

Crop Insurance Program: Ratings, Reinsurance, and Performance

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CAS - 2015 Seminar on Reinsurance

Philadelphia, PA



Advancing Farmland Markets through Information and Research

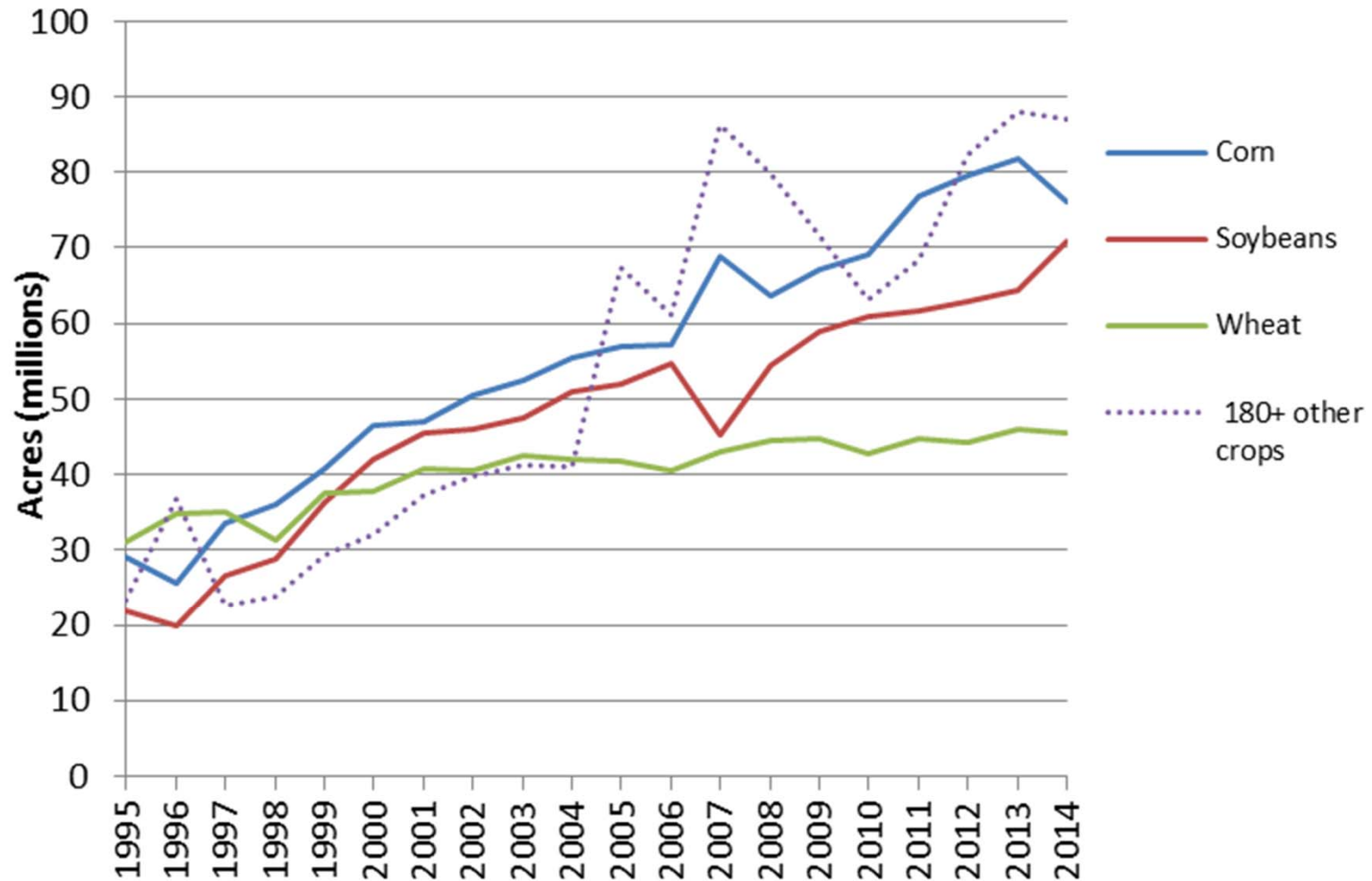


Outline:

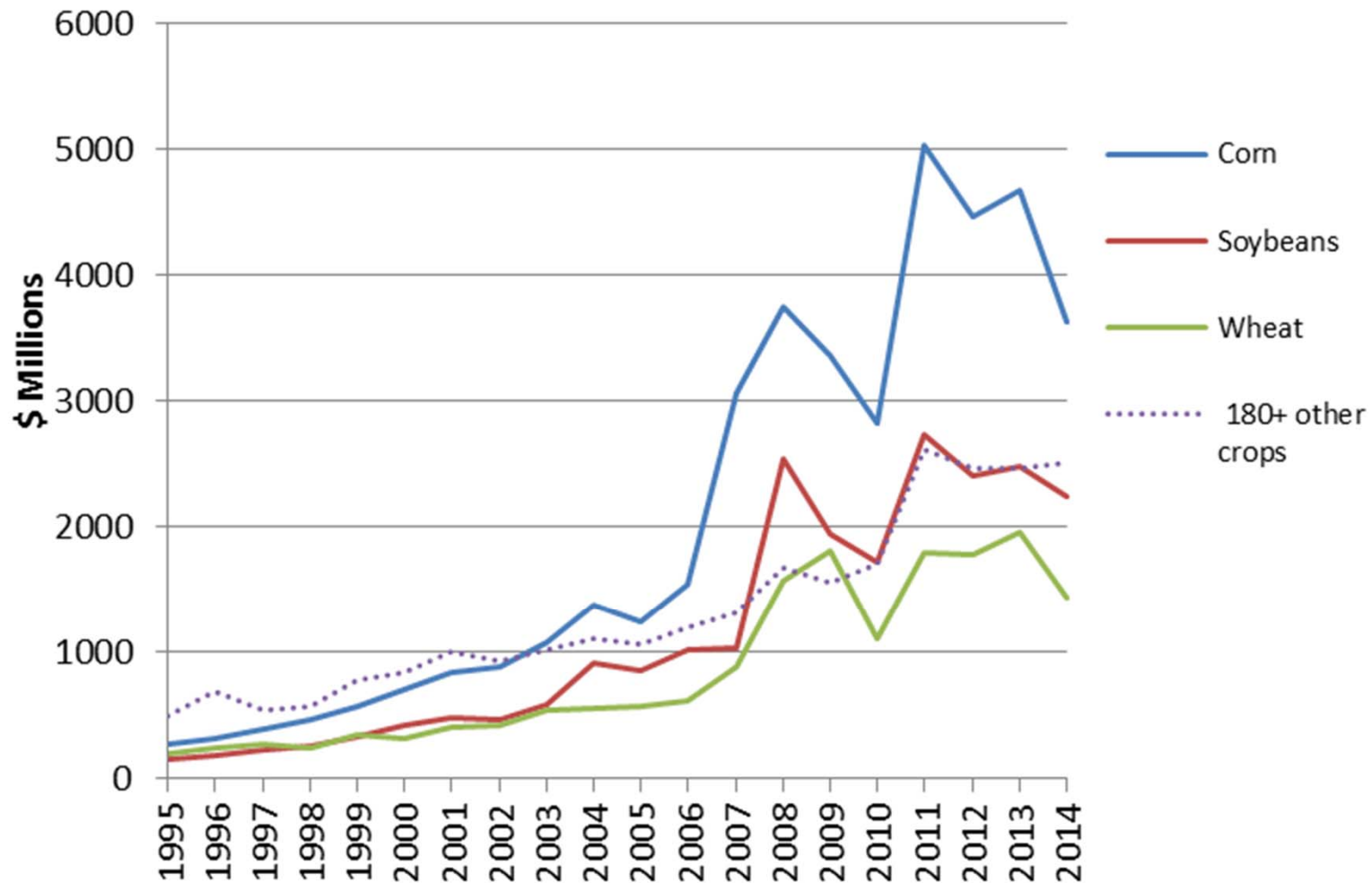
- Brief program context – (rough order: \$10B premium, \$100B Liability, scored larger than commodity title, growing)
- Ratings Methodology in principle, condensed, shortened, abbreviated - key in understanding risk exposure, especially at farm-level, and upstream through RE
- The SRA and real Reinsurance – as Congress tinkers....
- Price and Vol. “resets” change yearly – ‘service the car while driving’ issues, and many other moving parts –crop insurance performance in the large depends on price environment.
- Loss performance issues going forward
- Farm Bill Changes, and headwinds for program



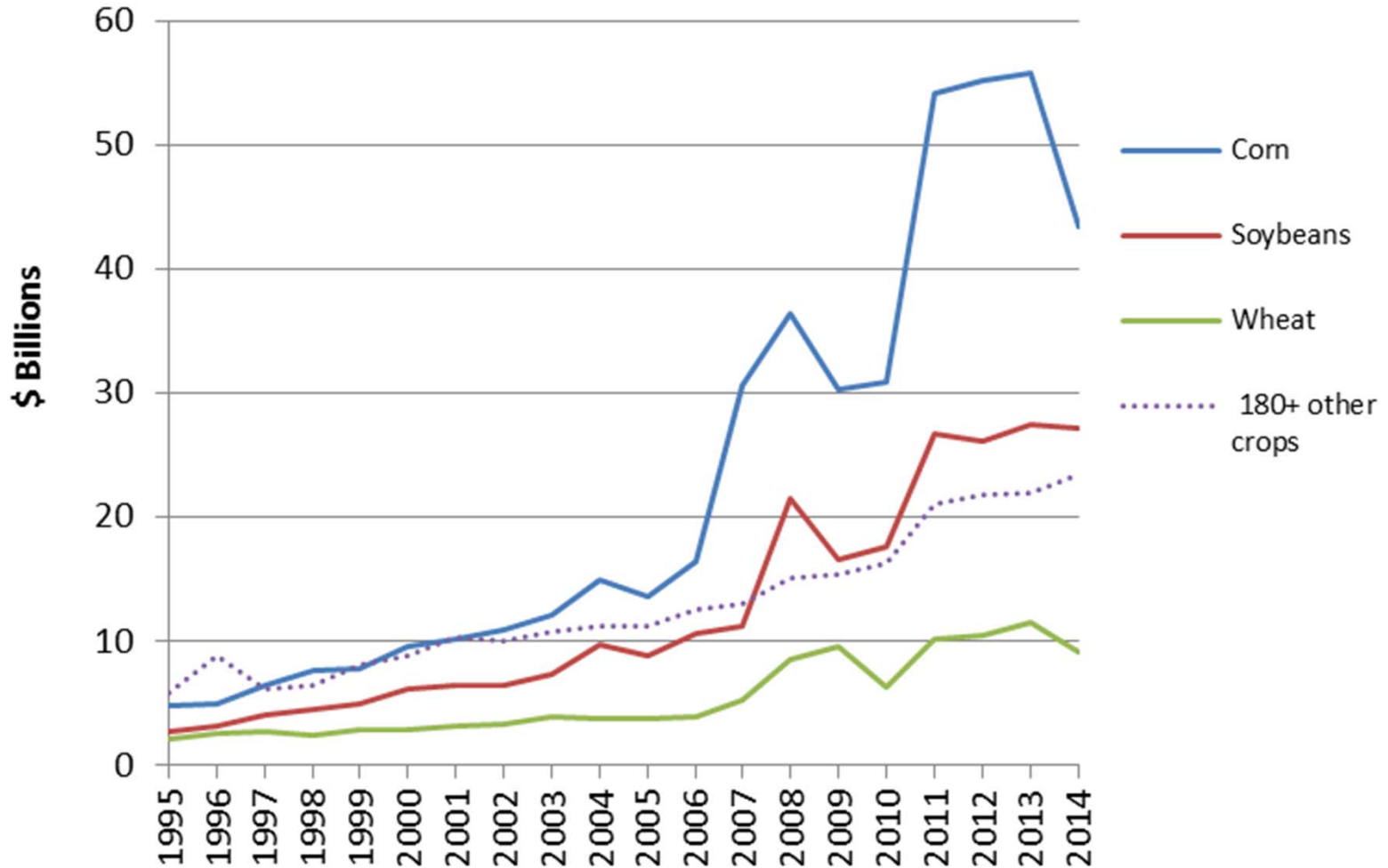
Acres Covered by Crop:



