

Indiana University Bloomington IUScholarWorks

Citation for this item

Citation format and information for this document is found at:

<http://hdl.handle.net/2022/17496>

This paper is from:

Dr. Ruth C(lifford) Engs - Presentations, Publications & Research Data Collection.

This collection is found at IUScholarWorks: <http://hdl.handle.net/2022/16829>

When in the collection and within a category, click on “title” to see all items in alphabetical order.

The Collection

This document is part of a collection that serves two purposes. First, it is a digital archive for a sampling of unpublished documents, presentations, questionnaires and limited publications resulting from over forty years of research. Second, it is a public archive for data on college student drinking patterns on the national and international level collected for over 20 years. Research topics by Dr. Engs have included the exploration of hypotheses concerning the determinants of behaviors such as student drinking patterns; models that have examine the etiology of cycles of prohibition and temperance movements, origins of western European drinking cultures (attitudes and behaviors concerning alcohol) from antiquity, eugenics, Progressive Era, and other social reform movements with moral overtones-Clean Living Movements; biographies of health and social reformers including Upton Sinclair; and oral histories of elderly monks.

Indiana University Archives

Paper manuscripts and material for Dr. Engs can be found in the IUArchives

http://webapp1.dlib.indiana.edu/findingaids/view?doc.view=entire_text&docId=InU-Ar-VAC0859

The Drinking Patterns and Problems of a National Sample of College Students, 1994

Ruth C. Engs
Beth A. Diebold
David J. Hanson

This pre-print was created in April 2014. Retrieved from: <http://hdl.handle.net/2022/17496>

AUTHOR ABSTRACT

Over 12,000 university students from every state were administered the Student Alcohol Questionnaire during the 1993-1994 academic year. Of all students 72.0% consumed alcohol at least once a year and 20.6% were heavy drinkers (consuming 5 or more drinks per occasion once a week or more). A mean of 9.6 drinks per week was consumed by all students in the sample, 31% of males consumed over 21 drinks per week and 19.2% of females consumed over 14 drinks a week. Of the drinkers, 28.4% were heavy and 71.6% were light to moderate drinkers and they consumed a mean of 10.9 drinks per week. A significantly higher proportion of men, whites, under 21 years old, Roman Catholics, individuals to whom religion was not important, individuals with low grade point averages, fraternity/sorority members, students attending college in the North East part of the United States, in small communities, private schools and colleges under 10,000 students exhibited heavier drinking and a higher incidence of problems related to drinking. These results are similar to other studies which have been accomplished over the past two decades. The results do not support dramatic changes in the demography of heavier drinkers within most demographic categories. It was concluded that demographic variables need to be taken into consideration when planning campus educational and prevention programs. In times of limited budgets, the primary target needs to be these high risk students.

INTRODUCTION

Educational efforts, prevention programming and comprehensive policies concerning alcohol consumption at the university level have increased over the past decade, largely due to increased funding from the federal level. However, this funding is likely to decline. With more limited resources, universities may need to find the most efficient strategies for delivering alcohol abuse prevention (Gonzales, 1993). Rather than aiming efforts at the total student body, limited funds would be better spent on programming for those at greatest risk for alcohol abuse.

Society is constantly changing and groups at greatest risk in an earlier era may no longer be so. Moreover, educational and prevention efforts considered important in the late 1980's may no longer be relevant to the mid 1990's. It is common knowledge that there have been numerous changes in the structure of American society. These include changes in gender roles and behavioral expectations, changes in socio-economic status of racial and ethnic groups, increased religious intermarriage, and social pressures for earlier maturity of youth. In addition, our society has seen changes in the law concerning alcohol use and the decrease in rural urban differences (Stark, 1994)

Because of possible changes in drinking patterns within these demographic categories, the purpose of this study was to gather new baseline information which could be used for curriculum development. A second purpose of this descriptive cross-sectional study was to test the hypothesis that demographic variables are less important now than in the past in relation to drinking behaviors.

The null hypotheses is that there are no longer any differences in drinking patterns or problems within the different demographic categories.

REVIEW OF THE LITERATURE

Societal changes in the United States may be reflected in drinking patterns and problems. There is mixed evidence regarding the importance of demographic variables in relation to drinking among the college population. Various personal, academic and social characteristics have been associated with drinking and drinking problems and gender has been one of the most important predictors of these phenomena. The majority of studies have shown that higher percentage of men drink and experience drinking-related problems than women (Engs & Hanson, 1990; Loughlin & Kayson, 1990; Saltz & Elandt, 1986; Engs & Hanson, 1985). In addition, recent studies (Billingham, Post, & Gross, 1993; Gustafson, 1993; Robinson, Gloria, Roth, & Schuetter, 1993), have reported that men generally consume alcohol more frequently and/or in greater quantities than women. Other investigations have disputed this, however, finding little or no difference between males and females (Kodman & Sturmack, 1984; Berkowitz & Perkins, 1985; Perkins, 1992).

Another important variable which is predictive of drinking patterns and problems related to drinking is racial or ethnic background. Older studies in the United States have reported non-whites having a higher rate of heavy drinking than whites (Maddox & Williams, 1968). Current research (Wechsler, Dowdall, Davenport, & Castillo, 1995; Williams, Newby, & Kanitz, 1993; Crowley, 1991; Schall, Weede, & Maltzman, 1991; and Hanson & Engs, 1990) has shown that non-white college students report lower rates of both alcohol consumption and drinking-related problems. On the other hand, one study showed non-white drinking rates equal to that of whites (Conners, Maisto, & Watson, 1989).

