



LOB-15: Wheels of Misfortune

CLRS Seminar, September, 2018
Anaheim, CA

John W. Buchanan, FCAS, MAAA, Managing Principal, Verisk/ISO

Mike Rozema, FCAS, MAAA, Head of Actuarial & Reserving, Swiss Re

Diane Injic, CPCU, Director Commercial Auto Underwriting, Verisk/ISO



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Concurrent Session LOB-15: Wheels of Misfortune



- This session will provide an update to the Commercial Auto industry experience, most recently presented at the 2018 March CAS Webinar and June CArE Wheels Down sessions.
- We will review various industry results from the 2000s through 2017. We will include a detailed review of 2017 as of 2018 with an emphasis on actual vs. expected testing indications, potential lengthening ground-up and excess loss development factors, case reserving practices, industry based initial expected loss ratios, rate change monitoring, and underwriting cycle ramifications.
- Additional claim drivers and litigation trends will be reviewed including a diagnosis of the past and potential remedies for the future.
- An underwriter / commercial auto product manager who has lived through the wheels ups and downs over the last decade will give their experience from a ground level perspective, including measures to help underwriters improve their insights in this continually challenging line of business.

LOB-15: Wheels of Misfortune Agenda



- **Introduction and update – John 30 mins**
 - Review of industry experience from 2009 to 2017, view at 2018
 - Review frequency and severity trends, lengthening loss development, profit vs LDF speed, IELRs – ground-up and excess, market segment review, rate changes
 - Loss development and Case reserving run-off tests
- **Additional industry insights – Mike 20 mins**
 - Review of industry booked loss ratios and development
 - Further analysis of lengthening development patterns
 - Claim drivers / trends
- **A product manager perspective – Diane 15 mins**
 - A view from the trenches over the last decade
 - Winners and losers
 - Measures to help improve insights
- **Further discussion and Q&A - Panel 10 mins**

Wheels Spinning

🕒 11:00 a.m. – 12:15 p.m.
📅 June 4th, 2018
📍 Room: Salon C

Speakers:
John Buchanan, ISO
William Wilk, Assured Research, LLC
William Burns, Conning
Diane Injic, ISO

2018 CAS Seminar on Reinsurance

Commercial Auto Views from 2010 - 2017



Commercial Auto – View at 2010



Frequency

Analysis Method: Premium (MW rate change)
 Apriori Trend = 0.03
 INCURRED

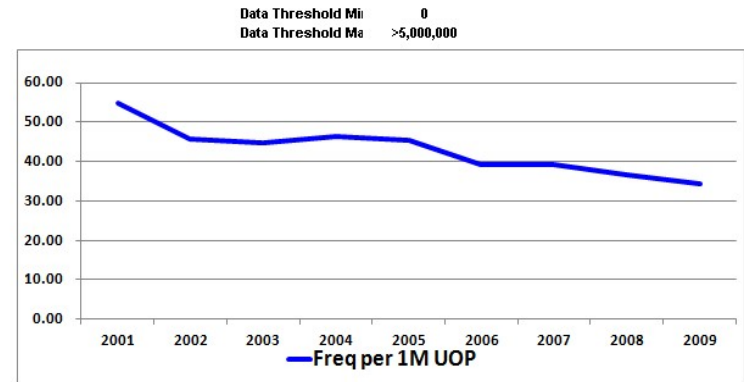
AY	Ultimate OCCURRENCE	Freq per 1M UOP	YTY Change	Ultimate Prem
2001	287,739	54.8940		5,241,730,845
2002	233,162	45.8150	-16.54%	5,089,250,680
2003	212,072	44.7750	-2.27%	4,736,394,774
2004	205,497	46.4050	3.64%	4,428,370,494
2005	207,560	45.4080	-2.15%	4,571,045,142
2006	197,104	39.1880	-13.70%	5,029,644,311
2007	200,826	39.3190	0.33%	5,107,664,575
2008	177,153	36.6460	-6.80%	4,834,202,298
2009	159,060	34.2520	-6.53%	4,643,800,894
Total/Average	3,139,584	71.8735	-2.84%	43,682,104,012
Trend 7 year			-5.07%	
Trend - all year			-4.98%	

-37.6%

Looking back at Trend at 2010:

- Frequencies steadily reducing from early 2000s
- Recent severities overall flat

Illustrative

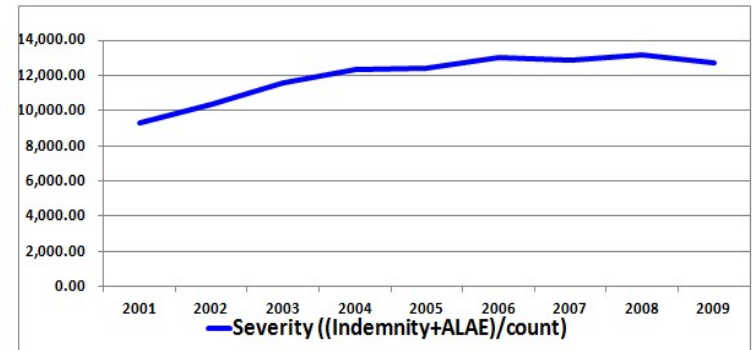


Severity

Analysis Method: Premium (MW rate change)
 Apriori Trend = 0.03
 INCURRED

AY	Ultimate Severity ((Indemnity-ALAE)/count)	Severity ((Indemnity-ALAE)/count)	YTY Change	Ultimate Prem
2001	9,334	9,334	9.11%	5,241,730,845
2002	10,383	10,383	11.24%	5,089,250,680
2003	11,585	11,585	11.58%	4,736,394,774
2004	12,336	12,336	6.48%	4,428,370,494
2005	12,406	12,406	0.57%	4,571,045,142
2006	12,988	12,988	4.69%	5,029,644,311
2007	12,832	12,832	-1.20%	5,107,664,575
2008	13,190	13,190	2.79%	4,834,202,298
2009	12,725	12,725	-3.53%	4,643,800,894
Total/Average	140,980	140,980	3.62%	43,682,104,012
Trend 7 year			1.60%	
Trend - all year			3.69%	

3.69%



Source: ISO Slides from CAS Casualty Loss Reserve Seminar – September 12, 2017 (LOB-3 Wheels Down – J. Buchanan)

Commercial Auto – View at 2010



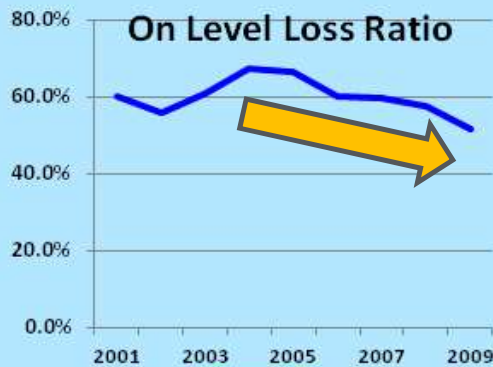
Holistic view at 2010:

- On level loss ratios going down since 2004
- Frequencies steadily reducing from early 2000s
- Severities overall recently flat
- Relatively quick LDF duration
 - avg GU reported loss = 1.2 yrs
 - avg paid = 2.4 yrs
- Moderate reductions in rates since 2005
- Mostly BI claims – but their trends ok as well
- The interconnected on-level line graphs show what various IELRs would be at current rate levels (useful for residual trend analysis)
- Overall, the current on-level loss ratio compared to long term is 8 pts better (60.0% long-term vs. 51.9% current)

ISO Size-of-Loss Matrix

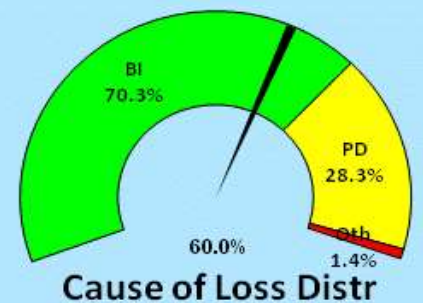
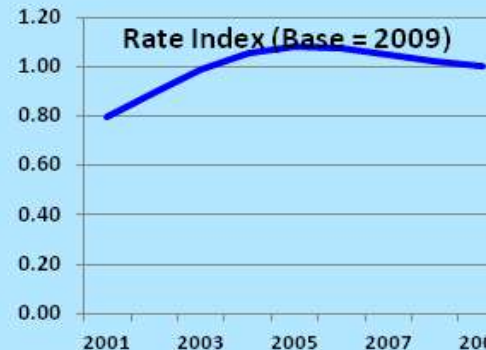
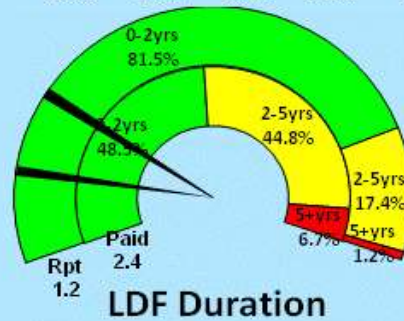
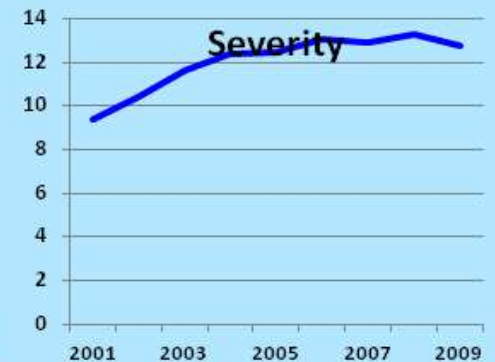
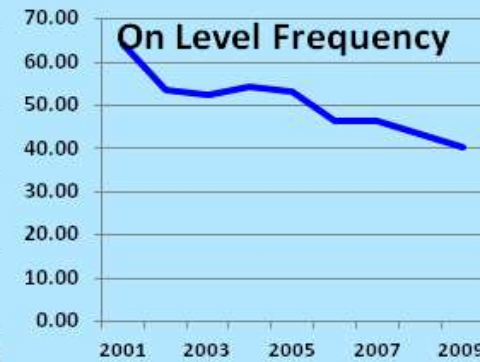
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Market Segment: Commercial Auto
Trucks Tractors and Trailers - All Companies
All Causes of Loss
Unlimited xs 0



Illustrative

Est All Yr/Curr Yr LR: 60.0% / 51.9%
7 Year Severity Trend: 1.60%
All Year Trend: 3.69%
Avg Rep / Pay Duration: 1.2 / 2.4 Years



Note: Loss development factors and durations use 5-year VWA and 3% detrending.
Rate changes from MarketWatch - Trucks Tractors and Trailers - Liability - 12/31/2016

Loss Ratio Analytics: View At 2010 - TTT

SOLM 2017 v0.4.2

Total Premium 12/2009: 36,899,761,019
Total Incurred Loss & Alae: 31,174,002,891
Total Occurrences: 3,129,183
Total Exposure (Power Units): 260,470,867

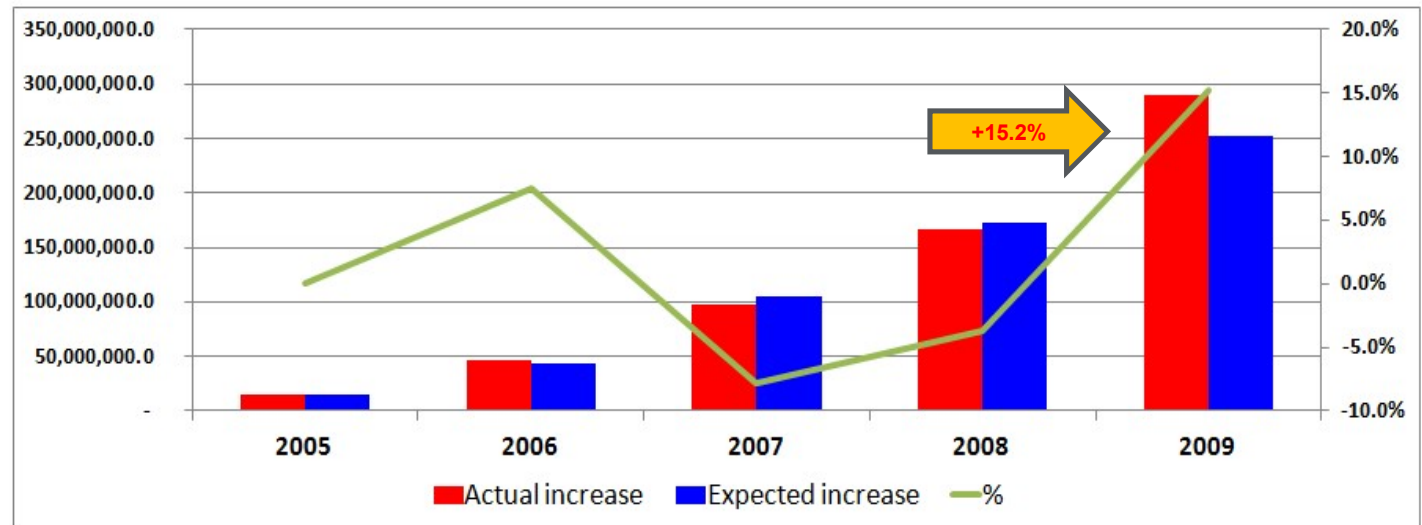
Commercial Auto – View at 2010



TTT Actual vs. Expected (ERLI Warning) – Excess Layer 900x100k *Illustrative*

Check to see if any early warning development signs in various layers and components.

Overall ok, except AY 2009 indicates a bit of a blip up – 252M expected, but 290M actual, or 15.2% adverse development.



AY	Actual n-6	Actual n-5	5-Yr ATA	Expected n-5	AY	Actual increase	Expected increase	Actual - Expected	%
2005	1,097,265,890	1,112,068,639	1.0135	1,112,059,126	2005	14,802,749.0	14,793,235.6	9,513.4	0.1%
2006	1,066,637,325	1,112,815,458	1.0403	1,109,570,434	2006	46,178,133.0	42,933,109.1	3,245,023.9	7.6%
2007	991,509,745	1,088,630,104	1.1063	1,096,882,077	2007	97,120,359.0	105,372,332.4	(8,251,973.4)	-7.8%
2008	722,271,219	888,533,303	1.2391	894,986,382	2008	166,262,084.0	172,715,163.5	(6,453,079.5)	-3.7%
2009	334,768,535	624,898,496	1.7525	586,678,587	2009	290,129,961.0	251,910,051.5	38,219,909.5	15.2%
2010		372,698,496			2010				
Sum x2010	12,419,753,463	13,029,933,029		13,010,201,530	Sum x2015	610,179,566	590,448,067	19,731,499	3.3%
1996-1999	3,028,045,461	3,027,332,760		3,027,933,529	2001-2004	(712,701)	(111,932)	(600,769)	-536.7%
2000-2004	5,179,255,288	5,175,654,269		5,182,091,395	2005-2009	(3,601,019)	2,836,107	(6,437,126)	-227.0%
2005-2009	4,212,452,714	4,826,946,000		4,800,176,606	2010-2014	614,493,286	587,723,892	26,769,394	4.6%

Commercial Auto – View at 2014



Due to frequencies and severities both ticking up since 2009, overall 2013 TTT IELR went from 51.9% to 62.8%

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2017

Market Segment: Commercial Auto
Trucks Tractors and Trailers - All Companies
All Causes of Loss
Unlimited xs 0

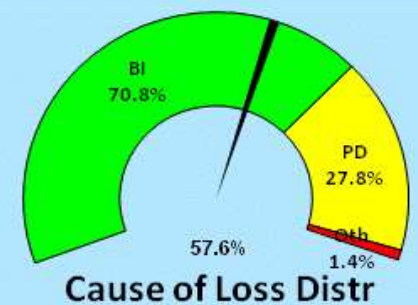
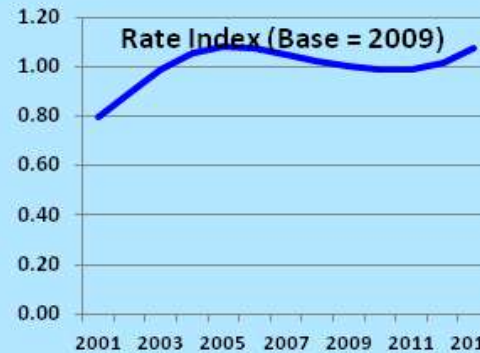
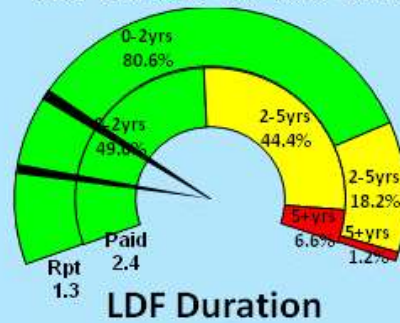
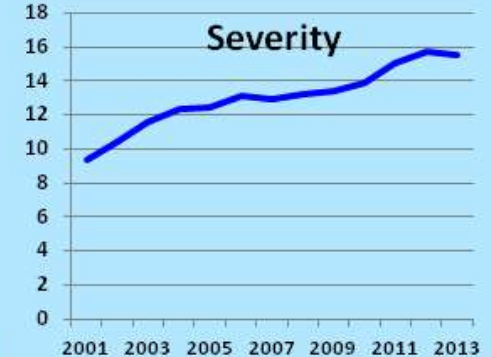
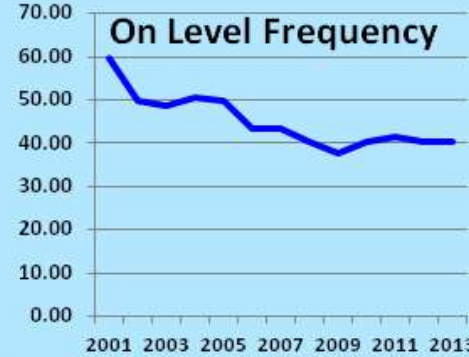
Illustrative

