

An Examination of the Use of Rented Land by Kansas Farmers



By Gregory Ibendahl

Gregory Ibendahl is an Associate Extension Professor at Kansas State University.

Abstract

Renting farmland is an important topic to farmers as it complements a typical farm's largest asset. There are many advantages to owning farmland, but purchased farmland will seldom cashflow. Thus, most farmers have additional rented crop acres. Over the last 50 years, both profitability and financial risk from farming have increased, and this paper examines whether these changing agricultural conditions have impacted the percent of farmland rented. An exploratory analysis of Kansas data shows the land rental percentage has remained constant since the end of the 1980s farm crisis with the median farm renting 75% of its cropland acres. These results should provide guidance about the demand for rented farmland.

INTRODUCTION

Crop farmers have two ways to build an acreage base for their farming operation: own their land or rent it. Ownership provides many advantages, such as land control, capital appreciation, and pride of ownership. With land ownership, a farmer never has to worry about losing a lease to another farmer and can make all the management decisions without answering to

a landlord. In addition, land typically appreciates each year and is a good hedge against inflation. However, as shown in Oltmans (1995), land will not cashflow. Thus, most farmers need the income from additional rented acres to help make the principal and interest payments on their land mortgages. This article examines the mix of rented and owned land by Kansas farmers to determine if the use of rented land has changed over time in response to rising land values and changes in farm profitability.

According to the U.S. Department of Agriculture's website (<https://quickstats.nass.usda.gov>), the average value of cropland in Kansas has increased from \$649/acre in 1997 to \$3,300/acre in 2024. During this same period and based on Kansas Farm Management Association (KFMA) grain farms (KFMA, 2024), average net farm income has varied from a low of \$11,000 in 2015 to a high of \$355,000 in 2021. The average number of crop acres across KFMA grain farms increased from 1,200 acres in 1997 to 1,800 acres in 2023. Although KFMA farms are not an exact representation of Ag Census farms (fewer very small farms and very large farms), the data does closely track changes in Economic Research Service (ERS) yearly net farm income (Ibendahl, 2021).

Both average net farm income and income volatility (financial risk) have increased over time for Kansas farmers. Comparing the five-year period starting from 1997 to the five-year period ending in 2023, average net farm income has increased from \$37,000 to \$190,000. However, the standard deviation of net farm income has also increased from \$15,000 to \$103,000.

The increase in land values since 1997 has been countered by the increase in average net farm income. Land values have increased 400%, while the five-year average of net farm income has also increased by 400%. However, the coefficient of variation has increased from 0.39 to 0.54, indicating that the relative financial risk has increased.

With this evidence of increased financial risk to farming, farmers might be increasing their use of rented land to provide a higher level of liquidity to meet periods of lower net farm income. This article examines the distribution of cropland rental percentages for all the KFMA grain farms at five-year intervals to determine if rented land has become a

larger proportion of a farmer's crop acreage base. These results should provide guidance about the demand for rented farmland.

BACKGROUND

The question of whether farmers should buy or rent their farmland has been studied for a long time. Reiss (1972) presented an analysis comparing the costs of purchasing land against the expected capital benefits from a purchase, using a sample farm approach to show that many of the benefits of owning land occur in the future. Some of the important issues a farmer should consider are the opportunity cost of capital, the mortgage interest rate, the land price relative to the net rent, and the variability of future prices and rents.

Edwards (2015) used an example farm approach similar to Reiss and found that much of the financial feasibility of purchasing farmland depends on the financial position of the farmer/borrower. Borrowers with enough cash to make a larger downpayment and who have other sources of revenue are better able to make a land purchase feasible. These factors are in addition to the purchase price and interest rate.

However, even if a farmer concludes that owning is the best choice, cashflow issues arise with land purchases. As shown in Oltmans (1995), farmland will seldom generate sufficient income to meet the cashflow requirements for principal and interest payments. Because land is non-depreciable and often appreciates, much of the return to owning land is based on land appreciating, thus, land could be a very profitable investment, yet still not be able to cashflow. This cashflow requirement would require a farmer to have rented land or have sufficient cash already available to contribute to loan payments.

