

Southern Illinois University Carbondale
OpenSIUC

Research Papers

Graduate School

2017

The College County: Analyzing Economic Development

Jacob RR Williams
jrrw.williams@gmail.com

Follow this and additional works at: http://opensiuc.lib.siu.edu/gs_rp

Recommended Citation

Williams, Jacob R. "The College County: Analyzing Economic Development." (Jan 2017).

This Article is brought to you for free and open access by the Graduate School at OpenSIUC. It has been accepted for inclusion in Research Papers by an authorized administrator of OpenSIUC. For more information, please contact opensiuc@lib.siu.edu.

THE COLLEGE COUNTY: ANALYZING ECONOMIC DEVELOPMENT

By

Jacob Williams

B.S., SIUC, May 2016

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the

Master of Science

Department of Agribusiness Economics

In the Graduate School

Southern Illinois University Carbondale

August 2017

RESEARCH PAPER APPROVAL
THE COLLEGE COUNTY: ANALYZING ECONOMIC DEVELOPMENT

By
Jacob Williams

A Research Paper Submitted in Partial
Fulfillment of the Requirements
for the Degree of
Master of Science
in the field of Agribusiness Economics

Approved by:
Ira Altman

Graduate School
Southern Illinois University Carbondale
April 25, 2017

AN ABSTRACT OF THE RESEARCH PAPER OF

JACOB WILLIAMS, for the Masters of Science degree in AGRIBUSINESS ECONOMICS,
presented on APRIL, 25 2017 at Southern Illinois University Carbondale

TITLE: THE COLLEGE COUNTY: ANALYZING ECONOMIC DEVELOPMENT

MAJOR PROFESSOR: Dr. IRA J. ALTMAN

The college county functions differently than other economies because of the university and its thousands of employees and students. Most college county economies in the United States have one thing in common; their government enterprises sector is the largest economic base. Many sectors make up the 21st century economy including Government expenditure, Information, Transportation, and several more. In this paper we analyze the college county and break down the economic fabric of the community one sector at a time. All three have similar populations, they're from similar regions, and they're from separate states. To better understand and to draw conclusions the college county, a brief county background and multiple economic sectors need assessed to conclude the economic analysis of the college county.

TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
ABSTRACT.....	i
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
CHAPTERS	
CHAPTER 1 – Introduction.....	1
CHAPTER 2 – Literature Review.....	2
CHAPTER 3 – Champaign County.....	6
CHAPTER 4 – Boone County.....	12
CHAPTER 5 – Brazos County.....	16
CHAPTER 6 – Results and Conclusion.....	20
REFERENCES.....	21
APPENDICES	
Appendix A – Related Figures.....	26
Appendix B – Related Tables.....	42
VITA.....	46

LIST OF TABLES

<u>TABLE</u>	<u>PAGE</u>
Table 1.....	42
Table 2.....	43
Table 3.....	44
Table 4.....	45

LIST OF FIGURES

<u>FIGURE</u>	<u>PAGE</u>
Figure 1.....	26
Figure 2.....	27
Figure 3.....	28
Figure 4.....	29
Figure 5.....	30
Figure 6.....	31
Figure 7.....	32
Figure 8.....	33
Figure 9.....	34
Figure 10.....	35
Figure 11.....	36
Figure 12.....	37
Figure 13.....	38
Figure 14.....	39

Figure 15.....40

Figure 16.....41

CHAPTER 1

INTRODUCTION

Major Universities have always had the academic success of students as their number one priority but regional development has become more and more important to their roles in the community. Most college counties in the United States have one thing in common; government enterprises make up the largest sector by a wide margin. Many sectors make up the 21st century economy including Government expenditure, information, transportation, and several more. In this paper, the author analyzes the college county and breaks down the economic fabric of the community one sector at a time. Three counties have been chosen for this study and each one is home to a public university. All three have similar populations, they're from similar regions, and they're from separate states. Analyzing university economics started a strong trend in the mid 1980's. (Roger Beck, Donald Elliot, John Meisel, Michael Wagner 2006) Studies like this have shown that universities can and should have significant positive impacts on the surrounding community.

The University of Illinois, Texas A&M, and the University of Missouri are all major public universities in the US. These counties are similar in many ways from population, to school size and county size. But, the sector analysis of these counties shows three very different economies. This approach will allow for a simple yet effective analysis of these counties.

CHAPTER 2

LITERATURE REVIEW

In recent decades there has been a fair amount of papers, journals, and articles published on the impacts of universities on community economics. This paper is intended to be straightforward and easily understood for the average reader. The author breaks down community economics to the sector level and this allows for other calculations to assess economic performance. Sectors in an economy affect each economy very differently. This paper standardizes these values and assesses each county economy based on its sector performance.

The regional economic impact of a university has been studied in different settings for many years. The mid 1980's saw the addition of economic development added to a university's mission. The author analyzes in this study, the community and uses sector values as the smallest unit of measure as opposed to a firm, a state, or a nation. One of my primary sources was the textbook *Community Economics Linking Theory and Practice*. Community economic analysis is defined as "How a community is put together economically and how the community responds to external and internal stimuli." (Ron Shaffer, Steve Deller, David Marcouiller 2004.) Community economic analysis transpires when people in a community break down local economic conditions, use that information to assess unrealized opportunity, decide on a course of action, and then mobilize people to achieve community economic goals. Community economics is not simply the pursuit of growth but the pursuit of a higher quality of life. "Often the terms economic growth and economic development are incorrectly used interchangeably." (Ron Shaffer, Steve Deller, David Marcouiller 2004.) Growth is typically a measure that is restricted to jobs, income, and population. All of which are quantitative measures where development involves social, environmental, and economic change to improve the quality of life. For example, growing an

economy would focus on bringing in a new manufacturer or employer to add jobs and income. Whereas development is more focused on the quality of life of constituents, which can include measures such as growth, but also include others like transformation of a community. Growth and development are typically related in timeframe and identifiable beginnings. Growth can spur development and development can spur growth, which also can blur the lines between the two, but understanding that they are not interchangeable is necessary in understanding community economics.

Export base theory is one of a few models that are typically applied when evaluating community economics. Historically, community economic development has focused on one small part of the circular flow model and that's the external market for goods and services. Export base theory "markets are dynamic entities that do not operate in isolation. They represent inextricably linked components that relate internal markets to the outside world. The vibrancy of a local community's economy can be thought of in terms of how effective its internal and external linkages are." (Ron Shaffer, Steve Deller, David Marcouiller 2004.) Two types of primary markets emerge; these are basic and nonbasic markets. Basic markets, or export markets, are the largest of an economy's sectors that not only operate in the community but in surrounding communities. Basic markets in community economics are those markets that are the economic base of an economy. The authors explain, changes that occur in basic markets two effects on a regional economy. The first, is the changes made initially to the basic market directly. While the second, non-directly affects the nonbasic markets as a multiple of the change in the basic market. The nonbasic sectors make up those markets that operate exclusively in the community's economy and do not trade outside the local market. Income and employment changes depend on

changes in the level of exports, with no other stimuli for local change. Export base theory is founded on a strong set of assumptions:

1. The marginal propensity to consume locally, specifically the amount of local income spent for local products, is stable over time and over a relatively wide range of income change.
2. The amount of local income generated by each dollar of local spending does not change, thus the local labor content does not vary over time.
3. There are no changes in the relative prices of capital or labor as their use increases or decreases.
4. The additional capital and labor required to expand production is available immediately and without any increase in wages or profit since the community has a perfectly elastic supply of capital and labor to meet increases in demand.
5. The economic structure of a community at one time will predict its future economic structure.
6. The homogenous export sector implies that earnings from jobs and backward linkages, among other factors in separate subsectors of the export sector, are roughly equivalent.
7. None of the local consumption of the goods' and services sold for export comes from importing those goods or services.

(Ron Shaffer, Steve Deller, David Marcouiller 2004.) The export base theory, like most economic theory, has some limitations to its practicality. The theory is best suited for small simple economies as opposed to large complex ones. Another limitation for export base theory is that it is best applied for short run application and not long run application.

In an economic study of the impact of universities on local development, *Estimating Universities' Contributions to Regional Economic Development: The Case of the U.S* (Joshua Drucker, Harvery Goldstein 2007. 20-46), utilizes 4 measures to analyze the economy of the surrounding sphere of influence. The first of these is expenditure on research related activities; their research shows that “new firm births” are directly correlated to research expenditure in university economic regions. Second, is the number of degrees awarded to students specifically in the fields of technology and science. Thirdly, is the ratio of graduate level degrees awarded in the fields of study cited above, compared to the number of degrees awarded in all fields of study, graduate and undergraduate. The fourth measure is the number of patents awarded in the economic sphere of influence. The conclusion that Goldstein and Drucker come to show that human capital does have a large impact on the economic development of a region. The overall impact of university's in their study show that the effects are especially large in small to medium sized metropolitan areas. It's noted in their paper that outside influence is difficult to avoid for a multitude of reasons. For example, a fast growing university which is adding employee's, students, and infrastructure will falsely raise incomes in its economic sphere and studies of such a scenario would incorrectly read a university has more economic influence than it actually does. To avoid these issues in assessing a university's economic influence they take into account the number of metropolitan bases in the region surrounding the university at study. They also allow room in their results for the influence of regional industrial bases. In all economic studies, it is very difficult to completely avoid these issues of multicollinearity and outside proximity influence.

In a study conducted to measure the economic impact of public universities, (Roger Beck, Donald Elliot, John Meisel, Michael Wagner 2006), the authors state how spatial economics is

important to the understanding of the real impact universities have. For example, in the SIU system of colleges, they can analyze a scenario where the economic impact is confined to a 14 county area and under this assumption we see expenditure amounts at levels of \$74.5 million for students in the region. However, when the impact area is increased to include a 40 county region of central and southern Illinois, expenditures fall to \$67 million. This fall in expenditure occurs in the larger of the two regions because expenditures for other universities have to be taken into account and subtracted out of the SIU total. Understanding the regional impacts of universities must include their defined area of economic impact. It is for this reason this author analyzes the economic impact the university has upon the county economics measure is based on industry sectors. All three economies in my study are being defined in the exact same manner. This allows for the addition of insight into what developers for county development based on accessible data and calculation.