Est All Yr/Curr Yr LR: 57.6% / 62.8%
7 Year Severity Trend: 3.67%
All Year Trend: 3.66%
Avg Rep / Pay Duration: 1.3 / 2.4 Years

Loss Ratio Analytics: View At 2014 - TTT

CSL17 2017 v0.4.2

Total Premium 12/2013: 52,517,171,135
Total Incurred Loss & Alae: 41,012,115,025
Total Occurrences: 3,797,565
Total Exposure (Power Units): 389,863,143



Note: Loss development factors and durations use 5-year VWA and 3% detrending.
Rate changes from MarketWatch - Trucks Tractors and Trailers - Liability - 12/31/2016

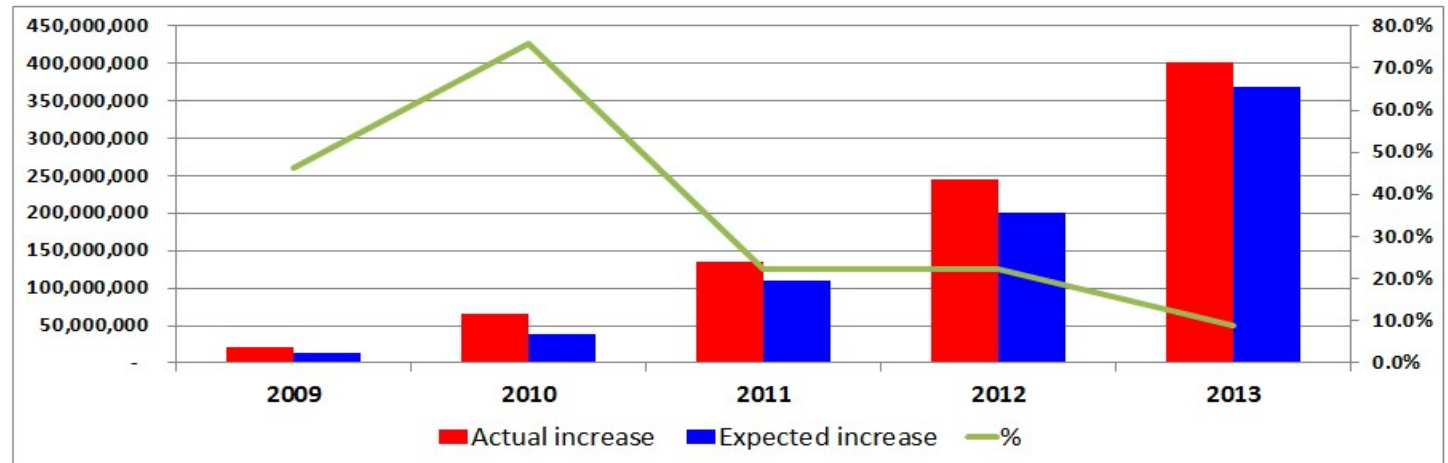
Commercial Auto – View at 2014



Commercial Auto – CAu (3 markets) - ERLI Warning – Excess Layer 900x100k

Each calendar year since 2009 had significant adverse development due to lengthening loss development tail.

Illustrative



SOLM Release 2016 (v4.2) - Development Triangle and Analysis ERLI Warning

AY	CY=2014				2 Ex Ante				
	Actual n-3	Actual n-2	5-Yr ATA	Expected n-2	AY	Actual increase	Expected	Actual - Expected	%
2009	927,792,337	948,489,796	1.015	941,937,861	2009	20,697,459	14,145,524	6,551,935	46.3%
2010	969,391,676	1,035,440,722	1.039	1,006,993,685	2010	66,049,046	37,602,009	28,447,037	75.7%
2011	990,401,529	1,125,681,334	1.112	1,100,985,153	2011	135,279,805	110,583,624	24,696,181	22.3%
2012	796,632,607	1,042,053,515	1.252	997,232,576	2012	245,420,908	200,599,969	44,820,939	22.3%
2013	448,845,946	849,647,219	1.820	817,040,649	2013	400,801,273	368,194,703	32,606,570	8.9%
Sum x2014	14,820,297,316	15,698,714,934		15,555,987,734	Sum x2014	878,417,618	735,690,418	142,727,200	16.4%
1999-2002	4,175,976,527	4,176,860,812		4,176,055,046	1999-2002	884,285	78,519	805,766	1026.2%
2003-2007	5,484,115,606	5,486,515,086		5,485,827,797	2003-2007	2,399,480	1,712,191	687,289	40.1%
2008-2012	4,711,359,237	5,185,691,817		5,077,064,243	2008-2012	474,332,580	365,705,006	108,627,574	29.7%

Commercial Auto – View at 2016

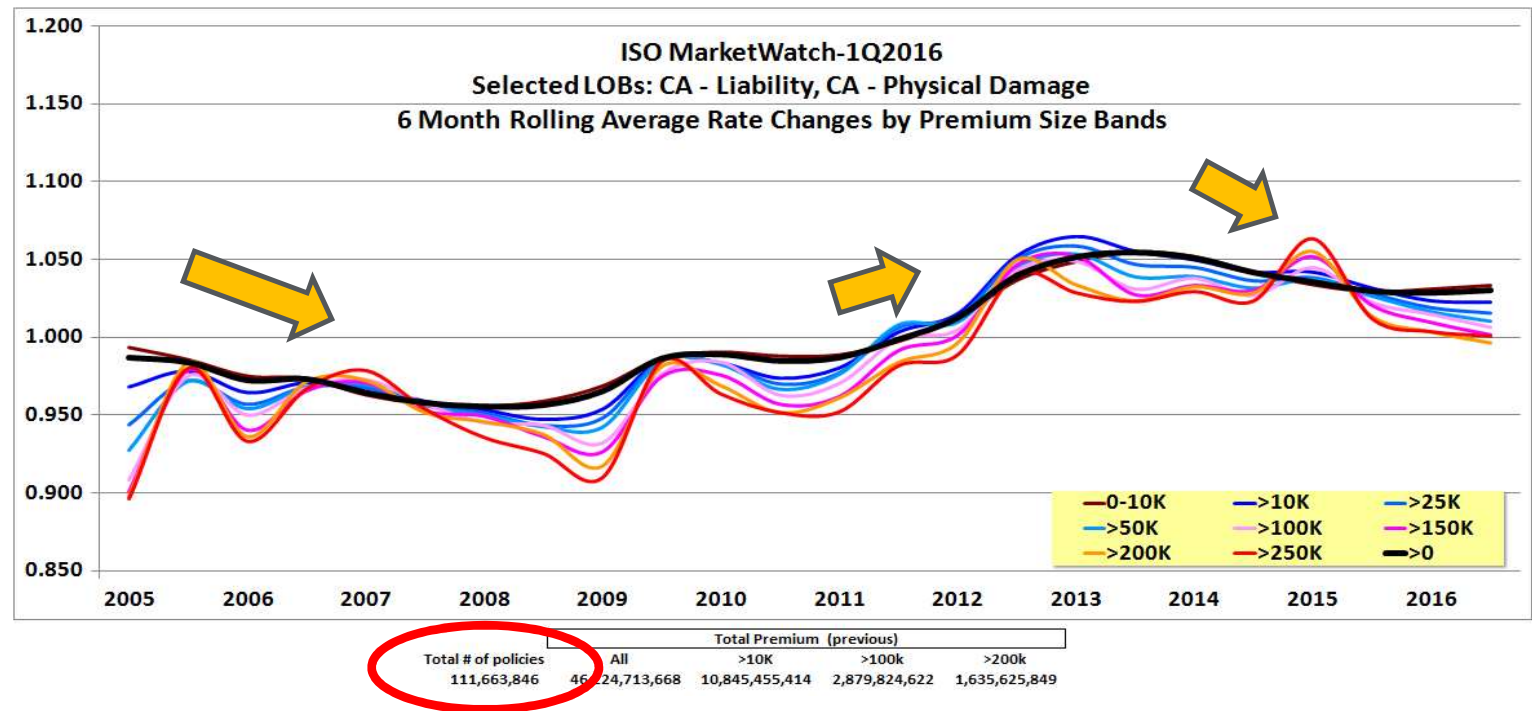


Incremental Rate Changes Through 3/31/2016 - Liability & Physical Damage

Rates reducing from 2005 to 2011, and importantly didn't go positive until 2012 even though loss trends changed direction 3 years earlier.

Larger policies, in general have larger rate reductions, and back to flat early 2016.

Illustrative



Source: ISO MarketWatch – released 6/15/2016; further details in Commercial Actuarial Panel – December 2016

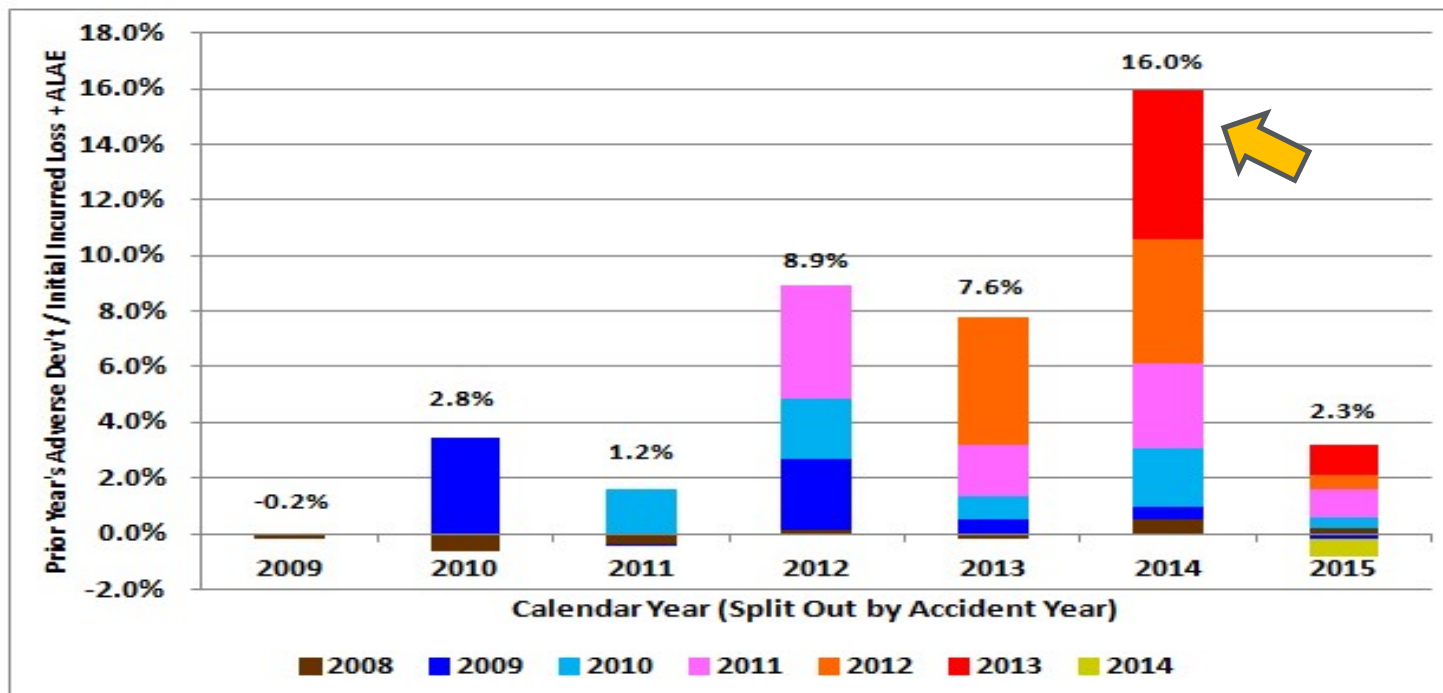
Commercial Auto – View at 2016



Illustrative

Commercial Auto – TTT - ERLI Warning through 2015 – Calendar Year

Each calendar year since 2010 had adverse development due to lengthening loss development tail. 2014 being by far the most adverse, with all years contributing besides first look at 2015.



Source: ISO SOLM 2016 v1 - losses developed to ultimate using 5-year VWA (refresh each year); premiums developed to ultimate using Earned Premium triangle
 ISO MarketWatch for Rate changes - Auto Commercial Liability - through 12/31/2015 (adjusted policy year to accident year using 6 mo policy term assumption)
 CY adverse development for AYs 2009-2014: approximately 40% in CY2014 (about 20% each in CY2013 and CY2012)

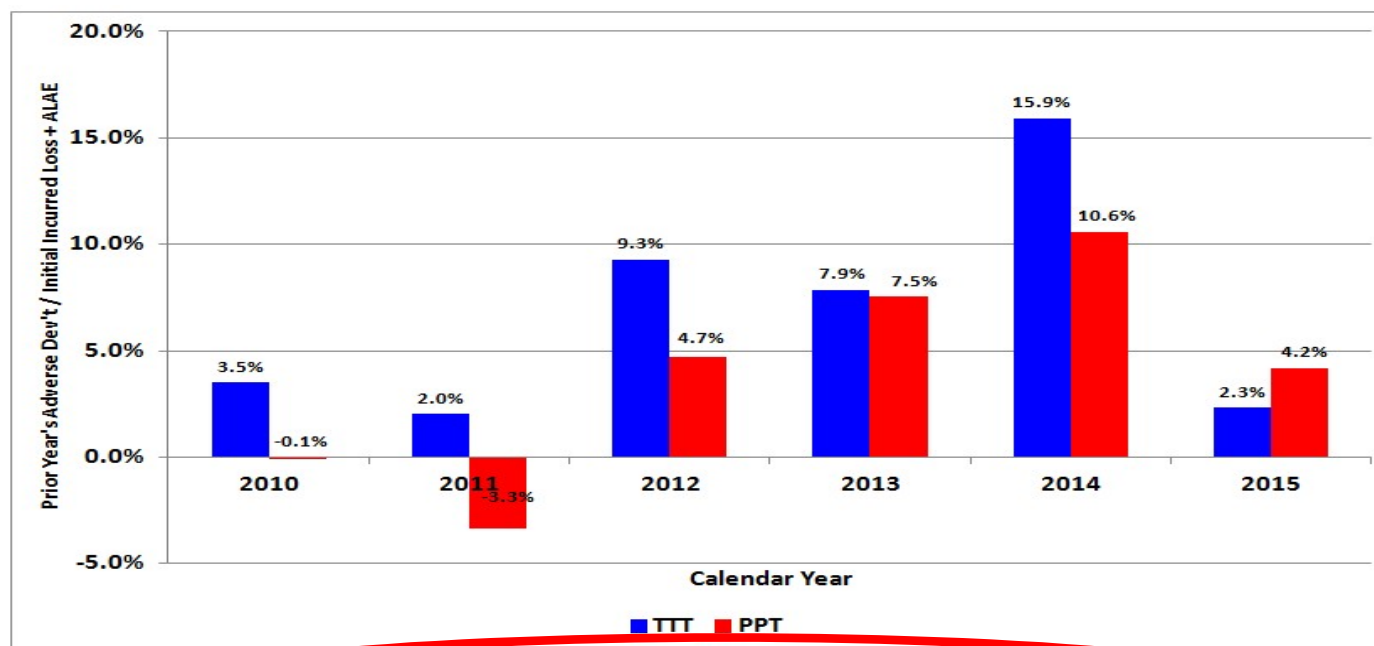
Commercial Auto – View at 2016



Commercial Auto – Comparing TTT to PPT – Calendar Year

TTT had its deterioration show up earlier than PPT, with over half appearing by 2013 for TTT, while PPT had its first meaningful overall deterioration in that year.

