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### ABSTRACT

According to the 2012 Census of Agriculture, the number of farm operations in the United States has declined by more than 4.3 percent since 2007. This supports the common notion that US farms are consolidating and increasing in size. A key issue facing the professional farm management industry is how the changing structure of US agriculture might impact future demand for their services. This article uses farm-level data from Illinois and from various years of the US Census of Agriculture to look at this issue more closely, focusing on the services offered by farm management associations. Farm types or sizes which are more likely to be members of a management association are identified, and trends in the number of these farm operations are examined at regional and national scales. The data suggests that the number of farms across the US who are more likely to demand services from farm management associations is likely increasing, but these changes are highly regional in nature.

## Trends in Farm Size and Potential Demand for Farm Management Association Services

By **Nicholas D. Paulson & Todd H. Kuethe**

### Introduction

According to data from the Agricultural Resource Management Survey (ARMS), approximately 56 percent of farm operators reported at least some expense for professional and farm management services in 2011 (Kuethe et al., 2014). The definition of professional or farm management services used in ARMS includes record keeping, accounting, tax and business planning, farm product advice, and conservation practices. These types of professional services were employed by both crop and livestock farms, at 60 percent and 54 percent of farms respectively. In total, US farmers spent \$1.2 billion on these types of professional farm management services in 2011.



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A key issue facing the farm management associations who offer these types of services is how the changing structure of agriculture in the United States might impact the future demand for their professional services. For example, the 2012 Census of Agriculture reported a total of 2.109 million farm operations in the United States, a decline of 4.3 percent from over 2.2 million farm operations in 2007. This decline in farm numbers supports the common notion of consolidation and increasing farm size.

This article focuses on the services provided by farm management associations for the active operators of farm operations, which align closely with those used in the definition of professional farm management services used in the 2011 ARMS questionnaire. Specifically, we used data from various years of the US Census of Agriculture and current data from the Illinois Farm Business Farm Management Association (IL FBFM) to look more closely at the changing structure of US farms and how it might impact the future demand for these types of professional farm management services. The IL FBFM data is used to illustrate the types of farm operations which choose to use these professional farm management services in Illinois. We then use the US Census data to show how the size of this specific demographic has changed both over time and geographically within the United States.

### **Illinois Farm Business Farm Management Association**

Across the United States, many farmers derive a number of benefits from their membership in a farm management association. Gustafson, Nielsen, and Morehart (1990) outline the main benefits of association membership. These include comprehensive reports

which contain more information than would be available when considering an individual farm operation. This allows for the comparison of individual financial and agronomic performance to association wide peer groups or benchmarks. Reports and financial statements are also provided to members who, in many cases, can be used in, or help to simplify, interactions with lenders and for the purposes of tax return preparation. Furthermore, the panel nature of the information collected by the associations allows individual members to chart the progress and performance of their individual operation through time, comparing it to other peer association members.

Financial record keeping is an important component of farm management. Accurate financial records assist farmers in: making planning and resource decisions; preparing tax filings; and communicating with stakeholders including lenders and other financial institutions, landlords, input suppliers, and equipment dealers.

As modern farm enterprises have grown more complex, the need for financial record keeping has increased and become more complex. As a result, a majority of US farms rely on external professional, or farm management services, for some portion of their business (Kuethe et al., 2014).

The Illinois Farm Business Farm Management Association (FBFM) is comprised of nine local not-for-profit associations in the state. Participating farmers (or cooperators) are members of the association. The cooperators elect representatives to serve on the association's board of directors to establish operating policy and procedures. The services are delivered

through regional field staff, each working with 100 to 120 cooperators. Although in the past, some field staff carried Illinois Extension appointments, currently most staff is employed directly by the local FBFM associations. In 1949, the local associations federated to form the Illinois FBFM Association. The purpose of the state-level association is to assist in program development, to coordinate the recruitment and training of field staff, and to acquire supplies and services for the local associations. A cooperator in a local association is automatically a member of the state association. The local associations elect a representative to sit on the state board of directors. Each year, 95 percent or more of the cooperators renew their membership.

Similar farm management associations exist in other states across the US, including large organizations in states such as Kansas, Kentucky, Iowa, and Minnesota. While the associations differ in their organizational structure and specific focus, they share the same broad goals of serving their farmer members and cooperators (Kuethe et al., 2014).

### **US Census of Agriculture**

The Census of Agriculture is a national account of all US farms, ranches, and farm operators which is taken every five years (USDA, 2014). The Census provides valuable information on land use and ownership, operator and operation characteristics, production practices, and farm income and expenditures. For many items, the census serves as the only source of county-level information on US farm operations. The most recent census was conducted in 2012, and a complete report was recently released by the USDA. The report provides a wealth of information valued by the farmers and ranchers included in the census, as well as agribusiness firms,

community planners, legislators and other government officials, and researchers. This article utilizes data from the past four releases of the census, which include 1997, 2002, 2007, and 2012. It is important to note that the census defines a farm as any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the reference year. This definition has been used since 1974 and is consistent across each of the releases of the census used in this analysis (Kuethe, 2014c).

### **Size Characteristics of Management Association Members**

Table 1 compares farm operation numbers within IL FBFM to those from the 2012 Census of Agriculture. The first two rows in Table 1 show that the 4,491 IL FBFM association farm operations represent fewer than six percent of the 75,087 farm operations located in Illinois according to the 2012 census. The acreage controlled by these farms, just over 4.7 million acres, represents nearly 17.5 percent of all cropland and pasture acreage in Illinois.

