

Virtual Conference
June 13-14, 2022

Seminar on Reinsurance



**CS23 Wheels -
Overinflated Tires**

CS23: Wheels – Overinflated Tires

June 14, 2022

Moderator: Barry Blodgett, FCAS, Senior Vice President Analytics, Topsail Re

Speakers:

Marni Novack, FCAS, Senior Actuarial Associate, Verisk Underwriting Solutions

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Portfolio Owner, Swiss Re



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CS23 Agenda - Wheels: Inflated Tires

- **Introduction**
- **Commercial and personal auto update**
 - Overall industry results through 12/31/2021 – ups and downs over the last decade
 - Review trends, LDFs, loss ratios, segments, ground-up vs excess, competitive underwriting cycle, rate changes, emergence lags, ILF pressures
 - Covid and heightened inflation – considerations into 2022 and 2023
- **Motor Portfolio Management perspective**
 - State of the market for commercial and personal auto
 - Current and Future auto trends, supply chain disruption, severity etc...
 - Impact on portfolio loss ratios & reserving
- **Liability/ Umbrella Portfolio Management perspective**
 - Economic uncertainty
 - Large losses looming, social inflation remains
 - Navigating the challenging risk landscape
- **Q&A**



Update of Commercial Auto

View at 2020



Commercial Auto – View at 2020

There has been a steady decline in on-level results since 2009.

Overall loss ratios fell slightly for the first time in 2019 due to continued slightly reduced severity trend and slightly increased reduction in frequency.

Since 2009, there has been higher average severity trends (7-year trend 6%), lengthening tail and continued adverse actual vs. expected losses. The recent improvement in rates may be starting to reverse the higher loss levels.

The current loss ratio of 76.0%, is 15.7 points worse than longer term on-level average of 60.3%.

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2021

Market Segment: Commercial Auto Liability
Total Commercial Auto Liability
All Companies - All Class Groups
All Causes Of Loss
Unlimited xs 0 Countrywide

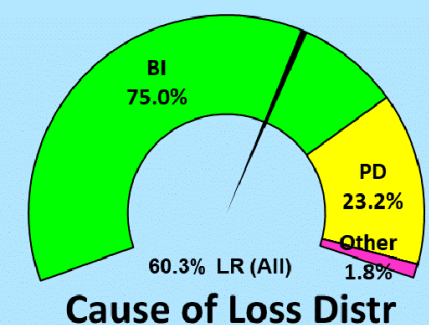
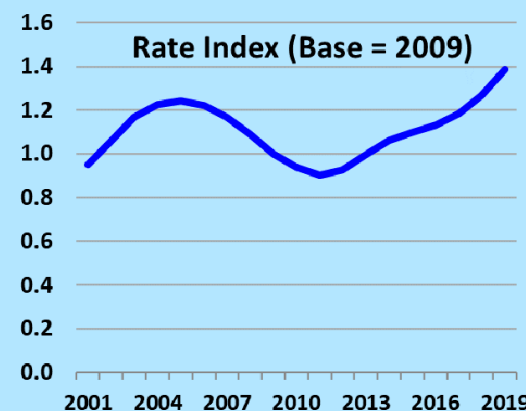
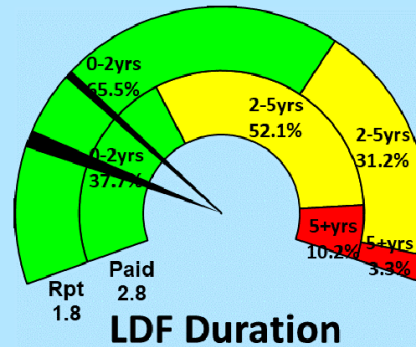
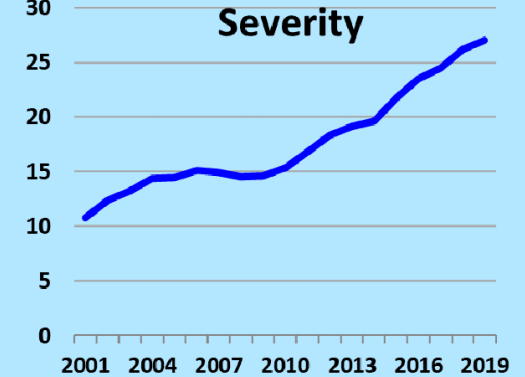
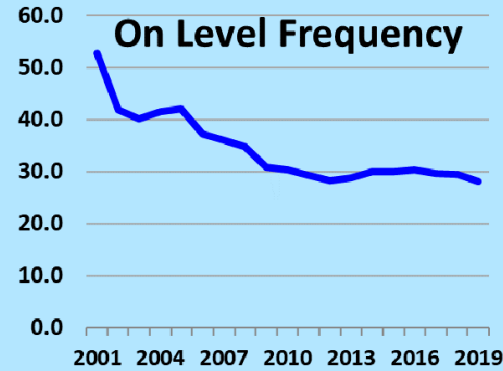
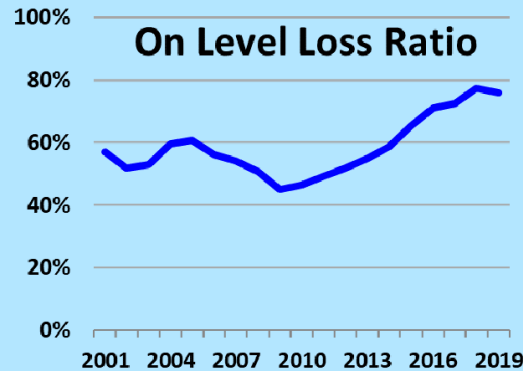
Illustrative

Est All Yr/Curr Yr LR: 60.3% / 76.0%
7 Year Severity Trend: 5.9%
All Year Trend: 4.90%
Avg Duration: Rpt 1.8 / Paid 2.8 Year

Loss Ratio Analytics

SOLM 2021 v1

Total Premium 12/2020: 179,081,698,833
Total Incurred \$ Indemnity+Alae (Prorata): 133,208,996,806
Total Occurrences: 8,928,095
VWA 3yr/all 100%/0%



Note: Loss development factors and durations use 3 year VWA and 3% detrending
Rate Changes from MarketWatch - New and Renewal Policies - 12/31/2019



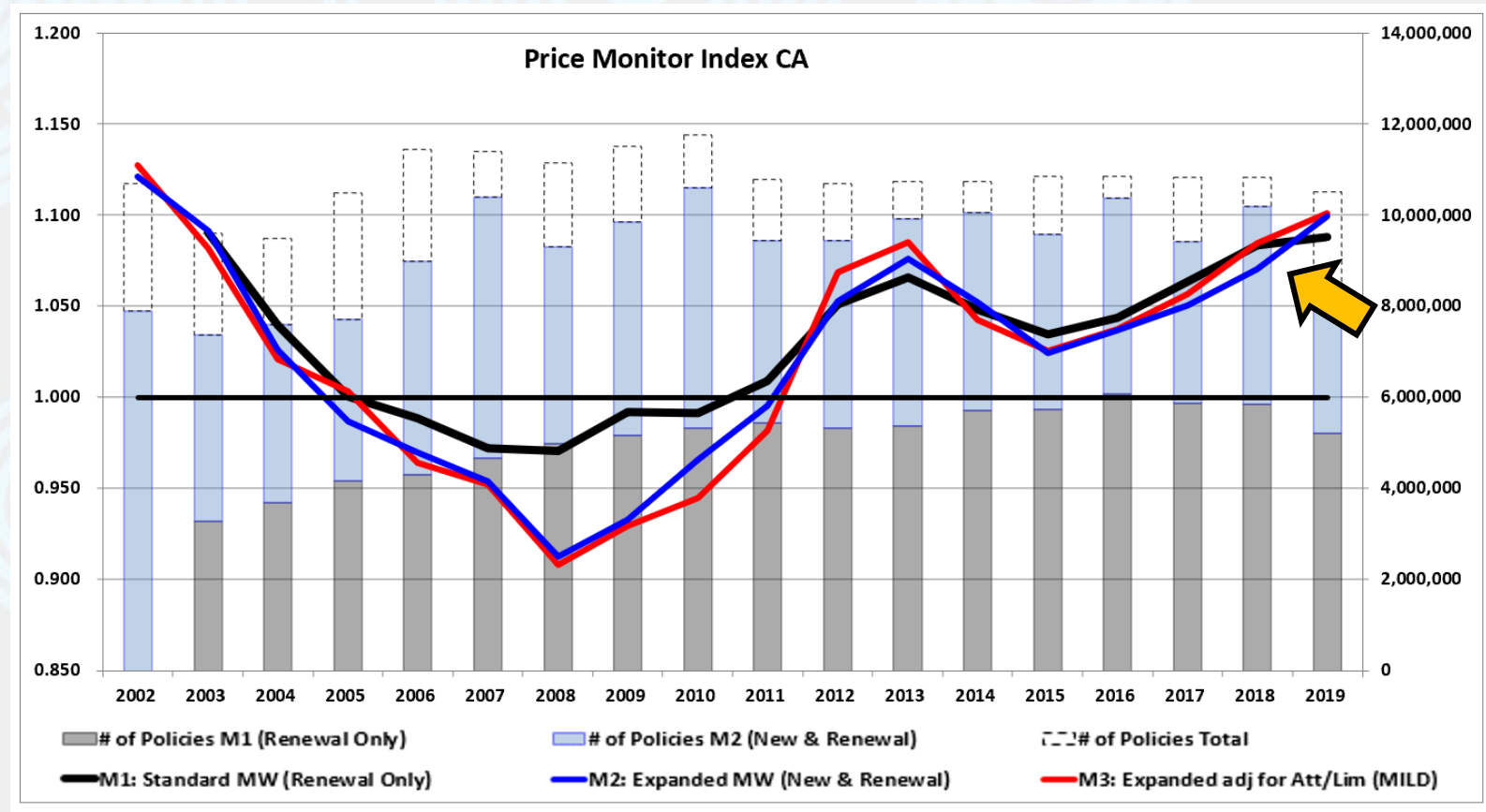
Commercial Auto – View at 2020

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%

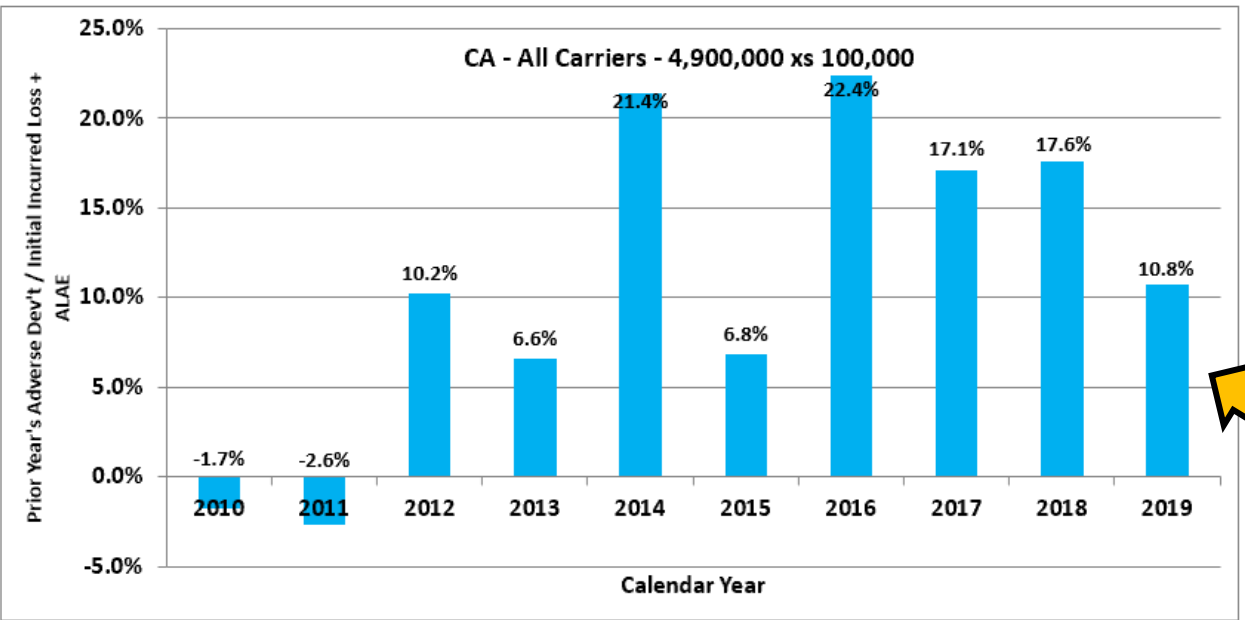


Commercial Auto – View at 2020

All CAu – Reserve Run-off Test @12/31/2019 – 4.9M xs 100k

Illustrative

Comparing to initial selected excess loss frequencies at 12 months using a mechanical 7-year average, produces adverse development all calendar years since 2012.



ISO SOLM 2020 v1 - Development Triangle and Analysis
Ex-ante Reserving Analysis Runoff Tests (through 12/31/2019)

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

Select Metric here:				CY2019	CY2018	CY2017	CY2016	CY2015	CY2014	CY2013	CY2012	CY2011	CY2010	CY2009	CY2008	CY2007	CY2006	CY2005	CY2004	CY2003	CY2002	CY2001
% Adverse (Favorable)	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	18	19
4.2%	1,127,046,093	47,476,388	2000	(12,547)	(149,760)	(15,852)	(161,035)	(267,938)	390,362	748,972	(1,032,814)	(505,188)	(269,262)	(148,841)	(2,952,111)	2,566,046	(13,637,592)	(19,657,081)	(4,689,317)	7,230,225	47,497,065	32,543,055
8.0%	2,500,551,667	199,145,650	2001	2,455,819	242,100	(2,000,655)	(48,578)	665,059	248,715	(3,235,863)	5,977	(528,202)	1,469,044	(1,324,413)	1,748,742	15,479,017	(20,502,536)	(35,208,913)	29,598,306	71,071,307	139,010,723	
4.6%	2,504,229,408	113,984,001	2002	1,465,432	612,680	(251,771)	542,465	549,941	4,653,329	423,934	(935,314)	6,697,939	1,673,711	(132,323)	30,611,956	(8,791,521)	(62,101,621)	40,033,542	103,862,768			
1.4%	2,596,503,520	37,494,803	2003	313,924	(291,888)	1,141,926	(20,446)	(1,574,931)	(1,905,818)	(510,559)	1,830,455	11,665,307	(11,097,807)	(12,676,130)	(9,604,316)	9,084,536	48,890,159	(32,237,060)	34,487,451			
-1.9%	2,982,485,486	(56,885,274)	2004	(750,906)	2,669,709	1,559,839	938,233	(1,564,344)	931,127	(3,075,597)	2,761,655	9,367,274	(9,068,260)	(4,410,257)	(5,058,702)	(60,762,367)	7,853,737					
0.1%	2,927,291,177	2,747,009	2005	(630,464)	9,844,095	337,374	(662,982)	(1,032,716)	(373,217)	(6,032,520)	305,191	13,346,052	(15,573,584)	(5,136,133)	(2,385,326)	(18,555,000)	29,296,237					
-2.2%	3,041,009,165	(66,376,821)	2006	(1,798,531)	397,175	1,771,054	6,190,687	(3,539,459)	4,021,497	4,374,383	(154,746)	708,599	(12,019,361)	(44,039,848)	(39,956,858)	17,668,586						
-1.9%	3,057,810,770	(59,116,310)	2007	357,877	(110,842)	1,122,844	(3,306,540)	6,779,331	6,316,040	(6,429,017)	16,015,972	(21,883,627)	(49,199,573)	(1,258,693)	(7,520,082)							
-4.0%	2,674,414,621	(106,544,639)	2008	5,002,159	3,445,731	2,385,856	4,520,052	155,293	6,199,162	97,349	7,648,026	(81,265,670)	(13,410,124)	(41,322,474)								
3.3%	2,147,733,606	71,462,745	2009	(2,280,516)	173,797	(71,484)	5,758,127	(9,238,324)	17,525,939	17,886,956	56,340,017	(56,393,670)	41,761,905									
12.1%	2,089,570,653	251,905,645	2010	1,301,158	1,096,449	9,447,220	15,407,425	3,397,948	78,232,099	19,198,439	75,857,400	47,967,506	Minimum	Maximum	Actual vs Expected Development: AY x CY							
13.7%	2,215,739,451	302,799,093	2011	277,595	1,650,398	7,382,891	36,014,524	46,541,968	98,349,018	44,094,807	68,487,891		-3.0%	-1.3%	10	Favorable development						
14.7%	2,365,026,561	348,751,436	2012	(11,270,148)	11,838,602	5,883,343	70,383,873	49,382,418	144,219,511	78,313,837			-1.3%	-0.5%	8	Somewhat favorable						
20.8%	2,317,328,024	482,647,102	2013	14,648,550	14,773,629	61,079,228	157,189,388	105,781,916	129,174,393				-0.5%	0.5%	118	Within +/-0.5% of original estimate						
12.4%	2,719,477,388	335,913,384	2014	18,325,126	70,464,148	138,338,555	153,110,341	(44,324,787)					0.5%	2.6%	29	Somewhat adverse						
16.3%	2,925,812,692	477,851,180	2015	28,389,917	163,977,871	166,835,860	118,647,532						2.6%	6.8%	25	Adverse development						
9.4%	3,370,133,595	317,013,076	2016	66,841,291	166,605,222	83,566,563																
5.2%	3,517,115,960	181,210,142	2017	88,119,785	93,090,357																	
4.2%	3,714,761,128	157,569,101	2018																			

Sources: Using SOLM 2020 v1 – mechanical selections of VWA (100% 7-year)



Commercial Auto

View at 2021 and 2022 with COVID and Heightened Inflation



Commercial Auto – View at 2021

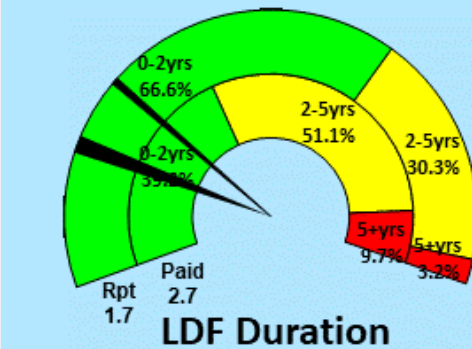
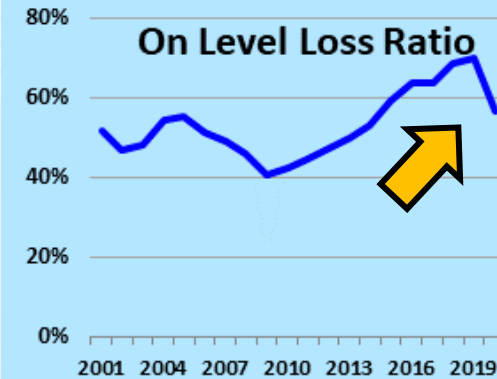
After the steady increase in loss ratio since 2009, loss ratios fell sharply in 2020. This was due to the significant drop in frequency that was observed in 2020 as a result of the pandemic. Fewer people were driving as people were staying home and most businesses were not open. Severity continued to climb in 2020 (6.34% 7-year trend), but this did not offset the decline in frequency.

For the first time in many years, the current year loss ratio is comparable to the all year loss ratio and not significantly higher (53.4% all year vs. 56.5% in 2020).

