

University of Nevada, Reno

**Health Behaviors of Undergraduate Students Attending the
University of Nevada, Reno**

A thesis submitted in partial fulfillment
of the requirements for the degree of

Bachelor of Science in Nursing and the Honors Program

by

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Abstract

Generalized research exists on the normative practices of undergraduate students, both nationally and of students attending the University of Nevada, Reno (UNR), but missing from these data is a deeper analysis of specific practices in the areas of general health, mental health, sexual health, drug and alcohol use, and medical service utilization, and how they may relate to an individual's demographic characteristics. Through the adaption of a unique and comprehensive survey tool, and disseminating it amongst undergraduate students on the UNR campus, analyses and comparisons can be made by examining priority health behaviors, perceptions of health, and utilization of healthcare facilities. The results of this study will enhance the understanding of the health practices of undergraduate students attending UNR, in addition to identifying significant trends, barriers to health, at-risk or underserved individuals, and potential gaps in health-related knowledge and use of services within the undergraduate population as a whole, and as they relate to specific demographic characteristics. The results may also hold significant implications regarding the influence and effectiveness of current campus-wide health initiatives and university funded health services in promoting healthy environments and encouraging healthy behaviors within the undergraduate population.

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Chapter 1: Introduction

Background and Significance

Research on the health of college students has been steadily proliferating over the past decade, with the amount of literature published between 2009 and 2011 alone accounting for half of the total amount in existence (Turner & Keller, 2015). A driving force behind the expanding interest in this field is the idea that institutions of higher education have a responsibility to cultivate enriching environments and promote healthy behaviors among students on their campuses (American College Health Association [ACHA], 2012). With a projected 17.9 million undergraduate students attending US colleges and universities in 2017, the campuses of these institutions act as essential access points through which health initiatives can reach large portions of the US population. Initiatives implemented on college campuses also target individuals at an extremely influential period in their lives, providing for substantial impacts that can affect the current and future wellbeing of students (ACHA, 2012; National Center for Education Statistics [NCES], 2016a).

The transition to college often requires students to assume primary responsibility of their own health, which includes making decisions about health behaviors that were previously moderated or made entirely by others (Unwin, Goodie, Reamy, & Quinlan, 2013). That this period is an influential and dynamic nature one in the lives of many college students is further substantiated by research showing that health behaviors established in early adulthood often persist later in life (Naicker, Galambos, Zeng, Senthilselvan, & Colman, 2013; Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008). In addition to the potential for sustainability, trends in service utilization show that

medical facilities on college campuses are becoming an increasingly important source of primary healthcare for individuals in this age group, further emphasizing the extent of the influence effective health initiatives hold on these campuses (Rahn, Pruitt, & Goodson, 2016).

Although individuals within the college-aged population, the majority of whom are aged 18 to 24 (Horn & Carroll, 1996), are generally characterized as being of good health, emerging literature is beginning to infer that just the opposite might be true (Irwin, 2010; Park, Scott, Adams, Brindis, & Irwin, 2014; Stroud, Walker, Davis, & Irwin, 2015). The ever-increasing amount of data on the health of this population have found that young adults have “higher rates of mortality, health damaging behaviors, and chronic conditions including mental health disorders and obesity” than adolescents, that is those under the age of 18 (Irwin, 2010, p. 405). Even though the morbidity and mortality rates of young adults are significantly lower for both acute and chronic cardiovascular, pulmonary, and blood diseases than for their older counterparts (Johnson, Hayes, Brown, Hoo, & Ethier, 2014; National Heart, Lung, and Blood Institute, 2012), individuals within this population often show worse health profiles when compared to those in their late twenties and thirties in terms of specific general, mental, and sexual health practices (Stroud et al., 2015).

Problem Statement

Generalized research exists on the normative practices of undergraduate students on a national scale, as does a limited amount on those of the student population of UNR, with surveys and studies similar to the American College Health Association’s National College Health Assessment-II (ACHA-NCHA-II) providing a substantial amount of data

on the health behaviors of college-aged individuals. The comprehensive nature of these research tools is helpful in identifying broad trends that exist within the college-aged population and allows for easy comparisons of participating colleges and universities to their national counterparts, but these tools often lack the specificity required for a deeper analysis of certain practices in the areas of general health, mental health, sexual health, drug and alcohol use, and medical service utilization. Additionally, the ability to correlate these behaviors to specific demographic characteristics is often lost in the publication of raw data sets. Through the development of a comprehensive survey that utilizes existing data to adapt and expand upon questions drawn from a variety of research and screening tools, this study analyzes and compares priority health behaviors, perceptions of health, and utilization of healthcare facilities. Synthesis of the data provides insight into how different demographic characteristics affect an individual's health perceptions and behaviors, in addition to identifying barriers to optimal student health on the surveyed campus and the existence of underserved or at-risk populations.

Purpose of Study

The purpose of this study is to provide novel information about and enhance understanding of the health practices of undergraduate students attending UNR. This population was chosen because, although a substantial amount of research exists on national trends of undergraduate health behaviors, little research exists specific to students on this campus. Additionally, the literature that does exist provides only a general overview of behavior trends without focusing on specific, priority health behaviors, and how they may be linked to certain demographic characteristics. Focusing on a smaller scope of health behaviors that have been identified as being significant

within this population, and then linking them to demographic information, provides a more complete and thorough analysis. These data were intended to identify significant trends within the surveyed health behaviors and service utilization, in addition to barriers to health and at-risk or underserved individuals within the undergraduate population as a whole and within specific intersectionalities on the UNR campus. The collected data contributes to the existing knowledge regarding the health and health behaviors of students on the UNR campus, and can in turn be utilized to help create or reformulate policies and interventions that seek to promote and enhance the health of undergraduate students. Additionally, the data may have implications regarding the influence and effectiveness of current health initiatives and university-funded medical services in promoting healthy environments and encouraging healthy behaviors within the undergraduate population.

Research Questions

The following research questions will be addressed in this study:

- 1) What significant trends exist within the health behaviors of undergraduate students at UNR, and how do those differ when considered in relation to specific demographic variables?
- 2) Are there at-risk or underserved populations within the total undergraduate population at UNR?
- 3) How do the behaviors of undergraduate students attending UNR compare to national trends?
- 4) What factors may exist as barriers to health on the UNR campus?

Using these questions to guide inquiry and analyses, a broader, deeper understanding of undergraduate health behaviors at UNR can be obtained. The collected data contributes to the existing knowledge, and can ultimately be used to improve the health outcomes of students if it is also utilized to evaluate and guide the formulation of health initiatives on the UNR campus.

Chapter 2: Literature Review

The growing interest in health behaviors of college students has led to a subsequent, rapid growth in the amount of literature published on the subject in recent years (Turner & Keller, 2015). Although individual studies have sought to examine the health behaviors of undergraduate students within the parameters of specific universities or demographic variables, the ACHA_NCHA-II has provided the largest, cumulative data set on these behaviors to date (Rahn et al., 2016). First released in 2000, the survey is conducted biannually in the spring and fall semesters, with the Spring 2016 edition collecting data from 137 public and private universities in the US (ACHA, n.d.-b, n.d.-c). This health assessment tool was created by an interdisciplinary group of college health professionals, and is comprised of over 300 questions covering seven categories of health behaviors including: “(1) health, health education, and safety; (2) alcohol, tobacco, and drugs; (3) sex behavior, perceptions, and contraception; (4) weight, nutrition, and exercise; (5) mental and physical health; (6) impediments to academic performance; and (7) demographics” (ACHA, n.d.-b; Rahn et al., 2016, p. 214). The validity and reliability of the survey have been upheld through analyses of common survey items against similar national surveys like the National College Health Risk Behavior Survey, Harvard School of Public Health 1999 College Alcohol Study (CAS), and United States Department of Justice: The National College Women Sexual Victimization Study 2000 (NCWSV) (ACHA, n.d.-a; Rahn et al., 2016). Data from the ACHA-NCHA-II are widely used to conduct both primary investigations and secondary analyses, making this survey’s impact on the literature on the health of college students very substantial (Rahn et al., 2016).

General Health

Data on the general health practices of college students have highlighted nutrition, exercise patterns, obesity, and sleep deficiencies as key topics affecting the well-being of this population. Regarding nutrition, the 2016 ACHA-NCHA-II found that 7.3% of all undergraduates surveyed reported eating zero servings of fruits and vegetables per day, while only 5.1% met the recommended total of five or more servings per day. The same survey also found that only 48.1% of undergraduates met the recommendations for physical activity, and that 36% qualified as being clinically overweight or obese, according to reported Body Mass Index (BMI) values (ACHA, 2016c). Although Vella-Zarb and Elgar (2009) found that the average student gains only an estimated 3.9 lbs. during the first year of college, weight problems at this age are highly indicative of issues with weight and obesity later in life (Naicker et al., 2013; Nelson et al., 2008). Additionally, the increasing prevalence of obesity within young adult populations warrants attention since obesity is not only a prominent risk factor for numerous cardiovascular diseases and disorders, but is also directly linked to a reduction in quality of life and increased rates of morbidity and premature death (Birmingham, Muller, Palepu, Spinelli, & Anis, 1999; Lee et al., 2010).

Sleep deficiencies are prevalent on college campuses, with the college-aged population appearing to have the greatest affliction of sleep-deprivation of all groups in the US (Forquer, Camden, Gabriau, & Johnson, 2008; Lund, Reider, Whiting, & Prichard, 2010; Pilcher & Walters, 1997; Tsai & Li, 2004). Tsai and Li (2004) found that over 48% of college students reported insufficient sleep times, and that females and freshman reported the poorest sleep patterns of all groups surveyed. Taylor and

Bramoweth (2010) found no significant differences in total sleep time when comparing gender, ethnicity, and class rank, but found that the use of medication and alcohol as sleep aids was a common behavior among the college students surveyed. Lund et al. (2010) found that over 60% of college students surveyed could be categorized as poor-quality sleepers according to the Pittsburgh Sleep Quality Assessment (PSQI), and that the use of prescription, over-the-counter, and recreational psychoactive drugs was prevalent to alter sleep/wake patterns. Of the students surveyed at UNR, 44.1% reported that sleepiness regularly affected daytime activities and 60.7% were interested in receiving information on sleep difficulties (ACHA, 2016a). The importance of consistent sleep patterns and adequate sleep times is evident when the implications of sleep deficiencies regarding both the physical and psychological health of individuals are considered. Trockel, Barns, and Egget (2000) found that sleep habits carry the greatest weight out of all studied health behaviors in predicting academic performance. Additional studies have highlighted mental health, stress levels, academic performance, physiological health, and incidences of risky behaviors and accidents as being some of the daily activities or aspects of an individual's life affected by sleep inadequacies (Forquer et al., 2008; Lund et al., 2010; Pilcher & Walters, 1997).

Insomnia screening tool. Screening tools for sleep deficiencies allow for quick and reliable identification of afflicted individuals, with the Insomnia Severity Index (ISI), the Athens Insomnia Scale (AIS), and the Pittsburgh Sleep Quality Index (PSQI) being some of the most commonly used tools. All three screening tools contain a limited number of questions (ISI 7 items, AIS 8 items, PSQI 19 items), which facilitates the use of these tools in clinical settings where time is often a key consideration. Of the three,

only the ISI and AIS have proven reliable as diagnostic tools for identifying individuals that qualify as having clinical insomnia (Chiu, Chang, Hsieh, & Tsai, 2016). The accuracy of the diagnostic ability, internal consistency, test-retest reliability, and concurrent validity across populations of the ISI and the AIS have been substantiated through numerous studies (Chiu et al., 2016; Morin, Belleville, Belanger, & Ivers, 2011). The greater feasibility of the ISI and AIS due to the limited number of questions is an additional benefit (Chiu et al., 2016). In regards to young adult and adolescent populations, though, the ISI has shown substantial reliability and validity within these populations making it a suitable tool for use within the college-aged population (Bastien, Vallières, & Morin, 2001; Chung, Kan, & Yeung, 2011; Wong et al., 2017).

Mental Health

Mental health issues are a growing concern among college-aged individuals, with increases to already high rates of diseases and disorders being recorded on an international scale (Hunt & Eisenberg, 2010; Wörfel, Gusy, Lohmann, Töpritz, & Kleiber, 2016). Among the many issues studied, depression, anxiety, and high levels of stress are the most commonly reported within this population (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Hunt & Eisenberg, 2010; Unwin et al., 2013; Wörfel et al., 2016). Regarding gender, Eisenberg et al. (2007) found that females had the highest screening rates for major depression and anxiety disorders. Results from the 2016 ACHA-NCHA-II substantiate these claims with reports that 37.5% of undergraduates nationally “felt so depressed that it was difficult to function,” while 59.1% “felt overwhelming anxiety” at some point during the preceding 12 months (ACHA, 2016c, p. 31-32). According to Hunt and Eisenberg (2010), of those students experiencing

symptoms of depression and anxiety, less than half go on to seek care. Eisenberg and Chung (2012) also found the screening, detection, and treatment of depression were fully inadequate within the college-aged population, leading to a higher incidence of disability, relapse, and even suicide. The importance of addressing mental health issues within this population is underlined by reports that 10.2% of undergraduates surveyed at UNR stated that they had seriously considered suicide within the last twelve months, with 2.2% reporting that they did so within the last two weeks (ACHA, 2016a). Trends in both national and university-specific data also show increasing incidences of stress within these populations; highlighting academic, financial, time- or health-related, and self-imposed factors as significant influences (ACHA, 2016a, 2016c; Misra & McKean, 2000).

Depression screening tool. The Patient Health Questionnaire-9 is a nine-item, widely used screening tool for depression that offers reliability, validity, and adequate sensitivity for depression detection through a self-reporting format. The brevity, ease of scoring, and multipurpose use of the tool to detect a wide variety of depressive symptoms are just some of the aspects that make it so appealing (Kroenke, Spitzer, & Williams, 2001; Richardson et al., 2010). Kroenke (2012) highlighted the brevity and ease of use as features that contribute to its use over other depression screening tools like the Beck's Anxiety Inventory and Kessler 6 (K6) for serious psychological distress. Tests of its reliability and validity have proven sufficient across a wide variety of populations as well (Kroenke, 2012; Kroenke et al., 2001; Richardson et al., 2010). Although the psychometrics within college-aged populations have not been widely tested, the literature that does exist on the topic has upheld the tool's reliability and validity with college-aged

individuals (Adewuya, Ola, & Afolabi, 2006; Umegaki & Todo, 2017; Zhang et al., 2013). For example, Granillo (2012) looked at the use of the PHQ-9 among non-Latina and Latina college women and found that the validity was maintained across racial and ethnic differences.

Sexual Health

In regards to sexual activity and practices, college-aged individuals are at an increased risk of experiencing negative outcomes relating to sexual health in comparison to all other age groups (Lechner, Garcia, Frerich, Lust, & Eisenberg, 2013). The Centers for Disease Control and Prevention (2016) found that the highest rates of chlamydia cases were reported among women aged 19 and 20 years, with this number increasing 2.7% for those between the ages of 20 and 24 from 2014 to 2015. Although the number of reported cases of chlamydia among men was lower than that among women, those ages 20 to 24 held the highest rates among all male age groups and saw a substantial increase of 7.8% from 2014 to 2015. The same report found that the highest rates of gonorrhea were reported among individuals, both male and female, aged 20 to 24 years, and that the number of cases among this age group increased 7.2% from 2014 to 2015 (Centers for Disease Control and Prevention [CDC], 2016). The 2016 ACHA-NCHA-II reported that 39% of undergraduate students who engaged in vaginal intercourse within the last 30 days “never” or “rarely” used a condom or protective barrier, and 66% “never” or “rarely” used a condom or protective barrier during anal intercourse (ACHA, 2016b). Additionally, of those reporting contraceptive use during the last experience of vaginal intercourse, 31.5% reported using the withdrawal method, and 17.8% reported using emergency contraception (ACHA, 2016c).

