

## Impact of Subsidy and Income Limits on Farm Size Measured at the State, County, and Farm Level

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The Trump administration is proposing crop insurance cuts, similar to the ones proposed earlier by Congressmen Sensenbrenner (R-WI) and Kind (D-WI) and by Senator Jeff Flake (R-AZ) in the “Assisting Family Farmers through Insurance Reform Measures” (AFFIRM) Act. Both proposals include the elimination of the Harvest Price Option (HPO), a limit on Adjusted Gross Income (AGI), and a \$40,000 limit on the government’s share of the premium, commonly referred to as a premium subsidy. Once a farmer hits the \$40,000 limit on the government’s share of the premium, the farmer would pay 100% of the premium cost for any covered acres above that level. This assumes the farm is below the \$250,000 AGI limit, which would completely eliminate their participation in the USDA reinsured crop insurance program.

The administration’s budget includes crop insurance cuts that are similar to the ones proposed in the AFFIRM Act. Their budget would cut over \$29 billion from crop insurance or about \$3 billion a year over 10 years.<sup>1</sup> Over the last five years, the total share of the crop insurance premium cost paid (“subsidy”) by the Risk Management Agency (RMA), has been between \$6 to \$7 billion per year plus about \$1.3 billion per year for Administrative and Operating (A&O) costs, with the balance paid by farmers.<sup>2</sup> A \$29 billion cut over 10 years would be nearly half of the government’s current share of the

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<sup>1</sup> Office of Management and Budget “Major Savings and Reforms”, Budget of the U.S. Government, Fiscal Year 2018, U.S. Government Publishing Office, Washington 2017. The link is:

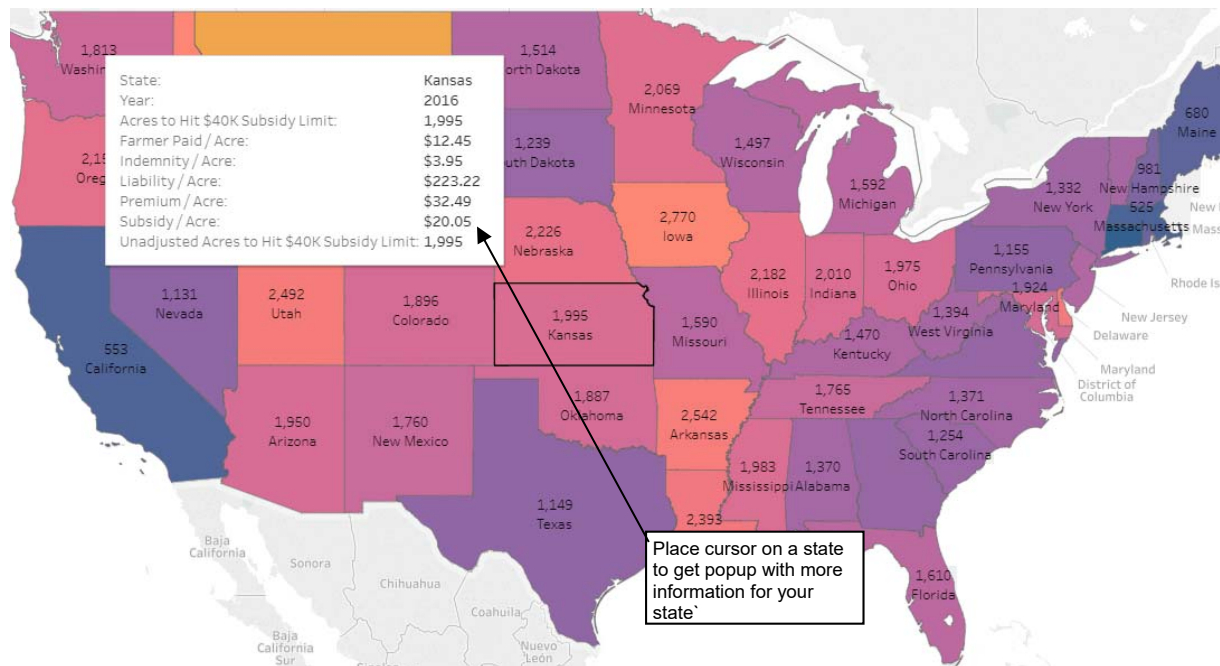
<https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/budget/fy2018/msar.pdf>

<sup>2</sup>Source: RMA’s Web page at <https://www.rma.usda.gov/>



premium cost. Therefore, these numbers only add up if there is a large reduction in the number of farmers buying crop insurance, maybe over a 30 percent decline in participation. Would these cuts make the insurance program so bad that it would reduce participation by such a large percentage? Such a large reduction in participation seems unlikely, because farmers could hire accountants and lawyers to create new “paper farms” and avoid some of the limits. However, the reduction could be significant and is likely to affect a greater proportion of farms in lower risk states.

