

A 10-Year Analysis of Net Farm Income

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Introduction

Every year the Kansas Farm Management Association (KFMA) collects farm financial information from farmers in order to provide each member with guidance that can improve farm and family decisions. KFMA accomplishes this goal by having professional farm economists visit each farm several times during the year. These economists help with record keeping, tax analysis, year-end planning, benchmarking, and other decision making needs. KFMA has more than 80 years of experience serving producers in the state. KFMA has computerized records dating back to 1973.

Part of the effort to help producers in the KFMA program includes providing various summaries and analyses of the farm data. In 2020, there were 898 farms that had certified data that was suitable for analysis. A full listing of the summaries provided each year can be found at (<https://www.agmanager.info/kfma/whole-farm-analysis>).

A review of the net income summaries in any given year shows that some farms lose money. Even in a very profitable year like 2020, over 12% of the farms had a negative net farm income. In poor years like 2015, 44% of the farms had negative net farm income. Are the same farms losing money each year? The purpose of this article is to examine a longterm time frame of continuous farms to see if there is a set of farms that might have had an average net farm income less than zero.

Data and Methods

A 10-year panel of farms was used for this exploratory analysis. For a farm to be included, it had to have a set of useable farm records from 2011 through 2020. 436 farms met this criteria. Two criteria were examined, first the 10 yearly distributions of net farm income were compared to the distribution of the 10-year average of net farm income from each farm. Secondly, the number of years of a negative net farm income were calculated for each farm and then this count was plotted as a histogram.

For the comparison of each yearly net farm income to the 10-year average, a Cumulative Distribution Function (CDF) was used. At any given NFI amount, a cumulative distribution shows the percentage of farms that have that particular level of NFI or lower. The 50-percentile point is the median level of NFI. Normally a cumulative distribution shows a line from 0 to 100 percent to represent the entire distribution of farms. However, because there is such a wide variation in NFI, the tails have been

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trimmed to highlight the main area of the graph. The CDF is useful as it also shows the percent of farms with negative net farm income.

Figure 1. shows the cumulative distribution of net farm income for each year from 2011 through 2020. As the figure indicates, there were some very profitable years at the beginning and end of this time frame as well as some less profitable years in the middle. The figure in red highlights the percent of farms with negative net farm income for that particular year. Figure 2 represents the distribution of the 10-year average net farm income from each farm.

Discussion

The percentage of farms with negative net farm income in a given year has varied from 7.6% to 40.1%. However, when net farm income is averaged across the 10-years for each farm, the distribution in Figure 2 shows that 5.5% of farms have a 10-year average less than zero. Because the percentage of 10-year average farms with negative net farm income is lower than the lowest, individual year's distribution, this is a strong indication that it's not always the same farms with negative net farm income.

Figure 3 represents the histogram of the 10-year average net farm income. Figure 3 is just showing the same information as Figure 2 but as a histogram instead of as a cumulative distribution. As both figures indicate, the median net farm income is around \$75,000 per year.

Figure 4 shows how many years out of 10, a farm earned a negative net farm income. The counts are plotted in a histogram. As the figure shows, well over half of the farms only had 0 or 1 years with negative net farm income. On the other side of the histogram, only a few farms have 5 or more years of negative net farm income. There were no farms that had negative net farm income in all of the 10-years.

One part of the picture left out is the appreciation of land. Thus even those farms with negative net farm income over 10-years could have increased their total equity if the land appreciation outweighed the negative net farm income.

The other issue to consider is that these were all KFMA farms with professional help. Thus these farms could represent a better picture for profitability than the non-KFMA farms. These farms were also in the KFMA program for at least 10-years and the fact these farms are still going could cloud the overall farm outlook as farms with lower profitability might no longer be in the program.

