

**SOCIAL NORMS, ATTITUDES AND PERCEPTIONS OF ALCOHOL AND DRINKING  
AND THEIR RELATIONSHIP WITH RISKY BEHAVIOR AMONG YOUNG ADULTS:  
A COMPARATIVE STUDY IN NEIVA, COLOMBIA AND PITTSBURGH, U.S.A.**

by

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**ABSTRACT**

**Background:** Drinking patterns, including behavioral beliefs among young adults may vary from one country to another or be heavily influenced by cultural/regional factors. In order to identify opportunities for targeted interventions to reduce alcohol-related injuries and illnesses, improved understanding of drinking patterns, beliefs and perceptions of the target population are necessary. **Methods:** Survey questionnaires among young adult patients at two academic, tertiary-care emergency departments (ED) were conducted to determine the similarities and differences in patient characteristics, drinking patterns and behavioral beliefs associated with drinking. Two independent samples, one consisting of Colombian (n=132) and the other of American (n=91) young adult patients, were recruited. Participants' drinking status was determined using the Alcohol Use Disorder Identification Test-Consumption (AUDIT C). Patient demographics and behavioral beliefs about drinking behaviors were obtained through guided self-administered survey questionnaires. Specifically, beliefs about how many drinks it would take to get drunk, intention to drink, feelings about drinking, including perceived drinking norms, control and situational confidence were examined. **Results:** Comparison analysis indicates that within the studied sample, young adults from Pittsburgh on average drink more frequently per month (7.47 vs. 3.96 days, p-value < 0.001). However, young adults from Neiva are more likely on average to consume a greater volume of alcohol per drinking session (13.3 vs.

5.59 drinks,  $p$ -value  $< 0.001$ ). Further, results indicate that social norms, attitudes and perceptions differ among the samples and may be indicative of drinking behavior. For instance, high-risk drinkers from the Neiva sample reported having positive attitudes and desires towards drinking. They were also more likely to believe that drinking among young adults was the social norm (55.45% vs. 35.5%,  $p$ -value = 0.04). These findings are in line with the Theory of Planned Behavior. **Conclusions and public health relevance:** This study identified important differences in drinking behavior as well as beliefs and attitudes that may contribute to drinking and alcohol abuse among young adults within two very different cultural settings. These findings have potential to inform the development of targeted intervention programs to reduce injury and illness related to alcohol abuse among young adults presenting at ED in similar settings.

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## **PREFACE**

I would like to thank the members of my thesis committee, Dr. Thomas Guadamuz, Dr. Patricia Documét, and Dr. Brian Suffoletto for their constructive feedback and input during the process of this thesis. In particular, I would like to express my gratitude to Dr. Suffoletto who provided me with the exciting opportunity to work on this research project under his continued mentorship and guidance. His insights and expertise in this field has been of great value in the design and analysis of this research. Furthermore, I would like to give special thanks to Matt Kessinger, whose resourcefulness allowed for the realization of this project. I would also like to thank our international collaborators Dr. Andres Rubiano and the medical students at the University of Surcolombia, without whom this project could not have been conducted. Lastly I would like to thank all the participants who have offered and volunteered their time to further research knowledge.

## 1.0 INTRODUCTION

Alcohol is considered the number one drug of choice among young adults and is used more frequently than all other illicit drugs combined (Windle, 2003). Ranked as the fifth most important risk factor for premature death and disability in the world, alcohol is responsible for 4% of all disease burden (WHO Global Status Report on Alcohol and Health, 2011). This equates to approximately 58.3 million Disability-Adjusted Life Years (DALY's) lost and 3.2% or 1.8 million of all deaths globally in 2000. Furthermore, using 100 independent country profiles, the WHO estimates that worldwide approximately 2.5 million alcohol-related deaths occur annually (WHO Global Status Report on Alcohol and Health, 2011).

Heavy episodic drinking has been associated with alcohol problems and increased likelihood of alcohol dependency (Knight, 2002). Additionally, study surveys associate a list of negative health outcomes to alcohol abuse. One of the most pressing public health concerns associated with young adult drinking is the high incidence of driving under the influence. In 2005, 28.9% of college students between the ages of 18-24 years drove under the influence of alcohol (Hingson et al., 2005). While alcohol-related traffic deaths are one of the leading preventable deaths in the United States, nearly half (49%) of traffic deaths in 2005 were attributed to alcohol (Hingson et al., 2005). Additionally several

studies indicate a correlation between alcohol consumption and risky sexual behavior, increased violence and confrontation, and increased crime, such as destruction of property (Turrisi, 2006 & Wechsler et al., 2002). Within intimate relationships, heavy alcohol has also been linked to intimate partner violence (IPV) (WHO Fact Sheet). Results from a WHO *Multi-country study on women's health and domestic violence against women* suggest that alcohol consumption is greatly correlated with occurrence and the severity of IPV (WHO Fact Sheet). Within the U.S., a national study indicated that 55% of physical assaults were thought to be related to alcohol (U.S. Department of Justice, 1998). Similar trends have been further confirmed through a multi-country study in Chile, India, Egypt and the Philippines (Jeyaseelan et al., 2004).

As such, the public health burden of alcohol abuse among young adults is worthy of global attention and intervention. However, interventions to mitigate the problem require a comprehensive understanding of the cultural and social factors that influence drinking patterns in different regions.

While ample research has sought to identify the leading social, perceptual and cognitive factors associated with drinking among young adults within the U.S., albeit through research conducted among college students; a lot less is known about the factors that drive drinking culture in Latin America. Yet, some studies suggest that public health issues related to alcohol abuse may disproportionately affect populations in Latin America when compared to other regions around the world (Barbor et al., 2003). According to the Interamerican Commission on Drug Abuse Control (CICAD), adolescents and young people in Latin America often start drinking before the legal drinking age. It is thus of

utmost importance for more research to focus on the underlying social and cultural factors that contribute to drinking behaviors among young adults in regions outside the U.S., specifically in Latin America.

## **1.1 OBJECTIVES**

The primary objective of this thesis is two-fold. First, it is to compare and contrast the drinking behaviors and patterns among young adult high risk drinkers in Pittsburgh, U.S.A. with Neiva, Colombia.. Additionally, social norms, perceptions, and attitudes will also be compared between groups. This may potentially present interesting relationships between perceived norms and attitudes with actual drinking behavior.

The second objective is to compare the drinking behaviors, patterns and perceptions of low risk drinkers with moderate to high risk drinkers in Neiva, Colombia. To the knowledge of the author, this type of descriptive study among young Colombians has not been carried out and may therefore be of particular interest to researchers and interventionists working outside the U.S.

Within the scope of this thesis, there will be a discussion of how cultural and social factors shape a nation's drinking patterns and how theories such as the Theory of Planned Behavior tie in with observed drinking behavior in these two populations.

## **2.0 BACKGROUND**

### **2.1 DRINKING AMONG YOUNG ADULTS: A GLOBAL PHENOMENON**

Young adults are among the most prominent users of alcohol. Among young adults between the ages of 18 to 25 years, alcohol consumption and alcohol abuse is rising each year, despite the increasing efforts of interventions that aim to the contrary. This increase is typically linked to an increased average volume of consumptions as well as an increase in the frequency of drinking sessions (Monteiro, 2007). In addition, young adults often partake in heavy episodic drinking, defined as having 5 or more drinks per session for men and 4 or more drinks per session for females. This type of drinking is often referred to as “binge drinking” (Knight, 2002; Walters, 2000) and is associated with an increased risk of alcohol dependence or alcohol related problems (O’Malley and Johnston, 2002). For example, college drinking and “binge drinking” among students has received a great deal of media attention and general concerns from the public. As a result, a significant body of the literature on young adult drinking has been focused on college students. This is particularly true of research coming forth from the U.S. Comparison of five national health surveys indicates that approximately 90% of college students have consumed alcohol over the past year. More specifically nearly 70% of

students report drinking within the last 30 days. Of those who drink, 24.6% engage in heavy drinking (O'Malley and Johnston, 2002). Hingson et al. (2005) reported that the proportion of 18- to 24-year-old college students who drank 5 or more drinks in a single session within the last 30 days increased from 41.7% in 1998 to 44.7% in 2005 ( $p < 0.001$ ). Furthermore, the number of college students participating in such activity has increased over the years. These statistics indicate the growing trend of alcohol abuse in college settings within the U.S. in particular. However, other studies suggest that this increase is not unique to the U.S., but incorporates young adults in many different countries (Furnham, 2010). Whereas the legal drinking age in the U.S. is 21, in many countries within Latin America, including Argentina, Bolivia, Brazil, Chile, Colombia and Ecuador, it is 18. According to the Interamerican Commission on Drug Abuse Control (CICAD), surveys collected from various countries throughout Latin America demonstrate that both adolescents and young adults consume alcohol and start drinking before the legal age of consumption, often starting as early as 12 years of age (CICAD). This is of particular significance, since early age drinking seems to be correlated with increased alcohol dependence later in life (Grant and Dawson, 1997). Furthermore, studies reveal that binge drinking is not unique to U.S. students, but is commonly practiced among young adults within Latin America as well. A national survey among students in middle and high schools in Brazil found that at least 25% of students reported having participated in binge drinking over the past month (Carlini-Cotrim et al., 1999). Binge drinking behavior was also measured among young adults from several other

countries, including Bolivia, Chile, Costa Rica, Mexico, Peru and Uruguay(Villatoro et al 2005; Medina Mora et al., 2003).

