12-2023

Alumni Giving From Online Learners: A Logistic Regression Study

Jaqlyne S. Jackson
Abilene Christian University, jsj16b@acu.edu

This dissertation, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Education in Organizational Leadership

Nannette W. Glenn, Ph.D.

Dr. Nannette Glenn, Dean of the College of Graduate and Professional Studies

October 13, 2023

Dissertation Committee:

Dr. Casey Reason, Chair

Dr. Scott Self

Dr. Scott Strawn

Abilene Christian University

School of Educational Leadership

Alumni Giving From Online Learners: A Logistic Regression Study

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Organizational Leadership

by

Jaqlyne S. Jackson

December 2023

Acknowledgments

I would like to express appreciation to those that served on my dissertation committee for guiding and supporting me throughout this journey. To my chair Dr. Casey Reason, who helped me get back on track after a hiatus that lasted too long. Thank you for your encouragement and suggestions to execute research that will stand the test of time. To committee member Dr. Scott Self, who answered over 60 separate questions about statistics. Thank you for introducing me to the theory of planned behavior and for always being as excited about my research as I am. To committee members Dr. Scott Strawn and Dr. Dana McMichael, thank you for asking questions that led me to improve my work and inspired ideas for future research. I am immensely grateful to each of you.

This study would not have been possible without the collaboration of Prairie Grass University (pseudonym). Thank you for partnering with me to conduct this important study. I hope the findings help you increase philanthropic giving from online learners. Since this was an archival study deemed nonhuman research, every inquiry I made regarding the data file resulted in additional work to the professionals who aided me. Your dedication to the advancement of charitable giving to higher education is admirable.

Throughout the process of conducting this study, I was blessed to be surrounded by colleagues that invested their time and intellect into my pursuits. I would like to specifically thank Ms. Darice Heishman, Dr. Paul Plummer, and Dr. Greg Williams for their teaching and guidance. There are many more individuals who supported me over the years, from small acts like an encouraging note, to larger involvement like proofreading this 100+ page document. To each of you, please know that I would not have finished without you.

Two people have been by my side through this entire experience: my husband Aaron and my daughter Ariel. Aaron, thank you for encouraging me when I was feeling defeated and kicking me into gear when I was procrastinating, and most importantly, for knowing the difference. If I never thanked you for making sure I ate during those full days I spent writing or for listening to endless hours as I processed information out loud, I hope you consider this dedication a permanent acknowledgement of your contributions to my success. Ariel, I have been a college student for the majority of your life, and you have always been considerate and encouraging, even when it meant we didn't get to spend as much time together as we would have liked. I am proud to now be "Dr. Mom" and look forward to what the future holds for our family.

Finally, I acknowledge that this was all possible because God saw me through it. Prayerful mornings and nights provided me with the strength I needed to persevere. I hope that my research helps advance God's good work. As 2 Corinthians 9:7 tells us: God loves a cheerful giver. Advancement professionals like myself are uniquely positioned to share the needs of institutions with God's people. By understanding their motivations, we have a better opportunity to encourage them toward cheerful giving.

Abstract

Alumni giving is increasingly important to the vitality of institutions of higher education. With governmental financial support of public institutions steadily declining, understanding philanthropic giving is more important than ever. Advancement offices that serve alumni populations benefit from analyzing predictors of the behavioral phenomenon of charitable giving. It is also known that enrollment in distance education programs is on the rise in the United States. For university administrators and advancement professionals to be proactive in cultivating relationships with alumni that attended through an online modality, more research was needed to understand what motivates philanthropic giving from this alumni constituency. Using the theory of planned behavior as a theoretical framework, this quantitative study employed logistic regression to explore if independent variables proven to predict philanthropic giving from alumni that attended through a residential education experience also predicted philanthropic giving from alumni who completed 80% or more of their learning experience through the online modality. The population of participants was alumni who have graduated from a midsized master's degree-granting public university in the Midwest with a degree from an online program. The institution in this study was at the forefront of implementing distance education programs, with beta testing starting in 1995 and full programs launched in 1998. The logistic regression model tested was statistically significant. Of the 11 predictor variables, nine were statistically significant. Overall, the strongest predictor of alumni giving in the model was having also earned a degree through a residential experience at the institution. Other strong predictors were alumni event attendance, marital status of married and divorced when compared to single, and having graduated from the Kinesiology academic program when compared to the Aviation academic program. The findings of this study can help inform decision making and

strategy creation of higher education leaders in securing financial support from this emerging audience of prospective donors while also helping inform student engagement and alumni engagement strategies regarding the subset of students that attend university through distance education. Ultimately, the results add to the body of research about philanthropic giving from alumni that attended universities through the online modality.

Keywords: alumni, giving, philanthropy, higher education, online modality, distance learning

Table of Contents

Acknowledgments i

Abstract iv

List of Tables viii

List of Figures x

Chapter 1: Introduction 1

- Statement of the Problem 5
- Purpose of the Study 6
- Research Question 7
- Definition of Key Terms 7
- Summary 9

Chapter 2: Literature Review 10

- Theory of Planned Behavior 11
  - Attitude 13
  - Subjective Norm 14
  - Perceived Behavioral Control 16
  - Background Factors 17
  - Predicting Behavior 18
  - Criticism 22
  - Empirical Research 24
  - Interventions 27
- Student Experience 27
- Distance Education 28
- Alumni Giving 30
- Independent Variables: Demographic Information 33
- Independent Variables: Student Experience 34
- Independent Variables: Alumni Experience 36
- Summary 38

Chapter 3: Methodology 39

- Research Design 39
  - Research Method 40
  - Setting and Population 41
  - Data Collection Procedure 43
  - Statistical Analysis Assumptions 43
- Ethical Considerations 51
- Summary 52

Chapter 4: Results 53

Data Formatting 54
Independent Variables: Demographic Information 54
Independent Variables: Student Experience 55
Independent Variables: Alumni Experience 59
Variables in the Equation 60
Results 68
Descriptive Statistics 69
Logistic Regression 70
Demographic Information 77
Student Experience 78
Alumni Experience 80
Summary 81

Chapter 5: Discussion, Implications, and Recommendations 83

Summary of Findings 84
Discussion of Findings in Relation to Past Literature 85
Theory of Planned Behavior 85
Demographic Information 88
Student Experience 90
Alumni Experience 93
Limitations of the Study 96
Implications for Practice 98
Recommendations for Future Research 103
Summary 107

References 109

Appendix A: SPSS Statistics Variable View Table 124

Appendix B: Confidentiality Agreement 126

Appendix C: Institutional Review Board Approval 127

List of Tables

Table 1. Variables in the Equation: Linearity of Predictor and Log Odds 45

Table 2. Coefficients: Test for Multicollinearity 47

Table 3. Correlations: Test for Multicollinearity 48

Table 4. Residuals Statistics: Cook's Distance 51

Table 5. Dependent Binary Variable: Giver? 61

Table 6. Age Range of Participants 61

Table 7. Marital Status of Participants 63

Table 8. Employment Status of Participants 63

Table 9. Employment at Institution Status of Participants 63

Table 10. Academic Program of Participants 65

Table 11. Degree Level of Participants 66

Table 12. Residential Experience of Participants 66

Table 13. Extracurricular Activities Involvement of Participants 67

Table 14. Event Attendance of Participants 67

Table 15. Volunteerism of Participants 67

Table 16. Distance from Campus for Participant 68

Table 17. Descriptive Statistics 70

Table 18. Case Processing Summary 71

Table 19. Dependent Variable Coding 71

Table 20. Classification Table: Baseline Model 71

Table 21. Omnibus Test of Model Coefficients 72

Table 22. Hosmer and Lemeshow Test 72

Table 23. Variance Model Summary 73

Table 24. Classification Table: Tested Model 73

Table 25. Area Under the ROC Curve 75

Table 26. Variables in the Equation: Tested Model 75

List of Figures

Figure 1. Proposed Logistic Regression Model 7

Figure 2. Theory of Planned Behavior Model 12

Figure 3. Expectancy Value Formula 14

Figure 4. Subjective Norm Formula 15

Figure 5. Perceived Behavioral Control Formula 16

Figure 6. Pattern of Residuals 50

Figure 7. Receiver Operating Characteristic (ROC) Curve Plot.....74

Chapter 1: Introduction

Alumni giving is increasingly important to the vitality of institutions of higher education in the U.S. (Langley, 2020). Advancement offices that serve alumni populations can benefit from analyzing independent variables that predict the behavioral phenomenon of philanthropic giving (Berger, 2016). Identifying prospective alumni donors is valuable in university efforts to begin cultivating relationships and, ultimately, raise funds for institutional priorities. However, the majority of existing research on alumni giving examines students who had a residential college experience (Massey, 2017). Residential learning is a method of education delivery where the main elements include student participation on a physical campus through face-to-face instruction and communication (Allen & Seaman, 2013; Berger, 2016; Council for Advancement and Support of Education, 2021). Using Ajzen's (1991) theory of planned behavior as a theoretical framework in this quantitative study, I employed logistic regression to explore if independent variables proven to predict philanthropic giving from alumni that attended through a residential education experience also predict philanthropic giving from alumni that completed 80% or more of their learning experience through the online modality. The independent variables examined are grounded in existing research findings and associated with demographic information, student experience, and alumni experience. The dependent binary variable is alumni giving. The population of participants is alumni who have graduated from a midsize state institution in the Midwest with a degree from an online program since 2002. The degree programs were intentionally designed to be delivered through the online modality and students were aware of the modality prior to enrollment.

As the funding sources institutions of higher education have typically relied on to operate have declined due to decreased enrollment and reductions in federal and state governmental

support, administrators have been looking to advancement offices to raise more funds and help fill the budgetary gap (Liu, 2006; Martin et al., 2015; Pumerantz, 2005; Sav, 2016; Weerts & Ronca, 2008). Advancement offices reach out to the most readily available audience—alumni—in hopes that their strong affinity to their alma mater will result in much-needed financial contributions (Tom & Elmer, 1994). According to Walcott (2015), "Fundraising is a highly competitive and relationship-driven arena that seeks to draw the maximum amount of charitable contribution from a donor" (p. 2). Understanding what influences alumni giving is not a new research topic in the literature. Foundational research on student engagement, retention, and persistence indicates that being involved socially and academically leads to increased retention (Tinto, 1987) and that involvement in student life leads to a feeling of attachment to the university (Astin, 1999). Attachment to the university, expressed through satisfaction with one's academic program and student experience, are primary motivations for alumni to give (Gaier, 2005; Monks, 2003; Rau & Erwin, 2015; Skari, 2014; Tsao & Coll, 2005; Vervoort & Gasman, 2016). Young et al. (2019) made the following claim:

> Alumni offices may also see benefits [of truly robust student engagement] in increased alumni involvement and giving if they perceive a deep connection to their alma mater, rather than feeling it provided them only with a degree, rather than a transformative life experience. (p. 31)

Simply put, it has been established that students that feel connected to the institution are more likely to turn into engaged alumni. Affinity to the institution has greater predictive power than wealth and giving history in relation to alumni giving to their alma mater (McAlexander et al., 2014).

Advancement offices strive to keep alumni engaged with the institution through four modes: philanthropic giving, volunteerism, communication, and alumni events (Smith & Kaplan, 2021). Philanthropic giving is a form of altruism expressed through a financial donation to a charitable and/or nonprofit organization (Council for Advancement and Support of Education, 2021; Iskhakova et al., 2017). It has been found that independent variables such as increased age and higher income often correlate with alumni giving intentions or behavior (Baade & Sundberg, 1996; Bristol, 1990; Bruggink & Siddiqui, 1995; Clotfelter, 2003; Lara & Johnson, 2014; Monks, 2003; Skari, 2014; Smith & McSweeney, 2007; Tsao & Coll, 2005; van der Linden, 2011), along with the concept of close proximity to the benefactor of the gift (Bruggink & Siddiqui, 1995; Curry et al., 2012; Touré-Tillery & Fishbach, 2017). While more difficult to quantify than demographic indicators, emotional attachment to alma mater is also a predictor of alumni giving (Beeler, 1982). Tom and Elmer (1994) built on Beeler's (1982) research and found that alumni who owned more university insignia goods perceived the institution as part of their personal identity, and the ownership of these goods correlated with a willingness to give back. However, the majority of existing research on alumni giving is based on students who had a residential college experience (Massey, 2017), which necessitates new research on the topic of alumni giving from online learners.

Higher education is experiencing a shift in college student populations; from exclusive residential (on-campus) study to including other learning modalities. This phenomenon has been evolving for decades (Allen & Seaman, 2013; Black et al., 2006). Institutions of higher education that practiced collegial entrepreneurialism were at the forefront of providing higher education through evolved modalities. Clark (1998) defined entrepreneurial universities as those that "adhere to the belief that the risks of experimental change in the character of universities should

be chosen over the risks of simply maintaining traditional forms and practices" (p. 14). However, when the COVID-19 pandemic shut down many physical campuses across the United States in 2020, a set of unprecedented natural experiments occurred in emergency online learning (Aguilera-Hermida, 2020; Zimmerman, 2020). This event impacted all institutions, not just those that practice collegial entrepreneurialism. In 2019, 17.6% of college students in the United States were exclusively enrolled in distance education courses, while an additional 19.7% were enrolled in at least one online course (National Center for Education Statistics [NCES], 2022). In 2020, the number increased drastically to 45.5% of students exclusively enrolled in distance education courses, with an additional 28.5% enrolled in at least one online course (NCES, 2022). In 2021 most campuses had resumed their residential offering, but the percentage of students exclusively enrolled in distance education courses remained higher than prepandemic at 30.3%, with an additional 28% enrolled in at least one online course (NCES, 2022). The natural experiments in educational modality that occurred as a result of COVID-19 have the potential to permanently impact the delivery of higher education (Zimmerman, 2020).

When students earn their coveted degrees through distance education, they will also earn the title of alumnus' and their alma maters will begin to depend on them for philanthropic support. However, the tactics advancement offices use to solicit graduates will be based on mass approaches that have proved successful when garnering support from traditional residential learners. It is possible that distance learners have not been afforded a student experience that will lead to what Astin (1999) defined as a long-term attachment to their university. Consequently, advancement offices have a limited understanding of what variables predict alumni giving from graduates who attended their respective universities through distance education (Tiger & Preston, 2013).

Statement of the Problem

The problem is that there is insufficient research regarding the independent variables associated with demographic information, student experience, and alumni experience that predict philanthropic giving from alumni that attended their respective universities through distance education. Distance education is defined as any method of education delivery where the main elements include physical separation of teachers and students during instruction and the use of various technologies to facilitate student-teacher and student-student communication. This study focuses exclusively on alumni that completed 80% or more of their learning experience through the online modality. Independent variables associated with demographic information include age, marital status, and two measures of employment status. Independent variables associated with student experience include academic program, degree level, having also had residential experience at the institution, and involvement in extracurricular activities. Independent variables associated with alumni experience include alumni event attendance, volunteering for the university, and distance from alma mater. The dependent binary variable will be if the alumnus has or has not made at least one philanthropic gift of any size to the university.

Tiger and Preston (2013) analyzed the philanthropic tendencies of alumni from online programs and found a significant negative correlation between the number of online courses completed and giving. However, other studies found that alumni who earned their degrees through distance education made larger donations more quickly after graduation than their residential-experience alumni counterparts (Lesht et al., 2018; Morrison, 2013). One multi-institutional study suggests that the relationship between modality and alumni giving may be specific to the institution (Lesht et al., 2018). For university administrators to be proactive in

cultivating relationships with alumni that attended through an online modality, more research is needed to understand what predicts philanthropic giving from this alumni constituency.

Purpose of the Study

The purpose of this quantitative study was to analyze the independent variables to determine if they predict the likelihood of an alumnus, who completed 80% or more of their learning experience through the online modality, to engage in philanthropic giving behavior. Through statistical analysis of archival data, I built and tested a logistic regression model. The study was conducted at a midsized master's degree-granting public university located in the Midwest that, at the time of the study, offered 60 degrees (including baccalaureate, master's, or education specialist) through distance education, where 80% or more of the coursework is completed through an online learning environment (Allen & Seaman, 2013; Berger, 2016; Lesht et al, 2018). With governmental financial support of public institutions steadily declining, understanding philanthropic giving is more important than ever (Martin et al., 2015; Pumerantz, 2005; Sav, 2016; Weerts & Ronca, 2008). However, in the past, increased philanthropy to public higher education has resulted in reduced government support, consequently deterring alumni giving (Sav, 2010; Sav, 2016). Additionally, public institutions are lacking in fundraising experience compared to their private institution counterparts who have historically relied on private giving to sustain operations (Liu, 2006).

The population of participants is alumni who have graduated with a degree from an online program since 2002. The institution in this study was at the forefront of implementing distance education programs, with beta testing starting in 1995 and full programs launched in 1998. The institution has a robust population of graduates from online degree programs. The independent variables analyzed are divided into three categories: those associated with

demographic information, those associated with the student experience, and those associated with the alumni experience. I selected the independent variables considering the theoretical framework of the theory of planned behavior (Ajzen, 1991) and empirical research on alumni giving from graduates who had a residential college experience. The results help inform decision making and strategy creation of higher education leaders in securing financial support from this emerging audience of prospective donors while helping inform student engagement theory and strategies regarding the subset of students that attend university through distance education. Ultimately, the results add to the body of research regarding philanthropic giving from alumni that attended universities through the online modality.

Research Question

In this logistic regression study, I tested the model in Figure 1 to answer the following question: Do independent variables associated with demographic information, student experience, and alumni experience predict the likelihood of an alumnus who earned their degree through the online modality to be a donor?

Figure 1

Proposed Logistic Regression Model

$$Y_{alumni\ giving} = \text{Constant} + \beta 1_{age} + \beta 2_{marital\ status} + \beta 3_{employment\ status} + B4_{employed\ at\ institution} + \beta 5_{academic\ program} + \beta 6_{degree\ level} + \beta 7_{\ residential\ experience} + \beta 8_{extracurricular\ activities} + \beta 9_{alumni\ event\ attendance} + \beta 10_{volunteerism} + \beta 11_{distance\ from\ alma\ mater}$$

Definition of Key Terms

Advancement office. An advancement office is an administrative division at an institution of higher education responsible for alumni relations, events, fundraising, and

stewardship. Some advancement offices are also responsible for integrated marketing and communications, admissions, or career services (Council for Advancement and Support of Education, 2021; Rau & Erwin, 2015).

Alumni. Alumni are individuals that have graduated from a college or university with a degree (Council for Advancement and Support of Education, 2021; Iskhakova et al., 2017).

Distance learning/education. Distance learning, or distance education, is a method of education delivery where the main elements include physical separation of teachers and students during instruction and the use of various technologies to facilitate student-teacher and student-student communication (Allen & Seaman, 2013; Berger, 2016; Council for Advancement and Support of Education, 2021).

Donor. A donor is an individual that has made a philanthropic contribution/ gift to the institution (Council for Advancement and Support of Education, 2021; Iskhakova et al., 2017).

Online modality. Online modality is a method of education delivery through which the student completes 80% or more of their coursework in an online environment (Allen & Seaman, 2013; Berger, 2016; Lesht et al., 2018).

Philanthropic giving. Philanthropic giving is a form of altruism expressed through a financial donation to a charitable/nonprofit organization (Council for Advancement and Support of Education, 2021; Iskhakova et al., 2017).

Residential (on-campus) learning/education. Residential (on-campus) learning, or residential education, is a method of education delivery through which the main elements include student participation on a physical campus through face-to-face instruction and communication (Allen & Seaman, 2013; Berger, 2016; Council for Advancement and Support of Education, 2021).

Summary

With most institutions of higher education now offering courses and entire programs of study exclusively through distance learning modalities, advancement offices are behind the curve in understanding what motivates these alumni to participate in philanthropic giving (Lesht et al., 2018). Colleges and universities exist on the principle that education positively influences the world around us; it is time for higher education to learn how to connect with diverse alumni populations like those that studied through the online modality (Black et al., 2006).

Distance education is no longer just an entrepreneurial choice for universities; it will be a survival tactic postpandemic. With continued growth in alumni populations that attended through distance education, the future of philanthropy continues to shift. The opportunity to have that shift be in the favor of loyal support is dependent upon a greater understanding of what factors predict alumni giving.

The next chapter presents the theory of planned behavior (Ajzen, 1991) as the theoretical framework for this study. Chapter 2 also presents foundational research on student engagement, retention, and persistence (Tinto, 1987), as well as involvement in student life (Astin, 1999), followed by a review of literature establishing motivations for alumni giving (Gaier, 2005; Monks, 2003; Rau & Erwin, 2015; Skari, 2014; Tsao & Coll, 2005; Vervoort & Gasman, 2016). The chapter concludes with a preview of emerging research findings on alumni giving from distance learners (Berger, 2016; Lesht et al., 2018; Tiger & Preston, 2013).

Chapter 2: Literature Review

The nuances of higher education are constantly evolving. Emphasis is no longer solely placed on the physical campus like it was in 1953 when President Dwight D. Eisenhower visited Dartmouth and famously announced that the campus was how colleges should look (Thelin, 2011). The overarching success of an institution now depends on expanded factors, like the breadth of academic programs offered, graduation rates and employment postgraduation statistics, perceived quality of education, and how it is delivered. Some colleges and universities were at the forefront of addressing factors like these before the majority realized a shift was occurring. Institutions like the one in this study were exploring and experimenting with change to shape the impact these internal and external demands would have on them, resulting in the creation of distance education. However, the integration of distance education impacted the long-term course of institutions by creating an entirely different student experience that ultimately has an impact on alumni giving.

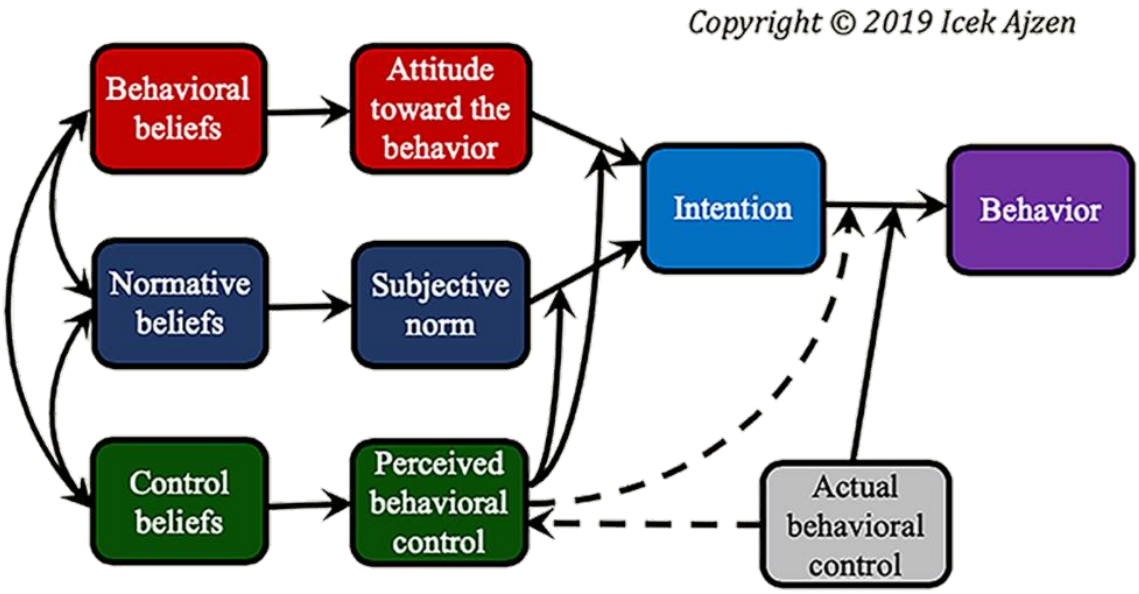
There is insufficient research regarding the independent variables associated with demographic information, student experience, and alumni experience that predict philanthropic giving from alumni that attended their respective universities through distance education. In this quantitative study I employed logistic regression to explore if independent variables proven to predict philanthropic giving for alumni that attended through a residential education experience also predict philanthropic giving from alumni that completed 80% or more of their learning experience through the online modality. This chapter presents the theory of planned behavior (Ajzen, 1991) as the theoretical framework for this study. Sections highlighting other literature and research findings related to the student experience, distance education, alumni giving, and the independent variables that I examined in this study immediately follow.