ISO Size-of-Loss Matrix

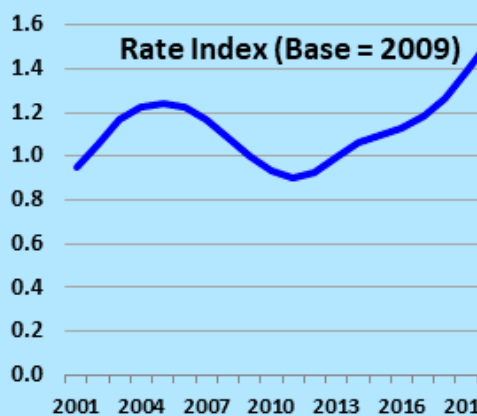
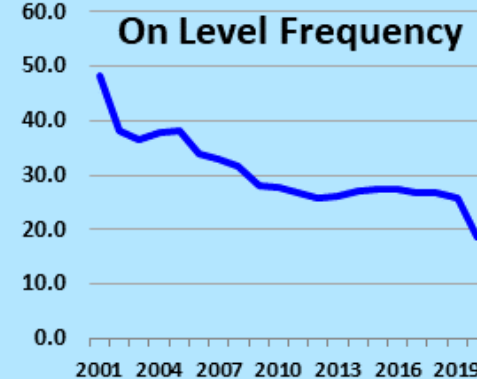
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Market Segment: Commercial Auto Liability
Total Commercial Auto Liability
All Companies - All Class Groups
All Causes Of Loss
Unlimited xs 0 Countrywide



Illustrative

Est All Yr/Curr Yr LR: 53.4% / 56.5%
7 Year Severity Trend: 6.34%
All Year Trend: 4.65%
Avg Duration: Rpt 1.7 / Paid 2.7 Years
Total Loss Cost

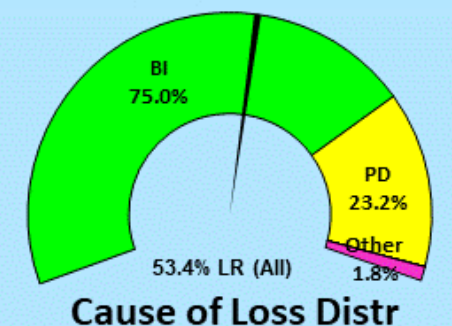
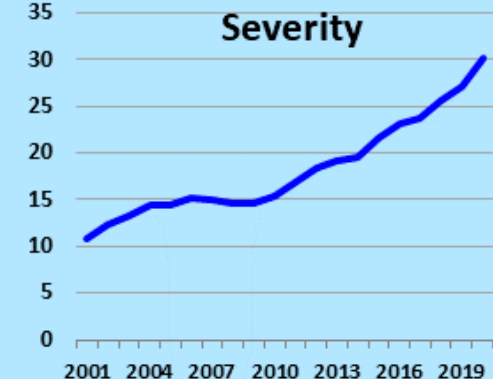


Note: Loss Development Factors and Durations use 2-year VWA and 3% detrending
Rate Changes from MarketWatch - New and Renewal Policies - 12/31/2020

Loss Ratio Analytics: View at 2021 - Total CAU

SOLM 2021 v1

Total Premium 12/2020: 179,081,698,833
Total Incurred \$ Indemnity+Alae (Prorata): 133,208,996,806
Total Occurrences: 8,928,095
VWA 3yr/all 100%/0%



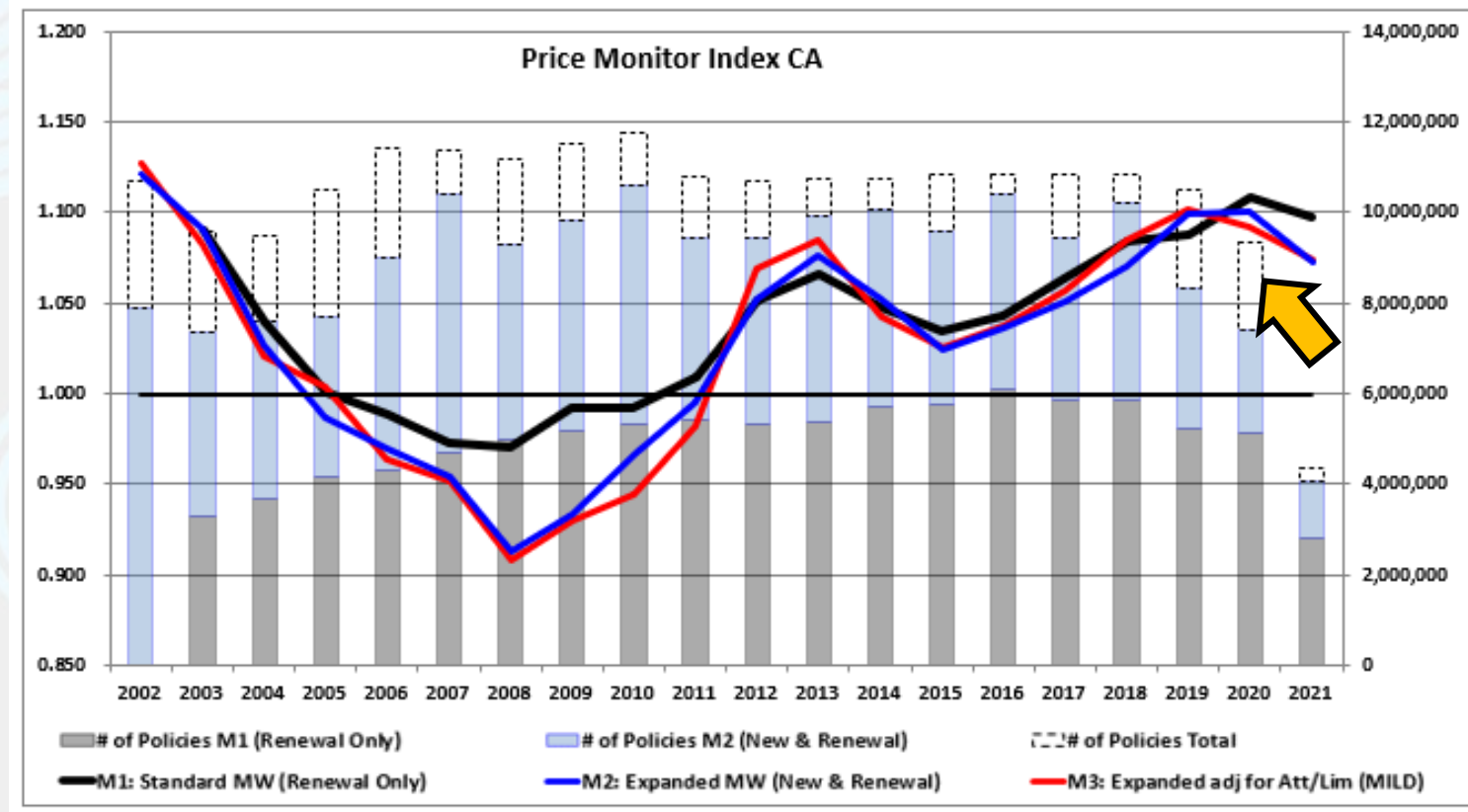
Commercial Auto – View at 2021

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

Illustrative

After years of increasing rate increases since 2016, rates, while still in the high single digits, have started to see lesser increases, more so for new and renewal policies than renewal only policies.

The number of policies in 2020 is also down from what was observed previously, indicating that there may have been some loss of policies during the pandemic, perhaps from businesses going out of business.



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 77%, Employee Months 20%, Named Insured Months 1%, Cost of Hire 1%



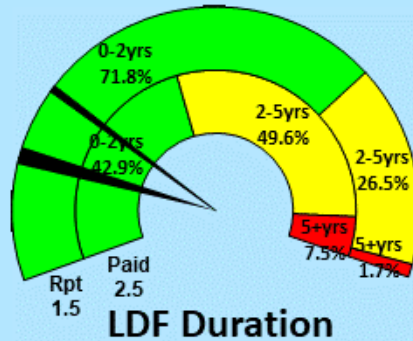
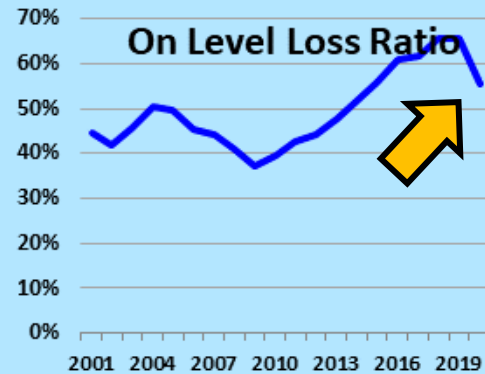
Commercial Auto – View at 2021

Like for Total Commercial Auto Liability, TTT saw a sharp decline in loss ratio in 2020 driven by a decline in frequency. TTT saw less of a decline than Total CAu due to a sharper increase in severity than for Total CAu.

ISO Size-of-Loss Matrix

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Market Segment: Commercial Auto Liability
Trucks Tractors and Trailers
All Companies - All Class Groups
All Causes Of Loss
Unlimited xs 0 Countrywide



Note: Loss Development Factors and Durations use 2-year VWA and 3% detrending
Rate Changes from MarketWatch - New and Renewal Policies - 12/31/2020

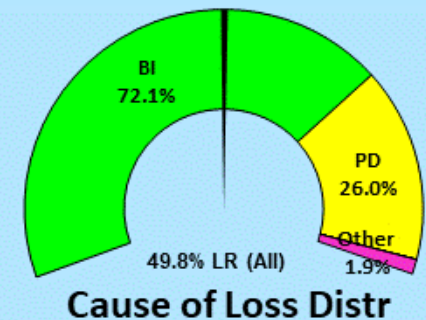
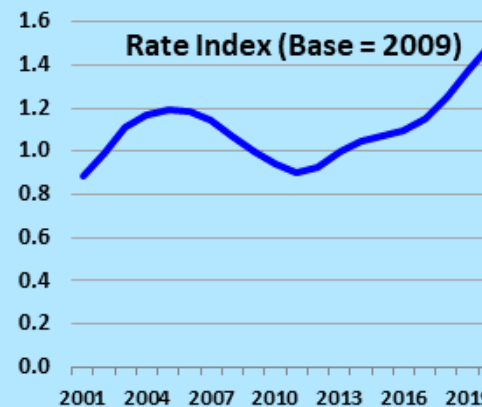
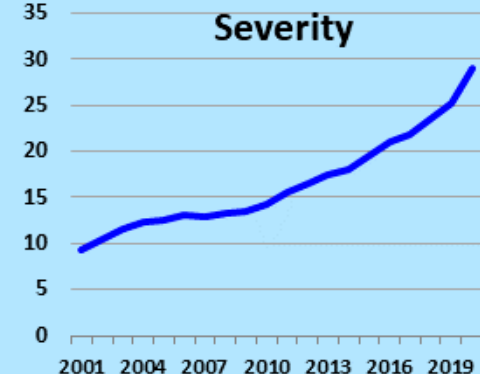
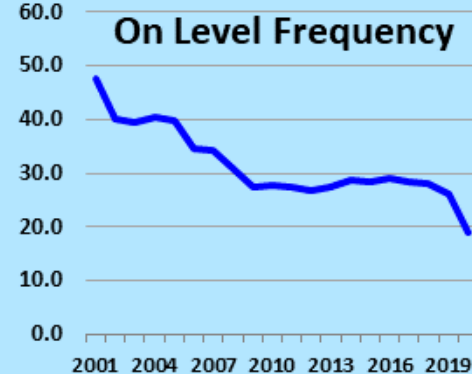
Loss Ratio Analytics: View at 2021 - TTT

SOLM 2021 v1

Illustrative

Est All Yr/Curr Yr LR: 49.8% / 55.4%
7 Year Severity Trend: 6.95%
All Year Trend: 5.13%
Avg Duration: Rpt 1.5 / Paid 2.5 Years
Total Loss Cost

Total Premium 12/2020: 88,733,425,284
Total Incurred \$ Indemnity+Alae (Prorata): 66,575,999,504
Total Occurrences: 5,006,019
Total Exposure (Power Units): 616,656,305
VWA 3yr/all 100%/0%



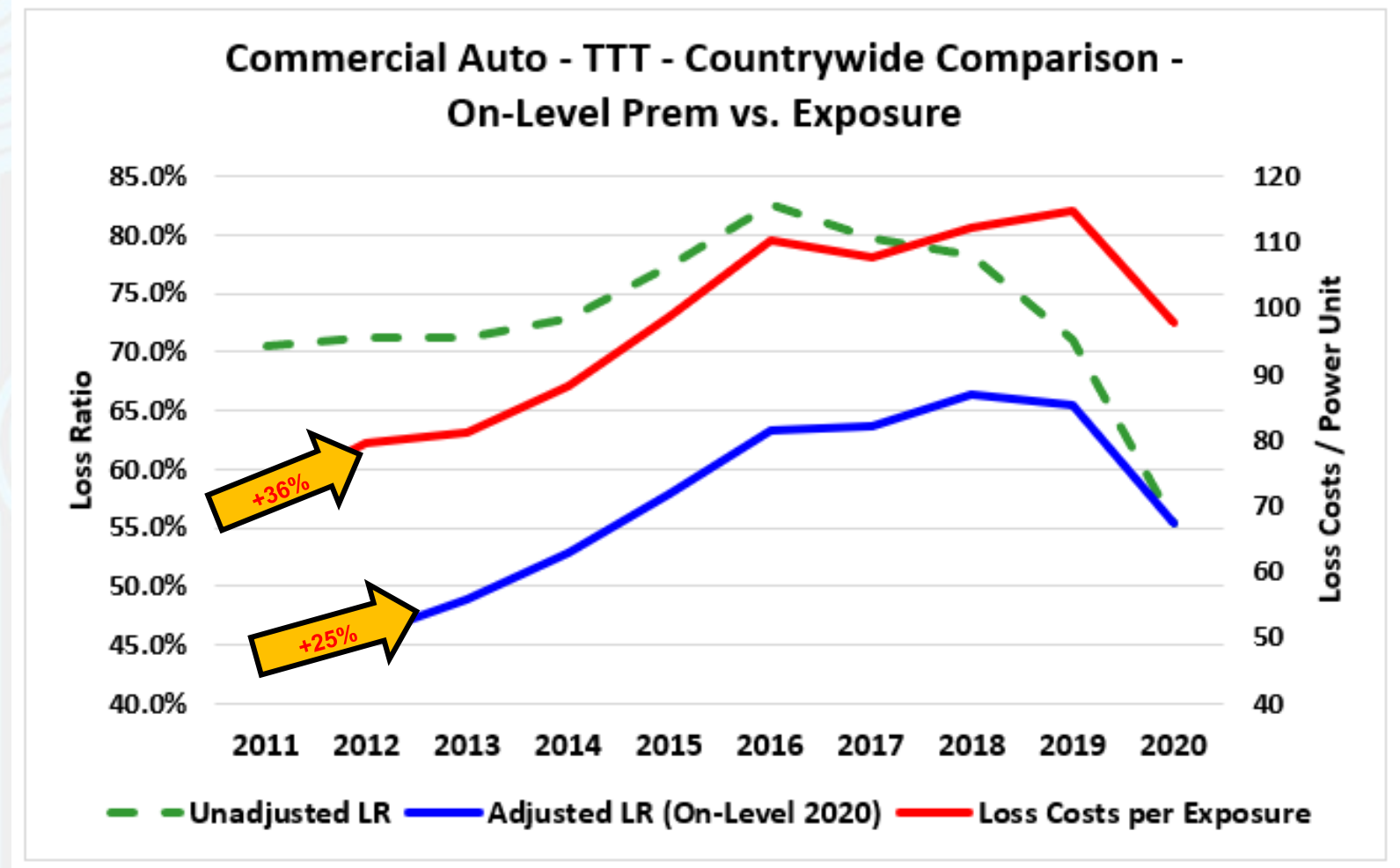
Commercial Auto – View at 2021

Comparison of Results using On-level premium vs. Power Units - TTT

Illustrative

Overall increase in cost up by 36% per power unit, and up by 25% per on-level premium.

Both methods show a significant drop-off in 2020 (~15%) after a previous seeming to level off since 2016. This can be attributed to the significant reduction in frequency due to Covid.



Source: SOLM 2021v1; losses developed using 3-yr VWA; uses ISO MarketWatch 12/31/2020 rate changes – CA-TTT Liability; power units in months



Commercial Auto – View at 2021

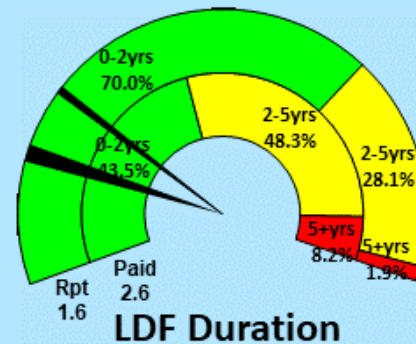
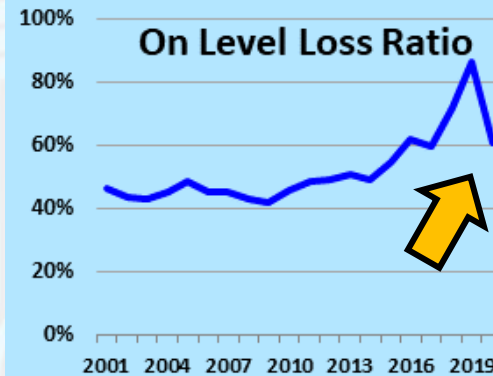
PPT Loss ratios fell more sharply than overall Commercial Auto with an even more significant drop in frequency and less of an increase in severity.

This could reflect that larger trucks were on the road in a higher proportion to pre-pandemic levels than private passenger cars.

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2021

Market Segment: Commercial Auto Liability
Private Passenger Types
All Companies - All Class Groups
All Causes Of Loss
Unlimited xs 0 Countrywide



Note: Loss Development Factors and Durations use 2-year VWA and 3% detrending
Rate Changes from MarketWatch - New and Renewal Policies - 12/31/2020

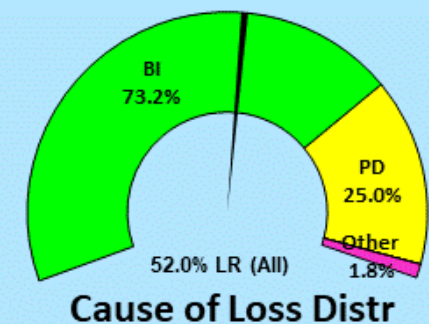
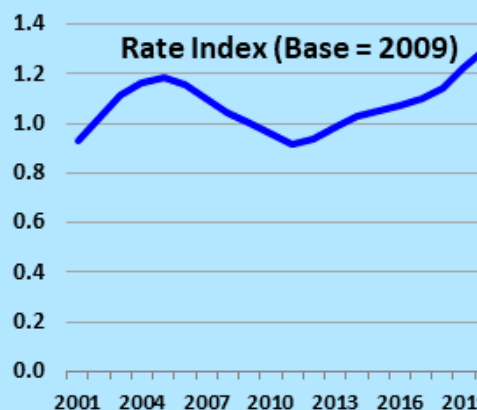
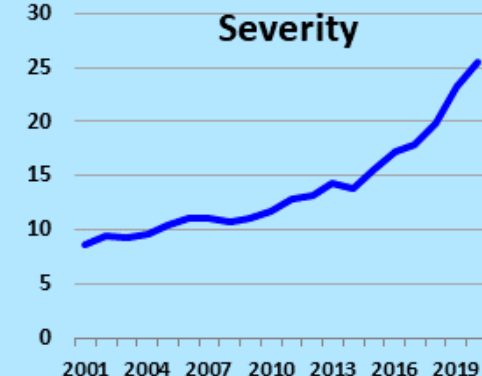
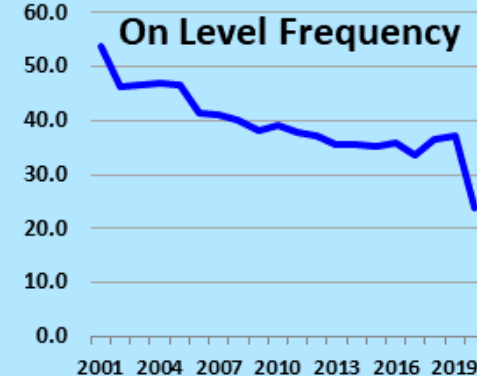
Loss Ratio Analytics: View at 2021 - PPT

SOLM 2021 v1

Illustrative

Est All Yr/Curr Yr LR: 52.0% / 60.8%
7 Year Severity Trend: 8.82%
All Year Trend: 5.05%
Avg Duration: Rpt 1.6 / Paid 2.6 Years
Total Loss Cost

Total Premium 12/2020: 16,062,164,296
Total Incurred \$ Indemnity+Alae (Prorata): 11,750,922,755
Total Occurrences: 1,043,078
VWA 3yr/all 100%/0%



Commercial Auto – View at 2021

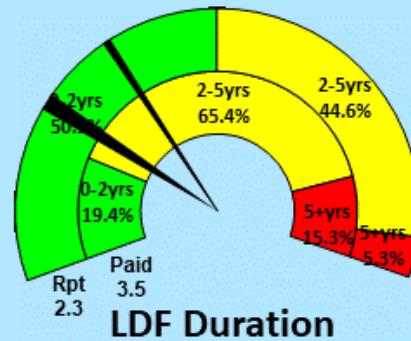
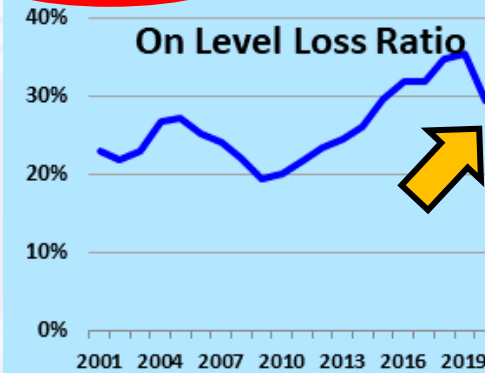
Larger claim sizes, while still impacted, with lower frequencies leading to lower loss ratios did not tend to have as significant of an impact as ground-up claims.

Fewer smaller claims were observed compared to prior years, potentially due to their being fewer cars on the road, so fewer smaller accidents (fender benders).

ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2021

Market Segment: Commercial Auto Liability
Total Commercial Auto Liability
All Companies - All Class Groups
All Causes of Loss
4,900,000 xs 100,000 Countrywide



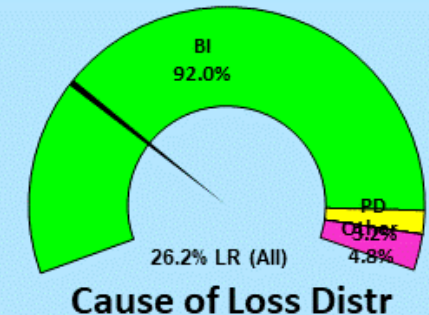
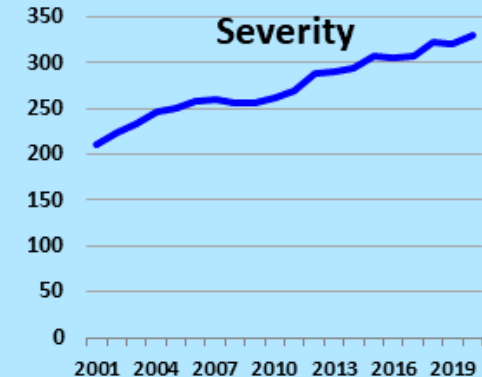
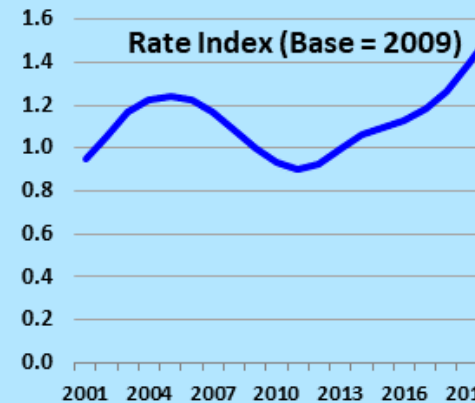
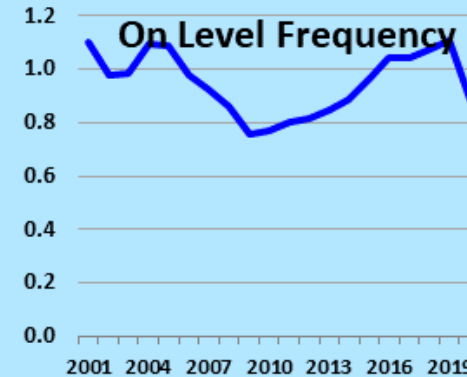
Note: Loss Development Factors and Durations use 2-year VWA and 3% detrending
Rate Changes from MarketWatch - New and Renewal Policies - 12/31/2020

Loss Ratio Analytics: View at 2021 **Total CAu Excess**

Illustrative

Est All Yr/Curr Yr LR: 26.2% / 29.4%
7 Year Severity Trend: 1.78%
All Year Trend: 2.12% (DeT=3%)
Avg Duration: Rpt 2.3 / Paid 3.5 Years
Partial Loss Cost

Total Premium 12/2020: 179,081,698,833
Total Incurred \$ Indemnity+Alae (Prorata): 61,811,846,484
Total Occurrences: 247,961
VWA 3yr/all 100%/0%

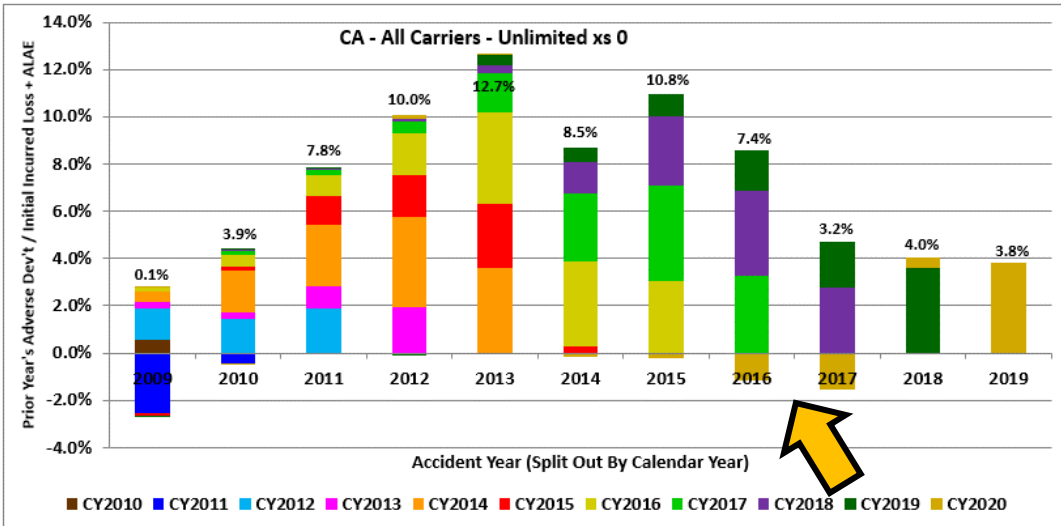


Commercial Auto – View at 2021

Total CAU Liability – Reserve Run-off Test @12/31/2020 – GU

Illustrative

For all Calendar Years since 2012, we have seen adverse development. 2020 is the first year that we are seeing significantly lower adverse development, and the first year since CY 2011 that we see favorable development for any accident years (2016 and 2017).



ISO SOLM 2021 v1 - Development Triangle and Analysis

Ex-ante Reserving Analysis Runoff Tests (through 12/31/2020)

Market Analysis:

CA - All Class Groups - All Carriers

Assumptions:

Incurred \$ Indemnity+Alae (Prorata); Unlimited xs 0; 7 yr VWA (100% wt); 3.0% detrended threshold

Insurance Services Office, Inc., 2021

SOLM 2021 v1

Select Metric Here:				CY2020	CY2019	CY2018	CY2017	CY2016	CY2015	CY2014	CY2013	CY2012	CY2011	CY2010	CY2009	CY2008	CY2007	CY2006	CY2005	CY2004	CY2003	CY2002	CY2001
% Adverse (Favorable)	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	18	19	20
3.5%	3,060,951,127	108,180,003	2000	311,330	59,327	(112,057)	(53,522)	(143,631)	(389,223)	270,324	968,293	(939,209)	(169,397)	(355,970)	660,439	(2,343,605)	1,910,366	(17,045,644)	(28,540,773)	(14,439,856)	(11,518,935)	40,389,352	139,667,661
7.7%	5,907,353,947	457,715,444	2001	(854,528)	2,699,391	514,218	(1,965,783)	67,251	634,508	52,225	(3,913,032)	(176,039)	(383,088)	2,530,470	(1,972,365)	1,758,260	27,759,291	(14,451,469)	(72,121,225)	96,886,665	126,562,711	294,067,362	
4.9%	5,500,018,796	269,796,708	2002	(1,133,353)	2,086,412	1,016,704	(259,041)	964,858	295,571	4,724,836	(328,795)	(1,519,981)	7,477,395	2,078,722	(4,175,574)	(1,848,048)	54,652,514	4,522,472	(60,193,022)	104,564,484	156,876,552		
3.1%	5,392,153,025	164,767,321	2003	(402,683)	529,827	(132,650)	1,171,813	69,373	(1,803,336)	(2,053,353)	(573,879)	2,668,349	12,591,628	(6,380,448)	(14,349,720)	(5,689,897)	27,013,031	78,627,650	(2,480,149)	75,361,765			
1.9%	5,740,410,873	111,256,895	2004	293,353	(7,162,727)	2,566,586	1,581,598	(81,387)	(743,217)	1,078,091	(3,831,704)	3,893,705	9,008,387	(9,587,186)	12,303,802	11,907,841	36,171,927	(1,311,786)	55,163,010				
1.4%	5,895,348,420	82,938,983	2005	774,568	248,463	10,309,525	978,236	(809,558)	(1,013,391)	(1,400,991)	(5,475,830)	476,116	17,139,274	(16,320,082)	11,890,116	21,067,048	(1,046,698)	46,722,187					
-0.4%	6,068,103,198	(25,179,431)	2006	732,870	(1,150,642)	1,061,268	1,479,869	11,701,079	(4,548,077)	5,343,851	3,360,893	1,859,089	(449,879)	(8,598,828)	(28,337,257)	(20,749,711)	13,110,045						
-0.6%	6,124,791,610	(33,709,598)	2007	(3,016,207)	557,812	1,054,311	444,503	(3,807,303)	9,536,802	5,891,103	(7,269,694)	21,135,303	(26,291,225)	(60,183,642)	15,716,229	12,521,811							
-1.7%	5,375,859,697	(90,187,470)	2008	1,050,157	4,949,989	10,270,142	2,372,563	5,335,745	846,400	10,554,124	(5,593,431)	27,196,769	(107,390,122)	(41,570,724)	1,190,917								
0.1%	4,729,183,375	5,362,516	2009	1,576,389	(4,006,470)	693,472	(269,747)	7,185,755	(4,308,530)	22,698,300	12,152,944	63,071,794	(119,956,447)	26,525,055									
3.9%	4,851,117,285	189,607,516	2010	(1,216,837)	1,931,773	1,672,744	8,694,588	24,027,065	7,801,345	85,073,441	14,125,897	63,838,358	(22,341,458)										
7.8%	4,985,561,073	388,834,712	2011	(1,816,320)	1,006,849	2,230,123	10,625,128	45,651,237	59,401,533	129,854,422	47,773,404	94,108,936	Minimum	Maximum	Actual vs Expected Development: AY x CY								
10.0%	5,211,512,868	518,902,394	2012	7,140,425	(5,874,113)	7,807,435	25,343,434	90,647,824	32,897,732	199,720,975	101,218,622		-2.5%	-1.2%	Favorable development								
12.7%	5,341,996,061	677,978,357	2013	4,227,052	22,356,819	17,211,289	89,102,753	209,144,573	144,009,398	191,926,473			-1.2%	-0.5%	Somewhat favorable								
8.5%	5,947,246,504	507,338,289	2014	(8,822,536)	34,717,561	79,873,272	169,342,304	215,403,268	16,744,422				-0.5%	0.5%	Within +/-0.5% of original estimate								
10.8%	6,535,211,382	702,949,938	2015	(12,104,425)	60,595,153	192,484,875	263,469,380	190,504,954					0.5%	2.0%	Somewhat adverse								
7.4%	7,202,968,851	535,285,139	2016	(115,323,083)	121,469,816	258,381,501	237,154,816						2.0%	5.0%	Adverse development								
3.2%	7,462,889,332	236,771,601	2017		9,544	206,215,139																	
4.0%	7,914,407,742	318,881,451	2018		32,780,134																		
3.8%	8,130,946,653	312,948,578	2019																				

Source: SOLM 2021v1 - mechanical selections of VWA (100% 7-year)

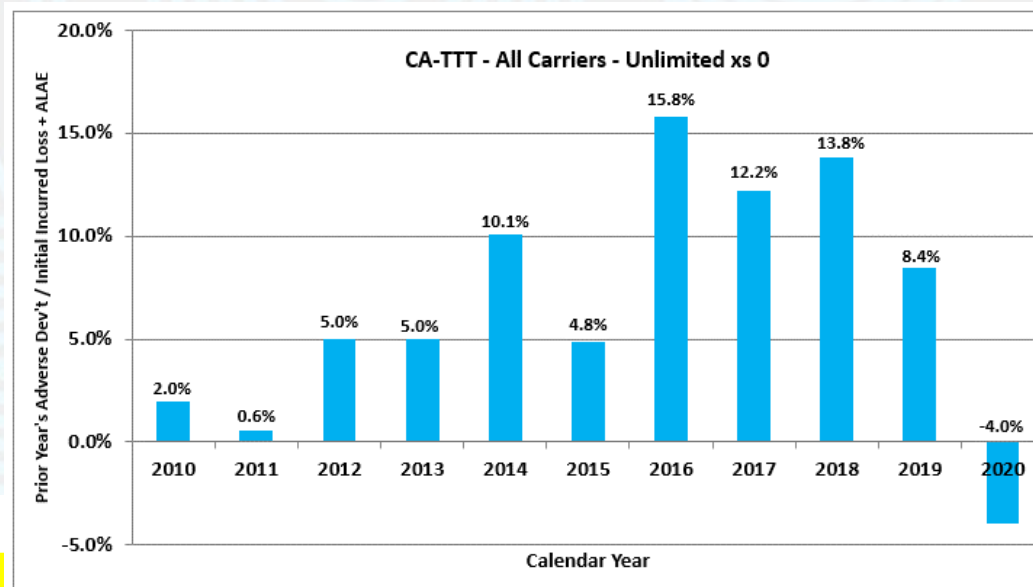


Commercial Auto – View at 2021

TTT – Reserve Run-off Test @12/31/2020 – GU

Illustrative

While we still see adverse development in AY2020 for TTT, 2020 is the first calendar year that we see favorable development since 2010.



ISO SOLM 2021 v1 - Development Triangle and Analysis

Ex-ante Reserving Analysis Runoff Tests (through 12/31/2020)

Market Analysis:

CA-TTT - All Class Groups - All Carriers

Assumptions:

Incurred \$ Indemnity+Alae (Prorata); Unlimited xs 0; 7 yr VWA (100% wt); 3.0% detrended threshold

Insurance Services Office, Inc., 2021
SOLM 2021 v1

Select Metric Here:				CY2020	CY2019	CY2018	CY2017	CY2016	CY2015	CY2014	CY2013	CY2012	CY2011	CY2010	CY2009	CY2008	CY2007	CY2006	CY2005	CY2004	CY2003	CY2002	CY2001
% Adverse (Favorable)	Ultimate Est. INCURRED @12 mos	Adverse (Fav) Devt	AY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Development																							
4.0%	2,473,401,951	97,863,613	2000	338,542	60,154	(100,022)	(67,352)	(13,231)	(365,110)	320,586	894,192	(541,753)	747,509	(1,256,277)	(1,318,858)	(1,715,327)	3,488,062	(11,855,232)	(23,466,001)	(6,315,381)	(19,223,294)	34,936,413	123,317,191
-1.1%	2,700,808,252	(29,024,009)	2001	(812,809)	913,495	77,520	100,703	(360,546)	774,569	(394,604)	331,685	(1,180,158)	(939,835)	(98,774)	(3,006,625)	(1,654,038)	(1,360,468)	(17,561,932)	(53,213,244)	38,161,807	6,076,120	5,123,123	
-4.6%	2,588,644,263	(118,400,278)	2002	(717,529)	1,705,738	116,628	(87,630)	419,038	481,509	974,222	155,751	(1,374,700)	(268,081)	(1,898,792)	(3,390,157)	3,343,375	(33,215,329)	(57,992,999)	(4,473,373)	(29,160,631)			
-2.3%	2,555,959,699	(59,637,207)	2003	(348,390)	268,053	(106,632)	224,202	(254,372)	(955,783)	(786,438)	(399,363)	482,253	2,720,552	(4,252,451)	(4,751,430)	(1,790,030)	(12,076,027)	5,642,027	(38,445,621)	(4,206,489)			
-3.3%	2,686,959,419	(89,001,145)	2004	(1,106,320)	1,035,266	343,314	764,801	307,158	209,657	(1,872,570)	(761,349)	1,484,774	1,142,715	(4,326,416)	(2,027,537)	(4,334,437)	(39,228,258)	(30,640,395)	(10,057,548)				
-4.0%	2,746,768,096	(110,349,781)	2005	(404,863)	1,216,876	(377,028)	16,733	(887,904)	274,808	433,270	(352,990)	366,065	4,307,634	4,857,439	(2,360,824)	(25,473,078)	(65,427,988)	(27,137,333)					
-3.3%	2,726,064,302	(89,279,231)	2006	(424,033)	278,552	(635,768)	229,315	1,145,343	(1,942,498)	2,135,335	(507,251)	1,448,373	(2,060,424)	8,645,105	(34,311,428)	(27,847,378)	(35,432,474)						
-2.4%	2,748,927,782	(66,610,499)	2007	(864,730)	228,826	(361,477)	266,486	1,334,804	3,024,434	(2,216,113)	2,734,907	5,899,791	5,379,453	(17,097,033)	(32,399,292)	(32,534,555)							
-0.3%	2,420,800,715	(20,822,357)	2008	(143,867)	850,262	(952,098)	3,553,738	50,668	2,377,437	7,081,311	(2,162,133)	7,716,431	(11,490,175)	(21,237,324)	(21,237,324)								
4.3%	2,070,354,735	89,191,884	2009	368,548	(857,323)	1,952,377	2,441,739	8,910,076	(99,451)	4,229,291	3,730,733	28,249,223	(6,346,993)	40,613,663	(6,466,607)								
4.8%	2,242,235,529	107,304,199	2010	819,248	(76,856)	(39,737)	7,531,664	11,151,643	6,023,892	29,447,646	7,229,483	25,676,039	19,541,177										
7.2%	2,431,257,534	175,457,834	2011	(2,482,637)	1,068,022	(5,562,144)	8,557,890	15,636,181	21,981,834	46,165,800	29,158,722	68,874,167	Minimum	Maximum	Actual vs Expected Development: AY x CY								
8.2%	2,474,484,014	203,283,854	2012	(5,435,764)	(1,689,547)	(1,183,301)	(867,853)	42,763,407	23,943,191	68,868,713	14,885,007		-2.4%	-1.1%	13	Favorable development							
10.3%	2,630,465,692	285,584,917	2013	(5,311,598)	5,557,003	8,029,219	39,326,333	91,655,599	44,783,749	102,144,533			-1.1%	-0.5%	9	Somewhat favorable							
9.6%	2,905,405,869	277,970,271	2014	(5,720,440)	(3,634,521)	41,174,131	81,061,710	135,757,276	29,326,114				-0.5%	0.5%	152	Within -0.5% of original estimate							
10.7%	3,167,426,716	337,524,908	2015	(7,548,395)	18,110,474	106,659,476	82,641,733	137,661,399					0.5%	2.0%	20	Somewhat adverse							
9.5%	3,532,025,937	335,590,408	2016	(34,913,918)	63,436,219	155,409,396							2.0%	5.0%	16	Adverse development							
5.3%	3,678,640,873	195,455,721	2017	(80,381,052)	120,760,060	155,676,713																	
2.3%	3,960,062,816	91,924,553	2018	(17,430,005)	109,354,553																		
1.1%	4,030,119,031	42,791,348	2019	42,791,348																			

Source: SOLM 2021v1 - mechanical selections of VWA (100% 7-year)

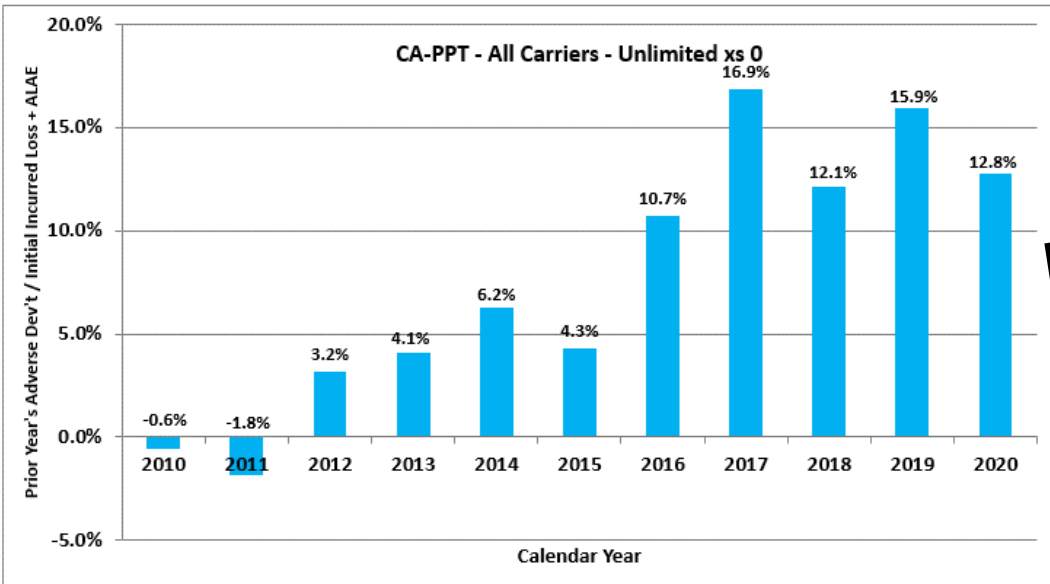


Commercial Auto – View at 2021

PPT – Reserve Run-off Test @12/31/2020 – GU

Illustrative

In the past we have tended to see that PPT lags behind PPT by 1-2 years. It seems this is still the case with CY2020 still seeing significant adverse development.



