



# Insurers are like zoos: better with cats!

Paul Eaton

**Prepared by Aon**  
Risk and Capital Strategy  
Presentation to 2018 CAS Fall Meeting

# Effective communication how-to

The screenshot shows a web browser window with a Google search for "how to communicate to actuaries". The search results include:

- [PDF] Effective Communication for Actuaries - Casualty Actuarial Society**  
<https://www.casact.org/education/reinsure/2011/handouts/C8-Underwood.pdf>  
Antitrust notice. • The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings ...
- [PDF] Actuarial Communications - The Actuarial Standards Board**  
[www.actuarialstandardsboard.org/wp-content/uploads/2014/02/asop041\\_120.pdf](http://www.actuarialstandardsboard.org/wp-content/uploads/2014/02/asop041_120.pdf)  
Section 3. Analysis of Issues and Recommended Practices. 3. 3.1 Requirements for Actuarial Communications. 3. 3.1.1 Form and Content. 3. 3.1.2 Clarity. 3. 3.1.3 Timing of Communication. 3. 3.1.4 Identification of Responsible Actuary. 3. 3.2 Actuarial Report. 3. 3.3 Specific Circumstances. 4. 3.4 Disclosures Within an ...

Below the results, there is a section titled "People also search for" with the following suggestions:

- actuarial disclosure statement example
- actuarial code of professional conduct
- asop list
- asop 49 medicaid
- asop 23 2016
- actuarial disclosure statement data quality

# Actuarial Standards Board's Actuarial Standards of Practice (ASOP)

The screenshot displays the Actuarial Standards Board's website. The browser address bar shows the URL [www.actuarialstandardsboard.org/standards-of-practice/](http://www.actuarialstandardsboard.org/standards-of-practice/). The navigation menu includes HOME, ASB MEMBERS, STANDARDS OF PRACTICE, DRAFTS, GUIDELINES, COMMITTEES, ABOUT ASB, and CONTACT. A dropdown menu for COMMITTEES is open, listing: Casualty Committee, Enterprise Risk Management Committee, General Committee, Health Committee, Life Committee, and Pension Committee.

ASOP 48	ASOP 49	ASOP 50
<b>Life Settlements Mortality</b>	<b>Medicaid Managed Care Capitation Rate Development and Certification</b>	<b>Determining Minimum Value and Actuarial Value under the Affordable Care Act</b>
Category: Life Date: December 2013 Status: Adopted	Category: Health Date: March 2015 Status: Adopted	Category: Health Date: September 2015 Status: Adopted
<a href="#">View</a>   <a href="#">Download PDF</a>	<a href="#">View</a>   <a href="#">Download PDF</a>	<a href="#">View</a>   <a href="#">Download PDF</a>

ASOP 51	ASOP 52	ASOP 53
<b>Assessment and</b>	<b>Principle-Based Reserves</b>	<b>Estimating Future Costs</b>

# ASOP 41: Actuarial Communications!

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## ASOP 41

### Actuarial Communications

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Category: General

Date: December 2010

Status: Adopted

[View](#) | [Download PDF](#)

## SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE

### 1.1 PURPOSE

This actuarial standard of practice (ASOP) provides guidance to actuaries with respect to [actuarial communications](#).

# So what is an “Actuarial Communication”?

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## SECTION 2. DEFINITIONS

The terms below are defined for use in this actuarial standard of practice.

### 2.1 ACTUARIAL COMMUNICATION

A written, electronic, or oral communication issued by an actuary with respect to actuarial services.

# And what are “Actuarial Services”?

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## 2.5 ACTUARIAL SERVICES

Professional services provided to a principal by an individual acting in the capacity of an actuary. Such services include the rendering of advice, recommendations, findings, or opinions based upon actuarial considerations.

# Are you my Principals?

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## 2.10 PRINCIPAL

A client or employer of the actuary.

# Is this an “Actuarial Document”?

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## 2.2 ACTUARIAL DOCUMENT

An actuarial communication in any recorded form (such as paper, e-mail, spreadsheets, presentations, audio or video recordings, web sites, and court or hearing transcripts). Notes taken by someone other than the actuary are not considered actuarial documents.

An actuarial communication in any recorded form (such as paper, e-mail, spreadsheets, presentations, audio or video recordings, web sites, and court or hearing transcripts). Notes taken by someone other than the actuary are not considered actuarial documents.  
(ASOP No. 41)

On another actuary's work)



# Agenda

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- Section 1**            Climate Trends
- Section 2**            Weather Loss Trends
- Section 3**            People Trends
- Section 4**            Insurance Trends
- Section 5**            Capital Trends
- Section 6**            The Point



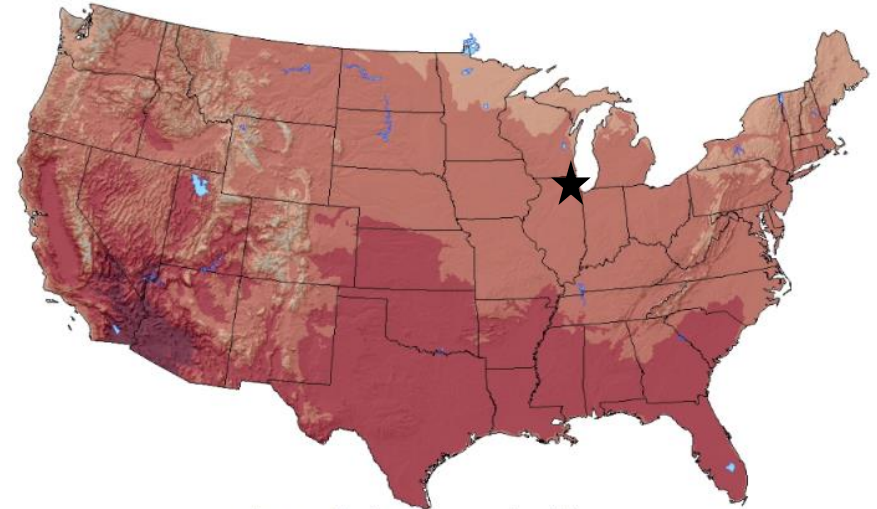
# Section 1: Climate Trends

# Weather vs. Climate



This is Weather.

**Today's Average High: 86°F**



**Average Maximum Temperature (F)  
Based on 1981-2010 Normals  
July**



This is Climate.

## Weather vs. Climate

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**“Climate is what we expect; weather is what we get.”**

