The Economics of a College Town

Sean Grady
sgrady1@iwu.edu

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Abstract

While there is an abundance of research examining the relationship between colleges and the students who eventually graduate, there is one topic that is lacking in literature. The relationship between colleges and the students is a very important and even relevant one, but the role of large universities in the towns that they inhabit is a relationship that deserves to be examined more. It would make sense, that such large institutions which attract so many people semester after semester would have an impact on the community as a whole. This paper compares and contrasts multiple college towns to multiple non-college towns to find if the presence of a college has any sort of significant impact on the town it is present in. This paper answers questions such as: Does the existence of a college or university in a town have a significant effect on the local economy? Is there a positive relationship between having a college or university in town and higher earnings? What factors would cause this to be the case?

Finding answers for these questions can be very beneficial for many reasons. Understanding the economic benefits of living in a college town can help recent graduates decide where they want to live after finishing school. Town officials who have a lot of influence can make more educated and overall better strategic decisions when deciding how they want to interact with the college or university in their town. This can also help business owners figure out how profitable it would be to open up shop in a college town. The research question at hand is an important one that can aid many different types of people with making strategic decisions.

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I. Introduction

The discussion of whether or not to enroll in a college or university and invest in higher education is one that has been discussed for hundreds of years. This makes sense, especially today, when you consider how much college tuition costs and what kind of job you will need in the future to make the costs of enrolling worth it. Many economists have conducted research looking into the impact of college education on the lifetime income of graduates to see if going to college is truly worth it, and many economic theories have been developed that show college education should have a major impact. Most of the literature has concluded that getting a college education has a significant impact on the amount of money you will make over your lifetime.

While there is an abundance of research examining the relationship between colleges and the students who eventually graduate, there is one topic that is lacking in literature. The relationship between colleges and the students is a very important and even relevant one, but the role of large universities in the towns that they inhabit is a relationship that deserves to be examined more. It would make sense, that such large institutions which attract so many people semester after semester would have an impact on the community as a whole. This paper compares and contrasts multiple college towns to multiple non-college towns to find if the presence of a college has any sort of significant impact on the town it is present in. This paper answers questions such as: Does the existence of a college or university in a town have a significant effect on the local economy? Is there a positive relationship between having a college or university in town and higher earnings? What factors would cause this to be the case?

Finding answers for these questions can be very beneficial for many reasons. Understanding the economic benefits of living in a college town can help recent graduates decide where they want to live after finishing school. Town officials who have a lot of influence can make more educated and overall better strategic decisions when deciding how they want to interact with the college or university in their town. This can also help business owners figure out how profitable it would be to open up shop in a college town. The research question at hand is an important one that can aid many different types of people with making strategic decisions.

II. Hypothesis and Theory

The hypothesis I will be using for this project is: "College towns will be more well off than non-college towns because college towns create/attract a more educated population." Since colleges are institutions designed with the intent to educate people, it would make sense that college towns have a more educated population. To measure the profitability and economic prosperity of college, as well as non-college, towns, I will be using average yearly income and household earnings of cities. So, communities that have higher household earnings qualify as being "better off" for the sake of this hypothesis. There are many different factors that go into whether or not a certain location is a nice place to live or even economically successful, but for this paper I will be focusing only on household income as the determining factor for economic wellbeing since it is easier to analyze across multiple towns.

The base of my hypothesis comes from the economic theory of "human capital". The basic idea behind Human Capital is that every worker has a different set of skills and these skills can

either be natural abilities or they can be acquired through education. As George J. Borjas says in his *Labor Economics* textbook, "The theory of compensating differentials suggests that wages will vary among workers because jobs are different. Wages also will vary because workers are different. We each bring into the labor market a unique set of abilities and acquired skills, or human capital." (Borjas, 2016, p229)

Now, one of the key ways to increase your human capital is to receive higher education, and higher education is exactly what colleges and universities offer. People with more human capital (especially in fields directly involving their skills or degree) are seen as more valuable because they have a greater ability to work. The skill, knowledge, training, and experience gained by an individual increases their value as an asset to an organization. Being seen as having a greater ability to work should not only provide a person with more job opportunities, but they should also be offered better paying jobs. With a higher paying job, a person can make more over their lifetime than a person without said high paying job. In short, education increases peoples' human capital which means they are seen as more capable to take on more difficult, higher paying jobs.