Two measures of farm size are used to illustrate the types of operations that demand professional services via the farm management association in Illinois. First, IL FBFM farms are broken out into total acreage categories compared with the total farm operation counts from the census in the same categories. The IL FBFM farms tend to be more representative of larger farms, as measured by total acreage. Within the largest acreage categories, farms with at least 1,000 acres, over 20 percent of all farm operations in Illinois are members of FBFM. The percentage of all farms that have members of IL FBFM declines as acreage decreases, particularly as farm size falls below 500 acres. This is further illustrated by the

average IL FBFM farm size of 1,048 acres compared with the average IL farm size of 359 acres as reported by the census.

Similar results are found when the value of gross sales is used to define farm size. The average value of sales on IL FBFM farms was over \$1.02 million in 2012, compared with the average value of sales on all IL farms reported by the census of just under \$229,000. Farm counts are also broken out by sales classes in Table 1. Over 30 percent of IL FBFM cooperating members fall in the largest sales class with more than \$500,000 in gross annual sales. The percentage of all farms enrolled in the FBFM association declines quickly in the categories with smaller values of sales.

The data in Table 1 show that, in Illinois, it is the larger farm operations that tend to become members of the IL FBFM association. This is true whether farm size is defined by acreage or value of sales. While the data is only for the state of Illinois, it would be reasonable to assume that these results could be extended to other states in the Corn Belt region given the relative homogeneity of farm operations producing crops such as corn and soybeans in these states. Furthermore, recent work comparing farm management association members to census data representative of all farms in other states such as Kentucky and Kansas – areas outside of the Corn Belt – also suggest that farm management services are most likely to be utilized by larger operations (Kuethe et al., 2014).

The fact that larger farm sizes are more likely to become members of a farm management association is not surprising. Larger farms would have the potential for more complexity from a variety of perspectives,

including business organization and ownership, the number of enterprises, production practices, and geographical heterogeneity. Furthermore, as farm size increases, the hiring of outside professional services becomes more justifiable from a financial perspective. As farm sales and returns increase, the marginal value of professional management services likely also increases. Similarly, positive size or scale effects also likely exist for association field staff as the cost of working with an operation may increase but at a declining rate as the size of the client's farm operation increases.

### **Trends in Farm Size: Value of Sales**

The previous section showed evidence that a higher percentage of farms in the larger sales class tend to utilize professional farm management services. The panels in Figure 1 use data from the 1997, 2002, 2007, and 2012 Census of Agriculture to show how the number of farms within each sales class has changed over time. Farm numbers by sales class are shown for Illinois in panel A. It clearly shows a declining to flattening line in the number of farms in the moderate sales classes (farms with between \$2,500 and \$499,999 in annual gross sales) since 1997. In contrast, the past 15 years have seen an increase in farm numbers with less than \$2,500 in annual gross sales. Furthermore, there has been considerable growth in the number of farms with at least \$500,000 in annual gross sales since 1997. In fact, the number of farms in the highest sales class in Illinois has more than tripled from just 3,056 operations in 1997 to over 9,500 farms in 2012.

Panels B illustrates the same numbers for states in the Corn Belt region (defined here as Illinois, Indiana, Iowa, Missouri, and Ohio). Farm numbers in the moderate sales classes have all declined since 1997, while there has

been considerable growth in both small and large sales class farm operations. Finally, Panel C provides a national perspective on farm numbers by sales class. Again, the past 15 years has shown a consistent decline in the moderate sales classes and a net increase in farm numbers in the smallest and largest sales classes. Nationally, farms with more than \$500,000 in gross annual sales have more than doubled from 70,408 operations in 1997 to 155,178 farms in 2012. Note that this sales class includes the highest percentage of farm operations who are members of the IL FBFM association in the state of Illinois.

The growth in farm numbers in the highest sales class suggests a bright outlook for continued growth in farm management association membership. However, focusing on shifts in sales class numbers should be viewed with caution. The large increase in farm numbers in the largest sales class is at least partially driven by the increase in commodity prices experienced since 2006. This price impact has had a bigger direct impact on farm operations specializing in crop production, as shown by the larger relative increase in farm numbers in the largest sales class in areas like Illinois and other Corn Belt states as compared with the national numbers illustrated in Figure 1. With markets suggesting lower commodity prices in coming years, we could see a shift in farm numbers back from the highest sales class due to exogenous and systemic price effects. Therefore, it is also helpful to look at trends in farm size based on total acreage.

### **Trends in Farm Size: Acreage**

The panels in Figure 2 provide a breakdown of the percentage of farm operations and the percentage of total value of production across various acreage categories according to the 2012 Census. Panel A focuses

on farms in Illinois, and shows that a significant portion (34.1 percent) of farm operations control less than 50 acres. Larger farms controlling more than 500 acres comprise just 20.4 percent of farm operations, but these farms account for over 75 percent of the total value of production.

Panel B focuses on the Corn Belt region states. Again, operations with less than 50 acres comprise nearly a third of all farms. However, farms with more than 500 acres, while representing just 18.6 percent of farm operations, generate nearly 70 percent of the total value of farm production in this region. Panel C provides national numbers, where small farms with less than 50 acres represent more than 38 percent of all farm operations. Farms with at least 500 acres represent just 15 percent of all farm operations but generate 66 percent of the total value of farm production in the United States.

The data illustrated in Figure 2 shows that while larger farms, which control more than 500 acres, represent a relatively small percentage of total farm operation numbers and are responsible for the vast majority of the total value of farm production. This is true at the state level in Illinois, for all states in the Corn Belt region, and at the national level. These numbers indicate that while the professional services offered by farm management associations might be utilized by a relatively small percentage of farm operations in the United States, these farms are responsible for a very significant portion of total agricultural production. This suggests that the demand for farm management association services, which has been shown to be concentrated among the larger farms, should see continued growth in terms of the percentage of total production value seeking services from this industry.

