Swiss Re

Wheels Commercial Auto CARe Meeting

Jennifer Stevens – Head of Regional Casualty Treaty Underwriting, Swiss Re North America

What we are going to Cover

State of the Market
- General Observations
- Auto Trends
- Jury awards and Anti-corporate Sentiment

Impact on Results
- Actual vs. Expected

What should we do about it?
- Possible Underwriting Actions
- Use of telematics and technology

A few words on Umbrella

What's next? The Road Ahead

State of the Market

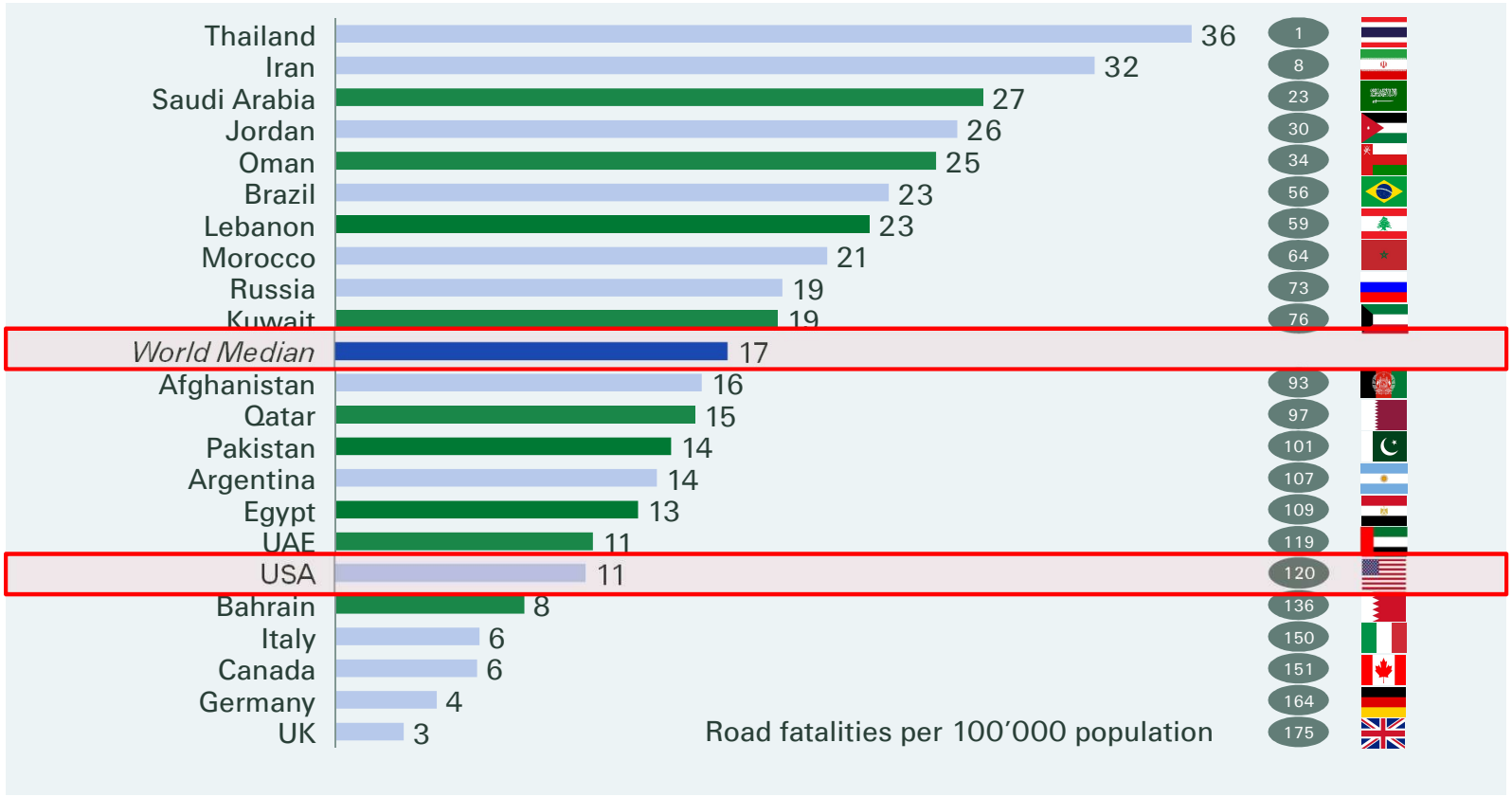
General Observations

- The US motor market experienced the lowest profitability level in the past 16 years during underwriting years 2012-17. The 2017 combined ratio for Commercial Motor was 112%, Personal Motor 108%.
  - Umbrella & Excess results are also deteriorating due to this negative impact. Severity and jury awards are increasing.
- Recent US economic recovery partially caused the sudden unexpected industry increase in both severity and frequency, with more vehicles on the road and 300bn more miles driven between 2013 to 2017 than in the previous 5 year period.
- Frequency appears to have stabilized in 2017 while severity increased as expected in-line with medical inflation & growth in new vehicles.
- Distracted driving remains difficult to predict due to lack of data. While personal auto gets a lot of focus here, commercial auto is being hit by it as well.
- The Primary market has responded to multi-year underwriting deterioration with a strong pricing response, with 7.7% rate increase in Q1 2018 being the highest rate increase in 7 years. Momentum continues in 2019. But is it enough?

Current Auto Trends

	Environmental Factors	Impact	Comments
	Increasing gas prices		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).
	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?)

Worldwide Road Fatality Data



Source: WHO, 2013

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**

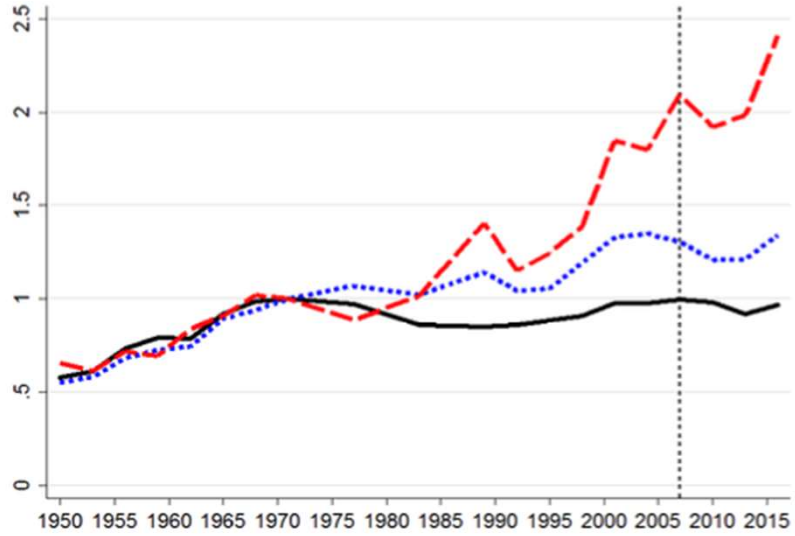
Comments and actions

- 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

Perception that corporate greed is a key driver in the Wealth Gap

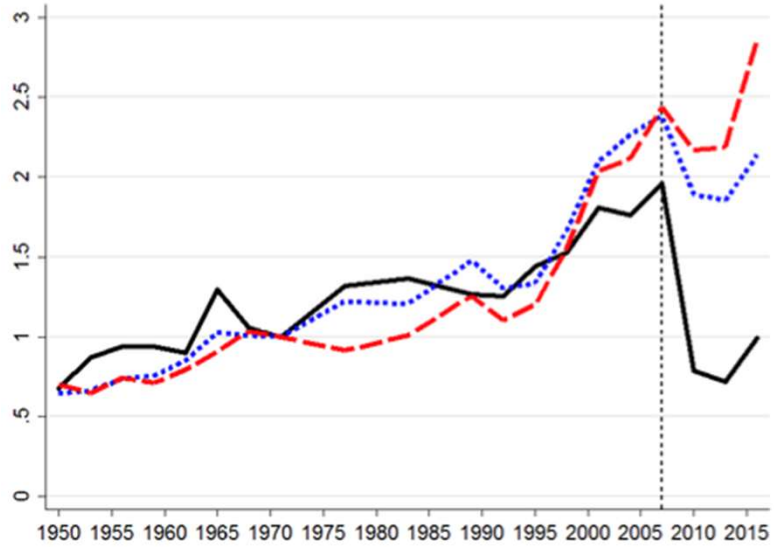
Growth of Income

Income *refers to money received by a person or household over some period of time.*



