



**INSURANCE
INFORMATION**
INSTITUTE

Disruption on the Horizon

2017 Actuarial Forum

August 29, 2017

Hartford, CT

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Politics

Divisiveness Makes Governing Difficult

Disruption is Everywhere

Catastrophes – Increases in frequency and severity

Natural Catastrophes

Water

2016 Flood Loss
6x Greater



Fire

2015: A Record



Wind

8 of 10 costliest
since 2004

Tornadoes +40%



Climate Change



Disruption is Everywhere

Catastrophes – Increases in frequency and severity

Man-Made Catastrophes

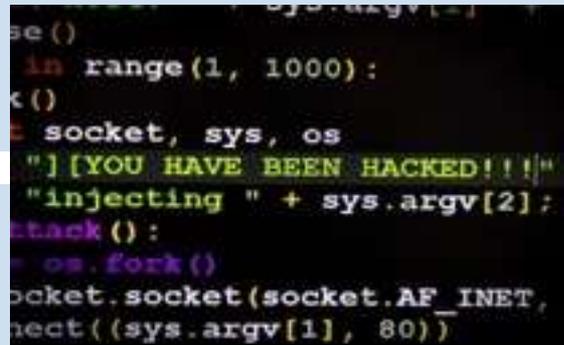
Autos



More cars on road

Distracted driving

Cyber



\$445 million/year

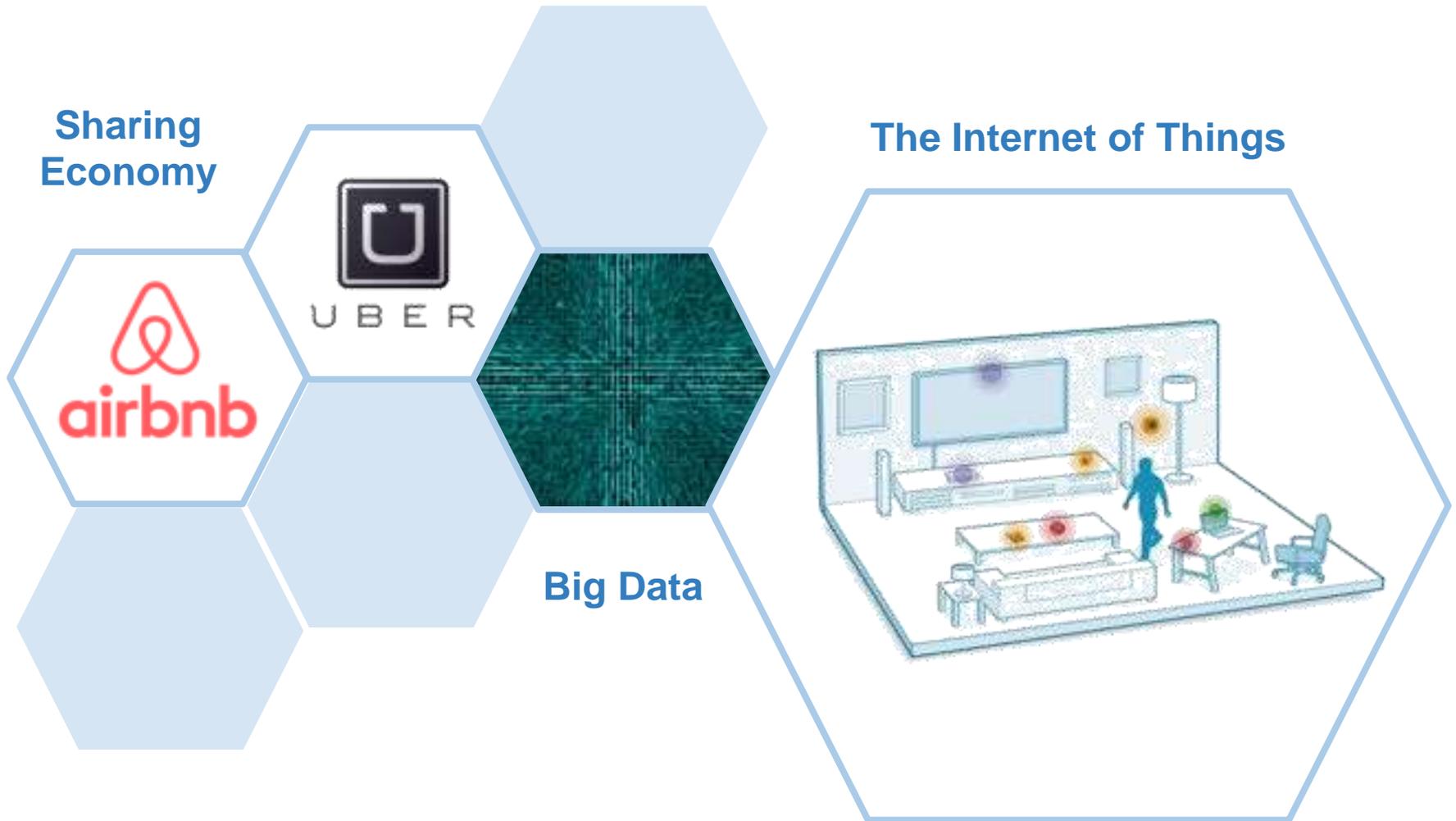
“Induced” Earthquakes



~950 3.0+

60% in OK

Technology / Digitalization



Economic Uncertainty

Global Growth...

*Since **2008** we've had the **longest period of relative trade stagnation** since **World War II**...



US Growth...



Investment Growth



...Monetary vs. Fiscal Policy

- ◆ **Monetary:** Low interest rates mean insurers are struggling to meet interest rate guarantees for life insurance and annuities must diversify their investment portfolios
- ◆ **Fiscal:** Supply-side debate heating up, i.e., tax reform



Rise of Nationalism

Regional Tensions

Global Trends Impacting Domestic Market



Regulatory Trends

"Conduct of Business"

Capital/Solvency

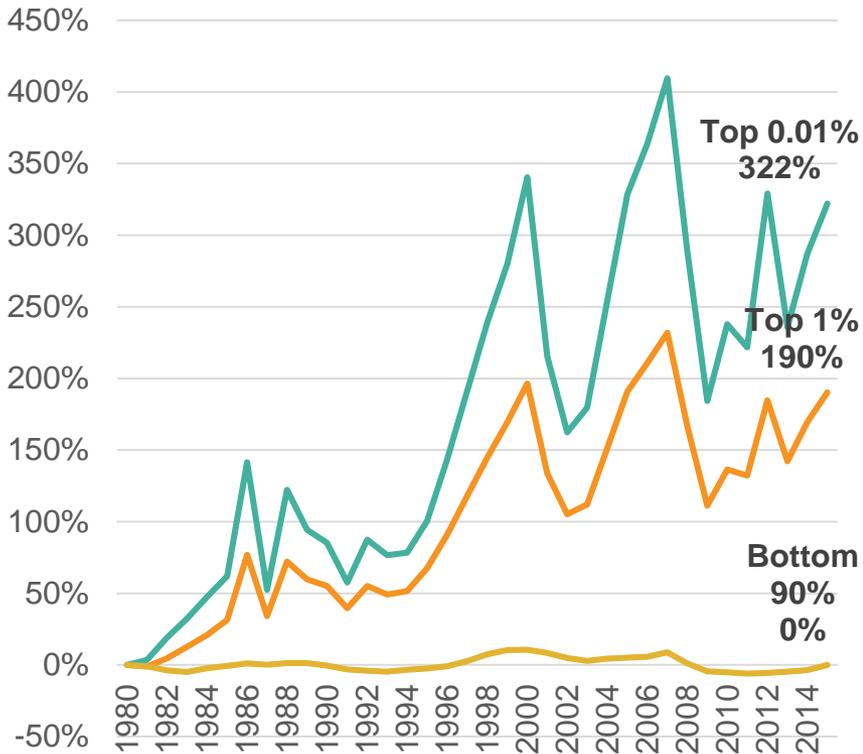
Dodd-Frank



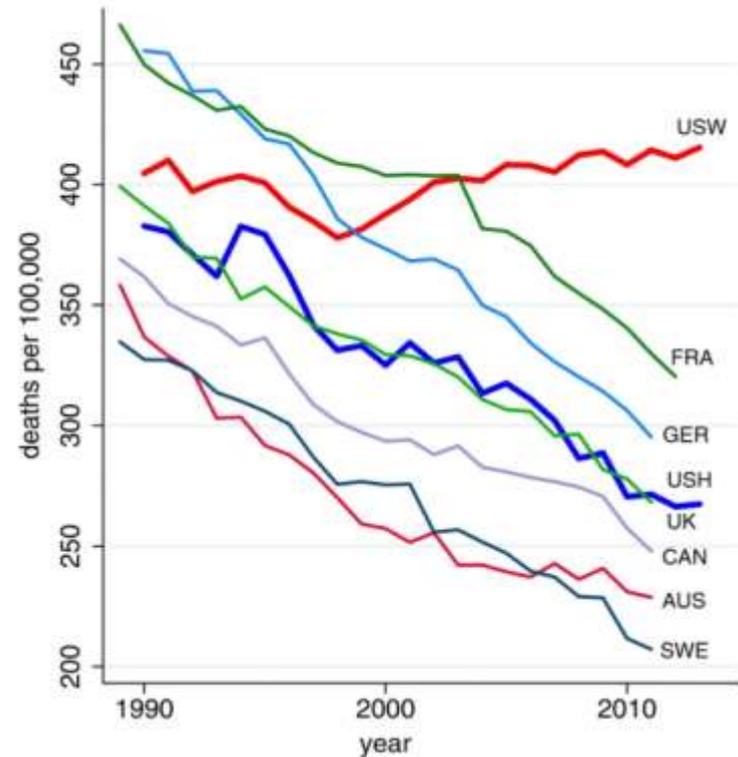
* Mainland purchases of insurance and related investment policies in the nine months ended September 2016 surged to a record high.

Stagnation's Toll

Cumul Chg in Real Avg Income



Death Rates, 45-64



SOURCES: World Wealth and Income Database (from motherjones.com), Insurance Information Institute; Washington Post (from Proceedings of National Academy of Sciences).

