

Welcome to the Casualty Insights Conference!

Welcoming Remarks



David Bradford
Co-Founder & Chief Strategy Officer
Advisen

M&C O,L&T

Leading the way to smarter and more
efficient risk and insurance communities,
Advisen delivers:
The **right** information into
The **right** hands at
The **right** time
To power *performance*

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Tim DeSett, Lockton Companies

Stephen Kempsey, Marsh

Chris Kopser, AIG

Debbie Michel, Liberty Mutual Insurance

Joe Peiser, Willis Towers Watson [2016 Conference Co-Chair]

Debbie Weiser, Travelers [2016 Conference Co-Chair]

Brian Winters, Zurich North America

Thank you to our Sponsors!



Save the Date!



Co-Chair Opening Remarks



Joe Peiser
Executive Vice President
Head of Casualty Broking
Willis Towers Watson



Debbie Weiser
President of Excess Casualty
Travelers

Keynote Address



Raymond W. Kelly
Vice Chairman
K2 Intelligence

Advisen Excess Casualty Loss Data

Advisen Excess Casualty Loss Data

Jim Blinn
EVP & Global Product Manager
Advisen



The Risk Manager's Perspective

The Risk Manager's Perspective



Stephen Kempsey
Managing Director
US Casualty Practice Leader
Marsh
(Moderator)

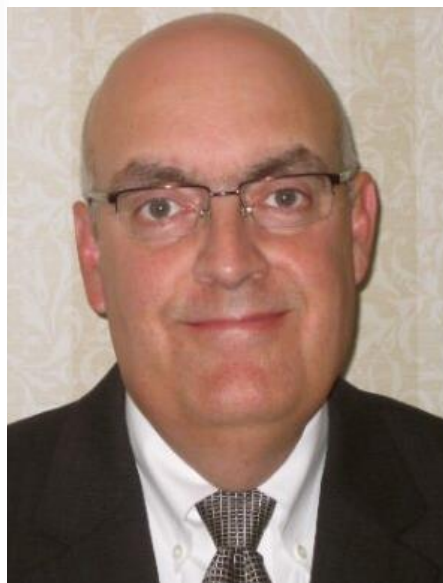
The Risk Manager's Perspective

- **Stephen Kempsey**, Managing Director, US Casualty Practice Leader, Marsh (Moderator)
- **Ray Abromitis**, Director of Risk Insurance, BlueScope Steel North America Corporation
- **Benjamin Gibbons**, Insurance Risk Manager, SAP
- **Ash Kilada**, Senior Director, Treasury Risk Management, Pepsico Inc.
- **Judy McInerney**, Director, Risk Management, Corning Incorporated

The Risk Manager's Perspective



Stephen Kempsey
Marsh



Ray Ambromitis
BlueScope Steel North
America Corporation



Benjamin Gibbons
SAP



Ash Kilada
PepsiCo Inc.



Judy McInerney
Corning Incorporated

Morning Break

Coming up next...

Track 1 (ACT I & II):

“Predictive Analytics and Casualty Modeling”

Track 2 (ACT III & IV):

“Autonomous Vehicles”

Thank you to our Sponsors!



Track 1: Insurance Issues

Predictive Analytics and Casualty Modeling

Predictive Analytics and Casualty Modeling

Mark Moitoso
Senior Vice President
Analytics Practice Leader
Lockton Companies
(Moderator)



Predictive Analytics and Casualty Modeling

- **Mark Moitoso**, Senior Vice President, Analytics Practice Leader, Lockton Companies (Moderator)
- **Vinny Armentano**, Senior Vice President, Business Insurance Claim, Travelers
- **Mark Brissman**, National Practice Leader, Predictive Analytics, Aon Risk Solutions
- **Jinsook Han**, SVP, Global Head of Business Solutions and Architecture, AIG
- **Toby Unwin**, Chief Innovation Officer, Premonition

Predictive Analytics and Casualty Modeling



Mark Moitoso
Lockton Companies



Vinny Armentano
Travelers



Mark Brissman
Aon Risk Solutions



Jinsook Han
AIG



Toby Unwin
Premonition

TPA's Changing Roles

TPA's Changing Roles



Debbie Rodgers
Sr. Vice President
Global Risk Management
Aramark
(Moderator)

TPA's Changing Roles

- **Debbie Rodgers, Sr. Vice President, Global Risk Management, Aramark (Moderator)**
- **Matt Merna, President, Chubb Global Casualty**
- **Dave North, President and CEO, Sedgwick**

TPA's Changing Roles



Debbie Rodgers
Aramark



Matt Merna
Chubb Global Casualty



Dave North
Sedgwick

Conference Luncheon

Coming up next...

Track 1 (ACT I & II):

“The Underwriter’s Viewpoint”

Track 2 (ACT III & IV):

**“Product Recall: How Social Media, Activist
Regulators and Complex Supply Chains Have Changed
the Risk Landscape”**

Thank you to our Sponsors!



Track 1: Insurance Issues

Thank you to our Sponsors!



The Underwriter's Viewpoint

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Debbie Weiser
President of Excess Casualty
Travelers
(Moderator)



The Underwriter's Viewpoint

- **Debbie Weiser**, President of Excess Casualty, Travelers (Moderator)
- **Connie Germano**, SVP, Head of Specialty Casualty, Everest National Insurance Company
- **Michael Hudzik**, SVP, Head of Casualty Treaty Underwriting - Global Clients, Swiss Re
- **Patrick Kenahan**, SVP, General Casualty Manager - Bermuda, Allied World
- **Don Pickens**, Chief Underwriting Officer, Global Corporate, North America, Zurich

The Underwriter's Viewpoint



Debbie Weiser
Travelers



Connie Germano
Everest National Insurance Company



Michael Hudzik
Swiss Re



Patrick Kenahan
Allied World



Don Pickens
Zurich

How is Big Data Changing the Broking Dynamic?

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Debbie Weiser
President of Excess Casualty
Travelers
(Moderator)

How is Big Data Changing the Broking Dynamic?

- **Debbie Weiser**, President of Excess Casualty, Travelers (Moderator)
- **Erica Dougherty**, Senior Vice President, ZOOM Sales Leader, Beecher Carlson
- **Ben Fidlow**, Global Head of Core Analytics, New York, Willis Towers Watson
- **Kelly O'Shea**, Director, Risk Management, Xylem Inc.

How is Big Data Changing the Broking Dynamic?



Debbie Weiser
Travelers



Erica Dougherty
Beecher Carlson



Ben Fidlow
Willis Towers Watson



Kelly O'Shea
Xylem Inc.

Track 2: The Risk Landscape

Autonomous Vehicles

Autonomous Vehicles



William Burrows
Product Development Lead
Incubator - New Strategic Markets
Munich Reinsurance America, Inc.



Autonomous Vehicles Risk Landscape

Advisen Casualty Insights Conference
March 31, 2016

Bill Burrows, Product Development Lead
New Strategic Markets, Munich Reinsurance America, Inc.



1. What are autonomous vehicles (AVs)?
2. Significant safety and economic benefits of AVs
3. Insurance implications
4. Liabilities expected to shift
5. Timing is uncertain
6. Key factors temper progress
7. Questions

What are autonomous vehicles?



NHTSA - Levels of automation

Full Automation Level 4 Testing	The vehicle is self-driving for entire trip; no human control required
Limited Automation Level 3 Testing	Driving functions are sufficiently automated under certain traffic or environmental conditions; the driver can safely engage other activities but expected to be available for occasional control.
Combined Function Level 2 In production	More than one function is automated at the time, but the driver remains attentive. Example: adaptive cruise control in combination with lane centering
Function-specific Level 1 In production	One or more functions is automated, but under human control. Examples: electronic stability control or pre-charged brakes
No-Automation Level 0 No longer in production	The human driver is in complete control of all functions of the car

Understanding autonomous vehicles

- Sensors, cameras, radar and Light Detection and Ranging (LIDAR) provide data about vehicle's position and surroundings to a computer that controls the car.
- LIDAR, like radar, fires bursts of energy at a target and measures the return time to calculate the distance.
- LIDAR generates high-resolution, three-dimensional data.

Google's Self-Driving Vehicle

Second Generation, 2012

Google's self-driving vehicles understand where they are and what's around them through sensors that are purpose-built to help the vehicles perceive their surroundings accurately, and software that processes the information received.



Safety drivers

Drivers also test the vehicles daily, reporting feedback on how to make the ride more safe and comfortable.

Laser

This sensor gives the vehicle a 360-degree understanding of its environment so the car can sense objects in front of, beside, and behind itself at the same time, all the time. The laser also helps the vehicle to determine its location in the world.

Processor

Information from the sensors is cross-checked and processed by the software so that different objects around the vehicle can be sensed and differentiated accurately, and safe driving decisions can then be made based on all the information received.

Position sensor

This sensor, located in the wheel hub, detects the rotations made by the wheels of the car to help the vehicle understand its position in the world.

Orientation sensor

Similar to the way a person's inner ear gives them a sense of motion and balance, this sensor, located in the interior of the car, works to give the car a clear sense of orientation.

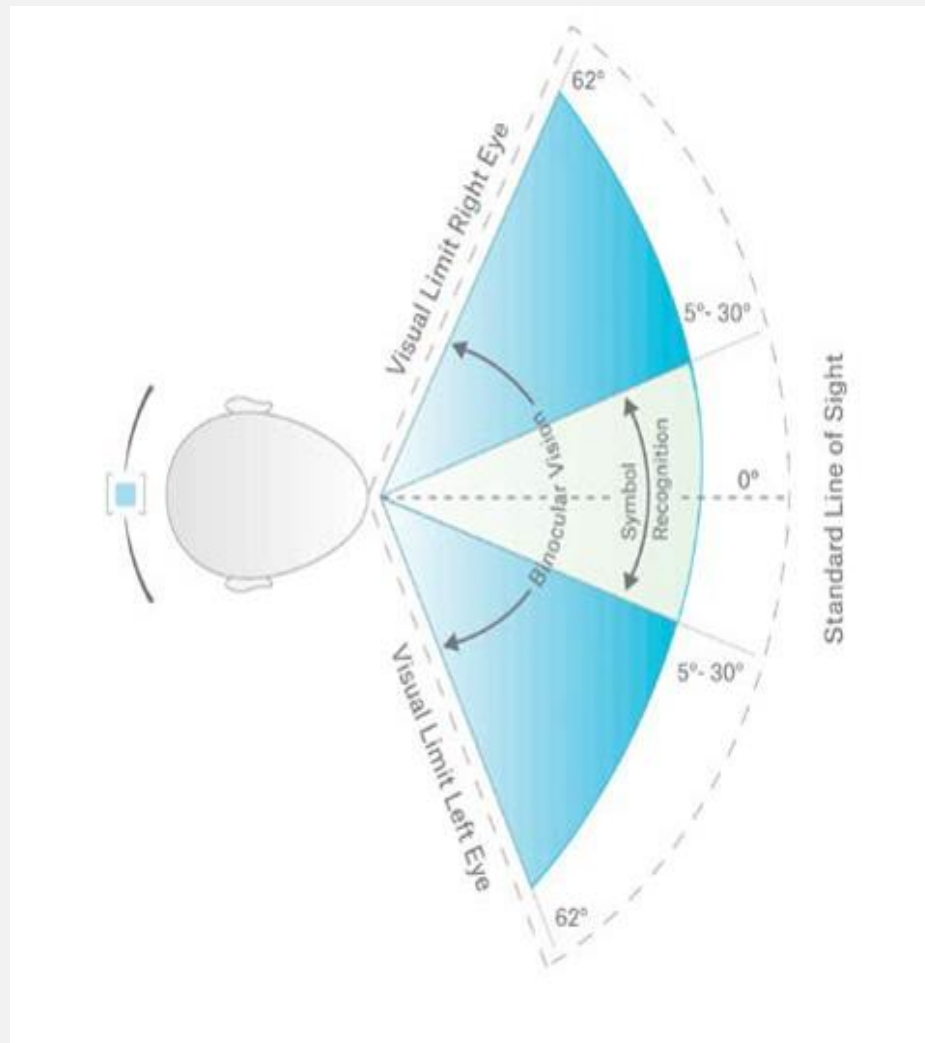
Radar

This sensor detects vehicles far ahead and measures their speed so that the car can safely slow down or speed up with other vehicles on the road.

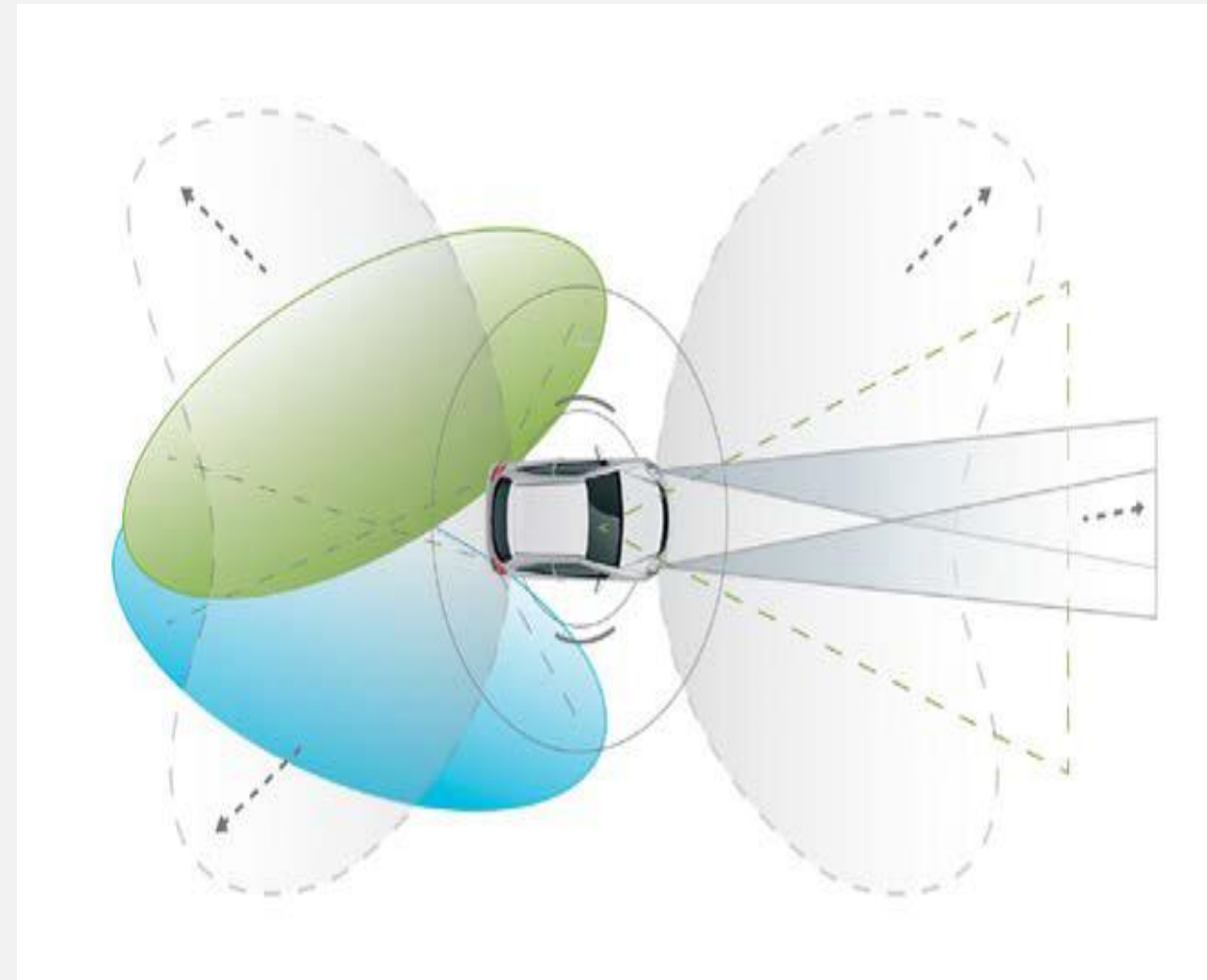


Human vision vs. machine vision

Field of view: 100 degrees
Distance: 30 meters ahead

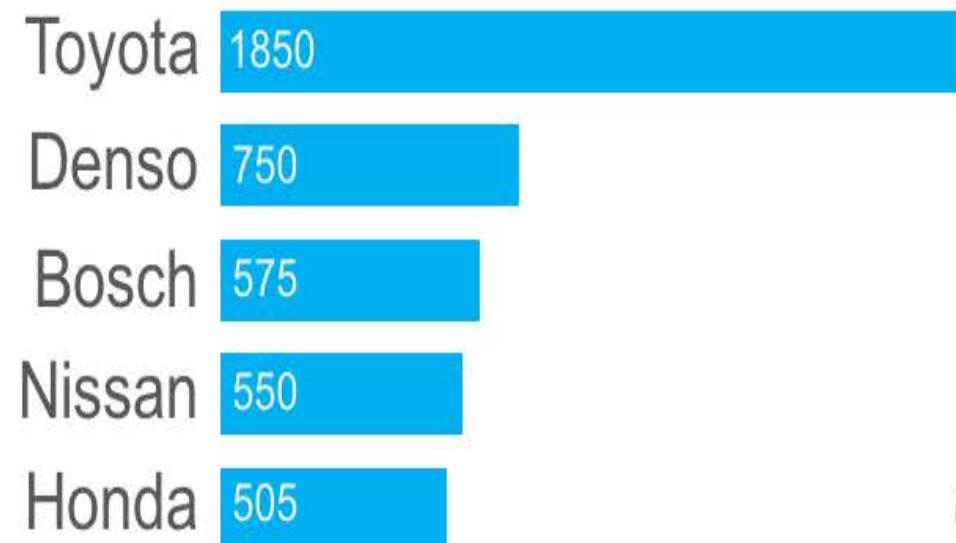


Field of view: 360 degrees
Distance: 300 meters ahead



Number of unique inventions

Autonomous Driving



Driver Assistance

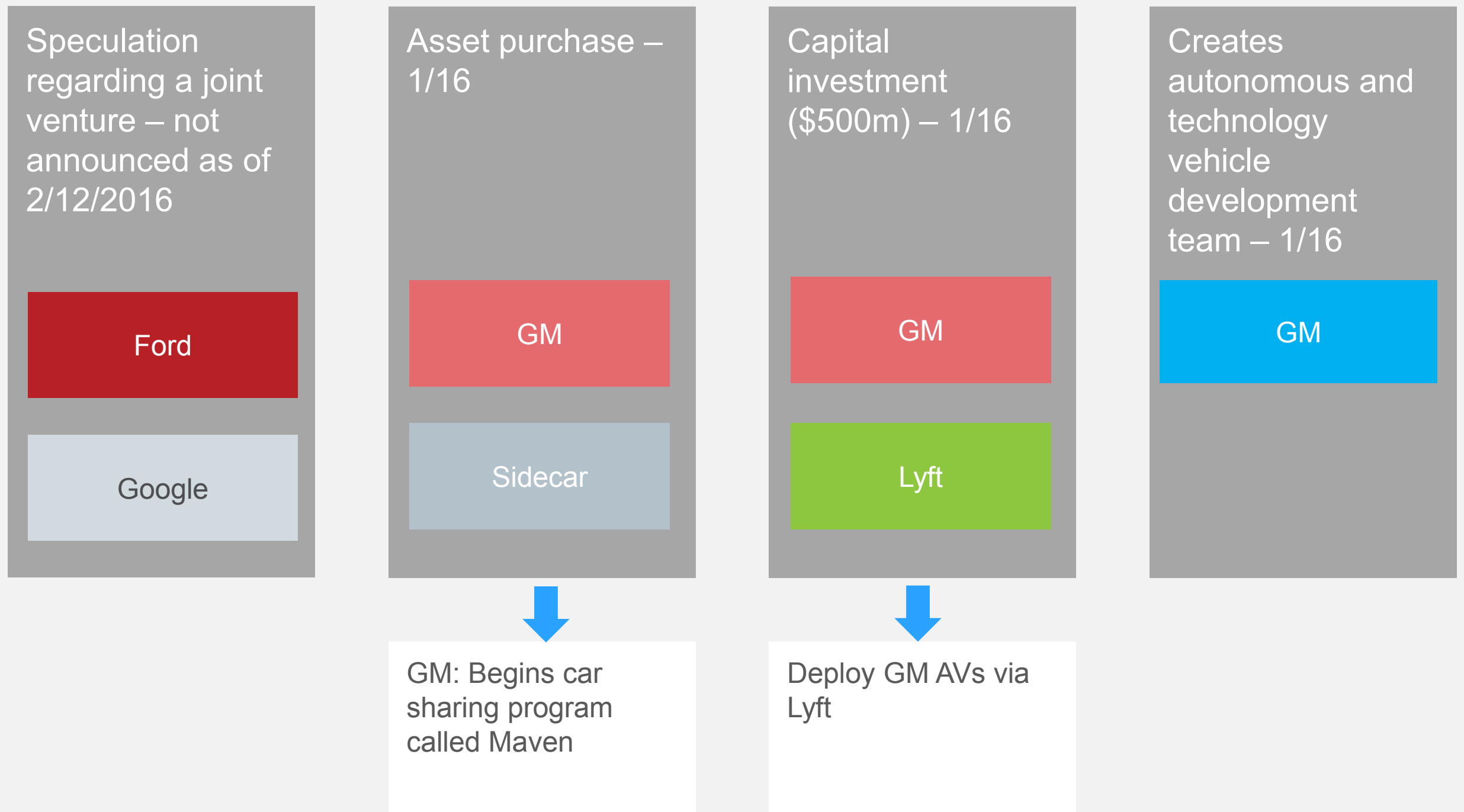


Telematics



Google ranked 19th for AV patents

New partnerships

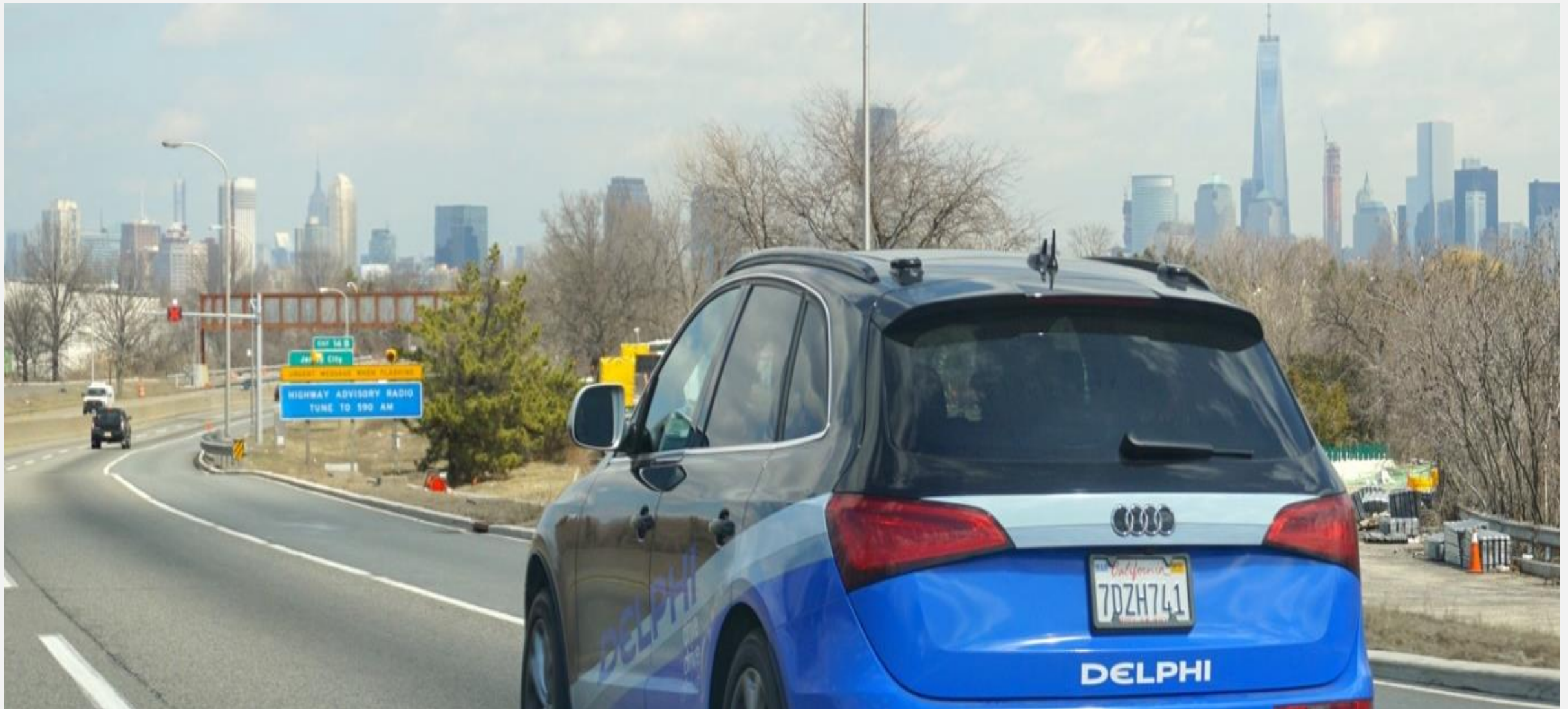


“If no human occupant of the vehicle can actually drive the vehicle, it is more reasonable to identify the ‘driver’ as whatever (as opposed to whoever) is doing the driving,” Paul Hemmersbaugh, NHTSA’s chief counsel, said in the letter.

In Google’s case, its self-driving system “is actually driving the vehicle,” he wrote.



Has logged over 1 million miles of autonomous driving



Completes a coast to coast trip 99% of the trip was done in autonomous mode

Significant safety and economic benefits



In 2015 in the US*



\$412** billion accidents



4.4 million injuries



38,300 fatalities

*provisional estimate increase of 8% year over year, largest increase in 50 years

**cost of motor-vehicle deaths, injuries and property damage



- Accident related costs
- Productivity costs
- Fuel consumption
- Traffic congestion
- Environment



- Today your car is an unused asset 95% of the day.
- Will we own fewer cars if they are available on-demand?
- Will you hire-out your car?
- Or send it on errands when it's not in use?



- Google and Uber compete to develop driverless taxis.
- Eliminating the “driver” significantly reduces overhead costs.
- Consumers can expect a driverless Uber fleet by 2030.



Fully autonomous technology in trucks can reduce fuel usage.

- Platooning

Dangerous environments



In dangerous environments such as mining, autonomous vehicles keep people out of harm's way.

Insurance implications



Large-scale adoption is a game-changer



The Driverless Car, Officially, Is a Risk

Wall Street Journal, March 3, 2015



New industries will
emerge, others will
decline.

“ ‘Driverless cars’ will ultimately change the face of auto insurance as we know it.”

Dowling & Partners/“The Path to Driverless Cars” 2013

“Ultimately, these advances are likely to actually eviscerate the personal auto insurance industry.”

Meyer Shields, Managing Director/Analyst/Keefe Bruyette & Woods, 2015

“Progressive has a significant concentration of its book of business with younger drivers who are likely the earliest adopters of disruptive technological change and Progressive may find its way to dominating this new kind of auto insurance world, but it also may find its products completely unnecessary in 2030.”

Joshua Shanker, Deutsche Bank Analyst, 2015

“Self-driving cars and ride-sharing programs will completely disrupt the car-insurance industry.”

- "Accident frequency will decline to where the difference among driving behaviors becomes negligible and it is difficult to charge a meaningful premium for insurance."
- "Insurance will take the form of commercial product liability instead of personal driver liability as we let the robots do the driving."
- "Vehicle utilization will rise and cars on the road will decline as one car can serve the driving needs of multiple travelers per day, which, in-turn, means fewer cars."

Business Insider

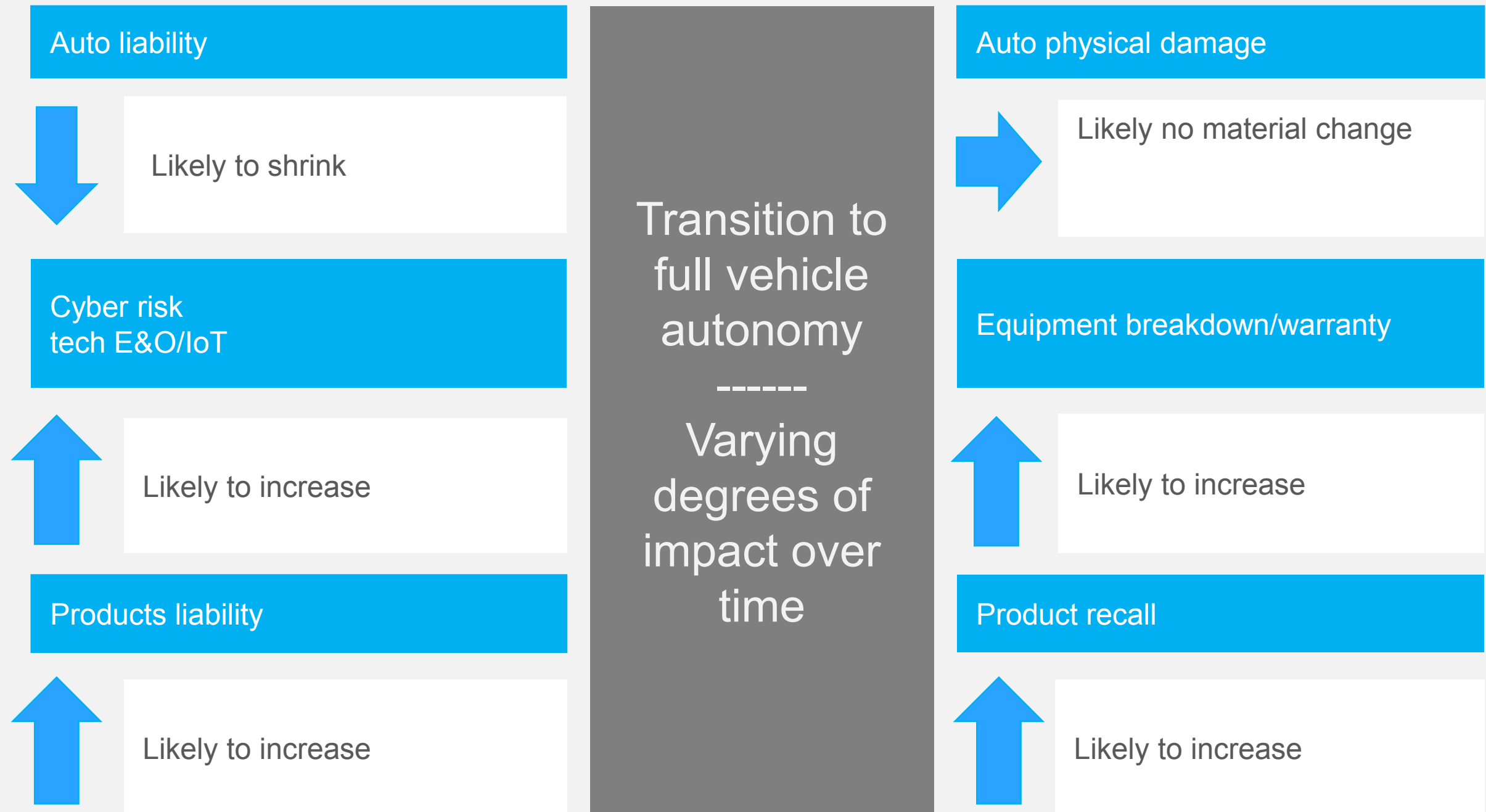
“This could be the beginning of the end for the car-insurance business”

July 21, 2015

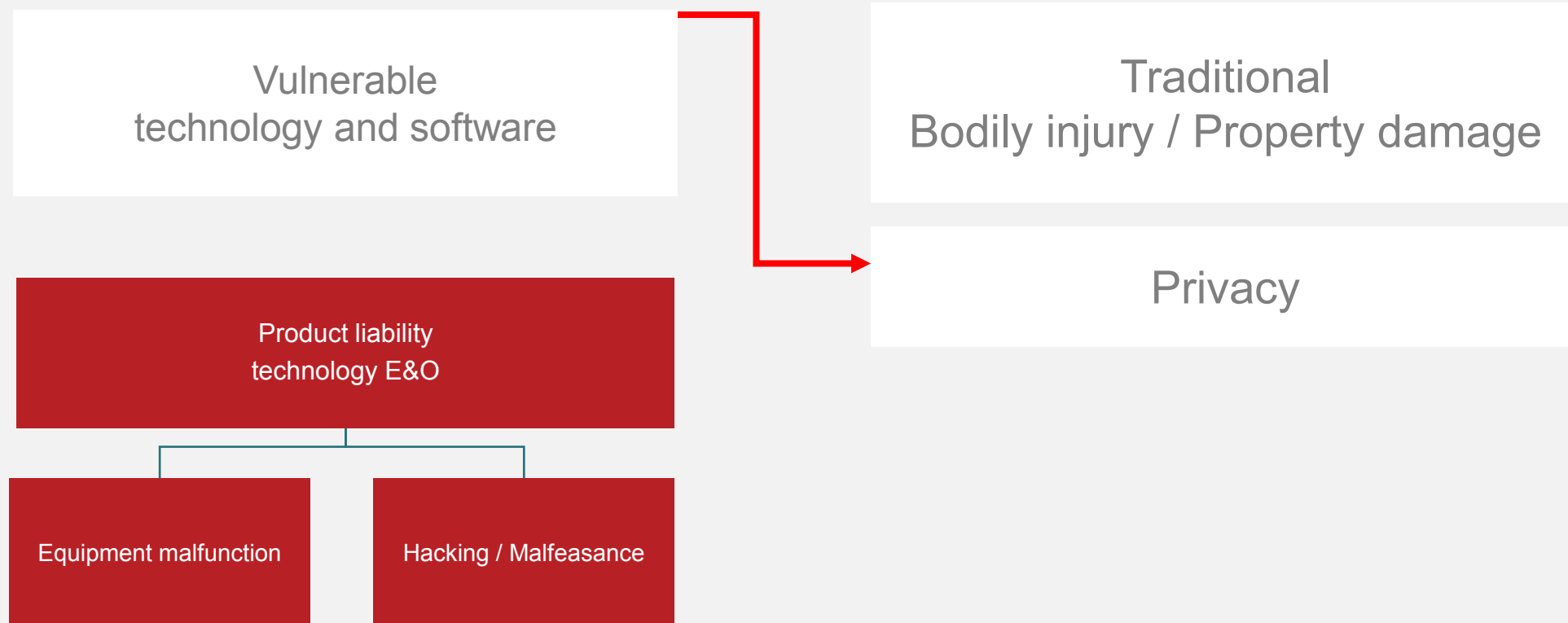
Liabilities expected to shift



Potential shifts in liabilities and premiums



Liability issues – AV cyber vulnerability



Example: Jeep

- 2015 hackers (researchers) accessed a Jeep while it was driving
- Took control of the radio, wiper blades and brakes
- Used a laptop and Smartphone to hack the Jeep from 10 miles away

Auto ISAC

- Automobile manufacturers
- US Department of Transportation
- National Highway Traffic Safety Administration

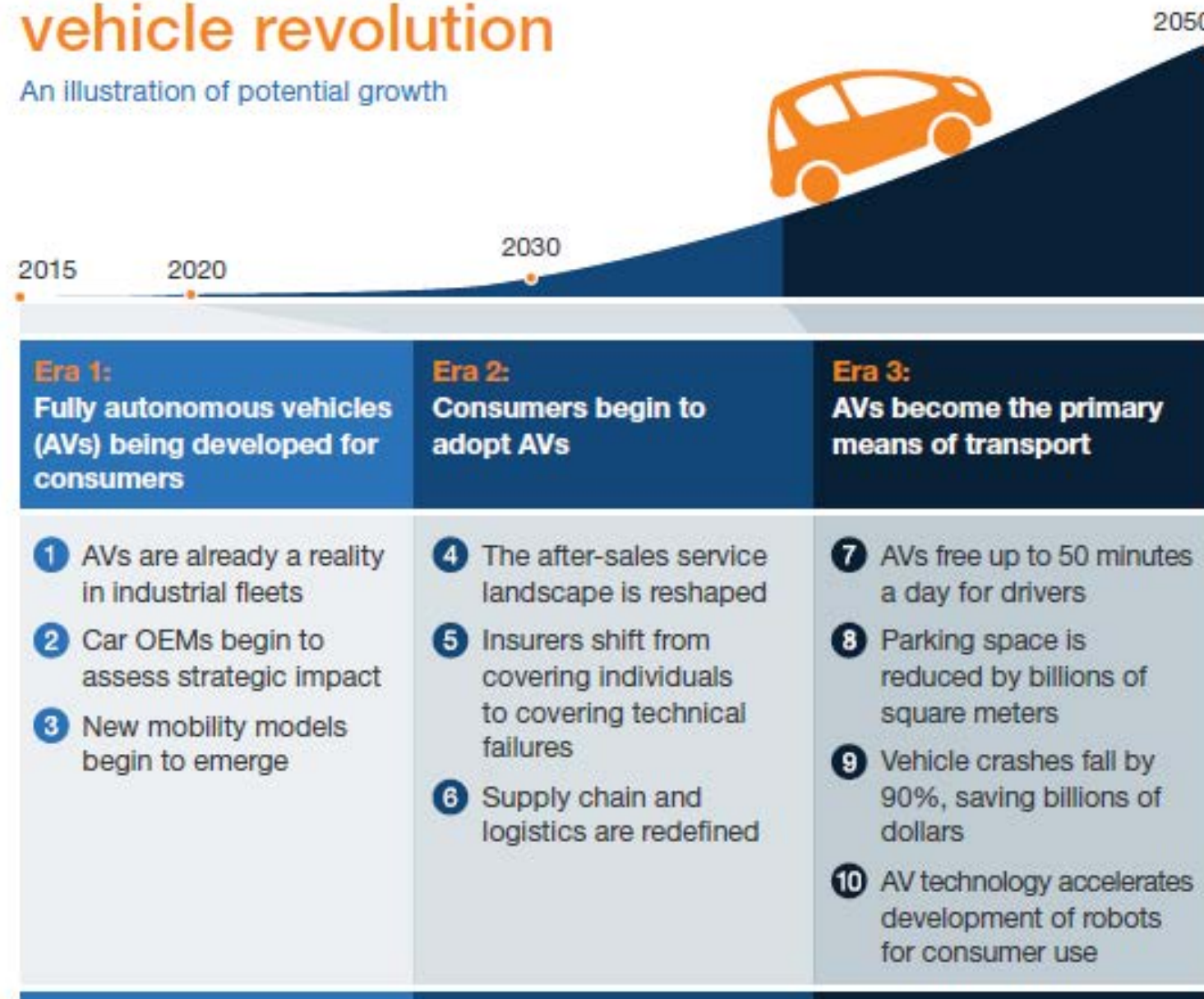
Timing is uncertain



Exhibit

The self-driving vehicle revolution

An illustration of potential growth



McKinsey&Company

- **Boston Consulting Group (BCG)**

“By 2017, AVs capable of traffic jam autopilot and autonomous valet parking should be on dealers’ lots, followed by highway autopilot with lane changing in 2018. Vehicles capable of urban autopilot could be ready in 2022, paving the way for fully autonomous vehicles by 2025.”

- **Frost and Sullivan**

“Autonomous commercial vehicles will see active use on North American roadways by 2025.”