Theory of Planned Behavior

The theory of planned behavior is an intuitively reasonable theoretical framework for understanding, predicting, and changing human social behavior in specific contexts (Ajzen, 1991; Ajzen, 2012). Developed as an extension of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the central factor of the theory of planned behavior is an individual's intention to perform a specific behavior (Ajzen, 1991; Ajzen, 2012). Behavioral intention is believed to be a proximal determinant to actual behavior; therefore, the stronger intention one has to engage in a specific behavior, the more likely that the individual will actually engage in the behavior (Ajzen, 1991; Manstead, 2016; Terry et al., 2016). The principal difference between the theory of reasoned action and the theory of planned behavior is the addition of a variable for perceived behavioral control in the latter. Perceived behavioral control helps determine behavioral intention, and serves as a proxy for actual control, assuming that the individual's evaluation of control accurately reflects their actual control (Ajzen, 1991; Ajzen & Sheikh, 2013). The theory of planned behavior uses the variable of perceived behavioral control to account for the assumption that nonmotivational factors, such as access to resources and opportunities, play a role in actual behavior when engagement in the behavior may not be under the individual's volitional control (Ajzen, 1991). Perceived behavioral control also takes into consideration an individual's past experience with a specific behavior (Ajzen, 2011; Ajzen & Sheikh, 2013).

Figure 2

Theory of Planned Behavior Model



Note. From *Theory of Planned Behavior Diagram,* by I. Ajzen at University of Massachusetts Amherst, 2019 (https://people.umass.edu/aizen/tpb.diag.html). Copyright 2019 by Icek Ajzen. Reprinted with permission.

To accurately predict behavior through the theory of planned behavior, several conditions must be met. First, all variables must be consistently measured in relation to a specific behavior in a specific context. Second, the interval of time must be constant for measurements of intentions, perceived behavioral control, and observation of actual behavior; this is to limit the impact of intervening events. Third, the individual's perception of control should accurately represent their actual control. These combined conditions constitute the principle of compatibility (Ajzen, 2020).

Ajzen (1991) stated, "At the most basic level of explanation, the theory postulates that behavior is a function of salient information, or beliefs, relevant to the behavior" (p. 189). Salient

beliefs are defined as those beliefs that first come to the individual's mind when responding to open ended questions; they are also referred to as accessible beliefs (Sutton et al., 2003). The advantage of a belief-based theory is that it allows the researcher to use identified beliefs to differentiate people based on intention (or lack of intention), creating opportunities to develop interventions and ultimately change actual behavior (Smith & McSweeney, 2007). Previous experience has a feedback effect that further informs an individual's beliefs, thus influencing future intentions and action (Ajzen, 2020). Salient beliefs are not indirect measures of attitude, subjective norm, or perceived behavioral control but rather serve as formative indicators (Ajzen, 2020). Salient beliefs are the prevailing determinants of intention and action (Ajzen, 1991).

Attitude

Salient behavioral beliefs are the beliefs an individual has about the consequences of engaging in a specific behavior (Sutton et al., 2003). These beliefs influence the individual's attitude toward the behavior. Using the expectancy-value model of attitudes (Fishbein & Ajzen, 1975), the theory of planned behavior posits that behavioral beliefs are developed by making associations between the specific action in question and attributes that the individual has already mentally linked to positive or negative consequences (Ajzen & Sheikh, 2013; Terry et al., 2016). As shown in Figure 3, the strength of each salient behavioral belief (b) is multiplied by the evaluation aspect of the belief attribute (e), summed over the number of salient beliefs (n). The individual's attitude (A) is proportional ($\propto$) to this summative index scale. Belief strength (b) is defined as the subjective probability that a specific behavior will result in a certain outcome (Fishbein & Ajzen, 1975).

Figure 3

Expectancy Value Formula

$$A \propto \sum_{i=1}^{n} b_i e_i$$

Attitude toward a specific behavior is therefore determined when the individual favors behaviors they believe will have desirable consequences, or has an unfavorable response because they believe engagement in the behavior will have undesirable consequences (Ajzen, 1991). In his later work, Ajzen (2011) further distinguishes that the theory of planned behavior could assess two kinds of attitude: "a general attitude toward enacting a given behavior and an affective attitude towards not performing the behavior" (p. 1117). Mittelman and Rojas-Mendez (2018) further endorse a multidimensional approach to evaluating attitude in their study on charitable giving using the theory of planned behavior, acknowledging that an individual can simultaneously have multiple and conflicting attitudes toward a specific behavior. While some social scientists have suggested that other variables, such as moral convictions (Manstead, 2016; Smith & McSweeney, 2007; van der Linden, 2011) or self-identity (Sparks, 2016), should be added to the theory of planned behavior model, these are often evaluated under attitude.

Subjective Norm

Salient normative beliefs are the beliefs an individual carries about the opinions of significant individuals or groups, sometimes referred to as referents (Ajzen, 1991; Sutton et al., 2003). These beliefs reflect the level of pressure an individual perceives from others to engage in the specific behavior. In this social influence process, an individual is motivated to align their behavior with the expectations of others that are important to them (Ajzen, 2012; Terry et al.,

2016). As shown in Figure 4, the strength of each normative belief (*n*) is multiplied by the individual's motivation to comply with social pressures (*m*), and the subjective norm (SN) is proportional (∝) to the sum of the resulting products across the number of salient referents (*n*) (Ajzen, 1991).

Figure 4

Subjective Norm Formula

$$\mathrm{SN} \propto \sum_{i=1}^{n} n_i m_i$$

In their later clarification regarding the theory, Fishbein and Ajzen (2011) distinguished between two types of normative beliefs: injunctive and descriptive. Injunctive normative beliefs reflect an individual's expectation that a specific referent individual or group will approve or disapprove of them engaging in a specific behavior. Descriptive normative beliefs reflect an evaluation of whether important others are engaging or would engage in the behavior. Both types of normative beliefs contribute to the overall perceived social pressure to engage in a behavior, constituting the subjective norm (Fishbein & Ajzen, 2011).

Specific to the research topic of the present study, research on the phenomenon of conditional cooperation has found that individuals are more likely to engage in philanthropic giving when they are aware that others are giving (Frey & Meier, 2004; Martin & Randal, 2008). It is notable that Ajzen (1991) acknowledges that in empirical findings, personal considerations tended to outweigh the influence of perceived social pressure, and Armitage and Conner's (2001) meta study found subjective norms to be the weakest predictor of intention in the model.

Perceived Behavioral Control

Salient control beliefs are beliefs an individual carries concerning factors that may facilitate or hinder their ability to engage in a specific behavior (Ajzen, 2012; Sutton et al., 2003). These beliefs help the individual determine their perceived behavioral control by evaluating requisite resources and opportunities. Control beliefs are developed through reflection on past experiences as well as evaluation of external factors that influence one's ability to engage in a specific behavior, including evaluation of anticipated obstacles (Ajzen, 1991). In layman's terms, individuals who feel they possess the necessary opportunity and resources to engage in a behavior anticipate fewer obstacles in their path and, as a result, have higher perceived behavioral control. As shown in Figure 5, each control belief (*c*) is multiplied by the individual's perceived power (*p*) of the control factor to facilitate or inhibit engagement with the behavior, and the sum of products for the number of salient beliefs (*n*) determines the perception of behavioral control (PBC; Ajzen, 1991).

Figure 5

Perceived Behavioral Control Formula

$$\text{PBC} \propto \sum_{i=1}^{n} c_i p_i$$

One important distinction of perceived behavioral control in the theory of planned behavior is its application to a specific behavior versus generalized perceptions of control over oneself, such as Rotter's (1966) concept of perceived locus of control. Another way that perceived behavioral control differs from locus of control is in its analysis of the perceived degree of control over a specific behavior versus an analysis of internal versus external forces

(Ajzen, 2020). Ajzen's (1991) perceived behavioral control variable is derived from Bandura's (1977) concept of perceived self-efficacy, which postulates that behavior is influenced by an individual's confidence in their ability to engage in the behavior. Ajzen (2020) postulated that the extent to which an individual believes they have volitional control over their ability to engage in a specific behavior can moderate the effects of attitude and subjective norm.

As previously stated, the theory of planned behavior states that perceived behavioral control helps determine behavioral intention and serves as a proxy for actual control (Ajzen, 1991; Ajzen, 2020). This means that when intention is held constant, increased perceived behavioral control simultaneously increases the predictive power of the model (Ajzen, 1991). Of course, this is only true when the individual's perception of control accurately represents their actual control (Ajzen, 2011; Ajzen & Sheikh, 2013). According to Ajzen (2012), "Direct measures of perceived behavioral control are typically obtained by asking people whether they believe that they are capable of performing the behavior of interest, whether they believe that doing so is completely under their control, and so forth" (p. 448). In the present study, the variables related to employment could contribute to an assessment of perceived behavioral control as representation of an individual's possible disposable income available for philanthropic giving.

Background Factors

The theory of planned behavior considers variables, such as personality traits, intelligence, life values, and demographic characteristics, as background factors (Ajzen, 2020). These factors impact an individual's behavioral intentions and action by influencing their salient behavioral, normative, and control beliefs. Therefore, the effect of these types of variables on intention and behavior are embedded in the theory's existing constructs. Ajzen (2020)

acknowledged that background factors can provide valuable information about possible precursors to salient beliefs and states that through the theory of planned behavior, specific background factors can be examined to determine their influence or lack of influence on behavior. It is common practice for researchers to focus on the descriptive role of demographic and socioeconomic variables in evaluation of charitable giving behavior (van der Linden, 2011).

Predicting Behavior

Customary methods and procedures have been developed to gather measures for the constructs of the theory of planned behavior, but a standard questionnaire does not exist (Ajzen, 2020). The typical procedure is as follows: A pilot study is conducted via free-response format to elicit salient behavioral, normative, and control beliefs from the research population. From the pilot study results, the prevailing beliefs are selected and items are developed to assess attitude, subjective norm, perceived behavioral control, actual behavioral control (when possible), and intention. A questionnaire with these items, typically using a seven-point bipolar adjective scale, is administered to the participants. Finally, the behavior identified in the study is either observed or self-reported (Ajzen, 2020).

The core focus of the theory of planned behavior is predicting behavioral intention, knowing that the intention-behavior correlation is usually quite substantial (Ajzen, 2011). The theory of planned behavior explains between 40% and 60% of the variance in intention, while the behavior-intention gap, or percentage of variance in actual behavior that appears to be predicted by intention, explains between 30% and 40% (Fishbein & Ajzen, 2011). In the field of philanthropic giving, where the primary goal is to raise actual funds, the theory of planned behavior emphasizes the need to understand the psychological factors that inform an individual's charitable intentions to achieve this goal (van der Linden, 2011).

"Perceived behavioral control is expected to moderate the relation between intentions and behavior such that intentions will predict behavior better when perceived control is high rather than low" (Ajzen, 2012, p. 449). This hypothesis has been tested using multiple regression analyses, where intention and perceived behavioral control are entered in the first step and the product of these variables on the second step with mixed results (Ajzen, 2012). Stronger moderating effects are present when the population of participants vary greatly in their intention and perception of control. Random measurement error can still occur after the constructs of the theory of planned behavior are carefully assessed (Ajzen, 2011). For example, while perceived behavioral control serves as a stand-in measurement for actual control, a true lack of control will reduce the predictive validity of behavioral intention (Ajzen, 2011). He stated that "even with good measures, the most we can reasonably expect in terms of correlations among the theory's constructs are coefficients of about 0.60" (Ajzen, 2011, p. 1114).

It is noteworthy that Ajzen (1991) articulated that both intention and perceived behavioral control can make significant contributions to the prediction of behavior, but based on a specific circumstance, one may be more important, or only one of the two predictors may be needed. In circumstances where the individual has complete volitional control, the theoretical framework would more closely align with the theory of reasoned action (Ajzen, 2012; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) where attitude and subjective norms predict behavioral intention, which predicts actual behavior.

One of the most frequently asked questions regarding the theory of planned behavior is how and when it is appropriate to add one or more independent variables or predictors to the model. The additional variables most often proposed are self-identity, anticipated affect, and past behavior (Ajzen, 2020). Overarchingly, Ajzen (2020) argued that no additional constructs are

necessary to accurately predict behavioral intention and action. However, Ajzen (1991) said in his original work that "the theory of planned behavior is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account" (p. 199). In Ajzen's (2011) later work he clarified five criteria that should be met before any new proposed variable is included. First, it should be specific to the behavior being studied where the researcher can define and measure the variable (Ajzen, 2011). For instance, Ajzen (1991) acknowledged that in certain contexts, adding moral obligation may add predictive utility to the model. Moral norm is often added to the model when considering pro-social behaviors such as philanthropic giving, which will be discussed in more detail later in this chapter. Harrison's (1995) study on nonprofit volunteer motivation and Beck and Ajzen's (1991) study on intention to engage in dishonest actions have confirmed that the addition of a measure for moral norm can add significantly to the prediction of behavioral intention. Manstead (2016) also added that a measure of moral norm may add value to the model when considering behaviors where "satisfaction of individual or social goals runs counter to moral imperatives" (p. 28).

Second, the proposed new variable should be considered as a causal factor that will help determine intention and/or action. For example, Ajzen (2011) addressed the evaluation of past behavior by stating that it is not included as an independent variable because it does not serve as a causal antecedent of intention. Instead, he articulated that "under the assumption of stable determinants, a measure of past behavior can be used to test the sufficiency of any model designed to predict future behavior" (Ajzen, 1991, p. 202). In alignment with this guidance, the present study has a dependent binary variable that represents past behavior; whether the alumnus has or has not made at least one philanthropic gift of any size to the university.

Third, any new variable should be independent from the theory's existing predictors. For example, while other researchers postulated that a new variable of anticipated affect added significance to the model, Ajzen and Sheikh (2013) proved that this variable only made an independent contribution to the prediction of behavioral intention when measured in the alternative measure (i.e., not engaging in the behavior). When all variables were evaluated using the same measure of behavior, anticipated affect made no independent contribution to the prediction of behavioral intention (Ajzen and Sheikh, 2013).

Fourth, any new variable should be applicable to a wide range of behaviors studied by social scientists. For instance, some researchers have asserted that self-identity should be evaluated independently in the theory of planned behavior model under the assumption that self-identity captures one's values in such a way that is not always expressed through an evaluation of attitude (Sparks, 2016). Sparks (2016) argued that inclusion of self-identity into the framework offers the opportunity to better examine an individual's social, moral and emotional dimensions, expanding knowledge within the social sciences.

Fifth, any new variable addition should consistently improve the prediction of behavioral intention or actual behavior. For instance, the theory of planned behavior has previously been criticized according to the prototype-willingness model (Gibbons et al., 1998), with the major question being whether a measure of willingness predicts behavior better than a measure of intention (as cited in Ajzen, 2011). Ajzen (2011) posited that willingness is proxy to intention, and presented empirical evidence that adding a variable of willingness to the model does not improve prediction of behavior. Despite Ajzen's detailed response to adding new variables to the model, the theory of planned behavior still receives criticism, which is discussed in more detail in the next section.

Criticism

Ajzen (2011, 2012) addressed criticism of the theory of planned behavior as it relates to reasoned action and the notion that individuals do not have as much conscious control over their human social behaviors as the theory posits. Ajzen (2011) argued that the theory of planned behavior is designed to focus on the controlled aspects of human information processing and decision making while recognizing that most behaviors are executed without much cognitive effort. The theory does not assume an individual to be completely rational and unbiased when evaluating their potential engagement in a specific behavior, nor that their beliefs accurately represent reality (Ajzen, 2012; Ajzen, 2020). Rather, individuals arrive at their attitudes, subjective norms, and perceptions of behavioral control as a direct result of their behavioral, normative, and control beliefs; regardless of those beliefs' bias, accuracy, or rationality (Ajzen, 2012; Ajzen, 2020). Furthermore, the theory does not assume an individual who systematically evaluates their beliefs is unaffected by emotion, prior to engaging in a behavior (Ajzen, 2012). Rather, the theory incorporates affect and emotion by means of an individual's background factors, as well as accessible memories, both of which guide one's behavioral, normative, and control beliefs (Ajzen, 2011; Ajzen, 2012). To further address this criticism related to affect, Ajzen and Sheikh (2013) conducted a study to evaluate the previously reported residual effects of anticipated affect in predicting behavioral intention. They proved that in studies reporting anticipated affect as a new variable into the theory of planned behavior model assessed anticipated affect in terms of action versus inaction, where anticipated affect was measured in relation to the alternative behavior (Ajzen & Sheikh, 2013). In the theory of planned behavior, measures of attitude, subjective norm, and perceived behavioral control are typically assessed in relation to engaging in a behavior (Ajzen & Sheikh, 2013). When all variables were evaluated

using the same behavior (versus a measurement in relation to not engaging in the behavior), anticipated affect made no independent contribution to the prediction of behavioral intention. Ultimately, Ajzen and Sheikh (2013) stated that it was not the addition of a measure of affect that added to the prediction of intentions, but rather the addition of a measure to address the alternative to the behavior.

Terry et al. (2016) presented a differing perspective on the theory of planned behavior through their interpretation of the concepts of self-identity and social identity. The basis of their criticism is that attitude and subjective norm are not as independent as proposed by the theory because "the perceived views of significant others may influence people's willingness to express their attitudes behaviorally" (Terry et al., 2016, p. 71). They acknowledged that when an individual's identity as a unique individual (or self-identity) is salient, the theory of planned behavior can accurately predict behavioral intention. However, when an individual's social identity is salient, their feelings and actions are more likely to be determined by the group norm than personal factors (Terry et al., 2016). In cases where social identity is salient, it was found that ingroup norms best predicted behavioral intention (Terry et al., 2016). Consequently, it is suggested that the subjective norm be modified to analyze the perceptions of salient referent groups versus salient others, to account for group influence versus interpersonal influence, the result being a better understanding of an individual's internalized social norms and group influence (Terry et al., 2016).

Another criticism of the theory of planned behavior is that it is intuitively reasonable (i.e., self-evident). Ajzen (2020) addressed this criticism by articulating the need for general theories of behavior that stand up to empirical tests. Under this same criticism, the theory's falsifiability has been questioned. As guidelines to prevent falsifiability, Ajzen (2020) posited that empirical

research studies should be methodologically sound in the following propositions that predict mediating and moderating processes:

a. Intention mediates the effects of attitude and subjective norm on behavior;

b. Perceived behavioral control moderates the effects of attitude and subjective norm on intention;

c. Actual control (or its proxy perceived behavioral control) moderates the effect of intention on behavior;

d. Beliefs influence intentions and behavior indirectly by their effects on attitudes, subjective norms, and perceived behavioral control;

e. Background factors (e.g., personality traits, values, demographic characteristics, etc.) influence behavior only indirectly by their effects on beliefs; and

f. Includes expectancy-value models specifying the way in which behavioral beliefs influence attitude toward the behavior, normative beliefs influence subjective norm, and control beliefs influence perceived behavioral control. (pp. 321–322)

In the next section, I review multiple empirical research studies that adhere to this guidance in evaluations of philanthropic giving behavior.

Empirical Research

Multiple studies of philanthropic giving behavior have been conducted utilizing the theory of planned behavior model (Chen et al., 2022; Knowles et al., 2012; Mittelman & Roja-Mendez, 2018; Smith & McSweeney, 2007; van der Linden, 2011). The most common modifications to the theory of planned behavior in analyzing charitable giving have the additions of independent variables for moral norms and past behavior.

Moral norms are considered distinctive from subjective norms because they emphasize personal feelings of responsibility and obligation versus perceived social pressure (Burgoyne et al., 2005; van der Linden, 2011). It is believed that moral norms are more likely to explain variance in intention than subjective norms because of the private nature of philanthropic giving (Mittelman & Rojas-Mendez, 2018; van der Linden, 2011). Another explanation is that moral norm is a superior measure over subjective norm in the philanthropic giving context when studying individuals within individualist cultures (such as the United States), whereas subjective norm may be superior when studying individuals in collectivist cultures (Chen et al., 2022; Mittelman & Rojas-Mendez, 2018). Some researchers have simply added moral norm to the model as an independent variable to predict the behavioral intention of giving (Knowles et al., 2012; Mittelman & Rojas-Mendez; 2018). Other researchers have modified the model in their studies of donating intentions to separate subjective norms into three distinct categories; injunctive/ prescriptive norms, descriptive norms, and moral norms (Smith & McSweeney, 2007; van der Linden, 2011).

Existing research on philanthropic giving that utilizes the theory of planned behavior model has also consistently added past behavior as an independent variable in their modified models to determine behavioral intention (Knowles et al., 2012; Mittelman & Rojas-Mendez; 2018; Smith & McSweeney, 2007; van der Linden, 2011). Researchers in other disciplines, such as the field of health and wellness, also argue that past behavior is the best predictor of future behavior using modified models of the theory of planned behavior (Bozionelos & Bennett, 1999; Conner et al., 2002; Sutton, 1994). Ajzen (2011) addressed the evaluation of past behavior by stating that it is not included as an independent variable because it does not serve as a causal antecedent of intention. Instead, he articulated that “under the assumption of stable determinants,

a measure of past behavior can be used to test the sufficiently of any model designed to predict future behavior" (Ajzen, 1991, p. 202). In the present study the dependent binary variable represents a measure of past behavior; whether the alumnus has or has not made at least one philanthropic gift of any size to the university.

Knowles et al. (2012) found that attitude, perceived behavioral control, moral norm, and past behavior predicted donating intention from individuals aged 18 to 24. Mittelman and Rojas-Mendez (2018) modified the model in their study of donating intentions to separate attitude into three distinct categories: attitude toward charity, attitude toward helping, and attitude toward donating. They kept the variables of perceived behavioral control and subjective norms in their model, while also adding moral norms and past behavior, and accounted for 76% of variance in intention to donate. In their study, attitude toward charity (β = 0.021) and subjective norm (β = 0.031) were not significant, and perceived behavioral control (β = 0.249), moral norm (β = 0.248), and past behavior (β = 0.266) had the strongest influences on intention. Smith and McSweeney (2007) found that attitude, perceived behavioral control, injunctive norm, moral norm, and past behavior (not descriptive norm) predicted donating intention, with moral norms accounting for more variance than injunctive norms. Furthermore, donating intention was the only significant predictor of actual behavior, not perceived behavioral control or past behavior (Smith & McSweeney, 2007). Van der Linden (2011) found that attitude, perceived behavioral control, moral norms, and past behavior predicted donating intention, with moral norms carrying the strongest beta weight (β = 0.51), well above attitude (β = 0.21) and perceived behavioral control (β = 0.27). Researchers aim to add to the existing body of knowledge and intend for practitioners to use these findings to design and implement interventions that will move individuals toward donating behaviors.

Interventions

The correlation between intention and behavior tends to decline as the time interval between measurement of intention and behavior increases, presumably due to the impact of intervening events (Ajzen, 2020). Intervening events can produce changes in beliefs, with the effect that the original measures of these variables no longer accurately predict behavior (Ajzen, 1991; Ajzen, 2020). Intervention has been proven to have a significant effect on intentions and prompt a change in behavior (Webb & Sheeran, 2006). It is outside of the scope of the present study to analyze any interventions, such as efforts from the institution to communicate specific information with alumni or solicit philanthropic gifts from them; although it is assumed these efforts are consistently occurring through the advancement office.

The theory of planned behavior is an intuitively reasonable theoretical framework for understanding, predicting, and changing human social behavior (Ajzen, 1991) and can be useful in considering philanthropic giving behavior. The following sections outline literature and empirical research on student experience, distance education, and alumni giving to build a foundational understanding of current knowledge related to alumni giving behavior.

Student Experience

Foundational research on student engagement, retention, and persistence indicates that being involved socially and academically leads to increased retention (Tinto, 1987) and that involvement in student life leads to a feeling of attachment to the university (Astin, 1999). Coates (2007) defined student engagement as a "broad construct intended to encompass salient academic as well as certain non-academic aspects of the student experience" including "active learning, participation in challenging academic activities, formative communication with academic staff, involvement in enriching educational experiences, and feeling legitimated and

supported by university learning communities" (as cited in Groccia, 2018).

Attachment to the university, expressed through satisfaction with one's academic program and student experience, are primary motivations for alumni giving (Gaier, 2005; Monks, 2003; Rau & Erwin, 2015; Skari, 2014; Tsao & Coll, 2005; Vervoort & Gasman, 2016). According to Young et al. (2019), "Alumni offices may also see benefits [of truly robust student engagement] in increased alumni involvement and giving if they perceive a deep connection to their alma mater, rather than feeling it provided them only with a degree, rather than a transformative life experience" (p. 31). Tom and Elmer (1994) surveyed graduates from residential learning experiences and found that alumni identification with their alma mater was most affected by their academic experience. Weerts and Ronca (2009) concluded that alumni giving is linked to the student experience; where strong feelings regarding the quality of academics and participation in an academic student organization correlated with larger philanthropic gifts. Bruni (2018) pointed out the significant need for a student to feel they are in a peer relationship with the institution rather than a consumer relationship. Simply put, it has been established that students who feel connected to the institution are more likely to turn into engaged alumni who continue to support their alma mater after graduating.