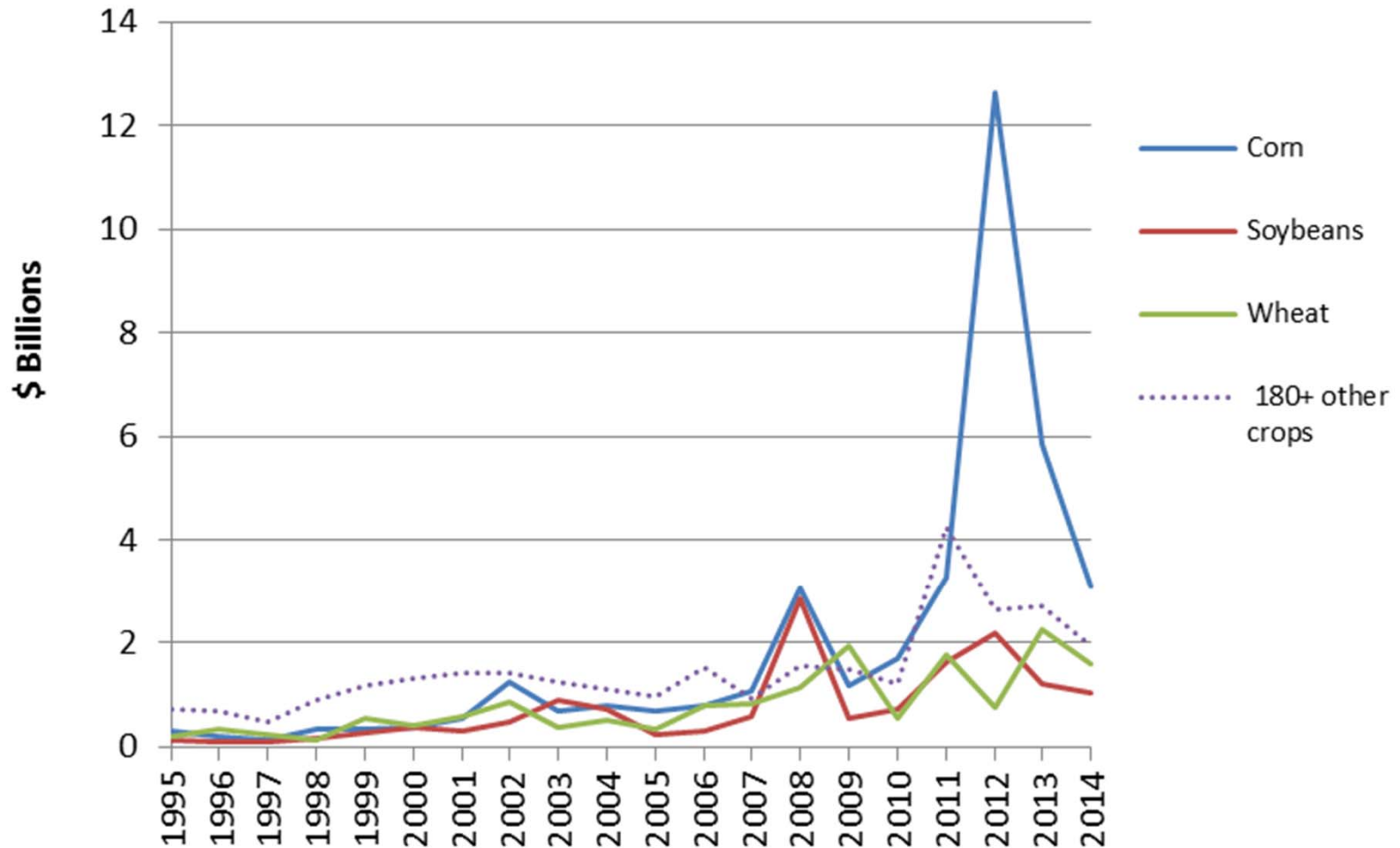
Total Premium *(tied to commodity price)*



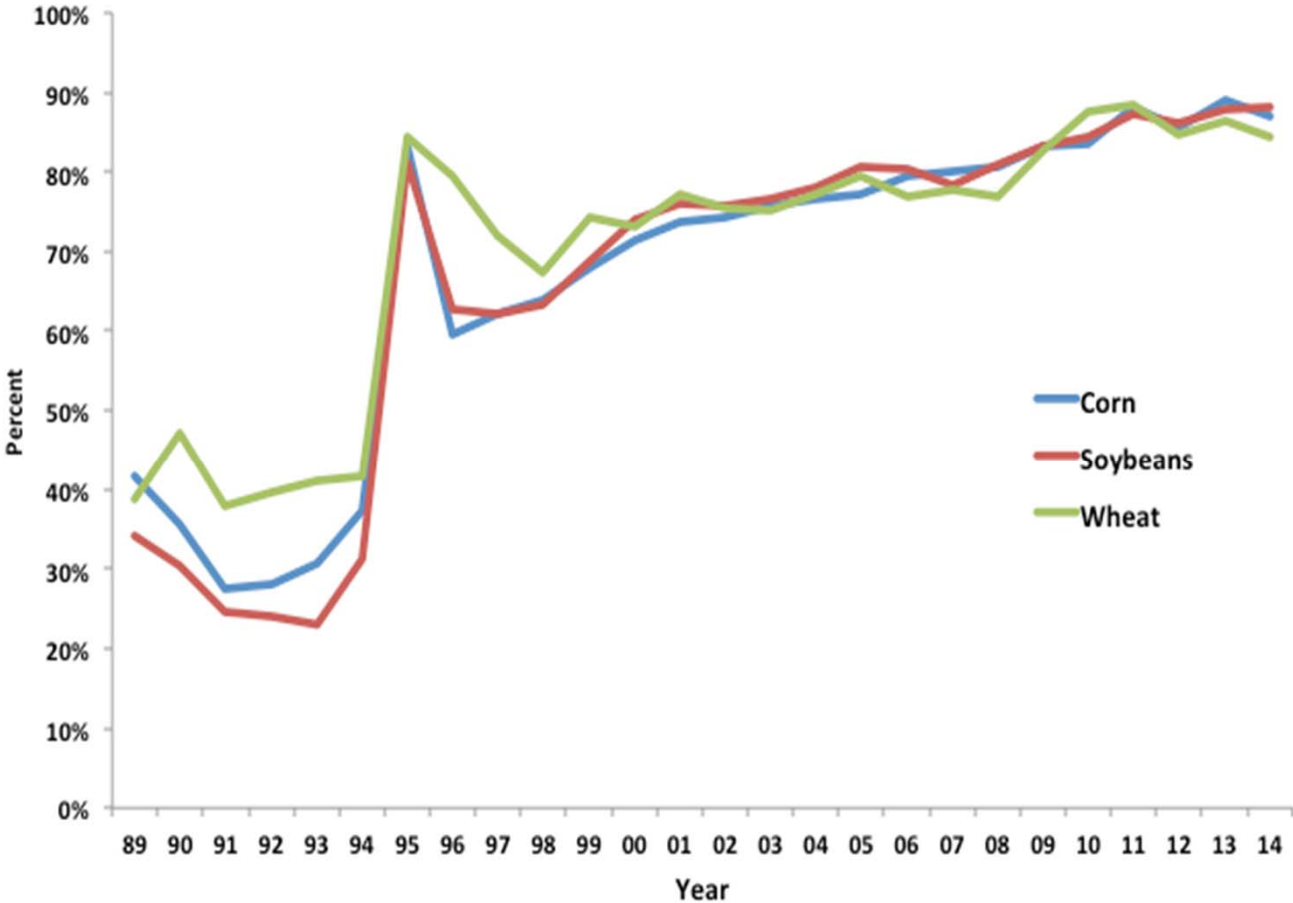
Total Liability (amount of insurance)



