Expert Elicitation Techniques for Social Scientists

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Introduction

- Introducing the team
  - John Paul Gosling (the Maths expert)
  - Jose Pina-Sánchez (the Social Scientist)
- Introducing each other
  - Background
  - Research interests
  - Goals for this course / plans to use expert elicitation in the future

What Is Expert Elicitation

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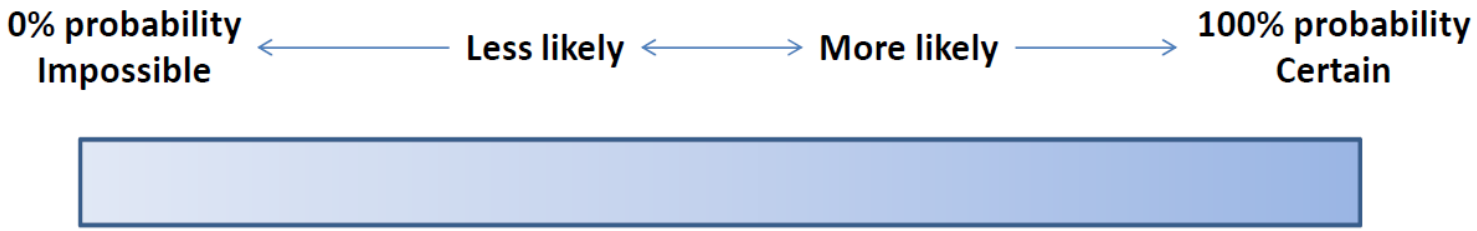
  - Eliciting views under carefully considered questions and protocols
  - Allowing for the necessary dialogue to discuss the complexity of the question
  - Avoid the ambiguity of verbal expressions (turning expert knowledge into quantitative data)
  - Compiling views from different subjects in a structured way