Distance Education

Universities across the globe have increased their efforts to implement more course offerings through the online modality but have a limited understanding of the impact of online pedagogy on engagement (Lawrence et al., 2019). Equivalent learning outcomes have been demonstrated when comparing residential learning experiences to distance learning experiences, but online coursework has been associated with higher withdrawal rates (Bawa, 2016) and lower engagement (Hu & Hui, 2012). Bawa (2016) found that online learning can negatively impact

student engagement, learning outcomes, and retention. You (2016) found that low student engagement in online learning is linked to poor academic achievement. Cerezo et al. (2017) stated that students may struggle with the online modality because they are required to govern their own academic experience, including determining their own investment of time and effort and identifying when to abandon or change learning strategies.

Christopoulos et al. (2018) studied how to increase student engagement through virtual interactions and found that students who went through an orientation process to the online platform were more likely to interact with virtual classmates and subsequently found the process more enjoyable and rewarding. They also stated, "those who did not opt to orient themselves properly were observed, almost constantly, struggling to deal with the tools and their assignments, by extension" (Christopoulos et al., 2018, p. 359). Conrad and Donaldson (2012) demonstrated that student engagement in the online modality is most often achieved when the students are encouraged to take increased responsibility for their own learning. However, the implementation of tactics, like timely communication interventions targeting online students who were identified as only nominally engaged or nonengaged, can still positively influence student engagement (Lawrence et al., 2019). While many distance education programs are implementing analytic tracking mechanisms to monitor student engagement, institutions are still learning how to utilize these metrics to best support student engagement (Lawrence et al., 2019; Stone, 2017).

While it is outside the scope of the present study to analyze all components of the student experience in distance education, such as pedagogical design, or to analyze independent variables, such as degree level, future research on the nuances of those predictors are warranted. However, as a starting point, an institution must be able to distinguish its residential students from its distance education learners. Disturbingly, many institutions are not effectively

identifying alumni that graduate from distance education programs in their alumni databases, hindering their ability to analyze the specific population or segment communications to this unique alumni group (Lesht et al., 2018)

Alumni Giving

Collegial entrepreneurship is an effective framework for higher education institutions to proactively work through change (Centobelli et al., 2019; Clark, 1998; Clark, 2000; Clark, 2004; Cleverley-Thompson, 2016). Universities that do not become entrepreneurial will be at considerable risk of institutional insufficiency in the 21st century (Clark, 2000). Clark (2000) stated, "In a nutshell, modern universities are developing a disturbing imbalance . . . they face an overload of demands and are equipped with an undersupply of response capabilities, beginning with badly constrained financing" (p. 11). Clark (1998) recommends developing third-stream funding sources through philanthropy to embrace financial diversification. Collegial entrepreneurship calls for five elements to be present, the fifth being an integrated entrepreneurial culture (Clark, 1998). When an institution has an integrated entrepreneurial culture, support for innovation is obvious in formal operations, processes, strategies, and structures (Ahmetoglu et al., 2018; Clark, 1998, Clark, 2004). Institutions like the one in this study practiced collegial entrepreneurship when creating distance education programs, and while they are now depending on philanthropic support from alumni of those programs, it is unclear if the fifth element of an integrated entrepreneurial culture was truly inculcated.

Advancement offices strive to keep alumni engaged with the institution through four modes: philanthropic giving, volunteerism, communication, and alumni events (Smith & Kaplan, 2021). Philanthropic giving is a form of altruism expressed through a financial donation to a charitable and/or nonprofit organization (Council for Advancement and Support of Education,

2021; Iskhakova et al., 2017). Bruggink and Siddiqui (1995) found positive statistical significance related to giving for alumni that had engaged in alumni relations activities. One multi-institutional study found that the strongest predictor of alumni giving, regardless of modality, was past behavior of giving to the institution (Lesht et al., 2018). It has been found that independent variables, such as increased age and higher income, often correlate with alumni giving (Baade & Sundberg, 1996; Bristol, 1990; Bruggink & Siddiqui, 1995; Clotfelter, 2003; Lara & Johnson, 2014; Monks, 2003; Skari, 2014; Tsao & Coll, 2005; van der Linden, 2011), along with the concept of close proximity to the benefactor of the gift (Bruggink & Siddiqui, 1995; Chen et al., 2022; Curry et al., 2012; Touré-Tillery & Fishbach, 2017). In his study of predictors of alumni giving, Walcott (2015) found the following variables significant in predicting the likelihood of alumni making a philanthropic gift: professional designation, constituent age, marital status, number of kids, ethnicity, business phone, extracurricular activities, undergraduate housing, distance from campus, alumni event attendance, college of business, college of nursing, participation volunteer, and graduation year.

While more difficult to quantify than demographic indicators, emotional attachment to alma mater is also a predictor of alumni giving (Beeler, 1982). Berger (2016) said, “The greater the development of an alumni identity, the increased probability an alumnus will become a supporter of their alma mater” (p. 125). Tom and Elmer (1994) built on Beeler’s (1982) research and found that alumni who owned more university insignia goods perceived the institution as part of their personal identity, and the ownership of these goods correlated with a willingness to give back. One study analyzing factors influencing alumni donative intention found positive correlations with almost all factors of satisfaction with student experience (Tsao & Coll, 2005). Furthermore, as the frequency of communication from faculty or their academic department

increased to the alumnus, donative intention increased as well (Tsao & Coll, 2005). Solicitation strategies, such as appeals related to class reunions, also increased alumni participation in giving (Bristol, 1990). Through quantitative analysis, one regional state university aimed to understand what factors impact alumni loyalty by analyzing rituals and traditions, finding that alumni exhibit stronger loyalty behaviors (such as giving) when they felt the institution had well-established rituals and traditions (Martin et al., 2015). The researchers noted that online and international alumni are often less engaged in traditions, and alumni associations should be empowered by administrators to act as traditions-keepers, i.e., given the freedom to create and modify traditions to engage with these alumni populations (Martin et al., 2015).

Pumerantz (2005) interviewed college administrators to determine what factors positively impact alumni giving finding the most common response to be the experiences the alumni had while they were students and their connections with faculty and staff. The themes that supported this response were making students feel valued and respected, showing students that the institution cares about them, and ultimately that students felt part of something bigger than themselves. According to Pumerantz (2005), “Positive experiences increase the probability of giving as alumni, and negative experiences have a negative impact on giving” (p. 291).

There is ample opportunity and need for further research in the field of alumni giving, especially for specific alumni populations like online learners. In the following pages, I outline the specific independent variables selected for the present study’s logistic regression model along with previous research findings that support their inclusion. Guided by the constructs of the theory of planned behavior (Ajzen, 1991) and previous research findings on philanthropic giving, in the present study I analyzed independent variables associated with demographic information, student experience, and alumni experience to determine if they predict the likelihood of an

alumnus who completed 80% or more of their learning experience through the online modality to engage in philanthropic giving behavior.

Independent Variables: Demographic Information

The theory of planned behavior labels demographic variables such as age, gender and income as background factors that influence salient beliefs, which influence intention and behavior indirectly (Ajzen, 2011). Background factors are central, albeit underlying, to the theory's construct. It is common practice for researchers to focus on the descriptive role of demographic and socioeconomic variables in evaluation of charitable giving behavior (van der Linden, 2011). Age, marital status, and two measures of employment status are the independent variables associated with demographic information that I tested in this study's logistic regression model. Each of these have been identified as predictors of alumni giving in previous research findings.

Increased age correlates with intention to give (Smith & McSweeney, 2007; van der Linden, 2011) and actual alumni giving (Bristol, 1990; Bruggink & Siddiqui, 1995; Gaier, 2005; Lara & Johnson, 2014; Monks, 2003; Skari, 2014; Tsao & Coll, 2005; Walcott, 2015; Weerts & Ronica, 2007). In his study on predictors of alumni giving, Berger (2016) found a significant positive relationship between increased age and giving from online graduates. Marital status has been correlated with alumni giving with some researchers finding significance related to being married (Lara & Johnson, 2014; Walcott, 2015) and others finding significance related to being single (Bruggink & Siddiqui, 1995; Monks, 2003). Lara and Johnson (2014) postulated that the independent variable of marital status may be sensitive to the institution being studied.

Higher income has correlated with intention to give (Smith & McSweeney, 2007) as well as with actual alumni giving (Baade & Sundberg, 1996; Clotfelter, 2003; Monks, 2003; Tsao &

Coll, 2005; Weerts & Ronca, 2009; Young & Fischer, 1996). In their use of classification trees to predict alumni giving, Weerts and Ronca (2009) showed that "income is an important divider that explains levels of giving and the likelihood of becoming a donor in the first place" (p. 107). Since the dataset of the present study did not include the variable of income, I utilized two variables related to employment status as a proximal factor for income. The first is a binary variable indicating if the institution is aware of the participants employment status. Weerts and Ronca (2007) determined that being employed was a critical variable, distinguishing alumni who were most likely to give by a rate of 1.8 times. Employment at the institution is the second variable related to employment status included in this logistic regression study. March (2005) found that faculty employed at Midwestern public institutions give philanthropically to their institutions at higher rates than their counterparts in other regions. In previous research on the impact of alumni status on institutional giving by employees, findings suggested that advancement offices will find it useful to consider the components of cross-cutting individual identities (i.e., alumni and employee statuses) when attempting to build relationships with the unique population (Borden et al., 2014). I conducted this study at an institution located in the Midwest and will add depth to those two cross-cutting individual identities to focus on alumni who learned through the online modality and to consider current and former employees.

Independent Variables: Student Experience

Academic program, degree level, having had a residential experience at the institution, and involvement in extracurricular activities are the independent variables associated with student experience that I tested in this study's logistic regression model. Each of these have been identified as predictors of alumni giving in previous research findings. Increased satisfaction with the academic experience has a significant positive correlation with alumni giving (Gaier,

2005; Marr et al., 2005; Tsao & Coll, 2005). For instance, Monks (2003) found that graduates of history programs are more likely to give, while Walcott (2015) found that graduation from the college of business and the college of nursing better predicted alumni giving. Others have found statistical significance related to giving for graduates of science, technology, engineering, and math (STEM) programs (Bruggink & Siddiqui, 1995; Marr et al., 2005). It is worth noting that an individual's academic major could reflect differences in income (Marr et al., 2005). It is also possible that alumni giving correlating to a specific academic program could be institution specific. With regard to graduates of online programs, Berger (2016) found a significant positive relationship between academic program and being a donor.

Some researchers have limited the population in their studies by degree level, specifically analyzing undergraduate students (Drew-Branch, 2011; Gaier, 2005: Meer & Rosen, 2012) or graduate students (Berger, 2016; Moore, 2014). This study's participants include baccalaureate, master's, and education specialist degree holders, with the intention of examining the impact degree level may have on alumni giving.

Provided that the majority of existing research on alumni giving has examined students who had a residential college experience (Massey, 2017), it is acknowledged that the independent variables I selected for inclusion in the proposed logistic regression model were based on existing literature specific to that population. For this reason, having also had a residential experience at the institution was included as an independent variable in the study.

Astin (1999) postulated that involvement in student life leads to a feeling of attachment to the university. Involvement in extracurricular activities has also correlated with alumni giving in multiple studies (Marr et al., 2005; Monks, 2003; Walcott, 2015). Monks (2003) found that dissatisfaction with the emphasis or lack thereof on extracurricular activities negatively affects

alumni giving behaviors, seeming to affirm the value alumni place on extracurricular activities and the impact extracurricular activities can have on donative behavior.

Prior to requesting archival data from the institution, I had aimed to include an independent variable for receipt of a university-sponsored scholarship in the logistic regression model. Marr et al.(2005) found that receipt of a need-based scholarship raised the probability of alumni giving by 12% regardless of the scholarship award amount. Many studies have found that alumni who received institutional financial aid were not statistically more likely to donate, but also found significant correlations regarding the amount given from those alumni that choose to give (Lara & Johnson, 2014; Meer & Rosen, 2012; Monks, 2003). In some findings scholarship recipients made substantially larger contributions than their peers (Lara and Johnson, 2014; Monks, 2003); in other findings, scholarship recipients made smaller contributions than their peers (Baade & Sundberg, 1996; Meer & Rosen, 2012). However, I discovered that it would not be possible to isolate scholarship aid for a specific degree earned so I ultimately decided to omit the variable from the study. It is notable that the independent variable for employment at the institution included in the regression model analyzed participants who were provided a full tuition waiver to pursue their academic degree while working at the university.

Independent Variables: Alumni Experience

Alumni event attendance, volunteerism for the university, and distance from alma mater are the independent variables associated with alumni experience that I tested in this study's logistic regression model. Each of these have been identified as predictors of alumni giving in previous research findings. Some researchers even suggest that involvement in alumni activities is a better predictor of alumni giving than student experience (Weerts & Ronca, 2007; Young & Fischer, 1996).

Attending alumni events positively correlates with alumni giving (Lara & Johnson, 2014; Walcott, 2015). Lara and Johnson (2014) found that the amount given by an alumnus increased by an average of $278 with each event attended. Interestingly, Rau and Erwin (2015) found that the number of event invitations received predicted alumni giving, suggesting that simply being invited to alumni events produced goodwill and donative behavior. Committed alumni (those that give financially and volunteer their time) have chosen to make the institution a part of their life after graduation by attending events and visiting campus (Weerts & Ronca, 2007). The act of volunteering for the university as an alumnus has correlated with alumni giving in previous studies (Clotfelter, 2003; Taylor & Martin, 1995; Walcott, 2015; Wunnava & Lauze, 2001). Young and Fischer (1996) found that volunteerism while a student correlated with increased amounts of dollars given. As a testament to the relationship between giving and volunteering, one study that aimed to create a profile of alumni who were best suited to volunteer only considered alumni donors as participants (Weerts & Ronca, 2007). Distance from alma mater, or close proximity to the benefactor of the contribution, has correlated with alumni giving (Berger, 2016; Bruggink & Siddiqui, 1995; Chen et al., 2022; Curry et al., 2012; Skari, 2014; Touré-Tillery & Fishbach, 2017; Walcott, 2015). Marr et al. (2005) found that alumni living further from the college are likely to give smaller amounts. Conversely, Lara and Johnson (2014) found that alumni living further from the college are likely to give larger amounts. Berger (2016) hypothesized that alumni who had a residential experience and live closer to their alma mater have more opportunities to be reminded of their connection to the institution. However, when specifically examining online graduates, Berger (2016) found no correlation between distance from campus and donative behavior.

Summary

Overarchingly, the majority of existing research on alumni giving is based on students who had a residential college experience (Massey, 2017). Tiger and Preston (2013) analyzed the philanthropic tendencies of alumni from online programs and found a significant negative correlation between the number of online courses completed and alumni giving. Berger (2016) compared graduates from face-to-face master's programs with graduates from online master's programs and found that alumni from the former were more likely to be donors, attend events, and follow social media channels than the latter. However, other studies found that alumni who earned their degrees through distance education made larger donations more quickly after graduation than their on-campus alumni counterparts (Lesht et al., 2018; Morrison, 2013). One multi-institutional study suggests that the relationship between modality and alumni giving may be specific to the institution (Lesht et al., 2018). While a few studies have focused on alumni giving from online learners, more research is needed to understand what motivates philanthropic giving from alumni that attended through the online modality.

Guided by the predictors of the theory of planned behavior (Ajzen, 1991) and previous research findings on philanthropic giving, the present study analyzed independent variables associated with demographic information, student experience, and alumni experience to determine if they predict the likelihood of an alumnus who completed 80% or more of their learning experience through the online modality to engage in philanthropic giving behavior. Through statistical analysis of archival data, I built and tested a logistic regression model. The next chapter includes discussions about the research design and method, setting and population, data collection procedures, statistical analysis assumptions, and ethical considerations of the study.

Chapter 3: Methodology

Alumni giving is increasingly important to the vitality of institutions of higher education (Langley, 2020). Advancement offices that serve alumni populations can benefit from analyzing factors that predict the behavioral phenomenon of philanthropic giving (Berger, 2016). Identifying prospective alumni donors is valuable in university efforts to begin cultivating relationships and, ultimately, raise funds for institutional priorities. However, the majority of existing research on alumni giving has examined students who had a residential college experience (Massey, 2017) and enrollment in distance education programs is on the rise nationally (NCES, 2022). For university administrators and advancement professionals to be proactive in cultivating relationships with alumni that attended through an online modality, more research is needed to understand what motivates philanthropic giving from this alumni constituency. This chapter includes discussions about the research design and method, setting and population, data collection procedures, statistical analysis assumptions, and ethical considerations of this study.

Research Design

In this quantitative study I used logistic regression to explore if independent variables proven to predict philanthropic giving for alumni that attended through a residential education experience also predict philanthropic giving from alumni that completed 80% or more of their learning experience through the online modality (Allen & Seaman, 2013; Berger, 2016; Lesht et al, 2018). In this logistic regression study, I tested the model in Figure 1 to answer the following question: Do independent variables associated with demographic information, student experience, and alumni experience predict the likelihood of an alumnus who earned their degree through the online modality to be a donor?

Figure 1

Proposed Logistic Regression Model

$$Y_{alumni\ giving} = \text{Constant} + \beta 1_{age} + \beta 2_{marital\ status} + \beta 3_{employment\ status} + B4_{employed\ at\ institution} + \beta 5_{academic\ program} + \beta 6_{degree\ level} + \beta 7\ _{residential\ experience} + \beta 8_{extracurricular\ activities} + \beta 9_{alumni\ event\ attendance} + \beta 10_{volunteerism} + \beta 11_{distance\ from\ alma\ mater}$$

Research Method

The present quantitative research study uses the inferential statistical method of logistic regression. Overarchingly, inferential statistical methods are a set of research techniques utilized to better understand a specific population based on a sample of data (Field, 2013). Logistic regression is a type of statistical analysis used for classification and predictive analytics (Menard, 2010; Tabachnick & Fidell, 2019). Logistic regression allows for a relationship to be modeled between multiple independent variables and a single dependent variable where the independent variables are being used to predict the dependent variable (Laerd Statistics, 2017). Logistic regression is the appropriate regression model to employ when the dependent variable is binary in order to predict the logit (the natural log of the odds of an event occurring) of the dependent variable. The logit is used to calculate the inverse logit (or anti-log), which predicts probability of the event (binary dependent variable) occurring ($v = 1$).

Logistic regression seeks to accomplish four things; model the probability of an event occurring dependent upon the values of categorical or numerical independent variables, estimate the probability of an event occurring versus an event not occurring, predict the effect of a series of independent variables on the dependent variable, and classify single data points by estimating the probability that the single data point is in a particular category (Tabachnick & Fidell, 2019).

Simply stated, logistic regression aims to predict the probability of the binary dependent variable by a set of independent variables. In logistic regression, the researcher does not control or manipulate the variables being studied. Findings provide an evaluation of a moment in time because the relationships between variables, even for the same population of participants, may change over time.

I selected the independent variables in this study considering the theoretical framework of the theory of planned behavior (Ajzen, 1991) and empirical research on alumni giving from graduates who had a residential college experience, as outlined in Chapter 2. Independent variables associated with demographic information included age, marital status, employment status, and employment status at the institution. Independent variables associated with student experience included academic program, degree level, having also had residential experience at the institution, and involvement in extracurricular activities. Independent variables associated with alumni experience included alumni event attendance, volunteering for the university, and distance from alma mater. In this study the dependent binary variable was whether the alumnus had ($v = 1$) or had not ($v = 0$) made at least one philanthropic gift of any size to the university. In alignment with the theory of planned behavior as a theoretical framework, this is an appropriate dependent variable as it is a measure of past behavior, which can be used to test the sufficiency of any model designed to predict future behavior (Ajzen, 1991).

Setting and Population

Prairie Grass University (pseudonym) is a midsized master's degree-granting public university in the Midwest. The Carnegie Classifications of Institutions of Higher Education classifies this university as Master's Colleges & Universities: Larger Programs, with size and setting defined as four-year, medium, highly residential (Carnegie Foundation for the

Advancement of Teaching, n.d.). The institution recently celebrated its sesquicentennial anniversary and, at the time of this study, offered over 150 degree programs. While the majority of graduates have earned their degrees through the residential learning experience, the institution was at the forefront of implementing distance education programs, with beta testing starting in 1995 and full programs launched in 1998. At the time of this study Prairie Grass University offered 60 degrees (including baccalaureate, master's, or education specialist) through distance education, where 80% or more of the coursework is completed through an online learning environment.

Lesht et al. (2018) conducted a multi-institutional study to examine giving patterns of online graduates compared to their residential counterparts and found that

> the single most important limitation had to do with the small sample size of participating institutions, which was largely due to the fact that a number of universities interested in participating could not do so as they did not segment their alumni data into on-campus and online groups. (p. 8)

For this reason, the most important factor about the setting in this study is that the institution has intentionally tracked learning modality and carried that information forward to be stored on the alumni records in the advancement office.

The population of participants was alumni who have graduated from Prairie Grass University with a degree from an online program since 2002. For the purposes of this study, alumni are defined as individuals that have graduated from a college or university with a degree (Council for Advancement and Support of Education, 2021; Iskhakova et al., 2017). The online degree programs at Prairie Grass University are intentionally designed to be delivered through the online modality and students are aware of the modality prior to enrollment. The institution

has a robust population of graduates from these programs to be analyzed in this study (N = 4,055).

Data Collection Procedure

The data collection procedure in this logistic regression study was the archival data method. I obtained the data required for this study from the institution's advancement office in coordination with the institution's registrar office. Approval to obtain data was sought from the advancement office, as well as the office of institutional research. I requested specific data for each graduate who completed 80% or more of their coursework through an online learning environment. Detailed information about the data request is presented in the Chapter 4 and in Appendix A. The advancement office required that I sign a confidentiality agreement (Appendix B). The advancement office provided me with deidentified data on an Excel file via a portable USB flash drive. I completed data formatting, outlined in Chapter 4, prior to testing assumptions, running the logistic regression, and analyzing results.

Statistical Analysis Assumptions

Using SPSS software, I developed a binary logistic regression model to predict the probability of an alumnus being a donor based on multiple independent variables. Seven assumptions should be met for a logistic regression model to be valid; presence of a binary dependent variable, presence of one or more continuous or nominal independent variables, independence of observations, sufficient observations, linearity of predictor and log odds, absence of multicollinearity, and absence of unusual points (Laerd Statistics, 2017). Violating any of these seven assumptions could result in false positives or false negatives, invalidating the logistic regression model (Laerd Statistics, 2017). The first four assumptions were addressed in study design, prior to entering the model into SPSS. The binary dependent variable of the present

study is whether the alumnus had (v = 1) or had not (v = 0) made at least one philanthropic gift of any size to the university. The 11 independent variables were continuous or nominal. Independence of observations means the categories of the binary dependent variable and all nominal independent variables should be mutually exclusive and exhaustive (Field, 2013). I ensured the independence of observations through study design and confirmed this via visual review of the data. Assumptions for sufficient observations is important because logistic regression relies on maximum likelihood estimation (MLE), a statistical method of estimating the parameters of an assumed probability distribution (Field, 2013). I confirmed that there were a minimum of 15 observations per independent variable, as outlined in Chapter 4.

I tested the final three assumptions using SPSS. First, logistic regression assumes that there is a linear relationship between continuous independent variables and the log odds (logit) of the dependent variable; modeled using a sigmoidal function (Tabachnick & Fidell, 2019). This is called linearity in the logit (Menard, 2010). Holding all other variables constant, the odds ratio represents how the odds change with a 1-unit increase for a specific variable (Laerd Statistics, 2017). The effect of a 1-unit increase on the logit of the dependent variable should be constant at any point on the scale spectrum. These constants are the values of the slope coefficients (Laerd Statistics, 2017). Linearity of the continuous variables (age and extracurricular activities) with respect to the logit of the dependent variable was assessed via the Box-Tidwell procedure (Box &Tidwell, 1962). As demonstrated in Table 1, neither of the continuous independent variables were found to be linearly related to the logit of the dependent variable: age by natural transformation of age (p = .134) and natural transformation of student activities by student activities (p = .517).

