

CAS RESEARCH PAPER

SOCIAL INFLATION AND LOSS DEVELOPMENT — AN UPDATE

*By Jim Lynch, FCAS, MAAA, and
Dave Moore, FCAS, CERA*



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Abstract

In a previous CAS Research Paper,¹ we described a method for using industrywide loss development factors to detect circumstances consistent with descriptions of a phenomenon known as social inflation. The paper focused primarily on commercial auto liability insurance as defined in Schedule P of the Annual Statement. We estimated that social inflation increased commercial auto liability claims by more than \$20 billion between 2010 and 2019.

This paper extends our analyses through the end of 2021, focusing again on commercial auto liability. We find that one metric for detecting excessive claims inflation, the calendar year 12–60-month loss development factor (abbreviated as the CYR 12-60 LDF) decreased significantly after calendar year 2019. The 2020 and 2021 factors were at levels consistent with 2016 and 2017. We believe the decrease was driven primarily by the pandemic, in part, due to slowdowns in tort dispositions and backlogs in cases. That the CYR 12-60 LDF remained significantly higher than a decade earlier is evidence that a certain level of social inflation remains baked into industry results, even in 2020 and 2021. We estimate that social inflation increased commercial auto liability estimates by more than \$30 billion between 2012 and 2021, with most of the increase coming from the addition of 2020 and 2021 to the analysis.

Defining Social Inflation

Previously, we acknowledged that there are a variety of definitions of social inflation. To bring our analysis into focus, we defined social inflation as excessive inflation in the size of claims. Our definition is consistent with the broad definition of social inflation put forth by Darren Pain writing for the Geneva Association in 2020: “All ways in which insurers’ claims

¹ Jim Lynch and Dave Moore, “Social Inflation and Loss Development,” Casualty Actuarial Society/Insurance Information Institute, February 2022, https://www.iii.org/sites/default/files/docs/pdf/social_inflation_loss_development_wp_02082022.pdf.

costs rise over and above general economic inflation, including shifts in societal preferences over who is best placed to absorb risk.”

This contrasts with the Geneva Association’s narrow definition – “legislative and litigation developments which impact insurers’ legal liabilities and claims costs.”² Other commentary suggests that social inflation also drove increases in claim frequency.³ Such an exploration is beyond the scope of this paper. We continue to use excessive inflation in the size of claims as our definition of social inflation.

In addition, other commentary frequently accepts the phenomenon as given and attempts to address what might be causing it: mechanisms for funding lawsuits, increasingly sympathetic juries, breakthrough legal strategies, etc.⁴ We focus on documenting trends that are consistent with social inflation, namely the increase in loss development factors over time.

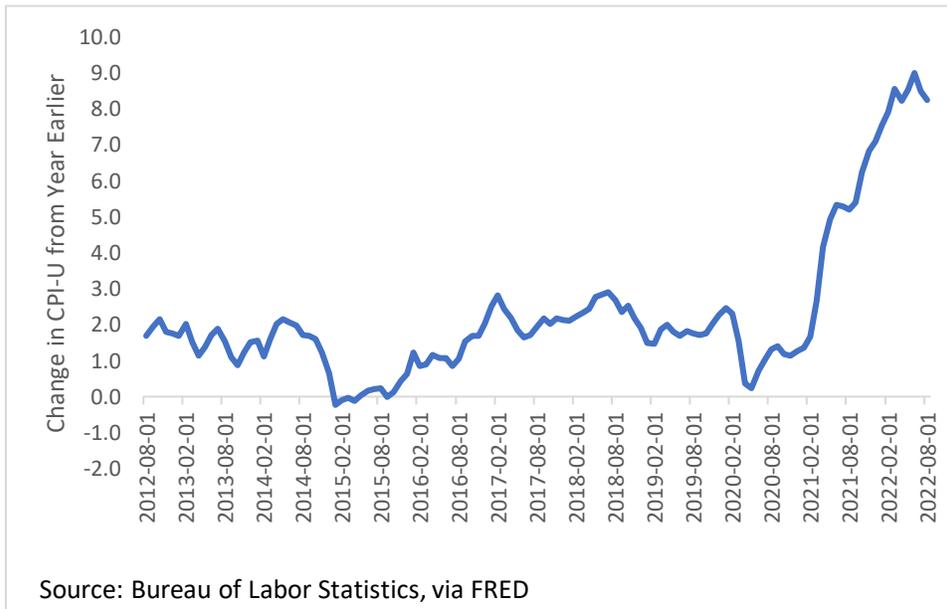
We reason that in looking at countrywide data, many of the considerations that can significantly affect company-level reserving analysis via Schedule P have a muted impact when examining countrywide data.

² Darren Pain, “Social Inflation: Navigating the evolving claims environment,” The Geneva Association, December 2020. https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/social_inflation_brief_web.pdf.

³ Lynch and Moore, pp. 1-4.

⁴ Lynch and Moore, p. 3.

Chart 1. Consumer Prices Indices for all urban consumer, percent change from year ago, monthly, seasonally adjusted



It is worth noting that our preferred analytical tool, the CYR 12-60 LDF, can rise due to an increase in social inflation or other types of general inflation, as well as other phenomena. In our previous work, general inflation, as shown in Chart 1, was relatively stable. That situation has changed dramatically since early 2021. Inflation was under 3% for more than nine years through March 2021. That stability made it relatively easy to conclude the impact of general inflation on loss development factors was relatively stable. Since then, general inflation has increased dramatically, making it more difficult to discount the impact of general inflation on LDFs.

