

PREDICTIVE INDICATORS IN COLLEGE ATHLETIC FUNDRAISING

By

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PREDICTIVE INDICATORS IN COLLEGE ATHLETIC FUNDRAISING

Abstract

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With increased fundraising efforts in intercollegiate athletic departments, understanding the logistics of a donor base can be beneficial in campaigns with the goal of improving financial contributions. The purpose of this study is to increase the understanding of alumni fundraising by focusing on predictive indicators for major gift donors at Washington State University. This paper will address the following question: How can predictive modeling help target potential donors and their likelihood of making a financial contribution to the Athletic Department? In this study fourteen variables were used, and of those, six were found to be significant in predicting the likelihood of a financial contribution. Significant variables included: Alumni of Washington State, Years of Donating to Washington State Athletics, Total Contribution to Washington State Athletics, Job Title of Owner or Founder, Gender, Donor Interaction by Letter or Telephone, and Donor Interaction by Email or Personal. As Washington State University navigates through structuring new fundraising campaigns the results from this study can help with strategic planning for potential donors.

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Dedication

I dedicate my thesis work to my family and friends who have supported me throughout the process. I will always appreciate all they have done, especially the hours of proofreading.

CHAPTER ONE: INTRODUCTION

In 2014 it was estimated that 60% of households gave to a philanthropic organization with an average annual gift of \$2,500 (Philanthropy Roundtable). This estimate compared to a survey in 1995, shows that the percentage of household giving has decreased from 68.5% in 1995 (Mulligan, 1997) to 60% in 2014. This comparison also shows that the average annual gift from a household has increased from \$1,081 in 1995 (Mulligan, 1997) to \$2,500 in 2014. Along with households, foundation grants and corporations also contribute to philanthropic giving. Foundation grants contribute 14%, corporations 5%, and the remaining 81% come from households (Philanthropy Roundtable). In this paper we will look closely at the giving that comes from households as well as if any specific factors can help inform an organization on why people give and what giving amount can be expected from them. With a rise in philanthropic giving, it's necessary for higher education institutions to study how this trend can impact their fundraising efforts. More specifically, this paper will focus on how this increase in philanthropic giving can ultimately impact the Washington State Athletic Department and how Washington State University can effectively target potential donors.

Fundraising plays a significant role in the continued development of higher education institutions. With increasing operating costs and the desire to improve without making sacrifices in quality it is necessary for institutions to receive financial investments. Higher Education institutions aspire for a philanthropic environment where contributions are made by organizations and individuals. While higher education institutions are still receiving state and government funding, this funding is limited and the need for more effective methods of targeting donors and predicting donation amounts is apparent. In the previous economic literature, factors such as gender, wealth, and various other demographic variables have contributed to deciding

alumni giving. There are also competing theories on how certain factors such as marital status, age, and gender correlate with predicting giving to an institution. Knowing that there are distinguishing characteristics between higher education institutions, specifically their alumni base, it would cause for insignificant results if models created for particular institutions were used on another institution. For this reason, there is a need for research on an individual institutional level. The focus of this research is to determine predictive modeling in fundraising to better help analyze the factors impacting contributions to specific institutions in higher education.

Predictive modeling is the process by which a model is created or chosen to try to best predict the probability of an outcome (Geisser, 1993). The purpose of this paper is to use predictive modeling to answer the question, what factors are most likely to predict the likelihood of an individual making a financial contribution over \$100,000 to the Washington State University Athletic Department?

The remainder of this paper is organized as follows. Section Two will focus on the theoretical framework. Section three will detail the data and empirical methodology. Section Four will outline the core findings of the analysis, and the implications from the analysis. Section Five will describe the conclusions, and future opportunities of the study.

CHAPTER TWO: THEORETICAL FRAMEWORK

Overview:

Previous literature has identified many theories related to philanthropic giving. In this section we will detail multiple theories and how an inter-theoretical framework can help identify a testable model given the available data.

Introduction:

In previous economic literature, the primary motive for philanthropic giving has been altruism. Altruism is defined as the willingness to give away resources to benefit others without expectation of a return (Fehr and Schmidt, 2006). However, this cannot be applied to a Higher Education setting. In a higher education setting, it is assumed that the experience one has while attending a university relates to the donations made to one's alma mater. Now that more research has been done to understand philanthropic giving, we can recognize that there are additional motives that impact philanthropic giving. Research by (Olson, 1971) suggests that individuals are motivated by social and psychological objectives. Others suggest that individuals are motivated by a desire to receive social praise or to avoid contempt from others (Becker, 1974). (Rose-Ackerman, 1006) suggests that to fully understand altruism further research within organizational behavior needs to be done. In development there is an understanding that there is an art and science to philanthropic giving. Instead of focusing on a single field we need to view philanthropy as an art. To understand philanthropy fully we need to use an inter-theoretical framework that is diversified into several disciplines. The goal of this paper is to evaluate the fundraising efforts of Washington State University, their alumni/non-alumni relations, and dive into what motivates donors to give to WSU. We will focus on both alumni and non-alumni who give to the university. This differs from previous literature which focuses mainly on alumni. The

inclusion of non-alumni giving is important to include because in athletics as we will note below donors can receive direct benefits such as priority seating to sporting events or naming rights to buildings in exchange for their contributions. These benefits give incentive for non-alumni to give to a university that they previously had no affiliation with. The theoretical perspectives that will be used to help with this goal are Charitable Giving, Organizational Identification, Social Identification, Economics, Services-Philanthropic, and Relationship-Marketing. Table 1 (Mann, 2007) details how each perspective theory has a potential implication on fund-raising. We will now go into detail of each perspective theory and how each can help understand philanthropic giving.

Charitable Giving:

The theory of charitable giving focuses on three different possibilities to illustrate how it would be in the best self-interest of an individual to use money towards philanthropic giving. The first is that individuals would like to consume more of the service provided (Andreoni, 1989) or in our case to improve the organization that they give to. By donating to WSU Athletics, you can support student-athlete scholarships, sport specific giving and capital projects. For the individuals wanting to improve the organization by supporting student-athlete scholarships, their donations aid in paying for the scholarships given out by the athletic department. The individuals can also give to capital projects. An example of a capital project would be giving towards the renovation to Martin Stadium. In this example, anyone can attend a WSU football game at the new and improved stadium even without donating to the project or WSU athletics. In this example, a self-interested person is better off giving nothing and taking a free-ride on the donation of others. This possibility cannot be an adequate explanation for why people give to philanthropic organizations. (Andreoni, 1988).

A second possibility is that individuals could be receiving something directly from an organization in exchange for their contributions. In our example with Washington State Athletics large donors (\$10,000+) may receive better seats to the football and basketball games or, they may have buildings or rooms named for them in return for their generous donation. While this could be a reason for large donors to give to the Athletic Department, most of the small donors only receive tokens such as a benefit package in exchange for their donations. In the case for Washington State Athletics the benefit package donors receive includes a lapel pin and a poster of a customized jersey football jersey with the donors last name. While this could be a possible explanation for why some people give to Washington State Athletics it is not an adequate explanation.

The third reason is that individuals could get an internal satisfaction or a “warm glow” from giving to a philanthropic organization, and with more money donated, more satisfaction they receive (Andreoni, 1989). Through this we would assume that donating money to philanthropic organizations would have a similar impact as buying another good such as pizza. Understanding the theory of consumer goods, we accept that individuals will consume goods that they prefer. We can also assume that some individuals have a preference for consuming pizza, so would it be acceptable to assume some individuals have a preference for this internal satisfaction or warm glow? With this assumption we would be able look at philanthropic giving as we would for pizza, seeing when income increases so should philanthropic giving.