The relationship between drinking and religious affiliation suggests the highest proportion of drinkers are typically found among Jews, a slightly lower rate among Catholics and the lowest among Protestants. This has been found in American (Carlucci, Genova, Rubackin, Rubackin, & Kayson, 1993), American and Canadian (Engs, Hanson, Glicksman, & Smythe, 1990) and two Scottish (Mullen, Blaxter, & Dyer, 1986; Engs & Mullen, 1996) samples. Some reports (Miller & Garrison, 1982; Engs & Hanson, 1985) also indicate a direct relationship between the lack of importance of religion and frequent or heavy drinking but not all (Reiskin & Wechsler, 1981)

While positive association between both quantity and frequency of drinking with both age and with college year have been documented (Wechsler, Dowdall, Davenport, & Castillo, 1995; Engs & Hanson 1985, 1989; Crum, Helzer, & Anthony, 1993), some studies have reported either relatively little difference or negative association with college year (Lotterhos, Holbert, & Glover, 1990; Schall et al., 1991; Gross, 1993). An inverse relationship between student drinking and academic achievement has been reported by numerous studies (Engs & Hanson 1985; Ford & Carr, 1990; Borges & Hansen, 1993). Evidence suggests that pledges or members of sororities and fraternities report greater rates of alcohol consumption and drinking-related problems than non-Greeks (Kodman & Sturmak, 1984; Tampke 1990).

Institutional characteristics are also associated with different drinking patterns. The frequency and quantity of drinking are lower in the South, in urban areas, in large and in public institutions. However, these differences may be waning (Engs & Hanson, 1985; Centers for Disease Control and Prevention, 1994).

METHODS

THE INSTRUMENT

A pre-coded anonymous instrument, the Student Alcohol Questionnaire (SAQ), was used to collect data (Engs 1977). The questionnaire includes various demographic items; six questions concerning quantity and frequency of wine, spirits and beer consumption; and 19 items regarding possible negative health/personal, social/academic, legal/violence or drinking/driving consequences resulting from alcohol consumption. The SAQ also contains alcohol knowledge and attitude questions.

For this report, 19 items regarding possible consequences of alcohol consumption are reported. The items are listed in Table 3. Students were asked to indicate if a given problem had occurred at least once during the preceding year. Six items used to calculate quantity-frequency and mean amount of alcohol consumed were also utilized.

Instructions explained the voluntary nature of participation, as approved by the authors' Institutional Review Boards. The instrument has been widely used or adapted by a number of authors. Some recent examples include Maney (1990), Hughes and Dodder (1992), Carlucci, Genova, Rubackin, and Kayson (1993), Flynn and Brown (1991), Gross (1993), and

Haworth-Hoepfner, Globetti, Stem and Morasco (1993) among others in the United States and other countries. The instrument has demonstrated internal consistency reliability of .79 for all items, excluding demographic factors. An updated reliability analysis (Engs & Hanson, 1994) has demonstrated Spearman-Brown reliability coefficients of .84 for the quantity/frequency and .89 for the Problems Related to Drinking sub-scales. The values of Cronbach alpha reliability were .86 and .92 respectively, for these subscales.

SAMPLE

This sample is part of an ongoing study of drinking patterns and problems of students attending four-year colleges and universities from every state in the United States that was begun in 1982. A number of studies have been published over the past 15 years from the five times data have been collected (See references for citations by the author's for some examples). Institutions were selected to form a "quota sample." Colleges were chosen to be representative of all four-year institutions of higher education in terms of financial support (public or private) and size (over and under 10,000 student enrollments). For example, approximately 65% of students attend state supported schools in terms of financial control in the United States (Snyder, 1993). This same proportion of institutions, from each state, were randomly selected from a list of colleges and universities which had health, physical education, or sociology departments (Simon, 1987; College Blue Book, 1993; Eta Sigma Gamma, 1992). The department head was then contacted about participation in the study. If an institution declined to participate, another institution with similar demographics, e.g.; state supported, small community, with over 10,000 students, in the same state was then asked to take part.

The following procedure was used to collect the sample. Departmental chairs asked faculty who taught general elective courses which had a high probability of having students from all academic years to participate in the study. Examples would include courses such as personal health, first aid, and basic sociology. These faculty were asked to distribute the SAQ to students for in-class completion and to return the completed questionnaire adds to the researchers. The return rate for complete and usable questionnaires exceeded 97%. Due to the fact that the whole class was surveyed, this "convenience sample" is limited to students in classes from institutions where instructors were willing to distribute the questionnaire.

The resulting sample consisted of 12,081 students from 168 colleges and universities and included the following personal demographic characteristics: 38.5% men and 61.5% women, 81.6% white, and 18.4% non-white; 31.8% Roman Catholic, 27.3% Protestants whose religion allowed drinking, 21.5% Protestants whose religion does not allow drinking, 1.9% Jews, and 17.5% none or other. Of the sample, 57.8% were under and 42.2% were over the age of 21 years. The mean age was 20.5. The sample over-represents females and non-whites compared to national statistics regarding the demographics of college students (Snyder, 1993)(FNa).

Among Academic and Social Behavioral characteristics, the sample consisted of 27.7% freshmen, 23.8% sophomores, 24.6% juniors, and 23.9% seniors; 16.2% were pledges or members of a fraternity or sorority.

Institutional characteristics: Twenty-four percent of the sample attended school in the Northeastern region of the United States, 28.9% in the North Central region; 30.0% in the Southern, and 17.1% in the Western region (including Alaska and Hawaii) of the United States. Of the total sample, 68.1% were from colleges with enrollments of 10,000 or more, and 31.9% were from colleges with a student body of less than 10,000; 81.7% were from public and 18.3% were from private institutions; 69.5% were from schools with surrounding communities of populations under 100,000, 20.0% from communities between 100-500,000, and 10.5% were from surrounding communities with populations over 500,000.

A limitation to the study was that the sample over-represents females, nonwhites and those who attended public schools compared to the universe of students attending four year institutions of higher learning in the United States (Snyder 1993)(FNa). Because of its large size, the sample had high power for detecting significant differences. On the other hand, the large sample size also introduces the chance of type I error.