## A Regional Look at Farm Size and Trends

The maps in Figure 3 provide a county-level view of average farm size (upper panel) and change in average farm size (middle panel), and a state-level regional look at the change in number of farm operations controlling more than 500 acres (lower panel) from 2007 to 2012. Counties shaded in dark green in the upper panel represent areas where the average farm size exceeds 500 acres. While there exists a concentration of counties where average farm size exceeds 500 acres in the Pacific Northwest and Upper Plains regions, average farm size seems to be much more evenly distributed in counties throughout other regions of the country.

The middle panel of Figure 3 provides percentage changes in average farm size from 2007 to 2012. Similar to average farm size, no clear regional pattern emerges in changes in farm size. Counties exist in all US states that have experienced growth and decline in average farm size over the past five years.

Finally, the lower panel of Figure 3 shifts our focus to changes in the number of farm operations controlling at least 500 acres. Note that this group was identified as being much more likely to be members of a farm management association based on the characteristics of IL FBFM farms reported in Table 1. Nearly all major production regions include at least one state where the number of large farms has increased. Exceptions include the Northern Plains and Pacific regions, however these are also regions where average farm size already exceeds 500 acres in most counties.

The data that is mapped in Figure 3 suggests that while there are not wide or concentrated geographic areas where the number of potential new association members

is growing, potential exists within areas of all regions for increased demand. The information related to regional changes in farm size depicted in Figure 3 could be used by the leadership and staff in a farm management association to better target recruitment and marketing efforts in areas where farm size trends suggest greater demand from potential new clients.

## Summary

According to USDA survey data, the majority of farm operations in the United States utilize professional farm management services, spending over \$1 billion annually. A key issue facing the organizations offering farm management services is the potential impact that structural change in the agricultural sector may have on the demand for their services in the future.

In this paper, we used data from the Illinois Farm Business Farm Management Association to illustrate and identify the types of farms most likely to demand the types of professional services offered by these types of management associations to farm operators. The data indicates that larger farms, as measured by both acreage and total value of annual gross sales, tend to be the types of operations who become members or cooperators in management associations. Similar evidence exists for the management associations in Kansas and Kentucky (Kuethe et al., 2014).

Data from the Census of Agriculture is then used to illustrate trends in farm size, focusing on those larger farm groups. In terms of value of sales, there has been a considerable increase in the number of farm operations with more than \$500,000 in gross sales each year. In Illinois, the number of farms in this sales class has tripled since 1997; at the national level, the number of

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farms in this sales class has doubled over the same time period. Since these large farm operations are those most likely to become management association members, this trend suggests a positive outlook for future demand in the industry. However, the effect of significantly higher commodity prices on how farm numbers are distributed across sales classes must be considered. This is particularly important given the current outlook for lower commodity price levels in future years.

Census data was also used to look at the distribution of farm size based on acreage categories. Data from the 2012 census shows that while farms with more than 500 acres (the size category most likely to be members of a farm management association) represents a relatively small portion of farm operations (just 15 percent nationally), they account for the vast majority of the value of farm production (66 percent nationally). This also suggests a positive outlook for continued demand for farm management association services. Both the number of farms likely to become association members, and their significance in terms of the percentage of sales generated within the agricultural industry, has been increasing.

Finally, maps of census data provided a regional look at the distribution and change in farm size across the country. The census demonstrates a continued path toward more large scale operations but also a growing population of small farm operations. However, the data also suggest that the change in the distribution in farm size is occurring at a moderate pace. Rather, the change is much more moderate than some industry observers' fear. Furthermore, while no clear pattern emerges in any broad or concentrated geographical sense, it is clear

that opportunities exist for management associations in all regions and states to do some targeted recruiting and marketing to continue to grow and strengthen their membership.

While the information on trends in farm numbers and farm size do not represent significant changes from those which have already been occurring, this information is important and useful for farm management associations in their short and long term strategic planning efforts. As the number of larger farms continues to grow, so does the pool of potential farm management association members. Knowledge of these trends is also important for management associations to continue effectively serving their existing farmer members. Of particular importance in the short term will be the potential impact of lower commodity prices on the valuation of association services by their members, especially if lower prices persist into the future. The staff and leadership of farm management associations will need to ensure that their members sufficiently value the services of the association in a climate where farmers may be seeking cost-reduction strategies.

This information can be similarly applied for short and long term strategic planning efforts by other agricultural professionals that support agricultural producers. Larger farms are more likely to purchase similar financial services including tax preparation and market information, but this growing subset of farm enterprises are also more likely to purchase services related to custom farming and technology. Farm management associations may be able to play a role in how these services are adopted and evaluated.