From these three possibilities, and the understanding of preferences the warm glow is a core economic motivation for giving (Andreoni, 1993). This however is not the only reason for giving, some individuals may give from a pressure by friends, family or as a sign of social

status (Rose-Ackerman, 1996). This theory provides value to this analysis because it gives perspective as to why alumni give.

Organizational identification:

Organizational Identification is defined as “the perception of oneness with or belongingness to an organization, where the individual defines themselves in terms of the organization in which he or she is a member” (Mael and Ashforth, 1992). An individual will celebrate when the organization has success and show concerns when weakness is exposed. In our situation with Washington State Athletics we know donors celebrate when there are Athletic successes. For example, the Alamo Bowl victory in the winter of 2018. Additionally, donors also were concerned during the summer of 2018 when the Athletic Department was under scrutiny stemming from the results of an audit. According to (Bhattacharya et al. 1995) an individual’s identification with an organization can be correlated into a model with a number of factors. The factors they identify are “organizational and product factors, member’s affiliation characteristics and member’s activity characteristics” (Bhattacharya et al. 1995). In their study, donors who were involved in student activities such as sports teams or sports organizations develop a strong bond to the university and have a greater propensity to donate.

According to (Young, 1981) there are five key reason why individuals donate to their alma mater. The five reasons are 1. Self-generated convictions as to the institution’s merits 2. Objectives and plans of the institution 3. Efficiency of the institution 4. Competence of the institution’s leadership and 5. Tax advantages.

Social identification:

The theory of social identification follows the idea that an individual's notion on themselves is based on two components, an individual's personal identity and an individual's social identity (Tajfel and Turner, 1985). An individual's personal identity includes one's personal characteristics such as their economic means and interests. The second component, social identity, includes salient group classification (Mann, 2007). Individuals have a tendency to identify with a variety of social groups which includes organizational membership and psychographic preferences. The concept of social identity details how individuals perceive themselves as members of a certain social groups or category (Mann, 2007). In our setting of Washington State University, examples of identification into particular groups could be former student-athletes or members of the Greek community.

Economics:

Philanthropic giving can be classified into eight different categories; awareness of need, solicitation, values, efficacy, reputation, altruism, psychological benefits, and costs and benefits. The economic literature emphasizes different categories such as altruism, psychological effects, and costs and benefits (Monnet, 2017).

We assume in economics that agents try and maximize their utility subject to a budget constraint (Andreoni and Payne, 2013). The budget constraint focuses on the price and income effects of making voluntary charitable donations. When originally modeling charitable giving from pure altruism, the assumption was made in an environment in which there was no internal or external reward for philanthropic activities (Bergstrom et al., 1986). As mentioned in the theory of charitable giving, if philanthropy is a public good then self-interested individuals will have an incentive to "free-ride" (Andreoni, 1988), Andreoni also notes that in a growing economy pure altruistic giving converges to zero. Alternative models assume impure altruism by

individuals where direct utility (private goods) are obtained from philanthropic activities. In models of pure altruism, a motive that drives giving is the impact that the gift has on others. This explanation is known as the warm-glow effect, which noted in charitable giving theory is an emotional feeling from helping others, and the feeling they receive from their actions is part of the individual's utility function. In these models, individuals decide on their philanthropic activities by comparing the monetary costs of giving with their psychological benefits (Monnet, 2017). Tax exemptions for giving reduce the monetary costs associated with giving and holding all else constant, increase philanthropic giving. This helps with our understanding that the more apparent the need for a donation, the more motivated the individual is to make a gift. Altruistically motivated individuals have the motivational need to give to others and have the low motivational need to receive from others (Freeman, 2004).

In higher education and specifically university athletic departments there are certain forces that act in this market to achieve a mutually beneficial satisfaction between donors and the university. This force is structured in a way that when donors supply donations to the university, in turn recognition or benefits are to be provided to those who made the gifts. This framework of market forces is evident in the theory of charitable giving and gives insight on possible motives alumni and non-alumni have to donate to higher education and specifically university athletic departments.

Services-philanthropic:

An individual's behavioral decisions are influenced by three primary constructs 1. Service value, 2. Service quality and 3. Satisfaction (Mann, 2007). Service value is focused around the trade-offs that consumers make between what they receive and what is given up when

acquiring the benefits (Monroe, 1990). Service quality is described as the perception of the quality of service by the organization. This could be from the interaction that an individual has when donating to the university or speaking with a representative of the university. Satisfaction refers to the overall quality of the donor's experience with the organization (Mann, 2007). This theory is important when trying to understand giving however the influences between service-related and philanthropic differ. We were unable to gather data related to service value, quality, and satisfaction, and considering we were not able to gather data in regards to this we will not focus on the services-philanthropic theory in our analysis but still want to highlight its influences on philanthropic giving to better understand the results.

Relationship-marketing:

The main focus of relationship-marketing theory is that customers vary in their relationships with an organization on a spectrum from transactional to highly relational bonds (Gabrarino and Johnson, 1999). On the transactional side of the spectrum we will see the individuals who only donate to the university for the benefits such as priority seating at sporting events. When individuals decide to no longer attend sporting events or purchase tickets, we see their contributions to the university stop. On the other end of the spectrum we see individuals giving to the university for the positive relationships with the university. One way the Athletic Department places an emphasis on positive relationships is through involvement in strategic planning. Involving donors in the strategic planning process creates a level of trust between the individual and the university. The key indicator of relationship-marketing is communication, the greater the communication between the University and the individual the greater likelihood of overall satisfaction of the parties involved (Cannon and Homburg, 2001).

This theory provides insight on the importance of donor cultivation and positive relationships building with donors. We will use data on different types of communication (email, phone, letter and in-person) between donors and university representatives. The different types of communication is an example of activities from higher education in relationship-marketing theory.

CHAPTER THREE: METHODOLOGY

DATA:

The data in this study was gathered from the Washington State University Foundation and Cougar Athletic Fund. There are 92 observations in our data set, each observation represents a financial commitment over \$50,000 to Washington State University Athletics in the previous even years. The variable of interest Major Gift Pledge represents all of the observations whose financial commitments were over \$100,000. The selected variables to explain Major Gift Pledge in this data were chosen from prior research along with new variables found as indicators for higher education fundraising. (Sun et al. 2007) found that income, gender, fraternity/sorority membership, employment status, alumni activity, family ties to the alma mater and contacts with faculty members to be significant factors in predicting likelihood of a financial contribution. Sun found that being employed nearly doubled the likelihood of an individual supporting their alma mater (Sun et al. 2007). (Lara and Johnson, 2008) found income, active alumni, and marital status to be significant factors in predicting likelihood of a financial contribution. Demographic, college experience, and alumni experience were some of the variables in prior research noted above found to be strong predictors of giving to higher education institutions. Demographic variables used in the study were male, children, rating, spouse alum, assets, C-level, President/Vice, and Owner/Founder. The variables representing college experience are alum, Greek affiliation, and former athlete. To represent alumni experience the following variables were used WSUYR, ATHYEAR, FB, email, letter, telephone, personal, WSU and ATH.