The Trust Gap

Largest Gaps



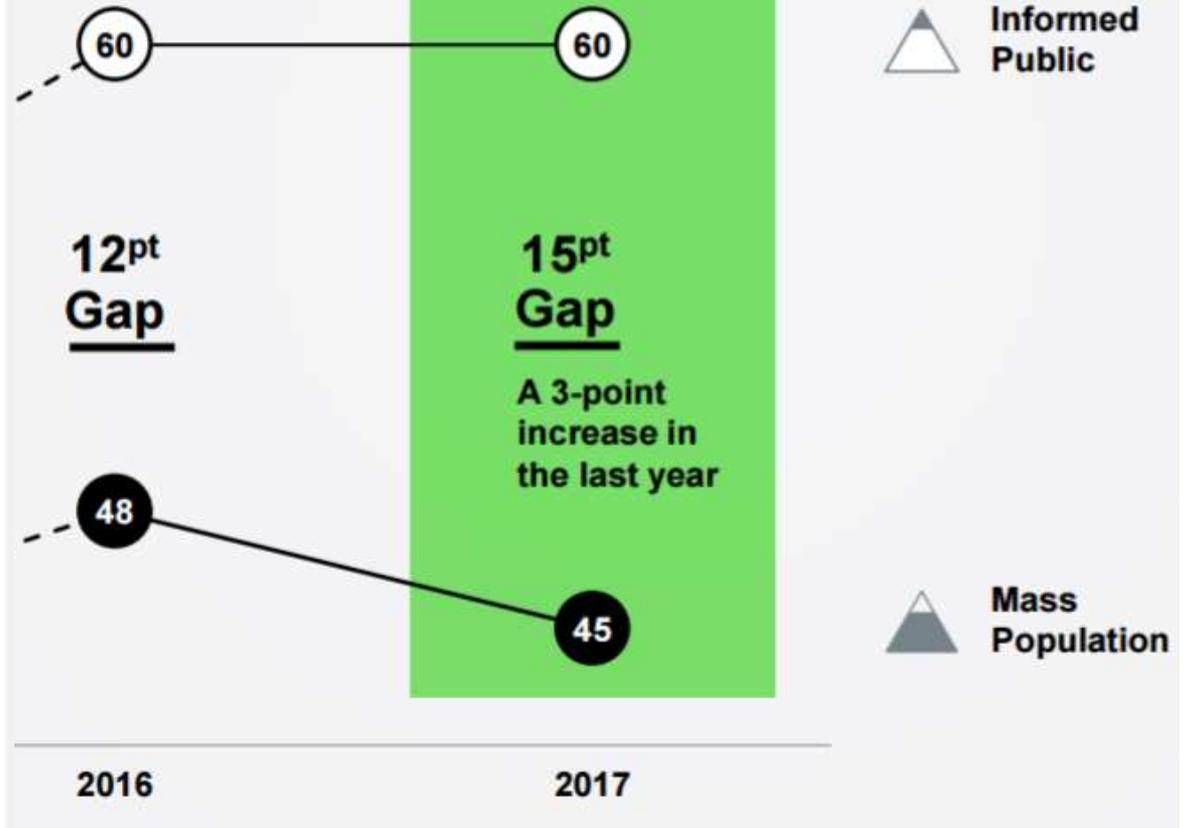
21 pts



19 pts

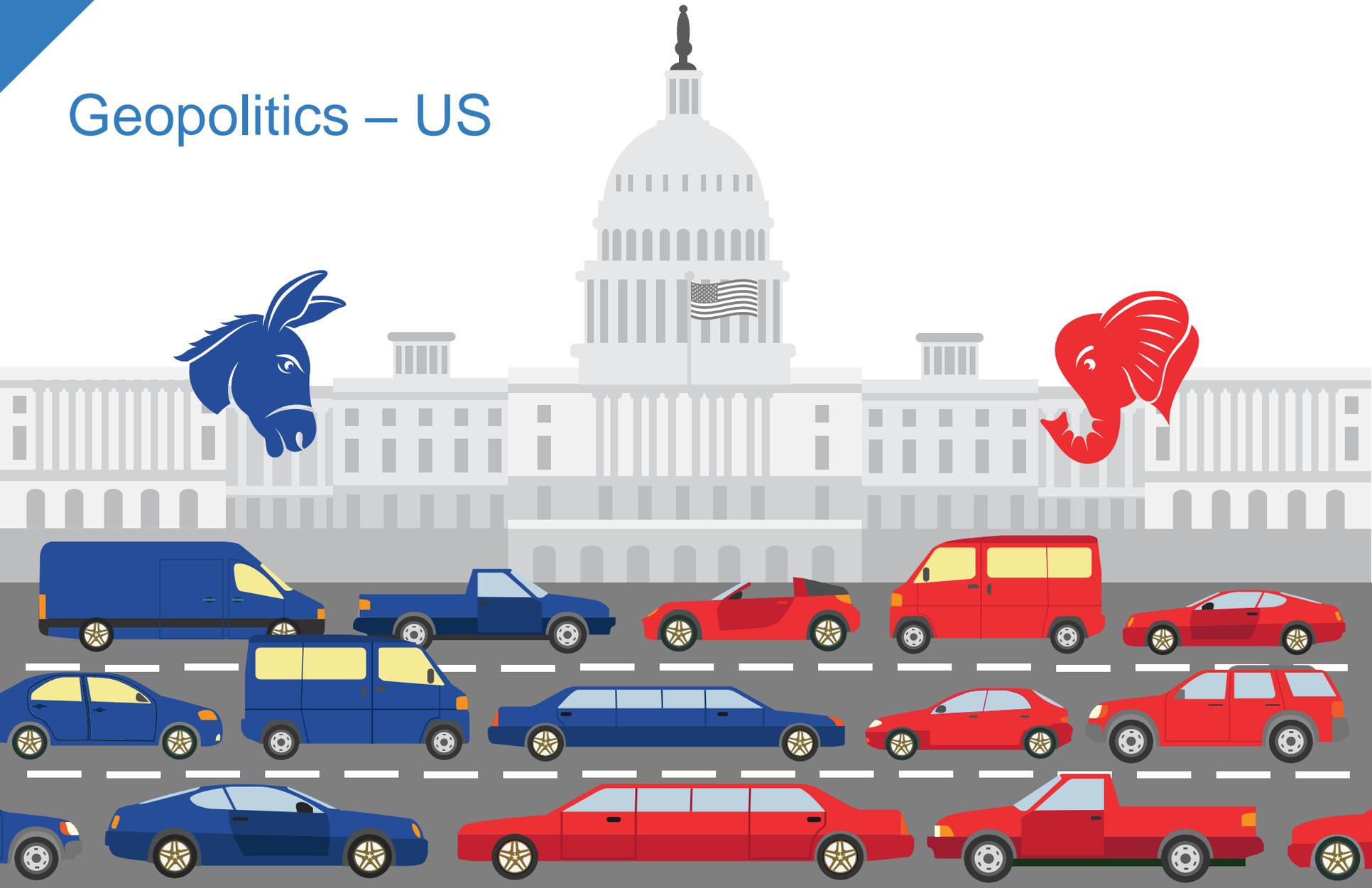


18 pts



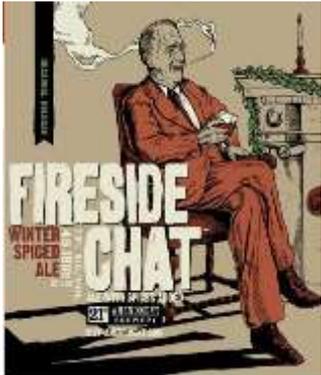
Average of trust in Government, NGOs, Media and Business.
SOURCE: Edelman Trust Barometer, 2017

Geopolitics – US



The 'Bully Pulpit' Evolution

Has Trump Changed the Game?



SHARE THIS:

- TWITTER
 - FACEBOOK
 - EMAIL
- FOLLOW US:
- TWITTER
 - FACEBOOK
 - INSTAGRAM

Profile page for Donald J. Trump (@realDonaldTrump). The page shows a profile picture of Donald Trump, a bio, and statistics: 34.3K tweets, 42 following, 19.8M followers, and 46 likes. There is a "Follow" button and a "Messages" button.

Donald J. Trump
@realDonaldTrump

TWEETS 34.3K FOLLOWING 42 FOLLOWERS 19.8M LIKES 46

[Follow](#)

[Messages](#)

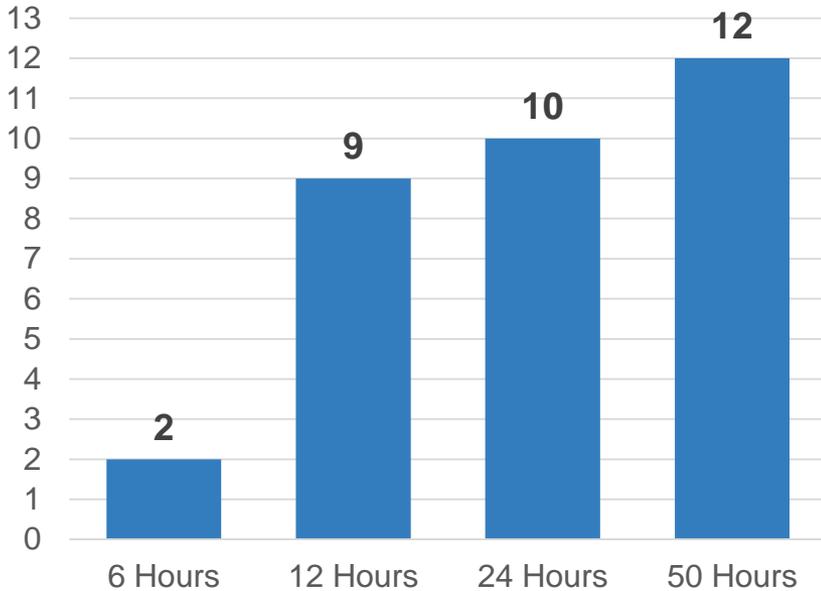
@USTreasSec where is #TaxReform? Get R done!

@USAG #Waterboarding will #MakeAmericaGreat!

Politicians Catch On But Can They Overdo It?

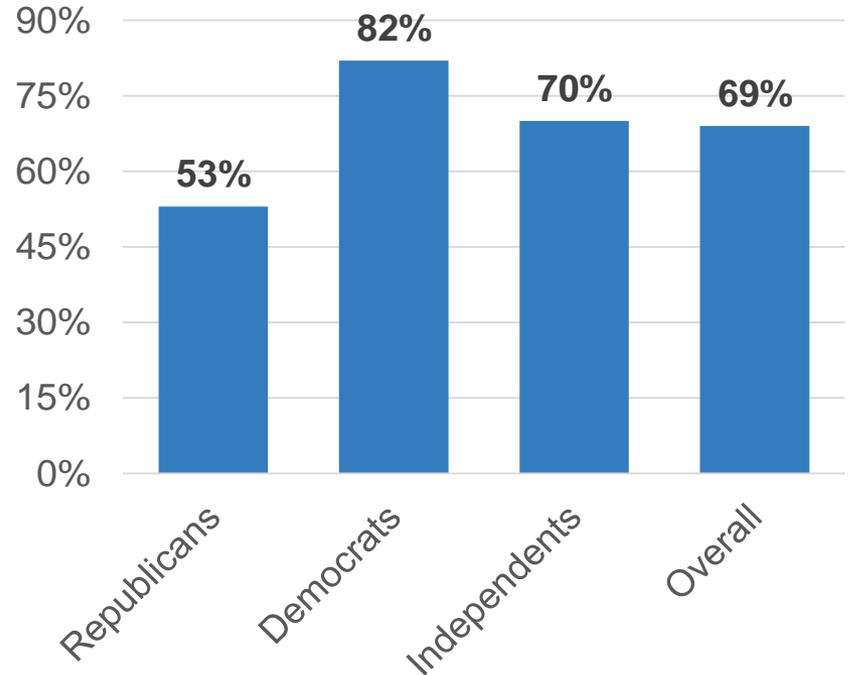
Responses to Charlottesville

(Number in NJ House Delegation Tweeting Within x Hours Of Emergency Declaration)



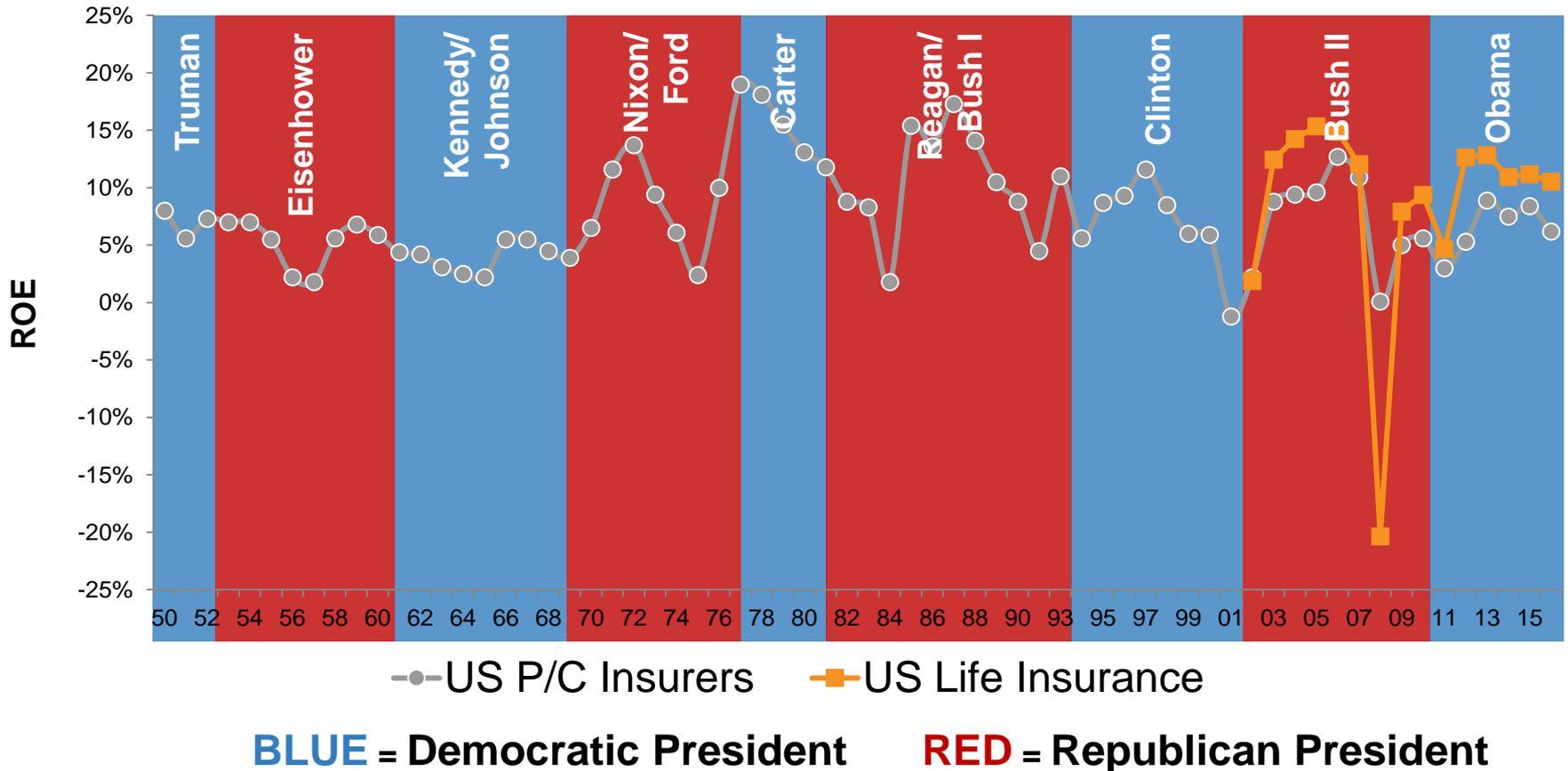
Is President's Use of Twitter a 'Bad Thing'?

(Percentage Answering 'Yes')



Insurance Industry ROE by Presidential Party Affiliation

1950-2016*



*2016 data is through Q3.

Source: S&P Global Market Intelligence, Insurance Information Institute.