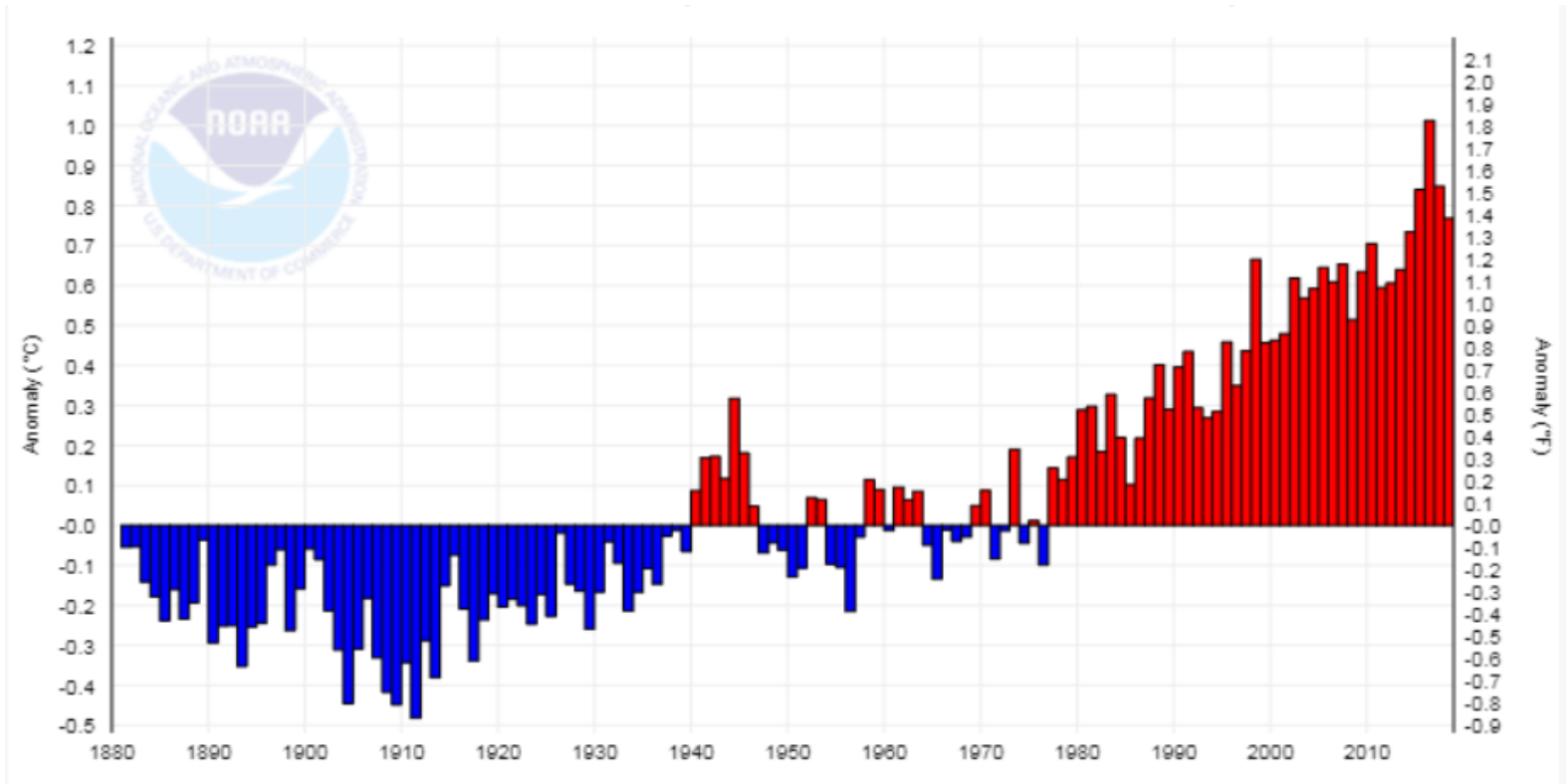
– Mark Twain

**“Weather is your mood; climate is your personality.”**

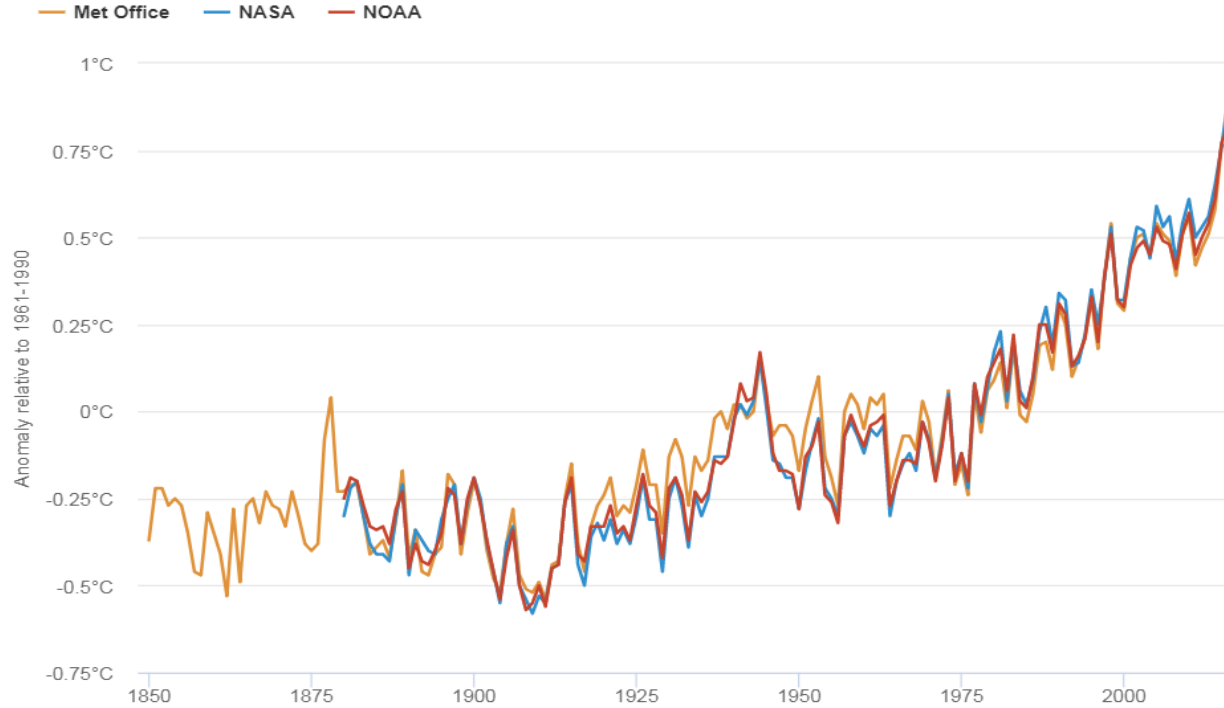
– Marshall Shepherd

*Climate change is a shift in long-term  
weather patterns*

# Fact: Global Temperatures are Rising

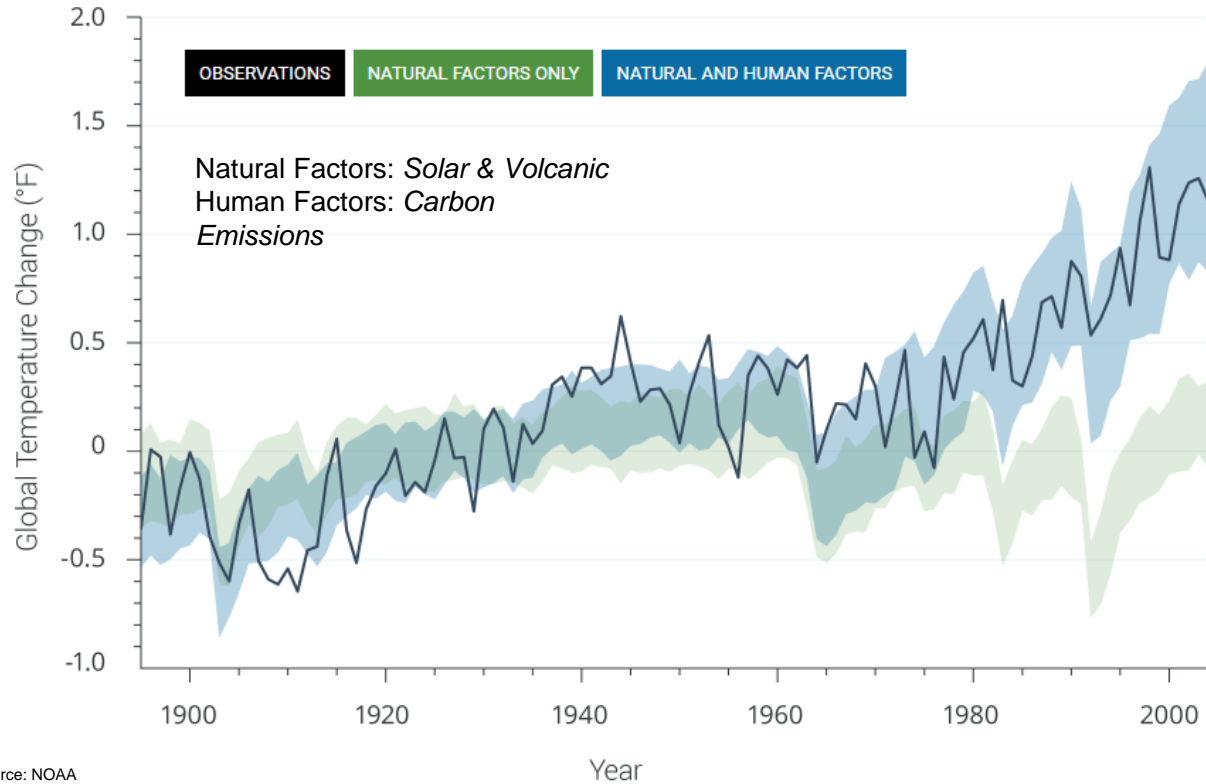


# ...a fact we all agree on



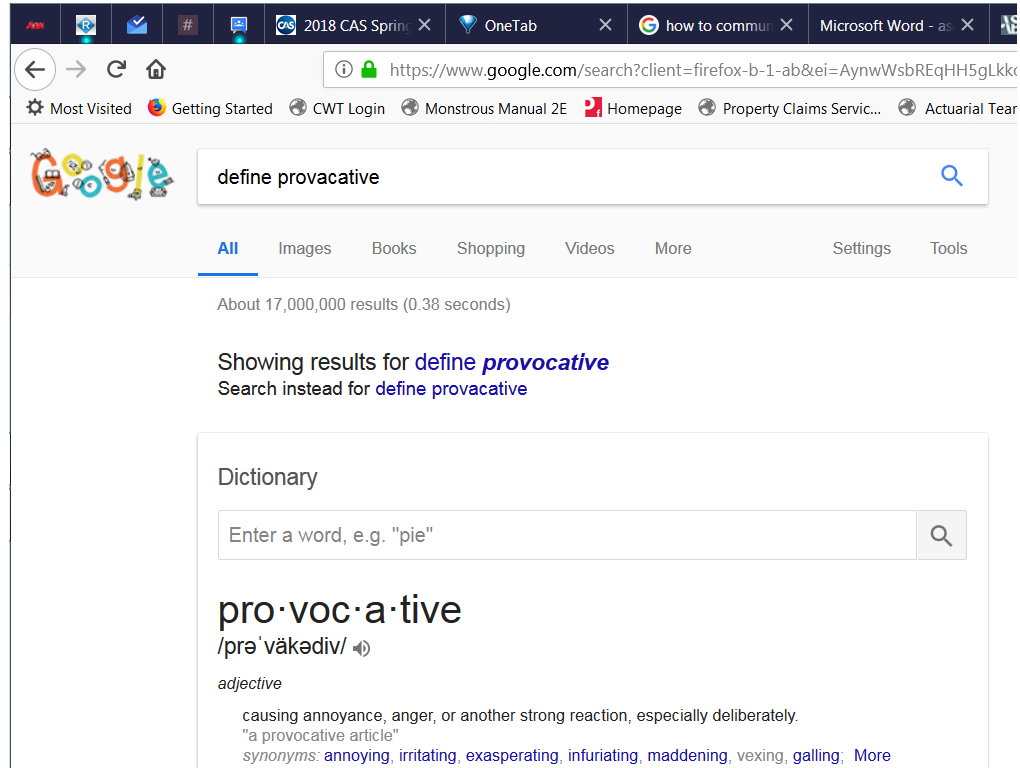
CB

# Fact: Causes of temperature rise



Source: NOAA

# Provocateur?

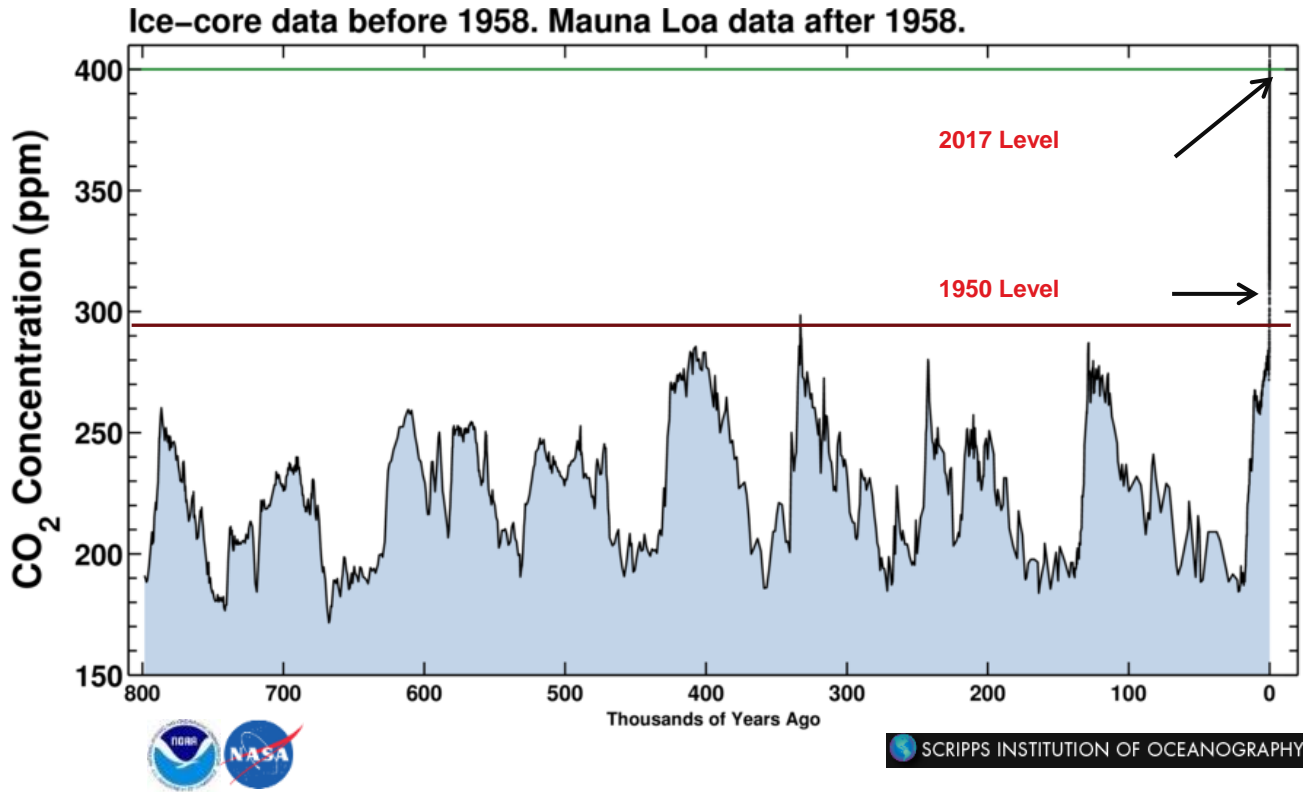


The screenshot shows a web browser window with a Google search for "define provocative". The search results page displays the following information:

- Search bar: "define provocative"
- Navigation tabs: All, Images, Books, Shopping, Videos, More, Settings, Tools
- Results: About 17,000,000 results (0.38 seconds)
- Showing results for **define provocative**
- Search instead for **define provocative**
- Dictionary section:
  - Input field: "Enter a word, e.g. 'pie'"
  - Word: **pro·voc·a·tive**
  - Phonetic: /prə'vəkədɪv/
  - Part of speech: *adjective*
  - Definition: causing annoyance, anger, or another strong reaction, especially deliberately. "a provocative article"
  - Synonyms: [annoying](#), [irritating](#), [exasperating](#), [infuriating](#), [maddening](#), [vexing](#), [galling](#); [More](#)

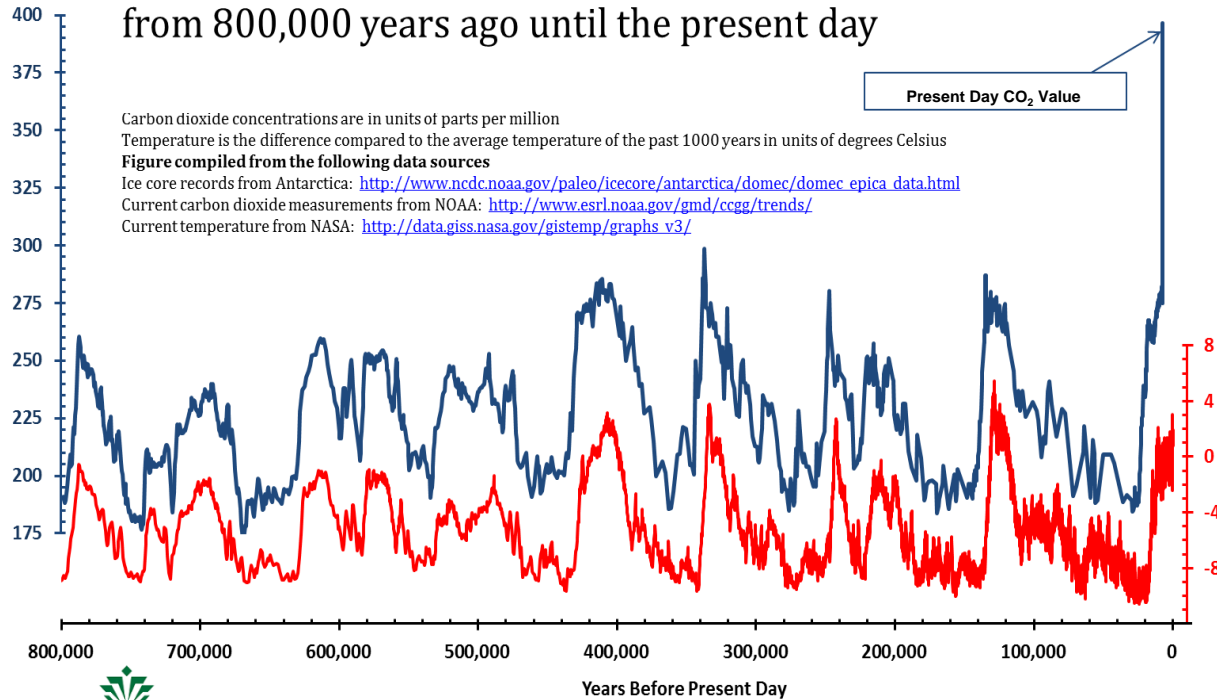


# Fact: Carbon dioxide levels are rising

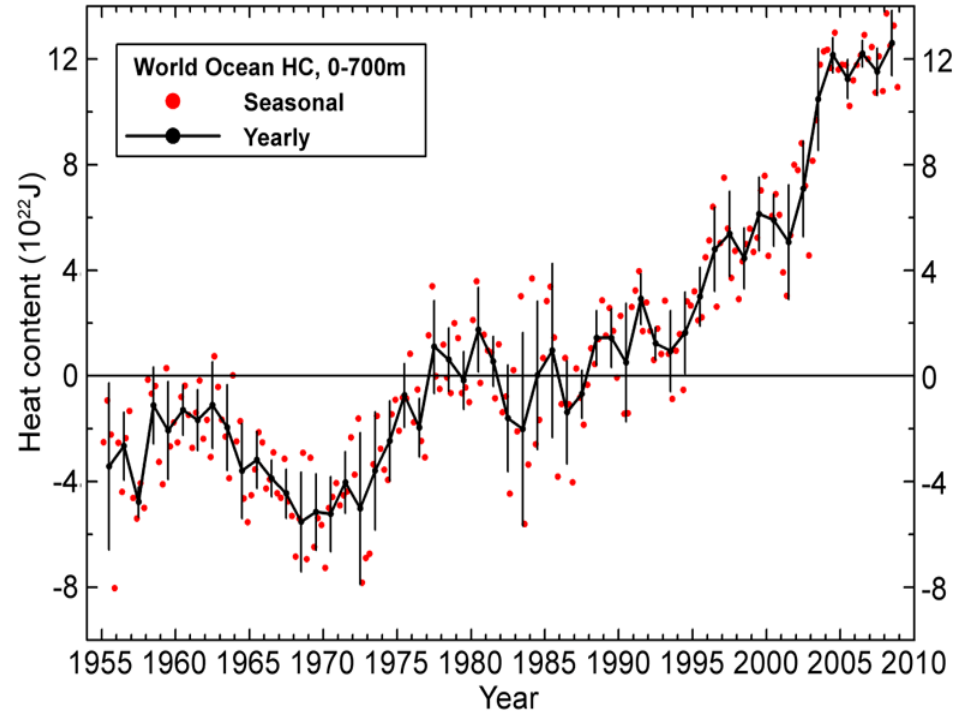
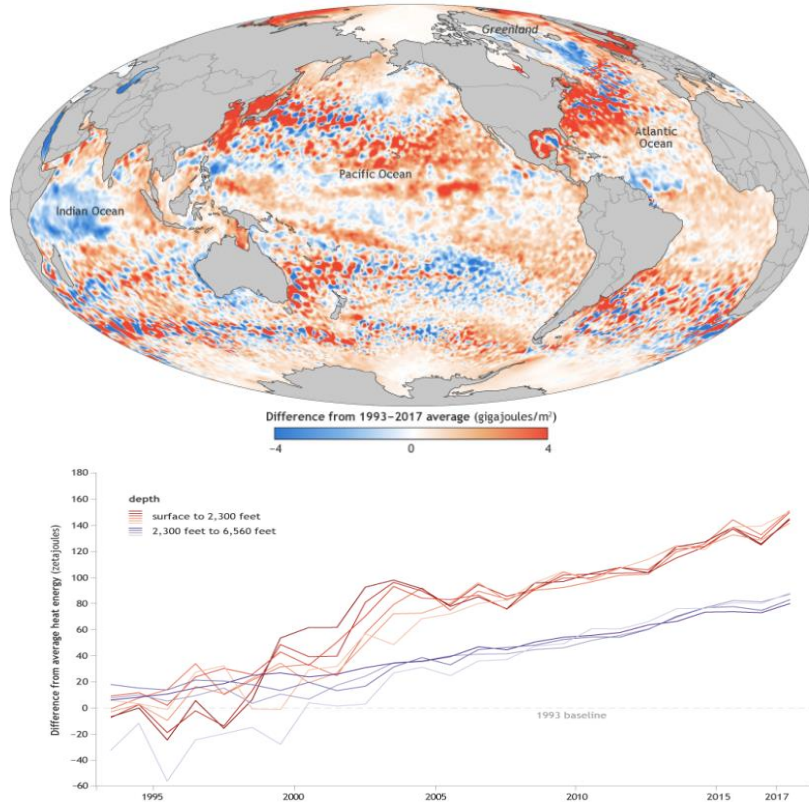


# Fact: Correlation Between CO<sub>2</sub> & Temperatures

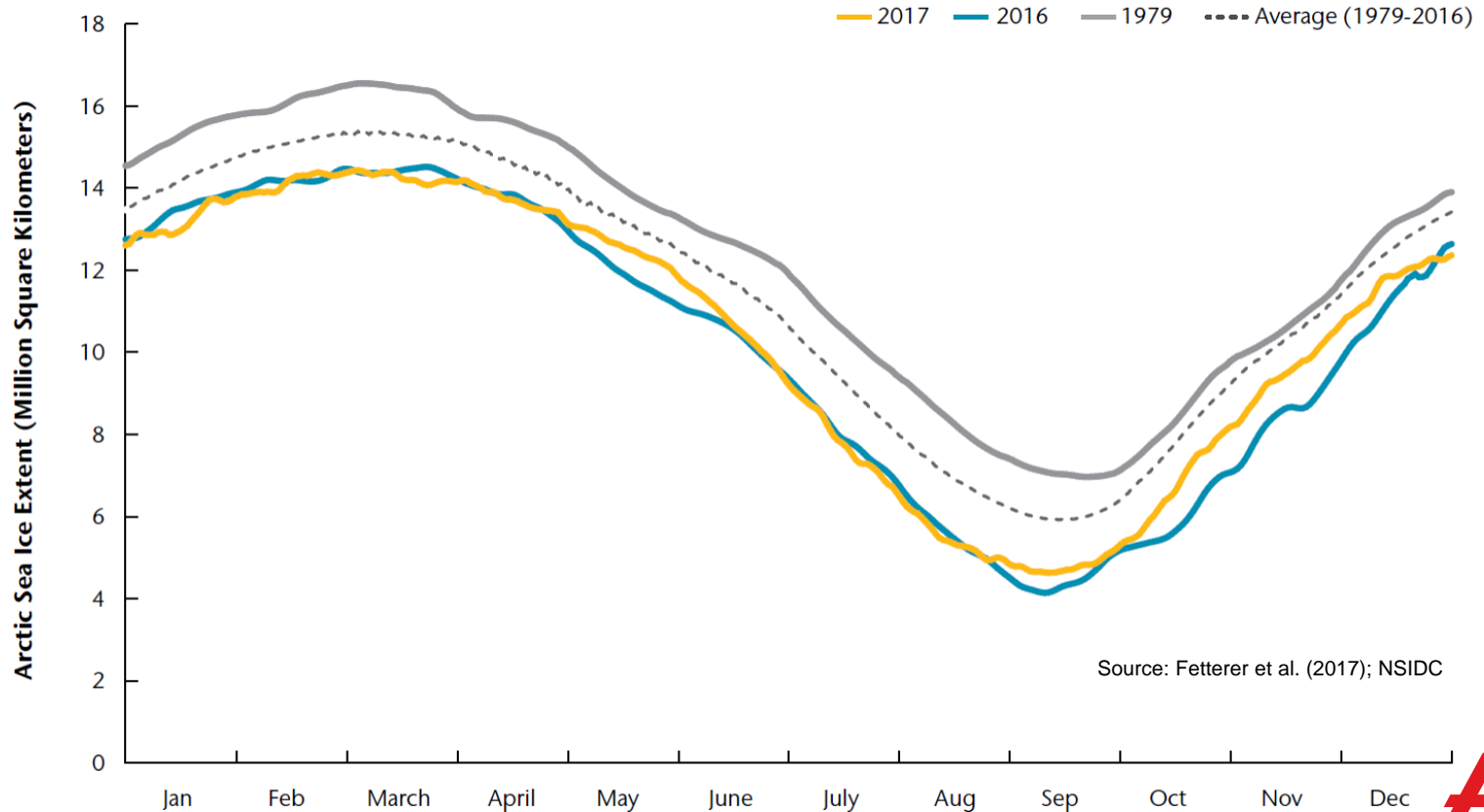
## Carbon dioxide and the temperature of our planet from 800,000 years ago until the present day



