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A Regional Development Plan: A Case Study of Douglas County, Kansas, USA

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Abstract
Our research focuses on regional economic growth and development, concentrating on Douglas County, one of the foundational pieces of the Kansas, United States economy. This paper will analyze trends in the County and outline an economic plan for where they should strive to create changes. The method used will compare Douglas County to Kansas and then the United States by industry using a measure called Location Quotient, which measures the strengths and weaknesses of an industry using a ratio matrix. Porter cluster analysis was employed to visualize and analyze how fostering an environment of competition, economic growth, and development will increase productivity, drive business synergy to the industries that need it the most, and stimulate new businesses with economic potential via the results from our Location Quotient analysis within the Douglas County region. Our concluding recommendations will be based on past literature that has commonalities with our finding, providing policymakers, academics, and stakeholders with a spectrum of information while highlighting the Strengths, Weaknesses, Opportunities, and Threats framework. Our finding aims to provide big-picture systemic changes that can be implemented within the County rather than individual or micro changes impacting less of the population.

Keywords: Douglas County, Location Quotient, Porter Cluster, Economic Growth, Economic Development

1. Introduction

Douglas County is home to four research institutions [Baker University, The University of Kansas, WellSpring School of Allied Health, and Haskell Indian Nations University], it is the fifth largest County by population in the State of Kansas, often referred to as a university town, it is home to 119 thousand people (DataUSA, 2023). The four main cities within the County are Lawrence, Baldwin City, Eudora, and Lecompton. The primary aim of this study and its contribution to the field of economic growth and development is to create a data-driven economic [growth and development] action plan that will improve conditions throughout the County and the standard of

living of its residents. This study will employ the Location Quotient analytical framework as a quantitative approach to understanding employment by industry within the County and how it has changed from 2014 through 2021. The identifier will separate industries by their independence in operating in the Douglas County community. A breakdown of the County's Strengths, Weaknesses, Opportunities, and Threats (SWOT) will be created, and potential solutions to issues identified within the County will be provided for policymakers, stakeholders, and academics.