It is worth noting that in this research, the author found a few high quality studies that were authored by Harvey Goldstein. In this paper, (Harvey Goldstein, Catherine S. Renault. 71-91), they spend time discussing why they chose to perform an econometric model on the economic impacts of universities. They use their model to understand the knowledge spillover that positively impacts the economy. Their explanation of this spillover was one that led to an enhanced economic output due to higher quality decisions being made by individuals no matter the industry. In the paper, it is explained how knowledge creation, human capital creation, transfer of existing know-how, and technical innovation can have impacts on economic output. "The potential impacts include: productivity gains, business innovation, new business start-ups, and increase in regional development capacity, regional creativity, and direct and indirect spending impacts." (Harvey Goldstein, Catherine S. Renault) They utilize a case study and an

econometric model to attain the impact results. In the model they use, their intentions are to understand the knowledge spillover effect that is a result of the university. The measure used for analysis is the average annual earnings per worker. This measure is very similar to what this author uses in this paper, the difference being that the study looks specifically at the average earnings per worker annually with intellectual knowledge increased for better decision making where this author's study uses earnings per sector annually to measure economic impact and trends. The model that Godlstein and Renault use is much more complicated than the process utilized by this author. There are many reasons for this; mainly they wanted to understand the impacts of a university from a standpoint of knowledge spillovers and the economic impact from increased intellectual capacity. This author's study simply addresses the analysis of college county economies so a developer can make better decisions based on sector earnings annually. A developer in a college county would be well suited to understand the effects of a "knowledge spillover" on their regional economies for enhanced understanding of results and why certain industry sectors perform the way they do. However, an argument can be made that developers for these counties would find economic analysis more useful for sector earnings. Developer's deal with many challenges, not just economic ones and they can better assess the development of a region if their economic analysis is set in total sector performance and not just firm specific or person specific analysis. With the analysis performed by Goldstein and Renault a developer will gain knowledge that is useful and important to economic performance in a university setting. Personally, this author finds industry specific calculations more important due to the totality of the results on an economy as opposed to results explaining why a university has the impacts it has. Developers in regional economies should look to lift up their constituents through understanding sector analysis and investing capital based on sector findings.

CHAPTER 3

CHAMPAIGN COUNTY

The analysis of Champaign County is broken up into four sections. The first will include a brief county background using qualitative measures. The second will be the 2005 and 2015 sector proportion analysis for Champaign County using the US and Illinois economy's as comparison. The third section evaluates calculated 2015 location ratios for Champaign County as well as a sector income evaluation over 15 years. The final section is a brief summary of the results for Champaign County. It is important to remember the fact that the great recession occurred shortly after 2005, allowing for the inclusion of its effects in the calculations. It is very interesting highlighting the differences in county sectors before and after the recession.

Section 1, the following information was found at Champaign County Wikipedia 2017. Champaign County was organized in 1833 and is home to the University of Illinois. The county is located in the east central part of the state approximately one and a half hours south of Chicago. Figure 1. Champaign's county seat is the city of Urbana, which is a part of the Champaign/Urbana metropolitan area. Champaign County is actually named after Champaign County, OH, the home of the Illinois legislator who sponsored the bill creating the county. Champaign County had a population in 2010 of 201,081 and estimates for 2015 are just over 208,000 people. The county's top employer is the University of Illinois followed by Carle Clinic Association, Carle Foundation Hospital, Champaign Schools Unit 4, Kraft Foods, Provena Covenant Medical, Parkland College, Kirby Foods, Christie Clinic Association, Urbana Schools District and Hobbico.

Section 2 begins quantitative analysis of the Champaign County economy. The first study is focused on income sector proportions. The use of income sector proportions creates a

foundation that is used for further development analysis. The economic sectors used in this research for the years of 2005 and 2015 are listed as follows...

1. Farm earnings
2. Forestry, fishing, and related activities
3. Mining, quarrying, and oil and gas extraction
4. Construction
5. Manufacturing
6. Wholesale trade
7. Retail trade
8. Transportation and warehousing
9. Information
10. Finance and insurance
11. Real estate and rental and leasing
12. Professional, scientific, and technical services
13. Management of companies and enterprises
14. Administrative and support and waste management and remediation services
15. Educational services
16. Health care and social assistance
17. Arts, entertainment, and recreation
18. Accommodation and food services
19. Other services (except public administration)
20. Government and government enterprises,

Figure 2. shows sector income proportions for Champaign County in the year 2005. Government and government enterprises make up 38.09% of total income; the second largest sector is health care and social assistance with a percentage of 11.73%. Rounding out the top three sector income proportions in 2005 is manufacturing with a total income proportion of 9.93%. When compared to 2015 sector proportions in figure 3. the largest sector is still government with 36.39%, even with dropping almost 2 full percentage points. Second is also the same with health care moving up .87% to 12.60% of total income. The third sector is where some change has occurred with manufacturing losing 3.54% down to 6.39% and retail trade moving up to 12.69% up from its 2005 mark of 5.48%. Manufacturing is still a large portion of income for the county but the 2008 recession took a toll on its income proportion due to the industry evolving in the global economy. Retail trade also took off in the county with the economy, as a whole, weathering the great recession much better than most due in large part to the U of I. Students were still needing to buy and access materials during their college tenure while manufacturing slid throughout the entire US economy.

Figure 4. and figure 5. show what the national and state economies sector proportions look like. While the government sector makes up 16.56% of the US and 14.13% of the Illinois income proportions; they're far below the 36.39% that makes up Champaign's government sector. Many people work for government income across the country but not near the amount seen in Champaign due to the presence of the U of I. Health care is very similar in all three sector analysis', which can be seen in the other two counties as well. If you take a look at the manufacturing sector of these economies you will see that its sector income proportions are very similar in the Illinois and US economies but dissimilar in the Champaign economy. Champaign's manufacturing sector was a strong performer in 2005 but the financial crisis took a toll on

manufacturing, especially in Champaign. The trend is also true for the retail trade sector. These sector proportions break down an economy so particular industries can be analyzed. In section 3, using the sector proportions to calculate location ratios of each sector, the calculated ratios express another valued statistic to evaluate economies.

Section 3, economic sectors are divided into three separate groupings based on their location ratios. Location ratios above a 1.25 ($LR > 1.25$) are labeled exporting sectors but are best identified as economic bases. When a sector ratio is between .75 and 1.25 ($.75 < LR < 1.25$) it is labeled as a neutral or self-sufficient. The third type of LQ/LR is the Importing sector and it occurs when a sector's Ratio is less than .75 ($.75 > LR$). Champaign's comparison economies are the US and Illinois and later in this paper, Brazos' and Boone county comparisons are also the US as well as Texas and Missouri respectively. Table 1. shows that Champaign County has two exporting sectors when using the US as a comparison. When Illinois' economy is used as the comparison farm earnings is now calculated as an exporting sector. Farm earnings only makes up a proportion of .24% which means that farm earnings in the state of Illinois has less of an effect economically than what the national data shows. When considering location ratios between the US and Champaign, there are a total of 14 importing sectors with ratios below .75. These sectors are those that export base theory has identified as being dependent upon the two exporting sectors Government and Retail trade. Champaign County is like most college counties with Government enterprises making up the largest economic base.

As we continue in section 3, we will analyze grouped sector proportions over time. Sectors are grouped with similar sectors so the line graph would be legible. The timeline begins in 2001 and ends in the year 2015. Sectors have been grouped as follows...

1. Unearned Income = Dividends and Interest + Transfer Payments

2. Agriculture = Farm earnings + Forestry
3. Goods = Mining + Construction + Manufacturing
4. Retail financial services = Professional Services + Finance and Insurance + Retail Trade
5. Residence adjustment = Residence Adjustment
6. Government = Government Enterprises

Figure 6. Shows how these sectors have adjusted over time. This data is particularly interesting because it allows an economist to view sector proportions over a 15 year span. It gives us a very good idea into how consistent the local economy is. As you see in figure 6 Champaign's grouped sector trend lines remain on relatively even paths. If you take a close look at the retail financial services group, you will notice a solid bump upward in its graph. That slight bump is the largest move for any grouping over the 15 years and was caused by an increase of 4.75% of total personal income for the county. Retail financial trade grouping's positive movement was caused mostly by the retail trade sector proportion increasing during and after the financial crisis thus, filling the gap left with the losses sustained in the manufacturing sector.

In conclusion, Champaign's local economy has seen consistent economic growth over the course of this study. The financial crisis certainly had a large impact on the local economy as can be seen, manufacturing slumped and never fully recovered. The income lost in the manufacturing sector was replaced by growth in the retail trade sector. The university's expenditure on income, shown as a piece of the government enterprises sector, creates consistent growth. Businesses thrive when there is stability in an economy. The government services sector in Champaign's economy is that stability. Where many sectors struggled through the financial crisis, the

government enterprise sector stayed consistent. The consistency in income from the government creates a foundation of consumers who reliably have an income to spend even during some the second deepest recession in our nation's history.

CHAPTER 4

BOONE COUNTY

Chapter 4 begins with a qualitative assessment of Boone County. The County is home to the Missouri Tigers and the following general information was accessed through Boone County Wikipedia 2017. Boone County is located in central Missouri shaded just a bit north of the center of the state Figure 7. The 2010 census tallied the population of Boone at 162,642. The county was organized in 1820 and named after the famous Daniel Boone. The county seat in Boone County is Columbus which is Missouri's 4th largest city. Boone County has a very rich history with many of its settlers coming from southern states; Boone quickly became Slave County after its organization. At slavery's peak in the county, up to 25% of the population was enslaved, helping to produce the cash crops of tobacco and hemp. In 1839, the first public university west of the Mississippi was founded as the University of Missouri. To this day Mizzou is the largest public university in the state with 2015 enrollment at 32,777. Just as is true in Champaign County, the largest employer in Boone County is the University of Missouri. University hospitals and clinics are the second largest employer with Columbia public schools and Boone hospital center rounding out the top four employers.

Section 2, is an analysis of Boone County's income sector proportions for the years 2005 and 2015 in Figure 8 we can see the sector proportions for 2005. As expected, the government sector makes up for 37.17% of all income in the county with health care and social assistance a distant 2nd with 11.12% of income. These two values can be expected of any count that has a large public university in it due to the large government expenditure. The university requires large amounts of funding to provide its academic service and thus increasing the size of the government enterprises sector. Figure 9. Shows Boone County sector proportions in 2015. In

2015, government enterprises sector proportion decreased .89% to 36.28% of total income. Health care still comes in a distant 2nd with an 11.18% sector proportion. The sector proportions seen in Boone County are very similar to that of Champaign County with one exception; Champaign County had a third sector, retail trade, that moved from 5.48% in 2005 to 12.69% in 2015. That shows that over the same 10-year study used for Champaign and Boone, Champaign has the only sector proportion above 10% that isn't Government enterprises or health care and social assistance. The effects of the 2008 financial crisis have already been evaluated for Champaign County in this paper and the sector proportions changing over time, in response to the recession, are especially evident in the manufacturing sector. The economy in Champaign had significant sector adjustment, where in Boone, most of the sector proportions in 2005 are very similar to those in 2015. Which would lead us to believe that Boone County's 2005 economy is largely unchanged in 2015.

