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# Impacts of the SURE Disaster Program on Producer Risk Management and Crop Insurance

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# Background

- **Prior to 1949**
    - Very little disaster assistance from Federal government
  - **1949 to 1981**
    - Agricultural legislation included provisions for low-interest loans and/or direct disaster relief payments
  - **1981 to Present**
    - In 1981, Sec. of Agriculture's authority to make disaster payments was suspended in all situations where crop insurance was available
    - This effectively meant that disaster relief would be on an *ad hoc* basis
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# History of *Ad Hoc* Relief

- Some sort of disaster relief has been offered in most years since 1981
    - From 1987 to 1994, over 60% of farms received disaster assistance at least once, with many farms receiving assistance every year (Barnett, 1999)
    - Payments made to both crop and livestock producers, with payments authorized for economic emergencies as well as natural disasters
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# Disaster Assistance and Crop Insurance

- Frequent disaster assistance payments have been made in an environment of increasing funding for subsidized crop insurance
    - Average cost of crop insurance program
      - 1981-1993: \$559 million
      - 1994-2003: \$1,919 million
    - Crop insurance reform bills of 1980, 1994, and 2000 expressed the goal of reducing the need for off-budget disaster assistance (Glauber, 2004)
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# SURE and a Digression

# 2008 Farm Bill Disaster Program

- 2008 Farm Bill includes the Supplemental Agricultural Disaster Assistance (SADA) standing disaster assistance program
    - Includes components to cover losses in crop production, livestock mortality due to adverse weather, forage losses, orchard and nursery tree losses, other production losses on livestock, honeybees, or farm-raised catfish
  - Supplemental Revenue Assistance (SURE) program is the portion of SADA dealing with commercial row crop production losses
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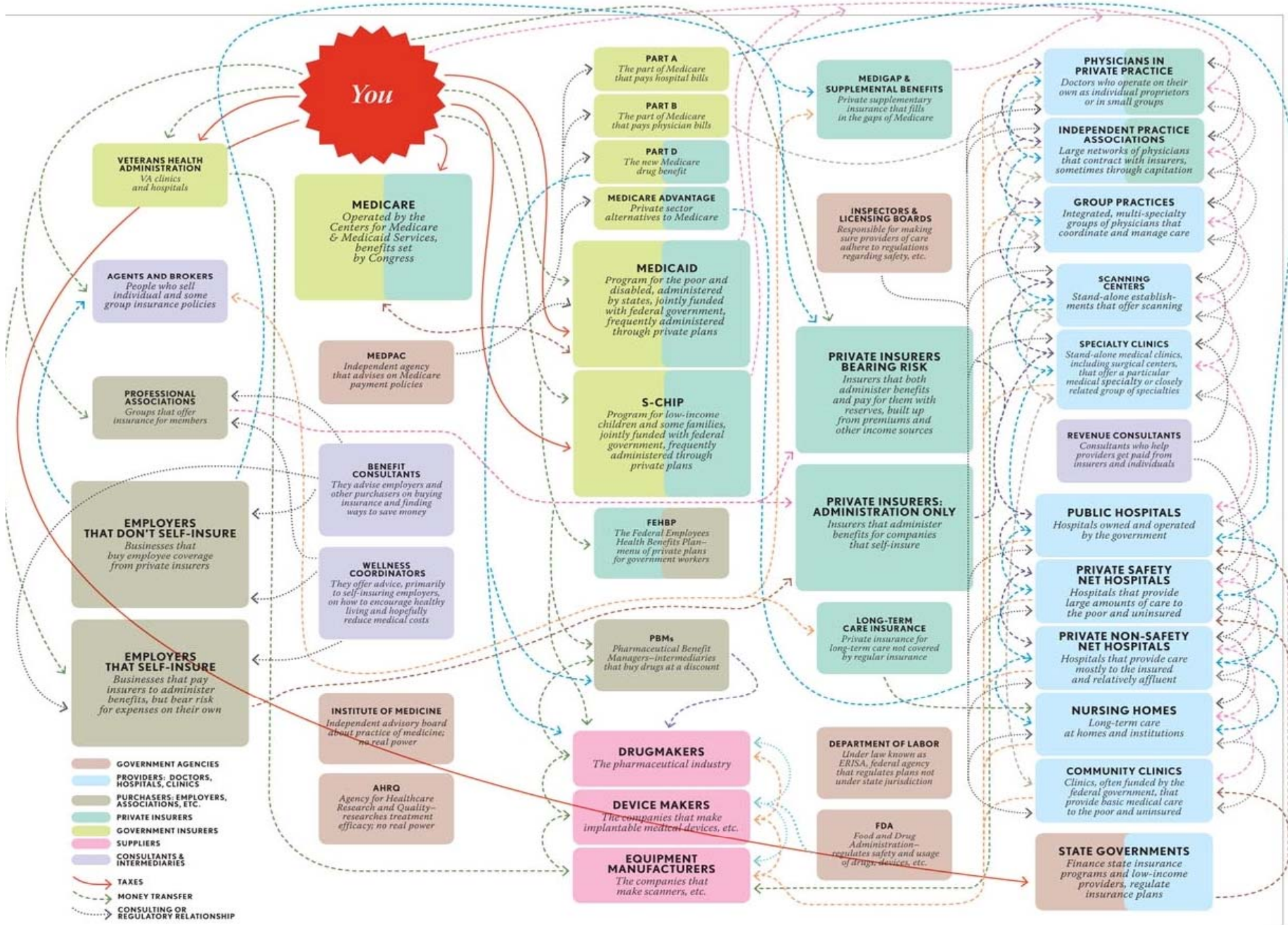
# SURE Program

