Exploring alternatives to selling farm ground under urban development pressures: A case study in Wichita, KS

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ABSTRACT

Farm ground is lost to development every year. If you live close to an urban area, you can see urban development creep out into the rural landscape in real time. Developers often come with deep pockets and seemingly endless resources. While the money may look attractive, exploring other options can help a farmer make a more informed decision. The purpose of this thesis is to provide a case study that evaluates tradeoffs and opportunity costs that agricultural producers face when they consider selling farm ground. The research focuses on counties in South Central Kansas that would be susceptible to development pressures from the Wichita area.

This case study explores four alternative options to retaining the land despite urban development pressures. Those options are selling the land, relocating the farm to a neighboring county, enrolling in the Conservation Reserve Program with the USDA, or finding a tenant to farm the ground. The Net Present Value (NPV) of the interest earned from the investment is calculated over a 10-year time horizon. The NPV is then calculated to find the best option. This case study can provide some insight into the loss of farm ground every year and could be a resource for a farmer who is considering selling his farm ground.

The results showed that relocating the farm to an adjacent county provided the best financial results, but there were more variables to consider. Factoring risk and liquidity, along with a person’s emotional tie to the ground they have potentially farmed for generations, doesn’t make the choice as clear-cut and easy to make. Also, the age of the farmer and what their financial goals are can also play a part in the decision-making

process. This study is helpful for any farmer who is feeling the pressures of urban sprawl or has been approached to sell their land. It allows them to look at the options available for generating income that may provide financial stability for the future.

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Hi Dad!

CHAPTER I: INTRODUCTION

1.1 Introduction

Thriving urban areas are popular spots for theatre, culture, nightlife, and vital transportation hubs throughout the country. In 2024, 86.4% of the U.S. population lived in metro areas, with those areas increasing by nearly 3.2 million since 2023, accounting for 96% of the nation's population growth (United States Census Bureau 2025). As urban areas grow, so does the need for more space. In 1920, over 50% of the population was considered urban for the first time (United States Census Bureau 2024). By 2010, nearly 81% of the US population was urban (United States Census Bureau 2022).

When an urban area reaches its capacity, these areas begin to expand into surrounding rural areas. Between 2000 and 2020, urban land area in the U.S. increased by 14%. Urban land area is 105,493 square miles, or 3% of total land area in the U.S., and is projected to more than double by 2060 (Center for Sustainable Systems, University of Michigan 2024). An urban landscape that moves into more rural areas is referred to as urban sprawl (Newton 2024). Urban sprawl can be a sign of city growth and a thriving economy. However, it can also raise concerns about the changing landscape and congested infrastructure. People living on the urban fringe can experience urban sprawl and watch the city around them change in real time. For people who live in the urban fringe, transitional zones, or landscapes situated between urban and rural areas, the landscape around them may include homes and businesses, but it still may consist of agricultural activities, such as fields of crops or grazing cattle. People in urban areas may become familiar with the noise of traffic and the bustle of the city, but those on the urban fringe may still be able to enjoy the sights and sounds of rural life.

However, as agricultural land is bought and developed to accommodate a growing city, the lives of prior residents of that land can begin to change. Where there were fields that grew acres of corn, now construction equipment may move in as the land is developed for other purposes. Construction equipment will dig, shape, and level off land to prepare for homes, industry, or better infrastructure to handle the growing population of a city. Leon Kolankiewicz is an environmental planner who studies urban sprawl. He indicated that "1,200 square miles of farmland and habitat are destroyed every year." (Rowsey 2022, 6). In one year, considering the vast size of the United States, 1,200 square miles (78,000 acres) taken out of production may not seem like it's much, but year after year, those acres add up. The loss of acreage may put stress on the local agricultural economy in the regional and surrounding area.

1.2 Purpose & Objectives

The purpose of this thesis is to provide a case study that evaluates tradeoffs and opportunity costs that agricultural producers face when they consider selling their farmland. The focus is primarily in peri-urban areas or the outskirts of cities. The case study will be for a hypothetical farm in south central Kansas, in the Wichita area. This thesis has two main objectives:

1. To explore the opportunity costs that farmers face when they consider no longer farming their farmland
2. To examine how these opportunity costs are calculated and how they are weighed.

The USDA estimates that the average age of a farmer is 58.1 years old (United States Department of Agriculture 2022). As the age of the average farmer increases, they may begin to weigh their options on how they manage their future operation, especially if there is no succession plan in place. If a farmer is considering selling or is approached by a developer to sell their land, selling doesn't have to be the only option. In some cases, developers can have deep pockets and offer higher value for the land.

When selling farm ground, there is more to consider than just the money. Farmers in the United States are often part of generations of family farming. Selling off farm ground is not just about entering retirement or taking any opportunity in front of them but about giving up something that has been a part of their family history. Rob Burton is a researcher in New Zealand, specializing in agricultural research. He wrote that "the farmers involved in farming are representing not simply their own identities but those of their families' past, present, and future" (Burton 2004, 12). Implications from the sale of farm ground are not taken lightly. From the outside, it may seem like an easy decision, but there are many options to consider and opportunities that can be explored. This thesis serves to explore those options and opportunities.

This case study will focus on non-irrigated farm ground, growing corn, as part of a family farm in three counties, Sedgwick, Butler, and Kingman County, all situated around Wichita in south central Kansas. In each county, an evaluation will be done to explore the opportunity costs of selling the farm ground and what alternatives to sale are available. Four options will be explored. The first option is to explore what the farmer would gain if they sold the land. Another option would be to examine the outcomes if they reinvested the money from the sale of their land into the purchase of land in a different location, farther from the city. Moving a farm can be a big undertaking, but there may be motivation to move it away from the urban fringe and into a more rural area. The following two options explore what the farmer may gain if they didn't own the land but chose not to farm on it any longer. Enrolling in the USDA Conservation Reserve Program (CRP) is one possible option. The second option would be to keep the land but rent it to an area farmer for additional income. The farm would stay in production, but the farmer in this study would not be the one to farm it, only collecting the rent from the farmer using the ground.

Farmland is the most significant portion of assets in a production agriculture portfolio. Farmland makes up 85% of the assets in production agriculture and is the most critical asset that should be given considerable attention, given that the land produces earnings indefinitely (Gloy, et al. 2011). When the value of farmland is considered, looking at the future earnings is an essential part of the valuation. When the earnings are higher, investors will continue to pay more for farmland. Increased farm earnings and low interest rates have contributed to the significant increase in farmland prices in recent years (Gloy, et al. 2011). It is important to note that farmland earnings can fluctuate from year to year and are very susceptible to change. If investors continue to believe that farmland prices will rise, then they will continue to pay a premium for farmland.

1.3 Contribution and Audience

The information from this thesis can help those who may consider selling off their farm ground to weigh the potential opportunity costs of any alternative options for that sale. With the considerable loss of farmland each year, it's essential to know what decisions farmers and their families face when they no longer consider farming. Exploring the options available may help make those decisions a little easier and shed light on why some decisions are made.

CHAPTER II: LITERATURE REVIEW

There is constant conversation around the purchasing of farmland by people and entities not connected to agriculture. In some cases, farmland is purchased as an investment. Land is a reliable investment with limited availability.

