Aon
Cyber

US Cyber Market Update

2019 US Cyber Insurance Profits and Performance

June 2020

Introduction

We are pleased to bring you the fifth edition of Aon's *US Cyber Market Update*, covering the cyber insurance industry's 2019 performance. As most readers know, each year it takes several months following year-end for US insurers to close their books for the previous year, report their results to regulators, and for companies like us to compile those results into a report such as this one. And this year as those months passed, the world has changed thanks to COVID-19. As we sit working from home, at times stunned by the drastic shifts in our health, social fabric and economy, we offer this report as an opportunity to reflect on the year before everything changed.

But in the world of Cyber, things were already changing. 2019 was the year we were all (nervously) waiting for: although ransomware has been on the rise for years, it was last year that the insurance industry felt the impacts far and wide. Unlike the NotPetya claims of 2017 these losses were not limited to a few large multinationals but were spread across companies of all sizes and especially the small commercial segment. We expect that ransomware will be the main claims story of 2020 as well.

For years now, the thesis of cyber insurance has been that risk mitigation and risk transfer belong together – that insurers can help companies who have suffered from cyberattacks to get back on their feet while working to reduce cyberattack frequency and severity through more effective risk controls. But as 2019 was ending, cyber market conditions remained soft which for some insurers meant a greater focus on premium growth than on stringent underwriting and risk control measures. No longer. Thus far in 2020, all signs point to significant market hardening, both in the form of stricter underwriting standards and sizable rate increases. So while 2019 was the story of a rise in claims, the 2020 story will be at least partially about insurers' response to that rise. We believe that the next several years may finally be the proving ground for the cyber insurance thesis – that by putting a price on risk, insurers will help improve cybersecurity hygiene and reduce the cost of cyberattacks.

This study analyzes US insurers' cyber insurance results for the 2019 financial year. As in prior years we draw our analysis from the NAIC statutory filing supplement, now in its fifth year. Although this data set has its limitations and data quality issues, we aim to take its general lessons as representative of US industry experience. See the "About the Data" section at the end of this paper for a full discussion of our approach to addressing these issues.

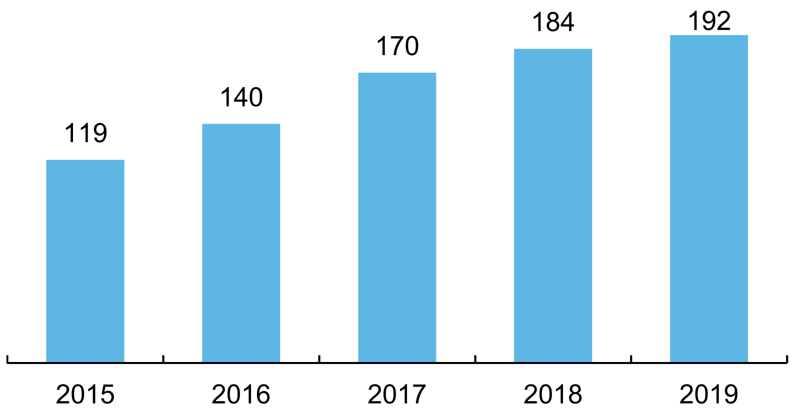
A total of 192 US insurers reported cyber insurance premiums in 2019. Aon has analyzed these filings and shared our key findings on the following pages. Our aim is to provide insights for insurers that currently offer cyber insurance, as well as those seeking to offer it, to provide a performance benchmark and to offer perspective on the industry experience.