Affordable Care Act

Going Going ... Maybe Not Going All the Way



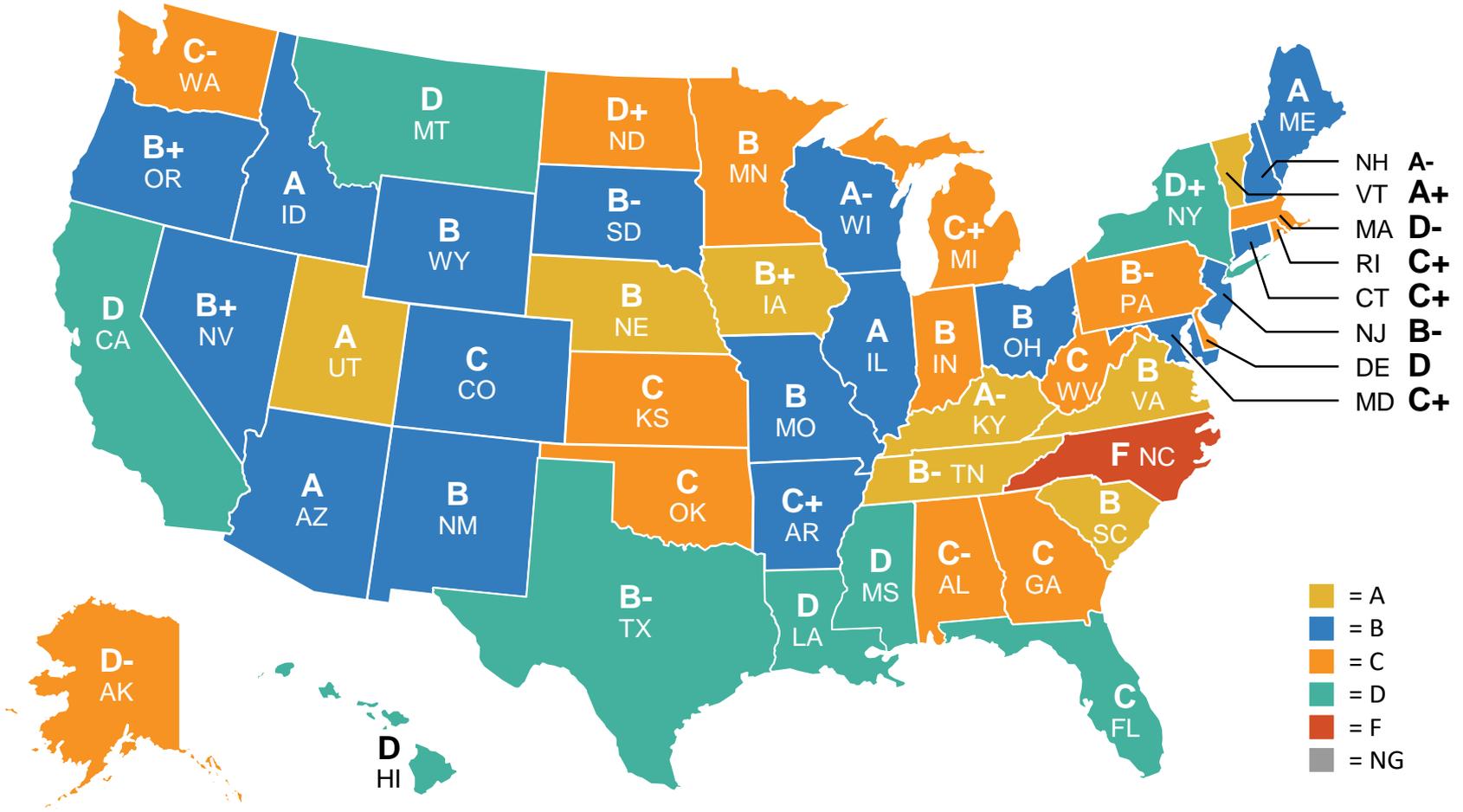
2017: Key Insurance Issues

- ▲ Taxes – Promises, promises
- ▲ Flood Insurance
 - ◆ NFIP reauthorization
 - ◆ A private role?
- ▲ Fiduciary Rule
 - ◆ Here today. . .
 - ◆ . . . gone tomorrow?



But State Politics Drives Insurance

And Every State is Different



Not Graded: District of Columbia



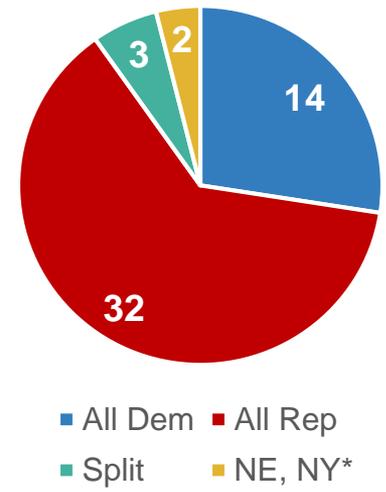
Source: R Street Insurance Regulation Report Card, December 2016

Republicans Control Most States . . .

In The November Election They Lost One Legislature Overall



Makeup Today



Seven chambers flipped control after the November 2016 elections.

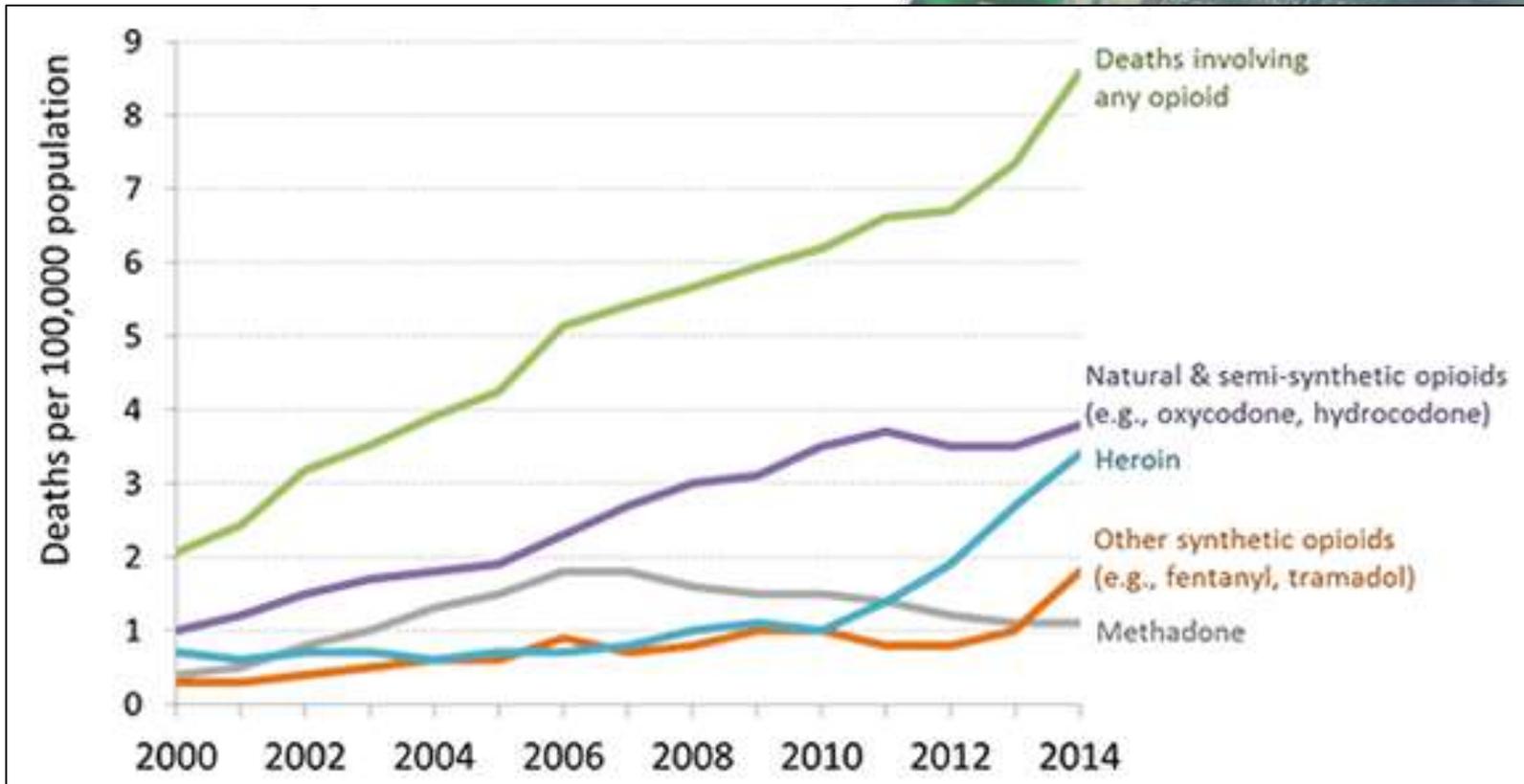
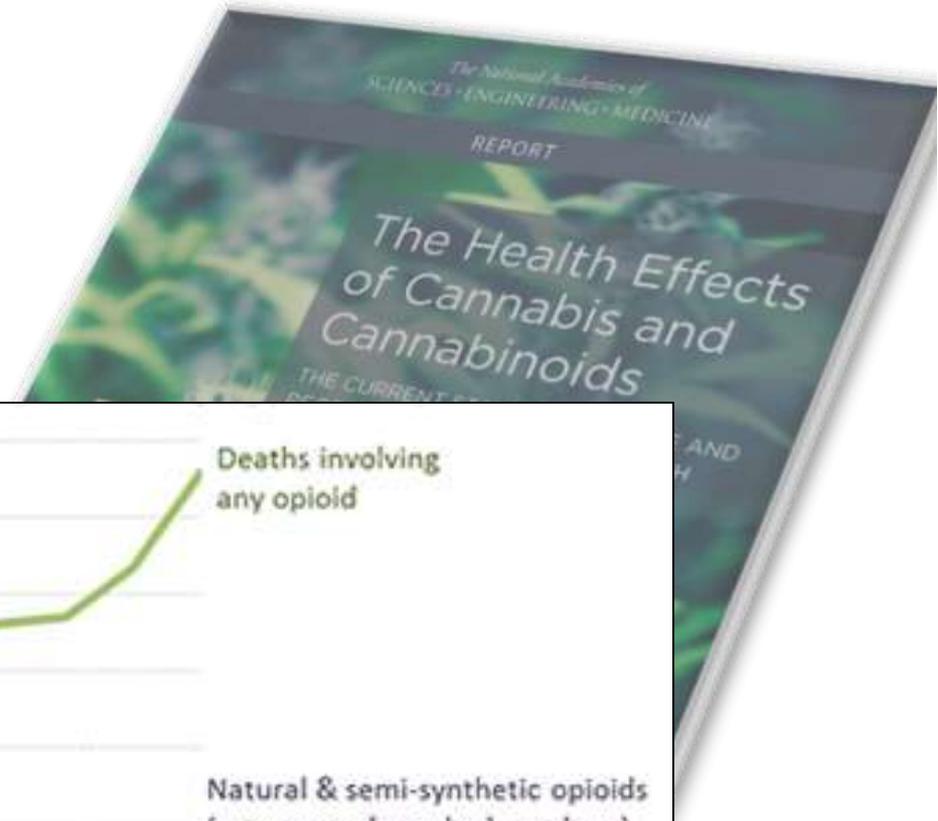


* Nebraska: Unicameral, nonpartisan, Republican dominated. New York: not decided.
Source: National Conference of State Legislatures, Ballotpedia, Insurance Information Institute.

Medical Marijuana

Insurers Caught in the Middle

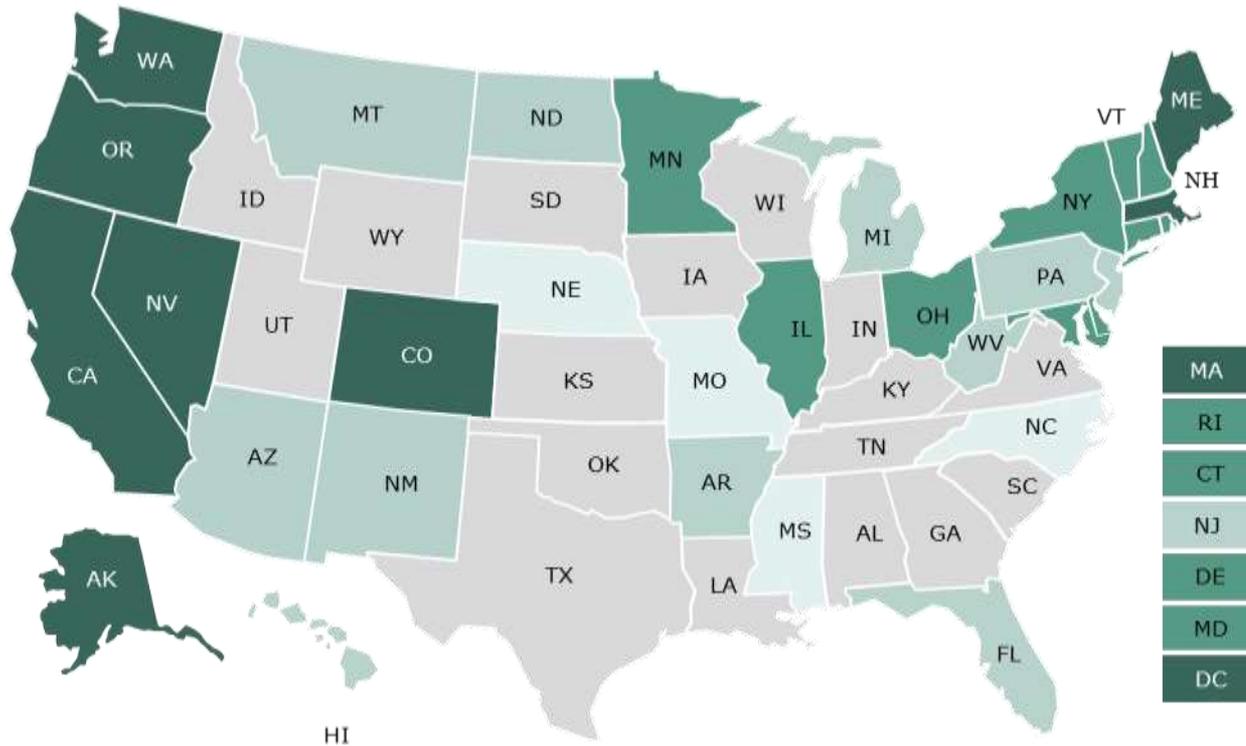
Opioid Alternative?



