Business Education & Accreditation
Vol. 11, No. 1, 2019, pp. 1-17
ISSN: 1944-5903 (print)
ISSN: 2157-0809 (online)

IBFR
www.theIBFR.COM

RELATIONSHIPS BETWEEN COLLEGE COSTS AND COLLEGE FUNDING: EVIDENCE FROM THE UNITED STATES

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ABSTRACT

In the last few decades, college tuition costs have escalated to what some have described as astronomical levels. This has led to a heavier reliance by college students on alternative sources beyond family financing. Such sources have included grants, scholarships, private loans, federal loans and alas credit cards. This study examines the impact of this increased and high tuition costs on the source of funding options students pursue and apply to their college education. Five factors indicated a strong relationship for the students who took loans – namely students who had been in school longer were less likely to take loans, students who had entered the college from another four-year college were also more likely to take loans, students from families with higher incomes were also less likely to take loans and students who were later in their family to go to college were also less likely to take a loan

JEL: M1, I2, H5

KEYWORDS: Business Administration, Education and Research Institutions, National Government Expenditures and Related Policies

INTRODUCTION

In the last few decades, college tuition costs have escalated to what some have described as astronomical levels. This has led to a heavier reliance by college students on alternative sources, beyond family financing. Such sources have included grants, scholarships, private loans, federal loans and alas credit cards. This study examines the impact of this increased and high tuition costs on the source of funding options students pursue and apply to their college education.

Statistical data from the U.S. Department of Education and the National Center for Education Statistics, provide details on recent college expenses. They state that for 2015–16, the overall year's total expenses for undergraduate students for their room, board, tuition and additional expenses were on average said to be $16,757 at public institutions, $43,065 at private nonprofit institutions, and $23,776 at private for-profit institutions (U.S. Department of Education, National Center for Education Statistics, 2018). The said statistics also noted that in the ten years from 2005–06 and 2015–16, the costs for undergraduate room, board, tuition and additional expenses increased 34 percent, and prices during the same period at private nonprofit institutions increased 26 percent, after taking into consideration inflation (U.S. Department of Education, National Center for Education Statistics, 2018). The current literature on the topic of college funding for students have looked at the availability of college funding on the type of college – public or private – that students choose to attend (Lillis, 2008; Johnson et al, 2016). The literature has also looked at what effect financial parental investments have on student GPA and degree completion Hamilton (2013). While another study has detailed that parents have delayed their retirement,

pushing it back, so they can continue to financially support children they have in college (Handwerker, 2011). While these studies make critical contribution to the literature, less is known about the role that varying and highly diverse factors play in college students' borrowing funds for college.

The purpose of this study was to examine patterns of funding for college students' tertiary education. In essence, how are college students funding their college education? Is this primarily through loans, scholarships, working, parental or family assistance? The sample will consist of undergraduate students recruited from Siena College. Discussion from the results will focus on implications for college students as they seek to navigate the changing landscape for funding their college education. The importance of new information and studies on college affordability and factors impacting students' college loan decisions is particularly significant in today's environment – where college costs are seen as exorbitant and defaulting on college loans by graduating and non-graduating students is at a critical level.

The paper begins with a look at the relevant literature, followed by the research design and sample and the descriptive, correlation and regression results. The paper ends with a conclusion and discussion section that explains the significance regarding the results to the existing literature and provides a proposal on future possible studies.

LITERATURE REVIEW AND BACKGROUND

Two detailed studies to have looked at college students and their college choices looked specifically at the impact of high-tuition, high-loan approach as it relates to the role of socioeconomic status on educational choice within varying situated contexts (Lillis, 2008). The author used a questionnaire that assessed college-choice behavior across various socioeconomic groups within and between high-cost and low-cost private postsecondary institutions. The study concluded that lower income students are more likely to choose more affordable or lower-tuition college choices, but also more likely to graduate, compared to their more affluent counterparts.

In a similar vein, a study by Johnson et al (2016) looked to understand the decision making process college students maneuver when borrowing money to finance their education. The authors concluded the following critical points: (a) students relied heavily on advice from parents, guidance counselors, and friends ;(b) attending college was not possible without student loans; and (c) students knew very little about the loans they would be responsible for repaying (Johnson et al, 2016). Breier (2010) in a study in South Africa noted that students from higher income levels were less likely to borrow funds for their higher education and when they did borrow, they requested smaller amounts and repaid it at a faster rate than their counterparts from lower income households.

Three key studies have looked at the impact of rising tuition costs on family income (Hamilton, 2013; Cheng et al, 2012; Handwerker, 2011). The first study employed tertiary level data from a national sample to assess how parents' financial investment in their children's education impact the latter's GPA and degree completion, Hamilton (2013) showed that parental financial investments increase college attendance. In addition, the author found that if parents assist their children with financial help, it did result in a decrease in these students' GPA, but that the said students were more likely to graduate (Hamilton, 2013). Thus the author found that students that were helped by their parents financially did ultimately graduate but were less motivated to do well – presumably because their continued funding did not necessarily depend on applying for scholarships and grants that might require high GPAs (Hamilton, 2013). In contrast, Cheng et al's (2012) study of 240 university students (62 men, 178 women) concluded that the students in that study actually maintained a high GPA when they received parents' financial support. In fact, the authors noted that parents that helped their children financially, were also more likely to also provide social support and that this social support played a positive role in improving the students' GPAs (Cheng et al, 2012). This financial and social support was particular

acute for female students in the study, who expressed that the dual support (financial and social) were very instrumental in them maintaining high GPAs through successive semesters (Cheng et al, 2012).