The administration’s budget estimates a savings of \$16.2 billion by requiring a limit on premium subsidies to \$40,000 per farm. They would also eliminate the HPO, which would impact even relatively small grain farmers, saving nearly \$12 billion. Their budget would



**Figure 1. Estimated number of crop acres needed to hit proposed USDA premium subsidy limit of \$40,000 with all remaining premium cost paid by farmers.<sup>3</sup>**

<sup>3</sup> Interactive maps of the subsidy limit analysis were created by Dr. Rich Llewelyn, Dept. of Agricultural Economics, Kansas State University and are available at: [www.agmanager.info/crop-insurance](http://www.agmanager.info/crop-insurance)



eliminate crop insurance eligibility for any farm with an Adjusted Gross Income (AGI) greater than \$500,000 versus the \$250,000 AGI limit in the AFFIRM Act. Under the administration's plan, farmers would likely hit the \$40,000 premium cost-share limit before hitting the AGI limit.

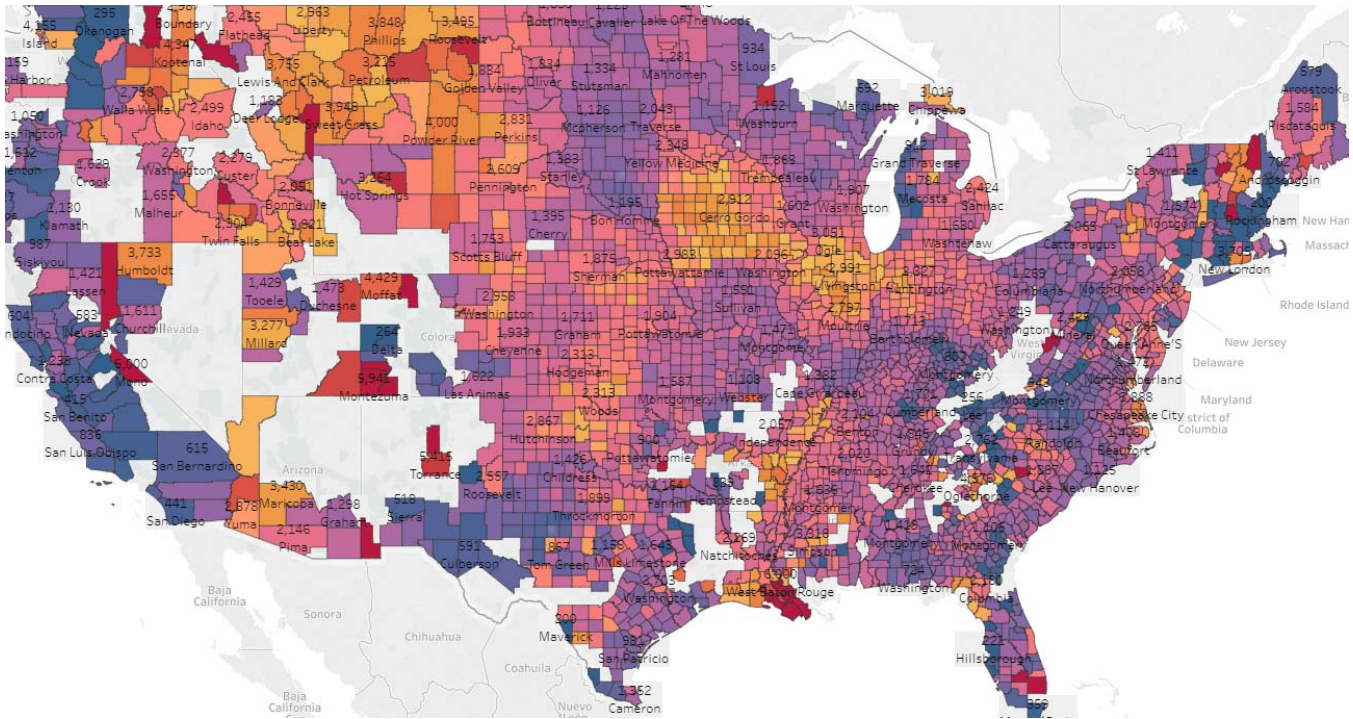
### 1. Average Crop Acres Required to Hit \$40,000 Premium Subsidy Limit by State

Figure 1 shows an interactive map displaying the average number of crop acres needed to hit the \$40,000 premium cost-share limit by state. This is based on current crop insurance coverage purchases for all states. On average, it takes between 1,500 to 2,500 crop acres to hit the \$40,000 subsidy cap, i.e. the government's share of the premium costs, depending on the year and state. Nearly 17% of the Kansas farmers who participate in the Kansas Farm Management Association (KFMA) are over this limit on acres. Once a farmer hits the \$40,000 limit, the farmer would pay 100% of the premium cost for any additional covered acres.

