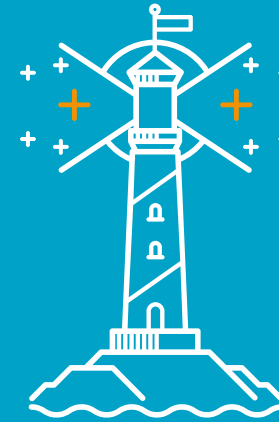


Embedding data science in non-life reserving

Insurance Data Science Conference

June 2023



LCP powering
possibility

Embedding data science into the reserving process:

- Automated identification of trends in reserving diagnostics
- Automating the selection of traditional reserving methods and assumptions, and prioritising assumptions for actuarial review
- Improving the setting of IEULR assumptions with time series forecasting



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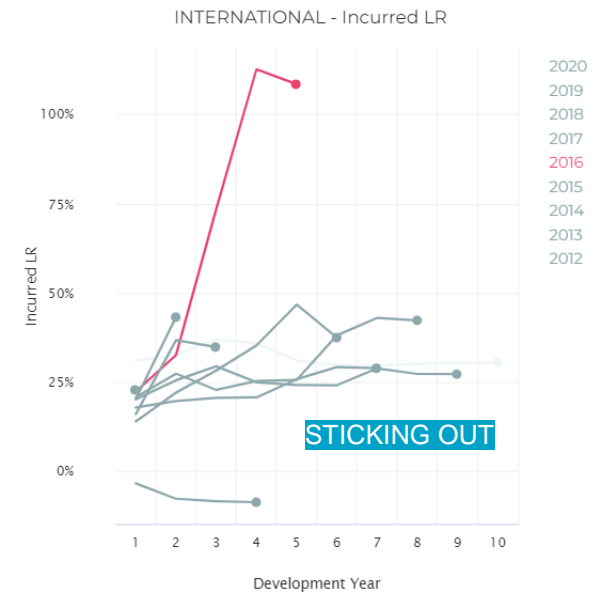
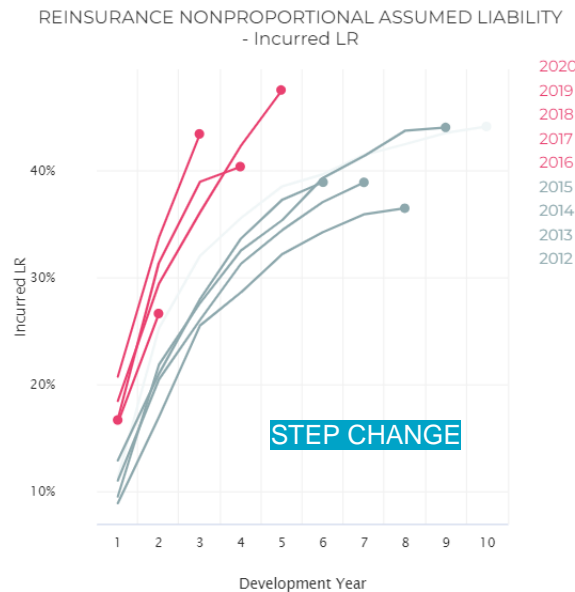
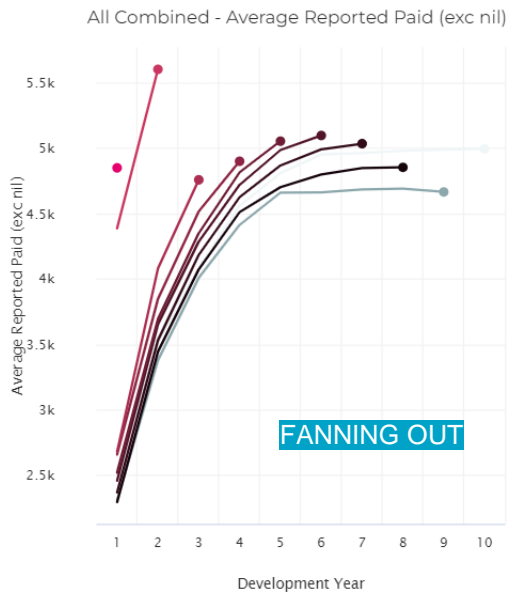
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Automated identification of trends in reserving diagnostics

