

ALCOHOL AND FIRST YEAR COLLEGE RETENTION:
THE VALUE OF ALCOHOL DATA TO PREDICTIVE MODELS, POLICY AND
OTHER PREVENTION STRATEGIES.

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ABSTRACT

Through an examination of first year college students at a large, urban, public university, this study explored one university's use of alcohol course survey data from an online alcohol prevention program to determine whether it would increase the power of a predictive model for first year student retention. At a time when fiscal and human resources are both scarce and in high demand, institutions require policy and prevention strategies that promise to make a positive difference in the health, safety and academic persistence of its students. Using available data on 4,121 first year students this research identified key variables that, when combined with student attitudes about alcohol use, identify the significant predictors of first year college retention enabling university leaders to design more impactful strategies for intervention including a student-centered policy framework with an aim toward reducing harmful behaviors on campus.

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CHAPTER 1

INTRODUCTION

The purpose of this study was to examine a single university environment and its existing institutional data to find out if using alcohol course survey¹ results from an online alcohol prevention program would increase the power of a predictive model for first year student retention. At a time when fiscal and human resources are both scarce and in high demand, institutions require calculated policy and prevention strategies that promise to make a positive difference in the health, safety and academic persistence of their students. Using available data on 4,121 first year students this research examines whether an existing predictive model for first semester grade point average can be improved upon with the addition of pre-enrollment student attitudes about alcohol in order to strengthen its predictive capacity for first year college retention. Such a model will enable university officials to connect existing data, determine the impact of the problem on their campus, and formulate a policy framework to strategically design the environment in which students are more likely to succeed.

After describing the underlying premise, significance and theoretical base of the study, this dissertation examines the relevant literature on college drinking and alcohol

¹ For the purposes of this research the web-based education and prevention program will be referred to as an “alcohol course”. Several commercially available programs have been developed and made available to colleges and universities with the intent to educate college students about the dangers of alcohol use and abuse. Temple University contracted with 3rd Millennium Classrooms (<http://3rdmilclassrooms.com>) to use their online prevention course “Alcohol-Wise”. According to 3rd Millennium’s website, “Alcohol-Wise is (an) evidence-based course typically used for incoming first-year students to change student perceptions, reduce risk for freshmen, and impact campus culture. The motivational interviewing style course is written to reduce student resistance and to integrate personalized feedback into the interactive portions of the course. Alcohol-Wise includes the evidence-based eCHECKUP TO GO created at San Diego State University. The course is one hour and 15 minutes long, which includes the 30-day follow-up portion.”

policy during the past 15 years. The particular focus is on the role of university policy in shaping the culture of alcohol use on college campuses and how it has directed the efforts and resources used to reduce harmful drinking behavior. While there are a multitude of reasons why students may leave college this study examines how alcohol might play a role. Today universities are using strategies that include data mining and empirically based analysis to identify significant variables that predict first year students who are at risk of dropping out. By alerting academic advisors, faculty, resident assistants and other support services early in a semester the institution is able to make timely and strategic interventions that improve student retention.

Statement of the Problem

The history of alcohol use at Temple University (TU) is similar to most colleges and universities across the country. Of the over 27,000 full-time undergraduate students, 512 students were referred to the student conduct board for violations of the alcohol policy in the 2008-2009 academic year. Over 48% of the students referred were first year students. During this same time period campus police received 183 community complaints of loud noise and house parties from neighbors in the blocks surrounding the campus. Campus police also reported that officers transported over 60 students to the hospital due to a high level of intoxication or alcohol poisoning. In addition to simple alcohol violations many related cases were reported, including: assaults, vandalism, disorderly conduct and sexual assaults, in which alcohol impaired the victim, the offender or both.

Confirming the local reality, the national data present equally compelling reasons for conducting research on alcohol policy and prevention strategies among college age students. More than 1,700 college students aged 18 to 24 years die annually from alcohol-related injuries while approximately 500,000 students suffer alcohol-related unintentional injuries (Hingson et al., 2005). Excessive drinking is also a contributor to fights, interpersonal and sexual violence. It is estimated that, annually, 600,000 college students aged 18 to 24 are assaulted by another student who has been drinking and 70,000 are victims of alcohol-related sexual assault or date rape (Hingson et al., 2002). Colleges and universities strive to design effective prevention strategies aimed at reducing high-risk drinking which includes managing the campus environment through appropriate programs and policies.

A glimpse of the research published over the last 15 years shows both the large-scale national and localized campus studies that help to identify the gap between harmful alcohol-related behaviors and existing policy and programs. This study primarily focuses attention on the students, culture, policy frameworks and prevention strategies at work in one large, urban, public university. The study uses an institutional case study design with existing data as the foundation for a multivariate analysis of pre-enrollment student data available to the institution within the first four weeks of enrollment. Until this study both the research and policy within higher education has treated college drinking and risk behaviors as a student affairs problem, and attrition and retention as an academic affairs problem. Each division has been left to their own data and resources to address their issues. What this research offers is one integrated approach that: illuminates the academic and non-academic factors that hinder retention; expands the research guiding the complexities of why students leave in the first year and what is needed in the

provision of student services; informs resource allocation; and helps to shape policy and practice within the university.

Purpose of the study

The loss of life, unintentional injury and foreshortened educational opportunities which result each year from the misuse and abuse of alcohol have remained at crisis level for college administrators across the country. Prevention and intervention strategies are constantly reviewed and revisited in order to meet the ever-changing needs and interests of a college age population. Although the well-resourced national research endeavors present important guideposts to crafting policies, individual schools must use their own expertise and resources to determine what works for their students. Small samples limit the value of multi-institutional and national data collections such as the Harvard School of Public Health College Alcohol Study (CAS). With more than 120 unique environments reflected in the students surveyed by the CAS, it is difficult to draw conclusions about which strategies would succeed or fail at any single institution.

Conducting similar surveys at one's own institution is valuable to more fully understand which practices are valued by the local student body. The literature review reflects that students expect the institution to put appropriate boundaries and standards in place to protect the health and safety of its community; however, it is often left to each individual campus to determine how to do it. The National Institute on Alcohol Abuse and Alcoholism ("NIAAA") continues to partner with colleges and universities to make certain that the latest research and best practices are readily accessible to those institutions that cannot keep pace with these important trends.

Federal and state laws will continue to provide a foundation for the development, implementation, enforcement, and assessment of college alcohol policies; however, such laws influence the creation of policy more than research. Individual institutions have the responsibility to study their students, learn the culture, design the framework to match their community, and evaluate their policies and practices regularly.

Research questions

The over-arching research questions that guided this effort are:

- Does information gathered from an alcohol course survey increase the power of a predictive model for first year student retention?
- What is the marginal value of alcohol course survey data to existing predictive models?

In order to arrive at a better understanding of these students' perceptions the study also addressed the following related questions:

- Are there any significant and meaningful correlations between demographic, pre-enrollment and/or enrollment variables and the alcohol course survey data?
- Are there any differences in enrollment and retention between the students who completed the survey and those who did not?

Definitions

Retention and persistence are often used interchangeably yet the National Center for Education Statistics makes the distinction that retention is an institutional measure while persistence is a student measure (Hagedorn, 2006, p.92). Therefore, throughout this study the term *retention* will be the goal used to describe first year students enrolled at Temple University (TU) who are retained through their second year. The term *persistence* is used to describe students who enroll at TU and complete a degree at TU;

whereas *non-persisters* will be treated as students who enrolled but did not complete a degree at TU or never returned to TU. Since the current study focuses on first year retention and not persistence to graduation, this study does not include outcome data to indicate whether students graduated. What we may not know about TU students who leave or *dropout* are the complex circumstances for their departure and whether they go on to complete a degree at another institution (Astin, 1971; Hagedorn, 2006; Tinto, 1987). Arguably, these terms have been reduced to the simplest form; however, there is a considerable body of literature available for greater detail (Astin, 1971; Bean & Eaton, 2001; DeBerard, Spielmans & Julka, 2004; diNovi, 2011; Hagedorn, 2006; Lotkowski, Robbins & Noeth, 2004; Tinto, 1975, 1987).

Significance of the Study

Larimer and Cronce (2002) conducted an overview of 15 years of individually focused college alcohol prevention and treatment strategies evaluated between 1984 and 1999. The behavioral outcomes used to evaluate program efficacy include reductions in alcohol use (including quantity, frequency and intensity of use), reductions in the negative consequences of use (in conjunction with or independent of use reduction) and/or increased rates of alcohol abstinence (Larimer & Cronce, 2002). The results of their comprehensive study found the following gaps in the strategies evaluated and support the need for this study:

- 1) Consistent with the results of previous reviews, little evidence exists for the utility of educational or awareness programs;
- 2) Much of the research suffers from serious methodological limitations;
- 3) Campuses would best serve the student population by implementing brief, motivational or skills-based interventions, targeting high-risk students identified either through brief screening in health care centers or other

- campus settings or through membership in an identified risk group (e.g., freshmen, Greek organization members, athletes, mandated students);
- 4) More research is needed to determine effective strategies for identifying, recruiting and retaining students in efficacious individually focused prevention services, and research on mandated student prevention services is an urgent priority;
 - 5) Integration between campus policies and individually oriented prevention approaches is recommended; and
 - 6) Fostering a campus climate supportive of prevention efforts through collaborations with policy-makers, judicial and disciplinary officers, law enforcement personnel, student affairs staff, health care staff and other stakeholders, is necessary (Larimer & Crounce, 2002).

By focusing on a single institution, engaging all of its key stakeholders and utilizing available data to examine the key research questions, this study reveals meaningful information beyond what has been possible based upon the predominantly small sample, multi-institutionally based research that has previously been conducted with college students. By gathering the available data about students that exist in isolated systems and separate departments, university leaders are better equipped to facilitate more impactful prevention and intervention strategies. For a number of reasons - uniqueness of campus setting and environment, diversity of student population – the goal was to study one campus and its entering freshmen to design meaningful strategies for TU which will provide a valuable model that other institutions can implement. This study offers insight to the first year college experience of students at comparable institutions by showing how currently collected academic and non-academic data at TU can be used to design a value enhanced predictive model that when applied to first year college students at TU will improve the institution's capacity to identify students at risk of leaving. Results from the analysis can then be applied to policies and practices to better address students' needs. Ultimately this research, and the future research

opportunities that it inspires, help university policymakers, judicial and disciplinary officers, law enforcement personnel, academic advisors, health care staff and other stakeholders, to support prevention efforts and to design student success strategies including the integration of campus policies.

Theoretical Base

As recently as two decades ago it was believed that brain development effectively stopped at age 16. However, neuroscientists conducting a longitudinal study of brain development sponsored by the National Institute of Mental Health (NIMH) found that children's brains were not fully mature until at least 25 (Henig, 2010, para. 21).

“Tellingly, the most significant changes took place in the prefrontal cortex and cerebellum, the regions involved in emotional control and higher-order cognitive function” (Henig, 2010, para. 22). NIMH scientists found that while the limbic system explodes during puberty, the prefrontal cortex keeps maturing for another 10 years. “Jay Giedd, director of the study, said it is logical to suppose — and for now, neuroscientists have to make a lot of logical suppositions — that when the limbic system is fully active but the cortex is still being built, emotions might outweigh rationality” (Henig, 2010, para. 25). Therefore this period of time from the end of adolescence through emerging adulthood is characterized by significant brain maturation affecting neurological and cognitive processes as well as the social and behavioral evolution that requires thoughtful management. This period of time, Arnett (2004) explains, “is not simply an ‘extended adolescence,’ because it is much different from adolescence, much freer from parental control, much more a period of independent exploration” (p.4). Not only does the

emerging adulthood theory resonate with the psychology and science of 16 to 20 year olds but there are policy implications to setting age based thresholds.

Emerging adulthood theory takes into account the stages of development coupled with findings in the neurological study of brain maturation, as well as the implications of these moving targets when policy seems to arbitrarily align adulthood with law. Henig (2010, para. 10) describes the “scattershot approach” that American policy and law has had with regard to defining the markers of adulthood:

“People can vote at 18, but in some states they don’t age out of foster care until 21. They can join the military at 18, but they can’t drink until 21. They can drive at 16, but they can’t rent a car until 25 without some hefty surcharges. If they are full-time students, the Internal Revenue Service considers them dependents until 24; those without health insurance will soon be able to stay on their parents’ plans even if they’re not in school until age 26, or up to 30 in some states. Parents have no access to their child’s college records if the child is over 18, but parents’ income is taken into account when the child applies for financial aid up to age 24. We seem unable to agree when someone is old enough to take on adult responsibilities. But we’re pretty sure it’s not simply a matter of age.”

As the literature has shown, policy alone cannot be the guidepost to behavioral expectations. Relying on the constructs of law and regulations to shape people from adolescence to adulthood is an incomplete solution at best.

The undercurrent of this study is a belief that adolescence goes on much longer and the process of emerging as an adult occurs later in life. Historically, colleges have utilized regulatory policy to shape the expectations and cultural norms for the emerging adult population. However, current alcohol research recognizes the need for interventions to be more mindful of student development where Tinto (1987) stresses the importance of facilitating the academic and social transition for students adjusting to

college, and Astin (1984) emphasizes the importance of student engagement in effective support systems. Therefore as the college age population extends adolescence into the beginning of higher education, the more we rely upon the institution to shape this process toward degree attainment.

CHAPTER 2

REVIEW OF THE LITERATURE

This presentation of the literature anchors the subject in its historical roots as well as charts the course through nearly a century of policy markers. The dysfunctional marriage of research and policy plays out its turbulent relationship in this review. The literature demonstrates how policy and practice have attempted to shape culture and impose solutions often without consulting the research. After discussing the foundational empirical research the review highlights some of the key findings from localized studies which affirm the need for: (1) focused study of an individual campus, (2) collaboration among university leaders to shape the campus environment, and (3) use of existing student data to identify meaningful ways to influence policy and prevention strategies.

The issue of alcohol misuse and abuse has long been studied and longer still, has stymied college administrators in their persistent attempts to create effective interventions. With over 7,000 colleges and universities across the country there is a need for the national student surveys and funded research initiatives that can guide and inform smaller institutions that do not have the resources to conduct their own study. Research from national centers has been the primary source guiding policy and program development at most institutions. However, some of these studies acknowledge in their future research recommendations the importance of localized studies which represent samples more reflective of individual campus culture, climate and student needs (Cohen & Rogers, 1997; DeJong, Towvim & Schnieder, 2007; Mallett, Marzell, Varvil-Weld, Turrisi, Guttman & Abar, 2011; Odo, McQuiller & Stretesky, 1999). As the literature unfolds here, it is clear that institutions of higher education have segregated the research

on student alcohol use and behavior from the research conducted on retention. Also surprising, there is little integration or research synthesis of the educational and psychological literatures when looking at student outcomes (Robbins, Lauver, Le, Davis, Langley & Carlstrom, 2004, p. 261). The current study bridges the gap in both the national research and the local institution's practice by showing the value of an integrated approach to supporting student outcomes.

Alcohol - Historical Implications & Policy

Historically, one of the most important events to shape alcohol policies in this country was the ratification of the 18th Amendment to the United States Constitution in 1919 which defined the era of Prohibition in the 1920's. Despite the effort to reduce alcohol-related problems at that time, there was a public backlash to the restrictions as well as the emergence of a flourishing underground market of speakeasies and illegal sale of alcohol (Dowdall, 2009). Prohibition and the 18th Amendment was later repealed in 1933 and stands as the only Amendment to the U.S. Constitution to be repealed in its entirety. As a result of this pivotal time in history, a unique and powerful relationship between the alcohol industry, crime and policy began to establish its roots within the American culture (Dowdall, 2009, p.105).

Alcohol policies are essentially regulatory policies which restrict behavior by creating penalties or sanctions for non-compliance (Fowler, 2009). The nature of such a regulatory policy is exacerbated by the federal mandates which compel colleges to create regulatory policies. Such was the case when, in 1984, Congress passed the Federal Underage Drinking Act, which withheld transportation funding from states that do not

have a Minimum Legal Drinking Age of 21 (MLDA21). The justification for the policy was that such an act would result in fewer traffic fatalities. Since then there has been little public debate about the wisdom of this policy until June 2008 when a group of college and university presidents drafted and signed the Amethyst Initiative, a public statement calling for "an informed and dispassionate public debate over the effects of the 21-year-old drinking age" (Miron & Tetelbaum, 2009). By April 2010 a total of 135 presidents and chancellors had signed on to the Amethyst Initiative. While politically it may be distinctly unpopular to sign on to the Amethyst Initiative, (note: there is not one presidential signature from a Pennsylvania state system or state-related university on the Amethyst Initiative statement) presidents understand the desperate need to do something more than follow the political policy. Balko (2008) best sums up the climate created when policy is implemented as a mandate without any sort of formative evaluation:

"It's been nearly 25 years since Congress blackmailed the states to raise the minimum drinking age to 21 or lose federal highway funding. Supporters of the law have hailed it as an unqualified success, and until recently, they've met little resistance. For obvious reasons, no one wants to stand up for teen drinking. The alcohol industry won't touch the federal minimum drinking age, having been sufficiently scolded by groups like Mothers Against Drunk Driving and federal regulators. So the law's miraculous effects have generally gone unchallenged."

Policy Shapes Culture

In his book, *College Drinking: Reframing a Social Problem*, sociologist George Dowdall (2009) spends a chapter looking at how public policy has influenced college drinking and how the policy created within higher education must be aligned with legislation. While federal laws mandate that colleges must have policies on alcohol (Drug-Free Schools and Campuses Act, 1989) and must report annually on crime,

including drug and alcohol violations (Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, 1990), most legislation does not guide colleges on how to create policy on their campuses that will reduce underage drinking and the alcohol related risk-taking behaviors. Therefore, while researchers study how policies can make a positive difference, policymakers are influenced more by the direction of legislature than research outcomes. Dowdall (2009) identifies the historical implications of alcohol legislation and how the eventual 21st Amendment repealing the prohibition of alcoholic beverages also worked to push public policy decisions regarding alcohol out to the states. A necessary consideration embedded within this study is the importance of developing alcohol policy that is aligned to the public policy mandate yet reflects the student environment.