Illustrative



Cumulative % Deterioration	2010	2011	2012	2013	2014	2015
TTT	8.5%	13.5%	36.1%	55.3%	94.3%	100.0%
PPT	-0.4%	-14.5%	5.5%	37.4%	82.2%	100.0%

Source: ISO SOLM 2016 v1 - losses developed to ultimate using 5-year VWA (refresh each year); premiums developed to ultimate using Earned Premium triangle
 ISO MarketWatch for Rate changes - Auto Commercial Liability - through 12/31/2015 (adjusted policy year to accident year using 6 mo policy term assumption)

Commercial Auto – View at 2016

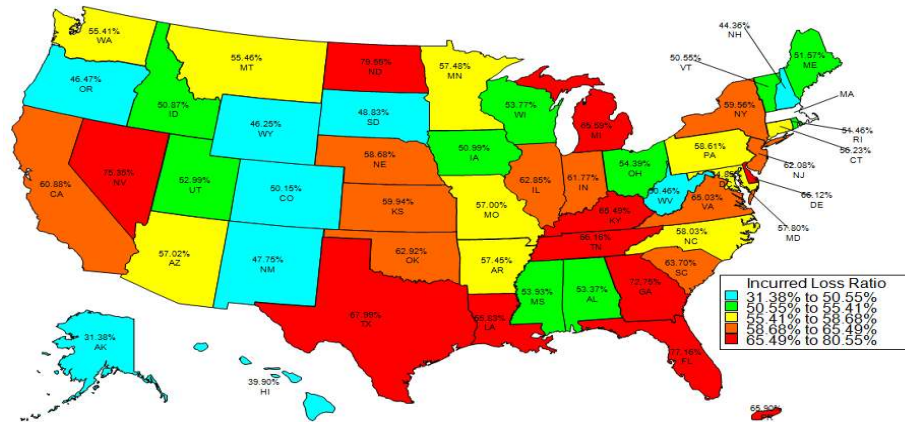


State Comparison: 2009-2013 Loss Ratios to 2014 and 2015 Rate Changes

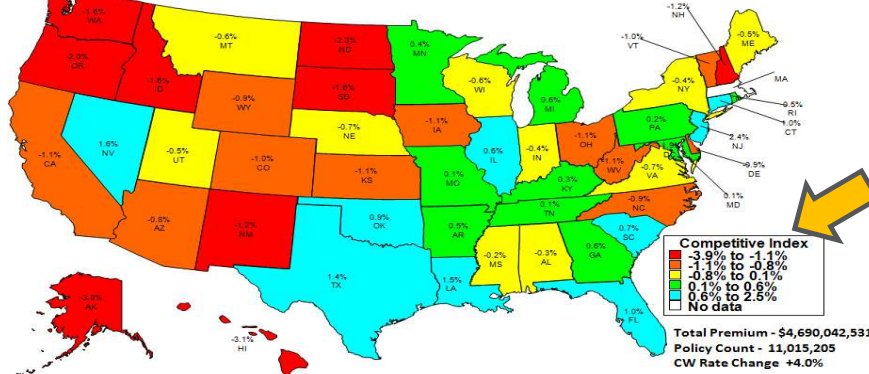
Overall loss ratios by state for the most part shows that higher relative loss ratios in the 2009 to 2013 period, produced higher than average rate changes in the following two years (opposite colors).

Commercial Auto Liability - Incurred Loss Ratios

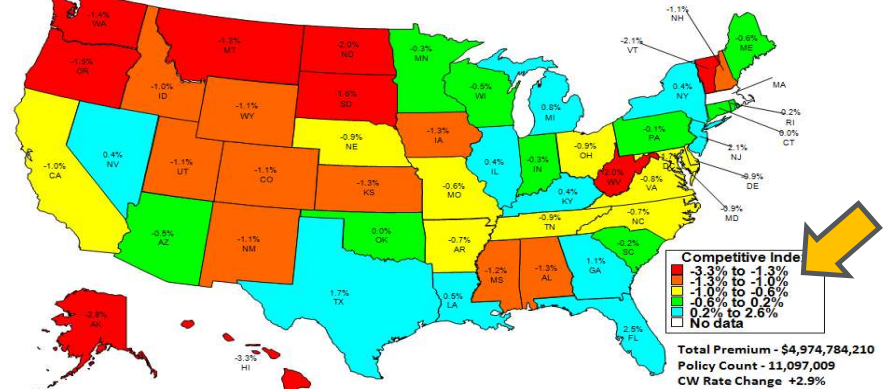
Illustrative



NextGen MarketWatch - Competitive Ranking
All Comm'l Auto - All Premium Sizes - 2014



ISO MarketWatch - Competitive Ranking
All Comm'l Auto - All Premium Sizes - 2015

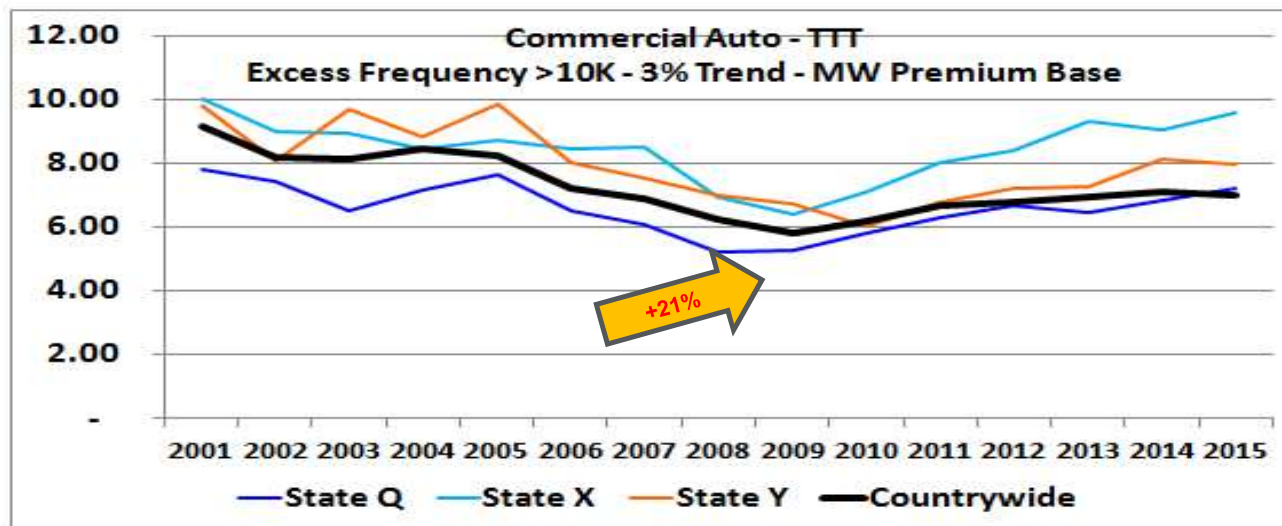


Commercial Auto – View at 2016



Excess Overall Frequency >10k @ 12/2015 and Assuming 3% Severity Trend ^{Illustrative}

Overall frequency trend for claims excess of 10k is larger than ground-up claims by overall 1.25%, but significant variations by state.



Excess Frequency >10K - 3% Trend - MW Premium Base

	Countrywide	State Q	State X	State Y
2009	5.78	5.25	6.38	6.74
2010	6.20	5.80	7.10	6.03
2011	6.67	6.29	7.99	6.79
2012	6.77	6.68	8.42	7.22
2013	6.92	6.45	9.30	7.24
2014	7.09	6.83	9.05	8.11
2015	7.01	7.22	9.55	7.98
7 Year Trend	3.15%	4.67%	6.60%	4.17%
Total Occurrences	723,394	48,635	25,544	11,015
Excess vs GU trend	1.25%	1.19%	3.17%	0.06%

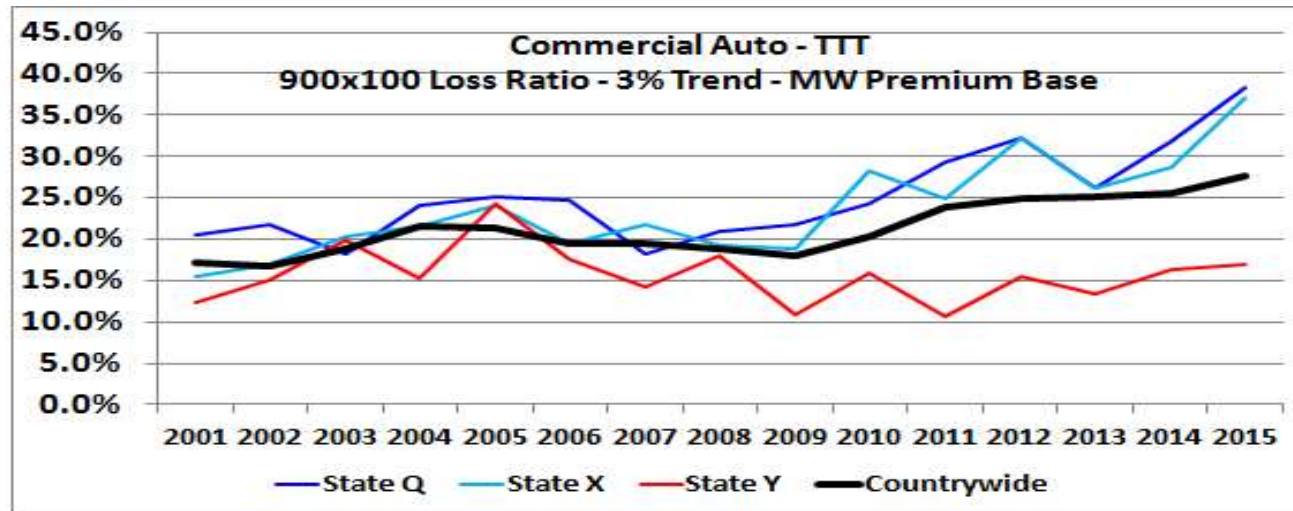
Commercial Auto – View at 2016



Excess Partial Loss Ratios 900x100k @12/2015 Assuming 3% Severity Trend

Illustrative

Overall excess IELRs for 900x100 show relativity has risen from average of 19% in the 2000s, to 27.6% in 2015; this increase suggests pressure on the ILFs; although not all states show the same pattern, overall excess loss ratio trend is larger than ground-up by about .5% per year



900x100 Loss Ratio - 3% Trend - MW Premium Base

	Countrywide	State Q	State X	State Y
2009	18.0%	21.8%	18.9%	10.9%
2010	20.4%	24.3%	28.3%	16.0%
2011	23.8%	29.3%	24.9%	10.6%
2012	25.0%	32.2%	32.2%	15.4%
2013	25.1%	26.2%	26.1%	13.3%
2014	25.5%	31.9%	28.6%	16.4%
2015	27.6%	38.3%	37.1%	16.9%
7 Year Trend	6.36%	7.58%	7.47%	5.69%
Total Indemnity	17,036,053,171	1,513,152,397	570,861,128	187,616,942
Excess vs GU trend	0.52%	0.52%	-0.55%	-0.07%

Commercial Auto – View at 2017



The IELR for 2016 has moved to 73.0%, up from 51.9% at 2009. Rebounded frequency, heightened severity trends, and lengthening development factors, coupled with rates that were still going down through 2012 account for the over 20 point increase.

ISO Size-of-Loss Matrix

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Market Segment: Commercial Auto
Trucks Tractors and Trailers - All Companies
All Causes of Loss
Unlimited xs 0

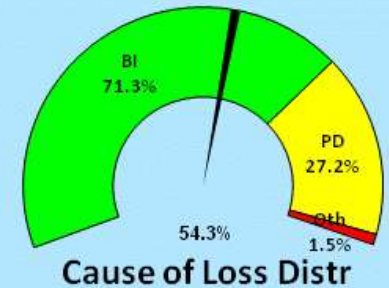
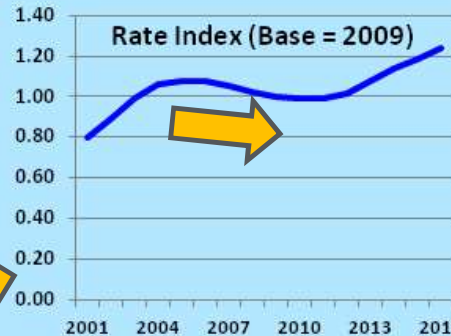
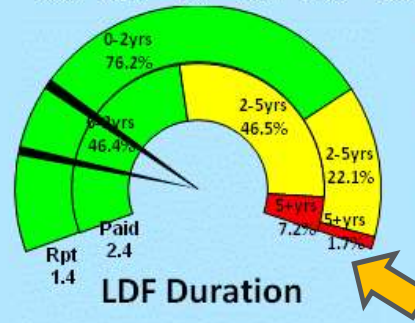
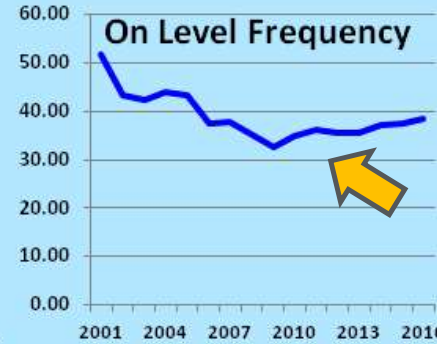
Illustrative

Est All Yr/Curr Yr LR: 54.3% / 73.0%
7 Year Severity Trend: 4.50%
All Year Trend: 4.18%
Avg Rep / Pay Duration: 1.4 / 2.4 Years

Loss Ratio Analytics: View At 2017 - TTT

SOLM 2017 v0.4.2

Total Premium 12/2016: 66,691,448,966
Total Incurred Loss & Alae: 50,729,706,680
Total Occurrences: 4,356,050
Total Exposure (Power Units): 492,788,066



Note: Loss development factors and durations use 5-year VWA and 3% detrending.
Rate changes from MarketWatch - Trucks Tractors and Trailers - Liability - 12/31/2016

Source: SOLM 2017v1 pre-release

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Commercial Auto View at 2018

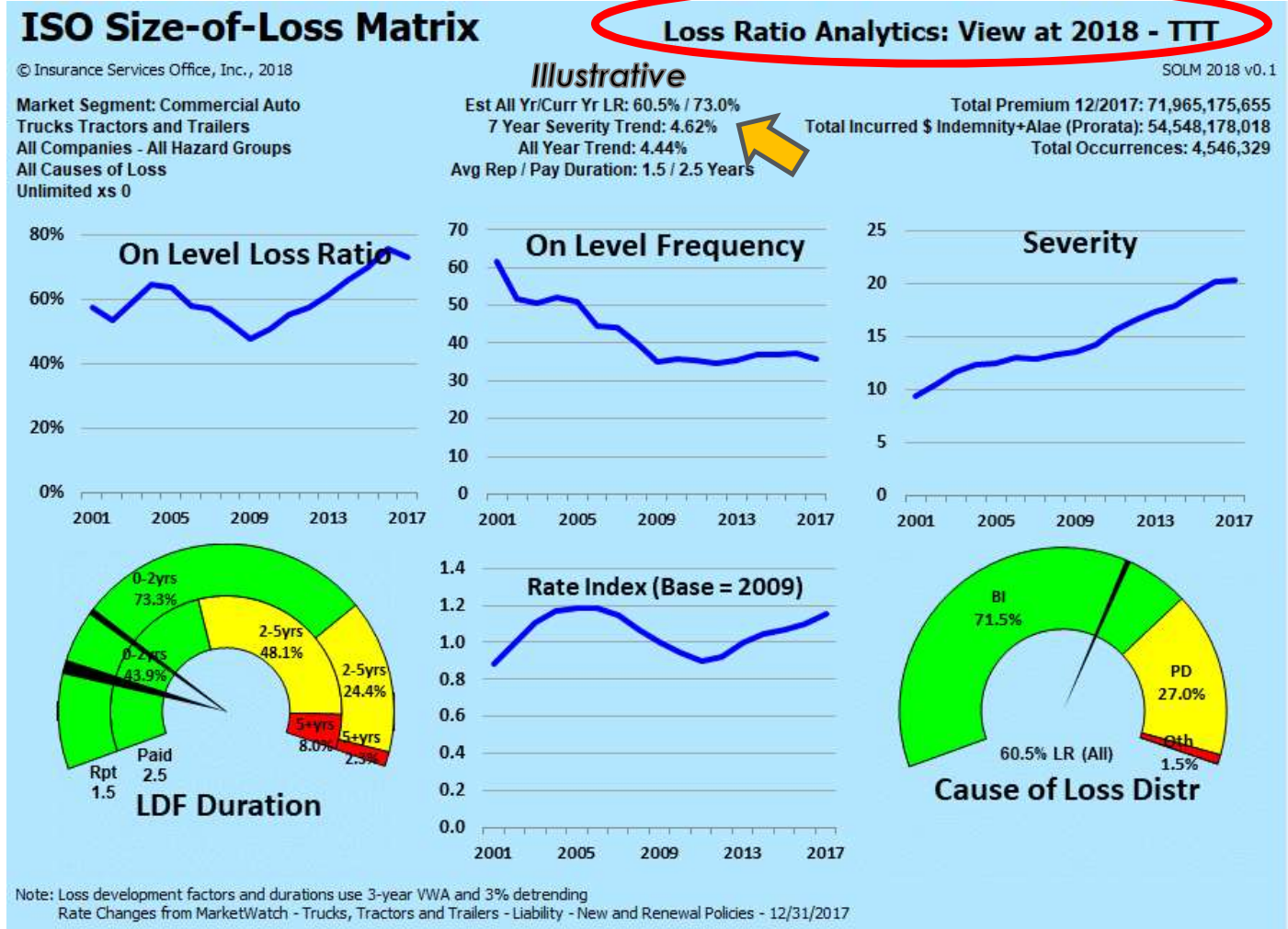


Commercial Auto – View at 2018



Overall loss ratios deteriorated a bit for 2016 and prior due to further lengthening tail and adverse loss development. 2017 improved a bit due to continued rate activity, and lessened loss trends.