Data

As before, we used annual statement data from Schedule P as submitted to the National Association of Insurance Commissioners. Data came from Annual Statements as of December 31, 2021. We also used older Schedule P evaluations to broaden the triangle history from 10 to 20 years. We accessed the data via S&P Global Market Intelligence, which accumulates the submissions of individual companies and adjusts the data for intragroup cessions. The data set remains widely used in the industry.

Schedule P data provide several loss triangles net of reinsurance at a line-of-business level. We focused primarily on paid loss triangles (Schedule P, part 3) and reported loss triangles, which can be inferred by subtracting Schedule P, part 4 [incurred but not reported losses and defense and cost containment expenses (DCC)] from Schedule P, part 2 (incurred losses and DCC).

We offer the same caveats to this data as before. While an individual company's Annual Statement data are affected by changes at the legal, regulatory and company level, those changes are muted at an industrywide level. We assume issues that can affect company data such as homogeneity, credibility, development patterns, reinsurance and operational changes have much less impact at the industry level.⁵

In this analysis, we also examined Schedule P, part 1 data for reported claim counts. Schedule P claim count data is less reliable than its dollar-driven counterparts. Different companies define what constitutes a reported count differently. For example, Question 6 of the 2021 Schedule P interrogatories requires insurers to indicate whether "claim count information is reported per claim or per claimant" and to indicate whether that standard has changed in recent years. Estimates of industrywide claim severity are affected by that choice. Our analysis assumes that few insurers change their definition of claim count over time. The ambiguity in how claim counts are reported would make claim severity calculated by Annual Statement less than useful in traditional actuarial analysis, but trends across years may be discernible. Also, when we analyzed information stemming from reported claim counts, we confirmed trends by looking at 10 large insurers. An industrywide trend would be present across most companies writing a given line of business, regardless of how each one defined a reported claim.

Analysis

To identify trends in commercial auto liability premium and losses, we standardize both against nominal gross domestic product (GDP). This assumes that exposures grow in the long term at about the same rate as the overall economy. Premium that grows faster than the economy indicates rising rates – a hard market. Premium growing slower than the economy indicates falling rates – a soft market. Losses that grow faster than the economy indicate that either claim frequency or severity is growing, or both are.

⁵ For a deeper discussion, see Lynch and Moore, pp. 6-8.

Chart 2. Net earned premium (EP) and ultimate loss and DCC to GDP \$ millions by accident year – P&C industry – commercial auto liability

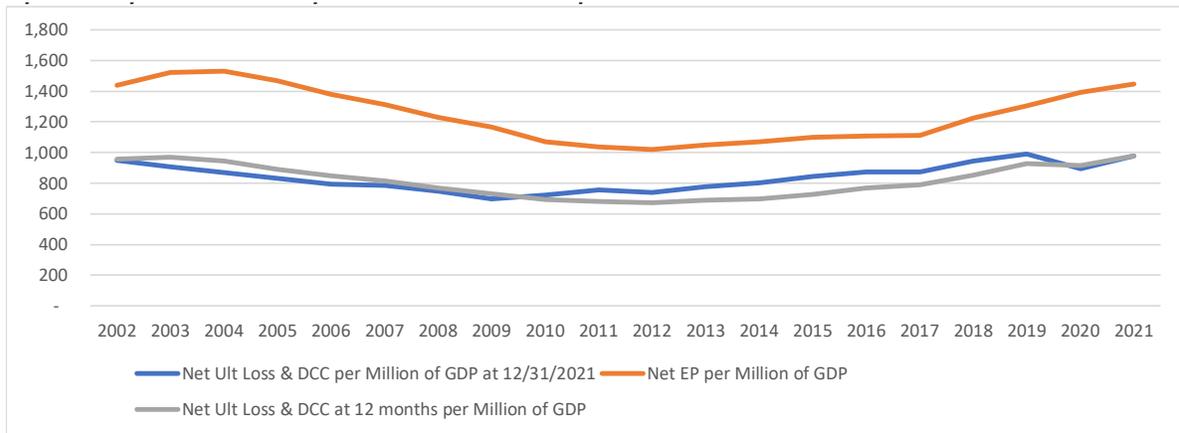


Chart 2 shows as a percentage of GDP the following:

- Calendar year net earned premium.
- Accident year ultimate loss and DCC at first evaluation.
- Accident year ultimate loss and DCC as of December 31, 2021.

Net earned premium per \$1 million GDP continues the growth that began in 2013, indicating that the hard market in commercial auto liability continued through 2021. Given the circumstances documented in our prior work – rising social inflation and a deficiency in booked losses – this is not surprising.

From 2019 to 2020, standardized net ultimate loss and DCC fell. It grew again in 2021. The 2021 figure is the highest in 20 years at the 12-month evaluation point. At the current evaluation, the 2021 standardized net ultimate loss and DCC is the second highest, after 2019.

The latest four years have had the highest level of losses at both first evaluation and current evaluation in the past 15 years.

Examining frequency and severity trends provides additional insights.

