Swiss Re

Casualty Actuarial Society Fall Seminar Meeting

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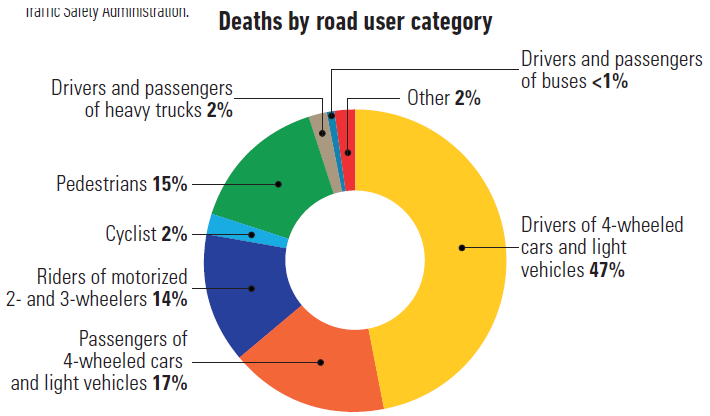
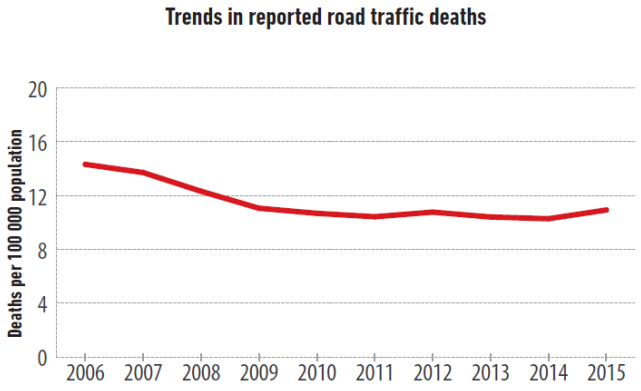
“Road Traffic crashes are not “accidents”. They are completely Preventable.” *- WHO Global Status Report on Road Safety 2018*

- Road traffic injury is the leading cause of death for people between 5-29 years old and the 8th leading cause of death globally.
- 105 Countries representing 5.3 B people have seat-belt laws aligning with WHO best practice
- 33 Countries representing 652 M people have child restraint laws that align with WHO best practice
- 145 Countries have a national mobile phone law that prohibits use of hand held phones while driving
- Increased progress requires increased political will and commitment, and better data capture

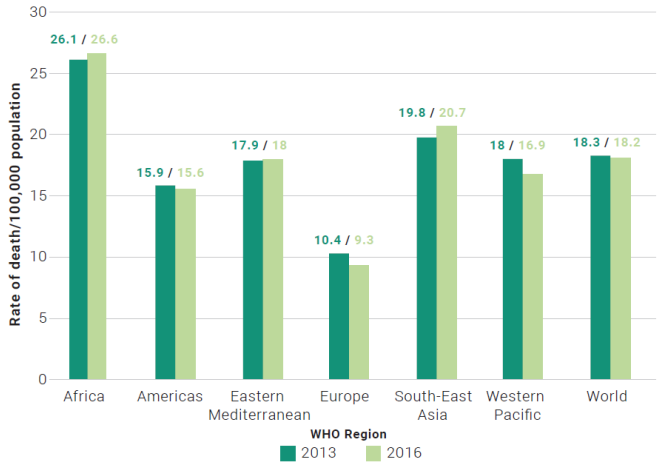


Source: 2015, Fatality Analysis Reporting System (FARS) Annual Report File



Source: 2006-2010 Fatality Analysis Reporting System (FARS) Annual Final File, and 2015 Fatality Analysis Reporting System (FARS) Annual Report File

Figure 5: Rates of road traffic death per 100,000 population by WHO regions: 2013, 2016



State of the Market

General Observations
Commercial Auto

- Elevated loss & comb ratios due to loss trend and adverse development ($1.8B in 2018)
- CAL 2018 Combined ratio @ 110%, 8th year in a row above 100%
- Rising rates; high single/ double digit (but not enough)
- Withdrawal of capacity AND new entrants, e.g. arbitrage via London Market
- Plaintiff attorney interest in 8 figure court awards for severe cases, a new litigation revenue stream
- Slow uptake of technology e.g. cameras in cabs means slower impact on loss reduction
- TNC growth, Uber and Lyft IPOs in 2019

General Observations
Personal Auto

- Return to Underwriting profit in 2018 after 10 consecutive years of CR > 100%
- Expect continued improvement in 2019, projected combined ratio @ ~98%
- Price increases slowing due to competition, dominant players looking to recapture lost market share
- Vehicle sales slowing leading to lower exposures
- Improving frequency, severity remains a concern
- Non-standard market showing improvement, but hazard profile remains high (10 year average CR @ 106%)

Key Trends for Casualty

Macro drivers	Impact	Comments
Reserve releases		Reserve releases are fading; adverse development for GL, Umbrella, ? PL, ? WC
Rate trends		Motor rates increasing/ leveling off?, WC rates decreasing, and Liability rates up/ momentum increasing
Strong Economy 		Low unemployment, wage increases, strong consumer confidence, more miles driven, etc, however weakening momentum
Yield curve 		Long tail lines extremely sensitive to investment income so yield curve movements impact profitability, new fed rate cuts and front end yield curve inversion
Health care costs 		As health care costs rise, claim costs increase, some PPACA provisions help keep medical inflation relatively low (than historical peaks)
Emerging Risks		Marijuana, Autonomous Vehicles, 3D Printing, etc
Loss Trends		Increasing severity due to property events, non-correlated, non-systemic large losses, deep pockets, motor impact on umbrella

Current Auto Trends

	Environmental Factors	Impact	Comments
	Gas prices flatish	→	Significant drop in gas prices in 2015-2016. Increasing since, but remain low.
	Unemployment	→	Unemployment continues to be at a multi-decade low. This is large driver of miles driven and road congestion.
	Trucking industry stress	↘	Continued rise in frequency and severity of trucking crashes, exacerbated by ongoing and projected employment shortage and increased demand (as seen in tonnage transported, up 6.6% in 2018. This is the largest increase since 1998. 2017 had a 3.8% increase). The number of fatality accidents is still lower than the high in 2005.
	Distracted Driving	↓	Distracted driving continues to be a concern. Currently, reliable statistics are not available. 2015 fatalities are estimated around 3.5k (drunk driving is still the leading cause of fatalities with 10k or 30% of fatalities). Rising exposure from marijuana use.
	Slow down of new vehicle sales	→	Car and light truck sales: 2016 (18.2M), 2017 (17.2M), 2018 (17.3M). More cars and trucks on the road with distractions, also increased crash avoidance technology. Move from passenger cars to larger/heavier SUVs and trucks. Not sure the impact.
	Rate Changes	↑	Personal lines carriers have been quicker to react to the 15&16 frequency increase than commercial. Rate increases expected in 2019, but more of a maintenance issue for personal and catch up rates remain for commercial.
	Advanced technology	?	Should lead to fewer accidents but when will it offset other trends? At same time leading to increase in repair costs and shift in mix of injuries. (potential to be more costly?)

Shifting Public Perceptions and Jury Impact

Public perception

Public's Negative Views of Institutions Not Limited to Government

Effect on way things are going in the country …	Positive %	Negative %	Other/ DK %
Banks & financial inst.	22	69	10=100
Congress	24	65	12=100
Federal government	25	65	9=100
Large corporations	25	64	12=100
National news media	31	57	12=100
Federal agencies & depts.	31	54	16=100
Entertainment industry	33	51	16=100
Labor unions	32	49	18=100
Obama administration	45	45	10=100
Colleges & universities	61	26	13=100
Churches & religious orgs.	63	22	15=100
Small businesses	71	19	10=100
Technology companies	68	18	14=100

Pew Research Center March 11-21 Q18a-n. Figures may not add to 100% because of rounding.

Jury Impact

45% of jurors admit sympathy affects their attitudes about a lawsuit

42% of jurors would **decide a case based** not on the law, but **on what they believe is fair**

35% of jurors would tack on lawyer fees to a damages award, **even if the judge specifically tells them not to**

72% said if a case makes it to the courtroom, they **assume it has some merit**

Comments and actions

- A portion of the US population feel large corporations are responsible for "crushing" of small businesses & farms, damage to the environment/global warming, loss of US jobs due to outsourcing overseas and downsizing, elimination of pensions & healthcare benefits, cost of healthcare increases, foreign wars, unfair tax burdens on working class due to tax breaks/taking advantage of loopholes
- There are very public experiences which lead to this sentiment e.g. Enron/Worldcom, CEO compensation, Airline travel, Utility caused wildfires, Opioid crisis, Enormous jumps in prescription medication cost, extensive lobbying of federal government
- All of this plays out in juries and appears to be driving a material effect on loss costs
- Action: The (re)insurance market needs to understand and quantify this affect on loss costs and be proactive in managing portfolios

