

**Charting the Volunteering Characteristics of College Students
in a Land-Grant University**

by

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Abstract

Volunteerism in the undergraduate years can be a predictor highly correlated with remarkable increase in social integrity, civic-mindedness, (Astin & Sax, 1998; Eyler & Giles, 1999; Pascarella & Terenzini, 2005; Vogelgesang & Astin, 2000; Cruce & Moore, 2007, 2012; Johnson, 2014; Plante & Halman, 2016), continued participation after college (Astin et al., 2000) and selecting service-oriented careers (Astin et al., 1999), which are attributes for accomplishing the land-grant university service mission. Distinguishing these environmental characteristics that influence volunteering will substantially benefit universities and colleges in concentrating on these measures to increase student participation.

This quantitative study was conducted to understand the volunteering characteristics of college students in a land-grant university. Participants of this study were 8,318 college students enrolled from 2013-2018, that completed the National Survey of Student Engagement questionnaire. The research model controlled for the demographic characteristics and examined the college experience measures that influenced the intensity of volunteering in college students. Data analysis was conducted using descriptive statistics, Pearson Correlation and Multinomial regression analysis. Results from the logistic regression analysis validated that the suggested set of predictors considerably increased the odds of predicting volunteerism in college students of a land-grant university.

Among the study sample 50.5% students had volunteered 1-5 hours during college in a land-grant university. The environmental characteristic variables that demonstrated higher likelihood to volunteering were athletic involvement and membership in a social

organization. The demographic variables that presented greater likelihood to volunteering were gender, age, and race. The current study results were consistent with previous findings that majors like engineering, physical science and mathematics were constantly challenged to incorporate service into the curriculum in ways that provided applicable and meaningful learning for the college students (Felder & Silverman, 1988).

The land-grant university being predominantly white, with a majority of traditional age group students enrolled full-time has multiple student groups volunteering 1-5 hours per week, suggesting that the institution has an established inclusive volunteering program on campus. Generally, integrating volunteering into the academic curriculum among all majors, that are practical and applicable can substantially increase student engagement and support land-grant universities in effectively achieving their service mission.

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List of Abbreviations

AACC	American Association of Community Colleges
ACT	American College Test
BCSSE	Beginning College Survey of Student Engagement
CIRP	Cooperative Institutional Research Program
CRI	Cross Racial Interaction
GPA	Grade Point Average
IPEDS	Integrated Postsecondary Education Data System
MAR	Missing at Random
MCAR	Missing Completely at Random
NCAA	National Collegiate Athletic Association
NSSE	National Survey of Student Engagement
SAT	Scholastic Aptitude Test
SIF	Student Information Form

Dedication

This work is dedicated to the love of my life, my husband Murali, my inspiration behind every initiative to achieve and determination to succeed. Rishi, you make our life amazing.

Style manual or journal used: Publication Manual of the American Psychological Association, 6th Edition.

Computer software used: SPSS version 25, Windows XP, and Microsoft Word 2000

Chapter 1

Introduction

The notion of engagement and outreach is a distinguishing concept that made public higher education in America unique in the world (University of Minnesota., 2000).

Unquestionably, derived from the Morrill Act 1890, Land Grant institutions made their charter mission critical to 21st century America, with the core attributes to prepare students with civic-mindedness for active outreach participation in a diverse democracy and to develop knowledge for the improvement and building of communities (Checkoway, B. 2001; Wallenstein 1997; Edmond 1978; Nevins 1962; Stephenson, 2011; Aronson & Webster, 2007). Therefore, promoting educational and volunteer work programs that nurture the habit of students volunteering while in college is critical to achieving the service vision and mission of the land-grant Universities.

Numerous studies have evidenced promising outcomes of college students' volunteering, with remarkable increase in social integrity, civic-mindedness, and emotional outcomes (Astin & Sax, 1998; Eyler & Giles, 1999; Pascarella & Terenzini, 2005; Vogelgesang & Astin, 2000; Cruce & Moore, 2007, 2012; Johnson, 2014; Plante & Halman, 2016). Several studies have highlighted the citizenship development and civic engagement (Astin & Sax, 1998; Astin et al., 1999; Astin et al, 2000; Bringle & Stein-berg, 2010; Einfeld & Collins, 2008; Hart et al., 2007; Johnson, 2004; Jones & Hill, 2003; Nokes et al., 2005; Sax, 2004; Taylor & Trepanier-Street, 2007), social consciousness and responsibility in college students (Dugan & Komives, 2010; Einfeld & Collins, 2008; Hirschinger-Blank & Markowitz, 2006; Jones & Abes, 2003, 2004; Taylor & Trepanier-Street, 2007), which

are appropriate for attaining the land-grant service mission. However, with the lack of understanding the predictors of the student volunteering characteristics (Cruce & Moore, 2007, 2012) colleges are unable to maximize student participation.

The earlier the land grant institutions measured and understood the characteristics of the students that volunteer and the intensity of their participation, they may benefit from aligning academic programs and resources to raising the number of students who participated (Cruce & Moore, 2007, 2012). Recruiting a substantial number of college students to volunteer work and fostering civic consciousness would support the land-grant universities in effectively achieving their community service mission.

Background context of the study

Land-grant institutions made civic duty and community participation as their official priority. Compass compact (2011), envisioned for all colleges and universities to be primary mediators and designers of a diverse democracy, dedicated to teaching students for accountable citizenship with actions that together develop their education and progress the quality of community life. Boyer (1970, pg. 7), stressed that it is imperative to apprehend that the objective is to not only serve the society but also reshape it. Emphasizing the civic duty, land-grant institutions, colleges and universities committed to promoting volunteerism by organizing various engaging prospects for the students to participate (Astin et al., 2002; Musil, 2003).

Statement of the problem

Volunteering by college students in universities are highly correlated with a strong possibility for contributing to future community service (Astin et al., 2000) and choosing

service-oriented careers (Astin et al., 1999). Therefore, it is vital for land-grant universities, to keep with the civic emphasis, encourage and support service that cultivate a tradition of students volunteering in college and beyond. Distinguishing the environmental characteristics that influence volunteering during college can help institutions to restructure volunteering programs that are more inclusive, practical and applicable. As noted by Boyer (1990) designing programs that integrate service scholarship with specific core curriculum can lead to substantial increase in student engagement for land-grant universities.

Therefore, to enhance student participation it is essential for the land-grant universities to recognize the college students' characteristics that stimulate lifelong volunteerism. However, with the huge gap in existing literature and the challenges associated with understanding and identifying the attributes of college students that volunteer, higher education institutions are unable to maximize student participation (Cruce & Moore, 2007, 2012).

Purpose of the study

The purpose of this quantitative study is to promote the understanding of the volunteering characteristics of college students specifically in a land-grant university. Creating and maintaining a profile of college students based on the intensity of their participation will enable institutions to focus on enhancing the number of participants and the quality and duration of student involvement (Gasiorski, 2009). A predictive model is designed from assessing the strengths and limitations of previous research, extensive review of literature, and consideration of Astin's input-environment-outcome college impact model (1991, 1993) undertaken to understand the volunteering characteristics of college students

and is used as the conceptual framework for this study. In the predictive model the college students' unique background characteristics will be controlled in order to ascertain the effect of an environmental characteristic on the outcome.

Therefore, the purpose of the study is to observe the environmental characteristics in relation to actual participation hours in predicting the volunteering characteristics of college students in a land-grant university. National Survey of Student Engagement will be used in the study, as it is the primary survey instrument that has been given attention nationally as an accurate measure of student engagement. The maximum benefit gained from the National survey of student engagement data is the outcome from "looking within" and assessing the considerable variations in student engagement that occurred within the organization (McCormick et. al., 2013).

This study aims to present a more valid and reliable statistics on the actual college students' participation in a land-grant university and add to the insufficient prevailing knowledge on the predictors of the volunteering characteristics in college students. Predictors play a vital role in identifying the student characteristics, so colleges and universities can design interventions to promote volunteer work that engage, appeal and encourage maximum student participation (Johnson, 2014).

Research Question

The research question that will guide the current study is, "Which of the environmental influences predict the volunteering characteristics of college students in a land-grant university?" Environmental influences provide the best opportunity for determining how a particular educational experience influences student development or

change (Astin, 1991). The study will control for the background characteristics that the students bring to college and assess the specific environmental characteristics influence in predicting the intensity of students volunteering during college. This predictive model particularly takes into account the college experience measures that contribute to either obstructing or intensifying college student volunteering. Identifying the impact of environmental influences can help institutions with aligning resources and programs that integrate with academic curriculum to eliminate obstacles that obstruct participation and lead to considerable increase in student commitment for land-grant universities.

Multinomial regression analysis will be conducted to address the research question. Multinomial regression allows the researcher to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables (Starkweather & Moske, 2011). Descriptive analysis, Correlation table, Chi-square analyses and likelihood ratio will allow to determine the significant differences that exist between college students that volunteer and those that do not participate on a number of key variables. The college students' characteristics will be charted based on the intensity or absence of their volunteer work participation in a land-grant university with the addition of the college experience measures.

Definitions of Key Terms

Volunteer work or College Community Service Participation

Measuring volunteering is challenging as many vocabularies (volunteer work, community service, service-learning) were regularly used interchangeably in previous studies, which posed a threat for misinterpretation. The terms volunteering and community

service have been used to mean the same concept in national studies like the Cooperative Institutional Research Program (CIRP) and the National Survey of Student Engagement (NSSE) (Astin & Sax, 1998; Cruce & Moore, 2007; Vogelgesang & Astin, 2000). So defining “volunteering” is crucial to understanding the context in which it was applied.

A general definition described volunteerism as voluntary, ongoing, planned, helping behavior that uplifts the well-being of strangers, offers no monetary compensation, and typically occurs within an organizational context (Clary et al., 1998; Finkelstien, 2009; Penner, 2002). For the purpose of this study, the term volunteering encompassed community service, volunteer work, charitable work, or service-learning performed by students while they were in college.

Significance of the Study

Numerous research studies prove that students are greatly benefitted with positive outcomes by volunteering in college (Astin & Sax, 1998; Myers-Lipton, 1998; Perry & Katula, 2001; Eyster & Giles, 1999; Litke, 2002; Vogelgesang & Astin, 2000; Pascarella & Terenzini, 2005; Einfeld & Collins, 2008; Finkelstein, 2009; Handy et al., 2009; Johnson, 2014; Plante & Halman, 2016; Huml et al., 2018, 2019); conversely, there is very little evidence to understanding the characteristics of the students who volunteer (Astin & Sax, 1998; Astin et al., 2000; Cruce & Moore, 2007, 2012; Johnson, 2014; Marks & Jones, 2004).

Several of the studies measured the student intentions to volunteer in contrast to actual participation. The current study is significant as it delimited this present inadequacy and investigated the college student’s actual participation hours in a longitudinal study from 2013-2018 in a land-grant university. The study in extension to previous research supports

and strengthens the literature by measuring actual participation on the variables that were consistently emerging as the predictors of volunteering in college students. This study also controls for demographic characteristics to distinguish the environmental influences that impacted volunteering.

Limited number of multi-institutional studies have examined the predictors from various demographic, academic and behavioral variables of community service participation of students' during college (Astin & Sax, 1998; Astin et al., 2000; Cruce & Moore, 2007, 2012; Johnson, 2014; Marks & Jones, 2004; Pierson, 2002; Serow & Dreyden, 1990). Although, multi-institutional studies increased the generalizability of the outcomes, there is a lack of longitudinal data study on a single institution specifically one deemed a land grant institution. This deficit in existing literature advocated for this research and this study aims to enhance earlier studies with a unique perspective.

Further review indicated that establishing a list of the key predictors and creating a profile of the existing student population who volunteer, and the intensity of their participation may vastly benefit the mission of the land-grant institutions, which warranted the study (Gasiorski, 2009). Furthermore, Universities may benefit from aligning resources and designing programs toward eliminating the obstacles to volunteering and increasing the number of students that volunteered during college which deemed the necessity for the current study (Cruce & Moore, 2007, 2012).

This study intends control for the background characteristics to examine the environmental characteristics that impact volunteering in college students. The findings from this study will be valuable to the office of outreach and service units, including the

different colleges that are in the process of promoting and impacting their students through volunteering in a land-grant university, which further merited the need for the study.

Summary

The abundance of research has continuously demonstrated that volunteerism promotes civic engagement in college students (Astin & Sax, 1998; Astin et al., 1999; Eyler & Giles, 1999; Eyler et al., 1997; Gray et al., 1998; Vogelgesang & Astin, 2000). In order to maintain the civic emphasis land-grant universities have offered numerous volunteering opportunities that benefit the college students, the university and their communities. Land-grant universities have to gain more evidence of the volunteering characteristics of in order to maximize student participation and succeed in achieving their outreach mission. The following chapter outlined the existing literature related to volunteer work and explained the gaps that this study attempts to bridge.

Chapter 2

Literature Review

Research studies have verified that a greater level of student involvement contributes to higher educational accomplishment (Carini et al., 2004; Kuh et al., R, 2005, 2006, 2006b, 2007, 2008). Previous inquiries have consistently evidenced a connection between volunteering and positive outcomes as in multicultural competence (Einfeld & Collins, 2008; Taylor & Trepanier-Street, 2007) academic and cognitive development, political efficacy, civic responsibility, citizenship, and personal and social development for college students (Astin & Sax, 1998; Astin et al., 2000; Eyler & Giles, 1999; Vogelgesang & Astin, 2000). Astin & Sax (1998) noted that more significant impacts were witnessed when extra time was spent on service participation. Furthermore, studies have established that initial engagement in the first year of college prompted future involvement later in college (Griffith, 2010; Griffith & Hunt-White, 2007) as well as after college (Fenzel & Peyrot, 2005; Misa & Yamamura, 2005).

This chapter gives a detailed depiction of the background of land-grant universities and their outreach mission, followed by an outline of the previous enquiry on volunteer work or college community service participation that reinforced their effectiveness. The next section presents a synopsis of the literature on the importance and benefits of college students volunteering and the impact it has towards achieving the outreach mission of a land-grant institution. The chapter extends to include the purpose of the study and the conceptual framework aimed to measure the volunteering characteristics of college students in a land-grant University. The conceptual framework reviews in detail existing literature on

the individual variables that were capable of predicting the volunteering characteristics of college students and the reasoning behind selecting or omitting those variables in this study. Finally, the chapter concludes with an examination of preceding studies and their limitations leading to the research question of this study.

Land Grant Universities and Volunteering

In the United States (US), land grant universities were established under the Morrill Act of 1862 to educate students, create awareness to reconstruct the failing economy, and empower communities with the gained knowledge (McDowell, 2001). Initially, these land-grant institutions thrived in achieving their democratic mandate for openness, accessibility, and service to people as they focused on rural, agricultural areas and communities.

In the onset of urbanization, it was technically impossible for the land-grant institutions to accomplish their outreach mission with 80% of the population moving to urban areas (US Census Bureau, 2000). The outreach mission of land grant universities to serve the rural communities was challenged and weakened with a substantial reduction in financial fund allocation (Blaine 2005; Fischer 2009), political struggles (McDowell 2001, 2003), and opinions of them being insignificant (West et al. 2009). Meanwhile, other colleges and universities of higher education had adopted the land-grant concept and served society better than the traditional land-grant universities. Whereas, with dwindling funds and progressively complex accountability issues, and huge anticipations, land-grant universities outreach mission struggled and became vulnerable to significant budget cuts (Blaine 2005; Fischer 2009). As community outreach and extension programs were not a source to

generate revenue, land-grant universities strived and failed to offer them with their existing flat or deficit budget allocations.

Kellogg Commission (1999) nudged the land-grant institutions to “return to their roots”, while few other organizations encouraged them to fulfill the “civic purposes of higher education” (Cress et al. 2010), and to “step forward as stewards of place” (American Association of State Colleges and Universities, 2002). Inspired by the directive, several land-grant institutions immediately set their sight to expanding their community and economic improvement endeavors (Fischer 2009; McDowell 2001), initiating participation throughout the university (Alperovitz and Howard 2005), and concentrating on refining the standard of living of the residents in their nearby societies (Franklin 2009; Spanier 1999).

Land-grant institutions, colleges and universities have always incorporated a prime commitment to inspiring students to be civically involved (Colby et al., 2007; Ehrlich, 2000; Jacoby, 2009). A growing number of higher education institutions specifically land-grant institutions are motivating their undergraduate students to participate in volunteer work to be civically engaged (Bringle et al. 1999a; Brukardt et al. 2004; Colby et al. 2003; Harkavy and Puckett 1994; Langseth and Plater 2004; Zlotkowski 1999). Hart et al., (2007) depicted “civic engagement” as voting and volunteering actions, while ‘civic-mindedness’ referred to an individual’s preference or outlook to be informed and involved in the community, and develop a sense of accountability as a member of that community (Bringle & Steinberg, 2010).

Land-grant institutions reconnected to their traditional principles with augmented emphasis on academic and co-curricular civic engagement, including propaganda for

volunteering and service-learning programs (Boyer, 1990; Campus Compact, 2011; Jacoby, 2009). Implanting social responsibility principles through academic practices that involved college students to volunteer was extremely important. Although the land-grant institutions were struggling with the on-going approach of education with declining budgets to retain their volunteering agendas (Darwen & Rannard, 2011) it was part of their outreach service mission. Holdsworth & Quinn (2010) acknowledged that colleges had not sufficiently incorporated volunteering into the course work and that the resources given to aid the outreach curriculum were only for a limited time, which hindered with volunteer work being a regular part of the education program.

Institution's commitment to volunteering has the prospective to nurture the progression of socially responsible leadership (Dugan & Komives, 2010), with students being involved with volunteerism alongside getting a degree. Students will bond with faculty and their peers, destroy prejudiced typecasts and have a greater fulfillment during college, which will further aid the institution in improving student retention and building enhanced community relations (Boyer, 1990). So it was imperative for the land-grant universities to integrate volunteerism into the curriculum.

Volunteering benefits to college students

Several studies have focused on college student population (Dote et al., 2006; Hart et al., 2007; Lopez et al., 2006; Taylor & Trepanier-Street, 2007; Titus, 2006; Kuh, 2007, 2008; Dugan, 2008; Astin, 1991, 1993; Astin & Sax, 1998, 1999, 2003; Fitch, 1987, 1991; Gonzalez, 2008; Bonnet 2008; Einfeld & Collins, 2008; Umbach, 2008; Finkelstein, 2009; Gasiorski, 2009; Handy et al., 2009; Hu, 2008; Dugan & Komives, 2010; Griffith, 2010;

Planty et al., 2006; Cruce & Moore, 2007, 2012; Darwen & Rannard, 2011; Einfeld & Collins, 2008; Dugan et al., 2012; Johnson, 2014; Plante & Halman, 2016; Huml et al., 2018, 2019); a few were to identify the student volunteering characteristics and many others were to recognize the impact and benefits of volunteering to the college students' and the university.

Astin & Sax (1998) noted that volunteering was related to substantial impact on college students' grades including increased grade point average, better interaction with faculty, improved retention rates, persistence in college, and aspirations for advanced degrees. Undergraduates involved in volunteer work exhibited an increase in academic aptitude, life skill development, and a sense of civic responsibility, all highly correlated to student accomplishment in college (Astin, 1993). College students that volunteered gained knowledge and awareness about individuals of different races and cultures and became devoted to promoting empathy towards other races, social values, and community-action programs (Astin and Sax, 2003). Relational effects such as heightened satisfaction in serving others and the aptitude to work supportively with others (Astin & Sax, 1998; Eyler & Giles, 1999) were also the result of volunteering in college.

Holistic education was well-defined as a learning viewpoint that concentrated on stimulating students' knowledge, faith, ethic, and community development and "preparing for leadership and service to the common good in their professional, civic, and personal lives" (Santa Clara University, n.d.). Volunteering enabled the achievement of holistic education, as being involved in the real world challenged students' biased views on issues and stimulated them towards critical thinking to handle complications they had only previously thought about in an intellectual way (Plante & Halman, 2016).

