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The Effects of School Selectivity on Student Loan Default Rates

by

Joshua Snapp

A Thesis

Submitted to the Graduate Faculty of

St. Cloud State University

in partial Fulfillment of the Requirements

for the Degree of

Master of Science

in Applied Economics

June, 2022

Thesis Committee:

Kenneth Rebeck, Chairperson

Mana Molle Komai

Chen Zhengyang

Abstract

The student debt crisis is one of the most prominent financial problems facing the United States today. As of 2018, the student loan market is now the largest source of non-mortgage household debt in the United States. Using data from 4-year public universities in the United States from 2013 to 2018, I examine the relationship between school selectivity and student loan default rates. I employ an OLS model with measures of selectivity defined as ACT scores of incoming freshmen and admission percentages of universities. Where higher ACT scores and lower admission percentages signify an increase in school selectivity, I find a negative relationship with ACT scores and default rates. These results are robust across model specifications and imply that higher ACT scores lead to a decrease in the chance of loan default. I suggest education policy changes, such as a personal finance seminar for incoming freshmen at low-selectivity schools, could lead to decreases in default rates.

Acknowledgments

I would like to first thank my wonderful committee for taking the time to help me through this process. Without your guidance, I would have never been able to come this far. Next, I would like to thank the Economics department. You have always been there when I needed help, a friendly face, or simply a good conversation. Lastly, I would like to thank my family and friends, who have supported me and cheered me on since the beginning. You have my sincerest gratitude. Thank you all.

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Chapter 1: Introduction

Problem Statement

About 46 million Americans have some type of student loan debt, 45.4 million of whom have federal student loan debt. While it is uncommon for students to rack up six-figure debt, the average debt at graduation from 4-year public and private non-profit colleges was \$28,400 in 2020. This statistic, coupled with the fact that 11.1 percent of student loans were 90 days or more delinquent or in default before the pandemic, indicates a deeper problem with the post-secondary education system. In addition, according to the Education Data Initiative, ten to twenty percent of students are currently in default and Arts and Humanities majors who attended non-selective institutions are the most likely to default on their student loans. The purpose of this paper is to examine the effects of school selectivity on the default rates of student loans for public 4-year universities in the United States. While I focus on the influence of two measures of schools' selectivity, ACT scores and admission rates, I control for student demographics and school characteristics.

Chapter 2: Background

From allowing socioeconomic mobility, to granting an individual the means to chase their intellectual passions, to simply helping people better understand the world around them, education has been an integral part of society. However, the value of a college degree is impacted by how it is financed, and in the past several decades, a worrying trend has come about regarding financing a degree with loans. According to the National Student Loan Data System (NSLDS), the amount of student borrowers defaulting or holding large debt balances (>\$50,000) is increasing steadily. Where the availability of loans has been plentiful and consistent, repayment rates have been steadily decreasing.

Loan default, where payments have been missed by 270 days or more, has severe and long-lasting consequences. It renders the borrower exempt from any further student aid and the loan becomes ineligible for deferment. Default also affects the purchasing options of individuals, limiting their credit and exempting them from certain jobs. Moreover, these loan programs allow students to take on large amounts of debt without solid guarantees of repayment. It is common practice for a student to take out a loan without knowing how they will eventually pay back that loan. This oversight can be ruinous to a student if they fail to complete their degree or default on payments. If students wish to finance an education with loans, they must also accept potential long-term financial ramifications.

Regarding student loan options, there are four types of federal loans offered based on age, education program type, veteran status, dependency status, and how much pre-existing loan debt one holds. Federal Student-Loan programs include the Direct Subsidized and Unsubsidized Loan, the Federal Perkins Loan, and the Direct PLUS Loan. As of 2016, Direct Subsidized and

Unsubsidized loans accounted for over 18 million loans nationally, or 90.8 percent of all loans (Clifford, 2016). The interest rates for these loans are set by Congress and have been fixed between 3.4 percent and 8.5 percent depending on the type of loan and year of origination (Looney & Yannelis, 2018, 2019).

Debt continues to grow while more and more graduating cohorts are entering the workforce attempting to accomplish the Sisyphean task of paying off their education. While there are a slew of papers attempting to explain the causes of the student debt crisis, much of the literature only offers conjecture as to why tuition has increased or the predatory nature of the market for student loans. Even though the default rates on these loans have fallen in recent years, the average default rates for institutions are currently about 6.5 percent.

There is a lack of publicly available data regarding individual levels of student loan debt, however, and measuring debt levels is difficult on more granular scales. Default rates for student loans are a publicly available measure of student loan debt for a large number of post-secondary institutions, making them a suitable replacement variable. If a positive relationship is found between default rates and selectivity measures of schools, it means that less selective schools could aid students by offering a seminar on managing debt. A personal finance course with an emphasis on debt management, as part of the first-year curriculum, could potentially decrease the default rate for these schools and have the added benefit of teaching students something they should have learned in high school: how to manage their money.

Chapter 3: Recent Literature

According to the FinAid, as of 2022, outstanding federal student loan debt has reached 1.8 trillion dollars, making it the second largest form of non-mortgage household debt in the United States. Research regarding the subject of student debt levels has focused primarily on the inverse relationship between government funding and tuition costs (Mitchell et al., 2016). Since the financial crisis of 2008-2009, the drop-off in funding for post-secondary schools has forced universities to raise tuition levels to compensate. While potentially necessary, it hardly matches what the Higher Education Act (1965) had envisioned by granting more affordable educational opportunities to underprivileged and impoverished citizens.

Different research methods have been implemented to understand trends for student debt as well. In a study by Clifford (2016), education data from the six New-England states were used to create a panel regression model, examining the effects of different types of institutions and student demographics on default rates. Institutions, including public and private 4-year universities, community colleges, and non-traditional schools, and demographics such as the share of first-generation students and the share of low-income students were used in the study. Main findings show that almost all student demographics had some influence on default rates, with the most important determinant being the share of students that are first-generation. Clifford also found that neighborhoods with below average incomes (<\$30,000) and higher shares of minorities had the highest severe delinquency rates on student loans. Institutional trends show that the highest levels of default were in community colleges and non-traditional schools, followed by public 4-year and private, non-profit 4-year colleges.

There is a large foundation of prior research on student loan default, mainly focused on the United States due to student loans being a prominent financial issue in education (Devaraj & Patel, 2020; Gross et al., 2009; Psacharopoulos & Patrinos, 2018; Webber & Burns, 2021). Researchers find that the literature states program completion, persistence, and success in school as strong predictors of student loan default. Other factors, like unemployment, gender, and age are also included in the list of research-backed predictors of default. Based on panel data from the 50 states from 2008 to 2015, the authors show that unemployment, the average debt per borrower, and consumer sentiment are significant in their contribution to 90 days or more delinquency and default. Consumer sentiment in this case refers to the attitudes a student has towards personal finance and the country's economy at the federal level. An increase in consumer sentiment implies a positive boost on the outlook on personal finance and the economy of the country. The coefficients for unemployment, average debt per borrower, and consumer sentiment were all found to be positive with respect the dependent variable, meaning that increases in each variable increased the chance of delinquency and default.