Table 1

Variables in the Equation: Linearity of Predictor and Log Odds

	Variables	B	*SE*	Wald	*df*	Sig.	Exp(*b*)	95% C.I. for Exp(*b*) Lower	Upper
Step	Age	.498	.315	2.493	1	.114	1.645	.887	3.053
1[a]	Single (ref)			11.761	3	.008			
	Married	1.878	.935	4.032	1	.045	6.539	1.046	40.877
	Divorced	-16.580	40192.970	.000	1	1.000	.000	.000	.
	Unknown	-2.964	1.269	5.459	1	.019	.052	.004	.620
	Employment Status	-.779	1.041	.560	1	.454	.459	.060	3.532
	Formerly Employed at University (ref)			2.406	2	.300			
	Formerly Employed at University	-2.968	2.292	1.676	1	.195	.051	.001	4.594
	Never Employed at University	-1.837	1.363	1.817	1	.178	.159	.011	2.302
	Aviation (ref)			9.527	24	.996			
	Business	1.619	16485.982	.000	1	1.000	5.049	.000	.
	Career & Tech. Ed.	1.711	26880.055	.000	1	1.000	5.535	.000	.
	Family Development	2.030	19269.355	.000	1	1.000	7.618	.000	.
	Communication	22.269	9124.156	.000	1	.998	4693674373.677	.000	.
	Criminal Justice	20.803	9124.156	.000	1	.998	1082566254.674	.000	.
	Crisis & Disaster Mgmt	2.263	16011.244	.000	1	1.000	9.609	.000	.
	Curriculum & Instruction	4.978	16728.825	.000	1	1.000	145.172	.000	.
	Early Childhood/ Elementary Ed.	22.320	9124.156	.000	1	.998	4935506667.353	.000	.
	Educational Technology	1.172	13032.927	.000	1	1.000	3.229	.000	.
	Industrial Management	2.683	16533.969	.000	1	1.000	14.630	.000	.
	Kinesiology	24.839	9124.156	.000	1	.998	61325643322.452	.000	.
	Library Science & Information Services	5.864	13409.640	.000	1	1.000	352.105	.000	.
	Nursing	22.020	9124.156	.000	1	.998	3658649458.974	.000	.
	Occupational Education	2.115	27225.343	.000	1	1.000	8.293	.000	.
	Occupational Safety	20.253	9124.156	.000	1	.998	625108934.748	.000	.
	Physical Ed./ Exercise & Sports Science	21.980	9124.156	.000	1	.998	3514738221.404	.000	.

Variables	B	*SE*	Wald	*df*	Sig.	Exp(*b*)	95% C.I. for Exp(*b*) Lower	Upper
Psychology	6.237	27918.933	.000	1	1.000	511.102	.000	.
RN BSN Nursing	22.762	9124.156	.000	1	.998	7679034891.880	.000	.
Rural Family Nursing	3.725	10869.977	.000	1	1.000	41.464	.000	.
Safety Mgmt	1.419	17921.241	.000	1	1.000	4.133	.000	.
Special Education	23.531	9124.157	.000	1	.998	16572764563.978	.000	.
Sports Mgmt	23.275	9124.156	.000	1	.998	12831552606.260	.000	.
Teaching	21.495	9124.156	.000	1	.998	2162799881.515	.000	.
Technology	24.717	9124.156	.000	1	.998	54240410029.515	.000	.
Degree Level	-1.016	1.358	.560	1	.454	.362	.025	5.185
Residential Experience	.384	1.430	.072	1	.788	1.468	.089	24.222
Student Activities	-.804	1.978	.165	1	.684	.447	.009	21.610
Event Attendance	1.965	.939	4.385	1	.036	7.138	1.134	44.928
Volunteer	-1.076	2.233	.232	1	.630	.341	.004	27.142
0 miles (ref)			6.158	5	.291			
0.1-40 miles	19.225	8174.957	.000	1	.998	223470752.332	.000	.
40.1-60 miles	19.902	8174.957	.000	1	.998	440004548.472	.000	.
60.1-175 miles	16.631	8174.957	.000	1	.998	16702751.855	.000	.
175.1 miles+	19.424	8174.957	.000	1	.998	272745311.391	.000	.
Unknown	18.488	8174.957	.000	1	.998	106946240.029	.000	.
Natural transformation of age	-19.356	12.931	2.241	1	.134	.000	.000	398.517
Natural transformation of student activities	2.608	4.028	.419	1	.517	13.572	.005	36429.741
Constant	10.026	12250.772	.000	1	.999	22599.985		

Note. [a] Variable(s) entered on step 1: Age, Marital Status, Employment at University, Program, Degree Level, Residential Experience, Student Activities, Event Attendance, Volunteer, Distance from Campus, Natural Transformation of Age, Natural Transformation of Student Activities.

Second, logistic regression assumes there is no multicollinearity. Multicollinearity occurs when two or more independent variables are highly correlated with each other (Tabachnick & Fidell, 2019). As demonstrated in Table 2, all variance inflation factor (VIF) values are less than 10, and all tolerance values are greater than 0.1, demonstrating there is no issue with high degrees of multicollinearity in the data (Laerd Statistics, 2017).

Table 2

Coefficients: Test for Multicollinearity

Model		Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
		b	*SE*	Beta	t	Sig.	Toleran-ce	VIF
1	(Constant)	.255	.043		5.884	< .001		
	Age	.002	.000	.082	5.414	< .001	.935	1.070
	Marital Status	-.006	.003	-.034	-2.306	.021	.959	1.043
	Employment	.052	.011	.078	4.508	< .001	.702	1.425
	Employment at University	-.099	.013	-.127	-7.847	< .001	.806	1.240
	Program	.000	.001	.007	.477	.633	.925	1.081
	Degree Level	-.001	.007	-.003	-.184	.854	.811	1.233
	Residential Experience?	.080	.010	.138	7.982	< .001	.707	1.414
	Student Activities	.018	.006	.042	2.863	.004	.971	1.030
	Event Attendance?	.170	.015	.172	11.059	< .001	.878	1.140
	Volunteer?	.114	.029	.058	3.912	< .001	.948	1.055
	Distance from Campus	-.003	.003	-.015	-1.014	.310	.940	1.064

Note. Dependent Variable: Giver?

I tested the assumption of no multicollinearity using the Spearman rho nonparametric test. As demonstrated in Table 3, none of the correlation coefficients were greater than 0.7 or less than -0.7, which means none of the independent variables are highly correlated with each other (Tabachnick & Fidell, 2019).

Table 3

Correlations: Test for Multicollinearity

Variable			Age	Marital status	Employment	Employment at university	Program	Degree level	Residential experience?	Student activities	Event attendance?	Volunteer?	Distance from campus
Spearman's rho	Age	Correlation Coefficient	1.000	.105**	.151**	-.005	.115**	.106**	-.043**	-.008	-.041**	-.032*	-.011
		Sig. (2-tailed)	.	< .001	< .001	.763	< .001	< .001	.007	.631	.009	.041	.489
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Marital Status	Correlation Coefficient	.105**	1.000	-.011	.049**	.008	.047**	-.125**	.021	-.068**	-.028	.028
		Sig. (2-tailed)	< .001	.	.501	.002	.632	.002	<.001	.191	< .001	.071	.079
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Employment	Correlation Coefficient	.151**	-.011	1.000	-.421**	-.106**	.175**	.347**	.048**	.186**	.176**	-.150**
		Sig. (2-tailed)	< .001	.501	.	< .001	< .001	< .001	< .001	.002	< .001	< .001	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Employment at University	Correlation Coefficient	-.005	.049**	-.421**	1.000	.061**	-.059**	-.123**	-.049**	-.273**	-.121**	.102**
		Sig. (2-tailed)	.763	.002	< .001	.	< .001	< .001	< .001	.002	< .001	< .001	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Program	Correlation Coefficient	.115**	.008	-.106**	.061**	1.000	-.189**	-.120**	-.052**	-.086**	-.074**	-.061**
		Sig. (2-tailed)	< .001	.632	< .001	< .001	.	<.001	< .001	< .001	< .001	< .001	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Degree Level	Correlation Coefficient	.106**	.047**	.175**	-.059**	-.189**	1.000	.363**	-.052**	.056**	.061**	.029
		Sig. (2-tailed)	< .001	.002	< .001	< .001	< .001	.	< .001	< .001	< .001	< .001	.062
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055

Variable			Age	Marital status	Employment	Employment at university	Program	Degree level	Residential experience?	Student activities	Event attendance?	Volunteer?	Distance from campus
	Residential Experience?	Correlation Coefficient	-.043**	-.125**	.347**	-.123**	-.120**	.363**	1.000	-.080**	.238**	.110**	-.185**
		Sig. (2-tailed)	.007	< .001	< .001	< .001	< .001	< .001	.	< .001	< .001	< .001	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Student Activities	Correlation Coefficient	-.008	.021	.048**	-.049**	-.052**	-.052**	-.080**	1.000	.075**	.005	.027
		Sig. (2-tailed)	.631	.191	.002	.002	< .001	< .001	< .001	.	< .001	.760	.089
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Event Attendance?	Correlation Coefficient	-.041**	-.068**	.186**	-.273**	-.086**	.056**	.238**	.075**	1.000	.147**	-.083**
		Sig. (2-tailed)	.009	< .001	< .001	< .001	< .001	< .001	< .001	<.001	.	< .001	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Volunteer?	Correlation Coefficient	-.032*	-.028	.176**	-.121**	-.074**	.061**	.110**	.005	.147**	1.000	-.064**
		Sig. (2-tailed)	.041	.071	< .001	< .001	< .001	< .001	< .001	.760	< .001	.	< .001
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Distance from Campus	Correlation Coefficient	-.011	.028	-.150**	.102**	-.061**	.029	-.185**	.027	-.083**	-.064**	1.000
		Sig. (2-tailed)	.489	.079	< .001	< .001	< .001	.062	< .001	.089	< .001	< .001	.
		N	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055

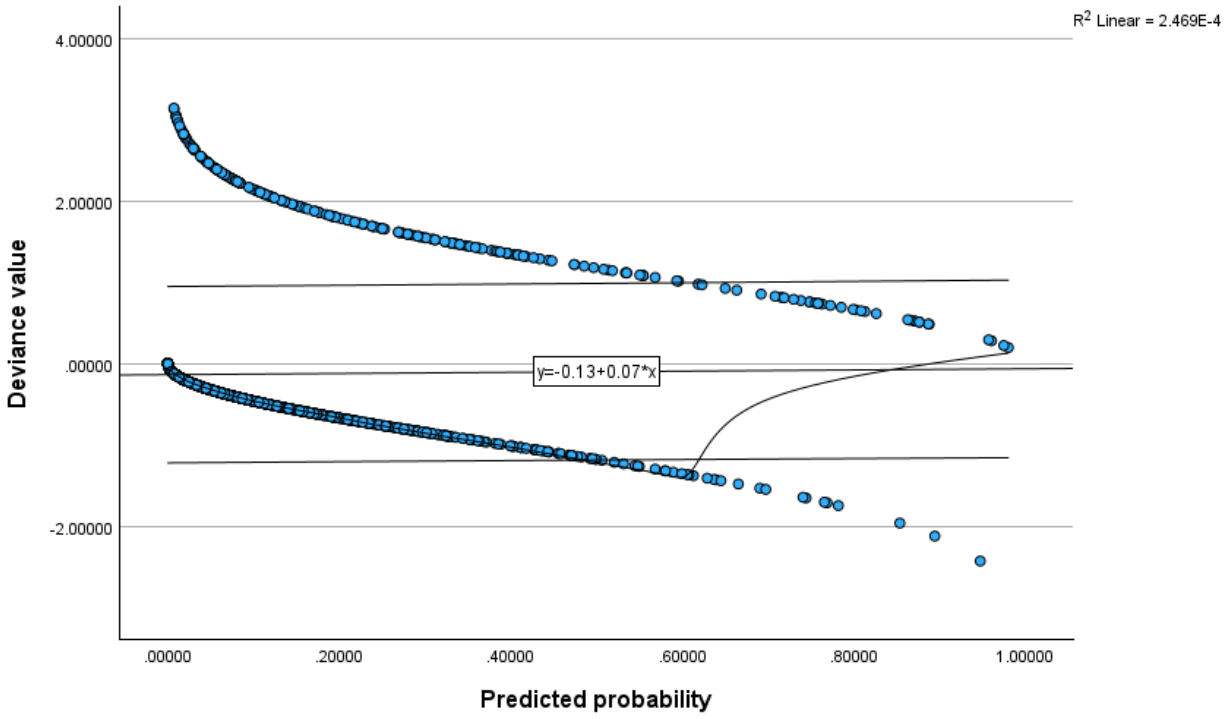
Note. ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Third, logistic regression assumes an absence of unusual points, such as outliers, leverage or influential data, that could impact the regression line (Tabachnick & Fidell, 2019). Unusual points could have a disproportionate influence on the estimated coefficients and predictive accuracy of the results (Tabachnick & Fidell, 2019). To review for usual points, I confirmed that

the binary dependent variable and the independent variables were specified correctly in SPSS. Next, new columns for predicted probabilities and deviance residuals were created in SPSS. The pattern of residuals were visually accessed via a scatter plot graph with linear and Loess fit lines, demonstrated in Figure 6. The regression line is $y = 0.13 + 0.07*x$. The line that represents predicted probabilities (top) and the line that represents deviance residuals (bottom) both follow a relatively straight line and all of the points follow closely. There does not appear to be any points that are significantly off the lines, indicating there are no outliers to address.

Figure 6

Pattern of Residuals



As a measure of influence, the threshold for Cook's distance was determined to be a minimum of .000 with a maximum of .025, demonstrated in Table 4. I visually reviewed data associated with Cook's distance variable in data view of SPSS and confirmed the range was from .00000 to .02497, confirming that there was no influential data in the set.

Table 4

Residuals Statistics: Cook's Distance

Variable	Minimum	Maximum	*M*	*SD*	*N*
Predicted Value	-.03	.62	.06	.091	4,055
Std. Predicted Value	-1.052	6.171	.000	1.000	4,055
Standard Error of Predicted Value	.005	.037	.011	.005	4,055
Adjusted Predicted Value	-.03	.61	.06	.091	4,055
Residual	-.536	1.014	.000	.223	4,055
Std. Residual	-2.405	4.550	.000	.999	4,055
Stud. Residual	-2.435	4.554	.000	1.002	4,055
Deleted Residual	-.550	1.016	.000	.224	4,055
Stud. Deleted Residual	-2.436	4.565	.000	1.003	4,055
Mahal. Distance	1.428	113.284	10.997	13.408	4,055
Cook's Distance	.000	.025	.000	.002	4,055
Centered Leverage Value	.000	.028	.003	.003	4,055

Note. Dependent Variable: Giver?

Ethical Considerations

This study posed minimal risk as it was conducted analyzing archival data and was categorized as nonhuman research, which does not involve interaction or intervention with living individuals, and information is not individually identifiable (see Appendix C). This aligns with the Code of Federal Regulations: Protection of Human Subjects. The original dataset was deidentified by the institution prior to being provided to me, mitigating the risk of participants being identified. None of the variables being studied present an issue in terms of being used as identifiers. Advancement offices that serve alumni populations may benefit from the results of this study by gaining a better understanding of the predictors of philanthropic giving from graduates who earned their degrees in an online environment.

Summary

After all seven assumptions were satisfied, I ran the regression analysis for the results, presented in Chapter 4. As a result of this study, I established a logistic regression model to determine which of the independent variables associated with demographic information, student experience, and alumni experience had a statistically significant effect on the probability of a graduate that completed 80% or more of their learning experience through the online modality to be a donor. The next chapter includes the results of the statistical analysis.

Chapter 4: Results

Alumni giving is increasingly important to the vitality of institutions of higher education (Langley, 2020). Advancement offices that serve alumni populations can benefit from analyzing independent variables that predict the behavioral phenomenon of philanthropic giving (Berger, 2016). Identifying prospective alumni donors is valuable in university efforts to begin cultivating relationships and ultimately raise funds for institutional priorities. However, the majority of existing research on alumni giving has examined students who had a residential college experience (Massey, 2017). Residential learning is a method of education delivery where the main elements include student participation on a physical campus through face-to-face instruction and communication (Allen & Seaman, 2013; Berger, 2016; Council for Advancement and Support of Education, 2021).

Using Ajzen's (1991) theory of planned behavior as a theoretical framework, I employed logistic regression to explore if independent variables proven to predict philanthropic giving for alumni that attended through a residential education experience also predict philanthropic giving from alumni that completed 80% or more of their learning experience through the online modality. The independent variables examined were grounded in existing research findings and associated with demographic information, student experience, and alumni experience. The dependent binary variable was alumni giving. The population of participants was alumni who had graduated from a midsize state institution in the Midwest with a degree from an online program since 2002. The degree programs were intentionally designed to be delivered through the online modality and students were aware of the modality prior to enrollment. This chapter provides detail about the data formatting for the logistic regression analysis, outlines the variables in the equation, and shares the results of the study.

Data Formatting

Due to the use of archival data provided by the advancement office, formatting of the original Excel file was required to be utilized for this logistic regression study. The original file was formatted to display the number of gifts a participant had made to the institution as a scale variable. Since the dependent variable is required to be binary, a new column was created where data were categorized as never given ($v = 0$) or had made at least one gift ($v = 1$).

Independent Variables: Demographic Information

I completed a visual review and ensured that data were present in the age column for each participant. No additional formatting was required for the scale variable of *age*. In the original file *marital status* was formatted to display as a categorical variable including single, married, divorced, widowed, other, and null. Upon visual review it was determined that the widowed category did not meet the assumption for sufficient observations ($n = 6$) so data coded as widowed were changed to the single category. I created a new category of unknown that combined data coded as other ($n = 46$), as well as all null entries ($n = 1{,}649$). I assigned a numerical value to each category for input into SPSS. The employment status data provided by the institution were formatted to display employer name or null. Data were reformatted to be binary, either null ($v = 0$) or employer name was present ($v = 1$). Archival data for *employment at the institution* were displayed in two columns; start date and end date of employment, or null, entries. I created a new column for this categorical variable. If data were present in the start data and end date columns the participant was categorized as formerly employed ($v = 1$). If data were present in the start data, but end date was null the participant was categorized as currently employed ($v = 2$). If start date and end date were null the participant was categorized as never employed ($v = 3$).

Independent Variables: Student Experience

Before formatting the data for variables associated with student experience, I addressed participants who had obtained more than one degree through the online modality (n = 109). Due to a limitation of logistic regression study, the analysis was limited to data related to the first online degree earned in the analysis. Further visual review of the data for variables associated with student experience resulted in a discussion with professional staff in the institution's advancement office. The following issues were reviewed and resolved.

First, undergraduate and graduate certificates earned through the online modality were included in the original file. Since this study includes participants who earned a baccalaureate or higher degree through the online modality, I reviewed participants who had earned certificates through the online modality. If the only education record was a certificate, the participant was removed from the study. If the participant had also earned a baccalaureate degree or higher through the online modality, the data related to the online certificate were removed and data related to the baccalaureate degree or higher were retained for analysis. The latter was common, because some academic programs are designed in such a way that a participant graduates with a degree and a certificate simultaneously.

Second, some participants were coded as earning their degree through the online modality in years prior to the existence of online delivery (n = 37). The institution's professional staff reviewed these data and returned the file to me with some removed (n = 32) and some corrected (n = 5). It was determined that issues with participants being inaccurately coded as online learners occurred when participants had earned at least one degree from the institution and were also currently enrolled in a degree program through the online modality. Since the advancement office only stores information on degrees earned, the data file included the

education record for the completed degree versus the degree sought through the online modality.

Third, some participants were coded as online learners but had not earned a degree from the institution (n = 6). It was determined that this occurred when the advancement office had created a record for the participant in their database, even though they had never earned a degree from the institution, and the participant was currently enrolled at the institution earning a degree through the online modality. These participants were removed from the study.

The academic program data prompted modifications to the file, which are outlined below. Upon visual review of the data, I identified participants that could not be readily categorized into an academic program category for various reasons (n = 545). This list was returned to the institution's advancement office for further review. The file was returned to me with the majority removed (n = 483) and guidance on how to categorize the remaining (n = 62). Those that remained were graduates of programs that were offered through the online modality in the past, but are currently only offered via a residential learning experience or not offered at all at the institution. The following were identified as reasons for the removal of participants:

- Participant was previously enrolled in an online program but changed to a residential educational experience and the online learner code was not removed.
- Participant was able to complete their degree by piecing together courses delivered through the online modality (i.e., not intentionally designed to be delivered through the online modality).
- The academic program the participant completed their degree from defined online learning at less than 80% of the coursework completed through the online modality (i.e., definition does not align with this study's definition).
- Participant was inaccurately coded as an online learner for an unknown reason.

Next, I formatted data to group programs under the same category when the program name or coding at Prairie Grass University had changed over time, but the curriculum remained consistent. For example, three differing entries—Education Tech, Educational Technology, and Human Services/ Educational Technology—were all grouped under Educational Technology.

At Prairie Grass University, some academic programs have multiple concentrations a student can choose from within the major. The following data were formatted to group concentrations under the corresponding academic program. This formatting was often necessary due to insufficient observations for specific concentrations within an academic program.

- Aviation = Aviation Management, Aviation Safety, Aviation Technology
- Career & Technology Education = General Career & Technology Education, Teacher Education, Teaching Leadership, Administration Leadership, Industry Training
- Communication = General Communication, Broadcast Media, Mass Communication, Digital Media Production, Speech Communication, Corporate Communication, Communication Studies
- Crisis & Disaster Management = General Crisis & Disaster Management, Emergency Services Management, Emergency Management, Business Continuity, Environmental Hazards
- Curriculum & Instruction = General Curriculum & Instruction, Elementary Ed Curriculum & Instruction, Secondary Ed Curriculum & Instruction
- Early Childhood/ Elementary Education = General Early Childhood/ Elementary Education, Birth–3rd grade, Grades 1–6, Elementary School Administration, Math Specialist

- Educational Technology = General Educational Technology, Human Services, Learning Resources
- Occupational Safety = General Occupational Safety, Occupational Safety Management, Environmental, Safety, and Risk Management
- Psychology = General Psychology, Behavioral Analysis Therapy

To further address insufficient observations in the data, I reviewed program curriculum at Prairie Grass University to categorize some academic programs together, either under an existing category or under a newly titled category. The Business category includes Business Administration, Management, and Marketing. The Family Development category includes Social Gerontology and Child and Family Development. The Occupational Safety category includes Industrial Hygiene. The Career & Technology Education category includes Educational Studies. Data for Professional Leadership was categorized under Educational Technology or Library Science & Information Services, based on the participant's educational concentration. Finally, participants from three academic programs were removed completely from the study because of insufficient observations and inability to align with any other category; Nutrition (n = 6), Cybersecurity & Info Assurance (n = 1), English Language Learners (n = 1).

I had aimed to include an independent variable for *receipt of university sponsored scholarship* in the logistic regression model. However, after requesting the archival data from the institution, it was discovered that it would not be possible to isolate scholarship aid for a specific degree earned. Some of the participants in the study had earned multiple degrees from the institution, including both residential experiences as well as through the online modality, and the inability to distinguish scholarship aid provided toward the degree earned through the online

modality would not achieve the purpose of its inclusion. I sought and received approval from the dissertation committee to omit the variable from the study.

There were three more independent variables associated with student experience in the data file: *degree level*, *residential experience*, and *extracurricular activities*. After eliminating certificates, three degree levels remained present in the data: baccalaureate, master's degree, and education specialist. I assigned a numerical value to each category for input into SPSS. A column was present to indicate if the participant had earned another degree at the institution through a residential learning experience, with data entries of yes or null. I created a new column to code this binary variable to indicate if the participant had earned another degree at the institution through a residential learning experience ($v = 1$) or if all degrees earned were through the online modality ($v = 0$). In the original data file provided by the institution's advancement office, the number of extracurricular activities that a participant was involved in was presented in 23 separate columns, sorted by extracurricular activity category (as designated by the institution). I used the sum of these columns to create a new column that represented a scale variable for each participant, ranging from zero to 8. However, there were insufficient observations for 5 ($n = 10$), 6 ($n = 6$), 7 ($n = 6$), and 8 ($n = 2$), so I recategorized each of these numerically as 4; categorically as 4+.