CALCULATIONS

All calculations were accomplished on the Indiana University VAX computer using the SPSS program (Norusis, 1990).

MEAN NUMBER OF DRINKS PER WEEK

Several methods for calculating the amount of alcohol consumed are in common use. They include calculating the mean grams or ounces of absolute alcohol or the mean drinks or units per week or per day. In self report studies, determining grams or ounces is often an imprecise calculation as it is based upon recall. In addition, people often underestimate the amount they have consumed (Thomas, Goddard, Hichman, & Hunter, 1993).

Therefore, in recent years it has become more common to calculate the mean number of drinks, or units, per week or day of all alcoholic beverages consumed in North America and Great Britain (Lemmon, Tan, & Knibbe, 1988; Engs, et al., 1990; Thomas, et al., 1993; Engs, 1990; Engs & Hanson, 1994; Gaziano et al., 1993). Calculations for this method are based upon the "rule of thumb" that an average can or glass of tavern beer (12 ounces) is roughly equivalent to an average size glass of wine (5 ounces) or shot of spirits (one and one half ounces) in terms of grams (approximately 13) of absolute alcohol (Thomas, et al., 1993).

For the calculations, the instrument assessed the usual frequency and quantity of beer, wine and spirits consumed by student. The frequency and quantity response categories were assigned constant values(FNb). To compute the total number of drinks consumed on a weekly basis, a

mean score was calculated by multiplying the re-coded quantity by the re-coded frequency weight for each beverage type and summing the three scores. A One-Way Analysis of Variance and the t-test was used to compare the mean number of drinks within demographic variables. The post-hoc Scheffe test was used to determine where differences occurred.

CALCULATING "AT RISK DRINKING" FOR MALES AND FEMALES

Several recent reports suggest that up to 21 drinks per week for males and 14 drinks for females is considered the maximum safe consumption limit in terms of acute and chronic health consequences (Engs & Aldo-Benson, 1995; Cohen, Tyrrell, Russell, Jarvis, & Smith, 1993; Garg, Wagener, & Madans, 1993; Gaziano, et al., 1993; Bofetta & Garfinkel, 1990).

Chi-Square analysis was conducted for males and females comparing the percent who had consumed over the maximum amount recommended for their gender. These students were defined as at risk drinkers. In contrast, males who consumed 21 and females who consumed 14 drinks or less per week during the previous 12 months were considered low risk drinkers.

QUANTITY/FREQUENCY DRINKING LEVEL

Based upon a method suggested by Cahalen (1968) and adapted by Engs (1977), a quantity/frequency level of drinking was calculated to identify different levels of drinkers for the total group. Individuals were divided into three categories: Abstainers, Light to Moderate, and Heavier Drinkers(FNc). These were analyzed by Chi-Square analysis.

DRINKING RELATED PROBLEMS

Only students who had consumed any alcohol during the previous 12 months, i.e. "drinkers", were asked to report on problem behaviors associated with drinking. Students who had not consumed any alcohol during the previous 12 months were asked to skip these items. A mean problem score was calculated for each student by assigning one point for each of the 19 problems experienced at least once during the previous 12 months. These scores were subjected to t-tests, and one-way analysis of variance and post-hoc Scheffe tests. In addition Chi-Square analyses were used to determine possible differences in the percentages of students exhibiting each of the 19 problems for gender among low risk and among at risk drinkers. Males consuming over 21 and females consuming over 14 drinks per week were selected into the "at risk" drinking category. Likewise, males and females under this level were selected out for the low risk category.

RESULTS

QUANTITY-FREQUENCY AND MEAN DRINKS PER WEEK

Of the total group, 72.0% were drinkers. One in five were considered Heavy Drinkers and half were classified as Light/Moderate Drinkers. Of the drinkers, 27.4% were Heavy Drinkers. The mean drinks consumed per week for the total sample of students was 9.6. For drinkers only it was 10.9 drinks per week. There was a significant difference ($p < .001$, $t = 8.8$) between the mean drinks consumed between the total population and the drinkers.

PERSONAL DEMOGRAPHIC CHARACTERISTICS

Gender: Table 1 reveals that men and women differed significantly in quantity and frequency of drinking ($p < .001$, $X^2 = 792.41$). Among drinkers significantly ($p < .001$, $X^2 = 65.7$) fewer women were heavy drinkers. When recommended maximum limits for safe alcohol consumption for men and women were examined, Chi-Square results revealed that a significantly ($p < .001$, $X^2 = 86.3$, $p < .001$) higher percent of males (31.1%) were "At Risk" drinkers compared to females (19.2%).

Table 2 indicates that among drinkers women consumed significantly ($p < .001$, $t = 27.2$) fewer mean drinks per week compared to men.

Race: A significant difference in student drinking patterns due to race was found ($p < .001$, $X^2 = 94.12$). More whites compared to non-whites consumed alcohol. Among drinkers ($p < .001$, $X^2 = 94.1$) twice as many whites compared to non-whites were heavy drinkers. White drinkers consumed significantly ($p < .001$, $t = 18.9$) more than twice as many drinks per week compared to non-white drinkers.

Age: There was a significant difference ($p < .001$, $X^2 = 57.3$) in the drinking patterns of older compared to younger students. Likewise among drinkers, a significant higher percent ($p < .001$, $X^2 = 55.4$) of underage students were heavy drinkers compared to legal age students. Among the legal-aged drinkers, there was a higher percentage of light-moderate consumers but no difference in the mean of drinks per week, compared to under age drinkers.

Religion: Almost half of all Protestants, whose religion does not allow drinking (Mormon, Baptist, Pentecostal, etc.), and about a fifth of Protestants whose religion does allow drinking were abstainers. In contrast few Catholics and Jews fell into this category ($p < .001$, $X^2 = 58.3$). Among drinkers, Catholics ($p < .001$, $X^2 = 61.3$) had the highest percentage of heavy drinkers compared to the other groups. The Scheffe post-hoc test for the MANOVA revealed that Catholics and Jews consumed the highest mean number of drinks per week ($p < .001$, $F = 102.2$) compared to the two Protestant groups.

