

EXAMINING THE ROLE OF UNIVERSITY PRESIDENT AND FOOTBALL COACH
SALARIES IN STUDENT DEBT

By

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A Thesis Submitted to The Honors College
In Partial Fulfillment of the Bachelors degree
With Honors in
Information Science and Arts

THE UNIVERSITY OF ARIZONA

M A Y 2 0 1 7

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Abstract

This research investigates the relationship between university president and coach salaries and student debt. The recent rise in tuition and student debt has created public concern, prompting a search for causes of and solutions to the problem. One hypothesis discussed in both popular news articles and academic papers is that university spending on president salaries and football coach salaries has an influence on student debt. However, prior to the current study, this hypothesis had not been subjected to careful analysis based on the available data. Utilizing data collected from the *Chronicle of Higher Education*, *USA Today*, and the *College Scorecard*, which provide data for a robust sample of universities, this study finds no correlation between university president/ football coach salaries and student debt.

Introduction

Student debt—it's one of those few topics which manages to attract both popular news coverage and intense scrutiny by academia. College is typically portrayed as an essential step in the transition to adulthood and as a path to the 'American Dream,' yet it often seems that achieving this milestone leaves students with a burden of debt astronomically high, causing some to question whether the opportunities afforded by a college degree are worth the price. In September 2015 *Forbes* published an article titled "Why College Isn't Worth the Money" in which the author concluded that the extra money she spent on a "distinguished private school with a premium price tag instead of the cheaper state option" wasn't worth the cost (Bond). In another article, "Is college worth it? According to Goldman Sachs maybe not," Sachs researchers are cited to support the claim that "a college degree is getting so expensive that it might not be

worth the money anymore” (Long, 2015). As these quotes illustrate, over the past few decades student debt has become a growing concern for students, parents, universities, politicians, and the general public. During the past three years alone student debt has risen by an alarming amount. In 2014 it was estimated that “about 70 percent of 2013 graduates [leave] college with an average of \$28,400 in debt” (Bidwell). For students graduating in 2016 this figure rose to \$37,172, an increase of \$8,772 in just three years (Powell, 2016).

With average debt per student at such a high figure, it is important to have a clear understanding of what the potential effects of such high debt levels are. After all, if there were no negative consequences of high student debt—for instance, if graduates were able to get high-paying jobs and quickly pay off the debt—it would not be a cause for concern. Studies have shown, however, that greater debt affects home ownership and graduate school attendance. With regard to home ownership, a 2016 study found that “student debt not only affects when people purchase their first home but also a person’s ability to make a down payment on a home, to invest in a retirement fund, or to put a portion of their income towards an emergency savings fund” (Flanagan, p. 361). The same article notes that it is ever more common for former students to become long-term renters. A recent report issued by the Federal Reserve Bank of New York had similar findings; for graduates aged 30-36 “having any student debt significantly hurts [their] chances of buying a home, compared to college graduates with no debt” (Kamenetz, 2017). The combined effect of high rent and student debt results in an extremely high cost of living for recent graduates (Flanagan, 2016, p. 361). Researchers have also examined the effect of student debt on “graduate school attendance and early career and lifestyle choices” (Zhang, 2013, p. 154). Using the Baccalaureate and Beyond 93/97 survey data, it was found that, for “public college graduates college debt has a negative and significant effect on graduate school

attendance” (Zhang, 2013, p. 154). The various impacts of student debt have a large “aggregate effect on the U.S. economy,” specifically in the job market where “borrowers find it increasingly difficult to avoid unemployment while simultaneously finding a job to repay their loans” (Flanagan, 2016, p. 361). Clearly, evidence shows that the effects of high levels of student debt are negative—high student debt can significantly impact the economy as well as education and lifestyle choices for students.

It is no wonder then that many politicians have concentrated their efforts and attention on decreasing tuition and student debt. President Obama has focused his efforts on making community college affordable and accessible, congress has passed debt-relief programs, and in the 2016 democratic primaries the lowering the cost of college was a key issue for both Hillary Clinton and Bernie Sanders. In 2015 “President Obama made a pitch for a free, two-year community college education” for Americans as a way to help the U.S. “lead the world in education again” (Korte, 2015). His proposed ‘America’s College Promise’ called for state and federal funds to pay tuition for associates degrees for responsible students. According to the White House, “if all states participate[d] an estimated 9 million students could benefit,” saving a full-time community college student ‘an average of \$3,800 in tuition per year’ (“FACT SHEET - White House Unveils America's College Promise Proposal: Tuition-Free Community College for Responsible Student,” 2015). Politicians have also attempted to stem the effects of student debt by focusing on debt relief programs. In the 1990s and 2000s Congress passed “income-driven repayment plans” and President Obama continued to support these plans. Under these plans, those who qualify are able to cap the amount of their monthly debt payment. Recently, a Government Accountability Office (GAO) report “offers [the] first full cost estimate of debt-relief programs” and indicates that the US will “forgive at least \$108 billion in Student debt in

Coming Years” (Mitchell, 2016). These debt-relief programs, are a way to “stem a sharp rise in borrowers defaulting on their loans since the recession” (Mitchell, 2016). Beyond supporting programs to help students deal with debt, politicians have also focused on decreasing tuition costs. During the 2016 Democratic primary both Bernie Sanders and Hillary Clinton addressed the problem of student debt, and President Trump has weighed in on the issue saying that he supports “the idea of helping student-loan borrowers” and has proposed “setting payments at 12.5% of income and forgiving balances after 15 years” (Mitchell, 2016). With the U.S. government’s \$1.26 trillion student-loan portfolio, the large loans that students are taking out to finance their education are obvious (Mitchell, 2016). Raising concern from students, parents, and politicians alike, student debt is a worrisome issue facing America.

