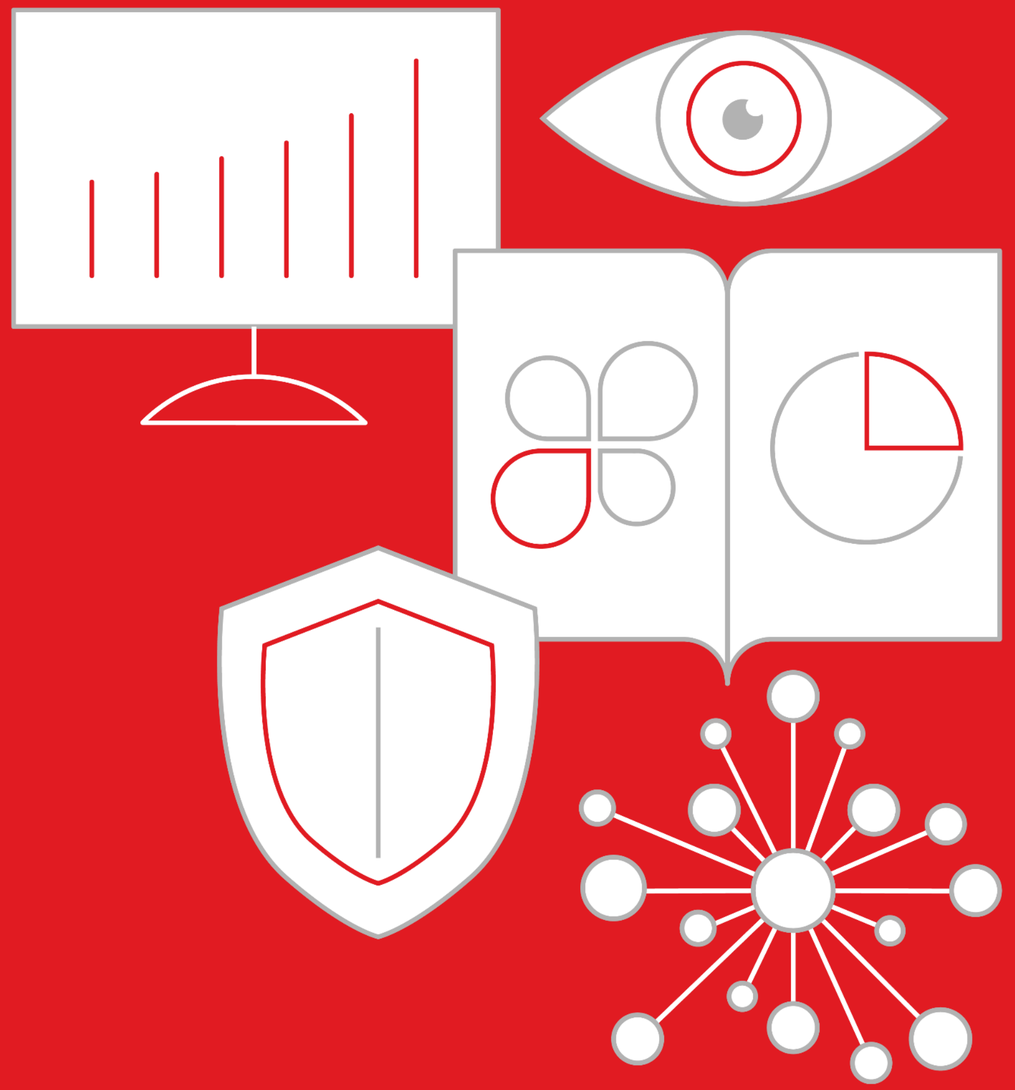
July 13-15 & July 20-22

2021 Insurer Analytics Virtual Series

Data-driven insights for making better business decisions



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July 13-15 & July 20-22

2021 Insurer Analytics Virtual Series

Data-driven insights for making better business decisions

When is Premium Riskier Than Loss?

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Live Poll Question

When did the hardest market of the last one hundred years occur?

a. 1929-31 during the great depression

b. 1939-45 during WW2

c. 1973-74 during “stagflation”

d. 1984-86 during the LMX spiral

e. 2000-02 during WTC, the dot com bust, etc.

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Answer Slide

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Live Poll Question

Hard markets coincide with:

Answers

a. Bad catastrophe losses
b. Cumulative reserve inadequacy
c. Raging inflation
d. Cats and Reserves
e. Reserves and Inflation

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Answer Slide

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Live Poll Question

The last market-wide hard market occurred

a. 2001 post-WTC
b. 2005 post-Katrina
c. 2008 post-GFC
d. 2012 post-Sandy
e. 2017 post-Irma

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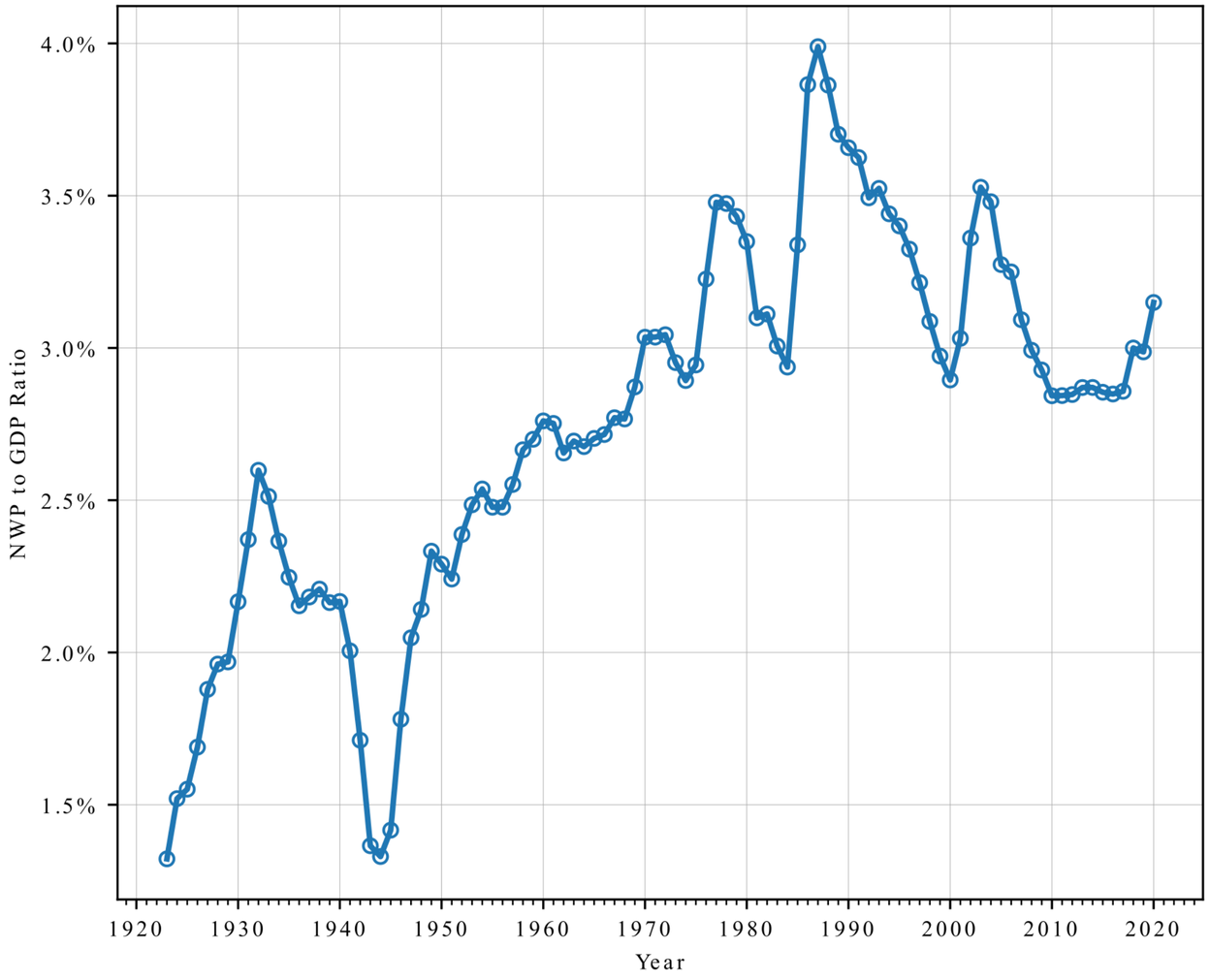
Premium to GDP Ratio