Importance of Religion: A higher percent of drinkers were found among those who did not consider religion important compared to those who considered it important ($p < .001$, $X^2 = 474.34$). Among drinkers, individuals to whom religion was not important were also more likely to be heavy drinkers ($p < .001$, $X^2 = 85.3$). The less religious also consumed twice as many drinks compared to very religious individuals ($p < .001$, $t = 18.1$).

ACADEMIC AND SOCIAL CHARACTERISTICS

Class standing: Table 3 reveals that the drinking patterns of students changed by year in school ($p < .001$, $X^2 = 227.77$). Among drinkers, there was a gradual decrease, however, in the percent of heavy drinkers from the first to the fourth year of college ($p < .05$, $X^2 = 8.1$). However, there was no significant difference in mean drinks consumed per week (See Table 4).

Grade Point Average (GPA): There was a significant relationship between GPA and the percent of students who drank or were heavy drinkers ($p < .001$, $X^2 = 277.17$). Among drinkers the lower the GPA the higher the percentage who drank or were heavy drinkers ($p < .001$, $X^2 = 143.9$). Those students with 4.0 GPAs consumed a third of the number of drinks compared to those with GPAs under 2.0 ($p < .001$, $F = 38.5$).

Pledge/members of fraternity/sorority (Greeks): A higher percentage of Greeks were drinkers compared to non-Greeks ($p < .001$, $X^2 = 64.9$). Greek drinkers also had a higher percentage of heavy drinkers compared to nonmembers ($p < .001$, $X^2 = 97.4$). In addition Greeks consumed almost twice as many drinks per week compared to non-Greeks ($p < .001$, $t = 15.6$).

DEMOGRAPHIC CHARACTERISTICS OF INSTITUTIONS STUDENTS ATTEND

Region of the country: Student drinking patterns also varied according to the region of the country in which they were attending school ($p < .001$, $X^2 = 433.82$). The highest proportion of drinkers was found in the North Central region, followed by the North Eastern, Southern, and Western regions, respectively (See Table 5). Among drinkers, the percentage of heavy drinkers ($p < .001$, $X^2 = 151.5$) was greatest in the North Eastern portion of the country, followed by the North Central, Southern and Western areas. However, there were no significant differences in alcohol consumption among the four regions of the country.

Type of School, School-size and Community-size: A slightly lower percentage of drinkers was found among students attending private schools, compared to publicly funded schools ($p < .001$, $X^2 = 43.6$). On the other hand, among drinkers, slightly more private than public school students were heavy drinkers ($p < .001$, $X^2 = 14.7$), but there was no difference in amount consumed.

There was also a significant difference between the percent of drinkers by size of school ($p < .001$, $X^2 = 15.7$) and community ($p < .001$, $X^2 = 46.7$). Schools with enrollments under 10,000 reported lower proportion of drinkers, compared to schools with enrollments greater than 10,000. The mean number of drinks did not differ between large and small schools or between private and public schools (see Table 6). Individuals attending schools in smaller communities consumed significantly more alcohol than did those at schools in large cities ($p < .001$, $F = 24.2$).

PROBLEMS RELATED TO DRINKING

Males had a significantly ($p < .001$, $t = 23.4$) higher mean drinking problem score compared to females (see Table 2). Chi-Square analysis of 19 problems related to drinking was performed (see Table 7) separately for low risk and for high risk drinkers for each gender. In most cases, a higher percent of males exhibited the problem. The exceptions were nausea and vomiting, missing classes because of hangover and being forced to have sex among the higher risk drinkers.

Whites had a higher mean problem scores than did non-whites ($p < .001$, $t = 21.8$). There was a significant difference in mean problem scores ($p < .001$, $F = 102.3$) between religious groups, with Catholics having the highest mean (see Table 2). Those to whom religion was not important had the highest score ($p < .001$, $t = 19.2$), as did those with the lowest GPA ($p < .001$, $t = 6.1$), and those associated with fraternity/sororities ($p < .001$, $t = 15.6$). Students who attended college in the North East and North Central part of the country ($p < .001$, $F = 38.2$), or small communities ($p < .05$, $F = 22.2$), or public schools ($p < .05$, $t = 3.2$) also had the highest mean problem scores (Table 6).

DISCUSSION AND RECOMMENDATIONS

There were significant differences in drinking patterns for all demographic groups. In terms of mean drinks per week there were no differences in consumption due to age, type of school, and school size. For the number of drinking related problems there were no differences due to age, year in school, region of the country, or size of school.

Major findings were that whites, males, Catholics, the non-religious, those with low grade point averages, those affiliated with fraternities/sororities, those attending colleges located in the Northeast, which are private, have enrollment under 10,000 and in small communities were most at risk for heavier drinking. These results do not indicate dramatic changes in drinking patterns between most of the demographic groups as these results have been found over the past two decades by various researchers.

Although there have been social changes which have given women more freedom for career choices and independence, this was not reflected in a smaller gap between male and female students in this sample in regards to alcohol consumption. When the percent of males and females who were considered "at risk" drinkers for their gender were examined (over 21 drinks per week for males and 14 for females), about one out of three males compared to about one out of five females fell into the "at risk" category for their gender.

The higher percent of underage students classified as heavy drinkers can perhaps be explained by Reactance Theory (Engs & Hanson, 1990; Allen, Sprenkel, & Vitale, 1994). Drinking is perceived as part of the college experience by most students. Prohibition of alcohol for those under the age of 21, makes it more alluring since it is illegal. Since students feel they have the right to drink, illicit alcohol consumption has gone "underground" away from adult monitoring. Because these illegal drinkers do not have adult social pressure to limit their consumption to

more moderate levels, they are likely to consume more drinks on the fewer occasions when alcohol is available. The increase in percent of students who drink from freshman to seniors may also support this hypotheses.