Alcohol consumption among young adults in Latin America varies widely from country to country. More specifically, drinking may also vary upon the different settings and environments within a given country. For instance, a study conducted in Guatemala by Foulger et al. (2013) suggests high variation of drinking behavior among adolescents in rural versus urban settings, with higher drinking behaviors among adolescents in rural settings (Foulger et al., 2013). However, variations vary greatly by culture and environmental factors. Very little data currently exists that would allow similar comparisons between different countries in Latin America. Multi-country projects such as the Global School Health Survey funded by the WHO, PAHO and the CDC are currently on-gong, collecting drinking information from young adults across Latin America. The aim of this project is to fill the gap of information on alcohol use within developing nations. Many countries have not yet prioritized alcohol research and as such, there is lack of population surveys from these regions (Monteiro, 2007). Efforts such as those of the WHO and PAHO indicate the growing recognition of both government and international organizations to step in and take action against the growing epidemic of alcohol abuse among young people.



## **2.2 FACTORS INFLUENCING DRINKING BEHAVIOR**

The literature presents a broad spectrum of theories about the causes of alcoholism and alcohol abuse. Ranging from intrapersonal to interpersonal to group to cognitive to family and cultural factors, this section will provide a brief overview of some of the commonly used theories of young adult drinking. Particular focus will be placed on aspects that detail the role of social norms and perceptions that may lead to drinking.

### **2.2.1 Intra- and interpersonal Factors**

Both intra- and interpersonal factors have been shown to influence drinking patterns of young adults (Beck et al., 2012). Certain personality traits, such as conscientiousness and impulsivity, greatly increase the likelihood for individuals to engage in risky drinking behavior (Beck et al. 2012; Adams et al., 2012, Kaiser et al., 2012). Additionally, factors like stress, tension and coping may also be reasons for excessive drinking (Beck et al., 2012). In 1945, E.M. Jellinek proposed Tension Reduction Theory, which suggested that consistent use of alcohol was associated with direct reward value to reduce stress and tension. Generally, this observation is in line with the well-known psychological effects of alcohol and its ability to increase self-assurance and self-acceptance of the drinker (Furnham, 2010). Although technically a chemical depressant, there is vast evidence that alcohol acts as a social stimulant by reducing

inhibition and increasing sociability. Therefore, on an individualistic level alcohol serves as a direct social enhancement and is therefore used widely among young adults.

In addition to individual-based factors, social relationships with other individuals play a crucial role on drinking behaviors. Within the literature, the social context of drinking specifically refers to the “immediate, situational, temporal, and motivational factors that influence drinking behavior” (Beck et al., 2012). The bulk of the literature identifies six contexts of young adult drinking: 1) social facilitation—drinking for social enhancement or enjoyment; 2) peer acceptance—drinking to gain social access or peer approval; 3) emotional pain—drinking to reduce stress or depression; 4) family drinking—drinking during religious or celebratory events with family; 5) sex-seeking—drinking for sexual gains; and 6) motor vehicle—drinking while in a car, either stationary or moving (Beck et al., 2012). Several studies have used these contexts as a tool to predict associations for increased likelihood of alcohol abuse. Findings from a longitudinal study among young adult college students showed that drinking within a context of social facilitation or motor vehicle were associated with an increased risk of developing alcohol dependence. Furthermore, first year students who drank in a context of social facilitation, sex-seeking, emotional pain, and motor vehicle, were more likely to be problem drinkers 3 years later (Beck et al., 2012). More importantly, drinking for social enhancement and for coping or emotional escape were shown to be the leading motivational factors for young adult drinking.

Alcohol has highly symbolic and ritualistic uses and is often used for an enhanced sense of group cohesiveness (Furnham, 2010). Within social contexts, this translates to

more adjunctive drinking, whereby alcohol is a complementary activity that frequently accompanies other primary activities, such as watching a sports event or celebrating holidays. This makes drinking among young adults a schedule-controlled occurrence (Lowe, 1999).

### **2.3 THEORY OF PLANNED BEHAVIOR**

One of the leading theories of drinking behaviors among young adults is the Theory of Planned Behavior (TPB) (Ajzen, 1985). TPB posits that behavioral intentions are governed by the following three constructs: 1) the attitude towards the particular behavior, 2) the subjective norm, such as the approval of a friend, which is deemed important to the individual, and 3) perceived behavioral control, such as the control to purchase alcohol at a local shop (John et al, 2010). According to this theory, behavior is predicted by intention to perform that behavior and perceived behavioral control. The TPB further proposes that intentions are influenced by a person's evaluation of the behavior (attitude), their perception of the social pressure to engage in that behavior (subjective norm), and their perception of their ability to carry out that behavior (perceived behavioral control; PBC), and that these constructs are in turn underpinned by beliefs (Ajzen, 1985). The theory was originally developed with the notion that behaviors are performed with a person's volitional control.

Considering the first construct of the TPB, the attitude towards alcohol consumption presumes that young adults who connect positive feelings and desires towards alcohol drinking are more likely to drink than those who do not. This was in fact shown through a study conducted among college students by Connor et al. (1999) where attitudes regarding drinking accounted for approximately 28% to 40% of the variance in intention of drinking. In many cases, the positive attitudes associated with alcohol can be tied to a perceived reward, such as a reward in sociability or connectedness with one's peers.

Subject norm is the second construct of TPB and associates the increased intent to drink among young adults to a perceived social norm. In other words, individuals who believe that drinking is a socially accepted norm are much more likely to consume alcohol compared to those who believe the contrary. A second aspect of this construct would therefore be how much importance or value the individual places on the opinion of the norm. Presumably, an individual who highly values the approval of the typical young adult, and believes the social norm is to drink, is thus more likely to consume alcohol. This finding has also been verified by self-report study conducted by Connor et al. (1999), as mentioned previously.

The last component of the TPB deals with the perceived control of one's behavior. This translates to the individual's belief that they are in control of the factors that may influence their decision to consume alcohol. For example, individuals that feel they have control over the decision to walk into a bar are less likely to drink than those who perceive such an action to be outside their control.

Given the success in predictability of alcohol behavior among various populations within the U.S., this theory has high potential applicability for use among populations outside the U.S. In the comparison of American young adults patients with Colombian young adult patients, it will be of particular interest to analyze the social norms, perception and attitudes related to drinking patterns and how these relate to reported drinking behavior.

### **3.0 METHODOLOGY**

This chapter details the process by which participants were recruited. It will also detail how data was collected and analyzed for the purpose of comparison between the sample data from Pittsburgh with the sample from Neiva.

#### **3.1 DESCRIPTIVE STUDY**

Two descriptive studies were conducted independently among young adult patients at an academic, tertiary-care emergency department (ED). The first sample consisted of young adult patients from Pittsburgh, U.S.A. and was obtained during the months between April and August, 2012. The second sample included young adult ED patients from Neiva, Colombia and was obtained during the months between May and September, 2012. Both studies determined patient characteristics, drinking patterns and behavioral beliefs associated with drinking. Data was obtained via a self-administered survey questionnaire. For the Neiva sample, surveys were adapted and translated into Spanish from an English version originally used by the University of Pittsburgh Department of Emergency Medicine (Suffoletto, 2012). Following completion of data

collection, the data sample of young adult Colombian patients from Neiva was compared with the sample of young adult American patients from Pittsburgh. Participants' drinking status was determined using the Alcohol Use Disorder identification Test-Consumption score (AUDIT C). Patient demographics, behavioral beliefs about drinking and past 30-day drinking were obtained and analyzed for comparison between samples.

### **3.2 RESEARCH ETHICS**

Each study was reviewed and approved by the Institutional Review Board (IRB) at the University of Pittsburgh. The proposed study for enrollment of participants in Pittsburgh underwent full review process. The IRB application was submitted under minimal risk to research participants because this was a descriptive study that did not ask participants for HIPAA identifiers. Following the approval of this protocol, a second research protocol was submitted for the Neiva sample which underwent an expedited IRB process, due to high similarity in methodology to the Pittsburgh study. Under IRB research protocol of working in an international site, an additional letter was submitted with the IRB application for the Colombia study that granted permission to work at the non-local site. The letter further addressed institutional commitments and regulations, applicable laws, and standards for professional conduct and practice between collaborators and was signed by the individuals authorized to commit the site to study participation and the local principal investigator. In granting approval for the conduct of

such a study at the non-local site, the IRB acknowledged that provisions to protect the privacy of subjects and maintain the confidentiality of data met adequate standards.