Alcohol and Substance Use

Although a decrease in cigarette use has been seen in recent years among this population (ACHA, 2016c; Park et al., 2014), alcohol and illicit drug use are still highly prevalent activities on US college campuses (Wechsler & Nelson, 2008). Binge drinking, defined by the Harvard School of Public Health College Alcohol Study (CAS) as a five-drink measure for males and a four-drink measure for females, is found to be a common occurrence among college students (Wechsler & Nelson, 2008). The 2016 ACHA-NCHA-II supports these statements finding that nationally 37.5% of undergraduates reported consuming five or more drinks that last time they “partied/socialized” (ACHA, 2016c, p. 18). Because binge drinking behaviors are proven to have significant impacts on, “college students’ academic performance, social relationships, risk taking behaviors, and health,” it is important to gauge the severity of and address these drinking behaviors in campus health initiatives (Wechsler & Nelson, 2008, p. 3). Research on the environmental influences driving alcohol use within this population cites membership in a fraternity or sorority, the availability of low-cost alcohol, easy access to alcohol through social affiliation, an individual’s housing situation, and campus populations with smaller amounts of racial and ethnic diversities as just some factors correlated to increased consumption (Wechsler & Nelson, 2008). Drug and tobacco use are prevalent behaviors affecting the health of college students across the nation as well. The 2016 ACHA-NCHA-II found that nationally, within 30 days of being surveyed, 9.2% of undergraduates had reported using cigarettes, 4.1% using e-cigarettes, and 18.6% using marijuana. Additionally, use of prescription medications that were not prescribed to the

user within the past year ranged from 2.3% for antidepressants, 3.5% for sedatives, 5.35% for pain killers, to 6.5% for stimulants (ACHA, 2016c).

Alcohol use screening tool. Since the trends of alcohol use among college students often align with binge-drinking behaviors, the AUDIT has proven superior to other alcohol screening tools in reliability for this population (DeMartini & Carey, 2012; Dhalla & Kopec, 2007; Olthuis, Zamboanga, Ham, & Van Tyne, 2011). Additionally, the utilization of the empirical guidelines for scoring alongside this tool show possible improvements in the identification of at-risk drinkers within surveyed populations (DeMartini & Carey, 2012). The first three items of the AUDIT pertain to consumption patterns, and are often scored on their own for a faster, briefer way of identifying at-risk drinking related to consumption patterns. The AUDIT-C, the formal name for a survey using only the first three AUDIT questions, has shown reliability and validity in identifying at-risk drinkers, especially related to binge-drinking behaviors when using the cut off scores of 7 for males and 5 for females (DeMartini & Carey, 2012).

Healthcare Service Utilization

Health services on college campus exist to provide both medical and behavioral services to students, with approximately 1,500 facilities operating on college campuses at present (Turner & Keller, 2015). A report on the usage of these services found that 60% of visits were for primary care services, 13% for mental health services, and 9% for vaccinations. The same report also found that utilization of services was sustained across all demographic groups surveyed, which helps bring to light the importance of these services on campuses (Turner & Keller, 2015). Regarding health insurance coverage,

approximately 64% of college students are covered under their parents' plans, 13% by college-sponsored plans, and 9% are uninsured (Unwin et al., 2013).

Overall, the current literature on the topic of college health behaviors provides a broad, solid foundation upon which other research can be built upon. The generalizability of the research is lacking, however, since different colleges and university populations possess distinct characteristics and campus cultures that influence behaviors. Utilizing current data to guide questioning on the health behaviors of UNR undergraduate students will enhance understanding of these practices through the identification of trends and significant patterns on this campus.

Chapter 3: Methodology

Research Design

This research study employs a retrospective cohort design aimed at examining personal perceptions of health, individual healthcare practices, and utilization of healthcare services among undergraduate students at UNR. The variables identified in this study are based on participants' responses to demographic and health-related survey items. The author-developed survey utilized in this study is reproduced in Appendix A.

Sample and Recruitment

Following approval from the UNR Institutional Review Board (IRB), study participants were recruited through population sampling of all undergraduate students enrolled at the university. Eligible participants included full-time and part-time undergraduate students over the age of 18. Potential participants were contacted through an email list provided to the author's thesis advisor by the UNR records department. A priori power analysis (G*Power 3.1.9.2) demonstrated that a sample of at least 197 participants was required to detect a large effect size using goodness of fit contingency tables with an alpha error of 0.05 ($df = 12$). A sample size of 547 was required to detect a medium effect, and 4,918 participants was required to detect a small effect. Given the limited sampling time frame of this study, the goal of the sampling plan was to recruit at least 1,000 eligible participants to allow for potentially invalid participant responses.

Human Subjects Protection

Human subjects were protected through IRB approval of the study prior to administration of the survey. Participants were asked to acknowledge a welcome letter explaining the purpose of the study, the eligibility criteria, and the anonymity of the

survey results, as well as a statement informing the participant that completion of the survey implies informed consent to participate in the study, see Appendix B for a copy of the letter. Collection of survey data occurred online through SurveyMonkey, which allowed for anonymous collection of responses that were encrypted and gathered without IP addresses.

Instrumentation

An author-developed survey was created through the adaption of various health assessment tools and the inclusion of select screening questionnaires commonly utilized in the healthcare setting. The survey consisted of six sections: demographics (questions 1–16), general health (questions 17–25), mental health (questions 26–30), sexual health (questions 31–41), alcohol and substance use (questions 42–57), and healthcare utilization (questions 58–60). The ACHA-NCHA-II was chosen as a primary directional reference for a substantial number of items within each section because of its comprehensive nature, specificity, validity, and reliability with college populations (ACHA, n.d.-a; Rahn et al., 2016). The use of this tool also allows for easy comparison of author-collected data to that collected previously at UNR and nationally.

Screening tools were integrated into the survey to allow for the identification of potential insomnia and depression diagnoses, in addition to the identification of risky drinking behaviors. The tools included were: the Insomnia Severity Index (ISI), the Patient Health Questionnaire-9 (PHQ-9), and the Alcohol Use Disorders Identification Test (AUDIT). Morin et al. (2011) found the psychometrics for the ISI to be Cronbach α of 0.90 and 0.91 for internal consistency, with an 86.1% sensitivity and 87.7% specificity when using a cut off score of 10 within the general population, though a cut off score of

15 was used in this study, as it is the original scoring suggestion. Kroenke (2001) found the internal consistency for the PHQ-9 to be Cronbach α of 0.86 to 0.89, with an 88% sensitivity and specificity for a cutoff score of 10, which was used in this study. Lastly, DeMartini and Kelly (2012) found that a cut off score of 8 for the AUDIT had an 82% sensitivity and 78% specificity. The same study also found that utilizing only the first three items (AUDIT-C) had a sensitivity of 80% and specificity of 88% when using a score of 7 for males, and a sensitivity and specificity of 82% when using a score of 5 for females. In the survey, the ISI is represented by questions 21–25, the PHQ-9 by questions 26–27, and the AUDIT by questions 42–46.

Data Collection Procedure

The author obtained a master list of undergraduate student email addresses (N=16,241) after IRB approval was obtained; see Appendix C for the IRB approval letter. The survey was then distributed to all undergraduate students through Constant Contact starting February 7th, 2017, with a second email sent on February 13th, 2017. Participant responses were collected through Survey Monkey. The survey could be completed via any technological platform with Internet connection. Only five questions, all of which were within the demographic section, required completion. All other questions were optional since some of the topics covered were of a sensitive nature. Ongoing communication was encouraged between the participants and the author once the survey was opened for response collection.

Data Analysis

Data collected through Survey Monkey were analyzed using descriptive and inferential statistics; the STATA 14.0 statistical program was utilized to conduct

statistical analyses. The data analysis included chi square analysis, frequency measures, descriptive statistics, and measures of central tendency. Pearson's chi square analysis was used to compare specific health practices, health-related characteristics, and demographic variables to identify significant relationships within the total and subsets of the total undergraduate population. Means, standard deviations, and medians were calculated for questions that dealt with continuous values, like age and number of sexual partners, in addition to being calculated for the total numerical scores collected from the Insomnia Severity Index (ISI), the Patient Health Questionnaire-9 (PHQ-9), and Alcohol Use Disorders Identification Test (AUDIT) screening tools. The ISI contained seven items, each of which had five answer choices with scored values of 0 to 4. Scores from each of the seven questions were added to calculate the participant's cumulative total, which was then compared to an established scoring range to determine the severity of sleep deficiencies. The PHQ-9 contained ten items, each of which had four answer choices. Scoring for the first nine items assigned each answer choice with a value of 0 to 3. Scores were added from the first nine items to calculate the participant's cumulative total, which was then compared to an established range to determine depressive symptom severity. The last screening tool used, the AUDIT, contained 10 items, with five answer choices scored 0 to 4. Scores from all of the items were added to calculate the participant's total and compare it to an established range to determine riskiness of drinking behaviors.

Budget and Funding

Monetary funds to support this study were provided by the author and by the UNR Office of Undergraduate Research through the Nevada Honors Undergraduate

Research Award. Funds were spent on subscriptions to Survey Monkey, Costant Contact, and for a temporary license for STATA software.

Chapter 4: Analysis

This study aimed to enhance understanding of the health practices of undergraduate students attending UNR through the identification of significant trends, at-risk or underserved individuals, and potential gaps in health-related knowledge and use of services. In this chapter, descriptive findings in each of the health-related areas covered in the survey are presented, with an emphasis on significant trends or patterns of behaviors and how they compare to existing university-specific and national data. These trends are then analyzed and compared against other trends and variables to identify underlying relationships or commonalities that may exist. Additional trends or patterns are identified, in addition to possible at-risk or underserved populations and potential barriers to health. The data collected for each of the items can be found alongside the full survey in Appendix A.

Description of Sample

Population sampling was used to collect the data for this study. After obtaining IRB approval, an introductory letter that outlined the purpose, requirements, and guidelines for the study was developed and embedded in an email that also contained a link to the electronic survey. This email was disseminated via Survey Monkey to a total of 16,241 undergraduate students attending UNR on February 7, 2017. A second email including the same introductory letter and link to the electronic survey was sent out on February 13, 2017 only to those students that had not opened the survey link, the second group included 14,850 students. By February 18, 2017, a total of 2,057 responses were collected. Analysis of the responses led to the omission of eight participants because they

did not meet the study's criterion of being over the age of 18, meaning that analyses were carried out with $N=2,049$.

Demographics

The first section of the survey gathered information about participants' demographics. The specific demographics collected included: age, sex assigned at birth, gender identity, sexual orientation, ethnicity/race, enrollment status at UNR, year in school, college or school of major, grade point average (GPA), participation in organized college athletics, membership in social fraternity or sorority, and veteran status.

Age. The ages of participants ranged from 18 to 67 years old, with a mean age of 21.6 ($SD=5.56$) and a median age of 20. The majority of participants were 18 to 20 years old, making up 57.2% ($n/N=1,171/2,049$) of responses. The next highest frequency were participants aged 21 to 24, making up 30.5% ($n/N=624/2,049$), and those 25 and older at 12.4% ($n/N=254/2,049$). These frequencies were similar to those collected from the Spring 2016 ACHA-NCHA-II conducted nationally and at UNR (see Appendix D, Table D1 for comparisons).

Sex. The majority, 66% ($n/N=1,353/2,049$), of participants identified as being female at birth, while 34% ($n/N=696/2,049$) identified as being male at birth. These frequencies were also similar to those collected from the Spring 2016 ACHA-NCHA-II conducted nationally and at UNR (see Appendix D, Table D2 for comparisons).

Gender identity. Of the participants that responded to the gender identity question, the following frequencies were collected: 64.4% ($n/N=1,319/2,047$) identified as women, 33.2% ($n/N=680/2,047$) as men. In total, participants that self-identified as a gender other than male or female made up 2.3% ($n/N=48/2,047$) of responses. Similar to

those for age and sex, the survey results for gender identity were in keeping with those collected from the Spring 2016 ACHA-NCHA-II conducted nationally and at UNR (see Appendix D, Table D3 for comparisons).

For clarification, unless otherwise stated, any further mention of *female(s)* and *male(s)* will in reference to the participant's sex at birth, not with the participant's gender identity. In certain cases a *non-binary* demographic group, that includes participants who self-identified as a gender other than woman or man, or whose gender identity was not consistent with their indicated sex at birth, will be referenced alongside *woman/women* and *man/men*.

Sexual orientation. The majority of survey participants identified as straight/heterosexual at 84.5% ($n/N=1,728/2,046$) with the second largest group identifying as bisexual at 6.7% ($n/N=138/2,046$). To facilitate data analysis, an LGBTQQ demographic group was created from the responses collected, combining participants identifying as lesbian, gay, bisexual, transgender (or non-binary identification), queer, and questioning. The creation of this group was based on responses to both the gender identity and sexual orientation questions, resulting in 83.9% ($n/N=1,716/2,046$) of the participants identifying as straight/heterosexual and 16.1% ($n/N=330/2,046$) as LGBTQQ.

Ethnicity/race. The majority of participants, 65.4% ($n/N=1,340/2,049$), identified as white or Caucasian; the second largest group identified as Hispanic or Latino/a at 14.2% ($n/N=291/2,049$). The remaining frequencies in descending order were: Asian or Pacific Islander 8.9% ($n/N=182/2,049$), biracial and multi-racial 6.3% ($n/N=129/2,049$), Black or African American 2.7% ($n/N=55/2,049$), and other 2.54% ($n/N=52/2,049$).

Academics. Regarding enrollment status at UNR in Fall 2016 86.2% ($n/N=1,763/2,049$) of participants were full time (enrolled in 12 credits or more), 7.5% ($n/N=153/2,049$) were parttime (11 credits or less), and 6.3% ($n/N=129/2,049$) were not enrolled at UNR.

Those who identified as first-year undergraduates made up 27.6% ($n/N=566/2,049$) of responses, second-year 21.3% ($n/N=436/2,049$), third-year 22.9% ($n/N=470/2,049$), fourth-year 17.5% ($n/N=359/2,049$), and fifth-year plus undergraduates 10.6% ($n/N=218/2,049$). These frequencies, representing only those who participated in the survey, are very similar to those of UNR as a whole. Of the 17,794 undergraduate students attending UNR in Fall of 2016, 25.9% were freshmen, 21.6% sophomores, 22.7% juniors, 28.6% seniors, and 1.2% second bachelor degrees (UNR, 2016). Table 1 presents the distribution of college majors.

Table 1

Distribution by College/School of Participants' Majors

College/School of Major	Frequency (%)
Undeclared	49 (2.4%)
College of Agriculture, Biotechnology, and Natural Resources	147 (7.2%)
College of Business	235 (11.5%)
College of Education	121 (5.9%)
College of Engineering	261 (12.7%)
College of Liberal Arts	358 (17.5%)
College of Science	303 (14.8%)
Division of Health Sciences	456 (22.3%)
Reynolds School of Journalism	47 (2.3%)
Dual-majoring in Two or More Colleges/Schools	72 (3.5%)
Total	2,049 (100%)

Cumulative GPAs were collected as numerical values, then organized into the following categories: A (3.7 to 4.0), B (2.7 to 3.69), C (1.7 to 2.69), D/F (1.69 or below).

The GPA mean was 3.33 ($SD=0.51$) and the median was 3.4. Of the 2,003 responses to this question, 30.1% ($n=603$) reported an A average, 59.6% ($n=1,193$) a B average, 9.4% ($n=189$) a C average, and 0.9% ($n=18$) a D/F average.

Other. Other significant characteristics included in the survey were affiliation with sorority and fraternity life, involvement in organized athletics, and status as a veteran. Of participants, 13.7% ($n/N=281/2,045$) were a part of a social sorority or fraternity and 14.8% ($n/N=302/2,041$) reported involvement in varsity, club, intramural, or other sports. A total of 63 participants reported being current or past members of the United States Armed Services, with 1.2% of all participants being involved in the National Guard/Reserve ($n/N=24/2,043$), and 1.9% reporting active duty ($n/N=39/2,043$).

General Health

The second section of the survey covered a variety of topics relating to participants' general health practices. Of the topics covered, body mass index, flu immunizations, and sleep patterns proved the most significant.

Body mass index. Participants' height and weight were collected to calculate Body Mass Indexes (BMIs) with the following formula: $(\text{weight in pounds} / [\text{height in inches}]^2) \times 703$. The values were then compared to the suggested ranges set forth by the CDC (2015) of: underweight (18.5 and below), normal/healthy weight (18.5 to 24.9), overweight (25.0 to 29.9), and obese (30.0 and above). Before looking at the data from this study, it is important to note that BMI is not always the most accurate representation of body fatness. Persons with high BMIs are very likely to have high body fat measurements, but these results can also be influenced by high lean body mass (muscles and bones) (CDC, 2015).