Chart 3. Change in reported claim frequency and net ultimate loss & DCC severity by accident year – P&C industry – commercial auto liability

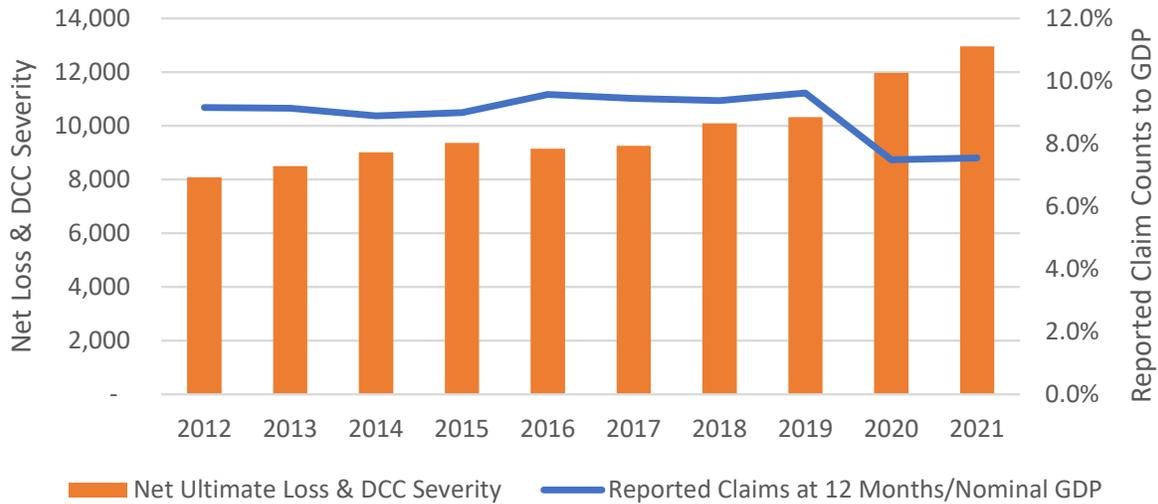


Chart 3 shows frequency and severity trends. Frequency is calculated as reported claim counts at 12 months as a ratio to nominal GDP.⁶ Severity is booked ultimate loss and DCC divided by reported claim counts at 12 months. Reported claim counts at 12 months were used to remove variances by year due to reporting lags. The focus here is relative changes by year, not ultimate frequency and/or severity. Frequency fell dramatically in 2020 and was at a similar level in 2021. Looking at Annual Statements from the 10 largest commercial auto liability insurers confirmed both trends.

The decline in 2020 can be attributed to the reduction in driving that resulted from the pandemic. Miles driven in the United States fell 11% in 2020 from a year earlier. Frequency in 2021 remaining at the 2020 level is puzzling. Miles driven has largely returned to pre-pandemic levels.⁷

Implied Net Ultimate Loss & DCC Severity increased about 16 percent in 2020 and another 8% in 2021.

There are several possible reasons:

Increasing general inflation. The Consumer Price Index rose 1.2% in 2020 but considerably faster, 4.7%, in 2021.

- *Changes in driving habits.* The number of deaths on the nation’s roads, a proxy for

⁶ Nominal GDP is used to normalize premium and losses in the line, as insurance exposures tend to grow over the long term at approximately the same rate as the economy.

⁷ Calculations made from data from Federal Highway Administration, Traffic Volume Trends, June 2022, https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm.

claim severity, has risen sharply after years of decline. Deaths rose 6.8% in 2020 and another 10.5% in 2021.⁸ In essence the mix of claims has changed. It got considerably worse.

- *Social inflation.* Examining the 100 largest jury awards as compiled annually by the *National Law Journal* provides evidence that the tort system is quickly returning to the same levels that existed before the pandemic. The median verdict in the 2021 top 100 – \$40 million – was more than five times larger than the 2020 median and approaching the 2019 median of \$57.6 million.⁹ The average verdict classified as motor vehicle or transportation-related was \$154.2 million in 2021, versus \$131.1 million two years earlier.¹⁰ In August 2022, a jury awarded \$1.7 billion to the family of two persons who died when their Ford pickup truck rolled over.¹¹
- *Conservative booking of commercial auto liability results in the last two years.* However, this would be a notable change from preceding periods. From calendar years 2012 to 2019, the industry took adverse development each year, totaling \$11.6 billion across that eight-year period.¹² In our prior work, we estimated that reserves at year-end 2019 were deficient another \$1.9 billion to \$3.9 billion.¹³ As of 2021, loss estimates on 2019 and prior have risen \$3 billion. The pandemic makes it difficult to determine the reserve adequacy of accident years 2020 and 2021.

⁸ National Highway Traffic Safety Administration, Traffic Safety Facts, “Early Estimates of Motor Vehicle Traffic Fatalities And Fatality Rates by Sub-Categories in 2021,” May 2022, <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813298,%20Insurance%20Institute%20for%20Highway%20Safety>, Highway Loss Data Institute, “Fatality Facts 2020: Yearly Snapshot,” May 2022, <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813298>.

