

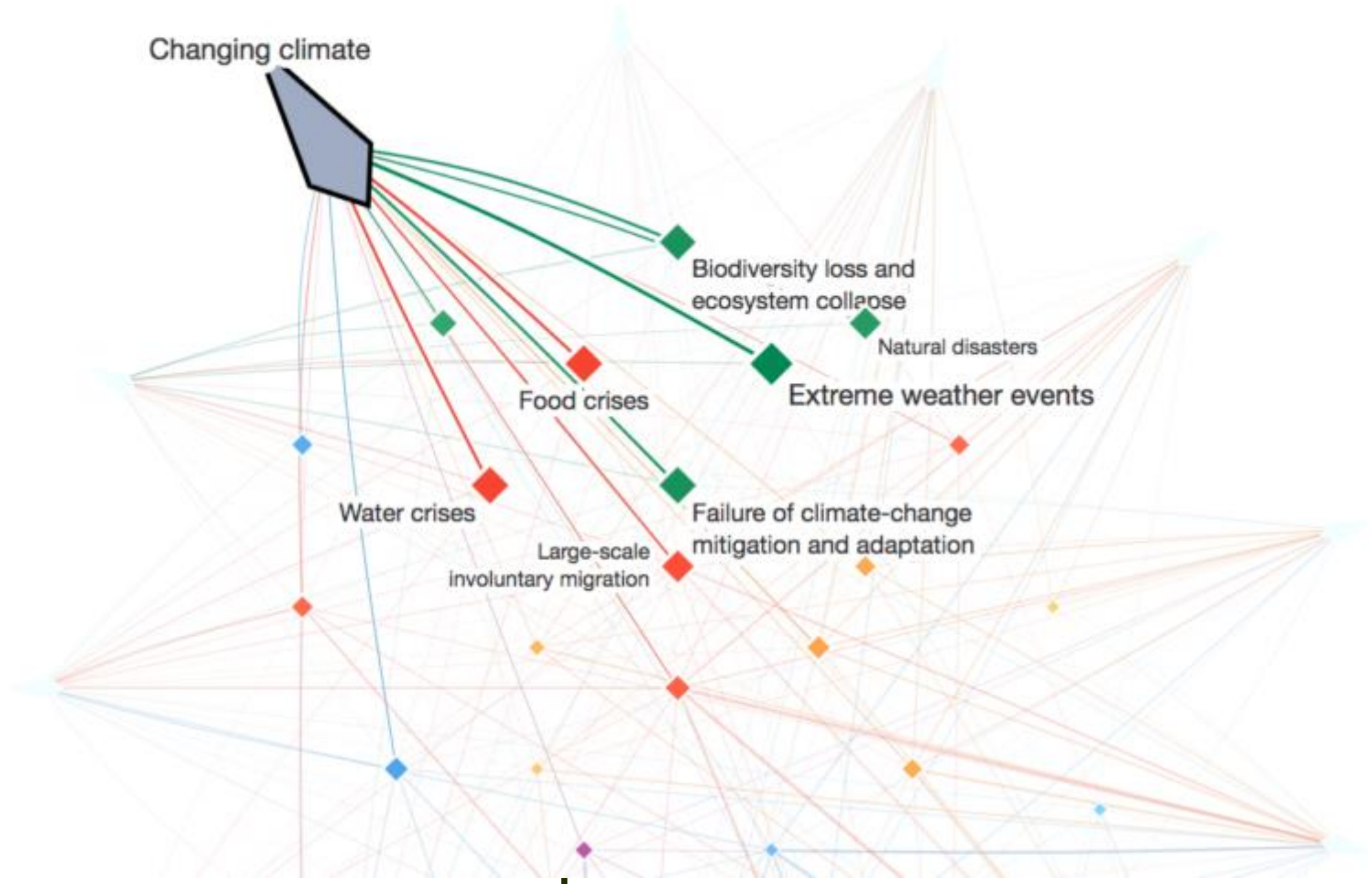
# Assessing and managing the risks posed by climate change to state and local governments

