage to remain as employees, depending on the particulars of their specific situation. While a limited amount of situational flexibility is essential to good management and leadership, failure to act quickly, decisively, and publically against instances of underage consumption among Resident Assistants cannot be beneficial to the public image of the Office of Housing, Residence Life, and Greek Life. Further, sole reliance on the judgment of underage Resident Assistants to navigate the

sometimes complicated ethical waters of their position, without a set of inviolate rules to help guide them, is an unwise course of action.

Finally, we must face the policy implications of the association between the Greek Life system and a wide variety of alcohol usage measures in the AUBBS. The Greek Life system at CWRU has continually attempted to distance itself from the stereotypical images of excessive drinking that are commonly associated with “going Greek”. However, despite this, Greek students and Greek housing appear to be strongly associated with alcohol usage at CWRU. In lieu of a specific recommendation to address this issue, two specific actions must be taken. First, further research is necessary to establish exactly what role the Greek system plays in alcohol usage at CWRU and how that role differs from other institutions. While alcohol consumption among Greek students may be higher than non-Greek students at CWRU, we do not know how our Greek students compare to Greek students at other institutions.⁸

In addition to this specific research on the Greek population, the Greek community must be integrated into any future interventions implemented at CWRU. The format of this integration will be determined by the nature of the intervention, of course, and a cookie-cutter suggestion would be both useless and narrow in its understanding of the problem. Greek students present a special population, and their alcohol usage appears to be substantively different from the general population. This fact must be acknowledged in future research and future interventions.

⁸ I thank Dr. Duncan Neuhauser and Dr. Janice Gerda of CWRU for illuminating this point during a private conversation with me after I presented on this research on 14 April 2009.

Strengths and Limitations

There are a number of notable strengths and limitations to this research. One of the key strengths of this research was the high response rate among the population surveyed. The CHORES, administered in 2008, obtained a 20% response rate; the AUBBS obtained a 31% partial response rate and a 29% full response rate, a significant increase over this. The large number of respondents allowed for the use of logistic regression to analyze the results of the AUDIT, and the resultant model can be utilized to drive future research questions.

Another strong point of the AUBBS is its preliminary attempt to address social and institutional factors that lead to alcohol use. The AUBBS attempts to address diverse issues related to alcohol usage, such as the prevalence of enforce figures engaging in illegal behavior, the venue where alcohol consumption takes place, the methods students utilize to acquire alcohol, the age of alcohol initiation, and how encounters with existing policies and enforcement affect drinking behaviors among students. Social group membership, institutional norms, and the built environment have the potential to seriously affect alcohol usage and outcomes; the AUBBS lays foundations for the future exploration of these constructs.

Finally, the AUBBS represents an initial step toward developing a framework for evaluating our existing interventions. From a public health standpoint, Resident Assistants and the Student Conduct System represent interventions, aimed at improving the health of the undergraduate population. The AUBBS provides preliminary data to construct a framework that can be utilized to evaluate the success, or failure, of these interventions.

Two primary limitations of the AUBBS are the definition of binge drinking utilized by the study and the timing of the initial survey period. The AUBBS utilized the NIAAA definition of binge drinking described previously, which is 5 or more drinks in two hours or less for male

students and 4 or more drinks in two hours or less for female students. On the surface, this definition appears to be correct, and fits our expectation of what a “binge” might look like: a student “slamming back” five beers at a party in two hours or less. However, two friends, out to dinner, each drinking one martini an hour for two hours, would also meet the definition of binge drinking.⁹ Physiologically, these students have consumed the same amount of alcohol; however, the social context of their drinking is vastly different.

