



Institute
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Steps towards the ideal reserving process

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2 September 2021

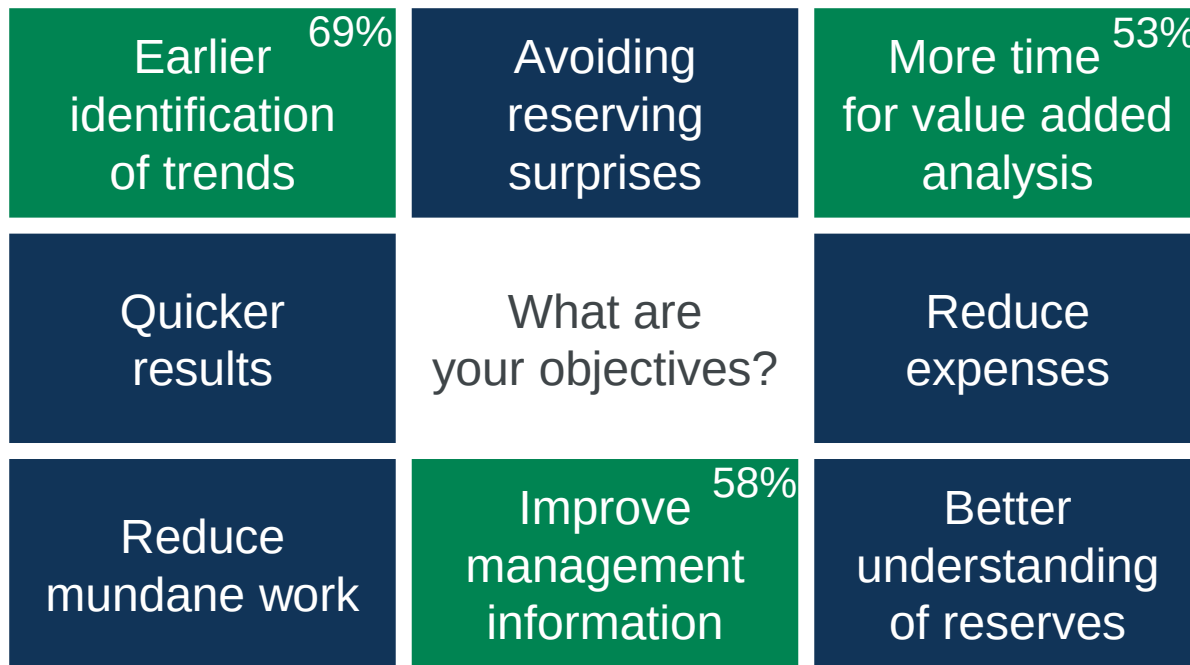


Agenda

- The ideal reserving process
- Opportunities for machine learning to level-up reserving
- Case study: Reserving diagnostics
- Case study: Automated first cut results

UK firms' top reserving objectives

We asked which of the following are top priority.



The ideal reserving process

Reserving calculations:

Data



- Single reliable source
- Ability to “drill down” or “slice and dice”
- Enriched with external data

Process



- Automation to give focus on value add
- Faster process, but few targeting “real time”
- Early warning flags for trends and anomalies

Analysis



- Majority satisfied with traditional methods
- Easier sensitivity testing and what-if scenarios
- Ability to drill down (into results as well as data)

The ideal reserving process

Wider reserving process:

Communication



- Increased focus on story behind the numbers
- Use of scenarios to explain uncertainty
- Some firms targeting a reserving dashboard

Feedback loops



- Quicker identification of drivers of performance
- Reserving linking to other business functions, incl. pricing, claims, strategy and risk

