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## RELATIONSHIP BETWEEN UNIVERSITY STUDENTS' DEMOGRAPHICS AND DRINKING & DRIVING BEHAVIORS

Carlos Razo

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RELATIONSHIP BETWEEN UNIVERSITY STUDENTS' DEMOGRAPHICS AND  
DRINKING & DRIVING BEHAVIORS

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A Thesis  
Presented to the  
Faculty of  
California State University,  
San Bernardino

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
in  
Public Health

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by  
Carlos Efren Razo Cabeza  
May 2022

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## ABSTRACT

In the U.S. there continues to be public health concerns behind alcohol related motor-vehicle accidents, as the yearly death continues to remain high. University students are a population of interest, as the age group found in these institutions closely matches the age range of most alcohol related accidents. University students already experience health related problems with their drinking & driving behaviors. Literature supports that university students are more susceptible to drinking and driving when compared to those that don't attend. This study focused on determining whether a relationship existed between university demographics (age, gender, and student classification) and their drinking and driving behaviors. The data was gathered by sending out a mass distribution email out to all enrolled students attending a public university during the spring 2022 semester and inviting them to a 10 question survey. The survey data was analyzed to determine if there were any statistically significant differences behind the respondents' answer choices. A secondary analysis was also conducted to determine the strength of an association between the variables of interest. The results obtained demonstrated that university students within some, but not all, demographics are more likely to participate in these risky behaviors. Ultimately, this research builds on the need for policy reform and future research in order to create safer roads for the general public.

## ACKNOWLEDGEMENTS

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# CHAPTER ONE

## INTRODUCTION

### Problem Statement

Over 250 million motor vehicles are registered each year in the United States (U.S.) and that number continues to increase with every year that passes (Stasha, 2022). The increase in motor vehicles also directly increases the likelihood of someone being involved in motor vehicle injury and fatality. What's most alarming about this problem is that an estimated 60% of all motor vehicle injuries and fatalities that happen in the U.S. are linked to drivers with a Blood Alcohol Concentration (BAC) of .01+ (NHTSA, 2019). Furthermore, BAC is total alcohol concentration in an individual's blood stream, which many states have differing percentages defining intoxication.

Regardless of what a state may define as intoxication, the Centers for Disease Control and Prevention (CDC) states that most fatal vehicle related accidents involving a drunk driver are between 21-34 years of age, an age group that closely matches the age range of college students (CDC, 2014). In fact, studies of college students' drinking habits have suggested that this specific group is more susceptible to drinking and driving, when compared to those that do not attend college (Wechsler et al., 2003). Hence, this is a major public health and safety issue that continues to impact millions of drivers that utilize public roads to get to their intended destinations.

Despite this problem, many of these studies have been limited, as they often group university students as one sample group regardless of their demographics. Instead, college students should be examined demographically to determine what relationships exist between their “drinking and driving habits” and “demographics characteristics.” Over the years more diverse groups of students have been admitted to colleges intentionally. Colleges believe that by creating a diverse environment it encourages critical thinking and helps students prepare for the real world (Bowman, 2011). Demonstrating that not all college students fit under one generalized group, as most studies tend to group them.

This study understands that college students are more susceptible to drinking and driving, however the question becomes more specific as it tries to answer “What college groups are more susceptible?” In order to answer this question the study will try to answer a more narrow question that focuses on basic demographics. Essentially trying to determine if a relationship might exist between college students’ age, gender, or student classification and their drinking and driving behaviors. Having a better understanding of this relationship can help provide public health and safety advocates with data to design more effective education and deterrent programs. This would not only save thousands of lives a year, but also make public roads safer for the general public.

#### Purpose of Study

The purpose of this study is to determine the relationship between university students’ gender, age, and student classification (e.g., year of study)

and the likelihood of driving under the influence of alcohol. The study is unique given the participants attend a minority-serving institution which is often underrepresented in the literature.

### Research Question

Is there a correlation between drinking and driving practices and university students':

- i) Age?
- ii) Gender?
- iii) Classification (freshman, sophomore, junior, or senior standing)?

