Natural and Man-made Catastrophes in 2015

Calm Before the Storm?

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Natural and Man-made Catastrophes in 2015 – Calm Before the Storm?

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Josh Bradford

Senior Editor, Specialty Editorial

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Swiss Re

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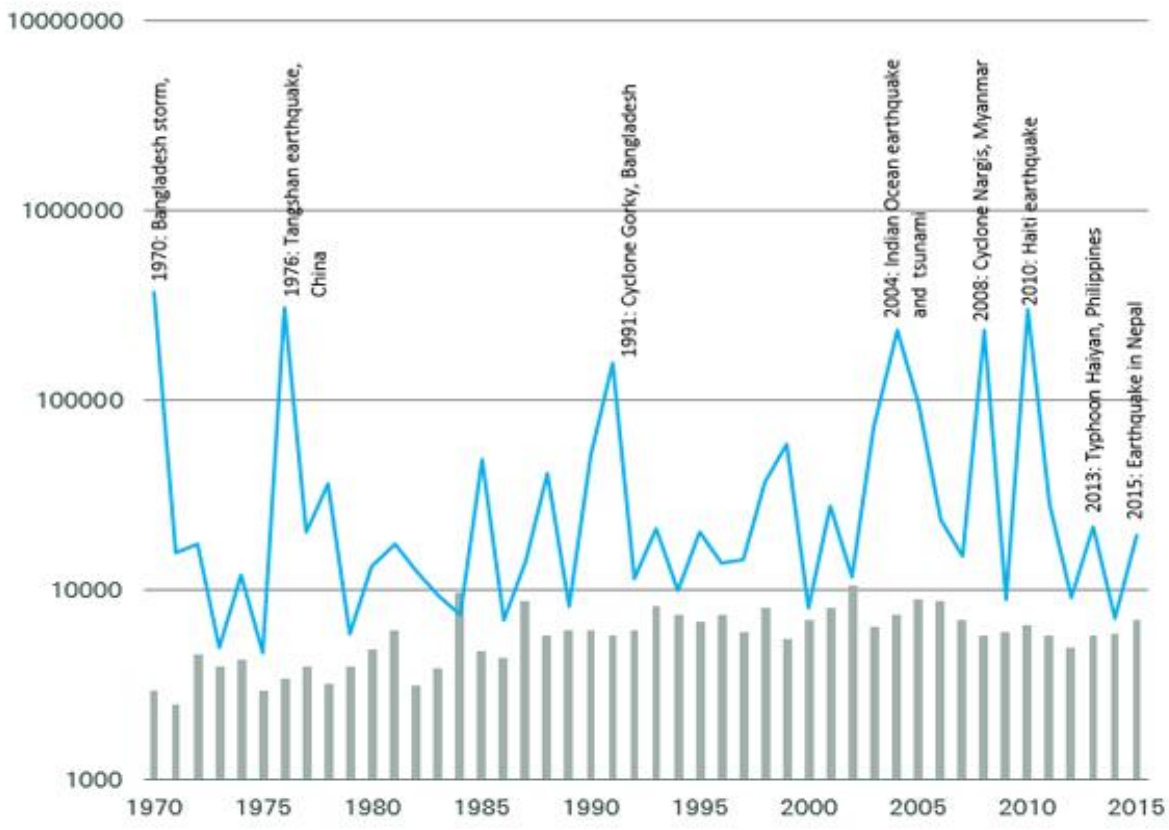
sigma

Natural catastrophes and man-made disasters in 2015
Swiss Re Economic Research & Consulting

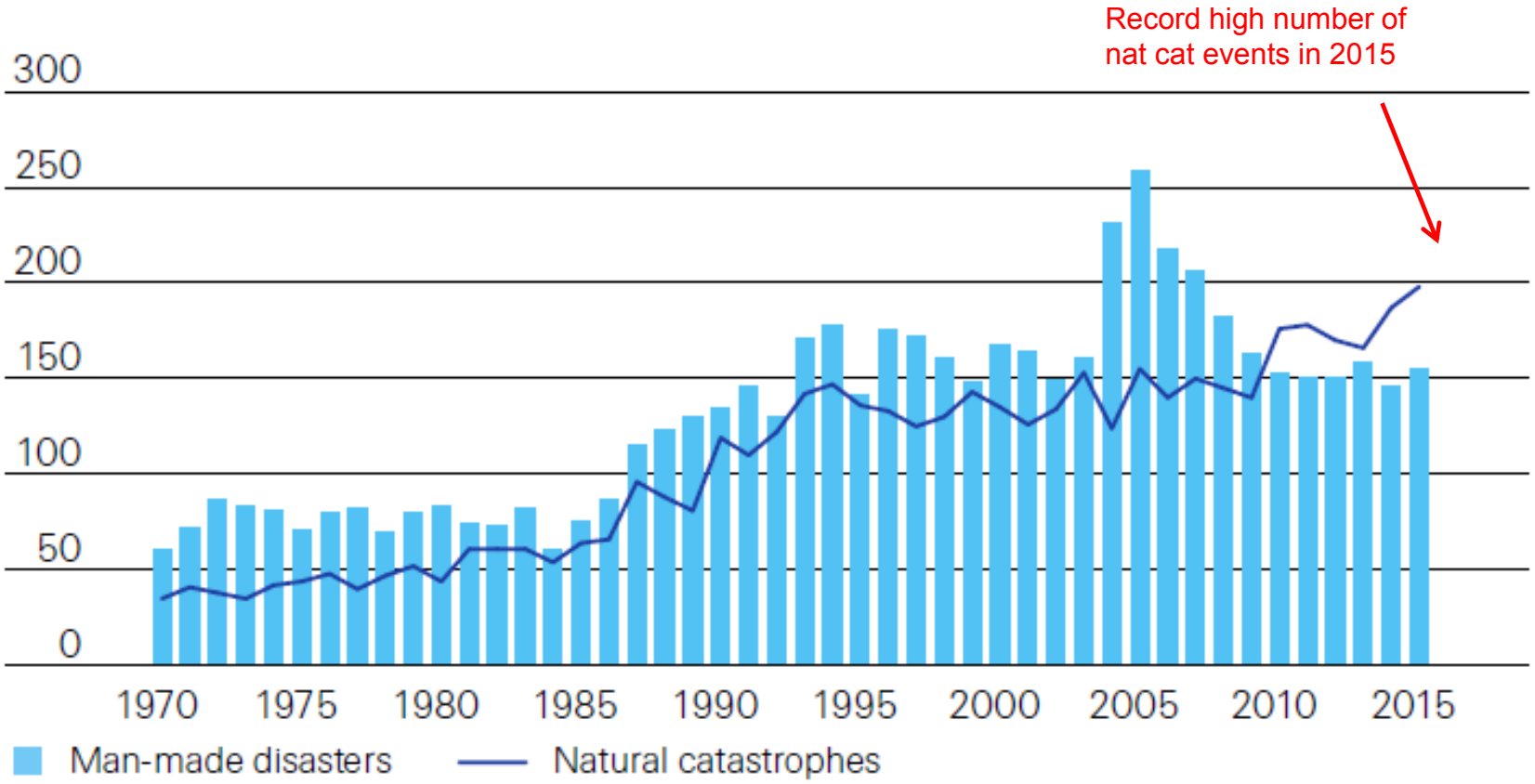
More than 26 000 casualties in 2015



More than 19 000 people were killed or went missing in natural catastrophes, the majority in the devastating earthquake that struck Nepal in April

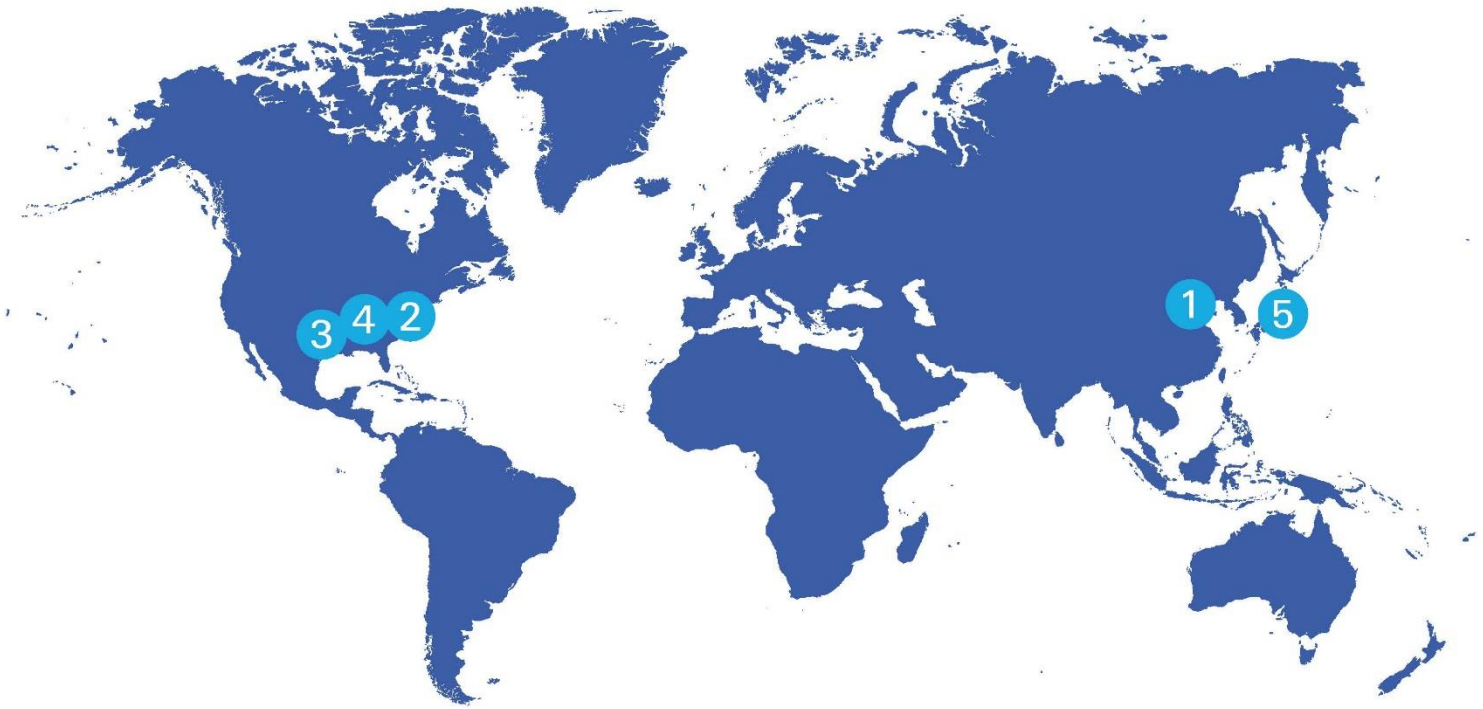
The number of natural catastrophe events continues to trend up

Number of natural and man-made catastrophe events, 1970 – 2015



Source: Swiss Re Economic Research & Consulting and Cat Perils.

Top five insured losses in 2015

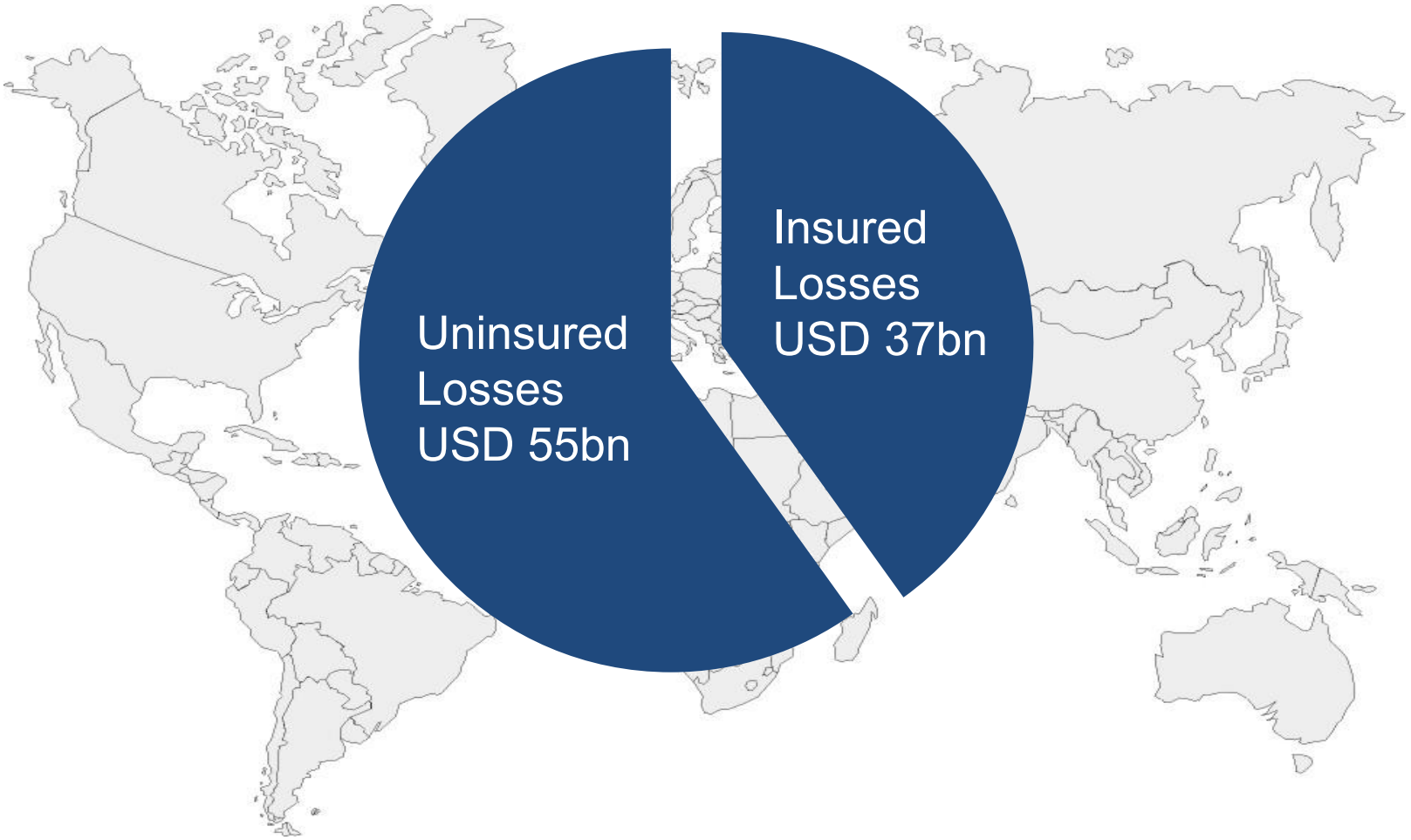


	China Tianjin 1	United States MA* 2	United States TX* 3	United States MO* 4	Japan Philippines North Korea 5
	Explosions at port	Winter storm	Thunderstorms	Thunderstorms	Typhoon Goni
Insured loss	2.5 to 3.5 bn USD	2.1 bn USD	1.5 bn USD	1.2 bn USD	1.2 bn USD
Victims	173	30	31	2	89

* Only worst affected country/state/place listed

Source: Swiss Re Economic Research and Consulting

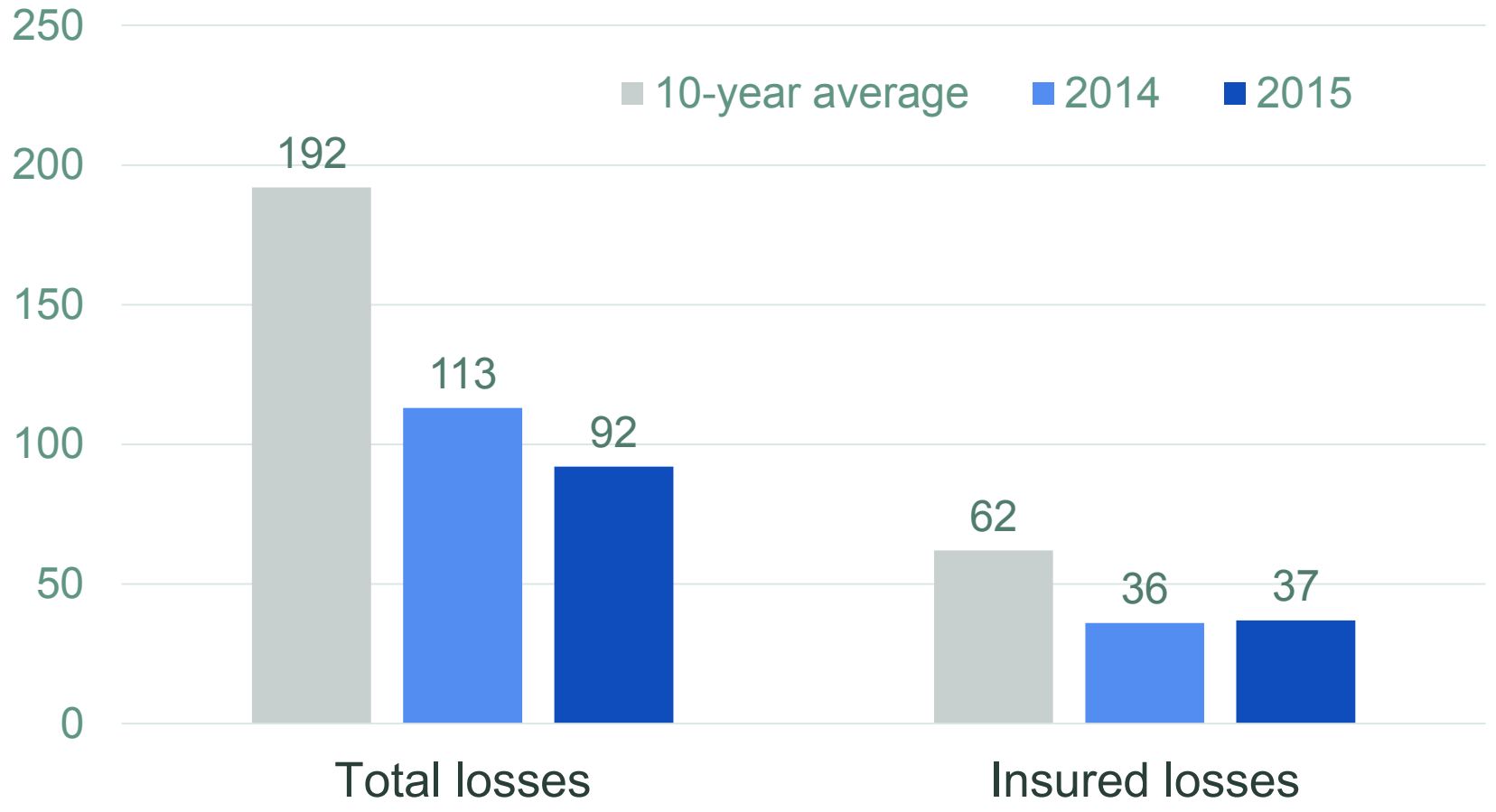
Global losses totalled 92 billion in 2015
with nearly 60% uninsured



Source: Swiss Re Economic Research & Consulting and Cat Perils.