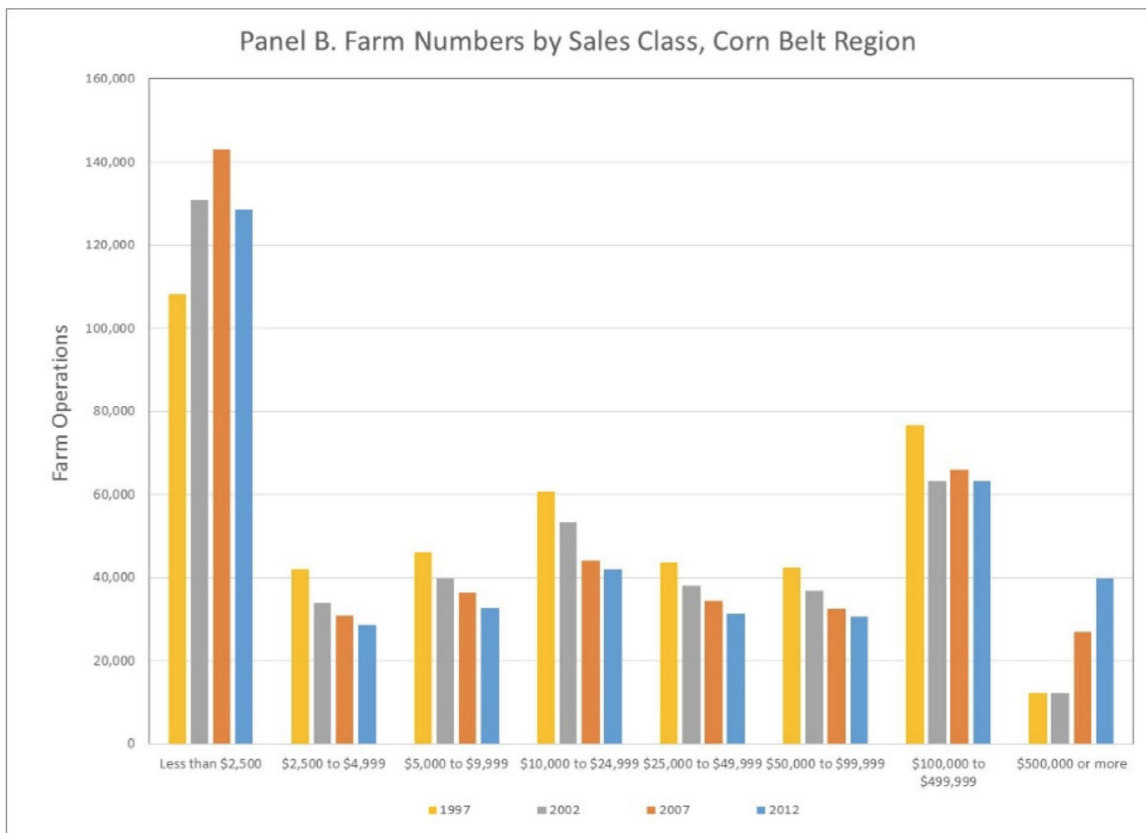
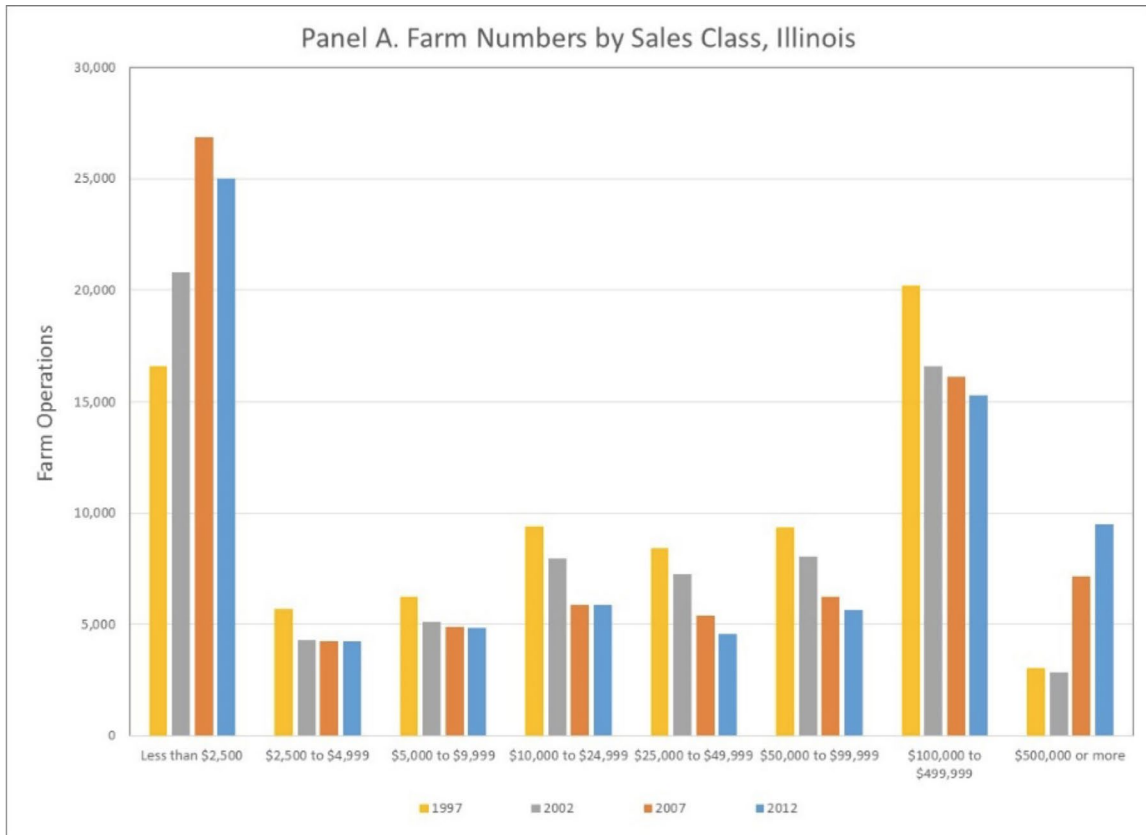
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