Growth of Wealth

Wealth *refers to the stock of assets held by a person or household at a single point in time.*



Notes:
Growth of income (left) and wealth (right) for different wealth groups. All time series are indexed to 1 in 1971.
The solid lines show growth rates for the bottom 50%, the short dashed lines for the middle class (50%-90%), and the long dashed lines for the top 10%.

2018- Example Noteworthy settlements and verdicts

- $227m settlement: Center City Philadelphia building collapse (7 died/12 injured)
- $160m settlement: Philadelphia propane explosion at a food truck (2 killed/5 injured)
- *$115m settlement: Chicago airport bus shelter collapse (1 person). Original verdict $148m.*
- $4.69b verdict: Talc products contained asbestos leading to ovarian cancer in 22 women ($213m pp)
- $1B verdict: Premises Liability. Woman sexually assaulted by armed security guard on premises
- $470m verdict: eight neighbors of a hog farm due to smells, noise and nuisances
- $289m verdict: worker contracted cancer due to exposure with pesticide
- *$242m verdict: Auto manufacturer defect related to seat back failure. (2 children with TBI)*
- *$101m verdict: Auto liability. TT struck plaintiff. Minor injuries to a single plaintiff.*
- *$92m verdict: Auto liability. OV crossed the highway grassy median. Struck IV TT head on.*
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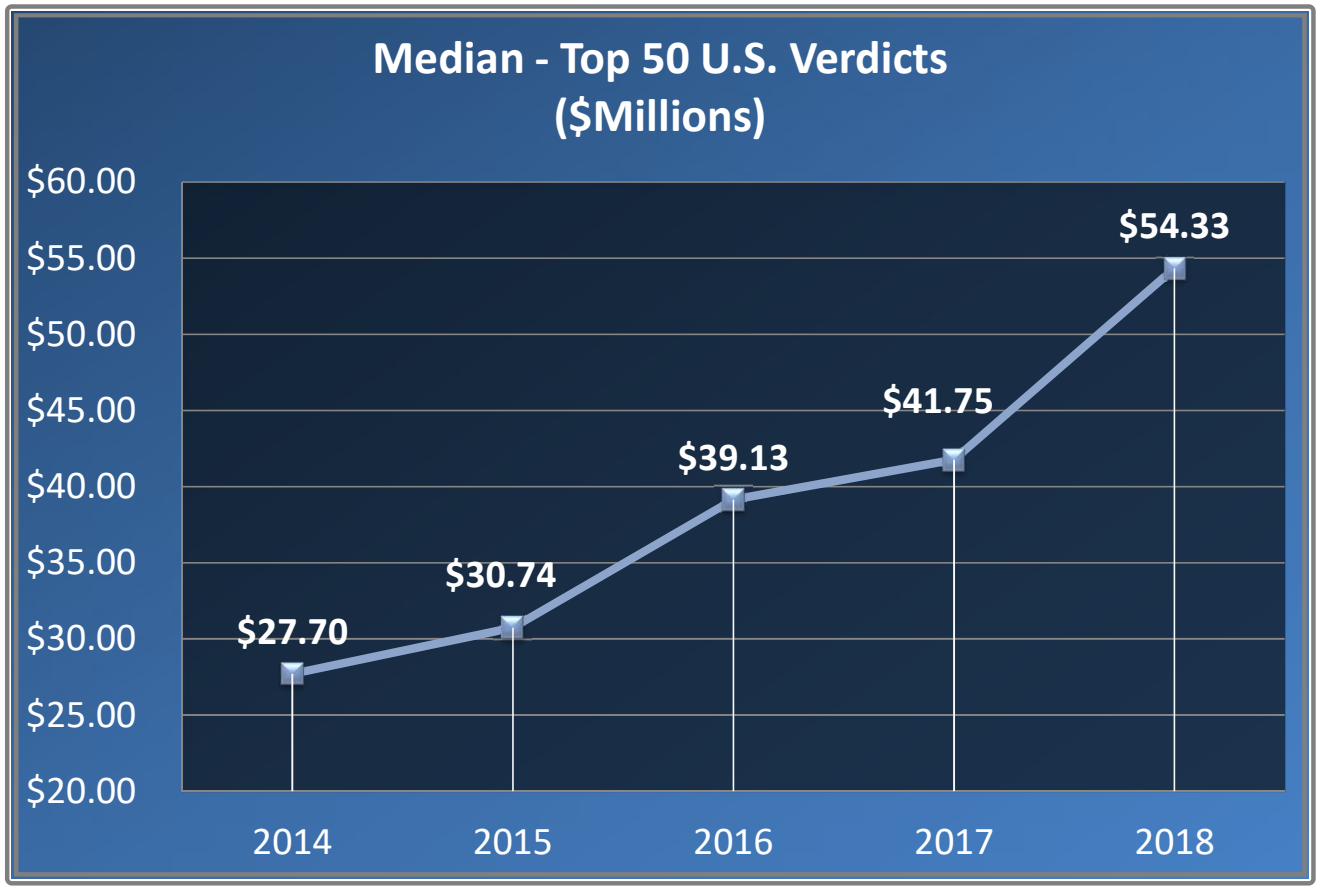
Claims Trend: Top 50 U.S. Verdicts 2014-2018



