Institute and Faculty of Actuaries

IFoA Life Conference

Avoiding pitfalls in setting longevity assumptions: going beyond technical proficiency

Agenda

01	Why discuss these issues?
02	Behavioural biases
03	Data considerations
04	Default model calibrations
05	Achieving better outcomes

Introduction

“It’s tough to make predictions, especially about the future”

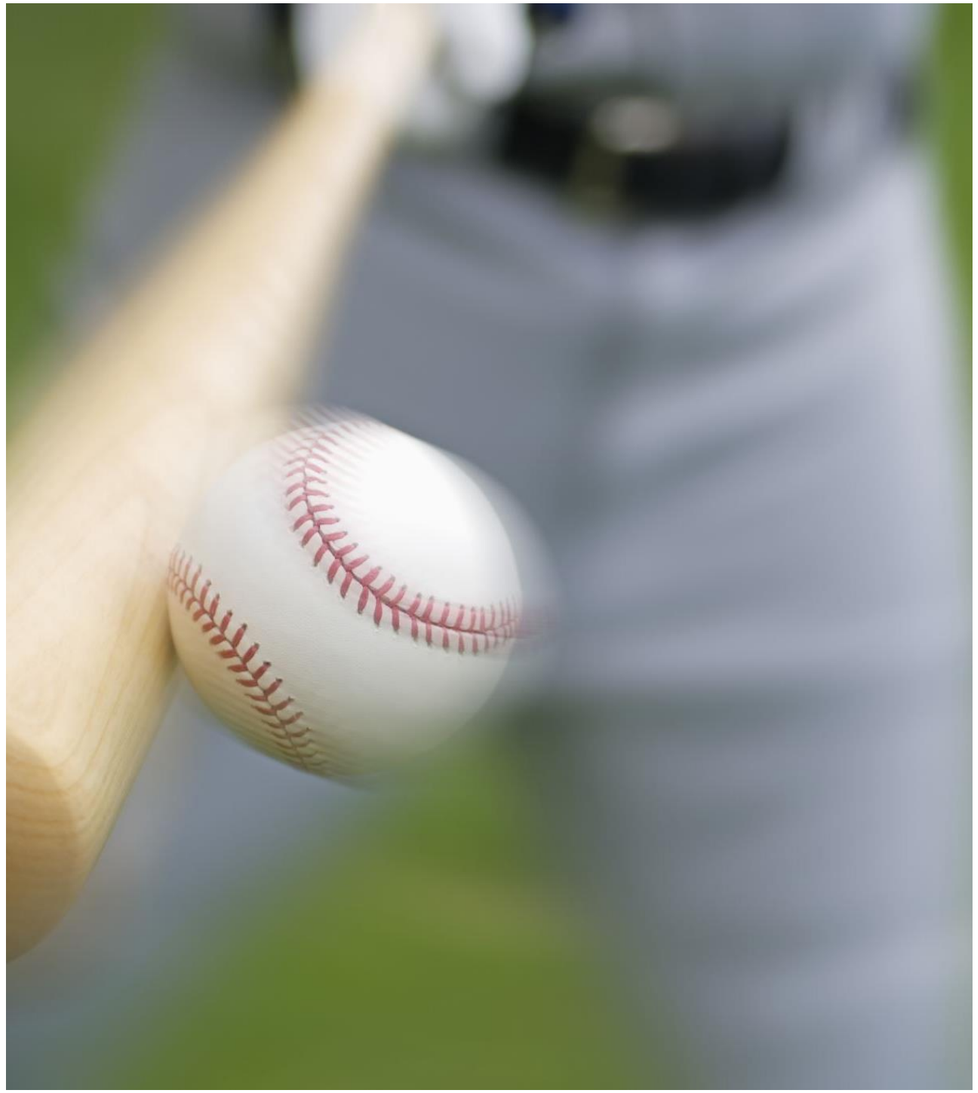
“It’s especially tough if you’re a human with all sorts of biases”

“If you don’t know where you’re going, you’ll end up someplace else”

Behavioural biases

Instinctive reactions can lead to erroneous conclusions

A famous example



A bat and ball cost $1.10 in total

The bat costs $1 more than the ball

How much does the ball cost?

Instinctive answer: 10 cents

Correct answer: 5 cents

Availability heuristic

Decision makers assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind.

