DETERMINANTS OF ALCOHOL CONSUMPTION BY COLLEGE STUDENTS

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ABSTRACT

This paper exploits a random survey of 704 Ithaca College students regarding their demographics and alcohol consumption. Regression analysis is used to explore a variety of issues including:

gender differences in alcohol consumption

whether marijuana and alcohol are complements or substitutes

underage drinking

the drinking habits of athletes

family history and alcohol abuse

the efficacy of specific policies designed to curb alcohol consumption by students.

A separate logistic regression is used to explore the determinants of binge drinking. The main finding is that the "social norms" approach to addressing alcohol abuse on campus is based on a false premise. Perceptions of the typical amount of alcohol consumption on campus have no impact on personal consumption behavior.

INTRODUCTION

The factors affecting the consumption and abuse of alcohol by college students have been widely researched. Summaries of this literature can be found in Engs and Hanson (1990), Prendergast (1994), Baer (2002), Knight et al. (2002), Perkins (2002a), and Ham and Hope (2003). A related, but distinct,

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(Revised in accordance with the comments of the reviewer and editor of the New York Economic Review, August 11, 2006.)

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area of research considers how perceived social norms affect alcohol consumption by college students. This vein of research is reviewed by Borsari and Carey (1999), Perkins (2002b), Berkowitz (2004), and Berkowitz (2005).

The basic idea behind social norms theory as it applies to alcohol consumption by students is that most college students overestimate the amount of alcohol consumed by their peers. This misperception induces college students to drink more than they would if they knew the true norm.

Many colleges and universities have used, and are using, the social norms approach to address alcohol abuse. The strategy involves educating students about the true norms with regard to drinking. The attractiveness of this approach is readily apparent. It is simple, easy to administer, and involves something institutions of higher learning do well – educate. Moreover, the social norms approach to alcohol policy is not patronizing and involves no moralizing.

This paper will briefly review some of the literature on the social norms approach to alcohol policy in higher education. Then a survey of 695 students at Ithaca College will be analyzed to determine the important determinants of alcohol consumption. It turns out that students' perceptions about how much alcohol is consumed by their peers have no impact on their own consumption. Therefore, the social norms approach is likely to be ineffective.

THE SOCIAL NORMS APPROACH

There is ample evidence supporting the efficacy of the social norms approach for controlling alcohol consumption on campus. Berkowitz (2005) cites Haines (1996), Haines and Spear (1996), Johannessen et al. (1999), Glider et al. (2001), Perkins and Craig (2002), Johannessen and Glider (2003), Haines and Barker (2003), Fabiano (2003), and Jeffrey et al. (2003). All these studies report positive results from actual social norms campaigns on various campuses.

However, all of these studies can be criticized on various grounds. Haines and Spear, for instance, showed a decrease in drinking levels as a result of social norms marketing methods. But the study did not take into account the demographic disparities between students. A greater number of women and younger students participated in the study and they turned out to be the ones who drank less alcohol to begin with. This contributed to the perceived reduction in drinking levels. It is problematic to accept these findings without controls for demographic factors.

The study carried out by Glider et al. (2001) showed that changes in perceptions regarding the intake of alcohol lowered alcohol use and problems arising from alcohol. The result was from a random sample. However, fewer than 30 percent of the students surveyed responded. From the sample that was categorized as high risk, fewer than 20 percent responded. At the same time the social norms methods were being applied, the college implemented stricter policies regarding the use of alcohol and raised the

number of social events on campus where non-alcoholic beverages were provided. Therefore, it is unclear whether the reduction in alcohol consumption was the result of social norms marketing or other factors.

A study by Werch (2000) used a random sample and controlled for demographic differences among students. The results indicated no change in drinking levels despite a vigorous social norms campaign. Along the same lines, Clapp et al. (2003) report on a failed social norms marketing campaign.

