

Is Adding Livestock the Solution to Profit Margins: A State and Regional Level Analysis

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http://www.agmanager.info/livestock/budgets/production/beef/AddingLivestock_2015.pdf

In the past few years, the price of grains have fallen significantly while the price of inputs have seen a small increase.¹ This combination has led to a decline in the crop income for Kansas Farm Management Association (KFMA) members (see Figure 1). During the same time frame, we have seen record high cattle prices leading to an increase in livestock income per farm for KFMA members (see Figure 1). This has raised the question, is adding livestock to the operation the solution to increasing, or maintaining, profit margins? This paper is an expansion of Rempe et al.'s (2015) paper titled "Is Adding Livestock the Solution to Profit Margins."² Specifically, the information provided in the current paper expands beyond the North Central KFMA region as described in Rempe et al. to include the entire State and all six KFMA regions.

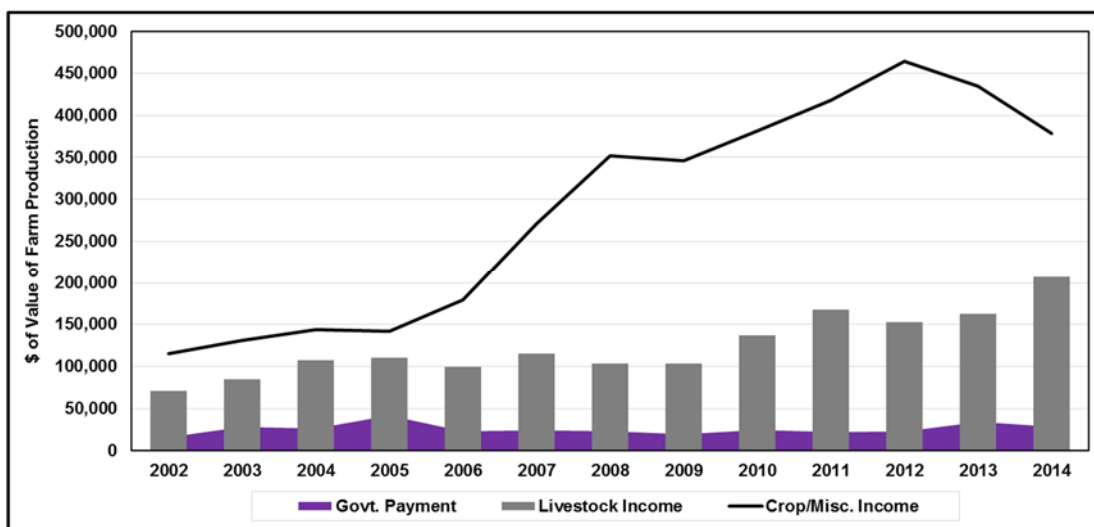


Figure 1. KFMA Value of Farm Production by Income Source, Kansas, 2002-2014

Figure 1 shows the average value of farm production (or gross farm income) per farm by income source for KFMA members. As one can see, the income generated from both crops and livestock has generally seen an increase over the time frame, with the exception of crop income between 2012 and 2014. As crop income has seen a decline since 2012, income generated from livestock has seen a large increase.

¹ For example, the average Kansas corn and wheat prices fell by 46% and 49% between October 2012 and October 2015, respectively. The USDA's Prices Paid Index indicates a 1% increase in input prices between October 2012 and October 2015.

² This paper can be found at: <http://www.agmanager.info/KFMA/Newsletters/Research/LivestockProfitMargin.pdf>.

While crop and livestock income have fluctuated in recent years, government payments have remained fairly constant over the entire time period. Although the magnitude by income source varies across associations (e.g., the Northwest association has lower livestock income when compared to the Southeast association), similar trends hold for each regional associations (see Appendix A for regional association figures).

To examine how livestock production contributed to the profitability of the KFMA members operations, net farm income by farm type was explored. The farm types were broken into two categories: those farms that only contained crops (denoted as crop only farms) and those that that were diversified with at least 50% of their time and management dedicated to livestock (denoted as 50/50 farms). As shown in Figure 2, both types of farms had similar net farm incomes in the 1980’s, 1990’s and early 2000’s. Starting in the mid-2000’s, the crop only farms experienced increased net farm income, due to higher crop prices, and outpaced the 50/50 farms. Beginning in 2010, we saw a large increase in net farm income from 50/50 farms, especially between 2013 and 2014 which saw record high cattle prices. The trends for the regional associations followed similar patterns as the state level (see Appendix B for the regional association figures).

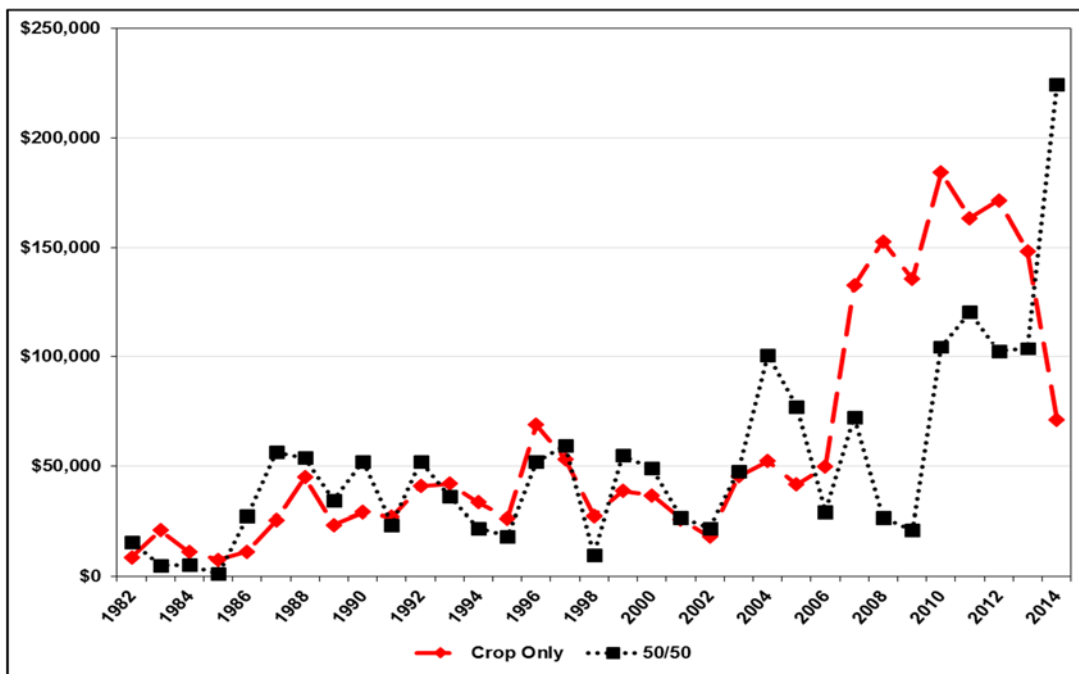


Figure 2. KFMA Net Farm Income by Farm Type, Kansas, 1982-2014

As demonstrated above, livestock has contributed or added value to KFMA member operations across time. Table 1 shows a comparison of selected average financial information for KFMA producers for 2014. Within the most profitable quartile (High 25%), \$397,178 (33%) of producers gross income come from livestock. This compares to \$31,903 (8%) from the least profitable producers (Low 25%). Since 2002, these 2014 percentages of income generated from livestock for the High 25% (33%) and Low 25% (8%) groups are the largest and smallest, respectively. This is due to the record high cattle prices

and low grain prices. When comparing 2014 to the previous eight years, Figure 3 shows the High-Profitable quartile producers typically generate a smaller portion of their gross income from livestock when compared to the Low-Profitable quartile producers. Appendices C and D contain the regional associations tables and figures, respectively.

Table 1. KFMA Comparison by Net Farm Income, Kansas, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$397,178	\$121,562	\$54,093	\$31,903
Value of Farm Production	\$1,197,887	\$528,358	\$313,765	\$412,276
Total Farm Expense	\$804,012	\$393,875	\$274,114	\$474,078
Net Farm Income	\$411,950	\$116,408	\$39,652	-\$61,802
% Return on Equity	9.90%	2.85%	-1.56%	-10.24%
Total Assets	\$4,107,998	\$2,006,341	\$1,442,596	\$1,696,722
Total Expense Ratio	0.6712%	0.7797%	0.8736%	1.1499%
Adjusted Total Expense Ratio	0.7503%	0.9167%	1.0584%	1.3026%
Economic Total Expense Ratio	0.8904%	1.0780%	1.2650%	1.4652%
Harvested Acres	2,252	1,307	1,006	1,428
Gross Crop Value	\$378.33	\$344.82	\$299.66	\$284.98
Crop Prod Costs	\$259.40	\$255.44	\$227.67	\$261.98
Crop Mach Cost	\$88.34	\$93.70	\$83.20	\$92.39