> "*Unlike other commodities or assets, land is a finite resource. This scarcity means that as demand for land increases--whether for residential, commercial or agricultural use-its value tends to rise. Inflation often drives up property prices, making land a stable and sought-after investment.*" (Land Solutions n.d., 2)

So, when the opportunity arises, investors may purchase farmland to help their investment portfolio or secure their monetary options in the future.

> "*As an inflation-resistant investment, land offers security and opportunity. Its intrinsic, tangible value makes it a reliable store of wealth, particularly in uncertain economic conditions. For investors seeking stability, appreciating value, and versatile options, land remains one of the best choices for long-term investment*. (Land Solutions n.d., 9)"

Developers often buy farmland that sits on the urban fringe for its opportunities and proximity to the nearest city center. When developers purchase farmland, they can turn that land into city infrastructure or develop residential homes or commercial buildings.

Urban sprawl can be unstructured and uncontrolled. There is a diverse range of factors that can drive land prices. Having more information about those factors and how they affect the land being purchased can help both the buyer and the seller make a more educated and well-thought-out decision. Knowing what can change the price of land can also help a landowner decide what option may be the best for them if they decide they no longer want to farm that ground.

2.1 Factors Influencing Land Prices

The factors that influence land prices should be examined and explored. The changes in land prices can show the strength of an economy, serve as an aid in development planning, and show how different elements affect and determine agricultural and land values. Knowing how and what causes a shift in land prices can be a valuable tool for planning and recognizing shifts in economic and agricultural trends.

There are a large number of factors that can have an impact on the price of land. Studies have shown that rainfall, sales method, and time affect the price of the land (Stephens and Schurle 2013). In Kansas, the farther west you move, the lower the rainfall, which can have a significant impact on land prices (Stephens and Schurle 2013). Additionally, whether or not the land is seen to be of good quality also has an impact on the price. A study done by Taylor et al. (2020) found significant differences in the rate of appreciation for low-quality land versus high-quality land. Land was determined to be high or low quality based on whether that land was productive. High-quality land is categorized as productive when it has the potential to be income-generating. Because it is seen as high quality and income-generating, it can appreciate at approximately twice the rate of low-quality land (Taylor, et al. 2020). It was also noted that there appeared to be a correlation with commodity prices, as well. As prices of commodities increase, the price of land also increases. Alternatively, when the prices of land declined, then high-quality and low-quality land declined at the same rate (Taylor, et al. 2020).

Urban sprawl has a direct effect on farmland prices. There are three effects of urban sprawl. The three effects of urban sprawl include the conversion of farmland to urban uses, the impact on agricultural returns and the speculative effect as represented by farmland conversion risk (Livanis, et al. 2006). There has been a growing interest in how urban proximity and urban pressures play a part in farmland values. Where there is urban growth, especially growth that is happening rather quickly, farmland valuations are likely to be higher. When there is farmland that is closer to a city center, there is evidence that there are not only higher farmland valuations but also evidence that rent for agricultural ground can rise. (Barnard 2000) “Traditionally farmland values have been modeled as the discounted returns to agriculture production” (Livanis, et al. 2006, 928). Farms near urban areas are also more susceptible to development pressures (Kuethe, Ifft and Morehart 2011). There are instances where farmland can be given higher values in an effort for developers and investors to purchase the land for commercial or residential purposes. These instances result in a bidding competition that affects land valuation, with the farmland being sold for a higher than intended price (Kuethe, Ifft and Morehart 2011).

Transportation costs play a part in determining land values. When a producer is closer to a city center, there is less ground to cover for the distribution of the agricultural products produced, which lowers the producer's cost and raises the value of the farmland being used (Moss n.d.). Not only does less ground to cover for distribution help with costs, but there are also more options for connectivity. Connecting rural parts of a state with more urban areas with ease helps farmers with the sale and production of their goods (Moss n.d.).

Many cities started as agricultural-producing regions. As production grew, so did the city. Because of this progression, soil near urban areas can tend to be more fertile and productive. This productive and fertile soil can contribute to higher farmland values (Kuethe, Ifft and Morehart 2011).

2.2 Concerns of Urban Sprawl

Urban Sprawl can seem unavoidable and uncontrollable. As an urban area expands outward, there are social and global concerns to consider. One of the main concerns for urban sprawl centers around environmental and economic impacts. Those impacts are not just the loss of agricultural land but also increased water and air pollution, deforestation, and the loss of wildlife habitats (International Fund for Animal Wildlife (IFAW) 2025).

Urban sprawl brings an increase in vehicle traffic. When people move from more urban areas, everything in their lives does not move with them. They begin commuting into the city for employment opportunities, healthcare, and other amenities that aren't as accessible or convenient when individuals relocate outside of urban centers. Individuals move out of urban areas for larger homes and homes with larger yards, but they return to the city for jobs, shopping, and other activities. The increased driving increases O^2 emissions, and those increased emissions play a part in air pollution. A study on the cost of Urban Sprawl said that

> "*Sprawl worsens air pollution by increasing vehicle miles travelled (VMT), which increases emissions of air pollutants such as nitrogen oxides (NO_2), volatile organic compounds (VOCs), carbon monoxide, heavy metals, carbon dioxide and respirable particulate matter (PM)* (Reid-Wainscoat, et al. 2024, 6-7)."

Additionally, long commutes reduce time available to spend with family, friends, and community, as well as reduced opportunities for healthy recreation (Reid-Wainscoat, et al. 2024, 11).

Water pollution and usage are areas of concern as urban sprawl takes place. Increased water usage increases the area of impervious surface, decreases retention time for rainwater, and diminishes rainwater's infiltration into the soil and the water table. It also leads to rapid erosion and structural degradation of streams and rivers that receive runoff in much greater volume over shorter periods (Reid-Wainscoat, et al. 2024). Deforestation and the loss of wildlife habitats are also concerns of environmental impacts caused by urban sprawl.

Deforestation is the large-scale removal of trees and other vegetation. Urban sprawl can accelerate the process. When forests are cleared, it leads to more carbon in the atmosphere, which contributes to global warming. It also harms wildlife, disrupts water cycles, and affects people who rely on forests for food, clean water, and shelter (Climate Impact Partners 2024, 4). Urban Sprawl can also be a driver in the loss of wildlife habitats. Urban sprawl affects wildlife in several ways. It can push wildlife out of their natural habitats, sometimes splitting up herds or forcing species to live in smaller spaces than they are naturally accustomed to. The increased foot and vehicle traffic can also disrupt the natural rhythms of how wild animals move and live (Kansas State University 2022).

Along with environmental impacts, there can be economic impacts to consider. Economic impacts affected by urban sprawl are higher costs for infrastructure, transportation, and public services. Infrastructure moving into more rural areas isn't just roads and bridges, but also includes the development of water, sewer, and electrical lines that are not already there (Reid-Wainscoat, et al. 2024). In more urban areas, cities are committed to upkeeping the current infrastructure, but when the suburbs surrounding that urban area expand, they are building what is needed for city development from scratch. In rural areas, it can be hard to upkeep their existing infrastructure, much less expand on what is already there. Rural areas have a hard time funding projects, along with getting crews out to their area to complete the project. Rural projects can be small, in isolated areas, and have outdated plans. These roadblocks can make it hard to get simple projects completed. This leads to a never-ending list of projects that need to be done and are never completed (League of California Cities 2023).