A critical blow to the social norms approach was delivered by Wechsler et al. (2003). Using data from the College Alcohol Study collected under the auspices of the Harvard School of Public Health, this study attempted to verify whether there were any decreases in drinking levels when colleges implemented social norms marketing interventions. The study looked at 118 schools of which 57 implemented the method and the remaining 61 did not. Surprisingly, no changes in the quantity, frequency, or volume of student alcohol use were detected in schools where the social norms marketing method was carried out. Five different measures of alcohol consumption were considered. The results strongly suggested that social norms programs did not affect drinking habits in a positive way. Indeed, significant increases in two of the five drinking measures were observed at schools that adopted the social norms approach. No evidence of increased alcohol consumption was found at the schools that did not adopt social norms programs. The authors of this study concluded that college administrators should "base their prevention programs on scientific evidence instead of the perception of promise." (Wechsler et al., 2003, pg. 494.)

The National Social Norms Resource Center disputed the results of Wechsler et al. and fired back with Perkins et al. (2005), which criticized Wechlser et al. for not considering the quality and the duration of the social norms programs at the 57 institutions. The National Social Norms Resource Center also suggested that Wechsler et al. were biased against the social norms approach and conveyed that bias to participants in the study, thus tainting the results.

THE DATA

The "Core Alcohol and Drug Survey" was developed in the late 1980s under the auspices of the U.S. Department of Education. The project is now housed at the CORE Institute at Southern Illinois University. The long form of the survey was administered to a random sample of 721 Ithaca College students in 2004. Surveys that were not complete were omitted as were surveys from graduate students, married students, and part-time students. This left a sample of 695 students.

For many of the survey questions, the responses were transformed to make more practical variables. For instance, one question on the survey asked students if anyone in their family had alcohol or other drug problems (mark all that apply): Mother/Father/Stepmother/Stepfather/Brothers/ Sisters/Mother's parents/Father's parents/Aunts/Uncles/Spouse/Children/None. For this study, this

information was transformed into the dichotomous variable HIST which is equal to 1 if the student responded by marking mother, father, or grandparents and 0 otherwise.

All of the variables that were gleaned from the survey are reported in Table 1. Table 2 gives the descriptive statistics for each variable. The "typical" Ithaca College student consumed 7.6 alcoholic drinks per week. The standard deviation was 9.3. The high was 70 drinks per week reported by one student. The mode was zero drinks per week reported by 140 students. Almost half of the sample consumed 4 or fewer drinks per week.

Another way to look at alcohol consumption is through binge drinking, defined as having 5 or more drinks at one sitting. 437 students, or 62.9 percent of the sample survey, said they had at least one episode of binge drinking over the last two weeks. In other words, well over half of all students abused alcohol within the last two weeks. This is certainly a cause for concern.

Table 1   Variables in the data set

VARIABLE	DESCRIPTION
drinks	number of alcoholic drinks consumed per week
binge	1 if the student had 5 or more drinks at a sitting in the last 2 weeks; 0 otherwise
grades	1 if GPA=F; 2 if GPA=D-; 3 if GPA=D; 4 if GPA=D+; 5 if GPA=C-; …13 if GPA=A+
gradessq	grades squared
male	1 if the student is male; 0 otherwise
ofage	1 if the student is 21 or older; 0 otherwise
cig	1 if the student uses tobacco; 0 otherwise
pot	1 if the student uses marijuana; 0 otherwise
working	0 if the student does not work; 0.5 part-time; 1 full-time
athl	1 if the student participates in varsity athletics; 0 otherwise
intra	1 if the student participates in intramural athletics; 0 otherwise
pcampus	1 if the student perceives Ithaca College to be a "party" campus; 0 otherwise
concern	1 if the student feels that IC is concerned about alcohol use; 0 otherwise
percep	1 if the student perceives that the typical IC student NEVER uses alcohol
	2 if the student perceives that the typical IC student uses alcohol once a year
	3 if the student perceives that the typical IC student uses alcohol 6 times a year
	4 if the student perceives that the typical IC student uses alcohol once a month
	5 if the student perceives that the typical IC student uses alcohol twice a month
	6 if the student perceives that the typical IC student uses alcohol once a week
	7 if the student perceives that the typical IC student uses alcohol 3 times a week
	8 if the student perceives that the typical IC student uses alcohol 5 times a week
	9 if the student perceives that the typical IC student uses alcohol every day
white	1 if the student is white (non-hispanic); 0 otherwise
hist	1 if mother, father, or grandparents had alcohol problems; 0 otherwise
inter	1 if the student's permanent residence is outside the USA; 0 otherwise
oncampus	1 if the student resides on campus; 0 otherwise
class	1 if first year student; 2 if sophomore; 3 if junior; 4 if senior

