Florida Windstorm Mitigation Credit Crisis: A Modeling Perspective

Report to DFS March 2010

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Mitigation Credits Gone Wild?

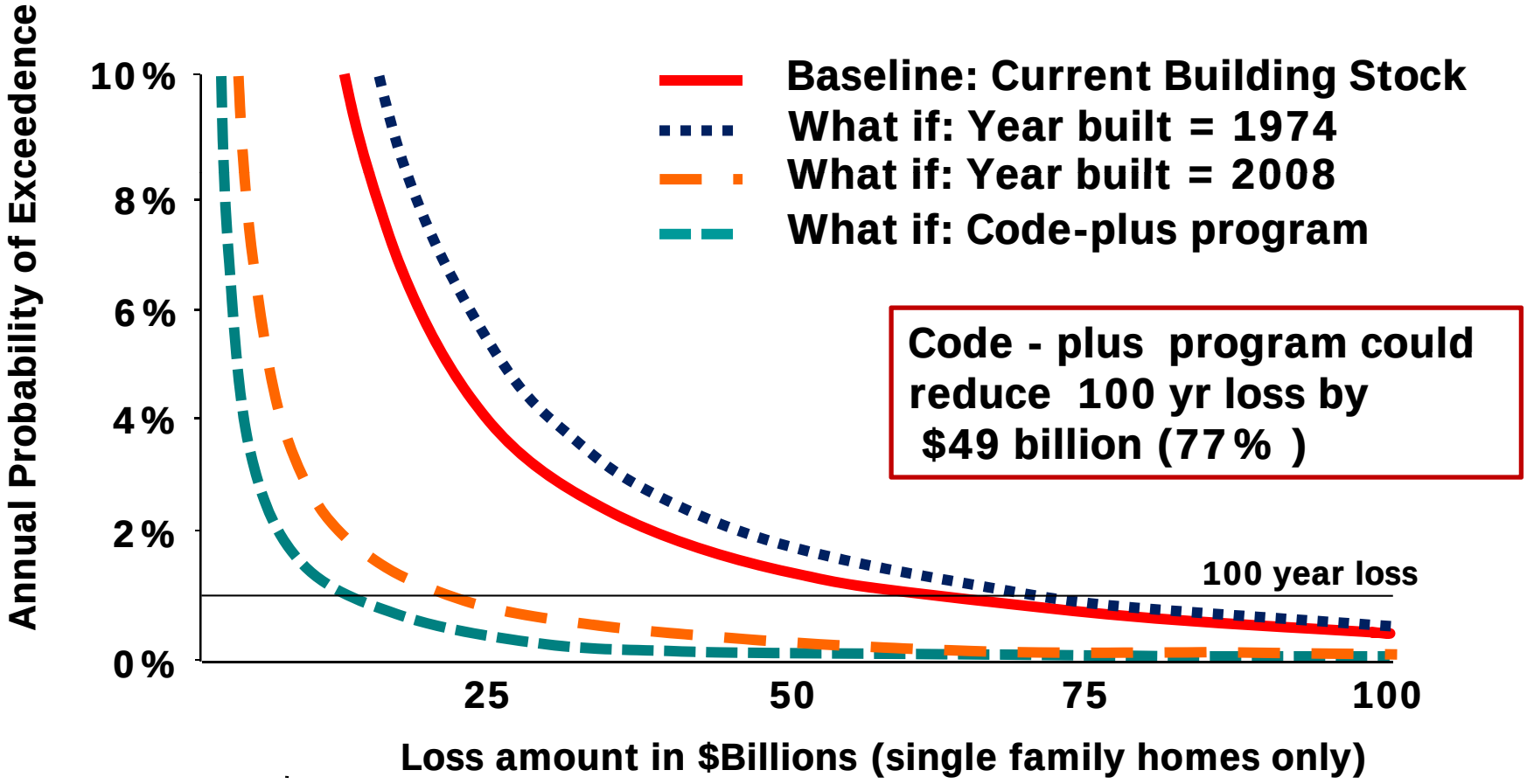
- Reports of problems from various stakeholders
- My Safe Florida Home program
- Consumer complaints and lack of mitigation feature installation
- Hurricane Commission study and report
  - Inspection
  - Data
  - Credits/quantification
  - Application/implementation

History of Mitigation Credits

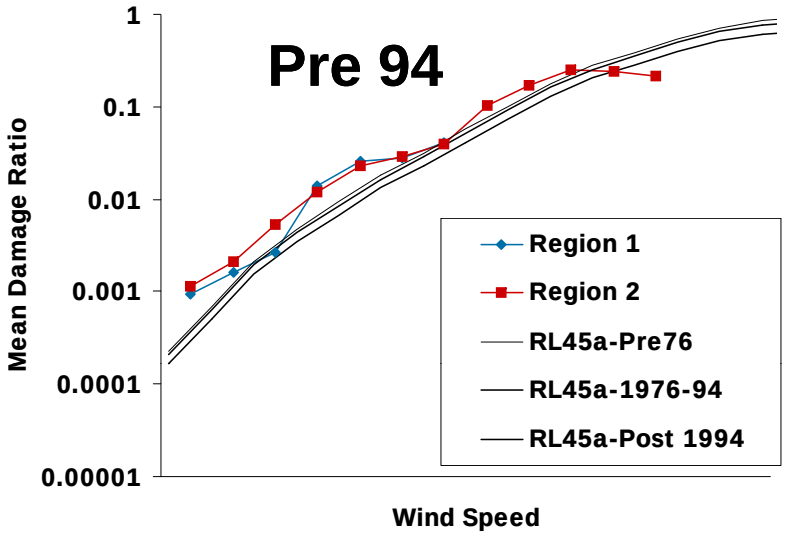
- In 2003, FL OIR mandated credits for wind mitigation based on 2002 study by Applied Research Associates.
- OIR plan assumes that all features of the 'mitigation plan' are credits.
  - Normalization to weak (completely unmitigated)
  - Relativities from study were compressed by 50%
- In 2006, FL OIR uncompressed the recommended mitigation credits
  - Everything is still a credit from base rate