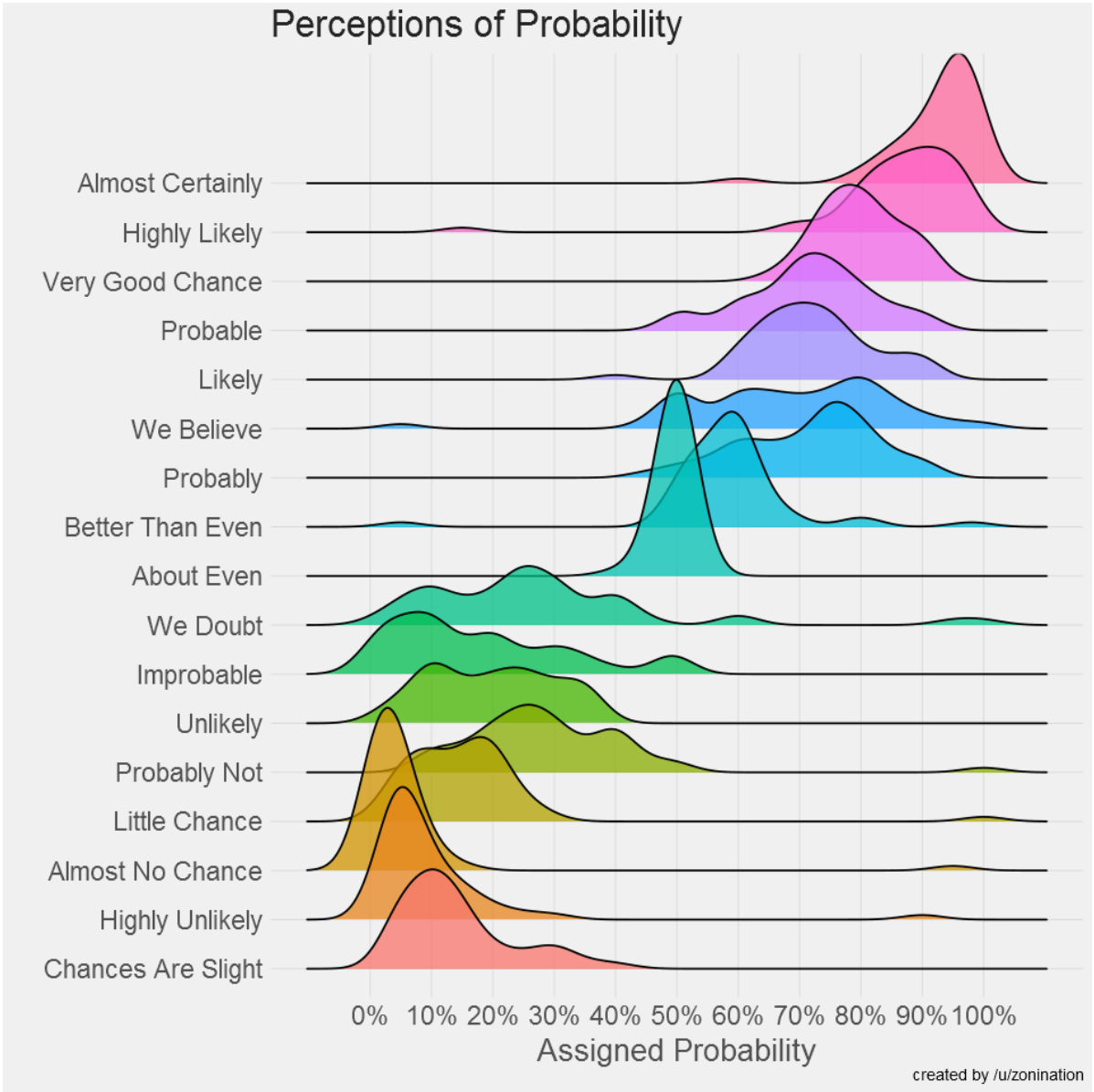
Turning *quali* into *quanti* data

- The probability scale
  - A useful tool to define precisely the likelihood of a particular event
  - Bounded between 0 and 1



- Values in between can be defined intuitively, e.g.
  - 50% = both outcomes equally likely (odds 1:1)
  - 66% = positive outcome twice as likely (odds 2:1 on)
  - 75% = positive outcome 3x as likely (odds 3:1 on)

Ambiguity of Verbal Expressions



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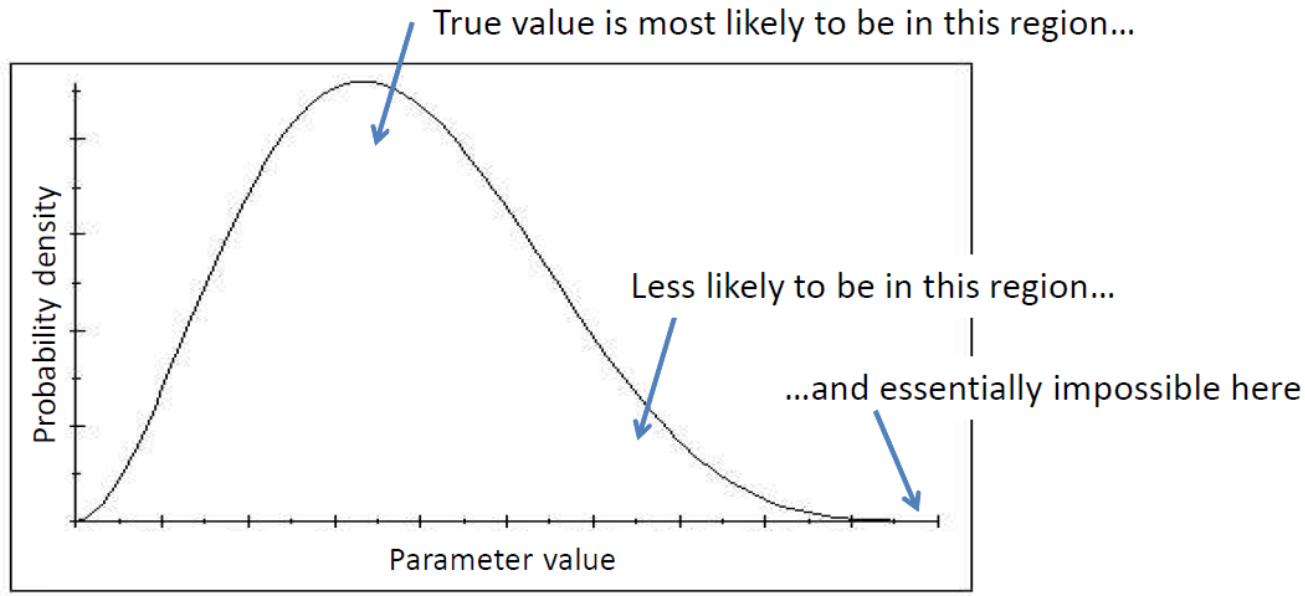
  - ...
- Goal Two: to quantify the uncertainty around that estimate
  - We want more than a specific value for each of the above
  - We want the likelihood of possible values
  - i.e. their statistical distribution