Perceptions about drinking on campus are measured in two ways. The variable "PERCEP" ranges from 1 to 9 with 1 meaning the particular student believes the typical student consumes no alcohol. In the survey, two students held that perception. When PERCEP equals 9, the particular student believes the typical student uses alcohol everyday. In the survey of 695 Ithaca College students, 20 of them responded with a "9". The mean of PERCEP is 6.7. Almost half of the respondents thought the typical Ithaca College student used alcohol 3 times a week.

Table 2   Descriptive Statistics

VARIABLE	MEAN	MEDIAN	MAX	MIN	ST. DEV.
drinks	7.57	5	70	0	9.26
binge	0.63	1	1	0	0.48
grades	10.30	10	13	2	1.59
gradessq	108.54	100	169	4	30.74
male	0.45	0	1	0	0.50
ofage	0.35	0	1	0	0.48
cig	0.49	0	1	0	0.50
pot	0.56	1	1	0	0.50
working	0.30	0.5	1	0	0.27
athl	0.16	0	1	0	0.37
intra	0.33	0	1	0	0.47
pcampus	0.10	0	1	0	0.30
concern	0.82	1	1	0	0.39
percep	6.67	7	9	1	0.92
white	0.88	1	1	0	0.32
hist	0.32	0	1	0	0.47
inter	0.02	0	1	0	0.15
oncampus	0.73	1	1	0	0.44
class	2.40	2	7	1	1.16

By this measure (PERCEP), the perception of alcohol consumption on the Ithaca College campus is fairly close to the reality of 7.6 drinks per week. Most students (82 percent) believe the typical student uses alcohol 1 - 3 times a week. If this perception is correct, then the typical student would consume 2.5 – 7.6 drinks per sitting. This range seems realistic. Perhaps it is an underestimate considering the data on binge drinking.

Another measure of student perceptions about alcohol consumption is "PCAMPUS". On the survey, students were asked to finish this sentence:

"Compared to other campuses with which you are familiar, this campus' use of alcohol is…(mark one)

Greater than other campuses…………. O

Less than other campuses………………O

About the same as other campuses……O

If the student responded by marking "Greater than other campuses", then PCAMPUS equals 1; 0 otherwise. Only 69 students responded with a "1". By this measure, the perception of alcohol use on campus is, again, moderate and fairly close to reality if not a slight underestimate.

Another variable that will be given special consideration is "CONCERN". This variable is equal to 1 if the respondent felt that the Ithaca College administration is concerned about the prevention of drug and alcohol use; 0 otherwise. In a sense, CONCERN measures the perception of how seriously the campus considers the issues surrounding substance use and abuse. The overwhelming majority of Ithaca College students (81.9 percent) felt that their campus was concerned about the prevention of drug and alcohol use.

It would be interesting to test the hypothesis that students who participate in Greek organizations consume more or less alcohol than students who do not. This was not possible because Ithaca College has no official Greek organizations.

DATA ANALYSIS OF ALCOHOL CONSUMPTION

From the casual examination of the summary statistics given above, it is difficult to discern if the perceptions surrounding alcohol use on the Ithaca College campus underestimate the reality or not. However, this point is not crucial for an assessment of the social norms approach to alcohol policy. The analysis in this section shows that students' perceptions about the normal amount of alcohol consumed on campus have no bearing on the amount that they actually consume.

This conclusion is the result of a regression analysis. As a first pass, a linear regression with drinks as the dependent variable and all the remaining variables except BINGE and GRADESSQ was considered. These results are shown in Table 3.

