

# **An Empirical Analysis of the Factors of Success in a Principles of Finance Class**

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## **ABSTRACT**

*In this article we first provide a review of the literature on the determinants of academic grades. We extend an analysis which reviewed this literature over the years of 1930-1937 [Harris, 1940]. Harris studies 328 previous articles and determines factors such as intelligence, high school grades, study habits, teaching methods and conditions, incentives and direct motivation, amount of course work taken, and extra-curricular factors. Next, we conduct a survey of 755 undergraduate students at the end of a semester of a principles of finance class at a large Western United States university. Students are asked over 100 questions that could be possible factors of their course grade. The factors include traditional factors such as those in Harris [1940], as well as program specific factors. The primary research objective is to determine which factors help students achieve the best learning (as measured by course grade) so instructors can focus efforts on variables that benefit student learning in a principles of finance class.*

## **INTRODUCTION**

Numerous studies have examined the factors that affect academic grades in various settings and disciplines. Along with the work of Harris [1940] discussed in the abstract, Munday [1970] studies 134 colleges and universities in 1964 and 1965 to determine the factors that predict college grades. He studies variables such as ACT, class size, gender, and high school GPA. In a more recent article, Robbins, et al. [2004] study the impact of psychosocial and study skill factors on predicting college grades. Their study, a meta-analysis of 109 previous studies, reveals that the two strongest predictors of GPA are academic self-efficacy and achievement motivation. [See also Lynch, 2006].

While results from these types of studies are not completely consistent nor conclusive, there are several common factors studied in the existing research such as grade point average (GPA), ACT/SAT scores, demographic variables, weekly hours studied for class, and weekly hours worked by students. These common factors warrant additional research. We extend the existing literature along two main directions. First, we test factors that explain student performance in a recent introductory finance class. Second, we expand the explanatory variable set by a considerable number of potential factors to explain student grade performance.

The extent literature, summarized below, contains previous attempts to determine what factors influence student grades (i.e., success) in various academic disciplines. The closest

disciplines studied in business are accounting and economics; however, we lever the literature by applying it to finance. This extension seems plausible. For example, in economics, Krohn and O'Connor [2005] show that the number of hours studied for a class is negatively correlated with success in that class—a counterintuitive finding. However, this perhaps intriguing result is also found in several studies across multiple disciplines including accounting and finance [Uyar and Gungormus, 2011 and Trine and Schellenger 1999]. Lagging economics and accounting, the literature about performance in a finance class is far from conclusive and leaves much to study. We attempt to fill part of this void with our paper.

The next section provides a review of the literature, specifically to motivate the factors and variables explored in the subsequent sections. We search all areas of academic literature, not limiting our search to finance or business journals. We then present the data and methods, to include the factor groups used in the multivariate tests. The data section is followed by the empirical results section, which highlights the key findings in univariate and multivariate tests. The final section concludes.

## **LITERATURE REVIEW**

For purposes of our study we have grouped many of the individual variables into factor groups. We construct factors to capture multiple dimensions within a single construct. For example, the Intelligence Factor is composed of ACT/SAT scores, High School GPA, College GPA, and whether or not the student was on an Academic Scholarship at the university when he or she took the questionnaire. By including multiple dimensions in one factor, we are able to test for significance of a factor that may not be able to be completely measured by an individual survey question. Each of the following sections contains a description of the individual variables that compose the factor groups and the theoretical underpinnings for each factor from the extant literature.

### **Intelligence**

As described above, the Intelligence factor is composed of ACT/SAT scores, High School GPA, College GPA, and whether or not the student was on an Academic Scholarship when he or she took the questionnaire. ACT/ SAT scores and college GPA have been used as predictors in earlier studies. In the general, ACT/SAT scores are accurate predictors of success in college courses [for example, see Coyle and Pillow, 2008 or Betts and Morrell, 1999]. Kara, et al. [2009] find that SAT scores are significant factors to learning success as measured by grades in an introductory economics class. Additionally, they find that college GPA has a positive and significant effect on grades in the economics course.

While high school GPA has not been studied as extensively as college GPA, there is research about its relationship with performance in various university classes [Davidovitch & Seon, 2015; Schulruf, et al. 2008; Zwick & Sklar, 2005, McKenzie & Schweitzer, 2001, Stricker, et al. 1996]. Betts and Morrell [1999] find that high school GPA is a significant predictor of success in college courses. Uyar and Gungormus [2011] and Trine and Schellenger [1999] develop these results further and find positive and significant association between a student's high school GPA and performance in accounting and finances courses, respectively. Zwick and Sklar [2005] find that high school GPA and SAT scores combine to explain 22% of the variance in first year of college GPA. The results go on to show high school GPA is the stronger of the

two predictors. McKenzie and Schweitzer [2001] demonstrate that final high-school GPA is the strongest predictor of the first-year college GPA.

To our knowledge, whether or not the student is on an academic scholarship at the time of the study has not been examined in previous studies. This may be due to covariance with other variables. For example, an academic scholarship is often given as a function of high school GPA, SAT/ACT scores, or college GPA. However, an academic scholarship serves as another proxy of intelligence and adds another dimension to the Intelligence factor. The empirical prediction for the Intelligence factor is a positive relationship with grade.

### Motivation/Drive

The Motivation factor is comprised of a student's belief about how much he or she strives toward learning, academic goals, and career goals. Many studies in all academic disciplines find that these three sub-factors positively affect students' academic performance [e.g., Loo & Choy, 2013; Phan, 2012; Pruzer, 2011]. Specifically, Wooten [1998] finds that motivation (as manifest through goals) is a significant factor in an accounting class. In fact, Wooten finds that motivation increases effort and that in the end, it is the increase in effort that causes an increase in performance. Trine and Schellenger [1999] also find that self-motivation is a significant determinant of performance in a finance course.

Schweinle and Helming [2011] find that success in challenging activities can be explained by student goals (grade, mastery, working, social and performance). Their research explores the reasoning behind the drive for success. According to Schweinle and Helming, and Afzal, et al. [2010], students' success is highest in those who are motivated intrinsically or by mastery compared to motivation through the grade or extrinsically. Vanthournout et al. [2012] emphasize identifying the reason behind motivation is an important factor in the academic outcome.

When investigating the rationale behind motivation, Vygotsky [1978] argues that there are certain levels of challenge to awake the greatest drive for learning within a student (which bring the greatest academic success). The ideal level of challenge will cause students to push themselves to the peak of their personal ability to perform. Flow theory depicts when student skills and challenge are both high, there will be the greatest motivation to learn and perform [Csikszentmihalyi, 1997; Csikszentmihalyi & Nakamuro, 1989; Csikszentmihalyi, et al. 1993; Hilmi, 2013]. As with Intelligence, we predict a positive correlation with course grade for the Motivation/Drive factor.

### Testing Preference

Years of anecdotal teaching suggests that some students just simply do not do as well on multiple choice exams as they do on more free-response types of questions. It is probably not unusual for professors to notice that some very bright students, who understand the concepts and methods being taught, cannot display their level of knowledge on multiple choice exams.

Notwithstanding this anecdotal evidence, some research has shown that students prefer multiple choice to essay tests [see Parmenter, 2009]. Parmenter [2009] finds that students believe that multiple choice tests are easier than essay tests and that as students' preparation increases they will prefer essay tests more. He also finds, however, that some students believe multiple choice tests are misleading.

In addition, test anxiety has consistently been found to be negatively associated with academic performance in many studies [e.g., Hembree, 1998; Sarason, 1980; Seipp, 1991]. Inasmuch as test anxiety can be captured by exam type preference (i.e., test anxiety positively correlated with multiple-choice-type exams), our study develops this research further by breaking down testing performance and anxiety into multiple factors including the students' preference for multiple choice, matching, true/false, fill-in-the-blank, short answer, essay and the students' self-evaluation of their performance in each of these areas. We are not able to find previous research in finance, accounting or economics that includes these variables as factors.

Because the grade in the finance class being studied is based solely on multiple choice quizzes and tests, we predict that students who prefer multiple choice and similar-type questions such as true/false will do relatively better in the class.

### Self-Belief

This factor includes the student's self-assessment of the following three variables: (1) how they handle difficult situations, (2) if they can handle many things at once, and (3) belief in self. While we do not believe the first two variables have been explicitly studied before, they have been studied indirectly through other variables (such as employment while working, class/credit loads, etc.). Our study focuses specifically on a student's belief about those variables instead of the variables themselves. Ibrahim [1989] and Seli et al. [2009] find that students' belief about what they can accomplish is significantly related to actual academic performance. Gladwell [2013] argues that, "how you feel about your abilities—your academic 'self-concept'—in the context of your classroom shapes your willingness to tackle challenges and finish difficult tasks. It's a crucial element in your motivation and confidence." Additionally, Gladwell makes the argument that students with equal academic abilities will vary in their classroom performance depending on their self-belief.