## Assessing Risks Acting for Change

Joyce Coffee  
Climate Resilience  
Consulting



# WEF: Five Global Risks in Terms of Impact



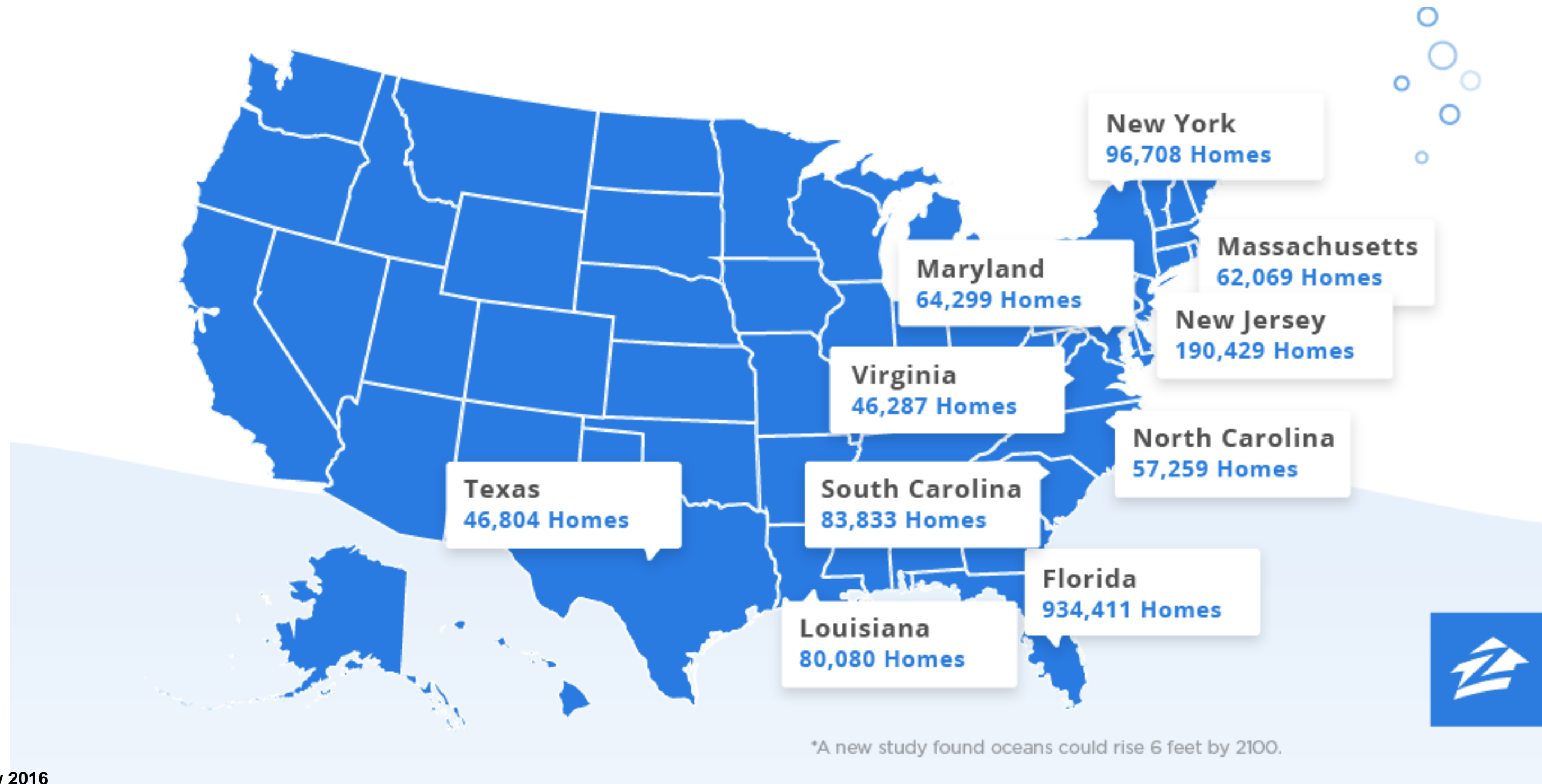
	2016	2017
	Failure of climate-change mitigation and adaptation	Weapons of mass destruction
ive	Weapons of mass destruction	Extreme weather events
ses	Water crises	Water crises
ss	Large-scale involuntary migration	Major natural disasters
ct	Severe energy price shock	Failure of climate-change mitigation and adaptation
te-on		