In this study, the mean BMI was 24.6 ($SD=5.26$) and the median was 23.4. Of the 1,966 calculated BMIs, 57.7% ($n=1,135$) of participants were categorized as having a healthy weight, while 5.4% ($n=107$) were below and 36.8% ($n=724$) were above the established healthy range. A large portion of those considered above a healthy weight fell within the “overweight” range, meaning only 12.7% ($n/N=249/1,966$) of all BMIs were in the obese range. Comparisons of calculated BMIs and perceptions of weight showed that students were well in-tune with where they fell in terms of weight categories ($X^2=1.1e+03, p<0.05$). The percentage of UNR students scoring over 25, and thereby classifying as overweight, was similar to those found in other studies of college students and to national trends (Desai, Miller, Staples, & Bravender, 2008; Vargas, Flores, & Robles, 2014).

More males than females were over the recommended healthy weight, with 43.1% ($n/N=292/677$) of males and 33.5% ($n/N=432/1,289$) of females having BMIs above 24.9. Additionally, more females were underweight at 6.7% ($n/N=86/1289$), with only 3.1% ($n/N=21/677$) of males having BMIs below 18.5 ($X^2=24.35, p<0.05$). Those aged 25 and older had the highest percentage of BMIs over the recommended healthy weight at 58.1% ($n/N=139/239, X^2=62.61, p<0.05$), in addition to those that identified as fifth year plus undergraduate students at 49% ($n/N=102/208, X^2=23.64, p<0.05$). BMI percentages among the different ranges were similar between LGBTQQ and straight/heterosexual individuals ($X^2=26.54, p<0.05$).

Interestingly, undergraduates who reported an average GPA of an A or B had better reported BMIs than those in the C and D/F categories. 30% of A students ($n/N=177/590$) and 37.7% of B students ($n/N=433/1,148$) had BMIs that were considered

over a healthy weight, while 50.8% of C students ($n/N=93/183$) and 53.3% of D/F students ($n/N=8/15$) were considered over a healthy weight ($X^2=31.18, p<0.05$).

Additionally, the subset of married students had the highest percentage of individuals over the recommended healthy BMI at 56.7% ($n/N=60/107$), compared to 39.4% ($n/N=403/1,023$) of single undergraduates and 31.1% ($n/N=259/834$) of those in a relationship who were considered overweight or obese ($X^2=33.69, p<0.05$).

Flu immunizations. Of the 2,025 undergraduates surveyed on flu immunizations, 64.9% ($n=1,315$) had not received a flu shot within the last 6 months, meaning that only 35.1% ($n=710$) were immunized during the Fall 2016 semester. Those over the age of 25 reported the highest percentage of flu immunizations at 42.5% ($n/N=107/252$), while only 34.9% ($n/N=404/1,158$) of 18 to 20 year olds and 32.4% ($n/N=199/615$) of 21 to 24 year olds were immunized ($X^2= 8.05, p<0.05$). Women had the highest rate of immunizations of all of the gender identities with 37.1% ($n/N=486/1,309$) being vaccinated, while only 31.7% ($n/N=212/668$) of men and 25% ($n/N=12/48$) non-binaries were vaccinated ($X^2=7.83, p<0.05$). Interestingly, participants' year in school presented differing frequencies, with first- and fourth-year undergraduate students having the highest immunizations rates at 39.6% ($n/N=221/558$) and 39.3% ($n/N=139/354$), respectively. All other years had immunization rates of 32% or below ($X^2=14.71, p<0.05$). Comparisons by the college or school of the participants' major showed that undeclared and Division of Health Sciences students had the highest rates of immunization at 51% ($n/N=25/49$) and 48.5% ($n/N=220/454$), while Reynolds School of Journalism and College of Education undergraduate students had the lowest rates at 19.2% ($n/N=9/47$) and 21.9%

($n/N=26/119$, $X^2=76.81$, $p<0.05$). See Table 2 for comparisons of all colleges and schools.

Table 2

Flu Immunizations by College/School of Participants' Majors

College/School of Major	Received Flu Shot in Last 6 Months		Row Totals
	Yes	No	
Undeclared	25 (51%)	24 (49%)	49 (100%)
College of Agriculture, Biotechnology, and Natural Resources	48 (33.1%)	97 (66.9%)	145 (100%)
College of Business	66 (28.5%)	166 (71.6%)	232 (100%)
College of Education	26 (21.9%)	93 (78.2%)	119 (100%)
College of Engineering	66 (25.8%)	190 (74.2%)	256 (100%)
College of Liberal Arts	111 (31.4%)	242 (68.6%)	353 (100%)
College of Science	119 (39.9%)	179 (60.1%)	298 (100%)
Division of Health Sciences	220 (48.5%)	234 (51.5%)	454 (100%)
Reynolds School of Journalism	9 (19.2%)	38 (80.9%)	47 (100%)
Dual-majoring in Two or More Colleges/Schools	20 (27.8%)	52 (72.2%)	72 (100%)

Note. $X^2=76.81$, $p<0.05$. Numbers in parentheses indicate row percentages.

Analysis of immunization rates against undergraduates' GPAs showed an interesting trend in that as GPA decreased, so did the rate of flu immunization ($X^2=10.35$, $p<0.05$); see Table 3.

Table 3

Flu Immunizations by GPA

GPA	Received Flu Shot in Last 6 Months		Row Totals
	Yes	No	
A	234 (39%)	366 (61%)	600 (100%)
B	410 (34.8%)	768 (65.2%)	1,178 (100%)
C	51 (27.3%)	136 (72.7%)	187 (100%)
D/F	4 (22.2%)	14 (77.8%)	18 (100%)

Note. $X^2=10.35$, $p<0.05$. Numbers in parentheses indicate row percentages.

Sleep patterns. The Insomnia Severity Index (ISI) was utilized to analyze participants' sleep patterns and deficiencies. The score ranges included for this 7-item tool are: no clinically significant insomnia (score 0 to 7), subthreshold for insomnia (8 to 14), clinical insomnia of moderate severity (15 to 21), and severe clinical insomnia (22 to 28). A cut off score of 15 was used to analyze sleep deficiency severity and identify likely clinical insomnia diagnoses. Study results showed a mean score of 5.43 ($SD=6.81$) with a median of 0. These are significantly lower than previous studies among college students (e.g. $M=8.84$, $SD=4.69$; $M=7.13$, $SD=5.10$) (Cukrowicz et al., 2006; Nadorff, Nazem, & Fiske, 2011). Of the 1,163 undergraduate responses received, 12.73% ($n=148$) qualified as having clinical insomnia of either a moderate or severe nature. Of the undergraduates surveyed, women had higher overall ISI scores than men and non-binary students did; see Table 4 for percentages. Data trends also showed that, as the perceptions of overall health decreased, the percentage of ISI scores above 15 within each category increased ($X^2=44.21$, $p<0.05$).

Table 4

ISI by Gender Identity

Gender Identity	No Clinically Significant Insomnia	Subthreshold for Insomnia	Moderate Severity Clinical Insomnia	Severe Clinical Insomnia	Row Totals
Woman	413 (55.8%)	223 (30.1%)	92 (12.4%)	12 (1.6%)	740 (100%)
Man	263 (67.1%)	88 (22.5%)	37 (9.4%)	4 (1%)	392 (100%)
Non-binary	16 (51.6%)	12 (38.7%)	3 (9.7%)	0 (0%)	31 (100%)

Note. $X^2=15.85$, $p<0.05$. Numbers in parentheses indicate row percentages.

Those who identified as LGBTQQ also had significantly higher ISI scores than their straight/heterosexual (and binary gender) counterparts, with 23.68% ($n/N=45/190$)

of LGBTQQ students scoring above a 15, while only 10.6% ($n/N=103/972$) of straight/heterosexual students fell within the insomnia diagnosis range ($X^2= 24.49$, $p<0.05$). Comparisons of GPA and ISI score also showed significant trends, reflected in Table 5, in that students with lower GPAs often scored higher on the ISI than did those with a higher GPA ($X^2= 23.20$, $p<0.05$).

Table 5

ISI by GPA

GPA	No Clinically Significant Insomnia	Subthreshold for Insomnia	Moderate Severity Clinical Insomnia	Severe Clinical Insomnia	Row Totals
A	234 (66.9%)	82 (23.4%)	31 (8.9%)	3 (0.9%)	350 (100%)
B	395 (58.7%)	186 (27.6%)	83 (12.3%)	9 (1.3%)	673 (100%)
C	46 (46%)	37 (37%)	13 (13%)	4 (4%)	100 (100%)
D	5 (38.5%)	5 (38.5%)	3 (23.1%)	0 (0%)	13 (100%)

Note. $X^2= 23.20$, $p<0.05$. Numbers in parentheses indicate row percentages.

Mental Health

The third section of the survey covered a variety of topics relating to participants' mental health statuses and practices, including depression, stress, and anxiety.

Depression. The Patient Health Questionnaire-9 (PHQ-9) was utilized to identify and analyze depressive symptoms in the undergraduate population surveyed. The scoring ranges used for the tool indicated depression severity and included: minimal depression (score 1 to 4), mild depression (5 to 9), moderate depression (10 to 14), moderately severe depression (15 to 19), and severe depression (20 to 27). A cut-off score of 10 was used to separate positive and negative screening for likely depression diagnoses.

The mean score for the PHQ-9 among UNR undergraduates was 6.14 ($SD=5.30$) with a median of 5. These values were higher than all but one other study involving undergraduate students (e.g. $M=7.7, SD=5.1$; $M=5.38, SD=3.78$; $M=2.22, SD=2.5$), and higher than those collected from use of the PHQ-9 in general populations (e.g. $M=3.30, SD=3.65$; $M=2.3, SD=3.3$; women $M=3.1, SD=3.5$; men $M=2.7, SD=3.5$) (Adewuya et al., 2006; Hinz et al., 2016; Kocalevent, Hinz, & Brähler, 2013; Urasaki et al., 2009; Zhang et al., 2013). Of the 1,933 undergraduates surveyed, 21.5% ($n=416$) screened positive for clinical depression, 13.4% ($n=259$) presented with moderate depression, 5.2% ($n=101$) with moderately severe depression, and 2.9% ($n=56$) with severe depression. A larger percentage of the female population, 23.2% ($n/N=289/1,247$), screened positive for clinical depression than the male population, 16.3% ($104/639$), but the highest percentage was seen in non-binary population with 48.9% ($n/N=23/47$) presenting as clinically depressed ($X^2= 33.35, p<0.05$). Similarly, 44.8% ($n/N=142/317$) of the LGBTQQ population had a positive screening for clinical depression, while only 17% ($n/N=274/1,615$) of straight/heterosexuals did ($X^2= 121.46, p<0.05$).

Undergraduates in the age groups of 18 to 20 and 21 to 24 had slightly higher percentages of individuals with positive screenings, 23.3% ($n/N=259/1,107$) and 20.3% ($n/N=118/582$), than the 25 and over age group, whose positive screen percentage was 16% ($n/N=39/244$) ($X^2= 7.27, p<0.05$). When comparing undergraduates by ethnicity/race, bi-racial and multi-racial individuals had the highest percentage of positive screenings at 34.96% ($n/N=43/123$), African Americans had the second highest percentage with 32% ($n/N=16/50$) of the individuals screening positive for clinical depression ($X^2= 21.70, p<0.05$). Of the schools and colleges, 39.1% ($n/N=27/69$) of dual-

majors, 30.7% ($n/N=105/342$) of College of Liberal Arts, and 28.9% ($n/N=13/45$) of undeclared undergraduates had positive depression screenings. The lowest incidence of positive screenings was seen in College of Education students at 11.5% ($n/N=13/113$) and Reynolds School of Journalism students at 14% ($n/N=6/43$) ($X^2= 46.29, p<0.05$).

Considering undergraduates' PHQ-9 scores and their description of overall health, it was found that, as the quality of health described decreased, the percentage of those screening positives for depression increased. Of those who reported general health perceptions of "excellent," only 3.8% ($n/N=9/237$) had positive screenings. Conversely, of those who reported perceptions of "fair" and "poor," 54.1% ($n/N=93/172$) and 75% ($n/N=21/28$) had positive screenings ($X^2= 233.75, p<0.05$). This finding suggests that a significant correlation may exist between depression severity and perceptions of health on the UNR campus.

Of the 416 participants that screened positive for clinical depression, only 38.5% ($n=160$) also had a previous depression diagnosis; 61.5% ($n=256$) did not ($X^2= 156.47, p<0.05$). Additionally, of the undergraduates with a definitive diagnosis of clinical depression, only 46.8% ($n/N=160/342$) screened positive through the PHQ-9. One conclusion that may be drawn from this finding, given the validity and reliability of the PHQ-9, is that 53.2% ($n/N=182/342$) of those with a definitive, previously made depression diagnosis were asymptotic and/or well-controlled at the time of the survey ($X^2= 156.47, p<0.05$).

Of the 143 undergraduates that screened positive for clinical insomnia, 67.1% ($n=96$) also screened positive for clinical depression, while only 16.5% ($n/N=162/982$) of those with no insomnia diagnoses scored a ten or above on the PHQ-9 ($X^2= 181.08,$

$p<0.05$). In fact, as the severity of insomnia increased, so did the percentage of those screening positive for depression; see Table 6.

Table 6

PHQ-9 and Severity of Insomnia

Severity of Insomnia Based on ISI Score	Score on PHQ-9		Row Totals
	No Depressive Symptoms (9 or below)	Depressive Symptoms (10 or above)	
No Clinically Significant Insomnia	634 (94.1%)	40 (5.9%)	674 (100%)
Subthreshold for Insomnia	186 (60.4%)	122 (39.6%)	308 (100%)
Moderate Severity Clinical Insomnia	45 (35.2%)	83 (64.8%)	128 (100%)
Severe Clinical Insomnia	2 (13.3%)	13 (86.67%)	15 (100%)

Note. $X^2=320.34$, $p<0.05$. Numbers in parentheses indicate row percentages.

An additional data trend existed between PHQ-9 scores and marijuana use. As the screened severity of depression increased, so did the percentage of undergraduates within each range that reported marijuana use within the last 30 days; see Table 7 for comparison.

Table 7

PHQ-9 and Marijuana Use

PHQ-9 Score Interpretation	Marijuana Use		Row Totals
	Have Used Within the Last 6 Months	Have Not Used Within the Last 6 Months	
Minimal Depression	191 (22.2%)	670 (77.8%)	861 (100%)
Mild Depression	147 (25.7%)	426 (74.4%)	573 (100%)
Moderate Depression	72 (28.9%)	177 (71.1%)	249 (100%)
Moderately Severe Depression	31 (31.3%)	68 (68.7%)	99 (100%)
Severe Depression	23 (41.8%)	32 (58.2%)	55 (100%)

Note. $X^2=16.03$, $p<0.05$. Numbers in parentheses indicate row percentages.

Additionally, of those who reported use of tobacco products, 33.3% ($n/N=51/153$) screened positive for depression, while positive screenings were only seen in 20.9% ($n/N=352/1,685$) of non-tobacco using undergraduates ($X^2= 12.69, p<0.05$).

Trends in positive screenings in relation to levels of anxiety and stress showed that as levels of anxiety and stress increased, so did the percentage of those scoring above 10, and thus screening positive, within each range/frequency amount; see Table 8 and Table 9 for comparison.

Table 8

PHQ-9 and Anxiety Frequency

Frequency of Experiencing a High Level of Anxiety	Score on PHQ-9		Row Totals
	No Depressive Symptoms (9 or below)	Depressive Symptoms (10 or above)	
Never	169 (98.3%)	3 (1.7%)	172 (100%)
Very Rarely	333 (95.7%)	15 (4.3%)	348 (100%)
Rarely	264 (88.9%)	33 (11.1%)	297 (100%)
Occasionally	494 (81.5%)	112 (18.5%)	606 (100%)
Frequently	191 (56.9%)	145 (43.2%)	336 (100%)
Very Frequently	66 (37.9%)	108 (62.1%)	174 (100%)

Note. $X^2=385.73, p<0.05$. Numbers in parentheses indicate row percentages.

Table 9

PHQ-9 and Stress Levels

Overall Level of Stress	Score on PHQ-9		Row Totals
	No Depressive Symptoms (9 or below)	Depressive Symptoms (10 or above)	
No Stress	26 (100%)	0 (0%)	26 (100%)
Less Than Average Stress	183 (95.3%)	9 (4.7%)	192 (100%)
Average Stress	713 (87.8%)	99 (12.2%)	812 (100%)
More Than Average Stress	531 (70%)	228 (30%)	759 (100%)
Tremendous Stress	64 (44.4%)	80 (55.6%)	144 (100%)

Note. $X^2=212.56, p<0.05$. Numbers in parentheses indicate row percentages.