While much of the literature has examined the land purchase versus land renting choice in terms of profitability and cashflow, some research has explored other factors, such as soil degradation and erosion. Leonhardt et al. (2021) investigated whether farmers used different conservation practices on rented land and found no differences between rented and owned cropland in the application of different soil conservation practices. However, this result could be because the rental arrangements in the samples studied were all secure, long-term arrangements.

The ratio of farmland price to cash rent price can be important when examining a farm's use of rented land. If farmland prices are high relative to cash rent prices, farmers are more likely to rent ground rather than

purchase ground. Baker et al. (2014) examined the rise in farmland prices from the early 2010s and found the farmland price to cash rent ratio was at historic highs and cautioned investors about purchasing farmland as a risk strategy in a portfolio of assets. However, farmland values increased 4.6% on a compounded annualized growth rate from 2017 to 2022 and increased 7.4% in 2022 (ERS, 2025). Thus, farmland was a profitable investment at the time of the Baker et al. paper.

DATA

This study uses data from the KFMA, a program that has been helping farmers since the 1930s and that has computerized farm records back to the early 1970s. There are currently around 2,000 farms in the KFMA system, and in any given year, about half of those farms will have records that are useable for research, teaching, and Extension analysis. However, the number of farms with usable data has declined over time as farms have gotten larger. In 1980, there were 2,500 farms with usable data, but in 2023, there were just 850 farms. There is also some evidence of continuity among the KFMA farms. Of the set of farms in 2023, about half have at least 10 years of continuous farm data.

KFMA farms work with an economist to collect financial and production data. Farms that are certified usable will have a valid income statement and balance sheet. While the focus is on collecting financial information, some production information is also collected, including the acres of each crop grown as well as the acres rented and own. The land rent percentage is calculated by dividing the number of rented crop acres by the total number of crop acres.

One limitation of the KFMA rental data is the lack of information about the type of lease. Share leased and cash leased land are both lumped together as rented land, and although this grouping does not affect the analysis shown here, the type of lease would help with other analyses. Any analysis of how renting farmland affects the risk levels of tenants and landlords is difficult to measure with KFMA data because cash leasing puts all the risk on the tenant while share leasing splits the risk between tenant and landlord. Also, the risk aversion level of tenants and landlords will dictate whether a cash or share lease is used.

To help provide a clearer picture of how rented land is used, only grain farms are used in this analysis. About two-thirds of KFMA farms fit into a grain farm category. Note that the KFMA uses labor hours as a

mechanism to separate farms into farm types, so there is likely a small amount of beef production on many grain farms.

ANALYSIS

For the analysis in this study, the percent of rented cropland was calculated for every grain farm since 1972, the earliest date when KFMA records were computerized. The first part of the analysis shows the median percentage of farmland rented each year (Figure 1). The median percentage of farmland rented is the midpoint of percent rented acres when the farms are ranked from the lowest percent of rented acres to the highest percent of rented acres.

The blue dashed line in Figure 1 shows the median rental percentage by region where the rental percentage is the percent of rented crop acres divided by total crop acres. Breaking the analysis into regions can be important because farming practices change considerably from East to West across the state. The Eastern part of the state receives rainfall that is close to the rainfall levels in Iowa and Missouri, and Eastern Kansas follows similar production practices. In the Western part of the state, rainfall drops to well under 20 inches, and fallowing land is common. More wheat and grain sorghum are grown in the Eastern part of the state, where corn and soybeans are the primary crops without the use of fallow land.

While the Central and Eastern parts of the state have several hundred KFMA farms each, the Western part of the state has less than 100 KFMA farms. In addition, these Western farms are much larger than in the other parts of the state, the size difference reflecting the number of acres needed to make a living when lack of rainfall constrains yields. As a result of fewer farms in the analysis, there is more variation in the calculated rental percentages in Western Kansas.

As Figure 1 shows, the median land rent percentage is between 70% and 80% in all three regions and across time except for the late 1970s and early 1980s. At the start of the KFMA dataset, the land rent percentage was closer to 60%. This increase in rental percentage reflects the same period as the 1980s farm crisis and the drop in land values during that time.