Transportation costs are often higher because of urban sprawl. With urban sprawl and the expansion of urban living, it can put pressure on individuals to rely more on their own individual transportation instead of public transportation readily available in the city. They are also commuting farther than they had been before and putting more time and maintenance into their vehicles, while cities are putting more time and energy into their roads and bridges. The last economic impact is a higher cost for public services. Public services such as emergency services and waste management. Both will require more workforce to manage, putting even more stress on city budgets, and a growing population can put strain on the accessibility of essential resources that city residents need (Richman 2012).

CHAPTER III: METHOD AND DATA

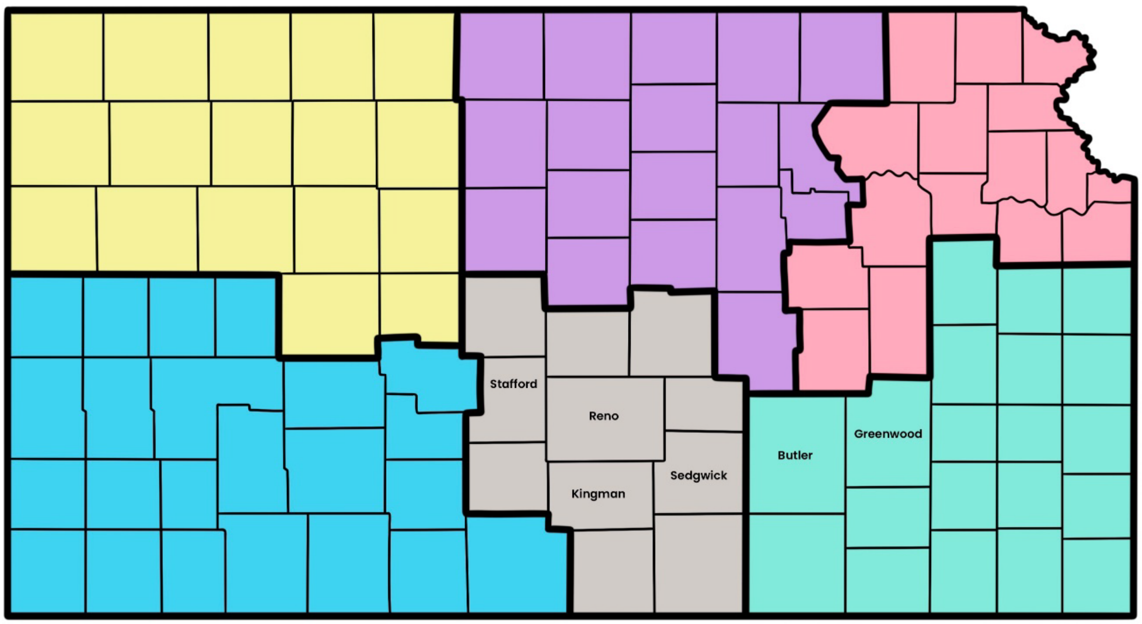
In this chapter, the data and methods are presented. Data was gathered for three counties in South Central Kansas and analyzed to evaluate the opportunity costs faced by a farmer who is considering selling their farm ground near an urban development in each county. That is, what are the different land use options available to the farmer and the potential economic returns to the land for those alternatives. The options considered included staying and farming the current ground, enrolling the land in the Conservation Reserve Program (CRP), renting out the land, and relocating the farm ground to an adjacent county farther from the city and development pressures.

Selling farm ground is a decision that many farmers face. Often, they consider selling for different reasons, including the potentially high price their land may receive for non-agricultural development. Opportunity costs look at the next best alternative to the farmer selling farm ground. It not only looks at the financial implications but also the social and personal implications that are not always easily measured with a monetary value.

The three counties examined in this case study are in South Central Kansas around Wichita, KS. They are Sedgwick, Butler, and Kingman County. Figure 3.1 shows all the counties being considered in the study and the potential counties used for a relocation option. Under the relocation option, the farmer would sell their land and purchase new farmland to operate on in an adjacent county (e.g., Reno, Stafford, and Greenwood County, respectively).

All data for this study were gathered over a 10-year period, 2014 to 2024, when available, to assess trends in different parameter values used for valuing returns. Net Present Value (NPV) was used to evaluate each option's long-term financial performance over the established time horizon. NPV was used to provide a consistent comparison by examining the return of different available options at present-day value. For the NPV, a standard 8% discount rate was used.

Figure 3.1 Kansas Counties Considered in the Analysis



Source: (Reid, Kansas Land Values Book 2023 2024)

3.1 Methods

The analytical framework adopted for this thesis is the evaluation of tradeoffs that may be available to farmers who live in peri-urban areas when the option to sell their land becomes available. That is, examining the potential opportunity costs. An opportunity cost is a method of evaluating the value of the next best options for a given decision relative to the one under consideration. For this case study, we consider land operated by a hypothetical crop farmer in South Central Kansas, around the Wichita, KS area, who is deciding whether to sell their farmland (due to urban sprawl that is increasing the value of the land) or to explore other options. The options under consideration include:

i. Selling the current farmland;
ii. Continuing to operate on the current farmland;
iii. Sell the farmland and relocate production to farmland in an adjacent county;
iv. Enroll the farmland into the Conservation Reserve Program; and
v. Rent out the current farmland.

We assume the farmer is currently using the land to produce non-irrigated corn. To assess different situations in the region, we examine the land in Sedgwick, Butler, and Kingman County. The counties examined were chosen based on their proximity to Wichita, the largest city in Kansas. Wichita has ample transportation and industry resources. Additionally, the counties surrounding Wichita can be susceptible to urban sprawl.

In order to determine whether selling the farm ground or relocating to an adjacent county may be an optimal choice, land valuations were gathered for all counties. When considering the options and tradeoffs, selling the land is the first consideration. Evaluating expenses and gains for selling the land helps to provide a baseline value for the assessment. Options that could allow the farmer to keep the land and still generate income are also explored, and three options are considered that have the farmer remaining on the land. Continuing to farm the land and relocating the farm ground means that the farmer keeps the land and continues to farm. Relocating the farm would also allow the farmer to reinvest in farm ground but away from urban expansion.

Options open to the farmer that allow them to retain the farm ground but not farm it include the possibility of enrolling the land in a land program, like the Conservation Reserve Program, if the land would qualify. The Conservation Reserve Program (CRP) is offered through the USDA, Farm Service Agency (FSA). CRP helps to convert valuable farm ground into vegetative cover, conserving acreage that is prone to erosion and environmentally sensitive. According to the FSA website, "the program helps to improve water quality, control soil erosion, and enhance wildlife habitat, contributing to overall environmental health and sustainability" (U.S. Department of Agriculture, Farm Service Agency n.d.). To be accepted into the program, a farmer must apply and meet program criteria, including demonstrating the potential for environmental benefits and the implementation of conservation practices (U.S. Department of Agriculture, Farm Service Agency n.d.). A competitive ranking system is used to select applicants for enrollment. In some cases, the land accepted into CRP must be enhanced and maintained. FSA offers cost-share assistance for up to 50% of the money spent on maintaining the land. Payments for CRP are typically paid on a contract spanning from 10 to 15 years, and all payments are paid out annually. Typically, the payment amount for CRP is the same every year, with little to no movement in the payment amount over the life of the contract. CRP has a competitive and rigorous selection process, but it is assumed that the land in this case study would qualify for the program.