All enrolled participants gave verbal informed consent. At the Neiva site, the consent form was read to participants by local native Spanish speaking research associates and verbal consent was obtained from the participants. Participants at both sites were informed that participation was voluntary, confidential and did not influence their treatment at the hospital ED. They were further made aware that they could withdraw from the study at any time and were not required to answer questions they did not want to.

Data collection and subsequent data analysis was performed without any identifying markers to individuals.

Support for the research conducted in Pittsburgh was provided by EMF-Century Council Grant, awarded to the principal investigator Dr. Brian Suffoletto. This study was carried out by a research team under the guidance of the principal investigator. I had no role in the recruitment or collection of data from the Pittsburgh sample. However, data obtained from the Pittsburgh study was used by me to perform a comparison analysis with the data collected from Neiva. For the study conducted in Colombia, on-site collaborators from Neiva included the University of Surcolombia and Fundación Meditech. The research in Neiva was supported by the University of Pittsburgh School of Medicine, Department of Emergency Medicine. Additional research funds were obtained by the University Center for International Studies at the University of Pittsburgh, as well as the Global Health Studies Fund that funded my travel and accommodations. The



research conducted in Neiva was led by me. I helped design the research tools and collaborated with on-site local medical students and faculty mentors. I trained medical students and engaged them to facilitate the recruitment and collection of data from patients in the ED. Furthermore, their feedback was continuously incorporated during the design and piloting stages of the study. All the data presented here forth was analyzed and interpreted by me with the mentorship and oversight of Dr. Brian Suffoletto.

### **3.3 MEASURES**

The survey questionnaire employed in this study consisted of four parts, each of which was adapted into Spanish from its original version in English for the collection of data in Neiva, Colombia. To ensure that the language and content of the Spanish translation was appropriate, local collaborators helped translate the language into the most colloquial language commonly used by most young adults within the region. Furthermore, the questionnaire was pilot-tested during two rounds, consisting of five participants each, in order to ensure cultural appropriateness.

The development of each part of the questionnaire and its specific use will be explained in the following sections. The entire survey questionnaire in Spanish can be located for reference in Appendix A. Similarly, the entire survey questionnaire used in the Pittsburgh sample can be located in Appendix B. The Pittsburgh study was conducted

prior to the collection of the Neiva sample and its initial intent was the screening of young adult patients for participation in an intervention.

### **3.3.1 Determination of High Risk Drinkers: The AUDIT screening tool**

The first section of the questionnaire consists of the Alcohol Use and Disorder Identification Test (AUDIT) (Babor, et al 2<sup>nd</sup> ed, 2001). This is a ten question screening survey developed by the World Health Organization (WHO) in 1982 (Saunders et al., 1993 & WHO). The survey is intended to identify persons with harmful and hazardous alcohol consumption. The first few questions address typical alcohol consumption of the participant. For example, “How often do you have a drink containing alcohol?” The participant then chooses from a set of five answer choices, ranging from “Never” to “4 or more times a week.” Each response is scored using the standardized scoring system developed by the WHO. The sum of scores from each of the ten questions determines the category of risk of the participant, whereby a score of 0-7 equates to low risk drinker, 8-15 to moderate risk drinker and a score above 15 to high risk drinker.

The usefulness of this screening tool has been tested and evaluated during the past two decades through a multitude of cross-cultural randomized controlled trials funded by the WHO, as well as, private research institutions (Saunders et al., 1993). The AUDIT parallels or exceeds comparable instruments used in clinical and research settings for the detection of hazardous drinking (Kelly et al. 2009) and a cut point of >4 (or >3 for females) produces a sensitivity of 0.76-0.99, and specificity of 0.65-0.98 (Reinert et al.,

2007). It has been used within a variety of healthcare settings worldwide, including Latin America (Saunders et al., 1993). However, the validity of the AUDIT has not yet been tested in Colombia.

For the purpose of the present studies, the original English version of the screening tool was used for the Pittsburgh sample and the Spanish version for the Neiva sample in order to determine high risk drinkers from moderate and low risk drinkers.

### **3.3.2 Drinking over the past 30 days: The Time Line Follow Back**

The second section of the questionnaire involves the Time Line Follow Back (TLFB) to assess alcohol consumption over the past month. The TLFB was first developed in the 1970s (Sobell et al., 1992, 1996a) and has since been extensively adapted and evaluated for its accuracy in retrospectively estimating daily consumption levels of alcohol. It has been used in various and diverse drinking populations and found to provide accurate measures (Sobell et al. 1994a.) In addition, the data from the TLFB reveals a wide range of information about the person's drinking habits, such as frequency of drinking days and average number of drinks per session.

For the purpose of the present studies, participants were asked to recall their drinking activity over the past 30 days. A 30-day calendar with dates and the day of the week was provided as an aid to trigger memory recall. Participants self-reported the days that they consumed any alcohol and furthermore approximated the number of drinks they had on that given day. Prior to the administration of the TLFB, the participant was

provided with a quick explanation of what constitutes a standard sized drink. This is to ensure that all participants have a uniform understanding of standard drink sizes during their self-report. For example, one standard drink is equivalent to 12 fluid ounces of a regular beer or 5 fluid ounces of wine. Figure 1 depicts a comparison chart of standard drinks used during the explanation process to the participant. The participant is then asked to fill out the calendar, recalling the number of standard drinks consumed, to the best of their knowledge. With the exception of translating the days of the week into Spanish, this section of the questionnaire required minimal adaptation for the collection of the Neiva sample.



Figure 1. Definition of standard sized drink

### 3.3.3 Understanding norms, attitudes and perceptions

The third section of the questionnaire contains questions specific to the attitudes and perceptions related to alcohol consumption. This section was developed and adapted by the University of Pittsburgh, Department of Emergency Medicine (Suffoletto, 2012) for the specific use in the Pittsburgh sample. Questions in this section assessed participants' intention to drink in order to get drunk, their desires to drink and whether they associate positive feelings towards getting drunk.

Determinants of intent and desire have shown to account for between 37% and 75% of the variation in binge drinking intentions and between 22% and 65% of subsequent binge drinking among young adults (Cooke et al, 2007; Johnston et al, 2003; Norman, 2007; McEachan, 2011). *Intention to binge drink* was measured through two items from the Behavioral Intentions Questionnaire (BIQ: Neal & Carey, 2004): “*Do you plan to binge-drink over the next 30 days? (1 = definitely no to 6 = definitely yes)*” and “*Do you plan to drink until you get drunk over the next 30 days? (1 = definitely no to 6 = definitely yes)*.” The arithmetic mean of each participant's scores on these two items will serve as the measure of intention to be used in the subsequent data analyses. The internal consistency of the indicators was good in prior samples of college binge drinkers ( $\alpha = .94$ ). *Attitudes toward binge drinking* were measured through two items from the Global Attitude Scale (GAS: Simons and Carey, 1998). Participants were presented with an item stem: “*For me, engaging in an episode where I drink to get drunk over the next 30 days would be...*” Participants rate their “overall opinions” along an unnumbered, nine-point

scale framed by two opposing word pairs on either end. The two global attitude word pairs to be used in the current study will be positive / negative and desirable / undesirable. The GAS has previously evinced good reliability ( $\alpha \geq .91$ ) and good internal consistency ( $\alpha = .87$ ). **Subjective norms** were measured through two items from the Subjective Norms Questionnaire (SNQ; Ajzen, 2002). Participants reported how much “*an average American young adult age 18-25 years*” and their “*closest friend*” would approve or disapprove of their “*drinking to get drunk*” on a five-point Likert scale, where 1 = highly disapprove and 5 = highly approve. Next, participants rated the importance of these groups’ opinions to them on a scale ranging from 1 (highly unimportant) to 5 (highly important). Subjective norms were ascertained by multiplying the approval of the target group by the participants’ report of the importance of the target group’s opinion. The “average young adult” and “closest friend” indicators evinced good reliability in prior samples ( $\alpha = .91$ ). **Perceived behavioral control** was broken down into two subordinate factors, self-efficacy and controllability (Ajzen, 2002). Controllability was measured through the following: “*How much personal control do you feel you will have over whether or not you drink over the next 30 days?* (1=no control at all to 5=complete control)” and “*How much will factors outside your control influence whether or not you drink over the next 30 days?*” (1=very much to 5=not at all). Self-efficacy was measured using the emotional relief and opportunistic scales of the Drinking Refusal Self-Efficacy Questionnaire (adapted from Young et al., 1991). On a six-point Likert scale, participants indicated their confidence they could resist “*drinking to get drunk*” in each of the 6 hypothetical situations presented. Good internal consistency ( $\alpha = .87 - .94$ ) and

concurrent and discriminant validity have been established for this measure (Baldwin et al., 1993).

Collectively, this section is used to assess the perceptions and feelings that individuals associate with drinking. It further provides insight as to whether there are general differences in attitudes and perceived norms among the identified risk categories and between different samples of a population.