CDF of 10-Year Net Farm Income

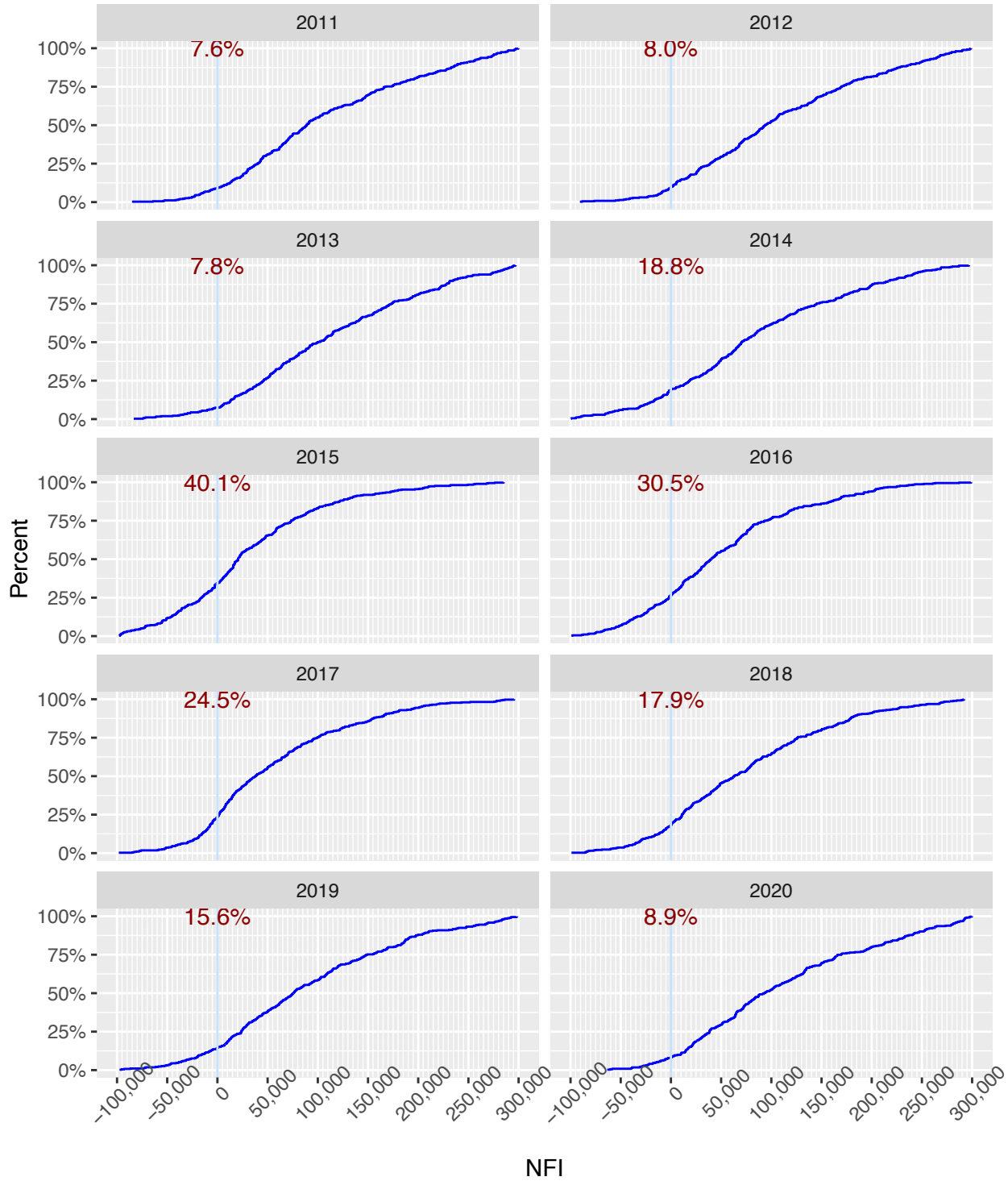


Figure 1. CDF of Yearly Net Farm Income for the Last 10 Years

CDF of 10-Year Average of NFI by Farm

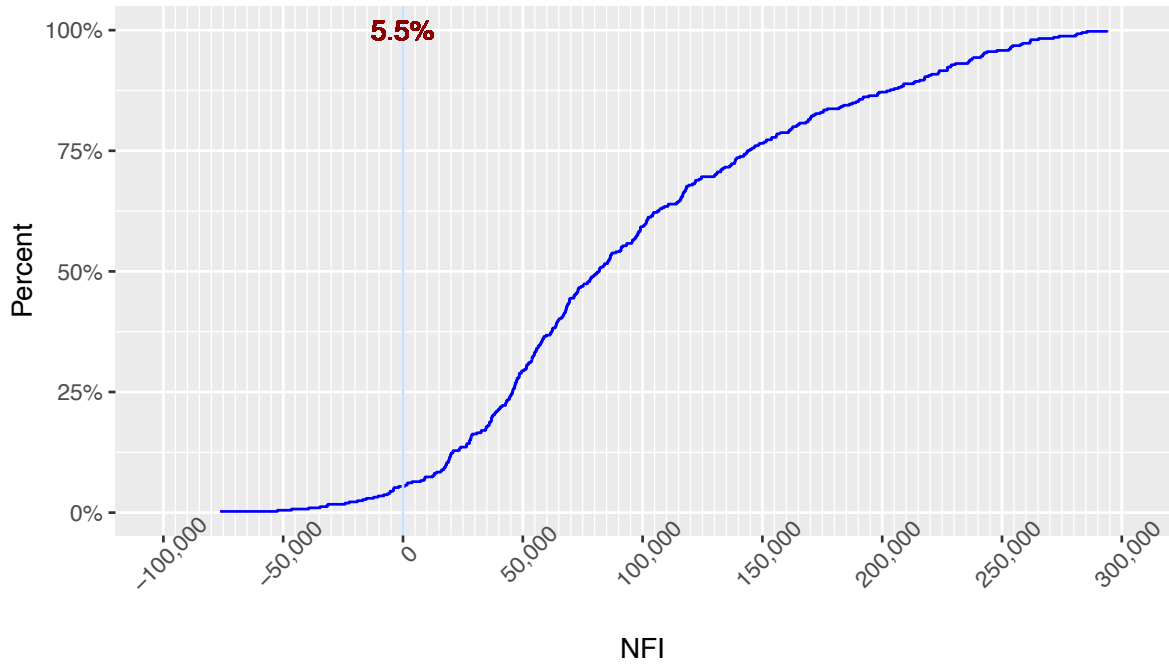