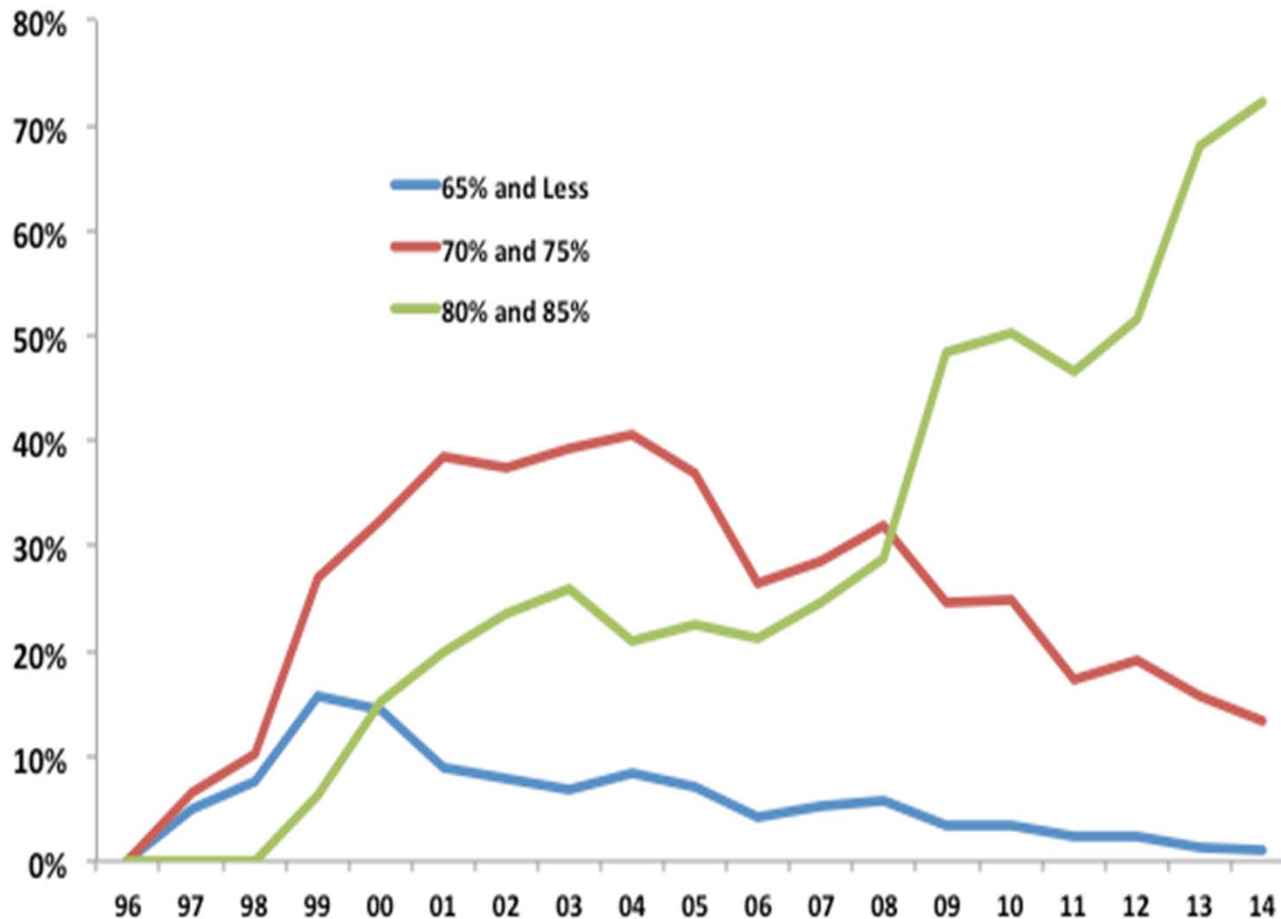
Total Payments by crop through time



Percent Acres Insured, U.S.



Farm-Level Revenue Products, Illinois, Corn, Percent of Insured Acres



Rating System (Overly)Simplified

- Based on a Loss Cost Ratio (LCR) system initiated in 1980s for a single product (65% yield) fixed indemnity-price policy. **Loss ratio target = 1**
- Idea – each year_t : $Losses/liability = rate_t$
then $ave(rates) \times liability = premiums$. Over time, **premiums** should equal **losses**.
- Main components used as rate components: farmer risk relative to county, reference yield, exponent, coverage level differential, and loads for CAT, PP, RP, and QA; and price level, vol. & deviates (correlation) for RP related.
- Subsidized to encourage broad participation



Crop Insurance Farmer Subsidy Rates

Crop Insurance Risk Management Subsidies			
Coverage Level	Basic And Optional	Enterprise	SCO
50%	0.67	0.80	0.65
55%	0.64	0.80	0.65
60%	0.65	0.80	0.65
65%	0.59	0.80	0.65
70%	0.59	0.80	0.65
75%	0.55	0.77	0.65
80%	0.48	0.68	0.65
85%	0.38	0.53	0.65

- Enterprise Unit Subsidy increase to encourage all-crop at a time coverage.
- Reduction in rate by coverage partly to create similar dollar value of coverage per acre
- May incent buy down for basic and optional and combine with SCO, but less risk protection in most cases – not good idea to just compare subsidy, and LR < > 1.



Ratings system - "so how are we doing"?

- Recall Basic Idea:

$$\text{Loss ratio} = \frac{\text{Insurance payments}}{\text{Total premiums}}$$

- RMA target Loss Ratio Should = 1.0
- If rates are correct, should have no discernible patterns across geography or crops



Historic Crop Insurance Performance by Crop

	----- (\$ millions) -----			
	Premium	Subsidy	Payments	Loss Ratio
CORN	41,709	23,450	39,790	95.4%
SOYBEANS	23,589	13,358	15,609	66.2%
WHEAT	17,872	10,163	17,581	98.4%
COTTON	8,947	5,263	11,638	130.1%
GRAIN SORGHUM	2,357	1,366	2,825	119.8%
POTATOES	1,169	643	991	84.8%
PEANUTS	1,083	515	1,458	134.7%
DRY BEANS	993	538	906	91.2%
SUNFLOWERS	966	572	1,231	127.5%
SUGAR BEETS	800	406	696	87.0%
RICE	568	328	720	126.9%
All Others	6,665	5,029	5,949	89.3%
Total Program	106,718	61,632	99,396	93.1%

1995-2014 (source: RMA SOB data, UI Calculations)

(sorted by premium)



Historic Crop Insurance Performance by Crop

Top 10 crops, states >\$1B Premium 1995-2014

State	Total Premium	Loss Ratio
TX	9,405,627,314	137.6%
OK	1,936,948,864	135.2%
GA	1,734,517,662	106.4%
MO	3,341,668,509	104.0%
MS	1,231,677,511	102.5%
CO	1,997,416,442	101.9%
KY	1,061,203,693	101.1%
KS	7,546,250,556	100.9%
AR	1,052,190,640	100.5%

State	Total Premium	Loss Ratio
WI	2,314,347,064	94.3%
IA	9,375,374,140	91.1%
IL	8,326,593,620	90.1%
ND	8,712,015,635	89.9%
IN	4,514,121,291	86.9%
NC	1,498,224,875	80.7%
SD	6,751,423,785	80.7%
MT	1,689,641,648	77.3%
MN	8,271,368,674	75.4%
NE	7,019,102,680	73.8%
MI	1,634,398,581	68.2%
OH	3,030,794,865	67.7%

- important implications for effective subsidy rates, and for fund allocation decisions if $LR < > 1$.



Projected and Harvest Prices

(Midwest States)

	2010	2011	2012	2013	2014	2015
Corn						
Projected Price	3.99	6.01	5.68	5.65	4.62	<i>\$4.15</i>
Harvest Price	5.46	6.32	7.50	4.39	3.49	?
Soybeans						
Projected Price	9.23	13.49	12.55	12.87	11.36	<i>\$9.73</i>
Harvest Price	11.63	12.14	15.39	12.87	9.65	?



Revenue Guarantee/Acre by Year

Year	Projected Price	RP Minimum Guarantee
	\$/bu	\$/acre
2011	6.01	971
2012	5.68	917
2013	5.65	912
2014	4.62	746
2015P	4.15	670

Corn, 180 bu TA-APH, 85% coverage level



How to assess the impact on Risk management in a given location for a specific farm?

- See *farmdoc* insurance payment evaluator in Corn Belt
- Developed a ratings tabulation “tool” for county-level analyses, and aggregation into states/crops.
 - Degree of risk reduction depends on net cost of insurance and counter-cyclicity of payments
- Replicated premium quoting system across previous five years.
 - Farm-level evaluation of RMA rated products
- Examples for a case county (quickly) then maps of all county results.



County case farms, by crop, unit, & acreage



Crop Insurance Evaluation Model



Case Farm Information

County: McLean	Crop: Corn		Farm Yield	County Yield
			<i>bu./acre</i>	<i>bu./acre</i>
Farm Average Yield	180.3 bu./acre			
Farm St. Dev. of yield	30.40 bu./acre	30% of years yields below:	166.31	169.47
County Average Yield	180.3 bu./acre	20% of years yields below:	155.49	160.62
County St. Dev. of yield	24.61 bu./acre	10% of years yields below:	139.63	147.41
Average Futures Price	\$4.17 /bu	5% of years yields below:	125.94	135.77
St. Dev. of Price	\$0.97 /bu	Farm Trend Adjusted-APH	180	<i>bu./acre</i>
Ave. Harvest Cash Basis	\$0.35 /bu	County TA Rate	1.83	<i>bu./acre/yr</i>
Average Gross Crop Rev.	\$678 /acre	Farm APH (ref)	171	<i>bu./acre</i>

- case: Enterprise unit on 320 acres. Projected price of 4.15

as of date: 3/23/2015



About 87 Combinations/Co.

McLean Co. Premiums (\$/Acre)

180 TA-APH

Coverage	Revenue Protection (RP)			RP- Harvest Price Excl.			Yield Protection (YP)			Area Risk Protection		
	Opt	Basic	Enterp.	Opt	Basic	Enterp.	Opt	Basic	Enterp.	AYP	ARP-HPE	ARP
50%	\$1.28	\$0.85	\$0.42	\$1.02	\$0.69	\$0.33	\$1.04	\$0.65	\$0.40			
55%	\$1.99	\$1.36	\$0.59	\$1.38	\$1.00	\$0.39	\$1.48	\$0.98	\$0.54			
60%	\$2.74	\$2.02	\$0.87	\$1.64	\$1.26	\$0.44	\$1.88	\$1.30	\$0.73			
65%	\$4.18	\$3.25	\$1.23	\$2.28	\$1.74	\$0.49	\$2.66	\$1.93	\$0.94			
70%	\$6.04	\$4.99	\$1.95	\$3.09	\$2.54	\$0.76	\$3.32	\$2.54	\$1.24	\$11.96	\$7.98	\$14.98
75%	\$9.22	\$8.00	\$3.42	\$4.38	\$3.90	\$1.33	\$4.37	\$3.49	\$1.78	\$16.00	\$13.62	\$24.34
80%	\$14.42	\$13.11	\$7.10	\$6.68	\$6.19	\$2.84	\$5.98	\$4.98	\$3.07	\$22.51	\$20.30	\$35.50
85%	\$22.67	\$21.36	\$14.71	\$10.48	\$10.05	\$6.13	\$8.33	\$7.22	\$5.48	\$30.06	\$31.11	\$54.59
90%										\$41.91	\$45.89	\$75.66

Corn - Enterprise 320 Acres

Projected Price of 4.15 and vol. factor of 0.21 used.