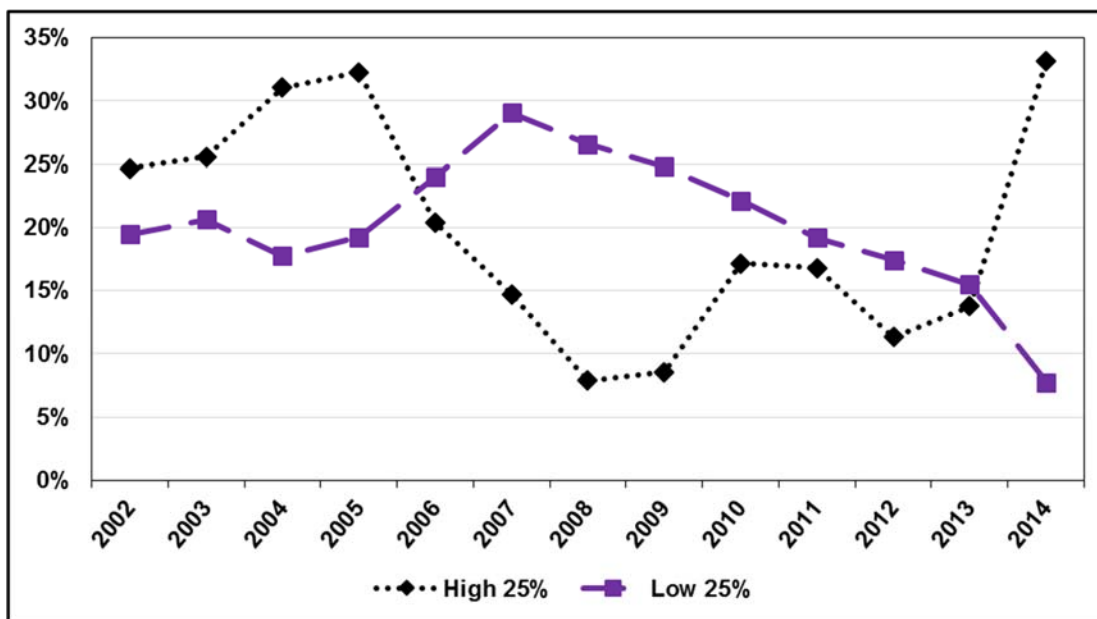


Figure 3. KFMA Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, Kansas, 2002-2014

When looking at the average income generated from livestock as a percentage of total gross income across time, we see the most profitable producers generate 20% of their income from livestock compared to 26% of their income by the least profitable producers. Similar trends occur in most of the regional associations and those tables can be found in Appendix E.

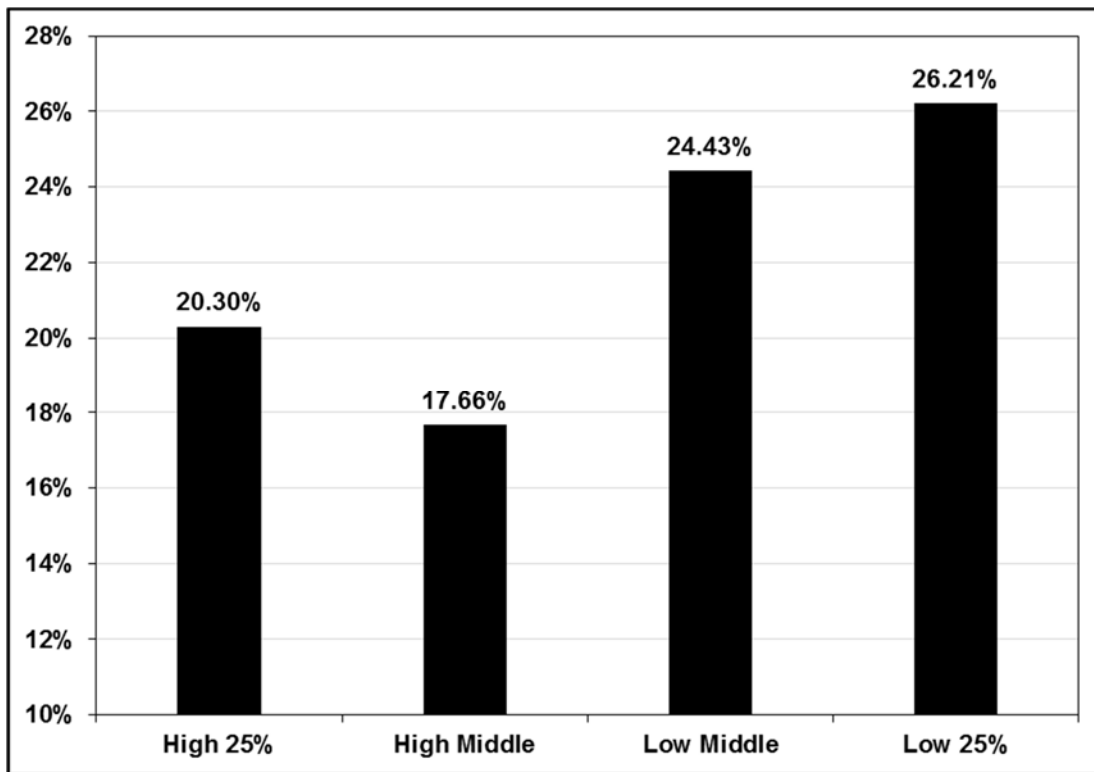


Figure 4. KFMA Average Livestock % of Value of Farm Production, Kansas, 2002-2014

Summary

With low crop prices and recent record high cattle prices, some producers have asked if adding livestock to their operation is the solution to maintaining their profit margin. In an attempt to address this question, historical Kansas Farm Management Data were used. The information provided in this paper shows that livestock has added value to operations over time, and significant value in certain years. However, recent history suggests that livestock on KFMA members operations might have been more of a burden than a benefit in terms of profitability, 2014 excluded. It would have been preferred to examine a livestock only operations; however, when that stipulation is used there are not enough observations to conduct an analysis. When trying to decide if one should add livestock to the operation mix, there are many factors that would go into that decision. For example, current and future output prices should be

taken into consideration. Although we have seen record high cattle prices in the past year, cattle prices have recently fallen and are forecasted to continue falling in the near future. Another important consideration are costs. For example, the costs associated with starting a new herd versus expanding an existing herd could be substantially different.

Appendix A. KFMA Historical Value of Farm Production by Income Source, 2002-2014

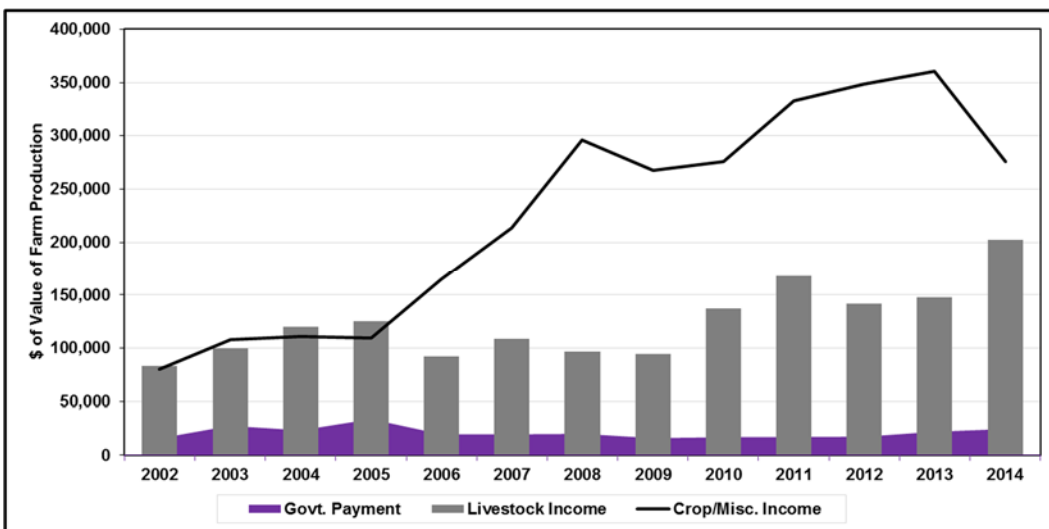


Figure A1. North Central KFMA Historical Value of Farm Production by Income Source, 2002-2014

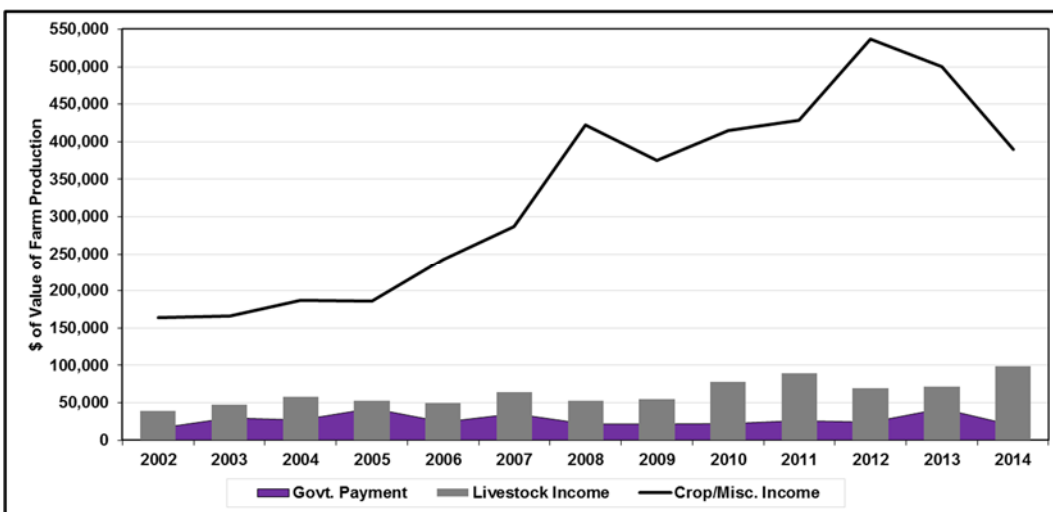


Figure A2. South Central KFMA Historical Value of Farm Production by Income Source, 2002-2014