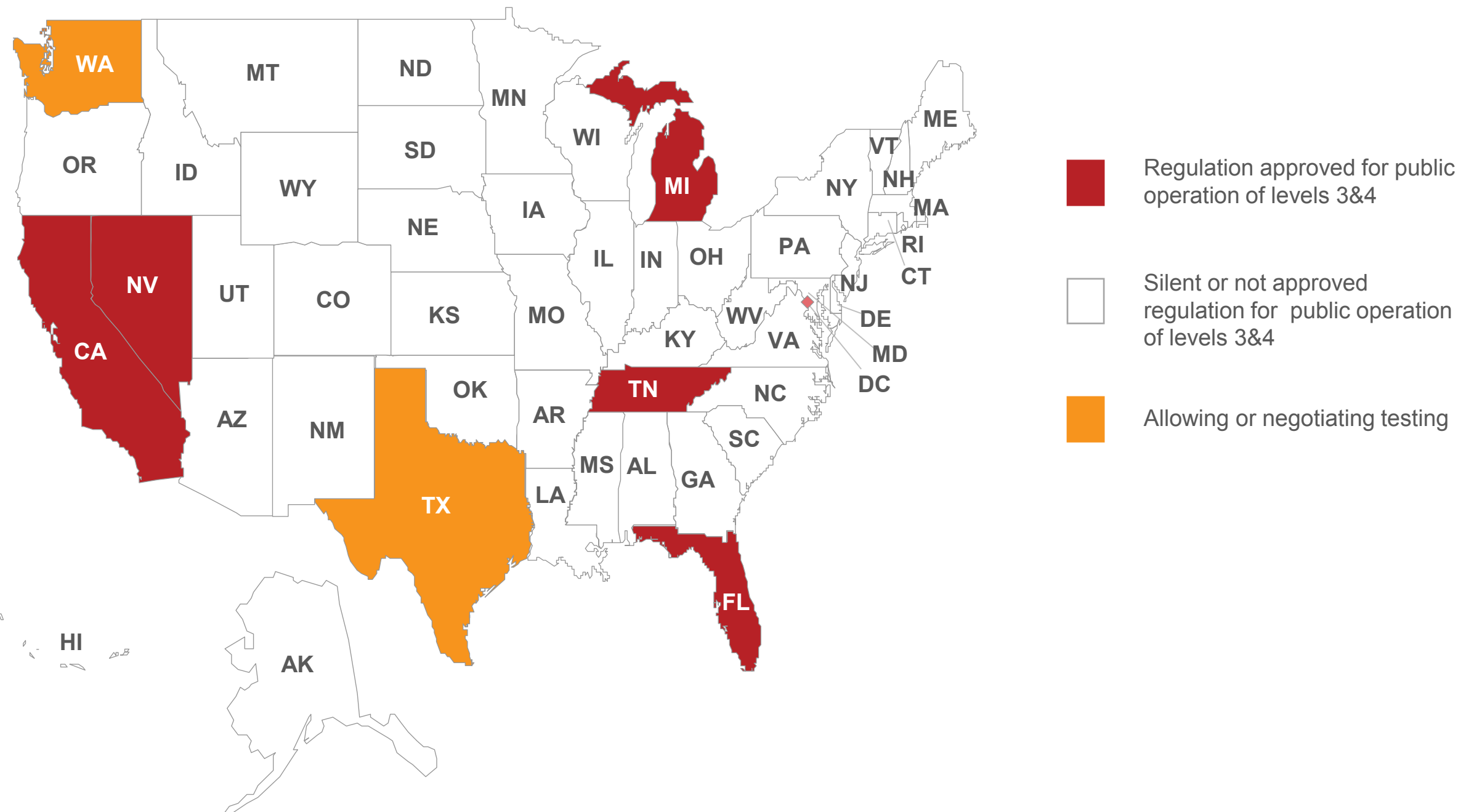
- **Google**

“Not only might it take much longer to arrive than the company has ever indicated—as long as 30 years, said Chris Urmson—but the early commercial versions might well be limited to certain geographies and weather conditions. Self-driving cars are much easier to engineer for sunny weather and wide-open roads, and Urmson suggested the cars might be sold for those markets first. He further stated: “How quickly can we get this into people's hands? If you read the papers, you see maybe it's three years, maybe it's thirty years. And I am here to tell you that honestly, it's a bit of both.”

Key factors temper progress



Regulatory environment



- 2016 AAA Report: **75% of drivers are scared of self-driving cars**
- 2015 J.D. Power Report: **60% of “technologies consumers” preferred their next vehicle come equipped with blind spot detection and prevention systems**, and collision mitigation systems – noted as “foundational building blocks leading to the possibility of fully-autonomous driving”.....but is this just the “techie generation”?
- 2015 Reuters Reported: **20% of new car owners had not used half of the technology features available; 35% had not used the automatic parking systems.**
- 2014 University of Michigan’s Transportation Research Institute Survey and 2014 Brookings Institute Study: Both reveal a **majority of respondents viewed AV benefits optimistically**
- **but...a majority also expressed deep concerns about security issues; would not want to pay more for the technology or were very concerned about the legal liability issues.**

How much does autonomous technology add to a car's sticker price?

2012: \$150,000*

2025: \$7,000 - \$10,000

2030: \$5,000

2035: \$3,000

*Google Prius test car

Inevitable

Complex

Evolving

Challenging

Insurance of auto exposure will change, possibly dramatically over time

Liability shifts from driver to manufacturers and technology companies

auto physical damage, cyber, products warranty may grow

- **Exposures will be more complex** – Cyber/software, car manufacturer, driver
- **Coverage issues will emerge and take time to evolve and stabilize**
- **Telematics use will grow** – continue the progress towards individual ratemaking
- **Insurance industry should understand the issues; be prepared to adjust and innovate** (particularly those with material personal or commercial auto portfolios)

How will the insurance industry respond?

- Some insurers will not be able to respond to coverage needs quickly enough
- Other insurers will develop new products and enter new markets
- Some insurers will increase deployment of risk mitigation technologies to their clients
- Insurers will need to participate in influencing regulatory change
- Insurers will need to become more innovative

How is Munich Re responding?

Identifying promising tech start-ups in Silicon Valley

Partnering with AV start-ups to stimulate progress

Researching AV emerging risks

Collecting and analyzing data

Developing innovative products and solutions

Educating and empowering stakeholders

- **University of Michigan** – a research partnership with the Mobility Transformation Center (MTC) that is establishing a commercially viable system of connected and automated vehicles
- **Active Safety Pilot Program** – implementing sensors on buses to alert drivers to presence of pedestrians to avoid collisions and reduce injuries
- **Techstars** – supporting entrepreneurs in developing data analytics and mobility solutions
- **DRIVEAI** – engaging and supporting a local non-profit in the development of AV technology
- Others under development





Thank you. Please connect.

Bill Burrows

+1 (609) 243-4395

bburrows@munichreamerica.com

<https://www.linkedin.com/in/williamburrowsjr>

Twitter [@Innov8Sherpa](https://twitter.com/Innov8Sherpa)

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The On-Demand Economy

The On-Demand Economy

Kate E. R. Sampson
Managing Director
Marsh
(Moderator)



The On-Demand Economy

- **Kate E. R. Sampson**, Managing Director, Marsh (Moderator)
- **Alex Benn**, COO, Turo
- **Melissa Gale**, Sr. Manager, Insurance Solutions, Lyft
- **Greg Hohman**, Senior Vice President - West Region, Zurich Global Corporate - Casualty
- **Brad Nail**, Senior Manager of Insurance and Public Policy, Uber Technologies, Inc.

The On-Demand Economy



Kate E.R. Sampson
Marsh



Alex Benn
Turo



Melissa Gale
Lyft



Greg Hohman
Zurich



Brad Nail
Uber

Conference Luncheon

Coming up next...

Track 1 (ACT I & II):

“The Underwriter’s Viewpoint”

Track 2 (ACT III & IV):

“Product Recall: How Social Media, Activist Regulators and Complex Supply Chains Have Changed the Risk Landscape”

Thank you to our Sponsors!



Track 2: The Risk Landscape

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Product Recall: How Social Media, Activist Regulators and Complex Supply Chains Have Changed the Risk Landscape

Product Recall

Todd Germano
Executive Vice President
Global Crisis Management Division
Allied World
(Moderator)



Product Recall

- **Todd Germano**, Executive Vice President, Global Crisis Management Division, Allied World (Moderator)
- **Denise Balan**, Head of Crisis Management, Americas, XL Catlin
- **Paul Primavera**, Executive Vice President, National Risk Control Services - Practice Leader, Lockton Companies
- **Dawn H. Puro**, Senior Vice President, Ironshore
- **Andy Steinbach**, Director of Global Risk Finance & Supply Chain Strategy, Yum! Brands, Inc.

Product Recall



Todd Germano
Allied World



Denise Balan
XL Catlin



Paul Primavera
Lockton Companies



Dawn H. Puro
Ironshore



Andy Steinbach
Yum! Brands, Inc

Workers' Compensation

Workers' Compensation



Paul Horgan
Chief Executive Officer
Zurich
Global Corporate in N. America
(Moderator)

Workers' Compensation

- **Paul Horgan**, Chief Executive Officer, Zurich, Global Corporate in North America (Moderator)
- **Mike Fenlon**, Sr. Director of Global Risk Management, UPS
- **Maureen McCarthy**, SVP and Manager, WC Fields Claims, Liberty Mutual Insurance

Workers' Compensation



Paul Horgan
Zurich



Mike Fenlon
UPS



Maureen McCarthy
Liberty Mutual Insurance

2016 Disruptors: The Casualty View

2016 Disruptors: The Casualty View

Bob Hartwig
President & Economist
Insurance Information Institute





2016 Insurance Industry Disruptors: *The Casualty View*

**Advisen Casualty Insights Conference
New York, NY**

March 31, 2016

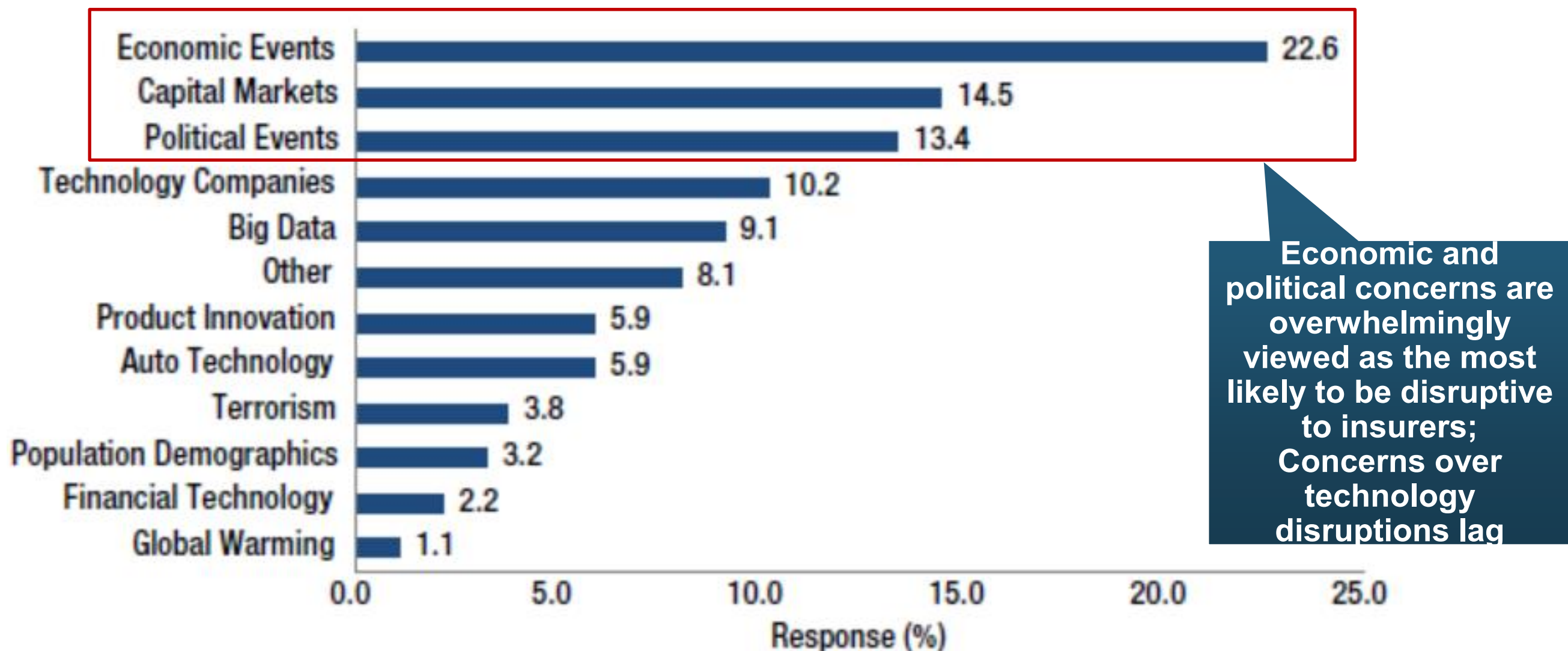
Download at www.iii.org/presentations

Robert P. Hartwig, Ph.D., CPCU, President & Economist

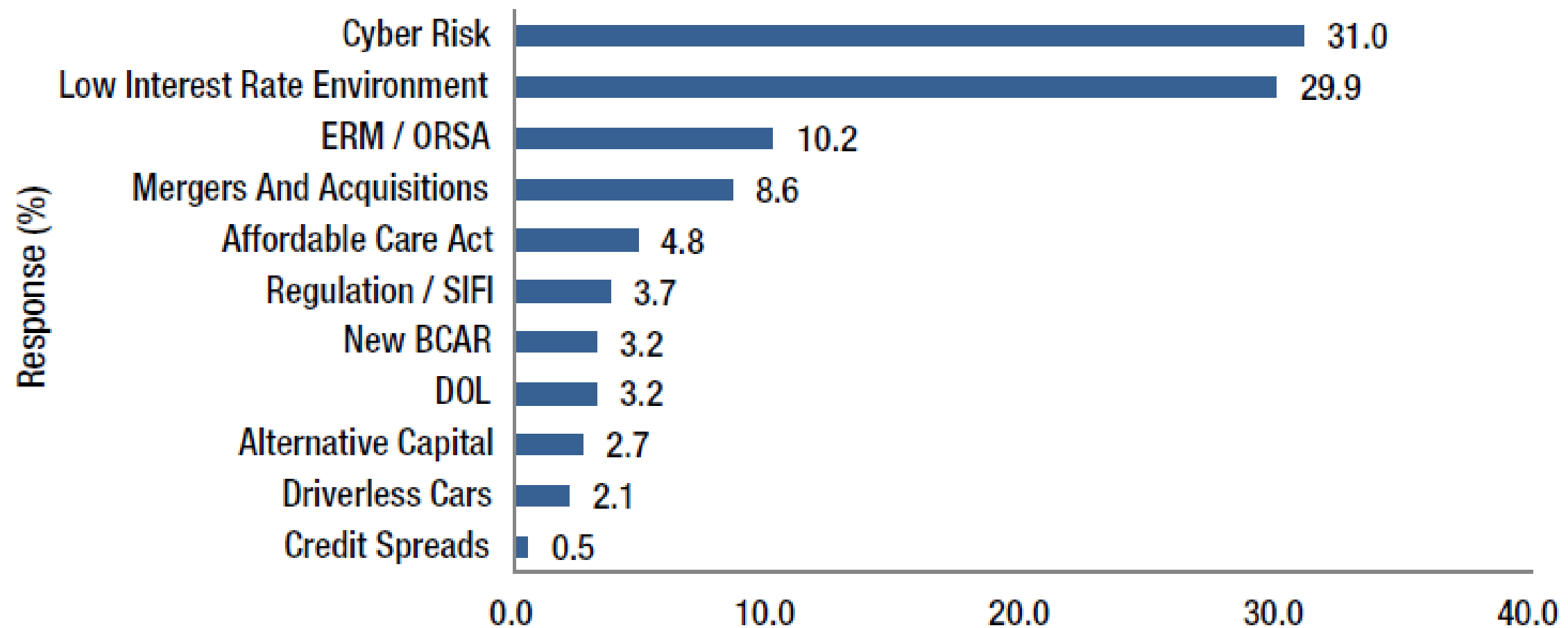
Insurance Information Institute ♦ 110 William Street ♦ New York, NY 10038

Tel: 212.346.5520 ♦ Cell: 917.453.1885 ♦ bobh@iii.org ♦ www.iii.org

Leading Disruptive Forces for the Insurance Industry Over the Next 5 Years



A.M. Best Survey: Top Insurance Industry Concerns

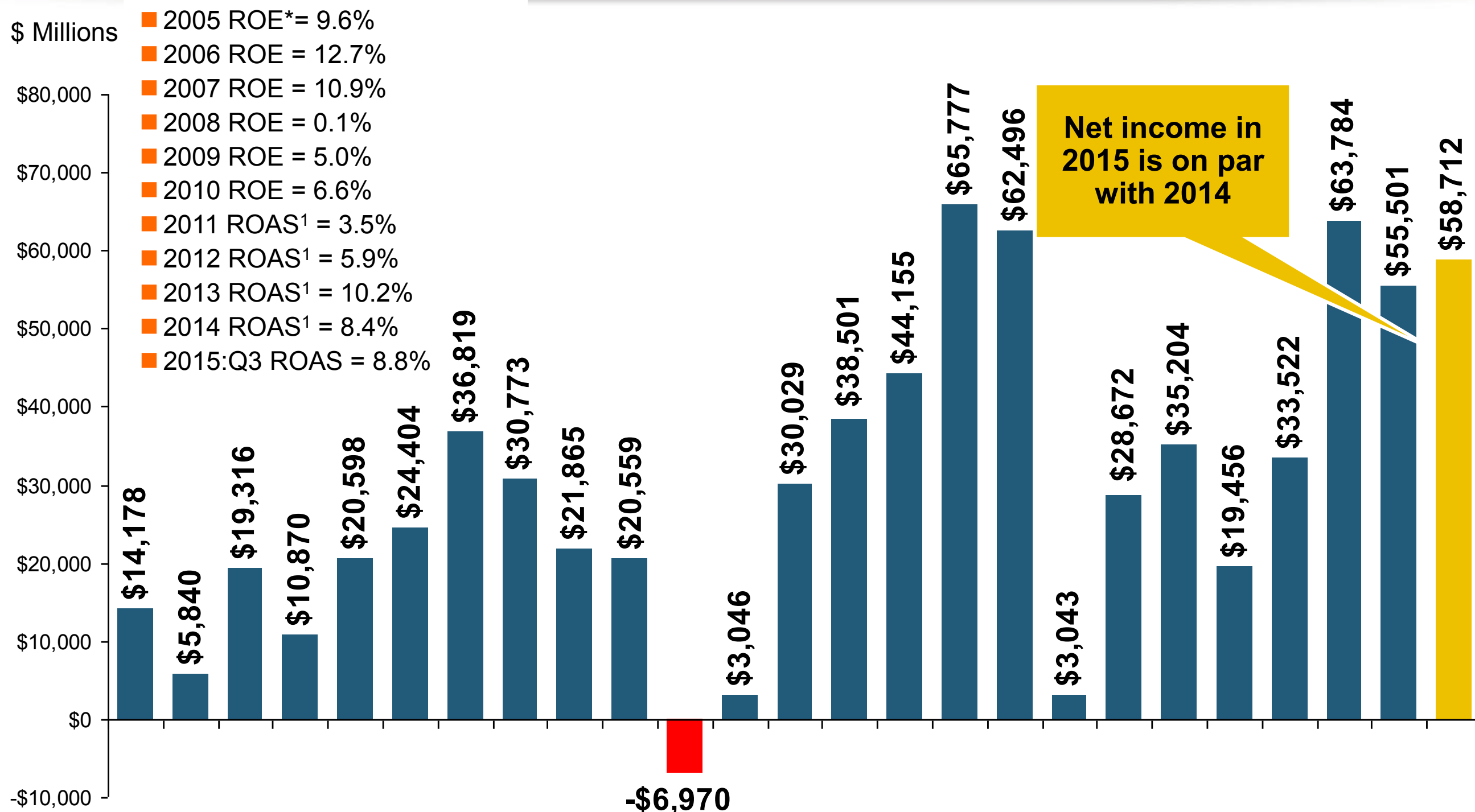


Insurance Industry: *Financial Update & Outlook*

***2015 Was a Reasonably Good Year
and Similar to 2014***

2016: Could Be Similar to 2015

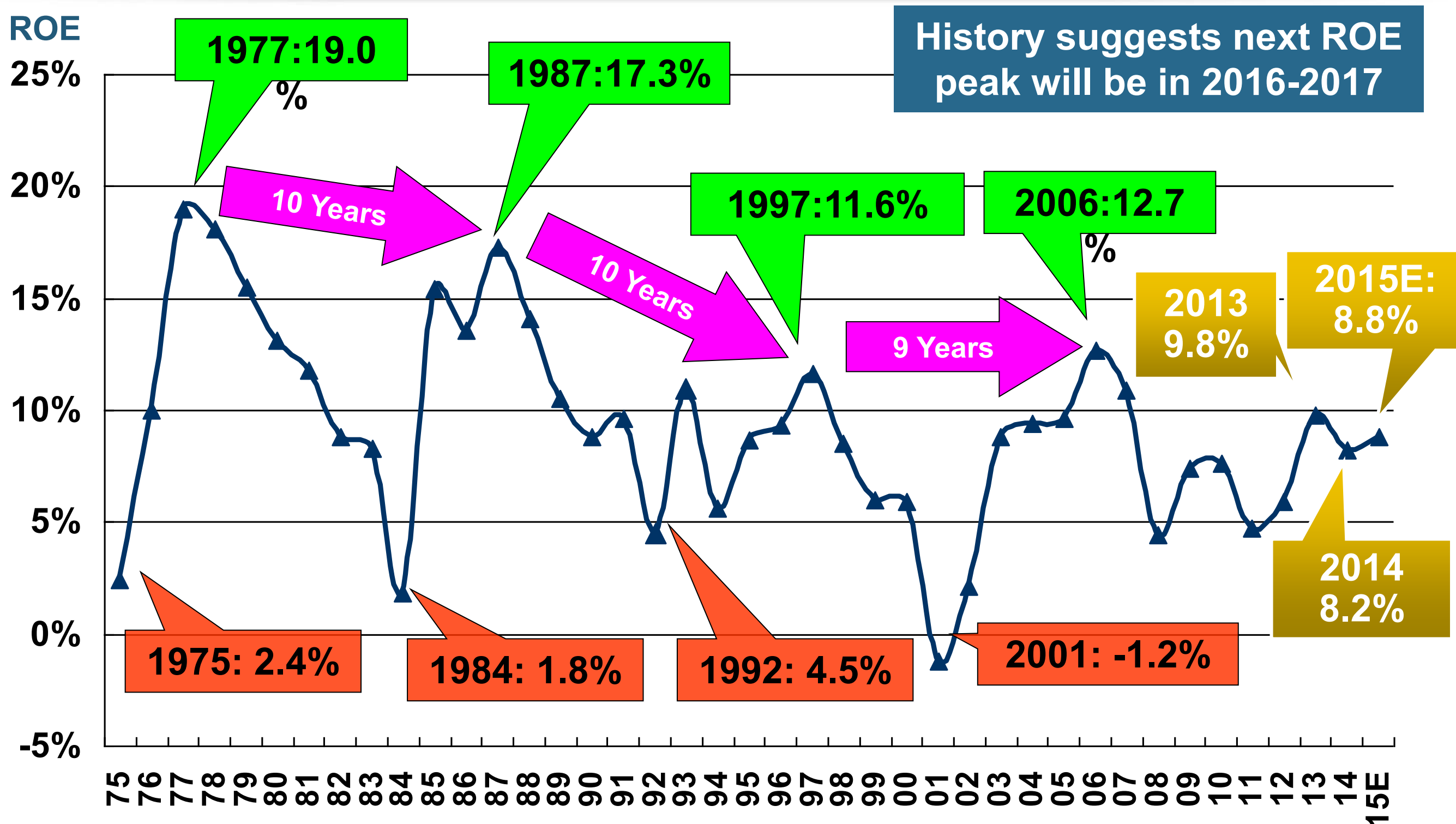
P/C Industry Net Income After Taxes 1991–2015E



*ROE figures are GAAP; ¹Return 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

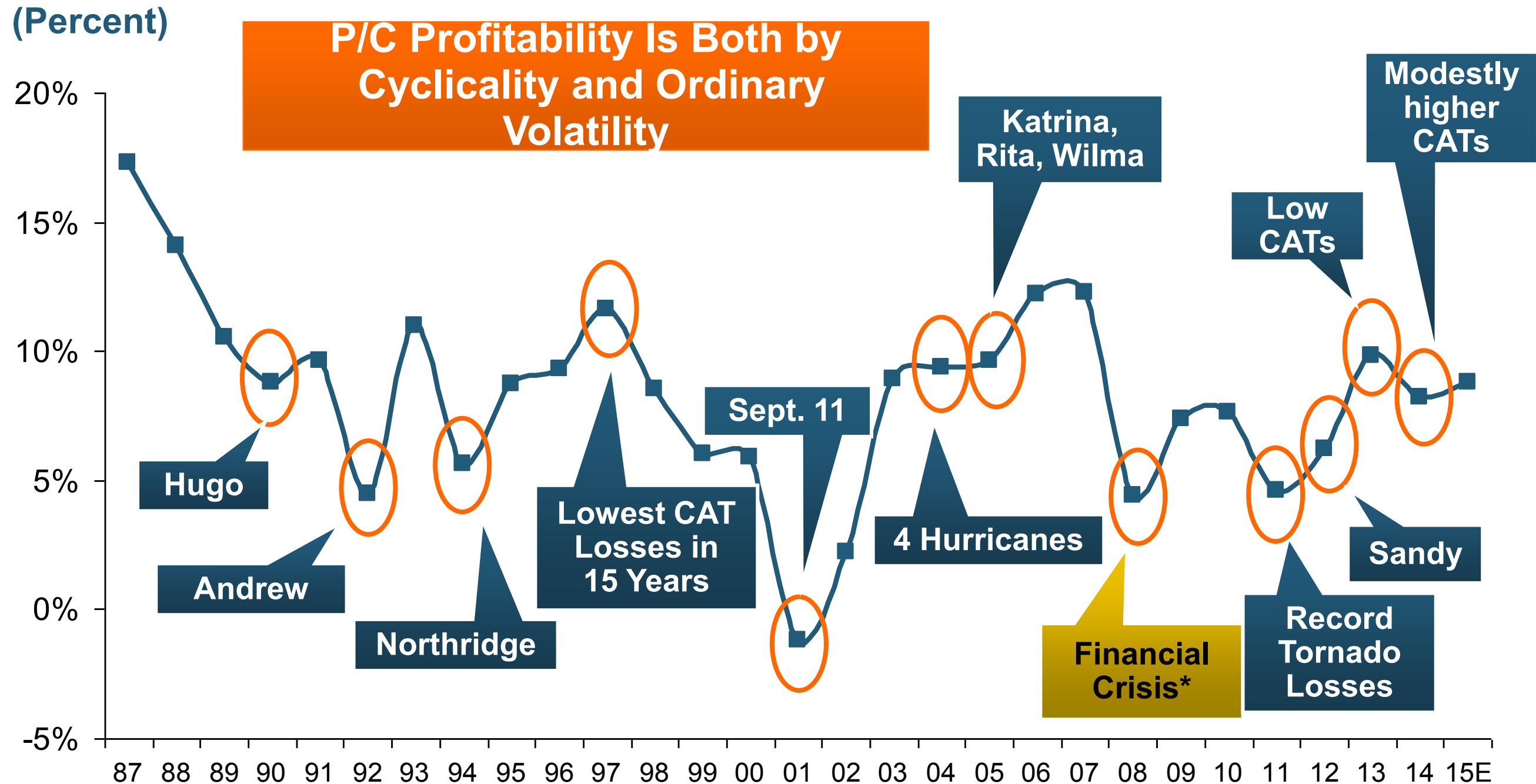
Profitability Peaks & Troughs in the P/C Insurance Industry, 1975 – 2015E



*Profitability = P/C insurer ROEs. 2011-14 figures are estimates based on ROAS data. Note: Data for 2008-2014 exclude mortgage and financial guaranty insurers.

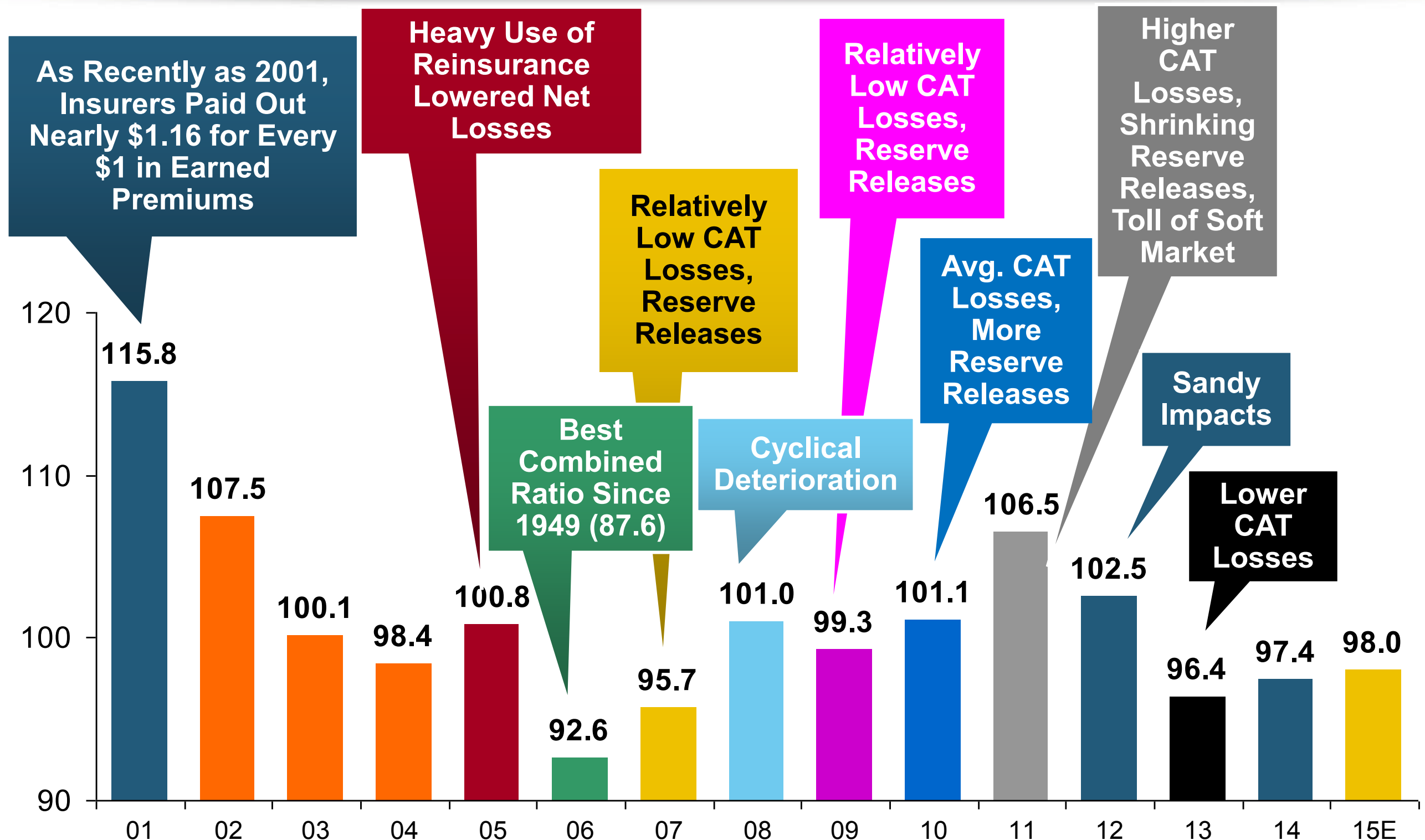
Source: Insurance Information Institute; NAIC, ISO, A.M. Best, Conning

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



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

P/C Insurance Industry Combined Ratio, 2001–2015:Q3 (Est.)*



* 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.

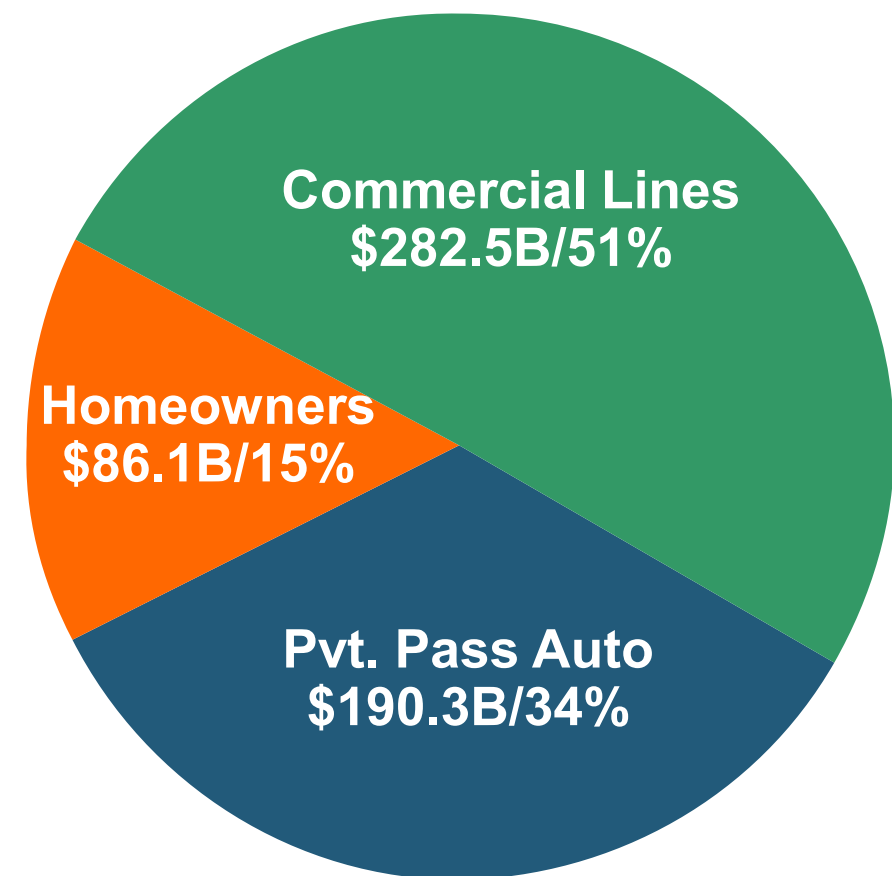
Sources: A.M. Best, ISO; Figure for 2010-2015E is from A.M. Best P&C Review and Preview, Feb. 16, 2016.