Since the purpose of colleges and universities is to educate the population, they are effectively seeking out to raise the human capital of those enrolled. Colleges hope to provide a set of skills to its students that they can take with them to whatever occupation they happen to pursue. Colleges, universities, and other forms of higher education play a major role in the accumulation of human capital. (Becker, 1975, 37) It would make sense that college towns have a more educated population compared to non-college towns seeing how much more readily available higher education is for people who can afford it. Census data gathered from www.infoplease.com shows that this has been true. According to data from the year 2000, Bloomington and Champaign had 39.7% and 44.3% of their population with Bachelor's degrees or higher respectively, while Kankakee, Decatur, and Rockford had 13.2%, 17.0%, and 19.8% of their population with Bachelor's degrees or higher respectively. This data is from quite some time ago, so it may not be as accurate today. It is worthwhile to still test to see if this is still apparent in college towns today.

Having higher value as an asset to an organization can also be expanded to the person's worth to the county. Larger companies may also find it lucrative to establish strong relationships with certain schools because of the amount of highly educated people that graduate from them. For example, State Farm Corporate Headquarters is located in town, so State Farm takes advantage of the stream of college students that graduate every year by providing opportunities to recent graduates. Similarly, some nonprofit organizations strive to provide more affordable housing opportunities in college towns to help convince recent graduations to stay in as a means to build the community. (Kennedy) In conclusion, having a college or university in town should mean a more highly educated community that makes more compared to non-college towns.

III. Literature Review

While I haven't found many pieces of literature that have touched the topic addressed in this paper in specific, some have engaged with other, related, questions. Many of these articles and books are still beneficial to look at as they contain sections that can still be relevant. Maranto and Dean (2015) talk about whether or not college towns provide equal opportunity education for their disadvantaged students and reach the level of educational equity one would expect from a town known for their "good schools". Similarly to this paper, they create two groups, one for college towns and one for non-college towns, and "examine the relationship between college influence and the graduation rates of K-12 school districts" (Maranto and Dean, 2015) as well as test scores. As a result, it was found that college towns have less equal educational outcomes and while the

difference is small it is still statistically significant. The topic of my paper is the effect that a college or university has on the town it inhabits, so seeing that this research has shown that college towns actually don't have a positive impact on graduation rate or test scores is interesting. The author, however, has stated that these statistical impacts are meek, so more research on this topic is required. Seeing as I am more focused on the post-graduate population and household income, I think there is still some weight to my current hypothesis using human capital theory. Also, because of the age range of my data, I will be seeing more people moving into town in my samples, so they may be fairly different from people who have been residents since birth. There are plenty of people who leave their home state to get an education, and there are also plenty of people who choose to stay in the state where they receive their education. Some of these people even come to school from outside of the country to not only look for higher education, but also see what kind of out-of-school learning experiences are available to international students. (Lee-Johnson 2015) Regardless, this research makes me question the actual influence colleges and universities have on the town at large. It also brings up the point that there are many different measures of prosperity for a town, so my criteria may be too strict.

Mosier (2015) seeks to determine how communities interact with local higher education institutions specifically in terms of sustainability. The research finds that it is usually the larger, public universities that are more likely to establish strong relationships and have greater effects on sustainability. This is another article that raises the valid point that there is more than just one way to measure a town's prosperity apart from only household income. While we are only using household income as the criteria for being economically well-off for the sake of not overcomplicating the research, it is important to recognize that it is not the only factor that relates to being "well-off". These results seem to collide with the results from the previously described research, where they show a positive relationship between higher education and the local community, albeit only large universities.