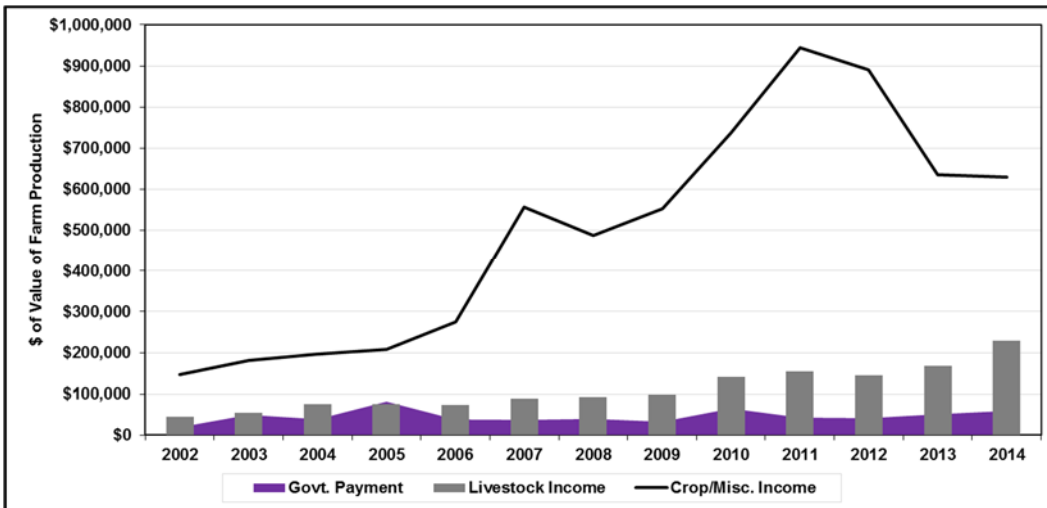


Figure A3. Northwest KFMA Historical Value of Farm Production by Income Source, 2002-2014

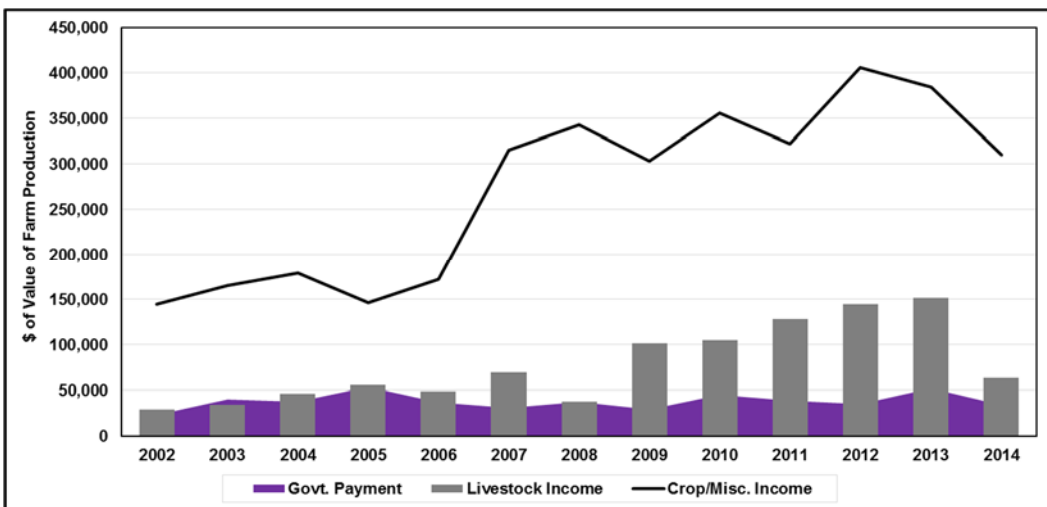


Figure A4. Southwest KFMA Historical Value of Farm Production by Income Source, 2002-2014

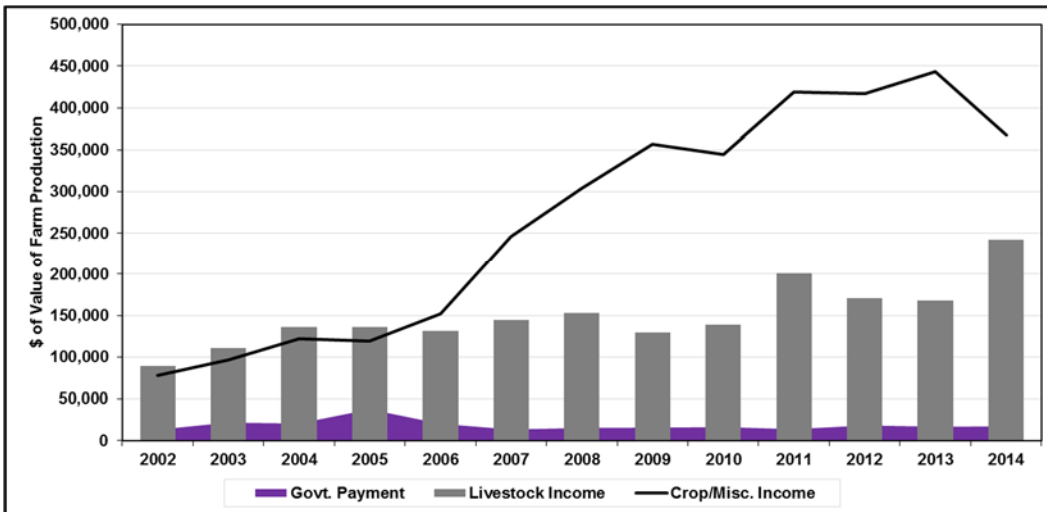


Figure A5. Northeast KFMA Historical Value of Farm Production by Income Source, 2002-2014

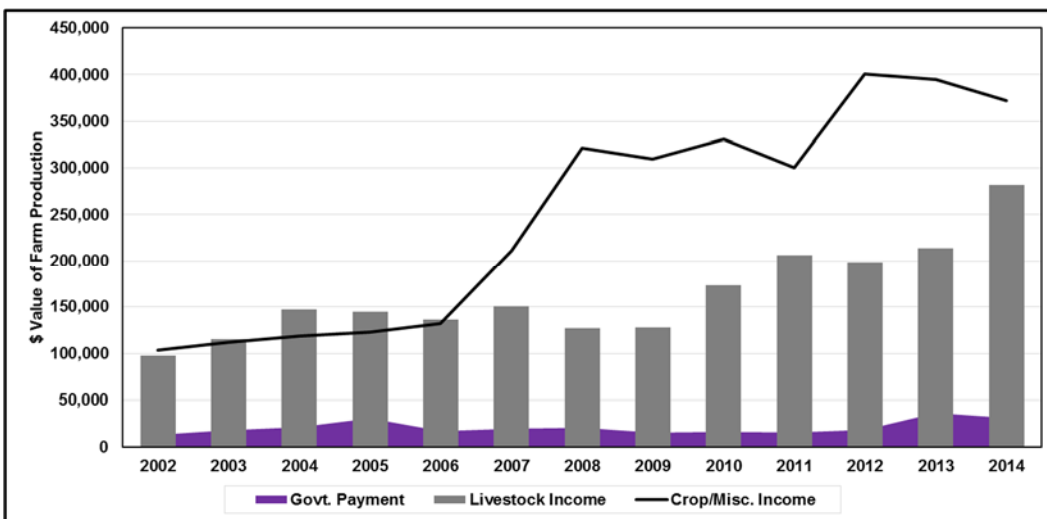


Figure A6. Southeast KFMA Historical Value of Farm Production by Income Source, 2002-2014