To clarify the data, here is further information regarding all of the variables used in the study. Our variable of interest Pledge is a binary variable where 1 indicates a pledge >\$100,000 and 0 indicates a pledge <\$100,000. The variable, Alum, includes being an alumnus of

Washington State University. This variable is binary where 0 indicates non-alumni and 1 alumnus. The variable, Former Athlete, includes any participation in an athletic endeavor, such as participating as a student-athlete, team manager or team trainer. This variable is also a binary variable where 0 indicates a donor who did not participate in an athletic endeavor and 1 indicates a donor who is considered a former athlete. The Greek Affiliation variables include being former members of a fraternity or sorority while attending Washington State University. This variable like the previous two is also binary, 0 indicates a donor who was not a former member of a fraternity or sorority, and 1 indicates a donor who was a member of a fraternity or sorority. In this study we account for number of children of the donor. This is an interval variable ranging from 0 – 4. To represent previous donor involvement with the institution ATH, WSU, WSUYR, and ATHYR are included in the model. WSU and ATH represent previous giving to the university and athletic department respectively by the donor before signing a pledge agreement. WSU is a continuous variable which ranges from 10,000 – 4,441,516 dollars. ATH is also a continuous variable which ranges from 10,000 – 2,203,145 dollars. Since these two variables are much larger than any other variable used in the model, two new variables were generated by dividing each variable by 10,000. The reasoning for this was to generate more understandable results. WSUYR and ATHYR represent years of giving to the university and athletic department respectively by the donor before signing a pledge agreement. WSUYR is an interval variable ranging from 1 – 57 years. ATHYR is an interval variable as well ranging from 1 – 54 years. These previous two variables are interval variables because each increment is one year. The Spouse Alum variable refers to if the spouse of the donor is an alum of WSU. This is a binary variable where 0 indicates a donor whose spouse is not an Alumni of Washington State University and 1 indicates a donor whose spouse is an alumnus of WSU. The next variable,

Male, represents the gender of the donor, this is a dummy variable for male gender. Three dummy variables were used to account for job title in this model. The C-level variable refers to the donor with a job title of CEO, CFO, COO, etc. The President/Vice variable refers to the donor with a job title of President or Vice-President of a company or organization. The variable Owner/Founder represents if the job title of the donor is an owner or founder of a company or organization. Rating is used to refer to our income variable. This variable is an interval variable ranging from 1 – 10. For the list of interval values see table in the appendix. Each increment represents a range of values, starting from 10,000 – 24,999 and ending at 25,000,000+. The variables Email, Letter, Personal, and Telephone refer to the amount of times an individual has been contacted by a representative of the university before committing to a major gift. These four variables are nominal variables which range from 0 – 182. The variable, Note, refers to the number of written notes completed by university representatives regarding a specific donor. The note's variable is a nominal variable which ranges from 0 – 39. Assets is a variable of the total amount of assets a donor has. To obtain this information university representatives must do research on donors and report this information into the donors account. The assets noted in a donors account includes capital and property owned. Donors can also self-report this information to university representative to obtain the data. This variable ranges from 0 – 23,181,730. Where 0 represents a donor, who does not have this information in their account and does not represent a donor who has 0 worth of assets. For a full list of the variables used in this study see {Table 2.1}.

Model:

The goal of this paper is to analyze the development unit for the Washington State Athletic Department. To achieve this goal, we first need to try to understand donor behavior by

using predictive modeling based on the available institutional data; specific to giving to identify factors associated with individuals more likely to be major gifts donors. The model was developed using previous variables found to be significant, where the goal is to identify significant variables to predict or identify donors and if the donors are likely be potential major gift (\$100,000+) donors. By applying statistical analysis to the data, we can discover new information that can help in strategic planning for the institution and athletic department. From previous research done and the theoretical framework noted the following empirical regression model was estimated:

$$\text{MajorGiftPledge} = \alpha_0 + \beta_1 \text{Alum}_i + \beta_2 \text{WSUYR}_i + \beta_3 \text{ATHYEAR}_i + \beta_4 \text{Note}_i + \beta_5 \text{Rating}_i + \beta_6 \text{Children}_i + \beta_7 \text{Former Athlete}_i + \beta_8 \text{Greek Affiliation}_i + \beta_9 \text{Southeast Alum}_i + \beta_{10} \text{C-Level}_i + \beta_{11} \text{President/Vice}_i + \beta_{12} \text{Owner/Founder}_i + \beta_{13} \text{Male}_i + \beta_{14} \text{FB}_i + \beta_{15} \text{Email}_i + \beta_{16} \text{Letter}_i + \beta_{17} \text{Personal}_i + \beta_{18} \text{Telephone}_i + \beta_{19} \text{Direct Benefit}_i + \beta_{20} \text{WSU}_i + \beta_{21} \text{ATH}_i + \beta_{22} \text{Assets}_i + \xi_i$$

Where, $i = 1, 2, \dots, 92$ (number of person specific donors) and $\xi =$ error term.

After running some original tests, it was found that adjustments could be made to the model to allow for a better analysis for my study. Noted in the Appendix are the models previously tested before finding the final model used in this study. First the variable Notes was removed from the model as the information explained in this variable was also explained in the variable Rating. The results from the original model found that the variables Letter and Telephone both were found to be statistically significant and negative impactors in the model. The results also show the variables Personal and Email to not be statistically significant and a positive impactor in the model. I generated two new variables by combining Letter and Telephone and combining Email and Personal. By generating these two new variables I found

this made the model a better fit for the study. The next adjustment made to the model was removing the Prez/Vice and C-Level variables from the model to test the impact of the Owner/Founder variable on the other two variables related to donor job title. The last adjustment made to the model above was removing the variable Direct Benefits due to the issue of multicollinearity. After making these adjustments I developed a new model below:

$$\text{MajorGiftPledge} = \alpha_0 + \beta_1 \text{Alum}_i + \beta_2 \text{WSUYR}_i + \beta_3 \text{ATHYEAR}_i + \beta_4 \text{WSU}_i + \beta_5 \text{ATH}_i + \beta_6 \text{Rating}_i + \beta_7 \text{Children}_i + \beta_8 \text{Former Athlete}_i + \beta_9 \text{Greek Affiliation}_i + \beta_{10} \text{Owner/Founder}_i + \beta_{11} \text{Male}_i + \beta_{12} \text{FB}_i + \beta_{13} \text{Email/Personal}_i + \beta_{14} \text{Letter/Telephone}_i + \xi_i$$

Where, $i = 1, 2, \dots, 92$ (number of person specific donors) and $\xi =$ error term

CHAPTER FOUR: ANALYSIS

As noted in the previous chapter, the variables that will be tested are used to identify the factors for this model. Since the variable we are interested in, Major Gift Pledge of over \$100,000, is binary we will use a logistic regression model. The decision to use a logistic model rather than a probit came from the assumption that the error term in the model would be logistically distributed. To help better understand the impactors we will look at the statistically significant variables and their correlation to our variable of interest. This logistic regression is used to evaluate the predictors that are impactful to determine gifts over \$100,000.

$$\text{Probability of donation over } \$100,000 = .038 + \text{Alum}^*(7.60) + \text{WSUYR}(1.17) + \text{ATHYEAR}^*(.780) + \text{WSU}(1.03) + \text{ATH}^*(1.17) + \text{Rating}^*(1.97) + \text{Children}(1.30) + \text{Former Athlete}(3.90) + \text{Greek Affiliation}(.433) + \text{Owner/Founder}^*(4.76) + \text{Male}^*(.040) + \text{FB}(.503) + \text{Email/Personal}^*(1.07) + \text{Letter/Telephone}^*(.770).$$

Where * indicates statistically significant variables at 90% confidence interval.