In a third study looking at financial college support and parents' income support, the author showed that after controlling for certain variables – that is - the total number of children who attended college and the total number of children who had their parents pay for their college education – several predictable findings were concluded. First, older parents who paid for their children's college education were more likely than their counterparts to continue working, that is not be retired (Handwerker, 2011). Broken down by gender, the author found that fathers were more likely to be working at 10.5% points than mothers at 6.9% points (Handwerker, 2011). These older parents from the same study were also likely to be drawing on their social security benefits (Handwerker, 2011).

Some of the most robust areas of research in this area has looked at college students' college funding and government funding, including state and federal sources. First, Martin (2002) discussed the rising costs of college tuition, attributing it to less public subsidies and the increased costs of professors as they pursue scholarship opportunities (Martin, 2002). Hemelt and Marcotte (2016) used student-level data on twelfth graders in 1992 and 2004 and found a decrease in the probability of high school students attending the in-state public universities, when there had been substantial increases in said tuitions. It could be inferred that such students dismissed the idea of in-state public institutions being less expensive and searched for cheaper alternative tertiary education options Hemelt and Marcotte (2016). These cheaper alternatives resulted in these students pursuing their college level education at public two year colleges – presumably to reduce the overall four-year financial commitment to college Hemelt and Marcotte (2016).

Overall the two authors found that large tuition increases at these public four-year colleges had reduced the likelihood that the high school graduates in those states would choose to pursue these public institutions and instead to look for cheaper alternatives such as less prestigious in-state public colleges, out-of-state public institutions, or private universities (Hemelt and Marcotte, 2016). These effects were most pronounced among students from families of low socioeconomic status, and non-elite students who performed below the 90th percentile on twelfth-grade math tests (Hemelt and Marcotte, 2016). Similar results were found from Chen et al (2011) whose study concluded that state funding of need-based aid was positively associated with college students' chances of persistence.

A study by Perna et al's (2008) drew on data from descriptive studies of 15 high schools and highlighted constraints in the availability of college counseling. The authors concluded that in the context of limited fiscal and other resources, as well as changes in federal and state financial aid policies and positive changes in district policies, all will help to ensure that high school students receive the appropriate help regarding college counseling and specifically college counseling related to financial aid (Perna et al, 2008). In a similar vein, Mclendon et al (2014) using a sample of undergraduate college students concluded that states who invested heavily in financial aid counselling will see students who are more equipped to make the best decisions regarding sources of funding for their higher education. Henry and Smith (2017) who used a sample of community college students, also found that educational assistance financial aid programs led to improved knowledge overall and higher retention rates among said college students. The positive relationship between increased financial aid education as it relates to college finances and improved performance by the college students was reinforced in studies by Greenfield (2015), Kaufman et al (2008), Harrington et al (2016) and Shireman (2009).

In a few miscellaneous but important studies on college students and their higher education funding, mixed results were found. Bertolas' (2018) article focused on the National Collegiate Athletic Association (NCAA), which help the college student-athletes who compete in college sports through the athletic programs of many colleges and universities in the U.S. and Canada. The author concluded that athletes received adequate funding through their colleges and didn't need additional college funding (Bertolas,

2018). Gayles and Hu's (2009) study examined factors related to student athletes' engagement in education and found it to be purposeful. Gonzalez (2017) completed more than 40 years of research found a positive relationship between increases in the proportion of non-resident students enrolling in an institution and increases in the tuition prices this institution charges to these same students. Finally, Hountras and Brandt (1970) looked at the relation of student residence to academic achievement in five colleges of an upper Midwest university, concluding that those living on campus were likely to do better academically.

DATA AND METHODOLOGY

The sample for this study was derived from students at a primarily undergraduate college, located in upstate New York, in the suburb of Albany. The college was originally established as a male commuter school in 1937. It remained a single sex institution until 1969, when the first female students were admitted. By 2009, the female population at the institution had grown to 56%. The students who participated in this study included freshmen, sophomores, juniors and seniors. A total of 432 students ultimately completed the questionnaire, from the three Schools at the college, namely the School of Liberal Arts, the Schools of Business and the School of Science. The survey was completed by the students between April and June 2018. These 432 students represented a response rate of 62%.

Some students were sent an email soliciting their participation in an online questionnaire. Other students were read a script in class by their professor, again soliciting their participation in either a hard copy or an online questionnaire. The questionnaire was designed to assess the source of funding for the students' college education. In the questionnaire, participants were asked to respond with varying degrees of intensity in regards to the source of their college funding, as well as demographic data (such as age, gender, family income, sports involvement and living arrangement) to be used for a correlation assessment.

