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The Financial Soundness and Affordability of the National Flood Insurance Program

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This presentation describes research conducted by myself and my coauthors, Perry Beider and David Wylie, with assistance from Jon Sperl. It has benefited from helpful comments provided by multiple people within CBO, including Kim Cawley, Molly Dahl, Joseph Kile, Damien Moore (formerly of CBO), David Torregrosa, and Robert Reese. It has also benefited from comments and assistance by people outside CBO, including Lloyd Dixon of the RAND Corporation, Carolyn Kousky of the University of Pennsylvania, and Rade Musulin of FBAlliance Insurance. The Federal Emergency Management Agency, Guy Carpenter and Company, LLC, and Risk Management Solutions provided data. (The assistance of external reviewers, companies, and agencies implies no responsibility for the final product.)

Overview of Talk

- Present estimate of NFIP's shortfall
- Describe data and methods
- Discuss sources of total shortfall and of regional differences
- Compare premiums with local household income
- Provide brief overview of policy approaches

What Measure of Cost Did CBO Use to Analyze Financial Sustainability?

- *Expected* annual costs for NFIP
 - Long-run average under current conditions
 - Differs from actual costs in any particular year
 - Based on large numbers of simulations of potential flooding events
 - Accounts for low-probability, high-cost floods
 - Accounts for years with little flood damage

- *Expected* annual costs will change as underlying conditions change, including:
 - Changes in the composition of policies
 - Changes in conditions affecting flood risk

NFIP's One-Year Expected Costs and Premiums

Expected Costs		Premiums	
Costs Associated With Writing and Servicing Policies		Rate-Based Receipts	3.3
Expected claims	3.7	Additional Charges	
Payments to firms selling and servicing policies	1.1	Reserve fund assessment	0.5
Salaries and operating expenses	<u>0.2</u>	Surcharges	0.4
Subtotal	5.0	Federal policy fee	<u>0.2</u>
		Subtotal	1.1
Additional Costs		Total	4.3
Floodplain mapping and management	0.2		
Mitigation assistance	0.2		
Interest on debt	<u>0.3</u>		
Subtotal	0.7		
Total	5.7		

Financial Sustainability Versus Actuarial Soundness

- **Financial sustainability:** Premiums sufficient to cover all expected costs
 - Includes costs and fees not typically associated with private insurance
 - CBO estimates a program shortfall of \$1.4 billion

- **Actuarial soundness:** Premiums sufficient to cover expected costs associated with paying claims and writing and servicing policies
 - Excludes compensation for risk and costs not associated with private insurance
 - Includes fees and surcharges that do not have direct counterparts in private insurance
 - CBO estimates an actuarial shortfall of \$0.7 billion

Data and Method

- For the 5 million policies in place in the contiguous United States on August 31, 2016, CBO used:
 - Policy-level information on premiums, locations, and rates
 - Estimates of county-level gross losses due to storm surge and inland flooding
 - Constructed by Guy Carpenter and Company using AIR Worldwide’s and RMS’s flood models

- CBO estimated:
 - County-level gross losses for “nonmodeled” losses: hurricane-related precipitation, tropical storms, and nor’easters
 - Expected claims from gross losses on the basis of an estimate of loss adjustment expenses

Steps Used to Estimate “Nonmodeled” Gross Losses

- Estimate each state’s nonmodeled gross losses on the basis of:
 - State-level estimates of gross losses from storm surge (sum of county estimates)
 - Ratio of each state’s gross losses from storm surge to its gross losses from hurricane-related precipitation (HRP)
 - Ratio of gross losses from tropical storms to combined gross losses from storm surges and HRP

- Allocate each state’s gross losses to counties within the state on the basis of each county’s vulnerability to:
 - Wind and storm surge damage from hurricanes
 - Inland flooding

Sources of NFIP's Expected \$1.4 Billion Shortfall

- CBO's estimate of expected claims is \$1 billion higher than estimate used by FEMA for setting rates
 - CBO's estimates rely on model results used by FEMA for assessing aggregate risk exposure for purchase of reinsurance
 - FEMA's method relies on analysis of past flooding events
- Cost of discounted rates exceeds surcharge to pay for discounts by \$0.3 billion
 - Discounts primarily for properties that existed prior to the creation of FEMA's flood maps; such discounts cost \$0.7 billion
 - Discounts offset by \$0.4 billion in surcharges

\$1.4 Billion Shortfall Is Net Effect of Summing Among Counties With Shortfalls and Surpluses

■ Shortfall counties

- 823 counties have shortfalls
- Shortfall counties contain 65 percent of all policies
- Shortfalls total \$2 billion

■ Surplus counties

- 2,161 counties have surpluses
- Surplus counties contain 35 percent of all policies
- Surpluses total \$0.6 billion