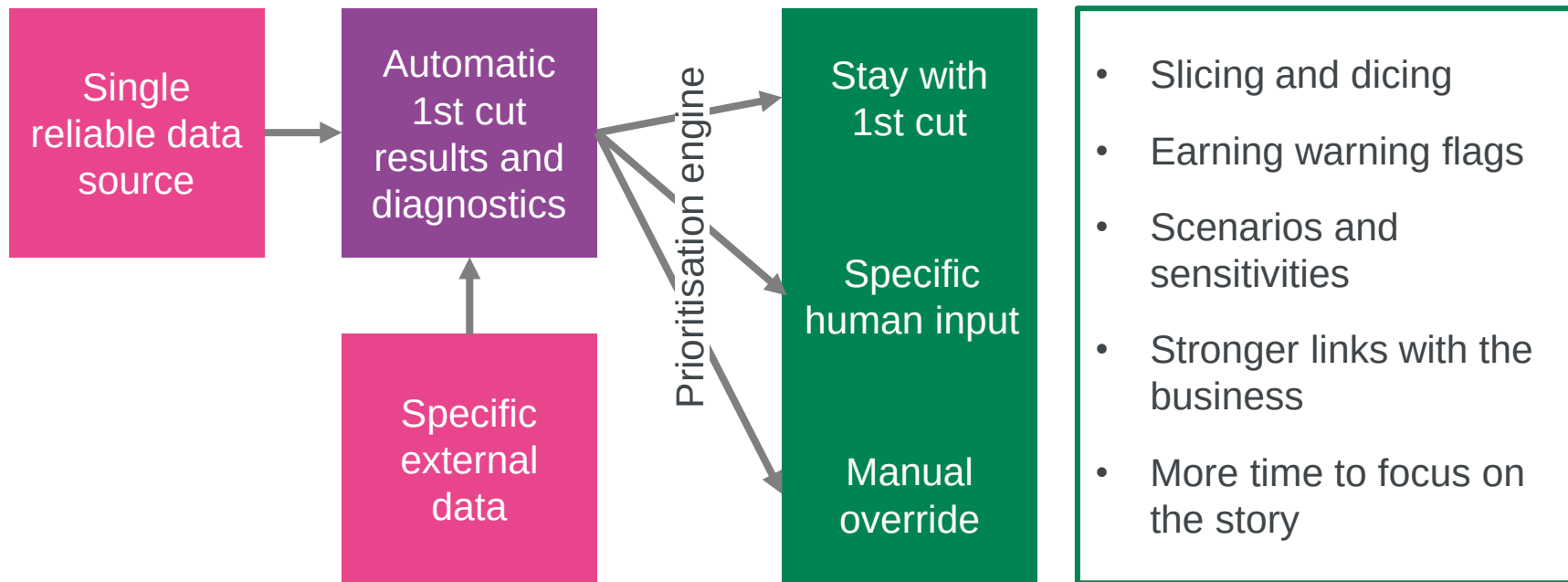
Governance



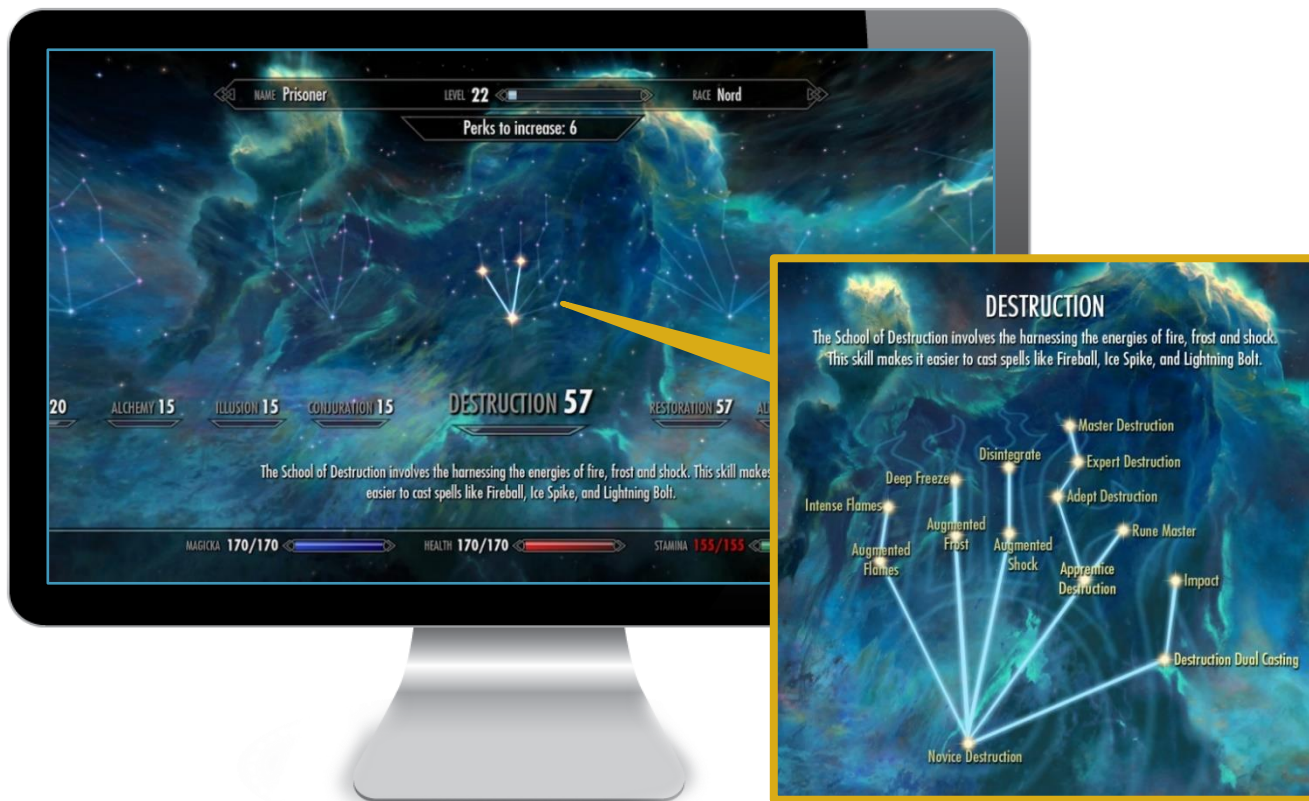
- Most firms satisfied governance working well
- Majority of challenge by sub-committees
- Board focus is then on what numbers mean