Nelson et al. (2005) examines individual student data from the seminal Harvard School of Public Health College Alcohol Study (CAS) and data from the Center for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) to better understand whether public policy and state alcohol control laws make a difference among the college age population and their drinking behaviors. The data from both studies provided a breadth of information spanning 22,453 students, enrolled in 120 colleges and universities from 40 states. The CAS surveys used by these researchers were collected between 1999 and 2001. Of particular interest to Nelson et al. (2005) were the states that had four or more of the alcohol control laws such as those listed within the National Institute on Alcohol Abuse and Alcoholism's Alcohol Policy Information System (APIS): keg registration, open container restrictions, blood alcohol concentration levels, etc. They found significant positive correlations between college

students' binge-drinking² status and their residence in a state with a comprehensive set of alcohol control policies, as well as the level of resources devoted to the enforcement of these policies (Nelson et al., 2005). "The presence of stronger state alcohol control policies in 8 states was found to be protective against binge-drinking among college students" (Nelson et al., 2005, p. 444). This finding is consistent with previous studies that found a more comprehensive set of policies at the state level to be associated with less drinking (Wechsler et al., 2002) and driving after drinking (Wechsler et al., 2003).

As public policy is shaped with a focus toward health and safety, colleges have been driven to develop their own institution-level policies to further impact the safety and well-being of their community. "Looking at (policy) culturally means identifying the behaviors, norms, and understandings that people share, and that shape the events that occur" (Marshall & Gerstl-Pepin, 2005, p.12). Temple University's existing alcohol policy complies with state guidelines including prescribed sanctions for first and second violations. However, there is very little about the policy that reflects the culture of the campus or its distinct student population.

Principle Study

The Harvard School of Public Health College Alcohol Study (CAS) was the foundational study for research on the drinking activity of college age students.

² Henry Wechsler coined the term binge-drinking as heavy episodic drinking (HED) which he defined as the "consumption of five or more drinks in a row for men and four or more drinks for women on one or more occasions during the 2-week period immediately before (responding to the College Alcohol Survey) questionnaire" (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998, p. 58). Since then this term and its use continue to be debated within the discipline of alcohol studies. Binge drinking was associated with elevated risks for various alcohol-related educational, interpersonal, health, and safety problems for the individual drinker" (Wechsler et al., 1998, p. 57).

Beginning in 1992 and continuing until 2006, CAS conducted four national surveys spanning 120 colleges and more than 50,000 students. Not only has this body of research anchored the majority of related alcohol studies and publications, but the principal investigator, Henry Wechsler, has written extensively as a result of the depth and breadth of information revealed through his studies. Dr. Wechsler is a social psychologist who has studied alcohol and other drug abuse with special attention to evaluating the capacity of policies to reduce binge-drinking and related harms. Building on what was learned from the CAS, Wechsler (2008) emphasizes the importance of developing clear and consistent policies responsive to the environment in which students live. This includes modifying policy according to the distinctive characteristics of the environment that must be informed and described by more than alcohol attitudes and behaviors.

Papers co-authored by George Dowdall and Henry Wechsler (2002) including the National Institute on Alcohol Abuse and Alcoholism (NIAAA) report, stress the role that culture plays in student behavior. Beyond alcohol control policies, such as those state laws outlined earlier within the APIS, policies are not often created or considered which could address the environmental designs by which risk behaviors could be reduced. Attendance policies with Friday morning classes that discourage weeknight partying or residence hall construction with single-point of entry where frequent bag checks are conducted are two ways in which the environment could be more thoughtfully shaped by policies that reflect the breadth of research recommendations. Using the university's data collected through the alcohol course survey and new student questionnaire provides valuable indicators about student attitudes and perceptions which may inform how the policy might better address the issue as they see it.

College Alcohol Research & Policy Development

No matter the specific content of an alcohol policy, “to be eligible for federal funds, the Drug Free Schools and Communities Act Amendments of 1989 obligates colleges and universities to implement a program to prevent the use of illicit drugs and the abuse of alcohol by students" (DFSCA 1989, Public Law Number 101-226). Public colleges and universities formulate their alcohol policies according to law. The problem with mere compliance with federal and state mandates is there is little consideration of the research, culture, values and relationship between an identified problem and the policy solution.

Strongly influenced by Wechsler’s work, DeJong, Towvim and Schneider (2007) encourage college administrators to craft clear and firm alcohol-control policies for students. The purpose of their quantitative study is to determine the level of support that college students have for alcohol-control policies on their campuses. Their findings show college students expect to have behavioral guidelines in place and need to have them consistently enforced by the institution. In 2000, the Survey of College Alcohol Norms and Behavior (SCANB) distributed to students from 32 four-year colleges and universities developed a sample comprised of 300 undergraduate students randomly selected from each school, to create a pool of 9,600 students to receive the SCANB. In order to have each class year (freshmen, sophomore, junior, senior) represented, each school’s random sample of 300 students was stratified by class year. The survey showed that college students endorsed 5 of the 12 proposed policies and indicated strong support for stricter disciplinary sanctions for students who engage in a violent act as a result of

drinking, as well as stricter sanctions for repeat offenders of the alcohol policy (DeJong, Towvim & Schneider, 2007). DeJong et al. (2007) conclude that college students support the implementation of some policies and community standards to reduce the negative effects of alcohol-related misconduct. Further, they advise that college administrators should not be guided by the misperception that stricter alcohol policies related to violent and harmful outcomes would not be supported by their students and that effective prevention strategy includes publicizing the majority of student support for these policies in order to counteract the influence of peer perception (DeJong, Towvim & Schneider, 2007). Some of the proposed policies that were not endorsed include requiring more early morning and Friday classes to discourage alcohol use during the week and eliminating low-price bar and liquor store promotions. Arguably, college students may have found early morning classes undesirable and overpriced drinks beyond their budget; however, this is a good example of how prevention strategies are not simply about influencing a student to change their attitude. Rather, it is a shared responsibility with university leaders to shape the environment to influence attitudes and behaviors.

The large-scale national studies have been critically important to college practitioners and administrators who are not as well-resourced and rely on these data and findings to determine the appropriate framework for their policy and programs. When considering these research findings it becomes increasingly evident that each institution needs to study the data about their own students' values and behaviors. Such research would allow administrators and educators to better understand the values of their students and the expectations that students have of their institution to implement appropriate boundaries. Not unlike Lowi's policy categories which "can be understood as a wide-angle lens for looking at policies, bringing the whole society into view" and "McDonnell

and Elmore's typology which resembles a close-up lens, permitting a detailed view of how a particular policy type functions" both perspectives help to craft a more holistic study of the problem and its possible solutions (Fowler, 2009, p.249). The historical context and laws about alcohol provide the wide-angle lens for interpreting how policy is devised on a local level. However, it is the local level that provides the greatest opportunity to study and reflect specifically about our students.

Many colleges and universities across the country have revisited their existing alcohol policies as a result of a terrible incident or tragedy occurring on their campus. Such was the case in 1991 when the University of Rhode Island (URI) initiated a strong new alcohol policy in the wake of an alcohol-related sexual assault incident. URI's policy sought to make an impact on the drinking culture using a harm-reduction strategy. Like other studies, Cohen and Rogers' (1997) research at URI highlights the desire to have policy complement prevention strategies on college campuses and reduce binge-drinking among students. To do this, they studied the disciplinary data compiled from alcohol policy violations over the next eight semesters from the time of the new policy implementation in 1991. Cohen and Rogers (1997) looked at the demographic information available about incidents such as: the average number of policy citations by month and by day of the week to identify peak times for alcohol-use, as well as gender and class status of violators. Two key findings emerged. First, that 'complex violations' such as assault and other violence, which are often compounded by drugs/alcohol, can be reduced when minor and first-time alcohol offenses are addressed immediately and consistently. Second, the recidivism³ rate for alcohol policy violations can also be

³ For the purpose of this study, recidivism is used to describe students that have violated the university's alcohol policy more than once.

reduced by addressing the first violation with the appropriate enforcement and education process to deter future violations.

Odo, McQuiller and Stretesky (1999) built upon Wechsler's research and sought to further understand binge-drinking among Rochester Institute of Technology (RIT) students in their institution specific research. The main objective of RIT's alcohol policy was to reduce binge-drinking; however, the results of this study did not show any impact on those students who binge-drink. What Odo et al. did find was important data about the climate of alcohol use depending on whether students lived on- or off-campus. Overall results indicate that there was a statistically significant relationship between the alcohol policy and alcohol consumption for students who did not live within the residence hall system. Those students living within RIT's owned or managed housing were already bound to the substance-free policy banning alcohol from its facilities, regardless of legal age. Further, the findings show that students living outside of RIT's controlled housing were four times more likely to drink than those students who live within the areas covered by RIT's alcohol policy. Though the specific research questions of this study were not clearly answered by the findings, there is value added by studying the institution's available data. Using the specific finding that students living outside of the institution's owned or managed housing were four times more likely to drink may be useful data to support a policy to have all first-year students live on campus. This study at RIT serves as an appropriate example of studying existing data to inform policy development that supports prevention strategies at one institution.

Perhaps the best reason for colleges to explore these types of questions within their own institutional environment is the unexpected findings which enlighten

administrators about their students. RIT also discovered that students who reported spending more time working and engaging in athletics during the week were actually more likely to report that they consumed alcohol during the week than those students who reported spending less time in these activities (Odo et al., 1999, p. 60). Understanding the attitudes and behaviors about drinking within a college community can help to uncover the relationship between drinking and the environment that Dowdall and Wechsler emphasize (Dowdall, 2009; Wechsler, Dowdall, Maenner, Gledhill-Hoyt & Lee, 1998).

Overall, studies at URI and RIT reinforce the importance of institutionally focused research in which routinely collected data about students can inform practice and assist administrators in shaping or managing the environment accordingly. URI uses the school's existing disciplinary data which are maintained by student conduct officers within institutions of higher education. TU has similar data, making it possible to replicate the URI study. The message to staff, administrators, resident assistants, and faculty at URI was the same - address every observed violation of the policy consistently (Cohen & Rogers, 1997). By closely studying a student body and learning about their drinking behaviors and the culture of the campus as it relates to these behaviors, policies can be shaped to address the behaviors and harms which are relevant to students. As Dowdall (2009) asserted, alcohol control policies alone will not address college drinking. Rather there are critical policies which must thoughtfully reflect the unique environment in which students live. Whether a commuter or residential campus, if there is student involvement in Greek life, or if sporting events permeate a college town throughout a season, these are some of the defining features that will have a profound impact on the social culture and environment. "Seymour Sarason argued that most education reforms

fail because reformers do not take school culture into account. They devise new policies as if they will be implemented in a vacuum rather than in an institutional setting with more than a century of cultural traditions” (Fowler, 2009, p.272). By using existing data to describe students’ attitudes and behavior it is possible to craft policy that reflects the student culture and then institutionalize such policy to become as much a part of the culture as the behaviors schools hope to change.

Strategic Planning, Campus Culture & a Climate of Care

The institution that welcomes an academically talented, homogenous class of students into college and then retains them through to their graduation without incident simply does not exist. While not every student incident can be predicted or averted, it is necessary to integrate prevention and intervention efforts as essential components of any institutional plan to support student success rates toward retention and graduation. There are best practices and models for schools to adopt, yet they tend to serve as a checklist of activities to perform, rather than a plan to produce enduring, large-scale social and cultural change. As Rowley and Sherman (2001, p.172) point out, in order to implement strategic change... “all the homework must be done...direction should be established and broadly accepted. Campus leaders and strategic planners should have completed a careful analysis of the factors surrounding change and should understand what elements...will impact the implementation process.” As much of the research has concluded, student health and safety on college campuses is not achieved through mere policies and protocols. There must be multidisciplinary support devoted to building the infrastructure and environmental management strategies which can sustain what Owen and Rodolfa (2009) described as a *campus climate of care*. While institutions’ alcohol

prevention efforts are well-intentioned and grounded in the national research recommendations and best practices, they often do not reflect the campus culture. One size or best practice does not fit all. The most enduring planning effort must be directed at adaptive change, reflect the participative environment that shapes the plan and must integrate the goals identified at the student and unit level.

Many of the college and university best practices in alcohol prevention reflect a rigid structure of steps and activities designed to educate students about the dangers of misusing alcohol. This study supports engaging a campus community in thoughtful consideration of how the community could work as a collective to identify and intervene with students at risk. Sadly, institutions have been thrust into circumstances which force administrators to be reactive rather than proactive. Each year alcohol-related tragedies on college campuses sweep the national news. In the months that follow, every detail of the institution's response and the events that led up to the tragedy are scrutinized. Typically a task force is appointed, culminating in a publicly released report that makes recommendations on how the campus can prevent a future student fatality. Most schools are anxious to have their student affairs administrators read it and learn what they could possibly incorporate into their own alcohol prevention plans. Additionally, in high-profile and media saturated events, the legislature stands equally as ready to begin passing laws and provisions in the hope that the right policy might prevent this kind of tragedy in the future.

University administrators might find it difficult to imagine the kind of alcohol policy or campus environment that could predict or prevent such a loss. What is more evident in the task force reports and the aftermath of tragic drinking related events is the

failure of key departments and people within the institution to understand the critical role they played. Because individuals and departments failed to connect the dots of data and observation, the opportunities for prevention and intervention were missed. The resulting recommendations instruct schools and officials to talk, share observations, engage parents and create campuses that prioritize a climate of care. Connecting the dots also cuts across institutional reporting lines and databases. RA's, campus police, academic advisors, faculty, coaches, fraternity advisors, parents and supervisors all possess data that, when shared appropriately, can mean the difference between life and death. In less dramatic and more practical terms, it can also mean the difference between salvaging a semester in week 4 or dropping out in week 13.

To address the problem of alcohol use many institutions circle the wagons and assemble a special committee to look at the issue, find out what other schools are doing and then create a list of programs, policies and assessment activities that would be accomplished over the next two to three years. The burden of work typically lands in student affairs departments, despite the fact that faculty and instructors are often on the front line where student issues begin to percolate. Hardly any of the planning teams include faculty and yet research acknowledges how critical it is to have instructors that are trained so that they can confidently execute their roles at the appropriate moment (Owen & Rodolfa, 2009). When the planning process does not properly engage all members of the community then those left outside of the plan are inclined to believe that it is somebody else's problem. And so, how do you get people to think about long-term issues of great import if they believe they are impervious to these issues (Rowley, Lukan & Dolence, 1997, p. 53)?

Upon the release of his book, *College Drinking: Reframing a Social Problem* (2009), George Dowdall, professor of sociology at Saint Joseph's University, was interviewed by Scott Jaschik (February 26, 2009). Much of the interview highlighted the gaping holes in our institutional attempts at strategic planning. “Colleges sometimes pigeonhole the dangerous use of alcohol as purely a student affairs issue or a problem for a small number of individual students. They simply don’t frame it as a major college-wide problem” (Jaschik, 2009). When we consider planning for areas that are closely tied to students it is assumed that the business of students belongs to the student affairs departments that serve them. Understandably, health services, counseling services, residential life, Greek life, student conduct and campus safety should be informing the process and guiding the direction based on their knowledge and experience. However, the climate and environment of the institution can only be influenced by these departments, not led. Dowdall went on to instruct that, “colleges should try to shape the entire environment that shapes college drinking... The most important task of colleges is to place this issue much higher on their own agendas. Colleges ought to look critically and realistically at what they now do; assess, using fresh research, what effect they’re having; and engage in serious strategic planning about what to do next. Just pulling a promising program or today’s trendy intervention off the shelf and directing it at a small fraction of students probably won’t work too well” (Jaschik, 2009). While alcohol is a contributing factor to a number of issues on college campuses, the efforts to reduce underage drinking, prevent alcohol-related incidents and educate students about misuse and abuse are not exclusively student affairs’ goals.

In an effort to understand the climate of care at TU the university's associate vice president for student affairs and dean of students, Dr. Stephanie Ives provided several key insights. Dr. Ives arrived at TU in 2008, after spending nine years at the University of Pennsylvania where she served as the Director of Strategic Initiatives and principal investigator on numerous federal grants related to alcohol and health education. A career of experience in counseling and prevention, as well as leading strategic initiatives related to student health and wellness, has shown Dr. Ives that cultivating stakeholders within every corner of the institution is absolutely essential if you intend to affect meaningful culture change. The safety and well-being of students cannot possibly be managed by a fraction of the community. As chair of both Temple University's Campus Health Awareness Resource Task Force and the behavioral threat assessment team, Dr. Ives relentlessly strives to instill "the belief that we are collectively responsible to provide students the support they need to succeed" (personal interview on March 19, 2009).

"An institution should consider strategic planning because it wishes to identify changes that can bring it into closer alignment with important forces operating in its environment" (Harvey, 1998, p. 236). In order to bring resources into closer alignment with what students really need institutions have to pay attention to the research and data while still ensuring that they really reflect each individual community. Fresh research is necessary in order to "respond in a forward-thinking, proactive manner to shape the internal effects of external forces on the institution" (Rowley, Lugan & Dolence, 1997, p. 53).

One of the more important data resources that institutions have available to them is the American College Health Association-National College Health Assessment

(ACHA-NCHA). Most of the student life planning effort across the country will base the rationale for their goals on these data as well as their own institutional CORE data if they participate in this survey exercise. In 2010 the ACHA-NCHA reported that, “within the last 12 months... the following factors affected (students’) academic performance (i.e. received an incomplete, dropped a course, received a lower grade in a class, on an exam, or on an important project):

Stress	27.4%
Sleep difficulties	20.0%
Anxiety	18.3%
Work	13.7%
Internet use/computer games	12.3%
Concern for friend or family member	11.1%
Relationship difficulties	11.0%
Participation in extracurricular	9.1%
Finances	7.0%
Death of a friend/family member	5.7%
Alcohol use	5.1%

While Rowley and Sherman (2001) probably did not intend for this interpretation, their strategic planning research in light of factors that negatively impact academic performance, emphasize how important it is to calculate campus climate and behavior when designing a plan. Each of these issues taken in isolation could be the source of its own targeted effort. When the faculty and staff also understand these very real obstacles to student success, it encourages the members of the broader campus community to figure out how they can use their role and resources to address these obstacles and become a part of the solution. Creating a climate of care is typically well aligned with an institution’s mission because it is student-centered and requires that the academic and administrative sides of the house fully participate. “It is more than a presidential vision statement or policy directive...It is a carefully reasoned analysis of what an institution

aspires to be and the core values that it embraces” (Hollowell, Middaugh & Sibowski, 2006, p. 13). Ives (2009) stressed the importance of high level support and clear alignment with the core values so that the entire campus can subscribe to the plan. “If there is to be collective ownership of the issues which affect students then housekeeping, facilities, faculty, grad assistants, peers need to see how they are obligated to act when they observe the red flags. All of us observe behaviors that warrant concern. While one person may not be comfortable confronting the behavior alone, s/he can share the observation with someone who might intervene in a necessary way” (Ives, 2009). When our core values embrace the notion of a climate of care, then our natural response is born out of an institutional commitment to supporting student well-being.