Another option along the same track as CRP would be renting out farm ground. There are different types of leases to consider, as well as what is covered in the lease. In this thesis, we only consider a cash-rent lease. A cash-rent lease is typically the most popular and puts most of the risk on the farmer or lessee and not the landowner, while still allowing the landowner to generate income on the land they own. Rent in this manner guarantees payments. The payments are made whether the farmer has a profitable year or not. The owner of the land has a more hands-off approach and is simply a landlord to the property being rented (M. Taylor 2019). Payments for a cash-rent lease are made either annually or biannually. Payments made biannually are usually paid before crops are planted, with the remaining rent paid at harvest. However, annual payments seem to be the most popular and are assumed in this analysis.

For each option considered by the farmer, the Net Present Value (NPV) was calculated. The NPV calculation varies slightly depending on the option being explored. In general, the NPV below is calculated as:

$$NPV = \sum_t \frac{Cash\ Flow_t}{(1+i)^t} + initial\ investment$$

Where *i* is the discount rate (assumed to be 8%), and *t* is the number of time periods (set at 10 years). For each scenario, the NPV is calculated as follows:

i. Selling the current farmland:

NPV = return net sales commissions and capital gains taxes from the sale of the land in year one.

ii. Continuing to operate the current farmland:

$$NPV = \sum_t \frac{(Net\ Return\ from\ operating\ the\ land\ in\ period\ t)}{(1+i)^t} + \frac{(Land\ value\ in\ period\ 10)}{(1+i)^{10}}$$

iii. Sell the farmland and relocate production to farmland in an adjacent county

$$NPV = \sum_t \frac{(Net\ Return\ from\ operating\ the\ land\ in\ period\ t)}{(1+i)^t} + \frac{(Land\ value\ in\ period\ 10)}{(1+i)^{10}} +$$

$$(net\ difference\ of\ land\ in\ Year\ 1\ net\ sales\ commission)$$

iv. Enroll the farmland in the Conservation Reserve Program

$$NPV = \sum_t \frac{(CRP\ return\ in\ period\ t)}{(1+i)^t} + \frac{(Land\ value\ in\ period\ 10)}{(1+i)^{10}}$$, and

v. Rent out the current farmland

$$NPV = \sum_t \frac{(Cash\ rents\ in\ period\ t)}{(1+i)^t} + \frac{(Land\ value\ in\ period\ 10)}{(1+i)^{10}}$$

3.2 Data and Calculations

The data in this thesis were gathered from various sources; however, the same criteria were used to gather each data set that was analyzed. When available, data were gathered for the years 2014 to 2024, with averages for the different parameters being considered for every year. All land values come from the Kansas Land Values Book. The Kansas Land Values Book gathers agricultural land sales data from the Kansas Property Valuation Department, submitted by county courthouses across the state. Once data from the Kansas Property Valuation Department is received, it is then reviewed and analyzed to be published. Table 3.1 gives summary statistics for the data gathered for the analysis conducted.

Table 3.1: Data Summary Statistics ($/acre)

	Average	Maximum	Minimum
Sedgwick County			
Land Values	$4,798.27	$7,052.00	$1,118.00
CRP	$48.23	$54.00	$44.04
Cash Rents	$40.32	$58.00	$5.83
Corn Price	$4.62	$7.80	$3.28
Operating Costs	$345.45	$451.96	$304.25
Kingman County			
Land Values	$2,388.18	$3,206.00	$1,718.00
CRP	$41.23	$45.00	$38.72
Cash Rents	$32.57	$45.00	$2.14
Corn Price	$4.62	$7.80	$3.28
Operating Costs	$345.46	$451.96	$304.25
Butler County			
Land Values	$4,292.55	$6,218.00	$2,461.00
CRP	$50.93	$54.28	$45.00
Cash Rents	$44.60	$69.00	$2.06
Corn Price	$4.62	$7.80	$3.28
Operating Costs	$345.46	$451.96	$304.25

Sources: Kansas Land Values Book; USDA, Farm Service Agency; AgManager.info; Pride Ag Resources; USDA, Economic Research Service

3.2.1 Selling the Land and Land Valuation Data

Land value data is needed for every county that is analyzed. Land value data is gathered to assess the options of selling the land and relocating the farm ground to an adjacent county farther away from Wichita, KS. All land values come from the Kansas Land Values book, published online every year, and available to the public on the AgManager.info website. Data for land values was more robust in some counties than in others. In the Kansas Land Values book, land data is only published if it meets pertinent criteria, which includes parcels that were sold within the year of publishing and were at least 70 acres in size. Any sales that were extreme outliers in relation to price for the corresponding county were removed from the data. Extreme outliers in price can significantly skew the results and are better left out of calculations (Reid, Kansas Land

Values Book 2023 2024). Since not every piece of data is published, and raw data is scrubbed to meet the criteria for analysis, it can be assumed that for the years when information is missing, any sales were either less than seventy acres or didn't meet the other criteria for analysis.

To assess the returns from selling the land, it was assumed that the land would be sold at the price per acre in 2024. When evaluating returns, a realtor commission fee and capital gains taxes were considered. The realtor commission fee was assessed at 7% and the capital gains tax was estimated at 20%. The average realtor commission fee is typically between 5% and 10%; the median was chosen at 7%. For Capital Gains Taxes, 5% was assessed for state taxes, and 15% was assessed for federal taxes. The final value of the sold land is obtained for the NPV by multiplying one minus the realtor commission and then multiplying one minus the capital gains tax rate.

3.2.2 Farming the Land and Corn Prices, Corn Yield, and Production Costs Data

Corn prices, Corn yield, and production costs are gathered to establish net returns generated from farming. The data is then utilized to determine returns from continuing to operate the land and not selling. Corn prices were collected from Pride Ag Resources (Ag Pride Resources n.d.). The prices provided are the average prices for the year and were priced per bushel. Corn prices were also collected for the overall state of Kansas and not by county. Thus, the same corn prices were used for Sedgwick, Kingman, and Butler County when gathering the data for those counties. Operating costs were collected from the USDA-Economic Research Service (ERS) website. The figures were the average costs per acre planted. The USDA provided figures based on the region, and Kansas falls within the Prairie Gateway region (U.S. Department of Agriculture, Economic Research Service 2025). The same figures were used for all three counties. Corn yields for Sedgwick, Kingman, and Butler County were taken from historical data from the USDA website (U.S. Department of Agriculture, Economic Research Service 2025). The figures given are the average bushels per planted acre, also in the Prairie Gateway region, so there was no difference in the corn yields based on the county being analyzed.

For the option to continue farming, the NPV of the stream of returns from crop farming was calculated, assuming a growth rate in net revenues each year of 2% over the 10-year period. The average net return per acre used for dryland corn production was $363.25 in each county.