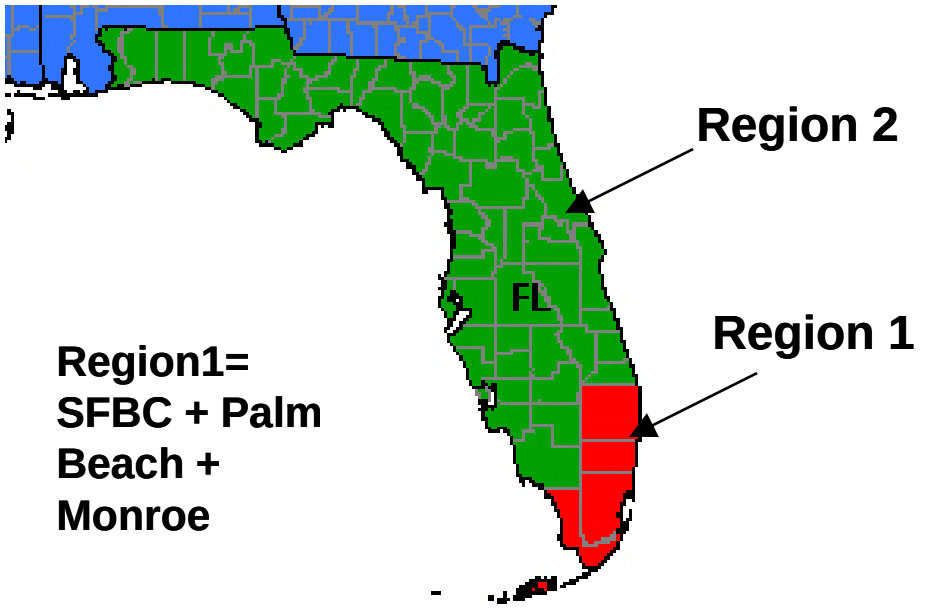
How Much Can Mitigation Help?

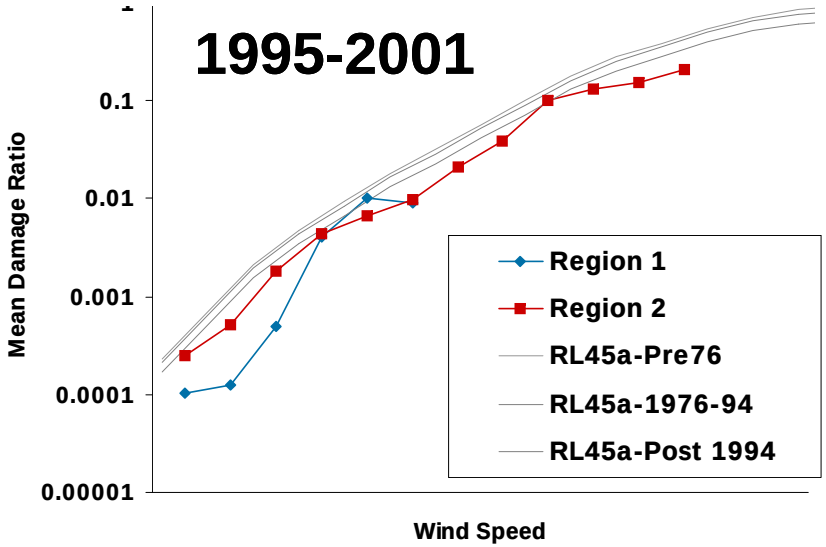
- This chart shows would happen if all the buildings were new, and if all the buildings were mitigated.