The Pseudo R² of the model was .5327, which is the measure of the amount of variance that is explained in the dependent variable by the independent variable. This value is not necessarily large, and this value shows that 53% of the variance correlated to the giving level is attributed to the variables included in the model. The r-square value for our study, like other studies for predictive modeling, should not be the only value used to measure the utility of the model. We can also look at the goodness of fit for the model along with the chi-square value. The goodness of fit was statistically significant, and the chi-square value was 65.10. To test for multicollinearity within the model we used the Variance Inflation Factor (VIF) test. If multicollinearity was present in the model there would be correlation between the predictor

variables, which would be a potential issue and could cause adversely affect the regression results. The VIF test estimates how much the variance of a regression coefficient is inflated due to multicollinearity in the model. In my model we estimate the results from the VIF test using the following rule of thumb, 1 indicates not correlated, 1-5 indicates moderately correlated, 5-10 moderate-highly correlated, >10 highly correlated. The results from the VIF table show a mean VIF of 3.50, showing it is not likely there is multicollinearity present in the model. The results show that there are moderate-highly correlated variables in the model WSU (8,17), ATH (6.34), WSUYR (6.73), ATHYEAR (6.58), Letter/Telephone (5.03) and Email/Personal (5.54). The high correlation between WSU and ATH is explained from the variables containing similar information. Even though there is high correlation between these variables, there is a specific reason the variables are still included in the model. One of the goals of the model is to understand donor behavior, we do this by testing the impact that previous giving to the university and athletics has on giving over \$100,000. For this same reason, we included the variables WSUYR and ATHYEAR. Now we will look more in-depth at the statistically significant variables in the model and their correlation to the other variables.

In this regression we find the variables Alum, ATHYEAR, ATH, Rating, Owner/Founder, Male, Letter/Telephone and Email/Personal to be statistically significant. To help determine the correlation between each of the above variables we look at the correlation table. First, looking at the variable Alum the results show an odds ratio of 7.61 and a z-value of 1.65 which indicates that the variable Alum has a positive impact on the variable of interest. Looking at the correlation table we do not find high correlation between this variable and the other variables in the model. This result confirms our prediction from previous research that being an alumnus of a university has a positive impact on predicting likelihood of a financial

contribution. The next variable to analyze is ATHYEAR, the results show a odds ratio of .780 and a z-value of -2.02 which indicates that this variable has a negative impact on the variable of interest. The assumption that previous years of giving to athletics being a positive indicator of predicting financial contributions was not proven in this model. In previous research by (Sun et al. 2007) it was found alumni activity to be a significant indicator of predicting financial contributions, which was also found in this study. From looking at the correlation table we see that ATHYEAR and Pledge are negatively correlated with a correlation of -.0114. The table also shows ATHYEAR is highly correlated with WSUYR with a correlation of .8916, but as we stated above there is a specific reason for still including both variables. The results from the model show an odds ratio of 1.17 and a z-value of 2.15 which indicates that the variable ATH has a positive impact on the variable of interest. From looking at the correlation table we see that ATH and Pledge are not highly correlated with a correlation of .3901. The table also shows ATH and WSU are highly correlated at .8375. Previous literature by (Sun et al. 2007) and (Lara and Johnson, 2008) found that income is a significant indicator of predicting financial contributions to an institution and this study also confirms this from the variable rating which we use as our income variable. The results show an odds ratio of 1.97 and a z-value of 1.66 which indicates that Rating has a positive impact on the variable of interest. The correlation table shows that Rating and Pledge are moderately correlated with a correlation of .4780. In previous research by (Sun et al. 2007) results found that being employed nearly doubled the likelihood of an individual supporting their alma mater. Our model dove deeper into this to find if certain job titles impact the likelihood of predicting a financial contribution more than others. Owner/Founder is the next variable we will analyze. The results find an odds ratio of 4.76 and a z-value of 1.80 which indicates the impact that the job title Owner/Founder has compared to the

two variables Prez/Vice and C-Level that were left out of the model. The correlation table shows that Pledge and Owner/Founder are not highly correlated with a correlation of .1939. Our next variable Male is the variable in the model used to indicate gender of the donor, in our model gender is heavily male dominated with a mean value of .924. Our results show the odds ratio of .040 and a z-value of -2.17 which indicates the impact that being a male donor has compared to a female donor. Next, from looking at the correlation table, Pledge and Male are negatively correlated with a correlation of -.0560. The last two statistically significant variables we will analyze are related to relationship marketing between donors and university representatives. The results show Letter/Telephone with an odds ratio of .770 and a z-value of -2.70 which indicates the impact that the variable Letter/Telephone has a negative impact on the variable of interest. The correlation table shows a positive correlation of .1685 between Pledge and Letter/Telephone. The results found an odds ratio of 1.07 and a z-value of 1.94 for the variable Email/Personal which indicates this variable has a positive impact on the variable of interest. The correlation table shows a positive correlation of .2574 between Pledge and Email/Personal. The correlation table also shows that the two variables related to relationship marketing Letter/Telephone and Email/Personal are highly correlated at .8337.

To validate the model and its ability to predict the level at which donors give, we calculated this probability on the beta values in the binary regression analysis. From the predicted regression results we tested the model's ability to accurately predict the level at which donors give. The results in table 4.2 found that the model correctly predicted 36.95% or 34 out of the 92 donors to their giving level. While this is not a high value the given the 90% confidence interval, it can help identify potential donors to the university.

After looking at the results from the logistic regression, we made an adjustment to the model to change the binary variable pledge and replace it with the actual amount that donors committed to. In this linear model the new dependent variable, Pledge, is continuous and ranges from 50,000 – 3,000,000. The reasoning behind moving from a logistic model to a linear model is to test how the impactor variables change with the actual pledge amount. Another reasoning behind using a linear model is due to the range of pledges included in the original binary variable value 1. In this value the pledges range from 100,000 – 3,000,000. In the linear model we are not focusing on the impactors of major gift likelihood (100,000+) but instead focusing on impactors of overall pledge amount. Another change in this linear regression model was removing the variables WSU and WSUYR due to the potential multicollinearity issue. Another adjustment that was made in the model was removing an observation due to the change in donation amount. This gift was originally signed as an estate gift, since this commitment the donor has been in the process of adjusting the gift amount. The goal of this model is to find the statistically significant predictors and compare these results with the logit model results.

The new linear regression is used to calculate what level a donor is likely to make a gift is: $-132,398.6 + \text{Alum}(65,940.82) + \text{ATHYEAR}(-2,055.43) + \text{Rating}^*(62,579.45) + \text{Children}(28,330.84) + \text{Former Athlete}(-39,952.05) + \text{Greek Affiliation}^*(-52,655.93) + \text{ATH}^*(4,410.66) + \text{Owner/Founder}(-27,151.6) + \text{Male}(-57,454.2) + \text{FB}(5,306.17) + \text{Letter/Telephone}^*(-2,717.937) + \text{Email/Personal}(1,153.34)$

Where * indicates statistically significant variables at 90% confidence interval.