A map of the United States showing the average number of crop acres, by county, needed to hit the \$40,000 limit for 2016 is shown in Figure 2.<sup>4</sup> Unlike the Commodity Title that covers only a few crops, crop insurance covers over 100 different crops. What this national map really

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<sup>4</sup>The KSU estimate includes Wheat, Blueberries, Onions, Canola, Oats, Millet, Rice, Avocados, Pecans, Cotton, Cotton Ex Long Staple, Macadamia Nuts, Almonds, Walnuts, Flax, Forage Seeding, Forage Production, Peaches, Prunes, Raisins, Sugarcane, Sugar Beets, Corn, Sweet Corn, Popcorn, Fresh Market Sweet Corn, Chile Peppers, Processing Beans, Dry Beans, Safflower, Hybrid Sorghum Seed, Grain Sorghum, Table Grapes, Grapes, Apples, Cultivated Wild Rice, Cherries, Cranberries, Silage Sorghum, Figs, Hybrid Corn Seed, Green Peas, Dry Peas, Mustard, Cabbage, Mint, Peanuts, Whole Farm Revenue Protection, Sunflowers, Clary Sage, Hybrid Seed Rice, Soybeans, Peppers, Potatoes, Fresh Market Tomatoes, Tomatoes, Pears, Barley, Plums, Hybrid Sweet Corn Seed, Rye, Grass Seed, Fresh Market Beans, Alfalfa Seed, Buckwheat, Cucumbers, Pumpkins, Strawberries, Sweet Potatoes, Grapefruit, Lemons, Tangelos, Fresh Apricots, Processing Apricots, Fresh Nectarines, Processing Cling Peaches, Processing Freestone, Fresh Freestone Peaches, Early & Midseason Oranges, Late Oranges, All Other Grapefruit, Oranges, Ruby Red Grapefruit, Flue Cured Tobacco, Fire Cured Tobacco, Burley Tobacco, Maryland Tobacco, Dark Air Tobacco, Cigar Filler Tobacco, Cigar Binder Tobacco, Cigar Wrapper Tobacco, Rio Red & Star Ruby, Banana, Coffee, Papaya, Mandarins/Tangerines, Annual Forage, Camelina, Sesame, Pistachios, Olives, Tangors, and Limesall.



**Figure 2. U.S. map showing number of crop acres, by county, needed to hit the \$40,000 premium subsidy limit.**

shows is the diversity of crops grown in the United States. In counties producing high value specialty crops, it only requires a couple hundred crop acres to hit the limit, while in other counties growing low value crops it would require over 6,000 acres to hit the limit.

Forage crops, mostly hay/grazing acres, based on weather derivatives were not included. These acres for most part are in permanent forage and the acres can't be tilled and planted to other crops. These tend to be low value "crops" per acre and the acres needed for a commercial size farming-ranching organization are very large. Forage, such as irrigated and non-irrigated alfalfa based on APH were included. The data does include all area-based plans that are measured by acres too, such as Area Risk Plan (ARP).

This data doesn't include contracts measured by trees or nurseries. "Crops" not included in the analyses include: All Other Citrus Trees, Apiculture, Avocado Trees, Banana Tree, Carambola Trees, Cattle, Clams, Coffee Tree, Dairy Cattle, Fed Cattle, Feeder Cattle, Grapefruit Trees, Lamb, Lemon Trees, Lime Trees, Macadamia Trees, Mango Trees, Nursery (FG&C), Orange Trees, Papaya Tree, Pasture-Rangeland-Forage, Swine, and Tangerine Trees. Source: RMA's Web page at <https://www.rma.usda.gov/>



In 2016, the number of acres required to reach the \$40,000 cost-share cap in Kansas ranged from a low of 1,166 acres to a high of 3,619 acres, depending on the county. By contrast, in California the range was from 149 acres to 7,556 acres in a county to hit the limit. However, in most cases these outliers were based on very few insured acres in the county. These county level estimates are based on RMA-published county-level crop insurance statistics by practice.

The primary assumption of the analysis presented here is that crop insurance purchases above the last cost-shared dollar will not occur (i.e. farmers will not purchase coverage if it is not discounted with a government cost-share). To simulate the impact, the total cost-share received by each farm in the KFMA database was calculated.<sup>5</sup> After capping the cost-share at \$40,000, the reduction in dollars spent on coverage as well as the percentage of KFMA farms impacted by the cap (i.e. the % of farms that would hit the cap and not purchase any more coverage) were calculated.