The current TTT loss ratio of 73.0%, is 12.5 points worse than longer term on-level average of 60.5%.



Source: SOLM 2018v1 pre-release (using expanded MarketWatch method 3-new and renewal including impacts from ILFs)

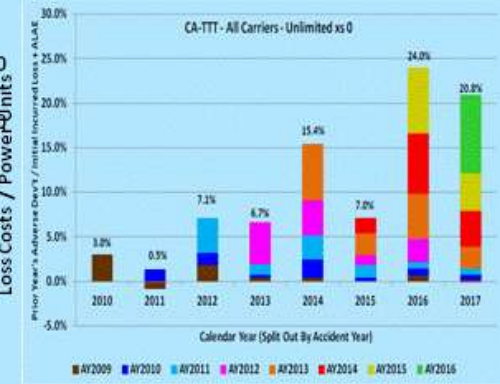
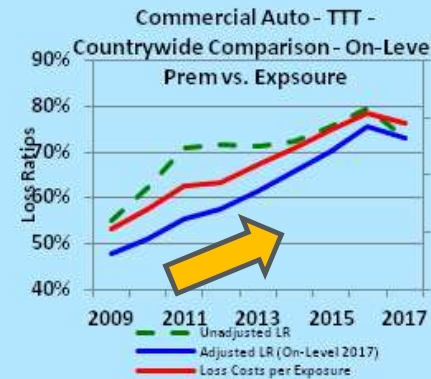
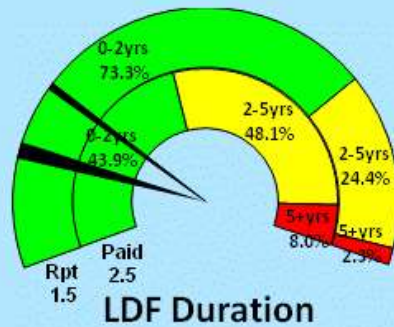
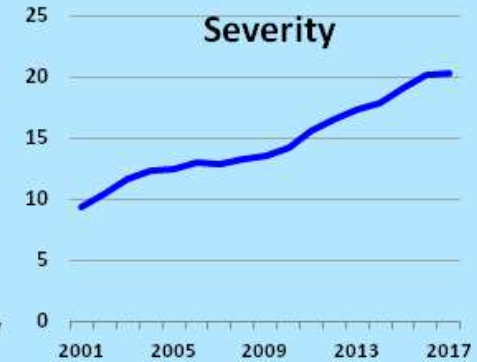
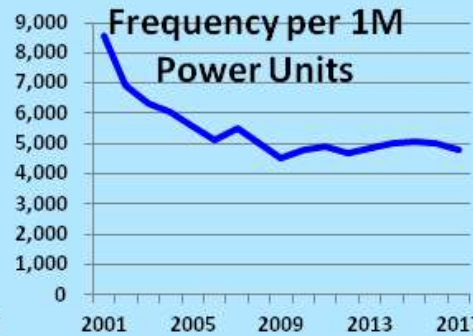
Commercial Auto – View at 2018



ISO Size-of-Loss Matrix

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Market Segment: Commercial Auto
Trucks Tractors and Trailers
All Companies - All Hazard Groups
All Causes of Loss
Unlimited xs 0



Note: All triangles use 3-year VWA (3.0% detrended)
Loss Costs are Total Losses / Power Units, Power Units are in months (multiply LC * 12 for annual cost)

Loss Cost Analytics: View at 2018 - TTT

SOLM 2018 v0.1

Illustrative

Est All Yr/Curr Yr LR: 60.5% / 73.0%
7 Year Severity Trend: 4.62%
All Year Trend: 4.44%
Avg Rep / Pay Duration: 1.5 / 2.5 Years

Total Premium 12/2017: 71,965,175,655
Total Incurred \$ Indemnity+Alae (Prorata): 54,548,178,018
Total Occurrences: 4,546,329
Total Exposure (Power Units): 36,513,373

Results using power units as base vs. on-level premium produce similar indications.

Continued adverse development in calendar year 2017 across all years, for 2nd worse CY (2016 worse after minor lull in 2015).

Source: SOLM 2018v1 pre-release

SERVE | ADD VALUE | INNOVATE

Commercial Auto – View at 2018

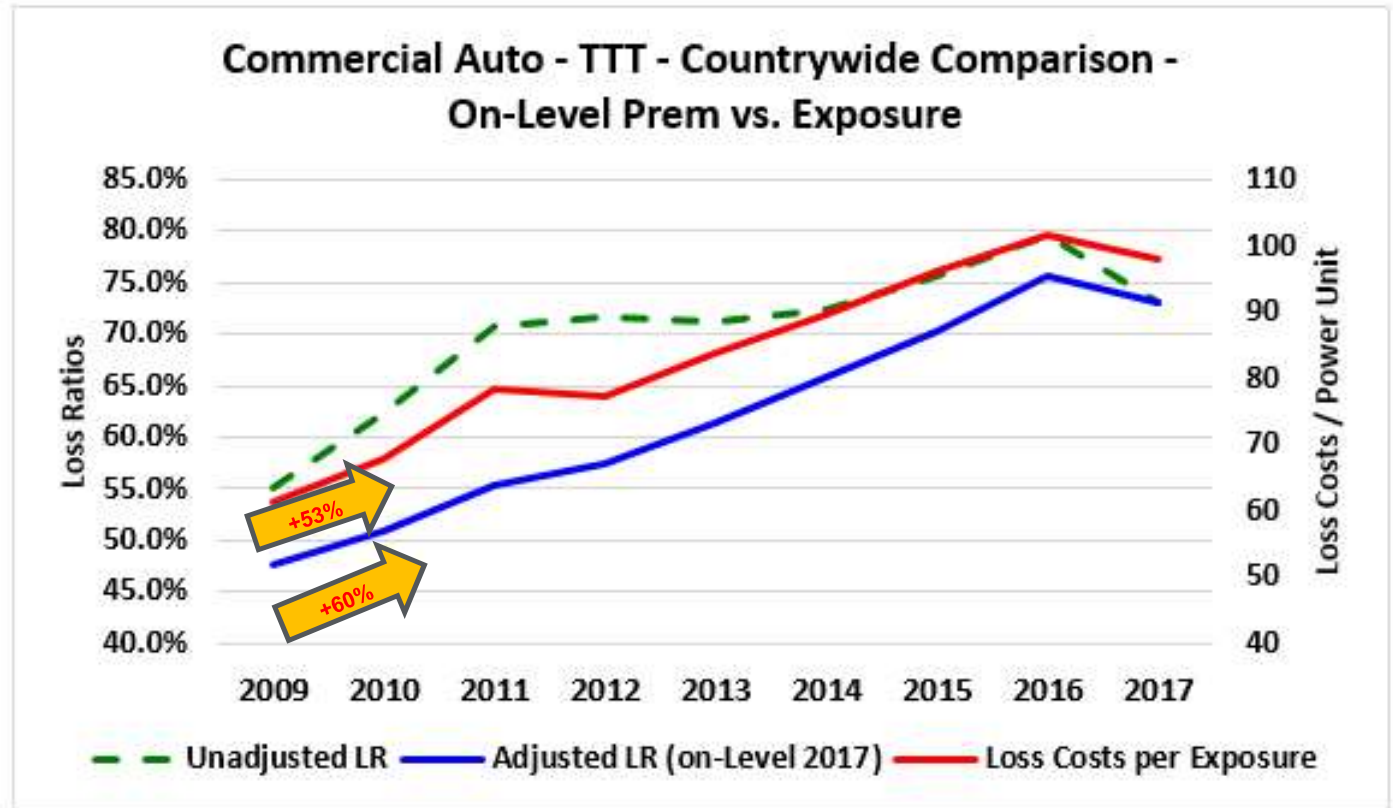


Commercial Auto Trend – TTT – Comparison On-level premium vs. Power Units

Illustrative

Overall increase in cost per on-level premium up by 53% per power unit, and up by 60% per on-level premium.

Small improvement in 2017 due to continued rate activity and somewhat lower trends for TTT.



Source: SOLM 2018v1 pre-release; losses developed using 7-yr VWA; uses ISO MarketWatch 12/31/2017 rate changes – CA-TTT Liability; power units in months

Commercial Auto – View at 2018



Bodily injury is a somewhat larger portion of total (71.5% vs. 70.3% in 2009), and longer average reported loss and payment duration.

BI shows higher frequency trends but lower severity trends than total and PD.

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2018

Market Segment: Commercial Auto
Trucks Tractors and Trailers
All Companies - All Hazard Groups
Bodily Injury
Unlimited xs 0

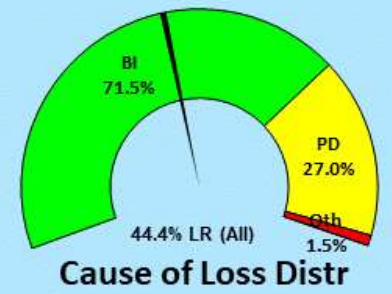
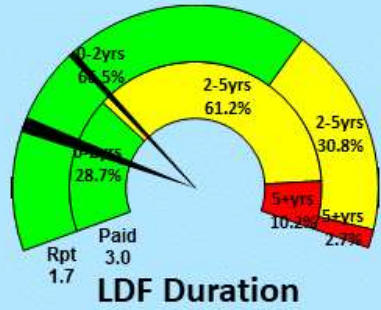
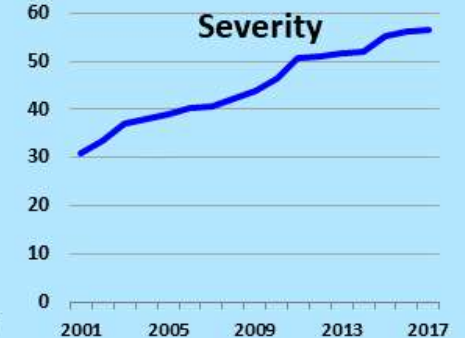
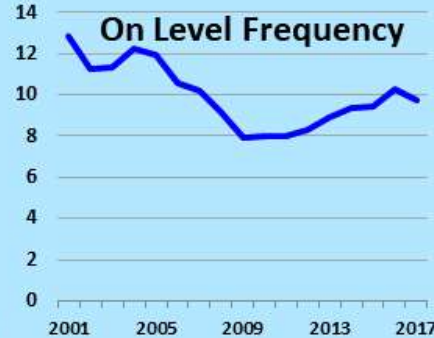


Loss Ratio Analytics: View at 2018 - TTT BI

SOLM 2018 v0.1

Illustrative
Est All Yr/Curr Yr LR: 44.4% / 55.3%
7 Year Severity Trend: 2.08%
All Year Trend: 3.60%
Avg Rep / Pay Duration: 1.7 / 3.0 Years
Partial Loss Ratio

Total Premium 12/2017: 71,965,175,655
Total Incurred \$ Indemnity+Alae (Prorata): 39,010,160,472
Total Occurrences: 1,047,716



Note: Loss development factors and durations use 3-year VWA and 3% detrending
Rate Changes from MarketWatch - Trucks, Tractors, & Trailers - Liability - New and Renewal Policies - 12/31/2017

Source: SOLM 2018v1 pre-release using on-level premium as base

SERVE | ADD VALUE | INNOVATE

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Commercial Auto – View at 2018

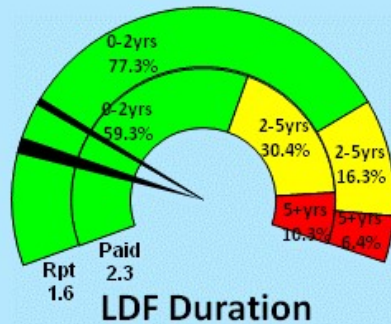


PD excess of 25k shows somewhat lower frequency trends but somewhat higher overall average severity trends, rising from 21k in 2008 to 38k in 2017 (80% increase)

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2018

Market Segment: Commercial Auto
Trucks Tractors and Trailers
All Companies - All Hazard Groups
Property Damage
Unlimited xs 25,000

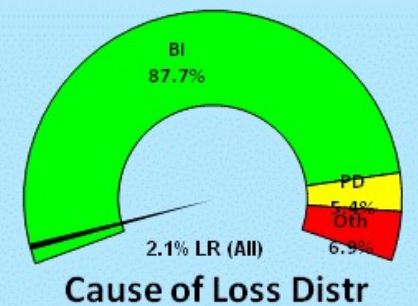
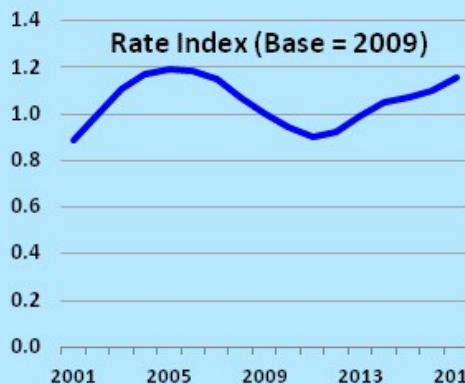
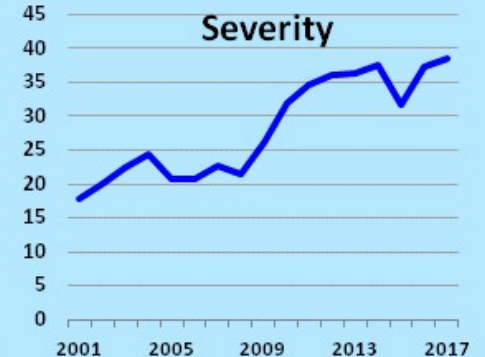
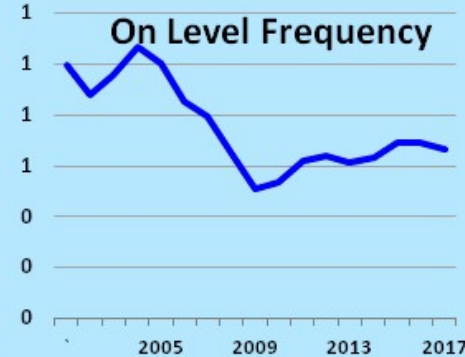


Loss Ratio Analytics - PD Excess of 25k Illustrative

SOLM 2018 v0.1

Est All Yr/Curr Yr LR: 2.1% / 2.6%
7 Year Severity Trend: 0.92%
All Year Trend: 4.86%
Avg Rep / Pay Duration: 1.6 / 2.3 Years
Partial Loss Ratio

Total Premium 12/2017: 71,965,175,655
Total Incurred \$ Indemnity+Alae (Prorata): 1,798,537,390
Total Occurrences: 75,451



Source: SOLM 2018v1 pre-release using on-level premium as base

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Commercial Auto – View at 2018



For all of Commercial Auto (TTT is about half of the 8 CAU markets and 38 total commercial markets we analyze), the current loss ratio is 77.1%, vs. long-term on-level average of 64.0%.

Recent somewhat higher overall severity trends (4.9% vs. 4.6% accounting for some of the difference).

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2018

Market Segment: Multiple
Multiple
All Companies - All Hazard Groups
All Causes of Loss
Unlimited xs 0

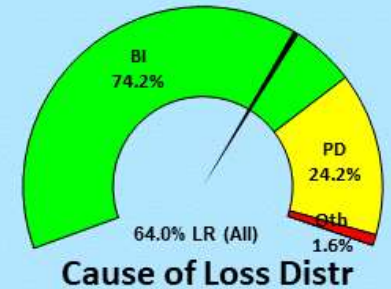
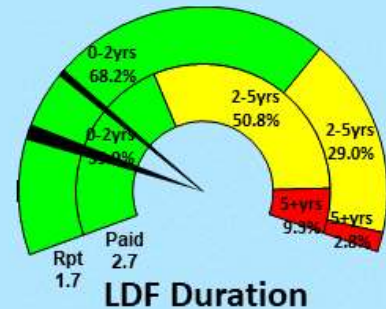
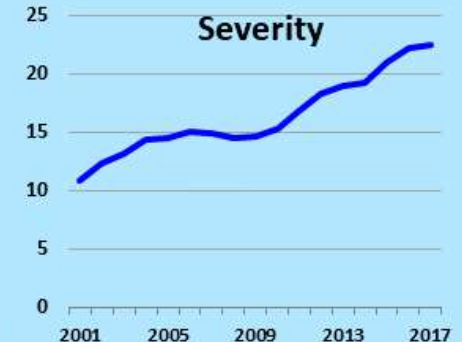
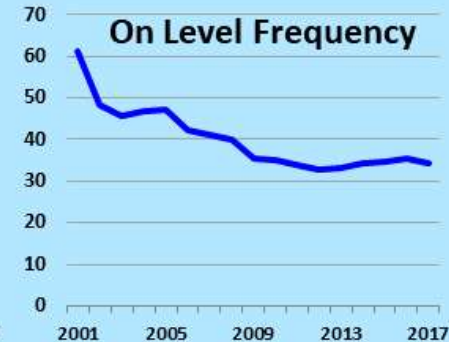
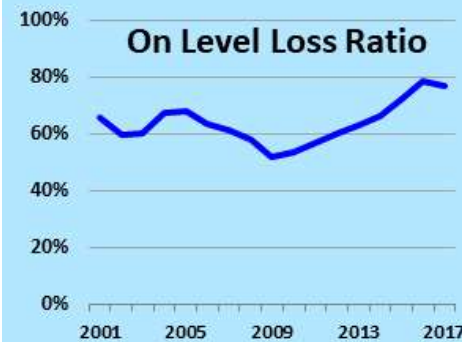
Loss Ratio Analytics: View at 2018 **All CAU**

SOLM 2018 v0.1

Illustrative

Est All Yr/Curr Yr LR: 64.0% / 77.1%
7 Year Severity Trend: 4.88%
All Year Trend: 3.96%
Avg Rep / Pay Duration: 1.7 / 2.7 Years

Total Premium 12/2017: 146,132,560,739
Total Incurred \$ Indemnity+Alae (Prorata): 108,693,596,416
Total Occurrences: 8,043,090



Note: Loss development factors and durations use 3-year VWA and 3% detrending
Rate Changes from MarketWatch - All Commercial Auto Lines - Liability - New and Renewal Policies - 12/31/2017

Source: SOLM 2018v1 pre-release using on-level premium as base

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Commercial Auto – View at 2018

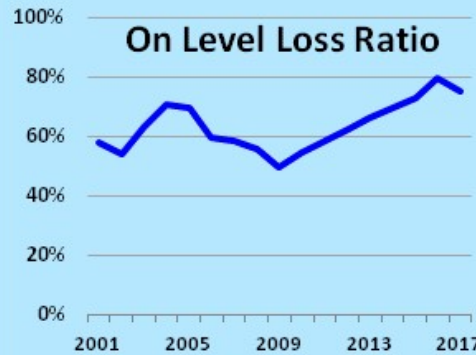


Regional carriers somewhat worse overall experience at 75.6% for TTT, and 11.6 points worse than long-term on-level average 64%. Significant variations between regional, and all, carriers exist.

