

Unveiling growth potential: maximizing taxes and land use through revenue per acre analysis in a great county in the Midwest.

MAPPING VALUE IN SEDGWICK COUNTY KANSAS

Unveiling growth potential: maximizing taxes and land use through revenue per acre analysis in a great county in the Midwest

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Land, as the most fundamental resources for local governments, plays an essential role for fostering the economic prosperity and ensuring the sustainability of the community. For a local government to thrive, it is crucial that the utilization of land is economically productive. This entails that the activities occurring on the city's land generate sufficient revenue to sustain the necessary infrastructure and services, thereby allowing the community to prosper and sustain over time.

In this pursuit, local governments often exhibit a preference for policies that promotes new development as it is generally regarded as an engine to introduce new jobs, residents, and streams of income. However, the positive economic and fiscal perspectives of such development projects might overlook some challenges and consideration through a geospatial lens.

The net fiscal impact of development, defined as the difference between tax revenues generated and the government's costs for infrastructure and services, depends significantly on the nature and location of development. This fact underscores the necessity for local governments to engage in financially informed decision-making regarding land use.

Traditionally, land use planning has centered on legal compliance, managing building codes, accommodating new development demands, and meeting goals related to mobility, parking, and green spaces. While these objectives remain important, they do not fully consider the fiscal and spatial implications of land use policies. The revenue per acre analysis can potentially unfold economic prosperity and growth, considering the total land size within local government's jurisdiction. This approach offers policymakers insights into the efficiency and productivity of various zones or districts. Subsequently, it enables policymakers and local authorities to identify areas of improvement, formulate targeted strategies, and foster sustainable economic growth within their communities. This report underscores the importance of revenue per acre analysis, particularly focusing on property tax and sales tax generated in relation to land size in Sedgwick County, Kansas. Furthermore, it discusses recommendations aimed at addressing the financial gap and enhancing county's revenue streams to support its sustainable economic growth.

REVENUE STRUCTURE IN SEDGWICK COUNTY

Property Tax

Property tax is one of the main sources of revenue for the county. The revenue from the Property Tax in Kansas is utilized locally to fund various projects and services within the county. These funds primarily support school districts, public transportation systems, infrastructure development, and other municipal government initiatives. In the Sedgwick County, property tax is levied against the tangible assessed valuation of real and personal property. One mill of taxation is equal to \$1 on each \$1,000 of assessed valuation (Sedgwick county, 2022), and assessed value in Sedgwick County is calculated by multiplying market value by the county's appropriate assessment ratio[1].

Among the 105 counties in Kansas, Sedgwick County ranks 16th in terms of median property taxes, with an annual amount of\$1,465.00 (Figure 1). Notably, Sedgwick County exhibits lower property taxes than several other counties in Kansas. This is attributed to its median home value of \$117,300.00, which is below the statewide median property value in Kansas, \$125,500.00.

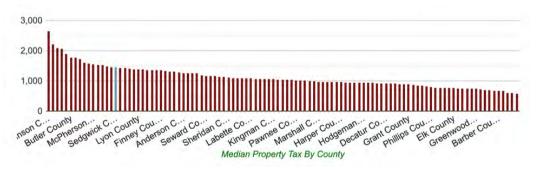


Figure 1: Median Property Tax[2]

^{1.} Real property is classified into subclasses, which determine which ratio is used: 11.5% for residential, 25% for commercial and industrial, 30% for agricultural and 12% for vacant.

^{2.} Due to the assessment and appraisal system in Kansas, comparing property tax rates between areas and other states is challenging. To address this, the effective tax rate, calculated as 1.25% of the median property home value, is applied to determine the median annual property tax payment. This figure is downloaded from Property Tax 101. https://www.propertytax101.org/kansas/sedgwickcounty

REVENUE STRUCTURE IN SEDGWICK COUNTY

Sales Tax

The Kansas retailers' sales tax, enacted in 1937 at the rate of 2%, has incrementally increased to its current rate of 6.5%, as per K.S.A. 79-3678. Both counties and cities in Kansas have the option to levy a local sales tax. Counties are capped at a general sales tax rate of 1% requring legislative approval for any rate exceeding the limit. Meanwhile, cities are authorized to impose a maximum sale tax of 3%. The state and local tax rate when both added together is called the combined sales tax and the law requires retailers selling in Kansas to collect it from customers. Even though Kansas and Sedgwick County have set their sales tax rate at 6.5% and 1% respectively, the maximum sales tax rate can reach to 10.5% due to the additional city rate, as detailed in Table 1

City	Sales Tax Rates	Population
Andale	7.50%	941
Bel Aire	7.50%	8,262
Bentley	7.50%	560
Cheney	8.0%	2,181
Clearwater	7.50%	2,653
Colwich	7.50%	1,455
Derby	8.50%	25,625
East Borough	7.50%	756
Garden Plain	8.50%	948
Goddard	10.50%	5,084
Haysville	8.50%	11,262
Kechi	7.50%	2.217
Maize	7.50%	5,735
Mount Hope	7.50%	806