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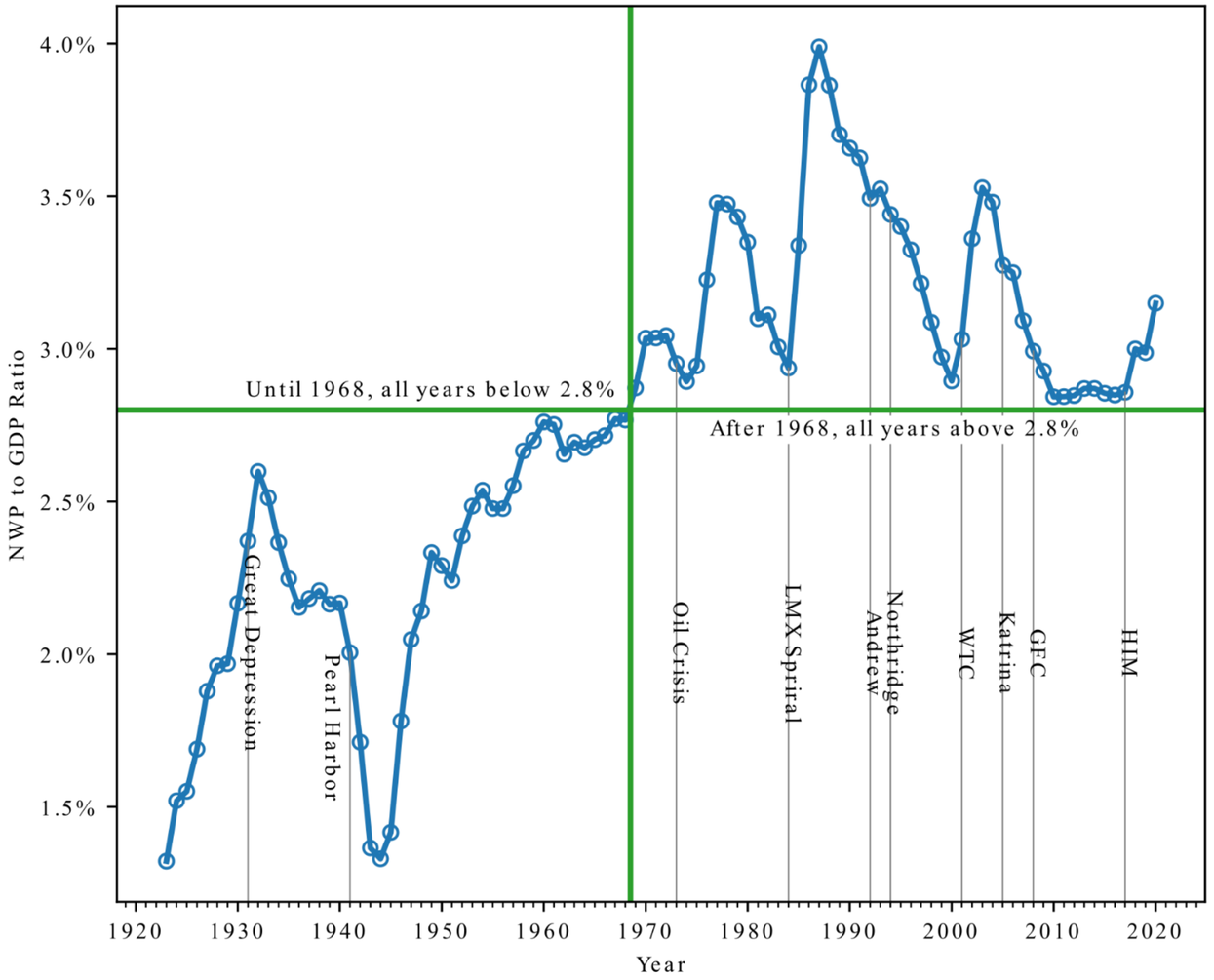
Premium to GDP Ratio 1968 Watershed



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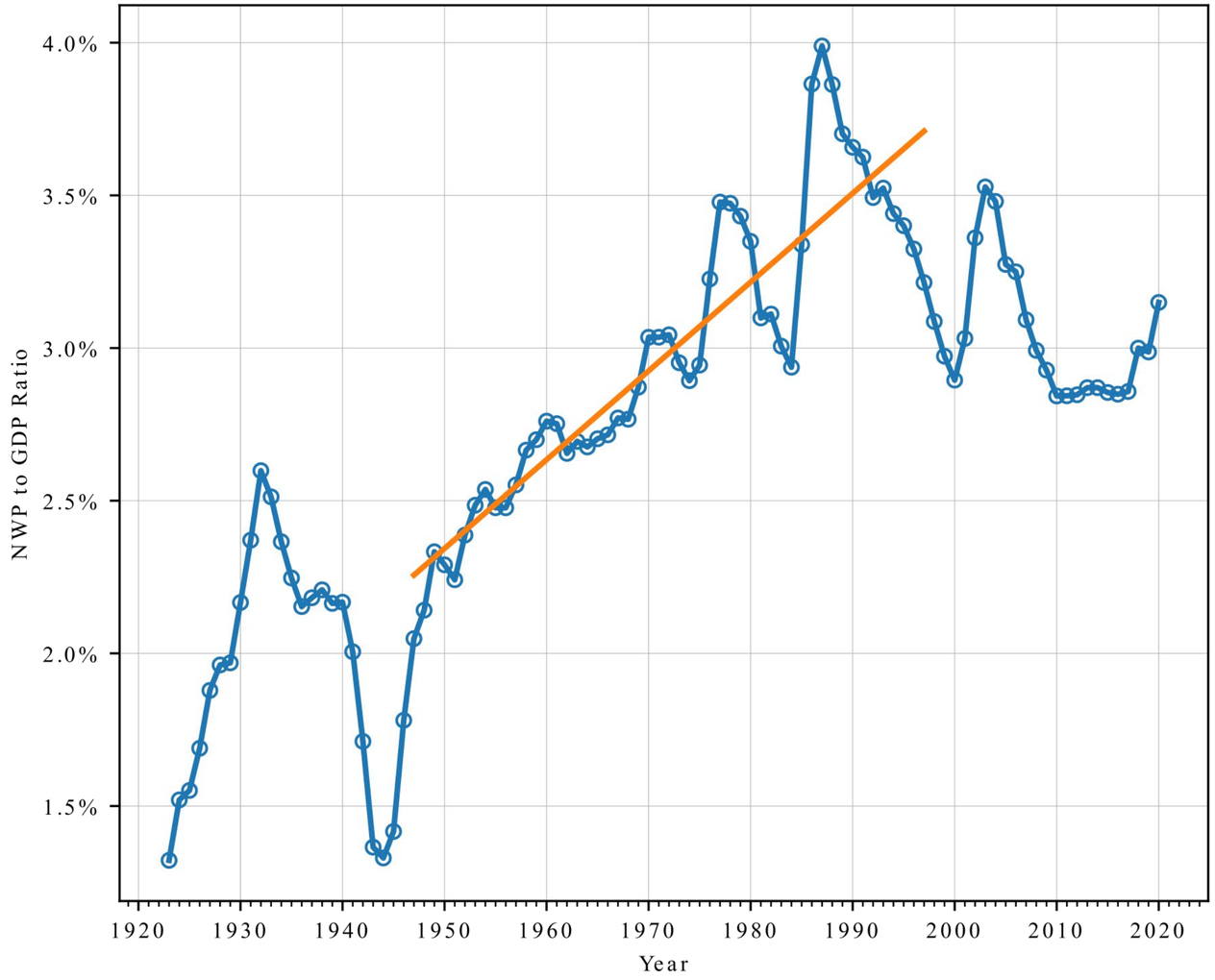
Premium to GDP Ratio Cyclical Growth Between 1947 and 1997



