C-23: Wheels Spinning

CARe Seminar, June 4-5, 2018
Brooklyn, NY

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Concurrent Session C-23: Wheels Spinning

- This session will provide a detailed update to the Commercial Auto industry experience, most recently presented at the CAS Wheels Down sessions.
- We will briefly review the results from 2009 through 2016, and then provide a detailed first view for 2017 in 2018, breaking down the overall results into the latest frequency and severity trends, rate changes, lengthening development factors, pressures on increased limits factors, and resulting profitability issues.
- Additional industry insights will be given, including bringing in various industry and governmental sources, and a diagnosis of the past and potential remedies for the future.
- An underwriter and 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.

C-23: Wheels Spinning Agenda

- **Introduction and update – John 30 mins**
  - Brief review of 2009 to 2016
  - Detailed update as of 12/31/2017
  - Review latest trends, rate changes, loss development, increased limits factor pressures, profitability issues, underwriting cycle impacts
- **Additional industry insights – Bill 20 mins**
  - Further diagnosis of historical problems
  - Using various industry and government sources
  - Diagnosis of past and potential future remedies
- **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**

Commercial Auto
Views from 2010 - 2017

Commercial Auto – View at 2010

Looking back at Trend at 2010:

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

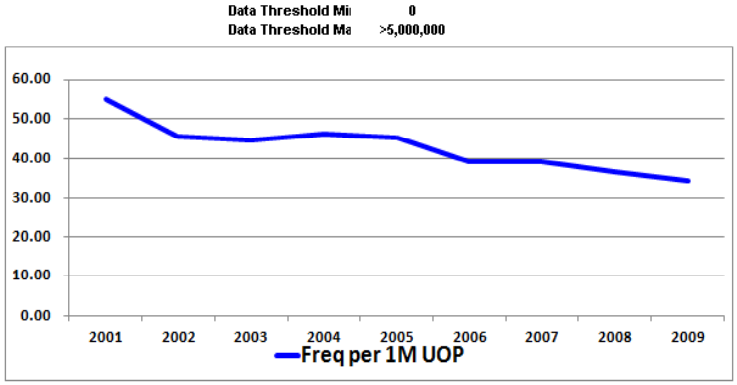
Frequency

Illustrative

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%	

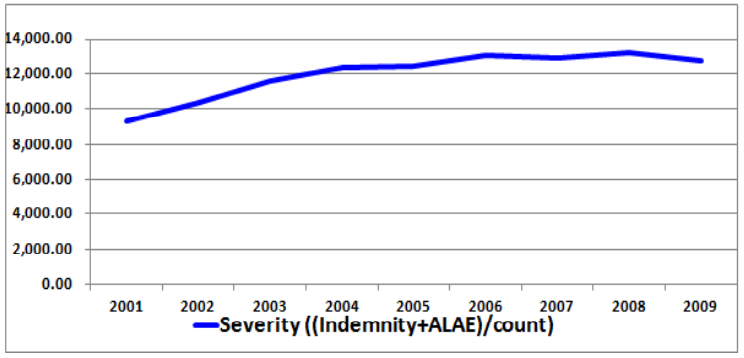
-37.6%



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	12,726	12,726	-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%	

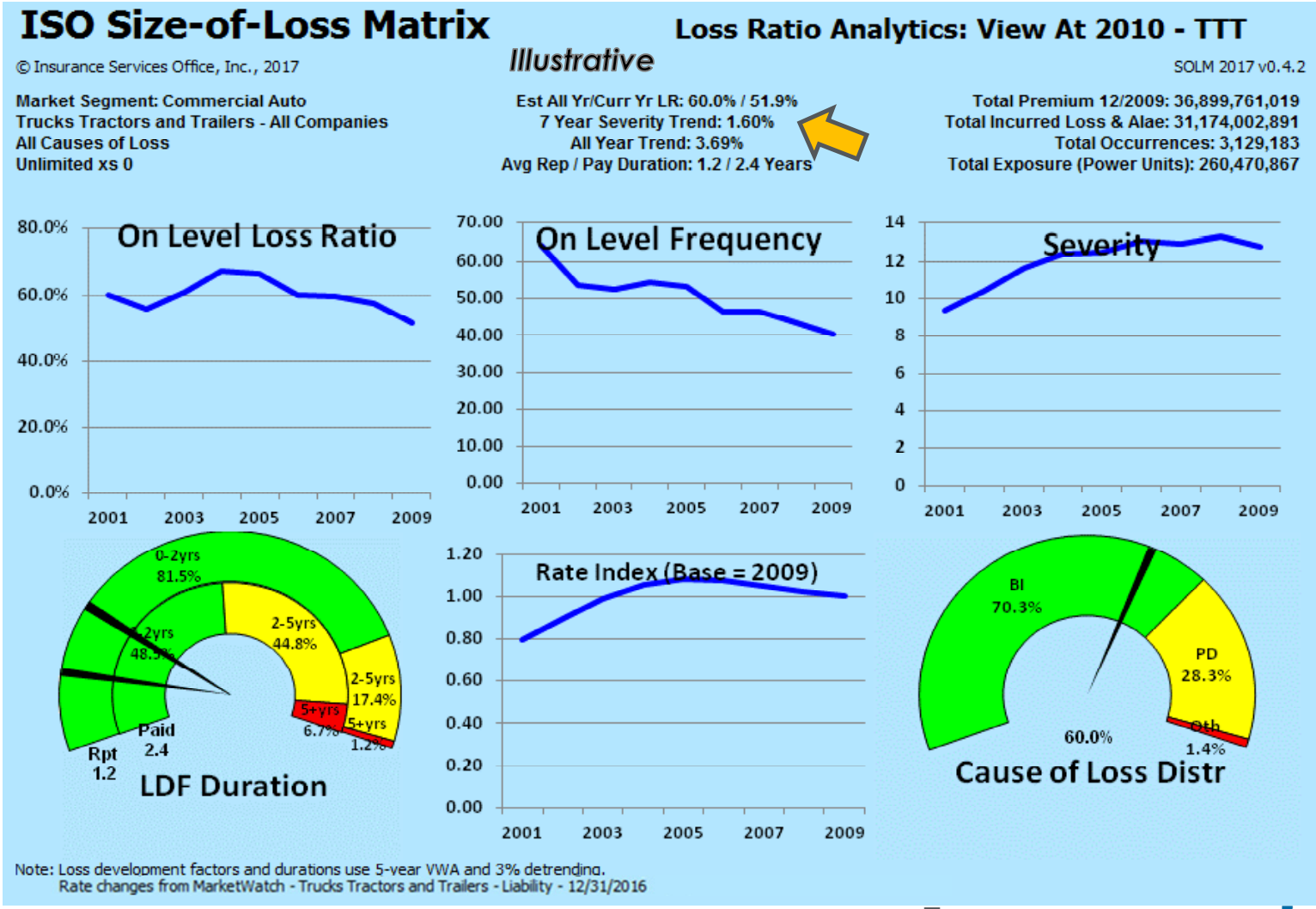


Source: ISO Slides from CAS Casualty Loss Reserve Seminar – September 12, 2017 (LOB-3 Wheels Down – J. Buchanan)

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 flat**
- **Relatively quick LDF duration**
  - **avg GU reported loss = 1.2 years**
  - **avg paid = 2.4 years**
- **Moderate reductions in rates since 2005**
- **Mostly BI claims – but their trends ok as well**
- **Overall, the current on-level loss ratio compared to long term is 8 pts better (60.0% long-term vs. 51.9% current)**



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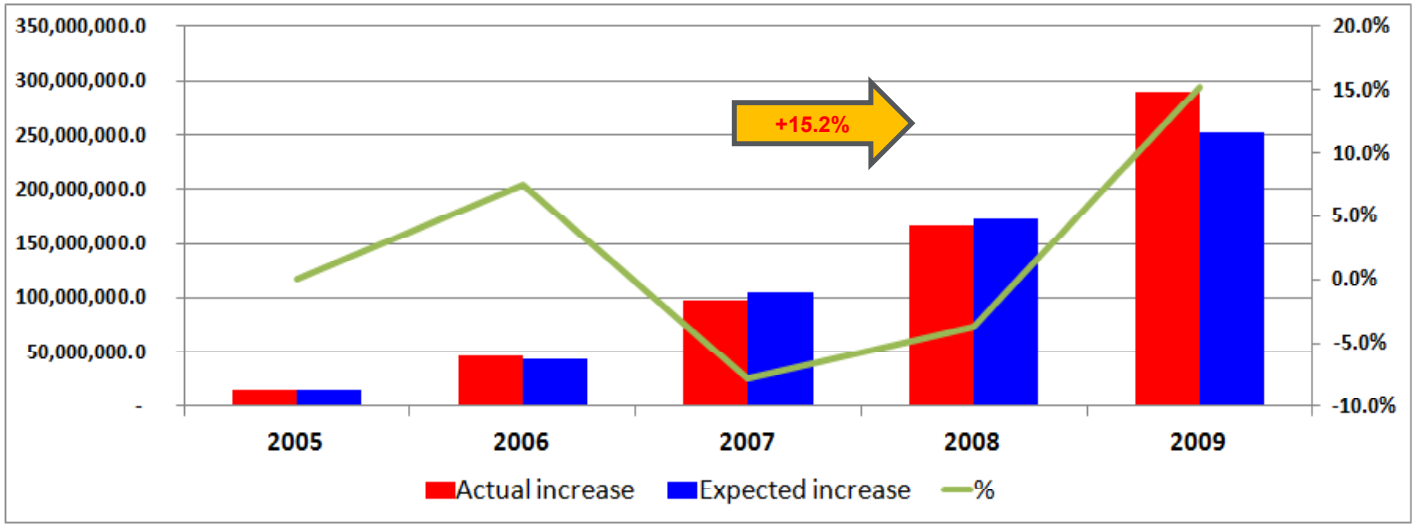
Illustrative

Commercial Auto – TTT - ERLI Warning – Excess Layer 900x100k

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

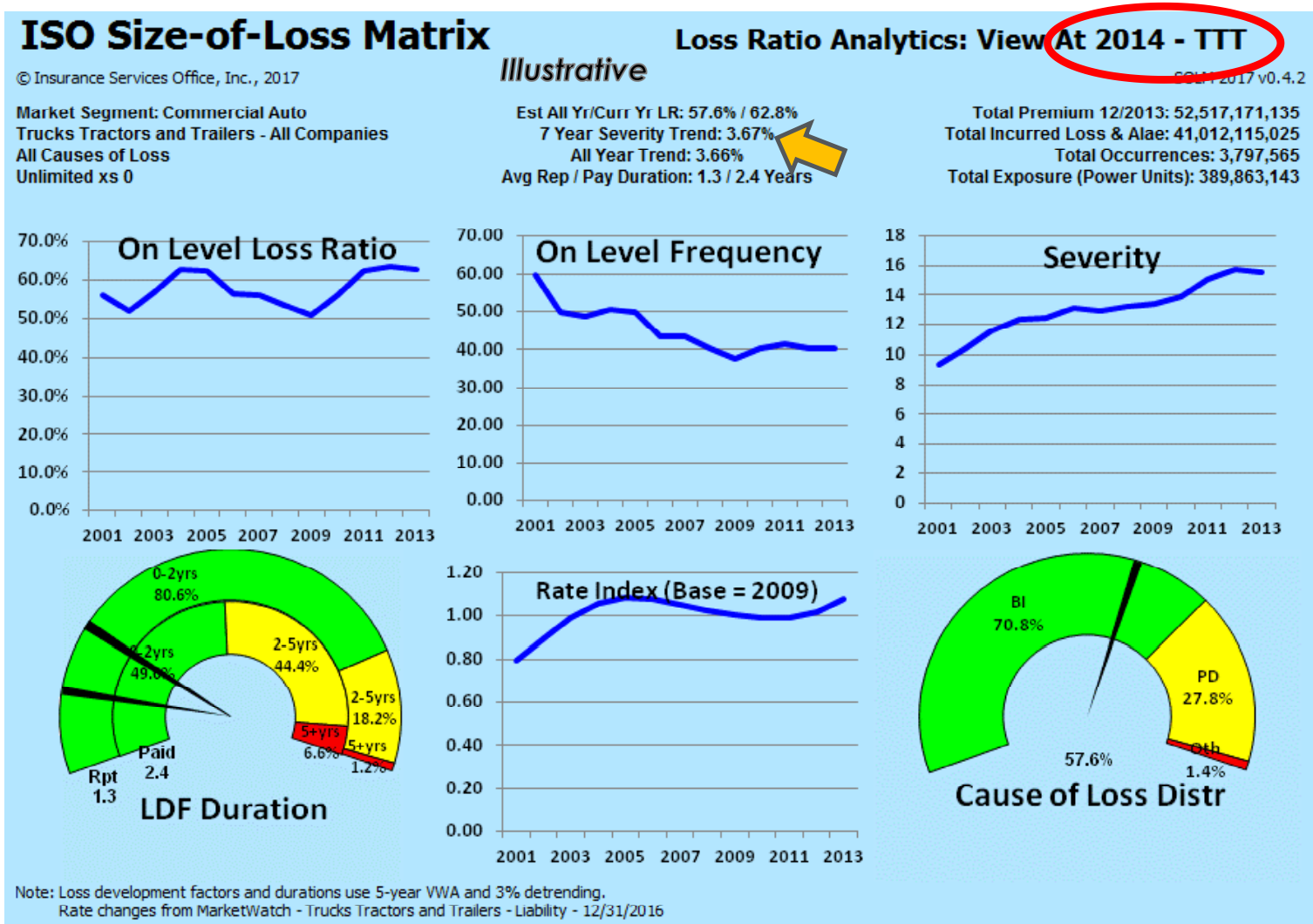
Overall ok, except AY 2009 indicates a bit of a blip up – 252M expected, but 290M actual, or 15.2% adverse development.



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 TTT loss ratio went from 51.9% to 62.8%

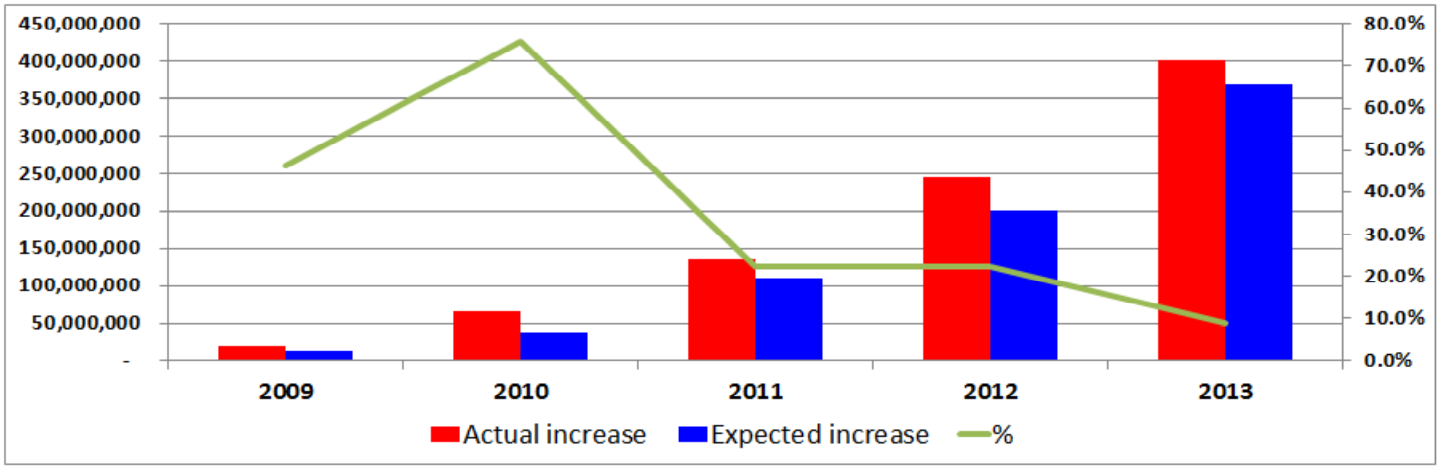


Commercial Auto – View at 2014

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

CY=2014 2 Ex Ante

AY	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	
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%