RESULTS AND DISCUSSIONS

The descriptive results begin with a look at the age of the students who participated in this study. In Table 1, the first panel shows the age range of all participants, the second panel shows the number of students in the study who are that age and the third panel shows the corresponding percentage of students that were a certain age. The majority of the students were in the 17-22 age group with the largest percent of the participants falling in this category. There were some outliers in the age group, with a few students in their late 20s, 30s and 40s.

Table 2 shows the gender of the students who participated in this study. The first panel shows the gender of all participants (including a category of Self-Identify), the second panel shows the number of students in the study who belong to each gender and the third panel shows the corresponding percentage of students that were in each gender category. In looking at the gender of the participants, most were male, with a percentage at 50.74 percent. The participants also consisted of 49 percent females. One student, 0.26 percent of the participants chose to self-identify (see Table 2). The Table also shows the School Division that students belong to at the college. As stated earlier, there are three divisions at the college, namely Arts, Business and Science. The first panel shows the School Divisions at the college, the second panel shows the number of students in each division and the third panel shows the corresponding percentage of students that were in each division. The results showed that School of Arts made up 28.22 % with 114 responses. 60.39% of participants came from the School of Business with 244 participants. The School of Science only made up 11.39% with 46 responses.

Table 1: Age of Participants

Age of Participants	Number of Students	Percentage (%)
17	2	0.49
18	63	15.59
19	95	23.51
20	83	20.54
21	84	20.79
22	59	14.60
23	4	0.009
24	3	0.007
25	3	0.007
26	2	0.005
28	1	0.002
31	1	0.002
37	1	0.002
39	1	0.002
46	1	0.002
Question not Answered	1	0.002
Total	**404**	**100%**

This Table provides results on the age of the participants in the study.

Table 2 also shows the description of the participants based on the year in school the participants belonged to. Panel A shows the years in college, namely Freshman, Sophomore, Junior and Senior. In looking at the year of study for the sample, the results showed that 28.22% of responses came from the Freshman class at 114 responses followed by Seniors which makes up 25.74% with 104 responses. Sophomores made up 25.00% with 101 responses. The junior class contributed 21.03% at 85 responses.

The Table also shows the type of school participants came from before attending the current college. In the Table, the first panel shows the type of school attended before coming to Siena College, the second panel shows the number of students in the study who attended a particular educational institution and the third panel shows the number of students in each category. In looking at the type of school participants came from before attending the current college, it should be noted that 81.68% of the students who participated in this survey came to Siena College from a high school. 9.40% of student participants came from a community college. 8.66% came from another four-year college. One student chose not respond or did not understand how to answer.

The Table also shows the type of high school participants attended before going to college. In the Table, the first panel shows the type of high school attended before going to college, the second panel shows the number of students in the study who attended a particular high school and the third panel shows the number of students in each category. In looking at the type of high school participants came from before attending the current college, it should be noted that 83.66% of participants came from a public high school. 13.61% of participants came from a private high school. 1.48% of participants came from a boarding school and 0.099% came from both a public and a private high school before Siena College, while 0.02% came from a charter school.

The Table also shows where the participants reside while attending college. In the Table, the first panel shows the type of residency, the second panel shows the number of students living in a particular type of residency and the third panel shows the number of students in each category. In looking at the place of residency of participants, it should be noted that 79.70% of participants live on campus, while 20.29% of the participants live off the campus. The Table also shows whether the students participating in this study paid rent or not. In the Table, the first panel asks whether students paid rent or not, the second panel shows the number of students in the study who answered yes or no to this question and the third panel shows the number of students in each category. In looking at whether or not a student paid rent, it should be noted, 93.81% of participants do not pay rent. 5.69% of participants do pay rent and 0.495% did not answer.

Table 2: Descriptive Results

Gender	**Number of Participants**	**Percentage (%)**
Female	198	49.00
Male	205	50.74
Self-Identify	1	0002
Total	**404**	**100**
School Division	**Number of Participants**	**Percentages (%)**
School of Art	114	28.22
School of Business	244	60.39
School of Science	46	11.38
Total	**404**	**100%**
Students' School Year	**Number of Responses**	**Percentages (%)**
Freshman	114	28.22
Junior	85	21.03
Senior	104	25.74
Sophomore	101	25.00
Total	**404**	**100%**
Students' Previous School Attendance	**Number of Responses**	**Percentages (%)**
Question was not Answered	1	0,02
Another Four Year College	35	8.66
Community College	38	9.40
High School	330	81.68
TOTAL	**404**	**100%**
Type of High School Attended	**Number of Responses**	**Percentages (%)**
Boarding	6	1.48
Charter	1	0.02
Private	55	13.61
Private and Public	4	0.099
Public	338	83.66
Total	**404**	**100%**
Students' Campus Residency Status	**Number of Responses**	**Percentages (%)**
Student does not Live on Campus	82	20.29
Student does Live on Campus	322	79.70
Total	**404**	**100%**
Students' Status of Paying Rent	**Number of Responses**	**Percentages (%)**
Question was not Answered	2	0.495
Student does not Pay Rent	379	93.81
Student does Pay Rent	23	5.69
Total	**404**	**100%**

This Table provides results on the gender, the school they majored in at the college, the school year the students were in and the type of school participants in the study attended prior to attending the current college. It also provides results on the type of high school attended, their current residency status while at the college and looked at whether or not they were paying rent in their current residency situation.