Figure 1 also shows the percent of farms not renting (red, solid line in the figure), which has remained around 10% over the entire database history. Western Kansas is the exception, but this variability is likely a small data issue.

The second part of the analysis developed a CDF (Cumulative Distribution Function) graph of rental percentages at each five-year interval starting from the most recent year of data (2023). A CDF function shows the rental percentage of each farm for that year, with the rental percentages sorted from low to high and then plotted on the graph. This analysis is shown in Figure 2. At any given rented acre fraction (X-axis values), a cumulative distribution shows the percentage of farms (Y-axis values) that have that fraction of rented acres or lower. The 50-percentile point (from the Y-axis) is the median level of the fraction of rented acres. A cumulative distribution shows a line from 0 to 100% (Y-axis) to represent the entire distribution of farms.

A CDF shows the probability the random variable X will take a value less than or equal to X. In Figure 2, the random variable is the rented acres fraction shown along the horizontal X-axis, with the probability of obtaining that rented acres fraction or less shown on the vertical Y-axis. The median rented acre fraction of how much land a Kansas farmer rents corresponds to the 50% point on the Y-axis, so, for example, in 2018, the median Kansas farm rented about 75% of its cropland.

The other way to interpret this CDF graph is to start from a point along the X-axis and then find the percent of farms with that level of rented ground or less. The red numbers in Figure 2 show this approach for farms that rent 50% of their cropland or less—for example, in 2018, 24% of the farms rent less than half their cropland. The right edge of each CDF helps show the percent of farms renting all their cropland—for example, in 2018, at slightly less than the 1.0 point along the X-axis (nearly 100% rented land), about 85% of farms have at least some acres of owned land. This can also be restated as 85% of farms have up to 100% of rented land but not 100% exactly. That means 15% of farms are farming with all their crop acres rented.

The left edge of the CDF shows the percent of farms not renting any cropland. The blue line stops before reaching zero, so this endpoint is the percent of farms not renting. The percent of farms not renting can be read from the CDF and is also shown in Figure 1 (the red, solid line).

An analysis of farmland renting by size of farm and age of principle operator is shown in Figures 3 and 4. Although the median rental percentage has not changed greatly since the end of the 1980s farm crisis, there are some farm size and operator age differences.

Figure 3 examines the percent of farmland rented by farm size. KFMA farms are divided into three equally sized groups based on the number of crop acres, and as might be expected, smaller farms own more of their crop acres than larger farms. For all three farm size groups, renting increased in response to the 1980s farm crisis and then leveled out.

Figure 4 examines the percent of farmland rented by age of the principal operator. As in Figure 3, KFMA farms are divided into three equally sized groups based on operator age, and the age breakdown is again as expected with younger farmers renting more of their land than older farmers. The younger and middle-aged farmers show a similar pattern to the other figures, with an increase in renting from the farm crisis and then a leveling out in the percent of farmland rented. The oldest farmer group is an exception to this trend with a large drop in rented land from 1987 to 1992 before beginning an increasing trend in the percent of rented farmland. However, this difference could be a data issue as farms do move in and out of the KFMA program.

CONCLUSIONS

Although this analysis is more exploratory than econometric, several observations can be made from Figures 1 and 2. First, cropland control changed during the 1980s farm crisis, with the percent of rented land increasing from 60% to 80% during this period, but since the mid-1980s, the percent of rented land has stayed within a narrow band in both Central and Eastern Kansas. Western Kansas is an outlier, likely due to the smaller number of farms in the KFMA program.

The 1980s farm crisis was a period of low profitability and high interest rates. It was also a period where land values declined for the first time in history, but the 1980s were not only a crisis period for farmers but also for banks that were heavily invested in agriculture. This is when the Farm Financial Standards Council was implemented to help create standards for farm accounting and evaluation. Banks moved away from farm lending based solely on solvency criteria to lending that also evaluated farm profitability. Thus, farmers were less able to borrow money to purchase farmland. More restrictive lending combined with lower per acre profitability likely led to the increase in renting during the 1980s.