Several other papers show that self-belief is linked with academic success and persistence in college students (Gloria et al., 1999; Lent et al., 1997; Robinson Kurpius et al., 2003). Although self-esteem and self-concept are separate issues in some types of literature, such as psychology, for our purposes, the two fall under the umbrella of self-belief. The following quote indicates self-esteem (or self-belief) does influence task performance:

For example, although some research indicates that domain-specific self-esteem predicts performance within relevant domains better than general self-esteem, Baumeister et al.[2003] and Dutton and Brown [1997] found that specific self-esteem predicted cognitive reactions to task performance among participants, whereas global self-esteem predicted emotional reactions to task performance. It may also be that general intelligence is more stable than math intelligence; certainly, our results indicated greater change in math than in general intelligence [Shively, et al., 2013].

Whereas self-belief has been shown to be significantly related to academic performance, studies have shown high school does not adequately prepare students for college on average [e.g., Nonis & Hudson, 2006] and can result in student over-confidence: "...69 percent of the student respondents indicated that they were achieving their academic potential, while only 22% of the faculty respondents felt that their students were reaching their academic potential" [Wyatt, et al. 2005]. This finding demonstrates an unrealistic belief, but the over-confidence may still have an

impact on success (either positive or negative). Wright [2000] questions whether students can harness over confidence to create a self-fulfilling prophesy. For the sake of this paper, we do not distinguish between realistic and unrealistic self-belief and acknowledge this may create noise in the findings. Previous studies do show that perception can play a significant factor in student performance. In the case of academic control, “Students’ perceived academic control was found to have a stronger impact on students’ GPAs than critical thinking disposition” [Stupinsky, et al., 2008]. Additional studies link academic achievement linked with academic control [Perry et al. 2001; Perry et al. 2005; Ruthig et al. 2008]. Following the logic of the previous literature, our empirical prediction is that students with higher Self-Belief will be correlated with higher grades.

### Finance-Ability Assessment

This factor group includes the following self-reported variables: skill in finance and interest in finance. Much of the research discussed in the Self-Belief section can be applied to the first variable. Additionally, research on the correlation of IQ with academic performance shows an interesting perspective on how skills, or ability, influence the final grade [Murray & Wren, 2003].

The interest-in-finance variable adds an interesting perspective to the discussion. Several studies have shown that interest in a course subject is a significant factor contributing to performance in that course [e.g. Kara et al., 2009 and Loo & Choy, 2013]. The argument is that if students are interested in finance, they are more likely to succeed in a finance class. Richard & Schumacher [2006] discuss how students who have a greater interest in math and accounting find greater success actuarial studies than those who lack interest. Another study states “interacting with friends provides mutual circles which may enhance their interest in instructional and non-instructional activities” (Saleem, 2001). This statement implies spending time with other people who are interested in a subject could enhance the interest of an individual. Foy [1994] shows that a good relationship with peers increases the learning curve. We can conclude that students in study groups with pre-finance majors perform better than those who were not in a pre-finance study group. Thus, we predict a positive correlation between Finance-Ability and course grade.

### Math Power

The Math Power factor is comprised of a student’s confidence in math and perceived skill in math. These variables are slightly different than those commonly used in prior studies. Prior studies have looked at ACT math scores and scores in a prerequisite math class. For example, in the business sector, Uyar and Gungormus [2011] find positive significant association between a student’s math score on the ACT test and his or her performance in a financial accounting course. Trine and Schellenger [1999] find similar results in an upper level finance course. However, Kirk and Spector [2006] find that math achievement is insignificant to performance in a managerial accounting principles course.

Lee and Lee [2005] conclude that a grade in math courses is an indicator of academic success for students in engineering and business. Ballard and Johnson [2004] observed math skills are “very important” for success in economics. They note, however, that quantitative skills are multidimensional and no single variable can exemplify math skills sufficiently [Ballard & Johnson, 2004]. We hope to overcome this measurement limitation by asking students to self-report their own assessment of math confidence and skill. In non-math-heavy sectors, such as humanities, overall academic success is not related to grades in math courses [Lee and Lee, 2005].

There is an interesting sub-section of math skills to take into account regarding gender. Hyde, et al. [2008] prove men tend to be better at math than women (although they do show that the gender gap has been decreasing). Odell, et al. [2013] reports that although women have a generally lower SAT math score than males, females do not rate their math ability lower than males. The same study at a business college describes male and females as having a significant difference in math skills, and recommend having colleges use different grade prediction scales for men and women [Odell, et al., 2013]. Because of the link between math and gender, we explicitly control for gender in our demographic control variables.

Based on these studies, as well as anecdotal evidence from professors, we predict a positive correlation between the Math Power factor and course grade, although this prediction is an empirical matter based on the Kirk and Spector [2006] findings.

### Student Bandwidth

This factor group includes the number of credit hours a student is taking, extracurricular activities a student is involved with, number of service hours given, and number of hours worked at a paid job.

The number of hours worked has been shown to be negatively correlated with performance in a variety of academic classes [see Kara et al., 2009; Trine and Schellenger, 1999]. However, it has also been shown to have no significant effect [e.g., Andreopoulos et al., 2008 and Darolia 2014]. Therefore, it may depend on the specific academic discipline or other factors and is an empirical matter. Similarly there is no one clear answer for the relationship between credit hours being taken in the term and academic performance. Uyar and Gungormus [2011] find that the number of credit hours does not have an impact on performance. On the other hand, Darolia [2014] finds an inverse relationship between credit hours and performance. Similarly, while Wooten [1998] finds extracurricular activities to be insignificant, various studies have shown the opposite—participation in extracurricular activities is associated with high performance in academic classes [see Harris, 1940].

While we were not able to find a study that uses service hours as a variable, its effects may be similar to those of employment and extracurricular activities due to the nature of the variable. As such, we predict that as students have less bandwidth to focus on the finance class, they will experience lower grades. Again, however, given the previous literature this is another empirical issue with no clear prediction.

### Individual Effort.

The Individual Effort factor is composed of the following individual variables: number of hours spent per week studying for the class, number of hours spent during the test week studying for the class, whether the student believes that he or she takes good notes and that these notes will help performance, attendance, and the percentage of assigned readings completed.

The impact of attendance on performance is a fairly well-documented variable. For example, in an economics class setting, researchers have shown that attendance is positively correlated with performance [Durden and Ellis, 1995; Chan, Shum, and Wright, 1997; Marburger, 2001; and Cohn and Johnson, 2006].

Several studies [e.g., Didia and Hasnat, 1998; Krohn and O'Connor, 2005; Kara et al., 2009] show that the number of hours studying for the class in question is negatively correlated

with performance. This may be seen as a surprising result. Although this result has been found in multiple studies, it still remains largely unexplained. Why would an increase in effort correlate with a decrease in performance? Is there a peak number of hours where performance begins to decrease after reaching this point? Research such as that by Borg, Mason, and Shapiro [1989] helps to give some understanding to this relationship. In their study, Borg, et al. divide students into two groups based on ACT/SAT scores. The group with above-average ACT/SAT scores received higher final grades as they spent more time studying. However, the group with below-average scores received lower final grades as they spent more time studying. In other words, individual effort is affected by intelligence. It seems that those with higher intelligence benefit more from additional studying than those with lower intelligence. Why this is the case remains unknown. Other studies such as those by Lumsden and Scott [1987] and Park and Kerr [1990] did not find any significant effect of effort on performance. Other studies still showed positive significant correlation between effort and performance [Lynch, 2010]. Nonis and Hudson [2006] state their position well:

It should be clearly communicated to them that their abilities, motivation, and behavior work in tandem to influence their academic performance. If students are lacking in even one of these areas, their performances will be significantly lower. Once students have a better understanding of how ability, motivation, study time, and work patterns influence academic performance, they may be more likely to understand their own situations and take corrective action. More important, they may be less likely to have unreasonable expectations about their academic performance and take more individual responsibility for its outcome rather than conveniently putting the blame on the instructor. For example, it is not uncommon for intelligent students to believe that ability will result in high levels of academic performance regardless of their level of motivation or effort. The results of this study show the impact of ability on academic performance to be much higher for students who spend more time studying than for those who spend less.

Because multiple effects are occurring at once, as voiced by [Nonis and Hudson, 2006] above, our subsequent multivariate tests allow us to control for not only intelligence and effort, but all of the other effects discussed in our paper. Overall, we predict a positive correlation between individual effort and performance.

## **DATA AND METHODS**

Our data sample consists of 755 undergraduate students from a large, Western US university. The students were offered extra credit to complete a 110 item questionnaire. The total number of students in the two classes were 1,249 for a resulting response rate of 60.4% percent. Compared to previously published research in finance, our response rates are excellent: Graham and Harvey [2001], 8.5% response rate; Trahan and Gitman [1995], 12% response rate; Brau and Fawcett [2006], 18.8% response rate; Krigman, Shaw, and Womack [2001], 34% response rate; and Brau, Ryan, and DeGraw [2006], 44.5% response rate.

The survey was fairly extensive and comprises Appendix A. Questions were determined using the academic literature as well as from soliciting input from faculty and students. Our basic research question is what factors drive student performance (as proxied by course grade) in the principles of finance class.

Table 2 reports the survey descriptive statistics, grouped by the factors determined by face validity. In unreported tests, we also created factors based on principal component analysis using orthogonal rotation (varimax, quartimax, and equimax) and oblique rotation (direct oblimin and promax). Our face validity factors resulted in better robustness, and stronger explanatory factors, as measured by the Cronbach Alpha test. As such, we report the face validity factors throughout this paper.