Table 3 shows the family income of the students who participated in this study. The first panel shows the range of family income of all participants, the second panel shows the number of students in the study who correspond to a particular income and the third panel shows the corresponding percentage of students that were in each category. In looking at the family income of the participants, Table 3 showed that only 283 participants choose to respond or knew their family income. Of the 283 responses, 16.25% claim a family income between $1 and $50,000, 34.62% of responses claim their family income is between $50,001 and $100,000, 16.61% of responses had a family income between $100,001 and $150,000, 19.79% claim a family income between $150,001 and $200, 000, 5.65% claim a family income between $200,001 and $250, 000 while 2.47% claim between $250,001 and $300,000. 1.41% claim a family income between $300,001 and $350, 000, 1.06% claim between $350,001 and $400,000, 0.07% claim a family income between $400,001 and $450, 000 and 1.06% claim between $450,001 and $500,000. And one person or 0.03% claimed a family income of between $850,001 and $900,000.

Table 3: Family Income Range

Students' Family Income Range	Frequency of Income Range	Percentages (%)
$0	0	0.00
$1 - $50,000	46	16.25
$50,001 - $100,000	98	34.62
$100,001 - $150,000	47	16.61
$150,001 - $200,000	56	19.79
$200,000 - $250,000	16	5.65
$250,001 - $300,000	7	2.47
$300,001 - $350,000	4	1.41
$350,001 - $400,000	3	1.06
$400,001 - $450,000	2	0.07
$450,001 - $500,000	3	1.06
$500,001 - $550,000	0	0.00
$550,001 - $600,000	0	0.00
$600,001 - $650,000	0	0.00
$650,001 - $700,000	0	0.00
$700,001 - $750,000	0	0.00
$750,001 - $800,000	0	0.00
$800,001 - $850,000	0	0.00
$850,001 - $900,000	1	0.03
Total	**283**	**100%**

This Table provides the family income range of the students who participated in this study.

Table 4 shows the number of siblings of each participant and the number of siblings that attended college. The first panel shows the number if siblings each participant has, the second panel shows the number of students in the study who correspond to a particular number of siblings and the third panel shows the corresponding percentage of students that were in each category. In looking at the number of siblings of the participants, 71.28% of responses say they have between one and two siblings. 14.85% of responses say they have between three and four siblings. 9.40% of responses have no siblings. 2.22% of responses say they have between five and six siblings. 1.23% of responses have between seven and eight responses.0.49% of responses say they have between nine and ten siblings and 0.25% say they have eleven and twelve siblings.The Table also details the number of students who had siblings in college. The fourth panel details the number of participants who indicated how many siblings they had in college and the fifth panel indicates the corresponding percentages. The Table shows that 60.64% of participants stated they had zero siblings in college, 37.12% of responses stated that they had between one and two siblings in college, 1.73% stated they had between three and four siblings in college. 0.25% of responses stated they had between five and six siblings in college.

Table 4: Number of Siblings for Each Participant and Number if Siblings in College

Students' Number of Siblings Range	Frequency of Sibling	Percentages (%)	Frequency of Sibling in College	Percentages
0	38	9.40	245	60.64
1 – 2	288	71.28	150	37.12
3 – 4	60	14.85	7	1.73
5 – 6	9	2.22	1	0.25
7 – 8	5	1.23	0	0.00
9 – 10	2	0.49	0	0.00
11 – 12	1	0.25	0	0.00
Total	**404**	**100%**	**404**	**100%**

This Table provides the results for the number of siblings each participant had in their family and the number of those siblings who are in college.

Table 5 shows the GPA of the students who participated in this study. The first panel shows the GPA range of all participants, the second panel shows the number of students in the study who correspond to a particular GPA range and the third panel shows the corresponding percentage of students that were in each category. In looking at the GPA, 386 of the participants answered or knew their GPA. 75.38% of

participants had a GPA between the range 3.01 and 4, 24.09% of participants had a GPA between 2.01 and 3 and 0.52% of participants had a GPA between 1.01 and 2.

Table 5: Participants' GPA Range

Students' GPA Range	Frequency of GPA Range	Percentages
0.00 – 1.00	0	0.00
1.01 – 2.00	2	0.52
2.01 – 3.00	93	24.09
3.01 – 4.00	291	75.38
Total	**404**	**100%**

This Table looks at the GPA of the students who participated in this study.