ISO Size-of-Loss Matrix

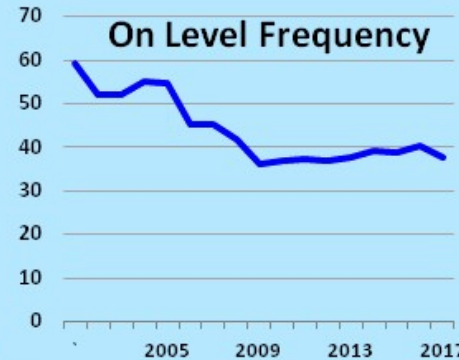
© Insurance Services Office, Inc., 2018

Market Segment: Commercial Auto
 Trucks, Tractors, and Trailers
 Regional Companies - All Hazard Groups
 All Causes of Loss
 Unlimited xs 0



Illustrative

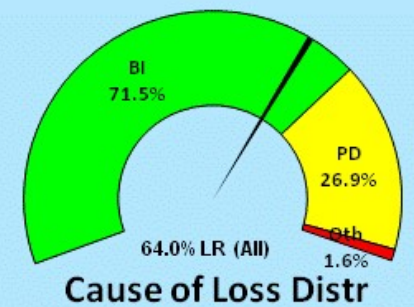
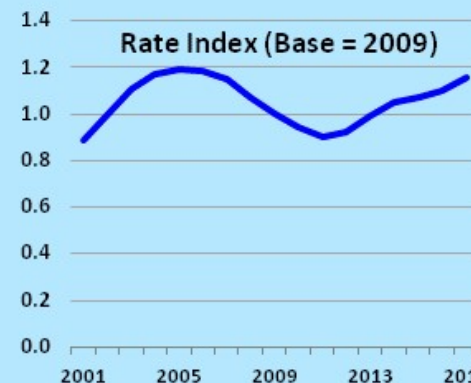
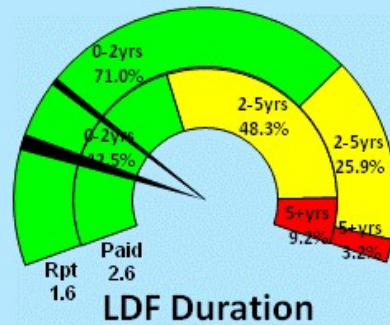
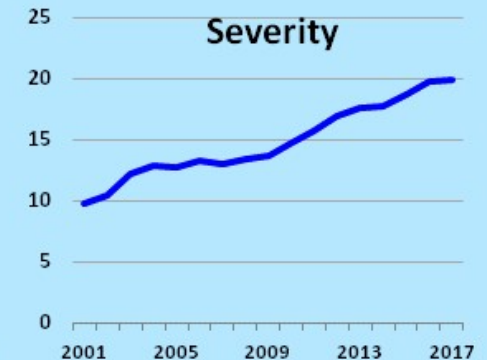
Est All Yr/Curr Yr LR: 64.0% / 75.6%
 7 Year Severity Trend: 3.87%
 All Year Trend: 4.15%
 Avg Rep / Pay Duration: 1.6 / 2.6 Years



Loss Ratio Analytics

SOLM 2018 v0.1

Total Premium 12/2017: 35,019,766,788
 Total Incurred \$ Indemnity+Alae (Prorata): 28,517,218,341
 Total Occurrences: 2,362,557



Source: SOLM 2018v1 pre-release using on-level premium as base

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Commercial Auto – View at 2018



Continued significant pressure on increased limits factors for layer 4.9M xs of 100k, going from low 20% in 2009 to above 30% currently, driven by higher frequency and steady severity trend excess of 3%.

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2018

Market Segment: Commercial Auto
Trucks Tractors and Trailers
All Companies - All Hazard Groups
All Causes of Loss
4,900,000 xs 100,000

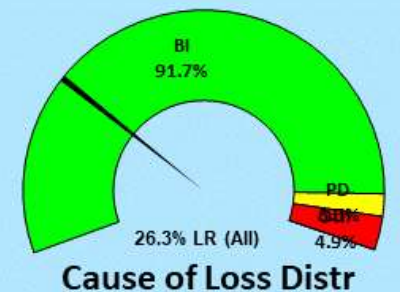
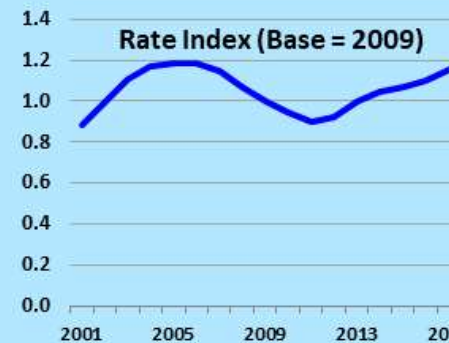
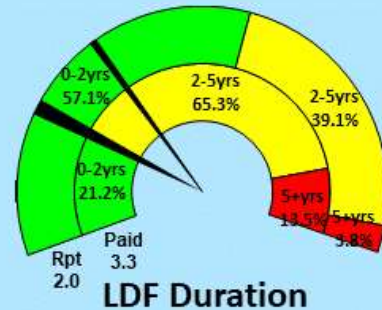
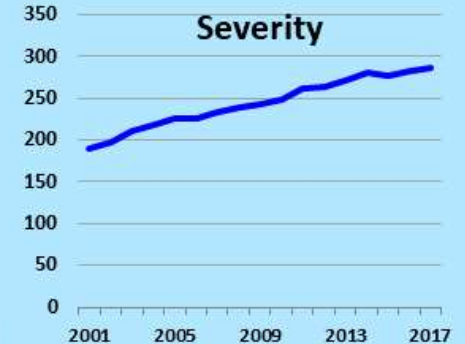
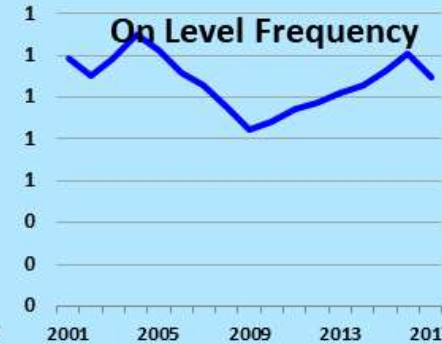
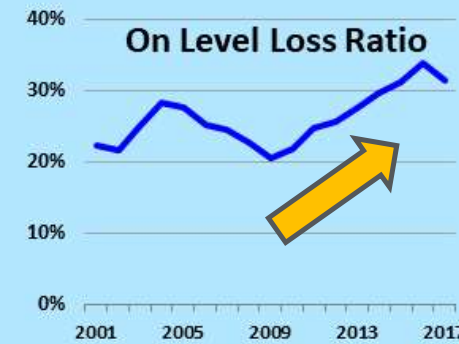
Loss Ratio Analytics: View at 2018 **TTT Excess**

SOLM 2018 v0.1

Illustrative

Est All Yr/Curr Yr LR: 26.3% / 31.5%
7 Year Severity Trend: 1.59%
All Year Trend: 2.51%
Avg Rep / Pay Duration: 2.0 / 3.3 Years
Partial Loss Ratio

Total Premium 12/2017: 71,965,175,655
Total Incurred \$ Indemnity+Alae (Prorata): 22,343,450,047
Total Occurrences: 101,424



Note: Loss development factors and durations use 3-year VWA and 3% detrending
Rate Changes from MarketWatch - Trucks, Tractors, & Trailers - Liability - New and Renewal Policies - 12/31/2017

Source: SOLM 2017v1 pre-release using on-level premium as base

SERVE | ADD VALUE | INNOVATE

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Commercial Auto – View at 2018



ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2018

Market Segment: Commercial Auto
Trucks Tractors and Trailers
All Companies - All Hazard Groups
All Causes of Loss
Unlimited xs 0

Illustrative

Est All Yr/Curr Yr LR: 60.5% / 73.0%
7 Year Severity Trend: 4.62%
All Year Trend: 4.44%
Avg Rep / Pay Duration: 1.5 / 2.5 Years

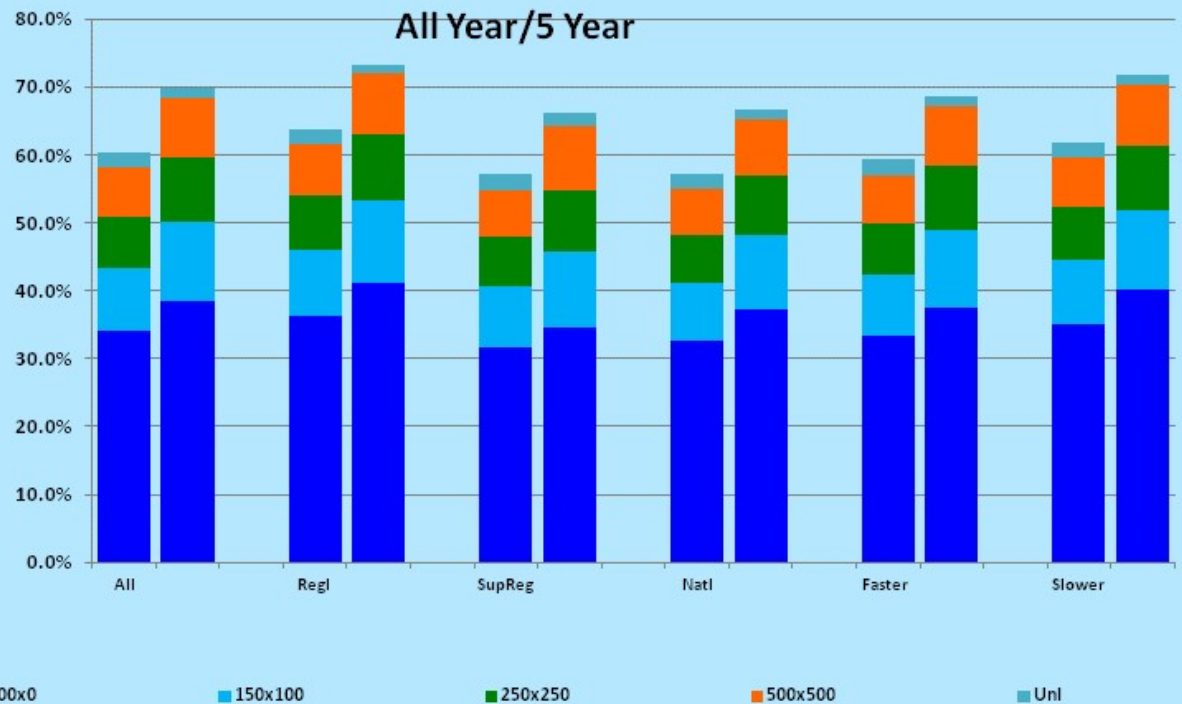
Excess Loss Ratio Analytics

SOLM 2018 v0.1

Total Premium 12/2017: 71,965,175,655
Total Incurred \$ Indemnity+Alae (Prorata): 54,548,178,018
Total Occurrences: 4,546,329

Regional carriers have worse experience than super-regional or national carriers, with losses less than 100k providing much of the difference.

Faster developing companies having better experience than slower companies.



Source: SOLM 2017 v1 using top 40 National Companies (market cap > \$1B); regional is <250M market cap

SERVE | ADD VALUE | INNOVATE

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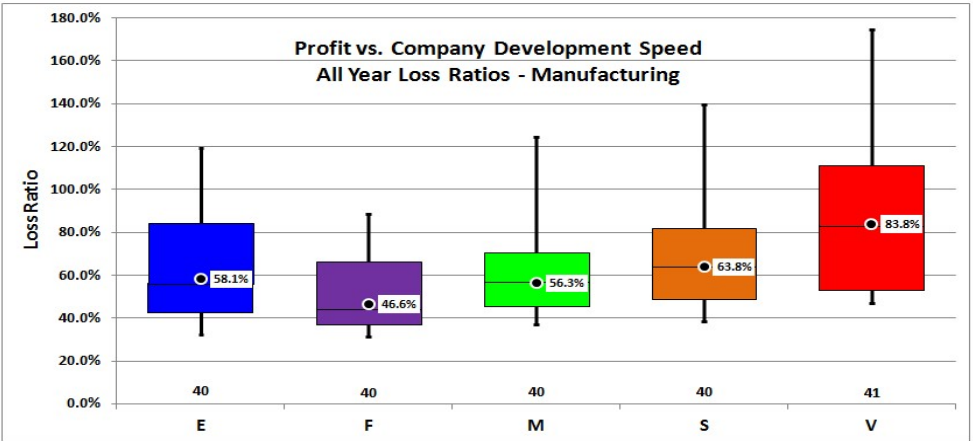
Commercial Auto – View at 2018



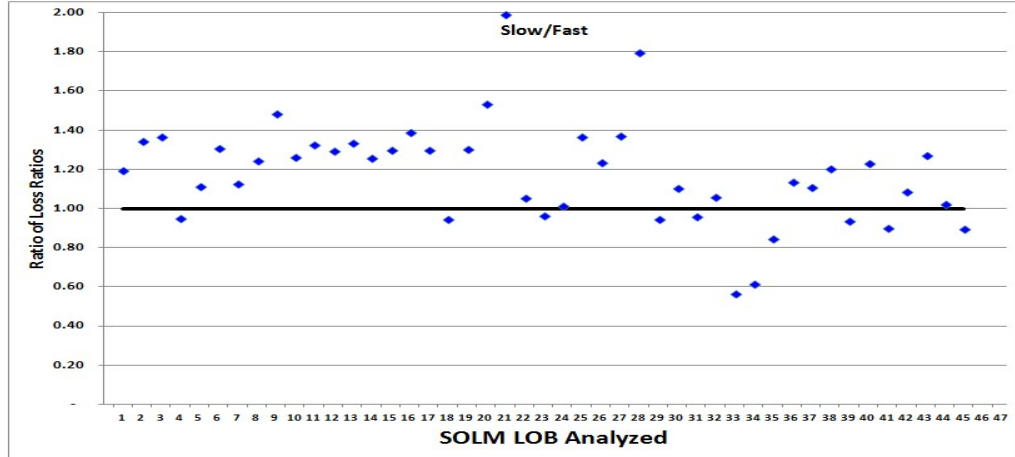
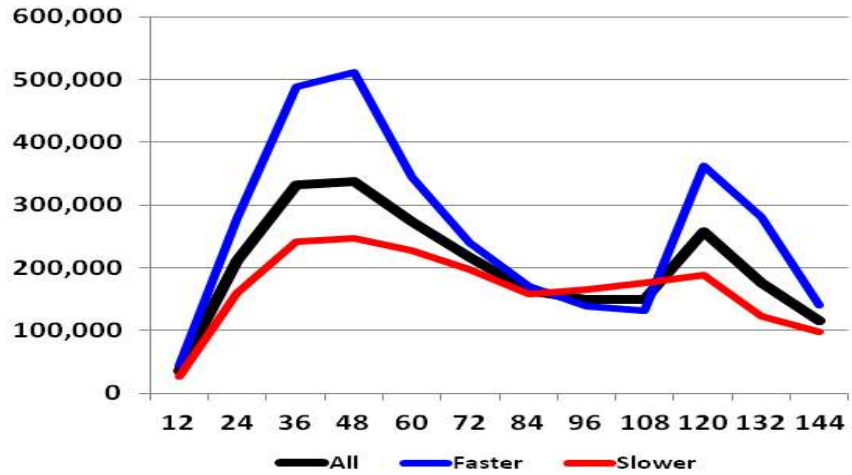
Is There a Connection between Profitability and LDF Speed? Illustrative

Faster and slower companies generally have significantly different average case reserves at comparable maturities, with faster companies putting up reserves much faster.