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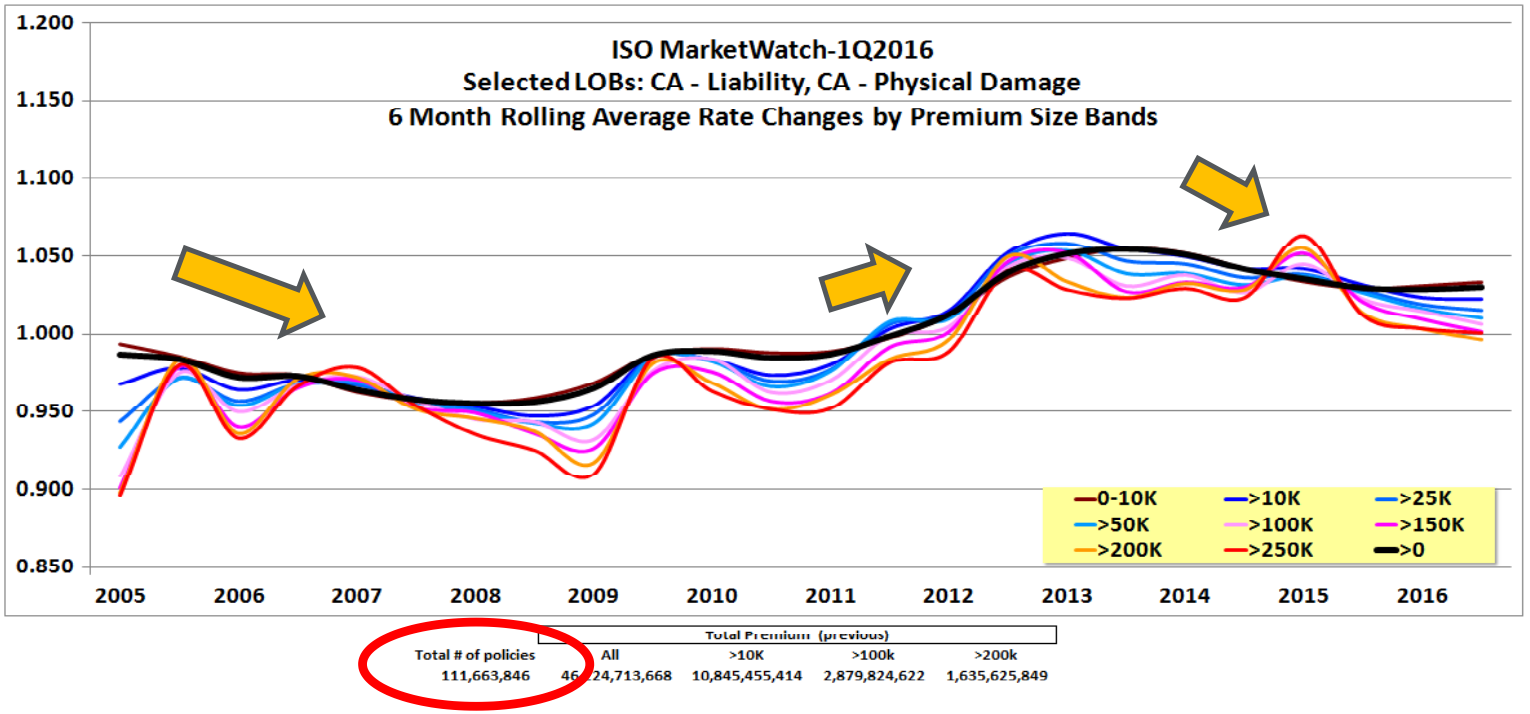
Commercial Auto – View at 2016

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

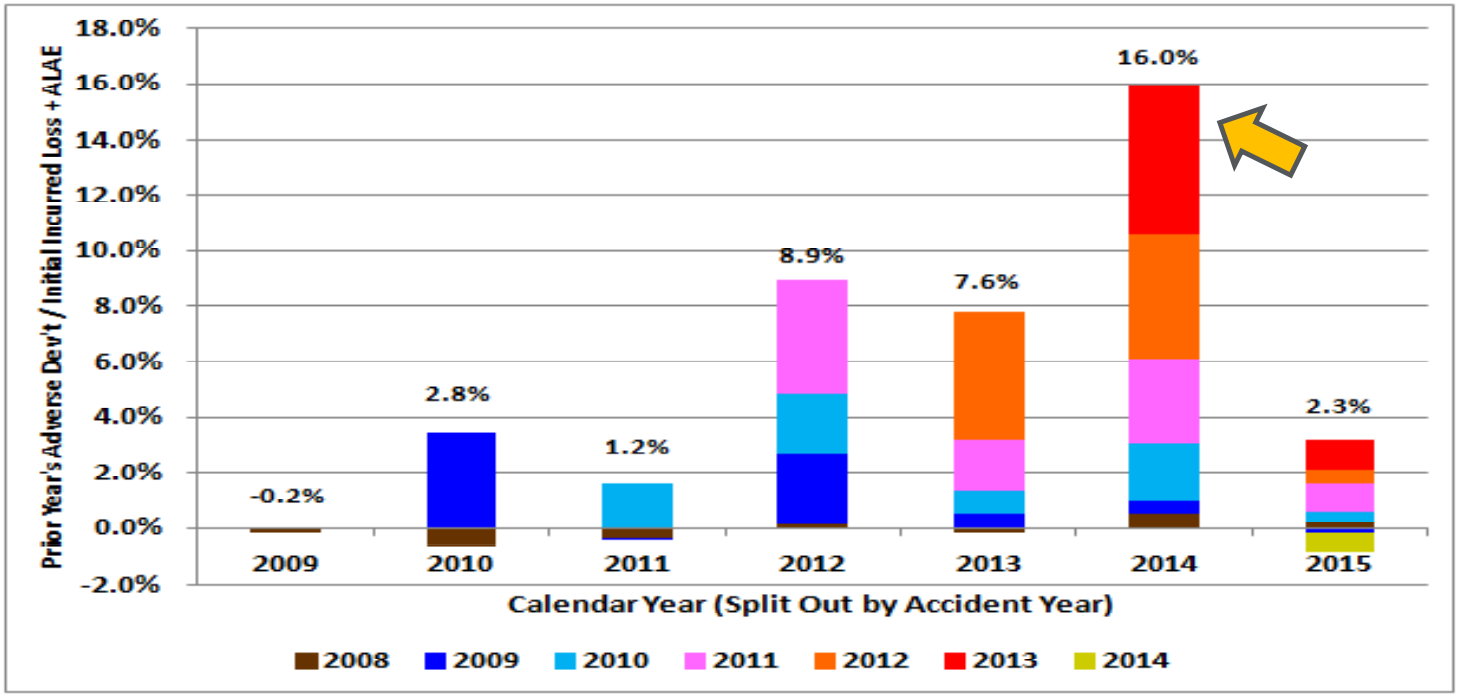


Source: ISO MarketWatch – released 6/15/2016; further details in Commercial Actuarial Panel – December 2016

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.

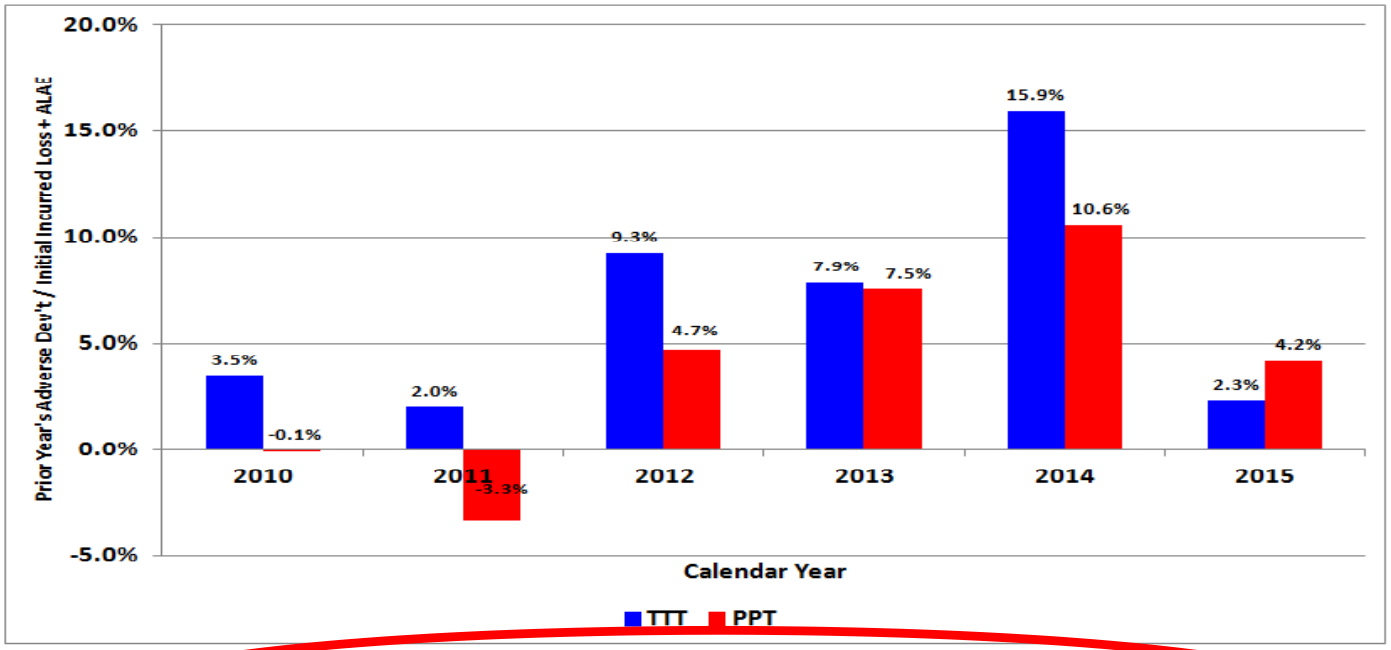


Source: ISO SOLM 2016 v1 - losses developed to ultimate using 5-year VWA (refresh each year); premiums developed to ultimate using Earned Premium triangle
ISO MarketWatch for Rate changes - Auto Commercial Liability - through 12/31/2015 (adjusted policy year to accident year using 6 mo policy term assumption)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

Commercial Auto – 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



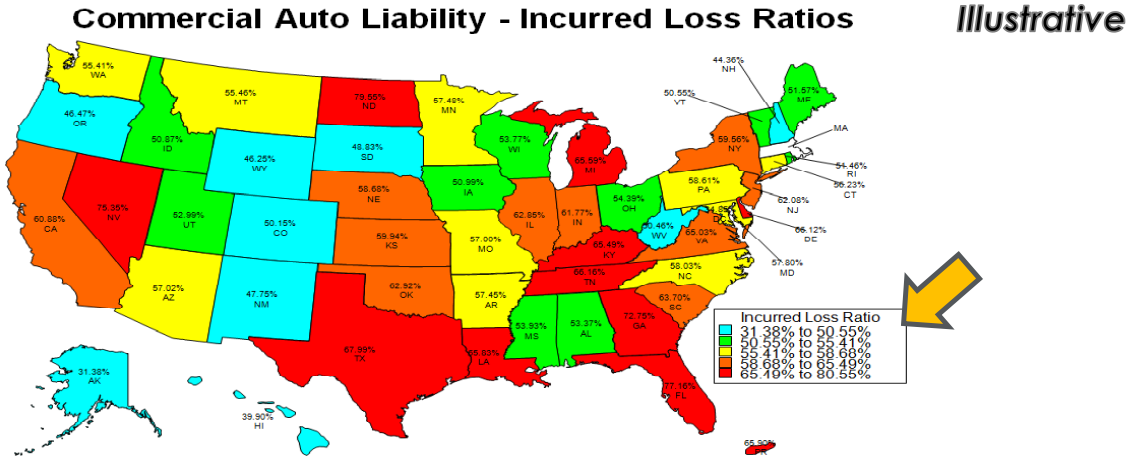
Cumulative % Deterioration	2010	2011	2012	2013	2014	2015
TTT	8.5%	13.5%	36.1%	55.3%	94.3%	100.0%
PPT	-0.4%	-14.5%	5.5%	37.4%	82.2%	100.0%

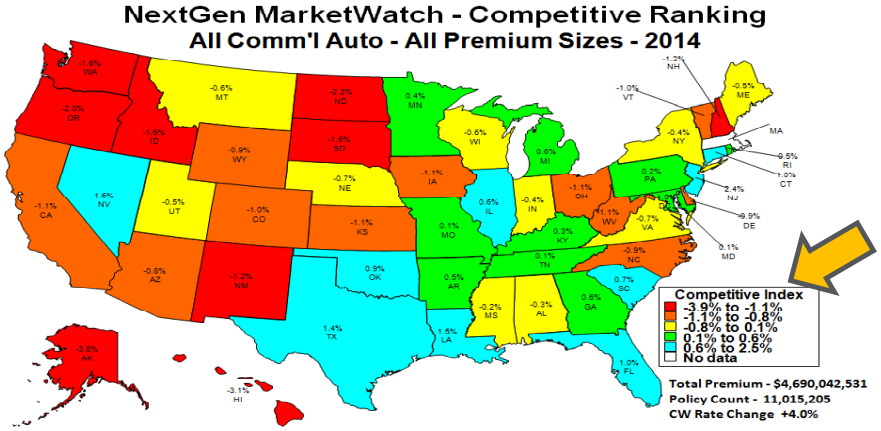
Source: ISO SOLM 2016 v1 - losses developed to ultimate using 5-year VWA (refresh each year); premiums developed to ultimate using Earned Premium triangle
ISO MarketWatch for Rate changes - Auto Commercial Liability - through 12/31/2015 (adjusted policy year to accident year using 6 mo policy term assumption)

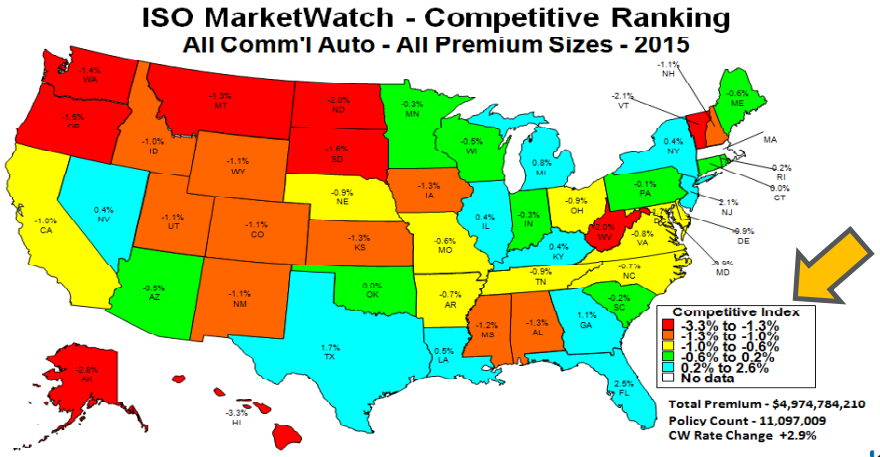
Commercial Auto – View at 2016

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).



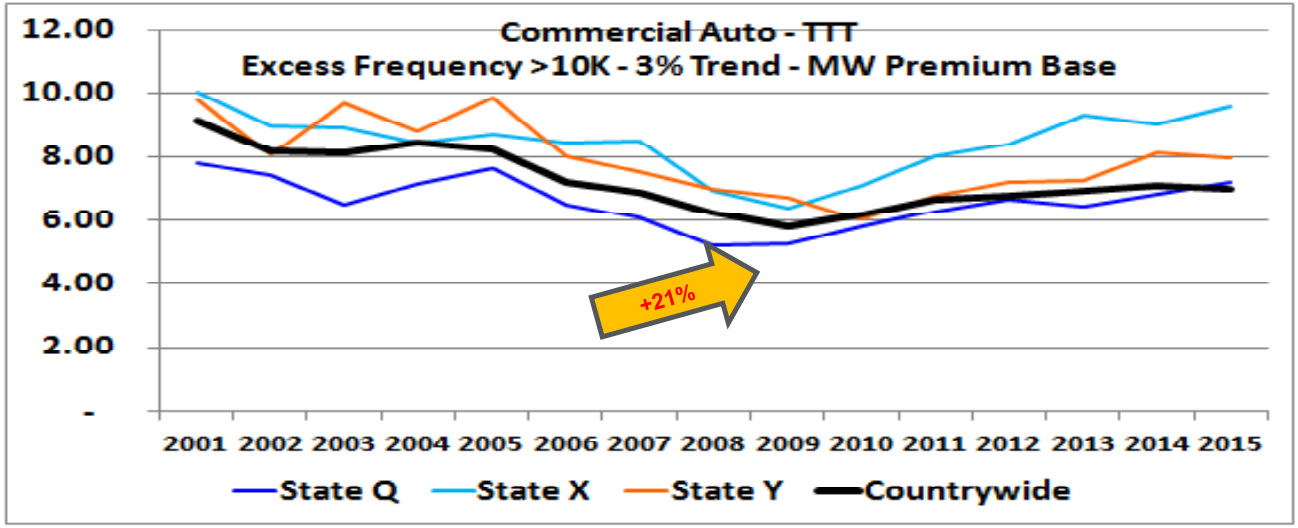




Commercial Auto – View at 2016

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

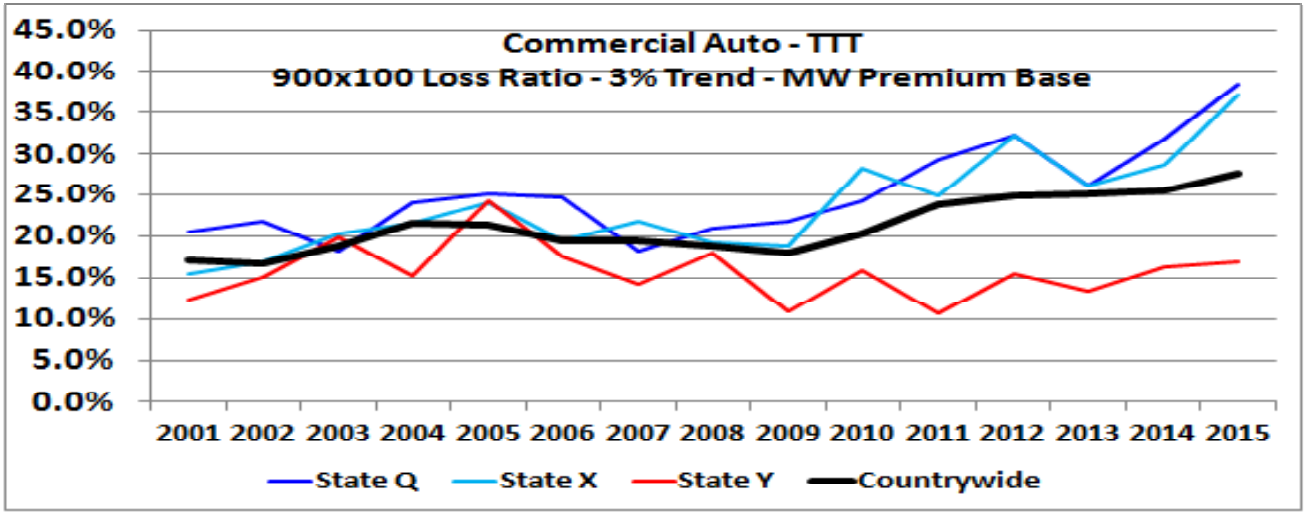
	Countrywide	State Q	State X	State Y
2009	5.78	5.25	6.38	6.74
2010	6.20	5.80	7.10	6.03
2011	6.67	6.29	7.99	6.79
2012	6.77	6.68	8.42	7.22
2013	6.92	6.45	9.30	7.24
2014	7.09	6.83	9.05	8.11
2015	7.01	7.22	9.55	7.98
7 Year Trend	3.15%	4.67%	6.60%	4.17%
Total Occurrences	723,394	48,635	25,544	11,015
Excess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