Millennial Generation
Key Characteristics and Jury Influence

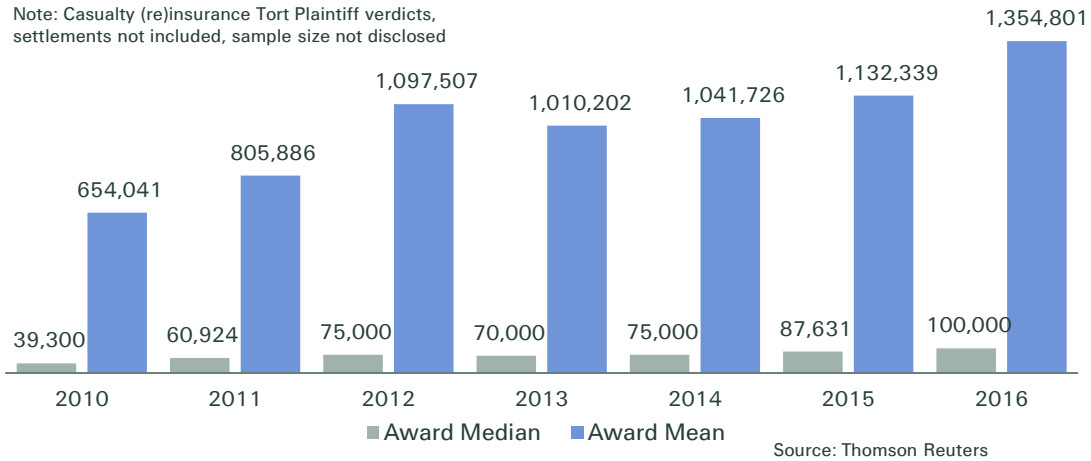
- Who are Millennials? Born after 1980, ages 19-35; largest living generation and make up 1/3 of jurors
  - Best educated generation (% with 4 yr. degrees)
  - Heavy exposure to technology, shorter attention spans
  - Safety conscious, 80% expect corporations to take every possible safety measure regardless of cost
  - Peculiar combination of optimism for the future and extreme distrust for others
- 44% would award more money if the defendant is a large corporation (vs. 25%)
- 69% would award medical bills even if the defendant is not at fault (vs. 48%)
- 31% would do internet research even if the judge forbids it (vs. 13%)
- 26% believe filing a lawsuit is too hard (vs. 18%)
- would give largest awards to a single parent or baby plaintiffs, or against a Fortune 500 defendant

Sources: 2014 Pew Research Center Study, "Millennials in Adulthood.", "Millennial Jurors Will Affect Product Liability Trials, Bloomberg Law

Millennials, Juries and Social Justice

Jury Verdicts ($) Increasing, Millennial Influence emerging

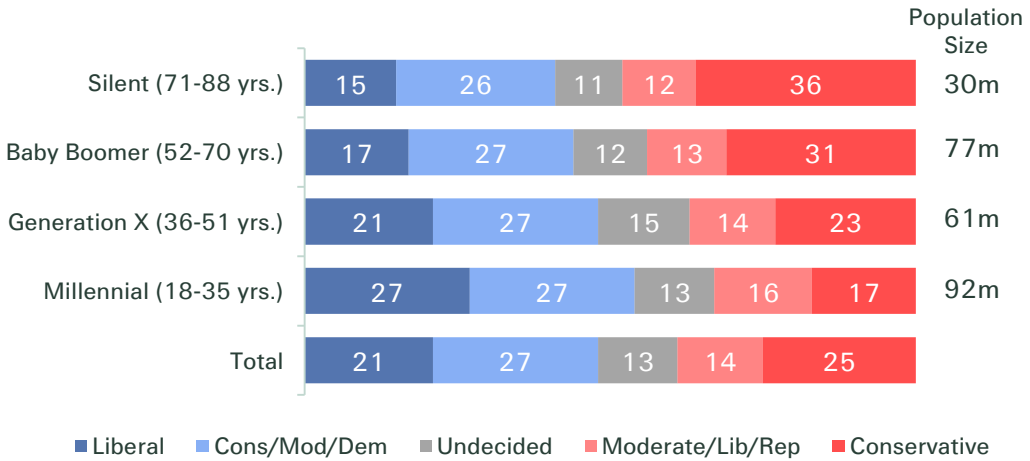
Note: Casualty (re)insurance Tort Plaintiff verdicts, settlements not included, sample size not disclosed



Source: Thomson Reuters

Sharp differences in partisan, ideological identification between younger and older generations

% of each generation who are...



Note: Undecided not shown

Source: Pew Research Center, US Census Bureau

Observations

Key Findings from Mock Trials and Surrogate Jurors:

- Study by Clarity Partners Trial Consultation (published in Claims and Litigation Management "CLM")
- Millennials (born 1981-1999) are the largest generation ever = 92m
- Millennials are significantly more likely to award higher damages in almost any type of case
- Median damage award of non-Millennials was $3.5M
- Median damage award of Millennials was $6M
- Top verdicts are in Product Liability ($4.8m avg.), Medical Malpractice ($3.1m avg.) and Business Negligence ($1.9m avg.)

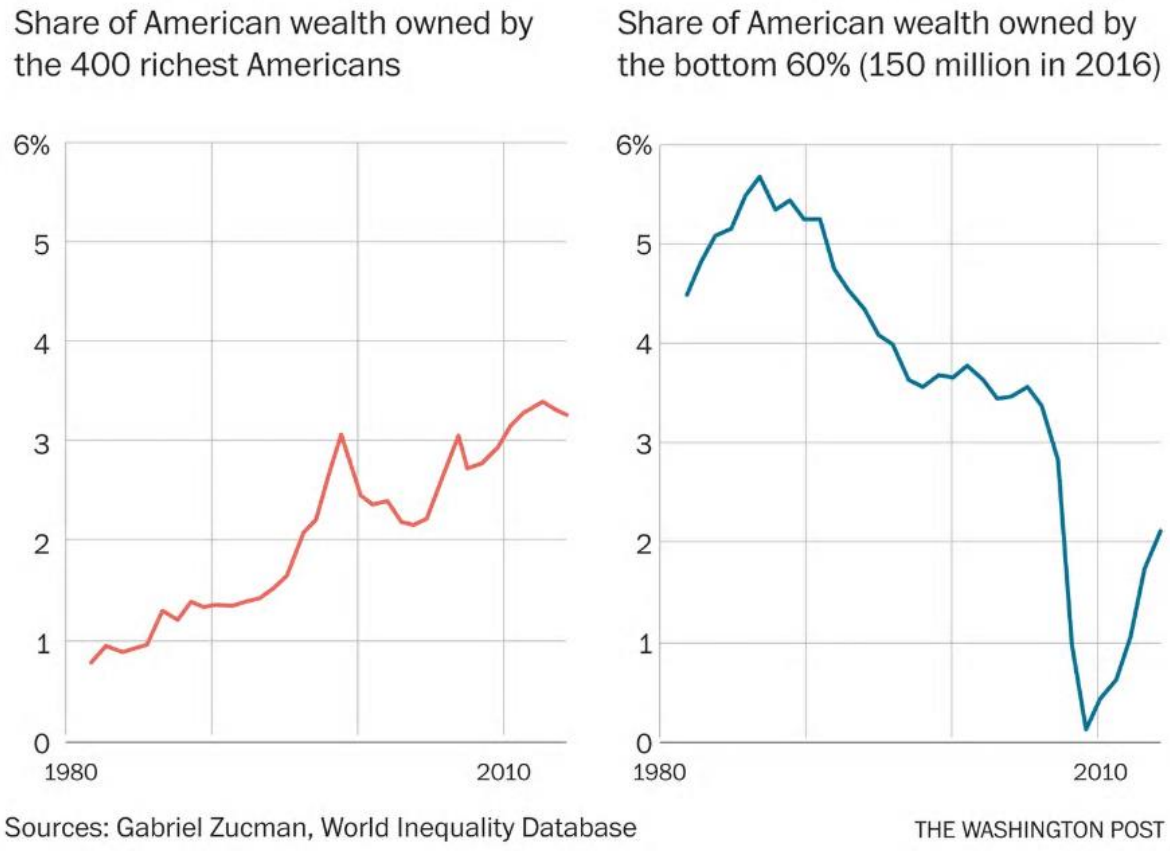
Greater spread in minority Millennials:

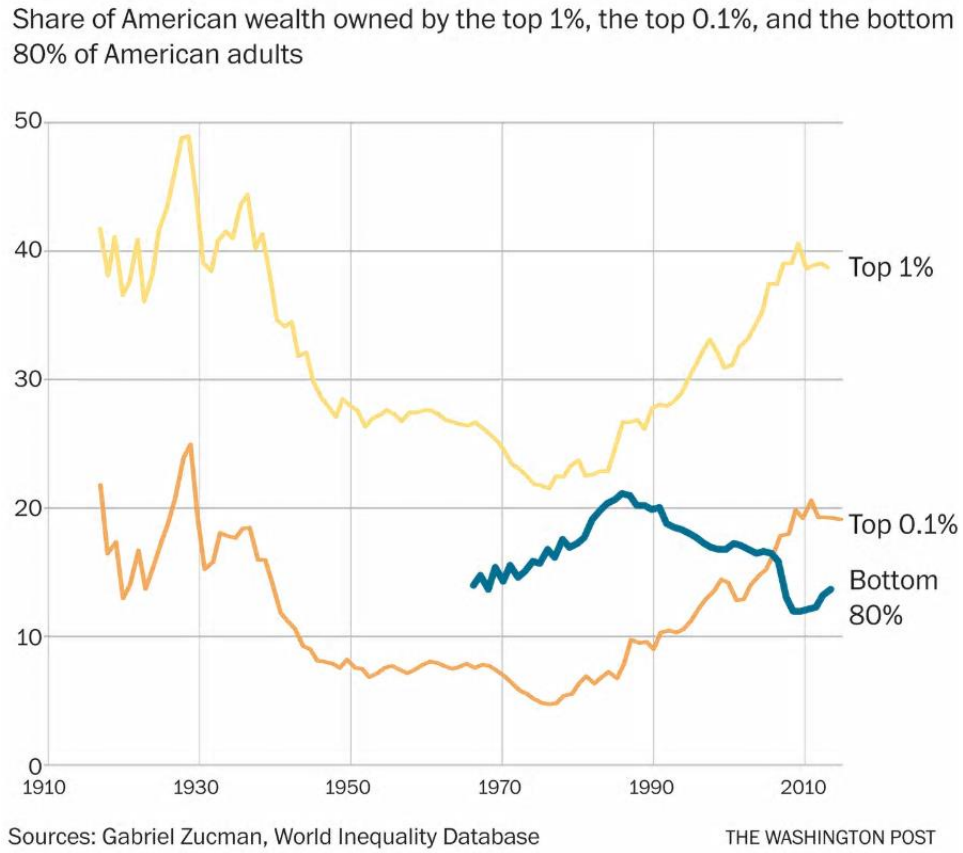
- Median damage award of minority Millennials was $9.7 million vs $6 million for minority non-Millennials
- Median damage award of white Millennials was $4.02 million vs $3 million for white non-Millennials