### Significance to Public Health

The significance of this study is centered around determining how age, gender, and academic standing classification among university students influence the likelihood of driving under the influence of alcohol. University students' involvement in alcohol-related motor vehicle accidents remains consistently high each year. Therefore, a more comprehensive understanding of this relationship can foster the development of effective education and deterrent programs. In turn, this may lead to improved public safety and a reduction in drunk driving fatalities.

The public health competencies that will be addressed throughout this thesis include:

1) *Interpreting results of data analysis for public health research, policy, or practice.* This will be accomplished by evaluating survey data and synthesizing it to make recommendations for policy reform and common practices.

2) *Explaining the critical importance of evidence in advancing public health knowledge.* This will be accomplished by utilizing data collected as part of this study to provide academic recommendations based on the results.

## CHAPTER TWO

### LITERATURE REVIEW

According to the National Institute of Health (NIH), drunk driving is a leading preventable cause of death in the U.S. (NIH, 2020). Yet, through education, awareness, and individual compliance fewer alcohol-related accidents may occur in the U.S. (NHTSA, 2019). It is estimated that approximately 10,000 alcohol-attributed motor vehicle traffic fatalities occur each year (NHTSA, 2017). According to the CDC drivers between 21-34 years of age have a higher tendency to not only drink and drive, but also be involved in fatal vehicle related accidents (CDC, 2014). The CDC's statements not only support, but also align with independent surveys conducted by the Department of Transportation (DOT). The DOT's surveys indicated that an estimated 50% of all alcohol-attributed motor vehicle traffic fatalities involve drivers between 21-34 years of age (U.S. DOT, 2010). An age group that closely matches the age range of college students.

In fact, many studies like "Drinking and Driving Among College Students" have found that college students are more susceptible to drinking and driving when compared with peers not attending college (Wechsler et al., 2003). It is suggested that about 30% of college students that consume any amount of alcohol will get behind the wheel shortly after their last drink (Wechsler et al., 2003). The study also found that 1 in every 10 college students has driven a

motor vehicle after consuming  $\geq 5$  drinks (Wechsler et al., 2003). This has placed college students that drink and drive at fault for more than 50% of all alcohol-attributed motor vehicle fatalities that happen annually (NHTSA, 2017). The prevalence of drinking and driving tends to increase as students' classification (ex. freshman < sophomore < junior < senior) gets closer to graduation (Wechsler et al., 2003). It has been estimated that if these drinking and driving behavioral patterns among college students can be reduced, an estimated 5,000 lives can be saved yearly (NHTSA, 2017).

The National Highway Traffic Safety Administration (NHTSA) has tried to deter individuals from participating in drunk driving to keep public roads safer. In order to deter individuals from driving under the influence of alcohol, (NHTSA) has implemented new policies and stricter punishments (NHTSA, 2017). For example, in the state of California, if an individual is convicted of driving under the influence (DUI) their driving privileges might get suspended for 4 to 12 months depending on the circumstances (Evans, Neville, & Graham, 1991). This may be accompanied by a minimum \$1,500 fine and possibly jail time (Richard, Magee, Bacon-Abdelmoteleb, & Brown, 2018). According to California State Laws, a person is subject to DUI when a motor vehicle is operated with a  $\geq .08$  blood alcohol concentration (BAC) (Offenses Involving Alcohol & Drugs, 2017). These policies appeared to have initially served as a deterrent, it seems that their effectiveness may have waned in recent years (NHTSA, 2019). The effectiveness of these policies is measured by assessing fluctuations in the

randomness of fatalities each year; specifically, minimal randomness may mean these policies are less effective (NHTSA, 2019). This random fluctuation is important in understanding driving practices, as it can help restructure current resources or introduce others that may ultimately deter individuals from drinking and driving. However, emphasis should also be placed on assessing why university students practice such risky behavior, as this may help design more effective education and deterrent programs.