Douglas County covers about 456 square miles (The United States (US) Census Bureau (CB),(US-CB) **2**024). Douglas County was one of the original thirty-three counties created with the founding of Kansas and named after a United States Senator who supported the Kansas-Nebraska Act, Stephen A. Douglas (Legends of Kansas, 2024). The County was heavily involved in disputes related to the Kansas-Missouri Border War from 1854 – 1859 and the American Civil War from 1861 – 1865 (Legends of Kansas, 2024). Focusing on the economy, it is of economic benefit to identify the County's trading partners.
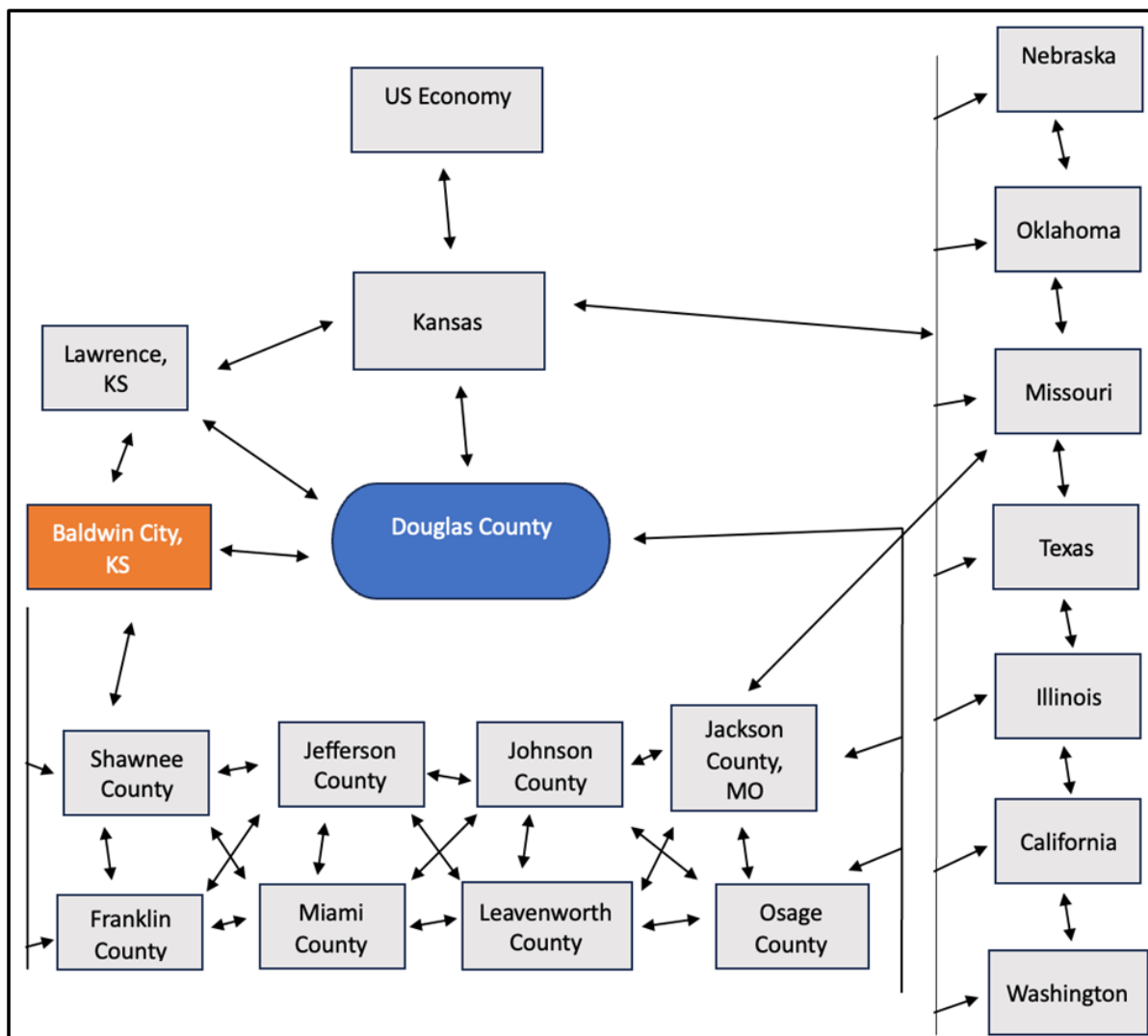

Figure 1: Douglas County Regional Connective to Neighboring Communities
Source: Authors' Creation.

Figure 1 shows the regional connective to neighboring communities according to DataUSA as of 2021 (DataUSA, 2023).

2. Literature Review

According to (Brown, 2006), Location Quotient (L.Q.) is a relevant tool for understanding the dynamics of an industry's exporting and employment strengths. The author states that L.Q. identifies export areas versus import areas, citing 1.25 as a threshold to where that industry can be considered an exporter (Brown, 2006). L.Q. is also valuable for identifying specific sectors within more significant demographics, such as nations or states, distinguishing how individual places can struggle with things considered to be the overall strengths of the region (Brown, 2006). Osiobe, 2018 provides a structural guideline for an in-depth analysis of a county and the strengths presented when using L.Q. to measure industry strengths. Focusing on industry employment size and changes can guide how policy and county-wide changes can create economic strengths from perceived weaknesses (Osiobe, 2018).

Pominova, 2022 writes about the consistency of using location quotients as a measurement and its difficulties and setbacks. Location quotients were said to be best utilized when measuring large areas with sufficient data to describe that region fully. Patrick, 2018 defines essential versus nonbasic industries using location quotient methodology and outlines how to interpret values produced by an L.Q. analysis. An L.Q. of less than one is said not to meet the local consumption and thus must reach outside the economy to satisfy the demand (importing from the external market). An L.Q. of one means the industry's production is at par with the regional market. An L.Q. greater than one shows a surplus in production and can support exporting their goods and services to other regions (Patrick, 2018).

3. Empirical Approach

The analytical measurement used to investigate Douglas County's strengths and weaknesses within its economy will be an economic base analysis. The particular analysis employed will be the L.Q., which shows how concentrated a specific industry or occupation is within a larger subset of data. The analysis timeline will be between 2014 and 2021, broken up among North American Industry Classification System (NAICS) employment categories compared to Kansas and the United States. At the city and county levels, the NAICS codes go to five digits, but at the state and federal levels, they stop at four, creating fewer specific industries and becoming slightly more generalized.