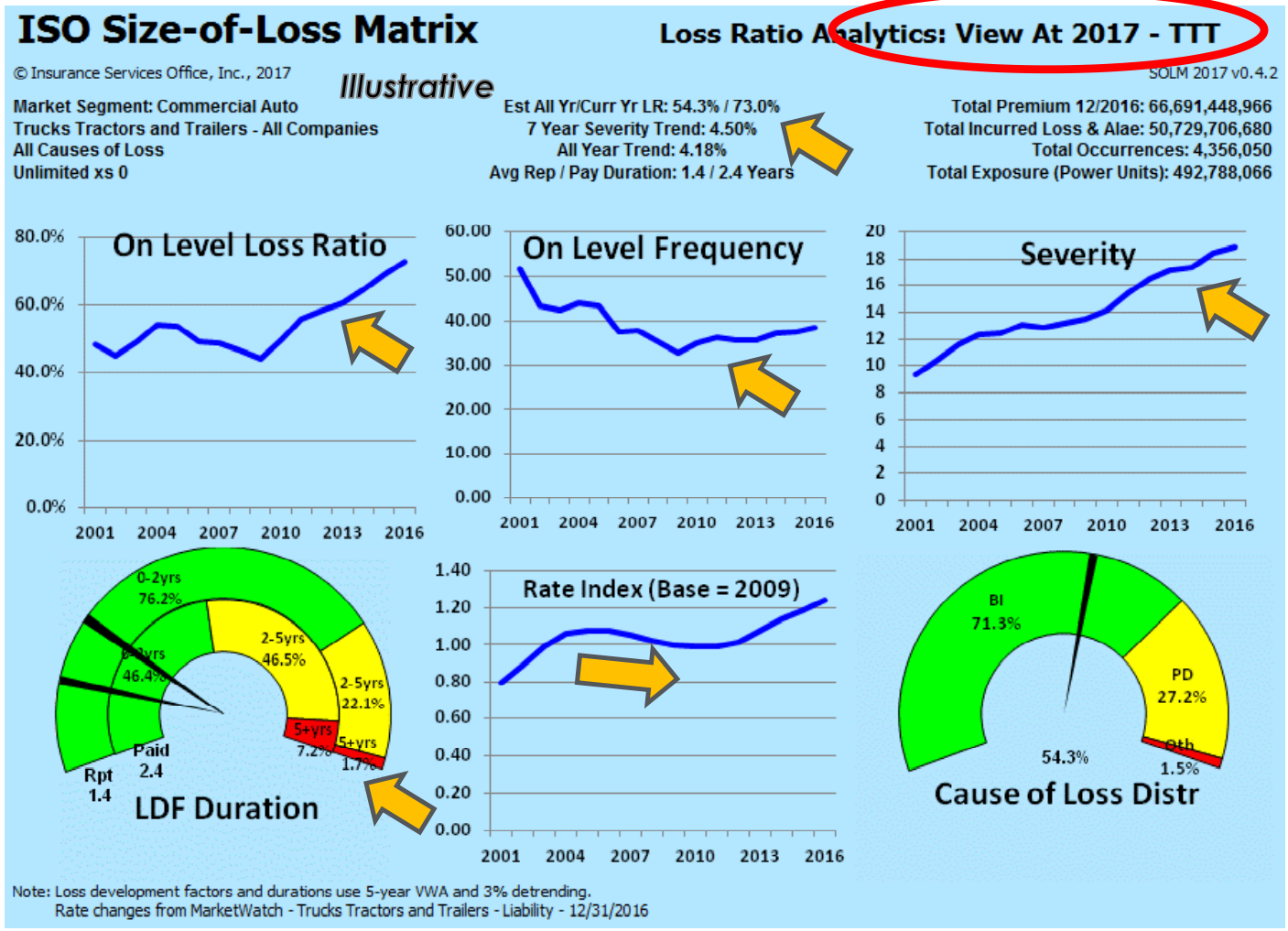


900x100 Loss Ratio - 3% Trend - MW Premium Base

	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

Overall loss ratio has moved to 67.8%, 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.



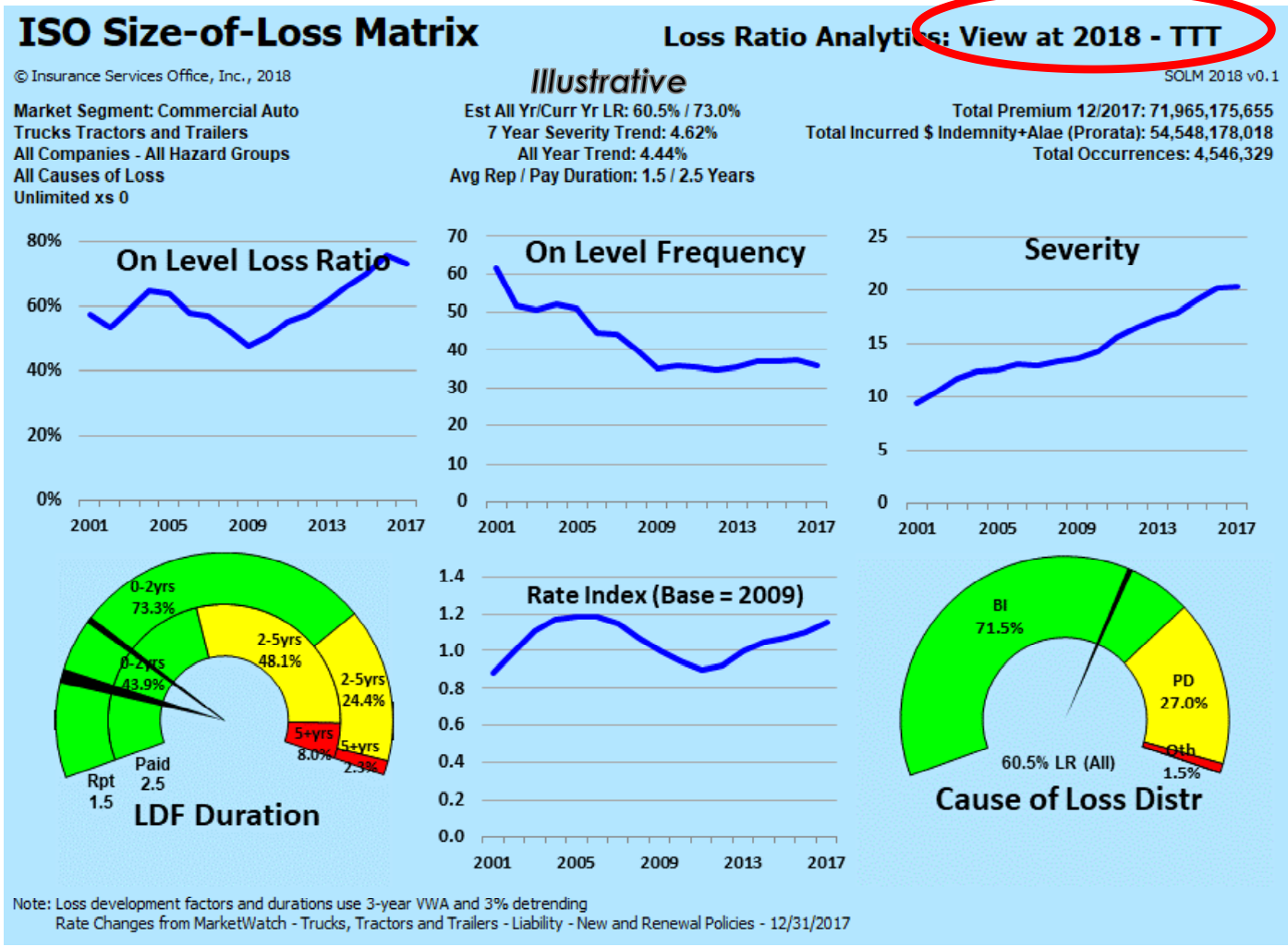
Source: SOLM 2017v1 pre-release

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%.

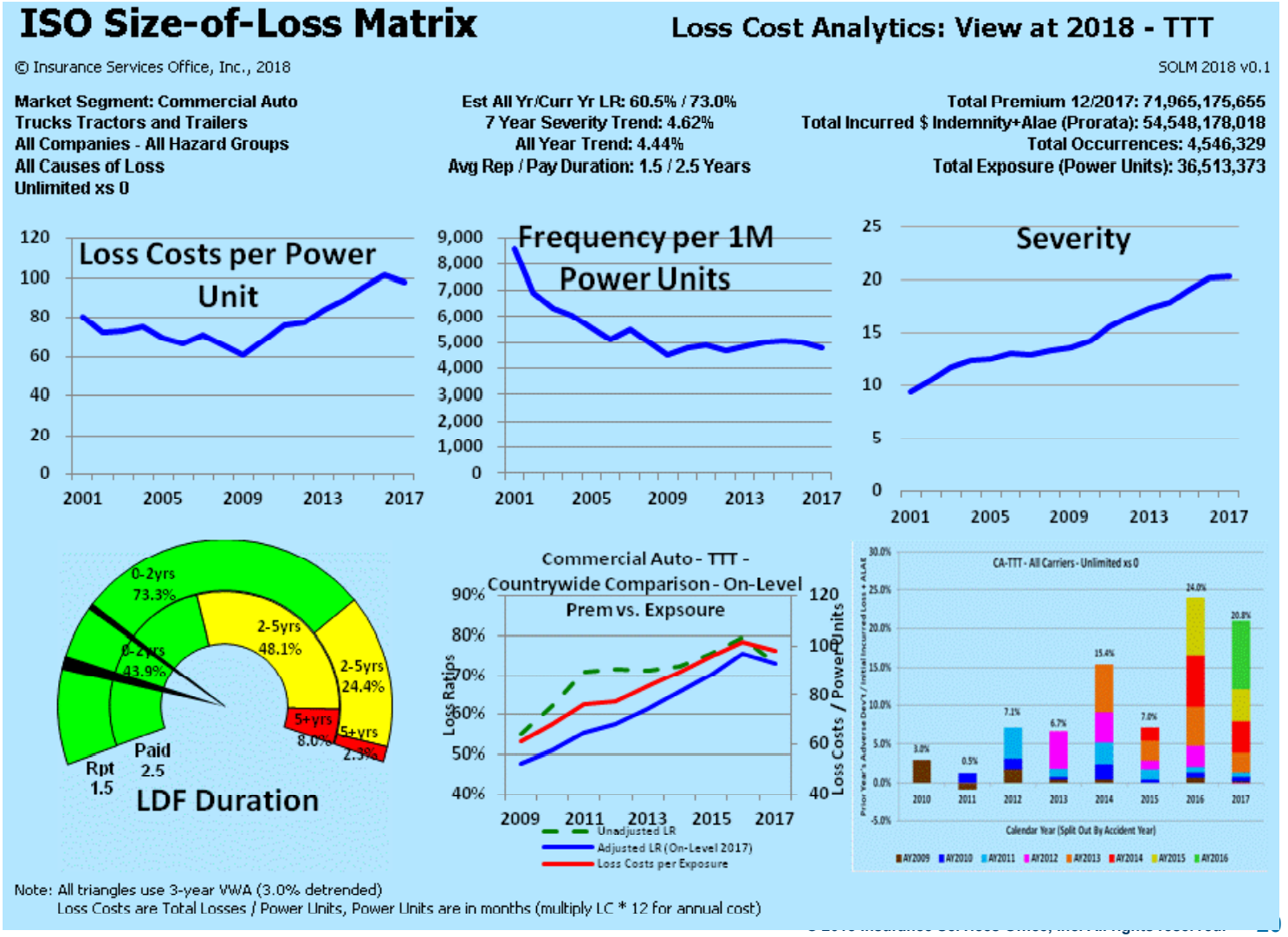


Source: SOLM 2018v1 pre-release (using expanded MarketWatch method 3-new and renewal including impacts from ILFs)

Commercial Auto – View at 2018

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 2017v1 pre-release

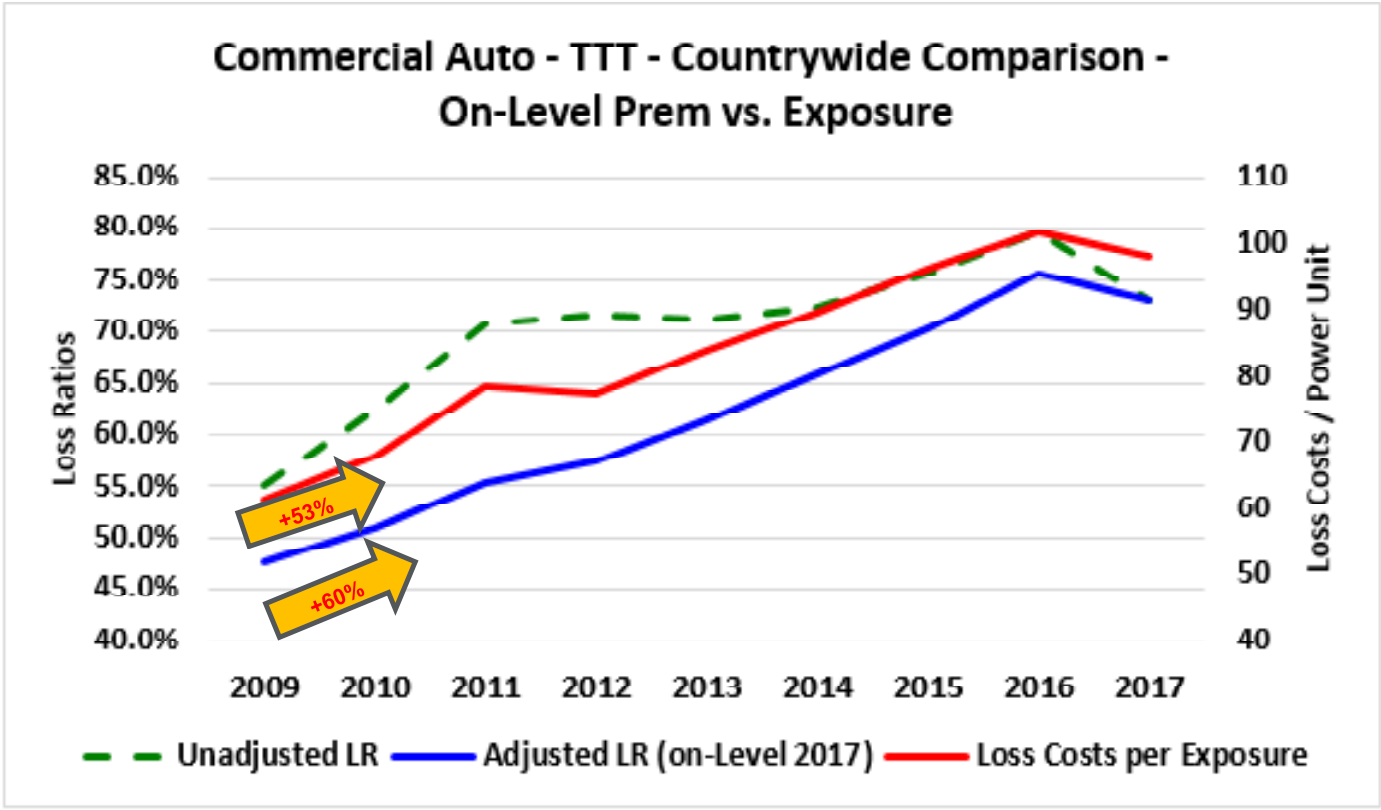
Commercial Auto – View at 2018

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.