Guarantees

Coverage	RP Indem.	YP Indem.	ARPI-YP	ARPI-RP
	Revenue	Yield	Yield	Revenue
50%	\$374	90.0		
55%	\$411	99.0		
60%	\$448	108.0		
65%	\$486	117.0		
70%	\$523	126.0	129.7	\$538
75%	\$560	135.0	139.0	\$577
80%	\$598	144.0	148.2	\$615
85%	\$635	153.0	157.5	\$654
90%			166.8	\$692

These tables allow a quick comparison of the costs and coverages available across alternative products, coverage levels, and unit designations. The farmer-paid premiums and Guarantee levels are based on the case farm and location presented for available products. Estimates are based on current market data as of March 2, 2015. A qualified insurance agent should be consulted for final quotes.

Case Farm Payments

Average Insurance Payments/Acre

McLean Co. Illinois -- Corn Enterprise Units

Coverage Election	YP	RP-HPE	RP	AYP	ARP-HPE	ARP
50%	\$0.20	\$0.08	\$0.20			
55%	\$0.40	\$0.23	\$0.51			
60%	\$0.82	\$0.63	\$1.11			
65%	\$1.60	\$1.49	\$2.40			
70%	\$2.95	\$3.17	\$4.78	\$4.34	\$7.29	\$12.22
75%	\$5.24	\$5.96	\$8.69	\$7.71	\$14.71	\$22.77
80%	\$8.92	\$10.30	\$14.72	\$13.13	\$26.06	\$38.68
85%	\$14.54	\$16.79	\$23.64	\$21.51	\$41.66	\$60.98
90%				\$33.89	\$61.62	\$89.76

The table above contains average annual per acre indemnity payments. For example, an entry of \$7.50 would indicate that the product would pay \$7.50 per acre per year with some years being greater, some years being zero, but averaging \$7.50 per acre per year through time.



Case Farm Frequency

Frequency of payment

McLean Co. Illinois -- Corn Enterprise Units

Coverage Election	YP	RP-HPE	RP	AYP	ARP-HPE	ARP
50%	0.4%	0.2%	0.4%			
55%	0.8%	0.7%	1.0%			
60%	1.6%	1.6%	2.2%			
65%	2.7%	3.5%	4.6%			
70%	4.6%	6.2%	7.9%	3.4%	7.3%	9.7%
75%	7.8%	9.7%	12.4%	6.1%	13.2%	17.1%
80%	12.2%	14.9%	19.1%	10.5%	20.9%	27.4%
85%	18.0%	21.7%	27.5%	17.1%	30.3%	40.0%
90%				26.7%	41.0%	54.4%

The table above contains the frequency of payment by product and election level. For example, an entry of 20% means that the product would pay in 1 out of every 5 years on average. A higher frequency payment can occur with smaller average payments & vice versa.



Net Cost of Insurance

Estimated Net Average Cost of Insurance

McLean Co. Illinois -- Corn Enterprise Units

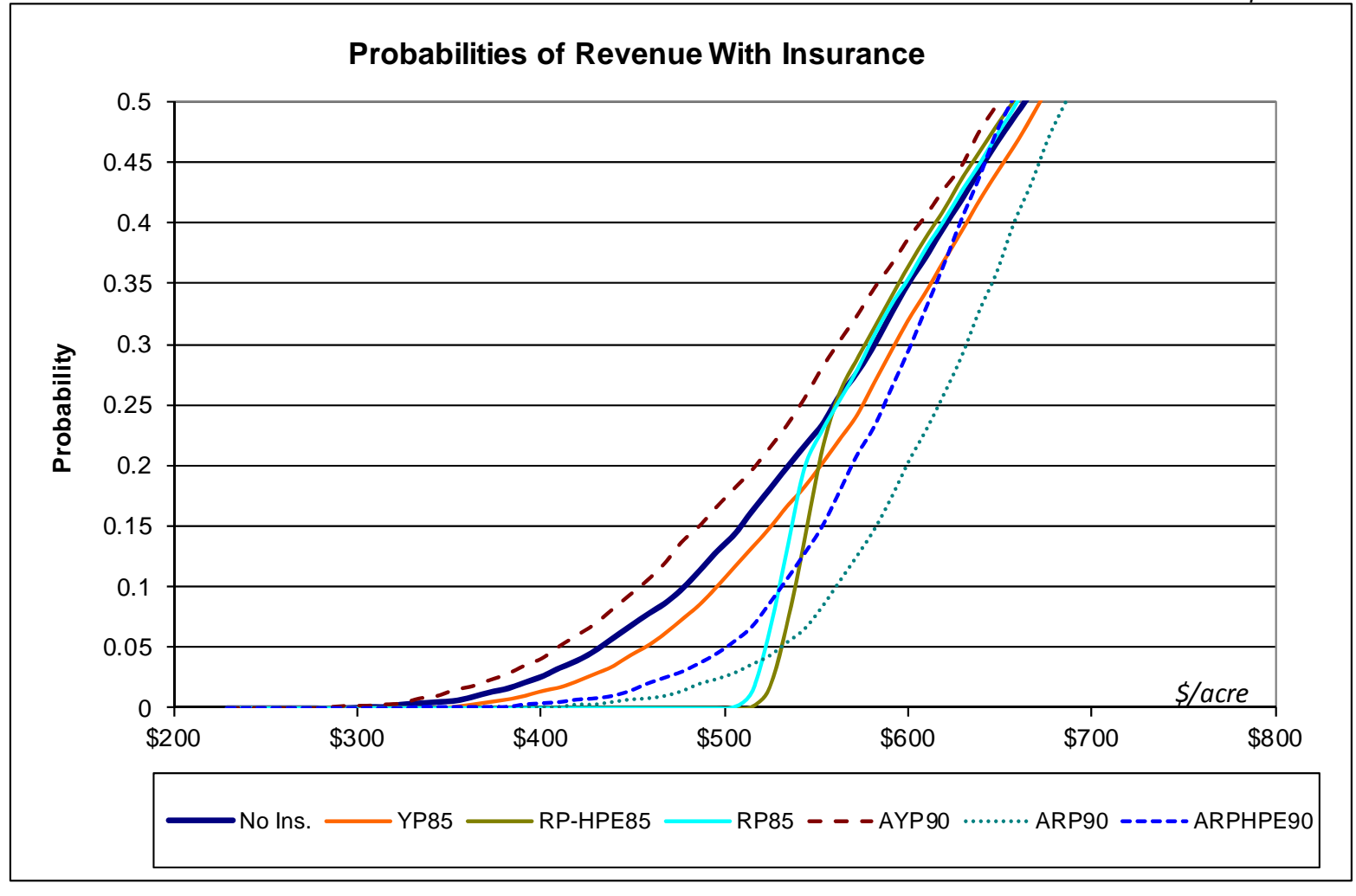
Coverage Election	YP	RP-HPE	RP	AYP	ARP-HPE	ARP
50%	0.20	0.25	0.22			
55%	0.14	0.16	0.08			
60%	(0.09)	(0.19)	(0.24)			
65%	(0.66)	(1.00)	(1.17)			
70%	(1.71)	(2.41)	(2.83)	7.62	0.69	2.76
75%	(3.46)	(4.63)	(5.27)	8.29	(1.09)	1.57
80%	(5.85)	(7.46)	(7.62)	9.38	(5.76)	(3.18)
85%	(9.06)	(10.66)	(8.93)	8.55	(10.55)	(6.39)
90%				8.02	(15.73)	(14.10)

The table above contains long run average net costs of insurance by product and election level. Net cost is defined as farmer-paid premium less average payment received. A negative value indicates that the product pays back more on average than the farmer-paid premium for the case farm considered.



Risk Reduction Summary

McLean Co. Illinois -- Corn Enterprise Unit



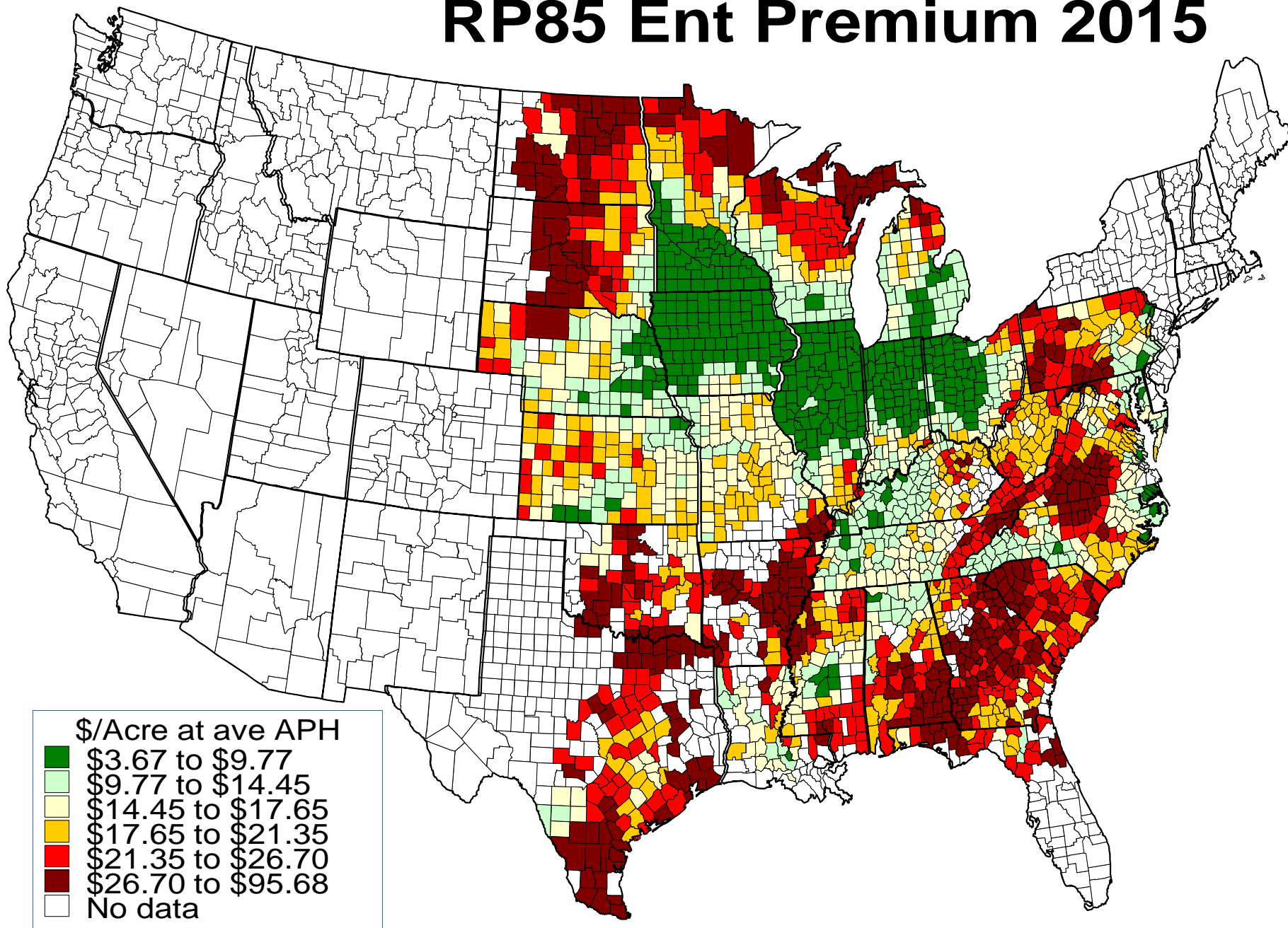
Ratings Evaluation – necessarily county-based, controlled for time.