Independent Variables: Alumni Experience

Three independent variables were associated with alumni experience: *alumni event attendance*, *volunteerism*, and *distance from alma mater*. Alumni event attendance was indicated in two columns on the original file; number of events registered for and number of events attended. The range for the number of events attended was 0–80. Upon visual review, I noted that a small number of participants had attended more than one event ($n = 69$) and chose to

format these data as binary, indicating whether the participant had attended at least one event hosted by the institution's advancement office ($v = 1$) or not ($v = 0$).

I presented participant's volunteerism data in a column that indicated their most recent volunteer type (as defined by the institution's advancement office). I reformatted the data to be binary, indicating whether the participant had participated in at least one volunteer activity organized by the institution's advancement office ($v = 1$) or not ($v = 0$).

Distance from alma mater required manipulation from an external source. The data provided by the institution's advancement office for this independent variable were the participant's postal code, or ZIP code. I utilized the National Bureau of Economic Research's ZIP Code Distance Database to calculate each participant's distance from the institution's ZIP code (National Bureau of Economic Research, n.d.). The ZIP Code Distance Database uses the Haversine formula to determine the shortest distance between two points on a sphere given the locations longitude and latitude (Chen et al., 2019). Calculations are measured as the crow flies; the direct distance between the two ZIP codes. I downloaded the 2022 dataset from the online database and employed a pivot table to isolate the institution's ZIP code and all corresponding ZIP code measurements. I developed a VLOOKUP formula in a new column on the original file to incorporate the distance from campus data into the study. After assigning a categorical value to participants with unknown addresses and participants with the same ZIP code as the institution, I assigned the remaining participants into one of four categories, attempting to have each category represent approximately 20–25% of the participant population.

Variables in the Equation

After completing data formatting the proposed logistic regression model includes 12 variables; one dependent variable and 11 independent variables. The dependent binary variable is

alumni giving, measured by the presence of a gift record in the advancement office database where the participant never gave (n = 3,805) or had made at least one gift (n = 250), demonstrated in Table 5. This variable includes direct gifts from the participant (i.e., cash, stock, donation of items, and so on), as well as passthrough gifts (i.e., gifts from a spouse or a donor-advised fund attributed to the participant at the time of receipt).

Table 5

Dependent Binary Variable: Giver?

Giver?		*f*	%	Valid %	Cumulative %
Valid	No	3,805	93.8	93.8	93.8
	Yes	250	6.2	6.2	100.0
	Total	4,055	100.0	100.0	

For the *age* variable, participants' ages ranged from 22 to 77 years old (Table 6), calculated as of June 2023.

Table 6

Age Range of Participants

Age		*f*	%	Valid %	Cumulative %
Valid	22	3	.1	.1	.1
	23	20	.5	.5	.6
	24	31	.8	.8	1.3
	25	52	1.3	1.3	2.6
	26	82	2.0	2.0	4.6
	27	87	2.1	2.1	6.8
	28	120	3.0	3.0	9.7
	29	147	3.6	3.6	13.4
	30	163	4.0	4.0	17.4
	31	210	5.2	5.2	22.6
	32	215	5.3	5.3	27.9
	33	240	5.9	5.9	33.8
	34	190	4.7	4.7	38.5
	35	178	4.4	4.4	42.9
	36	208	5.1	5.1	48.0
	37	175	4.3	4.3	52.3
	38	155	3.8	3.8	56.1

Age	*f*	%	Valid %	Cumulative %
39	136	3.4	3.4	59.5
40	145	3.6	3.6	63.1
41	153	3.8	3.8	66.8
42	110	2.7	2.7	69.5
43	118	2.9	2.9	72.5
44	74	1.8	1.8	74.3
45	87	2.1	2.1	76.4
46	94	2.3	2.3	78.7
47	71	1.8	1.8	80.5
48	69	1.7	1.7	82.2
49	57	1.4	1.4	83.6
50	68	1.7	1.7	85.3
51	74	1.8	1.8	87.1
52	76	1.9	1.9	89.0
53	60	1.5	1.5	90.5
54	54	1.3	1.3	91.8
55	46	1.1	1.1	92.9
56	31	.8	.8	93.7
57	30	.7	.7	94.4
58	38	.9	.9	95.4
59	35	.9	.9	96.2
60	32	.8	.8	97.0
61	17	.4	.4	97.4
62	25	.6	.6	98.1
63	13	.3	.3	98.4
64	21	.5	.5	98.9
65	11	.3	.3	99.2
66	6	.1	.1	99.3
67	9	.2	.2	99.5
68	7	.2	.2	99.7
69	5	.1	.1	99.8
70	2	.0	.0	99.9
71	1	.0	.0	99.9
72	1	.0	.0	99.9
73	1	.0	.0	100.0
74	1	.0	.0	100.0
77	1	.0	.0	100.0
Total	4,055	100.0	100.0	

Marital status had four categories: single (n = 1,766), married (n = 547), divorced (n = 48), and unknown (n = 1,694), as demonstrated in Table 7.

Table 7

Marital Status of Participants

Marital status		*f*	%	Valid %	Cumulative %
Valid	Single	1,766	43.6	43.6	43.6
	Married	547	13.5	13.5	57.0
	Divorced	48	1.2	1.2	58.2
	Unknown	1,694	41.8	41.8	100.0
	Total	4,055	100.0	100.0	

Employment status was a binary variable, with categories for unknown (n = 3,419) and employed (n = 636), as demonstrated in Table 8.

Table 8

Employment Status of Participants

Employment status		*f*	%	Valid %	Cumulative %
Valid	No	3,419	84.3	84.3	84.3
	Yes	636	15.7	15.7	100.0
	Total	4,055	100.0	100.0	

Employment at the institution had three categories: formerly employed (n =88), currently employed (n = 46), and never employed (n = 3,931), as demonstrated in Table 9.

Table 9

Employment at Institution Status of Participants

Employment status at institution		*f*	%	Valid %	Cumulative %
Valid	Formerly Employed	88	2.2	2.2	2.2
	Currently Employed	46	1.1	1.1	3.3
	Never Employed	3,921	96.7	96.7	100.0
	Total	4,055	100.0	100.0	

Twenty five categories for the variable *academic program* were included in the study (Table 10): Aviation (*n* = 99), Business (*n* = 34), Career & Technology Education (*n* = 116), Family Development (*n* = 20), Communication (*n* = 69), Criminal Justice (*n* = 351), Crisis & Disaster Management (*n* = 77), Curriculum & Instruction (*n* = 266), Early Childhood/ Elementary Education (*n* = 88), Educational Technology (*n* = 444), Industrial Management (*n* = 74), Kinesiology (*n* = 275), Library Science & Information Services (*n* = 244), Nursing (*n* = 225), Occupational Education (*n* = 24), Occupational Safety (*n* = 143), Physical Education/ Exercise & Sports Science (*n* = 62), Psychology (*n* = 19), RN BSN Nursing (*n* = 771), Rural Family Nursing (*n* = 190), Safety Management (*n* = 17), Special Education (*n* = 34), Sports Management (*n* = 21), Teaching (*n* = 308), and Technology (*n* = 84).

Table 10

Academic Program of Participants

Academic program		*f*	%	Valid %	Cumulative %
Valid	Aviation	99	2.4	2.4	2.4
	Business	34	.8	.8	3.3
	Career & Technology Education	116	2.9	2.9	6.1
	Family Development	20	.5	.5	6.6
	Communication	69	1.7	1.7	8.3
	Criminal Justice	351	8.7	8.7	17.0
	Crisis & Disaster Management	77	1.9	1.9	18.9
	Curriculum & Instruction	266	6.6	6.6	25.5
	Early Education/ Elementary Education	88	2.2	2.2	27.6
	Educational Technology	444	10.9	10.9	38.6
	Industrial Management	74	1.8	1.8	40.4
	Kinesiology	275	6.8	6.8	47.2
	Library Science & Information Services	244	6.0	6.0	53.2
	Nursing	225	5.5	5.5	58.7
	Occupational Education	24	.6	.6	59.3
	Occupational Safety	143	3.5	3.5	62.9
	Physical Education/ Exercise & Sports Science	62	1.5	1.5	64.4
	Psychology	19	.5	.5	64.9
	RN BSN Nursing	771	19.0	19.0	83.9
	Rural Family Nursing	190	4.7	4.7	88.6
	Safety Management	17	.4	.4	89.0
	Special Education	34	.8	.8	89.8
	Sports Management	21	.5	.5	90.3
	Teaching	308	7.6	7.6	97.9
	Technology	84	2.1	2.1	100.0
	Total	4,055	100.0	100.0	

Degree level had three categories; baccalaureate (*n* = 1,424), master's degree (*n* = 2,507), and education specialist (*n* = 124), demonstrated in Table 11.

Table 11

Degree Level of Participants

Degree level		*f*	%	Valid %	Cumulative %
Valid	Baccalaureate	1,424	35.1	35.1	35.1
	Master's Degree	2,507	61.8	61.8	96.9
	Education Specialist	124	3.1	3.1	100.0
	Total	4,055	100.0	100.0	

Residential experience was a binary variable to identify if the alumnus earned another degree at the institution through a residential learning experience (*n* = 904) or not (*n* = 3,151) demonstrated in Table 12.

Table 12

Residential Experience of Participants

Residential experience		*f*	%	Valid %	Cumulative %
Valid	No	3,151	77.7	77.7	77.7
	Yes	904	22.3	22.3	100.0
	Total	4,055	100.0	100.0	

The number of *extracurricular activities* a participant was involved in at the institution while earning their degree through the online modality ranged from zero to 4 (Table 13).

Table 13

Extracurricular Activities Involvement of Participants

Extracurricular activities		*f*	%	Valid %	Cumulative %
Valid	0	3,776	93.1	93.1	93.1
	1	152	3.7	3.7	96.9
	2	52	1.3	1.3	98.2
	3	37	.9	.9	99.1
	4	38	.9	.9	100.0
	Total	4,055	100.0	100.0	

Alumni *event attendance* was a binary variable to identify if the alumnus has attended at least one event hosted by the institution's advancement office (n = 257) or not (n = 3,798), demonstrated in Table 14.

Table 14

Event Attendance of Participants

Event attendance		*f*	%	Valid %	Cumulative %
Valid	No	3,798	93.7	93.7	93.7
	Yes	257	6.3	6.3	100.0
	Total	4,055	100.0	100.0	

Volunteerism was a binary variable to identify if the alumnus has participated in a volunteer activity organized by the institution's advancement office (n = 63) or not (n = 3,992), demonstrated in Table 15.

Table 15

Volunteerism of Participants

Volunteerism		*f*	%	Valid %	Cumulative %
Valid	No	3,992	98.4	98.4	98.4
	Yes	63	1.6	1.6	100.0
	Total	4,055	100.0	100.0	

Distance from alma mater had 6 categories (Table 16): same ZIP code as institution (*n* = 136), 0.1–40 miles (*n* = 1,000), 40.1–60 miles (*n* = 841), 60. –175 miles (*n* = 922), 175.1 miles or more (*n* = 893), and unknown address (*n* = 263).

Table 16

Distance from Campus for Participants

Distance from campus		*f*	%	Valid %	Cumulative %
Valid	0 miles (same ZIP)	136	3.4	3.4	3.4
	0.1-40 miles	1,000	24.7	24.7	28.0
	40.1-60 miles	841	20.7	20.7	48.8
	60.1-175 miles	922	22.7	22.7	71.5
	175.1+ miles	893	22.0	22.0	93.5
	Unknown	263	6.5	6.5	100.0
	Total	4,055	100.0	100.0	

Results

I tested a logistic regression model to ascertain if independent variables associated with demographic information, student experience, and alumni experience predicted the likelihood of an alumnus who earned their degree through the online modality to be a donor. The logistic regression model (Figure 1) was statistically significant ($p < .001$). The model explained 35.2% (Nagelkerke R^2) of the variance in giving and correctly classified 94.3% of cases. Sensitivity was 19.2% and specificity was 99.2%. Of the 11 predictor variables, nine were statistically significant.

Figure 1

Proposed Logistic Regression Model

$$Y_{alumni\ giving} = \text{Constant} + \beta 1_{age} + \beta 2_{marital\ status} + \beta 3_{employment\ status} + B4_{employed\ at\ institution} + \beta 5_{academic\ program} + \beta 6_{degree\ level} + \beta 7\ _{residential\ experience} + \beta 8_{extracurricular\ activities} + \beta 9_{alumni\ event\ attendance} + \beta 10_{volunteerism} + \beta 11_{distance\ from\ alma\ mater}$$

Descriptive Statistics

The statistical analysis of data began with a review of the descriptive statistics to describe the attributes of the actual data set, including measures of central tendency and measures of variability. Measures of central tendency are single values that attempt to describe a set of data by identifying the central position within that set of data, such as the mean and median for this study's continuous variables and the mode for its categorical variables (Field, 2013). Measures of variability describe how the data is distributed within the set; including standard deviation, variance, range and skewness (Field, 2013). This information is displayed visually in Table 17.

Table 17

Descriptive Statistics

Statistic		Giver?	Age	Marital status	Employ-ment	Employment at university	Program	Degree level	Residential experience?	Student activities	Event attendance?	Volunteer?	Distance from campus
N	Valid	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055	4,055
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
M		.06	39.11	2.41	.16	2.95	13.55	1.68	.22	.13	.06	.02	3.55
Mdn		.00	37.00	2.00	.00	3.00	13.00	2.00	.00	.00	.00	.00	4.00
Mode		0	33	1	0	3	19	2	0	0	0	0	2
SD		.241	9.566	1.396	.364	.309	6.337	.528	.416	.552	.244	.124	1.331
Variance		.058	91.517	1.949	.132	.095	40.161	.279	.173	.305	.059	.015	1.772
Skewness		3.646	.810	.162	1.888	-5.765	.010	-.131	1.332	5.164	3.585	7.837	.061
Std. Error of Skewness		.038	.038	.038	.038	.038	.038	.038	.038	.038	.038	.038	.038
Minimum		0	22	1	0	1	1	1	0	0	0	0	1
Maximum		1	77	4	1	3	25	3	1	4	1	1	6

Logistic Regression

I conducted the analysis using the binary logistic regression function in SPSS. The program first produced a baseline analysis, which established the constant. The case processing summary (Table 18) demonstrates that there was no missing data in the set (N = 4,055), and the dependent variable encoding table (Table 19) confirms that the dependent binary variable of *alumni giving* was entered correctly.

Table 18

Case Processing Summary

Unweighted cases[a]		*N*	%
Selected Cases	Included in Analysis	4,055	100.0
	Missing Cases	0	.0
	Total	4,055	100.0
Unselected Cases		0	.0
Total		4,055	100.0

Note. [a] If weight is in effect, see classification table for the total number of cases.

Table 19

Dependent Variable Coding

Original value	Internal value
No	0
Yes	1

The classification table in the beginning block (Table 20) demonstrates the baseline model, which does not include the independent variables. Predictions of this baseline model assume that the participant was not a donor, because the "no" category occurred most often in the dataset (n = 3,805). Using the approach (assuming the participant was not a donor) was accurate 93.8% of the time.

Table 20

Classification Table: Baseline Model

			Predicted		
			Giver?		
	Observed		No	Yes	Percentage correct
Step 0	Giver?	No	3,805	0	100.0
		Yes	250	0	.0
	Overall Percentage				93.8

Note. Constant is included in the model. The cut value is .500

The independent variables were then entered into the model and tables were produced to evaluate model fit using the omnibus tests of model coefficients and the Hosmer and Lemeshow test. The omnibus test of model coefficients (Table 21) confirmed that the model, with all independent variables, was significant ($p < .001$).

Table 21

Omnibus Test of Model Coefficients

		Chi-square	*df*	Sig.
Step 1	Step	566.717	42	< .001
	Block	566.717	42	< .001
	Model	566.717	42	< .001

The Hosmer and Lemeshow test of goodness of fit, shown in Table 22, confirmed that the chi-square was not significant at $p = .720$ (> .05), which means the model was a good fit.

Table 22

Hosmer and Lemeshow Test

Step	Chi-square	*df*	Sig.
1	5.344	8	.720

SPSS produced a variance model summary to demonstrate how much variation in the dependent variable could be explained by the model, referred to as the Nagelkerke R^2 value (Laerd Statistics, 2017). The model in this study predicted 35.2% of the variance, as demonstrated in Table 23.

Table 23

Variance Model Summary

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	1,310.666[a]	.130	.352

Note. [a] Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

The next classification table in the SPSS output (Table 24) reflects the percentage accuracy in classification (PAC), sensitivity, specificity, positive predictive value and negative predictive value to assess the ability of the model to correctly classify alumni givers, based on a cut value of 0.5. With the independent variables added to the model, accurate prediction increased by 0.5% from the baseline model (from 93.8% to 94.3%). Sensitivity, also referred to as the true positive rate, measures the proportion of actual positive cases that were correctly predicted as positive by the model. The sensitivity of 19.2% indicates that the model only correctly identified less than one-fifth of the alumni donors as donors. Specificity, also referred to as the true negative rate, measures the proportion of actual negative cases that were correctly predicted as negative by the model. The high specificity of 99.2% in this study indicates that the model had a very low false positive rate (less than 1%).

Table 24

Classification Table: Tested Model

			Predicted		
			Giver?		
	Observed		No	Yes	Percentage correct
Step 1	Giver?	No	3,776	29	99.2
		Yes	202	48	19.2
	Overall Percentage				94.3

Note. The cut value is .500

Hosmer et al. (2013) and Royston and Altman (2010) recommend reporting the ROC curve if the study aims to understand the ability of the model to discriminate between individuals with and without the event of interest. The receiver operating characteristic (ROC) curve plot, demonstrated in Figure 7, measures the overall discriminatory ability of the model by considering all possible cut values in the data, as well as how each cut value changes the specificity and sensitivity (Laerd Statistics, 2017). The area under the ROC curve (Table 25) was .882, 95% CI [.861, .904], which is an excellent level of discrimination according to Hosmer et al. (2013).

Figure 7

Receiver Operating Characteristic (ROC) Curve Plot

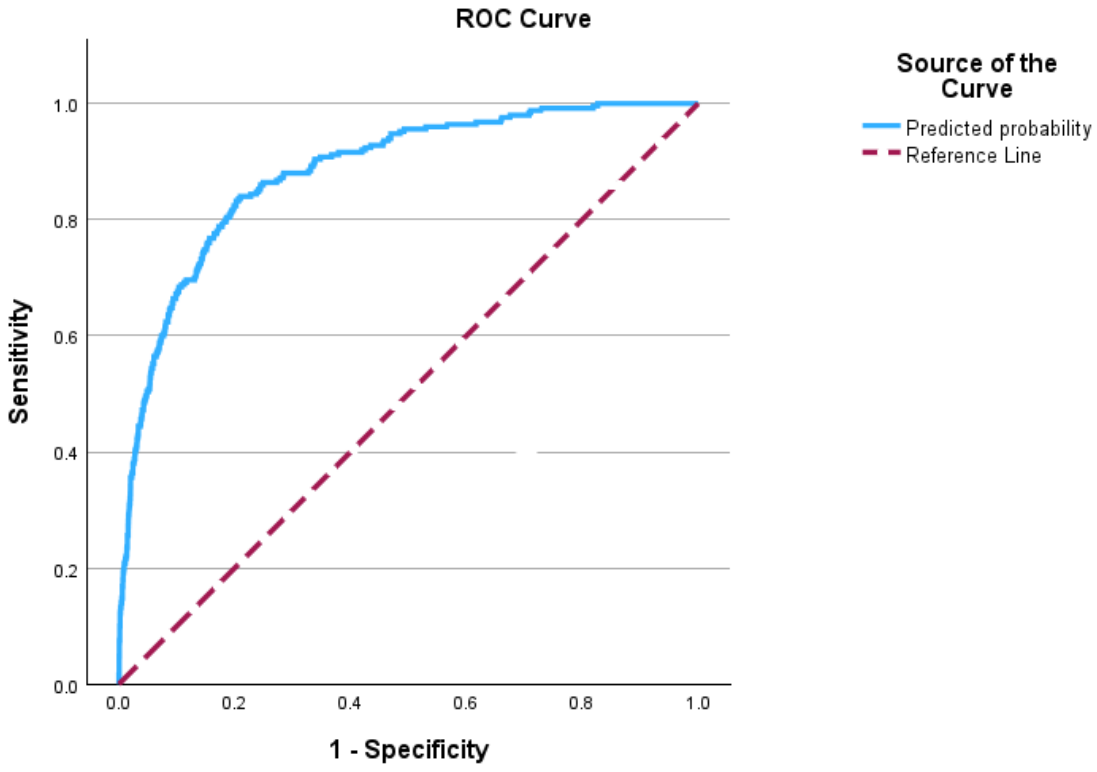


Table 25

Area Under the ROC Curve

Test result variable(s): Predicted probability

		Asymptotic	Asymptotic 95% CI	
Area	*SE*[a]	Sig.[b]	Lower bound	Upper bound
.882	.011	.000	.861	.904

Note. The test result variable(s): Predicted probability has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased. [a] Under the nonparametric assumption. [b] Null hypothesis: true area = 0.5.

Finally, Table 26 demonstrates the contribution of each independent variable to the model. I used the Wald test to determine statistical significance for each of the independent variables, where Sig. ($p < .05$) means the independent variable contributed significantly to the model (Ranganathan et al., 2017). The odds ratio for each independent variable, listed as Exp(β) in the table, indicated the change in the odds for each 1-unit increase. The following section includes a detailed review of the effect of each independent variable on the dependent variable.

Table 26

Variables in the Equation: Tested Model

								95% C.I.for Exp(β)	
Variables		B	*SE*	Wald	df	Sig.	Exp(β)	Lower	Upper
Step 1[a]	Age	.036	.008	18.565	1	< .001	1.037	1.020	1.054
	Single (ref)			63.466	3	< .001			
	Married	1.210	.194	39.070	1	< .001	3.352	2.294	4.898
	Divorced	1.355	.514	6.958	1	.008	3.877	1.417	10.613
	Unknown	-.370	.215	2.962	1	.085	.691	.453	1.053
	Employment Status	.335	.197	2.883	1	.089	1.398	.950	2.058
	Formerly Employed at University (ref)			11.652	2	.003			
	Formerly Employed at University	.550	.490	1.261	1	.262	1.733	.664	4.528
	Never Employed at University	-.763	.316	5.819	1	.016	.466	.251	.867
	Aviation (ref)			68.632	24	< .001			

Variables	B	*SE*	Wald	df	Sig.	Exp(β)	95% C.I.for Exp(β) Lower	Upper
Business	.135	.830	.026	1	.871	1.144	.225	5.823
Career & Tech. Ed.	-1.273	.804	2.509	1	.113	.280	.058	1.353
Family Development	-.954	1.478	.417	1	.519	.385	.021	6.979
Communication	.493	.641	.592	1	.442	1.637	.466	5.750
Criminal Justice	-.369	.526	.493	1	.482	.691	.247	1.937
Crisis & Disaster Mgmt	-18.593	4271.115	.000	1	.997	.000	.000	.
Curriculum & Instruction	-.998	.568	3.090	1	.079	.369	.121	1.122
Early Childhood/ Elementary Ed.	-.425	.721	.346	1	.556	.654	.159	2.689
Educational Technology	-.446	.513	.758	1	.384	.640	.234	1.748
Industrial Management	.593	.569	1.087	1	.297	1.810	.593	5.520
Kinesiology	1.326	.491	7.298	1	.007	3.768	1.439	9.864
Library Science & Information Services	-.339	.558	.371	1	.543	.712	.239	2.124
Nursing	-.299	.604	.244	1	.621	.742	.227	2.423
Occupational Education	-.392	1.164	.113	1	.737	.676	.069	6.622
Occupational Safety	-.123	.552	.050	1	.824	.884	.300	2.609
Physical Ed./ Exercise & Sports Science	.482	.634	.577	1	.447	1.619	.467	5.612
Psychology	-.295	1.168	.064	1	.800	.744	.075	7.342
RN BSN Nursing	-1.066	.593	3.227	1	.072	.344	.108	1.102
Rural Family Nursing	-.090	.589	.023	1	.879	.914	.288	2.901
Safety Mgmt	.274	.960	.082	1	.775	1.315	.200	8.635
Special Education	-.872	1.132	.593	1	.441	.418	.046	3.844
Sports Mgmt	1.135	.816	1.936	1	.164	3.111	.629	15.389
Teaching	-.384	.520	.545	1	.460	.681	.246	1.888
Technology	-.292	.723	.163	1	.686	.747	.181	3.078
Baccalaureate (ref)			4.024	2	.134			
Master's Degree	-.660	.329	4.021	1	.045	.517	.271	.985
Education Specialist	-.707	.572	1.527	1	.217	.493	.161	1.513
Residential Experience	1.601	.205	60.896	1	< .001	4.960	3.317	7.415
Student Activities	.380	.103	13.516	1	< .001	1.463	1.194	1.792
Event Attendance	1.044	.203	26.335	1	< .001	2.840	1.906	4.230
Volunteer	.602	.392	2.365	1	.124	1.827	.848	3.936
0 miles (ref)			18.726	5	.002			
0.1-40 miles	-.690	.295	5.469	1	.019	.502	.281	.894
40.1-60 miles	-.622	.321	3.767	1	.052	.537	.286	1.006
60.1-175 miles	-.972	.331	8.614	1	.003	.378	.198	.724
175.1 miles+	-.301	.313	.925	1	.336	.740	.400	1.367

Variables	B	*SE*	Wald	df	Sig.	Exp(β)	95% C.I.for Exp(β) Lower	Upper
Unknown	-1.616	.494	10.705	1	.001	.199	.075	.523
Constant	-3.357	.736	20.791	1	< .001	.035		

Note. [a] Variable(s) entered on step 1: Age, Marital Status, Employment, Employment at University, Program, Degree Level, Residential Experience, Student Activities, Event Attendance, Volunteer, Distance from Campus.