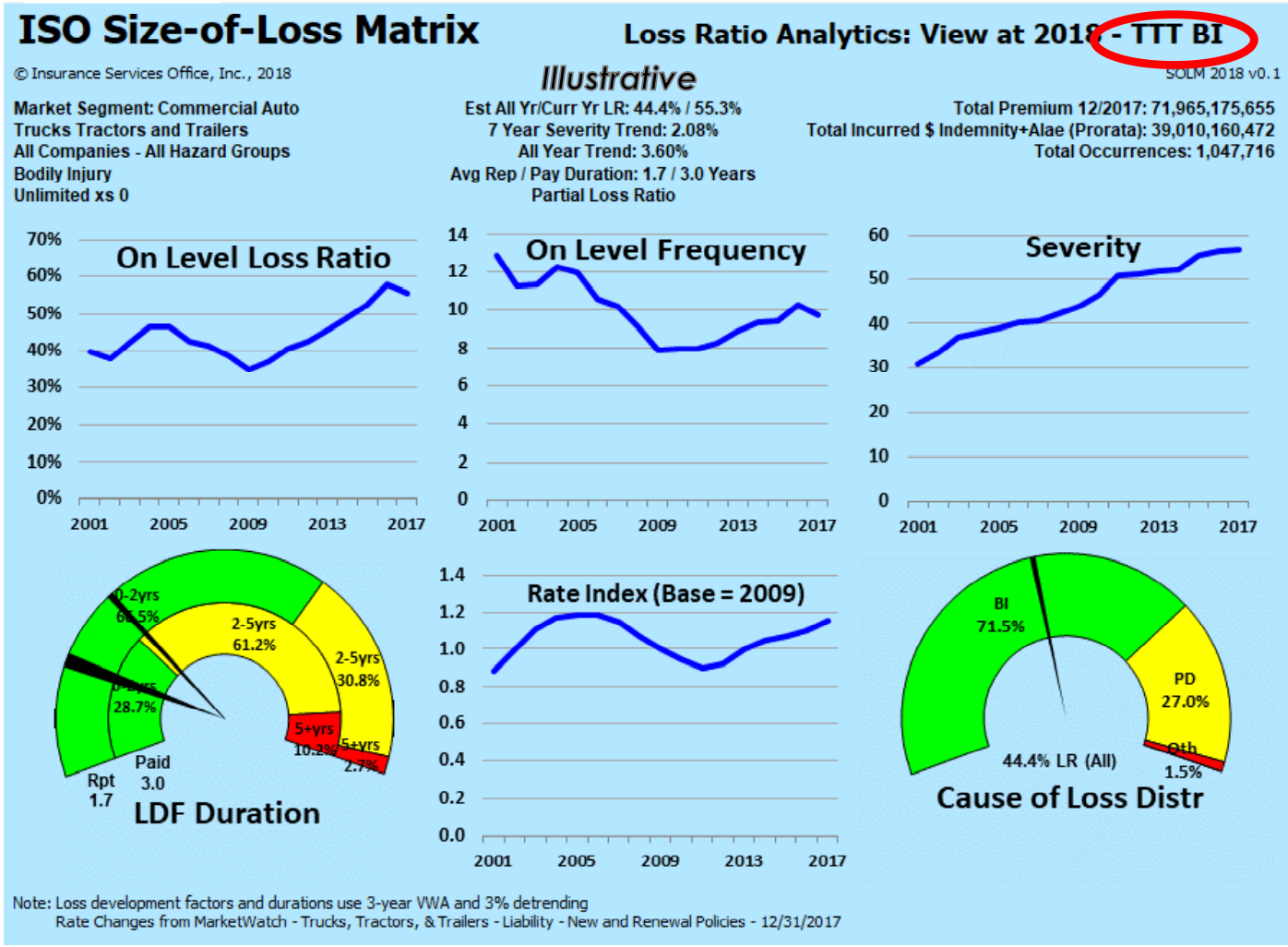


Source: SOLM 2017v1 pre-release; losses developed using 7-yr VWA; uses ISO MarketWatch 12/31/2017 rate changes – CA-TTT Liability; power units in months

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.

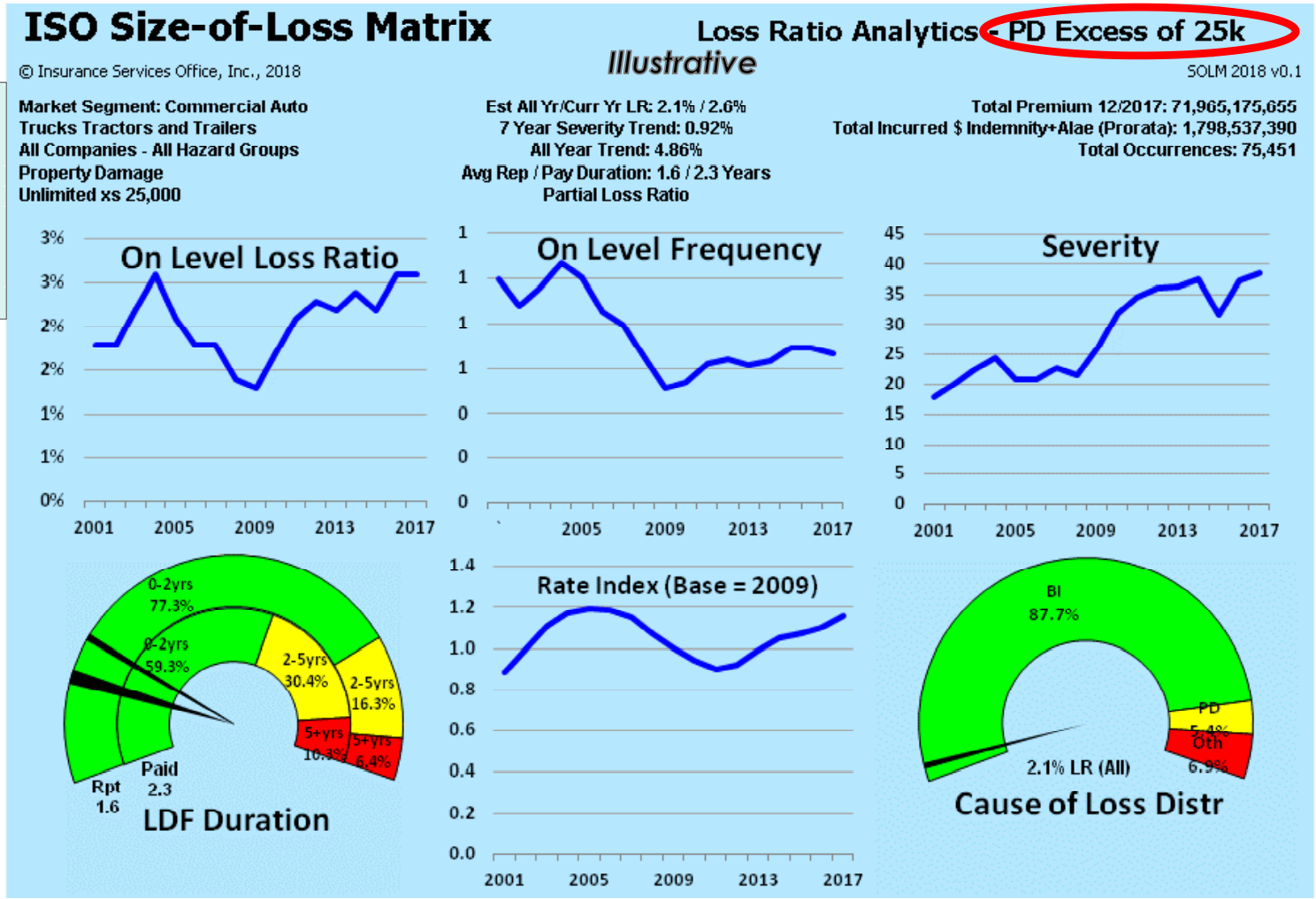
BI shows higher frequency trends but lower severity trends than total and PD.



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

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)

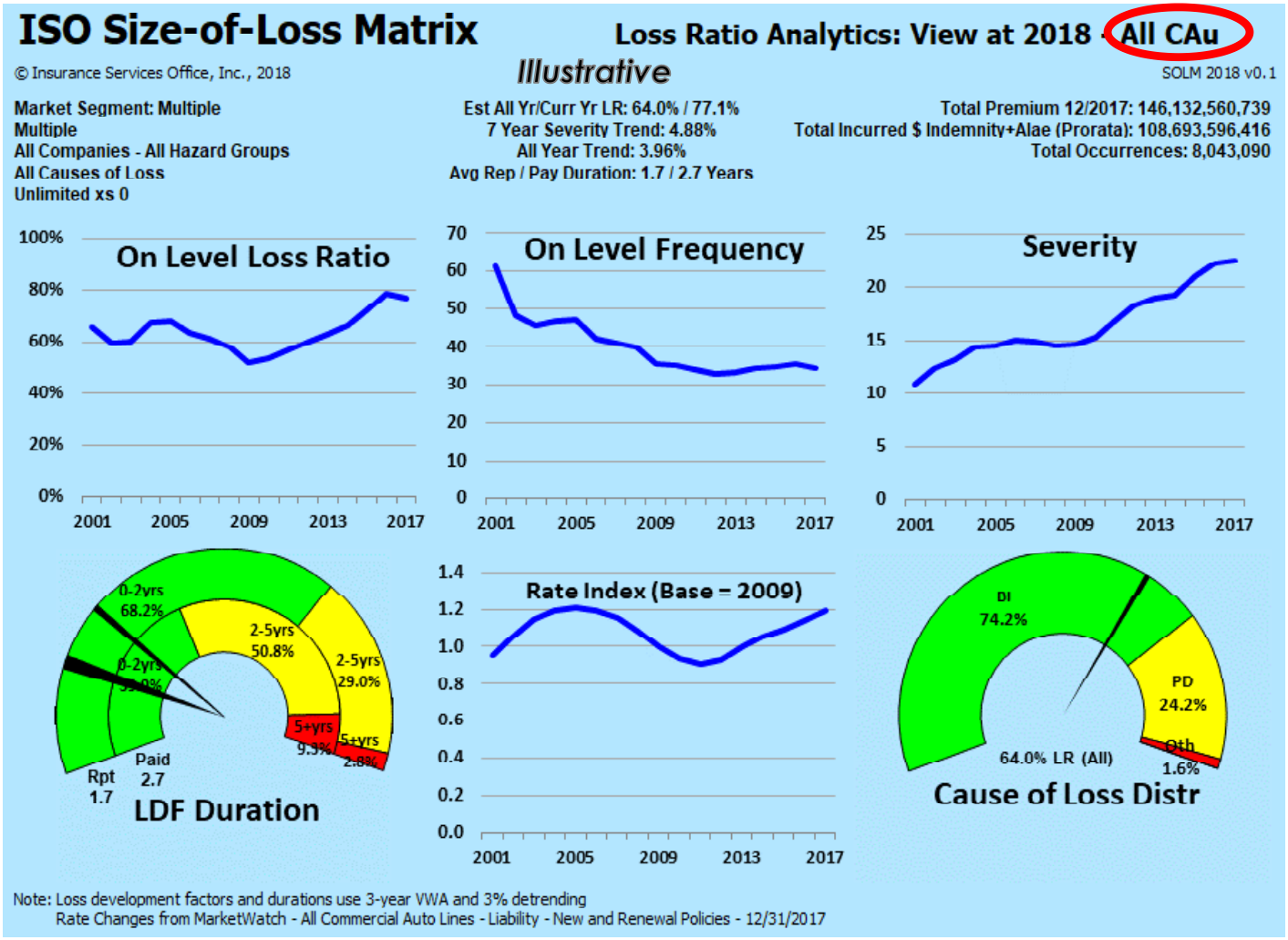


Source: SOLM 2018v1 pre-release using on-level premium as base

Commercial Auto – View at 2018

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

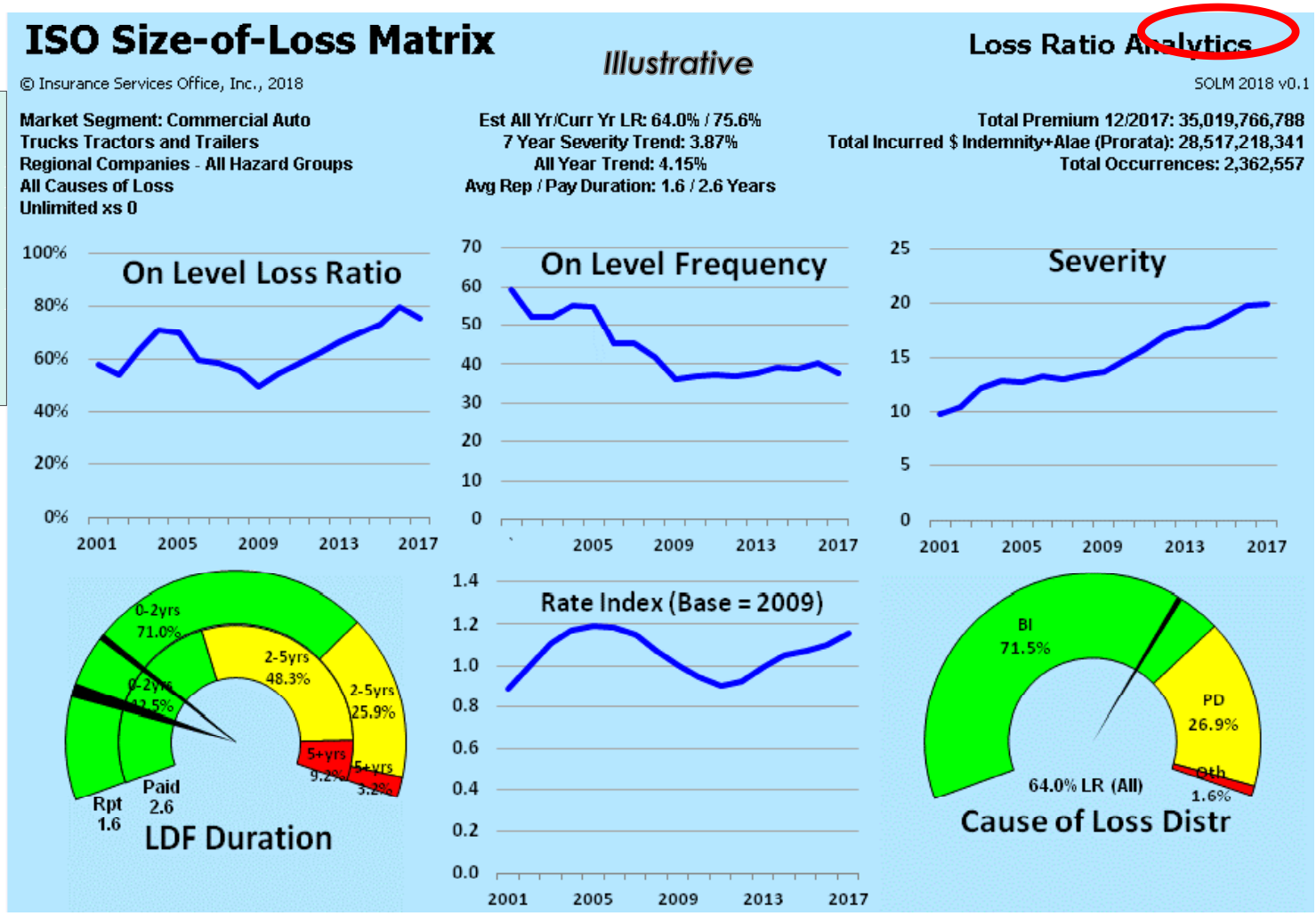
Recent somewhat higher overall severity trends (4.9% vs. 4.6% accounting for some of the difference).