The results (shown in figure 3) indicate that an average of 16.7% of KFMA farms would be impacted by the cap with a range of 2.3% (2005) to 27.3% (2013) over the time period analyzed. The percentage of farms impacted by the \$40,000 cap grows over time. The most recent year of data available (2016) suggests the impact would be 17.9%, but in the last six years that impact has ranged from 18% to 27% of farms.

The average reduction in coverage purchased beyond the \$40,000 cap is 74.5% with a range of 66% (2008) to 91% (2004). Based on these findings, the loss in revenue generated for crop insurance agents covering Kansas farms would be significant. This is an upper bound estimate due to the

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<sup>5</sup> The Kansas Farm Management Association (KFMA) database contains approximately 1,500 crop farms that submit their production, input expense, and financial information for comparisons to other KFMA farms for benchmarking purposes. The data have been shown to be a representative sample of Kansas farms, as compared to the Census of Agriculture.

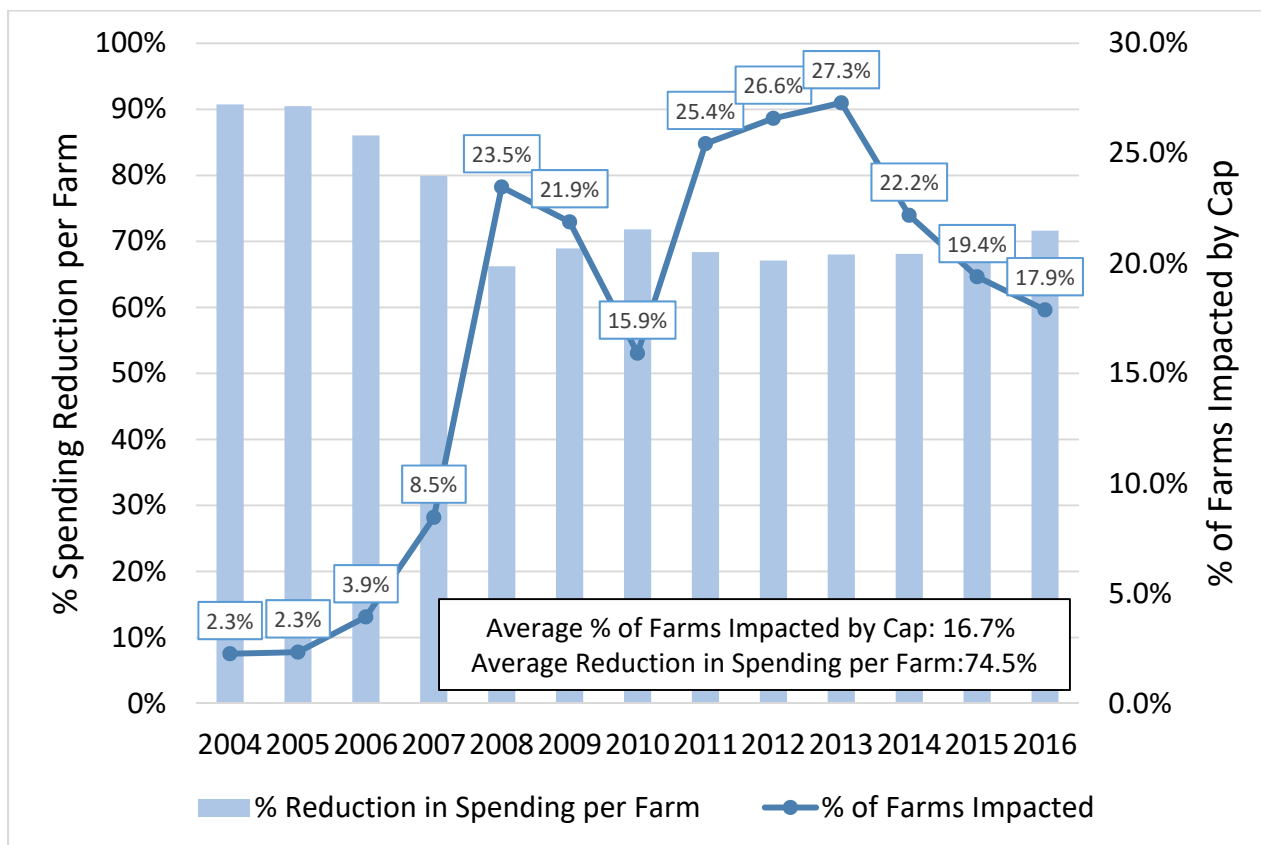
assumption that no dollars would be spent on crop insurance coverage if the cost-share is removed. It is possible farmers would buy some additional coverage beyond the \$40,000 cost-share cap, reducing the impacts shown in figure 3.