Appendix B. KFMA Net Farm Income by Farm Type, 1982-2014

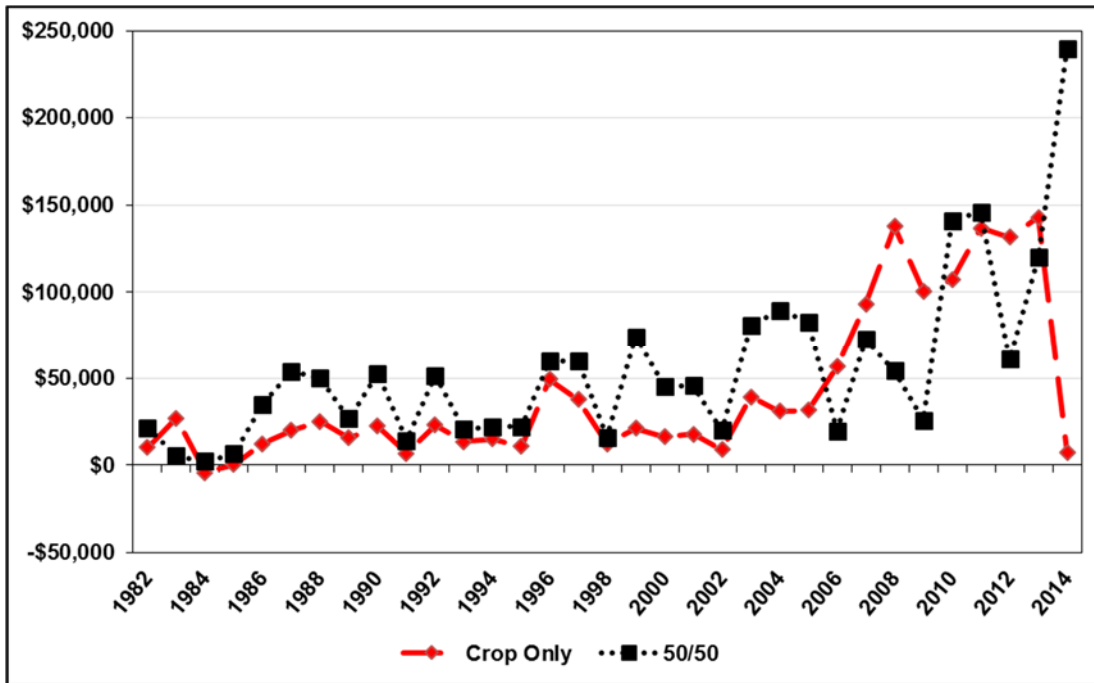


Figure B1. North Central KFMA Net Farm Income by Farm Type, 1982-2014

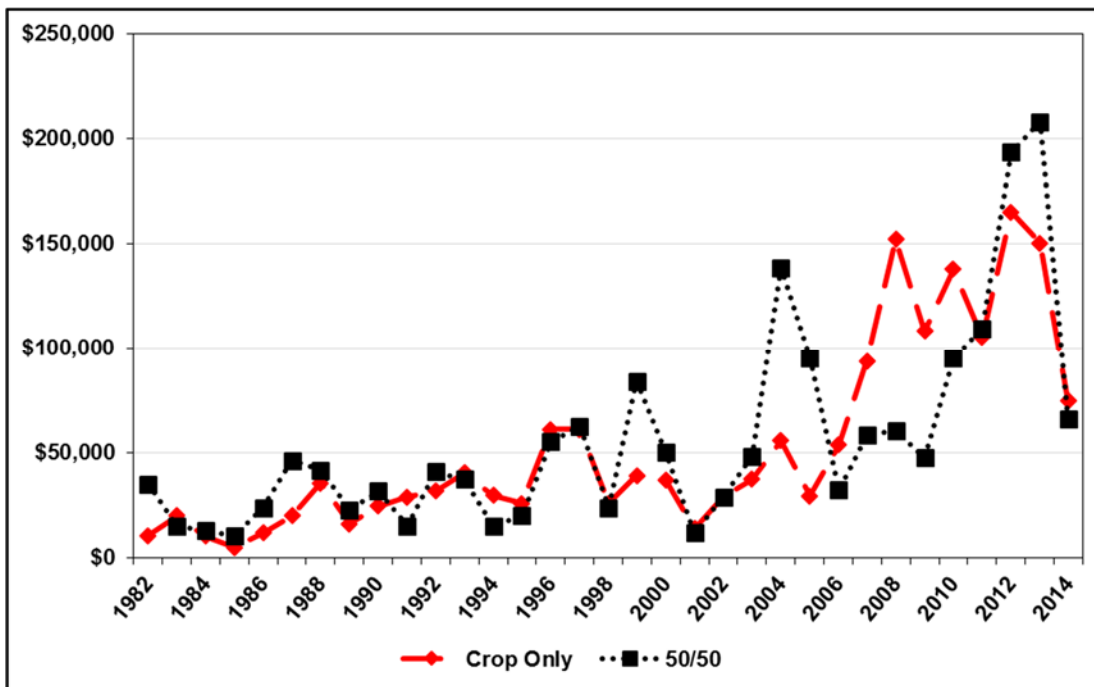


Figure B2. South Central KFMA Net Farm Income by Farm Type, 1982-2014

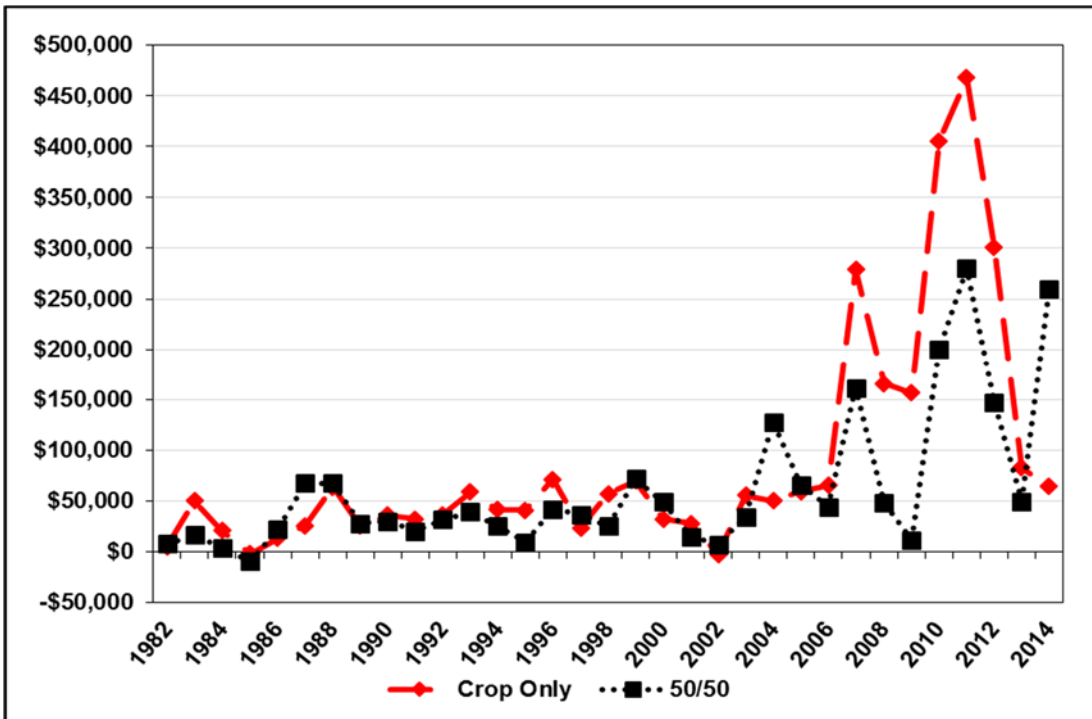


Figure B3. Northwest KFMA Net Farm Income by Farm Type, 1982-2014

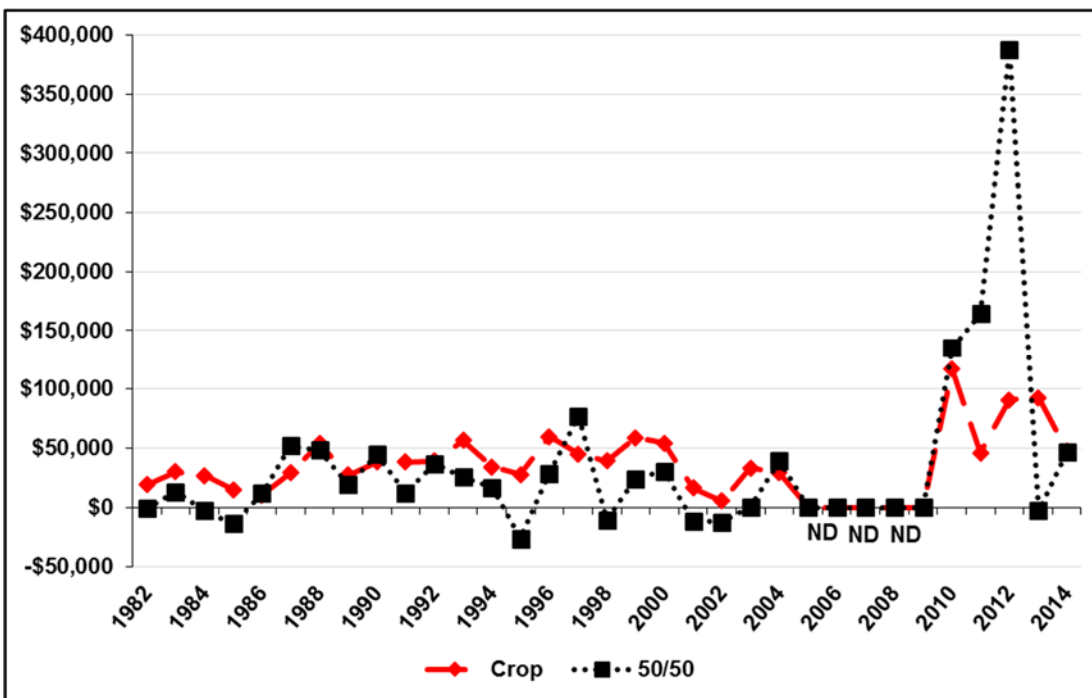


Figure B4. Southwest KFMA Net Farm Income by Farm Type, 1982-2014

*ND – There are not enough observations in years 2005-2009 to report these data.