Predictive Models and Student Retention

Universities that charge its leaders with taking responsibility for shaping campus culture and appointing all of its resources to do so will make the greatest impact on student retention. Transformational change in campus culture must be driven at the highest level of the institution in order for policy and practice to reflect such a campus environment. “We believe that one way for higher education leaders to communicate a greater sense of institutional purpose is for them to articulate to their respective communities that colleges and universities need to take greater responsibility for shaping the developmental trajectories of students, and to prioritize these organizational goals in decision-making” (Arum & Roksa, 2011, p. 127). Just as Arnett (2004) describes the emerging adult beginning college as not ready and unsure about what she wants to do, so too does psychologist William Damon. Damon (2008) studies youth transitions and

identifies a growing number of adolescents that lack a sense of purpose, a delay that seems to be characterized as a “prolonged state of directionless drift” (Arum and Roksa 2011; Damon, 2008).

Arum and Roksa’s (2011) research has received considerable attention in the higher education news cycle particularly in a time when state support for higher education continues to decline and legislators press university presidents to show the value added by a college education. The focus on learning outcomes, retention, and persistence in higher education has become the standard measure for everything from accreditation to *US News*’ influential rankings. It is evident that retention is one of the most common ways that students, parents, and stakeholders evaluate the effectiveness of colleges (Hagedorn, 2006). Arum and Roska go on to clarify the responsibility of institutions to do more than merely retain students:

Policymakers and practitioners alike have focused on keeping students in college, assuming that if they stay they will learn. But the causal arrows do not seem to work in that direction. The simple act of staying enrolled does not ensure that students are learning much. If on the other hand, students are learning and engaged, they will likely stay enrolled and graduate (2011, p. 136).

There is robust research offered on the critical importance of student engagement which echoes Harvard University’s past president, A. Lawrence Lowell’s assertion that, “The problem of the college is a moral one, deepening the desire to develop one’s mind, body, and character; and this is much promoted by living in surroundings and an atmosphere congenial to the object” (Arum & Roksa, 2011, p. 128).

In every college setting there exists all of the data and information necessary to understand both the forces that shape the culture as well as those that are influenced or

defined by it. “Most descriptive level explanations of student retention are structural in nature. They focus on how academic, social–psychological, and environmental factors, predict intermediate attitudes...such as satisfaction or fit with institution...which in turn predict college turnover” (Pleskac et al., 2011, p. 1). Institutions are committing resources to studying those factors that predict successful retention and graduation with most attention paid to the academic factors and less attention paid to the social-psychological or environmental. One of the goals of this study is to bring to bear all factors which influence retention and promote the use of available data to design more impactful prevention and intervention strategies.

In 2008 the Chronicle of Higher Education provided a sampling of colleges that were using data to predict which students were likely to dropout and described the interventions designed to reroute the student’s behavior (Rampell). Sometimes the students were aware that faculty and administrators were looking for such warning indicators and sometimes the institution felt it was better not to inform students. To have a more practical view of predicting risk and creating strategies for student success the following Table 2.1 outlines the specific examples offered by Rampell (2008):

Table 2.1: Colleges Using Data to Predict Dropout

College	Risk	Intervention
Slippery Rock University of Pennsylvania	Monitor number of swipes of student electronic ID card to identify students who have not been to the dining hall in the first weeks of the semester.	Resident Assistants are directed to reach out personally to students who are not regularly using the dining halls to find out how they are adjusting to college life.
University of Alabama at Tuscaloosa	Using analytics software data indicated that freshmen who lived off campus were more likely to drop out.	University officials began requiring first-year students to live on campus.
South Texas College	Study of grade histories indicates that students who enrolled late in courses frequently failed or dropped the course.	University officials did away with late registration.
Argosy University	Academic advisors receive daily reports about students enrolled in online courses to indicate how many times each student has posted to Web discussions.	Advisors reach out to students who rarely participate to find out what difficulty they might be having, technical or otherwise.
Tiffin University	Analyzes trends in variables such as standardized test scores, family income and interest in activities outside the classroom to predict student's likelihood to stay at the university.	Students most likely to dropout are assigned "success coaches" to remain in contact with the student and help guide them to appropriate support resources.

Each institution noted in this report has fully exploited the data they have collected to learn more about their students. Through closer examination, critical pieces of information emerge to better inform campus stakeholders about the environment or culture being shaped, either intentionally or not. By studying TU data which are routinely collected through a variety of mechanisms (admission application, new student

questionnaire, financial aid application, placement testing and alcohol survey) this study attempts to shed light on important factors which contribute to first-year student retention. Similar to the institutions described in Table 2.1, this effort strives to integrate the research findings with the development of a policy framework to shape a student-centered campus climate of care. Institutional policies and practices do affect rates of student retention and institutions are far from helpless when it comes to creating programs and designing environments that promote student success (Bean & Eaton, 2001). The literature reviewed here supports the need for: (1) a focused study of TU, (2) collaboration among TU leaders to shape the campus environment, and (3) use of existing student data to identify predictive variables and influence first year retention strategies.

CHAPTER 3

METHODOLOGY AND PROCEDURE

Assumptions and Rationale for Design

It is only through a comprehensive and rigorous engagement of the research questions and available institutional data that the university can understand what variables empirically predict student risk of leaving. Much has been offered on the subject of student retention, perhaps nothing more prominent than the work of Tinto (1975) who found that student's admissions characteristics (e.g., parent's level of education, socio-economic status, high school cumulative grade point average) and level of engagement once enrolled in college were critical predictors to student retention. Using a meta-analysis to examine 109 postsecondary retention studies, a 2004 ACT Policy Report found that while many retention programs rely on such academic factors to identify students at risk of leaving this approach may miss those students who are at risk due to other, non-academic factors (Lotkowski, Robbins & Noeth). The current study intends to determine the marginal value of non-academic data that, when used with other pre-enrollment and enrollment variables (i.e. high school GPA, SAT scores, family income, parent's highest degree earned, intention to transfer) could be used as predictors to first year college retention. The dependent variable in this study is the dichotomous outcome: either students were retained and were still making academic progress toward degree attainment or they were no longer enrolled at TU.

Alcohol survey data were available for 41.7% of first year enrolled TU students for fall 2008. The data are an outcome of surveying these students approximately six

weeks prior to the first day of ‘freshmen move-in’ to campus residence halls, then surveying them again six weeks after classes began to measure what has been termed *the college effect*. The survey is part of an online alcohol education course that newly enrolled first year students are invited to complete during the summer prior to their arrival on campus. The quantitative data describe the students who participated in the course at the prescribed time and completed the surveys about their experience. In a 2007 study of the alcohol survey data, researchers found that the online education intervention, “impacted post-study measures of drinking patterns, frequencies, and blood alcohol content... [concluding that the program]... can mitigate short-term drinking among first-year college students” (Staiano-Coico et al., manuscript 2009). In short, the students who participated in the alcohol course and the follow-up survey (six weeks later) showed that their knowledge increased and some drinking behaviors changed between August and October.

One of the goals of the alcohol course is to increase students’ knowledge about the misuse of alcohol. The premise being that when we increase students’ knowledge about the misuse of alcohol at pre-enrollment, students will change their behavior and make better choices within the beginning weeks of their college career. Connecting this course and survey data to pre-enrollment and enrollment data creates not only a richer, more descriptive profile of students but increases the value of data collected through varied independent sources which have not been integrated prior to this study. The simple dichotomous outcome (retained or not) does not capture the complexities of retention; however, viewing a series of academic and non-academic measures allows researchers and administrators to measure student progress more accurately (Hagedorn, 2006; Lotkowski, Robbins & Noeth, 2004).

Figure 1 below describes the very basic assumption made in this study. The behaviors related to alcohol misuse (described as “A”) yield negative academic outcomes such as missing class, failure to complete assignments and low grades (described as “B”) and negative academic outcomes (“B”) yield overall poor academic performance, course failure and dismissal from school (described as “C”).

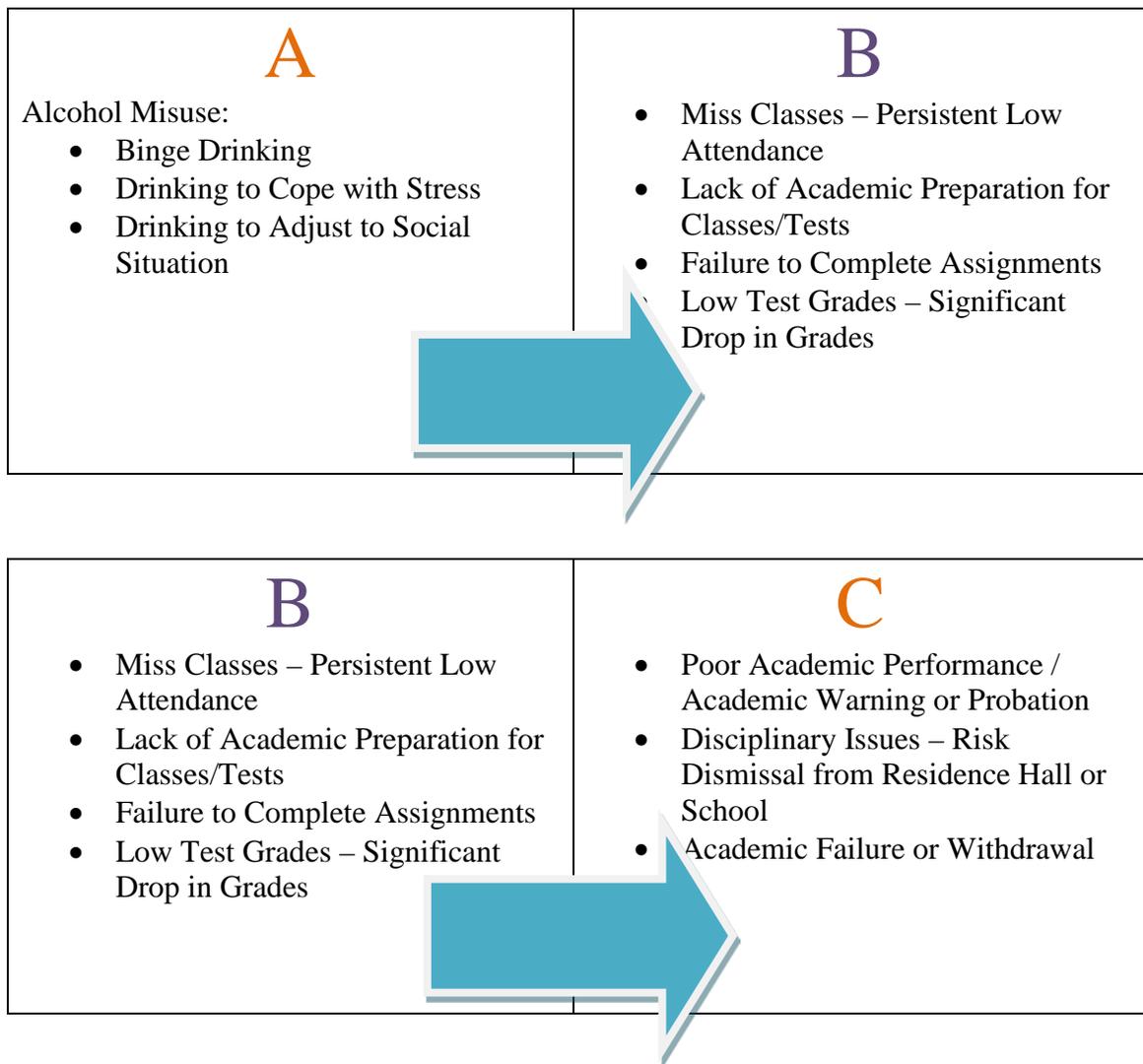


Figure 1: Study Assumption 1

Therefore, as the research has shown, if A leads to B and B leads to C then there is an important relationship between A and C (see figure 2 below):

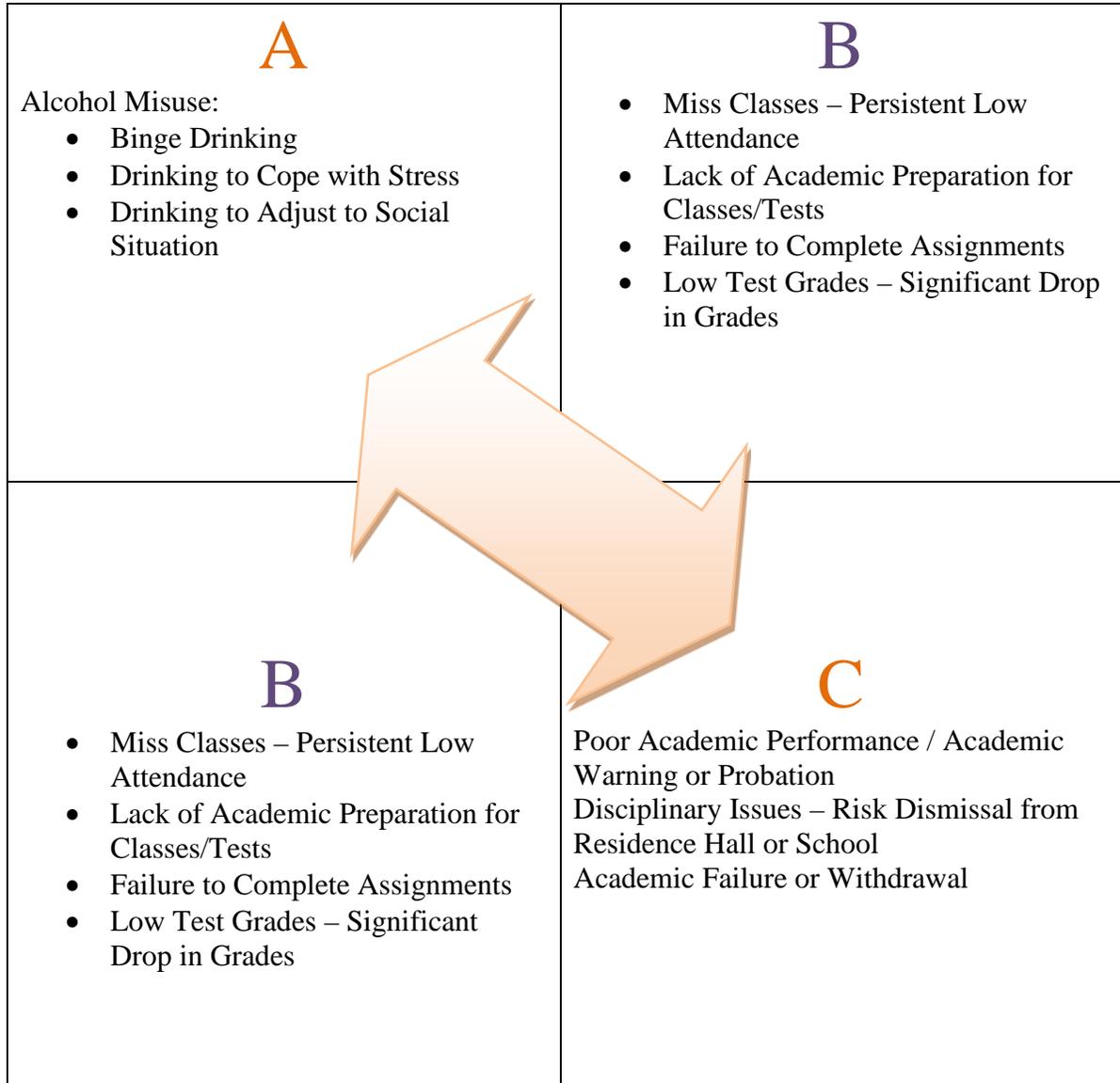


Figure 2: Study Assumption 2

Role of the Researcher

The author of this study has been employed at TU for ten years, the majority of that time spent serving as a student affairs administrator responsible for key units such as new student orientation, student conduct, and alcohol policy development. Three of the years involved supporting an intensive research project to assess whether Alcohol-Wise, an online alcohol education program, influences knowledge, attitudes and behaviors about alcohol use and abuse. Working on the research team since 2007 produced a number of research questions that remained unanswered by the survey data produced.

The data from three years of survey research have provided a very limited view of students. It does not capture the students who are transported to the hospital for excessive alcohol consumption, fail out of college because of poor academic performance related to alcohol use, are expelled because they were accused of sexual assault when both parties were too intoxicated to give consent, or went to jail because they operated a vehicle while under the influence. Conducting this research at TU provided a significant opportunity to expand what is currently known about students, using data that the institution collects, to enable key institutional leaders to cull a more holistic view of what students need.

Population

Temple University is a large, state-related public research university in the northeast region of the United States. The main campus hosts the majority of the student population in North Philadelphia with over 30,000 students attending classes of which

close to 5,100 live in university-managed housing. The population is described in Temple University's Fact Book Student Profile Fall 2008 which shows the total enrollment as 37,748 students. Of these 26,451 are undergraduate, 54% are female, and 4,138 were classified as freshmen. The 2008 entering freshmen class has an average combined SAT score of 1108 and an average high school grade point average (GPA) 3.37 on a 4.00 scale. Among the 131 academic programs offered for bachelors degree level the most popular are biology (5.6% of undergraduate enrollment), psychology (4.7%), elementary/early childhood education (4.4%) and 4.4% of undergraduates are classified as undeclared. Tuition and fees for attending during the 2008-2009 academic year were \$10,858 for Pennsylvania residents and \$19,878 for non-residents. Room and board fees totaled \$8,884. The following tables provide further detail.