The future of reserving

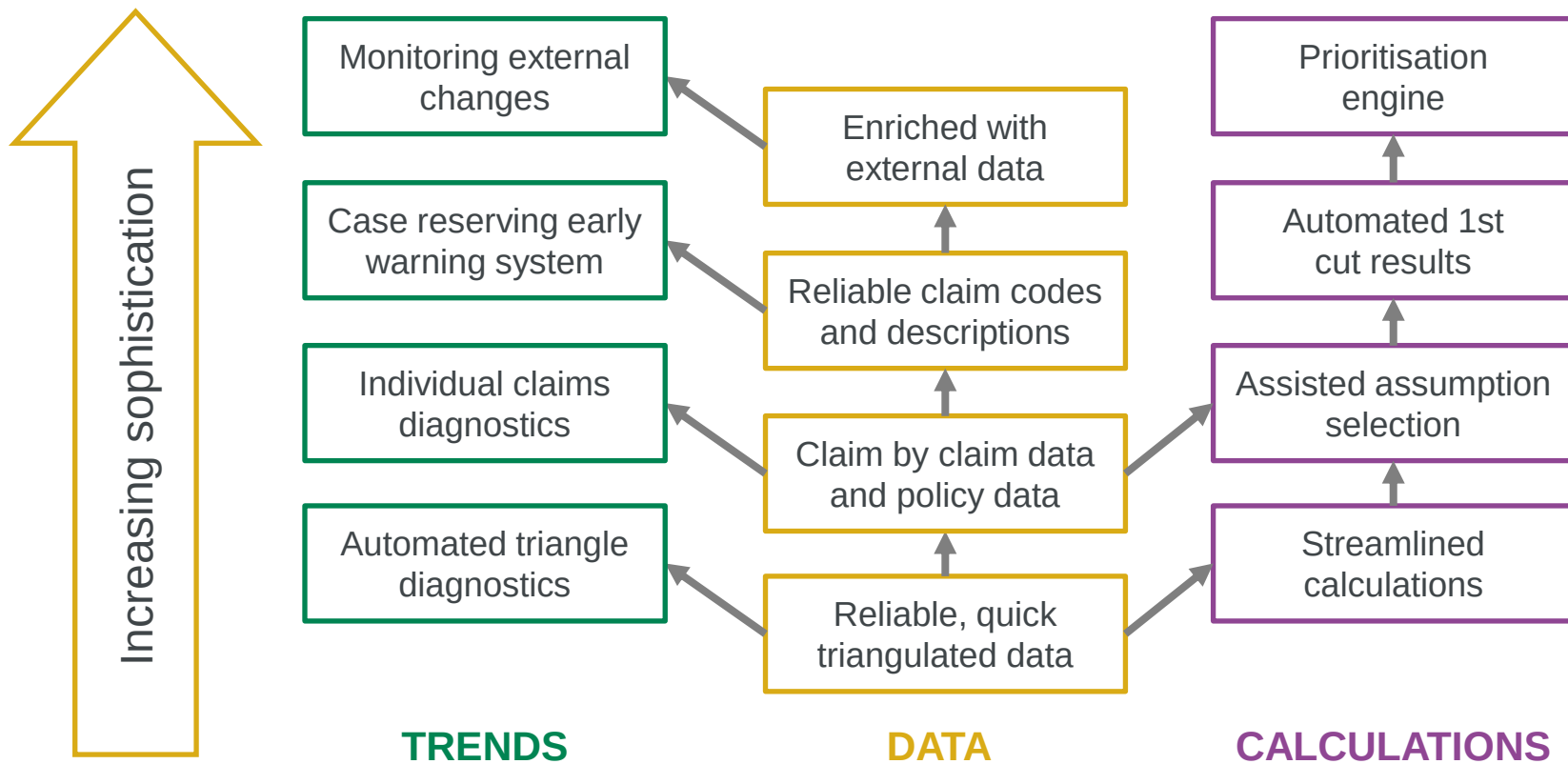
What does the ideal reserving process look like?