- **S**upplemental **R**evenue Assistance Payments
  - Provides payments at 60% of difference (if greater than zero) between **disaster assistance program guarantee** and **total farm revenue**
    - A true multi-crop coverage
  - Requires the purchase of crop insurance on crops of 'economic significance'
  - Conditioned on:
    - Crop insurance coverage choices
    - Direct payments
    - LDP
    - Counter-cyclical or ACRE payments
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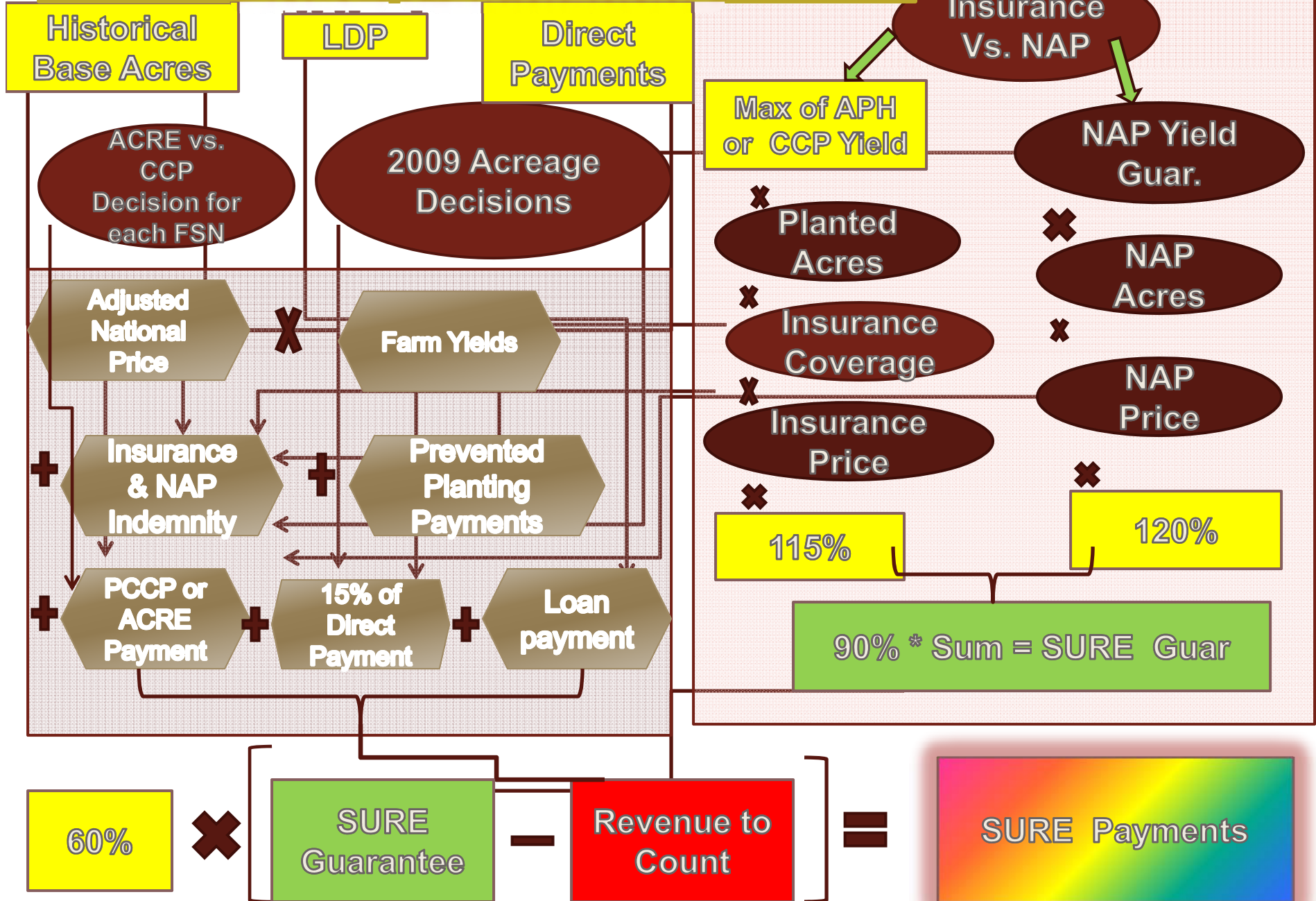
# SURE Payments