ISO SOLM 2021 v1 - Development Triangle and Analysis

Ex-ante Reserving Analysis Runoff Tests (through 12/31/2020)

Market Analysis:

CA-PPT - All Class Groups - All Carriers

Assumptions:

Incurred \$ Indemnity+Alae (Prorata); Unlimited xs 0; 7 yr VWA (100% wt); 3.0% detrended threshold

Insurance Services Office, Inc., 2021
SOLM 2021 v1

Select Metric Here:				CY2020	CY2019	CY2018	CY2017	CY2016	CY2015	CY2014	CY2013	CY2012	CY2011	CY2010	CY2009	CY2008	CY2007	CY2006	CY2005	CY2004	CY2003	CY2002	CY2001
% Adverse (Favorable)	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	18	19	20
1.8%	485,351,071	8,619,224	2000	(16,604)	534	(9,523)	10,171	(116,746)	(16,544)	(29,831)	73,778	(379,227)	(870,705)	840,660	1,705,611	(45,428)	(1,066,101)	(4,383,897)	(237,479)	(10,022,513)	8,182,430	2,637,856	12,362,723
-2.1%	546,838,106	(11,669,614)	2001	(227,637)	187,284	(5,352)	(90,186)	(545)	(4,603)	220,785	(972,015)	(20,569)	24,436	280,123	(410,899)	(446,380)	(4,216,304)	(1,234,603)	(2,875,527)	1,639,324	4,653,525	(8,163,266)	
-3.9%	492,758,987	(19,333,683)	2002	(6,027)	159,883	(885)	(18,639)	18,544	(170,809)	440,635	(134,372)	(1,213,778)	659,891	(1,332,069)	411,461	157,714	(4,526,484)	(3,200,355)	(12,386,795)	(1,684,321)	3,493,324		
-5.7%	471,797,164	(26,802,915)	2003	(41,407)	(37,027)	1,104	(6,382)	(3,786)	127,586	122,322	(71,555)	70,070	(53,712)	(64,414)	(1,100,788)	10,522	(5,686,431)	(6,351,672)	(13,204,688)	(512,658)			
-8.4%	472,071,806	(39,834,804)	2004	(48,356)	8,305	(3,168)	(30,645)	89,212	464,353	(244,404)	666,103	1,282,069	(5,020,872)	(381,499)	(2,406,409)	(8,552,521)	(9,675,415)	(15,741,273)					
-6.1%	486,048,380	(29,763,795)	2005	(1,582)	(45,080)	(5,081)	181,007	(248,264)	104,025	36,386	256,312	(798,662)	466,001	(2,314,306)	763,523	(3,543,748)	(20,630,198)	(4,043,530)					
-1.2%	455,942,874	(5,403,237)	2006	(20,443)	10,503	195,579	278,290	252,704	(81,840)	139,055	425,841	1,110,577	3,332,385	(351,062)	(5,321,833)	(3,944,408)	(1,429,186)						
-1.5%	471,467,626	(7,291,455)	2007	(10,466)	186,328	48,503	(201,770)	135,216	956,226	482,117	1,849,191	2,639,405	(5,761,763)	(1,848,421)	(11,963,680)	6,137,057							
-1.4%	430,903,589	(6,088,412)	2008	190,573	134,876	538,054	(282,122)	1,855,261	(441,202)	(285,022)	3,069,350	(3,689,279)	(3,776,103)	(507,183)	(2,896,215)								
1.3%	400,207,758	5,295,179	2009	68,685	134,877	(592,802)	163,733	(367,772)	(1,355,315)	3,093,294	6,150,367	3,593,025	(3,380,008)	(2,219,505)									
2.8%	424,268,877	11,921,074	2010	(55,227)	(282,533)	(949,544)	815,085	(1,450,830)	767,121	7,177,373	7,517,042	2,577,924	(4,195,337)										
5.1%	445,652,926	22,564,441	2011	392,834	479,488	(1,113,814)	2,649,532	4,168,870	2,657,968	(266,741)	6,255,468	7,340,835	Minimum	Maximum	Actual vs Expected Development: AY x CY								
3.8%	451,677,945	17,122,096	2012	(621,398)	(222,021)	(76,447)	1,960,869	6,195,586	1,809,323	10,743,712	(2,674,121)		-4.2%	-1.7%	0	Favorable development							
7.9%	464,925,727	36,537,454	2013	703,853	432,571	2,227,276	4,087,872	16,402,172	3,903,441	6,780,268			-1.7%	-0.5%	23	Somewhat favorable							
11.2%	431,645,244	48,337,560	2014	3,839,987	(2,391,422)	6,121,031	10,125,308	11,914,180	11,328,475				-0.5%	0.5%	135	Within -0.5% of original estimate							
13.2%	477,463,040	63,127,773	2015	1,284,914	11,479,751	11,452,632	28,736,226	10,174,251					0.5%	2.6%	32	Somewhat adverse							
13.9%	519,521,890	72,144,406	2016	(947,785)	22,077,875	21,067,401	23,536,315						2.6%	6.9%	12	Adverse development							
9.7%	503,660,021	49,001,757	2017	11,304,411	35,067	16,302,259																	
8.1%	593,368,237	47,876,365	2018	15,182,365																			
6.9%	695,723,758	48,119,060	2019	48,119,060																			

Source: SOLM 2021v1 - mechanical selections of VWA (100% 7-year)



ILF Pressures and competitive UW cycle

Commercial Auto – State Group X

900 x 100 – AS vs SOLM Partial Loss Ratio (3% detrended)

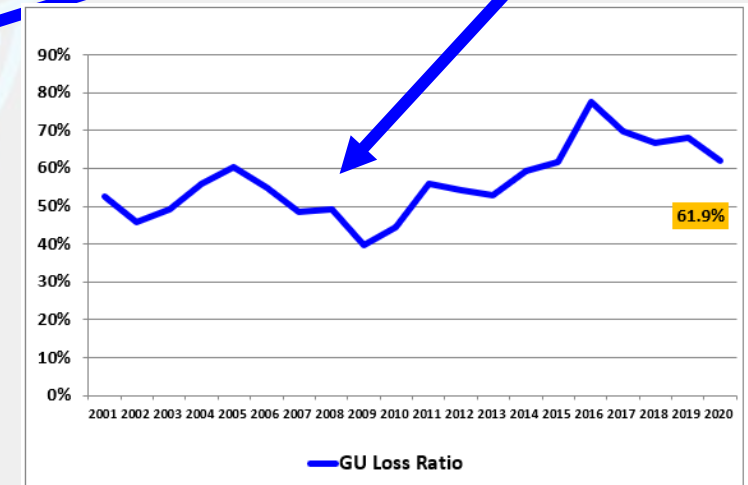
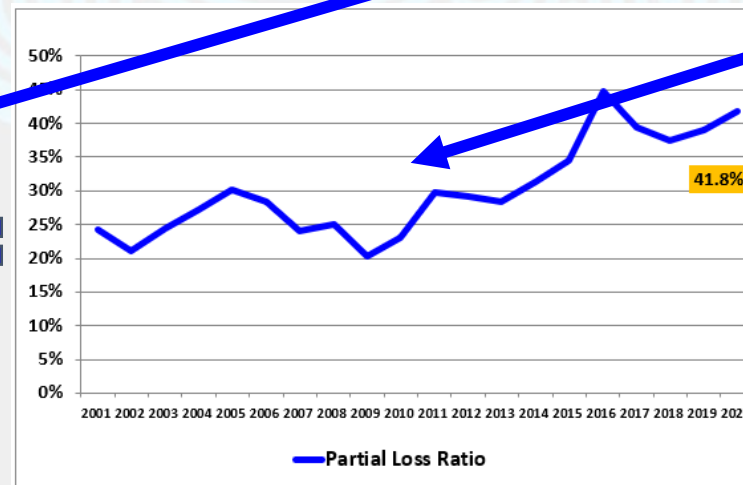
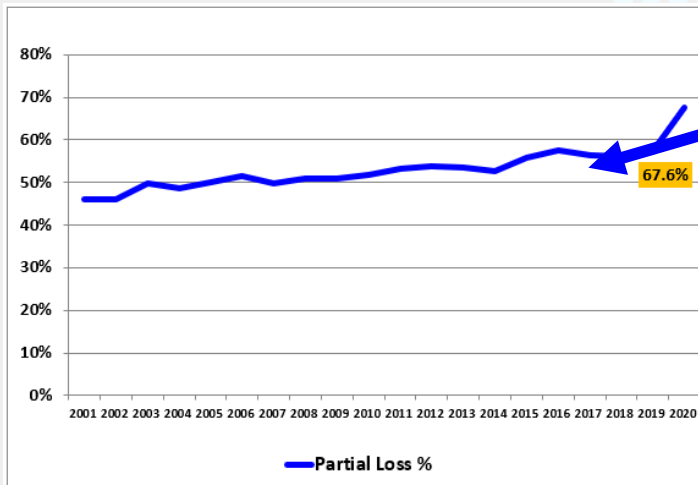
Illustrative

For the specific layer, class, and state group selected, the Weighted Expected Loss % can be compared to the Partial Loss % calculated with data through 2020. The Partial Loss % is higher than the Weighted Expected Loss % indicating an upward pressure on the ILFs.

Policy Limit	300k	1M	5M
100	1,000	1,000	1,000
250	1,420	1,420	1,420
300	1,520	1,520	1,520
400	1,690	1,690	1,690
500	1,830	1,830	1,830
750	2,080	2,080	2,080
1000	2,260	2,260	2,260
1500	2,490	2,490	2,490
2000	2,640	2,640	2,640
2500	2,760	2,760	2,760
3000	2,850	2,850	2,850
5000	3,100	3,100	3,100
7500	3,280	3,280	3,280
10000	3,400	3,400	3,400
900x100 Expected Loss %	34.2%	55.8%	40.6%
Loss Weight	6.6%	85.6%	7.8%

Weighted Expected Loss %
53.2%

AY	Ultimate \$ Indemnity	Partial Loss %	YTY Change	Ultimate Prem	Ultimate Ground- Up \$ Indemnity	Partial Loss Ratio	GU Loss Ratio
2001	53,876,633	46.2%		222,275,361	116,686,784	24.2%	52.5%
2002	45,350,362	46.0%	-13.18%	215,492,287	98,578,386	21.0%	45.7%
2003	50,718,333	49.7%	16.51%	206,841,209	101,983,654	24.5%	49.3%
2004	53,295,573	48.5%	10.56%	196,593,573	109,843,369	27.1%	55.9%
2005	60,626,503	50.1%	11.59%	200,411,047	121,122,862	30.3%	60.4%
2006	61,577,157	51.5%	-6.29%	217,217,827	119,594,623	28.3%	55.1%
2007	55,917,806	49.8%	-14.86%	231,692,628	112,274,856	24.1%	48.5%
2008	58,274,967	50.8%	3.64%	232,972,879	114,604,503	25.0%	49.2%
2009	48,400,964	51.0%	-19.24%	239,592,494	94,834,073	20.2%	39.6%
2010	58,224,941	51.9%	14.34%	252,072,270	112,276,864	23.1%	44.5%
2011	77,424,431	53.2%	28.93%	259,986,215	145,408,850	29.8%	55.9%
2012	78,469,004	53.7%	-2.29%	269,674,232	146,214,648	29.1%	54.2%
2013	82,574,025	53.5%	-2.66%	291,542,863	154,283,232	28.3%	52.9%
2014	90,561,992	52.8%	10.38%	289,665,151	171,650,677	31.3%	59.3%
2015	105,330,876	55.9%	10.08%	306,066,033	188,431,815	34.4%	61.6%
2016	137,626,049	57.6%	29.77%	308,165,084	239,116,871	44.7%	77.6%
2017	111,590,219	56.5%	-11.85%	283,471,844	197,610,473	39.4%	69.7%
2018	103,408,278	56.0%	-4.99%	273,682,290	182,928,805	34.4%	66.8%
2019	114,117,366	57.2%	4.11%	293,051,188	199,507,004	38.9%	68.0%
2020	116,741,513	67.6%	7.41%	279,097,506	172,768,099	41.8%	61.9%
Total/Average	1,563,061,992	53.9%		5,069,581,078	2,899,582,148	30.8%	56.2%
Trend 7 year		57.6%	-0.36%			38.28%	66.49%
Trend - all year			-2.02%				



Note: These above values are purely illustrative. Additional adjustments such as changes in mix of coverages, historical policy limits, deductibles, etc. would need to be considered.



Commercial Auto Liability – Loss Development Factors – GU Indemnity Illustrative

Since 2020Q2, especially in early development periods, development factors are noticeably higher than previously. This could be due to the shutdown of the court system or pipeline issues during the pandemic.

Loss Year	Loss Month	3	6	9	12	15	18	21	24	27
2017	3	469,795,091	775,463,001	890,560,940	986,887,582	1,075,155,321	1,157,955,287	1,232,383,162	1,313,123,648	1,375,361,430
2017	6	512,725,342	852,489,015	999,935,589	1,101,935,312	1,217,952,493	1,300,557,434	1,388,165,624	1,465,859,687	1,545,236,953
2017	9	525,718,076	865,641,996	1,004,553,502	1,138,758,674	1,240,320,712	1,333,585,413	1,427,553,745	1,515,717,812	1,594,495,867
2017	12	545,243,790	855,030,113	1,003,006,513	1,115,657,137	1,220,075,745	1,332,367,782	1,411,714,663	1,488,901,638	1,569,788,714
2018	3	457,466,468	769,257,754	904,739,036	1,019,888,269	1,137,552,787	1,220,097,765	1,301,472,588	1,393,643,460	1,470,414,425
2018	6	512,119,420	859,835,421	996,504,021	1,118,144,047	1,220,801,920	1,334,121,297	1,423,567,942	1,546,554,184	1,631,819,466
2018	9	524,989,315	907,092,345	1,067,841,413	1,189,269,882	1,315,209,966	1,409,799,656	1,502,875,477	1,607,432,988	1,672,328,313
2018	12	539,707,924	858,056,822	1,004,978,528	1,138,602,772	1,249,408,053	1,378,112,069	1,464,383,888	1,524,586,456	1,621,119,191
2019	3	466,097,490	781,541,377	925,689,064	1,029,837,404	1,153,873,214	1,262,719,649	1,319,496,452	1,434,172,552	1,482,942,838
2019	6	500,550,122	869,164,989	1,020,508,179	1,149,152,511	1,278,224,503	1,353,790,071	1,461,026,762	1,525,512,335	1,605,710,050
2019	9	529,702,730	927,875,193	1,097,245,525	1,244,265,856	1,350,971,950	1,483,729,707	1,572,916,435	1,673,559,269	1,754,508,121
2019	12	515,155,111	865,707,373	1,035,391,477	1,166,820,033	1,296,129,395	1,388,108,037	1,492,348,471	1,588,998,650	1,696,668,962
2020	3	409,989,328	659,049,714	772,270,218	878,713,376	972,243,237	1,063,601,618	1,140,917,921	1,222,760,656	
2020	6	272,333,496	513,923,769	626,312,978	711,776,624	785,217,537	839,257,161	923,994,918		
2020	9	386,358,129	691,840,651	813,835,461	926,138,700	1,021,893,627	1,132,907,362			
2020	12	410,520,658	686,972,957	818,631,149	935,783,624	1,056,836,957				
2021	3	336,524,278	624,522,751	744,592,490	856,668,110					
2021	6	395,978,397	727,798,482	874,361,428						
2021	9	440,866,475	792,153,688							
2021	12	454,319,452								

		6/3	9/6	12/9	15/12	18/15	21/18	24/21	27/24	30/27
2017	3	1.651	1.148	1.108	1.089	1.077	1.064	1.066	1.047	1.041
2017	6	1.663	1.173	1.102	1.105	1.068	1.067	1.056	1.054	1.041
2017	9	1.647	1.160	1.134	1.089	1.075	1.070	1.062	1.052	1.036
2017	12	1.568	1.173	1.112	1.094	1.092	1.060	1.055	1.054	1.047
2018	3	1.682	1.176	1.127	1.115	1.073	1.067	1.071	1.055	1.027
2018	6	1.679	1.159	1.122	1.092	1.093	1.067	1.086	1.055	1.019
2018	9	1.728	1.177	1.114	1.106	1.072	1.066	1.070	1.040	1.038
2018	12	1.590	1.171	1.133	1.097	1.103	1.063	1.041	1.063	1.032
2019	3	1.677	1.184	1.113	1.120	1.094	1.045	1.087	1.034	1.043
2019	6	1.736	1.174	1.126	1.112	1.059	1.079	1.044	1.053	1.034
2019	9	1.752	1.183	1.134	1.086	1.098	1.060	1.064	1.048	1.044
2019	12	1.680	1.196	1.127	1.111	1.071	1.075	1.065	1.068	
2020	3	1.607	1.172	1.138	1.106	1.094	1.073	1.072		
2020	6	1.887	1.219	1.136	1.103	1.069	1.101			
2020	9	1.791	1.176	1.138	1.103	1.109				
2020	12	1.673	1.192	1.143	1.129					
2021	3	1.856	1.192	1.151						
2021	6	1.838	1.201							
2021		1.797								

		3 - 6	6 - 9	9 - 12	12 - 15	15 - 18	18 - 21	21 - 24	24 - 27	27 - 30	30 - 33
ATA	2017-2020Q1	1.666	1.173	1.122	1.102	1.082	1.066	1.064	1.052	1.037	1.034
ATA	2020Q2-2021	1.807	1.196	1.142	1.112	1.089	1.101	1.064	1.052	1.037	1.034
ATA	Last 7 Quarters	1.778	1.193	1.138	1.107	1.085	1.071	1.063	1.052	1.034	1.033
ATU		4.211	2.368	1.986	1.745	1.576	1.452	1.356	1.276	1.213	1.173
Ultimate		1,913,320,758	1,875,814,950	1,736,126,965	1,494,567,127	1,665,083,229	1,645,295,176	1,253,164,670	1,559,825,561	2,058,077,746	2,149,215,833

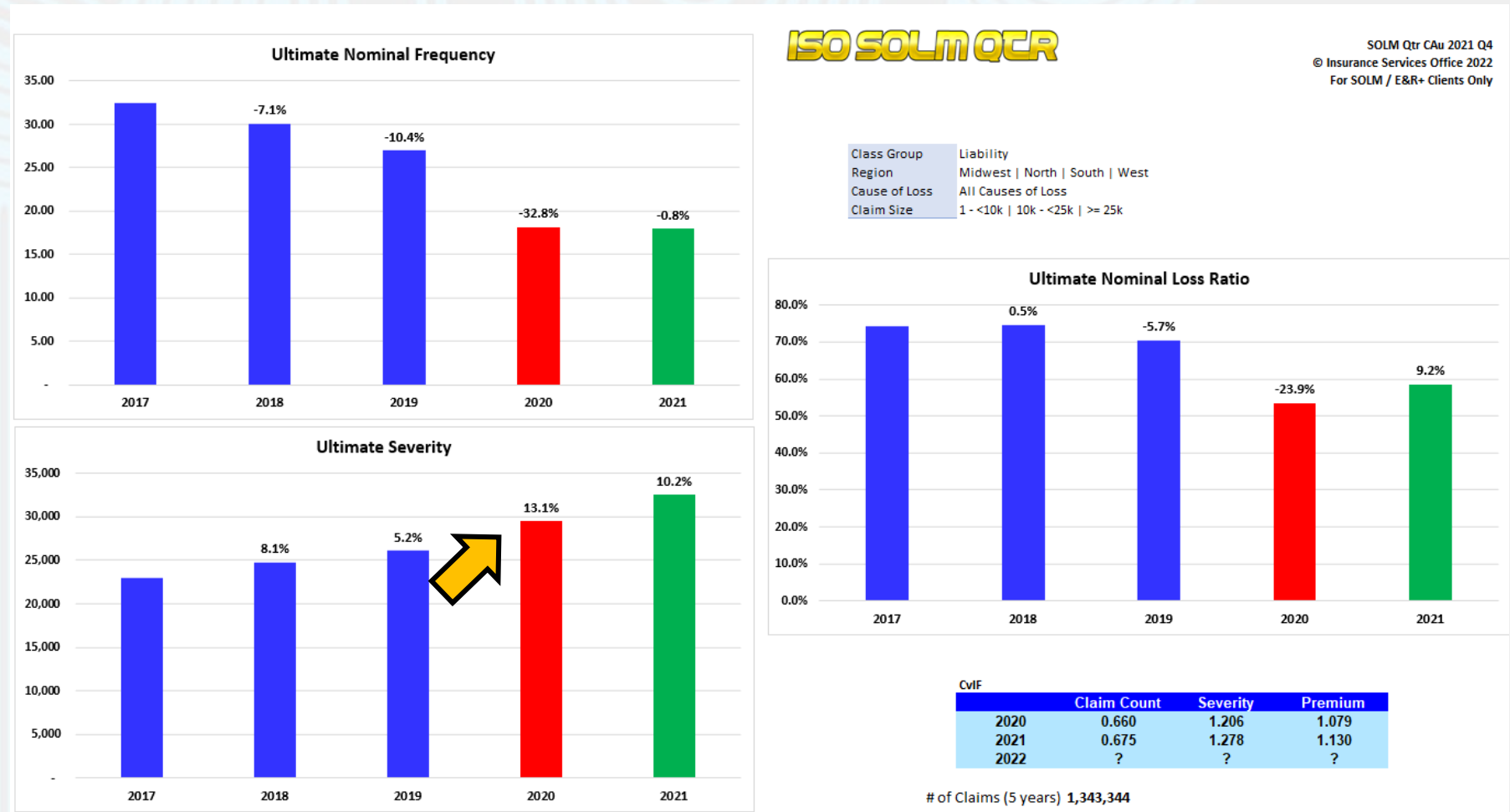


SOLM Qtr – Total CAu Liability – Nominal Results

Illustrative

As observed previously, in 2020 there was a significant frequency reduction driving a significant loss ratio reduction. For severity, we see YTY changes significantly higher than in the past with increases above 10% in 2020 and 2021. This large increase in severity led to a rebound of loss ratio in 2021.

Frequency remained down in 2021, but as the return to “normal” continues, frequencies may start to rise back to pre-pandemic levels. If severity and heightened inflation continues, coupled with rising frequency, this could lead to a large loss ratio increase in 2022 and beyond.



NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



Commercial Auto – View at 2022

As previously described, the slight recovery in frequency paired with the increase in severity lead to a recovery of loss ratio in 2021. With potential continuing recovery of frequency and increase in inflation in 2022, we may see loss ratios continue to rise.