■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological



# Cities & States Know Enough to Act

US homes under water if oceans rise 6 feet=1.9M homes, \$882 Billion value

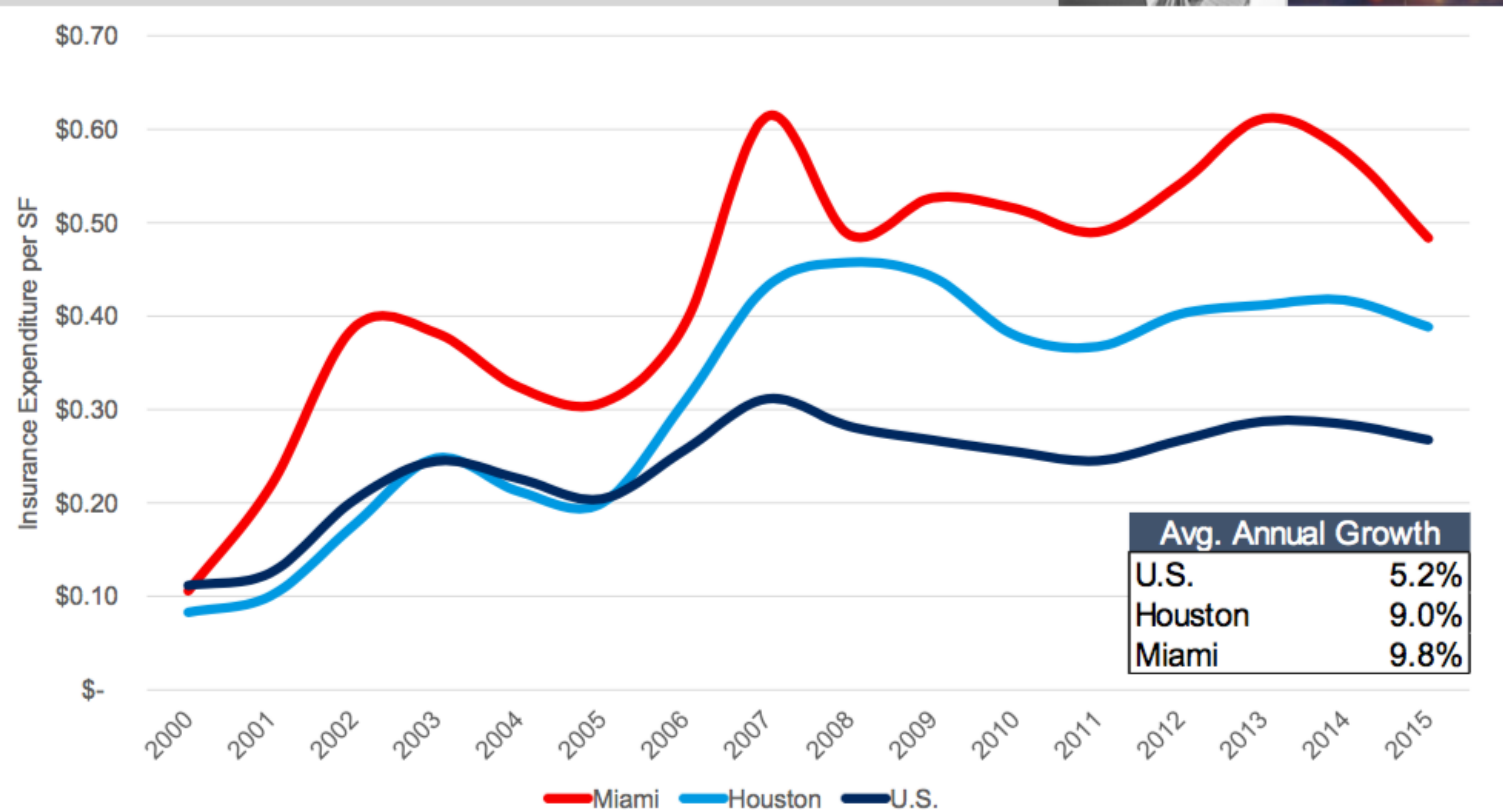


# Markets Show Winners, Losers

## Largest Markets by Contribution to Risk

Market	Asset value (\$m)	% of total	Average annual loss	% of total
Miami	\$160.00	3%	\$767,000	38%
Houston	\$210.00	4%	\$278,000	14%
New York City	\$720.00	14%	\$231,000	11%
Dallas	\$230.00	4%	\$200,000	10%
Los Angeles	\$780.00	15%	\$112,000	6%
Boston	\$320.00	6%	\$68,000	3%
Washington, D.C.	\$500.00	10%	\$66,000	3%
Chicago	\$340.00	7%	\$41,000	2%
San Francisco	\$550.00	11%	\$25,000	1%
Seattle	\$240.00	5%	\$8,000	0%
Other	\$1,110.00	21%	\$232,000	11%
<b>Total</b>	<b>\$5,200.00</b>		<b>\$2,020,000</b>	