Premium Impacts from ratings component changes					Champaign County, Illinois	
	Insurance Year					% Change
	2011	2012	2013	2014	2015	2011 - 2015
Coverage	YP - Optional Units					
65%	4.59	3.78	2.70	2.91	2.91	-36.60%
75%	9.26	7.64	5.28	5.70	3.84	-58.53%
85%	21.35	17.61	12.19	13.16	8.51	-60.14%
	YP - Enterprise Units					
65%	2.05	1.30	0.93	1.00	0.76	-62.93%
75%	4.22	2.87	1.99	2.15	1.35	-68.01%
85%	14.02	10.20	7.06	7.62	3.94	-71.90%
	RP - Optional Units					
65%	6.00	5.01	3.68	3.94	2.64	-56.00%
75%	12.35	10.48	7.76	8.27	5.38	-56.44%
85%	28.79	24.82	19.03	20.08	12.73	-55.78%
	RP - Enterprise Units					
65%	1.56	1.09	0.88	0.99	0.77	-50.64%
75%	3.01	2.35	1.98	2.18	1.40	-53.49%
85%	10.23	8.86	7.91	8.54	4.43	-56.70%

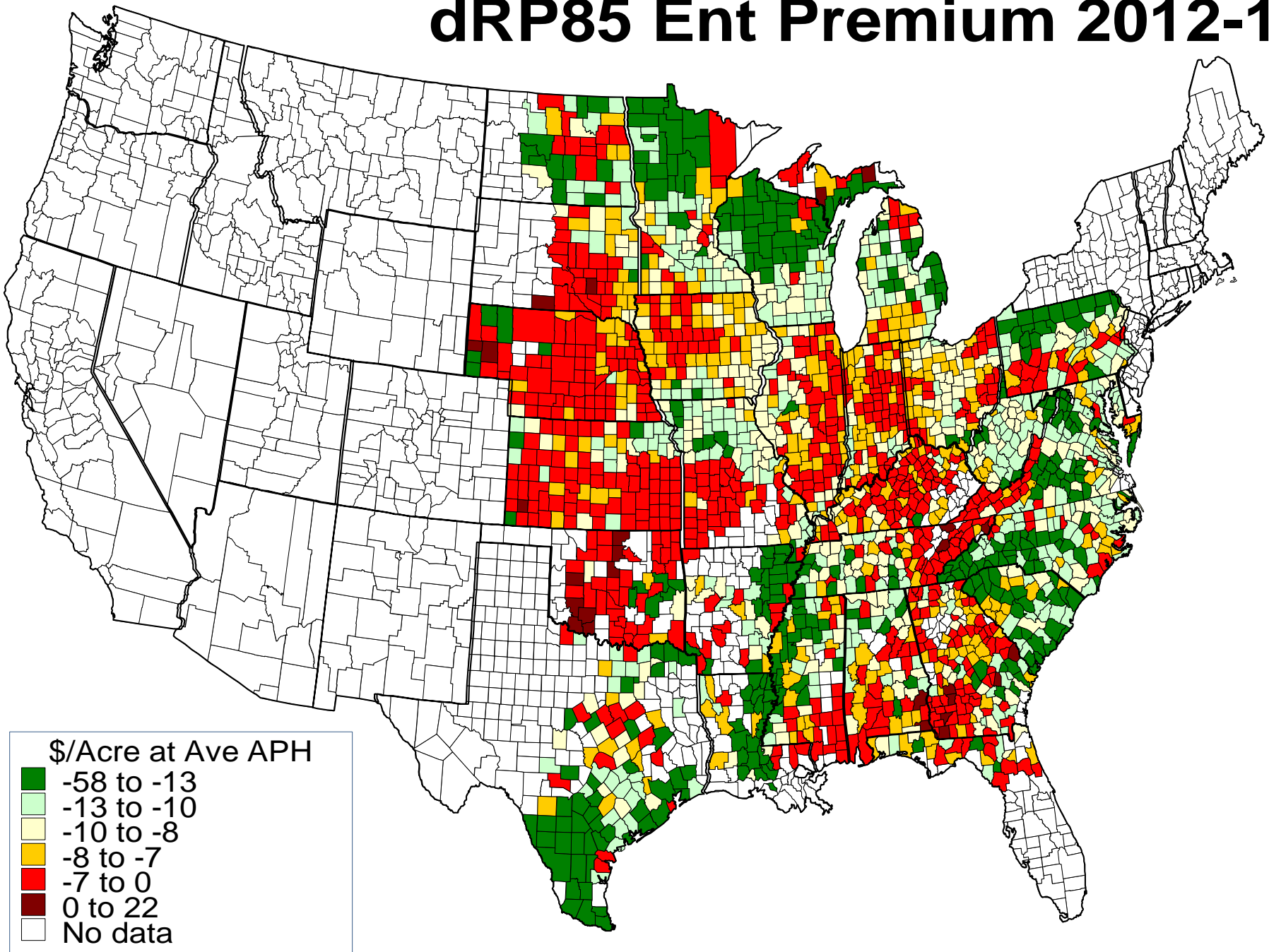
Standardized on PP of 4.15 and vol factor of 0.21



