4-20-2017

Determining Recreational Land Values Using Ordinary Least Squares Regression

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DETERMINING RECREATIOAL LAND VALUES USING ORDINARY LEAST SQUARES REGRESSION

by

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B.S., Southern Illinois University Carbondale, May 2016

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Master of Science

Department of Agribusiness Economics
in the Graduate School
Southern Illinois University Carbondale
August, 2017

RESEARCH PAPER APPROVAL

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For the Degree of

Master of Science

in the field of Agribusiness Economics

Approved by:

Dr. Dwight R. Sanders

Graduate School
Southern Illinois University Carbondale
April 20th, 2017

AN ABSTRACT OF THE RESEARCH PAPER OF

KAITLIN GLASSFORD, for the Master of Science degree in AGRIBUSINESS ECONOMICS, presented on APRIL 20th, 2017 at Southern Illinois University Carbondale.

TITLE: DETERMINING RECREATIONAL LAND VALUES USING ORDINARY LEAST SQUARES REGRESSION

MAJOR PROFESSOR: Dr. Dwight R. Sanders

Recreational land values in Illinois have increased 6 percent since 2011. This study presents a regression analysis of recreational land prices in Illinois. The data used for this regression model ranges from 2011 through 2016 and contains information for all ten regions of Illinois. Using an OLS regression model allows for parcel specific characteristics and time adjustments to be examined. The model shows prices trended upwards through 2014. In 2015, prices decreased but in 2016 prices were back up. This suggests that prices for recreational land in Illinois peaked in 2014. The model also shows that the further south a region is in Illinois, the price of recreational land will decrease compared to the base region in northern Illinois.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURE PAGE

CHAPTER 1

INTRODUCTION

Recreational land values in Illinois had been increasing until the 2016 report was released by the Illinois Society of Farm Managers and Rural Appraisers. The 2016 report contains sale information from 2015. The average total price per acre dropped from $3,775.18 in 2014 to $3,648.88 in 2015. From 2015 to 2016 average prices dropped by $126.3 per acre. Many regions are still recording increases even though average prices have been declining since 2012. Overall prices are up 6 percent since 2011. Sales and prices for recreational tracts in certain Illinois regions are starting to bounce back from the 2008 recession. These land segments took the biggest hits from the recession. Recreational land prices are typically driven by discretionary income therefore the regions with lower sales and prices in 2015 and 2016 could be explained by a lower discretionary income (ISFMRA, 2016). Recreational land buyers account for less than 5 percent of Illinois farmland buyers (ISFMRA, 2016). This is down from 2007 when they accounted for 9 percent. (ISPFMRA, 2007). Prices for farmland being sold for recreation use varies across Illinois. For example, North Central Illinois reported an 18.88 percent increase in recreational land prices from 2015 to 2016. Central Illinois reported a 10.53 percent decrease in recreational land prices from 2015 to 2016. Nine out of the ten regions in Illinois reported sales in recreational land for 2015. Region 1, northeast, reported no sales. In 2016 all ten regions recorded sales of recreational land tracts.

It can be difficult to recognize market changes depending on the data set and what methods are used in the analysis. There are different approaches that may be used. One would be to average the price per acre from the sample of sales that occurred in the same area over a period of time. There is however a disadvantage to using the averages approach. If average

prices are used to track changes in price over time, then there are no controls being used. There needs to be a control for the type of land that is being sold. Location, parcel size, productivity indexes, sale date, percent tillable, and the year sold are all characteristics that can affect the price per acre (Taylor et. al. 2015). "If the mix of land characteristics within the sample time period is not representative of all land sold, then a simple average may be biased (Taylor et. al. 2015 p. 76)." Instead of using the averages method, a linear regression model can be ran. "Regressing the price per acre of each parcel in the sample on parcel-specific characteristics provides an average price estimate that controls for not only those characteristics, but also seasonal selling patterns (Taylor et. al. 2015 p. 76)." When using a linear regression model the results can be interpreted better and market participants can better understand and visually see the changes in price (Taylor et. al. 2015). An objective of this paper is to identify if there is any correlation between the percentage of tillable acres on a recreational tract and the price paid per acre in Illinois. This study will be conducted using an ordinary least squares regression model to demonstrate the relationship between the percent tillable on a recreational tract and the price paid per acre.

CHAPTER 2

REVIEW OF LITERATURE

Recreational tracts can be defined as land that is typically high in non-tillable acres. These tracts also may contain soils that can easily erode or flood. Nonresident owners are the main purchasers of these tracts and use them for hunting, fishing, or other pursuits (ISFMRA, 2016). Recreational land can bring in a fair amount of income for a landowner because of its high demand. The high demand for recreational land comes from a rise in the interest of outdoor pursuits like hunting, fishing, and bird watching. This is also a result from the gradual disappearance of fence rows and small thickets in rural areas. A landowner can gain income in a couple of ways with recreational land. One way would be to sell the land to a recreational buyer or the land can be leased for recreational use. A recreational lease doesn't have to be for a property that is all recreational or all non-tillable. For example, a landowner can lease his corn field for dove hunting after the corn is shelled or a landowner can lease a tract that has 40 acres tillable and 20 non-tillable for hunting and or birdwatching. The possibilities for a recreational lease are numerous. Eberle and Wallace stated, "recreational leases for hunting, fishing, or wildlife watching provide a means by which rural Illinois landowners can supplement income from their land and maintain land ownership" (Eberle and Wallace, 2008, p. 28).