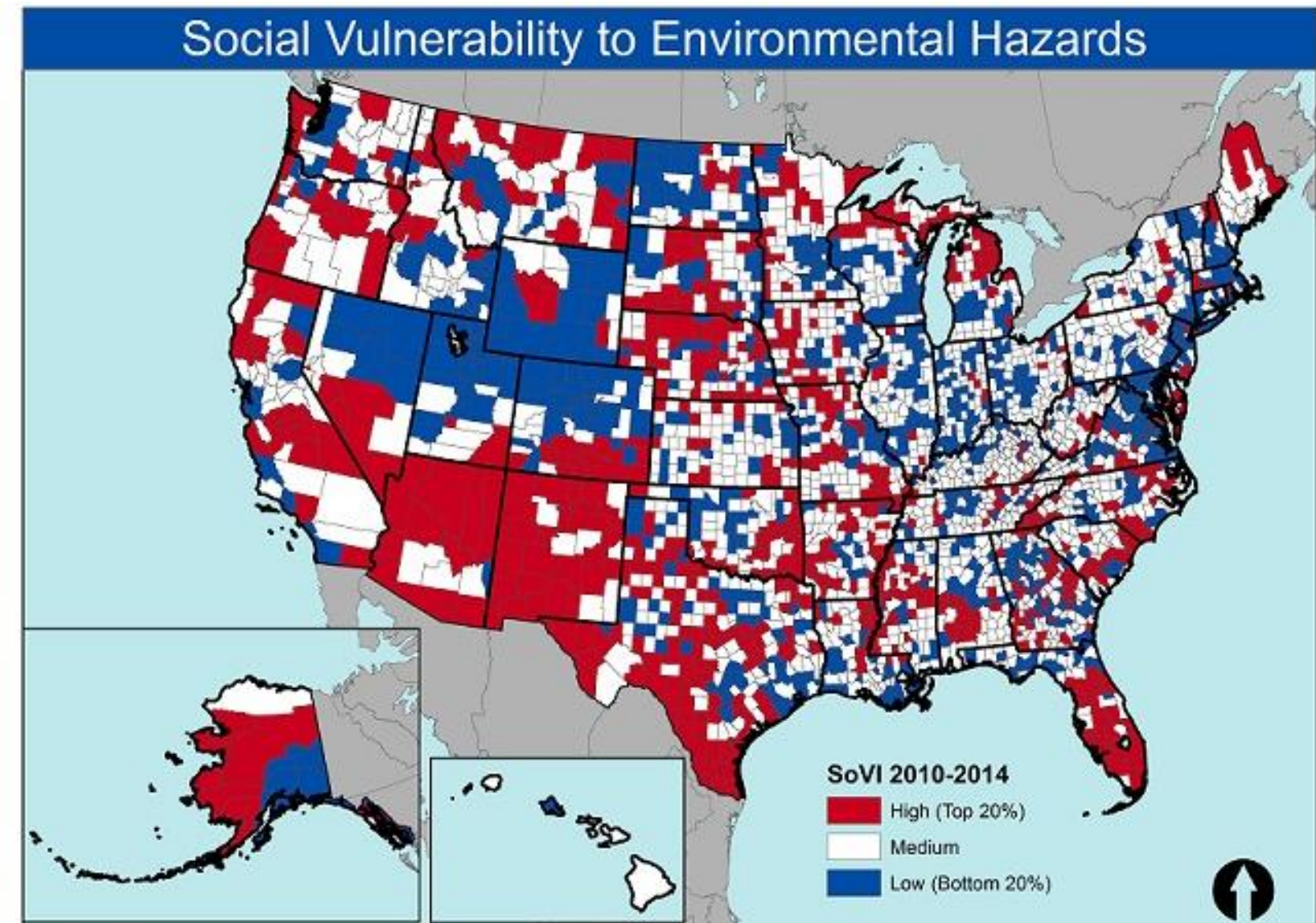