City	Sales Tax Rates	Population
Mulvane	8.50%	6,286
Park City	7.50%	8,333
Peck	7.50%	Unavailable
Sedgwick	7.50%	1,603
Valley Center	8.50%	7,340
Viola	7.50%	115
Wichita	7.50%	397,532



Table 1. City Sales Tax Rate

REVENUE STRUCTURE IN SEDGWICK COUNTY

Sales Taxes Composition

The North American Industry Classification System (NAICS) is a numeric coding system used to classify and measure businesses in the United States (Appendix 1). Federal agencies use NAICS codes for the purpose of collecting, analyzing and publishing statistical data related to the U.S business economy. In this study, the first two digits of NAICS codes signify the primary business sector driving sales tax contributions in Sedgwick County, providing insights into potential revenue trends from 2015 to 2022.

Figures 2 and 3 depict Sedgwick County's primary contributors to sales tax revenues based on first two digits of NAICS Codes, comprising businesses in retail trade (44-45), accommodation and food services (72), utilities (22), information (51), wholesale trade (42), and construction (23), in 2015 and 2022. In 2015, these major business entities collectively represented about 90% of the county's total businesses, with the remaining businesses[3], categorized under different NAICS codes, contributing only 10.13% to the sales tax revenue. In 2022, the sales tax revenues for each of the six major business categories increased individually. However, despite this growth, the overall sales tax revenue experienced a slight decrease, accounting for approximately 89%. Meanwhile, businesses falling outside these major NAICS codes covered the remaining 11% of the sales tax revenue.

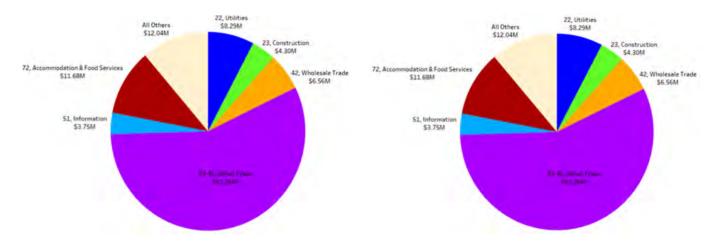


Figure 2. Sales Taxes Composition in 2015

Figure 3. Sales Taxes Composition in 2022

SEDGWICK COUNTY LAND USE POLICY

In Kansas, land use policies are decentralized to county and city governments. The planning and zoning departments at both the city and county level cities and counties oversee land management and policies under the guidance of city councilors and county commissioners. Each county or city has the authority to prepare a comprehensive plan, which serves as a blueprint for land use guidelines aligning with the overall physical and social development objectives of the city and county.

In Sedgwick County, a collaborative effort between the county and the city of Wichita resulted in the creation of the joint comprehensive plan- Community Investment Plan 2015-2035. This plan builds upon the foundation laid by the 1993 comprehensive plan. The purpose of this plan is to guide policy formulation, establish principles, and outline future land use policies. Additionally, specific land use plans for particular areas or neighborhoods are referenced for detailed guidance on any specific location (e.g., Wichita: Places for People). These land use plans serve as an infrastructure investment decision-making framework, facilitating informed choices regarding public investments that align with the community's highest priority needs and preferences, as well as its willingness to allocate resources toward public infrastructure.

The traditional land use policy typically focuses on regulations and planning, often overlooking comprehensive assessment of revenue and expenditure and its impacts on the land use patterns. This oversight results in a significant financial gap (Appendix 2), presenting a substantial challenge for the city and county to effectively implement necessary infrastructure developments. This issue contributes to the difficulties many governments face in funding infrastructure maintenance and replacement.

To address the long-term structural revenue and expenditure imbalances faced by local governments, a shift in perspective is needed, calling for a more deliberate approach to land use decisions. In this report, we will demonstrate an innovative approach that impacts land use decisions through revenue generation on a per-acre basis.

This approach often aligns with the intuitive desire of city leaders to attract affluent residents with the best interests of a city trying to maintain a balanced budget and make the most of its by zoning for large, high-value properties. However, this perspective overlooks a critical factor: valuable, occupy significant amounts of land. This allocation of land resources may not align In evaluating a city's economic landscape, it's common to evaluate property values in total, considering individual assets like a golf course valued at \$10 million or a home worth \$500,000. land use efficiency. The problem arises when those big, expensive houses, while individually finite land resources. Shifting the focus to per-acre value introduces a paradigm shift in how we assess a city's prosperity and land utilization. This approach moves beyond simply assessing the aggregate value per acre. This metric measures how efficiently a city utilizes its limited land resources. It particularly crucial in densely populated urban environments where land is a finite and of properties to a more nuanced examination of land use efficiency. This concept challenges conventional views about which parts of a city are thriving. To draw an analogy, consider how car owners care about miles per gallon (efficiency) rather than the total miles they can drive on a tank of gas (quantity). Similarly, cities also need to prioritize understanding highlights the importance of maximizing the economic yield from every acre of land, which is

Analytical Method

informative medium. Geographic Information System (GIS) is adopted to integrate various allowing for a spatial representation of revenue-related information. In Sedgwick County, sales provide detailed information on property tax and sales tax generated by individual properties layers of information onto maps. This involves overlaying financial data onto geographic data, tax and property tax are two main revenue sources. The project relies on data sources that Public finance typically relies on spreadsheets and graphs to present numbers. However, when it comes to understanding revenue per acre, geographic maps offer more intuitive and within Sedgwick County.