"Will this nightmare ever end"

"NHS in crisis"

"You must stay at home"

"Lockdown Britain"

Seeing a high mortality event in the news may make us more pessimistic about future mortality.

Herd mentality

When people conform to the actions, beliefs, or decisions of a larger group.

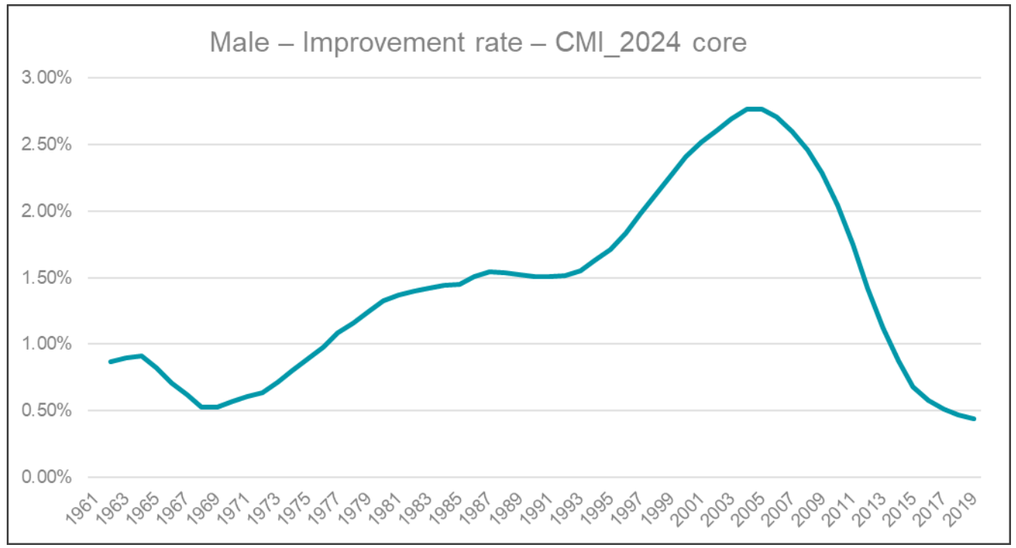
Busier restaurant

OR

Quieter restaurant

Hindsight bias

Hindsight bias is an implicit cognitive bias that occurs when people overestimate their ability to predict outcomes, after the fact.



Fitted age standardised mortality rates taken from CMI_2024 fitted between 1961 and 2024, with all other parameters set to the core parameters

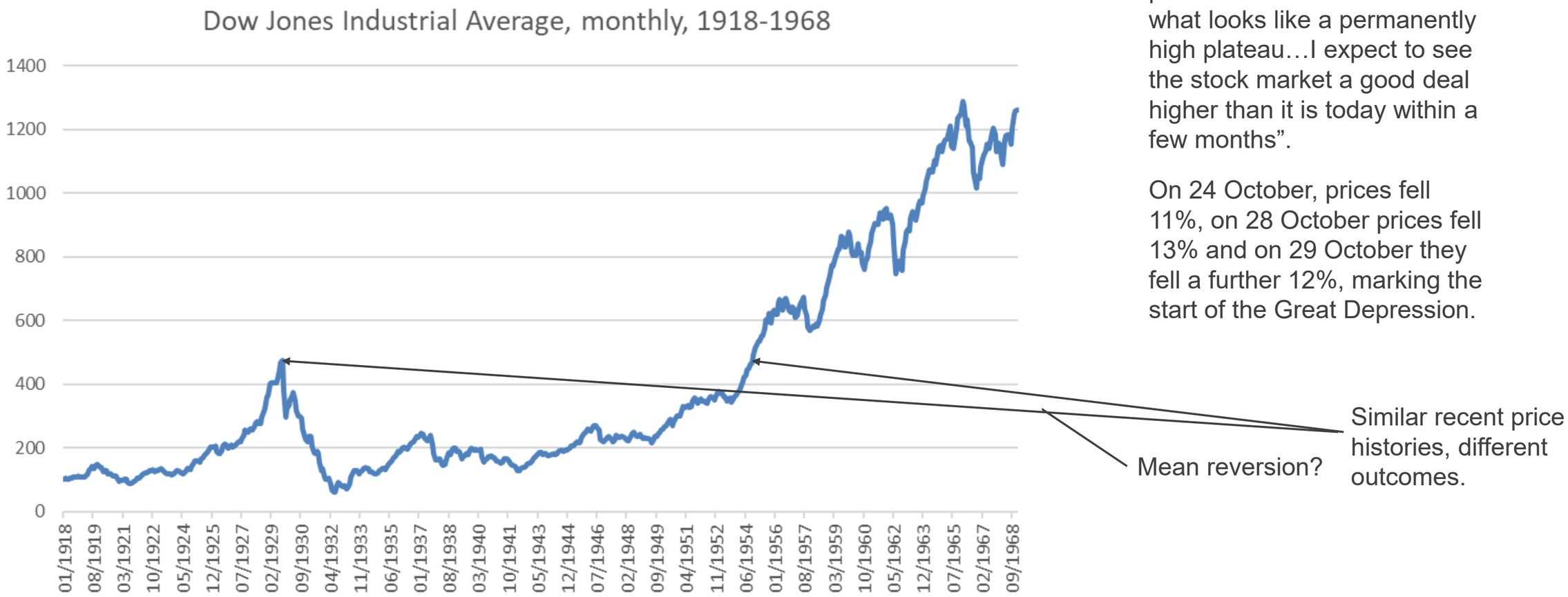
"The high improvements in the 2000s were bound to come to an end."