Rural landowners who pursue recreational leases are capturing more of the annual recreational dollars spent in Illinois. The 2011 National Survey of Fishing, Hunting and Wildlife-Associated Recreation reported that Illinois in 2011 had 1 million anglers spending $973 million, 512 thousand hunters spending $1.2 billion, and 3 million wildlife-watching participants spending $1.3 billion (U.S Dept. of Interior, Fish & Wildlife Service –

Illinois, 2014). From 2001 to 2011 for anglers there was a 1% increase in expenditures, for hunters there was a 96% increase in expenditures, and for bird watchers there was a 105% increase in expenditures (U.S Dept. of Interior, Fish & Wildlife Service – Illinois, 2014). With those numbers that the outdoor enthusiasts are spending it is hard to develop an argument against leasing farmland or recreational land to a hunter or wildlife-watching participant. These sportsmen are paying high lease payments to be able to do what they love. In prime hunting counties the leases are more expensive than a non-prime county. For example, a deer hunting lease in Pike county Illinois will more than likely have a higher lease rate than Clay or Hardin county Illinois. These leases can be made in a variety of ways. For example, a landowner may want to lease for nine months, lease ground monthly, lease ground weekly, or lease by season (e.g. deer or turkey).

Surprisingly, a small amount of landowners conduct leases. In 2012, 834 farms in Illinois reported receiving income from recreational services and Ag tourism (USDA-NASS, 2012, Table 6). Those numbers are increasing every year. In 2002 only 606 farms reported income from recreational services and Ag tourism (USDA-NASS, 2007, Table 6). "Likely reasons why more landowners do not lease is a lack of information about appropriate lease rates for the type of habitat owned, length of lease to offer, lease associated expenses (brokerage fees, advertising, land management changes, and habitat enhancement expenses), as well as concerns about safety, liability, and damage to crops, timber, and other property (Eberle and Wallace, 2008, p. 29)." Some landowners prefer to speak with and hire a professional farm manger to help them understand the lease and which lease is best for them and the property.

Owning land is part of the "American Dream". Most fulfill this dream by buying a house and a few acres but for an avid hunter or outdoor enthusiast that may not be enough. Hunting and

recreational land is a safe investment but it is also a long term investment. Long term investments are typically attractive to buyers (Laux 2015). Hunting land value is not dependent on profit and loss statements, rather it comes from owning something that will never go away, something that can be walked on and used while it appreciates in value. After buying the land, a landowner will look for ways to increase the value of the property as the years go by incase of the event of resale or a lease agreement. To make the tract of land more attractive to a potential buyer, they might consider adding food plots and mineral blocks for wildlife, develop a trail system for easy access on the property, and manage the habitat.

The landowner will look for ways to earn income off the land in other ways besides a lease. There are government programs, produced by the USDA, that generate income for landowners like the Conservation Reserve Program (CRP) and Farmable Wetlands Program (FWP). The CRP program is a land conservation program governed by the Farm Service Agency (FSA). "In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. (USDA 2017 para. 1)." President Reagan signed the program into law in 1985. This program is the largest private lands conservation program in the United States (USDA 2017). The Conservation Reserve Program has ten initiative programs. Highly Erodible Land Initiative (HELI) is one of the initiatives branching off of CRP. "For farmers and landowners with cropland exceeding an Erosion Index >20, establishing grass or tree cover will help maintain the long-term health of the land (USDA 2017 para. 2)." When land is enrolled in the HELI program it makes the most sense economically. Most of the time these land tracts do not

have a productivity index worth farming on because layers are susceptible to erosion. Landowners gain a financial benefit of ten years of rental payments and a fifty percent cost-share payment for establishing the practice (USDA 2017).

Illinois Recreational Access Program is another way for landowners to generate income off of their recreational land tracts. Illinois Department of Natural Resources (IDNR) created the Illinois Recreational Access Program (IRAP) by utilizing resources that were obtained by the USDA's Voluntary Public Access- Habitat Incentive Program (IDNR 2017). Illinois Recreational Access Program enrolls landowners who are willing to lease their land to public tenants approved by IRAP. "A private landowner who owns property in Illinois that has qualifying habitat for hunting turkey, deer (archery), upland bird, small game, and waterfowl may be eligible (IDNR 2017 para. 3)." Also, if a landowner has access to a river on a public waterway and/or owns a pond with sustainable fish habitat they may also be eligible. The leases are for properties in the counties of the Illinois and Kaskaskia Watersheds (IDNR, 2017). The watershed areas include sixty eight counties out of the one hundred and two in Illinois. Over 90% of the land in Illinois is privately owned leaving less than 10% for non-land owners to find a place for recreational activities. Granted some non-land owners utilize leases but IRAP makes the process of leasing easier. This program is a win win for the land owner and the IRAP tenant. When a landowner enrolls in the program their property will be enrolled in a habitat management program and they will also be eligible for assistance in implementing habitat restoration. The recreational access program provides financial stipends to landowners who lease land to participants in the IRAP. The stipend amount will be based on how many acres are leased and what activities will be conducted on the land (IDNR 2017). A typical lease through this program lasts three to four years.