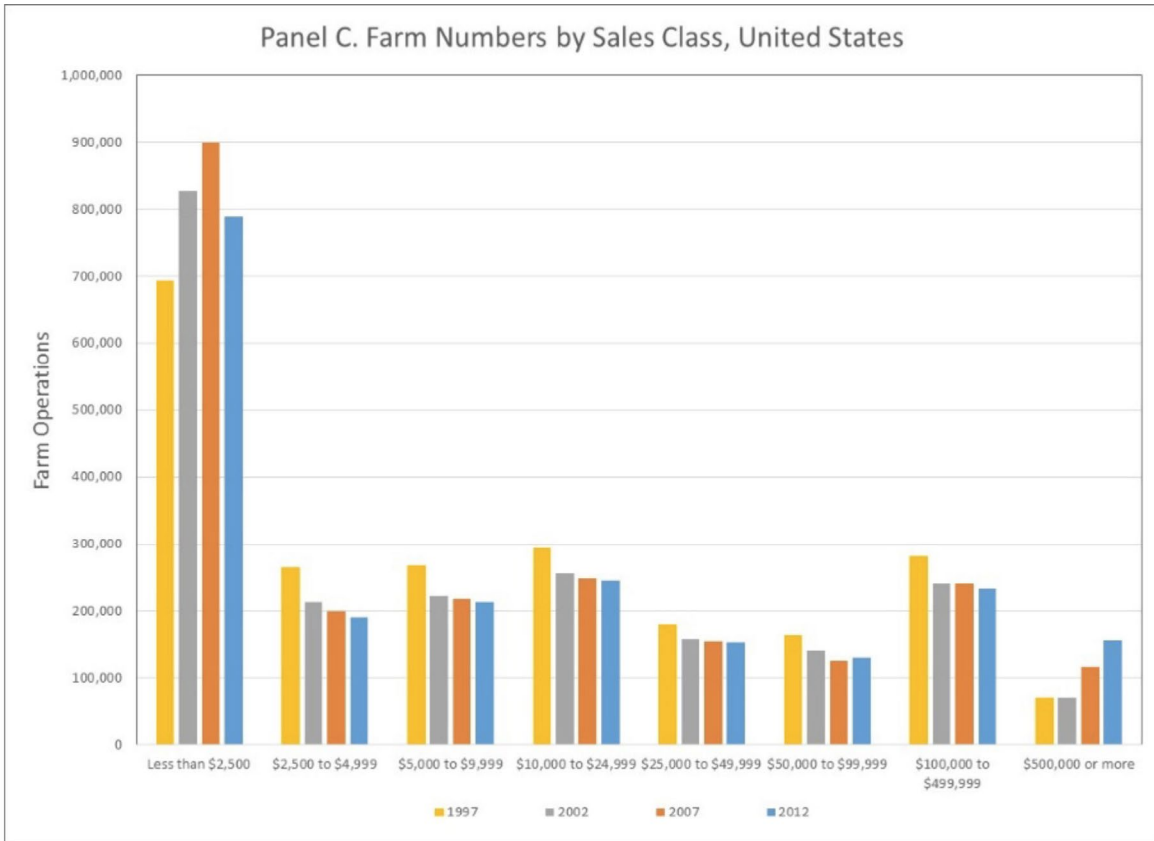
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**Figure 1. Farm Operations by Sales Class, 1997 to 2012**