Volunteering aided the college student to improve the skill to incorporate information from the classroom to the work setting (Darwen & Rannard, 2011; Edwards et al., 2001). The students took their newly gained knowledge and used it to make a difference, the deed of volunteering allowed them to retain that information in a much more practical and applicable manner. The other noticeable advantage was that volunteering offered proof to an employer, prospective employer or professor that the student had good time management skills and work-life balance (Holdsworth & Quinn, 2010). Through volunteerism students entered the competitive workforce with additional experience over their peers.

Former studies outcome found that volunteering by college student was also the strongest predictor of social activism (Astin, 1993; Astin et al., 2000; Sax, 2000; Vogelgesang & Astin, 2000). Social commitment (Hu, 2008), leadership (Misa et al., 2005) and participation in community service activities (Johnson, 2004) by students during college were all highly interconnected to enhance life skills, civic engagement and volunteer work after college. Enriched life skills were the leadership capability, ability to think critically, knowledge of diverse people, understanding of community issues, and interpersonal skills. Enhanced civic duty meant supportive racial understanding, serving the community, and pledging to impact politically. Several researchers found a correlation between college community service and the following citizenship outcomes: self-efficacy to effect social change (Astin et al., 1999; Eyler & Giles, 1999; Lopez et al., 2006; Taylor & Trepanier-Street, 2007); the desire to affect policy (Eyler & Giles, 1999); a propensity to help others and recognition of the prominence of volunteering (Astin et al., 1999; Eyler & Giles, 1999).

Astin and Sax (1998) established that volunteering in college grounds promoted greater students' racial acceptance, understanding and the capability to communicate with different races/ethnicities and cultures. Participating in community service with community organizations encouraged racial open-mindedness and respect. Gurin et al. (2002) presented that informal communication in a diverse environment meaningfully offered societal commitment for white, African American, Latino, and Asian American students. Chang and colleagues (2004) confirmed that cross-racial interaction (CRI) positively projected knowledgeable, communal, and community improvement, mainly among white students. "Social interest" and involvement in the campus activities inspired students to improve pro-social conducts and standards that matched their peers' (Swaner, 2005).

Numerous researchers have registered substantive evidence of the benefits that the college students gained by participating in volunteer work and service learning (Astin & Sax, 1998; Astin et al., 1999; Astin et al., 2000; Eyler et al., 2001). On the contrary, a few studies have confirmed that students that were compelled to contribute to community service often lost the impulse to continue participating in community service when the necessity ended (Deci & Ryan, 1987; Marks & Jones, 2004; Sobus, 1995; Stukas et al., 1999). The required part of the service was described undesirable by the students as they disliked being compelled to volunteer (Jones et al., 2008). Research on the required participation and the future impact on volunteering needs more scrutiny, as the findings were inconclusive (Metz & Youniss, 2003, 2005).

Importance of volunteering in a land-grant University

Numerous studies have evidenced outcomes of volunteering with noteworthy increase in citizenship, cognitive, and affective outcomes (Astin & Sax, 1998; Eyler &

Giles, 1999; Pascarella & Terenzini, 2005; Vogelgesang & Astin, 2000). Several studies highlighted the citizenship development and civic engagement (Astin & Sax, 1998; Astin et al., 1999; Astin et al., 2000; Bringle & Stein-berg, 2010; Einfeld & Collins, 2008; Hart et al., 2007; Johnson, 2004; Jones & Hill, 2003; Nokes et al., 2005; Sax, 2004; Taylor & Trepanier-Street, 2007), and social consciousness and responsibility in college students (Dugan & Komives, 2010; Einfeld & Collins, 2008; Hirschinger-Blank & Markowitz, 2006; Jones & Abes, 2003, 2004; Taylor & Trepanier-Street, 2007). Volunteer work or community service has become part of the academic agenda and propaganda that students were provided numerous opportunities for active engagement. Perry and Katula (2001) established that volunteering promoted social responsibility associated with intellectual understanding and future philanthropy.

American Association of Community Colleges (2011), explained that knowledge of civic engagement and commitment combined meant dynamic involvement in the public life of a community in a well-informed, dedicated, and productive fashion, with an emphasis on the common good. Promoting community service and service learning aided students to understand the injustices around the community (Mather & Konkle, 2013). Social justice was a great way to guide students to understand the reason they were helping a particular community, specifically in low income and high poverty areas.

Student volunteering in college would generate more engaged citizenship which would benefit the community and the society. Land-grant universities to attain their outreach mission should focus on “motivating and encouraging community service participation in the undergraduate years to augment students’ educational improvement, civic duty, and life skills” (Astin & Sax, 1998). Engaging large number of college students to volunteering

would vastly impact the land-grant universities in efficiently attaining their outreach mission. However, the challenge is that the characteristics of students that volunteered were not well defined and very few studies have looked at predictors of volunteering at the college level (Cruce & Moore, 2007, 2012).

Purpose of the study

The purpose of this quantitative study is to promote the understanding of the volunteering characteristics of college students particularly in a land-grant university. Creating and maintaining a profile of college students based on the intensity of their involvement will enable institutions to focus on enhancing the number of participants and the quality and duration of student engagement (Gasiorski, 2009). A predictive model is designed from assessing the strengths and limitations of previous research, extensive review of literature, and consideration of Astin's input-environment-outcome college impact model (1991, 1993) undertaken to understand the volunteering characteristics of college students and is used as the conceptual framework for this study. In the predictive model the college students' background characteristics will be controlled in order to ascertain the effect of specific environmental characteristic on the outcome of student volunteering.

Therefore, the purpose of the study is to observe the effect of environmental influences in association with the demographic characteristics on the actual participation hours in predicting the volunteering characteristics of college students in a land-grant university. National Survey of Student Engagement will be used in the study, as it is the primary survey instrument that has been given attention nationally as an accurate measure of student engagement. The maximum benefit gained from the National survey of student engagement data is the outcome from "looking within" and assessing the considerable

variations in student engagement that occurred within the organization (McCormick et al., 2013).

This study aims to present a more valid and reliable statistics on the actual college students' participation in a land-grant university and adds to the insufficient prevailing knowledge on the college experiences predictors of the volunteering characteristics in college students. Predictors play a vital role in identifying the student characteristics, so colleges and universities could design interventions to promote volunteer work that engage, appeal and encourage maximum student participation (Johnson, 2014).

Predictors of volunteering characteristics in college students

Predictors are essential to gather a perspective of the unique volunteering characteristics of the college student population. Numerous studies have chosen a multi-institutional approach to their research, as it was a convenient sample. Data was readily available from sources like IPEDS, NSSE, CIRP, and BCSSE which were easily accessible to conduct several studies with the huge data sets on student engagement. These sources allowed for generalizability of the outcome as it encompassed multi-institutional characteristics and a more inclusive student population. Other researchers chose the data set as it was the appropriate sample for their study on college student engagement. A few studies chose single institutions (Fitch, 1991) with distinctive characteristics like that of a land-grant university with the view to understand the needs and requirements of their specific campuses.

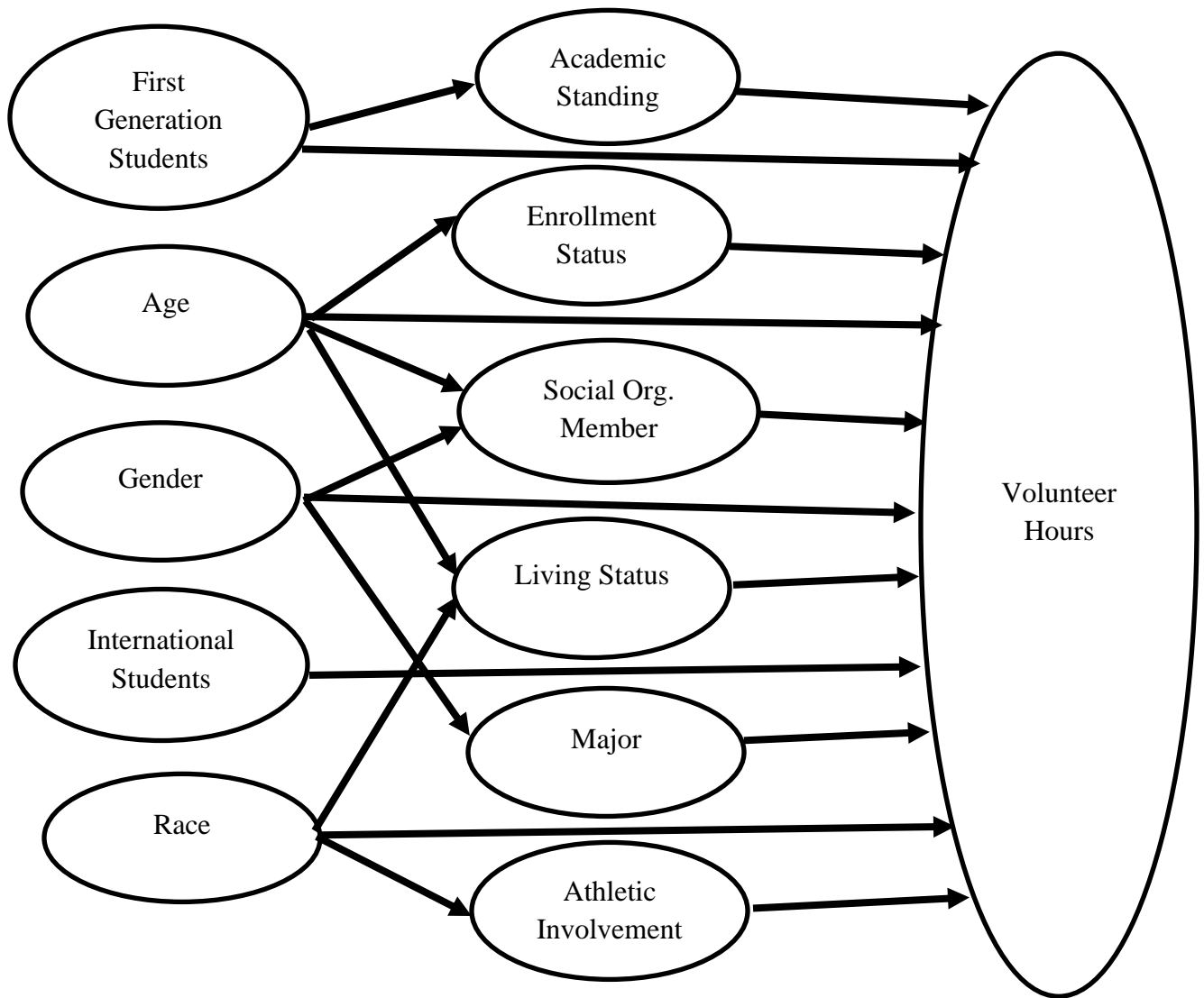
Former studies have established a pattern with specific characteristics that are associated with student volunteering in college using the national survey of student

engagement data. The following sections offers an overview of the conceptual framework of predictors that were considered in understanding the volunteering characteristics of college students in the present study. Individual predictors were considered that had predictive capabilities of volunteer work or community service participation of college students in a land-grant institution. It is essential to understand that there are possible underlying significant interactions between them that stimulated the students to volunteer. So this study controlled for background characteristics to determine the environmental characteristic predictors that promoted volunteering in college students' of a land-grant university.

Conceptual Framework

A predictive model was prudently designed from examining previous research, analyzing literature, and specifically Astin's input-environment-outcome college impact model (1991, 1993) that contributed to recognizing the volunteering characteristics of college students and was used as the conceptual framework for the study. The college impact model was set on the notion that students brought to college their unique input characteristics, which influenced their college experience. Astin's I-E-O model (1991) allowed the researcher the ability to evaluate the influence of the different environmental experiences by defining how students grew or transformed with changing environmental conditions, while still taking into account the distinctive characteristics that the students had before entering the college.

Figure 2.1: Predictive Model of Volunteering Characteristics of College Students' in a Land-Grant University



The predictive model is developed with two sets of independent variables categorized as demographic characteristics (i.e., first generation, age, gender, international student status, and race) and environmental characteristics (i.e., academic standing, enrollment status, social membership, living status, major and athletic involvement) to assess their influence on the dependent variable volunteer work participation per week. The demographic measures account for the individual characteristics that the students bring to college that encourage volunteer work participation. While the environmental influences allow the study to determine the certain educational experiences that promote or disrupt students' intensity of volunteering during college.

So, in the research framework the demographic characteristics will be controlled in the model and the inquiry will reveal the demographic measures that considerably or adversely impact the intensity of volunteering in college students. The model will then be re-estimated with the inclusion of the environmental characteristic measures to examine the certain educational experiences that promote or disrupt students' intensity of volunteering during college. The inclusion of these measures will permit the researcher to recognize the considerable change in the effect of the controlled variables and isolate the specific educational experiences that impact the intensity of volunteer work participation in college students.

Volunteer work

The observed dependent variable incorporated in the model is volunteer work hours per week to measure the extent to which students volunteered during college. This measure is crucial to the study as volunteerism promotes civic mindedness, which directly contributes

to the outreach mission of the land-grant universities. Charting the students' characteristics based on the intensity of their participation outcome will aid institutions to focus on groups that are struggling to incorporate volunteerism into their agenda.

Volunteerism usually involves ongoing and long-term behavior (Emmeline, 2010). There are difficulties attached to volunteer work or community service participation which should also be taken into account. Specifically, for example first-generation students are obligated to work more hours per week, that it has an undesirable impact on their academic development and co-curricular activities including volunteering in contrast to other students during college (Pascarella et al., 2004). Poor organizational skills and academic difficulties pose undue stress on students' propensity to volunteer, as volunteering can be challenging for students with time constraints to allocate it proficiently for different activities (Okun & Sloane, 2002).

Rago & Moore (2004) presented from their study that students with reasonable coursework cultivated improved life organization skills and were effective in incorporating educational and other activities into their busy schedule. Independent Sector (1999) noted that about half of the volunteers stated, volunteering as a continuing behavior and not something completed one time. A longitudinal study stated that most of the people that frequently participated in volunteer work continued to actively take part for some more years (Omoto and Snyder, 1995; Penner and Finkelstien, 1998). Several researchers advocated that when people volunteer to serve, they continued for an extended amount of time, even though it meant devoting considerable time and cost to volunteering. Astin & Sax (1998) illustrated that encouraging results were obvious and greater impacts were detected when the additional time was dedicated to volunteer work.

Students volunteering during college are greatly associated with a higher likelihood for committing to community service after college (Astin et al., 2000) and for selecting service-oriented professions (Astin et al., 1999). Registering the characteristics of college students based on the intensity of their volunteer work participation will greatly benefit institutions to design courses and plan interventions to increase the volunteer hours, student participation and quality of service.

Demographic variables

The demographic characteristics of the college students' takes into account the distinctive characteristics that the students had before entering the college and permits the researcher to determine their development or change over a period of time (Astin, 1993). The model is designed to record the demographic characteristics of students that had committed and those that were challenged to dedicate time for volunteering. The demographic characteristics integrated in the conceptual design are gender, race or ethnicities, age, first generation status, and international status. These measures were chosen as they consistently exhibited noteworthy or trivial involvement in volunteer work.

Gender

Gender is a strong predictor variable as evidenced from previous studies that were conducted to understand the volunteering characteristics of college students and is included in the study. A remarkable number of studies have consistently recognized that women showed a preference to volunteer more often than men (Cruce & Moore, 2007, 2012; Dote et al., 2006; Griffith & Hunt-White, 2007; Handy et al., 2009; Hu, 2008; Planty et al., 2006). Quite a few studies regarding gender differences in volunteer motivation have confirmed

that women scored greater on most roles than men, signifying that women had higher probability to volunteering than men (Chapman & Morley, 1999; Fletcher & Major, 2004).

In the predictive model gender is expected to play a vital role with the inclusion of the environmental characteristics in the choice of major and membership in a social organization in college that significantly stimulated their intensity of volunteering. Being part of a social organization is anticipated to improve the intensity of volunteer work participation in college students. Although, in general women were noted to be more fundamentally motivated to perform volunteer work than men that they were projected to commit more time in the social organizations.

Females were motivated with altruistic intentions that stressed concern for others and were motivated to pursue studies that emphasized nurturing (i.e., social service profession, education), while men were drawn towards majors that required computable reasoning and delivered materialistic rewards (i.e., engineering, business, physical sciences, mathematics & computer science). A few studies have evidenced that women were more intrinsically motivated and less materialistic to commit more time to volunteer work (Astin & Sax, 1998; Astin et al., 2000; Marks & Jones, 2004; Serow & Dreyden. 1990).

Rhoads (1997) also rendered from his study that women carried a sense of “ethic and care” that motivated them toward volunteer work in comparison to men who were less inspired to volunteer. Metz and Youniss (2005) in contrast found that when volunteering was made a compulsion, it had an optimistic effect on men than women and encouraged future participation. Since gender has been a consistent predictor variable it is an important predictive variable in the study.

Race/ Ethnicity

Previous studies have drawn varying findings when measuring race and ethnicity in relation to volunteer work involvement. The measure race/ ethnicity is included and deemed essential in the present study to gain a more in-depth understanding of this variable and add to bridge the inconsistencies in existing literature. Few studies suggested that the students' propensity to volunteer did not differ by race or ethnicity (Mark & Jones, 2004; Pierson, 2002).

Several other studies had contradicting outcome with white students participating more than the other race and ethnic groups (Nolin et al., 1997; Planty & Regnier, 2003; Dote et al., 2006; Eyler et al., 2001; Musick et al., 2000). Some other studies also yielded inconclusive results in effect of the different aspects of student ethnic identities that influenced volunteering (Cruce & Moore, 2007, 2012; Gonzalez, 2008; Griffith & Hunt-White, 2007; Dote et al., 2006; Jones & Hill, 2003).

Cruce & Moore (2007) and Bonnet (2008) established from their study that multiracial students volunteered or were likely to volunteer more than the white college students in their ethnic specific organizations. Both the studies mentioned that African Americans, Latinos, and Asian American students volunteered more than white college students. Jones and Hill (2003) found that students of color were engaged in their communities. The varied outcome observed in relation to volunteering is due to the diverse culture and normative beliefs of the college students' race or ethnicity in combination with the institutional experiences (Jones & Hill, 2003; Okun & Sloane, 2002). Cultural background most likely influences how volunteering is defined and undertaken.

The predictive model for this study is developed with the notion that racial groups will be dedicated to their particular ethnic, social, cultural organizations or be involved in athletics which could contribute to their extensive volunteer work participation.

Age

Earlier studies considered age as a weak predictor of volunteering characteristics of college students and a complicated variable to measure as college students were typically of a broad age group that ranged from age 17 – above 55 years. Several of the studies have listed age as a dichotomous variable with traditional age that ranged from 18 – 24 years and 25 years and above as non-traditional age categories of choice. This categorization limited the scope of understanding the volunteering contribution of students within the broad non-traditional age group. A meta-analysis of college student research identified 25 years or older as a benchmark of non-traditional age for college students (Pascarella & Terenzini, 2005). Although, categorizing age as a dichotomous variable restricted examiner in understanding the existence of significant differences in the volunteering characteristics among other age categories.

Many examiners have established that older volunteers were encouraged predominantly by altruistic motives (Finkelstein, 2009, Penner, & Brannick, 2005; Okun & Schultz, 2003). Although, younger volunteers were also strongly motivated by altruistic motives, they often ranked their career and social purposes higher (Clary & Snyder, 1999; Finkelstein et al., 2005; Omoto et al., 2000; Planalp & Trost, 2009; Roessler et al, 1999).

Bureau of labor statistics (2008) documented that ages between 35 - 44 years had a higher probability of volunteering than traditional age groups. Cruce & Moore (2007)

further warranted from their study that non-traditional age groups 25 years and above exhibited a greater chance of volunteering in comparison to the traditional age categories. Older college students might have advanced time management skills and already established patterns of community work that they continued even while attending college (Gasiorski, 2009). Although, both the above studies outcome were similar, the age groups used in the study were categorized differently making it incomparable and that prompted further research into the different age groups volunteering participation rates.