ISO Size-of-Loss Matrix

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Market Segment: Commercial Auto Liability
Total Commercial Auto Liability
All Companies - All Class Groups
All Causes Of Loss
Unlimited xs 0 Countrywide

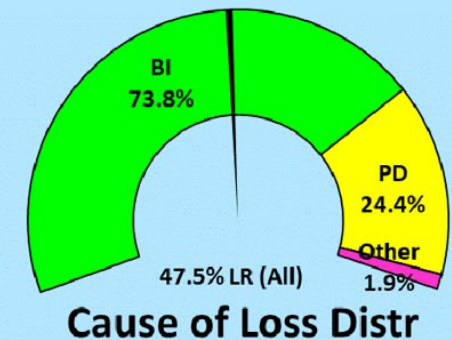
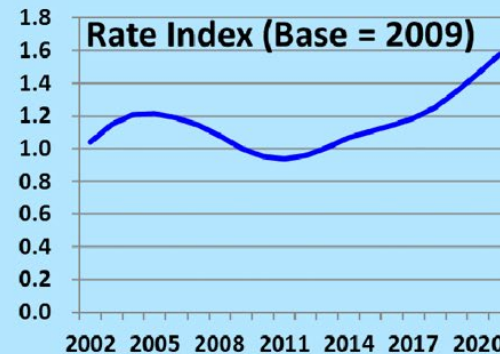
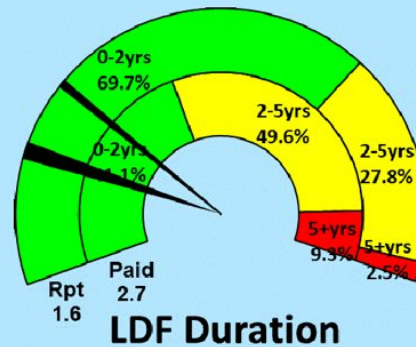
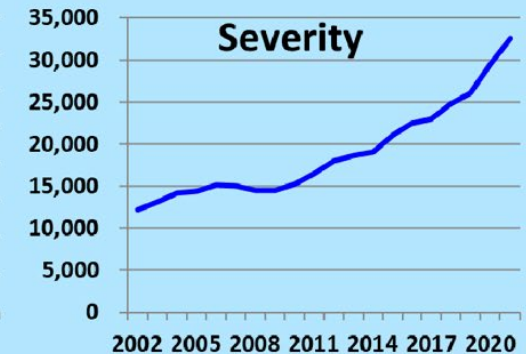
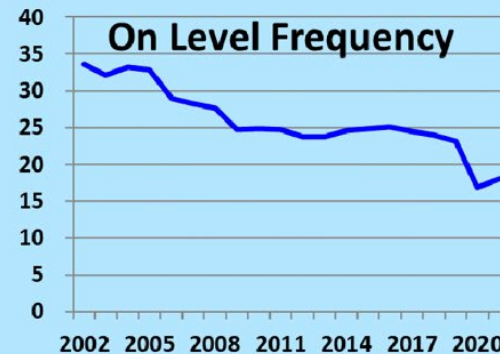
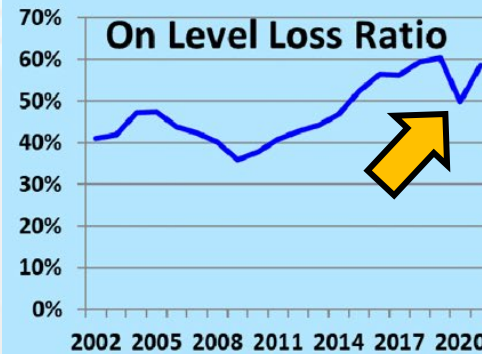
Illustrative

Est All Yr/Curr Yr LR: 47.5% / 58.5%
7 Year Severity Trend: 7.09%
All Year Trend: 4.62% (DeT=0%)
Avg Duration: Rpt 1.6 / Paid 2.7 Years

Loss Ratio Analytics: View at 2022 - Total CAu

SOLM 2021 v1

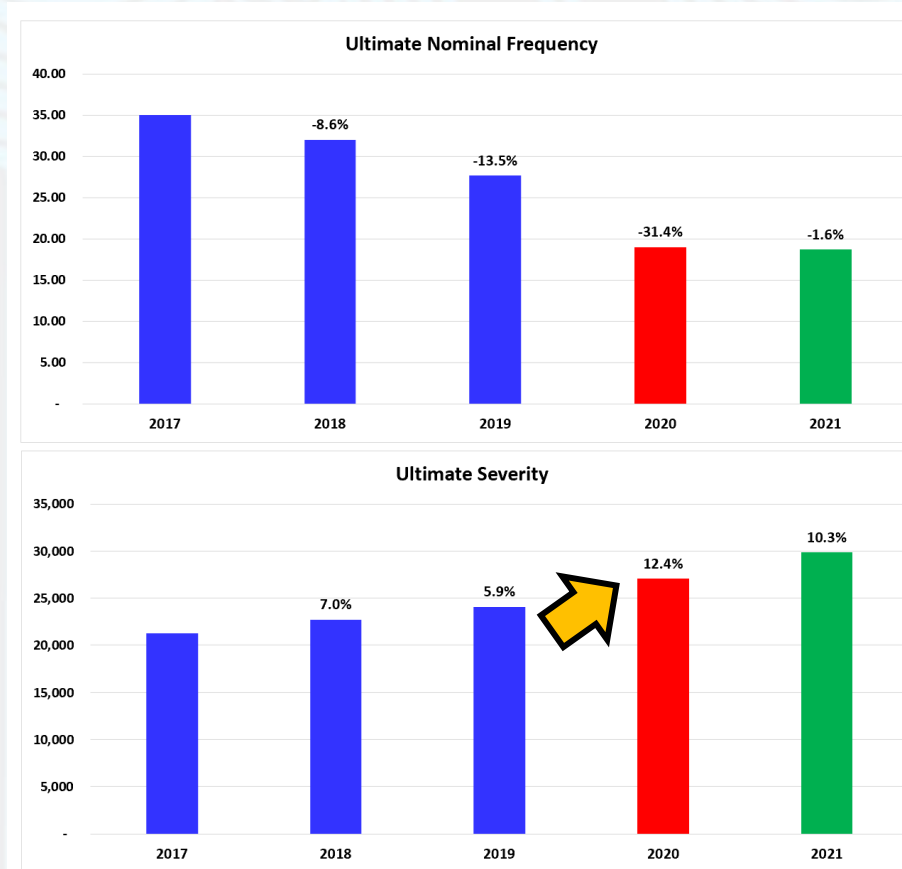
Total Premium 12/2021: 205,273,408,701
Total Incurred \$ Indemnity: 129,454,288,854
Total Occurrences: 8,513,470
VWA 3yr/all 100%/0%



SOLM Qtr – TTT – Nominal Results

Illustrative

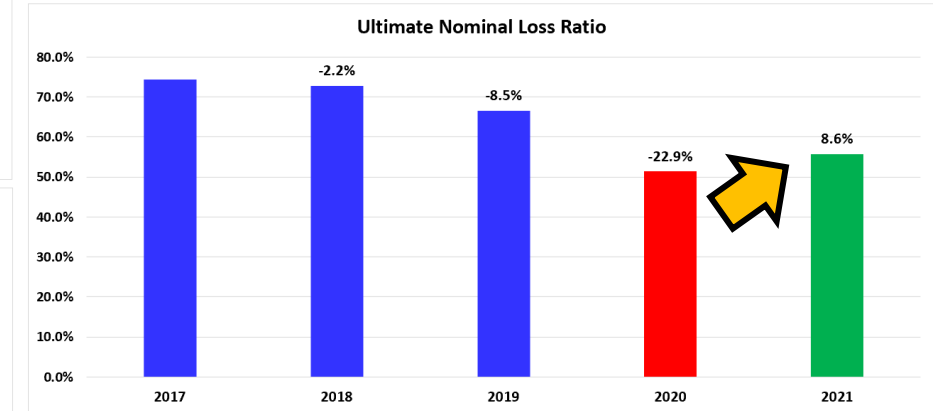
TTT data shows a very similar story to Total Commercial Auto Liability. In 2020 there was a significant frequency reduction driving a significant loss ratio reduction. For severity, we see YTY changes significantly higher than in the past with increases above 10% in 2020 and 2021. This large increase in severity led to somewhat of a rebound of loss ratio in 2021.



ISO SOLM QCR

SOLM Qtr CAU 2021 Q4
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Class Group Trucks, Tractors and Trailers
Region Midwest | North | South | West
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.655	1.205	1.081
2021	0.662	1.295	1.108
2022	?	?	?

of Claims (5 years) 722,275

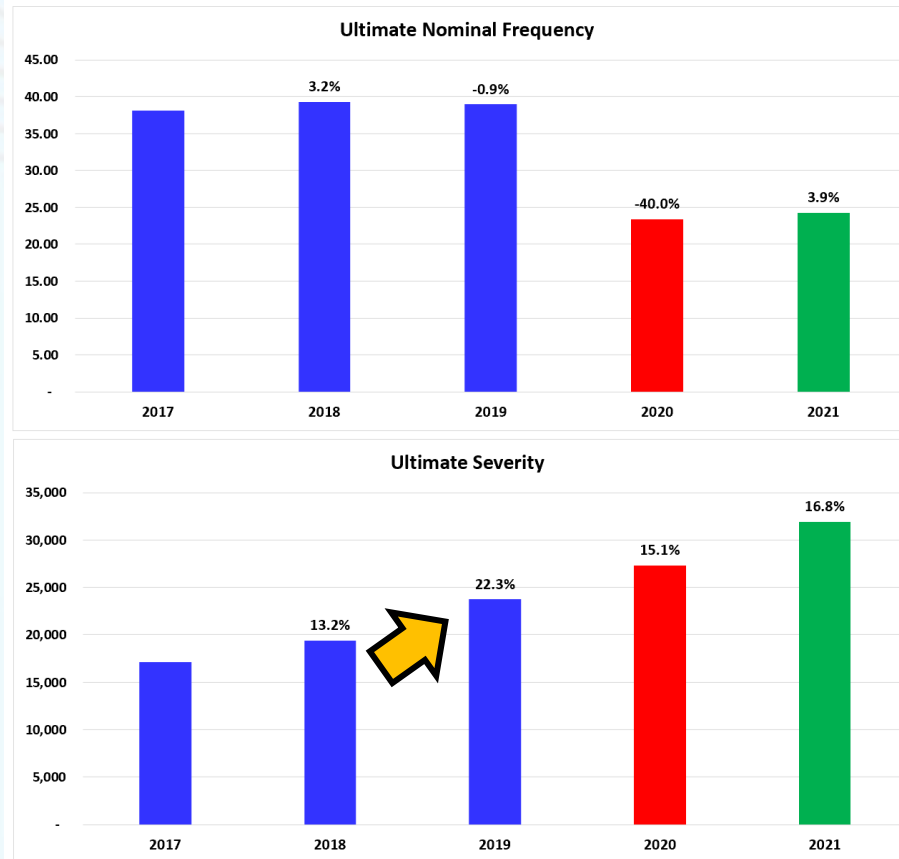
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAU SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – PPT – Nominal Results

Illustrative

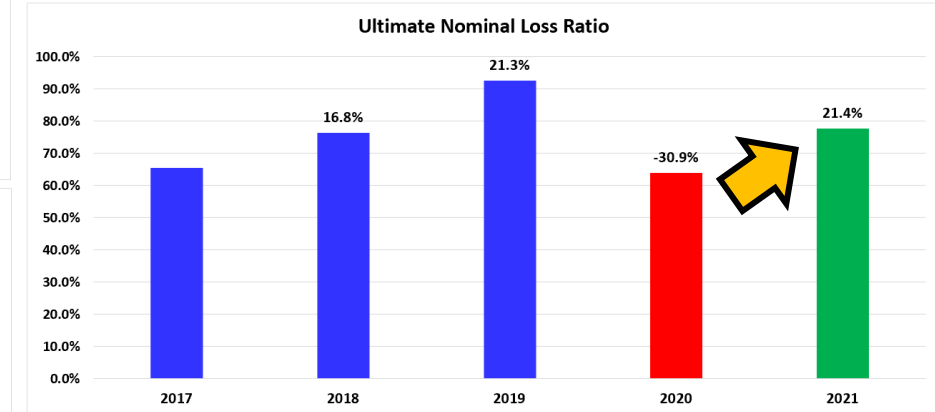
PPT shows the same overall pattern as TTT, but shows a more extreme drop in frequency in 2020. We see high severity changes in 2020 and 2021, but not as high as what was observed in 2019 of over a 20% increase. The beginning of a rebound in frequency in 2021 coupled with the large severity increases in recent years led to a larger recovery in loss ratio in 2021 than for TTT.



ISO SOLM QTR

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Class Group Private Passenger Types
Region Midwest | North | South | West
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | 10k - <25k | >= 25k



CVIF			
	Claim Count	Severity	Premium
2020	0.596	1.382	0.988
2021	0.610	1.414	0.975
2022	?	?	?

of Claims (5 years) 136,737

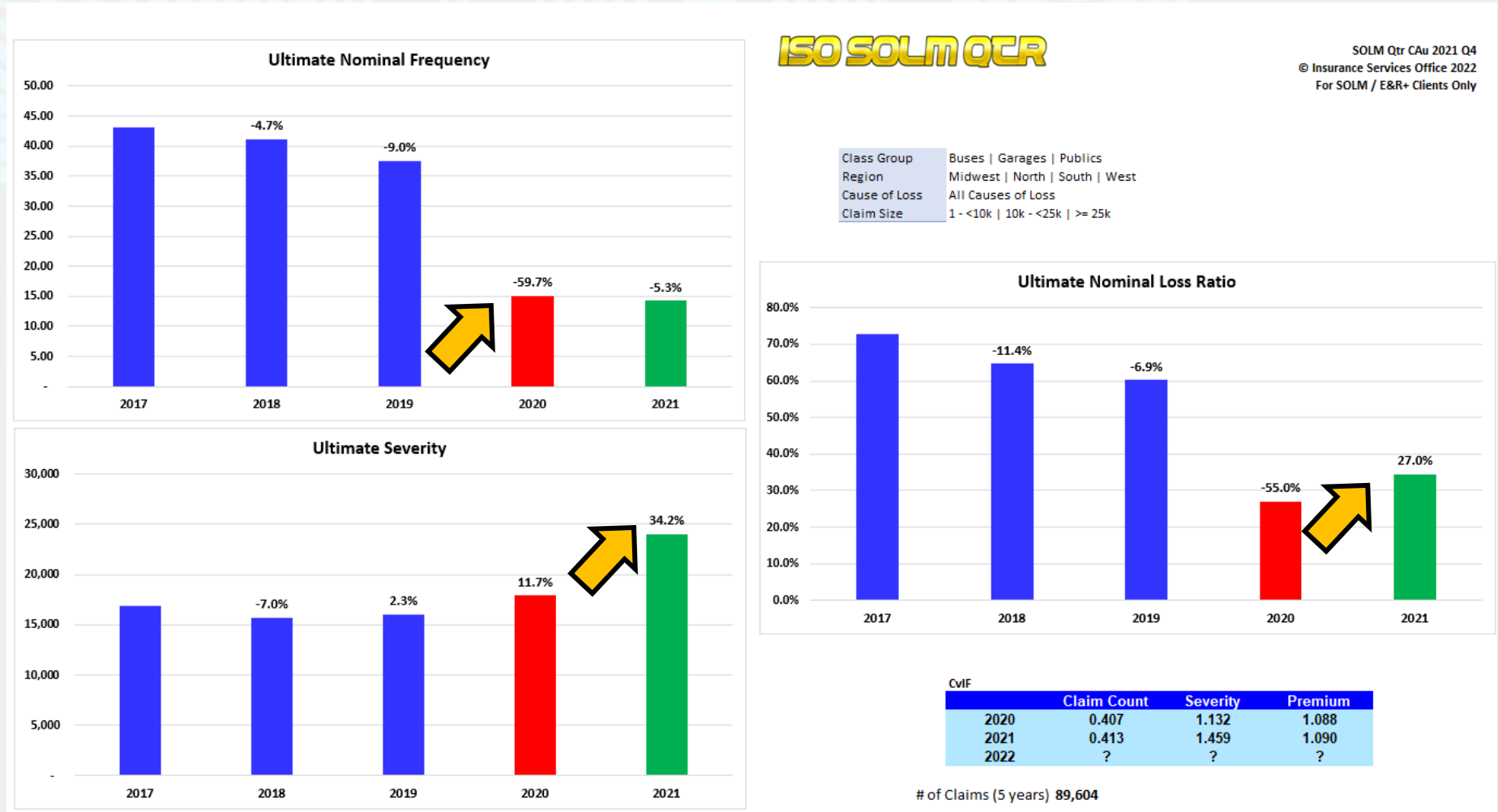
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAU SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – Buses, Garages, Publics – Nominal Results

Illustrative

Buses, Garages, and Publics provide a more extreme example of the trends noted on the prior slides. These markets had a drop in frequency of over 50% in 2020 with a continuing slight decline in 2021. However, severity is up significantly in 2021 at 34% after having been up almost 12% in 2020. These impacts led to an increase in loss ratio of 27% in 2021 after the decline of 55% in 2020.



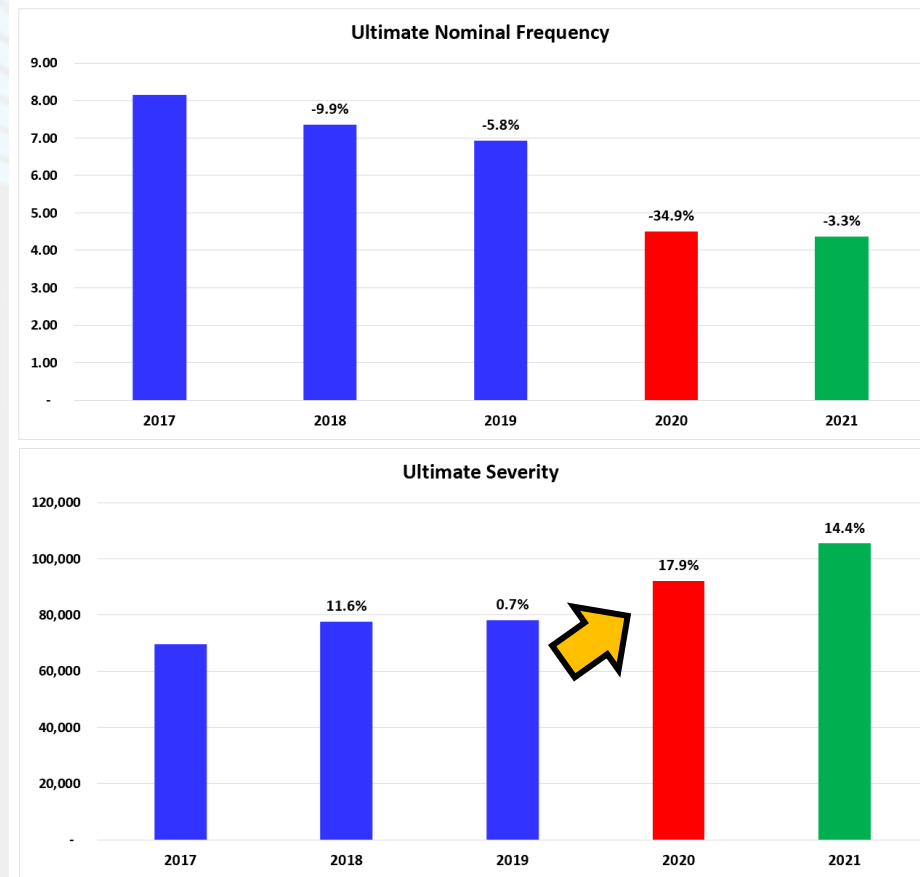
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – Total CAu Liability BI – Nominal Results

Illustrative

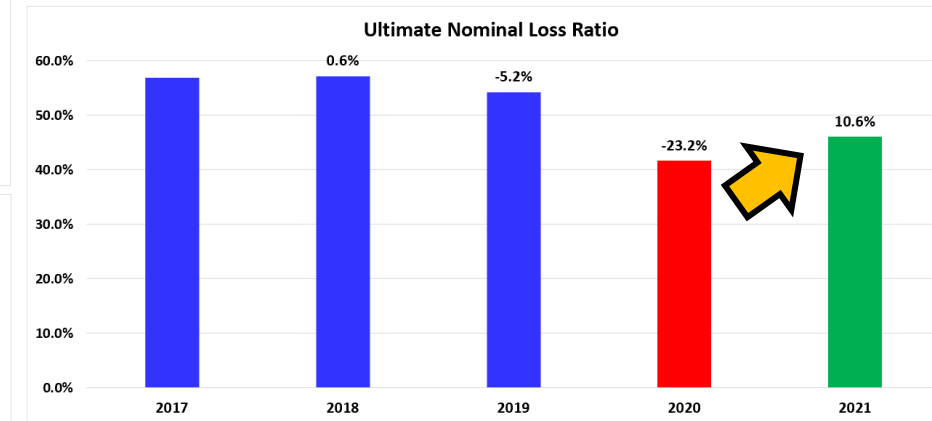
When looking at Total Commercial Auto Liability BI, we see the same trends as for All Causes of Loss. Frequency dropped significantly in 2020 followed by a continued small decline in 2021. Severity shows large increases of close to 15% or higher in both 2020 and 2021. These frequency and severity changes led to a large decline in loss ratio in 2020 and a start of a recovery in 2021.