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**Figure 1. Farm Operations by Sales Class, 1997 to 2012 (cont'd.)**



Source: 1997, 2002, 2007, and 2012 Census of Agriculture

Figure 2. Share of Farm Operations and Production Value by Acreage Category, 2012

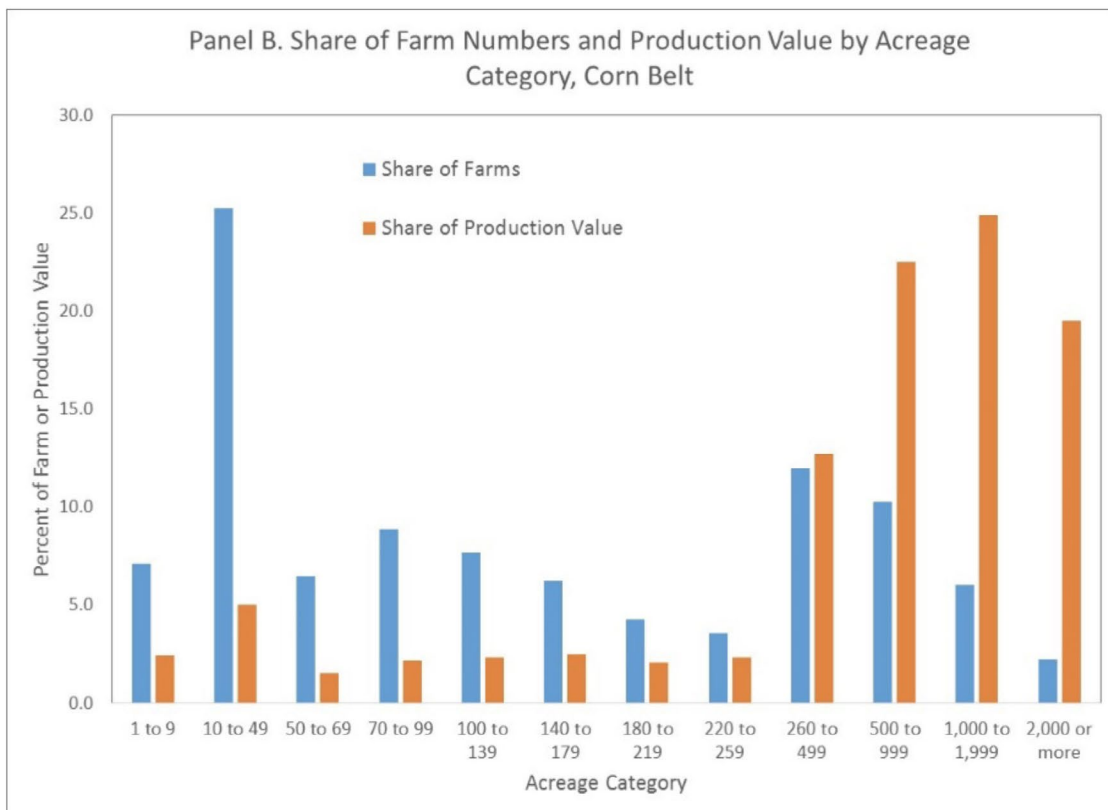
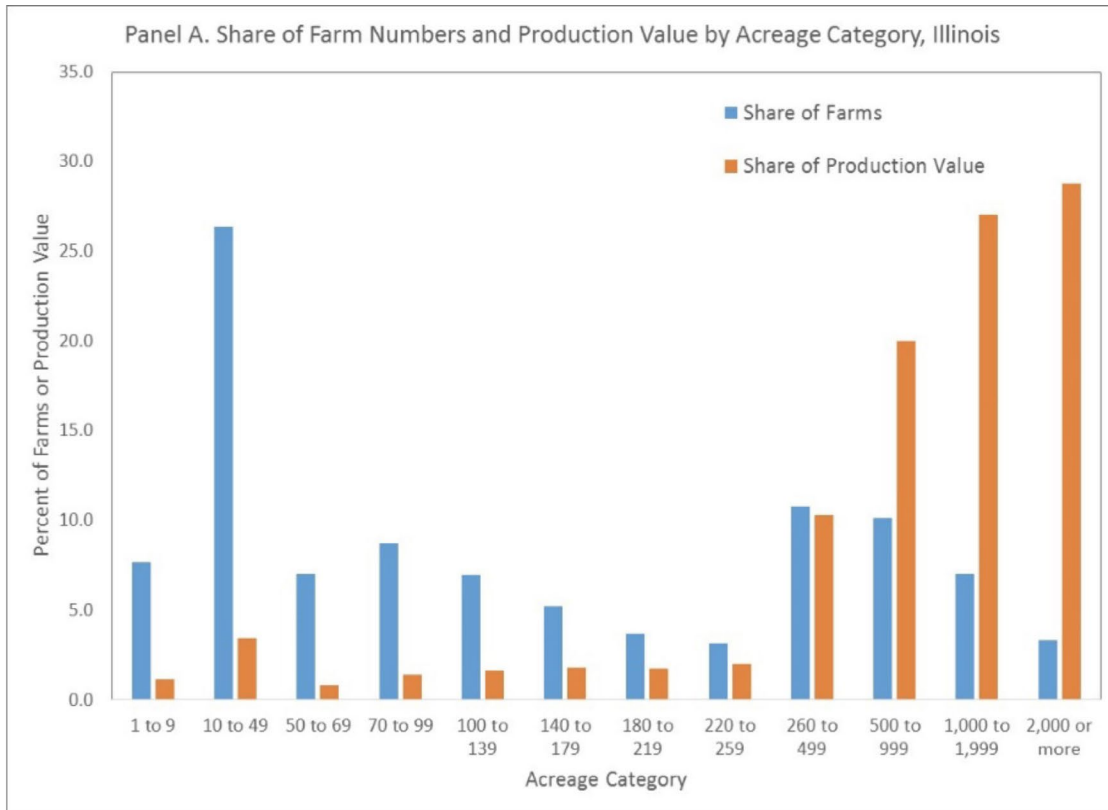
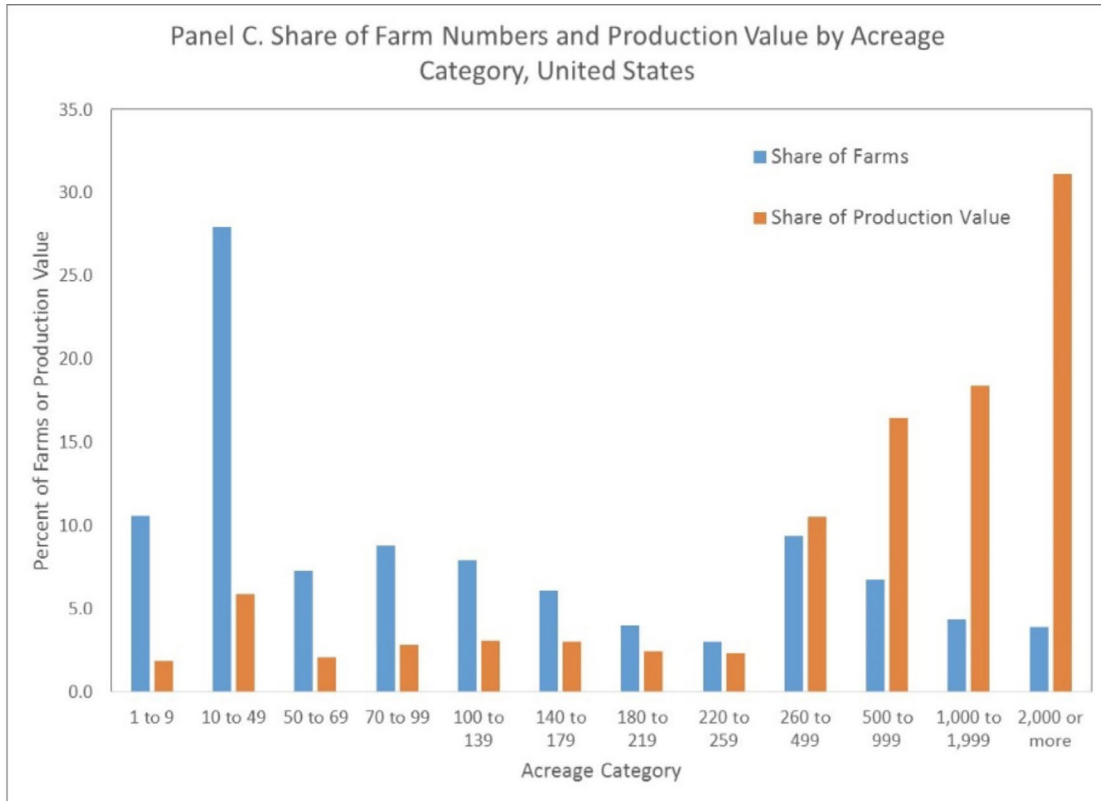