Millennials are generally more liberal:

- Their highest vocation is Social Justice
- College students are the most politically progressive generation in U.S. history
- Deeply concerned about social and economic inequality

Wealth concentration returning to ‘levels last seen during the Roaring Twenties’ Top 0.1% now own more than the bottom 80%





- The 400 richest Americans — the top 0.00025 percent of the population — have tripled their share of the nation’s wealth since the early 1980s

2019- Example Noteworthy settlements and verdicts

- $117m settlement: J&J/ Ethicon pay for deceptive marketing for surgical mesh (41 states + D.C.)
- $260m settlement: Opioid case 2 OH counties vs. McKesson, Cardinal, Amerisource, Teva
- $65m settlement: Class action for 100k au pairs vs. 15 firms for keeping wages low

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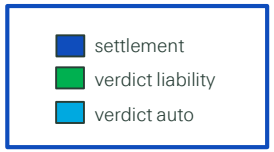
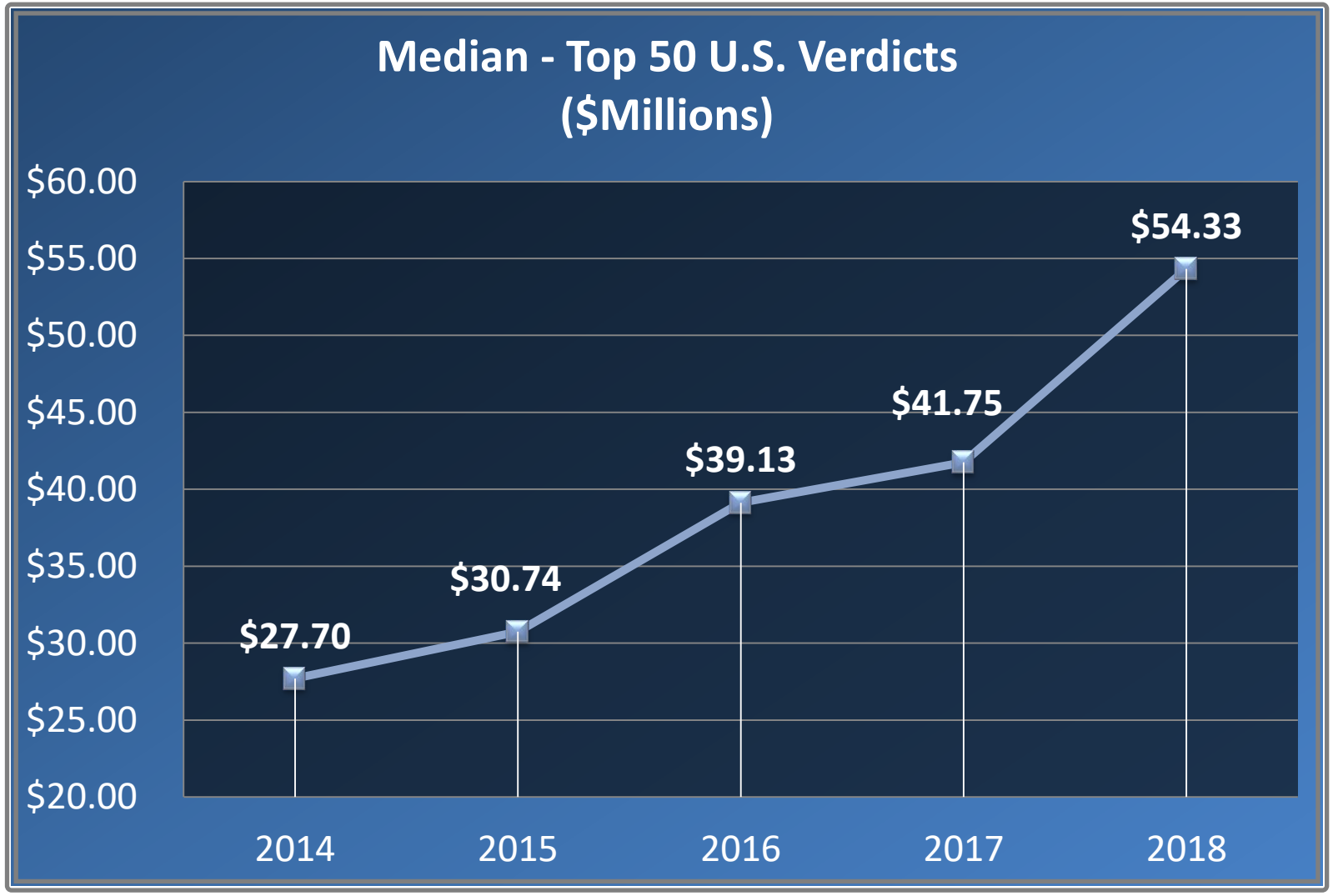
- $8B verdict: Punitive damages for Risperdal causing breast growth in a man. (1 plaintiff, 13k lawsuits)
- $37m verdict: NJ Talc compensatory (4 pers. Mesothelioma), 2017 MO $110m verdict overturned
- $2B verdict: CA verdict against AG Bayer/ Roundup (2 pers), reduced to $17m comp./ 69m punitive
- $81m verdict: GA verdict to Navy veteran shot in Kroeger parking lot (1 plaintiff, paraplegic)

- $280m verdict: Largest award ever vs. trucking co., jury took only 45 mins deliberation. (5 killed)
- $39m verdict: NJ motorcyclist hit in parking lot by drag racer. Property owner share = $20m
- $52m verdict: Against driver and temp work company in Denver, CO. Driver hit bicyclist. (paraplegic)



Claims Trend: Top 50 U.S. Verdicts 2014-2018



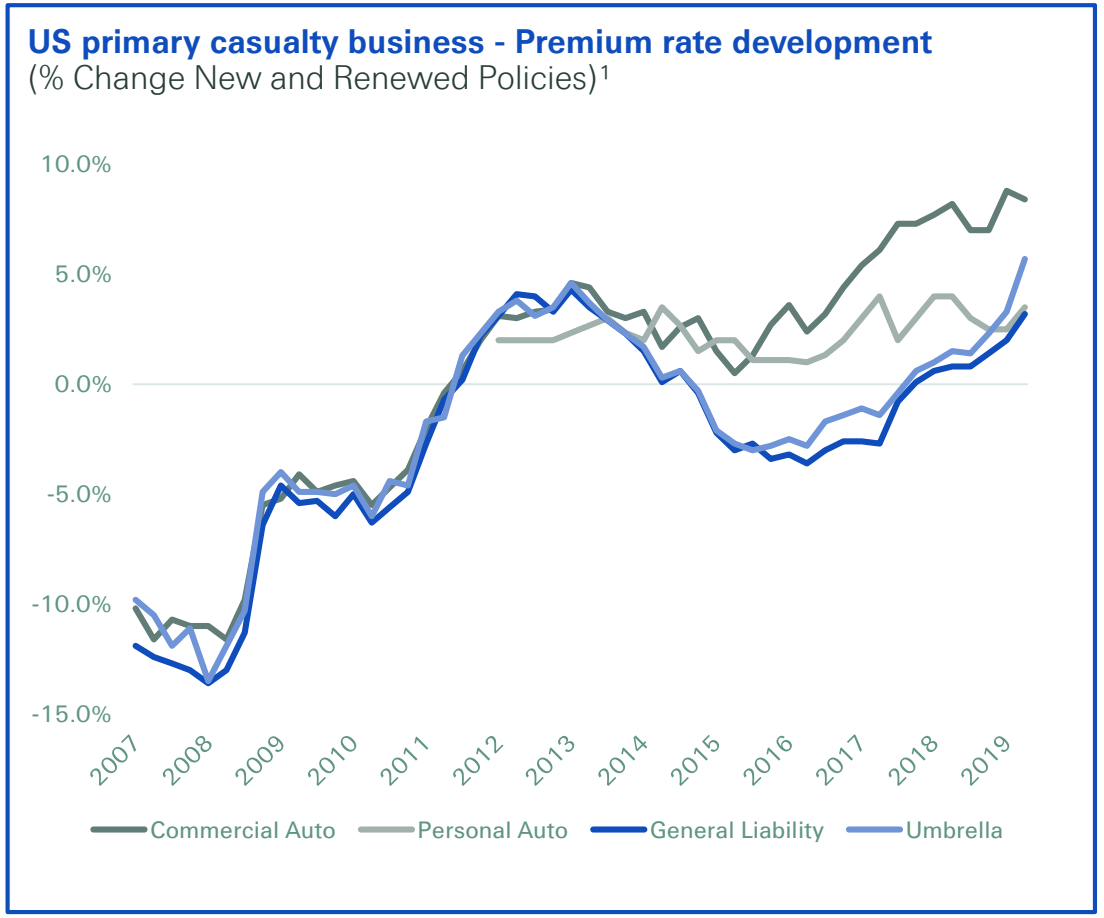
Comments

- Median of the top 50 single plaintiff bodily injury award has almost doubled from 2014 – 2018 due to increasing frequency of severe large losses
- Increase in "pile on litigation", once recalls/investigations are announced, more suits filed by municipalities, investors, consumers, etc.
- Juries desensitized to the value of a dollar and highly publicized mega verdicts are the new normal
- Millennials continue to take leadership roles in jury deliberations (studies indicate median awards from millennial juries are double prior historical awards)
- Juries discount facts on liability apportionment and are sympathetic to severely injured plaintiffs
- Plaintiff's bar very coordinated, share strategies rapidly & efficiently, and spending more on legal advertising and marketing than ever before
- Reptile theory & Kardashian effect continue unabated
- Health Hazard & Medical device verdicts continue to drive the increasing awards
- The anti-corporation movement gained momentum after such scandals as Enron and the financial crisis of 2007-2008, juries take this bias to the courtroom
- Litigation funding has quadrupled between 2013 – 2016 increasing the volume of legal actions