3.2.3 Relocation

When looking at the relocation option, land values are gathered for the counties we are considering relocating to. The counties considered for relocation are Reno, Stafford, and Greenwood County. The land values are gathered for the counties being considered for relocation, in addition to the original county's land values. If relocation were the most viable option, it is assumed that the family would continue to farm on the new ground. To clarify where you would move in the relocation option, if you lived in Sedgwick County, then you would relocate to Reno County, if you lived in Kingman County, then you would relocate to Stafford County, and if you lived in Butler County, then you would relocate to Greenwood County. Being in neighboring proximity to the original counties being considered allows for proximity to the current operation, and still a comfortable distance from Wichita. The land values for relocation and purchasing of new land were also gathered from the Kansas Land Values book, and the value in 2024 is used for the purchase price of new land. In addition, it is assumed that land is available for purchase. The net present value calculation is provided in the prior section. To calculate the present value for the sale and purchase of the new land, we calculate the difference in sale price minus purchase price and then account for sales commission. For the relocation option, the realtor commission stays at 7% as stated previously. Also, it is assumed that no capital gains taxes are paid and that a 1031 Exchange is utilized. A 1031 exchange is a tax strategy that is used to defer paying capital gains taxes. When using the 1031 exchange, it takes the funds that would be used for capital gains taxes and proceeds from the sale of their land and allows them to be reinvested into a like-kind property. It would roll the taxes from their current property into their new property (IPX1031 n.d.).

3.2.4 CRP Option

CRP rental rates were gathered over a 10-year period for Sedgwick, Kingman, and Butler County. CRP rates were collected from the USDA website. Only averages for CRP payments at a county level were available, and all averages are shown as price per acre. CRP is a good alternative to explore from both a financial and environmental standpoint. CRP would provide a farmer with guaranteed cash flow over an extended time period. Standard CRP contracts run for 10-15 years, with an annual payment of a fixed amount over the life of the contract. A simple linear regression calculation was estimated using the 10 years of collected historical data to estimate the marginal increase in CRP rates over time, assuming a linear trend. The marginal value is captured by the slope coefficient from the regression. The CRP rate is then set at the 2024 rate plus the marginal rate change in CRP rates over time (e.g., the estimated slope coefficient). This was estimated to be $0.94 in Sedgwick County, $0.61 in Kingman County, and -$0.56 in Butler County.

It is assumed that CRP payments are paid annually and at a flat rate over the life of the contract. CRP payments would be considered income and are subject to tax. A 15% tax rate is assumed. The land is also assumed to be owned outright, so the initial investment is zero. To calculate the NPV of CRP payments, we used the equation in section 3.1.

A limitation of the financial assessment is that CRP also provides environmental benefits. Water quality may improve due to less erosion and runoff; there is also a stronger wildlife habitat because of increased cover (U.S. Department of Agriculture (USDA) n.d.). The environmental benefits can often lead to improvements in the land that can increase its overall value over time and provide additional ecosystem services that are not valued here.

3.2.5 Cash Rent Option

Cash rent data was collected and analyzed as an alternative option to selling the farm ground. The data for rent was gathered from the AgManager.info website. Averages for non-irrigated crop ground were available for each year as a price per acre. AgManager sources its information for its reports from the USDA-NASS Website. One shortfall with the data is that for the years 2014 and 2015, the figures were combined. The option for cash rent can be a valuable consideration for any farmer. The land is still able to be used to produce for agricultural purposes, and, like CRP, it provides a consistent and steady stream of income to the landowner. Renting farm ground also allows the farmer to keep the land in their family. If the land has been in their family for generations, renting is a viable way to keep land in production and in the family without having the responsibility of farming the land themselves. Renting can also allow for a greener farmer to get started without the added costs of purchasing land. It would also allow the landowner to pass on their knowledge and expertise to someone who is not as experienced. It could allow the landowner to be involved in farming without the stress and strain of the day-to-day operations.

A simple linear regression calculation was estimated using the historical data gathered. The linear regression estimated the linear trend in rates and estimated what the increase in rent would be every year. The slope from the regression was then used to estimate what the future rent amount would be for the next 10 years. The regression is done to inflate the values into the future based on the trend. The marginal increase each year from the regression was $1.64 in Sedgwick County, $1.26 in Kingman County, and $1.39 in Butler County.

3.2.6 Additional Non-Pecuniary Considerations

When considering selling farm ground or any of the other options available, there are cost considerations that are not monetary and not built into the financial projections here. In many cases, farm ground has been in families for generations. According to a report done by the USDA in 2023, 86 percent of all small farms were owned and operated by families, and those family operations make up 41 percent of US agricultural land (Lim, et al. 2024). The sentimental value of a farm that has been in a family for generations cannot often be met with a monetary price.

CHAPTER IV: ANALYSIS & RESULTS

This chapter will discuss the results and analysis of the land use tradeoffs or opportunity costs from selling farmland within proximity to a large urban center. The analysis and results discuss the different alternatives that a farmer may consider making their decision. The assessment begins to consider which is the most favorable option: selling their land, continuing to operate their farm on the land, selling the land and relocating the farm, enrolling the land into the CRP, or renting out their land to another farmer on a cash-rent basis. The analysis will look at the net present value of the financial returns of the alternatives over a ten-year time horizon.

When only looking at the monetary return on your investment, the county you live in can change what your most favorable option is. Non-financial factors, such as the aforementioned generational ties to the farm ground, as well as caring and tending to the land, are not quantified but should also be considered when decisions are made. There is a change in the results depending on the choice that is made. The NPV and tradeoffs can be appealing to the farmers depending on their desired goals. Below is a table (Table 4.1) that summarizes all NPVs for the counties analyzed, along with the pros and cons for each county

Table 4.1 Summary of Results

Option	NPV	Pros	Cons
Selling the current farmland	Sedgwick County: $3,949.15 Kingman County: $1,824.73 Butler County: $4,711.50	• Immediate return • No longer under the stress of the volatility of farming • Considerable growth, no matter where the land is located	• Farmland no longer with the family • Removes any future revenue streams
Continuing to operate on the current farmland	Sedgwick County: $5,674.98 Kingman County: $3,822.84 Butler County: $6,474.96	• Continue the family legacy of farming	• Still under the pressures of urban sprawl • Can be subject to volatility in returns because of changes, both internal and external to the farm
Selling the farmland and relocating production to farmland in an adjacent county	Sedgwick County: $6,279.62 Kingman County: $4,574.00 Butler County: $7,776.92	• Continuing the family legacy of farming • Keeps land value and adds in farming returns • Keeps the continuity of the operation	• Moving can be costly, especially moving a farming operation • Farther from essential city infrastructure
Enroll the farmland in the Conservation Reserve Program	Sedgwick County: $3,275.95 Kingman County: 1,387.88 Butler County: $4,068.41	• Allows for income without having to sell farm ground • Guaranteed income • Provides valuable environmental benefits	• Very competitive, can be hard to get into the program • Reduces what can be done with the land
Rent out the current farmland	Sedgwick County: $3,361.61 Kingman County: $1,419.26 Butler County: 4,218.49	• Allows for income without having to sell farm ground • Lower risk	• It can be hard to find tenants for the land • Provides lower returns than other options

For every option, Butler County continually has the largest return. Butler County also had the largest land prices and, therefore, the highest taxes and realtor commissions. On the other hand, Kingman County continually has the lowest returns for any option. Kingman County also had the lowest land prices and is the farthest away from the city of Wichita. These results are to be expected.

Selling the farmland and moving the operation to an adjacent county produced the highest NPVs for all counties when compared with the other options. Enrolling the farm ground in CRP produced the lowest NPVs. It combines what the farmer would gain from an investment in land and the returns that are achieved from farming. Relocation leverages the 1031 exchange to keep the landowner from having to pay capital gains taxes. It keeps money in the farmers' investment and does not pay the taxes associated with the appreciation of their land. In the scenario of relocation, the farmer typically would move to an area where the land is at a lower cost, which would allow them to purchase land not only at a lower cost but also potentially purchase more land and expand their farming operation.