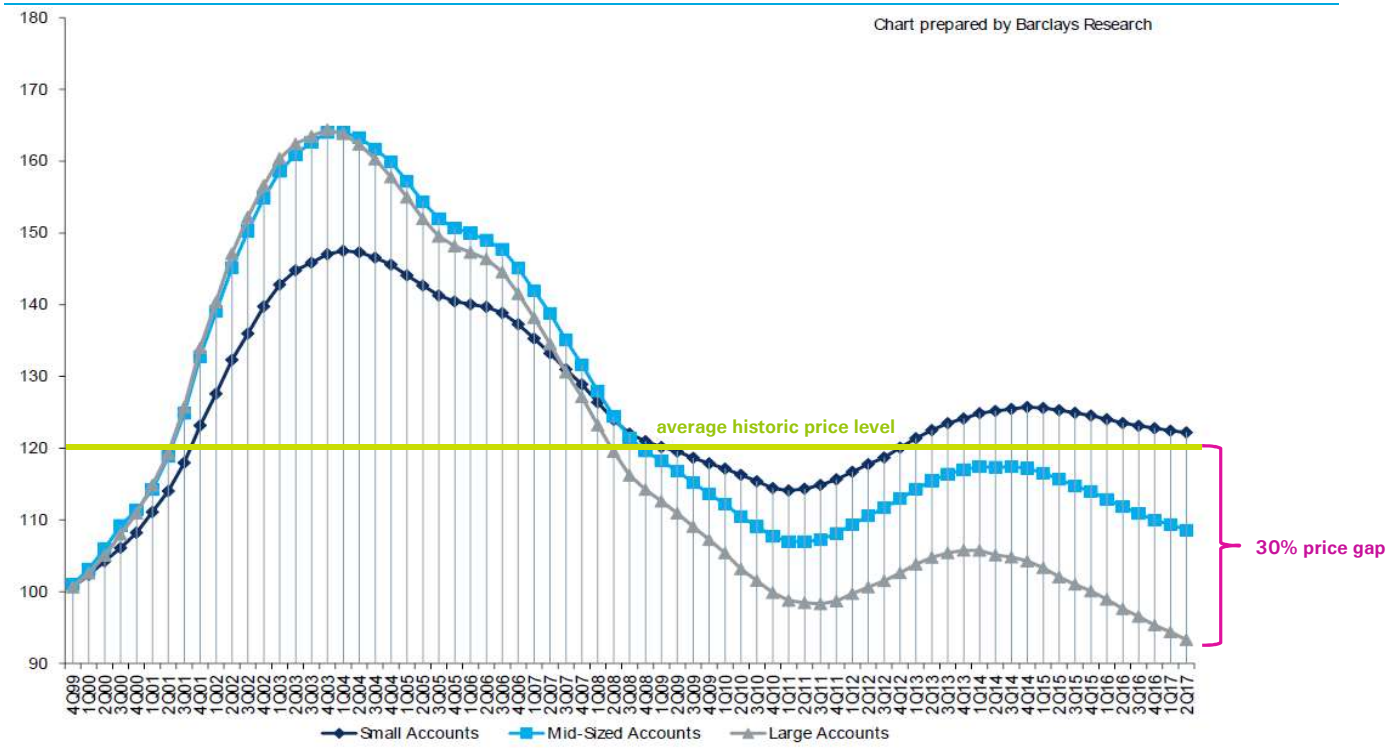
Comments

- 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

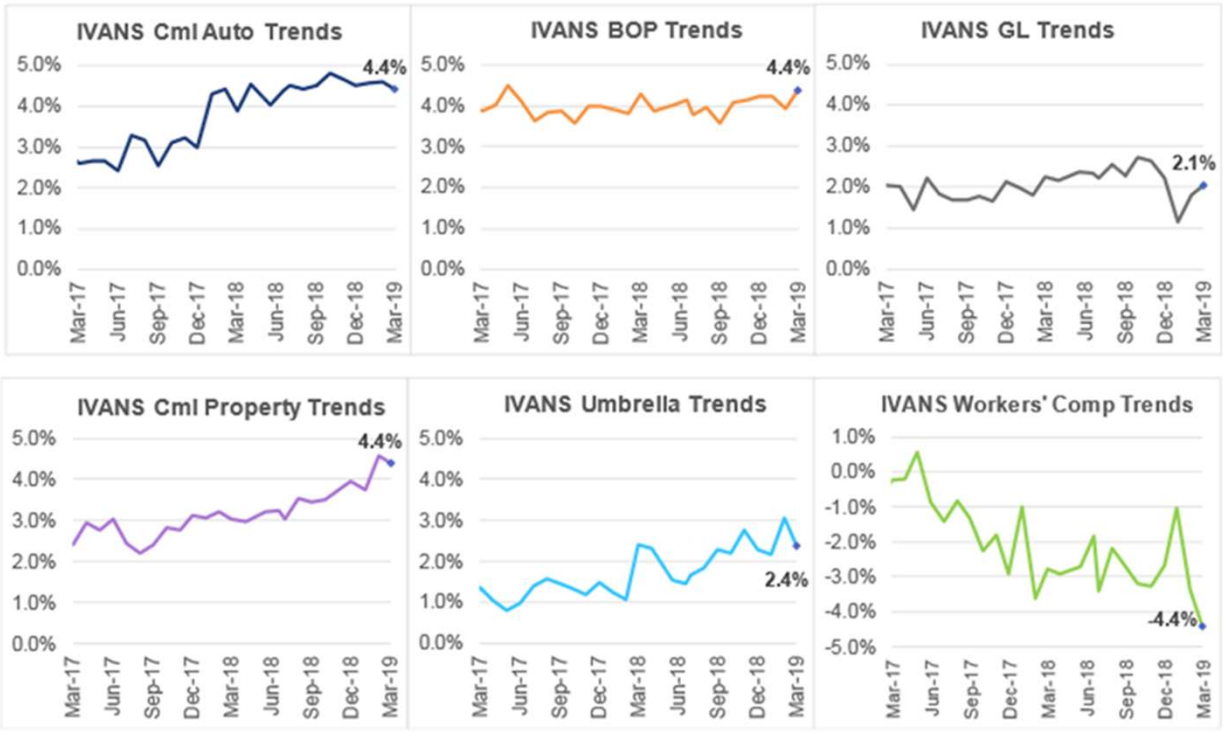
US market – P&C Rates for US market large and mid-size accounts have fallen below the level seen in year 2000

Cumulative quarterly rate changes by account size



Source: The Council of Insurance Agents & Brokers, August 2017. Chart prepared by Barclays Research

Rate trends: Hope on the horizon?
Commercial auto up strongly but decelerating, modest turnaround for liability