Trends also exist for borrowers based on the amount they borrow and the repayment plans they choose for their respective loans. Balakrishnan and Cynamon (2018) created a model that calculates lifetime earnings of college graduates as opposed to non-college graduates to answer the question "is college worth it?" By assuming average income from labor, taxes, unemployment, investment, retirement, and mortality, they found a 47.8 percent increase in the lifetime earnings of college graduates as opposed to non-college graduates. This difference, known as the "college value premium," was found to decrease depending on the way the degree was funded. Using a regular, 10-year federally granted loan with mortgage style amortization and forbearance, and an

income share agreement with flexible payments, the college value premium was shown to decrease by 28.4 percent and 17.6 percent respectively. Delisle (2019) also suggests that an ISA would be more beneficial to students and decrease the college value premium less than the current Income-Based Repayment system (IBR). The current federal loan program system has failed to make meaningful decreases in delinquencies and defaults, as can be seen by the rising number of both. Changes to the methods a student uses to repay their loans could have greater efficacy on decreasing default.

Looney & Yannelis (2018) examined borrowing and repayment trends from 2001-2011. Using a Blinder-Oaxaca decomposition to see which factors had the greatest influence on repayment rates, they found that the participation in extended repayment plans and forbearance were found to be the largest determinant for the decrease in repayment (40-50 percent of variation). The second largest determinant was the type of institution the borrower attended (20 percent of variation) and larger enrollment in for-profit and public 2-year institutions was correlated with higher default rates. Large-balance borrowers (>\$50,000) were less likely to default on their loans, but the largest amount of defaulted dollars was held by this group. 4-year private and 4-year public universities had the largest proportion of large balance borrowers, with the largest portion of debt being held in Graduate loans in the same period.

Differences in financial literacy have been found to cause differences in student loan repayment as well. Artavanis and Karra (2020) examined a sample of 1,000 students from a Massachusetts public university and the implications financial literacy had on the repayment of student debt. Where financial literacy is defined as the education of personal finance, there were found to be low levels of financial literacy among female, minority, and first-generation students.

Based on the results of the study, 38.2 percent of low-literacy students underestimate future loan payments by more than \$1,000 annually, while high financial literacy reduces the probability of significant payment underestimation by 17-18 percentage points. They conclude that a financial literacy wage gap exists, caused by students with low financial literacy expecting significantly lower starting salaries than their high-literacy peers. Due to this wage gap, low-literacy students are more vulnerable to unexpected shocks on their payment-to-income ratios that can impair future creditworthiness and undermine their ability to pay off debt post-graduation.

Carnevale et al., (2019) examined the returns-on-investment (ROI) of different liberal arts colleges across the United States. Using 4,500 institutions, the authors examined differences in the Net Present Value for institutions based on student demographics. The share of low-income students and Pell grant recipients in a university had a negative influence on the ROI, while graduation rates and the proportion of STEM majors had a positive influence on ROI. Reported geographic differences show that the New England area held the universities with the highest ROI, while the Southwest held the universities with the lowest ROI. Both researchers (Clifford, 2016; Carnevale et al., 2019) find that the number of STEM degrees awarded to students in a given year had positive effects on students' outcomes (lower likelihood of loan default for the Clifford study and a higher return-on-investment for the Carnevale study).

Monks (2014) uses data from the several different sources, and creates two regression models examining how different institution measures, like graduation rates and SAT midpoints, influence the average debt for students. The quality of institutions, measured by higher or lower SAT midpoints, was found to be a significant determinant of the average student debt among borrowers in both public and private schools. He finds that a 10 percent increase in state aid per

undergraduate is associated with a .5 percent decrease in student debt on average. He concludes that a one-hundred-point increase in SAT scores decreases average debt by .157 percentage points for public schools and a decrease of .150 percentage points in private schools. This implies that higher quality institutions, or those with higher SAT midpoints, lead to lower average debt for students, controlling for other factors.

Racial default disparities exist as well. Huelsman (2015) finds that Black and low-income students borrow more while Black and Hispanic students are dropping out of college at higher rates than White students. He also finds that Black and low-income students borrow more for a bachelors and more often, while associate's degree borrowing has spiked particularly among Black students over the past decade. Latino graduates borrow at similar rates and slightly lower amounts than White students. Default rates for Black and Hispanic students (8.2 percent and 5.6 percent respectively) are higher than the rate for white students (2.6 percent). In addition, students who defaulted were found to have earned less than students who did not. "While 50.6 percent of all students who did not default earned less than \$60,000, 71.1 percent of Black and 77.7 percent of Hispanic students who defaulted earned less than this amount" (Bynoe & Di Liberto., 2017). This means that minorities receive a lower return on investment for college, even without defaulting on loans. Charron-Chenier et al., (2020) also finds racial disparities among borrowers, showing that, while both White and Black borrowers stand to experience a substantial wealth increase from student loan forgiveness, the magnitude of the racial wealth gap among student borrowers remains essentially unchanged at any forgiveness level considered. This implies that for virtually any cancellation amount considered, White borrowers experience greater average wealth gains than Black borrowers. Feinberg (2020) corroborates these findings as well, and shows that student debt

burdens disproportionately affect minority and female students. He also finds that graduate student debt is associated with a slightly reduced likelihood of entering academia.

Bynoe & Di Liberto., (2017) find other trends comparing student loan debt and regular loan debt. When examining the percent of loan balances that are 90 or more days delinquent, they find that the proportion of student loan delinquency has been steadily increasing from 2003-2017. This is contrasted by the proportion of regular loan delinquency, which has been decreasing steadily since 2010. These findings are corroborated by Clifford (2016), who shows that the severe delinquency status of borrowers has increased steadily in the United States.

Researchers continue to find similar trends regarding debt; outstanding student loan debt is growing, minority and low-income borrowers are those most negatively affected, and the burden of student loan debt has become crippling to millions. These effects seem to be robust over different sample groups, different types of institutions and different years of observation, suggesting that the issue is endemic and requires policy change.

Chapter 4: Methods and Data

The models are based on the general theory that more selective schools have lower likelihoods of student loan default. This could be due to students at more selective schools being more driven, a higher quality of education, or increased rigor from classes leading to a graduating cohort more prepared for the labor market. It follows that the more prepared a cohort is for the labor market, the better labor market outcomes will be, and the less likely a cohort is to default. Less selective schools are defined as those with higher levels of admission rates and lower levels of ACT scores while the opposite is true for highly selective schools.

Schools are broken down by selectivity measures in Figures 1 and 2, with the prior focusing on the selectivity of schools by ACT score, and the latter focusing on the selectivity of schools by admission percentages. ACT selectivity is broken down into low (0-18), moderate (19-23), and high (24+), while admission percentage selectivity is broken down into low (100-80%), moderate (79-40%), and high (<39%). Moderately selective schools were the most common for both measures, while highly selective schools were the least common. Only fifty-two schools were found to have highly selective ACT scores while twenty-five have highly selective admission percentages.