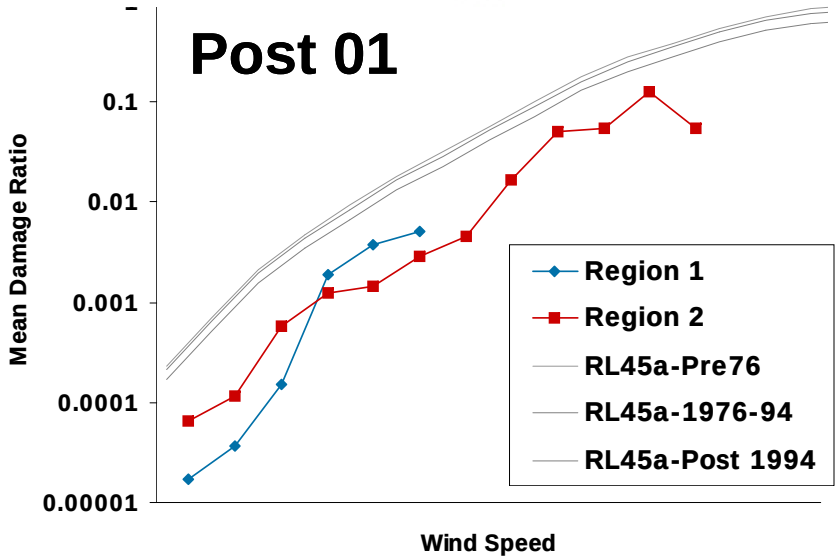


Florida Claims Data from 2004/2005 Events



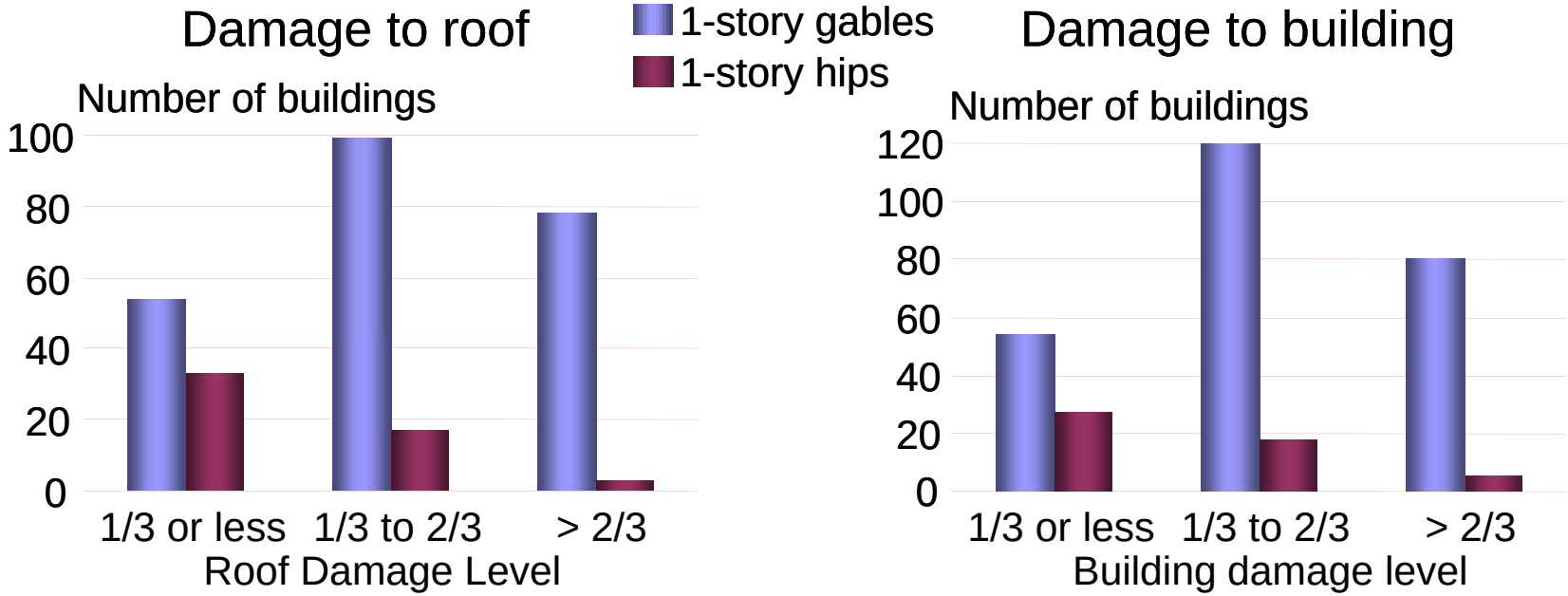






Roof Geometry – Damage Statistics

- HUD (Housing and Urban Development): post-Hurricane Andrew damage observations to gable and hip roof buildings



- Buildings with hip roof are less vulnerable than those with gable roof

Table 3-2. Loss Costs Relativities – Terrain B Locations with 2% Deductible

Terrain Category B – 2% Deductible				Roof Shape			
				Other		Hip	
Roof Cover	Roof Deck Attachment	Roof-Wall Connection	Opening Protection	No Secondary Water Resistance	Secondary Water Resistance	No Secondary Water Resistance	Secondary Water Resistance
Non-FBC Equivalent	A	Toe Nails	None	1.37	1.33	1.36	1.18
			Basic	1.33	1.37	0.91	0.83
			Hurricane	1.33	1.15	0.89	0.71
		Clips	None	1.55	1.37	0.91	0.80
			Basic	1.26	1.08	0.75	0.65
			Hurricane	1.19	1.01	0.72	0.61
		Single Wraps	None	1.53	1.35	0.91	0.79
			Basic	1.25	1.07	0.75	0.65
			Hurricane	1.19	1.00	0.72	0.61
		Double Wraps	None	1.53	1.35	0.91	0.80
			Basic	1.25	1.07	0.75	0.65
			Hurricane	1.19	1.00	0.72	0.61
	B	Toe Nails	None	2.16	2.05	1.32	1.14
			Basic	1.27	1.17	0.88	0.81
			Hurricane	1.04	0.92	0.76	0.68
		Clips	None	1.09	0.84	0.76	0.64
			Basic	0.84	0.71	0.65	0.56
			Hurricane	0.80	0.66	0.63	0.55
		Single Wraps	None	0.95	0.76	0.75	0.64
			Basic	0.79	0.64	[illegible]	0.55
			Hurricane	0.77	0.63	[illegible]	0.55
		Double Wraps	None	0.94	0.76	[illegible]	0.64
			Basic	0.79	0.63	[illegible]	0.55
			Hurricane	0.77	0.62	[illegible]	0.55
	C	Toe Nails	None	2.15	2.04	[illegible]	1.13
			Basic	1.27	1.16	[illegible]	0.81
			Hurricane	1.03	0.92	[illegible]	0.68
		Clips	None	0.98	0.82	0.75	0.64
			Basic	0.82	0.70	0.64	0.56
			Hurricane	0.78	0.66	0.63	0.55
		Single Wraps	None	0.91	0.73	0.75	0.63
			Basic	0.77	0.63	0.64	0.55
			Hurricane	0.75	0.62	0.63	0.55
		Double Wraps	None	0.90	0.72	0.75	0.63
			Basic	0.75	0.61	0.64	0.55
			Hurricane	0.74	0.61	0.63	0.54
FBC Equivalent	A	Toe Nails	None	2.11	2.05	1.07	1.04
			Basic	1.26	1.22	0.71	0.69
			Hurricane	1.03	0.99	0.59	0.57
		Clips	None	1.22	1.17	0.67	0.62
			Basic	0.94	0.91	0.53	0.51
			Hurricane	0.88	0.84	0.49	0.47
		Single Wraps	None	1.21	1.18	0.67	0.65
			Basic	0.94	0.90	0.53	0.51
			Hurricane	0.87	0.84	0.49	0.47
		Double Wraps	None	1.21	1.17	0.67	0.65
			Basic	0.93	0.90	0.53	0.51
			Hurricane	0.87	0.83	0.49	0.47
	B	Toe Nails	None	1.95	1.90	1.05	1.01
			Basic	1.06	1.02	0.69	0.67
			Hurricane	0.80	0.78	0.56	0.55
		Clips	None	0.72	0.69	0.53	0.50
			Basic	0.59	0.56	0.46	0.42
			Hurricane	0.54	0.51	0.45	0.41
		Single Wraps	None	0.65	0.61	0.52	0.50
			Basic	0.53	0.49	0.45	0.41
			Hurricane	0.51	0.48	0.45	0.41
		Double Wraps	None	0.65	0.60	0.52	0.50
			Basic	0.52	0.48	0.45	0.41
			Hurricane	0.51	0.47	0.45	0.41
	C	Toe Nails	None	1.94	1.89	1.05	1.01
			Basic	1.05	1.02	0.69	0.67
			Hurricane	0.80	0.77	0.56	0.55
		Clips	None	0.70	0.67	0.52	0.50
			Basic	0.58	0.55	0.46	0.42
			Hurricane	0.53	0.51	0.45	0.41
		Single Wraps	None	0.62	0.58	0.52	0.49
			Basic	0.51	0.48	0.45	0.41
			Hurricane	0.49	0.47	0.42	0.41
		Double Wraps	None	0.61	0.57	0.52	0.49
			Basic	0.50	0.46	0.45	0.41
			Hurricane	0.49	0.46	0.42	0.41