Distribution of Direct Premiums Written by Segment/Line, 2014

Distribution Facts

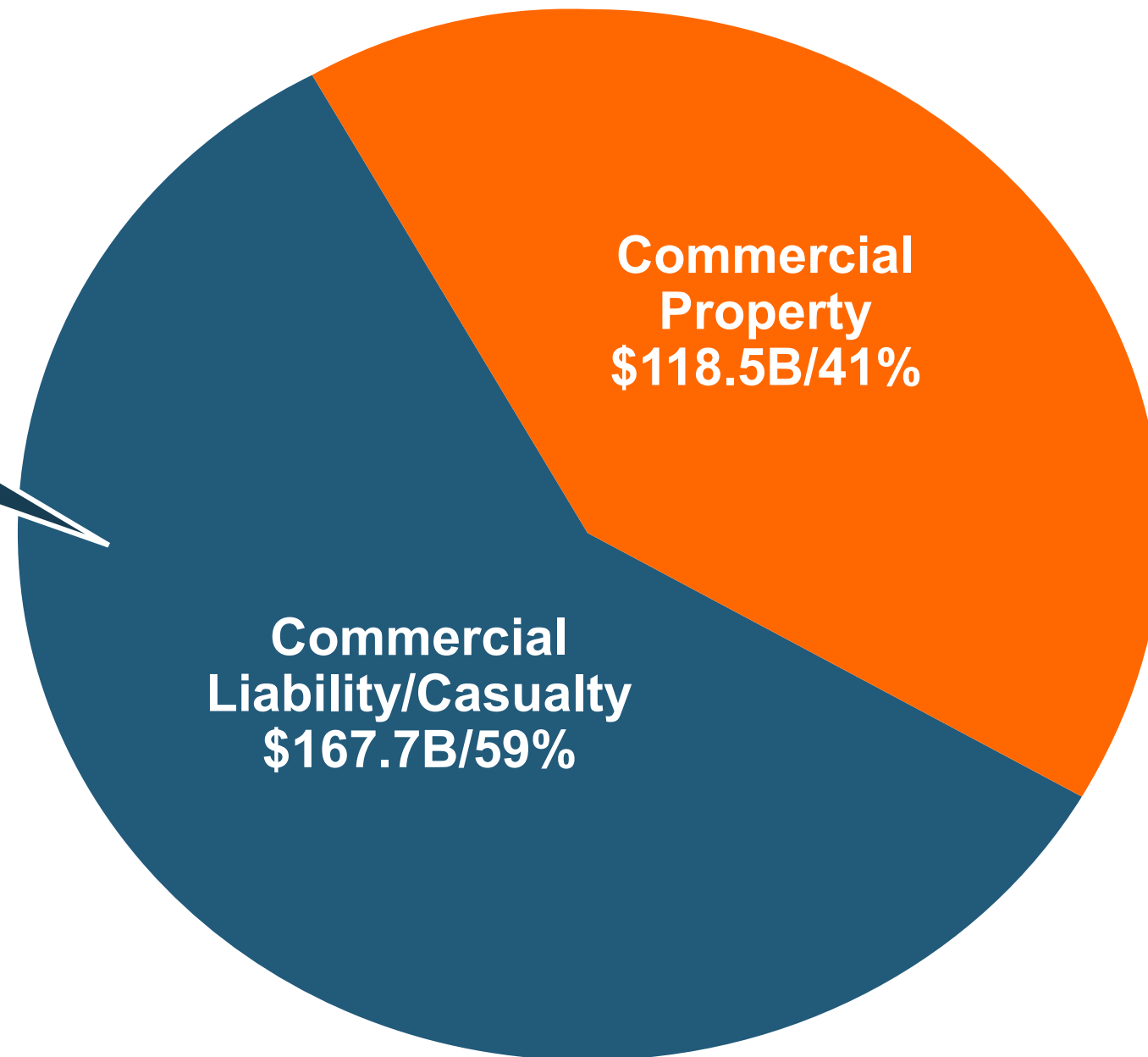
- Personal/Commercial lines split has been about 50/50 for many years
- Personal lines growth now exceeds Commercial lines; Industrywide, Private Passenger Auto is by far the largest line of insurance and is currently the most important source of industry profits
- Commercial lines growth in a flat rate environment is highly dependent on exposure growth driven by the expanding economy and product innovation

2014

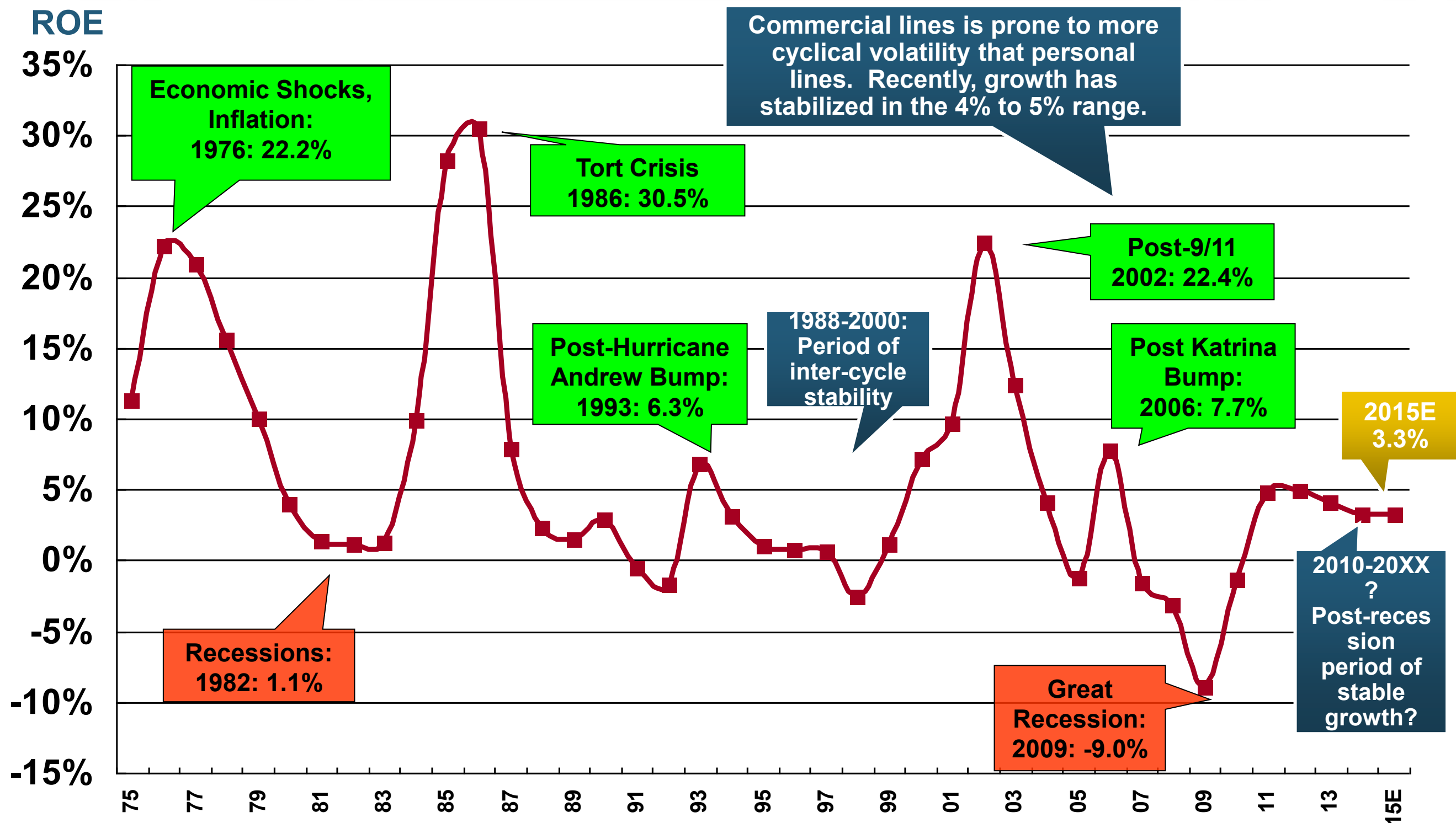


Distribution of Commercial Lines Premiums: Property vs. Liability, 2015

**Commercial
casualty/liability lines
account for 59% of
commercial premiums
written vs. 41% for
property lines**



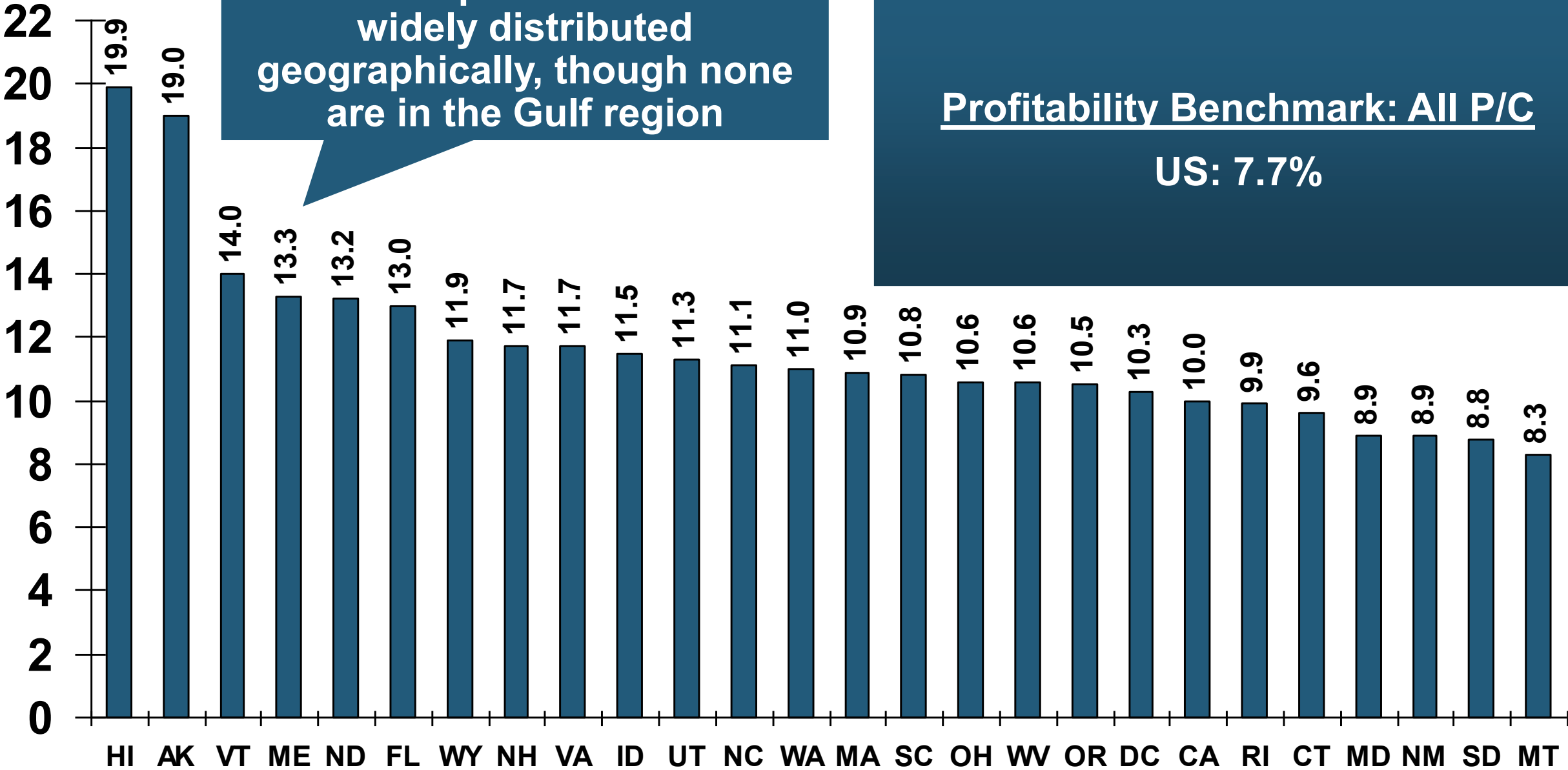
Commercial Lines NPW Premium Growth: 1975 – 2015E



Note: Data include state funds beginning in 1998.
Source: A.M. Best; Insurance Information Institute.

RNW All Lines, 2005-2014 Average: Highest 25 States

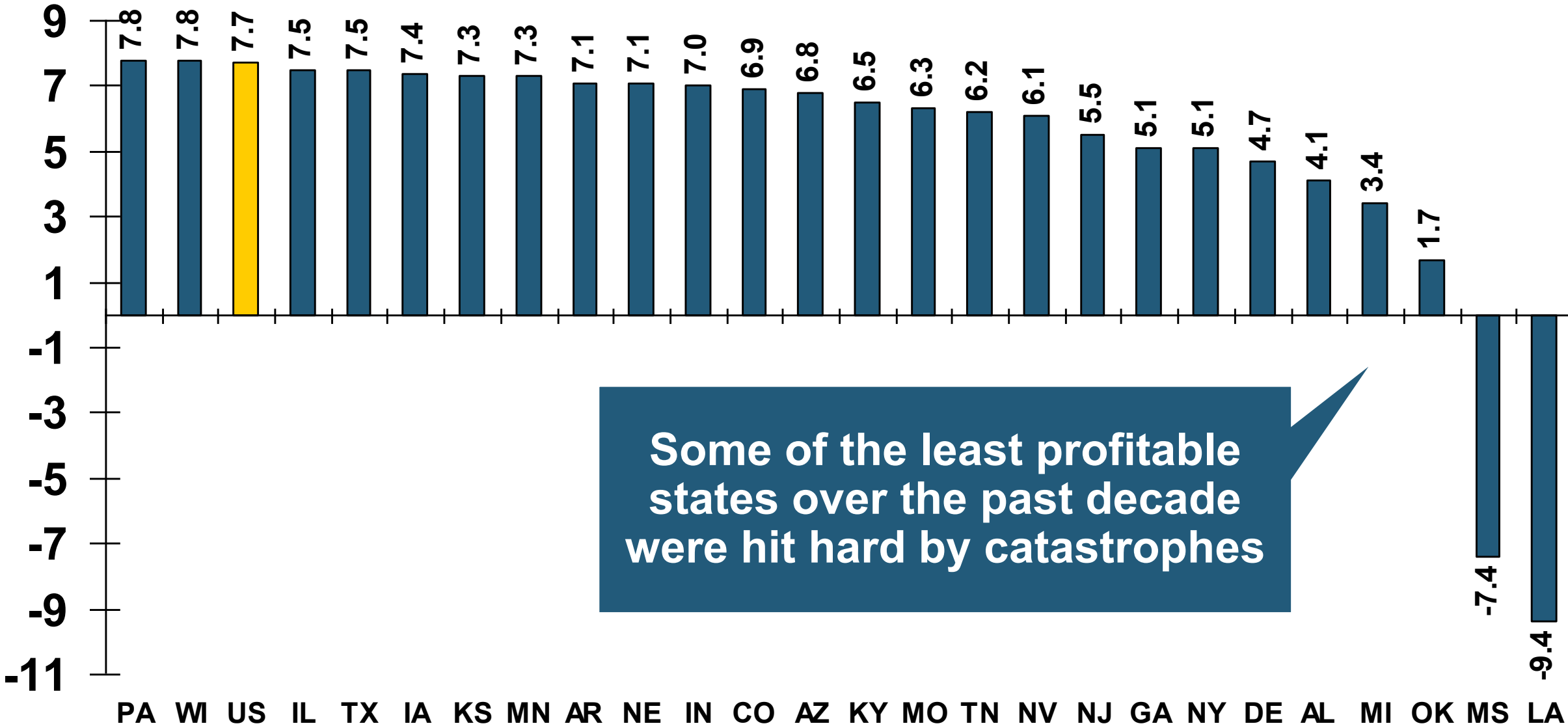
(Percent)



Source: NAIC; Insurance Information Institute.

RNW All Lines, 2005-2014 Average: Lowest 25 States

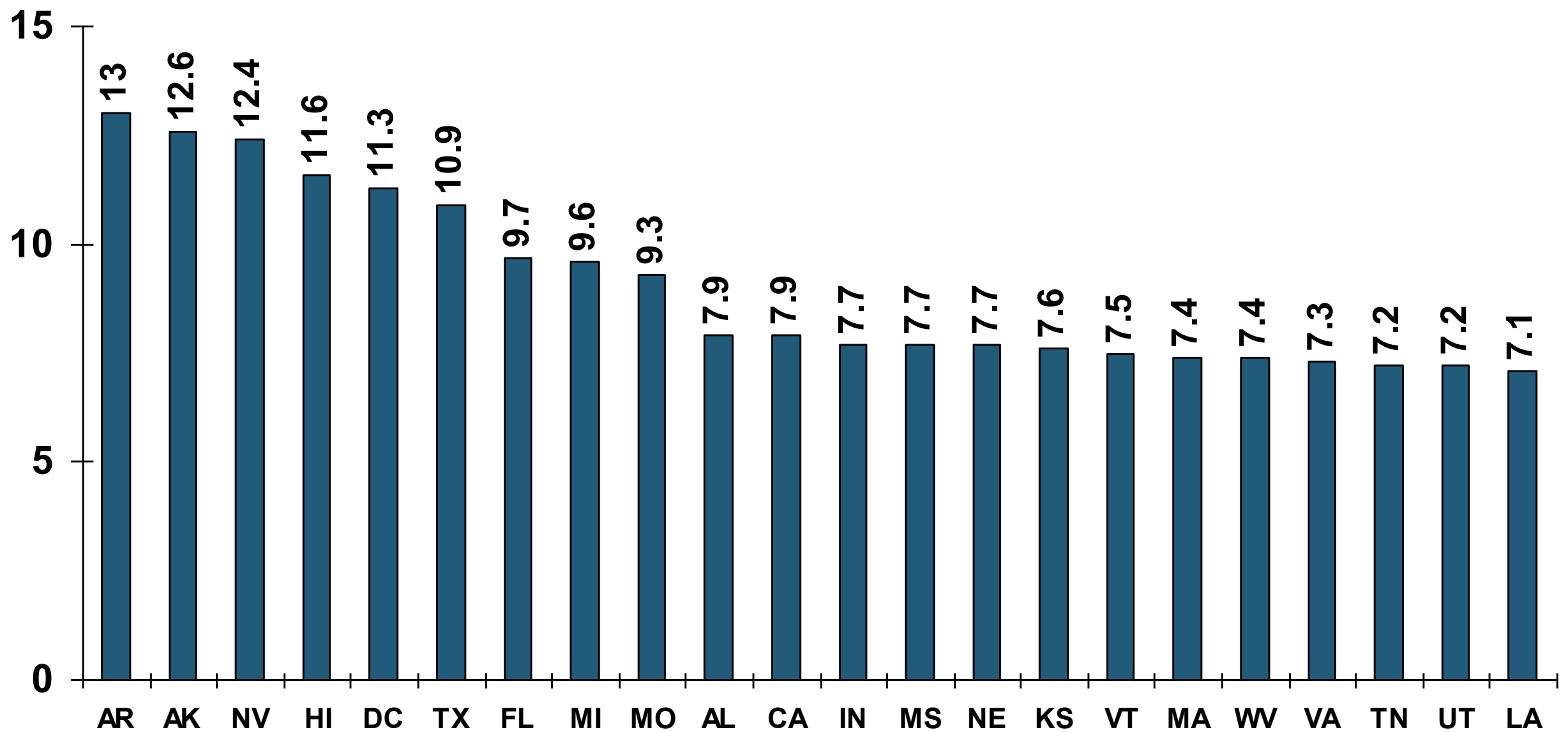
(Percent)



Source: NAIC; Insurance Information Institute.

RNW Workers Compensation, 2005-2014 Average: Highest 25 States

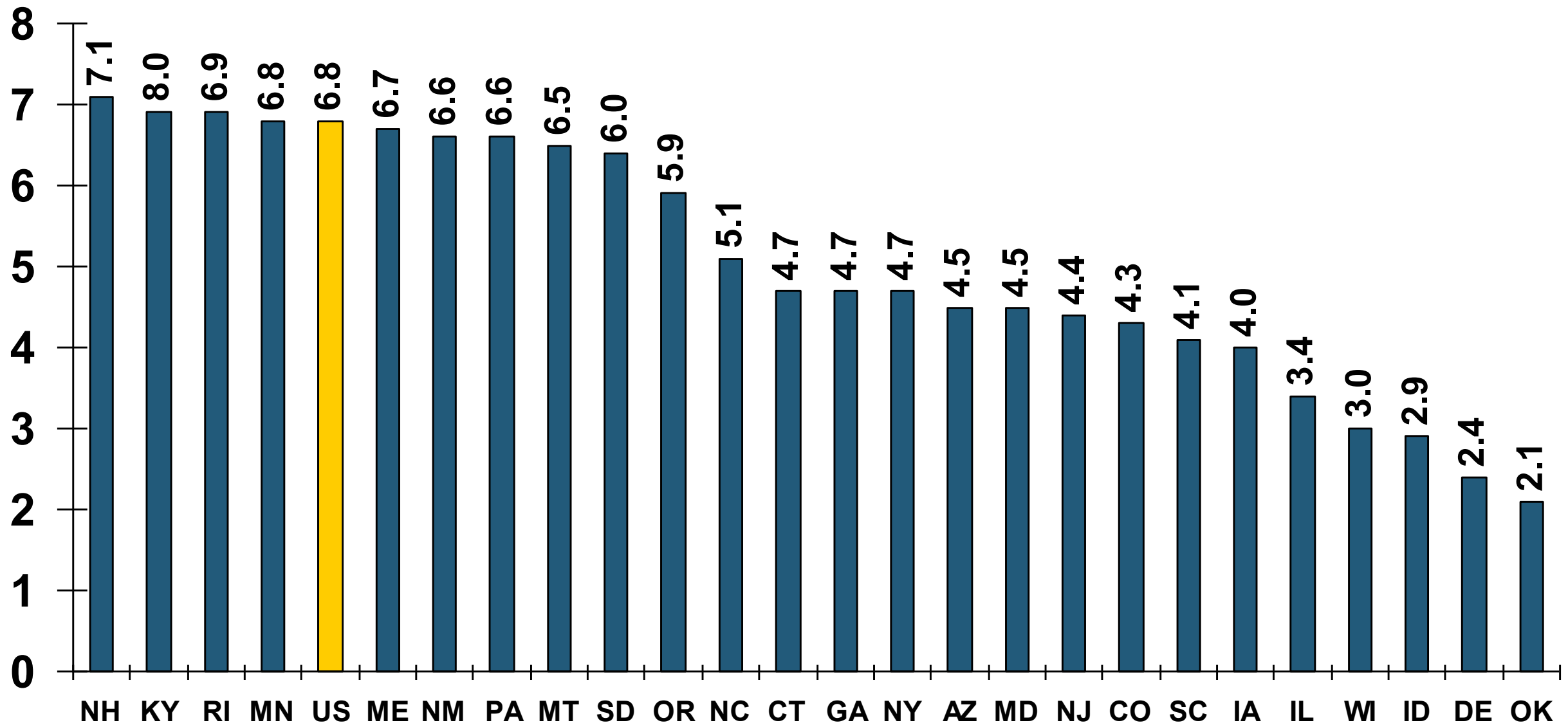
(Percent)



Sources: NAIC; Insurance Information Institute

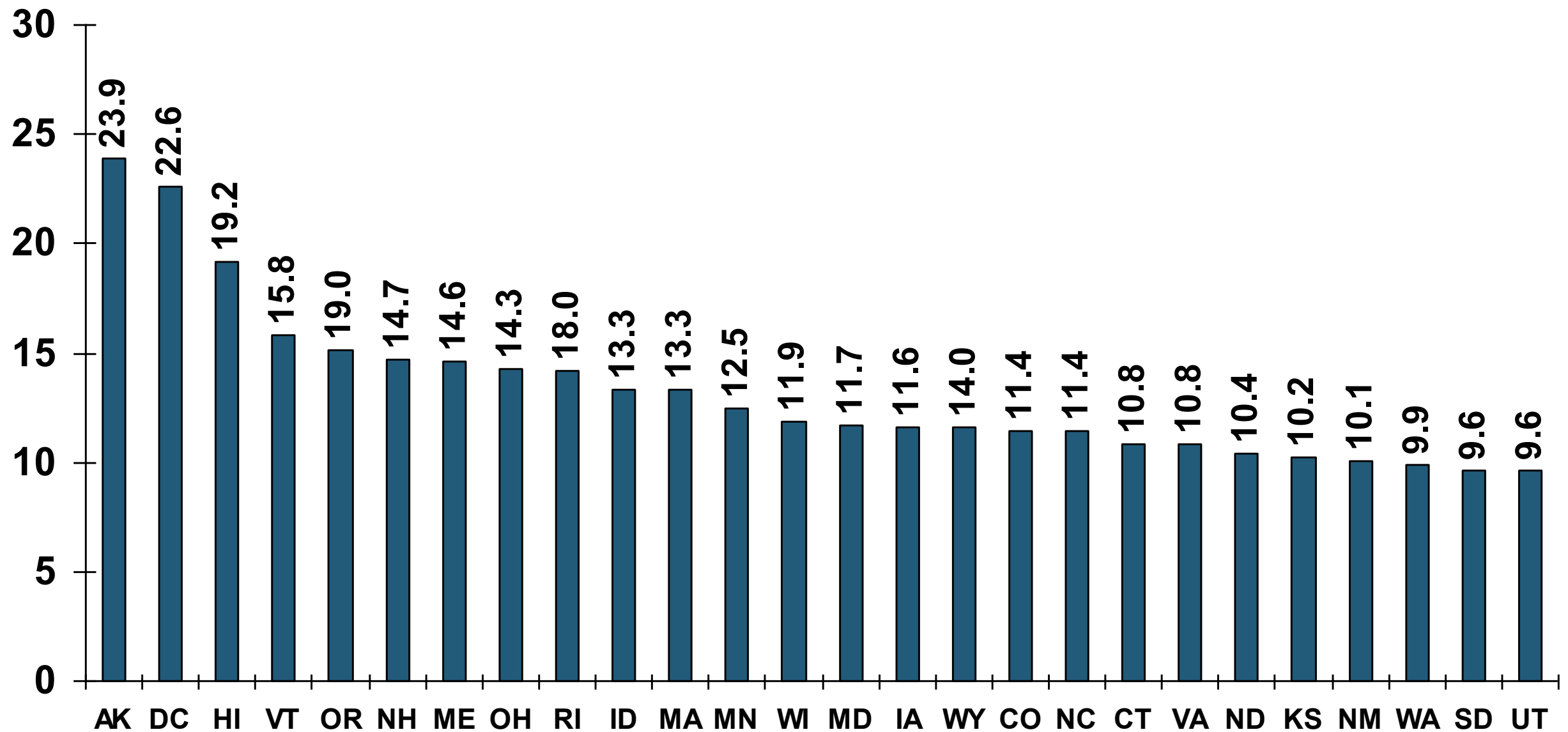
RNW Workers Compensation, 2005-2014 Average: Lowest 25 States

(Percent)



RNW Commercial Auto, 2005-2014 Average: Highest 25 States

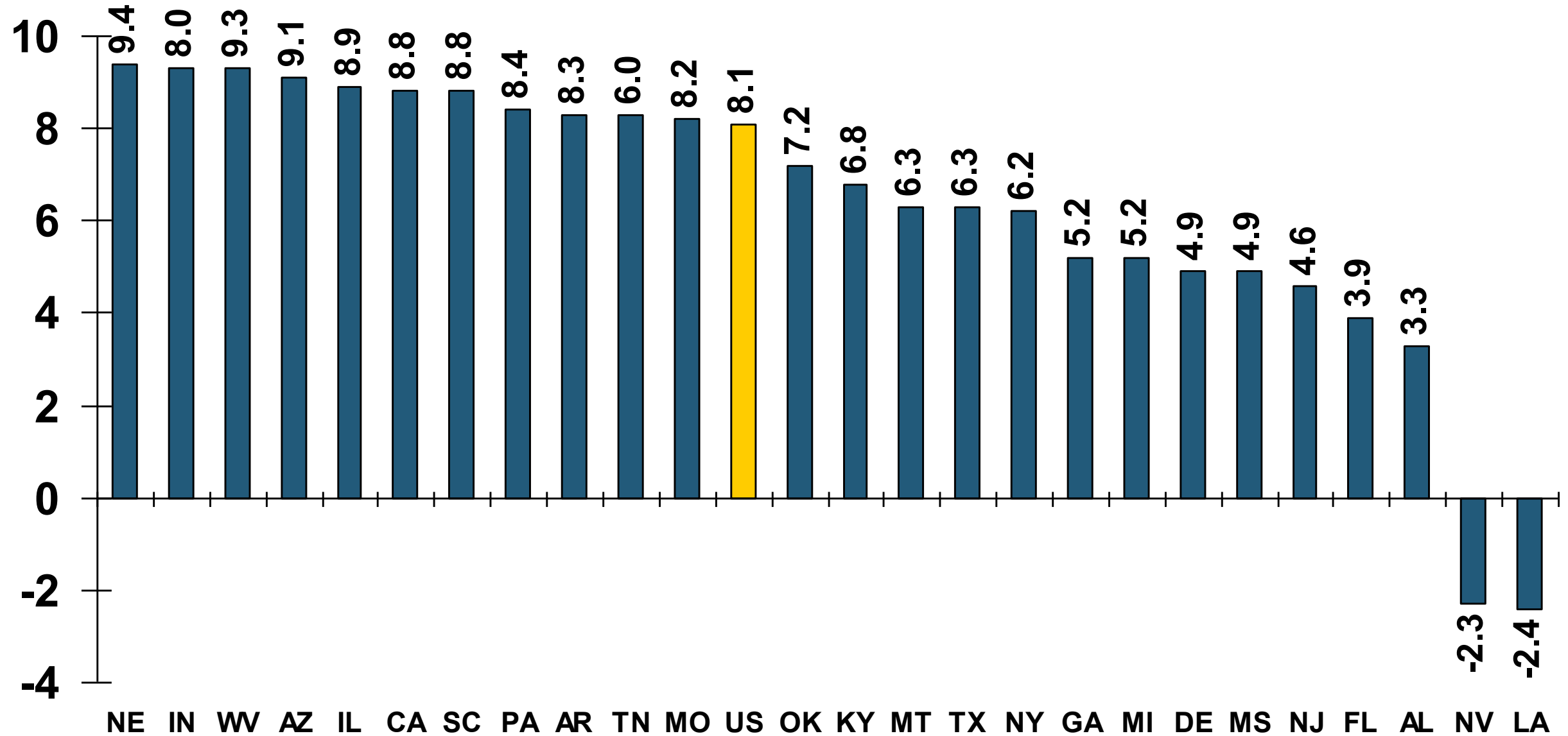
(Percent)



Sources: NAIC; Insurance Information Institute

RNW Commercial Auto, 2005-2014 Average: Lowest 25 States

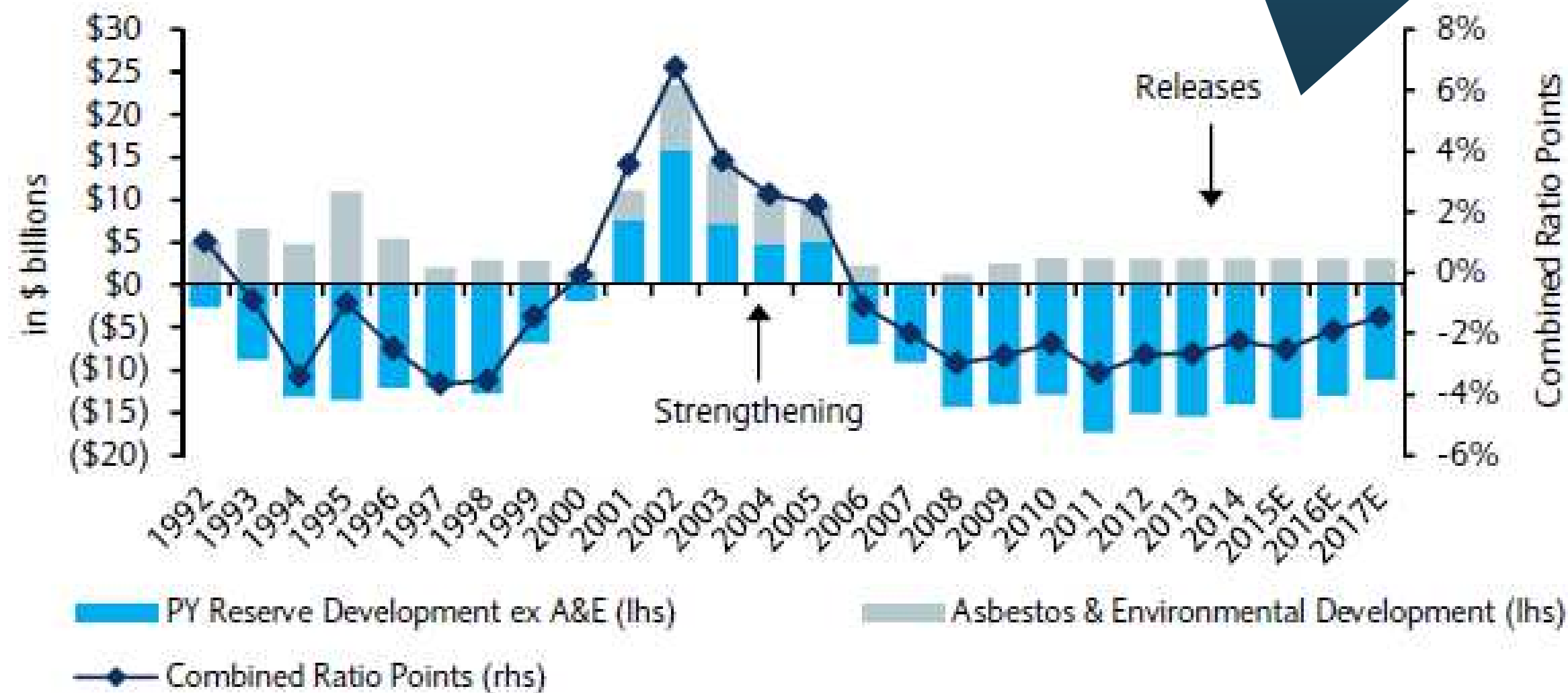
(Percent)



P/C Insurance Loss Reserve Development, 1992 – 2017E*

Reserve Change

Reserve releases are expected to gradually taper off slowly, but will continue to benefit the bottom line and combined ratio through at least 2017

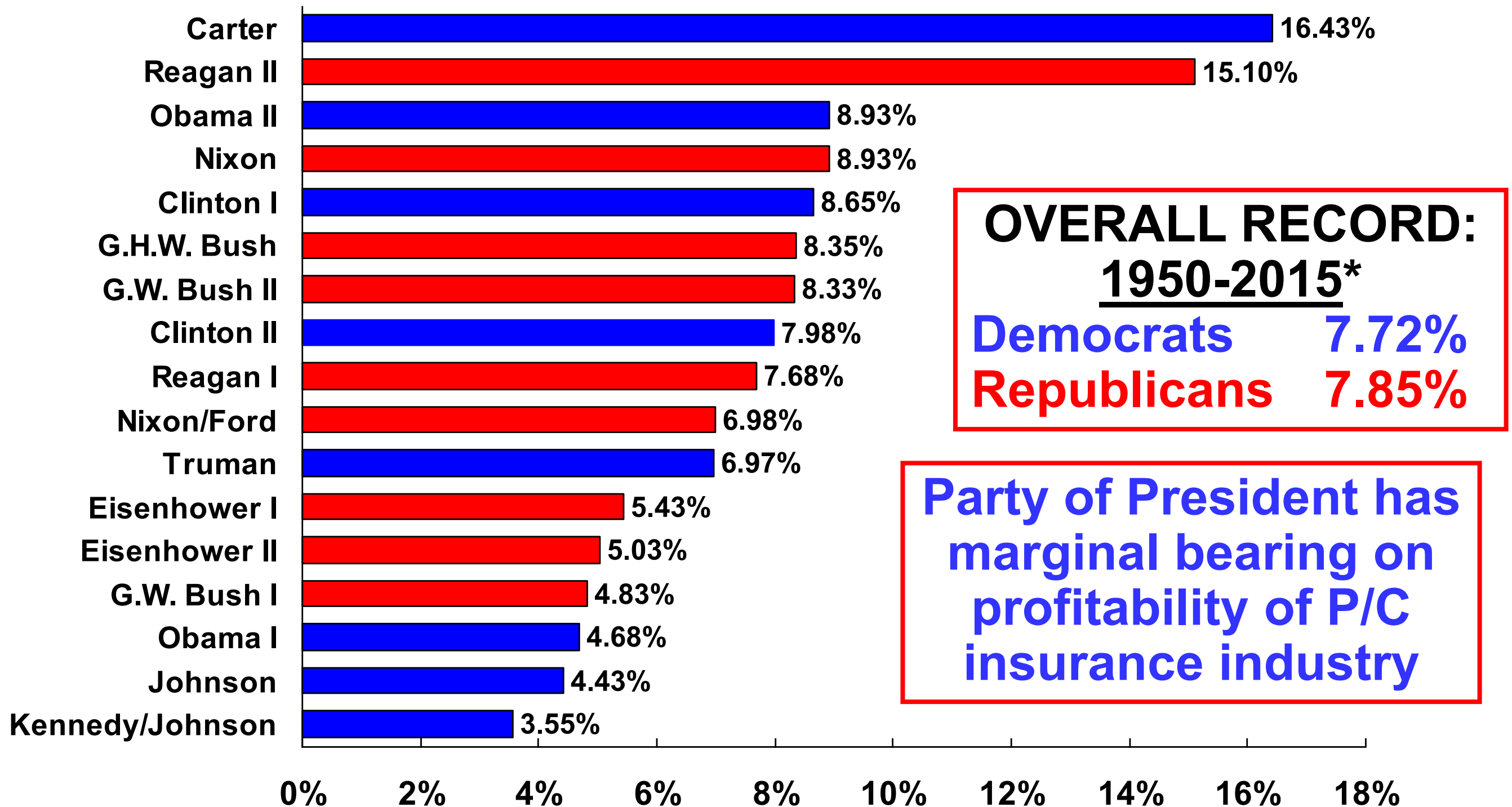


Source: A.M. Best; Barclays research for estimates.

Profitability & Politics

***How Is Profitability Affected by
the President's Political
Party?***

P/C Insurance Industry ROE by Presidential Administration, 1950-2015*

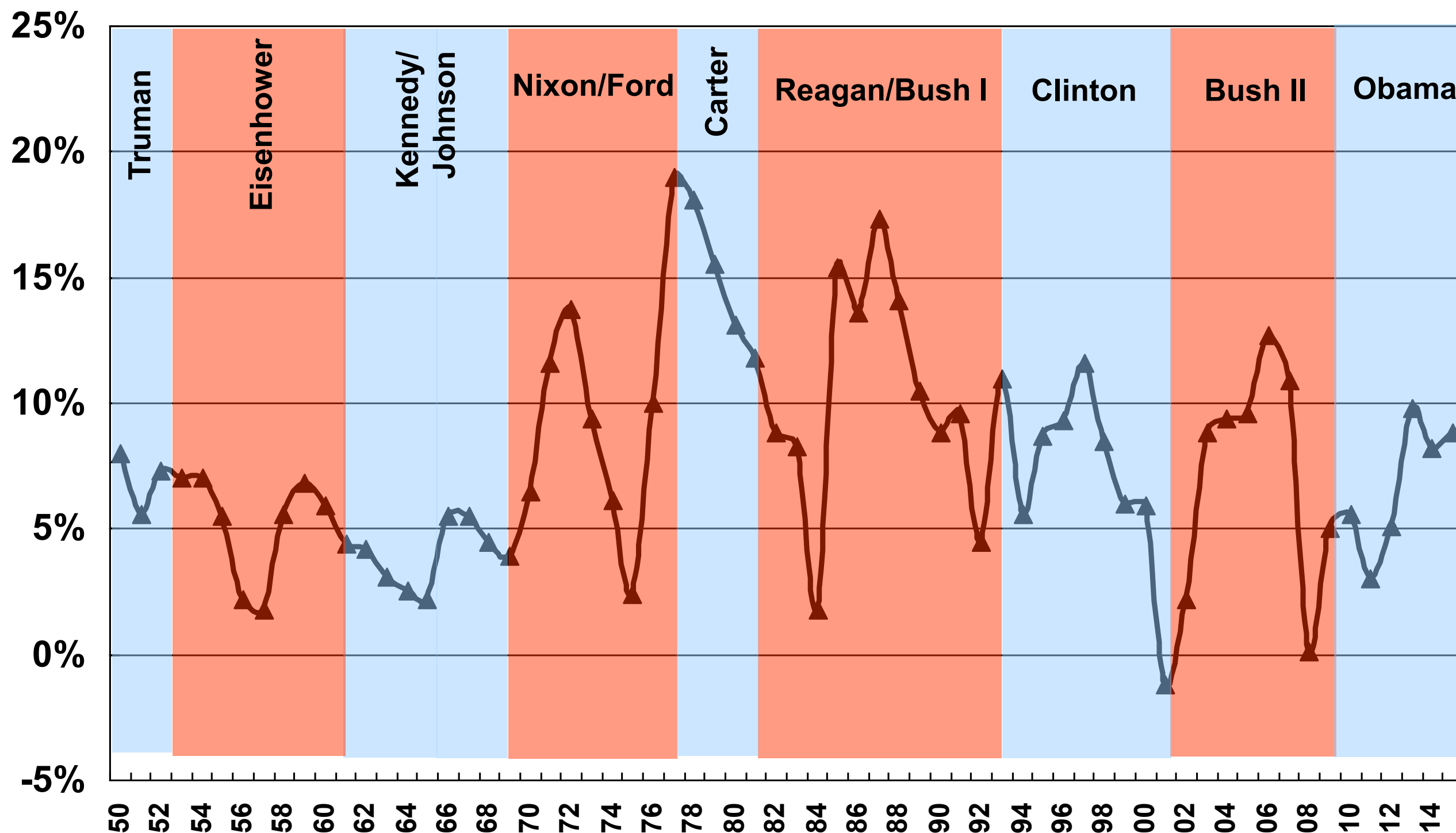


*Truman administration ROE of 6.97% based on 3 years only, 1950-52;.
Source: Insurance Information Institute

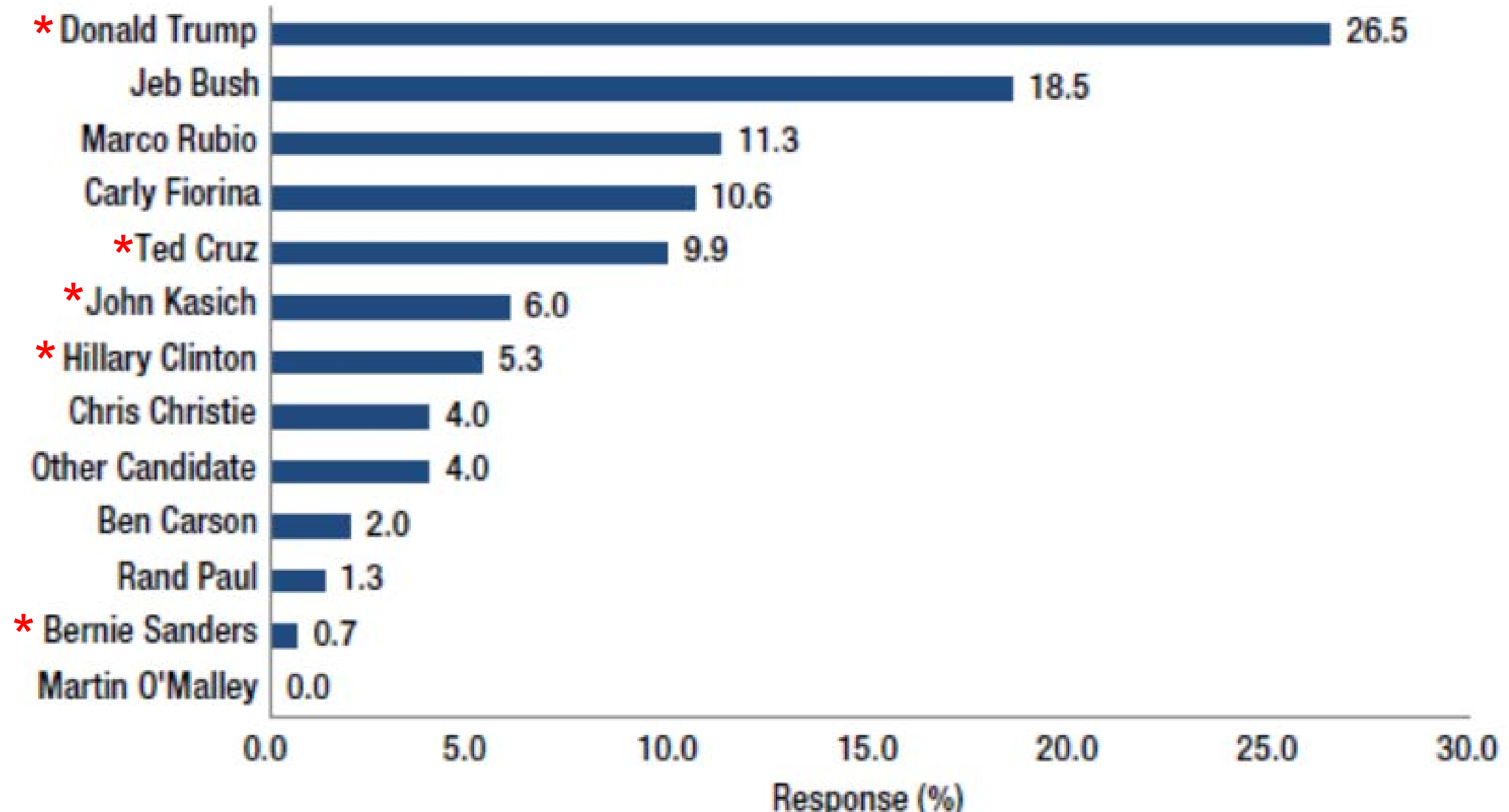
P/C insurance Industry ROE by Presidential Party Affiliation, 1950- 2015

BLUE = Democratic President

RED = Republican President



Presidential Candidate Anticipated as Having the Most Favorable Policies for the P/C Insurance Industry



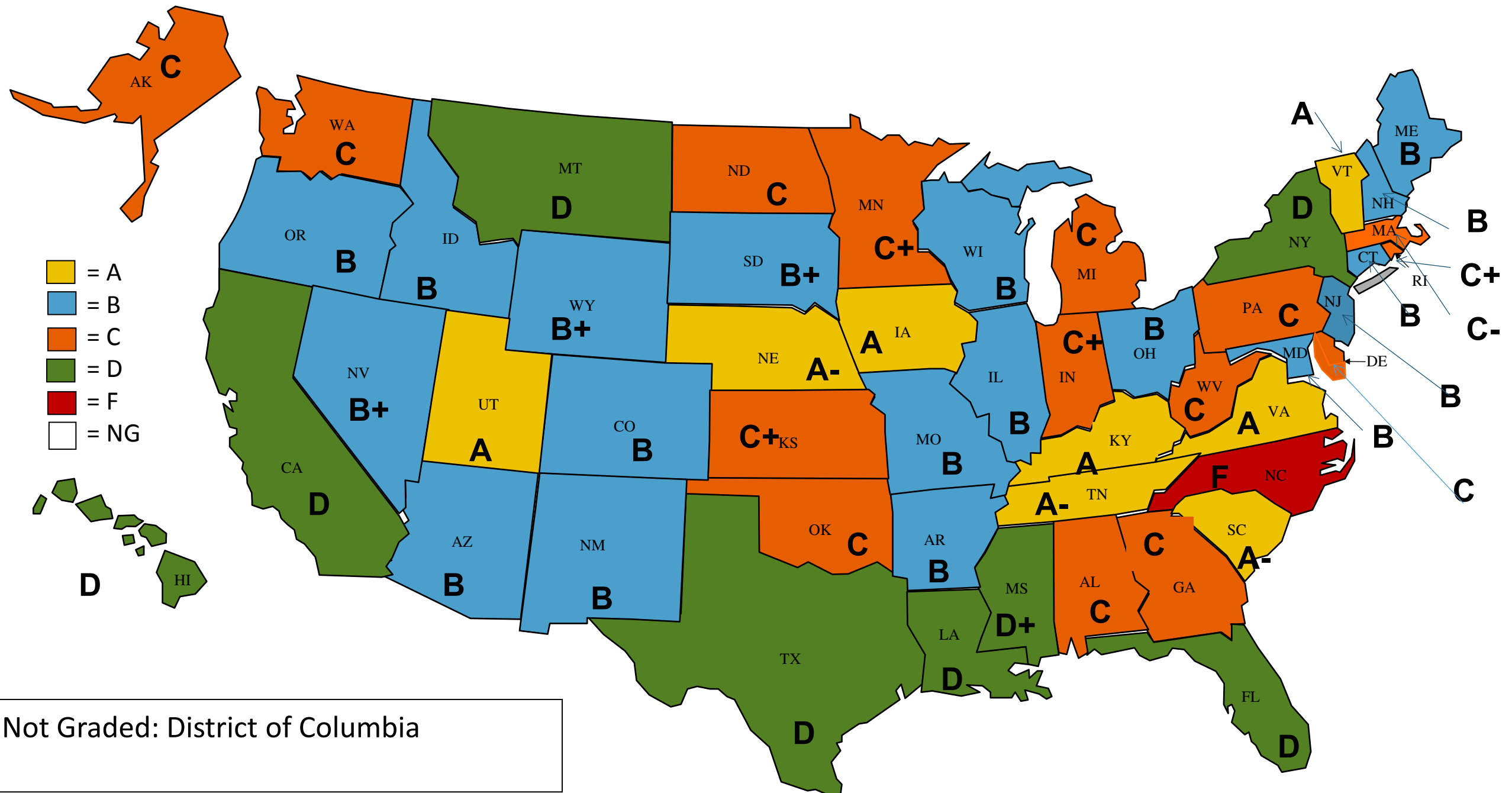
*Still in the race as of March 31, 2016.