The theoretical framework for the model is broken down into three categories: Selectivity Measures, School Characteristics, and Student Characteristics. Selectivity Measures are the ACT scores of incoming freshmen and admission percentages of universities. School Characteristics include various statistics about the universities and Student Characteristics are the demographics of the students attending each respective university. School and Student Characteristics are used as control variables. The theoretical model can be seen in Equation (1).

$$\text{DEFAULT} = f(\text{Selectivity Measures, School Characteristics, Student Characteristics}) \quad (1)$$

To test this theory, I develop an empirical model based on the theoretical model, which is an OLS regression model that can be seen in Equation (2).

$$\begin{aligned} \text{DEFAULT}_i = & \beta_0 + \text{ACT}_i + \beta_2 \text{ADMITPCT}_i + \beta_3 \text{LOGTUITION}_i + \beta_4 \text{CRN}_i + \beta_5 \text{STATE}_i \\ & + \beta_6 \text{PCTSTEM}_i + \beta_7 \text{WHITEPCT}_i + \beta_8 \text{FENROLLPCT}_i + \beta_9 \text{LOGPELL}_i \\ & + \beta_{10} \text{150COM}_i + \beta_{11} \text{100COM}_i + \beta_{12} \text{FINAID}_i + \beta_{13} \text{RETENTION}_i \\ & + \beta_{13} \text{GRADUATE}_i + \text{ENROLL}_i + \varepsilon_i \end{aligned} \quad (2)$$

The dependent variable **DEFAULT** is the cohort default rate for the university, where a cohort is defined as a group of students in a similar year of study. Default rates are calculated using the current graduating cohort of students plus the two most recent cohorts. For example, the cohort default rate for 2018 is calculated using the default rates of student borrowers entering repayment from 2018, 2017, and 2016. A single observation is the average default rate for the three cohorts over the average total number of borrowers for the same periods. The dataset contains cohort default rates from 436 4-year public universities in the United States from 2013 through 2018.

Selectivity Measures. The variable **ACT** is the average composite ACT at the 25th percentile for the incoming freshmen of the university. I expect the higher the average ACT scores for a university, the lower the likelihood of loan default. The variable **ADMITPCT** is the percentage of applicants that were accepted to the university. The higher the percentage of

accepted applicants, the less selective the school, and therefore, the higher the chance for loan default.

School Characteristics. The variable LOGTUITION is the logged total tuition for a year of schooling, including fees, for the university. I expect that students will rely more heavily on loans where tuition is larger, implying a positive increase in the chance of default. The vector *CRN* is the Carnegie Classification for the university. This shows the kinds of degrees (bachelors, masters, doctorates) granted in each university, and the variable is split into three dummies to denote differing levels of available programs at universities. Dummy variables are created and defined as “Low”, denoting classifications of 15-17, “Medium”, denoting classifications of 18-20, and “High”, denoting classifications of 21 and up. The higher the classification, the more available programs and degrees at the university. I expect a lower default rate for institutions with more available programs at higher levels of study. The vector *STATE* is a dummy variable denoting the state the university resides in. This is a control variable to capture differences across states that are not otherwise captured in the model. An example of this could be post-secondary funding programs that exist in one state but not another. The Variable *STEMPCT* is the average proportion of degrees awarded each year in STEM fields for the university. I expect the larger the share of STEM degrees, the lower the default rate due to higher average salaries for STEM graduates. The variable *LOGPELL* is the logged form of the amount awarded in Pell grants to the students in the university. Observations are given as the total cumulative dollar amount in Pell grants for a given year. Pell grants are given based on financial need and research has shown that Pell grants have a positive effect on the Returns-on-investments for students. I expect a negative relationship with Pell grants and default rates.

Student Characteristics. WHITEPCT refers to the percentage of white students enrolled in the university. FENROLLPCT refers to the percentage of female students enrolled in the university. Both WHITEPCT and FENROLLPCT are control variables used to capture some of the variation in default rates attributed to racial and gender inequalities. I expect a positive relationship between FENROLLPCT and default while I expect a negative relationship between WHITEPCT and default. 150COM and 100COM represent the average percentage of undergraduates completing their degree within 150 percent and 100 percent respectively of the normal degree timeframe. For 4-year universities, this means completing a degree within 6 years for 150COM and within 4 years for 100COM. FINAID denotes the amount of financial aid loaned to the students of the university. FINAID captures socioeconomic differences denoted by the reliance on student loans to fund a degree. I expect FINAID to have a positive effect on default. The variable RETENTION is the percentage of first-time students who began their studies in the Fall and returned to school the following Fall. Greater retention potentially captures a greater motivation of the average student at the university to earn the degree, and is a proxy for student traits that might lead to a lower likelihood of defaulting on student loans. Observations are given as a rate for the university, and I expect higher levels of RETENTION to result in lower default rates. GRADRATE is the average graduation rate for the university. Higher graduation rates imply better labor market outcomes, which would lead to a lower chance of default on loan payoff. I expect a negative relationship with default rates. ENROLL denotes the total enrollment for a university. This variable controls for factors that might differ across universities of different sizes. A summary of variable definitions and hypothesized signs can be seen in Table 1.

Data is pulled from several sources, including the National Center for Education Statistics (NCES) and the Federal Student Aid service through the Department of Education. Due to the missing values for many schools over multiple years, a decision was made to focus on the years 2016 through 2018, which resulted in complete data for all variables for 436 schools. Each variable represents the annual average for these three years for the university.

Table 2 presents the summary statistics for the variables. The mean default rate is about 6.5 percent for all institutions, with the smallest default at .833 percent and the largest at 23.8 percent. The average ACT score is 20, and the average admission rate is 68 percent. The minimum ACT score is 14.67 which acts as a lower bound for selectivity of institutions. In addition, the minimum admission percentage is 17 percent. The most selective schools have average ACT scores of 29.333 and admission percentages of 17 percent. The least selective schools have average ACT scores of 14.67 and admission percentages of 100 percent. The mean for FINAID is about \$30,348. This is consistent with the national average level of debt for a 4-year degree in the United States (\$30,000). Means for WHITEPCT and FENROLLPCT are 59.9 percent and 55.5 percent respectively, implying that the average school is more than half white, while also being a little over half female.

In addition, the minimum admission percentage is 17 percent. The most selective schools have average ACT scores of 29.333 and admission percentages of 17 percent. The least selective schools have average ACT scores of 14.67 and admission percentages of 100 percent. The mean for FINAID is about \$30,348. This is consistent with the national average level of debt for a 4-year degree in the United States (\$30,000). Means for WHITEPCT and FENROLLPCT are 59.9 percent and 55.5 percent respectively, implying that the average school is more than half white,

while also being a little over half female. Means for 150COM and 100COM are 51.15 and 35.98 respectively, meaning that on average 51 percent of students completed their degree within six years and 35.98 percent completed their degree within four years. The mean for GRADRATE is 50.88 percent, while the minimum and maximum are 12.33 percent and 93.33 percent respectively. The average for STEMPCT is 12.9 percent, with the highest proportion being 87.9 percent.

