Bryant University

HONORS THESIS

Student Loans and Their Effects on Postgraduate Life

BY Joseph Bartucca

ADVISOR • Leila Zbib
EDITORIAL REVIEWER • Mary Anne Clarke

Submitted in partial fulfillment of the requirements for graduation
with honors in the Bryant University Honors Program
APRIL 2021

TABLE OF CONTENTS

ABSTRACT

College tuition has been steadily increasing in America throughout the past two decades as demand for a higher education has continued to rise. A college education is invaluable and is inevitably essential in obtaining a successful career. As a result, more and more students have been depending on student loans to finance their way through college. The average college student loan debt has reached about $30,000 per student upon graduation nowadays. Because of these skyrocketing debt amounts, several life goals and aspirations have been impacted, including future employment, further enrollment, family formation, homeownership, and net worth. The objective of this project is to determine where there are significances between student loan debt and postgraduate life decisions, specifically continued education, homeownership, and family formation. The main purpose is to further add to existing data explaining the burdens of college loan debt and how something as simple as obtaining an education can be so impactful on one's finances and life decisions. A survey was conducted among Bryant University alumni where the data was used to run various regression and t-test models to determine the correlations between student loan debt and postgraduate decisions. As a result, it was determined that student loan debt does in fact negatively impact one's decision to pursue postgraduate enrollment and homeownership, however, family formation has proven to be not impacted by loans, although, this could be a result of many other factors.

INTRODUCTION

As seen throughout the past couple of decades in the United States, student loan debt has been continuously on the rise among college graduates and has led to public concern regarding potential social and economic consequences (Fry, 2019). The reason being is due to the significant increases in college tuition prices, currently at an all-time high because of the rising demand for higher education. The question as to whether college is even worth it or not has recently come into play due to the financial burden students must face upon graduation and the impact in has on their futures. Because of the large monthly payments that graduates are forced to make to pay back their loans, many graduates must put several life goals on pause because since do not have the necessary finances, which causes concern for future generations as tuition costs and student loan debt continue to increase. Factors such as employment upon graduation, enrollment in graduate school, family formation, purchasing a home, and overall net worth may potentially be affected by student loan debt.

As students decide on the route they want to take upon graduation, many are faced with the decision to choose a career path in which will provide them with larger salaries rather than satisfaction with what they are doing. Also, due to their large debts, many graduates decide not to enroll in further education because they do not want to put themselves in a position where they will take on even more debt burdens. Family formation is also a factor that may be delayed including getting married and having children simply because many people do not want to place themselves beneath such a heavy financial burden on top of their loan payments. This goes hand in hand with purchasing a home of their own because it is likely that adding a mortgage to their debt burdens would force them to allocate even more of their monthly salary to paying off their debts. Student loan debt plays a much larger role than some may realize and could prevent one from making investments that could pay off later in their lives, and it is important that this be addressed to support future college generations.

LITERATURE REVIEW

A vast amount of literature exists on student loans and their impact on students. According to Mark Kantrowitz’s Student Aid Policy Analysis Papers (2015), student loan debt has been growing rapidly over the past ten to twenty years. The average student debt in 1993 was just shy of $10,000, where only about 45% of students were graduating with student loans. However, just ten years later, the average student debt rose to about $19,000, where almost 64% of students graduated with student loans. By 2015, the average student debt accumulated to about $35,000, with up to 71% of students graduating with student loans. Debt has more than tripled in only twenty years along with the percentage of students graduating with student loans rising almost 30% (Kantrowitz, 2015). Along with this, Kantrowitz also explains the 10% debt-to-income threshold, which explains that a borrower has excessive student loan debt when 10% or more of the borrower's gross income must be devoted to paying back student loan debt. This threshold is also consistent with the rule of thumb that total student loan debt upon graduation should be no more than the borrower's expected annual salary. In most cases, student loan debt exceeds these benchmarks and is a major cause for concern because it leaves graduates in financially unstable situations upon graduation, which could take a major toll on future aspirations.

Not only does student loan debt affect borrowers upon graduation, however, it also has an impact on them amidst their college experience. As explained by Amanda Baker and Catherine Montalto (2019), college students who are concerned more about finances than their education tend to demonstrate lower goal commitment, lower academic engagement, and lower persistence while in school. It is understandable that this could be a major distraction for students because they become more worried about how they are going to come up with the money to pay for the education that they are receiving, which can further add to the pressures of being a college student. As a result, high levels of financial distress and student loan debt have been linked with increases in the likelihood of students dropping out of college or finding ways to reduce their workload. In connection with this, student loans have even resulted in students forgoing college enrollment, according to William Elliot (2013), because they simply do not want to put themselves in a position where they will have to pay back these loans in the future. Although this may seem like a good option to help alleviate the financial distress of college, it will only hurt students later due to the nature that a college education is invaluable and could be the door to a world of future opportunities. According to Richard Fry of the Pew Research Center (2014), households that owe student debt tend to have higher incomes and are better educated than those without student debt. Young, college educated adults have a median household income of about $60,000, regardless of whether they had student loans or not, while median income for those who did not graduate from college is nearly half, at $32,000. These numbers stress the importance of a college education and it is critical to understand that although it may seem like dropping out is the best option for the time being, it is not. It will be much more advantageous in the long run to complete your education, whether you have student loans or not, because it places you in a much better financial position in the future.

Along with a decrease in goal commitment, academic engagement, and persistence, students reporting high financial stress had significantly lower GPAs than students who reported low financial stress. This information comes from a 2014 online survey given to a random sample of 5,000 undergraduate students who were enrolled at a large public university in the Midwest (Baker & Montalto, 2019). In this survey, students were asked about grade point averages, expected student loan debt, and their financial stress levels, and results made it clear that those with higher financial stress had much lower grade point averages. This supports the notion that high tuition costs and high levels of student loan debt greatly impact the well-being of students and contributes to the strain that obtaining a college education can have on many.