Stress. Of the 1,934 undergraduates surveyed on stress levels, the majority, 42% ($n=812$), reported experiencing an “average” amount of stress within the last 6 months. 39.3% ($n=145$) reported experiencing “more than average” levels of stress and 7.5% ($n=145$) reported “tremendous stress levels”. These frequencies were lower than national averages from the ACHA-NCHA-II, though the time frame for the national percentages asked about the previous 12 (rather than 6) months (ACHA, 2016b).

Women reported the highest levels of “more than average stress” at 43% ($n/N=537/1,248$) and non-binary undergraduates reported the highest levels of “tremendous stress” at 12.8% ($n/N=6/47$, $X^2=81.78$, $p<0.05$) in terms of gender. Biracial and multi-racial students experienced the highest percentage of “tremendous stress” at 13.8% ($n/N=17/123$), with the next highest being the group identifying as “other” at 8% ($n/N=4/50$, $X^2=44.77$, $p<0.05$). Of UNR colleges and schools, students within the College of Liberal Arts experienced the highest percentage of “tremendous stress” at 11.4% ($n/N=39/343$), while students within the Reynolds School of Journalism experienced the lowest percentage of “tremendous stress” at 2.3% ($n/N=1/43$, $X^2=67.61$, $p<0.05$). Table 10 shows percentages across all colleges and schools.

In terms of year in school, reported rates of stress were similar across all ranges ($X^2= 51.05$, $p<0.05$). Additionally, of 144 undergraduates who screened positive for insomnia, 29.9% ($n/N=43/144$) also experienced “tremendous stress” levels within the last 6 months, whereas only 5.3% ($n/N=52/982$) of those that did not screen positive reported the same high levels of stress ($X^2= 123.89$, $p<0.05$). Comparisons of stress levels against GPA and age proved insignificant ($X^2= 10.35$, $p=0.59$; $X^2= 12.25$, $p=0.14$).

Table 10

Stress Level by College/School of Participants' Major

College/School of Major	No Stress	Less than Average Stress	Average Stress	More than Average Stress	Tremendous Stress	Row Totals
Undeclared	0 (0%)	8 (17.8%)	22 (48.9%)	12 (26.7%)	3 (6.7%)	45 (100%)
College of Agriculture, Biotechnology, and Natural Resources	1 (0.7%)	10 (7.2%)	59 (42.5%)	56 (40.3%)	13 (9.4%)	139 (100%)
College of Business	5 (2.2%)	33 (14.8%)	95 (42.6%)	77 (34.5%)	13 (5.8%)	223 (100%)
College of Education	2 (1.8%)	6 (5.3%)	52 (46%)	47 (41.6%)	6 (5.3%)	113 (100%)
College of Engineering	4 (1.6%)	37 (15%)	100 (40.7%)	83 (33.7%)	22 (8.9%)	246 (100%)
College of Liberal Arts	2 (0.6%)	21 (6.1%)	142 (41.4%)	139 (40.5%)	39 (11.4%)	343 (100%)
College of Science	6 (2.1%)	29 (10.3%)	119 (42.4%)	108 (38.4%)	19 (6.8%)	281 (100%)
Division of Health Sciences	3 (0.7%)	35 (8.1%)	180 (41.7%)	187 (43.3%)	27 (6.3%)	432 (100%)
Reynolds School of Journalism	3 (7%)	4 (9.3%)	18 (41.9%)	17 (39.5%)	1 (2.3%)	43 (100%)
Dual-majoring in Two or More Colleges/Schools	0 (0%)	9 (13%)	25 (36.2%)	33 (47.8%)	2 (2.9%)	69 (100%)

Note. $X^2=67.61$, $p<0.05$. Numbers in parentheses indicate row percentages.

Anxiety. Undergraduates were asked how often they experienced an overwhelming sense of anxiety within the last 6 months; 26.4% ($n/N=510/1,934$) of all respondents reported “frequent” to “very frequent” occurrences. Responses to each frequency can be found in Table 11.

Table 11

Distribution of Anxiety Frequency

Frequency of Experiencing Overwhelming Anxiety	Frequency (%)
Never	172 (8.9%)
Very Rarely	348 (18%)
Rarely	297 (15.4%)
Occasionally	606 (31.3%)
Frequently	336 (17.4%)
Very Frequently	174 (9.1%)
Total	1,934 (100%)

In terms of students' gender identities, women had the highest percentage of "very frequent" occurrences at 11.4% ($n/N=144/1,248$), while non-binary students had the highest percentage of "frequent" occurrences at 29.8% ($n/N=14/47$). Overall, men had the lowest frequencies of anxiety ($X^2=112.50, p<0.05$). Among the LGBTQQ cohort, experiences of tremendous anxiety occurred "frequently" for 28.4% ($n/N=90/317$) of individuals, and "very frequently" for 14.2% ($n/N=45/317$). A significant trend appeared when comparing these values to those within the straight/heterosexual community. Doing so showed that the percentages for "frequent" and "very frequent" occurrences of tremendous anxiety levels were about twice as high within the LGBTQQ cohort as in the straight/heterosexual group, with only 15.2% ($n/N=246/1,616$) of straight/heterosexual individuals experiencing tremendous anxiety "frequently" and 8% ($n/N=129/1,616$) "very frequently" ($X^2=62.21, p<0.05$).

Similar to high levels of stress, the highest percentage of "very frequent" tremendous anxiety experiences, 13% ($n/N=16/123$), occurred within the biracial or multi-racial group of students, 22% ($n/N=27/123$) of whom reported "frequent"

experiences. Unlike high stress levels, though, African American students had the next highest at percentage of “very frequent” and “frequent” experiences of tremendous anxiety at 10% ($n/N=5/50$) and 24% ($n/N=12/50$, $X^2= 51.33$, $p<0.05$). In comparing positive screenings for insomnia and anxiety levels, data trends also showed that, of those screened positive for clinical insomnia, 38.2% ($n/N=55/144$) reported “very frequent” experiences of tremendous anxiety and 22.3% ($n/N=33/144$) reported “frequent” experiences. Within the group of students reporting little to no sleep deficiencies, only 6.3% ($n/N=62/982$) reported experiencing “very frequent” occurrences of tremendous anxiety and 16.6% ($n/N=163/982$) reported “frequent” occurrences ($X^2= 160.89$, $p<0.05$); see Table 12 for all frequencies.

Table 12

Anxiety Frequency and Positive ISI Screening

ISI Screening	Frequency of Tremendous Anxiety Experiences Within the Last 6 Months						Row Totals
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	
Positive for Clinical Insomnia	5 (3.5%)	5 (3.5%)	8 (5.6%)	38 (26.4%)	33 (22.9%)	55 (38.2%)	982 (100%)
Negative for Clinical Insomnia	101 (10.3%)	188 (19.1%)	163 (16.6%)	305 (31.1%)	163 (16.6%)	62 (6.3%)	144 (100%)

Note. $X^2=160.89$, $p<0.05$. Numbers in parentheses indicate row percentages.

Sexual Health

Questions regarding sexual health behaviors covered sexual practices, barrier usage, contraception usage, STI and HIV testing, and self-examination rates. The mean number of sex partners within the last 6 months was found to be 1.21 ($SD=1.60$) and the

median was 1. These values were similar to values reported nationally (ACHA, 2016b).

Table 13 depicts the total distribution of sexual partners by categories.

Table 13

Distribution of Sexual Partners

Sexual Partners Within the Last 6 Months	Frequency (%)
No Sexual Partners	534 (28.9%)
1	934 (50.5%)
2 to 3	265 (14.3%)
4 to 5	75 (4.1%)
6 or more	43 (2.3%)
Total	1,851 (100%)

Of the UNR undergraduates surveyed, 63.3% ($n/N=1,188/1,877$) engaged in oral sex, 63.9% ($n/N=1,201/1,880$) in vaginal intercourse, and 11.2% ($n/N=207/1,849$) in anal intercourse within the last 6 months. Of those who engaged in oral sex, 93.5% ($n/N=1,101/1,172$) reported “never” or “rarely” using a protective barrier within the last 6 months. Lower, but still relatively high, rates of similar practices were reported for the other sexual activities with 43.3% ($n/N=512/1,182$) of those who engaged in vaginal intercourse and 65.2% ($n/N=133/204$) of those who engaged in anal intercourse reporting “never” or “rarely” using a protective barrier within the last 6 months. Table 14 shows the frequency of barrier use across all sexual activities. An important statistic that arose relating to barrier use with anal intercourse is that, in comparing the gender identities, 50% ($n/N=41/82$) of undergraduate men reported “never” or “rarely” using a protective barrier while 75.9% ($n/N=88/116$) of undergraduate women reported “never” or “rarely” using a protective barrier ($X^2=18.05, p<0.05$).

Table 14

Frequency of Protective Barrier Use

Sexual Activity	Frequency of Protective Barrier Use Within the Last 6 Months					Row Totals
	Never	Rarely	Sometimes	Most of the Time	Always	
Vaginal Intercourse	348 (29.4%)	164 (13.9%)	138 (11.7%)	186 (15.7%)	346 (29.3%)	1,182 (100%)
Anal Intercourse	122 (59.8%)	11 (5.4%)	12 (5.9%)	20 (9.8%)	39 (19.2%)	204 (100%)
Oral Sex	1,072 (91.5%)	29 (2.5%)	15 (1.3%)	20 (1.7%)	36 (3.1%)	1,172 (100%)

Note. Numbers in parentheses indicate row percentages.

Contraception. Of the undergraduate students surveyed, the most common types of contraception used as the primary method of birth control within the last 6 months were birth control pills (monthly or extended cycle) at 42.1% ($n/N=563/1338$) and male condoms 31.9% ($n/N=427/1338$). Additionally, 5% ($n/N=6/1338$) of undergraduates reported using withdrawal as their primary method, and 4.8% ($n/N=64/1338$) reported no use of any contraception at all.

Of 1,274 UNR undergraduates, 11.2% ($n/N=143/1274$) reported using some form of emergency contraception within the last 6 months. Among those who reported use of emergency contraception, 57.6% ($n/N=80/139$) reported using a protective barrier “most of the time” or “always” during vaginal intercourse, 13.7% ($n/N=19/139$) reported using a protective barrier “sometimes”, and 28.8% ($n/N=40/139$) reported “never” or “rarely” using a protective barrier within the last 6 months ($X^2=18.64, p<0.05$). Additional trends showed that 10% ($n/N=14/140$) used the withdrawal method as their primary form of contraception during vaginal intercourse, 43.6% ($n/N=61/140$) used male condoms, and 6.4% ($n/N=9/140$) used no form of birth control during vaginal intercourse over the past 6

months ($X^2 = 1.2e+03, p < 0.05$). Comparisons against the number of sexual partners showed that the highest percentage of emergency contraception use occurred among undergraduates that reported having only 1 sexual partner 53.6% ($n/N = 75/140, X^2 = 1.3e+03, p < 0.05$). Unintentional pregnancies were only reported in 0.55% ($n = 143$) of 1,281 UNR undergraduates.

STI screening. Of 1,867 undergraduates surveyed, 21.7% ($n = 405$) had been tested for STIs within the past 6 months. Considering only those who reported one or more sexual partners within the past 6 months, a higher percentage was seen with 29.3% ($n/N = 382/1303$) reporting being tested, meaning that 70.7% ($n/N = 921/1303$) of undergraduates sexually active within the last 6 months did not receive testing ($X^2 = 208.20, p < 0.05$). Among those undergraduates tested, 6.2% ($n/N = 25/402$) also reported receiving treatment for a STI within the last 6 months ($X^2 = 58.14, p < 0.05$).

Between the age groups and considering only individuals who reported one or more sexual partners within the last 6 months, ages 21 to 24 had the highest percentage of tested individuals at 33.8% ($n/N = 143/423$), with 25 and over at 29.4% ($n/N = 57/194$), and 18 to 20 year olds having the lowest percentage of tested individuals at 26.5% ($n/N = 182/686, X^2 = 6.68, p < 0.05$). Sexually active women showed much higher percentages of tested individuals at 35.1% ($n/N = 309/880$), in comparison to sexually active men at 16.1% ($n/N = 64/397$), and non-binary individuals who showed a tested percentage of only 9% ($n/N = 9/26, X^2 = 47.98, p < 0.05$). Comparisons between sexually active LGBTQQ individuals and straight/heterosexual individuals did not yield significant results ($p = 0.06$). Among the different years in school, sexually active fourth-year undergraduates had the highest percentage of tested individuals at 36.4%

($n/N=91/250$), and first-year undergraduates had the lowest percentage at 21.7% ($n/N=68/314$, $X^2=16.2$, $p<0.05$). Comparisons of STI testing rates of individuals who were sexually active within the last 6 months among the different colleges and schools yielded insignificant results ($p=0.08$). In taking a broader approach, considering testing rates of undergraduates irrespective of sexually active within the last 6 months, data trends showed that the Division of Health Sciences had the highest percentage of STI tested individuals at 28.9% ($n/N=120/416$), and that the second highest was the College of Education at 26.4% ($n/N=29/110$). The colleges and schools with the lowest percentage of tested individuals were undeclared majors at 11.6% ($n/N=5/43$) and the College of Engineering at 12.7% ($n/N=30/237$, $X^2=34.38$, $p<0.05$).

Data trends looking at the number of tested individuals within groups based on number of sexual partners showed that as the number of sexual partners increased, so did the percentage of individuals who had been tested for STIs within the last 6 months.

Table 15 depicts this trend.

Table 15

Sexual Partners and STI Testing

Number of Sexual Partners	Tested for STI Within the Last 6 Months		Row Totals
	Yes	No	
No Sexual Partners	17 (3.2%)	509 (96.8%)	526 (100%)
1	229 (24.8%)	695 (75.2%)	924 (100%)
2 to 3	89 (34%)	173 (66%)	262 (100%)
4 to 5	40 (54.1%)	34 (46%)	74 (100%)
6 or more	24 (55.8%)	19 (44.2%)	43 (100%)

Note. $X^2=208.20$, $p<0.05$. Numbers in parentheses indicate row percentages.

Among the undergraduates who reported engaging in vaginal intercourse within the last 6 months, 30.5% ($n/N=362/1,187$) also reported being tested for STIs ($X^2=$

157.71, $p < 0.05$). Additionally, higher frequencies of STI testing were seen in those who engaged in vaginal intercourse and “never” or “rarely” used a protective barrier (34.5%, $n/N=176/510$). Those who reported that they “sometimes” used a protective barrier had a testing percentage of 34.1% ($n/N=47/138$) and those who “always” used a barrier had a percentage of 25.4% ($n/N=135/532$, $X^2=11.30$, $p < 0.05$). Among undergraduates who reported engagement in anal intercourse within the last 6 months, 35.3% ($n/N=72/204$) also reported being tested for STIs. Unlike the trend observed with vaginal intercourse, comparisons of barrier use and STI testing among those who engaged in anal intercourse proved insignificant ($X^2=0.80$, $p=0.94$).

HIV screening. Of the 1,864 undergraduates surveyed on HIV screenings, only 27.3% ($n=509$) had been tested for HIV in their lifetimes. This number was just about equal to that of the national average (ACHA, 2016a). Considering only those undergraduates who reported one or more sexual partners within the last 6 months showed a significantly different trend in that 35.2% ($n/N=430/1,299$) of those individuals reported being tested for HIV in their lifetime ($X^2=138.06$, $p < 0.05$). Between the age groups and only looking at individuals who reported one or more sexual partners within the last 6 months, those aged 25 and over had the highest percentage of HIV tested individuals at 72.2% ($n/N=140/194$), with those aged 21 to 24 at 40.3% ($n/N=171/424$), and those aged 18 to 20 having the lowest percentage of tested individuals at 21.4% ($n/N=146/681$, $X^2=177.69$, $p < 0.05$). Comparisons of HIV testing rates and gender, gender identity, and sexual orientation proved insignificant ($p > 0.05$). The percentage of HIV-tested individuals among undergraduates who engaged in vaginal intercourse was 36.3% ($n/N=430/1,184$, $X^2=143.52$, $p < 0.05$), while the percentage among those who engaged in

anal intercourse within the last 6 months was 44.6% ($n/N=91/204$, $X^2=100.36$, $p<0.05$). Similar to STI testing among those who engaged in vaginal intercourse, percentages of HIV-tested individuals increased as the frequency of protective barrier use during vaginal intercourse decreased ($X^2=38.6$, $p<0.05$). Comparisons of barrier use and HIV testing among those who engaged in anal intercourse proved insignificant ($X^2=7.30$, $p=0.12$).