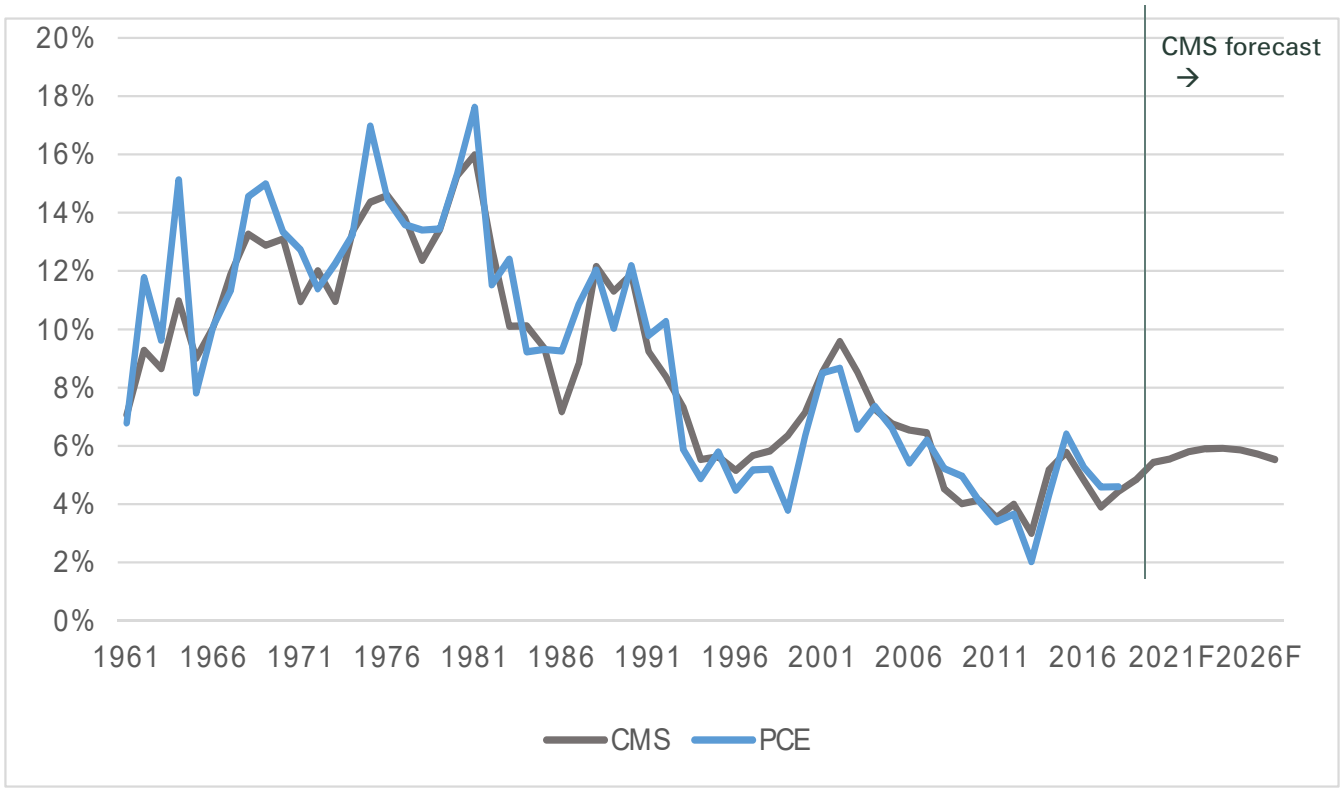
- Via Dowling and IVANS rate Index: Q1 19 Commercial Lines Renewal Rate Increases stabilize at +2.4%.
- March sees “Low-single Digit” Rates Similar To February and January

IVANS P/C’s data exchange is currently used by about 350 insurance carriers and more than 25,000 independent insurance agencies across the U.S.

Health spending is a key indicator of Medical Cost Inflation

Medical Inflation drives Bodily Injury loss severity

YoY Growth in Healthcare Spending

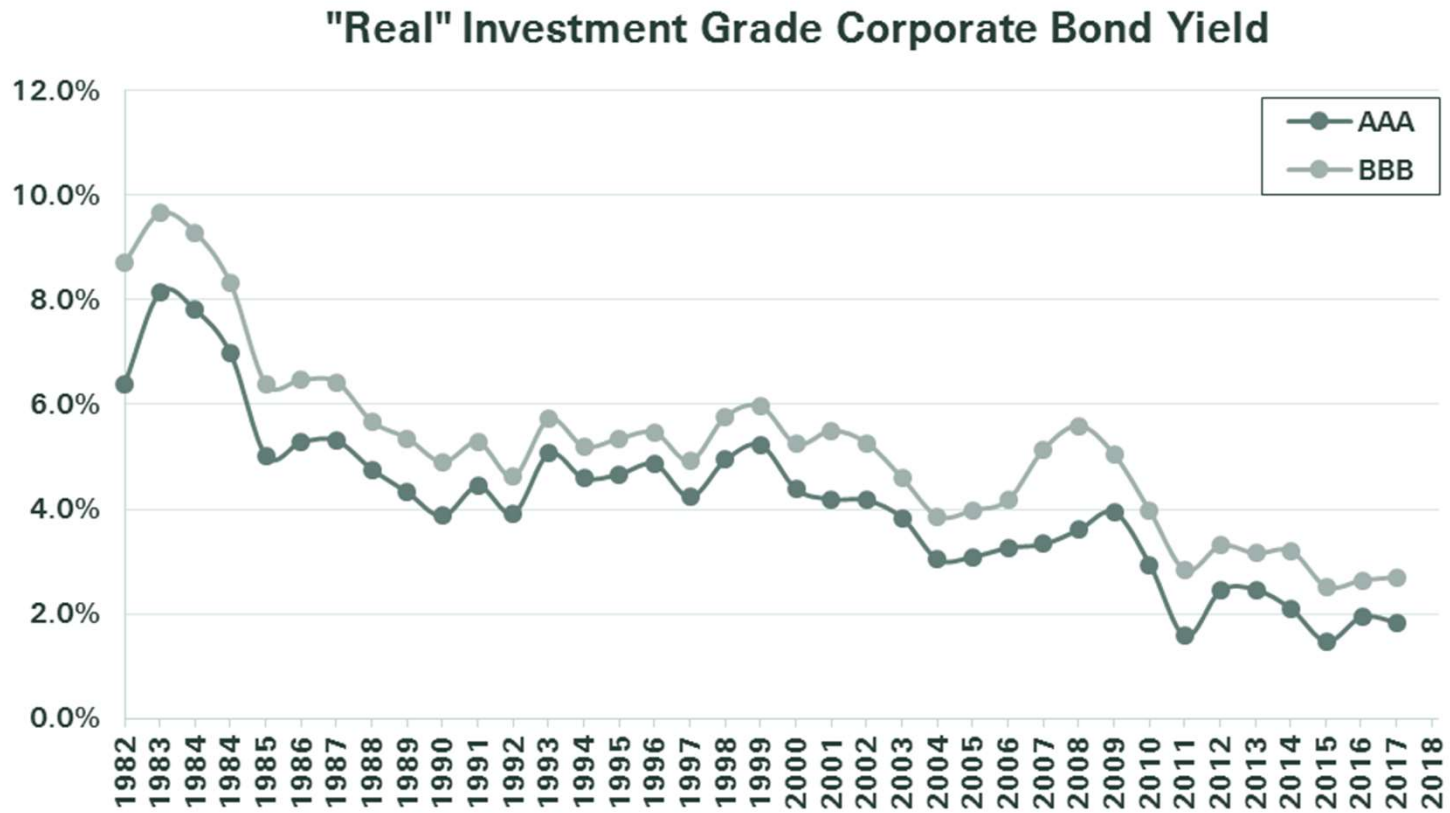


Comments & Actions

- 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

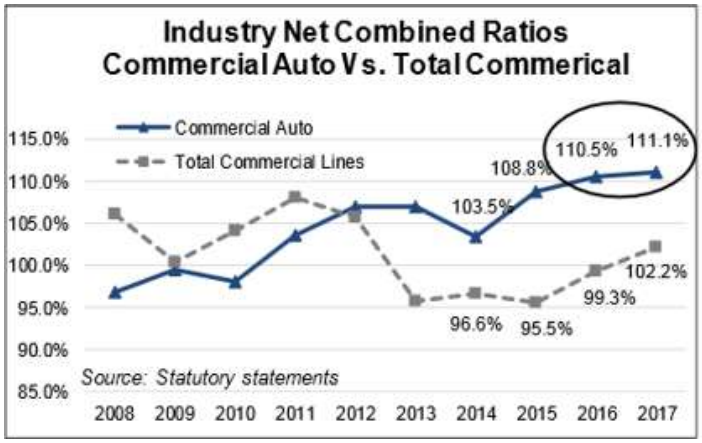
Source: Datastream and CMS

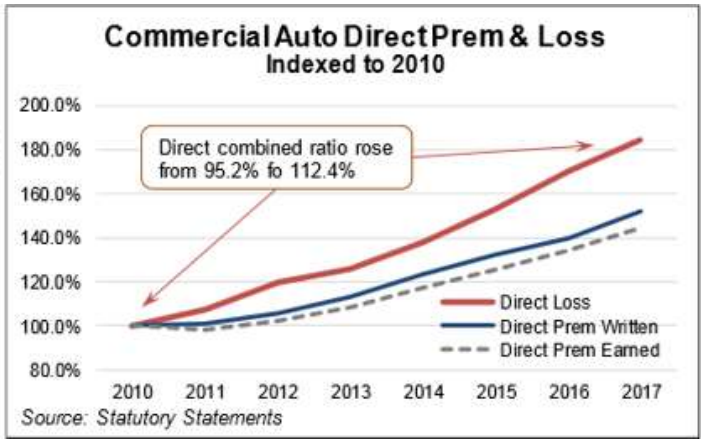
Investment Environment
Interest Rates remain at an all time low