In the present research the data on age category is estimated to be pre-sorted and categorized by the OIR office as it is part of the institutional reported data. The OIR classified age groups will not be pooled to form a dichotomous variable, so more information can be collected on other age groups commitment and contribution to volunteering. Age is expected to noticeably affect the enrollment, living status and social membership of college students.

Students of non-traditional age groups are likely to be part-time enrolled students that are not living on campus or within walkable distance to the institution and are not part of a social sorority or fraternity. So non-traditional age groups during college are probable to contribute less time to volunteering as they may be committed to their work, family, or residing too far from the institution and have restricted hours to contribute. Also, non-traditional age students' may not have time to be part of a social organization as these organizations demand extensive time dedicated for service activities. Since, the researcher is considering those groups that are currently lacking participation, the different categories of the age variable is significant for the current study.

First generation status (neither parent/ guardian holds a bachelor's degree)

There is a lack of research on students with first generation status in relation to volunteering. Previous studies have not established any positive significance of this variable to influence volunteering. Terenzini et al. (1996), on the contrary indicated that, first generation students were inclined to have either a substantially higher negative influence or considerably a smaller positive effect on outcomes of volunteer work than for other students. Since, universities and colleges are estimating those that are currently not volunteering to encourage and create engaging programs the variable first-generation status was significant for the current study.

Previous research has established a link between parents' education and college students' volunteering motivation (Marks and Jones, 2004). Students that had parents with college degrees had a better chance of participating in volunteer work than their peers (Cruce & Moore, 2007). However, they added that students who had parents with less than college education had a higher intention to partake in volunteer work at college. Past research has directed that a relationship existed between parents' education and college community service participation.

The First generation status measure is included in the study as additional research is required to decide the reliability of the first generation status as a more dependable predictor of volunteerism in college students ' .In the model first generation status students' are expected to have a negative inclination and intensity to volunteering with the addition of the academic standing measure (i.e., grades). Choosing first generation status as a predictor will also serve the purpose of determining the participation of students with parents of

educational capital and further monitoring the service participation of first-generation students.

International student or foreign national

Prior research on International student or foreign nationals' preference to volunteering in college were rather limited and should be further studied. So International student or foreign national variable is included in the model to add to the limited existing literature and advance knowledge on the predictive capability of this measure in relation to volunteering. Chen, (1999) noted that language and cultural barrier had significantly constrained international students to volunteer in the first year of college. The differences or feelings of isolation had restricted their participation and acted as a barrier that limited their capability and probability of volunteering (Zhao et al., 2005).

Cruce & Moore, (2012) reinstated in their study that foreign national students were indeed less likely than U.S. or Canadian citizens to contribute to volunteer work. Conversely, the study on the other hand, identified that international students had higher inclination of planning to volunteer during college. Although, the study only took into account the intentions to participate and not the actual intensity of participation by the college students. Including International students or foreign nationals as a predictor is important to determine if interventions were required to remove obstacles and lead to their active participation.

Environmental Characteristics

Environmental influences provide the best opportunity for determining how a particular educational experience influences student development or change (Astin, 1991).

Although, environmental assessment is the toughest aspect of the model as it encompasses all that the student experience during their time at the college (Astin, 1991). Institutional characteristics like that of a land-grant University, participation in a student social organization/ fraternity or sorority, living status and specific educational experiences like the major, academic standing, enrollment status, and athletic involvement were all part of the environmental characteristics. The model is designed to isolate the environmental characteristics which either contributes to the increase or decrease in the intensity of volunteering among college students.

Enrollment status

Enrollment status measure is integrated in the research model and estimated to be a strong predictor of volunteering characteristics of college students as most of the students are expected to be enrolled full-time. Earlier, research has established a link between enrollment status and volunteering in college. Previous studies that had enrollment status as a predictor determined students that registered part-time were less inclined to participate in volunteer work, when compared with students who were signed up full-time (Cruce & Moore, 2007). Students' registered part-time were probably of non-traditional age dedicated to a job and other serious life commitments, which hindered with volunteering in college.

Enrollment status listed as a dichotomous variable is vital to predicting the volunteering characteristics of college students. Few studies have evidenced students of non-traditional age to have greater possibility of volunteering (Bureau of labor statistics, 2008; Cruce & Moore, 2007, 2012), which contradicted with the outcome that part-time enrollment status students were less likely to volunteer. The enrollment status measure is

included in the study as further research is required in understanding the consistency of the variable in predicting the volunteering characteristics of college students.

Academic Standing

Academic standing variable was incorporated in the model as numerous researchers have observed a connection among varied forms of educational standing and volunteering in college students. Studies have used college grades, grade point average (GPA), scholastic aptitude test (SAT) or American college test (ACT) scores and evidenced that higher grades were a predictor of volunteering in college students (Serow & Dreyden, 1990). The current study will take into account only the college grades as the other scores are anticipated to be highly correlated with each other. Also, the current study is interested on college experiences that impacted students volunteering during college. Academically, students that participated in volunteer work obtained higher grades and exhibited superior problem solving and intellectual abilities (Eyler et al., 1998) and consistently demonstrated academic achievements (Eyler & Giles, 1999).

Kuh (2003) reflected that students that were actively engaged on their campus had a greater inclination to achieving a higher GPA. Vogelgesang & Astin, (2000) identified that students with higher GPAs were frequently participating in honors or scholars' programs that incorporated volunteer work into the syllabus. National Honor Society programs obligated students to complete volunteer work as a requirement for participation in their association.

Students with high GPA had enhanced skills to balance education and volunteer work, which could be the result of the relationship between higher GPA and volunteering in

college. Students with a higher GPA had a better knowledge of community service and volunteer work opportunities, as first-year honor societies or honors programs consistently necessitated or involved volunteer work as a vital aspect of their participation. On the other hand, first generation students' disposition to volunteering during college is expected to have an adverse effect with the presence of the academic standing measure. So academic grades is a crucial variable in determining the volunteering characteristics of college students in a land-grant university.

Athletic Involvement

Volunteering by student-athletes has yielded several constructive results like contentment, gratification on fulfilling duty to the community and a meaningful way of dedicating time to serve the society (Schatteman, 2014). A Previous study also elaborated that volunteer work enhanced athletes' problem-solving skills and promoted critical thinking skills (Huml et al., 2018). However, Cruce & Moore (2007) noted results from their study that students who participated in varsity athletics had chances of volunteering that were not significantly different from those of non-athletes.

Huml et al., (2019) in a recent study mentioned that National Collegiate Athletic Association (NCAA) had presented from their findings that nearly 90% of college athletes were engaged in volunteer work and almost 60% of athletic coaches insisted on them volunteering as a team. Regrettably, it was noted that colleges that had integrated targeted agendas to cultivate student athletes' educational improvements and service confirmed it to be insufficient to bridge the stress and difficulties they encountered (Kamusoko &

Pemberton, 2011). Arguably, there are questions regarding student-athletes and their lack of time to devote to events other than their athletic commitments (Hardin and Pate, 2013).

Studies that analyzed student-athletes' participation in co-curricular engagements, such as volunteer work are inadequate (Huml et al., 2018). Although, several studies have explored the impact of volunteering on college students they had not included student-athletes (Huml et al., 2019). Research in connection to volunteering in college and student-athlete is limited and needs further research in detail for more understanding of their predictive capability of the volunteering characteristics of college students. The athletic involvement is incorporated in the current research model to examine if it added unique contributions to predicting the intensity of volunteering in college students.

Major

Major is an important variable in the current study as integrating or re-defining service scholarship into the academic coursework would be the practical way to enhance volunteering in a land-grant university (Boyer, 1990). Including the major as a measure will ensure to identify majors that are unable to incorporate volunteering into their agenda. Gathering this information will be useful for colleges to re-structure their curriculum with practical applications to integrate volunteering. Since there are numerous majors listed in the survey this study will only use the OIR institutional reported majors and use the categories recognized by the university.

Existing studies found that academic major had a greater inclination toward projecting the odds of volunteering in college students (Astin & Sax, 1998; Cruce & Moore, 2007). Cruce & Moore (2007) explained that education majors had the highest probability of

contributing to volunteer work, while biological sciences, social sciences majors, professional occupations like business majors, exhibited a greater probability to volunteer work. Arts and humanities majors and undecided majors showed less probability to participate in volunteer work, whereas students of the educational curriculum within engineering and physical sciences had chances of volunteering that were not significantly different from students of the arts and humanities courses (Cruce & Moore, 2007).

The biggest problem for these majors like engineering and physical science, was the difficulty in incorporating service into academia that would deliver significant concrete and relevant educational involvement for students (Felder & Silverman, 1988). Lately, colleges and universities have initiated to examine those that were registered in these majors to understand the impact of volunteering on students learning (Jamieson, 2002; Oakes et al., 2000; Sanderson, 2003; Sanderson & Vollmar, 2000).

Member of Social Organization

Existing research indicates that being a part of social fraternity or sorority as a strong positive predictor of volunteerism in college (Cruce & Moore, 2007; Fitch, 1991).

Numerous studies have confirmed that a strong connection existed between volunteering and being a member of a social student organization. It is evident that students registered in college fraternity or sorority or Greek organizations that expected and anticipated community service had a higher inclination to participate in volunteer work (Marks & Jones, 2004; Serow & Dreyden, 1990).

Specifically, Greek organization students were regularly obligated to be involved in volunteer work or philanthropy as a requirement of their association and volunteered with

other members as a group (Hayek et al., 2002). Greek students were often provided opportunities to volunteer as a group with a clear emphasis on civic engagement and involvement in the community that brought the community together.

The societies demanded time and involvement as part of their organizational commitment, which increased the intensity and propensity of volunteering in college students. In the predictive model age, gender and race are expected to alter their intensity of participation with the influence of membership in a social organization during college. Based on preceding studies, being a member of a social fraternity or sorority or Greek organization in college was a strong predictor of volunteer work or community service participation (Cruce & Moore, 2007; Marks & Jones, 2004; Serow & Dreyden, 1990) and is included in the study.

Living status

Volunteering connected the students to be active citizens of the community there by encouraging them to be involved and cultivated a consciousness for those in that society (Holdsworth & Quinn, 2010). In previous research students that lived on campus regularly documented to have a higher probability of volunteering during their first college year than students who lived farther away from the institution (Cruce & Moore, 2007, 2012; Haski-Leventhal et al., 2008; Planty et al., 2006; Jones & Hill, 2003; Fitch, 1991). Residing on-campus contributed to the students' propensity to volunteer, as it allowed convenience, ease and proximity for students to take part in volunteer work opportunities. Among those students who had not participated in their first year of college, campus residents had

exhibited a higher inclination towards participating in comparison to non-residents (Cruce & Moore, 2007).

Implementing practices of boosting on-campus housing and promoting the use of learning communities on campus can extend beyond volunteering and can encompass varied methods of student engagement and improvement (Pascarella & Terenzini, 1991, 2005). Research showed prominent effect of living-learning communities on students' openness to diversity (Pike, 2002). These encouraging outcomes confirmed that in comparison to off campus living there were significant benefits to college students' in choosing to live on campus.

The Chronicle of Higher Education (2008) statistically presented that only a very small percent of the students actually lived on campus and that percent was also on the decline. Prevailing studies have specified that living status has a correlation with volunteering, this measure is included in the current study as this concept requires further analysis into the different groups that are listed under living status.

Institutional characteristics

Carnegie classification system defined the institutional type based on curriculum, student population and the location (Carnegie Foundation, n.d.). Vogelgesang & Astin (2000) stressed that it was vital to assess the environmental influence and account for the institutional characteristics when measuring the predictors of volunteering in college students. Educational settings and college involvement impact students' decision to engage in volunteer work (Alyssa, 2014).

Prior studies stated that students of religiously affiliated colleges and universities, along with smaller size institutions, had a much more probability of participating in volunteer work than other institutions (Cruce & Moore, 2007; Serow & Dreyden, 1990). Students that belonged to private four-year institutions statistically showed the maximum percent of involvement in volunteer work (Griffith & Hunt-White, 2007); however, in contrast, students of large urban institutions indicated fewer participation (Cruce & Moore, 2007). Larger institutions struggled with developing and sustaining a setting that established an assertion to volunteering. Moreover, institutional characteristics affected student participation, so calculations were made on the impact of components like institutional control, size, and selectivity (Antonio et al., 2000; Umbach, 2008; Vogelgesang et al., 2010; Cruce & Moore, 2007, 2012). Existing studies have not looked into the concept of land-grant organization and their impact on the students' volunteering in those institutions that have a specific mission to outreach and community service.

Research Question

The research question that will guide the current study is, "Which of the environmental influences predict the volunteering characteristics of college students in a land-grant university?" Environmental influences provide the best opportunity for determining how a particular educational experience influences student development or change (Astin, 1991). The study will control for the background characteristics that the students bring to college and assess the specific environmental characteristics influence in predicting the intensity of students volunteering during college. This predictive model particularly takes into account the college experience measures that contribute to either obstructing or intensifying college student volunteering. Identifying the impact of

environmental influences can help institutions with aligning resources and programs that integrate with specific core curriculum to eliminate obstacles that obstruct participation and lead to substantial increase in student engagement for land-grant universities.

Previous studies, challenges and delimitations

Johnson (2007) expressed that considering the significance of volunteerism on both economic and social standings, the concept has been comparatively not well researched. Much of the review on prior studies were associated with service-learning more than on volunteer work participation (Celio et al. 2011; Dipadova-Stocks, 2005; Driscoll et al. 1996). Volunteering is an extensive program for college students, and there are many significant outcomes evidenced (Astin & Sax, 1998; Eyster & Giles, 1999); although, an inquiry into the predictors of student volunteering is scarce (Cruce & Moore, 2007, 2012; Johnson, 2014).

Colleges and Universities are challenged, as plans to increase volunteer work programs were refined by reviewing earlier studies, which helped in listing those students that were at present involved or not committed to volunteer work. Gasiorski (2009) stated that it was essential for colleges and universities to create a profile of students who volunteered, to further promote the intensity of those already participating and to stimulate/inspire students who were not currently motivated towards volunteer work or community service. The current study aims to introduce suitable measures to estimate student participation that would assist faculty and staff to track volunteer hours, allocate appropriate resources, or design mediations to motivate the students that were currently not participating in volunteer work (Cruce & Moore 2007, 2012) and build a robust connection with

community members. As Boyer (1990) had envisioned this can promote institutions to also re-evaluate their current service scholarship agendas and incorporate integrated scholarship plans.

Past studies validate the positive effects of measures like gender, major, Greek involvement, educational capital and race/ethnicity in predicting the volunteering characteristics of college students (Cruce & Moore, 2007, 2012; Dote et al., 2006; Gonzalez, 2008; Griffith & Hunt-White, 2007; Handy et al., 2009; Hu, 2008; Jones & Hill, 2003; Planty et al., 2006; Johnson, 2014). In research, examiners were not frequently assessing on the same context of the previous studies, which posed major difficulties in comparing or continuing with the existing studies. Although, all the above-mentioned research presented that college volunteerism or community service involvement could be positively and continually measured on a broad framework, which encompassed volunteer work or community service and service learning.

Following the similar broad context of earlier studies was the Cooperative Institutional Research Program (CIRP) data that composed national data every year by charting first year students by their Student Information Form (SIF). Examiners that used these data sets measured the all-encompassing broad-spectrum of volunteer work or community service participation (Astin & Sax, 1998; Astin et al., 2000; Astin et al., 1999; Vogelgesang & Astin, 2000). The intensity of the volunteer work or community service was measured with questions, “Please indicate how often you performed volunteer work during the past year,” with choices as frequently, occasionally, or not at all (Vogelgesang & Astin, 2000).

Cruce and Moore (2007) measured college volunteerism by using a single item from the National Survey of Student Engagement instrument, “Which of the following have you done or do you plan to do before you graduate?” Community service or volunteer work was one of the selections, and the students’ answer choices were: “done,” “plan to do,” “do not plan to do,” or “have not decided.” Since volunteerism was related to a higher inclination to carry out volunteer work in the future (Astin et al., 2000) and choose service-oriented careers (Astin et al., 1999) it was evident that greater rewards were achieved when more time was devoted to volunteer work (Astin and Sax, 1998).

The number of hours per week that college students spent on volunteer work projected optimistic civic outcomes (Cress et al., 2001). Understanding the significance of measuring and estimating the actual time spent by college students in volunteer work, National Survey of Student Engagement question was changed in 2013 to include the volunteer work or community service hours per week. The item appeared with nine other items (e.g., working for pay on campus, working for pay off campus and reading for class) that in combination, measured the number of hours the student spent on participating in various enriching experiences. The question for this set of items read, “About how many hours do you spend in a typical 7-day week doing the following?” with response options: 0 hours per week, 1-5 hours, 6-10 hours, 11-15 hours, 16-20 hours, 21-25 hours, 26-30 hours, and more than 30 hours. Although this change permitted for more accurate calculation of the actual time spent on volunteer hours or community service it failed to allow the continuity of previous research studies.

The other major limitations noted from prior studies were that they lacked generalizability of the results as institutional characteristics were so different that

generalization was not possible across all factors. Most of the studies were multi-institutional studies that had not taken into consideration the uniqueness of the organizations (e.g., control/affiliation, size, and location) and the sample it encompassed (Astin & Sax, 1998; Astin et al., 2000; Marks & Jones, 2004; Pierson, 2002). Few other studies had considered a limited set of the institution in a state (Serow & Dreyden, 1990) or a single institution (Fitch, 1991). National Survey of Student Engagement data strength is that it allows for institutions to examine and assess within their organization using longitudinal data to calculate the substantial differences in student engagement that occurred within the organization. The current study took into account the power of National Survey of Student Engagement data to overcome this present limitation and analyzed within the single organization and conducted a longitudinal study to determine the predictors of college students volunteering characteristics.

Another problem with understanding the volunteering characteristics of college students was that no two studies were comparable, as they did not use the same data, variables, parameters or method for analysis. Similarly, studies were not comparable as the surveys asked students different questions. Studies that used CIRP, National Survey of Student Engagement (till 2012) data analyzed student intentions to participate rather than actual participation, while other instruments measured actual volunteer hours or benefits of community service participation. The current study was conducted with longitudinal data from 2013-2018 and reliable actual college student volunteering hours along with new variables that were not included in previous studies to augment another dimension to the existing studies.

Another significant limitation was that the type of analysis used were not the same. Two studies (Fitch, 1991; Serow & Dreyden, 1990) used a sequence of chi-square tests to study the consistencies in volunteering characteristics among college students. Astin and Sax (1998) and Astin et al. (2000) had not reported the statistical model that shaped their findings, which made it problematic to confirm the reliability of their outcomes. Pierson (2002) projected a model of the volunteer decision using ordinary least squares (OLS) multiple regression, which was comparatively a better statistical analysis. The current study used multinomial regression analysis to compare data within the institution to understand the strong and weak predictors of the volunteering characteristics in college students of a land-grant institution.

Longitudinal data enabled to identify a trend in student participation, but it also added to the complications in relating data on volunteer work. It was apparent that a substantial number of college students were contributing to volunteer work and the rates of their participation differed subject to the research. Since the volunteer work participation rates were continually varying for college students, it was important to use recent data in order to gather current specifics of the volunteerism or college community service phenomenon.

The current study set out to investigate the predictors of volunteering by college students to generate a characteristics portfolio of students with actual participation in volunteer work and the intensity with which they participated or the lack of it. The role that this specific study can play is that it uses the consistently emerging predictor variables and introduces an entire set of variables that were not included in prevailing studies like student athlete, first generation status students and international students. The study also took into

account the different age groups instead of treating it as a dichotomous variable. It is not only important to have information on students that are documented with commonality in characteristics for volunteering, but also of those students that were unaccounted for their participation in volunteer work or community service.