Table 3.1 Fall 2008 Student Profile for Temple University

	Enrollment (including Japan campus)
Total Enrollment	37,748
Full-Time Equivalent (FTE) Students	32,605
Undergraduate Total Enrollment	26,451
Graduate	5,144
First-Professional (Dentistry, Law, Medicine, Pharmacy, Podiatric Medicine)	3,132
Non-Matriculated (Non-Degree Seeking) Undergraduate	1,674
Pennsylvania Resident	25,653 (or 68.0%)
Non- Resident	12,095 (or 32.0%)
Female	14,256 (or 54.0%)
Male	12,165 (or 46.0%)

Table 3.2: Fall 2008 Ethnicity as a Percentage of Enrollment

	Undergraduate	Graduate/ Professional	Total Enrollment
American Indian/Alaska Native	0.3%	0.7%	0.4%
Asian/Pacific Islander	10.0%	10.9%	10.2%
Black, non-Hispanic	16.8%	8.6%	14.6%
Hispanic	3.7%	3.6%	3.7%
White, non-Hispanic	57.7%	54.5%	56.9%
Other/Unknown	8.8%	13.1%	9.9%
Non-resident Alien (International Students)	2.7%	8.7%	4.3%

The sample population will be described in greater detail in chapter 4. For this study the cohort of first year undergraduate students enrolled in Fall 2008 was used. Based on the [2009-2010 Common Data Set](#) in Temple University's Fact Book there were 4,186 degree-seeking, first-time, full-time freshmen enrolled in the Fall 2008 cohort. By October 2009 the institution reported that 88% of the cohort was enrolled in the Fall 2008 semester which is considered TU's first year retention rate. At the same point in time TU admitted and enrolled 2,900 transfer students which are not included in the Fall 2008 cohort nor this study.

General Alcohol Statistics in 2008-2009

In the 2008-2009 academic calendar year, 512 students were referred to the Student Conduct and Community Standards Office for possible alcohol policy violations. Of the 512 students: 67% were male, 48% were freshmen, and 383 of the incidents occurred within undergraduate University Housing facilities which as a policy are

deemed “dry residence halls”. Pennsylvania’s Liquor Control Enforcement issued citations to 94 students during the course of 3 off-campus house parties. TU Police received 183 community complaints, 89% of which were due to loud parties/music/noise coming from an off-campus house or property occupied by TU students. During this same year, at least one freshman died of causes related to the misuse of alcohol and prescribed medication, and five freshmen were suspended from the university for two or more violations of the student code of conduct.

Data Sources

There are four data sources that contribute to the data set for this study described in Table 3.3 below. The student information system contains many of the key variables used in this study, particularly the 20 predictive variables for first semester GPA (see Table 3.5). The new student questionnaire (“NSQ”) is a self-report survey instrument that is administered to all first year students during the time that they take their placement tests (see Appendix A). Placement testing in English and Mathematics is a requirement for incoming students so the response rate for the NSQ is very high. The NSQ contains 81 questions that span demographic information, family income and financial aid needs, parent education, as well as features that influenced their decision to choose TU, and self-efficacy questions such as how organized or self-confident a student considers themselves. The alcohol survey instrument contains a series of survey questions, of these 37 were included in this study (see Table 3.6). Finally, the Student Conduct and Community Standards Office, part of the division of student affairs, is the source for outcome data related to a student’s discipline record which is held separate from a

student's academic record. The following section describes the variables used from each corresponding data source in the order they've been presented in Table 3.3 below.

Table 3.3: Description of Data Sources

	Description	Source Manager
Academic Record including admissions application, credit hours completed and grades	Student Information System	Institutional Research Office
New Student Questionnaire	Self-report survey for all new students to complete during placement testing and prior to registering for courses	Institutional Research Office
Alcohol Survey	Self-report survey for all new students to complete online prior to the first day of move-in	Provost Office
Student Conduct including incidents, violations and sanctions	Student conduct system	Student Conduct Office

Table 3.4: Summary of Key Data Set Variables and Data Source

Variables	Description	Source
TUId	Temple University identification number is a unique identifier assigned to each student and employee in the university's information systems.	Institutional Research office and the student information system. This identification number will be removed by IR and replaced with a new data ID number.
Date of Birth (mm/yyyy)	Data collected in student's application and indicates student age.	Institutional Research office and the student information system
High School Cumulative GPA	Cumulative GPA as recorded on the student's high school transcript and provided during pre-enrollment period.	Institutional Research office and the student information system
First semester enrolled	Semester student began taking courses at Temple	Institutional Research office and the student information system
Total credit hours attempted	Indicates the total number of credits a student has registered for without dropping within the first 2 weeks of a semester.	Institutional Research office and the student information system
Total credit hours completed	Indicates the total number of credits a student has registered for and completed.	Institutional Research office and the student information system
Predicted first semester grade point average	Study conducted by the Institutional Research office to predict academic achievement and cumulative grade point average based on admissions and pre-enrollment data.	Institutional Research office
Student Conduct Violation(s)	Student code of Conduct assigns a number to each violation.	Data file exported from Student Conduct database ("Pave") submitted to Institutional Research office.
Date of Violation (mm/yyyy)	Month and year of each violation associated with student's records.	Data file exported from Student Conduct database ("Pave") submitted to Institutional Research office.
Alcohol-related illness or injury resulting in transportation to university hospital (y/n)	Indicates (yes or no) whether a student was transported to the hospital.	Data file exported from Student Conduct database ("Pave") submitted to Institutional Research office.
Number of repeat violations	Month and year of each violation associated with student's records.	Data file exported from Student Conduct database ("Pave") submitted to Institutional Research office.
Housing Status – University assignment or commuter	Predictive Risk variable (New Student Questionnaire)	Institutional Research office and the student information system ("Banner")
Completed Alcohol Course Survey (y/n)	Alcohol course data is "cleaned" by comparing the list of admitted first year students in July 2008 to the list of enrolled first year students in September 2008. Completion of the online alcohol course is not mandatory so this data will only exist for students who actually participated.	Data file exported from Alcohol Course Survey database submitted to Institutional Research office.

Predictive Risk Variables

Beginning in 2007 the Institutional Research Office began to develop a risk prediction equation to identify first year students at risk of low academic performance (diNovi, 2011). The prediction variables and risk equation were used to calculate first semester grade point average. Each entering fall semester cohort's risk variables were based upon the previous year's cohort. Table 3.5 details the variables used in this study of the Fall 2008 entering class based upon the Fall 2007 cohort.

Table 3.5: Prediction Variables Used for Fall 2008 Entering Freshmen*(Source: Temple University's Measurement and Research Center)*

Code	Variable Used to Compute Future Grade Point Average	Source
HGPA	High School GPA	Admissions Record
SATW	SAT Writing	Admissions Record
NSQ	New Student Questionnaire Summary	New Student Questionnaire
I17	NSQ--What was your approximate high school average?	New Student Questionnaire
I05	NSQ--During the school year, on the average, how many hours do you plan to work for money per week?	New Student Questionnaire
COLG	College of Enrollment	New Student Questionnaire
EL3	Mathematics Placement Test (Part 3)	Pre-Enrollment Student Record
I74	NSQ--Agreement with "Most of my teachers considered me one of the harder workers in their class."	New Student Questionnaire
I59	NSQ--What is the chance that you will change your major field of study?	New Student Questionnaire
READ	Writing Placement Test (Reading Section)	Admissions Record
I80	NSQ--Agreement with "I am organized and have good study habits."	New Student Questionnaire
I78	NSQ--Agreement with "I am self confident."	New Student Questionnaire
I62	NSQ--Agreement with the chance that I will "Be a student leader."	New Student Questionnaire
I31	NSQ--Degree to which student liked "Natural Science" in high school.	New Student Questionnaire
I67	NSQ--Agreement with the chance that I will "Work with a professor on a research project."	New Student Questionnaire
I57	NSQ--Agreement with decision to attend Temple was influenced by "Meeting students with backgrounds and interests different from yours."	New Student Questionnaire
RCC	Russell Conwell Center Membership	Pre-Enrollment Student Record
I34	NSQ--Importance of attending college because "I wanted to be able to get a better job."	New Student Questionnaire
I36	NSQ--Importance of attending college because "I wanted to learn more things that interest me."	New Student Questionnaire
I29	NSQ--Degree to which student liked "Mathematics" in high school.	New Student Questionnaire

Note: New Student Questionnaire (NSQ) 2007 questions are coded using the letter "I" to indicate the year of the survey followed by the question number in the Table above. In Chapter Four the "I" is replaced by "NSQ" to distinguish the data source.

Alcohol Course Survey

In July 2008 there were 4,332 first year students that were accepted to TU and submitted a tuition deposit to the university. Using this list provided by the Registrar a letter was mailed to each first year student explaining the purpose of the online alcohol education course and stating that the student was expected to complete the online course and survey prior to the first day of classes. Figure 3 provides a flow diagram of the eligible students to receive the alcohol course and the number that participated. The data collected through the alcohol course survey are only available from those students who chose to participate in the voluntary program (pre-enrollment survey responses, n=1,722; follow up survey responses six weeks later, n=1,410). Table 3.6 describes the data variables collected from the alcohol survey. Appendix B provides a sample of the survey content and questions as presented to the students through a web module.

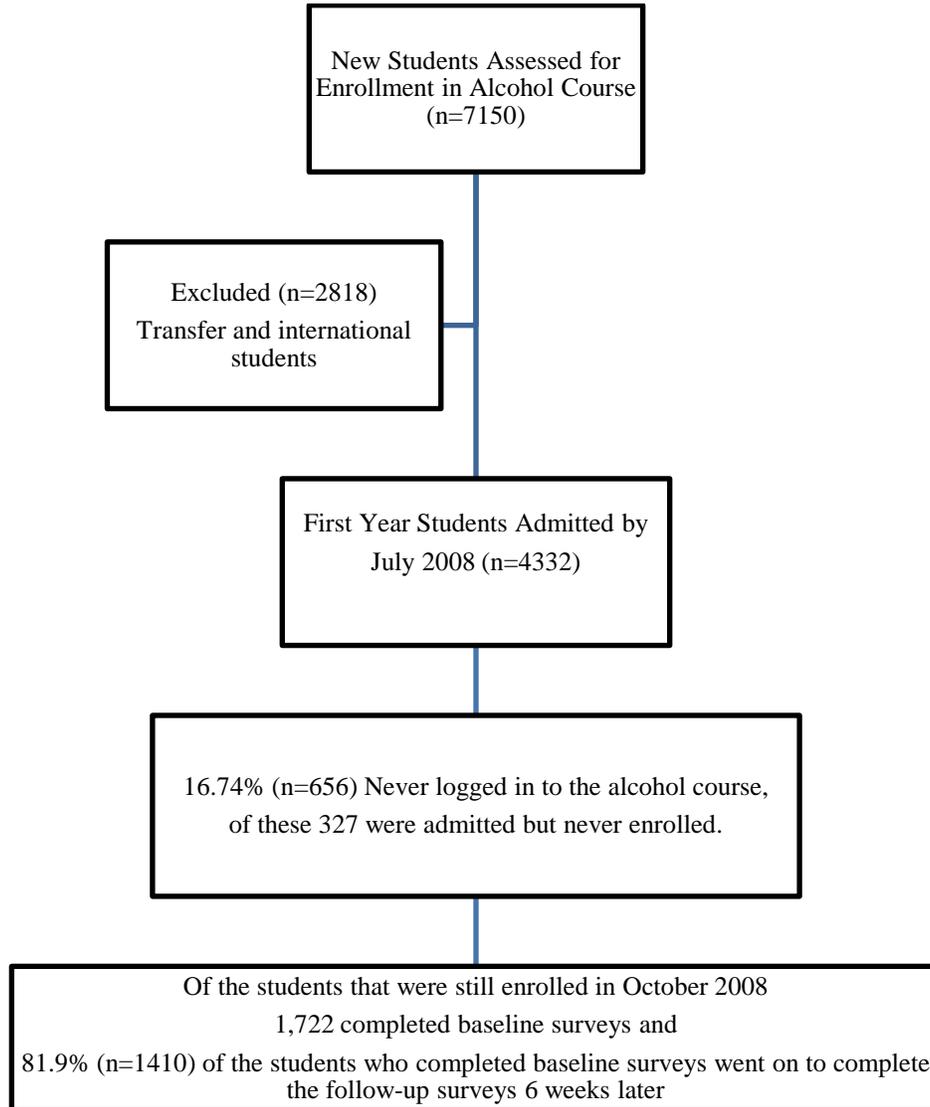


Figure 3: Fall 2008 First Year Alcohol Course Survey Flow Diagram

(Data numbers based on July 1, 2008 projected admits not actual enrollment)

Table 3.6: List of Data Variables from the Alcohol Survey

e-CHUG Alcohol Course Survey Questions	Variable
Date the online survey was completed	echug_date
Demographic Information- Male or Female	Gender
Demographic Information- Age in years	Age
Demographic Information- Weight in Pounds	Weight
Are you currently taking any prescription medications?	TakingPrescriptionMeds
Do you live on-campus or in a residence hall?	ResidenceStatus
Demographic Information- Year Level/Class Standing (Not Applicable, Freshman, Sophomore, Junior, Senior, Graduate)	GradeLevel
Do you belong to a Fraternity or Sorority?	GreekAffiliation
For a TYPICAL MONTH, please describe a TYPICAL DRINKING WEEK. For each day, fill in the number of STANDARD DRINKS of each type of alcohol you consumed and the NUMBER OF HOURS you drank on that day:	
Beers per Day in a <i>Typical Week</i>	q01MondayBeers
	q01TuesdayBeers
	q01WednesdayBeers
	q01ThursdayBeers
	q01FridayBeers
	q01SaturdayBeers
	q01SundayBeers
Wines per Day in a <i>Typical Week</i>	q01MondayWines
	q01TuesdayWines
	q01WednesdayWines
	q01ThursdayWines
	q01FridayWines
	q01SaturdayWines
	q01SundayWines
Shots or Mixed Drinks per Day in a <i>Typical Week</i>	q01MondayLiquors
	q01TuesdayLiquors
	q01WednesdayLiquors
	q01ThursdayLiquors
	q01FridayLiquors
	q01SaturdayLiquors
	q01SundayLiquors
Hours Spent Drinking On Monday	q01MondayHours
	q01TuesdayHours
	q01WednesdayHours
	q01ThursdayHours
	q01FridayHours
	q01SaturdayHours
	q01SundayHours
Think of the one occasion during the PAST MONTH when you DRANK THE MOST. Fill in the number of standard drinks of each type you consumed and the number of HOURS you drank that day:	
The ONE Occasion you <i>Drank the Most</i> in the Last Month: # of beers	q02Beers
The ONE Occasion you <i>Drank the Most</i> in the Last Month: # of wines	q02Wines
The ONE Occasion you <i>Drank the Most</i> in the Last Month: # of shots or mixed drinks	q02Liquors

Table 3.6, continued

# of hours spent drinking on the ONE occasion when you drank the most in the last month	q02Hours
Think about the number of your BLOOD RELATIVES who are now, or have been in the past, problem drinkers or alcoholics.	
Number of parents	q03Parents
Number of siblings	q03Siblings
Number of grandparents	q03GrandParents
Number of Aunts or Uncles	q03ParentalSiblings
Number of Cousins	q03Cousins
During the PAST MONTH, how many days did you drive a vehicle shortly after having three or more drinks?	q04DaysAsIntoxicatedDriver
During the PAST MONTH, how many days were you a passenger in a vehicle when a driver had three or more drinks?	q05DaysAsPassenger
How much would you estimate you spend on alcoholic beverages per week?	q06WeeklyAlcoholExpenditure
How much spending money do you have in an average MONTH?	q07MonthlyDisposableIncome
How many drinks containing alcohol do you have on a typical day when you are drinking? <i>Enter a number between 0 and 100%</i>	q08NationalExceed
How often do you have a drink containing alcohol? <i>Never, Monthly or less, 2-4 times a month, 2-3 times a week, 4+ times a week</i>	q09AlcoholConsumptionFreq
How many drinks containing alcohol do you have on a typical day when you are drinking? <i>0-2, 3 or 4, 5 or 6, 7 to 9, 10 or more</i>	q10NumberDailyDrinks
How often do you have six drinks or more on one occasion? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q11HeavyDrinkingFrequency
How often, during the last year, have you found that you were not able to stop drinking once you had started? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q12UncontrollableDrinkingFreq
How often during the last year have you failed to do what was normally expected from you because of drinking? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q13ResponsibilityAffectedDrink
How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q14MorningDrinkNeededFreq
How often during the past year have you had a feeling of guilt or remorse after drinking? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q15GuiltRemorseFrequency
How often during the last year have you been unable to remember what happened the night before because you had been drinking? <i>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</i>	q16BlankMemoryFrequency
Have you or someone else been injured as a result of your drinking? <i>No, Yes but not in the last year, Yes during the last year</i>	q17InjuredFromDrinking
Has a relative or friend or a doctor or other health worker been concerned about your drinking, or suggested you cut down? <i>No, Yes but not in the last year, Yes during the last year</i>	q18OthersConcernedAboutDrinking
During the PAST MONTH, how many cigarettes did you smoke on a typical day?	q19DailyCigarettesSmoked
If you're a smoker, for how many years have you smoked regularly?	q20YearsSmoked

Table 3.6, continued

How important is it to you to make any change in your personal use of alcohol? <i>Importance scale of 1 to 10, 1=Not at all important and 10= Very important</i>	q21HowImportant
How confident are you that you are able to make any change in your personal use of alcohol? <i>Confidence scale of 1 to 10, 1=Not at all confident and 10= Very confident</i>	q22HowConfident
Do you play on a college athletic team?	AthleteStatus
Year Level/Class Standing (Not Applicable, Freshman, Sophomore, Junior, Senior, Graduate)	ClassLevel
Do you live on-campus or in a residence hall?	ResidenceStatus
At what age did you first start drinking?	AgeFirstStarted
In a TYPICAL MONTH, how many weeks do you have an alcoholic drink.	Q01WeeksInAMonth
Ethnicity	Ethnicity
Alcohol use adversely affects a student's academic success.	Scale of 1 to 10, 1= Disagree to 10=Agree
Alcohol use adversely affects the quality of life for other students.	Scale of 1 to 10, 1= Disagree to 10=Agree

Student Conduct Data

The Student Conduct and Community Standards Office prepared a data file of all reported incidents of alcohol policy violations that occurred during the 7 semesters (Fall 2008 – Fall 2011) captured in this study. Each incident submitted is attached to the data record of the student charged with an alleged violation of the student code of conduct. When requesting the student conduct data, one parameter was to only include data for incidents where at least an alcohol policy violation was charged. Any other violations that were charged in addition to an alcohol violation were then included. In addition, TU has a medical amnesty policy as part of its student code of conduct (2009, p.8):

Temple University seeks to encourage and sustain an academic environment that both respects individual freedom and promotes the health, safety and welfare of all members of its community. The university strongly encourages students to call Campus Safety Services for medical assistance for themselves

or for other individuals who are dangerously under the influence of drugs or alcohol. No student seeking medical treatment for the effects of drug or alcohol use will be subject to university discipline for violating the Student Code. This medical amnesty will be granted to both the intoxicated student and to the student seeking medical assistance for the intoxicated student; however, the intoxicated student will be required to participate in the university's Drug and Alcohol Education Program in order to receive medical amnesty.