Self-examinations. Of the undergraduates surveyed on sexual health self-examinations, 48% ($n/N=587/1224$) of females reported performing a self-breast exam within the last 6 months, and 41.9% ($n/N=258/616$) of males reported performing a self-testicular exam. Among undergraduate males, those aged 25 and older had the highest percentage of testicular exams performed at 49.5% ($n/N=51/103$), while for those aged 21 to 24 the percentage was 42.9% ($n/N=87/203$) and for those aged 18 to 20 it was 35.9% ($n/N=120/334$, $X^2=6.84$, $p<0.05$). A similar trend was found among undergraduate females, with 62.8% ($n/N=86/137$) of those 25 and older reporting self-examination, 57% ($n/N=209/367$) of those aged 21 to 24, and 39.2% ($n/N=293/747$) of those aged 18 to 20 ($X^2=46.40$, $p<0.05$).

Alcohol and Substance Use

Questions in the fifth section of the survey covered participants' alcohol and substance use. The questions on alcohol use focused on consumption patterns, while the questions on substance use looked at participants' use of tobacco, marijuana, illicit drugs, and prescription drugs.

Alcohol use. Assessment of drinking patterns and identification of at-risk drinkers was done through the use of the Alcohol Use Disorders Identification Test

(AUDIT) screening tool. The scoring ranges included: low-risk (score 0 to 7), risky/hazardous level (8 to 15), high-risk/harmful level (16 to 19), high-risk and dependence likely (20 or more). The mean score for the undergraduate population at UNR was 5.50 ($SD=4.50$) with a median of 4. These values were lower than some of the values collected in other studies of college students (e.g. $M=8.40$, $SD = 5.55$; $M=6.10$, $SD = 5.90$), but this difference could be due to the high volume of female respondents (DeMartini & Carey, 2012; Olthuis et al., 2011). The first three items of the AUDIT, or rather the AUDIT-C, showed that females scored a mean of 3.36 ($SD=1.96$) and median of 3, while males scored a mean 4.36 ($SD=2.33$) and a median of 4. In comparison to other studies using the AUDIT-C among college students, UNR females scored lower than average (e.g. $M=3.56$, $SD=2.49$; $M=3.72$, $SD=0.19$), while UNR males scored in the middle of values from other studies (e.g. $M=4.10$, $SD=2.94$; $M=5.38$, $SD=0.19$) (Barry, Chaney, Stellefson, & Dodd, 2015; Wahesh & Lewis, 2015). It is important to note that individuals who reported zero alcohol consumption were immediately excluded from the screening process; only those who reported alcohol use are included in the AUDIT statistics.

The distribution of scores for the full AUDIT can be seen in Table 16, with 76.4% ($n=1,102$) of the 1,443 undergraduate drinkers qualifying as low-risk individuals. Using the suggested cut off score of 7 for males and 5 for females to identify risky, binge-like drinking behaviors, 23.7% ($n/N=231/974$) of female drinkers and 18.9% ($n/N=90/476$) male drinkers screened positive (DeMartini & Carey, 2012). Additionally, analysis of specific questions from the AUDIT that relate to alcohol reliance found that dependence is highly likely in 2.5% ($n/N=37/1,454$) of the undergraduate drinking population.

Table 16

Distribution of AUDIT Scores

AUDIT Interpretation	Frequency (%)
Low-risk	1,102 (76.4%)
Risky/Hazardous	285 (19.8%)
High-risk/Harmful	33 (2.3%)
High-risk and Likely Alcohol Dependent	23 (1.6%)
Total	1,443 (100%)

Data trends on membership in a social fraternity or sorority showed that rates of risky/hazardous drinking and high-risk/harmful drinking were twice as high among Greek-affiliated individuals compared to non-affiliated alcohol users; see Table 17 for percentages. Percentages of high-risk drinking were similar among student athletes and non-athlete drinkers, but student-athlete drinkers had a higher percentage of risky/hazardous consumption levels at 28.7% ($n/N=64/223$) as compared to 18.1% ($n/N=220/1,217$) in non-athletes ($X^2=13.67, p<0.05$).

Table 17

AUDIT Score and Greek Affiliation

Greek Involvement	AUDIT Interpretation			Row Totals
	Low-Risk	Risky/Hazardous	High-risk/Harmful and above	
Greek-Affiliated Alcohol Users	136 (61%)	70 (31.4%)	17 (7.6%)	223 (100%)
Non-Greek Affiliated Alcohol Users	965 (79.2%)	215 (17.6%)	39 (3.2%)	1,219 (100%)

Note. $X^2=35.70, p<0.05$. Numbers in parentheses indicate row percentages.

A significant trend was seen when comparing the number of sexual partners and AUDIT scores. With the exception of those reporting 2 to 3 partners and qualifying as risk/hazardous drinkers, as the number of sexual partners increased among the

undergraduate drinking population, the percentage of risk/hazardous and high-risk/harmful drinking levels increased as well; see Table 18 for percentages.

Table 18

AUDIT Score and Sexual Partners

Sexual Partners of Alcohol Users	AUDIT Interpretation			Row Totals
	Low-Risk	Risky/Hazardous	High-risk/Harmful and above	
No Sexual Partners	281 (86.5%)	37 (11.4%)	7 (2.2%)	325 (100%)
1	603 (80.7%)	125 (16.7%)	19 (2.5%)	747 (100%)
2 to 3	139 (58.2%)	87 (36.4%)	13 (5.4%)	239 (100%)
4 to 5	36 (55.4%)	20 (30.8%)	9 (13.9%)	65 (100%)
6 or more	19 (47.5%)	14 (35%)	7 (17.5%)	40 (100%)

Note. $\chi^2=124.40$, $p<0.05$. Numbers in parentheses indicate row percentages.

Comparisons of PHQ-9 and AUDIT scores showed that levels of risky/hazardous drinking are similar among those with a positive screening for depression and those without depressive symptoms at around 20%. A difference is apparent, though, considering high-risk/harmful drinking percentages in that the incidence among individuals with a positive depression screening was 7.6% ($n/N=24/314$) as compared to the 2.8% ($n/N=32/1,128$) in drinkers with a negative depression screening ($\chi^2=17.48$, $p<0.05$). Another significant correlation was found between AUDIT scores and substance use. Compared to average rates of risky/hazardous drinking (19.8%, $n/N=285/1,443$) and high-risk/harmful drinking (3.9%, $n/N=56/1,443$) within the undergraduate population as a whole, individuals who used tobacco, marijuana, illicit drugs, or abused prescription drugs had significantly higher rates of at-risk drinking. Most concerning is the fact that rates of high-risk/harmful drinking patterns are almost double to triple those seen in the general population; see Table 19 for this pattern.

Table 19

AUDIT Score and Substance Use

Population	AUDIT Interpretation			Row Totals
	Low-Risk	Risky/Hazardous	High-risk/Harmful and above	
All UNR Undergraduates	1,102 (76.4%)	285 (19.8%)	56 (3.9%)	1,443 (100%)
Tobacco Users*	68 (46.9%)	57 (39.3%)	20 (13.8%)	145 (100%)
Marijuana Users**	264 (60.3%)	145 (33.1%)	29 (6.6%)	438 (100%)
Illicit Drug Users***	82 (43.9%)	86 (46%)	19 (10.2%)	187 (100%)
Prescription Drug Abusers****	72 (44.2%)	73 (44.8%)	18 (11%)	163 (100%)

Note. Numbers in parentheses indicate row percentages. * $\chi^2=91.87$, $p<0.05$. ** $\chi^2=92.55$, $p<0.05$. *** $\chi^2=128.41$, $p<0.05$. **** $\chi^2=109.19$, $p<0.05$.

Substance use. The health behaviors and practices that were surveyed among undergraduates included use of tobacco products, marijuana, illicit drugs, and prescription drugs (without a legal prescription). Unlike the rest of the survey questions, some of the items within this section used a timeframe of 30 days to better gauge the frequency of substance use.

Tobacco use. Of 1,839 undergraduates surveyed on tobacco use, the majority, 91.7% ($n=1,686$), reported not using any tobacco products within the last 30 days, while 8.32% ($n=153$) reported positive use. Overall, usage averages across the different tobacco products were similar between collected data and national data with the exception that UNR undergraduates had more daily users of e-cigarettes at 2.1% ($n/N=39/1,831$) than the national average of 0.9% ($n/N=693/79,499$) (ACHA, 2016b).

Among the age groups, those 25 and older had the highest percentage of tobacco use at 12.5% ($n/N=29/233$) with those younger averaging about 8% ($\chi^2=7.32$, $p<0.05$).

Higher percentages of men and non-binary students reported tobacco use at 11.8% ($n/N=71/603$) and 12.8% ($n/N=6/47$), respectively, while only 6.4% ($n/N=76/1,189$) of women reported tobacco use within the last 30 days ($X^2=16.45$, $p<0.05$). Significant trends were found when considering sexual orientation and tobacco use in that the percentage of use within the LGBTQQ cohort of 14.1% ($n/N=44/313$) was twice as high as the percentage among straight/heterosexual tobacco users at 7.1% ($n/N=109/1,525$, $X^2=16.25$, $p<0.05$).

Of all undergraduates who reported tobacco use within the last 30 days ($N=153$), 62.1% ($n=95$, $X^2=120.07$, $p<0.05$) also reported using marijuana, 36.6% ($n=56$, $X^2=116.94$, $p<0.05$) reported illicit drug use, and 32% ($n/N=49/153$, $X^2=96.89$, $p<0.05$) reported illegal use of prescription drugs. The percentage of non-smokers who indicated illicit drug use and prescription drug abuse, however, were much lower at 8.4% ($n/N=141/1,686$) and 7.6% ($n/N=127/1,682$) respectively.

Marijuana use. Of the 1,838 undergraduates surveyed on marijuana use, 25.2% ($n=464$) reported positive marijuana use within the last 30 days. In comparing this to the national average, undergraduate usage of marijuana at UNR is about 5% higher than the national average of 19.9% ($n/N=15,836/79,557$). Among the undergraduates surveyed on the different methods of ingestion, 23% ($n/N=423/1,837$) reported smoking marijuana (via joints, blunts, pipes, water pipes, etc.), 6.4% ($n/N=117/1,828$) reported ingesting marijuana in an edible form, 4.9% ($n/N=89/1,822$) reported vaporization-related forms, and 2.8% ($n/N=48/1,743$) reported using marijuana in another form than those listed.

Among the age groups, those aged 18 to 20 and 21 to 24 had the highest usage rates at 25.7% ($n/N=270/1,050$) and 27.6% ($n/N=153/555$), while only 17.6%

($n/N=41/233$) of those aged 25 and older reported usage ($X^2=8.93, p<0.05$). 30% ($n/N=181/603$) of men reported marijuana use within the last 30 days, with usage among women and non-binary undergraduate students averaging at a similar rate of around 23% ($X^2=10.83, p<0.05$). The LGBTQQ cohort had a higher percentage of usage at 30% ($n/N=94/313$) than the straight/heterosexual cohort at 24.3% ($X^2=4.55, p<0.05$). Additionally, the highest incidences of marijuana use were seen amongst biracial and multi-racial students at 28.3% ($n/N=34/120$) and White/Caucasian students at 27.5% ($n/N=331/1,205$) ($X^2=14.62, p<0.05$). In terms of the colleges and schools of marijuana users, those dual-majoring had the highest percentage of use; see Table 20 for all frequencies.

Table 20

Marijuana Use by College/School of Participants' Majors

College/School of Major	Marijuana Use Within the Last 30 Days		Row Totals
	Yes	No	
Undeclared	14 (32.6%)	29 (67.4%)	43 (100%)
College of Agriculture, Biotechnology, and Natural Resources	36 (27.3%)	96 (72.7%)	132 (100%)
College of Business	64 (30.2%)	148 (69.8%)	212 (100%)
College of Education	36 (32.7%)	74 (67.3%)	110 (100%)
College of Engineering	50 (21.3%)	185 (78.7%)	235 (100%)
College of Liberal Arts	82 (25.1%)	245 (74.9%)	327 (100%)
College of Science	52 (19.7%)	212 (80.3%)	264 (100%)
Division of Health Sciences	92 (22.6%)	316 (77.5%)	408 (100%)
Reynolds School of Journalism	13 (34.2%)	25 (65.8%)	38 (100%)
Dual-majoring in Two or More Colleges/Schools	25 (36.2%)	44 (63.8%)	69 (100%)

Note. $X^2=21.39, p<0.05$. Numbers in parentheses indicate row percentages.

In terms of extracurricular characteristics, data trends showed that 36.8% ($n/N=91/247, X^2=20.28, p<0.05$) of Greek-affiliated individuals reported using marijuana

within the last 30 days, as well as 31.2% ($n/N=84/269$, $X^2=6.01$, $p<0.05$) of student athletes. When comparing usage rates across the different GPA groups, a trend arose in that as GPA decreased, the percentage of those reporting marijuana increased ($X^2=36.40$, $p<0.05$); see Table 21 for comparisons.

Table 21

Marijuana Use by GPA

GPA	Marijuana Use Within the Last 30 Days		Row Totals
	Yes	No	
A	99 (18%)	451 (82%)	550 (100%)
B	289 (27.1%)	777 (72.9%)	1,066 (100%)
C	62 (36.1%)	110 (64%)	172 (100%)
D/F	10 (55.6%)	8 (44.4%)	18 (100%)

Note. $X^2=36.40$, $p<0.05$. Numbers in parentheses indicate row percentages.

Illicit drug use. Of the 1,839 undergraduates surveyed on illicit drug use, 10.7% ($n=197$) reported having used illicit drugs within the last 6 month, while 89.3% ($n/N=1,642/1,839$) reported no use at all. Cocaine was found to be the most frequently used illicit substance with 5.1% ($n/N=93/1,839$) of respondents reporting use within the last 6 months. MDMA had the second highest usage percentage at 4.8% ($n/N=89/1,837$). Similar to national averages, cocaine and MDMA also had the highest percentages of use by UNR undergraduates in the past, but not within that past 30 days. Overall, patterns of usage among all illicit drugs were very similar to national averages as well, the one exception being the usage of LSD. The percentage of UNR undergraduates who utilized LSD, 3.9% ($n/N=72/1,836$), was three times higher than the national average of 1.3% ($n/N=1,068/79,692$).

Of the different age groups, those aged 25 and older had the lowest percentage of illicit drug use at 6.9% ($n/N=16/233$), with those aged 21 to 24 having the highest at

13.5% ($n/N=75/555$), and those aged 18 to 20, the second highest at 10.1% ($n/N=106/1,051$, $X^2=8.59$, $p<0.05$). Males also had higher usage percentages at 12.9% ($n/N=80/618$) within the last 6 months, than females at 9.6% ($n/N=117/1,221$, $X^2=4.85$, $p<0.05$). In terms of undergraduates' colleges and majors, students who were dual-majoring and those who were undeclared had the highest usage rates at 18.8% ($n/N=13/69$) and 16.3% ($n/N=7/43$), respectively ($X^2=17.13$, $p<0.05$); see Table 22 for all frequencies.

Table 22

Illicit Drug Use by College/School of Participants' Majors

College/School of Major	Illicit Drug Use Within the Last 30 Days		Row Totals
	Yes	No	
Undeclared	7 (16.3%)	36 (83.7%)	43 (100%)
College of Agriculture, Biotechnology, and Natural Resources	21 (15.9%)	111 (84.1%)	132 (100%)
College of Business	29 (13.7%)	183 (86.3%)	212 (100%)
College of Education	9 (8.2%)	101 (91.8%)	110 (100%)
College of Engineering	23 (9.8%)	212 (90.2%)	235 (100%)
College of Liberal Arts	34 (10.4%)	293 (89.6%)	327 (100%)
College of Science	19 (7.2%)	246 (92.8%)	265 (100%)
Division of Health Sciences	38 (9.3%)	370 (90.7%)	408 (100%)
Reynolds School of Journalism	4 (10.5%)	34 (89.5%)	38 (100%)
Dual-majoring in Two or More Colleges/Schools	13 (18.8%)	56 (81.2%)	69 (100%)

Note. $X^2=17.13$, $p<0.05$. Numbers in parentheses indicate row percentages.