We have shown a very significant link between faster reporting companies and better overall results in the 38 markets we analyze on a macro basis.



Commercial Auto TTT - Average OS



Source: Verisk Monday Webinar – 9/11/2017 – John Buchanan, Marni Wasserman (recorded)
<http://webinars.verisk.com/line-of-insurance/profitability-company-loss-development-speed/>

Loss Development and Reserve Runoff Testing



Commercial Auto – View at 2018



Continuing Reported Lengthening Loss Development – 4.9M vs 100k

Illustrative

LDF Factors continue to lengthen in 2017, especially at early maturities. All views at 2017 use 3-year averages – if use more recent or trend LDFs, indications would be higher.

Incurred \$ Indemnity+Alae (Prorata) Triangle

	12	24	36	48	60	72	84	96
AY 1997	355,264,602	608,682,744	745,848,695	833,301,037	899,726,136	929,042,072	934,852,469	937,165,942
AY 1998	364,072,942	615,886,827	774,726,342	898,842,391	946,683,658	966,048,321	974,453,538	974,978,737
AY 1999	370,272,825	630,115,254	843,990,492	972,904,373	1,018,862,211	1,043,988,830	1,054,644,834	1,058,216,716
AY 2000	372,263,727	670,637,370	891,252,145	1,018,824,073	1,080,643,575	1,094,078,246	1,094,132,434	1,100,728,139
AY 2001	364,721,191	645,068,835	856,253,354	1,005,484,887	1,038,759,560	1,045,705,628	1,050,559,011	1,053,024,782
AY 2002	371,777,192	649,665,122	840,935,267	928,445,250	952,285,727	976,780,779	980,015,103	980,894,357
AY 2003	402,974,499	700,425,397	874,739,196	994,041,218	1,030,712,246	1,047,723,872	1,049,455,034	1,047,256,916
AY 2004	442,610,208	762,111,746	945,303,690	1,041,447,509	1,087,772,917	1,107,288,931	1,108,814,997	1,112,338,773
AY 2005	452,086,653	766,408,383	941,174,855	1,051,772,671	1,092,040,508	1,113,094,508	1,122,836,482	1,126,132,240
AY 2006	443,060,155	761,433,808	954,499,616	1,048,681,435	1,097,845,533	1,114,461,643	1,119,806,423	1,122,032,779
AY 2007	449,809,851	759,343,172	941,700,469	1,043,502,464	1,088,184,815	1,109,864,697	1,116,634,928	1,117,380,129
AY 2008	421,817,444	692,775,246	859,070,663	952,419,664	990,311,852	1,005,811,481	1,015,199,765	1,017,805,123
AY 2009	315,224,780	589,509,272	742,720,514	852,442,255	895,450,048	914,762,876	916,891,453	925,305,709
AY 2010	347,620,007	621,549,508	808,799,694	909,502,022	974,970,229	995,084,915	1,007,306,031	1,016,392,539
AY 2011	398,045,378	730,342,259	931,379,459	1,070,351,074	1,137,372,922	1,165,510,192	1,179,944,765	
AY 2012	391,366,902	741,003,007	974,687,116	1,105,555,391	1,190,315,100	1,209,474,875		
AY 2013	411,038,684	783,334,253	1,017,773,426	1,208,137,090	1,303,628,069			
AY 2014	453,765,972	796,972,033	1,109,671,439	1,312,978,428				
AY 2015	468,654,360	918,092,526	1,226,788,487					
AY 2016	501,684,814	1,000,840,684						
AY 2017	497,010,097							

4, 2015, 2016, 2017: 17,831,449,583 19,102,140,293 20,689,969,093 22,343,450,047

	24/12	36/24	48/36	60/48	72/60	84/72	96/84	108/96
AY 1997	1.713	1.225	1.117	1.080	1.033	1.006	1.002	1.001
AY 1998	1.692	1.258	1.160	1.053	1.020	1.009	1.001	1.002
AY 1999	1.702	1.339	1.153	1.047	1.025	1.010	1.003	1.001
AY 2000	1.802	1.329	1.143	1.061	1.012	1.000	1.006	0.999
AY 2001	1.769	1.327	1.174	1.033	1.007	1.005	1.002	0.998
AY 2002	1.747	1.294	1.104	1.026	1.026	1.003	1.001	1.000
AY 2003	1.738	1.249	1.136	1.037	1.017	1.002	0.998	1.004
AY 2004	1.722	1.240	1.102	1.044	1.018	1.001	1.003	1.001
AY 2005	1.695	1.228	1.118	1.038	1.019	1.009	1.003	1.001
AY 2006	1.719	1.254	1.099	1.047	1.015	1.005	1.002	1.002
AY 2007	1.688	1.240	1.108	1.043	1.020	1.006	1.001	1.003
AY 2008	1.642	1.240	1.109	1.040	1.016	1.009	1.003	1.000
AY 2009	1.870	1.260	1.148	1.050	1.022	1.002	1.009	1.004
AY 2010	1.788	1.301	1.125	1.072	1.021	1.012	1.009	
AY 2011	1.835	1.275	1.149	1.063	1.025	1.012		
AY 2012	1.893	1.315	1.134	1.077	1.016			
AY 2013	1.906	1.299	1.187	1.079				
AY 2014	1.756	1.392	1.183					
AY 2015	1.959	1.336						
AY 2016	1.995							



Commercial Auto – View at 2018

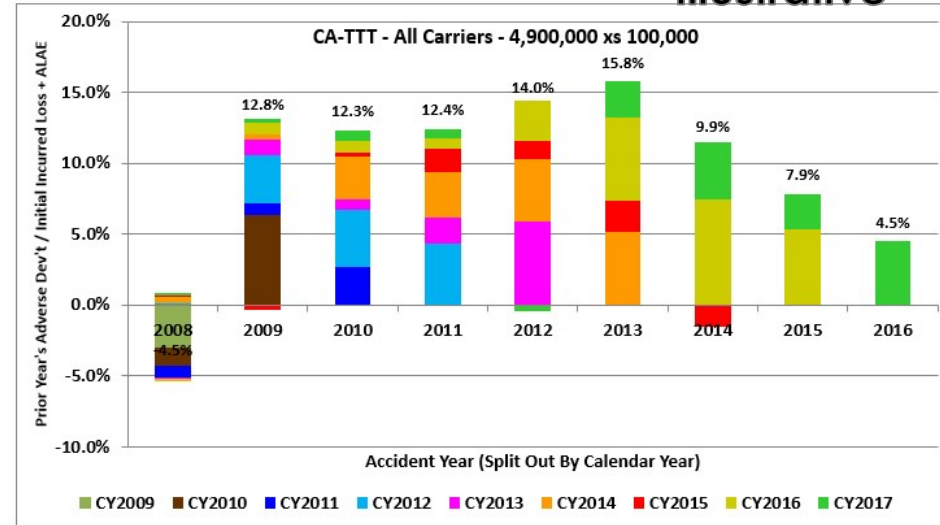


TTT – Reserve Run-off Test @12/31/2017 – 4.9M vs 100k

Comparing to initial selected excess losses at 12 months using a mechanical 7-year average, produces deterioration over 10% for accident years 2009 to 2013.

All subsequent years continue the same pattern of deterioration.

Illustrative



ISO SOLM 2018 v1.99a - Development Triangle and Analysis
Ex-ante Reserving Analysis Runoff Tests (through 12/31/2017)

Market Analysis: CA-TTT - All Carriers
Assumptions: Incurred \$ Indemnity+Alae (Prorata); 4,900,000 vs 100,000; 7 yr VWA (100% wt); 3.0% detrended threshold

Select Metric here:		CY2017 CY2016 Ultimate Est. CY2015 CY2014 CY2013 CY2012 CY2011 CY2010 CY2009 CY2008 CY2007 CY2006 CY2005 CY2004 CY2003 CY2002 CY2001																		
Runoff % Adv (Fav)	Ultimate Est. INCURRED @12 mos	Adverse (Fav) Dev't	AY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
5.7%	879,073,511	50,040,803	2000	(16,651)	(33,724)	(257,609)	410,714	719,096	(509,105)	822,183	(1,111,961)	(2,213,713)	(2,335,399)	4,229,270	(9,204,322)	(14,401,882)	1,472,961	(762,665)	36,246,493	36,987,117
1.7%	987,946,588	16,386,008	2001	(4,165)	(430,178)	792,627	(204,849)	633,461	(987,250)	(808,484)	(668,730)	(3,081,024)	(901,297)	(1,603,308)	(16,020,299)	(26,679,463)	26,137,116	24,586,539	15,029,271	
-5.7%	1,047,585,314	(59,285,146)	2002	(76,964)	210,663	478,067	870,059	1,102,075	424,672	(1,557,906)	(327,442)	(2,088,819)	(2,492,891)	6,501,131	(26,282,435)	(38,727,463)	(1,695,532)	4,377,639		
-5.4%	1,136,393,938	(61,464,242)	2003	166,881	(150,142)	(914,882)	(618,966)	(861,792)	602,927	3,678,745	(5,016,464)	(3,980,707)	(3,592,861)	(12,375,477)	(5,170,349)	(33,417,979)	186,821			
-7.2%	1,259,116,652	(90,100,749)	2004	762,499	147,378	(88,540)	(2,127,020)	(557,314)	881,538	1,325,262	(3,890,012)	(1,668,240)	(3,122,576)	(37,530,968)	(37,200,772)	(7,032,584)				
-6.5%	1,260,826,044	(82,470,007)	2005	12,936	(747,146)	390,522	1,171,564	(21,248)	936,556	5,085,693	1,841,102	(5,073,476)	(19,446,020)	(47,140,374)	(19,480,116)					
-4.9%	1,225,363,033	(59,434,095)	2006	212,601	150,539	(1,374,463)	2,071,691	(495,542)	574,520	(2,568,400)	6,074,394	(32,075,552)	(23,035,902)	(8,368,040)						
-4.2%	1,236,815,028	(51,960,837)	2007	211,898	1,351,605	2,051,468	(1,745,840)	2,850,346	4,122,570	1,791,813	(15,390,603)	(24,251,968)	(22,952,128)							
-4.5%	1,125,279,902	(50,296,101)	2008	2,581,652	(1,519,626)	1,134,230	4,944,475	(1,567,517)	1,175,707	(9,227,953)	(13,632,685)	(34,184,384)								
12.8%	814,731,656	104,521,112	2009	1,926,039	7,062,298	(2,489,500)	2,735,048	9,341,017	27,605,431	6,734,579	51,606,201									
12.3%	890,937,778	109,877,672	2010	6,569,800	7,303,944	2,617,655	26,661,016	7,006,909	35,687,173	24,051,175										
12.4%	1,008,983,651	125,196,708	2011	6,972,985	7,079,897	16,324,612	32,724,308	18,178,029	43,916,877											
14.0%	1,012,604,251	141,974,008	2012	(4,137,906)	29,311,090	12,674,733	44,271,155	59,854,936												
15.8%	1,088,849,300	171,720,272	2013	27,685,954	64,290,413	23,740,015	56,023,889													
9.9%	1,247,034,013	123,835,679	2014	50,230,236	92,581,791	(18,976,348)														
7.9%	1,310,828,158	103,053,830	2015	32,903,029	70,150,801															
4.5%	1,502,116,296	67,820,217	2016	67,820,217																

Minimum	Maximum	Actual vs Expected Development: AY x CY
-3.7%	-1.2%	Favorable development
-4.2%	-0.1%	Somewhat favorable
-0.1%	0.1%	Within +/-1% of original estimate
0.1%	2.4%	Somewhat adverse
2.4%	7.4%	Adverse development

Sources: Using pre-release SOLM 2018 v2 – mechanical selections of VWA (100% 7-year)

Commercial Auto – View at 2018

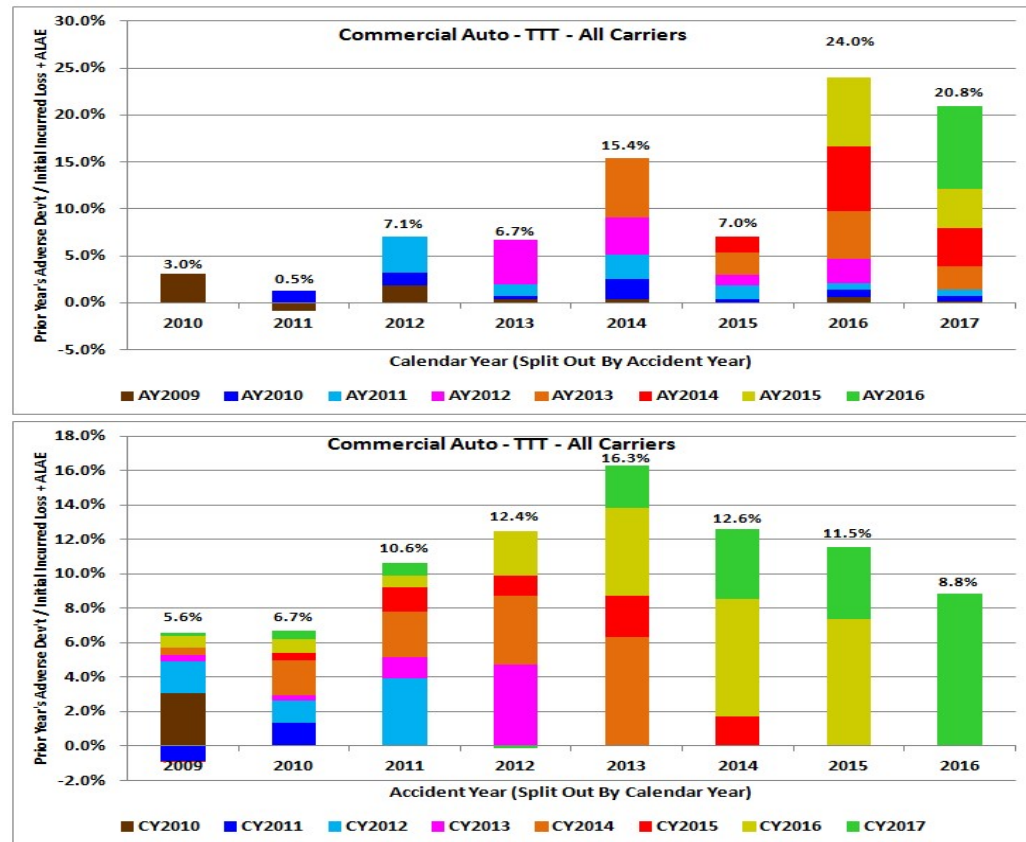


TTT - ERLI Warning through 12/31/2017

Illustrative

Calendar year 2017 2nd worse year for adverse development for TTT, with 2016 worse and 2015 a small lull.

Adverse development across all AYs.



Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

Commercial Auto – View at 2018

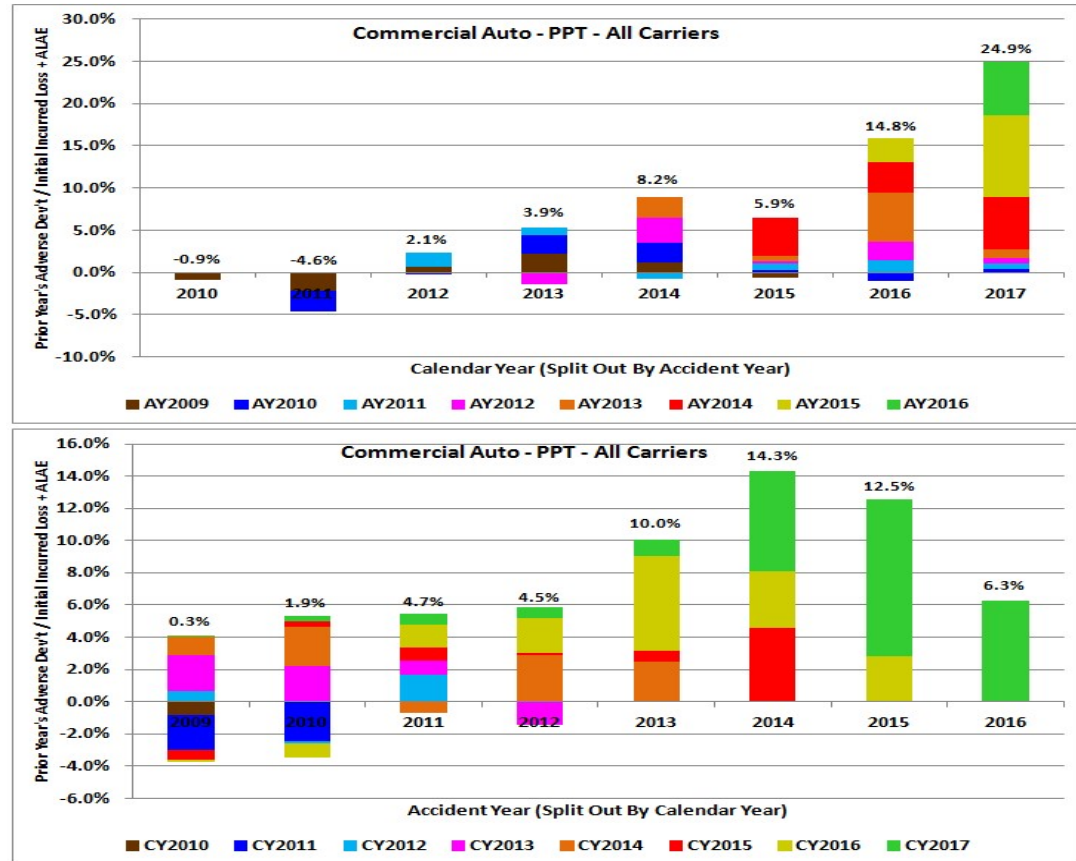


PPT - ERLI Warning through 12/31/2017

Illustrative

Calendar year 2017 worse year for adverse development for PPT, continuing lag vs. TTT shown previously.

