



## Variation in ARC-CO Payment per Program Base Acre by County

**Carl Zulauf**

Department of Agricultural, Environmental and Development Economics  
Ohio State University

**Gary Schnitkey**

Department of Agricultural and Consumer Economics  
University of Illinois

August 27, 2015

*farmdoc daily* (5):157

---

Recommended citation format: Zulauf, C., and G. Schnitkey. "Variation in ARC-CO Payment per Program Base Acre by County." *farmdoc daily* (5):157, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 27, 2015.

Permalink: <http://farmdocdaily.illinois.edu/2015/08/variation-in-arc-co-payment-per-program-base.html>

---

### Overview

This article examines the variation across counties in ARC-CO (Agriculture Risk Coverage –County program) payments per program base acre, using estimated corn and soybean payments for the 2014 crop year as an illustration. Understanding the variation in payments is important to understanding the impact and operation of ARC-CO, as well as other revenue and yield based risk programs. In particular, the non-trivial variation in county payments by ARC-CO implies that the decision by Farm Service Agency (FSA) to make payments based on the county in which the FSA farm is administered not the county in which the FSA farms lies also potentially non-trivial.

### Source

Estimated per acre county payments were computed for our [August 6, 2015 farmdoc daily article](#), "Estimated National 2014 ARC-CO and PLC Payments." The estimates were made using county yields and U.S. average price for the 2014 crop year. County yields are from USDA, National Agricultural Statistical Service (NASS) because FSA has not yet released their estimates, which are based on Risk Management Agency data or other sources should NASS data be unavailable. Other details of the analysis are discussed in the August 6, 2015 article. Corn and soybeans are a useful combination to examine because each has over 50 million program base acres, each has over 90% of base acres enrolled in ARC-CO, and 2014 crop year payments will be large for corn but limited for soybeans. Our estimate of ARC-CO payments for the U.S. total \$4.1 billion for corn vs. \$0.4 billion for soybeans.

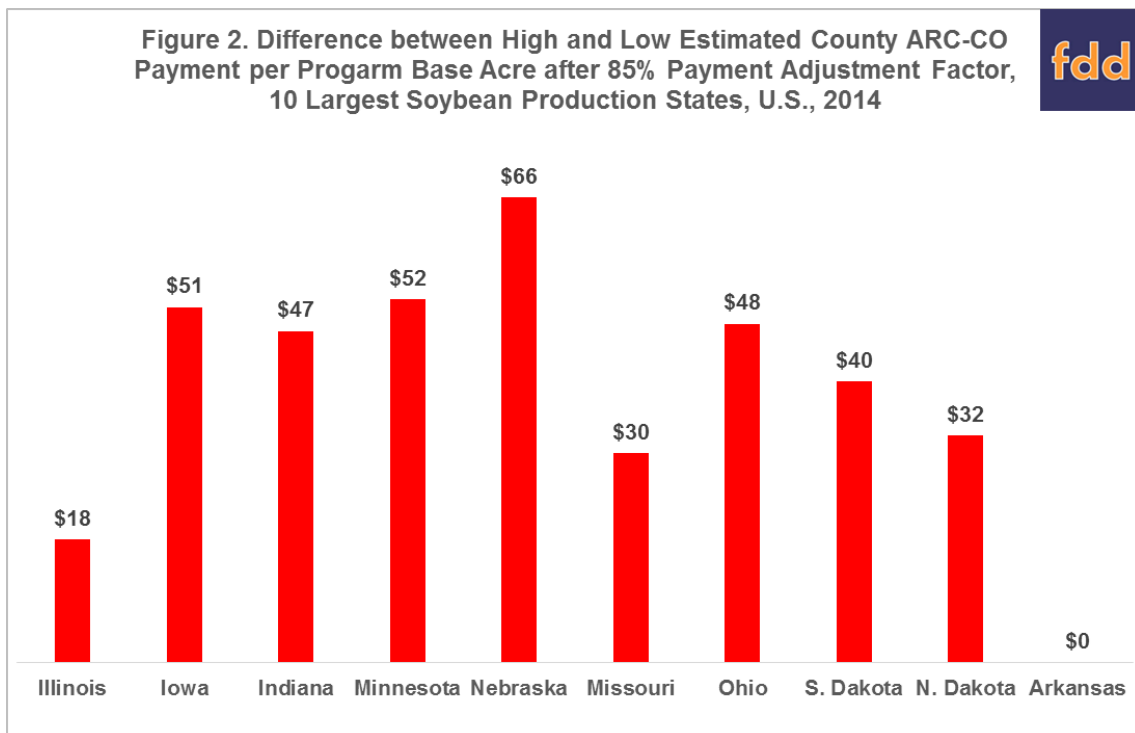
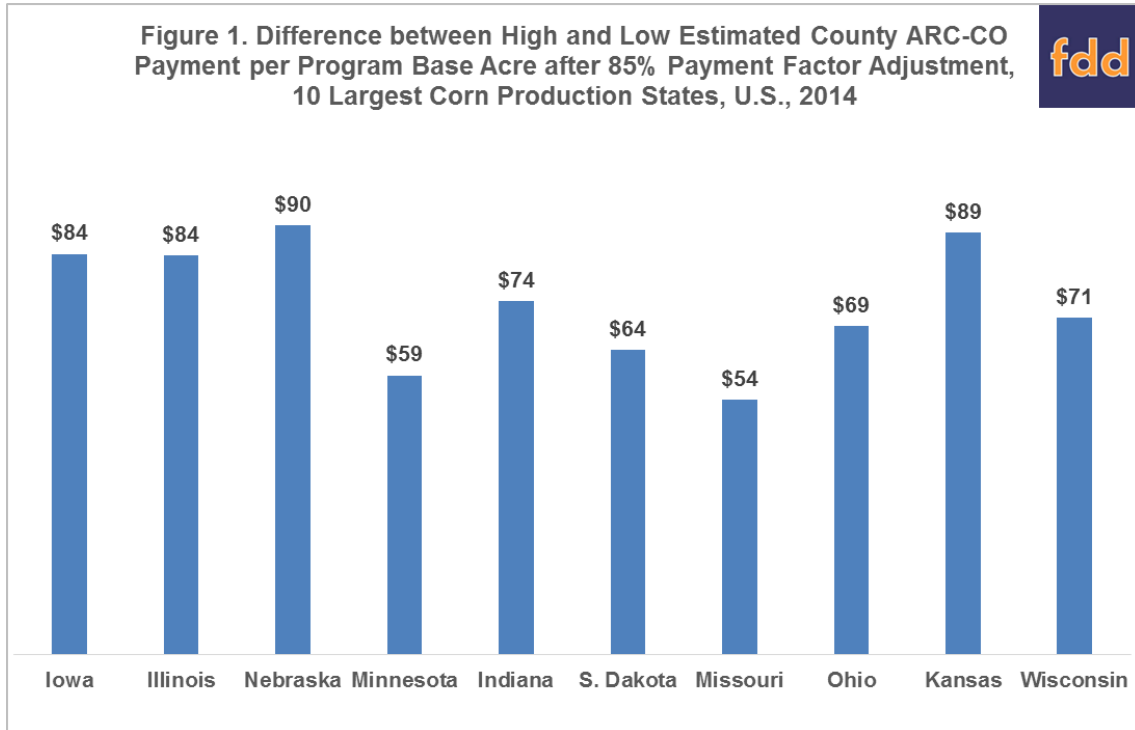
### Per Acre County Payment Variation within a State