We comment on just a few of the variables in Table 2 and leave the remaining for the reader's observation. As the survey was done at a Western school, more students take the ACT than SAT. The ACT reports a median score of 27, which is on the traditional 36 scale. The SAT on the other hand is a scaled response as per the survey in Appendix A (i.e., a 20-point scale). The median high school GPA is 3.8 and median college GPA is 3.6. These GPAs are relatively high, but the subset of students who take the principles of finance class have a large proportion of students desiring to become business majors which are limited enrollment programs and very competitive.

Table 3 shows the distribution of the larger section of the class broken down by declared major at the beginning of the semester as an example of class heterogeneity. Note the entry under "Pre-Management Core" is the largest declared major with 352 students, followed by "Open-Major" with 88, and "Pre-Finance Core" with 26. Typically many of the Open-Major students are also Pre-Management who simply have not yet changed their major code as they are still working on the prerequisites. Obtaining admission to the college of business is very selective, with less than half of the students being admitted to the school after completing the prerequisites. The principles of finance class is one of these prerequisite classes and the competition is brisk to earn an A or A-, as the cut-off for prerequisite GPA for admission is typically a 3.7 or above.

Returning to Table 2, nearly 42% of the responding students held academic scholarships at the time of the survey. These five variables: ACT/SAT, High School GPA, College GPA, and Academic Scholarship comprise the first factor, which we label Intelligence. We could have also called it Academic Horsepower, or some other factor name. The Intelligence factor has a standardized Cronbach Alpha of 0.64 which indicates that it is a consistent factor for the subsequent tests.

The next proposed factor in Table 2, Business Major, consists of the five majors offered in the business school. Business management has the largest representation at 35.7% and recreation management has the lowest 5.9%. The Cronbach Alpha indicates that this factor is not significantly grouped and therefore the variables are used independently in the subsequent regressions.

The Drive factor represents motivation of the student and consists of three variables. Students are asked to rate themselves on a 7-point scale on their effort to strive towards academic goals, career goals, and learning. The Cronbach Alpha on Drive is 0.72 which indicates a consistent factor.

Table 2 reports the remainder of the factors as they are described in the literature review and hypothesis development. If the factor has an \*, it indicates the Cronbach Alpha is statistically significant and the factor is used in the subsequent regression. If there is no \* by the factor, then the individual variables are used in the regression model and not the factor.

The empirical methods for this study begin with pair-wise Spearman correlation coefficients to have a first pass at the univariate correlations of each independent variable on the outcome



variable (course grade). The correlations are followed by parametric t-tests and (unreported) Wilcoxon difference tests. These tests are based on the difference between students who earned an A and those that did not. The last tests are OLS and Tobit models that examine the factors and variables in a multivariate setting.

## EMPIRICAL RESULTS

### Correlation Results

Table 4 reports the Spearman correlation coefficients for each of the survey variables as they correlate with the student's course grade. Panel A (the first two columns) report the variables that have significant and negative coefficients. Under each variable is reported the name of the variable, the estimated correlation coefficient, and the number of observations. Although we recognize that pairwise correlations such as these are suggestive in nature—as there is high probability they suffer from omitted variable bias, several interesting results and patterns can be gleaned from Table 4.

Take, for example, the variable Children. A hypothesis could be argued for either a negative or positive sign. Such as having a child helps a student be more mature and driven with the additional responsibility; or conversely, having a child takes up a lot of time and energy and typically results in less sleep. The first hypothetical predicts a positive coefficient whereas the second predicts a negative. The correlation of  $-0.092$  ( $p=0.0116$ ) supports an explanation consistent with the second line of logic. Having a child (or children) is significantly and negatively correlated with a student's course grade.

Other factors such as preferring write-out exams (instead of multiple choice tests), preferring smaller sections, and working a paid job outside of class all seem to be unsurprising, but confirming in nature. The variable Retaking Finance, however, does not seem intuitive along some dimensions ( $r = -0.168$ ,  $p < 0.0001$ ). At this university, because the grade in the prerequisites is so crucial for program admission, some students retake the class in an effort to earn an A. These students have already seen the material and had the opportunity to sit through the lectures twice. Despite these facts, re-takers are negatively correlated with course grade. This finding suggests that students who do not do well enough the first time they took the class have some inherent reason that persists as a challenge the second time as well.

The finding on Transfer ( $r = -0.180$ ,  $p < 0.0001$ ) confirms anecdotal evidence among faculty that transfer students typically struggle more than students who started at the university. Each institution has individual ways of working, teaching, etc., and often there is an adjustment period for transfer students, many of whom take this class in their first or second semester after transferring.

Somewhat disheartening is that students who make the effort to attend the Help Desk ( $r = -0.083$ ,  $p = 0.0220$ ) or Finance Tutoring ( $r = -0.186$ ,  $p < 0.0001$ ), both provided free as part of the class, perform significantly lower in the class than those who do not. Without claiming causality, one explanation is that strong students who do not need the extra help never attend Help Desk or Finance Tutoring; and therefore, the selection bias of those who do attend are those who struggle more with the material. The more important question would be if Help Desk and Finance Tutoring increase the scores of those who attend relative to if they had not attended, all else equal. We cannot test this question with an experiment design.

Some majors are correlated with negative performance such as Recreation Management (-0.179,  $p < 0.0001$ ), Business Management (-0.068,  $p = 0.0613$ ), non-business majors but business minors (Business Minor, -0.0817,  $p = 0.0249$ ), and non-business major or minor (Other, -0.148,  $p < 0.0001$ ).

The midterms in these classes are given over 2-3 days in a testing center. Students may take the exam anytime between 8 am and 10 pm and there are no time limits. The dayMdfin variable indicates that students who do not take the midterm on the first day perform significantly worse (-0.273,  $p < 0.0001$ ). This finding confirms observation by the professors where the average on the first day is typically 10% higher than on the subsequent days. Students who are confident enough in their preparation to take the exam on the first day, not only perform better on average, but avoid a \$5 late-exam fee. The remainder of the negative correlations in Panel A will be left to the reader's perusal.

Panel B reports the variables that are positively correlated with the class grade. For brevity, we do not discuss all of the variables, as 32 of them have significantly positive pairwise correlations. The variables generally follow the predictions from the literature review. For example, higher ACT, SAT, and GPAs are all positively correlated with class grade, as expected. Students who prefer non-open-ended questions such as multiple choice and true/false fare better, as all of the quizzes and exams are multiple choice. Students taking more credit hours also fared better.

The two most competitive business majors, Accounting (0.268,  $p < 0.0001$ ) and Finance (0.148,  $p < 0.0001$ ) are correlated significantly with class grade. Both of these majors consider the principles of finance class as a major signal for acceptance consideration. Students who are comfortable in large sections (more than 200 people in a classroom) score significantly better (0.459,  $p < 0.0001$ ). The two sections surveyed for this study were in the same room that fits 866 students with an 8 am section that was 90% full and a 2 pm section that was 50% full.

Panel B reports the variables that are not significantly correlated with grade. These 19 variables are not consistent with previous predictions as they are not significant. Having previously taken a high school or college finance class, being married, hours spent studying for finance before and during an exam week, having family in finance, and other variables are somewhat surprisingly uncorrelated with grade.

## T-Test Results

We divide the sample between those students who earned an A and all others and perform t-tests which are reported in Table 5. The first row of each variable reported is the mean of students who did not earn an A and the second row reports the mean for A students. For example, students who earn an A have an average ACT of 25.6 compared to non-A student ACT average of 23.3. According to the 2014-2015 National Ranks for Test Scores and Composite Scores provided by the ACT, those scores represent the top 82% nationally versus the top 70%, a large difference.

Perhaps the most striking result of the A versus non-A samples is that every t-test indicates statistical differences in means beyond the 5% level. (The p-values have been adjusted for variance.) The results that are significant in Table 5 are strongly consistent with those in the Table 4 correlations.

Some interesting (but expected) trends can be seen in the results. A-students have higher ACT/SAT scores, higher GPAs, prefer multiple choice exams, are confident in their math skills, strive more towards goals, handle difficult situations well, are OK with large sections, feel they

take strong personal notes, have an interest in finance, take the exam on the first day, do not have children, do not have to hold down a job, have an academic scholarship, are not a transfer student, and did not experience a trauma during the semester.

Other results are more surprising. Students who earn A's actually study less than non-A students during non-Exam and Exam weeks. A-students also work in study groups less often. These findings, coupled with the findings from Table 4 (and confirmed in Table 5) that students who do not go to Help Desk and Finance Tutors score better seem to indicate that some students are naturally better at performing in a principles of finance class than other students. Despite retaking the course, studying longer, working in a group, attending Help Desk, and working with a Finance Tutor, some students do not perform well vis-à-vis other students on the other side of each variable. One final, striking result is nearly 20% of the students not earning an A marked that they experience a significant trauma during the semester. The fact that 1-in-5 students felt this traumatic stress may be an eye opener to professors once again at the non-academic pressure many students are under.