The results from this regression give an R2 value of .5345 measures the amount of variance within the actual pledge amount group that can be explained by independent variables explain collectively. This shows that 53.45% of the variance for the variable of interest Pledge can be explained by the model above. As noted in the results from the logistic regression, the R2 value should not be the sole measure for concern or optimism regarding the effectiveness of the model predicting donor giving base on available data. The variables that were found to be statistically significant in this model were ATH, Rating, and Letter/Telephone. The statistically significant variables in the linear regression were also found to be statistically significant in the logistic regression. Previous research has found that income is a significant factor in indicating donor behavior which is proven in this model. The variable Rating factors into account donor income along with other impactors. We decided to not look at the predicted values for the linear regression, the reason we came to this conclusion is due to the goal of the paper. The goal is to identify significant variables to predict or identify donors and if the donors are likely be potential major gift (\$100,000+) donors. Since we are not looking at predicting actual donation amount the predicted values of the logistic regression provide the results to help answer the sought after question.

CHAPTER FIVE: CONCLUSIONS

Predictive modeling has increased in popularity and for this reason more institutions have begun to study the impact it can have on fundraising in higher education (Walcott, 2014). While more institutions have used predictive modeling to better understand donor behavior and donor giving levels, it is not effective to use models created for other institutions. The reason it is not effective for other universities to use these models is because each institution has different organizational makeup pertained to their donors. When trying to generate a model for a specific institution the variables used in the model can be different than the variables used in other models. Previous literature has focused mainly as the institution as a whole and has not dove in to different departments within the university. Donors can specify that gifts be allocated to a certain department such as certain colleges within the university. Focusing on the Athletic Department will generate different results than when/if focusing on the Department of Economics. Existing literature has also focused on predicting the amount of money a donor will contribute, this study focuses on major gifts over \$100,000. Due to this difference in the amount of contribution trying to predict Major Gift Donors it is necessary to conduct a new analysis that can help benefit from predictive modeling. The model used in this paper was designed to answer the question, what factors are most likely to predict the likelihood of an individual making a financial contribution over \$100,000 to the Washington State Athletic department?

The results from this study show identifying factors that will help in identifying potential new donors that are likely to donate over \$100,000. The information provided from these models can support in the fundraising efforts by the Washington State Athletic Department. Organizational leadership can use this information in their strategic planning process to set fundraising goals for capital or specific projects. In the study we included non-alumni in the

model for the purpose of identifying individuals who support the university but did not graduate or attend the university. The reason for this is individuals could associate as supporters either through personal affiliation or fan affiliation. The inclusion of the FB variable in the model helps analyze donors who support the team and could be non-alumni. By expanding the data to allow for non-alumni, this provides more predictive factors for university representatives to take into account when trying to identify potential donors. As the athletic department for Washington State University plans to move into a new capital campaign this statistical model can be used as a method in projecting how many gifts over \$100,000 could be received from potential donors. In reality, while we can project which donors could be potential donors of \$100,000, there is an art to fundraising which comes from interaction between the donor and a representative to the university. Talking with the potential donor to find their passion and why they want to give is a large part of fundraising in higher education. This model will be useful in targeting donors, but to be successful in obtaining these gifts representatives need to build relationships and find a mutually beneficial agreement between the two parties. This is confirmed in the study where we see personal connections are significant in predicting donations. Each donor is different and just like institutions differ, donors can have preferences to different capital or specific project depending on their interests and motives. This study generates similar results to (Sun et al. 2007) study where contacts by faculty members to be a significant factor in predicting financial contributions to an institution. To determine if the donor is maximizing their utility by donating to the university the representative will have to communicate with the potential donor. The model that was developed will provide a basis to target donors based on the data available to the department. The use of predictive modeling allows for opportunities to plan strategically,

representatives can analyze their portfolio of donors that are capable to donate at a significant level and support projects beneficial to the institution.

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APPENDIX

Table 1.1: Theoretical Perspectives

Table 1: Summary of theoretical perspectives

Theory	Characteristics	Fundraising considerations
Charitable giving	There are three motivations to explain why people make donations: (1) altruism, (2) reciprocity, and (3) direct benefits; altruism is a primary motive in explaining why individuals make donations to a particular cause or charity	Alumni feel a sense of obligation towards alma mater; have pride in their association with their College; alumni feel a responsibility to make donations
Organizational identification	People define themselves (in part) by their association with the organization; they feel a strong connection to the organization; proud parent phenomenon; celebrate the organizations successes (i.e. achieving important goals)	Alumni who feel connected to the College as an organization will celebrate the achievement of its strategic and fund-raising goals; they will be inclined to support these goals and be motivated to be a donor
Social identification	A person's identity is influenced by how they order themselves into social groups or categories; their social identity evolves from their ordering; people develop a deep psychological connection to that group (i.e. class of students, roommates, athletic team)	Alumni maintain positive psychological connections to a group(s) from their College experience; fund-raising efforts can focus on group-specific goals to motivate alumni to make donations (i.e. hockey team, debate team)
Economics	Donors feel utility in making a gift that benefits the recipients; the more apparent the need, the more motivated they are to make a donation	When a potential donor better understands the need or value for gift, there is an increased likelihood that they will make a gift
Services-philanthropic	People's behavioral intent is influenced by three constructs: (1) service value, (2) service quality, and (3) satisfaction; these constructs shape a person's overall experience and perception of an organization	When alumni feel they receive professional service and value from their alma mater, they are likely to have a more positive perception of the organization and its fund-raising needs
Relationship-marketing	Customers have relationships with an organization ranging from transactional to highly relational; customers who have a positive relationship feel connected to the organization, whereas transactional customers view their relationship as an exchange of services and have no emotional investment in the organization	Effective communication with alumni will help shape a positive relationship between the College and the alumnus; Conversely, poor communication will shape the relationship as more transactional; developing positive relationships between alumni and their College will create an emotional connection that may support fund-raising efforts

Table obtained from: Mann, T. (2007). College fund raising using theoretical perspectives to understand donor motives. *International Journal of Educational Advancement*, 7(1), 35-45.

Table 2.1: Independent Variables

Name	Scale	Description
Alum	Nominal	Is the donor an alum of WSU
WSUYR	Interval	How many years had the donor contributed to WSU before committing to a major gift pledge
ATHYEAR	Interval	How many years had the donor contributed to WSU Athletic Department before committing to a major gift pledge
Note	Interval	How many notes have been filed in regard to the donor
Rating	Nominal	The type of giving rating associated with the donor.
Children	Interval	The number of children associated with the donor
Former Athlete	Nominal	Was the donor a former student athlete, manager or athletic trainer
Greek Affiliation	Nominal	Was the donor affiliated in a Greek organization
Spouse Alum	Nominal	Was the donor's spouse an alum of WSU
FB	Nominal	Did the donor have Football Season tickets the year prior to committing to a major gift pledge
C-Level	Nominal	Job title of CEO, COO or CFO
President/Vice	Nominal	Job title of President or Vice-President
Owner/Founder	Nominal	Job title Owner or Founder
Direct Benefit	Nominal	Did the donor receive naming rights to a facility in return for the contribution
Male	Nominal	Was the donor a male or female
Email	Interval	How many times was the donor contacted through email by a university representative before committing to a gift
Letter	Interval	How many times was the donor contacted through letter by a university representative before committing to a gift
Personal	Interval	How many times was the donor contacted in person by a university representative before committing to a gift
Telephone	Interval	How many times was the donor contacted through telephone by a university representative before committing to a gift
WSU	Interval	Total giving to WSU before committing to a gift
ATHYEAR	Interval	Total giving to WSU Athletics before committing to a gift
Assets	Nominal	Is there information on the value of assets a donor has in their account
WSU	Interval	How much had the donor given to WSU before committing to the new Athletics gift