Portfolio Impact

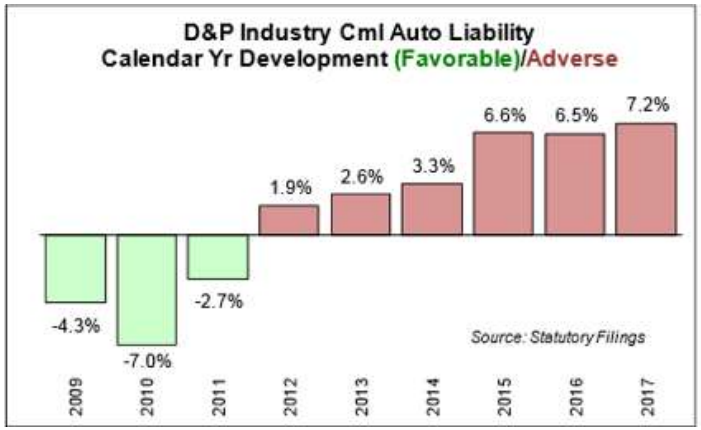
Industry Experience
Conning's view

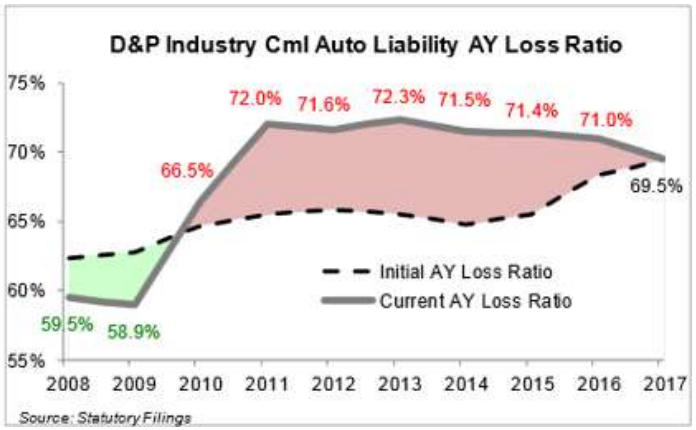




- Commercial Auto experience has degraded since 2010/11, with poorer results in recent years than any other P&C line of business. In 2015 the CAL combined loss ratio was 15 points worse than commercial lines loss ratio overall and has risen by almost 20 points in the last ten years.
- CAL has had loss growth outpacing premium growth due to higher frequency and severity trends.
- Despite several recent years of significant rate increase, rate is barely keeping pace with trend and is very slow to catch up. The industry needs to continue pushing rate to achieve a sustainable marketplace.

Industry Experience
Conning's view





- The plaintiff's bar has been successful at targeting the higher limits of the larger trucking fleets by focusing on the safety training and protocols of the corporate employer rather than merely focusing on driver error.
- Jury awards of $30–$40 million for single plaintiff auto accidents claims are somewhat common. 5 years ago it was rare for an auto claim to reach $10 million.
- Fatal accidents involving large trucks have increased consistently over time. Most recent data is +2.9% in 2016 over 2015.

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%										

- 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%								

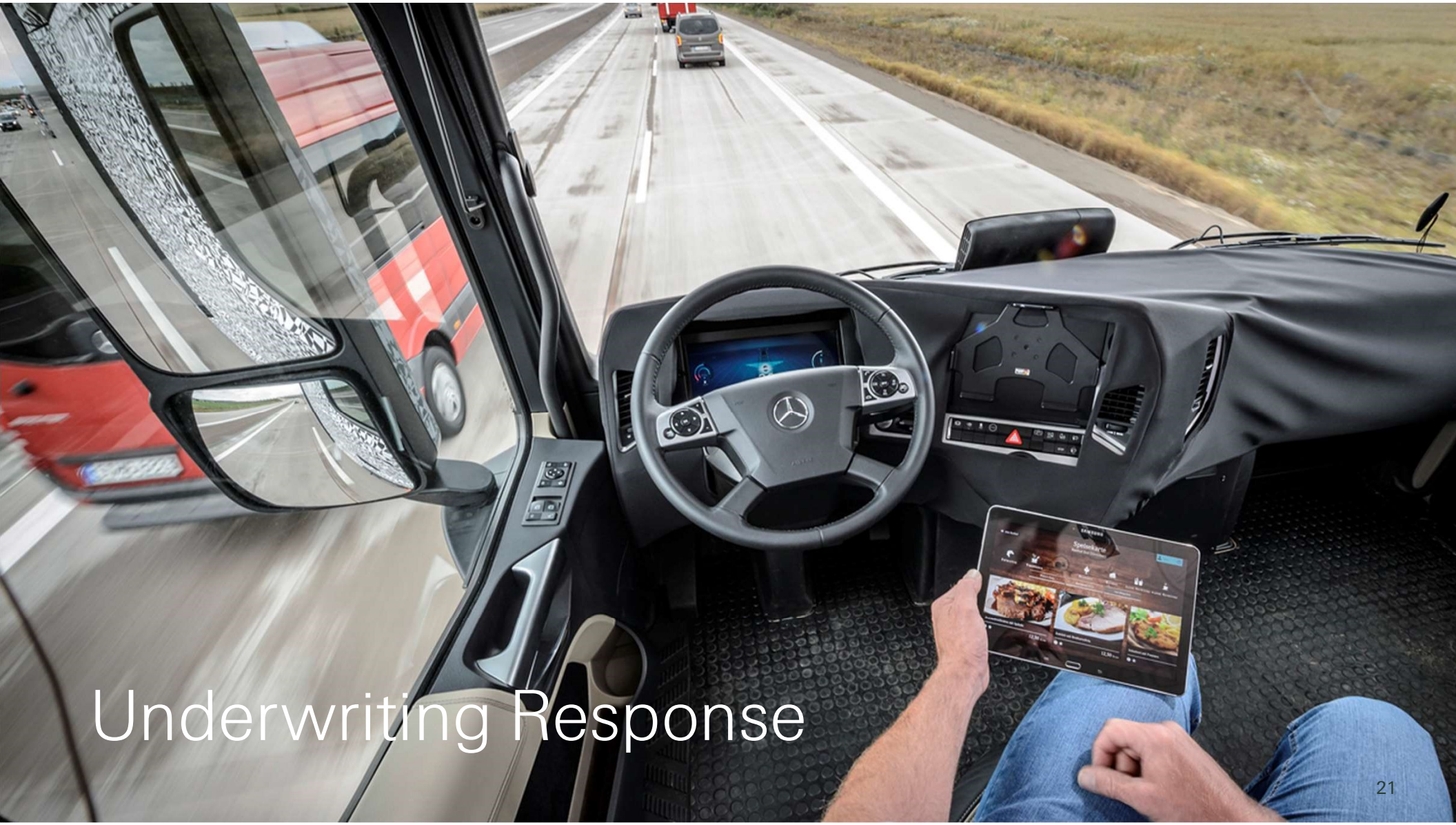
Personal Auto Liability – Results
Industry Schedule P