Table 3   Preliminary regression analysis

Dependent Variable: DRINKS

Method: Least Squares

Sample: 695

Included observations: 695

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.280606	3.603544	1.187888	0.2353
ATHL	1.955796	0.818694	2.388920 *	0.0172
CIG	2.682547	0.704227	3.809205 **	0.0002
CLASS	0.223968	0.438300	0.510993	0.6095
CONCERN	1.526256	0.788550	1.935521	0.0533
GRADES	-0.865844	0.195708	-4.424166 **	0.0000
HIST	-0.508088	0.647085	-0.785195	0.4326
INTER	-1.794914	2.138156	-0.839468	0.4015
INTRA	2.249785	0.638625	3.522858 **	0.0005
MALE	4.799663	0.611792	7.845257 **	0.0000
OFAGE	0.736147	0.988567	0.744661	0.4567
ONCAMPUS	-0.977509	0.887675	-1.101201	0.2712
PERCEP	0.542401	0.327360	1.656897	0.0980
POT	4.462002	0.706063	6.319553 **	0.0000
WHITE	1.423699	0.972718	1.463629	0.1438
WORKING	-2.710187	1.155182	-2.346112 *	0.0193
R-squared	0.311941	Mean dependent var		7.569784
Adjusted R-squared	0.296740	S.D. dependent var		9.260897
S.E. of regression	7.766241	Akaike info criterion		6.960202
Sum squared resid	40953.55	Schwarz criterion		7.064810
Log likelihood	-2402.670	F-statistic		20.52223
Durbin-Watson stat	1.944252	Prob(F-statistic)		0.000000

** significant at the 1 percent critical level
 * significant at the 5 percent critical level

This preliminary regression was undoubtedly overspecified. Some explanatory variables may have been redundant. For instance, CLASS and OFAGE are highly correlated (r = 0.77). CIG and POT were less correlated than expected (r = 0.52). Surprisingly, PERCEP and PCAMPUS were not correlated (r = 0.08).

Many of the variables in the preliminary regression are statistically insignificant at the 5 percent critical level (CLASS, CONCERN, HIST, INTER, OFAGE, ONCAMPUS, PERCEP, and WHITE). Two variables, CONCERN and HIST, have unexpected signs. Perhaps it is not unexpected that students who felt their campus was concerned with drug and alcohol use drank more. However, it is well documented that students with a family history of drug and alcohol abuse drink more. (See, for instance, Weitzman et al. 2003.) In any event, neither variable is statistically significant.

As a second pass, the preliminary regression was re-run without CLASS since it was highly collinear with OFAGE. OFAGE remained insignificant and the results of this second pass were not substantially different from the first regression. More specifications with multifarious variable combinations were considered as were alternate functional forms. In the end, the following specification was settled on:

Table 4   Final regression analysis

Dependent Variable: DRINKS
Method: Least Squares
Sample: 695
Included observations: 695

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.31965	6.542528	4.328548**	0.0000
GRADES	-4.934542	1.352311	-3.648971**	0.0003
GRADESSQ	0.212136	0.069859	3.036650**	0.0025
MALE	4.522718	0.601804	7.515268**	0.0000
OFAGE	1.947880	0.632799	3.078198**	0.0022
CIG	2.641322	0.695943	3.795313**	0.0002
POT	4.790316	0.703772	6.806634**	0.0000
WORKING	-2.455481	1.136537	-2.160495*	0.0311
ATHL	2.156151	0.813714	2.649764**	0.0082
INTRA	2.291202	0.634786	3.609410**	0.0003

R-squared	0.309008	Mean dependent var	7.569784
Adjusted R-squared	0.299929	S.D. dependent var	9.260897
S.E. of regression	7.748616	Akaike info criterion	6.947189
Sum squared resid	41128.12	Schwarz criterion	7.012569
Log likelihood	-2404.148	F-statistic	34.03644
Durbin-Watson stat	1.958128	Prob(F-statistic)	0.000000

** significant at the 1 percent critical level
*   significant at the 5 percent critical level

All of the explanatory variables are statistically significant at the 5 percent critical level. This specification has low multicollinearity among the explanatory variables. When any of the unincluded variables are added to this specification they turn out to be insignificant. This regression tests positively for heteroskedasticity using White's (1980) test. However, applying White's heteroskedasticity-corrected

standard errors does not change the statistical significance of any variable. Thus, the ordinary least-squares standard errors are reported in Table 4.