## CHAPTER THREE

### METHODS

#### Study Design

This was a cross-sectional study where students (part-time, full time, undergraduate, graduate, and Open University students) attending a public university were asked to complete a 10-question survey. The study was designed to collect quantitative data regarding participants' demographics, drinking habits, and driving behaviors with the aim to better understand the relationship between university students' age, gender, and classification and the likelihood of driving under the influence of alcohol.

#### Data Sources and Collection

Data were collected by sending a mass distribution email out to all enrolled students attending a public university during the Spring 2022 semester (part-time, full time, undergraduate, graduate, and Open University students) (Appendix A & B Survey Questions). The mass distribution email was sent twice (1 week apart) in order to increase response rates. All university students were invited to respond to the survey via email and eligibility criteria were based on screening questions based on the inclusion and exclusion criteria below. The informed consent, screening questions, and formal survey were distributed anonymously using Google Forms. Participants were directed to read and complete the informed consent prior to starting the survey. Those who declined

consent were directed to a thank you and exit message. Similarly, those that did not meet eligibility criteria received the same message. Only those respondents who provided consent and were eligible were directed to participate in the survey.

Participant Inclusion Criteria

Inclusion criteria	Assessed at screening	Include participant if responds:
≥ 18 years of age	How old are you?	≥ 18 years of age
Current university student	Are you currently enrolled at a university in an undergraduate or graduate program or as an Open University student?	Yes

Participant Exclusion Criteria

Exclusion criteria	Assessed at screening	Exclude if participant responds:
Already completed the survey	Have you already participated in this survey?	Yes

Measures and Data Analysis

Data were analyzed using the Statistical Software Package for the Social Sciences (SPSS) v. 28 (IBM, Armonk, NY). Given the data included categorical variables, results were compared using a chi-squared test to determine if there were any statistically significant differences between variable categories. Given that some survey data were incomplete (e.g., survey questions were

unanswered), a secondary analysis was conducted after excluding these incomplete surveys. Statistical significance was then compared between analyses. No significant differences existed between the analyses, therefore results only include completed survey data. A spearman's Rho test was also used to measure the strength of an association between our variables of interest and drinking & driving behaviors.

### Ethics

This study incorporated the collection of quantitative primary data at a public university, which was approved by the Institutional Review Board (FY2202-166) (Appendix C IRB Approval Letter).

## CHAPTER FOUR

### RESULTS

There were a total of 713 respondents that met all inclusion criteria; however, 27 participants were excluded from the analyses as they failed to even answer 1 of the 10 survey questions. An analysis was conducted with all  $n = 713$  respondents and directly compared to  $n = 686$  the sample size that excluded 27 respondents. There were no significant differences between the two sample sizes, as the statistical significance remained unchanged. Therefore, the final sample size for this study was  $n = 686$  respondents and incomplete surveys were excluded from any analyses.

When asked “What is your gender assigned at birth?” participants who identified as female represented 78.7% of respondents ( $n = 540$ ), while those who identified as male represented 20.7% of respondents ( $n = 142$ ). In this survey there were ( $n = 4$ ) participants that selected the option “Prefer not to Answer.”

Respondents' age was grouped into 6 different categories (A. 18, B. 19-20, C. 21-22, D. 23-24, E. 25 and older, and E. Prefer not to answer.) A majority of respondents ( $n = 331$ ) identified as being 25 and older, which accounted for 48.3% of those surveyed ( $P < 0.001$ ). Approximately 5.4% ( $n = 37$ ) were 18 years of age, 15% ( $n = 103$ ) were between the ages of 19-20, 18.1% ( $n = 124$ ) between 21-22, and 12.8% ( $n = 88$ ) between 23-24 years of age ( $P < 0.001$ ).