The second observation based on Figures 1 and 2 is how consistent the rented cropland percent has remained since the farm crisis of the 1980s ended. Not

only has the median percent rented acres remained in a narrow range as shown in Figure 1, but the entire distribution of farms in a specific year is visually consistent as shown in Figure 2. The percent of farms not renting is typically less than 10%, while the percent of farms renting all their cropland is between 15% to 25%. Figure 2 also shows the percent of farms renting half their cropland or less has remained near 25% during each five-year interval over the last 50 years.

Finally, there are renting differences based on farm size and operator age that are consistent with expectations about renting with younger farmers renting more of their land than older farmers. Older farmers typically have a bigger equity base and can afford to buy more of their crop land. Also, farmers do have a limited amount equity, so it is not surprising that the largest farms need to rent a greater percentage of their cropland to become a large farm.

DISCUSSION

The increase in rented land during the 1980s farm crisis is readily explainable because of tighter lending standards and lower profitability. However, since then, there have been periods of very low profitability as well as periods of very high profitability. Despite these changing conditions, the percent of rented land has remained within a limited range with visually similar distributions. Only the 1980s farm crisis shows any real changes occurring with the percent of rented ground. The older farmer group could be an exception to this consistent renting percentage, or it could be a data issue as the age of the principal operator changes when a long-term KFMA farm moves to a new generation.

For discussion, here are some ideas that merit further analysis. First, does it take a land price decrease before farmers are willing to move to a higher level of rented ground? Farmers perceive many advantages to owning land, including the typical yearly capital appreciation. When land prices decline, this advantage goes away making rented land look more attractive.

Second, the relative financial risk to farming has increased as discussed in the introduction about the increase in the coefficient of variation. This increase in financial risk means a farmer's net income is subject to more year-to-year variation, but why has this risk increase not also increased the percent of land rented? It may be possible the stickiness of rental arrangements and the difficulty of quickly changing a farm's land control structure has kept the land rent

percent distribution from changing very quickly or changing very much.

Third, there have been periods where the land price to cash rent ratio has changed during the last 50 years, but these changes do not show up in a visual inspection of land rent percentages. Perhaps these changes are just short term and revert to a given mean after a time? This would explain why the land rent percent does not show any changes given these changes are sticky.

The last discussion point is about how appraisers should approach evaluating land. Do the land price and land rental markets have self-correcting mechanisms in place to keep them in balance? The consistency in how farmers maintain the same level of rented ground through time suggests that is the case.

REFERENCES

Baker, T.G., M.D. Boehlje, and M.R. Langemeier. 2014. "Farmland: Is It Currently Priced as an Attractive Investment?" *American Journal of Agricultural Economics* 96(5): 1321–1333. <https://doi.org/10.1093/ajae/aau037>.

Edwards, W. 2015. "Evaluating a Land Purchase Decision: Financial Analysis." *Iowa State University Ag Decision Maker*. <https://www.extension.iastate.edu/agdm/wholefarm/pdf/c2-77.pdf>.

ERS. 2025. "Land Use, Land Value & Tenure - Farmland Value." USDA, Economic Research Service. Updated January 5, 2025. <https://www.ers.usda.gov/topics/farm-economy/land-use-land-value-tenure/farmland-value>.

Ibendahl, G. 2021. "A Comparison of Kansas Net Farm Income from KFMA and ERS." AgManager.info. Kansas State University. February 9, 2021. <https://www.agmanager.info/farm-management/farm-profitability/comparison-kansas-net-farm-income-kfma-and-ers>.

KFMA State Summaries. 2024. Kansas State University. <https://www.agmanager.info/kfma/whole-farm-analysis/kfma-state-summaries>.

Leonhardt, H., M. Braitto, and M. Penker. 2021. "Why Do Farmers Care about Rented Land? Investigating the Context of Farmland Tenure." *Journal of Soil and Water Conservation* 76(1): 89–102. <https://doi.org/10.2489/jswc.2021.00191>.