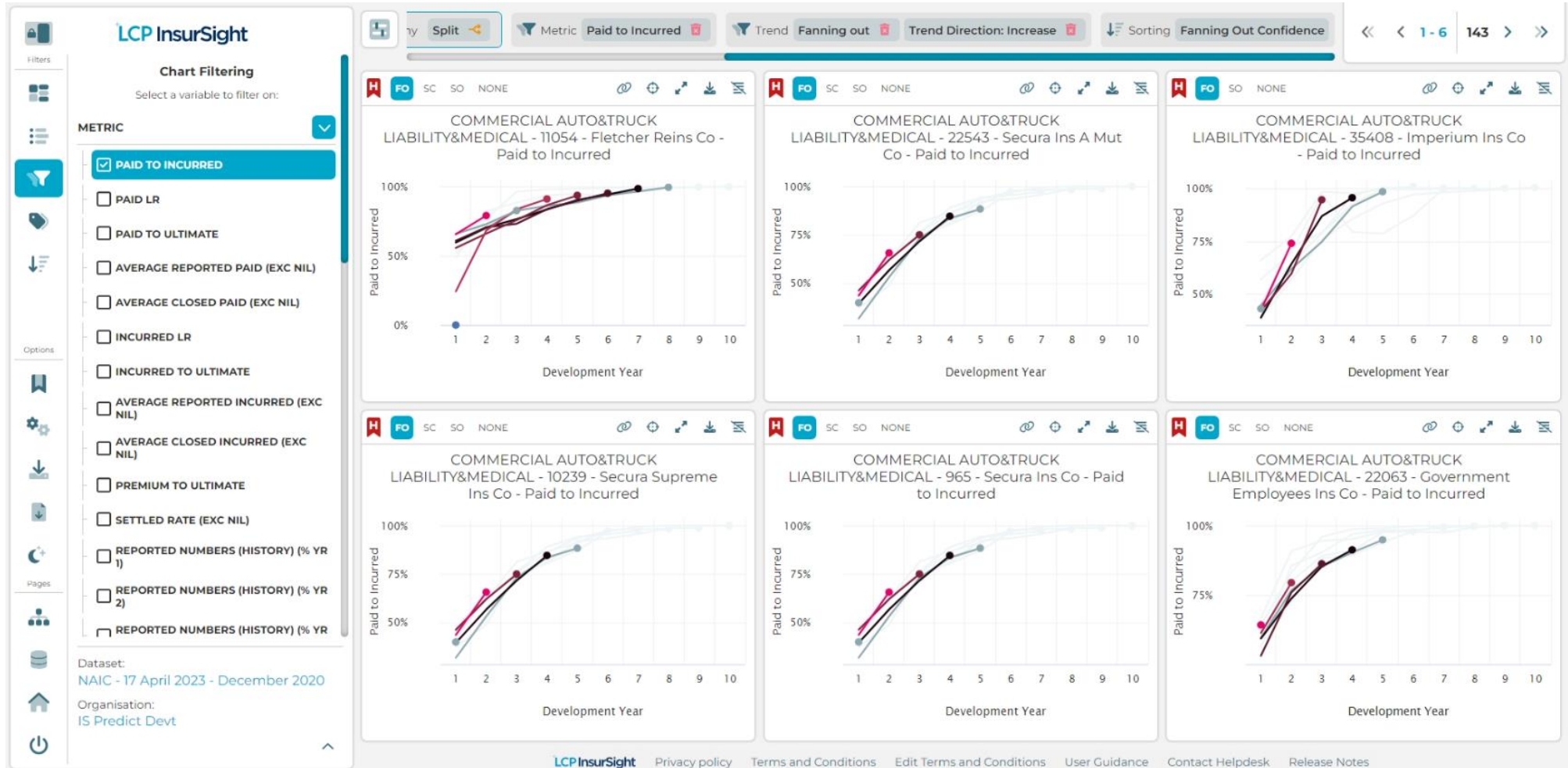
- Manual analysis to detect trends in a large book of business is a very time-consuming task
- Classification models can really help here

Our approach

- Random forest models trained to detect 3 key types of trends in reserving triangles:
 - Fanning out
 - Step change
 - Sticking out