Summary

Kiesa et al. (2007) stated that 92% of the students that participated in the surveys acknowledged that it made a huge difference when communities united with higher education institutions to resolve their issues. In recent years, due to the democratization and openness of colleges and universities, a more diverse student population are involved in volunteering (Musil, 2003). The conceptual model is developed to identify those environmental characteristics that influence volunteering among college students. Controlling for the demographic variables enables to isolate the college experience measures that impact volunteering in college students. Land-grant institutions with an obligation to community service would greatly benefit with insights into the kinds of actions and deeds that students were engaged in the community and understanding the characteristics that predicted their participation. Registering a significant number of students to volunteer work would be considered a proven success of the land-grant universities in nurturing civic awareness and responsibility towards the community as part of their outreach mission.

Chapter 3

Methods

The chapter clearly details the methods that will be used in the research on approval of IRB protocol number 18-368 EX 1809 to identify the predictors of volunteering characteristics of college students in a land-grant university. The chapter begins with the research question, followed by an explanation of the instrument and the data source. The following sections describes in detail about the sample that will be used in the study, the measures and the specifics of data modification with a detailed description of the statistical processes that will be conducted to address the research question.

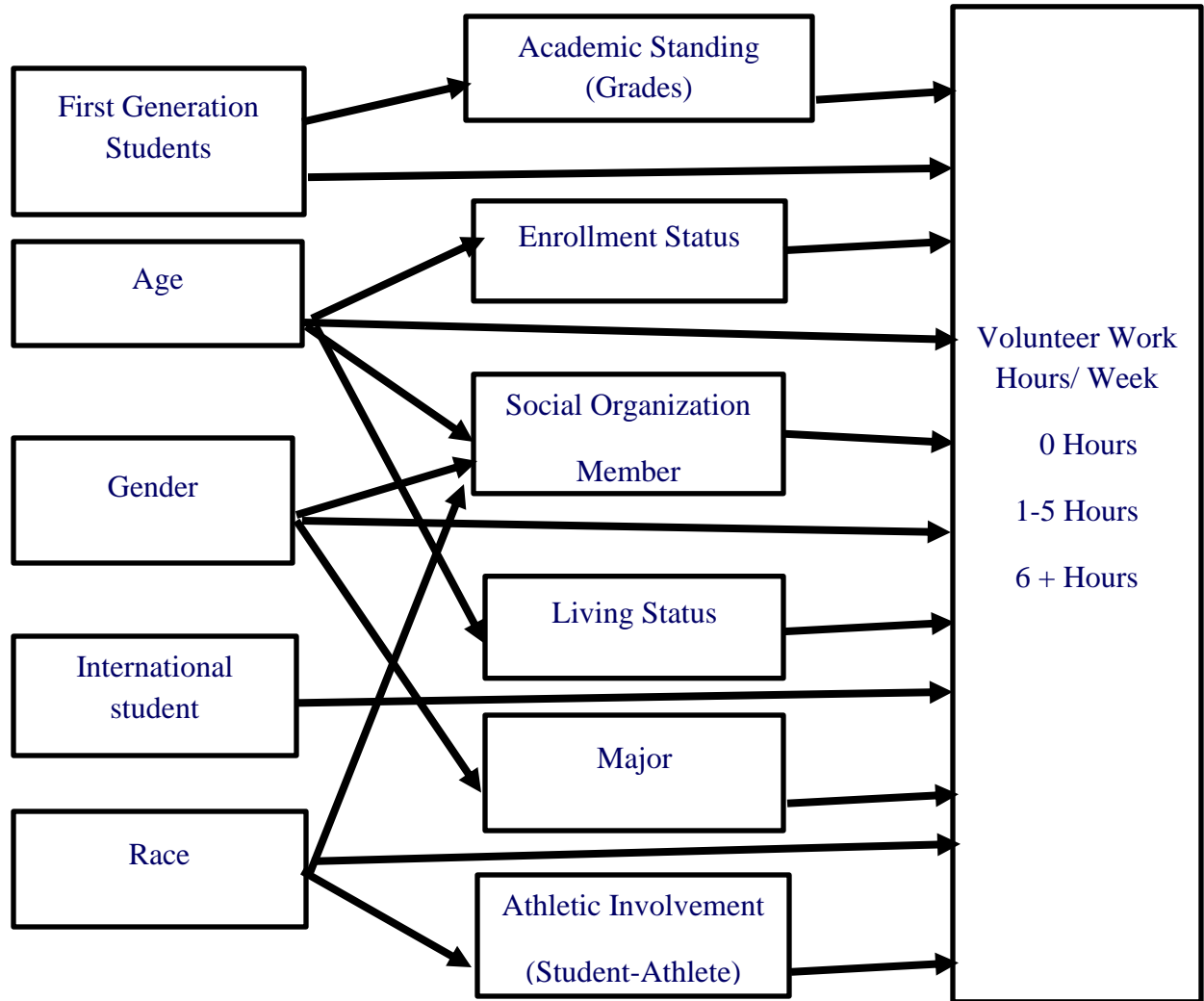
Research Question

The research question that will guide the current study is, “Which of the environmental influences predict the volunteering characteristics of college students in a land-grant university?” Environmental influences provide the best opportunity for determining how a particular educational experience influences student development or change (Astin, 1991). The study will control for the background characteristics that the students bring to college and assess the specific environmental characteristics influence in predicting the intensity of students volunteering during college. This predictive model particularly takes into account the college experience measures that contribute to either obstructing or intensifying college student volunteering. Identifying the impact of environmental measures can help institutions with aligning resources and programs that integrate with specific core curriculum to eliminate obstacles that obstruct participation and lead to an extensive increase in student engagement for land-grant universities.

Multinomial regression analysis will be conducted to address the research question. Multinomial regression allows the researcher to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables (Starkweather & Moske, 2011). Descriptive analysis, Correlation table, Chi-square analyses and likelihood ratio will allow determining the significant differences that exist between college students that volunteer and those that do not participate on a number of key variables. The college students' characteristics will be charted based on the intensity or absence of their volunteer work participation in a land-grant university with the addition of the college experience measures.

The research framework will guide to address the research question of this study. A multinomial regression model will be estimated on the chosen controlled demographic variables without the presence of the environmental influence measures in relation to the intensity of volunteering in college students. This will list the demographic characteristics that positively or negatively influence volunteering in college students. The model then will be re-estimated with the inclusion of the environmental characteristics, and an improvement in the overall model fit, as measured by a chi-square test of the likelihood ratio, will be assessed to determine if those measures alter the influence of demographic variables in the prediction of volunteering involvement in college students. The inclusion of the college experience measures will permit to recognize the specific variables that impact the intensity of volunteer work participation among students during college.

Figure 3.1: Predictor Variables of Volunteering Characteristics of College Students' in a Land-Grant University



In the study, the dependent variable will be volunteer work hours per week, with categories 0; 1-5; and 6 and above hours per week. A correlation table will be used to select the independent variables to ensure that they are not highly correlated with other variables that could produce substantive results.

The predictive model includes the selected predictor variables that will be used in the study to determine the volunteering characteristics of college students in a land-grant university (Figure 3.1). The demographic characteristics will include variables such as gender, age, and race that were consistently used in prior research along with measures that were not previously selected like international students and first-generation students. The environmental characteristics will include variables such as academic standing, enrollment status, major, athletic involvement, membership in a social organization, and living status. Academic standing will be measured by choosing grades as a predictor variable, and athletic involvement will be assessed with the student-athlete/ non-student athlete variable.

Instrument

National Survey of Student Engagement (NSSE)

National Survey of Student Engagement is the primary survey instrument that has been given attention nationally as an accurate measure of student engagement. National Benchmarks of Effective Educational Practice, NSSE (2000) has high face validity, is simple to relate, and provides an easily processed overview of the results. NSSE is a survey that annually measures from a random sample of undergraduate students using a standard protocol at approximately 500 to 750 bachelor's degree-granting institutions (National Survey of Student Engagement, 2012). NSSE measures the extent to which the students

engage in empirically assessed quality educational methods, acknowledges the educational approaches the colleges have focused on, and identifies the extent to which students have developed academically and individually as an outcome of those involvements (McCormick et al., 2013).

Several studies have used NSSE survey results to measure volunteer work participation and its influence on student-learning (Carini et al., 2006), college preparation (Kuh, 2007), instructional approaches (Ahlfeldt et al., 2005), grades and persistence in college (Kuh et al., 2007). NSSE results also aid in measuring faculty influence on the intensity of student engagement (Umbach & Wawrzynski, 2005). Few researchers have used NSSE data to isolate individualities between student groups, such as first-generation and low income students (Filkins & Doyle, 2002), American and international students (Zhao et al., 2005), gender differences (Harper et al., 2004), Greek letter students (Hayek et al., 2002), and student-athletes (Umbach et al., 2006).

NSSE survey delivers the key statistics that colleges desire in order to target their efforts to advance the undergraduate experience. Nationally, the benchmarks empirically establish existing levels of student engagement in effective educational practices. NSSE (2007) records item-by-item effects, and also generates swift actions in the form of five “Benchmarks of Effective Educational Practice” that concentrates on crucial points of excellence in undergraduate education: level of academic challenge, active and collaborative learning, student-faculty interaction, enriching high impact practices (Courses that included a community-based project), and supportive campus environment (McCormick et al., 2013).

The modified NSSE survey questions from 2013 indicate student time commitment to different activities per week that colleges could intervene with methods and techniques to enhance student learning outcomes. The prime strength of the NSSE instrument is that it permits the participating institutions to assess within their organization the considerable disparities in student engagement (McCormick et al., 2013).

Missing Data and validity of the NSSE instrument

Higher education and social science surveys have commonly noted a steady decline in the response rates for several years (Dey, 1997; National Research Council, 2013). “Survey fatigue” is noted as an emerging threat that hinders the organization’s ability to process data and to understand student experience on college campuses (McCormick, 2013). The consistent decline in response rates has led to queries and challenges of missing data, which threatens the validity of higher education survey research.

Hutchison and associates (1987) support that NSSE survey evaluations of college student results can be attained based on a relatively low response rate administration, which is also similar to former NSSE non-responder researches (Kuh, n.d.; Sarraf, 2005), along with Pike’s (2012) outcome that NSSE benchmark scores based on 50 respondents deliver reliable group means. These prior studies on NSSE have established low response rate validity and reliability, which is a vital strength of the instrument.

Data Source

The subject population will be all college students that voluntarily participated in the NSSE data collection ranging through the years 2013 – 2018, which was administered annually during every spring of a land-grant university. The NSSE self-reported data of the

college students' data will not be directly collected from the participants. The data source will originate from IRB protocol number 18-368 EX 1809 of the National Survey of Student Engagement (NSSE, or "Nessie") survey instrument, The Office of Institutional research (OIR) will provide the complete data of the NSSE survey from 2013-2018 on approval of the submitted expedited IRB.

This research project involves the secondary analysis of existing college students' data gathered by the OIR office of a land-grant University. In addition to the NSSE survey self-reported data, the institution reported data which gives an enrollment data snapshot on the demographic information of the students would also be gathered to strengthen the validity of the study. In order to maximize data safety, the existing data gathered will not be shared, participants' information will be de-identified and strong data security controls on storage sites will be ensured.

Student self-reported survey data are predominant in research on the college students and are gathered directly from the participant; although, this study will use secondary data. The original data collected by the OIR office are voluntary college student self-reported data. Information on student behavior such as the number of student volunteer work hours per week cannot be confirmed and the prospect of verifying this information is impractical as well as time and cost consuming. Ouimet & colleagues (2004) conducted focus groups to validate the NSSE survey, they assessed the meaning of the NSSE response categories and established evidence that the meanings are item specific. The increasing specialization of assessment instruments have resulted in more confidence on self-reported data derived from a survey taken by college students (Astin, 2003; Chun, 2002; Kuh, 2003; Takalkar et al., 1993).

Self-reported data on student demographic information are readily verifiable against records held by the institution. Gathering a snapshot of the student enrollment data from the institution has 100% possibility of being complete and accurate unlike self-reported data which can be incomplete and inaccurate. In the present study, a modified IRB will be submitted to collect the institutional data on student demographic information.

Data Analysis

This section describes the process by which the variables will be sorted in order to suit the research design of this study. Particulars on the sample of the study and the modifications that will be made to the data are described in detail.

Sample

This segment of the chapter will provide a thorough examination of the sample on all of the predictors used in the study. This study will conduct secondary analysis on existing longitudinal survey data collected by the OIR office of a land-grant University using the NSSE survey from 2013 through 2018 to address the research question. This study will include the sample that originates on submitting and being approved with the IRB protocol number 18-368 EX 1809 based on the NSSE survey instrument. NSSE, a reliable tool for institutional self-analysis and improvement, gathers high-quality information about key aspects of the student experience (Kuh, 2008). The instrument consists of questions on student demographics, some measures from national studies, with a few new scales and queries intended to measure student engagement.

The sample comprises of 8,318 college students that participated in the NSSE administration from 2013 to 2018 of a single land-grant university. The institutional

research office of the land-grant institution that administered NSSE during 2013 - 2018 to the college students measured the extent of student engagement on different scales during the academic years.

Measures

Given the wide range of independent variables modeled in previous studies (Cruce & Moore, 2007, 2012; Celio et al. 2011; Dipadova-Stocks, 2005; Astin & Sax, 1998; Eyler & Giles, 1999; Driscoll et al. 1996; Gasiorski, 2009; Dote et al., 2006; Gonzalez, 2008; Griffith & Hunt-White, 2007; Handy et al., 2009; Hu, 2008; Jones & Hill, 2003; Planty et al., 2006; Johnson, 2014), we delimited our work to include only those measures that played an essential role in either predicting the positive or negative outcomes of volunteering hours.

The subsequent section lists in detail the dependent and independent variables that will be chosen for the study to predict the volunteering and non-volunteering characteristics of college students in a land-grant university. Several modifications will be made to process the data to fit the study. The data set will also be examined for outliers to confirm that no cases had an undue effect on the model.

The measures represented in the model will reflect key dimensions of the predictive capabilities of volunteer work involvement among college students, as identified in the existing literature. The study also introduces a set of variables that have not demonstrated consistency in volunteer work participation. The focus of the model is to understand the influence of environmental characteristics on the intensity of student volunteer work participation, given the overwhelming evidence that time devoted to service enhances outcomes (Astin & Sax, 1998).

Dependent variable

Volunteer work or community service

The dependent variable for this study originates from a single item on the NSSE instrument that measures the students' current volunteer work hours. The item appears with nine other items (e.g., working for pay on campus, working for pay off campus and reading for class) that in combination measures the number of hours the student spent on participating in various enriching experiences. The question for this set of items read, "About how many hours do you spend in a typical 7-day week doing the following?" with response options: 0 hours per week, 1-5 hours, 6-10 hours, 11-15 hours, 16-20 hours, 21-25 hours, 26-30 hours, and more than 30 hours.

Since there were multiple response options, some of the groups are expected to have very low percent of responses. The observed variable, volunteer work or community service will be reduced to three categories for the current study. As mentioned by Pallent (2007), multiple categories will be pooled to form an even distribution based on the descriptive statistics. The dependent variable volunteer work hours per week (3 items), will measure the extent to which students volunteered during college. The biggest group of the students in the dependent variable sample is expected to be 0 hours of volunteer or community service work, which will be set as the reference group for the study. A score of 0 reflects "no" or "0" volunteer work hours, 1 represents 1 – 5 volunteer work hours per week, and 2 reflects 6 hours and above of volunteer work or community service hours per week during the years 2013 – 2018.

Background/ demographic characteristics

The background or demographic characteristics of the college students' will take into account the distinctive characteristics that the students had before entering the college and permits the researcher to determine their development or change over a period of time (Astin, 1993). The predictive model allows controlling for the demographic variables by assessing the college students volunteer work involvement with and without the presence of the environmental characteristics.

Gender

Previous research models included gender as an important key predictor and will be added as a dichotomous variable in the present study (Astin & Sax, 1998; Cruce & Moore, 2007; Marks & Jones, 2004; Vogelgesang & Astin, 2000). The categories will be coded as 1 for females and 0 for males. The males will be set as the reference group to examine the extent to which females were more likely to volunteer than men. Gender is anticipated to affect the choice of major and membership in a social organization, which will impact the intensity of their volunteering participation.

Race/ Ethnicity

This study will gather institution reported data for race or ethnicity. The survey choices were: American Indian or Alaskan native, coded 7; Asian American, Black or African American, coded 6; Native Hawaiian/ Pacific Islander coded 5; Hispanic or Latino coded 4; Other coded 3; Foreign or Non-resident alien coded 2; Two or more races/ ethnicities, coded 1 and White coded 0.

The institutional reported data is accurate information on the student background, so some of the categories are expected to have very low response rates due to the low number or lack of participants belonging to that category. In the current study, the student sample is predominantly projected to be white. The research framework takes into consideration that with the inclusion of the environmental characteristics that race, or ethnicity will probably influence the membership in social organization and athletic involvement. Based on the descriptive analysis categories will be combined with the category “Other” if necessary, to eliminate the possibility of problems with multinomial regression analysis (Pallant, 2007).

Age

The study will gather institution reported data for age, which is categorized as: 19 years or younger, 20-23 years, 24-29 years, 30-39 years, 40-55 years, and over 55 years. Although, age is a continuous variable, previous studies have consistently used age as a dichotomous variable with traditional age of 18 – 24 years and non-traditional age of 25 years and above as categories (Cruce & Moore, 2007, 2012). In order to collect more specific data on the volunteer groups of a single institution based on age, only some of the institutional reported age categories will be combined in this study. Since students above 40 years may be less in number, based on the descriptive statistics, the age groups will be combined to 40-50 years and 50 and above or 40 -55 years and 55 years and above depending on the number of students in each category.

Since the age groups 19 or younger and 20-23 years are treated as the traditional age of the students the order will be reversed for the study with age 19 or younger as the reference group coded 0; 20-23 coded 1; 24-29 coded 2; 30-39 coded 3; 40-55 coded 4; and Over 55 coded 5. Age is probable to impact enrollment status, membership in a social

organization and the living status of the college students with the addition of the college experience measures.

First generation Status (neither parent/ guardian holds a bachelor's degree)

First generation Status is listed as a dichotomous variable in the survey. First generation will be the reference group coded 0 and Non-first-generation status will be coded 1. First generation status was not taken into consideration in previous studies when determining the volunteering characteristics of college students. Previous studies have used the variable parents' education with choices as an independent variable from the NSSE instrument: Less than high school diploma or GED; high school diploma or GED; some college; Associates degree; Bachelor's degree; Master's degree; and Doctorate or professional degree (e.g., JD, MD, PhD) (Astin & Sax, 1998; Cruce & Moore, 2007; Marks & Jones, 2004; Vogelgesang & Astin, 2000).

Since the variable parents' education is expected to be highly correlated with first generation status survey question choices and due to high number of response options in the parents' education with the probability of several categories with low or no responses the parents' education variable will be omitted from the study. This study aims to gather more information on the first-generation variables predictive capability of being a significant non-contributor to volunteering work hours. The first-generation students' status with the inclusion of grades is likely to negatively impact and restrict their volunteering hours during college.

International student or foreign national

Prior research on International student preference to volunteering in college is rather limited and should be further studied. International student or foreign national is listed as a dichotomous variable in the survey. It will be listed with international students as the reference group 0, and non-International students will be coded 1. This study targets to gather more information on the first-generation variables predictive capability of being a significant non-contributor to volunteering work hours in college.

College experience/ Environmental Characteristics

“Environmental influences provide the best opportunity for determining how a particular educational experience influences student development (Astin, 1991).” This current study specifically focuses on isolating the environmental characteristics that positively or negatively influence volunteering in college students. Institutions can regulate environmental influences to impact student volunteering during college. So identifying those characteristics is crucial, as institutions will vastly benefit in streamlining resources and developing a curriculum that can maximize student participation.

Enrollment status

Enrollment status in college is listed as a dichotomous variable. Since most of the sample is expected to be of full-time enrollment status students it will be set as the reference group and coded 0 and the part time status students will be coded 1.

