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# Can you trust your reserving?

Reserving validation under COVID-19

Presented by William Diffey, Malcolm Cleugh, Laura Hobern and Ed Harrison  
on behalf of members of the TORP Working Party

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Shaping the future  
Networking  
Professional support  
Enterprise and risk  
Learned society  
Opportunity  
International profile  
Journals  
Supporting

# Agenda

1. Reserving validation and why we need it
2. How COVID-19 has brought validation into focus
3. Your validation toolkit
4. How to deploy your validation toolkit to best effect
5. Feedback and governance
6. Reserving validation framework
7. Where next?





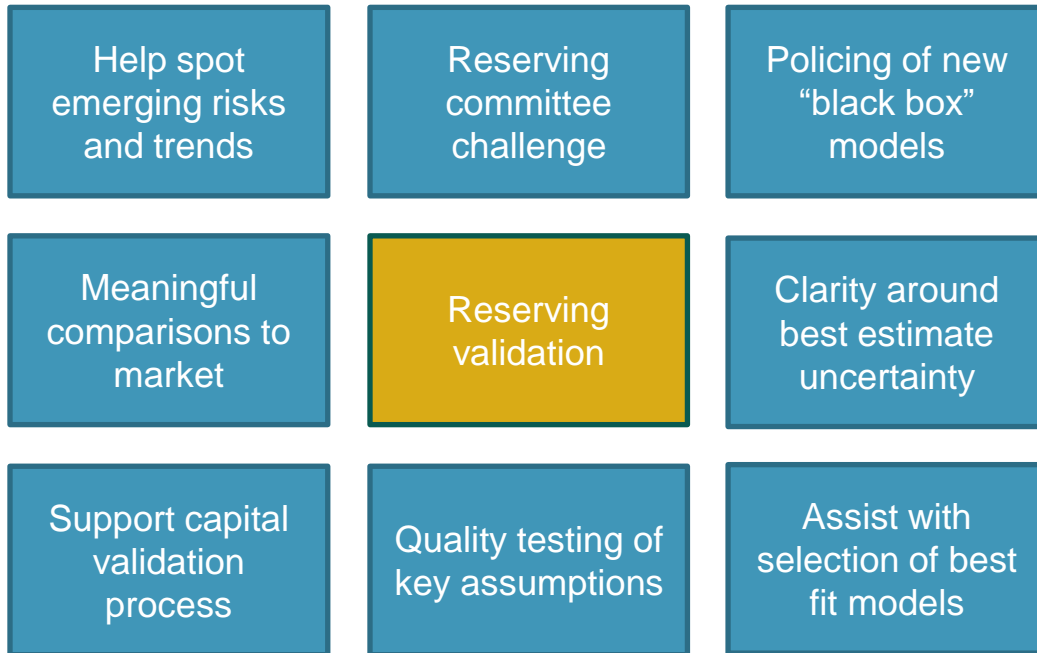
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# Reserving validation and why we need it