Notes: 1. This table is based on averaging the relativities for each of the three modeled houses (with composition shingle roof coverings) for all 17 Terrain [illegible]

"Typical" Building

OIR Mitigation credits

- Worst Building is 2.37 times typical building
- Best Building is 0.41 times typical building
- The choice of "typical" is critical to align credits with base rates

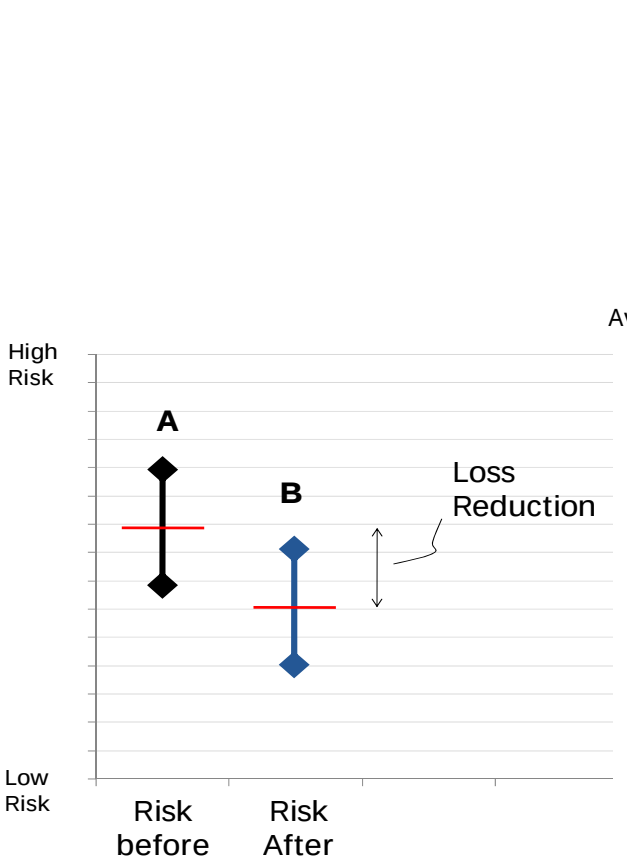
RMS

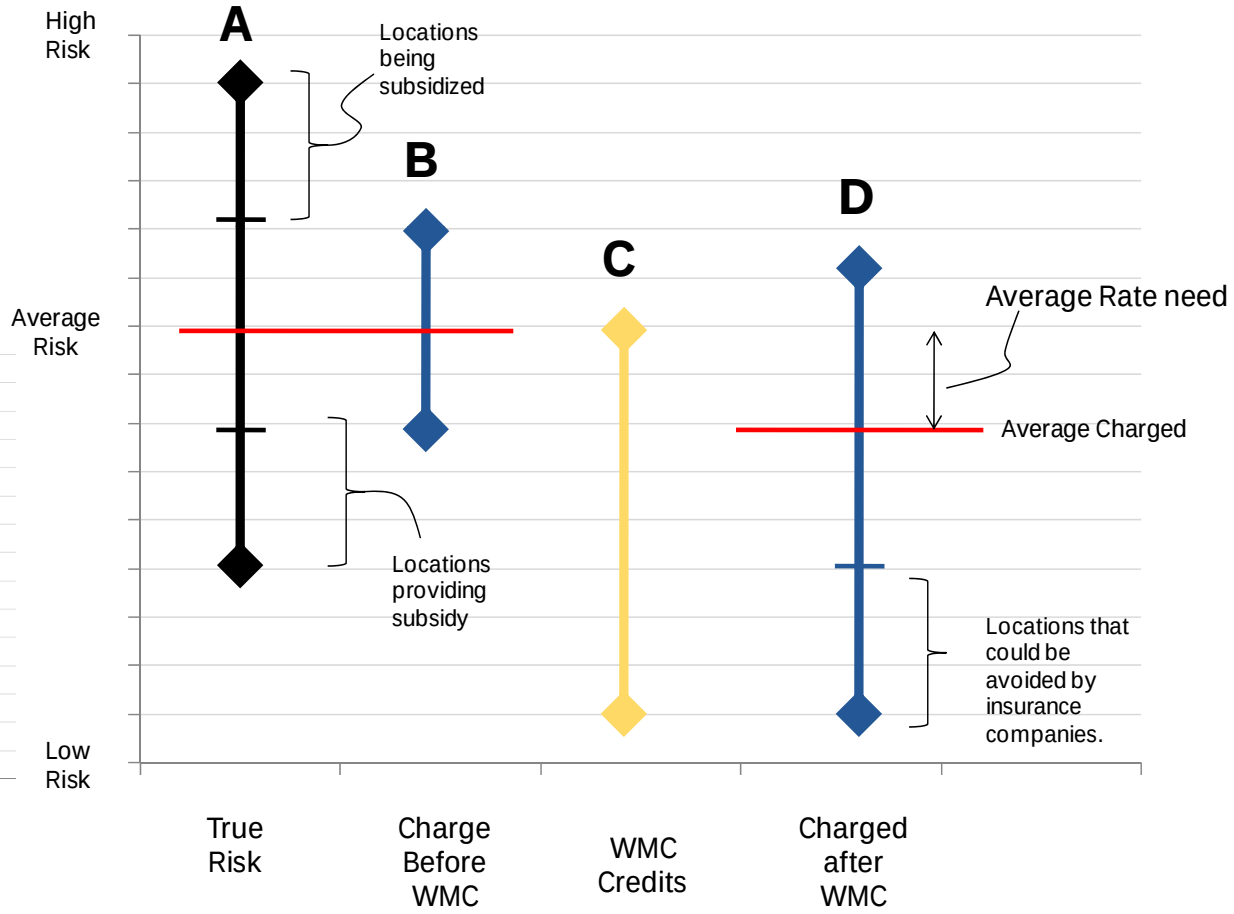
Implementation Issue

1. The matrix is indexed to a point representing less than 5% of the population
   - 95% of the population should get a credit
   - Creates need for base rate offsets
2. To use Mitigation Credit matrix requires detailed inspections
   - Voluntary
   - Biased?