Key Findings on 2019 US Cyber Insurance Performance

Premiums and market participation continue to grow modestly

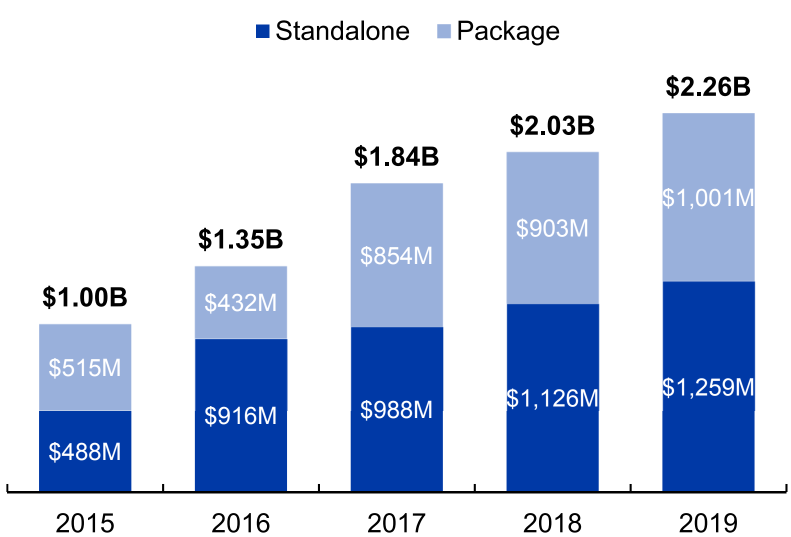
A total of 192 US insurers reported direct cyber written premium to the NAIC in 2019, up from 184 in 2018. The new market participants averaged USD393,000 in premium each. Note that these numbers do not include MGAs, who do not file the NAIC supplement.

Exhibit 1: Number of US cyber insurers | 2015 – 2019



US cyber premiums grew to USD2.26 billion in 2019, an 11 percent increase from the prior year, with similar rates of growth observed for both package and standalone cyber products.[1]

Exhibit 2: US cyber direct written premiums | 2015 – 2019

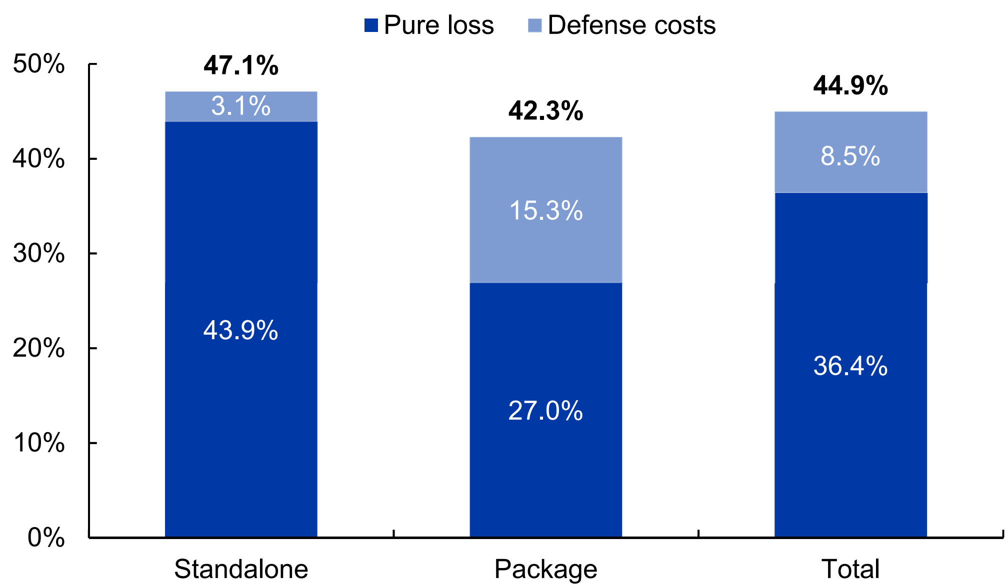


[1] See "About the Data" on page 12 for details on how "package" and "standalone" cyber are defined.

Loss ratios increased, driven by frequency

Loss ratios increased in 2019 for both Standalone and Package. The direct incurred industry loss ratio was **44.9** percent across all policies, with standalone and package business reporting 47.1 percent and 42.3 percent respectively. This year, the average defense costs for Standalone insurers rose to 3.1 percent, with 8.5 percent average defense costs for the industry overall.[1]