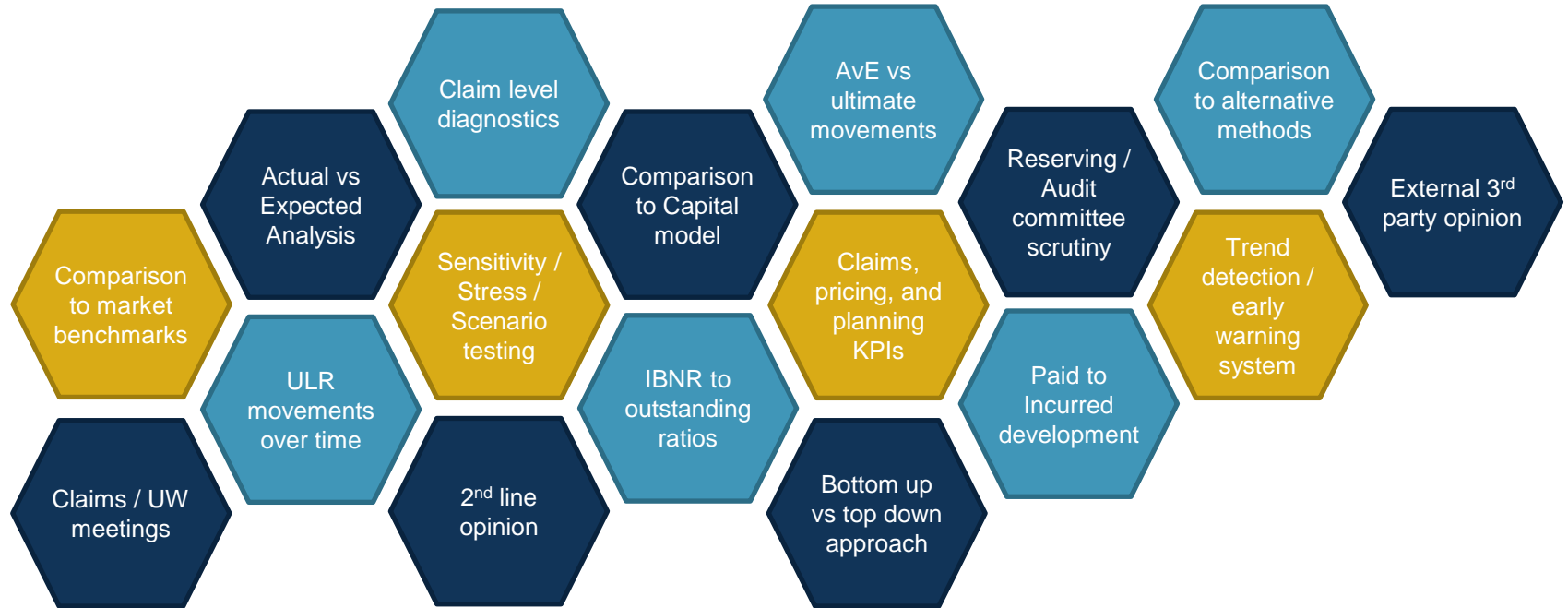


# What is reserving validation?

- Reserving validation is about ensuring results from the reserve review are appropriate.
- It can take many forms, from simple checks to full independent reviews.
- Done well it adds value to the reserving process, enhances governance and increases confidence in the results.



# Popular validation techniques



# Why focus on reserving validation?

- Done well, it can add a lot of value to the reserving process, improve governance and increase confidence in the results.
- **But....** reserving validation often has lower priority than capital validation and is carried out in a less structured way (in our view).

Three key issues are:

Lack of validation plan and framework

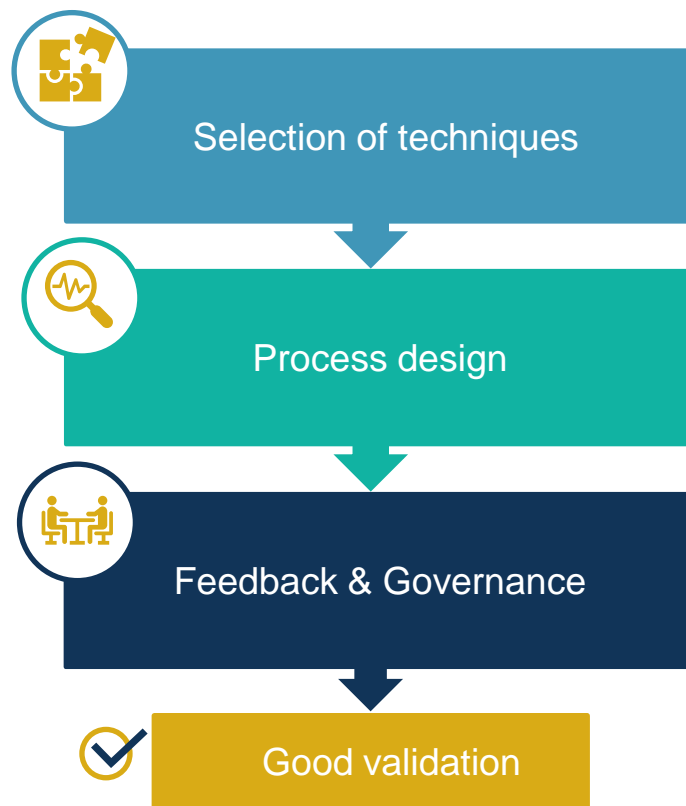
Scattergun approach to applying validation tools

Prone to focus on “known” problems

# Introducing a framework

- Most insurers complete some form of reserving validation on a regular basis.
- However, to improve the effectiveness (and efficiency), we believe a validation framework should be introduced.

***COVID-19 has brought into focus the limitations of our current reserving validation.***







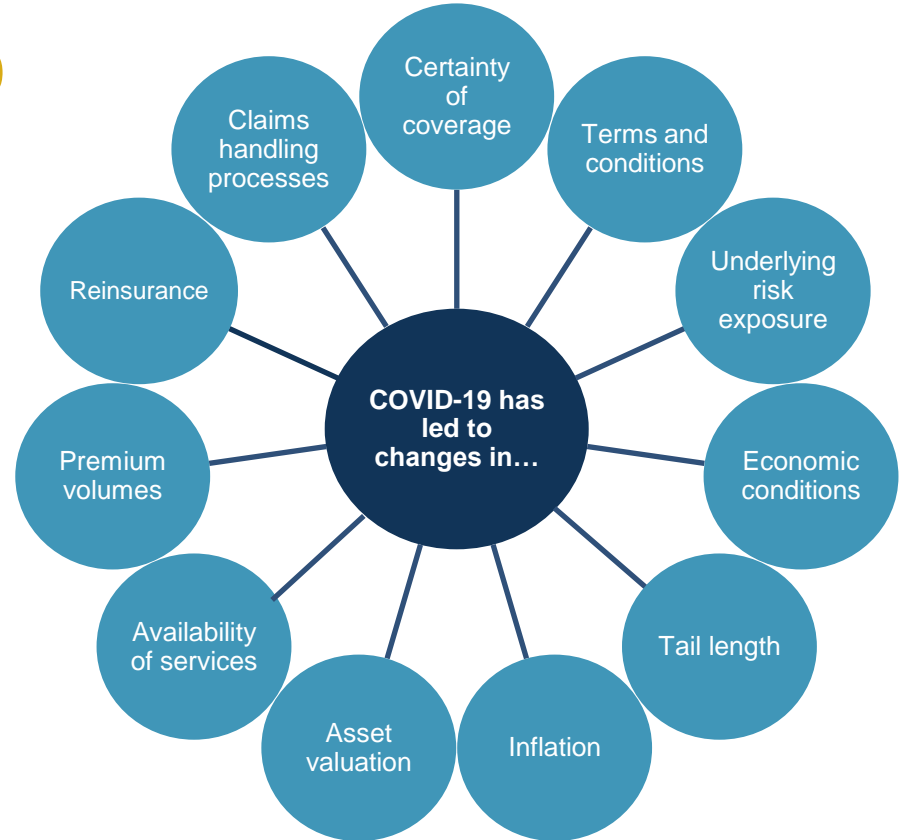
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# COVID-19

What's the big deal for reserving validation?