Demographic Information

Increased age was found to be a significant predictor of alumni giving ($p < .001$). The coefficient for age was 0.036 (95% CI [1.020, 1.054]), indicating a positive relationship between age and being an alumni donor. The exponentiated coefficient (Exp(β)) for age was 1.037, suggesting that for each additional year of age, the odds of being a donor increased by a factor of 1.037, holding all other variables constant.

I examined the impact of marital status on an alumnus being a donor. The reference category for marital status was single. The marital status of married was statistically significant ($p < .001$) compared to the reference category of single. The odds of an alumnus being a donor were 3.352 times higher for married individuals compared to single individuals. The marital status of divorced was also statistically significant ($p = .008$) compared to the reference category of single. The odds of an alumnus being a donor were 3.877 times higher for divorced individuals compared to single individuals. The marital status of unknown was not statistically significant ($p = .085$) compared to the reference category of single. This suggests that there was no strong evidence of a difference in the odds of an alumnus being a donor if they were categorized as single versus unknown marital status.

Presence of employment information in the institutional advancement database was not statistically significant ($p = .089$). This suggests that there was no strong evidence of a difference

in the odds of an alumnus being a donor if the institution was aware of their employment status or not.

I also examined the impact of employment at the institution on an alumnus being a donor. The reference category for this variable was formerly employed. The category of currently employed was not statistically significant ($p = .262$) compared to the reference category of formerly employed. This suggests that there was no strong evidence of a difference in the odds of an alumnus being a donor if they were currently employed versus formerly employed. The category of never employed was statistically significant ($p = .016$) compared to the reference category of formerly employed. The odds of an alumnus being a donor were 0.466 times lower for individuals who have never been employed by the institution than those that were formerly employed by the institution.

Student Experience

In this logistic regression analysis, I examined the impact of academic programs on an alumnus being a donor. The reference category for the academic program variable was Aviation. Kinesiology was the only academic program that was statistically significant ($p = .007$) compared to the reference category of Aviation. The odds of an alumnus being a donor were 3.768 times higher for individuals whose academic program was Kinesiology compared to those whose academic program was Aviation. All of the remaining academic programs analyzed were not statistically significant compared to the reference category of Aviation; Business ($p = .871$), Career & Technology Education ($p = .113$), Family Development ($p = .519$), Communication ($p = .442$), Criminal Justice ($p = .482$), Crisis & Disaster Management ($p = .997$), Curriculum & Instruction ($p = .079$), Early Education/ Elementary Education ($p = .556$), Educational Technology ($p = .384$), Industrial Management ($p = .297$), Library Science & Information

Services (p = .543), Nursing (p = .621), Occupational Education (p = .737), Occupational Safety (p = .824), Physical Education/ Exercise & Sports Science (p = .447), Psychology (p = .800), RN BSN Nursing (p = .072), Rural Family Nursing (p = .879), Safety Management (p = .775), Special Education (p = .441), Sports Management (p = .164), Teaching (p = .460), and Technology (p = .686).

The impact of degree level on an alumnus being a donor was examined. The reference category for degree level was baccalaureate. The category of master's degree was statistically significant (p = .045) compared to the reference category of baccalaureate. The odds of an alumnus being a donor were .517 times less for individuals who earned a master's degree than those that earned a baccalaureate degree. The category of Education Specialist was not statistically significant (p = .217) compared to the reference category of baccalaureate. This suggests that there was no strong evidence of a difference in the odds of an alumnus being a donor if they earned a baccalaureate degree versus an education specialist degree.

Having earned another degree at the institution through a residential experience was found to be a significant predictor (p < .001). The coefficient was 1.601 (95% CI [3.317, 7.415]), indicating that having also had a residential experience increased the log-odds of an alumnus being a donor by 1.601. The exponentiated coefficient (Exp(β)) was 4.960, suggesting that if the alumnus had earned another degree at the institution through a residential experience, the odds of them being a donor increased by a factor of 4.960, holding all other variables constant. The results suggest that this variable was the strongest predictor of giving from online learners in the model.

Involvement in extracurricular activities was found to be a significant predictor of alumni giving (p < .001). The coefficient was 0.380 (95% CI [1.194, 1.792]), indicating that as the

number of involvement attributes increased, the log-odds of an alumnus being a donor increased by 0.380. The exponentiated coefficient (Exp(β)) for involvement in extracurricular activities was 1.463, suggesting that for each one unit increase in the number of activities a student was involved in, the odds of them being a donor increased by a factor of 1.463, holding all other variables constant. These results suggest that involvement in extracurricular activities was a predictor of alumni giving.

Alumni Experience

Attendance at alumni events was found to be a significant predictor of alumni giving ($p <$ .001). The coefficient was 1.044 (95% CI [1.906, 4.230]), indicating a positive relationship between event attendance and alumni giving. The exponentiated coefficient (Exp(β)) for alumni event attendance was 2.840, suggesting that the odds of an alumnus who had attended an event being a donor increased by a factor of 2.840, holding all other variables constant. These results suggest that alumni event attendance was a predictor of the dependent variable.

Volunteerism was not statistically significant (p = .124). This suggests that there was no strong evidence of a difference in the odds of an alumnus being a donor whether they volunteer or not.

In addition, I examined the impact of distance from campus on an alumnus being a donor. The reference category for distance from campus was the same ZIP code as the institution. Of the five categories related to distance from campus, three were significant. The category of 0.1 to 40 miles from campus was statistically significant (p = .019) compared to the reference category. The coefficient was -0.690 (95% CI [0.281, 0.894]), indicating a negative relationship between living 0.1 to 40 miles from campus and being an alumni donor. The odds of an alumnus being a

donor are 0.502 times less for individuals who lived 0.1 to 40 miles from campus than those that resided in the same ZIP code.

The category of 60.1 to 175 miles from campus was also statistically significant (p = .003) compared to the reference category. The coefficient was -0.972 (95% CI [0.198, 0.724]), indicating a negative relationship between living 60.1 to 175 miles from campus and being an alumni donor. The odds of an alumnus being a donor were 0.378 times less for individuals who lived 60.1 to 175 miles from campus than those that resided in the same ZIP code.

The category of unknown was statistically significant (p = .001) compared to the reference category. The coefficient was -1.616 (95% CI [0.075, 0.523]), indicating a negative relationship between an unknown number of miles from campus and being an alumni donor. The odds of an alumnus being a donor were 0.199 times less for individuals who lived an unknown number of miles from campus than those that resided in the same ZIP code.

The following categories were not statistically significant compared to the reference category of living in the same ZIP code as the institution; 40.1 to 60 miles from campus (p = .052) and 175.1+ miles from campus (p = .336). This suggests that there was no strong evidence of a difference in the odds of an alumnus being a donor if they lived within these distances from campus.

Summary

I tested a logistic regression model to ascertain if independent variables associated with demographic information, student experience, and alumni experience predicted the likelihood of an alumnus who earned their degree through the online modality to be a donor. The logistic regression model was statistically significant (p < .001). With the independent variables added to the model, accurate prediction increased by 0.5% from the baseline model (from 93.8% to

94.3%). The model explained 35.2% (Nagelkerke R^2) of the variance in giving and correctly classified 94.3% of cases. Sensitivity was 19.2% and specificity was 99.2%.

Of the 11 predictor variables, nine were statistically significant; only employment status and volunteerism were not statistically significant. Of the demographic information variables, increased age, being married, and being divorced were found to be positive predictors of alumni giving. Having never been employed by the institution was found to be a negative predictor of alumni giving. Of the student experience variables, being in the Kinesiology academic program, having earned another degree at the institution through a residential experience, and increased involvement in extracurricular activities were found to be positive predictors of alumni giving. Having earned a master's degree was found to be a negative predictor of alumni giving. Of the alumni experience variables, attendance at alumni events was found to be a positive predictor of alumni giving. Living 0.1 to 40 miles from campus, 60.1 to 175 miles from campus, or having an unknown address were found to be negative predictors of alumni giving.

Overall, the strongest predictor of alumni giving in the model was having also earned a degree through a residential experience at the institution. Alumni that had earned two or more degrees from the institution, at least one through a residential experience and at least one through the online modality, were 4.960 times more likely to be donors. Other strong predictors were marital status of married (Exp(β) = 3.352) and divorced (Exp(β) = 3.877) when compared to single, having graduated from the Kinesiology academic program (Exp(β) = 3.768) when compared to the Aviation academic program, and alumni event attendance (Exp(β) = 2.840). In the following chapter a summary of these findings, I discuss implications for practice, limitations of the study, and recommendations for future research.

Chapter 5: Discussion, Implications, and Recommendations

Alumni giving is increasingly important to the vitality of institutions of higher education (Langley, 2020). Advancement offices that serve alumni populations can benefit from analyzing independent variables that predict the behavioral phenomenon of philanthropic giving (Berger, 2016). Identifying prospective alumni donors is valuable in university efforts to begin cultivating relationships and, ultimately, raise funds for institutional priorities. However, the majority of existing research on alumni giving has examined students who had a residential college experience (Massey, 2017). Residential learning is a method of education delivery where the main elements include student participation on a physical campus through face-to-face instruction and communication (Allen & Seaman, 2013; Berger, 2016; Council for Advancement and Support of Education, 2021).

In this quantitative study I used Ajzen's (1991) theory of planned behavior as a theoretical framework and employed logistic regression to explore if independent variables proven to predict philanthropic giving for alumni that attended through a residential education experience also predicted philanthropic giving from alumni that completed 80% or more of their learning experience through the online modality. The independent variables I examined were grounded in existing research findings and associated with demographic information, student experience, and alumni experience. The dependent binary variable was alumni giving. The population of participants was alumni who graduated since 2002 from a midsize state institution in the Midwest with a degree from an online program. The degree programs were intentionally designed to be delivered through the online modality and students were aware of the modality prior to enrollment. This chapter includes discussion of findings, limitations of the study, implications for practice, and recommendations for future research.

Summary of Findings

I tested a logistic regression model to ascertain if independent variables associated with demographic information, student experience, and alumni experience predicted the likelihood of an alumnus who earned their degree through the online modality to be a donor. The logistic regression model was statistically significant ($p < .001$). With the independent variables added to the model, accurate prediction increased by 0.5% from the baseline model (from 93.8% to 94.3%). The model explained 35.2% (Nagelkerke R^2) of the variance in giving and correctly classified 94.3% of cases; sensitivity was 19.2% and specificity was 99.2%.

Of the 11 predictor variables, nine were statistically significant; only employment status and volunteerism were not statistically significant. Of the demographic information variables, increased age, being married, and being divorced were found to be positive predictors of alumni giving. Having never been employed by the institution was a negative predictor of alumni giving. Of the student experience variables, I found that being in the Kinesiology academic program, having earned another degree at the institution through a residential experience, and increased involvement in extracurricular activities were positive predictors of alumni giving. Having earned a master's degree was a negative predictor of alumni giving. Of the alumni experience variables, I found that attendance at alumni events was a positive predictor of alumni giving. Living 0.1 to 40 miles from campus, 60.1 to 175 miles from campus, or having an unknown address were negative predictors of alumni giving.

Overall, the strongest predictor of alumni giving in the model was having also earned a degree through a residential experience at the institution. Alumni that had earned two or more degrees from the institution, at least one through a residential experience and at least one through the online modality, were 4.960 times more likely to be donors. Other strong predictors were

marital status of married (Exp(β) = 3.352) and divorced (Exp(β) = 3.877) when compared to single, having graduated from the Kinesiology academic program (Exp(β) = 3.768) when compared to the Aviation academic program, and alumni event attendance (Exp(β) = 2.840).

Discussion of Findings in Relation to Past Literature

I conducted his study because there is insufficient research regarding the independent variables associated with demographic information, student experience, and alumni experience that predict philanthropic giving from alumni that attended their respective universities through distance education. For university administrators and advancement professionals to be proactive in cultivating relationships with alumni that attended through the online modality, a better understanding of what motivates philanthropic giving from this alumni constituency is necessary. The independent variables examined in this study were grounded in existing research findings and the theoretical framework of the theory of planned behavior (Ajzen, 1991). The following section will discuss the findings of this study in relation to past literature.

Theory of Planned Behavior

The theory of planned behavior aids in understanding, predicting, and changing human social behavior in specific contexts (Ajzen, 1991; Ajzen, 2012). It served as the theoretical framework for this study. The central factor of the theory of planned behavior is an individual's intention to perform a specific behavior (Ajzen, 1991; Ajzen, 2012). Behavioral intention is believed to be proximal to actual behavior; therefore, the stronger intention one has to engage in a specific behavior, the more likely that the individual will actually engage in the behavior (Ajzen, 1991; Manstead, 2016; Terry et al., 2016). In the theory of planned behavior, three independent variables determine intention; attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). Attitude is the individual's personal evaluation of a specific behavior.

Existing research informs us that attachment to the university, expressed through satisfaction with one's academic program and student experience, are primary motivations for alumni giving (Gaier, 2005; Monks, 2003; Rau & Erwin, 2015; Skari, 2014; Tsao & Coll, 2005; Vervoort & Gasman, 2016). Based on this knowledge, it is reasonable to assume that each of the independent variables associated with student experience in this study impacted the participant's salient behavioral beliefs, which in turn influenced their attitude toward the behavior of philanthropic giving.

Subjective norm is the individual's perception of social acceptance when engaging in the behavior. In support of this theoretical construct, research on the phenomenon of conditional cooperation has found that individuals are more likely to engage in philanthropic giving when they are aware that others are giving (Frey & Meier, 2004; Martin & Randal, 2008). In the present study, variables associated with alumni experience serve as measures that could be influenced by the participant's subjective norm. Through alumni event attendance and volunteerism at the university, participants were actively engaging with their peers, which provided opportunities for them to be aware of referent individuals and groups' attitudes toward philanthropy or to feel a sense of social pressure to be a donor.

Perceived behavioral control is the degree of self-efficacy in respect to engagement in the specific behavior. In the present study, the variable of employment status provided a measure that could contribute to an assessment of perceived behavioral control, serving as representation of a participant's possible disposable income available for philanthropic giving. Previous research had found being employed had strong predictive power in distinguishing which alumni were most likely to give (Weerts & Ronca, 2007).

The theory of planned behavior labels demographic variables, such as age, gender and income, as background factors that influence salient beliefs, which influence intention and behavior indirectly (Ajzen, 2011). Background factors are central, albeit underlying, to the theory's construct. It is common practice for researchers to focus on the descriptive role of demographic and socioeconomic variables in evaluation of charitable giving behavior (van der Linden, 2011). In the present study, independent variables associated with demographic information included age, marital status, and two measures of employment status.

The theory of planned behavior postulates that behavioral intention, together with perceived behavioral control, can be used to predict behavior with high accuracy (Ajzen, 1991). The core focus of the theory of planned behavior is predicting behavioral intention, knowing that the intention-behavior correlation is usually quite substantial (Ajzen, 2011). Per the guidance of Ajzen (1991), I utilized a measure of past behavior (alumni giving) to test the sufficiency of a model designed to predict behavior. Through logistic regression analysis, utilizing alumni giving as the dependent variable, I tested a model (Figure 1) to answer the following question: Do independent variables associated with demographic information, student experience, and alumni experience predict the likelihood of an alumnus who earned their degree through the online modality to be a donor?

Figure 1

Proposed Logistic Regression Model

$$Y_{alumni\ giving} = \text{Constant} + \beta 1_{age} + \beta 2_{marital\ status} + \beta 3_{employment\ status} + B4_{employed\ at\ institution} + \beta 5_{academic\ program} + \beta 6_{degree\ level} + \beta 7_{\ residential\ experience} + \beta 8_{extracurricular\ activities} + \beta 9_{alumni\ event\ attendance} + \beta 10_{volunteerism} + \beta 11_{distance\ from\ alma\ mater}$$

The logistic regression model was statistically significant ($p < .001$). The next sections provide a detailed summary of the findings related to past literature specific to each group of independent variables.

Demographic Information

Previous studies analyzing alumni who had a residential experience have found that increased age correlates with intention to give (Smith & McSweeney, 2007; van der Linden, 2011) and actual alumni giving (Bristol, 1990; Bruggink & Siddiqui, 1995; Gaier, 2005; Lara & Johnson, 2014; Monks, 2003; Skari, 2014; Tsao & Coll, 2005; Walcott, 2015; Weerts & Ronica, 2007). Consistent with Berger's (2016) study of predictors of alumni giving from online graduates, I also found a significant positive relationship between increased age and giving. These findings indicate that alumni, regardless of learning modality, are more likely to be donors as they age. In this study, I found that for each additional year of age, the odds of being a donor increased by a factor of 1.037 ($\text{Exp}(\beta) = 1.037$). Similar to how this study utilized variables related to employment as measures that could contribute to an assessment of perceived behavioral control, age could also serve as representation of a participant's possible disposable income available for philanthropic giving under the assumption that increased age equates to increased financial stability. In past research, higher income has correlated with intention to give (Smith & McSweeney, 2007) as well as with actual alumni giving (Baade & Sundberg, 1996; Clotfelter, 2003; Monks, 2003; Tsao & Coll, 2005; Weerts & Ronca, 2009; Young & Fischer, 1996).

The ages of participants ranged from 22 to 77 years old; the median age was 37 years old. Therefore, one might assume that many of the participants in this study began pursuing a degree through distance education at an older age than traditional age students. It is probable they were

able to maintain gainful employment while pursuing a degree through the flexible learning option of the online modality.

In previous studies, marital status has correlated with alumni giving, some researchers finding significance related to being married (Lara & Johnson, 2014; Walcott, 2015) and others finding significance related to being single (Bruggink & Siddiqui, 1995; Monks, 2003). In the present study I analyzed marital status and single was the reference category in the logistic regression analysis. The marital status of married was statistically significant ($p < .001$), with the odds of an alumnus being a donor at 3.352 times higher for individuals who were married compared to those who were single. The marital status of divorced was also statistically significant ($p = .008$), with the odds of an alumnus being a donor 3.877 times higher for individuals who were divorced compared to those who were single. The marital status of unknown was not statistically significant ($p = .085$). Lara and Johnson (2014) postulated that the independent variable of marital status may be sensitive to the institution being studied. Following that pattern of thought, it is likely that the advancement office fostered a relationship with the participants coded as married or divorced, indicated by the mere fact that the institution was aware of their specific marital statuses, versus the majority that were coded as single or unknown (85.3%).

In their use of classification trees to predict alumni giving, Weerts and Ronca (2009) posited that “income is an important divider that explains levels of giving and the likelihood of becoming a donor in the first place” (p. 107). Since the dataset of the present study did not include the variable of income, I utilized variables related to employment status as proximal factors for income. Weerts and Ronca (2007) determined that being employed was a critical variable, distinguishing alumni who were most likely to give by a rate of 1.8 times. However, in

this study, presence of employment information in the institutional advancement database was not statistically significant (p = .089), suggesting that there is no strong evidence of a difference in the odds of an alumnus being a donor if the institution is aware of their employment status or not. This is likely a result of incomplete data because of the low percentage of participants coded as employed (15.7%), making it specific to Prairie Grass University.

Employment at the institution was the second variable related to employment status included in this logistic regression study. In previous research on the impact of alumni status on institutional giving by employees, findings suggested that advancement offices may find it useful to consider the components of cross-cutting individual identities (i.e., alumni and employee statuses) when attempting to build relationships with the unique population (Borden et al., 2014). This study added depth to those two cross-cutting individual identities to focus on alumni who learned through the online modality and to consider both current and former employees. In this study, the odds of an alumnus being a donor if they were currently employed versus formerly employed were insignificant. However, never having been employed at the institution was statistically significant (p = .016) compared to the reference category of formerly employed. The odds of an alumnus being a donor were 0.466 times lower for individuals who had never been employed by the institution. This negative finding for never employed indicates that graduates from online programs who were formerly employed at the university are better prospects for alumni giving.

Student Experience

In this study, Kinesiology was the only academic program that was statistically significant (p = .007) when compared to the reference category of Aviation. The odds of an alumnus being a donor are 3.768 times higher for individuals whose academic program was

Kinesiology compared to those whose academic program was Aviation. None of the remaining academic programs analyzed were statistically significant. Tsao and Coll (2005) found that as the frequency of communication from faculty of the academic department increased to alumni, donative intention increased as well. Interestingly, the Kinesiology academic program at Prairie Grass University is no longer offered through the online modality. While it was outside the scope of this study to analyze communications and solicitation efforts from the institution, one may assume that the faculty of the academic department were not actively communicating with this alumni population, considering that the program no longer exists.

Previous studies have found that increased satisfaction with the academic experience has a significant positive correlation with alumni giving (Gaier, 2005; Marr et al., 2005; Tsao & Coll, 2005). For instance, Monks (2003) found that graduates of history programs are more likely to give, while Walcott (2015) found that graduation from the college of business and the college of nursing better predicted alumni giving. Others have found statistical significance related to giving for graduates of science, technology, engineering, and math programs (Bruggink & Siddiqui, 1995; Marr et al., 2005). In hindsight, I do not believe that logistic regression analysis was the best method to measure the impact of specific academic programs on philanthropic giving due to the requirement to select a reference category. In the present study Aviation was selected as the reference category because it was first alphabetically. The analysis of academic programs would have been better suited for a multiple linear regression study.

Some researchers have limited the population in their studies by degree level, specifically analyzing undergraduate students (Drew-Branch, 2011; Gaier, 2005: Meer & Rosen, 2012) or graduate students (Berger, 2016; Moore, 2014). In the present study, participants were baccalaureate, master's, and education specialist degree holders. This study found that master's

degree holders were 0.517 times less likely to be donors than those that earned a baccalaureate degree. There was no strong evidence of a difference in the odds of an alumnus being a donor if they earned a baccalaureate degree versus an education specialist degree. Attachment to the university, expressed through satisfaction with one's academic program and student experience, are primary motivations for alumni giving (Gaier, 2005; Monks, 2003; Rau & Erwin, 2015; Skari, 2014; Tsao & Coll, 2005; Vervoort & Gasman, 2016). It is possible that distance learners in master's degree programs have not been afforded a student experience that led to what Astin (1999) defined as a long-term attachment to their university. This finding suggests that master's degree online learners may not be good prospects for alumni giving, having less affinity for the institution than bachelor's degree holders.

In the present study, I found that having earned another degree at the institution through a residential experience was a significant predictor of alumni giving ($p < .001$). This was the strongest predictor of giving from online learners in the model, with the odds of an alumnus that had earned another degree at the institution through a residential experience being a donor almost 5 times higher ($\text{Exp}(\beta) = 4.960$) than an alumnus who had only earned a degree through the online modality. Provided that the majority of existing research on alumni giving has examined students who had a residential experience (Massey, 2017), I acknowledge that the independent variables I selected for inclusion in the tested logistic regression model were based on existing literature specific to that population. For this reason, it was important to include an independent variable in the study to distinguish those that also had a residential experience at the institution. Being the independent variable with the highest predictive power, it successfully served its purpose. It is encouraging that the logistic regression model tested in this study was statistically significant ($p < .001$) when analyzing the population of alumni that completed 80% or more of

their learning experience through the online modality, because it demonstrates that past literature on alumni giving (which primarily analyzed alumni who had a residential experience) is, at least in part, applicable to the specific alumni population of online learners.