Table 6 shows the participants' type of residence and the students' status of being a first generation college student. In the first section, the first panel shows the state of residency or if the participant was from a country outside of the United States – the latter was included since not all students had their permanent residence in the United States, the second panel shows the number of students in the study who correspond to a particular state and the third panel shows the corresponding percentage of students that were in each category. In looking at the state of residency of the participants, 75.99% of participants are from New York State. 5.19% of participants are from Connecticut. 4.95% of participants are from Massachusetts. 3.21% of participants are from outside the United States., 2.72% of the participants from New Jersey and 1.48% of the participants are from Pennsylvania.

Table 6: Participants' State of Residence

Students' State of Residence	Number of Responses	Percentages (%)
The Student is not From the United States	13	3.21
Question was not Answered	2	0.49
California	4	0.99
Connecticut	21	5.19
District of Columbia	2	0.49
Florida	1	0.25
Georgia	1	0.25
Illinois	1	0.25
Massachusetts	20	4.95
Maryland	1	0.25
Montana	1	0.25
New Hampshire	4	0.99
New Jersey	11	2.72
New York	307	75.99
Ohio	3	0.74
Pennsylvania	6	1.48
Rhode Island	1	0.25
Texas	1	0.25
Vermont	4	0.99
Total	**404**	**100%**
Students' Type of Residential Area	**Number of Responses**	**Percentages (%)**
Question was not Answered	3	0.74
Rural	141	34.90
Suburb	206	50.99
Urban	54	13.36
Total	**404**	**100%**
Students' Status of Being a First Generation College Student	**Number of Responses**	**Percentages (%)**
Question was not Answered	3	0.74
The Student is not a First Generation College Student	324	80.19
The Student is a First Generation College Student	77	19.05
Total	**404**	**100%**

This Table looks at the state the students were from, the type of residential area the students were from, as well as whether the student was a first generation student to attend college in their family.

Table 6 also shows the type of residential area the participants are from. The first panel shows the type of residential area the participants are from, namely rural, suburban and urban, the second panel shows the number of students in the study who belong to each residential area and the third panel shows the corresponding percentage of students that were in each category. In looking at the residential type, 50.99% of the participants are from suburban areas. 34.90% of the participants are from rural regions. 13.36% of participants came from an urban region. Three people did not know how to or choose not to answer this question.

Table 6 also shows whether the students in the study are first generation students from their family to attend college or not. The first panel has categories that ask whether or not the participant was a first generation from their family to attend college, the second panel shows the number of students in the study who responded whether or not they were a first generation to attend college or not and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 80.19% of the participants are not first generation students. 19.05% of participants are first generation college students. Three students either choose not to answer or didn't understand the question.

Table 7: Birth Order of Participants and Order of Family to Attend College

Students' Birth Order in Their Family	Number of Responses	Percentages (%)	Students' Order in Family to Attend College	Percentages (%)
Question was not Answered	3	0.74	7	1.73
The Student is the First Child in the Family	180	44.55	194	48.01
The Student is the Second Child in the Family	129	31.93	122	30.19
The Student is the Third Child in the Family	63	15.59	54	13.36
The Student is the Fourth Child in the Family	16	3.86	18	4.45
The Student is the Fifth Child in the Family	4	0.99	2	0.49
The Student is the Sixth Child in the Family	4	0.99	3	0.74
The Student is the Seventh Child in the Family	2	0.49	1	0.25
The Student is the Eighth Child in the Family	3	0.74	1	0.25
The Student is the Ninth Child in the Family			1	0.25
The Student is the Tenth Child in the Family			1	0.25
Total	**404**	**100%**	**404**	**100%**

This Table provides results on the birth order in their family of the students who participated in thus study and the order that the students went to college.

Table 7 shows the birth order of participants and order of family to attend college. The first panel shows the participants' birth order in their family, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table 44.55% of participants are the first child in their family. 31.93% of participants are the second kids in their families, 15.59% of participants are the third child of their family, 3.86% of participants are the fourth child in their family, 0.99% of participants are the fifth or sixth child and 0.74% of participants are the eighth child or didn't answer the question separately, 0.49% of participants are the seventh child of their family.

Table 7 also shows the participants' order in family to attend college. The fourth panel shows the participants' order in their family to attend college, the fifth panel shows the corresponding percentage of students that were in each category. In looking at the Table, 48.02% of participants are the first child in their family to go to college, 30.19% of participants are the second child in their family to go to college, 13.36% of participants are the third child in their family to go to college, 4.45% are the fourth child in their family to go to college, 1.73% did not answer the question.0 .743% are the sixth child to go to college, 0.495% are the fifth to go to college, 0.248% are either the eighth, nineteenth, seventh, or tenth separately.

Table 8 shows the participants' in this study parental household status, type of housing, students' sports status, students' status on graduate school intentions and number of hours worked by participants. The first panel shows the participants' parental status, the second panel shows the number of students in the study who belong to each category of parental status household and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 79.20% of participants came from a dual parent household. 14.85% of participants are from single parent households. 5.19% came from neither a dual or single household, 0.49% didn't answer and 0.25% answered the question with "not applicable."