Data compiled by Shaub, Ahmuty, Citrin & Spratt

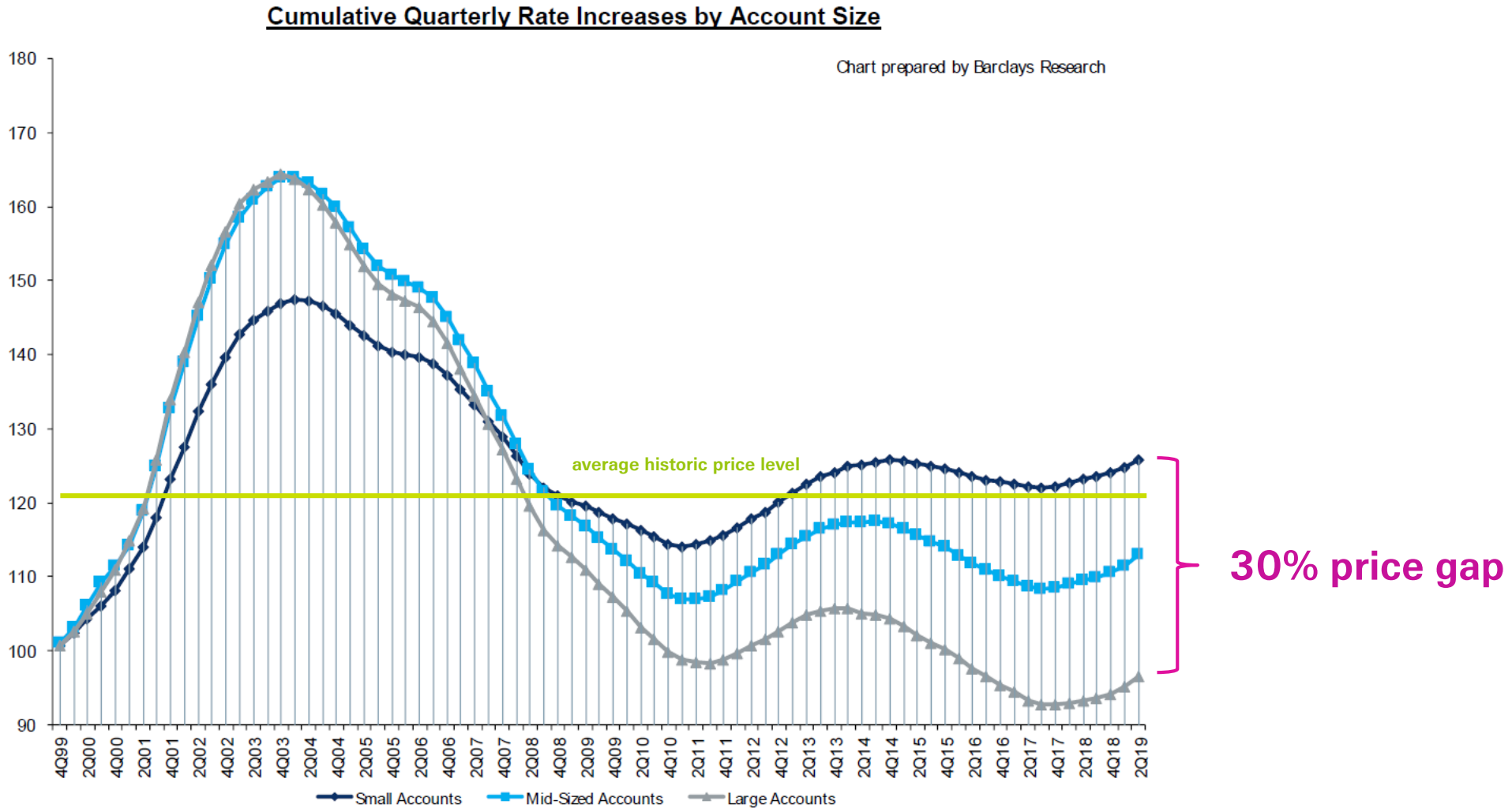
Rate trends: Hope on the horizon...but will it be enough? Quantifying the impact of new trends in real time is very difficult.

- Commercial Auto has shown strong rate increases to reflect claims inflation in recent years.
- General Liability and Umbrella price levels have bottomed out and show increases since 2018.
- Personal Auto Price increases down due to competitive pressure
- Social inflation, anti-corporate sentiment and lag of underlying severe motor losses hitting umbrella layers driving need for rate.



[1] Premium Rate data by The Council of Insurance Agents & Brokers as of Q2 2019.

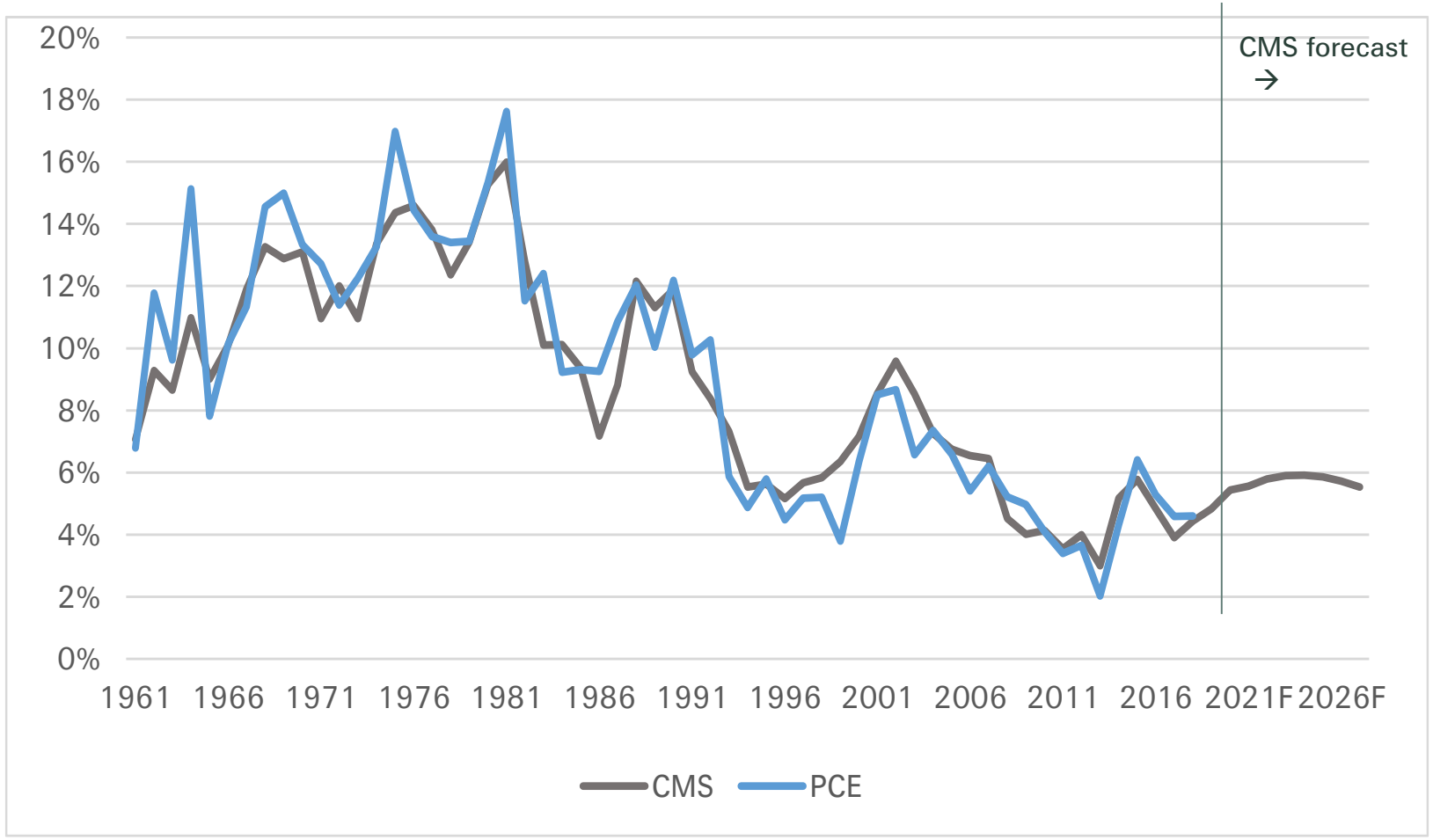
P&C Rates for US market large and mid-size accounts still below year 2000 level
The most exposed accounts are the least adequately priced



Source: The Council of Insurance Agents & Brokers. Chart prepared by Barclays Research.

