ASTIN, AFIR/ERM and IACA Colloquia
Innovation & Invention

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Actuaries Institute

Behavioral Biases in Underwriting: Implications for Insurers

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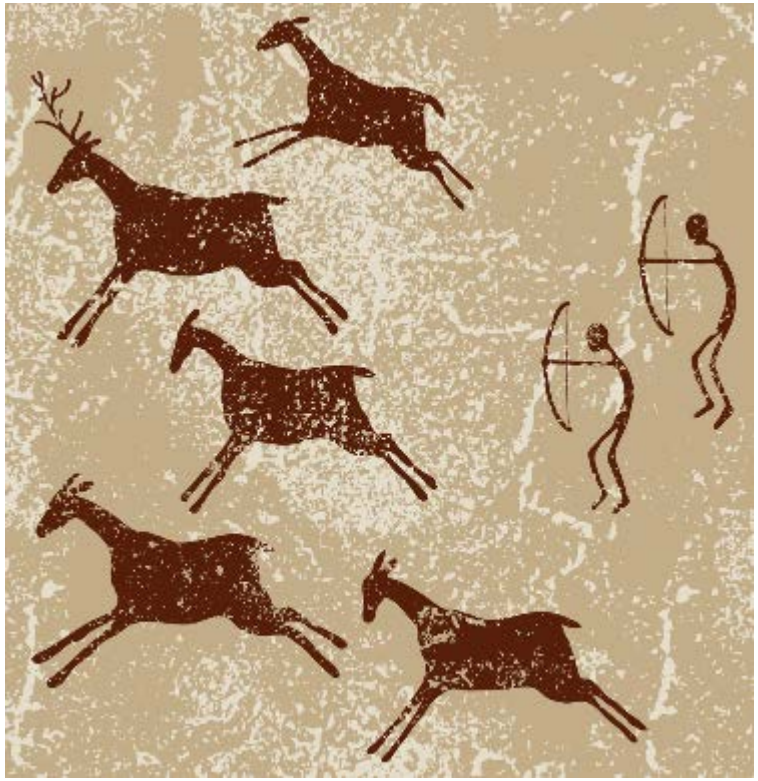
Swiss Re