There is an article that specifically engages with the exact same research question that this paper addresses. Abel and Deitz (2016) researched how colleges and universities can contribute to the local economy by raising the human capital of its residents. They conclude that "The amount of human capital in a region is a key determinant of its economic vitality and long-fun economic success." (Abel and Deitz, 2016) This is a very important article for this paper as it concludes that schools have a positive impact when it comes to developing the local community, and they do this by increasing the human capital of a town's inhabitants.

While this seems to prove my hypothesis correct, it does not really answer this research question from the perspective of the individual person in the town. It also makes the point that "colleges and universities do increase the supply of human capital in metropolitan areas, there is only a small positive relationship between the human capital produced by these institutions and the local stock of human capital." (Abel and Deitz, 2016) While plenty of people decide to stay in town, there are also plenty of people who opt out and decided to move elsewhere. What is my motivation for not taking my newly acquired human capital elsewhere? There is a promise of economic development, but could I not be just as well off if I decide to live in a town that isn't a college town? My research not only provides results that help better understand the effect of living in a college town on income, but it also separates educational attainment as to see if getting a bachelor's degree is good enough. We also get to see if living in a college town is beneficial in-and-of itself once controlling for all exterior factors.

IV. Database

The data being analyzed for this research project are gathered from the website http://usa.ipums.org/usa/. IPUMS-USA "is a project dedicated to collecting and distributing United States census data." {https://usa.ipums.org/usa/index.shtml} IPUMS, is a very reliable source of microdata from fifty American population samples that can be used for many different kinds of social and economic research. Because of how easy IPUMS makes it to organize all of the relevant data by state, I can ensure that all of the data I am looking at comes from college and non-college towns within Illinois. It is important to make certain that the towns are all in the same state using standard metropolitan areas. By doing so, I can limit the amount of exterior factors that skew the results. Differences in state regulations like tax and wage rates could have an effect on the final results, so it is necessary to control for this by sticking with only one state as to make sure that the results are as accurate as possible. Using a college town ranking list, I was able to pick out two of the most highly regarded college towns in Illinois to use for this research. The towns I compare in this paper are Bloomington-Normal, Champaign, Rockford, Kankakee, and Decatur. For this project, Bloomington-Normal and Champaign will represent the college towns because of their schools Illinois State University and University of Illinois Urbana-Champaign respectively. At the same time, Rockford, Kankakee, and Decatur organize the non-college towns. For being counted in the Census, Cohn (2010) says that "most college students should be counted at their college address, either on campus or off campus." So, I use the ratio of enrolled population compared to the overall population of a town to determine whether or not a town is a college town. This means that while there are technically schools in the "non-college" towns, I do not consider them college towns to the same degree as Bloomington-Normal or Champaign.

To be considered a college town for the sake of this paper, the town needs have a significant portion of its population attending the university in question, specifically at least 10%. Bloomington-Normal and Champaign both have populations of around 80,000 people, where Bloomington has 20,000 enrolled at Illinois State University and Champaign has 44,000 enrolled at University of Illinois Urbana-Champaign. While there is a University in Rockford, for example, the school only has an enrollment of 1,000 people in a town which has a population of 150,000. This means that the students of Rockford University only make up for about .6% of the overall population. At this point, it is safe to assume that Rockford University doesn't have as much of an influence on Rockford as, say, University of Illinois has on Champaign. Kankakee, Rockford, and Decatur don't have schools sizable enough to count them as college towns.

Not only does IPUMS provide data for household incomes within the various towns, but it also provides other variables that give us more information on how the town is composed. We can use this other information to get an idea of what could be causing the average household income for each town to be where it is. To increase the accuracy of our results, we pull five different samples from IPUMS for the years 2010 through 2014. For each year, I also collected data for variables including year, state, metropolitan area, number of children in own household, sex, age, marital status, race, birthplace, educational attainment, employment status, hours worked and wage and salary income.