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

Commercial Auto – View at 2018

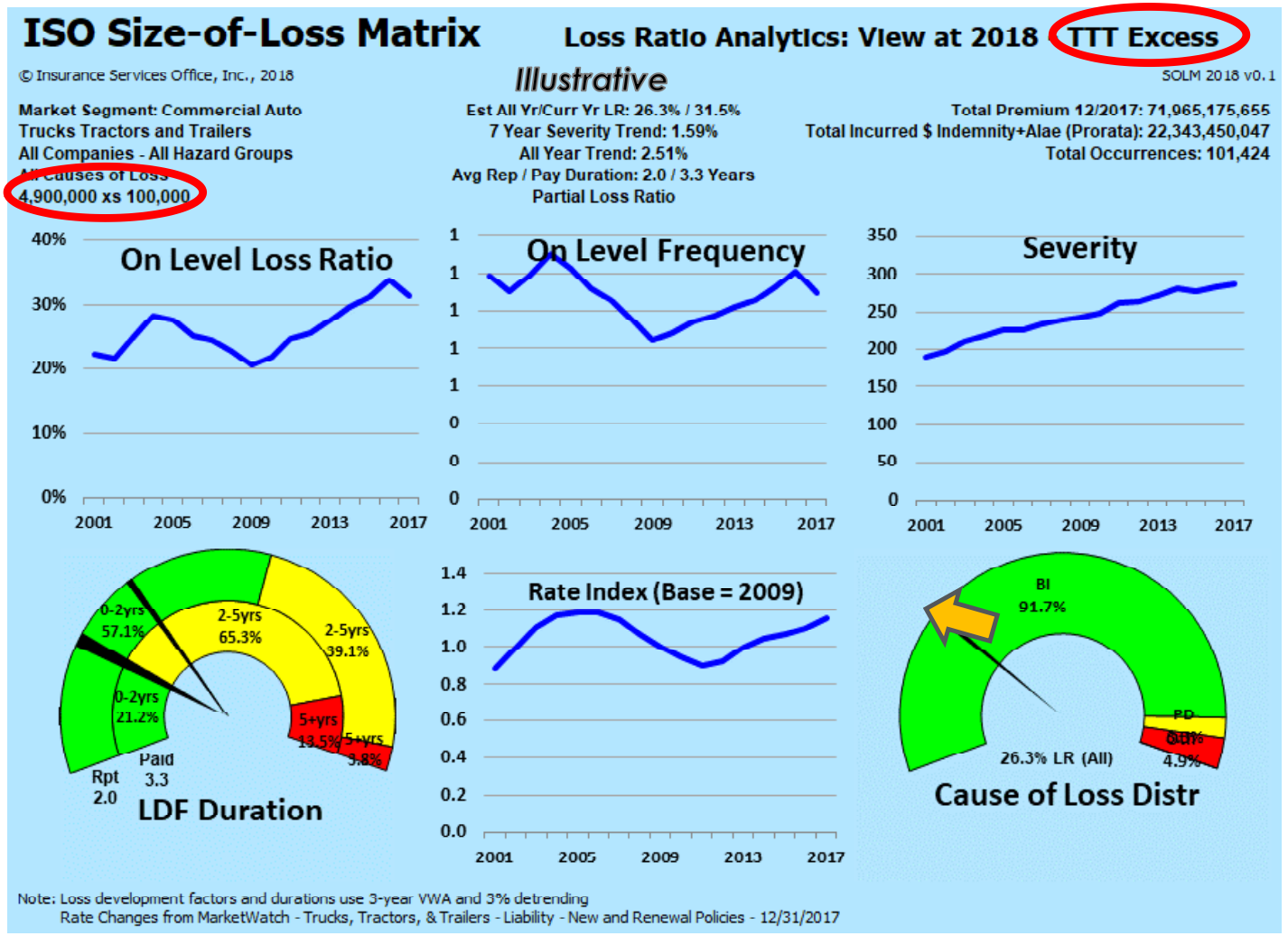
Regional carriers somewhat worse overall experience at 75.6% for TTT, and 11.6 points worse than long-term on-level average 64%. Significant variations between regional, and all, carriers exist.



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

Commercial Auto – View at 2018

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%.



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

Commercial Auto – View at 2018

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.

ISO Size-of-Loss Matrix

Illustrative

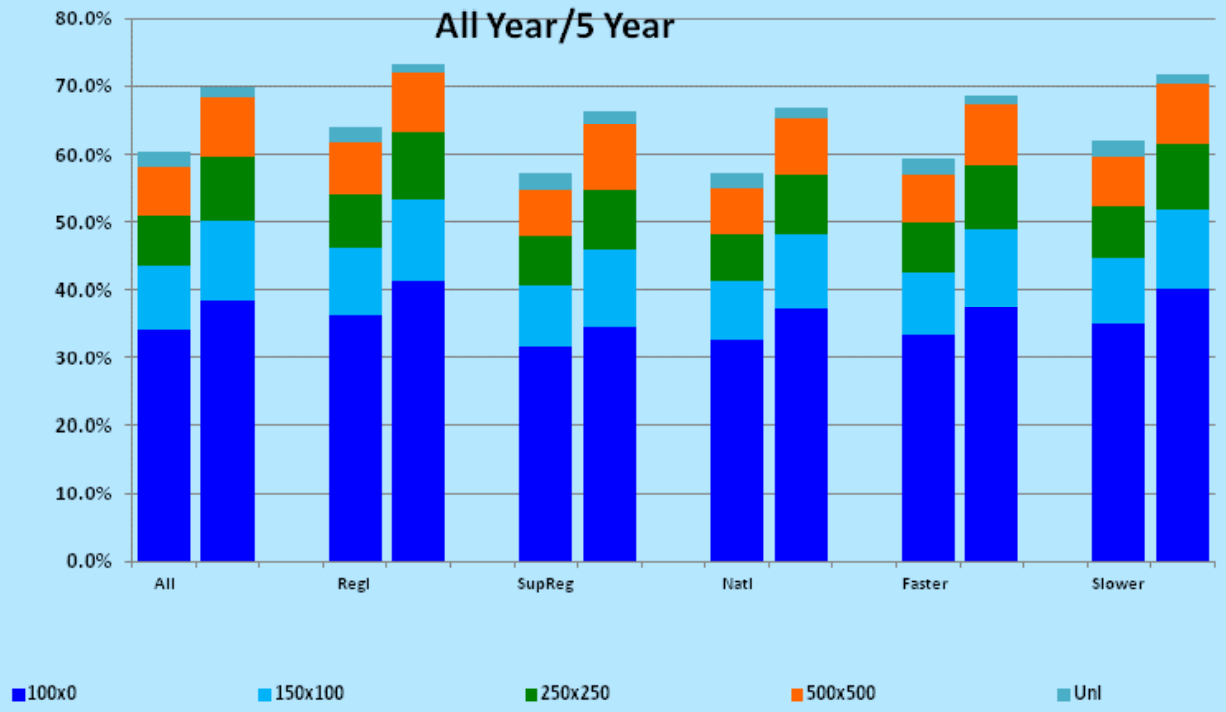
Excess Loss Ratio Analytics

SOLM 2018 v0.1

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

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



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

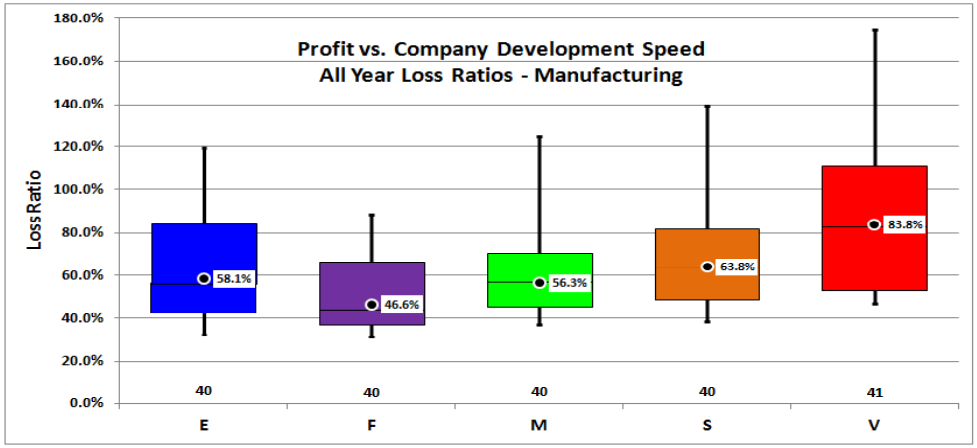
Commercial Auto – View at 2018

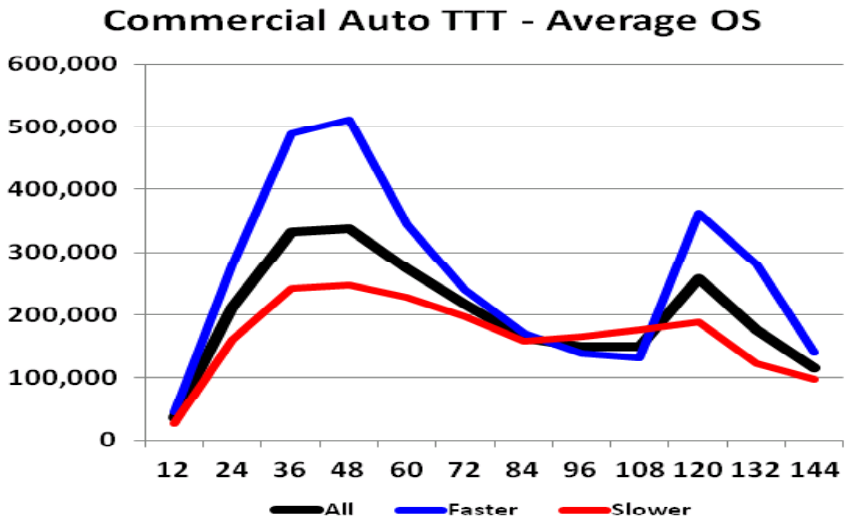
Is There a Connection between Profitability and LDF Speed?

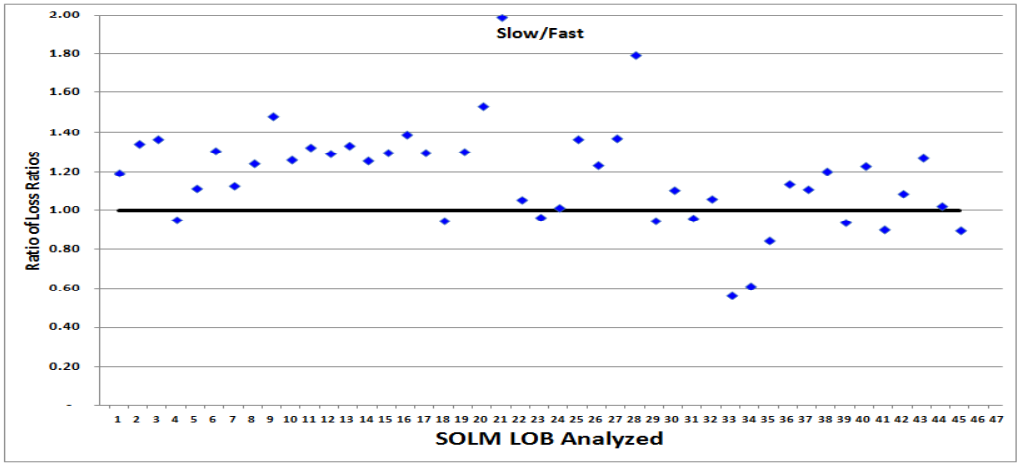
Illustrative

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.







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

Commercial Auto – View at 2018

Continuing Reported Lengthening Loss Development – 4.9M xs 100k

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

Illustrative

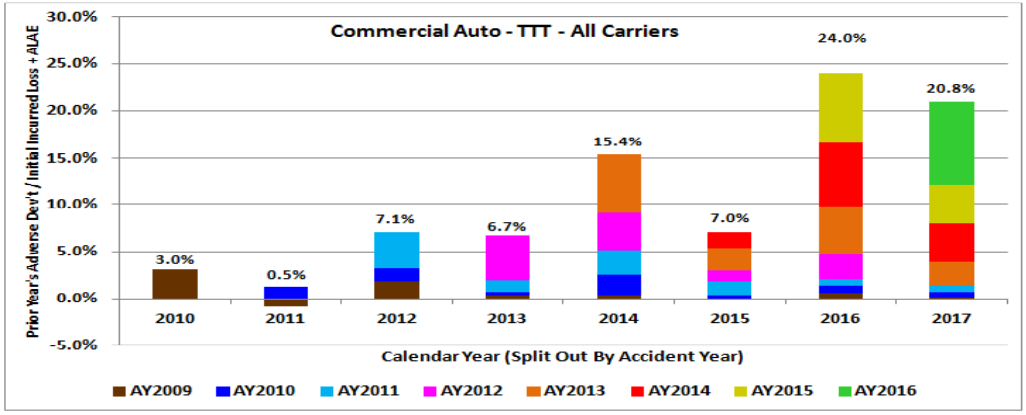
	12	24	36	48	60	72	84	96
AY 1997	355,264,602	608,682,744	745,848,695	833,301,037	899,726,136	929,042,072	934,852,469	937,165,942
AY 1998	364,072,942	615,886,827	774,726,342	898,842,391	946,683,658	966,048,321	974,453,538	974,978,737
AY 1999	370,272,825	630,115,254	843,990,492	972,904,373	1,018,862,211	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							
l4,2015,2016,2017:	17,831,449,583	19,102,140,293	20,689,969,093	22,343,450,047				

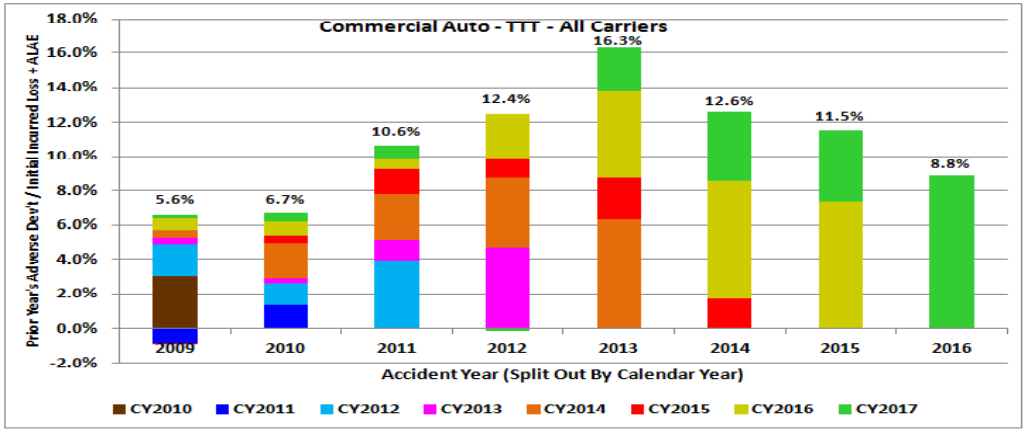
	24/12	36/24	48/36	60/48	72/60	84/72	96/84	108/96
AY 1997	1.713	1.225	1.117	1.080	1.033	1.006	1.002	1.001
AY 1998	1.692	1.258	1.160	1.053	1.020	1.009	1.001	1.002
AY 1999	1.702	1.339	1.153	1.047	1.025	1.010	1.003	1.001
AY 2000	1.802	1.329	1.143	1.061	1.012	1.000	1.006	0.999
AY 2001	1.769	1.327	1.174	1.033	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							

TTT - ERLI Warning through 12/31/2017

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

Adverse development across all AYs.



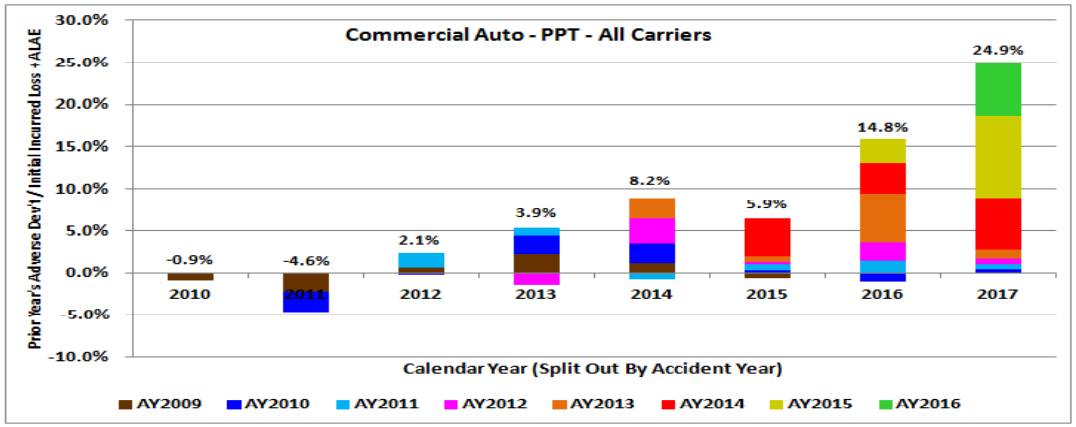


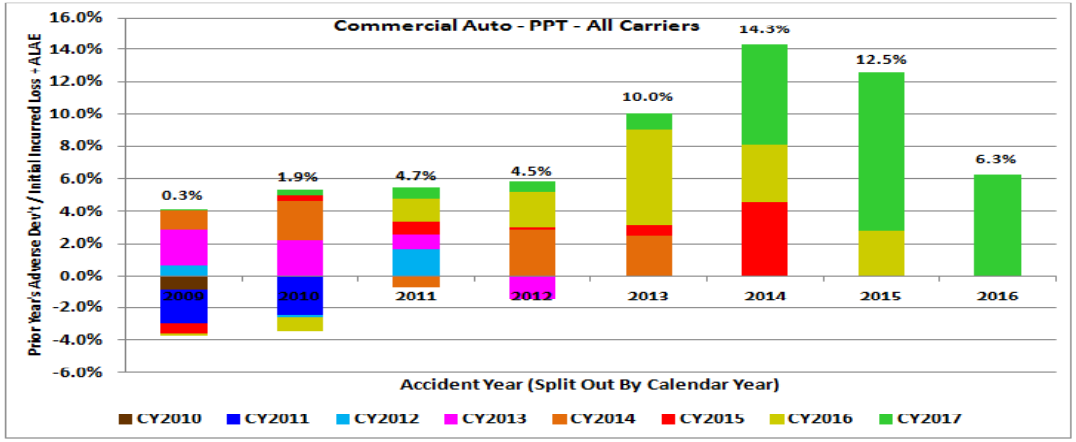
Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

PPT - ERLI Warning through 12/31/2017

Calendar year 2017 worse year for adverse development for PTT, continuing lag vs. TTT since previously.