Levelling up...



Setting your “levelling-up” path for reserving



Case study 1: Reserving diagnostics

Traditional



- Manual review of triangles
- Time consuming (ie, hours) to review all triangles, so typically consider a selected sample
- Potential to miss features

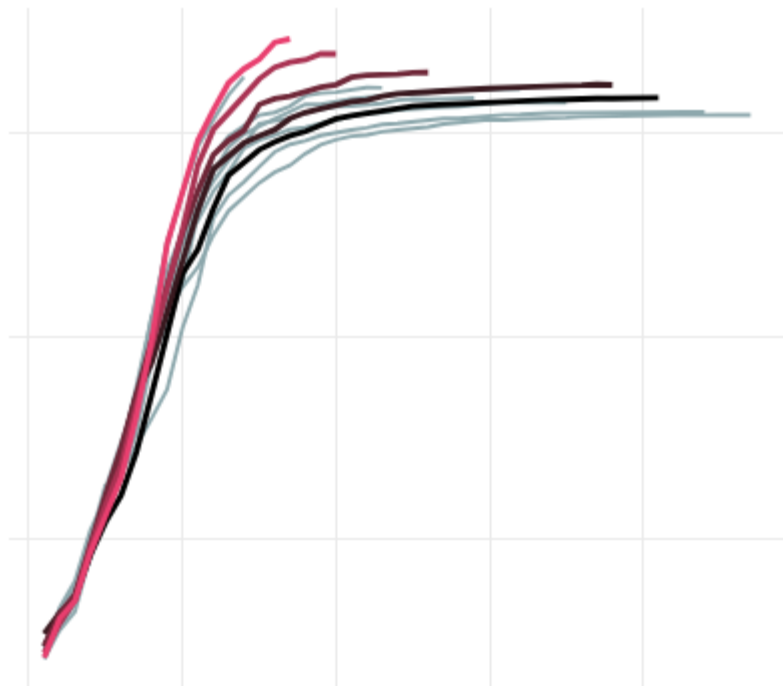
Levelled-up



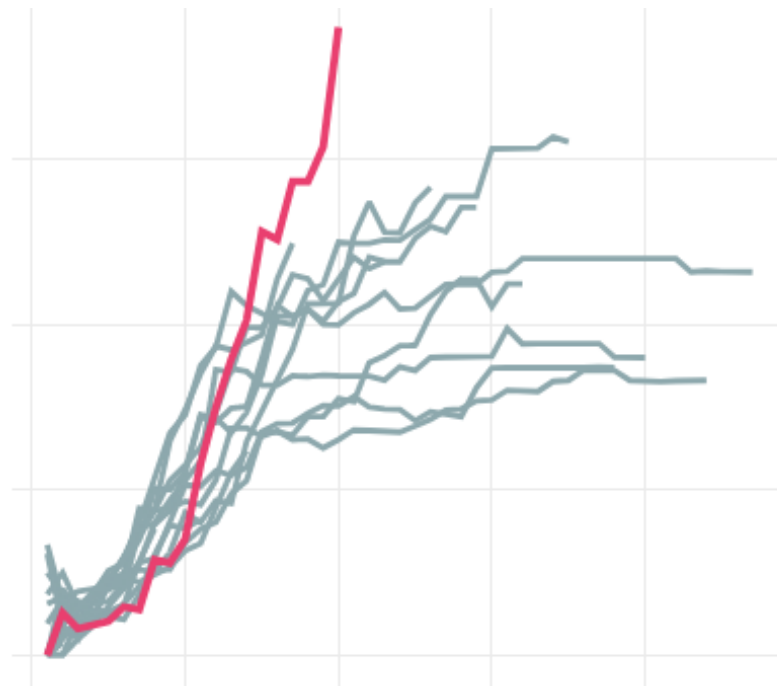
- Automated approach, which prioritises top triangles to review
- Quick (ie, minutes), scalable and ability to drill down
- More time to understand the “why?”

