

Insuring Climate Change

Or statistics that matter

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What is Insurance?

Pooling / sharing of risk

Concept began in 2nd Century with Babylon and Chinese traders

Santa Maria in 1492:

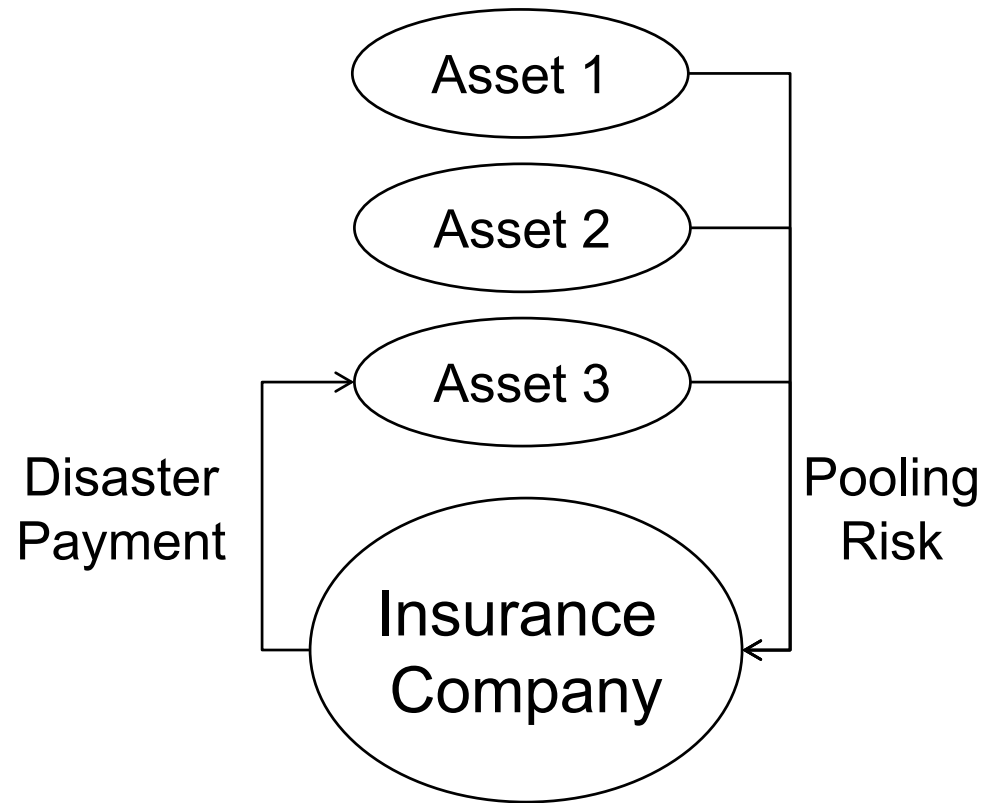
- 17.7 m

Largest ship of 1400s:

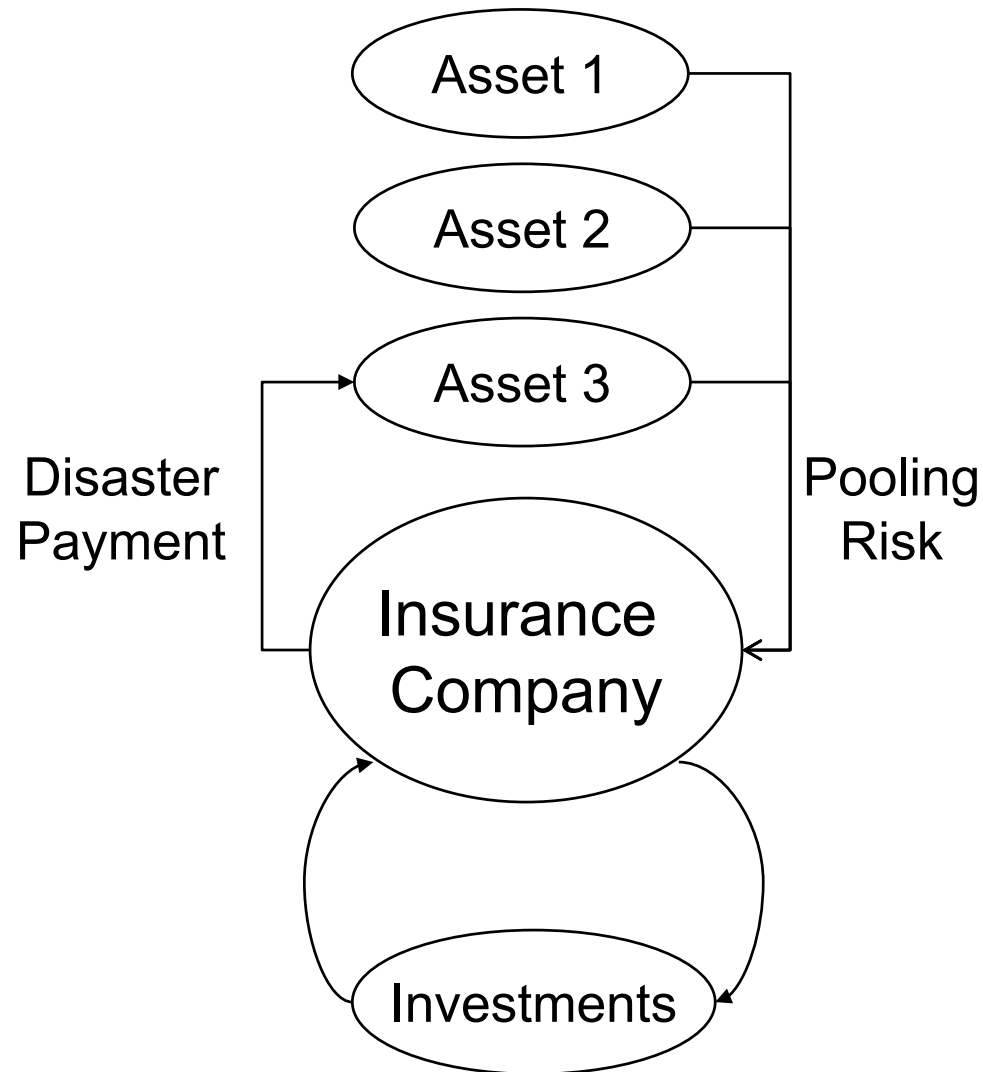
- 66.5 m



How Insurance Works

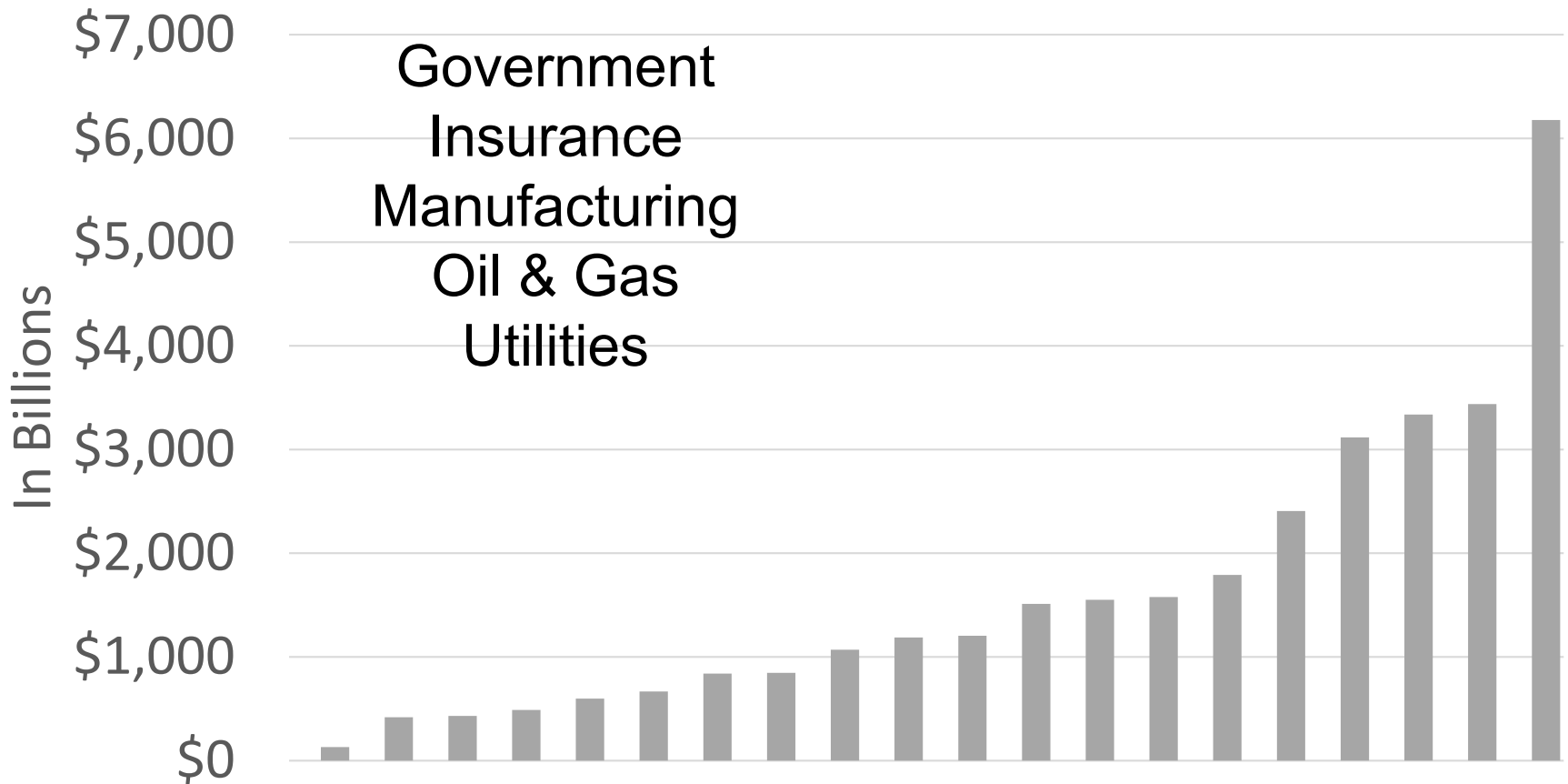


How Insurance Works



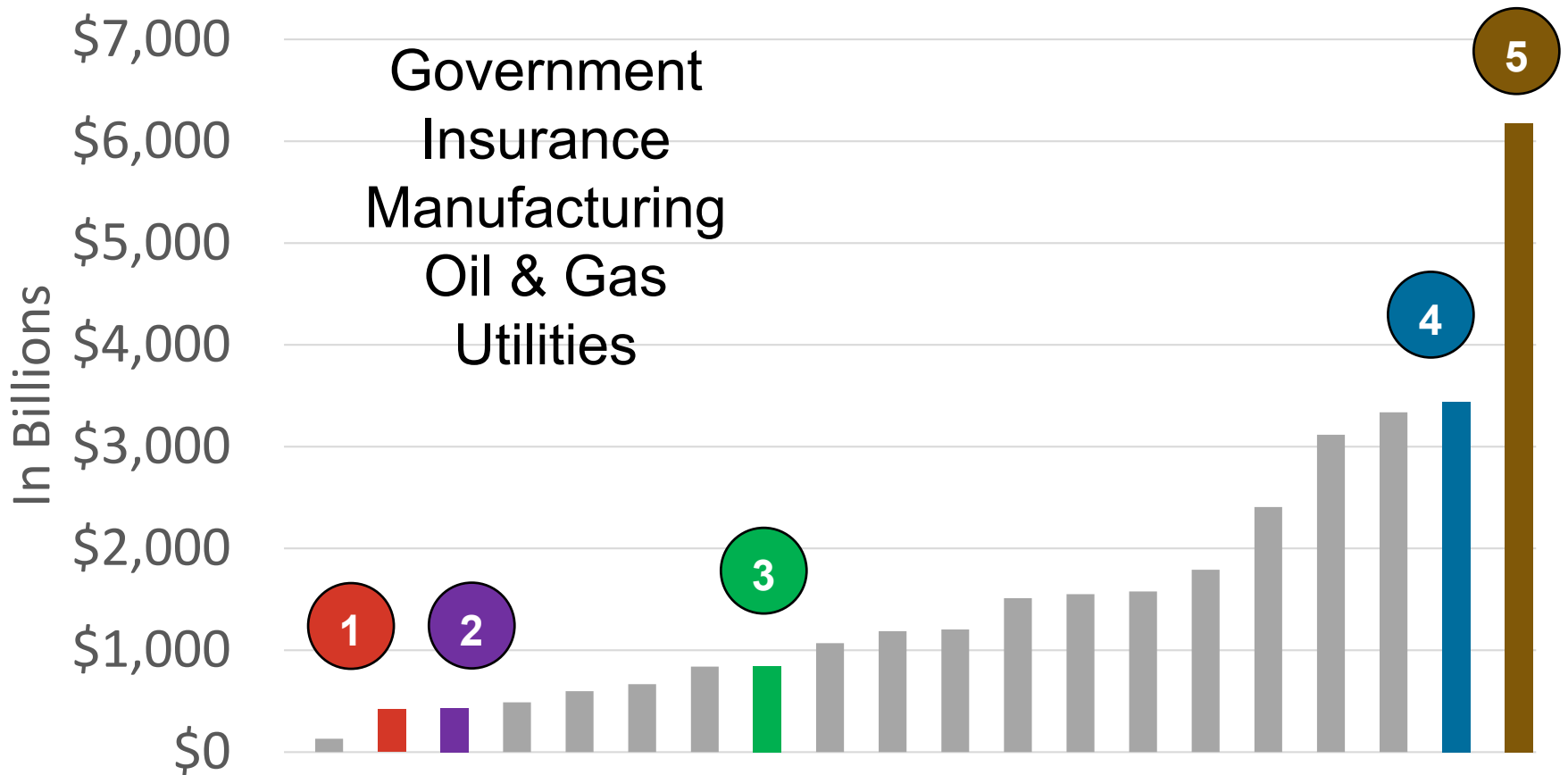
What industry?