CMI working paper 39, July 2009

This recognises that Age/Period features in mortality improvements for younger adults have tended to change from decade to decade. However, for ages 60 to 80, where a few major causes of death dominate, there is greater scope for longer-running features and there appears to be no clear end in sight yet for the high rate of mortality improvements driven by advances in relation to circulatory diseases. For the oldest ages it seems appropriate to use a short Period of Convergence, in keeping with the general concept of mortality improvement rates running to zero relatively quickly after age 100.

Hindsight bias

It’s easy when you already know the outcome



On 15 October 1929, US economist and Yale professor Irving Fisher said “stock prices seem to have reached what looks like a permanently high plateau…I expect to see the stock market a good deal higher than it is today within a few months”.

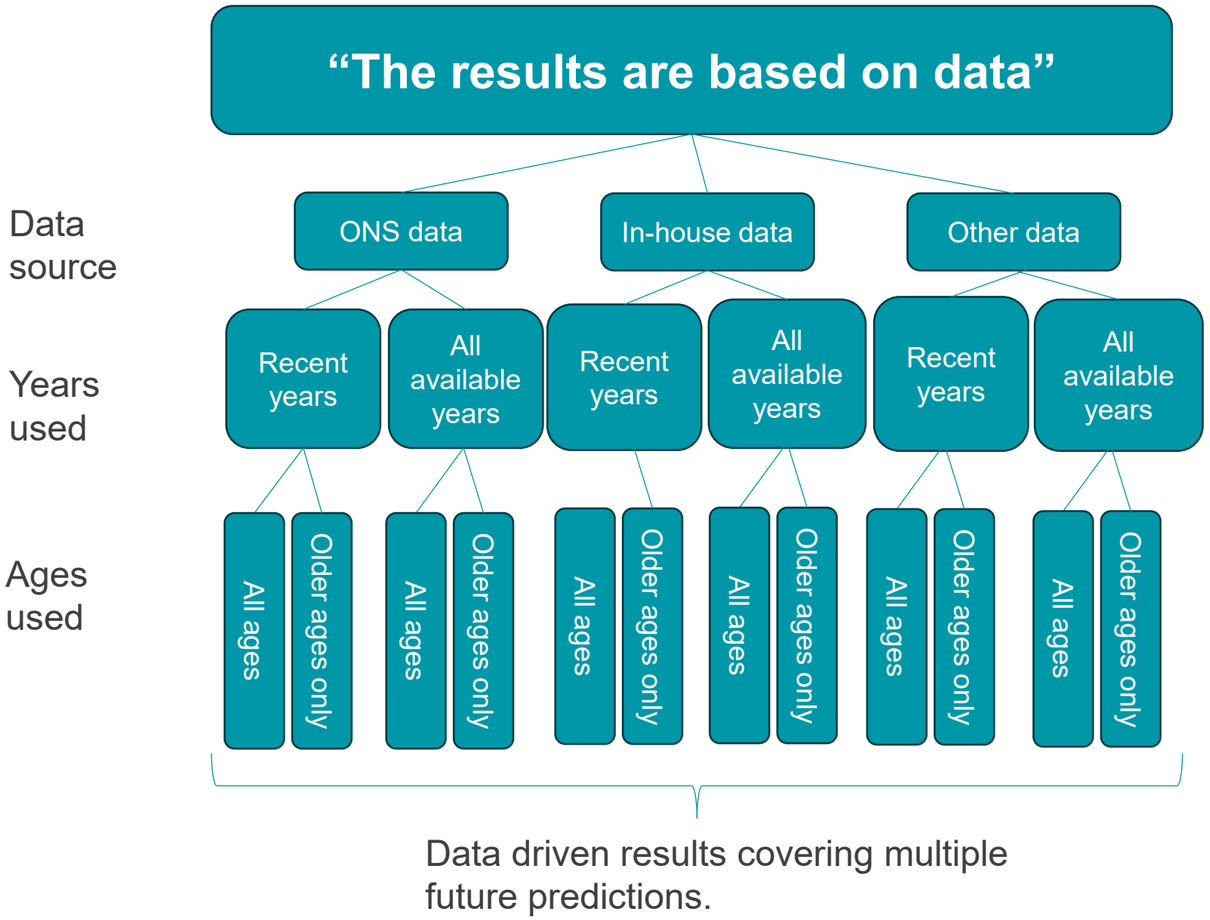
On 24 October, prices fell 11%, on 28 October prices fell 13% and on 29 October they fell a further 12%, marking the start of the Great Depression.