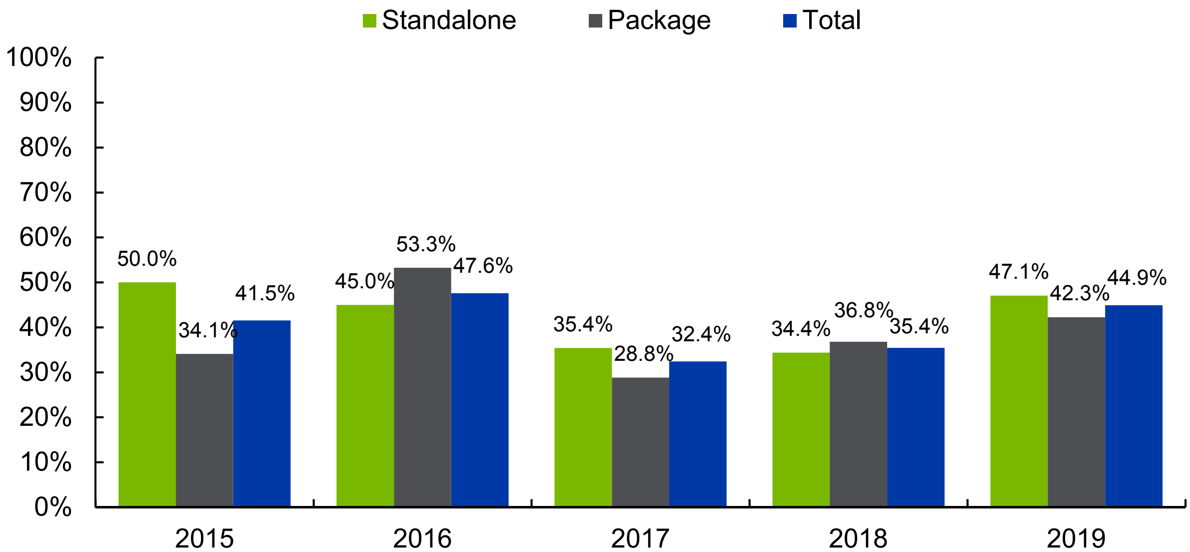
Exhibit 3: US cyber loss ratios | Standalone vs. package



Loss ratios increased for both Standalone and Package segments, with the Standalone and Package loss ratios reaching their highest levels since 2015 and 2016 respectively. Note that in 2015 and 2016, the NAIC also included “adjusting and other” expenses in loss ratios, whereas they have not since 2017. Adjusting and other costs averaged 1.7 loss ratio points in 2015 and 2016 – a minor component of the loss ratio but one worth noting.

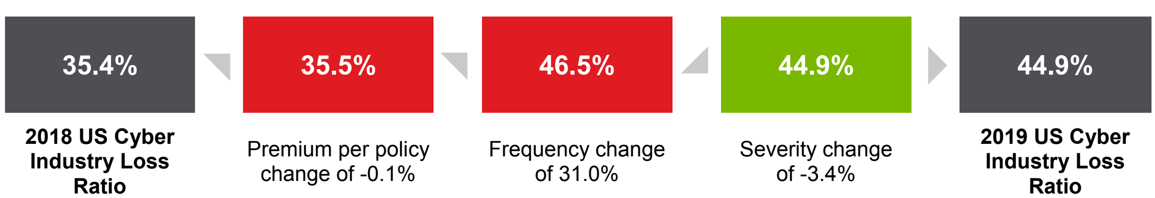
The loss ratio increase was particularly stark for Standalone cyber policies, where a 12.7-point increase was observed, following several years of improving loss ratios. The increase for Package was 5.5 points, and the total industry loss ratio increased 9.5 points.

Exhibit 4: US cyber loss ratio | 2015 – 2019



As one might expect, the 2019 loss ratio increase was primarily due to an increase in claim frequency. The average 2019 claim frequency across all companies was 5.6 claims per 1000 policies, up from 4.2 in 2018, and affected Standalone business to a greater degree than Package. This jump in frequency more than offset a reduction in the claim severity, where the average claim size fell slightly from USD50,401 in 2018 to USD48,709 in 2019. The premium per policy was essentially unchanged from 2018 – while this may seem unremarkable, it is a notable shift from the rate deterioration seen in 2017 (-18.3%) and 2018 (-1.7%). As we mentioned earlier, rates thus far in 2020 have been broadly increasing.

Exhibit 5: Components of loss ratio change, 2018 to 2019



We also compared loss ratios a different way to see how widespread the year-on-year deterioration appeared to be. Here, we segmented insurers based on the magnitude of their loss ratio change from 2018 to 2019, looking only at writers with at least USD5 million in direct written premium to avoid potential skewing from small premium bases. A change of at least five loss ratio points was selected to indicate a material change. The results appear in Exhibit 6.