# Fact: Oceans Getting Warmer

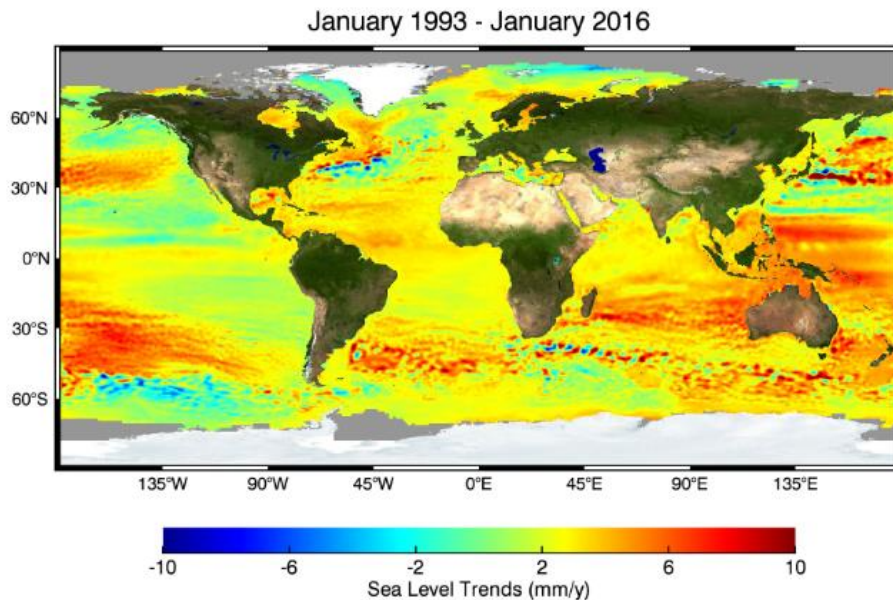
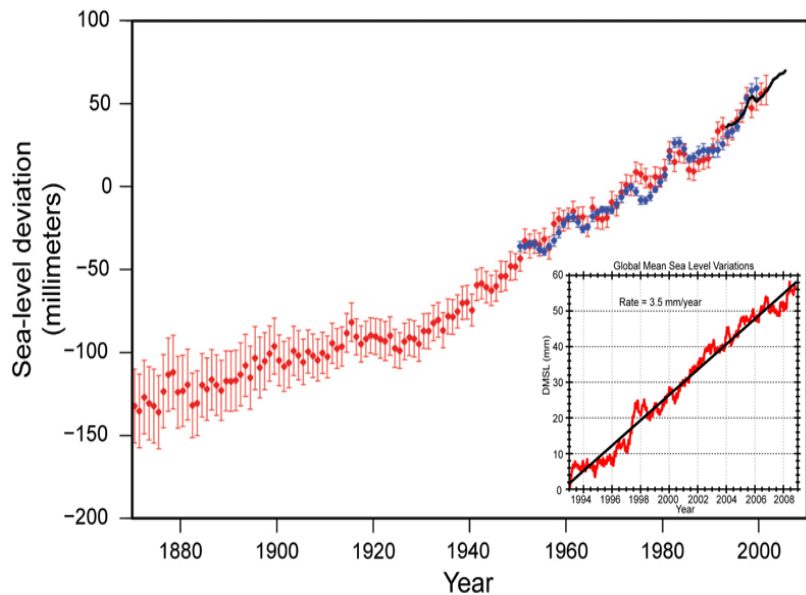


# Fact: Sea ice is melting



Source: Fetterer et al. (2017); NSIDC

# Fact: Sea Levels Rising



# ASOP 41: Disclosures

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## 3.4 DISCLOSURES WITHIN AN ACTUARIAL REPORT

Consideration of the items to be disclosed is an important part of the preparation of any actuarial communication. The actuary should review the list of required disclosure items included in section 4 of this ASOP, and in any other relevant ASOP. Further discussion regarding some of these disclosure items follows:

# ASOP 41: Reliance On Others

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## 3.4.3 RELIANCE ON OTHER SOURCES FOR DATA AND OTHER INFORMATION

An actuary who makes an actuarial communication assumes responsibility for it, except to the extent the actuary disclaims responsibility by stating reliance on other sources. Reliance on other sources for data and other information means making use of those sources without assuming responsibility for them. An actuarial communication making use of any such reliance should define the extent of reliance, for example by stating whether or not checks as to reasonableness have been applied. An actuary may rely upon other sources for information, except where limited or prohibited by applicable standards of practice or law or regulation. Further guidance on when such reliance is appropriate, and what the actuary's responsibilities are when such reliance is stated, is found in ASOP No. 23, *Data Quality*.

# ASOP 41: Responsibility...

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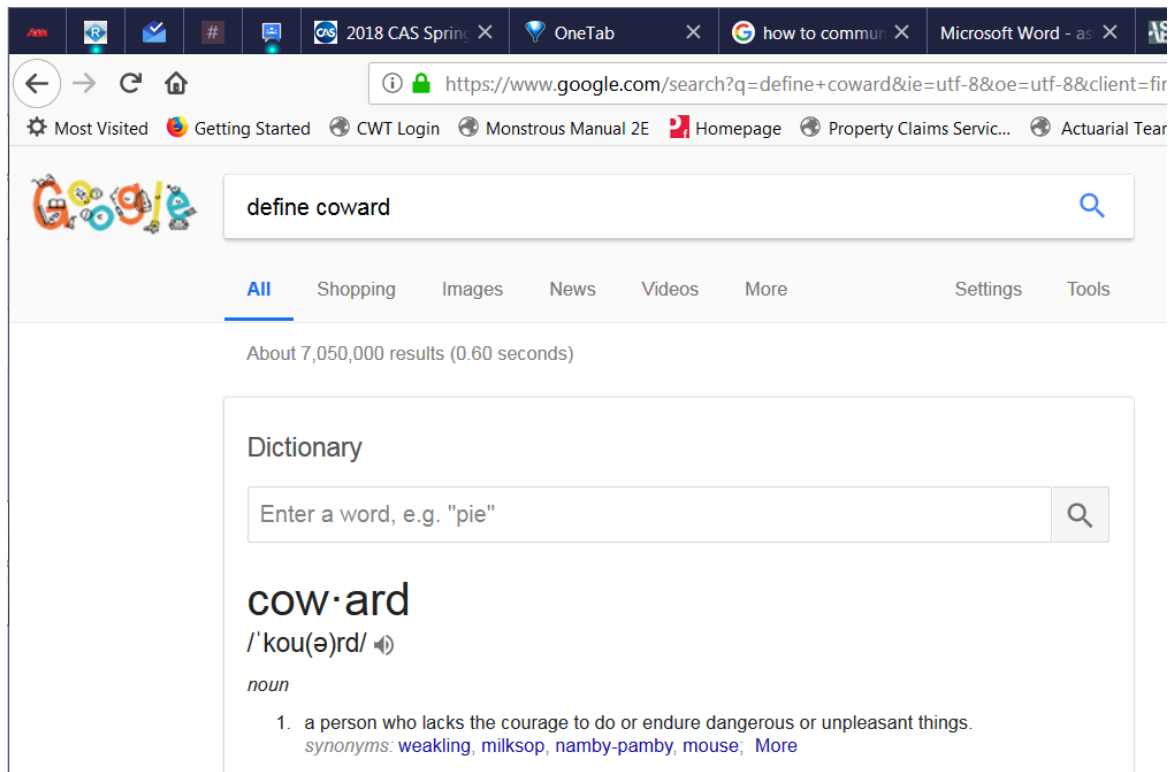
## 3.4.4 RESPONSIBILITY FOR ASSUMPTIONS AND METHODS

b. If a material assumption or method is selected by another party, the actuary has three choices:

3. If the actuary has been unable to judge the reasonableness of the assumption or method without performing a substantial amount of additional work beyond the scope of the assignment, or if the actuary was not qualified to judge the reasonableness of the assumption, the actuary should disclose that fact as specified in section 4.3.



# Things that make you go, “hmm”...



The screenshot shows a web browser window with several tabs open. The active tab is a Google search page for the query "define coward". The search results show approximately 7,050,000 results in 0.60 seconds. A dictionary widget is displayed, showing the definition of "coward" as a noun: "a person who lacks the courage to do or endure dangerous or unpleasant things." Synonyms listed include "weakling", "milksop", "namby-pamby", and "mouse".

Browser tabs: 2018 CAS Spring, OneTab, how to commun, Microsoft Word - as

Address bar: <https://www.google.com/search?q=define+coward&ie=utf-8&oe=utf-8&client=fi>

Search bar: define coward

Navigation: All, Shopping, Images, News, Videos, More, Settings, Tools

Results: About 7,050,000 results (0.60 seconds)

Dictionary

Enter a word, e.g. "pie"

**cow·ard**  
/ˈkou(ə)rɪd/

*noun*

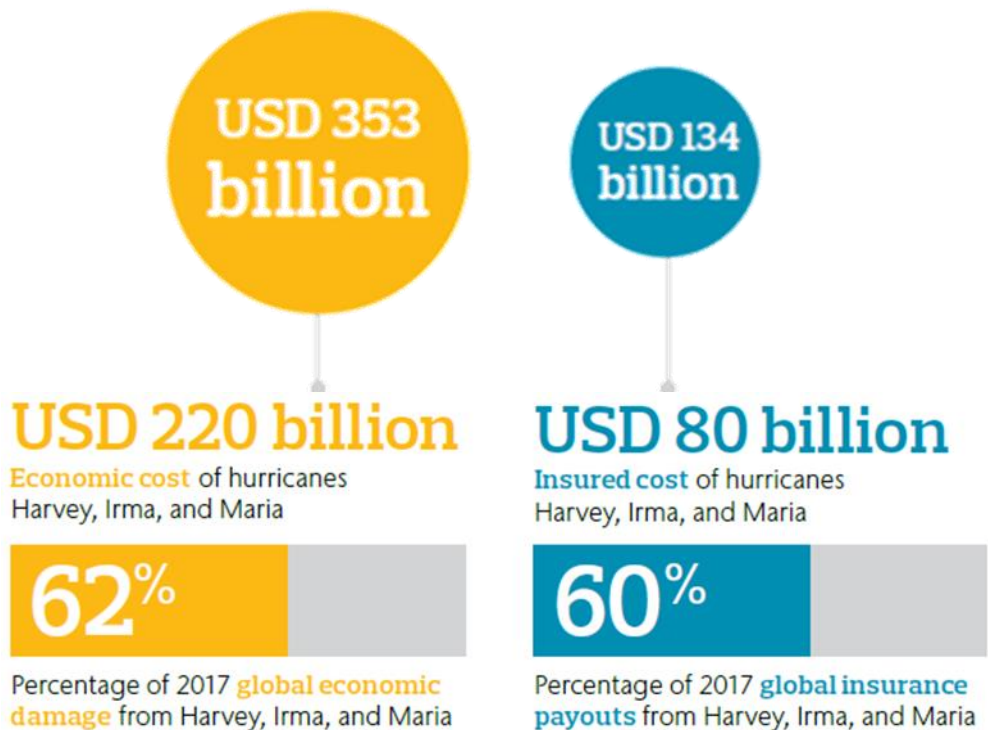
1. a person who lacks the courage to do or endure dangerous or unpleasant things.  
*synonyms:* weakling, milksop, namby-pamby, mouse; [More](#)



# Section 2: Weather Loss Trends

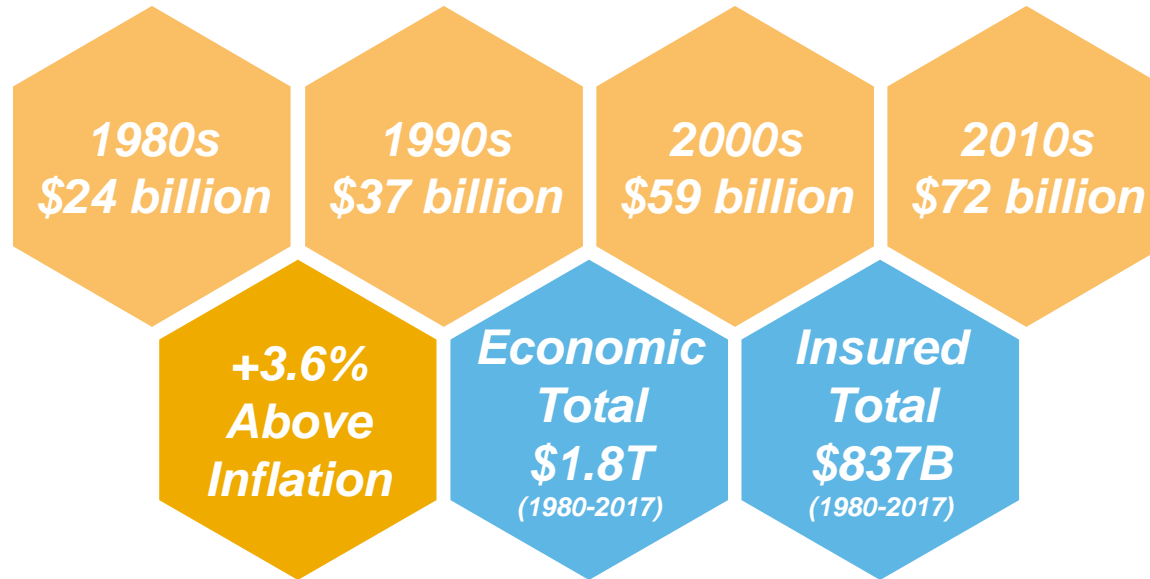
## But first...2017

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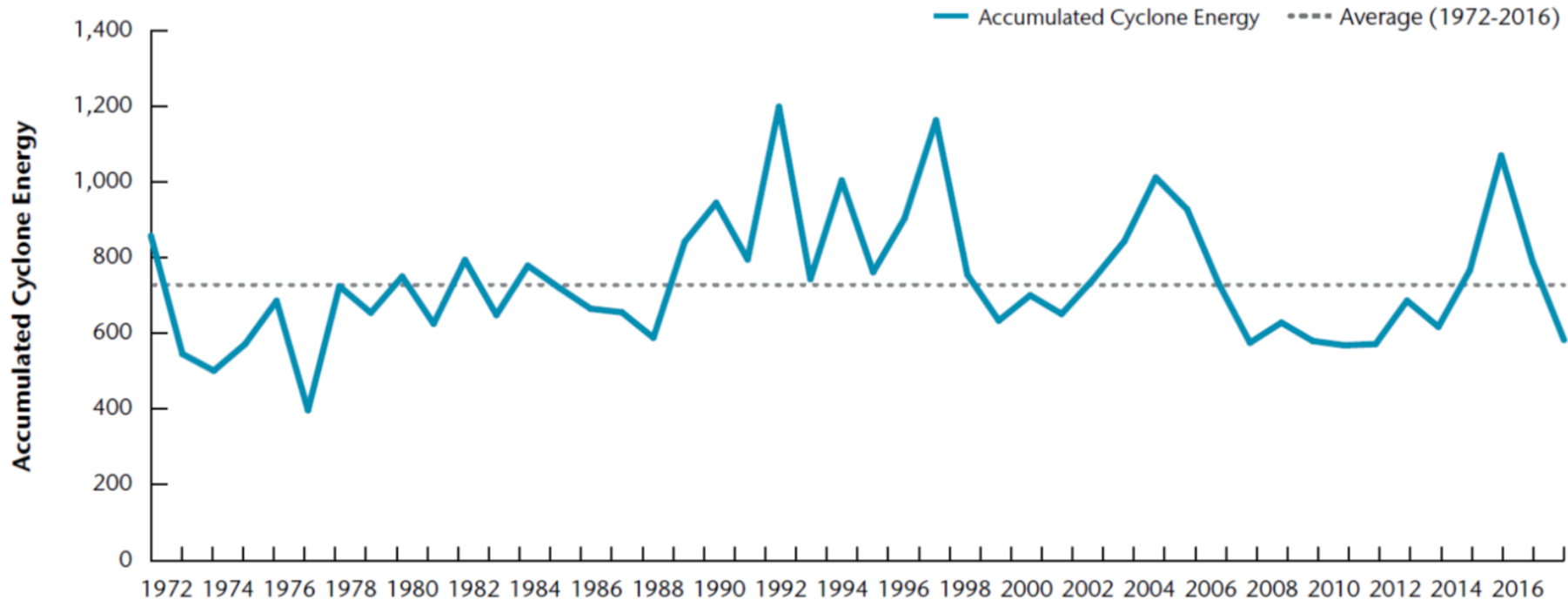
# U.S. Economic Loss: Weather Events