In 2011 IRAP was formed and since then 16,000 acres in 38 counties have been leased through IRAP for outdoor recreational activities (IDNR 2017). IRAP helps youth turkey hunters gain access to land where they can hear a turkey gobble and see him strut. It's also assisted archery hunters harvest deer every fall. "IRAP has helped landowners with almost 6,000 acres of non-native species (NNS) removal and aerial spraying; nearly 1,500 acres of prescribed burning; and 250 acres of timber stand improvement and another 250 acres of prairie planting" (IDNR para. 3).

CHAPTER 3

DATA AND METHODS

The data for this paper is from the Illinois Society of Professional Farm Managers and Rural Appraisers. It includes data from recreational tract sales in all ten regions of Illinois from 2011-2016. The data set includes the following variables: year in which the sale took place, the region in which it sold, total acres sold, the percent tillable, productivity index on the tillable acres, and the total price per acre paid.

A regression analysis in economics has been used in a variety of different ways for many years. It has been used to evaluate how factors affect the price of land, to show USDA land values lag the market as reflected by sales data, and it has been used to estimate the value of different types of crop land (Eberle and Wallace, 2008). In a regression analysis, statistics are used to discover what variables have an impact on the variable at question. It answers questions like what variables matter most, what can be ignored, and how do they interact with each other? There are two different types of variables used in a regression analysis; dependent and independent. The main factor being predicted or explained is the dependent variable. Therefore the independent variable would be the factors suspected to have an impact on the dependent variable. There can be more than one independent variable. In a case where there is more than one independent variable the model will be referred to as a multiple regression. A regression model can be estimated in Excel, SPSS, or STATA. Once the regression has been ran in any of the fore mentioned programs, tables of information will be discharged. The regression outputs will vary slightly in appearance depending on the statistical package used. In excel the outputs will have a regression statistics table, an ANOVA table, and a table with the coefficients. The

SPSS output will be similar except for the first table will be referred to as a model summary. For every independent variable there will be a coefficient standard error, t statistic, and a p value.

The simplest way to determine the average value of land in a data set or to isolate the value of an individual characteristic would be to run an Ordinary Least Squares (OLS) regression model instead of taking a simple average (Taylor et. al. 2015). As stated earlier, the averages approach does not take into account parcel specific characteristics and there are no controls being used. Controls are used to determine the specific characteristics that have an impact on the total price per acre. "If the mix of land characteristics within the sample time period is not representative of all land sold, then a simple average may be biased (Taylor et. al. 2015 pg. 76)." For example, if a large proportion of the observed sales in a given time period has a large percentage of tillable acres, then the simple average of price across these sales will be inflated due to the large percentage of the tillable acres in the recreational tract.

The OLS method is used for estimating the unknown parameters in a linear regression. The main objective of an OLS estimator is to minimize the error terms. There are seven assumptions that need to be made in order to run an OLS regression. The seven assumptions are as follows: one – dependent variable is a linear function of independent variable with the addition of an error term, two – the number of randomly selected sample observations should be larger than the number of parameters in the model, three – independent variables should be non-random1, four – the error terms will follow a normal distribution centered on a mean that is equal to zero, five – error terms have equal variances, or homoscedasticity, six – there is no auto correlation between the error terms, seven – no perfect multicollinearity between the independent variables.

A regression equation structure is based on a hedonic pricing model. Hedonic pricing is a model identifying price factors according to the premise that price is determined both by internal characteristics of the good being sold and external factors affecting it. For this study, the regression equation is formulated as follows:

(1) *Sale Price = f (sale year, region, parcel size, percent tillable, productivity index on tillable acres)*

where the sale price per acre of a given parcel of land is defined as a linear function of the year in which the parcel was sold, the region in Illinois where the parcel is located, the size of the parcel in acres, the percent tillable on the parcel, and the productivity index on the tillable acres sold. Using this equation the sale price was set as a function of the five independent variables, sale year, region, parcel size, percent tillable, and productivity index on tillable acres.

The region where the parcel was sold is included as an independent variable to account for the different factors that impact prices across Illinois. Some of the factors that vary across Illinois include, but aren't limited to: changes in county tax rates, proximity to urban areas, weather patterns and soil productivity. Year to year changes will also be observable if they are present. The percent tillable and the productivity index will be held constant so we can determine if those variables impact the total price paid per acre for a recreational tract. Productivity indexes are classified into four categories; excellent, good, average, and fair. An excellent productivity index ranges from 147- 133. Most of the productivity indexes in the excellent range are located in regions four, five, six, and seven. The regions with good productivity indexes (117 -132) include regions one through seven. An average productivity index ranges from 100-116. The regions containing these productivity indexes are eight through ten. Fair productivity indexes are less than 100. Fair indexes are mostly around the southern tip

on region ten. The regions containing theses indexes can vary depending on the parcel. For example, region three and two contain some areas with average productivity indexes.