### **3.3.4 Questions on Demographics**

The last section of the questionnaire consists of questions regarding demographic information. This section allows the determination of specific age, racial, gender, education, or employment related factors that may significantly impact differences between low and high risk drinkers. In addition, information obtained through this section may be indicative of differences between populations of young adults of varying backgrounds and cultural settings. For the purpose of the study conducted in Neiva, race categories were translated to match the English version of the survey questionnaire as closely as possible. The distinction of Latino as a race was explained to participants as being an equivalent to “Mestizo.” The term *mestizo* is used in many Latin American regions to identify individuals of mixed descent. It does, however, not identify which combination of races the individual identifies as. For instance an individual of Black and Indigenous descent is indistinguishable from an individual of Black and White descent under the category *mestizo*.

### **3.4 TRAINING COLOMBIAN MEDICAL STUDENTS**

One additional element of the design for the Neiva study, not necessary for the Pittsburgh study, was the incorporation of native Spanish speakers to 1) obtain informed consent and 2) to fully administer the survey questionnaire to eligible participants. Since all study participants were anticipated to be Spanish speakers, it was essential that study information and informed consent were obtained through research assistants who were native Spanish speakers as well. This was in accordance with IRB guidelines of obtaining verbal informed consent.

A group of 8 medical students from the University of Surcolombia was trained to thoroughly explain the study protocol and to administer the surveys in completion to participants. Training sessions were held over the course of a week in 2-hour sessions during which students were able to practice obtaining informed consent and administer the entire survey with each other. Following the training session, students were paired into groups of 2 and assigned a weekly schedule to recruit eligible young adults into the study. Because the varying nature, style and technique with which medical students interacted with participants could potentially influence or lead participants to respond in a particular way, a research supervisor was always present to help facilitate uniform survey administration in order to reduce this potential bias.



### 3.5 SETTING

The Pittsburgh study was conducted in a single urban ED in Western Pennsylvania, UPMC Mercy, with an annual census of 65,000 visits per year. In comparison, the Neiva study took place at an emergency department at Hospital Universitario Hernando Moncaleano Perdomo (HUHMP) Neiva, Colombia. Neiva is the capital city of the Department of Huila (departments are similar to states or provinces), located in south central Colombia. It has a population of approximately 370,000 residents. HUHMP is the only tertiary care center and the largest hospital in the city of Neiva. It receives approximately 100 ED patients a day with an average of 40 admissions per day. The hospital is the only public hospital serving the city of Neiva and the surrounding villages. Residents of the neighboring areas are often transported to HUHMP for more specialized services and care. In comparison, UPMC Mercy, is not the only serving hospital facility within Pittsburgh. It is expected that the patient demographic of the two selected hospitals may vary based on the accessibility and location of the hospitals chosen. The study was conducted at these particular locations since the city of Neiva is comparable in size to Pittsburgh (population size 310,000). Additionally, since HUHMP is a tertiary care center it provides services on the same scope as the hospital facility in Pittsburgh. The comparison of sample populations from similar hospital facilities therefore reduces potential confounders in patient populations. Furthermore, local collaborators from Neiva had specific connections to HUHMP, which allowed for easy access of patient recruitment into the study.

## **3.6 PARTICIPANTS AND RECRUITMENT**

### **3.6.1 Pittsburgh sample Participants**

A Research Associate (RA) identified potential participants from April to August, 2012 in an ED at UPMC Mercy. Participants had to be 18-25 years old and not critically ill using an electronic triage board. The RA then obtained permission from the ED clinician to approach potential participants in their treatment room. If a patient was interested in participating, informed consent was obtained and an 8-item self-administered screening instrument was completed. Inclusion criteria comprised the following: age 18-25 years, English-speaking, hazardous drinking behavior (Alcohol Use Disorder Identification Test for Consumption: AUDIT-C scores of >3 for women or >4 for men) (Bradley et al., 2007) and last month binge episode. Participants received \$10 for completion of the assessment.

### **3.6.2 Neiva sample Participants**

Participants were recruited during the months of May through August 2012. Eligible participants had to be between 18 to 25 years of age, fully conscious, not intoxicated or under the influence, as determined by the research associate. Pregnant females and individuals with conditions that may alter their normal drinking habits were

not eligible. Furthermore, individuals who reported that they did not consume alcohol or had not consumed alcohol within the past 30 days were also excluded.

All eligible young adults were explained about the study and asked whether they would like to participate. The study details were thoroughly explained by one of the trained native Spanish-speaking students and informed consent was verbally obtained. Following consent, participants were guided through a pen-and-paper version of the questionnaire and asked to verbally respond to each of the questions presented. The questionnaire was read to participants to reduce the obstacle of illiteracy and difficulty of comprehension. Trained students recorded all responses on the questionnaire for uniformity. Of the 187 young adult patients approached, 146 (78%) completed the entire survey. Approximately 2.5% of those approached refused screening and 19.6% did not qualify because they did not drink alcohol or had not consumed any over the last 30 days. Participants did not receive any compensation for participation of this survey.

### **3.7 ENROLLMENT STATISTICS**

Among the 187 young adults that were approached for the Neiva sample during the 3 month time period of June to August of 2012, 132 individuals (70%) successfully enrolled and completed the questionnaire. Among those who did not enroll, 95% were ineligible due to their non-drinking status. Using AUDIT scores, 23.5% of young adults were determined to be low risk drinkers (n=31, AUDIT score >7), 49.2% moderate

drinkers (n=65, AUDIT score 8-15) and 27.3% high risk drinkers (n=36, AUDIT score >15).

For the purpose of the Pittsburgh sample, only young adults who screened positive for high risk drinking were included into the study. Research Associates approached over 200 patients of which the majority completed the eligibility screening. Approximately 49% (95% CI 39 to 59) of those screened positive for hazardous drinking. Among those who screened-positive, 6 patients were excluded because of concurrent psychiatric treatment, leaving 91 individuals who were eligible and enrolled (n=91 moderate to high risk drinkers, AUDIT-C > 3).

### **3.8 STATISTICAL ANALYSIS**

All analysis was performed using STATA IC Version 12.0 (Statacorp Inc., College Station, TX), statistical software. Frequencies were computed for each of the individual AUDIT diagnostic criteria and individuals were classified into drinking risk category according to their cumulative AUDIT score. A score of 0 to 7 equated to low risk drinker, 7 to 15 to moderate drinker and a score above 15 was considered high risk drinker (Saunders, 1993). Participants were also characterized by demographic variables and response values to behavioral questions. For each given response, variables were summarized by stating either the means or standard deviations (SD) or medians and interquartile range (IQR). Person's chi-squared test or Fisher's exact test (for variables

where  $n$  was smaller than 10) was conducted for categorical variables to compare response values of low risk drinkers with high risk drinkers. Likewise, Pearson's chi-square was used to investigate differences between the Pittsburgh and Neiva samples.

## **4.0 RESULTS AND FINDINGS**

This chapter will detail the key findings from the participant responses to the survey questionnaires of both sample populations. I will first describe the demographic characteristics of the sample populations, followed by a detailed comparison analysis of the samples that indicate similarities and differences in observed drinking behavior, as well as social norms, perceptions and attitudes related to drinking.

### **4.1 DEMOGRAPHICS**

Table 1 presents the demographic comparison between the two sample populations. The average age of enrollees in the Pittsburgh sample is 22 (SD = 2). In comparison, the average age of participants from the Neiva sample is 21 (SD = 2). Women and men were almost evenly represented (55% versus 45%, respectively) in Pittsburgh, whereas in the Neiva sample, men made up a significant majority of the sample population (77%). Within Pittsburgh, the majority of participants self-identified as Caucasian/White (57%), followed by Black/African-American (35%), and Native Hawaiian/Pacific Islander (6%). Approximately one-third of young adults was currently

enrolled or had completed some college level coursework, whereas another 31% had graduated high school or obtained a GED. In comparison, half of young adults from Neiva self-identified as Mestizo, and another 29% as White. Indigenous and Blacks made up a small minority of the sample population (11% and 8%, respectively). In contrast to young adults from Pittsburgh, a majority of young adults from Neiva had completed secondary school (57%), which is the equivalent of American high school. Approximately, one-fourth of the sample had completed or was currently enrolled in some college and another 14% was attending vocational training.

**Table 1. Demographic statistics of Pittsburgh sample**

<b>Variable</b>	<b>Neiva n=101</b>	<b>Pittsburgh n= 91</b>
<b>Age, mean (Standard Deviation)</b>	21 (2)	22 (2)
<b>Gender (%)</b>		
Male	77%	45%
Female	23%	55%
<b>Race (%)</b>		
Latino, *Mestizo	50%*	4%
Black/AA	8%	35%
Caucasion/white	29%	57%
American Indian/Alaska Native, *Indigenous	11%*	1%
Native Hawaiian/Pacific Islander	n/a	6%
Bi-/Multi-racial	n/a	1%
Other	2%	0%
<b>Education (%)</b>		
None	1%	0%
< HS Graduate, *Primary School	10%*	17 %
HS graduate or GED, *Secondary School	57%*	32%
Some college, *University	18%*	35%
College graduate	0%	10%
Post-grad work	0%	3%

**Table 1 Continued**

Vocational, *Technical School	14%*	3%
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## **4.2 NEIVA AND PITTSBURGH COMPARISON**

This section will compare the survey responses of both population samples, specifically, drinking frequencies and total drinks over a 30 day period and determine whether social norms and perceptions regarding alcohol use differ among the sample populations.