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%								



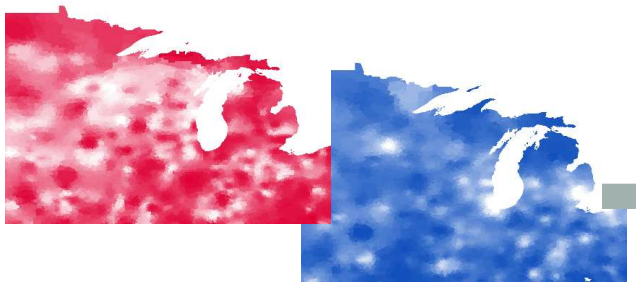
Underwriting Response

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

1. Strategy
   - Use of Commercial Auto as a loss leader
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. Price
   - Raise rates
   - More detailed rating plans, use of data and predictive analytics
4. Underwriting/ Risk Management
   - Invest in risk prevention and research
   - Targeted Underwriting questions
   - Limits (shorter) / attachment point ($2m min, $5m)

Highly granular risk predictions can be used to assess individual fleets
Example of taxi fleets in the Chicago metropolitan area

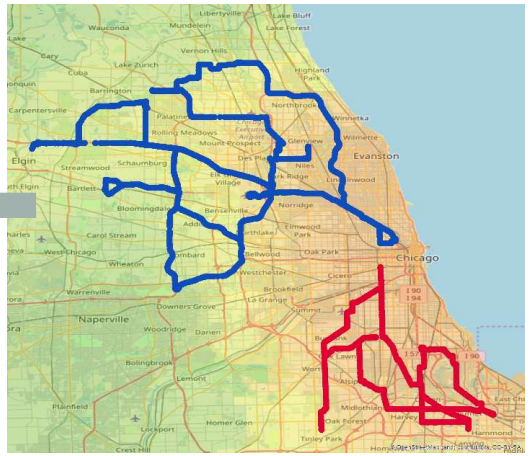
Risk landscape



Risk predictions with high granularity based on factors driving accident risk

- Population density
- Economic activities
- Land use
- Weather
- Road infrastructure

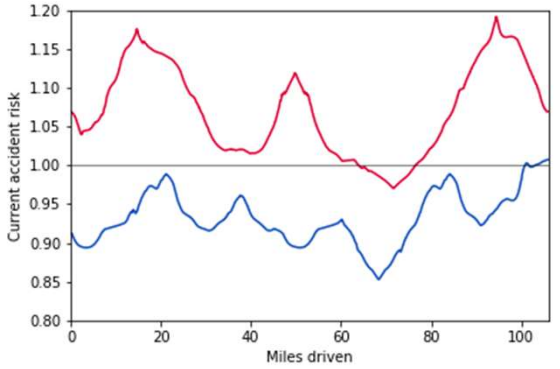
Operational area of a fleet



Example of the operations of two taxis in the Chicago metro area

Color map shows accident risk of the corresponding area

Difference in risk profile



Significant differences in the resulting risk profiles of the two taxis by more than 15%

Average accident risk per lane kilometre in the Chicago area normalised to 1

Benefits – Underwriting: Contextual and derived factors

Driving Hours per Day	Determining driver fatigue
Vehicle Hours Driven per Day	Determine if slip seating
Road Type (Functional Class)	Determine ‘where’
Time of Day	
Traffic Density	Increases crash frequency

One national carrier stated that time of day driving can be twice as predictive as traditional insurance rating variables. Driving during the night is around 10 times riskier than driving during the daytime.

Government highway studies have shown that crash patterns follow the general shape of traffic density patterns.

Benefits – Claims: First Notice Of Loss “FNOL” reporting data

- Date and time of loss
- Additional occupant is right front passenger seat from seat belt and/or airbag sensors
- Point of impact, crash severity and injury probability from the accelerometers
- Exact location of accident
- Where vehicle was traveling prior to accident
- Road type and curvature
- Direction of travel
- Traffic density and flow
- Harsh event prior to accident
- Weather

This claim information from telematics, sensors, GPS data, accelerometer and contextual data.

Disclaimer: This is not Accident Reconstruction. Not all TSPs provide all of this data.

Benefits – Claims

Crash Detection and Notification	Speedy deployment of the appropriate resources can mitigate costs of unnecessary emergency response equipment and high towing and storage charges.
Real-time Driver Assistance	Provide immediate proactive actions that include initiating emergency services to address insureds needs.
Hit and Run Claims	Fraudulent claims of an insured vehicle hitting another vehicle and leaving the scene can be defended with the telematics data telling where the vehicles are at all times.
Defense Position	Immediate capture of factual accident data aids is the early positioning of how to handle a claim.
Parking Lot Claims	Substantiate if the insured's vehicle was parked and not moving.
Stolen Vehicle Tracking	Follow the whereabouts of the stolen vehicle in real-time.

What about Umbrella?

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

2008-2017 Excludes Amtrust		Schedule P Ultimate Loss Ratio Selections - Liability (OL and Prod)										
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	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	27,085,919	68.9%	68.3%	66.5%	64.0%	63.1%	61.9%	61.4%	61.8%	61.1%		7.8%
2010	25,337,958	68.8%	68.6%	68.3%	67.1%	66.6%	66.0%	66.0%	65.2%			3.5%
2011	25,219,549	67.3%	67.2%	67.5%	67.1%	67.2%	67.3%	66.7%				0.6%
2012	26,520,174	65.0%	64.9%	64.1%	65.0%	64.1%	64.3%					0.6%
2013	28,511,708	62.5%	61.5%	62.0%	63.0%	62.3%						0.2%
2014	30,835,673	62.0%	61.1%	62.3%	61.3%							0.7%
2015	31,743,828	61.8%	63.4%	62.6%								-0.7%
2016	31,622,151	63.9%	64.1%									-0.2%
2017	32,282,942	63.2%										

Combined OL Occ, Prod CM, Prod Occ

Loss Ratio for Combined Ratio of 100 = 60.3%

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

Actuarial Projections			
Paid Method	Reported Method	Selected	Carried - Selected
59.4%	59.6%	59.5%	**0.3%**
61.1%	61.0%	61.1%	**0.0%**
65.4%	65.1%	65.2%	**0.0%**
67.4%	67.3%	67.4%	**-0.6%**
65.6%	65.4%	65.5%	**-1.2%**
65.9%	65.0%	65.4%	**-3.1%**
68.7%	65.5%	67.1%	**-5.8%**
72.9%	69.0%	70.4%	**-7.8%**
70.6%	68.4%	69.3%	**-5.2%**
71.3%	66.0%	68.6%	**-5.5%**

Based on standard actuarial methods, Swiss Re projects that accident year loss ratios from 2013 to 2017 will all increase from where they are currently booked.