Table 1*Variable Definitions and Expected Signs*

<u>Dependent Variable:</u>	Description	Hypothesized Sign
DEFAULT	Average student loan default rate in university (<i>i</i>)	
<u>Variables:</u>		
ACT	Average ACT score at the 25 th percentile in university (<i>i</i>)	-
ADMITPCT	Average acceptance rate for university (<i>i</i>)	+
LOGTUITION	Average total yearly tuition (logged) for a university (<i>i</i>)	+
CRNHIG	1 if university (<i>i</i>) is ranked 21+, 0 otherwise	?
CRNMED	1 if university (<i>i</i>) is ranked 18-20, 0 otherwise	?
CRNLOW	1 if university (<i>i</i>) is ranked 15-17, 0 otherwise	?
STATE	Dummy variable denoting the state in which university (<i>i</i>) resides	?
PCTSTEM	Average percentage of total degrees awarded by university (<i>i</i>) that are classified as STEM degrees	-
WHITEPCT	Average percentage of white students enrolled in university (<i>i</i>)	?
FENROLLPCT	Average percentage of students in university (<i>i</i>) that identify as female	?
LOGPELL	Average Pell grant amount awarded in university (<i>i</i>)	+
150COM	Average percentage of students that completed their education within 150 percent of the normal time frame in university (<i>i</i>)	?
100COM	Average percentage of students that completed their education within 100 percent of the normal time frame in university (<i>i</i>)	?
FINAID	Average total financial aid taken out in university (<i>i</i>) (Values are divided by 1,000 for ease of interpretation)	+
RETENTION	Average number of students who began their studies in the Fall and returned to school the following Fall in university (<i>i</i>)	-
GRADRATE	The average graduation percentage for university (<i>i</i>)	-
ENROLL	Average number of students enrolled in university (<i>i</i>) (Values are divided by 1,000 for ease of interpretation)	?

Table 2*Summary Statistics (N=436)*

Variable	Mean	Standard Deviation	Min	Max
<u>Dependent Variable:</u>				
DEFAULT	6.474	3.7	.833	23.8
<u>Independent Variables:</u>				
ACT	20.013	2.877	14.677	29.333
ADMITPCT	68.085	15.925	17	100
LOGTUITION	7.789	.524	5.928	8.981
PCTSTEM	.129	.119	0.	.879
WHITEPCT	59.908	22.533	1.333	94
FENROLLPCT	55.558	9.02	11	88.333
LOGPELL	7.11	.377	5.42	7.921
150COM	51.15	16.441	12	93.333
100COM	35.988	16.602	3	89
FINAID	30,348.375	13,520.382	0	131,894
RETENTION	76.169	9.809	49.333	97
GRADRATE	50.888	16.679	12.333	93.333
ENROLL	14,511324.0	12,002.419	829.333	61,103

Chapter 5: Results

When selectivity and default rates are examined graphically, a clear trend can be seen with default rates and ACT scores (Figure 3), while no obvious trend can be seen with default rates and admission percentages (Figure 4). There is a clear negative trend with the first selectivity measure with higher levels of ACT scores leading to lower chances of default. Figure 2 has no visually obvious trends, however there are more observations of high default clustered around higher admission percentages. Figure 5 shows the effect of the proportion of STEM degrees on default rates. Similar to Figure 1, there is a clear downward sloping trend, where higher proportions of STEM degrees lead to lower default rates. Default rates by enrollment size can be seen in Figure 6. While there is a weak trend of higher enrollment leading to lower default rates, the effect is very small.

The OLS regression results are provided in Table 3. The first column of results (1) represents estimation of equation (1) which includes both measures of selectivity (ACT and ADMITPCT). Columns (2) and (3) provide the results when each is included separately. About eighty percent of the variation in default rates was explained in each specification. The F-Statistic was significant at the .01 level for each specification, so I reject the null hypothesis that the coefficients for the independent variables were jointly equal to zero. I also reject the null hypotheses that the adjusted R^2 was equal to zero, meaning each specification of the empirical model is significant at the .01 level.

Table 3*Regression Output*

	(1)	(2)	(3)
<u>Variables:</u>			
ACT	-0.281** (0.085)	-0.248** (0.084)	---
ADMITPCT	-0.014 (0.007)	---	-0.008 (0.007)
CRNHIG	0.817 (0.466)	0.858 (0.461)	1.004* (0.471)
CRNMED	0.470 (0.272)	0.515 (.272)	0.490 (.277)
LOGTUIITION	-4.134*** (0.677)	-4.179*** (0.679)	-4.720*** (0.661)
PCTSTEM	-1.492 (1.368)	-1.574 (1.372)	-3.424** (1.265)
WHITEPCT	-0.047*** (0.007)	-0.052*** (0.006)	-0.055*** (0.006)
FENROLLPCT	-0.047** (0.015)	-0.047** (0.015)	-0.056 *** (0.015)
LOGPELL	6.168*** (0.805)	6.043*** (0.805)	6.886*** (0.792)
150COM	-0.029 (0.054)	-0.045 (0.054)	-0.005 (0.054)
100COM	0.055* (0.028)	0.062* (0.027)	0.035 (0.027)
FINAID (In 1,000s)	0.030** (0.009)	0.028** (0.009)	0.025** (0.009)
RETENTION	-0.121*** (0.025)	-0.120*** (0.025)	-0.131*** (0.025)
GRADRATE	0.031 (0.044)	0.039 (0.044)	0.009 (0.044)
ENROLL (In 1,000s)	-0.037* (0.018)	-0.033 (0.018)	-0.045* (0.019)
INTERCEPT	16.280	16.080	12.280
Sample Size:	436	436	436
Adj R ² :	.802	.801	.794
F-Statistic:	27.28***	27.47***	26.56***
Note: Values for coefficients are given with their respective standard deviation below in parentheses. State dummies not included in output results. Significance denoted by asterisks (for 10%, ** for 5%, *** for 1%)			

For the full model specification (1), the estimated coefficients of ACT, are negative, while being significant at the .05 level. I fail to reject the null for ACT, meaning that variations in ACT scores influenced the variations in default rates. An increase of one point in average ACT scores reduces default rates by .281 percentage points, controlling for other factors. This supports my hypothesis that higher ACT scores decrease the chance of default rate and reinforces the idea that the more selective a school is, the lower the likelihood on default. ACT was the better of the two selectivity variables and captured some of the variation in default rates. This finding is also supported by prior research and implies that stronger academic outcomes lead to a better ability to pay off debt.

The estimated coefficients of ADMITPCT are positive, while being insignificant. I reject the null for ADMITPCT, meaning the variations in admission percentages have no influence on default rates. This does not support my hypothesis. Changes to admission percentages do not impact the chance for default on student loans. Further, admission percentages are a poor means of capturing the variation in default rates as there are many instances where an individual gets admitted to a university based on extracurricular background or other non-academic qualities. More specific restrictions on the definition of admission must be administered if the variable is to be a reliable means of gauging selectivity.

The estimated coefficient on LOGTUITION was negative and statistically different from zero at the .01 level. This is the opposite to what research suggests and means that a one percent increase in total tuition decreases the default rate by about 4 percentage points, controlling for other factors. This is also counter to my hypothesis, and the negative sign on LOGTUITION could be caused by factors that weren't able to be controlled for in the empirical model, such as the

amount of tuition waived. In addition, higher levels of tuition would act as a paywall, and default rates could decrease due to lower levels of enrollment. Furthermore, it is likely that the students that attend these schools could afford the higher levels of tuition, implying a stronger ability to pay off student debt.