⁹ The 2021 mean award was more than \$3 billion, 10 times the 2019 average. That was skewed by a single \$301 billion verdict, of which neither plaintiff nor defendant expects collection of \$300 billion. The case involved a bar that served a customer who caused an accident killing two persons. [KTRK, “Jury awards Texas family \$300 billion over 2017 DWI crash that killed teen and her grandmother,” December 9, 2021, <https://abc13.com/drunk-driving-crash-corpus-christi-300-billion-award-lawsuits/11316226/>]

¹⁰ National Law Journal, “The National Law Journal Top 100 Verdicts,”
2019 compilation: September 2020, https://images.law.com/media/nationallawjournal/supplements/TVS_NLJ_2019/mobile/index.html
2020 compilation: July/August 2021, https://images.law.com/media/nationallawjournal/supplements/TVS_NLJ_2020/mobile/index.html
2021 compilation: July/August 2022, https://images.law.com/media/nationallawjournal/supplements/TVS_NLJ_2021/index.html#p=1

¹¹ *Advisen Front Page News*, “Ford asks for new trial after \$1.7 billion verdict in rollover lawsuit,” September 27, 2022, https://www.advisen.com/tools/fpnproc/fpns/articles_new_1/P/447429774.html?rid=447429774&list_id=1

¹² Lynch and Moore, p. 15.

¹³ Lynch and Moore, p. 19.

Table 1. Net paid loss and DCC link ratio – P&C industry – commercial auto liability

| Acc Year | 12-24 | 24-36 | 36-48 | 48-60 | 60-72 | 72-84 | 84-96 | 96-108 | 108-120 | CYR 12-60 |
|----------|-------|-------|-------|-------|-------|-------|-------|--------|---------|-----------|
| 2002 | 2.080 | 1.481 | 1.225 | 1.110 | 1.051 | 1.023 | 1.010 | 1.005 | 1.003 | |
| 2003 | 2.117 | 1.454 | 1.232 | 1.116 | 1.050 | 1.020 | 1.010 | 1.005 | 1.005 | |
| 2004 | 2.041 | 1.442 | 1.236 | 1.115 | 1.049 | 1.021 | 1.010 | 1.006 | 1.002 | |
| 2005 | 2.140 | 1.439 | 1.226 | 1.105 | 1.046 | 1.019 | 1.010 | 1.003 | 1.004 | |
| 2006 | 2.064 | 1.444 | 1.213 | 1.107 | 1.043 | 1.023 | 1.011 | 1.005 | 1.004 | 4.220 |
| 2007 | 2.099 | 1.424 | 1.222 | 1.106 | 1.049 | 1.022 | 1.007 | 1.006 | 1.003 | 4.097 |
| 2008 | 2.048 | 1.433 | 1.228 | 1.111 | 1.049 | 1.022 | 1.010 | 1.006 | 1.002 | 4.142 |
| 2009 | 2.081 | 1.440 | 1.238 | 1.117 | 1.053 | 1.022 | 1.012 | 1.006 | 1.005 | 3.910 |
| 2010 | 2.125 | 1.450 | 1.232 | 1.120 | 1.051 | 1.025 | 1.011 | 1.005 | 1.004 | 4.033 |
| 2011 | 2.129 | 1.440 | 1.242 | 1.128 | 1.057 | 1.023 | 1.012 | 1.007 | 1.002 | 4.157 |
| 2012 | 2.155 | 1.454 | 1.249 | 1.126 | 1.051 | 1.025 | 1.012 | 1.004 | 1.002 | 4.246 |
| 2013 | 2.168 | 1.465 | 1.270 | 1.132 | 1.056 | 1.029 | 1.008 | 1.004 | | 4.273 |
| 2014 | 2.173 | 1.507 | 1.269 | 1.145 | 1.057 | 1.019 | 1.009 | | | 4.384 |
| 2015 | 2.247 | 1.504 | 1.288 | 1.135 | 1.048 | 1.022 | | | | 4.484 |
| 2016 | 2.286 | 1.517 | 1.285 | 1.114 | 1.053 | | | | | 4.839 |
| 2017 | 2.293 | 1.510 | 1.238 | 1.124 | | | | | | 4.942 |
| 2018 | 2.359 | 1.493 | 1.245 | | | | | | | 5.132 |
| 2019 | 2.406 | 1.479 | | | | | | | | 5.194 |
| 2020 | 2.350 | | | | | | | | | 4.956 |
| 2021 | | | | | | | | | | 4.862 |

Analysis of loss triangles provides some insight. Table 1 shows the net paid loss and DCC link ratio triangle for commercial auto liability for accident year 2002 to accident year 2021. Each link ratio along the diagonal has embedded in it a sample of the underlying change in inflation (social or otherwise). In Table 1, the red highlighting in a cell indicates that the link ratio increased relative to its counterpart in the prior year.

Note the preponderance of red cells beginning in the calendar year 2010 diagonal and continuing through 2019. This indicates that loss development factors were steadily increasing across the period. Also note that the 2020 and 2021 diagonals appear to have fewer red cells.

The individual link ratios that constitute the 2020 CYR 12-60 LDF fell at almost every evaluation point from a year earlier, a phenomenon almost certainly a result of the pandemic. The shutdown of the economy likely affected the ability to settle claims, particularly more complicated ones.

According to data from 12 states compiled by the Court Statistics Project, incoming civil cases fell almost one-third in 2020 compared with a year earlier. Meanwhile, cases were disposed of more slowly, creating a backlog of more than 97,000 cases from January 2020 to June 2021.¹⁴

¹⁴ Paula Hannaford-Agor, “Our New Normal? How COVID-19 Accelerated Pre-Pandemic Trends in State Court Litigation,” 71 *DePaul L. Rev.* 279 (2022), <https://via.library.depaul.edu/law-review/vol71/iss2/5>.