- Payment = 60% x (farm's SURE guarantee – farm's total crop revenue).
  - Farm's SURE guarantee is sum of
    - For each insurable crop: planted acres x insurance coverage % x insurance price selected by farmer x maximum of APH yield or counter-cyclical payment yield x 115%.
    - For each noninsurable crop: planted acres x NAP price x maximum of NAP yield guarantee or counter-cyclical program yield x 120%.
    - Capped at 90% of sum of expected revenue for each crop.
  - Farm's total crop revenue is sum of
    - Value of crops produced (based on adjusted national price) + insurance and NAP indemnities + prevented planting payments + other federal disaster assistance for the same loss + 15% of direct payments + PCCP or RCCP payments + marketing loan payments.
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# SURE Calculations



# Research Methods

# Research Objectives

- This research evaluates
    - Impact, if any, of the proposed program on crop insurance purchase decisions
    - Potential program benefits across crops/regions
    - Effect of diversification on disaster program payments
  - Compares proposed program with alternative design
    - focus on effect of differences in production risk on program experience
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# Methods

- Stochastic simulation of farm-level returns for three farms representing different production regions/crop mixes
    - Mississippi cotton/soybeans/corn
    - Illinois corn/soybeans
    - Kansas wheat/corn
  - Search across CRC coverage levels to maximize certainty equivalent using CRRA utility function
    - Returns from crop production, government programs, crop insurance, and disaster program
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# Simulation Summary