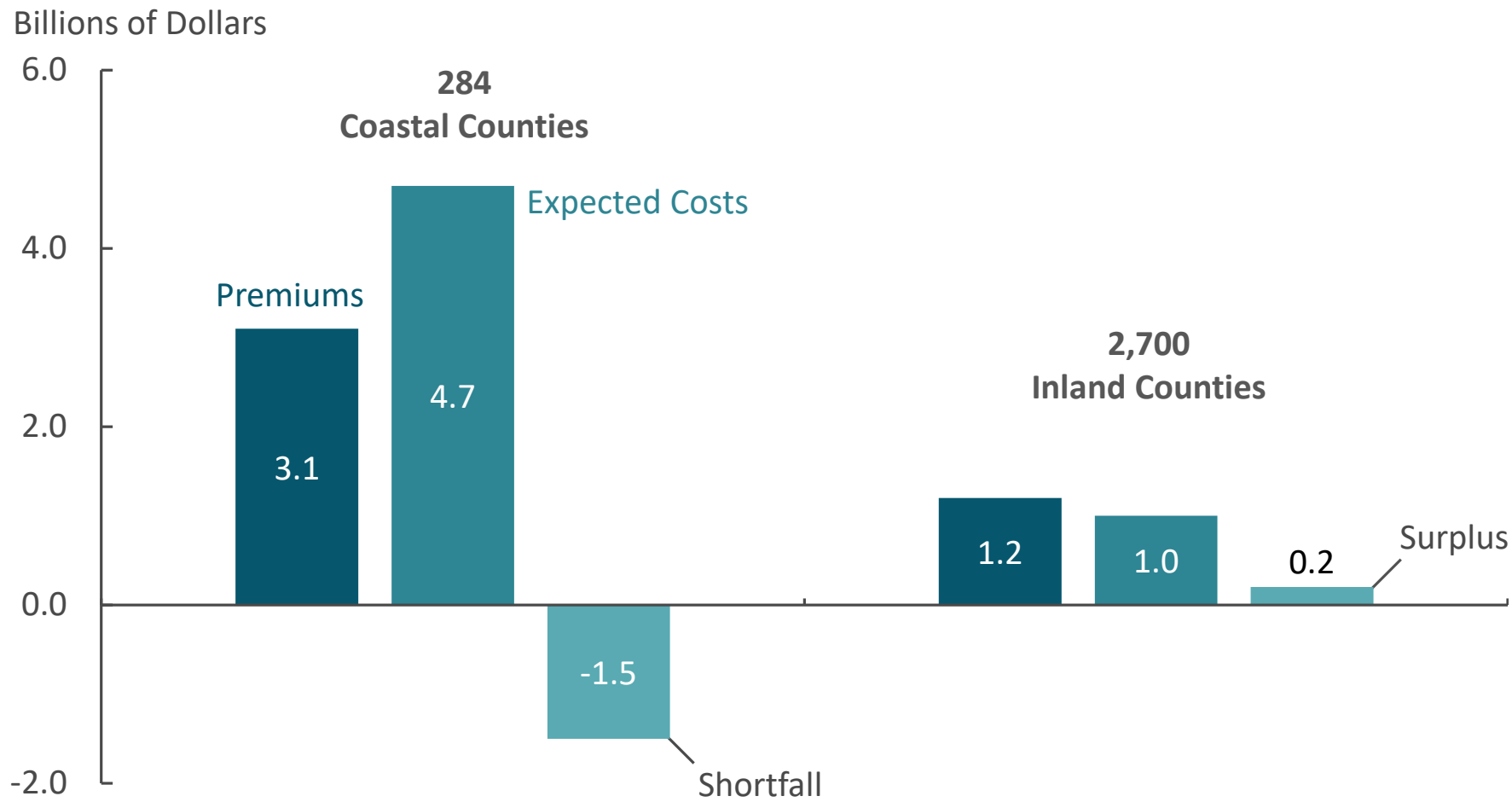
Concentration of Shortfalls Within Selected Counties

	Counties With Shortfalls		
	Less Than \$10 Million	More Than \$10 Million	Total
Number of Counties	790	33	823
Percentage of All U.S. Counties	25	1	26
Total Shortfall (Millions of dollars)	270	1,720	1,990
Percentage of Total Shortfall	13	87	100
Percentage of All NFIP Policies	24	41	65
Average Per-Policy Shortfall (Dollars)	220	840	610

Concentration of Surpluses Within Selected Counties

	Counties With Surpluses		
	Less Than \$2 Million	More Than \$2 Million	Total
Number of Counties	2,102	59	2,161
Percentage of All U.S. Counties	68	2	70
Total Surplus (Millions of dollars)	270	370	640
Percentage of Total Surplus	42	58	100
Percentage of All NFIP Policies	19	16	35
Average Per-Policy Surplus (Dollars)	280	480	370