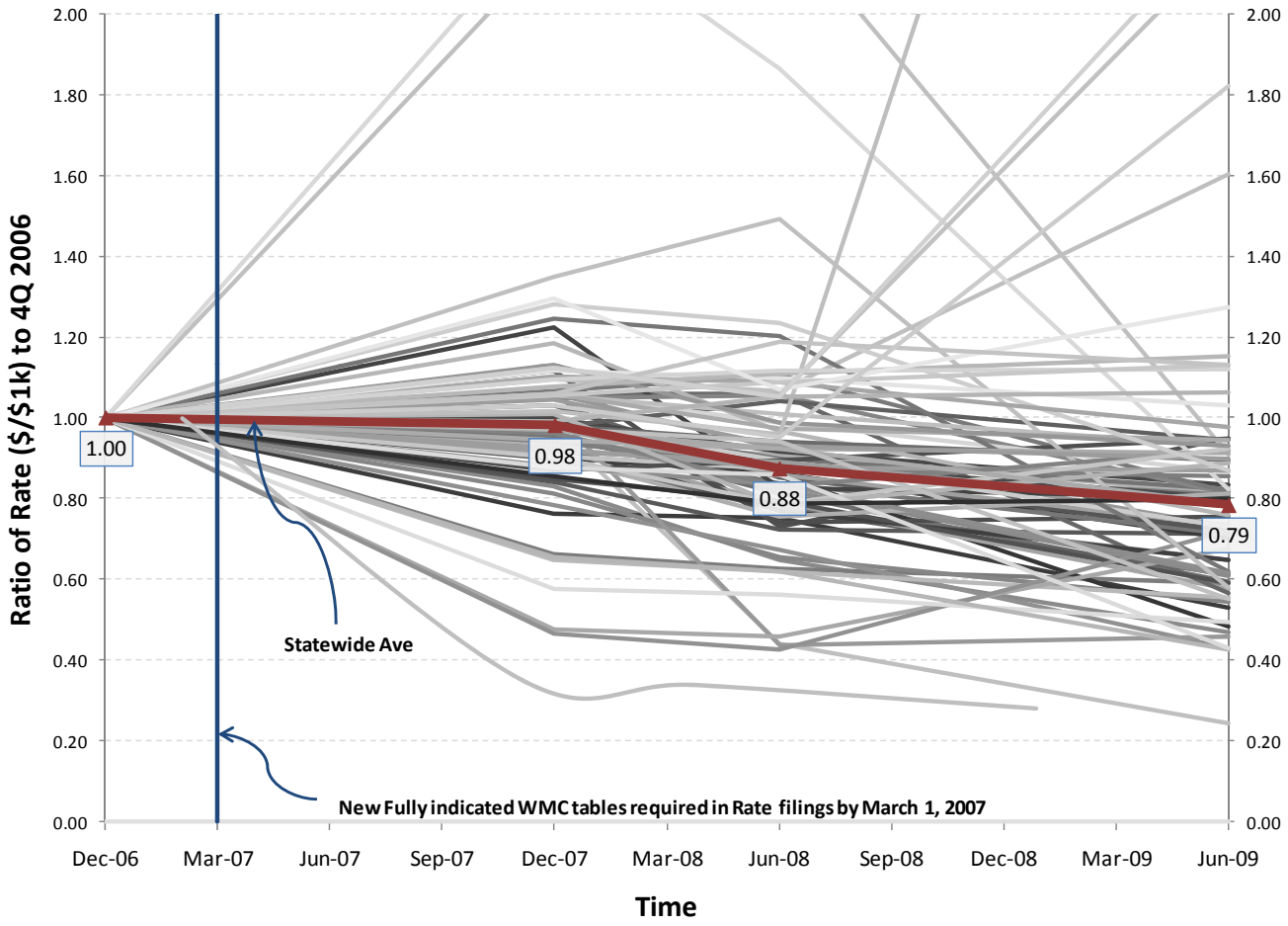
Hardening vs. Reclassification

- Insurance companies need to figure out the degree to which reclassification has taken place vs. hardening





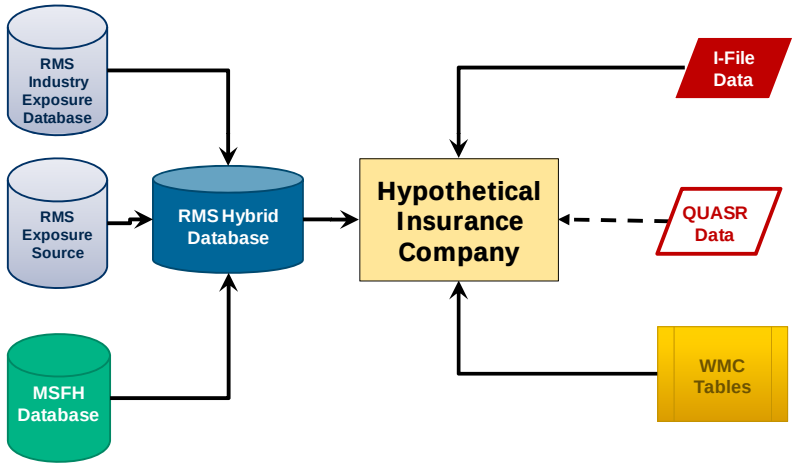
Observed Trends in Average Premium



- Underwriting losses for 102 of 251 companies in first half of 2009
- No hurricanes