Not only do loans affect a student's grades and well-being, but they also influence what students choose to study while attending school. As explained by Bruce Chapman and Kiatanantha Lounkaewa (2010), many students aim to study certain things in college that will result in larger salaries upon graduation, rather than actually pursuing their dreams and doing what they desire. Students know that getting a higher education is necessary in today's society if they hope to be successful, however, some simply cannot afford to do so, resulting in having to take out student loans. As a result, many students decide to concentrate in majors that will make them more money when pursuing a career, rather than concentrating in something they enjoy, because they know they will have to pay these loans back and want to set themselves up in the best possible way financially to do so.

Now that specifics of student loan debt have been addressed and it is understandable how large of a problem it is for students, the effects that these loans have on life after college will be investigated. On the authority of Erin Velez, Melissa Cominole, and Alexander Bentz (2020), about two thirds of students who are receiving their bachelor's degrees take out loans to fund their educations and the average debt has risen to about $30,000 in loans per student in 2018. As a result of these ever-increasing numbers, graduates with high debt tend to delay many life achievements because they are not financially prepared. Endeavors such as employment, additional enrollment, family formation, homeownership, and net worth have all been pushed off because recent graduates do not want to take on any more debt burdens on top of the college loan debt they must already repay. Student loan debt may affect post-college employment because graduates with more debt need to work more hours or choose less desirable jobs with higher incomes to afford to pay back their loans. Also, graduates with debt from undergraduate education may choose to delay or not pursue additional education because they are worried about their current debt and want to avoid taking on even more educational debt. According to the authors most recently mentioned, it has been found through previous literature that females with higher student debt are more likely to delay having children than those with low debt because children can quickly become very expensive and can also contribute to an increase in debt.

Although all these factors become affected because of student loan debt, homeownership rates have drastically continued to decrease in young adults as well. As mentioned by Jason Houle and Lawrence Berger (2015), student loan debt is leading young adults under the age of 30 to forgo home buying because they are leaving college with an average of $30,000 in student loan debt. The reason is because they do not want the additional debt burden, or they are simply unable to get approval for mortgages due to their high debt and low credit scores. Data shows that in 2006, 35.1 percent of young adults under the age of 30 owned a home, while in 2013, only 30.2 percent owned a home. Although it is not certain that student loans are the reason for this, there is a clear negative correlation that shows as student loan debt has increased, homeownership has declined. Student loan debt is forcing young adults to delay home buying because they do not want to take on additional debt and typically when one takes on too much debt, their credit scores decrease which could hurt eligibility for mortgages.

Mezza, Ringo, Sherlund, and Sommer (2015) explain that student debt has more than doubled over the past decade and reached over 1.1 trillion dollars in America as of 2015. During this span, the American homeownership rate fell five percent, where the largest drop was among young households, between ages 24 and 32, at a nine percent decrease. It has been stated that the increase in student loan debt is a key factor in this homeownership decline through borrowers' ability to qualify for a mortgage and their desire to take on more debt. The authors have uniquely constructed an administrative data set for a nationally representative cohort of about 35,000 people ages 23 to 31 from the years 1997 to 2010. What they found was that for every ten percent increase in student loan debt, there is a one to two percentage point drop in the homeownership rate for student loan borrowers during the first five years after graduating from college. The study found that those who had no student loan debt and did receive a bachelor's degree had a larger homeownership rate than those who did in fact have debt. As a result of their findings, the authors broke down student debt into four categories: no debt, \$0-\$15,000 in debt, \$15,000-\$30,000, and \$30,000-\$50,000 in debt, explaining how those with no debt had the largest homeownership rate, while those with the most debt had the lowest homeownership rates.

Jennifer Shand (2007) also further explains how households are delaying home purchases due to their debts. Shand goes on to describe that researchers have found that lender constraints have a negative impact on the probability of homeownership for households who already have lots of debt, and therefore, young people are financially constrained. A study had been conducted and it was found that educational debt within a household decreases homeownership rates by .5 percentage points for every \$1,000 of outstanding educational loans and for every additional \$1,000 of loans to repay reduces homeownership by 2.63%. This causes concern because with the increasing amount of student loans, it seems that less people are willing to put themselves in the financial situation of purchasing a home and building wealth.

Although many have delayed the process of buying a home, it is important to understand that financing real estate is a good investment, whether its direct investment or indirect investment, as explained by Georgi Gerogiev (2002). Direct investment includes acquiring and managing the physical property, while indirect investment involved buying shares of real estate investment companies, known more familiarly as REITs, which are then traded on financial exchanges. It is important to keep a diversified portfolio of investments because it has been proven to provide the highest return for the least risk. Direct real estate is much less volatile than the stock market and will allow investors to generate return by increasing in value. This goes to show that purchasing a home at a young age is very important because there is great opportunity to increase the value of your investment in the future. The housing market is important when looking to gain wealth because for the most part, when markets are stable, real estate typically increases in value. As a result, this would allow for one to sell down the road and make a profit from their investment which could make them more financially stable. For this reason, although student loan debt could be a barrier between a young adult and homeownership, it is important for one not to lose sight of the benefits that could come from it and take that extra risk because in the end, it will pay off.

RESEARCH QUESTION AND HYPOTHESIS

RESEARCH QUESTION

The research question this Honors Thesis focuses on investigates student loan debt among recent graduates from Bryant University and the effects this debt has on postgraduate life decisions including continued education, homeownership, and family formation. The study focuses mainly on those who have graduated from Bryant University between the years of 2009 and 2020 as these age groups are the main areas of focus in which the analysis is conducted.

HYPOTHESIS

According to prior research that has been conducted regarding student loan debt and postgraduate life decisions, a hypothesis has been created stating that if one graduates from college with any amount of student loan debt, then he or she will be less likely to further invest in continued education, homeownership, and family formation as rapidly as one with no student loan debt. The reason being is because since one is already paying off their undergraduate student loans, he or she may not want to take on more debt by getting his or her master's degree or buying a home. Also, since a large portion of his or her monthly salary is allocated towards paying off this loan, he or she may not have the funds necessary to buy a home or begin a family as soon as he or she would like.