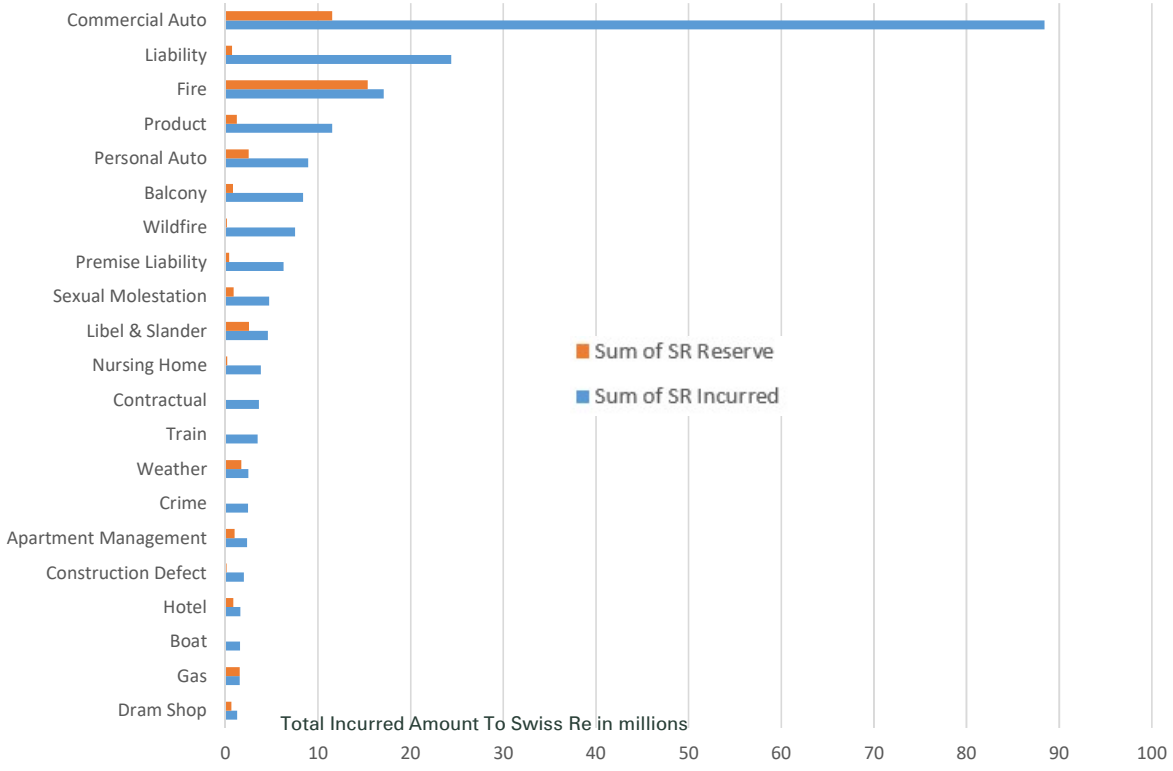
2008-17 Reserve Redundancy/ (Deficiency)

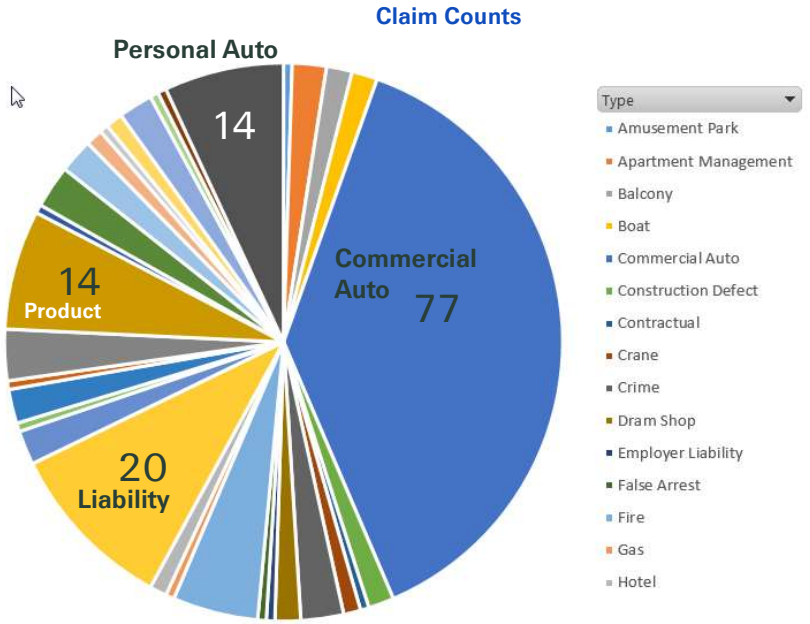
= (8,952,673) -12.1%

- Accident Years 2013 through 2017 loss ratios are projected to be inadequate by 3 to 8 points
- Industry reserve deficiency is estimated to be $9.0B
- Dowling says that Other Liability Occurrence reserves are clearly deficient and worse than they thought a year ago; the last 4-5 AYs are likely all deficient.
- Morgan Stanley has Other Liability Occurrence reserves are deficient by $6.4B.

Motor loss impact on Umbrella is Significant

Top 200 Umbrella XOL losses (2010-2017)



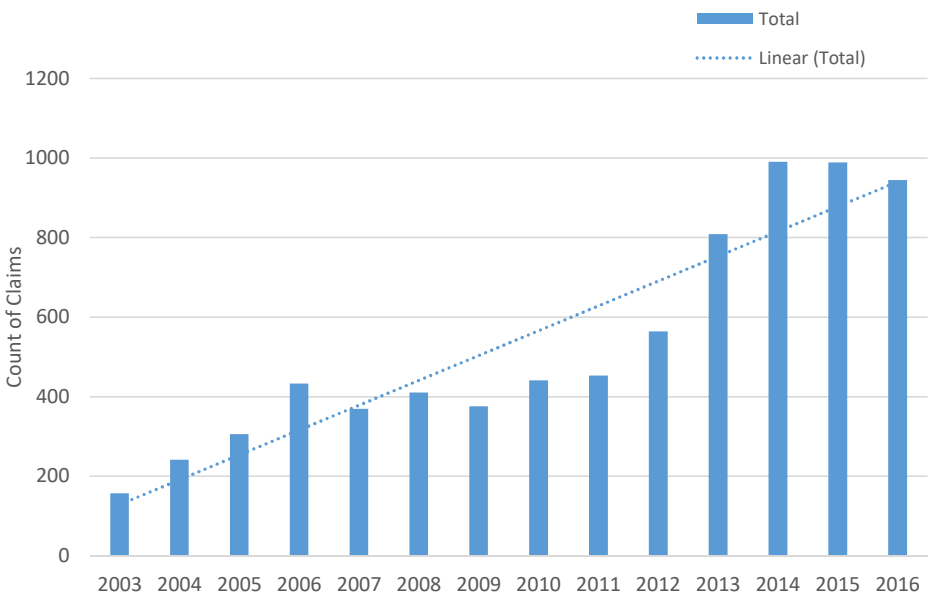


40% (count) and 43% (total incurred) of our largest 200 Umbrella XOL losses are from Commercial Auto