Health spending is a key indicator of Medical Cost Inflation
Medical Inflation drives Bodily Injury loss severity

YoY Growth in Healthcare Spending



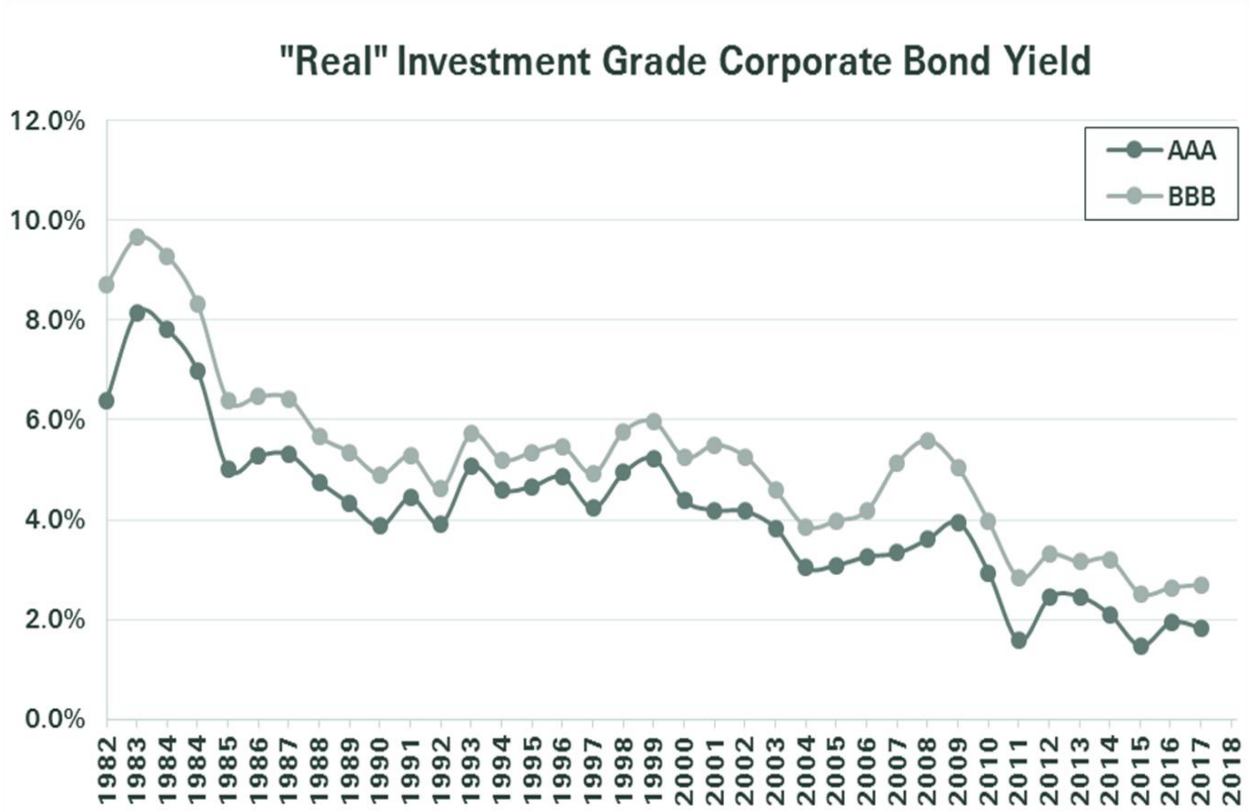
Comments & Actions

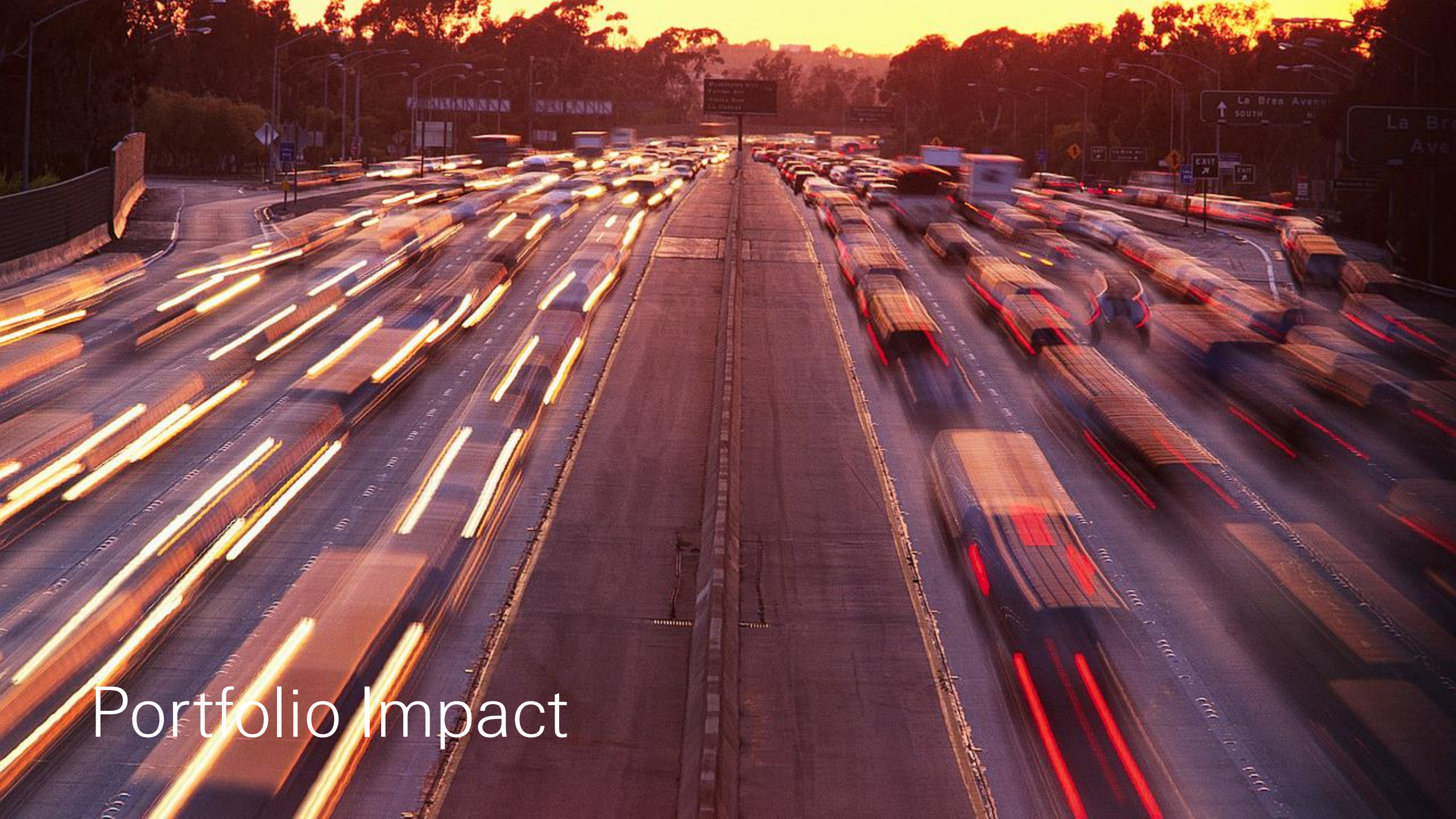
- PCE = Nominal dollar expenditures (price x quantity) on healthcare as measured by the Personal Consumption Expenditures component of Gross Domestic Product
- CMS = Nominal dollar expenditures on healthcare as measured by the Centers for Medicare and Medicaid Services
- The correlation between the two annual yoy series is 95.3% (1961-2018); on average, historic data shows health expenditure growth for PCE yoy is 0.2% higher than CMS estimates.
- The average CMS projection through 2027 is 5.6%.
- KEY TAKEAWAY
  - After a decade (2001-2011) of declining Health spending levels, yoy growth has increased, partly driven by coverage expansion under ACA after 2014, BUT
  - the projection of 5.6% is lower than the long term average
- ACTION:
  - Continue to closely monitor and reflect current best estimates in parameters

Source: Datastream and CMS

Yield Curve Headwinds

- Yield curve 101 (from Wikipedia/Yahoo Finance): “a curve showing several yields or interest rates across different contract lengths (2 month, 2 year, 20 year, etc. ...) for a similar debt contract. The curve shows the relation between the (level of the) interest rate (or cost of borrowing) and the time to maturity, known as the "term", of the debt for a given borrower in a given currency.”
- Yield curve is used to derive the discount factors we use in our “costing.”
- Yield curve has a significant impact on expected profitability for casualty business – especially where we do not expect a strong underwriting profit.
- Discount factors have increased significantly since late 2018 (meaning less discount is applied to expected losses) and there could be more to come.
- Impact is really felt on longer tail lines like umbrella/excess liability and workers’ compensation.
- These headwinds along with the other macro trends create a need for us to get better terms.