### Ordinary Least Squares Regression Results

Table 6 reports the results of a grand regression that includes as independent variables the factors that statistically group by Cronbach Alpha and the individual variables for those that do not. The first variable, Section 2, indicates that there was an effect between the two sections. This could be for several reasons such as time of day, size of class, use of PowerPoint, structure of class, exams, etc. The Intelligence factor is significant and positive confirming the univariate results. The major variable results are intriguing. Pre-Accounting students have a positive coefficient vis-à-vis a negative coefficient on Pre-Finance students. Historically at this university, the Accounting program has been the most competitive and rigorous. Even after controlling for every factor the authors could think of to explain grades, Accounting students still possess some attribute that allows them to perform significantly better than all other majors. Economically, as both of these variables are binary in nature, Accounting students average nearly two points better in the class grade whereas Finance students average nearly two points worse.

The factors of Drive and Testing are consistent with theoretical predictions. Students who indicate a strong drive for career, school, and learning are positively correlated with grade. Students who prefer multiple choice, true/false, and matching questions on exams outperform those who prefer short answer, essay, and fill-in-the-blank. Anecdotally, it is common for professors to hear students say that they do not do well on multiple choice exams; that is, they test below their knowledge level because they do not have the knack for multiple choice exams. The Testing factor provides evidence that test preference is a significant effect.

The factors of Finance Assessment and Math support the notion that students who believe they are strong at finance and math (both quantitative areas) perform statistically positive in the class. The class size variable that a student feels he or she does as well in large as in small sections is positive, indicating that some students who do not like large sections do not do as well in them. Again, anecdotal evidence from discussions with students suggests that some students struggle in large sections. Whether a large section is over 400 students (as the second section of this class), or over 800 students (as the first section of this study), the perception of being in a large class can negatively impact some students.

The variables of a University Accessibility Center (UAC) letter for a disability and a trauma during the semester continue to be negative in the multivariate setting. UAC letter students

underperform on average two percentage points and students suffering a trauma underperform 2.6 percent (i.e., nearly half a letter grade). Additionally, the results indicate students taking more credit hours during the semester correlate with a higher grade and students working more hours for pay during the semester correlate with a lower grade.

The factor of Individual Effort is significantly related to performance in the class, indicating that in combination, hours spent studying, taking good notes, believing in one's notes, attending class, and doing the readings contribute to learning and grade performance. The variable Gender indicates that men out-perform women in the class. This finding is counter-intuitive in that many national studies show that women are out-performing men along both verbal and quantitative academic dimensions [Collins and Askar, 2012]. The final significant variable, Day Midterm Taken is consistent with the univariate results which indicate that students who take the exam on the last day it is offered do significantly worse than those who take it the first day of the week.

As the gender finding may cause some concern among readers, we concur with the analysis presented in Brau, Holmes, and Israelsen [2014]:

This gender-based discrepancy confirms the results in other studies such as Danes and Haberman [2007]. However, Danes and Haberman document other subtleties such as showing that females achieve higher scores in specific areas such as insurance and investment strategy.

In a study conducted with the Myers-Briggs Type Indicator (MBTI), McGee and Phipps-Barnes [1997] categorized male and female students into 4 distinct groups: creative style, conceptual capacity, executive disposition, and vocational preference. The results show females are significantly more intuitive than males and that males have greater conceptual capacity than females. Consistent with our findings, McGee and Phipps-Barnes conclude that males perform better on static instruments such as financial assessments because of their ability to master required material and their preference for "tool handling." Thus, the narrow statistical gap between males and females with respect to financial knowledge in our data is consistent with the gender-based differences demonstrated with the MBTI [McGee and Phipps-Barnes, 1997]. However, the advantage associated with the heightened creativity and intuitive nature of females may be unregistered in our financial literacy quiz.

Evidence that women may be better investors than men has received considerable attention beginning with Barber and Odean [2001] who show that men trade more often than women, and as a result, experience a greater reduction in net return. Another example is Weidner [2011] who reports on multiple studies that provide evidence that women are better investors than men because they take less risk, hold their investments longer, and have greater financial self-control.

Hence, there may be no difference in the abilities of males and females to make sound decisions in a realm with the vagaries of finance. Rather, it is possible that the innate source of sound decision making stems from different cognitive attributes in males and females and that these differences are not fully captured in empirical analysis because of inadequacies in the instrument. Obviously, further research is warranted.

## Robustness: Tobit Regression Results

Table 6 reports the results of a limited dependent specification for the grand model. We use a Tobit regression because the course grade is truncated at zero – that is, it is impossible for a student to earn less than a zero percent grade in the class. The Tobit model indicates strong consistency with the OLS model. There are four variables, however, that have different effects in the Tobit model. Two variables that were not significant in the OLS – Self Belief and College Finance Class are now significant. Students who have taken a previous College Finance Class do marginally better relative to those who have not at the 10% level of significance, consistent with predictions. Inconsistent with predictions though, students with higher self-belief perform relatively worse in the class. This factor which includes students who believe they handle difficult situations well, believe in themselves, and believe they can handle many things, has a negative coefficient on grade. Perhaps this factor is picking up over-confidence in one's abilities.

Two variables that were significant become insignificant in the Tobit – UAC letter and Semester Credit Hours. The nature of the underlying distribution assumed by the Tobit specification controls better for the outliers on the UAC variable and Semester Credit Hours variable degrading the significance. Overall, the OLS and Tobit models indicate robustness for the large majority of variables.

## CONCLUSION

In this paper we have documented specific variables and factors that significantly impacted the course grades of undergraduate students in two large sections of a principles of finance class. We are clearly not the first researchers to investigate this type of question, as evidenced by the work of Harris [1940] who studied over 300 articles from 1930-1937. Along with demonstrating that several of the Harris variables are still robust today, such as intelligence, high school GPA, and study habits, we extend the set of explanatory variables through a questionnaire of over 100 questions. We demonstrate the impact of dozens of individual variables, along with factors constructed and verified through econometric measures. Using both univariate and multivariate models, we show robustness for a sufficient set of variables to contribute to the discussion on how students learn, or at least on how they perform in an introductory finance course. Our paper has implications for not only professors of finance on how to help students learn, but also for students who desire to effectively perform in their principles of finance class.

We believe that there is room for much additional research on this topic. Foremost, these variables and research questions can be studied in an experiment setting as opposed to a survey method after all students have had the same experience. An experimental design could help us understand causality among the variables and not just correlation. Additionally, some of the counterintuitive results or inconclusive results pose interesting questions of “why” and “how”.

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Table 1.  
Variable  
Definitions

Abbrev Names	Variable
AcaSchol	Equals 1 if Academic Scholarship
ACT	ACT (on the 36 max ACT score)
Age	Age (16-point scale)
athSchol	Equals 1 if Athletic Scholarship
athTutor	Use of athletic tutor (7-point scale)
attndFin	How often attend class (6-point scale)
BelifHar	Belief in self (7-point Likert Scale)
BusAcadm	Strives toward academic goals (7-point Likert Scale)
BusCarr	Strives toward career goals (7-point Likert Scale)
BusLearn	Strives toward learning (7-point Likert Scale)
busMinor	Equals 1 if Business Minor
BYU GPA	College GPA on a 4.0 scale)
Children	Children 0=no, 1=yes
CollAthl	Equals 1 if College athlete
collFin	Equals 1 if College finance class
confmath	Confidence in math (7-point Likert Scale)
credhrs	Credit hours (5-point)
dayMdFin	Day took test 1=first day 2=second day
EmHlpFam	Family emotional support (7-point scale)
EngFirst	Equals 1 if English as first language
EQlar_Sm	Performance dependence on class size (7-point Likert Scale)
extraAct	Extracurricular activities (7-point scale)
famInFin	Equals 1 if Family in finance
FrndHelp	Friend support (7-point scale)
GamInSem	# collegiate sports games in semester
GdNotes	Good notes (7-point scale)
Gender	Gender 0=female 1=male
hlpdesk	Use of Help Desk (7-point scale)
HndlMany	Can handle many things (7-point Likert Scale)
hrExmFin	# of hours per exam week spent on studying (11 point scale)
hrPaidJb	Hours spent at a paid job in the semester (8-point)
hrRelSer	Hours serving in religious/spiritual community (7-point scale)
hrsFin	# of hours per week spent on studying (11 point scale)
HS GPA	High School GPA on a 4.0 scale
HSFin	Equals 1 if HS finance class
intFin	Interest in finance (7-point Likert Scale)
Marital	Married 0=no, 1=yes
mathskil	Percieved skill in math (7-point Likert Scale)
mission	Equals 1 if served LDS mission
NotePer	Notes improve performance (7-point scale)
num_chil	# of children during semester
Other	Equals 1 if not a pre-business Major
OutDiff	Handle difficult situations (7-point Likert Scale)
peEssay	Performance essay (7-point Likert Scale)
peFill_	Performance fill-in-the-blank (7-point Likert Scale)
peMatch	Performance matching (7-point Likert Scale)
peMultCh	Performance multiple choice (7-point Likert Scale)
peShrtAn	Performance short answer (7-point Likert Scale)
peT_F	Performance true/false (7-point Likert Scale)
pplGpFin	# of people in study group
preACCT	Equals 1 if Pre-Accounting Major
preBusM	Equals 1 if Pre-Business Mgmt Major
preFIN	Equals 1 if Pre-Finance Major
preIS	Equals 1 if Pre-IS Major
preRecM	Equals 1 if Pre-Recreational Mgmt Major
prEssay	Equals 1 if Prefer essay
prFill_	Equals 1 if Prefer fill-in-the-blank
prMatch	Equals 1 if Prefer matching
prMultCh	Equals 1 if Prefer multiple choice
prShrtAn	Equals 1 if Prefer short answer
prT_F	Equals 1 if Prefer true/false
readFin	Percentage of reading completed before class (%)
retakFin	Equals 1 if Retaking the class
SAT	SAT (on a 20 point scale)
SecTwo	Equals 1 if in Section 2
skillFin	Skill in finance (7-point Likert Scale)
SmBetter	Perform better in small classes (7-point Likert Scale)
StGrpFin	Equals 1 if in a Study Group
teachFin	Teach others principles from class (6-point scale)
transfer	Equals 1 if Transfer student
trauma	Equals 1 if Traumatic life event during semester
tutorFin	Use of a tutor (7-point scale)
UAC	Equals 1 if student has a University Accessibility Letter
whnSleep	Time to Sleep (7-point scale)
whnWake	Wake up time (7-point scale)