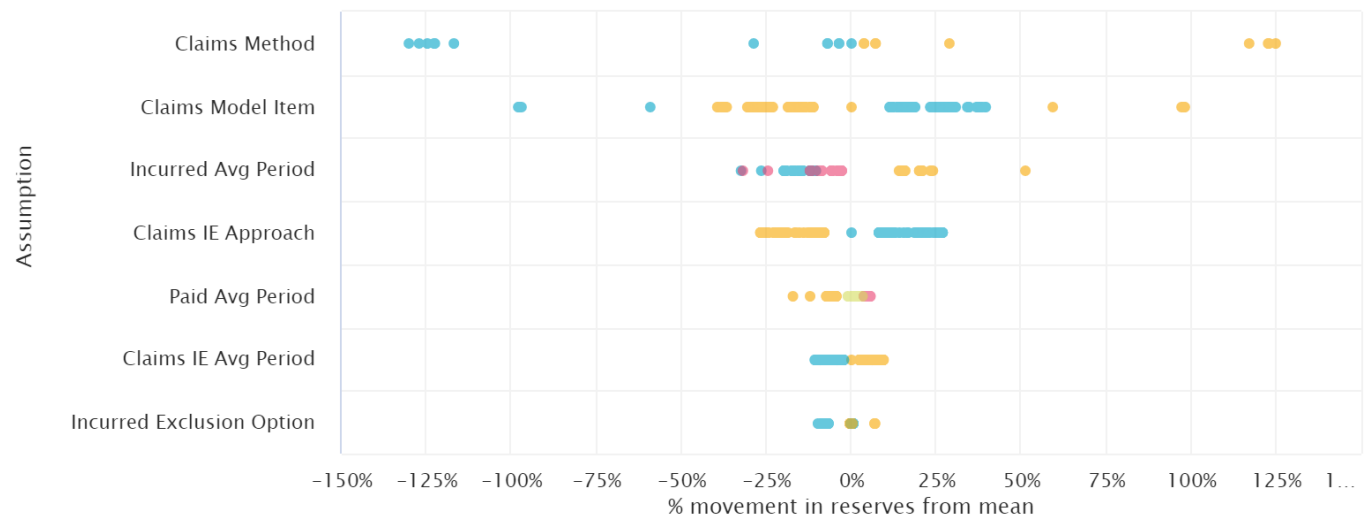
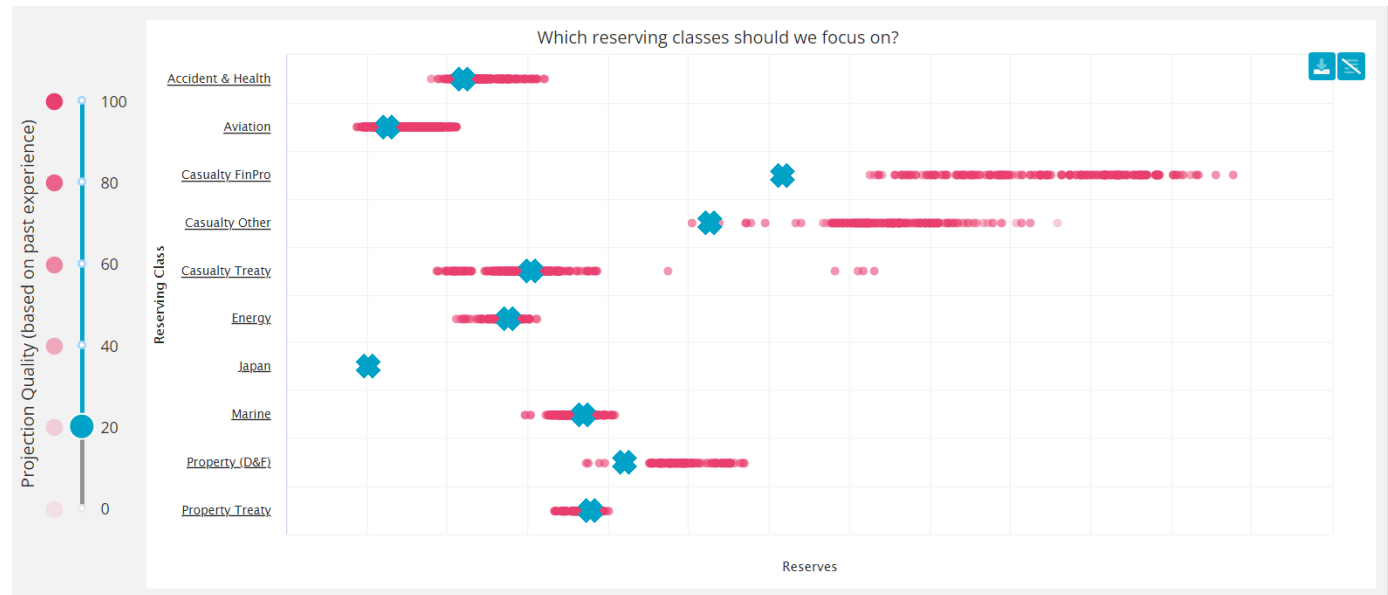


Automated identification of trends in reserving diagnostics



Identifying companies across the US insuring *Commercial Auto/Truck Liability and Medical* that are potentially under-reserved using the **Fanning Out** trend on the **Paid to Incurred** metric.