**Table 1.1** Responses to Demographic questions according to gender assigned at birth and age

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>1. What is your gender assigned at birth?</b>			
A. Male	142	20.7%	<0.001
B. Female	540	78.7%	
C. Prefer not to answer	4	0.6%	
<b>2. What is your age?</b>			
A. 18	37	5.4%	<0.001
B. 19-20	103	15.0%	
C. 21-22	124	18.1%	
D. 23-24	88	12.8%	
E. 25 and older	331	48.3%	
F. Prefer not to answer	3	0.4%	

The respondents were also asked to identify their student classification and responses were limited to the following six options (A. Freshman, B. Sophomore, C. Junior, D. Senior, E. Open University, and F. Prefer not to answer). The majority of respondents identified as juniors 34.5% (n = 237) or seniors 35.6% (n = 244) (see Table 1.2). A total of 1.6% (n = 11) skipped this question and 6.9% (n = 47) preferred not to answer.

**Table 1.2** Responses to demographic question according to student classification.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>3. What is your student classification?</b>			
Skipped Question	11	1.6%	<0.001
A. Freshman	46	6.7%	
B. Sophomore	57	8.7%	
C. Junior	237	34.5%	
D. Senior	244	35.6%	
E. Open University	44	6.4%	
F. Prefer not to answer	47	6.9%	

### Drinking Behaviors

Among those that answered “yes” to the question “In the past 12 months have you consumed any alcoholic beverages?” were defined as an alcohol user. The alcohol users in this study accounted for 72% (n = 494) of respondents, whereas 0.9% (n = 6) preferred not to answer, and 0.3% (n = 2) skipped the question ( $P < 0.001$ ) (see Table 2.1).

**Table 2.1** Responses to drinking behaviors in the past 12 months.

Variables	Overall ( n = 686)		
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	<b>N</b>	<b>%</b>	<b>P-Value</b>
<b>4. In the past 12 months have you consumed any alcoholic beverages?</b>			
Skipped Question	2	0.3%	<0.001
A. Yes	494	72.0%	
B. No	184	26.8%	
C. Prefer not to answer	6	0.9%	

Those that responded “yes” to the previous question (72.0%) were asked a follow-up, “How often did/do you have a drink containing alcohol?” Five possible answer choices were provided that included: (A. About once a month, B. 2 to 4 times a month, C. 2 to 3 times a week, D. 4 or more times a week, and E. Prefer not to answer) (see Table 2.2). A majority of respondents, 86.1% (n = 591), had either selected option A. About once a month or B. 2 to 4 times a month ( $P < 0.001$ ).

**Table 2.2** Responses to drinking frequency by university students.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>5. If you answered “yes” to the above question: How often did/do you have a drink containing alcohol?</b>			
Skipped Question	164	23.9%	<0.001
A. About once a month	265	38.6%	
B. 2 to 4 times a month	162	23.6%	
C. 2 to 3 times a week	45	6.6%	
D. 4 or more times a week	20	2.9%	
E. Prefer not to answer	30	4.4%	

### Alcohol Use and Driving Behaviors

The following three questions asked about alcohol and respondents' driving behaviors. The first question asked, “In the past 12 months, have you ever driven a motor vehicle within two hours of drinking an alcoholic beverage?” The majority of respondents, 81.6% (n = 560) indicated “no” ( $P < 0.001$ ) (see Table 3.1).



**Table 3.1** Responses to drinking and getting behind the wheel in the past 12 months.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>6. In the past 12 months, have you ever driven a motor vehicle within two hours of drinking an alcoholic beverage?</b>			
Skipped Question	2	0.3%	<0.001
A. Yes	122	17.8%	
B. No	560	81.6%	
C. Prefer not to answer	2	0.3%	

The next question asked “Have you ever been charged with driving under the influence (DUI)?” to which 96.6% (n = 663) responded “no” ( $P < 0.001$ ) (see Table 3.2). Of those that responded “yes” (n = 19), with the exception of one respondent, identified as being 25 years of age or older.

**Table 3.2** Responses to being charged with driving under the influence (DUI)?

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>7. Have you ever been charged with driving under the influence (DUI)?</b>			
Skipped Question	4	0.6%	<0.001
A. Yes	19	2.8%	
B. No	663	96.6%	
C. Prefer not to answer	0	0%	

The last question within this set asked, “Have you ever been involved in an accident and charged with a (DUI)?” Those that answered “no” accounted for 98.3% (n = 674) of respondents ( $P<0.001$ ) (see Table 3.3). Among those that answered yes, all identified as 25 years of age or older.