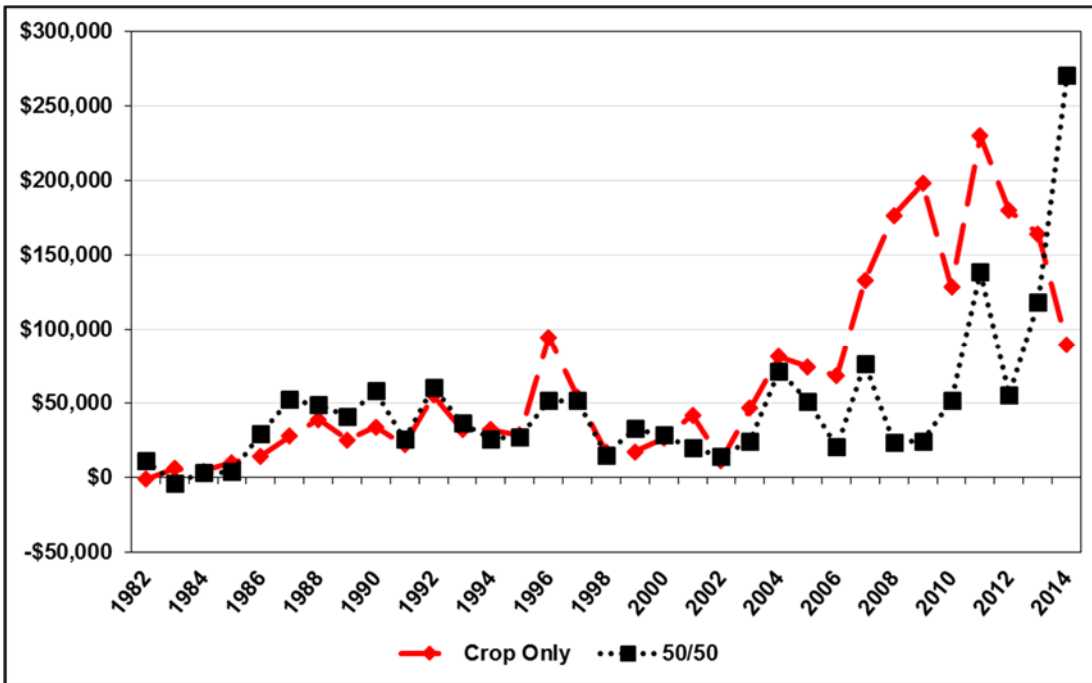


Figure B5. Northeast KFMA Net Farm Income by Farm Type, 1982-2014

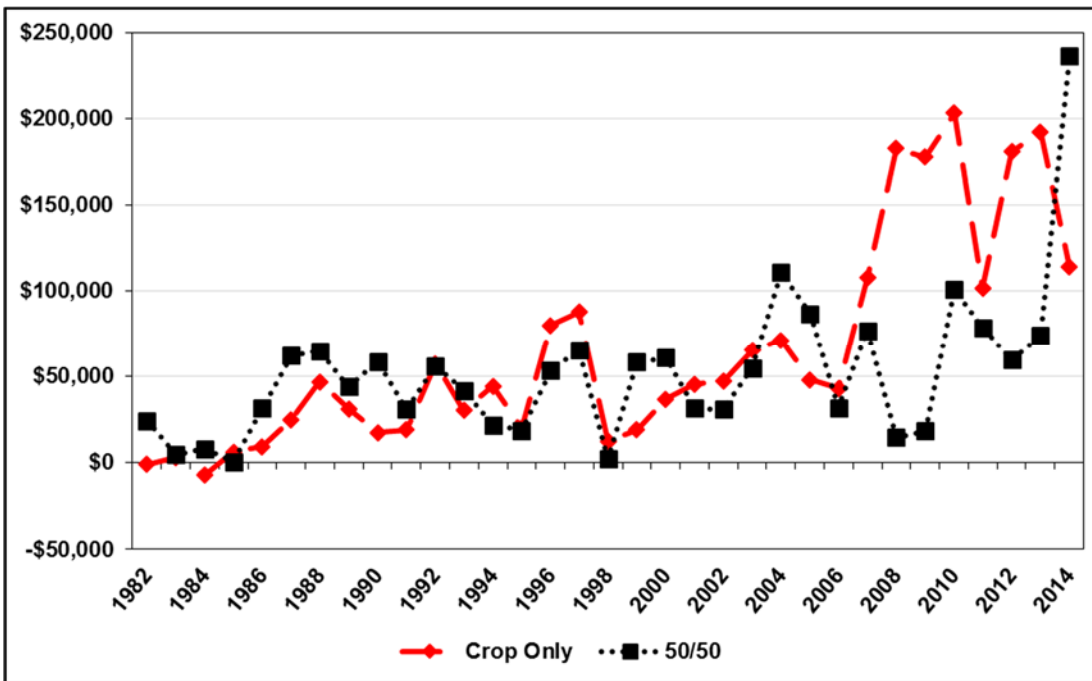


Figure B6. Southeast KFMA Net Farm Income by Farm Type, 1982-2014

Appendix C. KFMA Comparisons by Net Farm Income, 2014**Table C1. North Central KFMA Comparisons by Net Farm Income, 2014**

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$387,563	\$154,574	\$55,696	\$32,704
Value of Farm Production	\$844,627	\$518,680	\$290,347	\$351,669
Total Farm Expense	\$545,517	\$410,370	\$252,595	\$390,360
Net Farm Income	\$299,110	\$108,310	\$37,753	-\$38,691
% Return on Equity	11.33%	2.97%	-1.59%	-9.47%
Total Assets	\$2,428,892	\$1,941,519	\$1,603,629	\$1,755,997
Total Expense Ratio	0.6459%	0.7912%	0.8700%	1.1100%
Adjusted Total Expense Ratio	0.7435%	0.9247%	1.0649%	1.2773%
Economic Total Expense Ratio	0.8693%	1.0648%	1.2904%	1.4386%
Harvested Acres	1,709	1,404	971	1,264
Gross Crop Value	\$296.52	\$305.02	\$294.88	\$292.13
Crop Prod Costs	\$237.68	\$232.40	\$224.08	\$270.90
Crop Mach Cost	\$88.17	\$84.57	\$83.99	\$100.19

Table C2. South Central KFMA Comparisons by Net Farm Income, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$170,863	\$49,679	\$25,839	\$35,423
Value of Farm Production	\$875,151	\$427,723	\$296,018	\$435,536
Total Farm Expense	\$648,322	\$362,871	\$285,550	\$525,701
Net Farm Income	\$226,829	\$64,852	\$10,468	-\$90,165
% Return on Equity	5.66%	-0.62%	-5.12%	-14.35%
Total Assets	\$3,225,404	\$1,826,555	\$1,343,228	\$1,833,999
Total Expense Ratio	0.7408%	0.8484%	0.9646%	1.2070%
Adjusted Total Expense Ratio	0.8309%	1.0216%	1.1816%	1.3670%
Economic Total Expense Ratio	0.9958%	1.2149%	1.3767%	1.5067%
Harvested Acres	2,313	1,436	1,095	1,814
Gross Crop Value	\$358.34	\$304.98	\$297.28	\$273.50
Crop Prod Costs	\$235.68	\$230.72	\$236.11	\$256.59
Crop Mach Cost	\$85.44	\$87.71	\$90.30	\$103.67

Table C3. Northwest Association KFMA Comparisons by Net Farm Income, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Income	\$392,386	\$156,309	\$93,002	\$13,343
Value of Farm Production	\$1,717,668	\$612,893	\$551,749	\$785,078
Total Farm Expense	\$1,285,839	\$486,262	\$526,180	\$943,596
Net Farm Income	\$431,829	\$126,631	\$25,569	-\$158,517
% Return on Equity	6.39%	2.45%	-2.48%	-12.49%
Total Assets	\$7,105,930	\$2,973,909	\$2,055,386	\$2,798,608
Total Expense Ratio	0.7486%	0.7934%	0.9537%	1.2019%
Adjusted Total Expense Ratio	0.8088%	0.9026%	1.0720%	1.2912%
Economic Total Expense Ratio	0.9745%	1.1220%	1.2329%	1.4195%
Harvested Acres	3,644	1,607	1,566	2,507
Gross Crop Value	\$348.80	\$306.86	\$322.24	\$328.35
Crop Prod Costs	\$261.75	\$238.39	\$263.88	\$327.19
Crop Mach Cost	\$80.47	\$86.06	\$86.25	\$99.40

Table C4. Southwest Association KFMA Comparisons by Net Farm Income, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$79,397	\$84,892	\$9,501	\$19,066
Value of Farm Production	\$687,311	\$440,774	\$206,677	\$283,904
Total Farm Expense	\$498,218	\$371,036	\$194,074	\$336,361
Net Farm Income	\$189,093	\$69,738	\$12,603	-\$52,457
% Return on Equity	5.98%	-0.01%	-3.61%	-8.10%
Total Assets	\$2,428,892	\$1,941,519	\$1,603,629	\$1,755,997
Total Expense Ratio	0.7249%	0.8418%	0.9390%	1.1848%
Adjusted Total Expense Ratio	0.8290%	1.0002%	1.2589%	1.4109%
Economic Total Expense Ratio	0.9868%	1.2158%	1.6509%	1.6909%
Harvested Acres	1,708	882	804	998
Gross Crop Value	\$318.18	\$333.67	\$227.92	\$271.43
Crop Prod Costs	\$248.53	\$341.79	\$226.45	\$307.53
Crop Mach Cost	\$79.37	\$148.80	\$90.16	\$128.36

Table C5. Northeast KFMA Comparisons by Net Farm Income, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$516,154	\$128,544	\$54,181	\$40,376
Value of Farm Production	\$1,216,511	\$606,728	\$380,149	\$289,472
Total Farm Expense	\$793,454	\$467,661	\$321,991	\$317,113
Net Farm Income	\$423,057	\$139,067	\$58,158	-\$27,641
% Return on Equity	11.39%	3.26%	-0.61%	-8.79%
Total Assets	\$3,739,782	\$2,246,828	\$1,543,717	\$1,252,509
Total Expense Ratio	0.6522%	0.7708%	0.8470%	1.0955%
Adjusted Total Expense Ratio	0.7445%	0.9117%	1.0194%	1.3019%
Economic Total Expense Ratio	0.8695%	1.0611%	1.1970%	1.4915%
Harvested Acres	1,624	1,141	900	710
Gross Crop Value	\$489.66	\$467.25	\$434.94	\$446.94
Crop Prod Costs	\$333.96	\$315.97	\$286.98	\$345.08
Crop Mach Cost	\$116.62	\$107.87	\$101.98	\$104.99