METHODOLOGY

To test the above hypothesis, college student loan debt and its effects on students' lives upon graduation from Bryant University have been investigated. The reason that this university is the main focus is not only due to the fact that I attend this university as an undergraduate, but also due to the fact that it is located in the state of Rhode Island. This is applicable due to the fact Rhode

Island has the fourth highest average student debt in the country at about $36,000 per student. Along with this, 63% of graduates of universities located in the state of Rhode Island graduate with student loan debt, which is above the national average rate of 57%, according to The Institute for College Access and Success (TICAS). It is also important to note that Bryant University is a private university, carrying a larger tuition than public universities within the state, further contributing to larger amounts of student loan debt.

This study largely focused on determining the percentage of students pursuing a bachelor's degree who graduated with student loan debt, along with locating the average debt per student. These numbers were then compared to aspects of postgraduate life such as continued education, family formation, and homeownership. The analysis of these aspects assisted in determining the relationship between student loan debt and future life decisions and goals.

SURVEY

In order to gather the necessary data, a survey was distributed to Bryant University alumni, primarily focusing on the twenty-two to thirty-five year old age group, as this age range is when most begin to pursue things such as continued education, family formation, and homeownership if they desire to do so. Bryant University's Office of Alumni and Parent Engagement assisted in dispersing the survey to Bryant alumni. This study mainly focuses on alumni who graduated from the years 2009-2020 in order to target the age group previously mentioned. A range of about 8,000 alumni remained, however, the office only has access to about 60% of these alumni emails. Therefore, the survey was administered to just under 5,000 Bryant University alumni. With a response rate of about 25%, according to the office's previous research assistance, the goal was to receive somewhere in the vicinity of 1,000 responses in which the analysis would be conducted. However, after distributing the data on three separate occasions, 320 total responses were collected in which the analysis and regressions were conducted.

In creating the online survey, Qualtrics was used, where multiple questions were asked, since it is better to gather more information needed than not enough. The goal was to not exceed a time period of five minutes to complete the survey. The reasoning behind this five-minute time period was largely due to the fact that people lead busy lifestyles, and as a result, any perception of a lengthy survey may turn participants away from completing it if they feel as though a long period of time must be devoted to its completion. The survey ranged from simple multiple-choice questions to short-response questions, allowing for more personal responses. Simple questions such as age, race, and gender were asked, while assuring that respondents remain anonymous to minimize ethical concerns. More specific questions were then asked as follows:

- What was your major as an undergraduate student at Bryant University?
- What year did you graduate from Bryant University?
- Did you finance your undergraduate education through student loans?
- How much did you accumulate in student loan debt throughout your undergraduate experience?

In addition, questions regarding respondents' postgraduate lives were asked such as:

- What do you currently do for a living?
- Did you continue your education after receiving your bachelor's degree?
- Have you purchased your own home?
- Have you gotten married and/or had children?

To conclude the survey, more questions were asked focusing on those who did indeed have student loan debt upon graduation and whether they felt as if they were at a disadvantage in terms of pursuing their life goals, including continuing their education, purchasing a home, or starting a family. The responses to this question were very interesting because they aided in the understanding of the impact student loans can have on the lives of college graduates.

As mentioned above, after distributing the survey and obtaining responses, information was gathered, and multiple visuals were designed in order to break down and organize the material necessary to support the thesis. Line charts, pie charts, and bar graphs were created to illustrate the ages, genders, races, and degree types of the individuals a part of the sample. Graphs were also created to show those who graduated with student loan debt and whether they continued their education, purchased a home, or began a family in the years following graduation.

Aside from simply investigating the descriptive statistics of the data sample and creating visuals to represent the data, SAS 9.4 was also used to find basic statistical measures of the respondents who took part in the online survey. Along with this, regressions were ran in SAS in order to determine whether there were significant correlations between those who graduated with student loan debt and their decisions to further their education, purchase a home, or start a family.

DATA

The first step that was taken in analyzing the data included transferring the survey results into Excel where key findings were broken down that would contribute to the later analysis. Initially, when examining the data, gender, race, and college major categories of the sample were investigated. Of the 320 survey respondents, 143 were male respondents, 176 were female respondents, and 1 respondent identifying as other. Next, looking at the races of the sample, 269 respondents were White, 20 were Asian, 11 were American Indian or Alaskan Native, 10 were Black or African American, and 10 were Hispanic or Latino. As for college major categories, 246 respondents graduated with a business degree, 71 respondents with an arts and sciences degree, and 3 respondents with an interdisciplinary degree. Of the 320 alumni, 206 respondents graduated with student loan debt, or just over 64%, which sits just below the national average of about 71% and just above the Rhode Island state average of 63% students graduating with student loan debt. Therefore, it was determined that the sample of 320 undergraduate alumni would be a sufficient sample to use as it included a wide range of participants, while also aligning closely with national averages in terms of student loan debt.