The impact of profitability on premiums paid by KFMA farms varies by year. Between 2013 and 2014, there is a 5.1% reduction in the percentage of farms impacted by the \$40,000 cost-share limitation. During this period, farm profitability declined significantly due to lower crop prices. The decrease in spending on crop insurance, and subsequent decrease in the number of farms hitting the cost-share limitation, was due to a combination of insuring a lower valued crop and having less money to spend on all inputs of the farm production including crop insurance premiums.

A similar analysis of the cost-share limitation was conducted by Dr. Eric Belasco at Montana State University (<http://ageconmt.com/impact-cap-insurance-premium-subsidies/>). The analysis indicated that the cost-share cap would impact 5.23% of all farms (all commodities, all states considered) and would reduce premium cost-shares by 64%. The disadvantage to the MSU analysis is the use of a single year of data (2014) and, therefore, the inability to see how the impact changes with variations in profitability for farms.







**Figure 3. Impact of \$40,000 premium subsidy cap on KFMA farms (2004 to 2015).**

**2. Elimination of Premium Cost-Share for Farms Based on Adjusted Gross Income (AGI)**

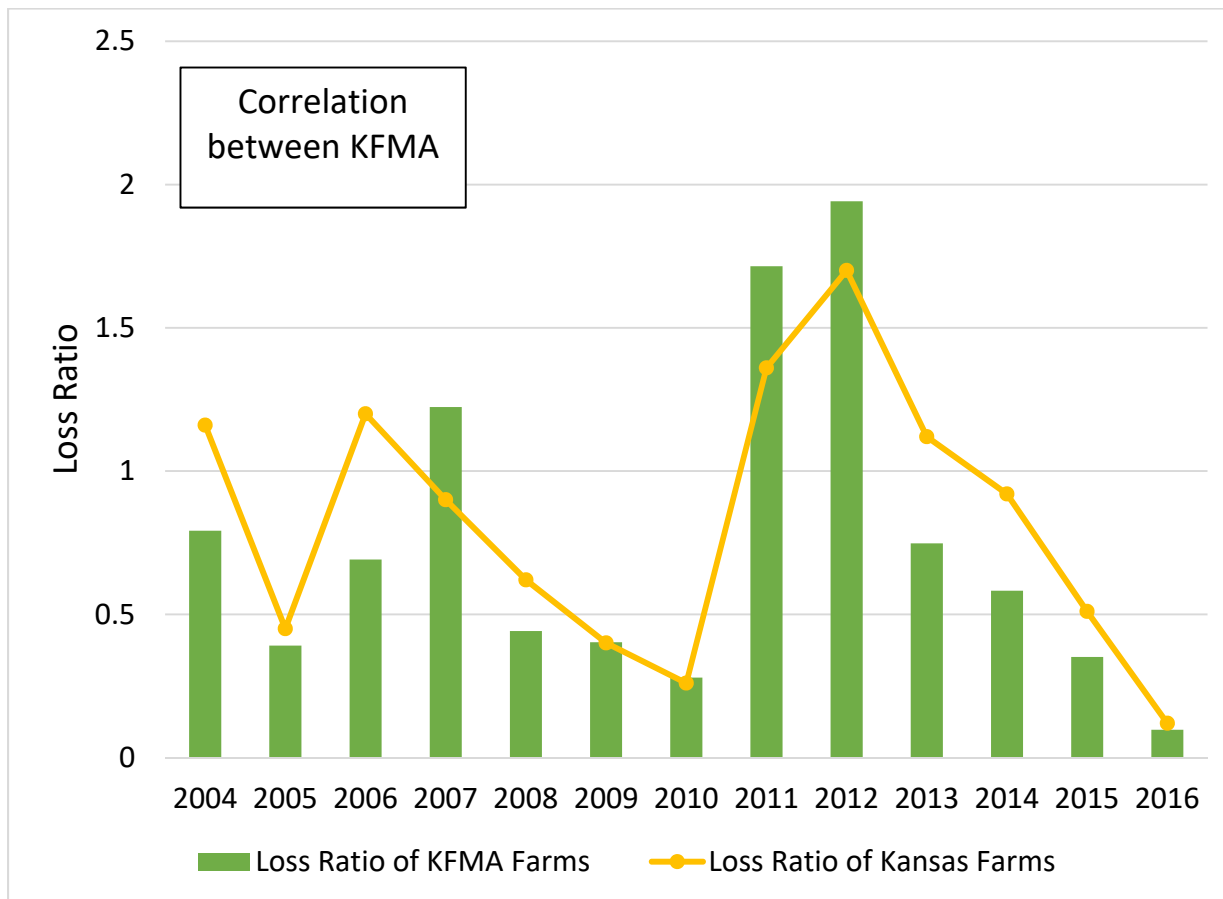
The loss ratio was calculated for a crop insurance pool of KFMA farms by year (premiums paid divided by indemnities received and multiplied by 0.4) for the years 2004 to 2016 and is presented in figure 4. The average loss ratio across the 13-year period is 0.74, with a high of 1.94 (2012) and a low of 0.10 (2016). Loss ratio data for the entire state of Kansas was collected from the RMA website. The average loss ratio across Kansas is 0.82, with a high of 1.70 (2012) and a low of 0.12 (2016). The correlation between the two series is 87.1%, suggesting a high correlation between the behavior of