ATH	Interval	How much had the donor given to WSU Athletics before committing to the new Athletics gift			
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Table 3.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
pledge	92	.6195652	.488154	0	1
alum	92	.8478261	.3611576	0	1
wsuyr	92	25.26087	12.58367	1	57
athyear	92	21.07609	12.53499	1	54
note	92	9.141304	7.694127	0	39
rat	92	5.695652	1.75874	3	10
children	92	1.347826	1.270414	0	4
formerathl~e	92	.1847826	.3902478	0	1
greekaffil~n	92	.4565217	.5008354	0	1
spousealum	92	.4456522	.4997611	0	1
wsu	92	52.37651	80.4806	1	444.1516
ath	92	33.6048	42.82921	1	220.3145
Asset	92	.6630435	.4752599	0	1
clevel	92	.173913	.3811116	0	1
presidentvp	92	.2282609	.4220114	0	1
owenfounder	92	.25	.4353854	0	1
male	92	.923913	.26659	0	1
fb	92	.7934783	.4070274	0	1
email	92	5.141304	7.528089	0	37
personal	92	32.69565	34.76032	0	182
telephone	92	8.663043	10.36931	0	51
directbene~t	92	.5978261	.4930235	0	1

Table 4.1: Logistic Regression

```

Logistic regression                Number of obs    =          92
                                   LR chi2(14)         =         65.10
                                   Prob > chi2         =         0.0000
Log likelihood = -28.561159        Pseudo R2        =         0.5327
  
```

	pledge	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
	alum	7.601222	9.346571	1.65	0.099	.6827063	84.63167
	wsuyr	1.169641	.1398224	1.31	0.190	.9253312	1.478453
	athyear	.7795968	.0959927	-2.02	0.043	.6124357	.9923836
	wsu	1.035153	.0427483	0.84	0.403	.9546685	1.122422
	ath	1.165327	.0829246	2.15	0.032	1.013622	1.339736
	rat	1.968156	.8051454	1.66	0.098	.8827639	4.388077
	children	1.299907	.4950823	0.69	0.491	.6162029	2.74221
	formerathlete	3.901738	3.96602	1.34	0.180	.5321485	28.60773
	greekaffiliation	.4326013	.3371557	-1.08	0.282	.0939049	1.992908
	owenfounder	4.760919	4.116817	1.80	0.071	.8742743	25.9259
	male	.0396039	.0590278	-2.17	0.030	.0021333	.7352154
	fb	.5030956	.5363521	-0.64	0.519	.062256	4.065554
	lettertelephone	.7695181	.074525	-2.71	0.007	.6364775	.9303676
	emailpersonal	1.067183	.0357096	1.94	0.052	.9994391	1.139518
	_cons	.0388494	.1055515	-1.20	0.232	.0001891	7.980785

Note: _cons estimates baseline odds.

Table 4.2: Correlation Table

	pledge	alum	wsuyr	athyear	rat	children	formerathl~e	greekaffil~n	wsu	ath	owenfounder	male	fb	lettertele~e	emailperso~l
pledge	1.0000														
alum	0.1043	1.0000													
wsuyr	0.0575	0.1080	1.0000												
athyear	-0.0114	0.0536	0.8916	1.0000											
rat	0.4780	0.0647	0.1754	0.1092	1.0000										
children	0.1626	0.1645	0.2294	0.3157	0.3627	1.0000									
formerathl~e	-0.0307	-0.0322	-0.0457	-0.0052	-0.0132	0.1128	1.0000								
greekaffil~n	0.0889	0.2668	0.1291	0.0819	0.2593	0.2140	-0.0428	1.0000							
wsu	0.3578	0.1233	0.2796	0.2110	0.6338	0.2482	-0.0723	0.2530	1.0000						
ath	0.3901	0.1311	0.3638	0.3596	0.6133	0.2168	-0.1678	0.1911	0.8375	1.0000					
owenfounder	0.1939	-0.1048	-0.1564	-0.1203	0.0144	0.0397	0.0485	0.1260	0.0681	0.0472	1.0000				
male	-0.0560	0.1067	-0.0792	-0.0213	-0.0031	0.1439	0.1366	-0.0662	0.0414	0.0725	-0.0237	1.0000			
fb	-0.0126	0.2324	-0.0301	-0.0292	0.0954	0.0554	0.0353	-0.0176	0.0586	0.0702	-0.1395	0.0561	1.0000		
lettertele~e	0.1685	0.1626	0.4419	0.2765	0.4983	0.1722	0.0396	0.2325	0.7130	0.4648	-0.0779	-0.1321	0.0757	1.0000	
emailperso~l	0.2574	0.1910	0.3758	0.2179	0.5760	0.0710	0.0142	0.2395	0.6470	0.4216	-0.0841	-0.1192	0.1047	0.8337	1.0000

Table 4.3: VIF Table

Variable	VIF	1/VIF
wsu	8.17	0.122454
wsuyr	6.73	0.148481
athyear	6.58	0.151958
ath	6.34	0.157697
lettertele	5.03	0.198709
owenfounder	4.54	0.220024
rat	2.80	0.356615
children	1.72	0.582150
alum	1.30	0.768570
greekaffil~n	1.24	0.807568
male	1.15	0.870596
formerathl~e	1.13	0.881665
owenfounder	1.13	0.887086
fb	1.11	0.901419

-----+-----
 Mean VIF | 3.50

Table 5.1: Linear Regression

Source	SS	df	MS	Number of obs	=	91
				F(12, 78)	=	7.46
Model	2.7521e+12	12	2.2934e+11	Prob > F	=	0.0000
Residual	2.3969e+12	78	3.0730e+10	R-squared	=	0.5345
				Adj R-squared	=	0.4629
Total	5.1490e+12	90	5.7211e+10	Root MSE	=	1.8e+05

	pledge	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	alum	65940.82	57136.55	1.15	0.252	-47809.31 179690.9
	athyear	-2055.43	1780.209	-1.15	0.252	-5599.554 1488.694
	ath	2383.611	643.5366	3.70	0.000	1102.428 3664.794
	rat	62579.45	17300.33	3.62	0.001	28137.13 97021.76
	children	-5627.08	18301.2	-0.31	0.759	-42061.96 30807.8
	formerathlete	4479.551	49925.89	0.09	0.929	-94915.26 103874.4
	greekaffiliation	-91417.91	40903.03	-2.23	0.028	-172849.6 -9986.237
	owenfounder	-27151.6	44696.1	-0.61	0.545	-116134.7 61831.49
	male	-57454.2	73409.84	-0.78	0.436	-203602 88693.56
	fb	5306.169	47383.13	0.11	0.911	-89026.4 99638.74
	lettel	-3634.851	1740.325	-2.09	0.040	-7099.573 -170.1291
	emper	1153.336	923.7108	1.25	0.216	-685.6307 2992.303
	_cons	-132398.6	127190.2	-1.04	0.301	-385614.8 120817.5