AGE

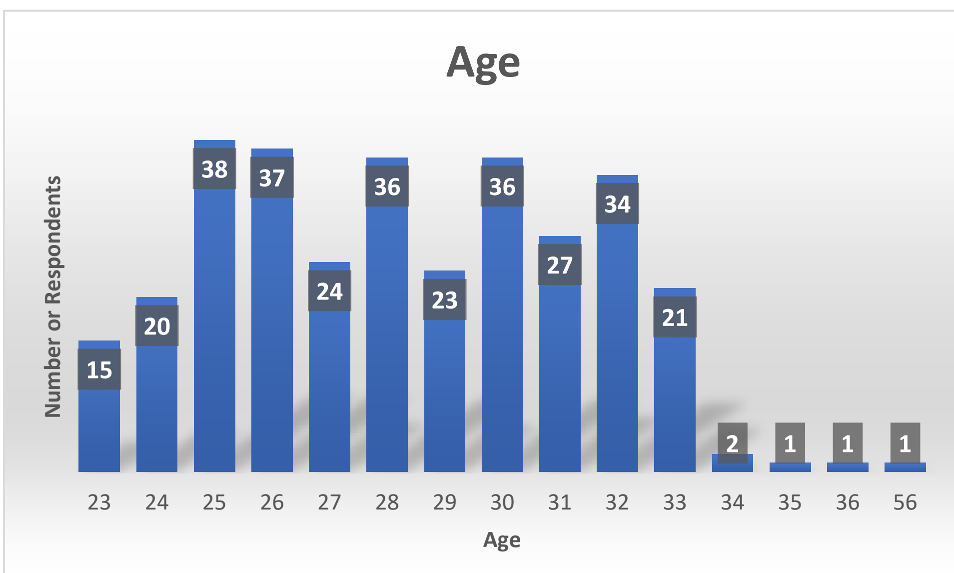
The table below shows basic statistical measures of age among those who completed the online survey. As shown, the average age of the respondents was about 28 years old with a minimum of 23 years old and a maximum of 56 years old. This maximum is a clear outlier in the data as the second largest age of the respondents was 36 years old, the data was still found to be useful according to the study's hypothesis. There was also a standard deviation of just under 3.4 which further suggests that the maximum age of 56 years old among those who took part in the online survey is in fact an outlier in relation to the other respondents of the sample.

Table 1: Basic Statistical Measures

Analysis Variable: Age

Mean	**Median**	**Mode**	**Maximum**	**Minimum**	**Std Dev**
28.332	28.000	25.000	56.000	23.000	3.391

Figure 1- Age Distribution of Respondents



GENDER

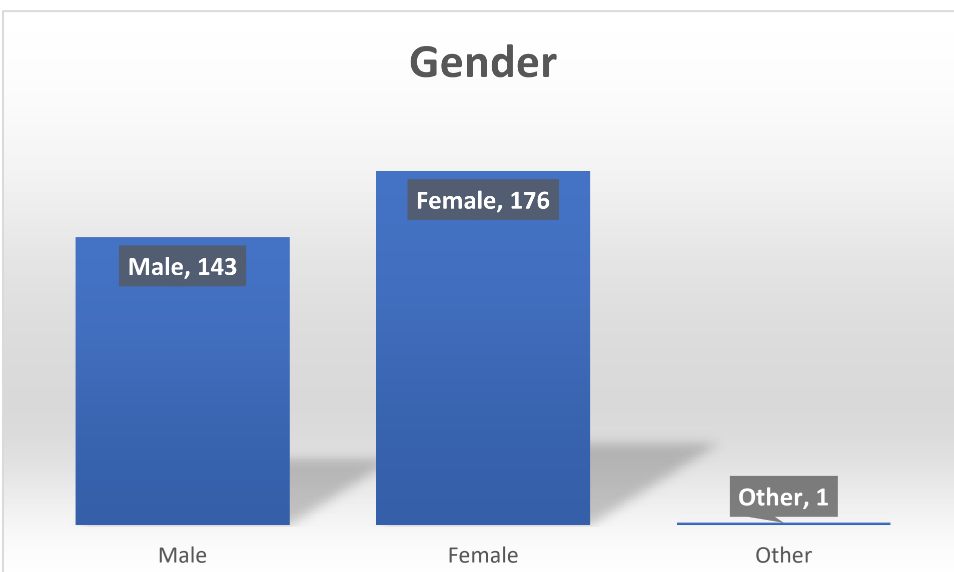
The next table shows basic statistical measures of gender among those who completed the survey, where dummy variables were created, with 0 signifying a female respondent, 1 signifying a male respondent, and 2 signifying other gender. As shown below, the mode, which is the number that appears most frequently in the data set, is 0, indicating that a majority of responders were females. This correlates with the analysis from above where it was determined that 176 respondents were female, while only 143 respondents were male and 1 respondent identifying as other. This is an important aspect of the data because it allows for the investigation of how student loan debt effects genders differently. Gender was used as a control variable in the regressions to see whether it changed the significance of correlations between student loan debt and postgraduate life decisions.

Table 2: Basic Statistical Measures

Analysis Variable: Gender

Mean	Median	Mode	Maximum	Minimum	Std Dev
0.453	0	0	2.000	0	0.505

Figure 2- Gender Distribution of Respondents



RACE

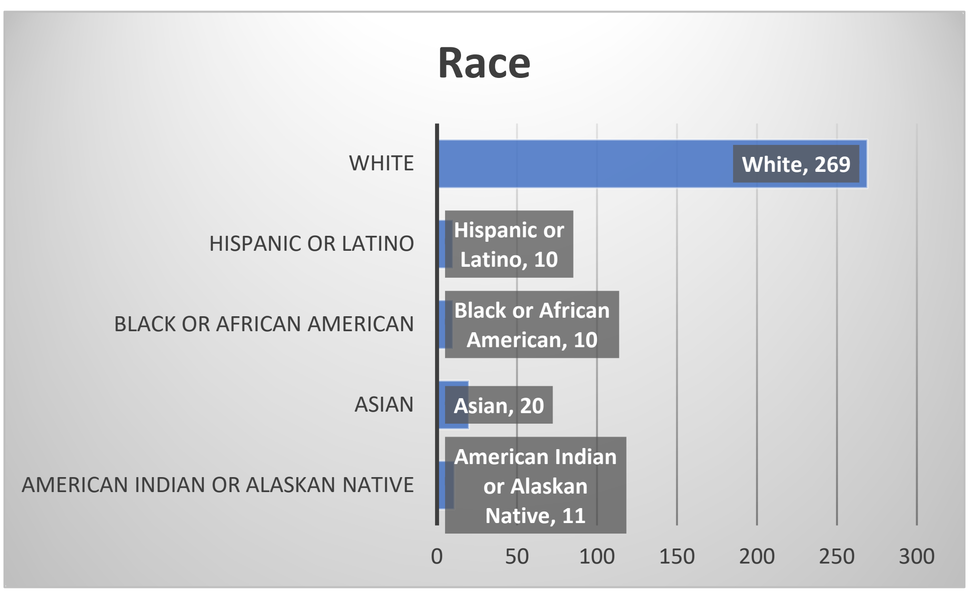
The next table shows basic statistical measures of race among those who participated in the online survey. Dummy variables were created for each race in the data set, where 1 indicates American Indian or Alaskan Native, 2 signifying Asian, 3 indicating Black or African American, 4 indicating Hispanic or Latino, 5 indicating Native Hawaiian or Other Pacific Islander, 6 signifying White, and 7 signifying other race. As shown in the table below, the mode lies at 6, suggesting that the majority of respondents were White individuals. This also correlates with the prior analysis from above where it was found that out of the 320 participants, 269 were White, which extremely drives the average up, which is just over 5.6.