Figures 1 and 2 present for the 2014 crop year the difference between the highest and lowest estimated county payment per program base acre for the top 10 corn and soybean production states, respectively.

---

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from *farmdoc daily*. Guidelines are available [here](#). The *farmdoc daily* website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

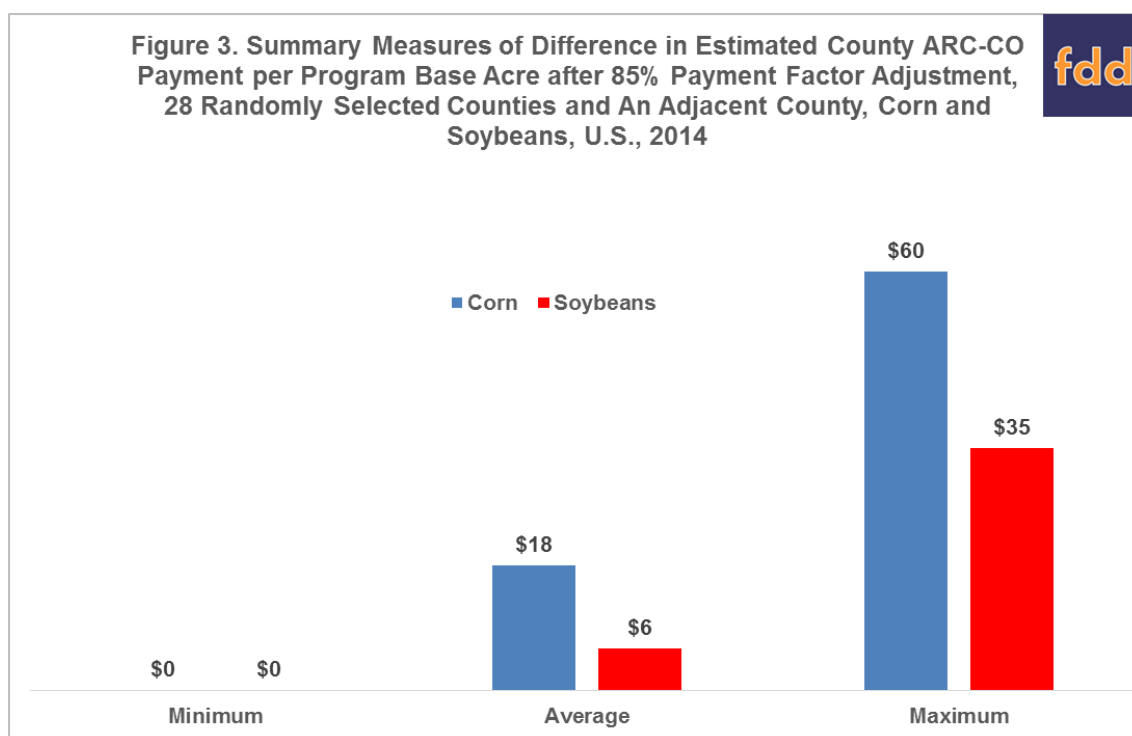
The estimated payments are adjusted for the 85% payment factor. Arkansas soybeans (\$0) and Illinois soybeans (\$18) are the only two state-crop combinations with a difference between the low and high county payment within a state that is less than \$30 per program base acre<sup>1</sup>. For corn, the minimum difference between the low and high county payment within a state is \$54 per program base acre for Missouri. In short, a large variation exists in ARC-CO estimated payments per program base acre for the 2014 crop year in almost all of the top 10 corn and soybean production states.