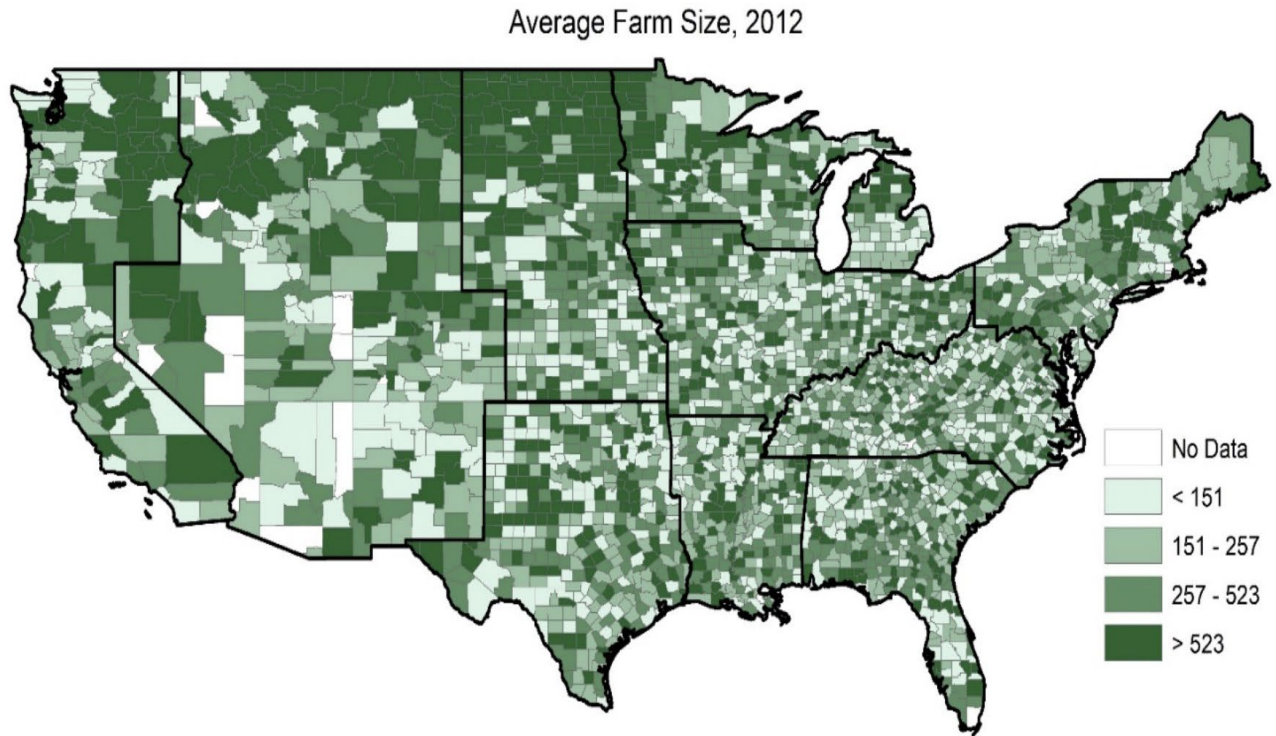
Figure 2. Share of Farm Operations and Production Value by Acreage Category, 2012 (cont'd.)



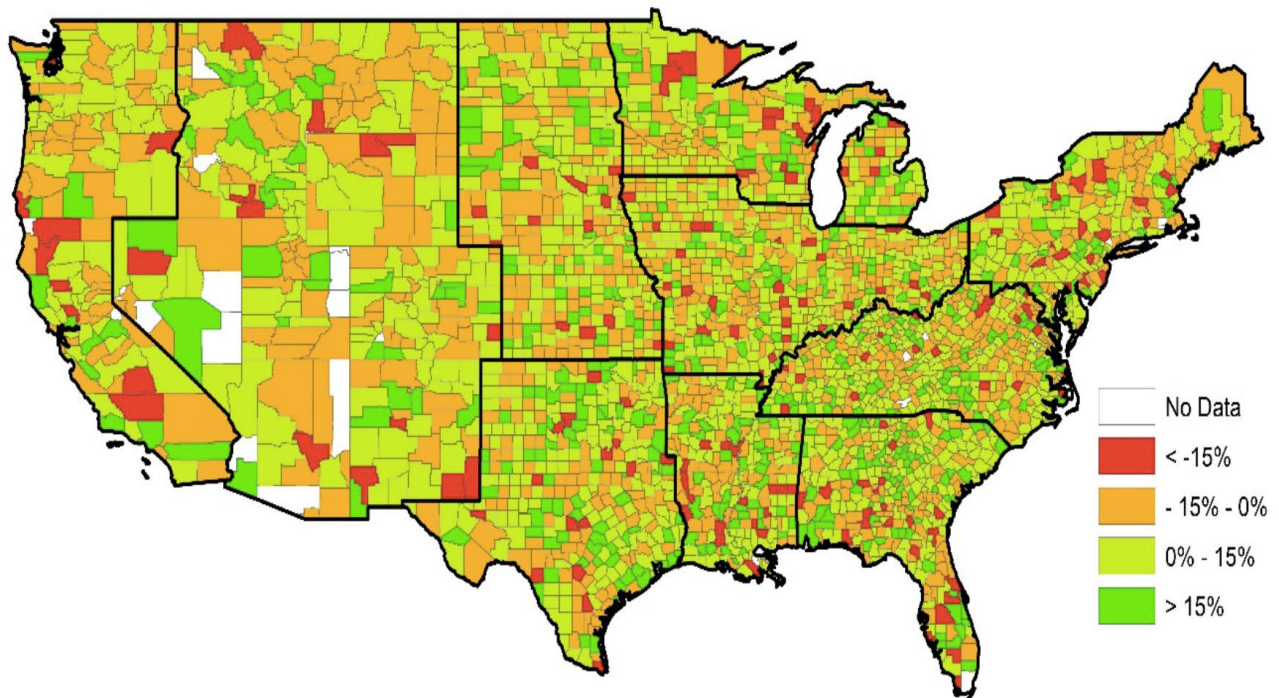
Source: 2012 Census of Agriculture

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## Figure 3. Average Farm Size (Acres) and Percentage Change in Farm Size, 2007 to 2012