It was important in the design of the medical amnesty policy to maintain the enforceable education intervention. Because an alcohol violation most often results in educational sanctions that include participation in a Drug and Alcohol Education Program, a concern was raised that students who may need this level of intervention would miss the program if not mandated as a consequence of the student conduct process. In order to enforce this sanction, the Student Conduct Office tracks students who requested medical amnesty consideration and holds those students accountable for fulfilling this education program. Eleven students from the fall 2008 cohort who requested medical amnesty consideration were recorded in the student conduct database. In addition, the sanctions that resulted from violations of the student code of conduct were also variables in the data file, including five students who were suspended from the university for alcohol-related offenses. These data variables were included in this analysis to explain a student's attendance outcome when it was as a result of a discipline sanction such as suspension or expulsion.

Data Collection

The pre-enrollment and enrollment data employed are required data elements from the student's admission application, new student questionnaire and academic record. Data from student conduct records and the alcohol survey were exported in the following data files: pre-enrollment admissions records (n=4186), new student questionnaire records (n=4121), alcohol course survey records (n=1410), enrollment records (n=4121) and student conduct records (n=427). Information selected from these data files were merged according to student identifier characteristics (i.e., TU identification number and/or TU email address) into a single data set for analysis. Temple University's Institutional Research Office produced the sample by exporting the requested data from the student information system during the fall semester of 2011 and matching records from the student information system to the data files extracted from the alcohol course survey database and the student conduct database.

Data Analysis

The plan for data analysis was to use previously collected predictive data from student pre-enrollment and enrollment and introduce alcohol course survey data to determine whether there is a marginal effect on the prediction of retention (Gay, 1992). Using fall 2009 attendance as an outcome variable, a model was developed using multiple regression and logistic regression (Herzog, 2005) with historical data. Retention to the second year was the dependent variable. While the predictive risk equation has been implemented and has experienced much success in the early identification of

students at risk of poor academic performance and low first semester grade point average, the academic variables alone do not predict retention to the second year.

diNovi's (2010) research and dissertation analyzed the TU predictive model as well as devised an academic advising intervention strategy to identify students at risk of leaving early enough in a semester to make a change. "The overall findings (in Phase One) suggest that while modest support was found for the predictive ability of the original risk equation, more effective models should be sought, particularly for the subset of students who are most academically at-risk. Additionally, the results offer modest support for the inclusion of non-cognitive variables when predicting first- semester academic performance" (p. 64).

Ethical Considerations

The Institutional Review Board (IRB) regulates and monitors all university research on, or involving, human subjects. The research protocol for the current study was reviewed by the Temple University IRB. Student identity has been protected and all personal identifiers were removed from data sets. With thoughtful consideration of the key university stakeholders, this study identifies institution-specific strategies to improve first-year student retention and brings to bear all of the data, information and experience within this campus community. Consultation within Temple University's General Counsel and the U.S. Department of Education confirmed that the planned use of information in the study is consistent with the Family Educational Rights and Privacy Act ("FERPA"), when shared only with university officials with a legitimate educational interest.

Outcome of the Study and its Relation to Theory and Literature

In concert with emerging adulthood theory and the review of literature discussed previously, Brown et al. (2009) provide a *summary of developmental processes and mechanisms* in the course of what they consider late adolescence from ages 16 to 20. The authors provide a substantial integration of cognitive, biological, social and affective changes that unfold during this period of emerging adulthood and do so with special attention to the escalated use of alcohol, including binge and heavy drinking, which is higher in 18-20 years olds than at any other time in the average life span (Brown et al., 2009). Reyna's (2006) research on human judgment, social judgment and risky decision making in adolescents shows that "the ability to regulate behavioral impulses is especially important during adolescence, when exposure to risk situations increases. Interestingly, by age 15, adolescents appear to be as capable as adults at logically assessing the likelihood of risk and their own vulnerability to risk; however, adolescents are more likely than adults to engage in risky behaviors" (Brown et al., 2009, p.44). Part of the reason for this, Gardner and Steinberg (2005) suggest, is that adolescent risk taking may serve a social function and studies are showing that risk taking increases when adolescents are in the presence of their peers. This seems to echo anecdotal evidence obtained during the surveys, with one TU sophomore saying that "(you) don't tend to hang out with the people who drink more than you do because it makes you feel out of place" (Interview on October 19, 2010).

It is not as easy to measure the social influences exerted upon college students who are striving to begin new relationships and find acceptance among their peer group.

Two of the instruments that are used in this study- the new student questionnaire and the alcohol course survey- capture student attitudes and expectations to ‘make close friends’. Although these variables may not necessarily serve to predict specific behaviors during college they indicate, by simply posing the question, that attitudes and expectations play a part in persistence. Universities that survey students for such information have need for the data. A goal of this study is to gather such data, from separate databases, and build a model that informs policy, programs and support services that sustain the process of emerging adulthood and college retention. Among the outcomes of this study is a clearer picture of the variables that predict students at risk of leaving the institution as well as a set of calculated strategies to make meaningful interventions and design the environment in which students are more likely to succeed.

White et al. (2006) found that the transition to college significantly increases the risk for binge drinking, particularly in the first few months of the freshman year. Of critical importance to both emerging adulthood and the beginning of college is the change in environment, creation of new relationships and distance from parental control (White, McMorris, Catalano, Fleming, Haggerty & Abbott, 2006). Emerging adults age 18 to 24 have the highest levels of alcohol consumption and alcohol dependence of any age-group (Brown et al., 2009) and, of particular significance to my study, “college students on average drink more than their non-college peers, even though they drank less during high school than those who did not go on to college” (Johnston et al. 2006*a, b*; Schulenberg & Maggs 2002).

Though the differences in drinking behavior between college students and non-college peers in the same age group are not necessarily large, an opportunity exists to understand the predictive factors and behaviors which could better inform prevention efforts and policy decisions within a university (Brown et al., 2009). The bounded college campus setting affords research an opportunity to learn how policy and programs positively intervene in the lives of their emerging adults. “The brain maturation associated with the onset of and progression through puberty, coupled with the increase in environmental stressors such as school transitions (e.g., progression into high school and college), greater academic demands, transition to first work environments, and exposure to new social situations, contribute” to negative outcomes when managed by alcohol and other drugs (Brown et al., 2009, p.45). Not only are these transitions and greater academic demands difficult to manage but these dimensions can be further exacerbated for a cohort that is woefully under-prepared for college and the core subject requirements, where one in four college freshmen takes a remedial math course (Haycock, 2002; Herzog, 2005, p.887). The pre-enrollment, enrollment and alcohol data collected and analyzed through this study help to: (1) better inform the efforts currently employed by practitioners whose methods and interventions have been limited by silo-ed databases; (2) broaden the use of a predictive model for first semester GPA that is currently in use as a proxy for first year retention; and (3) further address needed adaptations in the campus environment to better support student persistence and institutional retention strategies.

CHAPTER 4

RESULTS

This chapter is organized into three sections: Section 1 describes the characteristics of the sample and how the questions were approached; Section 2 presents the analyses relevant to the major research question focusing on four sources of data (academic record, new student questionnaire, alcohol survey and student conduct); and Section 3 presents the results from a series of additional analyses that are intended to extend and elaborate the results from the major research question.

Characteristics of the sample

The 2008 cohort of enrolled first year students was selected for this study. Data from the seven semesters since these students were admitted to the university was also available to help describe some of the students' outcomes. The sample (n=4,121) is described in detail below:

Table 4.1: Demographic Data for First Year Students Enrolled in Fall 2008

Variable	Percentage of Total (N= 4,121)
Gender	
Male	45.7%
Female	54.3%
Race:	
African American	13.9%
Asian	10.8%
Hispanic	4.2%
Native American/Pacific Islander	0.4%
Unknown, Other or Non-Resident Alien ("International")	10.6%
White	60.1%
From out of state (excluding international / nonresident aliens)	26.0%

Table 4.1, continued

Age:	
16 or younger	0.4%
17-18	93.6%
19-21	5.4%
22-25	0.2%
26 or older	0.1%
Missing	.3%
Live off campus or commute	21.0%
Live in university-managed residence hall	79.0%
Applied for and received financial aid from TU	64.7%
English is native language	88.5%
Best estimate of total family income	
Less than \$20,000	8.8%
\$20,000 to \$39,999	17.0%
\$40,000 to \$59,999	21.8%
\$60,000 to &79,999	19.4%
\$80,000 or more	33.0%
Mother's Education	
did not graduate high school	5.3%
high school graduate	24.1%
some college	21.0%
college graduate	32.3%
post graduate	17.2%
Father's Education	
did not graduate high school	6.9%
high school graduate	29.6%
some college	17.0%
college graduate	28.4%
post graduate or professional degree	18.1%

In order to define retention as the outcome variable the sample was divided into three groups based on three categories of retention:

Group 1 → Students who were accepted to the university but left in the first year (n= 440) and did not re-enroll in fall 2009 or thereafter;

Group 2 → Students who attended all 7 semesters since fall 2008 (n= 2821).

Group 3 → All students who are not in Group 1 or Group 2. Specifically, this group included students who attended the university at various times throughout the seven semesters but who stopped out at least once during this time (n= 860).

It is important to note that students who are suspended or expelled from the university do not have this action indicated in the academic record. The only indication on a student's academic record and/or transcript is reflected in their attendance for the semester. This further supported the decision to define three retention categories and groups. Regardless of why students left it was important to develop a model that considered all of the factors that may lead to their departure.

Since TU's retention model is focused on Group 1 as described above, the major research question for this dissertation will be similarly focused. That is, the analyses for the major research question will concentrate on attempting to differentiate the students in Group 1 from the students in Groups 2 and 3 combined. A more refined model comparing all three groups will be presented in Section 3 of the Chapter. Descriptive data on the students in all three of the retention categories are presented in Table 4.2.

Table 4.2: Demographic Data by Group – Categories of Retention

Total (N= 4,121)	Group 1 (N= 440)	Group 2 (N= 2821)	Group 3 (N= 860)
Gender			
Male	48.2%	45.2%	46.7%
Female	51.8%	54.5%	52.8%
Missing	0.0%	.3%	.5%
Race:			
African American	12.7%	14.1%	13.7%
Asian	7.7%	10.8%	12.3%
Hispanic	6.4%	3.5%	5.5%
Native American/Pacific Islander	0.0%	.4%	.6%
Unknown, Other or Non-Resident Alien ("International")	12.3%	9.9%	12.2%
White	60.9%	61.3%	55.7%
English is native language (% Yes)			
	92.3%	87.7%	87.4%
Age:			
16 or younger	.7%	.4%	.2%
17-18	92.3%	94.2%	92.6%
19-21	6.6%	5.1%	5.9%
22-25	.5%	.1%	.2%
26 or older	0.0%	0.0%	.3%
Missing	0.0%	.3%	.7%
Residence During First Year			
Living in Residence Hall	75.9%	81.7%	76.3%
Commuting	24.1%	18.3%	23.7%
Admissions Application Reported Scores			
High School GPA	3.27	3.40	3.33
SAT Math	547.33	561.11	559.29
SAT Verbal	546.19	546.98	553.57
SAT Writing	532.85	544.35	541.90
SAT Total	1626.36	1652.72	1655.08
College of Enrollment (% of students enrolled in 12 possible schools/colleges)			
College 1	University Studies 19.1%	Science 18.7%	Science 22.6%
College 2	Liberal Arts 17.3%	Business 17.4%	Liberal Arts 18.5%
College 3	Science 15.9%	University Studies 15.1%	University Studies 17.2%
Best estimate of total family income			
Less than \$20,000	8.2%	7.1%	8.6%
\$20,000 to \$39,999	17.3%	14.4%	16.2%
\$40,000 to \$59,999	20.5%	19.1%	18.8%
\$60,000 to &79,999	16.8%	18.1%	15.8%
\$80,000 or more	25.2%	30.5%	29.7%
Missing	12.0%	10.8%	10.9%

Table 4.2, continued

Mother's Education			
did not graduate high school	4.5%	4.8%	6.2%
high school graduate	31.1%	22.2%	24.4%
some college	20.9%	20.8%	19.5%
college graduate	28.0%	33.0%	30.9%
post graduate	13.2%	17.8%	16.6%
Missing	2.3%	1.4%	2.3%
Father's Education			
did not graduate high school	8.2%	6.1%	7.3%
high school graduate	32.7%	27.3%	29.5%
some college	18.2%	16.5%	16.7%
college graduate	21.6%	29.3%	27.0%
post graduate	15.5%	18.5%	16.3%
Missing	3.9%	2.2%	3.1%

Research Questions

The existing predictive model is used to predict first semester grade point average in order to identify the early signs of risk that may lead to poor academic performance. By applying the predictive risk equation to first year students, using data variables available to academic advisors prior to the first day of classes, the institution is currently capable of identifying the population of students that are projected to achieve a low fall semester GPA. While grade point average is one of the strongest predictors of first year retention, the existing prediction model does not predict retention. However, the first semester GPA is the measure used by the institution as a proxy for predicting retention. The primary research questions answered were: 1) Does information gathered from an alcohol course survey increase the power of a predictive model for first year student retention? And if so, 2) What is the marginal value of alcohol course survey data to existing predictive models? Also, how does data from the alcohol survey interact with other variables in explaining retention?

One of the first steps in this study was to determine if the variables in this prediction model could predict first year retention with the same degree of accuracy. As the results will show, there are variables not currently part of the model that strengthen its predictive capacity for first year retention. Furthermore, introducing variables from the alcohol survey increase the power of a predictive model for first year retention.

Overview of the Analyses to Answer the Major Research Question

The following sequence of analyses was used to answer the major research question:

Step 1: The first step was to take the existing model, calculated by the university's Measurement and Research Center to predict GPA for the 2007 entering freshmen cohort, and apply this model directly to the 2008 cohort to show the variance accounted for in the model predicting GPA.

Step 2: The second step was to take the existing model that was used to predict GPA and apply this model to predict retention.

Step 3: The third step was then to add data from the alcohol survey to the model used for step 2 and to ascertain if additional predictive power was gained by this addition. As will be described below, this was done in two different ways, and each way will be described.

A brief comment is necessary about the choice of statistical analyses that were employed to answer the major research question. Predicting a variable such as GPA which is a continuous variable can be accomplished by using Ordinary Least Squares Regression to establish unknown parameters. For step 1, (the prediction of GPA using the 2007 model) a full-scale regression model was used which represents a commonly used approach for this type of analysis. For retention, however, the major research question is a dichotomous variable, several alternate approaches are possible. In general, the preferred approach is to use a binary logistic regression since this analysis has been created specifically to handle dichotomous criterion variables. However, according to Tabachnick and Fidell (2001), binary logistic regression is not applicable if the proportion of the sample in the smaller category is less than 20%. Since in this case the proportion of students in group 1 ($n=440$) is only 10.7%, this analysis is not possible. Tabachnick and Fidell recommend that in a case such as the one for this research the preferred approach is a two group MANOVA, followed by a discriminant function analysis. It will be this approach that will be followed to answer the major research question.

Step 1: Predicting fall 2008 GPA using the model created from the 2007 Cohort

The results of the full scale multiple regression using the model created from the 2007 cohort is presented in Table 4.3. The table includes the variable from the model, the beta weight found for predicting fall 2008 GPA and the significance of the variable in the model.

Table 4.3: GPA Prediction Variables Applied to Fall 2008 Cohort

Code	Variable Used to Compute Future Grade Point Average	Beta Weight	Significance in the Equation
HGPA	High School GPA	.174	.000
SATW	SAT Writing	.084	.000
NSQ	New Student Questionnaire Summary	.123	.000
I17	NSQ--What was your approximate high school average?	.092	.000
I05	NSQ--During the school year, on the average, how many hours do you plan to work for money per week?	.048	.002
COLG	College of Enrollment	.068	.000
EL3	Mathematics Placement Test (Part 3)	.087	.000
I74	NSQ--Agreement with "Most of my teachers considered me one of the harder workers in their class."	.033	.058
I59	NSQ--What is the chance that you will change your major field of study?	.023	.105
READ	Writing Placement Test (Reading Section)	.054	.002
I80	NSQ--Agreement with "I am organized and have good study habits."	.055	.001
I78	NSQ--Agreement with "I am self confident."	-.026	.072
I62	NSQ--Agreement with the chance that I will "Be a student leader."	-.054	.000
I31	NSQ--Degree to which student liked "Natural Science" in high school.	-.050	.000
I67	NSQ--Agreement with the chance that I will "Work with a professor on a research project."	-.016	.273
I57	NSQ--Agreement with decision to attend Temple was influenced by "Meeting students with backgrounds and interests different from yours."	-.001	.947
RCC	Russell Conwell Center Membership	-.093	.000
I34	NSQ--Importance of attending college because "I wanted to be able to get a better job."	-.036	.011
I36	NSQ--Importance of attending college because "I wanted to learn more things that interest me."	.014	.336
I29	NSQ--Degree to which student liked "Mathematics" in high school.	-.045	.006
Math	Math Placement Score 1	.037	.033

For the above regression model $R = .506$, $R^2 = .256$ and Adjusted $R^2 = .253$.