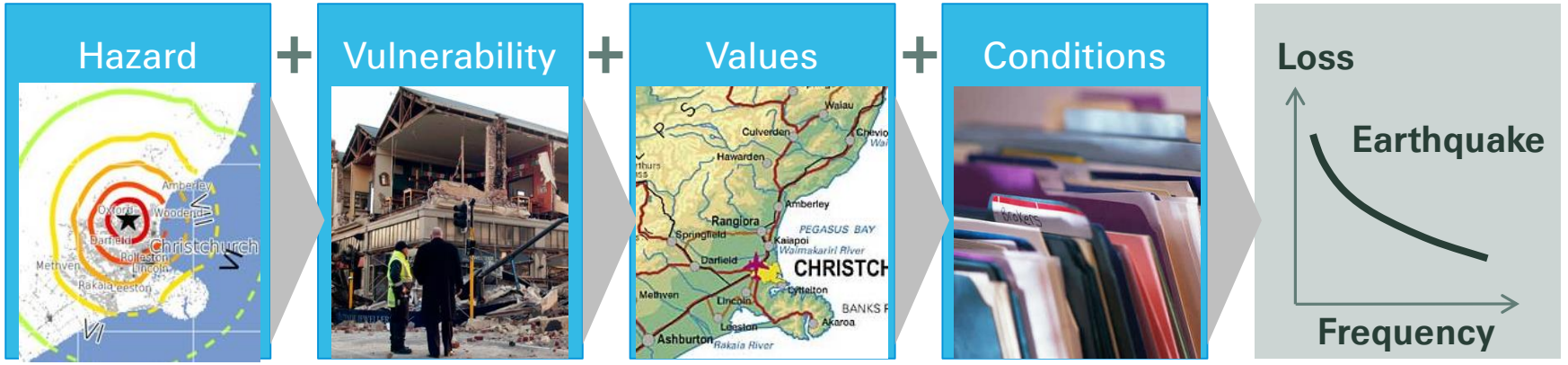




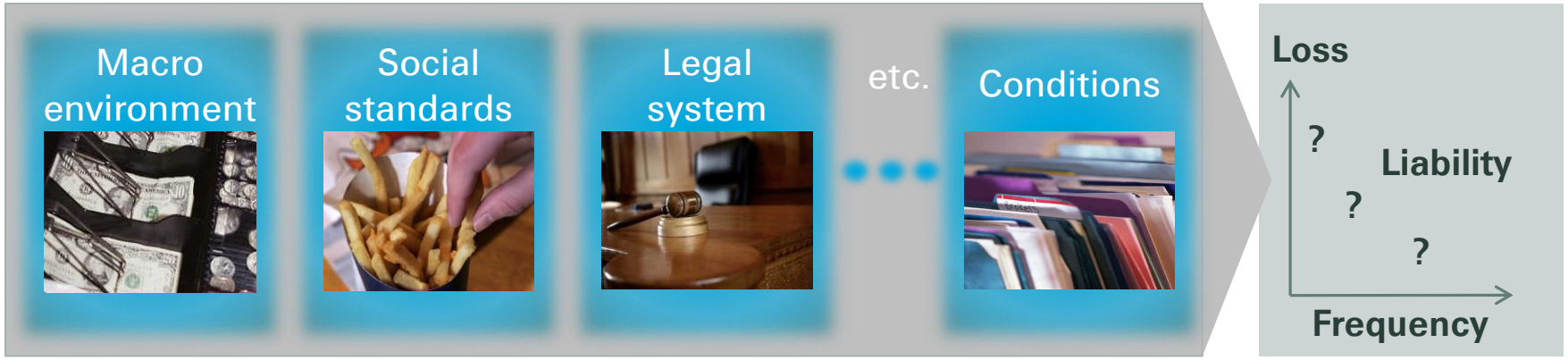
Portfolio Impact

What drives the Risk Landscape?
Property = Natural Sciences, Casualty = Social Sciences

Property event = **laws of physics**



Liability event = **dynamics of life and society**



Commercial Auto Liability
Industry Schedule P Booked Loss Ratios

		Schedule P Ultimate Loss Ratio Selections - Commercial Auto Liability										
Accident Year	Earned Premium (000s)	As of 12	As of 24	As of 36	As of 48	As of 60	As of 72	As of 84	As of 96	As of 108	As of 120	(Adv)/Fav from 12 to Current
1996	12,038,793	76.7%	77.3%	79.1%	80.1%	80.6%	80.9%	80.9%	80.7%	80.8%	80.9%	-4.2%
1997	12,188,203	77.8%	78.3%	79.9%	81.8%	83.5%	83.9%	83.9%	83.7%	83.8%	83.7%	-5.9%
1998	12,093,751	77.0%	78.7%	81.8%	85.2%	86.4%	86.8%	86.5%	86.4%	86.1%	86.1%	-9.1%
1999	11,992,467	78.5%	83.7%	88.0%	91.3%	92.6%	92.5%	92.8%	92.6%	92.4%	92.4%	-13.9%
2000	12,870,674	77.3%	80.8%	84.2%	86.6%	88.0%	88.9%	88.6%	88.5%	88.5%	88.4%	-11.1%
2001	13,900,917	73.3%	73.2%	75.7%	77.6%	78.7%	78.2%	77.9%	77.9%	77.6%	77.5%	-4.2%
2002	15,724,627	66.6%	64.9%	66.4%	66.9%	66.9%	66.8%	66.4%	66.3%	66.1%	66.0%	0.6%
2003	17,429,980	63.6%	61.5%	61.1%	61.2%	60.8%	60.5%	60.2%	59.9%	59.8%	59.7%	3.9%
2004	18,711,968	61.5%	58.6%	58.2%	57.9%	57.3%	57.4%	56.9%	56.8%	56.7%	56.7%	4.9%
2005	19,121,586	60.8%	59.1%	58.3%	58.2%	57.8%	57.5%	57.1%	57.0%	56.8%	56.7%	4.1%
2006	19,041,946	61.6%	59.8%	59.2%	58.9%	58.3%	57.8%	57.8%	57.7%	57.5%	57.5%	4.1%
2007	18,899,073	61.9%	61.1%	60.9%	60.7%	60.1%	60.2%	60.0%	59.9%	59.8%	59.7%	2.2%
2008	17,884,154	62.4%	61.4%	61.3%	61.0%	61.0%	60.9%	60.9%	60.8%	60.8%	60.7%	1.7%
2009	16,739,915	62.7%	60.5%	60.4%	60.1%	60.2%	60.0%	59.9%	59.7%	59.7%	59.7%	2.9%
2010	16,033,236	64.7%	64.9%	66.0%	66.8%	67.6%	67.8%	67.5%	67.4%	67.4%		-2.6%
2011	16,090,036	65.6%	68.4%	70.1%	71.1%	72.5%	72.6%	72.5%	72.6%			-7.0%
2012	16,492,593	66.2%	68.2%	69.7%	71.7%	72.6%	72.7%	72.7%				-6.5%
2013	17,640,867	65.6%	67.2%	70.6%	72.8%	73.6%	73.6%					-8.0%
2014	18,758,346	65.2%	68.3%	71.5%	73.2%	74.5%						-9.3%
2015	20,037,529	66.0%	69.8%	72.7%	74.7%							-8.7%
2016	20,685,919	69.1%	72.1%	75.0%								-5.9%
2017	21,713,630	70.5%	72.7%									-2.2%
2018	25,181,024	69.4%										

Key Observations

- Direction of movement from initial booked loss ratio rarely reverses
- Clear indication of future adverse development as early as Year-End 2013
- Simple Chain Ladder indicates continued deterioration in 2015-2018

Commercial Auto Liability – Results
Industry Schedule P

Net Loss+DCCE Ratio

Acc Year	12	24	36	48	60	72	84	96	108	120
2009	62.7%	60.5%	60.4%	60.2%	60.2%	60.0%	60.0%	59.8%	59.7%	59.8%
2010	64.7%	64.9%	66.0%	66.8%	67.6%	67.8%	67.6%	67.5%	67.4%	
2011	65.6%	68.3%	70.1%	71.1%	72.5%	72.6%	72.5%	72.6%		
2012	66.1%	68.2%	69.8%	71.9%	72.7%	72.8%	72.8%			
2013	65.6%	67.2%	70.6%	72.9%	73.7%	73.7%				
2014	65.2%	68.3%	71.5%	73.3%	74.6%					
2015	66.0%	69.9%	72.7%	74.8%						
2016	69.2%	72.2%	75.3%							
2017	70.6%	72.9%								
2018	69.5%									

Deviation from 12 Month Estimate

Acc Year	24	36	48	60	72	84	96	108	120
2009	-2.2%	-2.3%	-2.5%	-2.5%	-2.6%	-2.7%	-2.9%	-2.9%	-2.9%
2010	0.2%	1.3%	2.2%	3.0%	3.2%	2.9%	2.8%	2.7%	
2011	2.7%	4.5%	5.5%	6.9%	7.0%	6.9%	7.0%		
2012	2.1%	3.7%	5.7%	6.6%	6.7%	6.7%			
2013	1.6%	5.0%	7.3%	8.1%	8.1%				
2014	3.2%	6.3%	8.2%	9.4%					
2015	3.8%	6.7%	8.8%						
2016	3.0%	6.0%							
2017	2.3%								

Personal Auto Liability – Results
Industry Schedule P

Net Loss+DCCE Ratio

Acc Year	12	24	36	48	60	72	84	96	108	120
2009	72.9%	71.9%	71.2%	70.7%	70.4%	70.4%	70.5%	70.4%	70.4%	70.4%
2010	73.5%	72.5%	71.6%	71.5%	71.4%	71.4%	71.3%	71.3%	71.2%	
2011	72.1%	70.8%	70.8%	70.7%	70.6%	70.5%	70.5%	70.5%		
2012	71.4%	70.8%	70.6%	70.6%	70.5%	70.4%	70.4%			
2013	72.4%	72.3%	72.4%	72.5%	72.3%	72.1%				
2014	65.8%	66.1%	66.4%	66.4%	66.2%					
2015	72.8%	74.5%	75.0%	75.1%						
2016	75.1%	75.7%	76.0%							
2017	72.3%	71.7%								
2018	69.4%									

Deviation from 12 Month Estimate

Acc Year	24	36	48	60	72	84	96	108	120
2009	-1.0%	-1.7%	-2.2%	-2.5%	-2.5%	-2.4%	-2.5%	-2.5%	-2.5%
2010	-1.0%	-1.8%	-1.9%	-2.1%	-2.1%	-2.2%	-2.2%	-2.2%	
2011	-1.3%	-1.3%	-1.4%	-1.5%	-1.6%	-1.5%	-1.6%		
2012	-0.7%	-0.8%	-0.9%	-1.0%	-1.0%	-1.1%			
2013	-0.1%	0.0%	0.0%	-0.2%	-0.3%				
2014	0.3%	0.6%	0.6%	0.4%					
2015	1.7%	2.2%	2.2%						
2016	0.7%	0.9%							
2017	-0.6%								

What about Umbrella?