Table 2. Summary Statistics and Factors

Factors (face value)	Cronbach Alpha	Variable	N	Mean	Median	Minimum	Maximum
Intelligence*	0.641	ACT	735	26.87	27	14	36
		SAT	195	13.93	15	3	20
		High School GPA	786	3.73	3.8	1.8	4
		College GPA	777	3.52	3.6	0	4
		Academic Scholarship	794	0.42	0	0	1
Business Major	-0.490	Pre-Accounting Major	803	0.19	0	0	1
		Pre-Finance Major	803	0.17	0	0	1
		Pre-IS Major	803	0.07	0	0	1
		Pre-Recreational Mgmt Major	803	0.06	0	0	1
		Pre-Business Mgmt Major	803	0.36	0	0	1
Drive*	0.723	Strives toward academic goals	799	6.24	6	1	7
		Strives toward career goals	801	5.97	6	1	7
		Strives toward learning	801	5.83	6	2	7
Testing*	0.661	Prefer multiple choice	803	0.90	1	0	1
		Prefer matching	803	0.61	1	0	1
		Prefer true/false	803	0.39	0	0	1
		Prefer fill-in-the-blank	803	0.22	0	0	1
		Prefer short answer	803	0.29	0	0	1
		Prefer essay	803	0.13	0	0	1
		Performance multiple choice	802	5.82	6	1	7
		Performance matching	799	5.83	6	1	7
		Performance true/false	798	4.95	5	1	7
		Performance fill-in-the-blank	794	4.37	4	1	7
		Performance short answer	799	4.70	5	1	7
Performance essay	801	4.52	5	1	7		
Self Belief*	0.771	Handle difficult situations	801	5.90	6	2	7
		Belief in self	799	5.63	6	1	7
		Can handle many things	798	5.60	6	1	7
Finance*	0.709	Skill in finance	801	5.33	6	1	7
		Interest in finance	799	5.19	5	1	7
Math*	0.972	Confidence in math	801	5.57	6	1	7
		Percieved skill in math	800	5.53	6	1	7
Class Size	-3.489	Performance dependence on class size	800	4.80	5	1	7
		Perform better in small classes	801	4.32	4	1	7
Outside Stress	0.224	UAC	801	0.06	0	0	1
		Traumatic life event	797	0.16	0	0	1

Table 2 (Cont'd.). Summary Statistics and Factors

Factors (face value)	Cronbach Alpha	Variable	N	Mean	Median	Minimum	Maximum
Family	0.102	Married 0=yes, 1=no	798	0.82	1	0	1
		Children 0=no, 1=yes	797	0.04	0	0	1
		# of children	803	0.06	0	0	5
Bandwidth	0.111	Credit hours	802	2.84	3	1	5
		Hours spent at a paid job in the semester	796	3.76	4	1	8
		Hours serving in religious/spiritual community	794	3.18	3	1	7
		Extracurricular activities	795	2.56	3	1	7
Athlete*	0.863	College athlete	797	0.04	0	0	1
		# collegiate sports games in semester	803	0.05	0	0	2
		Athletic Scholarship	803	0.01	0	0	1
Exposure to Finance	0.094	Family in finance	802	0.33	0	0	1
		HS finance class	802	0.05	0	0	1
		College finance class	801	0.08	0	0	1
		Retaking the class	803	0.08	0	0	1
Indiv effort*	0.586	# of hours per week spent on studying	798	3.92	4	1	11
		# of hours per exam week spent on studying	799	7.71	7	2	11
		Good notes	800	5.32	6	1	7
		Notes improve performance	800	5.48	6	1	7
		Attendance	800	5.71	6	1	6
		Readings	795	81.67	90	0	100
Outside Help*	0.615	Use of Help Desk	799	1.49	1	1	6
		Use of a tutor	800	1.43	1	1	7
		Study Group	801	0.50	0	0	1
		# of people in study group	803	1.13	0	0	6
		Teach others principles from class	798	0.64	1	0	1
		Use of athletic tutor	803	0.09	0	0	6
Support*	0.632	Family emotional support	799	5.99	6	1	7
		Friend support	797	5.43	6	1	7
Demographic		LDS mission 0=no 1=yes	797	0.77	1	0	1
		English as first language	798	0.94	1	0	1
		Transfer student	803	0.31	0	0	1
		Second Section	803	0.12	0	0	1
		Age	795	7.09	7	2	16
		Gender 0=female 1=male	798	0.74	1	0	1
		Day took test 1=first day 2=second day	798	1.63	2	1	2
		Time to Sleep	798	5.38	5	3	7
		Wake up time	798	4.92	5	1	7
		Business Minor	803	0.13	0	0	1
		Other Major	803	0.28	0	0	1

Table 3. Example of Majors (from Section 1)

Emphasis	#	Emphasis	#	Emphasis	#
Acting Premajor Program	3	English Language	1	Mathematics	4
Actuarial Science	7	Entrepreneurship	2	Mechanical Engineering	3
Advertising	4	Environmental Science	1	Mechanical Engineering Pre-Professional	7
American Studies	3	Epidemiology	1	Media Arts Premajor	3
Animation	1	Exercise & Wellness	3	Microbiology	3
Animation Premajor	1	<b>Exercise Science</b>	<b>15</b>	Middle East Studies / Arabic	1
Applied and Computational Mathematics	2	Experience Industry Management	1	Molecular Biology	1
Applied Physics	1	Experience Management	6	Music--Premajor Program	5
Applied Statistics & Analytics	8	Facilities Management	3	Neuroscience	7
Archaeology	1	Facility & Property Management	2	Nursing Premajor Program	4
Art Education K-12 Pre-Major Program	1	Family Studies	2	Nutritional Science	1
Art History & Curatorial Studies	2	Finance	1	<b>Open-Major</b>	<b>88</b>
Biochemistry	2	Food Science	1	Philosophy	1
Biology	11	French	1	Photography	1
Biophysics	2	French Studies	2	Photography Pre-Major Program	1
Brass	1	General Business	1	Physics	2
Chemical Engineering	13	Genetics & Biotechnology	2	Physiology & Developmental Biology	10
Chemistry	2	Geospatial Intelligence	1	Political Science	12
China Studies	1	Health Promotion	5	Post-Bacc Studies	1
Chinese	2	Health Science	4	<b>Pre-Finance Core</b>	<b>26</b>
Civil Engineering	3	History	2	<b>Pre-Management Core</b>	<b>352</b>
Communication Disorders Pre-Major	2	History Teaching	1	Pre-Recreation Management	2
<b>Communications Premajor</b>	<b>17</b>	Human Development	3	Psychology	11
Computer Engineering	5	Illustration	1	Public Health	2
Computer Science	8	Industrial Design Premajor	2	Public Relations	6
Conservation Biology	1	Information Technology	3	Russian	2
Construction Management	5	Interdisciplinary Humanities	1	Sociology	3
Dance	1	International Relations	6	Spanish	5
Dance Education K-12 Premajor	1	Japanese	1	Spanish Translation	1
Dance Premajor	1	Journalism	1	Statistical Science	2
Dietetics	2	Landscape Management	8	String	2
Dietetics Premajor	2	Latin American Studies	1	Teaching Social Science	1
<b>Economics</b>	<b>22</b>	Leisure Services Management	1	Technology & Engineering Education	1
Electrical Engineering	2	Linguistics	3	Therapeutic Recreation	3
Elementary Education	3	Manufacturing Engineering Technology	3		
English	4	Marketing Management	1		