Thus, the 2007 model accounts for about 25% of the variance in predicting fall 2008

GPA for the 2008 cohort.

Step 2: Using the 2007 GPA Model to Predict Retention

The results of the two group MANOVA comparing Group 1 to Groups 2 and 3 are presented in Table 4.4. The Table presents the means for both groups, the significance level of the univariate analyses for each variable and the partial eta squared for each variable that is significant at the .05 level or below. (Note: In ANOVA based statistics, the recommended metric for effect size is partial eta squared. This statistic is similar to a correlation squared. Values of .02 to .05 are considered “small”; values of .05 to .08 are considered “medium”; and values of .08 and higher are considered “large”.)

Table 4.4: Two Group MANOVA Results for Retention

Code	Mean for Group 1	Mean for Groups 2 & 3	Significance Level	Partial Eta Squared
HGPA	3.27	3.38	.000	.008
SATW	532.85	543.78	.005	.002
NSQ	228.05	228.45	.000	.011
I17	2.71	3.00	.000	.009
I05	2.59	2.78	.000	.004
COLG	2.82	2.82	.918	-
EL3	4.35	5.36	.000	.009
I74	3.00	3.19	.000	.004
I59	2.67	2.61	.220	-
READ	32.96	33.47	.065	-
I80	2.50	2.63	.011	.002
I78	3.14	3.19	.349	-
I62	2.28	2.10	.000	.005
I31	2.60	2.60	.922	-
I67	3.20	3.22	.468	-
I57	3.20	3.18	.643	-
RCC	.05	.06	.541	-
I34	2.98	2.93	.245	-
I36	3.80	3.80	.793	-
I29	2.06	2.30	.001	.003
Math1	11.89	12.44	.000	.004

For the above model predicting retention the omnibus test was significant (Wilks Lambda = .976, $p = .000$). The partial eta squared equaled .024. Therefore, approximately 2 ½

percent of the variance in retention can be accounted for with the variables used in the 2007 GPA prediction model. As shown in Table 4.5, none of the variables individually would be considered even small in terms of effect size. The overall prediction model would be labeled as “small” in terms of effect size. The follow-up discriminant function analysis produced the structure matrix presented in Table 4.5.

Table 4.5: Structure Matrix for Retention

Predictor (“I” replaced by “NSQ”)	Discriminant Function Score
NSQ	.671
MathPlace3	.618
NSQ17	.605
HGPA	.572
NSQ62	-.438
MathPlace1	.400
NSQ5	.395
NSQ74	.384
NSQ29	.342
SATW	.276
NSQ80	.251
Read	.182
NSQ59	-.121
NSQ34	-.115
NSQ78	.092
NSQ67	.072
RCC	.060
NSQ57	-.046
NSQ36	.026
Colg	.010
NSQ31	.010

See notes in Table 3.5 for variable code

As shown in Table 4.5, the discriminating variables for retention with discriminant function scores greater than .4 are: NSQ, Math Placement 3, NSQ17, High School GPA, NSQ62, and MathPlacement 1. For this Step 2 of the process, the analysis shown in Table 4.5 demonstrates that positive predictors of retention to the second year, beginning with the strongest, are: the New Student Questionnaire summary score, Math Placement Test score, approximate high school GPA asked for in the NSQ, actual high school GPA and agreement with the “chance I may be a student leader”.

Step 3: Alcohol Survey Data Added to the Model

There are 4,121 student records in the data set. Of these, 1,722 students have pre-enrollment alcohol survey data which is still a large sample size however it represents a significant reduction in the cohort. This subset of the sample precipitated two additional questions for this study: a) Are there any significant and meaningful correlations between demographic, pre-enrollment and/or enrollment variables and the alcohol survey data? b) Are there any differences in enrollment and retention between the students who completed the survey and those who did not? These two questions will be answered prior to adding the alcohol data to the prediction model presented in Step 2 above in order to distinguish the characteristics of the two groups and have a better understanding of the sample providing alcohol data. As a first analysis, students who completed the alcohol survey were compared to those who did not complete the survey. A summary of the significant differences is presented in Table 4.6.

Table 4.6: Significant Differences by Group- Completers vs. Non-Completers

Variable	Mean for Completers (n=1722)	Mean for Non-Completers (n=2399)
Gender (1)	Women complete the questionnaire more than males	
Work hours (5)	Students who completed work less hours	
Family Income (9)	3.59	3.48
High School Average (17)	4.11	3.88
Rank in High School Class (19)	3.64	3.48
Chance student will join a social club (63)	3.54	3.44
Chance student will transfer to another college (70)	1.95	2.03
Chance student will be satisfied with TU (71)	3.73	3.67
Agree that teachers considered student a hard worker (74)	4.24	4.11
Student finds it difficult to keep a plan of action with school work (75)	2.37	2.58
Knows how to manage time well (77)	3.79	3.66
Plans seemed full of difficulties and have had to give them up (79)	2.09	2.20
I am organized and have good study habits (80)	3.69	3.56
GPA Fall 2008 to Fall 2011	All of these are significant, with students who complete the questionnaire having higher GPAs. In general, students who complete the questionnaire have GPAs about .2 to .3 greater than those who don't. For example, the GPA for completers in fall 08 is 3.06; for non-completers it is 2.77	
Retention Spring 2009 to Fall 2011	The pattern here is the same. Those who completed the questionnaire are retained at a higher rate. The difference is about .3 to .5%	
Race	White students complete the questionnaire at the highest rate (47.2%), followed by Hispanic students (38.3%), Asian (37.2%), other (32.5%), African American (30.7%) and then Native American (17.6%)	
SAT Writing	552.7	535.4
SAT Verbal	547.03	524.00
SAT Quantitative	557.72	534.71
High School GPA	3.44	3.32
WR1 –Placement Test Writing part 1	25.12	24.32
WR2 –Placement Test Writing part 2	31.55	30.17
Admission points (equation for decision to admit)	64.74	58.57

One of the assumptions made prior to beginning this study was that students who generally do what is asked of them will practice that responsibility often. First year students, newly accepted to college, tend to do what the institution asks them to do including the submission of tuition and housing deposits, health forms to verify inoculation records and roommate preference forms. The alcohol survey instructions were distributed to all newly accepted first year students in early July, a time when students have already begun placement testing and orientation. To further ensure that students would comply with the completion of the online course and surveys by the appointed deadline a separate letter was sent home to parents of first year students from the dean of students letting them know that their TU student was expected to complete the course and surveys before they left home for the beginning of the fall semester. It is not surprising that the survey completers (n=1722) tend to be a more compliant group of students and Table 4.6 has described some of those differences. Survey completers tend to have a higher high school grade point average, ranked higher in their graduating class, do not expect to transfer to another college, know how to manage their time, and tend to be organized and have good study habits. The completers averaged higher testing scores from the SATs to placement tests and when their actual fall 2008 grades were analyzed, the average GPA for completers was 3.06 while the GPA for non-completers was a 2.77.

After these preliminary analyses were completed, an additional variable was added to the predictor list - whether the student completed the survey (coded as "1") or did not complete the survey (coded as "0"). As an initial analysis, the retention analysis presented in Tables 4.4 and 4.5 was computed again with the addition of the dichotomous variable indicating whether the student had or had not completed the survey. The variable indicating survey completion was significant at the .000 level with a partial eta

squared of .004. The percent of the variance for the omnibus model increased from 2.4% to 2.6%. The structure matrix from the discriminant function analysis is presented in Table 4.7.

Table 4.7: Structure Matrix with Addition of Completer Dichotomy

Predictor	Discriminant Function Score
NSQ	.644
MathPlace3	.594
NSQ17	.582
HGPA	.550
NSQ62	-.420
CompleterGroup	.397
MathPlace1	.385
NSQ5	.380
NSQ74	.369
NSQ29	.329
SATW	.265
NSQ80	.241
Read	.175
NSQ59	-.116
NSQ34	-.110
NSQ78	.089
NSQ67	.069
RCC	.058
NSQ57	-.044
NSQ36	.025
Colg	.010
NSQ31	.009

As shown in Table 4.7, the completer group variable has become the sixth strongest predictor of retention and contributes to the features that describe the subset of the population (N=1,722) that are completers of the alcohol survey.

Factor Analysis of the Alcohol Survey

Once the preliminary analysis of the predictive model was done and the analysis of the two groups (completers and non-completers of the alcohol survey) revealed that the completers (N=1,722) were generally academically stronger students than non-completers, the primary research question was ready to be examined - *Does information from the alcohol survey increase the prediction of retention?* The alcohol survey contains a series of questions asking the students about a variety of aspects of their life related to drinking (a copy of the survey is included in Appendix B). To reduce the number of predictor variables, a factor analysis, followed by a varimax rotation, was computed on the questions. “A factor analysis starts with the premise that respondents’ answers to attitudinal questions may be linked to underlying beliefs (or “factors”)...the analysis works by looking for patterns in the respondents’ answers” (Salem & Jones, 2010, p.65). Several iterations were attempted with the best solution being a four-factor model. The rotated factor matrix is presented in Table 4.8. The cell entries are all factor loadings above .4 for the questions in the survey on the factor to which they most strongly correlate.

Table 4.8: Rotated Component Matrix of the Alcohol Survey

Alcohol Survey Variable	Factor 1	Factor 2	Factor 3	Factor 4
Q11Heavy Drinking Frequency	.842			
Q10NumberDailyDrinks	.827			
Q09AlcoholConsumptionFrequency	.818			
Q02#BeersDrankMost1Sitting	.811			
Q02Hours	.772			
Q02Liquors	.565			
Q06WeeklyAlcoholExpenditure	.515			
Q13ResponsibilityAffectedDrinking		.774		
Q15GuiltRemorseFrequency		.720		
Q12UncontrollableDrinkingFrequency		.658		
Q16BlankMemoryFrequency		.589		
Q14MorningDrinkNeededFrequency		.552		
Q18OthersConcernedAboutDrinking		.516		
Q03ParentalSiblings			.773	
Q03Cousins			.764	
Q03Parents#probdrinkers			.618	
Q03Grandparents			.614	
Q03Siblings			.550	
Q19DailyCigarettesSmoked				.855
Q20YearsSmoked				.852

Factor 1: *Alcohol use* - Students who report a higher frequency of alcohol consumption could be described as twice per week or as high as four plus times per week; in a typical day the number of drinks containing alcohol that they consumed range from seven to nine drinks, or as much as ten or more drinks; and report spending a larger portion of their budget each month on alcohol.

Factor 2: *Alcohol use resulted in bad outcomes* – Students responded that very often (daily/weekly) during the last year, because of drinking, they have failed to do what was normally expected, have had a feeling of guilt or remorse after drinking and have been unable to remember what happened the night before. Once these students started

drinking they found it very difficult to stop and the next morning have needed a first drink to get themselves going after a heavy drinking session.

Factor 3: *In the blood (Family)* – When asked to think about the number of blood relatives who are problem drinkers or alcoholics, or have been in the past, students counted parents, aunts, uncles, grandparents, siblings and/or cousins.

Factor 4: *Smokers* - Respondents indicated the number of cigarettes smoked in a typical day during the past month as well as the number of years they have smoked regularly.

With the factor analysis completed in Table 4.8 the additional four variables were added to the model. To facilitate interpretation of the factors, the factor scores were converted to T scores, thus making the mean 50 and the standard deviation 10. As a second analysis, the two group MANOVA was again computed, but this time with the addition of the four factor scores. One aspect of this to remember is that the sample size for this analysis has been reduced from 4,121 to 1,722. While this is still a large sample size, the power of the analysis has been significantly reduced. Factors 3 and 4 were statistically significant in the MANOVA with the significance level for both factors being .000. The partial eta squared for Factor 3 was .011 and for Factor 4 it was .013. The omnibus partial eta squared was .053. Thus, a little over 5% of the variance in retention can be accounted for with the addition of the four factors from the alcohol survey. The structure matrix from the discriminant function analysis is presented in Table 4.9.

Table 4.9: Structure Matrix with the Addition of the Four Factors

Predictor	Discriminant Function Score
MathPlace3	.537
Factor4	-.479
Factor3	-.456
MathPlace1	.334
NSQ	.316
SATW	.307
NSQ29	.295
HGPA	.286
NSQ5	.253
Read	.235
NSQ17	.222
NSQ80	.205
NSQ62	-.176
Factor2	.168
RCC	.136
NSQ59	-.083
NSQ78	-.072
Colg	-.063
NSQ36	-.059
NSQ31	-.048
NSQ34	-.047
NSQ74	-.033
Factor1	.020
NSQ67	-.014
NSQ57	-.004

As shown in Table 4.9, Factors 3 and 4 from the alcohol survey have now become the second and third strongest predictors of retention. A summary of the top four predictors could be stated as follows: Students with lower math placement test scores, have family members with drinking problems, and smoke daily are more likely to leave TU after their first year. To answer the research question more directly, the addition of the factors from the alcohol survey increase the strength of the prediction model for first year

retention and the students who are retained to the second year are academically stronger students with fewer family alcohol problems and are less likely to smoke.

Additional Analyses

Additional analyses were conducted to extend and elaborate the results presented above. Although the results presented have answered the core research questions and affirm that alcohol survey data does strengthen a model for first year retention, there are related questions that were raised throughout the analysis which are briefly summarized in this section. To make these more interpretable, the question that each analysis is intended to answer will be presented, followed by the results.

Question: Is there more predictability by using a three group model of retention as contrasted to the two group model? To answer this question all of the analyses presented above were computed again but this time comparing the three groups of alcohol survey completers (n=1,722) to each other. Perhaps the most interesting of these analyses was the one conducted with the four factor scores. The means, univariate significance levels, and partial eta squares for this analysis are presented in Table 4.10. In this analysis, Group 1 represents the students that were not retained (n=143), Group 2 represents the students that were retained all seven semesters since Fall 2008 (n=1,268), and Group 3 represents the remaining students who stopped-out at some point during the seven semesters (n=309).

Table 4.10: Three Group MANOVA Results for Retention with Factor Scores

Predictor	Mean for Group 1 (n = 143)	Mean for Group 2 (n = 1268)	Mean for Group 3 (n = 309)	Significance Level	Partial Eta Squared
HGPA	3.35	3.46	3.38	.000	.011
SATW	534.09	552.44	562.08	.002	.007
NSQ	228.34	228.69	228.51	.000	.009
I17	2.95	3.17	2.93	.000	.013
I05	2.64	2.84	2.80	.036	.004
COLG	2.83	2.83	2.82	.280	-
EL3	4.04	5.53	5.53	.000	.016
I74	3.27	3.27	3.11	.016	.005
I59	2.65	2.57	2.66	.199	-
READ	33.29	34.20	34.72	.019	.005
I80	2.52	2.74	2.56	.003	.007
I78	3.23	3.18	3.17	.780	-
I62	2.20	2.07	2.09	.212	-
I31	2.64	2.58	2.68	.356	-
I67	3.22	3.20	3.23	.821	-
I57	3.19	3.19	3.19	.999	-
RCC	.02	.04	.05	.412	-
I34	2.96	2.91	2.99	.288	-
I36	3.83	3.80	3.82	.591	-
I29	1.29	2.32	2.31	.016	.005
Math1	11.87	12.61	12.72	.004	.006
Factor 1	49.84	50.01	50.01	.981	-
Factor 2	48.69	49.52	51.23	.024	.004
Factor 3	53.55	49.52	50.32	.000	.012
Factor 4	53.73	49.29	51.17	.000	.018

The overall omnibus test was significant (Wilks Lambda = .919, $p = .000$). The partial eta squared equaled .054. The first function derived from the analysis was significant at the .000 level. The structure matrix is presented in Table 4.11.

Table 4.11: Structure Matrix for the Three Retention Group Model

Predictor	Function 1	Function 2
Factor4	-.533*	.241
MathPlace3	.510*	.190
Factor3	-.467*	.014
NSQ	.362*	-.217
MathPlace1	.301*	.207
NSQ29	.284*	.087
NSQ5	.259*	-.010
NSQ62	-.177*	-.012
RCC	.127*	.059
NSQ78	-.067*	-.033
Factor1	.019*	.006
NSQ57	-.005*	.004
NSQ17	.319	-.497*
NSQ74	.041	-.401*
SATW	.243	.375*
HGPA	.359	-.362*
Factor2	.105	.356*
NSQ80	.266	-.304*
Read	.182	.303*
Colg	-.023	-.222*
NSQ59	-.120	.189*
NSQ34	-.083	.189*
NSQ31	-.080	.169*
NSQ36	-.078	.095*
NSQ67	-.029	.078*

A post-hoc analysis of the function scores indicated that all three groups are significantly different from each other. Table 4.11 shows that the three most important discriminating variables are Factor 4, the math placement test and Factor 3. In terms of the exact meaning of the variables, the results show that: Students who leave TU after one year, to a greater extent than students who leave at some time during the seven semesters on

which there are data, to an even greater extent than students who are retained for all seven semesters:

- Are more typically smokers;
- Have lower math placement scores; and
- Have family members with drinking problems.