GDP by Industry 2014



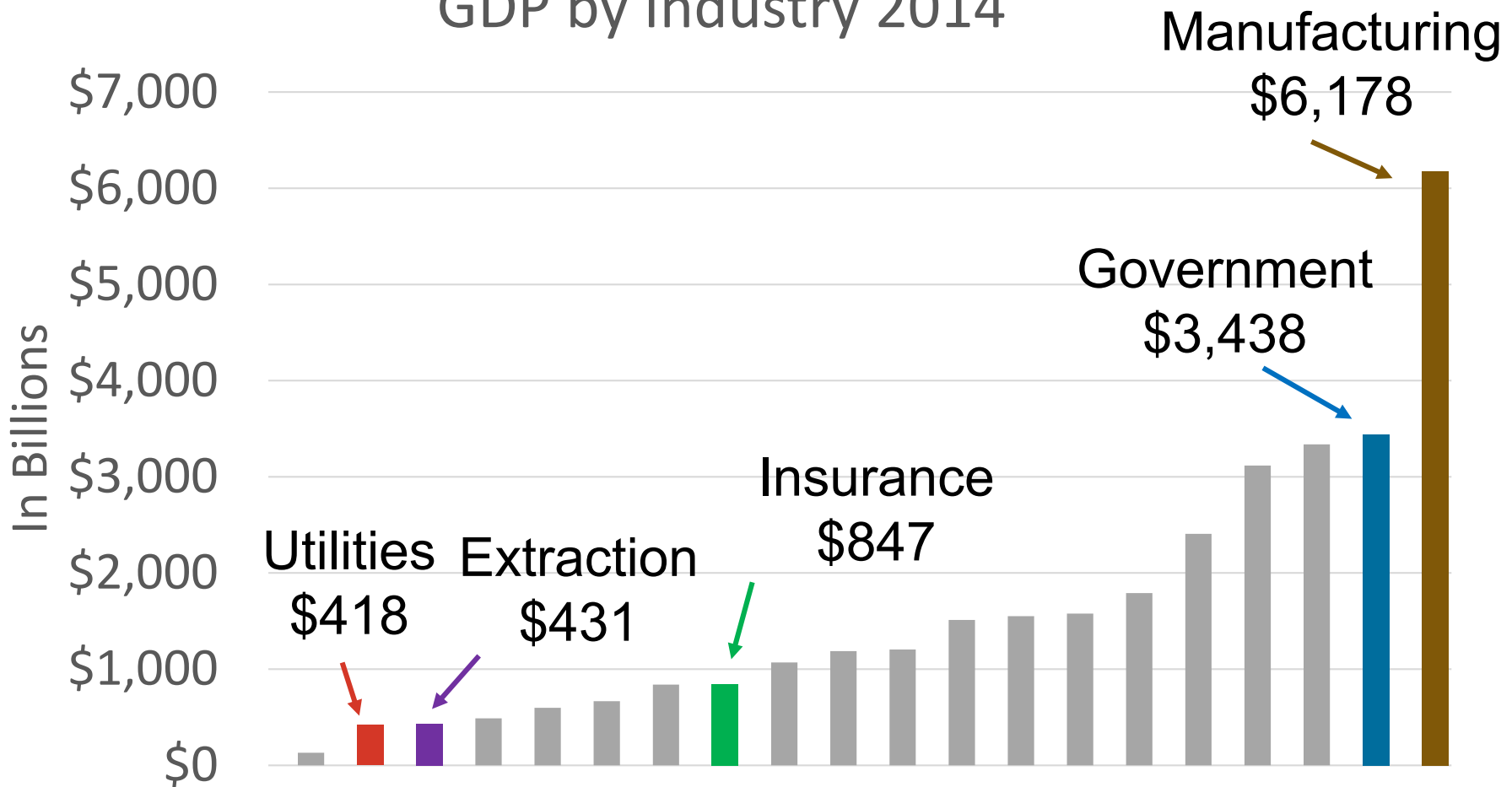
What industry?

GDP by Industry 2014



What industry?

GDP by Industry 2014



How much cash do they sit on?

Table 1 **World insurance in 2008**

Region	Premium volume (USD million)	Real growth
America	1,450,749	-2.4
North America	1,345,816	-3.1
Latin America and Caribbean	104,933	8.4
Europe	1,753,200	-6.2
Western Europe	1,656,281	-6.9
Central and Eastern Europe	96,919	9.0
Asia	933,358	6.6
Japan and newly industrialised Asian economies	675,109	3.8
South and East Asia	229,036	16.3
Middle East and Central Asia	29,213	4.7
Oceania	77,716	8.6
Africa	54,713	4.9
World	4,269,737	-2.0

The global state of sustainable insurance UNEP Finance initiative 2009

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The global state of sustainable insurance UNEP Finance initiative 2009

Rank ↕	Country/Region ↕	GDP (Millions ↕ of \$US)
	<i>World</i>	70,201,920
1	 United States	14,991,300
2	 China	7,203,784
3	 Japan	5,870,357
4	 Germany	3,604,061
5	 France	2,775,518
6	 Brazil	2,476,651
7	 United Kingdom	2,429,184
8	 Italy	2,195,937
9	 India	1,897,608
10	 Russia	1,857,770
11	 Canada	1,736,869
12	 Australia	1,515,468
13	 Spain	1,478,206
14	 Mexico	1,155,206
15	 South Korea	1,116,247

Premiums change due to behavior

Ben Franklin organized US's first fire department



Premiums change due to behavior

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Ben Franklin imported London's fire insurance system



Premiums change due to behavior

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Poorly built houses were not insured



Result: Encouraged buildings to meet existing building codes for fire safety

Coupled threats?

What if this:



Causes this?



How does climate change cause damage to...



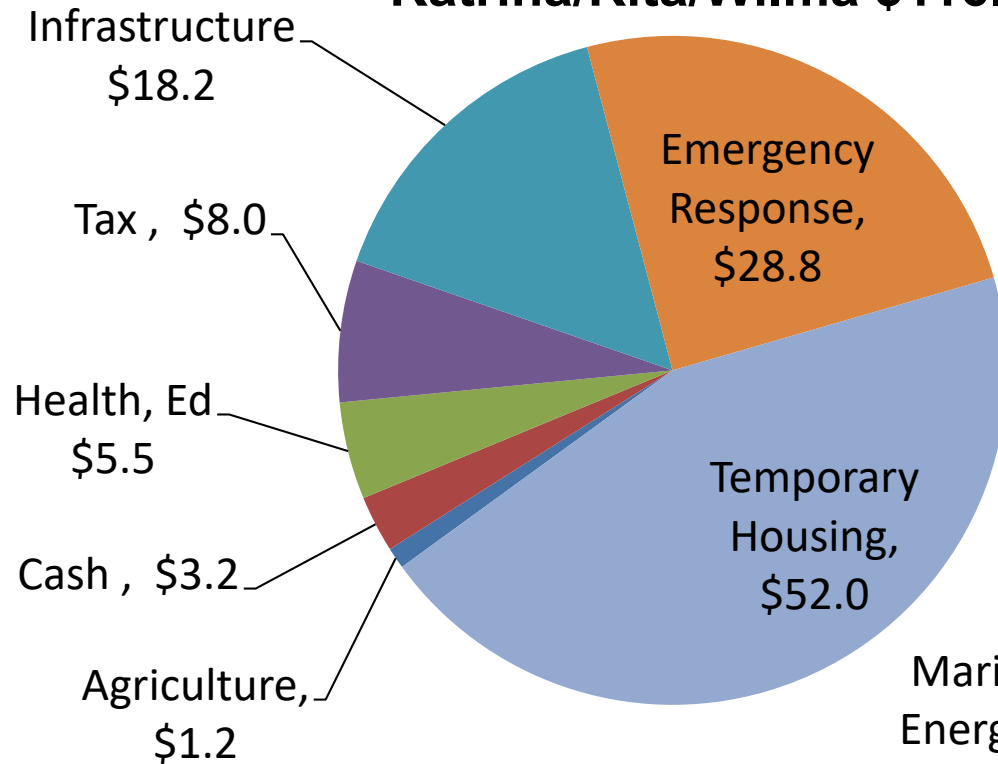
How does climate change cause damage to...

- Real Estate –
- Life –
- Health –
- Auto –
- Municipal Bonds –
- Business Continuity –
- Investments –
- Agriculture –
- Etc...