Other biases

- Cognitive dissonance
- Status quo bias
- Mental accounting
- Anchoring
- Framing effect
- Decision fatigue
- Levelling and sharpening
- Priming
- Naïve realism
- Illusory correlation
- Authority bias

Data is not truth

Data is fallible – approach with caution

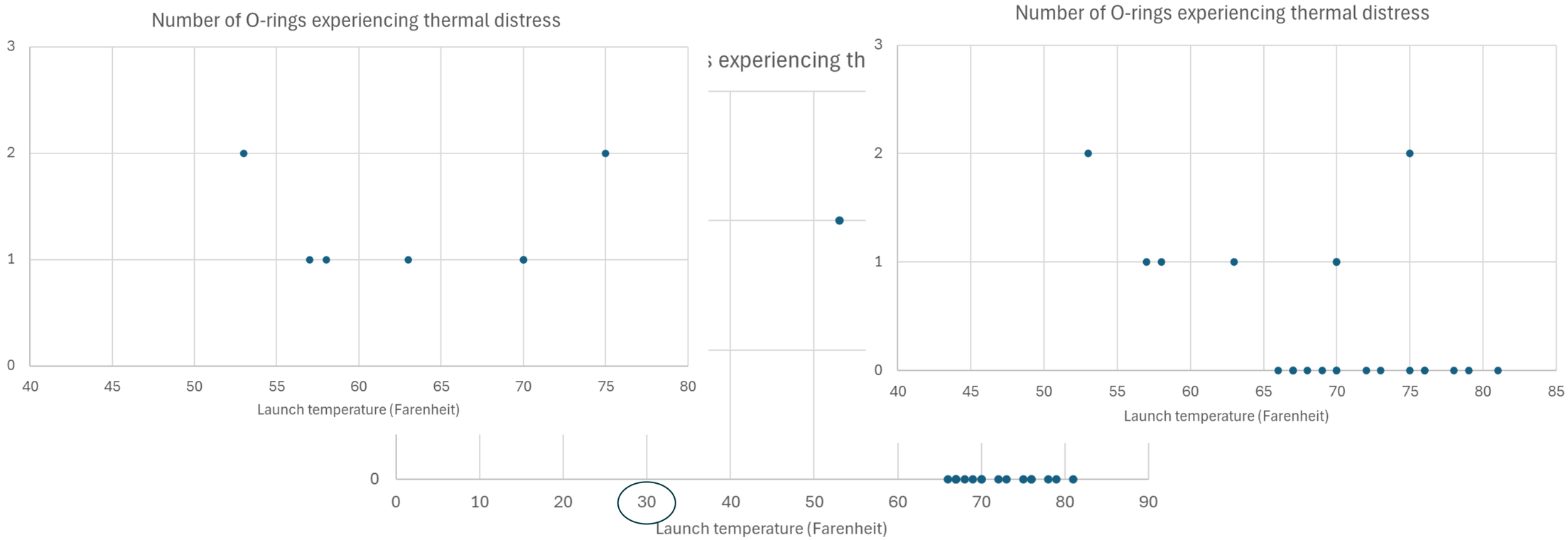


Is there really one 'source of truth' with data?