Figure 2. CDF of Average of 10-Year Net Farm Income

Histogram of 10-Year Average of NFI by Farm

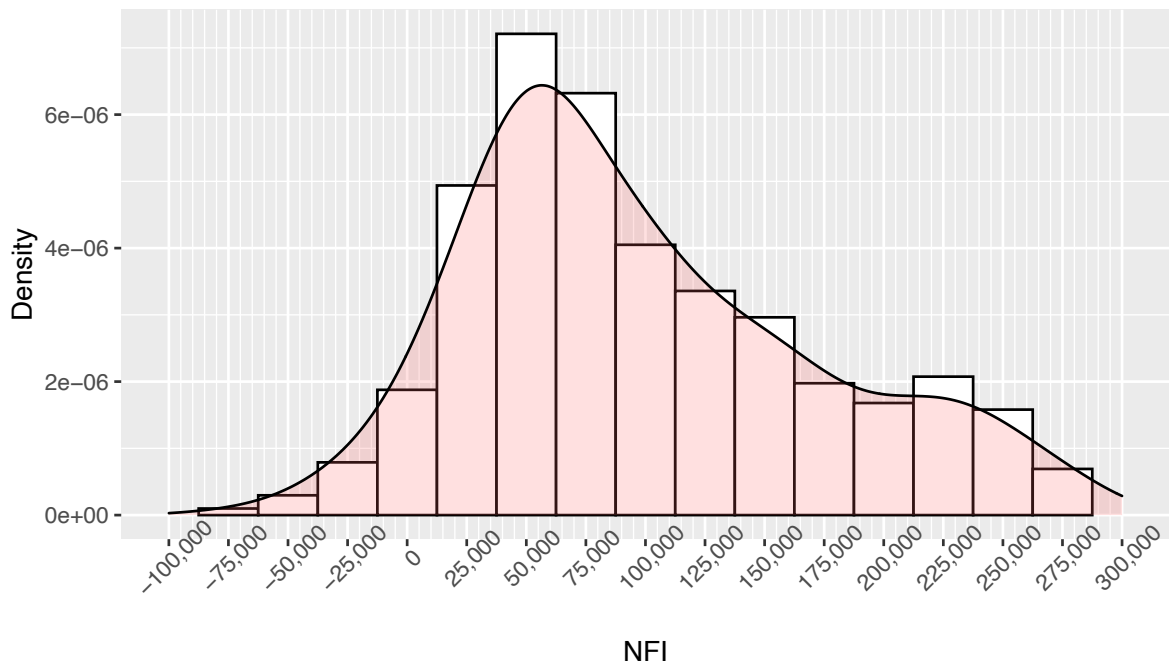


Figure 3. Density Plot and Histogram of Average of 10-Year Net Farm Income