As discussed in the section concerning limitations to the study, the sample is over-represented in females, non-white's state supported institutions compared to the universe of students in the United States. This sample bias may have caused an underestimation of drinking levels for some of the demographic categories. For most of the problems related to drinking, a higher proportion of males reported problems compared to females among both "low risk" and "high risk" drinkers even when the gender effect of maximum safe limit is taken into consideration (Engs & Hanson, 1993).

The results of this study can be useful for curricular planning. Rather than directing massive un-focused prevention efforts indiscriminately at all university students, it would appear prudent to tailor and target efforts to those groups that are at most risk for alcohol abuse. These would include being under age 21, white, male, low grade point average, fraternity member/pledge and non religious. Programs aimed at these specific groups would be a much more efficient use of resources in an era of fiscal restraint.

ENDNOTES

- a. The percent of women among university students as a whole in the United States was 52% in 1991, the last year for which data is available, 14% of students were non-white and 68% attended public institutions (Snyder 1993, Table 174, p 180).
- b. Loading values used to calculate mean number of drinks per week. For the usual frequency of drinking by each respondent: every day = 7.0; at least one a week but not daily = 3.5; at least once a month but not weekly = 0.5; more than once a year but not monthly = 0.12; one a year or less = 0.02; never = 0. Values for number of drinks of beer, wine, distilled spirits: 7⁺=7.5; 5-6=5.5; 3-4=3.5; 1-2=1.5; < 1=0.5; 0= 0.
- c. The Quantity-Frequency measure for each subject was calculated from the beverage (beer, wine, or distilled spirits) most frequently used and the amount consumed on a typical occasion. Drinking category of Abstainer: drinks less than once a year or not at all; Light to Moderate Drinker: drinks at least once a month but not weekly and consumes no more than 1 to 2 drinks at any one sitting; drinks at least once a month but not weekly and consumes no more than 5 to 6 drinks per occasion; drinks at least once a week but not daily and consumes no more than 3 to 4 drinks per sitting, or once a day but consumes no more than 1 or 2 drinks. Heavy Drinker: drinks more than 5 drinks at any one sitting once a week or more.

Table 1 Chi-Square Results of the Percent of Students Exhibiting Each Quantity-Frequency Level for ALL STUDENTS, and for DRINKERS ONLY within Personal Demographic Characteristics(FNa).

	ALL STUDENTS			DRINKERS ONLY			
	#	A	L/M	H	#	L/M	H
Gender							
Males	4641	21.8	44.5	33.7(FN*)	3630	56.9	43.1(FN*)
Females	7440	30.9	56.7	12.4	5071	82.1	17.9
Race							
White	9862	23.5	53.3	23.2(FN*)	7544	69.6	30.4(FN*)
Non-White	1921	45.6	45.8	8.6	1045	84.1	15.9
Age							
Under 21	6931	30.2	47.7	22.1(FN*)	4841	68.4	31.6(FN*)
Over 21	5068	23.7	57.7	18.6	3868	75.6	24.4
Religious Background							
Catholic	3844	15.6	56.4	28.0(FN*)	3244	66.8	33.2(FN*)
Jewish	234	15.8	59.8	24.4	197	71.1	28.9
Protestant, drinkers	3301	22.4	56.4	21.1	2561	72.7	27.3
Protestant, non-drinkers	2594	48.0	40.4	11.6	1348	77.7	22.3
Importance of Religion							
Very	7923	32.9	50.4	16.7(FN*)	5315	75.1	24.9(FN*)34.1
Not	3985	16.0	55.4	28.7	3348	65.9	

FOOTNOTES

= Number of students, A = Abstain, L/M = Light/Moderate, H = Heavy

* p < .001 + p < .05

a Note: sample size in each category does not necessarily add up to the total sample due to missing data for each analysis.

Table 2 Results of One-Way ANOVA and of T-test's of the Mean Drinks Per Week Consumed and Number of Problems Related to Drinking by Personal Demographic Characteristics Among DRINKERS.

	N	Mean Drinks Per Week	(sd)	Number of Problems	(sd)
Personal Demographic Characteristics					

Gender					
males	4567	14.3	(17.1)(FN*)	3.4	(3.4)(FN*)
females	7080	6.6	(10.6)	2.0	(2.4)
Race					
White	9571	10.6	(14.4)(FN*)	2.7	(3.0)(FN*)
Non-White	1107	4.2	(10.1)	1.1	(3.5)
Age					
Under 21	6936	9.5	(14.0)	2.4	(2.9)
Over 21	2891	9.0	(13.8)	2.5	(2.9)
Religious Background					
Catholic	3741	12.4	(14.7)(FN*)	3.1	(3.0)(FN*)
Jewish	225	13.0	(16.7)	2.7	(2.9)
Protestant, drinking	3209	10.2	(14.1)	2.7	(3.0)
Protestant, no Drinking	2494	5.7	(11.4)	1.8	(2.7)
Importance of Religion					
Very	3568	5.3	(11.2)(FN*)	1.6	(2.6)(FN*)
Not	4101	10.4	(13.5)	2.8	(2.8)

Table 3 Chi-Square Results of the Percent of Students Exhibiting Each Quantity-Frequency Level for ALL STUDENTS, and for DRINKERS ONLY Within Academic and Social Characteristics(FNa).