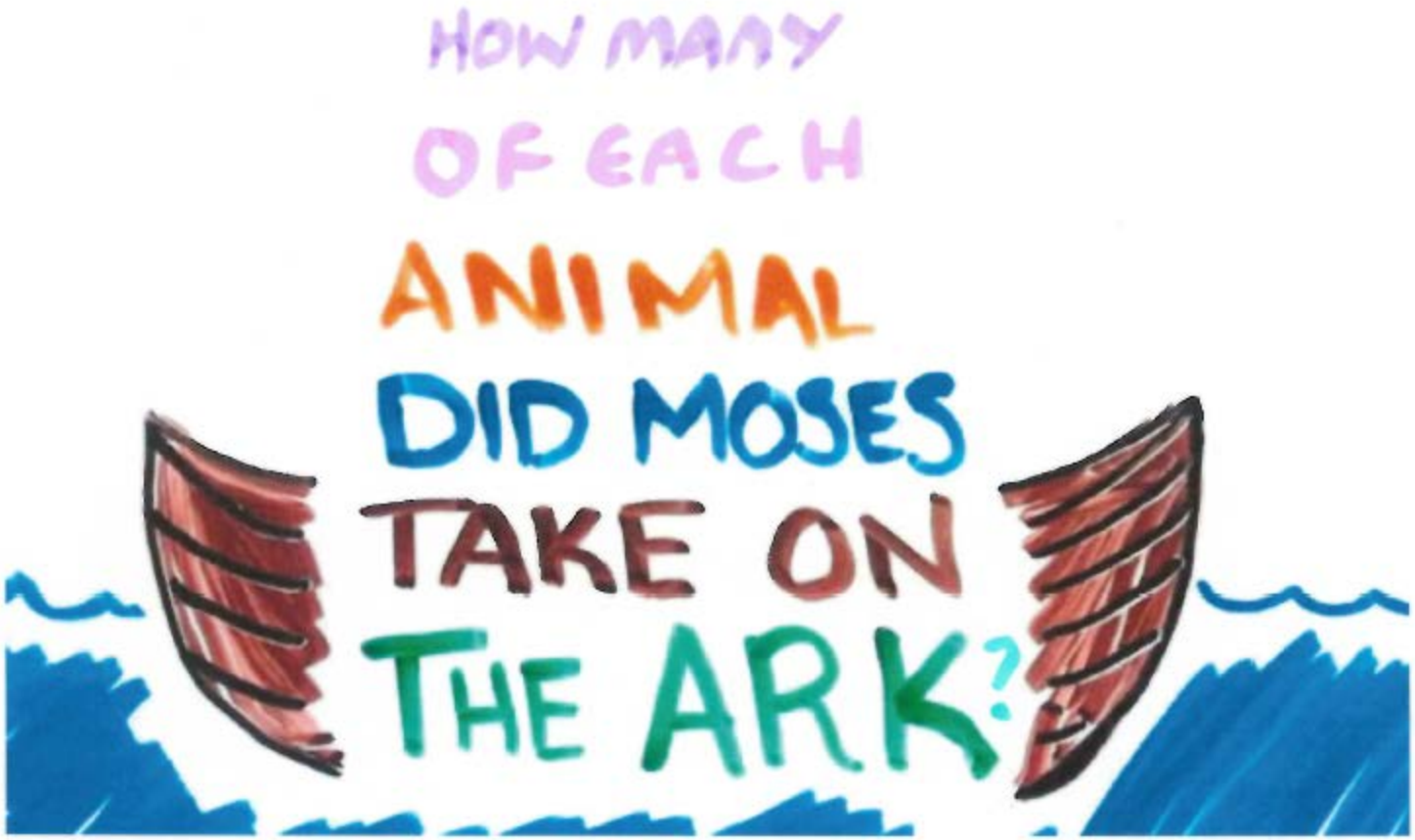
Our human history



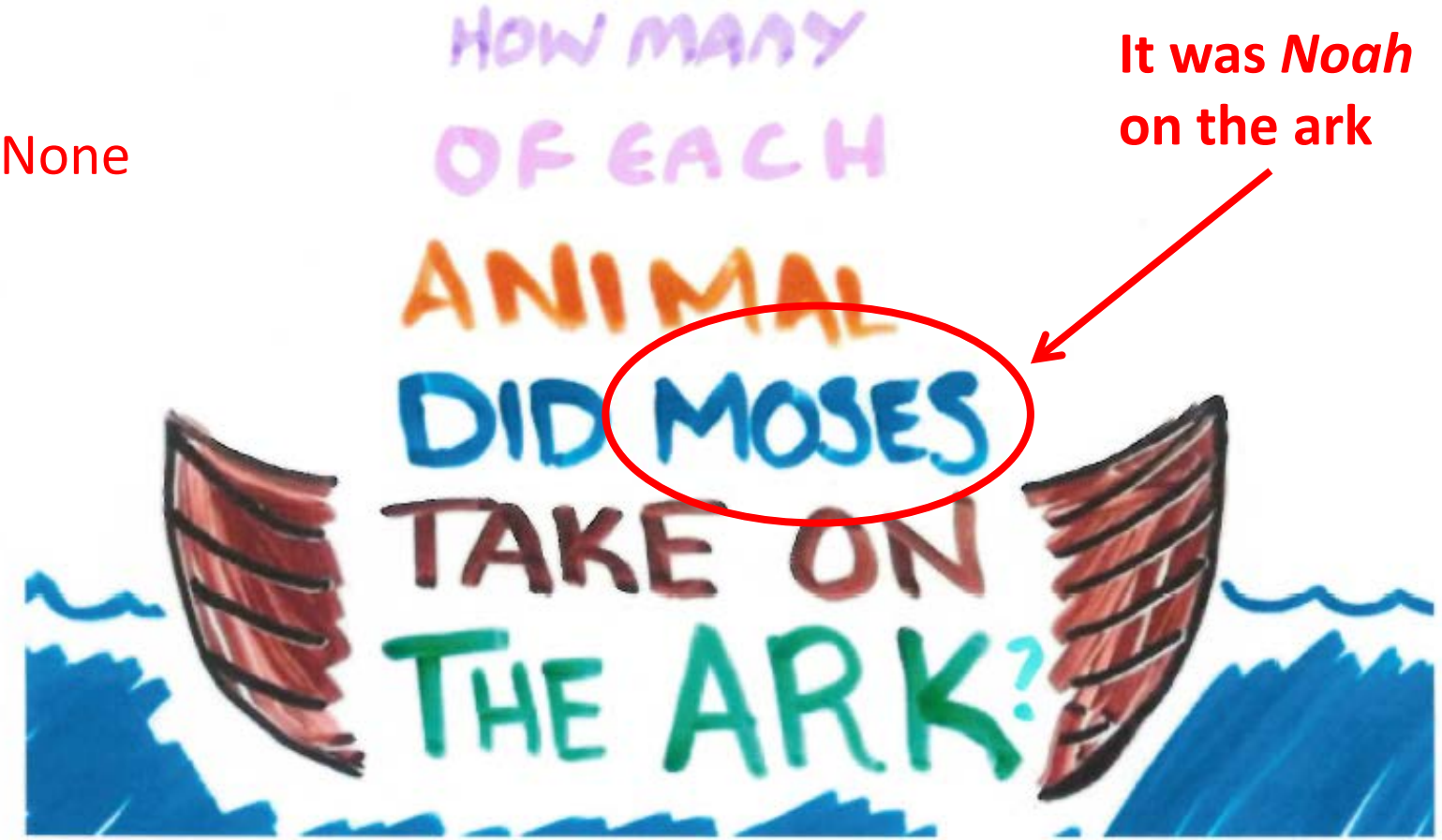
- Modern humans have been around for 200,000 years.
- In the beginning we were hunter gatherers – and sometimes we *were* the hunted and gathered.
- Our primary goal was survival.