Sources: A.M. Best Winter 2015/2016 Insurance Industry Survey, March 2016; Insurance Information Institute.

Trump vs. Clinton: Issues that Matter to P/C Insurers

Issue	Trump	Clinton
Economy	<i>Supply Side-Like Philosophy:</i> Lower taxes→Faster real GDP growth; Deficits likely grow as tax cuts are combined with targeted increased spending on Homeland Security, Defense, etc.	<i>Keynesian Philosophy:</i> More government spending on infrastructure, education, social services; Deficits likely increase as tax increases likely difficult to pass
Interest Rates	May trend higher with larger deficits; Shift from monetary policy to fiscal focus (tax cuts, government spending)	Status quo at the Fed; Net impact on interest rates unclear
Taxes	Favors lower tax rates for corporate and personal income tax rates; Tax code overhaul?	Unlikely to reduce taxes or embark on major overhaul of tax code
International Trade	Protectionist Tendencies	Has criticized Trans-Pacific Partnership but is a realist on international matters
Tort System	Doesn't like trial lawyers but seems to like filing lawsuits	Status Quo

2015 Property and Casualty Insurance Regulatory Report Card



Source: R Street Insurance Regulation Report Card, December 2015

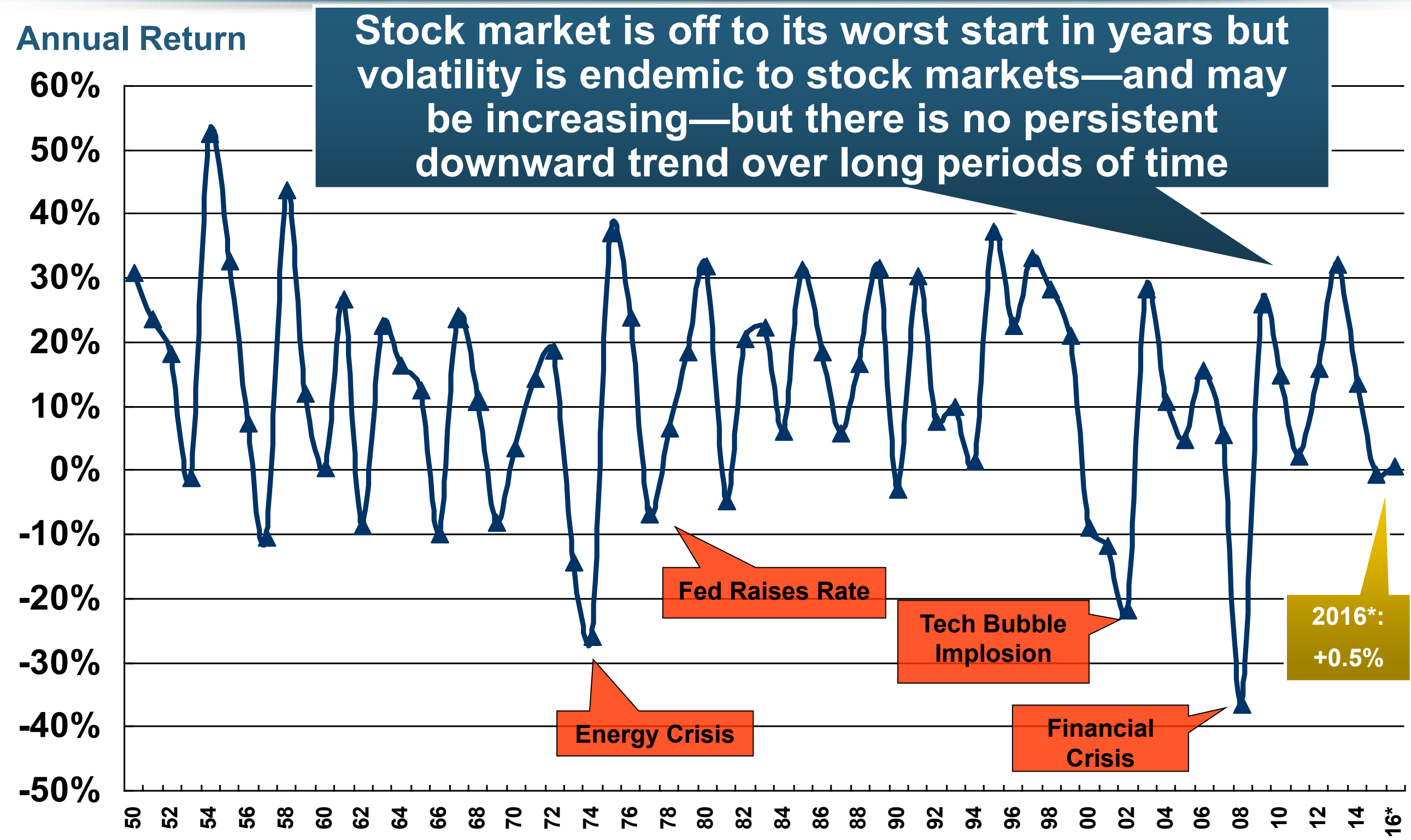
INVESTMENTS: THE NEW REALITY

**Investment Performance is a Key
Driver of Profitability**

***Depressed Yields Will
Necessarily Influence***

Underwriting Profitability

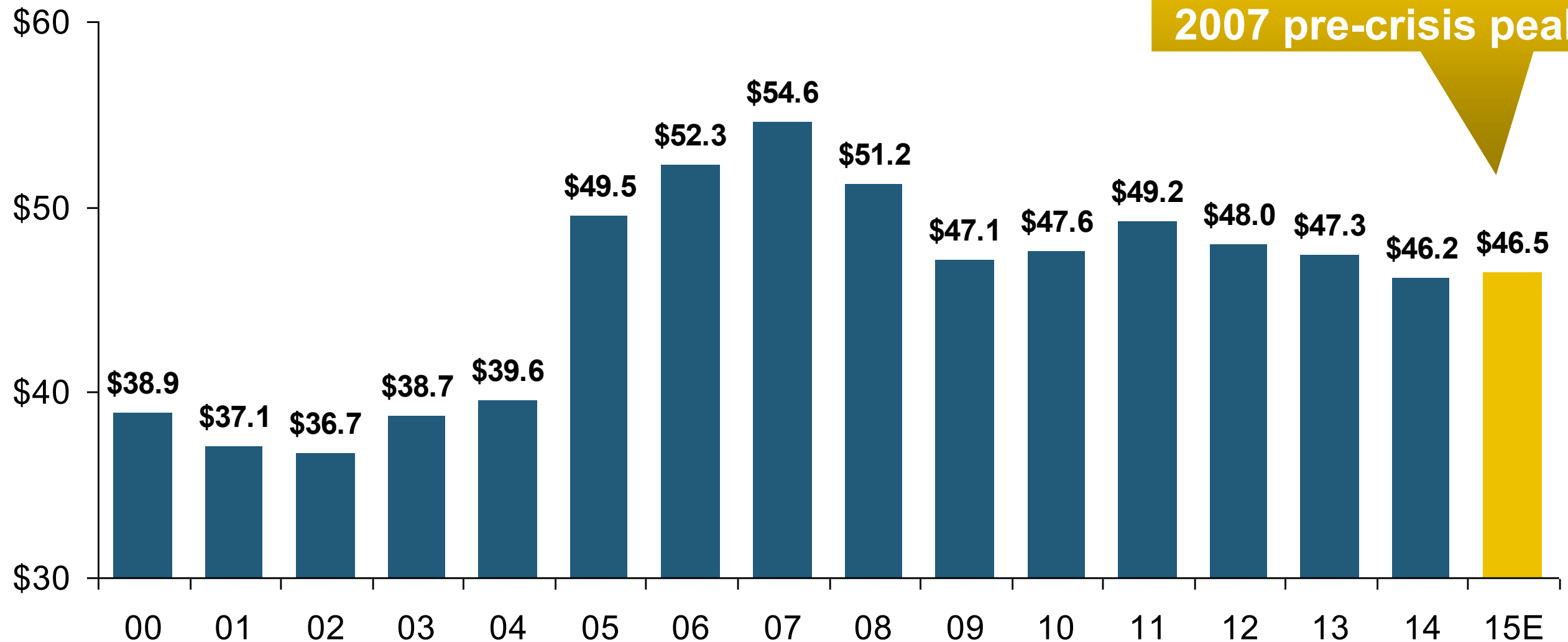
S&P 500 Index Returns, 1950 – 2016*



*Through March 29, 2016.
Source: NYU Stern School of Business: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html Ins. Info. Inst.

Property/Casualty Insurance Industry Investment Income: 2000–2015E¹

(\$ Billions)

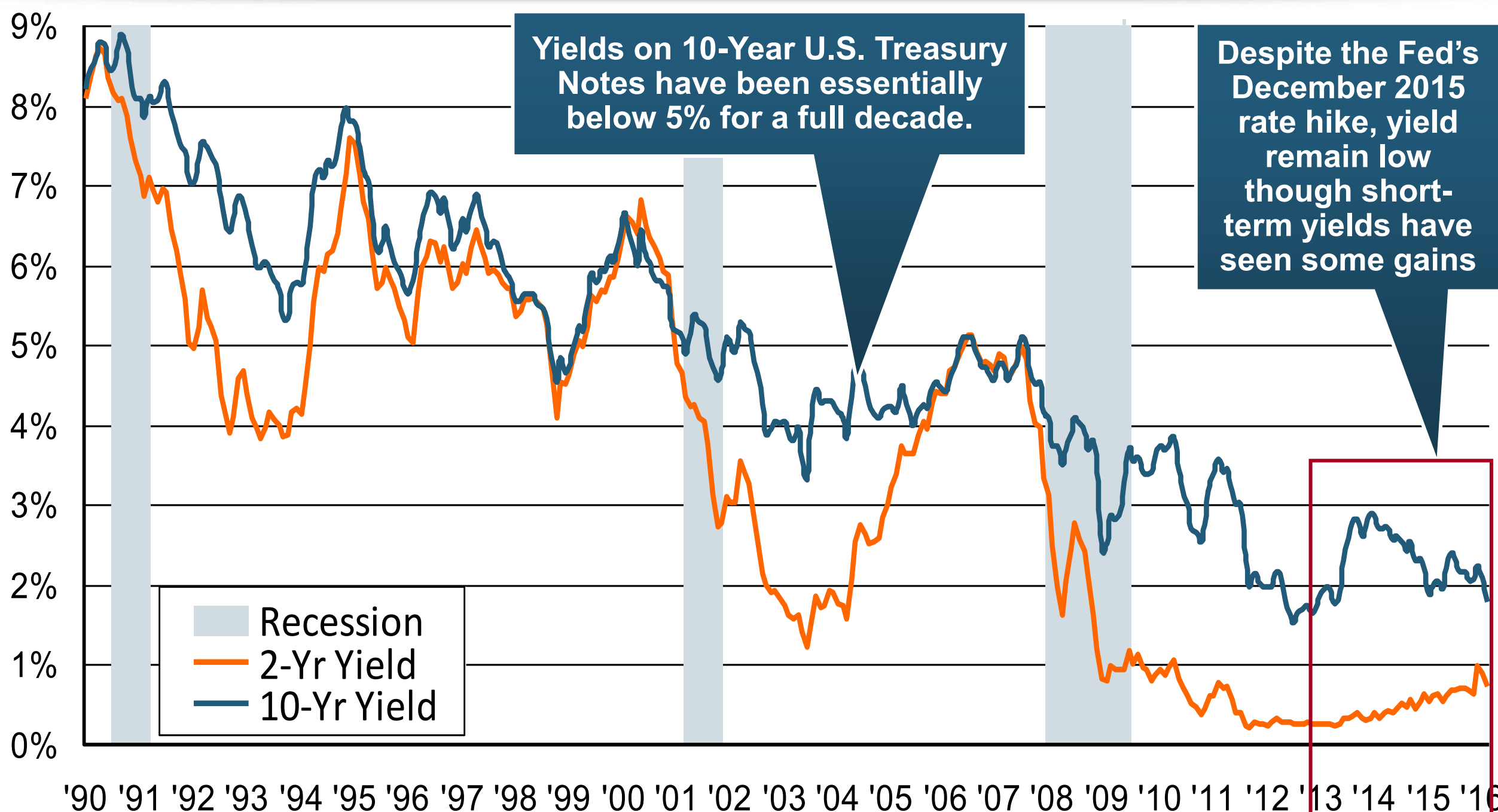


**Due to persistently low interest rates,
investment income fell in 2012, 2013 and 2014.**

¹ Investment gains consist primarily of interest and stock dividends.
Q3.

*2015 figure is estimated based on annualized data through

U.S. Treasury Security Yields: A Long Downward Trend, 1990–2016*

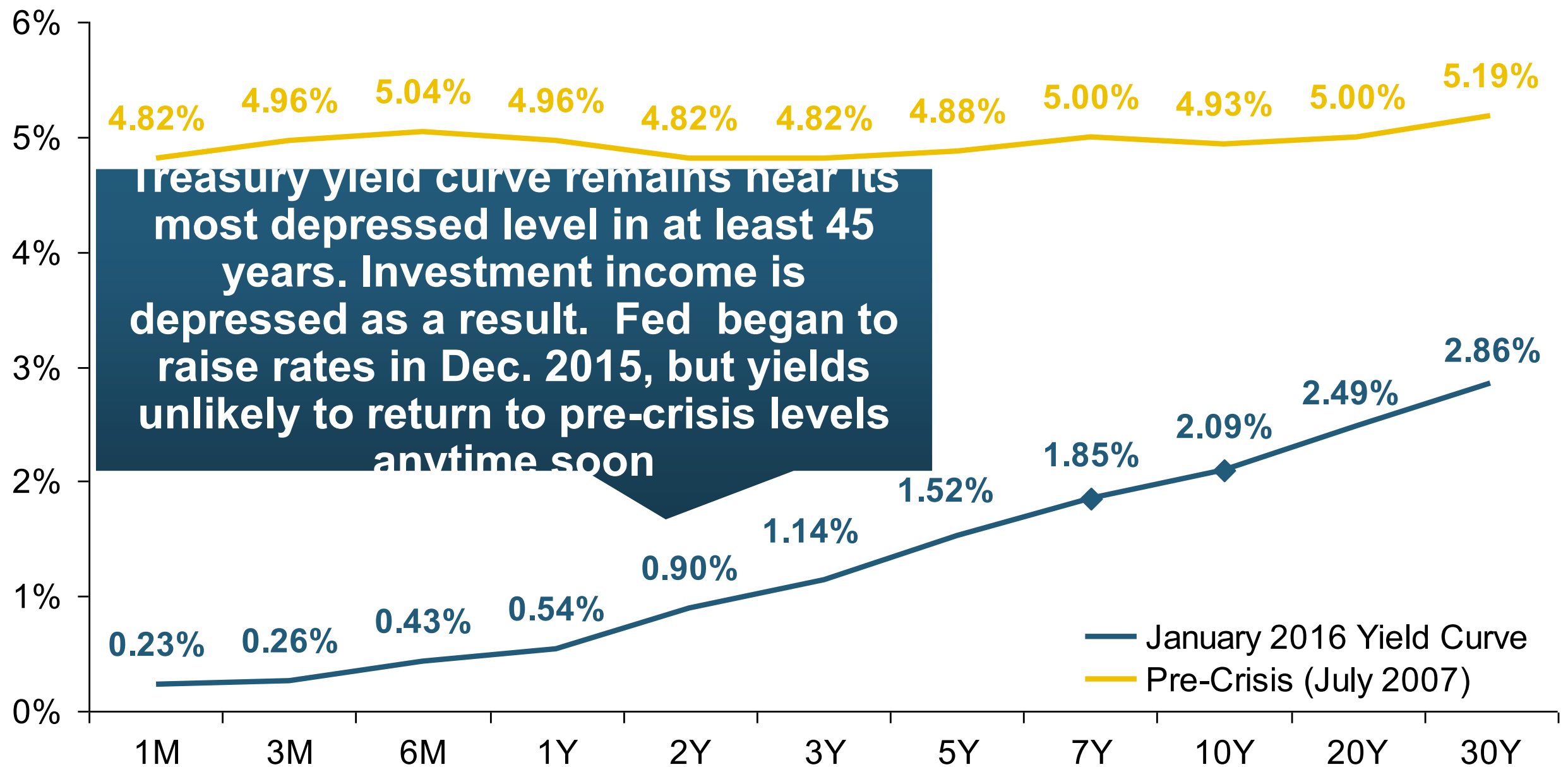


Since roughly 80% of P/C bond/cash investments are in 10-year or shorter durations, most P/C insurer portfolios will have low-yielding bonds for years to come.

*Monthly, constant maturity, nominal rates, through February 2016.

Sources: Federal Reserve Bank at <http://www.federalreserve.gov/releases/h15/data.htm>. National Bureau of Economic Research (recession dates); Insurance Information Institute.

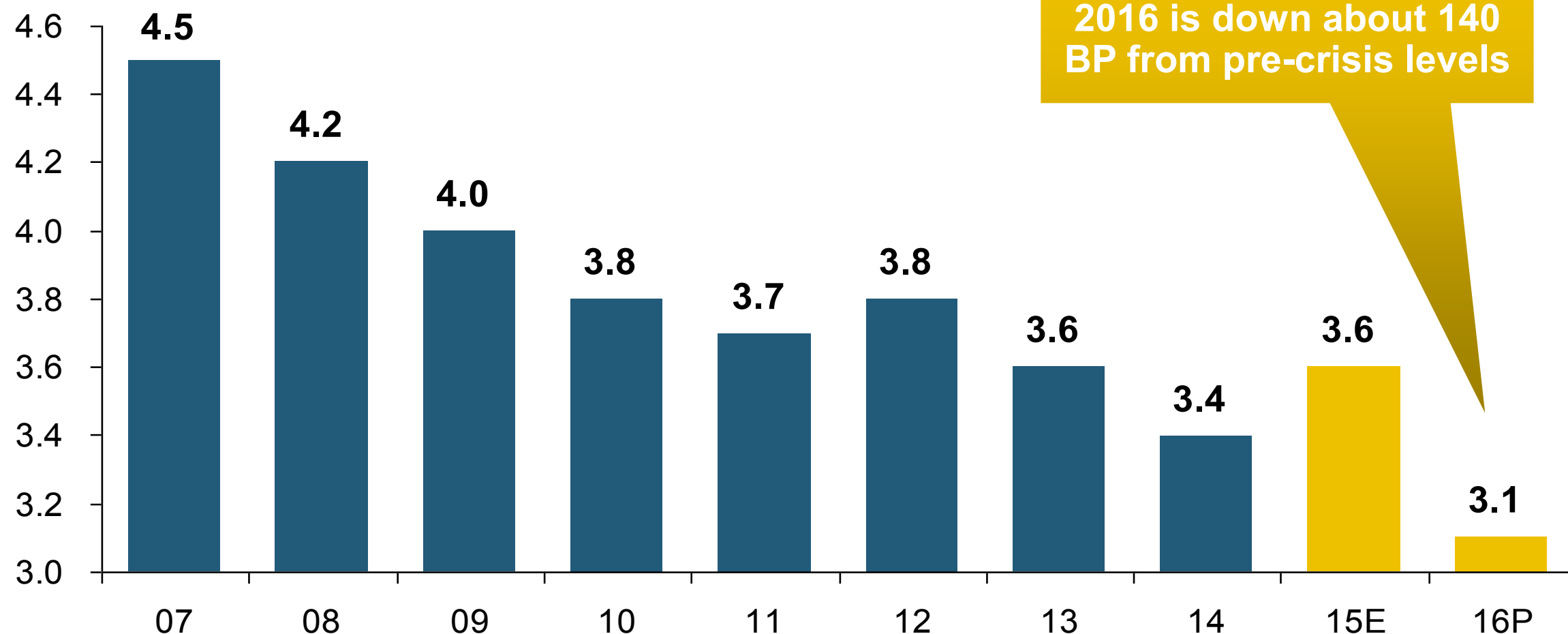
Treasury Yield Curves: Pre-Crisis (July 2007) vs. January 2016



The Fed Began to Raise Rates in Dec. 2015 but Market Volatility and Weakness Abroad Will Make It Difficult for the Fed to Raise Rates in Early 2016

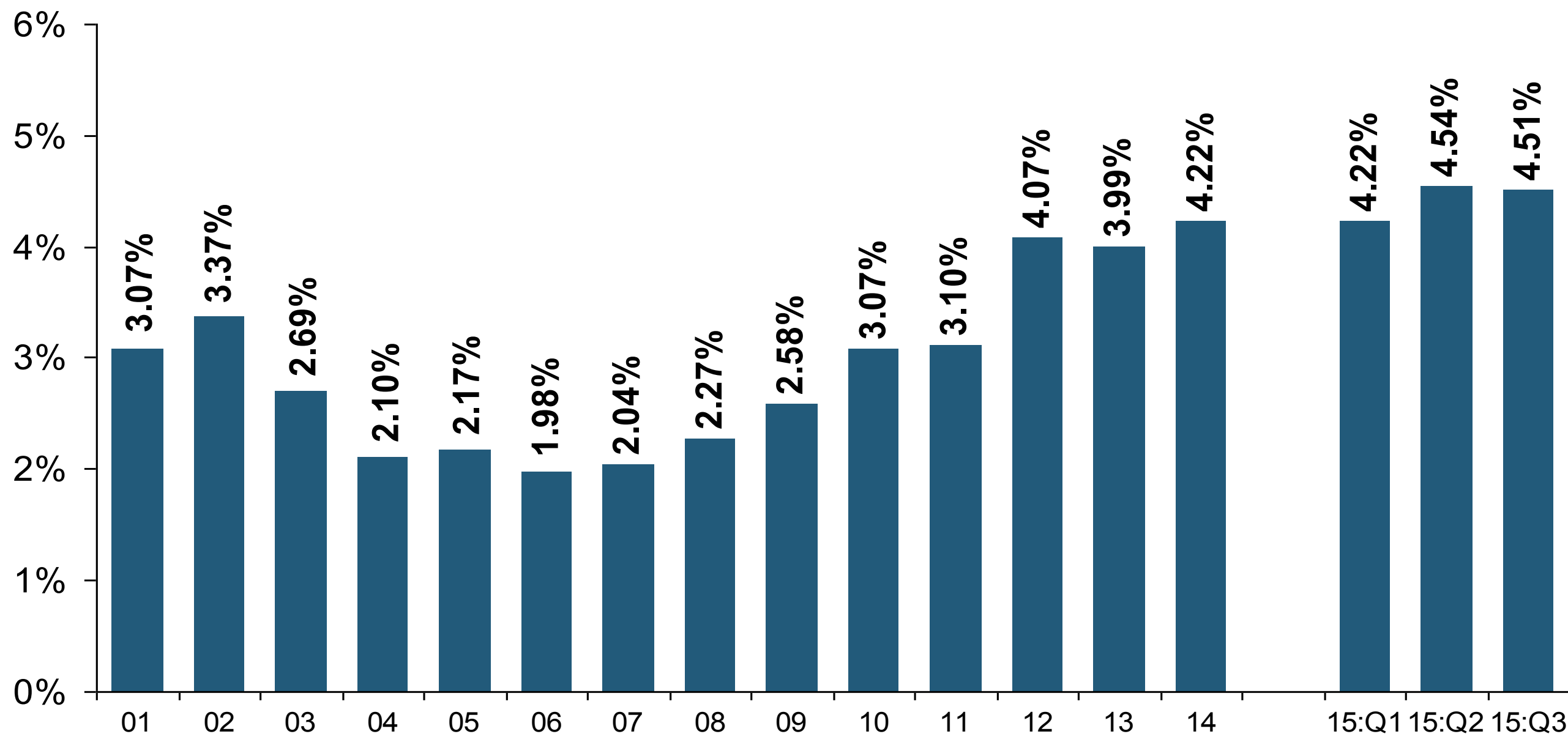
Net Investment Yield on Property/ Casualty Insurance Invested Assets, 2007–2016P*

(Percent)



The yield on invested assets remains low relative to pre-crisis yields. The Fed's plan to raise interest rates in late 2015 has pushed up some yields, albeit quite modestly.

P/C Insurers Below-Investment-Grade (BIG) Bonds as a Percent of Total Bonds, 2001-2015:Q3



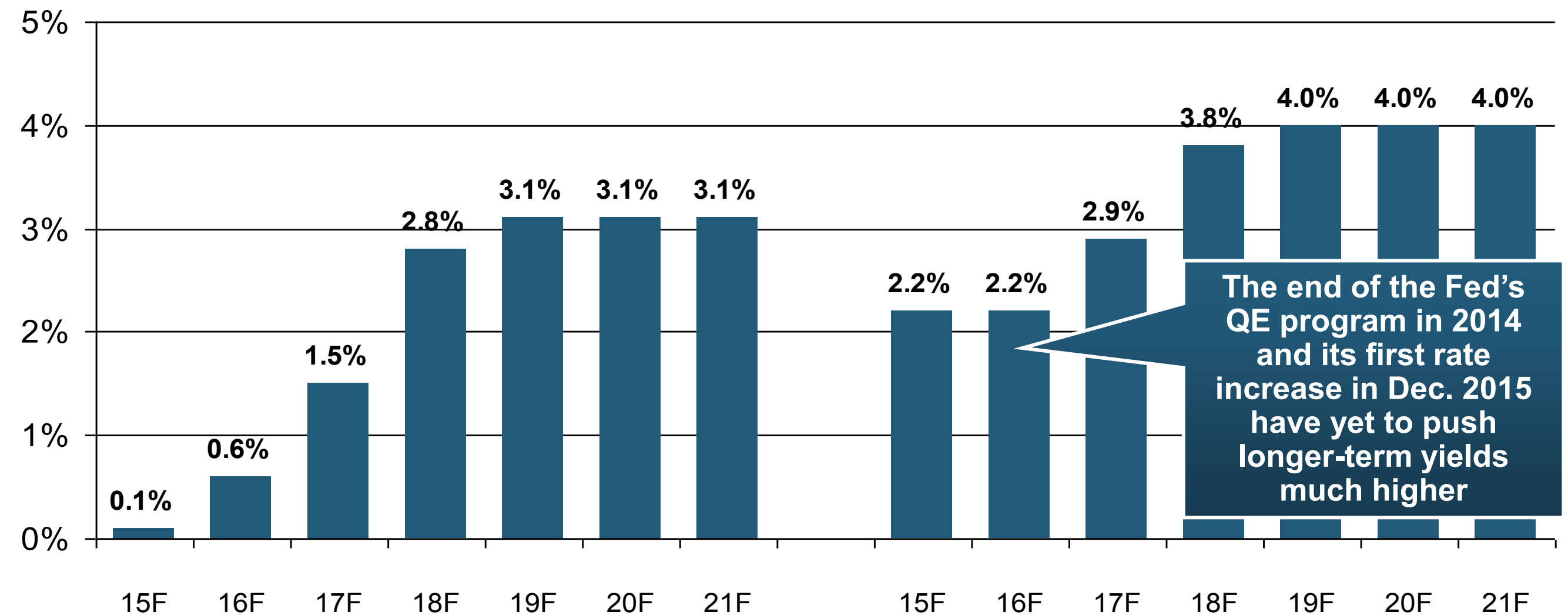
As a group, P/C carriers have increased the percentage of bond investments in riskier instruments. Since 2006-07, that percentage has risen over 200 basis points (double what it was). As interest rates rise, will this percentage return to pre-recession levels?

Interest Rate Forecasts: 2015 – 2021

Yield (%)

3-Month Treasury

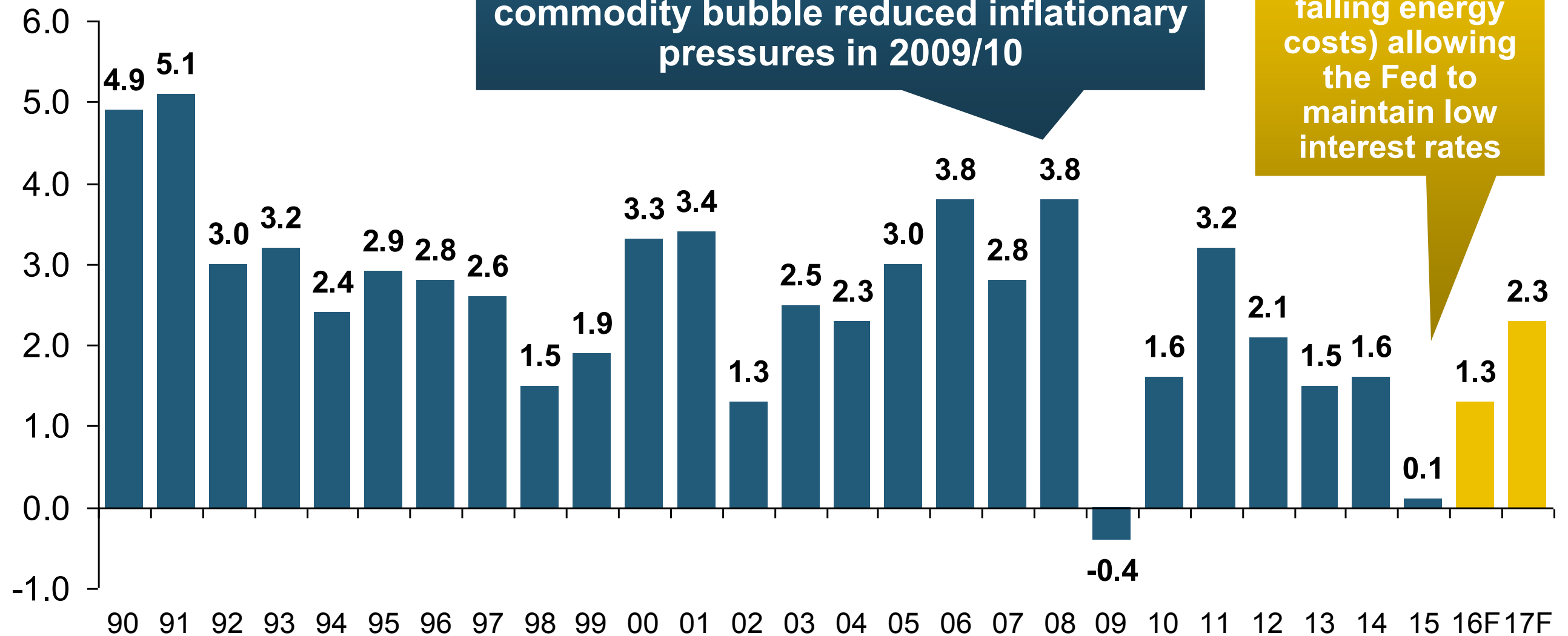
10-Year Treasury



A full normalization of interest rates is unlikely until 2019, more than a decade after the onset of the financial crisis.