Below-average losses in 2015 – no room for complacency

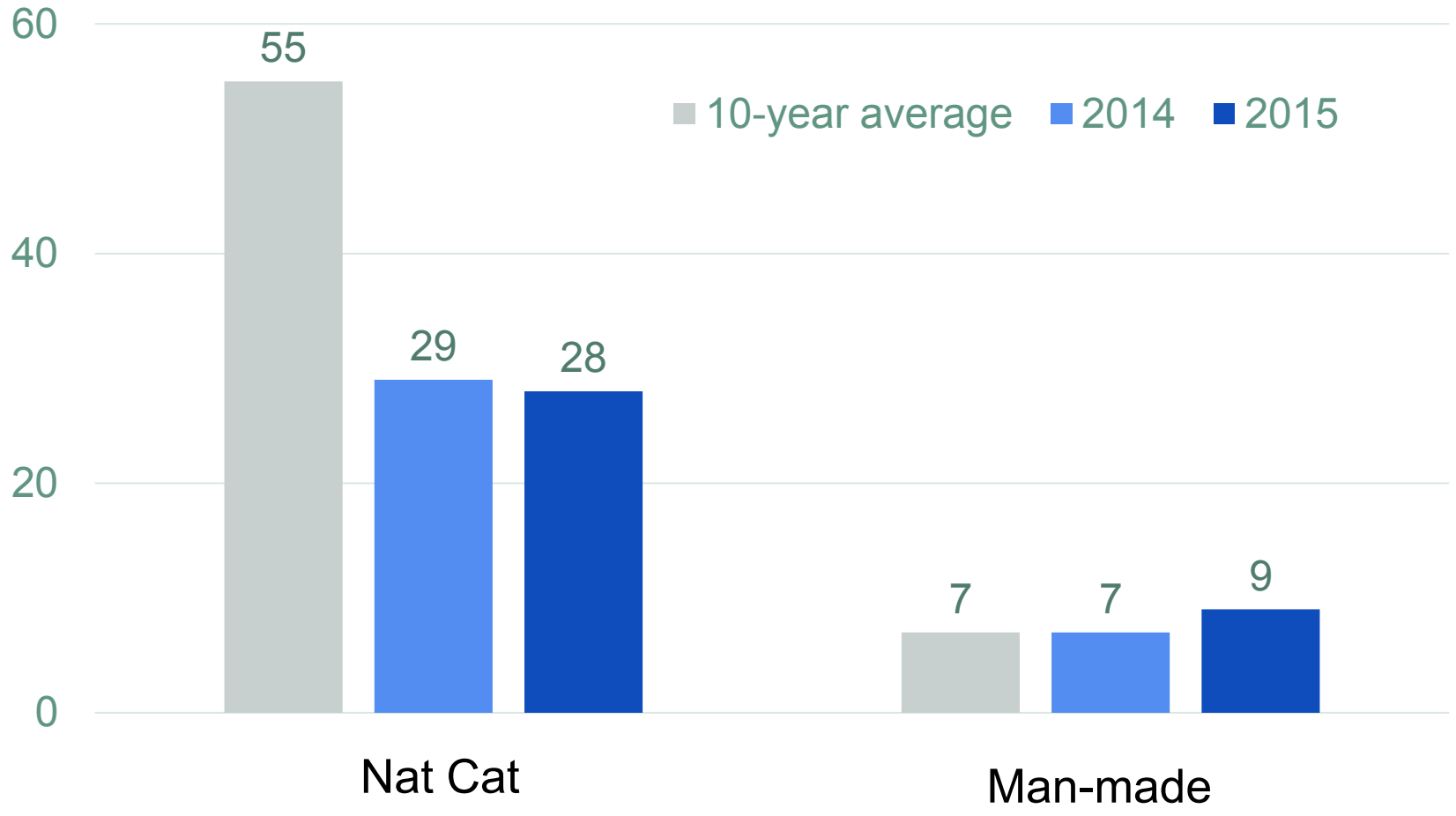
Total and insured losses in USD billion



Source: Swiss Re Economic Research & Consulting and Cat Perils.

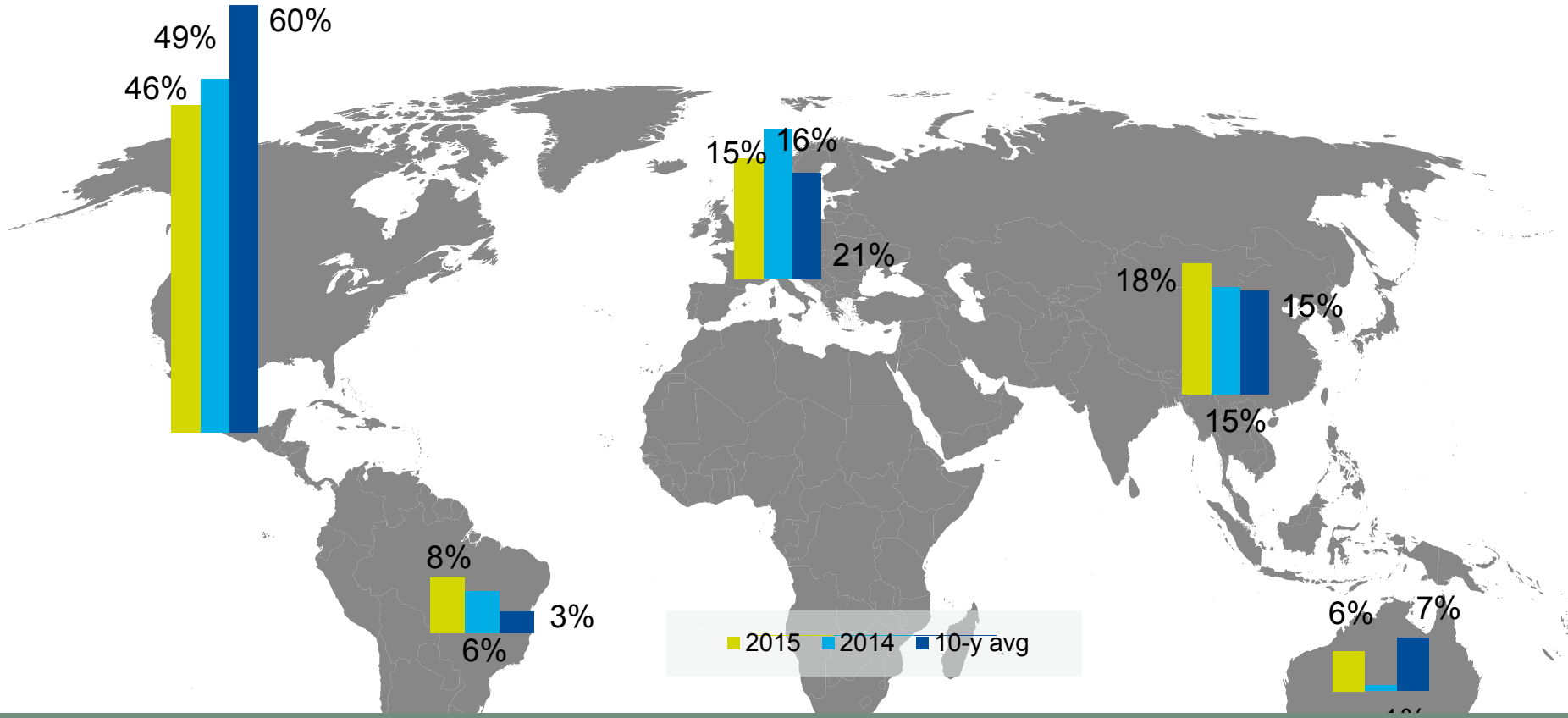
Man-made losses were up

Insured losses in USD billion



Source: Swiss Re Economic Research & Consulting and Cat Perils.

North America faced highest insured losses

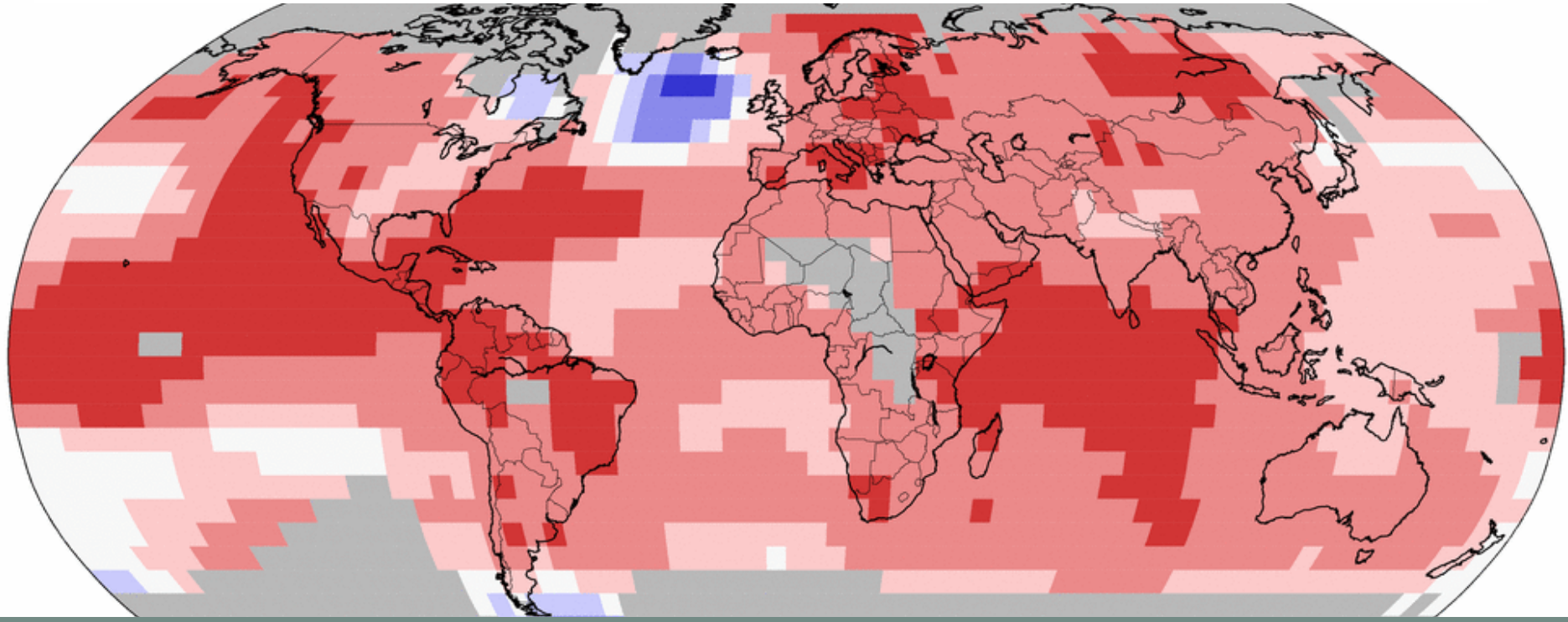


2015 was the 10th year in succession that no major hurricane made US landfall, the longest stretch since the 1860s

Source: Swiss Re Economic Research & Consulting and Cat Perils.

Global weather patterns deviated from climate norms

Land and Ocean Temperature deviations Jan through Dec 2015



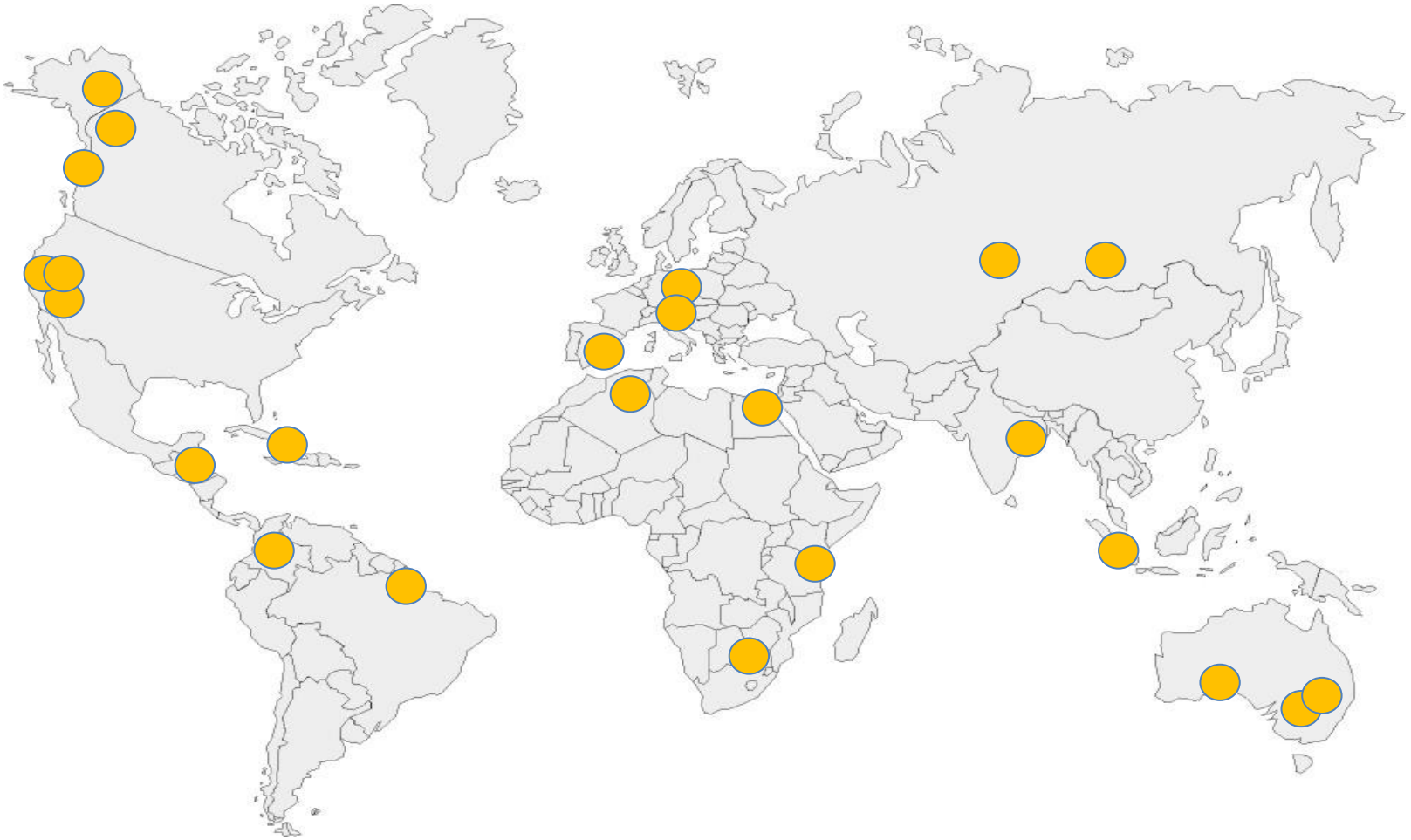
Despite a harsh winter season in the US, 2015 was the hottest year since 1850

Record Coldest | Much Cooler than Average | Cooler than Average | Near Average | Warmer than Average | Much Warmer than Average | Record Warmest

Source: NOAA's National Centers for Environmental Information

Wed Jan 13 12:15:02 EST 2016

Several heat waves, wildfires and droughts



Source: Swiss Re Economic Research & Consulting and Cat Perils.

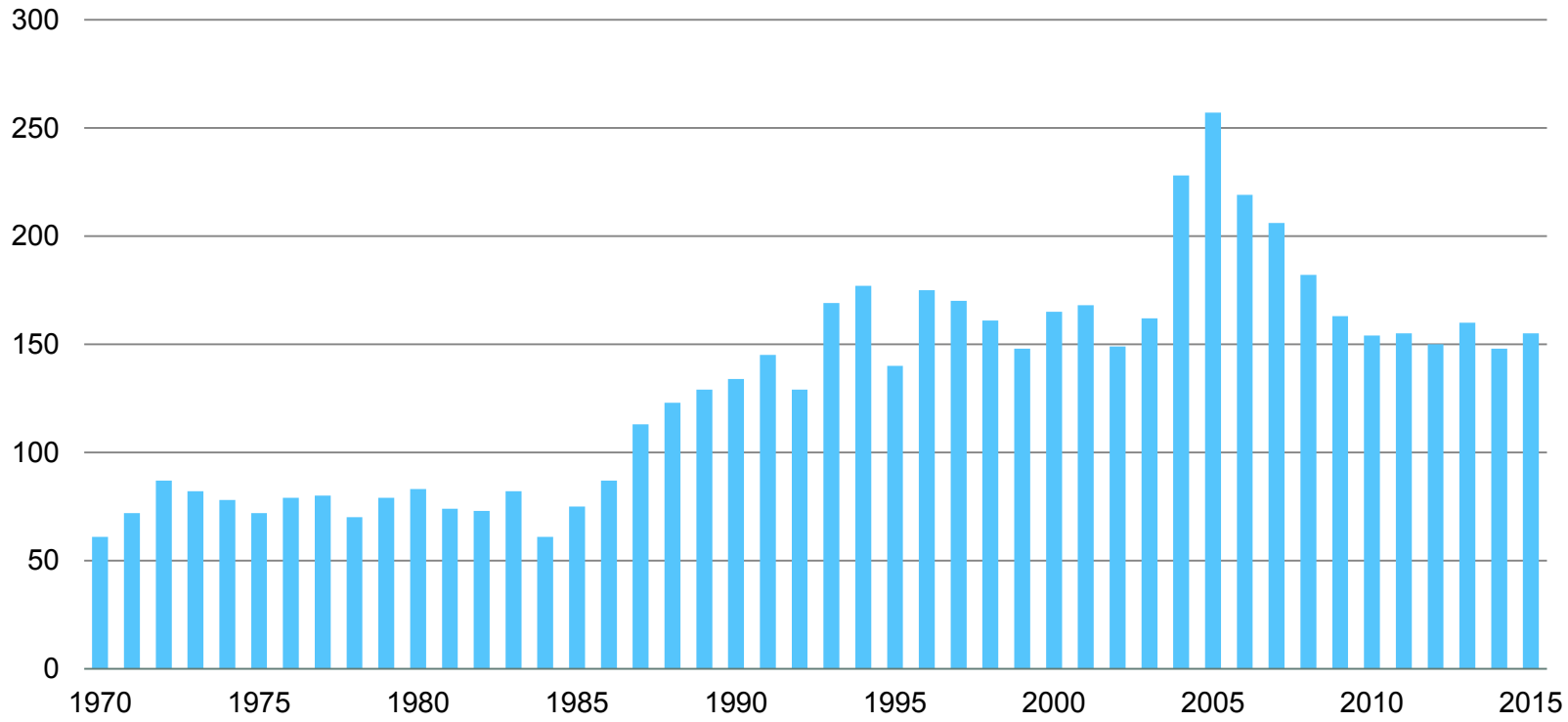
El Niño contributed to low North Atlantic hurricane activity

Tropical storm activity in the North Atlantic was suppressed, while it was a very active season in the Pacific

Source: Swiss Re Economic Research & Consulting and Cat Perils.