L.Q. will be used to identify industries in Douglas County that are considered both nonbasic and basic. In our study, a nonbasic industries provide services to the economy while exporting from outside the economy, while basic industries are potential exporters and can be considered an economic strength (Brown, 2006).

Equation Specification:

LQ_i	LQ_i Interpretation
Greater than (>1)	Basic industry
Equal to (=1)	Employment satisfies local consumption
Less than (<1)	Nonbasic industry

$$Kansas\ Base = {Douglas\ County\ NACIS}/{Kansas\ NACIS}$$

$$\dots\dots\dots\dots(1)$$

$$United\ States\ Base = \frac{Douglas\ County\ NACIS}{United\ States\ NACIS}$$

$$\dots\dots\dots\dots(2)$$

$$LQ_i = \frac{(\frac{DC_i}{DC})}{(\frac{K_i}{K})}$$

................(3)

Where:

DC_i = Douglas County employment in a specific industry

DC = Total employment in Douglas County

K_i = State of Kansas employment in a specific industry

K = Total employment in the state of Kansas

$$LQ_i = \frac{(\frac{DC_i}{DC})}{(\frac{US_i}{US})}$$

............(4)

Where:

DC_i = Douglas County employment in a specific industry

DC = Total employment in Douglas County

US_i = United States employment in a specific industry

US = Total employment in the United States

4. Results

Table 1: Location Quotient of Douglas County (Kansas Base) for 2014-2021

Industry	2014	2015	2016	2017	2018	2019	2020	2021
Active-Duty Military	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agriculture, Forestry, Fishing and Hunting, and Mining	0.39	0.41	0.36	0.36	0.40	0.43	0.36	0.35
Arts, Entertainment & Recreation and Accommodation & Food Services	**1.41**	**1.46**	**1.37**	**1.37**	**1.40**	**1.44**	**1.42**	**1.43**
Construction	0.80	0.76	0.75	0.70	0.70	0.70	0.79	0.70
Educational Services, Health Care & Social Assistance	**1.30**	**1.27**	**1.25**	**1.27**	**1.21**	**1.20**	**1.19**	**1.21**
Finance & Insurance, and Real Estate, Rental & Leasing	0.89	0.96	0.94	0.99	0.93	0.92	0.91	0.91
Information	**1.33**	**1.31**	**1.36**	**1.21**	**1.10**	**1.10**	**1.04**	0.83
	0.54	0.52	0.54	0.53	0.59	0.63	0.60	0.67

Other Services, Except Public Administration	**1.18**	**1.08**	**1.14**	**1.15**	**1.22**	**1.21**	**1.30**	**1.21**
Professional, Scientific & Management, and Administrative & Waste Management Services **1.19**	**1.23**	**1.14**	**1.15**	**1.13**	**1.08**	**1.18**	**1.23**
Public Administration	0.77	0.84	0.97	0.97	0.94	0.96	0.83	0.80
Retail Trade **1.08**	**1.08**	**1.14**	**1.15**	**1.20**	**1.17**	**1.14**	**1.08**
Transportation & Warehousing, and Utilities	0.56	0.58	0.66	0.64	0.65	0.70	0.78	0.81
Wholesale Trade	0.67	0.68	0.64	0.60	0.69	0.66	0.64	0.62

Source: Authors' calculation

Table 1 shows the L.Q. results of Douglas County compared to the state of Kansas, with basic industries highlighted in green, potential basic industries in orange, and nonbasic industries in grey. Mostly, all basic industries maintained their status throughout the period (2014-2021) other than information, which became potential basic in 2021. Other basic industries are as follows:
- Arts, Entertainment & Recreation and Accommodation & Food Services
- Educational Services, Health Care, and Social Assistance
- Other Services, Except Public Administration
- Professional, Scientific & Management, and Administrative & Waste Management Services
- Retail Trade

Additionally, a Porter cluster analysis will be created based on the data for Douglas County to represent the shape of its overall economy. According to (Osiobe, 2018), an assistant professor at Baker University, industry clusters "are groups of similar and related firms in a defined geographic area that share common markets, technologies, and worker skill needs, which are often linked by buyer-seller relationships" (Osiobe, 2018). Porter, 1998 states that business models are constantly changing, and businesses are not usually able to build solely horizontally or vertically within the market economy but build in a cluster mass (Porter, **1998**). Identifying where these clusters lie within an economy identifies the strengths in what they can create and do.