Academic Standing (Grades)

Participants of the NSSE survey have provided their college grades information and will be used to determine the academic standing of the students. The choices listed were A+;

A-; A; B+; B-; B; C+; C, and C or lower, which are an increased number of response options that several categories were expected to have a low number of responses. Following Pallant (2007), recommendation, the categories will be combined as grade A; grade B; grade C; grade C- or lower. The order will be rearranged with C- or lower coded to 3; Grade C coded 2; Grade B coded 1, and Grade A coded 0 as the reference group. First generation status variable with the presence of academic grades variable will most likely have a negative impact on the intensity of volunteering among college students.

Athletic Involvement

The athletic involvement will be measured by categorizing as student-athlete and non-student athlete. Student-athlete is entered as a dichotomous variable. Student-athlete will be listed as the reference group and coded 0 and non-student athletes will be coded 1.

Major

The institution reported data collected on major will be pre-sorted, combined and recoded by the OIR and will be used as categorized. The categories will be: Arts & Humanities coded to 11; Biological sciences, agriculture and natural resources coded to 10; Physical sciences, mathematics and computer science coded to 9; Social sciences coded to 8; Business coded to 7; Communications media and public services coded to 6; Education coded to 5; Engineering coded to 4; Health professions coded to 3; Social sciences profession coded to 2; All other coded to 1 and the reference group undecided or undeclared coded to 0. Gender is expected to greatly impact the significance of this measure in relation to volunteering during college.

Member of Social Organization

Member of social organization is listed as a dichotomous variable. Member of social organization will be the reference group and coded 0 with non-member coded as 1.

Living status

Students reported their living status while attending college as part of the NSSE survey. Similar to previous studies that have included living on campus (Cruce & Moore, 2007; Fitch, 1991) the current study will also include the variable to examine if a relationship exists between living status and volunteer work participation. The response options are dormitory or other campus housing coded to 4; fraternity or sorority house coded to 3; residence within walking distance to the institution coded to 2; Residence farther than walking distance to the institution coded to 1 and the reference group none of the above coded to 0.

Analytic Strategy

Prior studies have conducted statistical methods including descriptive analysis, Pearson Chi square and multinomial regression analysis to determine the college students' propensity to volunteering (Cruce & Moore, 2012). Multinomial regression was conducted with categories: Done; Plan to do; Have not decided and Do not plan to do in previous studies that used NSSE data. Multinomial Logistic regression will be appropriate when the outcome will be a categorical variable with more than two categories.

The current study aims to address the research question using SPSS software (version 25). A correlation table will be used to determine those variables that will be highly correlated with each other, which will then be re-examined and included or omitted to fit the study. The data set will also be examined for outliers to confirm that no cases have an undue

effect on the model. The independent variables will be sorted as demographic variables and environmental characteristics, which will include all college experiences with the dependent variable as volunteering hours per week.

Descriptive analysis

The descriptive statistics will provide the frequency of distribution of the chosen dependent and independent measures. The descriptive analysis of the sample will determine the different categories to be pooled to avoid undue exaggeration of the results. The inquiry in terms of frequency of volunteer work participation hours per week will provide a perspective for the outcomes of the model to measure the volunteering characteristics of the college population. Although the analysis will present the frequency of college students' volunteer work participation, it will not distinguish the type or quality of their service participation.

Multinomial regression

Multinomial regression uses maximum likelihood estimation to evaluate the probability of categorical membership. It will be considered a valid assessment as it will not assume normality, linearity, or homoscedasticity (Starkweather and Moske, 2011). In the current study, a multinomial regression will be used to analyze the extent to which the independent variables can predict placement within the categorically dependent variable (0 volunteer work hours; 1-5 hours of volunteer work or community service; 6 hours and above per week).

The strategy will be to perform multinomial regression on the chosen demographic characteristics, but without the presence of the college experience measures. This analysis is

expected to record the unique qualities the students bring to college that effect volunteer work participation. The model will be then re-estimated with the inclusion of the environmental characteristics to isolate the measures that positively or negatively influence volunteerism in college students. The addition of the environmental characteristics to the demographic characteristics is expected to demonstrate an improvement in the overall model fit. Pearson Chi-square statistics will be conducted to determine how well the model fit the data. The likelihood ratio test will reveal all the independent variables that are statistically significantly or insignificantly correlated with volunteer work participation.

Assumptions

Multinomial logistic regression necessitates careful attention to the sample size and assessment for outlying cases. Several assumptions have to be met in order to conduct a multinomial regression analysis. Primary data analysis has to be detailed and include careful univariate, bivariate, and multivariate calculations. Multicollinearity will be estimated with simple correlations among the independent variables in order to not violate the assumption. This assumption states that the choice of or membership in one category will be not related to the choice or membership of another category (i.e., the dependent variable). A correlation table with all the predictors will be reviewed and variables will be omitted or included based on their overall influence on the model

Furthermore, multinomial logistic regression also assumes non-perfect separation. If the categories of the outcome variable were perfectly separated by the predictor(s), then unrealistic coefficients will be estimated, and effect sizes will be greatly exaggerated.

Collinearity Testing

In a multinomial regression analysis, collinearity testing will be undertaken in that the study will conduct Pearson product moment correlations between each of the pairs of variables. Collinearity is a problem that arises when independent variables are highly correlated, which leads to standard errors that are too high. Prior to the multinomial regression analysis, collinearity testing confirms that the variables are not too highly correlated to produce substantive results. Several of the variables in this study, like the demographic variables such as students who respond as first generation status are also most likely to have parents who hold some degree or higher, which causes reason for concern. All the predictors will be examined for collinearity and if that presented a problem, variables will be reviewed and omitted or included based on their overall influence on the model.

The effect of each of the individual independent variables on the dependent variable will be measured by using the parameter estimates, odds ratios and the Wald statistic. The parameter estimates (b coefficients) will explain whether the variable has a positive or negative relationship with the dependent variable. The odds ratio for a given independent variables will represent the factor by which the odds of the event occurring change for a one-unit change in the independent variable.

The Wald statistic is the squared ratio of the unstandardized logistic coefficient to its standard error. The Wald statistic also has a corresponding p value that will explain the presence or inexistence of a substantial association between the independent and dependent variable. As stated by Menard (1995), if independent variables were not determined significant by the Wald statistic, they were most probably not contributing to the overall fit of the model.

Summary

This chapter describes in detail a summary of the research design that will be used to determine the predictors of volunteer work or college community service participation by students of a land-grant university. It includes the research question, instrument, data collection, and data analysis techniques to be conducted in the study. Initial data analyses and multinomial regression analysis were explained in detail, along with the reason that it will be the appropriate choice to address this research question. The next chapter explains the results of this study.

Chapter 4

Results

This chapter presents the results of the descriptive studies and multinomial regression analysis that examined the correlation between a set of predictor variables and the intensity of volunteering participation by college students. This chapter explains the individual independent variables relationship between 0 volunteer hours to 1-5 hours and 6 and above hours of volunteer work participation of students per week in a land-grant university. The study draws specific attention to the college experience measures influence on students volunteering during college. Finally, the summary provides a synopsis of the results of the study.

Data Analysis

Statistical procedures comprising of descriptive analysis, Pearson Chi square and multinomial regression analysis were directed using SPSS software (version 25) to address the research question. A correlation table was used to determine those variables that were highly correlated with each other, which were then re-examined and included or omitted to fit the study. The data set was also examined for outliers to confirm that no cases had an undue effect on the model. The table presents the independent variables that were significantly correlated to the dependent variable.

Descriptive analysis

The institution reported data was accurate and complete with no missing data unlike the student self-reported survey data set. In the current study, the dependent variable student

volunteer work participation hours were examined. A descriptive analysis on the sample of 8,318 students from 2013 – 2018 deducted 30.7% missing data for the dependent variable (Table 4.1).

Table-4.1

Volunteer work hours per week

Volunteer Work	Frequency	%	Valid Percent
0 Hours	2829	34.0	49.1
1-5 hrs	2292	27.6	39.8
6-11hrs	355	4.3	6.2
11-15hrs	148	1.8	2.6
16-20hrs	69	0.8	1.2
21-25hrs	34	0.4	0.6
26-30hrs	12	0.1	0.2
Above 30hrs	26	0.3	0.5
Total	5765	69.3	100.0
Missing	2553	30.7	
Total	8318	100.0	

Additional analysis was conducted as stated by Tabachnick & Fidell (2007), since there were more than 1% of cases with missing data. However, on conducting the additional analysis like missing completely at random (MCAR) and missing at random (MAR) the researcher could not conclude if cases were missing systematic or at random, as variables used in the study had 100% of institutional reported data (i.e., enrollment status, gender, race,) and students' self-reported data (i.e., First generation status, Athlete, grades, Major, Foreign national, age, Fraternity or sorority, living status and volunteer hours) with 30.7%

missing data in the predictor variable. On further analysis of all the chosen variables data set a sample size of 5,445 was estimated as valid for the study.

Past studies were reviewed to estimate the validity and reliability of the NSSE survey, with 30.7% missing data in the dependent variable and other independent variables. A recent study (Fosnacht et al., 2017), examined the connection between low response rates and the reliability of NSSE survey, projected for quite a few measures of college student engagement to be reliable under low response rate conditions (5% to 10%), provided the sampling frame included at least 500 students. Hutchison and associates (1987) also supported that survey evaluations of college student results can be attained based on a relatively low response rate administration, which was also similar to former NSSE non-responder researches (Kuh, n.d.; Sarraf, 2005), along with Pike's (2012) outcome that NSSE benchmark scores based on 50 respondents delivered reliable group means. Since the current study had 70% valid data, missing data were not imputed.

The descriptive analysis provided a snapshot of the frequency of college students' volunteer work or college community service participation. The frequency with which each respondent participated in volunteer work or community service was tested and the choices were: 0 hours, 1-5 hours, 6-10 hours, 11-15 hours, 16-20 hours, 21-25 hours, 26-30 hours and more than 30 hours. Since there was an uneven distribution of responses due to multiple answer choices, the categories were combined into three groups with 0 hours, 1-5 hours and 6 hours and above per week. The biggest group of students in the dependent variable sample was the 0 hours of volunteer work, which was set as the reference group for the study.

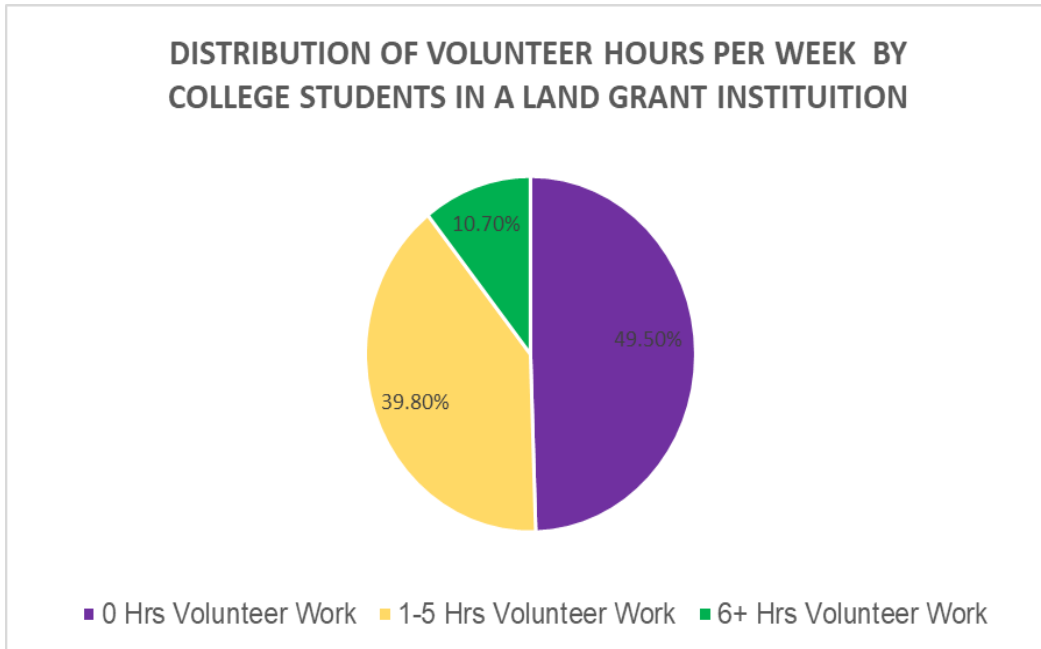


Figure-4.1: Students Volunteer work hours’ distribution in a land-grant University

Among the study sample, 50.5% students had volunteered, and 49.5% students had not volunteered any hours. Among the whole sample of the volunteered group, 39.8% had 1 – 5 hours of volunteer work, while 10.7% had volunteer work or community service of 6 hours and above per week (Figure 4.1).

The descriptive results revealed that above half of the students’ population belonged to the 20-23 age category ($n = 2,835$, 52%). In the current study sample of gender, the biggest group was females ($n = 3,310$, 60.8%) when compared to males ($n = 2,138$, 39.2%); Whites ($n = 4,461$, 81.9%) emerged as the predominant group under the Race category. Most of the college students were on full time enrollment ($n = 5,105$, 93.7%) and more than half of the student population lived in or within walking distance to the campus ($n = 3,330$, 61.1%) (Table 4.1).

Table-4.2

Characteristics of college students in a land-grant University

Variable	n	%
Race		
American Indian or Alaskan Native	44	0.8%
Asian American	133	2.4%
Black or African American	326	6.0%
Hispanic or Latino	182	3.3%
Other	49	0.9%
Foreign or Non-resident Alien	212	3.9%
Two or More Races/ Ethnicities	41	0.8%
White	4461	81.9%
Age		
Over 55	11	0.2%
40-55	31	0.6%
30-39	75	1.4%
24-29	323	5.9%
20-23	2835	52.0%
19 Or Younger	2173	39.9%
First Generation Status		
No	4378	80.4%
Yes	1070	19.6%
International Student of Foreign National		
No	5208	95.6%
Yes	240	4.4%
Gender		
Female	3310	60.8%
Male	2138	39.2%
Major		
Arts and Humanities	462	8.5%
Biological Sciences, Agriculture, & Natural Resources	780	14.3%
Physical Sciences, Mathematics & Compute Science	204	3.7%
Social Sciences	356	6.5%
Business	822	15.1%
Communications, Media & Public Relations	224	4.1%
Education	274	5.0%

Engineering	1256	23.1%
Health Professions	804	14.8%
Social Service Professions	52	1.0%
All other	183	3.4%
Undecided, Undeclared	31	0.6%
Grades		
C- or lower	57	1.0%
C	531	9.7%
B	2273	41.7%
A	2587	47.5%
Enrollment Status		
Not full-time	343	6.3%
Full time	5105	93.7%
Student Athlete		
No	5300	97.3%
Yes	148	2.7%
Living Status		
Dormitory or other campus Housing (not fraternity or sorority)	1546	28.4%
Fraternity or Sorority house	105	1.9%
Residence WITHIN walking distance to the institution	1670	30.8%
Residence FARTHER THAN walking distance to the institution	2078	38.1%
None of the above	40	0.7%
Member of Social Org.		
No	3851	70.7%
Yes	1587	29.3%
Total	5448	100.0%

Students that held first generation status (n = 1,070, 19.6%) or were a member of a social organization (n = 1,597, 29.3%) and students enrolled in Engineering major (n =

1,256, 23.1%) were each estimated to be less than 30% of the sample. International students (n = 240, 4.4%), student athletes (n = 5,300, 2.7%) and students with C- or lower grade (n = 57, 1%) categories accounted for less than 5% of the sample. The descriptive statistics aided in the merging of categories to avoid undue exaggeration of data in a multinomial model.

This combined categories data was used to conduct a multinomial regression.

Multinomial regression

A multinomial regression model was first estimated with the controlled demographic characteristics (Age, Gender, International student, Race, First-generation status), without the presence of the college experience measures (Living status, Member of social organization, Enrollment status, Major, Grades, Student-Athlete).

Table-4.3

Model 1: Demographic Characteristics Likelihood Ratio Test

Effect	-2 Log Likelihood of Reduced Model	Chi Square	df	Sig (<i>p</i>)
Intercept	705.790 ^a	.000	0	.
Race	736.042	30.251	14	.007*
Age	750.219	44.429	10	.000*
First Generation	717.117	11.327	2	.003*
International student	706.424	.633	2	.729
Gender	816.292	110.501	2	.000*

* $p < .05$

Model 1 likelihood ratio test demonstrated all the demographic variables that were statistically insignificant and those variables that were significant. These results contained likelihood ratio tests of each independent demographic variable to the model. Using the conventional ($\alpha > .05$) threshold, race, age, first generation, and gender, demonstrated the significance and International student [$\chi^2 (2) = 706.424, p = 0.729$], did not exhibit any significance in the model to determine the volunteering characteristics of college students (Table 4.3).

Table-4.4

Goodness-of-Fit

	Chi Square	df	Sig (<i>p</i>)
Pearson	271.209	234	.048
Deviance	283.157	234	.015

* $p < .05$

The “Goodness of fit” table presented the Pearson and Deviance Chi-square tests to determine how well the model fit the data. Significant results in both Pearson [$\chi^2 (234) = 271.209, p = 0.048$] and Deviance [$\chi^2 (234) = 283.157, p = 0.015$] Chi-Square tests indicated that the model was not a good fit to the data (Table 4.4).

Table-4.5

Goodness-of-Fit

	Chi Square	df	Sig (<i>p</i>)
Pearson	4117.660	4038	.187
Deviance	3537.341	4038	.669

* $p < .05$

The model was then re-estimated with the inclusion of the environmental characteristics for an improvement in the overall model fit as measured by a chi-square test of the likelihood ratio, was assessed to determine how well the model fit the data. The insignificant results noted in both Pearson [$\chi^2(4038) = 4117.660, p = 0.187$] and Deviance [$\chi^2(4038) = 3537.341, p = 0.869$] Chi-Square tests indicated that the model was an overall good fit when the environmental variables were part of the model (Table 4.5).

Table-4.6

Pseudo R-Square

Cox and Snell	.120
Nageikerke	.141
McFadden	.067

* $p < .05$

In Table 4.6 the pseudo R-square values were treated as rough analogues as there were no strong guidance in the literature on how the results should be used or interpreted (Lomax & Hahs-Vaughn, 2012; Osborne, 2015; Pituch & Stevens, 2016; Smith & McKenna, 2013)

Model 2 likelihood ratio test demonstrated all the independent variables that were statistically insignificant, and those variables that were significant. The model 2 likelihood ratio test results contained the overall contribution of each independent variable to the model. Using the conventional ($\alpha > .05$) threshold, Race, Age, Gender, Major, Grades, Student-Athlete and Member of social organization exhibited significance in the model.

Table-4.7

Model 2: All Independent Variables Likelihood Ratio Tests

Effect	-2 Log Likelihood of Reduced Model	Chi Square	df	Sig (<i>p</i>)
Intercept	5300.512	.000	0	.
Race	5337.255	36.742	14	.001*
Age	5333.344	32.832	10	.000*
First Generation	5303.146	2.634	2	.268
International student	5300.843	.331	2	.848
Gender	5327.692	27.180	2	.000*
Major	5506.577	206.065	22	.000*
Grades	5336.795	36.282	6	.000*
Enrollment Status	5304.279	3.767	2	.152
Student-Athlete	5310.542	10.029	2	.007*
Living Status	5306.765	6.253	8	.619
Member of Social Org	5399.256	98.743	2	.000*

* $p < .05$

*All demographic variables were included in the model, but not shown.

First generation status [$\chi^2 (2) = 2.634, p = 0.268$], International student [$\chi^2 (2) = 0.331, p = 0.848$], Enrollment status student [$\chi^2 (2) = 3.767, p = 0.152$] and Living status [$\chi^2 (8) = 6.253, p = 0.619$] did not exhibit any significance in the model 2 (Table 4.7).

Describing the Findings for multinomial Regression

Multinomial logistic regression was used to analyze the extent to which the independent variables can predict placement within a categorically dependent variable (i.e., volunteering per week - 0 hours; 1-5 hours; 6 hours & above). The category 0 hours of volunteer work or community service was set as the reference group and compared with the 1-5 hours and 6 and above hours per week categories. The following sections describe the process through which the proposed data analyses addressed the research questions.