- 100,000 simulated price changes, basis values, and yields used to derive distribution of revenue outcomes starting with a beginning futures price
    - Prices/yields correlated using procedure from Anderson, Harri, and Coble (**JARE**, April 2009)
  - Each farm assumed to consist of 1,500 acres
    - Program modeled for each crop in monoculture and with acreage equally divided among all crops on the farm
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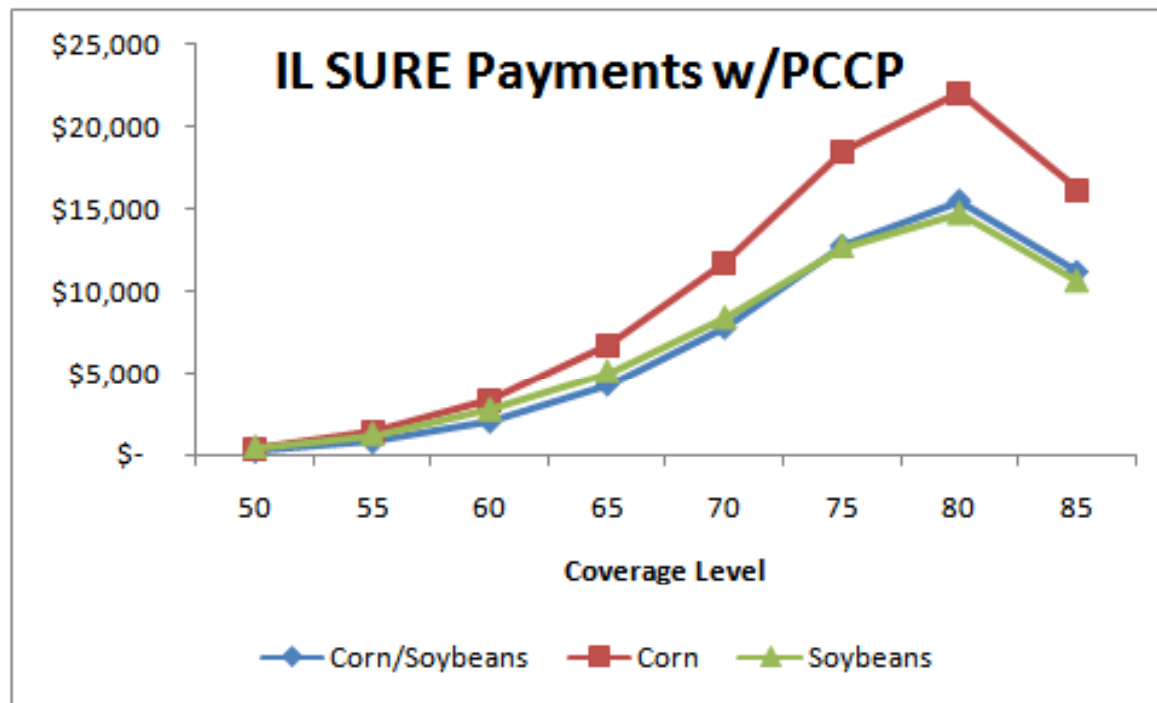
# Results