ISO SOLM QTR

SOLM Qtr CAu 2021 Q4
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Class Group Liability
Region Midwest | North | South | West
Cause of Loss BI
Claim Size 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.655	1.234	1.079
2021	0.653	1.332	1.130
2022	?	?	?

of Claims (5 years) **334,845**

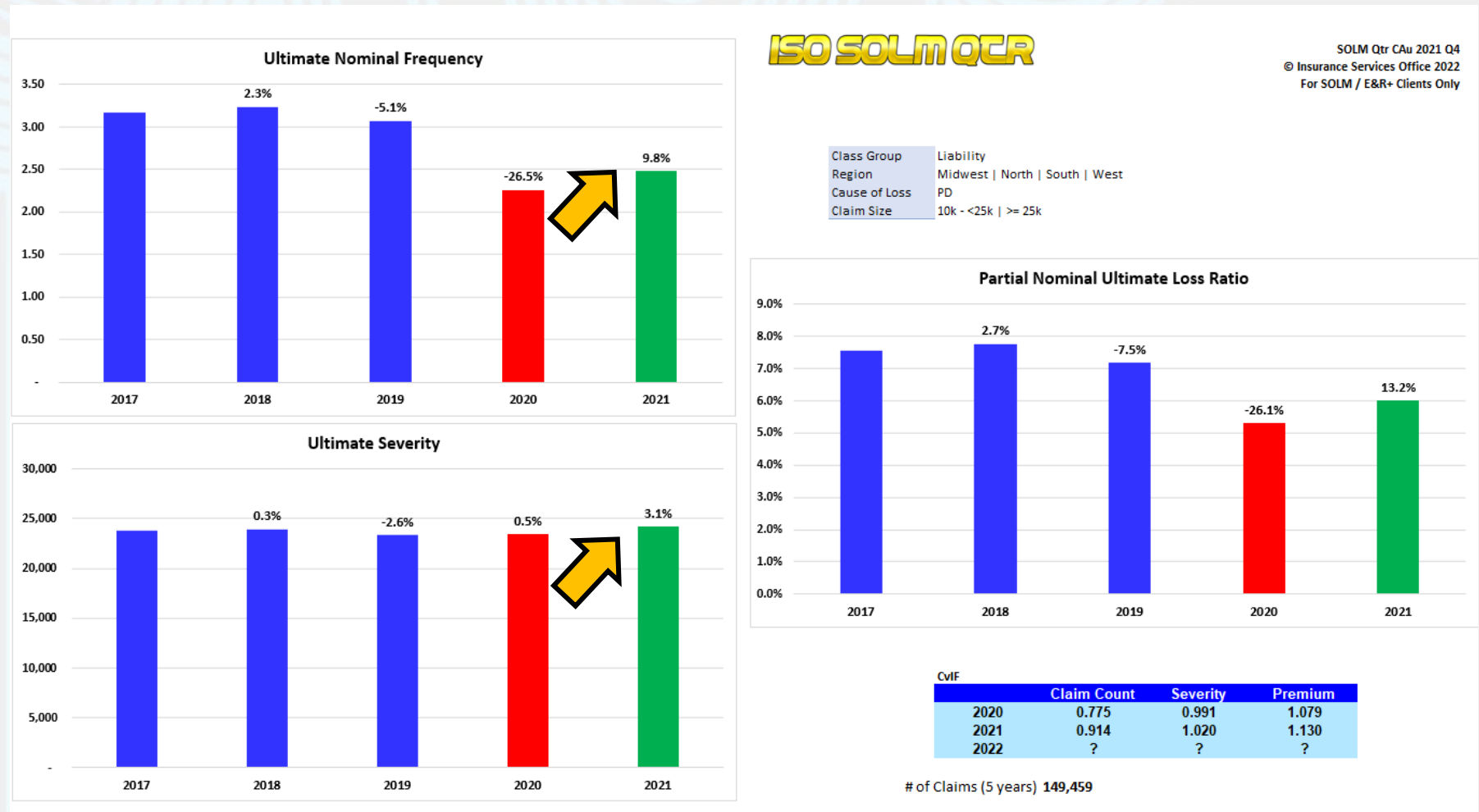
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Infographic – Total CAu Liability PD >10k – Nominal Results

Illustrative

Not all segments are seeing the large increase in severity. Property Damage claims >10k are a good example. In 2020, we still saw the large drop in frequency, but there was not much of an impact to severity, leading to a drop in loss ratio. 2021 somewhat of a recovery in frequency and a slight increase in severity leading to a rebound in loss ratio



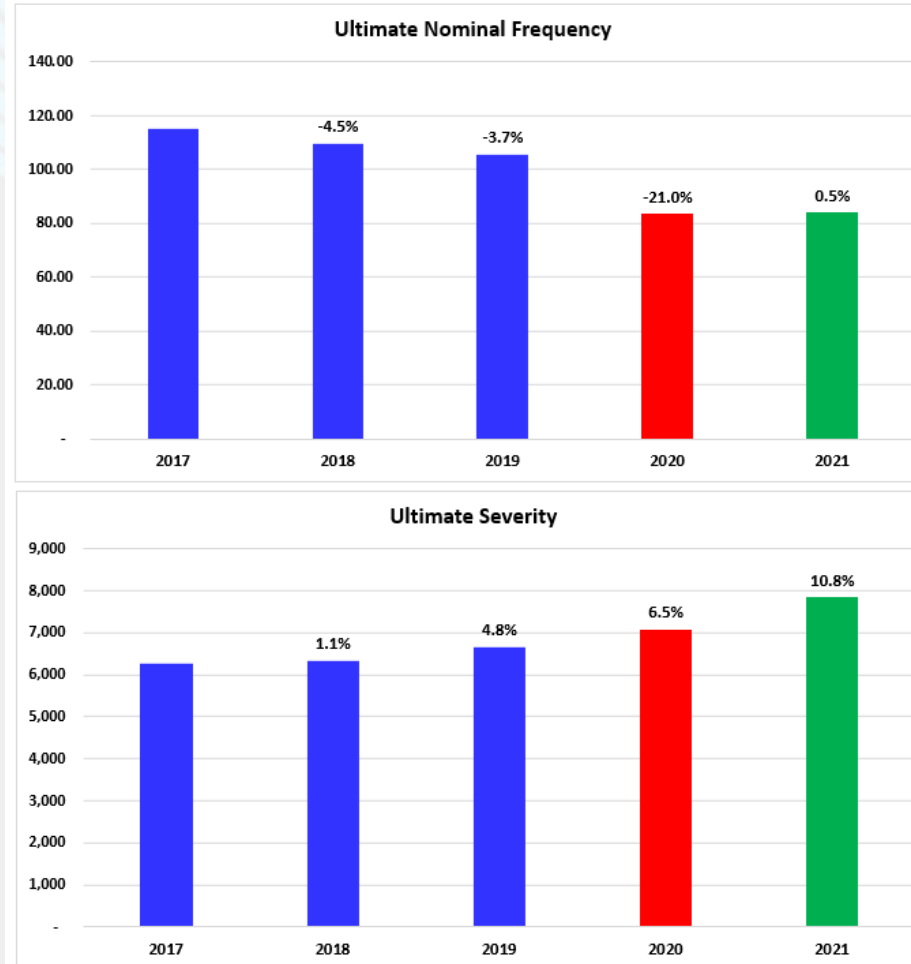
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Infographic – Total CAu Physical Damage – Nominal Results

Illustrative

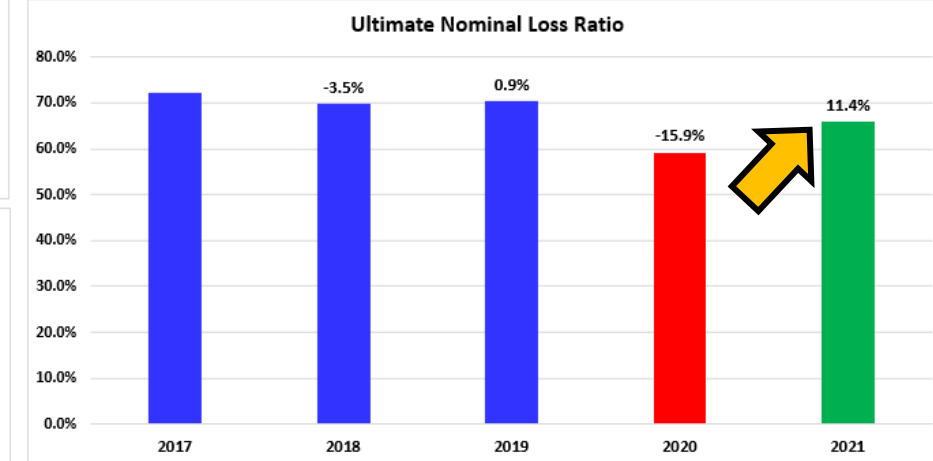
Commercial Auto Physical Damage shows a very similar story to Commercial Auto Liability. While still showing a significant frequency decrease in 2020 and increasing severity in 2020 and 2021, these impacts are not as significant as for liability.



ISO SOLM QCR

Class Group Physical Damage
Region Midwest | North | South | West
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | >= 10k

SOLM Qtr CAu 2021 Q4
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CvIF	Claim Count	Severity	Premium
2020	0.835	1.101	1.098
2021	0.868	1.213	1.115
2022	?	?	?

of Claims (5 years) 1,442,209

NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



Overconfidence

Illustrative

Metric for Accident Year 2020/2021	90% CI		Actual
	Lower	Upper	
General Liability Average Annual Frequency Change from 2015-2019 (pre Covid)			
General Liability Frequency Change from 2019 to 2020 (1 st Covid year)			
General Liability Frequency Change from 2020 to 2021 (2 nd Covid year)			
General Liability Average Annual Severity Change from 2015 to 2019 (pre Covid)			
General Liability Severity Change from 2019 to 2020 (1 st Covid year)			
General Liability Severity Change from 2020 to 2021 (2 nd Covid year)			
Commercial Auto Frequency Change 2019 to 2020 (1 st Covid year)			
Commercial Auto Severity Change 2020 to 2021 (2 nd Covid year)			
Personal Auto Frequency Change 2019 to 2020 (1 st Covid year)			
Personal Auto Severity Change 2020 to 2021 (2 nd Covid year)			

Personal Auto

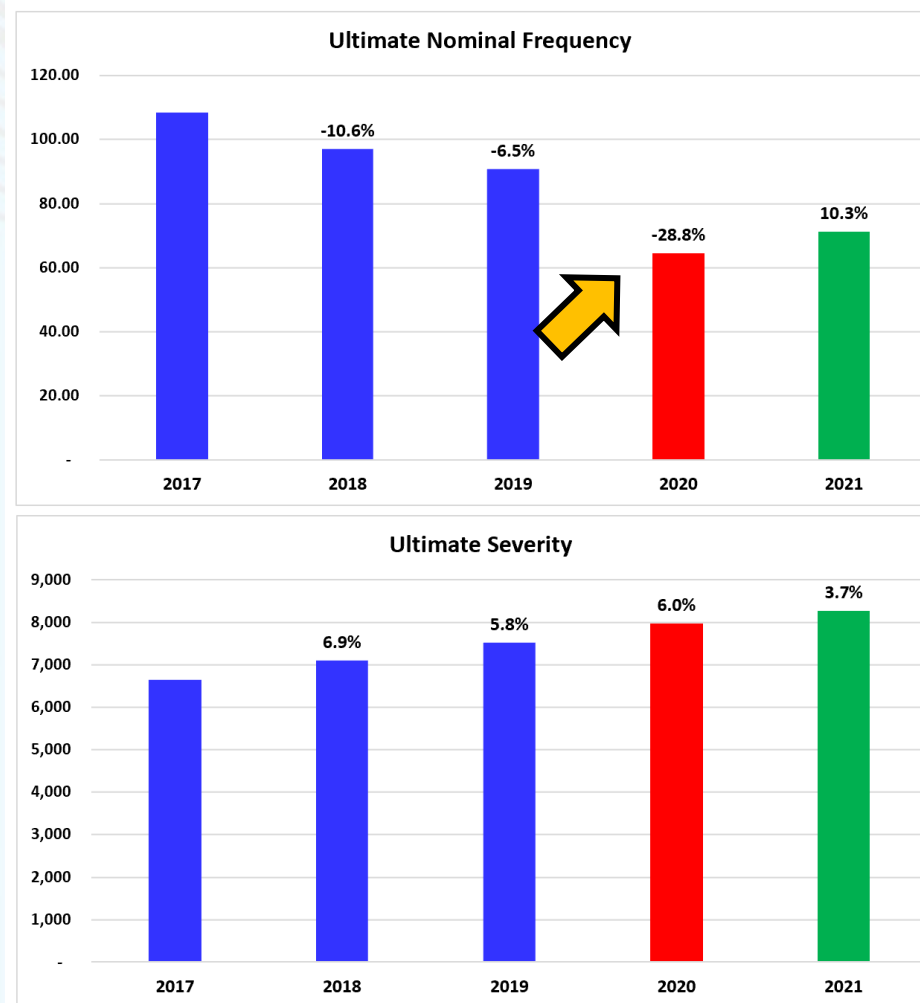
View at 2022



SOLM Qtr – Total PAu Liability – Nominal Results

Illustrative

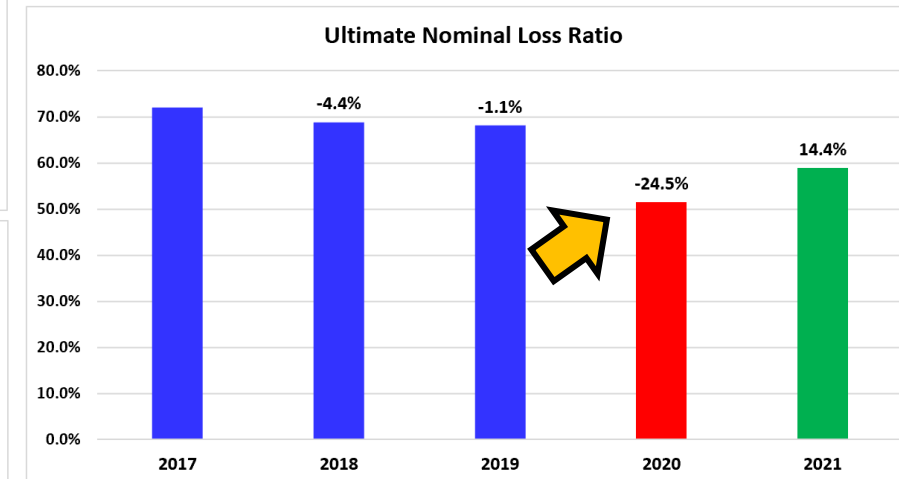
For Personal Auto Liability, we see the large decline in frequency in 2020 that we see generally across most lines of business. In 2021, there is a bigger recovery in frequency than what was seen for Commercial Auto. Severity increases in 2020 and 2021 are not very different (even lower) than what was observed since 2017. The changes in frequency drove the loss ratio to fall in 2020 and then recover somewhat in 2021.



ISO SOLM QCR

SOLM Qtr PAu 2021 Q4
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Class Group PAu Liability
Region Midwest | North | South | West
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.681	1.126	1.042
2021	0.747	1.170	1.055
2022	?	?	?

of Claims (5 years) 8,362,586

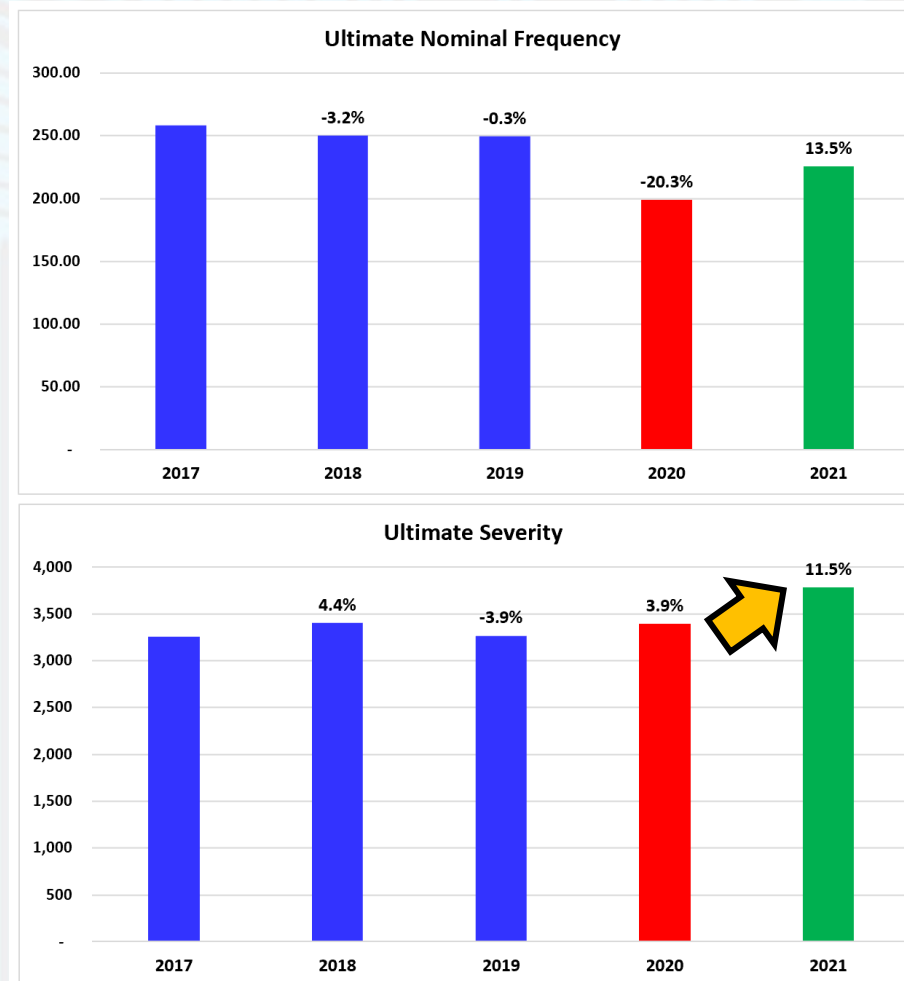
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from PAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – Total PAu Physical Damage – Nominal Results

Illustrative

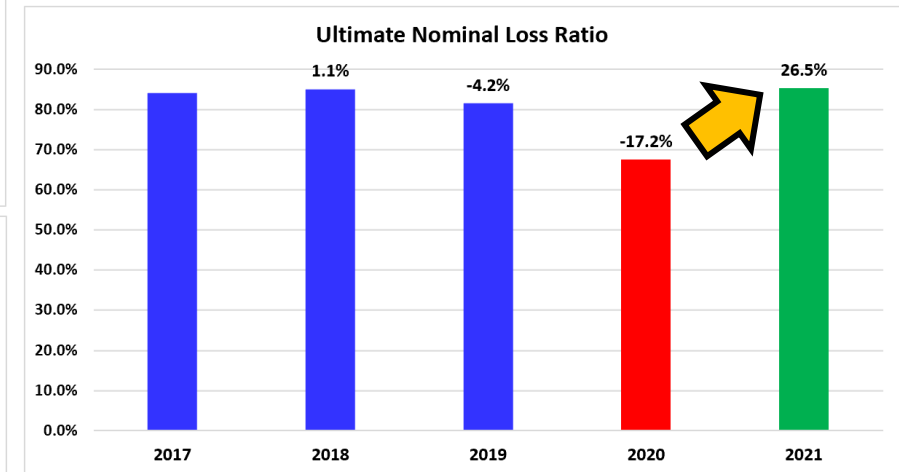
For Personal Auto Physical Damage, like with liability, we see the large decline in frequency in 2020 and the start of the recovery in 2021. Severity in 2021 also jumped significantly from what had been observed in the past. This led to a large increase in loss ratio in 2021 to higher than pre-pandemic levels.



ISO SOLM QCR

SOLM Qtr PAu 2021 Q4
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Class Group: PAu Physical Damage
Region: Midwest | North | South | West
Cause of Loss: All Causes of Loss
Claim Size: 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.840	1.021	1.067
2021	0.979	1.160	1.108
2022	?	?	?

of Claims (5 years) 19,753,082

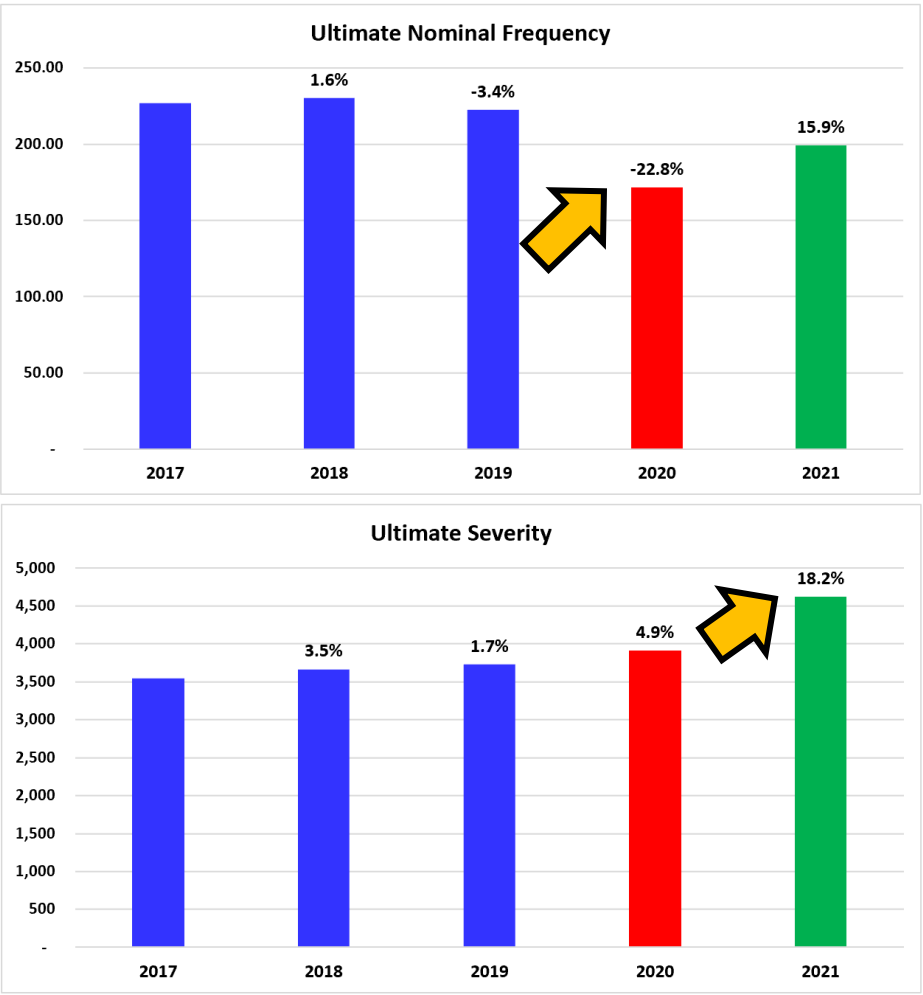
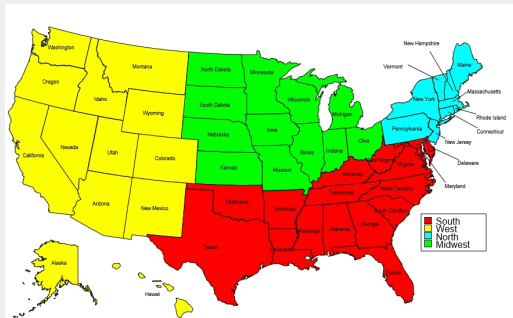
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from PAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – Total PAu Physical Damage – Northern States – Nominal Results

Illustrative

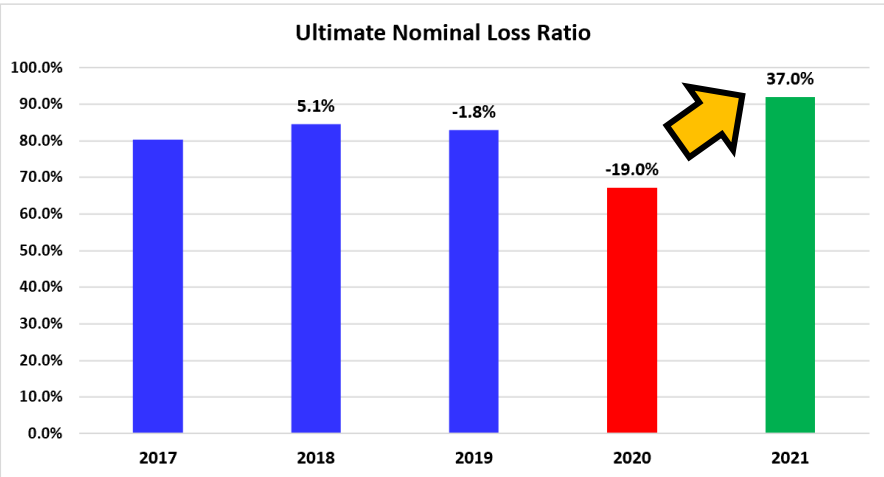
Northern states saw a larger dropoff in 2020 than states in other parts of the country. Additionally, these states saw a larger increase in severity in 2021. This led to loss ratios that rose to higher levels than before the pandemic in 2021.