These data are collected from the county property appraisal office, county treasure office, and county division of finance. The analysis involves a parcel-by-parcel examination of revenue generation. Each parcel's financial data, including property tax and sales tax contributions, is considered in relation to its acreage. To calculate revenue per acre for each parcel, the financial value (property tax and/or sales tax) associated with that parcel is divided by its acreage. This calculation yields a specific value that indicates how much revenue is generated for each acre of land.

Once the revenue-per-acre values are computed for each parcel, these values are then visually represented using GIS technology on the map (Figure 4). The creation of visual representations, where different colors and height of the property are used to indicate varying levels of revenue per acre across the county. The resulting maps and data visualizations can provide valuable insights for local governments and policymakers. They can identify areas with high revenue generation per acre, which is indicative of efficient land use or valuable economic activity. Armed with this spatial understanding of revenue generation, policymakers can make more informed decisions about zoning, land use, economic development, and taxation policies. The data can guide efforts to balance the budget, stimulate economic growth, or allocate resources more effectively.

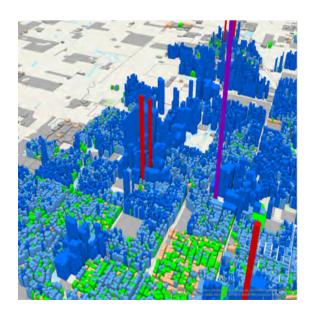


Figure 4. Illustration of Revenue Per Acre

Analysis Results

From the value-per-acre perspective, local governments can make more informed decisions about zoning, land use, and development policies. This approach helps them work towards achieving a balance between attracting affluent residents and optimizing land use for the overall benefit of the community and its financial stability. Figure 5 is a map of property tax[4] per acre collected by the Sedgwick County government in 2022. The map functions analogously to a bar chart, where areas with higher elevations represent greater revenue generation per acre. On this map, it is evident that property tax revenue per acre is generally higher in the downtown and east side of the county compared to the west and south side. In this development pattern, the heightened regions subsidize the communities with lower property tax.

However, an intriguing insight emerges when sales taxes [5] are added to the analysis, as shown in Figure 6, the west side and south side of the county exhibit increased productivity. The heightened regions on these two maps correspond to higher revenue per acre, allowing for a clear and informative visualization of the economic contributions from different locations within the county. In addition, the differences in the heightened regions suggest the necessity to shift focus from emphasizing total amount of revenue to analyzing revenue per acre. The following analysis will provide a more in-depth examination of the revenue per acre derived from property tax and sales tax.



^{4.} The property taxes include levies by all the tax units on that parcel.

^{5.} Sales tax is the 1% countywide sales tax before distributing to municipalities.