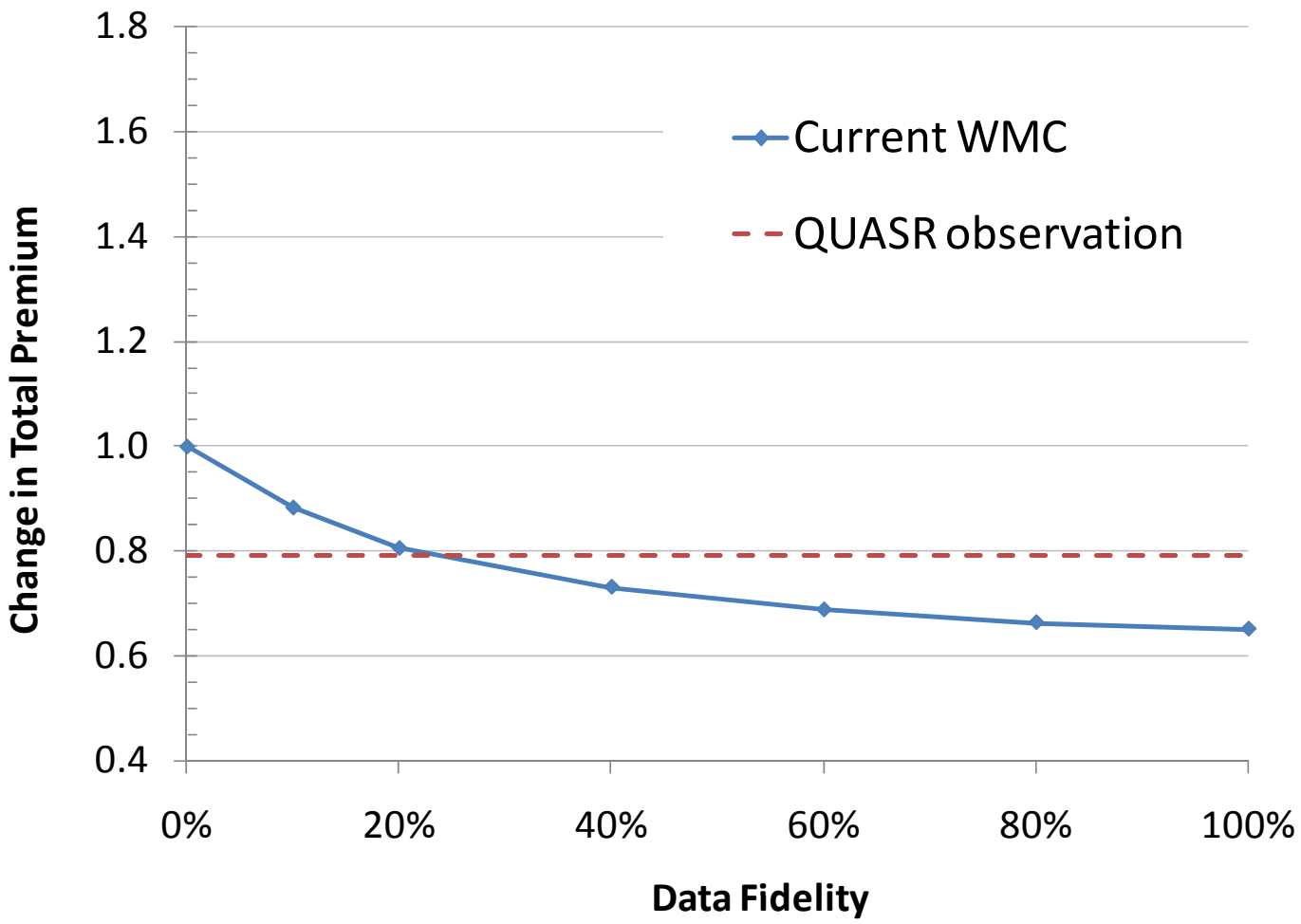
Simulating the impact of WMC

- Creation of a hypothetical insurance company equal to voluntary market
- Hybrid Database contains detailed distribution of WMC for entire state