Welcome to modern times

- Hunting and gathering still happen, but now we hunt with credit cards and gather using Amazon.
- Our bodies might be working with 21st century technology, but we are using our 200,000 year old brains to operate it.


HOW MANY
OF EACH
ANIMAL
DID MOSES
TAKE ON
THE ARK?

None



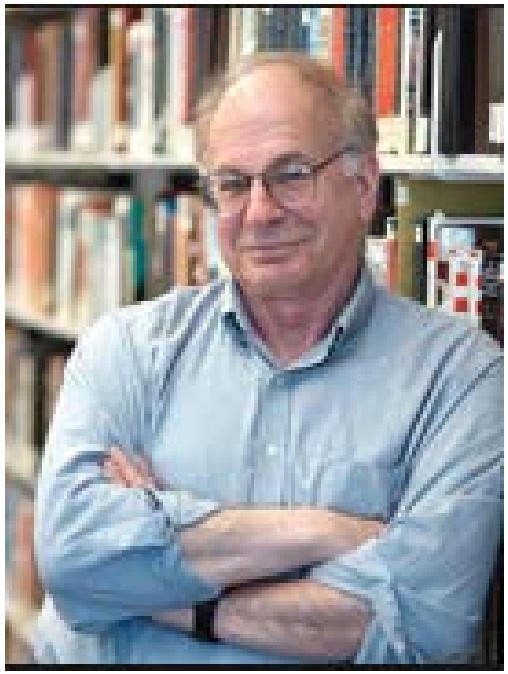
It was *Noah* on the ark


Can you find the
the mistake?
1 2 3 4 5 6 7 8 9

Answer 4

So how *do* we think?

- One of the earliest and most influential researchers into what became called 'Behavioural Economics' was Daniel Kahneman (who won the Nobel prize for Economics in 2002)
- System 1 vs. System 2 thinking
  - System 1 is ***automatic***: fast, unconscious, associative and very low energy consumption
  - System 2 is ***reflective***: slow, conscious, analytic and consumes a lot of energy.
- Kahneman's book *Thinking, Fast and Slow* recounts his journey of scientific discovery (how do you *prove* we have all these biases?)



So what do these biases look like?

And where might we find them in Underwriting?

Overconfidence effect

Where a person's subjective *confidence* in his or her judgments is greater than the objective *accuracy* of those judgments