Section 3 is an examination of Boone County's location ratios. Remember from chapter 3 that ratios above a 1.25 ($LR > 1.25$) are labeled exporting sectors. Values between .75 and 1.25 ($.75 < LR < 1.25$) are labeled as a neutral or self-sufficient. The third location ratio grouping is the importing sector and it occurs when a sector's ratio is less than .75 ($.75 > LR$). Table 2. is Boone County's location ratios using the US economy as the comparison. There are three sectors that are exporting sectors with a ratio of 1.25 or higher, Government enterprise, arts and entertainment, and management. The government sector produced a ratio of 2.19 compared to the US, showing that Boone County's government income sector proportion is over twice the size of that as the national economy. Boone County location ratios only have one ratio reaching above a value of 2 and the other two exporting sectors, arts/entertainment and management, only earn ratio values of 1.46 and 1.54 respectively. But, when Missouri's state economy is used as

the comparison, Boone County only registers the government enterprises sector as having a ratio that qualifies as an exporting sector with a value of 2.31. This ratio adjustment from the US economy comparison to the Missouri state comparison is easily identified 2015 state sector proportions. The two differences are found in the arts/entertainment and management sectors. The values of 1.38% and 4.16% respectively are large enough differences compared to the same sectors in the 2015 US values of 1.17% and 2.68% respectively. Figure 10.

In the next part of section 3, sector proportions for Boone County from 2001 – 2015 are evaluated. These calculations were made by grouping the same sectors together as done above in chapter 3 for Champaign. Figure 11. shows the trends that these sectors have followed the past 15 years. The trend lines show a county economy that is consistent and steady in Sector proportions. The one group that makes marked changes over the 15 year study is goods. Goods include mining, construction, and manufacturing, all are industries that were hit hard by the financial crisis. The trend line for goods takes a downward trajectory right around the same time as the financial crisis. Also the trend lines for unearned income, government, and retail financial all have a modest upward bump in the 2007-2009 time frame. This would lead to the conclusion that as the goods income proportion fell, the other three sectors made up the difference lost by gaining proportion size.

To conclude Boone County's analysis, this economy is structured very similar to that of Champaign. These counties largest economic base is the government enterprises sector. As we were able to see Boone's county economy through different figures and tables, it was interesting to see the effects before and after the financial crisis. As analyzed in figure 11 from section 3 the goods grouping slumped during the financial crisis in the goods grouping that was offset with modest gains in the unearned income and retail financial services groupings. The gains made by

these two sectors filled the void left by the manufacturing slump. Also, the income generated in the management sector saw significant growth from 2005-2015 that stayed steady even through the recession. Its value in 2005 was \$140,105 and when the study concluded in 2015 it had gained \$103,607 in income growth to total \$243,712. The biggest take away from Boone County is the economic stability that is brought about by the economic impact of the University of Missouri.

CHAPTER 5

BRAZOS COUNTY

Chapter 5 is the third and final economic evaluation conducted in this paper. Brazos County's general info was accessed through Brazos County Wikipedia 2017. Brazos County is the home of Texas A&M University and was formed in 1841 and organized in 1843. The Brazos River, which bisects Washington County and is the namesake of Brazos County in 1841, was seen as too large an obstacle to overcome for a county government at the time, so a new county was formed. The county is situated in east central Texas about 90 miles northwest of Houston and as of the 2010 census is home to 194,851 people, as visible in Figure 12. The county seat is located in Bryan, TX but Texas A&M is located in College Station making Brazos county the only county in this study where the college the study is predicated on isn't in the city limits of the county seat. It's worth noting that Bryan and College Station are both part of the Bryan-College Station metropolitan area, which is the 15th largest metro in the state of Texas. Brazos County is much more diverse economically than the first two county studies. With mining being a large industry in the area, as is true with most of Texas today; this has significant effects upon every other sector as we are about to see.

Section 2 of this chapter will look at Brazos County income sector proportions and will begin with Brazos' County 2005 sector proportions are shown in pie chart form in Figure 13. In 2005 the income sector proportions of the county mirror that of what we saw in Boone and Champaign counties with government enterprises and health care bringing in 37.29% and 10.46% accordingly. The third largest sector proportion is retail trade with a value of 7.72%. Almost all of the other sectors in 2005 for this figure garner small values with a diverse spread of industries after government and health care are accounted for. When comparing 2005 sector

proportions to the sector proportions for 2015 in Figure 14 there are some interesting changes to note. Government and health care are still the largest income sector proportions but both slipped slightly with government lowering by 2.08% and health care following government and lowering by .46% making the 2015 sector proportion an even 10%. Another sector that made a noticeable change is the manufacturing sector. All three counties have shown the exact same trend of manufacturing taking a noticeable dip following the 2008 crisis. In Brazos County in 2005, the manufacturing sector accounted for 7.36% and in 2015 that number fell by 2.61% to 4.75%. Mining, switched to become an exporting sector for Brazos, was only 1.91% of income in 2005 but in 2015 had moved up to 4.51% making the biggest jump by any sector over the 10 year study.

Section 3, continues this study with the Brazos County 2015 location ratios compared to the US and Texas economies. When compared to the US, as seen in Table 3, we see similarities to the previous counties as well as some differences. The biggest difference in Brazos, County is the mining sector. Mining is a large industry throughout the state of Texas and this is true in Brazos. The location ratio for mining, compared to the US economy, is 3.00. The mining industry in the county accounts for three times the income proportion of that in the US economy. But, when you take a look at Table 4, the mining industry has only a 0.53 location ratio. This is due to the fact that the mining industry in the US economy accounts for a 1.50% sector proportion where in Texas it swells to 8.49% making it one of the biggest industries in the state. When looking back into county location ratios compared to the US, there are three export sectors. Government, mining, and accommodations all have ratios above 1.25. The government and accommodations sectors are both exporting sectors when compared to the state also. The mining industry ratio when compared to the US is deceiving as when compared to Texas; it is

comfortably in the importing sector range. This means that in its immediate surroundings, the mining sector is much more prevalent in Texas than it is in the US which would lead one to conclude that its effects upon the county and its income are not those of a sector with a location ratio of 3.00. The government enterprises sector follows a similar trend in all three studies. The government enterprises sector is so important in these counties because it's already the largest sector in the US and when we break down the county economy, their location ratios are comfortable in the 2-3 range.

In the second part of section 3, Brazos County's sector proportions are graphed over time. In Figure 16 Brazos County's income sector proportions have shown relative consistency for 15 years, even through the 2008 crisis. There are only slight trajectory changes in any sector trend line, the government enterprises proportion increased following the recession. This is a result of other industries feeling the negative effects of the recession and government staying consistent causing its proportion to increase. The government sector weathers recession more steadily than most private sectors because government spending typically stays the same, and in many cases spending increases during downturns to stimulate recovery. These trends are very consistent with most changes being well within the 1% range from the year before. For example, the dip that occurs in the residence adjustment trend line at 2008-2009 was caused by a reduction of 1.10%.

In conclusion of Brazos' County economic study, the economy has grown especially in recent years. The government enterprises sector has the largest sector proportion, just as we saw in Champaign and Boone Counties. What we didn't see in those two other cases is in the first part of section 3. When calculating location ratios for the county sectors, mining had the largest ratio scoring a 3. However, when compared to the state for calculations, the mining sector moved from an exporting sector to an importing one. This shows that while the mining sector has a very

visible effect on income in the economy, its effects aren't as important as the government services sector, which scored a ratio of 2.13. Texas has a much more robust mining sector than that of Illinois and Missouri which means that, at the very least, Texas has effectively utilized its natural resources when compared to that of the other two states. As seen in chapters 3 and 4, Brazos County enjoys the steady engine that the government sector provides.

CHAPTER 6

CONCLUSION

This research was completed for the economic analysis of Champaign, Brazos, and Boone County's economies. The results of this study indicate that, although from different areas and different backgrounds, the single most important economic factor in a college county economy is the university and the stability that it brings. The income generated by the government enterprises sector is about 20% higher in a college county than that of the US economy. Retail Trade in all 3 economies was more significant than that in the national and state economies of all three studies. This value is another result of the university due to students making purchases in the local economy that don't normally call the county home, causing an increase in external demand. In all 3 studies, the 2008 financial crisis did not cause large economic turmoil like it had elsewhere. The stability that a university brings to a regional economy is crucial, especially in a regional setting not in a large metropolitan area.

Using the data collected, economic developers could better invest development dollars into their counties where university dollars are least effective. Developers in college counties should focus on expanding industry that is not associated with the university. A developer that can diversify a county's economy will achieve sustained growth and stability even more so than that which the university provides.

REFERENCES

- BECK, ROGER, DONALD ELLIOTT, JOHN MEISEL, and MICHAEL WAGNER.
 "Economic Impact Studies of Regional Public Colleges and Universities." *Growth and Change*. July 03, 2006. <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-2257.1995.tb00170.x/abstract>.
- "Boone County, Missouri." Wikipedia. April 22, 2017.
https://en.wikipedia.org/wiki/Boone_County,_Missouri.
- "Brazos County, Texas." Wikipedia. April 22, 2017.
https://en.wikipedia.org/wiki/Brazos_County,_Texas.
- "Champaign County, Illinois." Wikipedia. April 22, 2017.
https://en.wikipedia.org/wiki/Champaign_County,_Illinois.
- Drucker, Joshua, and Harvey Goldstein. "Assessing the Regional Economic Development Impacts of Universities: A Review of Current Approaches." *SAGE journals* 30, no. 1 (January 1, 2007): 20-46.
<http://journals.sagepub.com/doi/pdf/10.1177/0160017606296731>
- Goldstein, Harvey A., and Catherine S. Renault. "Estimating Universities' Contributions to Regional Economic Development: The Case of the U.S." *Spillovers and Innovations Interdisciplinary Studies in Economics and Management* 4:71-91.
 doi:10.1007/3-211-27175-9_4
- Shaffer, Ron, Steve Deller, and David Marcouiller.
Community economics: linking theory and practice. 2nd ed. Ames, IA: Blackwell Publishing, 2004
- "U.S. Bureau of Economic Analysis (BEA)." Bureau of Economic Analysis. November 9, 2016.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=00000&7027=2015&7001=710&7028=-1&7031=0&7040=-1&7083=levels&7029=32&7090=70>
- "U.S. Bureau of Economic Analysis (BEA)." Bureau of Economic Analysis. November 9, 2016.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=17000&7027=2015&7001=710&7028=-1&7031=17000&7040=-1&7083=levels&7029=32&7090=70>

- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. November 9, 2016.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=29000&7027=2015&7001=710&7028=-1&7031=29000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. November 9, 2016.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=48000&7027=2015&7001=710&7028=-1&7031=48000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=17019&7027=2005&7001=710&7028=-1&7031=17000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=17019&7027=2015&7001=710&7028=-1&7031=17000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=29019&7027=2005&7001=710&7028=-1&7031=29000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=29019&7027=2015&7001=710&7028=-1&7031=29000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdsn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=48041&7027=2005&7001=710&7028=-1&7031=48000&7040=-1&7083=levels&7029=32&7090=70>

- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 6, 2017.
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7024=naics&7033=-1&7025=4&7026=48041&7027=2015&7001=710&7028=-1&7031=48000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 7, 2017
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=17019&7027=-1&7001=710&7028=-1&7031=17000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 7, 2017
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=29019&7027=-1&7001=710&7028=-1&7031=29000&7040=-1&7083=levels&7029=32&7090=70>
- “U.S. Bureau of Economic Analysis (BEA).” Bureau of Economic Analysis. January 7, 2017
<https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=7#reqid=70&step=30&isuri=1&7022=10&7023=7&7033=-1&7024=naics&7025=4&7026=48041&7027=-1&7001=710&7028=-1&7031=48000&7040=-1&7083=levels&7029=32&7090=70>

APPENDICES

APPENDIX A
RELATED FIGURES



Figure 1. Champaign County Illinois.