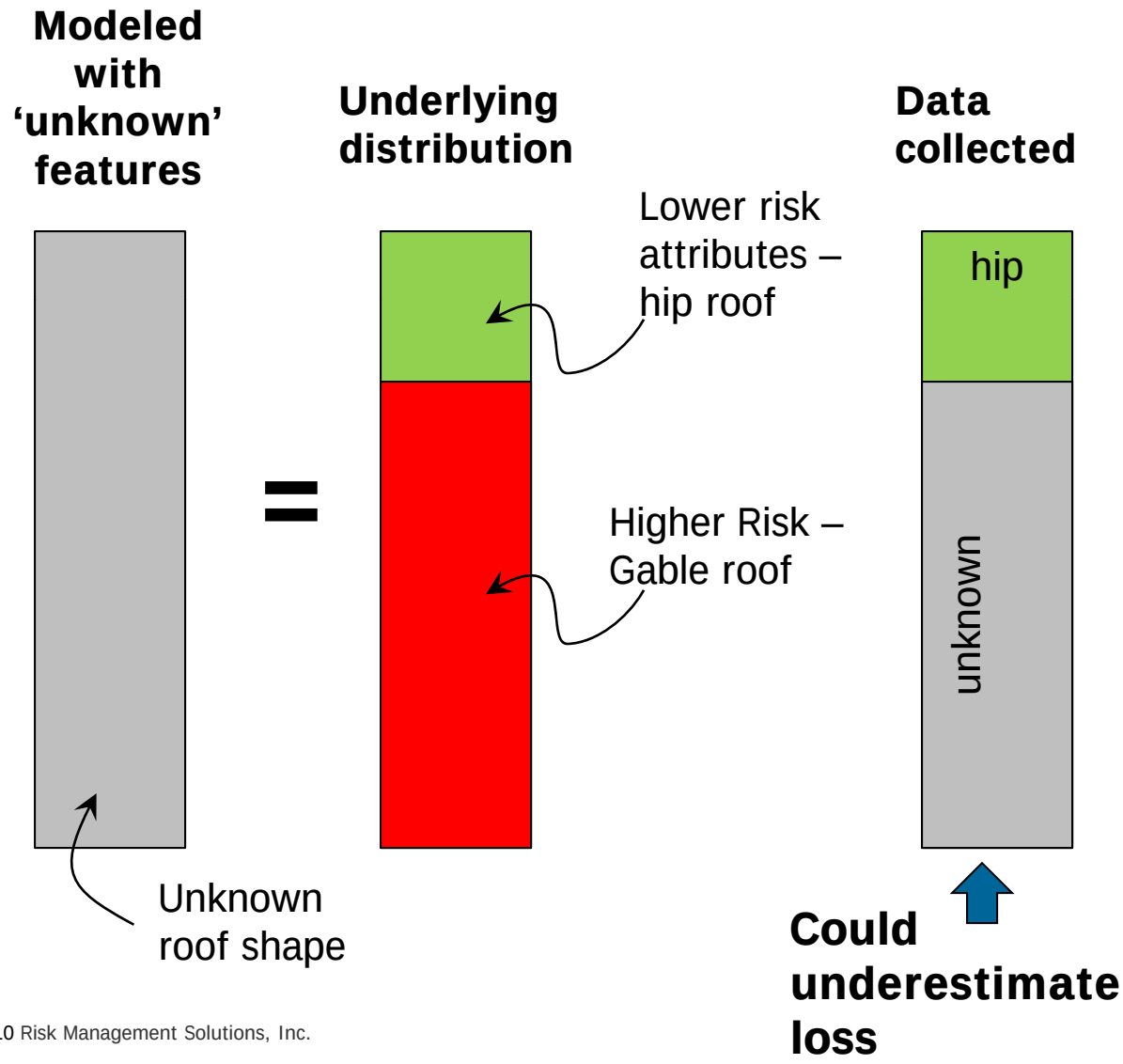


Estimating impact of WMC by Data Fidelity

- Data fidelity levels = inspection level
- FHCF suggests that fidelity level is about 20% statewide
- Matches observed premium drop