Frequency of man-made catastrophes was flat since 2010 but severity was above-average in 2015

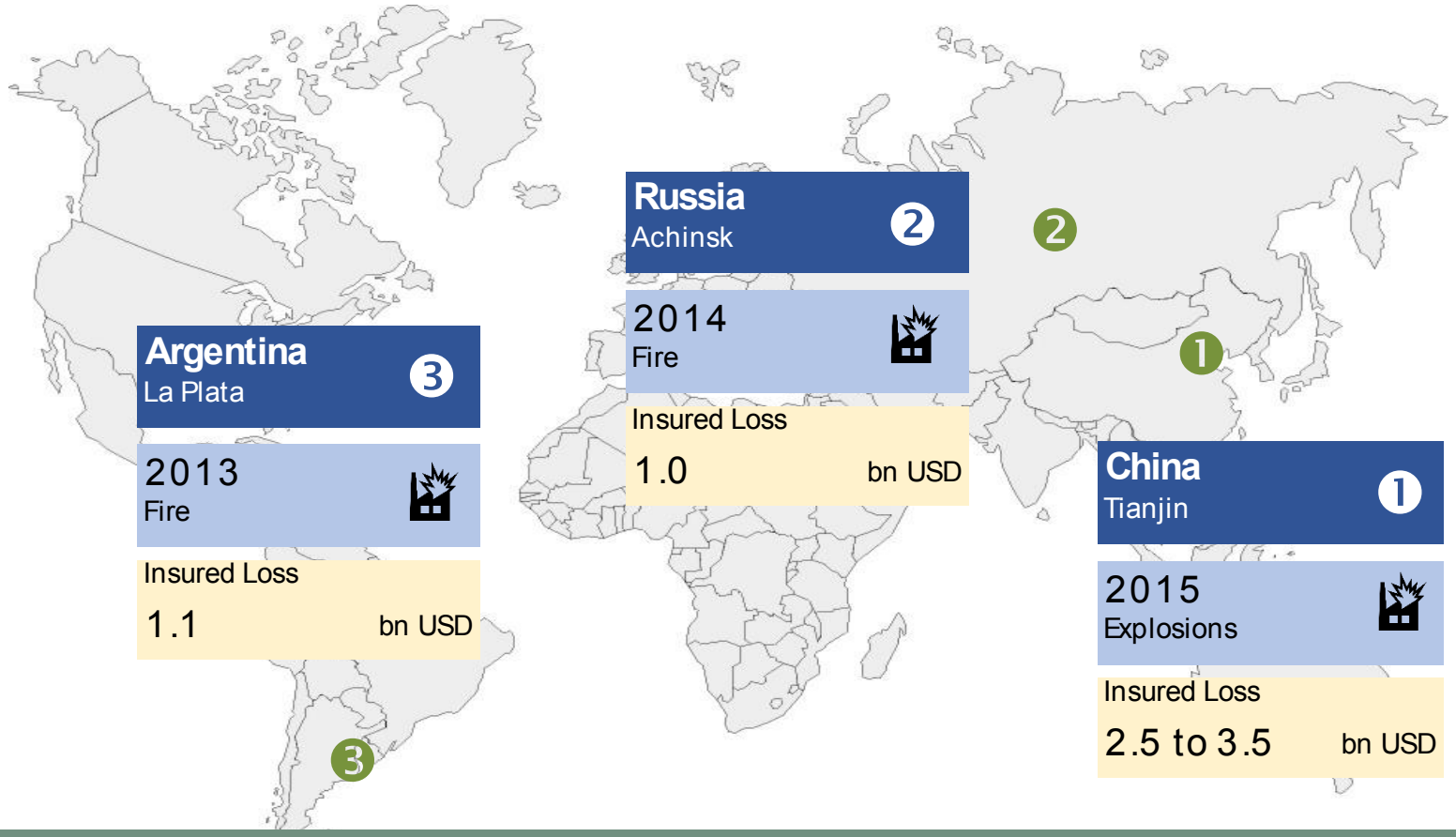
Number of man-made catastrophe events, 1970 – 2015



The frequency of man-made catastrophe events is stagnating with a weak global economy

Source: Swiss Re Economic Research & Consulting and Cat Perils.

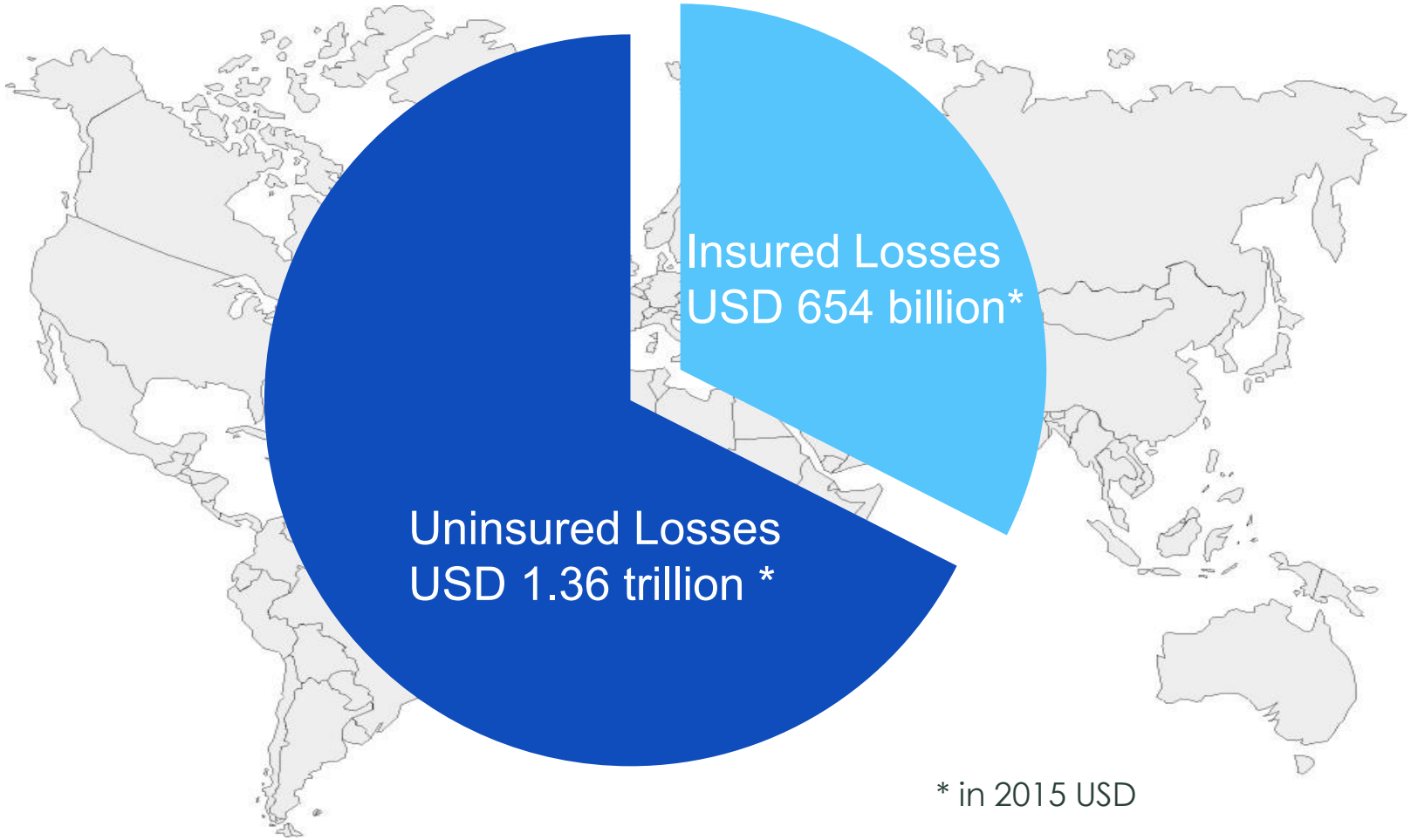
The largest man-made losses of the last three years occurred in emerging economies...



... putting a spotlight on the global spread of commercial risks

Source: Swiss Re Economic Research & Consulting and Cat Perils.

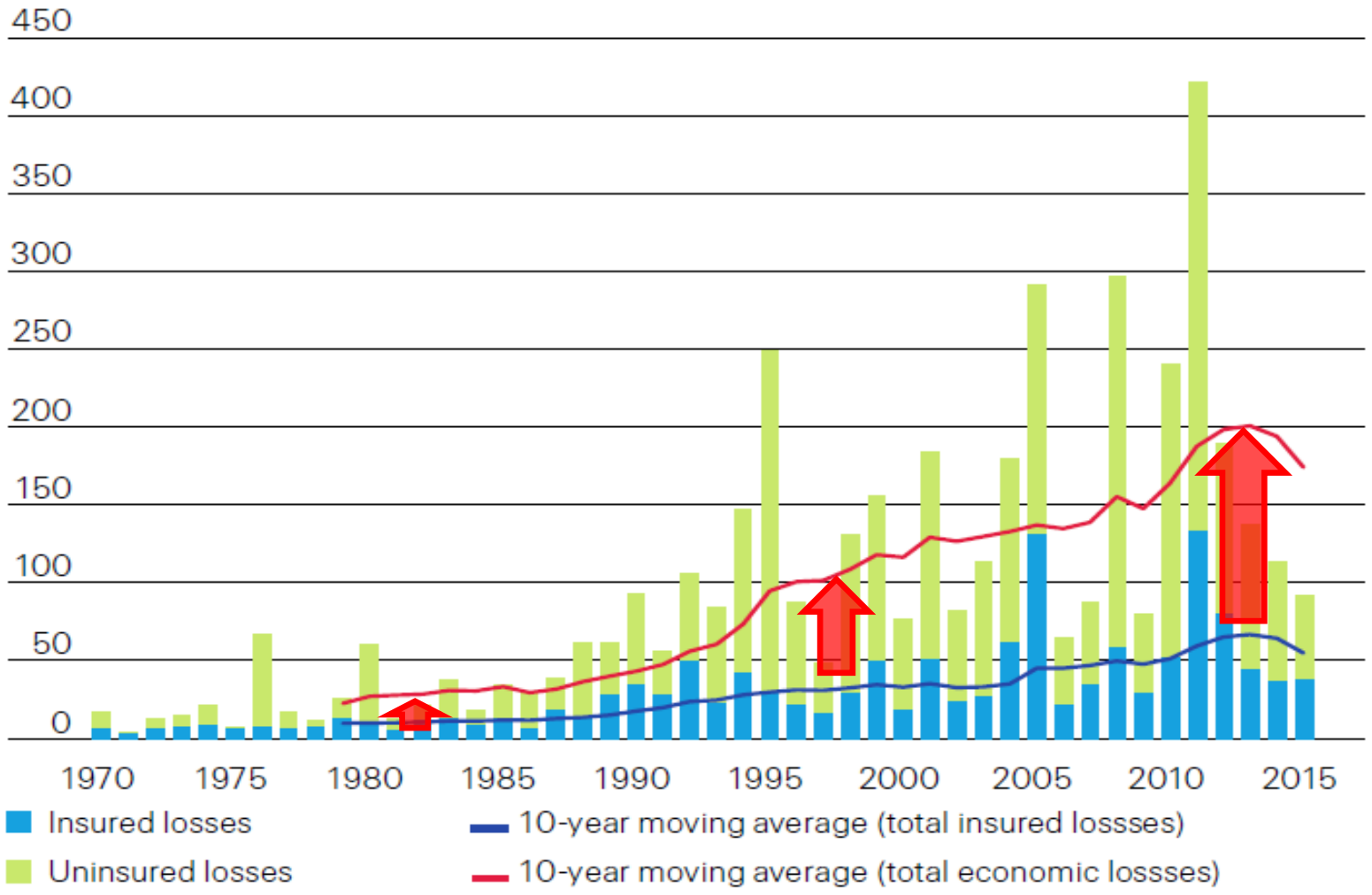
Global natural catastrophe losses totaled USD 2 trillion* over the last decade, with ~70% uninsured



* in 2015 USD

Source: Swiss Re Economic Research & Consulting and Cat Perils.

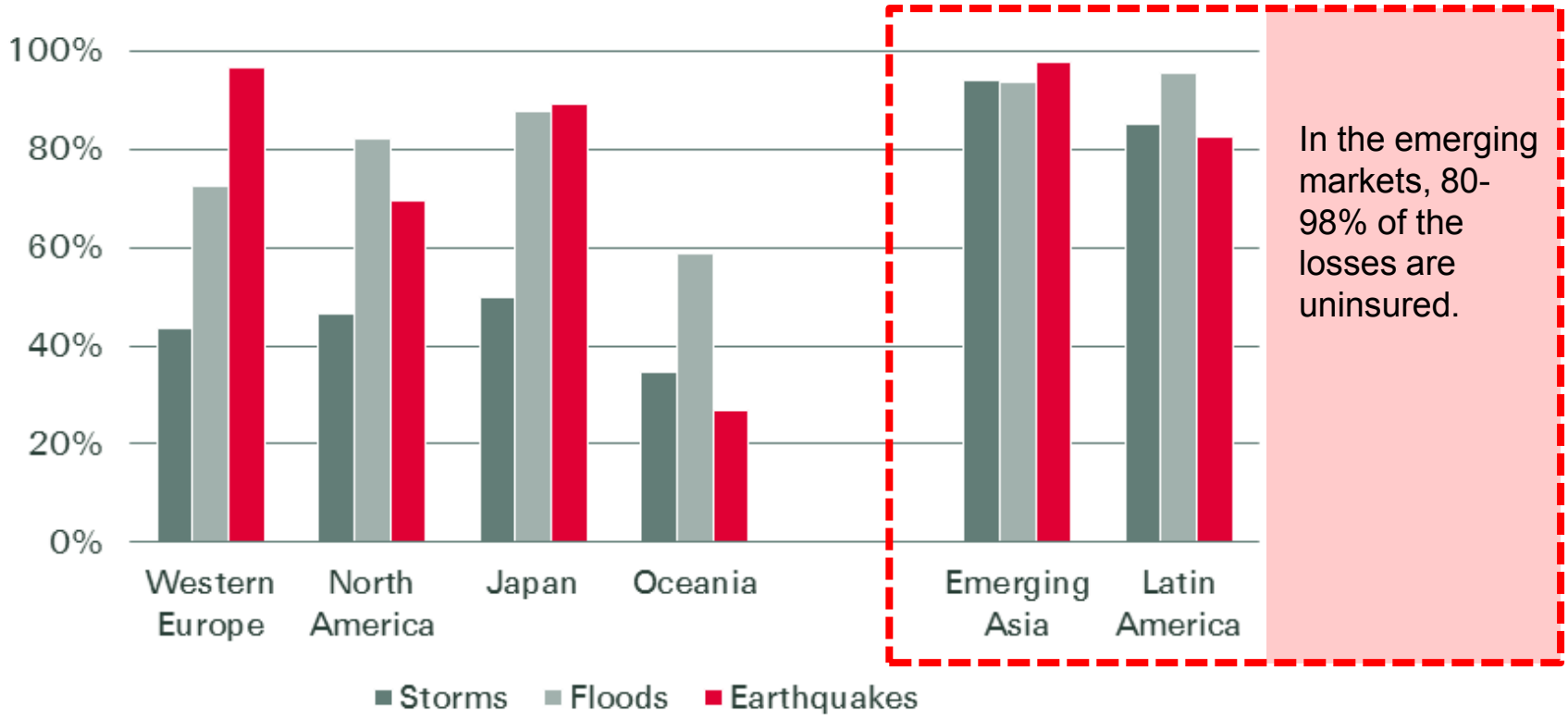
Total losses outpaced insured losses



Source: sigma 1/2016

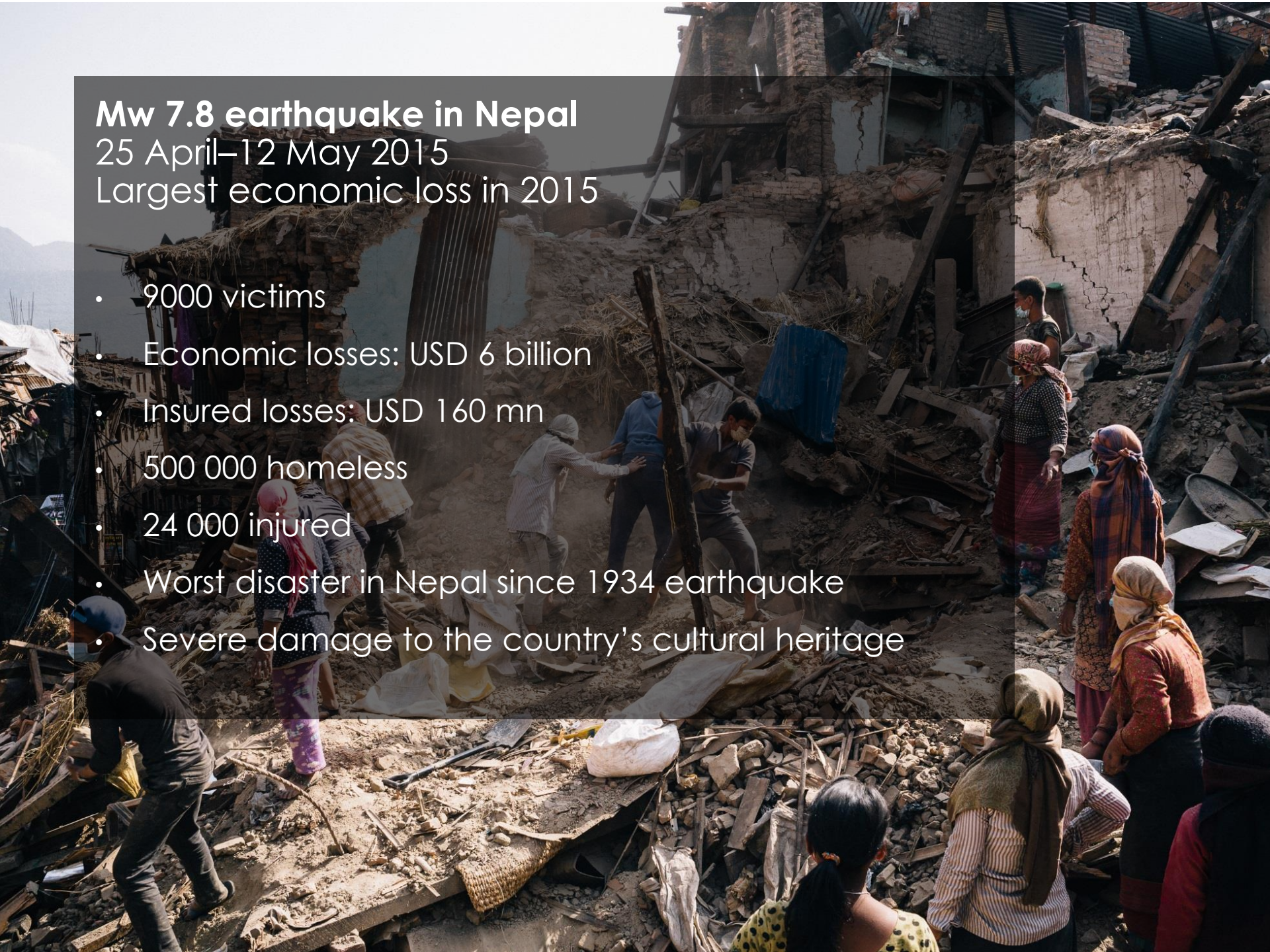
The protection gap varies by peril and by region