Despite the growing concern regarding student debt, there appears to be an incongruity between stated concern about debt and universities’ efforts to keep costs for students low. Universities all claim to be committed to reducing student debt, and yet top administrators earn salaries in the millions. The irony of university presidents speaking about their commitment to lowering student debt while being compensated in the millions is often cited as a poignant example of the problems within the U.S. higher education system. In fact, *USA Today* tackled this very issue with an article titled "Despite Rising Student Debt, 68 University Presidents Make More than Obama"(Mistry, 2015). When salaries of top university officials are so high, one wonders how strong universities’ commitment to reducing debt and student costs really is. Take, for example, Georgia Sate University (GSU). With a donation from president Mark P. Becker, GSU launched the Panther Retention Grant in 2013. The program was an effort to help students struggling with debt by providing “small grants to some 200 students after they were dropped from classes for nonpayment” (“Case Study: Georgia State University,” 2015). All results from

the program indicate that it has been extremely successful (“Case Study: Georgia State University,” 2015).

However, would such programs have even been necessary if tuition and debt were lower to begin with? Between the 2009–10 and 2013–14 academic years the median student debt at Georgia State University (GSU) increased by \$2,070—more than double the amount a student could owe while still qualifying for the Panther Retention grant—from \$15,000 to \$17,070. During this same time period, GSU president Mark P. Becker experienced a very reasonable salary increase of \$39,274, from \$491,326 to \$530,600. The following year, however, Becker’s salary received another increase, to \$1,051,204. I have no information as to whether tuition was increased to help finance this salary bump; however, if tuition rates were increased to help finance the \$520,604 raise, this would seem to demonstrate an incongruity between commitment to reducing student costs and spending on university leadership.

This contradiction between stated commitment to lowering student debt and university spending on top officials’ salaries prompted my research on the connection between university leadership salaries and student debt. A connection between higher salaries and debt seems reasonable, and past research has supported a positive correlation. As such, I was interested in investigating this correlation on a broader scale. The reasoning behind positing the existence of such a connection is straightforward; extraordinarily high compensation of top officials would be indicative of an overall trend towards unrestrained spending at these universities, and this in turn would be reflected in higher levels of tuition and student debt. Indeed, a 2014 report by Andrew Erwin and Marjorie Wood found that at “the 25 public universities with the highest executive pay” administrative spending was more than double scholarship spending, and that student debt levels rose at rates above the national average (Erwin and Wood, 2014).

Beyond the report from Erwin and Wood, no larger study into the effects of high presidential and coach salaries has yet been published; the research presented in this paper fills this gap in the literature. To determine if this correlation exists within a larger selection of schools and for football coach as well as president salaries, I examined both the median debt and debt at the 90th percentile in relation to president salaries, coach salaries, and an interaction between president and coach salaries. Ultimately my results suggested no correlation between universities with high levels of presidential and coach salaries and high levels of student debt. The exception to this was at private universities, where high presidential salaries had a very weak correlation to high levels of cumulative student debt at the 90th percentile. The results of this study, while limited, offer evidence contradictory to common sense; high university spending at top levels is not correlated to higher student debt. This result makes one wonder, if higher spending at universities is not responsible for debt, what is? This research shows the need for more research into both the area leadership compensation and student debt in general.

The remainder of this paper will consist of a literature review, data collection methods used in this research, analysis, results, and a conclusion. In the literature review I present current research on student debt, both from researchers focusing on cost of college and those focusing on other factors. In the data collection section I discuss collection techniques, sources utilized, and explain the differences in data used for my two analyses. The results section includes the regressions utilized, graphic representation of the results, and tables demonstrating the lack of correlation. These are utilized to explain that from this analysis there is no correlation between high presidential and coach salaries and student debt. In the conclusion I present the limitations of this study, explain the effect this may have had on the results, and discuss the implications of

my work. Finally, I call for more work in the field and briefly discuss a sister project aimed to knowledge of student debt and help students make more informed decisions.

Literature Review

With the average student debt above \$30,000 and rapidly growing, it is no surprise that many academics have taken an interest. However, attempting to find causal relationships in the murky land of student aid, university spending, student spending, tuition, scholarships, etc. is a complex task. Causal modeling of college student debt is especially difficult as “statistical estimates of causal effects are confounded by dynamic interactions between the decision to borrow and the characteristics of borrowers (endogeneity), their degree and earnings expectations (self-selection bias) and cumulative debt (temporal and threshold effects)” (Dowd, 2008, p. 232).

Despite these difficulties however, a variety papers and studies have reported on the causes and consequences of student debt, with most explorations focusing exclusively on either the consequences or causes of debt. Beyond the consequences mentioned earlier, studies in this area will not be addressed. Among those focusing on causes of debt, research tends to fall in one of two areas; a focus on non-university costs or a focus on tuition and other university costs. This literature review briefly touches on some of the other factors that researchers have examined such as race and credit card debt before chiefly focusing on literature about university costs. This is for two reasons; one, this research falls into the research about university costs, and second because most of the other research in this field does as well. Among literature on the role of tuition and related costs, a focus is placed on papers concentrating on presidential and coach

salaries in tuition and student debt, with a discussion of their limitations and what this research brings to the area.

Research into non-university cost factors has included investigations into student spending with credit cards and the role race plays in student debt. A 2013 study by Victoria Javine found that students with greater credit-card debt and financial independence were more likely to have high student loans (p. 367). Javine also found correlation between race and college debt; according to her work, African American students typically have higher debt than students of other races (p. 367). Dugger et. Al reported similar findings, noting that among medical students “the proportion of Blacks, Whites, Hispanics, and Asians reporting anticipated educational debt in excess of \$150,000 was 77.3%, 65.1%, 57.2% and 50.2%, respectively” (2013).