Table 3: Basic Statistical Measures

Analysis Variable: Race

Mean	Median	Mode	Maximum	Minimum	Std Dev
5.624	6.000	6.000	7.000	1.000	1.117

Figure 3- Race Distribution of Respondents



<u>DEGREE TYPE</u>

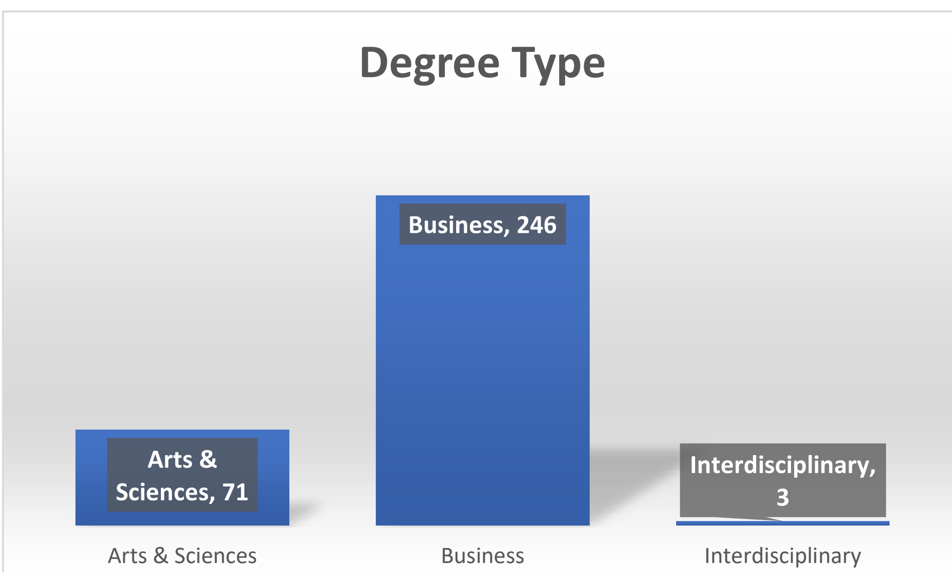
The table below shows basic statistical measures of degree type amid the 320 respondents of the online survey. The three major college major categories that Bryant University offers are business, arts & sciences, and interdisciplinary. Variables were created for these three groups of degree types, where 1 implies graduating with a business degree, 2 implies graduating with an arts & sciences degree, and 3 implies graduating with an interdisciplinary degree. Looking at the table below, it can be seen that the mode is 1, suggesting that the majority of respondents graduated from Bryant University with a business degree, supporting the calculations from above, where it was found that 246 out of the 320 respondents graduated with a degree in business. This information is important in the analysis because it has allowed for getting an understanding of the industries these respondents currently work in, which may contribute to their abilities to pay off their student loan debt and pursue certain postgraduate decisions.

Table 4: Basic Statistical Measures

Analysis Variable: Degree

Mean	**Median**	**Mode**	**Maximum**	**Minimum**	**Std Dev**
1.241	1.000	1.000	3.000	1.000	0.450

Figure 4- Degree Type Distribution of Respondents



STUDENT LOANS

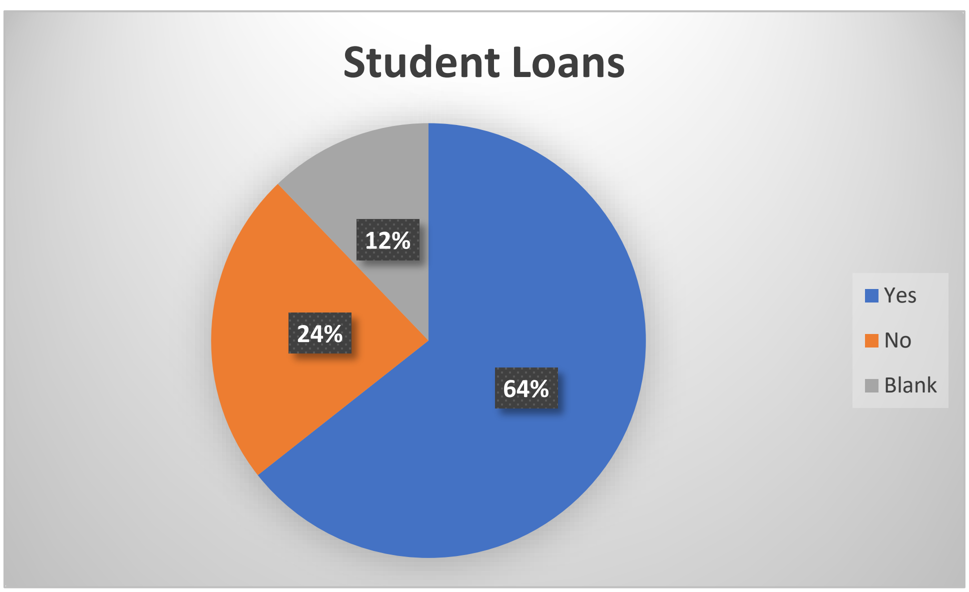
The following table shows basic statistical measures of those who financed their education through student loans. Dummy variables of 0 and 1 were created, signifying graduating with no student loan debt and graduating with student loan debt, respectively. As shown in the table below, the mode was determined to be 1, which indicates that the majority of respondents graduated with student loan debt. This information also supports the prior calculations, where it was found that 64% of participants had financed their undergraduate education through student loans. This information was pleasing to find because a majority of the sample did in fact graduate with student loan debt, allowing for further analyzation of the effects this student loan debt had on their postgraduate experiences, assisting in the contribution to the study's hypothesis.