## Average Annual Economic Loss (current USD)



Source: Impact Forecasting

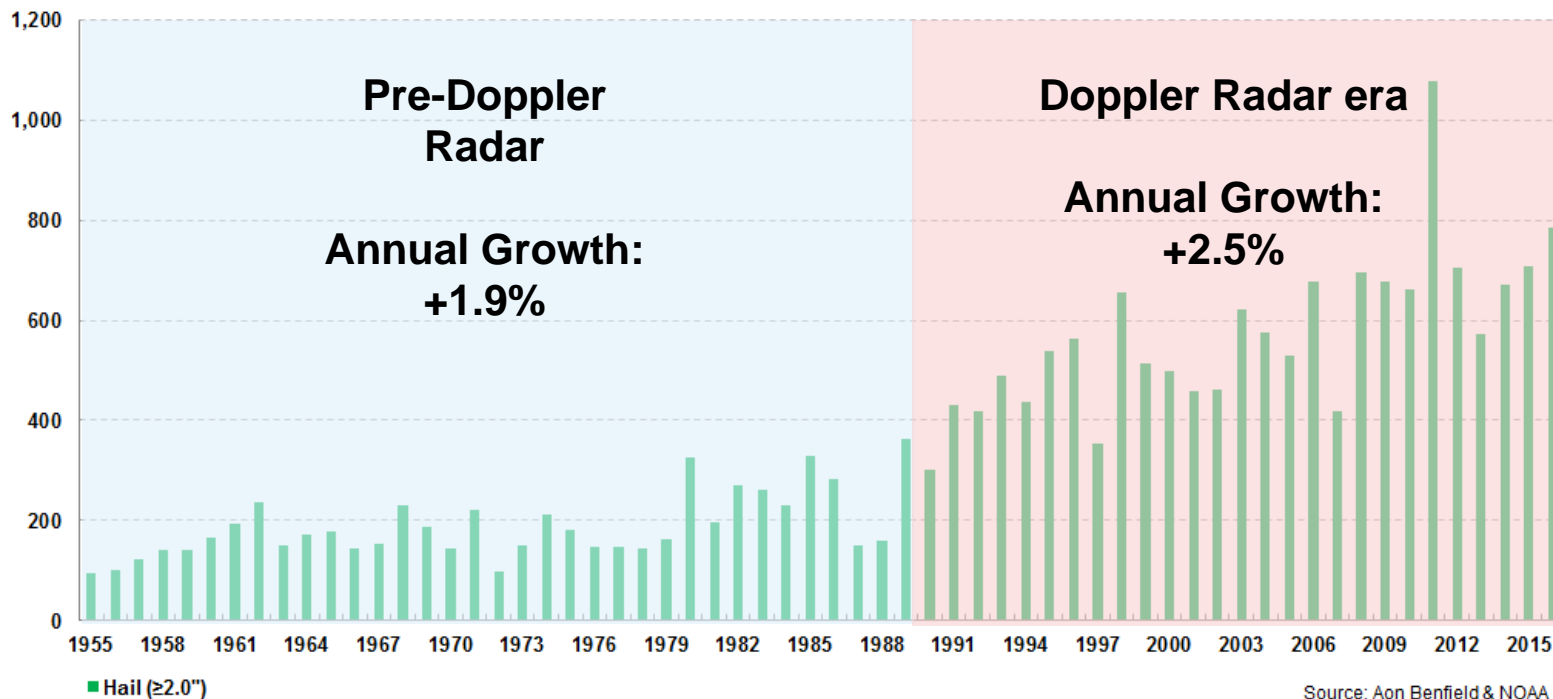
# Loss Driver: Atlantic Hurricanes



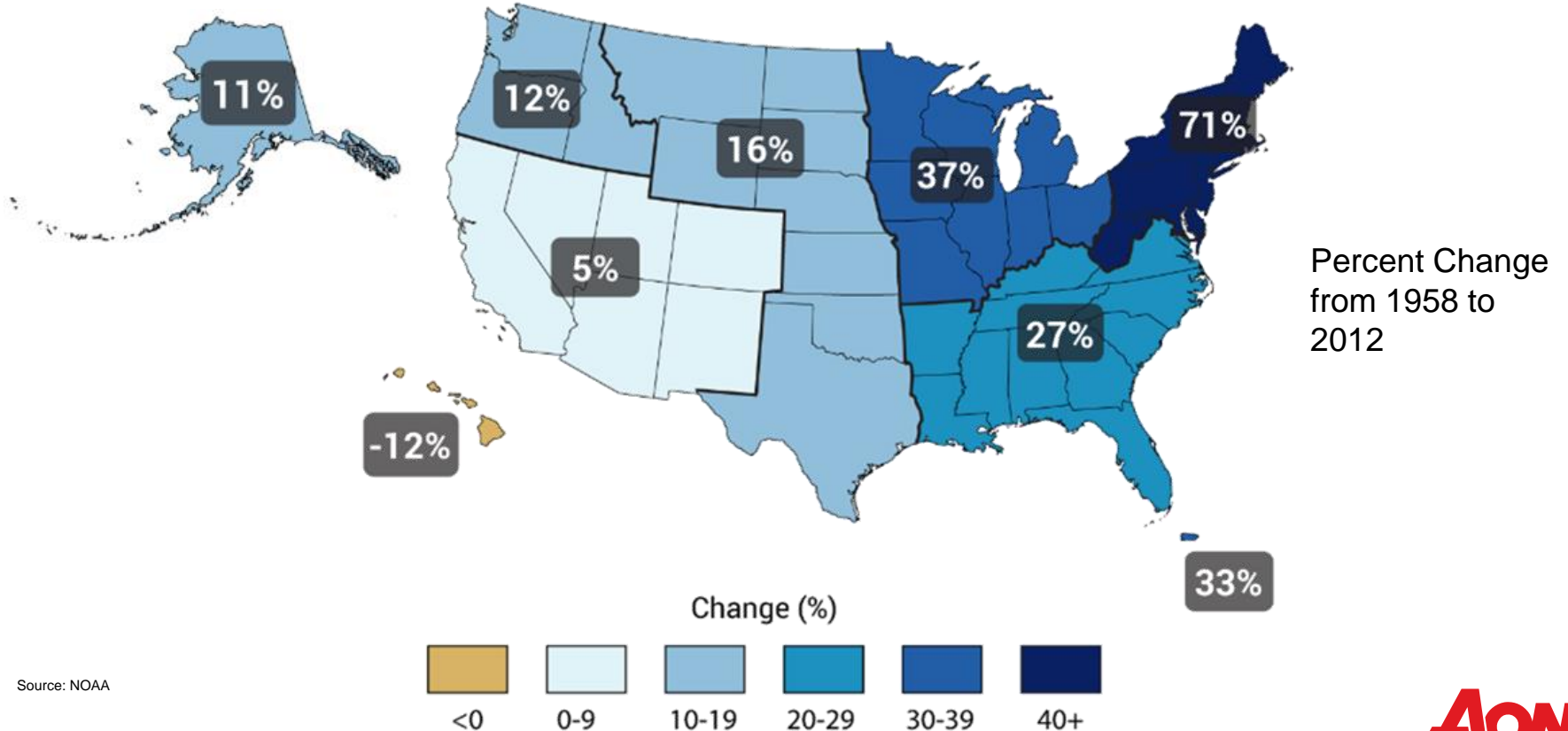
Source: Aon Benfield & Colorado State University

# Loss Driver: Hail

## SPC Hail Reports: 1955-2016



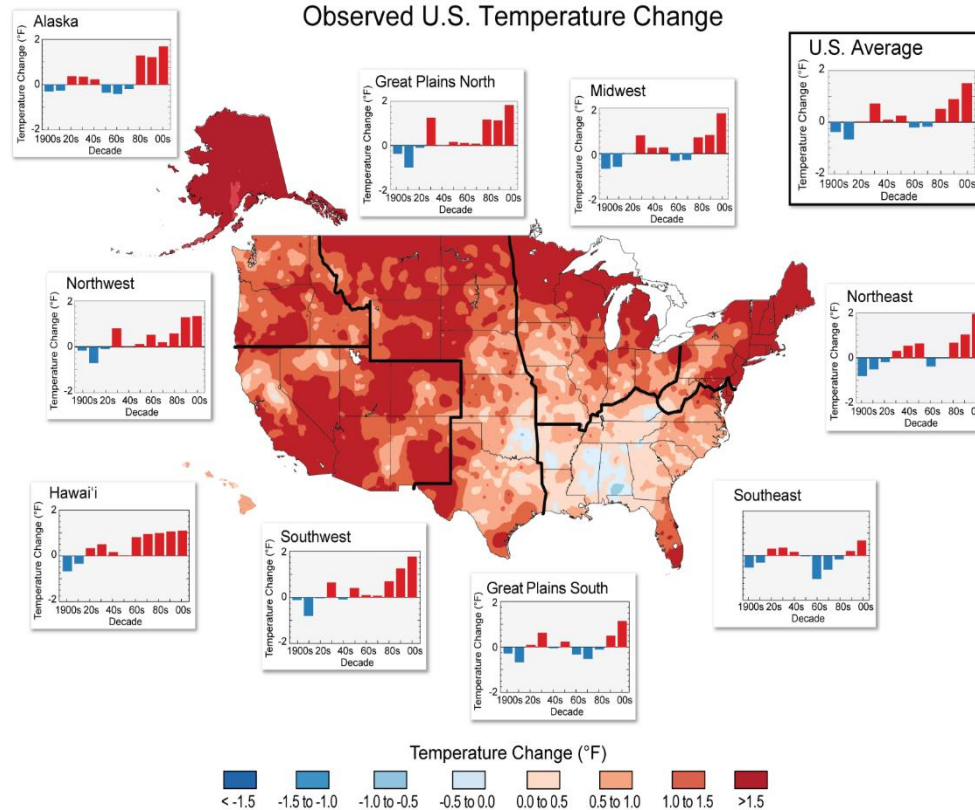
# Loss Driver: Precipitation



Source: NOAA

# Loss Driver: Drought & Wildfire

Temperature change from 1991 to 2012 compared to 1901 to 1960 average and the 1951 to 1980 average for AK and HI