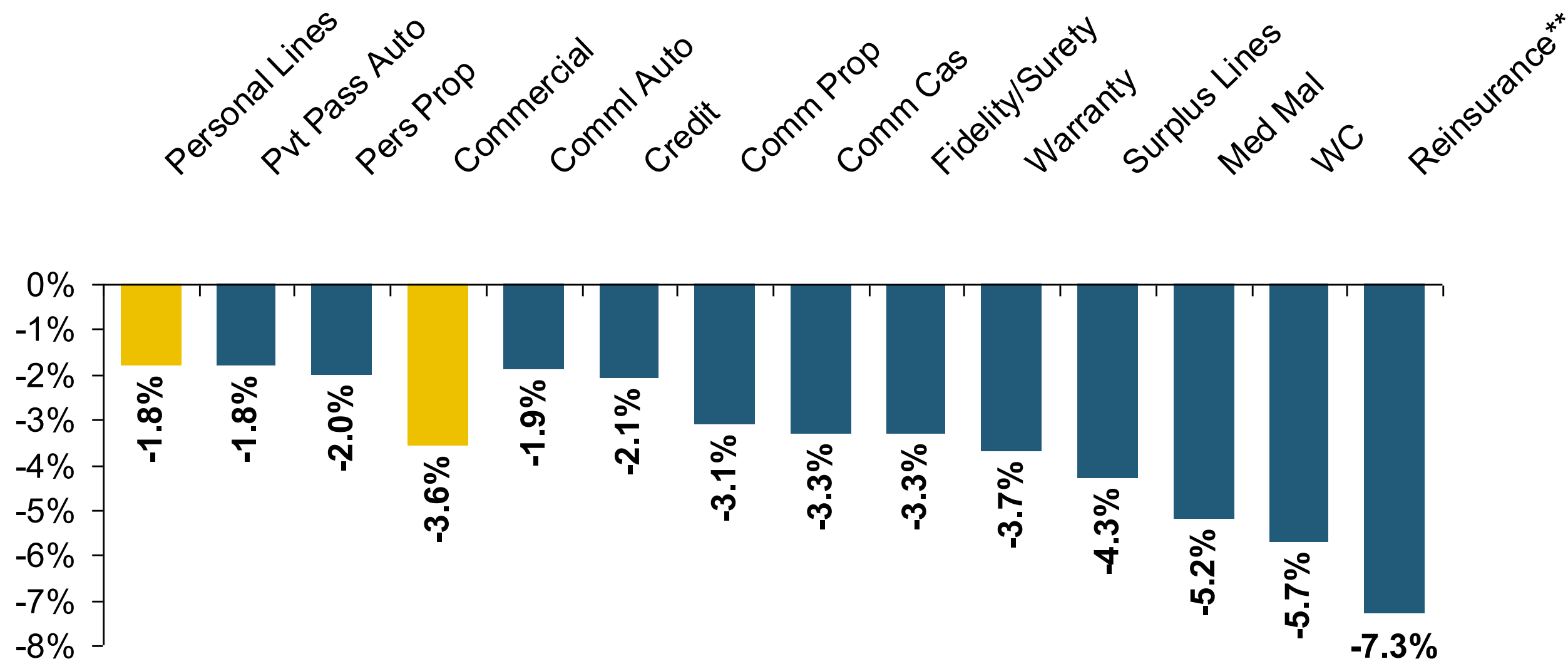
Annual Inflation Rates, (CPI-U, %), 1990–2017F

Annual Inflation Rates (%)



Slack in the U.S. economy and falling energy prices suggests that inflationary pressures should remain subdued for an extended period of times

Reduction in Combined Ratio Necessary to Offset 1% Decline in Investment Yield to Maintain Constant ROE, by Line*



Lower Investment Earnings Place a Greater Burden on Underwriting and Pricing Discipline

*Based on 2008 Invested Assets and Earned Premiums

**US domestic reinsurance only

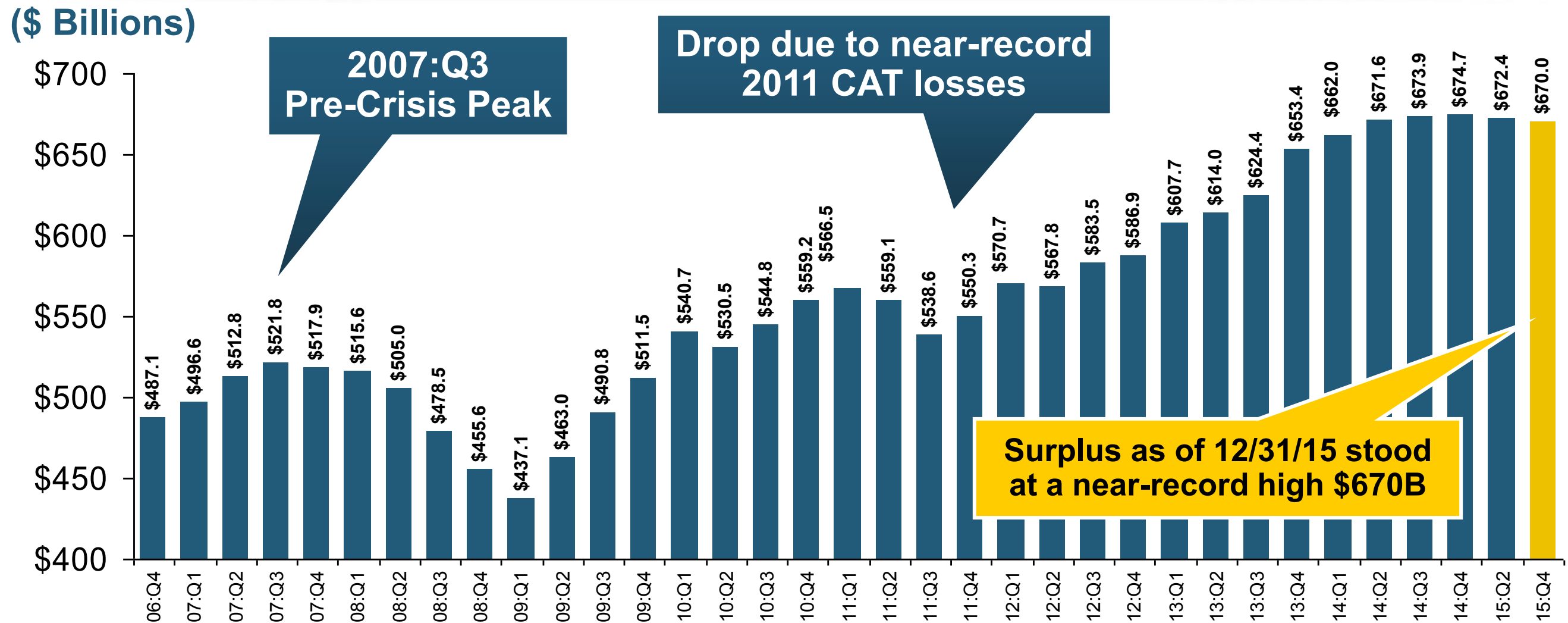
Source: A.M. Best; Insurance Information Institute.

CAPITAL/CAPACITY

**Capital Accumulation Has
Multiple Impacts**

Alternative Capital Impacts?

Policyholder Surplus, 2006:Q4–2015:Q4E



**The industry now has \$1 of surplus for every \$0.73 of NPW,
close to the strongest claims-paying status in its history.**

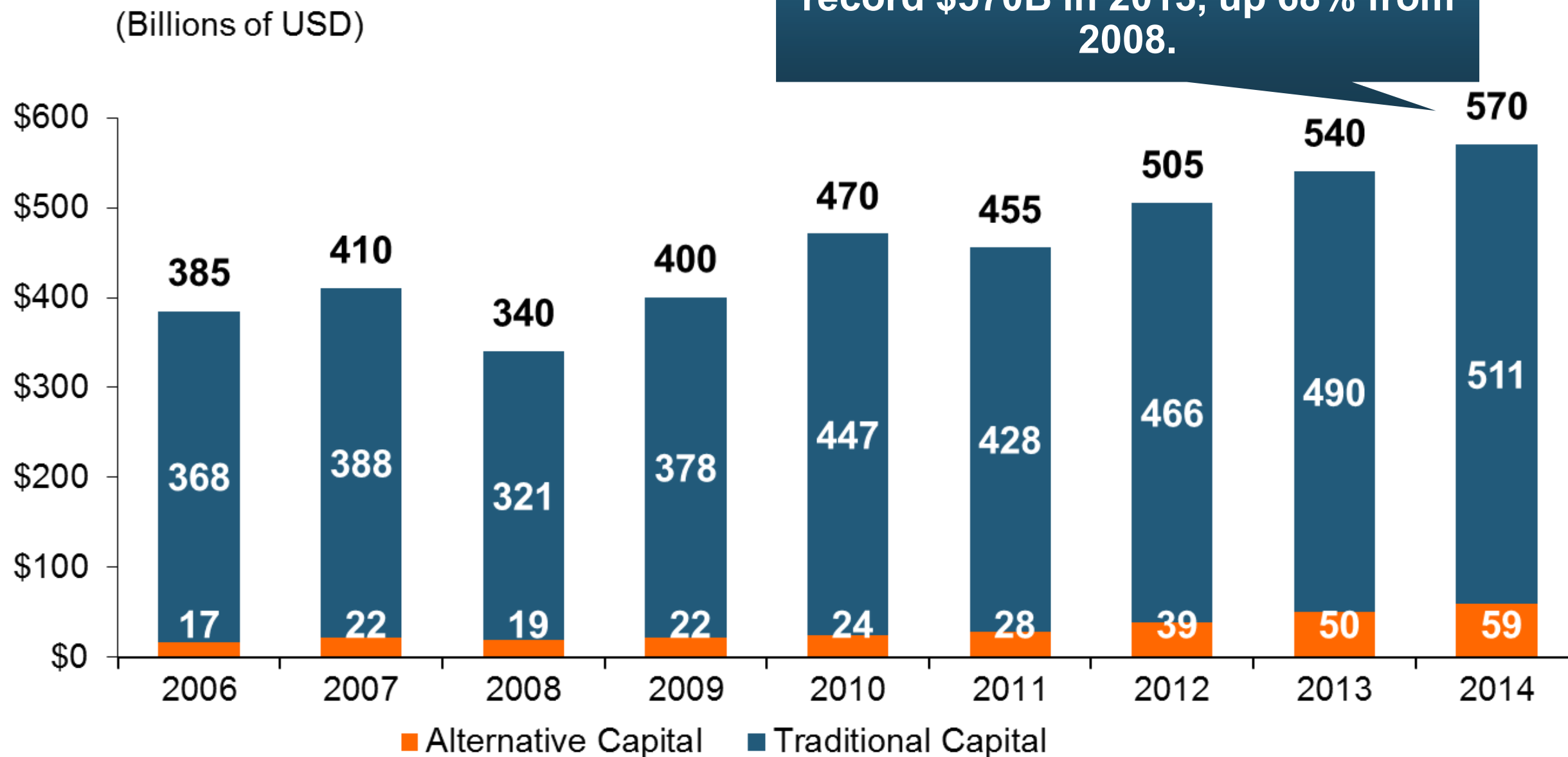
2010:Q1 data includes \$22.5B of paid-in capital from a holding company parent for one insurer's investment in a non-insurance business .

Sources: ISO, A.M .Best.

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

Global Reinsurance Capital (Traditional and Alternative), 2006 - 2014

Total reinsurance capital reached a record \$570B in 2013, up 68% from 2008.

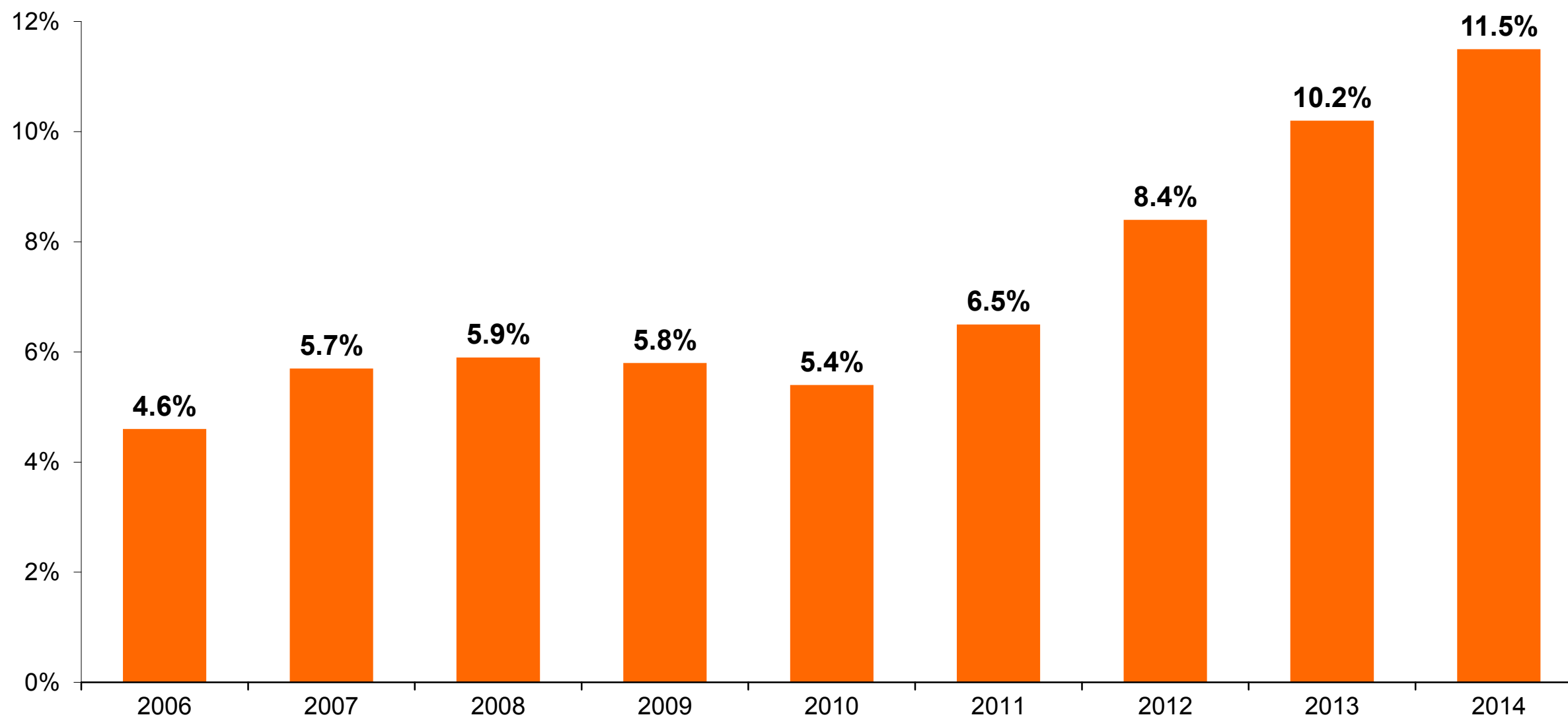


But alternative capacity has grown 210% since 2008, to \$50B. It has more than doubled in the past three years.

2014 data is as of June 30, 2014.

Source: Aon Benfield Analytics; Insurance Information Institute.

Alternative Capital as a Percentage of Traditional Global Reinsurance Capital



Alternative Capital's Share of Global Reinsurance Capital Has More Than Doubled Since 2010.

2014 data is as of June 30, 2014.

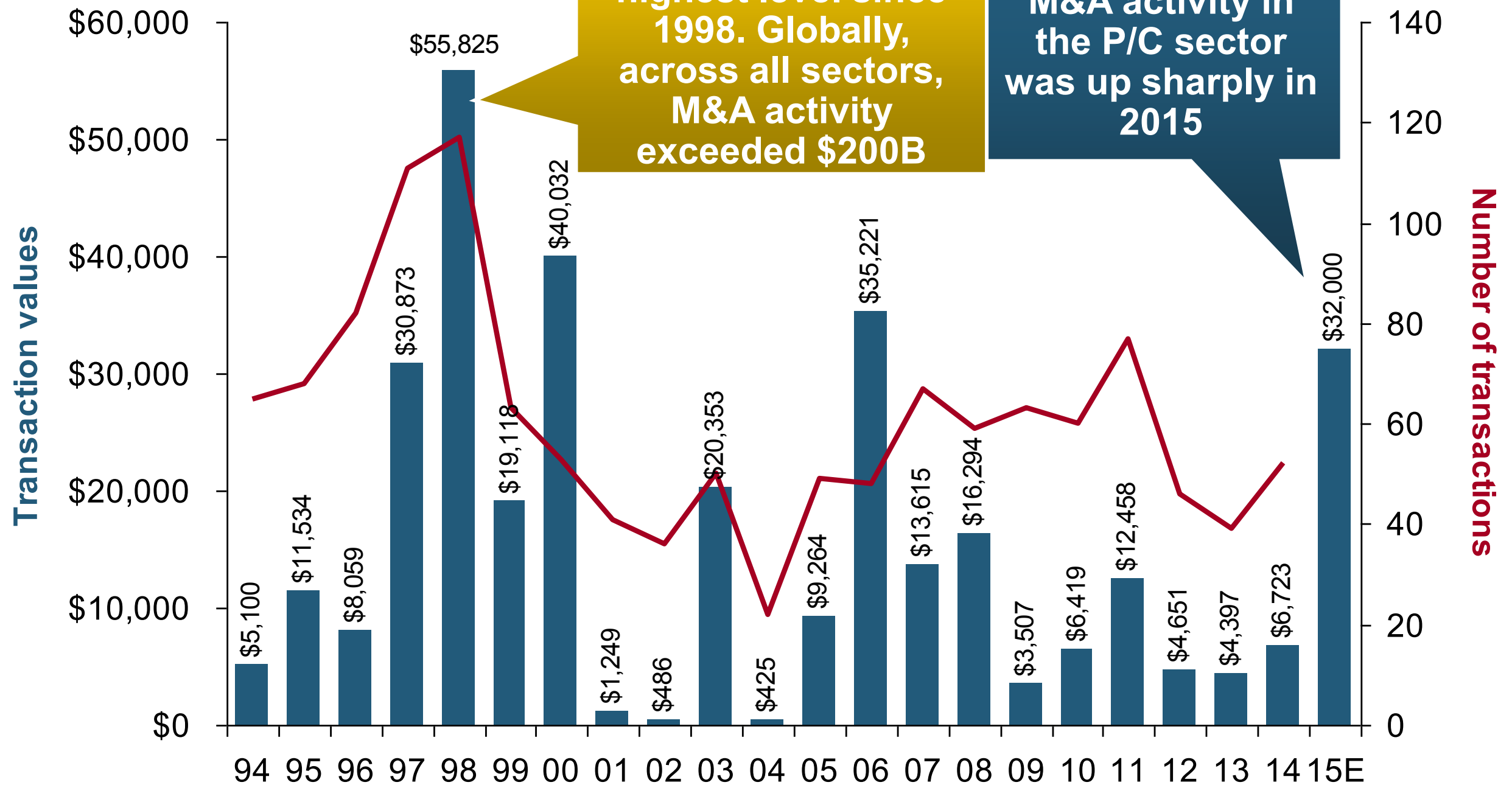
Source: Aon Benfield Analytics; Insurance Information Institute.

GLOBAL M&A UPDATE: *A PATH TO GROWTH?*

**Are Capital Accumulation, Drive
for Growth and Scale Stimulating
M&A Activity?**

U.S. INSURANCE MERGERS AND ACQUISITIONS, P/C SECTOR, 1994-2015E (1)

(\$ Millions)



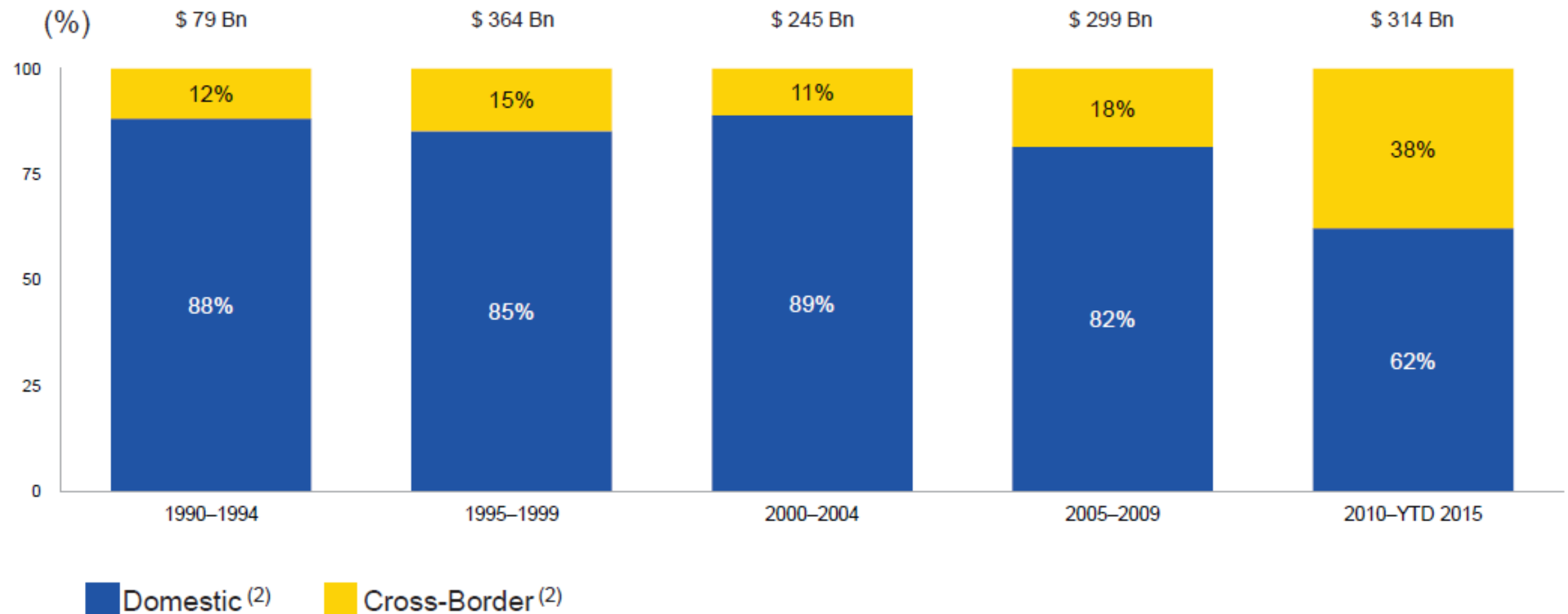
(1) Includes transactions where a U.S. company was the acquirer and/or the target.

Source: Conning proprietary database; 2015 I.I.I. estimate.

Huge Shift from Domestic M&A Activity to Cross-Border

The share of M&A deal volume that was cross-border more than doubled in 2015

Insurance M&A Volumes
Deals of value > \$100M (Since 1990)

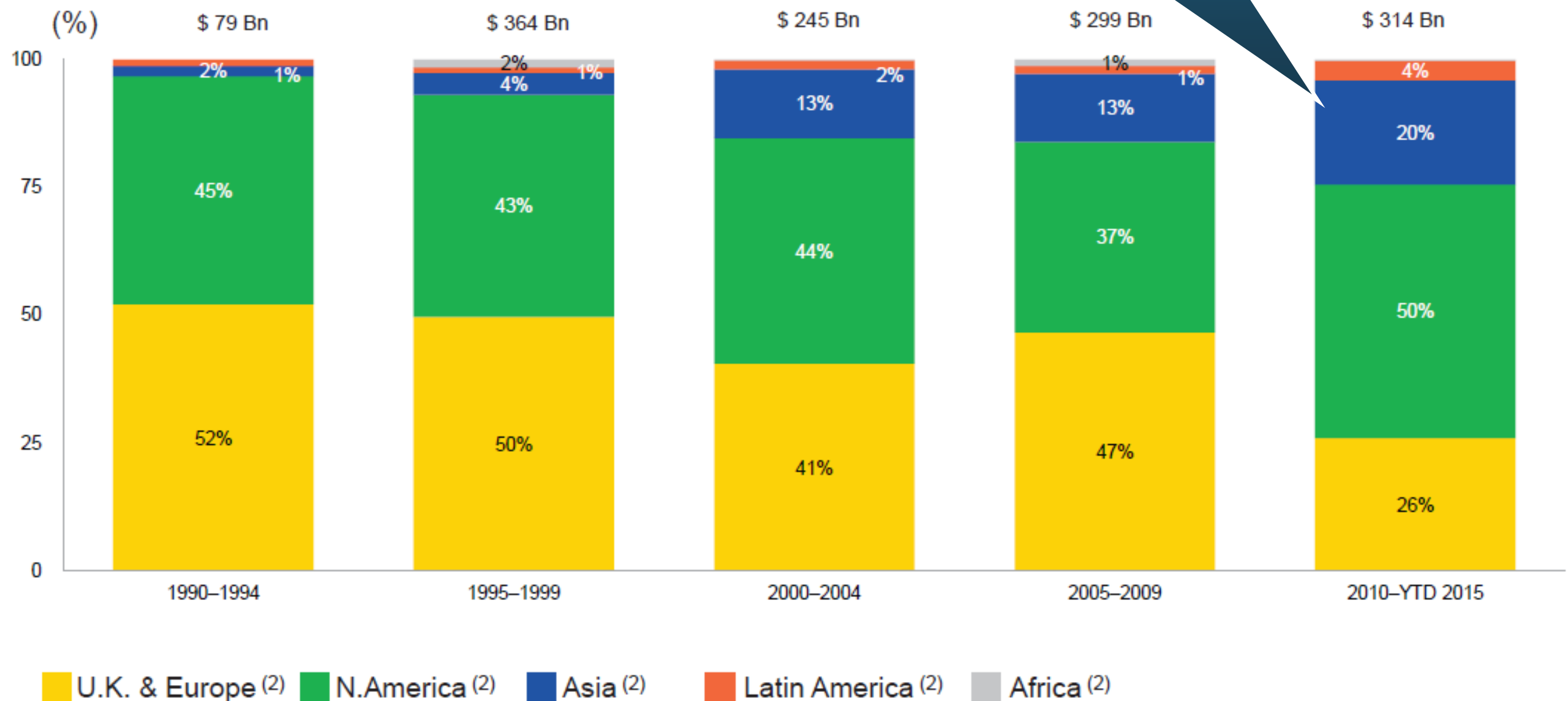


Notes

1. Split based on target's region
2. Values exclude assumed liabilities

M&A Activity Has Shifted Away from Europe and Towards Asia and N. America

Asian, N. American
deal volumes were up
sharply in 2015

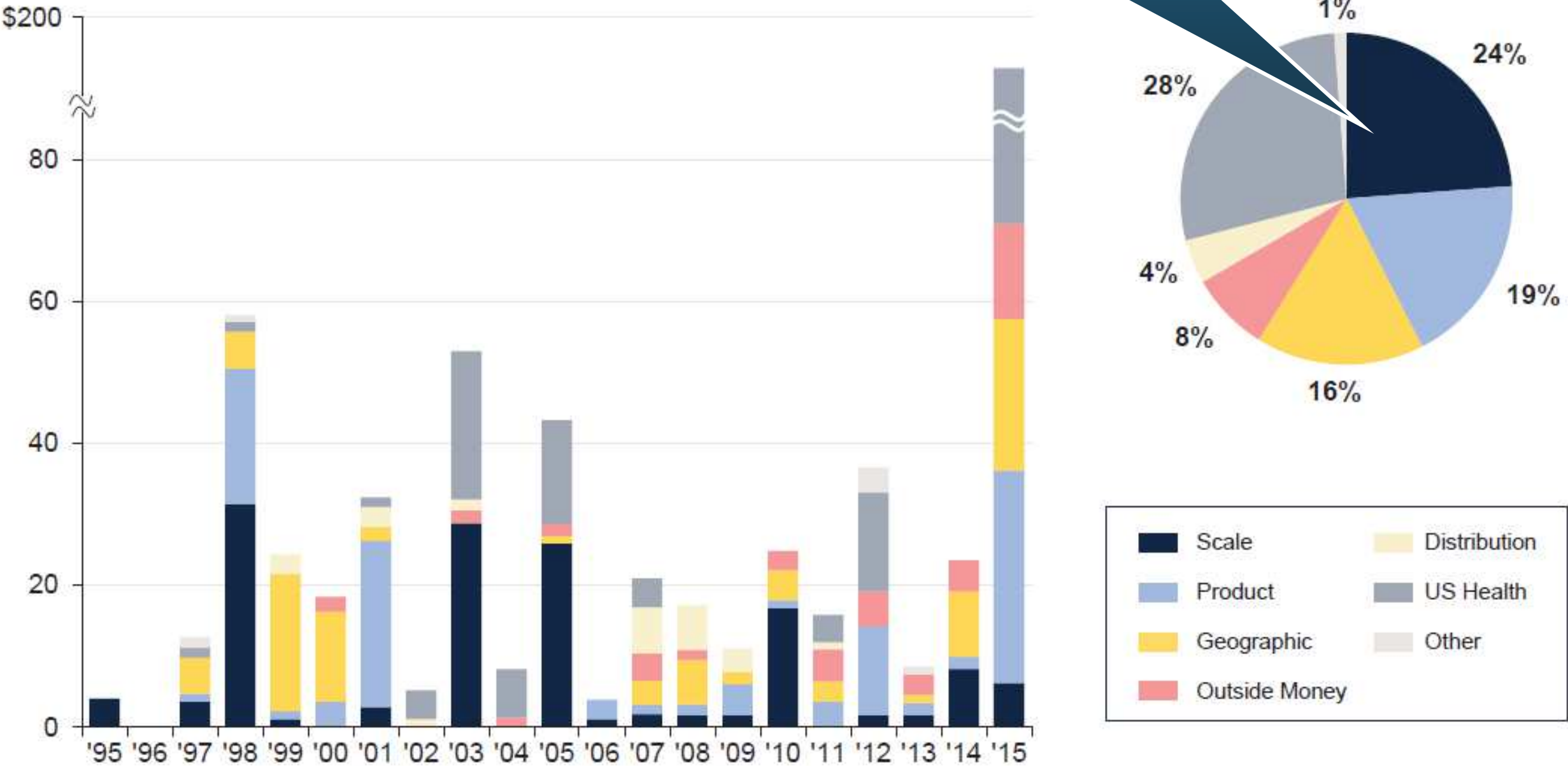


Notes
1. Split based on target's region
2. Values exclude assumed liabilities

Source: Thomson Reuters as of Oct. 2015 from Geneva Association Newsletter *Insurance and Finance*, Jan. 2016, presentation "*Facts vs. Sentiment: Deals in the Insurance Sector*," by Aviva CEO Mark Wilson.

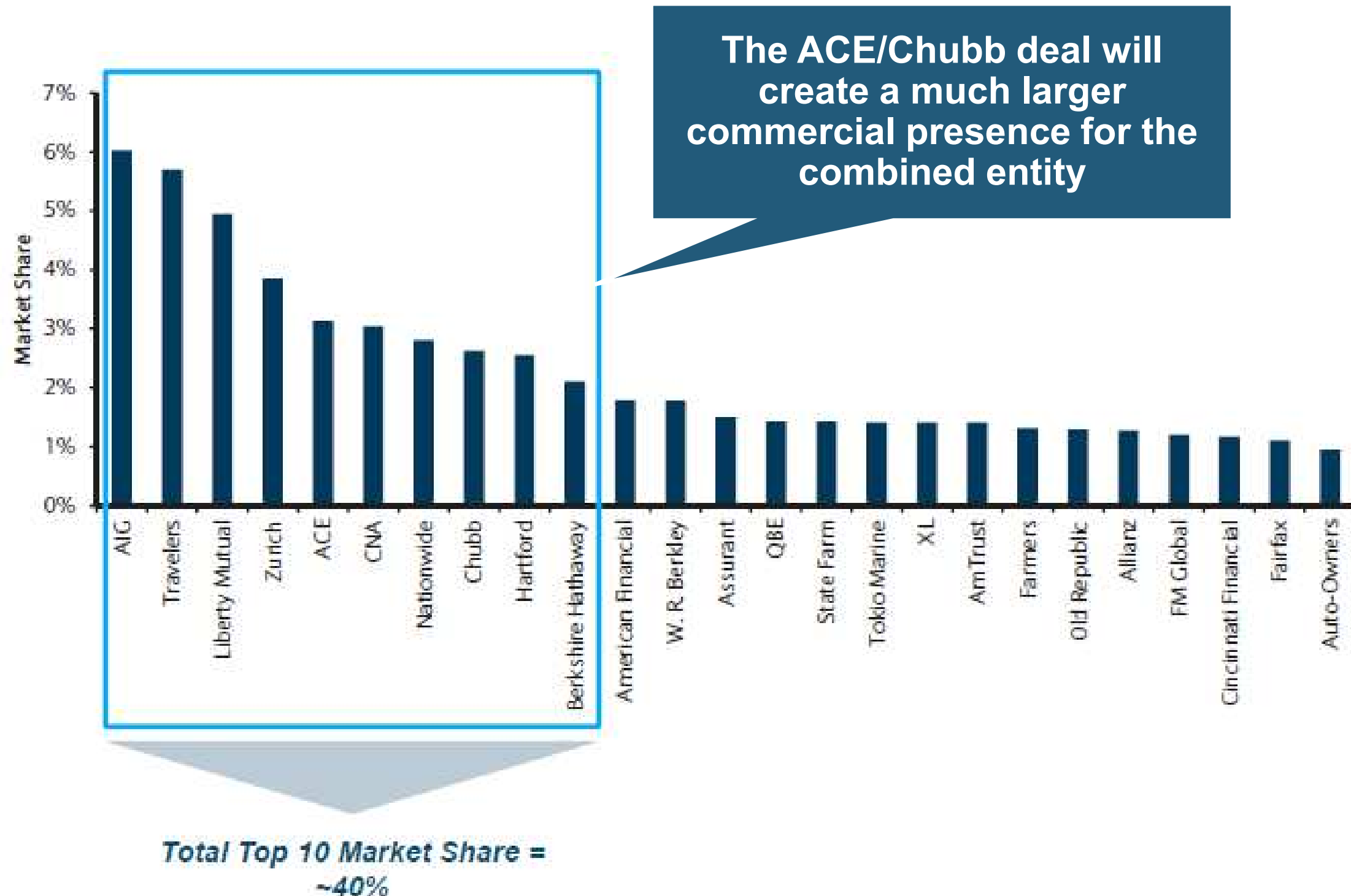
M&A: Deal Rationale by Dollar Amount

Scale drives most deals (excluding health sector)



Source: SNL Financial and WCMA estimates from Geneva Association Newsletter *Insurance and Finance*, Jan. 2016, presentation “What is the Logic Behind Consolidation? And Does It Create Value? A View from Outside,” by Brian Shea, Head of Willis Capital Markets & Advisory Europe (WCMA).

Top 25 US P/C Insurers by Direct Premiums Written, 2014

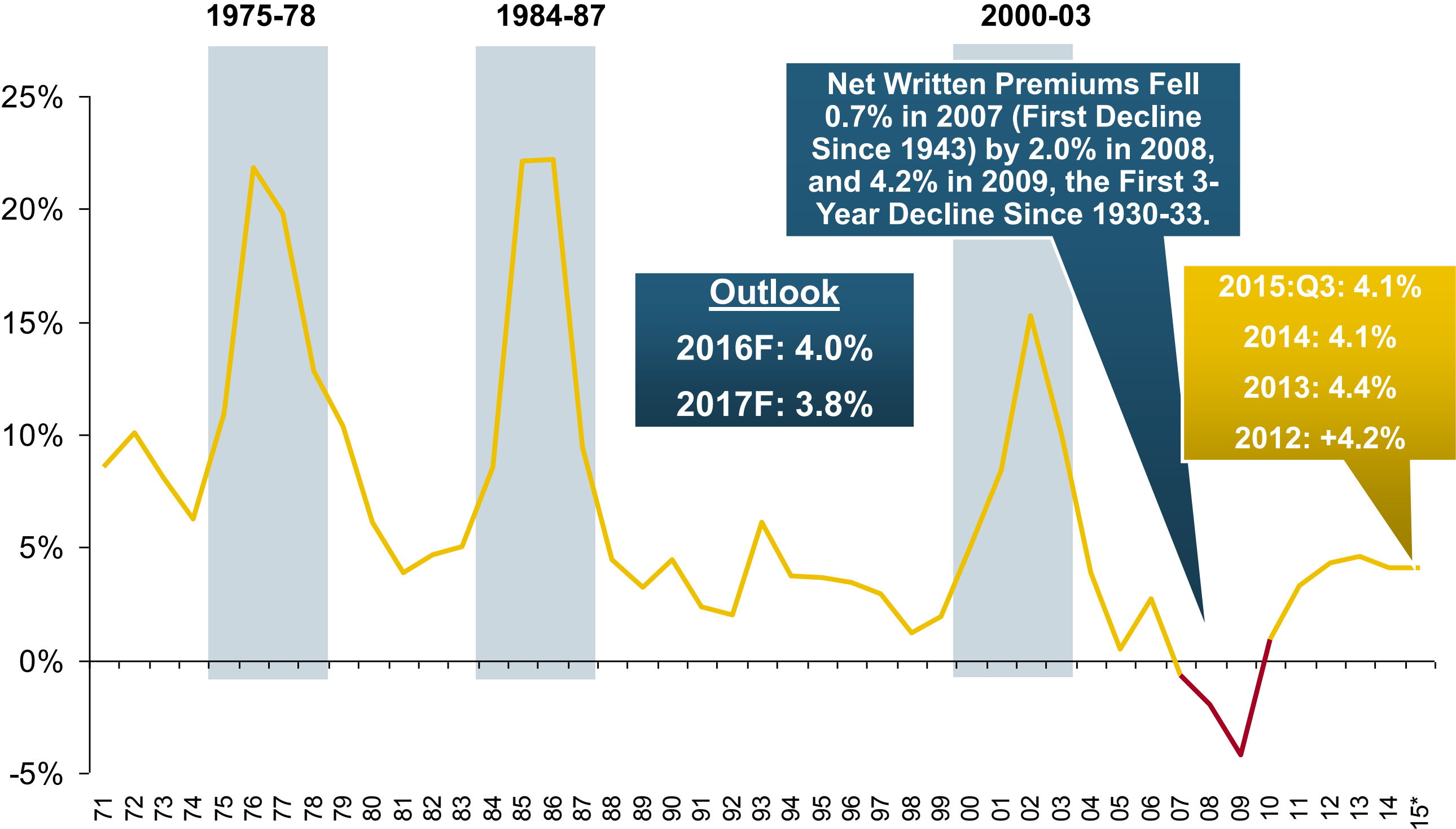


Growth

**Premium Growth Rates Vary
Tremendously by State and
Over Time, But...**

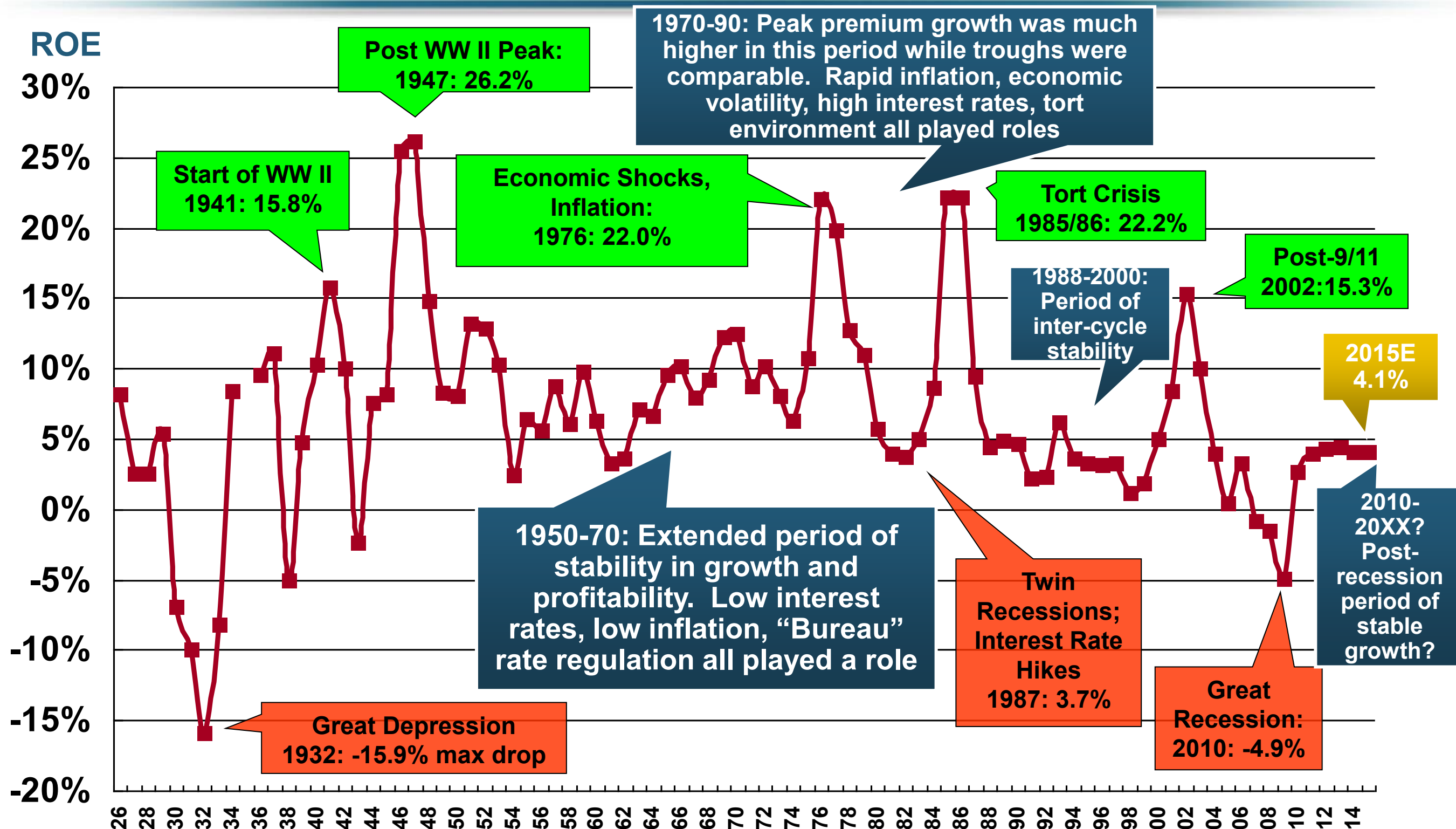
Net Premium Growth (All P/C Lines): Annual Change, 1971—2015:Q3

(Percent)



Shaded areas denote “hard market” periods
Sources: A.M. Best (1971-2013), ISO (2014-15).