GRADES

Alcohol consumption and grade point average are inversely related. However, GRADES are used an explanatory variable here so that one is faced with explaining why high grades cause low alcohol consumption. One is tempted to say that smart students know better and drink less. Or conversely, low grades cause students to try to drink their troubles away. The most appealing explanation is that high grades require a time commitment that cuts into party time.

It was found that the polynomial functional form on GRADES fit best. The Negative coefficient on GRADES combined with the positive coefficient on GRADESSQ can be interpreted to mean that as GRADES increase drinking declines until grade point average reaches 3.5. Then further increases in GRADES leads to an increase in drinking. The conclusion is that students with very high GPAs drink slightly more than other students, ceteris paribus.

MALE

It is well established that male students drink more than female students, ceteris paribus. The magnitude of the coefficient on MALE in this regression is in line with previous studies such as Trainor (2003) and Turrisi et al. (2000). The strict interpretation is that a male student consumes 4.5 more drinks than a female student, ceteris paribus.

OFAGE

Our regressions results suggest that being younger than 21 years old lowers alcohol consumption by 1.9 drinks per week. This result is supported by Wechsler et al., (1997) who found that underage students drank less alcohol but drank excessively when they did.

CIG

Tobacco and alcohol are complements according to these regression results. Students who smoke are expected to consume 2.6 more drinks per week. Jones et al., (2001) found that students who reported current use of cigarettes were more likely to binge drink than students who were non-smokers. In addition, Jones et al. found a strong correlation between drinking and cigarette use.

POT

Marijuana and alcohol are compliments as well. These results suggest that a student who uses marijuana is expected to consume 4.8 more drinks per week than a student who does not, all other variables being equal. Zhao and Harris (2004) support this finding.

WORKING

A student with a full-time job consumes 2.5 drinks per week less than a student who does not work for income.

ATHL

There is a large literature investigating the relationship between participation in varsity athletics and alcohol use. We find that varsity athletes consumed 2.2 more drinks per week on average than other students with the same demographics. This finding is consistent with evidence from other researchers. Wechsler et al. (1997) found that intercollegiate athletes tend to be involved in heavy drinking. Leichliter et al. (1998) discovered that intercollegiate athletes had more drinks per week on average and participated in more binge drinking sessions compared to nonathletes.

INTRA

There is a connection between intramural athletes and alcohol consumption as well. Lindsey and Chen (2004) reported that 54.85 percent of intramural sports participants were involved in binge drinking compared to 39.91 percent of the non-intramural sports participants. Besides this, intramural sport participants were the higher consumers of alcohol per week. The results of this regression analysis confirm that finding: A student who participates in intramural sports is expected to consume 2.3 more drinks per week than a non participant with the same demographics.

PERCEP, PCAMPUS, and CONCERN

Table 5 shows that PERCEP and PCAMPUS are each insignificant when added to the specification from Table 4. The interpretation of these results is that perceptions about the normal amount of alcohol consumption on campus do not have an impact on the amount of alcohol a particular student actually consumes. Even if students overestimate the actual amount of drinking on campus, they would not drink more themselves because of that misperception.

Table 5 also shows that students who perceive their administrations to be concerned with drug and alcohol abuse do not drink less because of that perception. This is an important result for college administrators. Creating a sense of caring and concern about alcohol use on campus, by itself, does nothing to reduce the number of drinks a student has per week.