To address the research question of this study, a multinomial regression analysis was first estimated on the demographic variables without the presence of the college experiences measures. The model then was re-estimated with the inclusion of the college experiences measures, and an improvement in the overall model fit, as measured by a chi-square test of the likelihood ratio, was assessed to isolate the measures that contributed or altered the intensity of volunteering by college students. The impact of the college experiences was evidenced when comparing output by controlling for the demographic characteristics. Academic standing was measured by choosing grades as a variable and athletic involvement was assessed with the student-athlete/ non-athlete variable.

Table-4.8

Model 1 – Controlled for Demographic Characteristics

1-5 hours/ week Volunteering	B	Wald	sig	Exp(B)	95% CI	
	β		(<i>p</i>)	<i>eβ</i>	Lower bound	Upper bound
Intercept	-.860	5.836	.016			
Female	.627	104.746	.000	1.872	1.661	2.111
Male	0 ^b					
American Indian or Alaskan Native	.637	3.476	.062	1.890	.968	3.690
Asian American	.050	.069	.790	1.051	.724	1.527
Black or African American	-.094	.545	.460	.910	.709	1.169
Hispanic or Latino	-.205	1.632	.201	.814	.594	1.116
Other	-.199	.367	.545	.820	.431	1.560
Foreign or Non-resident Alien	-.153	.164	.686	.858	.410	1.799
Two or More Races/ Ethnicities	.156	.206	.650	1.169	.595	2.297
White	0 ^b					
Over 55	-.639	.867	.352	.528	.138	2.026
40-55	-.577	1.410	.235	.562	.217	1.455
30-39	-.604	4.427	.035	.547	.311	.959
24-29	-.253	3.497	.061	.777	.596	1.012
20-23	.117	3.629	.057	1.124	.997	1.267
19 Or Younger	0 ^b					
Not First Generation	.247	10.001	.002	1.280	1.099	1.492
First Generation	0 ^b					
Non- International student	.031	.008	.928	1.032	.525	2.028
International Student	0 ^b					

6+ hours/ week Volunteering	B	Wald	Sig	Exp(B)	95% CI	
	β		(<i>p</i>)	<i>eβ</i>	Lower bound	Upper bound
Intercept	-1.793	13.417	.000			
Female	.447	21.379	.000	1.564	1.294	1.891
Male	0 ^b					
American Indian or Alaskan Native	.694	1.981	.159	2.002	.762	5.262
Asian American	.178	.354	.552	1.194	.666	2.143
Black or African American	.372	4.370	.037	1.450	1.023	2.055
Hispanic or Latino	-.613	3.588	.058	.542	.287	1.022
Other	.682	2.924	.087	1.977	.905	4.320
Foreign or Non-resident Alien	1.205	6.106	.013	3.337	1.283	8.678
Two or More Races/ Ethnicities	.641	1.796	.180	1.899	.743	4.852
White	0 ^b					
Over 55	.254	.100	.752	1.289	.267	6.228
40-55	1.436	12.431	.000	4.203	1.892	9.335
30-39	-.385	.646	.422	.680	.266	1.740
24-29	-.004	.000	.986	.996	.656	1.513
20-23	.398	15.958	.000	1.488	1.225	1.809
19 Or Younger	0 ^b					
Not First Generation	-.032	.029	.865	.981	.783	1.228
First Generation	0 ^b					
Non- International student	-.090	.543	.461	.707	.281	1.778
International Student	0 ^b					

a. Reference category is 0 hours / week volunteering

b. This parameter is set to zero because it is redundant

c. *e β* significant $p < .05$

Table-4.9

Model 2 – Inclusion of Environmental Characteristics

1-5 hours/ week Volunteering	B	Wald	sig	Exp(B)	95% CI	
	β		(<i>p</i>)	<i>eβ</i>	Lower bound	Upper bound
Intercept	1.025	2.224	.136			
Female	.354	26.292	.000	1.424	1.244	1.630
Male	0 ^b					
American Indian or Alaskan Native	.895	6.478	.011	2.447	1.228	4.874
Asian American	.289	2.187	.139	1.336	.910	1.960
Black or African American	.113	.713	.398	1.120	.861	1.456
Hispanic or Latino	-.168	1.023	.312	.845	.610	1.171
Other	-.049	.021	.885	.954	.494	1.839
Foreign or Non-resident Alien	.214	.297	.586	1.238	.574	2.669
Two or More Races/ Ethnicities	.342	.936	.333	1.407	.704	2.812
White	0 ^b					
Over 55	-.739	.773	.379	.478	.092	2.480
40-55	-.378	.533	.465	.685	.248	1.891
30-39	-.300	1.002	.317	.741	.412	1.333
24-29	-.033	.050	.823	.967	.722	1.296
20-23	.215	7.856	.005	1.240	1.067	1.442
19 Or Younger	0 ^b					
Not First Generation	.120	2.106	.147	1.127	.959	1.324
First Generation	0 ^b					
Non- International student	.166	.217	.641	1.181	.587	2.372
International Student	0 ^b					
Part-time enrollment	-.192	1.739	.187	.826	.621	1.098
Full-time enrollment	0 ^b					
C- or Lower	-.535	2.929	.087	.585	.317	1.081
C	-.476	18.062	.000	.622	.499	.774
B	-.312	22.677	.000	.732	.644	.832
A	0 ^b					

Non-Student Athlete	-.286	2.073	.150	.751	.509	1.109
Student Athlete	0 ^b					
Arts and Humanities	-.767	3.415	.065	.464	.206	1.408
Biological Sciences, Agriculture, & Natural Resources	-.173	.179	.673	.841	.377	1.877
Physical Sciences, Mathematics & Compute Science	-.809	3.511	.061	.445	.191	1.038
Social Sciences	-.653	2.426	.119	.521	.229	1.184
Business	-.423	1.068	.301	.655	.294	1.461
Communications, Media & Public Relations	-.627	2.134	.144	.534	.230	1.239
Education	.106	.062	.803	1.112	.482	2.566
Engineering	-.890	4.782	.029	.411	.185	.912
Health Professions	-.112	.075	.784	.894	.401	1.994
Social Service Professions	.236	.190	.663	1.266	.439	3.654
All other	-.177	.162	.687	.838	.355	1.978
Undecided, Undeclared	0 ^b					
Non-member social organization	-.695	94.521	.000	.499	.434	.574
Member social organization	0 ^b					
Dormitory	-.348	.846	.358	.706	.336	1.482
Fraternity or Sorority house	-.226	.273	.601	.798	.342	1.862
Residence within walking distance to the institution	-.377	1.013	.314	.686	.329	1.429
Residence FARTHER than walking distance to the institution	-.499	1.793	.181	.607	.293	1.260
None of the above	0 ^b					

6+ hours/ week Volunteering	B	Wald	sig	Exp(B)	95% CI	
	β		(<i>p</i>)	<i>eβ</i>	Lower bound	Upper bound
Intercept	-.001	.000	.999			
Female	.061	.319	.572	1.063	.860	1.315
Male	0 ^b					
American Indian or Alaskan Native	.910	3.268	.071	2.484	.926	6.662
Asian American	.299	.822	.365	1.349	.706	2.574
Black or African American	.464	6.038	.014	1.590	1.098	2.301
Hispanic or Latino	-.640	3.504	.061	.527	.270	1.031
Other	.760	3.308	.069	2.139	.943	4.853
Foreign or Non-resident Alien	1.657	9.399	.002	5.242	1.818	15.119
Two or More Races/ Ethnicities	.734	2.242	.134	2.083	.797	5.442
White	0 ^b					
Over 55	.035	.002	.969	1.036	.179	6.001
40-55	1.270	7.378	.007	3.562	1.424	8.907
30-39	-.428	.733	.392	.652	.244	1.737
24-29	-.010	.002	.967	.990	.625	1.568
20-23	.427	12.189	.000	1.533	1.206	1.948
19 Or Younger	0 ^b					
Not First Generation	-.032	.070	.792	.968	.763	1.229
First Generation	0 ^b					
Non- International student	-.090	.030	.862	.914	.331	2.526
International Student	0 ^b					
Part-time enrollment	.183	.978	.323	1.201	.836	1.725
Full-time enrollment	0 ^b					
C- or Lower	-.560	1.230	.267	.571	.213	1.536
Grade C	-.197	1.317	.251	.821	.586	1.150
Grade B	.003	.001	.974	1.003	.820	1.227
Grade A	0 ^b					
Non-Student Athlete	-.781	10.502	.001	.458	.286	.735
Student Athlete	0 ^b					

Arts and Humanities	-1.253	4.567	.033	.286	.091	.901
Biological Sciences, Agriculture, & Natural Resources	-.267	.221	.638	.766	.252	2.328
Physical Sciences, Mathematics & Compute Science	-1.396	5.098	.024	.248	.074	.832
Social Sciences	-.551	.898	.343	.576	.184	1.801
Business	-.859	2.285	.131	.423	.139	1.290
Communications, Media & Public Relations	-.519	.758	.384	.595	.185	1.914
Education	.342	.340	.560	1.408	.446	4.444
Engineering	-1.350	5.657	.017	.259	.085	.789
Health Professions	-.208	.135	.714	.812	.267	2.471
Social Service Professions	1.129	2.796	.094	3.092	.824	11.606
All other	.365	.380	.538	1.441	.451	4.603
Undecided, Undeclared	0 ^b					
Non-member social organization	-.547	23.556	.000	.579	.464	.722
Member social organization	0 ^b					
Dormitory	-.007	.000	.988	.993	.372	2.649
Fraternity or Sorority house	-.058	.009	.923	.944	.292	3.051
Residence WITHIN walking distance to the institution	-.015	.001	.976	.985	.375	2.591
Residence FARTHER than walking distance to the institution	-.087	.032	.858	.916	.351	2.390
None of the above	0 ^b					

a. Reference category is 0 hours / week volunteering

b. This parameter is set to zero because it is redundant

c. $e\beta$ significant $p < .05$

Background/ Demographic Characteristics

Gender

In this study, there were more females in the sample than males that approximately, 61% of the sample were females (Figure 4.2). The males were set as the reference group to examine the extent to which females were more likely to volunteer than men. The males volunteered 31.4% when compared to females that volunteered 45.2% of 1-5 hours instead of 0 hours per week.

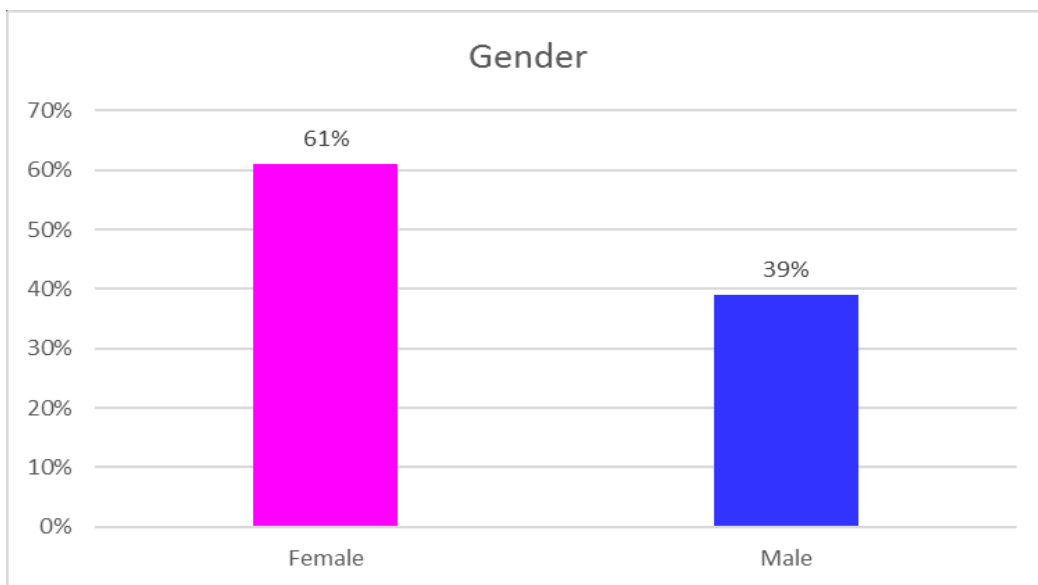


Figure-4.2: Sample distribution of Gender

The inclusion of the college experiences to the regression model presented a positive correlation towards females as opposed to males in volunteering 1-5 hours per week ($e\beta = 1.424, p = .000$). The model projected that females were 42% more likely to volunteer in contrast to males that volunteered 1-5 hours instead of 0 hours per week. However,

compared to males, there was no statistically significant relationship between females volunteering 6 hours & above instead of 0 hours per week.

Race/ Ethnicity

The study was to gather precise information of the student background, but some of the categories had very low response rates due to the low number or lack of participants belonging to that category. Pallant (2007), suggested combining categories when categorical predictors had limited cases in each category to eliminate the possibility of problems with multinomial regression analysis. Following the recommendation, the category Hawaiian/ Pacific Islander, which had only two respondents were combined with the “other” category to prevent undue exaggeration of the data.

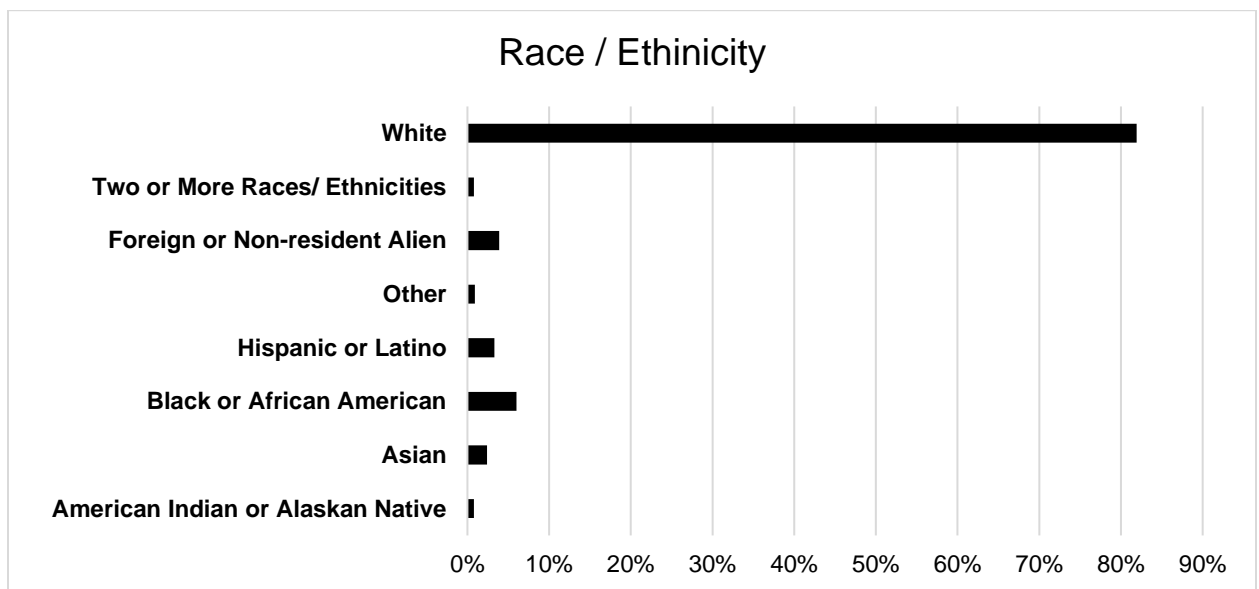


Figure-4.3: Sample Distribution of Race/ Ethnicity

White respondents accounted for ($n = 4,461, 82\%$) emerged as the most predominant race as expected, so the variables were reordered to compare all the categories with whites' as the reference variable (Figure 4.3). White and American Indian or Alaskan native students were observed to have volunteered 40.8% and 53.3% respectively of 1-5 hours per week. While white, Black or African American and foreign students were noted to volunteer 9.5%, 14.1% and 33.5% respectively of 6 & above hours per week.

A statistically significant relationship existed in the model as opposed to whites between American Indian or Alaskan native ($e\beta = 2.447, p = .011$) and 1-5 hours of volunteer work; Black or African American ($e\beta = 1.590, p = .014$) and Foreign or non-resident Alien ($e\beta = 5.242, p = .002$) of 6 hours and above in comparison to the reference category of 0 hours per week.

Compared to white college students, the model suggested that American Indian or Alaskan native students were 145% more likely to perform volunteer work of 1-5 hours instead of 0 hours per week. Race categories, Black or African American and foreign non-resident had an 59% and 424% respectively increased prospect than white students to volunteering 6 hours and above instead of 0 hours. Students of races other than American Indian and Alaskan native, Black or African American and foreign non-resident in comparison to whites did not exhibit any significant relationship between outcomes of 1-5 hours or 6 & above hours instead of 0 hours per week.

Age

The students of age group 19 or younger were 39.9% and 20-23 years were 52% of the total student sample and 19 or younger age group was set as the reference group. In the

study, 40.2% of age groups 19 or younger and 41.3% of age group 20-23 were observed to have volunteered 1-5 hours per week. While, 11.9% of age group 20-23 and 9.3% of age groups 19 or younger had volunteered 6 & above hours per week. Age 40-55 age category had 33.3% contribution of 6 & above hours per week.

The addition of the college experiences variable presented a positive relationship to volunteering 1-5 hours for age category 20-23 ($e\beta = 1.240, p = .005$). The model 2 also evidenced significant participation of 6 hours and above instead of 0 hours, of student age category 40-55 years ($e\beta = 13.562, p = .007$) and age 20-23 category years ($e\beta = 1.533, p = .000$) when compared to 19 years or younger age group (Table 4.9).

The predictive model estimated that in comparison to the reference group of 19 years or younger the students' age category 20-23 years were 24% more probable to perform volunteer work of 1-5 hours instead of 0 hours per week. The other student age groups did not present any significant association between the outcome of 1-5 hours and 0 hours per week volunteer work participation in comparison to 19 years and younger age category.

When comparing to the reference group of 19 years and younger, the students of age category 20-23 years were 53% more likely and 40-55 years age group were 256% more probable, to volunteer work of 6 hours & above instead of 0 hours per week.

First Generation Status

The study sample had 19.6% first generation 80.4% students that were not first-generation students. The analysis indicated that 14% of first-generation and 10% of non-first-generation students had devoted 6 hours and above per week. The study showed that 33% of first-generation and 41.5% of non-first-generation students had volunteered 1-5

hours per week. The addition of the college experience measures did not reveal any statistically significant relationship in comparison with first-generation between non-first generation students and volunteering 1-5 hours ($e\beta = 1.127, p = .147$) and 6 hours & above ($e\beta = 0.968, p = .792$) instead of 0 hours per week. However, the model predicted that with all else held equal and a unit increase demonstrated a 12% increase in probability of volunteering 1-5 hours instead of 0 hours for non-first-generation students when compared with the first-generation students. Although it did not exhibit any statistical significance, a unit increase validated that in comparison to first generation students, their peers were 3% less likely to volunteer 6 and above hours instead of 0 hours per week

International student or Foreign National

The descriptive analysis stated that international students accounted for 4.4% while non-international students were 95.6% of the sample. In the study 27% of international and 40.3% non-international students were observed to have dedicated 1-5 hours per week. The study also stated that 30.1% of international and 9.9% non-international students contributed 6 & above hours per week. The predictive model did not evidence any substantial connection between non-international students and 1-5 hours ($e\beta = 1.181, p = .641$) or 6 & above hours ($e\beta = 0.914, p = .862$) instead of 0 hours per week of volunteer work in comparison to international students. However, the model projected, when all else held equal, a unit increase in this category will most likely result in non-international students 18% more likely to participate in volunteer work of 1-5 hours instead of 0 hours per week in comparison to international students. Although, a unit increase had a 8.6% negative impact on the non-international students probability to volunteer 6 hours and above instead of 0 hours in comparison to the international students.