In every county, CRP and rent had the lowest NPV. Those NPVs are lower because in both scenarios, the income is paid out annually and not in a lump sum. They are also a low-risk investment, with guaranteed income for the life of the contract that is signed. It also allows you to keep the land asset as it appreciates. Table 4.1 allows a farmer to compare the opportunity costs and what the tradeoffs are visually. The results don't point to a single best option because it will depend on the long-term goals and personal preferences of the farmer who is considering selling his land.

4.1 Selling the Farmland

Land values across the state of Kansas have seemed to level off after several consecutive years of growth. However, regional and county-level differences are observed and differ from trends for the entire state. In the three counties that were analyzed in this case study, Sedgwick County showed almost no growth over a 10-year period, Kingman County showed a negative growth rate in land values, and Butler County showed a positive growth rate. When considering the sale of land, the Net Present Value (NPV) of the investment over the time horizon should be considered, which is assumed to be 10 years, as well as future projections of land values, as that could affect an optimal time to sell (which is beyond the scope of this thesis). This is all still assuming the land is being used for agricultural production purposes. It may likely be the case that for urban development, agricultural land may sell for much higher values.

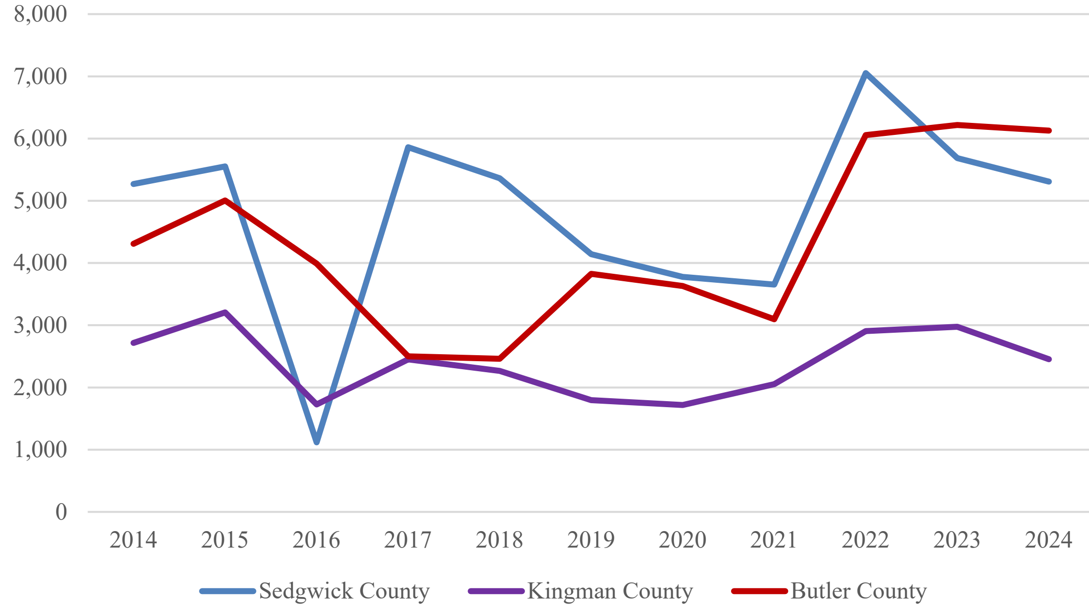
Land values for agricultural land in Sedgwick County showed very little growth over the past 10-year period. In 2014, land sold in Sedgwick County for $5,270 an acre. Ten years later, in 2024, land sold for $5308 per acre. That’s a $38 difference over the past 10 years. The highest price per acre over the 10 years was in 2022, when land sold for $7,052 per acre, and the lowest price per acre was in 2016 at $1,118 per acre. The price of $5,308 per acre was used for the sale price in this analysis. In addition, it was assumed the farmers would need to pay a realtor commission of 7% and 20% of the capital gains tax on the value of the land. The NPV for this investment is $3,949.15.

The other two counties being examined in South Central Kansas, around Wichita, for the case study were Kingman and Butler County. Kingman County is farther from Sedgwick County than Butler County is. Kingman County may not experience as much pressure for urban development as the other two counties, because it’s located farther away from the city center of Wichita. Because of this, for Kingman County, the results are considerably different than what was found in Sedgwick County. The growth rate of the value of land after a 10-year period is negative 1%. There was not as much movement in land prices over the 10-year period analyzed. The highest average price was in 2015 for $3,206 per acre, and it was a considerable outlier in the data. Outliers can skew perceptions of growth or decline in land values. Trends in these situations play a helpful role in telling the full story of land values in that area, helping to average out the effects of outliers. The lowest average price was in 2020 for $1,718.

In 2024, land in Kingman County sold on average for $2,453 per acre. In 2014, land sold for $2,717 per acre. There was a decline of $264 an acre between the two years. The NPV for the sale of Kingman County is $1,824.73.

Butler County showed higher valuations than Kingman for the option of selling the land. Butler County had a growth rate in land value of 4% over the past 10-year period. In 2014, land sold on average for $4,308 per acre, and in 2024, land sold for $6,128 per acre. That’s a $1,820 difference between the two years. The highest price was in 2023 at $6,218 per acre, and the lowest price was in 2018 for $2,461 per acre. The NPV was the most favorable for $4,711.50. While this county does have the highest NPV, that may also come with higher upfront costs or taxes. The tradeoffs for living in Butler County are worth thoughtfully exploring. Figure 4.1 is a graph that shows the changes in the sale of land over the 10-year period analyzed from 2014 through 2024. The prices are shown as an average price per acre for the given year.

Figure 4.1 Land Valuation by County



Source: Kansas Land Values Book

While the state of Kansas seems to have leveled off, there is still some volatility in the price of land and differences that change from county to county. When a landowner sells their land, it removes any future revenue streams from the land, which needs to be thoughtfully considered. Land can be a safer investment and not as volatile as other investment options available. Land is also better served as a long-term investment. Any volatility in the short term shouldn't be a predictor for the return of your investment in the long term.

In Sedgwick County, there was virtually zero growth in the price of land, but it still generated a positive NPV. Butler County had the highest NPV, the highest growth rate, but also had the highest starting land value. Kingman County had a negative growth rate but still had a positive NPV. This shows that no matter where the land is located, it can still be a favorable investment when sold and has a considerable growth trajectory as a long-term investment.

There are several reasons that can factor in the price of land. Sedgwick and Butler counties are closer to the city center. Transportation is less costly because crops don’t have as far to travel to reach a point of distribution. Also, land in these counties could be seen as more lucrative because they are more apt for development pressures from both investors and developers. Since Sedgwick County holds Wichita, and Butler County is a neighboring county, both counties are seeing rapid growth and change. Kingman County sits farther out and is not as susceptible to urban pressures or development. The land is good for agricultural use, but the urban areas are not in close enough proximity. While some of the factors discussed above can cause an increase in land values, factors like drought, commodity prices, and changes in regulations can influence land values.