Table C6. Southeast KFMA Comparisons by Net Farm Income, 2014

	High 25%	High Middle	Low Middle	Low 25%
Livestock Value Produced	\$532,370	\$127,204	\$73,329	\$43,342
Value of Farm Production	\$1,512,566	\$521,090	\$311,203	\$386,385
Total Farm Expense	\$960,423	\$366,891	\$248,331	\$424,185
Net Farm Income	\$552,143	\$154,200	\$62,872	-\$37,799
% Return on Equity	12.29%	6.03%	1.18%	-8.08%
Total Assets	4,801,336	1,950,395	1,253,323	1,491,922
Total Expense Ratio	0.6350%	0.7041%	0.7980%	1.0978%
Adjusted Total Expense Ratio	0.7042%	0.8332%	0.9626%	1.2386%
Economic Total Expense Ratio	0.8384%	0.9858%	1.1373%	1.4018%
Harvested Acres	2,696	1,194	877	1,232
Gross Crop Value	\$388.22	\$337.98	\$314.85	\$339.38
Crop Prod Costs	\$257.25	\$238.81	\$223.03	\$297.86
Crop Mach Cost	\$89.01	\$87.06	\$76.44	\$102.29

Appendix D. KFMA Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

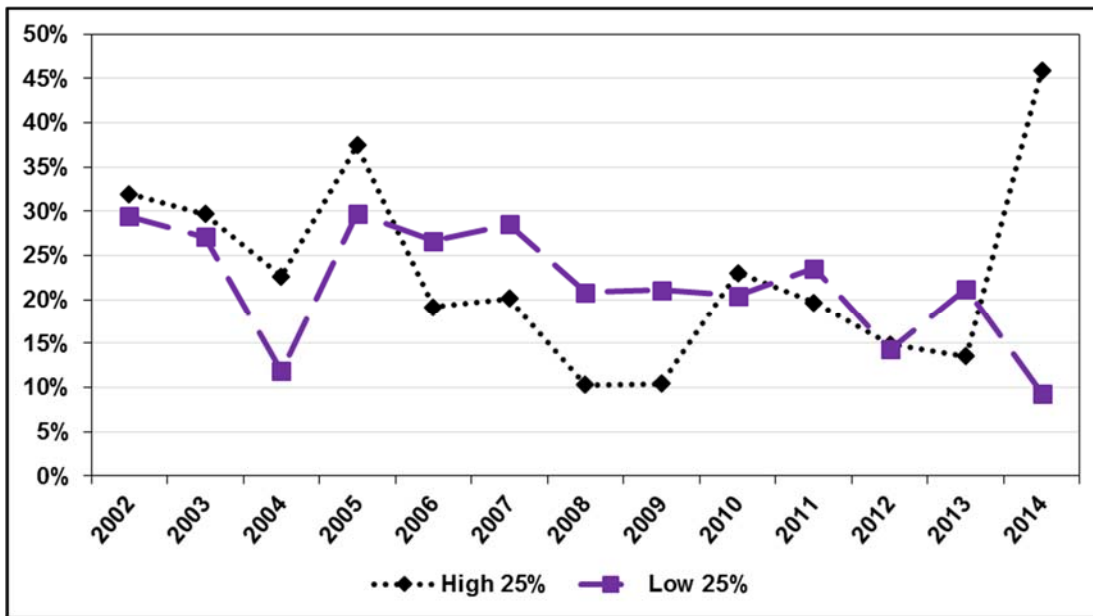


Figure D1. North Central KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