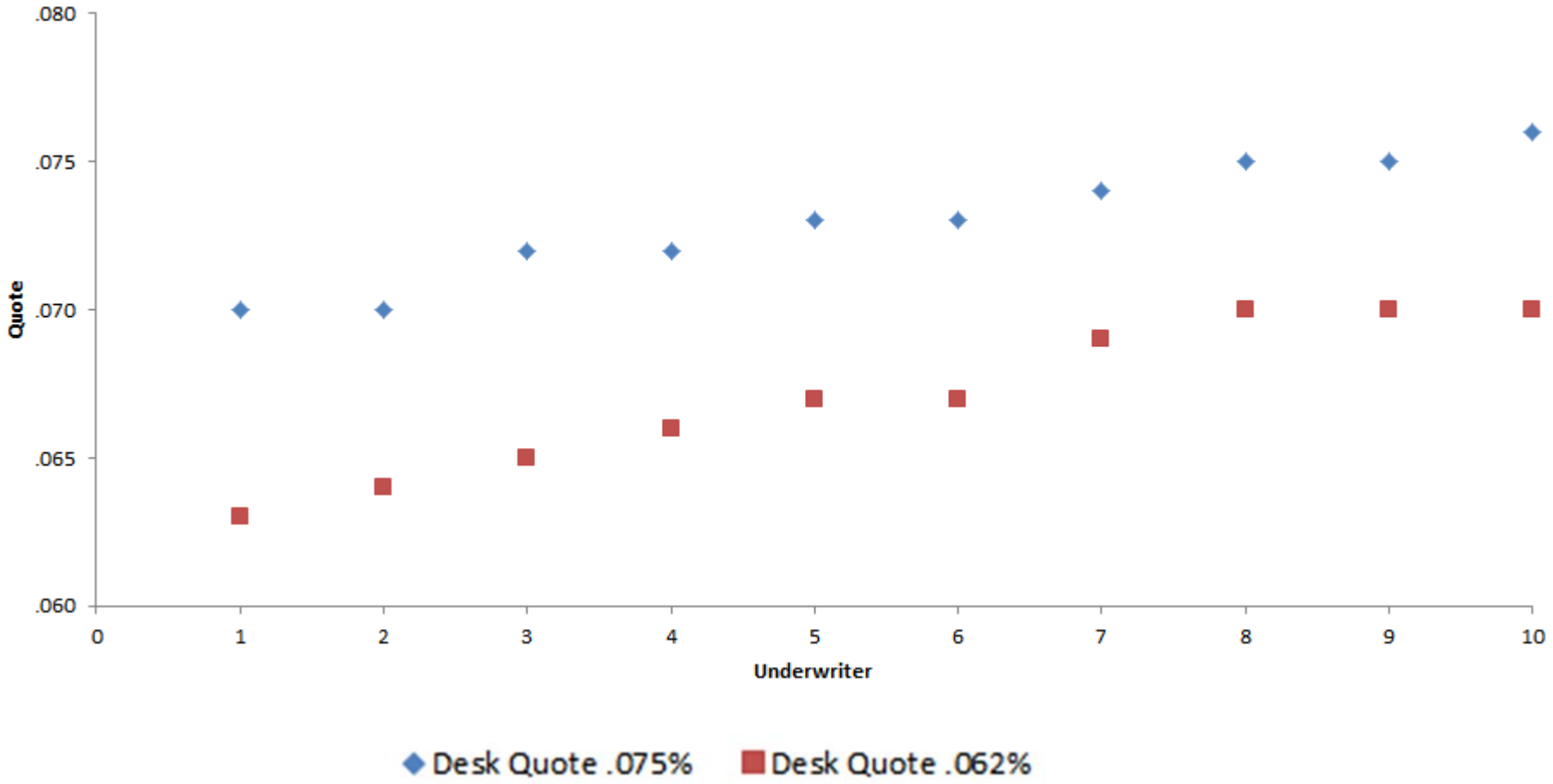
Anchoring

The tendency to rely too heavily, or "anchor", on one trait or piece of information when making decisions

You know the following facts about a renewal. What is your recommendation for quotation?

Rate required to meet profit target	**0.070%**
Rate required to break even	**0.064%**

Broker desk quote **it varied!**



2, 4, 6

What's my rule?

2, 4, 6

If you were typical, you would have thought 8, 10, 12

What's my rule?

Any 3 numbers in ascending order

Confirmation bias

The tendency to search for, interpret, focus on and remember information in a way that confirms one's preconceptions. When testing an existing belief, people tend to search for evidence which could confirm that belief, rather than for evidence which could disprove it.

The Framing Effect: It all depends on how we look at it!

Diagnosed with a serious illness, you have the choice between two therapies: surgery or radiation.

Group 1 were told:

Of 100 people having surgery:
- 10 die during surgery or post-operatively,
- 32 die by the end of one year,
- and 66 die by the end of 5 years.

Of 100 people having radiation therapy:
- none die during treatment,
- 23 die by the end of one year
- and 78 die by the end of 5 years.