4.2 Continuing to Farm

Continuing to farm despite the pressures of urban development is an option. The returns for farming were calculated for every year, and an NPV of the streams of returns from farming over a 10-year time horizon was estimated, which included the present value of the land at the end of the 10-year period. Calculating the farming returns gives a fuller picture of what your tradeoffs are if you choose to farm no longer. There is an assumption that the corn operation sees a 2% growth rate year over year. Continuing to farm also accounts for the Present Value (PV) of the land in every county. The NPV for farming returns in Sedgwick County is $3,361.61, in Kingman County it is $3,822.84 and in Butler County $6,474.96. The returns are the same over time, as corn prices, yields, and operating costs did not change across counties for the data collected, which is a limitation of this study.

In some cases, the NPV of farming is stronger than some of the other options. However, continuing to farm can be subject to risks, such as volatile commodity prices, battling the weather, and changes in input costs, which can significantly affect the returns. Options like CRP or rent can be a safer and stronger opportunity cost when compared to the farming returns.

4.3 Relocating the Farmland to an Adjacent County

Considering land values and the options selling the land brings, it is important to note that selling land is not the only opportunity available when urban pressures start to mount. Another option available to the farmer is to relocate to other nearby farmland, capitalizing on the higher values close to an urban center to help cover the cost of purchasing other land and relocating production (Table 4.1). Relocation can provide an alternative to selling the farm and walking away from what could potentially be a generation-old operation. However, relocating a farming operation could be costly, and there are a multitude of factors that should be considered.

When the option of relocation was analyzed, it was looked at from a primarily financial perspective, without consideration for community or infrastructure access, which may play a significant role. For the case of this study, we look at the original county where we consider selling farmland and relocating to an adjacent county. The sale price of that land is used to purchase land in a county that is farther from the city center and less likely to be affected by the pressures of urban sprawl. Land farther away from the city center may allow the farmer to purchase a larger tract of land or to be in an area where agricultural infrastructure, such as grain elevators, crop inputs, and storage & handling facilities, are ready and available for use. Additionally, land farther from the city center is more likely to sell for a lower price per acre. The relocation land is purchased using the profits from the original land sale, less the realtor's commission. We assume no taxes are taken out of the transaction, assuming that a 1031 Exchange is used.

A farmer in Sedgwick County would relocate to Reno County. Reno County is approximately 45 minutes from Sedgwick County. Land values are 54% on average, less per acre in Reno County than in Sedgwick. When considering relocating out of Sedgwick County, Reno County appeared to be a financially viable option. It’s farther away from Wichita’s city center, which means that the farming operation has a better chance of being farther away from urban development pressures. Land in Sedgwick County would be sold for $4936.44 per acre, which accounts for the realtor commission. Land would be purchased in Reno County for $3441 per acre, assuming a tract of land is available at this price. When relocating, the NPV for Reno County is $6,279.62. This option provides long-term sustainability and keeps the continuity of operations that could justify relocation like this.

In the second relocation scenario, a farm in Kingman County would be relocated to Stafford County. Stafford County is approximately an hour west of Kingman County. Land in Kingman County would be sold for $2453 per acre, and land in Stafford County would be purchased for $2420 per acre. When relocating, the NPV for Stafford County is $4,574.00.

The last relocation option would be to move from Butler County to Greenwood County. Greenwood County was just under an hour away from Butler County. Butler County, neighboring Sedgwick County and Greenwood County, sits on the other side of Butler County. Greenwood County land value information wasn't as robust as the other counties in this study. The last year that land values were gathered for Greenwood County was in 2022. The data from 2022 was used for the analysis for the study, instead of 2024, as in the other county analysis. In 2022, land was sold in Greenwood County for $4826 per acre. The land in Butler County sold for $6128 per acre. The NPV for Greenwood County is $7,776.92.

The return on investment is not the same as when the farm is relocated. It's also worth noting that the data limitations in Greenwood County introduce some uncertainty about this scenario and do not provide as full a picture as the other two options. Land prices took a considerable rise between 2018 and 2022, and it's unlikely that land prices will continue on that trend. They tend to even out and stabilize over the period examined.

4.4 Enrolling the land into the Conservation Reserve Program (CRP)

This option looks at the possibility of enrolling the land into the Conservation Reserve Program (CRP) or a similar agricultural farmland retirement program. CRP is typically paid out annually, and in most cases, a farmer signs a contract for a flat rate over the life of their contract. There are instances where the payment amount can change, given rate adjustments, eligibility, and maintenance, but a flat rate over the life of a 10-year contract was assumed for simplicity. An estimation of how much a CRP payment may increase from 2024 prices to 2025, when they started their CRP contract.

In Sedgwick County, it was estimated that CRP contracts would increase $0.94 every year. This is the strongest increase of any of the counties. Given that the CRP rates for 2024 were $50, the increase was added for 2025, and the assumption is that $50.94 would be paid for the life of the 10-year contract. At the end of the CRP contract, the NPV is $3,275.95. The higher payments and higher NPV can be indicative of the higher price of land. It can also be that there is a higher demand to move land closer to urban areas into conservation programs.

When a regression was run for Kingman County, a CRP contract in Kingman County had a $0.61 increase per year and a positive NPV value. The increase is not as strong as in Sedgwick County, but it is still a positive investment. In 2024, CRP contracts were signed for $44 an acre, on average. When the contract is signed for 10 years, $44.61 is paid out annually per acre. The NPV for CRP in Kingman County is $1,387.88.

The last county to be analyzed is Butler County. The average CRP contract in 2024 was signed for $50. Unlike the other counties, the regression analysis for Butler County showed that CRP rates were declining by $0.56. The $50 less the $0.56 means that the CRP contract would be signed for $49.44. The NPV for CRP in Butler County is $4,068.41.

With CRP, there are a lot of factors that are not covered or that are assumed. This analysis does not account for any maintenance payments or cost-sharing that the USDA may pay out on top of the agreed-upon CRP contract payment. CRP payments are also considered taxable income, and taxes are not factored into any of the opportunity costs analyzed. CRP is guaranteed income, but it reduces what can be done with the land the farmer owns and takes away any opportunity to produce revenue through crops. CRP provides significant environmental benefits, but there are strict rules about what can be done with the land to stay in the program. The next section looks at an option that also allows a farmer to keep the land and generate income, but it also allows for a change in revenue from year to year.

4.5 Cash Rents

When figuring out the opportunity costs for renting farm ground, there are a couple of considerations that should be considered. When renting farm ground, most rent is either paid annually or paid twice a year, half at planting and half at harvest, depending on how the rent contract is written. For simplicity, an annual payment is assumed. Rental rates were assumed to be for non-irrigated land, and historical rates were used. From the data gathered, a regression analysis was carried out to determine any trend in rental prices over the past 10 years. Renting land to another farming operation is a potentially lower-risk option to maintain cash flow, while maintaining ownership of the land.

For Sedgwick County, the rental rates for non-irrigated farm ground for 2024 were reported to be $58/acre. Historical data for the years 2014-2024 were gathered and analyzed, and a regression analysis was run. The regression analysis determined that rates would increase every year by $1.64. The NPV for Sedgwick County is $3,361.61.

In Kingman County, the rental rates were expected and shown to be a bit lower than in Sedgwick County. Rental rates followed the land values, and in both instances, Kingman County had the lowest return. Kingman County rental rates in 2024 were $44/acre, and it was determined that rates would increase each year by $1.26. The NPV would be $1,419.26.

The final county had the best rental rates. In Butler County, rental rates were $69/acre. After a regression analysis was run, it was determined that contracts could increase by $1.39 per acre each year. The NPV for this county is $4,218.49.