# Complexities of COVID-19

- Many standard validation techniques rely on the assumption that business is relatively stable and will behave in the future as it has in the past.
- COVID-19 significantly increases complexity in validation due to multiple changes in the data, processes and even the underlying risk profile.
- Changes are rarely allowed for adequately in automated validation techniques.
- It is more important than ever to have validation processes in place that help to understand the uncertainties and support robust challenge.



# Reserving validation in a COVID-19 world

- Each issue highlighted is not unusual in itself. Reserving Actuaries are used to dealing with such issues during the reserving process and validation:
  - Ogden rate change, a soft market, a global recession, changes to legislation, social inflation and major catastrophes.
- The fact that they have all happened at the same time and impact multiple lines is what makes them particularly challenging and **brings into focus the limitations of our current validation techniques.**
- Additional methods that are likely to be required include stress and scenario testing:
  - Can be time consuming, and will be an additional challenge in an already tight timetable.
- Ensure that validation is carried out **with sufficient time to investigate/address any issues** and that validation results are **communicated clearly.**
- Validation plays an important part in ensuring the **overall result is balanced** as well as individual assumptions or segments.
- Reserving validation should be **a useful tool for management challenge.**



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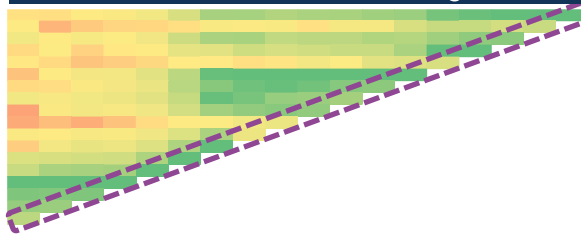
# Your validation toolkit

Examples from the real world

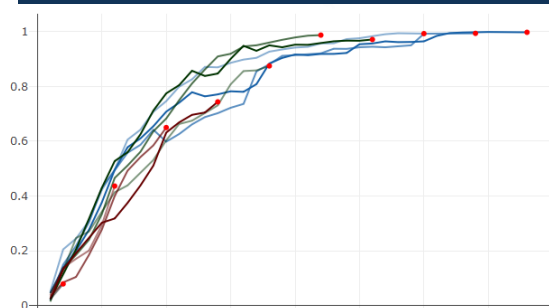
# Validation : Diagnostic Techniques (1)

*Our current reserving toolkit includes many diagnostic techniques we can use to validate claims data trends and to see whether the claims data development or comparison to previous reserve selection have been impacted by COVID-19.*

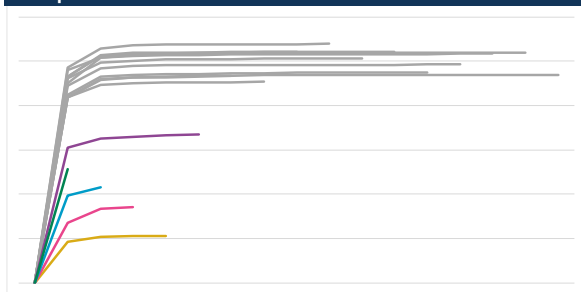
Incurred incremental claims triangle



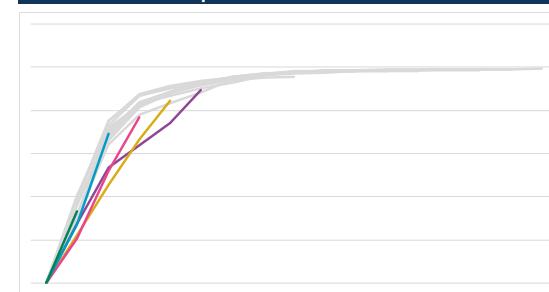
Paid / Incurred ratio



Reported Counts



Settlement Speed



## Diagnosics:

- Analysing these diagnostics, how does the latest data period compare to recent history?
- Do we see a speed up or slow down in pattern?
- Changes may be arising from direct COVID-19 influences e.g. frequency or severity, but are other factors influencing the trends as well? e.g.
  - Claims handling operational changes.
  - Product and mix changes.

## Alternative Methods and Data Cuts:

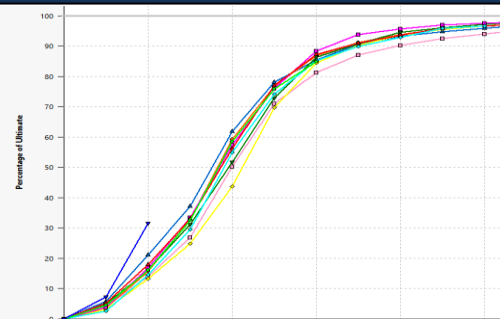
- Are different splits of the data appropriate?
  - E.g. Household : changing frequency by claim type as people work from home. Lower theft and EOW but more Accidental Damage.
- Different methods:
  - Chain Ladder.
  - BF.
  - Frequency x Severity.
  - Loss Ratio.
  - Combination of methods varying by accident period.