This limitation is present in nearly all the literature on collegiate alcohol use, and it is difficult to come up with alternative forms of measurement, despite the inability of binge drinking definitions to differentiate between the two situations described above. While the physiological characteristics of “5 drinks in 2 hours” are the same regardless of the social context, the behavioral and social risk factors are different and deserve further study. Quantifying and measuring the difference between these situations is a challenge that will likely require a different study design than an anonymous survey. Alternatively, creation of an index variable combining both the amount consumed and the venue it is consumed in may allow the creation of an alternative measure for bingeing that better captures this distinction.

Due to institutional restrictions on the availability of student information, the AUBBS was administered almost three weeks after the originally planned date. This resulted in the survey being sent out immediately prior to the Spring Break holiday. This may have inflated the “Past 30 Day” measures in the survey, due to students engaging in abnormal drinking behavior owing to the spring holiday. This restriction was unavoidable due to the timetable enforced by the institution, but future studies should endeavor to schedule survey dates before the Spring Break holiday or at least 30 days after it to avoid this issue. With this caveat in mind, it should be noted that over two-thirds of the respondents to the AUBBS completed the survey within 48

⁹ A martini is generally a 5:1 ratio of gin and vermouth, roughly 2.5 oz of gin and .5 oz of vermouth.

hours of its initial release, suggesting contamination from the spring holiday is minimal. Studies of specific drinking behavior during the Spring Break period may also provide valuable information to the institution regarding whether or not CWRU students engage in typical “Spring Break” behavior such as excessive bingeing and consumption.

Conclusion

Alcohol usage among undergraduate students is a well-known public health problem garnering national attention throughout popular and academic media. Translating national survey results to institutional policies and programs can be challenging, however. This project attempted to address this gap by providing recent and institution-specific information on alcohol usage, attitudes, and beliefs among undergraduates at CWRU. The Alcohol Usage, Behaviors, and Beliefs Survey was administered to the undergraduate population in March 2009, with over a thousand students responding. This successful data collection provides valuable information on the prevalence of alcohol usage at CWRU and lays a foundation for future research. The data in this report provides a framework to evaluate future policies and interventions, while also offering several directions for future research.

Acknowledgements

I would like to gratefully acknowledge the work of Claire Boettler, another member of the Master of Public Health Program. The work contained in this capstone project was heavily influenced by her work on the Campus Health Online Risk Evaluation Survey. It is no exaggeration to say that without her work, this project would have been exponentially harder, and Claire has been endlessly supportive in sharing her information and expertise.

References

Babor, Thomas F., with John C. Higgins-Biddle, John B. Saunders, and Maristela G. Monterio.

The alcohol use disorders identification test: guidelines for use in primary care, 2nd edition. Geneva, Switzerland: World Health Organization Department of Mental Health and Substance Dependence, 2001. 28 December 2008

<http://www.who.int/substance_abuse/publications/alcohol/en/index.html>.

Begley, Stephen. Presentation to Residence Life staff members on campus policies. 2008
Residence Life Staff Training, Case Western Reserve University. August 2008.

“Case at a glance.” December 2008. Case Western Reserve University Center for Institutional Research. Case Western Reserve University. 01 April 2009

<<http://www.case.edu/president/cir/pdfiles/ataglance.pdf>>.

“Case in national rankings.” August 2008. Case Western Reserve University Center for Institutional Research. Case Western Reserve University. 01 April 2009

<<http://www.case.edu/president/cir/pdfiles/cwrurankings.pdf>>.

“Case Western Reserve University Common Data Set 2008-09.” Case Western Reserve University Center for Institutional Research Common Data Set. Case Western Reserve

University. 01 April 2009 <<http://www.case.edu/president/cir/cdsmain.htm>>.

Cooper, M. Lynne. "Alcohol use and risky sexual behavior among college students and youth: evaluating the evidence." Journal of Studies on Alcohol Supplement 14 (2002): 101-117. 28 December 2008. Public access provided by the National Institute on Alcohol Abuse and Alcoholism. <<http://www.collegedrinkingprevention.gov/SupportingResearch/papers.aspx>>.