Nat cat protection gap by region and peril, 1975-2014



Average uninsured portions have been around 55% for windstorms, 86% for floods, and 90% for earthquakes.

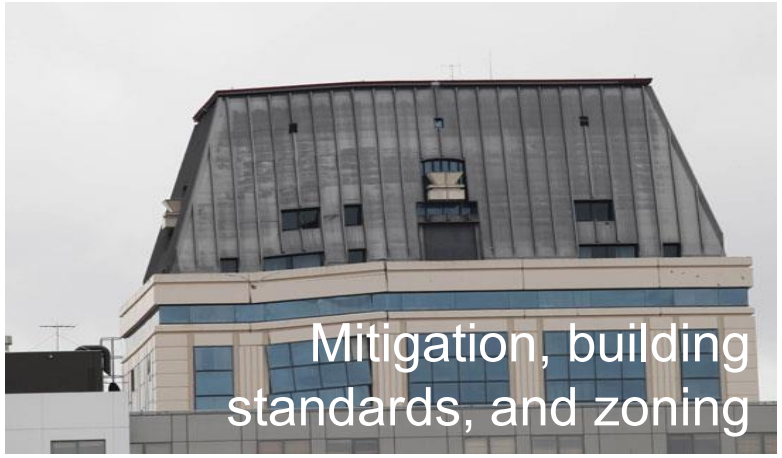
Source: Swiss Re *sigma* 5/2015



Mw 7.8 earthquake in Nepal
25 April–12 May 2015
Largest economic loss in 2015

- 9000 victims
- Economic losses: USD 6 billion
- Insured losses: USD 160 mn
- 500 000 homeless
- 24 000 injured
- Worst disaster in Nepal since 1934 earthquake
- Severe damage to the country's cultural heritage

How to close the underinsurance gap?



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Natural catastrophes and man-made disasters in 2015

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Swiss Re and the Insurance Information Institute

May 25, 2016

Download at www.iii.org/presentations

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Insurance Industry Financials Are Often Driven by Catastrophe Loss Activity

Past Few Years Have Been Unusually Quiet in the US

This Will Change…

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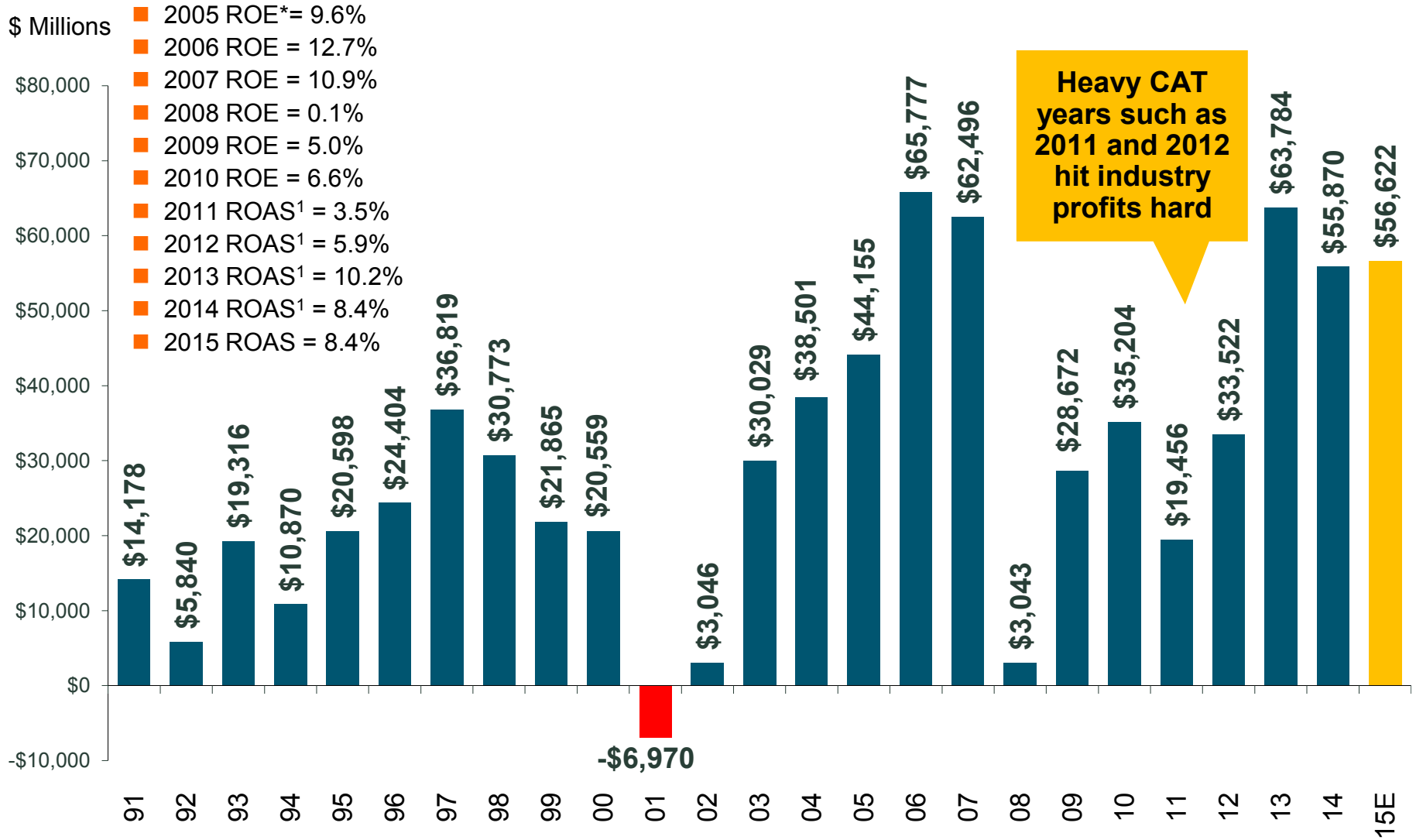
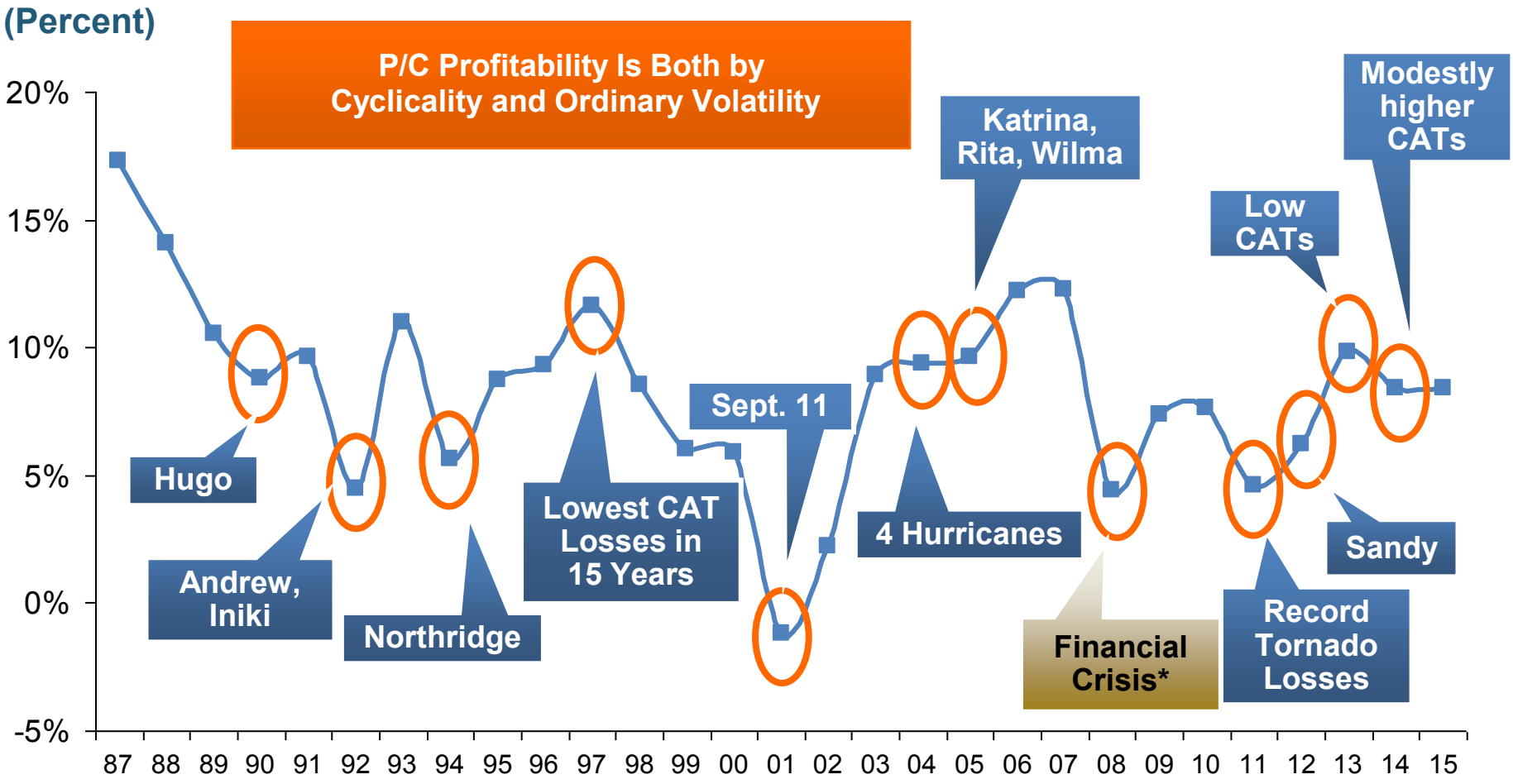
P/C Industry Net Income After Taxes 1991–2015



•ROE figures are GAAP; [1]Return on avg. surplus. Excluding Mortgage & Financial Guaranty insurers yields a 8.2% ROAS in 2014, 9.8% ROAS in 2013, 6.2% ROAS in 2012, 4.7% ROAS for 2011, 7.6% for 2010 and 7.4% for 2009; 2015E is annualized figure based actual figure through Q3 of $44.0

Sources: A.M. Best, ISO; Insurance Information Institute

ROE: Property/Casualty Insurance by Major Event, 1987–2015



* Excludes Mortgage & Financial Guarantee in 2008 – 2014.
Sources: ISO, *Fortune*; Insurance Information Institute.

P/C Insurance Industry Combined Ratio, 2001–2015*

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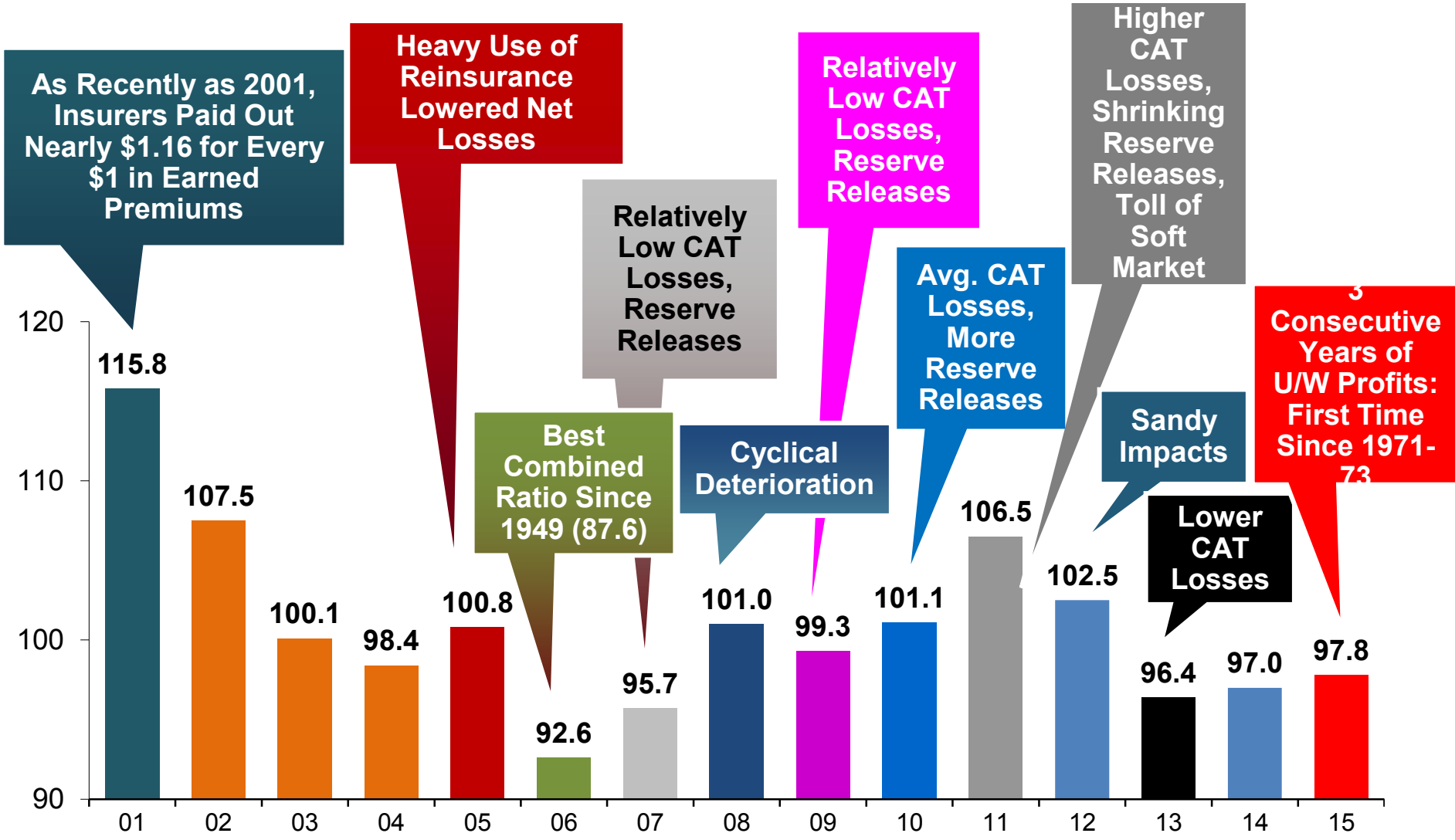

* Excludes Mortgage & Financial Guaranty insurers 2008--2014. Including M&FG, 2008=105.1, 2009=100.7, 2010=102.4, 2011=108.1; 2012:=103.2; 2013: = 96.1; 2014: = 97.0.

Sources: A.M. Best, ISO (2014-2015); Figure for 2010-2013 is from A.M. Best P&C Review and Preview, Feb. 16, 2016.

