A Comparison of 10-years of NFI vs the Average of 10-years

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Introduction[1]

Every year the Kansas Farm Management Association (KFMA) publishes a summary of results from the farms in the program. While a historical summary is available on AgManager, these summaries do not show how a set of farms perform across time. In addition, the state summary set of farms changes each year and some farms are added and others drop off.

This publication examines a consistent set of farms for the last 10-years to compare the yearly distribution of Net Farm Income (NFI) for each year to the average 10-year NFI. Fortunately, the 10-average NFI portrays a stronger financial picture than many of the individual years.

Data and model

Data comes from the KFMA and uses only the NFI from each farm for this visual examination. The data is filtered so that only farms with the last 10-years of data are used in the analysis. This data requirement reduces the number of farms available to 346 farms.

A Probability Density Function (PDF) is generated for each year and also for the 10-year average. A PDF figure should be familiar to most readers as it very similar to a histogram. While a histogram tells how many data points are in certain ranges. A PDF tells how likely it is to see a value in a certain range. A PDF produces a smooth continuous curve while a histogram produces discrete bars.

Results

Figure 1 shows the distribution of NFI for each of the 346 farms for each of the last 10 years. This figure further shows the quartiles of the distribution. The first quartile has the lowest 25% of NFI farms, the second quartile as the next lowest 25%, etc. The breakpoint between the

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second and third quartile is the median point for a given year. For example, in 2014, the median NFI was about $70,000. That is, half the farms earned NFI below $70,000 and half of the farms earned NFI above $70,000.

As shown in Figure 1, 4 of the last 10 years had 25% of the farms earning a negative NFI (2017 was included in this count as it was almost zero). In only two of the years did a majority of the farms earn a NFI above $100,000 (2020 and 2021).

Fortunately, results look better when averaging each farm across the 10 years. This result is shown in Figure 2. While there are a few farms with a 10-year NFI average below zero, the median 10-year NFI average is about $90,000. Those farms with a 10-year negative NFI average likely had other sources of income including off farm employment and other business income.