Table 4.  
Spearman  
Correlations  
with  
Course  
Grade

Panel A		Panel B			Panel C	
Negative Correlation		Positive Correlation			Insignificant Correlation	
<b>2nd Sec</b>	<b>Children</b>	<b>ACT</b>	<b>BusCarr</b>	<b>teachFin</b>	<b>prMatch</b>	<b>Marital</b>
-0.08814	-0.09212	0.34297	0.25175	0.09287	-0.00078	0.03714
0.0154	0.0116	<.0001	<.0001	0.0109	0.9830	0.3095
755	750	692	753	751	755	751
<b>UAC</b>	<b>num_chil</b>	<b>SAT</b>	<b>BusLearn</b>	<b>Gender</b>	<b>prT_F</b>	<b>GamInSem</b>
-0.08886	-0.09334	0.3011	0.29696	0.19634	-0.04949	-0.04803
0.0147	0.0103	<.0001	<.0001	<.0001	0.1743	0.1874
753	755	188	753	751	755	755
<b>prShrtAn</b>	<b>whnSleep</b>	<b>HS_GPA</b>	<b>EmHlpFam</b>	<b>mission</b>	<b>prFill_</b>	<b>athTutor</b>
-0.06436	-0.06712	0.26698	0.15671	0.09713	0.02558	-0.0499
0.0772	0.066	<.0001	<.0001	0.0078	0.4828	0.1708
755	751	741	751	750	755	755
<b>prEssay</b>	<b>whnWake</b>	<b>credhrs</b>	<b>HndlMany</b>	<b>EngFirst</b>	<b>peShrtAn</b>	<b>extraAct</b>
-0.09063	-0.08734	0.19775	0.18048	0.06874	0.00343	0.05214
0.0127	0.0167	<.0001	<.0001	0.0597	0.9252	0.1543
755	751	754	750	751	752	748
<b>SmBetter</b>	<b>hrPaidJb</b>	<b>prMultCh</b>	<b>OutDiff</b>	<b>acaSchol</b>	<b>peEssay</b>	<b>preIS</b>
-0.35739	-0.25002	0.20045	0.18479	0.33041	-0.03017	0.01392
<.0001	<.0001	<.0001	<.0001	<.0001	0.4084	0.7027
753	749	755	753	747	753	755
<b>retakFin</b>	<b>athSchol</b>	<b>peMultCh</b>	<b>BelifHar</b>	<b>preACCT</b>	<b>FrndHelp</b>	<b>hrRelSer</b>
-0.16844	-0.06081	0.31989	0.12352	0.26784	0.01005	0.04415
<.0001	0.095	<.0001	0.0007	<.0001	0.7835	0.2281
755	755	754	751	755	749	747
<b>hlpdesk</b>	<b>preRecM</b>	<b>peMatch</b>	<b>EQLar_Sm</b>	<b>preFIN</b>	<b>famInFin</b>	<b>CollAthl</b>
-0.08342	-0.17899	0.1792	0.45909	0.14812	0.05484	-0.04731
0.0222	<.0001	<.0001	<.0001	<.0001	0.1325	0.1956
751	755	751	752	755	754	750
<b>tutorFin</b>	<b>preBusM</b>	<b>peT_F</b>	<b>GdNotes</b>	<b>BYU_GPA</b>	<b>HSFin</b>	<b>hrsFin</b>
-0.18603	-0.06813	0.12195	0.09496	0.61826	-0.03745	-0.05093
<.0001	0.0613	0.0008	0.0092	<.0001	0.3044	0.1635
752	755	750	752	733	754	750
<b>StGrpFin</b>	<b>busMinor</b>	<b>peFill_</b>	<b>NotePer</b>	<b>skillFin</b>	<b>collFin</b>	<b>hrExmFin</b>
-0.07809	-0.08165	0.16935	0.1612	0.66305	-0.0255	-0.05359
0.0321	0.0249	<.0001	<.0001	<.0001	0.4847	0.1423
753	755	747	752	753	753	751
<b>pplGpFin</b>	<b>Other</b>	<b>confmath</b>	<b>intFin</b>	<b>readFin</b>	<b>attndFin</b>	
-0.07266	-0.14797	0.39178	0.30851	0.24672	0.05878	
0.046	<.0001	<.0001	<.0001	<.0001	0.1073	
755	755	753	751	747	752	
<b>dayMdFin</b>	<b>transfer</b>	<b>mathskil</b>	<b>BusAcadm</b>			
-0.27255	-0.18029	0.38854	0.42414			
<.0001	<.0001	<.0001	<.0001			
750	755	752	751			
<b>Age</b>	<b>trauma</b>					
-0.08107	-0.21873					
0.0266	<.0001					
748	750					

Table 5.  
T-tests  
Based on  
Earning  
a Course  
Grade of  
an A or  
not.

	n	mean	p-value	difference		n	mean	p-value	difference
Second Section	594	0.128	0.047	-0.0466	Retake Fin	594	0.094	0.0019	-0.056
	209	0.081				209	0.038		
ACT	545	23.262	<.0001	2.3323	Read Fin	590	80.315	0.0048	5.2652
	190	25.595				205	85.581		
HS GPA	582	3.696	<.0001	0.1197	Hours Fin	593	3.998	0.0251	-0.3154
	204	3.816				205	3.683		
Credit Hrs	594	2.790	0.0007	0.1767	Hours Exam Fin	594	7.840	0.0111	-0.5133
	208	2.966				205	7.327		
UAC	593	0.074	<.0001	-0.0454	Tutor Fin	594	1.488	0.0003	-0.2406
	208	0.029				206	1.248		
Pref MC	594	0.874	<.0001	0.1024	Student Group	594	0.524	0.0145	-0.0985
	209	0.976				207	0.425		
Perf MC	594	5.647	<.0001	0.6804	People Group	594	1.190	0.0355	-0.238
	208	6.327				209	0.952		
Perf Match	592	5.711	<.0001	0.4773	Day Take Exam	591	1.692	<.0001	-0.2427
	207	6.188				207	1.449		
Perf TF	591	4.858	0.0005	0.3692	Gender	591	0.706	0.0002	0.1205
	207	5.227				207	0.826		
Perf Fill	588	4.231	<.0001	0.5163	Children	591	0.044	0.0136	-0.0294
	206	4.748				206	0.015		
Conf Math	594	5.377	<.0001	0.7437	Hours Paid Job	591	3.983	<.0001	-0.8611
	207	6.121				205	3.122		
Math Skill	593	5.334	<.0001	0.7627	Hours Rel Service	589	3.136	0.0115	0.1618
	207	6.097				205	3.298		
Bus Acad	592	6.100	<.0001	0.5428	ACA Schol	588	0.344	<.0001	0.2827
	207	6.643				206	0.626		
Bus Carr	594	5.882	0.0029	0.3255	Pre-Acct	594	0.140	<.0001	0.1904
	207	6.208				209	0.330		
Bus Learn	594	5.716	<.0001	0.4246	Pre-Fin	594	0.147	0.0228	0.0736
	207	6.140				209	0.220		
Em Hlp Fam	593	5.907	0.0005	0.3306	Pre-RecM	594	0.072	0.0002	-0.0533
	206	6.238				209	0.019		
Handle Money	593	5.536	0.0061	0.2637	Pre-BusM	594	0.384	0.0084	-0.1015
	205	5.800				209	0.282		
Out Diff	594	5.847	0.0059	0.2063	Pre-Bus Minor	594	0.145	0.0292	-0.0539
	207	6.053				209	0.091		
EQ Large Small	593	4.467	<.0001	1.2865	Other Major	594	0.301	0.0479	-0.0716
	207	5.754				209	0.230		
Small Better	594	4.625	<.0001	-1.1705	Transfer Student	594	0.350	<.0001	-0.1492
	207	3.454				209	0.201		
Note Per	594	5.426	0.0424	0.2197	BYU GPA	572	3.433	<.0001	0.3474
	206	5.646				205	3.781		
Int Fin	591	5.047	<.0001	0.5295	Trauma	591	0.193	<.0001	-0.1201
	208	5.577				206	0.073		
Skill Fin	593	5.041	<.0001	1.0989					
	208	6.139							



Table 6. Ordinary Least Squares Regression with Course Grade as the Defendant Variable. Variables are defined in Table 1.

Variable	Parameter	Pr >  t	Variance
	Estimate		Inflation
<b>Intercept</b>	0.296	<.0001	0
<b>Section 2</b>	-0.035	0.0001	1.15
<b>Intel</b>	0.027	<.0001	1.71
<b>preACCT</b>	0.018	0.0452	1.66
<b>preFIN</b>	-0.019	0.0318	1.36
<b>preIS</b>	-0.002	0.9054	1.25
<b>preRecM</b>	0.001	0.9466	1.44
<b>preBusM</b>	0.001	0.8659	1.96
<b>Drive</b>	0.008	0.0755	1.76
<b>Testing</b>	0.019	0.0056	1.11
<b>SelfBelief</b>	-0.006	0.1369	1.42
<b>FinanceAsmt</b>	0.040	<.0001	1.97
<b>Math</b>	0.006	0.0197	1.40
<b>EQLar_Sm</b>	0.010	<.0001	2.35
<b>SmBetter</b>	-0.001	0.7067	1.91
<b>UAC</b>	-0.021	0.0994	1.10
<b>trauma</b>	-0.026	0.0015	1.16
<b>Marital</b>	0.000	0.9989	1.51
<b>Children</b>	-0.010	0.6238	1.46
<b>credhrs</b>	0.009	0.0474	1.24
<b>hrPaidJb</b>	-0.006	0.0001	1.24
<b>hrRelSer</b>	-0.002	0.4835	1.15
<b>extraAct</b>	-0.001	0.5710	1.18
<b>Athlete</b>	-0.001	0.9589	1.12
<b>famInFin</b>	-0.006	0.3309	1.12
<b>HSFin</b>	0.007	0.6312	1.07
<b>collFin</b>	0.014	0.2041	1.13
<b>retakFin</b>	-0.002	0.8548	1.18
<b>IndivEffort</b>	0.002	0.0036	1.20
<b>OutsideHelp</b>	0.006	0.3189	1.25
<b>Support</b>	0.002	0.4459	1.24
<b>mission</b>	-0.001	0.9236	2.47
<b>EngFirst</b>	0.015	0.3590	1.14
<b>transfer</b>	0.007	0.3454	1.46
<b>Age</b>	0.001	0.7009	2.43
<b>Gender</b>	0.016	0.0749	2.16
<b>dayMdFin</b>	-0.019	0.0028	1.26
<b>whnSleep</b>	-0.003	0.4169	1.75
<b>whnWake</b>	0.002	0.6263	1.75
<b>busMinor</b>	0.002	0.8512	1.25
<b>Other</b>	-0.004	0.6937	2.40
<b>Adj R-sq</b>	0.573	<.0001	

Table 7. Tobit Regression with Course Grade as the Dependent Variable. Variables are defined in Table 1.