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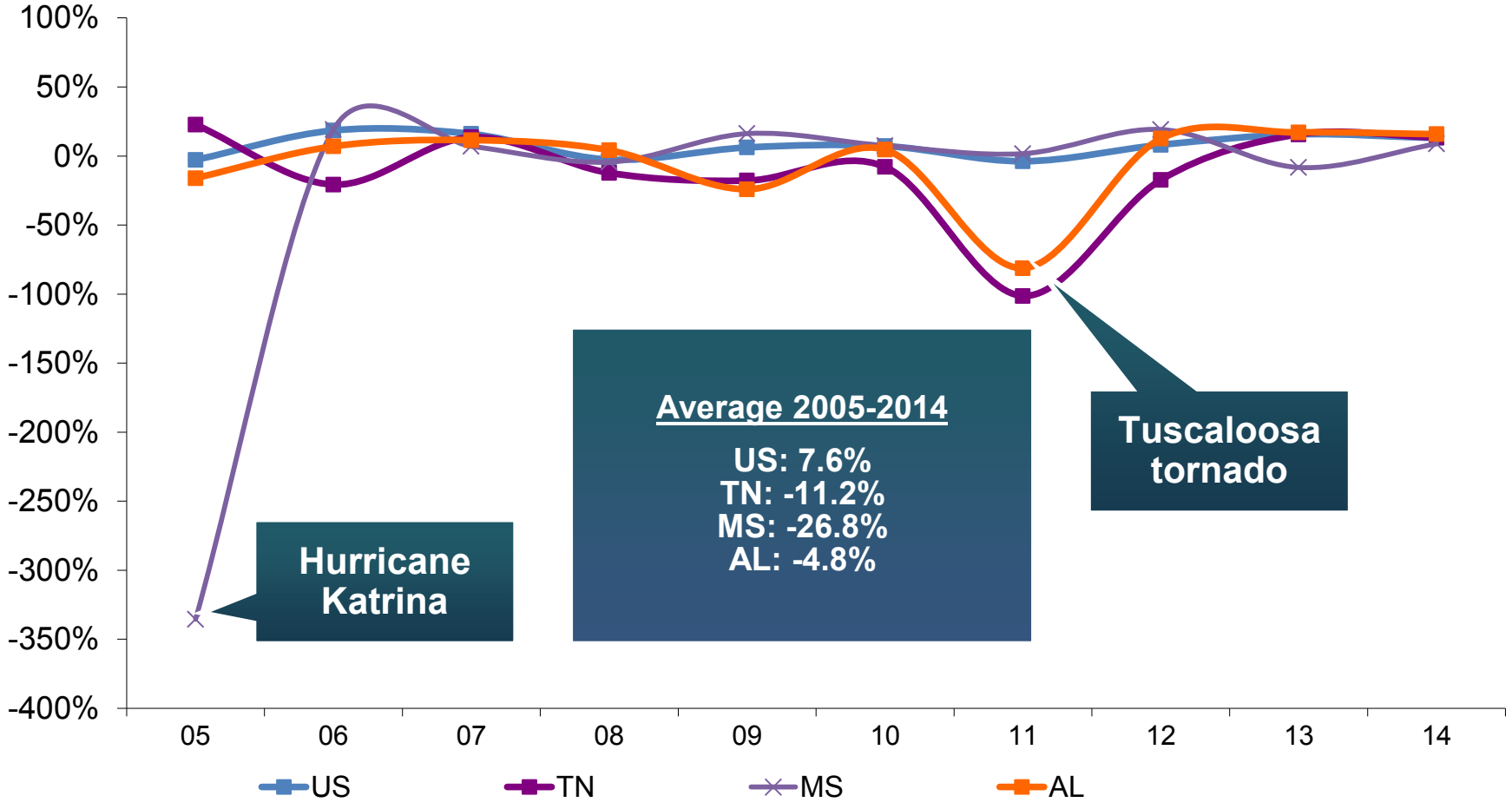
Profitability and Growth in Georgia, Florida, the Carolinas, Tennessee, Mississippi and Alabama's P/C Insurance Markets

Analysis by Line and State Comparisons

RNW Homeowners: TN, MS and AL vs. U.S., 2005-2014

(Percent)



Sources: NAIC.

Top Ten Most Expensive And Least Expensive States For Homeowners Insurance, 2013 (1)

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Florida ranked as the most expensive state for homeowners insurance in 2013, with an average expenditure of $2,115. Mississippi was 5th ($1,395). Alabama was 8th ($1,323).

Rank	Most expensive states	HO average premium	Rank	Least expensive states	HO average premium
1	Florida	$2,115	1	Idaho	561
2	Texas (2)	1,837	2	Oregon	568
3	Louisiana	1,822	3	Utah	609
4	Oklahoma	1,654	4	Wisconsin	665
5	Mississippi	1,395	5	Washington	676
6	Kansas	1,343	6	Nevada	687
7	Rhode Island	1,334	7	Delaware	709
8	Alabama	1,323	8	Arizona	724
9	Connecticut	1,274	9	Ohio	763
10	Massachusetts	1,263	10	Maine	776

(1) Includes policies written by Citizens Property Insurance Corp. (Florida) and Citizens Property Insurance Corp. (Louisiana), Alabama Insurance Underwriting Association, Mississippi Windstorm Underwriting Association, North Carolina Joint Underwriting Association and South Carolina Wind and Hail Underwriting Association. Other southeastern states have wind pools in operation and their data may not be included in this chart. Based on the HO-3 homeowner package policy for owner-occupied dwellings, 1 to 4 family units. Provides "all risks" coverage (except those specifically excluded in the policy) on buildings and broad named-peril coverage on personal property, and is the most common package written.

(2) The Texas Department of Insurance developed home insurance policy forms that are similar but not identical to the standard forms. In addition, due to the Texas Windstorm Association (which writes wind-only policies) classifying HO-1, 2 and 5 premiums as HO-3, the average premium for homeowners insurance is artificially high.

Note: Average premium=Premiums/exposure per house years. A house year is equal to 365 days of insured coverage for a single dwelling. The NAIC does not rank state average expenditures and does not endorse any conclusions drawn from this data.

Source: ©2016 National Association of Insurance Commissioners (NAIC). Reprinted with permission. Further reprint or distribution strictly prohibited without written permission of NAIC.

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INVESTMENTS: THE NEW REALITY

Investment Earnings Offset a Smaller Share of Catastrophe Losses than in the Past

Rates Must Pick Up a Larger Share

Property/Casualty Insurance Industry Investment Income: 2000–2015[1]

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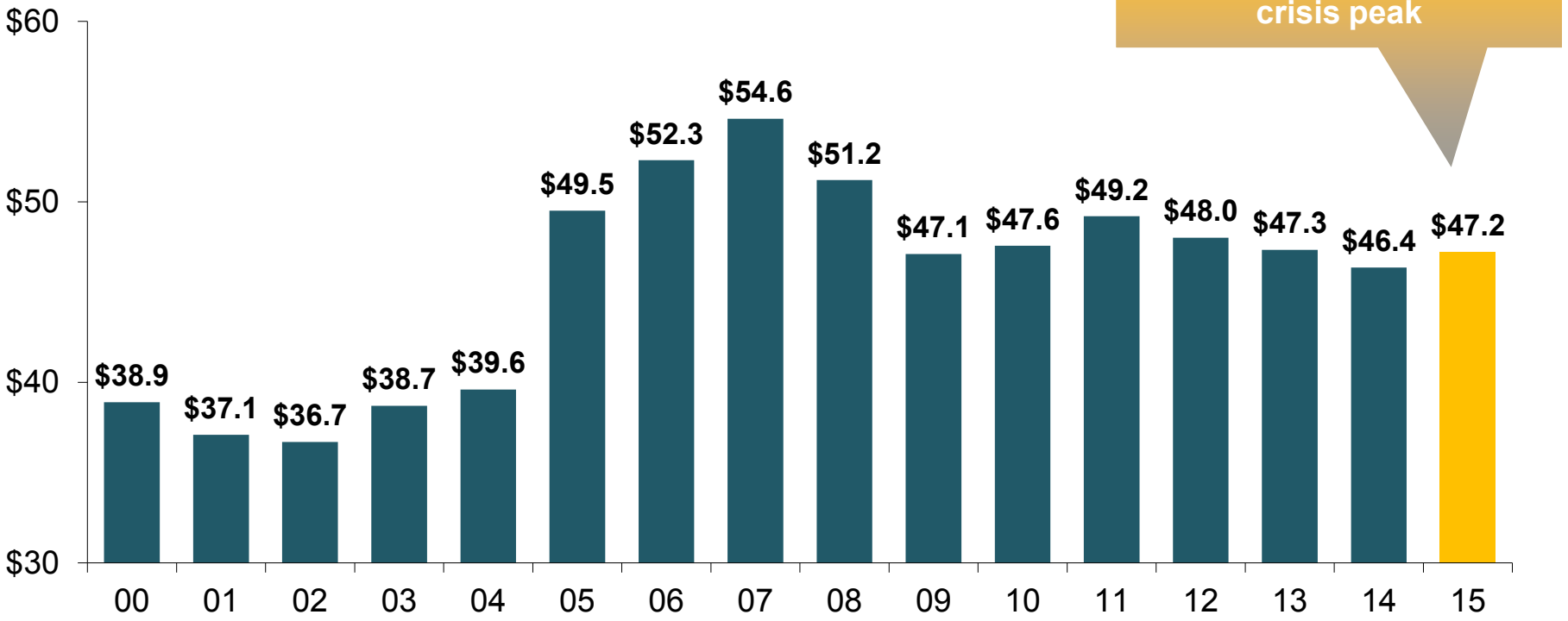
($ Billions)



Due to persistently low interest rates, investment income fell in 2012, 2013 and 2014 but showed a small (1.9%) increase in 2015—a trend that may continue

[1] Investment gains consist primarily of interest and stock dividends. Sources: ISO; Insurance Information Institute.

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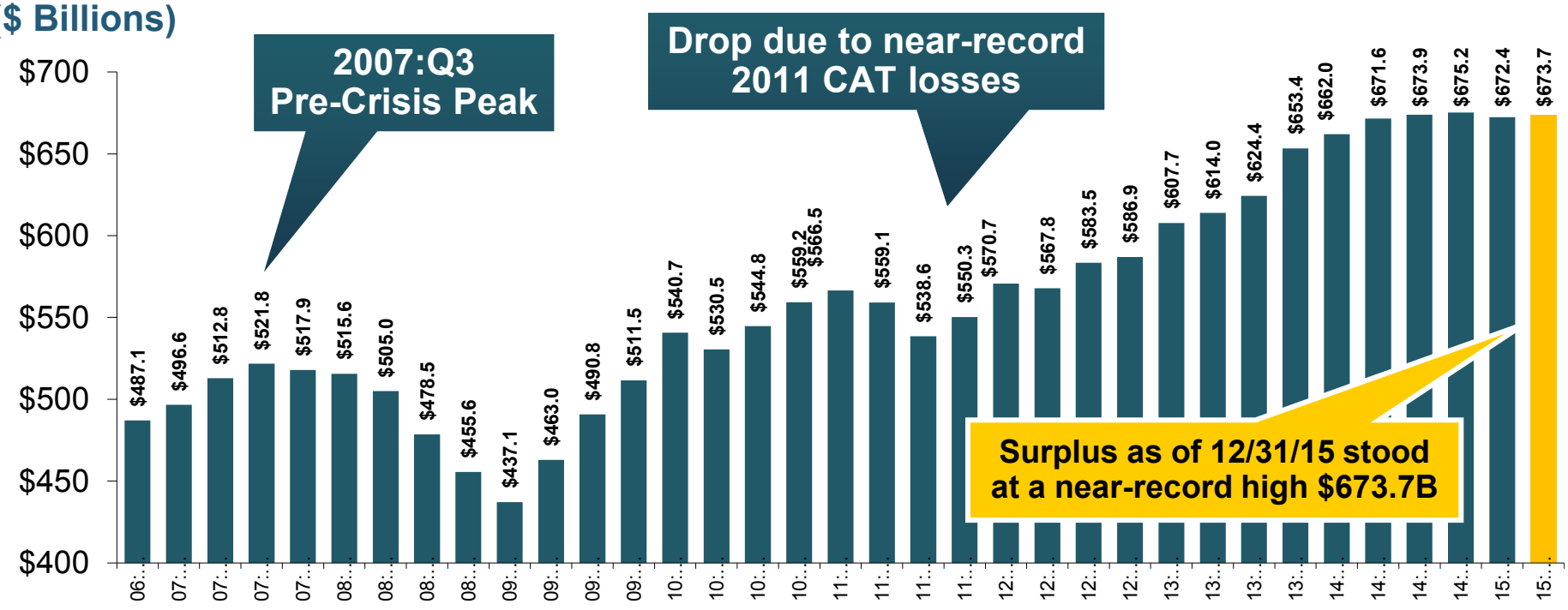
CAPITAL/CAPACITY

(Re)Insurance Industry Is Very Well Capitalized

Policyholder Surplus, 2006:Q4–2015:Q4

($ Billions)



The industry now has $1 of surplus for every $0.76 of NPW, close to the strongest claims-paying status in its history.

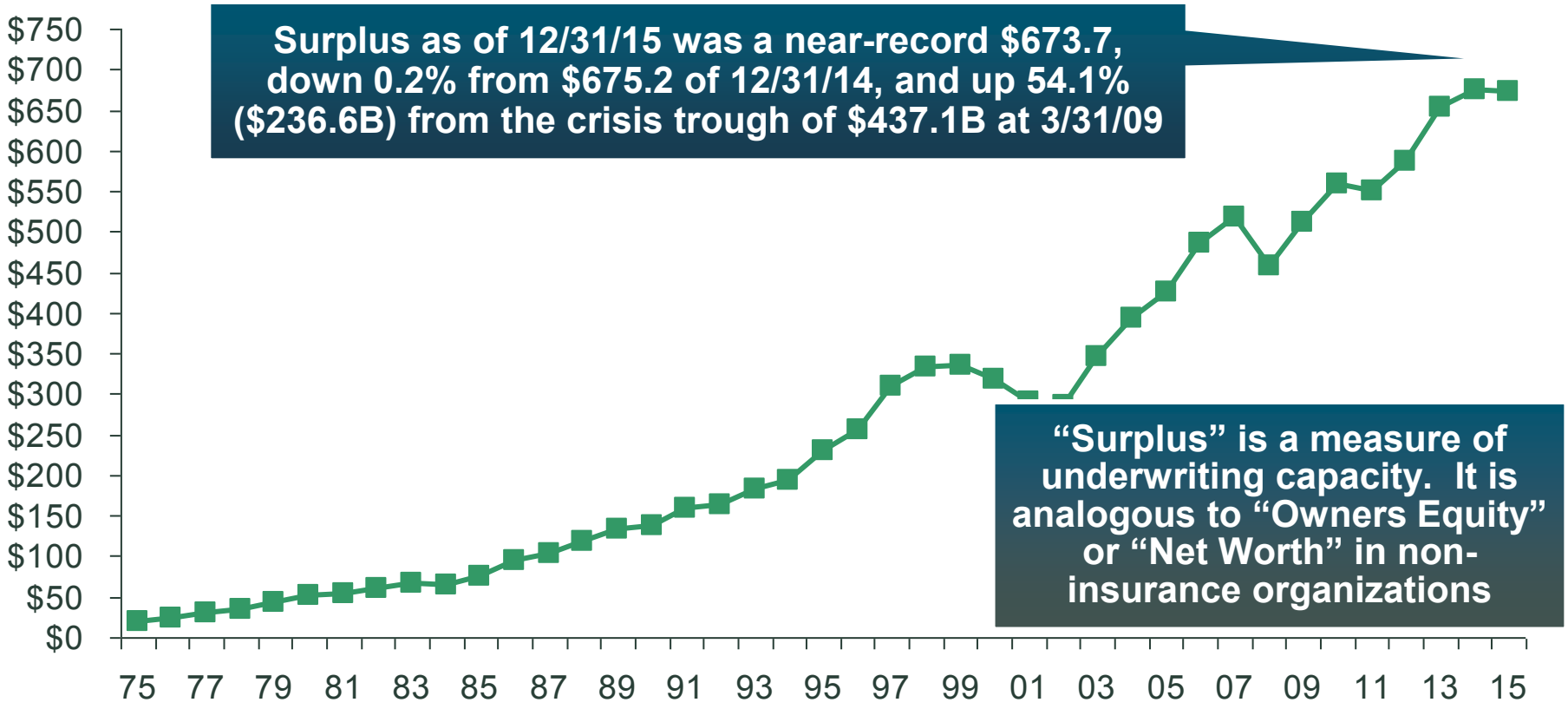
2010:Q1 data includes $22.5B of paid-in capital from a holding company parent for one insurer's investment in a non-insurance business .

The P/C insurance industry entered 2016 in very strong financial condition.

Sources: ISO, A.M .Best.

US Policyholder Surplus: 1975–2015*

($ Billions)



Surplus as of 12/31/15 was a near-record $673.7, down 0.2% from $675.2 of 12/31/14, and up 54.1% ($236.6B) from the crisis trough of $437.1B at 3/31/09

"Surplus" is a measure of underwriting capacity. It is analogous to "Owners Equity" or "Net Worth" in non-insurance organizations

The Premium-to-Surplus Ratio Stood at $0.76:$1 as of 12/31/15, a Near Record Low (at Least in Recent History)

* As of 12/31/15.

Source: A.M. Best, ISO, Insurance Information Institute.

Catastrophe Bond Issuance and Outstanding: 1997-2015

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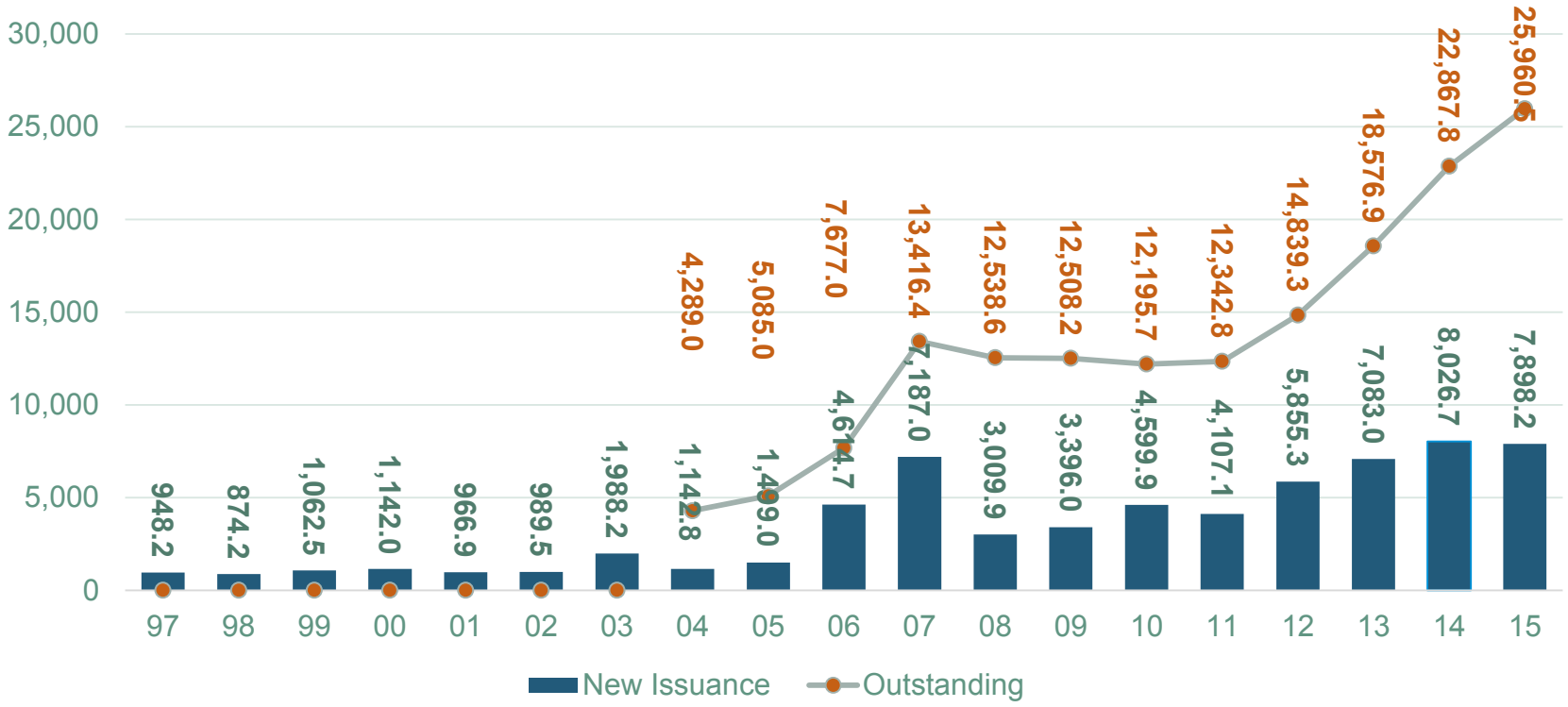
Risk Capital Amount ($ Millions)



Cat Bond Issuance Declined Slightly in 2015 from 2014's Record Pace. Lower Yields on Bonds Explain Some of the Contraction.