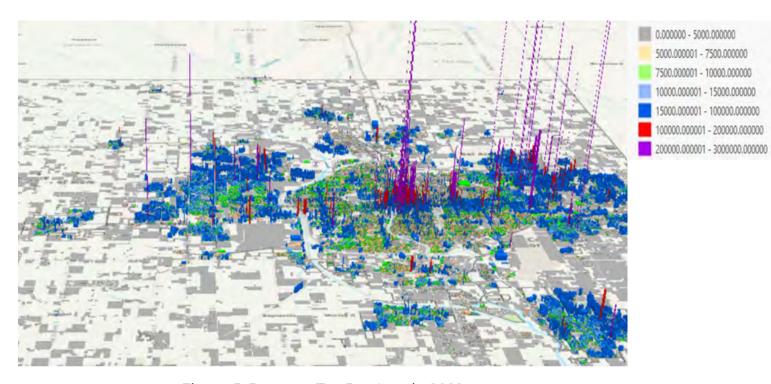


Figure 5. Property Tax Per Acre in 2022

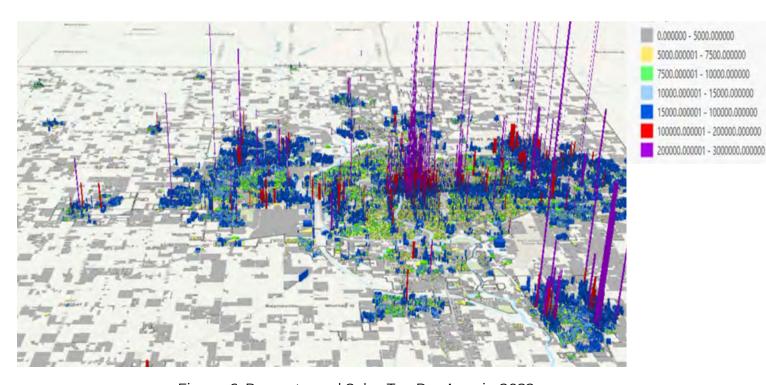


Figure 6. Property and Sales Tax Per Acre in 2022

Property Tax

Figures 7 and 8 present a comprehensive overview of the property tax revenue per acre in Sedgwick County, highlighting its trends observed from 2015 to 2022. The data reveals an overall increase in property tax revenue per acre across the county. Specifically, the central downtown area, as well as the east and west bounds of the county, exhibit growth trends in property tax revenue per acre over this period. Additionally, the city of Derby, situated at the southern end of the county, demonstrates an upward trajectory in property tax revenue per acre as well.

The observed increase in property tax per acre within Sedgwick County can be directly attributed to the substantial rise in property values across the region. This increase serves as an indicator of the economic growth and development witnessed throughout the county from 2015 to 2022. A closer examination of this trend also reveals a correlation with the county's strategic policy focuses on land use development. The central downtown area and the eastern and western boundaries of the county, alongside the city of Derby in the south, reflect county's emphasis on fostering development and maximizing the utility of land resources.

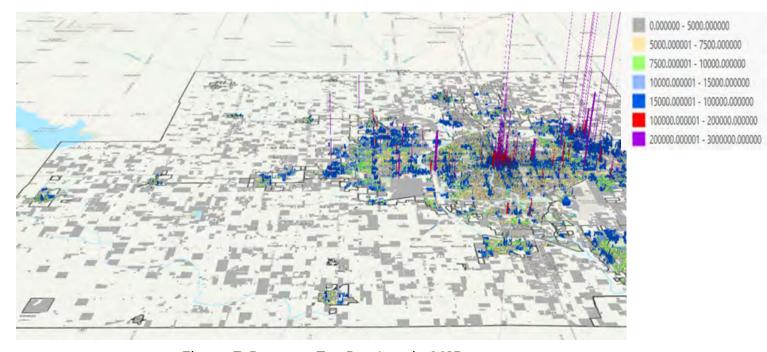


Figure 7. Property Tax Per Acre in 2015

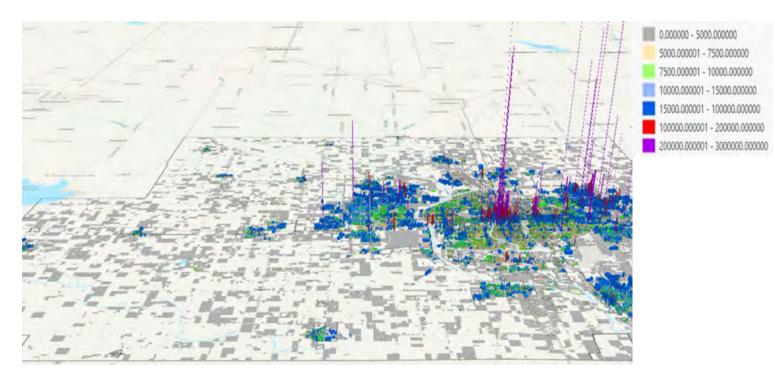


Figure 8. Property Tax Per Acre in 2022

The county property tax is distributed among multiple local government units, such as school districts, municipalities, and fire districts, etc. This distribution is based on the mill levy rate applied to the assessed value of the property. Figures 9 and 10 exhibit the proportion of property tax allocated to the county based on its mill levy rate in 2015 () and 2022 (), respectively. Upon visualizing these two figures, a consistent trend emerges: the downtown area consistently maintains a relatively higher revenue per acre over the seven-year period. This can be attributed to the higher density of land use in this downtown region. Furthermore, there has been a significant increase in property tax per acre in the east, west, and south areas of the county. This also suggests a shift in the county's land-use development strategies over the years.