Histogram of Number of Years of Negative NFI by Farm Count

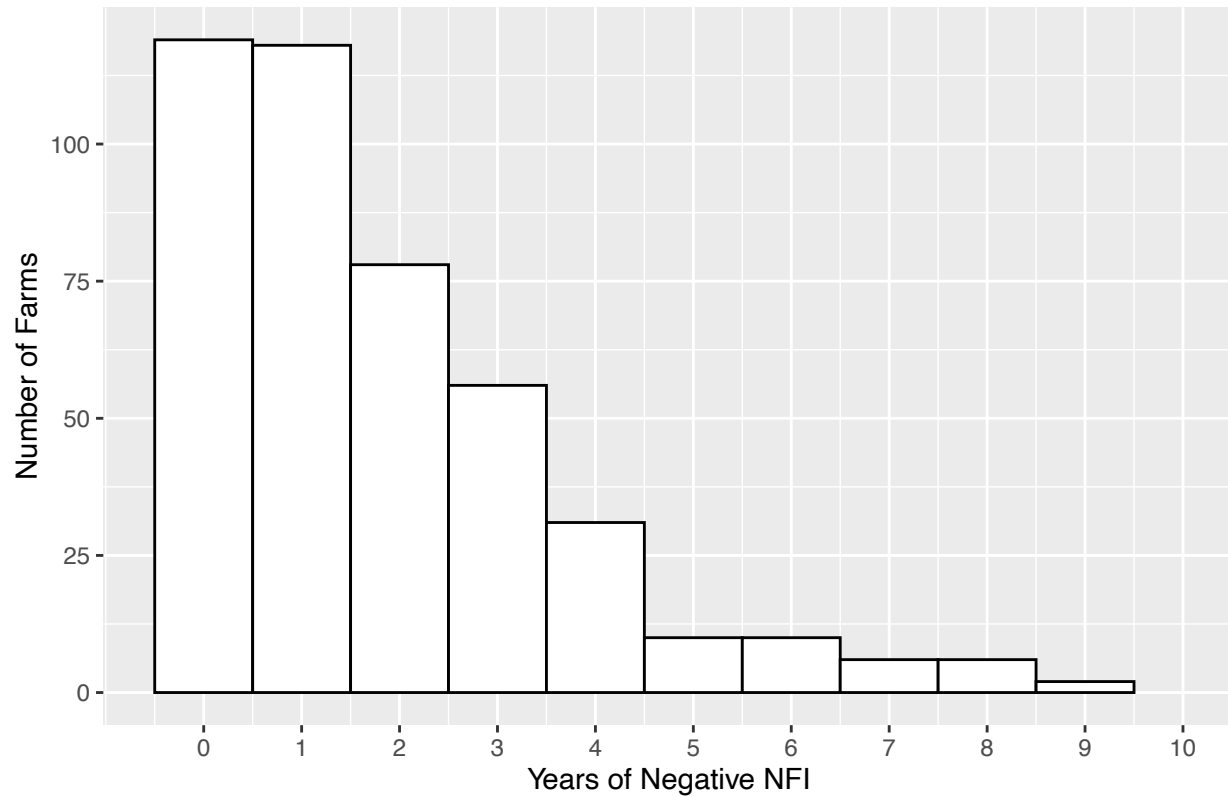


Figure 4. Number of Farms with Years of Negative NFI from Last 10 Years