	ALL STUDENTS			DRINKERS ONLY			
	(FN#)	A	L/M	H	(FN#)	L/M	H
Class Year							
Freshman	3352	35.8	45.2	19.0(FN*)	2152	70.4	29.6(FN*)
Sophomore	2883	28.6	50.0	21.4	2059	70.0	30.0
Junior	2973	23.9	54.6	21.5	2262	71.8	28.2
Senior	2527	19.4	59.3	21.3	2036	73.6	26.4
Grade Point Average							
4.0	537	41.0	50.3	8.8(FN*)	317	85.2	14.8(FN*)
3.5	2387	32.6	52.6	14.7	1608	78.1	21.9
3.0	4499	27.0	53.5	19.5	3285	73.3	26.7
2.5	3205	21.9	52.3	25.8	2505	66.9	33.1
2.0	814	23.8	47.5	28.6	620	62.4	37.6
<2.0	179	24.6	39.7	35.8	135	52.6	47.4
Member/Pledge of Fraternity/Sorority							
Member	1719	12.2	53.8	34.0(FN*)	1509	61.3	38.7(FN*)
Non-Member	10115	29.7	52.0	18.3	7111	73.9	26.1

FOOTNOTE

=Number of students, A=Abstain, L/M=Light/Moderate, H=Heavy

* p<.001 +p<.05

a Note: sample size in each category does not necessarily add up to the total sample due to missing data for each analysis.

Table 4 Results of One-Way ANOVA and of T-test's of the Mean Drinks Per Week Consumed and Number of Problems Related to Drinking by Academic and Social Characteristics Among DRINKERS.

	#	Mean Drinks Per Week	(sd)	Number of Problems	(sd)
Class Standing					
Freshman	3307	8.6	(14.2)(FN+)	2.0	(2.7)
Sophomore	2818	9.6	(14.0)	2.5	(2.9)
Junior	2881	10.0	(13.7)	2.7	(2.9)
Senior	2429	10.7	(14.0)	2.9	(2.9)
Grade Point Average					
4.0	495	5.9	(14.5)(FN*)	1.4	(2.4)(FN*)
3.5	2245	7.6	(12.4)	2.0	(2.6)
3.0	4406	9.2	(13.6)	2.4	(2.8)
2.5	3159	11.4	(14.4)	3.1	(3.1)
2.0	812	12.2	(16.4)	3.1	(3.2)
<2.0	176	14.8	(18.8)	3.7	(3.7)
Member/Pledge of Fraternity/Sorority					
Member	1714	15.4	(17.0)(FN*)	3.6	(3.2)(FN*)
Non-Member	9787	8.6	(13.1)	2.3	(2.8)

FOOTNOTES

* p < .001

+ p < .05

Table 5 Chi-Square Results of the Percent of Students Exhibiting Each Quantity-Frequency Level for ALL STUDENTS, and for DRINKERS ONLY, Within Institutional Characteristics(FNa).

	ALL STUDENTS			DRINKERS ONLY			
	(FN#)	A	L/M	H	(FN#)	L/M	H
Region of Country							
Northeast	2900	21.5	49.9	28.6(FN*)	2277	63.5	36.5(FN*)
North Central	3497	20.7	55.5	23.8	2772	70.0	30.0
South	3377	35.7	48.9	15.4	2170	76.0	24.0

West	2228	33.0	53.7	13.3	1492	80.2	19.8
Community-Size Institution Located							
<100,000	8402	25.9	51.5	22.6(FN*)	6222	69.5	30.5(FN*)
100-500,000	2419	32.1	51.5	16.4	1642	75.8	24.2
>500,000	1180	28.3	56.4	15.3	846	78.7	21.3
Type of School in Terms of Traditional Financial Support							
Public	9876	26.5	53.3	20.2(FN*)	7258	72.5	27.5(FN*)
Private	1942	32.5	45.4	22.0	1310	67.3	32.7
School-Size							
<10,000	8233	28.6	50.3	21.1(FN*)	5879	70.5	29.5+
>10,000	3769	24.9	55.5	19.7	2832	73.8	26.2
TOTAL(FNa)	12003	27.4	52.0	20.6	8711	72.6	28.4

FOOTNOTES

= Number of Students, A = Abstain, L/M = Light/Moderate, H = Heavy

* p < .001 / + p < .05

a Note: Sample size in each category does not necessarily add up to the total sample due to missing data for each analysis.

Table 6 Results of One-Way ANOVA and T-test's of the Mean Drinks Per Week Consumed and Number of Problems Related to Drinking by Institutional Demographic Characteristics Among DRINKERS.

	#	Mean drinks per week	(sd)	Mean Number of Problems	(sd)
Region of the Country					
Northeast	2601	13.6	(15.0)	3.1	(2.9)
North Central	3153	11.6	(14.5)	3.0	(2.9)
South	2714	9.4	(14.2)	2.7	(2.9)
West	1782	8.4	(13.1)	2.6	(2.8)
Community-Size Institution Located					
< 100,000	8177	10.2	(10.6)(FN*)	2.6	(2.9)(FN+)
100-500,000	2333	8.2	(9.8)	2.2	(2.9)
> 100,000	1155	8.3	(9.2)	2.2	(2.8)
Type of School in Terms of Support					
Public	9560	9.6	(14.0)	2.6	(2.9)(FN+)
Private	1923	9.8	(14.6)	2.3	(3.0)
School-Size					
<10,000	8001	9.7	(14.5)	2.5	(3.0)
>10,000	3665	9.5	(13.0)	2.6	(2.8)
TOTALS		10.9	(13.7)	2.5	(2.9)

FOOTNOTE

+ p < .05
 * p < .001

Table 7 Chi-Square Results of Percentage of Drinkers who Reported Health/Personal, Social/Academic, Legal/Violence, and Drinking/Driving Behaviors as a Result of Alcohol Consumption for "Low Risk Drinkers" and for "High Risk Drinkers" (Over 21 Drinks Per Week for Males and Over 14 Drinks Per Week for Females).