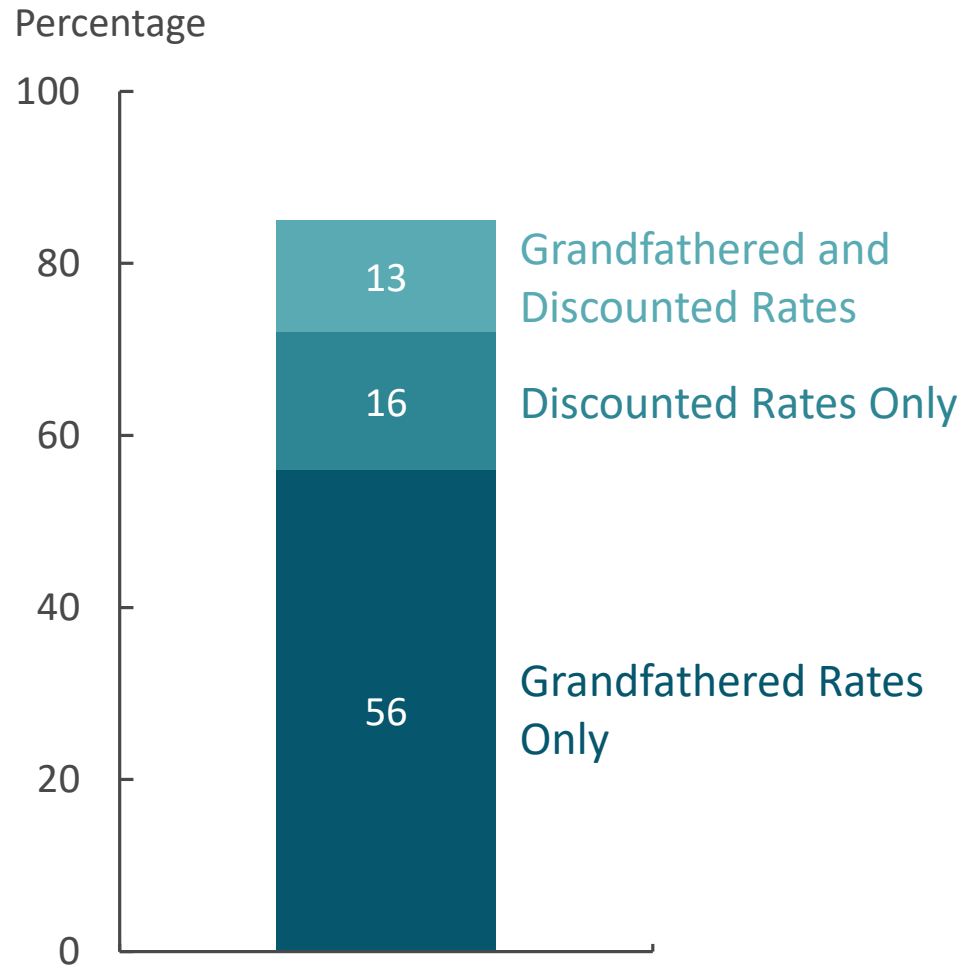
One-Year Premiums, Expected Costs, and Shortfall or Surplus, by Location



Sources of Difference Between Coastal and Inland Counties

- Under FEMA's rate-setting method, policyholders with different amounts of expected damage from waves may pay the same rate
 - Rates for similar homes vary among three zones:
 - Zone V: 100-year flood plain plus at least 3-foot waves in a 100-year flood
 - Zone A: 100-year flood plain, not in Zone V
 - Zone X: outside 100-year flood plain
 - Similar homes in Zone A pay same rate regardless of proximity to Zone V
- Most Zone V policyholders do not pay full risk rates