Involvement in extracurricular activities has correlated with alumni giving in multiple studies (Marr et al., 2005; Monks, 2003; Walcott, 2015). In this study, involvement in extracurricular activities was a significant predictor of alumni giving ($p < .001$), with the odds of a participant being a donor increasing by a factor of 1.463 for each 1-unit increase in the number of activities a student was involved in. This is consistent with foundational research on student engagement, retention, and persistence indicating that being involved socially and academically leads to increased retention (Tinto, 1987) and that involvement in student life leads to a feeling of attachment to the university (Astin, 1999).

Monks (2003) found that dissatisfaction with an emphasis or lack thereof on extracurricular activities negatively affects alumni giving behaviors, which seems to affirm the value alumni place on extracurricular activities and the impact extracurricular activities can have on donative behavior. With this in mind, it is notable that this independent variable had a low participation level in the present study ($n = 279$) with only 6.9% of the participant population having been involved in any extracurricular activities while earning their degree through the online modality. It is unknown if students were choosing not to participate in extracurricular activities, if students did not perceive the available opportunities as accessible through the online modality, or if opportunities to be involved were limited.

Alumni Experience

Bruggink and Siddiqui (1995) found positive statistical significance related to giving for alumni that had engaged in alumni relations activities. Attending alumni events positively

correlates with alumni giving (Lara & Johnson, 2014; Walcott, 2015). Interestingly, Lara and Johnson (2014) found that the amount given by an alumnus increased by an average of $278 with each event attended. In this study, attendance at alumni events was a significant predictor of alumni giving ($p < .001$), with the odds of an alumnus who had attended an event being a donor increasing by almost three times over an alumnus who had never attended an event ($\text{Exp}(\beta) = 2.840$). This result is indicative of the influence alumni affinity to their university could ultimately have on alumni giving. Affinity to the institution has greater predictive power than wealth and giving history in relation to alumni giving to their alma mater (McAlexander et al., 2014). The act of participating in alumni events signals that alumni perceive a deep connection to their alma mater, rather than feeling that earning a degree was a transactional exchange (Young et al., 2019). Is it also probable that alumni event attendance encourages alumni to actively engage with their peers, which provides opportunities for them to be aware of referent individuals and groups' attitudes toward philanthropy, or to feel a sense of social pressure to be a donor, influencing their subjective norm as outlined in the theory of planned behavior (Ajzen, 1991).

Advancement offices strive to keep alumni engaged with the institution through four modes: philanthropic giving, volunteerism, communication, and alumni events (Smith & Kaplan, 2021). Assuming all four modes carry equal importance, alumni event attendance and volunteerism should be high indicators of alumni affinity to their alma mater. The present study found that alumni event attendance is a strong positive predictor of one of the other modes of engagement: philanthropic giving. However, volunteerism was not statistically significant ($p = .124$) in the present study; suggesting that there is no strong evidence of a difference in the odds of an alumnus being a donor whether they volunteer or not.

In many previous studies, the act of volunteering for the university as an alumnus has correlated with alumni giving (Clotfelter, 2003; Taylor & Martin, 1995; Walcott, 2015; Wunnava & Lauze, 2001). In the present study, the volunteerism independent variable had a low participation level with only 1.6% of the participant population having ever volunteered for the university. An analysis of the descriptive statistics related to alumni distance from campus shows that over half of the participant population resided more than 60.1 miles from campus or had an unknown address (n = 2,078). It is possible that volunteer opportunities offered by the institution were not accessible or appealing to graduates from the online modality.

Distance from alma mater, or close proximity to the benefactor of the contribution, has correlated with alumni giving in multiple studies (Berger, 2016; Bruggink & Siddiqui, 1995; Chen et al., 2022; Curry et al., 2012; Skari, 2014; Touré-Tillery & Fishbach, 2017; Walcott, 2015). Berger (2016) hypothesized that alumni who had a residential experience and lived closer to their alma mater had more opportunities to be reminded of their connection to the institution. However, when specifically examining online graduates, he found no correlation between distance from campus and donative behavior (Berger, 2016). The present study found that alumni living 0.1 to 40 miles from campus, 60.1 to 175 miles from campus, and an unknown distance from campus were all statistically significant compared to alumni living in the same ZIP code as Prairie Grass University. The relationship between these distances and the alumnus being a donor are negative.

Alumni living within a comfortable driving distance from campus (0.1 to 40 miles) were the least likely to be donors ($\text{Exp}(\beta) = 0.502$). Alumni living 60.1 to 175 miles from campus were 0.378 times less likely to be donors than those living in the same ZIP code as the university. It is notable that a large metropolitan area is located in the 60.1- to 175-mile range. Given that

both ranges have a negative relationship with alumni giving, I find it interesting that the exponentiated coefficient was higher for the range closer to campus. One would assume that alumni who live 60.1 to 175 miles from campus would be less likely to be donors than those that reside 0.1 to 40 miles from campus. These findings are inconsistent with past literature findings.

When the advancement office did not know where alumni resided, they were assigned to the unknown category. The category of unknown was also statistically significant (p = .001) in this study, with the odds of the alumnus with an unknown address being a donor at 0.199 times less likely than an alumnus that lives in the same ZIP code as the university. This finding is intuitively reasonable; the institution is unaware of where the alumnus resides and is therefore limited in its ability to maintain a relationship with them or solicit them for philanthropic contributions. In addition, the alumnus has not taken action to update their contact information with the institution; this is likely an indication of low affinity for their alma mater.

The present study found living 40.1 to 60 miles from campus (p = .052) and 175.1+ miles from campus (p = .336) were not statistically significant compared to the reference category of living in the same ZIP code as the institution. This suggests alumni living within these distances from campus are just as likely or unlikely to be a donor as alumni that live in the same ZIP code as the campus.

Limitations of the Study

As with all research, this study has its limitations. I conducted the research at an institution I have a personal connection to, creating potential for institutional bias (Andrade, 2021). This concern was negated by the research design of using archival data. I had no control over the data collection process (Jones, 2010). However, the lack of control in the data collection process created its own limitations in that I was required to do extensive data formatting prior to

running the logistic regression analysis and had to assume the data provided by the advancement office was accurate. One especially challenging aspect of using archival data from Prairie Grass University was that the institution's data management protocol assigns the *online learner* code to the participants record, not to the specific degree within that participants record. Due to this protocol, I identified multiple participants who, because of having earned multiple degrees from the institution, or currently seeking a second or third degree from the institution, required review by the advancement office to determine which degree(s) were earned or being sought through the online modality. This time-consuming review process resulted in corrections to the data file for some participants and removal of many of the participants from the study.

After receiving the archival data file from the advancement office, I suspect some inaccurate coding in the modality of specific academic courses. In instances where it was unclear if the participant undertook 80% or more of their courses through the online modality, a full audit of their coursework was evaluated by the advancement office. Some participants that were enrolled in a distance education program that was intentionally designed to be delivered via the online modality had more than 20% of their course registrations coded as residential experience. Consistently, these residential course codes were related to internships, capstones, independent studies, and readings. Whether this was an oversight or done intentionally by the institution remains undetermined. The advancement office and I made considerable effort to identify and ensure accuracy in the data file, but the breadth of this issue could be larger than what was addressed for the purpose of this study.

A delimitation in this research study was the unknown long-term impact that the COVID-19 pandemic had on the student experience and distance education (Madrigal & Blevins, 2021; Prokes & Housel, 2021). Significant criticism of the implementation and execution of the

transition to virtual delivery during the crisis resulted in the defined distinction between remote teaching and distance education (Aguilera-Hermida, 2020; Dill et al., 2020; McMurtrie, 2020a; McMurtrie, 2020b; Selingo, 2020; Zimmerman, 2020). Distance education pedagogy is intentionally formatted for virtual delivery and voluntarily accepted by all parties, while remote teaching is pivoting a typical face-to-face pedagogy to a virtual delivery in response to circumstances (Aguilera-Hermida, 2020; Dill et al., 2020; McMurtrie, 2020a; McMurtrie, 2020b; Selingo, 2020; Zimmerman, 2020). To negate this delimitation, I only analyzed data from alumni that graduated from a distance education program that was intentionally designed to be delivered via the online modality.

Implications for Practice

With most institutions of higher education now offering courses and entire programs of study exclusively through distance learning modalities, advancement offices are behind the curve in understanding what motivates these alumni to participate in philanthropic giving (Lesht et al., 2018). Colleges and universities exist on the principle that education positively influences the world around us; it is time for higher education to learn how to connect with diverse alumni populations like those that studied through the online modality (Black et al., 2006).

In this study I tested a logistic regression model to ascertain if independent variables associated with demographic information, student experience, and alumni experience predicted the likelihood of an alumnus who earned their degree through the online modality to be a donor. The logistic regression model was statistically significant ($p < .001$) increasing accurate prediction of giving by 0.5% from the baseline model. The following section outlines implications for practice; these tactical ideas based on the findings from this analysis can guide

the efforts of advancement professionals in increasing philanthropic giving from alumni who earned their degree through the online modality.

Advancement offices strive to keep alumni engaged with the institution through four modes: philanthropic giving, volunteerism, communication, and alumni events (Smith & Kaplan, 2021). Efforts to engage with alumni via these modes, regardless of age, are designed to increase affinity through the alumni experience. This study found that attendance at alumni events was a significant predictor of alumni giving ($p < .001$) with the odds of an alumnus who had attended an event being a donor increasing by almost three times over an alumnus who had never attended an event ($\text{Exp}(\beta) = 2.840$). Emphasis on encouraging alumni to attend events could result in increased giving from the online learner population. One recommendation is for advancement offices to audit their plan for alumni events to ensure they are hosting events in a variety of geographic areas (or through different modalities), planning the details of the event and the corresponding marketing materials in such a way that would appeal to the online graduate population, and ensuring invitations are deployed to the population. In the present study, over half of the participant population resided more than 60.1 miles from campus or had an unknown address ($n = 2{,}078$). For this reason, it is recommended to host events in areas where large populations of alumni reside.

Recognizing that online graduates likely do not have a strong affinity to the physical campus or knowledge of the rituals and traditions that residential students experience (Martin et al., 2015), it is recommended to thoughtfully review event programming and marketing materials to ensure alumni who attended through the online modality find the event appealing and would feel comfortable and welcome should they attend. For instance, if part of the programming for a regional alumni event is to compete in a trivia challenge, the advancement office should review

the trivia questions to ensure there is a good distribution of questions that are not specific to the residential experience alone. Finally, it is recommended that the population of alumni who attended through the online modality are not omitted from the event initiation list. The findings of this study indicate that in relation to alumni giving, it is worthwhile to encourage event attendance.

Another mode through which advancement offices strive to keep alumni engaged with the institution is volunteerism (Smith & Kaplan, 2021), which was not statistically significant related to philanthropic giving in the present study. This implication for practice is that it is not worthwhile to solicit donations from alumni volunteers who attended through the online modality, as compared to their nonvolunteer peers. However, I suspect that it is possible volunteer opportunities offered by Prairie Grass University have not been accessible or appealing to graduates from the online modality. An analysis of the descriptive statistics related to alumni distance from campus showed that over half of the participant population resided more than 60.1 miles from campus or had an unknown address (n = 2,078). Upon review of the current volunteer opportunities available on Prairie Grass University's website (as of September 23, 2023), it appears each were positioned around the residential experience, such as speaking on a panel related to Greek Life students, or geographically bound, such as assisting in hosting an alumni event on the physical campus. Similar to the implications for practice related to alumni events, it is important for institutions to ensure volunteer opportunities are offered in a variety of geographic areas (or through different modalities), corresponding marketing materials are designed in such a way that would appeal to the online graduate population, and ensuring invitations are deployed to the population.

The findings of the present study offer multiple insights as to how advancement professionals could segment and target fundraising appeals to subsets of the population of graduates who studied through the online modality. Overall, the strongest predictor of alumni giving in the model was having also earned a degree through a residential experience at the institution. Alumni that had earned two or more degrees from the institution, at least one through a residential experience and at least one through the online modality, were 4.960 times more likely to be donors. An implication for practice from this finding is to focus the limited resources available for fundraising purposes on maintaining meaningful engagement with alumni who had both a residential and a distance learning experience with the institution.

Past research, including the findings of this study, consistently affirm that alumni are more likely to be donors as they age (Bristol, 1990; Bruggink & Siddiqui, 1995; Gaier, 2005; Lara & Johnson, 2014; Monks, 2003; Skari, 2014; Tsao & Coll, 2005; Walcott, 2015; Weerts & Ronica, 2007). There are multiple potential reasons for this finding. One is that older alumni have higher earning potential and, likely, more disposable income that can be allocated to philanthropic giving. Another reason may be that older alumni took on less student loan debt, or have paid off their student loan debt prior to becoming willing to make donations. It is also possible that alumni appreciation for their college experience increases over time, perhaps after enough time has passed for a graduate to reap benefits from their advanced education, consequently increasing their affinity toward their alma mater later in life. A practical application of this knowledge is for advancement professionals to focus the limited resources they have for fundraising purposes on maintaining meaningful engagement with older alumni. This recommendation is not to say that younger alumni should be avoided or ignored, just that they are less likely to engage in philanthropic giving than their more mature peers.

Based on the finding in this study that graduates never employed by the institution were 0.466 less likely to be donors than those that were formerly employed by the institution, a recommendation for practitioners is to design and implement an annual giving fundraising campaign targeting graduates from online programs who are coded as former employees that acknowledges their cross-cutting individual connections to the university and monitor philanthropic giving results of the effort (Borden et al., 2014).

It has been established that involvement in extracurricular activities correlates with alumni giving (Marr et al., 2005; Monks, 2003; Walcott, 2015). The findings of this study affirmed this research finding for the population of graduates who attended through the online modality. Involvement in extracurricular activities was a significant predictor of alumni giving ($p < .001$) with the odds of a participant being a donor increasing by a factor of 1.463 for each 1-unit increase in the number of activities a student was involved in. An implication for practice would be to prioritize graduates from online programs who were involved in extracurricular activities when communicating fundraising outreach efforts. Monks (2003) found that dissatisfaction with the emphasis or lack thereof on extracurricular activities negatively affects alumni giving behaviors. With this in mind, it is notable that in this study, involvement in extracurricular activities had a low participation level ($n = 279$). It would behoove institutions to analyze if students are choosing not to participate in extracurricular activities, if students do not perceive the available opportunities as accessible through the online modality, or if opportunities to be involved are limited. There is potential opportunity to develop new extracurricular activities specifically to serve this unique population of students.

Marital status of married ($\text{Exp}(\beta) = 3.352$) and divorced ($\text{Exp}(\beta) = 3.877$) were two of the strongest positive predictors of alumni giving when compared to single individuals. An

intuitively reasonable implication for practice would be to target fundraising appeals toward graduates from online programs who are coded as married or divorced. However, I agree with other researchers who postulated that the independent variable of marital status may be sensitive to the institution being studied (Lara and Johnson, 2014). It is likely that the advancement office at Prairie Grass University has fostered a relationship with the participants coded as married or divorced, indicated by the mere fact that the institution is aware of their specific marital statuses, versus the majority that were coded as single or unknown (85.3%). Overarchingly, research findings, like those ascertained through this study, are not possible without high data quality. The importance of curating and maintaining accurate and robust data on alumni who attended through the online modality cannot be overstated as an implication for practice.

Recommendations for Future Research

The findings of this study could be replicated, expanded upon, or challenged in future research studies to continue to add to the existing body of knowledge on alumni giving from alumni who earned their degree through the online modality. The following section outlines recommendations for future research.

If this exact logistic regression analysis were to be redesigned and tested again in the future, a recommended change would be to remove participants that also had residential experience at the institution (n = 904). Limiting the population to only online learners who did not have a residential experience at the institution would allow the researcher to compare the results of the two models and gain a better understanding of the philanthropic giving tendencies of alumni who exclusively attended through the online modality. However, with only 6.2% of the participant population being coded as givers (n = 250), it is questionable how many would remain if a portion of the population was excluded from the study.

Another potential modification that could be made to the current model is the inclusion of an independent variable for academic performance or grade point average (GPA). Upon further review of the archival data file, most of the participants that were involved in extracurricular activities were members of an honor society, an academic club related to their major, or student government. Given that participation in an honor society was one of the few extracurricular activity's participants were involved in, and involvement in extracurricular activities was found to be a significant predictor of alumni giving ($p < .001$), it would be interesting to include academic performance under independent variables associated with student experience in a future study.

Furthermore, alumni event attendance was a strong positive predictor of giving in the model tested in this study. In the archival data file provided by the institution, a small group of participants ($n = 56$) had registered for an event, but did not attend. Rau and Erwin (2015) found that the number of event invitations received predicted alumni giving, suggesting that simply being invited to alumni events produced goodwill and donative behavior. A recommended modification to this study is to evaluate if intent to attend an event predicts alumni giving.

According to the theory of planned behavior, intervening events can produce changes in beliefs, with the effect that the original measures of these variables no longer accurately predict behavior (Ajzen, 1991; Ajzen, 2020). Intervention has been proven to have a significant effect on intentions and prompt a change in behavior (Webb & Sheeran, 2006). It was outside of the scope of the present study to analyze any interventions, such as efforts from the institution to communicate specific information with alumni or solicit philanthropic gifts from them; however, it would be interesting to implement an intervention, such as a targeted solicitation informed by

the findings of this study, and then conduct the logistic regression analysis again with the same population.

I initially aimed to include an independent variable for receipt of a university-sponsored scholarship in the logistic regression model tested in this study. However, it was discovered that it would not be possible to isolate scholarship aid to the specific degree earned through the online modality and was subsequently removed from the study. Marr et al. (2005) found that receipt of a need-based scholarship raised the probability of alumni giving by 12%, regardless of the scholarship award amount. In some findings, scholarship recipients made substantially larger contributions than their peers (Lara and Johnson, 2014; Monks, 2003); in other findings, scholarship recipients made smaller contributions than their peers (Baade & Sundberg, 1996; Meer & Rosen, 2012). It would be ideal in a future study to analyze if receipt of scholarship predicts the likelihood of an alumnus who earned their degree through the online modality to be a donor.

The current study analyzed alumni giving as a one-time act. I coded participants as givers if they had made at least one philanthropic gift of any size to the university at any point in time. It is recommended that future studies incorporate measures for frequency of giving and/or amount of dollars given. Such research would add to the existing body of knowledge about philanthropic giving from online learners while providing advancement professionals with practical guidance toward cultivating relationships with alumni that attended through an online modality that could result in increased alumni giving.

In regards to the theory of planned behavior, Ajzen (1991) called for researchers to consider *habit* in understanding, predicting, and changing human social behavior in specific contexts:

> It must be realized, however, that although past behavior may well reflect the impact of factors that influence later behavior, it can usually not be considered a factor in its own right. Nor can we simply assume that past behavior is a valid measure of habit; it may, and usually does, reflect the influence of many other internal and external factors. Only when habit is defined independently of past behavior can it legitimately be assessed as an explanatory variable to the theory of planned behavior. (p. 203).

Other philanthropic giving researchers have also recommended that future studies examine the role of habit in charitable behavior (Rosen & Sims, 2010; van der Linden, 2011).

Another avenue to expand upon this study's findings would be to deepen its breadth through additional analysis in alignment with the customary methods and procedures of the theory of planned behavior. To accomplish this, a researcher would conduct a pilot study via free-response format to elicit salient behavioral, normative, and control beliefs from the population. Smith & McSweeney (2007) recommended highlighting charitable giving as a moral action and gauging participant's attitudes toward helping others. From the pilot study results, the prevailing beliefs would be selected and items developed to assess attitude, subjective norm, perceived behavioral control, actual behavioral control (when possible), and intention. A questionnaire with these items, typically using a 7-point bipolar adjective scale, would be administered to the participants. Future research may also benefit from an in-depth qualitative analysis with past donors regarding the motivations underlying their decision to give to the institution.

Finally, replication of this study at another institution of higher education is recommended. The setting of the present student was a midsized master's degree-granting public university in the Midwest. The Carnegie Classifications of Institutions of Higher Education

classifies the institution as Master's Colleges & Universities: Larger Programs, with size and setting defined as four-year, medium, highly residential (Carnegie Foundation for the Advancement of Teaching, n.d.). Analysis at a similar or different institution would allow for comparison of findings. It would also be ideal, if possible, to analyze a population where a larger percentage (compared to 6.2%) of the alumni who earned their degree through the online modality were previous donors.

Summary

With governmental financial support of public institutions steadily declining, understanding philanthropic giving is more important than ever (Martin et al., 2015; Pumerantz, 2005; Sav, 2016; Weerts & Ronca, 2008). For university administrators and advancement professionals to be proactive in cultivating relationships with alumni that attended through an online modality, a better understanding of what motivates philanthropic giving from graduates who earned their degrees through the online modality was necessary.

As a result of this study, I tested a logistic regression model to ascertain if independent variables associated with demographic information, student experience, and alumni experience predict the likelihood of an alumnus who earned their degree through the online modality to be a donor. The logistic regression model was statistically significant ($p < .001$). With the independent variables added to the model, accurate prediction increased by 0.5% from the baseline model (from 93.8% to 94.3%). The model explained 35.2% (Nagelkerke R^2) of the variance in giving and correctly classified 94.3% of cases. Sensitivity was 19.2% and specificity was 99.2%. Overall, the strongest predictor of alumni giving in the model was having also earned a degree through a residential experience at the institution. Alumni that had earned two or more degrees from the institution, at least one through a residential experience and at least one

through the online modality, were 4.960 times more likely to be donors. Other strong predictors were marital status of married (Exp(β) = 3.352) and divorced (Exp(β) = 3.877) when compared to single, having graduated from the Kinesiology academic program (Exp(β) = 3.768) when compared to the Aviation academic program, and alumni event attendance (Exp(β) = 2.840).

With enrollment in distance education programs is on the rise nationally (NCES, 2022) advancement offices that serve alumni populations would benefit from the results of this study by gaining a better understanding of the predictors of philanthropic giving from graduates who earned their degrees in an online environment. This study can help inform decision-making and strategy creation of higher education leaders in securing financial support from this emerging audience of prospective donors, while helping inform student engagement and alumni engagement strategies regarding the subset of students that attend university through distance education. Ultimately, the results add to the body of research regarding philanthropic giving from alumni that attended universities through the online modality.

References

Aguilera-Hermida, A.P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open, 1*. https://doi.org/10.1016/j.ijedro.2020.100011

Ahmetoglu, G., Akhtar, R., Tsivrikos, D., & Chamorro-Premuzic, T. (2018). The entrepreneurial organization: The effects of organizational culture on innovation output. *Consulting Psychology Journal: Practice and Research*, *70*(4), 318–338. https://doi.org/10.1037/cpb0000121

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-t

Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, *26*(9), 1113–1127. https://doi.org/10.1080/08870446.2011.613995

Ajzen, I. (2012). The theory of planned behavior. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology*, Vol. 1 (pp. 438–459). Sage Publications.

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, *2*(4), 314–324. https://doi.org/10.1002/hbe2.195

Ajzen, I., & Fishbein, M. (1980). *Understanding attitude and predicting social behavior*. Prentice-Hall.

Ajzen, I. & Sheikh, S. (2013). Action versus inaction: Anticipating affect in the theory of planned behavior. *Journal of Applied Social Psychology, 43*(1), 155–162. https://doi.org/10.1111/j.1559-1816.2012.00989.x

Allen, I. E., & Seaman, J. (2013, January). *Changing course: Ten years of tracking online*

education in the United States. Babson Survey Research Group.

Andrade, C. (2021). The inconvenient truth about convenience and purposive samples. *Indian Journal of Psychological Medicine, 43*(1), 86–88. https://doi.org/10.1177/0253717620977000

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471–499. https://doi.org/10.1348/014466601164939

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development, 40*(5), 518–529. https://eric.ed.gov/?id=EJ614278

Baade, R. A., & Sundberg, J. O. (1996). What determines alumni generosity? *Economics of Education Review, 15*(1), 75–81. https://doi.org/10.1016/0272-7757(95)00026-7

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295x.84.2.191

Bawa, P. (2016). Retention in online courses: Exploring issues and solutions—A literature review. *Sage Open, 6*(1), 1–11. https://doi.org/10.1177/2158244015621777

Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality, 25*(3), 285–301. https://doi.org/10.1016/0092-6566(91)90021-h

Beeler, K. J. (1982). *A study of predictors of alumni philanthropy in private universities* [Doctoral dissertation, University of Connecticut]. University of Connecticut Library.