Oltmans, A.W. 1995. "Why Farmland Cannot, Will Not and Should Not Pay for Itself." *Journal of ASFMRA*, 57–67.

Reiss, F.J. 1972. "Buying versus Renting Farmland." *Illinois Agricultural Economics* 12(1): 37–40. <https://doi.org/10.2307/1348770>.



Figure 1. Median percent of land rented and percent of farms not renting by region

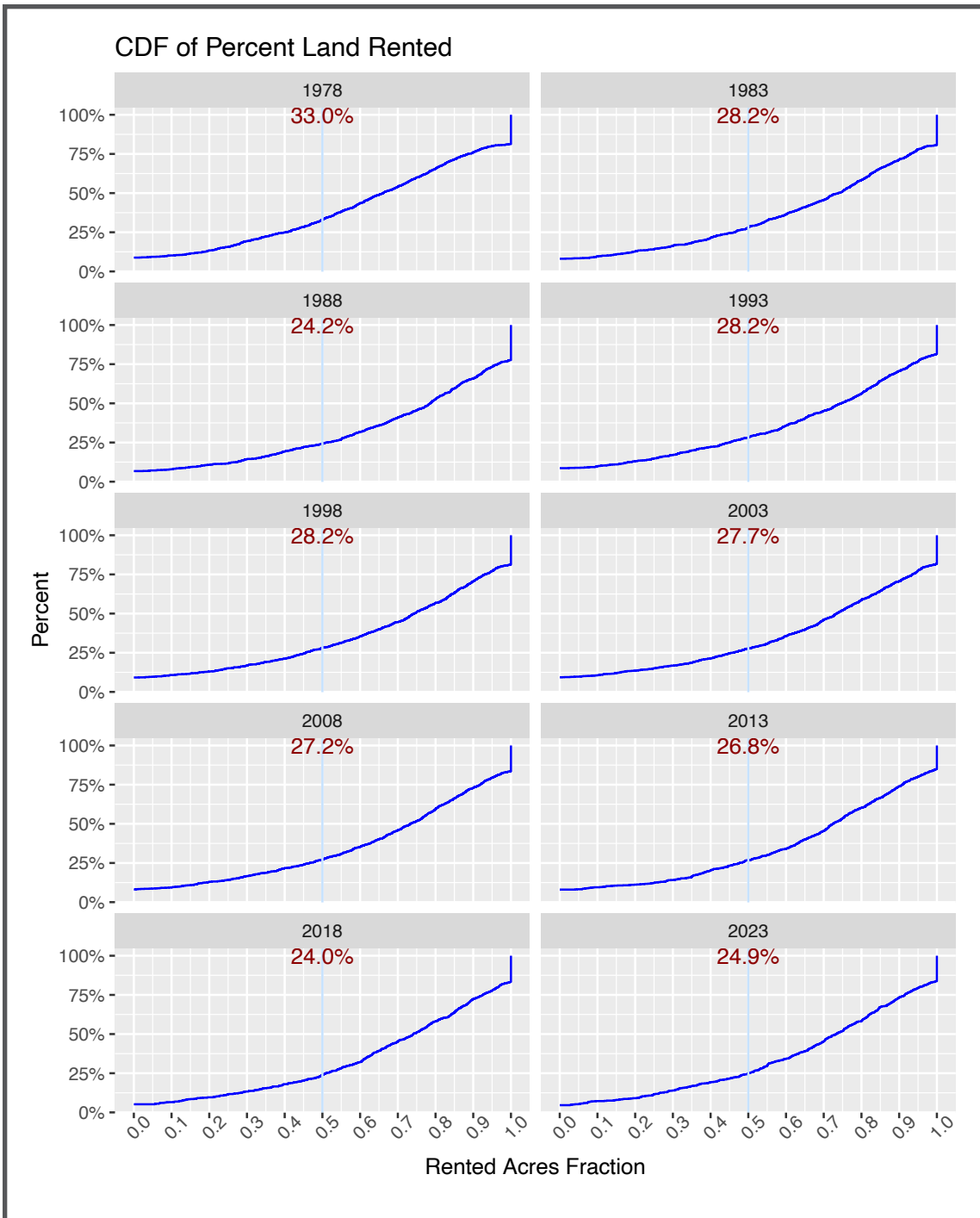


Figure 2. CDF of percent land rented at five-year intervals