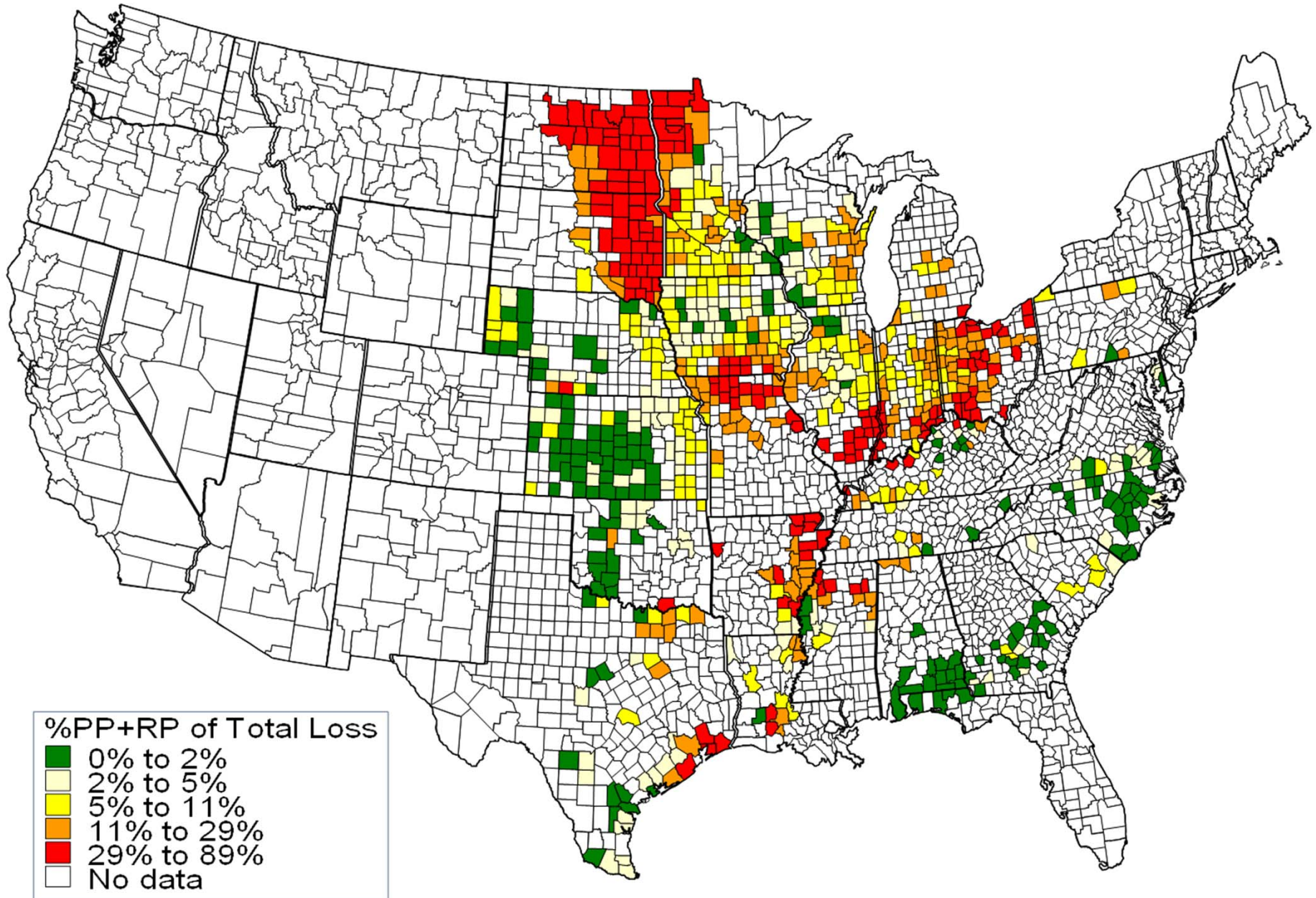
RP85 Ent Premium 2015



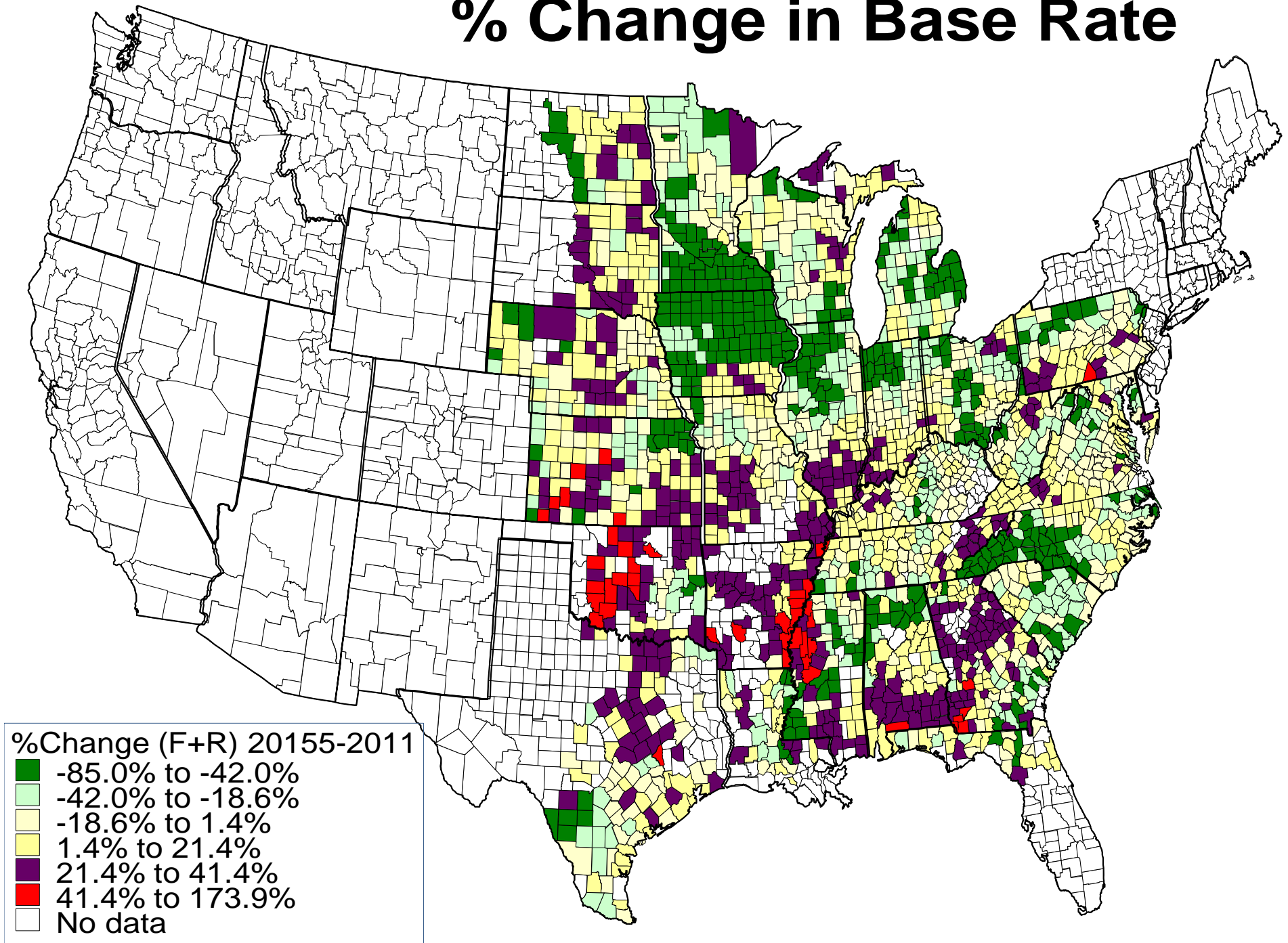
dRP85 Ent Premium 2012-15



% of Loss from Prevented and Replant



% Change in Base Rate



Standard Reinsurance Agreement

- Fund designation into Commercial by group, or Assigned Risk changes exposure by *ex post* loss ratio.

Commercial Fund				
Group1	Loss Ratio		<i>Shares</i>	
	From	To	Company	FCIC
	0	0.5	0.05	0.95
	0.5	0.65	0.4	0.6
	0.65	1	0.75	0.25
	1	1.6	0.65	0.35
	1.6	2.2	0.45	0.55
	2.2	5	0.1	0.9
	5	200	0	1
			\$	\$
EXAMPLE	1.25	Loss	0.1625	0.0875
After ceding	6.50%		0.1519	0.0981



Standard Reinsurance Agreement

Assigned Risk

<i>All</i>	Loss Ratio		Loss Share	
	From	To	Company	FCIC
	0	0.5	0.03	0.97
	0.5	0.65	0.135	0.865
	0.65	1	0.225	0.775
	1	1.6	0.075	0.925
	1.6	2.2	0.06	0.94
	2.2	5	0.03	0.97
	5	20	0	1
			\$	\$
ENTER LR	1.25	<i>Loss</i>	0.0188	0.2313
After ceding	6.50%		0.0175	0.2325



Standard Reinsurance Agreement

Final losses/gains (\$) after SRA split shares

LR	Assigned Risk		Commercial 1		Commercial 2	
	AIP	FCIC	AIP	FCIC	AIP	FCIC
0.75	0.0526	0.1974	0.1753	0.0747	0.2221	0.0279
1.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.50	0.0351	0.4649	0.3039	0.1961	0.1987	0.3013
1.75	0.0505	0.6995	0.4278	0.3222	0.2665	0.4835
2.00	0.0645	0.9355	0.5330	0.4671	0.3132	0.6868
2.25	0.0771	1.1729	0.6218	0.6282	0.3530	0.8970