57% chose surgery

Group 2 were told:

Of 100 people having surgery:
- 90 live through the post-operative period,
- 68 are alive at the end of one year,
- and 34 are alive at the end of 5 years.

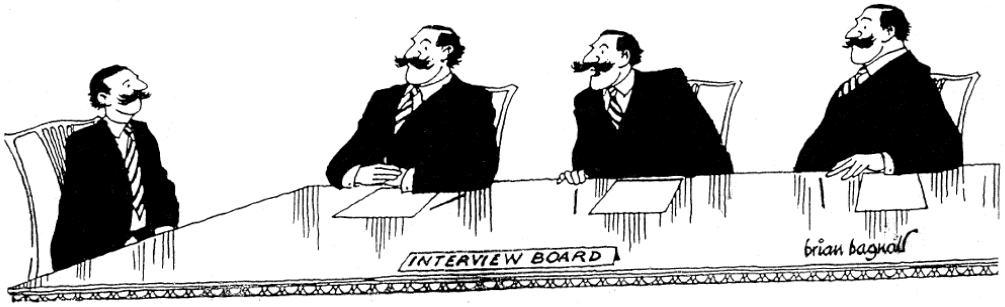
Of 100 people having radiation therapy:
- all live through treatment,
- 77 are alive at the end of year one,
- and 22 are alive at the end of 5 years.

92% chose surgery

The challenges for Underwriters

Social, corporate and emotional

"Frankly Dinsdale, we like the look of you"

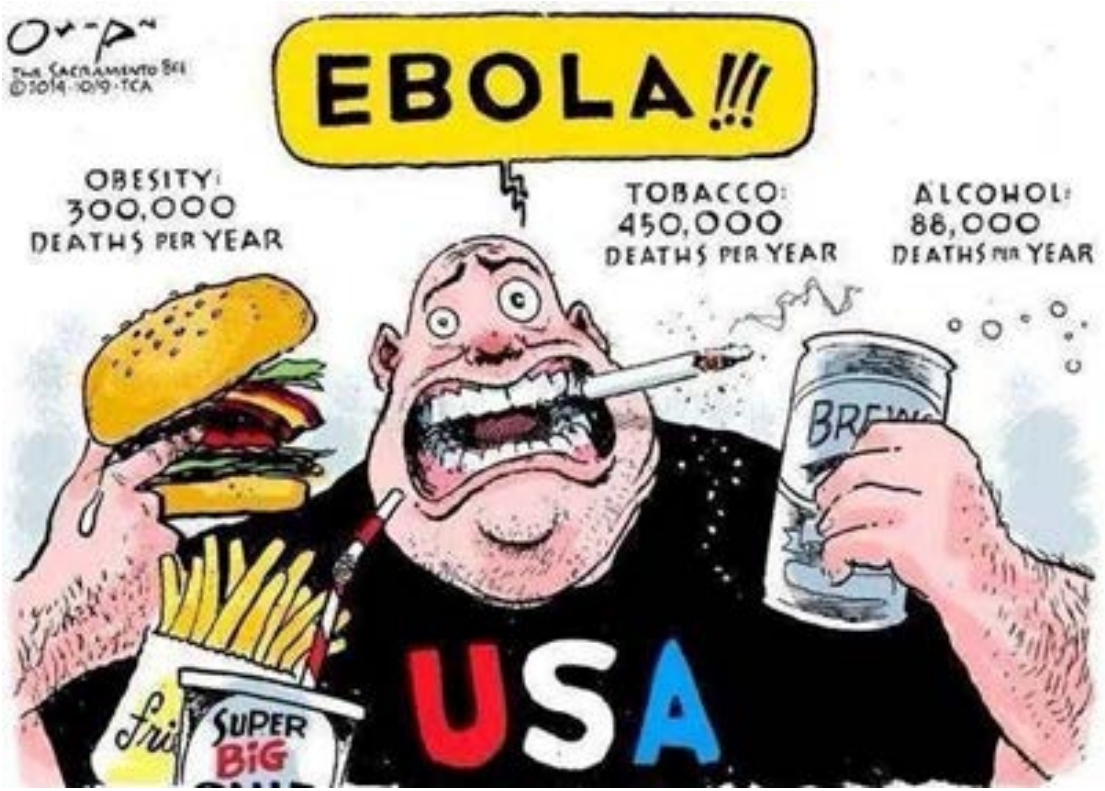


Challenges for classes and markets

If individual Underwriters have biases, what's the impact on whole classes of business and the wider market?