For this regression model there will be two dummy variables. Those dummy variables will be present for the sale year and sale region. The sale year dummy variable is specified as equal to one if a parcel was sold in that year and zero otherwise. The sale region dummy variable is also specified as equal to one if a parcel was sold in that region and zero otherwise. The equation can be examined below:

$$\textit{Total Price/Acre} = \beta_0 + \beta_1 \text{Total Acres} + \beta_2 \text{Percent Tillable} + \beta_3 \text{Productivity Index}$$
$$+ \beta_4 \text{D Region 2} + \beta_5 \text{D Region 3} + \beta_6 \text{D Region 4} + \beta_7 \text{D Region 5} + \beta_8 \text{D Region 6}$$
$$+ \beta_9 \text{D Region 7} + \beta_{10} \text{D Region 8} + \beta_{11} \text{D Region 9} + \beta_{12} \text{D Region 10} + \beta_{13} \text{D Year 2012}$$
$$+ \beta_{14} \text{D Year 2013} + \beta_{15} \text{D Year 2014} + \beta_{16} \text{D Year 2015} + \beta_{17} \text{D Year 2016}$$

Once the model is estimated, the model will be able to predict average land prices for each of the regions in the dataset. The model will also provide an overview of the trends in Illinois recreational land prices over the observed six years.

For this regression model there will be a hypothesis, and a t-test conducted for each independent variable, resulting in a total of seventeen results. A t-test is conducted in a regression model to see if the estimated beta coefficient is statistically different from zero. If the null hypothesis is rejected then the estimated coefficients are statistically different from zero. Failure to reject a hypothesis results in the estimated coefficient having no significant impact on the dependent variable. The critical values for each t-test will be the same, however each test statistic will be different. The null hypothesis for test statistics that are less than the critical value will be in the fail to reject region. An F-test will also be conducted for this study. The F-test uses the R^2 value. The R^2 value gives the explanatory value of the estimated model. If the F

critical value is in the fail to reject region, then the models independent variables do a poor job in explaining variation in the dependent variable. Therefore if the critical value is in the rejection region, then the models independent variables do a good job of explaining variation in the dependent variable. The hypothesis test for this study can be examined in table 1. The expectations for this research on recreational land values are as follows. The sale year will have an impact on the sale price. It's expected that the peak of recreational land sales was in 2012. The regions in which the parcels were sold will also have an impact on sale price. Recreational tracts sold in northern Illinois, closer to Chicago, will have higher sale prices than the tracts sold in southern Illinois. The total amount of acres in a recreational land tract will impact price as well. For example, a parcel that has a total of 175 acres will have a lower price per acre than a tract with a total of 50 acres. A segment of land with a high percentage of tillable acres will sell more than a segment with little tillable acres. This is because the probability of generating income off of tillable land is greater than the probability of non-tillable land. The percentage of tillable acres goes hand in hand with the productivity indexes. A higher productivity index will bring a higher price than a low productivity index. A buyer will be willing to pay more for land that he/she won't have to put as many inputs on to be successful.

Table 1: Hypothesis Tests

Null Hypothesis	Alternative Hypothesis
$H_o: \beta_{\text{Parcel Size}} = 0$	$H_a: \beta_{\text{Parcel Size}} \neq 0$
$H_o: \beta_{\text{Percent Tillable}} = 0$	$H_a: \beta_{\text{Percent Tillable}} \neq 0$
$H_o: \beta_{\text{PI on Percent Tillable}} = 0$	$H_a: \beta_{\text{PI on Percent Tillable}} \neq 0$
$H_o: \beta_{\text{Region 2}} = 0$	$H_a: \beta_{\text{Region 2}} \neq 0$
$H_o: \beta_{\text{Region 3}} = 0$	$H_a: \beta_{\text{Region 3}} \neq 0$
$H_o: \beta_{\text{Region 4}} = 0$	$H_a: \beta_{\text{Region 4}} \neq 0$
$H_o: \beta_{\text{Region 5}} = 0$	$H_a: \beta_{\text{Region 5}} \neq 0$
$H_o: \beta_{\text{Region 6}} = 0$	$H_a: \beta_{\text{Region 6}} \neq 0$
$H_o: \beta_{\text{Region 7}} = 0$	$H_a: \beta_{\text{Region 7}} \neq 0$
$H_o: \beta_{\text{Region 8}} = 0$	$H_a: \beta_{\text{Region 8}} \neq 0$
$H_o: \beta_{\text{Region 9}} = 0$	$H_a: \beta_{\text{Region 9}} \neq 0$
$H_o: \beta_{\text{Region 10}} = 0$	$H_a: \beta_{\text{Region 10}} \neq 0$
$H_o: \beta_{\text{Sale Year 2012}} = 0$	$H_a: \beta_{\text{Sale Year 2012}} \neq 0$
$H_o: \beta_{\text{Sale Year 2013}} = 0$	$H_o: \beta_{\text{Sale Year 2013}} \neq 0$
$H_o: \beta_{\text{Sale Year 2014}} = 0$	$H_o: \beta_{\text{Sale Year 2014}} \neq 0$
$H_o: \beta_{\text{Sale Year 2015}} = 0$	$H_o: \beta_{\text{Sale Year 2015}} \neq 0$
$H_o: \beta_{\text{Sale Year 2016}} = 0$	$H_o: \beta_{\text{Sale Year 2016}} \neq 0$