Source: Guy Carpenter, Artemis accessed at http://www.artemis.bm/deal_directory/cat_bonds_ils_issued_outstanding.html .

US Property CAT Rate on Line Index & Global Reinsurance ROE

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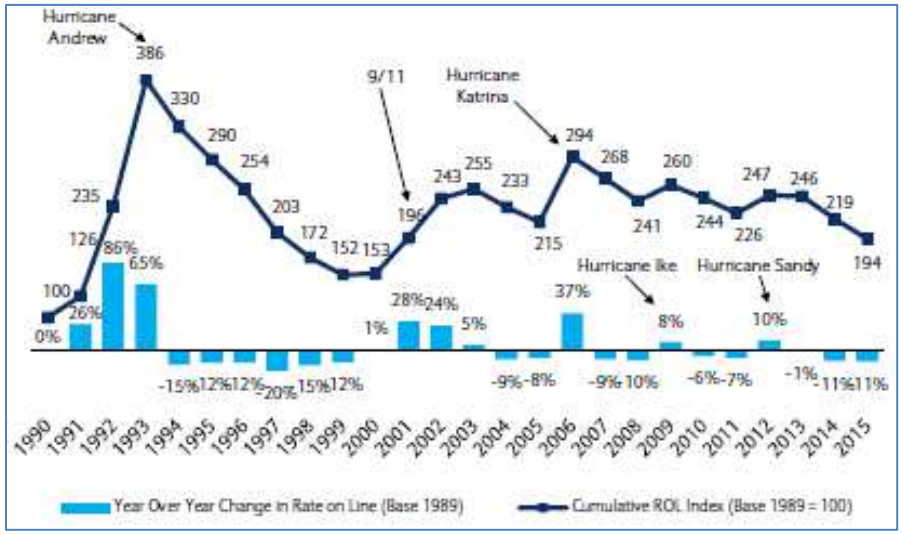
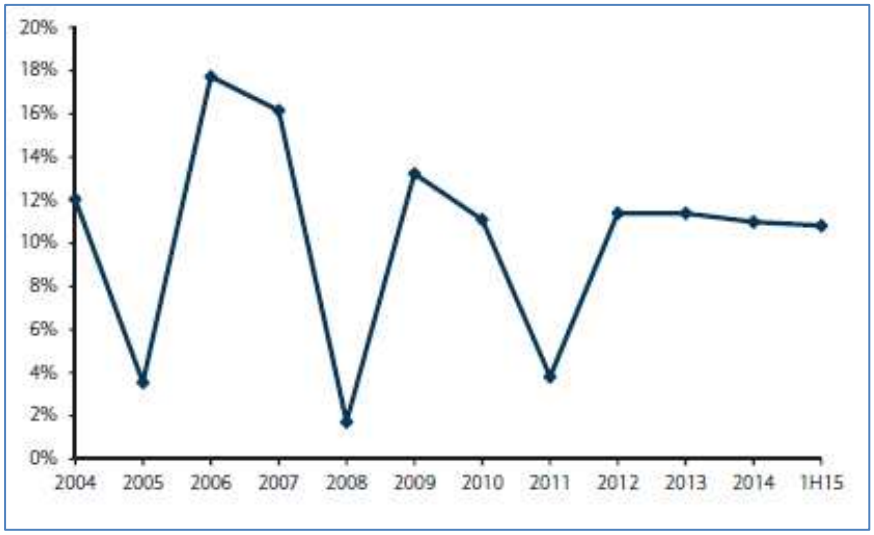
US Property CAT ROL



Global Reinsurance ROE



Near-record traditional capacity, alternative capital and low CAT activity have impacted markets

Source: Barclays PLC from Guy Carpenter; Insurance Information Institute.

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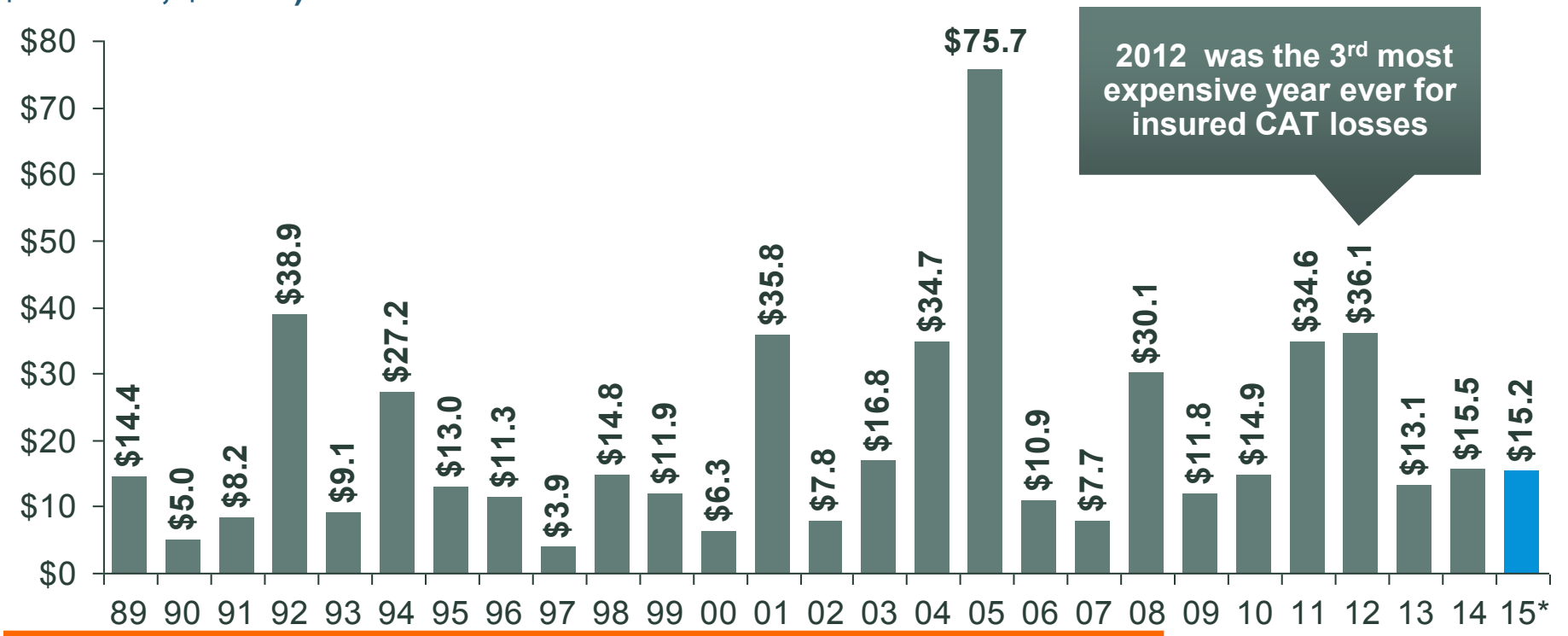
Insured Catastrophe Losses

2013/14 and 2015 Experienced Below Average CAT Activity After Very High CAT Losses in 2011/12

Winter Storm Losses Far Above Average in 2014 and 2015

U.S. Insured Catastrophe Losses

($ Billions, $ 2015)



2013/14/15 Were Welcome Respites from 2011/12, among the Costliest Years for Insured Disaster Losses in US History. Longer-term Trend is for more—not fewer—Costly Events

*Estimate through 12/31/15 in 2015 dollars.

Note: 2001 figure includes $20.3B for 9/11 losses reported through 12/31/01 ($25.9B 2011 dollars). Includes only business and personal property claims, business interruption and auto claims. Non-prop/BI losses = $12.2B ($15.6B in 2011 dollars.)

Sources: Property Claims Service/ISO; Insurance Information Institute.

Combined Ratio Points Associated with Catastrophe Losses: 1960 – 2016F*

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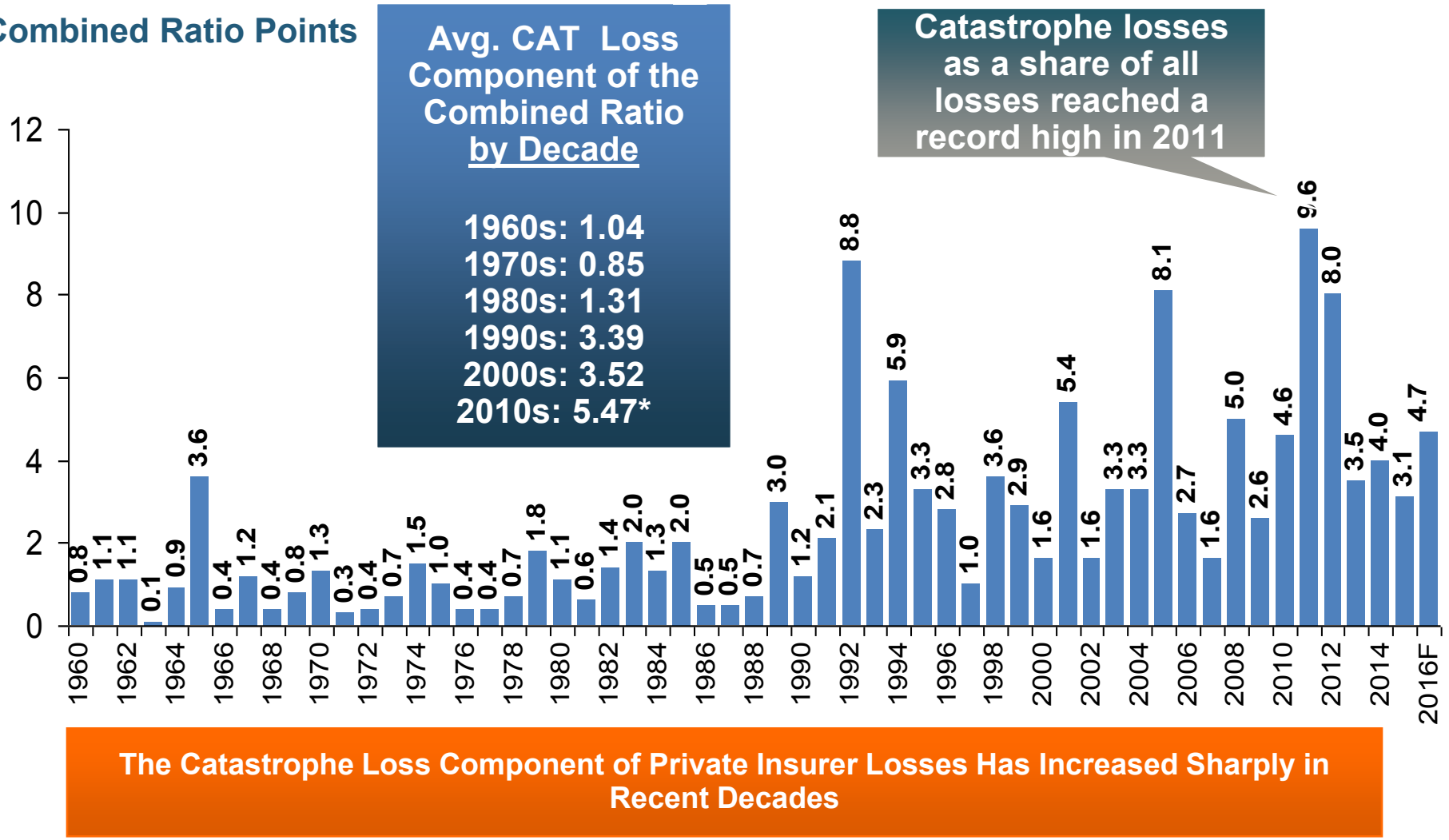

The Catastrophe Loss Component of Private Insurer Losses Has Increased Sharply in Recent Decades

*2010s represent 2010-2015.

Notes: Private carrier losses only. Excludes loss adjustment expenses and reinsurance reinstatement premiums. Figures are adjusted for losses ultimately paid by foreign insurers and reinsurers.

Source: ISO (1960-2009); A.M. Best (2010-16E) Insurance Information Institute.

Top 16 Most Costly Disasters in U.S. History—Katrina Still Ranks #1

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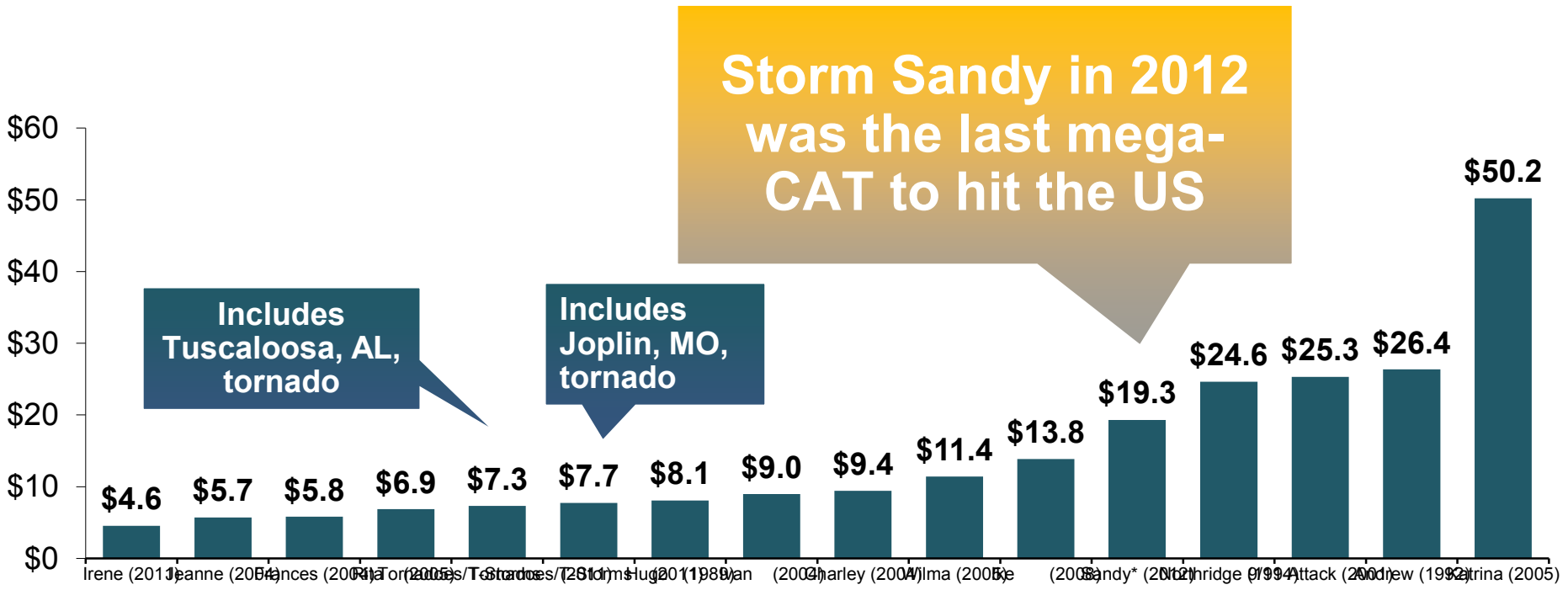
(Insured Losses, 2014 Dollars, $ Billions)



12 of the 16 Most Expensive Events in US History Have Occurred Since 2004

Sources: PCS; Insurance Information Institute inflation adjustments to 2014 dollars using the CPI.