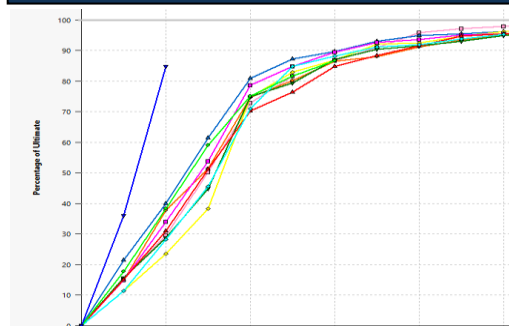
# Validation : Diagnostic Techniques (2)

Our current reserving toolkit includes many diagnostic techniques we can use to validate claims data trends and to see whether the claims data development or comparison to previous reserve selection have been impacted by COVID-19.

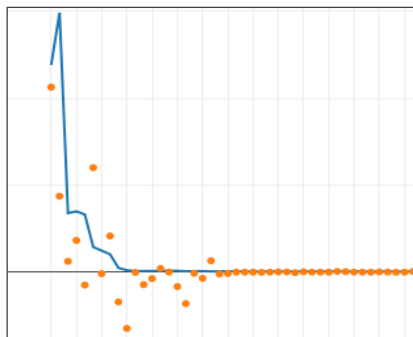
## Paid as % Ultimate



## Incurred as % Ultimate



## Actual vs Expected



- **Blue line** is the expected incurred (or paid) change from the previous period reserve model for the next (i.e. current) data diagonal.
- **Orange dots** being the actual incurred (or paid) data change seen in the diagonal for the current period.

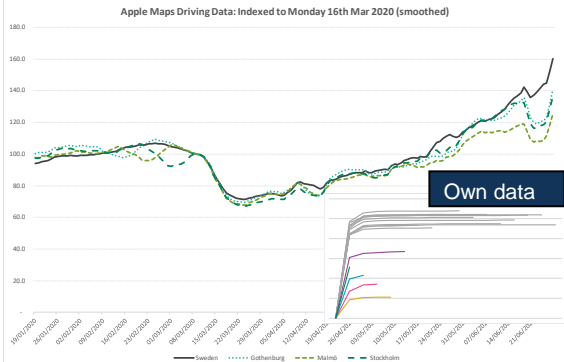
### Key points:

- Analysing these diagnostics, how does the latest data period compare to recent history?
- Do we see a speed up or slow down in pattern?
- Changes may be arising from direct COVID-19 influences e.g. frequency or severity but are other factors influencing the trends as well? e.g.
  - Claims handling operational changes.
  - Product and mix changes.
- Actual vs Expected (AvE) gives an indication of how 'good' the previous period reserve model was in predicting the current quarter incremental data change.

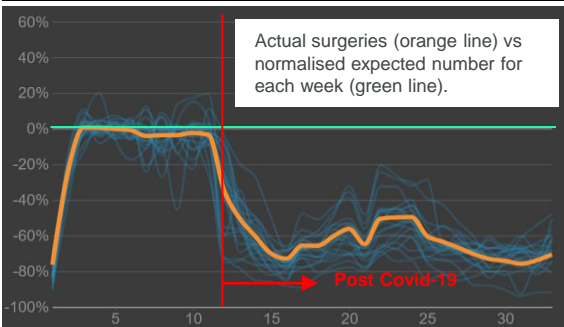
# Validation : External Benchmarking

External market data can be used to benchmark data and as a comparative to trends you may be seeing in your own company data.

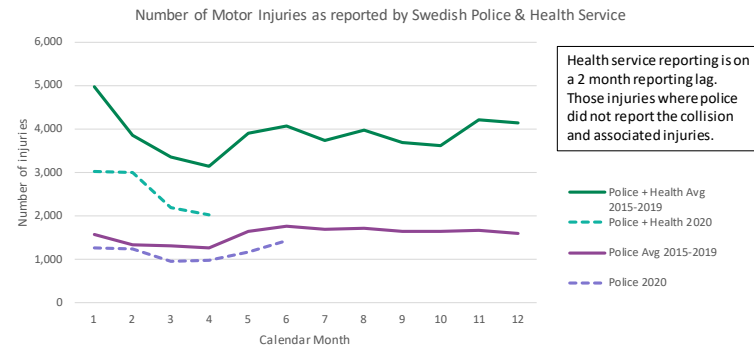
## Apple Maps driving data



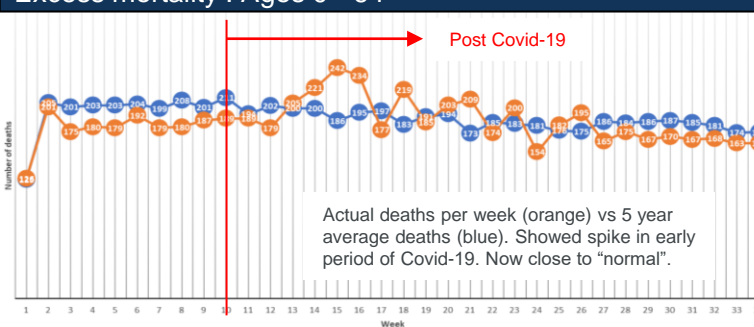
## Number of performed surgeries



## Market motor collision – injured parties



## Excess mortality : Ages 0 - 64



## Key points:

- These are all examples of external market statistics available in Sweden. Similar available in other countries.
- Allow you to compare your company claims experience to wider market data and also trends vs previous calendar years.
- E.g. Own company reported counts (claim frequency), with Apple Maps data (damage, collision), or Market injury data with own company Third Party Injury.
- Medical treatments for Workers Comp, Personal Accident etc. vs Health Service treatments and operations.