Adverse development across all AYs.





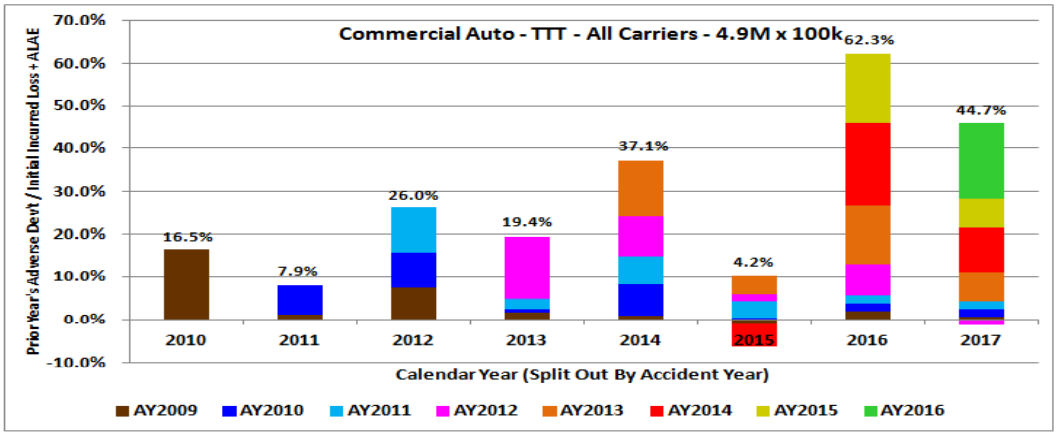
Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

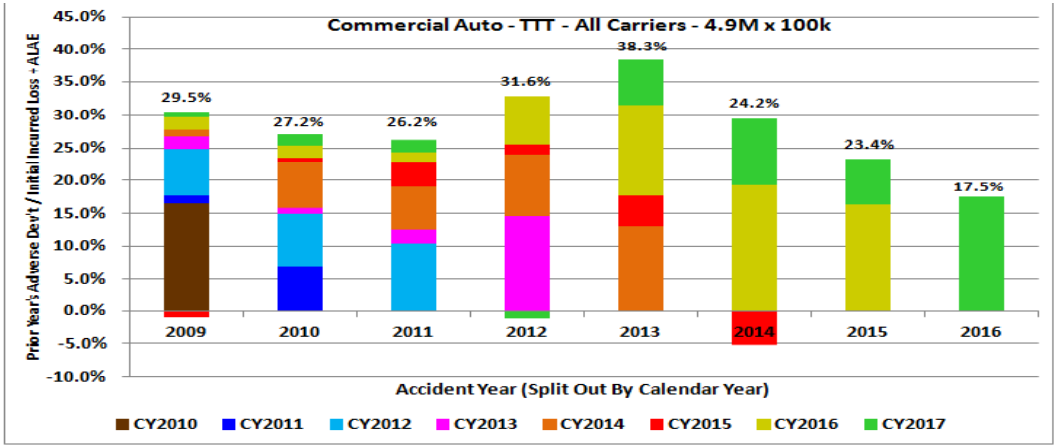
Commercial Auto – View at 2018

TTT XS - ERLI Warning through 12/31/2017

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.



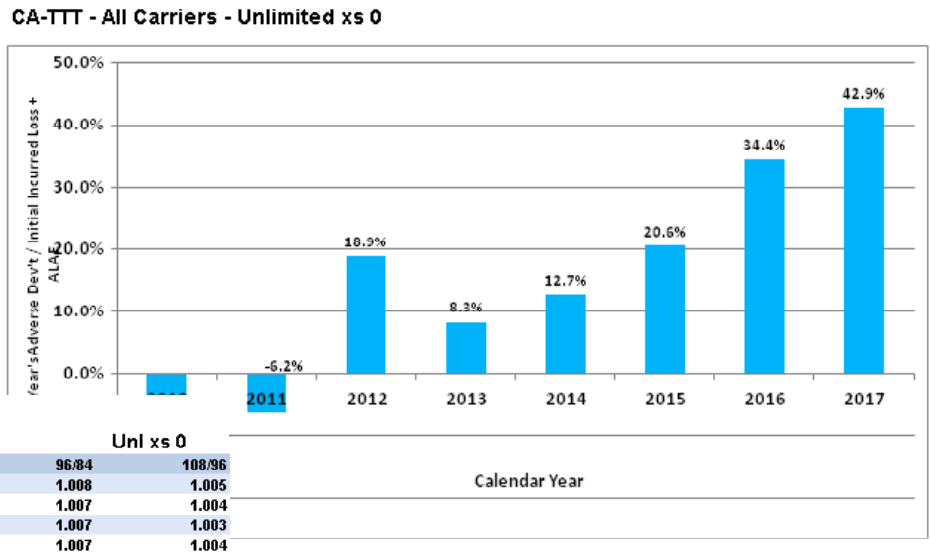


Sources: Using pre-release SOLM 2018 v1 – mechanical selections of VWA (50% all-year, 50% 5-year)

Commercial Auto – View at 2018

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.



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

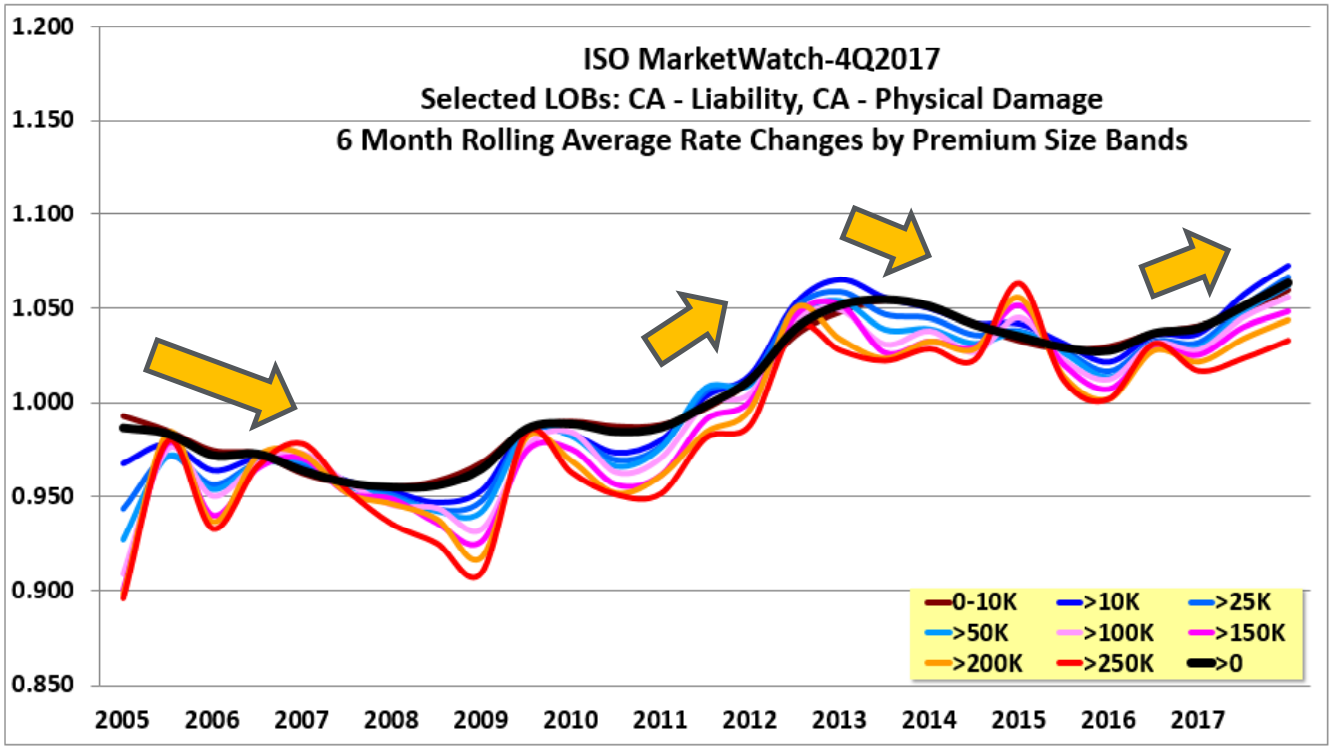
	24/12	36/24	48/36	60/48	72/60	84/72	96/84	108/96
AY 1997	2.028	1.409	1.189	1.101	1.049	1.017	1.008	1.005
AY 1998	1.993	1.430	1.208	1.097	1.038	1.018	1.007	1.004
AY 1999	2.042	1.424	1.216	1.090	1.041	1.020	1.007	1.003
AY 2000	1.993	1.426	1.207	1.106	1.040	1.015	1.007	1.004
AY 2001	1.989	1.440	1.208	1.103	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)

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

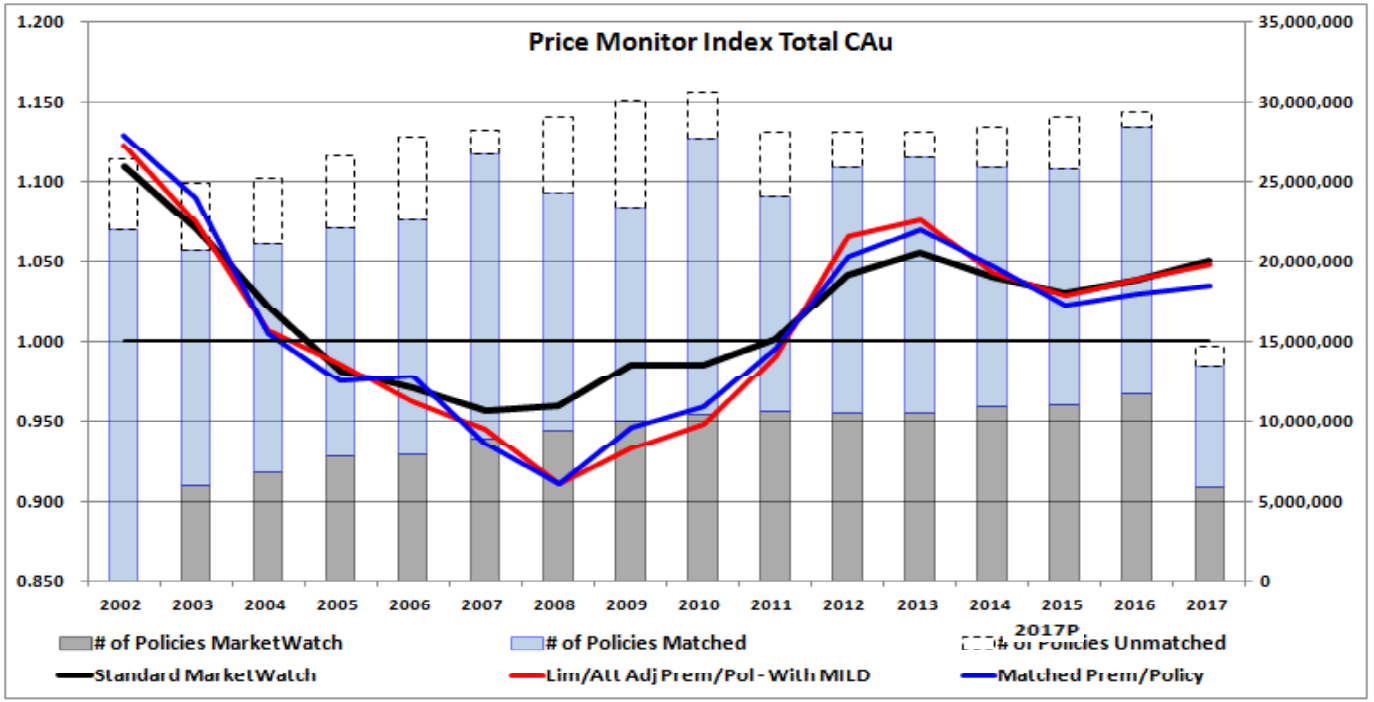
Commercial Auto – View at 2018

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%

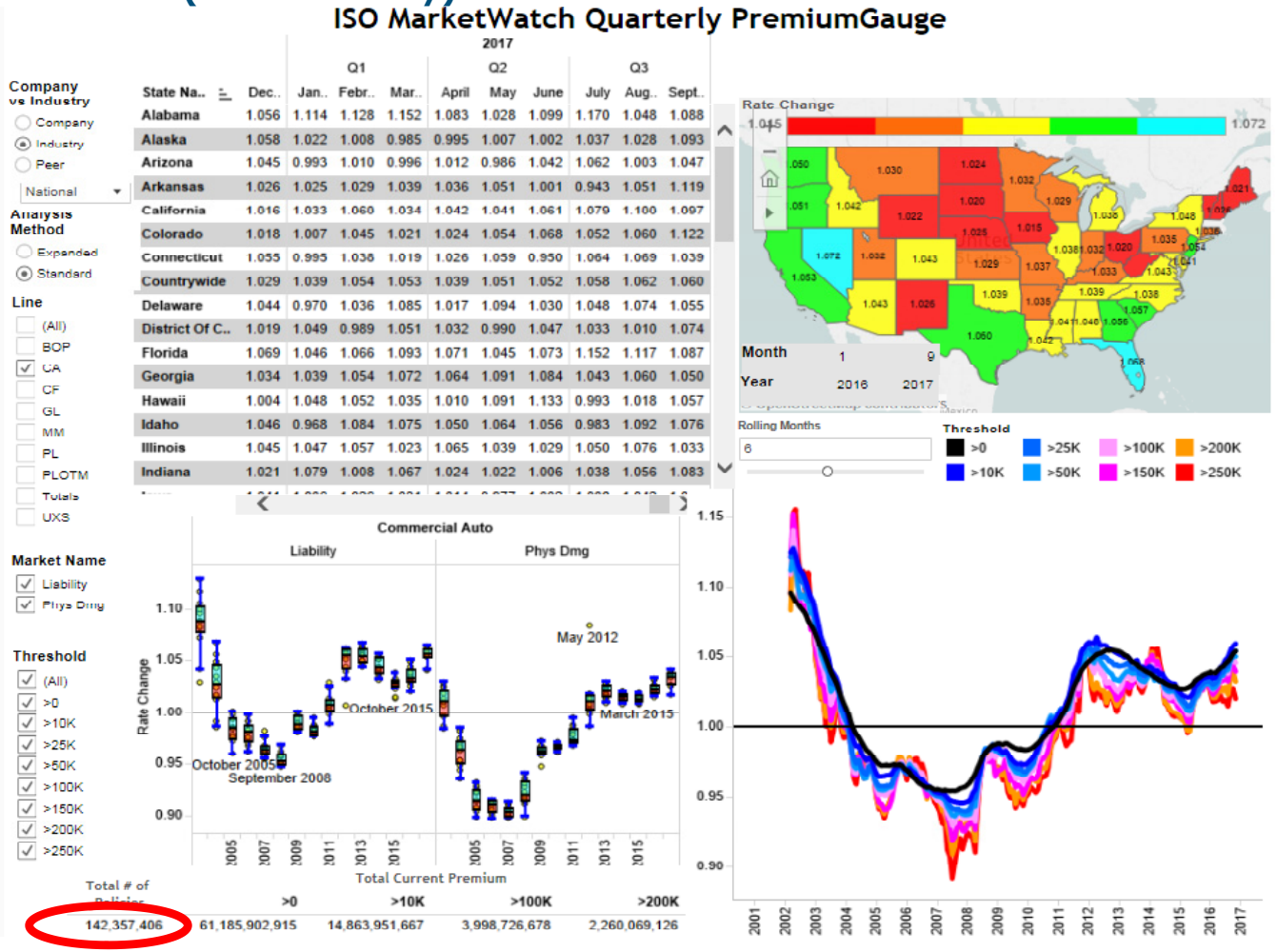
Source: ISO MarketWatch (* Preliminary through 4Q2017; not including aggregate changes in limits and attachment points)
Renewal Commercial Auto contains CRR, while New and Renewal does not (both contain Auto Physical Damage)
Renewal General Liability does not contain CRR, Liquor, and Pollution, while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