NPW Premium Growth: Peaks & Troughs in the P/C Insurance Industry, 1926 – 2015E

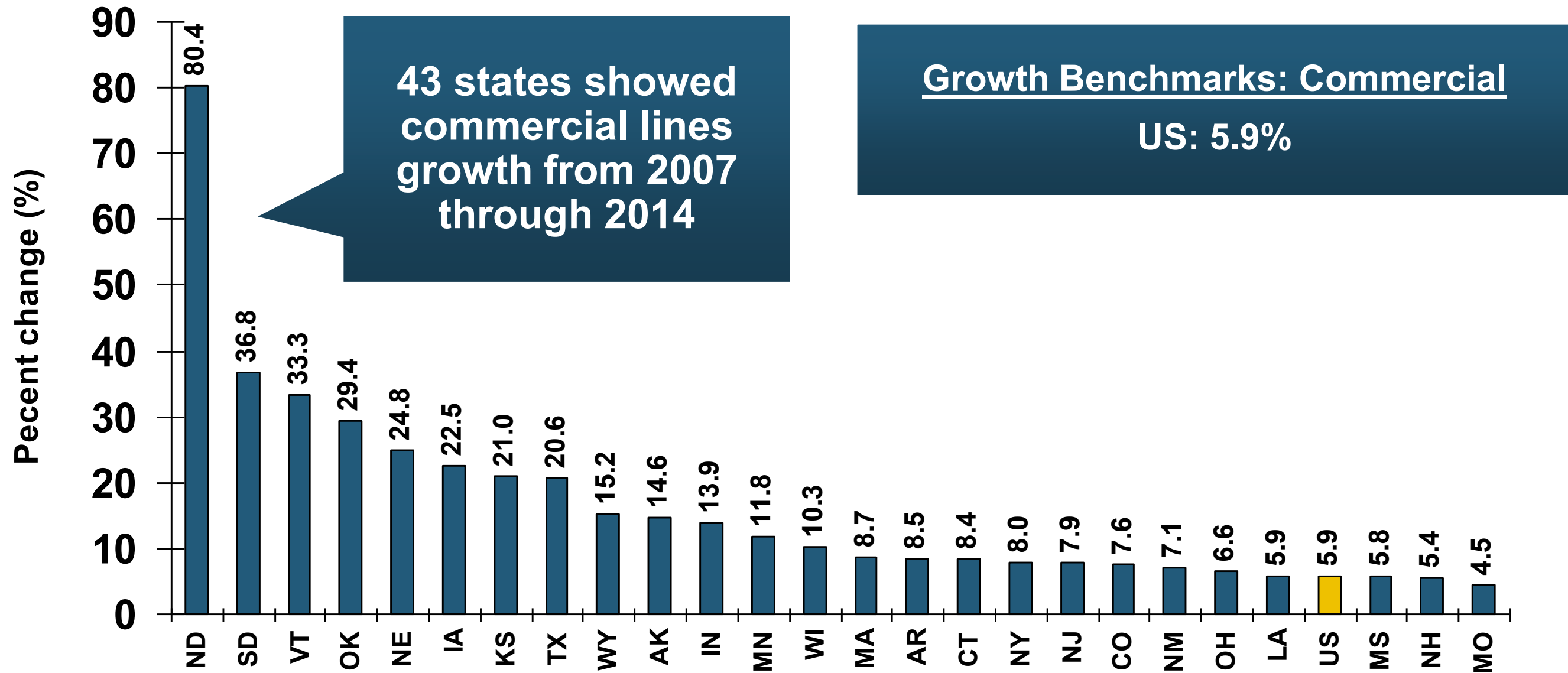


Note: Data through 1934 are based on stock companies only. Data include state funds beginning in 1998.

Source: A.M. Best; Insurance Information Institute.

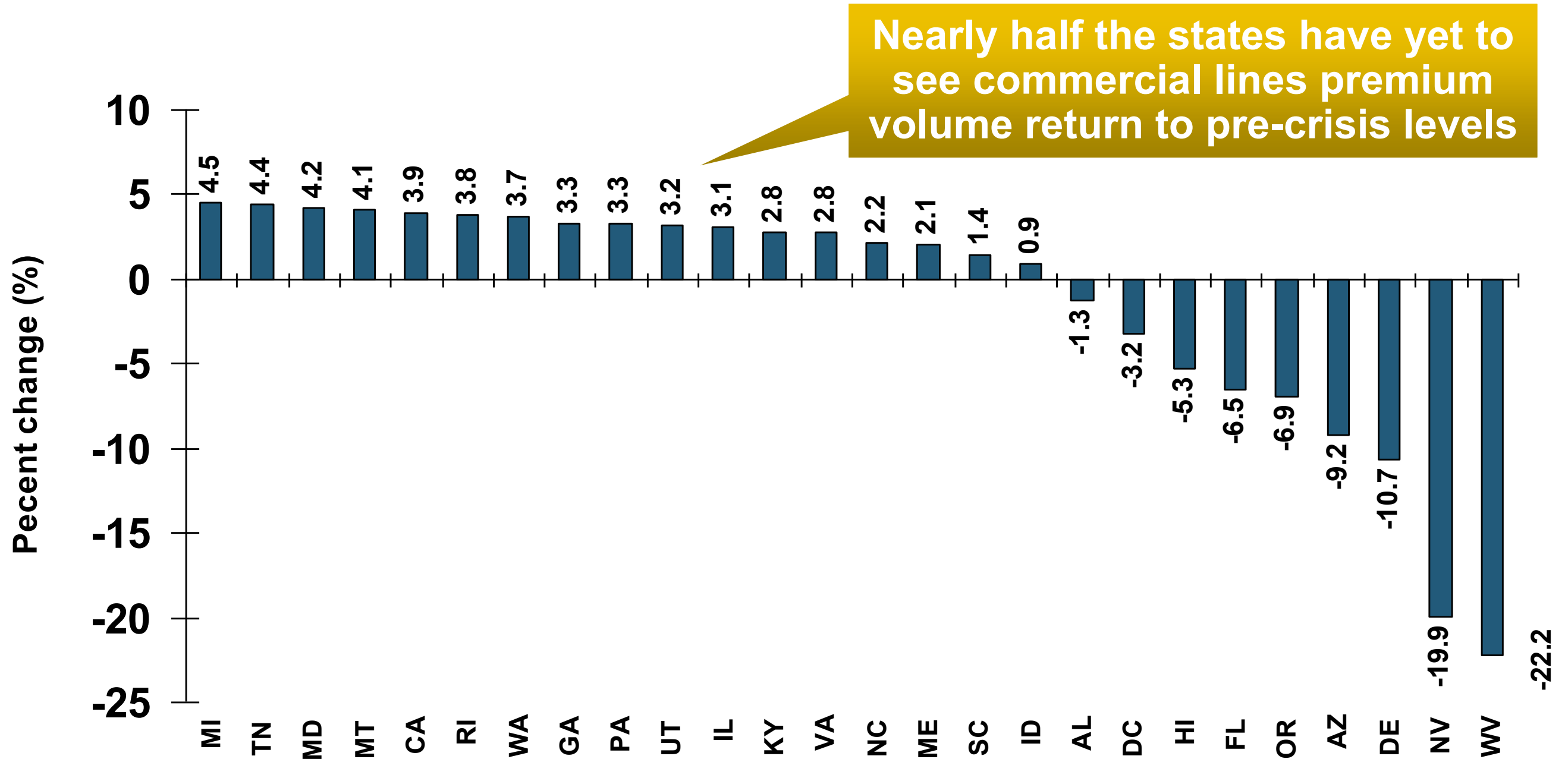
Direct Premiums Written: Comm. Lines Percent Change by State, 2007-2014

Top 25 States



Direct Premiums Written: Comm. Lines Percent Change by State, 2007-2014

Bottom 25 States

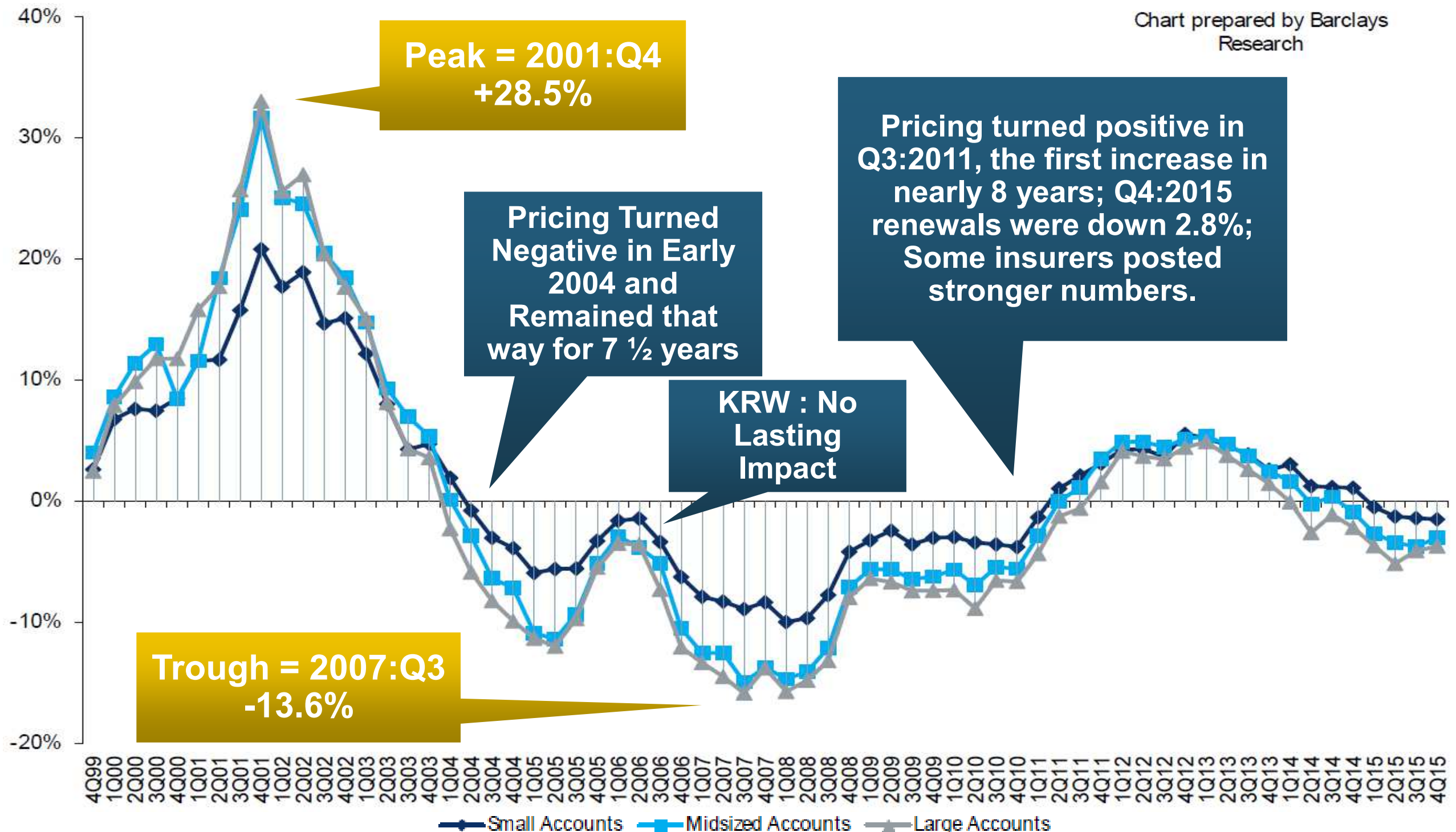


Pricing Trends

**Personal Lines Pricing Is Up
Survey Results Suggest
Commercial Pricing Has
Flattened Out**

Change in Commercial Rate Renewals, by Account Size: 1999:Q4 to 2015:Q4

Percentage Change (%)

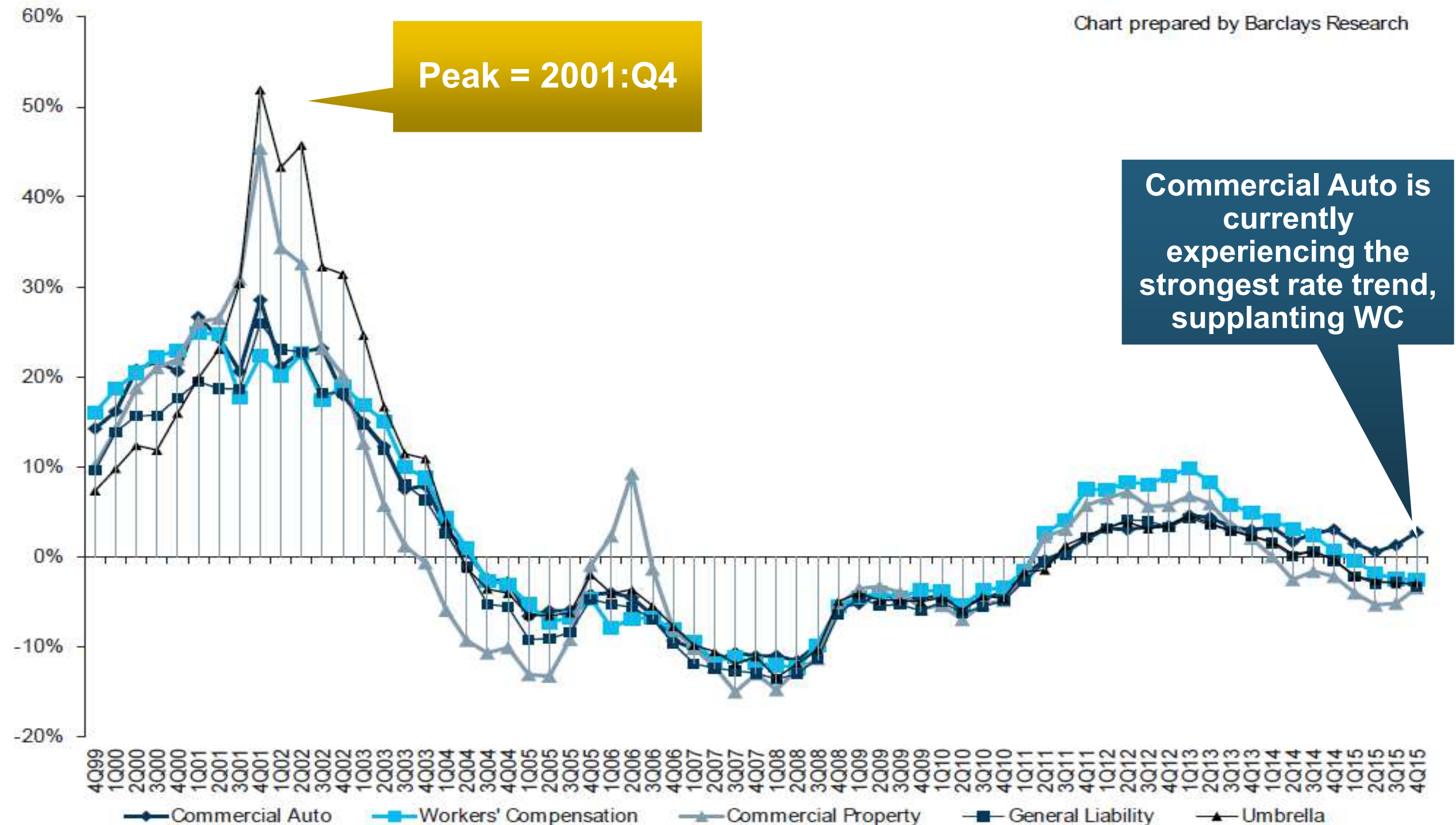


Note: CIAB data cited here are based on a survey. Rate changes earned by individual insurers can and do vary, potentially substantially.

Source: Council of Insurance Agents and Brokers; Barclay's Capital; Insurance Information Institute.

Change in Commercial Rate Renewals, by Line: 1999:Q4 to 2015:Q4

Percentage Change (%)



Note: CIAB data cited here are based on a survey. Rate changes earned by individual insurers can and do vary, potentially substantially.

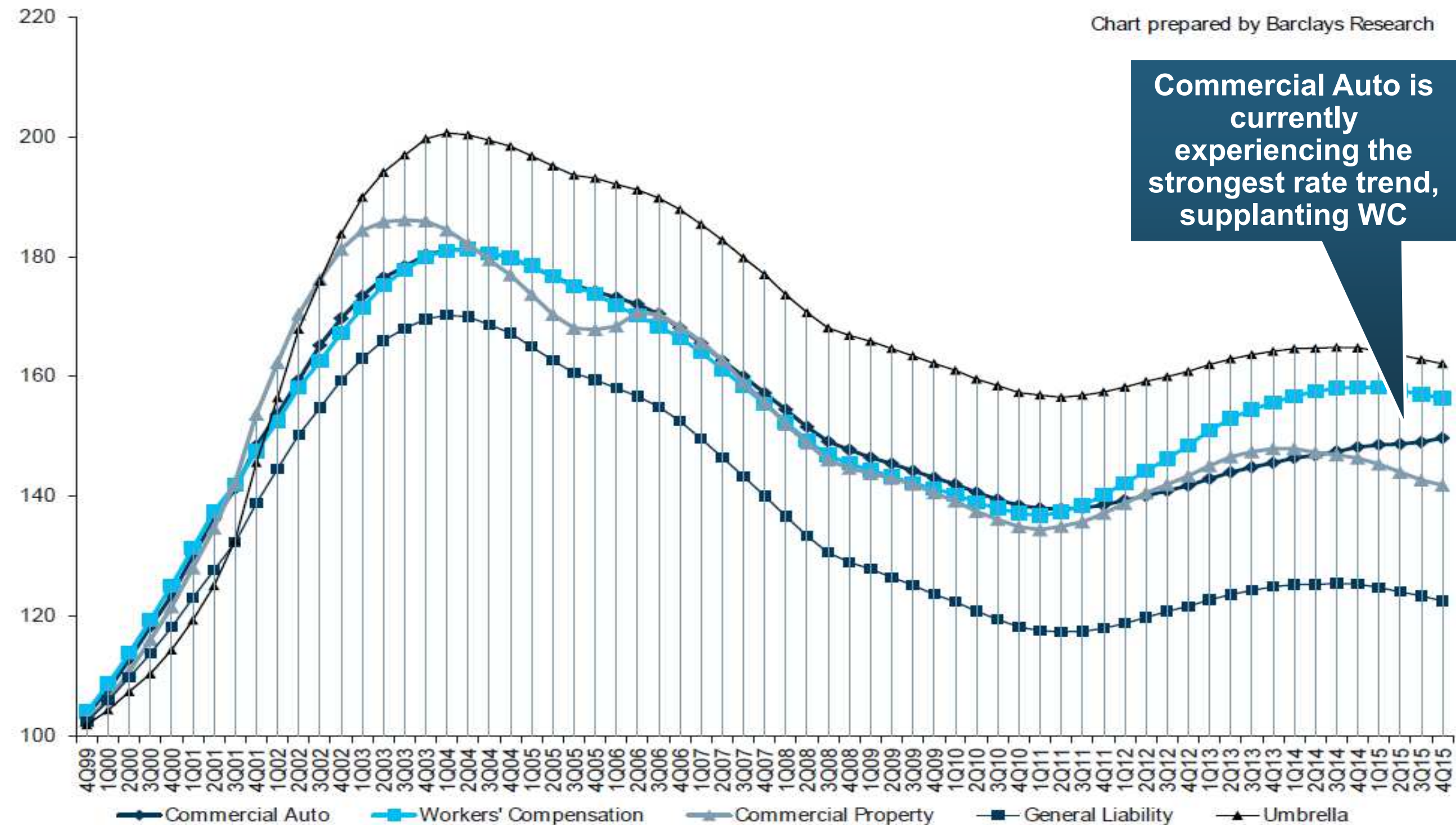
Source: Council of Insurance Agents and Brokers; Barclay's Capital; Insurance Information Institute.

Cumulative Qtrly. Rate Changes, by Line: 1999:Q4 to 2015:Q4

1999:Q4 = 100

Chart prepared by Barclays Research

Commercial Auto is currently experiencing the strongest rate trend, supplanting WC

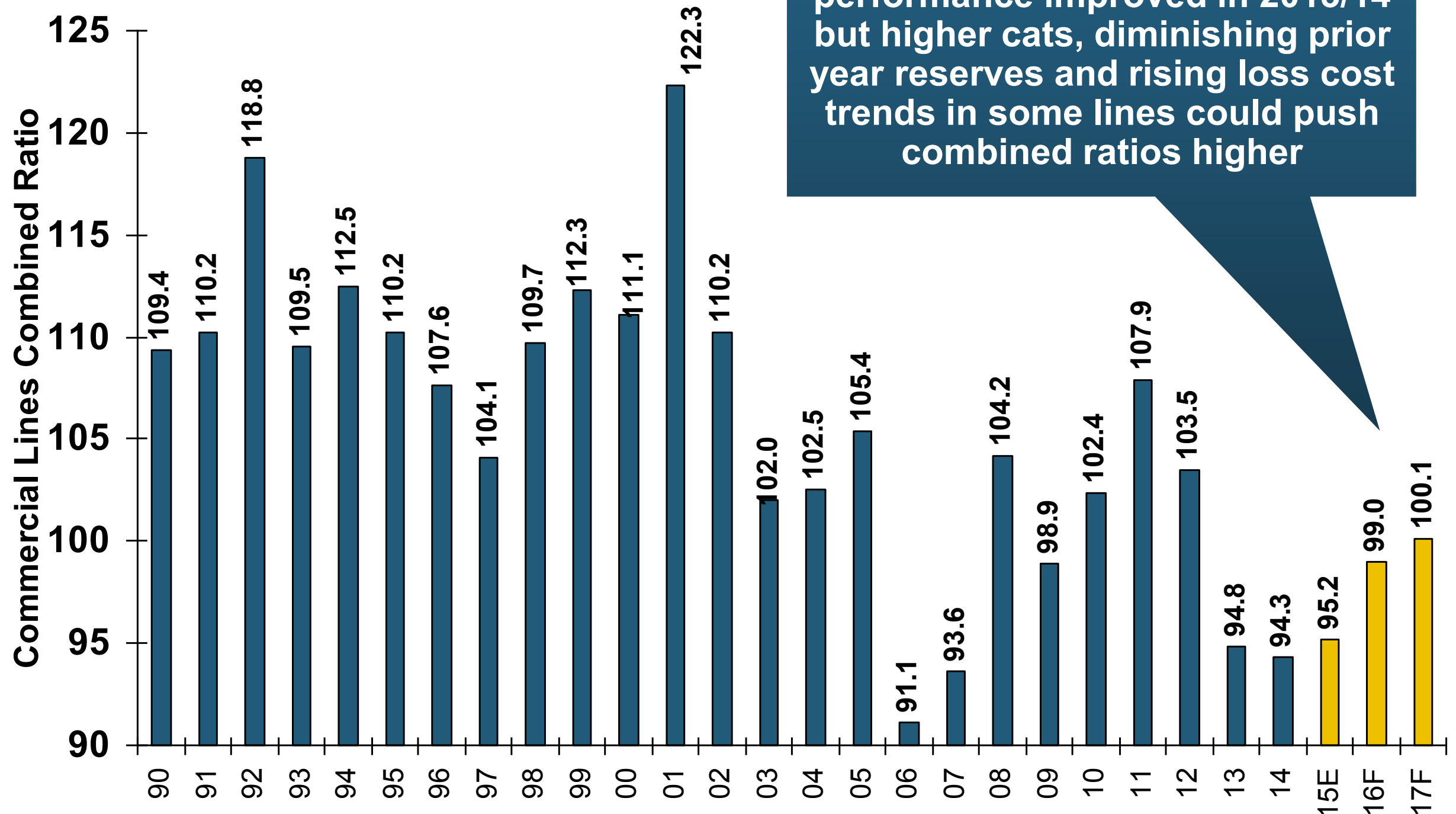


NOTE: CIAB data cited here are based on a survey. Rate changes earned by individual insurers can and do vary, potentially substantially.

Source: Council of Insurance Agents and Brokers; Barclay's Capital; Insurance Information Institute.

Underwriting Performance

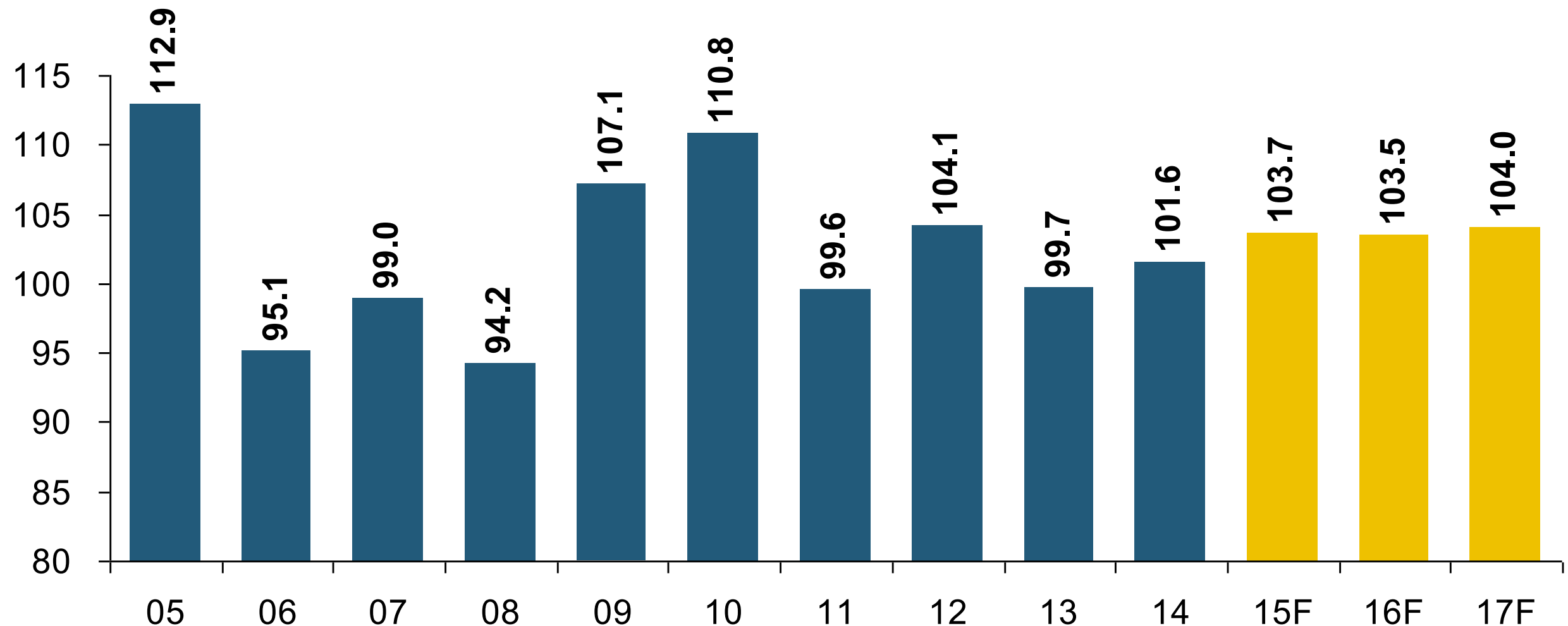
Commercial Lines Combined Ratio, 1990-2017F*



*2007-2012 figures exclude mortgage and financial guaranty segments.

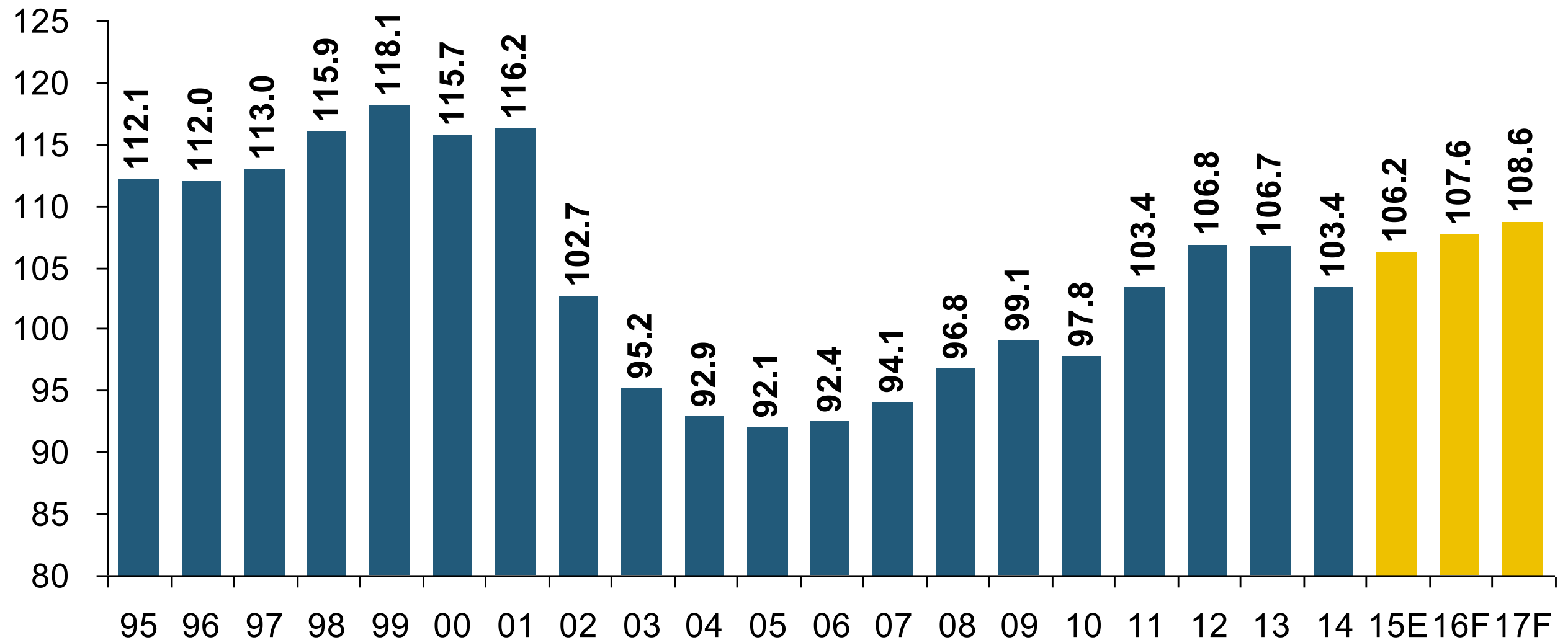
Source: A.M. Best (1990-2014); Conning (2015E-17F) Insurance Information Institute.

General Liability Combined Ratio: 2005–2017F



**Commercial General Liability Underwriting
Performance Has Been Volatile in Recent Years**

Commercial Auto Combined Ratio: 1993–2017F

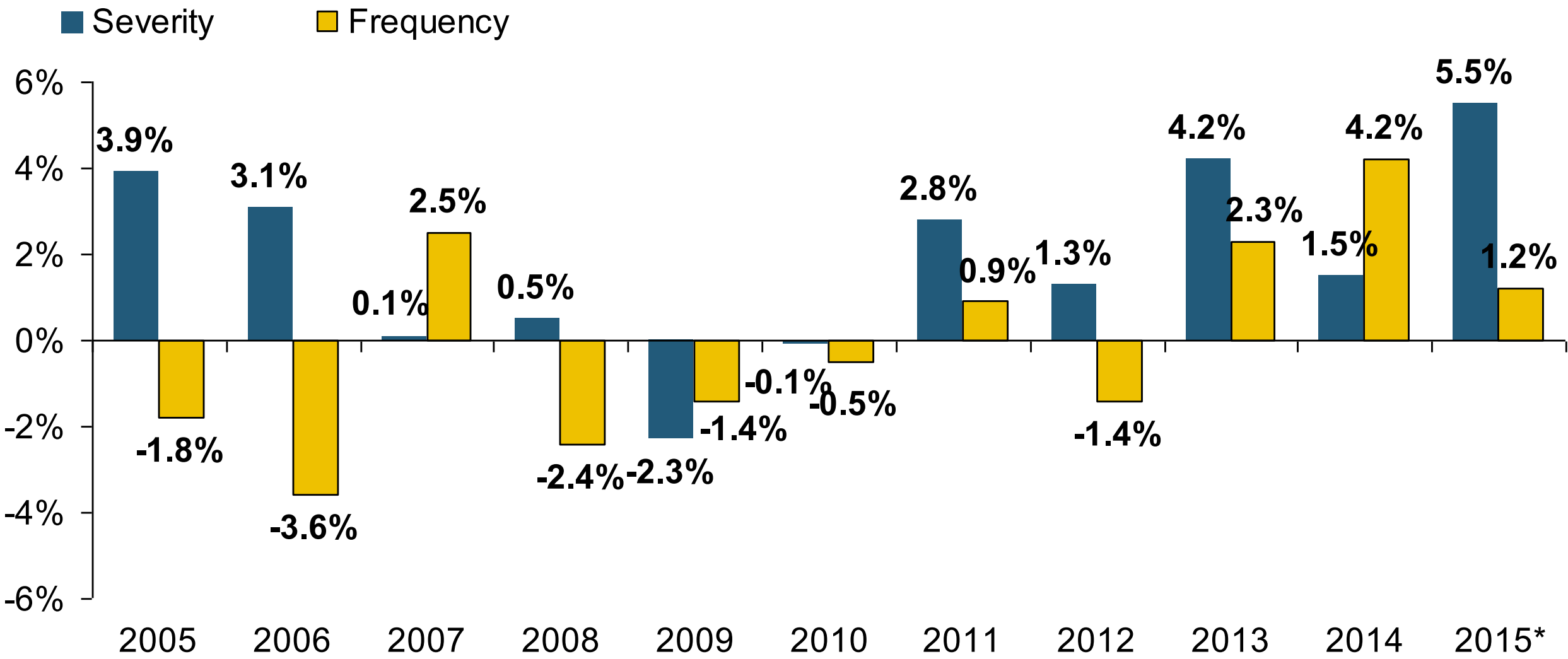


**Commercial Auto Results Are Challenged as Rate Gains Barely
Have Yet to Offset Adverse Frequency and Severity Trends**

Collision Coverage: Severity & Frequency Trends Are Both Higher in 2015*



Annual Change, 2005 through 2015*

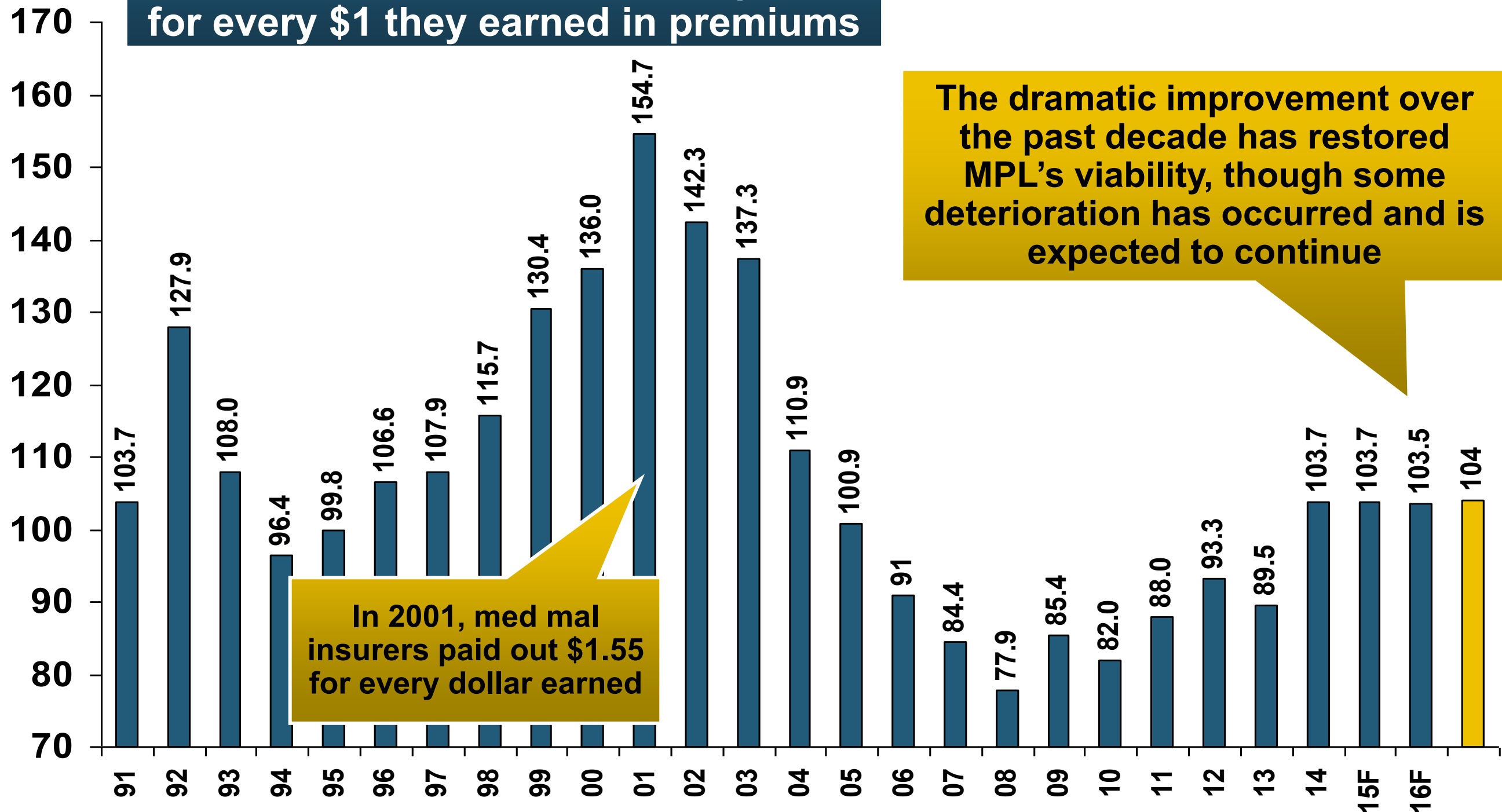


The Recession, High Fuel Prices Helped Temper Frequency and Severity, But this Trend Has Clearly Reversed, Consistent with Experience from Past Recoveries