Among the different GPA categories, illicit drug use was reported in: 7.3% ($n/N=40/551$) of A students, 11.7% ($n/N=125/1,066$) of B students, 14% ($n/N=24/172$) of C students, and 33.3% ($n/N=6/18$) of D/F students ($X^2=19.39$, $p<0.05$). This trend is similar to the one observed for tobacco use in that, as GPA decreases, the frequency of use increases. When looking at extracurricular characteristics and illicit drug use, data

showed that 18.2% ($n/N=45/247$, $X^2=416.76$, $p<0.05$) of Greek-affiliated individuals reported illicit drug use, and that 14.9% ($n/N=40/269$, $X^2=5.82$, $p<0.05$) of student athletes did so as well.

Prescription drug use. Of the 1,844 undergraduates surveyed on prescription drug use, 9.7% ($n=178$) reported illegally using prescription medications that were not prescribed to them. Undergraduates aged 21 to 24 reported the highest usage rates at 12.8% ($n/N=71/556$), while the other two age groups had usage rates around 8% ($X^2=8.90$, $p<0.05$). Use of prescription medications that were prescribed to a different person occurred in 12.4% ($n/N=75/605$) of men, 17% ($n/N=8/47$) of non-binary individuals, and 8% ($n/N=95/1,192$) of women ($X^2=12.02$, $p<0.05$). Prescription drug abuse was also found to be higher within the LGBTQQ cohort at 14.1% ($n/N=44/312$), compared to the 8.8% ($n/N=134/1,531$) of straight/heterosexual individuals who reported illegal usage ($X^2=8.50$, $p<0.05$).

Relating to year in school, data trends showed that, as the years of undergraduate schooling increased, so did the percentage of those reporting illegal prescription drug use. Of the years in school, 16.6% ($n/N=32/193$) of fifth-year plus undergraduate and 12.2% ($n/N=39/320$) of fourth-year undergraduate students reported use, while the lowest was seen among first year undergraduates at 6.3% ($n/N=32/506$, $X^2=19.89$, $p<0.05$). Unlike the trends seen with illicit drug and tobacco use and GPA, B average and D/F average undergraduate students had similar percentages of use around 11%. Students reporting a C average had the overall highest usage rate of prescription drugs at 17.4% ($n/N=30/172$), while A average students had the lowest at 5.1% ($n/N=28/550$, $X^2=26.91$, $p<0.05$). Additionally, prescription drug abuse was seen in 15.3% ($n/N=38/248$) of Greek-

affiliated individuals, while the rate among non-Greeks was only 8.8% ($n/N=140/1,595$, $X^2=10.54$, $p<0.05$). Comparisons of rates among student athletes and non-athletes yielded insignificant results ($p=0.84$).

Of the prescription drugs surveyed, stimulant medications were the most commonly used without a prescription ($n=103$). Table 23 shows the distribution of all prescription drug usage without a prescription.

Table 23

Distribution of Prescription Drug Use

Prescription Drug	Use Within the Last 6 Months		Row Totals
	Yes	No	
Antidepressants (Celexa, Lexapor, Prozac, Wellbutrin, Zoloft)	21 (1.1%)	1,829 (98.9%)	1,850 (100%)
Stimulants (Adderall, Ritalin, Concerta, Desoxyn, Dexedrine, Focalin)	103 (5.6%)	1,747 (94.4%)	1,850 (100%)
Pain Killers (Vicodin, OxyContin, Percocet, Methadone, Codeine)	53 (2.9%)	1,794 (97.1%)	1,847 (100%)
Sedatives (Valium, Xanax, Ativan, Klonopin)	57 (3.1%)	1,790 (96.9%)	1,847 (100%)

Note. Numbers in parentheses indicate row percentages.

In addition to frequency of use, undergraduates were asked the primary reasoning for their use of medications that were not prescribed to them. Interestingly, the most common reasons for each different class of prescription drug coincide with likely medical indications for use. Tables 24-27 show the data collected on each class of medication.

Table 24

<i>Reason for Prescription Stimulant Abuse</i>	
Reason	Frequency (%)
To Help Me Study	81 (78.6%)
To Get High/Have Fun	10 (9.7%)
To Concentrate, Be Alert During Tasks Not Related to School	4 (3.9%)
To Experiment	4 (3.9%)
To Counteract the Effects of Other Drugs	2 (1.9%)
Other	2 (1.9%)
Total	103 (100%)

Table 25

<i>Reason for Prescription Pain Killer Abuse</i>	
Reason	Frequency (%)
To Relieve Pain	23 (43.4%)
To Get High/Have Fun	19 (35.9%)
To Help Decrease Anxiety	6 (11.3%)
To Experiment	2 (3.8%)
To Help Me Sleep	2 (3.8%)
Other	1 (1.9%)
Total	53 (100%)

Table 26

<i>Reason for Prescription Sedative Abuse</i>	
Reason	Frequency (%)
To Help Decrease Anxiety	21 (36.8%)
To Get High/Have Fun	16 (28.1%)
To Help Me Sleep	8 (14%)
To Experiment	7 (12.3%)
Other	4 (7%)
To Counteract the Effects of Other Drugs	1 (1.8%)
Total	57 (100%)

Table 27

<i>Reason for Prescription Antidepressant Abuse</i>	
Reason	Frequency (%)
To Help Decrease Feelings of Depression	9 (45%)
To Help Decrease Anxiety	6 (30%)
Other	4 (20%)
To Help Me Sleep	1 (5%)
Total	20 (100%)

Healthcare Utilization

Insurance. Of the 1,835 undergraduates surveyed on insurance coverage, 2.6% ($n=48$) reported having a college/university-sponsored plan, 75.5% ($n=1,386$) utilized their parent's plan, 15.5% ($n=284$) had another plan, 4.9% ($n=90$) had no health insurance, and 1.5% ($n=27$) were unsure of their coverage status.

UNR service utilization. Of the 1,802 undergraduates surveyed on utilization of UNR services, 52.6% ($n=948$) used no services at all. Of the 861 that reported using one or more services, primary care was the most frequent service utilized; see Table 28 for all percentages. Looking at overall utilization of UNR's mental health services, 90.1% ($n/N=1,624/1,802$) of undergraduates reported not using these services within the last 6 months. Of those who screened positive for clinical depression on the PHQ-9, only 19.3% ($n/N=76/394$) reported using UNR's mental health services, while 80.7% ($n/N=318/394$) reported not using them within the last 6 months ($\chi^2=50.94$, $p<0.05$).

Table 28

Distribution of UNR Service Utilization

UNR Services	Frequency (%)
Primary Care	601 (69.8%)
Pharmacy	260 (30.2%)
Immunizations	203 (23.6%)
Mental Health	178 (20.7%)
Women's Health	140 (16.3%)
Sexual Health	130 (15.1%)
Lab	70 (8.1%)
Nutrition	35 (4.1%)
Health Education	32 (3.7%)
Radiology	24 (2.8%)

Note. The total number of responses to this question was $N=861$. Respondents who utilized more than service one were only counted once in the N total.

Of the reasons listed for not using UNR services by undergraduate students, not knowing they existed was the most common. See Table 29 for all distributions.

Table 29

Distribution of Reasons for Not Using UNR Services

Reason for Not Using Services	Frequency (%)
Did Not Know They Existed	508 (38.3%)
Other	435 (32.8%)
Inconvenient Hours (E.G. During Class, Work)	356 (26.9%)
Inconvenient Location	177 (13.4%)
Lack of Trust in UNR Healthcare Providers	152 (11.5%)
Too Expensive	151 (11.4%)
Too Long of a Wait	117 (8.8%)
Past Negative Experience with the Services	77 (5.8%)
Language Barrier	5 (0.4%)

Note. The total number of responses to this question was N=1,325. Respondents who indicated more than one reason were only counted once in the N total.

These analyses highlight the existence of significant trends within the UNR undergraduate population in relation to the surveyed health behaviors. The existence of at-risk or underserved populations also becomes apparent when health behaviors are considered alongside respondents' demographic characteristics. Comparisons to national trends were briefly mentioned, but further analyses of and comparisons to meaningful trends identified within the current literature will shed more light on the significance of these data.

Chapter 5: Discussion

Description of the Study

The purpose of this study was to enhance understanding of undergraduate health behaviors at UNR by identifying significant trends, at-risk or underserved individuals, and potential barriers to optimal health outcomes. Ultimately, the study analyzed the general trends of specific behaviors and compared them to other trends and demographic characteristics. This chapter will discuss its findings, limitations, and implications, as well as offering future research recommendations.

Summary and Discussion of Major Findings

A total of 2,057 survey responses were obtained, 2,049 of which were suitable for analysis. These results represent a response rate of 12.6% (N=16,241) of the total undergraduate population at the study university for the required questions. The amount of responses per question vary for questions that were not required. Cross tabulations of health behaviors with demographic variables and other health behaviors were analyzed in an attempt to answer the following research questions:

- 1) What significant trends exist within the health behaviors of undergraduate students at UNR, and how do those differ when looked at in relation to specific demographic variables?
- 2) Are there at-risk or underserved populations within the total undergraduate population at UNR?
- 3) How do the behaviors of undergraduate students attending UNR compare to national trends?
- 4) What factors may exist as barriers to health on the UNR campus?

Health behavior trends. Significant data trends were identified in all of the health areas surveyed. The following sections summarize trends within the total undergraduate population in addition to relationships found between health practices.

General health. Regarding BMI results, the undergraduate population showed fairly healthy patterns, with the majority falling within the healthy range and only 12.7% ($n/N=249/1,966$) falling within the category of “obese.” The data also showed consistency with trends found in other studies college populations (Desai et al., 2008; Vargas et al., 2014). As mentioned above, BMI is not always the most accurate representation of body fatness because it can be influenced by high lean body mass (CDC, 2015). This means that distribution among the categories may be slightly skewed to higher values, which could explain the large proportion of those categorized as just above the healthy average at “overweight.”

Although the percentage of those who received flu vaccinations within the last six months was low at about one third of the population, it was only 10% lower than the national average, which asked about vaccinations in a larger period of time (twelve months). The timing of the survey could have provided lower vaccination rates if undergraduates received vaccination later in the flu season. Even so, efforts to increase vaccination percentages will always be a priority among health leaders, meaning that there is room for improvement among the UNR undergraduate population.

Sleep patterns and the Insomnia Severity Index (ISI) provided the most significant results within the general health category. Although ISI results for the total undergraduate population showed that UNR students had lower rates of insomnia in comparison to other studies on college populations (Cukrowicz et al., 2006; Nadorff et al., 2011), the

implications sleep deficiencies carry for physiological and psychological health statuses warrant continued attention to the 12.7% ($n/N=148/1,163$) with positive screenings for insomnia. Although comparison of ISI scores and BMI proved insignificant, a significant relationship was seen between ISI and PHQ-9 scores. Data showed that two thirds of the undergraduates who screened positive for insomnia also screened positive for clinical depression. When looking at the data on individuals with depressive symptoms, that percentage proved to be four times higher than in the non-depressed population. This relationship was further confirmed by the data trend of increasing percentages of positive depression screenings as the severity of insomnia increased. Comparisons of stress and anxiety levels to ISI scores showed similar trends in that as levels and frequency of the two increased, so did ISI scores. These data trends correlating sleep deficiencies and mental health impairments only become more significant when looking at the wide spread implications of the PHQ-9 trends.

Mental health. Results from the PHQ-9 showed that one in every five students in the UNR undergraduate population surveyed screened positive for clinical depression, and that UNR students had generally higher average scores when compared to other studies on college populations (Adewuya et al., 2006; Hinz et al., 2016; Kocalevent et al., 2013; Urasaki et al., 2009; Zhang et al., 2013). The severity of this mental health issue on the UNR campus is further underlined by the fact that, of those with positive screenings, only 38.5% ($n/N=160/416$) indicated a previously established diagnosis of depression. Although overall data trends of the PHQ-9 within UNR undergraduates showed numerous mental health issues, one positive was identified as well. Of the individuals who had a previously established diagnosis of depression, less than half screen positive

for depressive symptoms. One conclusion that can be drawn from this, given the validity and reliability of the PHQ-9, is that 53.2% (n/N=182/342) of those with a definitive, previously established depression diagnosis were asymptotic and/or well-controlled at the time of the survey.

When looking at relationships between the ISI, the PHQ-9, stress, and anxiety levels, it is not surprising that higher PHQ-9 scores were seen amongst those who reported higher levels of stress and anxiety. The strong interrelation between sleep deficiencies and the mental health issues of depression, stress, and anxiety has serious implications for the health of undergraduate students, and represents a serious barrier to optimal health among undergraduates on the UNR campus.

Sexual health. The overall sexual health practices of UNR undergraduates are concerning, especially as they relate to protective barrier use and STI screenings. Similar to flu immunizations, efforts to increase safe sex practices, especially among those who report two or more sexual partners in a shortened period of time, will always be a priority of health efforts among college populations.

Alcohol and substance use. Data from the AUDIT scoring showed some positive trends within drinking behaviors of UNR undergraduate students in that both the total average score and that of females and males were either similar to or lower than results seen in other studies (Barry et al., 2015; Wahesh & Lewis, 2015). Although these data show positive differences between the UNR population and other college populations, it is important to note that risky/hazardous to high-risk/harmful drinking patterns were still seen in one third of the population. In addition to the correlations drawn between mental health issues and AUDIT scores, the data trends showing strong relationships between

higher AUDIT scores and substance use underline a pattern of risky behaviors clustering within the UNR population.

Although rates of tobacco, marijuana, and illicit substance use were similar to national averages, interesting findings arose regarding the use of prescription drugs. The sample size of those who reported use of medications that they did not have a legal prescription for and those who went on to answer the question on primary reason of use is too small to provide significance across demographic variables, but it did highlight an interesting trend. Among those who illegally used prescription medications, the most common reported reasons for use aligned with the medical indication of the medication. This trend could be indicative of underserved populations relating to issues like pain, insomnia, depression, and anxiety.

Healthcare utilization. Overall utilization trends of service utilization showed that more than half of the undergraduates surveyed had never sought care from UNR facilities. This finding could be affected by the fact that a large majority were covered under a parent's insurance plan, meaning that they might have found using outside facilities to be easier than those with a different plan. With 38.3% of ($n/N=508/1,325$) of those surveyed stating that they did not seek care from UNR services simply because they did not know the services existed, though, student knowledge of healthcare resources is clearly lacking. Underutilization of services is likely another barrier to health faced by the UNR undergraduate population.

At-risk populations. When analyzing the data through the lens of the demographic characteristics surveyed, significant trends also arose within subsets of the undergraduate population. Highlighted in this section are the groups that showed the most

extreme clusters of negative behaviors; while some have been mentioned previously in literature on college students, others present as novel information.

Women. The first group identified as at-risk and possibly underserved because of the behavior trends found within their population is individuals who were born female and identify as women. Data from this survey showed that this group had significantly high rates of insomnia and mental health issues, reporting higher depression, stress, and anxiety rates than men. The high prevalence of sleep deficiencies and difficulties found within the female population at UNR is similar to other findings in the current literature (Lund et al., 2009; Tsai & Li, 2004). Interestingly, Lund et al. (2009) found that reports of stress-related sleep troubles were significantly higher in women than in men. Although the exact reasoning for sleep difficulties were not surveyed in this study, this could be an occurrence within the UNR undergraduate population as well given the high levels of mental health issues reported also from women. Not only are women biologically more predisposed to depression than men, but the deep relationship between depression and sleep difficulties has been shown to affect women in other studies (Conti, Adams, & Kisler, 2014).

LGBTQQ. The LGBTQQ cohort within the undergraduate population at UNR also showed numerous unhealthy behavior trends that compromise optimal health outcomes and qualify them as at-risk individuals. This cohort showed significantly high rates of insomnia, depression, and anxiety, all around two to three times higher than those seen in heterosexual individuals, in addition to higher rates of tobacco and illicit drug use than heterosexual individuals. These mental health results parallel the results from previous studies on LGBTQQ cohorts both within young adult and college populations;

most finding significantly high levels of depression, anxiety, stress, even suicidal ideation in this population (Cochran, Sullivan, & Mays, 2003; Kerr, Santurri, & Peters, 2013; King et al., 2008; Westefeld, Maples, Buford, & Taylor, 2001). Although suicidality was not examined in this study, it is extremely important to note that a strong link exists between suicide and unresolved mental health issues, and to emphasize the greater risks faced by this community (Kisch, Leino, & Silverman, 2005). The reasons for high rates of mental health afflictions within the LGBTQQ population have been explored in numerous studies as well. Most have found that they may be linked to stressors arising from the stigmatization of sexual orientations that are not straight/heterosexual in addition to hostile environments or encounters (Lewis, Derlega, Griffin, & Krowinski, 2003; Meyer, 2003; Szymanski, 2005; Woodford & Kulick, 2015). Woodford and Kulick (2015) highlighted the fact that there is also a strong link between mental health issues and LGBTQQ student retention rates on college campuses.