# SURE and Insurance Coverage Level

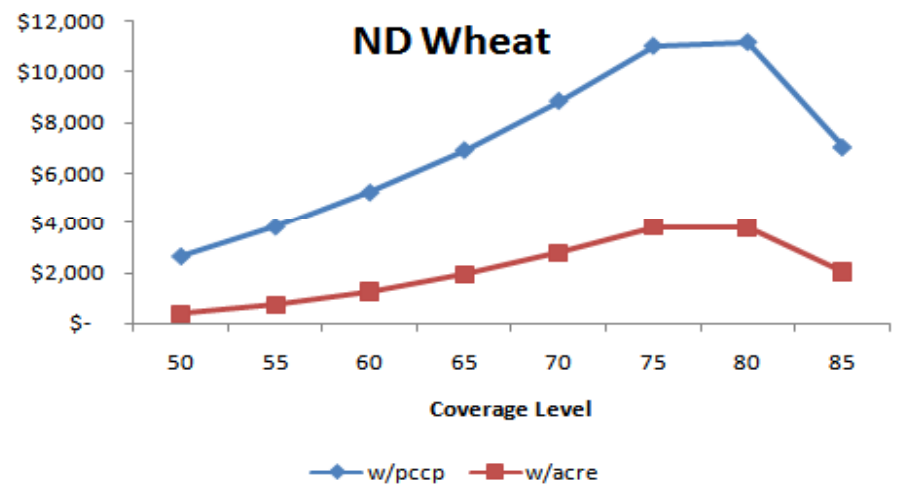
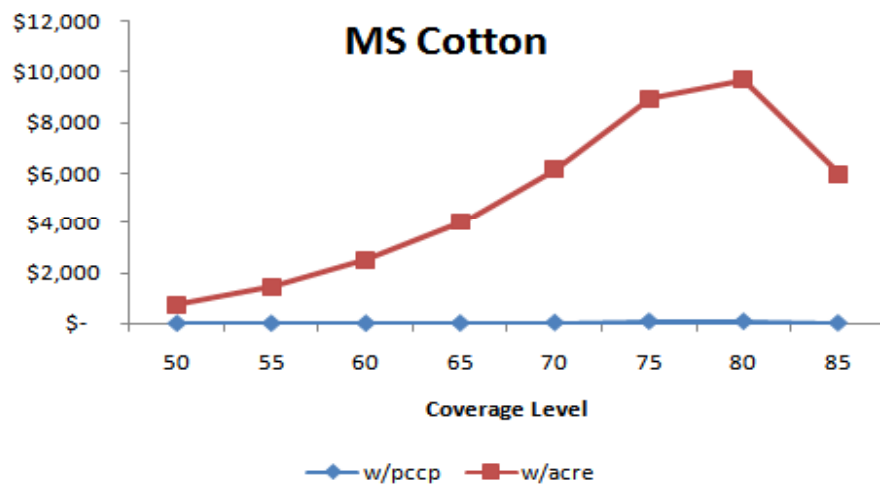
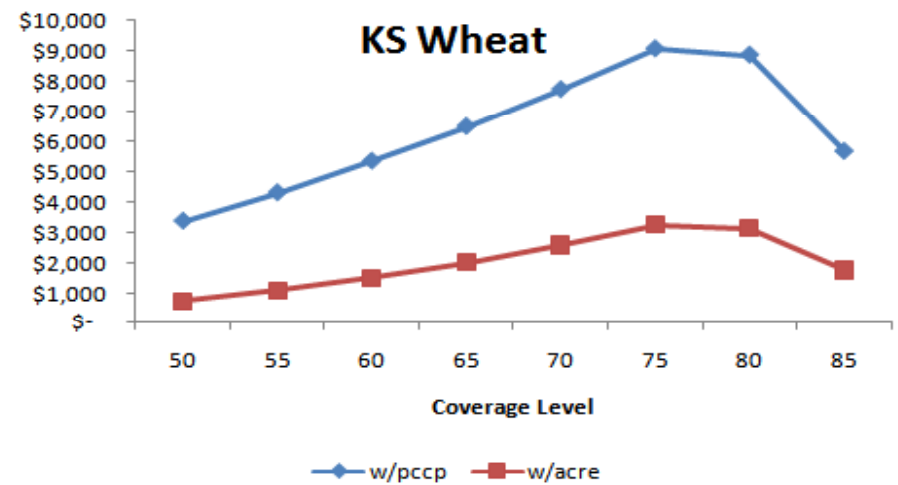
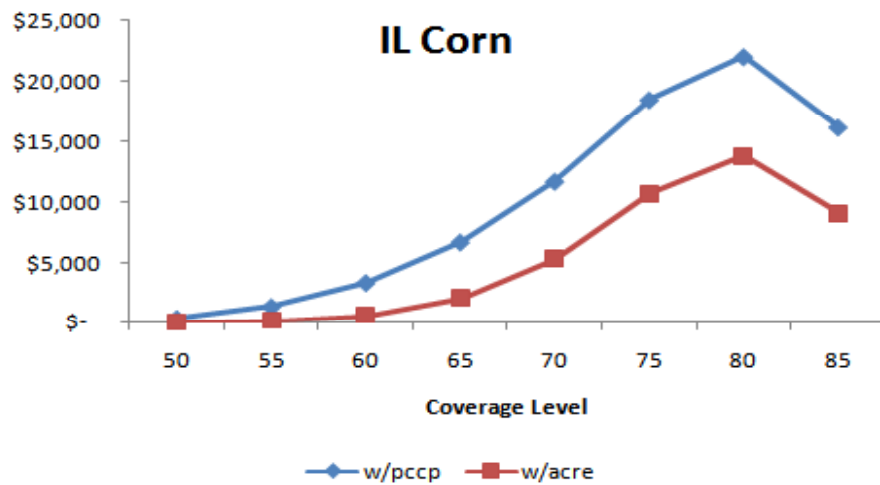
- Impact of SURE on insurance coverage level is likely to be minimal
    - CEs with and without SURE differed between coverage levels by only about 1.5% for farms in PCCP and <1% for farms in ACRE
  - SURE does favor intermediate coverage levels ( $\approx 75\%$ ) due to the manner in which payments are capped (i.e., 115% of insurance guarantee but no more than 90% of expected crop revenue)
  - SURE payments never exceeded 50% of PCCP for diversified farm
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# SURE Payments and Crop Diversification

- With minor exceptions, SURE payments are smaller for more diversified farms. For example, see IL results