Inflation Adjusted U.S. Catastrophe Losses by Cause of Loss, 1995–2014[1]

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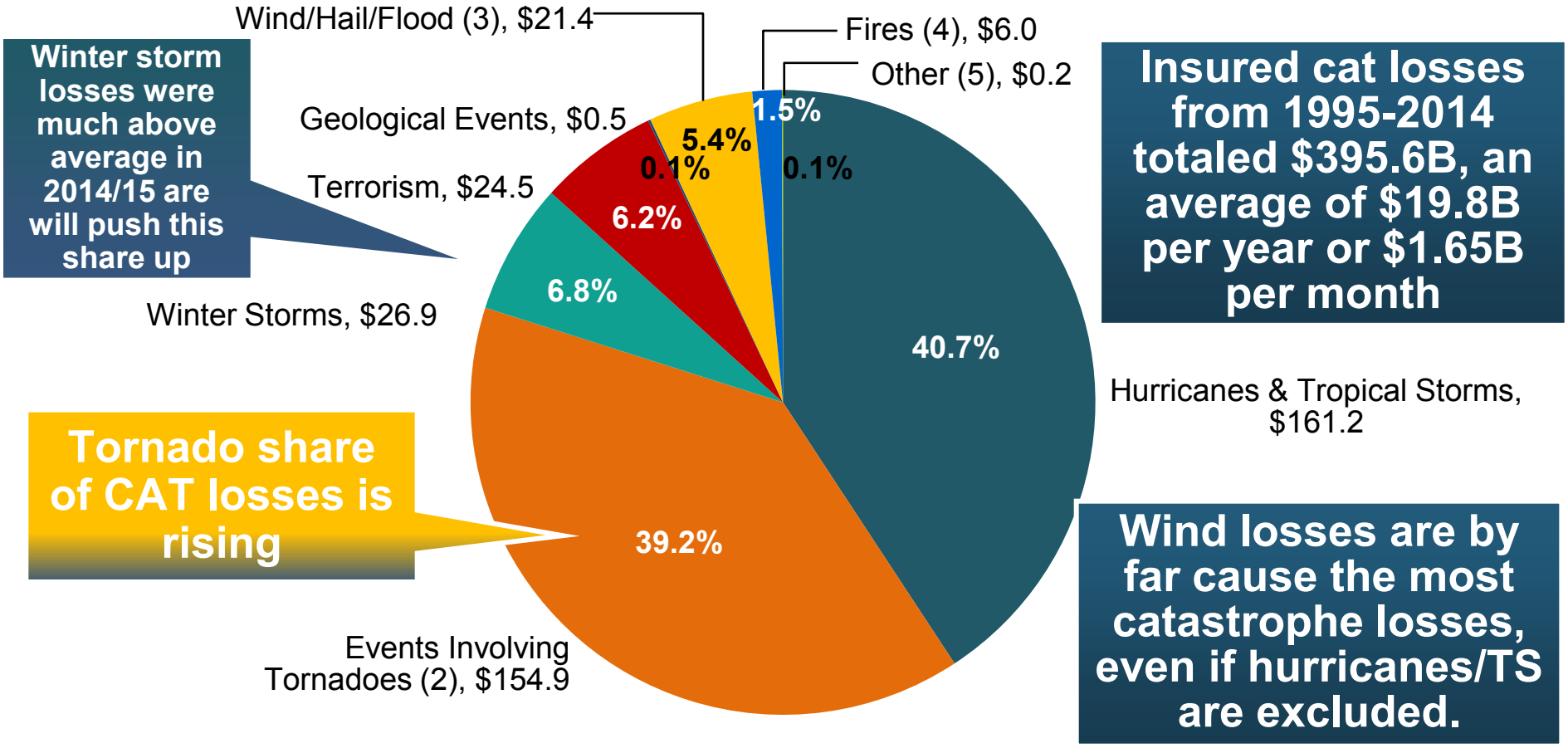

1. Catastrophes are defined as events causing direct insured losses to property of $25 million or more in 2014 dollars.
2. Excludes snow.
3. Does not include NFIP flood losses
4. Includes wildland fires
5. Includes civil disorders, water damage, utility disruptions and non-property losses such as those covered by workers compensation.

Source: ISO's Property Claim Services Unit.

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UNDERSINSURANCE: POLITICAL AND ECONOMIC CONSIDERATIONS IN THE U.S.

Vulnerable Economic Development, Subsidies and Underinsurance Are Inextricably Intertwined

The Four Types of Underinsurance

1. **Entirely Uninsured**
   - –People/Businesses in this group buy no insurance at all because:
     - •Unaware of it
     - •Belief that cost outweighs benefit
2. **Insured, but Certain Perils Excluded**
   - –Covered for many perils but some are excluded (e.g., flood, earthquake)
   - –Fail to completely insurer because:
     - •Unaware of availability of coverage
     - •Belief that cost outweighs benefit
     - •Lack of available coverage
3. **Insured, but Policy Terms Restrictive**
   - –Coverage is restrictive/limited, often due to limits of insurability
4. **Insured, but Undervalued**
   - –Perils are covered and level of coverage meets stated demand, but exposures are undervalued

Source: Swiss Re Economic Research & Consulting, sigma no. 5/2015.

Factors Influencing the Decision to Buy Property Insurance

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1. **Risk Awareness**
   - –Vulnerability to (natural disaster) risk often poorly understood
   - –Awareness does not necessarily lead to insurance purchases
   - –Lack of awareness; perceptions on low-probability events
2. **Knowledge about Insurance Products and their Availability**
   - –Insurance 'literacy' is key
   - –Understanding of what's covered, limits, premiums, claims process often lacking
3. **Affordability**
   - –As with any product, insurance buyers are price sensitive
   - –Budget constraints could be binding for low-income consumers
4. **Trust in Insurers**
   - –Stories of claim disputes, litigation have impact
5. **Ease of Buying Insurance Products**
   - –Insurance products are intangible and may seem abstract to many consumers
6. **Reliance on Government Aid as a Substitute for Insurance**
   - –Widespread expectation of government aid can reduce incentives to buy insurance, leading to a crowding out of private sector solutions

Source: Swiss Re Economic Research & Consulting, sigma no. 5/2015.

Take-Up Rates for Various Types of Insurance in the U.S.

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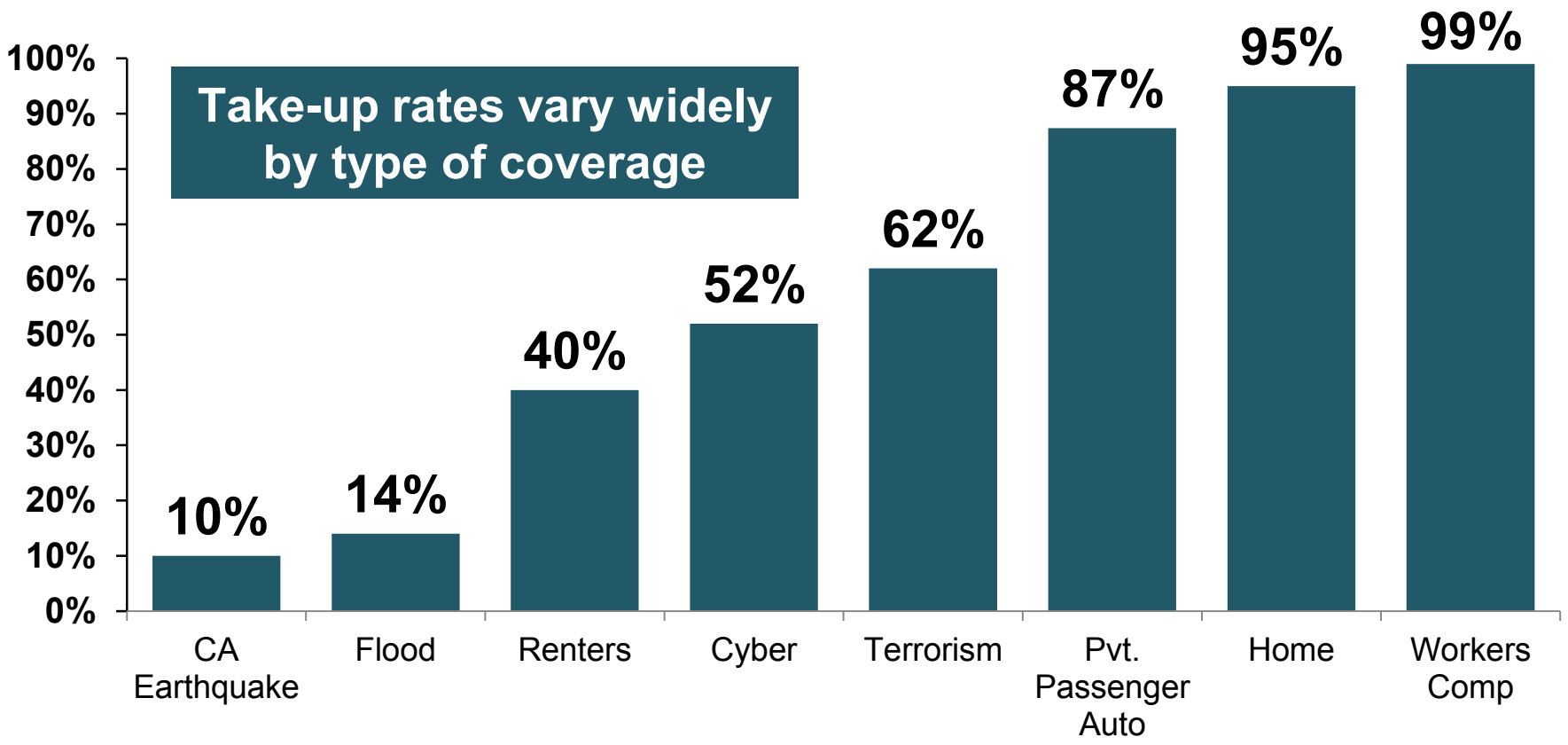
Take-Up Rate



Sources: CA Earthquake (WSJ, http://www.wsj.com/articles/california-pushes-homeowners-to-insure-against-earthquakes-1440980138); Flood and Renters (I.I.I. June 2015 Pulse Survey); Cyber (Advisen, 2015); Terrorism (Marsh Global Analytics, *2014 Terrorism Risk Insurance Report,* April 2014; data for 2013); Pvt. Passenger Auto (Insurance Research Council, *Uninsured Motorists,* 2014 Edition, data for 2012); Home and Workers Comp (I.I.I. estimates); Insurance Information Institute research.

Number of National Flood Insurance Program Policies in Force at Year-End, 1980-2015*

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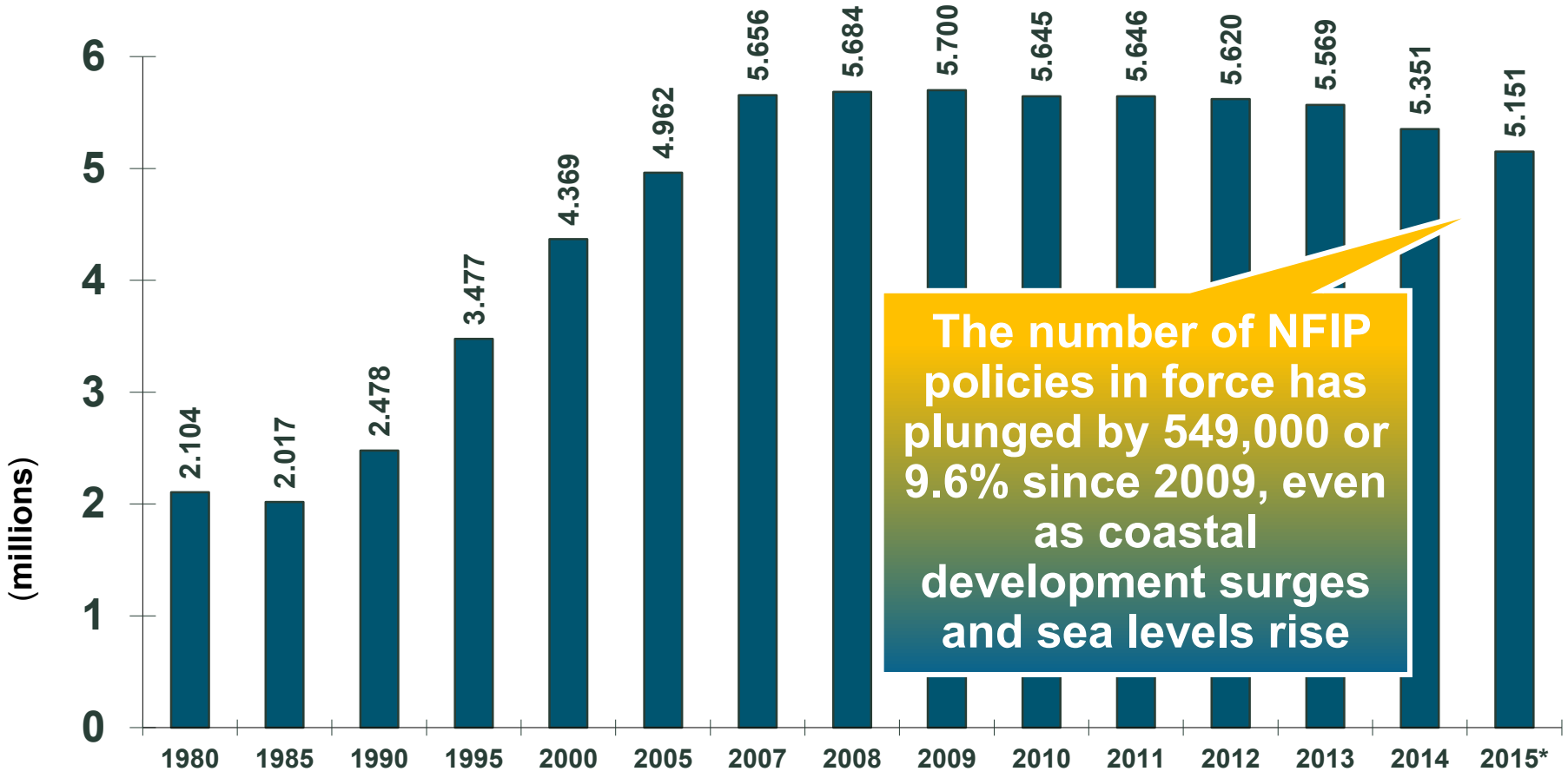

Source: National Flood Insurance Program.
* As of July, 2015

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CONSUMER AWARENESS AND UNDERINSURANCE

Education of the Public Is a Difficult, Continuous Process

Case Study: Flood Insurance

I.I.I. Poll: Home Insurance

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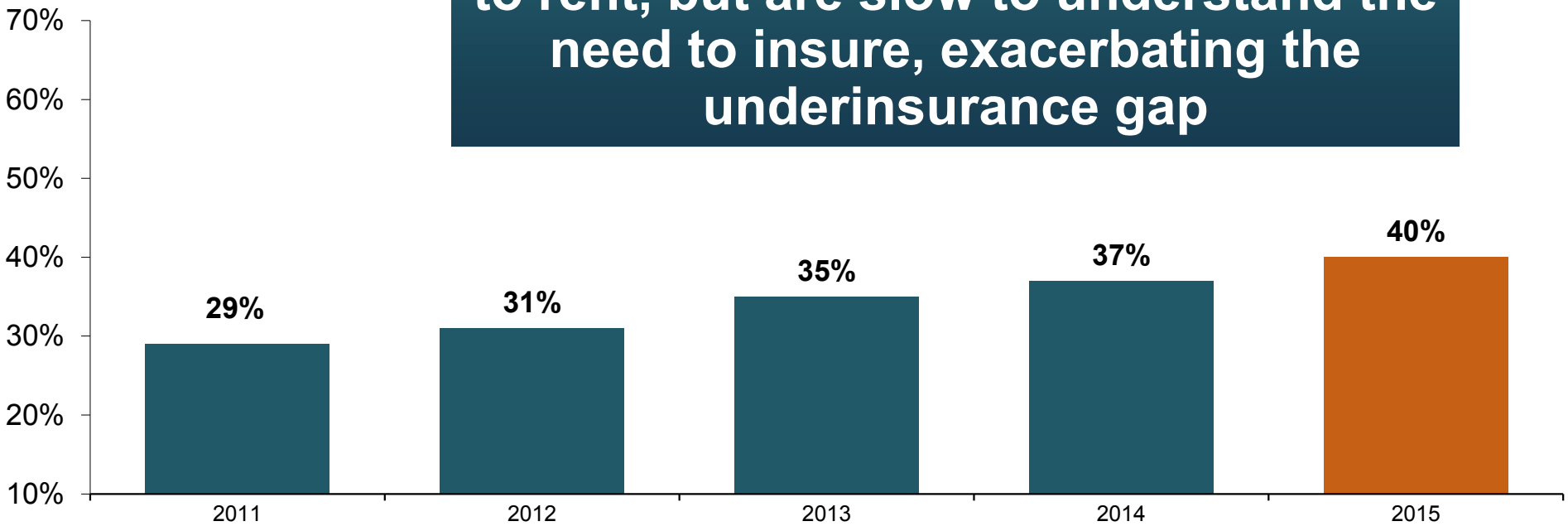
Q. Do you have renters insurance? [1]

Americans are increasingly choosing to rent, but are slow to understand the need to insure, exacerbating the underinsurance gap



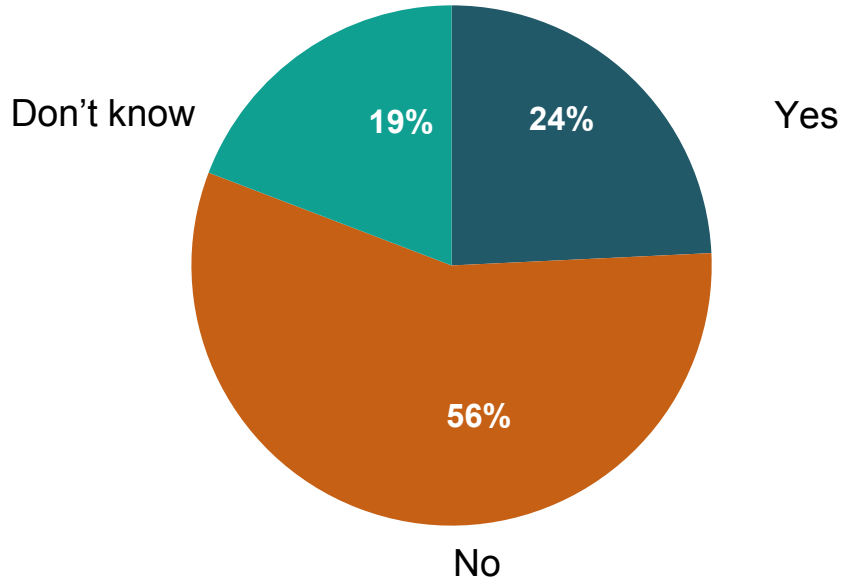
The Percentage of Renters Who Have Renters Insurance Has Been Rising Since 2011.

[1]Asked of those who rent their home.

Source: Insurance Information Institute Annual *Pulse* Survey.