Commercial Auto – View at 2018

Industry Rate Changes – Commercial Auto (Renewal only)

Illustrative

There are significant rate change differences by state, month, year, premium size



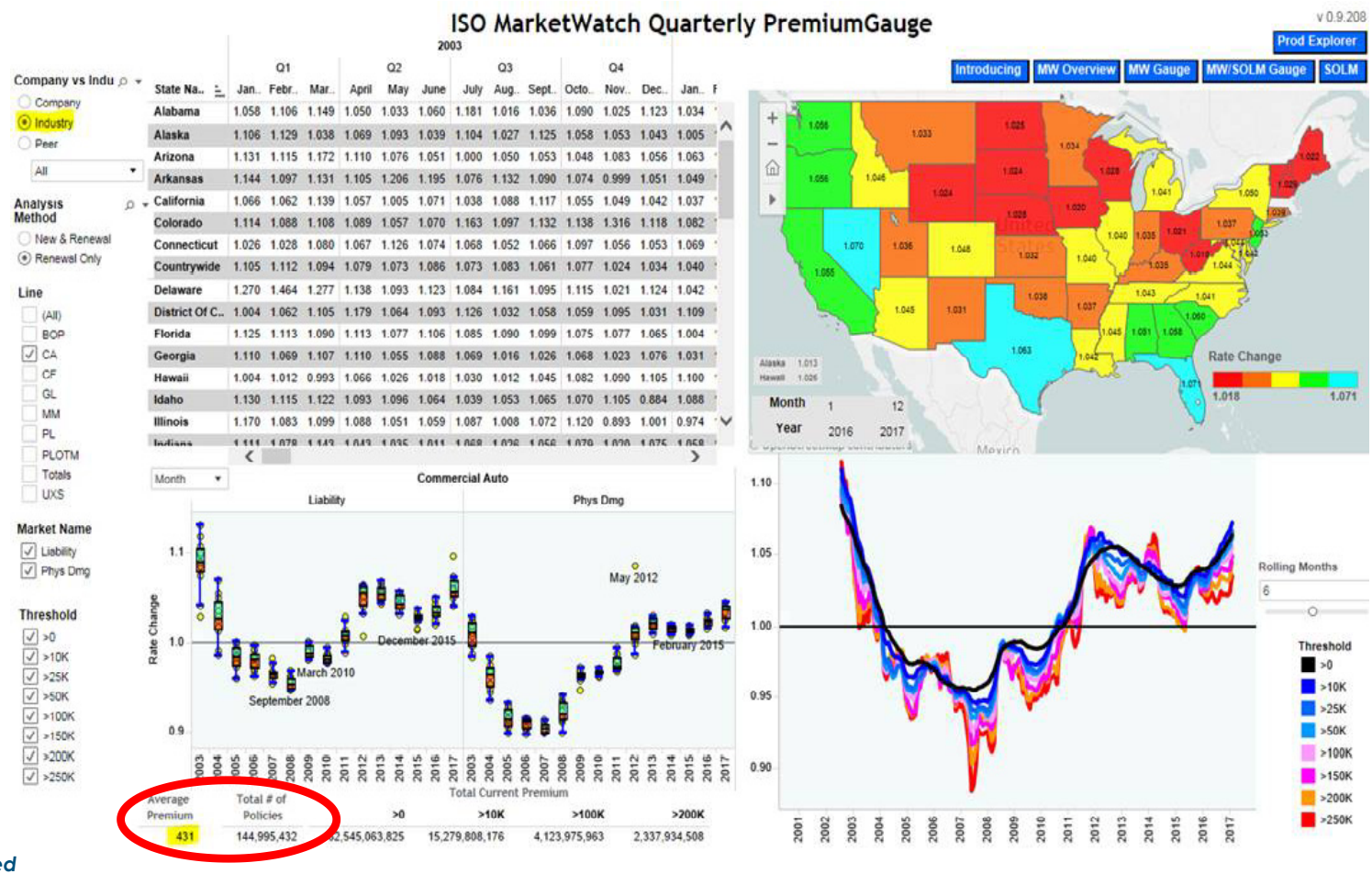
Note: Values shown may not match options selected

Commercial Auto – View at 2018

Commercial Auto Liability – Total Industry – Renewal Policies

Illustrative

There are significant rate change differences by state, month, year, premium size, aggregated peer groups, line of business and market.



Note: Values shown may not match options selected

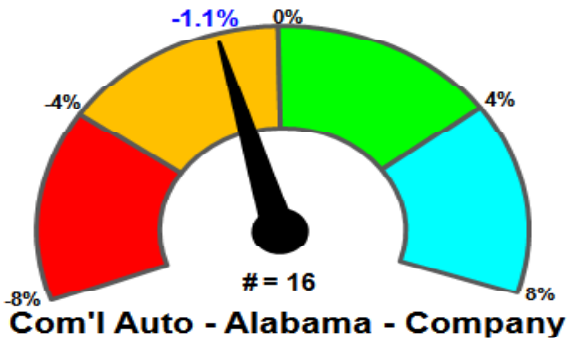
Commercial Auto – View at 2018

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

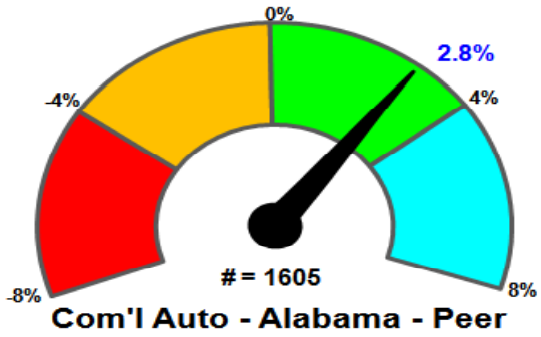
There are significant rate change differences by company, aggregated peer company, and industry.

Illustrative

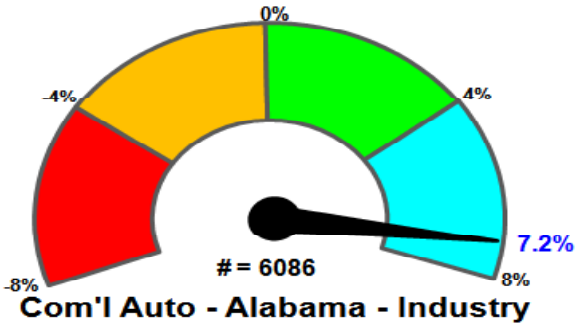
Company



Peer



Industry

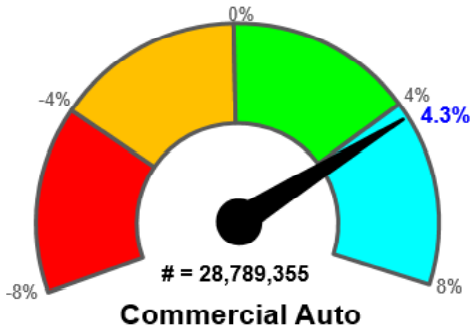


Holistic View of Rate Changes, Loss Trends and Loss Ratios

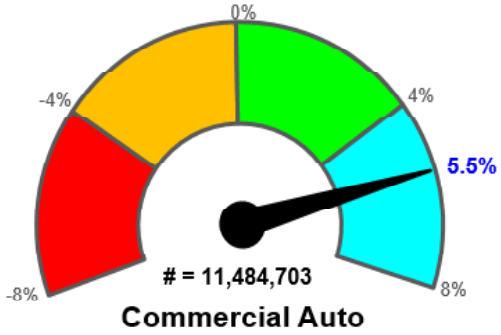
Illustrative

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

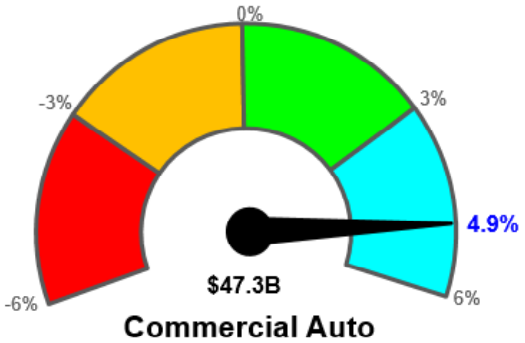
CY2017 New & Renewal Rate Change*



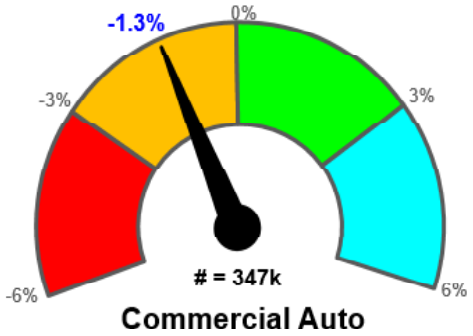
CY2017 Renewal Only Rate Change*



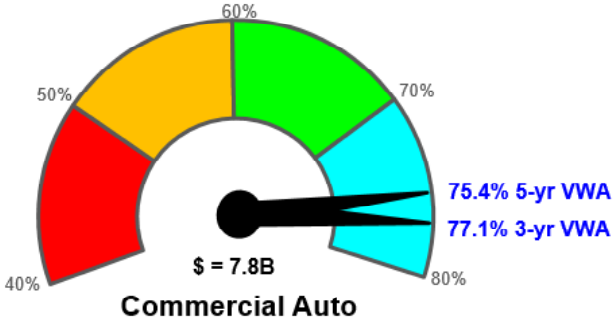
7 Year Severity Trend



3 Year Frequency Trend



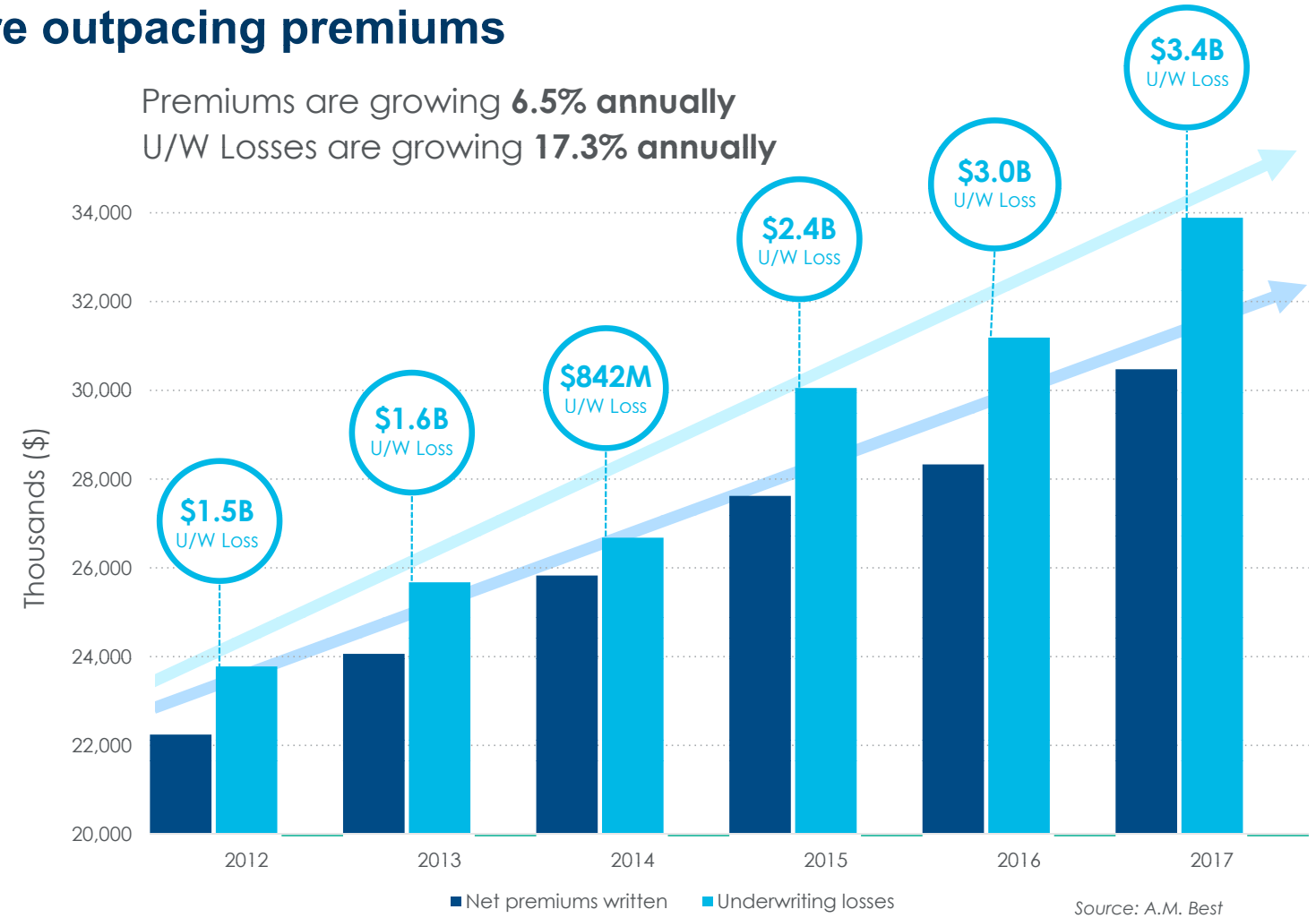
2017 Loss Ratio



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)

A Product Managers Perspective

Losses are outpacing premiums



Source: A.M. Best

Trends driving higher losses

More than **16 million** commercial vehicles are on the road today

Miles driven were **up 6.5%** between February 2015 and February 2016

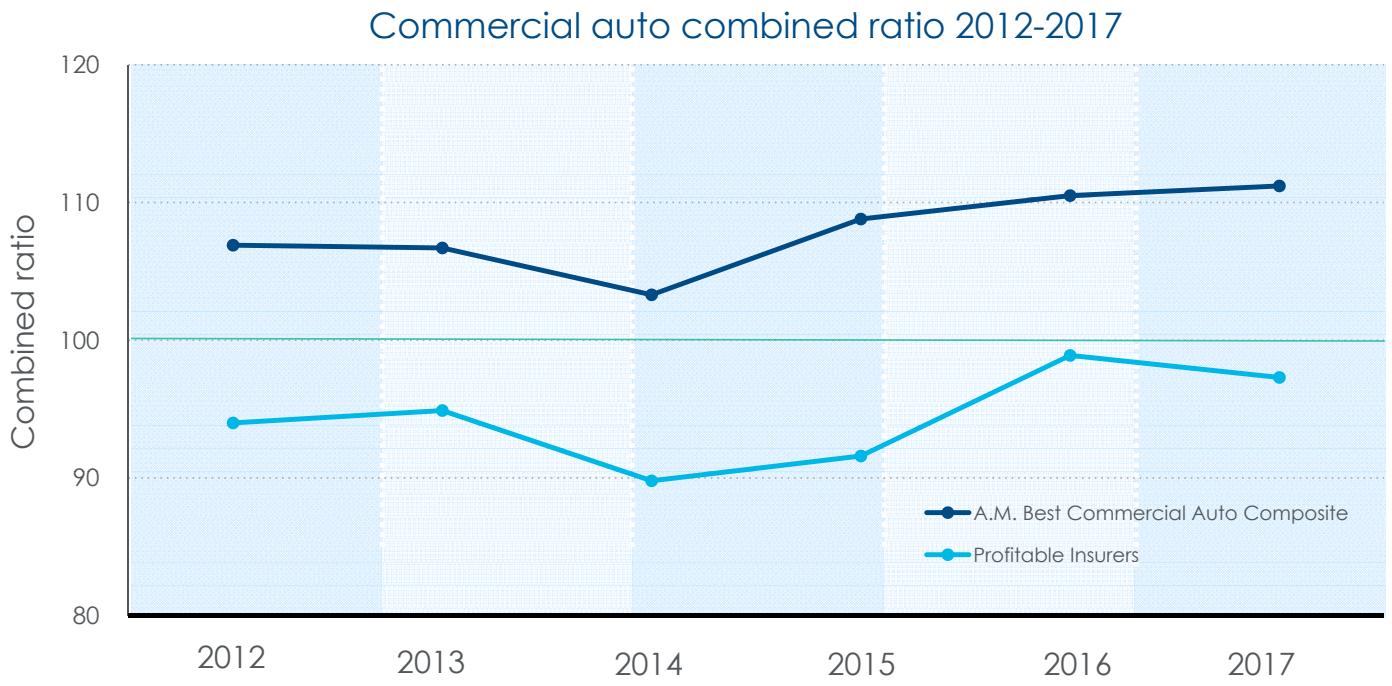
The need for as many as **50,000 drivers** is producing a glut of inexperienced drivers

27% of crashes involved drivers distracted by mobile devices

Loss severity per claim was up **nearly 39%** between 2009 and 2016

Not all companies are experiencing pain

Industry leaders have a combined ratio **13.5 points** better than the total industry from 2012-2017