Many of the link ratios from calendar year 2021 were higher than their calendar year 2020 predecessors, though not as high as the comparable calendar year 2019 link ratios. Hence, while we see some evidence of link ratio increases in 2021, the patterns have not yet reverted to pre-pandemic levels.

At this point, our analysis applies traditional actuarial tools in nontraditional ways. They can be effective in identifying the trends that we are studying.

Specifically, we calculate the product of the 12-to-24-, 24-to-36-, 36-to-48-, and 48-to-60-month link ratios along a given diagonal of the development triangle. We call this the calendar year 12–60 development factor (CYR 12–60 LDF). It appears in the far-right column of Table 1. If the CYR 12–60 LDF is higher than its predecessor, that is evidence of growing inflation.

Chart 4. Net paid loss and DCC CYR 12–60 loss development factors – commercial auto liability

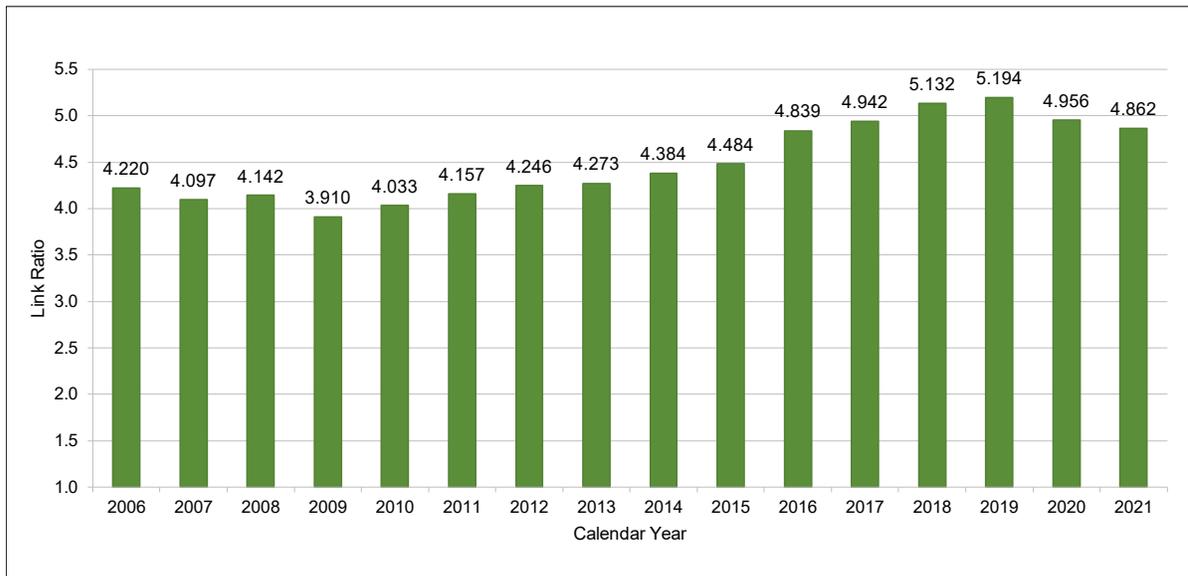
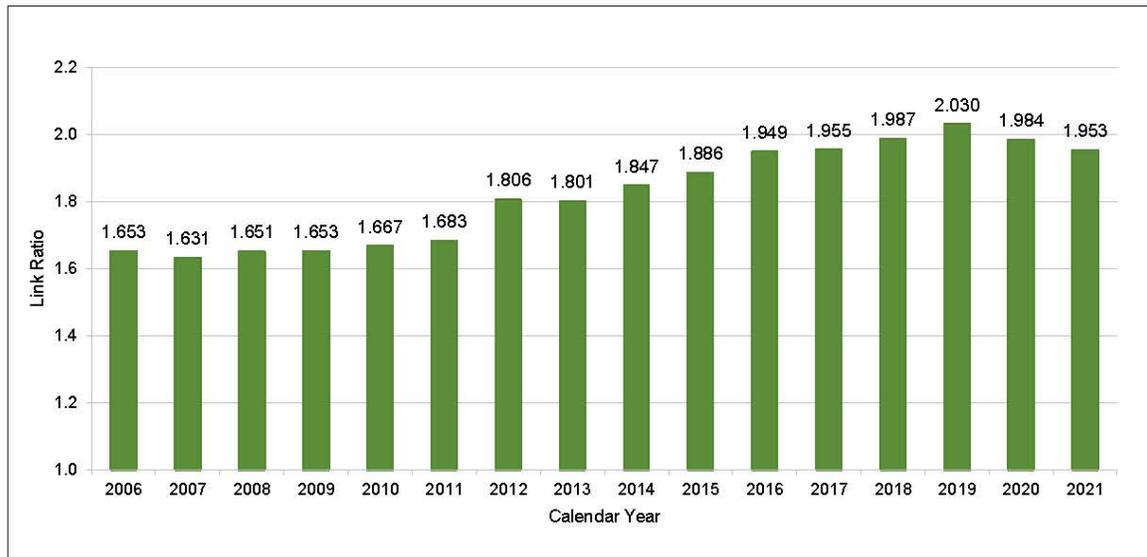


Chart 5. Net case-incurred loss and DCC CYR12-60 loss development factors – commercial auto liability



The CYR 12-60 LDFs are visualized in Chart 4 and Chart 5, first for paid losses, then for case-incurred losses. For both, the CYR 12-60 LDF decreased in 2020 and 2021 after a run-up that has persisted for a decade. The 2020 and 2021 factors were at levels consistent with 2016 and 2017. They are higher than the years preceding 2016. This is evidence that an element of social inflation remains embedded in loss development.