ISO SOLM QCR

SOLM Qtr PAu 2021 Q4
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Class Group PAu Physical Damage
Region North
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.787	1.067	1.039
2021	0.906	1.275	1.046
2022	?	?	?

of Claims (5 years) 3,552,829

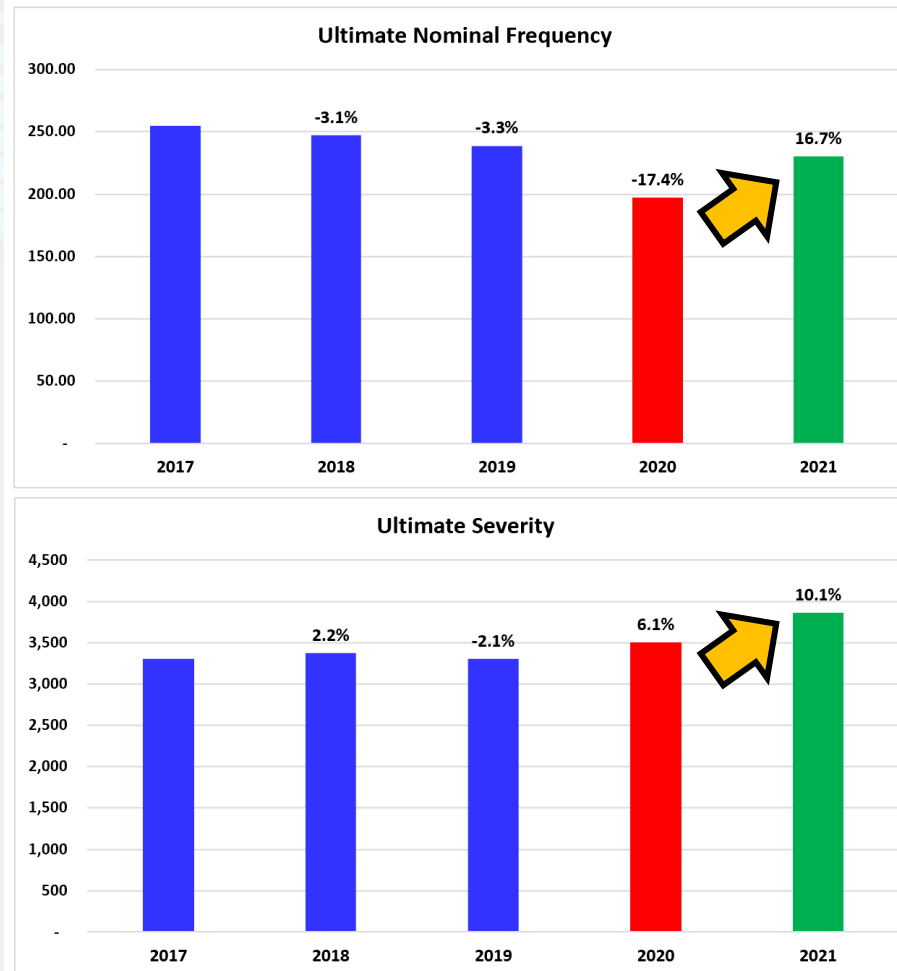
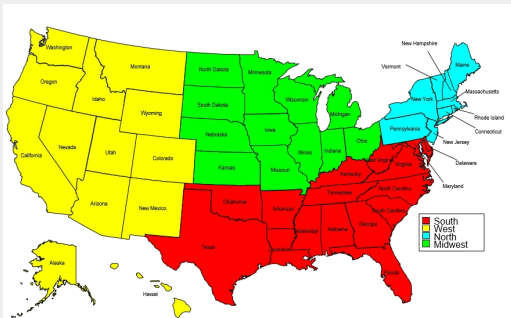
NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.



SOLM Qtr – Total PAu Physical Damage – Southern States – Nominal Results

Illustrative

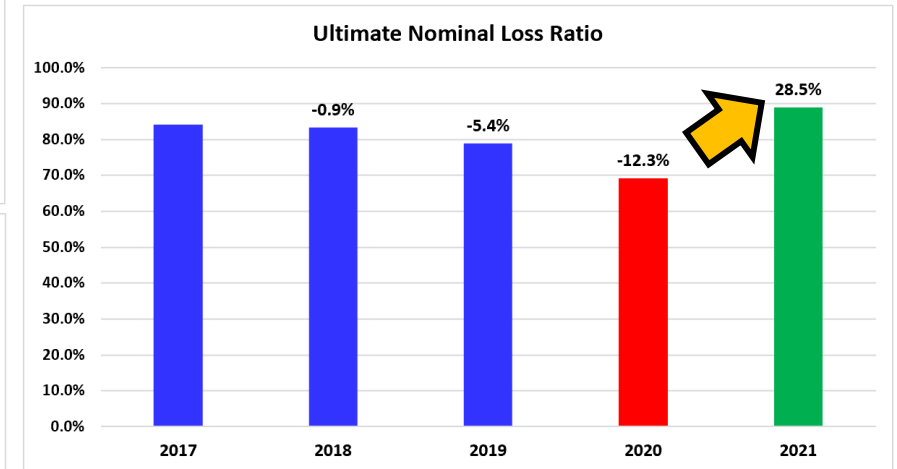
Southern states saw less of a dropoff in frequency in 2020 and a recovery in 2021 almost back to the same level as in 2019 prior to the pandemic. Severity rose in 2021, but to a lesser extent than in northern states. These frequency and severity trends led to an increase in loss ratio in 2021 to a level higher than pre-pandemic.



ISO SOLM QCR

SOLM Qtr PAu 2021 Q4
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Class Group PAu Physical Damage
Region South
Cause of Loss All Causes of Loss
Claim Size 1 - <10k | 10k - <25k | >= 25k



CvIF	Claim Count	Severity	Premium
2020	0.847	1.050	1.060
2021	0.964	1.171	1.045
2022	?	?	?

of Claims (5 years) 6,742,241

NB: mechanical selection for LDFs of last 7 qtr VWA used in projections from CAu SOLM-Qtr at 12/31/2021. No tail beyond 2017 supplied.





State of the Market

Motor Trends

Litigation Funding

Supply Chain Issues

Microchip Shortage

Worker Shortages

Wage Inflation

Increasing Attorney Rep. rate

Increases Used car values

Increased severity during the pandemic

General and widespread inflation for materials

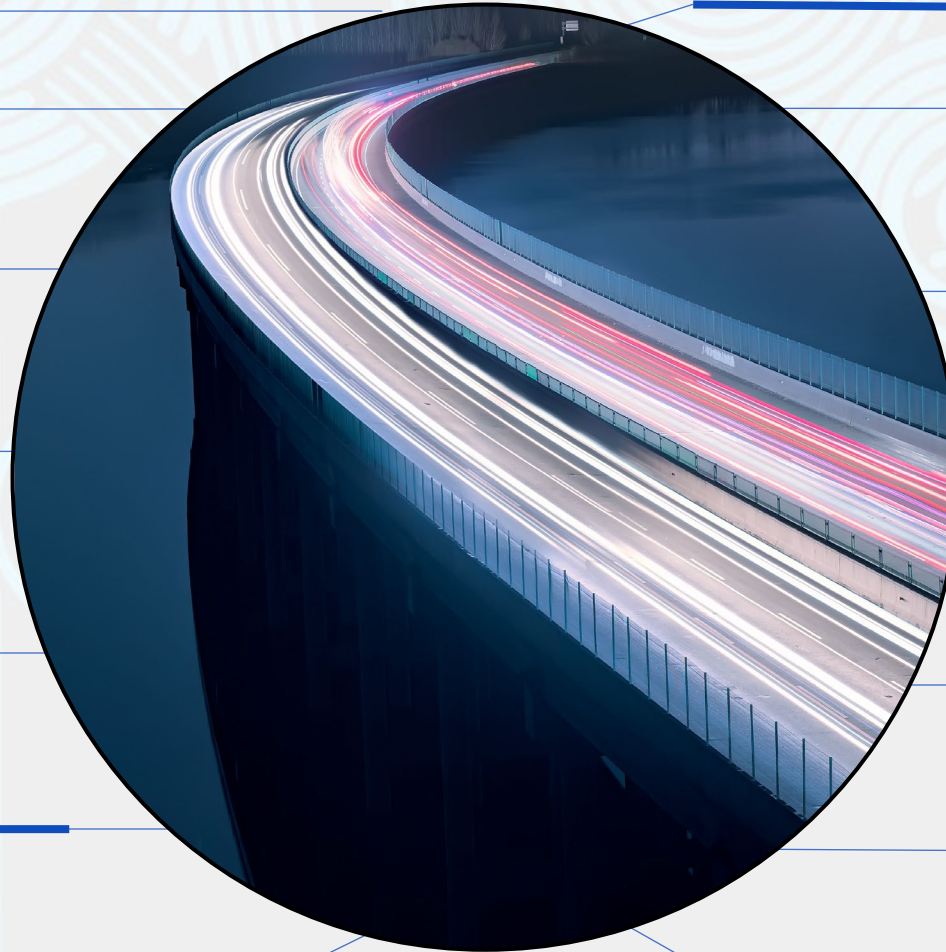
Medical inflation

Frequency returning to pre-pandemic levels

Gas prices

Social unrest – Canadian Truckers protest

Ukraine-Russia conflict / Global instability



General Observations Commercial Auto

- Elevated loss & comb ratios due to social inflation and adverse development
- Rising rates; high single/ double digit but unfortunately, rates still inadequate
- Litigation funding becoming the norm
- Slow uptake of technology – telematics haven't produced the loss ratio lift expected. Cameras gaining use, but a double-edged sword
- TNC business has not performed well and continues to struggle with rate and understanding exposure
- Increasing amount of business being placed in the MGA space



General Observations

Personal Auto

- Brief COVID benefit on the frequency side has disappeared
- Severity increased dramatically through the pandemic and has continued to grow
- Continuing supply chain and microchip issues are creating a shortage of used cars and pushing APD loss costs up
- Worker shortages, social inflation and lit funding are further eroding personal motor results
- Needed rate to return to profitability has been slow to come and will continue to lag emerging trends – California



In uncertain times for the Personal Auto business...

Personal Auto insurers' margins are under the pressure of higher loss costs and limited rate increases approved by regulators. Rate increases are projected to catch up with loss inflation only in mid-2023, depending on state mix



Loss severity on the rise

While loss frequency is back to pre-pandemic levels, physical damage loss severity has increased dramatically driven by higher costs for repairs, car parts, and the price of used vehicles.

Social inflation trends are also impacting the severity of liability losses, in particular third party litigation funding.



Rate increases still to catch up

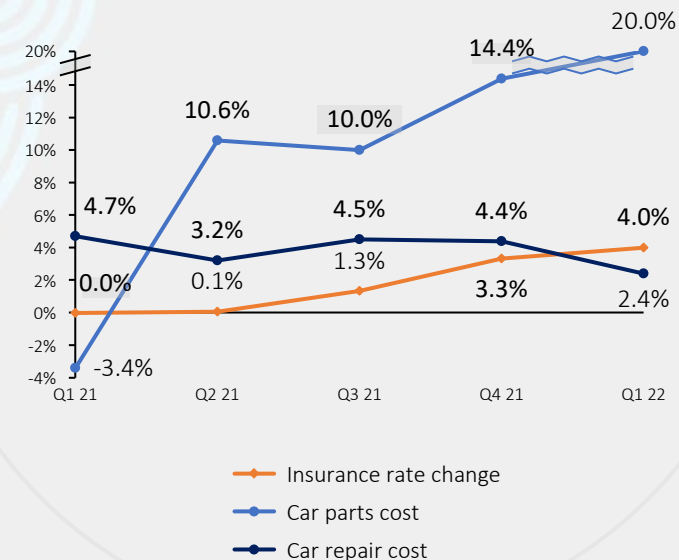
Rate activity picked up in the second half of 2021 and continues strong in 2022, though regulatory backlog is slowing the rate approval process in some heavily impacted states. Projection is that rate will catch up only around mid-2023, depending on state mix. Margins will remain under pressure until the new rate has earned through.



Impact of geopolitical situation on loss inflation

Ukraine-Russia conflict impacting production and distribution of key materials (e.g. neon and palladium) fueling continued market shortage of microchips and more supply chain disruptions for automakers. Higher energy costs could lower vehicle miles travelled but may drive up inflation, further affecting loss severity.

Personal Auto rate increases* vs loss severity components

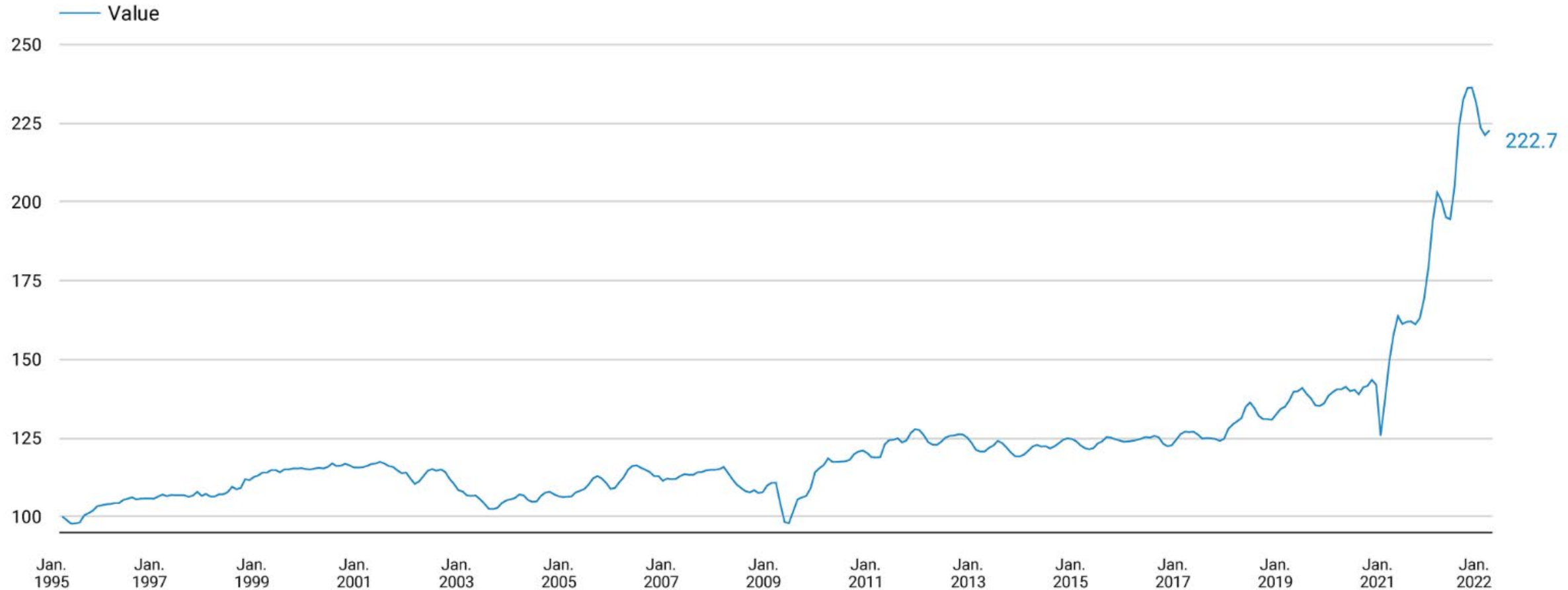


*Industry average of approved rate filings for all Personal Auto products, across all states
Source: S&P Capital IQ, statutory filings, US Bureau of Labor Statistics



MANHEIM USED VEHICLE VALUE INDEX

Mid-May 2022



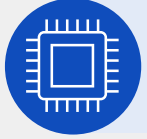
Cox
AUTOMOTIVE™



Current Auto Trends



Supply Chain - Continued supply chain issues creating increased loss costs, longer wait times for parts and increased cost of those parts. Rental cars are needed longer while repair work is being done



Microchip Shortages - Micro-chip production, and many of the key components needed to build them, has been hit hard for over a year and this is expected to continue well into 2023



Gas Prices - Gas continues to rise and it's unclear if the government will put controls in place. This should work to dampen frequency, but these benefits could be less prominent than what has been observed in the past as people already aren't going into the office in the regular way they used to - Hybrid work/remote work



Inflation – Wage, Medical, & Social. Number of medical procedures increasing, and they are being ordered faster. Worker shortages driving wage inflation, trucking hit especially hard. Social inflation continues to create adverse development, even in the personal lines space



Advanced Technology - ADAS features should continue to help with frequency and severity on the liability side, but for first party covers, these features make cars more expensive to fix, increasing comprehensive loss costs. Adoption will be slower than projected due to car shortages. Average age of vehicles has gone up for the last 4 years straight and now sits at 12.2 years.



Rate Changes - Commercial lines carriers have achieved a lot of rate over the last decade, but nuclear verdicts continue to erode any gains. Many personal lines carriers issued refunds during the pandemic, but loss costs started to heat up in Q2 2021. Some reacted with rate increases in late 2022, but DOI's have been slow to approve rate increases. CA especially problematic as they are just now approving filings from 2019. More rate needed across the board



Severity - Severity started to increase during the pandemic and continuing to rise. Less traffic causing less congestion and higher rates of speed. Fatality rate higher than it's been in 40 years and alcohol related accidents up. Unclear how marijuana will impact severity long term. Litigation funding creeping into the personal lines space.

Overall Impact



A wide-angle photograph of a two-lane asphalt road stretching straight to the horizon. The road has a dashed yellow center line and solid white edge lines. The landscape on either side is flat, grassy terrain with some low-lying shrubs. In the far distance, a range of low mountains is visible against the horizon. The sky is filled with soft, wispy clouds, and the colors range from a pale blue at the top to a deep pink and orange near the horizon, suggesting a sunset or sunrise scene.

The Road Ahead

Future Auto Trends



Plaintiff Attorney focus on motor and nuclear verdicts. Plaintiff's bar focus on traditional bodily injury and motor, de-sensitized and anti-corporate juries, and complexity are driving increase in large losses.



Distracted Driving. Distracted Driving is expected to continue. However, smartphone penetration has little room to increase and vehicle cockpit innovations continue to be prevalent.



Soaring Repair Costs. Supply chain issues, worker shortages and tech advances in vehicles will continue to drive up costs.



Telematics and Usage Based Insurance. Telematics and UBI uptake continues, and should improve loss costs. Telematics heavily used in commercial motor, but hasn't produced the magnitude of savings expected. Telematics continues to grow in personal as cars become more connected. UBI became more popular during the pandemic, but insurtech's continue to struggle with profitability.



Ride Share & Micromobility. Ride share is the norm, but profitability has been elusive. Micro-mobility gaining popularity (scooters) but understanding the exposures and properly underwriting them has proven to be difficult.



Safety Innovation & Autonomous Vehicles. High autonomous vehicles expected in maybe a decade with full automation much further out. Average age of a vehicle increasing since the 1990's and is 12.2 years in 2022. AV will trickle into the population, more slowly now than ever, delaying full benefits. Fully Autonomous vehicles, 'bot' vehicles, being piloted for delivery services for small radius trips.



Medical Inflation. Innovation and enhanced protocols are driving higher utilization of medical services, treatment costs and life expectancy, increasing severity. Plaintiffs bar also driving up medical costs.



Marijuana. Legalization for recreational use is expected to continue in more states. Results on loss costs unclear but will need long term studies to fully understand.



Cyber. Cyber is not expected to be a covered motor exposure, but in the case of a mass hack creating an aggregate event, Motor will be expected to respond initially with ultimate liability being sorted out in the courts over many years.

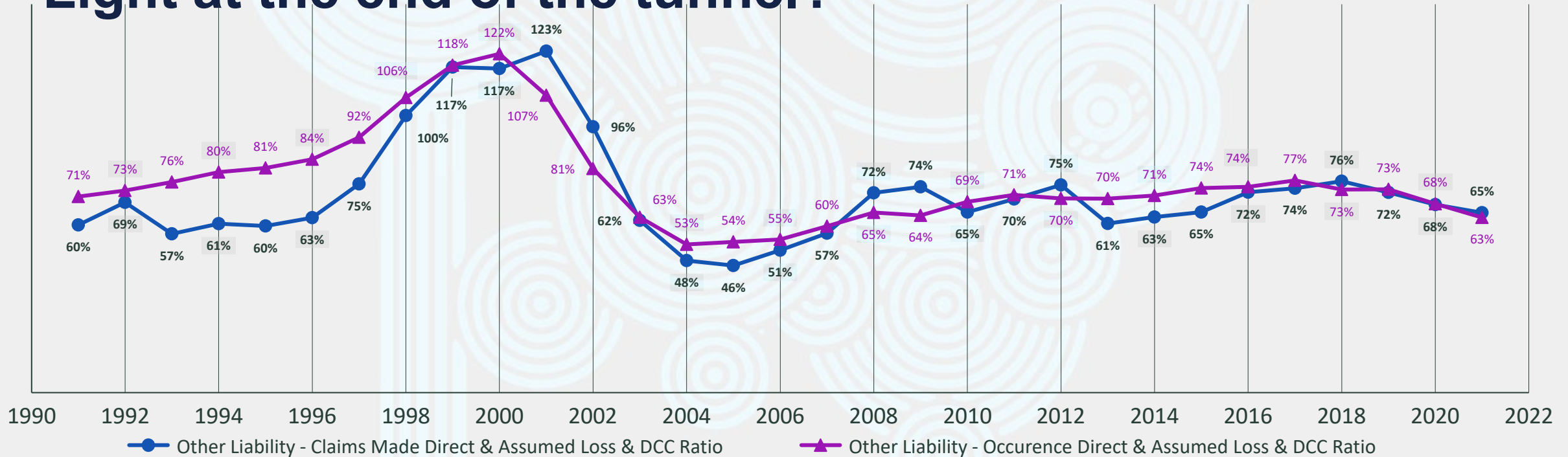
Overall Impact





What about Umbrella?