Table 5: Basic Statistical Measures

Analysis Variable: Student Loans

Mean	Median	Mode	Maximum	Minimum	Std Dev
0.733	1.000	1.000	1.000	0	0.443

Figure 5- Percentage of Respondents with Student Loans



LOAN AMOUNT

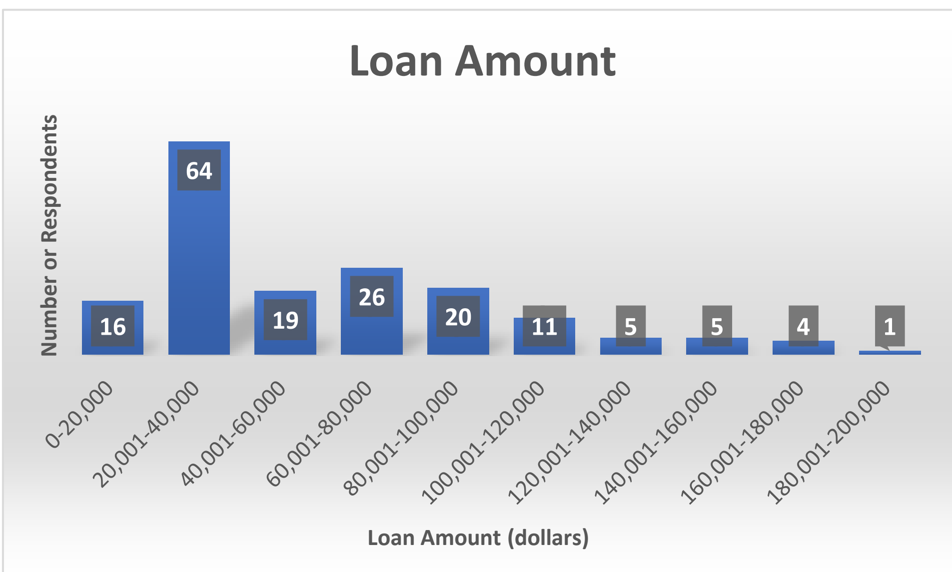
The table below shows basic statistical measures of loan amount among the 206 respondents who graduated college with student loan debt. As shown in the table, the average student loan debt amount amongst those respondents with student debt is about $62,500, with a standard deviation of nearly $42,000. This average sits well above the national averages of between $30,000 and $40,000. The main explanation for this high number could come as a result of the fact that Bryant University is a private university with a tuition of about $60,000 per year, making it a greater burden on students to find the necessary resources to fund their education. The table also shows the maximum loan amount among the respondents, which is $200,000, along with the minimum of $2,000 in debt.

Table 6: Basic Statistical Measures

Analysis Variable: Loan Amount

Mean	**Median**	**Mode**	**Maximum**	**Minimum**	**Std Dev**
62514.34	50000.00	100000.00	200000.00	2000.00	41612.73

Figure 6- Loan Amount Distribution of Respondents



CONSTRUCTION OF VARIABLES

Now that the sample has been broken down to get an understanding of the group of people who the study was working with, the analysis and modeling that was performed will now be addressed, beginning with the construction of the variables used in the assessment. First, beginning with whether or not one had student loans, variables of 0 and 1 were created, where 0 signified those who did not graduate with student loan debt, while 1 signified those who did graduate with student loan debt. Next, for continued education, dummy variables 0 and 1 were also created, indicating either not continuing education after receiving a bachelor's degree and continuing education after receiving a bachelor's degree, respectively. Home purchase was the next topic in which variables were constructed for, where 0 signifies those who have not yet purchased a home and 1 signifies those who have purchased a home. Variables were also constructed for family formation among the respondents, where 0 indicates that the respondent has neither gotten married or had a child/children, while 1 indicates that the respondent has both gotten married and had a child/children.

EMPIRICAL APPROACH

CONTINUED EDUCATION

To begin the analysis, SAS was used to run regressions to determine the correlation and significance between student loan debt and three major postgraduate life decisions. As explained prior, these three factors are continued education, home purchase, and family formation. To run the regressions, the student loan variable, which is whether or not one graduated with student loan debt, was set as the independent variable, and continued education was set as the dependent variable. After running the regression, it was determined that the there is a high significance between the two at the 1% level. Below is the model that was used to determine the significance level.

$$Continued\ Education = \alpha_0 + \alpha_1\ Student\_Loans$$

Control variables were then added to the regression to see whether any variables would affect the significance of the correlation. The control variables that were used in the analysis include age, gender, race, degree type, and personal income. The reason there is a need to control for these variables is because each has an effect on debt in its own way. For example, age may have an effect on one's loan because if he/she is young, he/she may not have an established credit, which may make it more difficult to receive a loan or he/she may be charged higher rates. Also, looking at personal income, if one has a lower income, it will be more difficult for him/her to pay the loans and he/she may have to designate more of their monthly salary to these payments, having a larger effect on his/her life. After control variables of age, gender, race, degree type, and personal income were added, the significance remained high at the 1% level even accounting for several other variables within the data set. In terms of economic significance based off of the regression below, it was found that respondents are 27.38% less likely to continue their education as a result of their student loans. Below is the revised model used to determine the significance level while taking the control variables into account.