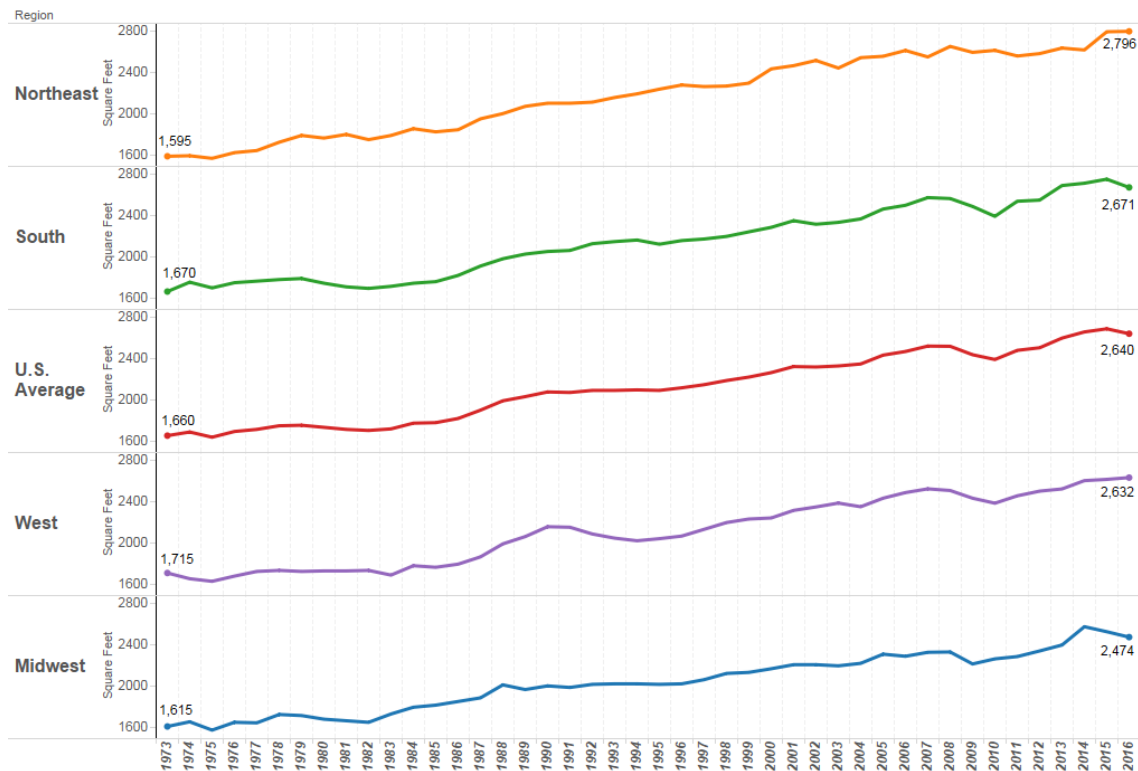






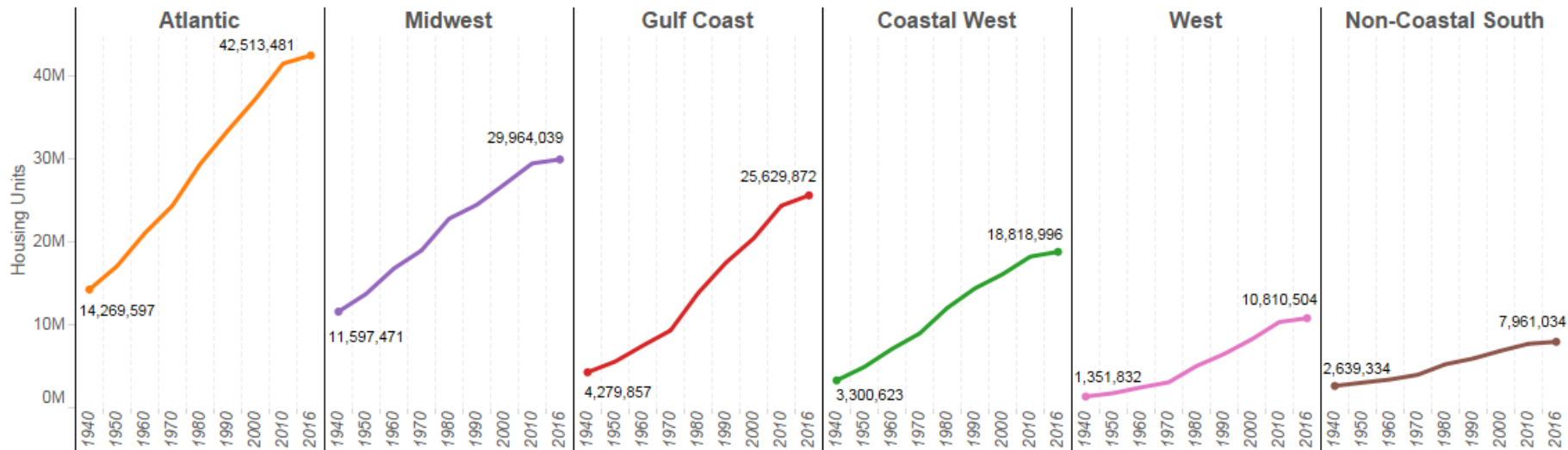
# Section 3: People Trends

# Loss Driver: Bigger & Costlier Homes



Source: U.S. Census

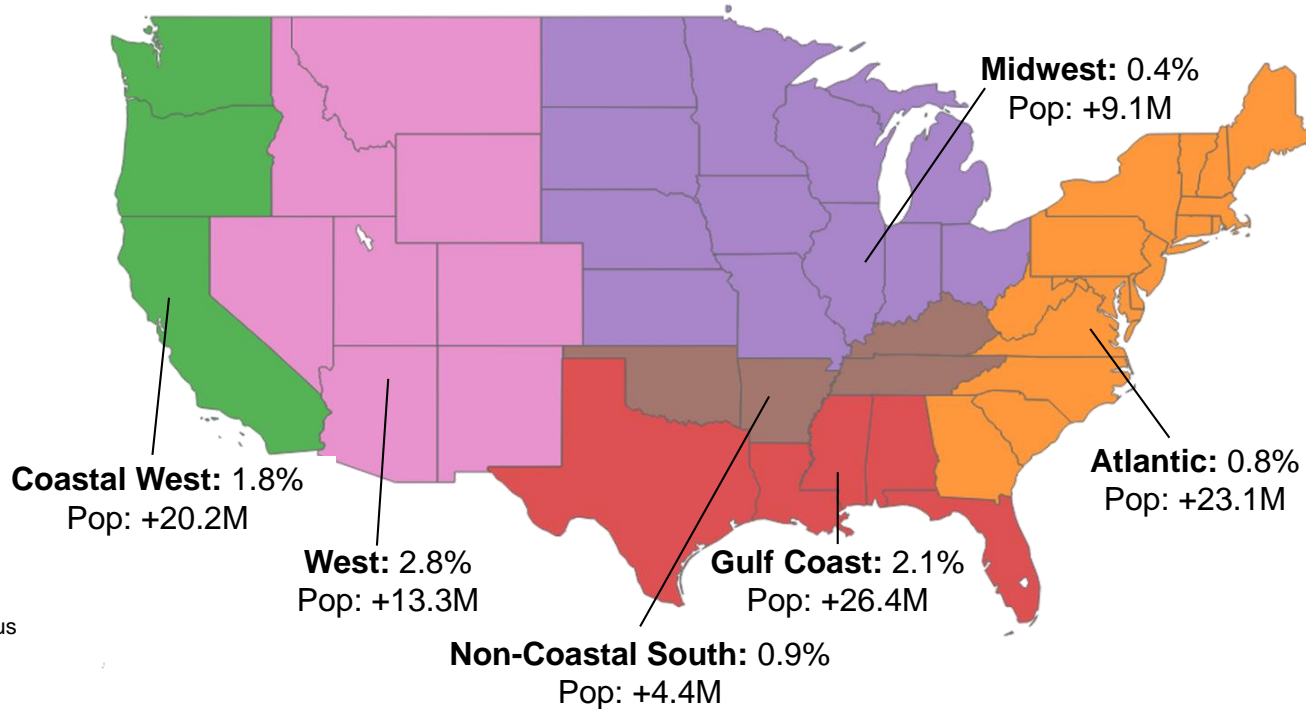
# Loss Driver: More Homes



Source: U.S. Census

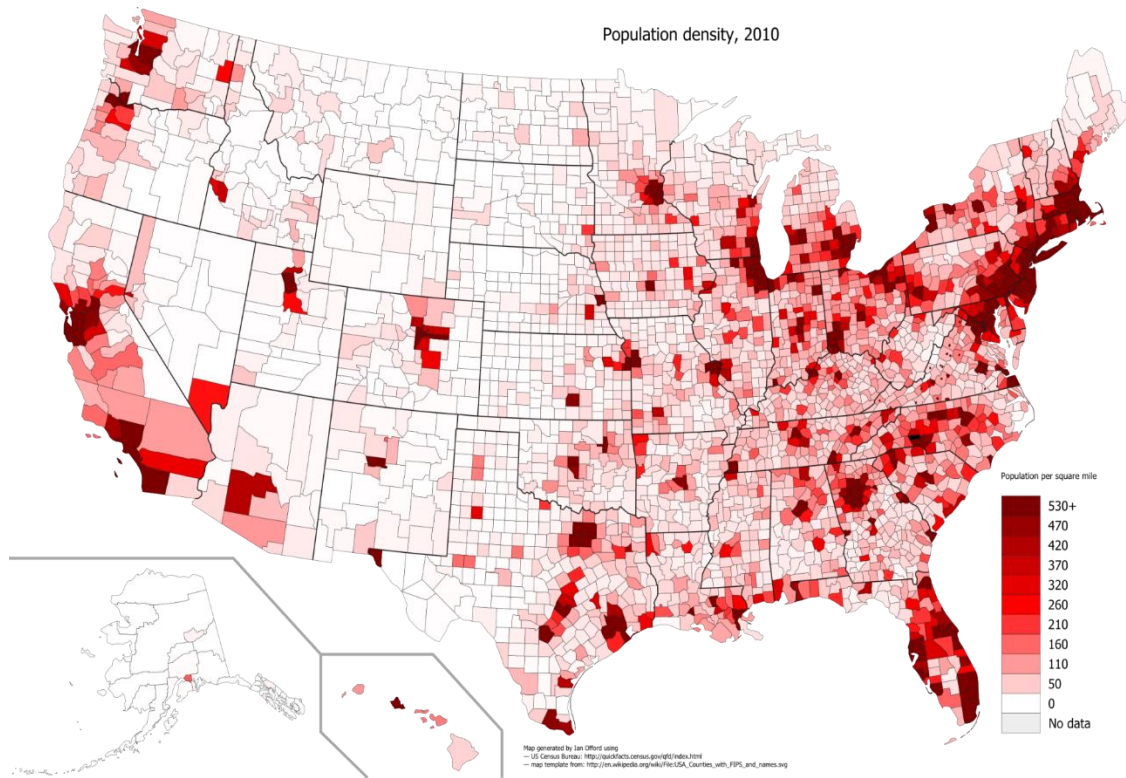
# Loss Driver: U.S. Population Growth Rates

**1980-2016:** 72% of population increase found in ocean-bordering states



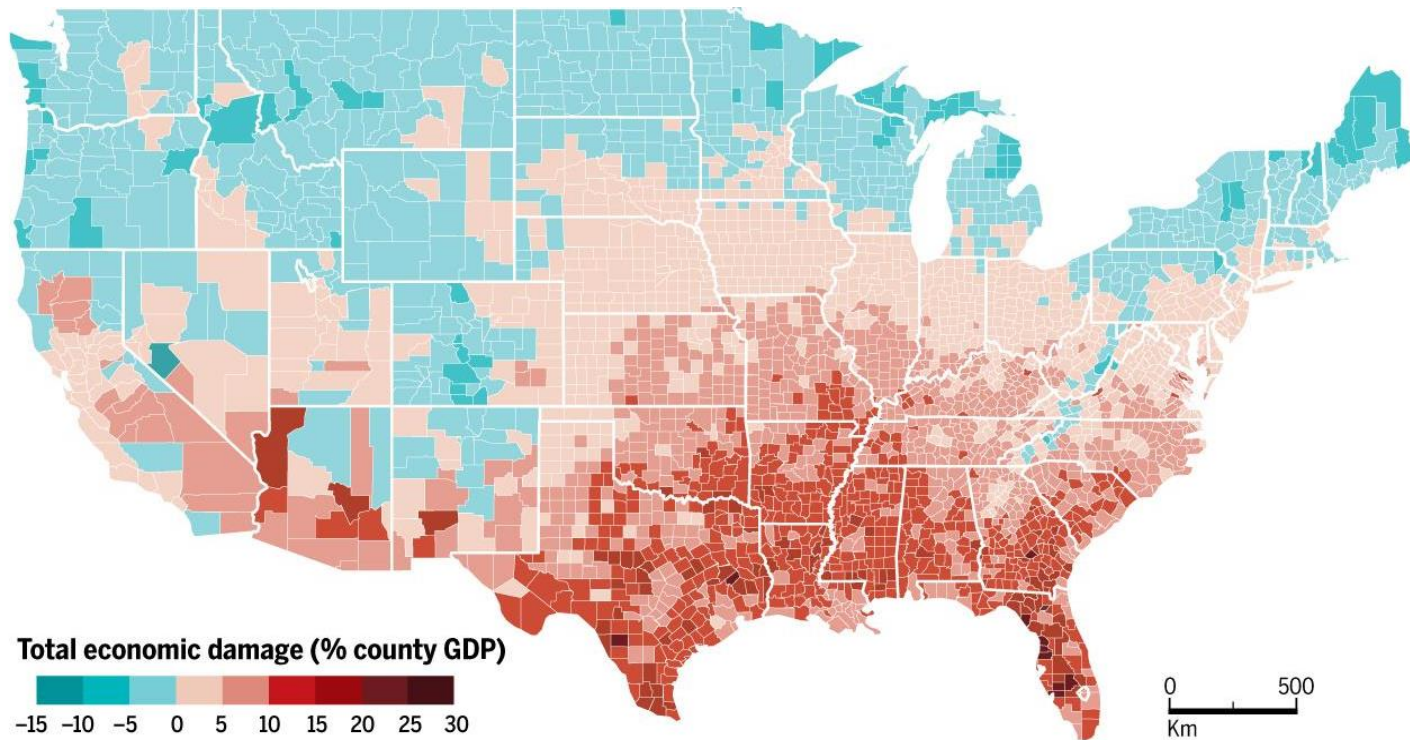
Source: U.S. Census

# Loss Driver: U.S. Population Patterns



# Greatest Risk Areas

**Study:** For every +1°C increase in global mean temperature, cost impact to US GDP increases by +1.2%



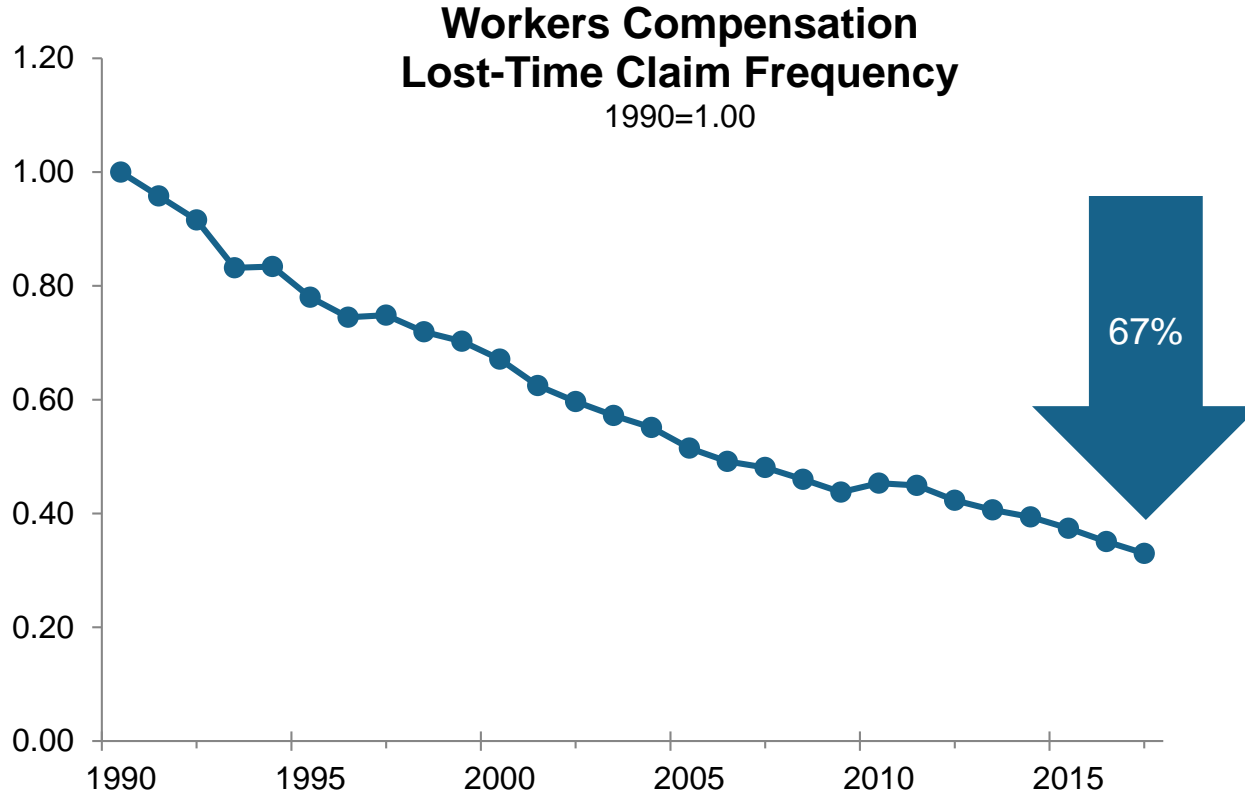
Hsiang, Kopp, Jina, Rising, et al. (2017)