Medical Marijuana

Insurers Caught in the Middle

■ Fully legal ■ Medical use legal and recreational use decriminalized
■ Medical use legal ■ Recreational use decriminalized ■ Fully illegal



Congressional Cannabis Caucus



Rohrbacher
(CA)



Blumenauer
(OR)



Young
(AK)



Polis
(CO)

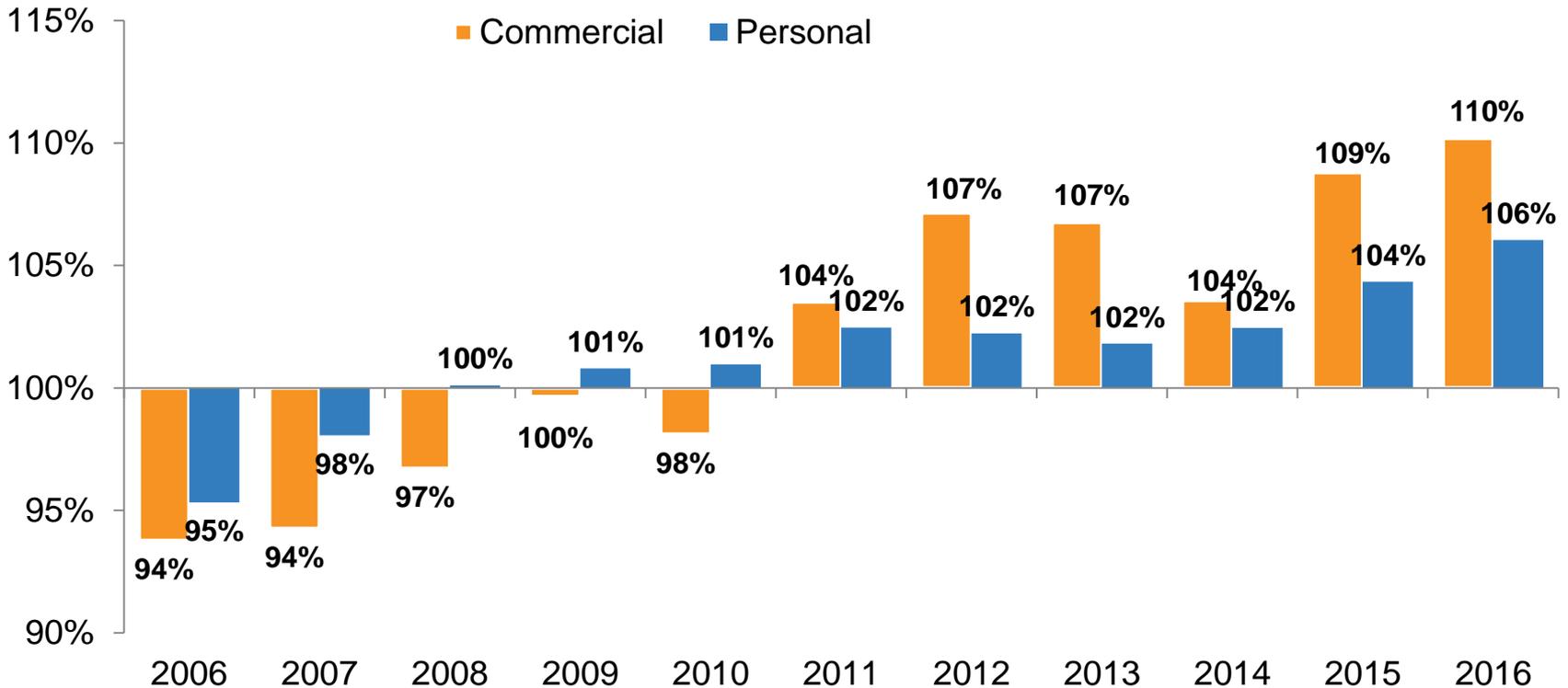


SOURCE: National Journal, July 19, 2017.

Personal Auto

Rising Frequency, Severity Pinching
the Largest P/C Line

Auto Net Combined Ratio, 2005-2016



**Loss Ratios Have Been Rising for a Decade.
2015 Return on Net Worth is Likely Close to Zero or Negative.**



Source: National Association of Insurance Commissioners data, sourced from S&P Global Market Intelligence; Insurance Information Institute.

State Issues

Auto Insurance

Increase in Loss Costs, 2015:Q1–2017:Q1



Bodily Injury

15.3%



Property
Damage

15.0%



Personal Injury
Protection

14.1%



Collision

13.2%



Comprehensive

22.5%

From 2015 to 2017, the cost of accidents has risen dramatically. By contrast, consumer prices overall rose 3.9 percent during 2014 and 2015.

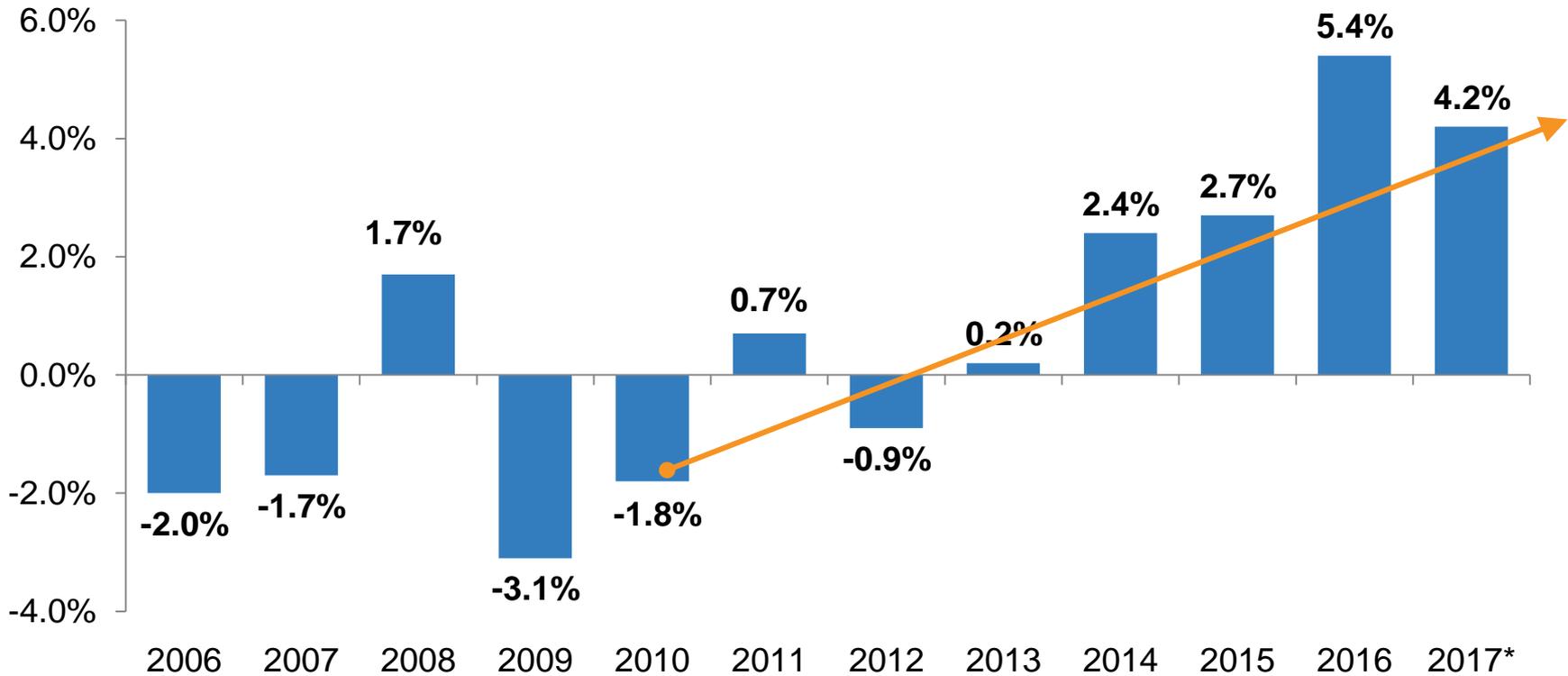


Claim Trends by Coverage

Focus on Collision

Collision Claims: Frequency Trending Higher in 2010s

Annual Change, 2006 through 2017



For a Long Time, Claim Frequency Was Falling, But Since 2010 This Trend Seems to Have Reversed.

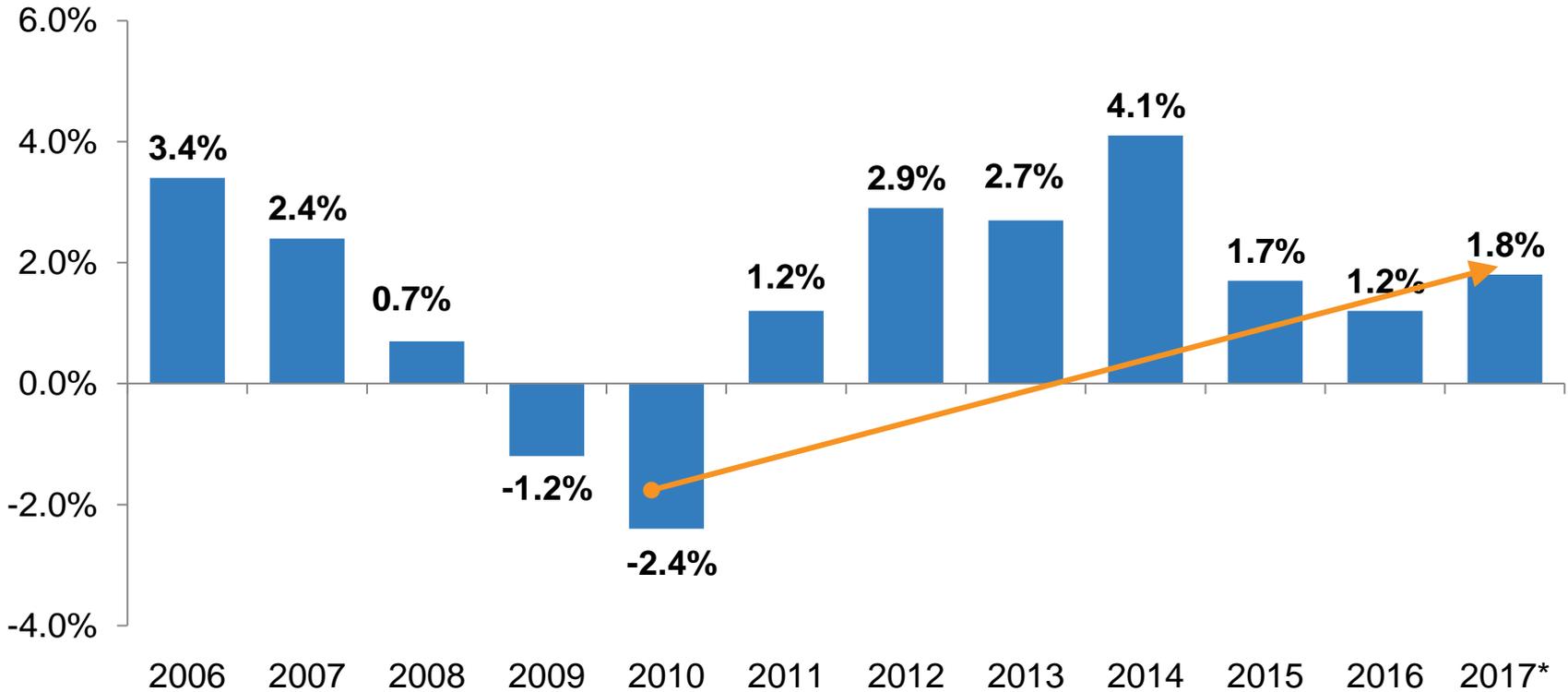


*Four Quarters Ending in March.

Source: ISO, a Verisk Analytics company; Insurance Information Institute.

Collision Claims: Severity Trending Higher in 2010-2017

Annual Change, 2006 through 2017



The Great Recession and High Fuel Prices Helped to Temper Claim Severity, But These forces Have Clearly Reversed, Consistent with Experience from Past Recoveries.



*Four Quarters Ending in March.