**Table 3.3** Responses to being involved in an accident and charged with a DUI.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>8. Have you ever been involved in an accident and charged with a (DUI)?</b>			
Skipped Question	4	0.6%	<0.001
A. Yes	7	1%	
B. No	674	98.3%	
C. Prefer not to answer	1	0.1%	

Of note, the frequency of respondents who answered “yes” to questions 6, 7, and 8 decreased from 17.8% (n = 122), to 2.8% (n =19), to 1% (n = 7).

#### Drinking and Driving Awareness

The final two questions asked respondents general awareness questions regarding drinking and driving. The first question asked “Are you aware of the laws against drinking and driving?” A majority of respondents 96.6% (n = 665) responded “yes” ( $P<0.001$ ) (See Table 4.1). All respondents that had answered “yes” to “In the past 12 months, have you ever driven a motor vehicle within two hours of drinking an alcoholic beverage?” acknowledged their awareness of laws against drinking and driving with the exception of three respondents.

**Table 4.1** Responses to awareness of laws against drinking and driving.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>9. Are you aware of the laws against drinking and driving?</b>			
Skipped Question	4	0.6%	<0.001
A. Yes	665	96.9%	
B. No	15	2.2%	
C. Prefer not to answer	2	0.3%	

The last question asked “Do you think the laws against drinking and driving are sufficient to deter someone from drinking while intoxicated?” The majority, 64.9% (n = 445) responded “no” ( $P < 0.001$ ) (See Table 4.2). The data also revealed that the majority 30.9% (n = 212) of respondents who indicated “no” were 25 years of age or older.

**Table 4.2** Responses to drinking and driving laws being sufficient in deterring intoxicated individuals from getting behind the wheel.

Variables	Overall ( n = 686)		
	N	%	P-Value
<b>10. Do you think the laws against drinking and driving are sufficient to deter someone from driving while intoxicated?</b>			
Skipped Question	3	0.4%	<0.001
A. Yes	220	32.1%	
B. No	445	64.9%	
C. Prefer not to answer	18	2.6%	

A Spearman’s Rho Test was conducted to determine whether correlations existed among age, gender, and student classification (independent variables) and drinking and driving behaviors (dependent variables). This test indicated that there was no strong correlation between any of the variables. However, statistically significant correlations were found. There was a weak, negative correlation between age and drinking behavior,  $r(675) = -.226, P < 0.001$ . Similarly, there was a weak, negative correlation between student classification and drinking behaviors,  $r(621) = -.259, P < 0.001$ . There was also a weak, negative correlation between student classification and driving behaviors,  $r(625) = -.210, P < 0.001$  (See Table 5.1).

**Table 5.1** Spearman's Rho Test conducted among dependent and independent variables

			n(df)	r-Value	P-Value
<b>Question Numbers</b>	<b>Independent Variable</b>	<b>Dependent Variable</b>			
1 & 4	Gender	Drinking	674(673)	-0.065	0.091
1 & 6	Gender	Driving	678(677)	-0.049	0.199
1 & 8	Gender	Accident	678(677)	-0.042	0.278
2 & 4	Age	Drinking	676(675)	-0.226	<0.001
2 & 6	Age	Driving	680(679)	-0.192	<0.001
2 & 8	Age	Accident	680(679)	-0.078	0.041
3 & 4	Student Classification	Drinking	622(621)	-0.259	<0.001
3 & 6	Student Classification	Driving	626(625)	-0.210	<0.001
3 & 8	Student Classification	Accident	626(625)	-0.019	0.629

## CHAPTER FIVE

### DISCUSSION

The purpose of this study was to investigate whether a correlation existed between university student demographics and drinking & driving behaviors. Of particular interest were the following variables: age, gender, and student classification. Based on the results, there were differences between respondents' age, gender, or student classification and drinking and driving behaviors. Results also indicated that there were some statistically significant correlations between some of the independent and dependent variables. Therefore, suggesting that a university students' age, gender, and their academic classification can be linked to drinking and driving behavioral patterns.