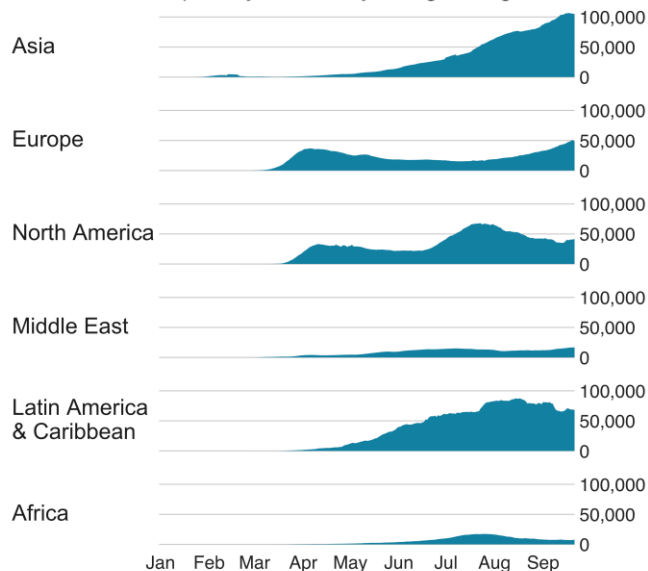
# Validation : Scenario Analysis

Scenario analysis can be used to validate the reserves, by generating various scenarios. The ultimate impact on general insurers will be a function of infection rate, government actions and economic impacts, which are interrelated.

## Current level of infection and possible future trajectory

### COVID-19 cases compared by continent

Number of cases per day, seven-day rolling average

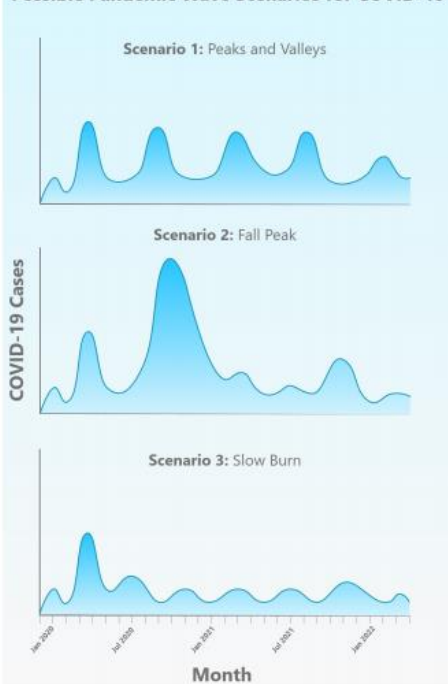


Oceania cases excluded as too low to register on scale

Source: ECDC and national public health agencies, data to 21 Sep



### Possible Pandemic Wave Scenarios for COVID-19



### Key Points:

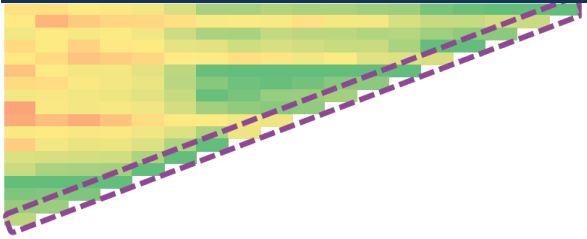
- Starting from the current infection rate, develop different scenarios of how future infection rates will rise and fall.
- Consider different patterns, infer from experiences so far and experience from other countries who are ahead of the curve.
- Link to the timing of events such as the introduction and easing of government restrictions.
- Government restrictions will influence economic activity and policyholder behaviours.
- Management actions: risk appetite, and it's wish to reduce damages preserve reputation by settling disputed claims.
- Longer term trends: how will claims trends revert smoothly back to the norm or will there be a new norm?
- Scenario analysis has the benefit that it can potentially generate a range of reserves, which can readily be used as new reserves as situation changes.
- Outlook for scenarios will depend on feasibility and speed of vaccines. Latest speculation is that UK will have a vaccine implemented for general adult population by March 2021.



# Example: The value of multiple validation approaches

## 1. Actual vs Expected

Heat map - Incremental incurred claims



- A clear 'improvement' trend shown in the AvE does not always indicate the ultimate results will be better than expected.
- Need to understand the drivers of change.

## 2. Granular KPIs

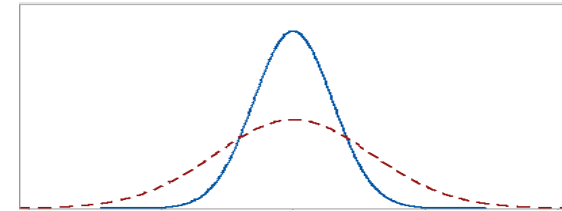
Development chart – claims notified



- Granular diagnostic KPIs will help you understand these drivers.
- Comparing to market data and benchmarks can provide additional insight.