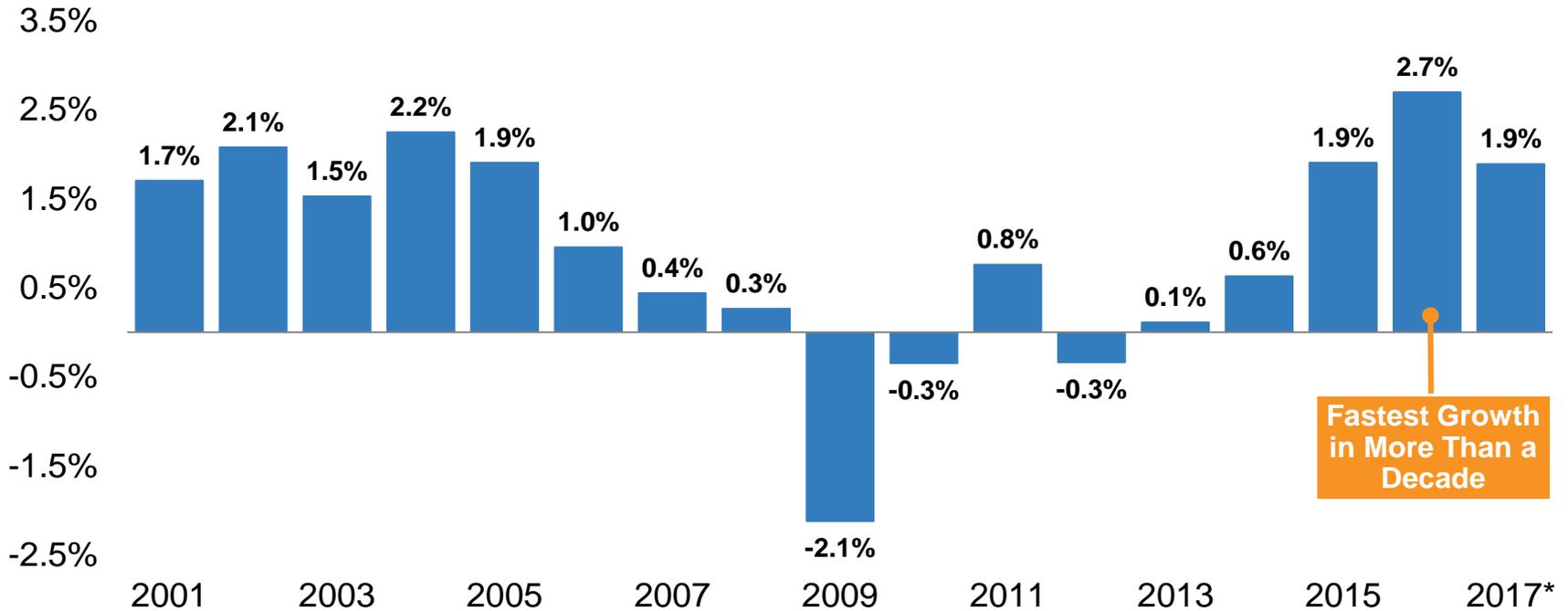
Source: ISO, a Verisk Analytics company; Insurance Information Institute.

What's Driving These Trends?

Frequency; Severity; Distraction?

America is Driving More Again: 2000-2017

Percent Change, Miles Driven*



Fastest Growth
in More Than a
Decade

Tremendous Growth In Miles Driven. The More People Drive, The More Frequently They Get Into Accidents.

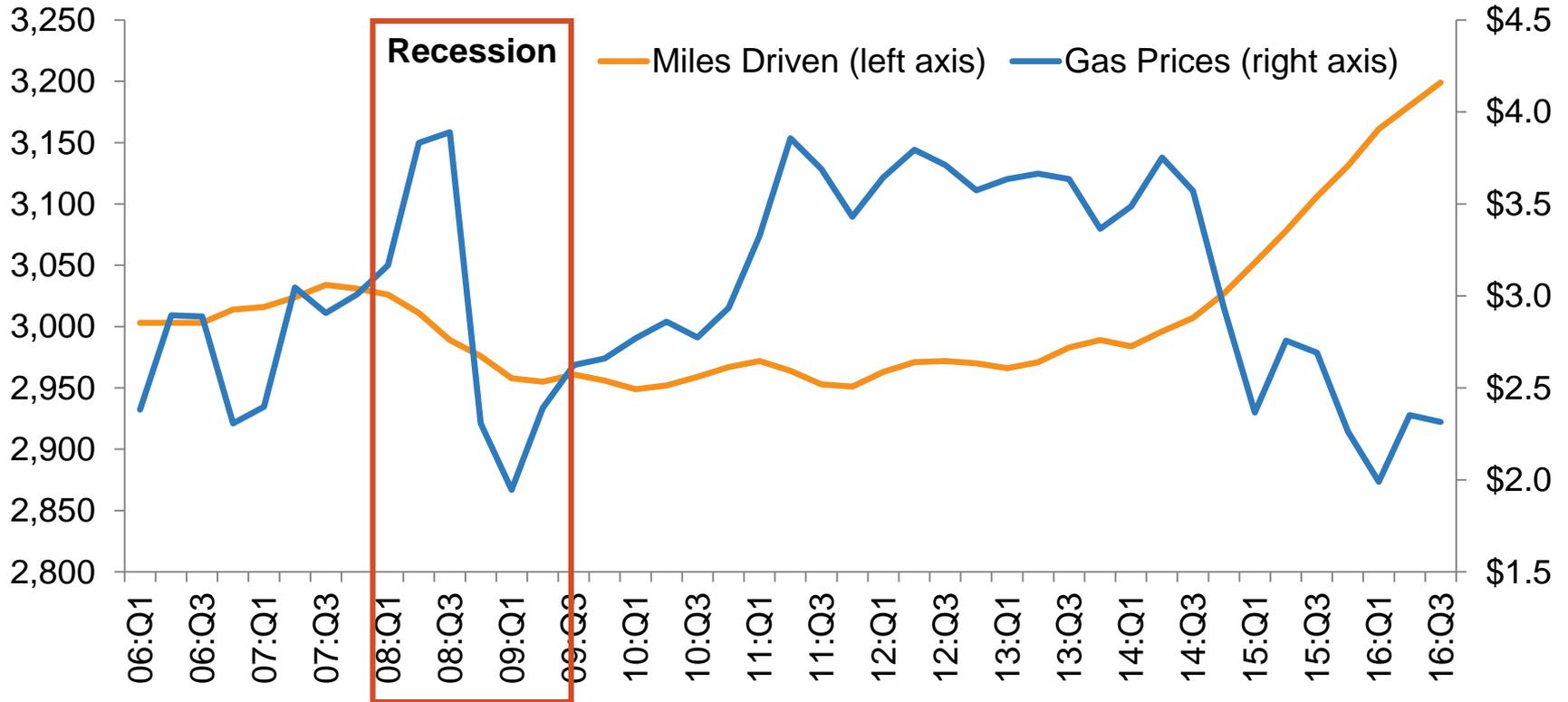


*Moving 12-month total vs. prior year through March.
Sources: [Federal Highway Administration](#); Insurance Information Institute.

Why Are People Driving More Miles? Cheap Gas?

Billions of Miles Driven in Prior Year

Average Price Per Gallon



Gas Prices Don't Seem Correlated With Miles Driven.

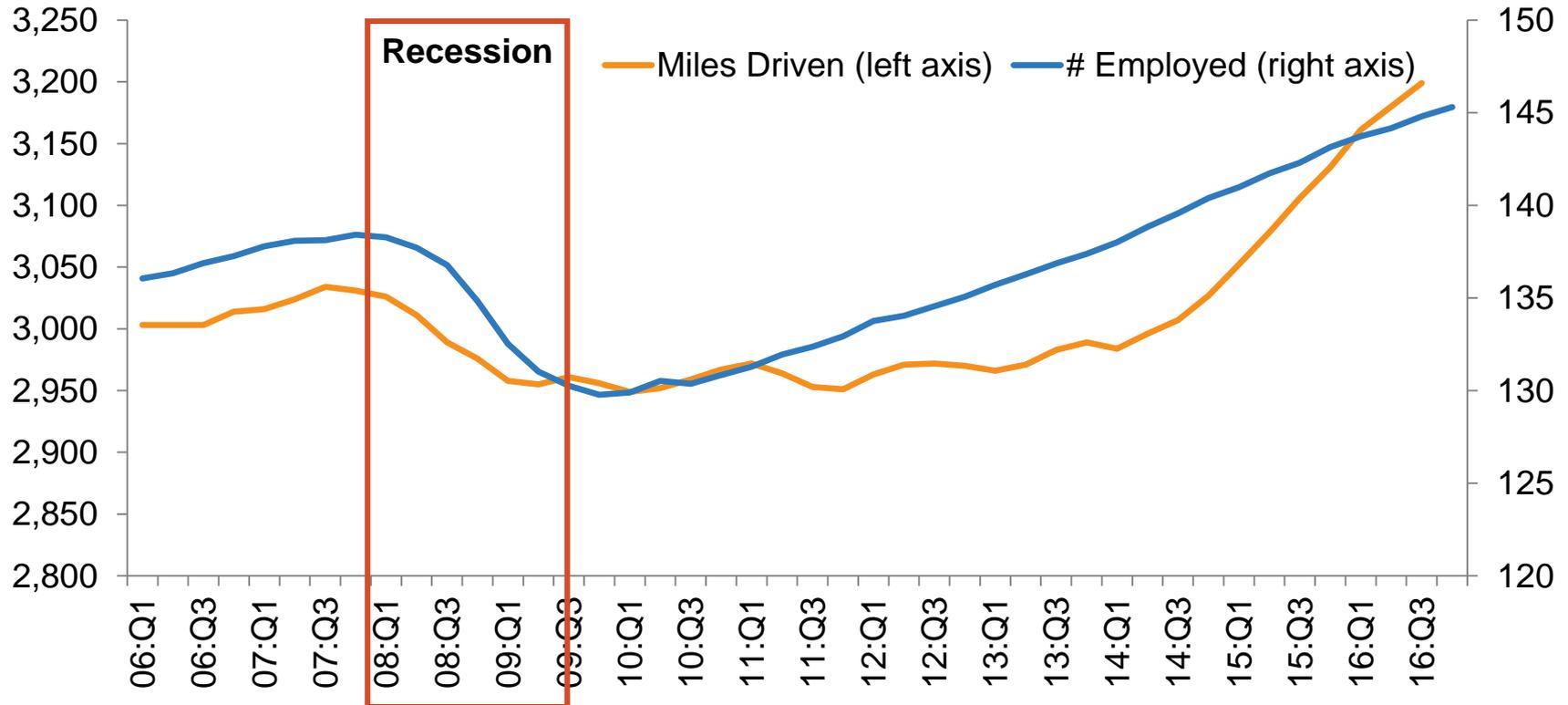


Sources: [Federal Highway Administration](#); [Energy Information Administration](#) (All Grades All Formulations Retail Gas Prices); Insurance Institute for Highway Safety; Insurance Information Institute.

Why Are People Driving More Miles? Jobs?

Billions of Miles Driven in Prior Year

Millions Employed



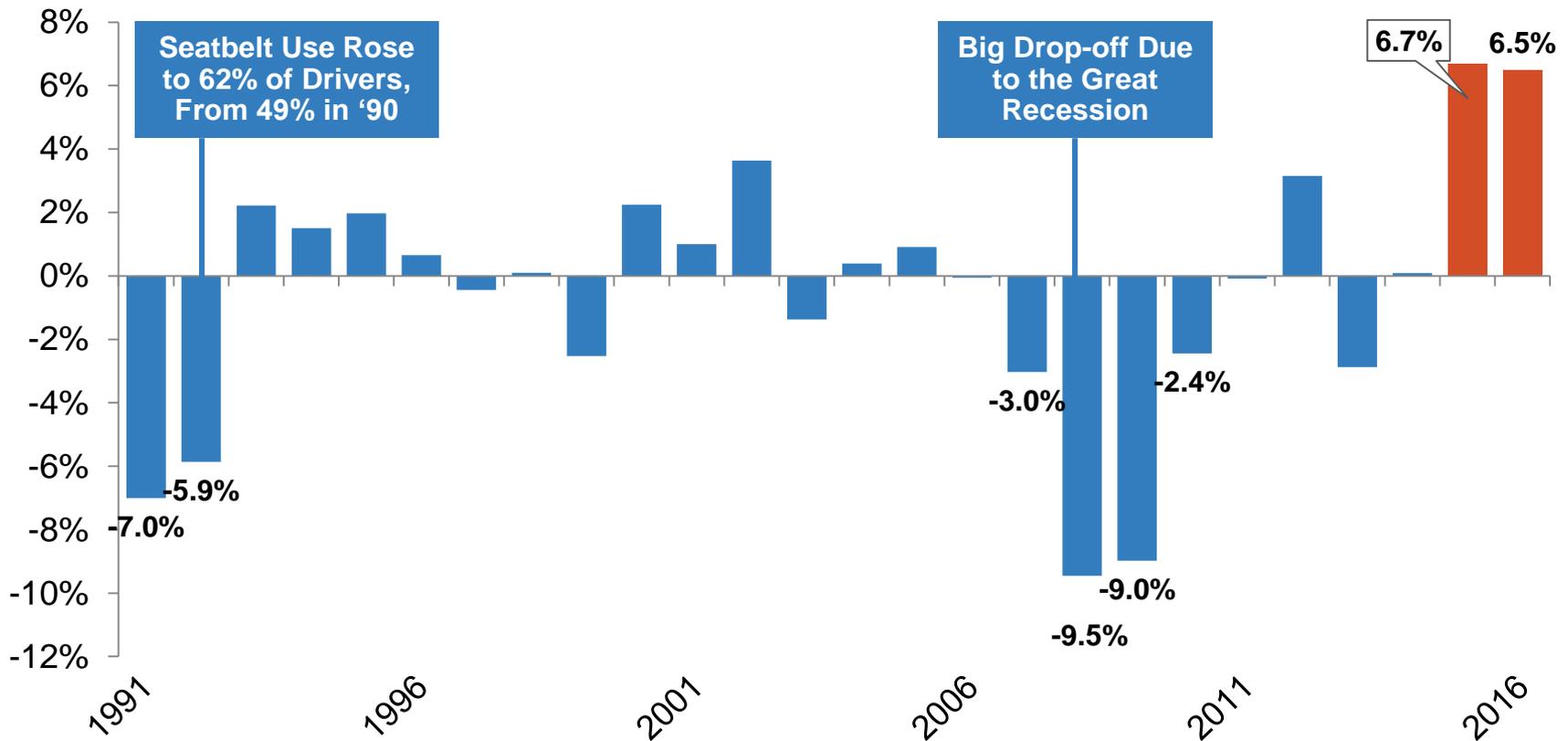
**People Drive to and from Work and Drive to Entertainment.
Out of Work, They Curtail Their Movement.**



Sources: [Federal Highway Administration](#); Seasonally Adjusted Employed from Bureau of Labor Statistics via [FRED](#); Insurance Institute for Highway Safety; Insurance Information Institute.