TABLE 5   Comparative regression results

$DRINKS_i = \beta_0 + \beta_1 X1_i + \beta_2 X2_i + \ldots + \beta_k Xk_i + \varepsilon_i$

Variable	Coefficient	Coefficient	Coefficient	Coefficient
Constant term	28.31965**	25.47000**	28.09243**	27.17226**
GRADES	-4.934542**	-4.876509**	-4.901710**	-4.924437**
GRADESSQ	0.212136**	0.209879**	0.210609**	0.212031**
MALE	4.522718**	4.532494**	4.474511**	4.594226**
OFAGE	1.947880**	1.900421**	1.933505**	1.837946**
CIG	2.641322**	2.703632**	2.665122**	2.598298**
POT	4.790316**	4.760006**	4.832623**	4.730380**
WORKING	-2.455481*	-2.447162*	-2.521923*	-2.529141*
ATHL	2.156151**	2.153792**	2.177174**	2.142968**
INTRA	2.291202**	2.296011**	2.293923**	2.239745**
PERCEP		0.373438		
PCAMPUS			0.619618	
CONCERN				1.412414
Adjusted R-squared	0.299929	0.300282	0.299291	0.302325

n = 695
** significant at the 1 percent critical level
*   significant at the 5 percent critical level

The analysis of the data from Ithaca College sharply contradicts the social norms method of alcohol reduction. It is not clear whether Ithaca College students overestimate the typical amount of alcohol consumed on campus, but that point is irrelevant. The amount of alcohol an Ithaca College student consumes is not affected by his or her perceptions of the campus norm. Thus, adjusting student perceptions would have no effect on actual behavior.

DATA ANALYSIS OF BINGE DRINKING

The CORE Alcohol and Drug survey also asked students if they had consumed 5 or more drinks in one sitting over the last two weeks. The variable BINGE is equal to 1 if the student responded affirmatively to this question; 0 otherwise. Logistic regressions were then considered in order to determine the important factors determining BINGE.

As a first pass, all of the variables except DRINKS were used to explain BINGE. Many of the explanatory variables were insignificant in this preliminary regression. After experimenting with many combinations of variables the regression specified in Table 6 was selected as having the best fit with no insignificant variables.

Table 6   Final logistic regression results

Dependent Variable: BINGE

Method: ML - Binary Logit (Quadratic hill climbing)

Sample: 695

Included observations: 695

Convergence achieved after 4 iterations

Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.478816	0.376267	-6.587925	0.0000
MALE	0.698083	0.191147	3.652079	0.0003
CIG	0.907406	0.207680	4.369247	0.0000
POT	1.611103	0.205433	7.842459	0.0000
INTRA	0.607585	0.201538	3.014747	0.0026
CLASS	0.309515	0.080718	3.834523	0.0001
WHITE	0.663876	0.292058	2.273095	0.0230
Mean dependent var	0.628777	S.D. dependent var		0.483480
S.E. of regression	0.409807	Akaike info criterion		1.040134
Sum squared resid	115.5438	Schwarz criterion		1.085900
Log likelihood	-354.4466	Hannan-Quinn criter.		1.057831
Restr. log likelihood	-458.4244	Avg. log likelihood		-0.509995
LR statistic (6 df)	207.9555	McFadden R-squared		0.226815
Probability(LR stat)	0.000000			
Obs with Dep=0	258	Total obs		695
Obs with Dep=1	437			

When any variable from those available is added to this specification it is not statistically significant. The results indicate that males were more likely to binge than females. Tobacco use and marijuana use were strong indicators of binge drinking. Intramural athletes were more likely to binge than others. Interestingly, varsity athletes were not. Juniors and seniors were more likely to binge drink than

underclass students. The variable CLASS performed better than OFAGE in this respect. Finally, white students were more likely to binge drink than students of color.

It is disturbing to realize that a white, male, senior, who does not smoke cigarettes or marijuana, and particpates in intramural sports probably binged in the last two weeks. The probability, according to these results, is 67 percent.

Table 7 delineates how the regression results are altered when PERCEP, PCAMPUS, and CONCERN are each added separately as explanatory variables.