College experience/ Environmental characteristics

In the current study, the demographic control measures allowed to identify those college experiences that had a significant influence on students volunteering 0 hours or 1-5 hours or 6 & above hours during college in a land-grant university. The main focus of the study was to identify those environmental characteristics that impacted student volunteering during college. Differentiating the student characteristics that positively or negatively influence volunteering can benefit land-grant institutions to focus attention on them for maximizing student engagement.

Enrollment status

The research sample stated that 93.7% were full-time enrolled students and 6.3% were part-time enrolled students. The analysis observed that 40.6% of full-time enrolled and 27.2% of part-time enrolled students had offered 1-5 hours per week. Further assessment stated that 10.3% of full-time enrolled and 18.5% of part-time enrolled students had committed to 6 & above hours per week. Part-time enrolled students did not validate any statistical significance in comparison to full-time enrolled students to volunteering 1-5 hours ($e\beta = 0.826, p = .187$) or 6 & above hours ($e\beta = 1.201, p = .323$) instead of 0 hours per week.

The study predicted that when all else held equal and increased by a unit, in comparison to full time enrolled students' part-time students were 17% less prospective to volunteer 1-5 hours instead of 0 hours per week. Although when increased by a unit, in comparison to full-time enrolled students, part-time students were 20% more probable to volunteer 6 hours and above instead of 0 hours per week.

Academic standing

The descriptive statistics demonstrated that 47.5% of the students had grade A, 41.7% had Grade B and 9.7% had grade C of the student sample. Additional inquiry observed that 52.6% of Grade A, 39% of Grade B and 7.6% of grade C students had committed to 1-5 hours of volunteer work per week. Grade A was set as the reference group to examine the extent to which other grade students volunteered. The model predicted a statistically significant negative relation between students with grades B ($e\beta = 0.732, p = .000$), grades C ($e\beta = 0.622, p = .000$) in comparison with grade A students and volunteer work of 1-5 hours as opposed to 0 hours of volunteer work per week. Compared to students with grade A, students with grade C were 37.8% less likely and grade B were 27% less probable to volunteer 1-5 hours per week instead of 0 hours per week.

The student with grades B, grades C and grades C- or lower in comparison to grade A category did not present any statistically significant association between the outcome of 6 hours & above and 0 hours per week volunteer work participation.

Athletic Involvement

The study sample accounted 97.3% as non-student athlete and 2.7% as student-athlete. In the current study 24.2% of student-athlete and 10.5% of non-athlete had volunteered 6 & above hours per week. The model predicted a significant negative relation between the non-student athlete ($e\beta = 0.458, p = .001$) and volunteer work of 6 hours & above as opposed to 0 hours of volunteer work per week when compared to student-athletes. In comparison to student-athletes, non-athletes were 54% less prospective to volunteer 6 hours & above instead of 0 hours per week. Students' who did not identify as an athlete did

not present any probability to participate in volunteer work of 1-5 hours instead of 0 hours per week when compared to student-athlete.

Major

The study sample presented that the majority of college students were 23.1% engineering major, 14.8% health profession major, 14.3% biological sciences, agriculture, & natural resources and 15.1% business majors. In the study, 44.7% of undecided or undeclared majors and 29.7% of engineering major students had volunteered 1-5 hours per week. Additional inquiry stated that 13.2% of undeclared or undecided majors, 6.6% engineering, 7.2% Arts & humanities, 8.5% Physical sciences, Mathematics & computer science major students had volunteered 6 & above hours per week.

The model predicted a statistically negative association between students of Engineering ($e\beta = 0.411$, $p = .029$) major and volunteer work of 1-5 hours as opposed to 0 hours of volunteer work per week. Engineering students were 59% less likely to volunteer 1-5 hours instead of 0 hours per week when compared to the undecided or undeclared major.

The predictive model statistically estimated a negative relation between students in majors Arts and Humanities ($e\beta = 0.286$, $p = .033$), Physical sciences ($e\beta = 0.248$, $p = .024$) Engineering students' ($e\beta = 0.259$, $p = .017$) in comparison with undecided or undeclared major and volunteer work of 6 hours & above as opposed to 0 hours of volunteer work per week. Arts and Humanities Physical sciences and Engineering majors were 71%, 75%, and 74% respectively less probable to do volunteer work of 6 hours & above instead of 0 hours per week when compared to the undecided or undeclared group students. The study did not estimate any other majors with statistically significant involvement in volunteer work of 1-5

hours or 6 & above hours instead of 0 hours per week in comparison to undeclared or undecided majors.

Member of Social Organization

Analysis into the student sample revealed that 70.7% of the students were not members of a social organization and 29.3% belonged to some student social organization during college. Further review offered that 52.3% of students in a social organization and 34.6 % of non-members committed to 1-5 hours of volunteering per week. Additional examination presented that 11.6% of members and 10.5% of non-members of a social organization volunteered 6 & above hours per week.

The research model predicted a statistically significant negative connection between non-members of a student social organization and participation of 1-5 hours ($e\beta = 0.499, p = .000$) and 6 hours & above ($e\beta = 0.579, p = .000$) in comparison to 0 hours of volunteer work per week. Students' that were not part of a social organization were 50% less probable to volunteer 1-5 hours instead of 0 hours per week when compared to students of a social organization. In comparison to students of a social organization, students' who did not belong to a social organization were 42% less prospective to volunteer work for 6 hours & above instead of 0 hours per week.

Living status

A descriptive analysis of the sample noted that a majority of 38.1% of students lived farther than walking distance from the institution, 30.8% resided within walking distance to the institution and 28.4% were in a dormitory or other campus housing. Further examination showed that 17% of students in none of the above category, 9.6% dormitory, 11.2% within

walking distance to institution and 11.3% farther from institution had volunteered 6 hours & above per week. The measure of living status did not determine any statistically significant relationship to volunteering in the model.

Summary

This chapter presented the descriptive and multinomial regression analysis conducted to predict the volunteering characteristics of college students through their actual participation hours per week. The results with a specific focus on the environmental characteristics impact validated the substantial differences in college students that volunteered and those that had not participated in a land-grant university. The results discussed in the next chapter presents the overall fit of the model for the current study. The following chapter extends to include a discussion of the results, implications of the study, limitations, and suggestions for future research.

Chapter 5

Discussion and Conclusion

This chapter presents a discussion of the current study results from the perspective of existing literature on the predictors of student volunteering during college. The initial segment of the chapter offers a review and discussion of the results integrated with the prevailing literature. The consequent segment explains the significance of the study and examines the limitations of the study. The last segment of the chapter includes implications of the study for higher education office of outreach and service units prompting guidelines for future research.

Review of the Results and Discussion

The review of the study results and discussion that follows this section is fit by the observed findings that almost 50.5% of the student sample were committed to volunteering. In the current study “volunteer work” integrates a broad spectrum which includes service learning, community service and volunteer work of college students. The data collected from 2013 – 2018 observed that maximum number of college students were involved in a minimal of 1-5 hours of volunteer work per week. A majority of 39.8% of students were contributing to 1-5 hours and 10.7% were participating in 6 hours and above per week. The research model allowed the study to project student volunteering with three volunteer work hours categories to gather an overall perspective of student involvement in volunteer work. Prior research has considered the parameters that only assessed intentions of student participation leading to outlining students’ propensity and inclination towards volunteering. Intentions to volunteer need not necessarily lead to regular student

participation in volunteer work during college. The findings from the current study adds a different aspect and a better understanding of the student volunteering characteristics in comparison to previous studies as it includes categorized observed student time contribution to volunteer work per week.

Demographic Characteristics

Demographic characteristics of students in a land-grant university had a significant relationship with volunteering during college. The model predicted that females, American Indian or Alaskan native, Black or African American students and Foreign, or non-resident students,' along with age groups 20-23 years, and age sets 40-55 years were more probable to volunteer during college.

Gender

Multiple studies have demonstrated that women were more likely to volunteer in college than men (Astin & Sax, 1998; Astin et al., 2000; Bonnet, 2008; Cruce & Moore, 2007, 2012; Fitch, 1991; Marks & Jones, 2004; Sax et al., 1996; Serow & Dreyden, 1990; Vogelgesang & Astin, 2000; Gasiorski, 2009; Johnson, 2014). Consistent with the existing literature the current study projected females to volunteer 1-5 hours more than males. The college student sample with 60.8% of females represented in the sample strengthened their likelihood of volunteering more than men. Although, there was no significant difference evidenced between males and females in volunteering 6 hours & above per week.

Review of existing studies in relation to the present analysis indicated that females were in general considered more caring and had moral connection towards the community, which motivated them towards volunteering (Rhoads, 1997). Further, other studies presented

that women were more intrinsically motivated and valued volunteering to commit additional time to it (Astin & Sax, 1998; Astin et al., 2000; Marks & Jones, 2004; Serow & Dreyden, 1990). Consistent with our results, existing studies imply that males have consistently shown less propensity and inclination to volunteering during college. The evident findings advocate for further research to study the motives and differences in gender preferences that lead to the dissimilarities in volunteer work commitment. Understanding the reasoning behind men's' attitude and outlook toward volunteering may benefit colleges in providing programs that inspire and stimulate their participation.

Race/ Ethnicity

In the present study, as expected white students were the largest percentage of college students in the sample. In comparison to the white students, the study indicated that American Indian or Alaskan natives were more prospective, in volunteering 1-5 hours per week and Black or African Americans, Foreign or non-resident Alien students were more probable to contribute 6 hours and above per week than their white peers. The study however did not indicate any association between Latino or Asian American race students and volunteering. The current study is consistent with some aspects of prior studies but not with others.

Earlier studies have drawn inconsistent findings with regard to establishing a relationship between volunteering and race/ ethnicity. One study found no significant relationship between race and volunteering (Marks and Jones, 2004). While another study explained that volunteering during college was not significantly different among White students and students of color (Cruce & Moore, 2012). Few other studies presented that

African American, Latino (Gasiorski, 2009), and Asian American college students were all more likely to participate in volunteer work than their White peers (Cruce & Moore, 2007).

The current study contradicted with a previous study by presenting that foreign nationals were more probable to volunteer than their white peers. Since, a prior study indicated that foreign national students had lower probabilities than U.S. or Canadian citizens of volunteering during college (Cruce & Moore, 2007). However, the study was consistent in finding a connection between African American students and volunteering. Research is supporting steady participation of Black or African American students' during college. Including college experiences like athletic involvement and membership in a social organization measures in future research may aid in gathering more consistent evidence of their contribution.

Age

Few studies that have used age as a dichotomous variable and found that the relationship between age and volunteering was not significant (Cruce & Moore, 2012; Gasiorski, 2009). Contradicting these findings, in comparison to 19 years and younger, the age group 20-23 years showed a substantial increase in volunteering of 1-5 hours and 6 & above hours per week in the current study.

The results from this study are difficult to compare with previous studies which had combined age groups to form a dichotomous variable as traditional (18-24 years) and untraditional age (25 years and above) categories. Further dividing the age categories in the present study enabled to understand the differences that existed within the suggested traditional and non-traditional age groups of college students. Age groups 20-23 years

clearly were committed to volunteer work more time than 19 or younger age sets. Since both of these age groups are the predominant categories in the sample, it is important to focus on the 19 or younger students to recognize any barriers that obstructed their participation. The students of age group 19 or younger maybe more immature and not be interested to commit to volunteer work. Another possibility is that 19 or younger age students may be very smart and with their choice of professional majors that they might have to spend more time with their homework and academic responsibilities that take up their time.

Previous study results also found that the non-traditional age of 25 years and above students were more likely to volunteer than their traditionally aged peers (Cruce & Moore, 2007). Consistent with the findings and that older volunteers were encouraged predominantly by altruistic motives (Finkelstein, 2009; Penner et al., 2005; Frisch & Gerrard, 1981; Okun et al., 1998; Omoto et al., 2000); this study found that compared to 19 years and younger age group students, the 40-55 age group was more prospective to participate in 6 hours and above per week than 0 hours. The choice of courses, programs enrolled by this age group may explain their regular volunteer work participation. Conducting studies to understand this specific non-traditional age group motivation to volunteering can help entice other non-traditional age categories to participate.

First Generation Status

Prior studies found that students that enrolled in college with better educational resources (i.e., parents' education) were more likely than first generation students or students with less educational capital to volunteer during college (Marks and Jones, 2004; Cruce & Moore 2007). The prevailing studies explained that first generation students

required to dedicate more time to their academic work that they did not have time to participate in extracurricular or community service activities. Students with educated parents had better resources to influence their learning. They were equipped and better prepared for college requiring less time for studies and homework. These students were able to participate in extracurricular activities and service, which further enhanced their learning.

Contradicting to the existing studies, in the current study students with higher educational capital in comparison to their first-generation peers did not demonstrate any increased likelihood to volunteering. This research model challenges a prior study finding that first-generation students are inclined to have a noticeably negative influence on outcomes of volunteer work than for other students (Terenzini et al., 1996). Further research is required to gather more understanding of the first-generation status students volunteering perspective.

International student or Foreign National

Prior studies suggest that cultural and language barriers along with the feeling of loneliness may be the primary reasons for them not contributing to service (Chen, 1999; Zhao et al., 2005; Cruce & Moore, 2012). The study found that non-international students in comparison to international student, did not present any significant relationship to volunteering. Although, in the current study under the race category the foreign nationals indicated a substantial number of hours and more probability of volunteering in comparison to their white peers. It is important to note that misinterpretation of the question is a possibility considering the language and cultural barriers of other race/ ethnicities students. A qualitative study on international students, especially those from varied language and

cultural background, will be more useful to avoid misinterpretation of the survey questions and gathering precise information.

College Experience

The predictive model allows to recognize the influence of the environmental characteristics on the intensity of college student volunteering. College involvement measures such as belonging to a social organization and athletic involvement had a positive implication, while few choices in majors and academic standing had a negative association with volunteering among college students. Enrollment status and living status did not evidence any major impact on student volunteering.

Enrollment status

The current study model had 93.7% of the student population enrolled full-time with only 6.3% enrolled part-time. A prior study indicated that part-time enrollment status was a significant negative predictor of college community service participation for first-year students (Cruce & Moore, 2007). The sample for the current study includes all four class years, while the impact found in a prior study took only first-year student sample. The results of this study did not present a significant difference of participation between part-time, or full-time enrolled students and volunteering. Future studies should focus on the academic curriculum to determine if more courses were integrating service scholarship into their curriculum that students enrolled full-time and part-time were volunteering regularly.

Academic Standing

A prior study found that students that either had mostly grade A or a mixture of A and B showed significantly lower probabilities than students with mostly grade B of not planning to volunteer during college (Cruce & Moore, 2012). The current study findings were inconsistent with the earlier studies on students' grades. This present study showed in comparison with students with Grade A, a significant negative relationship existed between students with B and C grades and volunteering.

The reason Grade A students volunteered more maybe because they were not required to spend more time on their educational work that they were able to contribute their time to volunteering. Students with grade B represent 41.7% of the sample, focusing on this grade student's engagement will considerably increase total student participation. Academic standing is a strong predictor of volunteering, so concentrating on curriculum to include service scholarship can aid with maximizing student involvement (Boyer,1990).

Athletic Involvement

Recently Athletic Association (NCAA) had presented that nearly 90% of college athletes were engaged in volunteer work and were motivated by the coaches as part of their athletic agenda (Huml, 2019). Consistent with the late findings this study found that in comparison to the athletes, non-athletes were less probable to volunteer 6 hours & above per week. Athletic involvement significantly influenced students volunteering during college, as predicted in the study. However, Cruce & Moore (2007) noted from their study that students who participated in varsity athletics had chances of volunteering that were not significantly different from those of non-athletes.

Several studies that explored the impact of volunteering on college students had not included student-athletes (Huml, 2019). Research in connection to volunteering in college and student-athlete is limited and needs further research in detail for more understanding of their predictive capability of the volunteering characteristics of college students.

Major

Few studies found that academic major was a predictor of volunteering that students within the arts and humanities, physical sciences, engineering, and business fields, undecided major had lower relative odds of planning to volunteer (Cruce & Moore, 2007; Astin & Sax, 1998). The current study was consistent with the earlier findings, that Engineering students were less prospective to volunteer 1-5 hours; while Arts and humanities, Physical sciences, and Engineering majors were less probable to do volunteer work of 6 hours & above per week. A previous study stated that undecided and undeclared students were undecided about their plans to volunteer (Cruce & Moore, 2007). Although, it is interesting to note that in the current study the undecided or undeclared majors were involved in contributing a considerable amount of time to volunteering during college.

The result is consistent with another study that explained the continuing obstacle faced by most of the disciplines (e.g., engineering and physical sciences) in integrating volunteer work into the syllabus that provides an essential and smooth educational connection for students (Felder & Silverman, 1988). As mentioned by Boyer (1990), reimagining and restructuring service scholarship as part of education can greatly affect these disciplines, increasing student participation. Several studies are examining these

disciplines influence of including volunteer work on the students learning (Jamieson, 2002; Oakes et al., 2000; Sanderson, 2003; Sanderson & Vollmar, 2000).

Member of Social Organization

Student participation in community service or volunteer work related associations have a predictable relationship with volunteering. Learning communities and organizations such as fraternities/ sororities have expectations for membership and have structures in place for volunteering that motivate students and instills the prominence of volunteer work. Consistent with the expected impact, a substantial connection existed between students' belonging to a student social organization and participation of 1-5 hours and 6 hours & above of volunteer work per week in this study.

Students' who were not part of a social organization were less likely to volunteer 1-5 hours or 6 & above hours when compared to students of a social organization. The institutions taking action to integrate and promote the varied ethnic specific organizations may be contributing to the increased likelihood of different races being highly represented in volunteering. When institutions establish a strong commitment to outreach, and students are constantly encouraged and commended on active participation, they are probable to volunteer (Ward, 1996; Boyer, 1990).

Living status

Few studies found that students who resided on campus had a greater probability than their peers of volunteering during college (Fitch, 1991; Cruce & Moore, 2007; Gasiorski, 2009). Although the current study was consistent with a prior study in that volunteering did not differ significantly by the student on-campus or off-campus residence

(Cruce & Moore, 2012) it contradicted the other studies. On-campus students should have easy access and information on all the volunteer opportunities and so it is unclear as to the reason they did not exhibit any significant contribution towards volunteering in college. The difference in the findings may be due to the choice of the reference group and the different groups within the category. It should be noted that the results could manifest another way if a different category of living status was chosen as the reference group instead of the “none of the above” group. Earlier studies established that students who resided off campus conventionally devote additional time traveling that hindered with volunteer work participation (Kuh et al., 2001).

Overview

The results from this study indicate a good model fit between the chosen set of predictor variables, especially the college experience measures and college student volunteer work participation. Prior studies had not taken into the account the observed volunteer hours of college students for distinguishing the volunteering characteristics of college students (Cruce & Moore, 2007, 2012; Pascarella & Terezini, 2005). The change in NSSE 2013 survey questionnaire to include student volunteer work hours per week permitted the study to categorize and conduct analysis on the observed actual volunteering hours that students dedicated per week during college. The quantitative study used collected NSSE data from 2013-2018 to assess student volunteering characteristics.

Some of the positive demographic predictor variables in the study were race, age, and gender. In the current study, in comparison to the reference group of each category, the following students demonstrated a positive inclination and commitment to volunteering.

Students that were of the American Indian or Alaskan native, race/ ethnicity, and or females exhibited a greater inclination to volunteering 1-5 hours per week during college. Students that were of the Black or African Foreign or Non-resident Alien race/ ethnicity or was of the 40-55 age group or 20-23 age group, showed a higher inclination to volunteering 6 hours and above per week.

Since the focus of the study was to isolate the environmental influences on college students volunteering, the study predicted that among the environmental features' athletic involvement and member of social organization were the most influential variables. Other college experience measures like major and grades enabled to gather a more in depth understanding of the students that volunteered within these categories. Although contradicting to previous findings the study did not find any significance in relation to living on-campus and students' volunteer work participation.