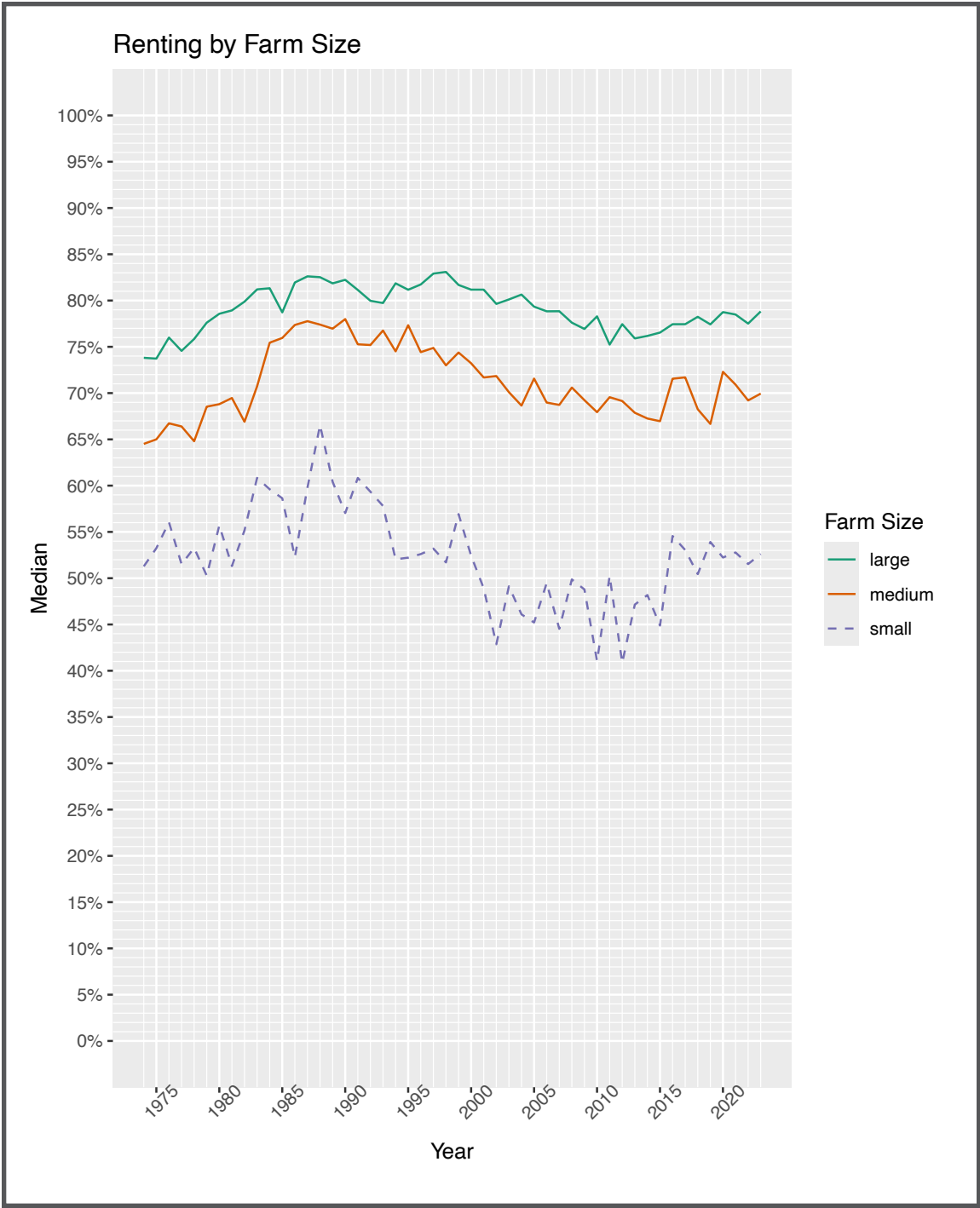


Figure 3. Median percent of farmland rented by farm size

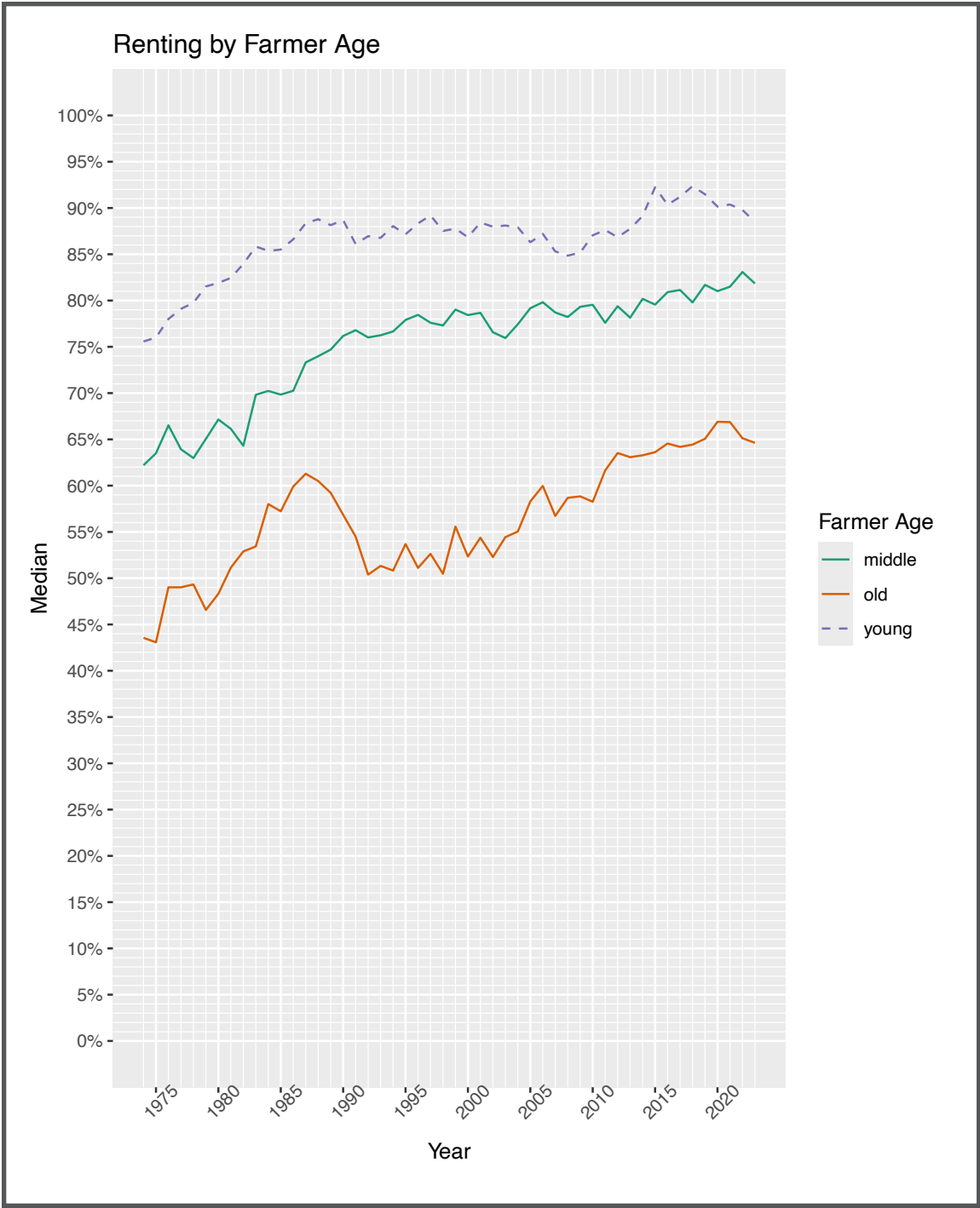


Figure 4. Median percent of farmland rented by principal operator age