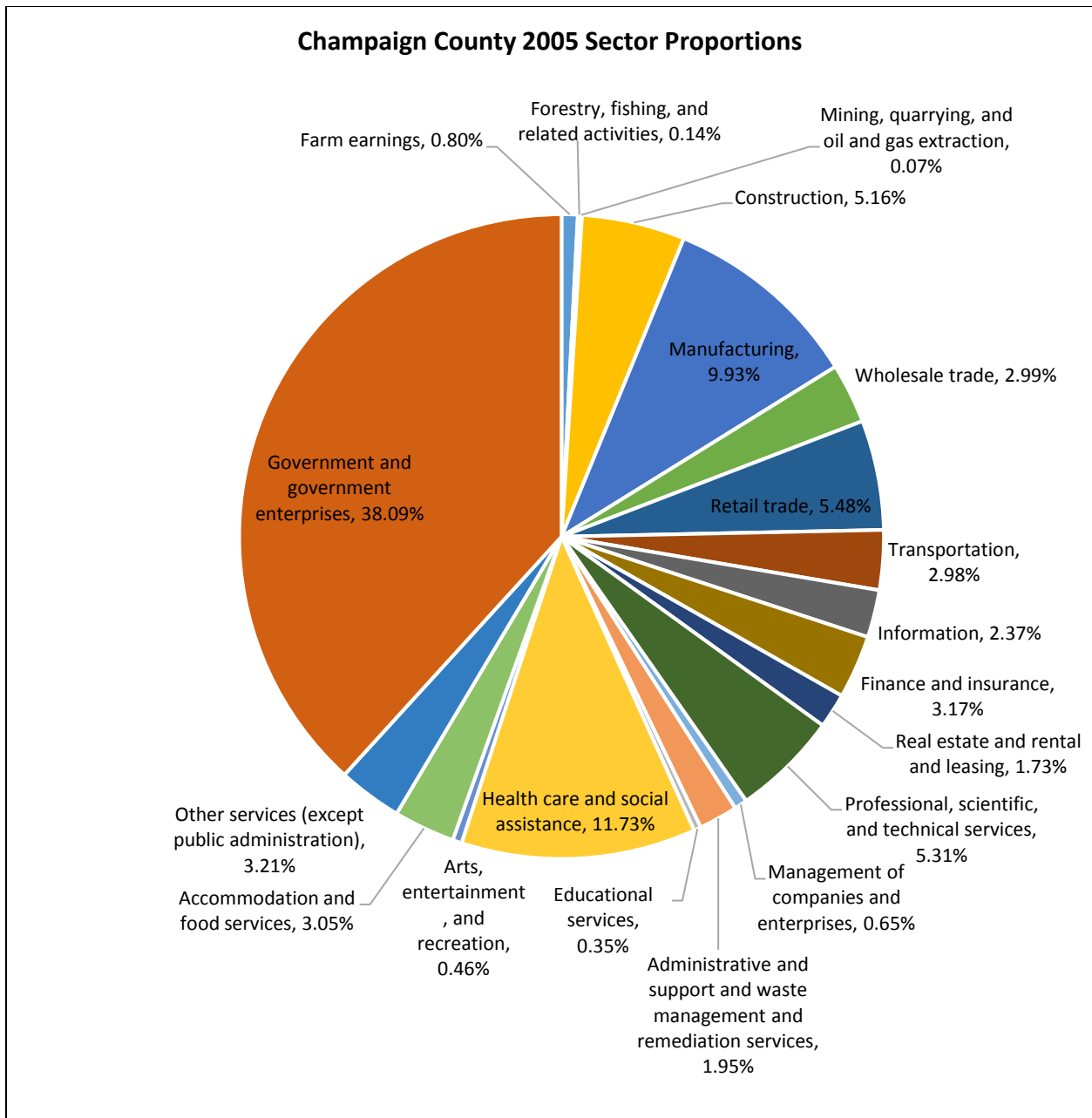


Figure 2. 2005 Champaign County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

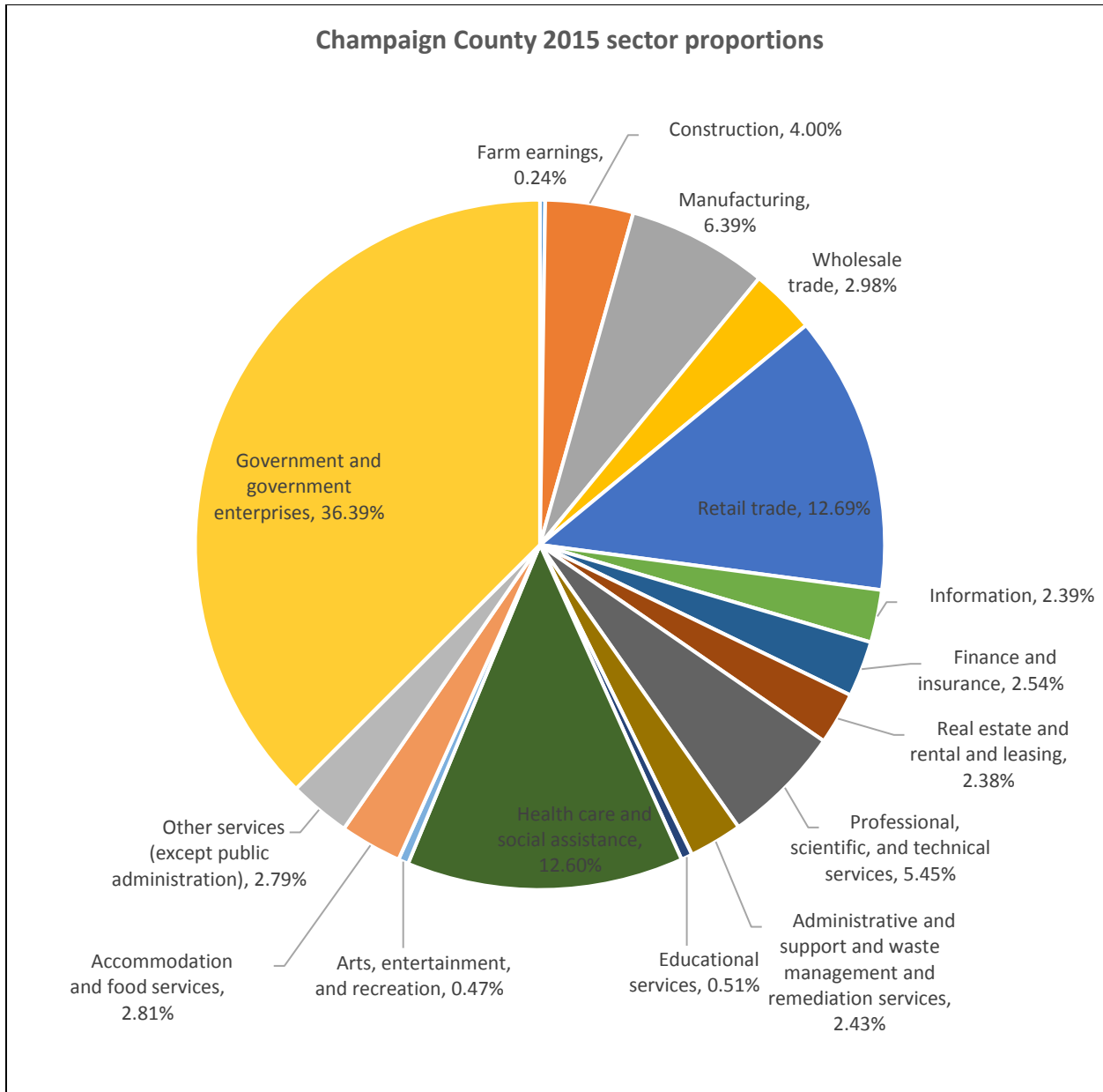


Figure 3. 2015 Champaign County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