Many more studies have focused on factors related to university costs and tuition prices. This is most likely because of the similar trajectory that tuition and student debt have followed. Just as student debt has rapidly increased, so has tuition. While no studies have specifically examined the link between the two, it seems to be generally accepted that the increase in tuition is largely responsible for the increase in debt; students go into debt to pay for tuition. The similar rates of tuition inflation and student debt would support this. According to Ray Franke, a professor of education at the University of Massachusetts, Boston, “[college tuition] has been rising almost six percent above the rate of inflation” (as cited in Schoen, 2015). In an example provided in “Why does a college degree cost so much?” the economist John Schoen provides a telling comparison noting that, [if] annual increases had simply tracked the inflation rate since 1971” the 2015 tuition at Harvard would be \$15,189 instead of \$45,278 (2015). Elite private institutions such as Harvard are not the only universities to have experienced a steep increase in tuition and fees compared to the inflation rate; across the U.S. public state universities have also experienced

the enormous increase in tuition. The same is true for student debt; at both public and private universities students have experienced a rapid increase in debt; as mentioned earlier, average debt in 2013 for 70% of graduates was \$28,400 and in 2016 was \$37,172 (Bidwell, 2014; Powell, 2016). While the cost of university is not the single cause for debt (after all, as Dowd points out, it is a complex issue), nonetheless many researchers have focused on the causes of increasing college costs as the key element in student debt.

Among investigations into why the costs of college keep rising, three factors which have been considered are state aid, athletic fees, and the salaries paid to top university leadership. Increased state grant aid has been linked to lower debt, and need-blind schools are associated with higher debt levels (Monks, 2014, p. 125). Unsurprisingly, institutions which meet the “full demonstrated need” of students have “average student debt that is approximately 17 percent lower than institutions” which do not (Monks, 2014, p. 135). Additionally, Monks found that that cost of attendance and expenditures per student are both correlated to higher levels of debt (2014, p. 135). Karen Weaver found that from the 2004–2005 to 2008–2009 academic years the average athletic fee for university students increased by 28 percent and that in just a few years the “average salary of a head football coach increased 46 percent” (2010).

Two studies concentrating on salaries paid to top officials as predictors and contributors to debt were conducted by Devon Flanagan and James Harbin in 2016 and the previously mentioned study conducted by Erwin and Wood in 2015. In his paper ‘Are student loans hurting not helping students?’, Flanagan cites concerns about the financial activities of colleges and universities, specifically the “salary and wages of university employees and the allocation of funds towards athletics” (2016, p. 361). He writes that the increase in tuition has been followed by increases in compensation of university presidents, and while many universities justify their

“arguably outrageous salaries by comparing [them] to employment positions in other sectors” (2016, p. 361). Flanagan goes on to say that the fact remains that “the tuition expenses required to generate a president’s salary, however, is essentially the responsibility” of the very students who are graduating with such high levels of debt (Flanagan, 2013, p. 361). However, Flanagan lacks a quantitative study, which would be able to show correlation or causality between high salaries and student debt.

Through analysis of the increase in university president salaries, Harbin finds that there “appears to be a slippery slope effect taking place in salary creep for presidential salaries” and that this in turn is creating a “ratcheting up effect on various levels just below the president” (2016, p. 361). Looking at Texas A&M University and Texas A&M University-Texarkana, Harbin compares the \$1 million + “yearly \$200,000 housing allowance, an \$800,000 signing bonus and be eligible to receive up to four \$100,000 performance bonuses” that the newly appointed TAMU president was to receive in comparison with the Texarkana president of TAMU whose “salary is \$250,000 plus some modest benefits” (Harbin, 2016, p. 20). This paper had multiple limitations, the most problematic being that it did not attempt a large or diverse sampling of universities in an attempt to find correlation or causation. Additionally, Harbin fails to thoroughly analyze the possible effects of high presidential salaries. Despite the limitations of the study, Harbin convincingly demonstrates the rapidly increasing salaries paid to top university presidents.

The study by Erwin and Wood in 2014 provides a wider look at the correlation between president salaries and debt. Conducted by the Institute for Policy studies, this report had several interesting findings. First, “student debt crisis is worse at state schools with the highest-paid presidents,” specifically at the 25 schools where presidential compensation increased most

dramatically (Erwin and Wood, 2014). At these 25 schools the average presidential compensation increased at double the rate of the national average and was roughly \$1,000,000 in 2012 (Erwin and Wood, 2014). The report also found that at state schools with the highest university president salaries “administrative spending outstripped scholarship spending by more than 2 to 1” (Erwin and Wood, 2014). Erwin and Wood utilized the Executive Compensation Database from the *Chronicle of Higher Education* and focused on the FY 2006 to FY 2012. This study was limited however in that it focused exclusively on public universities. Additionally, its focus was on a comparison between the 25 Public universities with the highest paid presidents and the average public research universities, thereby failing to analyze if similar effects take place at smaller liberal art schools.

Correcting the limitations of the above studies, the study described here expands on the analysis of Wood and Erwin by including both public and private universities and universities that do not focus solely on research. It analyzes the effect presidential salaries on cost of attendance, median student debt, and cumulative student debt at the 90th percentile across a wide range of public and private universities. Additionally, it looks at the interaction between coach and president salary on student debt for public universities.

Data

Three separate sources were utilized for data collection. The data on presidential compensation was collected from the ‘Executive Compensation’ database published by the *Chronicle of Higher Education*. The data on 2009 College Football coach salaries was collected from an archived page from *USA Today* and the data on college debt statistics, enrollment size,

acceptance rate and all other variables came from the *College Scorecard*. The IPEDS ‘school finder’ tool was utilized to match each school to their unique IPEDS ID, which was then used to merge the original datasets. After merging, two separate data sets were compiled, the first with information from 2009 and 2013 for university president salaries and the second with president and coach salaries for the year 2009 only. The two data sets varied in size as well as year due to the availability of data for the coach salaries.