Table 2: Location Quotient of Douglas County (U.S. Base) for 2014-2021

Industry	2014	2015	2016	2017	2018	2019	2020	2021
Active-Duty Military	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agriculture, Forestry, Fishing and Hunting, and Mining	0.57	0.59	0.52	0.53	0.59	0.63	0.52	0.53
Arts, Entertainment & Recreation and Accommodation & Food Services	**1.17**	**1.20**	**1.16**	**1.16**	**1.19**	**1.24**	**1.24**	**1.28**
Construction	0.81	0.77	0.76	0.70	0.70	0.69	0.76	0.67
Educational Services, Health Care & Social Assistance	**1.39**	**1.36**	**1.32**	**1.35**	**1.29**	**1.27**	**1.26**	**1.29**
Finance & Insurance, and Real Estate, Rental & Leasing	0.80	0.86	0.84	0.90	0.86	0.85	0.86	0.87
Information	**1.41**	**1.37**	**1.41**	**1.18**	**1.03**	**1.03**	0.95	0.74
Manufacturing	0.64	0.63	0.65	0.64	0.71	0.77	0.77	0.84
Other Services, Except Public Administration	**1.09**	**1.00**	**1.05**	**1.04**	**1.09**	**1.10**	**1.18**	**1.11**
Professional, Scientific & Management, and Administrative & Waste Management Services	0.96	0.99	0.96	0.97	0.96	0.90	0.96	0.98
Public Administration	0.74	0.82	0.93	0.94	0.93	0.95	0.82	0.80
Retail Trade	**1.03**	**1.03**	**1.07**	**1.08**	**1.12**	**1.11**	**1.06**	**1.03**
Transportation & Warehousing, and Utilities	0.57	0.58	0.63	0.61	0.62	0.66	0.73	0.75
Wholesale Trade	0.69	0.72	0.69	0.64	0.77	0.73	0.68	0.65

Source: Authors' calculation

Table 2 shows the L.Q. results of Douglas County compared to the United States, with basic industries highlighted in yellow, potential basic industries in orange, and nonbasic in grey. The information industry was the only category that transformed from basic to nonbasic from 2014 through 2021. The results show that basic sectors are similar to Table 1. The basic industries are:

- Arts, Entertainment & Recreation and Accommodation & Food Services
- Educational Services, Health Care, and Social Assistance
- Other Services, Except Public Administration
- Retail Trade

Table 3: Porter Cluster Analysis for Douglas County (U.S. Base) 2014-2021

Industry	2021 L.Q.	Percentage change in L.Q. 2014-2021	Percentage of Employment 2021
Active Duty Military	0.00	0.00%	0.00%
Agriculture, Forestry, Fishing and Hunting, and Mining	**0.53**	**-6.11%**	**0.79%**
Arts, Entertainment & Recreation and Accommodation & Food Services	1.28	9.44%	11.81%
Construction	**0.67**	**-17.76%**	**4.16%**
Educational Services, Health Care & Social Assistance	**1.29**	**-7.56%**	**30.58%**
Finance & Insurance, and Real Estate, Rental & Leasing	0.87	9.13%	5.70%
Information	**0.74**	**-47.51%**	**1.42%**
Manufacturing	0.84	30.06%	8.65%
Other Services, Except Public Administration	1.11	1.18%	4.56%
Professional, Scientific & Management, and Administrative & Waste Management Services	0.98	1.90%	11.11%
Public Administration	0.80	7.67%	3.92%
Retail Trade	1.03	0.12%	11.45%
Transportation & Warehousing, and Utilities	0.75	32.86%	4.22%
Wholesale Trade	**0.65**	**-5.76%**	**1.64%**