The current environment makes it difficult to determine why factors are behaving as they are. The pandemic clearly affected driving habits and likely affected settlement patterns. Meanwhile, general inflation has accelerated. The Consumer Price Index for all urban consumers rose 1.2% in 2020 – slightly less than, but consistent with, prior years – but rose 4.7% in 2021, the fastest rate this millennium. Given the confluence of variables, we cannot clearly conclude whether social inflation increased, decreased or stayed the same during the past two years.

Our previous analysis was able to assume a steady state. General inflation was low and steady, so it was unlikely to affect development patterns. Individual companies might amass claims backlogs, but we assumed no individual company’s backlogs would affect overall development patterns. The insurance industry has gone from a relatively calm, low-noise environment, where it was relatively easy to use development factors to find evidence of social inflation, to a noisy environment, where the reasons for changing factors are harder to discern.

Loss emergence has also changed from previous patterns. We compare actual versus expected emergence from 12 to 120 months for calendar years 2012 through 2021 (which spans accident years 2003 through 2020). To project emergence in each year, we use a

three-year weighted average of three previous development factors. The calculation is as follows:

- Let $E(L_{i,j})$ = expected cumulative paid loss and DCC for accident year i at age j in months.
- Let $A_{i,j}$ = actual cumulative paid loss and DCC for accident year i at age j in months.
- $E(L_{i,j}) = (A_{i,j-12}) * (A_{i-3,j} + A_{i-2,j} + A_{i-1,j}) / (A_{i-3,j-12} + A_{i-2,j-12} + A_{i-1,j-12})$.

The expected projection is only one diagonal forward; for example, the 2019 diagonal starts with the 2018 actual diagonal and applies three-year average link ratios to project the 2019 diagonal.

Table 2. Actual versus expected net loss and DCC Link Ratio – P&C Industry – commercial auto liability (in \$ millions)

| Calendar Year | <u>Paid</u> Emergence on Prior Accident Years through 120 Months | | | | <u>Case Incurred</u> Emergence on Prior Accident Years through 120 Months | | | |
|---------------|--|---------|----------|------------|---|--------|----------|------------|
| | Expected | Actual | Variance | % Variance | Expected | Actual | Variance | % Variance |
| 2012 | 8,061 | 8,489 | 427 | 5.3% | 4,267 | 5,088 | 821 | 19.2% |
| 2013 | 8,425 | 8,635 | 210 | 2.5% | 4,699 | 5,064 | 366 | 7.8% |
| 2014 | 8,813 | 9,115 | 303 | 3.4% | 5,108 | 5,639 | 531 | 10.4% |
| 2015 | 9,326 | 9,706 | 381 | 4.1% | 5,711 | 6,121 | 410 | 7.2% |
| 2016 | 9,919 | 10,857 | 938 | 9.5% | 6,252 | 6,933 | 681 | 10.9% |
| 2017 | 10,975 | 11,604 | 629 | 5.7% | 7,120 | 7,535 | 415 | 5.8% |
| 2018 | 12,070 | 12,899 | 830 | 6.9% | 7,826 | 8,273 | 447 | 5.7% |
| 2019 | 13,540 | 14,023 | 483 | 3.6% | 8,787 | 9,354 | 567 | 6.5% |
| 2020 | 14,865 | 14,007 | (858) | -5.8% | 9,954 | 9,801 | (153) | -1.5% |
| 2021 | 14,543 | 13,827 | (717) | -4.9% | 9,800 | 9,438 | (362) | -3.7% |
| 2012 - 2016 | 44,544 | 46,802 | 2,259 | 5.1% | 26,036 | 28,845 | 2,809 | 10.8% |
| 2012 - 2021 | 110,536 | 113,162 | 2,626 | 2.4% | 69,522 | 73,245 | 3,724 | 5.4% |
| 2017 - 2021 | 65,993 | 66,360 | 367 | 0.6% | 43,486 | 44,401 | 915 | 2.1% |

Table 2 shows the results of an actual vs. expected analysis. For the first time in a decade, actual emergence was less than expected emergence in 2020 and 2021 – perhaps reflecting the influence of the pandemic. In our previous work, we asserted that actual versus expected analysis demonstrated that using traditional actuarial estimates, such as the three-year average, resulted in consistently underpredicting ultimate loss emergence. That does not appear to be the case with respect to calendar years 2020 and 2021.

The pandemic-driven changes to the economy and the insurance business make it difficult to detect social inflation in the past two years. It might be present but hidden in link ratios awash in conflicting trends. It might have been reduced, at least temporarily. But the higher development factors it helped create remain. They make losses today higher than they would have been.

We estimate the impact of this change by calculating the implied net ultimate loss and DCC for commercial auto liability based upon paid and case-incurred loss development methods using alternative LDF assumptions for accident years 2012 to 2021.¹⁵ The alternative LDFs are derived from 12-to-ultimate factors developed from calendar year 2008 (around or slightly before our estimate of the beginning of the social inflation era). We apply those LDFs to losses at 12 months for each accident year. This allows the inclusion of all loss development caused by increased LDFs after 12 months.