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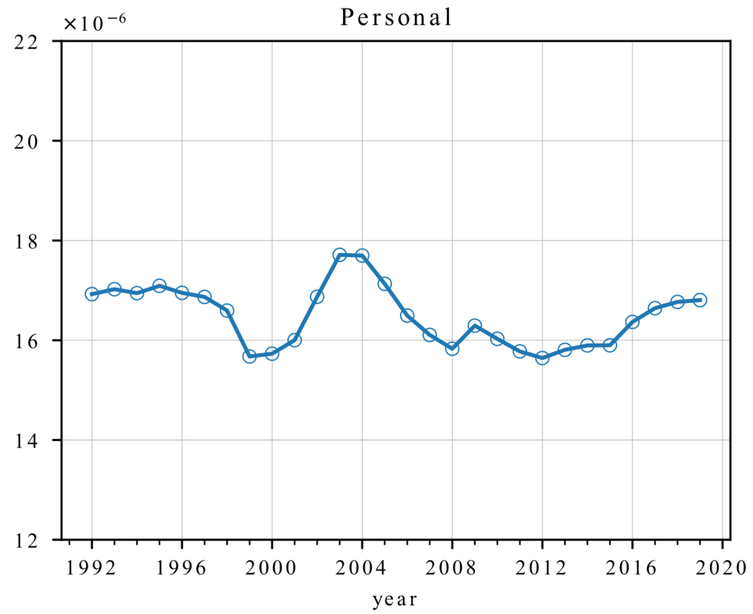
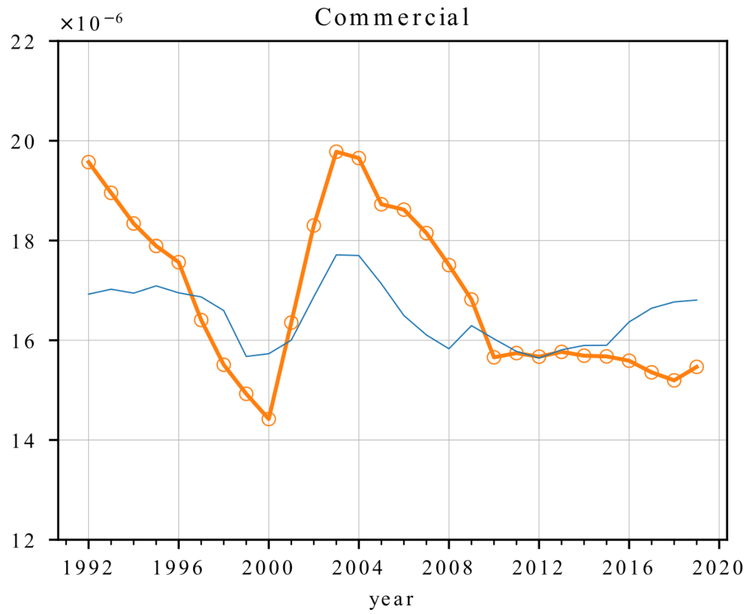
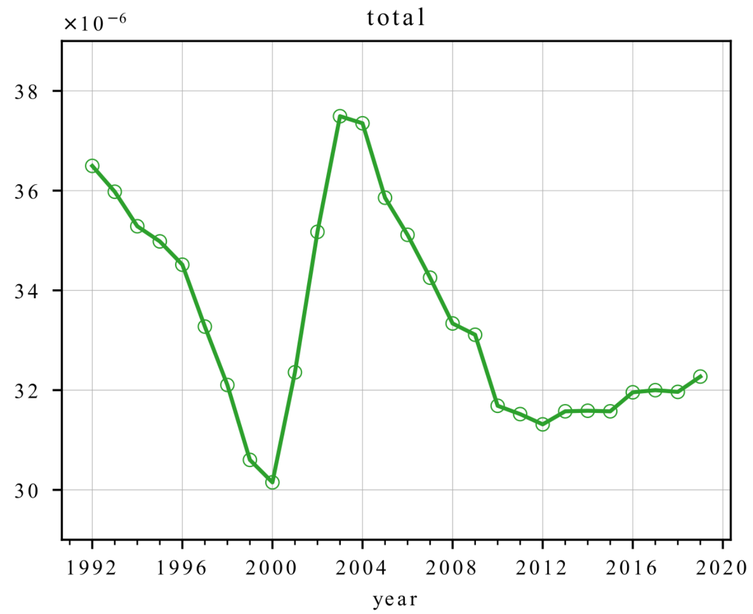
The Underwriting Cycle Is Driven by Commercial Lines







Premium to GDP for personal lines vs. commercial shows the cycle is more driven by commercial

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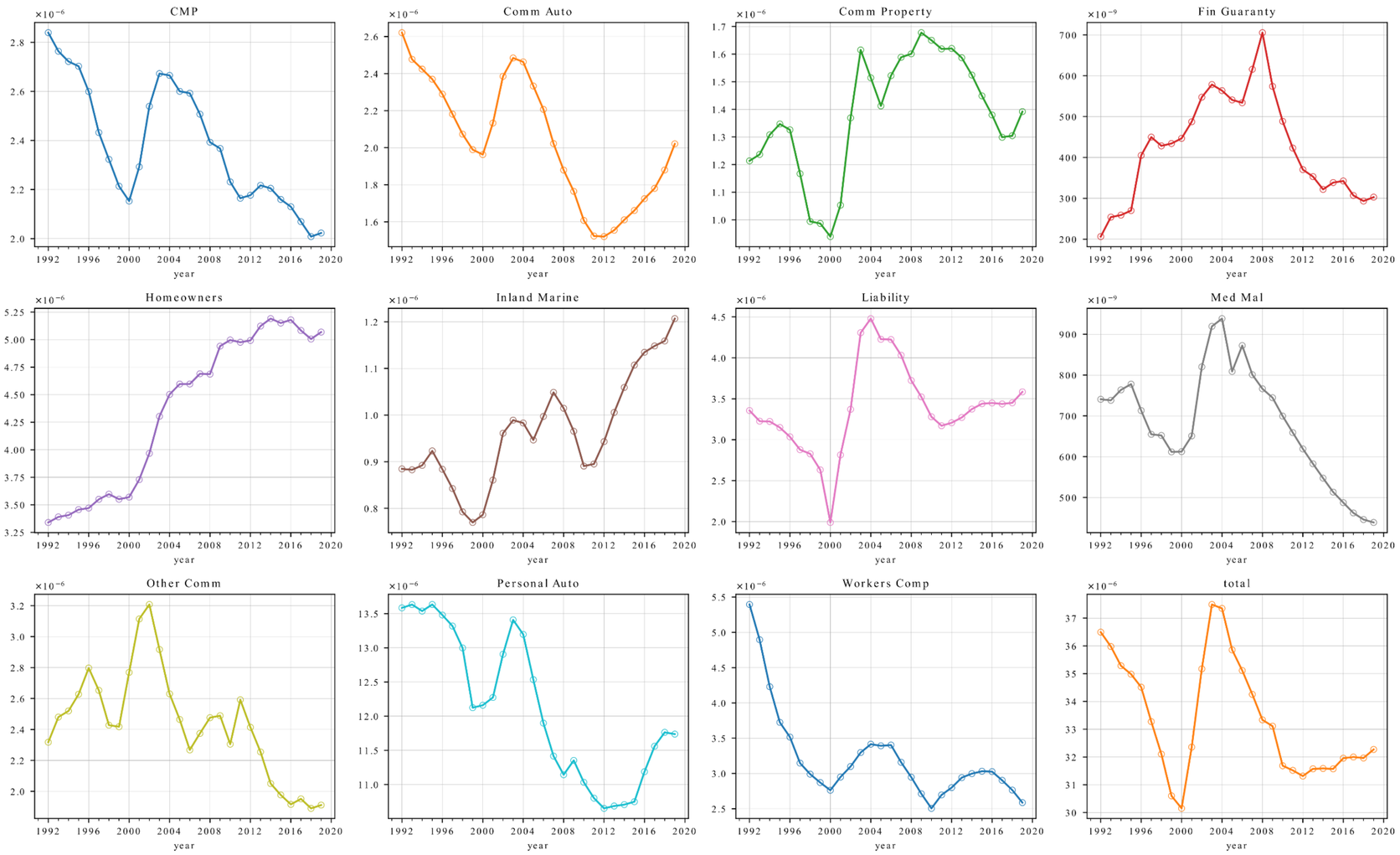
Calm Surface Masks Inner Turmoil