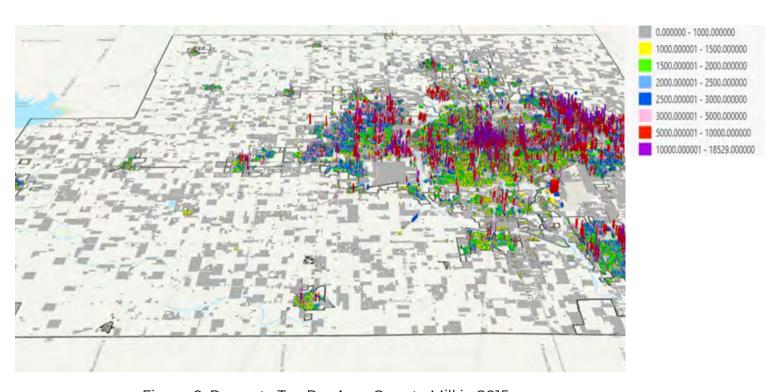


Figure 9. Property Tax Per Acre County Mill in 2015

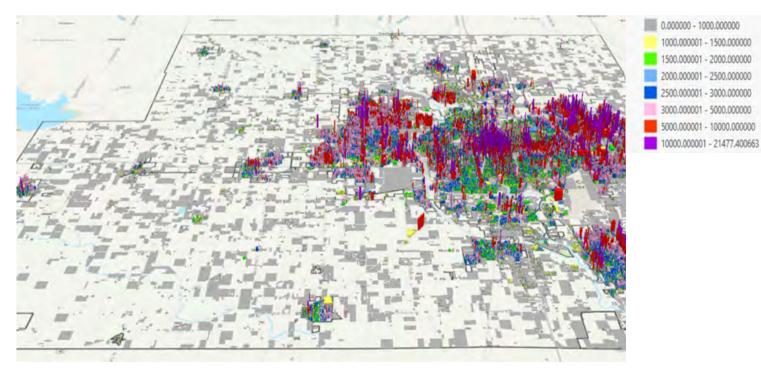


Figure 10. Property Tax Per Acre County Mill in 2022

Sales Tax

Figures 11 and 12 provide a visual representation of the sales tax revenue per acre within Sedgwick County from 2015 to 2022. These figures depict a generally stable trend in sales tax per acre over this period, without significant fluctuations. The consistent nature of sales tax revenues suggests a degree of economic stability within the county.

Despite the overall stability, a notable anomaly stands out-the closure of Walmart in the city of Clearwater after 2015. This significant event is exhibited in the figures, where the highest bar in the city of Clearwater has disappeared from the map in 2015. The absence of this prominent bar underscores the direct impact of significant commercial closures on sales tax revenues, emphasizing the sensitivity of local economies to key business establishments.

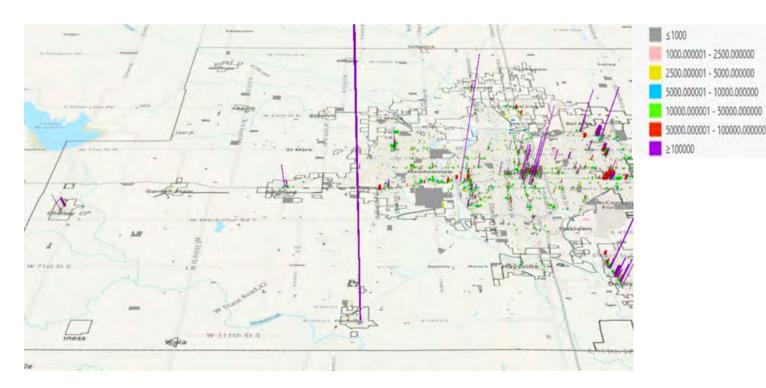


Figure 11. Sales Tax Per Acre in 2015

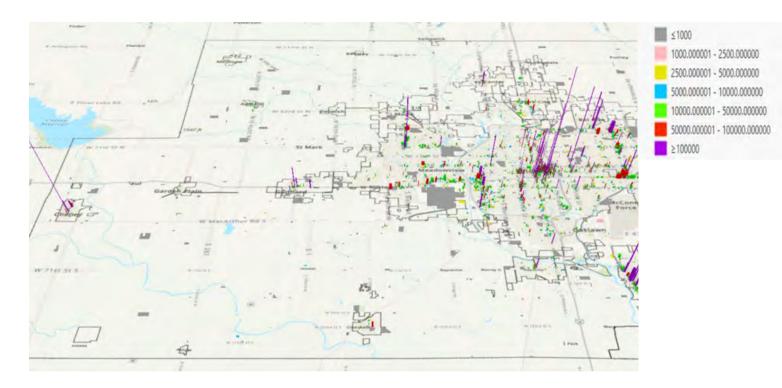


Figure 12. Sales Tax Per Acre in 2022

Figures 13 and 14 illustrate the trend in sales tax per acre for the six (6) primary businesses category in 2015 and 2022. These visual representations underscore a consistent growth in sales tax over the specified years. Notably, within the various business sectors, retail trade emerges as the leading contributor to sales tax revenue, with its development concentrated on the east side of the county. Following closely is the sector of accommodation and food services, distributed across the east, west, and downtown areas. Meanwhile, the north and south regions of the county are identified as focal points for the construction business.