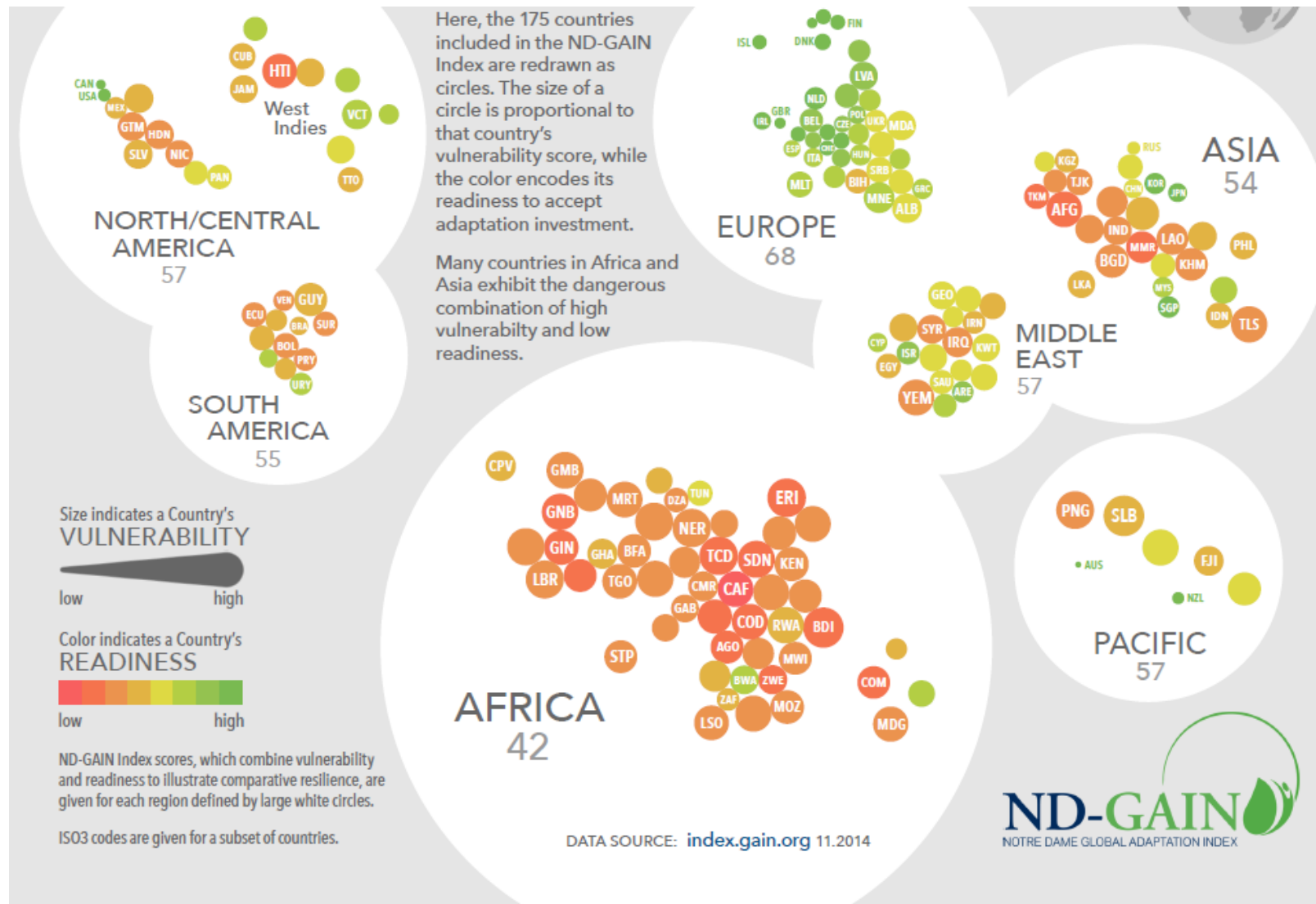
## Insurance Spend 2000-2015