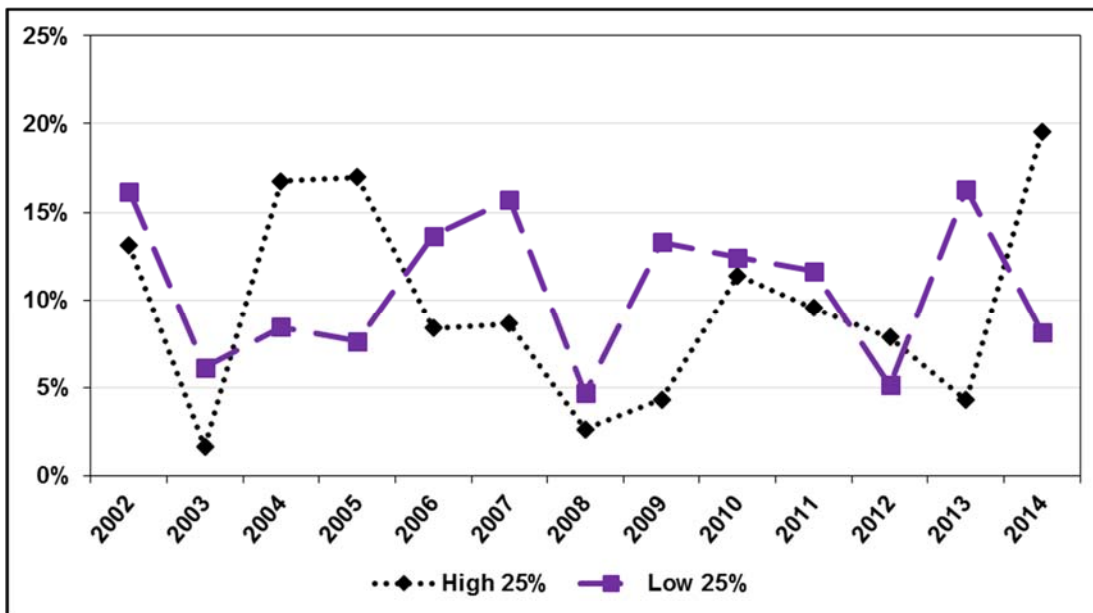


Figure D2. South Central KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

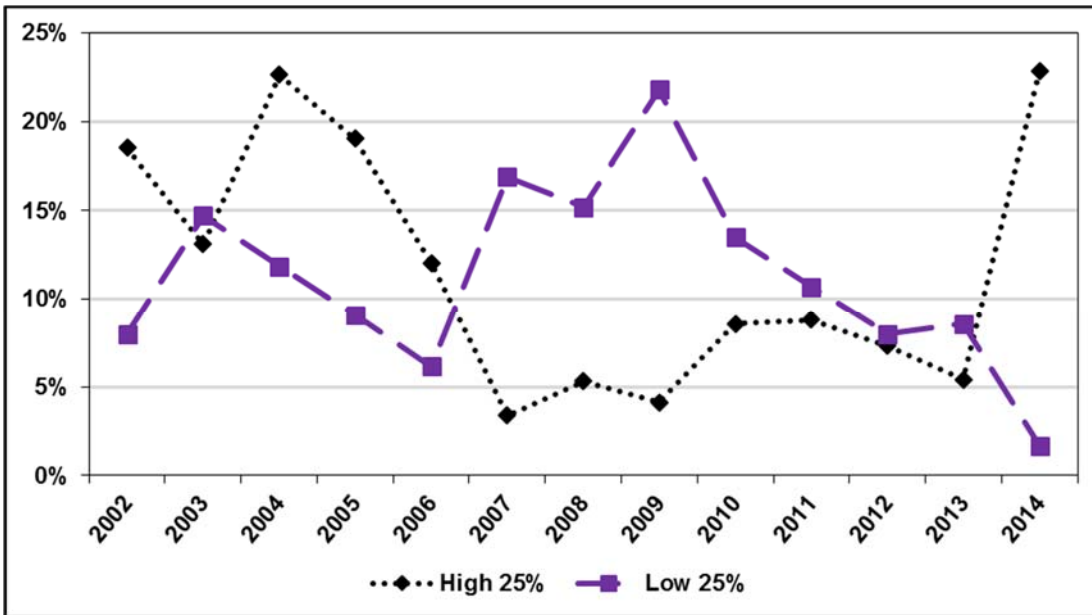


Figure D3. Northwest KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

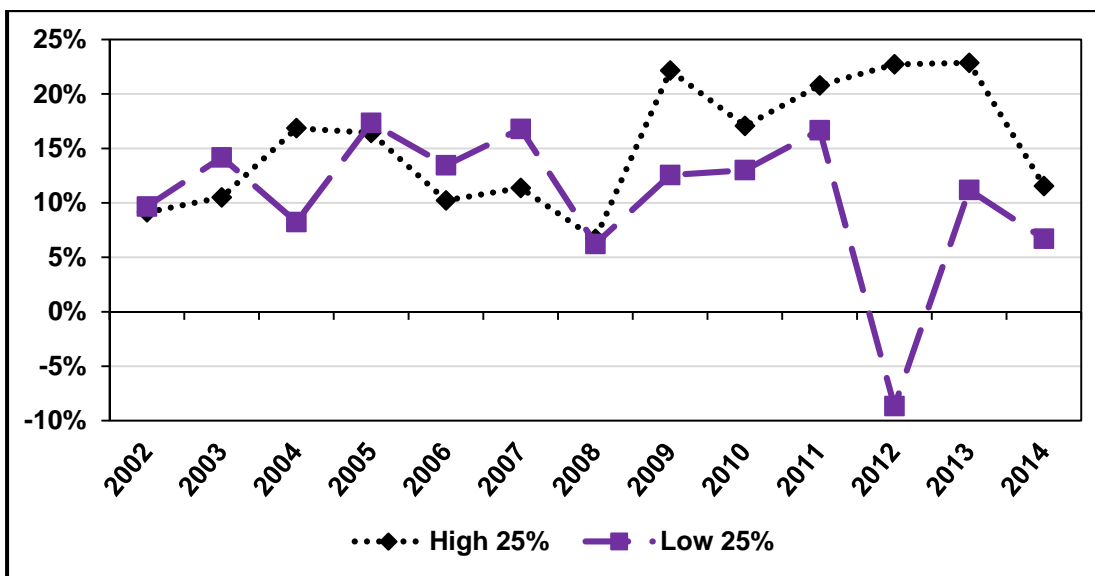


Figure D4. Southwest KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

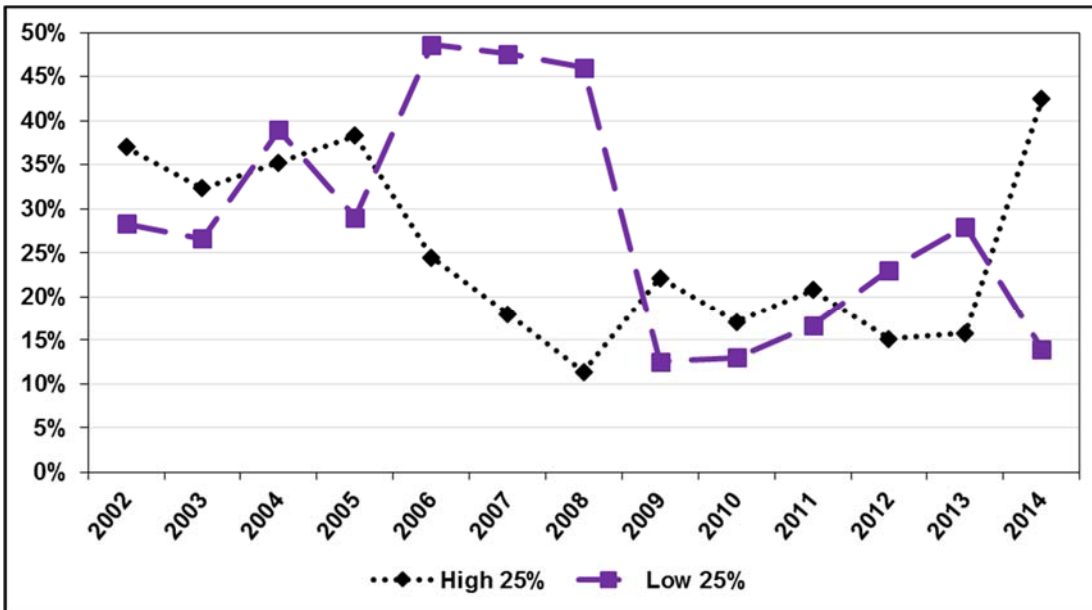


Figure D5. Northeast KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

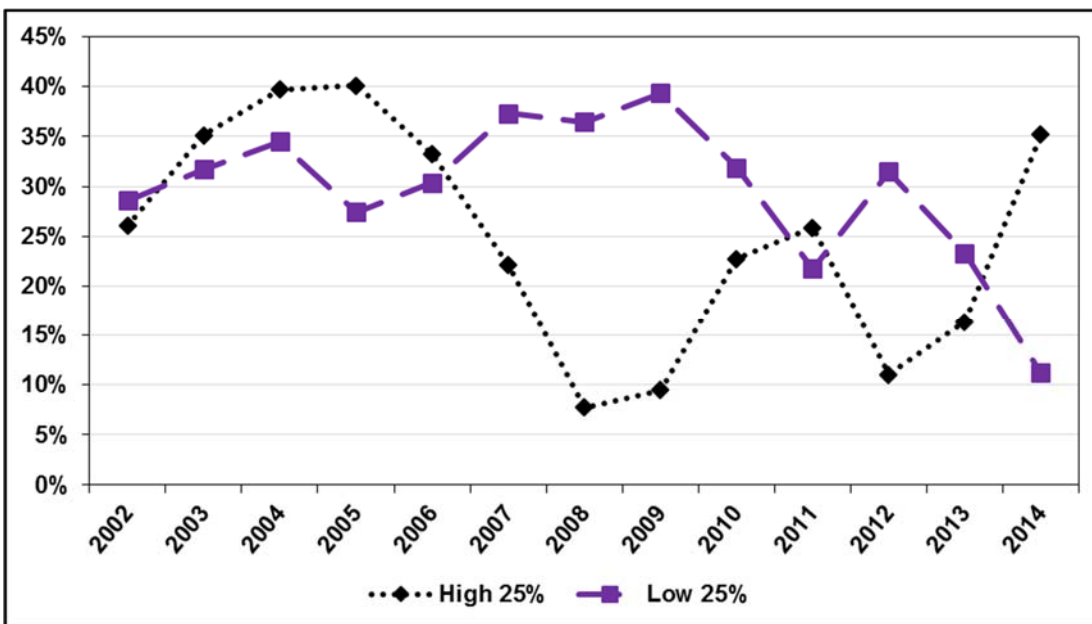


Figure D6. Southeast KFMA Average Livestock % of Value of Farm Production between Top and Bottom Profitability Quartiles, 2002-2014

Appendix E. KFMA Average Livestock % of Value of Farm Production, 2002-2014

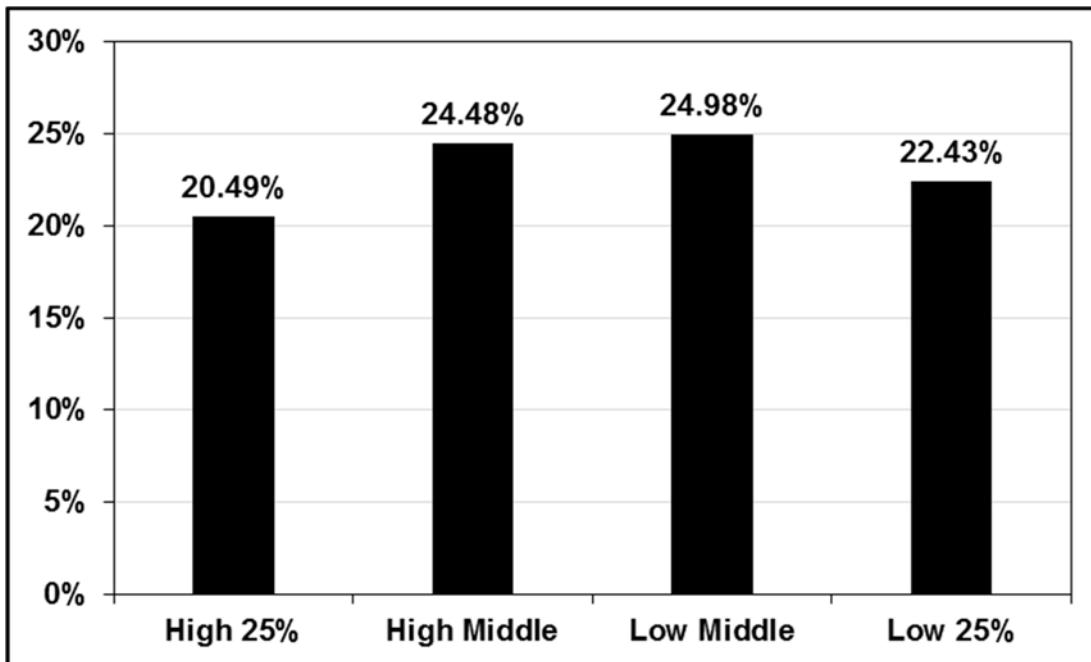


Figure E1. North Central KFMA Average Livestock % of Value of Farm Production, 2002-2014

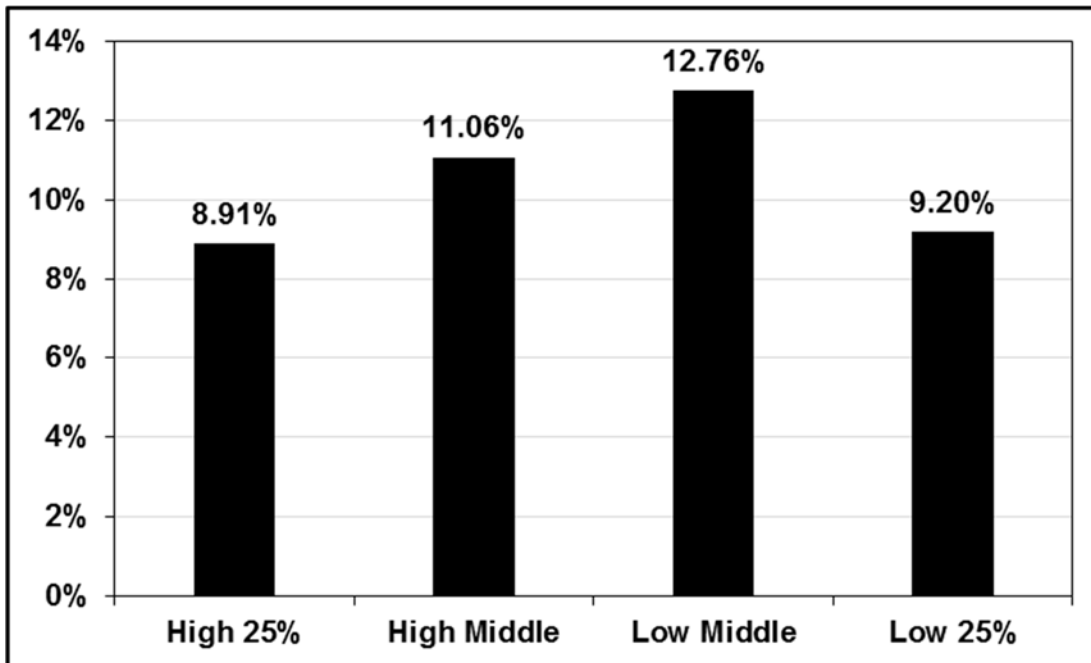


Figure E2. South Central KFMA Average Livestock % of Value of Farm Production, 2002-2014