Parameter	Estimate	Chi-Square	Pr > Chi Sq
<b>Intercept</b>	-0.576	108.87	<.0001
<b>Section 2</b>	-0.025	9.00	0.0027
<b>Intel</b>	0.024	46.75	<.0001
<b>preACCT</b>	0.018	4.65	0.0311
<b>preFIN</b>	-0.020	6.53	0.0106
<b>preIS</b>	-0.014	1.45	0.2284
<b>preRecM</b>	-0.016	1.59	0.2069
<b>preBusM</b>	0.005	0.44	0.5060
<b>Drive</b>	0.007	3.40	0.0651
<b>Testing</b>	0.020	9.07	0.0026
<b>SelfBelief</b>	-0.008	4.31	0.0379
<b>FinanceAsmt</b>	0.036	97.53	<.0001
<b>Math</b>	0.008	13.26	0.0003
<b>EQLar_Sm</b>	0.010	20.13	<.0001
<b>SmBetter</b>	-0.001	0.14	0.7078
<b>UAC</b>	-0.010	0.67	0.4115
<b>trauma</b>	-0.031	17.03	<.0001
<b>Marital</b>	-0.001	0.01	0.9259
<b>Children</b>	-0.011	0.36	0.5474
<b>credhrs</b>	0.007	2.28	0.1310
<b>hrPaidJb</b>	-0.007	19.09	<.0001
<b>hrRelSer</b>	-0.004	1.20	0.2736
<b>extraAct</b>	-0.001	0.27	0.6043
<b>Athlete</b>	-0.012	0.52	0.4712
<b>famInFin</b>	-0.008	1.94	0.1634
<b>HSFin</b>	0.008	0.34	0.5574
<b>collFin</b>	0.018	2.88	0.0894
<b>retakFin</b>	0.001	0.00	0.9444
<b>IndivEffort</b>	0.002	7.84	0.0051
<b>OutsideHelp</b>	0.004	0.45	0.5041
<b>Support</b>	-0.002	0.34	0.5605
<b>mission</b>	0.000	0.00	0.9951
<b>EngFirst</b>	0.014	0.79	0.3747
<b>transfer</b>	-0.002	0.08	0.7819
<b>Age</b>	0.002	0.53	0.4686
<b>Gender</b>	0.018	4.70	0.0302
<b>dayMdFin</b>	-0.018	8.87	0.0029
<b>whnSleep</b>	-0.003	0.71	0.4004
<b>whnWake</b>	-0.002	0.28	0.5990
<b>busMinor</b>	-0.003	0.16	0.6876
<b>Other</b>	-0.009	1.13	0.2882

## Appendix A. Survey Instrument

Q1 Your participation in this study will require the completion of this Qualtrics survey. This should take approximately 20-30 minutes of your time. You will not be paid for being in this study. This survey involves minimal risk to you. The benefits, however, may impact society by helping increase knowledge about the education process. You do not have to be in this study if you do not want to be. You do not have to answer any question that you do not want to answer for any reason. We will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem you may contact me, Brother Brau at [jerboa@byu.edu](mailto:jerboa@byu.edu) or my colleague Brother Swenson at [michael\\_swenson@byu.edu](mailto:michael_swenson@byu.edu). If you have any questions about your rights as a research participant you may contact the IRB Administrator at A-285 ASB, Brigham Young University, Provo, UT 84602; [irb@byu.edu](mailto:irb@byu.edu); (801) 422-1461. The IRB is a group of people who review research studies to protect the rights and welfare of research participants. The completion of this survey implies your consent to participate. If you choose to participate, please complete the survey in the next 48 hours. Thank you!

Q2 Please enter your NetID (for example, you may sign into MyBYU with jcb222). In order to receive extra credit for your participation in this study, you must enter your NetID.

NetID (1)

Q3 What is the highest score you received on the ACT?

- I didn't take the ACT; I took the SAT. (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- 10 (11)
- 11 (12)
- 12 (13)
- 13 (14)
- 14 (15)
- 15 (16)
- 16 (17)
- 17 (18)
- 18 (19)
- 19 (20)

- 20 (21)
- 21 (22)
- 22 (23)
- 23 (24)
- 24 (25)
- 25 (26)
- 26 (27)
- 27 (28)
- 28 (29)
- 29 (30)
- 30 (31)
- 31 (32)
- 32 (33)
- 33 (34)
- 34 (35)
- 35 (36)
- 36 (37)

Q8 What is the highest score you received on the SAT? (if you took the SAT before 2005, select "I took the SAT before 2005". Otherwise, please select the range in which your highest score falls).

- I didn't take the SAT; I only took the ACT. (1)
- I took the SAT before 2005. (2)
- 600-699 (3)
- 700-799 (4)
- 800-899 (5)
- 900-999 (6)
- 1000-1099 (7)
- 1100-1199 (8)
- 1200-1299 (9)
- 1300-1399 (10)
- 1400-1499 (11)
- 1500-1599 (12)
- 1600-1699 (13)
- 1700-1799 (14)
- 1800-1899 (15)
- 1900-1999 (16)
- 2000-2099 (17)
- 2100-2199 (18)
- 2200-2299 (19)
- 2300-2399 (20)
- 2400 (21)

Q9 What is your high school unweighted GPA (4.0 maximum)?

Q10 How many credit hours are you taking this semester?

- Less than 9 (1)
- 9-12 (2)
- 13-15 (3)
- 16-18 (4)
- More than 18 (5)

Q11 Do you have a letter on file with the University Accessibility Center (UAC) that provides academic accommodations to you?

- Yes (1)
- No (2)

Q117 Which types of test questions do you prefer? Select all that apply.

- Multiple Choice (1)
- Matching (2)
- True/False (3)
- Fill-in-the-Blank (4)
- Short Answer (5)
- Essay Questions (6)

Q116 Please rate yourself on how well you perform on each of the following types of test questions.

	Much Worse (1)	Worse (2)	Somewhat Worse (3)	About the Same (4)	Somewhat Better (5)	Better (6)	Much Better (7)
Multiple Choice (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Matching (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
True/False (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fill-in-the-Blank (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short Answer (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Essay Questions (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

111 Please select how much you agree or disagree with each of the following statements.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
I have confidence in my math ability. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe I have good math skills. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am determined to do well in my business courses because I want to achieve my academic goals. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am determined to do well in my business courses because I want to pursue a career in business. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am determined to do well in my business courses because I am interested in learning new subjects. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get the emotional help and support I need from my family. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My friends really try to help me. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I can handle many things at a time. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am in a difficult situation, I can usually find my way out of it. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My belief in myself gets me through hard times. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perform equally well in large classes and small classes. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Class size affects my overall performance -- the smaller the class the better. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take good notes in class. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying my notes improves my performance in class. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q104 Did you take Finance 201 this semester with Dr. Brau or Dr. Holmes?

Yes (1)

No (2)

If No Is Selected, Then Skip To End of Block

Q5 What is your personal level of interest in Finance?

- Extremely Uninterested (1)
- Very Much Uninterested (2)
- Slightly Uninterested (3)
- Neither Interested nor Uninterested (4)
- Slightly Interested (5)
- Very Much Interested (6)
- Extremely Interested (7)

Q12 How well do you rate your skills in Finance?

- Very Bad (1)
- Bad (2)
- Poor (3)
- Neither Good nor Bad (4)
- Fair (5)
- Good (6)
- Very Good (7)

Q13 Do you have a parent, sibling, or close associate who works in this field?

- Yes (1)
- No (2)

Q14 Did you take a finance class in high school?

- Yes (1)
- No (2)

Q15 Have you taken another finance class in college?

- Yes (1)
- No (2)

Answer If Have you taken another finance class in college? Yes Is Selected

Q16 What is the other finance class you have taken in college?

Q17 Are you retaking Finance 201?

- Yes (1)
- No (2)

Q6 How often did you attend Finance 201 this semester?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)

Q7 What percentage of the assigned readings do you generally have completed before attending Finance 201?

\_\_\_\_\_ % Readings Completed Before Class (1)



Q18 How many hours per non-exam week do you study outside of class for Finance 201?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q19 How many hours per exam week do you study outside of class for Finance 201?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q20 How often do you use help desk for Finance 201?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q21 How often do you use tutors (non-TAs) for Finance 201?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q22 Are you in a study group for Finance 201?