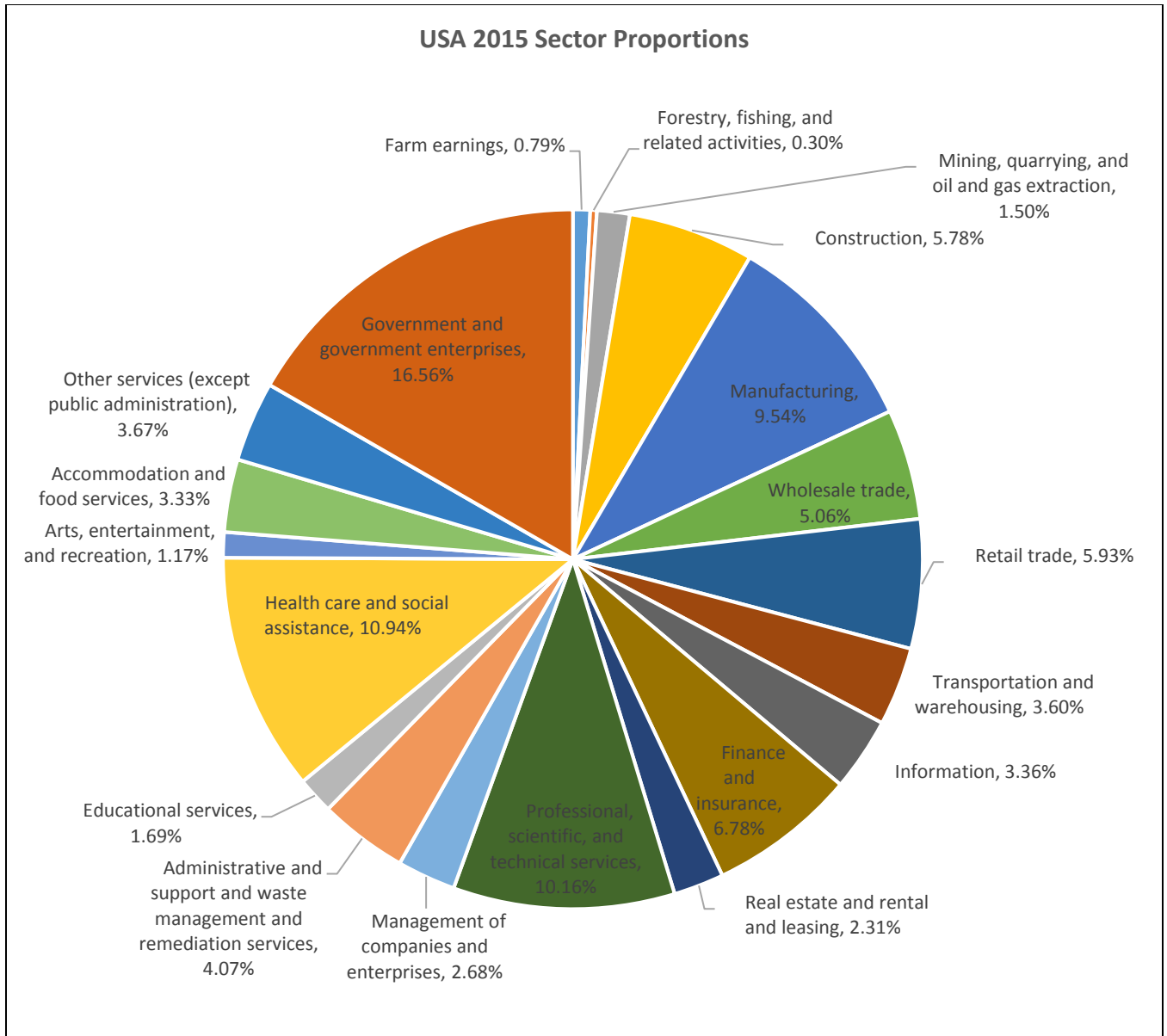


Figure 4. 2015 USA Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

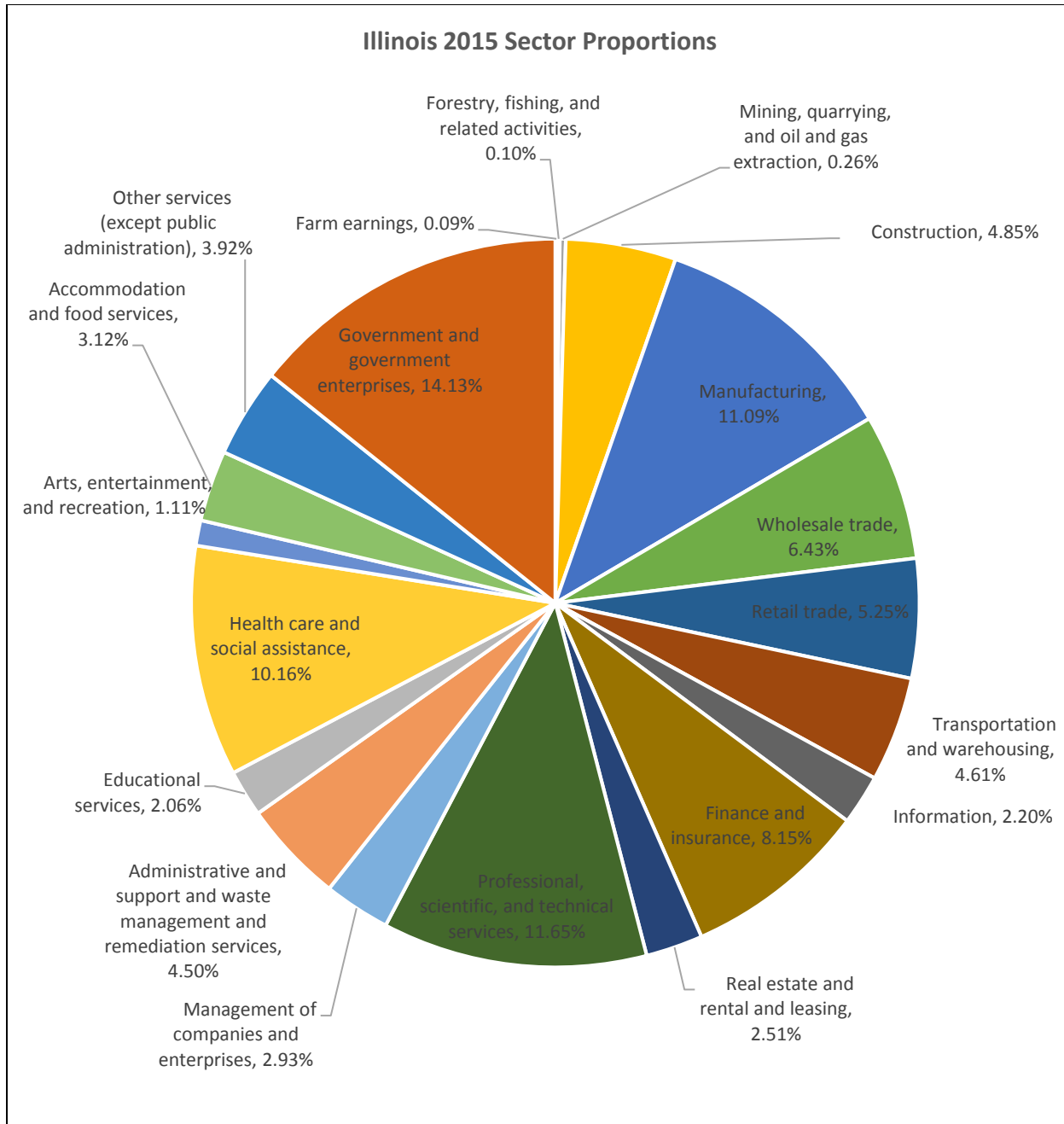


Figure 5. 2015 State of Illinois Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

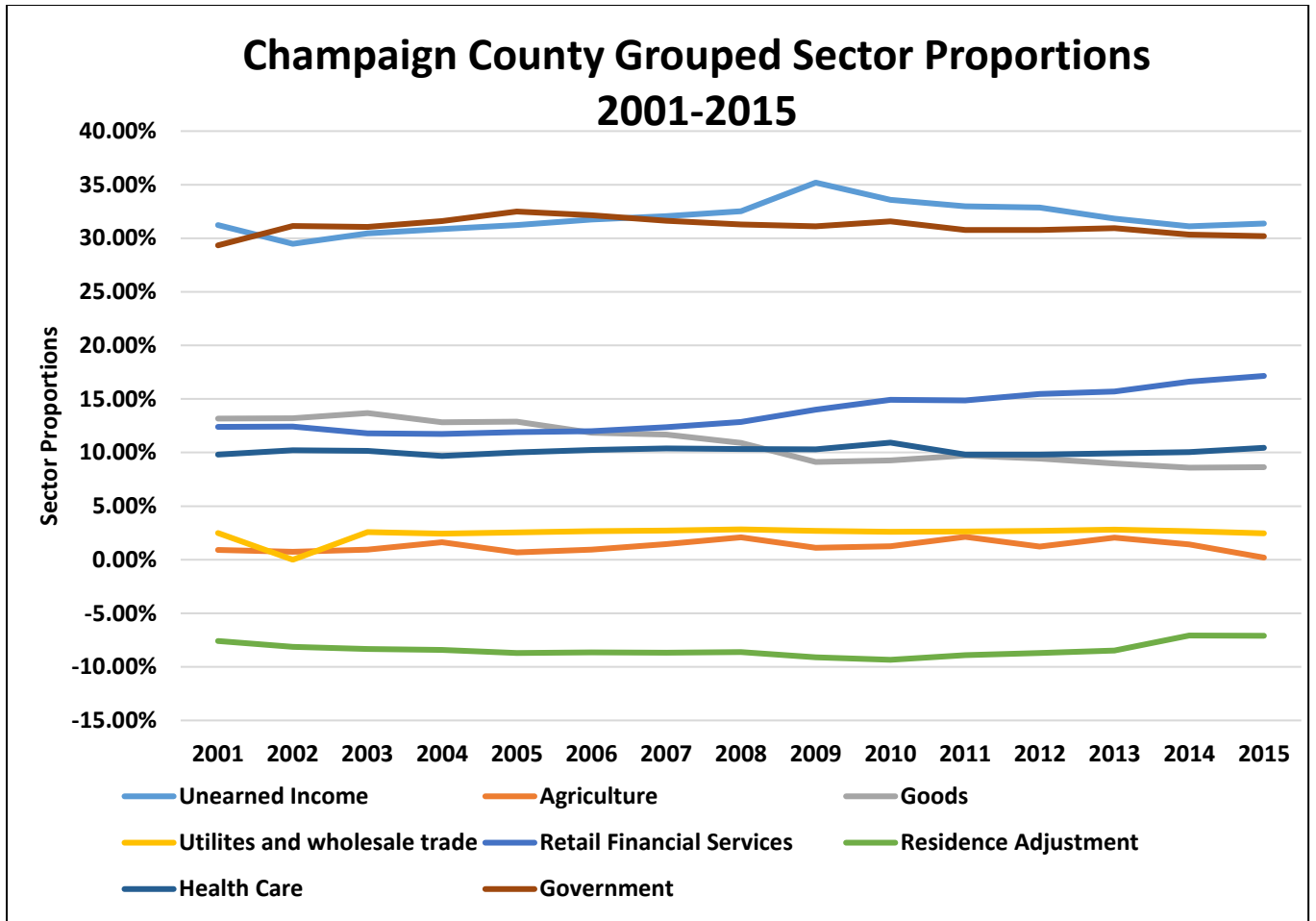


Figure 6. 2001-2015 Champaign County Grouped Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.



Figure 7. Boone County Missouri.