# Section 4: Insurance Trends

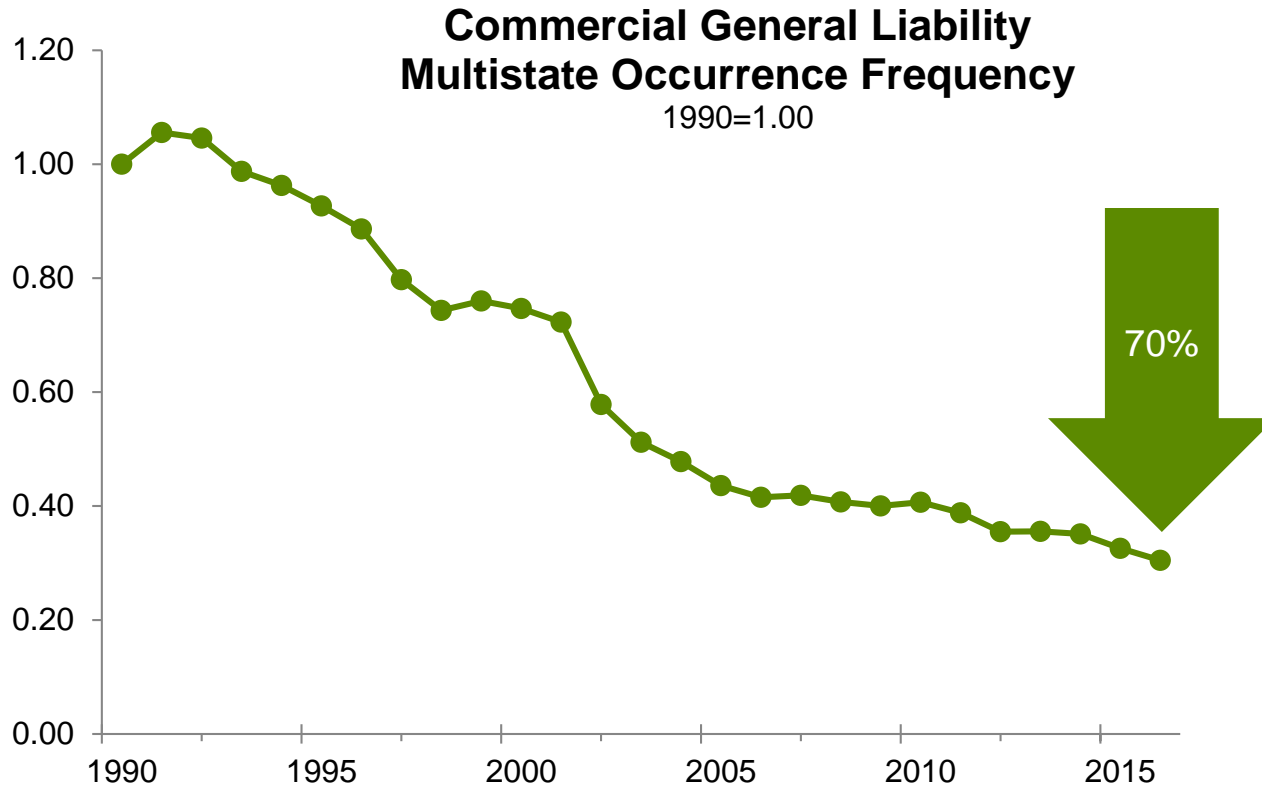


# Workers Compensation Lost Time Frequency

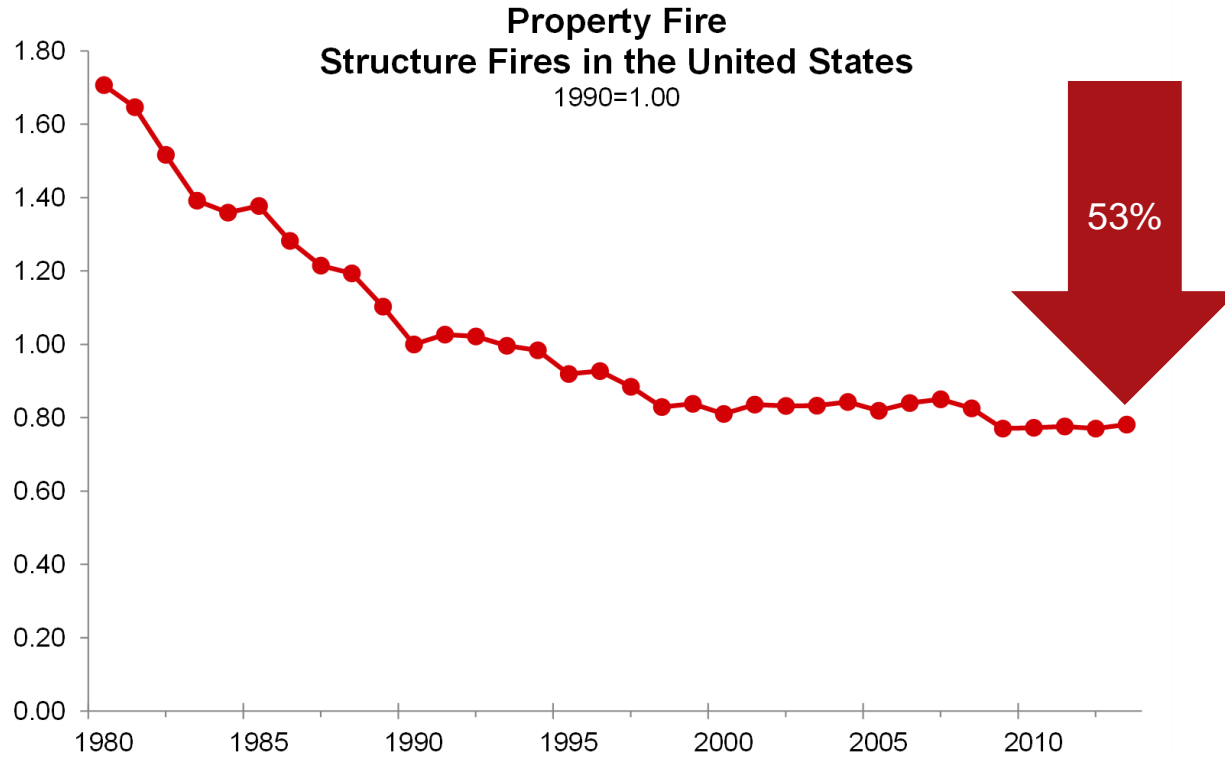




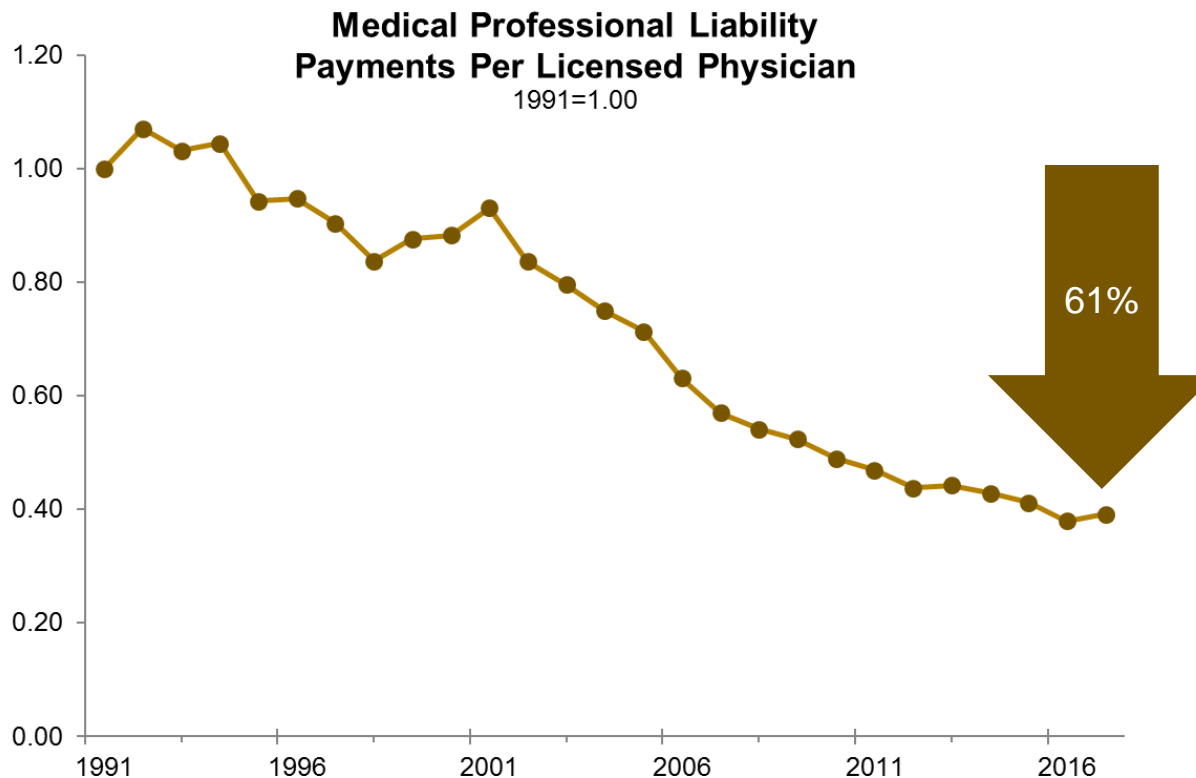
# General Liability Frequency



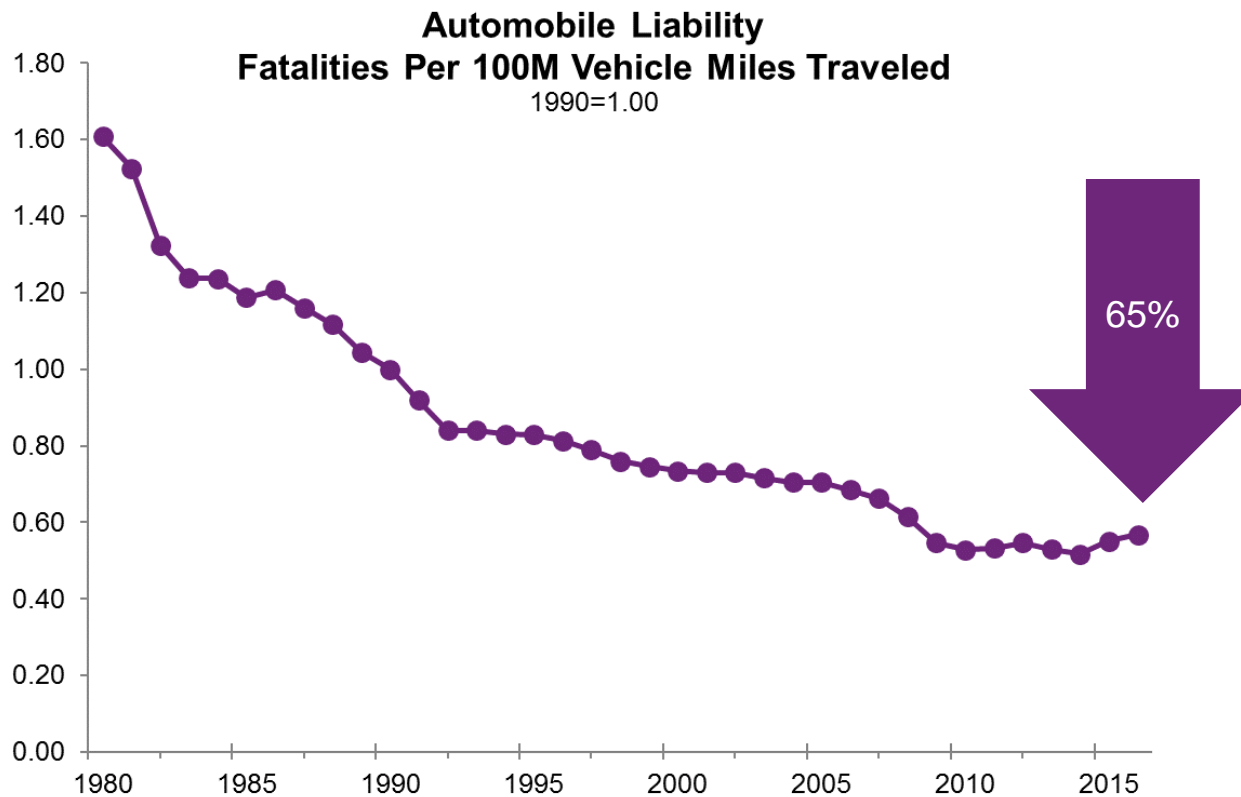
# Structure Fire Loss Frequency



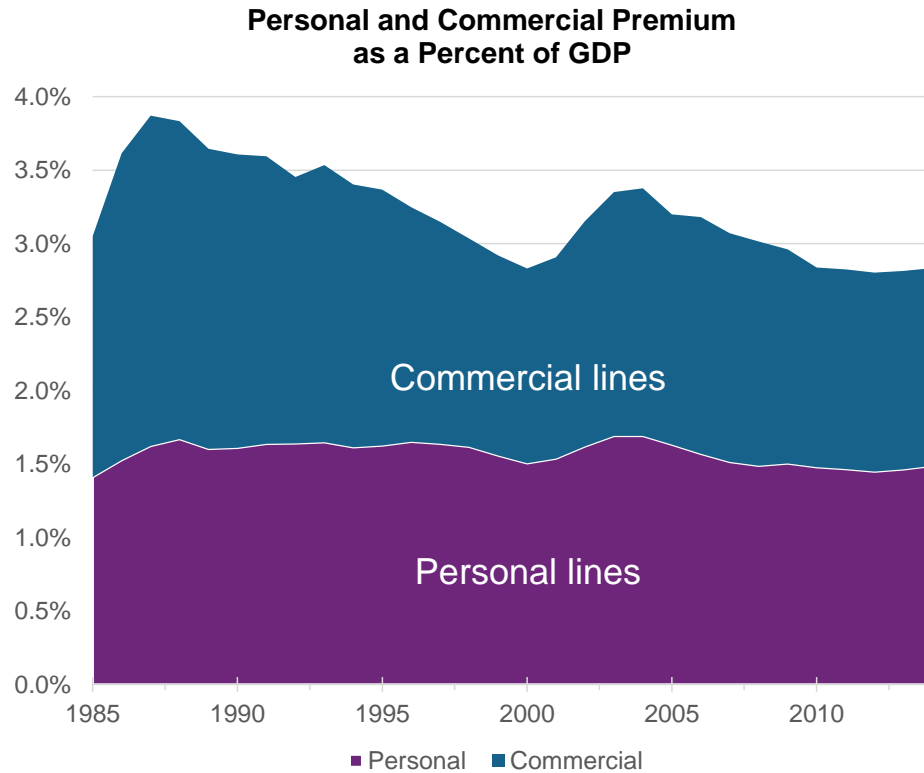
# Medical Professional Payment Frequency