The Table also looked at the types of housing participants permanently resided in, such as an apartment or house. The first panel shows the participants type of permanent housing, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 91.08% of participants live in a house, 8.66% of participants live in an apartment, 0.25% did not answer the question.

The Table also looked at whether or not a student participated a sport and represented the college. The first panel details whether or not a student participated in a sport, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 79.70% do not play a sport. 20.05% do play sports and 0.245% did not answer.

The Table also looked at whether or not participants intended to go to graduate school. The first panel details whether or not a student intended to pursue graduate studies, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 52.72% of the participants do want to go to graduate school. 35.64% are unsure. 11.38% do not want to go to graduate school and 0.25% did not answer the question.

The Table also looked at whether or not a student worked while attending college and the number of hours they worked. The first panel details whether or not a student worked and how many hours, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. Of the 402 participants that answered the question about how many hours a week on average they worked 50.49% of student worked between 0 and 5 hours. 15.92% worked between 5.01 and 10 hours per week. 10.44% of students worked between 15.01 and 20 hours. 8.95% of students worked between 10.01 and 15 hours on average per week. 5.97% of students worked between 20.01 and 25 hours per week. 3.98% worked between 25.01 and 30. 2.23% worked between 35.01 and 40 hours. 1.74% worked between 30.01 and 35 and 0.25% worked over 40 hours per week.

Table 8: Parental Household Status, Type of Housing, Students' Sports Status, Students' Status on Graduate School Intentions and Number of Hours Worked by Participants

Parental Household Status	**Number of Responses**	**Percentages (%)**
Question was not Answered	2	0.49
The Student is from a Dual Parent Household	320	79.20
The Student is neither from a Dual Parent nor a Single Parent Household	21	5.19
The Question was Answered "Not Applicable"	1	0.25
The Student is from a Single Parent Household	60	14.85
Total	**404**	**100%**
Type of Housing	**Number of Responses**	**Percentages (%)**
Question was not Answered	1	0.25
The Student Resides in an Apartment	35	8.66
The Student Resides in a House	368	91.08
Total	**404**	**100%**
Students' Status on Participating in College Sports	**Number of Responses**	**Percentages (%)**
Question was not Answered	1	0.25
The Student does not Participate in a Sport	322	79.70
The Student Does Participate in a Sport	81	20.04
Total	**404**	**100%**
Students' Status on Wanting to Attend Graduate School	**Number of Responses**	**Percentages (%)**
Question was not Answered	1	0.25
The Student Does Not Want to Attend Graduate School	46	11.38
The Student is Unsure Whether They Want to Attend Graduate School	144	35.64
The Student Does Want to Attend Graduate School	213	52.72
Total	**404**	**100%**
Students' Hours Worked per Week (Done in Ranges)	**Number of Responses**	**Percentages (%)**
0 – 5	203	50.49
5.01 – 10	64	15.92
10.01 – 15	36	8.95
15.01 – 20	42	10.44
20.01 – 25	24	5.97
25.01 – 30	16	3.98
30.01 – 35	7	1.74
35.01 – 40	9	2.23
Over 40	1	0.25
Total	**402**	**100%**

This Table provides results for the type of parental household status, specifically looking at whether students belonged to dual or single parent household. It also looks at the type of housing, specifically whether students lived in an apartment or house as well as if students played a sport for the college. Finally, it provided results on whether student intended to attend graduate school and the number of hours they worked on a weekly basis.

Table 9 shows the participants' in this study source of funding for college and what percentages participants used for college from each source. The first panel shows the source of their college funding for each participant, the second panel shows the number of students in the study who used 0-25% from that particular source, the third panel shows the number of students in the study who used 25.01-50% from that particular source, the fourth panel shows the number of students in the study who used 50.01-75% from that particular source the second panel shows the number of students in the study who used 75.01-100% from that particular source . In looking at the Table, 63.11% used 0-25% of their funding from loans, 35.39% used 25.01-50% from scholarships, 53.21% used 0-25% from parents, 91.83% used 0-25% from family members, 92.07% used 0-25% from working and 93.31% used 0-25% from other sources.

Table 9: Source of Funding

Source of Funding	Number of Students Who Used 0-25%	Number of Students Who Used 25.01-50%	Number of Students Who Used 50.01-75%	Number of Student Who Used 75.01-100%
Funding from Loan	255 (63.11%)	76 (18.81%)	22 (5.44%)	14 (3.46%)
Funding from Scholarship	138 (34.15%)	143 (35.39%)	43 (10.64%)	33 (8.16%)
Funding from Parents	215 (53,21%)	68 (16.83%)	38 (9.40%)	36 (8.91%)
Funding from Family Members	371 (91.83%)	7 (1.48%)	7 (1.73%)	3(0.74%)
Funding from Working	372 (92.07%)	6 (1.48%)	1 (0.25%)	1 (0.25%)
Funding from Other Sources	377 (93.31%)	4 (0.99%)	4 (0.99%)	3 (0.74%)

This Table provides the results for the source of funding from which students accessed financial resources. It looks at different sources of funding and the percentage of that funding students accessed.