Figure 13. Sales Tax Per Acre by Category in 2015

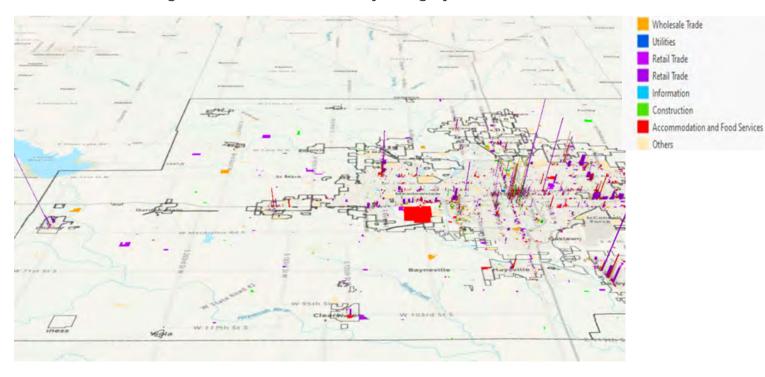


Figure 14. Sales Tax Per Acre by Category in 2022

Main Revenue Sources: Property and Sales Tax

Figures 15 and 16 illustrate the combined revenue per acre derived from property tax and sales tax, mirroring the trend observed in property tax per acre. This alignment can be attributed to the consistent progression of sales tax over time. However, the predominant factor influencing the upward trajectory of revenue per acre appears to be the increase in property tax. While the trajectory of sales tax development remains relatively stable, it is the rise in property tax that emerges as the predominant driver for the observed growth in overall revenue per acre depicted in these figures. This observation also suggests a significant reliance on property tax as a source of revenue for the county.

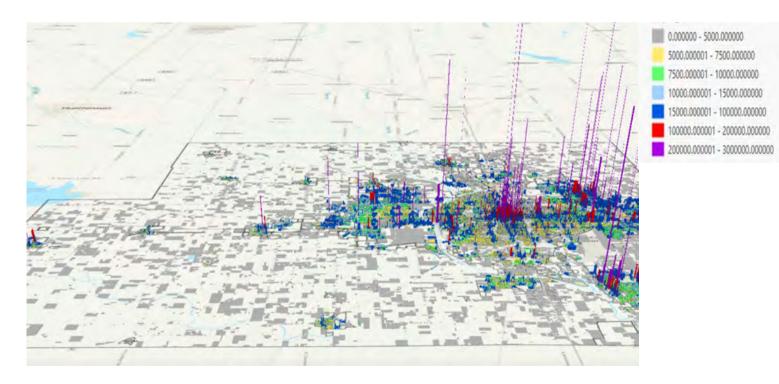


Figure 15. Property and Sales Tax Per Acre in 2015

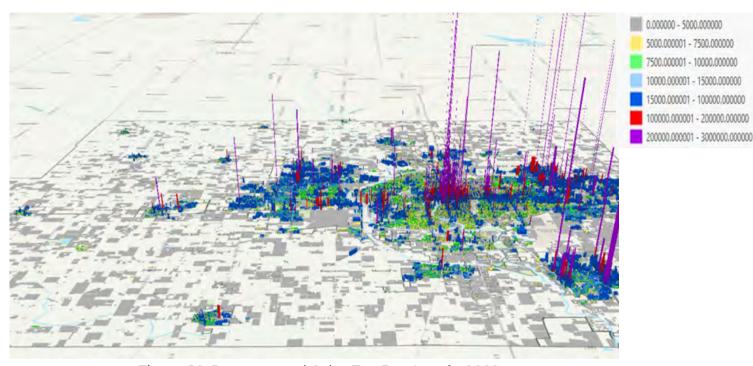
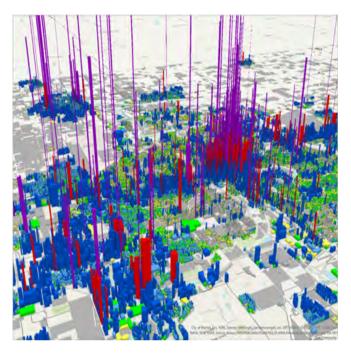
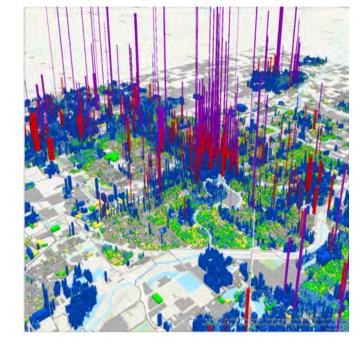


Figure 16. Property and Sales Tax Per Acre in 2022

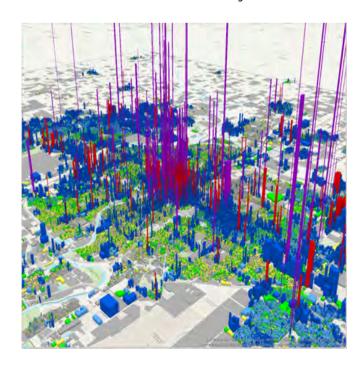
Figure 17 illustrates the revenue per acre within the county in 2022 across various orientations-Northeast (NE), Northwest (NW), Southeast (SE), and Southwest (SW). These maps reveal that the north part of the county and the east side exhibit comparatively higher revenue per acre. This pattern strongly implies more efficient land use in these particular areas. The elevated revenue figures in the north suggest that property development strategies contribute to a more effective utilization of land resources in this region compared to other orientations within the county. Furthermore, retail areas are concentrated on the east side of the county, coinciding with a higher density of residential properties. This spatial relationship indicates a symbiotic development, where the retail and residential sectors mutually facilitate each other's growth.