## 3. Sensitivity testing

Distribution of reserves around mean



- Changes in data and methods introduces greater uncertainty.
- Sensitivity testing can be used to better understand the uncertainty and demonstrate a range of reasonable best estimate results.

### Key Point

Using a complementary range of validation techniques allows drivers to be identified quickly, uncertainty understood better and increases confidence in the final results.



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# How to deploy the toolkit most effectively



# Deploying your validation toolkit

Three steps to success:

1

**Tool selection & framework design:** **ensure full coverage** of both known and unknown reserving risks. Also ensure **easy to run** and not too time consuming!

2

**Integration into process:** validation tools have most impact when used at an appropriate stage in process, when they can influence decision making.

3

**Feedback to business:** outputs from validation tools can provide useful direct feedback to the business, rather than simply through the reserving papers.

# Ensuring your toolkit covers the risks

## Reserve risk audit

- Infrequent exercise to identify the key risks in the reserves and in the reserving process.
- Followed by careful selection of a “toolkit” that best monitors/controls these risks.



## Connecting tools to risks

Testing of both reserving  
methods and reserves  
themselves

Appropriateness of reserving  
segmentation

Library of scenarios

Use of higher and lower  
granularities

# Making your process quick to run

## Three tips for a smooth process:

1. Automate the automatable (e.g. trend detection, sensitivity tests).
2. BUT beware of over-automation and over-validation
3. Invest in good quality visual outputs:
  - *Graphical outputs that make sense to non-actuaries.*
  - *Traffic lights / rag frameworks with defined tolerances.*
  - *Bespoke dashboards for different stakeholders & involve them in the design.*