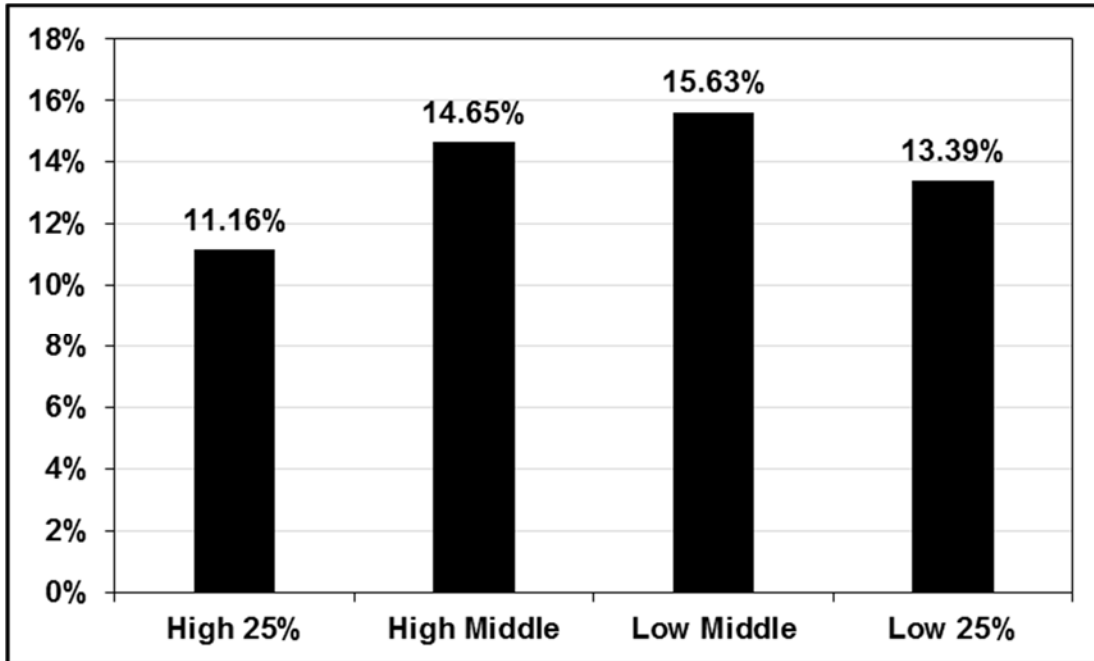


Figure E3. Northwest KFMA Average Livestock % of Value of Farm Production, 2002-2014

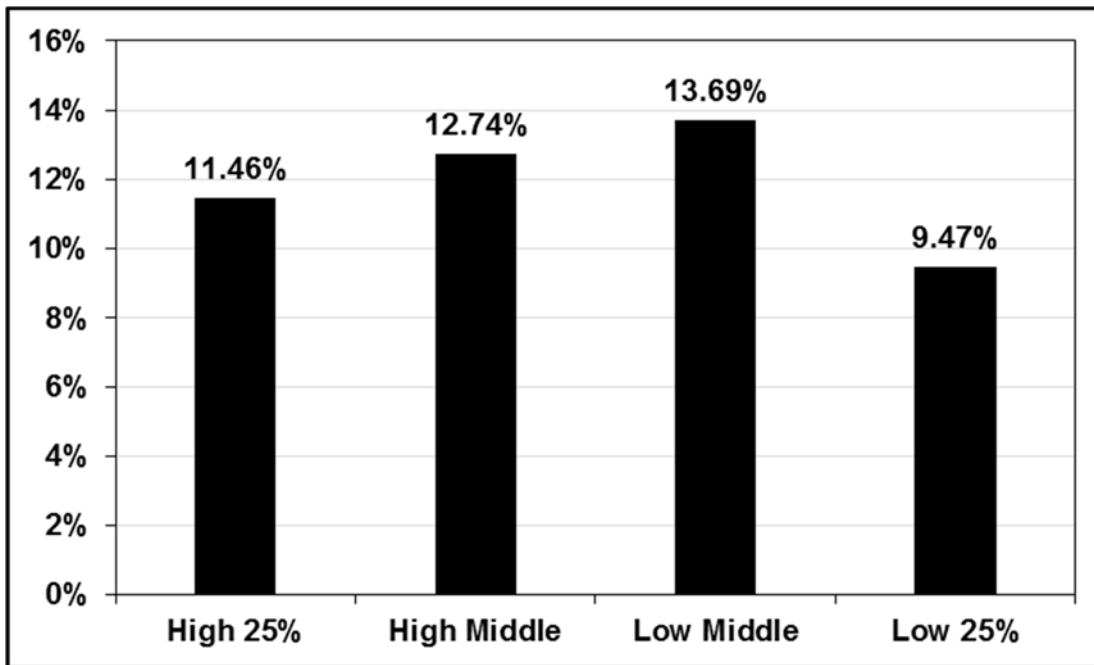


Figure E4. Southwest KFMA Average Livestock % of Value of Farm Production, 2002-2014

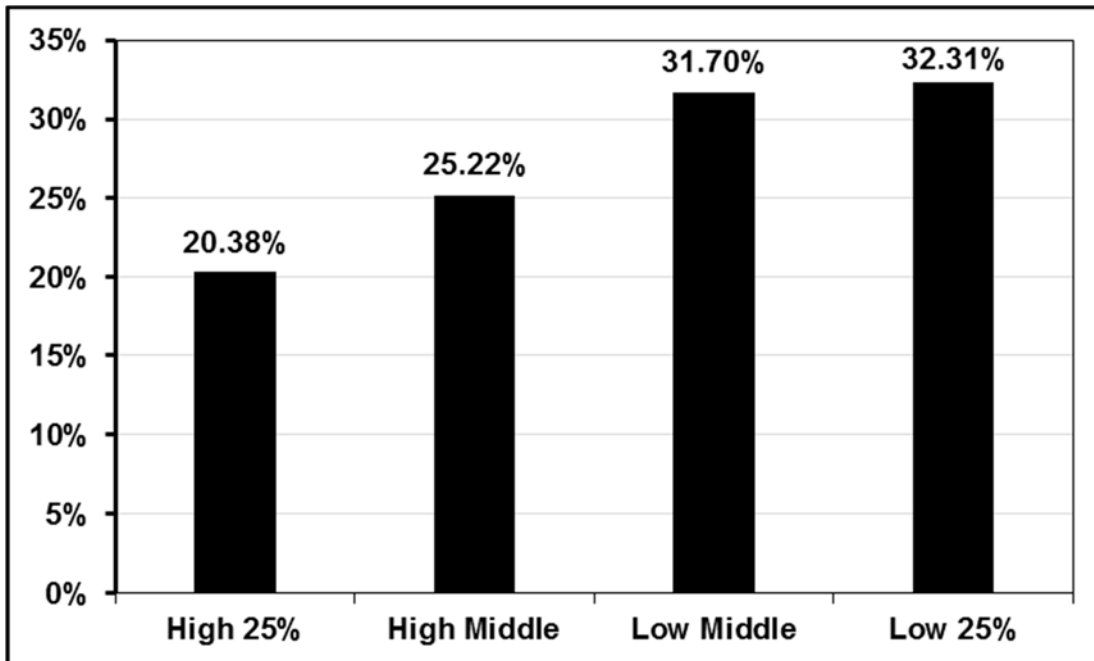


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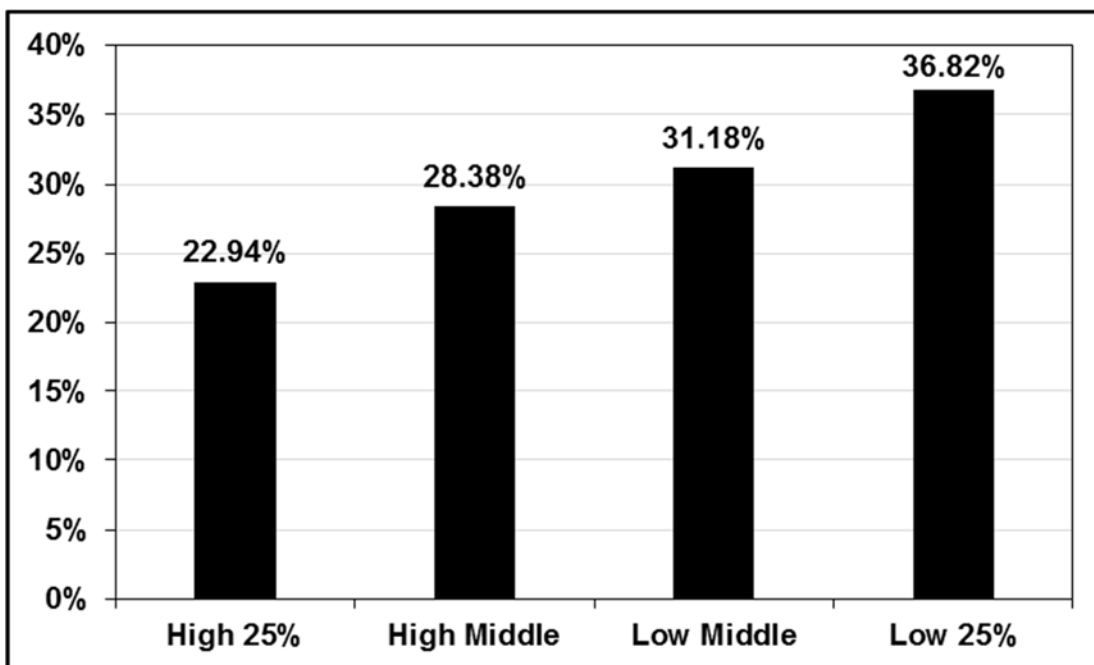


Figure E6. Southeast KFMA Average Livestock % of Value of Farm Production, 2002-2014

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