Results of the direct comparison between both sample populations are shown in Table 2. Young adults from Neiva had significantly higher total number of drinks during the past 30 days prior to the completion of the questionnaire, when compared to young adults from Pittsburgh (median = 43 vs. 28, p-value = 0.036). Furthermore, the average number of drinks per drinking session was also significantly higher among young adults from Neiva (median = 13.3 vs. 5, p-value < 0.001). However, when considering the frequency of drinking days and heavy drinking days (>5 drinks per session) over the last 30 days, young adults from Pittsburgh had an average of 2 drinking days per week compared to one drinking day per week for their Neiva counterparts (p-value < 0.001). These results indicate that young adults from Neiva drink less frequently over the course of a month, however when they do drink, they drink significantly more drinks per drinking session than young adults from Pittsburgh.



Comparing drinking intentions, significantly more young adults from Pittsburgh indicated intent to get drunk and binge drink over the next 30 days (p-value < 0.001). They additionally also reported desire to get drunk and associated good feelings to getting drunk.

Perceptions of social norms also varied between sample populations. Young adults from Neiva perceived that the average young adult would approve of their drinking and indicated that the opinion of their peers highly mattered to them (p-value < 0.001). On the contrary, young adults from Pittsburgh believed that the average young adult would not approve of their drinking, yet, the opinion of their peers was deemed less important (21% vs 53%, p-value <0.001). Both sample populations reported approximately equal frequency of approval of drinking from their best friends and placed equal value on their best friend's opinion (p-value = 0.389).

Having personal control over the decision to drink was not determined to be significantly different between the two samples (p-value = 0.206), however, significantly more participants from Pittsburgh indicated that they did not have any control over their decision to drink when outside influences such as a friend's birthday party, or a holiday were promoting occasion for alcohol use (p-value = 0.009).

Perceived likelihood of drinking to get drunk in certain situations and moods did not vastly differ among sample populations. Young adults from both samples indicated that they were likely to drink to get drunk when they were out with friends, when sad or when they wanted to relax. They were less likely to drink when nervous or when they were by themselves. Additionally, only young adults from Neiva reported that they would

be much more likely to drink in order to get drunk when they were mad (46% vs. 28%, p-value = 0.01).

**Table 2. Comparison of Drinking Behavior and Perceptions among Young in Neiva and Pittsburgh**

Variable	Neiva (n=101)	Pittsburgh (n=91)	p-value
Number of total drinks within last 30 days (median, IQR)*	43 (23,75)	28 (17,55)	0.036
Average number of drinks per drinking day (median, IQR)*	13.3 (8.8, 20)	5.0 (3.7,6.9)	<0.001
Number of drinking days within 30 days (mean, STD)*	3.96 (2.74)	7.47 (5.61)	<0.001
Number of heavy drinking days within 30 days (mean, STD)*	3.7 (2.72)	5.59 (5.19)	<0.001
<b>Drinking Intent, next 30 days</b>			
Plan to get drunk (freq, %)**	52 (51%)	78 (86%)	<0.001
Plan to get plastered**	45 (45%)	70 (77%)	<0.001
Desire to get drunk**	66 (65%)	76 (84%)	0.004
Good feelings about getting drunk**	55 (54%)	79 (87%)	<0.001
<b>Peer Norms</b>			
Approval of drinking to get drunk by average young adult**	56 (55%)	35 (38%)	0.019
How important is their opinion to you? **	58 (57%)	21 (23%)	<0.001
Approval of drinking to get drunk by your best friend**	55 (54%)	56 (62%)	0.321
How important is their opinion to you? **	71 (70%)	69 (76%)	0.389
<b>Personal Control</b>			
Total personal control over your drinking**	53 (52%)	56 (62%)	0.206
No influence of factors outside your control**	83 (82%)	86 (95%)	0.009
<b>Sure I would drink to get drunk....</b>			
...when out with friends, median (IQR) **	75 (74%)	58 (64%)	0.115
...when angry**	47 (47%)	26 (29%)	0.010
...when sad**	44 (44%)	32 (35%)	0.235
...when nervous**	11 (11%)	15 (16%)	0.258
...when trying to relax**	41 (41%)	38 (42%)	0.870
...when I am by myself**	16 (16%)	17 (19%)	0.603

\*indicates continuous variable, \*\*indicates categorical variable

### **4.3 CHARACTERISTICS OF NEIVA SAMPLE**

This section will present additional data from the Neiva sample. It will analyze the differences in drinking behavior between low risk, moderate risk and high risk drinkers and further compare social norms, perceptions and attitudes across the different risk groups. Data from this section is meant to provide further understanding of the general drinking characteristics and patterns among young adults in Colombia, which may substantially differ from those of other countries in Latin America.

#### **4.3.1 Demographics**

Table 3 summarizes the key demographic findings by category of low to high risk drinkers of Colombian young adults. Demographic information indicates that the mean age across all risk categories was 21 ( $SD = 2.0$ ). A majority of participants, 77%, were males. More specifically, 92% of identified high risk drinkers were male as compared to 85% moderate and 52% of low risk drinkers. Females were significantly underrepresented within this sample population (23%), but those who were included were likely low risk drinkers. With respect to race, there were no significant differences in self-reported race and the level of risk category. 62% of participants had a full-time job and

the majority were single (75%). However, no significant differences were found in levels of education, employment status or relationship status between risk categories.

**Table 3. Demographic characteristics of Neiva sample**

<b>Variables</b>	<b>Total (N=132)</b>	<b>Low Risk (n=31)</b>	<b>Moderate Risk (n=65)</b>	<b>High risk (n=36)</b>	<b>p-value</b>
Age (years), mean (SD)	21 (2)	21 (2)	21 (2)	21 (2)	0.8
Underage (<21 years), n(%)	67 (46)	21 (47)	29 (45)	17 (46)	0.9
Male sex, % (no)	111 (77)	23 (52)	55 (85)	33 (92)	<0.001
<b>Race</b>					
Latino/Mestizo	73 (50)	20 (45)	34 (52)	19 (51)	0.9
White	42 (29)	13 (30)	19 (29)	10 (27)	
Black	12 (8)	3 (7)	4 (6)	5 (14)	
Other	3 (2)	2 (5)	1 (2)	0	
Indian	16 (11)	6 (14)	7 (11)	3 (8)	
<b>Highest level of education</b>					
None	1 (0.7)	0	0	1 (3)	0.4
Primary School	15 (10)	3 (7)	8 (12)	4 (11)	
Secondary School	83 (57)	25 (57)	41 (63)	17 (46)	
University	27 (18)	9 (20)	8 (12)	10 (27)	
Technical school	20 (14)	7 (16)	8 (12)	5 (14)	
<b>Relationship status</b>					
Single	109 (75)	35 (80)	44 (68)	30 (81)	0.5
Lives with significant other (not married)	30 (21)	7 (16)	16 (25)	7 (19)	
Divorced or separated	7 (5)	2 (5)	5 (8)	0	
<b>Employment</b>					
Student	38 (26)	14 (32)	12 (18)	12 (32)	0.6
Unemployed	13 (9)	4 (9)	7 (10)	2 (5)	
Full-time employment	91 (62)	24 (55)	44 (68)	23 (62)	
Other	4 (3)	2 (5)	2 (3)	0	

### **4.3.2 Drinking patterns, Social Norms, Perceptions and Attitudes**

Participants' reported drinking behavior during the 30 days prior to survey administration and perceptions regarding drinking are represented in Table 4. For purposes of direct comparison of perceived response values, moderate and high risk drinkers were combined into one collective category of "moderate/high risk drinkers" which collectively accounts for 76.5% of the young adults surveyed in Neiva (n =101). Results presented in this subsection will indicate characteristic comparisons between "low risk drinkers" with "moderate/high risk drinkers."

Moderate/high risk drinkers demonstrated significantly higher total number of drinks within the last 30 days, when compared to moderate and low risk drinkers (43 vs. 9, p-value < 0.001). This observed difference was attributed to a significantly higher number of drinks per drinking day (13 vs. 3, p-value < 0.001) in addition to a higher frequency of heavy drinking days (4 vs. 1, p-value < 0.001). The general observed trend suggests that the risk category, as determined through the AUDIT screening scores, is consistent with increased consumption of alcohol.

Among participants, moderate/high risk drinkers perceived that the number of drinks needed to get drunk was significantly higher compared to low risk drinkers (mean = 15 vs. 10 drinks, p-value = 0.029). Additionally, moderate/high risk drinkers also reported much higher frequencies of intent, desire and positive feelings to get drunk within the next 30 days. When asked about social norms, moderate/high risk drinkers were much more likely to perceive that the average young adult would approve of

drinking (55.45% vs. 35.5%,  $p$ -value = 0.04). However, low risk drinkers and moderate/high risk drinkers deemed the opinion of their peers equally important (non-significant difference,  $p$ -value = 0.8), including the opinion of their best friend. When asked whether participants were likely to drink in a given situation or mood, responses among moderate/high risk drinkers indicated that they were significantly more likely to drink when out with friends, when angry, when sad, and when they were by themselves compared to low risk drinkers (see Table 4).