Relating to illicit drug use, findings of increased use within this population were similar to that found in another study. Drazdowski et al. (2016) found that LGBTQ discrimination led to increased internalized oppression, which was then linked to higher rates of illicit drug use. The findings of this study and those from others show that the greatest risks for this population come from an underlying theme of unaddressed mental health afflictions, meaning that addressing these issues head on could help promote optimal health outcomes and enhance the health profiles of these individuals.

Greek-affiliated individuals. Data from this study identified individuals affiliated with the UNR Greek system to have higher rates of risky/hazardous drinking, illicit drug use, prescription drug use, and marijuana use than their non-Greek counterparts. Not only

were usage levels higher, but rates of alcohol use and all substance use, except marijuana, proved to be twice as high as those seen in the non-Greek population. This trend is not unique to the UNR Greek system, though, as literature has shown that Greek-affiliated individuals are known to engage in higher levels of risky behavior than those who are not affiliated (Barry, 2007; Borsari, Hustad, & Capone, 2009; Brown-Rice & Furr, 2015; Ragsdale et al., 2012). When looking at the risks these behaviors carry for an individual's health both physiologically and in terms of the occurrence of accidents and other harmful incidents, this population is clearly an important group to target in promoting healthy behaviors and practices.

Biracial and multi-racial individuals. Contrary to findings in the current literature, biracial and multi-racial individuals at UNR proved to be an at-risk population within the UNR undergraduate community. Data from this study showed that they had the highest rates of depression screenings, experiences of tremendous stress, anxiety levels, and marijuana use of all the ethnicities. Although the literature on this group is somewhat limited, studies have shown that biracial individuals who report a strong sense of their ethnic identity are less likely to experience depression, often better insulated from experiencing anxiety, and show better mental health profiles than other identities (Coleman & Carter, 2007; Lusk, Taylor, Nanney, & Austin, 2010). This finding points to new areas for discussion of perceptions of race, self-esteem, and self-identity, and how they relate to mental health, which were not explored in the survey. Nevertheless, the fact remains that barriers to health exist within this population on the UNR campus preventing from optimal health outcomes.

Other. Other populations with significant, negative health behavior trends were students with lower GPAs, those who identified as dual-majors, and those within the age range of 21 to 24. Students whose GPAs fell within the D/F range (1.69 or below) were found to have higher BMIs, higher rates of insomnia, marijuana use, illicit drug use, and prescription drug abuse. In fact, not only were the rates higher, but the trend also proved to be directly relational in that, as GPA decreased by category, the incidence of the above-mentioned behaviors increased. The high rates of insomnia within this population likely carry the most significant implications for overall health profiles. Indeed, Trockel, Barns, and Egget (2000) found that sleep habits hold the greatest weight out of all studied health behaviors in predicting academic performance. Since only correlation was proven in this study, we can only hypothesize about whether GPA decreased because of these health behaviors, or if an already low GPA led to increases in negative health behaviors. This idea, however, presents a unique opportunity to access this group from two different points, both through individual health behaviors and/or as a whole population, to provide for enhancement to its health profiles.

Those aged 21 to 24 proved to be at-risk for more negative health-related outcomes. Data showed that this group had the highest rates of depression screenings of all the age groups in addition to the highest rates of marijuana, illicit drug, and prescription drug abuse. Most studies on college-aged individuals focus on those aged 18 to 22, so the findings of this study present information that is novel in comparison to the existing literature. Although these behaviors are common throughout the undergraduate population, specifically targeting these individuals, whose likelihood of experiencing

depression and the amount of substance use is the highest, could provide for better health outcomes.

Dual-majors are a final subset of the undergraduate population that showed significant trends in health behaviors. When compared to all other majors, this group had the highest rates of positive depression screenings, experiences of above average stress levels, marijuana use, and illicit drug use. Little literature exists on comparisons between college majors, likely because they are often unique to specific colleges and universities, but an enhanced understanding of these behaviors and knowledge that these behaviors are prevalent in this population indicates acts another access point through which health initiatives can be directed to enhance optimal outcomes.

The data from this study not only provided unique depictions of general trends that exist between health behaviors, but also allowed for the identification of multiple at-risk and possibly underserved subsets of the UNR undergraduate population. Though some of the at-risk groups had been previously identified in the current literature on college-aged populations, the focused nature of this study allowed for the identification of additional groups that were too specific or unique to be identified on a national level. This enhanced knowledge is not only beneficial in expanding the understanding of health behaviors of UNR undergraduate students, but also highlights various access points through which health behaviors can be influenced for the better.

Limitations

This study had several potential limitations, the first being selection bias of participants. The undergraduate students who completed the survey are inherently different from those who did not because of their willingness to do so. Second, the

diversity of undergraduate participants was lacking in multiple areas. The majority of participants were White/Caucasian females, meaning that there was underrepresentation of both males and undergraduates from other ethnicities/races. Additionally, a large number of participants belonged to the Division of Health Sciences. Inspection of frequencies among other demographic characteristics also showed underrepresentation of certain subsets based on age, year in school, and major, among others. The small sample sizes of these population subsets had the potential to yield skewed results among data that analyzed health behaviors and trends within the total undergraduate population. With this in mind, the demographics collected in this study were very similar to those collected with the UNR and national ACHA-NCHA-II, meaning that comparisons against these data were still significant. The small sample sizes of population subsets also had implications for the results of those groups with the possibility for over- or underrepresentation of certain behaviors based on individual participant differences. Although analysis of certain variables showed statistical significance, veteran status was one of several variables that received too few responses to compare against other data with significant results. The third limitation was related to social desirability bias. Participants may have provided more positive than truthful answers for health behavior practices. The fourth limitation involved bias related to participant recall of information. The 6-month and 30-day timeframes that were used introduced the possibility for bias related to the accuracy of participants in recalling frequencies or patterns of health behaviors. The last possible limitation arose from questions that utilized Likert-scales, in that sufficient differentiation may not have existed between the options listed.

Implications

Looking at the trends and demographics identified in this study, it is apparent that barriers to health and gaps in health-related knowledge exist. These data carry the most significant implications for those implementing healthcare initiatives on the UNR campus. Institutions of higher education have a responsibility to cultivate enriching environments and promote healthy behaviors for students on their campuses (American College Health Association [ACHA], 2012; Turner & Keller, 2015). Having an enhanced knowledge of health deficits within the populations they are serving improves their ability to create focused and effective programs. These data highlight problematic areas in health-related behaviors of UNR undergraduate students. A beneficial aspect of the clustering seen in the patterns of behaviors surveyed is that it provides multiple access points at which screenings can be implemented and interventions can be made. The formation of healthcare initiatives geared toward addressing the issues highlighted by this data will help better achieve optimal health within the undergraduate population. The finding that there is currently limited use of UNR healthcare services is another barrier to health present on the UNR campus. These data went on to identify a lack of knowledge of the services offered as the most common reason for their disuse, so better advertisement of services would benefit the undergraduate population in expanding their access to these resources.

Recommendations for Future Research

The first recommendation for future research is to focus on efforts to increase the amount of participation by minority ethnicities and races. Though this study received over 2,000 responses, diversity of ethnicities and races in addition to veteran status and

majors was lacking. Increasing the participation of these population subsets would have yielded more significant results. A second recommendation is to further analyze the trends highlighted within this study as only correlation, not causation was be proven here. Researching these trends in more detail could provide beneficial insight into how and why the behaviors of sleep, depression, anxiety, and stress are linked within this population. Continuing to look into how demographics are related to health behaviors and choices will be extremely beneficial to those charged with developing healthcare initiatives as they offer insight into at-risk and underserved populations. The topic of prescription drug use was one that, unfortunately, could not be examined more carefully due to the insignificance of results because of the small amount of responses. The analyses that were made, though, and the survey of reasons for use, highlight possible underserved individuals experiencing chronic pain, insomnia, depression, and anxiety. Continuing to analyze health behaviors and identify trends is extremely important in helping to ensure optimal health within the undergraduate population, especially when these data contribute to the formation of effective and focused health initiatives.

Conclusion

The results of this study indicate that significant trends exist within undergraduate health practices at UNR in all of the surveyed areas and that these carry various implications for the health and wellbeing of undergraduate students. Trends within sleep patterns, overall mental health profiles, and alcohol and substance use show that UNR undergraduates are practicing health behaviors that compromise both their current and future health statuses. Overall, similarities were observed between the practices of UNR undergraduate students and college students on a national scale, with only small

differences observed within specific health behaviors. In comparing relationships between different health behaviors, trends similar to those identified in current literature were found, especially when examining the relationships between various mental health practices, and risky behavior tendencies.

Additionally, the existence of multiple at-risk and underserved groups within the total undergraduate population predicts consequences with both immediate and long-term effects on the students surveyed. Many of the vulnerable populations identified were similar to those mentioned in the current literature, but looking at demographic characteristics beyond gender, gender identity, and extracurricular involvement showed that significant levels of negative health behaviors were seen within different majors, GPAs, and ethnicities. The confirmation of existing at-risk populations not only shows that barriers to health exist on the UNR campus, but also carries significant implications for current and future health initiatives and directives. In combination with the data on utilization of UNR healthcare services, the existence of these populations reveals that serious gaps in knowledge and usage of these services could be hindering efforts to promote optimal health within the student population.

As noted above, college and university campuses act as large, strategic access points through which health initiatives can reach large portions of the US population (ACHA, 2012). Moreover, the use of these access points also targets these individuals at a critical period in their lives, meaning that effective health efforts in colleges and universities can provide both immediate and long-term benefits to society (Naicker et al., 2013; Nelson et al., 2008). Although the identification of significant trends within health behaviors and at-risk populations greatly enhances understanding of the health practices

of UNR undergraduates, the application of this knowledge to the formation of healthcare initiatives and other efforts is crucial for change to occur. Utilizing data from this study to formulate concise, focused initiatives to promote healthy behaviors and practices within the UNR undergraduate population will help ensure that all efforts are being made to remove barriers to health, eliminate health disparities, and promote optimal health outcomes for all undergraduate students.

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Appendix A

Undergraduate Health Behavior Survey and Data Distribution

Dear UNR Undergraduate Student,

Thank you for participating in this important research study examining UNR student health behaviors. All of your answers are confidential and anonymous, and participation is completely voluntary. There are no consequences if you choose not to participate in this study, or if you discontinue participation at any time. If you feel uncomfortable while answering any of the survey questions you may take a break and come back later, choose to not answer a question, or stop the process altogether.

For any questions or concerns regarding this project or your rights as a participant you can contact me anytime via email at jenae.amanda@gmail.com. You may also contact my thesis advisor Dr. Lisa Thomas at (775) 682-7155/ lmthomas@unr.edu, or the UNR Institutional Review Board at (775) 327-2364.

Thank you again for your participation!

Sincerely,

Jenae Christensen
UNR Honors Student

Table A1

Health Behavior Survey

DEMOGRAPHICS	
Question 1. How old are you? (N = 2,049) \bar{X} = 21.59; SD 5.57	
Age 18 to 20	1171
Age 21 to 24	254
Age 25 and older	624
Question 2. What gender were you assigned at birth, such as on an original birth certificate? (N = 2049)	
Male	1252
Female	696
Intersex	0
Question 3. Which term(s) do you currently use to describe your gender identity? (N = 2,047)	
Woman	1323
Man	682
Trans-woman	4

Trans-man	4
Genderqueer	7
Genderfluid	9
Gender nonconforming	10
Another identity	8
Question 4. Which term(s) best describes your sexual orientation? (N = 2,046)	
Straight/heterosexual	1728
Gay	33
Lesbian	17
Bisexual	4
Queer	11
Pansexual	50
Questioning	10
Asexual	24
Same gender loving	2
Another identity	11
Question 5. What is your height in inches? (N = 2,049) \bar{X} = 21.59; SD 5.57	
Question 6. What is your weight in pounds? (N = 2022) \bar{X} = 156.71; SD 38.3	
Question 7. How do you usually describe yourself? (N = 2049)	
White	1340
Black	55
Hispanic or Latino/a	291
Asian or Pacific Islander	182
Biracial or Multi-racial	129
Other	52
Question 8. What is your relationship status? (N = 2,044)	
Not in a relationship	1067
In a relationship	868
Married	109
Question 9. In fall of 2016, what was your enrollment status at UNR? (N = 2,045)	
Full time (> 12 credits)	1763
Part-time (< 12 credits)	153
Not enrolled Fall 2016	129
Question 10. What is your year in school? (N = 2,049)	
1 st year undergraduate	566
2 nd year undergraduate	436
3 rd year undergraduate	470
4 th year undergraduate	359
> 4 th year undergraduate	218

Question 11. To what UNR college or school does your major belong? (N = 2,049)	
Undeclared	49
CABNR	147
Business	235
Education	121
Engineering	261
Liberal Arts	358
Science	303
Health Sciences	456
Journalism	47
Dual Major	72
Question 12. Where do you currently live? (N = 2,045)	
Campus residence hall	441
Fraternity or sorority house	18
Other college/university housing	75
Parent/guardian's house	421
Other off-campus housing	1004
Other	86
Question 13. What is your approximate cumulative grade point average? (N = 2003) \bar{X} = 3.33; SD 0.51	
3.7 to 4.0	603
2.7 to 3.69	1193
1.7 to 2.69	189
1.6 or below	18
Question 14. Within the last 6 months, have you participated in organized college athletics at any of the following levels? (N = 2,041)	
No	1727
Yes, varsity sports	31
Yes, club sports	119
Yes, intramural sports	151
Other	24
Question 15. Are you a member of a social fraternity or sorority? (N = 2045)	
No	1764
Yes	281
Question 16. Are you currently or have you been a member of the United States Armed Services (Active Duty, Reserve, or National Guard)? (N = 2043)	
No	1980
Yes, National Guard/Reserve	24
Yes, Active Duty	39

GENERAL HEALTH	
Question 17. In general, how would you describe your overall health? (N = 2028)	
Excellent	244
Very Good	792
Good	778
Fair	184
Poor	30
Question 18. How would you describe your weight? (N = 2026)	
Very underweight	19
Slightly underweight	203
About the right weight	1018
Slightly overweight	669
Very overweight	117
Question 19. Did you receive an influenza vaccination (flu shot) within the last 6 months? (N = 2025)	
No	1315
Yes	710
Question 20. Within the last 6 months, have you held a membership to a gym or other exercise facility? (N = 2027)	
No	776
Yes, UNR Lombardi Recreation Center	554
Yes, off-campus facility	697
Question 21. How satisfied are you with your current sleep pattern? (N = 2021)	
Very satisfied	121
Satisfied	545
Moderately satisfied	805
Dissatisfied	447
Very dissatisfied	103
Question 22. How worried are you about your current sleep problem? (N = 1347)	
Not worried at all	316
A little	519
Somewhat	391
Much	88
Very much worried	103
Question 23. How noticeable to others do you think your sleep problem is in terms of impairing the quality of your life? (N = 508)	
Not noticeable at all	94
A little	169
Somewhat	174
Very noticeable	57

Very much noticeable	14				
Question 23. How noticeable to others do you think your sleep problem is in terms of impairing the quality of your life? (N = 508)					
Not noticeable at all	94				
A little	169				
Somewhat	174				
Very noticeable	57				
Very much noticeable	14				
Question 24. To what extent do you consider your sleep problem to interfere with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) currently? (N = 506)					
Not interfering at all	94				
A little	169				
Somewhat	174				
Much	57				
Very much interfering	14				
Question 25. Please rate the current (i.e. within the last 2 weeks) severity of your sleep problem(s). (N = 507)					
	None	Mild	Moderate	Severe	Very Severe
Difficulty falling asleep	58	238	122	66	23
Difficulty staying asleep	136	219	76	55	21
Problems waking up too early	141	186	92	59	29
MENTAL HEALTH					
Question 26. Over the last 2 weeks, how often have you been bothered by any of the following problems? (N = 1933)					
	Not at All	Several Days	More than Half Days	Nearly Every Day	
Little interest or pleasure in doing things	1028	658	172	75	
Feeling down, depressed, or hopeless	982	703	155	93	
Trouble falling asleep, staying asleep, or sleeping too much	672	779	295	187	
Feeling tired or having little energy	464	958	320	191	
Poor appetite or overeating	879	622	280	152	
Feeling bad about yourself – or that you’re a failure or have let yourself or your family down	1028	574	194	137	