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Live Poll Question

Which line of business has seen the fastest cumulative premium growth since 1992?

a. Personal Auto

b. Commercial Auto

c. Workers Compensation

d. Homeowners

e. Medical Malpractice

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Answer Slide

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Live Poll Question

Which line of business has seen the **slowest** cumulative premium growth since 1992?

a. Personal Auto

b. CMP

c. Workers Compensation

d. Inland Marine

e. Medical Malpractice

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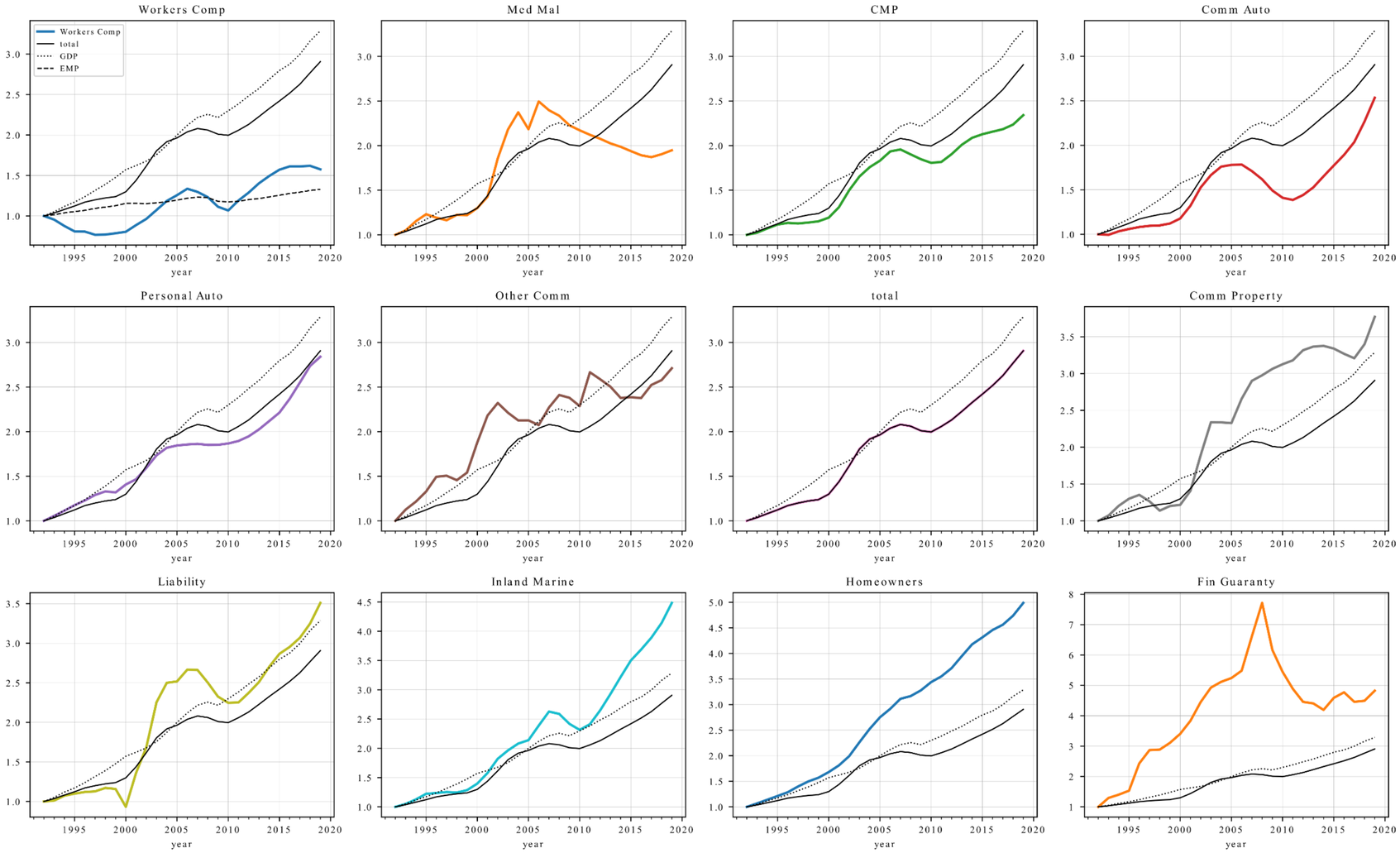
Premium and GDP Growth Since 1992 (1992=1.0)