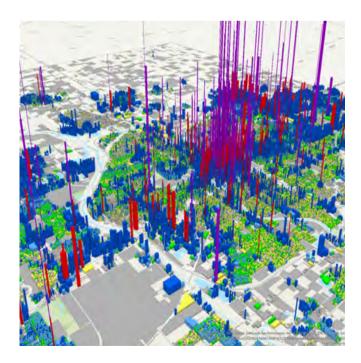
NE of the County



NW of the County



SE of the County



SW of the County

Figure 17. Property and Sales Tax Per Acre in 2022 from Different Orientation

Urban Infill Strategy

Infill development is a strategy that offers several advantages for local communities and governments. It involves enhancing the use of underutilized parcels within established urban areas. By revitalizing previously underused parcels, the county and municipality can collect property taxes and other taxes, such as sales tax, which contribute to its financial stability. Infill development is also a cost-effective approach. It capitalizes on existing infrastructure, including roads, utilities, and public safety services. Therefore, the cost of providing services to these newly developed parcels is relatively low compared to greenfield development on the outskirts of the city.

Underdeveloped or vacant properties often enjoy a subsidy in the form of low property valuations and, consequently, low property tax bills. Infill development removes this subsidy by developing these properties, increasing their value and tax contributions, and aligning more closely with the services, such as road maintenance and public utilities. Lastly, infill development frequently involves vertical construction, such as multi-story buildings. This efficient use of space not only maximizes the utility of the land but also tends to improve revenue per acre. This is evident in the revenue-per-acre maps, where areas with more vertical development tend to generate higher revenue.

An example of urban infill strategy is the Wichita Urban Infill Strategy. This strategy focuses on the Established Central Area (ECA) – comprised of the downtown core and its surrounding mature neighborhoods. In Figure 18, the parcels in red are vacant parcels in the ECA and its adjacent neighborhoods. The strategy focuses on 'areas of opportunity' — the most vacant and underutilized parcels. Infill development can reverse patterns of abandonment and decline. The areas of opportunity include vacant parcels, renter-occupied dwelling units, and infrastructure that are below standard, etc. This approach shows the potential of infill development to rejuvenate urban spaces, improve financial returns, and foster sustainable urban growth.



Figure 18. Vacant Parcels in Downtown Area

Understand Cross-Subsidization

Low-density development, characterized by properties with larger lots or more spacious layouts (as illustrated in Figure 19), often presents a fiscal challenge for local governments. This type of development typically does not generate sufficient revenue-compared to high-density area (Figure 20)-to cover the costs associated with building, maintaining, and replacing infrastructure like roads, utilities, and other public services required to serve the development. These costs can be substantial, particularly in areas with spread-out, low-density development.



To mitigate the financial gap resulting from low-density development, local governments may rely on cross-subsidization. Cross-subsidization in the context of local government finances occurs when the costs associated with developing or providing services in one area of a community are subsidized by the revenues generated in another area within the same jurisdiction. Cross-subsidization is a common fiscal strategy used by local governments to address the challenges posed by low-density development. While it can help balance budgets and provide services to less dense areas, it also raises issues of fairness and long-term fiscal sustainability.

When cross-subsidization is primarily aimed at covering the higher costs of services in one area, it often results in a reduction of the "net" revenue per acre. Cross-subsidization can also distort resource allocation decisions. Instead of resources being allocated based on the actual costs and benefits associated with specific areas or developments, they may be distributed unevenly, potentially leading to inefficiencies and inequities.

To address these concerns, local governments often strive to achieve a more equitable and fiscally responsible approach to land use planning and service provision. This may involve revising zoning and land use policies, conducting fiscal impact analyses for new developments, and exploring alternative revenue sources to ensure that the costs and benefits of development are appropriately distributed across the community. In addition, revenue per acre analysis can be utilized as a financial analysis tool for local government s in their land use planning