$$Continued\ Education = \alpha_0 + \alpha_1\ Student\_loans + \alpha_2 \mathrm{Gender} + \alpha_3 Race + \alpha_4 Degree\ + \alpha_5 Age + \alpha_6 Pers\_Income$$

Table 7: Student Loan Debt vs. Continued Education

The table below outlines the results from OLS regressions of the relationship between student loan debt and continued education, and whether student loan debt has a significance on one's ability to further their education following college. Student Loans is the independent variable while Continued Education is the dependent variable. Row 1 reveals the regression between the two with no control variables, while Row 2 includes control variables of gender, race, degree, age, and personal income. T-statistics are reported in parentheses below each row. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

Continued Education

	1	2
Student Loans	-0.263***	-0.241***
	(-3.95)	(-3.30)
Gender		-0.134**
		(-2.00)
Race		0.433
		(0.88)
Degree		0.051
		(0.71)
Age		0.001
		(0.14)
Personal Income		0.466
		(0.67)
Constant	0.653***	0.114
	(11.64)	(0.21)
Observations	257	225
Adjusted R^2	0.054	0.050

<u>HOME PURCHASE</u>

The next regression executed was created to determine the correlation between student loan debt and home purchase. In doing so, student loan debt was set as the independent variable and home purchase was set as the dependent variable. After the regression was ran, it was determined that there is a weak significance between student loan debt and home purchase at the 10% level. Below is the model used to determine the significance level between the two variables.

$$Home\ Purchase = \alpha_0 + \alpha_1\ Student\_Loans$$

Like the continued education regression from above, control variables of age, gender, race, degree type, and personal income, were also added to determine whether they had any impact on the significance level of the data. After the control variables were added, it was determined that the significance level increased from being at the 10% level to now significant at the 5% level. It was determined that respondents are 17.02% less likely to purchase a home as a result of student loans. Below is the model that was used to determine the significance level while accounting for the control variables.

$$Home\ Purchase = \alpha_0 + \alpha_1\ Student\_loans + \alpha_2 \text{Gender} + \alpha_3 Race\ + \alpha_4 Degree + \alpha_5 Age + \alpha_6 Pers\_Income$$

Table 8: Student Loan Debt vs. Home Purchase

The table below outlines the results from OLS regressions of the relationship between student loan debt and home purchase, and whether student loan debt has a significance on one's ability to purchase a home following college. Student Loans is the independent variable while Home Purchase is the dependent variable. Row 1 reveals the regression between the two with no control variables, while Row 2 includes control variables of gender, race, degree, age, and personal income. T-statistics are reported in parentheses below each row. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

Home Purchase

	1	2
Student Loans	-0.117*	-0.132**
	(-1.80)	(-2.08)
Gender		0.080
		(1.35)
Race		0.116
		(0.27)
Degree		-0.142**
		(-2.24)
Age		0.053***
		(5.99)
Personal Income		0.957
		(1.57)
Constant	0.427***	-1.131**
	(7.80)	(-2.34)
Observations	256	224
Adjusted R^2	0.009	0.215

FAMILY FORMATION

The third regression executed was created to determine the correlation between student loan debt and family formation, including both getting married and having children. Student loan debt was set as the independent variable, while family formation was set as the dependent variable. It was determined, after running the regression, that there is no significance between student loan debt and family formation. Below is the model used to determine the significance between the two variables.

$$Family\ Formation = \alpha_0 + \alpha_1\ Student\_Loans$$

Control variables of age, gender, race, degree type, and personal income were also added to the regression to determine whether these variables would add any significance. As a result, it was revealed that the control variables did not have any impact on the significance of the correlation as it remained not significant. Below is the model used accounting for the control variables.

$$\begin{aligned} &Family\ Formation \\ &\quad = \alpha_0 + \alpha_1\ Student\_loans + \alpha_2 \text{Gender} + \alpha_3 Race\ + \alpha_4 Degree\ \ + \alpha_5 Age \\ &\quad + \alpha_6 Pers\_Income \end{aligned}$$

Table 9: Student Loan Debt vs. Family Formation

The table below outlines the results from OLS regressions of the relationship between student loan debt and family formation, and whether student loan debt has a significance on one's ability to start a family, through getting married and having children. Student Loans is the independent variable while Family Formation is the dependent variable. Row 1 reveals the regression between the two with no control variables, while Row 2 includes control variables of gender, race, degree, age, and personal income. T-statistics are reported in parentheses below each row. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

Family Formation		
	1	2
Student Loans	-0.051	-0.047
	(-0.80)	(-0.75)
Gender		0.085
		(1.48)
Race		0.098
		(0.23)
Degree		-0.016
		(-0.26)
Age		0.033***
		(3.89)
Personal Income		2.525***
		(4.25)
Constant	0.338***	-0.988**
	(6.31)	(-2.11)
Observations	255	224
Adjusted R^2	-0.001	0.186

FURTHER ANALYSIS

DISADVANTAGE

In addition to running regressions to determine the correlation between student loans and their effects on certain factors of postgraduate life, further analysis was conducted to determine the disadvantage levels respondents felt they were at because of their loans. Within the survey, three specific questions were asked to help determine this, including:

- How much of a disadvantage did you feel you were at in pursuing further enrollment because of your student loans?

- How much of a disadvantage did you feel you were at in pursuing homeownership because of your student loans?
- How much of a disadvantage did you feel you were at in forming a family because of your student loans?

After looking into the survey results themselves, it was found that 16% of respondents felt that they were at a high disadvantage when pursuing further enrollment due to their undergraduate student loans. It was also determined that 14% of respondents felt that they were at a high disadvantage in purchasing a home because of their student loans. Lastly, looking at family formation, it was found that 10% of participants felt they were at a high disadvantage in starting a family due to their undergraduate student loans. Through these findings, they help to support the overall effect that student loans have on one's own perspective when choosing to pursue these major life decisions.