Industry Perspective: Ultimate Loss Ratios – Booked vs Projected
Other Liability – Liability Excluding Professional Liability

2009 -18 Excludes Amtrust		Schedule P Ultimate Loss Ratio Selections - Other Liabiltiy (Occ) and Products Liability											Actuarial Projections			
Accident Year	Earned Premium (000s)	As of 12	As of 24	As of 36	As of 48	As of 60	As of 72	As of 84	As of 96	As of 108	As of 120	(Adv)/Fav from 12 to Current	Paid Method	Reported Method	Selected	Carried - Selected
1996	13,424,585	80.0%	79.1%	79.5%	78.2%	77.7%	76.8%	76.9%	76.6%	78.7%	79.5%	0.4%				
1997	14,097,476	80.6%	81.1%	82.0%	80.8%	82.2%	84.1%	83.9%	85.8%	87.1%	88.1%	-7.5%				
1998	14,814,053	81.8%	82.2%	84.7%	87.6%	90.9%	91.0%	95.0%	97.6%	98.4%	98.7%	-16.9%				
1999	13,876,031	78.8%	80.5%	82.5%	89.1%	92.4%	96.4%	101.0%	102.8%	103.1%	106.6%	-27.7%				
2000	13,725,077	78.5%	78.8%	83.4%	89.5%	95.0%	97.5%	98.2%	99.6%	100.8%	101.6%	-23.1%				
2001	14,733,035	87.9%	88.7%	90.0%	93.4%	98.1%	100.2%	102.0%	102.4%	103.4%	104.4%	-16.5%				
2002	18,815,344	74.2%	73.3%	75.3%	78.3%	79.8%	80.7%	81.2%	81.9%	82.6%	83.2%	-9.0%				
2003	24,697,190	69.2%	65.7%	65.4%	64.5%	63.2%	63.0%	62.9%	63.2%	63.0%	62.7%	6.5%				
2004	28,787,460	67.8%	60.3%	57.2%	55.2%	54.2%	54.1%	53.5%	53.1%	52.7%	52.8%	15.0%				
2005	29,055,114	64.6%	60.5%	58.2%	55.3%	54.6%	53.6%	52.8%	52.4%	52.3%	52.7%	11.9%				
2006	31,945,388	63.4%	61.0%	57.8%	56.1%	55.2%	53.6%	52.9%	52.1%	51.7%	51.7%	11.7%				
2007	31,606,966	65.2%	62.7%	60.8%	61.1%	59.5%	59.1%	57.9%	57.1%	56.9%	56.9%	8.3%				
2008	29,239,092	66.7%	65.3%	65.0%	62.5%	61.9%	61.4%	60.5%	59.9%	59.8%	59.8%	6.9%				
2009	27,312,516	68.8%	68.2%	66.4%	63.9%	63.0%	61.9%	61.4%	61.7%	61.0%	61.1%	7.7%	61.1%	61.1%	61.1%	**0.0%**
2010	25,554,042	68.7%	68.6%	68.2%	67.1%	66.5%	66.0%	65.9%	65.1%	65.0%		3.7%	65.0%	64.9%	65.0%	**0.0%**
2011	25,441,288	67.3%	67.2%	67.4%	67.1%	67.1%	67.3%	66.7%	66.6%			0.7%	66.6%	66.5%	66.6%	**0.1%**
2012	26,728,183	65.0%	64.9%	64.1%	65.0%	64.1%	64.3%	63.9%				1.1%	64.7%	63.8%	64.2%	**-0.4%**
2013	28,704,355	62.5%	61.5%	61.9%	62.9%	62.3%	62.3%					0.2%	63.8%	63.3%	63.5%	**-1.2%**
2014	31,007,153	61.9%	61.1%	62.3%	61.3%	61.7%						0.2%	66.1%	64.5%	65.3%	**-3.6%**
2015	31,894,486	61.8%	63.4%	62.5%	63.5%							-1.6%	71.0%	68.7%	69.8%	**-6.4%**
2016	31,708,226	63.9%	64.1%	64.7%								-0.9%	69.6%	67.2%	68.4%	**-3.6%**
2017	32,350,073	63.1%	64.5%									-1.4%	69.5%	70.5%	69.9%	**-5.4%**
2018	38,526,704	64.7%											70.9%	70.8%	70.9%	**-6.2%**

Chain Ladder methods indicate future increases to booked loss ratios to about 70% for each of the past 4 accident years.

Combined OL Occ, Prod CM, Prod Occ *Loss Ratio for Combined Ratio of 100 = 61.6%*

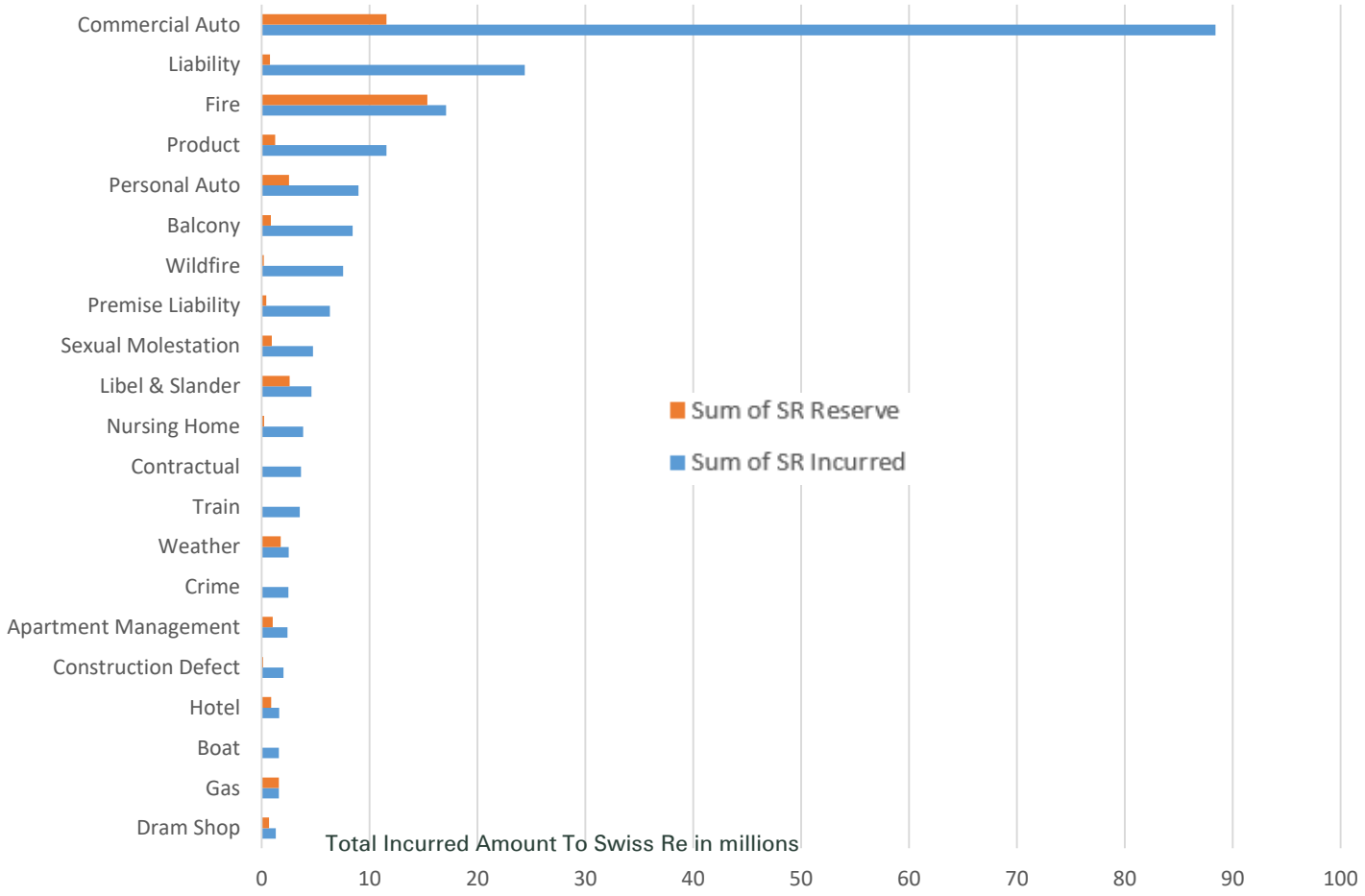
Δ vs 12	< -10.0%	< -7.5%	< -5.0%	< -2.5%		> 2.5%	> 5.0%	> 7.5%	> 10.0%

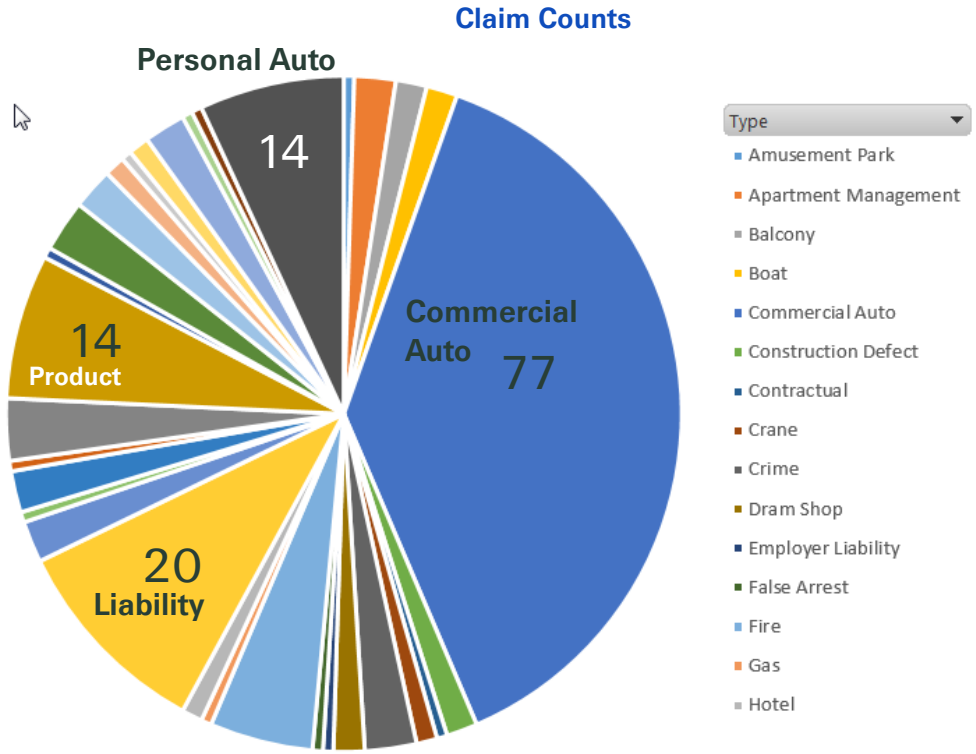
2009-18 Reserve Redundancy/(Deficiency)
= (8,907,729) -11.3%