Liability (Claims Made and Occurrence) Industry Schedule P Booked Loss Ratios Light at the end of the tunnel?



Source: S&P Global Market Intelligence

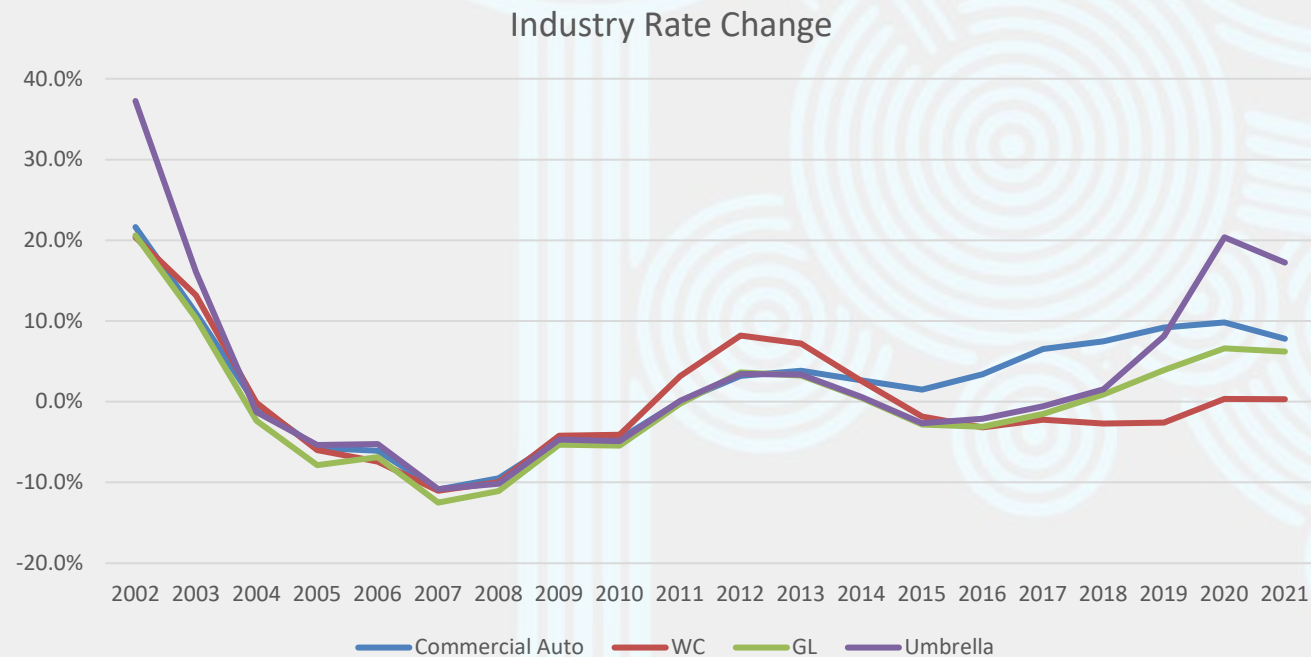
Key Points:

- The market has hardened since 2019; original rate increases and frequency reductions during the pandemic have benefited liability
- Caution around over-exuberance due to strong rates, the post-Covid environment is uncertain
- 2020/21 looking profitable, but rate increases slowing in 2022
- The risk and competitive landscape + economic conditions will continue to challenge the industry



Industry Rate Change

Shift in 2017, sharp increase in 2019, especially distressed lines like Umbrella



- Umbrella rate changes exceeded estimates of loss trend since 2019. Reinsurer profits muted due to increased ceding commissions
- Commercial Auto markets push rate, but have years of inadequate rate to overcome. Trend headwinds also a challenge
- General Liability rates are higher, but GL represents a very large and diverse segment, much of which is not ceded to reinsurers
- Workers Compensation rates negative or flat in reaction to recent profitable results. Industry loss ratios increasing

Data Source: CIAB

Data Date: Thru Q4 2021

* Data does not include "exposure trend" and represents "new" and "renewal"



Industry Perspective: Ultimate Loss Ratios – Booked vs Projected

Other Liability – Liability Excluding Professional

2011 - 20 Excludes Amtrust		Schedule P Ultimate Loss Ratio Selections - Other Liability (Occ) and Products Liability										
Accident Year	Earned Premium (000s)	As of 12	As of 24	As of 36	As of 48	As of 60	As of 72	As of 84	As of 96	As of 108	As of 120	(Adv)/ Fav from 12 to Current
1998	14,814,053	81.8%	82.2%	84.7%	87.6%	90.9%	91.0%	95.0%	97.6%	98.4%	98.7%	-16.9%
1999	13,876,031	78.8%	80.5%	82.5%	89.1%	92.4%	96.4%	101.0%	102.8%	103.1%	106.6%	-27.7%
2000	13,725,077	78.5%	78.8%	83.4%	89.5%	95.0%	97.5%	98.2%	99.6%	100.8%	101.6%	-23.1%
2001	14,733,035	87.9%	88.7%	90.0%	93.4%	98.1%	100.2%	102.0%	102.4%	103.4%	104.4%	-16.5%
2002	18,815,344	74.2%	73.3%	75.3%	78.3%	79.8%	80.7%	81.2%	81.9%	82.6%	83.2%	-9.0%
2003	24,697,190	69.2%	65.7%	65.4%	64.5%	63.2%	63.0%	62.9%	63.2%	63.0%	62.7%	6.5%
2004	28,787,460	67.8%	60.3%	57.2%	55.2%	54.2%	54.1%	53.5%	53.1%	52.7%	52.8%	15.0%
2005	29,055,114	64.6%	60.5%	58.2%	55.3%	54.6%	53.6%	52.8%	52.4%	52.3%	52.7%	11.9%
2006	31,945,388	63.4%	61.0%	57.8%	56.1%	55.2%	53.6%	52.9%	52.1%	51.7%	51.7%	11.7%
2007	31,606,966	65.2%	62.7%	60.8%	61.1%	59.5%	59.1%	57.9%	57.1%	56.9%	56.9%	8.3%
2008	29,239,092	66.7%	65.3%	65.0%	62.5%	61.9%	61.4%	60.5%	59.9%	59.8%	59.8%	6.9%
2009	27,312,516	68.8%	68.2%	66.4%	63.9%	63.0%	61.9%	61.4%	61.7%	61.0%	61.1%	7.7%
2010	25,303,473	68.8%	68.6%	68.3%	67.1%	66.6%	66.0%	66.0%	65.1%	65.0%	65.0%	3.7%
2011	24,959,250	67.7%	67.6%	67.8%	67.5%	67.6%	67.7%	67.0%	67.0%	67.3%	67.4%	0.3%
2012	26,238,377	65.3%	65.2%	64.3%	65.3%	64.3%	64.6%	64.2%	64.2%	63.7%		1.6%
2013	28,208,290	62.8%	61.8%	62.2%	63.2%	62.5%	62.6%	62.7%	62.4%			0.4%
2014	30,518,969	62.2%	61.3%	62.5%	61.5%	62.0%	63.4%	63.1%				-0.9%
2015	31,396,769	62.1%	63.7%	62.9%	63.8%	65.9%	67.2%					-5.1%
2016	31,230,253	64.1%	64.5%	65.1%	66.6%	68.1%						-4.0%
2017	31,877,922	63.4%	64.9%	66.7%	67.3%							-3.9%
2018	37,975,656	64.9%	65.9%	67.1%								-2.1%
2019	40,351,211	66.8%	67.3%									-0.5%
2020	43,987,105	67.6%										

Combined OL Occ, Prod CM, Prod Occ

Loss Ratio for Combined Ratio of 100 = 64.9%*

*avg last 2 yrs.

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

- Accident Years 2015 through 2018 loss ratios appear to have been inadequate by 2 to 5 points
- Industry reserve deficiency reduced from height of ~ \$8.9B to near adequate, lots of reserve strengthening (pain)

Actuarial Projections			
Paid Method	Reported Method	Selected	Carried - Selected
<p>Early indication that 2020, 2021 will be favorable years benefiting from ~30% frequency reductions during Covid. Caution as Post-Covid uncertainty and elevated severity (Social Inflation) remain.</p>			
67.4%	67.4%	67.4%	0.0%
63.7%	63.7%	63.7%	0.0%
62.4%	62.4%	62.4%	0.0%
63.8%	62.5%	63.2%	-0.1%
68.0%	67.0%	67.5%	-0.3%
65.9%	66.8%	66.4%	1.7%
65.9%	67.6%	66.7%	0.6%
67.6%	68.3%	68.0%	-0.9%
71.7%	69.5%	70.8%	-3.4%
71.7%	61.5%	65.5%	2.1%

2011-20 Reserve Redundancy/ (Deficiency)

= (200,275) -0.2%

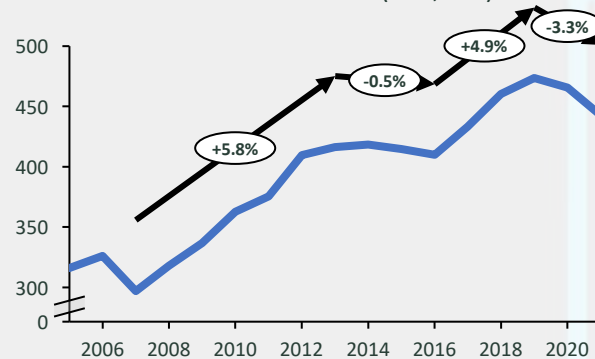


High severity claims are stuck in the Post-Covid court backlog

Expect more nuclear verdicts to follow as social inflation picks up again

Only minor drop in tort filings

Filed tort cases in State Courts (in 1,000)



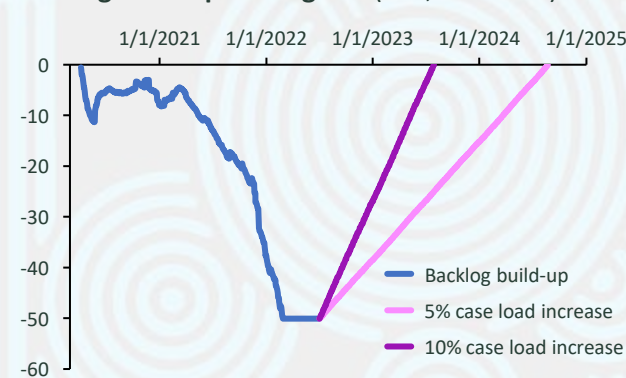
Source: Thomas Reuters Westlaw, Swiss Re Institute

- Civil case filings in state courts dropped 28% during the pandemic.
- However, casing filings for insurance relevant **tort cases only dropped 6.5%.**
- Filing dynamics differ significantly by state

Impact: Tort case filings dropped far less than what would be expected from the impact of the pandemic. Expect those cases to work their way through the court system over the next years.

Significant court case backlog

Backlog build-up and dig-out (in 1,000 cases)



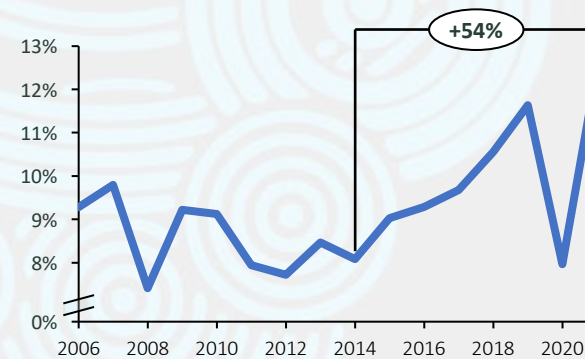
Source: Thomas Reuters Westlaw, Swiss Re

- Court closures during the pandemic lead to the build-up of a significant case backlog.
- We expect the **backlog** to have grown by approx. **50k cases** during the pandemic and will take **1.5 to 3 years to clear.**
- **Nuclear verdicts** have **significantly decreased** during the pandemic.

Impact: While settlement conditions were favorable for small/mid-size claims, **high severity claims remain stuck in the court system.** Claims duration has increased.

Social inflation trends pick up again

Share of GL verdicts >5m



Source: Thomas Reuters Westlaw, Swiss Re Institute

- The reprieve on social inflation trends from the shutdown appears to be over.
- The **proportion of large verdicts is escalating** again, following pre-pandemic trends.
- The drivers underlying social inflation have not abated, propensity to sue is increasing and our **outlook remains negative.**







Impact: Expect **continued pressure from social inflation** on the high severity case backlog flowing through the court system.

Actions

- Prudent portfolio steering in light of current UW uncertainty
- Costing parameters must adequately reflect social inflation trends
- Lags should be adjusted to reflect longer claim duration
- Experience costing should consider that pandemic years probably appear better than they are



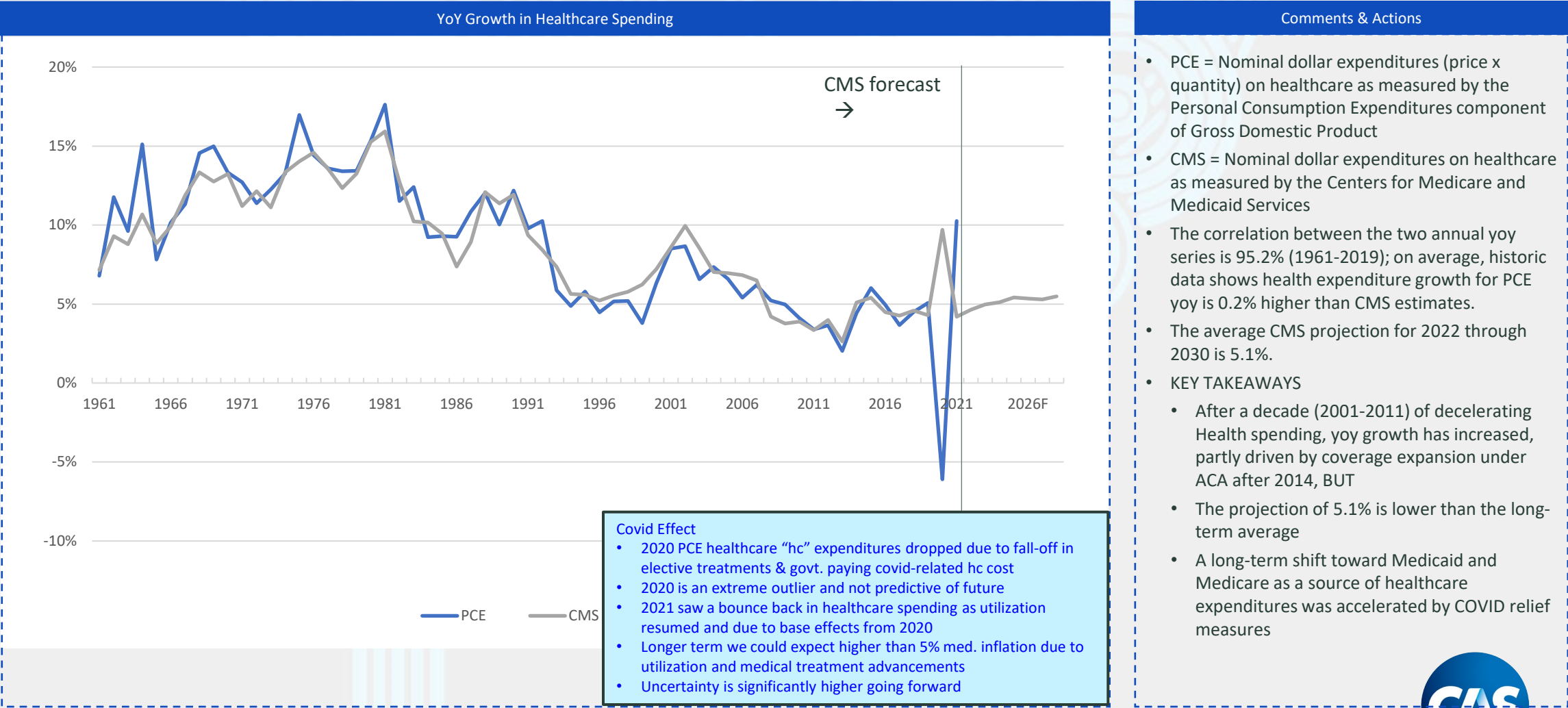
Key Trends for US Casualty

Macro drivers	Impact	Comments
Claims trends		Economic and social inflation have increased loss severity, with social inflation having an outsized impact on lines such as commercial auto, medical malpractice, and premises liability; COVID-19 remains a tail risk despite generally favorable rulings to date
Rate increases		18 consecutive quarters of rate increases for commercial lines (excluding WC) through 1Q22; rates are moderating but increases are expected to continue into 2023 due to heightened geopolitical, economic and legal risk factors
Economy		Economic conditions remain strong with an outlook for rapid deceleration and rising recession risk. A tight labor market with high employment and wage growth leads to strong growth in payrolls and workers comp exposures. Supply shortages boost inflation, especially for construction and cars (parts)
Yield curve		Higher Fed policy rates and rising longer-term yields will gradually provide a modest tailwind; longer-tail lines stand to benefit the most
Health care costs		Relatively muted healthcare cost inflation is expected to rise in contract negotiations for 2023 as hospitals incorporate rising labor and supply costs in pricing; Medicare Part B premiums have already increased 14.5% for 2022
Reserve releases		Industry reserve position has improved to near adequate; GL and commercial auto remain slightly deficient
Emerging risks		PFAS is receiving heightened media and government focus; attribution science has increased potential for climate change liability; new privacy laws and recent global judgments on collective redress regimes have increased cyber liability



Health spending is a key indicator of Medical Cost Inflation

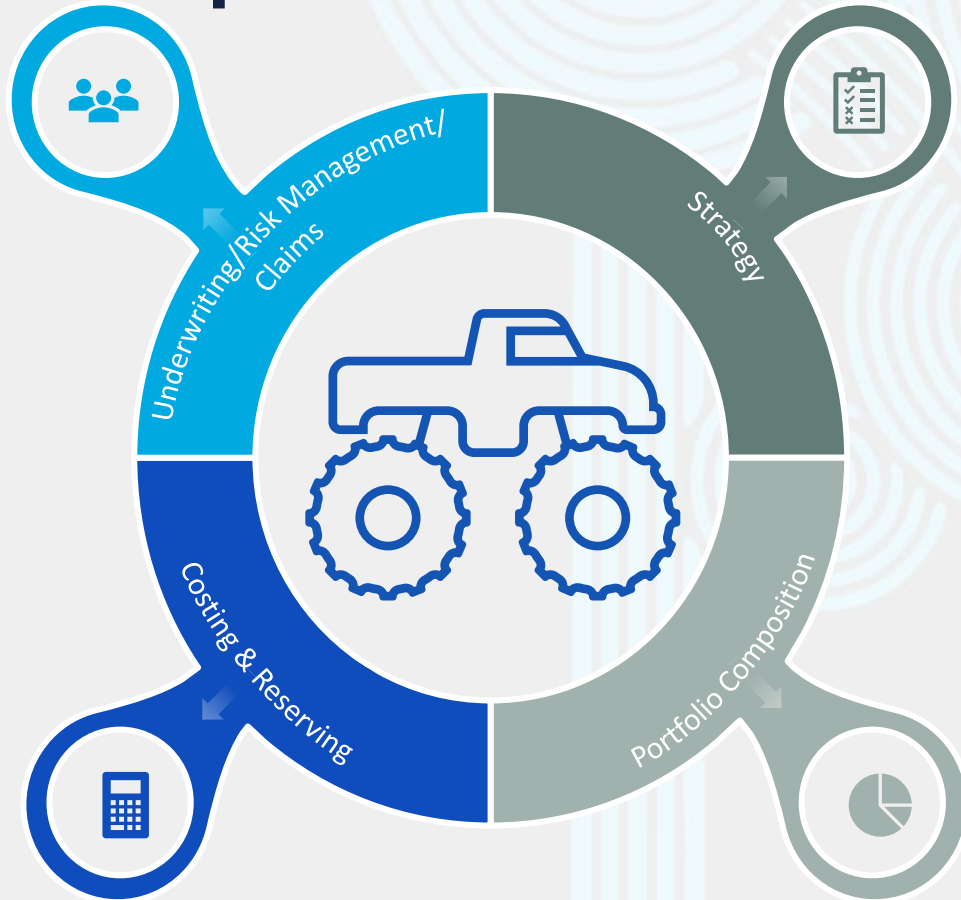
Medical Inflation drives Bodily Injury loss severity



Source: Datastream and CMS



Underwriting Perspectives: What can Underwriters and Portfolio Managers do in Response?



Strategy

- Is Commercial Auto as a loss leader vs. other lines of business. Do other lines subsidize? Is this sustainable?
- Careful attention to market share vs. other lines.

Portfolio Composition

- Mix of Commercial vs. Personal (performs better)
- Mix of small (performs better) vs. large fleet business
- Geographic Mix: larger states (ex. OH) showing poor profitability
- Range of Hazard Classes (balance heavy accounts with lower volatility classes)

Costing & Reserving

- Loss costs to reflect risk profiles and changing risk and exposure dynamics, more forward looking
- More detailed rating plans, use of data and predictive analytics, faster recognition of development and swift reaction

Underwriting/Risk Management/Claims

- Invest in risk prevention (e.g. Driving Behaviors), research and technology (telematics, ADAS, autonomous)
- Better use of data, targeted underwriting questions, limits and attachment point adjustments
- Better Communication about the social purpose of our product and industry



Thank you!



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Questions?