Berger, D. J. (2016). *The relationship between academic program delivery method, alumni demographics, and graduate alumni engagement: A correlation study* (Publication No. 10108876) [Doctoral dissertation, Ball State University]. ProQuest Dissertations and Theses Global.

Black, E. W., Dawson, K., & Ferdig, R. E. (2006). Forgotten alumni: Online learners as donors. *Academic Exchange Quarterly*, *10*(1), 43–47. https://www.thefreelibrary.com/Forgotten+alumni%3A+online+learners+as+donors.-a0146219122

Borden, V. M. H., Shaker, G. G., & Kienker, B. L. (2014). The impact of alumni status on institutional giving by faculty and staff. *Research in Higher Education, 55*(2), 196–217. https://doi.org/10.1007/s11162-013-9318-3

Box, G. E., & Tidwell, P. W. (1962). Transformation of the independent variables. *Technometrics*, *4*(4), 531–550. https://doi.org/10.1080/00401706.1962.10490038

Bozionelos, G., & Bennett, P. (1999). The theory of planned behaviour as predictor of exercise: The moderating influence of beliefs and personality variables. *Journal of Health Psychology*, *4*(4), 517–529. https://doi.org/10.1177/135910539900400406

Bristol, R. B. (1990). The life cycle of alumni donations. *Review of Higher Education, 13*(4), 503–517. https://doi.org/10.1353/rhe.1990.0011

Bruggink, T. H., & Siddiqui, K. (1995). An econometric model of alumni giving: A case study for a liberal arts college. *American Economist, 39*, 53–60. https://doi.org/10.1177/056943459503900206

Bruni, F. (2018, April 17). How to get the most out of college. *The New York Times*. https://www.nytimes.com/2018/08/17/opinion/college-students.html

Burgoyne, C. B., Young, B., & Walker, C. M. (2005). Deciding to give to charity: A focus group study in the context of the household economy. *Journal of Community & Applied Social Psychology, 15*(5), 383–405. https://doi.org/10.1002/casp.832

Carnegie Foundation for the Advancement of Teaching. (n.d.). *The Carnegie classification of institutions of higher education*. Retrieved September 28, 2022, from https://carnegieclassifications.acenet.edu/

Centobelli, P., Cerchione, R., Esposito, E., & Shashi. (2019). Exploration and exploitation in the development of more entrepreneurial universities: A twisting learning path model of ambidexterity. *Technological Forecasting & Social Change, 141,* 172–194. https://doi.org/10.1016/j.techfore.2018.10.014

Cerezo, R., Esteban, M., Sánchez-Santillán, M., & Núñez, J. C. (2017). Procrastinating behavior in computer-based learning environments to predict performance: A case study in moodle. *Frontiers in Psychology, 8,* 1403. https://doi.org/10.3389/fpsyg.2017.01403

Chen, J., Glaeser. E. L., & Wessel, D. (2019). *The (non-) effect of opportunity zones on housing prices (*NBER Working Paper No. 26587). National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w26587/w26587.pdf

Chen, L., Luo, F., He, W., Zhao, H., & Pan, L. (2022). A study on the influencing factors of the public's willingness to donate funds for critical illness crowdfunding projects on network platforms. *PloS One, 17*(3), 1–24. https://doi.org/10.1371/journal.pone.0263706

Christopoulos, A., Conrad, M., & Shukla, M. (2018). Increasing student engagement through virtual interactions: How? *Virtual Reality, 22*(4), 353–369. https://doi.org/10.1007/s10055-017-0330-3

Clark, B. R. (1998). *Creating entrepreneurial universities: Organizational pathways of*

transformation. International Association of Universities Press.

Clark, B. R. (2000). Collegical entrepreneurialism in proactive universities: Lessons from Europe. *Change: Magazine of Higher Learning*, *32*(1), 10–19. https://doi.org/10.1080/00091380009602704

Clark, B. R. (2004). Delineating the character of the entrepreneurial university. *Higher Education Policy, 17*, 355–370. https://doi.org/10.1057/palgrave.hep.8300062

Cleverley-Thompson, S. (2016). The role of academic deans as entrepreneurial leaders in higher education institutions. *Innovative Higher Education*, *41*(1), 75–85. https://doi.org/10.1007/s10755-015-9339-2

Clotfelter, C. T. (2003). Alumni giving to elite private colleges and universities. *Economics of Education Review, 22*(2), 109–120. https://doi.org/10.1016/s0272-7757(02)00028-6

Coates, H. (2007). A model of online and general campus-based student engagement. *Assessment & Evaluation in Higher Education, 32*(2), 121–141. https://doi.org/10.1080/02602930600801878

Conner, M., Norman, P., & Bell, R. (2002). The theory of planned behavior and healthy eating. *Health Psychology*, *21*(2), 194–201. https://doi.org/10.1037/0278-6133.21.2.194

Conrad, R. M., & Donaldson, J. A. (2012). *Continuing to engage the online learner: More activities and resources for creative instruction.* John Wiley & Sons.

Council for Advancement and Support of Education. (2021). *CASE global reporting standards.*

Curry, J. J., Rodin, S., & Carlson, N. (2012). Fundraising in difficult economic times: Best practices. *Christian Higher Education, 11*(4), 241–252. https://doi.org/10.1080/15363759.2011.559872

Dill, E., Fischer, K., McMurtrie, B., & Supiano, B. (2020, March 6). As coronavirus spreads, the decision to move classes online is the first step. What comes next? *Chronicle of Higher Education.* https://www.chronicle.com/article/as-coronavirus-spreads-the-decision-to-move-classes-online-is-the-first-step-what-comes-next/

Drew-Branch, V. (2011). *Student engagement, alumni satisfaction, and alumni donations at a public four year institution: An analysis of how the undergraduate experience influences alumni donations* (Publication No. 3476544) [Doctoral dissertation, West Virginia University]. ProQuest Dissertations and Theses Global.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics.* Sage.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Addison-Wesley.

Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach.* Psychology Press.

Frey, B. S., & Meier, S. (2004). Social comparisons and pro-social behavior: Testing "conditional cooperation" in a field experiment. *American Economic Review, 94*(5), 1717–1722. https://doi.org/10.1257/0002828043052187

Gaier, S. (2005). Alumni satisfaction with their undergraduate academic experience and the impact on alumni giving and participation. *International Journal of Educational Advancement, 5*(4), 279–288. https://doi.org/10.1057/palgrave.ijea.2140220

Gibbons, F. X., Gerrard, M., Blanton, H., & Russell, D. W. (1998). Reasoned action and social reaction: willingness and intention as independent predictors of health risk. *Journal of Personality and Social Psychology, 74*(5), 1164–1180. https://doi.org/10.1037/0022-3514.74.5.1164

Groccia, J. E. (2018). What is student engagement? *New Directions for Teaching & Learning, 2018*(154), 11–20. https://doi.org/10.1002/tl.20287

Harrison, D. A. (1995). Volunteer motivation and attendance decisions: Competitive theory testing in multiple samples from a homeless shelter. *Journal of Applied Psychology, 80*(3), 371–385. https://doi.org/10.1037/0021-9010.80.3.371

Hosmer, D. W., Jr., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). Wiley.

Hu, P. J. H., & Hui, W. (2012). Examining the role of learning engagement in technology-mediated learning and its effects on learning effectiveness and satisfaction. *Decision Support Systems, 53*(4), 782–792. https://doi.org/10.1016/j.dss.2012.05.014

Iskhakova, L., Hoffmann, S., & Hilbert, A. (2017). Alumni loyalty: Systematic literature review. *Journal of Nonprofit & Public Sector Marketing*, *29*(3), 274–316. https://doi.org/10.1080/10495142.2017.1326352

Jones, C. (2010). Archival data: Advantages and disadvantages for research in psychology. *Social & Personality Psychology Compass*, *4*(11), 1008–1017. https://doi.org/10.1111/j.1751-9004.2010.00317.x

Knowles, S. R., Hyde, M. K., & White, K. M. (2012). Predictors of young people's charitable intentions to donate money: An extended theory of planned behavior perspective. *Journal of Applied Social Psychology, 42*(9), 2096–2110. https://doi.org/10.1111/j.1559-1816.2012.00932.x

Langley, J. M. (2020). *The future of fundraising: Adapting to changing philanthropic realities*. Academic Impressions.

Lara, C., & Johnson, D. (2014). The anatomy of a likely donor: Econometric evidence on philanthropy to higher education. *Education Economics, 22*(3), 293–304. https://doi.org/10.1080/09645292.2013.766672

Lawrence, J., Brown, A., Redmond, P., & Basson, M. (2019). Engaging the disengaged: Exploring the use of course specific learning analytics and nudging to enhance online student engagement. *Student Success, 10*(2), 47–58. https://doi.org/10.5204/ssj.v10i2.1295

Laerd Statistics (2017). Binomial logistic regression using SPSS Statistics. *Statistical tutorials and software guides.* https://statistics.laerd.com/

Lesht, F., Schejbal, D., & Shiels, R. (2018). Do alumni of online programs give more than alumni of on-campus programs? *Online Journal of Distance Learning Administration, 21*(4), 1–9. https://ojdla.com/archive/winter214/lesht_schejbal_shiels_mailloux_214.pdf

Liu, Y. (2006). Determinants of private giving to public colleges and universities. *International Journal of Educational Advancement, 6*(2), 119–140. https://doi.org/10.1057/palgrave.ijea.2150014

Madrigal, L., & Blevins, A. (2021). 'I hate it, it's ruining my life': College students' early academic year experiences during the COVID-19 pandemic. *Traumatology.* https://doi.org/10.1037/trm0000336

Manstead, A. S. R. (2016). The role of moral norm in the attitude behavior relation. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 11–30). Routledge.

March, K. S. (2005). *A descriptive study of faculty and staff giving practices at public institutions of higher education within the United States* (Publication No. 3173632) [Doctoral dissertation, State University of New York at Buffalo]. ProQuest Dissertations and Theses Global.

Marr, K. A., Mullin, C. H., & Siegfried, J. J. (2005). Undergraduate financial aid and subsequent alumni giving behavior. *Quarterly Review of Economics and Finance*, *45*(1), 123–143. https://doi.org/10.3386/w17861

Martin, M. C., Moriuchi, E., Smith, R. M., Moeder, J. D., & Nichols, C. (2015). The importance of university traditions and rituals in building alumni brand communities and loyalty. *Academy of Marketing Studies Journal*, *19*(3), 107–118. https://scholars.fhsu.edu/cgi/viewcontent.cgi?article=1001&context=appliedbusiness_facpubs

Martin, R., & Randal, J. (2008). How is donation behaviour affected by the donations of others? *Journal of Economic Behavior & Organization*, *67*(1), 228–238. https://doi.org/10.1016/j.jebo.2007.08.001

Massey, K. (2017). *Alumni giving in the age of online education: A literature review.* Unpublished manuscript, Division of Continuing Education, Outreach and E-learning, University of Wisconsin Extension, Madison, Wisconsin.

McAlexander, J. H., Koenig, H. F., & DuFault, B. (2014). Advancement in higher education: The role of marketing in building philanthropic giving. *Journal of Marketing for Higher Education*, *24*(2), 243–256. https://doi.org/10.1080/08841241.2014.969797

McMurtrie, B. (2020a, March 20). The coronavirus has pushed courses online: Professors are trying hard to keep up. *Chronicle of Higher Education.*

https://www.chronicle.com/article/the-coronavirus-has-pushed-courses-online-professors-are-trying-hard-to-keep-up

McMurtie, B. (2020b, October 7). The new rules of engagement. *Chronicle of Higher Education.* https://www.chronicle.com/article/the-new-rules-of-engagement

Meer, J., & Rosen, H. S. (2012). Does generosity beget generosity? Alumni giving and undergraduate financial aid. *Economics of Education Review*, *31*(6), 890–907. https://doi.org/10.3386/w17861

Menard, S. W. (2010). *Logistic regression: From introductory to advanced concepts and applications.* Sage.

Mittelman, R., & Rojas-Méndez, J. (2018). Why Canadians give to charity: An extended theory of planned behaviour model. *International Review on Public and Nonprofit Marketing, 15*, 189–204. https://doi.org/10.1007/s12208-018-0197-3

Monks, J. (2003). Patterns of giving to one's alma mater among young graduates from selective institutions. *Economics of Education Review*, *22*,121–130. https://doi.org/10.1016/s0272-7757(02)00036-5

Moore, M. M. (2014). *What makes them want to give?: Factors that influence the propensity for alumni giving among students in online master's programs* (Publication No. 3635755) [Doctoral dissertation, University of Pennsylvania]. ProQuest Dissertations and Theses Global.

Morrison, A. (2013). Making their presence felt: Online graduates are poised to have major impact – despite the absence of a strong campus connection. *Currents, 39*(3), 34–37. https://eric.ed.gov/?id=EJ1016827

National Bureau of Economic Research. (n.d.). *ZIP code distance database.*

https://www.nber.org/research/data/zip-code-distance-database

National Center for Education Statistics. (2022). *Digest of education statistics, 2021* (NCES 311.15). U.S. Department of Education.

Prokes, C., & Housel, J. (2021). Community college student perceptions of remote learning shifts due to COVID-19. *Tech trends: Linking research & practice to improve learning, 65*(4), 576–588. https://doi.org/10.1007/s11528-021-00587-8

Pumerantz, R. R. (2005). Alumni-in-training: A public roadmap for success. *International Journal of Educational Advancement, 5*(4), 289–300. https://doi.org/10.1057/palgrave.ijea.2140221

Ranganathan, P., Pramesh, C. S., & Aggarwal, R. (2017). Common pitfalls in statistical analysis: logistic regression. *Perspectives in Clinical Research, 8*(3), 148–151. https://doi.org/10.4103/picr.PICR_87_17

Rau, N. E., & Erwin, T. D. (2015). Using student engagement to predict alumni donors: An analytical model. *Journal of Nonprofit Education and Leadership, 5*(2).

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80*(1), 1–28. https://doi.org/10.1037/h0092976

Royston, P., & Altman, D. G. (2010). Visualizing and assessing discrimination in the logistic regression model. *Statistics in Medicine, 29*, 2508–2520. https://doi.org/10.1002/sim.3994

Sav, G. T. (2010). Private giving crowding government funding in public higher education. *American Journal of Economics and Business Administration, 2*(3), 293–299. https://doi.org/10.3844/ajebasp.2010.293.299

Sav, G. (2016). Declining state funding and efficiency effects on public higher education: Government really does matter. *International Advances in Economic Research, 22*(4), 397–408. https://doi.org/10.1007/s11294-016-9602-z

Selingo, J.J. (2020, July 16). Plexiglass won't save us. *Chronicle of Higher Education.* https://www.chronicle.com/article/plexiglass-wont-save-us

Skari, L. A. (2014). Community college alumni: Predicting who gives. *Community College Review, 42*(1), 23–40. https://doi.org/10.1177/0091552113510172

Smith, J. C., & Kaplan, A. E. (2021, April). *Alumni Engagement Metrics*. Council for Advancement and Support of Education. https://www.case.org/resources/case-alumni-engagement-metrics-key-findings-2020-digital

Smith, J. R., & McSweeney, A. (2007). Charitable giving: the effectiveness of a revised theory of planned behaviour model in predicting donating intentions and behaviour. *Journal of Community & Applied Social Psychology, 17*(5), 363–386. https://doi.org/10.1002/casp.906

Sparks, P. (2016). Subjective expected utility-based attitude-behavior models: The utility of self-identity. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 31–46). Routledge.

Stone, C. (2017). Opportunity through online learning: Improving student access, participation and success in higher education. Retrieved December 7, 2021, from https://apo.org.au/sites/default/files/resource-files/2017-03/apo-nid94591.pdf

Sutton, S. (1994). The past predicts the future: Interpreting behaviour–behaviour relationships in social psychological models of health behaviour. In D. R. Rutter & L. Quine (Eds.), *Social psychology and health: European perspectives* (pp. 71–88). Avebury/Ashgate Publishing Co.

Sutton, S., French, D. P., Hennings, S. J., Mitchell, J. O., Wareham, N. J., Griffin, S., Hardeman, W., & Kinmonth, A. L. (2003). Eliciting salient beliefs in research on the theory of planned behaviour: The effect of question wording. *Current Psychology, 22*(3), 234–251. https://doi.org/10.1007/s12144-003-1019-1

Tabachnick, B. G. & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson Education.

Taylor, A. L., & Martin, J. C. (1995). Characteristics of alumni donors and nondonors at a research I, public university. *Research in Higher Education*, *36*(3), 283–302. https://doi.org/10.1007/bf02208312

Terry, D. J., Hogg, M. A., & White, K. M. (2016). Attitude-behavior relations: Social identity and group membership. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 67–93). Routledge.

Thelin, J. R. (2011). *A history of American higher education.* John Hopkins University Press.

Tiger, A., & Preston, L. (2013). Logged in and connected? A quantitative analysis of online course use and alumni giving. *American Journal of Business Education*, *6*(3), 361–370. https://doi.org/10.19030/ajbe.v6i3.7816

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. University of Chicago Press.

Tom, G., & Elmer, L. (1994). Alumni willingness to give and contribution behavior. *Journal of Services Marketing, 8*(2), 57–62. https://doi.org/10.1108/08876049410058442

Touré-Tillery, M. & Fishbach, A. (2017). Too far to help: The effect of perceived distance on the expected impact and likelihood of charitable action. *Journal of Personality and Social Psychology, 112*(6), 860–876. https://doi.org/10.1177/107769580405900407

Tsao, J. C., & Coll, G. (2005). To give or not to give: Factors determining alumni intent to make donations as a PR outcome. *Journalism & Mass Communication Educator*, *59*(4), 381–392. https://doi.org/10.1177/107769580405900407

Van der Linden, S. (2011). Charitable intent: A moral or social construct? A revised theory of planned behavior model. *Current Psychology, 30*(4), 355–374. https://doi.org/10.1007/s12144-011-9122-1

Vervoort, A., & Gasman, M. (2016). An exploration of giving among gay male college alumni. *Journal of Education and Training Studies, 4*(5), 123–138. https://doi.org/10.11114/jets.v4i5.1298

Walcott, M. E. (2015). *Predictive modeling and alumni fundraising in higher education* (Publication No. 3704831) [Doctoral dissertation, Illinois State University]. ProQuest Dissertations and Theses Global.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*(2), 249–268. https://doi.org/10.1037/0033-2909.132.2.249

Weerts, D. J., & Ronca, J. M. (2007). Profiles of supportive alumni: Donors, volunteers, and those who “do it all.” *International Journal of Educational Advancement, 7*(1), 20–34. https://doi.org/10.1057/palgrave.ijea.2150044

Weerts, D. J., & Ronca, J. M. (2008). Characteristics of alumni donors who volunteer at their alma mater. *Research in Higher Education, 49*(3), 274–292. https://doi.org/10.1007/s11162-007-9077-0

Weerts, D. J., & Ronca, J. M. (2009). Using classification trees to predict alumni giving for higher education. *Education Economics, 17*(1), 95–122. https://doi.org/10.1080/09645290801976985

Wunnava, P. V., & Lauze, M. A. (2001). Alumni giving at a small liberal arts college: Evidence from consistent and occasional donors. *Economics of Education Review, 20*(6), 533–543. https://doi.org/10.1016/s0272-7757(00)00023-6

You, J. W. (2016). Identifying significant indicators using LMS data to predict course achievement in online learning. *The Internet and Higher Education, 29,* 23–30. https://doi.org/10.1016/j.iheduc.2015.11.003

Young, P. S., & Fischer, N. M. (1996, May 5–8). Identifying undergraduate and post-college characteristics that may affect alumni giving. In paper presented at the *36th Annual Forum of the Association of Institutional Research*, ERIC Document Reproduction Services (No. ED397748) (pp. 2–24).

Young, N. D., Michael, C. N., & Smolinksi, J. A. (2019). *Captivating campuses: Proven practices that promote college student persistence, engagement and success*. Vernon Press.

Zimmerman, J. (2020, March 10). Coronavirus and the great online-learning experiment. *Chronicle of Higher Education.* https://www.chronicle.com/article/coronavirus-and-the-great-online-learning-experiment/

Appendix A: SPSS Statistics Variable View Table

Name	Type	Label	Values	Measure
Giving	Numeric	Whether the graduate has made a philanthropic gift since graduation or not	0 = no 1 = yes	Nominal
Age	Numeric	Age of participant	22–77	Scale
Marital Status	Numeric	Whether the graduate is listed as single, married, divorced, or unknown	1 = Single 2 = Married 3 = Divorced 4 = Unknown	Nominal
Employment	Numeric	Whether the graduate is listed as employed	0 = no 1 = yes	Nominal
Primary Employment	Numeric	Status of employment at the institution	1 = formerly employed 2 = currently employed 3 = never employed	Nominal
Degree Level	Numeric	What level of degree was the graduates first online degree	1 = Baccalaureate 2 = Master's Degree 3 = Education Specialist	Nominal
Program	Numeric	Which academic program did the graduate earn their online degree from	1 = Aviation 2 = Business 3 = Career & Technology Education 4 = Family Development 5 = Communication 6 = Criminal Justice 7 = Crisis & Disaster Management 8 = Curriculum & Instruction 9 = Early Childhood/ Elementary Education 10 = Educational Technology 11 = Industrial	Nominal

			Management 12 = Kinesiology 13 = Library Science & Information Services 14 = Nursing 15 = Occupational Education 16 = Occupational Safety 17 = Physical Education/ Exercise & Sports Science 18 = Psychology 19 = RN BSN Nursing 20 = Rural Family Nursing 21 = Safety Management 22 = Special Education 23 = Sports Management 24 = Teaching 25 = Technology	
Residential	Numeric	Whether the graduate has also had a residential experience at this institution	0 = no 1 = yes	Nominal
Student Activities	Numeric	How many extracurricular activities was the graduate involved in while enrolled as an online student	0-4	Scale
Event Attendance	Numeric	Whether the graduate is listed as attending an alumni event or not	0 = no 1 = yes	Nominal
Volunteer	Numeric	Whether the graduate is listed as having volunteered for the university or not	0 = no 1 = yes	Nominal
Distance	Numeric	Distance in miles from residence to institution (measured by ZIP code)	1 = 0 miles 2 = 0.1–40 miles 3 = 40.1–60 miles 4 = 60.1–175 miles 5 = 175.1 miles+ 6 = Unknown	Nominal

Appendix B: Confidentiality Agreement

CONFIDENTIALITY AGREEMENT

I understand that REDACTED UNIVERISTY NAME is the central repository for all alumni and donor information, prospect management, and relationship tracking.

I understand that all information contained in the enterprise relationship management database and hard copy files ("Records") by the advancement office is confidential and should only be utilized for University work to engage alumni, raise money from constituents, or advance the University.

I understand all fundraising and engagement activities undertaken by University staff, faculty or students, or by volunteers, are undertaken on behalf of the REDACTED UNIVERISTY NAME. All Records associated with such fundraising and/or engagement activities in possession of University staff, faculty, or student, or any volunteer are records of the advancement office and are confidential.

I understand that information should never be shared with anyone other than University staff, faculty, or student, or any volunteer and only shared with those persons that need to know and are engaged in a project or initiative that advances the mission of the REDACTED UNIVERISTY NAME.

I agree that any information that I receive or have access to, as well as discussions about constituents and/or prospects, will be kept confidential.

I agree to act with discretion in using the sensitive information contained in Records and any other confidential information provided to me.

I will not contact constituents that have an assigned prospect manager without first consulting the prospect manager for approval.

I will not create a shadow database from the information contained in Records. If information needs to be updated or corrected, I will follow policies and procedures approved by the Director of Foundation Database and Research.

I will not use information contained in Records for personal reasons.

I understand that the misuse of information maintained by the REDACTED UNIVERISTY NAME could result in disciplinary or legal action.

_____ _____

Signature Date

_____

Printed Name

_____

Title

Appendix C: Institutional Review Board Approval

Date: May 2, 2023

PI: Jaqlyne Jackson

Department: ONL-Online Student, 17250-EdD Online

Re: Initial - IRB-2023-91

Alumni giving from online learners: A logistic regression study

The Abilene Christian University Institutional Review Board has rendered the decision below for *Alumni giving from online learners: A logistic regression study*.

Decision: No Human Subjects Research

Research Notes:

Additional Approvals/Instructions:

Any modifications to the approved study must be submitted for review through Cayuse IRB. All approval letters and study documents are located within the Study Details in Cayuse IRB.

Sincerely,

Abilene Christian University Institutional Review Board