Table 5.2: Other Linear Regression

Source	SS	df	MS	Number of obs	=	92
-----+-----				F(22, 69)	=	2.67
Model	4.0786e+12	22	1.8539e+11	Prob > F	=	0.0010
Residual	4.7921e+12	69	6.9450e+10	R-squared	=	0.4598
-----+-----				Adj R-squared	=	0.2875
Total	8.8707e+12	91	9.7480e+10	Root MSE	=	2.6e+05

pledge	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
alum	-10335.67	92396.26	-0.11	0.911	-194661.2	173989.8
wsuyr	2071.331	6002.773	0.35	0.731	-9903.873	14046.53
athyear	-7072.16	6091.901	-1.16	0.250	-19225.17	5080.85
note	-4660.341	4070.342	-1.14	0.256	-12780.45	3459.77
rat	58067.08	27564.46	2.11	0.039	3077.492	113056.7
children	28330.84	30301.49	0.93	0.353	-32118.99	88780.66
formerathlete	-39952.05	82680.77	-0.48	0.630	-204895.7	124991.6
greekaffiliation	-52655.93	64886.75	-0.81	0.420	-182101.4	76789.58
spousealum	49190.7	65381.93	0.75	0.454	-81242.69	179624.1
wsu	-1605.793	1043.786	-1.54	0.129	-3688.09	476.504
ath	4410.66	1728.495	2.55	0.013	962.4068	7858.913
assets	15485.44	68085.62	0.23	0.821	-120341.7	151312.5
clevel	-56568.55	86801.44	-0.65	0.517	-229732.7	116595.6
presidentvp	172447.5	82380.79	2.09	0.040	8102.296	336792.6
owenfounder	-11219.79	76963.15	-0.15	0.885	-164757.1	142317.5
male	-67325.01	120057.3	-0.56	0.577	-306832.8	172182.8
fb	-6091.953	76866.14	-0.08	0.937	-159435.7	147251.8
email	-2396.105	8599.785	-0.28	0.781	-19552.21	14760
letter	-2717.937	4673.452	-0.58	0.563	-12041.22	6605.344
personal	2840.461	2176.085	1.31	0.196	-1500.711	7181.632
telephone	-2616.893	5963.828	-0.44	0.662	-14514.4	9280.619
directbenefit	12053.97	67555.82	0.18	0.859	-122716.2	146824.1
_cons	-71400.79	209081.4	-0.34	0.734	-488506.7	345705.2

Figure 1.1: Residuals vs Fitted Values

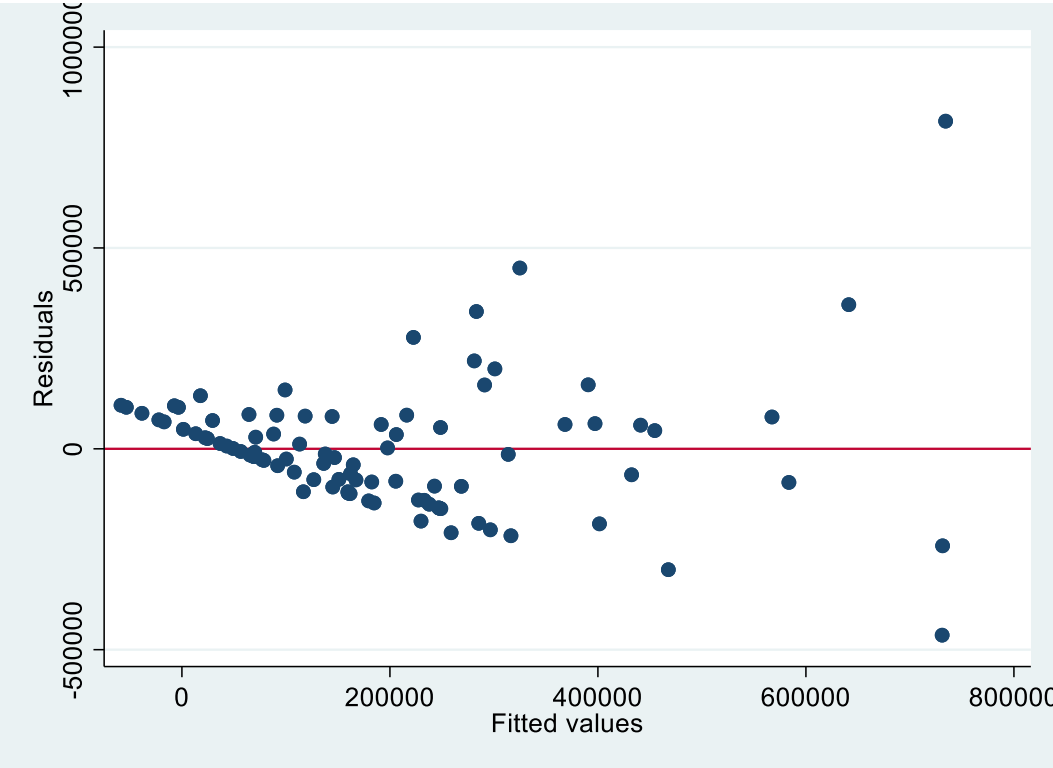


Table 5.3: Robust Regression

```

Linear regression      Number of obs   =      91
                      F(12, 78)           =      5.37
                      Prob > F          =      0.0000
                      R-squared         =      0.5345
                      Root MSE       =      1.8e+05
  
```

```

-----
                |
                |           Robust
pledge |           Coef.   Std. Err.   t   P>|t|   [95% Conf. Interval]
-----+-----
    alum |    65940.82   41350.56   1.59   0.115   -16381.82   148263.5
    ath  |    2383.611   1260.19   1.89   0.062   -125.2344   4892.456
athyear |   -2055.43   2184.064   -0.94   0.350   -6403.567   2292.706
    rat  |    62579.45   17551.59   3.57   0.001    27636.92   97521.98
children |   -5627.08   20504.08   -0.27   0.784   -46447.56    35193.4
formerathlete |  4479.551   35693.02    0.13   0.900   -66579.8    75538.9
greekaffiliation | -91417.91   44398.18   -2.06   0.043   -179807.9  -3027.916
owenfounder |  -27151.6   41545.98   -0.65   0.515   -109863.3   55560.09
    male |   -57454.2   50774.98   -1.13   0.261   -158539.4   43631.01
    fb   |    5306.169   27999.35    0.19   0.850   -50436.26    61048.6
lettel  |  -3634.851   1879.527   -1.93   0.057   -7376.702   106.9999
emper   |    1153.336    977.4181    1.18   0.242   -792.5539   3099.226
   _cons |  -132398.6    103296    -1.28   0.204   -338045.2   73247.86
  
```

Table 4.4: Other Logistic Regression

```

Logistic regression          Number of obs   =          92
                             LR chi2(16)           =          68.06
                             Prob > chi2          =          0.0000
Log likelihood = -27.081264  Pseudo R2       =          0.5569
  
```

	pledge	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
	alum	5.126231	6.863968	1.22	0.222	.3715767 70.72092
	wsuyr	1.234708	.1813627	1.44	0.151	.9258354 1.646626
	athyear	.7497202	.1095449	-1.97	0.049	.5630233 .9983252
	wsu	1.038095	.0439302	0.88	0.377	.9554677 1.127868
	ath	1.156828	.0804118	2.10	0.036	1.009488 1.325673
	rat	1.70496	.7324913	1.24	0.214	.7345439 3.957406
	children	1.330823	.5169436	0.74	0.462	.6215562 2.849444
	formerathlete	2.565722	2.907969	0.83	0.406	.2782687 23.65673
	greekaffiliation	.5200259	.4360226	-0.78	0.435	.1005365 2.689838
	spousealum	1.064249	.8397322	0.08	0.937	.2266804 4.996581
	owenfounder	6.730476	6.469171	1.98	0.047	1.023037 44.27924
	fb	.6284042	.7622575	-0.38	0.702	.0583079 6.77253
	male	.040463	.0611144	-2.12	0.034	.0020961 .7810786
	lettertelephone	.7701696	.07883	-2.55	0.011	.6301768 .9412615
	emailpersonal	1.064861	.0364204	1.84	0.066	.9958185 1.138691
	directbenefit	3.919125	3.268282	1.64	0.101	.7644433 20.09246