What are we looking for?

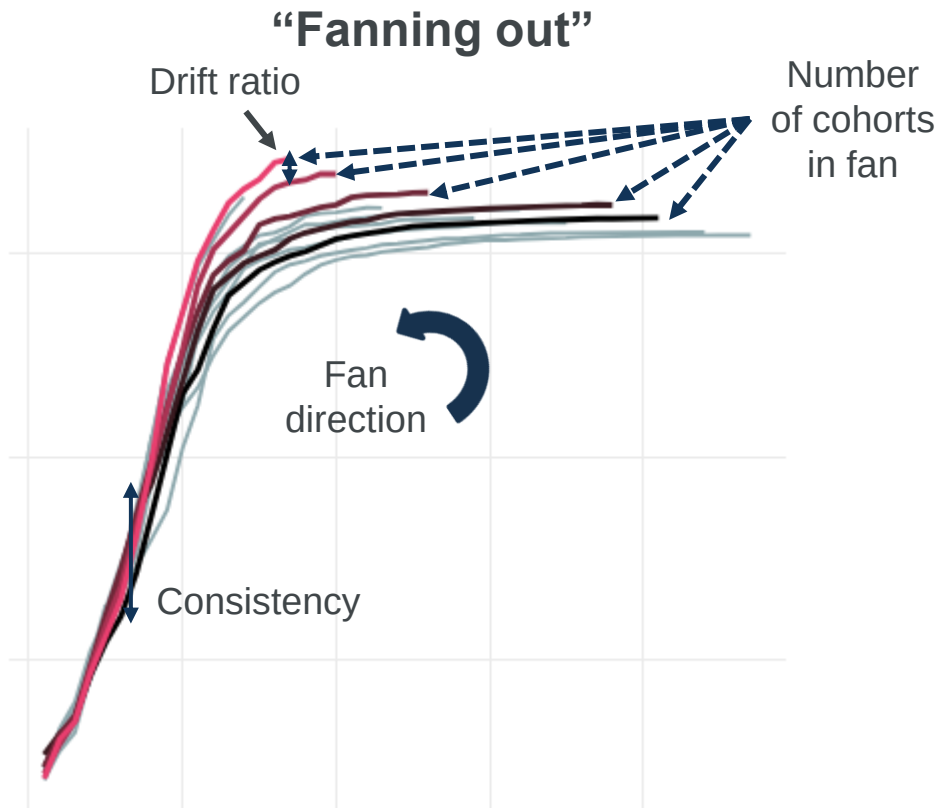
“Fanning out”



“Sticking out”



What are we looking for?



Feature engineering:

Using domain
knowledge of the data
to create features
that make machine
learning algorithms
work

Integrating ML effectively



ML highlighting trends for easier identification (providing insight)

Slice and dice and drilldown to understand the drivers of trends (flexibility)

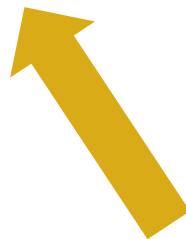
Prioritise metrics to review using trend identification (human overlay)

A systematic approach to diagnostics

- % Non Zero Reported
- Settled Rate
- Incurred as % of previous yr Ultimate



- Incurred Loss Ratio
- Paid to Incurred
- Incurred as % dev yr 1
- Incremental Paid to Outstanding



- Paid to Ultimate
- Triangle of Ultimates as % of dev yr 1
- Incurred to Ultimate



Each step of reserving process can benefit from systematic approach to triangle based diagnostics

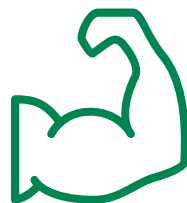
Case study 2: Automated first cut results