The results are in Table 3. Columns F and G show the difference between the booked ultimate and what would have been booked in a world without social inflation. This method indicates that the potential impact of social inflation is between \$30 billion and \$35 billion over the past 10 years. Put another way, losses would have been 18% to 20% lower without social inflation and any other factors that might have been driving LDFs higher.

The average of these two estimates, \$32.2 billion, is nearly 60% larger than the estimate made in our prior work. The difference comprises two parts. First, the booked losses as of December 31, 2019, were deficient by over \$3 billion. Our original paper noted that we had detected a potential deficiency of between \$1.9 billion and \$3.9 billion. The emergence since December 31, 2019, has been consistent with this estimated deficiency.

Second, accident years 2020 and 2021 have been added to the analysis; CYR12-60 LDFs decreased in those years. The social inflation that has built up over the past decade remains, however. Adding those two years has increased the impact of social inflation by

Table 3. Actual versus expected net loss and DCC Link Ratio – P&C Industry – commercial auto liability (in \$ millions)

| Year | Amounts in Millions | | C Per 12/31/2021 Schedule P Net Ultimate Loss & DCC | D = A*(Alternative LDF) E = B*(Alternative LDF) | | F = D - C G = E - C | |
|-------|---|--|---|--|--|--|--|
| | A B | | | Implied Net Ultimate Loss & DCC using Alternative LDFs | | Variance to Booked | |
| | Per 12/31/YYYY Schedule P Net Paid Loss & DCC @ 12 months | Net Case Incurred Loss & DCC @ 12 months | | 3yr Weighted Average as of 12/31/2008 (Paid) | 3yr Weighted Average as of 12/31/2008 (Case Incurred) | 3yr Weighted Average as of 12/31/2008 (Paid) | 3yr Weighted Average as of 12/31/2008 (Case Incurred) |
| 2012 | 2,449 | 6,295 | 11,981 | 11,180 | 10,579 | -801 | -1,401 |
| 2013 | 2,552 | 6,600 | 13,020 | 11,650 | 11,093 | -1,370 | -1,928 |
| 2014 | 2,651 | 6,936 | 14,030 | 12,103 | 11,657 | -1,927 | -2,373 |
| 2015 | 2,785 | 7,491 | 15,357 | 12,714 | 12,589 | -2,643 | -2,769 |
| 2016 | 2,910 | 8,067 | 16,400 | 13,286 | 13,557 | -3,114 | -2,843 |
| 2017 | 3,070 | 8,451 | 17,068 | 14,014 | 14,203 | -3,054 | -2,865 |
| 2018 | 3,372 | 9,391 | 19,478 | 15,393 | 15,781 | -4,084 | -3,696 |
| 2019 | 3,553 | 10,369 | 21,261 | 16,221 | 17,425 | -5,040 | -3,836 |
| 2020 | 2,897 | 8,769 | 18,715 | 13,223 | 14,737 | -5,492 | -3,979 |
| 2021 | 3,369 | 10,963 | 22,462 | 15,377 | 18,424 | -7,084 | -4,038 |
| Total | 29,608 | 83,331 | 169,772 | 135,163 | 140,044 | -34,609 | -29,728 |
| | | | | % Variance | | -20.4% | -17.5% |

¹⁵ Our previous analysis extended the estimated impact back to 2010. We have excluded 2010 and 2011 from this table as the change is *de minimus*.

between \$8 billion and 12.6 billion. The annual impact of this, as estimated by the case-incurred method, is shown in Chart 6.

Chart 6. Case-incurred estimate of impact of social inflation by year – P&C Industry – commercial auto liability