The dataset to measure the effect of high executive compensation on student debt was size $n=458$. Data for both public (2009–2010 and 2013–2014 school years) and private (2009 and 2013) presidential salaries was collected with a distribution of 125 public schools and 333 private schools. For a summary of the data for all schools see Figure 1.

	All Schools	Public	Private
Number of Schools	458	125	333
Mean University Presidential Pay 2009	\$479,938	\$389,137	\$514,125
Mean University President Pay 2013	\$551,600	\$472,835	\$581,255
Change Presidential Pay	\$71,662	\$83,698	\$67,130
Cost for Attendance 2009	\$34,766	\$18,547	\$40,873
Cost for Attendance 2013	\$40,927	\$22,244	\$47,962
Change Cost for Attendance	\$6,161	\$3,697	\$7,089
Median Student Debt 2009	\$15,334	\$14,207	\$15,758
Median Student Debt 2013	\$19,227	\$16,715	\$20,173
Change in Median Student Debt	\$3,893	\$2,508	\$4,415
Cumulative Student Debt at the 90th Percentile 2009	\$27,527	\$30,167	\$26,533
Cumulative Student Debt at the 90th Percentile 2013	\$33,232	\$34,047	\$32,924
Change in Cumulative Student Debt at the 90th Percentile	\$5,704	\$3,880	\$6,391

Figure 1

This summary provides some interesting insights about the dataset. As to be expected, the average pay for private university presidents was higher than that of public university presidents, but, surprisingly, public universities saw a larger increase in presidential pay from 2009 to 2013 (\$83,698 vs \$67,130). Unsurprisingly, the cost for attendance at private schools was higher than public schools, and they also experienced a larger increase in cost over the time period (private schools increased in cost by \$7,089 vs. a \$3,697 increase for public schools). In 2009 there was a relatively small difference in the median student debt for public vs. private schools. At that time students attending public schools had on average \$1,551 less debt than their private school counterparts (\$14,207 vs. \$15,758), but by 2013 that difference had grown to \$3,458 (\$16,715 vs. \$20,173). This summary also reveals that at the 90th percentile public schools had higher levels of debt for both 2009 (public at \$30,167 vs. private at \$26,533) and 2013 (public at \$34,047 vs. private at \$32,924), although private schools were increasing at a faster rate (\$3,880 for public vs. \$6,391 for private).

Due to these differences between public and private schools, both in terms of presidential salary and debt growth, they were analyzed separately. For both groups of schools a regression was run based off the change in presidential salaries between 2009 and 2013, and admission rate was included as a control variable to account for differences in prestige among schools. The data for both public and private schools is summarized scatter plots shown in Figures 2 and 3.