Question: Given that this model can be used by other institutions could these predictors be used to develop a classification or typology of students which would better inform prevention and intervention programs? Since one of the goals of the research was to find out if additional data about student attitudes and behaviors would strengthen a predictive model, a natural opportunity exists to map the attitudes of the alcohol survey respondents to see if there are meaningful patterns and groupings among these students once the factors are applied (Salem & Jones, 2010, p. 65). Retention research has been largely done with academic measures such as GPA and standardized test scores whereas psychological, social and behavioral factors are frequently used not as predictors but as outcome measures (Robbins, Lauver, Le, Davis, Langley & Carlstrom, 2004, p. 263). With the data that has been collected in this study a cluster analysis was performed to investigate how the four factors described here are combined and distributed among the students. “The analysis uses the factors as basis variables to identify clusters that have high internal consistency and that are significantly separated from the other clusters” (Salem & Jones, 2010, p. 66). Ultimately both the factor and cluster analyses express that “attitudes are better understood as multidimensional and interrelated collections of factors” (Salem & Jones, 2010, p. 76). Once the classifications are analyzed and

described, student needs can be appropriately guided to support resources such as academic advising, math and science resource center, health education resource team or the drug and alcohol counseling services which include groups for family members of alcoholics.

Question: Does the alcohol survey predict alcohol violations? To answer this question, Pearson correlations were computed between the variables derived from the alcohol survey and the number of alcohol violations. For completeness, the individual questions from the pre-test as well as the factor scores were included in this analysis. In addition, the variable indicating whether the student had completed the questionnaire was also included. The correlations significant at beyond the .01 level are contained in Table 4.12.

Table 4.12: Correlations with Alcohol Violations

Alcohol Survey Variable		
q02#Beersdrankmost1sitting	Pearson Correlation	.167**
	Sig. (2-tailed)	.000
	N	1722
q02Liquors	Pearson Correlation	.136**
	Sig. (2-tailed)	.000
	N	1722
q02Hours	Pearson Correlation	.151**
	Sig. (2-tailed)	.000
	N	1722
q03Parents#probdrinkers	Pearson Correlation	.065**
	Sig. (2-tailed)	.007
	N	1722
q04DaysAsIntoxicatedDriver	Pearson Correlation	.101**
	Sig. (2-tailed)	.000
	N	1722

Table 4.12, continued

q05DaysAsPassenger	Pearson Correlation	.117**
	Sig. (2-tailed)	.000
	N	1722
q06WeeeklyAlcoholExpenditure	Pearson Correlation	.111**
	Sig. (2-tailed)	.000
	N	1722
q07MonthlyDisposableIncome	Pearson Correlation	-.005
	Sig. (2-tailed)	.827
	N	1722
q08NationalExceed_#drinkstypdaywhendrinking1100	Pearson Correlation	-.065**
	Sig. (2-tailed)	.007
	N	1722
q09AlcoholConsumptionFrequency	Pearson Correlation	.229**
	Sig. (2-tailed)	.000
	N	1721
q10NumberDailyDrinks	Pearson Correlation	.179**
	Sig. (2-tailed)	.000
	N	1722
q11HeavyDrinkingFrequency	Pearson Correlation	.206**
	Sig. (2-tailed)	.000
	N	1722
q12UncontrollableDrinkingFrequen	Pearson Correlation	.139**
	Sig. (2-tailed)	.000
	N	1722
q13ResponsibilityAffectedDrinkin	Pearson Correlation	.093**
	Sig. (2-tailed)	.000
	N	1722
q15GuiltRemorseFrequency	Pearson Correlation	.138**
	Sig. (2-tailed)	.000
	N	1722
q16BlankMemoryFrequency	Pearson Correlation	.195**
	Sig. (2-tailed)	.000
	N	1722
q17InjuredFromDrinking	Pearson Correlation	.091**
	Sig. (2-tailed)	.000
	N	1722

Table 4.12, continued

q18OthersConcernedAboutDrinking	Pearson Correlation	.063**
	Sig. (2-tailed)	.009
	N	1722
q19DailyCigarettesSmoked	Pearson Correlation	.073**
	Sig. (2-tailed)	.002
	N	1722
Factor1	Pearson Correlation	.198**
	Sig. (2-tailed)	.000
	N	1720
Factor2	Pearson Correlation	.108**
	Sig. (2-tailed)	.000
	N	1720

As a follow-up analysis, two step-wise multiple regressions were computed: the first using the individual alcohol survey questions and the second using the factor scores. For the analysis using the questions, the three variables that entered the equation (in order) are Q9-Alcohol frequency consumption; Q16- Blank Memory, and Greek Affiliation. This analysis accounted for 6.2% of the variance. For the analysis using the factor scores, Factor 1 and Factor 2 entered the equation with the regression accounting for 5.1% of the variance. To summarize, students who completed the alcohol survey and violated the university's alcohol policy were more likely to report: 1) having several drinks containing alcohol in a typical day; 2) forgetting where they were or what they did as a consequence of drinking; and 3) considering affiliation with a fraternity or sorority. In addition, by applying the student conduct outcomes to the predictive variables and all four factors, it is interesting that Factors 3 and 4 figured prominently in the retention model whereas Factors 1 and 2 (frequency of alcohol use and negative outcomes resulting from alcohol use) enter the equation when predicting alcohol-related violations.

Question – What information could be learned about students who were transported to the hospital or dismissed from the university for alcohol-related behavior? Perhaps the most negative alcohol-related outcomes assumed throughout this study have been attrition, specifically due to poor academic performance or disciplinary suspension. Given the availability of student conduct data to describe disciplinary outcomes there was an interest in looking at the five students who were suspended from the university for alcohol-related conduct violations; as well as the eleven students that enacted the medical amnesty clause when they sought medical attention for excessive alcohol use. Of the five students who were suspended for alcohol violations only one student actually completed the alcohol course and survey. All five students are White, four are male, and three achieved above a 3.0 first semester GPA. Of the eleven medical amnesty cases: six completed the alcohol survey, nine were female, three report that they take prescription medication. None of these students were repeat offenders of the alcohol policy following their medical amnesty incident. Finally worth noting, there were two questions in the alcohol survey that were not predictive and did not correlate significantly within the results of this analysis however they are important to call attention to when looking at these 16 outliers. On a scale of 1 to 10, disagree to agree, students were asked to rate the following:

- 1) Alcohol use adversely affects a student's academic success.
- 2) Alcohol use adversely affects the quality of life for other students.

Of the six survey completers who ended up with a medical amnesty incident and the one survey completer that was suspended, all of them rated these two questions a 7 or above

with a mean score of 8.43 for alcohol use adversely affects academic success and a mean score of 7.85 for adversely affects the quality of life for other students. Because these students represent less than 1% of the sample population it is understandable that their outcomes might be lost in such a large set of data. However, these unfortunate and sometimes tragic outcomes tend to be the cases that drive the resources and policies intended to span the rest of the population.

CHAPTER 5

IMPLICATIONS AND OPPORTUNITIES

Summary of the Findings

The purpose of this study was to focus on a single, university environment and its existing institutional data to find out if using alcohol survey data increases the power of a predictive model for first semester GPA and consequently identifies the strongest predictors of first year student retention. When both fiscal and human resources are threatened for public institutions there is a heightened need for evidenced-based policy and other strategies that promise to make a positive difference in the retention of its students. Further, an ethic of care would guide institutional leaders to conduct similar analyses of both its student body and resource allocation to ensure that all available resources are dedicated to such strategies. “In organizing efforts, administrators guided by an ethic of care would encourage collaborative efforts between faculty, staff, and students. These would serve to promote interpersonal interactions, to deemphasize competition, to facilitate a sense of belonging, and to increase individuals’ skills as they learn from one another” (Beck, 1994, p. 85). Developing a campus culture and environment that values student health and safety is not achieved through policies and protocols alone. There must be multidisciplinary support devoted to building the infrastructure and environmental management strategies which can sustain what Owen and Rodolfa (2009) describe as a *campus climate of care*.

Using available data on 4,121 first year students this research looked at key variables that, when combined with student attitudes and behavior, identified the

significant predictors of first year college retention. This predictive model will help university officials determine the impact of the problem on their campus and strategically design the environment in which students are more likely to be retained. The institutional data collected and analyzed will: (1) better inform the efforts currently employed by academic and student affairs practitioners whose methods and interventions have been limited by isolated databases; (2) broaden the use of a predictive model for first semester GPA by applying additional factors and strengthening the institution's model for improving first year retention; and (3) further address needed adaptations in the campus environment to better support student persistence and institutional retention strategies.

Summary of Findings Discussion

Students leave an institution for a wide variety of reasons, some are positive (job opportunity, transfer to another institution) and some are negative (Astin 1971 & 1984; Bean & Eaton, 2001; DeBerard, Spielmans, & Julka, 2004; Hagedorn, 2006; Herzog, 2005; Hingson, Heeren, Winter & Wechsler, 2005; Hossler, Ziskin, Moore, & Wakhungu, 2008; Tinto, 1987). "Most models that examine student success, broadly defined, include five sets of variables: (1) student background characteristics including demographics and pre-college academic and other experiences, (2) structural characteristics of institutions such as mission, size and selectivity, (3) interactions with agents of socialization such as faculty and staff members and peers, (4) student perceptions of the learning environment, and (5) the quality of effort students devote to educationally purposeful activities" (Kuh, Kinzie, Cruce, Shoup & Gonyea, 2006, p.4). In 2007, TU developed a predictive model for first semester GPA applying some of these variables. Because first semester GPA is closely correlated with first year retention this

model was previously used as a proxy for predicting first year retention. This study introduces additional variables not previously considered in the predictive model which include pre-college attitudes and behaviors related to alcohol use and smoking. As a result, the existing model is strengthened by the alcohol survey and shows that students who simply complete the alcohol course and surveys (n=1,722) were retained at a higher rate than students who did not complete. Further, students who leave TU after one year (n=440) are more typically smokers, with lower math placement test scores and report having “blood relatives who are now or have been in the past, problem drinkers or alcoholics” (Appendix B). Perhaps most interesting from these results is the finding that the marginal value of alcohol survey data to the retention outcome involves smoking and family members with drinking problems, not the student’s actual use of alcohol.

Implications for Policy and Practice

“Connecting the Dots” is a phrase that has appeared often in higher education dialogue and policy review. The most tragic use occurred repeatedly in the communication assessments following the horrific tragedy that took place on Virginia Tech’s campus on April 16, 2007 (see Report for Governor Kaine, Commonwealth of Virginia, August 2007). Sharing data and information within the institution and including all those with an “educational interest” is not only essential for the organization but can have dire consequences when the communication barriers are seen only in hindsight. As evidenced by the findings, connecting institutional data creates not only a richer, more descriptive knowledge of students, but it also increases the value of data collected through varied independent sources which had not been integrated prior to this study.

Bridging the eternal gap between academic and student affairs is simply essential. The need to support student persistence and retain students through degree attainment mandates joint purpose and action. Frequently institutions are bombarded with the latest and greatest products that promise to improve student retention, yet the organization struggles with planning and implementing a campus-wide, cross-functional strategy that effectively links mission, data, research, policy and programming together into a unified approach (Dowdall, 2009; Owen & Rodolfa, 2009; Rowley, Lugan & Dolence, 1997). Comprehensive retention strategy is not the responsibility of one department, even if the institution has the luxury of appointing a dedicated retention office. It requires ongoing input and stakeholders from the senior administration, enrollment, student affairs, institutional research, faculty, campus safety and student leaders. As discussed extensively in Chapter Two, the majority of college alcohol research has contributed to prevention and intervention strategies in an effort to reduce high risk drinking. This research has shown that this work cannot be left to the drug and alcohol counselors alone to solve (Dowdall, 2009; Ives, 2009; Jaschik, 2009).

Policy shapes culture

Public policy including prohibition, minimum legal drinking age laws, Mothers Against Drunk Driving initiatives, and keg registration requirements, have all influenced alcohol related behavior. The belief that research has the capacity to positively influence policy has been one of the motivating forces for this study. Knowing the variables that predict students at risk of leaving, or not persisting, raises the question of whether the institution should consider not admitting these students at all. And if it does admit

students at greater risk of dropout, stop-out or failure, what then is the institution's responsibility to support them once they are here? It is an ethical dilemma and policy issue for the institution. Data mining is a fascinating endeavor if all you want to do is study your market. However, the controversy that IHEs face is once you have mined the data and understood the risks, what interventions must be in place to appropriately respond?

Information that the institution knows (can know) within the first four weeks can guide policy decisions. Tinto's (2002) lecture on *connecting the dots* asserts that institutions need to "move beyond thinking of access solely as enabling people to gain entry to higher education (and start) seeing access as providing individuals realistic opportunities to earn a four-year college degree. What matters is not merely whether individuals are able to begin college, but whether they are able to finish college" (p.1). A simplified cost/benefit analysis related to this study would spotlight that only 68.7% of first year students were retained continuously for the seven semesters since enrolling in fall 2008. At the time that this cohort entered the four year graduation rate (for the 2002 cohort) was 36% and the six year graduation rate was 65%. Whether students dropout or stop-out it remains a loss of tuition revenue to the institution and a loss of educational investment for the student.

Policy informed by Research

Results of this study support the need for institution-based research to improve the institution's efforts to retain students and develop the policy framework to sustain it.

Policy informed by research, specifically using institutional data to design policy that supports the environment and outcomes desired, is one of the recommendations from this study (Hossler, Ziskin, Moore, & Wakhungu, 2008, p.21). While the national and multi-institutional studies continue to serve the field of higher education the findings here re-emphasize the importance of an institutional study which focuses on a sample more reflective of individual campus culture, climate and student needs (Cohen & Rogers, 1997; DeJong, Towvim & Schnieder, 2007; Herzog, 2005; Hossler, Ziskin, Moore, and Wakhungu, 2008; Mallett, Marzell, Varvil-Weld, Turrisi, Guttman & Abar, 2011; Odo, McQuiller & Stretesky, 1999).

This research illuminates both academic and non-academic factors that contribute to and hinder student retention to the second year of college. Given the complexities of emerging adulthood, the transition to the college environment, the diverse and dynamic student body and the wide variety of needs that are brought to bear on university faculty and administration, here are several policy recommendations offered as a result of this study.

- 1) Institutionalize a climate of care (Owen & Rodolfa, 2009) where all of the university's data and resources are shared freely among key stakeholders and researchers with a vested educational interest in utilizing empirical evidence to inform prevention and intervention programs and strategies. Task force and

committee efforts have solid intentions within the university setting; however, these direct and indirect observations often have the ability to translate into data and analysis. Having the support of campus-wide senior leadership and department heads in such a forum can unify data managers of once isolated systems to collaborate with a common goal and purpose. Very often such committees have experts in the fields of public health, educational psychology, criminal justice, medicine, psychiatry, and educational administration and the research opportunities and interests are ripe for study.

- 2) Student persistence and institutional retention must be as central to faculty and administrative goals as it is the university's core mission. Dowdall (2009) emphatically gives voice to the importance of not partitioning off the alcohol issues, risky behavior and discipline cases to the student affairs personnel. Omitting the faculty who observe (perhaps most often) some of the warning signs - low attendance, missing assignments, declining performance on assignments and tests, and arriving in class either hung over or injured - reduces the number of dots to be connected when trying to identify the warning signs for students at risk. Rowley, Lukan and Dolence (1997) assert that when all of the critical players are not appropriately engaged in addressing the problem and appear to be left outside of the plan, then they are rightly inclined to believe it must be somebody else's problem to solve.
- 3) Apply the research. Once the data have been shared among key stakeholders the senior leaders need to hold everyone accountable to aligning their programs,

- policies and resources to these priorities. Data results from TU's 2008 cohort revealed that within the first week of their college career a predictive model could be implemented that would be served by some of the following policy recommendations.
- 4) With less than half of the cohort completing the alcohol course and surveys there is adequate support for adding meaningful questions to the new student questionnaire which has a near perfect completion rate among first year students. Data that have a significant predictive capacity should be continually analyzed and reflected in annual revisions to this instrument. As part of this analysis, there will also be questions and corresponding variables that no longer warrant tracking and could be removed from the instrument in order to keep the questions to a reasonable survey size which is presently 81 questions in length.
 - 5) When data is analyzed and students are categorized by such descriptors as: predicted first semester GPA below 2.0; daily smoker; family members who are problem drinkers; report significant alcohol use as well as use of prescription medication - these students would be linked to appropriate support services. Policy needs to confront the ethical liability of one arm of an institution surveying students and collecting data that resides in a database apart from the support services that benefit from knowing these students who are potentially at risk of leaving. Risk factors that are evident for individual students would be directly linked to the necessary support services such as: CARE Team (interdisciplinary risk assessment teams often chaired by the dean of students); Student Health

- Services, Counseling Services (including drug and alcohol specialists and psychiatric services); Math and Science Resource Center; academic and faculty advisors; and residence life administration.
- 6) Opportunities exist for applying the predictive model through individual prevention and intervention strategies as well as in larger settings that would be necessary at an institution of TU's size. Strategically packaging and delivering the significant predictors and outcomes through new student orientation sessions, academic advising sessions, parent and family programs, articles presented in faculty and alumni periodicals, first year experience curriculum, general education curriculum and other such forums have the opportunity to educate all of the real stakeholders in a student's persistence.

These policy recommendations represent a modest sampling of what is possible within an institution when policy and research become more interdependent.

Limitations of the Study

One of the fundamental limitations of the study was created within the process of selecting the method or technique that best fits the research data and purpose (Brennan, 1987; Jones & Harris, 1999, p. 252). Regression analysis identifies predictors with an effect across the entire population where a different technique, such as "CHAID" or Chi-squared automatic interaction detector is better suited to describing a large data set (and)... partitions the data into mutually exclusive, exhaustive, subsets that best describe

the dependent variable” (Kass, 1980, p. 119). Therefore one of the possibilities raised early in the data analysis was that the effect of predictors, or other variables that did not emerge as strong predictors in the sample population, could be lost if not analyzed within the smaller subset that would reflect the effect. For example, if one of the four alcohol survey factors had a pronounced effect for Hispanic students (4.2% of the first year cohort and 6.4% of group 1) it may be lost when looking at such a large data set. Not only does this serve as an imperative for future research it is echoed in diNovi’s research (2010) whose findings, “suggest that risk equations should be customized to the subpopulation of interest, rather than built on a full cohort of students, in order to provide the most effective prediction at each level” (p.80).