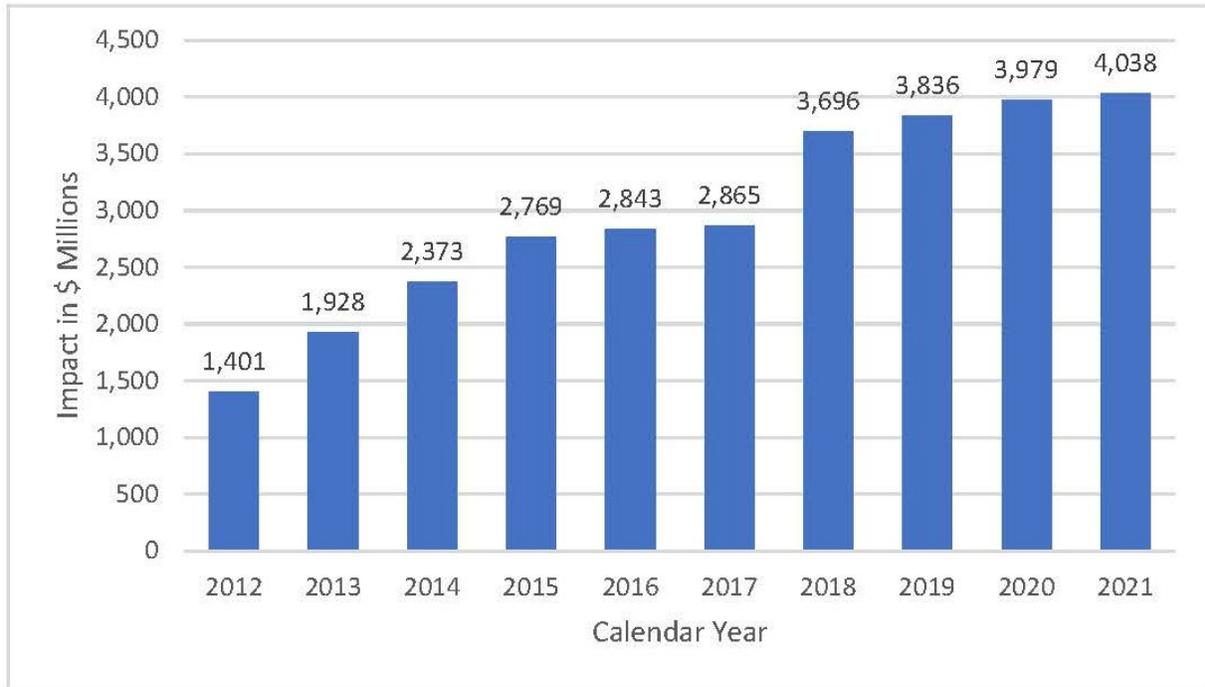


Table 4 builds upon the results from Table 3 to estimate the implied average annual impact of social inflation. Again, we are comparing the booked ultimates in column A to the implied ultimates using alternative LDF assumptions in columns B and C. The implied annual impact is calculated in columns D and E. Using 2021 as an example:

- The ratio of the booked ultimate to the ultimate implied by applying 12/31/2008 LDFs to the paid Loss & DCC is 1.461 (=22,462/15,377)
- 2021 is 13 years after the comparison period of 2008.
- $1.461^{(1/13)} - 1 = 3.0\%$.
- The implied average annual impact of social inflation appears in column D, 3.0%.

Hence, if social inflation were the cause of the difference between the booked ultimate and the implied ultimate, that would suggest an average annual impact of social inflation of +3.0% for accident year 2021. We repeated this calculation for every accident year from 2012 – 2021 and using both the paid and case-incurred implied ultimates. Regardless of the accident year or method, the indications consistently fall in the range of 2 – 3%.

This suggests that social inflation could be causing losses to increase faster than general inflation by 2 to 3% per year.

Table 4. Implied average annual impact of social inflation

| Amounts in Millions | A | B | C | D = (A/B) [^] (1/(Year - 2008)) - 1 | E = (A/C) [^] (1/(Year - 2008)) - 1 |
|------------------------|------------------------------|---|--|--|--|
| | Per 12/31/2021 Schedule P | Implied Net Ultimate Loss & DCC using Alternative LDFs | | Implied Average Annual Impact of Social Inflation | |
| Year | Net Ultimate Loss & DCC | 3yr Weighted Average as of 12/31/2008 (Paid) | 3yr Weighted Average as of 12/31/2008 (Case Incurred) | 3yr Weighted Average as of 12/31/2008 (Paid) | 3yr Weighted Average as of 12/31/2008 (Case Incurred) |
| 2012 | 11,981 | 11,180 | 10,579 | 1.7% | 3.2% |
| 2013 | 13,020 | 11,650 | 11,093 | 2.2% | 3.3% |
| 2014 | 14,030 | 12,103 | 11,657 | 2.5% | 3.1% |
| 2015 | 15,357 | 12,714 | 12,589 | 2.7% | 2.9% |
| 2016 | 16,400 | 13,286 | 13,557 | 2.7% | 2.4% |
| 2017 | 17,068 | 14,014 | 14,203 | 2.2% | 2.1% |
| 2018 | 19,478 | 15,393 | 15,781 | 2.4% | 2.1% |
| 2019 | 21,261 | 16,221 | 17,425 | 2.5% | 1.8% |
| 2020 | 18,715 | 13,223 | 14,737 | 2.9% | 2.0% |
| 2021 | 22,462 | 15,377 | 18,424 | 3.0% | 1.5% |
| Total | 169,772 | 135,163 | 140,044 | 2.5% | 2.3% |

Conclusion

Commercial liability results continue to be affected by social inflation. The diagnostic test we used to show rising development factors – the CYR 12-60 LDF – decreased in the last two years. The pandemic and post-pandemic environment have impacted the effectiveness of that metric in detecting social inflation. Nonetheless, development factors remain considerably higher than in the pre-social inflation era. The Consumer Price Index hitting +9% in July 2022 is likely to contribute to additional severity increases, while the toll from social inflation continues to climb.

More research is welcome in this area. Annual Statement data, as we have noted, has deficiencies in consistent reporting, particularly with regard to claim counts. Analysis of more rigorously developed data sets, from major individual carriers or from statistical agents such as Insurance Services Office, could prove fruitful. It would be instructive to look at direct losses rather than net and explicitly adjusting data for changes in policy limits and deductibles – options not available with Annual Statement data. Researchers could examine CYR 12-60 LDFs, as we have, or conduct traditional severity trend analysis. Examining the size of loss trends could help identify what sorts of losses are driving averages higher or could test for the presence of escalating trends at higher layers or both.

Researchers could also adjust Annual Statement data for changes in general inflation, then examine the LDFs from the resulting loss triangle.

It might prove beneficial to consider alternatives to nominal GDP as an exposure base. Miles driven, number of units, truck tonnage, diesel fuel sales and employment statistics in trucking and busing fields are among the possibilities.

Time may also provide insight. The pandemic years gave an enormous exogenous shock to the insurance system, separate from any inflationary or technological phenomena. How industry losses develop going forward could provide greater insight into how general inflation, social inflation, the pandemic and other factors affect insurance losses.