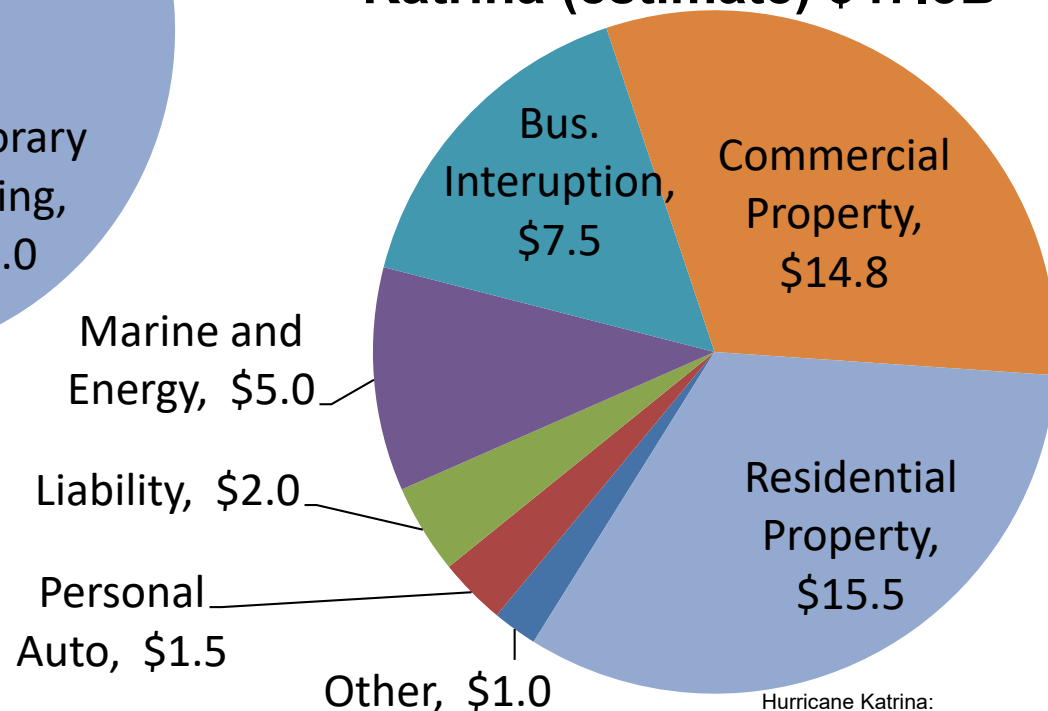
Catastrophes

Federal Response to Katrina/Rita/Wilma \$116.9B



Matt Fellowes and Amy Liu **FEDERAL ALLOCATIONS
IN RESPONSE TO KATRINA, RITA and WILMA: AN
UPDATE** THE BROOKINGS INSTITUTION

Insurance Response to Katrina (estimate) \$47.3B



Hurricane Katrina:
Analysis of the Impact on the
Insurance Industry Towers Perrin 2005

Loss events worldwide 2014

Percentage distribution

980 Loss events



7,700 Fatalities





Overall losses US\$ 110bn





Insured losses US\$ 31bn



 **Geophysical events**
(Earthquake, tsunami,
volcanic activity)

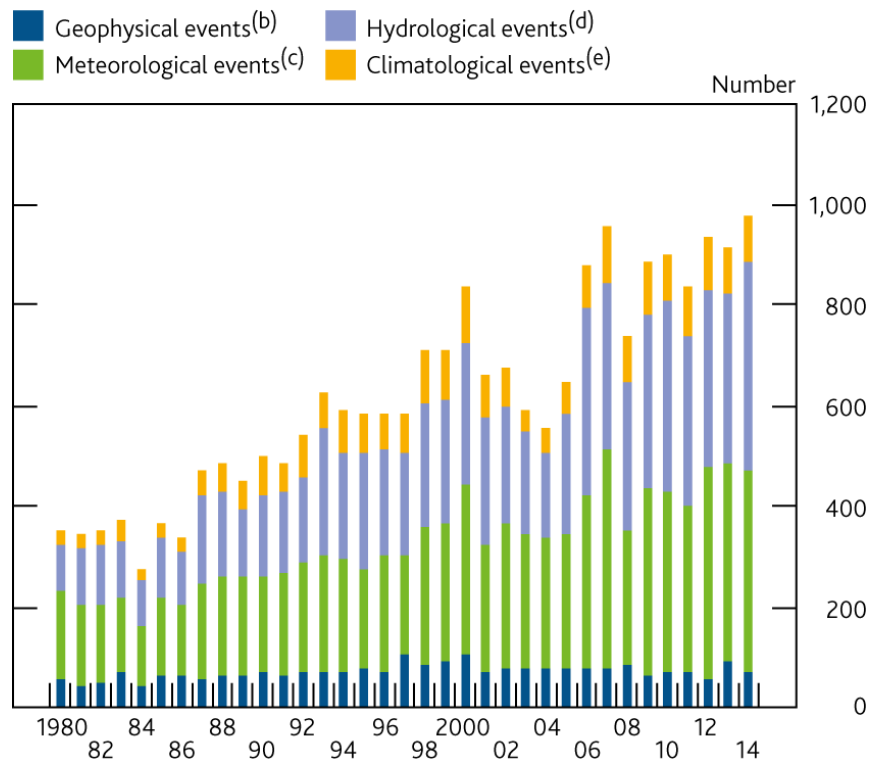
 **Meteorological events**
(Tropical storm, extratropical
storm, convective storm,
local storm)

 **Hydrological events**
(Flood, mass
movement)

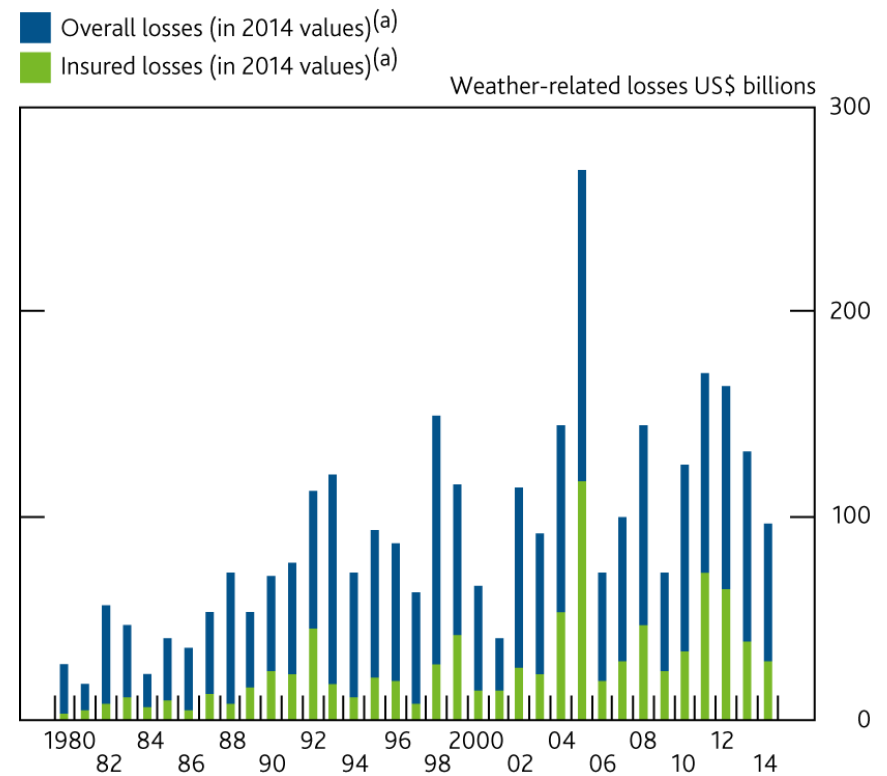
 **Climatological events**
(Extreme temperature,
drought, forest fire)