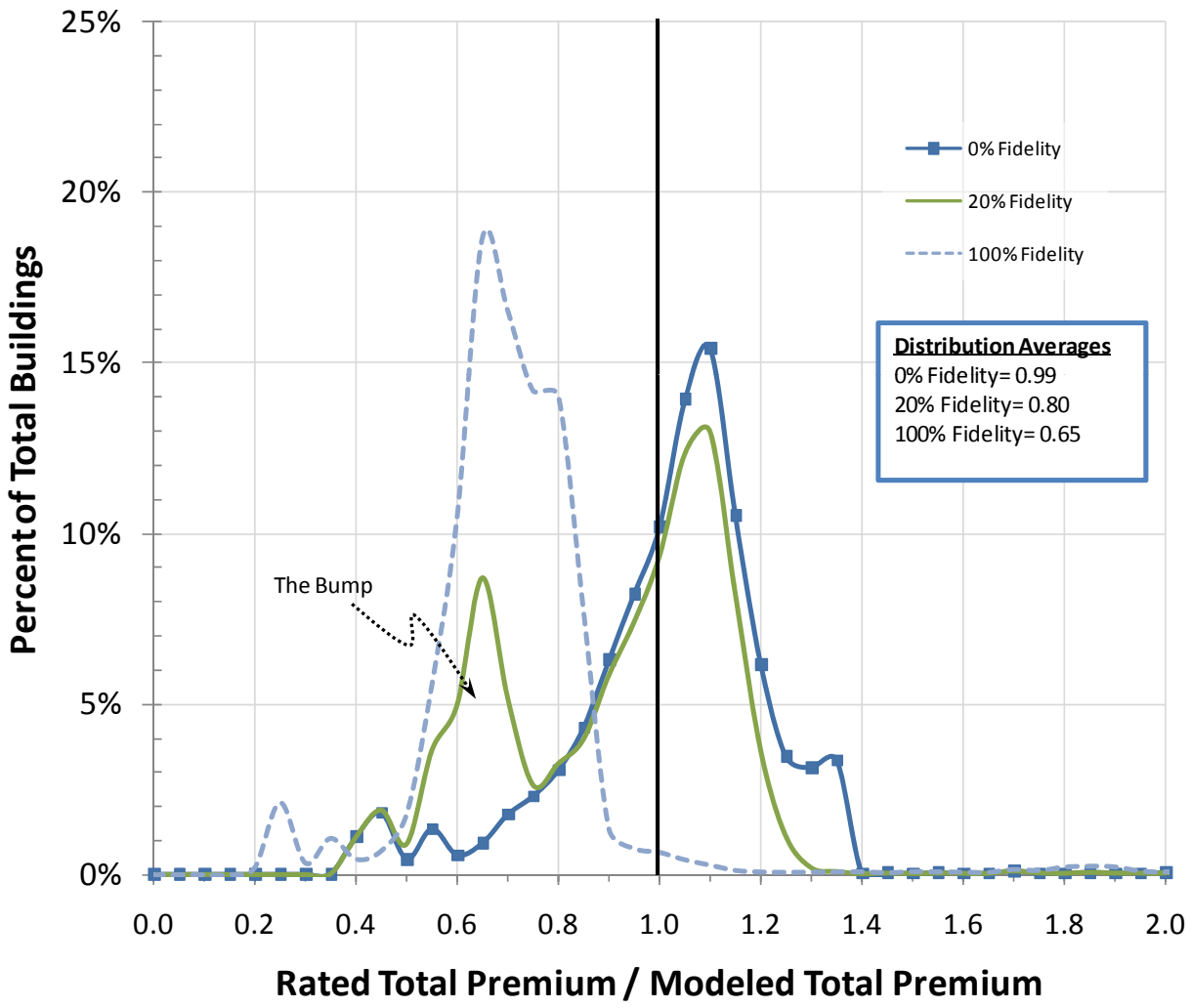


Implementation Issue: Unknown Characteristics



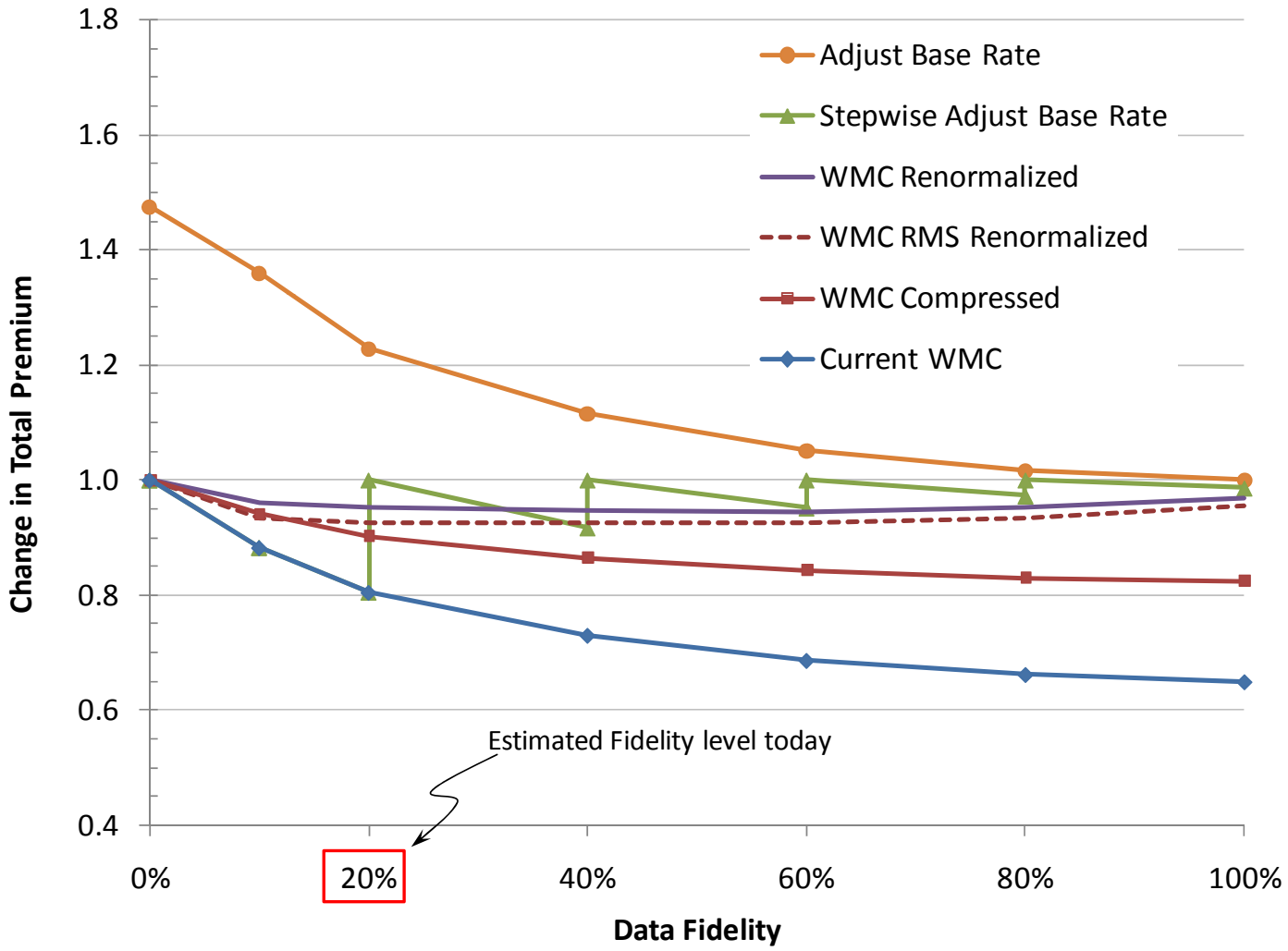
- Partial attributes can underestimate the portfolio loss levels.
- Partial data collection is therefore worth very little in portfolio modeling unless treated properly.

Rated Premium / Model Premium



- **Original fidelity level has average around 1.0.**
- **Present inspection level results in 'bump' of homes that are 30% of what the model says they should be.**
- **Bump = larger homes in South Florida**

WMC Scenarios

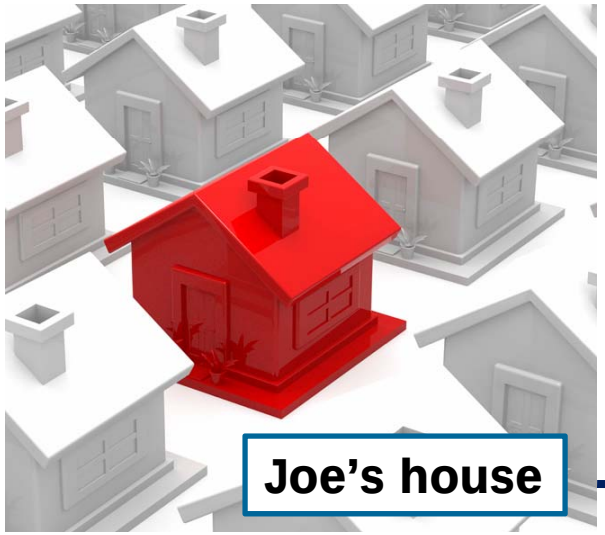


Theory of Mitigation Credits…

Legislators…

Insurance Company

Contractor



Joe's house

Policy

No Mitigation	= $1300 per year
With Mitigation	= $600 per year
Saving	= $700 per year
Mitigation Cost	= $400 per year
Net savings:	= $300 per year

RMS

Estimated Hardening Levels

- RMS estimated the amount of homes to voluntarily retrofit under various WMC scenarios
- Current situation is only 2%
- Realignment of WMC and base rate tables result in ~5%
- 30 year loan results in much higher hardening levels.

	20% Fidelity Level (Today)		100% Fidelity Level (All Inspected)	
Wind Mitigation Credit Scenario	**5 Year Loan**	**30 year Loan**	**5 Year Loan**	**30 year Loan**
Current WMC	2%	9%	4%	19%
WMC Compressed	1%	3%	1%	7%
Adjust Base Rate	5%	14%	13%	38%
WMC Re-normalized	5%	14%	12%	39%
WMC RMS Re-normalized	10%	13%	21%	50%
Stepwise Adjust Base Rate	2%	10%	13%	38%

Recommendations

1. Need to Realign WMC and Base Rates to restore premium levels
2. F.S. 627.0629 (1)(a) should be revised to allow both credits and surcharges, and address the appropriate base for application
3. WMC tables should be normalized to an average house
4. Homeowner cost to mitigate should be subsidized

Information Sources

- Florida Commission on Hurricane Loss Projection Methodology Wind Mitigation Committee **http://www.sbafla.com/methodology/wmc.asp**
- Study of Florida's Windstorm Mitigation Credits; Assessing the Impact on the Florida Insurance Market **www.rms.com**
- **Kay.Cleary@rms.com** 850.386.5292