Hingson, Ralph W., with Timothy Heeren, Ronda C. Zakocs, Andrea Kopstein, and Henry Wechsler. "Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24." Journal of Studies on Alcohol 63.2 (2002): 136-144. 28 December 2008. Public access provided by the National Institute on Alcohol Abuse and Alcoholism. <<http://www.collegedrinkingprevention.gov/SupportingResearch/papers.aspx>>.

O'Malley, Patrick M., and Lloyd D. Johnston. "Epidemiology of alcohol and other drug use among American college students." Journal of Studies on Alcohol Supplement 14 (2002): 23-39. 28 December 2008. Public access provided by the National Institute on Alcohol Abuse and Alcoholism. <<http://www.collegedrinkingprevention.gov/SupportingResearch/papers.aspx>>.

Population and household economic topics. 05 August 2008. U.S. Census Bureau. 20 April 2009 <<http://www.census.gov/population/www/popdata.html>>.

Prendergast, Michael L. "Substance use and abuse among college students: a review of recent literature." Journal of American College Health 43.3 (1994): 99-113. Academic Search Complete. Kelvin Smith Library, Case Western Reserve University, Cleveland, Ohio. 28 December 2008.

Presley, Cheryl A., with Philip W. Meilman and Jami S. Leichliter. "College factors that influence drinking." Journal of Studies on Alcohol Supplement 14 (2002): 82-90. 28 December 2008. Public access provided by National Institute on Alcohol Abuse and Alcoholism.
<<http://www.collegedrinkingprevention.gov/SupportingResearch/papers.aspx>>.

Wechsler, Henry, with Jae Eun Lee, Meichun Kuo, and Hang Lee. "College binge drinking in the 1990s: a continuing problem. Results of the Harvard School of Public Health 1999 College Alcohol Study." Journal of American College Health 48.5 (2000): 199-210. Academic Search Complete. Kelvin Smith Library, Case Western Reserve University, Cleveland, Ohio. 28 December 2008.

Wechsler, Henry, with Toben F. Nelson. "What we have learned from the Harvard School of Public Health College Alcohol Study: focusing attention on college student alcohol consumption and the environmental conditions that promote it." Journal of Studies on Alcohol and Drugs 69.4 (2008): 481-490. 20 April 2009. Public access provided by the Harvard School of Public Health College Alcohol Study.
<<http://www.hsph.harvard.edu/cas/What-We-Learned-08.pdf>>

"What colleges need to know now: an update on college drinking research." November 2007.

College Drinking: Changing the Culture. National Institute on Alcohol Abuse and Alcoholism. 28 December 2008 <http://www.collegedrinkingprevention.gov/1College_Bulletin-508_361C4E.pdf>.

Appendix A - Results of Logistic Regression Analysis - Model Obtained by Backwards Stepwise Regression

Variable	Coefficient	Significance	Odds Ratio	95% CI for OR
Student is pre-law	0.960	0.024	2.610	1-137-5.993
Student is other pre-professional	1.497	0.002	4.466	1.761-11.331
Student is a regular beer drinker	0.573	0.050	1.774	1.000-3.147
Student has a friend of legal age buy them liquor	0.680	0.005	1.975	1.225-3.184
Student regularly drinks in a Greek house	0.761	0.002	2.140	1.315-3.481
Student regularly drinks in a university-owned apartment	0.634	0.021	1.886	1.100-3.233
Student regularly drinks at a public event	0.718	0.019	2.050	1.128-3.726
Student has been documented for alcohol since enrollment	0.889	0.001	2.432	1.455-4.065
Grade Point Average	-0.940	0.002	0.390	0.216-0.707
Student has binged in the last 30 days	2.045	0.000	7.727	4.300-13.884
Student has played a drinking game in the last 30 days	0.772	0.005	2.164	1.270-3.687
Student has passed out in the last 30 days	2.671	0.000	14.451	4.694-44.493
Constant	-1.031	0.341	0.357	