#### Student Classification and Drinking & Driving Behaviors

This study not only reviewed recent literature, but also comparatively analyzed similar survey questions. The study findings suggest that nearly 72% of university students reported to have consumed an alcoholic beverage in the past 12 months. This not only aligns with the existing literature, but also supports the idea that university students may consume alcohol regularly (Wechsler et al., 2003). When directly comparing student classification with drinking and driving behavior, a weak negative correlation was found. This means that as a university student's classification gets closer to graduation the chances of participating in drinking and driving behaviors decrease.

The findings in this study differ from other similar studies which suggest higher student classification is related to a greater frequency of drinking among university students (Wechsler et al., 2003). However, these studies establish a relationship among “drinking frequency” and not “drinking behaviors” (Wechsler et al., 2003). Drinking frequency measures how often an individual drinks, whereas drinking behaviors assess whether any alcoholic beverages have been consumed within a specific timeframe.

However, literature does support the correlation that was observed between student classification and driving behaviors. In fact, research performed by Pedersen, Neighbors, & LaBrie, 2010 found a negative correlation between students’ year of study and subsequent driving behaviors. These researchers also theorized that the only time this correlation might not exist would be when drinking is not part of the university’s culture (Pedersen, Neighbors, & LaBrie, 2010). A low drinking culture, according to Pedersen, not only impacts an individual’s drinking habits but also their driving behaviors (Pedersen, Neighbors, & LaBrie, 2010).

#### Gender and Drinking & Driving Behaviors

In relation to university students’ gender distribution and drinking & driving behaviors, no correlation was found. However, it is plausible that one might exist beyond this study. In fact, a study conducted by Hoyle (2018) highlights that men tend to be more susceptible to drinking and driving than their female counterparts. The same study acknowledges that even though a susceptibility



gap (a large drinking difference) between gender existed among its sample, it might not always exist in others (Hoyle et al., 2018). Other studies suggest that analyses between gender and drinking & Driving may be skewed when there is unequal representation among genders (Cullen et al., 2021).

### Age and Drinking & Driving Behaviors

The findings in this study suggest that there is a statistically significant, but weak, negative correlation between age and drinking behaviors. This means that as a university student gets older their drinking behaviors decrease. However, previously published studies suggest there is no correlation. For example, Wechsler (2000) argued that underage and of-age university students have equal access to alcoholic beverages, despite existing alcohol laws (Wechsler, 2000). This equal access to alcoholic beverages may prevent the establishment of a correlation between age and drinking behaviors (Wechsler, 2000).

In relation to a student's age and driving behaviors, no correlation was observed. However, many studies suggest otherwise. Arafa (2020) found that younger drivers often do not fully understand the dangers behind risking driving behaviors, when compared to older drivers. Trankle, Gelau, & Metker (1990) evaluated how different age groups perceived dangerous driving situations and concluded that younger individuals often do not perceive dangerous driving situations (e.g., texting & driving, drinking & driving) as being dangerous enough to deter them from participating in them.

## University Student Demographics and Accidents

Finally, the study found no correlation among the independent variables (age, gender, or student classification) and involvement in alcohol- related motor vehicle accidents. This finding contradicts the literature given previous studies suggest that a higher education level may lead to fewer motor vehicle accidents (Heydari et al., 2013). Analyses from this study found only 1% of all respondents were involved in a motor vehicle accident and charged with driving under the influence.

### Strengths and Limitations

This study had several limitations such as: first, the study should have asked respondents to enter their exact age instead of having them select an age group. Age grouping made it difficult to determine a respondents' exact age in association to the questions being asked which may have allowed for more specificity when forming conclusions.

Secondly, it would also have been desirable to have a proper definition of what DUI meant within some of the survey questions or at the start of the survey. Some questions did not account for the fact that individuals may be charged with a DUI in connection to other drugs (e.g., marijuana). Third, the inclusion of the Master's-level student classification option in one of the survey questions in order to have accurate representation of the student population would have been desirable.