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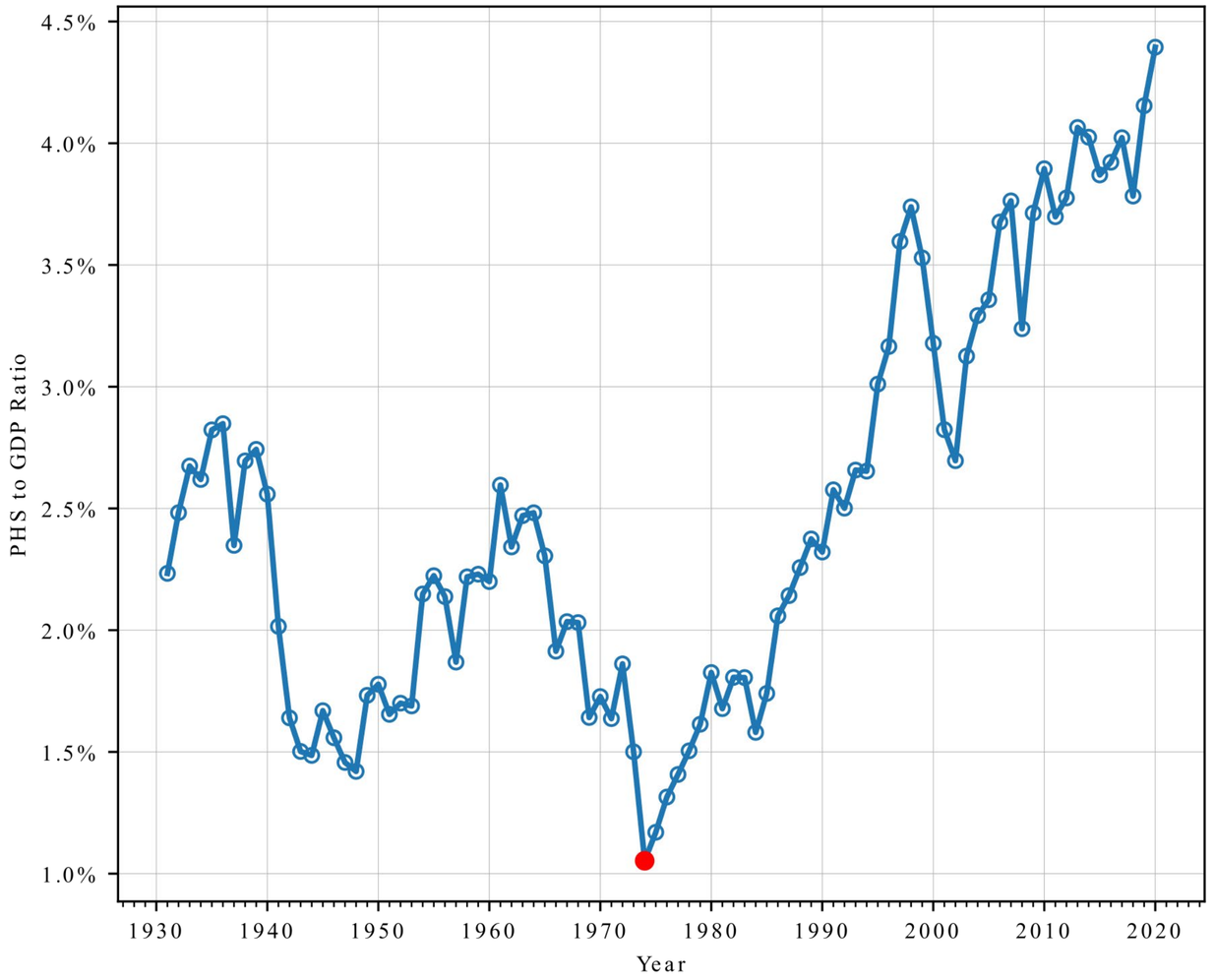
Surplus to GDP Ratio, 1931-2020e



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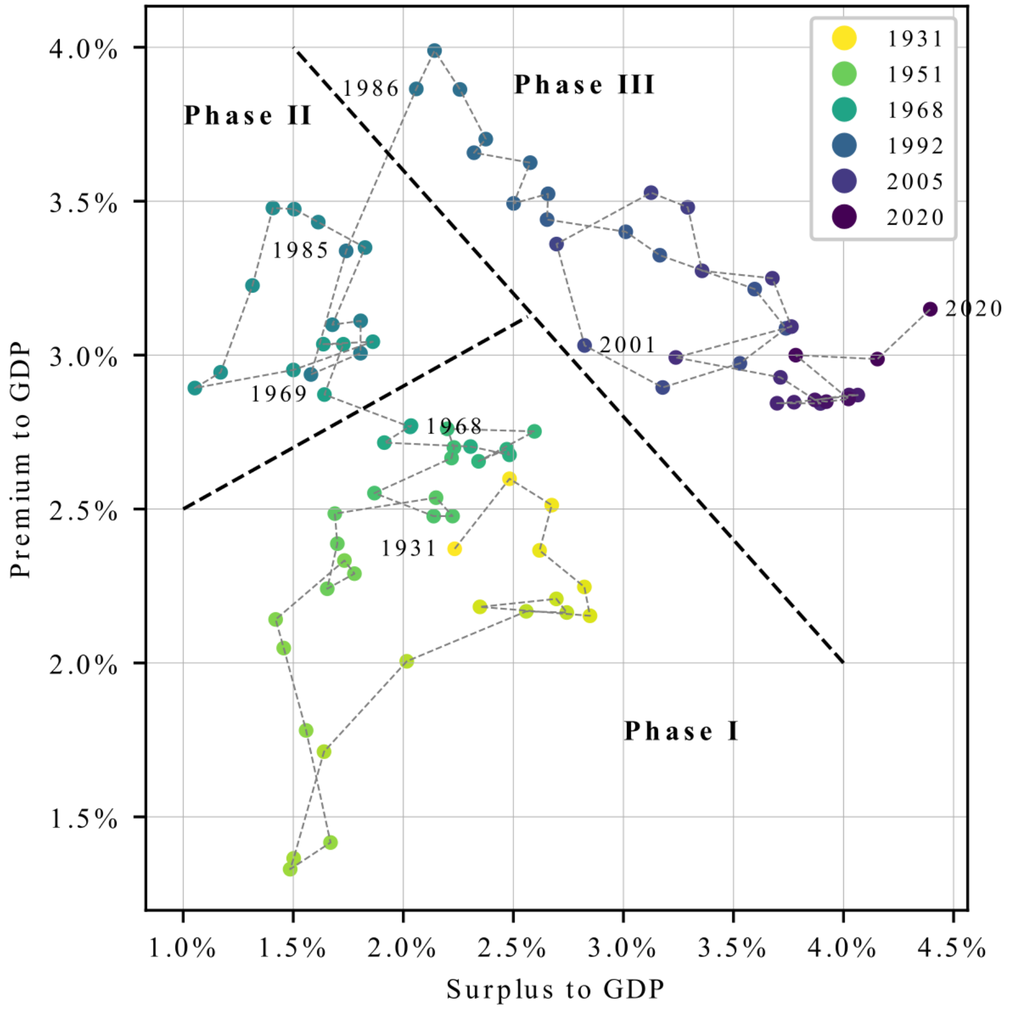
Three Phases of Market Dynamics Since 1931



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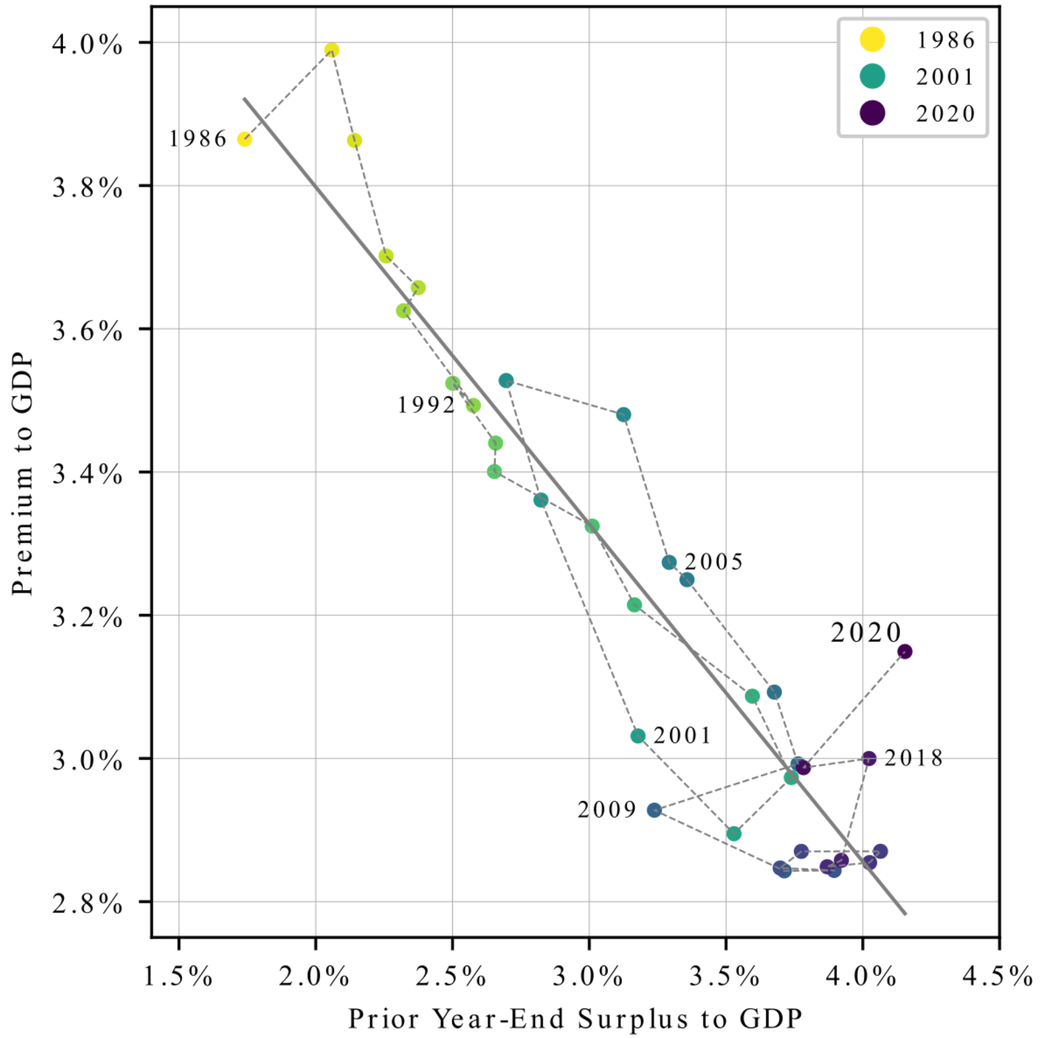
Market Dynamics Since 1986 Explained by Prior Year Surplus Levels