Severity: Driving Fatalities are Rising

Annual Change in Motor Vehicle Deaths



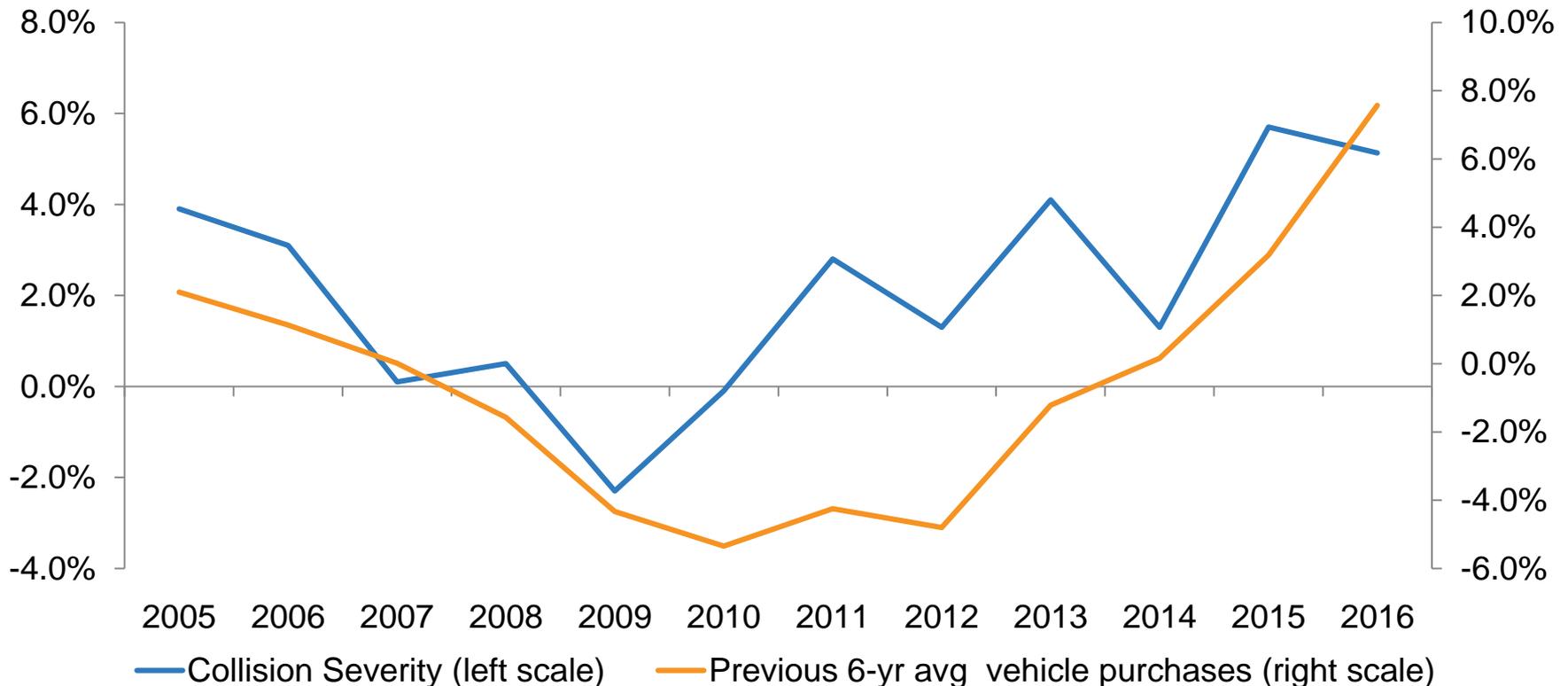
Driving Has Been Getting Safer for Decades, But Recent Trend is Discouraging—38,300 Deaths in 2015.



Sources: National Safety Council, Insurance Information Institute.

Does Spending on Vehicles Affect Claim Severity?

Annual Change, 2005 through 2016



As the Economy Has Gotten Better, People Are Spending More on Vehicles – When Those Cars Wreck, Severity Increases.

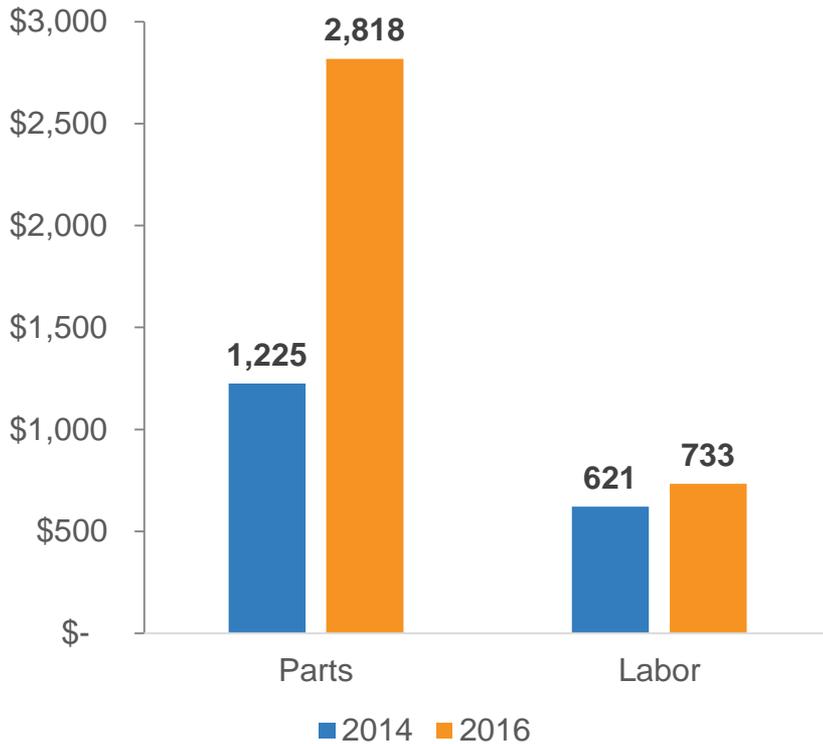


Source: Fast Track Monitoring System; Bureau of Labor Statistics Consumer Expenditure Survey (vehicle purchases – net outlay)
Insurance Information Institute.

Fixing a Bumper

... On an Entry-Level Luxury Car (~\$35K)

2014 Cost vs. 2016 Cost



What Has Changed?

	2014	2016
Grille: Distance Sensor	\$0	\$2,818
Headlamp Assembly	394	918
Mechanical Labor	0	108

Fewer Accidents, Higher Costs

- ▲ Parts: 130% Higher
- ▲ Labor: 18% Higher
- ▲ Total cost: \$1,705 higher



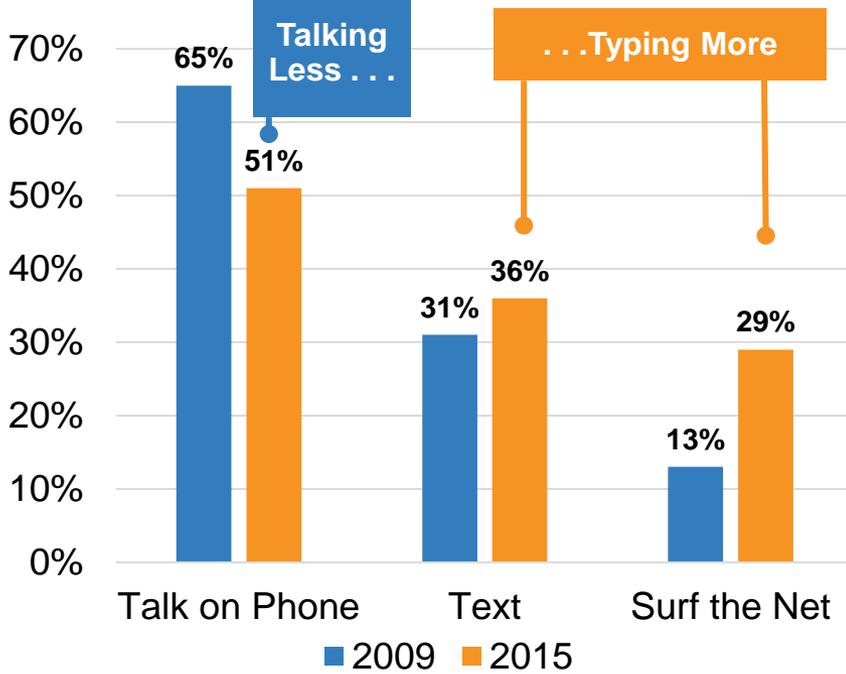
2016 vehicle has LED headlights and adaptive cruise control.
SOURCE: Liberty Mutual Insurance.

What About Distractions?

It's A Problem. Is It Growing?

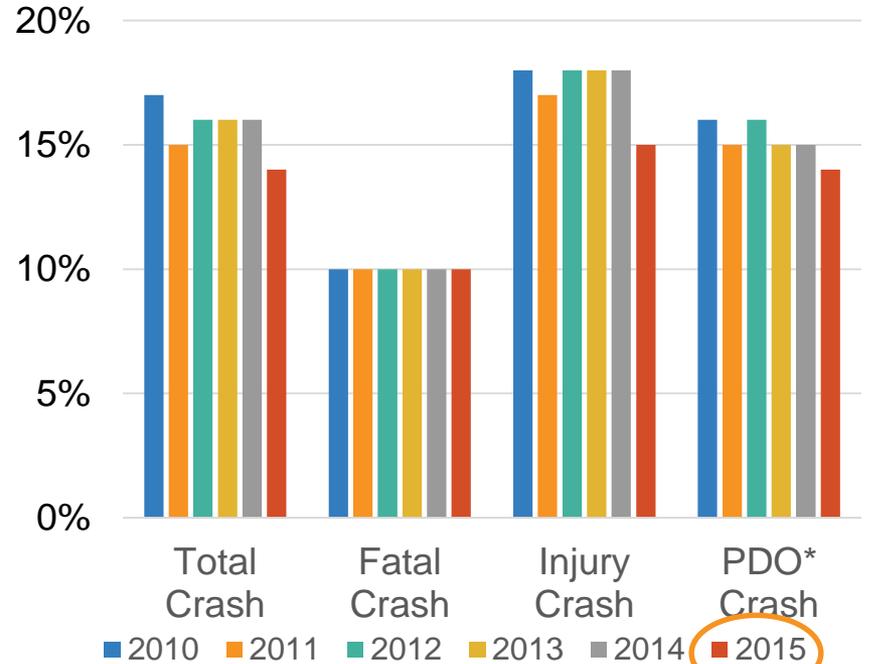
What We Do Behind The Wheel

Percentage of Drivers Who . . .



But Impact Is Not Clear

Percentage of Crashes Involving Distraction



Most Recent Year



* Property Damage Only.

SOURCES: State Farm, National Highway Transportation Safety Administration (distraction.gov)

Disruption and Insurance

Challenges and Opportunities
All Along the Value Chain

Insurance Disruption Technology / Digitalization

Fundamental Changes

- ▲ Future of Auto
- ▲ Future of Reduced Risk Pools

Opportunities

- ▲ Automation / Efficiencies
- ▲ New Product Lines (Cyber)
- ▲ Emerging Technologies

Challenges

- ▲ Consumer Trust – Demonstrate the Societal Value
- ▲ Big Data vs. Individual Privacy

New Market Entrants “Uber of Insurance”?