KFMA farms and all farms in the state of Kansas with regard to crop insurance purchases and indemnities over time.

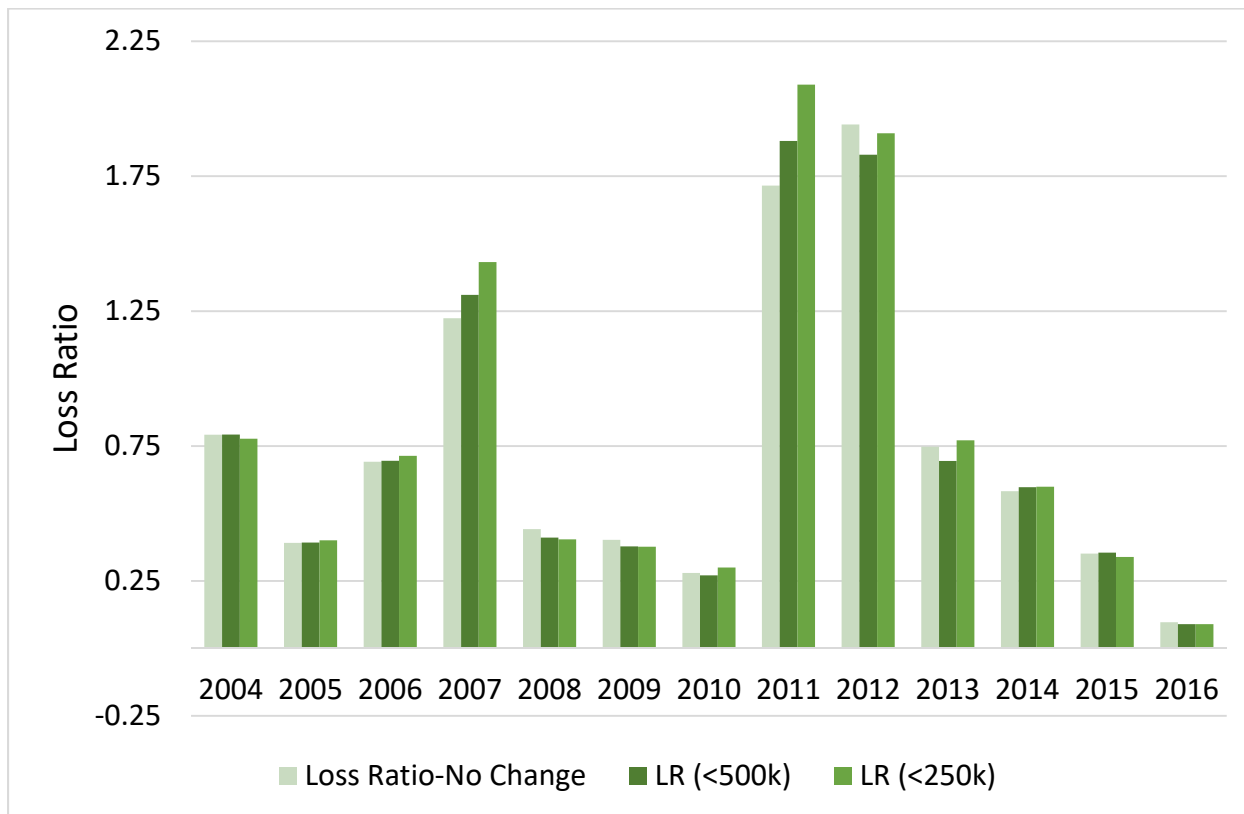
To simulate the potential impacts of a cap on farm participation in the crop insurance program based on AGI, the net farm income (NFI) per farm was added to off-farm income earned to proxy for AGI. The loss ratio for the sample of KFMA farms was calculated under two different scenarios: (1) Eliminating farms with a AGI greater than \$500,000 per year and (2) eliminating farms with a AGI greater than \$250,000 per year. The loss ratios for each scenario are shown alongside the actual loss ratio in figure 5. While the overall loss ratio of the KFMA pool does not change much in some years, there are years where it increases the overall loss ratio under one of the two scenarios (2005, 2006, 2007, 2010, 2011, 2013, and 2014). The loss ratio decreased in the years 2004, 2008, 2009, and 2016. The impact of the various scenarios changes by year because the number of farms eliminated from the pool varies by year due to changes in AGI over time. The use of a fixed AGI to determine which farms may participate by year will change the number of farms in the pool and the impacts of this policy. However, the removal of the highest grossing farms (as measured by the highest AGI farms) appears to increase the loss ratio in several years, which would result in higher premiums being charged to the remaining farms in the pool.