Consistent with existing study's findings, students with grade B, grade C or a non-member of a social organization, or were of engineering major were predicted to be less likely to volunteer 1-5 hours per week. Students that were non-athletes, or non-members of a social organization, or were of the Arts and Humanities Physical Sciences major, or Mathematics & Computer Science major, or Health Professions major showed less probability of volunteering 6 hours and above per week.

The interesting finding projected was that in comparison to previous results the current study outcome was positive in multiple categories. Prior researchers have consistently noted that foreign nationals, undecided or undeclared majors, first-generation students, part-time enrolled students demonstrated a negative inclination to volunteering.

This study model predicted that foreign nationals and undecided or undeclared major students that were consistently absent or less inclined to volunteering to have a positive association of volunteering 6 & above hours. First-generation and part-time students did not exhibit a negative tendency towards volunteering in comparison to their peers. Also, there was no significant difference in volunteering 6 hours & above per week between males and females, suggesting that males were also considerably involved in volunteer work.

The limited diversity of the sample; nearly every student from the United States enrolled full-time and predominantly being a white institution, students in general are devoting time to volunteer work. This strongly implies that the institution has established inclusive programs that nurture volunteering among all college students. The findings from the study suggest that the institution, and college experience have a strong impact on the propensity and intensity of student participation. Although, social organization and athletic involvement have the strongest predictive relationships with volunteering, it must be noted that academic standing and major also play a vital role.

Overall, the findings from this study support the notion that controlling for background characteristics, and including the environmental characteristics improved the odds of predicting the intensity of volunteer work participation or the absence of it in college students. Student's participation in college as well as a commitment to the community can be prominently raised with interventions designed to include and appeal to all students. The following section reviews some of the limitations of this study on predictors of college volunteering.

Limitations

The study identified several limitations, including missing data. Some limitations in the current study are significant and need to be recognized because of their potential impact on the results of the study. This study used secondary analysis of longitudinal data from NSSE. The secondary data limited the current study to the availability of variables in the data set (Titus, 2006) and placed restrictions on the study by defining the variables that can contribute to the research (Strayhorn, 2006). Additional predictors for college volunteering that were used in earlier research but were not considered in this study due to the difference in the use of survey instruments and statistical tools. For example, family involvement was a predictor that showed a correlation with college volunteering but was not part of this NSSE questionnaire (Marks and Jones, 2004).

Prior studies that used NSSE (till 2012) data estimated only the students' intentions or propensity to volunteer (Astin & Sax, 1998; Astin et al., 2000; Cruce & Moore, 2007, 2012; Fitch, 1991; Marks & Jones, 2004; Pierson, 2002; Serow & Dreyden, 1990) rather than their actual participation and the intensity of their participation or the absence of it to determine the student volunteering characteristics. Intentions to participate need not necessarily translate to actual participation among college students.

NSSE data till 2012 had a different question in the survey instrument that originated from a single item on the NSSE instrument that measures the students' current participation or plans to engage in community service or volunteer work while in college (Cruce & Moore, 2007, 2012). The item appeared with seven other items (e.g., study abroad, and independent study or self-designed major) that in combination measure students' plans to

participate in various enriching educational experiences. The question for that set of items reads, “Which of the following have you done or do you plan to do before you graduate from your institution?” with response options: Done, Plan to do, Do not plan to do, and Have not decided. When compared to the current study where the NSSE question and the choices had changed from 2013, to include 0 to over 30 hours per week of volunteer work to determine the actual intensity of the college student participation. In 2013, the change in the NSSE question made the study incomparable to the previous studies; although, it contributed robust information on actual student participation and new knowledge for future studies. The model permitted to set a baseline for future studies, by examining the categorized actual volunteer hours contributed by the students during college in a land-grant university (50.5% volunteered minimum of 1-5 hours).

The research analysis relied upon student self-reported data and university reported data. While some deem students’ self-reported aspiration data debatable (Jencks, Crouse, & Mueser, 1983; Rosenbaum, 2001), the current study valued the robust and positive relationship between educational aspiration and actual attainment that was found in other research studies (Adelman, 2006; Domina et al., 2011; Reynolds et al., 2006). The study relied on previous theoretical models to guide the understanding of the survey response process to provide a useful framework to assess the trustworthiness of the data (Sudman et al., 1996; Tourangeau et al., 2000; Turner and Martin, 1984). Due to some of these findings, the results can only be considered generalizable with similar student sample populations (i.e., predominantly white student population).

Another significant limitation was that the type of analysis used were not the same. Two studies (Fitch, 1991; Serow & Dreyden, 1990) used a sequence of chi-square tests to

study the consistencies in volunteering characteristics among college students. Astin and Sax (1998) and Astin et al. (2000) had not reported the statistical model that shaped their findings, which made it problematic to confirm the reliability of their outcomes. Pierson (2002) projected a model of the volunteer decision using ordinary least squares (OLS) multiple regression, which was comparatively a better statistical analysis. The current study used multinomial regression analysis to compare data within the institution to understand the impact of the environmental characteristics that influenced in college students of a land-grant institution.

A complication emerged as the student age was considered as a dichotomous variable in previous studies, while the current study took into consideration the different student age groups. The choice of using different age categories in this study proved beneficial in finding a significant relationship between volunteering and age groups 40-55 and 20-23 years which was not evident in previous studies.

Another limitation is that this study did not take into account the different types and the quality of the volunteer work performed by college students. Similar to prior research, this study used volunteering as a broad spectrum to understand the connection that existed between a set of predictor variables and volunteering (Cruce & Moore, 2007, 2012; Marks & Jones, 2004; Gasiorski, 2009). Future studies could use a qualitative approach to fill this gap in the literature.

Other studies were conducted with instruments that measured the various benefits of community service participation to college students. The current study was conducted with 2013-2018 data with categorized observed college student volunteering hours per week

along with new variables that were not included in previous studies to extend and add to the existing studies.

Finally, this study was conducted on a single institutional setting; thus, the results cannot be generalized to all colleges. Although the NSSE instrument used is suggested by few researchers to be explicitly useful in gathering precise information of student engagement within an institution, the results and implications of this study are meaningful only to a four-year land-grant institution.

Discussion and Implications for practice

The findings from this study support several suggestions for both higher education outreach coordinators and land-grant institution policymakers regarding student volunteer work participation. The study set a baseline for future studies, as it assessed the categorized observed volunteer hours contributed by the students during college in a land-grant university (50.5% volunteered minimum of 1-5 hours). Institutions can determine based on their outreach initiative to increase the number of hours and maximize student participation.

Previous studies have steadily validated that women contribute more than men to volunteer work (Astin & Sax, 1998; Astin et al., 2000; Bonnet, 2008; Cruce & Moore, 2007; Fitch, 1991; Marks & Jones, 2004; Sax et al., 1996; Serow & Dreyden, 1990; Vogelgesang & Astin, 2000). The current study is consistent with prior findings, so including and incorporating men in the planning process of configuring appealing programs may prove helpful in maximizing their participation. Debunking the myth of volunteer work being associated with women and as a feminine act will greatly help with more men committing to

volunteer work (Edwards and Jones, 2009). Future qualitative research on the outlook and mindset of men could benefit in understanding their negative attitude towards volunteering.

Race and ethnicity have yielded inconclusive results in comparison to existing literature as predictors of volunteering in college students. Involvement rate by Asian Americans, two or more races / ethnicities, Latino and White students was not significant in this study. In a predominantly white institution (81.9%), precaution should be taken to create volunteering programs that are inclusive in nature and appeal to the sensitive nature of students of color and all students (Gasiorski, 2009). Further look into the different race/ethnicity could help shed light on the variation in the results of current and previous studies (Marks and Jones, 2004; Gasiorski, 2009; Cruce & Moore, 2007, 2012). Institutions are concentrating on promoting different cultural and international student organizations. Understanding the individual groups strengths, weakness and interest can suggestively promote volunteering among these student groups.

The study found significant relationship between volunteering and non-traditional (40-55) age group. Classifying the different age groups further identified that among the traditional age groups 19 and younger were contributing less in comparison to age 20-23 years. Further research is required that takes into consideration the different age groups instead of using age as a dichotomous predictive variable with traditional and non-traditional age groups.

College grades are a significant predictor of volunteering in college students. Students with A grades are more likely to participate in volunteer work as they do not need to spend more time studying. Incorporating volunteer opportunities into the academic

curriculum for all disciplines will engage students with grade B, grade C and lower and promote academic achievement (Astin & Sax, 1998; Astin et al., 2000; Eyler & Giles, 1999; Vogelgesang & Astin, 2000).

Membership in a social organization considerably increases the students volunteer work participation. These organizations have structures in place to motivate and offer numerous opportunities for volunteering. They also require a commitment to volunteering as part of their membership. Encouraging on-campus and off-campus students to be involved in these organizations will help them stay engaged with the campus community and reap the benefits of volunteering (Kuh et al., 2005).

International student variable did not present any statistical significance in the study, but foreign or non-resident alien a category in race/ ethnicity, exhibited a higher inclination to volunteering. The findings in combination with Latino and Asian American students that are less likely to volunteer needs further analysis to confirm if there was a difference in their interpretation of the questions. Since this quantitative study relied on self-reported information, students may have interpreted what it means to participate in volunteer work or community service differently. A qualitative study can help eliminate any misunderstanding and help with gathering more reliable and valid information about their intention and actual participation. Gathering reliable information can eliminate barriers and maximize their involvement, which will provide an opportunity for native students to mingle with their diverse peers (Carnevale, 1999; Mori, 2000; Sandhu, 1995). However, the results in the study with the foreign students exhibiting greater probability to volunteering credits the institution for promoting inclusive engagement.

The institutional characteristics play a pivotal role in the overall volunteering participation of college students. As stated by Boyer (1990), redefining scholarly service, which is both applicable and contributes to human knowledge, will help students develop essential skills and insights to not only serve during college but also beyond to reshaping the society. Land-grant colleges should direct attention to defining service or outreach in relation to faculty assessment and evaluation. Proper measures should be taken to recognize and commend faculty that take effort to tie service activities that relate to their specific field of knowledge. Incorporating scholarly services into the curriculum can be painstaking, time consuming, and extremely demanding of the faculty. Such efforts to integrate service to the specific fields will fundamentally maximize college students' participation contributing to the service mission of the universities.

Directions for Future research

The present quantitative study focused on isolating the environmental characteristics that impacted student volunteering during college. So, the study was unable to examine the different types of service that students were involved in and the quality of their volunteering experience. A qualitative analysis on the student volunteer work experience can enhance further understanding of the attributes that promote volunteering in college students. It is important to note that positive impact of volunteering will motivate further frequent student engagement, while negative experience may prevent participation. Upcoming researches can conduct mixed method study by analyzing data quantitatively and gathering qualitative information on the impact and quality of volunteer work involvement to provide information for higher education institutions to develop programs to capitalize on student participation and increase involvement hours.

Further, the current study was able to categorize the college students dedicated volunteer hours per week and create student profiles based on the intensity of their involvement. Future studies can use volunteer hours as a continuous variable or add more categories to get a more in-depth understanding of student volunteering characteristics. Although the study used data from 2013 – 2018 it did not do a longitudinal analysis or a year to year comparison of student participation. Future studies can do a longitudinal analysis or a comparison analysis between years to chart the variations in student volunteer work participation.

Most of the previous research have conducted multi-institutional studies, except very few studies that were focused on a single institution to determine student volunteering characteristics. Since NSSE is nationally recognized to measure student engagement within an institution future studies can focus on individual organizations to understand the volunteering characteristics of college students within their establishment.

Existing literature, prior and present research have consistently indicated that membership in a student social organization like sorority or fraternity and Greek organizations substantially increases the students volunteer work participation. Future studies can include student-athletic involvement and focus on actions that stress contribution and commitment from students in these organizations. Gathering this specific information can greatly benefit with incorporating similar structures within other units to enhance participation.

Conclusion

Overall, abundant of positive outcomes are evidenced from volunteering, especially with the citizenship development and civic engagement (Astin & Sax, 1998; Astin, Sax, & Avalos, 1999; Astin et al., 2000; Bringle & Stein-berg, 2010; Einfeld & Collins, 2008; Hart et al., 2007; Johnson, 2004; Jones & Hill, 2003; Nokes et al., 2005; Sax, 2004; Taylor & Trepanier-Street, 2007) which are attributes of the land-grant mission.

Land grant universities are redefining their engagement missions in light of declining budgets, changing demographics, and globalizing economies (Clark 2004; Slaughter and Leslie 1997; Tandberg 2010). Many campuses have already made civic learning a high priority in undergraduate education goals and are now urged to begin systematic evaluation of the influence of their educational opportunities and experiences on the next generation of engaged and responsible citizens (Hurtado et al., 2012). So, the current study is timely and relevant as it allows the institution to assess student engagement within, and the predictive model permits the land-grant institutions to chart the volunteering characteristics of college students based on the intensity of their participation.

The objective of the study was to recognize the environmental characteristics that promoted college students volunteering in a land-grant university. The results indicated that membership in a social organization and athletic involvement were positive predictors of student volunteering during college. Encouraging on-campus and off campus students to be involved in social organizations will help them stay engaged with the campus community and reap the benefits of volunteering. Few majors and grades showed a negative impact to college student volunteering. Incorporating volunteer opportunities into the academic

curriculum for all disciplines will engage students with grade B, grade C and lower and promote academic achievement. Identifying these environmental characteristics that either promote or obstruct will encourage institutions to focus effort and design a variety of programs and volunteering opportunities that are engaging to all students irrespective of gender, race/ ethnicity, or other differences.

The land grant institutions being more proactive can understand the volunteering characteristics of the college students based on the intensity of their volunteer work participation. In the present study, females, Foreign nationals, Black or African American, Alaskan native, students of age set 40-55 years and 20-23 years, students with Grade A, students with membership in social and athletic organization were more likely to be involved in volunteer work during college in a land-grant university. Students with Grade B, Grade C, students of Engineering, Physical science, Mathematics & computer science majors, Arts & Humanities majors were less likely to volunteer during college.

Creating such student profiles based on their involvement will benefit institutions in incorporating educational courses and resources to raising the number of student participation (Cruce & Moore, 2007, 2012). Enlisting an extensive number of college students to volunteering and nurturing civic consciousness would support the land-grant universities to efficiently succeed in their outreach and service mission.

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**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS
REQUEST FOR EXEMPT CATEGORY RESEARCH**

For Information or help completing this form, contact: THE OFFICE OF RESEARCH COMPLIANCE, 115 Ramsay Hall
Phone: 334-844-5966 e-mail: IRBAdmin@auburn.edu Web Address: <http://www.auburn.edu/research/vpr/ohs/index.htm>

Revised 2/1/2014 Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

Project activities may not begin until you have received approval from the Auburn University IRB.

1. PROJECT PERSONNEL & TRAINING

PRINCIPAL INVESTIGATOR (PI):

Name Madhumalini Nadar Title _____ Ph.D. candidate _____ Dept./School College of Education
Address Auburn, AL AU Email mzk0035@auburn.edu
Phone 334 734 4554 Dept. Head Sherida Downer

FACULTY ADVISOR (if applicable):

Name Dr. Sean Forbes Title Associate Professor Dept./School College of Education
Address 4036 Haley Center
Phone 334 844 3083 AU Email forbesa@auburn.edu

KEY PERSONNEL: List Key Personnel (other than PI and FA). Additional personnel may be listed in an attachment.

Name	Title	Institution	Responsibilities
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

KEY PERSONNEL TRAINING: Have all Key Personnel completed CITI Human Research Training (including elective modules related to this research) within the last 3 years? YES NO

TRAINING CERTIFICATES: Please attach CITI completion certificates for all Key Personnel.

2. PROJECT INFORMATION

Title: Charting the volunteering characteristics of college student in a land grant institution

Source of Funding: Investigator Internal External

List External Agency & Grant Number: _____

List any contractors, sub-contractors, or other entities associate with this project.

List any other IRBs associated with this project (including those involved with reviewing, deferring, or determinations).

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____ APPROVAL # _____
DATE OF IRB REVIEW: _____ by _____ APPROVAL CATEGORY: _____
DATE OF ORC REVIEW: _____ by _____ INTERVAL FOR CONTINUING REVIEW: _____
DATE OF APPROVAL: _____ by _____
COMMENTS: _____

The Auburn University Institutional Review Board has approved this Document for use from 09/06/18 to _____
Protocol # 18-368 Ex 1809

3. PROJECT SUMMARY

a. Does the research involve any special populations?

- YES NO Minors (under age 19)
 YES NO Pregnant women, fetuses, or any products of conception
 YES NO Prisoners or Wards
 YES NO Individuals with compromised autonomy and/or decisional capacity

b. Does the research pose more than minimal risk to participants? YES NO

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. 42 CFR 46.102(f)

c. Does the study involve any of the following?

- YES NO Procedures subject to FDA Regulation Ex. Drugs, biological products, medical devices, etc.
 YES NO Use of school records of identifiable students or information from instructors about specific students
 YES NO Protected health or medical information when there is a direct or indirect link that could identify the participant
 YES NO Collection of sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior or use of alcohol
 YES NO Deception of participants

If you checked "YES" to any response in Question #3 STOP. It is likely that your study does not meet the "EXEMPT" requirements. Please complete a PROTOCOL FORM for Expedited or Full Board Review. You may contact IRB Administration for more information. (Phone: 334-844-5966 or Email: IRBAdmin@auburn.edu)

4. PROJECT DESCRIPTION

a. Subject Population (Describe, include age, special population characteristics, etc.)

The de-identified data of the subject population are, all Auburn University students who have voluntarily participated in NSSE data collection ranging through the years 2013 - 2018. The participant data will be de-identified and will not be shared and strong data security controls on storage sites will be ensured for data security and protection.

b. Describe, step by step, all procedures and methods that will be used to consent participants.

- N/A (Existing data will be used)

- c. **Brief summary of project.** (Include the research question(s) and a brief description of the methodology, including recruitment and how data will be collected and protected.)

This study aims to examine the volunteering characteristics of the college students by focusing on one college population in a land grant institution(Auburn University). Limited studies have examined the predictors of the volunteerism during college. The study will analyze all the NSSE variable listed in the 2013 - 2018 survey data for predictors of the volunteering characteristics in the college students.

The research questions are:

1. What measures predict the volunteering characteristics of college students in a land grant institution? OR
2. Do measures of pluralistic orientation (i.e.,ability to see the World from another's perspective; tolerance for difference; openness to having ones views challenged; ability to work co-operatively with diverse others; and ability to discuss controversial issue) add unique contributions to predicting the volunteering characteristics of college students?

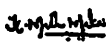

The study will examine all the NSSE variables included in the survey 2013 - 2018 for predictors of the volunteerism in college students. The Office of Institutional research at Auburn University will provide the complete data of the NSSE survey from 2013 - 2018. I will not be collecting the data directly from the participants. The existing data gathered will not be shared, participants information will be de-identified and a strong data security controls on storage sites will be ensured for data security and protection. Please see attached letter of data support from OIR.

- d. **Waivers.** Check any waivers that apply and describe how the project meets the criteria for the waiver.

- Waiver of Consent (Including existing de-identified data)**
 Waiver of Documentation of Consent (Use of Information Letter)
 Waiver of Parental Permission (for college students)

This project involves the secondary analysis of existing data and does not pose any risk. To maximize data safety the participants data will be de-identified, the data will not be shared and strong data security controls on storage sites will be ensured for data security and protection.

- e. **Attachments.** Please attach Informed Consents, Information Letters, data collection instrument(s), advertisements/recruiting materials, or permission letters/site authorizations as appropriate.

Signature of Investigator	 <small>Digitally signed by MacDermott Name: Date: 2018.02.24 10:20:40 -0500</small>	Date _____
Signature of Faculty Advisor	 <small>Digitally signed by Dean Forbes DN: cn=Dean Forbes, o=Auburn University, c=US, email=forbes@auburn.edu, o=US Date: 2018.02.24 11:45:29 -0500</small>	Date _____
Signature of Department Head	Sherida Downer <small>Digitally signed by Sherida Downer Date: 2018.02.20 07:32:08 -0500</small>	Date _____