- Accident Years 2014 through 2018 loss ratios are projected to be inadequate by 3.5 to 6.5 points
- Industry reserve deficiency is estimated to be $8.9B

Motor loss impact on Umbrella is Significant

Top 200 Umbrella XOL losses (2010-2017)

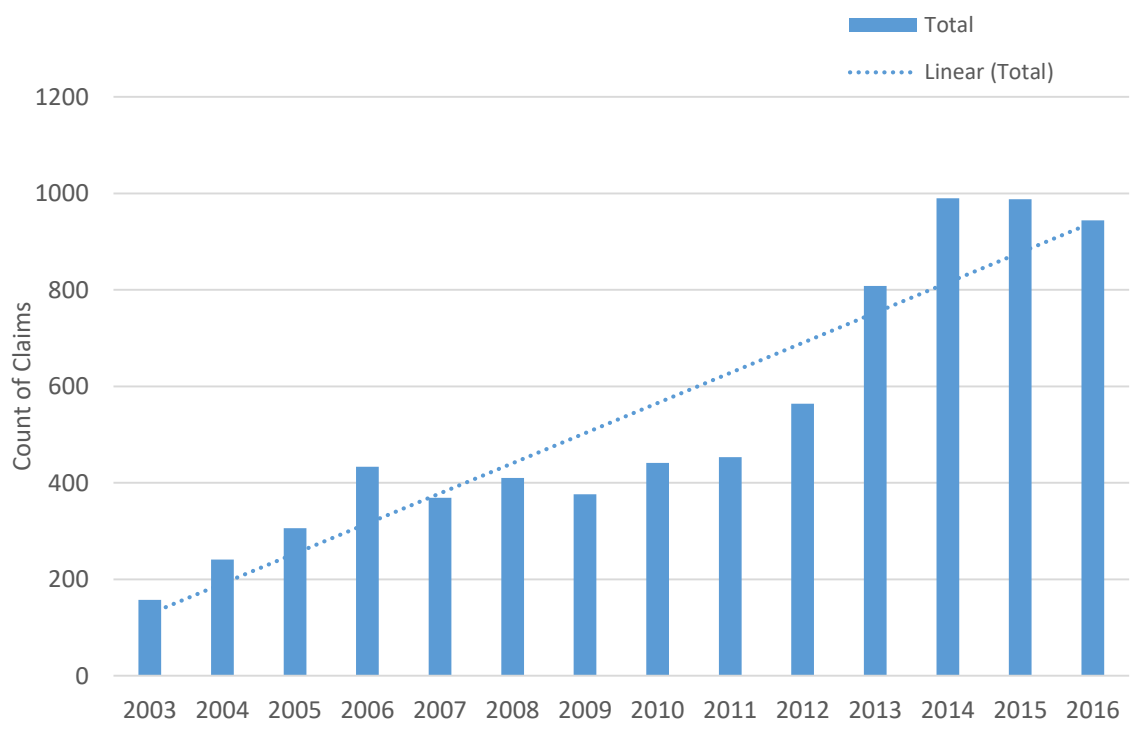




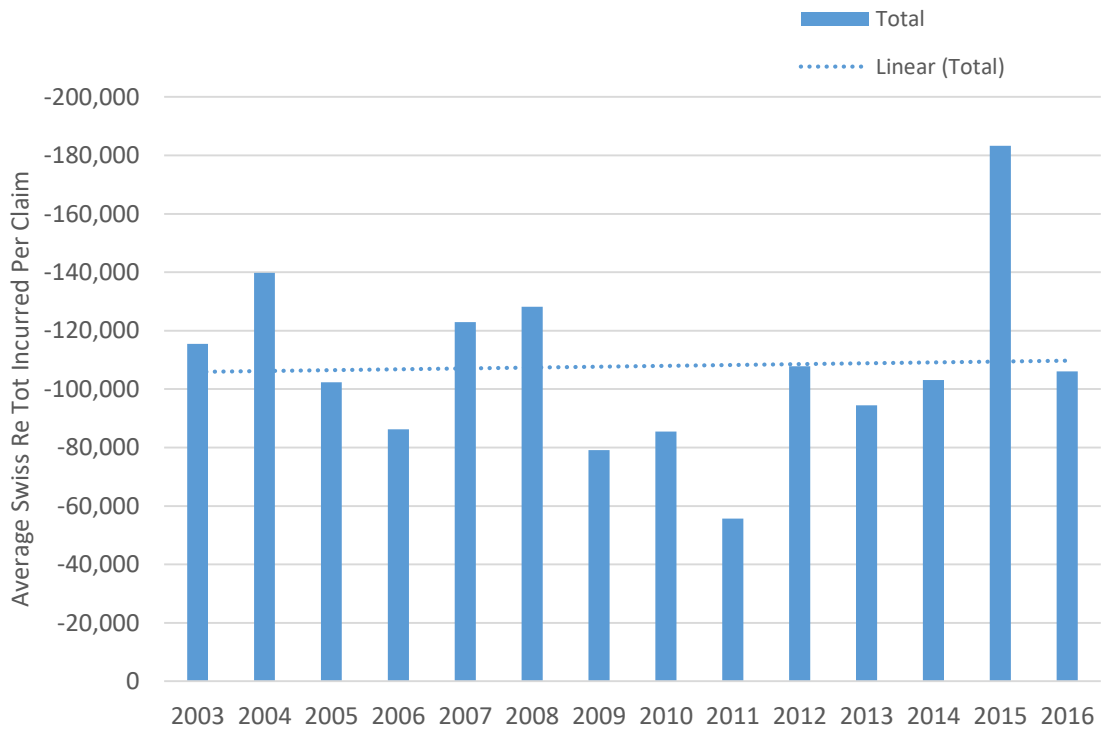
40% (count) and 43% (total incurred) of our largest 200 Umbrella XOL losses are from Commercial Auto

Motor Severity impact on Umbrella is Significant
All XOL Auto Umbrella Claims 2003 – 2016

Auto related Frequency (Claims Per Accident Year)



Auto related Severity (Average Incurred Per Claim)



- A review of all XOL auto umbrella claims reflects increasing claims frequency and variation in severity year over year
- Frequency appears to accelerate post economic recovery (2009 and forward)
- Severity appears to have reverted to levels prior to economic crash (2008 and prior) with a small upward trend
- Follow-up: further analysis, normalize data for shares changes, new treaties, possible costing parameter adjustment

The Road Ahead

Future Auto Trends

	Environmental Factors	Expected Impact	Comments
	Plaintiff attorney focus on motor and nuclear verdicts		Plaintiff's bar focus on traditional bodily injury and motor, de-sensitized and anti-corporate juries, and complexity are driving increase in large losses.
	Distracted Driving		Distracted Driving is expected to continue. However, smartphone penetration has little room to increase and vehicle cockpit innovations continue to be prevalent. This puts frequency at an elevated level, but not necessarily increasing anymore.
	Telematics & usage based insurance		Poised for rapid growth in the U.S.. Continued improvement in cost, convenience, and effectiveness. By 2020, 70% insurers expected to use. Consumer awareness increasing.
	Safety Innovation & Autonomous Vehicles		High autonomous vehicles expected in maybe a decade with full automation much further out. Average age of a vehicle increasing since the 1990's and is 11.7 years in 2017. Therefore, autonomous vehicles will trickle down to the population, delaying full benefits.
	Ride Sharing		Real-time algorithms drive efficiency. Potential for multiple customers to the same destination. Implications huge for less congestion, fewer drunk drivers, and less pollution.
	Soaring repair costs		Safety innovations/ autonomous features are driving up cost to replace or repair vehicle.
	Medical inflation		Innovation and enhanced protocols are driving higher utilization of medical services, treatment costs and life expectancy, increasing severity.
	Marijuana		DC and 10 states legal for recreational use with more to come. (According the Highway Loss Data Institute, the number of vehicle collisions reported to insurance companies in Colorado, Oregon, Nevada and Washington is 6 percent higher than what would have been expected if those states had not made it legal to buy pot)

Underwriting Perspectives
What can Underwriters and Portfolio Managers do in response?

1. Strategy
   - Use of Commercial Auto as a loss leader vs. other lines of business
2. Portfolio Composition
   - Mix of commercial vs. personal (performs better)
   - Mix of Small (perform better) vs. Large fleet business
   - Geographic mix - larger states except OH showing poor profitability
   - Range of hazard classes (balance heavy exposed accounts with lower volatility classes)
3. Costing/ Reserving
   - Loss costs to reflect risk profiles and changing risk and exposure dynamics, more forward looking
   - More detailed rating plans, use of data and predictive analytics, faster recognition of development and reaction
4. Underwriting/ Risk Management/ Claims
   - Invest in risk prevention (e.g. driving behaviors), research and technology (telematics, ADAS, autonomous)
   - Better use of data, targeted Underwriting questions, limits and attachment point adjustments
   - **Better communication about the social purpose of our product and industry**

Swiss Re

Thank you!

Contact us

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Background

- Leads a team of 17 Senior Underwriters and Actuaries responsible for the technical underwriting, costing, strategy and steering of the Swiss Re Casualty Treaty Regional portfolio.
- Portfolio owner for North America Liability, responsible for strategy, analysis, performance.
- 27 years experience. 16 years with Swiss Re. Prior to SR was with GE Insurance Solutions (ERC), Allianz Global Risks (AGCS)/ Fireman's Fund and Zurich Insurance.
- Primary, Facultative and Treaty P&C Underwriting and Risk Management background.
- International experience including 5 years in Munich with Allianz and GE Frankona Re (ERC/ GEIS) and 2 years in Zurich with Swiss Re.

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