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Live Poll Question

Which line of business has seen the highest standard deviation of loss ratio since 1992

a. Commercial Auto

b. CMP

c. Workers Compensation

d. Financial Guaranty

e. Homeowners

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Live Poll Question

Which line of business has seen the **lowest** standard deviation of loss ratio since 1992

a. Commercial Auto

b. Personal Auto

c. Workers Compensation

d. General Liability

e. Homeowners

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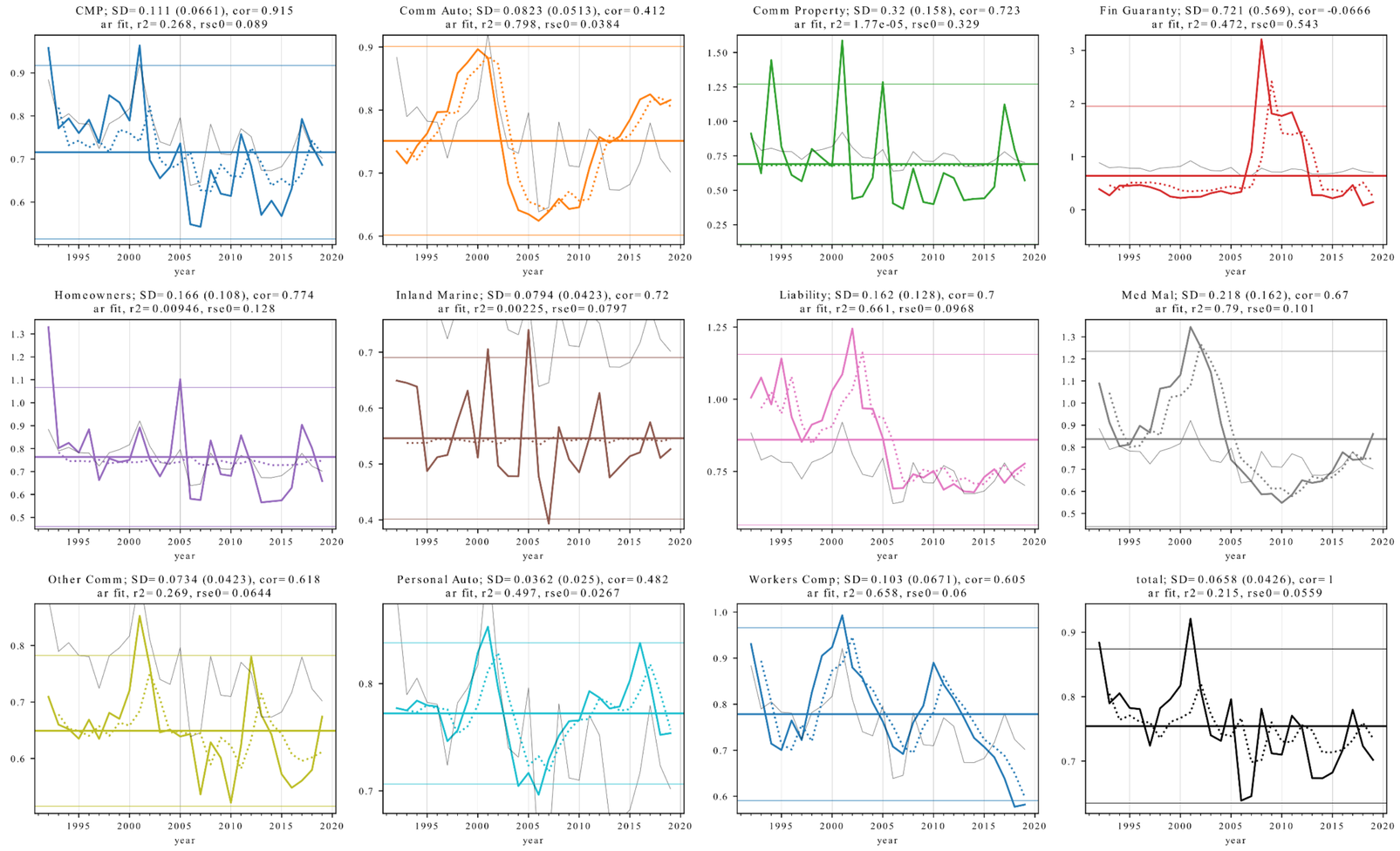
Direct Loss Ratio Time Series by Major Line



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Loss Ratio Time Series by Major Line

Title decoder:

CMP; SD=0.111 (0.0661),

cor=0.915 ar fit, r2=0.268, rse0=0.089

- Line; standard deviation
- Down-side semi-deviation is shown in parenthsis (explain)
- Correlation of the line with total on the first line
- (second line) shows the R^2 and residual standard error of an autoregressive loss ratio model

Interpretation

- When the rse is much lower than SD it suggests the market cycle is predictable
- Tends to occur in casualty lines (e.g., commercial auto, medical malpractice, private passenger auto, and workers compensation)
- The cycle for property lines tends to be idiosyncratic, for obvious reasons

Line Legend

- Thin gray line in each plot shows the total loss ratio, for context
- The horizontal lines show the mean (thicker) and mean $\pm\Phi^{-1}(22/23) = \pm 1.71$ standard deviations
  - If the loss ratios were normally distributed, we expect all observations from 22 years (1996-2017) to fall within these tram lines
  - They provide a surprisingly good estimate of the range of loss ratio, except for Financial Lines (which uses a different tick spacing, note)