Table 7   Comparative logistic regression results

$$\ln(\frac{BINGE_i}{1 - BINGE_i}) = \beta_0 + \beta_1 X1_i + \beta_2 X2_i + \ldots + \beta_k Xk_i + \varepsilon_i$$

Variable	Coefficient	Coefficient	Coefficient	Coefficient
Constant term	-2.478816**	-3.322515**	-2.458542**	-2.679203**
MALE	0.698083**	0.700001**	0.718836**	0.706650**
CIG	0.907406**	0.926558**	0.903585**	0.899662**
POT	1.611103**	1.603674**	1.595446**	1.599584**
INTRA	0.607585**	0.608450**	0.606731**	0.602097**
CLASS	0.309515**	0.305944**	0.312627**	0.294173**
WHITE	0.663876**	0.687868**	0.660575**	0.664063**
PERCEP		0.123537		
PCAMPUS			-0.228518	
CONCERN				0.298683
McFadden R-squared	0.226815	0.228396	0.227424	0.228503

n = 695
** significant at the 1 percent critical level
*   significant at the 5 percent critical level

PERCEP is statistically insignificant. Students' perceptions about how much the typical Ithaca College student drinks have no effect on whether or not they binge drink.

PCAMPUS has the incorrect sign according to the social norms approach to alcohol control. The negative sign indicates that students who said the use of alcohol at Ithaca College is greater than other campuses were less likely to binge. However, the coefficient on PCAMPUS is not statistically significant.

The coefficients on CONCERN is disconcerting because it implies that students who feel their administration is concerned about drug and alcohol use are more likely to binge drink. But again, the coefficient is not statistically significantly different from zero. Still, this means that administrative concerns about substance abuse have no impact on binge drinking.

Table 8 shows the in-sample success rates for our logistic regression in predicting binge drinking behavior. Overall, the regression had a success rate of 77.99 percent.

Of the 695 students surveyed, 437 identified themselves as binge drinkers. The logistic regression correctly predicted that 381 of these students would be binge drinkers based on their demographics. The regression incorrectly predicted that 56 of these students would not be binge drinkers.

Table 8   Success rates for the final logistic regression

	Actual		
Predicted ↓	No Binge	Binge	Total
No Binge	161	56	217
Binge	97	381	478
Total	258	437	695
Correct	161	381	542
% Correct	62.40	87.19	77.99
% Incorrect	37.60	12.81	22.01

On the other side of the coin, 258 students said they had not binged in the last two weeks. The logistic regression identified 161 of these students correctly based on their demographics. The other 97 students who were not binge drinkers were incorrectly predicted to be bingers by the regression.

CONCLUSION

Drinking among college students has been a matter of concern ever since the earliest colleges were established in the United States. A local sheriff leads Harvard University's graduation procession today. This is a tradition that goes back to Colonial days when disruptive drunk students had to be restrained.

It is critical for college administrators to address this serious issue. Alcohol is highly correlated with negative consequences for college students. High rates of heavy drinking have led to numerous problems such as unintentional injuries, assaults, vandalism, noise disruptions, and property damage. In

reaction to these problems, the Department of Health and Human Services pressed the need to have a 50 percent reduction in heavy drinking among college students by the year 2010.

Much effort has gone into discerning the factors that effect drinking by college students. Binge drinking is a special concern. The hope is that this research will lead to better policies to address alcohol consumption by students.

Social norms policies became popular in the late 1980s and remain so today. These policies strive to educate students about the typical behaviors regarding alcohol on campus. The rationale is that students over-estimate the degree to which alcohol is used and abused. Once students become aware of the true campus norms they will adjust their own behavior appropriately.

The empirical evidence on the efficacy of social norms policies is mixed and hotly debated. This paper adds to that debate. A 2004 survey of 695 students at Ithaca College reveals that students may or may not over-estimate the amount of alcohol consumed by their peers. A statistical analysis of the survey data shows that students' perceptions about alcohol use does not factor into their own decisions about how much to drink. Moreover, knowing students' perceptions does not help to predict whether or not they binge drink. All this implies that social norms policies are not likely to succeed.

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