# Auto Severe Accident Frequency

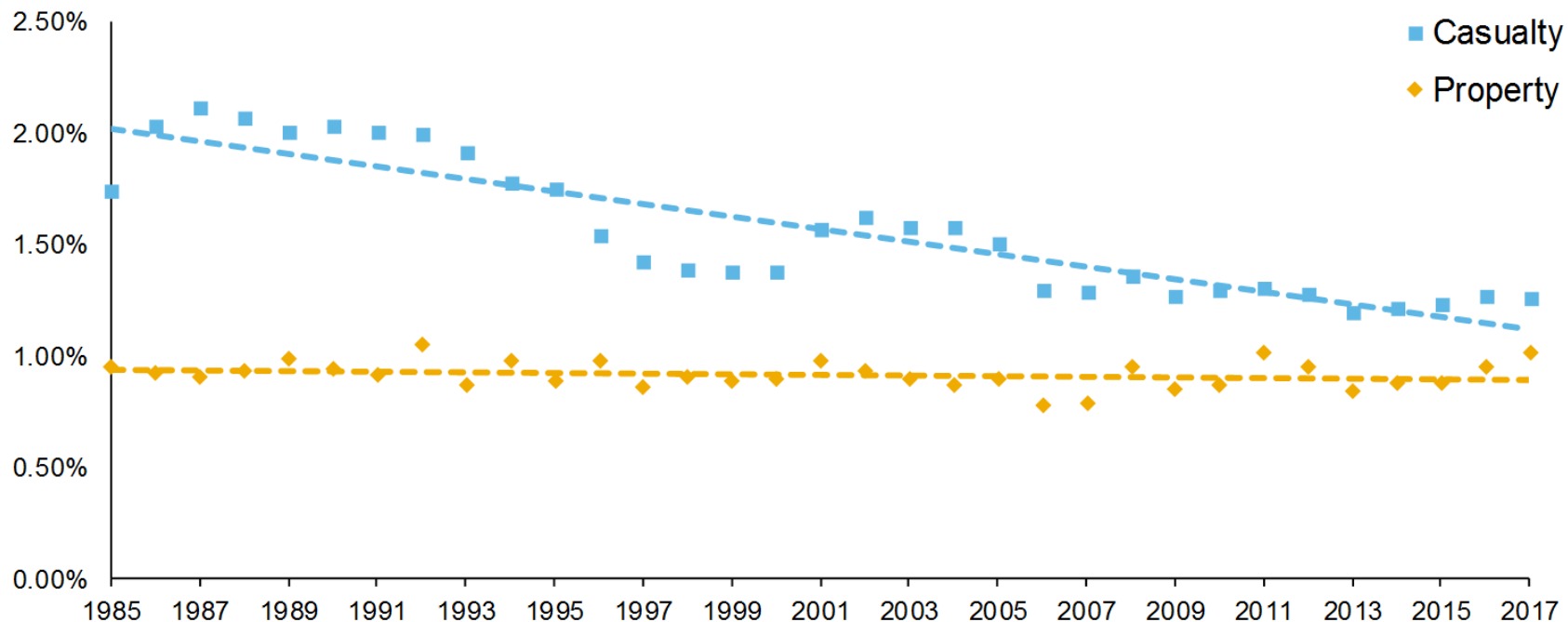


# Commercial Lines Are Shrinking



# Because casualty is shrinking (not property)!

## Calendar Year Incurred Loss % of GDP



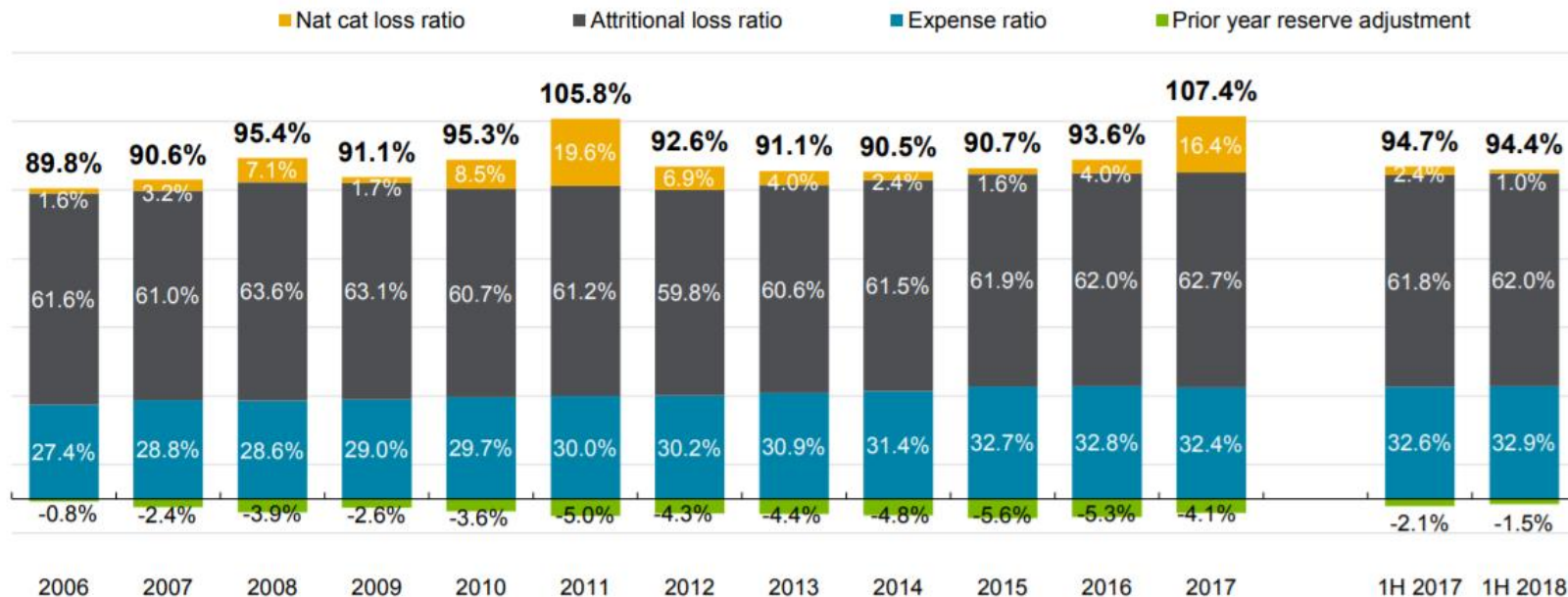


# Section 5: Capital Trends

# 2017 was not a great year for reinsurers...

## Reinsurer combined ratios

Aon Benfield Aggregate Index of Reinsurers



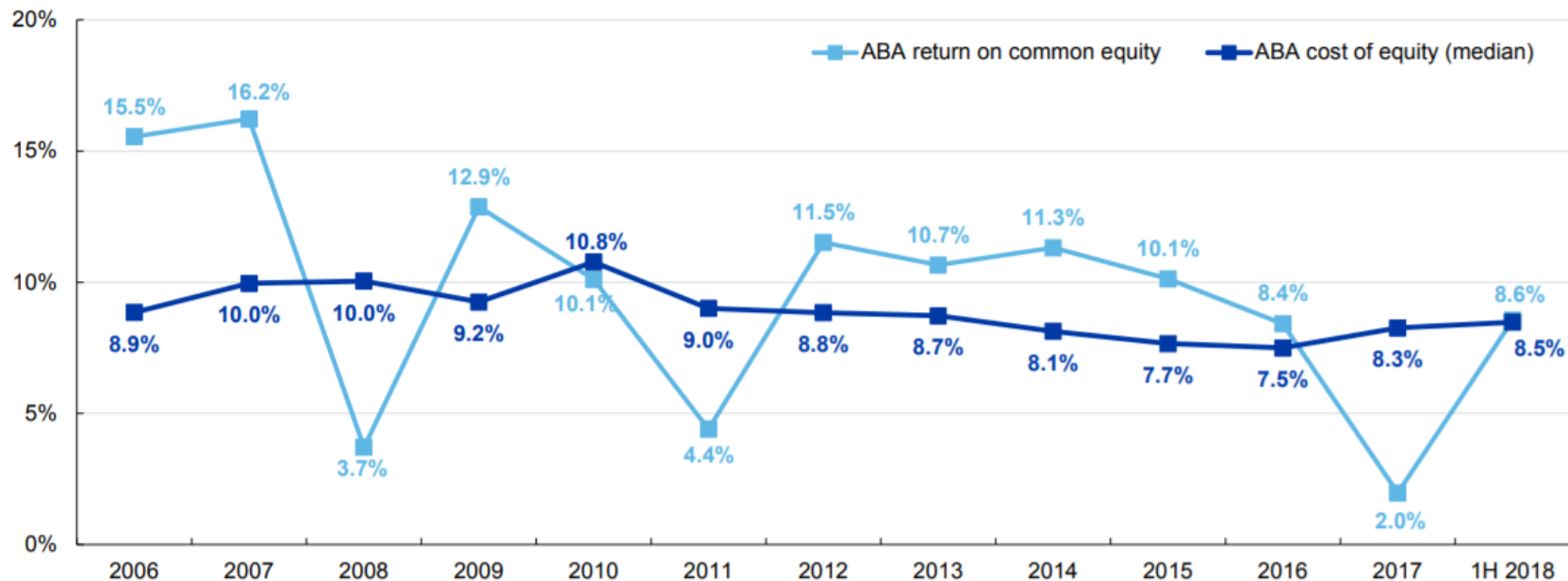
Source: Company financial statements / Aon Reinsurance Analytics



# 2017 was not a great year for reinsurers...

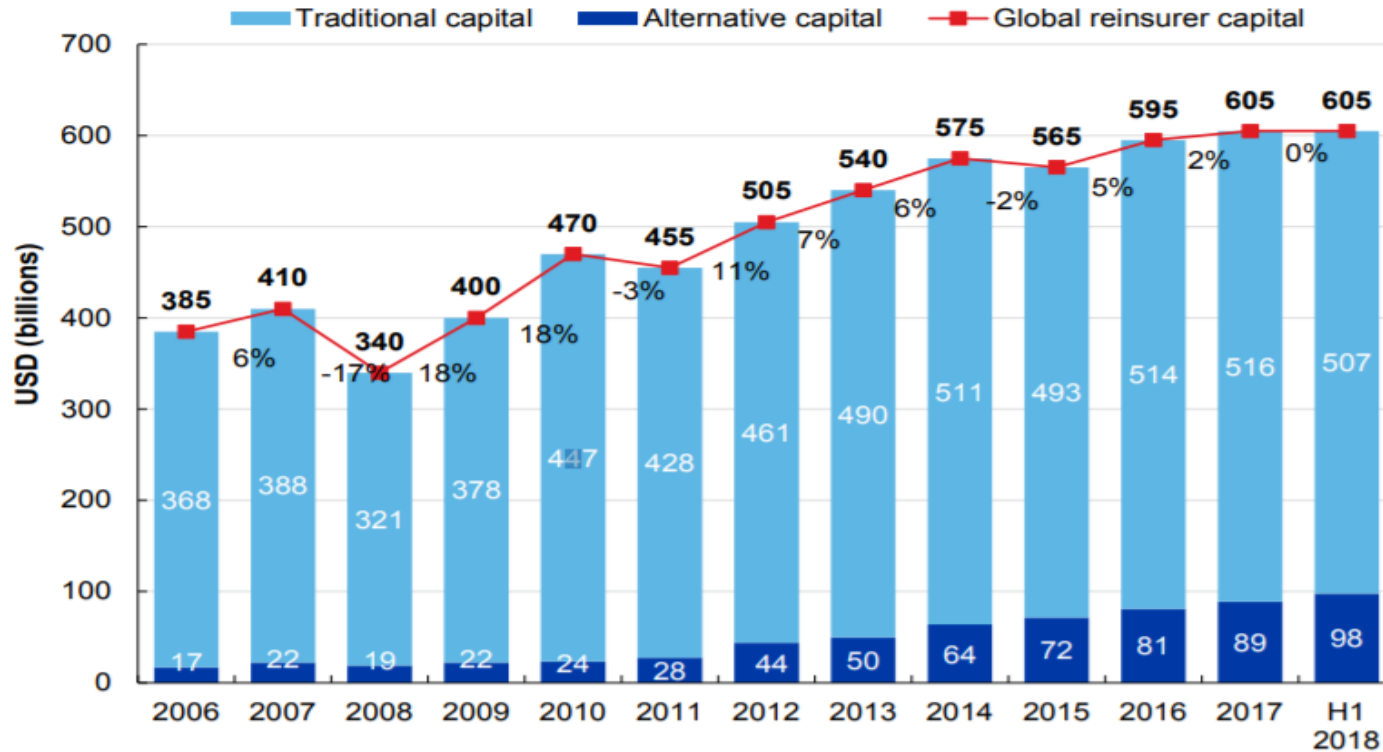
## Reinsurer return on equity

Aon Benfield Aggregate Index of Reinsurers



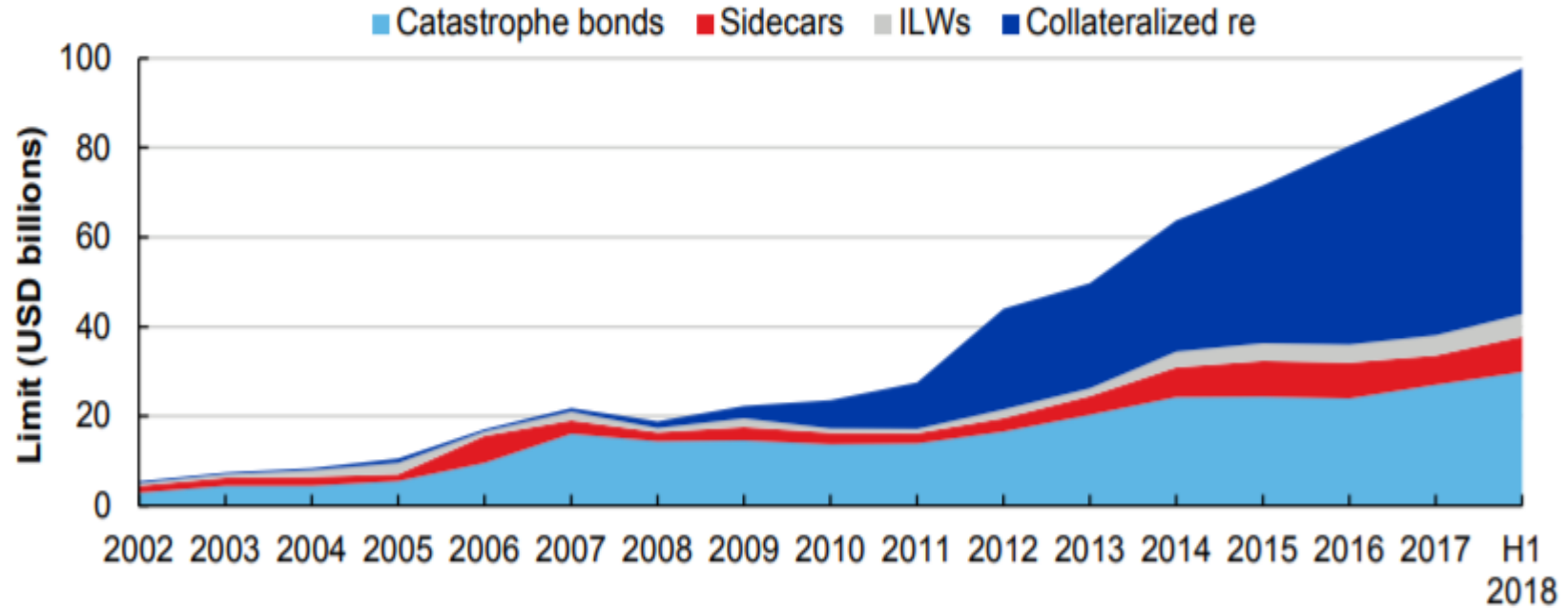
Source: Company financial statements / Aon Reinsurance Analytics

# But global reinsurer capital is still at all time highs



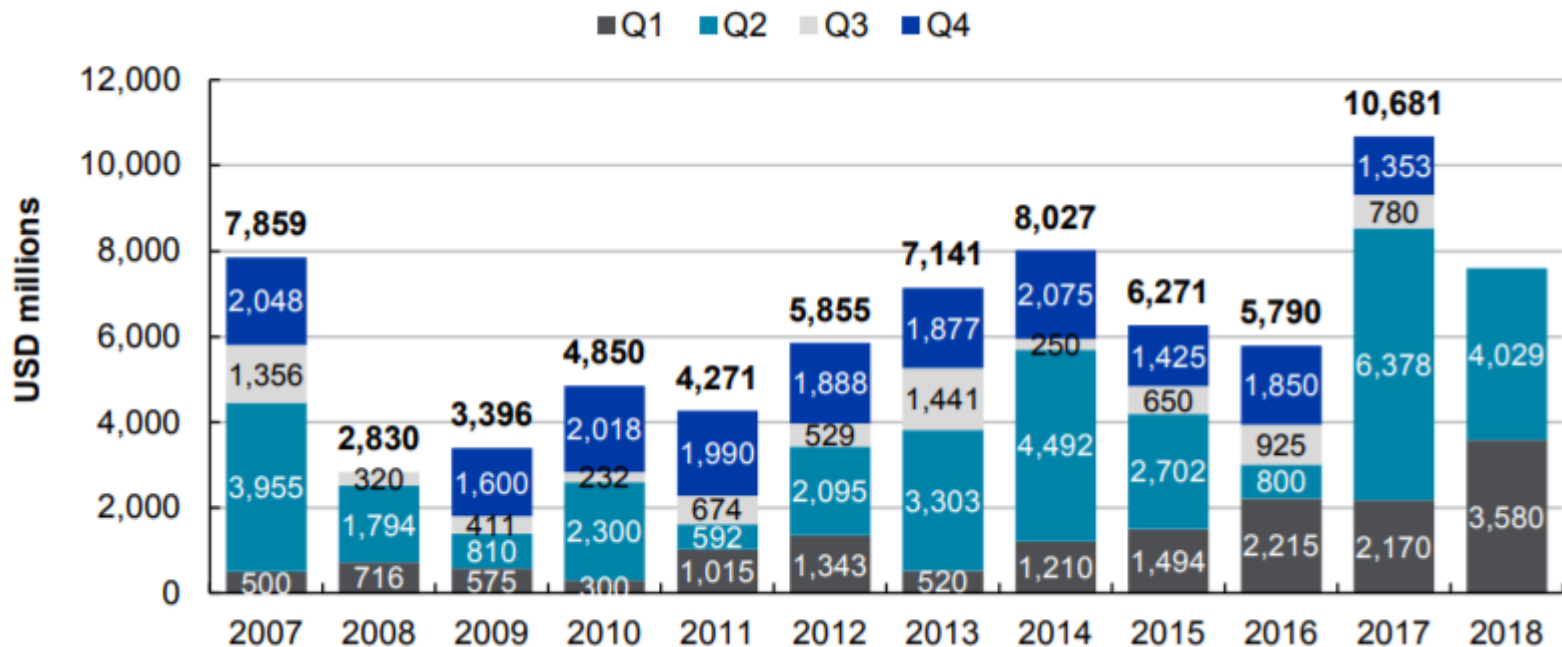
Source: Company financial statements / Aon Reinsurance Analytics