- There can be multiple population data sources (e.g. in the US.)
- A fixed window that rolls forward every year: what is added, what drops out?
- Cause of death data is only as reliable as the categorisation and diagnosis.

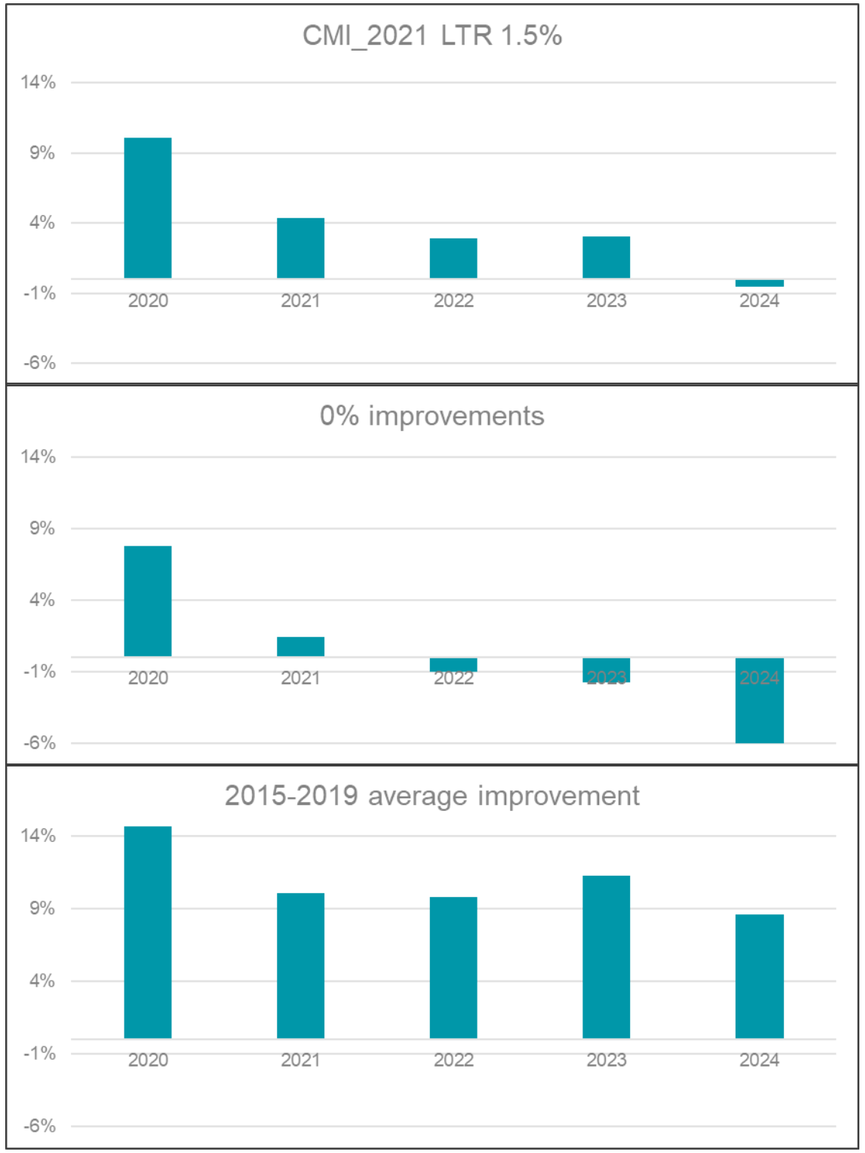
What you don’t see can be fatal

What could be missing?



Deciding what information is relevant prior to looking at the whole picture should be avoided

Blurring the objective and subjective



UK female population data, base qx is the 2015-2019 average with a base year of 2017

"Excess deaths are **close to zero in 2024** in England and Wales"

"Excess deaths are **negative in 2024** in England and Wales"

"Excess deaths are **high in 2024** in England and Wales"

Default model calibrations

Default models and industry engagement

Ensure someone else isn’t making key decisions for you

We all know there are many advantages to having industry models, benchmarking surveys and default calibrations.