- ▲ Lemonade
 - ◆ Offered in CA, IL, NJ, NY

Regulatory Opportunities/Threats

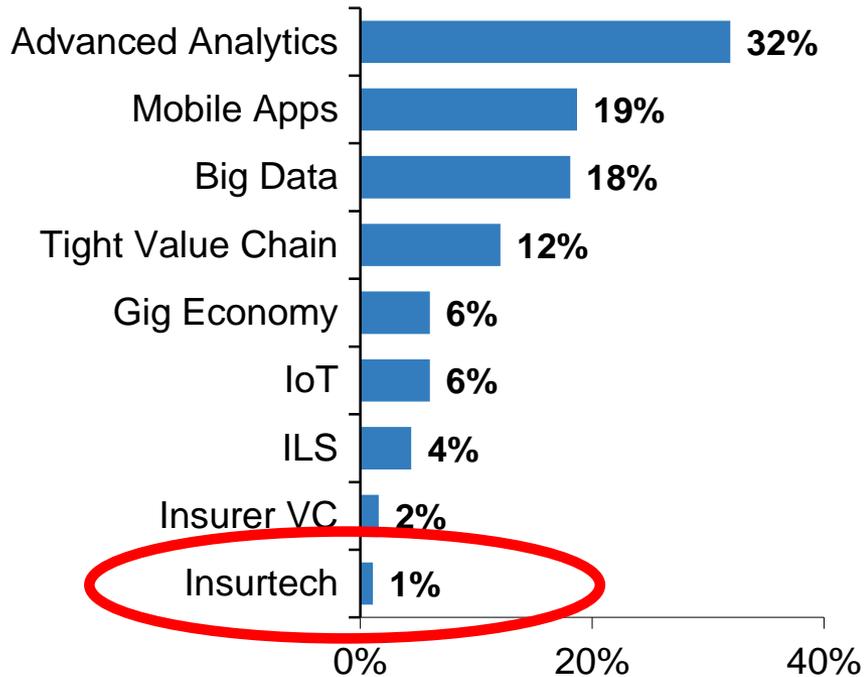
- ▲ Barrier to Entry
- ▲ US vs. Other Less Regulated Regions
- ▲ Trust Pull-back – the Sandbox Approach



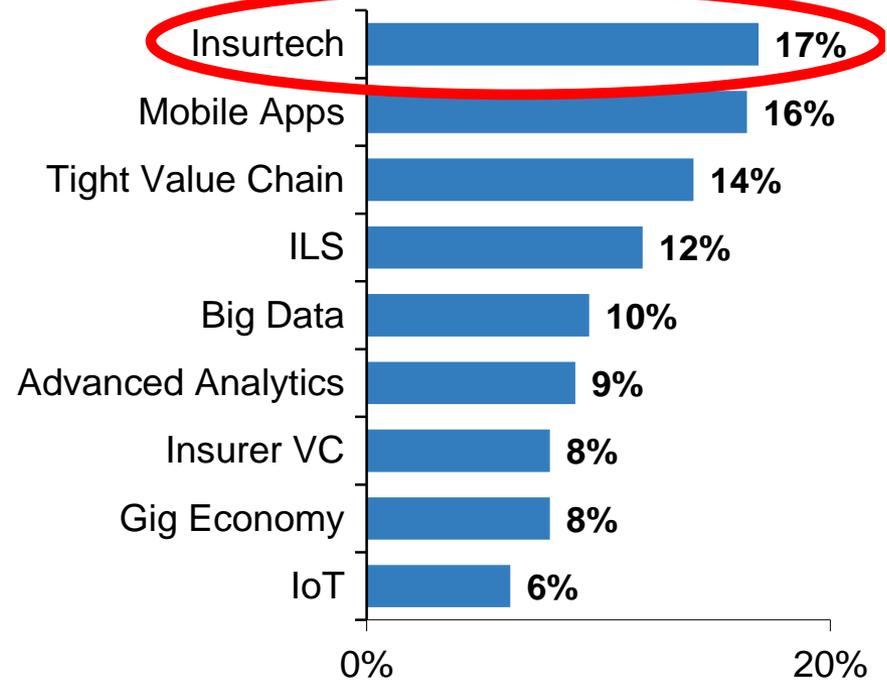
Greatest Threats, Opportunities

Whither Silicon Valley?

Greatest Opportunity



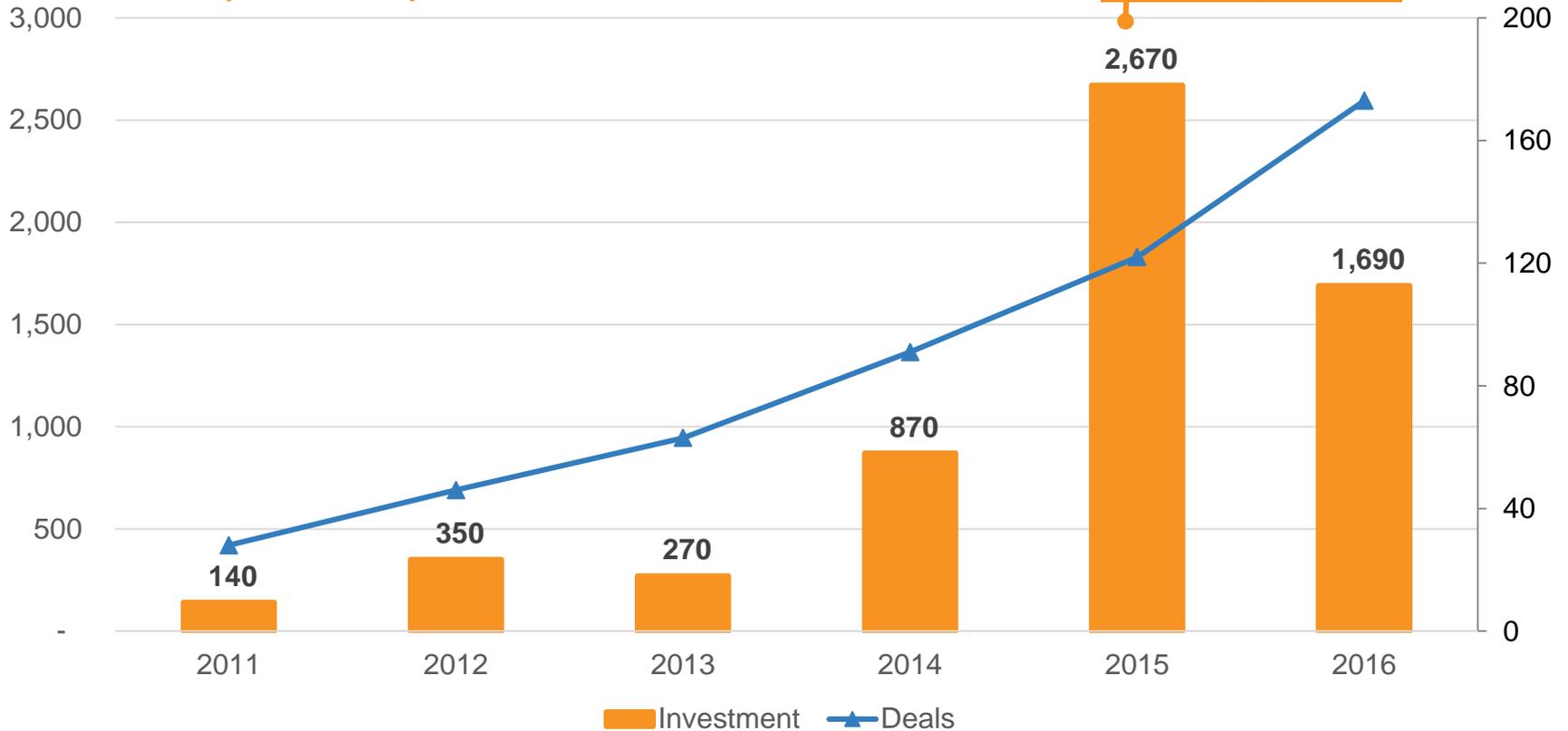
Greatest Threat



SOURCE: A.M. Best Winter 2016-17 Insurance Industry Survey.

Insurance Technology Financing – Change Is Coming

Investment (\$ Millions)



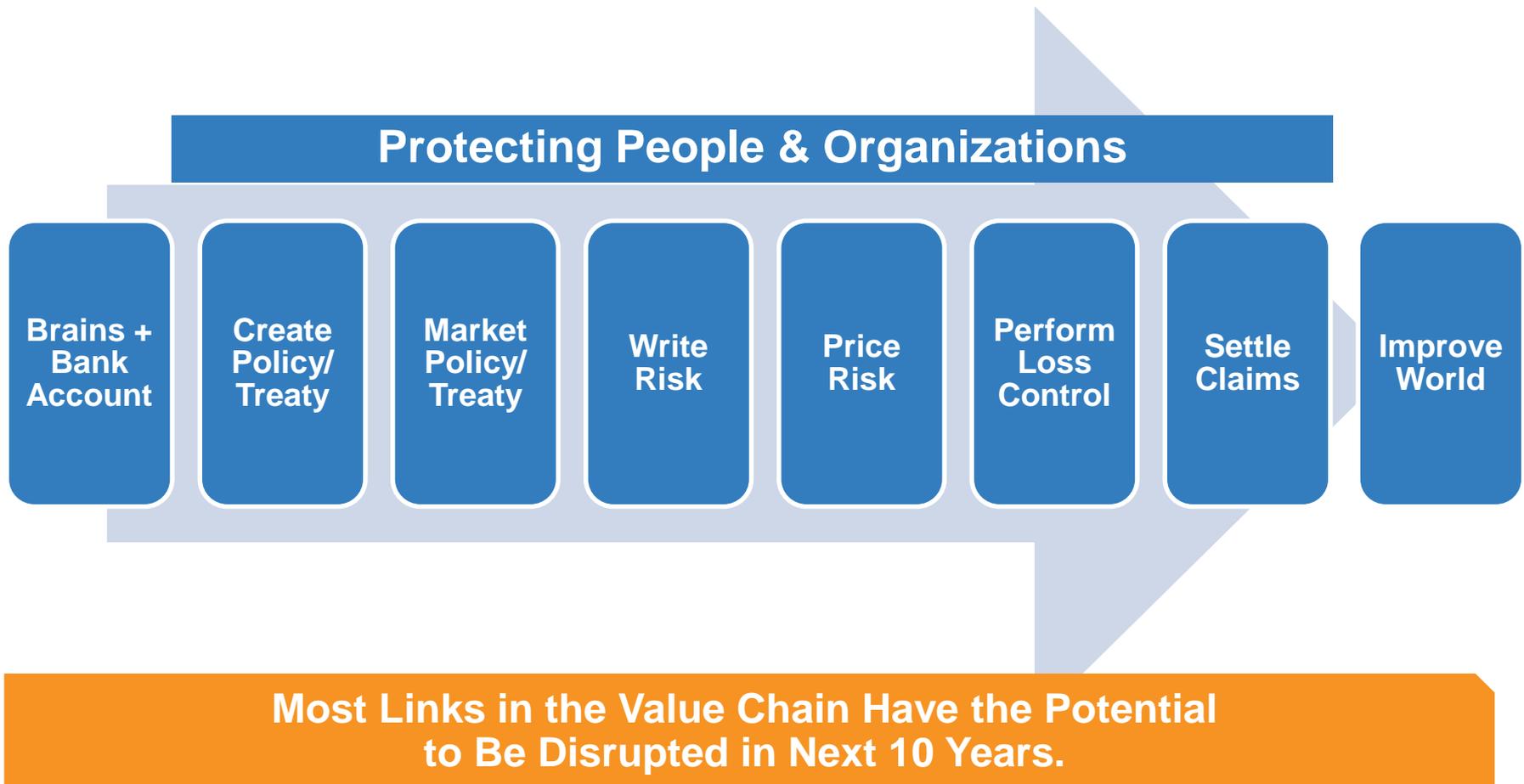
Investment In Insurance Tech Is Rising. Number of Deals Set A Record Last Year.



SOURCES: CB Insights, Insurance Information Institute.

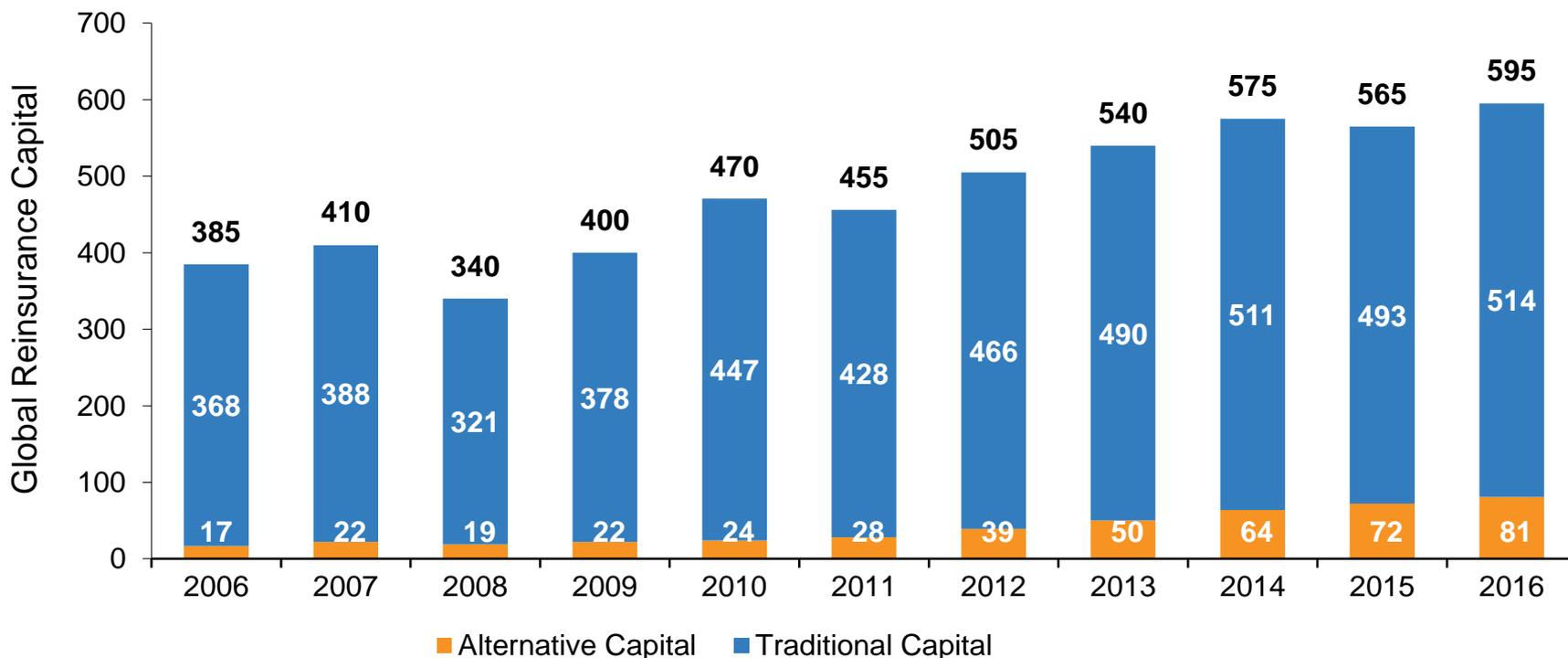
The (Re)Insurance Value Chain

Where Could Disruption Lie?