Trouble concentrating on things, such as reading the newspaper or watching television	1056	572	205	100
Moving or speaking so slowly that other people could have noticed. Or, the opposite – being so fidgety or restless that you have been moving around a lot more than usual	1524	277	93	39
Thoughts that you would be better off dead or of hurting yourself in some way	1660	199	38	36
Question 27. If you checked off any problems on the previous question, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people? (N = 1927)				
N/A, I did not check off any problems	274			
Not difficult at all	790			
Somewhat difficult	720			
Very difficult	115			
Extremely difficult	28			
Question 28. Have you ever been diagnosed with depression? (N = 1931)				
No	274			
Yes	790			
Question 29. Within the last 6 months, how would you rate the overall level of stress you have experienced? (N = 1934)				
No stress	26			
Less than average stress	192			
Average stress	812			
More than average stress	759			
Tremendous stress	145			
Question 30. Within the last 6 months, how often did you experience an uncomfortably high level of anxiety? (N = 1934)				
Never	172			
Very rarely	348			
Rarely	297			
Occasionally	606			
Frequently	336			
Very frequently	175			

SEXUAL HEALTH					
Question 31. Within the last 6 months, with how many partners have you engaged in oral sex, vaginal intercourse, and/or anal intercourse? (N = 1851) \bar{X} = 1.21; SD 1.60					
No sexual partners	534				
1 sexual partner	934				
2 -3 sexual partners	265				
4-5 sexual partners	75				
6 or more sexual partners	43				
Question 32. Within the last 6 months, did you have:					
	No	Yes, not in last 6 months		Yes	
Oral sex? (N=1,877)	461	228		1188	
Vaginal intercourse? (N=1880)	510	169		1201	
Anal intercourse? (N=1849)	1383	259		207	
Question 33. Within the last 6 months, which of the following was the primary method (used most often) of birth control you or your partner(s) used to prevent pregnancy during vaginal intercourse? (N = 2,049)					
Birth control pills	563				
Birth control shots	30				
Birth control implants	52				
Birth control patch	5				
Vaginal ring	25				
Intrauterine device (IUD)	78				
Male condom	427				
Female condom	1				
Diaphragm or cervical cap	0				
Withdrawal	67				
None, sexually active in six months	64				
Not sexually active	501				
Other method	26				
Question 34. Within the last 6 months, how often did you or your partner(s) use a condom or other protective barrier (e.g. male condom, female condom, dam, glove) during:					
	Never	Rarely	Sometimes	Most of the Time	Always
Oral sex (N = 1172)	1072	29	15	20	36
Vaginal Intercourse (N = 1182)	348	164	138	186	346
Anal Intercourse (N = 204)	122	11	12	20	39

Question 35. Within the last 6 months, have you or your partner(s) used emergency contraception (“morning after pill”)? (N = 1864)	
N/A	590
No	1117
Yes	143
I don't know	14
Question 36. Within the last 6 months, have you or your partner(s) become pregnant? (N = 1868)	
N/A	587
No	1264
Yes, unintentionally	8
Yes, intentionally	4
I don't know	5
Question 37. Have you been tested for a sexually transmitted infection (STI) within the last 6 months (e.g. chlamydia, gonorrhea, herpes, etc.)? (N = 1867)	
No	1462
Yes	405
Question 38. Have you received treatment for a sexually transmitted infection (STI) within the last 6 months (e.g. chlamydia, gonorrhea, herpes, etc.)? (N = 1865)	
No	1832
Yes	33
Question 39. Have you ever been tested for HIV (human immunodeficiency virus)? (N = 1864)	
No	1355
Yes	509
Question 40. (Males) Have you performed a testicular self-exam in the last 6 months? (N = 640)	
No	382
Yes	258
Question 41. (Females) Have you performed a breast self-exam in the last 6 months? (N = 1251)	
No	382
Yes	258
ALCOHOL AND SUBSTANCE USE	
Question 42. How often do you have a drink containing alcohol? (N = 1875)	
Never	399
Monthly or less	534
2-4 times a month	552
2-3 times a week	313
4 or more times a week	77

Question 43. How many drinks containing alcohol do you have on a typical day when you are drinking? (N = 1452)					
1 or 2	665				
3 or 4	502				
5 or 6	221				
7 to 9	49				
10 or more	15				
Question 44. Please mark the appropriate column for each row.					
	Never	< Monthly	Monthly	Weekly	Daily
How often do you have six or more drinks on one occasion?	515	628	201	109	3
How often during the last year have you found that you were not able to stop drinking once you had started?	1227	161	46	19	3
How often during the last year have you failed to do what was normally expected of you because of drinking?	1224	191	26	12	2
How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	1407	34	9	4	1
How often during the last year have you had a feeling of guilt or remorse after drinking?	976	392	59	21	6
How often during the last year have you been unable to remember what happened the night before because of your drinking?	947	425	66	14	2
Question 45. Have you or someone else been injured because of your drinking? (N = 1453)					
No	1326				
Yes, but not in the last year	67				
Yes, during the last year	60				
Question 46. Has a relative, friend, doctor, or other healthcare worker been concerned about your drinking or suggested that you cut down? (N = 1455)					
No	1339				
Yes, but not in the last year	38				
Yes, during the last year	78				

Question 47. Have you taken any prescription antidepressant (Celexa, Lexapor, Prozac, Wellbutrin, Zoloft) that were not prescribed to you? (N = 1850)	
No	1803
Yes, but not in the last six months	26
Yes, during the last six months	21
Question 48. What was the primary reason/motivation for using prescription antidepressants (Celexa, Lexapor, Prozac, Wellbutrin, Zoloft) that were not prescribed to you? (N = 30)	
To help decrease feelings of depression	14
To help me sleep	1
To help decrease anxiety	9
To get a high/have fun	2
To experiment	0
To counteract effects of other drugs	0
Felt pressured from friends/peers	0
Safer than street drugs	0
Because I'm addicted	0
Other	4
Question 49. Have you taken any prescription stimulants (Adderall, Ritalin, Concerta, Desoxyn, Dexedrine, Focalin) that were not prescribed to you? (N = 1850)	
No	1655
Yes, but not in the last six months	92
Yes, during the last six months	103
Question 50. What was the primary reason/motivation for using prescription stimulants (Adderall, Ritalin, Concerta, Desoxyn, Dexedrine, Focalin) that were not prescribed to you? (N = 108)	
To help me study	82
To concentrate; not related to school	5
To lose weight	0
To get a high/have fun	10
To experiment	4
To counteract effects of other drugs	2
Felt pressured from friends/peers	0
Safer than street drugs	0
Because I am addicted	0
Other	5
Question 51. Have you taken any prescription pain killers (Vicodin, OxyContin, Percocet, Methadone, Codeine) that were not prescribed to you? (N = 1847)	
No	1689
Yes, but not in the last six months	105

Yes, during the last six months	53					
Question 52. What was the primary reason/motivation for using prescription pain killers that were not prescribed to you? (N = 60)						
To relieve pain	26					
To help me sleep	3					
To help decrease anxiety	6					
To get a high/have fun	20					
To experiment	3					
To counteract effects of other drugs	0					
Felt pressured from friends/peers	0					
Safer than street drugs	0					
Because I'm addicted	0					
Other	2					
Question 53. Have you taken any prescription sedatives (Valium, Xanax, Ativan, Klonopin) that were not prescribed to you? (N = 1847)						
No	1705					
Yes, but not in the last six months	85					
Yes, during the last six months	57					
Question 54. What was the primary reason/motivation for using prescription sedatives (Valium, Xanax, Ativan, Klonopin) that were not prescribed to you? (N = 59)						
To help me sleep	8					
To help decrease anxiety	21					
To get a high/have fun	16					
To experiment	7					
To counteract effects of other drugs	1					
Felt pressured from friends/peers	0					
Safer than street drugs	0					
Because I'm addicted	0					
Other	6					
Question 55. Within the last 30 days, on how many days did you use any of the following tobacco products:						
	Never	0 Days	1 – 4	5 – 15	16 – 29	Daily
Cigarettes (N=1836)	1433	252	78	25	17	31
E-cigarettes (N=1831)	1527	197	38	19	11	39
Water pipe (N=1834)	1384	353	70	17	6	4
Cigars (N=1836)	1520	259	46	7	4	0
Smokeless (N=1832)	1683	104	18	7	5	15
Other (N=1739)	1663	52	14	3	2	5

Question 56. Within the last 30 days, on how many days did you use marijuana through the following methods:						
	Never	0 Days	1 – 4	5 – 15	16 – 29	Daily
Smoking (N = 1837)	1,433	252	78	25	17	31
Vaporization (N = 1822)	1,527	197	38	19	11	39
Edible Form (N = 1828)	1,384	353	70	17	6	4
Other (1743)	1,520	259	46	7	4	0
Question 57. Within the last 6 months, on how many days did you use:						
	Never	0 Days	1 – 4	5 – 15	16 – 29	Daily
Cocaine (N=1839)	1631	115	65	18	7	3
Methamphetamine (N=1838)	1805	31	2	0	0	0
MDMA (N=1837)	1599	149	70	8	2	9
Amphetamines (N=1836)	1782	41	5	1	3	4
Heroin (N=1837)	1819	15	1	2	0	0
LSD (N=1836)	1657	107	56	7	3	6
Psilocybin (N=1837)	1662	132	37	2	1	3
Ketamine (N=1837)	1817	17	2	1	0	0
Salvia (N=1,838)	1754	72	9	0	1	2
Dimethyltryptamine (N=1,837)	1808	19	8	1	0	1
Other illegal drugs (N=1,817)	1744	60	7	5	0	1
HEALTHCARE ACCESS AND UTILIZATION						
Question 58. What is your primary source of health insurance? (N = 1835)						
College/university sponsored plan	42					
Parent's plan	1386					
Another plan	284					
Don't have health insurance	90					
Not sure if I have health insurance	27					

Question 59. Please indicate which of the following services provided by the University of Nevada, Reno you have utilized within the last 6 months. (N = 1802)	
Primary care	601
Psychiatry/counseling/mental health	178
Women's services	140
Sexual health services	130
Nutrition	35
Immunizations/injections	203
Pharmacy	260
Laboratory	70
Radiology	24
Health education	32
I have not used any of these services	948
Question 60. Have any of the following reasons caused you to not seek help from UNR services? (N = 1325)	
Too expensive	151
Did not know they existed	508
Too long of a wait	117
Inconvenient hours	356
Inconvenient location	177
Lack of trust in UNR healthcare providers	152
Previous Negative Experience	77
Language barrier	5
Other	435

Appendix B

Letter to Participants

Dear [undergraduate student's name],

My name is Jenae Christensen and I am an undergraduate Honors student at the University of Nevada, Reno, pursuing a Bachelor of Science Degree in Nursing. I am assessing health behaviors of undergraduate students on the UNR campus for my senior Honors thesis and would greatly appreciate your participation in my research study.

Please click this link to access an anonymous survey that will include questions on a variety of health practices and demographic characteristics. The total time to complete this survey is approximately 15 minutes. You may access the survey from any computer, but please make sure to follow the logout procedure at the completion of the survey to protect your anonymity and confidentiality.

Participation in this study is completely voluntary. There are no consequences if you choose not to participate in this study. If you feel uncomfortable while answering any of the survey questions you may take a break and come back later, choose to not answer a question, or stop the process altogether.

By completing this survey, you are consenting to participate in this research study and affirming that you are 18 years of age or older. The data and information provided from the survey will be used in an aggregate form, but no identifying information will be collected. You will not be identified individually in any way, and no other attempts will be made to contact you after completion of the survey.

For any questions or concerns regarding this project or your rights as a participant you are welcome to contact me anytime via email at jenae.amanda@gmail.com. You may also contact my thesis advisor Dr. Lisa Thomas at lmthomas@unr.edu, or the UNR Institutional Review Board at (775) 327-2364.

Thank you in advance for your time and consideration. Your participation will provide valuable information to guide further development of student health needs on the University of Reno, Nevada campus.

Sincerely,
Jenae Christensen
UNR Honors Student

Thesis Advisor:
Lisa Thomas, PhD, RN, CNE
Associate Professor
Orvis School of Nursing

Appendix C

IRB Approval



University of Nevada, Reno

Research Integrity Office
218 Ross Hall / 331,
Reno, Nevada 89557
775.327.2368 / 775.327.2369 fax
www.unr.edu/research-integrity

DATE: January 26, 2017
TO: Lisa Thomas, Ph.D, R.N., CNE
FROM: University of Nevada, Reno Institutional Review Board (IRB)

PROJECT TITLE: [988702-1] Health Behaviors of Undergraduate Students at the University of Nevada, Reno
REFERENCE #: BioMedical
SUBMISSION TYPE: New Project
ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: January 26, 2017
REVIEW CATEGORY: Exemption Category #2

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The Research Integrity Office, or the IRB reviewed this project and has determined it is EXEMPT FROM IRB REVIEW according to federal regulations. Please note, the federal government has identified certain categories of research involving human subjects that qualify for exemption from federal regulations.

Only the Research Integrity Office and the IRB have been given authority by the University to make a determination that a study is exempt from federal regulations. The above-referenced protocol was reviewed and the research deemed eligible to proceed in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46.101 paragraph [b]).

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Reviewed Documents

- Application Form - Exempt 2 - Application Form (UPDATED: 12/19/2016)
- Letter - Survey Welcome Letter (UPDATED: 12/19/2016)
- Questionnaire/Survey - Christensen Survey - Rev. 1/20/17 (UPDATED: 01/20/2017)
- Training/Certification - Christensen - CITI Training (UPDATED: 11/15/2016)
- University of Nevada, Reno - Part I, Cover Sheet - University of Nevada, Reno - Part I, Cover Sheet (UPDATED: 12/19/2016)

If you have any questions, please contact Nancy Moody at 775.327.2367 or at nmoody@unr.edu.

NOTE for VA Researchers: You are not approved to begin this research until you receive an approval letter from the VASNHCS Associate Chief of Staff for Research stating that your research has been approved by the Research and Development Committee.

Sincerely,

Richard Bjur, PhD
Co-Chair, UNR IRB
University of Nevada Reno

Janet Usinger, PhD
Co-Chair, UNR IRB
University of Nevada Reno

Appendix D

Comparisons of Demographic Data from This Study and the National and UNR ACHA-NCHA-II

Table D1

Age Comparisons

Source	18 to 20	21 to 24	25 and older	Row Totals	Mean (SD)	Median
Study Participants	1,171 (57.2%)	624 (30.5%)	254 (12.4%)	2,049 (100%)	21.6 (5.56)	20
UNR (Spring 2016) ^a	556 (58.2%)	284 (29.7%)	116 (12.1%)	956 (100%)	21.5 (5.54)	20
National (Spring 2016) ^b	42,908 (53.9%)	27,757 (34.9%)	8,969 (11.3%)	79,634 (100%)	21.5 (5.12)	20

Note. UNR data from ACHA (2016a) and national data from ACHA (2016b). Numbers in parentheses indicate row percentages. ^aThis data includes undergraduate students and 15 participants that identified as graduate or professional, non-degree seeking, or other students. ^bResponses categorized as “unknown” were removed from this data.

Table D2

Sex at Birth Comparisons

Source	Female	Male	Row Totals
Study Participants	1,353 (66%)	696 (34%)	2,049 (100%)
UNR (Spring 2016) ^a	671 (70.4%)	282 (29.6%)	953 (100%)
National (Spring 2016) ^b	54,499 (68.7%)	24,856 (31.3%)	79,355 (100%)

Note. UNR data from ACHA (2016a) and national data from ACHA (2016b). Numbers in parentheses indicate row percentages. ^aThis data includes undergraduate students and 15 participants that identified as graduate or professional, non-degree seeking, or other students. ^bResponses categorized as “unknown” were removed from this data.

Table D3

Gender Identity Comparisons

Source	Woman	Man	Non-binary	Row Totals
Study Participants	1,319 (64.4%)	680 (33.2%)	48 (2.3%)	2,047 (100%)
UNR (Spring 2016) ^a	652 (68.4%)	278 (29.2%)	23 (2.4%)	953 (100%)
National (Spring 2016) ^b	52,673 (66.4%)	24,183 (30.5%)	2,500 (3.2%)	79,356 (100%)

Note. UNR data from ACHA (2016a) and national data from ACHA (2016b). Numbers in parentheses indicate row percentages. ^aThis data includes undergraduate students and 15 participants that identified as graduate or professional, non-degree seeking, or other students. ^bResponses categorized as “unknown” were removed from this data.