Renting out farm ground looks to be a positive investment in every county studied. Important factors to consider in this scenario are that rent payments are still considered taxable income. It also doesn’t account for any potential maintenance costs that the farmer may incur. Choosing to rent farm ground can be a solid investment, but a tradeoff is that you would give up the lump sum acquired from selling or the higher returns that CRP provides.

4.6 Current Scenario

In every scenario studied, future projections were made using historical averages. But when a developer or investor is involved in the land, it can inflate the land prices and price out farmers who may be looking at purchasing or acquiring new land. If those inflated prices were analyzed as part of this study, then it would change the numbers significantly. As an example, in Wichita, KS, there is a property of 156 acres currently listed for sale, which is used for agricultural purposes. Right now, non-irrigated crops are grown on the land, but it has been zoned for residential purposes. The land sits just outside of Wichita, and the ease and convenience of the city without living in it. Those 156 acres at the price listed come out to be about $19k/acre, when the typical price per acre in Sedgwick County is $5,308. This land has been priced for development purposes, not to continue its agricultural purpose. When you plug the price per acre into the formulas, it changes the outcome significantly. Selling the land in Sedgwick County and using the same fees as in the previous valuation would take the NPV from $3,949.15 to $14,136.00. It also changes the relocation evaluation from $6,279.62 to $18,670.50. And the change in relocation only shows the change in land NPV. Those are both significant changes in your investment and projections. It also shines a light on why farmers are selling their farmland and why it can be hard to walk away from an offer to buy the land at such an inflated price.

Higher land prices can make it harder to decide which decision is the best one. It can also skew the average price per acre in the county, and the county averages we used were from scrubbed data that removed outliers such as inflated land values. These inflated land values also have an impact on long-term land availability and can make land harder to purchase for those not interested in development. It also sheds a greater light on the loss of farmland permanently and why so many acres of farmland are lost per year. It would also be hard to put this inflated land price against the returns that come from CRP or renting. This situation is just a single case where there are inflated land prices and is helpful for illustrating market pressures that farmers may face when it comes to urban development. They show why selling often wins over any other option available, even if the farmer's desire is to keep farming. There are still the non-pecuniary decisions to consider, but a lot of times, the amount the land can be sold for can win out.

CHAPTER V: SUMMARY AND CONCLUSION

Development pressures from urban sprawl can increase pressure on farmers to sell their land for urban development. The decision to sell their land will depend on the location of the farm and proximity to the urban fringe, as well as alternatives available to the farmer if they consider the option of selling. The purpose of this thesis was to examine these potential alternatives to selling farmland to developers, focusing on a case study examining a farm on the outskirts of Wichita, KS. There are a number of factors to consider, from the trajectory of land values to the non-monetary value of farming on a generational farm.

This thesis provides a case study as a starting point for evaluating these factors. It covers not just selling the land but the tradeoff of relocating the farming operation or keeping the land, they own and enrolling the land into the CRP or renting the land out to another farmer. The thesis examines these different alternatives and compares them using the Net Present Value (NPV) of the returns to the different options, while considering the location of the farm. While NPV provides an estimate of the financial return to the land, it may not capture the price of stewardship of the land, a family heritage, or a continued quality of life. Every option explored produced positive NPVs, but they did vary in magnitude relative to each other. Each option also came with a different mix of risk, equity, and revenue streams. Not every option provided a clear picture of whether keeping the land or continuing to farm was the best option. Proximity to Wichita, such as Sedgwick and Butler County, provided better financial outcomes than you would see in Kingman County, which was farther away. The following sections summarize key insights, recommendations, and limitations of this study.

5.1 Main Findings

There were trends that you could see across the options explored. If you were looking for the highest option for liquidity and reinvestment, then selling the land was the best option. Selling the land had a higher NPV, but it also came with its own risks. Land values near Wichita had a higher value, which made Sedgwick and Butler counties more favorable for this option. Relocation was the best option. It kept the farming operation intact and allowed the farmer to continue to produce crops. It still provided you with a valuable land asset but also produced a lower NPV because most of the capital acquired from the sale of your original land went back into the purchase of new land. Relocation also looks to be the most favorable when the new county's land value is sufficiently cheaper than the original county the farm is being moved from. When looking at the results for CRP, it seemed to be the most stable. It had a solid NPV and was the most likely to be the least risky for farmers who may not be comfortable with riskier options or who may be close to retirement age. The last option was renting out the farm ground. This produced the lowest NPV but also had tradeoffs to consider. Renting was one of the options that kept the farm ground in production. Keeping the farm ground in production is vital to its ability to continue to produce and maintain its monetary value.

5.2 Recommendations

Which option was the most favorable option can depend on what the end goal of the farmer is and where the land is located. Selling the land and relocating the farm will always give the biggest NPV, no matter where the land is located. For farmers who have a strong tie to farming but want to remove themselves from the pressures of urban expansion, relocation could be a good option. It's also important to look at the best county in terms of location and price, not just the neighboring county. You may have to look farther away from where you are moving to find land that suits the operation you have. If you want to truly be away from the urban pressures of development and consideration of future infrastructure plans, like highways and utilities, relocation should be considered. Selling the land outright or relocation could require work from a tax advisor to be sure a 1031 Exchange or capital gains taxes are handled appropriately.

For farmers who want to keep the land but are not able to farm any longer, enrolling in CRP or finding someone to rent their farm ground to farm on may be the next option. For every property, rent and CRP aren't available. You would have to find a trusted renter for your land. For CRP contracts, you would have to meet requirements and be in a desirable area for the program. At the same time, depending on where you are farming, your land could potentially continue to grow in value while also providing you with additional income through CRP and rent. In some cases, choosing to rent out farm ground or enrolling in CRP may be the best option. When you live in an area where there are strong CRP rates, enrolling in the program would provide a low-risk way to generate income and provide additional capital.

Decisions should not be made solely about which NPV is the highest, but the non-pecuniary factors need to be considered as well. Not just how the land ties to the family and their heritage, but also the farmers' risk tolerance and retirement horizons. It's important to look at all factors when making a decision.

5.3 Limitations

There were some limitations with this case study. The land value data for Greenwood County was not complete, limiting assessments in this county. Not all costs are considered either. For example, when looking at the relocation scenario, beyond taxes and a realtor commission, transportation and moving costs are not considered either. This study also assumes that there is assessable and available land to farm in a relocated county. That might not always be the case. Costs related to CRP and getting the land ready for the program are touched on but not explicitly included.

In every scenario, an 8% discount rate was used. While it keeps things steady and allows for a more direct comparison, it doesn't allow for changes that naturally occur in the market. The reader should be aware of the assumptions made when interpreting results.

5.4 Conclusion

The purpose of this case study is to evaluate the best opportunity cost and financial tradeoffs for selling farm ground near an urban center that is expanding. Farmers continually face pressures to sell their land as urban areas expand and grow. Farmers who are located on the urban fringe may experience strong development pressures to sell their land. Overall, every option examined provided a positive NPV, but they also came with different risks and trade-offs. These results are important for farmers who may be in this situation and are trying to decide what the best viable option for them is. It's important to know what is happening to the agricultural land around us. The decrease in farmland has both economic and cultural implications. Future research can help farmers make decisions that balance their stability with their desire to preserve their history in farming and agriculture.

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