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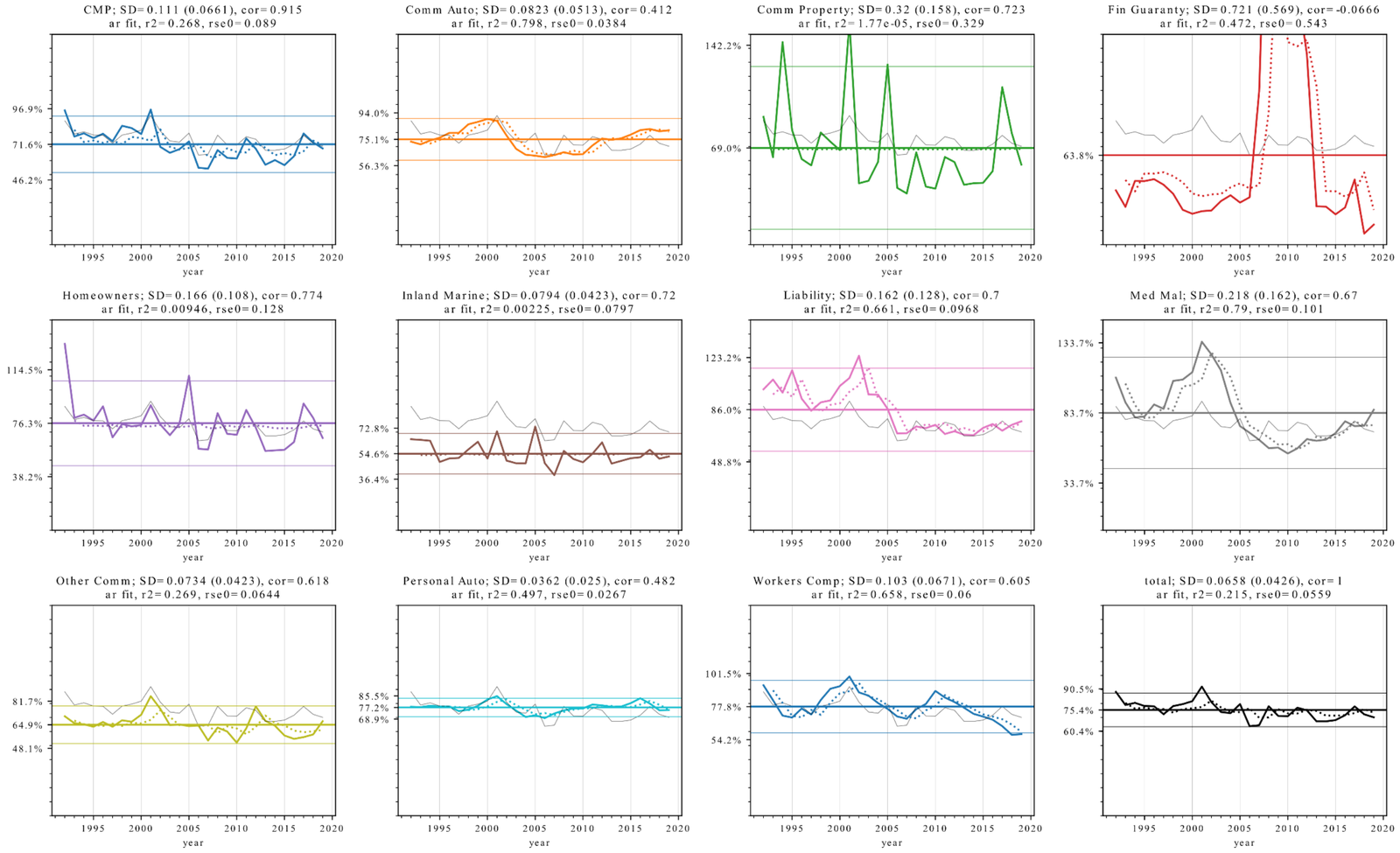
Direct Loss Ratio Time Series by Major Line

Loss Ratio Scale 0 to 150 Percent



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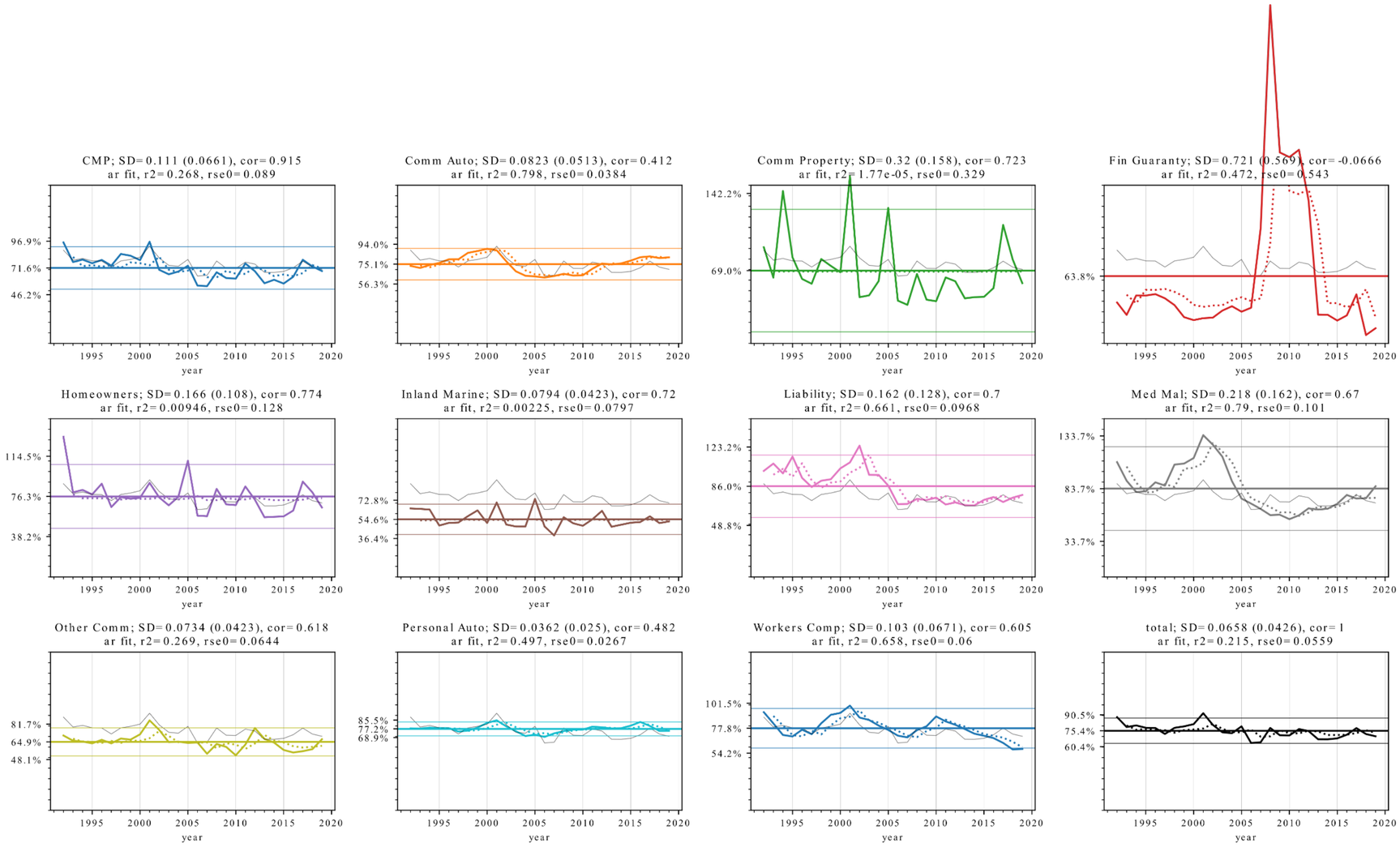
Some Lines Are More Volatile Than Others…



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Live Poll Question

Premium is riskier than loss for which of the following?