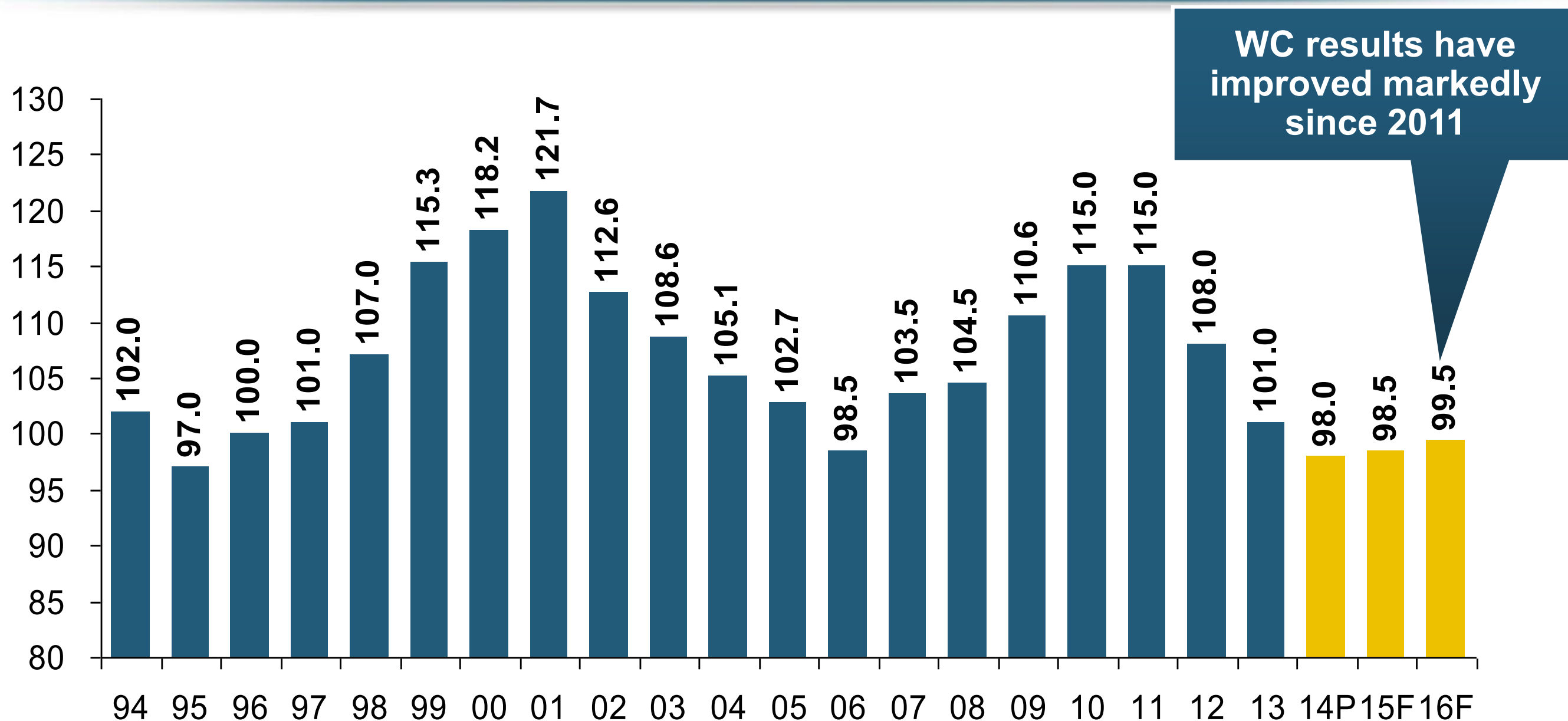
*2015 figure is for the 4 quarters ending with 2015:Q3.
Source: ISO/PCI *Fast Track* data; Insurance Information Institute

Medical Malpractice Combined Ratio vs. All Lines Combined Ratio, 1991-2017F

MPL insurers in 2015 paid out an estimated \$1.04 in loss and expense for every \$1 they earned in premiums



Workers Compensation Combined Ratio: 1994–2016F



**Workers Comp Results Began to Improve in 2012.
Underwriting Results Deteriorated Markedly from 2007-
2010/11 and Were the Worst They Had Been in a Decade.**



Workers Compensation Operating Environment

**Workers Comp Results Have Improved
Substantially in Recent Years**

Payroll vs. Workers Comp Net Written Premiums, 1990-2015E

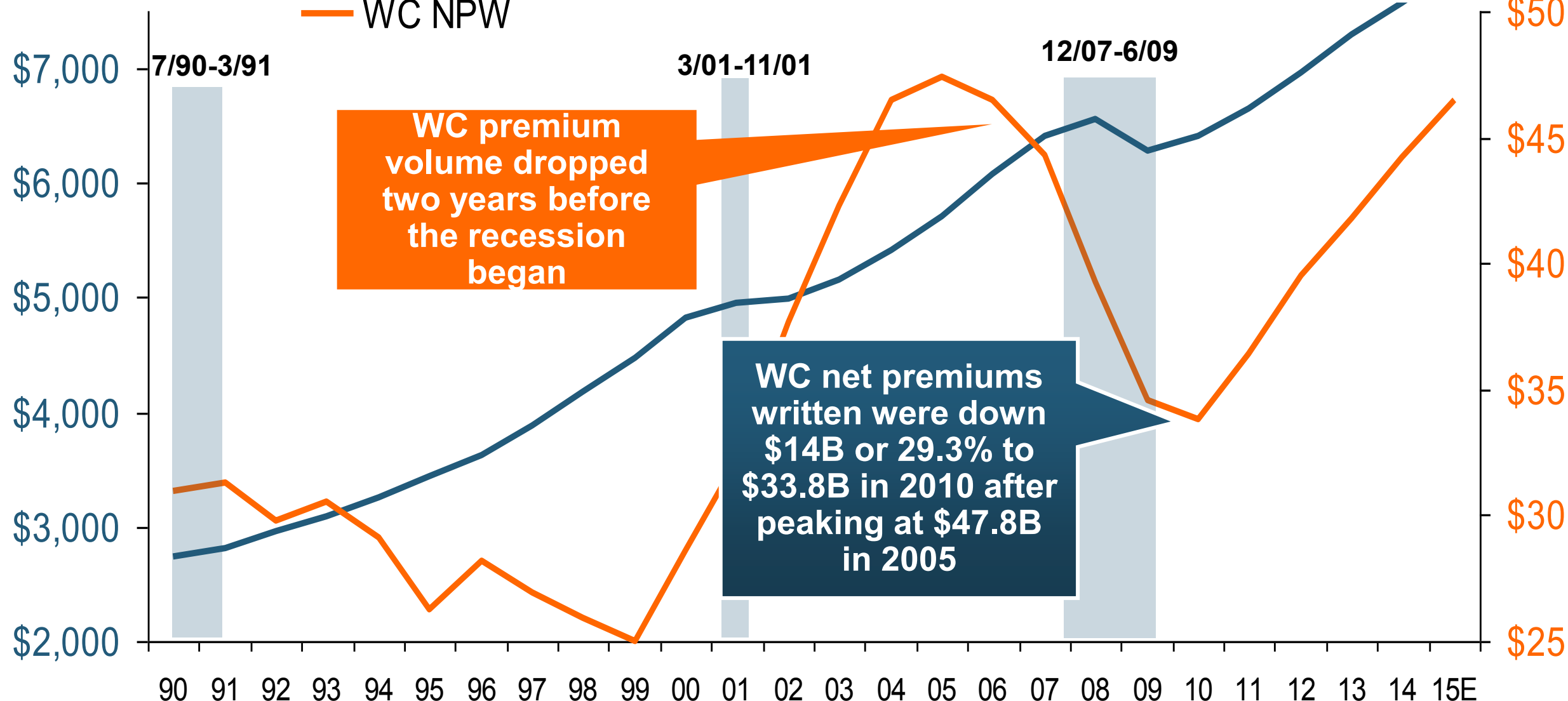
Payroll Base*

WC NWP

\$Billions

\$Billions

— Wage & Salary Disbursements
— WC NPW



Continued Payroll Growth and Rate Gains Suggest WC NWP Will Grow Again in 2016

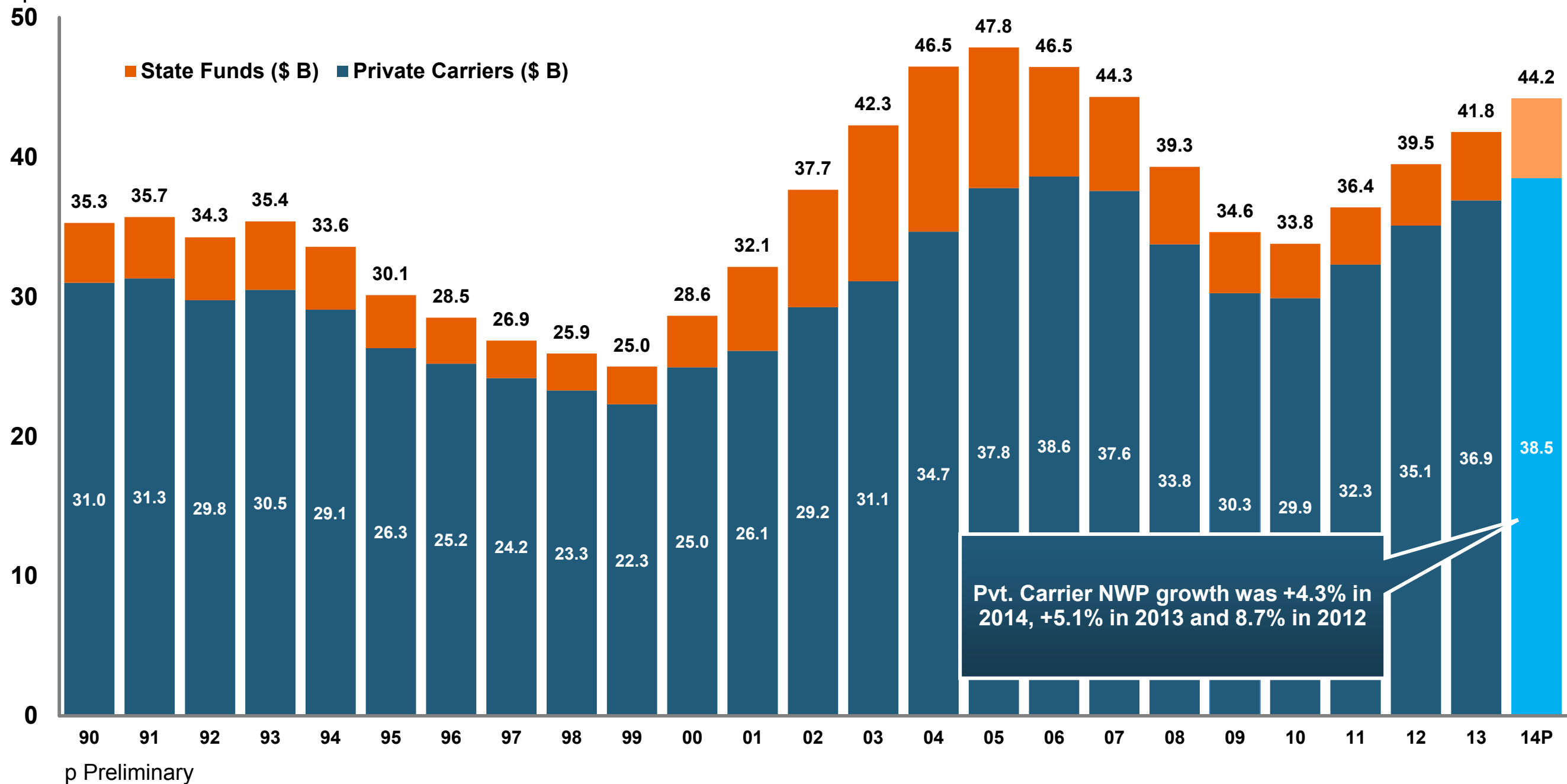
*Private employment; Shaded areas indicate recessions. WC premiums are from NCCI through 2014; I.I.I. estimate for 2015.

Sources: NBER (recessions); Federal Reserve Bank of St. Louis at <http://research.stlouisfed.org/fred2/series/WASCUR> (annualized as of Q3 2015); NCCI; I.I.I.

Workers Compensation Premium: Fourth Consecutive Year of Increase

Net Written Premium

\$ Billions



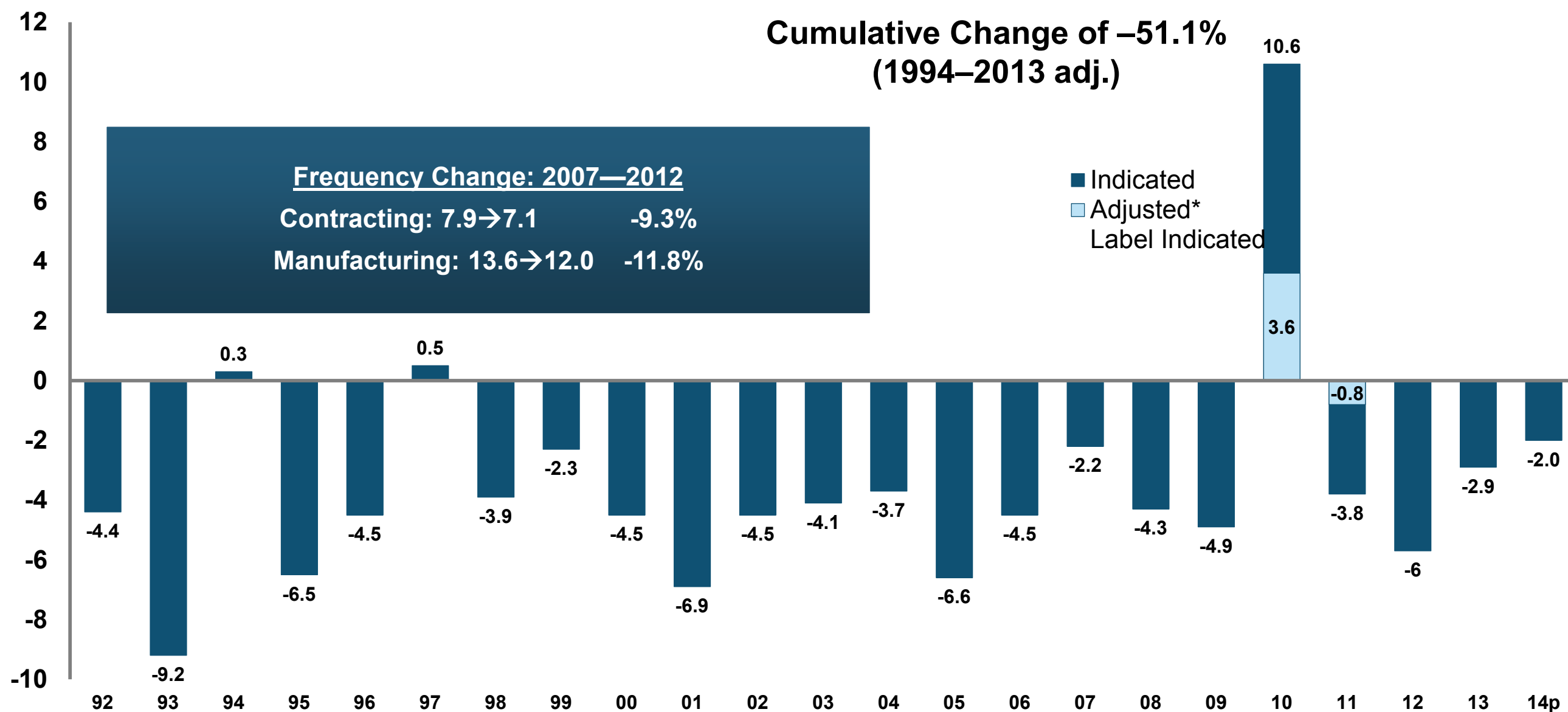
Source: NCCI from Annual Statement Data.

Includes state insurance fund data for the following states: AZ, CA, CO, HI, ID, KY, LA, MD, MO, MT, NM, OK, OR, RI, TX, UT.

Each calendar year total for State Funds includes all funds operating as a state fund that year.

Workers Compensation Lost-Time Claim Frequency Declined in 2014

Percent



*Adjustments primarily due to significant audit activity.

2014p: Preliminary based on data valued as of 12/31/2014.

Source: NCCI Financial Call data, developed to ultimate and adjusted to current wage and voluntary loss cost level; Excludes high deductible policies; 1994-2013: Based on data through 12/31/13. Data for all states where NCCI provides ratemaking services, excluding WV.

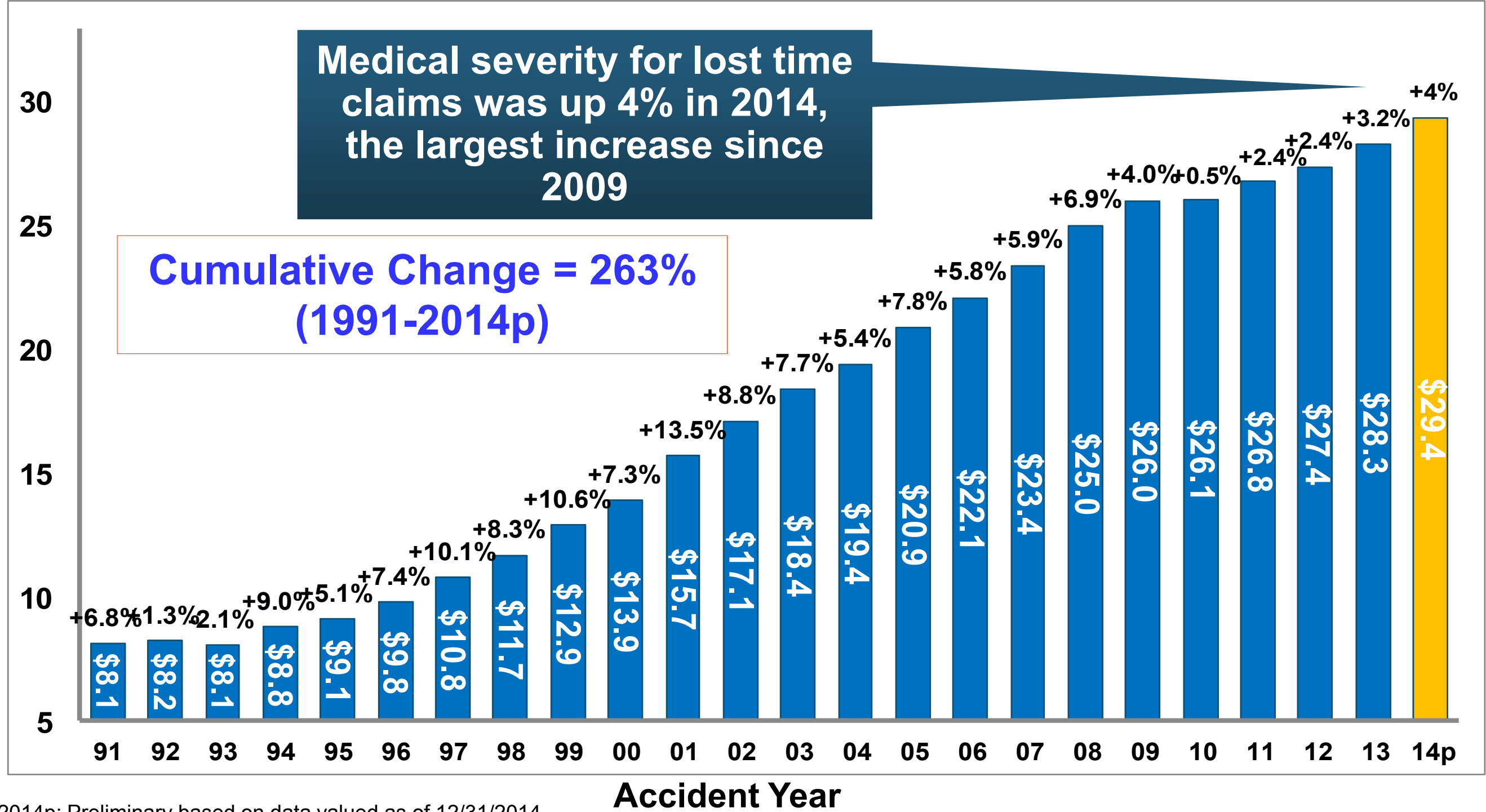
Frequency is the number of lost-time claims per \$1M pure premium at current wage and voluntary loss cost level

Workers Compensation Medical Severity: Moderate Increase in 2014



Medical
Claim Cost (\$000s)

Average Medical Cost per Lost-Time



2014p: Preliminary based on data valued as of 12/31/2014.

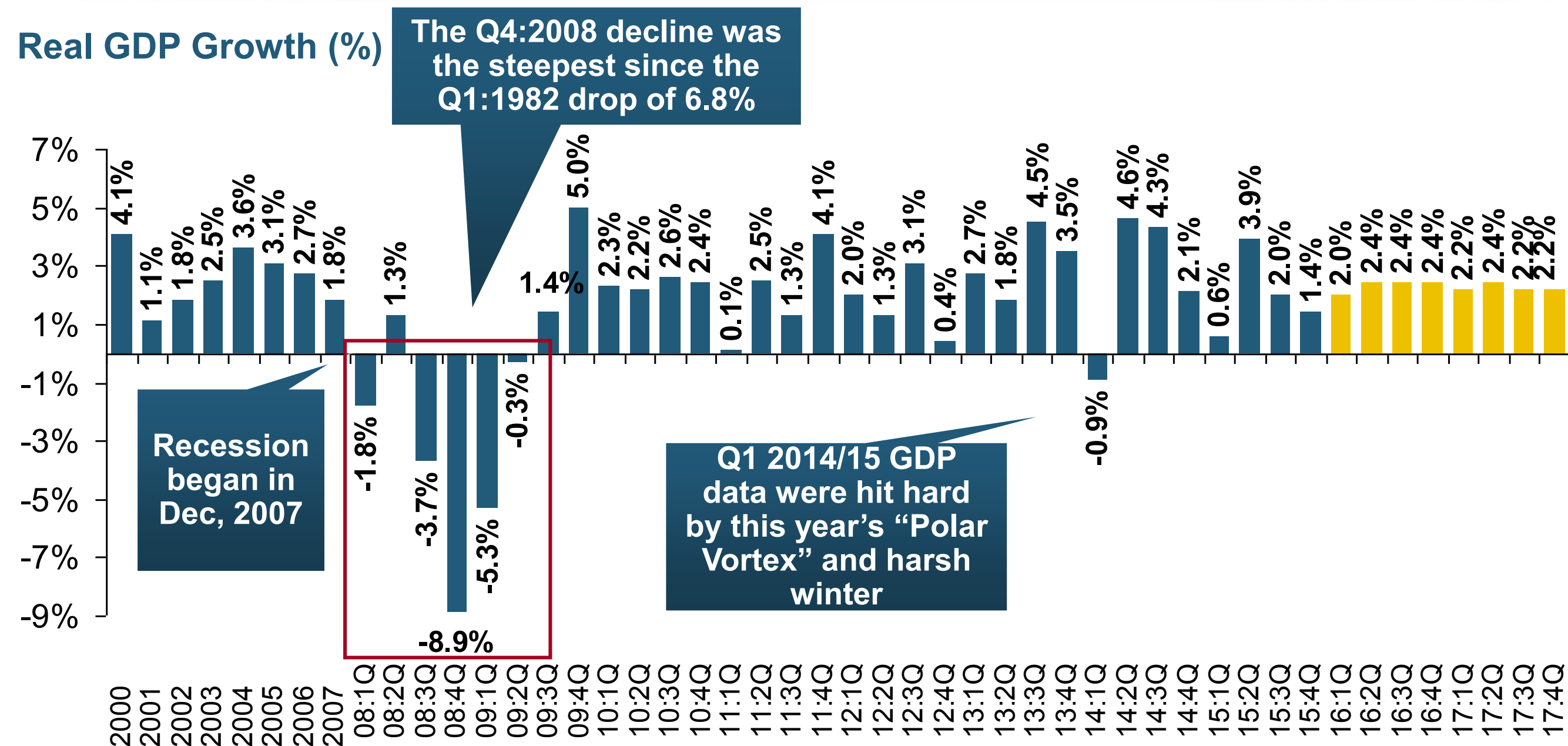
1991-2013: Based on data through 12/31/2013, developed to ultimate

Based on the states where NCCI provides ratemaking services including state funds, excluding WV; Excludes high deductible policies.

THE ECONOMY

**The Strength of the Economy Will
Greatly Influence Insurer Exposure Base
Across Most Lines**

US Real GDP Growth*



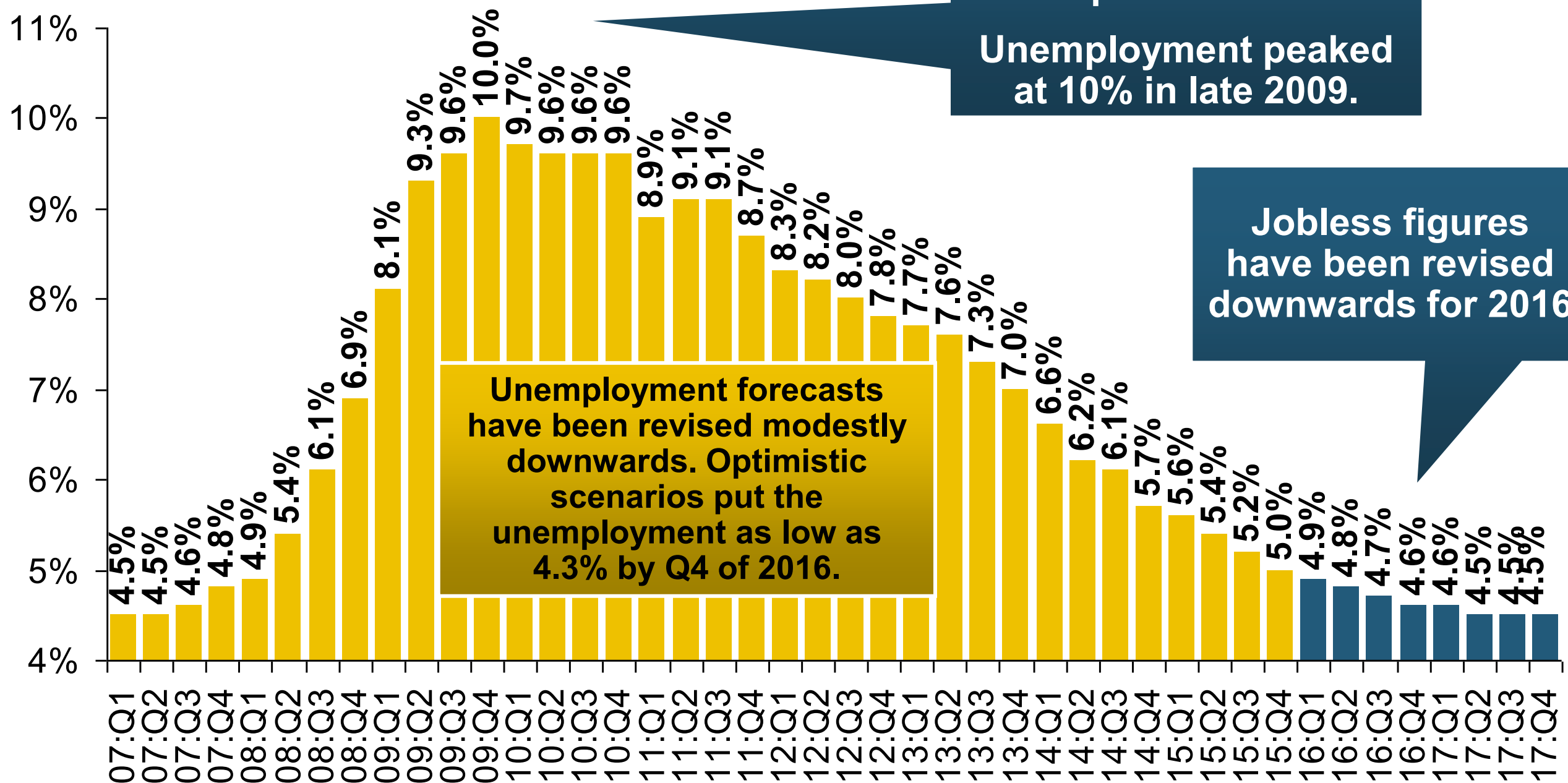
Demand for Insurance Should Increase in 2016 as GDP Growth Continues at a Steady, Albeit Moderate Pace and Gradually Benefits the Economy Broadly

* ■ Estimates/Forecasts from Blue Chip Economic Indicators.

Source: US Department of Commerce, Blue Economic Indicators 3/16; Insurance Information Institute.

US Unemployment Rate Forecast

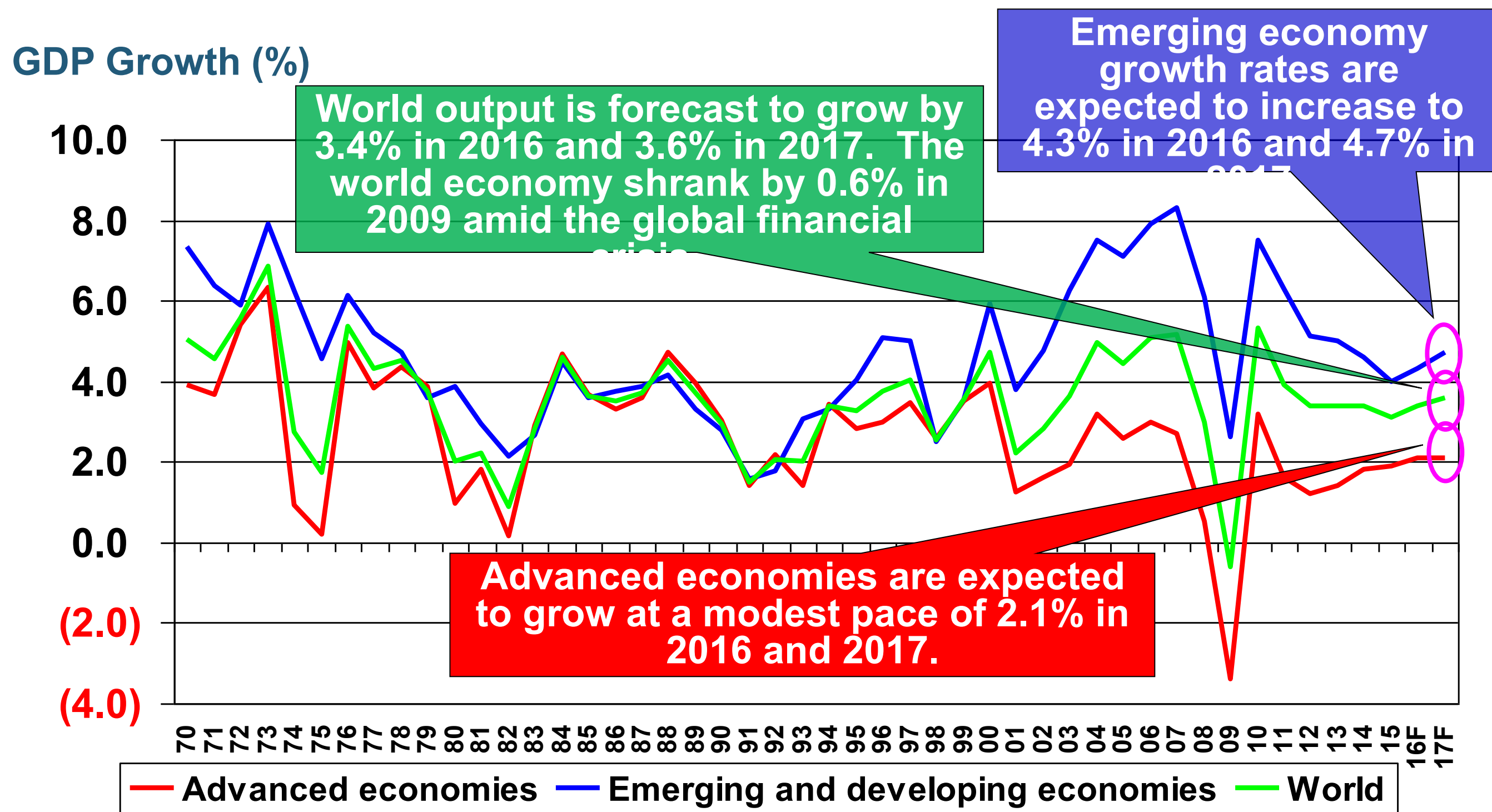
2007:Q1 to 2017:Q4F*



* = actual; = forecasts

Sources: US Bureau of Labor Statistics; Blue Chip Economic Indicators (3/16 edition); Insurance Information Institute.

GDP Growth: Advanced & Emerging Economies vs. World, 1970-2016F

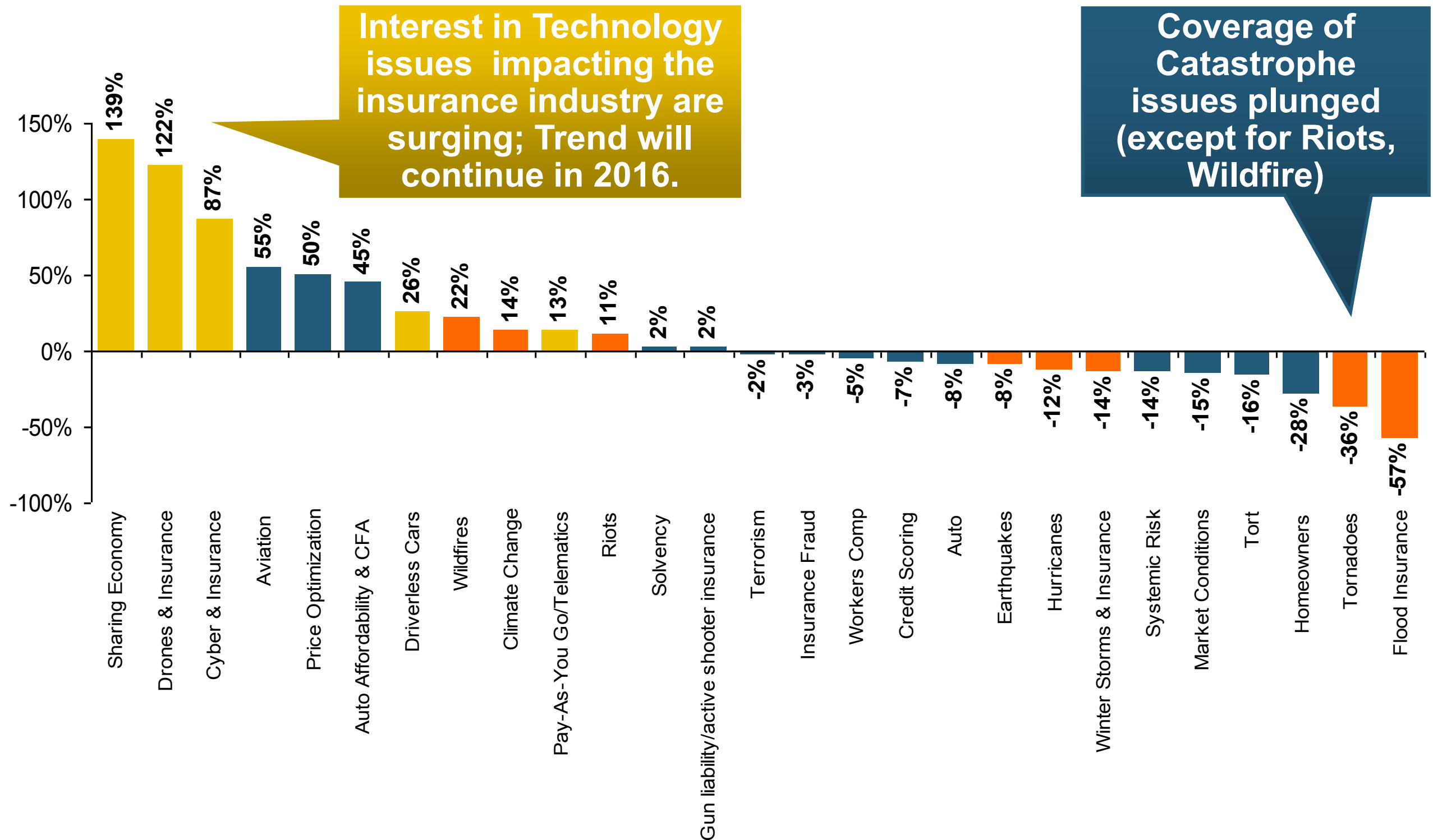


Top Insurance Issues: ***What's Hot, What's Not***

Technology Spiked, Catastrophes Crashed

I.I.I. Media Index, P/C, 2014 vs 2015*

Percent increase/decrease from previous year



*Based on a search of Lexis/Nexis (January 1-December15)

TECHNOLOGY, DISRUPTORS AND INSURANCE

**Applications of Technology in P/C
Insurance Have Gripped the Media as
Have Industry Solutions**

Interest in Technology Issues and Insurance Is Surging: Presents Opportunity

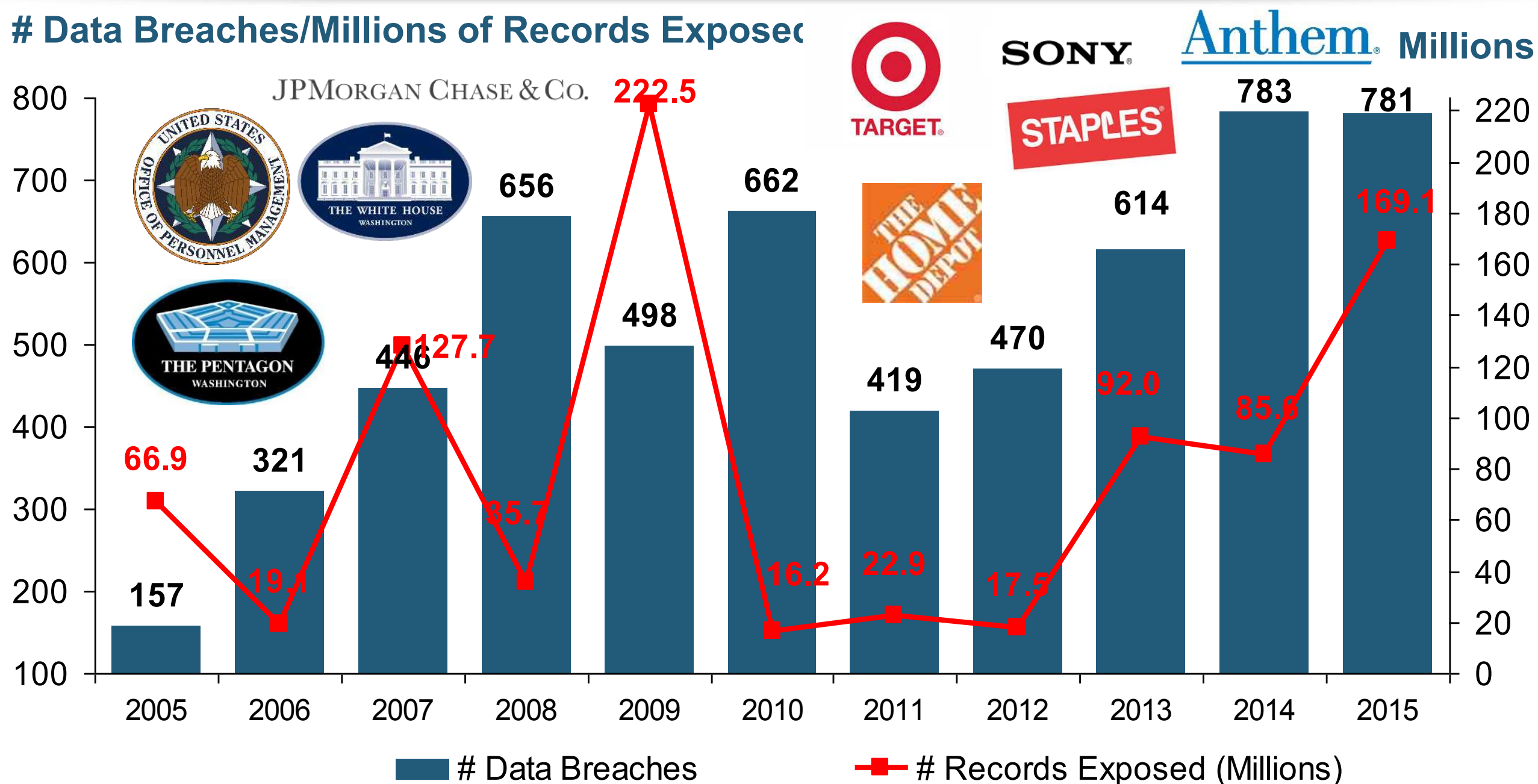
- Insurers are at the intersection of many of the most important technological innovations of the early 21st century
 - ◆ Problem→Solution→Opportunity
- Industry is too often depicted as a technology laggard
- I.I.I. is highlighting the industry as being on the technological cutting edge—an innovative, nimble industry with solutions for managing countless new risks of the current era:
 - ◆ Sharing economy Cyber Auto Technology
 - ◆ Supply Chain Climate Risk Drones
 - ◆ Wearable devices The “Internet of Things”
- Positions industry well with customers, investors, current and prospective workers/Millennials, regulators/legislators and (tech) media