CHAPTER 4

RESULTS

Of the seventeen hypothesis tests that can be observed in Table 1, fourteen hypothesis were rejected. The hypothesis that weren't rejected were total acres, productivity indexes on tillable acres, and the year 2012. If a hypothesis is considered to be fail to reject, it is concluded that the coefficient variable is not statistically significant. All other hypothesis test were in the acceptance region and were considered to be rejected. A rejection of a hypothesis means that the independent variables do have a statistically significant impact on the dependent variable (total price per acre). An F-test was conducted to interpret the R^2 value. The R^2 value is equal to .363. For the F-test, a critical value of 1.64 was used. The F statistic that was examined in the ANOVA output is 25.758. The F statistic hypothesis, H0: $R^2= 0$, was rejected at the .05 significance level. The R^2 value of .363, tells us that 36% of variation in recreational land in Illinois is explained by the coefficients. Likewise, 63.7% of the variation in recreational land in Illinois isn't explained by the model.

Table 4 shows results of the regression model that was ran in SPSS. These coefficients are interpreted relative to the total price paid per acre for recreational land sold in Illinois from 2011-2016. To determine what variables are statistically significant for this study, t-tests were ran. For the t-test, a critical value of 1.96 and -1.96 was used. The t-statistics can be examined on the same page as the results of the regression.

The first three variable coefficients are the parcel specific classifications that were examined to conclude if those characteristics impact the total price per acre paid. The first of the three variables examined was the total acres sold. After running a t-test, it was determined that the total acres sold in each parcel wasn't statistically significant. The percentage of tillable acres

sold on a recreational tract was the only variable of the three that had any statistical significance regarding the impact on the total price per acre. The other variable that was not statistically significant was the productivity index on the tillable acres.

The dummy variable coefficients for each region reflect the price adjustments relative to the region left out of the model (Region 1). Land values vary substantially across the ten regions. In all ten regions of Illinois prices decreased compared to the base region. For example, recreational land in region four sells for $824.69 per acre lower than the prices in the base region one. Another example is the land parcels in region ten sell for $2,979.41 per acre less than the base. After a t-test was ran for all ten regions, it was concluded that all of the regions were statistically significant in impacting the total price per acre. This means all the regions in the model had an impact on the total price per acre.

The use of dummy variables for each year observed controls for year to year changes in the land market. For this study, recreational land in Illinois peaked in 2014. There is an overall upward trend in land values from 2011. In 2012, the land value was $166.36 per acre higher compared to the base year of 2011. In 2013, recreational land values were $440.32 per acre higher than in 2011. As stated previously, recreational land prices peaked in 2014. The price was $728.75 per acre higher than in 2011. Therefore, prices in 2015 were down from 2014 by $142.93 per acre. The prices were up $585.82 per acre since 2011. Recreational prices in 2016 were back on the rise compared to the prices in 2015. From 2015 to 2016 prices increased by $35.09 per acre. Compared to the base year prices increased by $620.91 per acre. After all the t-tests were ran for the sale years, it was concluded that every year besides 2012 had a statistically significant impact on the total price per acre.

CHAPTER 5

DISCUSSION

This study presents an analysis of pricing patterns for recreational land in the state of Illinois. The data set includes sales that occurred from January 2011 to December 2016. These sales were recorded in all ten regions of Illinois and analyzed by using a linear regression method. Because this study only takes into account Illinois sales, it won't be beneficial to other states. Illinois has a different local land market than other states, the quality of land is different and earning potential of agriculture land versus other land uses will be different for each state. Even though this study has its limitations, the Illinois data provides an example of how an OLS regression is useful. The regression ran estimates parcel specific characteristics, region, and year effects. The results of this study indicate land prices decrease the farther south one travels in Illinois. According to the regression estimates recreational land prices peaked in 2014. Since 2014, prices have slowly been returning to what was recorded in 2013. The results of this study may possibly be sensitive to factors not considered in this regression model for recreation land. Still, it provides valuables information to land market participants in Illinois.

EXHIBITS

Table 2: Model Summary

Model Summary				
Model	**R**	**R^2**	**Adjusted R^2**	**Standard Error of the Estimate**
1	.603[a]	.363	.349	974.7207

Table 3: ANOVA Table

ANOVA Table					
Model		**Sum of Squares**	**df**	**Mean Square**	**F**
1	Regression	416020649.800	17	24471802.930	25.758
	Residual	729661826.100	768	950080.503	
	Total	1145682476.000	785		

Table 4: Coefficients Summary

Coefficients Summary						
Model		**Unstandardized β**	**Coefficients Standard Error**	**Standardized Coefficients βeta**	**t**	**Hypothesis Test Outcomes**
1	(Constant)	4779.047	289.211		16.524	
	Total Acres	-.436	.330	-.039	-1.319	Fail to Reject
	Percent Tillable	10.764	1.701	.195	6.326	Reject
	PI	.569	.657	.026	.866	Fail to Reject
	Region 2	-1187.186	288.219	-.344	-4.119	Reject
	Region 3	-2116.685	287.052	-.626	-7.374	Reject
	Region 4	-824.686	293.381	-.209	-2.811	Reject
	Region 5	-1710.787	306.046	-.349	-5.590	Reject
	Region 6	-1532.134	309.663	-.298	-4.948	Reject
	Region 7	-2322.733	293.641	-.607	-7.910	Reject
	Region 8	-1763.695	294.377	-.454	-5.991	Reject
	Region 9	-2234.337	292.240	-.589	-7.646	Reject
	Region 10	-2979.413	290.860	-.826	-10.243	Reject
	2012	166.358	138.402	.050	1.202	Fail to Reject
	2013	440.324	144.803	.122	3.041	Reject
	2014	728.751	138.752	.217	5.252	Reject
	2015	585.821	129.373	.205	4.528	Reject
	2016	620.912	130.328	.215	4.764	Reject