The estimated coefficient on WHITEPCT is negative and statistically different from zero at the .01 level. This means that a one percent increase in the proportion of Whites in a university causes a .047 percentage point decrease in default rates. This result is consistent with my hypothesis and prior research. Schools that have higher proportions of white students have a lower likelihood that students will default, implying racial disparities in default rates.

The estimated coefficients for FENROLLPCT are negative and statistically different from zero at the .05 level. This means a one percent increase in the proportion of female students causes a .047 percentage point decrease in default rates. This is not consistent with my hypothesis and implies higher proportions of female students cause lower chances of default on student loans.

The estimated coefficient on LOGPELL is positive and statistically different from zero at the .01 level. This means a one percentage point increase in the amount awarded in Pell grants decreases the chance of default by 6.168 percentage points. This is inconsistent with my hypothesis but makes logical sense. Pell Grants are a means of measuring socioeconomic status and are granted based on financial need. In universities where the amount awarded in Pell Grants is greater, there are greater proportions of low-income students, and therefore, a greater proportion of students that are more likely to default on loans.

The estimated coefficient on FINAID was positive and was statistically different from zero at the .05 level. The coefficient can be interpreted as a one percentage point increase in financial

aid increases the chance of default by .030 percent. This is consistent with my hypothesis and prior research. Higher levels of financial aid cause lower default rates.

The estimated coefficient on RETENTION was negative and statistically different from zero at the .01 level. It can be interpreted as a one percent increase in retention rates decreases the chance of default by .121 percent. This supports my hypothesis and means that the higher the percentage of students returning to school after their first year, the lower the chance of default.

The estimated coefficient for ENROLL is negative and statistically different from zero at the .10 level. This does not support my hypothesis and can be interpreted as a one percentage point increase in total enrollment causes a .037 percent decrease in the chance of default.

Other coefficients, such as those for PCTSTEM, CRN, and GRADRATE are all insignificant and we cannot reject the null that they are statistically different from zero. This means changes to the proportion of stem degrees awarded, the Carnegie classification, and the graduation rate have no impact on the likelihood of default. While this is inconsistent with prior research, the sample used in the study and the method of regression may have some influence.

Columns (2) and (3) report that when ADMITPCT is removed, ACT remains significant at the .05 level, but when ACT is removed, ADMITPCT remains insignificant. No other large differences in independent variable coefficients or significance exist across specifications.

Chapter 6: Conclusions and Further Research

The purpose of this study was to examine if more selective schools, or those with higher ACT scores and lower admission rates, had lower rates of student loan default. A dataset was created using 436, 4-year public universities from the United States from 2013 to 2018. The main findings show that higher average ACT scores led to lower default rates. This is robust across several specifications, implying that the more selective a school is, the lower the chance students from that school will default on their student loans. Several school and student characteristic variables were also found to influence default rates, including the gender, ethnicity and retention levels of students.

My findings are consistent with prior research, although there are some notable departures such as the effect gender has on default rates and the relationship between tuition and default. Higher levels of tuition decreased the chance of default. This trend was found to be true for all model specifications and may be explained by the income demographics of students.

Further research could be conducted using different kinds of institutions, such as private, 2-year, For-Profit, and non-traditional schools, such as in the Clifford study. The results from the same model, using different types of universities could yield strikingly different results. One of the drawbacks of this study is that it focuses solely on 4-year public universities. Comparing and contrasting results from different types of universities would be useful for understanding a more complete picture of the nature of default rates. Other variables that have been shown to be significant determinants of default, such as first-generation status, could also be added for the benefit of further studies. Further research following a specific cohort over the course of their academic career could also be helpful in understanding student loan trends over time. Beginning

the study at the start of freshman year, and ending when that cohort graduates, could yield more granular data, such as changes in financial aid taken out. Much research has been published on the history of student debt (Gross et al., 2009; Pyne and Grodsky, 2020; Mitchell et al., 2016) and on potential solutions to student debt (Hedlund, 2022; Delisle et al., 2014; Martin, 2016; Velez et al., 2019; Fuinhas et al., 2019). This study serves as an addition to the growing amount of research on the subject of student debt.

With a significant body of evidence that exists, stating that personal financial education can make a difference in young people's lives, offering courses on financial literacy could be beneficial in stemming the tide of default. According to the Council for Economic Education, only 25 states require an economics course to graduate high school, while only 23 require a personal finance course to graduate. Furthermore, no central database exists that tracks institutions offering personal finance courses for students' benefit, rather than as a routine part of a business school curriculum. The Financial Security Project at Boston College identified more than 100 U.S. colleges and universities that offer for-credit courses in personal finance, which is far from the approximate total of 5,300 colleges and universities in the U.S. The lack of required education regarding personal finance could be alleviated with an introductory finance seminar for incoming college freshmen, especially at low-selectivity institutions. Where universities that have lower average ACT scores also tend to have higher default rates, offering a class on financial literacy could decrease the likelihood of default by giving students the tools they need to navigate the student loan market.

In addition, examining schools with lower ACT scores of incoming freshmen could provide some useful information as to why default rates are higher there than other schools. If

there are certain traits found within less selective schools that more selective schools do not possess, a program could be created to remove the trait. The amount awarded in Pell Grants has been shown here and in prior research to be a strong measure of socioeconomic status. Because they are granted based on financial need, the more Pell Grants awarded to a university, the larger the financial need of students at that university. Similar to looking at schools with low ACT scores of incoming freshmen, examining the traits of schools with a large number of Pell Grant recipients could offer some insight as to why financial need is so high.

Finally, this finding can be used to help schools with higher likelihoods of default by means of reallocation of resources. Schools that accept students with lower ACT scores, on average, have students with higher likelihood of default, meaning that funding and loan forgiveness programs would be better suited at these institutions. While most states have at least one federal loan forgiveness program, some states have none, including Tennessee, North Dakota, and Utah. Reallocating federal and state aid to schools that have lower average ACT scores could lessen the financial strain on students and decrease the chance of default.

On April 6, 2022, the U.S Department of Education extended COVID-19 emergency relief for student loans through August 31, 2022. Included in this relief is a suspension of loan payments, a zero percent interest rate and stopped collections on defaulted loans. While this acts as a stopgap for lowering student default rates, a more permanent solution may be reached with policy changes.