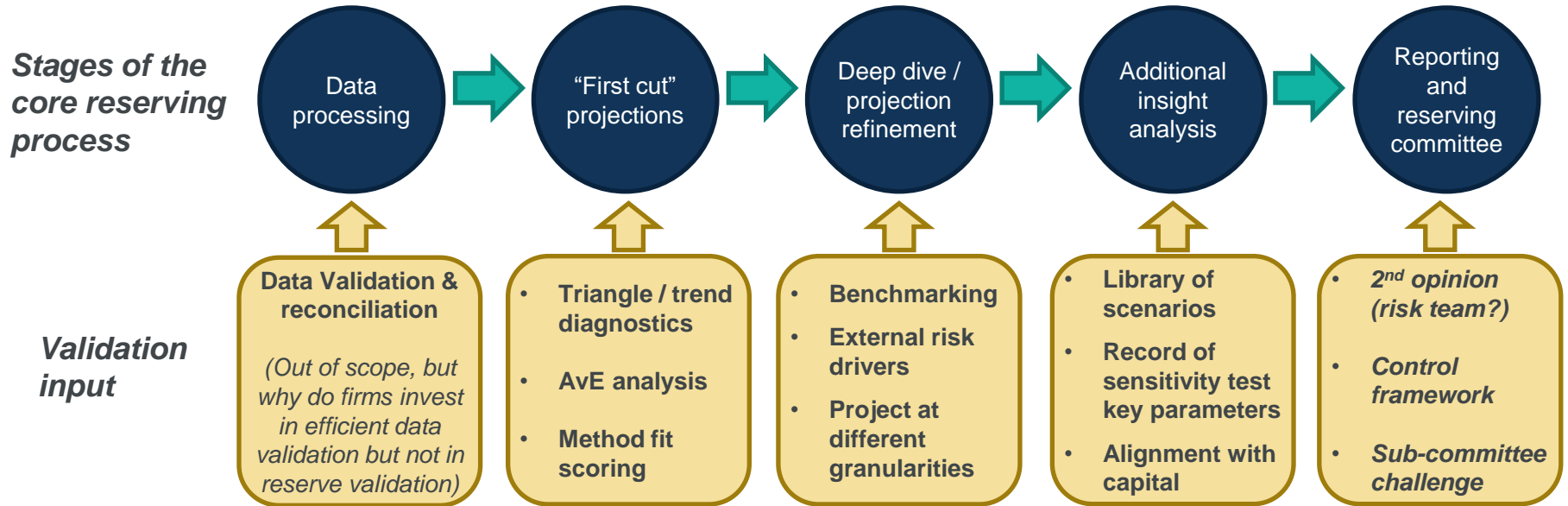
### Key point

*Good quality validation pays for itself in time saved!*

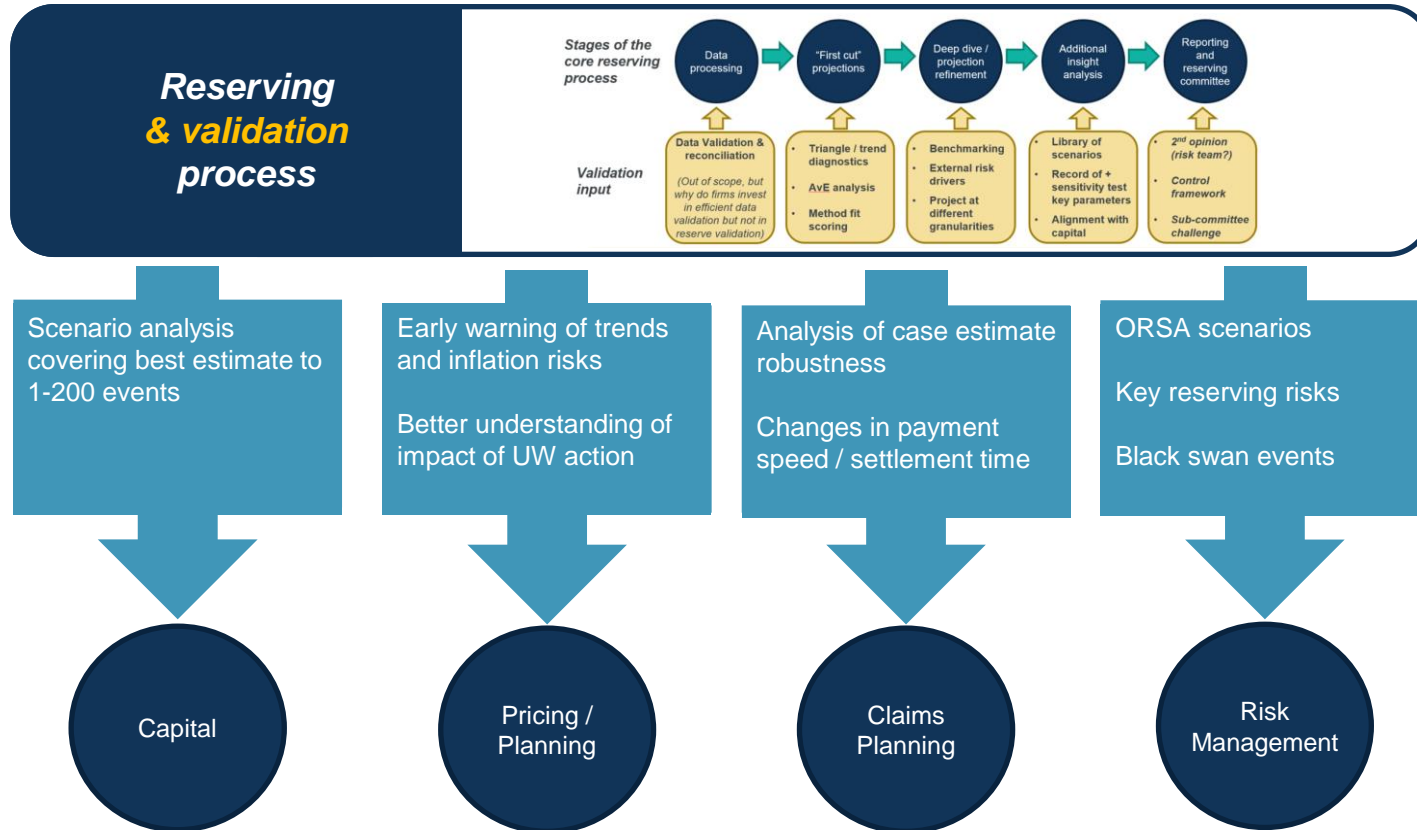
*The better the validation framework...the more confidence you can have to leave methods un-changed.*

# Fitting validation into your process

- Validation is not a single activity / “add on” to reserving, it should be integrated into the process.
- Different aspects of validation activity work best at different stages.
- Most firms already do this.... But the framework should be designed holistically.



# Adding value to the wider business







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# Feedback and Governance





# Feedback and Governance (1)

## Reserving subject to multiple lines of defence, which add to aspects of validation:

- Reserving committees / forums with CEO, CFO, Chief Underwriter & Chief Actuary engagement – works well with experienced stakeholders bringing real business knowledge to the table.
- Assurance can be provided by 2<sup>nd</sup> Line Actuarial validation / reporting to Actuarial Function Holder or by Group Actuarial to provide independent view of reserve selection. However, such engagement may be less regular than quarterly (i.e. not fully embedded in a tight close process).
- For internal model firms, risk validation also provides insight along with Internal model validation.
- Internal Audit: 3<sup>rd</sup> Line Validation can provide an independent view and assurance to look at aspects such as presentation; and major aspects such as data adequacy. However, expertise often accountancy focused and ‘co-sourcing’ model maybe needed for actuarial expertise.

## Validation can involve a multiplicity of angles, with a focus on:

- Role of KRIs / KPIs / development curves.
- Deep dive reports – e.g. specialist sensitivity reports and scenario reports.
- Link to case reserving and policy (remember the Dear Chief Actuary letter of Nov 2019).

# Feedback and Governance (2)

## Feedback loops – some hot topics:

- Current focus on interaction between business planning and the Impact of Covid-19.
- Changing sales volumes in COVID-19 world bringing spotlight back onto reserving.
- COVID-19 may well lead to instances of over/under reserving - and future prior period development as this is a shock period and period of change compounded by Brexit.
- Need to consider likely Attitude of Boards, Attitude of Audit Committees/ARCCs and avoid defensiveness.
- Data adequacy and robustness and especially Data controls.
- Reserve sensitivities and scenarios.

## Need to remember the needs of the audience:

- Reflect – job of CRO is actually hard – challenge for risk is : what can you really contribute.
- Reflect – job of CUO is actually hard – how do you balance commercial imperatives with maintaining margin/rate.
- CFOs are under much pressure from all sides as they navigate Covid-19 and business pressures. Clarity of communication from Reserving Actuaries is at a premium as a key part of Governance.