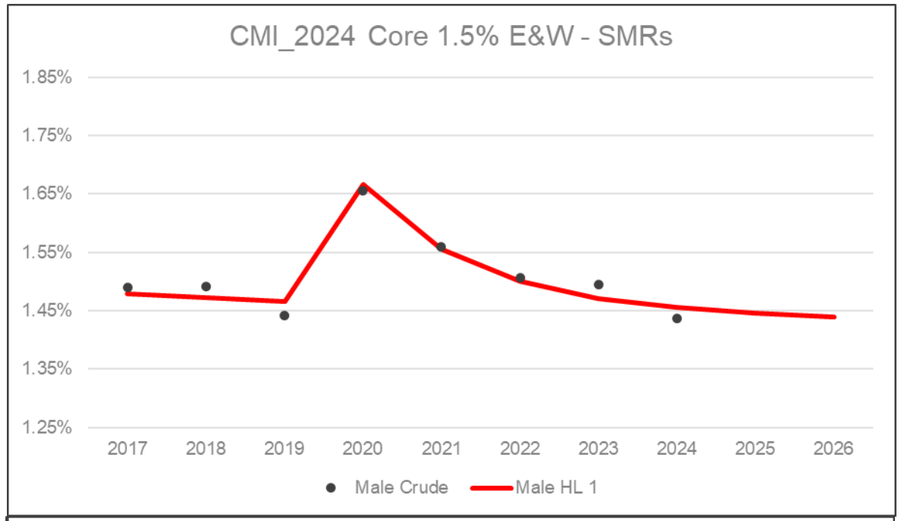
- Source of external benchmarking
- Common language when describing improvements
- External view to challenge internal viewpoints
- Any many more

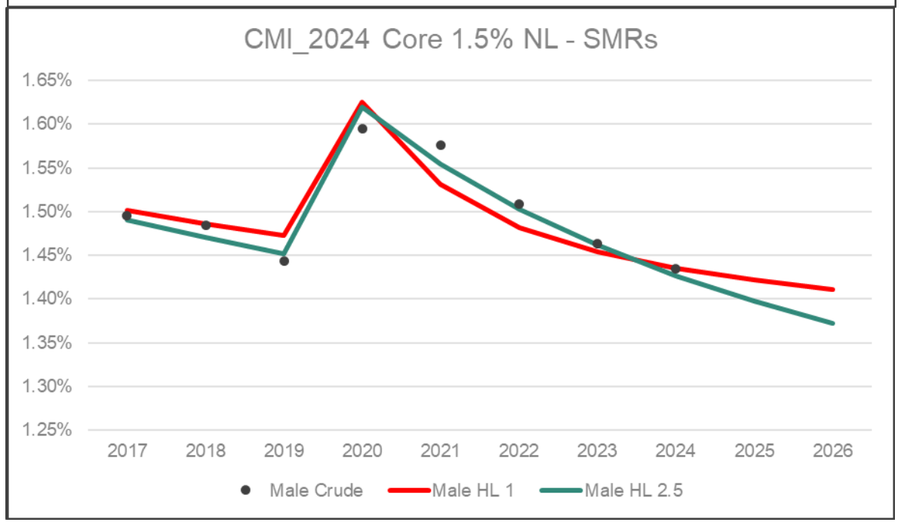
But do we spend enough time thinking about the risks this can introduce:

- Status quo bias
- Herding
- Anchoring
- Decision fatigue

Default model calibrations

Ensure someone else isn't making key decisions for you





The appropriateness of assumptions can change:

- Over time
- When they are applied to different input data
- When the model output is applied to different lives

How to combat these issues

Taking steps to allow more considered thinking

1. Training and awareness is not sufficient
2. Sensitivities and implications
3. Pre-mortem analyses - try to falsify assumptions
4. Leveraging historical examples
5. Ensuring robust challenge
6. List out key judgements, rationale, alternatives
7. Share rationale and methodology in advance of the results

In the same way we employ reviews and checks to prevent numerical and human errors, we need systems and structures in place to mitigate biases

Q & A

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Thank you

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