CYBER RISK AND INSURANCE

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

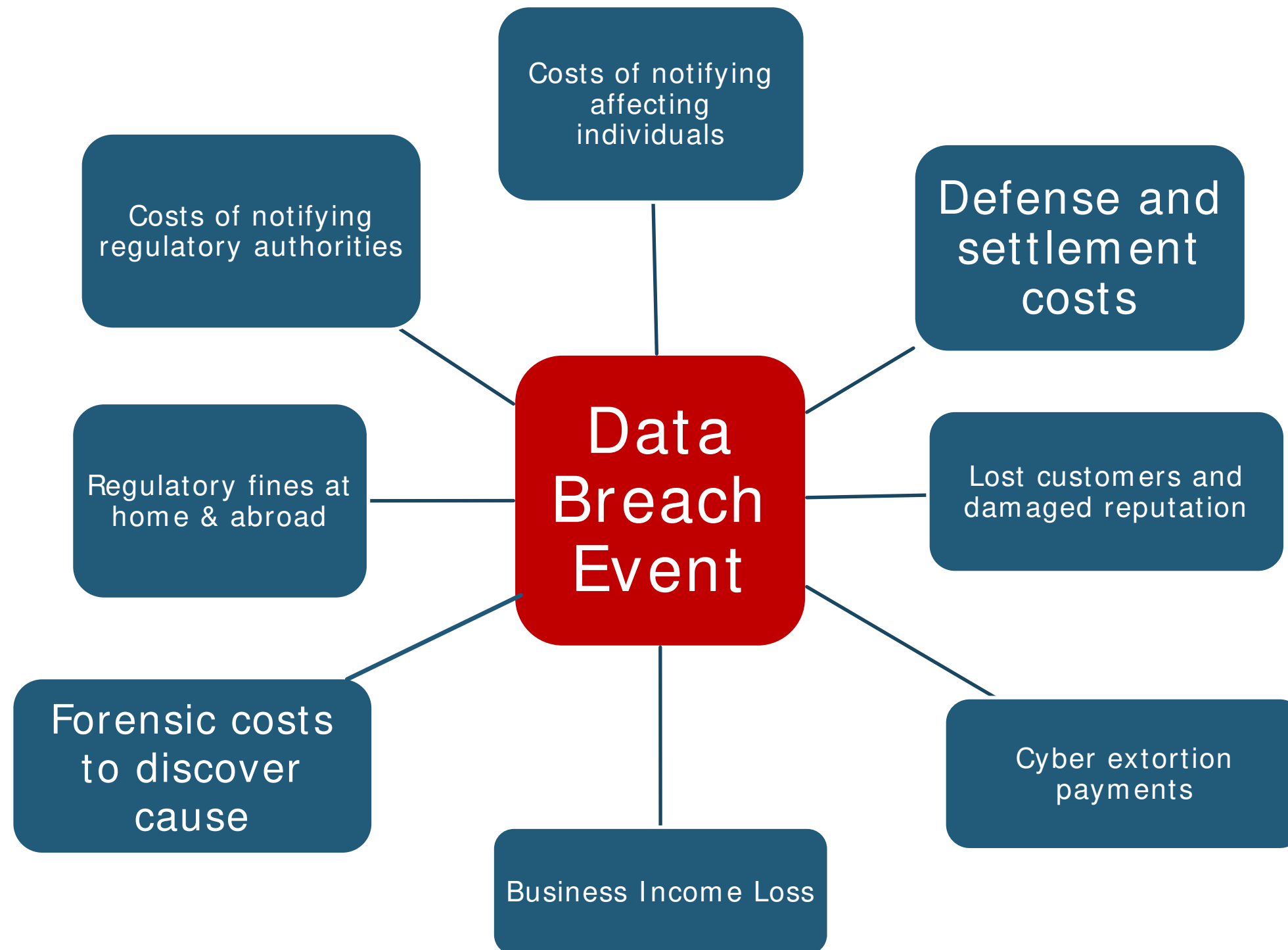
Data Breaches 2005-2015, by Number of Breaches and Records Exposed

Data Breaches/Millions of Records Exposed



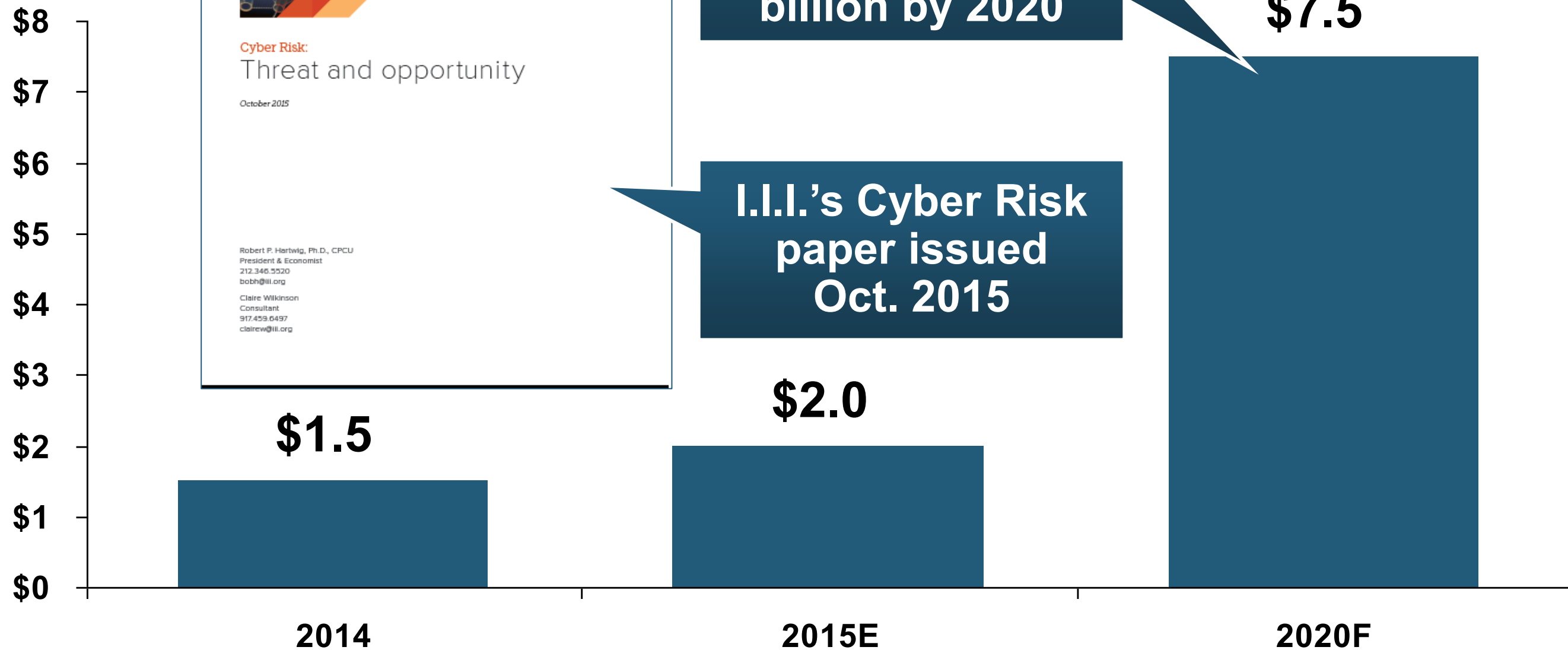
The 781 reported data breaches in 2015 was virtually unchanged from the record 783 reported in 2014. The number of exposed records soared to 169.1 million, and increase of 97.5%.

Data/Privacy Breach: Many Potential Costs Can Be Insured



Estimated Cyber Insurance Premiums Written, 2014 – 2020F

\$ Billions



THE SHARING (ON-DEMAND) ECONOMY

**Area of Extreme Interest—And Insurers
Are Providing Solutions for this
Dynamic Economic Segment**

Sharing/On-Demand/Peer-to-Peer Economy Impacts Many Lines of Insurance

- The “On-Demand” Economy is or will impact many segments of the economy important to P/C insurers
 - ◆ Auto (personal and commercial)
 - ◆ Homeowners/Renters
 - ◆ Many Liability Coverages
 - ◆ Professional Liability
 - ◆ Workers Comp
- Many insurance questions have arisen
- Insurance solutions are increasingly available to fill the many insurance gaps that arise



Regulation, Politics and the Sharing Economy

**Insurers Need to Operate in a
Complex and Rapidly Changing
Regulatory Environment**

Political Skepticism About the 'Gig' Economy



*"Many Americans are making extra money renting out a spare room, designing a website ... even driving their own car. This on demand or so called 'gig' economy is creating exciting opportunities and unleashing innovation, **but it's also raising hard questions about workplace protections** and what a good job will look like in the future."*

--Hillary Clinton, July 13, 2015



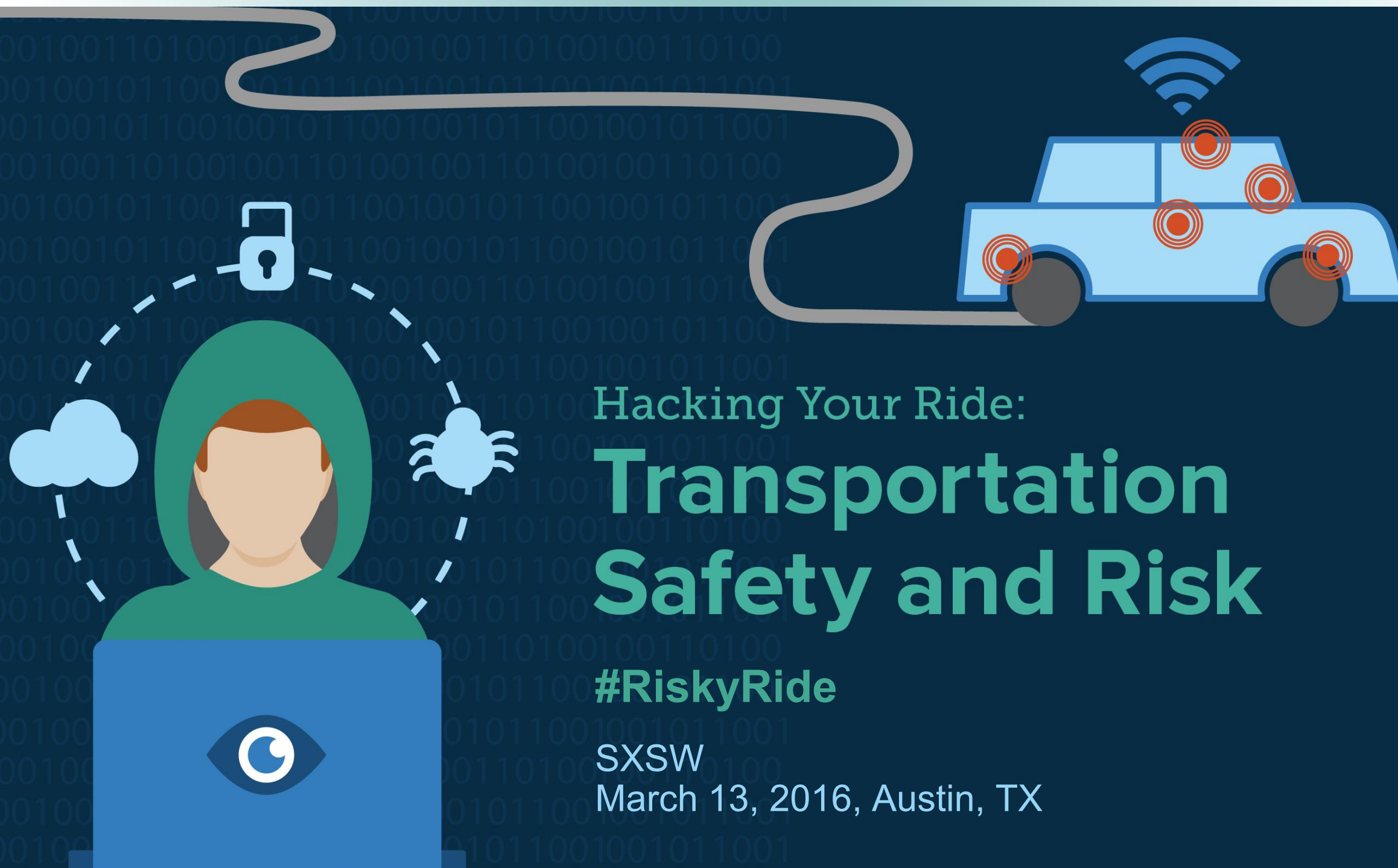
In California, Uber Driver Is Employee, Not contractor: Agency

By [Sarah McBride](#) and [Dan Levine](#)

*A driver for Uber is an **employee, not a contractor**, according to a California ruling that eventually could push up costs for the smartphone-based ride hailing service and hurt the closely watched start-up's valuation.*

*The California Labor Commissioner's decision could ripple through the burgeoning industry of providing services via smartphones, with **potential implications for other “crowdsourced” services such as Uber rival Lyft, chore service TaskRabbit, and cleaning service Homejoy.***

--Reuters, June 18, 2015



Hacking Your Ride:

Transportation Safety and Risk



#RiskyRide

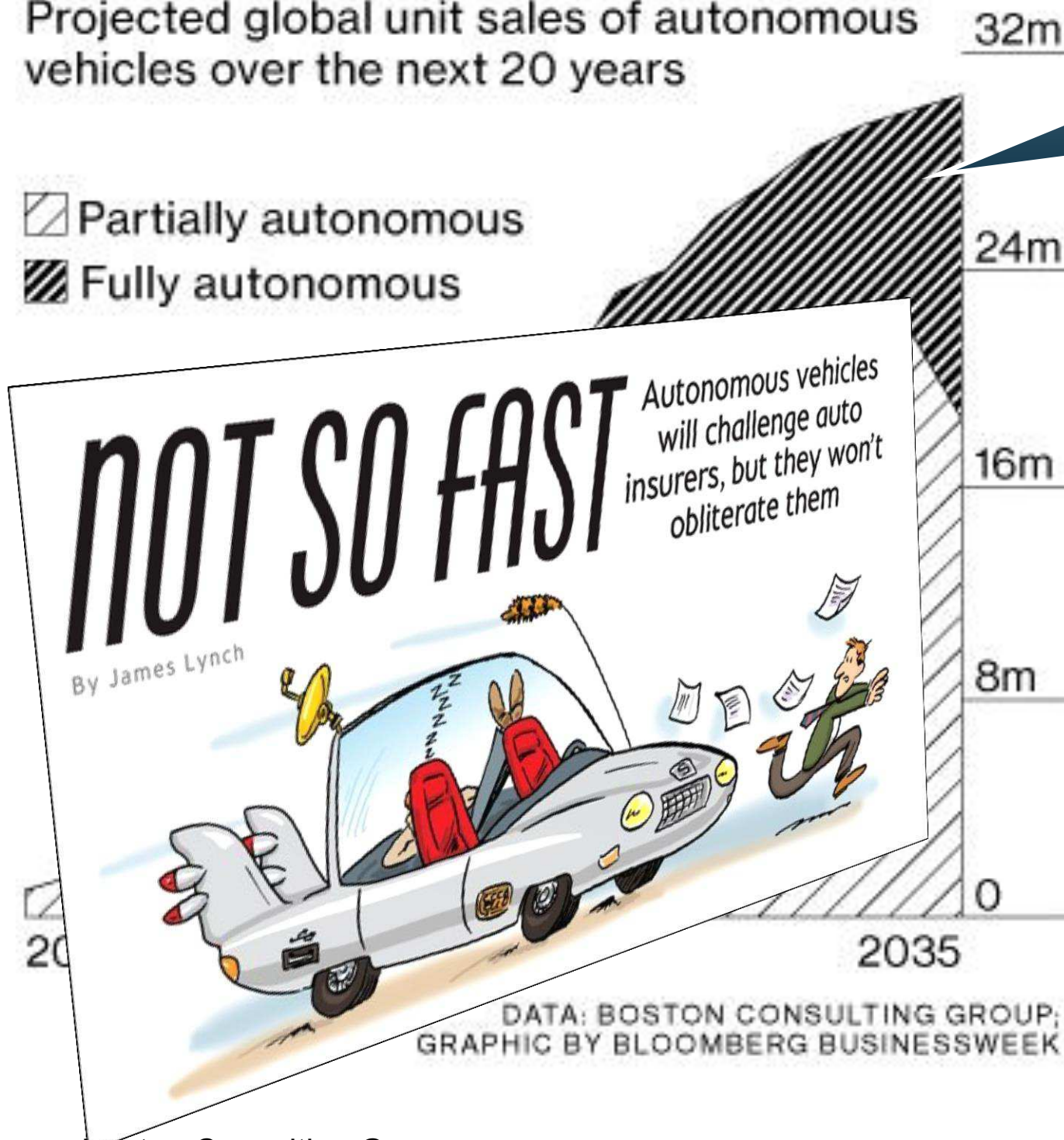
SXSW
March 13, 2016, Austin, TX

Media is Obsessed with Driverless Vehicles: Often Predicting the Demise of Auto Insurance

Hands-Free

Projected global unit sales of autonomous vehicles over the next 20 years

-  Partially autonomous
-  Fully autonomous



By 2035, it is estimated that 25% of new vehicle sales could be fully autonomous models

Questions

- Are auto insurers monitoring these trends?
- How are they reacting?
- Will Google take over the industry?
- Will the number of auto insurers shrink?
- How will liability shift?

2015: Transportation Incidents on the Rise



“Is It Possible for Passengers to Hack Commercial Aircraft?”

- *Federal Highway Administration Report, 1997*

“Fiat Chrysler Issues Recall Over Hacking”

- *The New York Times, July 24, 2015*



“Hackers Show They Can Take Control of Moving Jeep Cherokee”

- *Wall Street Journal, July 21, 2015*

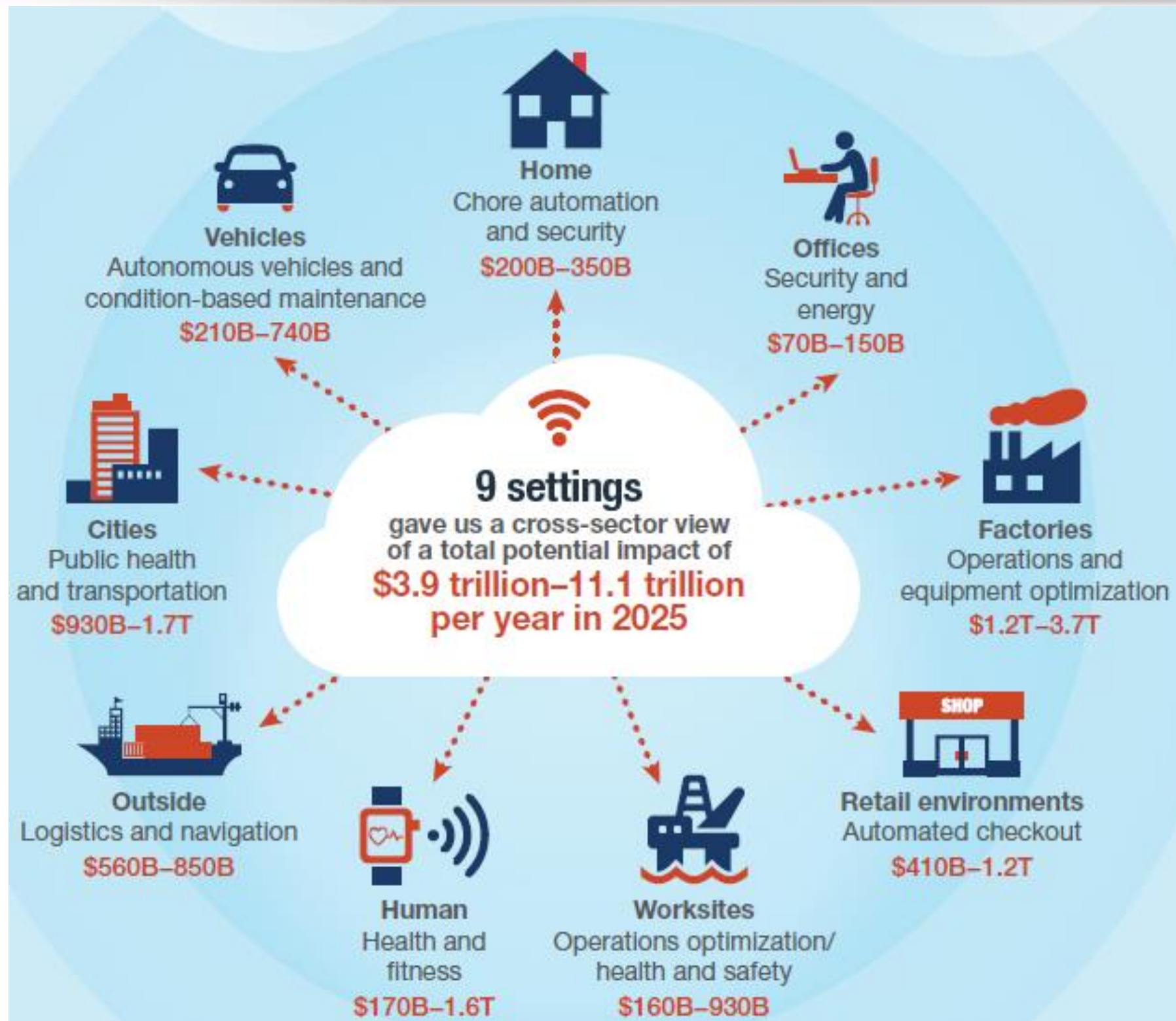
“Hackers Cut a Corvette’s Brakes Via a Common Car Gadget”

- *Wired, August 11, 2015*

THE ‘INTERNET OF THINGS’

Capturing Economic Value Amid a Shifting Insurer Value Chain

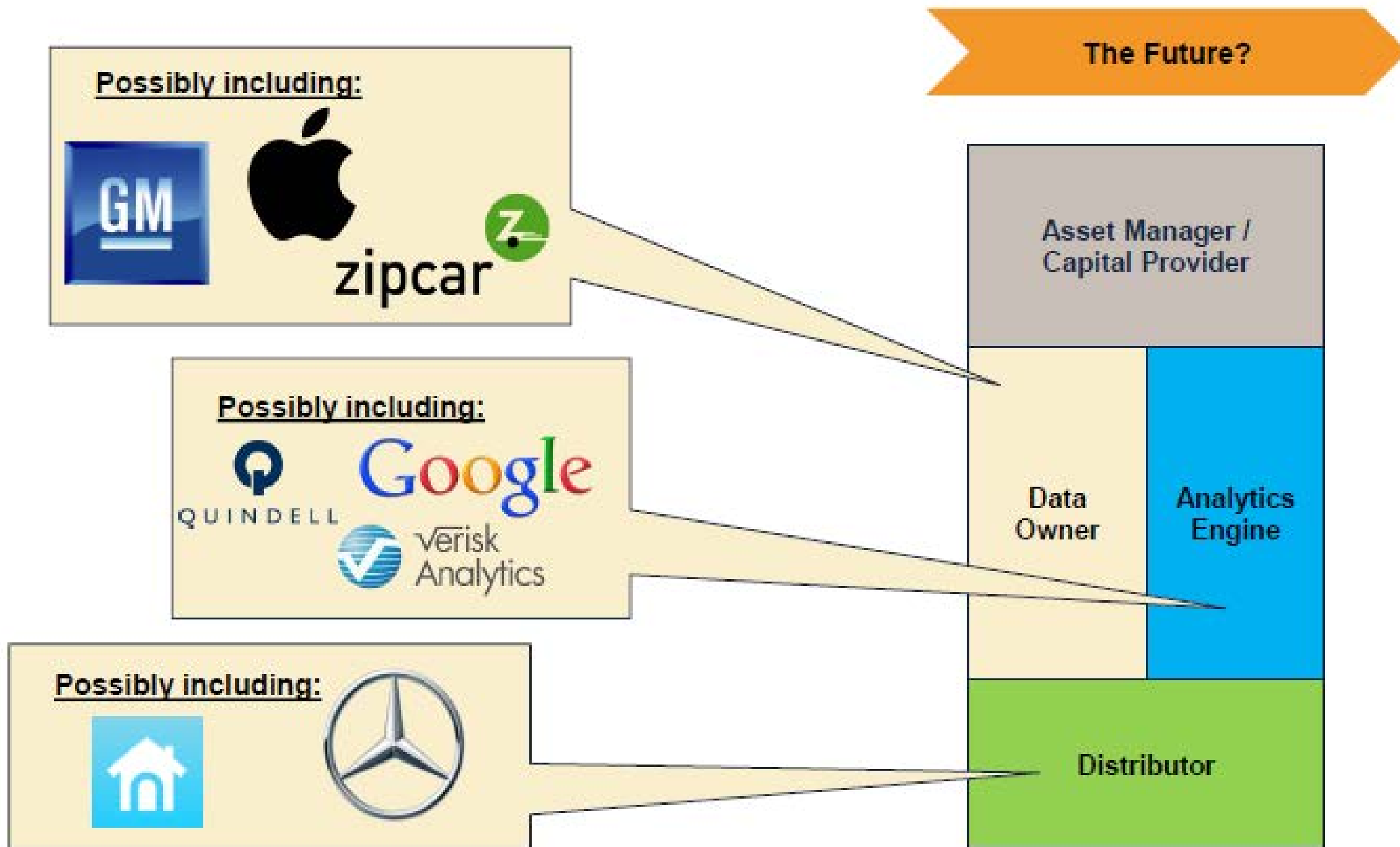
The Internet of Things and the Insurance Industry



- The “Internet of Things” will create trillions in economic value throughout the global economy by 2025
- What opportunities, challenges will this create for insurers?
- What are the impact on the insurance industry “value chain”?

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

The Internet of Things, Data and the Insurance Industry Value Chain



**Who owns the data? Where does It flow? Who does the analytics?
Who is the capital provider?**

Wearables and Beyond...

**Where The Internet of Things
Meets Health, Disability and Workers
Compensation Insurance**

Wearables Show Significant Potential to Reduce Workplace Injury, Death

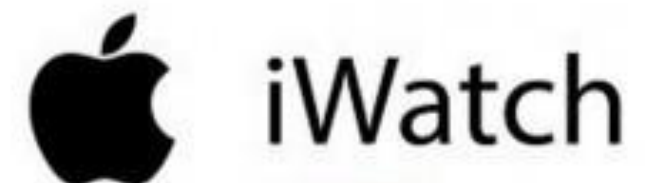
■ Wearables Today Can Monitor:

- ◆ Location
- ◆ Heart rate
- ◆ Temperature
- ◆ Steps/Exertion
- ◆ Sweat
- ◆ Sleep



■ In the Near Future Could Monitor:

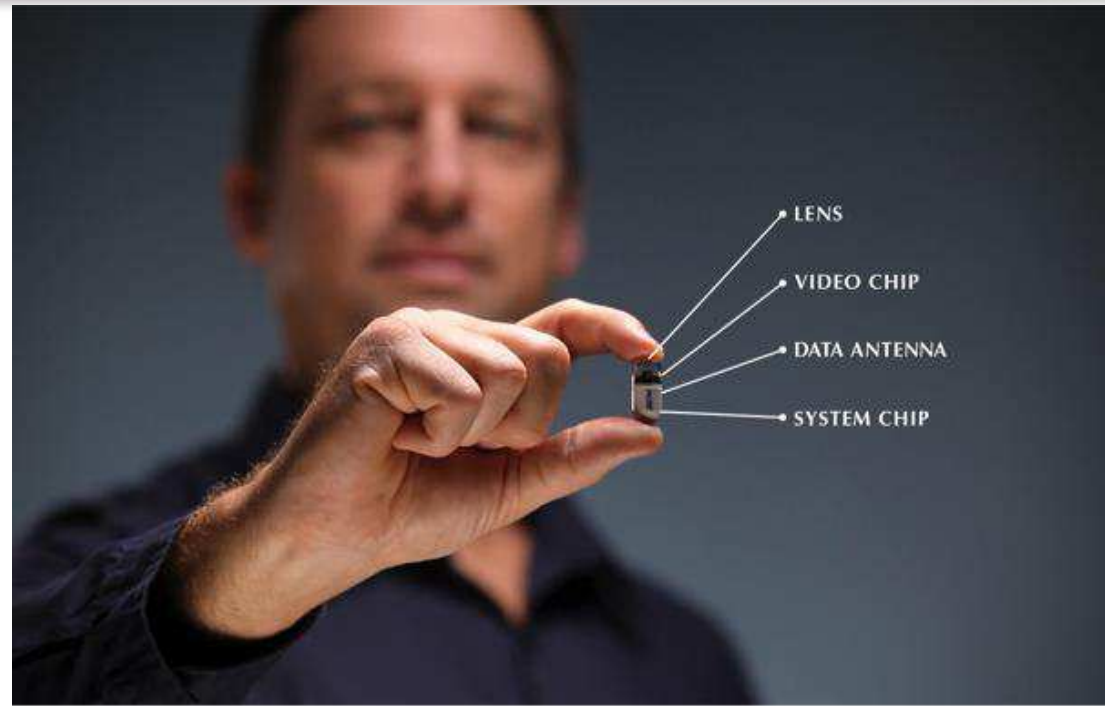
- ◆ Glucose level
- ◆ Oxygen levels
- ◆ Pain
- ◆ Nausea



Beyond Wearables: Ingestibles and Implantables, VR Could Have Big Impacts Too

■ Ingestibles:

- ◆ Body chemistry
- ◆ View malignancies
- ◆ Detect diseases
- ◆ Medication adherence



■ Implantables

■ Smart Fabrics

■ Virtual Reality

- ◆ Computer simulated reality



■ Augmented Reality

- ◆ Real world environment supplemented by computer generated inputs

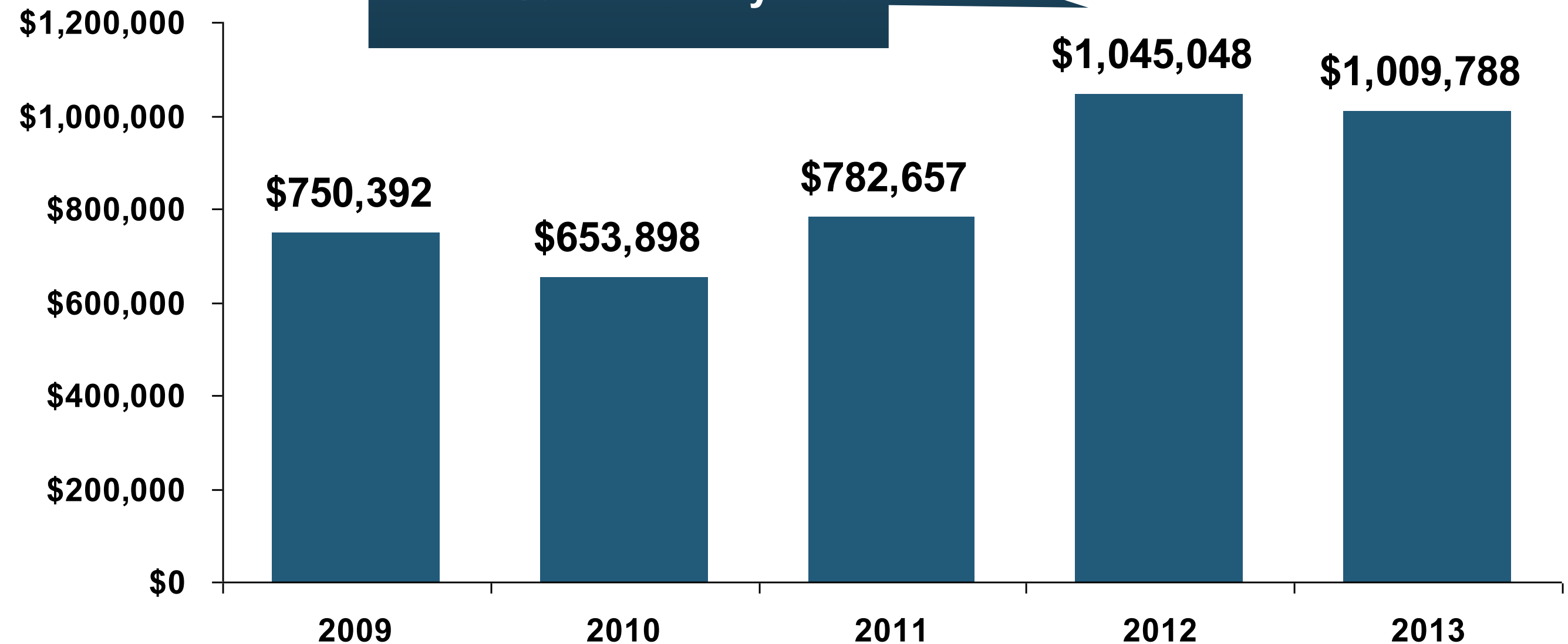


Shifting Legal Liability & Tort Environment

Will the Tort Pendulum Swing Against Insurers?

Average Personal Injury Jury Award, 2009 – 2013

Average awards in
Personal Injury cases
have increased by more
than 1/3 in recent years



Source: *Current Award Trends in Personal Injury*, 54th Edition; Insurance Information Institute.

Business Leaders Ranking of Liability Systems in 2015

Best States

1. Delaware
2. Vermont
3. Nebraska
4. Iowa
5. New Hampshire
6. Idaho
7. North Carolina
8. Wyoming
9. South Dakota
10. Utah

New in 2015

- Vermont
- New Hampshire
- North Carolina
- South Dakota

Drop-offs

- Minnesota
- Kansas
- Virginia
- North Dakota

Worst States

41. Arkansas
42. Missouri
43. Mississippi
44. Florida
45. New Mexico
46. Alabama
47. California
48. Illinois
49. Louisiana
50. West Virginia

Newly Notorious

- Arkansas
- Missouri

Rising Above

- Oklahoma
- Montana

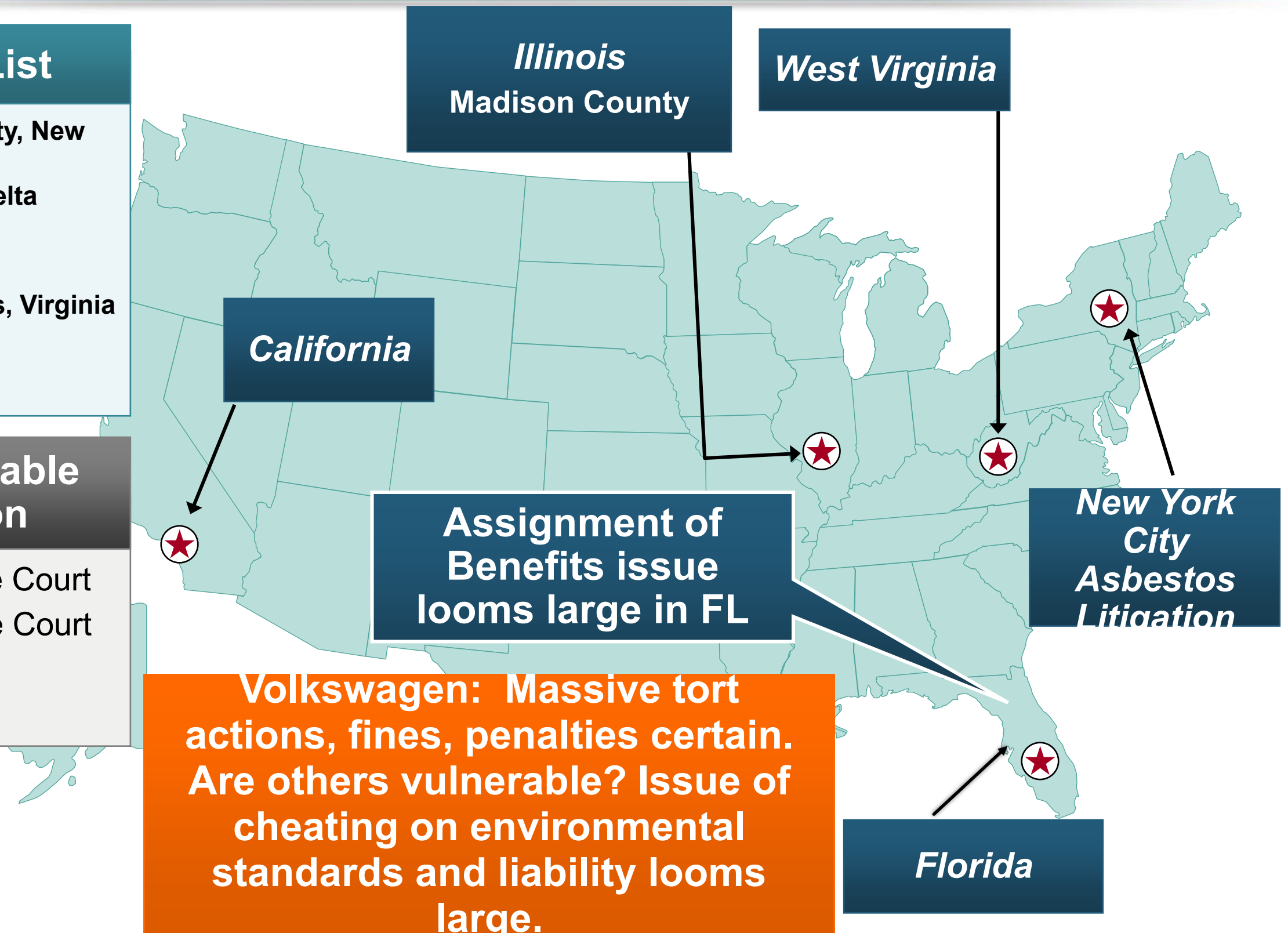
The Nation's Judicial "Hellholes": 2014/2015

Watch List

- Atlantic County, New Jersey
- Mississippi Delta
- Montana
- Nevada
- Newport News, Virginia
- Philadelphia, Pennsylvania

Dishonorable Mention

- AL Supreme Court
- PA Supreme Court



Insurance Information Institute Online:

www.iii.org

***Thank you for your time
and your attention!***

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Download at www.iii.org/presentations

The View from the Top

The View from the Top



Joe Peiser
Executive Vice President
Head of Casualty Broking
Willis Towers Watson
(Moderator)

The View from the Top

- **Joe Peiser**, Executive Vice President, Head of Casualty Broking, Willis Towers Watson (Moderator)
- **Alexander Baugh**, President, Liability & Financial Lines, AIG
- **David Bresnahan**, Executive Vice President, Berkshire Hathaway Specialty Insurance
- **Duane Hercules**, President, Safety National
- **Chris Maleno**, Senior Vice President, Chubb Group, Division President, Chubb North America Major Accounts
- **Timothy W. Turner**, Chairman and CEO, RT Specialty

The View from the Top



Joe Peiser
Willis Towers Watson



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Closing Remarks & Reception

Uber Promo! Use the code **ADVISENLTD** to receive \$20 off a first ride (new users only, valid only in US, excludes uberT, expires 12/31/16)