## Per Acre Payment Variation between Adjacent Counties

The agro-climate is usually more similar among adjacent counties than non-adjacent counties. To provide insights into the variation in ARC payments that exists among adjacent counties, a random set of data was drawn. Specifically, all counties for which ARC-CO corn payments were estimated were alphabetized by state and then by county within the state. Every 50<sup>th</sup> county was selected. Then, a direction was selected, cycling alphabetically through east, north, south, and west for each succeeding county. If data were not available, the next available county or direction was selected with the stipulation that the same county had to be used for both corn and soybeans. The resulting data set was composed of 28 counties in 21 states. No state had more than 2 counties.

Across the 28 pairs of adjacent countries, the average difference in ARC-CO payment per program base acre was \$18 for corn and \$6 for soybeans (see Figure 3). These two differences are notably smaller than most differences reported in Figures 1 and 2. This result is consistent with the expectation that yield and per acre revenue are more similar for adjacent than non-adjacent counties. As a comparison, average ARC-CO payment per program base acre for the 56 counties that comprise the 28 pairs of adjacent counties was \$31 for corn and \$7 for soybeans. Thus, the average difference in ARC-CO payment per program base acre was 58% and 86% of average ARC-CO payment per program base acre for corn and soybeans in the adjacent counties, respectively.



The minimum difference in ARC-CO payment was \$0 for both crops. In each case, a \$0 difference resulted because both counties in the pair received no ARC-CO payment. The smallest difference when a payment was made to at least one county in the adjacent pair was \$0.15 and \$1.74 per program base acre for corn and soybeans, respectively. In contrast, the maximum difference was \$60 and \$35 per program base acre for corn and soybeans. The difference exceeded \$10 per program base acre for 11 and 7 pairs of the 28 pairs of adjacent counties for corn and soybeans, respectively.

### Summary Observations

1. ARC-CO payment per program base acre will vary widely by county for 2014 crop year corn and soybeans.
2. This variation will occur within, not just across states.

3. Double digit variations in ARC-CO payments per program base acre will occur at times between adjacent counties.
4. Because ARC-CO uses the U.S. crop year price, variation in per acre payments across counties in a crop year largely results from the variation in county yields. It is normal for this yield variation, and thus variation in payments, to be large unless ARC-CO makes no or a small payment due to high prices or high yields.
5. Variations in payments per acre is a feature not just of ARC-CO but of any risk management program based on yield or a derivative of yield, such as revenue.
6. ARC-CO payments per program base acre will likely vary more across counties than PLC payments per program base acre because PLC payments are made on a fixed yield and a price difference that is the same for all counties (reference price minus U.S. crop year price).
7. The agro-climate based variation in ARC-CO payments per program base acre makes the decision by the Farm Service Agency (FSA) to make payments based on the county in which the FSA farm is administered not the county in which the FSA farms lies potentially non-trivial.
8. The preceding point has potential implications for the ability of ARC-CO to provide assistance for agro-climate risk specific to the county in which the farm is located.

#### **Notes**

1. The no-to-low variation in county per acre payment rates in Arkansas and Illinois soybeans probably reflects the consistently high yields that occurred throughout both states.

#### **References**

Schnitkey, G., and C. Zulauf. "[Estimated National 2014 ARC-CO and PLC Payments.](#)" *farmdoc daily* (5):143, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 6, 2015.

*This publication is also available at <http://aede.osu.edu/publications>.*