Traditional



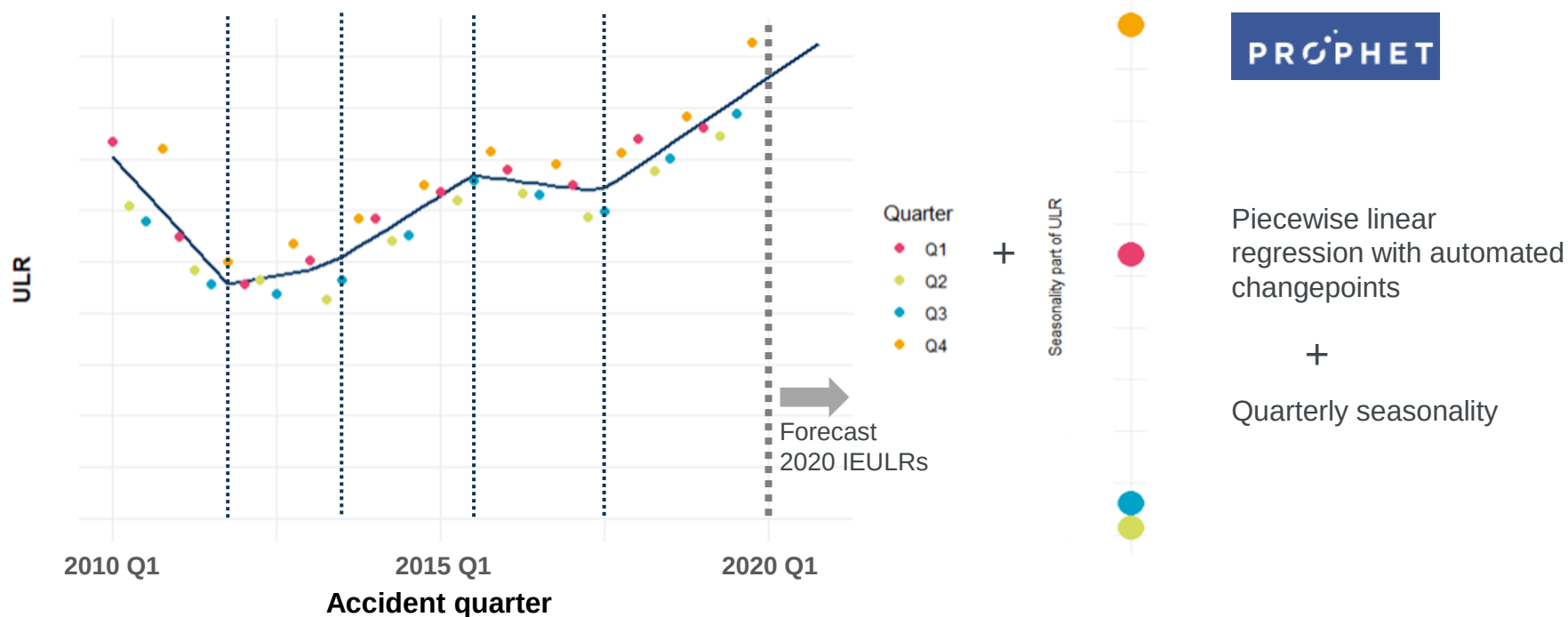
- Manual selection of reserving assumptions and methods
- Time consuming (ie, hours) to apply multiple methods well for a large number of classes
- Little quantitative information to justify one assumption or method over another