# Alternative capital sustained losses, but still grew



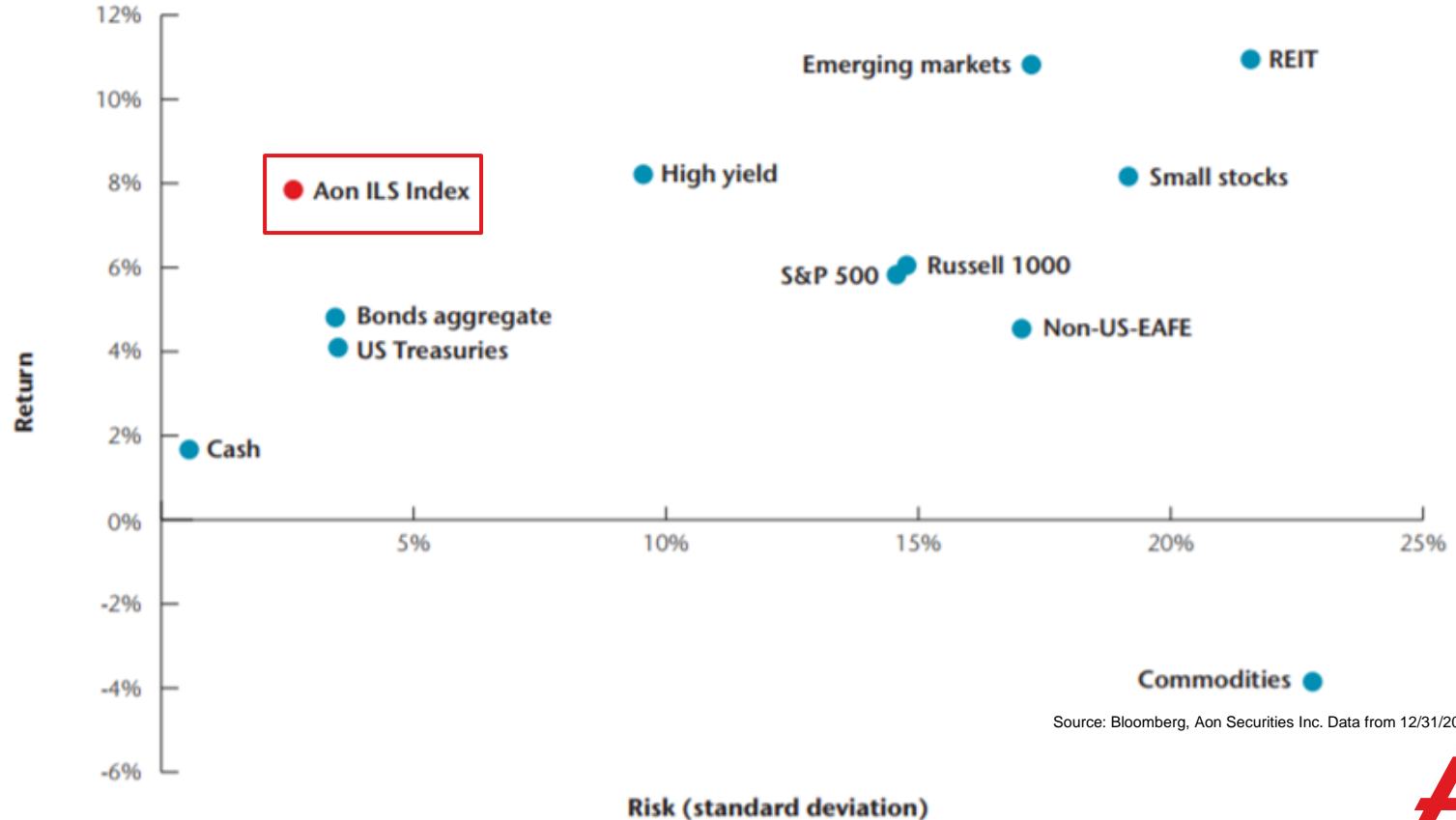
Source: Aon Securities Inc.

# Catastrophe bonds – on record pace in 2018



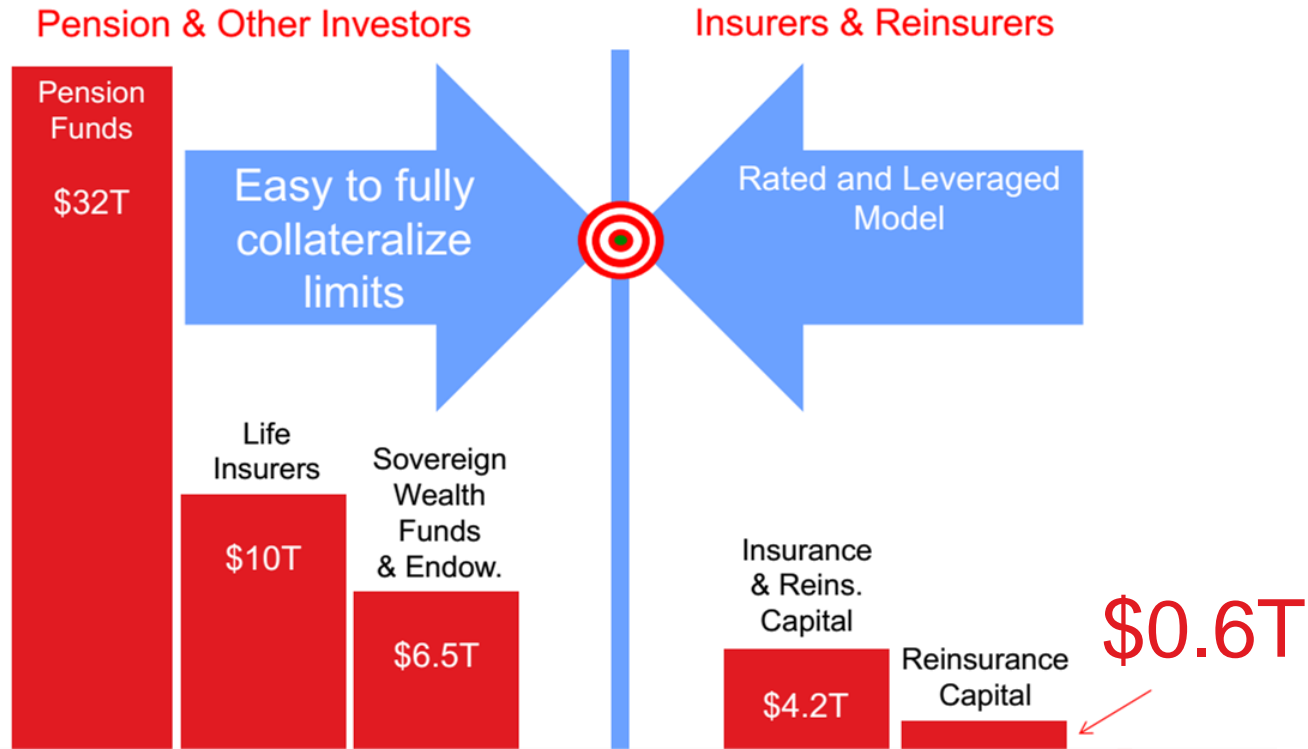
Source: Aon Securities Inc.

# Insurance-linked securities are attractive...



Source: Bloomberg, Aon Securities Inc. Data from 12/31/2000-6/30/2017

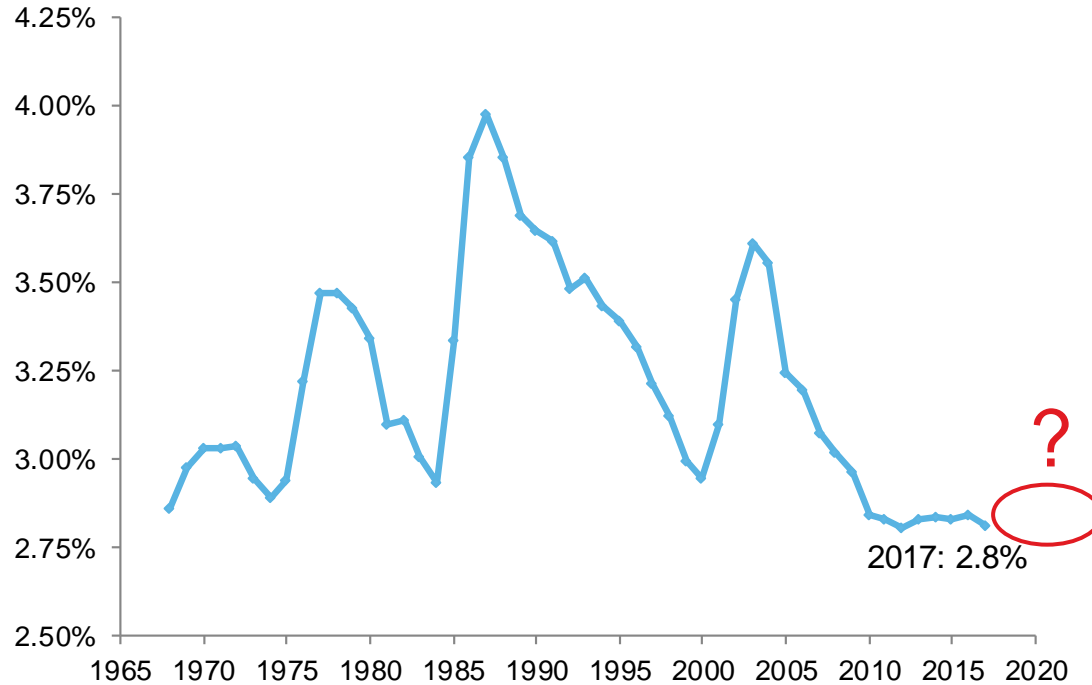
# ...and the investor pool is enormous





# Section 6: The Point

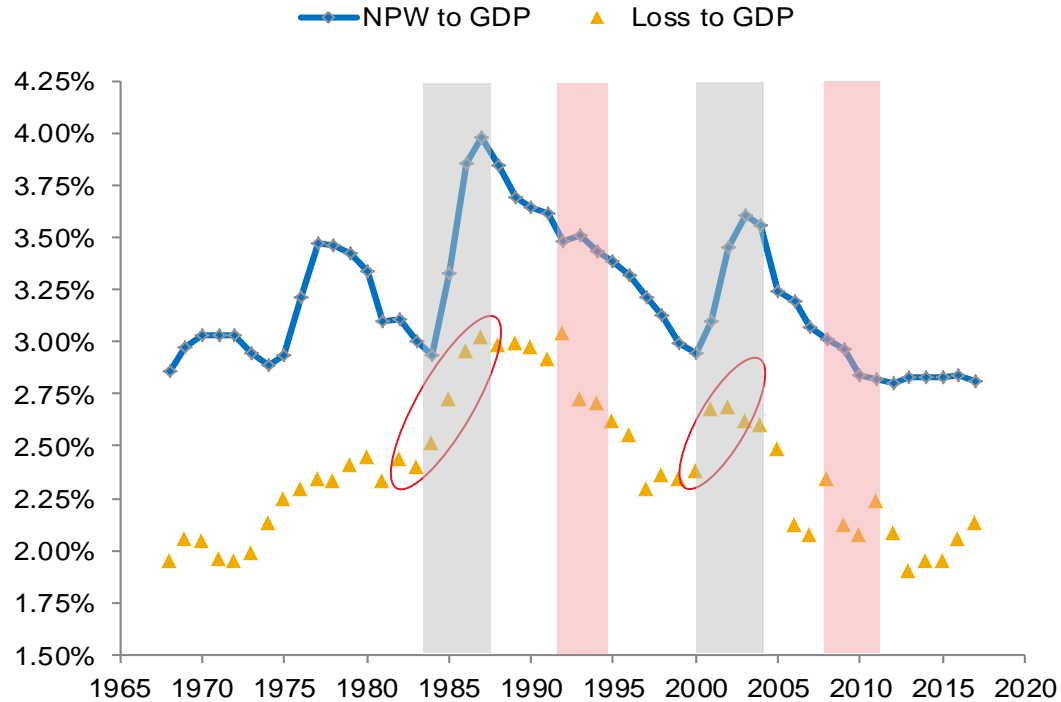
# Insurance Premium to GDP – several past cycles



Sources: A.M. Best's Aggregates and Averages, IMF World Economic Outlook Database ([www.imf.org](http://www.imf.org)), SNL Financial, Aon Benfield Analytics, World Bank Databank ([www.worldbank.org](http://www.worldbank.org))  
US GDP based on revised July 31, 2014 methodology by US Bureau of Economic Analysis



# But prior cycles driven by casualty, not property

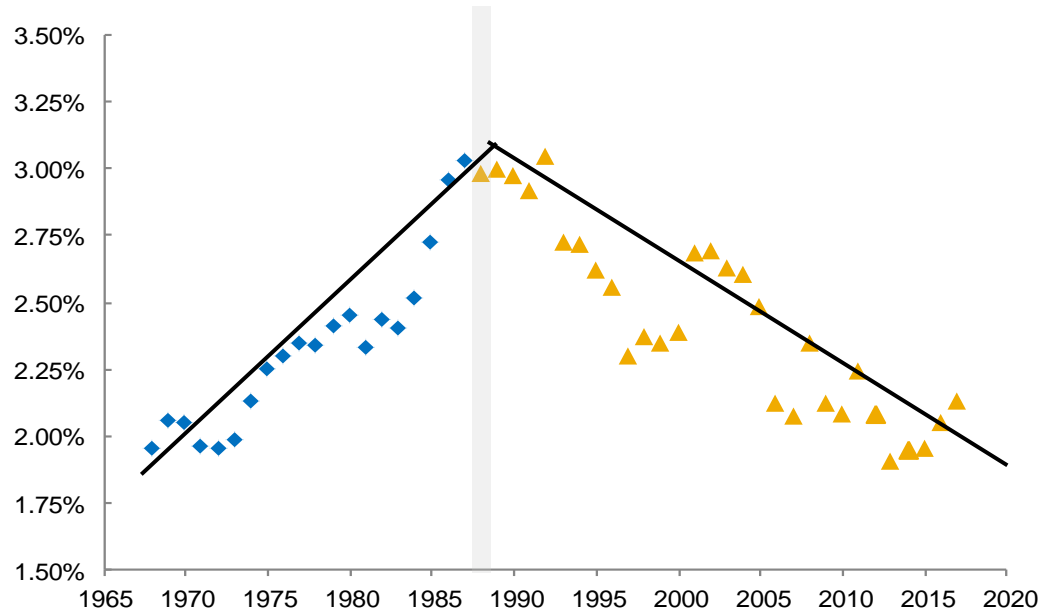


Sources: A.M. Best's Aggregates and Averages, IMF World Economic Outlook Database ([www.imf.org](http://www.imf.org)), SNL Financial, Aon Benfield Analytics, World Bank Databank ([www.worldbank.org](http://www.worldbank.org))

US GDP based on revised July 31, 2014 methodology by US Bureau of Economic Analysis

# Innovation deficit in insurance...

Calendar Year Incurred Loss % of GDP



Sources: A.M. Best's Aggregates and Averages, IMF World Economic Outlook Database ([www.imf.org](http://www.imf.org)), SNL Financial, Aon Benfield Analytics, World Bank Databank ([www.worldbank.org](http://www.worldbank.org))  
US GDP based on revised July 31, 2014 methodology by US Bureau of Economic Analysis

## ...opportunities for innovation

### Global Risk Management Survey risk ranking

1 Damage to reputation/brand	2 Economic slowdown/slow recovery	3 Increasing competition	4 Regulatory/legislative changes
5 Cyber crime/hacking/viruses/malicious codes	6 Failure to innovate/meet customer needs	7 Failure to attract or retain top talent	8 Business interruption
9 Political risk/uncertainties	10 Third party liability (incl. E&O)	11 Commodity price risk	12 Cash flow/liquidity risk

Insurable

Partially Insurable

Uninsurable

**Climate uncertainty drives higher property insurance demand and represents a manageable, positive long-term opportunity for insurers and reinsurers**

# Next Steps

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## Potential solutions and steps forward

- Further integration of private insurance markets and federal governments
- Insurance risk pools
- Recommend key risk mitigation metrics to governments or policyholders
- Introduce “Parametric Insurance” to new markets
- Catastrophe modelling

## Contact List

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# About Aon Benfield

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