Alternative Capital Potentially Disrupting the Bank Account

(Billions of USD)



Alternative capacity has grown 350% since 2006. It has more than tripled in the past six years.



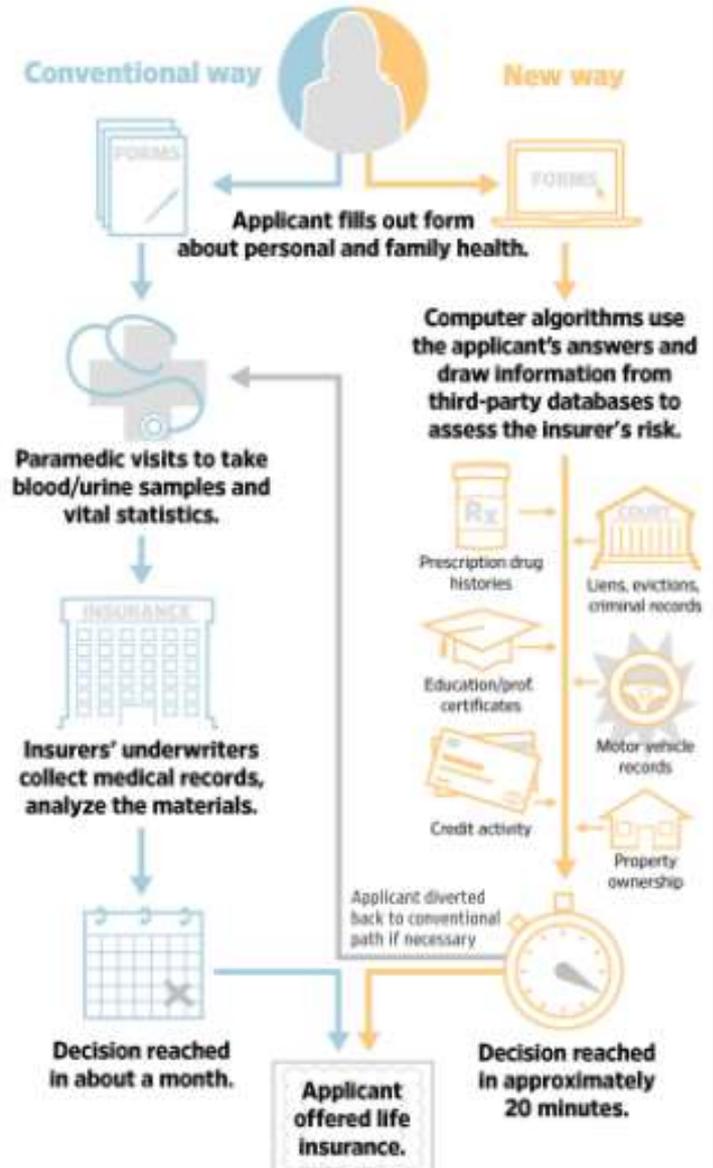
Source: Aon Benfield Analytics; Insurance Information Institute.

Life Underwriting

- ▲ Lower underwriting costs
- ▲ 20 minutes vs. 1 month
- ▲ Mainly for under 45s
- ▲ Policies at \$1 million limit
- ▲ Motor Vehicle Records – Surprisingly important!

Deal Terms

Life insurers traditionally have required extensive medical analysis of buyers of large policies to figure out the risk they pose. Now, they're going digital. Here are some differences that may apply.



Sources: Industry analysts; Insurance companies

Hanna Sender/THE WALL STREET JOURNAL.

One-Day Auto Insurance



こんな心配ありませんか？

子どもにクルマを買すとき
家族とドライブするとき
休日に買いたかったクルマを借りたとき

そんなときは
運転するときにだけ加入できる便利で安心な
1日500円からの自動車保険



スマートフォンアプリで保険料を計算し、運転するときにだけ加入できる便利で安心な1日500円からの自動車保険。自動車保険料を安く取りたい場合は、運転するときにだけ加入する保険料を安くする。



Premium is added on the monthly mobile phone bill

Read
QR Code
(agency code embedded)

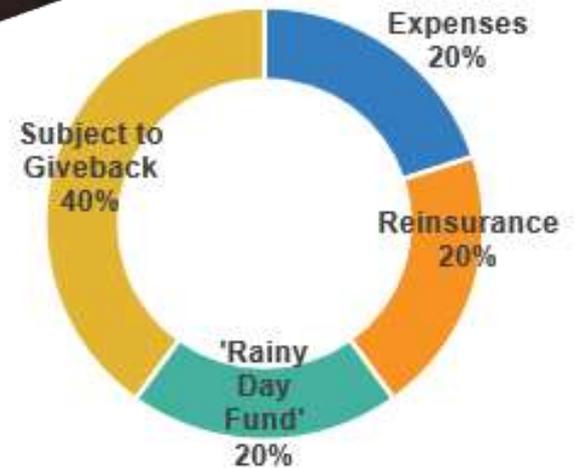
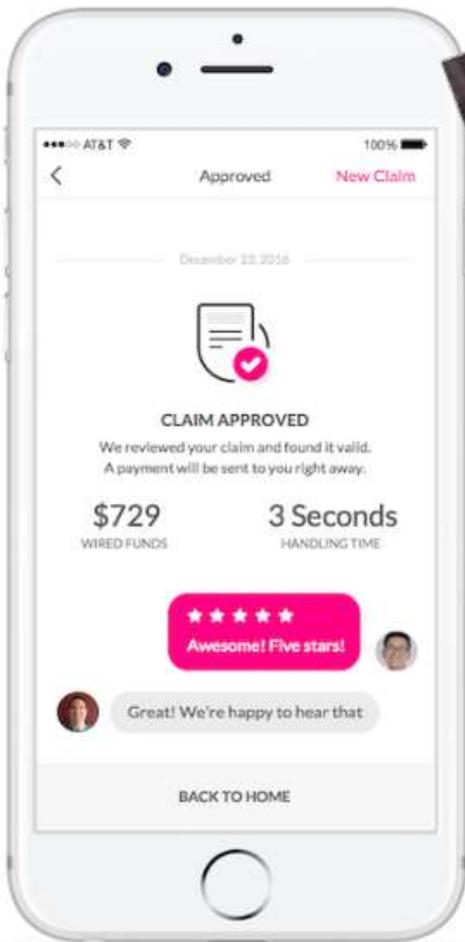
- Register
- Name
 - Birthday
 - Address
 - e-mail address
 - Driver's License No.
 - License expiry date

- Input
- License plate No.
 - Date of driving

Claims Disruptor

Artificial Intelligence + Behavioral Economics

Lemonade



Peer-to-Peer (P2P) Insurance

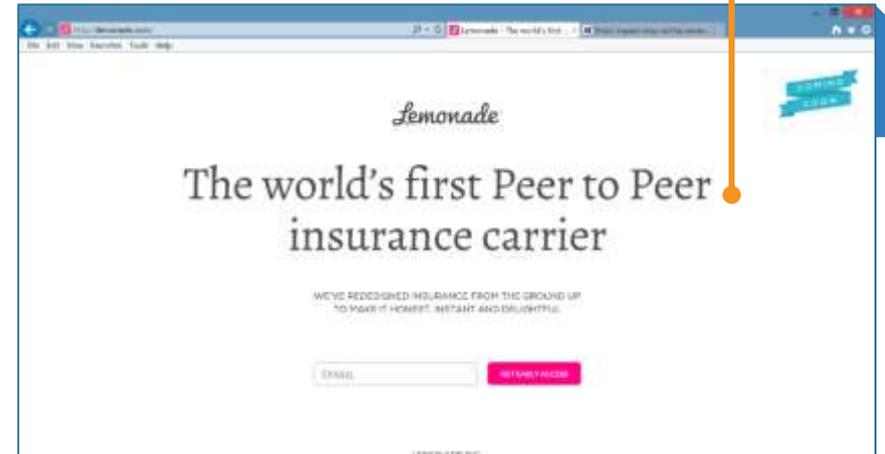
Taking on the Entire Value Chain

A Typical P2P Model

- ▲ Resembles Mutuals/Reciprocals
- ▲ People Join Small Group of Friends to Prefund Deductible or Bear Other Small Risk.
- ▲ Leftover Deductible \$\$ Rolled Forward.
- ▲ May Deter Fraud – You Wouldn't Cheat Your Friends!

Source: "UberX-ing Insurance : Is Peer-to-Peer Insurance Viable?", presentation by Jay Sarzen, Aite Group at Drinker Biddle Insurance Conference, June 21, 2016.

Lemonade's Model:
Unknown



CEO Daniel Schreiber

- ▲ Our Chief Behavioral Officer, Professor Dan Ariely, says that "If you tried to create a system to bring out the worst in humans, it would look a lot like the insurance of today."

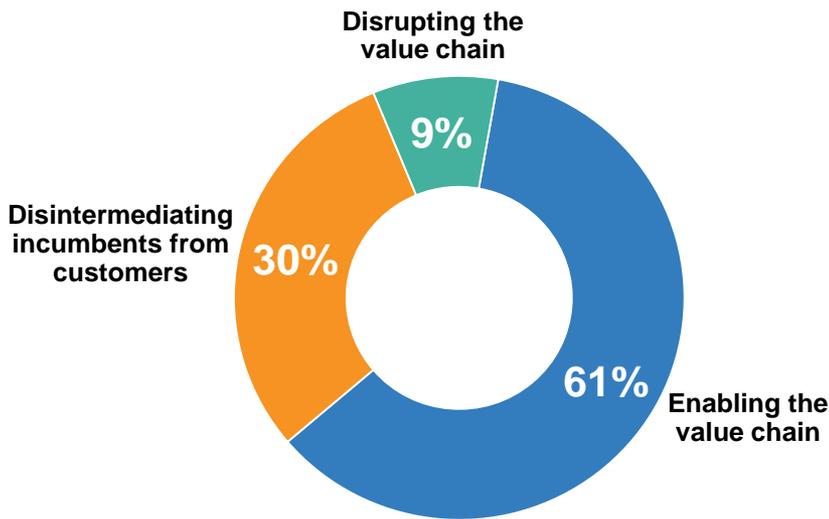


InsurTech Disruption: Threat or Opportunity?

Automation efficiencies can have powerful impact on industry

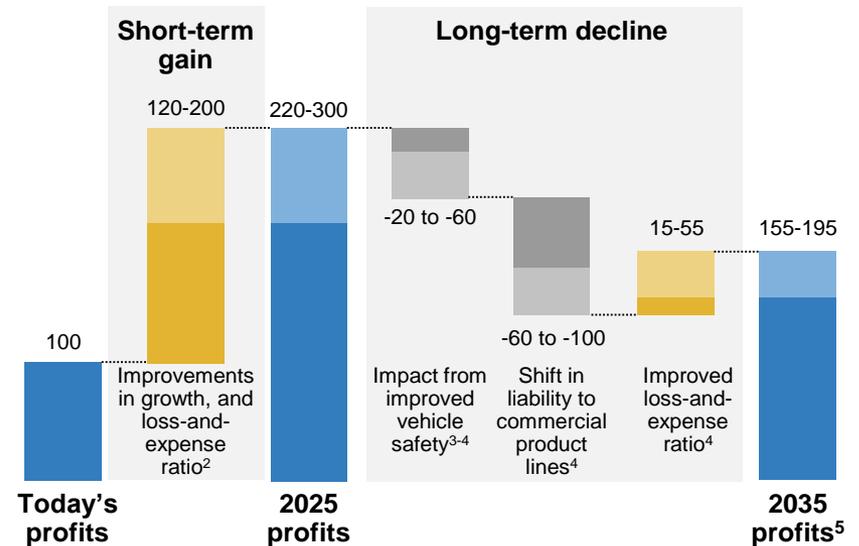
Focus of InsurTech in the insurance value chain¹, %

Only nine percent of InsurTechs aim to oust incumbents



Future profits as a % of today's profits

Digitizing the business, auto insurance example



¹Insurtechs are insurance businesses, usually startups, that use technologically innovative apps, processes, or business models; 2016 data based on some 500 commercially well-known cases. ²Assumes a 3 to 5 percentage point improvement in loss ratio, a 2 to 4 percentage point improvement in operating expenses, and a 6 to 8 percentage point improvement in direct sales conversions. ³Includes growth in investment income as well as premiums. Investment income modeled as a flat percentage of premium in each year. ⁴Includes impact of semi- and fully autonomous vehicles. ⁵Assumes a 25 percent reduction in premiums as a result of telematics and sensors and a 50 percent risk transfer to commercial product liability.

Source: Panorama by McKinsey; Digital and Auto Insurers Value at Stake Analysis, McKinsey, 2016.



InsurTech Startups Have Broad Range...BUT...

Risk	Health
Insurance Marketplace	
 	    
Digital Brokers	
 	 
Peer to Peer	Health Navigators
   	  
Micro-duration Coverage	  
Telematics	    



Source: Aon.

...With Broad Incumbent Support







\$205M







\$57M







\$37M









\$21M







\$4M



Note: Total funding.
Source: Aon.

What Makes an Actuary?

It's More Than Math

Actuary Saves Kitties!!!

Advises No-Kill Shelter



How to Win at Jeopardy!



Summary

- ▲ The political scene is defined by divisiveness, and this makes it difficult to achieve progress.
- ▲ Disruption provides opportunities and challenges throughout the value chain
- ▲ Personal auto costs are rising (both frequency and severity), linked closely to the improving economy.
- ▲ Actuaries have value far beyond the numbers.





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

Read our auto [White Paper](#) on Rising Personal Auto Costs at
www.iii.org