The correlation coefficient statistical analysis was used to analyze relationships between likely variables. Correlation coefficient or R is a measure of the degree of linear relationship between two variables. The value ranges from -1 to +1, the closer the results to -1 or +1, the stronger the relationship.

As shown in Table 10, there were some predictable and some not so predictable results. The first panel shows the relationships between loans taken by the students and a number of variables, the second panel shows the correlation coefficient values for a number of relationships and the third panel shows the level of significance. To begin, strong relationships were found between students taking loans and the longer they had been in school (-0.73) with the value indicating that the longer they were in school (4^{th} versus lower years) the less likely they were to take loans. Students who had entered the college from another four-year college were also more likely to take loans (0.68). Students from families with higher incomes were also less likely to take loans (-0.71). Finally, a surprising result showed that students who were later in their family (fifth versus a second sibling) to go to college were also less likely to take a loan (-0.64).

Five moderate relationships were found. To begin, students who lived on campus (versus off) were more likely to take loans (0.41). Students who worked more hours were also more likely to take loans (0.39). Students born later in their family were also less likely to take loans (-0.52). As expected, students with higher GPAs were less likely to take loans (-0.43). Also as expected, students from dual-income families (single-income families) were also less likely to take loans (-0.56).

Weaker relationships were found for students, depending on the school they belonged to. Specifically, students from the School of Science were less likely to take loans (-0.32) and students who were planning to attend graduate school were also less likely to take loans (-0.31).

After developing the correlation coefficient, a regression was performed. The results are presented in Table 11 below. The first column shows the predictor variables (constant, major, source of entry into college, residence, number of hours worked, family income, order of birth, order of college attendance in family, GPA, single/dual family household and expected graduate attendance). The first variable (constant) represents the constant, also referred to in textbooks as the Y intercept, the height of the regression line when it crosses the Y axis. In other words, this is the predicted value of student loans when all other variables are 0.

Table 10: Correlation Tables and Results

Correlations Analyzed from Data	Correlation Coefficient Values	Level of Significance	Strength of Significance
Relationship Between Loans and Year in School	-0.73*	0.05	strong
Relationship Between Loans and School of Business/Arts/Science	-0.32**	0.10	weak
Relationship Between Loans and Source of Entry (high school, community college, 4 year college)	0.68*	0.05	strong
Relationship Between Loans and residence (on campus versus off campus)	0.41**	0.10	moderate
Relationship Between Loans and number of hours per week worked	0.39**	0.10	moderate
Relationship Between Loans and family income	-0.71*	0.05	Strong
Relationship Between Loans and order of birth in family (first/second/third child, etc.)	-0.52*	0.05	moderate
Relationship Between Loans and order of sibling to go to college	-0.64*	0.05	Strong
Relationship Between Loans and GPA	-0.43**	0.10	moderate
Relationship Between Loans and single/dual income family	-0.56*	0.05	moderate
Relationship Between Loans and going to graduate school	-0.31**	0.10	Weak

This Table provides results for the correlation analysis of student loans with other variables. The corresponding level of significance and the strength of the correlation is also noted.

The second column has B, which are the values for the regression equation for predicting the dependent variable from the independent variable. The regression equation would thus be presented as:

$$Y(\text{Student Loans}) = b0 + b1(YS) + b2(M) + b3(E) + b4(R) + b5(HW) + b6(FI) + b7(OrB) + b8(OrC) + b9(GPA) + b10(SDI) + b11(GSP) \quad (1)$$

This column of estimates provides the values for b0, b1, b2, b3 and b4, b5, b6, b7, b8, b9, b10 and b11 for this equation. The third column has the standard errors, these are the standard errors associated with the coefficients. The fourth column has Beta, these are the standardized coefficients. These are the coefficients that you would obtain if you standardized all of the variables in the regression, including the dependent and all of the independent variables, and ran the regression. By standardizing the variables before running the regression, you have put all of the variables on the same scale, and you can compare the magnitude of the coefficients to see which one has more of an effect. The fifth and sixth columns have the values for t statistics and significance. – These are the t-statistics and their associated 2-tailed p-values used in testing whether a given coefficient is significantly different from zero.

The Table shows results that shows the intercept value is -3.325. The higher the year in school, the less likely students would take loans (B=-.231, $p < .05$). Student in the field of science were less likely than their Arts or Business counterparts to take loans (B=-.360, $p < .10$). Students who came directly from high school, the more likely students would take loans (B=.137, $p < .05$). Students who lived on campus were more likely students would take loans (B=.137, $p < 0.10$). The higher the number of hours worked, the more likely students would take loans (B=.192, $p < 0.10$). The higher the family income, the less likely students would take loans (B=-.890,$p < .05$). The higher the order of birth in the family, the less likely students would take loans (B=-.455,$p < .05$). The higher the order of going to college as a child in the family, the less likely students would take loans (B=-.274,$p <0.05$). The higher the GPA, the less likely students would take loans (B=-.321,$p < 0.10$). The students from a dual income family home, the less likely students would take loans (B=-2461,$p < 0.05$). The more likely they are to be going to graduate school, the less likely students would take loans (B=-.253,$p < 0.10$). The adjusted R-squared value of 0.388 from the regression model indicates that 38.8% of the dependent variable is explained by the eleven independent variables.