V. Empirical Model

To test my hypothesis, I conducted three separate tests using the data collected from IPUMS. There are two groups I define for my testing. Group 1 is defined as "college towns", and this group contains Bloomington-Normal and Champaign. The other group is defined as "non-college towns" (otherwise known as the control group), which contains Kankakee, Decatur, and

Rockford. Firstly, I use descriptive statistics to calculate and compare the standard deviations as well as the means for both groups. Descriptive statistics are statistics that describe quantitative features of a set of data. Such statistics can provide information about central tendencies for a single variable (such as the average and the median) and the spread of the data (such as range and deviation). We can also use descriptive statistics to compare the means for each group and find if there is any statistically significant difference between the two. Based on my hypothesis, group 1 should have a higher average household income than group 2 and this difference should be statistically significant.

Given that there's a statistically significant difference between the mean household incomes for each group, two regression analyses are conducted to explore what variables could explain this difference. Regression analysis is the statistical procedure of assessing the correlation between a dependent variable and a set of independent variables. First off, I specified the data by removing certain people from the test, namely people who weren't working full time (at least 35 hours a week) and people who were not within the age range of 22 and 65. By removing people who were not working at least 35 hours a week, I removed all unemployed people from the data

Table 1: Variable Definition and Description

Variable Name		Description	Expected Sign
Dependent			
	Wage and Salary Income	Income of the respondent	N/A
Independent			
	College	1 = College town 0 = Not college town	+
	White	1 = White 0 = Not white	+
	Female	1 = Female 0 = Male	-
	Age	Age in years	+
	Age Squared	Age^2	-
	Married	1 = Married 0 = Not Married	+
	# of Children	Number corresponds children in house	+
	InState	1 = From Illinois 0 = From outside Illinois	+
	Bachelor (2nd test only)	1 = Has received higher education (bachelor's or higher) 0 = Has not	+

as well. One reason I limited the age range to between 22 and 65 was to remove retired people and students who may only be working work study jobs for minimum wage. By doing so I hope to find more accurate results from my testing. Table 1 (below) defines what the variables are and also communicates how I expect the independent variables to relate to the dependent variable.

Using the data from IPUMS, I created multiple dummy variables for testing. The dummy variables that I created were College, White, Female, Married, InState, and Bachelor. I also created a variable for Age and Age squared because, while I believe age is positively correlated with higher income, there is most likely a point where the effects of age start wearing off. By using a quadratic we allow for the nonlinearity that is common in earnings functions. That is, earnings increase at a decreasing rate with age. I also expect the sign for the coefficient for Age to be positive and the coefficient for Age Squared to be negative showing how the effects of age on earnings drop-off as you get older. College stands for whether or not the respondent lives in a college town. If they live in a college town they are given a 1, and if they don't they receive a 0. This dummy variable helps us compare the two groups directly and see what influence living in a college town really has. Based on my hypothesis, I assume that living in a college town will have a positive influence on the income of the respondent. White is a dummy variable for the race of the respondent which separates everyone into two groups, people who are white and people who are not. I expect this variable to have a positive influence on the income of the workers because non-white people have been historically disenfranchised and do not see the same amount of education or job opportunities as white people. Similarly, I created another dummy variable for the gender of the correspondent called Female. This variable separates everyone into two groups, people who are female and people who are not female. I expect being female to have negative influence on the income of the worker based on the multitude of economic articles showing that women earn less than men. # of Children is a variable that represents the amount of children living in a person's household, which I expect to be positively correlated with the person's income, as they have to work more to provide for their family. The last dummy variable used for the first test is called InState, and represents whether or not the worker is from Illinois or from an outside state/region. I expect being from within the state to have a positive influence on the person's income because people usually fair better in the state that they were born in as well as not having to deal with as many expenses that come with moving state to state.