Fourth, including an exclusion criteria that limited the survey to only university students that drive regularly may have increased the validity of the responses. Fifth, there could also be social acceptability bias, where respondents answered questions in a manner that is viewed favorably by researchers and this alone could threaten the validity of the results.

Some notable strengths include the use and collection of primary data from a large sample size. The data collection methods mirrored other studies that examined university-student behaviors. This study was also able to effectively limit the participation of those who didn't identify as a university student. There is notable authenticity behind the utilization of primary data, as data was collected directly from the source of interest. Lastly, the collection of quantitative data is favorable, by design as it often is direct and linked to few variables.

### Recommendations

Based on these results, students attending a minority-serving institution continue to participate in drinking and driving behaviors.

The study observed that, despite their awareness of the possible legal consequences, some university students still admit to driving after consuming alcohol. These risky drinking and driving behaviors are not only dangerous to the individual, but also to those that might be directly harmed. Therefore, this issue remains a major public health concern, despite the assumption that laws against drinking and driving are the most effective method of deterring this behavior (Gakuru, 2021). The results of this study indicate that other interventions that

reach university students may be needed. This recommendation comes after 65% of all respondents in this survey indicated that the current laws do little to nothing to deter individuals from drinking and driving.

Additional, future research should address why university students continue to participate in such risky behavior. The interpretation of these results could aid universities in figuring out how to better support their students and potentially prevent this behavior from happening. Along with this, it could significantly reduce the number of injuries and fatalities associated with drinking and driving, which is a major issue that the U.S. continues to experience (NHTSA, 2019).

It may also be beneficial to have university students participate in yearly drinking and driving behavioral training. Scheduled training courses have proven to be effective in reminding individuals of acceptable and unacceptable behaviors among society (Wagonhurst, 2002). The training course should not only highlight the dangers behind drinking & driving, but also provide guidance on where to seek on campus help. Most importantly, establishing a policy that ensures university students free access to this resource, can encourage students to seek help when needed.

The recommendations provided have been founded on the interpretation of results in order to advocate for policy reform and future research.

Recommendations are also supported by evidence-based solutions and align with current public health competencies.

## Conclusion

The results of this study suggest that students within some, but not all, demographics are more likely to participate in drinking and driving behaviors. These results collectively are important in helping design more effective education and deterrent programs, as a continued public health concern exists among university students and drinking and driving. Based on these findings it is also important to incorporate policy reform and conduct future research. Policy reform must focus on implementing harsher penalties for those that drink and drive. The current assumption is that the current laws against drinking and driving are not sufficient to prevent participation in these behaviors. Furthermore, future research may help to better understand students' decision-making after consuming alcohol. The findings of this type of research can help universities not only better support their students, but also help them seek more effective resources.

At the moment there is an indication that university students significantly contribute to motor vehicle accidents due to their drinking and driving behaviors. This only adds to the continued problem with drinking and driving in the U.S. given that it accounts for approximately 60% of all motor vehicle-related accidents (NHTSA, 2019). This suggests that continued research is needed in order to better understand why so many individuals are willing to drink and drive. Hopefully, by understanding this problem, it will lead to safer roads for us all.

APPENDIX A  
SURVEY QUESTIONS PART 1

1. What was your gender assigned at birth?
  - A. Male
  - B. Female
  - C. Prefer not to answer
  
2. What is your age?
  - A. 18
  - B. 19-20
  - C. 21-22
  - D. 23-24
  - E. 25 and older
  - F. Prefer not to answer
  
3. What is your student classification?
  - A. Freshman
  - B. Sophomore
  - C. Junior
  - D. Senior
  - E. Open University
  - F. Prefer not to answer
  
4. In the past 12 months have you consumed any alcoholic beverages?
  - A. Yes
  - B. No
  - C. Prefer not to answer
  
5. If you answered "yes" to the above question: How often did/do you have a drink containing alcohol?
  - A. About once a month
  - B. 2 to 4 times a month
  - C. 2 to 3 times a week
  - D. 4 or more times a week
  - E. Prefer not to answer