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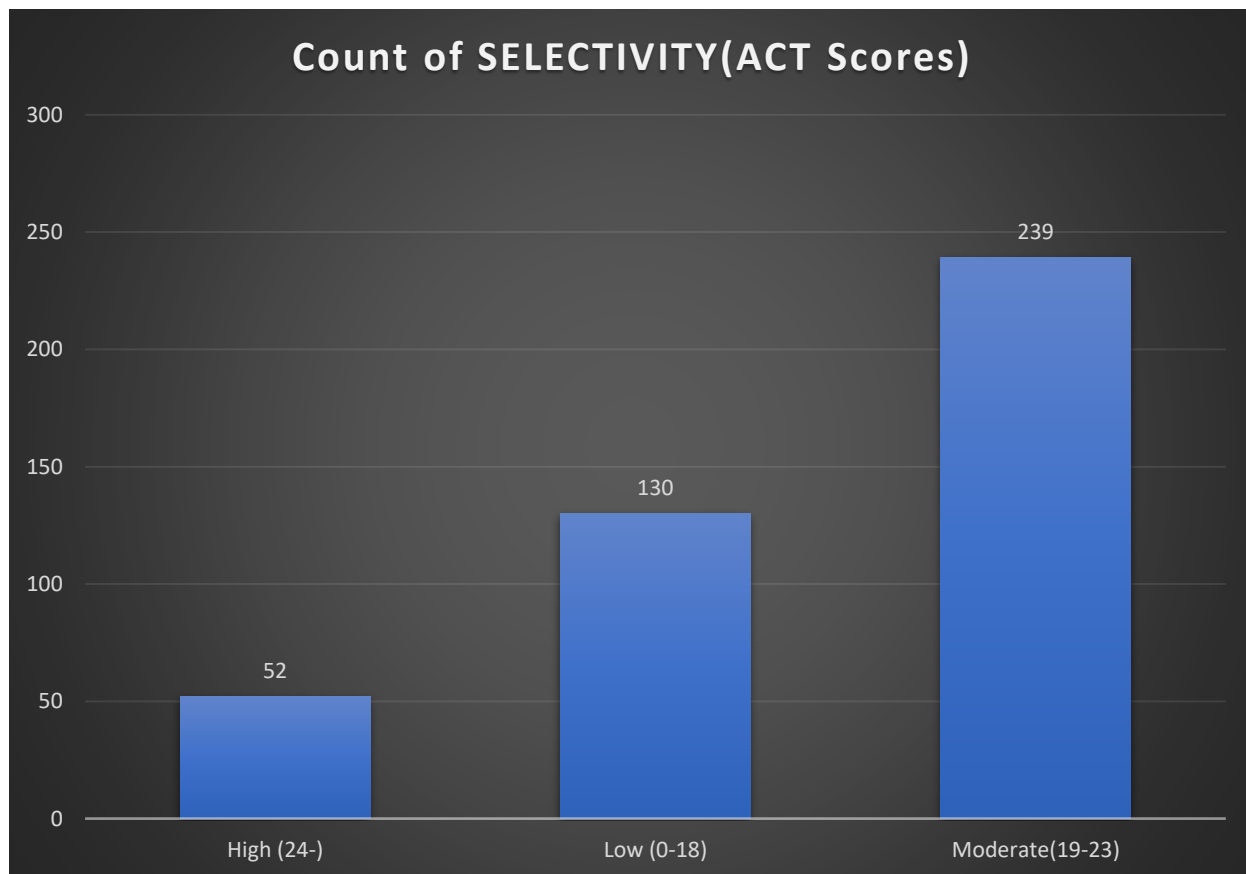
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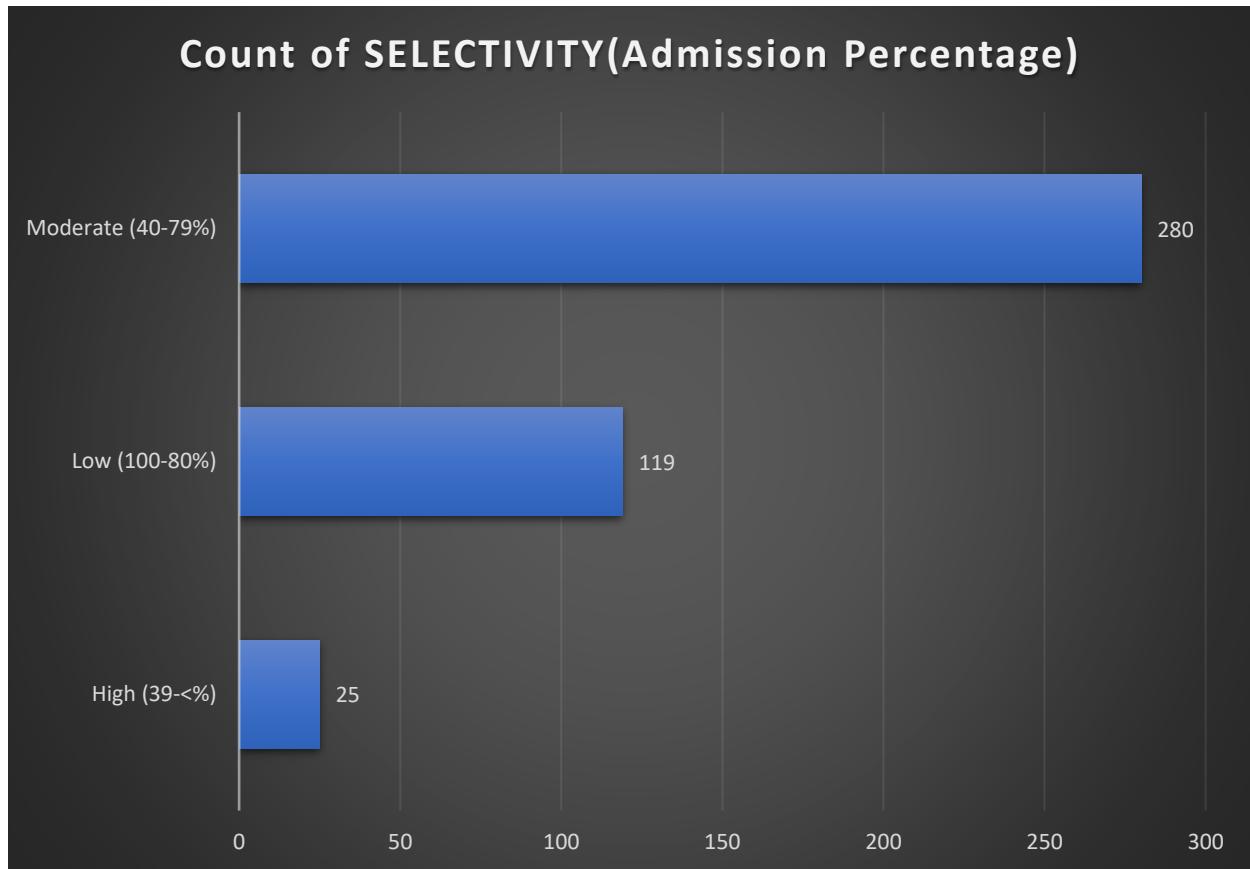
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Appendix A: Figures**Figure 1***Count of Schools by ACT scores*