Source: Authors' calculation

Table 3 and Figure 2 combine to show the Porter Cluster Analysis for Douglas County using a United States base to visualize specific industries' positioning. Industries above the horizontal axis have grown in employment in 2021 since 2014, while those to the right are the basic industries in 2021.
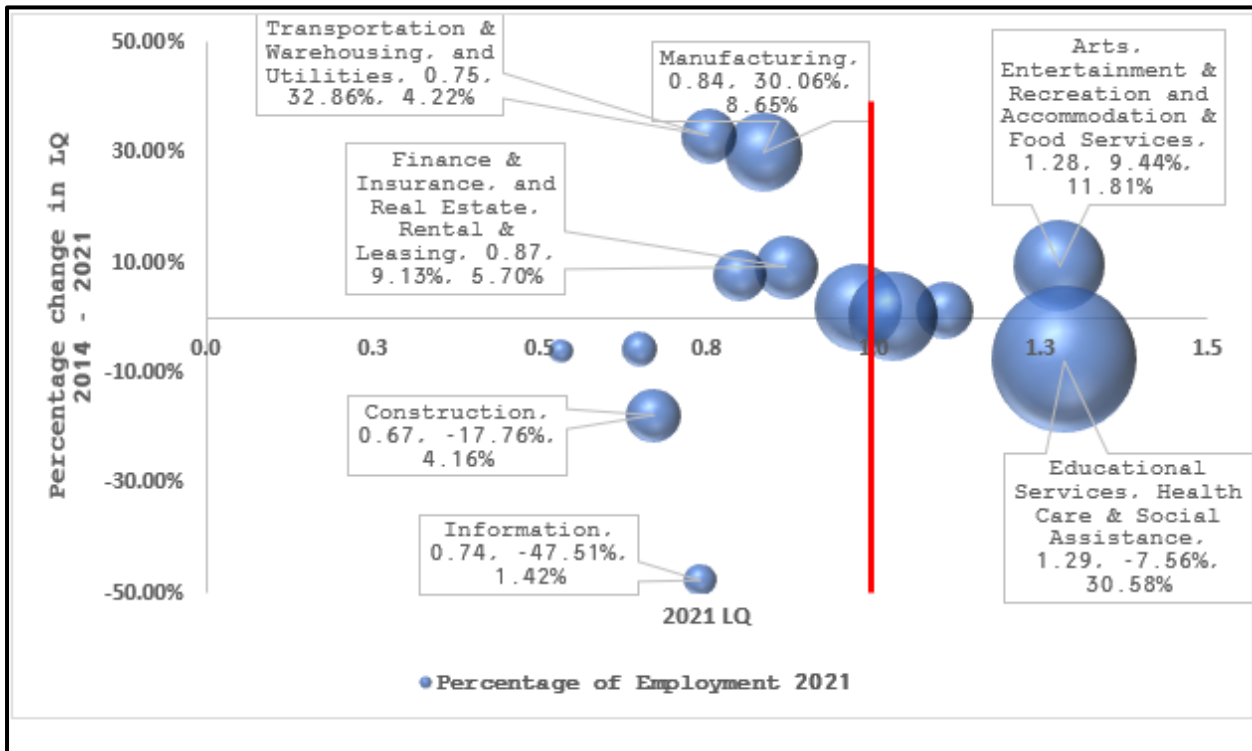
Figure 2: Porter Cluster Analysis for Douglas County (U.S. Base)
Source: Authors' Calculation

The size of the bubble deals with the size of relative employment in the Douglas County economy. Things to notice are the size of the "Arts, Entertainment, Recreation, and Accommodation & Food Services" and "Educational Services, Health Care & Social Assistance" bubbles and where they lay compared to the others. Those are the strong pillars of the Douglas County economy, and they seem to have a firm grasp of that position. Growing industries that are important to note are "Transportation & Warehousing, and Utilities," "Manufacturing," and "Finance & Insurance, real estate and, Rental & Leasing." These specific industries are essential in the continual shift with technology, and further reinforcements through government policy could boost them into the range of becoming basic industries. After researching Douglas County, a SWOT analysis was created through several sources, such as the Baker University Economic Development Office, documents published by the State of Kansas, and other sources that present information about the region. A SWOT analysis is helpful because it diagnoses things from internal (strengths and weaknesses) and external (threats and opportunities) vantage points. Partnering the information presented by the location quotient analysis, the cluster analysis, and the SWOT analysis leads to a position to provide suggestions for Douglas County moving forward.