	LOW RISK DRINKERS		HIGH RISK DRINKERS	
	[less than or equal] 21	[less than or equal] 14	> 21	> 14
	Males	Females	Males	Females
	N = 2232	N = 4938	N = 1426	N = 766
Health/Personal				
Hangovers	50.4	49.2	92.6	94.0
Nausea & Vomiting	33.1	33.2	76.1	81.8(FN+)
Thought might have problem with drinking	3.7	2.6(FN+)	21.3	15.8(FN+)
Academic/Social				
Attended class after drinking	3.3	1.5(FN*)	21.3	13.1(FN*)
Cut classes after drinking	4.5	3.0(FN+)	29.8	23.1(FN*)
Missed classes due to hangover	10.7	10.6	53.8	58.6(FN+)
Lower grade due to drinking	2.4	1.5(FN+)	19.3	15.2(FN+)
Played drinking games	74.4	70.0(FN*)	75.1	50.0(FN*)
Been criticized by a date for drinking too much	9.6	6.8(FN*)	31.6	22.5(FN*)
Legal				
Forced someone or were forced to have sex	3.0	3.3	6.2	12.2(FN*)
Had trouble with the law	2.9	1.3(FN*)	22.5	11.0(FN*)
In trouble with school admin.	.9	.5	7.4	4.7
Got in a fight	7.8	5.8(FN+)	38.8	29.8(FN*)
Used a fake ID	13.3	13.8	40.9	49.5(FN*)

Damaged Property	6.1	1.8(FN*)	33.2	12.5(FN*)
Drinking/Driving				
Driving after	27.0	19.5(FN*)	72.1	59.8(FN*)
drinking	16.3	11.8(FN*)	59.2	48.3(FN*)
Drinking while				
driving	16.9	10.1(FN*)	55.9	42.8(FN*)
Driving drunk	.7	.3+	3.4	1.4+
DWI Offense				

FOOTNOTE

+p < .05

* p < .001

FOOTNOTE

* This study was funded by Indiana University and the State University of New York, Potsdam.

REFERENCES

- Allen, D.N., Sprenkel, D.G., & Vitale, P.A. (1994). Reactance theory and alcohol consumption laws: Further confirmation among collegiate alcohol consumers. *Journal Studies on Alcohol*, 55(1), 34-40.
- Berkowitz, A.D., & Perkins, H.W. (1985). General differences in collegiate drinking: Longitudinal trends and developmental patterns. Paper presented at the American Personnel Association Conference.
- Billingham, R.E., Post, J., & Gross, W.C. (1993). Parental divorce and the change in drinking behavior from high school to college. *Psychological Reports*, 72 (3, pt 2), 1275-1281.
- Bofetta, P., & Garfinkel, L. (1990). Alcohol drinking and mortality among men enrolled in an American Cancer Society prospective study. *Epidemiology*, 1, 342-348.
- Borges, N.J., & Hansen, S.L. (1993). Correlation between college students' driving offenses and their risks for alcohol problems. *Journal of American College Health*, 42 (2), 79-81.
- Cahalen, D., & Cisin, I.H. (1968). American drinking practices; findings from a national probability sample. I. Extent of drinking by population subgroups.
- Carlucci, K., Genova, J., Rubackin, F., Rubackin, R., & Kayson, W.A. (1993). Effects of sex, religion, and amount of alcohol consumption on self-reported drinking-related problem behaviors. *Psychological Reports*, 72(3, pt 1), 983-987.
- Centers for Disease Control and Prevention (1994). Frequent alcohol consumption among women of childbearing age--Behavioral risk factor surveillance system, 1991. *Mortality and Morbidity Weekly Report*, 43(18), 328-329, 334-335.
- Cohen, S., Tyrrell, D.A., Russell, M.A., Jarvis, M.J., & Smith, A.P. (1993). Smoking, alcohol consumption, and susceptibility to the common cold. *American Journal of Public Health*, 82, 1277-1283.
- Connors, G.J., Maisto, S.A., & Watson, D.W. (1989). Initial drinking experiences among black and white male and female student drinkers. *International Journal of the Addictions*, 24(12), 1173-1182.
- Crowley, J.E. (1991). Educational status and drinking patterns: How representative are college students? *Journal of Studies on Alcohol*, 52(1), 10-16.
- Crum, R.M., Helzer, J.E., & Anthony, J.C. (1993). Level of education and alcohol abuse and dependence in adulthood: A further inquiry. *American Journal of Public Health*, 83(6), 830-837.

Engs, R.C. (1977). Drinking patterns and drinking problems of college students. *Journal of Studies on Alcohol*, 38, 2144-2156.

Engs, R.C. (1990). Family background of alcohol abuse and its relationship to alcohol consumption among college students: An unexpected finding. *Journal Studies of Alcohol*, 51, 542-547.

Engs, R.C., & Aldo-Benson, M. (1995). The association of alcohol consumption with self-reported illness in university students. *Psychological Reports*, 76, 727-736.

Engs, R.C., & Hanson, D.J. (1994). The student alcohol questionnaire: An updated reliability of the drinking patterns, problems, knowledge and attitude subscales. *Psychological Reports*, 74, 12-14.

Engs, R.C., & Hanson, D.J. (1993). Boozing and brawling on campus: A national study of violent problems associated with drinking over the past decade. *Journal of Criminal Justice*, 22(2), 171-180.

Engs, R.C., & Hanson, D.J. (1990). Gender differences in drinking patterns and problems among college students: A review of the literature. *Journal of Alcohol and Drug Education*, 1990, 35(2), 36-47.

Engs, R.C., & Hanson, D.J. (1989). Reactance Theory: A test with collegiate drinking. *Psychological Reports*, 64, 1083-1086.

Engs, R.C., & Hanson, D.J. (1985). The drinking patterns and problems of college students: 1983. *Journal of Alcohol and Drug Education*, 31(1), 65-83.

Engs, R.C., Hanson, D.J., Glicksman, L., & Smythe, C. (1990). The religious variables: Comparison of Canadian and American college students' alcohol abuse problems. *British Journal of Addictions*, 85, 1475-82.

Engs, R.C., & Mullen, K. (1996). Religion and importance of religion as factors in alcohol and drug use behaviour. Paper presented at the Kettil Bruun Epidemiology meetings, Edinburgh, Scotland.