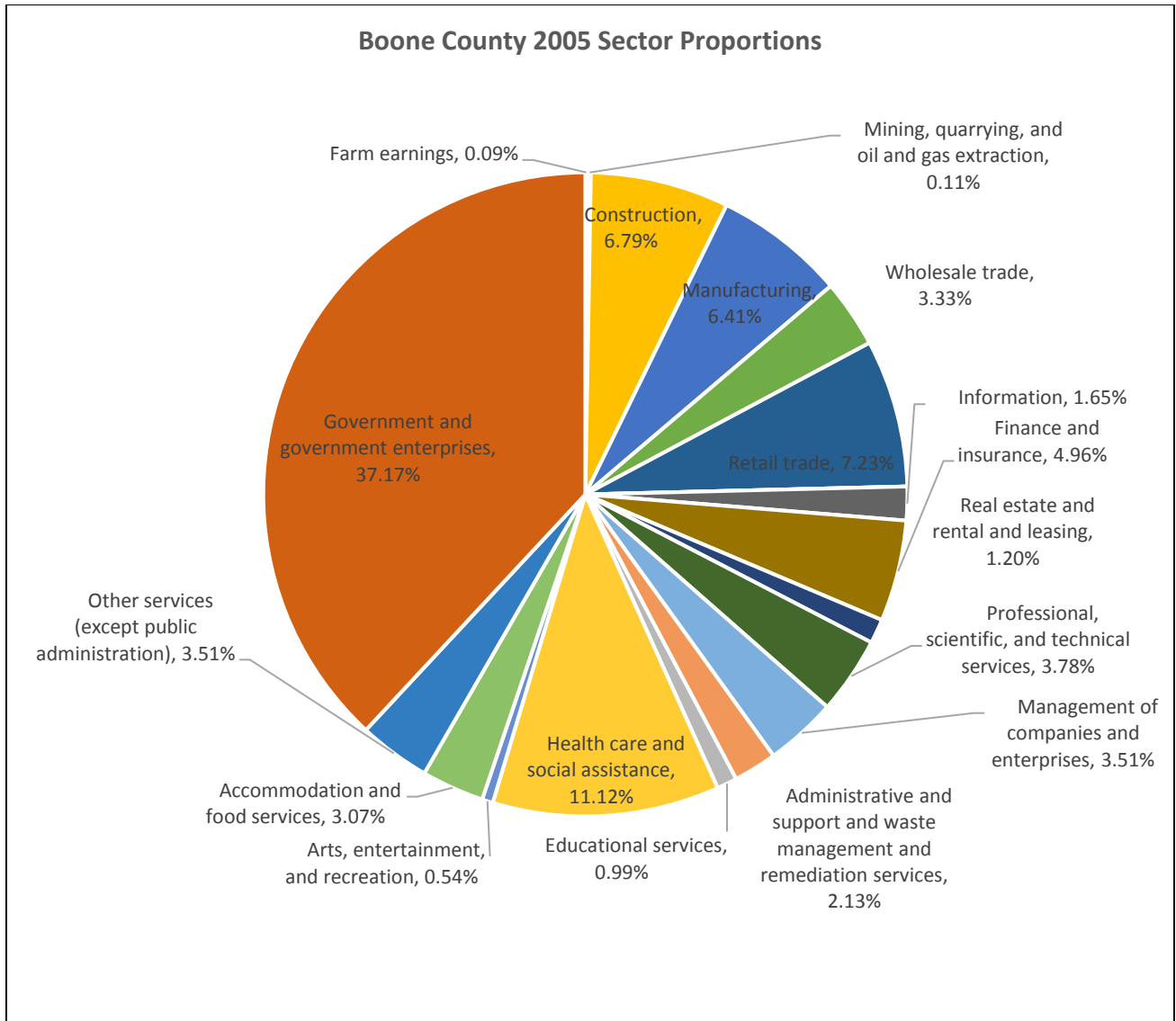


Figure 8. 2005 Boone County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

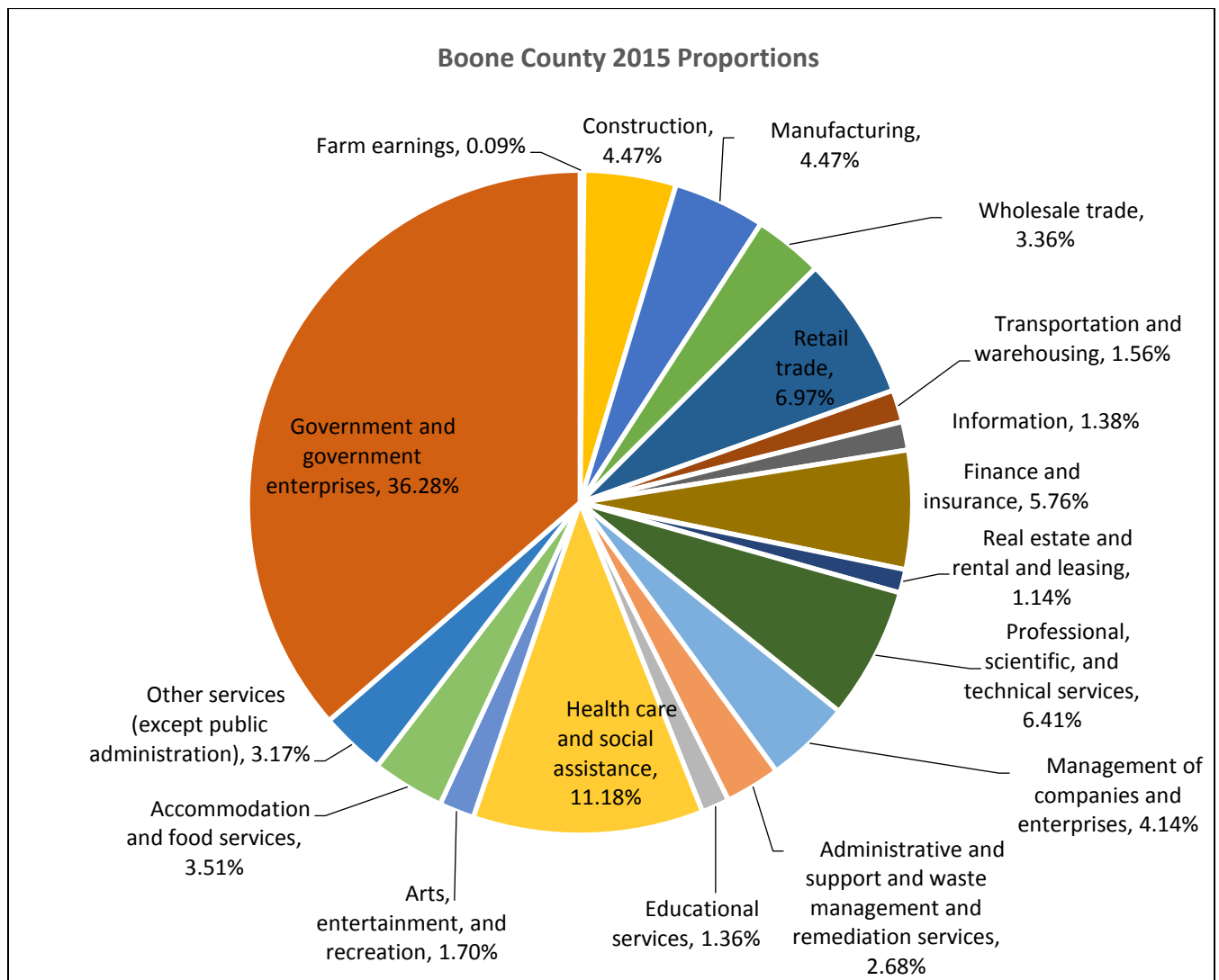


Figure 9. 2015 Boone County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

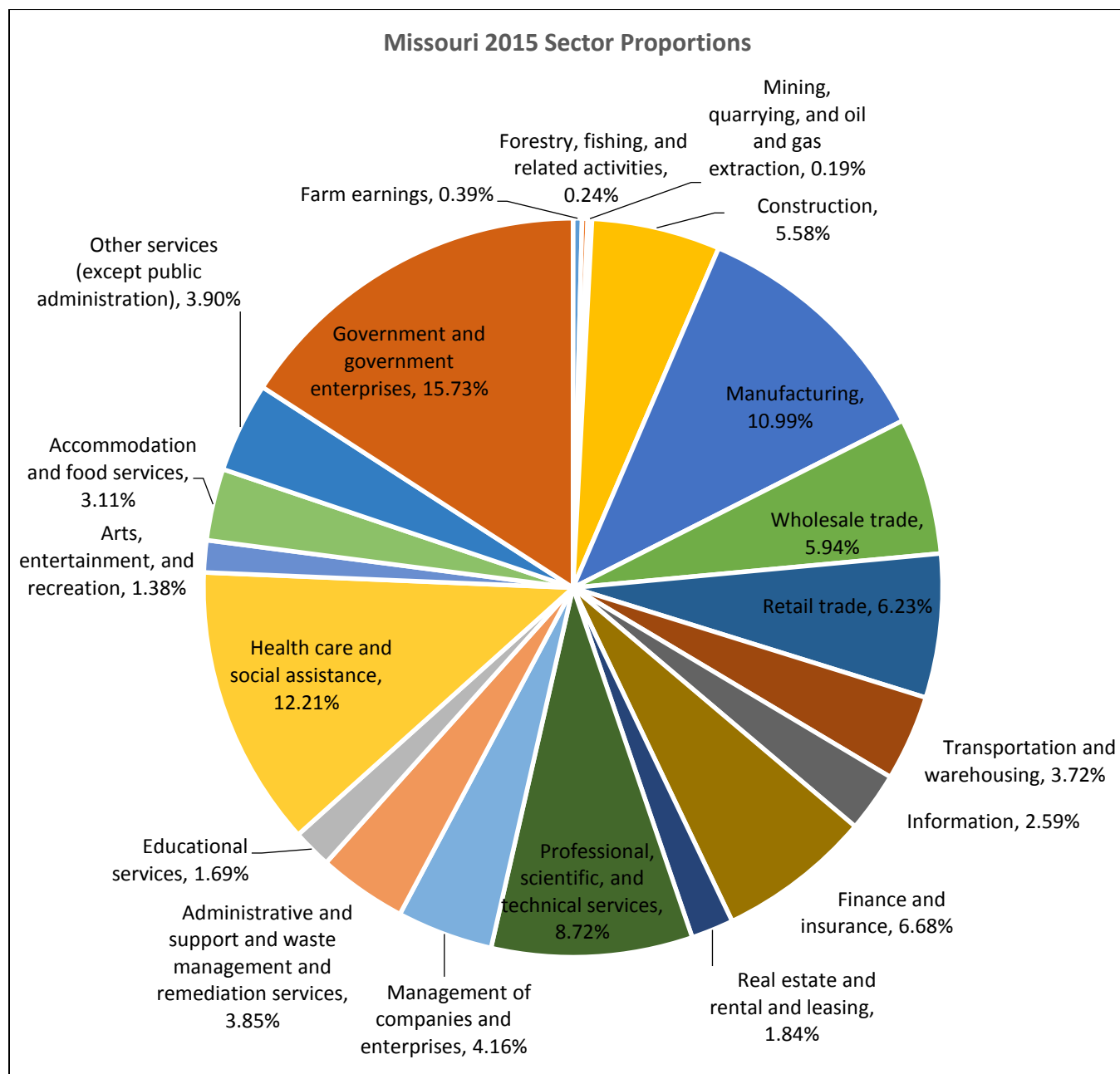


Figure 10. 2015 State of Missouri Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