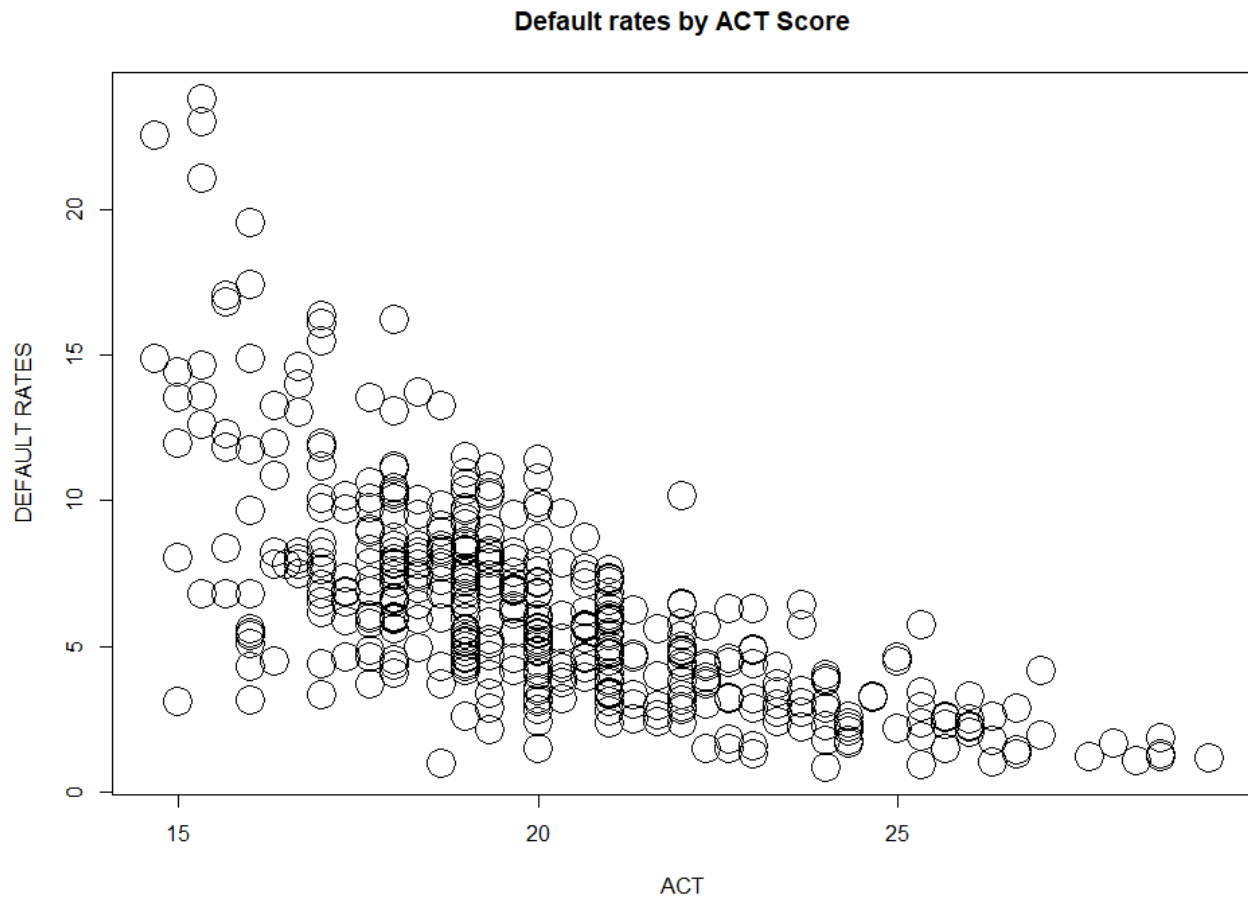
Note. Measures of ACT scores arbitrarily broken into three categories to denote different levels of selectivity. The count of schools is on the Y-axis, with the selectivity categories on the X-axis.

Figure 2

Count of Schools by Admission Percentages



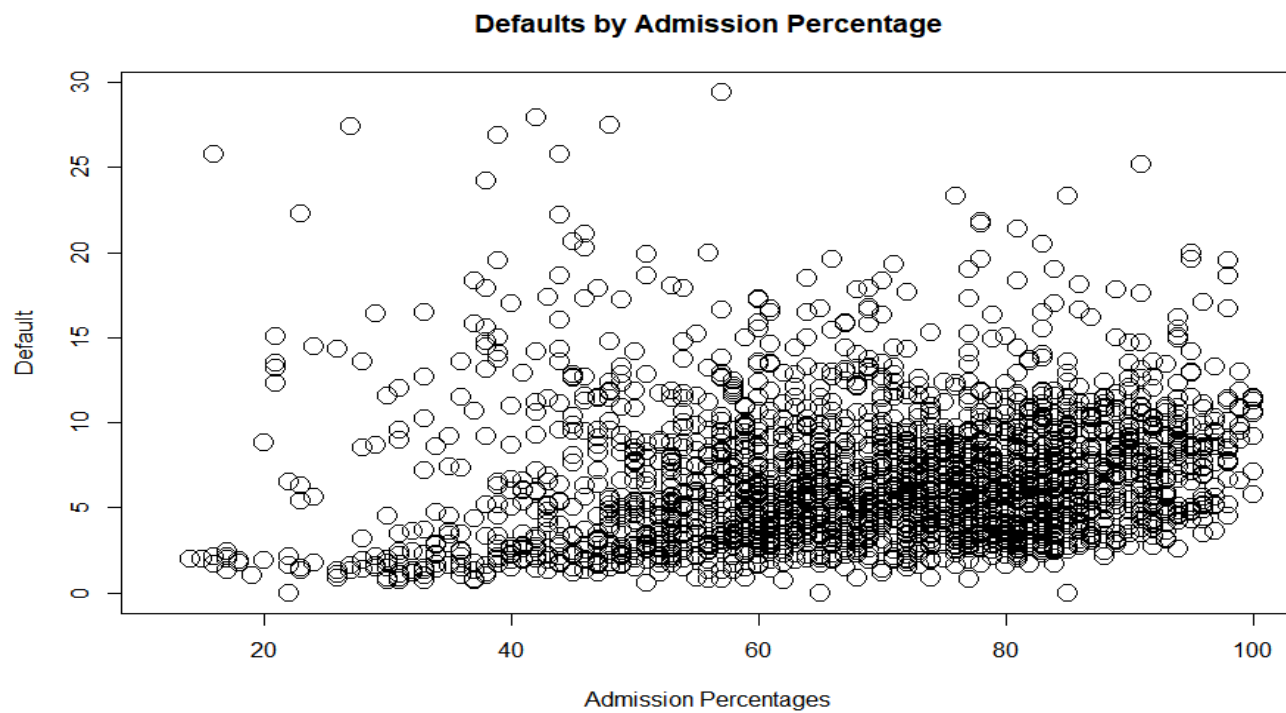
Note. Measures of admission percentages arbitrarily broken into three categories to denote selectivity of schools. The count of schools is on the X-axis, with the categories on the Y-axis.

Figure 3*Default Rates and ACT scores*

Note. Scatter plot with ACT scores of university students on the X-axis and default rates of universities on the Y-axis.