**Figure 4. Comparison of loss ratios of KFMA farms versus all insured farms in the state of Kansas (2004 to 2015).**

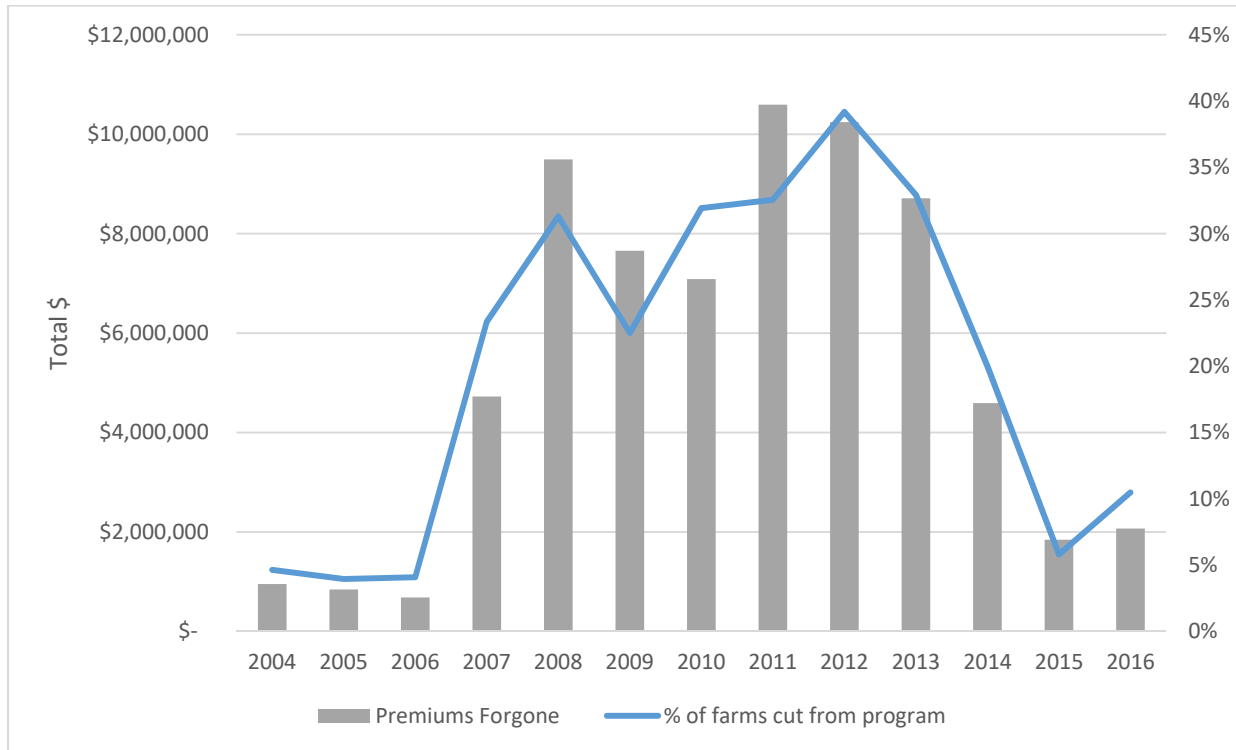
The impact of the AGI threshold being low enough to cut off a significant number of farms in a given year manifests through the loss in premiums from fewer farms in the pool. This impact is shown in figure 4, with the greatest impact on the percent of farms cut from the program, and foregone premiums, occurring in 2008, 2011, and 2012.



**Figure 5. Comparison of loss ratios of KFMA farms under various AGI limitations (2004 to 2015).**

The impacts of overall profitability of farms impacts the results in figure 6 through the volatility of net farm income (NFI). NFI dropped significantly in the years 2014 through 2016, leaving many farms that would have previously been affected by the AGI limitation able to participate in the program. With a fixed AGI cap and volatility in NFI occurring across years, it is unclear if farms would choose to participate in the crop insurance program if their ability to enroll was not consistent across time. The administrative costs of keeping track of farms that qualify, or do not, as well as their crop insurance records during years when they do not qualify could be onerous for both crop insurance agents and RMA.