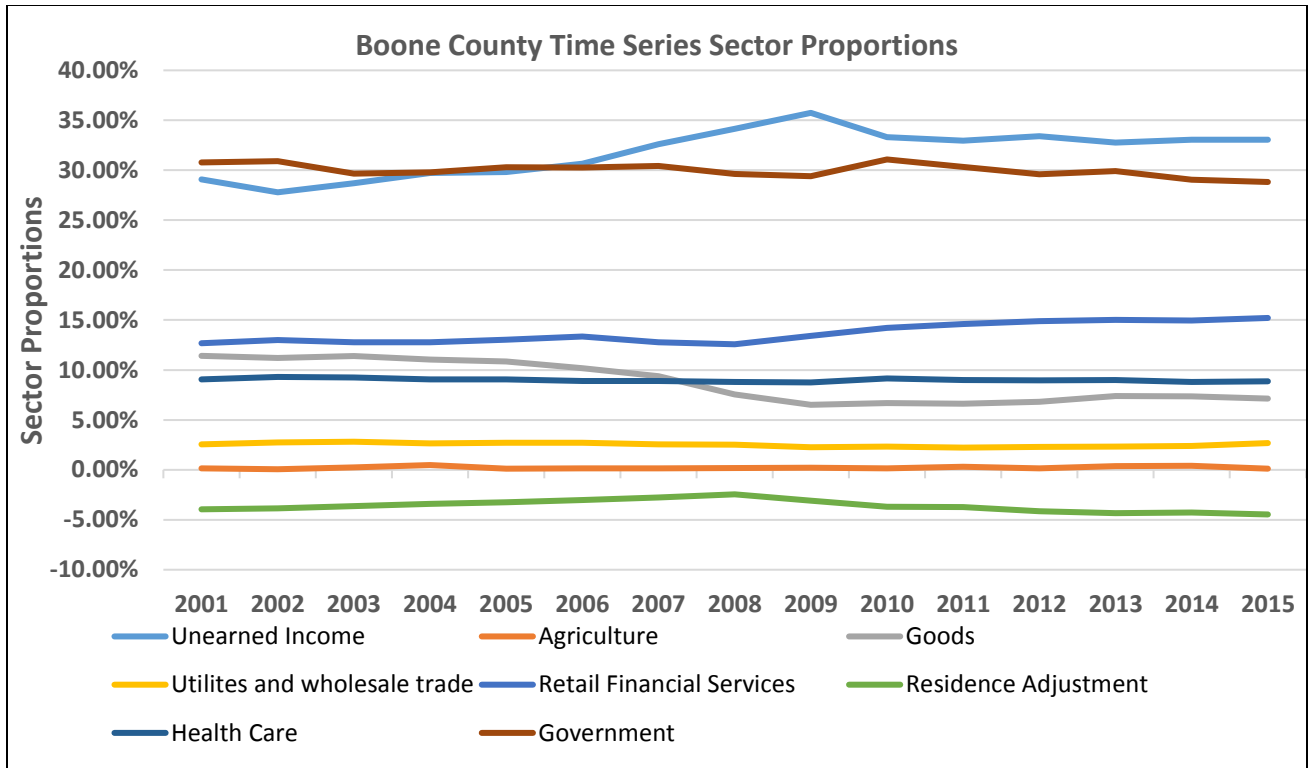


Figure 11. Boone County Earnings Data 2001-2015.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.



Figure 12. Brazos County Texas.

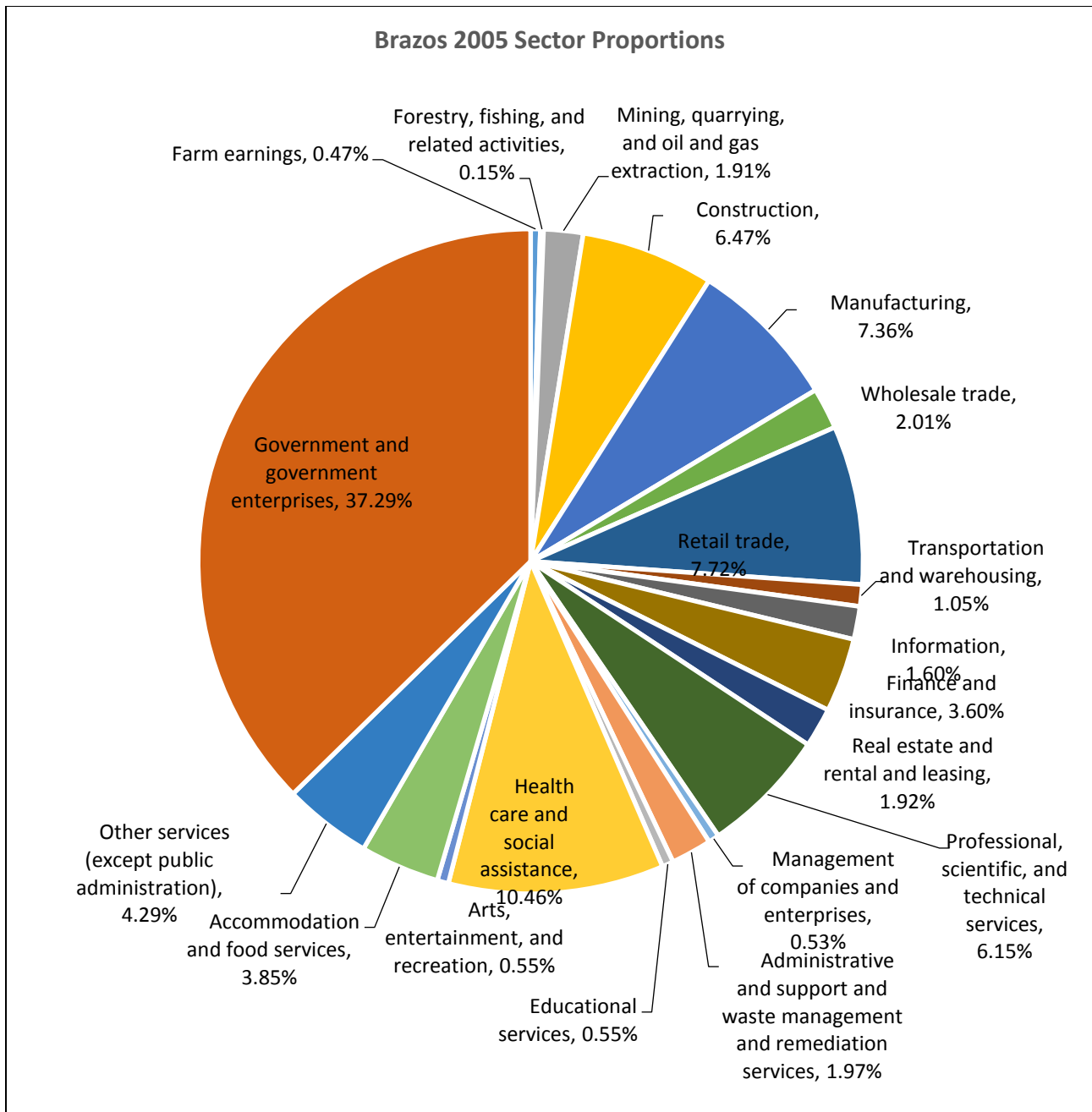


Figure 13. 2005 Brazos County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

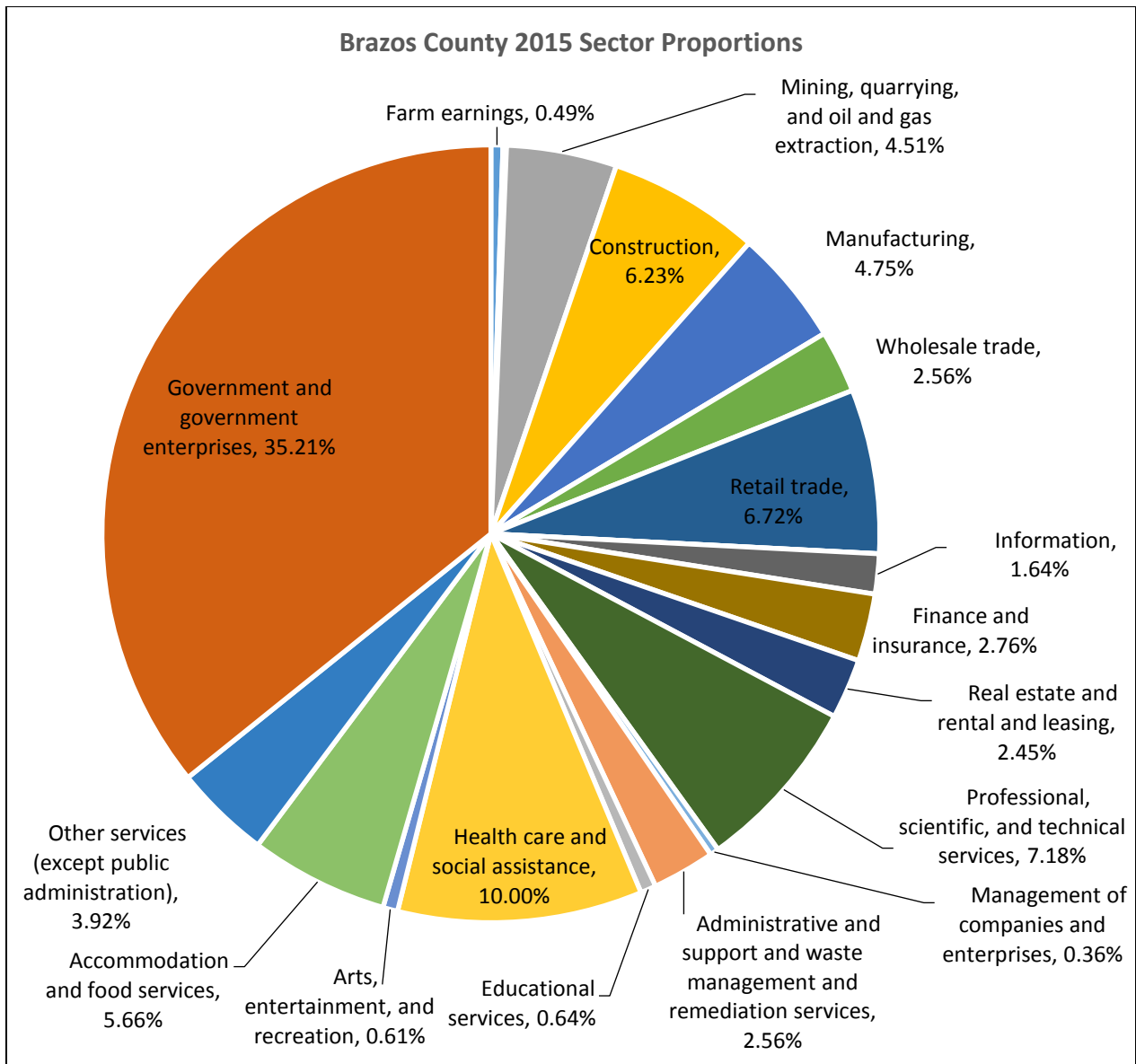


Figure 14. 2015 Brazos County Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