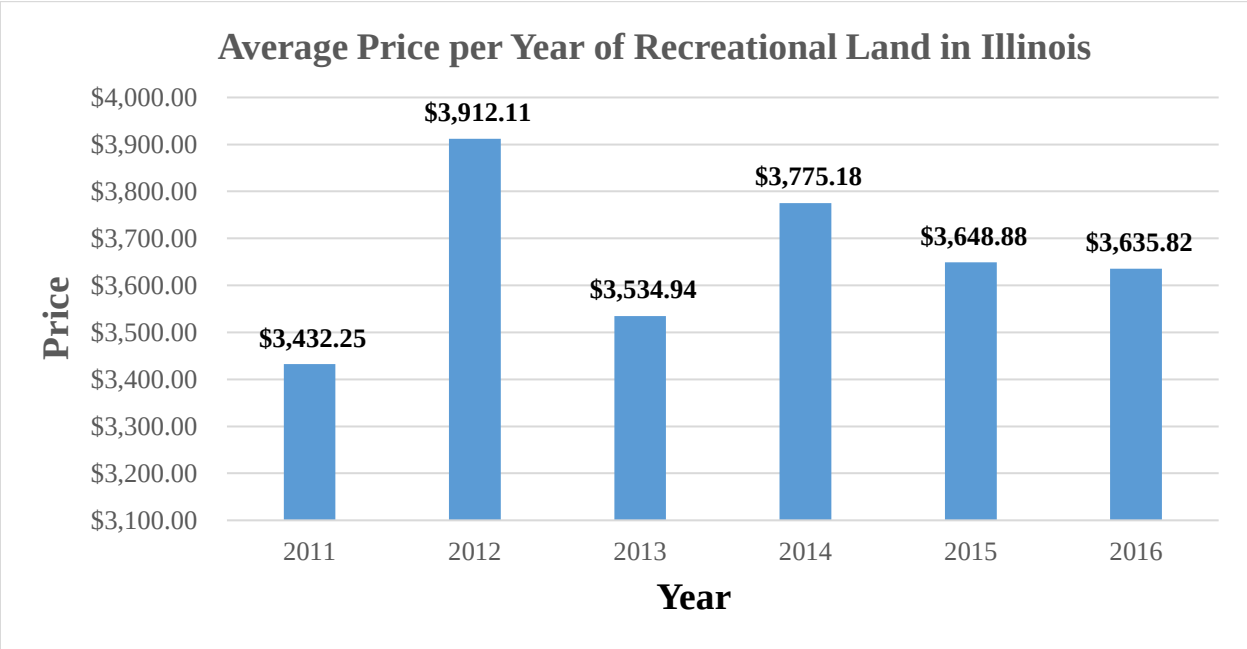

Figure 1: Average Prices per Year of Recreational Land in Illinois

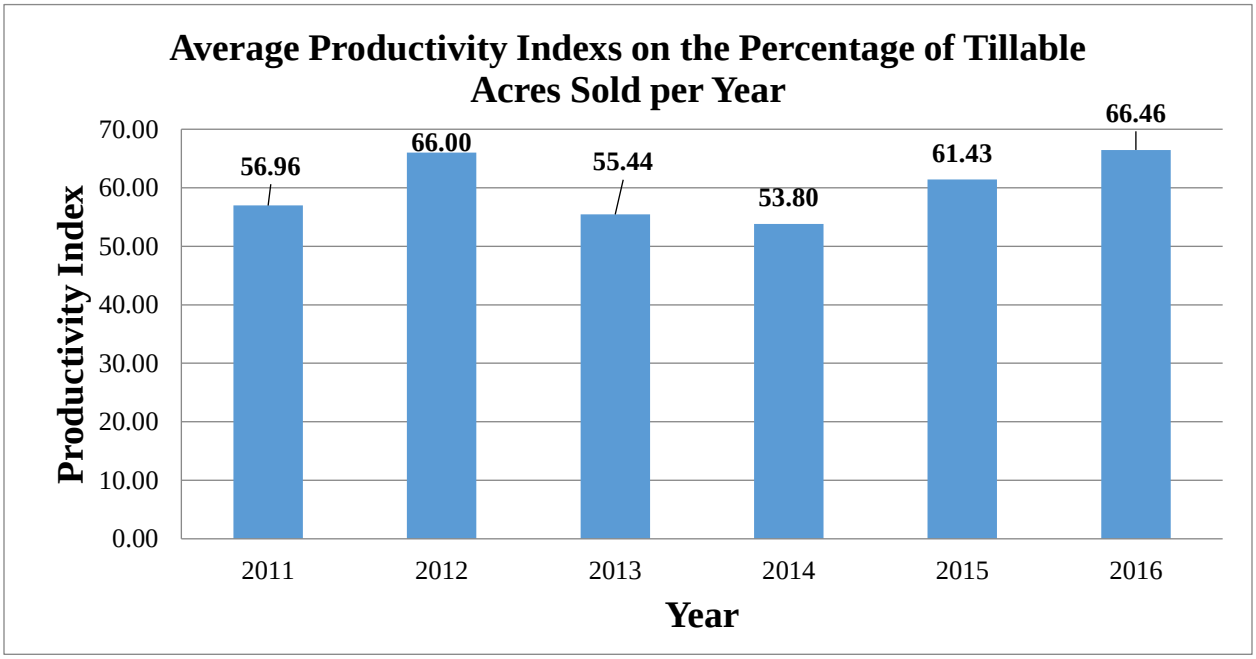

Figure 2: Average Productivity