Table 11: Regression Results

Model	B	Standard Error	Beta	t	p
Constant (Intercept)	-3.325	.186		-9.728	<0.05
Year in School(YS)	-.231	.060	-0.065	-3.838	<0.05
Major (M)	-.360	.068	-0.082	-5.280	<0.10
Source of Entry (E)	.137	.064	0.035	2.146	<0.05
Residence(R)	.196	.048	0.061	4.118	<0.10
Number of hours per week worked (HW)	.192	.082	0.033	2.352	<0.10
Family Income (FI)	-.890	.038	-0.280	-3.468	<0.05
Order of birth in family(OrB)	-.455	.020	-0.027	-2.336	<0.05
Order of sibling to go to college (OrC)	-.274	.003	-0.064	-5.192	<0.05
GPA	-.321	.044	-0.089	-7.280	<0.10
Single/dual income family (SDI)	-.246	.039	-0.149	-12.040	<0.05
Graduate school Potential (GSP)	-.253	.064	-0.050	-3.972	<0.10

R-squared = 0.491 and adjusted R-squared =0.388 This Table provides the results of the regression analysis. It includes results for the unstandardized coefficients, the beta values, the corresponding values for standard errors, the standardized coefficients, t values, levels of significance and confidence intervals.

CONCLUSION

The purpose of this study was to examine patterns of funding for college students' tertiary education. In essence, how were college students funding their college education? Was this primarily through loans, scholarships, working, parental or family assistance? The sample for this study was derived from students at a primarily undergraduate college, located in upstate New York, in the suburb of Albany. The students who participated in this study included freshmen, sophomores, juniors and seniors. A total of 432 students ultimately completed from the three Schools at the college, namely the School of Liberal Arts, the Schools of Business and the School of Science. The survey was completed by the students between April and June 2018. These 432 students represented a response rate of 62%. Some students were sent an email soliciting their participation in an online questionnaire. Other students were read a script in class by their professor, again soliciting their participation in either a hard copy or an online questionnaire. The questionnaire was designed to assess the source of funding for the students' college education. In the questionnaire, participants were asked to respond with varying degrees of intensity in regards to the source of their college funding, as well as demographic data (such as age, gender, family income, sports involvement and living arrangement).

A key overriding question was posed at the beginning of this study - specifically this key question addressed what were the factors that lead to students taking out loans for college. With regard to this overall question, five factors indicated a strong relationship for the students who took loans – namely students taking loans and the longer they had been in school, students who had entered the college from another four-year college were also more likely to take loans, students from families with higher incomes were also less likely to take loans and students who were later in their family to go to college were also less likely to take a loan

In addition, five moderate relationships were found. To begin, students who lived on campus were more likely to take loans, students who worked more hours were also more likely to take loans, students born later in their family were also less likely to take loans, students with higher GPAs were less likely to take loans and students from dual-income families (single-income families) were also less likely to take loans.

Weaker relationships were found for students, depending on the school they belonged to. Specifically, students from the School of Science were less likely to take loans and students who were planning to attend graduate school were also less likely to take loans.

The result on family income and the negative relationship it had to students taking loans was echoed in a previous study by Breier (2010) – showing that we can have confidence in the current data. Bertolas' (2018) study on athletes found that NCAA founded athletes were less likely to take college loans. While a significant relationship cannot be shown between these two variables in the current study. Handwerker's (2011) study on students and college loans found that parents were likely to keep working longer years to support their college attending students, even postponing retirement. The results in the current study may partly allude to this, as we see students later in line in the family being less likely to take loans – maybe relying more on their not-yet-retired parents. Cheng et al's (2012) study found that students with more family social support were less likely to take loans. This could be seen as in keeping with the current study, which found that siblings who were later in line to attend college were less likely to take loans – possibly an indication that such credit sources are not needed since the students were obtaining support from other or previous family members. The regression stated that

Overall, the results of this study provide sound knowledge and reliable information that a variety of critical factors affect college student funding and the extent to which students will take loans, based on demographic, socioeconomic and perceptual factors.

Were there limitations to the current study? Absolutely. This limitation began with the sample, a convenience sample of students that is taken from a small liberal arts college in upstate New York. Furthermore, while the students covered all three colleges, namely Business, Arts and Science, there was some skewing of numbers towards Business students versus students from the other areas. However, stylized facts that could be most valuable for interested parties include conclusions made in this study regarding the source of college funding and the factors that impact the reasons impacting the necessity for increased college loans.

A future follow up study with a similar sample of students will be conducted in Spring 2019 and is expected to look at how additional variables, namely internships before and during college, GPA before college, race and college advising before and during college, impacted the source of students' financial sources for college. Future follow up studies could also extend the current study to a larger sample of students from different perspectives, increasing the generalizability of the findings related to this topic.

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