Survey created by Carlos E. Razo Cabeza

APPENDIX B  
SURVEY QUESTIONS PART 2



6. In the past 12 months, have you ever driven a motor vehicle within two hours of drinking an alcoholic beverage?

A. Yes

B. No

C. Prefer not to answer

7. Have you ever been charged with driving under the influence (DUI)?

A. Yes

B. No

C. Prefer not to answer

8. Have you ever been involved in an accident and charged with a (DUI)?

A. Yes

B. No

C. Prefer not to answer

9. Are you aware of the laws against drinking and driving?

A. Yes

B. No

C. Prefer not to answer

10. Do you think the laws against drinking and driving are sufficient to deter someone from driving while intoxicated?

A. Yes

B. No

C. Prefer not to answer

Survey created by Carlos E. Razo Cabeza

APPENDIX C  
IRB APPROVAL LETTER

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**IRB-FY2022-166 - Initial: IRB Admin./Exempt Review Determination Letter**

6 messages

Mon, Jan 31, 2022 at 10:38 AM



January 28, 2022

**CSUSB INSTITUTIONAL REVIEW BOARD**  
Administrative/Exempt Review Determination  
Status: Determined Exempt  
IRB-FY2022-166

Prof. Neal Malik and Carlos Razo  
CNS - Health Science  
California State University, San Bernardino  
5500 University Parkway  
[San Bernardino, California 92407](#)

Dear Prof. Neil Malik and Carlos Razo:

Your application to use human subjects, titled "Drinking and Driving Behaviors Among University Students " has been reviewed and determined exempt by the Chair of the Institutional Review Board (IRB) of CSU, San Bernardino. An exempt determination means your study had met the federal requirements for exempt status under 45 CFR 46.104. The CSUSB IRB has weighed the risks and benefits of the study to ensure the protection of human participants.

This approval notice does not replace any departmental or additional campus approvals which may be required including access to CSUSB campus facilities and affiliate campuses. Investigators should consider the changing COVID-19 circumstances based on current CDC, California Department of Public Health, and campus guidance and submit appropriate protocol modifications to the IRB as needed. CSUSB campus and affiliate health screenings should be completed for all campus human research related activities. Human research activities conducted at off-campus sites should follow CDC, California Department of Public Health, and local guidance. See CSUSB's [COVID-19 Prevention Plan](#) for more information regarding campus requirements.

You are required to notify the IRB of the following as mandated by the Office of Human Research Protections (OHRP) federal regulations 45 CFR 46 and CSUSB IRB policy. The forms (modification, renewal, unanticipated/adverse event, study closure) are located in the Cayuse IRB System with instructions provided on the IRB Applications, Forms, and Submission webpage. Failure to notify the IRB of the following requirements may result in disciplinary action. The Cayuse IRB system will notify you when your protocol is due for renewal. Ensure you file your protocol renewal and continuing review form through the Cayuse IRB system to keep your protocol current and active unless you have

completed your study.

- **Ensure your CITI Human Subjects Training is kept up-to-date and current throughout the study.**
- **Submit a protocol modification (change) if any changes (no matter how minor) are proposed in your study for review and approval by the IRB before being implemented in your study.**
- **Notify the IRB within 5 days of any unanticipated or adverse events are experienced by subjects during your research.**
- **Submit a study closure through the Cayuse IRB submission system once your study has ended.**

If you have any questions regarding the IRB decision, please contact Michael Gillespie, the Research Compliance Officer. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at [mgillesp@csusb.edu](mailto:mgillesp@csusb.edu). Please include your application approval number IRB-FY2022-166 in all correspondence. Any complaints you receive from participants and/or others related to your research may be directed to Mr. Gillespie.

Best of luck with your research.

Sincerely,

*Nicole Dabbs*

Nicole Dabbs, Ph.D., IRB Chair  
CSUSB Institutional Review Board

ND/MG

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