Sources:  
1. NCREIF Query Tool: Expense Detail search by MSA, National Council of Real Estate Investment Fiduciaries, as of Jan. 24, 2017



# Disproportionate Risk

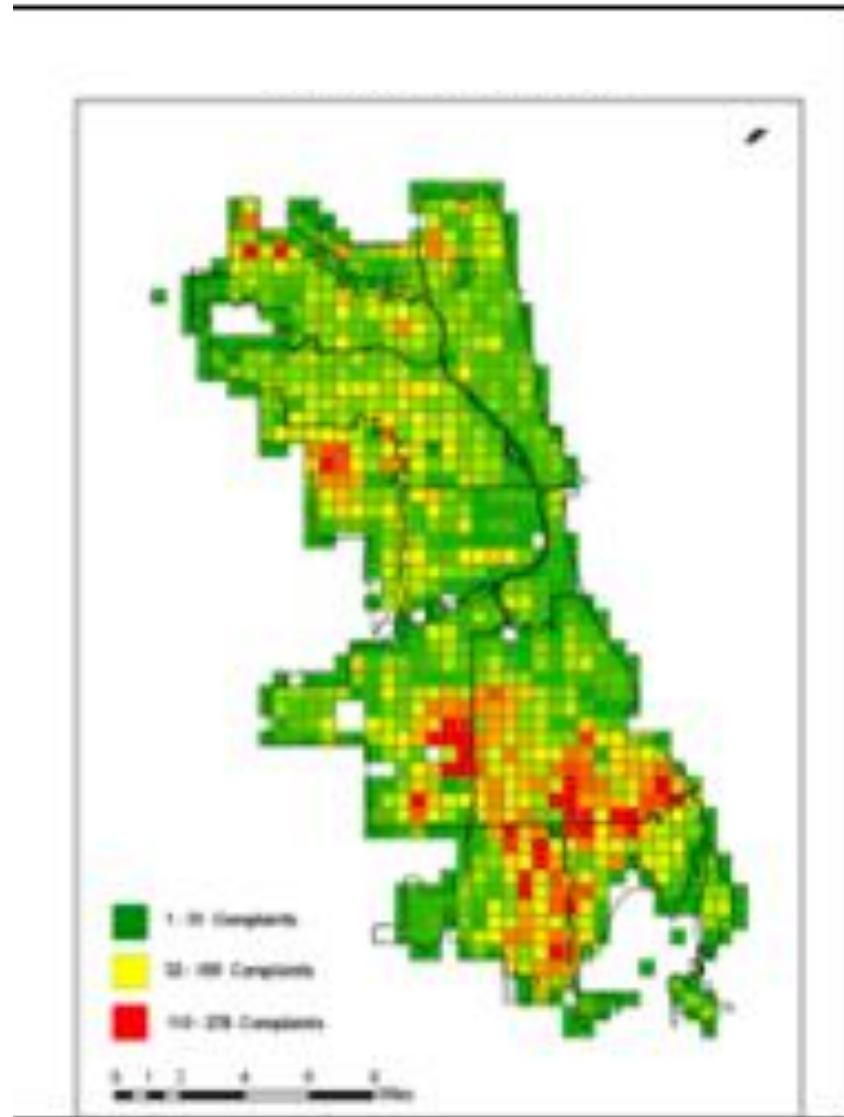


Social Vulnerability Index 2010-2014  
 Data from the American Community Survey 2010-2014, 5 Year Census Data Product - ACS 2010-2014