**Figure 6. Impacts of \$250,000 AGI limit on Premiums Paid and Number of Farms Participating.**

### 3. Elimination of the Harvest Price Option (HPO)

The administration claims elimination of the HPO will save \$12 billion and is not needed because the risk is covered by the Farm Service Agency (FSA) commodity programs. The argument that the HPO overpays farmers is a half-truth. When the harvest price is just a penny higher than the projected price, Revenue Protection (RP) insured farmers must have an insurable yield loss to trigger any indemnity payment. For most corn farmers that will require a 22-25% yield loss or more to collect anything (20% deductible + 2%-5% farmer-paid premium). For example, an Iowa corn farm with an APH equal to 185 bushel would need a yield loss greater than 37 bushels to trigger either an RP or Yield Protection (YP) contract indemnity when the harvest price increases. A farmer expecting a 185-bushel



corn yield will need a yield below 148 bushels to receive any indemnity payment from YP or RP when the harvest price is higher<sup>6</sup>.

In 2012, crop insurance critics argued that corn farmers were overpaid by RP. The fact is that all 2012 RP corn claims require an insurable yield loss to collect any indemnity payment. When the harvest price increases, the yield indemnity calculations are the same for YP and RP, except that YP indemnifies the lost bushels at the projected price set 6 months earlier, while RP indemnifies the lost bushels at the current market price (harvest price).

#### **4. Summary of Impacts**

The results presented here were based on crop insurance coverage purchases over a multi-year span. It is unlikely that this will be the result in the future because many farmers will likely make adjustments to avoid the subsidy limit. As a first step, they will likely create new “paper” farms. If they have a spouse, then farmers will try to get a second crop insurance policy for their spouse and divide the acres between two “farms”. This will double the paperwork for the whole system, including agents, AIPs and RMA, with no new premium. Some farmers may encourage their landlords to change from cash rent to crop share rent in order to stay under the subsidy limit. “Big” farmers will likely hire accountants and lawyers to create more entities. This will expand the administrative cost for farmers as these entities must be kept separate for all recordkeeping purposes.

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<sup>6</sup> In 2012, RP insured Iowa corn farmers at the 80% coverage level had an approximate average yield of 185 bushels. Source: RMA’s Web page at <https://www.rma.usda.gov/>

Farmers who are affected by the cost-share cap may choose to cut their coverage to stay under the limit. If still available, they could eliminate the HPO to get under the limit. They could also lower their percent coverage level. They might decide to insure their corn but leave their soybeans uninsured or only insure with CAT, which has a 100% premium subsidy.

The results presented here, based on historical results, may not be the realized results, because farmers will apply strategies to avoid the limit. This will likely result in less budget savings than advertised, but these cuts will impact middle-sized farmers because they will have to create new farms to avoid the limit. While it may not reduce benefits for this size farm, it will increase the paper work and that has a cost too. Also, this assumes that driving the really large farms out of the crop insurance program will have no impact on the insurance pool, which is shown in this analysis to not necessarily be the case.

This case creates some interesting public policy questions. When prices fall, revenue insurance often overlaps with other government payments because those programs trigger payments when prices are low including payments from Price Loss Coverage (PLC), Loan Deficiency Payments (LDP) and in many cases Agriculture Risk Coverage (ARC). In addition, the hedged farmers will also show gains in their brokerage account. The critics have claimed that the HPO in RP competes with other USDA farm safety net programs and the CME, but it is clearly the opposite.

When prices increase, farmers receive few if any government payments, hedged farmers have margin losses, and higher prices reduce or eliminate revenue indemnity payments. Those farmers with HPO will have their lost bushels, less the deductible, replaced at their current market value, offsetting



margin losses and loss of government payments. When farmers have a crop failure and prices increase, farmers will lose their PLC payment when they most need it because they have nothing to sell at the higher prices.

It is important to remember that even in a bad year causing higher prices, not all farmers have a crop failure. Those farmers who don't have a crop failure will have very "high" incomes and make the average U.S. farm income high. This is the problem with making public policy decisions based on national averages. Crop insurance targets the payment to only individual farmers who have losses.<sup>7</sup>

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<sup>7</sup> A more detailed presentation on the policy issues and alternatives are presented in a paper titled "Administration's Proposed Crop Insurance Cuts Would Eliminate Harvest Price Option and Limit Farm Size (Updated Data)". The link to the paper is: <http://www.agmanager.info/crop-insurance/risk-management-strategies/>