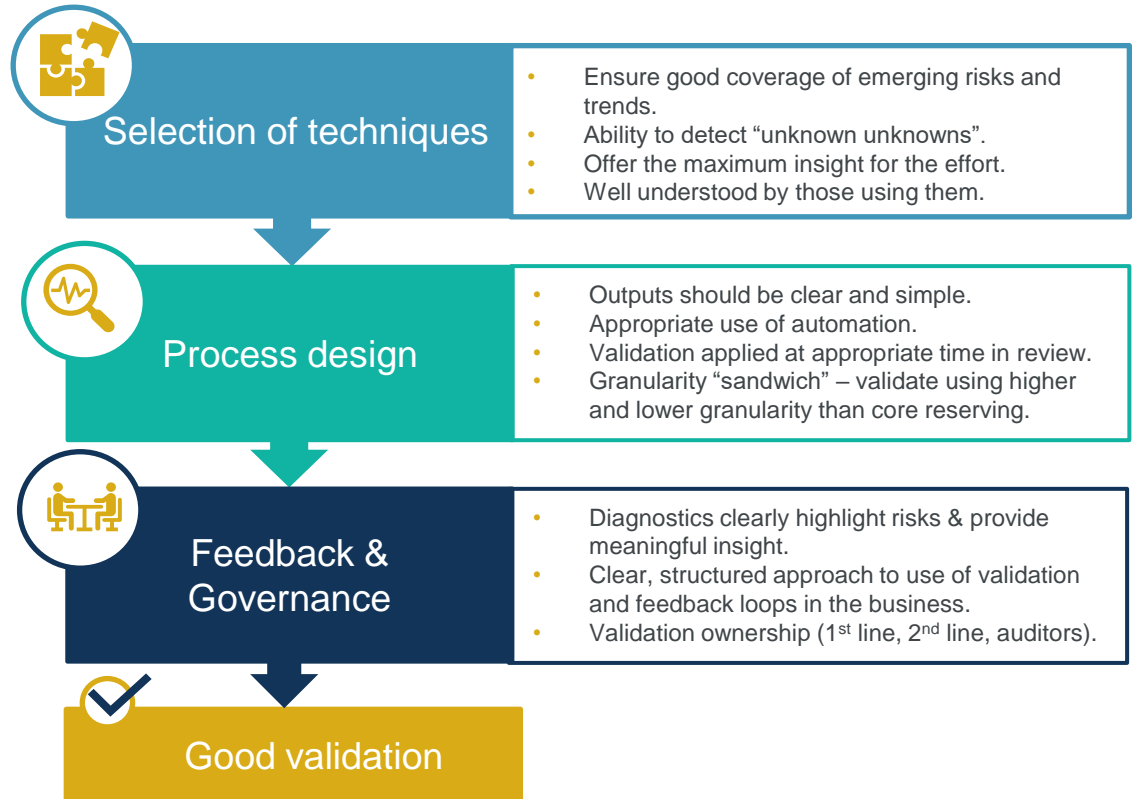
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# Reserving validation framework



# Building your validation framework

- Most insurers use validation techniques on a regular basis.
- What is needed is a framework to ensure insurers get the most out of validation time.
- Key questions include:
  - Who does your validation?
  - What techniques give best coverage?
  - How are the results fed back into business?





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**Where next?**



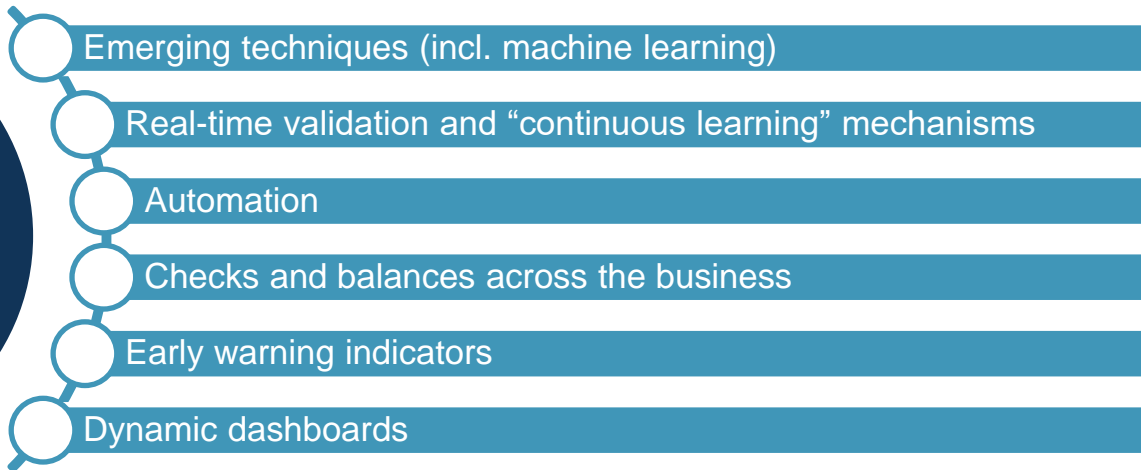
# The future of reserving validation

The TORP working party is continuing to focus on validation and its place in the reserving process.

We will present back our findings next year...

## Developments driven by:

- regulatory change
- big data
- availability / use of technology



If you have ideas you'd like to share with us, please get in touch!



# Questions

# Comments

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