Weather-related Losses

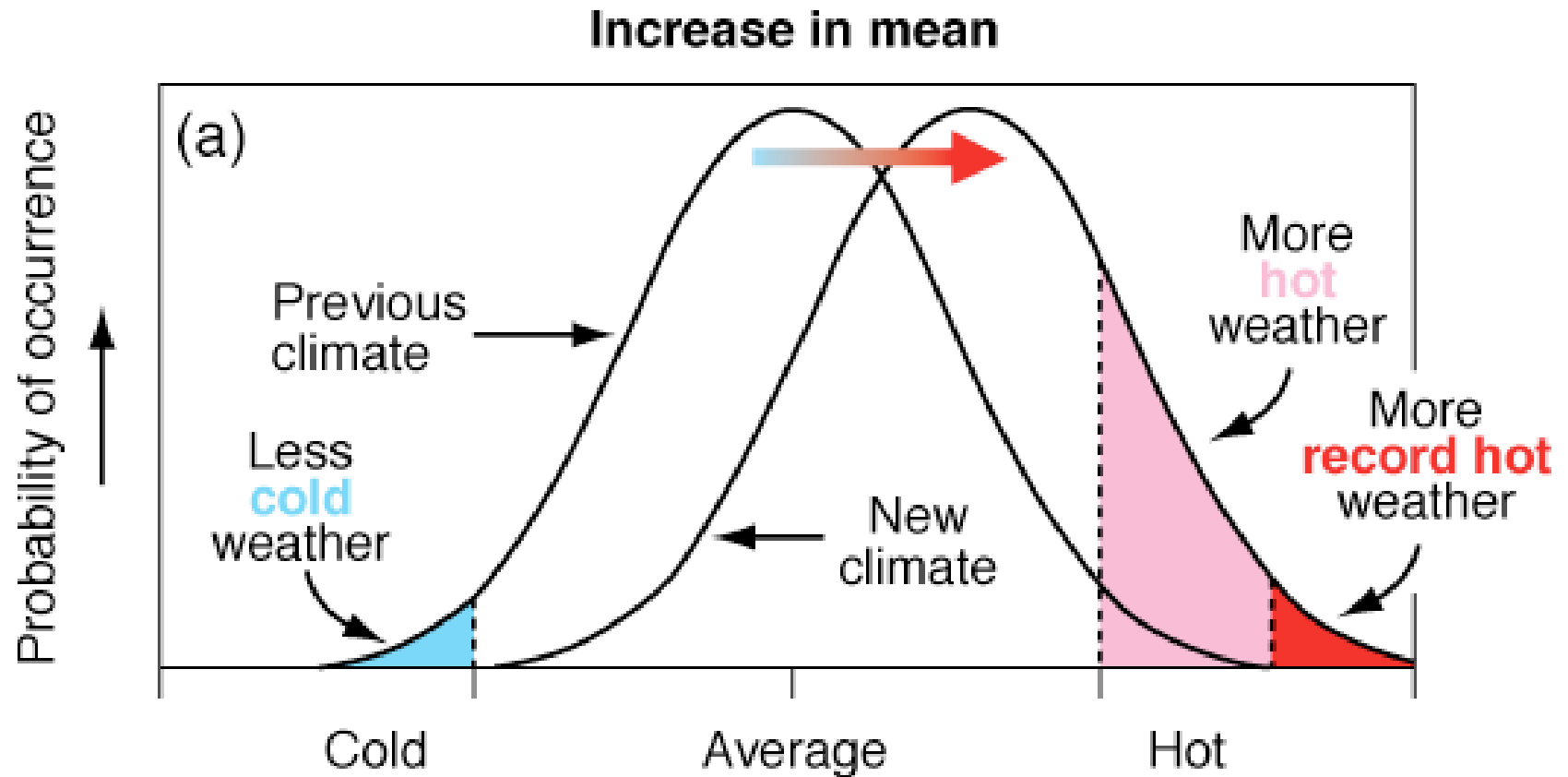
Weather-related and geophysical 'loss events' worldwide (1980–2014)



Weather-related loss events worldwide (1980–2014)