Eta Sigma Gamma (1992). *A National Directory of College and University Health Education Programs and Faculties*, 11th Edition. Eta Sigma Gamma. Ball State University: Muncie, IN.

Ford, D.S., & Carr, P.G. (1990). Psychological correlates of alcohol consumption among black college students. *Journal of Alcohol and Drug Education*, 36(1), 45-51.

- Garg, R., Wagener, D.K., & Madans, J.H. (1993). Alcohol consumption and risk of ischemic heart disease in women. *Archive of Internal Medicine*, 153, 1211-1216.
- Gaziano, J.M., Buring, J.E., Breslow, J.L., Goldharber, S.Z., Rosner, R., VanDenburgh, M., Willett, W., & Hennekens, C.H. (1993). Moderate alcohol intake, increased levels of high-density lipoprotein and its subfractions, and decreased risk of myocardial infarction. *New England Journal of Medicine*, 329, 1829-34.
- Gonzalez, G. (Winter 1993-1994). Can colleges reduce student drinking? *Planning for Higher Education*, 22, 14-21.
- Gross, W. (1993). Gender and age differences in college students' alcohol consumption. *Psychological Reports*, 72, 211-216
- Gustafson, R. (1993). Alcohol-related expected effects and the desirability of these effects for Swedish college students measured with the Alcohol Expectancy Questionnaire. *Alcohol and Alcoholism*, 28(4), 469-475.
- Hanson, D.J., & Engs, R.C. (1992) College students drinking problems: A national study, 1982-1991. *Psychological Reports*, 71, 39-42.
- Hanson, D.J., & Engs, R.C. (1990) Black college students drinking patterns in: Forster, B., & Salloway, J.C. (Eds) *The Socio Cultural Matrix of Alcohol and Drug Abuse*, 62-78a.
- Haworth-Hoepfner, S., Globetti, G., Stem, J., & Morasco, F. (1993). The quantity and frequency of drinking among undergraduates at a southern university. *International Journal of the Addictions*, 24, 829-857.
- Hughes, S.P., & Dodder, R.A. (1992). Changing the minimum drinking age: results of a longitudinal study. *Journal Studies on Alcohol*, 53, 568-575.
- Kodman, F., & Sturmak, M. (1984). Drinking patterns among college fraternities: A report. *Journal of Alcohol and Drug Education*, 27(3), 61-72.
- Lotterhos, J.F., Holbert, D., & Glover, E.D. (1990). The impact of a 21-year drinking age law on university students' alcohol use, 1986-1989. Paper presented at American Alliance for Health, Physical Education, Recreation and Dance Conference, New Orleans, LA.
- Loughlin, K.A., & Kayson, W.A. (1990). Alcohol consumption and self-reported drinking-related problem behaviors as related to sex, work environment and level of education. *Psychological Reports*, 67, 1323-1328.

Maddox, G.L., & Williams, J.R. (1968). Drinking behavior of negro college students. *Quarterly Journal of Studies on Alcohol*, 29, 117-129.

Maney, D.W. (1990). Predicting university students' use of alcoholic beverages. *Journal of College Students Development*. 31, 23-32.

Miller, J., & Garrison, H. (1982). Sex roles: The division of labor at home and in the workplace. *Annual Review of Sociology*, 8, 237-262.

Mullen, K., Blaxter, M., & Dyer, S. (1986). Religion and attitudes toward alcohol use in the Wester Isles. *Drug and Alcohol Dependence*, 18, 51-72.

Norusis, M. (1990). *SPSS Advanced Statistics: Student Guide*, SPSS Inc.: Chicago, IL.

Perkins, H.W. (1992). Gender patterns in consequence of collegiate alcohol abuse: A 10-year study of trends in an undergraduate population. *Journal of Studies on Alcohol*, 456-462.

Reiskin, H., & Wechsler, H. (1981). Drinking among college students using a campus mental health center. *Journal of Studies on Alcohol*, 42, 716-724.

Robinson, S.E., Gloria, A.M., Roth, S.L., & Scheutter, R.M. (1993). Patterns of drug use among female and male undergraduates. *Journal of College Student Development*, 34(2), 130-137.

Saltz, R., & Elandt, R. (1986). College student drinking studies, 1976-1985. In *Contemporary Drug Problems*. New York: Federal Legal Publications, 117-159.

Schall, M., Weede, T.J., & Maltzman, I. (1991). Predictors of alcohol consumption by university students. *Journal of Alcohol and Drug Education*, 37(1), 72-80.

Simon, J.A. (1987). *Physical Education Gold Book: 1987-1989 (Directory of Physical Educators in Higher Education)*, American Association for Health, Physical Education, and Recreation: Reston, VA.

Snyder, T.D. (1993). *Digest of Education Statistics, 1993*. National Center for Education Statistics, Department of Education: Washington, D.C.

Stark, R. (1994). *Sociology: Fifth Edition (Chapters 11,16,17,18,19)*. Wardsworth Publishing Co.: Belmont, CA.

Tampke, D.R. (1990) Alcohol behavior, risk perception, and fraternity and sorority membership. *NASPA Journal*, 28(1), 71-77.

The College Blue Book: Degrees Offered by College and Subject (1993). MacMillan Publishing Co.: New York, NY.

Thomas, M., Goddard, E., Hickman, M., & Hunter, P. (1993). *General Household Survey 1992*, Office of Population Censuses and Surveys, HMSO: London.

Wechsler, H., Dowdall, G.W., Davenport, A., & Castillo, S. (1995). Correlates of college students binge drinking. *American Journal of Public Health*, 85(7), 921-926.

Williams, J.E., Newby, R.G., & Kanitz, H.E. (1993). Assessing the need for alcohol abuse programs for African-American college students. *Journal of Multi cultural Counseling and Development*, 21(3), 155-167.