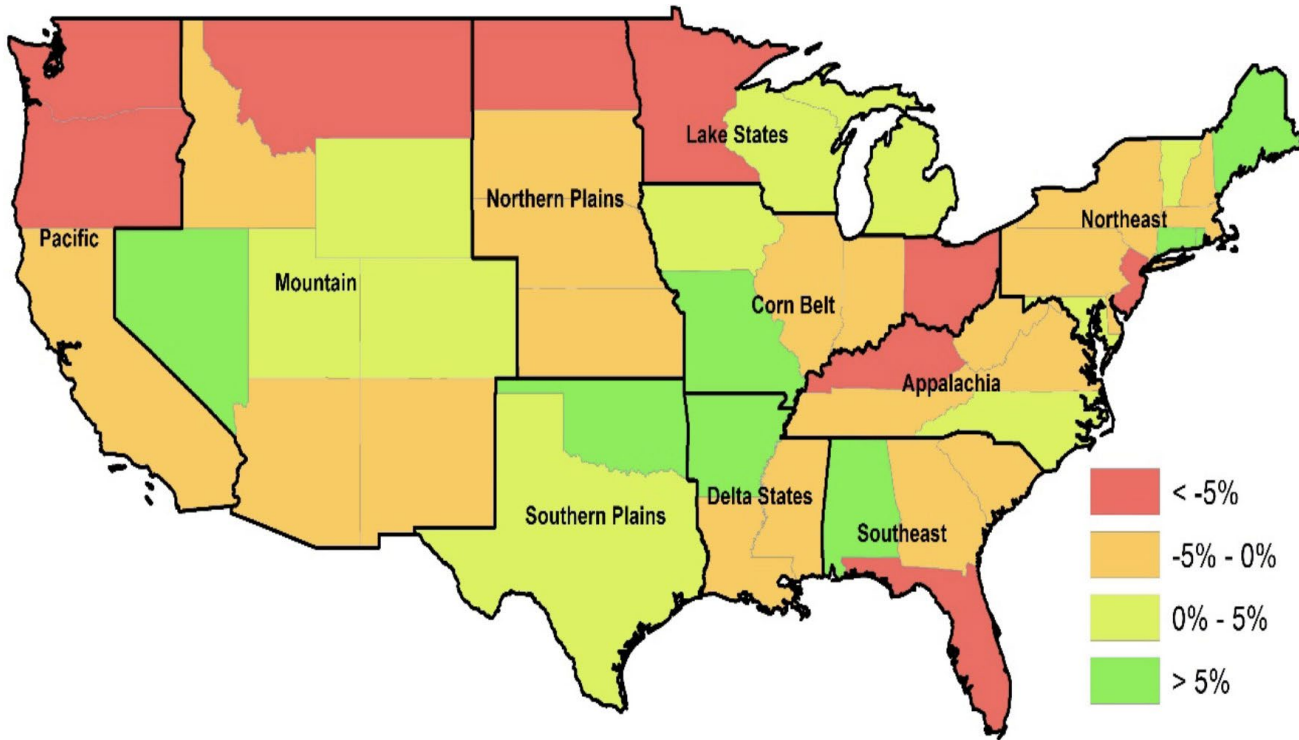


Percent Change in Average Farm Size, 2012 - 2007



Percent Change in Number of Farms with at Least 500 Acres, 2012-2007

Figure 3. Average Farm Size (Acres) and Percentage Change in Farm Size, 2007 to 2012 (cont'd.)



Source: 2007 and 2012 Census of Agriculture

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**Table 1. Comparison 2012 Census of Agriculture and Illinois FBFM Farm Operations**

	IL FBFM	2012 Census (IL)	Percent
Number of Farms	4,491	75,087	5.98%
Land in Farms	4,708,390	26,937,721	17.48%
Average Size of Farms	1,048	359	
Farms by Size (Number):			
1 to 9 acres	15	5,776	0.26%
10 to 49 acres	50	19,801	0.25%
50 to 179 acres	270	20,941	1.29%
180 to 499 acres	1,047	13,216	7.92%
500 to 999 acres	1,320	7,617	17.33%
1,000 to 1,999 acres	1,267	5,267	24.06%
2,000 acres or more	522	2,469	21.14%
Average Market Value of Sales	\$1,020,908	\$228,895	
Farms by Value of Sales (Number):			
Less than \$2,500	14	25,025	0.06%
\$2,500 to \$4,999	4	4,256	0.09%
\$5,000 to \$9,999	5	4,860	0.10%
\$10,000 to \$24,999	25	5,908	0.42%
\$25,000 to \$49,999	63	4,563	1.38%
\$50,000 to \$99,999	133	5,666	2.35%
\$100,000 to \$499,999	1,272	15,289	8.32%
\$500,000 or more	2,975	9,520	31.25%

Sources: Illinois Farm Business Farm Management Association and the 2012 Census of Agriculture