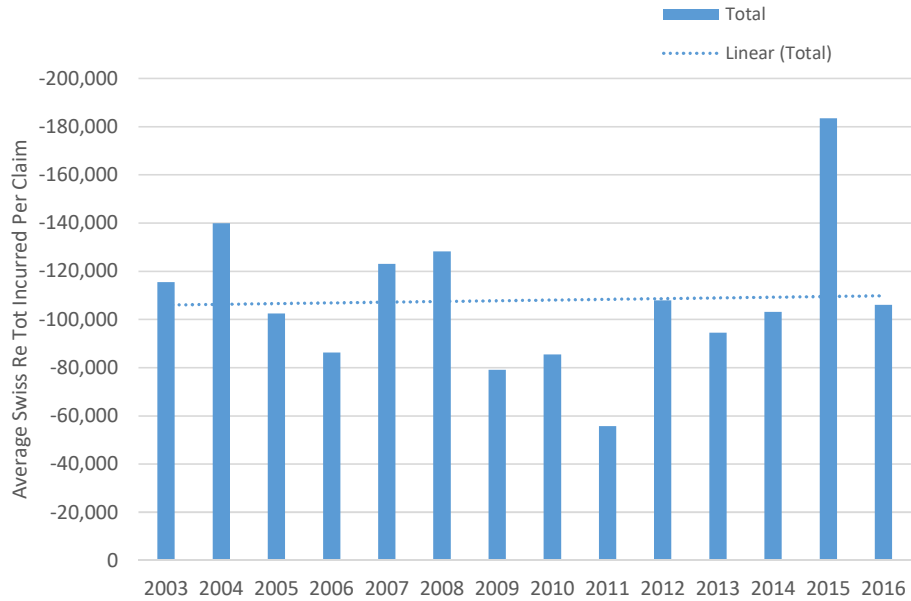
Motor Severity impact on Umbrella is Significant

All XOL Auto Umbrella Claims 2003 – 2016

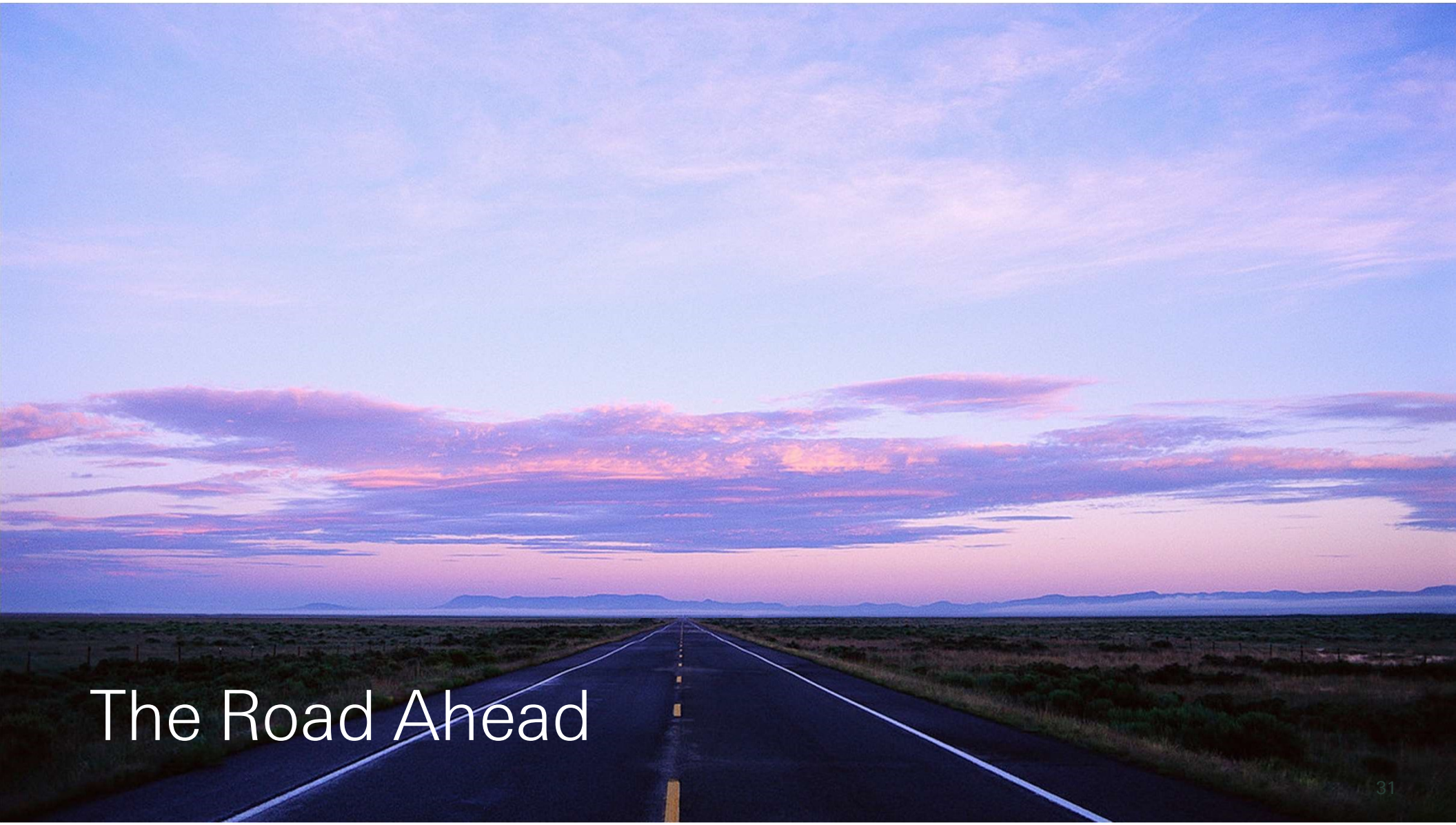
Auto related Frequency (Claims Per Accident Year)



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

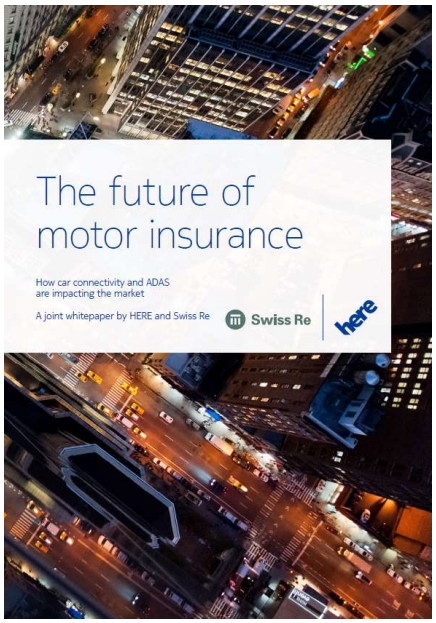


The Road Ahead

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)

The future of motor insurance – full report online



http://www.swissre.com/reinsurance/insurers/casualty/Towards_a_safer_driverless_future.html

Final Thoughts

- 8 accident years of adverse development provides an obvious learning opportunity for the industry, but also for individual actuaries and other professionals
  - Data Science capabilities are better now than they were in 8 years ago. How could Data Science have improved Commercial Auto Liability results (industry and company)?
  - Did we see early evidence of adverse development using traditional approaches and what did we do about it? (In other words, don't ignore early initial chain ladder results!)
  - Are we doing enough to quantify the impact of new business loss ratio differential in our actuarial work?

- In retrospect, could we have been
  - More forward looking?
  - Faster to recognize development and adjust accordingly?
  - More effective in communication?

Jennifer Stevens
Senior Vice President, Head Regional Casualty Treaty Underwriting, N. America

Bio

- 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 P&C Underwriting and Risk Management background.
- International background including 5 years in Munich with Allianz and GE Frankona Re (ERC/ GEIS) and 2 years in Zurich with Swiss Re. Can speak conversational French and German.

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