**Table 4. Response statistics of social norms, perceptions and attitudes, Neiva sample**

Variables	Drinker Subtype		
	Low Risk (n=31) 23.5%	Moderate/ High risk drinkers (n=101) 76.5%	$p$ - value
number of total drinks within last 30 days (median, IQR)	9 (4,17)	43 (23, 75)	<0.001
average number of drinks per drinking day (median IQR)	3 (1,5)	13.3 (9, 20)	<0.001
number of drinking days within 30 days (mean, STD)	2 (2)	3.96 (2.74)	<0.001
number of heavy drinking days within 30 days (mean, STD)	1 (2)	3.7 (2.72)	<0.001
<b><i>Perception of drunkenness</i></b>			
Number of drinks to get drunk, mean (STD)	10.41 (1.23)	15.09 (1.30)	0.029
Number of drinks to get plastered, mean (STD)	22.38 (2.87)	32.10 (2.32)	0.016
<b><i>Drinking Intent, next 30 days</i></b>			
Plan to get drunk (freq, %)	6 (19%)	45 (45%)	0.012
Plan to get plastered	9 (29%)	52 (51%)	0.039
Desire to get drunk	11(35%)	66 (65%)	0.006
Good feelings about getting drunk	10 (32%)	55 (54%)	0.04
<b><i>Peer Norms</i></b>			

Table 4 Continued

Approval of drinking to get drunk by average young adult in Colombia	11 (35%)	56 (55%)	0.04
How important is their opinion to you?	19 (61%)	58 (57%)	0.836
Approval of drinking to get drunk by your best friend	13 (42%)	55 (54%)	0.304
How important is their opinion to you?	17 (55%)	71 (70%)	0.13
<b>Personal Control</b>			
Total personal control over your drinking	20 (65%)	53 (52%)	0.3
No influence of factors outside your control	26 (84%)	83 (82%)	1
<b>Sure I would drink to get drunk....</b>			
...when out with friends Median(IQR)	4 (2,4)	4 (3,5)	0.003
...when angry	1(1,3)	3(1,5)	<0.001
...when sad	1(1,3)	3(2,6)	0.001
...when nervous	1(1,2)	1(1,2)	0.132
...when trying to relax	2(1,3)	2(1,4)	0.260
...when I am by myself	1(1,1)	2(1,3)	0.004

## 5.0 DISCUSSION

The results in the previous section indicate that there are significant differences between the drinking behaviors of young adults from Neiva and young adults from Pittsburgh. The two most prominent differences in drinking patterns are the frequency of drinking sessions during a given month and the number of drinks consumed per drinking session. Furthermore, the data suggests that there are clear differences in the perceived social norms of both populations. As highlighted by the Theory of Planned Behavior, perceived norms, intent to drink, and perceived self-control may be predictive of actual drinking behavior and perhaps explain, in part, the differences in drinking patterns of each group. The following section will explore the possibility of how these constructs account for the findings of our sample populations in greater detail.

Additionally, further analysis of the Neiva sample suggests that a typical young adult high risk drinker from is male, but does not significantly differ from the low risk drinker in terms of education level, employment status or relationship status. These findings strongly suggest that socioeconomic status may not be a significant predictor of alcohol consumption among young adults. This finding is contrary to the literature, which suggests that socioeconomic factors have a positive relationship with alcohol abuse (Keyes and Hasin, 2008). The findings of this study may be indicative of the fact that



socioeconomic status does not simply correlate to risky drinking. However, further analysis of this phenomenon is beyond the capability of the current study.

This study has, for the first time, looked at several indicators of social norms and perceptions of young adults in Colombia. The current section will discuss in more detail how these indicators may predict drinking behavior and how the framework of the TPB helps us understand the observed findings.

Recognizing and understanding the drinking patterns of a population is an important factor in understanding potential health implications and areas of possible intervention for prevention efforts. The findings previously presented suggest that one way of reducing the burden of drinking among young adults in Colombia is to target young adult males, who perceive high intent and desire to drink and who furthermore believe that drinking is a social norm that young adults approve. This section will explore how future research can use this knowledge to further investigate the underlying mechanisms that can lead to risky drinking behavior.

## **5.1 DRINKING BEHAVIOR OF PITTSBURGH VERSUS NEIVA**

When considering drinking behavior among young adults from both samples, results indicate that young adults from Pittsburgh generally consume alcohol more frequently within a given month compared to young adults from Neiva (mean 7.5 vs. 4 drinking days per past month,  $p$ -value  $< 0.001$ ). That is, on average young adults in

Pittsburgh drink twice a week or approximately 8 times per month. Young adults in Neiva, on the contrary, generally only drink once per week or approximately 4 times per month. Similar observations hold true when considering heavy drinking days (6 vs. 4 heavy drinking days per 30 days,  $p$ -value = 0.001). This finding suggests that drinking occurs with nearly twice the frequency among young adults in Pittsburgh, when compared to young adults in Neiva. However, results further indicate that young adults from Neiva have more than 2.5 times the number of drinks per drinking session than young adults from Pittsburgh. These findings indicate significant differences in drinking patterns between the two populations. Whereas young adults in Pittsburgh seem to prefer drinking frequently, as often as 2 to 3 times per week, they generally limit their consumption to an average of 5 drinks. On the contrary, young adults in Neiva generally drink about once a week, but during this session they consume an average of 13 drinks. This finding is significant as it indicates a significant difference in the pattern of social drinking.

One potential reason for the significant difference in number of drinks between the samples could be due to gender, or more specifically, the gender difference among enrolled participants. Whereas males accounted for 77% of participants in the Neiva sample, they only accounted for 45% in the Pittsburgh sample. Literature suggests that women of any culture or background generally drink less than men (Wilsnack and Obot, 2006). Results from a study called the Gender, Alcohol, Culture: an International Study project (GENACIS), indicated that prevalence of drinking was higher among men than women in Argentina, Brazil, Costa Rica, Mexico, Uruguay and USA (Obot and Room,

2005). The findings from the comparison may reinforce the finding that males drink significantly higher volume of alcohol than females and therefore drive the statistically mean to a significantly higher norm than that observed in the Pittsburgh sample. While there are certainly biologically explanations for this observation, such as the fact that women tend to metabolize alcohol much slower than males, there are likely cultural factors that contribute to the behavioral difference as well. It is known that women experience more social stigma related to alcohol consumption than do males (Furham).

## **5.2 SOCIAL PERCEPTIONS AND THE THEORY OF PLANNED BEHAVIOR**

According to the Theory of Planned Behavior, an individual's actions are the result of intend and desire toward that action, the perceived social norm, and the perceived self-control over decisions that may ultimately influence the action. Within the scope of this study, significant differences in perceptions between the populations were found that may explain the differences in drinking behavior. For instance, a significantly higher proportion of young adult risky drinkers from Pittsburgh indicated intent to drink, desire to drink and a desire to drink until drunk, as compared to Neiva. Within the framework of the TPB, a higher intent for a given action would directly translate to an increase in the likelihood of engaging in that action. That is, young adults from Pittsburgh presumably demonstrate a higher drinking frequency per week, because their intent to

drink is high and they subsequently make plans to fulfill their drinking intent. The ability to plan ahead of time, allows for an increase in drinking opportunity.

Survey responses on social norms reveal that a higher proportion of Neiva participants versus Pittsburgh participants believe that the average young adult approves of drinking. Furthermore, Colombians indicate that the opinions of their peers highly matter to them. Based on the social construct of perceived social norm, the TPB attributes that individuals are more likely to act according to what they perceive to be the socially accepted norm. Neiva participants, who are under the notion that other young adults consume alcohol and approve of such an act, are much more inclined to behave in a similar manner, since the opinion of others matters to them. They are therefore following the norms of the crowd. The notion of conforming to socially accepted behavior is similar in concept to drinking for enhancement of sociability or social drinking (Furnham, 2010). In terms of the current findings, this theory may explain why Neiva participants drink higher volumes of alcohol during a given drinking session. They are likely behaving in the socially accepted norm. On the contrary, fewer Pittsburgh participants indicate the belief that the average young adult approves of drinking. Therefore, in line with the TPB, fewer Americans would actually drink high volumes if they do not believe that action to be sociable. In addition, only one-fourth of Pittsburgh participants reported that the opinion of the typical young adult actually mattered to them. In other words, even if Pittsburgh participants perceive high sociability in the act of drinking, few indicated that peer approval was important to them. It should be noted here that the TPB does not fully explain why Neiva participants do not drink more frequently, if they perceive high

sociability with the act of drinking. This shows that indicators for drinking may still be more complex than presented here.