Group 1: IL, IN, IA, MN, NE

Group 2: All Others

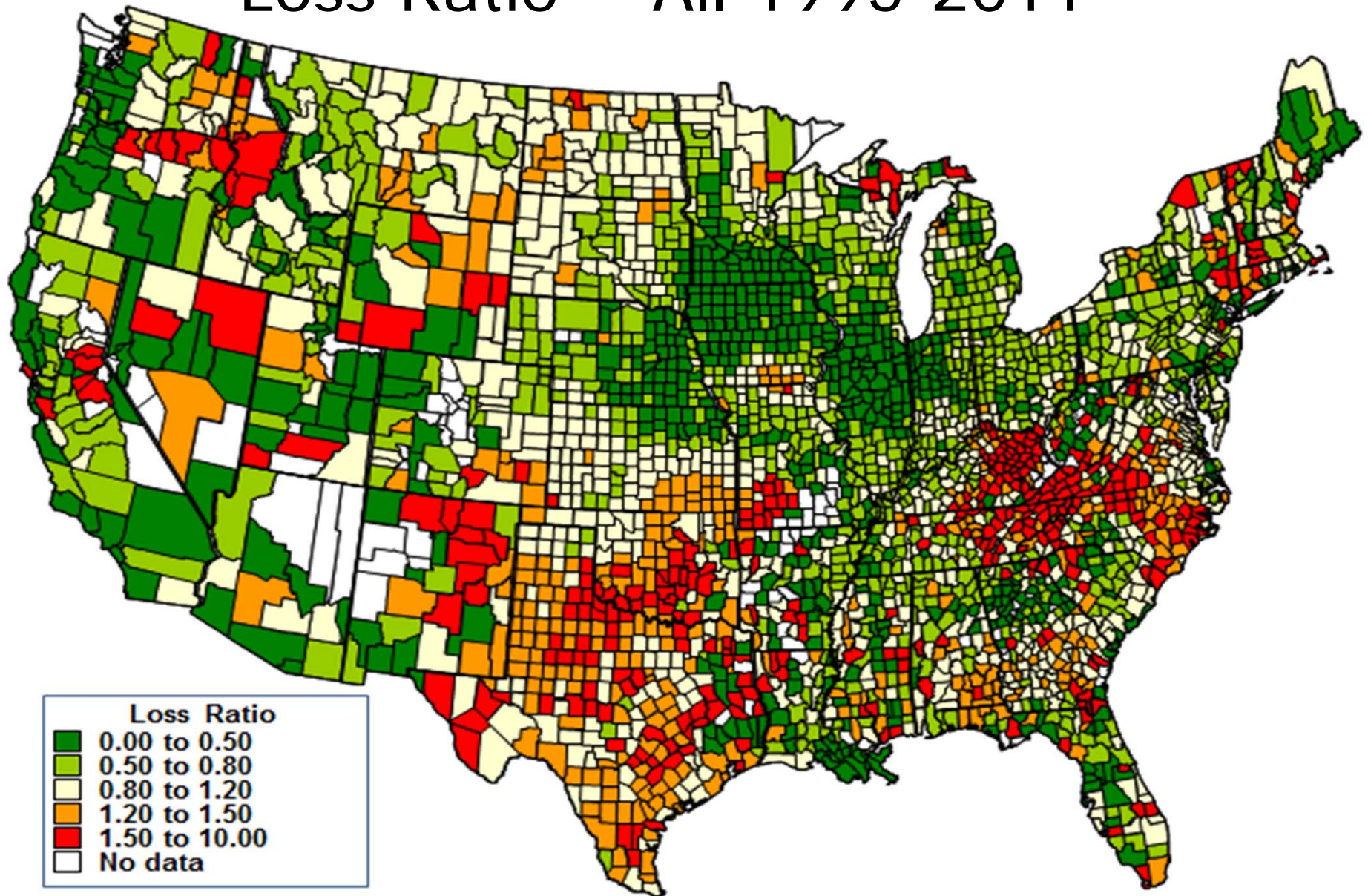


AIP Company Loss issues

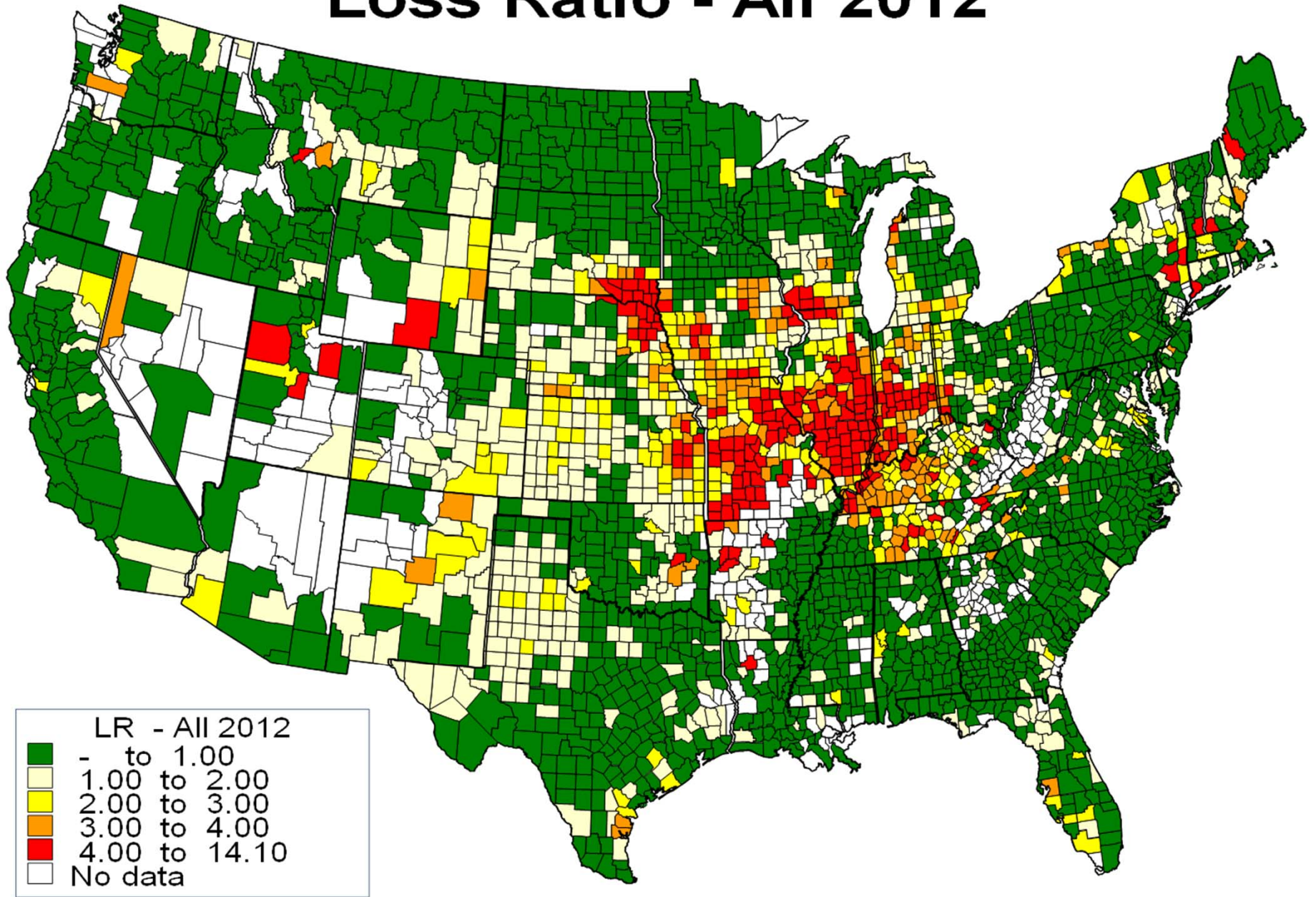
- Argued that 2012 “more than wiped out all gains”. Argued that reductions in rates “went too far” and should be reconsidered. “Implemented too fast”
- Why? SRA negotiations(?), perhaps A&O lobby as well as UW gains. Group1 vs. Group 2 more equilibrated. Other needs to cover costs and ROR(P)
- Need to understand SRA in addition to Ratings design to appreciate performance of programs
- Co.’s fortunate to have lost ceding argument
- Fund designation decisions and reinsurance design had huge impact on individual performance



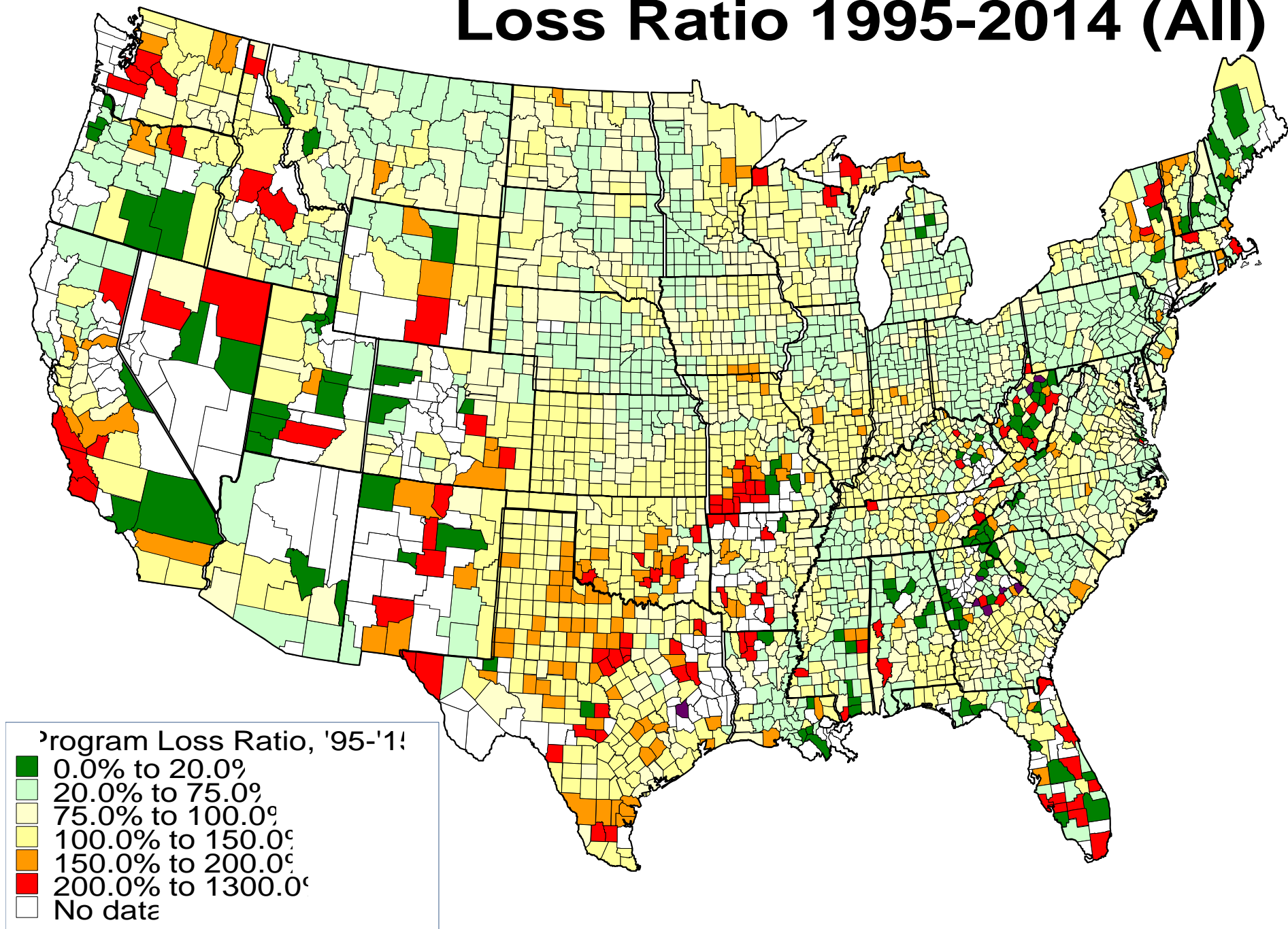
Loss Ratio - All 1995-2011



Loss Ratio - All 2012



Loss Ratio 1995-2014 (All)



Crop Insurance Payments, 1995-2014

Table 1. Federal Crop Insurance, All locations, All Crops, \$ Millions (except rates)

year	Total Premium	Farmer Subsidy	Indemnity Payments	Loss Ratio	\$Gain(loss)	%Prem Gain Rate	Farmer Prem Paid - \$	Farmer Net - \$
1995	1,091	437	1,400	1.284	(309.6)	-28.39%	654	746
1996	1,409	552	1,343	0.953	66.0	4.69%	856	486
1997	1,426	554	950	0.666	476.3	33.40%	873	77
1998	1,519	589	1,563	1.029	(44.7)	-2.94%	930	633
1999	2,014	1,096	2,353	1.168	(338.4)	-16.80%	918	1,435
2000	2,275	1,083	2,529	1.111	(253.7)	-11.15%	1,192	1,337
2001	2,716	1,528	2,910	1.071	(194.2)	-7.15%	1,188	1,722
2002	2,685	1,510	3,988	1.486	(1,303.7)	-48.56%	1,175	2,814
2003	3,205	1,816	3,216	1.003	(10.7)	-0.34%	1,389	1,827
2004	3,944	2,236	3,155	0.800	789.0	20.00%	1,709	1,447
2005	3,712	2,107	2,267	0.611	1,445.9	38.95%	1,605	661
2006	4,365	2,467	3,435	0.787	930.4	21.31%	1,897	1,537
2007	6,289	3,550	3,487	0.555	2,801.4	44.55%	2,739	748
2008	9,515	5,355	8,605	0.904	910.1	9.56%	4,160	4,445
2009	8,641	5,118	5,147	0.596	3,493.9	40.43%	3,523	1,624
2010	7,327	4,444	4,210	0.575	3,117.7	42.55%	2,883	1,327
2011	12,135	7,375	10,900	0.898	1,234.6	10.17%	4,760	6,140
2012	11,105	6,827	18,286	1.647	(7,181.1)	-64.67%	4,277	14,009
2013	11,544	7,034	12,019	1.041	(474.8)	-4.11%	4,509	7,509
2014	9,801	5,953	7,633	0.779	2,167.7	22.12%	3,847	3,786
Ave/year	5,336	3,082	4,970	0.95	366.1	5.18%	2,254	2,715
Total (overall)	106,718	61,632	99,396	0.93	7,322.1	6.86%	45,086	54,310

(source: RMA SOB Tablations)



Normalized Scale Payments

Table 2. Federal Crop Insurance, All locations, All Crops, \$ Millions (except rates) 2014 basis

year	Total Premium	Farmer Subsidy	Indemnity Payments	Loss Ratio	\$Gain(loss)	%Prem Gain Rate	Farmer Prem Paid - \$	Farmer Net - \$
1995	9,801	3,923	12,583	1.284	(2,782.76)	-28.39%	5,877	6,706
1996	9,801	3,842	9,341	0.953	459.43	4.69%	5,959	3,382
1997	9,801	3,804	6,527	0.666	3,273.64	33.40%	5,997	530
1998	9,801	3,798	10,089	1.029	(288.14)	-2.94%	6,003	4,086
1999	9,801	5,333	11,447	1.168	(1,646.53)	-16.80%	4,468	6,980
2000	9,801	4,665	10,893	1.111	(1,092.65)	-11.15%	5,136	5,758
2001	9,801	5,514	10,501	1.071	(700.69)	-7.15%	4,286	6,215
2002	9,801	5,513	14,560	1.486	(4,759.43)	-48.56%	4,288	10,272
2003	9,801	5,553	9,834	1.003	(32.86)	-0.34%	4,248	5,586
2004	9,801	5,555	7,840	0.800	1,960.56	20.00%	4,246	3,594
2005	9,801	5,563	5,984	0.611	3,817.19	38.95%	4,238	1,745
2006	9,801	5,540	7,712	0.787	2,089.00	21.31%	4,260	3,451
2007	9,801	5,532	5,435	0.555	4,365.88	44.55%	4,268	1,166
2008	9,801	5,516	8,863	0.904	937.41	9.56%	4,285	4,578
2009	9,801	5,805	5,838	0.596	3,962.67	40.43%	3,996	1,842
2010	9,801	5,945	5,631	0.575	4,170.12	42.55%	3,856	1,774
2011	9,801	5,956	8,804	0.898	997.09	10.17%	3,844	4,959
2012	9,801	6,026	16,139	1.647	(6,337.92)	-64.67%	3,775	12,364
2013	9,801	5,972	10,204	1.041	(403.14)	-4.11%	3,828	6,375
2014	9,801	5,953	7,633	0.779	2,167.74	22.12%	3,847	3,786
Ave/year	9,801	5,229	9,380	0.957	420.47	4.29%	4,572	4,809
Total (overall)	186,214	99,355	178,225	0.957	7,988.86	4.29%	86,859	91,366