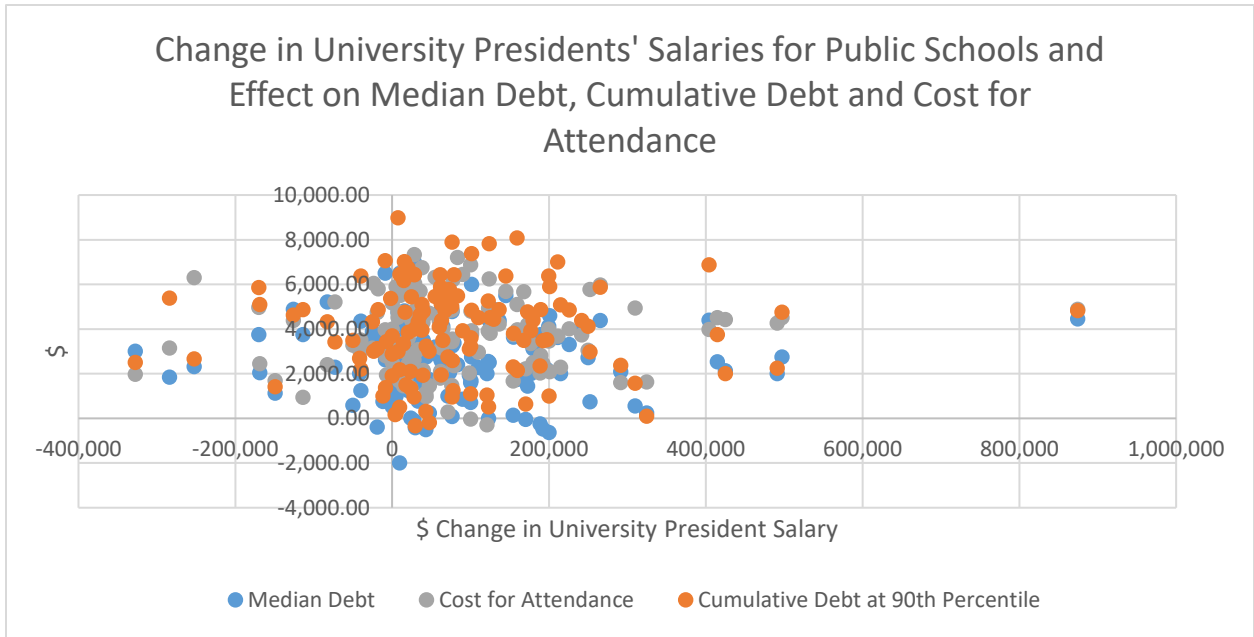


Figure 2

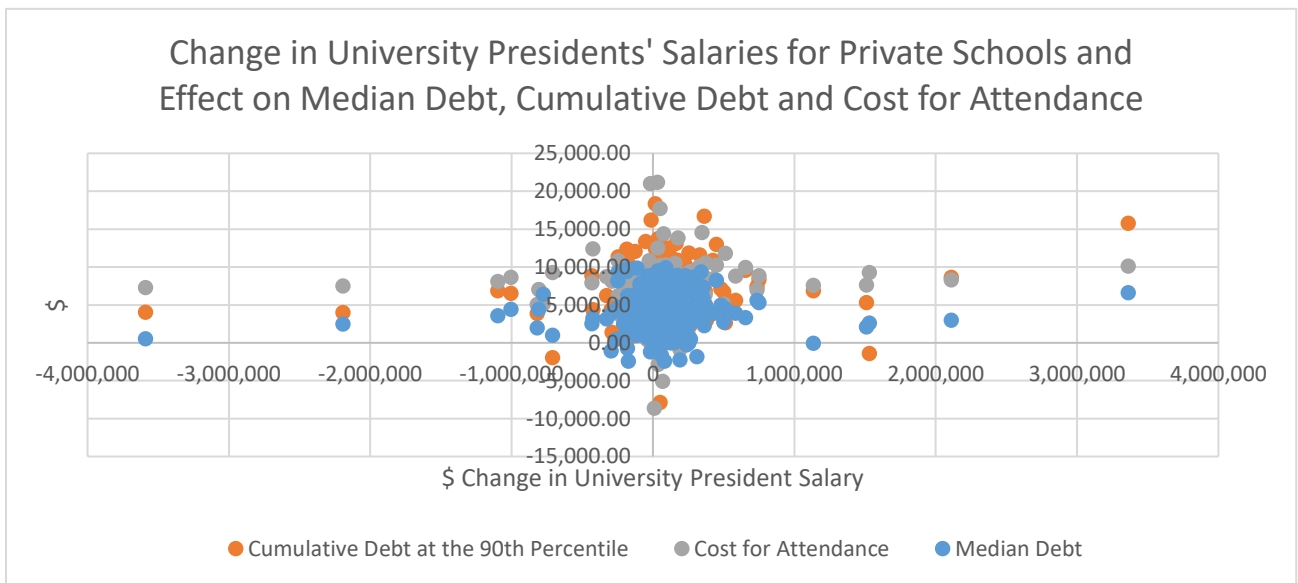


Figure 3

Unfortunately, the dataset used for analysis of college football coach salaries and presidential salaries varied substantially from the data available for the university president salaries. The coach salaries were collected from the *USA Today* sports database. However, the data was only available for 2009 and was significantly smaller with sample size $n=94$. Further investigation into the distribution of private and public schools revealed that there were only 11 private schools. Due to the differences between private and public schools found in the analysis of presidential salaries, the private schools were excluded and focus was placed exclusively on public schools, resulting in a sample size of $n = 83$. The regression model used for public university presidential salaries was modified for this analysis by accounting for coach salaries and the single year availability. See Figure 4.

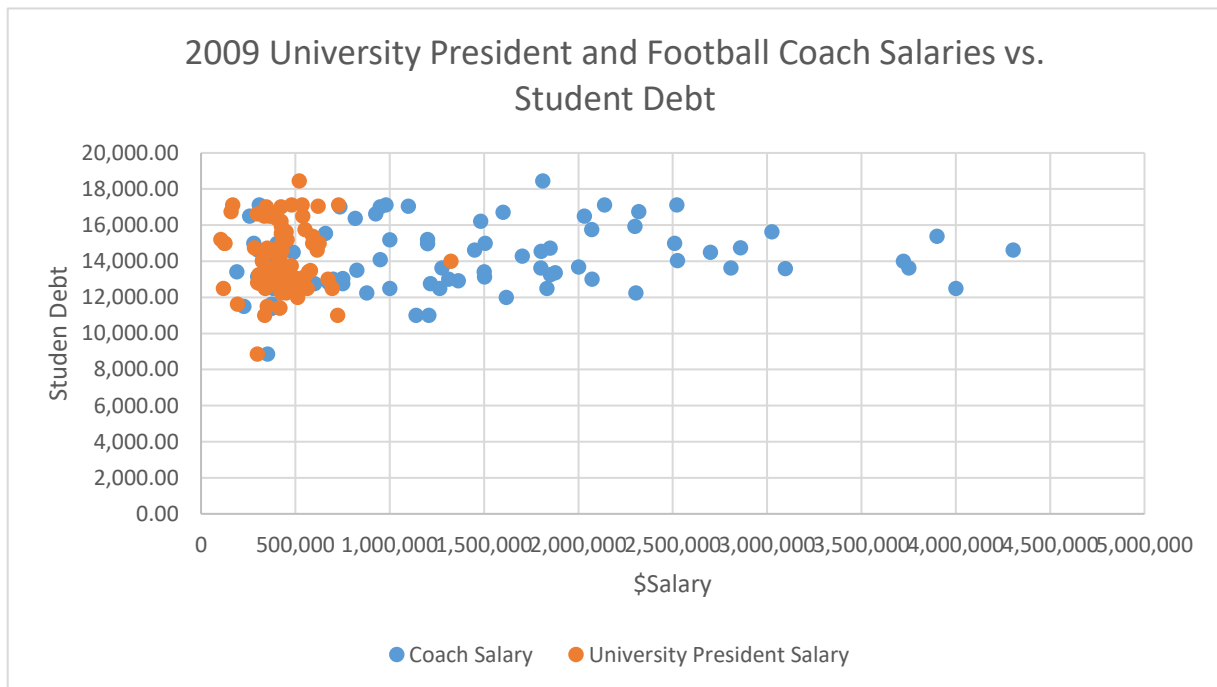


Figure 4

Results

After running multiple regressions, I failed to reject the null for all but one subgroup of my analysis. For private and public schools, change in university president salary had no significant effect on the cost of attendance or median student debt. For public schools there was also no effect on cumulative student debt at the 90th percentile; however, for private schools there was a very weak positive effect. These results are summarized in Figure 5.