Exhibit 6a: US cyber loss ratios, 2018 vs. 2019 | Standalone policies
For insurers with standalone cyber direct written premium greater than USD5 million[2]

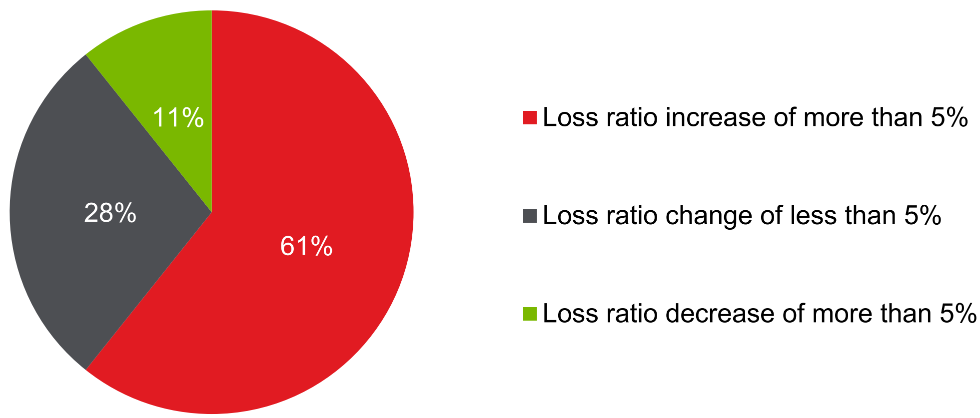
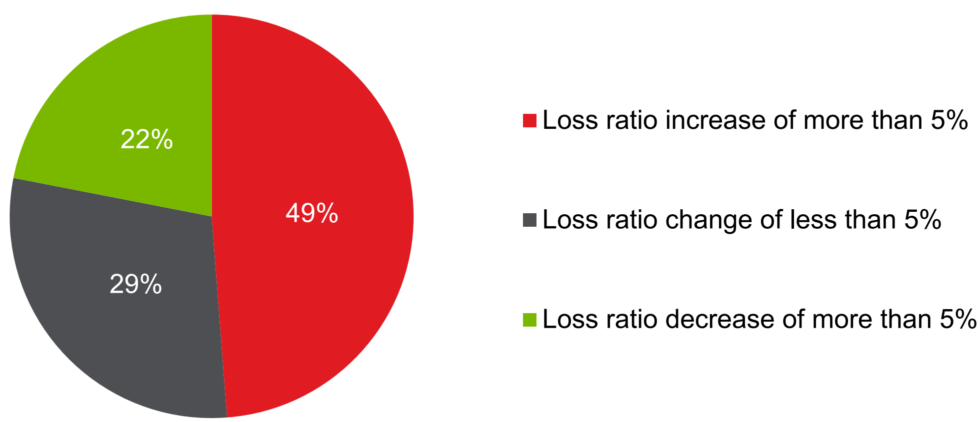


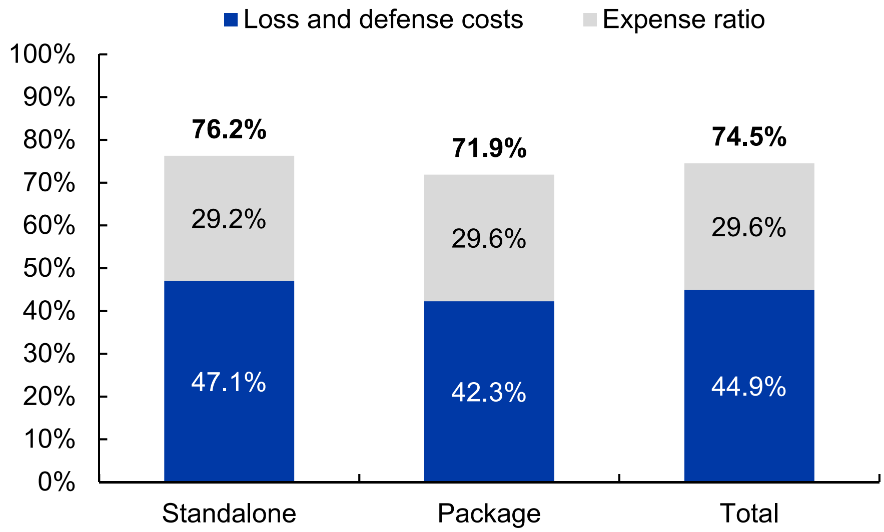
Exhibit 6b: US cyber loss ratios, 2018 vs. 2019 | All policies
For insurers with total cyber direct written premium greater than USD5 million



These charts tell a story consistent with the earlier analysis. Overall, more insurers saw increases in loss ratios than decreases in loss ratios of similar magnitude when looking at all policies, 49 percent versus 22 percent. For standalone policies (Exhibit 6a), the differential is even more extreme, with 61% of insurers showing increases versus 11% showing decreases.