For the second test, I include a final dummy variable for educational attainment called Bachelor, where people who have received higher education (A bachelor's degree or above) are separated from people who have not. This way we can see truly see the correlation between education and income. For future research, it could probably be beneficial to create additional dummy variables for the higher degrees as well to separate people who have beyond bachelors so they don't skew the results. For this paper, one dummy variable should be sufficient as people with bachelors are still considered highly educated so they work with my hypothesis, but it is important to consider how higher degree can affect the results. I base my expectation for educational attainment to have a positive effect on the income of the worker on human capital theory. We omit Bachelor from the first regression test so we can get an idea of how living in a college town influences the income of an individual while still including their educational attainment. This way we can see how a more educated town correlates with the income of the people in the town. Afterwards, we control for the education of the people in the town by adding the dummy variable to see if living in a college town still has any sort of impact on a person's income. The two regression equations are given below, where the first regression test is above and the second regression test is below.

Regression Equations

$$Income = \beta0 + \beta1(College) + \beta2(White) + \beta3(Female) + \beta4(Age)$$
$$+ \beta5(Age\ Squared) + \beta6(Married) + \beta7(\#\ of\ Children)$$
$$+ \beta8(InState) + \varepsilon$$

$$Income = \beta0 + \beta1(College) + \beta2(White) + \beta3(Female) + \beta4(Age)$$
$$+ \beta5(Age\ Squared) + \beta6(Married) + \beta7(\#\ of\ Children)$$
$$+ \beta8(InState) + \beta9(Bachelor) + \varepsilon$$

VI. Results

Table 2 (below) shows the average wage and salary income for full time workers in both college towns as well as non-college towns.

Table 2: Descriptive Statistics

	College	N	Mean	Std. Deviation	Std. Error Mean
Wage and Salary Income	1	7251	49996.930	46147.116	541.933
	0	9840	46538.225	44276.225	446.347
Comparative Analysis					
Mean Difference		**F Statistic**		**Sig. Value**	
3458.690		18.857		.000***	
*Significance at the .10 Level					
**Significance at the .05 Level					
***Significance at the .01 Level					

Using the College dummy variable, we have separated the entire set of people into two groups, those who live in a college town and those who do not live in a college town. The group of people living in a college town are denoted by 1 while the other group is represented by the 0. After testing, we can see that group 1 has an average household income of $49996.93 while group 2 has an average household income of $46538.225, with a mean difference of $3458.69 between the two groups. We can also see that there is a significant value less than .01. Not only is it apparent that college towns have higher average wage and salary income than non-college towns, but this difference is proven to significant at the .01 level based on the Sig. Value.

At this point we have found the hypothesis that college towns should have a higher average household income to be correct based on the samples we have examined, but we have not yet fully examined the reasoning for this difference in wage and salary income. Now that we know that there is a significant difference between the two groups, it is worthwhile to do further testing so we can find what variables are causing this.

Table 3 (below) presents the first regression test results, where wage and salary income are the dependent variable. For this regression test, the Bachelor dummy variable is omitted.

We use regression analysis in the above table to test several variables that could possibly affect the wage and salary income for significance. In our first regression, we omit educational attainment so we can see test the influence of being a college town while including its educated population. The R-squared we are given tells us that this regression model explains 8.9% of the variability of the data around its mean. We also see that there is a Standard Error of 43055.381.

Table 3: Regression Test 1

Variable	Coefficient	t-statistic	Sig. Value
Constant	-29348.600	-6.016	.000***
College	4419.117	6.601	.000***
White	6241.787	6.071	.000***
Female	-13669.408	-20.531	.000***
Age	2990.189	12.561	.000***
Age Squared	-28.129	-10.207	.000***
Married	9677.594	12.786	.000***
# of Children	1691.512	4.887	.000***
InState	-6336.820	-8.657	.000***
N	17091		
Adjusted R Squared	.089		
Standard Error	43055.381		
*Significance at the .10 Level			
**Significance at the .05 Level			
***Significance at the .01 Level			