Answers

a. Personal Auto and Commercial Auto

b. Personal Auto and Homeowners

c. Commercial Auto and Workers Compensation

d. Personal Auto, Commercial Auto, and Workers Compensation

e. None of the above

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Direct Premium and Loss Dynamics

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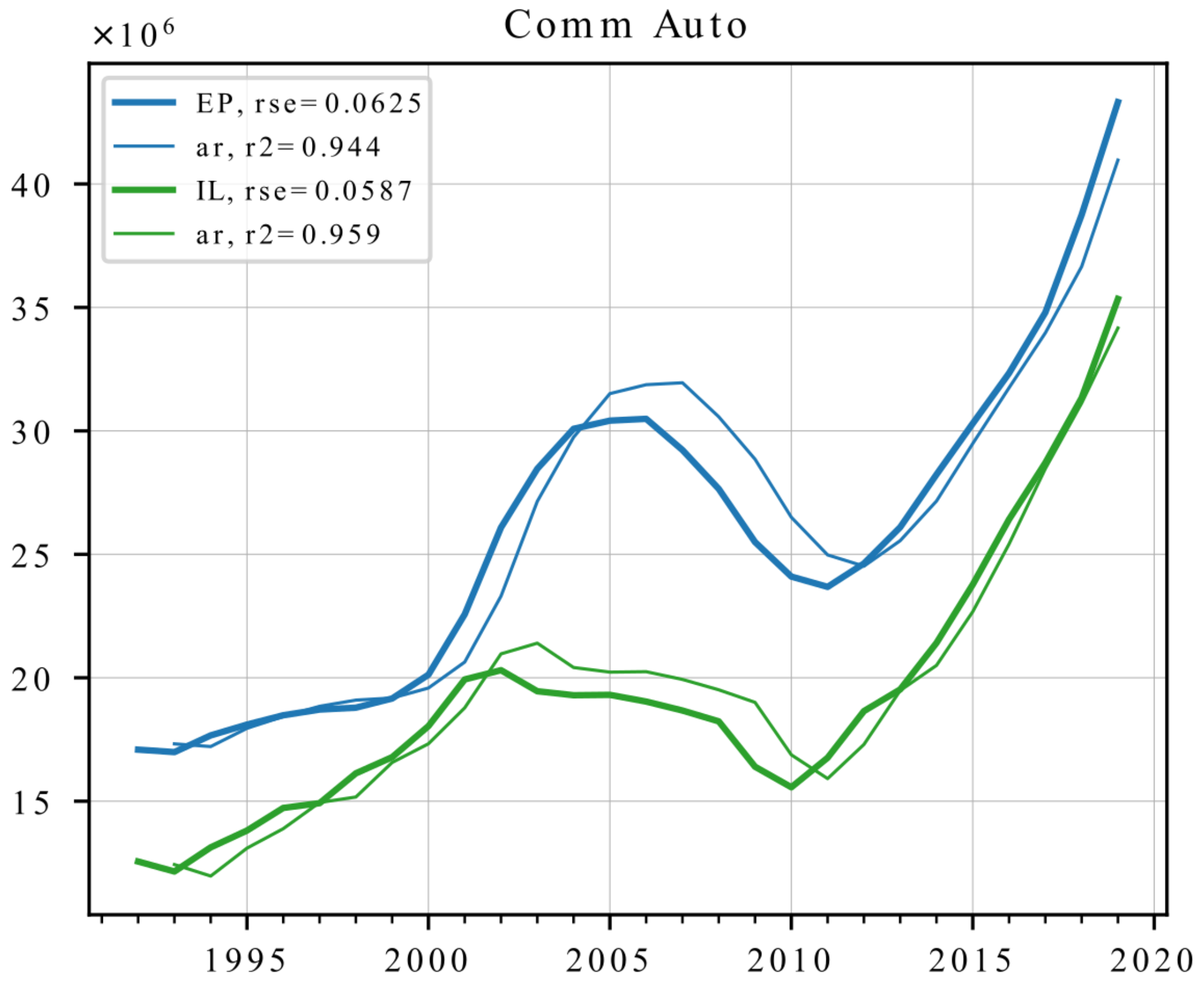
Direct Premium and Loss Dynamics



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More Resources

Stephen Mildenhall & David Wright on the Macro Environment In Insurance - YouTube

Stephen Mildenhall & David Wright on Macro History of Insurance Part 2 – YouTube

https://www.convexrisk.com/pirc

https://podcast.notunreasonable.com/

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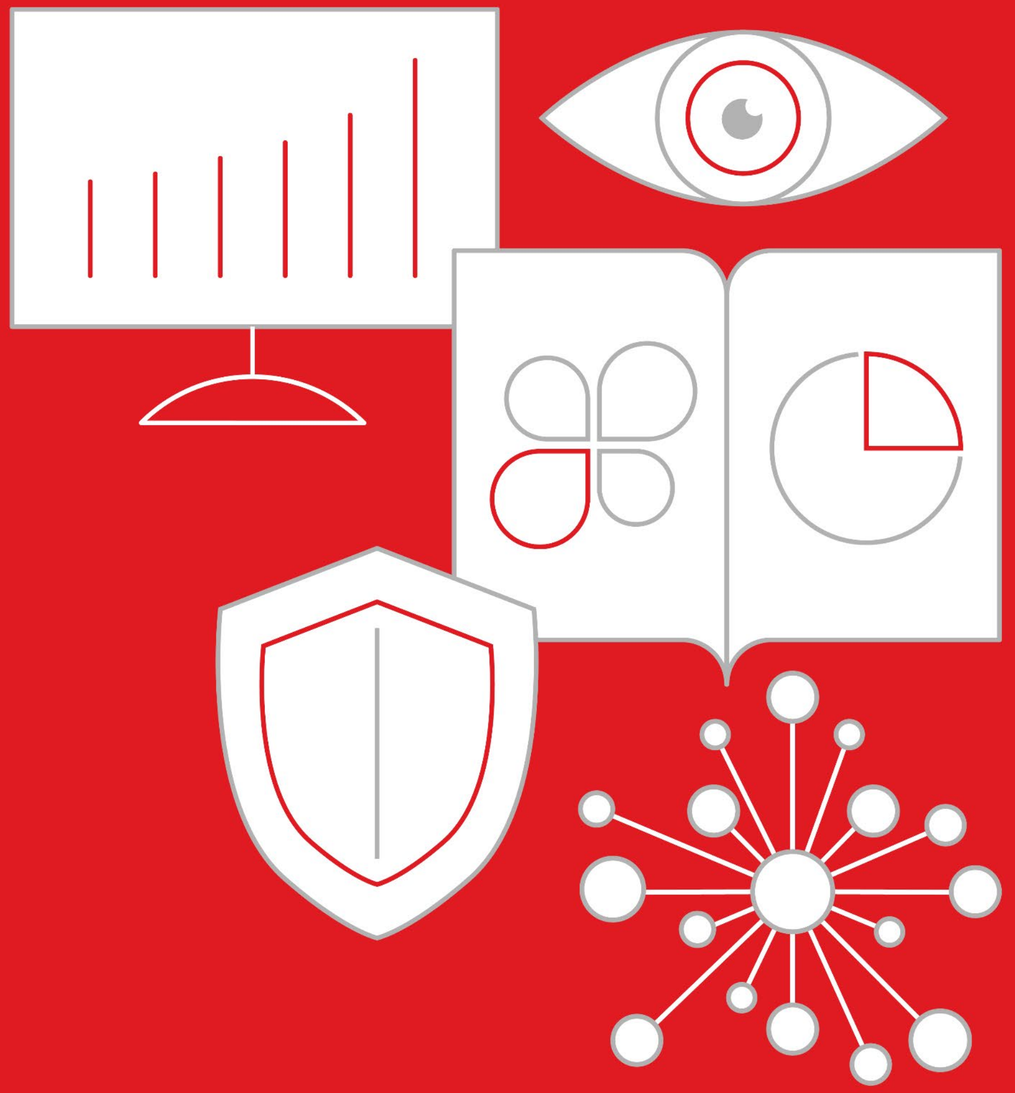
Q&A



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