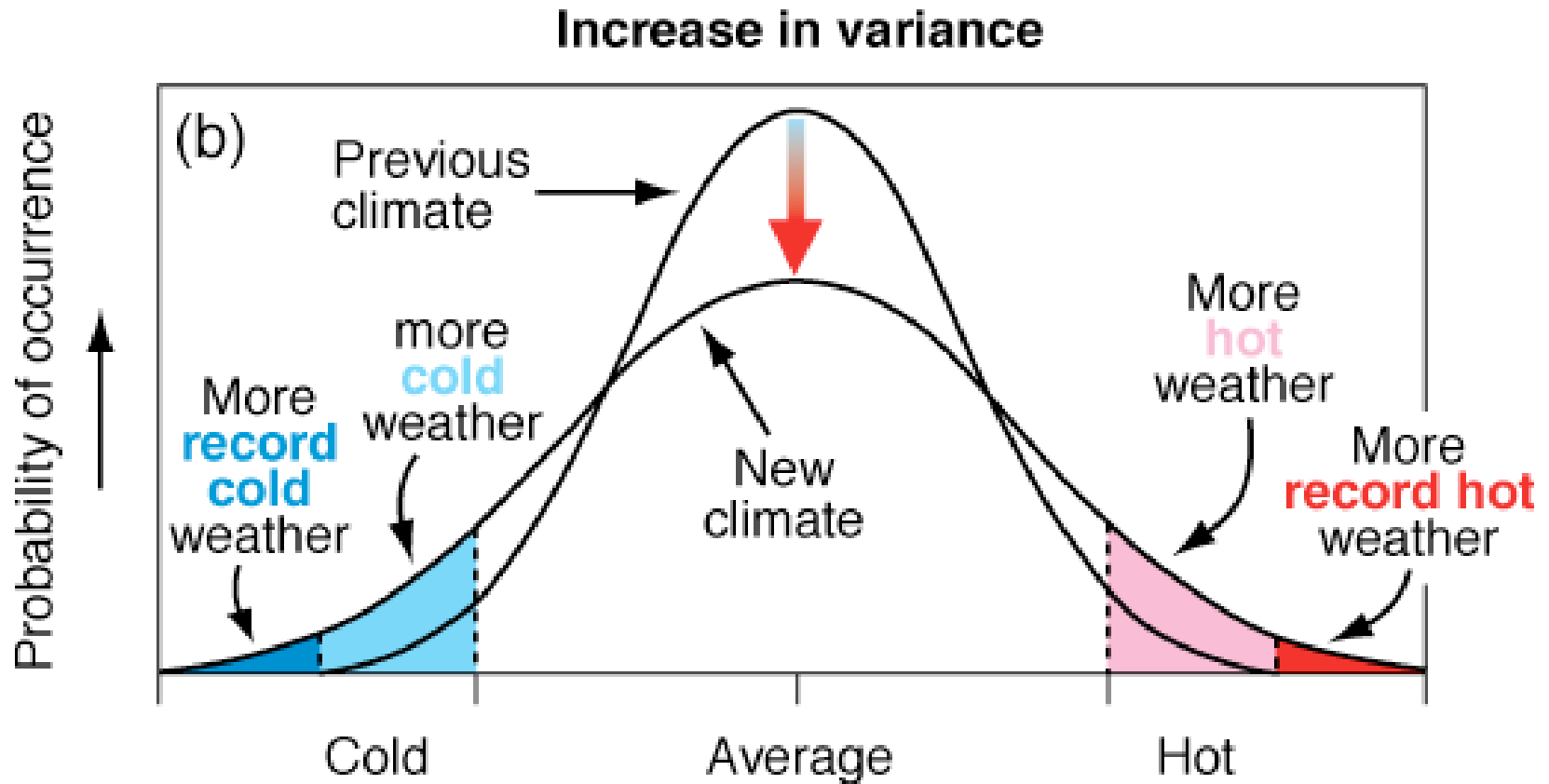


How Weather Changes



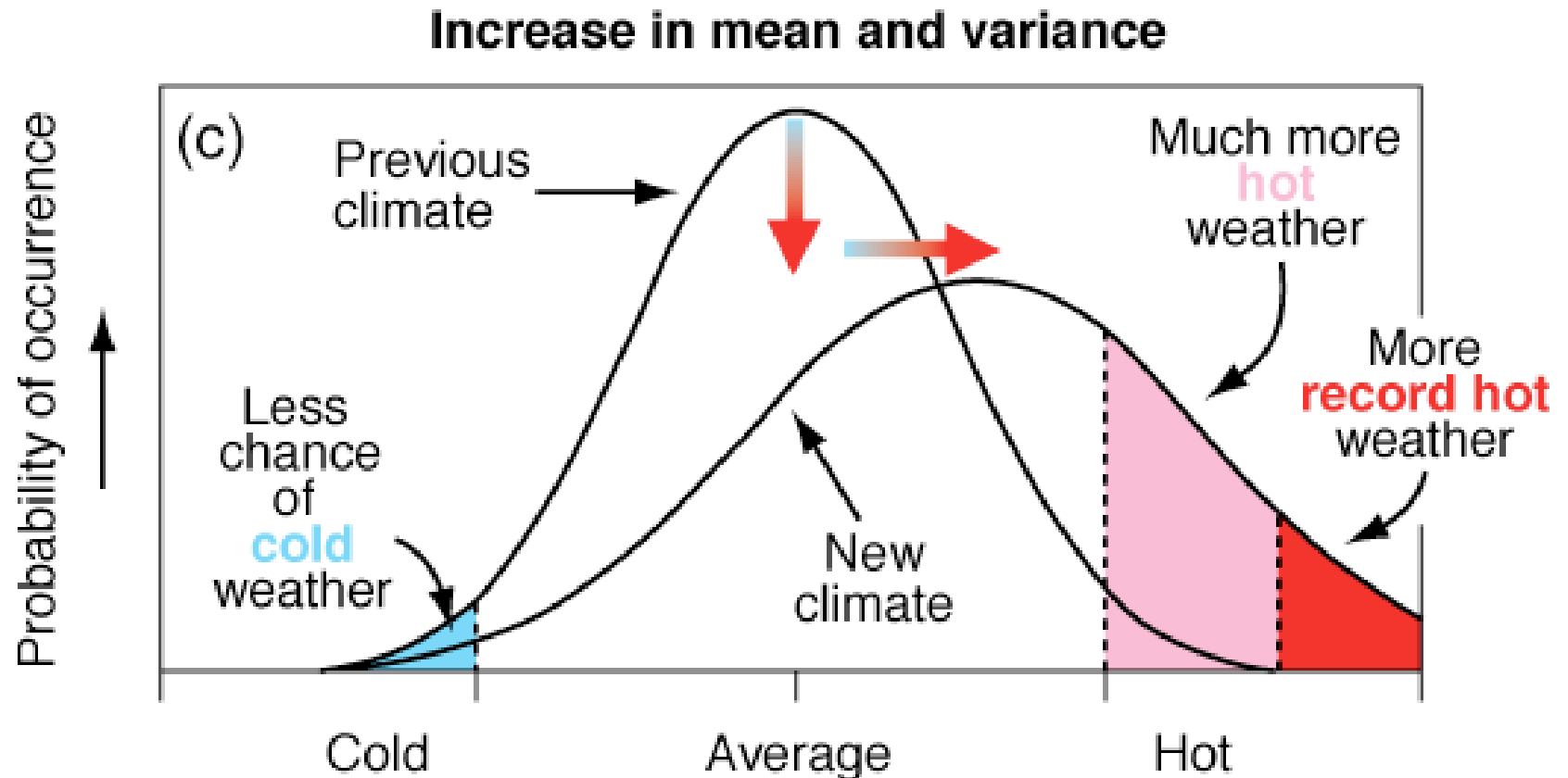
Determining the impact of Climate Change on Insurance Risk and the Global Community: Phase 1: Key Climate Indicators. American Academy of Actuaries' Property/Casualty Extreme Events Committee 2012

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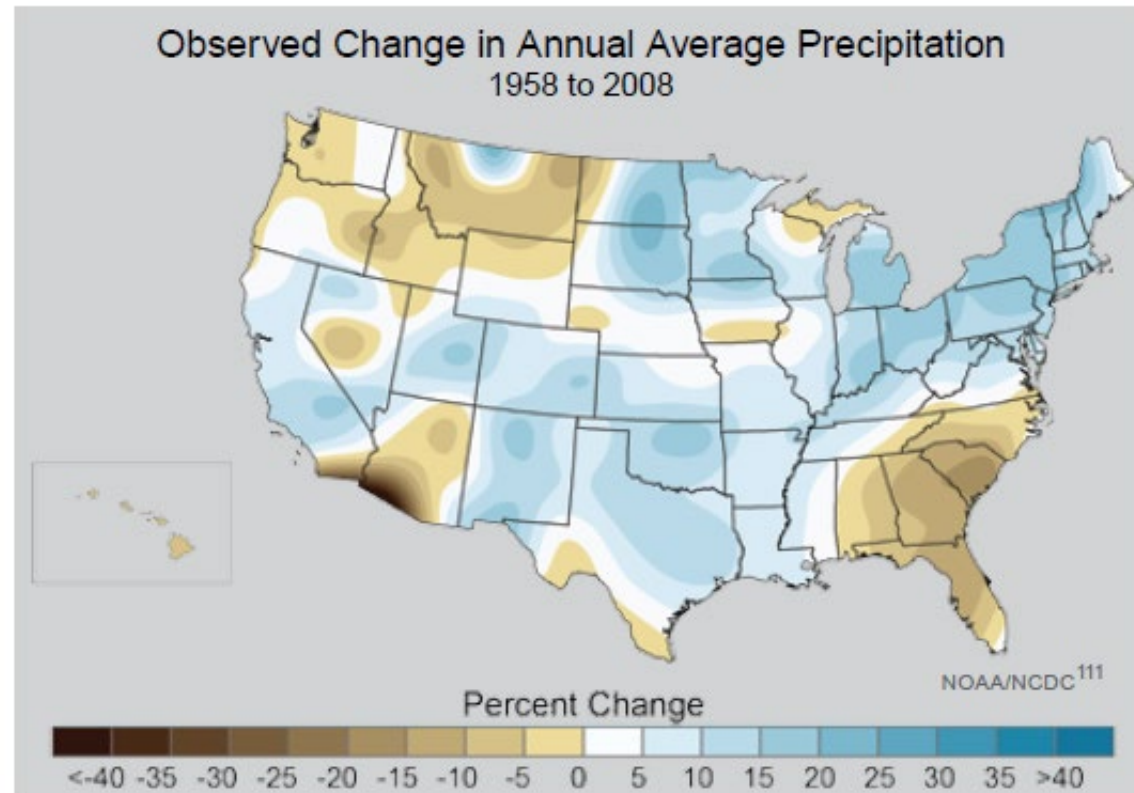