- Yes (1)
- No (2)

Answer If Are you in a study group? Yes Is Selected

Q23 How many people (yourself included) regularly participate in your study group?

- 2 (1)
- 3 (2)
- 4 (3)
- 5 (4)
- 6 (5)
- More than 6 (6)

Answer If Are you in a study group? Yes Is Selected

Q24 How did you find one another to form your group?

Q25 Do you teach other people principles from the class in order to help you learn the material from class?

- Yes (1)
- No (2)

Q26 Finance 201 provides 2 days for taking midterm exams. Which day do you generally take Finance 201 midterm exams?

- First Day (1)
- Second (Last) Day (2)

Q105 Did you take Finance 200 this semester with Dr. Marsh?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q27 What is your personal level of interest in Finance?

- Extremely Uninterested (1)
- Very Much Uninterested (2)
- Slightly Uninterested (3)
- Neither Interested nor Uninterested (4)
- Slightly Interested (5)
- Very Much Interested (6)
- Extremely Interested (7)

Q28 How well do you rate yourself in Finance?

- Very Bad (1)
- Bad (2)
- Poor (3)
- Neither Good nor Bad (4)
- Fair (5)
- Good (6)
- Very Good (7)

Q29 Do you have a parent, sibling, or close associate who works in this field?

- Yes (1)
- No (2)

Q30 Did you take a finance class in high school?

- Yes (1)
- No (2)

Q31 Have you taken another finance class in college?

- Yes (1)
- No (2)

Answer If Have you taken another finance class in college? Yes Is Selected

Q32 What is the other finance class you have taken in college?

Q33 Are you retaking Finance 200?

- Yes (1)
- No (2)

Q34 How often did you attend Finance 200 this semester?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)

Q35 What percentage of the assigned readings do you generally have completed before attending Finance 200?

\_\_\_\_\_ % Readings Completed Before Class (1)

Q36 How many hours per non-exam week do you study outside of class for Finance 200?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q37 How many hours per exam week do you study outside of class for Finance 200?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q38 How often do you use help desk for Finance 200?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q39 How often do you use tutors (non-TAs) for Finance 200?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q40 Are you in a study group for Finance 200?

- Yes (1)
- No (2)

Answer If Are you in a study group? Yes Is Selected

Q41 How many people (yourself included) regularly participate in your study group?

- 2 (1)
- 3 (2)
- 4 (3)
- 5 (4)
- 6 (5)
- More than 6 (6)

Answer If Are you in a study group? Yes Is Selected

Q42 How did you find one another to form your group?

Q43 Do you teach other people principles from the class in order to help you learn the material from class?

- Yes (1)
- No (2)

Q44 Finance 200 provides multiple days for taking the exam. Which day do you generally take the exam? (for example, first day, second day, etc.)

Q106 Did you take BUSM 241 (Marketing) this semester with Dr. Swenson?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q45 What is your personal level of interest in Marketing?

- Extremely Uninterested (1)
- Very Much Uninterested (2)
- Slightly Uninterested (3)
- Neither Interested nor Uninterested (4)
- Slightly Interested (5)
- Very Much Interested (6)
- Extremely Interested (7)

Q46 How well do you rate yourself in Marketing?

- Very Bad (1)
- Bad (2)
- Poor (3)
- Neither Good nor Bad (4)
- Fair (5)
- Good (6)
- Very Good (7)

Q47 Do you have a parent, sibling, or close associate who works in this field?

- Yes (1)
- No (2)

Q48 Did you take a marketing class in high school?

- Yes (1)
- No (2)

Q49 Have you taken another marketing class in college?

- Yes (1)
- No (2)

Answer If Have you taken another marketing class in college? Yes Is Selected

Q50 What is the other marketing class you have taken in college?

Q51 Are you retaking BUSM 241 (Marketing)?

- Yes (1)
- No (2)

Q52 How often did you attend BUSM 241 (Marketing) this semester?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)

Q53 What percentage of the assigned readings do you generally have completed before attending BUSM 241?  
\_\_\_\_\_ % Readings Completed Before Class (1)

Q54 How many hours per non-exam week do you study outside of class for BUSM 241 (Marketing)?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q55 How many hours per exam week do you study outside of class for BUSM 241 (Marketing)?

- Less than 1 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- More than 9 (11)

Q56 How often do you use TA Office Hours for BUSM 241 (Marketing)?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q57 How often do you use tutors (non-TAs) for BUSM 241 (Marketing)?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q58 Are you in a study group for BUSM 241 (Marketing)?

- Yes (1)
- No (2)

Answer If Are you in a study group? Yes Is Selected

Q59 How many people (yourself included) regularly participate in your study group?

- 2 (1)
- 3 (2)
- 4 (3)
- 5 (4)
- 6 (5)
- More than 6 (6)

Answer If Are you in a study group? Yes Is Selected

Q60 How did you find one another to form your group?

Q61 Do you teach other people principles from the class in order to help you learn the material from class?

- Yes (1)
- No (2)

Q62 BUSM 241 (Marketing) provides 4 days for taking the exam. Which day do you generally take the exam?

- First Day (1)
- Second Day (2)
- Third Day (3)
- Fourth (Last) Day (4)

Q81 What is your age?

- 16 (1)
- 17 (2)
- 18 (3)
- 19 (4)
- 20 (5)
- 21 (6)
- 22 (7)
- 23 (8)
- 24 (9)
- 25 (10)
- 26 (11)
- 27 (12)
- 28 (13)
- 29 (14)
- 30 (15)
- 31+ (16)

Q82 What is your sex?

- Male (1)
- Female (2)

Q83 What is your marital status?

- Single (1)
- Married (2)

Q84 Do you have children?

- Yes (1)
- No (2)

Answer If Do you have children? Yes Is Selected

Q85 How many children do you have?

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- More than 6 (7)

Q86 Have you served a full-time mission for The Church of Jesus Christ of Latter-Day Saints?

- Yes (1)
- No (2)



Q87 Is English your native/first language?

- Yes (1)
- No (2)

Q88 What time do you typically go to sleep at night?

- Before 8pm (1)
- Between 8pm and 8:59pm (2)
- Between 9pm and 9:59pm (3)
- Between 10pm and 10:59pm (4)
- Between 11pm and 11:59pm (5)
- Between Midnight (12:00am) and 12:59am (6)
- After 1am (7)

Q89 When do you generally wake up?

- Before 4am (1)
- Between 4am and 4:59am (2)
- Between 5am and 5:59am (3)
- Between 6am and 6:59am (4)
- Between 7am and 7:59am (5)
- Between 8am and 8:59am (6)
- After 9am (7)

Q90 How many hours each week have you spent at a paid job this semester?

- 0 - I did not have a paid job this semester. (1)
- 1-5 hours per week (2)
- 6-10 hours per week (3)
- 11-15 hours per week (4)
- 16-20 hours per week (5)
- 21-30 hours per week (6)
- 31-40 hours per week (7)
- More than 40 hours per week (8)

Q108 How many hours each week do you spend serving in your religious or spiritual community?

- Never - I am neither religious or spiritual (1)
- Less than 1 hour (2)
- 1-3 hours (3)
- 4-6 hours (4)
- 7-9 hours (5)
- 10-12 hours (6)
- More than 12 hours (7)

Q91 Are you a Collegiate Athlete?

- Yes (1)
- No (2)

Answer If Are you a Collegiate Athlete? Yes Is Selected

Q92 Did any or all of your sport's regular season games during this semester?

- Yes (1)
- No (2)

Answer If Are you a Collegiate Athlete? Yes Is Selected

Q93 How often do you seek help from athletic tutors for your Finance, Accounting, and/or Marketing classes?

- Never (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Answer If Are you a Collegiate Athlete? Yes Is Selected

Q94 Have you received an athletic scholarship?

- Yes (1)
- No (2)

Q109 How many hours did you spend each week participating in extracurricular activities (for example, ROTC, performing arts groups, membership or leadership in campus clubs, etc.)?

- None - I am not involved in extracurricular activities (1)
- Less than 1 hour (2)
- 1-3 hours (3)
- 4-6 hours (4)
- 7-9 hours (5)
- 10-12 hours (6)
- More than 12 hours (7)

Q95 Have you received an academic scholarship?

- Yes (1)
- No (2)

Q97 What is your major? (Check all that apply)

- Pre-Accounting Major (1)
- Pre-Finance Major (2)
- Pre-IS Major (3)
- Pre-RecM Major (4)
- Pre-Business Mgmt Major (5)
- Business Minor (6)
- Other (7)

Q99 Did you transfer to BYU from another university?

- Yes (1)
- No (2)

Answer If Did you transfer to BYU from another university? Yes Is Selected

Q100 From which school did you transfer?

Answer If Did you transfer to BYU from another university? Yes Is Selected

Q101 Which semester did you begin studying at BYU? (for example, Winter 2015, Summer 2013)

Q110 What is your BYU GPA (4.00 maximum)?

Q98 Did you happen to experience a traumatic life event right before or during Winter Semester 2015 (for example, death of a loved one, your own divorce or divorce of your parents, serious illness of self or immediate family member)?

Yes (1)

No (2)