Table 4: SWOT Analysis for Douglas County

Strengths	Weaknesses
- Health care industry - Education industry - Diversity driven by education - Arts and Food industry	- Infrastructure (sidewalks, power supply) - Limited affordable housing - Rural problems with nutrition - Construction and information industries
Opportunities	**Threats**
- Interest rate adjustments - Notoriety with Kansas University athletics	- Lack of farming compared to neighboring areas

- Offering move programs and business loans to attract people/businesses	- Growth of the Kansas City Metropolitan area - Shifting education mindset within American culture

Source:(Osiobe & Joseph, 2023; Osiobe & Dobson, 2023; Osiobe & Ruiz, 2023; Osiobe & Stright, 2023)

The strengths of Douglas County are evident, with all pieces of evidence pointing to the education and healthcare industries as their biggest strengths. Osiobe & Dobson, 2023 analyzed the workforce size by industry comparisons between Baldwin City, Douglas County, and the state of Kansas to identify trends. The authors cited education and health care as strong pillars of the economy. Osiobe & Ruiz, 2023 employed the L.Q. analysis. Their results showed that in Baldwin City, the health care, education, and arts/food industries all qualify as basic industries, showing their importance in that community. Furthermore, DataUSA shows the population breakdown of Douglas County by ethnicity for 2021; most residents are white (77.4% of around 92,000 people) (DataUSA, 2023). Looking at the student diversity available, 29.8% of the degrees awarded in Douglas County in 2021 went to non-white people, showing that although not massive, there is an increase in the diversity of students compared to the overall population, which can be attributed to the university in the area Baker University (DataUSA, 2023).

The L.Q. and Porter cluster analysis highlights weaknesses in Douglas County, primarily centered around the construction and information industries and their relative decline. In the eight years covered by the study, the construction and information industries have experienced a 17.8% and 47.5% decrease in employment, respectively. Douglas County has areas that struggle with a lack of infrastructure, such as the lack of energy creation and neglect of sidewalks, which are issues noticed by residents (Osiobe & Ruiz, 2023). Osiobe and Joseph, 2023 found that population fluctuation in Baldwin City that limited affordable housing is one of the economy's most significant issues. As Baldwin City is a smaller part of Douglas County, this issue is not far from the overall scope of the current expensive housing market that the United States is dealing with. The most significant weaknesses of the County currently are (but are not limited to) "limited safe and affordable housing," "inadequate transportation linking people to services, jobs, and recreation," and "lack of access to affordable, healthy foods" (Collie-Akers, **2012**). If Douglas County could implement a form of transportation that can provide trustworthy and reliable transit between Lawrence and its smaller communities (such as Baldwin City or Perry), it would help alleviate some of the concerns. Other measures to combat said problems are to create competition within these smaller towns by attracting larger retail stores or additional markets to compete against the high prices of these individualized sellers. When buyers have choices, ideally, prices would fall for desired healthy goods that would benefit the residents of these communities outside of Lawrence.

Douglas County's overall opportunities to improve the economy would be to address some of the identified issues that have slowed the creation of new businesses in the area. Giving more favorable and affordable business and individual interest rates would be a step in the right direction. Osiobe and Dobson, 2023 highlight the struggles of the financial industry in Douglas County as consumer preferences have shifted from physical bank locations to mobile banking (Osiobe & Dobson, 2023). In the interest of attracting outsiders to Douglas County, financial institutions should consider offering a higher interest rate to investors on finances kept within county lines to increase the amount of liquid capital available to them and, ideally, reinvest in the community. It can be risky, as an increase that is too high can cause a collapse. Still, if financial institutions could attract some of that money that has left and gone "digital," it could benefit the community when banks can give back. Another opportunity to improve Douglas County would be offering financial literacy programs at a discounted rate through partnering institutions. With the resources and coursework already created at universities (like Baker University), why not have local government providing access or, at the very least, promoting these programs to encourage smart money habits and techniques that can help any citizen regardless of occupation?