Indexes on the Percentage of Tillable Acres Sold per Year

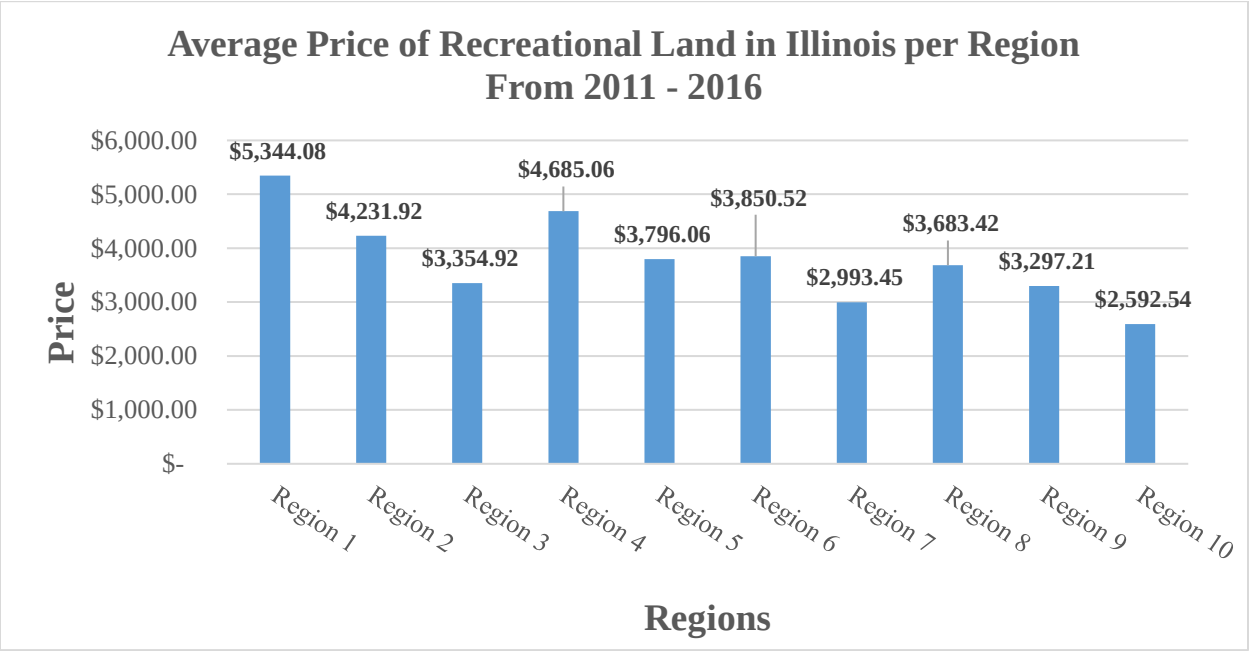

Figure 3: Average Price of Recreational Land in Illinois per Region from 2011 – 2016