This number is very high, so our regression is only so accurate, but this could be because of variability of the data we are analyzing. Looking at the variables, we notice that in this test every single one is significant at the .01 level. This means that every variable has a significant influence on the wage and salary income. The majority of the coefficients meet our sign expectations as well. InState is the only variable that does not meet the expectation made before testing. It was expected that being from Illinois would have a positive influence on the earnings of the individual, but the test has shown that being from Illinois actually has a significant negative influence on the earnings of an individual. College meets our expectations in the first test. Not only is it shown that living in a college town has a positive effect on an individual's earnings, but this effect is significant at the .01 level. So, based on the tests we have conducted thus far, we can see that not only do college towns have a higher average household income, but this difference could be explained by the fact there is a school in town. While this all seems good, we have yet to account for the educational attainment of the people within the town to see how it is related to earnings.

Table 4 (below) presents the second regression test, where wage and salary income is still used as the dependent variable. In this test, the Bachelor dummy variable is included.

Once we run the regression again by including the dummy variable for educational attainment, there is different story. Not only does the new regression model fit the data better (as shown by the higher R Squared and lower Standard Error), but we can also see that this time living in a college town has no statistically significant effect at any level on the income of the individuals living in the town. Instead, it is revealed that having a Bachelor's degree or higher is significantly

positive effect at a .01 level. Compared to every other variable tested, higher education has the most impact on the income of an individual.

Table 4: Regression Test 2

Variable	Coefficient	t-statistic	Sig. Value
Constant	-46400.729	-9.989	.000***
College	-427.987	-0.664	.507
White	5019.225	5.143	.000***
Female	-15552.406	-24.56	.000***
Age	3344.890	14.799	.000***
Age Squared	-30.799	-11.774	.000***
Married	5878.797	8.126	.000***
# of Children	1936.080	5.894	.000***
InState	-2511.330	-3.587	.000***
Bachelor	29469.386	43.494	.000***
Summary			
N	17091		
Adjusted R Squared	.180		
Standard Error	40853.794		
*Significance at the .10 Level			
**Significance at the .05 Level			
***Significance at the .01 Level			

So what does this mean? After controlling for educational attainment, we can see that living in a college town really has no large effect on your income. This does not, however, mean that college towns are not better off than non-college towns (at least based on the criteria for being "better off" that has been used thus far). The college towns that we studied still have a significantly higher average income than non-college towns, and being a college town did, at one point, look as to be influential regarding people's incomes. What we have found is that the reason college towns have a higher average income is because they have a more educated population when compared to non-college towns. That is the only way that living in a college town could have once been significant at one point, and then become insignificant after controlling for one variable. This result is consistent with our hypothesis that college towns have higher average incomes because they create/attract a more educated population. This is also consistent with the census data gathered from www.infoplease.com that showed college towns to have a higher population of people with bachelors in the past. We just haven't found any reason to believe that living in a college town, alone, has any sort of significance whatsoever in terms of income.

VII. Conclusion

While we find our hypothesis to be supported by results, the results we have gathered still may not be exactly what we expected. As the hypothesis predicted, the average wage and salary

income for college towns is significantly higher than that of non-college towns. As seen in our two regression tests, this difference can be explained by the highly educated populations that make up each college town. All of this falls in line with human capital theory and Abel and Deitz (2016). It makes sense that people chose to live in town after graduating given how many opportunities are created to persuade people into not leaving. The interesting discovery here is the actual lack of significance a college town actually has on your income. As the results of the second regression test clearly show, the education you obtained from the college itself has much more of an influence on the amount you make than the presence of the college post-graduation. These results seem to agree more with Maranto and Dean (2015) who stated that college towns actually don't end delivering on the "educational equity" that they pride themselves on. The advantages of higher education seem to be more reserved for those actually pursuing it. There are no real visible results, at least in the research conducted in this paper, people gain anything from living in a college town by itself. A certain College town may be becoming more sustainable, it may even be a prettier place to live, but if you have a college degree you can do just as well anywhere else.

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