Notice that nearly all of the distributions are skewed to the right. This indicates a wider range of NFI from the most profitable farms. Another observation is the distribution pattern in 2021, the best year for NFI from the last 10 years. This distribution is not only skewed to the right but has many farms with higher than normal NFI (the height of the third and fourth quartiles).
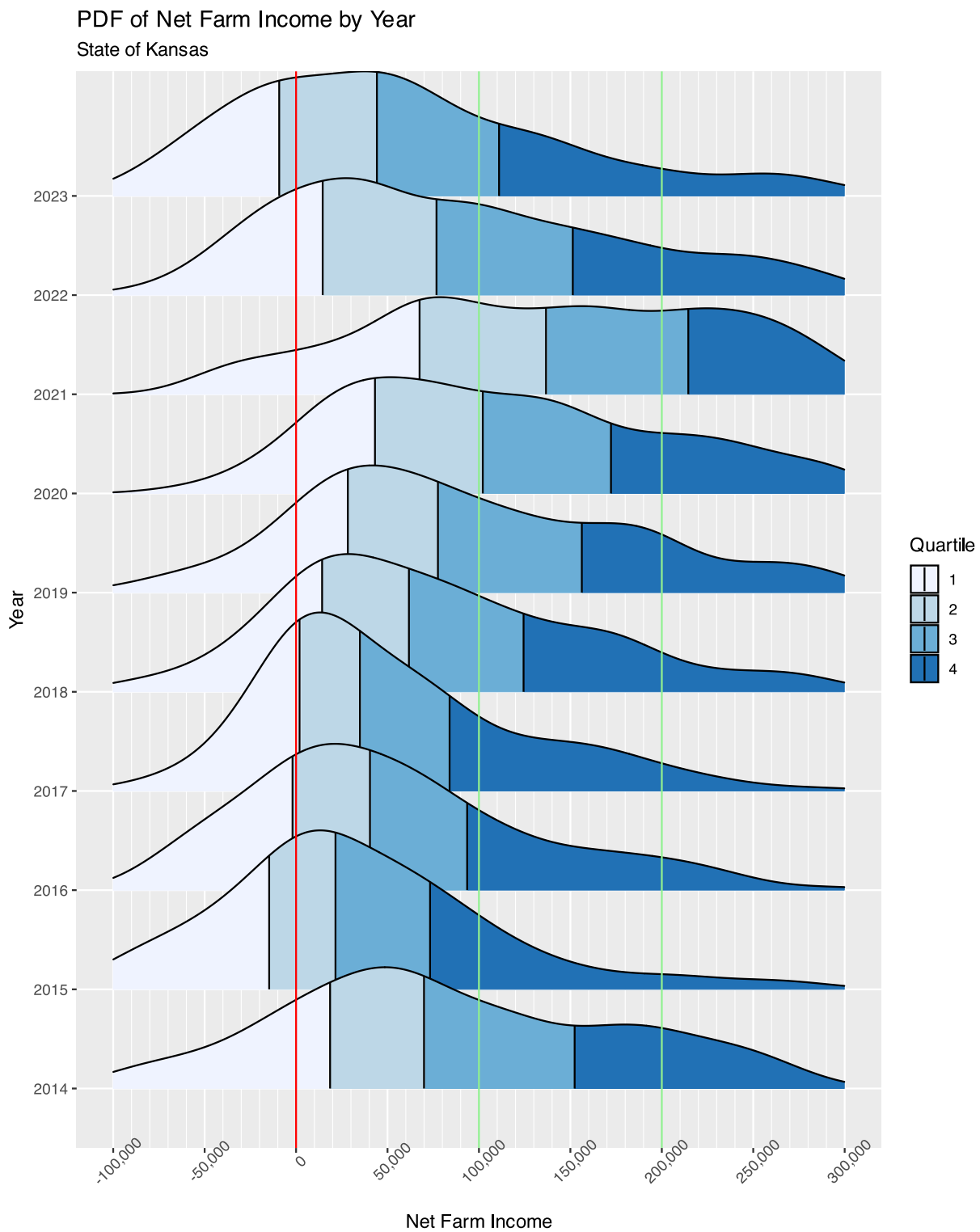
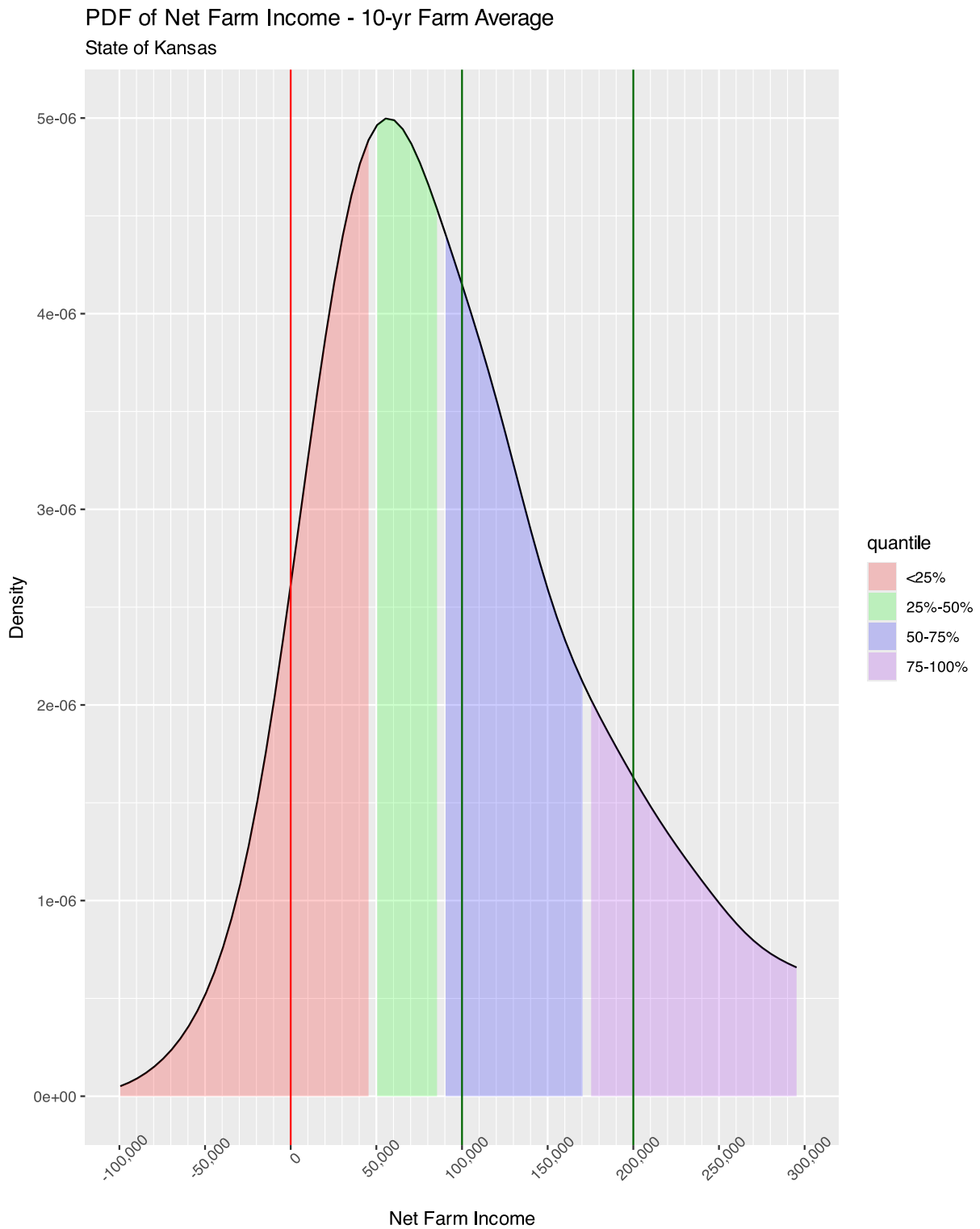Figure 1. Distribution of Net Farm Income by Year

PDF of Net Farm Income - 10-yr Farm Average
State of Kansas

Figure 2. Distribution of Average 10-yr Net Farm Income

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