Finally, we estimated the industry's cyber combined ratio for 2019, using expense ratio estimates from the Insurance Expense Exhibit, as seen below in Exhibit 7.[3]

Exhibit 7: Estimated 2019 US cyber combined ratios



These results suggest continued profitability for US cyber insurance in 2019, despite the loss ratio increases. However, we would make two caveats when interpreting the 2019 results:

- These expense ratios are estimated from "other liability-claims made" and "commercial multi peril" business, since Cyber is not a line in the IEE. Our experience with many insurers suggests that cyber expense ratios are higher than for other lines, perhaps by 5 points or more. This is not reflected in the NAIC data.

- Cyber insurance is a catastrophe-exposed line of business, and 2019 was a catastrophe-free year. While this does not change the 2019 results, we do recommend the inclusion of an appropriate catastrophe load for forward-looking projections. Aon has spent considerable time working with clients and models to define cat loads for the cyber business.

Results varied more widely among small insurers than large ones

Individual insurers saw loss ratio results both higher and lower than the average of 44.9 percent – some notably so. Among underwriters with at least USD5 million in direct written premium, loss ratios ranged from 0.2 percent at the low end to 285.8 percent at the high end.

The coefficient of variation (CV) of insurer loss ratios – defined as the standard deviation divided by the mean – increased in 2019 for insurers with at least USD 5 million of direct written premium. Interestingly, the largest insurers with direct premium greater than USD 50 million actually saw a decrease in the CV. This decrease in CV occurred because *fewer insurers reported very low loss ratios* – i.e. in 2019 loss ratios were not only higher, but more consistently so.

Exhibit 8: Coefficient of variation of direct loss ratio by year

Calendar Year	Insurers with > USD 5M	Insurers with > USD 50M
2018	94.2%	50.0%
2019	116.1%	28.7%

To look at the data a different way, we also look at the percentile distribution of loss ratios for insurers. The tables below show the range among insurers with premiums more than USD5 million as well as those with more than USD50 million. Unlike some previous years, there were no significant outliers with exceptionally large loss ratios.

Exhibit 9a: Cyber insurance loss ratio percentiles by year | insurers with > USD 5M

Calendar Year	5th Pctl	25th Pctl	Median	75th Pctl	95th Pctl
2018	5.5%	17.7%	26.4%	53.5%	112.1%
2019	2.1%	12.5%	31.8%	55.5%	123.7%

Exhibit 9b: Cyber insurance loss ratio percentiles by year | insurers with > USD 50M

Calendar Year	5th Pctl	25th Pctl	Median	75th Pctl	95th Pctl
2018	11.7%	23.3%	36.1%	56.5%	62.5%
2019	29.7%	32.6%	47.1%	55.5%	61.6%

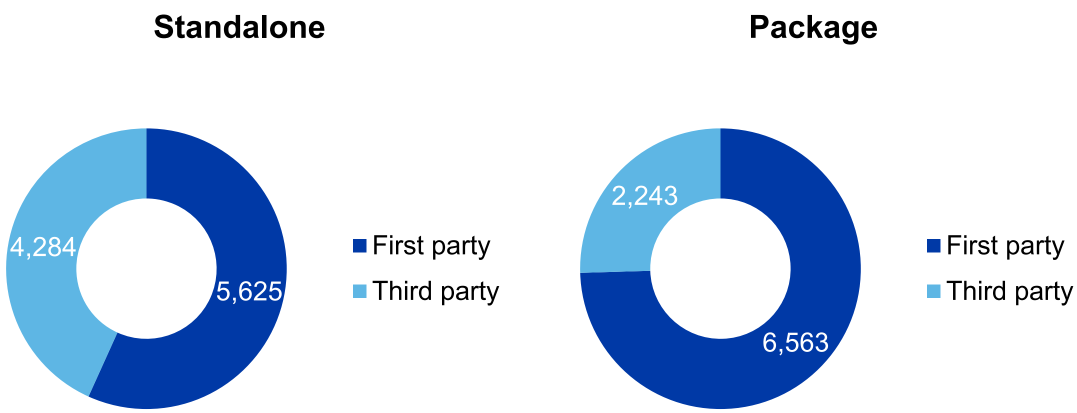
We see the median loss ratio increased for insurers of all sizes, consistent with the earlier findings. For insurers with premiums over USD5 million we see a wider range than the previous year, whereas insurers with premiums over USD50 million show a notably narrower range than before. These results are not surprising given the widespread nature of ransomware attacks in 2019 and the relative lack of large tower losses, Capital One notwithstanding. And this highlights that insurers with large diversified portfolios will see more stable underwriting results, apart from the presence of systemic risk and catastrophe events.