Adverse development across all AYs.



Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

Commercial Auto – View at 2018

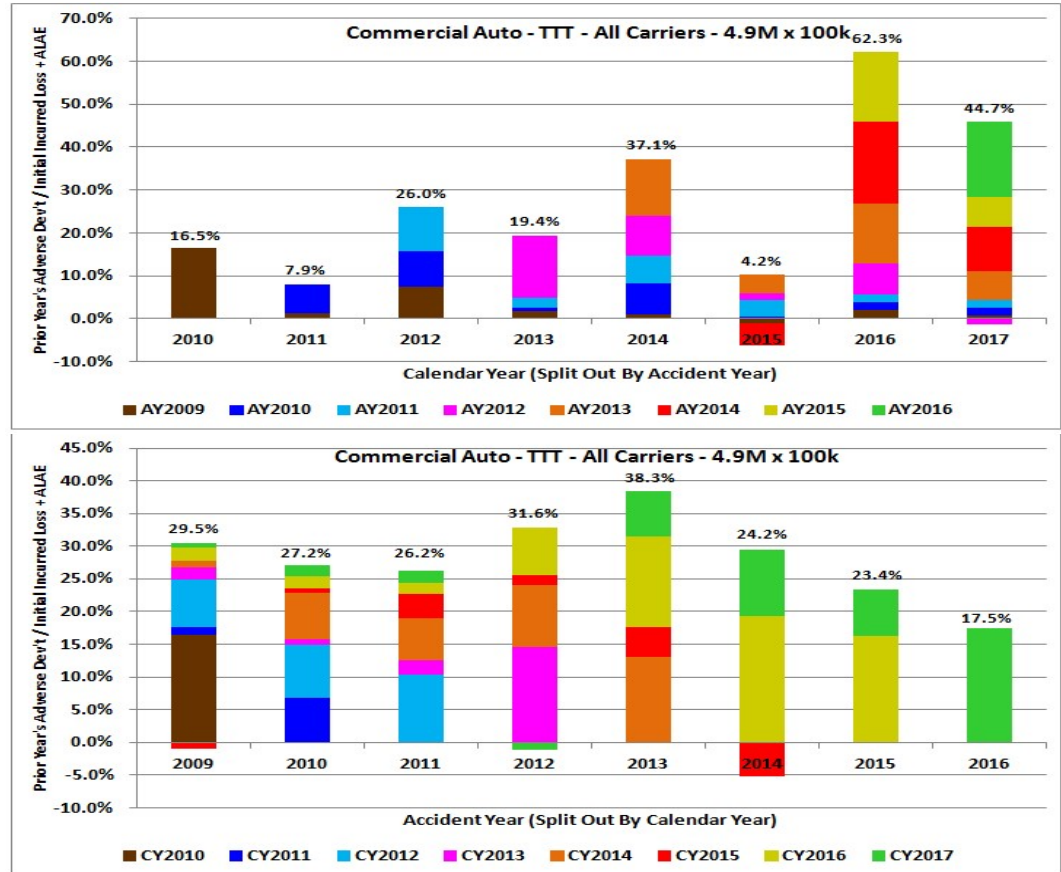


TTT XS - ERLI Warning through 12/31/2017

Illustrative

Excess TTT adverse development is higher than ground-up for 2017, continuing overall pattern of 2016 worse and 2015 a small lull.

Adverse development across all AYs.



Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

Commercial Auto – View at 2018

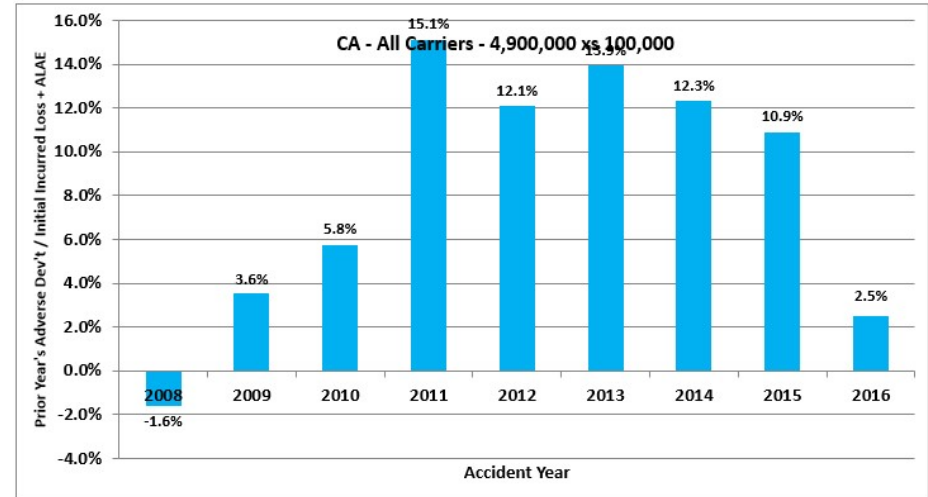


All CAU – Reserve Run-off Test @12/31/2017 – 4.9M xs 100k

Illustrative

Comparing to initial selected excess loss frequencies at 12 months using a mechanical 7-year average, produces deterioration over 10% for accident years 2011 to 2015.

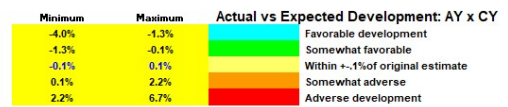
All years from 2009 have large loss deterioration



ISO SOLM 2018 v1.99a - Development Triangle and Analysis Ex-ante Reserving Analysis Runoff Tests (through 12/31/2017)

Market Analysis: CA - All Carriers
Assumptions: Incurred # Occurrence Indemnity; 4,900,000 xs 100,000; 7 yr VWA (100% wt); 3.0% detrended threshold

Runoff % Adv (Fav)	Ultimate Est. INCURRED @12 mos	Adverse (Fav) Dev't	AY	CY																
				2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
3.1%	6,156	190	2000	(1)	(1)	(0)	(1)	2	(1)	1	4	8	(8)	(0)	(39)	(69)	(127)	(46)	58	411
1.1%	12,633	142	2001	(1)	(0)	1	0	(7)	(0)	(7)	4	(3)	(12)	(3)	(86)	(260)	63	(65)	517	
4.9%	12,235	(597)	2002	(0)	3	(5)	4	(6)	(6)	18	(15)	(18)	4	72	(215)	(220)	(109)	(108)		
2.6%	11,248	(280)	2003	1	0	(7)	(1)	3	7	12	(15)	(47)	(6)	(41)	(146)	(107)	57			
5.9%	12,124	(720)	2004	2	(1)	(2)	1	(8)	8	1	(31)	(23)	(83)	(100)	(285)	(190)				
-6.3%	12,156	(763)	2005	(2)	1	(5)	(2)	(14)	16	20	(49)	(38)	(106)	(301)	(203)					
-7.3%	12,317	(894)	2006	(1)	3	(12)	16	(1)	39	7	(85)	(165)	(205)	(490)						
-4.6%	11,736	(643)	2007	1	1	2	11	8	97	(78)	(263)	(229)	(93)							
-1.6%	9,465	(150)	2008	(0)	2	(5)	52	16	101	(222)	(203)	109								
3.6%	7,914	281	2009	16	13	11	70	70	149	(271)	223									
5.8%	7,955	459	2010	18	38	(3)	143	108	161	(6)										
15.1%	7,718	1,168	2011	26	59	129	273	223	458											
12.1%	8,065	978	2012	(5)	109	183	408	282												
13.9%	8,308	1,157	2013	156	355	275	373													
12.3%	8,617	1,061	2014	375	465	220														
10.9%	9,391	1,025	2015	570	455															
2.5%	10,936	272	2016	272																



Sources: Using pre-release SOLM 2018 v2 – mechanical selections of VWA (100% 7-year)

Commercial Auto – View at 2018

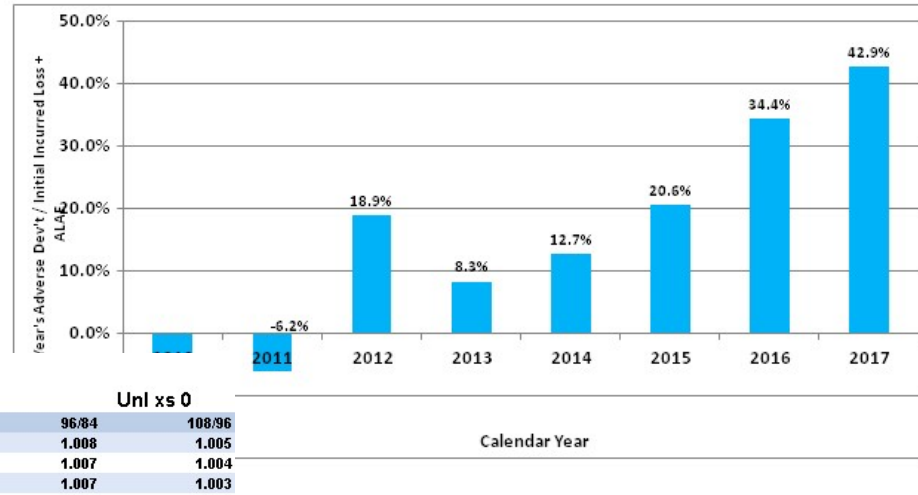


TTT Paid - ERLI Warning through 12/31/2017

A check of payment patterns, also shows continuing adverse development or a lengthening of the tail. In particular in CY 2017 and 2016, so not just a case reserve issue.

Illustrative

CA-TTT - All Carriers - Unlimited xs 0



CY tots-2014,2015,2016,2017: 40,924,982,311 43,857,816,084 47,101,153,754 50,676,813,165

	Paid \$ Indemnity+Alae (Prorata) Triangle		Commercial Auto		Trucks Tractors and Trailers		Unl xs 0	
	24/12	36/24	48/36	60/48	72/60	84/72	96/84	108/96
AY 1997	2.028	1.409	1.189	1.101	1.049	1.017	1.008	1.005
AY 1998	1.993	1.430	1.208	1.097	1.038	1.018	1.007	1.004
AY 1999	2.042	1.424	1.216	1.090	1.041	1.020	1.007	1.003
AY 2000	1.993	1.426	1.207	1.106	1.040	1.015	1.007	1.004
AY 2001	1.989	1.440	1.208	1.103	1.040	1.015	1.007	1.003
AY 2002	2.001	1.438	1.212	1.092	1.036	1.019	1.005	1.003
AY 2003	2.085	1.455	1.241	1.109	1.037	1.014	1.005	1.004
AY 2004	2.120	1.454	1.210	1.094	1.043	1.015	1.006	1.004
AY 2005	2.092	1.415	1.223	1.096	1.038	1.015	1.007	1.004
AY 2006	2.026	1.451	1.218	1.100	1.043	1.016	1.007	1.003
AY 2007	2.071	1.398	1.210	1.103	1.039	1.016	1.005	1.004
AY 2008	2.066	1.410	1.222	1.097	1.040	1.017	1.007	1.005
AY 2009	1.991	1.410	1.238	1.107	1.042	1.018	1.010	1.005
AY 2010	2.020	1.451	1.228	1.115	1.043	1.019	1.011	
AY 2011	2.096	1.419	1.227	1.119	1.052	1.022		
AY 2012	2.097	1.438	1.244	1.120	1.047			
AY 2013	2.069	1.450	1.276	1.130				
AY 2014	2.078	1.476	1.265					
AY 2015	2.084	1.505						
AY 2016	2.206							

Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

Appendix Rate Change Information



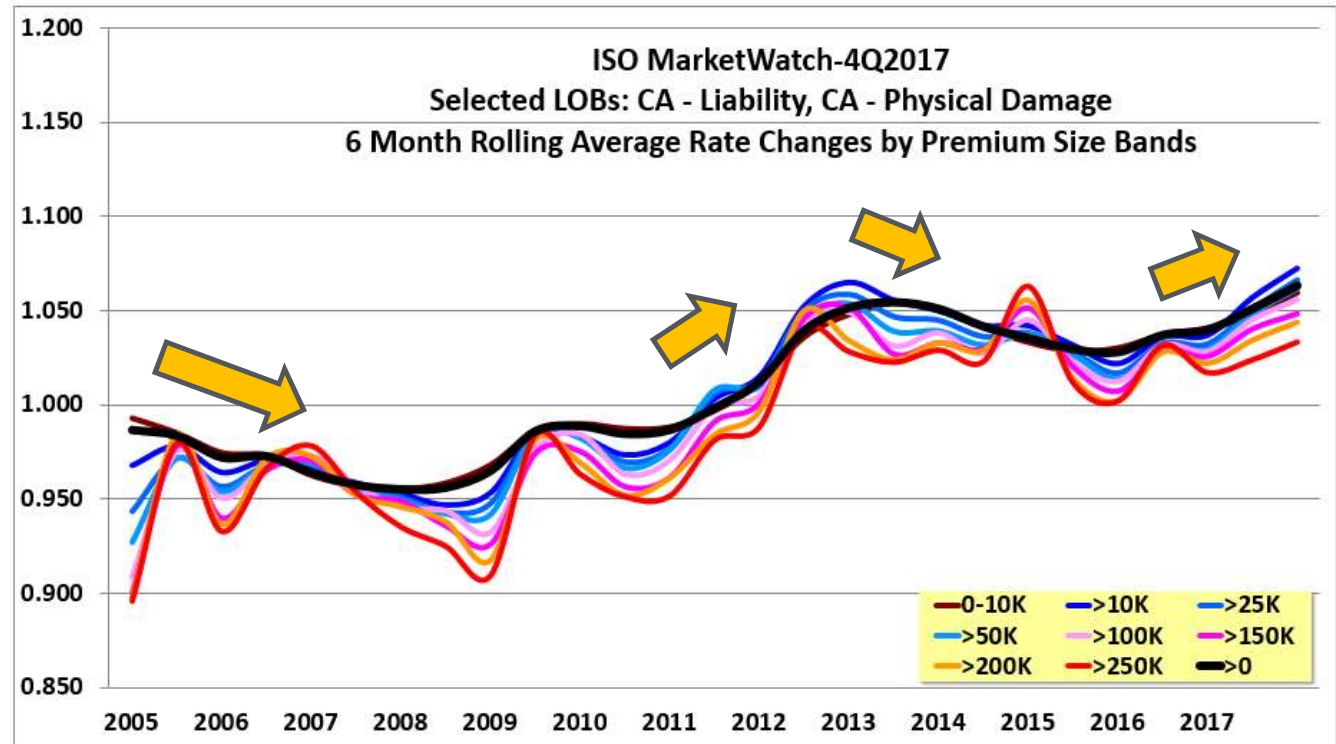
Commercial Auto – View at 2018



Incremental Rate Changes Through 12/31/2017 – Renewal Policies

Illustrative

Rates ride a roller coaster ride, but lagged by a few years compared to actual experience.