		Coefficient of Correlation	P-value
Private			
	Cost for Attendance	0.000536415	0.14931
	Median Student Debt	0.000444785	0.191207
	Cumulative Student Debt at the 90 th Percentile	0.00109922	0.009282
Public			
	Cost for Attendance	0.00083	0.39932
	Median Student Debt	-1.7E-05	0.986315
	Cumulative Student Debt at the 90 th Percentile	0.000328	0.787404

Figure 5

The following regressions were used to create Figure 5:

$$[\text{cost for attendance}(2013) - \text{cost for attendance}(2009)] = a + b*[\text{university president salary}(2013) - \text{university president salary}(2009)]$$

$$[\text{median debt}(2013) - \text{median debt}(2009)] = a + b*[\text{university president salary}(2013) - \text{university president salary}(2009)]$$

$$[\text{cumulative debt at } 90^{\text{th}} \text{ percentile}(2013) - \text{cumulative debt at } 90^{\text{th}} \text{ percentile}(2009)] = a + b*[\text{university president salary}(2013) - \text{university president salary}(2009)]$$

As mentioned earlier, the only result which was statistically significant (at the $p < .02$ level) was the effect of increasing university president salaries at private schools on cumulative student debt at the 90th percentile. This correlation was $r = .00109922$ and r squared at =

0.017361181. This means that there is an extremely weak positive correlation between increases at private universities' presidents' salaries and the cumulative student debt at the 90th percentile.

Graphing this relationship resulted in scatter plot shown in Figure 6.

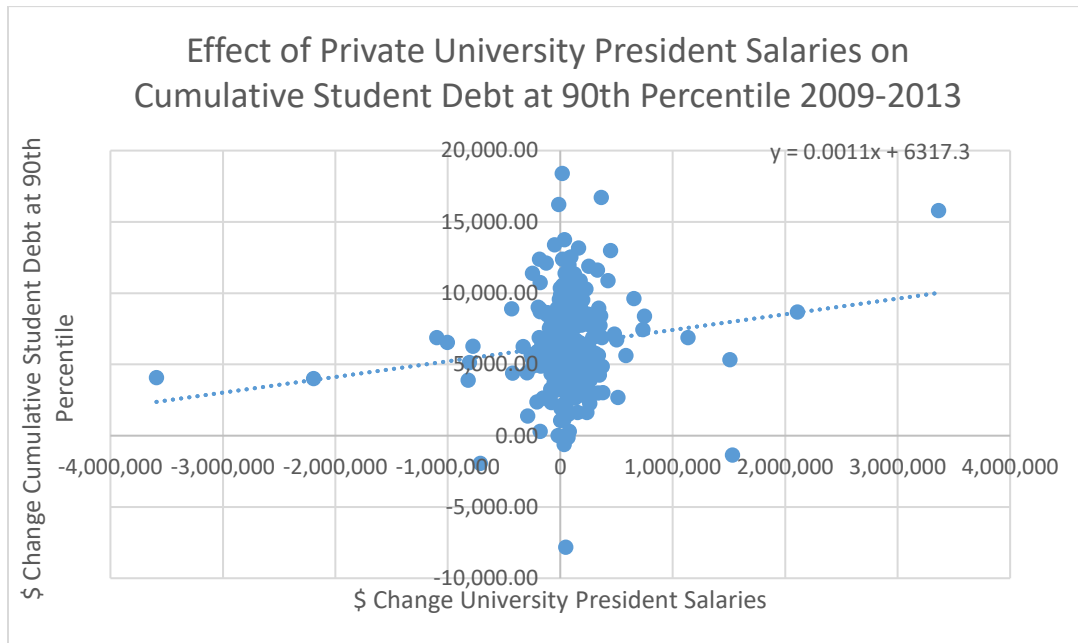


Figure 6

The analysis of football coach salaries and their effect on student debt failed to result in a failure to reject the null hypothesis. Due to data availability, the regression equation was adjusted to account for a single year of data and to include an interaction between football coach salaries and university president salaries. The regression equations were as follows:

$$\text{cost for attendance (2009)} = a + [b(\text{university president salary} * \text{coaches salary})] + [c * \text{university president salary}] + [d * \text{coaches salary}]$$

$$\text{median debt (2009)} = a + [b(\text{university president salary} * \text{coaches salary})] + [c * \text{university president salary}] + [d * \text{coaches salary}]$$

$$\text{cumulative debt at the 90}^{\text{th}} \text{ percentile (2009)} = a + [b(\text{university president salary} * \text{coaches salary})] + [c * \text{university president salary}] + [d * \text{coaches salary}]$$

A summary of the results are found in Figure 7.

		Coefficient of Correlation	P-Value
Cost for Attendance			
	President Salary	0.006571	0.10447
	Football Coach Salary	0.000814	0.314794
	Interaction	-9.4E-10	0.556563
Median Debt			
	President Salary	0.000148	0.948982
	Football Coach Salary	0.000404	0.384263
	Interaction	-2.2E-10	0.806652
Cumulative Debt at 90th Percentile			
	President Salary	-0.00446	0.415777
	Football Coach Salary	-0.00164	0.13886
	Interaction	1.61E-09	0.460276

Figure 7

As shown above, none of the results for football coach salaries were statistically significant. All of the p-values were too high to be statistically significant, with those for the interaction between president and coach salaries being among the highest. The high p-values indicate that none of the results were significant, thus falsifying the hypothesis that there would be an effect of the interaction between high president and coach salaries on student debt.

Conclusion

After completing the data analysis, I was unable to reject null hypothesis and thus found no significant difference in student debt for schools with higher salaries for university presidents or coaches for all but one subgroup of my analysis. In the one area where I was able to reject my null, my regression produced a very weak positive correlation between private university presidents' salaries and cumulative student debt at the 90th percentile. However, the coefficient

of correlation was so low (0.00109922) that despite being statistically significant it indicates very little correlation between private school president salaries and student debt at the 90th percentile.