First party claims predominate

In 2019, claims against first party coverage outnumbered third party claims, accounting for 65 percent of all claims. For standalone policies, first party claims made up 57 percent of the total, while for package policies, first party was 75 percent of the total. The claims results are summarized below.

Exhibit 10: US 2019 cyber claims

Total Claims: 18,715
Total First Party Claims: 12,188 | Total Third Party Claims: 6,527



This is consistent with what we hear from conversations with our clients, with first party claims costs accounting for the majority of costs that insurers are paying.

Claims rates were significantly higher for standalone business. Cyber claims occur at a rate of 61.5 per 1000 standalone policies, versus a rate of 2.8 per 1000 package policies. Remember that 'package' business may vary in meaning for different insurers, ranging from cyber endorsements on small commercial or BOP policies to large cyber / technology E&O blended policies.

Premiums are growing modestly and the field is widening slightly

In 2019, US cyber premiums grew approximately 11 percent year-on-year to USD2.26 billion. In total, 192 insurers reported writing some cyber premiums in 2019. This was an increase of 8 insurers over 2018. 90 insurers wrote more than USD1 million and 41 wrote more than USD5 million.

Overall, the market became slightly more competitive in 2019. The top 10 cyber insurers accounted for 69 percent of direct written premiums, down from 70 percent last year. By way of comparison, the top 10 writers of other liability claims made insurance account for 56 percent of premium and the top 10 in commercial multi-peril account for 47 percent of premium.[4] The US cyber market is still quite concentrated.

As a reminder, the NAIC data does not include MGAs. This is unfortunate, as recent years have seen MGAs adding both to the number of market participants as well as the perceived level of competition. So the cyber market is likely not quite as concentrated as the data suggest.

The charts below illustrate the distribution of cyber premium.

Exhibit 11: US 2019 cyber direct written premium distribution by insurer size | 2015 – 2019

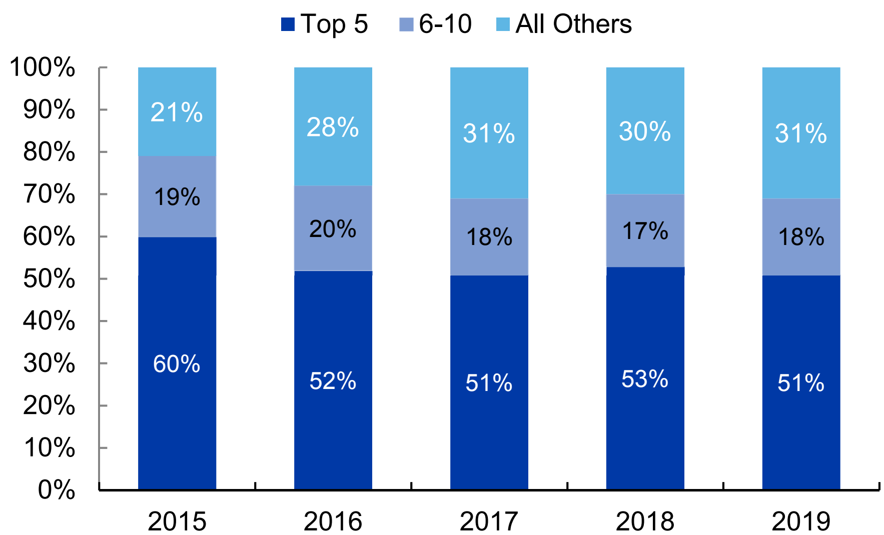
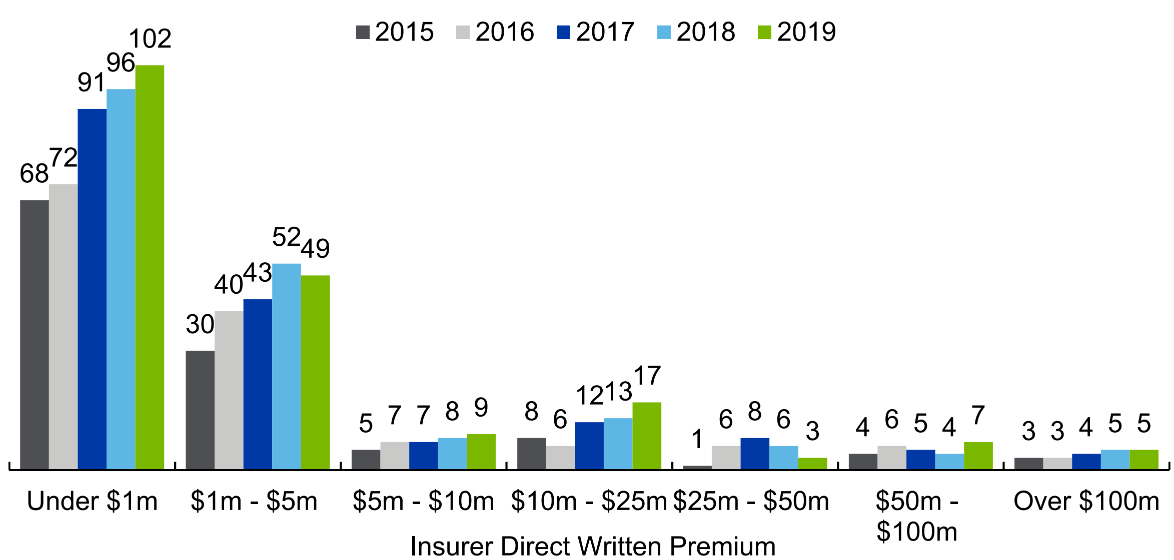