Source: A.M. Best and ISO analysis

Common Underwriting challenges impact revenue, expenses, and risk control

Submission volumes are growing

⇒ *But underwriting resources are not growing*

Market conditions and transparency creates pricing pressure

⇒ *Need better data and process improvement to **price right** and **act fast***

Applications frequently have missing and inaccurate data

- Agents are time constrained
- Cumbersome data entry
- Misleading applications leads to misclassifications

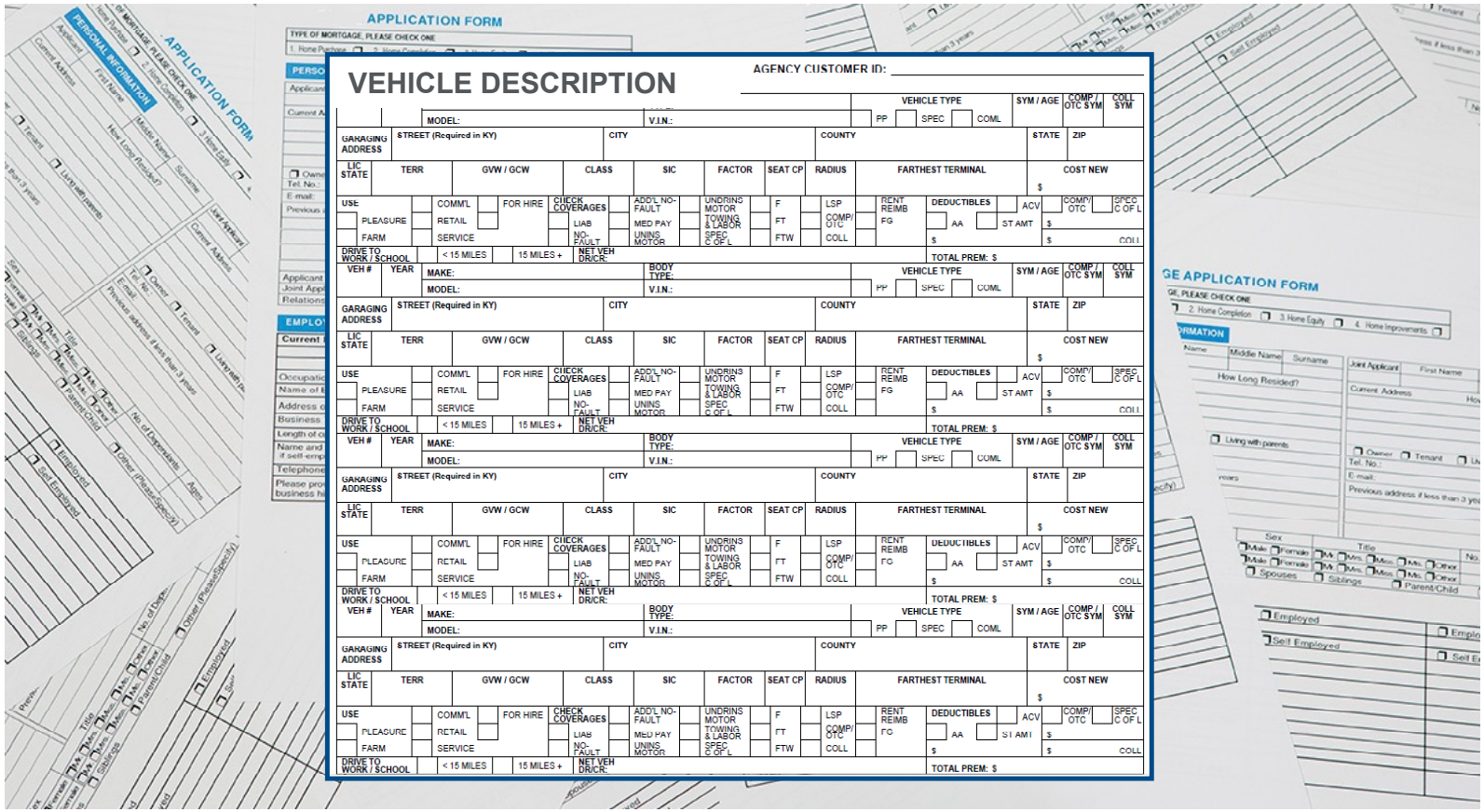
⇒ *Impact on premium leakage?*

Application to quote can be slow

⇒ *Impact on underwriting expenses, revenue, and distribution channels?*

Package policies can complicate decision making

How could *this* possibly lead to inaccurate information about a risk?



The intersection of data, analytics, workflow, and technology

Maximize profitability through high quality data and workflow processes grounded in industry best practices

High quality **data**

- Prefill application with unbiased data
- Verify existing data characteristics
- Leverage newly available data and capabilities
- Unparalleled access to business, vehicle, driver, and loss history information

Smart **analytics**

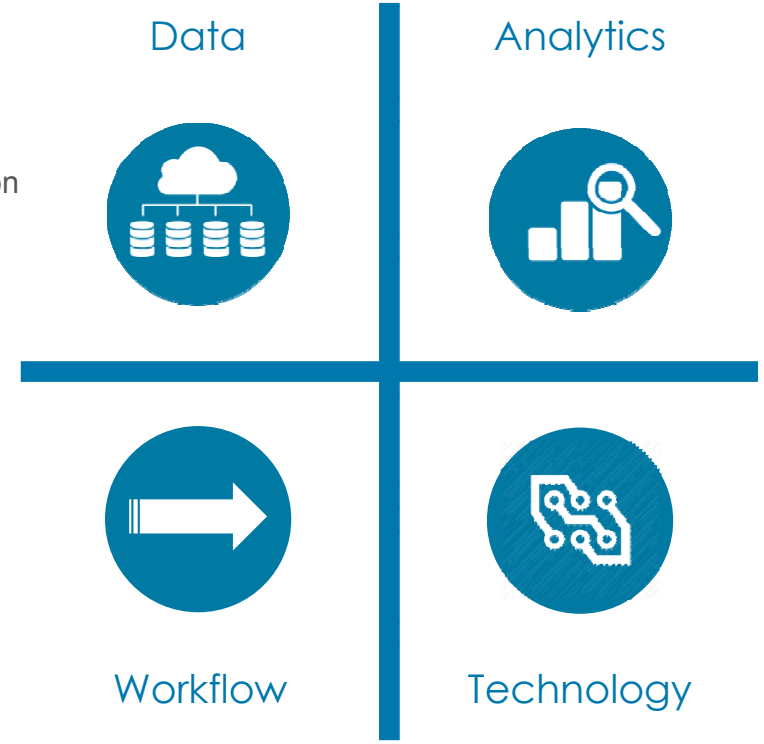
- Measures of management competency

Workflow enablement

- Apply domain expertise to provide actionable analytics
- Incorporate into efficient underwriting guidelines

Technology integration

- Seamless Data-As-A-Service integration
- Onboarding experiences with >40 carriers



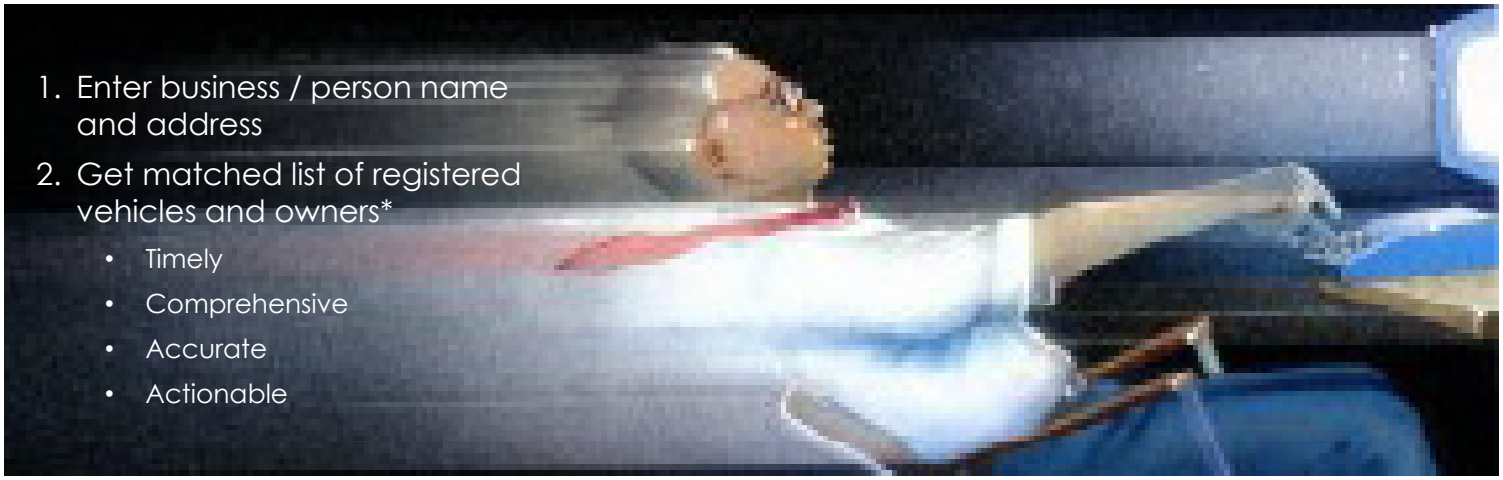
Commercial Auto: Vehicle Registration Data

Key fields with 100% fill rate

- VIN Number
- License plate
- Year
- Make
- Model

60 other fields including:

- Gross vehicle weight
- Base price
- Body type
- Anti-lock brakes
- Four-wheel drive (Y/N)
- Air bags
- Registered owner
- Name code (i.e. owner, lessor, lessee, lien holder, etc.)
- Branded designation (i.e. flood, junk, fire and hail damage, stolen, etc.)
- Plate type (i.e. official, exempt, farm, commercial, etc.)



* Excluding AZ, CA, HI, NH, NY, OK, PA, VA

Improved underwriting insights: Vehicle ownership/registration

Search criteria:

- IMT Landscaping
- Albert Collins

Avoid data entry errors

Identify vehicles missing from application

IMT Landscaping Inc., owned by Albert Collins

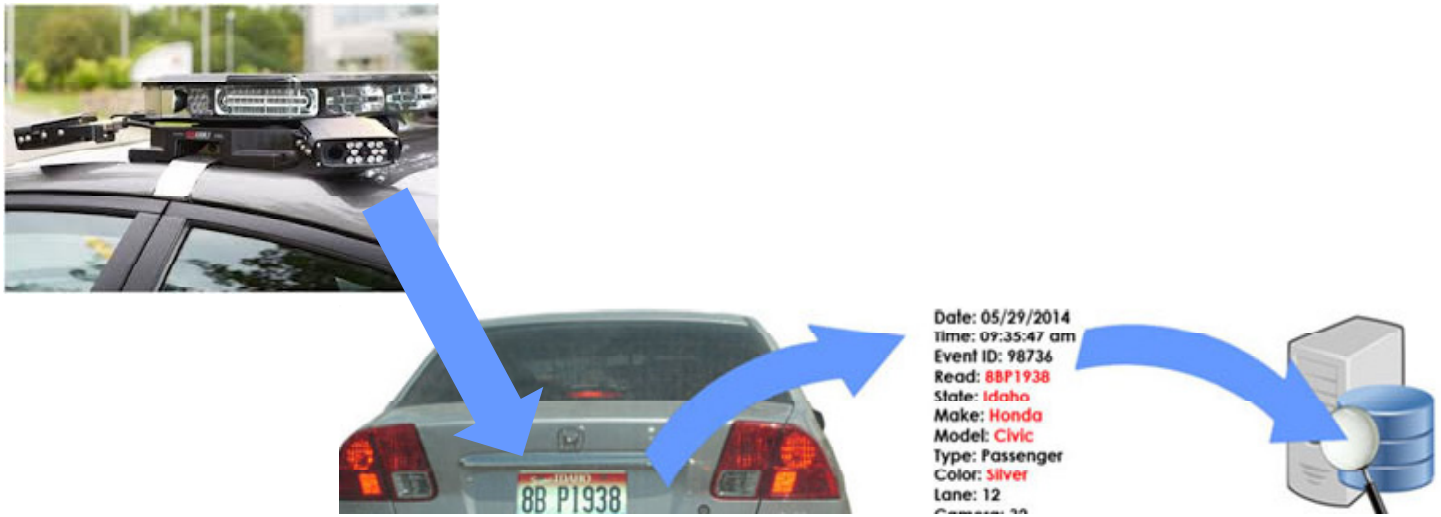
Year/Make	Model	VIN	Registered Owner	Registered to the business?	On the application?
2010 United Express Line	UTL	459845DUHR89D467I	IMT Landscaping Inc.	Yes	No
2014 Ford	F350 Super Duty	J39HD35SGJO9JH675	IMT Landscaping	Yes	Yes
2014 Chevrolet	K2500 Heavy Duty	JLK048J404H4L3474	IMT & Sons Landscaping Inc.	Yes	Yes
2012 Moritz Inc.	DMP	D93045J110784JORF	IMT Landscaping Inc.	Yes	Yes
2013 Chevrolet	Corvette	DH4ASG6980LNMYT35	Albert B Collins	No	Yes

Confirm vehicle characteristics

Distinguish cars most likely used for personal use

Commercial Auto Visual Insight Data

Underwriting insight to confirm application accuracy



DPPA permissible use required. Not FCRA/Cannot deny Insurance or Claims.

- 30-50% coverage nationwide
  - Not available in AR, NH, VT
- Over 150 million sightings per month
- Over 7 billion sightings in total

- Picture of the vehicle and license plate
- Latitude and longitude
- Date and time

Commercial Auto – Garaging and Radius Rating Data

Identify potential radius misrepresentation for each vehicle on a policy

Converts VIN to License plate

Detailed sighting analysis:

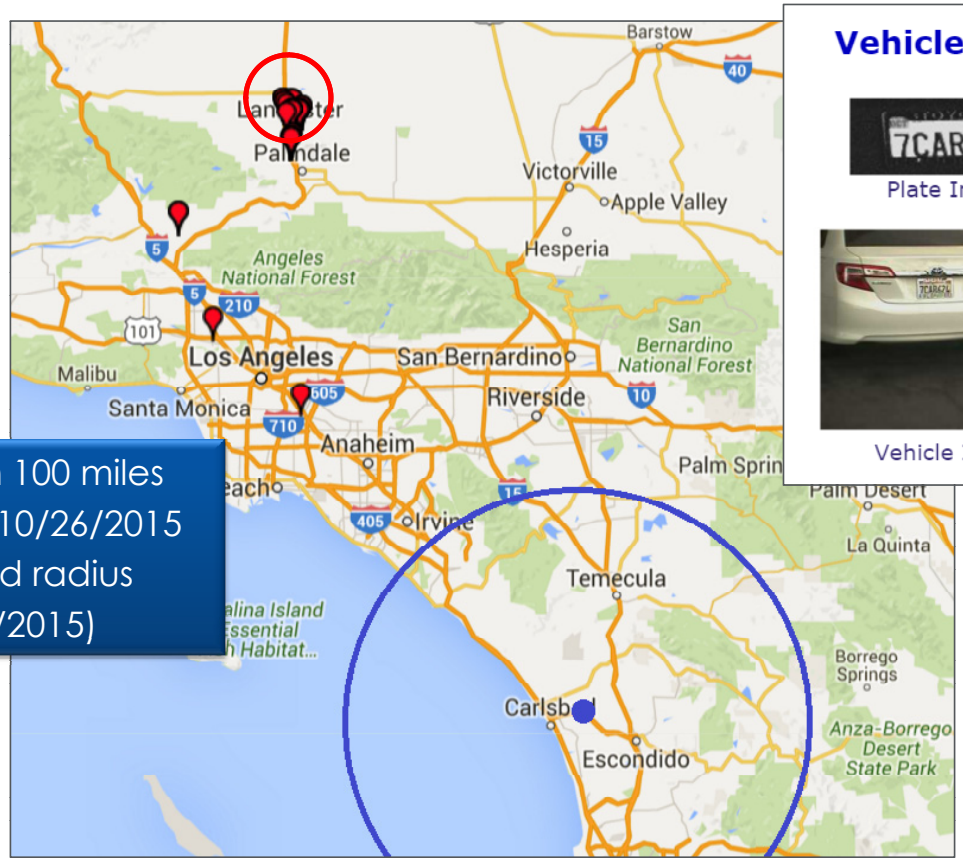
- Date / time stamp
- Lat / Long
- Radius class based on given garage location

Summarized information by vehicle and location:

- # sightings inside radius
- # sightings outside radius
- Analytics to identify vehicles with potential radius misrepresentation

Investigative sample

Vehicle application with territory in San Diego County and 50 mile radius



Vehicle Data:

Plate Image

Vehicle Image

- Sighted more than 100 miles beyond radius on 10/26/2015
- 36 sightings beyond radius (12/9/2013 - 10/26/2015)

Bios

John W. Buchanan

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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 2018-2019 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.

Diane Injic

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Diane is a CPCU, and leads Verisk's Commercial Auto Underwriting Products. Including innovative policy and vehicle level underwriting solutions, which offer speed, efficiently 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.