The availability heuristic

The tendency to overestimate the likelihood of events with greater "availability" in memory, which can be influenced by how recent the memories are or how unusual or emotionally charged they are.

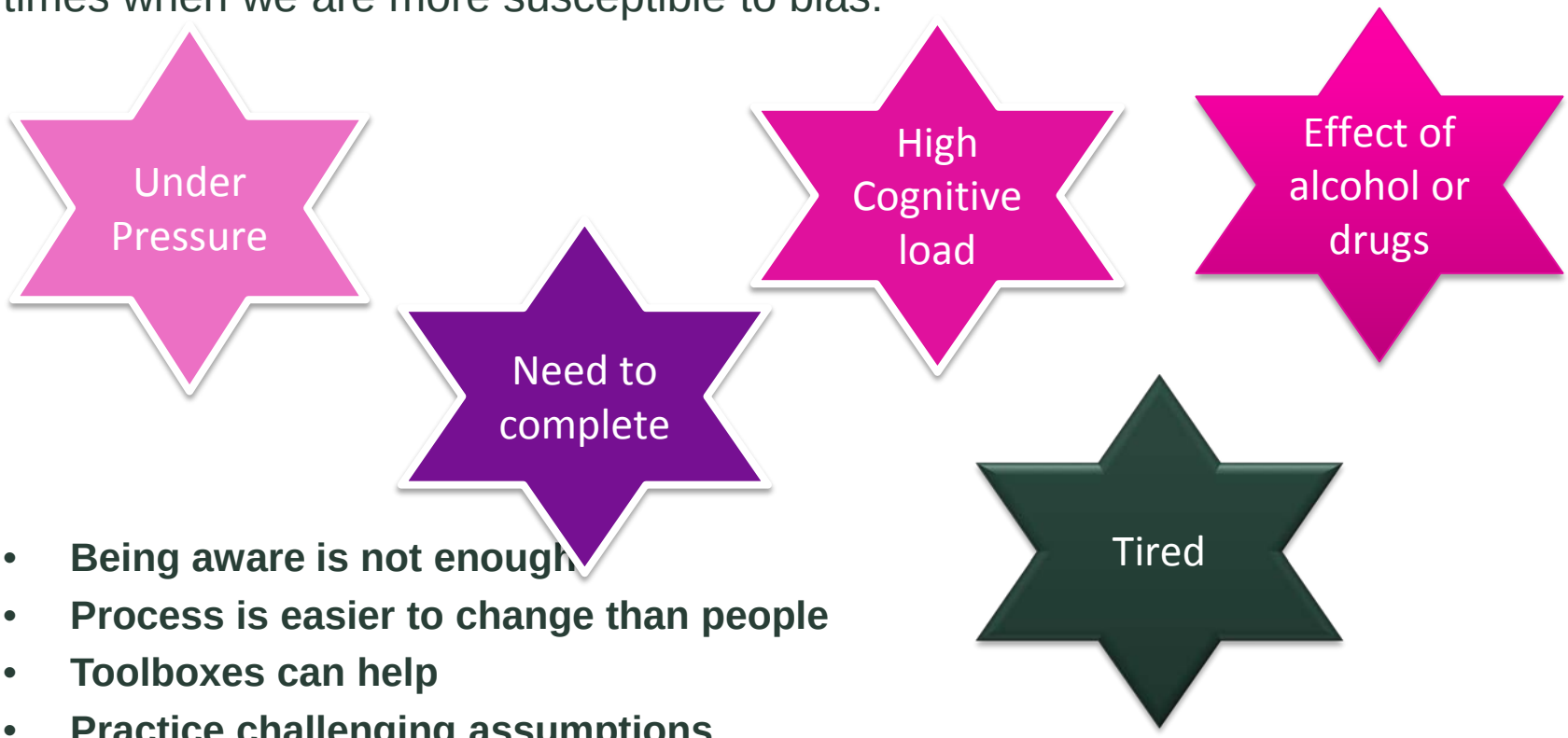


The status quo bias

The tendency to like things to stay relatively the same.

But can we really do anything about our biases?

Probably need to start by identifying when we are most susceptible. There's lots of academic research out there on this topic which tells us there are times when we are more susceptible to bias:



- **Being aware is not enough**
- **Process is easier to change than people**
- **Toolboxes can help**
- **Practice challenging assumptions**