SPLIT DATA

Additional research was done to determine the average age of marriage and the average age of for first-time parents in the United States. It was determined that in 2020, the average age of marriage lies between the ages of 31 and 33 years old in the United States (Lee, 2021). It was also revealed that the average age of first-time parents in the United States lies between the ages of 26 and 31 years old (Stahl, 2020). After becoming aware of this information, these age numbers were compared to the ages of the respondents of the study's online survey. It was found that in the data, a large majority of respondents were under the age of 30 years old. As a result, the data was then broken down into two parts, where Group 1 included individuals between the ages of 23 and 29, and Group 2 including respondents above the age of 30. Regressions were then run between student loans and family formation for each of the two new groups to determine if one group is more effected by student loans than the other when deciding whether to start a family. After running the regressions, it was found that there was no significance between student loans and family formation in Group 1, which included respondents between 23 and 29 years old. The table below shows the results of the regression and due to the high p value of .7731, this correlation is not statistically significant.

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	0.65000	0.10989	5.91	<.0001
Student_Loans	Student Loans	1	-0.03776	0.13041	-0.29	0.7731

However, after running the regression between student loans and family formation for Group 2, which included respondents above the age of 30, it was concluded that there is a moderate significance between the two variables at the 5% level. The table shows the results of the regression and due to the low p value of .0064, this correlation is moderately significant.

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	0.23810	0.04970	4.79	<.0001
Student_Loans	Student Loans	1	-0.16518	0.05959	-2.77	0.0064

RESULTS AND CONCLUSION

After running regressions between student loan debt and factors such as continued education, homeownership, and family formation, the data indicates that that student loan debt does have an impact on postgraduate life decisions. According to the sample, student loan debt has the largest effect on continued education as the regressions that were run produced the largest significances when in direct comparison. Homeownership was also impacted by student loan debt as there were moderate significances between the two in terms of the sample that was used. Although student loan debt did play a role in one's decision to pursue these two decisions, family formation was not impacted by one's accumulation of student loan debt. However, after splitting that data into two groups, it was found that there was a moderate significance between the two variables among respondents above the age of 30 since these individuals are more inclined to begin starting families. Although the sample did not show any significance between the two variables, the sample itself may have impacted these results as it accounted solely for Bryant University graduates, focusing mainly on a private university located in the Northeast. As a result, if more time and resources had been devoted to this area of study, a larger sample of college graduates could have been obtained to collect the data. Data from participants all throughout the country from both public and private universities could have been gathered to account for any discrepancies that may have been faced in terms of location and school type. If able to do so, a larger group of data could have been analyzed, increasing the overall significance of the analysis. However, the results of that data in which was analyzed are pleasing as it further contributes to research that has already been published, focusing on the topic of student loans and their effects on postgraduate life decisions.

REFERENCES

Baker, Amanda R., and Catherine P. Montalto. "Student Loan Debt and Financial Stress: Implications for Academic Performance." Journal of College Student Development, vol. 60, no. 1, 26 Jan. 2019, pp. 115–120.

Chapman, Bruce; Lounkaewa, Kiatanantha. *Repayment Burdens with US College Loans*. The Australian National University Centre for Economic Policy Research. Discussion Paper No. 647, November 2010.

Elliott, William, Grinstein-Weiss, Michal, & Nam, Ilsung. (2013). *Is Student Debt Compromising Homeownership as a Wealth-Building Tool?* (CSD Working Paper 13-33). St. Louis, MO: Washington University, Center for Social Development.

Fry, Richard. *Student Debt and Overall Economic Well-Being.* Pew Research Center's Social & Demographic Trends Project, 31 Dec. 2019.

Georgiev, Georgi, et al. *Benefits of Real Estate Investment.* The Journal of Portfolio Management, vol. 29, no. 5, 2003, pp. 28–33.

Houle, Jason N. and Berger, Lawrence, "Is Student Loan Debt Discouraging Homeownership among Young Adults?" (2015).Open Dartmouth: Faculty Open Access Articles. 2472.

Kantrowitz, Mark. *Who Graduates with Excessive Student Loan Debt?* Student Aid Policy Analysis Papers. December 2015.

Lee, E. (2021, February 02). This is the average age of marriage in the U.S. Retrieved April 3, 2021, from https://www.theknot.com/content/average-age-of-marriage

Mezza, Alvaro, Daniel R. Ringo, Shane M. Sherlund, and Kamila Sommer (2016). On the Effect of Student Loans on Access to Homeownership, Finance and Economics Discussion Series 2016-010. Washington: Board of Governors of the Federal Reserve System.

Shand, Jennifer M. *The Impact of Early-Life Debt on the Homeownership Rates of Young Households: An Empirical Investigation*. November 2007.

Stahl, A. (2021, January 11). New study: Millennial women are delaying having children due to their careers. Retrieved April 3, 2021, from https://www.forbes.com/sites/ashleystahl/2020/05/01/new-study-millennial-women-are-delaying-having-children-due-to-their-careers/?sh=6c32c914276a

Velez, Erin, Melissa Cominole & Alexander Bentz (2019) *Debt Burden After College: The Effect of Student Loan Debt on Graduates' Employment, Additional Schooling, Family Formation, and Home Ownership*, Education Economics, 27:2, 186-206.

Zhang, Lei. *Effects of College Educational Debt on Graduate School Attendance and Early Career and Lifestyle Choices*. Education Economics, vol. 21, no. 2, May 2013, pp. 154–175.

APPENDIX

Variable	Description
Age	Age of respondent
Gender	Gender of respondent
Race	Race of respondent
Degree	Degree type of respondent
Personal_Income	Yearly personal income of respondent
Loan_Amount	Amount of student loan debt of respondent if education was financed through student loans
Continued_Education	Whether respondent continued their education after college
Home_Purchase	Whether respondent has purchased a home after college
Both	Whether a respondent has both gotten married and had children after college