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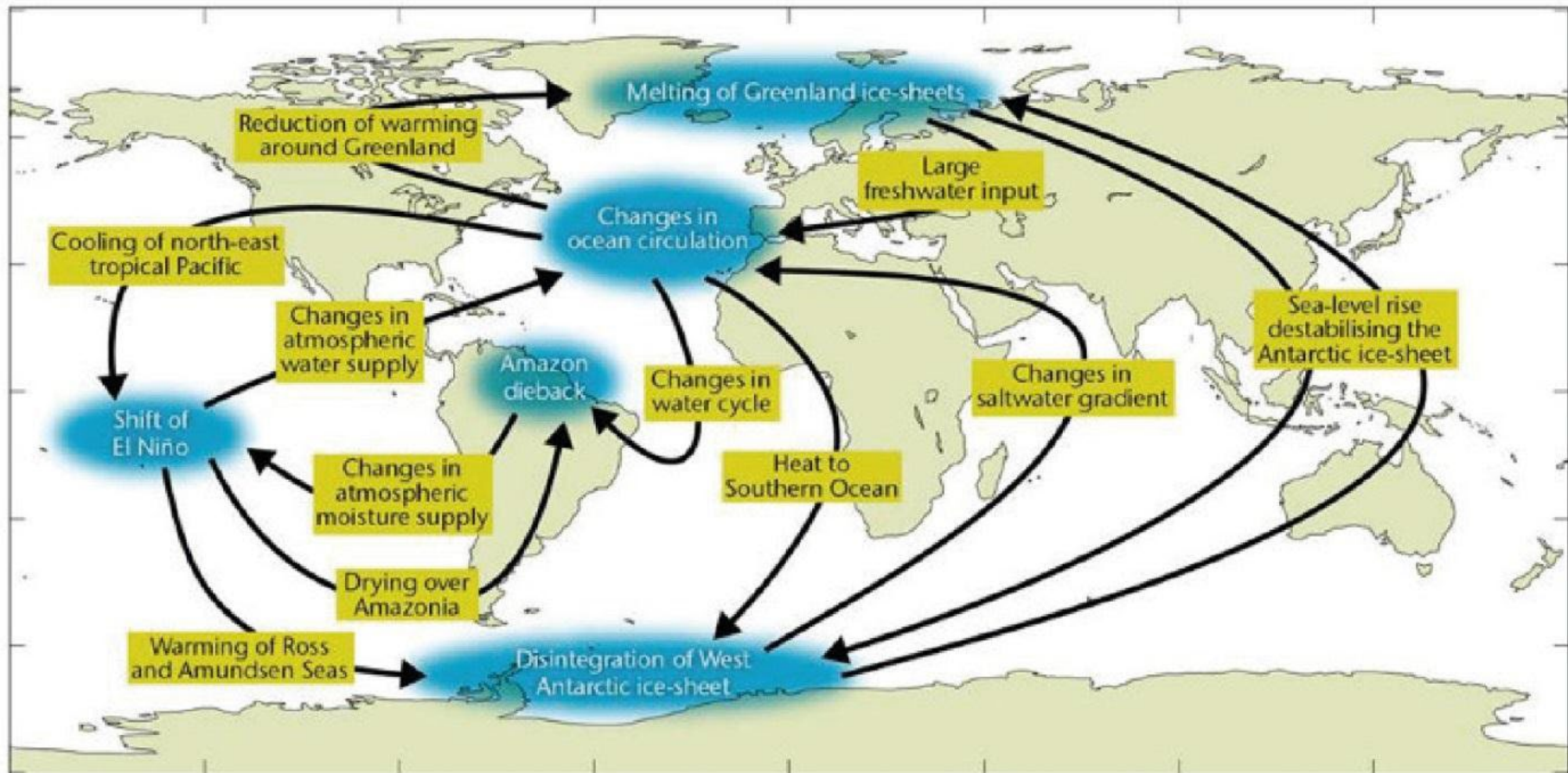
Uncertainty

- 1) Not enough data (white parts of map)
- 2) Noisy data (increases and decreases of rain)

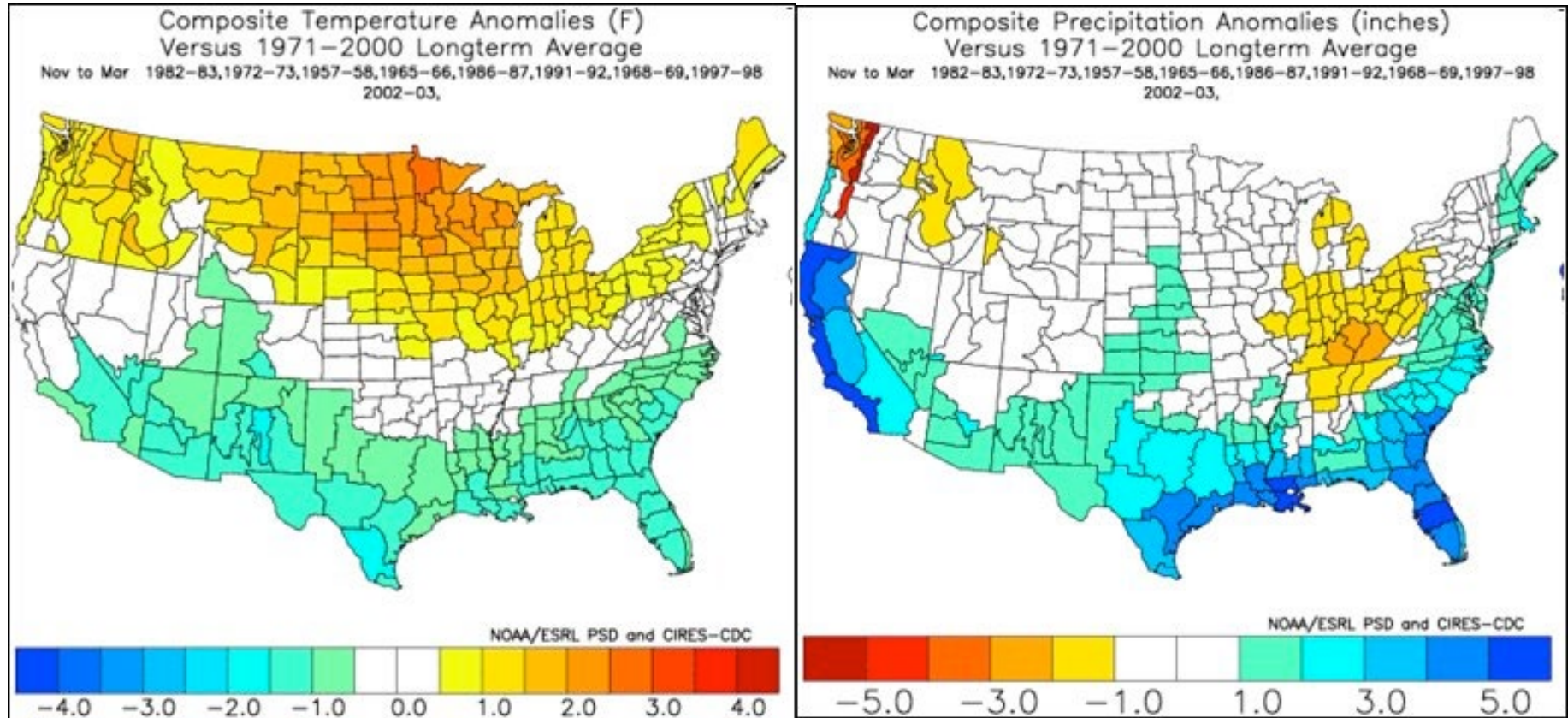
Unfortunately,
“uncertainty”
gets interpreted as
“does not exist”



Global *CHANGE* of weather



Anomalous weather (1971-2000)



Determining the impact of Climate Change on Insurance Risk and the Global Community: Phase 1: Key Climate Indicators. American Academy of Actuaries' Property/Casualty Extreme Events Committee 2012

The Role of Insurance

- “The commercial success of insurers, reinsurers, lenders and asset managers relies on their ability to identify, quantify and manage risk”

-- *Advancing adaptation through climate information services SBI 2011*

- “Insurers have the potential, in keeping with their historical role, to be significant innovators in contributing to the solutions of climate change...”