Figure 4

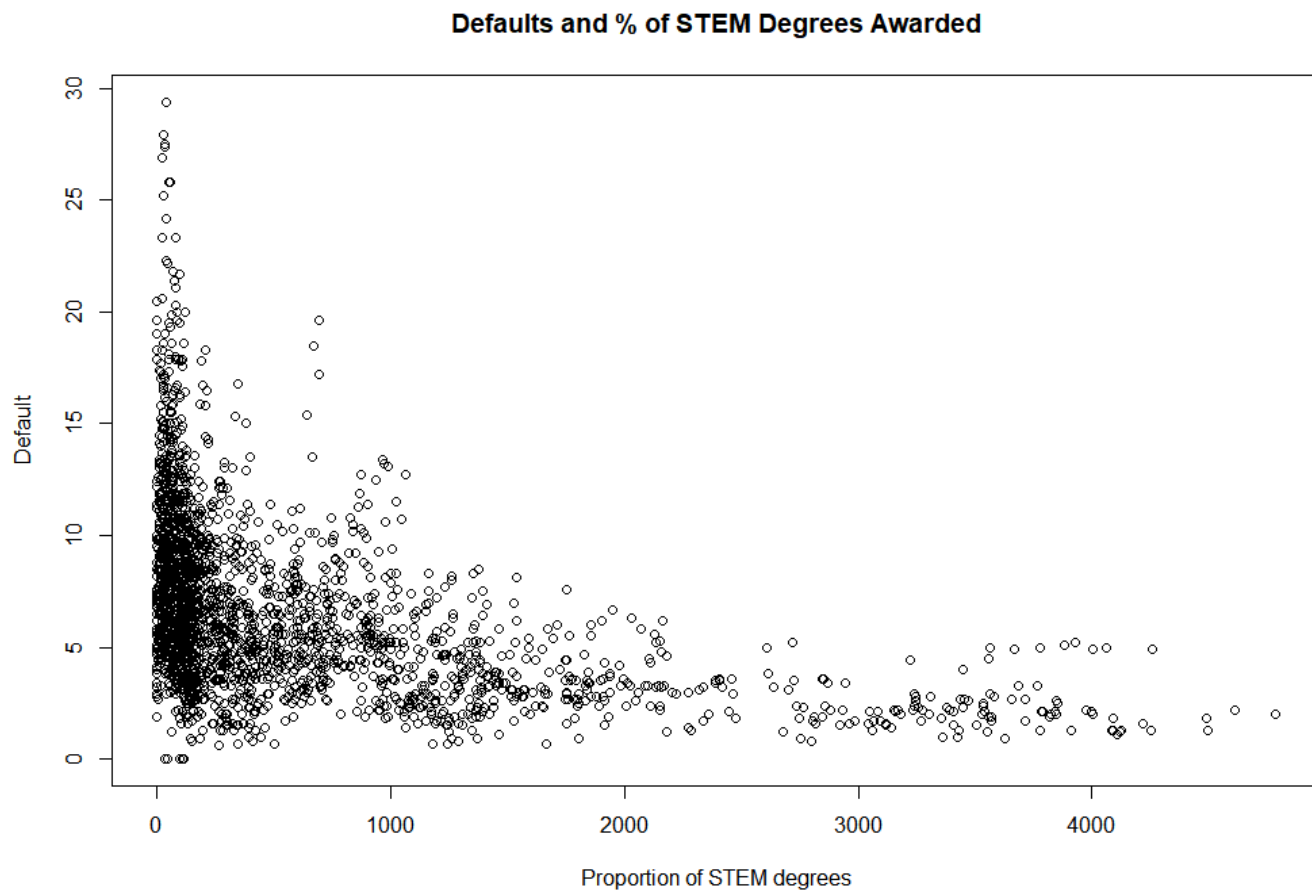
Default Rates and Admission Percentages



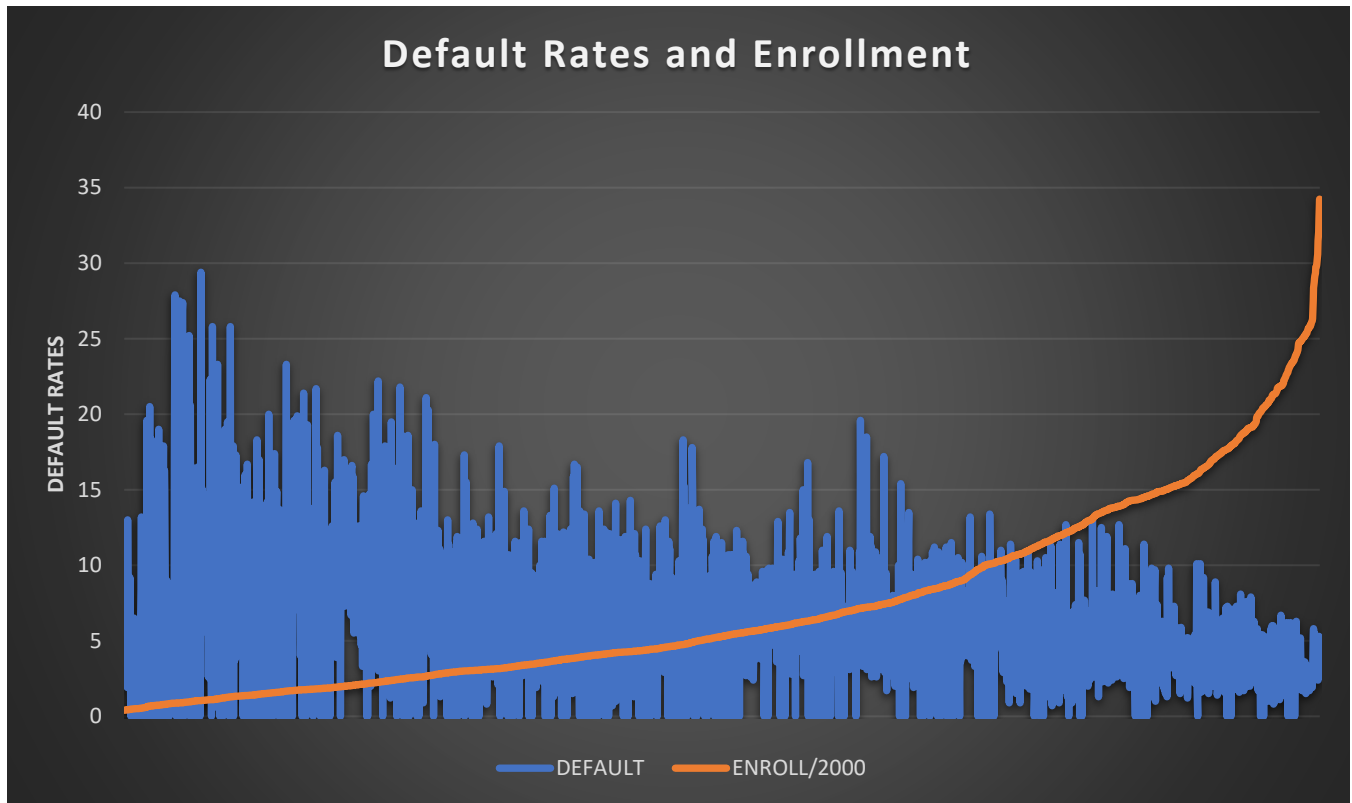
Note. Scatter plot with the admission percentages of universities on the X-Axis and the default rates of universities on the Y-axis.

Figure 5

Default Rates and Proportions of STEM Degrees



Note. Scatter plot with the proportion of STEM degrees awarded in a university on the X-axis and the default rates of universities on the Y-axis.

Figure 6*Default Rates and Enrollment*

Note. Line graph showing the enrollment and default rates of universities on the Y-axis.

Enrollment has been divided by a factor of 2000.