	Total Premium (previous)			
total # of policies	All	>10K	>100k	>200k
132,023,123	55,694,457,947	13,601,203,331	3,714,659,438	2,106,704,117

Source: ISO MarketWatch – released 3/22/2018; further details in Commercial Actuarial Panel – December 2016

Commercial Auto – View at 2018

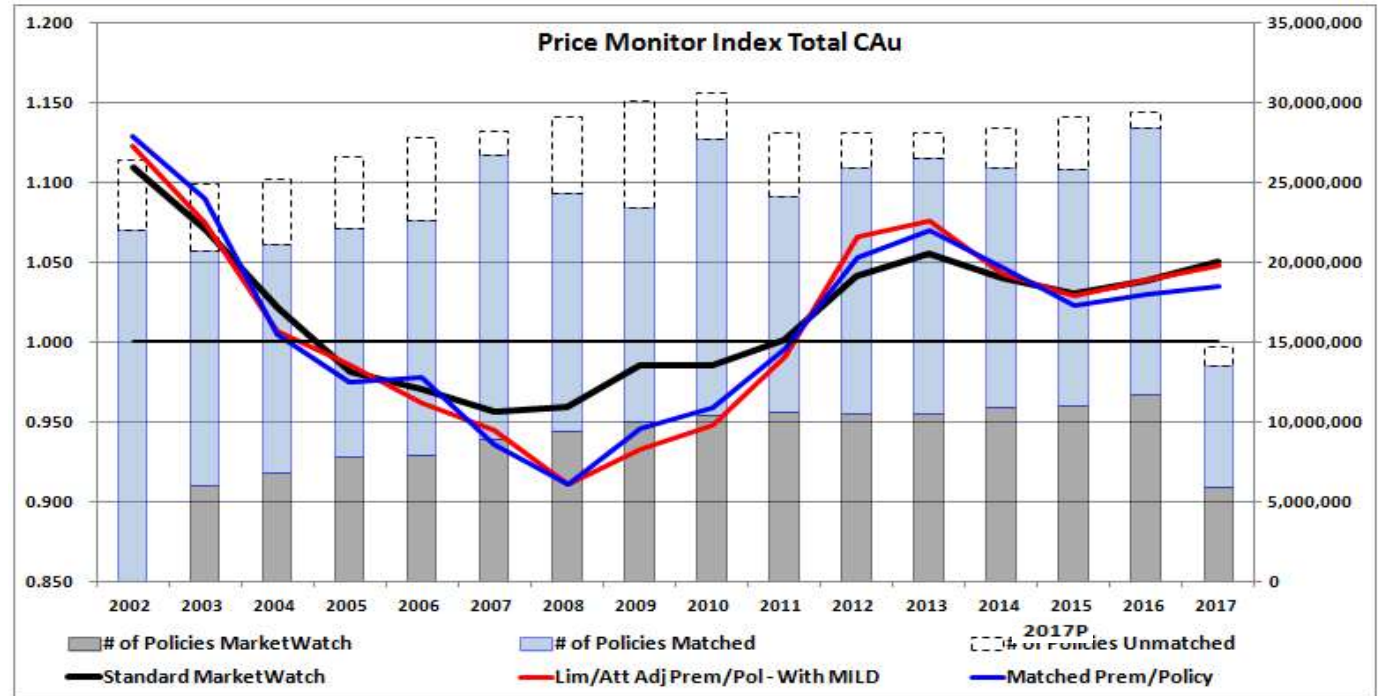


Sample Price Monitors - Commercial Auto Liability – New and Renewal Policies

Illustrative

Renewal vs. New and renewal rate changes show different patterns throughout the underwriting cycle.

For example, renewal policies show a reduction of about 2% in 2009 and 2010, while new and renewal (adjusted for different average attachment and limits offered), shows a reduction of closer to 7% and 5% (-8% in 2008).



Note: Renewal Policies (Standard MarketWatch) - the # of policies underlying this policy level method is shown by the height of the grey bar. The black line represents the incremental rate changes. This method analyzes policy level data, only including policies with a common footprint from year to year for limit, attachment, capping, etc.

New and Renewal Policies (Expanded MW) - the # of policies underlying this company level method is shown by the total height of the grey and blue bars. The blue line represents the incremental rate changes. This method analyzes company level data from year to year, excluding companies for a particular year that have significant changes. This method does not include impacts due to the average number or type of exposures underlying the policy counts.

Limit/Attachment Adjusted - includes adjustments for aggregated limit and attachment differences using MILD for casualty lines (no adjustment for property).

The total # of policies issued by line of business is the total height of all 3 bars (the bar height is the current year policy counts, rather than the prior year).

The largest reported exposure bases (by policy count) for this line are: Car Months 89%, Employee Months 7%, Cost of Hire 1%

Commercial Auto – View at 2018



Sample Price Monitors – New and Renewal – YE 2017

Illustrative

There are different indications of renewal vs. new & renewal policies in 2017.

Including new policies, including those that go from company to company in an aggregated method, show about 2 points lower across all markets we analyze (38 property and casualty).

	YE2017*			2017Q4*		
	Policy Count (UM)	New & Renewal Rate Change	Renewal Rate Change	Policy Count (UM)	New & Renewal Rate Change	Renewal Rate Change
Commercial Auto	28,789,355	4.3%	5.5%	5,940,365	3.0%	6.7%
General Liability	7,393,845	-1.6%	0.3%	1,495,559	-2.2%	0.6%
Commercial Property	12,726,062	0.5%	1.0%	2,746,918	-0.3%	1.3%
Total Casualty	22,395,468	1.6%	3.5%	4,517,038	1.5%	4.2%
Total Property	38,314,433	0.8%	1.6%	8,172,385	-0.9%	2.0%
Total P&C	60,709,901	0.8%	2.8%	12,689,423	0.4%	3.4%

Source: ISO MarketWatch (* Preliminary through 4Q2017; not including aggregate changes in limits and attachment points)
 Renewal Commercial Auto contains CRR, while New and Renewal does not (both contain Auto Physical Damage)
 Renewal General Liability does not contain CRR, Liquor, and Pollution, while New and Renewal does
 Renewal Total Property does not contain BOP, while New and Renewal does

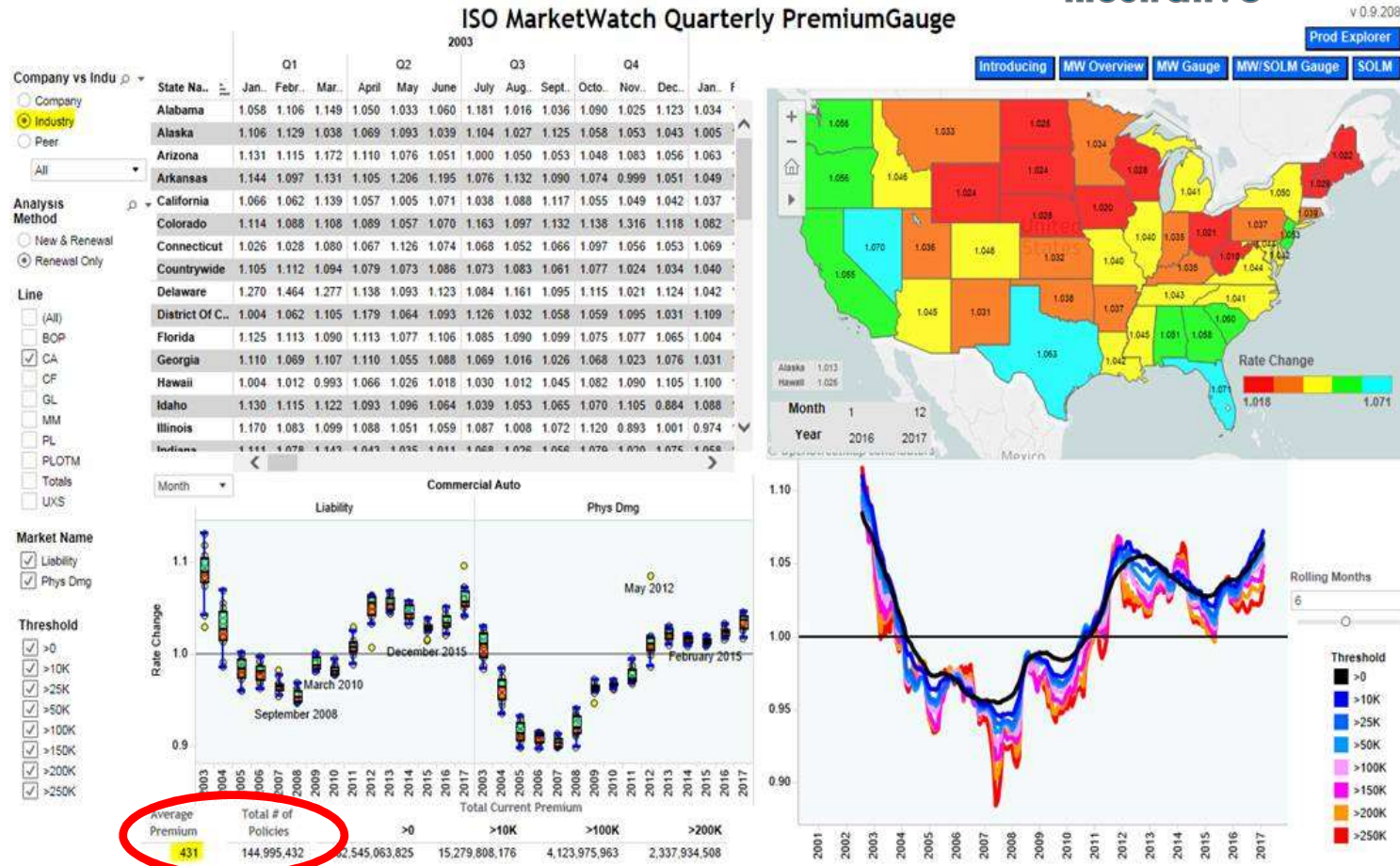
Commercial Auto – View at 2018



Total Commercial Auto Industry – Renewal Policies

Illustrative

There are significant rate change differences by renewal vs new/renewal, state, month, year, premium size, aggregated peer groups such as regional/super-regional/national, line of business and market.



Note: MarketWatch Dashboard (expected release 3Q2018); vlues shown may not match options selected

Commercial Auto – View at 2018

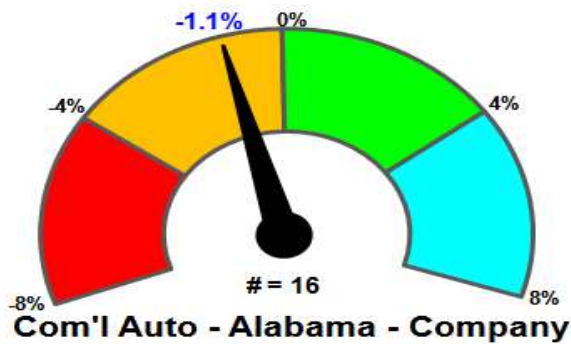


Industry Comparative Gauges – Hypothetical Sample: Alabama – July 2017 (Renewal only)

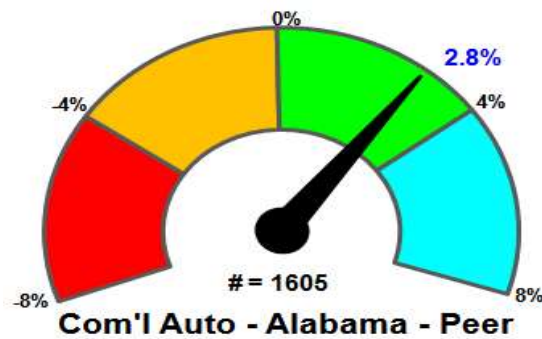
There are significant rate change differences by company, aggregated peer companies, and industry.

Illustrative

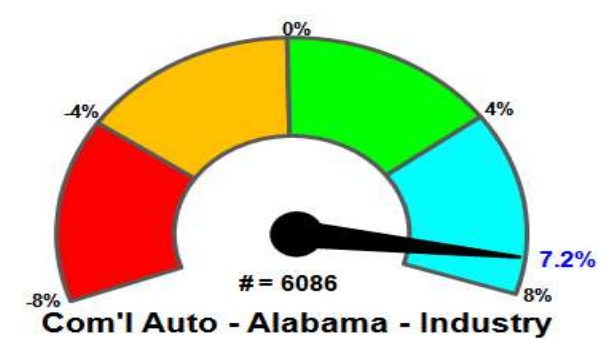
Company



Peer



Industry



Commercial Auto – View at 2018



Holistic View of Rate Changes, Loss Trends and Loss Ratios

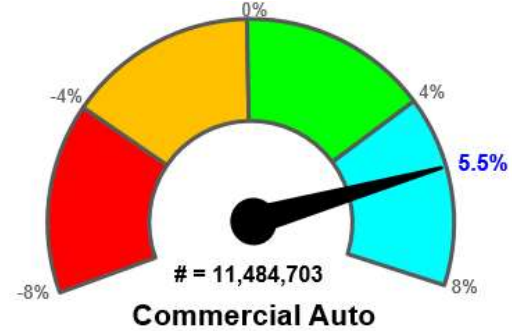
Illustrative

Combining rate changes, severity, frequency trends (including any exposure trends), will produce pressures on ultimate expected loss ratios.

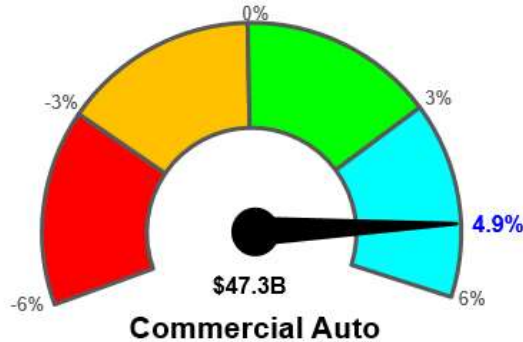
CY2017 New & Renewal Rate Change*



CY2017 Renewal Only Rate Change*



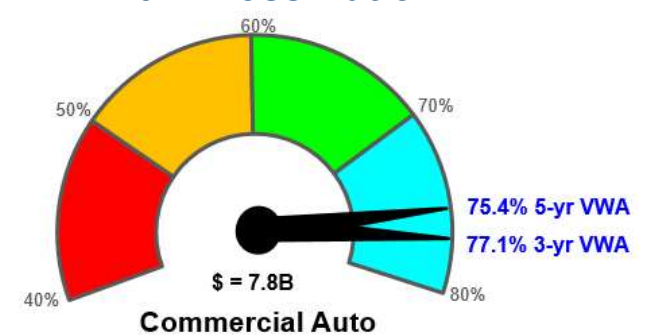
7 Year Severity Trend



3 Year Frequency Trend



2017 Loss Ratio



Sources: ISO MarketWatch (* Preliminary through 4Q2017; not including aggregate changes in limits and attachment points)

SOLM (Using pre-release SOLM 2018 v1 data as of 12/31/2017, on-leveled using new and renewal rate changes for Commercial Auto through 12/31/2017)

Bios





John W. Buchanan, FCAS

Verisk / ISO

John.Buchanan@verisk.com



John Buchanan, FCAS, MAAA, is a principal in charge of ISO's Excess and Reinsurance Division. He has over 30 years of experience as a front-line pricing actuary and consultant in the US, London, and other international reinsurance marketplaces.

In John's career, he has conceptualized, developed and implemented extensive benchmarking and modeling services for various reinsurers, excess carriers, and industry groups. He has pioneered extensive work to extend information gathered in mature benchmarking markets, and applying the information to other International markets making use of local and customized knowledge. He was a frontline sign-off actuary for many domestic and international lines of business. While a consultant, he was also the main contact for many years for the Reinsurance Association of America and the Reinsurance Research Council of Canada as well as having worked extensively with the London and European reinsurance market through the Casualty Actuaries in Reinsurance in London. He also formed and is the chairperson of the joint IFoA-CAS International Pricing Research Working Party. The paper prepared for the 2016 GIRO Conference, "*Analyzing the Disconnect Between the Reinsurance Submission and Global Underwriter's Needs - Property Per Risk*", won the UK Brian Hey award for best paper presented at the conference. He is spearheading the potential for a 2019 GIRO version, focused on Energy risks.

John's professional accomplishments also include being heavily involved with many international meteorological groups including NOAA, UK-Met, GLOBE, ACRE, and was chairperson of the CAS Climate Change Student Outreach subcommittee. He is on the CARE committee responsible for many of the annual CARE conference educational tracks, and previously at the CAS Ratemaking Seminar. He has been a moderator and panelist at dozens of industry seminars on the topic of domestic and international reinsurance pricing, the underwriting cycle, international benchmarking, etc.

Prior to joining Verisk, John was a Senior Vice President at Platinum Underwriters (previously St. Paul Reinsurance), a Principal at Tillinghast (now Towers Watson), and a Senior Consultant at KPMG, Peat Marwick. He has also competed as an amateur in the annual Miami World Salsa Summit championships, and is determined to write the book "The Mathematician's Guide to Salsa Dancing". He has also written and directed a few sponsored films entitled "Franklin Climate Change" and "Cuba People to People" with the former being used to incentivize middle and high school students around the world to investigate the connection between old weather records and today, and the latter selected to run at various in-person and on-line film festivals in the short documentary category in 2017 and 2018. The *Actuarial Review* is preparing a 2018 article on these non-actuarial pursuits.



Mike Rozema, FCAS

Swiss Re America
Michael_Rozema@swissre.com



Mike Rozema joined Swiss Re in 2002 and has served as Head of Actuarial and Reserving for Reinsurance in the Americas Region for the past 5 years. During Mike's first 10 years at Swiss Re he led treaty pricing for the US Broker unit.

Prior to his current role, Mike was a consulting actuary with KPMG. While at KPMG, Mike advised his clients on a wide variety of reserving, ratemaking, cost allocation and modeling solutions.

Mike is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries. He received Masters of Science and Bachelor of Science degrees in Statistics from the University of California, Riverside.



Diane Injic, CPCU

Verisk / ISO

Diane.Injic@verisk.com



Diane is a CPCU, and leads Verisk's Commercial Auto Underwriting Products. Including innovative policy and vehicle level underwriting solutions, which offer speed, efficiency and profit improvement to commercial auto books.

Diane has over 18 years of commercial auto industry experience, including claims, underwriting and product management. She has worked very closely with actuaries through her career as Product Manager to help attain growth and improve profitability.

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