The last construct of the TPB places importance on the individual's perceived control. Given multiple potential scenarios, results indicate that young adults from both Pittsburgh and Neiva show low perceived control in scenarios when out with friends. This finding is indeed in line with theories on group dynamics (Beck et al., 2012). It furthermore re-emphasizes the concept of drinking for enhancement of sociability. That is, young adults, regardless of culture or region, are more likely to consume alcohol when they are with their friends/peers, whom they presumably believe to uphold similar drinking beliefs.

Several findings presented thus far can be explained using constructs of the Theory of Planned Behavior. Interestingly, differences in perception can potentially inform and predict outcomes in drinking behavior across independent samples of different cultural backgrounds. This study therefore suggests that certain aspects of the TPB are relevant for use in predicting and understanding how perceived social norms and intentions of the individual can influence their drinking behaviors.

### **5.3 SOCIAL NORMS AND PERCEPTIONS INFLUENCING DRINKING IN NEIVA**

Results from the Neiva sample indicate that there are significant differences in drinking behaviors among low risk drinkers and moderate/high risk drinkers. That is, the average total number of drinks within a 30 day period substantially increases as the risk category increases. Likewise, the frequency of heavy drinking days within a month increases by risk category. Both these findings re-emphasize the use of the AUDIT screening in identifying individuals who demonstrate risky drinking behaviors with those who do not. Outcomes from the data furthermore indicate that males make up a majority of young adult high risk drinkers in Neiva. Females, on the other hand were less likely to fall under the high or moderate risk category.

Responses to questions related to perceptions of number of drinks to get drunk show that high risk drinkers require a significantly higher amount of drinks than their low risk drinker counterparts to get drunk (mean 15 drinks vs. mean 10 drinks) and may suggest that high risk drinkers have built a much higher tolerance for alcohol consumption or that their perceived need for alcohol is significantly higher. Interestingly, these results are further reflected in the intent and desire of high risk drinkers to get drunk. Generally speaking, high risk drinkers are more likely to associate drinking with positive feelings and believe that the average young adult would approve of their drinking. This may highlight the importance of perceived peer approval on influencing decisions to drink. Although low risk drinkers regarded the opinion of other young adults,

they did not believe that the average young adult approved of them drinking, which would subsequently discourage their decision to drink. This finding would be in accordance with the TPB, which suggests drinking behavior itself that is in line with perceived social norms of drinking. Similar results are evident when considering the opinion of an individual's best friend. Whereas risky drinkers were more likely to perceive that their best friend approved of them drinking, low risk drinkers indicated the contrary. These observations suggest that individuals are more likely to surround themselves with people engaging in similar behaviors and have similar beliefs, such that low risk drinkers are more likely to associate with other low risk drinkers and high risk drinkers with other high risk drinkers. This theory is consistent with the finding that high risk drinkers reported that they are much more likely to drink to get drunk when out with their friends than low risk drinkers. Therefore, drinking may be considered a primary social activity among groups of high risk drinkers, whereas on the contrary, low risk drinkers are less likely to drink while hanging out with other low risk drinkers. Another possibility is that young adults are more likely to behave according to what they believe is the social norm for their age category. According to the TPB, this would mean that high risk drinkers are merely following what they perceive as the norm of drinking among their age group. And so, according to high risk drinkers, they are just behaving in the most accepted and appropriate behavior of typical young adults. On the contrary, low risk drinkers, who generally perceive the norm of drinking among the average young adult to be much lower, adhere to a lower drinking frequency. In summary, perceived

norms among risk categories may be highly deterministic of actual drinking behaviors. These mechanisms need to be further studied.

Additionally, this study shows that high risk drinkers are much more likely to drink when they experience anger, sadness and when they are alone. These findings may be indicative of behaviors that suggests alcohol dependency and/or abuse. According to the literature on alcohol dependency, it is common for alcoholics to resort to drinking when in certain emotional states (Lang et al., 1999). Several studies indicate that individuals report highly positive emotions similar to elation and euphoria when consuming alcohol (Lang et al, 1999).

#### **5.4 STRENGTHS AND LIMITATIONS**

This study has several limitations. The first involves the extent to which participants within both sample populations are truly representative of all young adults in both Pittsburgh and Neiva. For example, since participant recruitment occurred solely within the setting of a hospital emergency department, only individuals that were admitted to the ED were actually included into the study. While this sort of sampling is not representative or inclusive of all young adults within the selected settings, it does provide a meaningful comparison for young adults who present to a hospital facility. In addition, in Neiva, the hospital setting receives a high influx of patients from surrounding neighborhoods. Whereas studies conducted in the US tend to recruit in school or



university settings, this recruitment method may not be appropriate for developing countries where education may not be accessible to everyone. This recruitment furthermore gives the hospital setting practical value when thinking in terms of future interventions. For example, this study has described specific population characteristics of young adults who present to the ED. When thinking of designing potential interventions, it would be beneficial to use this information to directly tailor intervention for this target population.

Another potential limitation is the reliance on participants' self-report of drinking behavior and perceptions, while direct observations or physical or biologic measurements such as Blood Alcohol Levels (BAC) during the days of consumption would have been more accurate. Yet, prior studies have demonstrated that self-reports of alcohol and drug use are quite accurate and reliable of actual drinking behavior as determined through laboratory testing (Babor et al., 1989). Although we used a diagnostic self-reported screening tool to determine risk categories for drinking, this diagnostic tool was taken from an assessment developed by the WHO, which is used widely as the standard tool for identifying category of drinking risks. The AUDIT screening tool has been validated in various studies in different settings (WHO, 2013).

To minimize recall bias, we specifically asked participants to recall their drinking frequency within the last 30 days only. However, memory aids, such as the calendar on the questionnaire enabled participants to visualize the month according to days of a week. Error in recall should therefore be reduced.

The comparison performed within the scope of this report also makes the inherent assumption that the original survey questionnaire used for the Pittsburgh sample is an appropriate “golden standard” that can apply to other sample populations as well. This assumption may not be completely correct, given that the language and content of the questionnaire used in the English version may not translate to other cultures or regions based on various factors such as dialect, literacy, and culture. However, to minimize these obstacles, the local collaborators helped design and edit the questionnaire to make it culturally appropriate. Furthermore, the questionnaire was pilot-tested among five initial persons and edited/revised based on their feedback.

Additionally, as mentioned throughout the discussion, there are limitations of the interpretations that can be made using responses of social norms and perceptions. It is evident that findings interpreted within this discussion are limited in scope and may simply represent a glimpse of a much more complex web of causal factors and various mechanisms that were not measured in this study.

## **5.5 POTENTIAL HEALTH IMPLICATIONS AND FUTURE DIRECTIONS**

Future studies in this field should address these limitations and build upon the work that has been provided here. This study has provided evidence that drinking patterns among young adults vary widely with region and culture. It would therefore not be appropriate to design an intervention for target groups whose drinking behavior and

motivators have not previously been studied. For example, an intervention designed to address the needs of young adults in American college settings is very unlikely to work effectively among Colombian college students. However, this study revealed that a possible start to designing an intervention is to tackle the characteristics found to be most typical of a high risk drinker: male, single status, with high perceived social approval and low perception of self-control. It would also be beneficial to further investigate how social networks and group dynamics contribute to increased drinking behaviors. There are thus many areas that this research study leaves open for further investigation.

It is the hope of the author that results discussed within this report will serve as a gateway for future interventions and serve as a means to fill the gap in understanding the cultural and perceptual motivators that influence drinking behaviors in various countries within Latin America.

## **6.0 CONCLUSION**

This study suggests there are distinctive differences in drinking behaviors and drinking perceptions among young adults from two different cultural settings: Neiva, Colombia and Pittsburgh, U.S.A. The results discussed within this report are in close alignment with the Theory of Planned Behavior, which may suggest a possible avenue for future interventions to target behavioral intentions in order to change behavior. Furthermore, given the specific recruitment setting of the emergency department, it is suggested that future interventions be able to directly use patient characteristics as highlighted within this thesis to inform the nature and design of their target population. Additionally, this study calls for an increased focus on research to identify the leading social and perceptual motivators that influence drinking behaviors.