Figure 2.1: Dependent vs Independent Error

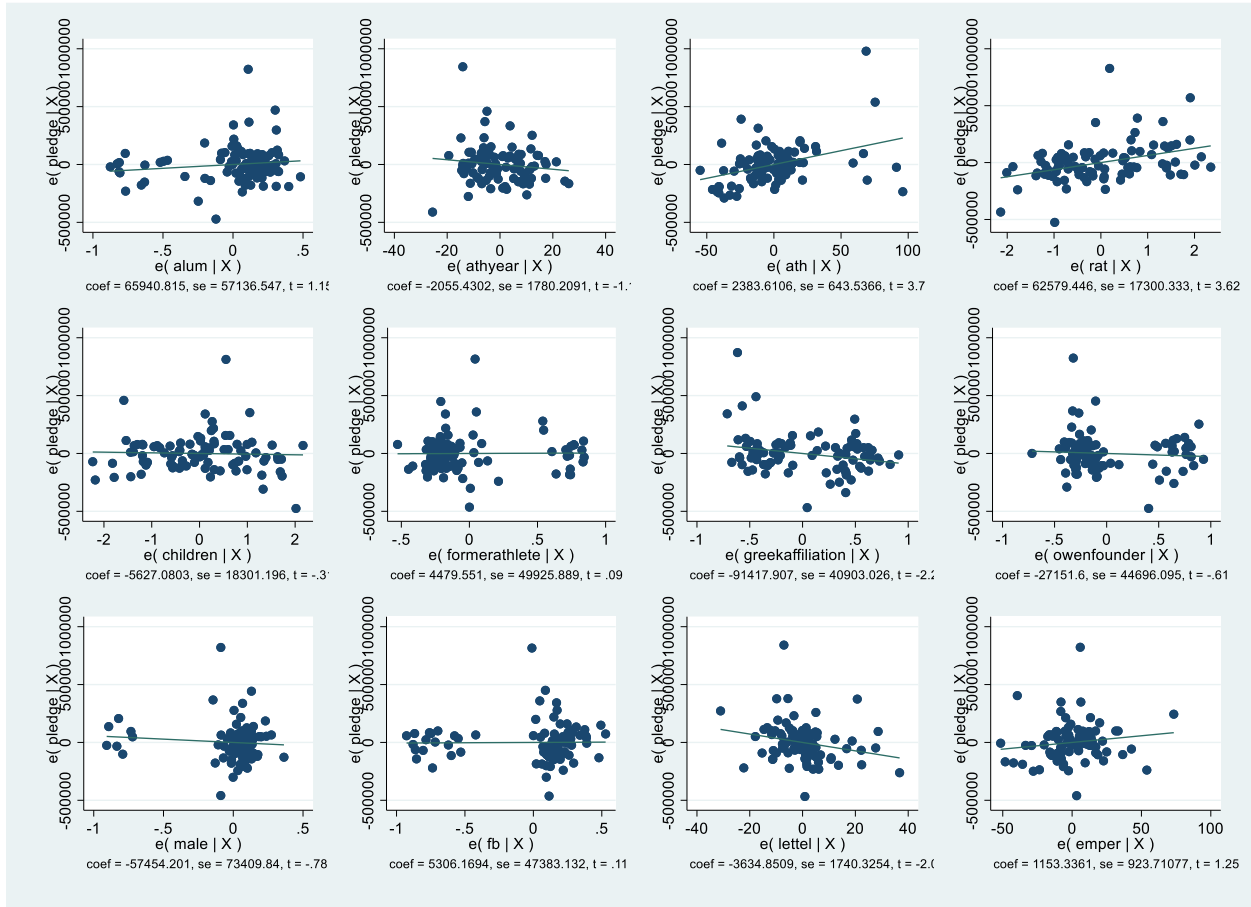


Table 4.5: Predicted Values

	yhat
1.	.7418829
2.	.3343578
3.	.9934008
4.	.3121864
5.	.0753675
6.	.3085265
7.	.9999935
8.	.0659964

9. | .0906543 |
10. | .9538885 |
|-----|
11. | .9999998 |
12. | .940345 |
13. | .9991487 |
14. | .2500475 |
15. | .9999957 |
|-----|
16. | .9928831 |
17. | .4988024 |
18. | .2333471 |
19. | .9155543 |
20. | 1 |
|-----|
21. | .3233247 |
22. | .296625 |
23. | .8039137 |
24. | .7112905 |
25. | .5391527 |
|-----|
26. | .4975978 |
27. | .3510828 |
28. | .6177611 |
29. | .9035413 |
30. | .0058054 |
|-----|
31. | .0872633 |
32. | .998439 |
33. | .889851 |
34. | .7184486 |

35. | .1281959 |
|-----|
36. | .9997786 |
37. | .9838743 |
38. | .6594013 |
39. | .7296291 |
40. | .9918468 |
|-----|
41. | .1366516 |
42. | .0046158 |
43. | .9999994 |
44. | .0610056 |
45. | .5314085 |
|-----|
46. | .6532832 |
47. | .3083892 |
48. | .9184468 |
49. | .633093 |
50. | .9685298 |
|-----|
51. | .6986369 |
52. | .3021292 |
53. | .1779263 |
54. | .9737369 |
55. | .9931544 |
|-----|
56. | .0052016 |
57. | .2586933 |
58. | .9915172 |
59. | .9991282 |
60. | .7720454 |

|-----|
61. | .0364368 |
62. | .9993367 |
63. | .9988298 |
64. | .4081399 |
65. | .9350866 |
|-----|
66. | .5091958 |
67. | .0187987 |
68. | .4733893 |
69. | .806253 |
70. | 1 |
|-----|
71. | .0305413 |
72. | .8434185 |
73. | .391263 |
74. | .8125591 |
75. | .7777973 |
|-----|
76. | .3802478 |
77. | 1 |
78. | .9999992 |
79. | .2672802 |
80. | .523013 |
|-----|
81. | .9005145 |
82. | .9770086 |
83. | .4467047 |
84. | .9999999 |
85. | .5233991 |
|-----|

86. | .9807336 |
87. | .4709546 |
88. | .3782576 |
89. | .998221 |
90. | .957135 |
|-----|
91. | .0393239 |
92. | .7853686 |
+-----+

Table 4.6: Rating Interval Values

- 10: \$25,000,000 +
- 9: \$10,000,000 - \$24,999,999
- 8: \$5,000,000 - \$9,999,999
- 7: \$1,000,000 - \$4,999,999
- 6: \$500,000 - \$999,999
- 5: \$250,000 - \$499,999
- 4: \$100,000 - \$249,000
- 3: \$50,000 - \$99,999
- 2: \$25,000 - \$49,999
- 1: \$10,000 - \$24,999