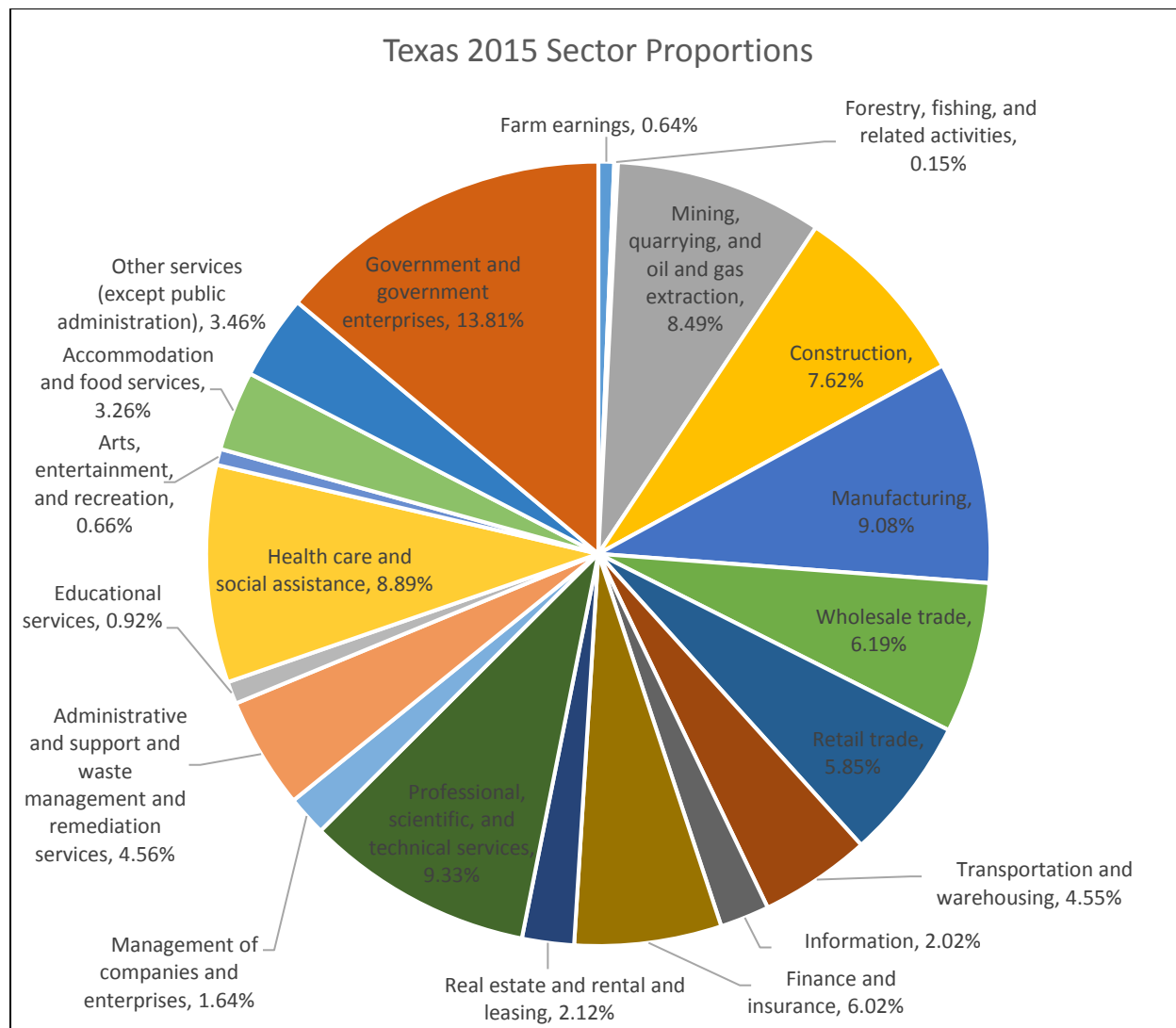


Figure 15. 2015 state of Texas Sector Proportions.

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

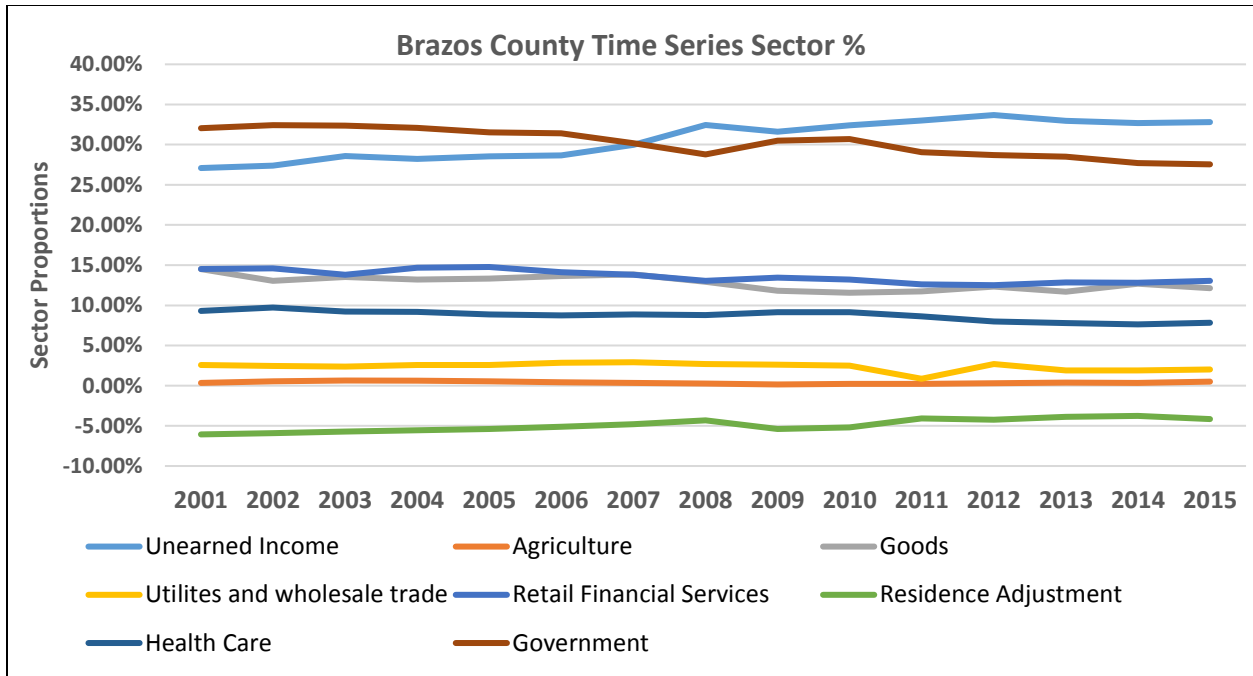


Figure 16. Brazos County Earnings Data 2001-2015

Note: All data utilized in constructing the graph above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

APPENDIX B

RELATED TABLES

Table 1. 2015 Champaign County Location Ratios Comparison US

Note: All data utilized in constructing the table above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

Champaign/US LR's	
0.30	Importing
0.00	Importing
0.00	Importing
0.69	Importing
0.67	Importing
0.59	Importing
2.14	Exporting
0.00	Importing
0.71	Importing
0.37	Importing
1.03	Neutral
0.54	Importing
0.06	Importing
0.60	Importing
0.30	Importing
1.15	Neutral
0.40	Importing
0.84	Neutral
0.76	Neutral
2.20	Exporting

Table 2. 2015 Boone County Location Ratios Comparison US.

Note: All data utilized in constructing the table above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

Boone/US LR's	
0.12	Importing
0.18	Importing
0.03	Importing
0.77	Neutral
0.47	Importing
0.67	Importing
1.18	Neutral
0.43	Importing
0.41	Importing
0.85	Neutral
0.49	Importing
0.63	Importing
1.54	Exporting
0.66	Importing
0.80	Neutral
1.02	Neutral
1.46	Exporting
1.05	Neutral
0.86	Neutral
2.19	Exporting

Table 3. 2015 Brazos County Location Ratios Comparison US.

Note: All data utilized in constructing the table above is from the Bureau of Economic Analysis “Regional GDP & Personal Income” data, gathered from BEA.

Brazos/US LR's	
0.62	Importing
0.47	Importing
3.00	Exporting
1.08	Neutral
0.50	Importing
0.51	Importing
1.13	Neutral
-	Importing
0.49	Importing
0.41	Importing
1.06	Neutral
0.71	Importing
0.13	Importing
0.63	Importing
0.38	Importing
0.91	Neutral
0.52	Importing
1.70	Exporting
1.07	Neutral
2.13	Exporting

Table 4. 2015 Brazos County Location Ratios Comparison Texas.

Note: All data utilized in constructing the table above is from the Bureau of Economic Analysis "Regional GDP & Personal Income" data, gathered from BEA.

Brazos/TX LR's	
0.76	Neutral
0.95	Neutral
0.53	Importing
0.82	Neutral
0.52	Importing
0.41	Importing
1.15	Neutral
-	Importing
0.81	Neutral
0.46	Importing
1.15	Neutral
0.77	Neutral
0.22	Importing
0.56	Importing
0.70	Importing
1.13	Neutral
0.92	Neutral
1.73	Exporting
1.13	Neutral
2.55	Exporting

VITA

Graduate School

Southern Illinois University

Jacob R.R. Williams

jrrw.williams@gmail.com

Southern Illinois University

Bachelor of Science, Agriculture, May 2016

Research Paper Title:

The College County: Analyzing Economic Development

Major Professor: Ira J. Altman