## APPENDIX A: SURVEY QUESTIONNAIRE (SPANISH)

**School of Medicine**  
**Department of Emergency Medicine**

Iroquois Building, Suite 400A  
3600 Forbes Avenue  
Pittsburgh, PA 15261  
412-647-3078

ID: \_\_\_\_\_

### AUDIT

**1) Con que frecuencia ingiere bebidas  
alcohólicas?**

- 0. nunca
- 1. mensualmente o menos
- 2. 2 a 4 veces al mes
- 3. 2 a 3 veces por semana
- 4. 4 o mas veces por semana

**2) Cuantas cervezas o tragos ingiere  
en un día cuando toma?**

- 0. nunca
- 0. 1 a 2
- 1. 3 a 4
- 2. 5 a 6
- 3. 7 a 9
- 4. 10 o mas

**3) Con que frecuencia toma mas de  
cinco cervezas o tragos en la misma  
ocasión?**

- 0. nunca

- 1. menos de una vez al mes
- 2. mensualmente
- 3. semanalmente
- 4. diario o casi diario

**4) Le ocurrió, durante el ultimo año,  
que no pudo parar de beber una vez  
que había empezado?**

- 0. nunca
- 1. menos de una vez al mes
- 2. mensualmente
- 3. semanalmente
- 4. diario o casi diario

**5) Que tan frecuentemente, durante el  
ultimo año, dejo de hacer algo que  
debería haber hecho por beber?**

- 0. nunca
- 1. menos de una vez al mes
- 2. mensualmente
- 3. semanalmente

- 4. diario o casi diario

**6) Que tan frecuentemente, durante el ultimo año, necesito beber un trago a la mañana siguiente después de haber bebido en exceso?**

- 0. nunca
- 1. menos de una vez al mes
- 2. mensualmente
- 3. semanalmente
- 4. diario o casi diario

**7) Que tan frecuentemente, durante el ultimo año, se sintió culpable o tuvo remordimientos por haber bebido?**

- 0. nunca
- 1. menos de una vez al mes
- 2. mensualmente
- 3. semanalmente
- 4. diario o casi diario

**8) Que tan frecuentemente, durante el ultimo año, olvido algo de lo que había pasado la noche anterior debido a que estuvo bebiendo?**

- 0. Nunca
- 1. menos de una vez al mes

- 2. mensualmente
- 3. semanalmente
- 4. diario o casi diario

**9) Se ha lastimado o alguien a resultado lastimado como consecuencia de su consumo de bebidas alcohólicas?**

- 0. No
- 1. Si, pero no en el ultimo año
- 2. Si, en el ultimo año

**10) Algún amigo, familiar, o doctor se ha preocupado por la forma en que Ud. bebe o le ha sugerido que disminuya el consumo?**

- 0. No
- 1. Si, pero no en el ultimo año
- 2. Si, en el ultimo año

## **PROYECTO OPCIONES SALUDABLES**

### **Instrucciones para Completar el Calendario de Uso de Alcohol**

Para tener una idea de como su uso de alcohol fue en los últimos 90 días, queremos que usted llene el calendario de línea de tiempo incluido.

Llenar el calendario no es difícil! Intente ser lo mas precisa que sea posible. Nosotros reconocemos que personas no tendrán recolección perfecta, eso es OK.

### **QUE TIENE QUE LLENAR**




- La idea es de poner un número para cada día en el calendario incluido.
- Cuando usted no tomó, usted escribiría un “0”.
- Cuando usted sí tomó, usted escribirá el número total de bebidas que usted tomó.
- Queremos que usted anote su beber en el calendario usando Bebidas Estándar.

UN CUÁDRO GRÁFICO DE CONVERSIONES DE BEBIDAS ESTÁNDAR está incluido como un marcador para ayudarle.

### **SU MEJOR ESTIMACIÓN**

- Realizamos que no es fácil recordar cosas con 100% exactitud.

## **Conversión de copa estándar**

<b><u>Bebida</u></b>		<b><u>% Volumen</u></b>	<b><u>Cantidad</u></b>
<b><u>Cerveza</u></b>		<b>4%</b>	<b>330 ml 12 onzas</b>
<b><u>Vino</u></b>		<b>12%</b>	<b>142 ml 5 onzas</b>
<b><u>Destilado</u> (aguardiente, ron, tequila, vodka, gin, whisky)</b>		<b>40-50%</b>	<b>43 ml 1 1/2 onzas Un trago</b>

## CALENDARIO DE USO DE ALCOHOL DE 30 DÍAS

Fecha de inicio: \_\_\_\_\_ Fecha de Término: \_\_\_\_\_

<b>Mayo</b>	<b>Domingo</b>	<b>Lunes</b>	<b>Martes</b>	<b>Miércoles</b>	<b>Jueves</b>	<b>Viernes</b>	<b>Sábado</b>
	29	30	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31		

<b>Junio</b>	<b>Domingo</b>	<b>Lunes</b>	<b>Martes</b>	<b>Miércoles</b>	<b>Jueves</b>	<b>Viernes</b>	<b>Sábado</b>
						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30

<b>Julio</b>	<b>Domingo</b>	<b>Lunes</b>	<b>Martes</b>	<b>Miércoles</b>	<b>Jueves</b>	<b>Viernes</b>	<b>Sábado</b>
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				







**B. Cuando estoy enojado(a)...**

1	2	3	4	5	6
Estoy seguro(a) que no bebería			Estoy seguro(a) que bebería		

**C. Cuando estoy triste...**

1	2	3	4	5	6
Estoy seguro(a) que no bebería			Estoy seguro(a) que bebería		

**D. Cuando estoy nervioso(a)...**

1	2	3	4	5	6
Estoy seguro(a) que no bebería			Estoy seguro(a) que bebería		

**E. Cuando intento relajarme...**

1	2	3	4	5	6
Estoy seguro(a) que no bebería			Estoy seguro(a) que bebería		

**F. Cuando estoy solo(a)...**

1	2	3	4	5	6
Estoy seguro(a) que no bebería			Estoy seguro(a) que bebería		

## **Información demográfica**

**D1. ¿Qué edad tiene? (en años)\_\_\_\_\_**

-No sabe / no está seguro

**D2. ¿A cuál o cuáles de las siguientes razas diría usted que pertenece?**

**(Marque todas las opciones que correspondan) Léale:**

1. Latino
2. Blanco Colombiano
3. Negro Colombiano
4. Asiático
5. Otra [especifique] \_\_\_\_\_
6. Indígena

**D3. Es usted... Léale:**

1. Soltero
2. Casado
3. Divorciado
4. Viudo
5. Separado
6. Vive en pareja sin estar casado

**D4. ¿Cuál es el nivel de educación más alto que ha alcanzado?**

1. Ninguno
2. Primaria
3. Secundaria
4. Universitario
5. Técnico o tecnólogo
6. Profesional
7. Otros

**D5. Es usted actualmente...:**

1. Empleado asalariado
2. Trabajador independiente
3. Desempleado desde hace más de 1 año
4. Desempleado desde hace menos de 1 año

5. Encargado de las tareas del hogar
6. Estudiante

**D6. ¿Tiene usted un teléfono celular para uso personal? Por favor incluya los teléfonos celulares de uso personal y de trabajo.**

1. Sí
  2. No
-

## APPENDIX B: SURVEY QUESTIONNAIRE (ENGLISH)

### M4D STUDY

#### Baseline Information Questionnaire:

---

1. What is your age in years? \_\_\_\_\_

2. What is your gender?

- 0** **1**  
 Male  Female

3. Describe your ethnicity

- 1** **0**  
 Hispanic or Latino  NOT Hispanic or Latino

4. Describe your race:

- Black/AA **(0)**  Caucasian/white **(1)**  Asian **(2)**  
 American Indian/Alaska Native **(3)**  Native Hawaiian/Pacific  
 Bi-/Multi-racial **(5)**  
 Other \_\_\_\_\_ **(6)**

Islander **(4)**

5. What is the highest school level you completed?

- < HS Graduate **(0)**  HS graduate or GED **(1)**  
 Some college **(2)**  College graduate **(3)**  
 Post-grad work **(4)**  Vocational **(5)**

6. About how many text messages do you send per day?

- None (I don't own a cell phone) **(0)**  
 None (I own a cell phone but don't text message) **(1)**  
 1-10 messages **(2)**  
 11-30 messages **(3)**

- 30-50 messages (4)
- >50 messages (5)

## What is considered a 'standard drink'?



### ALL OTHER CODING FOLLOW NUMBERS

#### 1. How often do you have a drink containing alcohol?

- Never (0)
- Monthly or less (1)
- 2 to 4 times a month (2)
- 2 to 3 times a week (3)
- 4 or more times a week (4)

#### 2. How many drinks containing alcohol do you have on a typical day when you are drinking?

- 1 or 2 (0)
- 3 or 4 (1)
- 5 or 6 (2)
- 7, 8, or 9 (3)
- 10 or more (4)
- I don't drink (0)

#### 3. How often do you have 6 or more drinks on one occasion?

- Never (0)
- Less than monthly (1)
- Monthly (2)
- Two to three times per week (3)
- Four or more times a week (4)

4. How many times in the past 30 days have you had 5 or more standard-sized drinks in a day (for men), or 4 or more standard-sized drinks in a day (for women)? \_\_\_\_\_

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Department of Emergency Medicine*

15261

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Pittsburgh, PA

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**TLFB**

To help us evaluate your drinking, we need to get an idea of what your alcohol use was like in the past 30 days. To do this, we would like you to fill out the attached calendar.

✓ We recognize you won't have perfect recall. That's OKAY.

- The idea is to put a number in for **each day** on the calendar.
  - On days when you did not drink, you should write a "0".
- On days when you did drink, you should write in the total number of drinks you had.

**It's important that something is written for every day, even if it is a "0".**







**13. How sure are you that you could resist “drinking to get drunk” in each of the 6 hypothetical situations presented.....**

**A. When I am out with friends....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

**B. When I am angry....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

**C. When I am sad....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

**D. When I am nervous....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

**E. When I am trying to relax....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

**F. When I am by myself....**

1	2	3	4	5	6
I am sure I would not drink			I am very sure I would drink		

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