Exhibit 12: Number of US cyber insurers by direct written premium

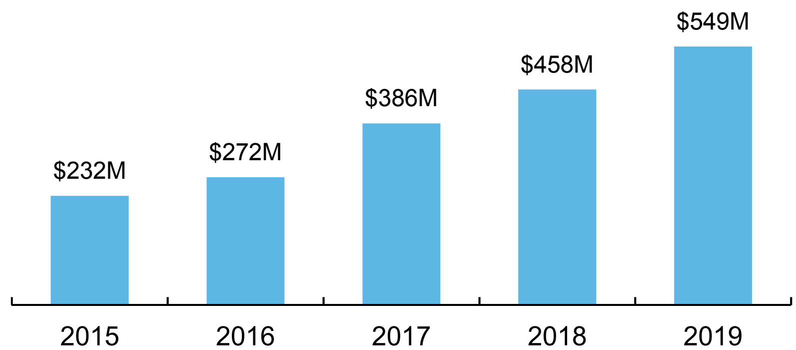


Small commercial cyber is outperforming the industry overall

Finally, in 2019 we saw continued development of the small commercial cyber segment, where the growth rates have exceeded the rest of the industry. Loss ratios have outperformed the industry as well, and although many have remarked on the impact of ransomware attacks on small businesses in 2019, the segment still ran at a lower loss ratio than the industry as a whole.

The NAIC data does not neatly allow segmentation by company size. To estimate the small commercial cyber market, we have focused on a group of insurers that we believe are primarily focused on small commercial accounts and aggregated that group's results. The results can be seen below.

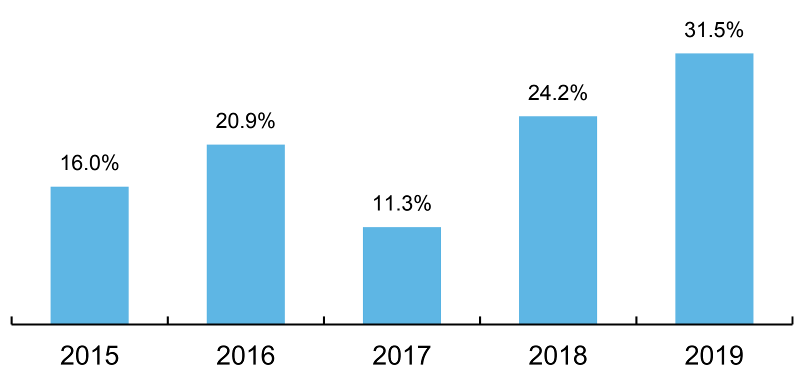
Exhibit 13: US cyber direct written premiums | small commercial writers | 2015 – 2019



Based on this cohort of companies, small commercial cyber premiums grew by nearly 20 percent in 2019 and by 19 percent in 2018. The industry overall grew 11 percent and 10 percent, respectively.