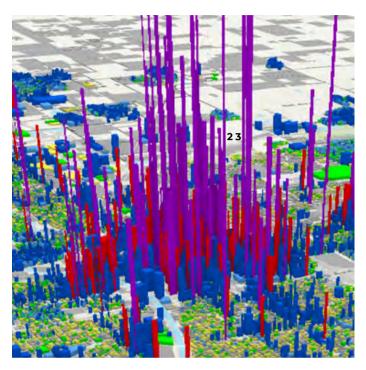


Figure 19. High Density Area

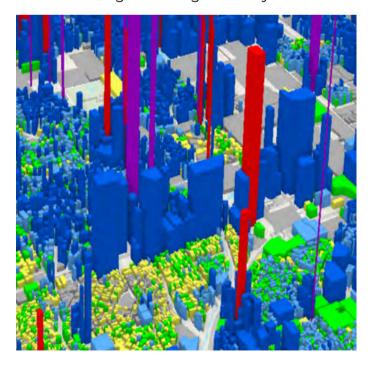


Figure 19. High Density Area

CONCLUSION

and expenditures. This report introduces an innovative approach, the Revenue Per Acre This study delves into the intricacies of Sedgwick County's land use policies, emphasizing the importance of reevaluating traditional approaches considering sustainable fiscal growth. The decentralized nature of land use policies in Kansas, with a focus on comprehensive plans, creates room to examine how the policies impact the growth of the local government's revenue Analysis, accelerating the conventional assessments of the county's fiscal growth by shifting the focus from total land values to per-acre value for efficiently using the land within the County.

Strategy as a policy suggestion, enabling financial sustainability through the development of use, economic development, and taxation policies. The analysis introduces the Wichita Infill development through the cross-subsidizing method as a fiscal strategy employed by the The concept of revenue per acre analysis, grounded in geographic information systems (GIS), analyzes and visualizes on a parcel-by-parcel basis the property tax and sales tax generated by individual properties within the county. The resulting maps enable policymakers to identify areas with high revenue generation per acre, facilitating informed decisions about zoning, land urban parcels. Additionally, it emphasizes the importance of low-density county. Overall, the findings suggest the county government to adopt innovative approaches to forecast fiscal health and integrate financial considerations into their land use decisions for sustainable economic growth. underutilized

CONCLUSION

Building on the insights gained from the Revenue Per Acre Analysis, a recommended subsequent study should focus on measuring the infrastructure costs in Sedgwick County and associating these costs with specific land areas. This study would involve a detailed assessment of the expenses incurred in constructing, maintaining, and upgrading key infrastructure components such as roads and bridges, water pipes, and wastewater treatment facilities. By quantifying these costs and allocating them to corresponding land areas, the study aims to provide a clearer understanding of the fiscal impact of infrastructure on different regions within the county. This approach would not only enhance the precision of fiscal planning but also inform decisions related to land use, zoning, and development, ensuring that infrastructure investments are strategically aligned with the county's long-term economic and environmental goals. Such a comprehensive analysis would be invaluable for policymakers in creating a sustainable and financially responsible framework for urban development and infrastructure management.

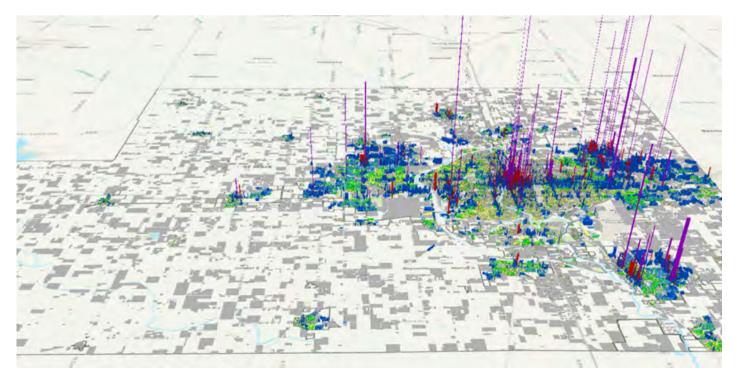


- 1. NAICS Codes employ a six-digit coding system, categorizing economic activities into 20 sectors—five focused on goods production and 15 on service provision. Each company is assigned a primary NAICS code, reflecting its main business line based on the highest revenue generated in the past year at a specified location. These codes cascade from 20 sectors to 96 three-digit subsectors, further dividing into 308 four-digit industry codes, 689 five-digit industry codes, and finally, 1,012 six-digit NAICS codes. In this study, the first two digits of NAICS codes signify the primary business sector driving sales tax contributions in Sedgwick County, providing insights into potential revenue trends from 2015 to 2022.
- 2. The infrastructure investment decision-making framework aims to close the long-term cost/revenue gap between currently planned future infrastructure expenditures and projected revenues. Three levels of evaluation are recommended for both new and replacement infrastructure projects, encompassing maintaining and replacing existing infrastructure, making enhancements, and expanding the current system. According to the revised Comprehensive Plan in 2022, there is a projected \$9-10 billion gap for plan implementation[7].
- 3. The following figures exhibit the sum of property tax and sales tax per acre from 2015-2022.





Appendix Figure 1. Property and Sales Tax Per Acre in 2015



Appendix Figure 2. Property and Sales Tax Per Acre in 2016



Appendix Figure 3. Property and Sales Tax Per Acre in 2017



Appendix Figure 4. Property and Sales Tax Per Acre in 2018



Appendix Figure 5. Property and Sales Tax Per Acre in 2019



Appendix Figure 6. Property and Sales Tax Per Acre in 2020



Appendix Figure 7. Property and Sales Tax Per Acre in 2021



Appendix Figure 8. Property and Sales Tax Per Acre in 2022