I.I.I. Poll: Home Insurance

Q. Does your homeowners policy cover damage from flooding during a hurricane?[1]

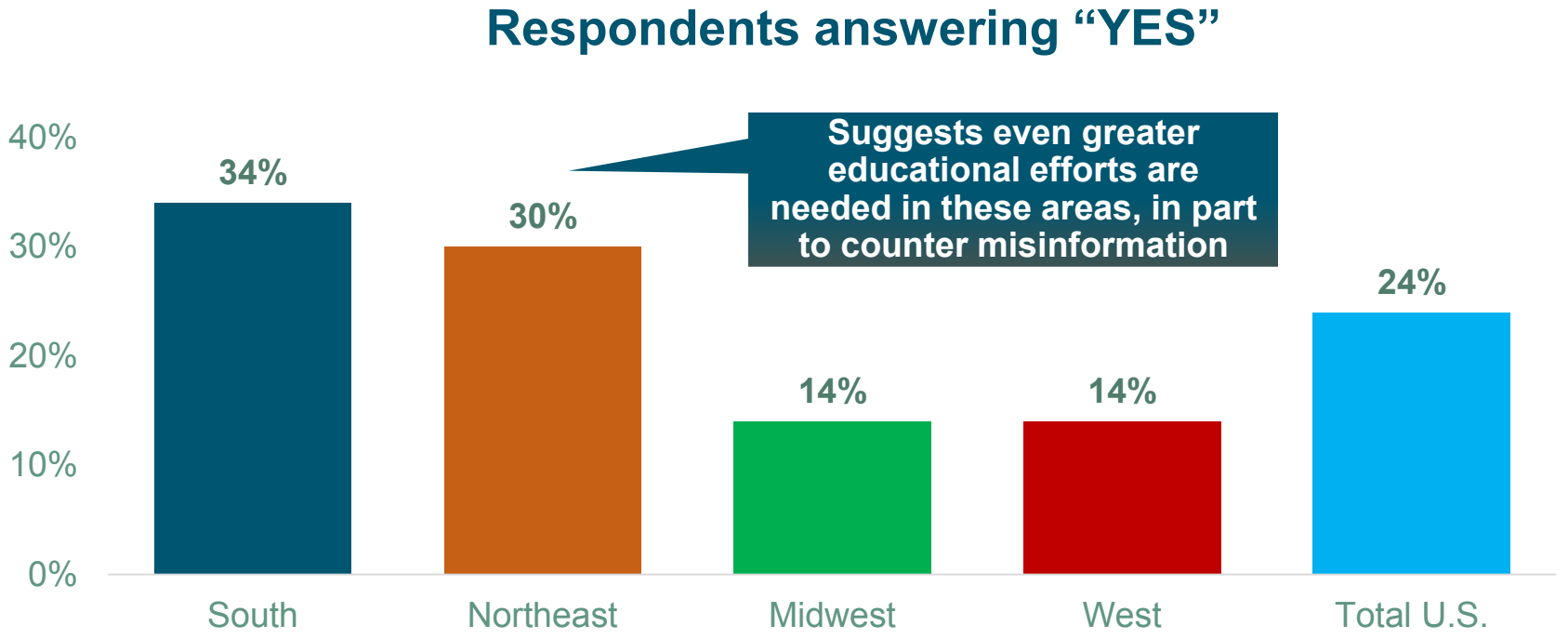


More Than Half of Homeowners Know Their HO Insurance Does Not Cover Flood From a Hurricane, But A Significant Proportion Either Think It Does Or Do Not Know.

[1]Asked of those who have home insurance.
Source: Insurance Information Institute Annual *Pulse* Survey.

I.I.I. Poll: Home Insurance

Q. Does your homeowners policy cover damage from flooding during a hurricane?[1]



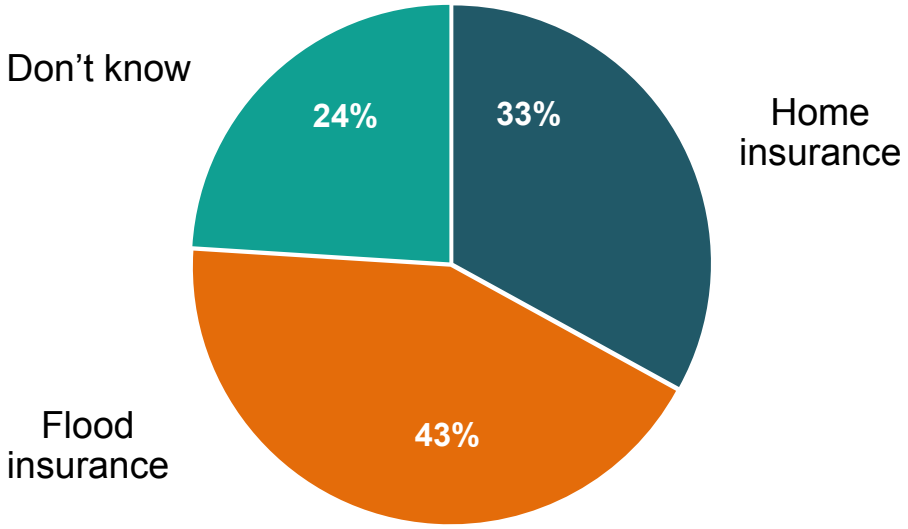
Homeowners in the South and Northeast Were Most Likely to Think Home Insurance Pays for Flood Damage.

[1]Asked of those who have home insurance.

Source: Insurance Information Institute Annual *Pulse* Survey.

I.I.I. Poll: Superstorm Sandy Claims

Q. Do you think that the damages in these disputed claims from Hurricane Sandy were covered by homeowners insurance or flood insurance policies?[1]



Only 1/3 Third of Those Who Heard About Superstorm Sandy Claim Disputes Thought the Claims Were Related to Home Insurance while 43% Understood Correctly that the Claims are on Flood Policies.

[1]Asked of those who had heard about disputes following Hurricane Sandy.

Source: Insurance Information Institute Annual *Pulse* Survey.

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CYBER RISK AND INSURANCE

Cyber Risk is a Rapidly Emerging Exposure for Businesses Large and Small in Every Industry

Insurers Are Closing the Gaps

Data Breaches 2005-2015, by Number of Breaches and Records Exposed

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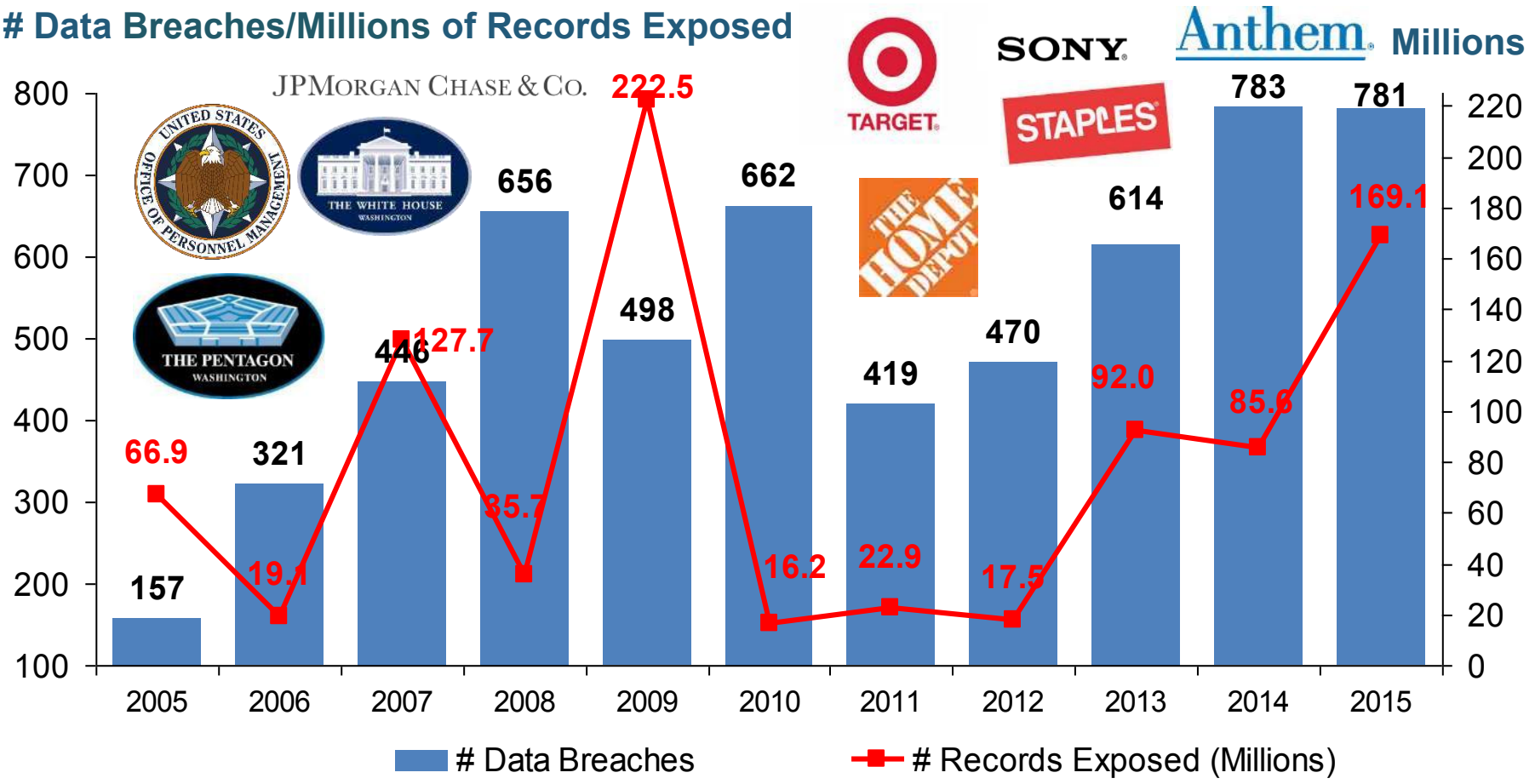

The 781 reported data breaches in 2015 was virtually unchanged form the record 783 reported in 2014. The number of exposed records soared to 169.1 million, and increase of 97.5%.

Source: Identity Theft Resource Center (updated as of Jan. 6, 2016);
http://www.idtheftcenter.org/images/breach/ITRCBreachReport2015.pdf

Data/Privacy Breach: Many Potential Costs Can Be Insured

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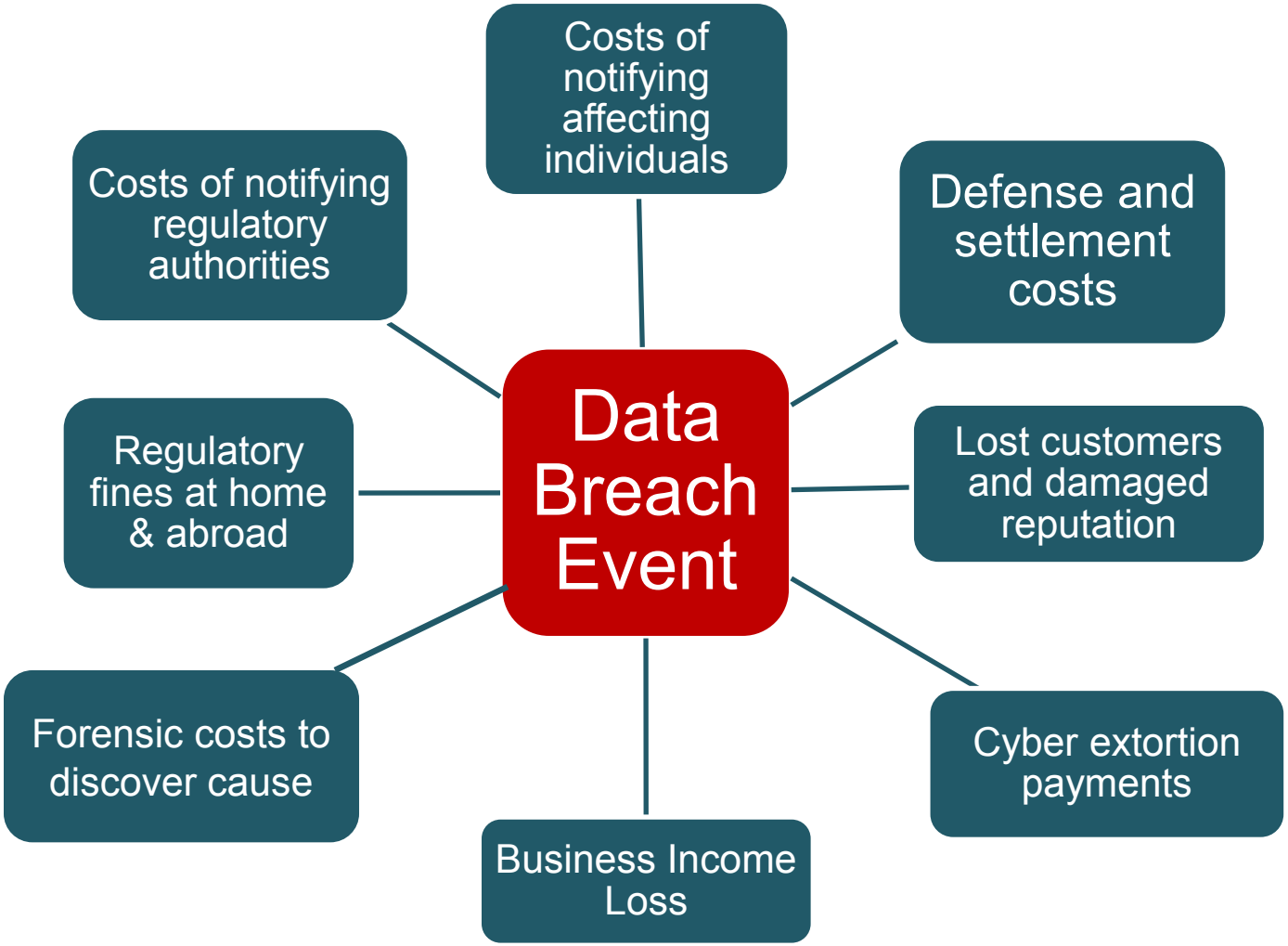

Estimated Cyber Insurance Premiums Written, 2014 – 2020F

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$ Billions

Cyber insurance premiums written could more than triple to $7.5 billion by 2020

I.I.I.'s Cyber Risk paper issued Oct. 2015

Source: Advisen (2014 est.); PwC (2015, 2020); Insurance Information Institute.

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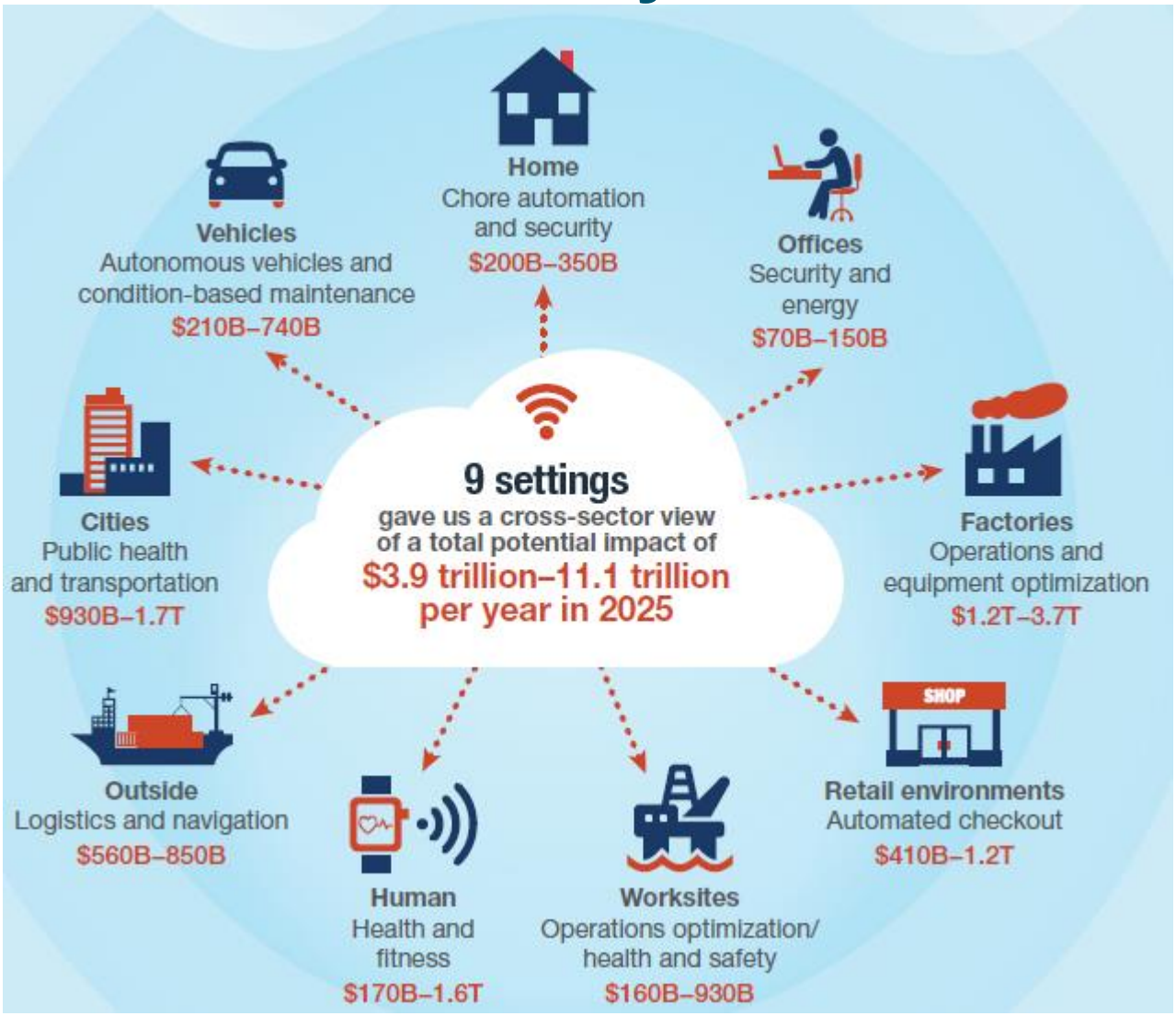
THE 'INTERNET OF THINGS'

The Advance of Technology Creates New Risks, New Gaps and New Solutions

The Internet of Things and the Insurance Industry



Sources: McKinsey Global Institute, *The Internet of Things: Mapping the Value Beyond the Hype*, June 2015; Insurance Information Institute.

- The "Internet of Things" will create trillions in economic value throughout the global economy by 2025
- What opportunities, challenges will this create for insurers?
- As new risks arise, new gaps will emerge as solutions generally lag

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Thank you for your time and your attention!

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Thank you to our panelists!

Robert Hartwig
President,
Insurance Information Institute

Thomas Holzheu
Chief Economist Americas,
Swiss Re

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