-- *The Potential Impact of Climate change on Insurance Regulation*

The Role of Insurance

- Allianz, stated that climate change stands to increase insured losses from extreme events in an average year by 37 per cent within just a decade. Losses in a bad year could top US\$1 trillion.

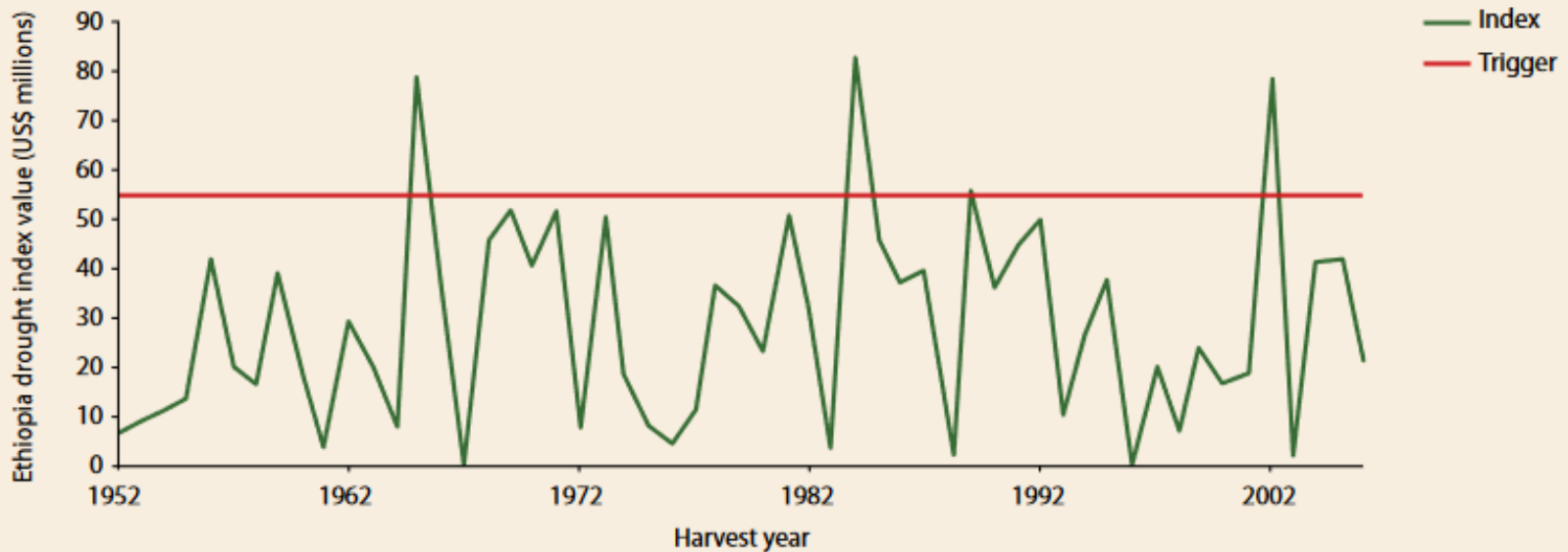
Reactive vs. Proactive Insurers



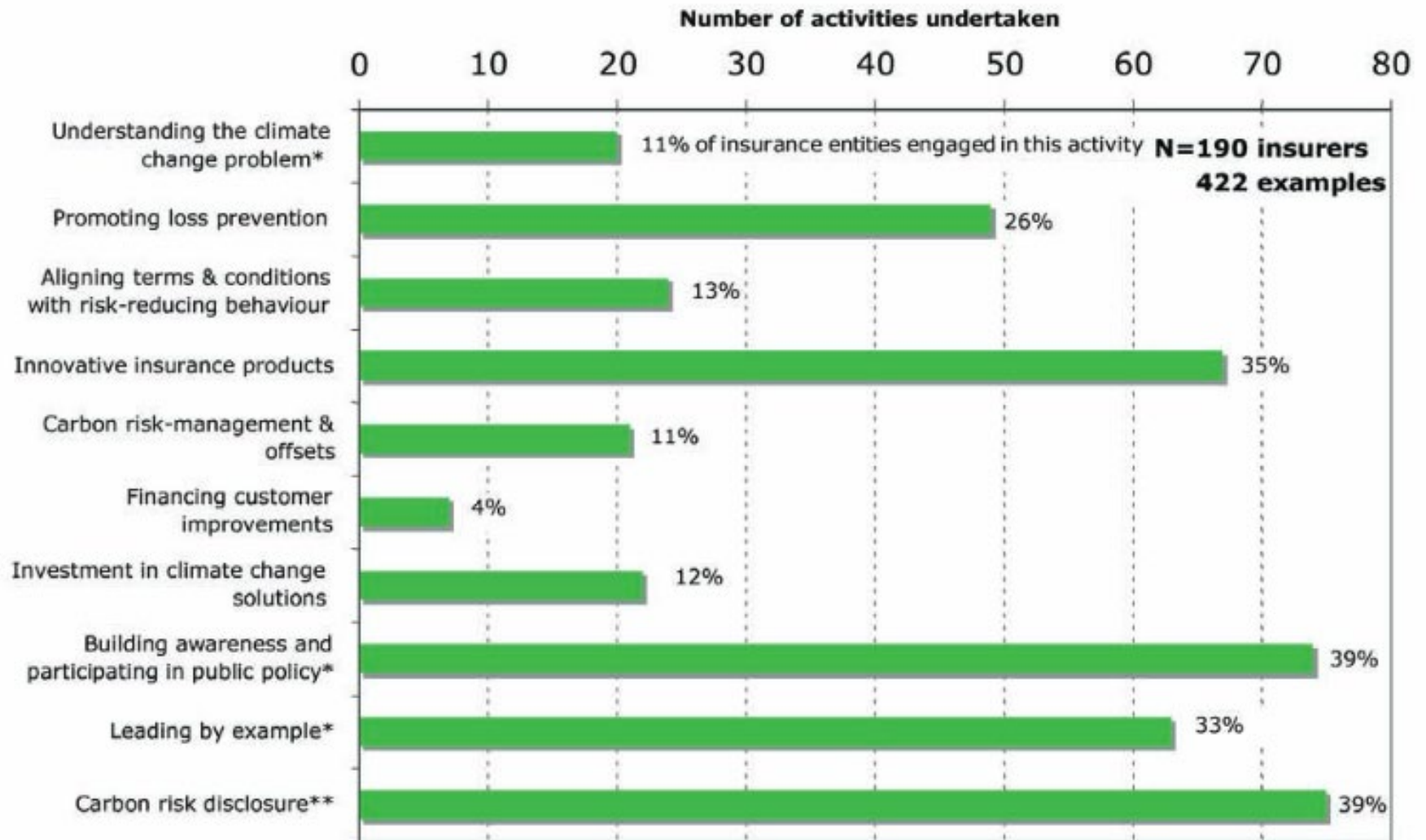
Index Insurance

Index insurance can be applied across a diverse range of weather-related risk problems, from loss of crops due to drought, to loss of livestock in harsh winter conditions, to losses resulting from hurricanes

The Ethiopia Drought Index, 1952–2006.



Evolution of Insurance Sector



Ways insurance companies change behaviors:

- CCRIF launches new excess rain product to protect its member countries against losses
- Pay-as-you-drive insurance products – *GMAC*
- Leading insurance CEOs Confirm Geneva Association Climate Risk Statement
- Facilitating carbon trading – *Aon*

The silent change agent that hits the bottom line

“ The insurance sector is uniquely positioned between two ends of the climate change spectrum – the causes and impacts. Insurers insure carbon-intensive industries as well as homes, autos and pollution-emitting airplanes that are some of the primary causes of anthropogenic greenhouse gas emissions”

-- The Potential Impact of Climate Change on Insurance Regulation

Thank You