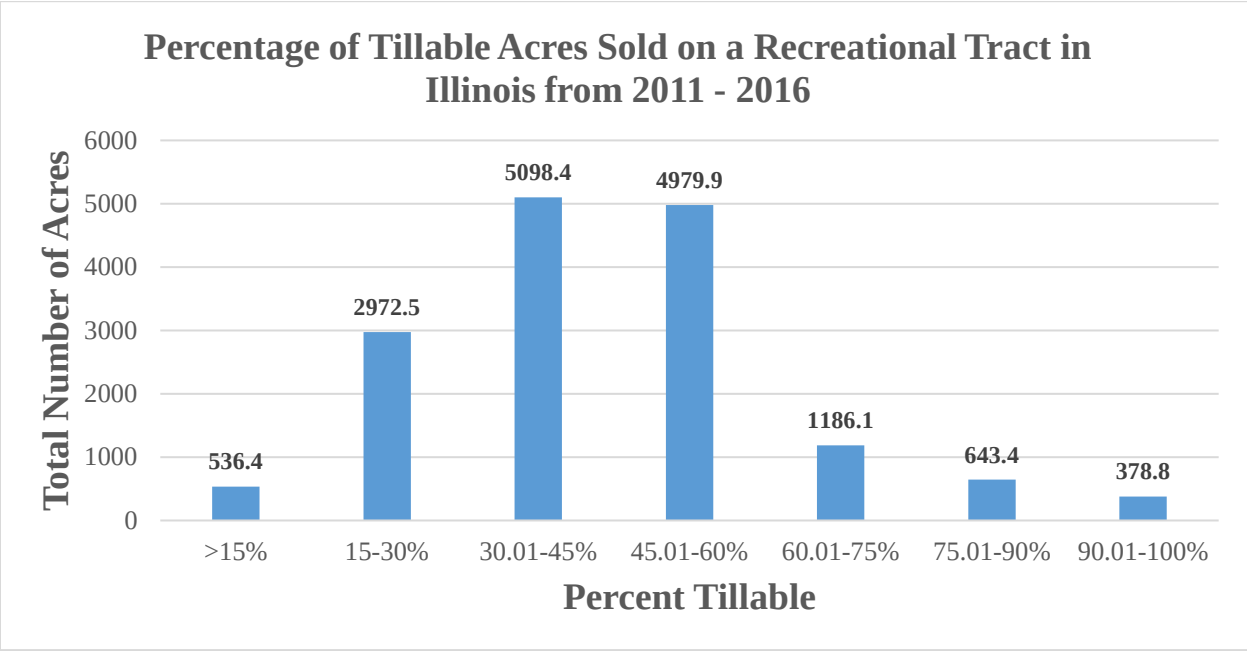

Figure 4: Percentage of Tillable Acres Sold on a Recreational Tract in Illinois from 2011 - 2016

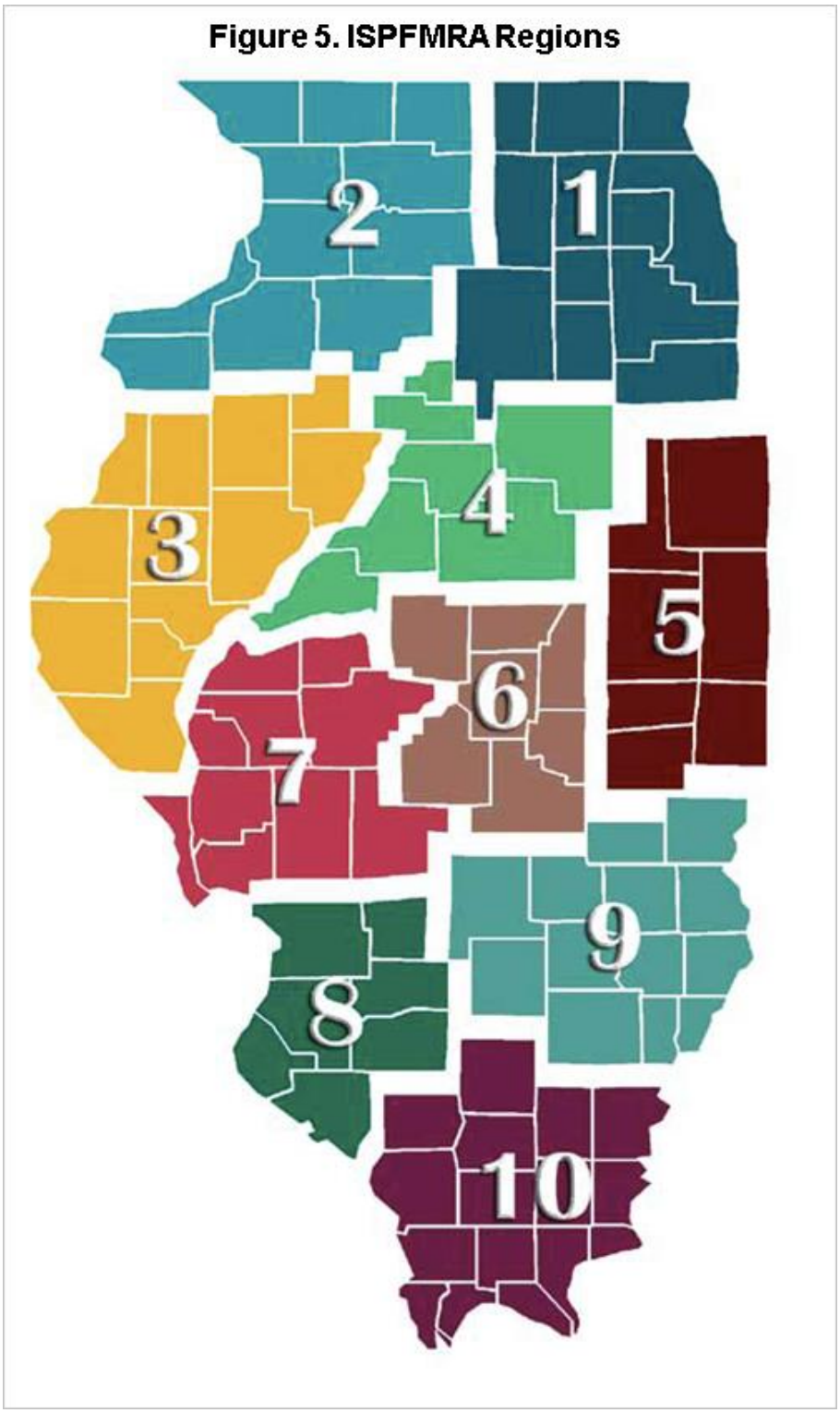

Figure 5: Illinois Society of Professional Farm Managers and Rural Appraisers Regions

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Research Paper Title:
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Major Professor: Dr. Dwight R. Sanders