- Calculating reserves using a wide range of assumptions and methods
 - e.g. 5-year WA Incurred DFM
- Generate a “Universe of Reserves” for each class
- Projection quality – calculated through backtests – assigned to each combination of assumptions/methods
- Can immediately recognise classes with the most material uncertainty
- Drilldown further to identify which reserving assumptions are most material



Setting Initial Expecteds

- Weighted average of historical data does not always capture all trends present
- Seasonality usually added in manually

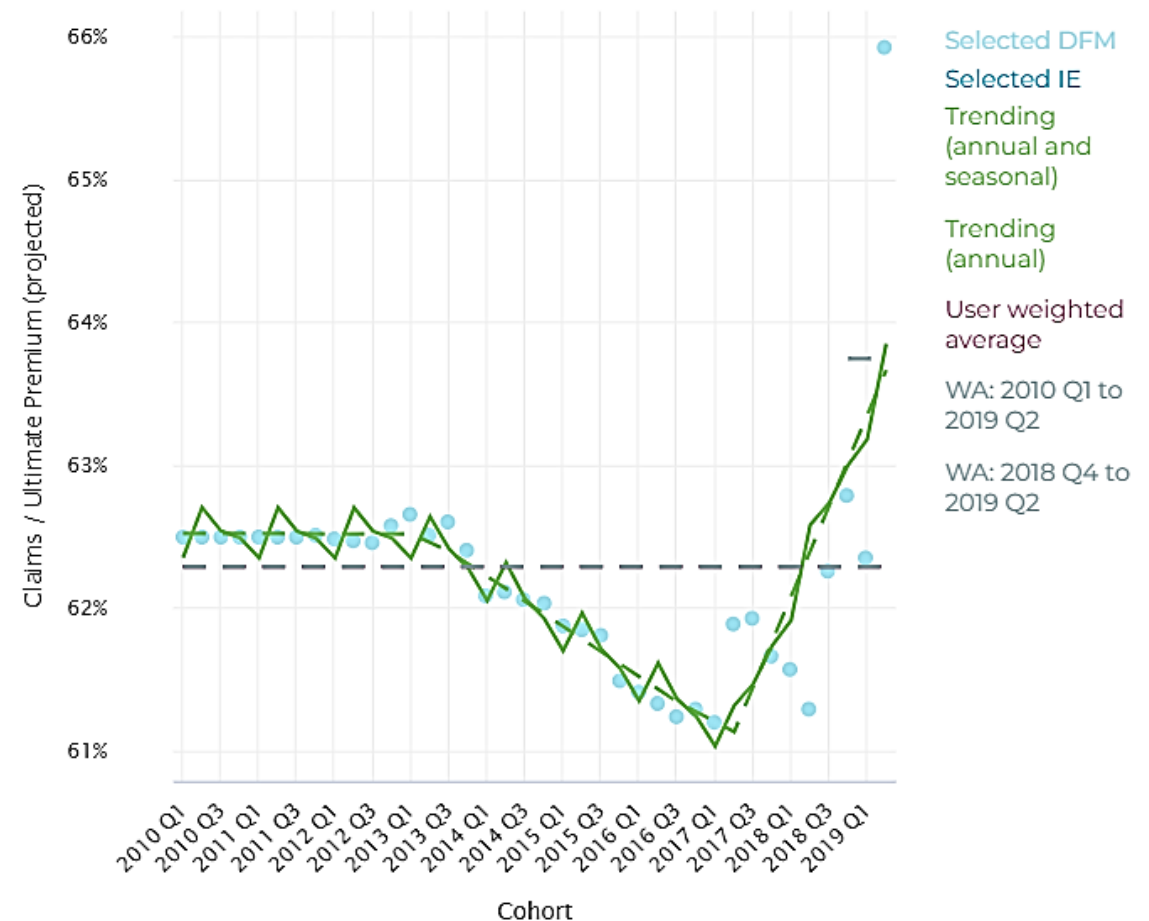
Time series forecasting models

- Can identify and model various different properties in a time series
 - e.g. sharp change in trend, seasonality

Usage for IE trends

- Prophet forecasting model
- Remove calendar year effects from model to aid in explainability of trends identified
- Automated model sensitivity setting for each reserving class using cross-validation across the time series

IE – Trending of On-levelled Ultimate Loss Ratios



Contact us



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