The results of this study may have been impacted by its limitations and structure. One of the most serious limitations of the study was that I was only able to collect data for the years 2009 and 2013. Not only would I ideally have been able to collect data for a wider range of years (as far back as 2000 to 2015), but these particular years had an unusual economic climate as a result of the Great Recession. The economic climate at the time could have affected which students chose to attend universities, the support they received from parents, the ability to receive loans, and even the university president salaries in 2009. As I was unable to include data from prior years, we cannot know what the effects of the recession may have been on the data. Beyond the limited years covered by the data, there was also an uneven distribution of private to public schools. Future studies on this issue would ideally include more public school data. Additionally, I was unable to include control variables in the study due to limitations of data collection; including control variables such whether the school was liberal arts vs. research, or how much state aid a school received, may have produced different results.

While this study was limited, the results nonetheless demonstrate the complexity of the student debt issue facing the United States. Relationships that would at first glance appear to have a straightforward relationship— $\text{increase in salaries} > \text{greater spending} > \text{greater tuition} > \text{greater debt}$ —are not always so. This study sheds doubt on whether the large salaries paid to coaches and presidents are a cause of rising costs and associated student debt. A lack of correlation between salaries and debt also cautions us when making assumptions about contributors to student debt; the issue is so complex that what seems straightforward may in fact be having no effect. When spending millions on executive and coach salaries has no relationship

to the student debt, it raises the question, “What can be changed to help reverse student debt?”
What are the factors that actually do indicate or cause higher costs to students at universities?

More studies and analysis into this area are needed, both specifically concentrating on top university salaries and on the causes of student debt as a whole. An expansion of this study with more years and control variables would provide a more thorough analysis of the impact of high salaries, and more research into other predictors and contributors of student debt could reveal possible ways to stem the ever-growing student debt. Beyond more research into the causes and consequences of debt, I believe greater awareness about the scope of the student debt problem is imperative. Student debt is already an issue in this country, and if it continues to grow at current rates it will significantly impact students’ decisions to attend college, lives after college, and the economy as a whole. Providing students and others a better understanding of the debt picture in this country them would allow them to make different choices in their path through college and avoid substantial debt.

Postscript

Given the need for a more informed public on this topic, as a sister-project to this research paper, I have created a series of information graphics detailing the all aspects of student debt; causes, consequences, and how to minimize it. Utilizing statistics from *The College Board* as well as data from this research, I have compiled numerous infographics illustrating the growth of debt at both the per student and national level, associated costs such as room and board, and graphs related to university spending. By so doing, I hope it will convey many of the realities of debt and college tuition in an easily digestible, convenient, and aesthetically appealing format.

My hope is that it helps to make students aware of the debt they may face before they begin planning for college; in doing so they will be better prepared to navigate the costs of college.

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Process Paper¹

Completing my honors thesis project has been a rewarding and challenging experience. From asking Dr. Kay Mathiesen to be my advisor to where I am today—three weeks left in my final semester, finishing up the last touches of my thesis—the whole process has taken a year. My thesis is comprised of a quantitative research paper on the relationship (or rather lack thereof) between university president/coach salaries and student debt, numerous information graphics on the subject, and a website (currently located at <http://www.u.arizona.edu/~esmemiddaugh/collegecostsandcompensation/>) to display them. In completing each part of the process I learned a great deal, including how to adapt and deal with difficulties associated with data collection, how the academic writing and revision process works, what factors are important in designing information graphics, and how to overcome the challenges that accompany responsive design. In the fall semester I focused my efforts on drafting the paper, while during the spring semester I extensively revised the paper in response to comments from my advisor, created the information graphics, and built the website.

My paper comprises the chief portion of my thesis project. Writing the paper involved background reading, data collection, analysis, and revision. To gain a thorough understanding of the debate surrounding student debt in general I read numerous popular and scholarly articles. I had initially intended to include a much broader data set and more variables; in my prospectus I outlined plans to include factors such as amenities, textbook costs, student spending, and many more. However, searching for this data yielded results that would be infeasible to collect during

¹ As this honors thesis is comprised of both a research paper and a creative project, a process paper (artist's statement) is included as well.

my time frame, so I limited my variables to university president and football coach salaries. By only utilizing these variables I was able to expand my data set from the 63 universities that I had originally planned to use to 458 and 83 for the presidential and coach salary analysis respectively. For both the university president and coach data I hand copied over the relevant information from the databases available from the *Chronicle of Higher Education* and *USA Today*. In order to utilize this data and merge with my *College Scorecard* dataset, however, I needed each school's IPEDS ID. I located this by looking up each school with IPED's 'Find School' tool.

Once I had an ID for each school, I was able to begin gathering the institutional characteristics and student debt data from the *College Scorecard*. Getting the correct data from the *College Scorecard* proved difficult given the overabundance of data—every year had a separate excel file with thousands of records. Originally I planned to manage and pull data utilizing the *College Scorecard*'s API and an open source script available on the web that can be used within the R program. When I attempted this, however, the API was not pulling the data correctly. So, I decided to utilize the programming language Python instead. After downloading the Scorecard data, I wrote a Python script to cycle through each of the individual year .csv files, pulling only the variables I was interested for only the schools I was interested (for Python script see Appendix A). After running this script, my data was substantially more manageable. It was small enough so that I could, after merging my data in Tableau, use Excel to run my regressions and create graphs for my paper.

Before delving into my data analysis, I wanted to make sure that I was running the regressions properly so I took the advice of my advisor and sought help from Dr. Yotam Shmargad. Dr. Shmargad provided guidance about how to utilize my limited data for causation

analysis. Additionally, Dr. Shmargad set up a meeting for me to meet Dr. Betsy Williams, who provided additional reading material (*How the Financial Crisis and Great Recession Affected Higher Education*) and provided ideas on how best to structure and present my paper.