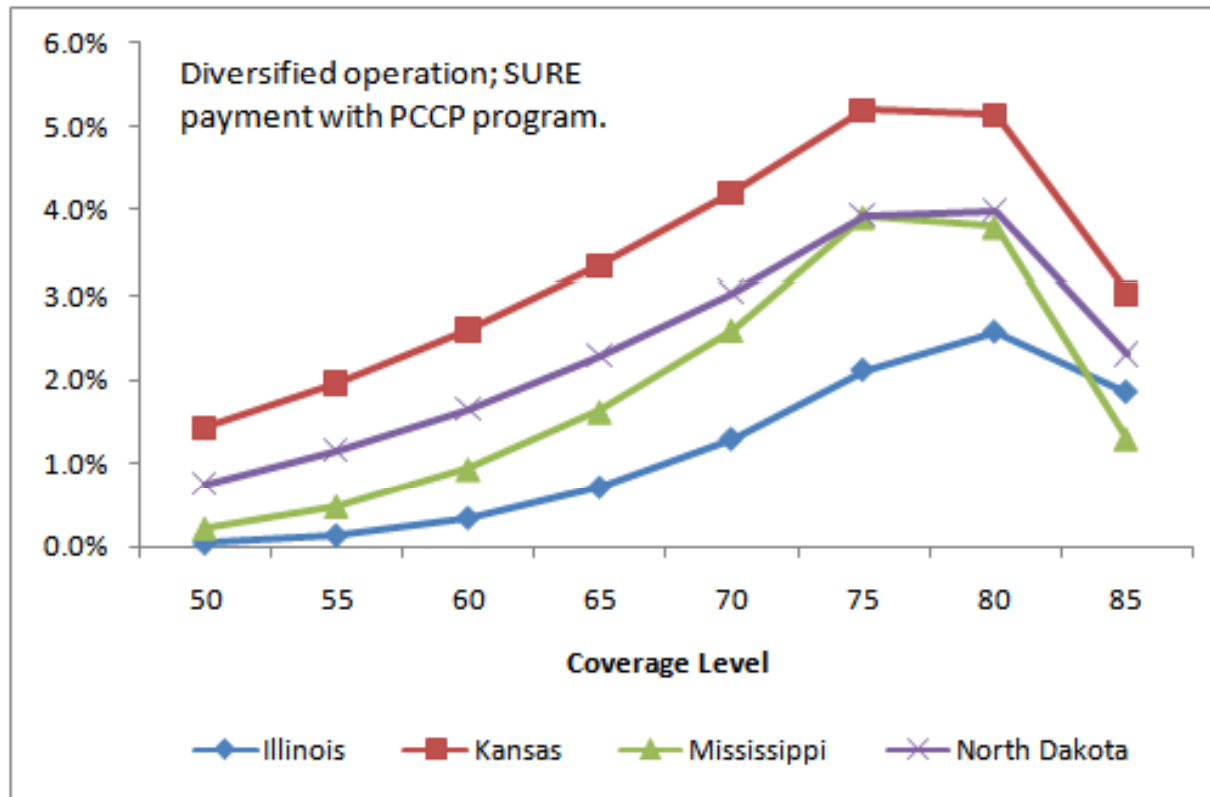


# Other Programs Impact SURE



# Geographic Differences in SURE

- SURE payments as percent of expected total revenue



# Additional Regional Analysis

- Model was used to calculate actuarially fair premium rate for different revenue coverage levels for the primary crop in each state

Coverage

Level	IL	KS	MS	ND
50%	0.019%	7.814%	17.320%	2.610%
60%	0.248%	10.805%	20.298%	4.892%
70%	1.110%	13.932%	23.194%	7.749%

# Diversification and Regional Differences

- Actuarially fair premium rate for 70% whole farm revenue coverage was estimated for each state/crop combination

Crops	IL	KS	MS	ND
Corn (C)	1.110%	17.929%	9.533%	13.754%
Cotton (CT)			8.179%	
Soybeans (S)	1.341%		11.990%	
Wheat (W)		13.932%		7.749%
C/CT			6.700%	
C/S	0.849%		8.737%	
C/W		10.954%		8.014%
C/CT/S			6.758%	
CT/S			7.394%	

# Conclusions

- No practical impact of the proposed disaster program on crop insurance purchase decisions
  - Surprisingly, for farms under PCCP program, SURE should be expected to pay more when prices are high than when prices are low
    - Due to  $E(\text{PCCP})$  not figuring into revenue guarantee
  - In general, program will pay more to farms that are 1) less diversified and/or 2) in areas with greater production risk
    - This result is ignored in programs (like this one) establishing fixed coverage levels across farms varying in diversification and riskiness of production
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