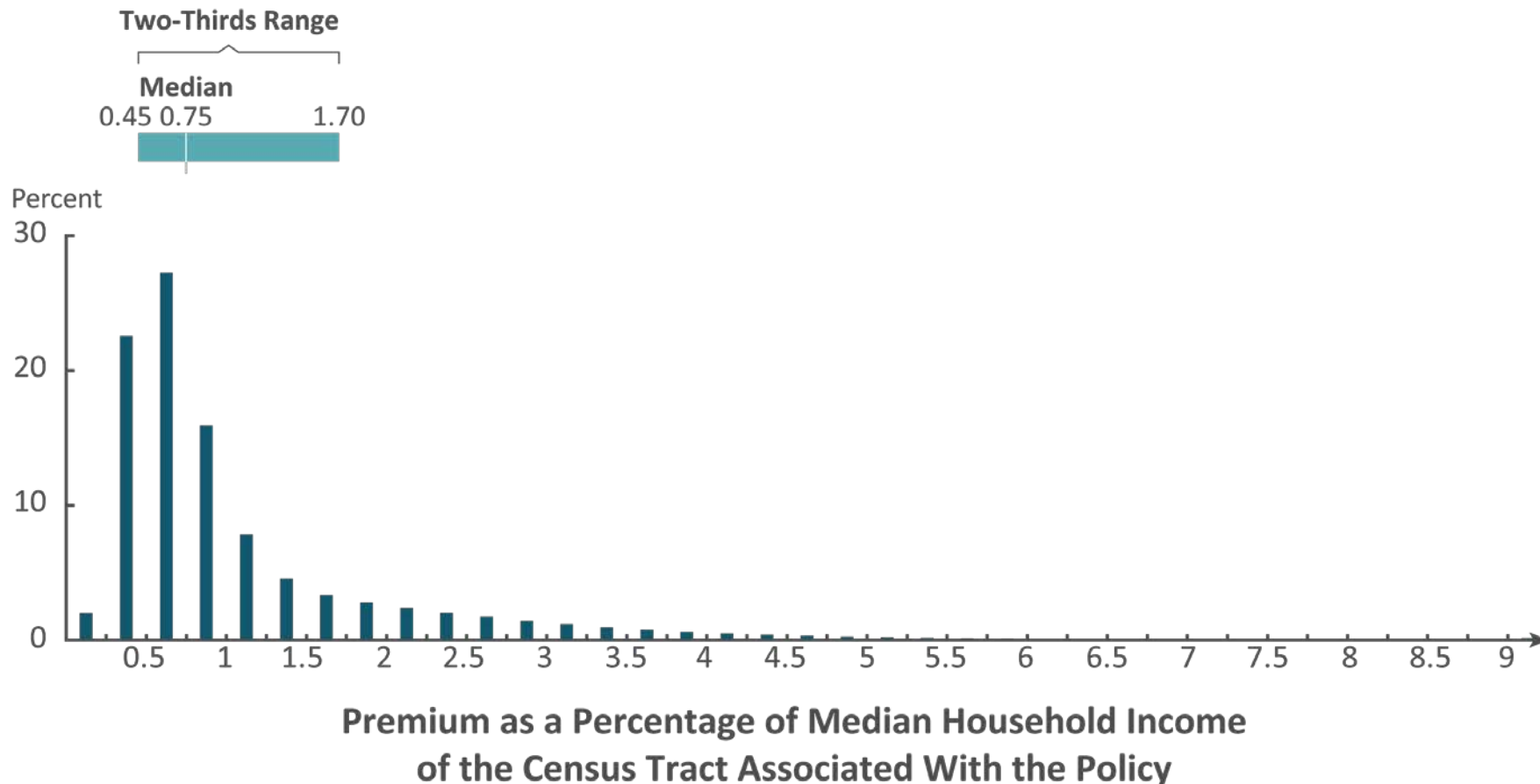
Share of Zone V Policies With Grandfathered and Discounted Rates



Cost to Households: One-Year Premiums for Residential Policies (Dollars)

	Median (50th Percentile)	Central Two-Thirds Range Around the Median	
		17th Percentile	83rd Percentile
All Residential	520	420	1,330
Condominiums	440	260	810
Single-family noncondominiums	520	430	1,350
Primary residences	450	410	1,130
Nonprimary residences	740	600	1,950

Share of Policies for Which the Premium Makes Up a Certain Percentage of Median Income in the Relevant Census Tract



Includes only policies covering primary single-family homes. Premiums were compared with the median single-family household income of the census tract in which the home was located.

Policy Approaches

- CBO considered four types of approaches—those that would primarily:
 - Increase receipts
 - Reduce subsidies
 - Shift costs away from the NFIP
 - Adjust premiums to better reflect underlying risk factors

- CBO examined approaches on the basis of their ability to:
 - Improve solvency
 - Better align premiums and risks
 - Keep costs low for some or all policyholders

- Approaches entail trade-offs

Conclusions

- CBO's estimated shortfall of \$1.4 billion is due to:
 - Differences between CBO's estimates of expected claims and estimates used by FEMA for setting rates
 - The fact that the cost of discounted rates exceeds offsetting surcharges
- Coastal counties have aggregate shortfall of \$1.5 billion; inland counties have aggregate surplus of \$0.2 billion
 - Most rates in coastal areas do not reflect additional expected damage due to waves
- Two-thirds of premiums for all residential policies (including condominiums) fall between \$420 and \$1,330
 - Among single-family homes, premiums for primary homes are higher than for nonprimary homes
- Policy approaches entail trade-offs

Where Can You Find the Work Underlying This Presentation?

The National Flood Insurance Program: Financial Soundness and Affordability

www.cbo.gov/publication/53028

Premiums Under the National Flood Insurance Program as a Share of Household Income

www.cbo.gov/publication/53185