Following my meetings with Dr. Shmargad and Dr. Williams, I began work on my data analysis. I ran separate regressions for the presidential salaries and the coach salaries given the differences in the population sizes (for a more in depth description of the analysis techniques used, see the data analysis section of the thesis). After running my regressions and finding no correlation between salaries and debt, I began work on writing my paper and finished my first draft of the paper shortly before winter break. I continued the process of rewriting, revision, and editing throughout the spring semester. In doing so I gained a better understanding of the stylistic differences between disciplines as well as what makes a paper suitable for formal academic writing. The hard work has paid off however, and the final form of my paper is significantly stronger and clearer than the first draft I submitted to Dr. Mathiesen in the Fall 2016 semester.

In addition to paper, I also created information graphics to help explain and illuminate student debt figures. To gain background knowledge of information graphics, I attended a course given by Dr. Edward Tufte, a statistician and one of the key figures in information graphics today. I was extremely fortunate to receive a Professional Development Grant from the Honors College, which I enabled me to fly to Washington D.C. and attend the one day course. In doing so, I learned some of the fundamental rules for making information graphics; let the information speak for itself and create complex, meaningful graphics that do not obscure the information. Keeping Tufte's principles in mind while designing my information graphics helped to ensure that they were uncluttered and readable. I decided to give my information graphics a bright and cheerful feel, which not only made them more approachable, but also helped to differentiate the

data from one graph to another; the datasets I was presenting appear similar at first glance, so by making the colors distinctly different I helped to separate the data visually. Along the same lines as my data, I had originally intended to include a few more variables in my information graphics, but a similar lack of data made that infeasible. With the data that I did have, however, I decided to have bright colored, extremely clear and simple graphics with a simple sans-serif typeface (Open Sans) to give the graphics, and ultimately the website I created, and an unimposing, easily readable, and attractive look, thereby allowing the information reach and inform a broader audience.

When I started work on my website to display the information graphics, I tested different frameworks for the site. After experimenting with PureCSS, Bootstrap, and a few other frameworks, I ultimately decided to use Bootstrap. Not only is Bootstrap widely used and being able to use it an excellent skill to have, it is extremely easy to customize and creates fluid, responsive websites. I had a very small amount of experience utilizing Bootstrap for another course, so I wanted to use this knowledge and expand upon it. Using the base code provided on the Bootstrap website, I altered and added to it to create a simple and attractive layout which suited the information graphics. Along the way there were many hiccups—attempting to implement the modal image viewer and get the responsive layout to work correctly had me racking my brain for some time—but ultimately I am quite pleased with the result.

A year ago when I committed to completing an honors thesis I was not sure of the work it would involve or what I would get out of the experience. Now that I am nearly finished with my thesis, I can say that it has been an immensely rewarding and challenging learning experience. Completing each section of my thesis taught me something new, from the difficulties of data collection and analysis, to the process of revision, to how to make a responsive website display

properly. By completing an honors thesis with both quantitative and creative aspects I feel I have had the opportunity to learn and practice skills in numerous fields which will serve me well regardless of the career or academic path my future holds.

Appendix A

'''

Author: Esme Middaugh

Date: September 18, 2016

Description:

This program collects data from the College Scorecard (downloaded .csv files). Runs with Python 3, additional files needed:

- College Scorecard CSV files

- CSV file with list of the IPED ids

- CSV file with list of the variable names (from the Scorecard) that are requested

'''

import pandas as pd

import numpy as np

import csv

def unit_id_list(fname):

''' This function takes a file and turns it into a list of INT '''

f_reader = open(fname, 'r')

my_list = []

for line in f_reader:

 line = line.strip()

 my_list.append(int(line)) # Making it work with the Unit IDs

return my_list

def select_schools(fname, column_name, list_ids):

'''

This function takes the College Scorecard Data with all the data and narrows it down to only unit IDS that are in the file(fname).

'''

```

df = pd.read_csv(fname)

    aau_df = df.loc[df[column_name].isin(list_ids)]
#http://stackoverflow.com/questions/17071871/select-rows-from-a-
dataframe-based-on-values-in-a-column-in-pandas

    return aau_df

def select_schools_after_99(fname, column_name, list_ids):
    '''
    This function takes the CS with all the data and narrows it down
    to only unit IDS that are in the fname, works for years after 1999
    '''
    df = pd.read_csv(fname, encoding='ISO-8859-1')
    aau_df = df.loc[df[column_name].isin(list_ids)]

    #http://stackoverflow.com/questions/17071871/select-rows-from-a-
dataframe-based-on-values-in-a-column-in-pandas

    return aau_df

def select_variables(fvariables):
    #This is for getting the list of variables we are interested in
    f_reader = open(fvariables, 'r')
    my_variables = []
    for line in f_reader:
        line = line.strip()
        my_variables.append(line)
    return my_variables

def repeat_for_all_schools(ids, the_variables):
    '''
    This gives back only the selected years ("if i== 2009 or
    i==2013:").
    '''

```

```

for i in range(2009, 2014):
    if i== 2009 or i==2013:
        aau_df = select_schools_after_99('cs_raw_data/merged_'+
str(i) + '_PP.csv', 'UNITID', ids)[the_variables]
        aau_df.to_csv('results/cs_' + str(i) + '.csv')
    return None

#=====

def main():
    '''
    This takes the list of desired IPEDS IDs, desired Variables, and a
    creates new CSV files with the narrowed datasets for each year.
    '''
    iped_ids= unit_id_list('iped_ids.csv')
    my_variables = select_variables('my_variables.csv')
    repeat_for_all_schools(iped_ids, my_variables)

if __name__ == '__main__':
    main()

```