Levelled-up

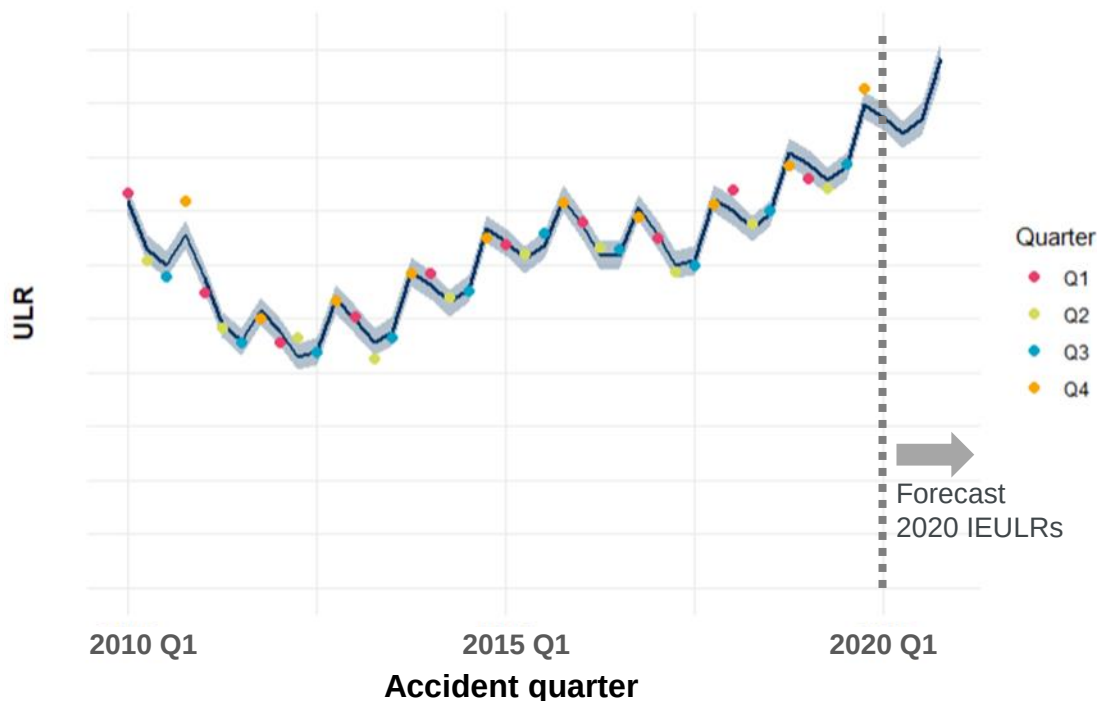


- A new automated reserving engine, prepares reserves in less than 5 minutes
- Engine scores the quality of each reserve estimate for a range of methods and assumptions
- Scores used to prioritise classes to review

ML sets key assumptions – IEULR Example



ML sets key assumptions – IEULR Example



Benefits

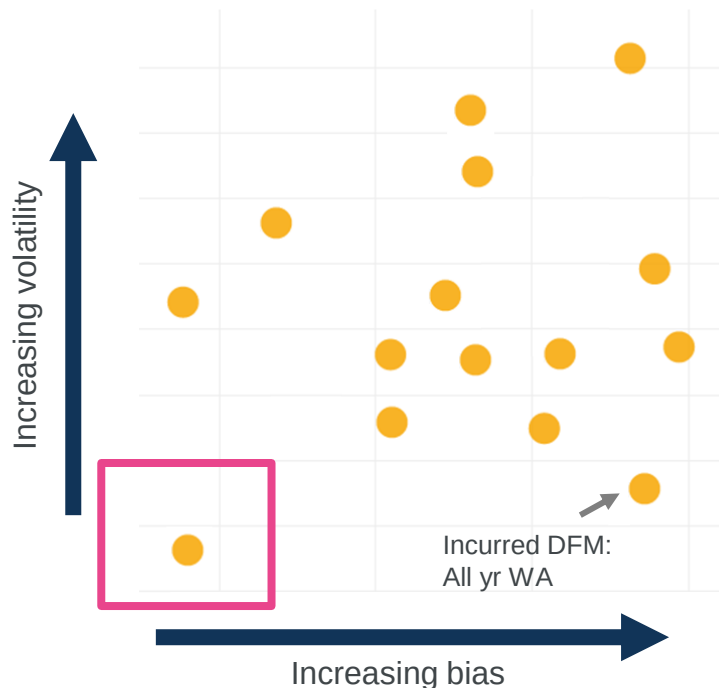
- Consistent, objective and easily scalable.
- More accurate predictions.
- Can be run alongside the existing process.
- Used to identify and challenge where assumptions are inconsistent with purely data driven view.
- Improved understanding of volatility in ULRs, feed into UW Risk.
- Other applications, eg as part of claims diagnostics monitoring.

Scoring the quality of reserve estimates

Volatility

Options include:

- Rollforward volatility
 - Movement in ultimates between analyses
- Sub sample volatility
 - Repeat the reserving process on samples from the full set of individual claims data



Bias

Options include:

- Historical AvsE. Overlaid with business knowledge:
 - ‘Recent experience is different’ -> Focus on recent diagonals
 - ‘Nothing has changed’ -> More diagonals assessed
- ‘Wisdom of crowds’
 - Difference from average across all estimates

Method and assumption set is “high quality” where it has low volatility and low bias

Any questions?

- The ideal reserving process
- Opportunities for machine learning to level-up reserving
- Case study: Reserving diagnostics
- Case study: Automatic first cut results

Questions

Comments

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