Another potential opportunity for Douglas County is the recent rise to prominence of some Kansas University athletic teams. On a macro scale, it is easy to understand that Kansas University is the backbone of the Douglas County economy, highlighted by the 35.9 million dollars the university spent on research-related spending within Douglas County in 2022 (Paget, **2023**). As sports are one of the main attention-getters for the average consumer,

the additional attention that the university's Football teams are attracted nationally can create an advertising effect for the region if appropriately executed. If local government could create attractive media commercials to attract businesses and consumers to explore Douglas County on local and potential national broadcasts, it could increase population and business retention. By creating affordable housing, the government can increase its population and reduce the number of college students leaving the area after graduation, which the County can benefit from on a larger scale (Osiobe & Joseph, 2023). The authors also found that young people are likelier to stay local to their college location if affordable housing options have proper socialization and competitive employment opportunities. As shown by the L.Q. data about employment opportunities, investments into the declining fields (highlighted in yellow in Table 3) can help incentivize young graduates to consider staying local in Douglas County and strengthening the region. According to (Osiobe & Straight, 2023), It is recommended that governments offer incentive programs or tax breaks to startup companies to make starting a business in the area more appealing. Suppose Douglas County were to take some of these suggestions and put them to use in declining fields. In that case, it can help balance their economy with the industries that are losing employment while granting a higher chance at retaining talent created at local institutions.

Talking about some of the threats that Douglas County faces, looking at the economy of Kansas, it is noticeable that Douglas County has a significantly lower amount of farming and agriculture. Agriculture-related employment is around 18% of Kansas' employment, but in Douglas County, it is only 1% (Osiobe & Dobson, 2023). It is noted that Douglas County does not have the same amount of land dedicated to farming as other counties within the state. Still, if there were to be an increase in the price of importing foods, Douglas County may be hit harder than neighboring counties constructed differently. Douglas County residents and officials should be mindful of the growth of the Kansas City Metropolitan (K.C.) area as it continues to grow in population and diversity. With many attractions and businesses deciding that the geographically local area is a better place to create a business or raise a family, the County needs to find ways to stick out to K.C.'s residents. With nearly 3 million people within an hour of Douglas County, it would be wise to find partnerships with the K.C. area rather than try to compete with it.

Arguably, the most critical threat that Douglas County faces is the shifting mindset of the American youth who are deciding to go to college less than they were before. Richard Fry at the Pew Research Center conducted a 2022 study on the enrollment rates of high school graduates and found an 8% and 4% decrease in enrollment rates among men and women, respectively, from where they were in 2011. Although more high schoolers graduate yearly, fewer are deciding to go the traditional education route due to inflating costs, lower attention spans, and lack of desire (Fry, **2023**). With so much of the attraction related to Douglas County attached to its universities, declining enrollment rates could drastically affect the economy. Douglas County needs to be wise in aiding these institutions in monitoring costs to mitigate the risk of students deciding that the education is not worth the financial burden.

5. Conclusion

Douglas County possesses many great traits and opportunities that outrank other Kansas communities. The education and healthcare industries are the most renowned fields within the County. At the same time, educational institutions are instrumental in furthering the area's development and stimulating economic growth—the L.Q. measures highlight industries such as manufacturing and financial institutions, which are growing steadily. In contrast, the construction and information industries need support. A Porter cluster analysis shows the visual position of specific industries in Douglas County compared to the United States. Douglas County has the opportunity to address some of its identified problems by implementing transit to and from Lawrence and inviting businesses to help populate smaller cities. Proper county initiatives and planning can neutralize affordable housing concerns and a relative weakness in agriculture compared to the state. This paper can help policymakers, academics, and stakeholders by bringing attention to underaddressed issues, residents of Douglas County by showing their strengths and shortcomings, and academia by showing what a plan of this structure can do for comparable communities. If Douglas County were to help strengthen identified industries and nurture them into basic industries, it could appeal to outsiders, help grow their population, and bolster the region for decades.

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