(source: RMA SOB Tablations)



Post-SRA losses in perspective

Table 3. SRA Allocations per dollar of Premium

	Assigned Risk		Commercial Fund					
	AIP	FCIC	Group 1	AIP	FCIC	Group 2	AIP	FCIC
1995	-0.0199	-0.2640	-0.1726	-0.1114	-0.1128	-0.1711		
1996	0.0099	0.0370	0.0329	0.0140	0.0416	0.0052		
1997	0.0703	0.2638	0.2342	0.0998	0.2967	0.0373		
1998	-0.0021	-0.0273	-0.0179	-0.0115	-0.0117	-0.0177		
1999	-0.0118	-0.1562	-0.1021	-0.0659	-0.0668	-0.1012		
2000	-0.0078	-0.1037	-0.0678	-0.0437	-0.0443	-0.0672		
2001	-0.0050	-0.0665	-0.0435	-0.0280	-0.0284	-0.0431		
2002	-0.0341	-0.4516	-0.2951	-0.1905	-0.1930	-0.2926		
2003	-0.0002	-0.0031	-0.0020	-0.0013	-0.0013	-0.0020		
2004	0.0421	0.1580	0.1403	0.0598	0.1777	0.0224		
2005	0.0786	0.3109	0.2602	0.1293	0.3257	0.0638		
2006	0.0448	0.1683	0.1495	0.0637	0.1893	0.0238		
2007	0.0857	0.3598	0.2811	0.1643	0.3466	0.0989		
2008	0.0201	0.0755	0.0671	0.0286	0.0850	0.0107		
2009	0.0805	0.3238	0.2658	0.1386	0.3312	0.0731		
2010	0.0832	0.3423	0.2737	0.1518	0.3391	0.0864		
2011	0.0214	0.0803	0.0713	0.0304	0.0904	0.0114		
2012	-0.0447	-0.6020	-0.3843	-0.2624	-0.2472	-0.3995		
2013	-0.0029	-0.0382	-0.0250	-0.0161	-0.0163	-0.0248		
2014	0.0109	0.0409	0.0363	0.0155	0.0460	0.0058		
Ave/year	0.0209	0.0224	0.0351	0.0082	0.0774	-0.0340		
Weighted	0.0255	0.0330	0.0457	0.0127	0.0948	-0.0364		



2015 Farm Bill Crop Insurance Changes

- Conservation compliance applies to highly erodible farmland
- YE Ability to drop low yields from APH
 - Yield Exclusion allowed in cases where county or contiguous county had yield below 50% of simple average of prior 10 years
 - Does not change rate yield
 - Equivalent to change in effective coverage
 - May lose portion of Trend Adjustment
- New Supplemental Coverage Option or SCO



Yield Exclusion – in practice

- Does NOT depend on individual yield
- Immediately preceding crop year not available
- Can choose by individual APH database, can change decision in future
- Do not have to exclude if eligible county/crop
- YE or YA only – *actual yield* options only.
- Equivalent to changing “amount of insurance”

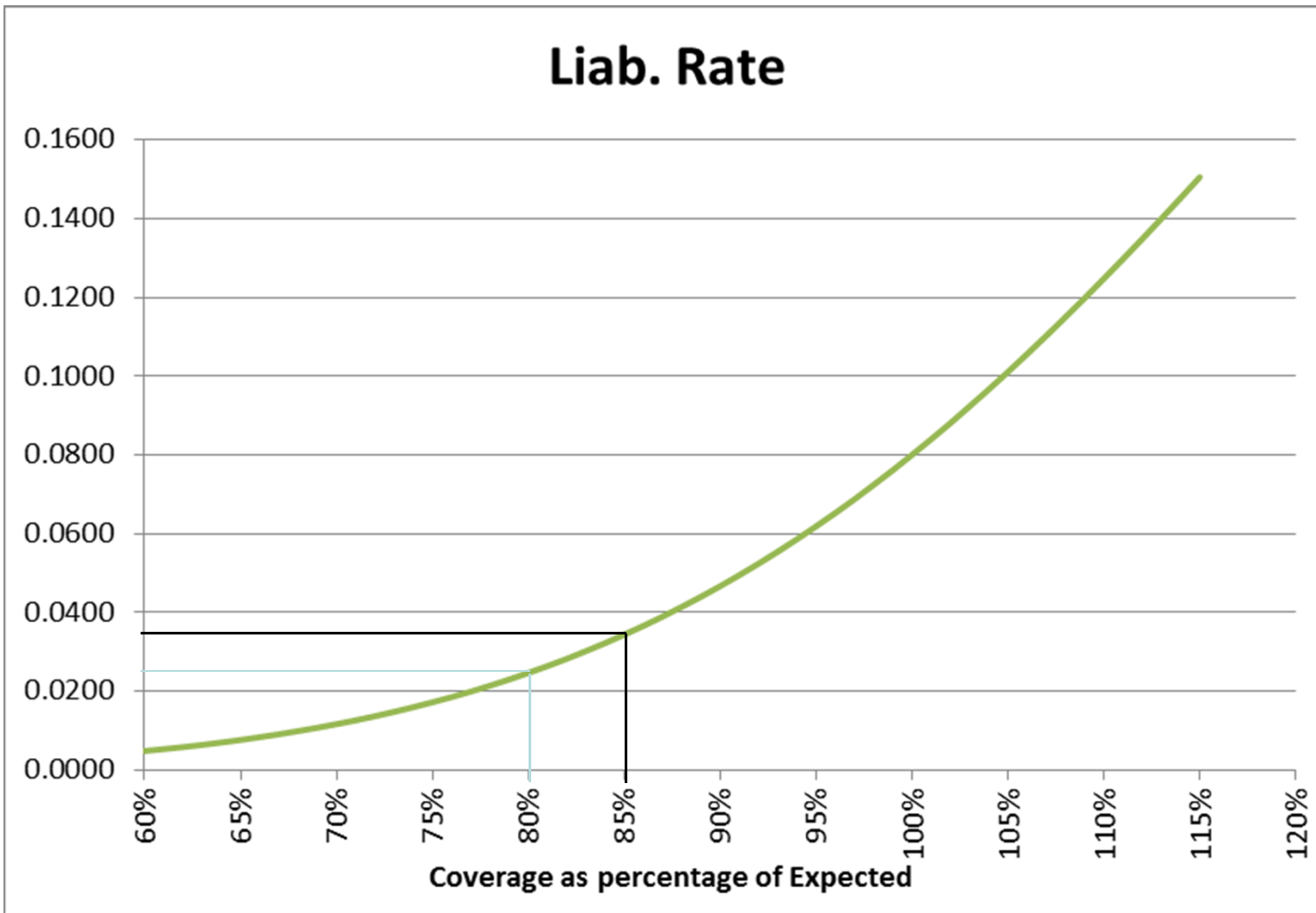


Yield Exclusion – in practice

- **Producer has an APH data base and either a yield or a yield plug in a year eligible to exclude**
 - **Identifies the year to “drop” from calculation of APH**
 - **Continuous policy provision, doesn’t add other years**
 - **If “count” used in TREND <4, Trend also reduced**
 - **Average of remaining yields becomes Coverage APH**
 - **Original average including low yield remains Rate yield**
 - **Calculate new effective Coverage rate**
 - **Calculate point on rate curve associated with new effective Coverage rate**
 - **Premium = effective coverage rate times Coverage APH**



Coverage Rate Curve (Co.)



Yield Exclusion – example

Step	Value	Description
1	180.0	All-data APH (used as rate yield)
2	80%	Coverage
3	144	Liability in bushels
4	2.47%	coverage rate
5	3.55	premium prior to subsidy, in bushels
	(times price times 1-subsidy = farmer cost)	\$ 7.53
6	191.0	Excluded Yield APH
7	80%	Coverage
8	152.8	Liability in bushels
9	84.89%	Implied Coverage = row8/row1
10	3.97%	implied coverage rate
11	6.0708	premium for excluded APH coverage
	needed to maintain same loss ratio relationship	\$ 12.87



Yield Exclusion – example

	APH	YE-APH	Subsidy Rate
Coverage	180	191	80%
60%	108	115	80%
65%	117	124	80%
70%	126	134	80%
75%	135	143	77%
80%	144	153	68%
85%	153	162	53%



Yield Exclusion – issues

- Excluded yield does not have to be “low”
- Can result in more than 100% of expected
- Rate increase can vary greatly across a county line
- May decide later to keep yield
- Most likely in areas with higher starting loss ratios – less evidence of need
- Does not improve estimate of expected yield
- Black-eye potential for program



Implications for Risk Management

- Insurance payments have reduced need for disaster assistance. Insurance worked as intended.
- 2012 drought (1-in-25 to 1-in-50 year event). Incomes good. Low stress. Insurance worked. 2013 was largest unintended consequence of 2012.
- Lower PP substantially reduces risk protection, increases need for higher coverage.
- Small payouts compared to other systemic insurance support programs, but still a favorite target for some budget axers.



Implications for Risk Management

- Underwriting gains in most years, but bad years are really bad. Had program been the same size in previous ten-years, accumulated insurance gains would have more than covered losses. Insurance worked, *SRA and A&O???* ..
- *Opinions: Lenders and grain handlers will be among "last ones standing" as AIPs*
- *Fund Des increasingly critical*
- *Not a good conduit for targeted support (YE)*
- *Continued NRS Developments to compete*



Questions?

Thanks!

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