Loss ratios in the small commercial cohort have also performed better than the industry overall, averaging 31.5 percent in 2019. We found that the frequency for these insurers was 36 percent lower than industry averages, and severity was 9 percent lower as well. Understandably, insurers have found small businesses to be an attractive segment. That said, the 2019 loss ratio was up sharply from 2018, and with ransomware showing no signs of slowing down in 2020, insurers should exercise caution and take steps to mitigate the impacts to their insureds.

Exhibit 14: US cyber loss ratio | small commercial writers | 2015 – 2019



About the Data

The NAIC supplement requests insurers to report on several kinds of coverage:

- Standalone cyber insurance policies
- Cyber insurance that is part of a package policy
- Standalone identity theft insurance policies
- Identity theft insurance that is part of a package policy

For our analysis, we have focused on the cyber insurance coverages, both standalone and package.

For this year's study, the data was extracted on April 28, 2020.

We looked to extract as many insights from the supplement data as possible, but have some concerns about the completeness and quality of the reported information. We suggest reading this briefing not as commentary about the US cyber industry per se, but rather as commentary about *this particular dataset*. We have commented on anomalies in the data where we are able to identify and adjust for them. We discuss a few specific data issues below.

Premium completeness

The data reported to the NAIC is only a partial picture of the US cyber insurance market. Non-US insurers garner premiums for US risks that are not reflected in this data – most notably, this includes the Lloyd's syndicates. The NAIC data represent a sizable portion of the US market but are not comprehensive. Additionally, the NAIC data do not reflect the entirety of the performance of US insurers that write internationally.

Issues with package policies

The treatment of cyber package policies creates several issues worth noting, particularly when comparing results against standalone policies:

- Premiums for the 'cyber' portion of package policies can be difficult to break out. About eight percent of the total package cyber premiums reported are from insurers that were unable to quantify the amounts exactly and instead used estimation techniques. However, it's worth noting that this is down from the 23 percent estimated when the NAIC started collecting data in 2015.
- Losses reported for package policies do not include IBNR. The NAIC requested payments and case reserves for package policies, whereas it requested payments and total incurred amounts for standalone policies. It remains unclear whether insurers interpreted the standalone 'incurred' losses to include IBNR. But the results for package business clearly do not.
- Insurers were left to interpret the meaning of 'package' business for themselves. 'Package' in cyber can be interpreted extremely widely, ranging from an endorsement on a small commercial or BOP policy to a large cyber / technology E&O blended policy. We see this in the policy counts for package insurers: a number have more than 100,000 policies issued, while others with fewer than 1,000 are collecting more premium. Thus, the results for package business are far less homogeneous than the results for standalone cyber.

Claims data quality

Not all insurers reported cyber claims counts, and of those that did, the number of claims varied considerably. The mix between first and third party claims also varied significantly between some insurers. We would advise caution if analyzing the data on a per-claim basis.

Sources and Notes:

[1] Industry loss ratios are calculated for companies on a calendar year basis and weighted by direct earned premium. All numbers reported to the NAIC are on a direct basis.

[2] We changed our approach with the Standalone chart this year. In the Standalone chart, we now show only writers with Standalone direct written premium greater than USD 5 million. Previously, we had shown all writers with total direct written premium greater than USD 5 million, even if the Standalone direct premium was less than USD 5 million.

[3] 2019 Insurance Expense Exhibit. Based on a premium-weighted average of the other liability-claims made expenses (for standalone cyber premiums) and commercial multi-peril liability expenses (for package premiums).

[4] Source: NAIC 2019 statutory filings, as captured in S&P Global Market Intelligence as of April 28, 2020.

Contact Information

Authors

Jon Laux, FCAS, MAAA
Head of Cyber Analytics
+1 312 381 5370
jonathan.laux@aon.com

Craig Kerman, FCAS
Director, Cyber Practice Group
+1 212 441 1568
craig.kerman@aon.com

Sammie Coakley
Analyst, Cyber Practice Group
+1 212 441 1270
sammie.coakley@aon.com

Aon's Reinsurance Cyber Leadership

Catherine Mulligan
Global Head of Cyber
+1 212 441 1018
catherine.mulligan@aon.com

Luke Foord-Kelcey
International Head of Cyber
+44 (0)20 7086 2067
luke.foord-kelcey@aon.com

About Aon

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

About Aon

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

Empower Results®