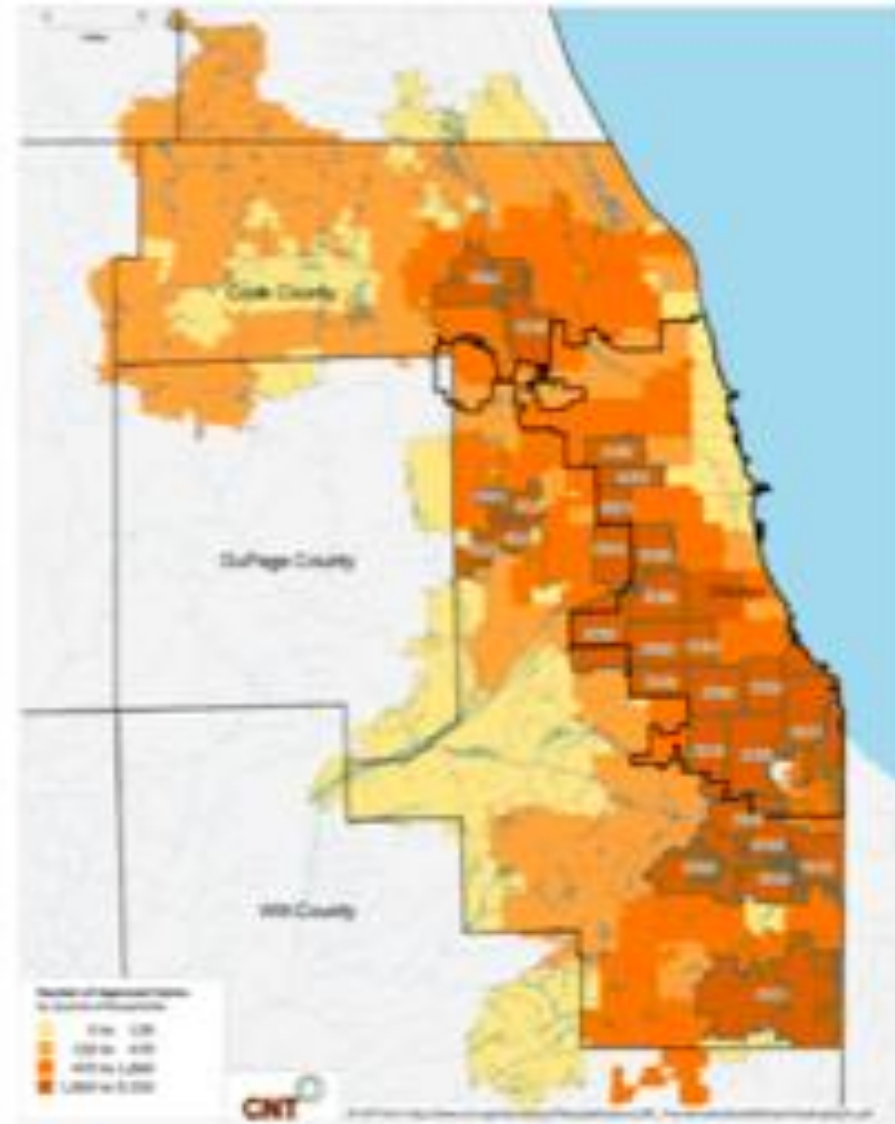


# Variable Vulnerabilities

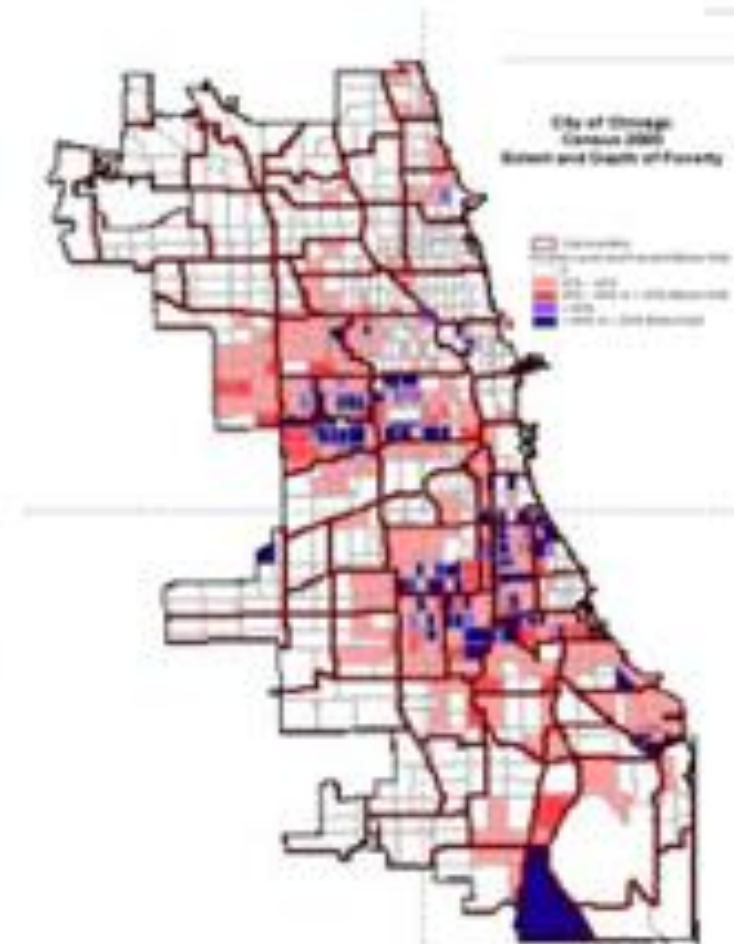
## Water in Basement








## Extreme Heat



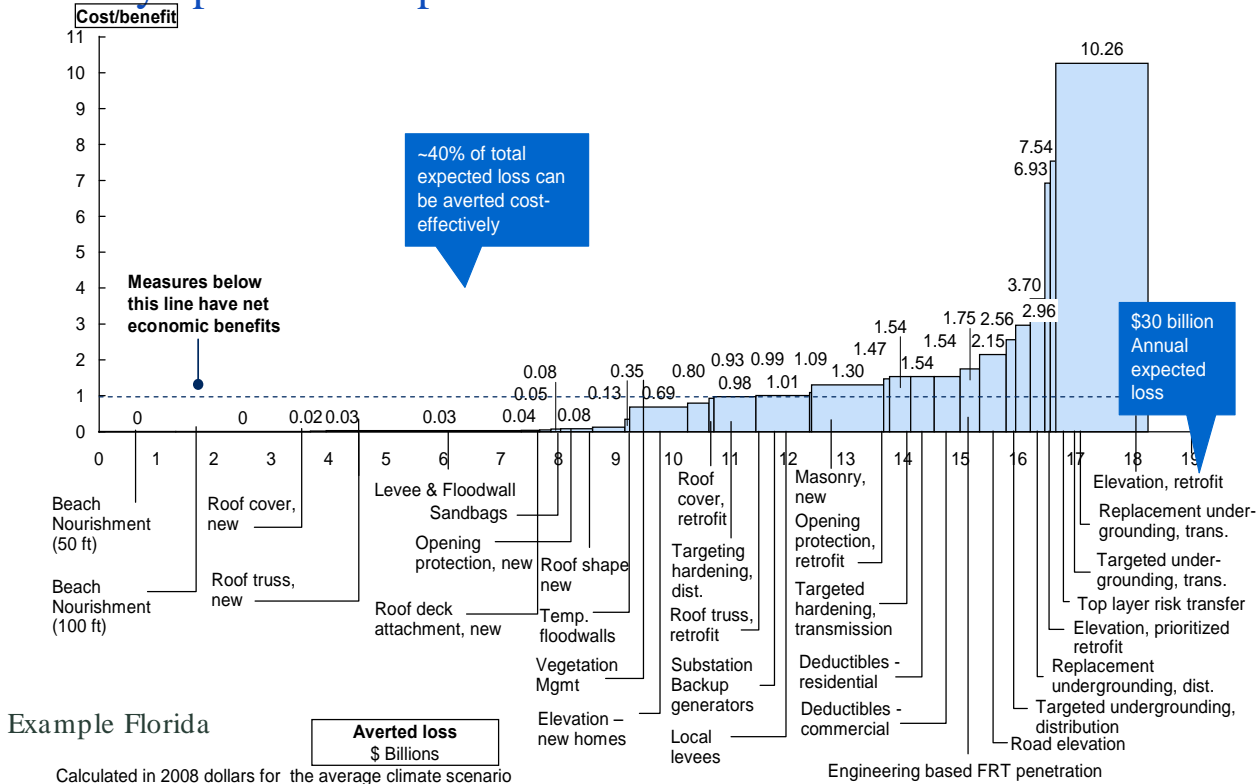
## Poverty



# City Pragmatism: Benefit Cost Ratios

National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		
Overall Hazard Benefit-Cost Ratio		
	Federally Funded	Beyond Code Requirements
 Riverine Flood	7:1	5:1
 Hurricane Surge	Too few grants	7:1
 Wind	5:1	5:1
 Earthquake	3:1	4:1
 Wildland-Urban Interface Fire	3:1	4:1

Locally specific adaptation cost / benefit curve





# City Climate Resilience Networks

- Compact of Mayors/C40
- 100 Resilient Cities
- World Mayors Council for Climate Change
- Durban Adaptation Charter,
- Urban Sustainability Directors Network
- US Conference of Mayors Climate Protection Agreement
- ICLEI - Local Governments for Sustainability/Carbounn





# Stress Test & Create Case for Resilience and Risk Mitigation

1. Fully investigate climate-risk needs and solution options
2. Describe 1 in 100/200/500 year event impact with and without project
3. Clearly define *data-rich* scope, delivery program and budget requirements
4. Consider commercial viability, possible funding options and applicable laws
5. Identify path to meet regulatory, permit and land rights

# Clients & Partners



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Communities



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