Eliciting Uncertainty

- Using probability distributions to express uncertainty
  - Represents the range of possible values and their relative likelihoods



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- We like to think of ourselves as post-positivist
  - The philosophical framework that suits EKE more naturally

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- But also, for certain research questions, EKE can also be the best option
  - Predicting tipping points or non-linear effects (e.g. the Kessler effect, how many more satellites can be put in orbit before the space debris becomes ubiquitous)
  - When we need more than a point estimate (e.g. data quality adjustments, scales of subjective preferences)
  - Exploratory research (e.g. when interested in the thought process of experts)

EKE in the Research Methods Context

- Four features that set it apart from survey research
  - Focus on experts
  - Deal with complex themes/questions
  - Thoroughly designed questions and protocols
  - Thorough participant deliberations
  - Interactive, dialoguic
  - Small samples

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- I like to think of it as the quantitative equivalent of a focus group
- Questionnaires as used in survey research can be too shallow
  - Aquiescence bias
  - Social desirability bias (not an issue in self-completed questionnaires)
  - Recall errors (telescoping bias)
  - Different interpretation of questions (slide 5)
- EKE methods are designed to reduce these biases

Limitations

- Limited external validity
  - Based on small samples of experts
  - Bound to be affected substantially by sampling error
  - In addition, the experts' 'expertise' is highly variable
  - The recruitment of the right experts is crucial
- Regarding internal validity...
  - More valid (less biased) than questionnaires
  - But still based on subjective views

Limitations

Recap

- EKE can be used to
  - Represent experts' judgements quantitatively
  - Uncertainty, captured as a probability distribution
  - Encouraging careful, thoughtful judgements
  - In a formal, rigorous and discursive format
  - Aiming to reduce psychological biases

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  - Aiming to reduce psychological biases
- With a vast potential in the Social Sciences
  - Rarely used beyond Health Economics and Epidemiology
  - Vast potential in areas where no data is available
  - Can offer more valid findings than more 'typical' methods

Day 1

10:00-10:30	Registration and refreshments
10:30-11:30	Introduction: quantifying uncertainty
11:30-12:30	The basics of expert knowledge elicitation
12:30-13:30	Lunch
13:30-15:15	Methods for capturing judgements
15:15-15:45	Tea/Coffee break
15:45-17:00	Practical: elicitation methods

Day 2

09:30-10:40	The Sheffield method in depth
10:40-11:10	Tea/Coffee break
11:10-12:30	Practical: the SHELF software
12:30-13:30	Lunch
13:30-14:40	Expert elicitation in the social sciences
14:40-15:10	Tea/Coffee break
15:10-16:10	Advanced topics in elicitation
16:10-16:30	Wrap-up