In addition to a more refined analysis of the specific subsets of the population, a notable limitation was the absence of complete data for all students, specifically: 1) not having alcohol survey data for all first year students because it is not mandatory to participate or complete the surveys; and 2) not having tracked or recorded outcome data about the circumstances of a student’s departure and whether a student transferred, stopped out or dropped out. Not only would it benefit this study to have complete alcohol data on the full sample (N=4,121) but the analysis summarized in Table 4.6 demonstrates how different the subset of alcohol survey completers are as compared to non-completers.

Future Research & Recommendations

Mixed methods, in this case applying both quantitative and qualitative techniques to answer the research questions, would yield more meaningful results. Kuh et al., (2006)

not only analyzed student persistence data using regression and psychometric analyses but they further explored how and why students responded to survey questions through cognitive interviews and focus groups. Some of their findings indicate that while the majority of survey items are interpreted as intended and elicited responses consistent across students from racial and ethnic backgrounds...a few items are problematic across all settings and students such as understanding the meaning of terms used in the survey questions and response options (Kuh et al., 2006).

Furthermore, enhancing the data with a qualitative study (using interviews and/or focus groups) would explore how the university's policies and programs impact student perceptions and whether they have influenced individual persistence. Such a study could include interviewing a set of students during their second year to find out how these students perceive the efficacy of programs offered during their first year and what role, if any, the university's policies played in the choices they or their peers made regarding alcohol use. Students who were not retained in their second year would also be interviewed to develop data explaining why they left. Within the scope of policy analysis it would be advantageous to analyze all of the institutional policies that govern the student first year experience and identify what policies are supporting or hindering student persistence and first year retention. Qualitative methods capture student beliefs, assumptions and perceptions which reveal more of the story behind the quantitative data. Additional research could also include a mixed methods longitudinal study to follow the students predicted to be high risk of dropping out.

As suggested in Chapter Four, cluster analysis of the data offers a typology or classification system that can be designed from the students' data creating a "dynamic model capable of changing as the nature of the population itself changes" (Jones & Harris, 1999, p. 274). Such a cluster analysis could then add demographic and predictive variables to better describe the types of students and link such classifications to prevention programs (Jones & Harris, 1999). Not only would a cluster analysis help to develop a model with the intention of describing the data, it would also establish a structure for organizing policies that meet the needs of each unique cohort of students. Just as the predictive variables for the 2008 cohort differed from those derived from the 2007 cohort, each cohort since then has had its own unique set of predictors.

Methods that allow for a changing class profile and distinguishing institutional culture are best suited for the emerging adult population. Tinto's (1987) emphasis on academic and social transition needs of first year students adjusting to college and Arnett's (2004) theory that adolescence goes on much longer and adulthood is beginning later in life, seem to translate into predictive modeling as a moving target. Each changing cohort begins college and there begins a new set of personalities and experiences. "Several pre-college characteristics such as academic achievement represented by ACT or SAT score are strongly linked to first-year grades and persistence. However once college experiences are taken into account, the effects of precollege characteristics and experiences diminish considerably" (Kuh, Kinzie, Cruce, Shoup & Gonyea, 2006, p. 33).

Finally, there are two public health research strands that were raised in Factors 3 and 4 of the data results. Both smoking and familial problem drinkers emerged as

predictors. DeBerard, Spielmans, and Julka (2004) found that smoking emerged as a significant predictor of achievement even after accounting for the influence of other predictors. This not only reasserts the need for greater health promotion and education efforts to reduce smoking because of the long-term health problems, but it appears that smoking is significantly related to escape-avoidance coping behaviors (DeBerard, Spielmans, & Julka, 2004). Similarly, the results of Jeynes' (2002) study indicate that increased frequency of cigarette smoking and being under the influence of alcohol did frequently have an impact on adolescent academic achievement. Considering that only 41.7% of the fall 2008 cohort completed the alcohol survey and these two questions were found to be significant for first year retention, it would be valuable to add at least these two questions to the New Student Questionnaire which has a near 100% completion rate.

Conclusion

The most enduring policy effort is directed at adaptive change, reflects the participative environment that shapes the plan and integrates the goals identified at the student and unit level (Owen & Rodolfa, 2009). Creating a policy framework that reflects the routinely collected data that has not been previously shared or integrated across the campus, and engaging the key institutional stakeholders in designing such policy, is a yet to be realized opportunity for TU. Upon reflection and an examination of the data through the common lens of supporting retention, there is fullness in perspective that did not exist previously. This exercise creates an opportunity for each stakeholder to organize their personal and professional values around the issue and help to frame the resolution. "It is more than a policy directive...It is a carefully reasoned analysis of what

an institution aspires to be and the core values that it embraces” (Hollowell, Middaugh, & Sibowski , 2006, p.13). Institutions that are authentically engaged in a process that is focused on the holistic care of students are better equipped to adapt their people and resources to respond. Carefully orchestrating a climate of care requires that students, faculty, staff, neighbors, parents, and administrators are full participants who understand that they are equally responsible for creating the safe, supportive environment they wish to see. Such a commitment is what distinguishes one institution’s policy statement from another university’s enduring plan. By engaging all critical stakeholders in such a process I believe that our results will be more authentic and meaningful in the future.

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APPENDIX A

New Student Questionnaire Summer 2008

1. Gender
 - a. Male
 - b. Female
2. Age
 - a. 16 or younger b. 17-18
 - c. 19-21
 - d. 22-25
 - e. 26 or older
3. In which class will you be during your first semester at Temple?
 - a. Freshman b. Sophomore c. Junior
 - d. Senior
 - e. Other
4. Is English your native language?
 - a. Yes
 - b. No
5. During the school year, on the average, how many hours do you plan to work (for money) per week?
 - a. None
 - b. 1 to 15 hours c. 16 to 20 hours d. 21 to 25 hours
 - e. More than 25 hours
6. In what kind of residence will you be living during your first semester at Temple?
 - a. University-owned housing (including residence halls)
 - b. Home of parents/relatives
 - c. Your own home or apartment d. Other
7. Where is your permanent home?
 - a. City of Philadelphia
 - b. Suburban Philadelphia
 - c. Pennsylvania, other than suburban Philadelphia d. United States, other than Pennsylvania
 - e. Other country
8. What is your U.S. Military Status?
 - a. No military service
 - b. Active military service c. Veteran
 - d. Reserves or ROTC
 - e. Other

9. What is your best estimate of the total income of your PARENTAL FAMILY during the past year?
 - a. Less than \$20,000
 - b. \$20,000 to \$39,999
 - c. \$40,000 to \$59,999
 - d. \$60,000 to \$79,999
 - e. \$80,000 or more
10. What is your best estimate of YOUR OWN total income during the past year?
 - a. Less than \$2,000
 - b. \$2,000 to \$3,999
 - c. \$4,000 to \$5,999
 - d. \$6,000 to \$7,999
 - e. \$8,000 or more
11. Did you apply for financial aid from Temple for this year?
 - a. Yes, and I received an aid package
 - b. Yes, but I did not receive aid
 - c. Yes, but I have yet to hear about an aid package
 - d. No, but I intend to apply
 - e. No, I will not need financial aid to attend Temple
12. How did the amount of financial aid you received from Temple compare to other schools to which you were admitted?
 - a. Higher than most
 - b. About the same
 - c. Lower than most
 - d. Applied for aid only at Temple
 - e. Did not apply for financial aid
13. Do you have any concern about your ability to finance your college education?
 - a. None (I am confident that I will have sufficient funds)
 - b. Some concern (but I will probably have enough funds)
 - c. Major concern (not sure I will have enough funds to complete college)
14. What was your rating of Temple at the time you applied for admission.
 - a. Temple was my first choice
 - b. Temple was my second choice
 - c. Temple was my third or lower choice
15. What is the highest level of formal education completed by your father?
 - a. Did not graduate from high school
 - b. Graduated from high school
 - c. Some college education
 - d. Graduated from college (a bachelor's degree)
 - e. Postgraduate or professional degree
16. What is the highest level of formal education completed by your mother?
 - a. Did not graduate from high school
 - b. Graduated from high school
 - c. Some college education
 - d. Graduated from college (a bachelor's degree)

- e. Postgraduate or professional degree
17. What was your approximate high school average?
 - a. A b. B+ c. B d. B-
 - e. C+ or lower
 18. What scholastic average do you expect to obtain in college?
 - a. A b. B+ c. B d. B-
 - e. C+ or lower
 19. Scholastically, where did you rank in your high school graduating class?
 - a. Top 10% b. Top 20% c. Top 30% d. Top 50%
 - e. Not among top 50%
 20. In general, how well do you feel that your high school prepared you to do college work?
 - a. Very well b. Fairly well c. Uncertain d. Poorly
 - e. Very poorly
 21. Have you decided on an academic major?
 - a. Yes
 - b. No
 22. Do you consider yourself to be a person who has a disability?
 - a. Yes b. No
 - c. Uncertain
 23. During the school year, on the average, how many hours do you plan to study per week?
 - a. None
 - b. 1 to 15 hours c. 16 to 20 hours d. 21 to 25 hours
 - e. More than 25 hours

Questions 24-27 During high school (grades 9- 12), how many years did you study each of the following subjects? For questions 24 through 27 use the following responses:

- a. None b. One c. Two
 - d. Three
 - e. Four
24. English
 25. Mathematics

26. Foreign Language

27. Natural Sciences

Questions 28- 31 During high school (grades 9- 12), how much did you like each of the following subjects?

For questions 28 through 31 use the following responses:

- a. Liked very much
- b. Liked somewhat
- c. No feeling one way or the other
- d. Disliked somewhat
- e. Disliked very much

28. English

29. Mathematics

30. Foreign Language

31. Natural Sciences

Questions 32 - 38 How important were the following in your decision to go to college?

For questions 32 through 38 use the following responses:

- a. Very important
- b. Somewhat important
- c. Not important

32. I wanted to get a general education.

33. My parents wanted me to go.

34. I wanted to get away from home.

35. I wanted to be able to get a better job.

36. I wanted to learn more about things that interest me.

37. I wanted to prepare myself for graduate or professional school.

38. It seemed like a good thing to do as a transition to work.

Questions 39 - 45 How important were the following in your finding out about or selecting Temple?

For questions 39 through 45 use the following responses:

- a. Very important
 - b. Somewhat important c. Not important
 - d. Does not apply / did not attend
39. Personal call or letter from Temple faculty member or student
 40. High school visit by Temple representative
 41. College Fair
 42. E-mail communication from Temple
 43. Temple's web site
 44. Temple open house or reception
 45. Regular campus visit/tour

Questions 46 - 58 Below are some reasons that might have influenced your decision to attend Temple. How important was each reason in your decision to come here?

For questions 46 through 58 use the following responses:

- a. Very important positive factor
 - b. Somewhat important positive factor c. Not a positive factor
46. Affordable tuition
 47. Temple's size
 48. Social atmosphere
 49. Closeness to home
 50. Location in a large city
 51. Variety of programs available
 52. Reputation of Temple
 53. Reputation of your specific major at Temple
 54. Advice and experience of parents or relatives
 55. Advice and experience of friends

- 56. Meeting students with backgrounds and interests similar to yours
 - 57. Meeting students with backgrounds and interests different from yours
 - 58. Availability of financial aid
-

Questions 59 - 73 What is the chance that you will do the following while you are at Temple?

For questions 59 through 73 use the following responses:

- a. Very good chance
 - b. Some chance
 - c. Very little chance
 - d. No chance
- 59. Change your major field of study
 - 60. Participate in an honors program
 - 61. Be a student leader
 - 62. Work full time while attending college
 - 63. Join a social organization or club
 - 64. Play varsity / intercollegiate athletics
 - 65. Need more than 4 years to complete degree requirements
 - 66. Make close friends
 - 67. Work with a professor on a research project
 - 68. Receive encouragement from family while you're in college
 - 69. Get tutoring help in specific courses
 - 70. Transfer to another college before graduating
 - 71. Be satisfied with Temple University
 - 72. Find a job after college in your chosen field of study
 - 73. Participate in volunteer or community service work

Questions 74- 81 Please indicate your level of agreement with each of the following statements:

For questions 74 through 81 use the following responses:

- a. Definitely agree
- b. Somewhat agree
- c. Neither agree or disagree
- d. Somewhat disagree
- e. Definitely disagree

- 74. Most of my teachers considered me one of the harder workers in their class.
- 75. I find it difficult to keep to a plan of action in my school work.
- 76. I enjoy studying and reading about things on which I am working.
- 77. I know how to manage my time well.
- 78. I am self confident.
- 79. My plans have frequently seemed so full of difficulties that I have had to give them up.
- 80. I am organized and have good study habits.
- 81. I prefer to be independent of others in deciding what I want to do.

APPENDIX B

Alcohol Survey Summer 2008

Pre-Survey

Please read each sentence below carefully, then select the answer that best describes how you feel.

Students And Alcohol

On a scale of 1 to 10 (Disagree to Agree):

1. Alcohol use adversely affects a student's academic success.

1 2 3 4 5 6 7 8 9 10

2. Alcohol use adversely affects the quality of life for other students.

1 2 3 4 5 6 7 8 9 10

Drinking On Your Campus

3. The last time you partied/socialized, how many alcoholic drinks did you have? (If you're a non-drinker, click NONE).

4. Within the last 30 days, if you "partied/socialized, how often did you do the following? (If you're a non-drinker, click NEVER for each item.)

Scale: Always Usually Sometimes Rarely Never

- a) Alternate non-alcoholic with alcoholic beverages.
- b) Determine in advance, not to exceed a set number of drinks.
- c) Choose not to drink alcohol.
- d) Use a designated driver.
- e) Eat before and/or during drinking.
- f) Have a friend let you know when you've had enough.
- g) Keep track of how many drinks you were having.
- h) Pace your drinks to 1 or fewer per hour.
- i) Avoid drinking games.
- j) Drink non-alcoholic beer, punch, etc.

5. If you drink alcohol, within the last year, have you experienced any of the following as a consequence of your drinking? (If you're a non-drinker, click NO for each item).

- a) Physically injured yourself. Yes / No
- b) Physically injured another person. Yes / No
- c) Been involved in a fight. Yes / No
- d) Did something you later regretted. Yes / No
- e) Forgot where you were or what you did. Yes / No
- f) Had someone use force or threat of force to have sex with you. Yes / No

electronic Check-Up To Go (eCHUG):

To start off, please tell us a little bit about yourself by completing the questions below:

Gender? Male / Female

Age? _____years

Weight? _____ pounds

Are you currently taking any prescription medications? Yes / No

What is your ethnic identity? {drop down menu}

Do you belong to a Fraternity or Sorority? Yes / No

Do you play on a college athletic team? Yes / No

What is your student status? College Student / High School Student / Non-Student

Year Level/Class Standing: Not Applicable / Freshman / Sophomore / Junior / Senior / Graduate

Do you live on-campus or in a residence hall? Yes / No

The eCHUG is a short, on-line survey that provides you with an accurate, detailed assessment of your alcohol use. Please fill out the questionnaires that follow and answer all questions honestly. Answering each question accurately will give you realistic feedback regarding your use of alcohol. When completing the e-CHUG, please remember that a "standard drink" is equivalent to 12 ounces of beer, 10 ounces of malt liquor, a 1.5 ounce shot or mixed drink, 5 ounces of wine, or 1 wine cooler.

For the PAST MONTH, please describe a TYPICAL DRINKING WEEK. For each day, fill in the number of STANDARD DRINKS of each type of alcohol you consumed and the NUMBER OF HOURS you drank on that day.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
beer	# drinks						
wine	# drinks						
liquor	# drinks						
hours	# hours						

2. Think of the one occasion during the PAST MONTH where you drank the most. Fill in the number of standard drinks of each type you consumed and the number of HOURS you drank that day.

Max Drinks In One Sitting

beer _____
 wine _____
 liquor _____
 hours _____

3. Think about the number of your BLOOD RELATIVES who are now, or have been in the past, problem drinkers or alcoholics.

parents _____
 brothers/sisters _____
 grandparents _____
 uncles or aunts _____
 cousins _____

4. During the PAST MONTH, how many days did you drive a vehicle shortly after having three or more drinks? _____ days

5. During the PAST MONTH, how many days were you a passenger in a vehicle when a driver had three or more drinks? _____ days

What percent of US College Students (of your gender) drink MORE than you?
 (Enter a number between 0 and 100) _____%

6. How much would you estimate you spend on alcoholic beverages per week? (Please round to the nearest dollar) \$_____ .00 per week

7. After school expenses, how much do money do you have to spend in an average MONTH? (Please round to the nearest dollar) \$_____ .00 per month

8. How often do you have a drink containing alcohol?

Very Seldom Or Never
Once Per Month
Twice Per Month
Twice Per Week
Four Plus Times Per Week

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

Zero To Two
Three Or Four
Five Or Six
Seven To Nine
Ten Or More

10. How often do you have six drinks or more on one occasion?

Never
Less Than Monthly
Monthly
Weekly
Daily

11. How often, during the last year, have you found that you were not able to stop drinking once you had started?

Never
Less Than Monthly
Monthly
Weekly
Daily

12. How often during the last year have you failed to do what was normally expected from you because of drinking?

Never
Less Than Monthly
Monthly
Weekly
Daily

13. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never
Less Than Monthly
Monthly
Weekly
Daily

14. How often during the past year have you had a feeling of guilt or remorse after drinking?

- Never
- Less Than Monthly
- Monthly
- Weekly
- Daily

15. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- Never
- Less Than Monthly
- Monthly
- Weekly
- Daily

16. Have you or someone else been injured as a result of your drinking?

- No
- Yes More Than One Year Ago
- Yes Within The Past Year

17. Has a relative or friend or a doctor or other health worker been concerned about your drinking, or suggested you cut down?

- No
- Yes More Than One Year Ago
- Yes Within The Past Year

18. During the PAST MONTH, how many cigarettes did you smoke on a typical day?
_____cigarettes

19. If you're a smoker, for how many years have you smoked regularly?
_____ years (leave "0" if you do not smoke)

On a scale of 1-10 {1 = Not Important to 10 = Very Important }:

20. How important is it to you to make any change in your personal use of alcohol?

1 2 3 4 5 6 7 8 9 10

21. How confident are you that you are able to make any change in your personal use of alcohol?

1 2 3 4 5 6 7 8 9 10