



R(ise) & Shiny

Taking steps to utilise R packages in Shiny applications

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| Overview

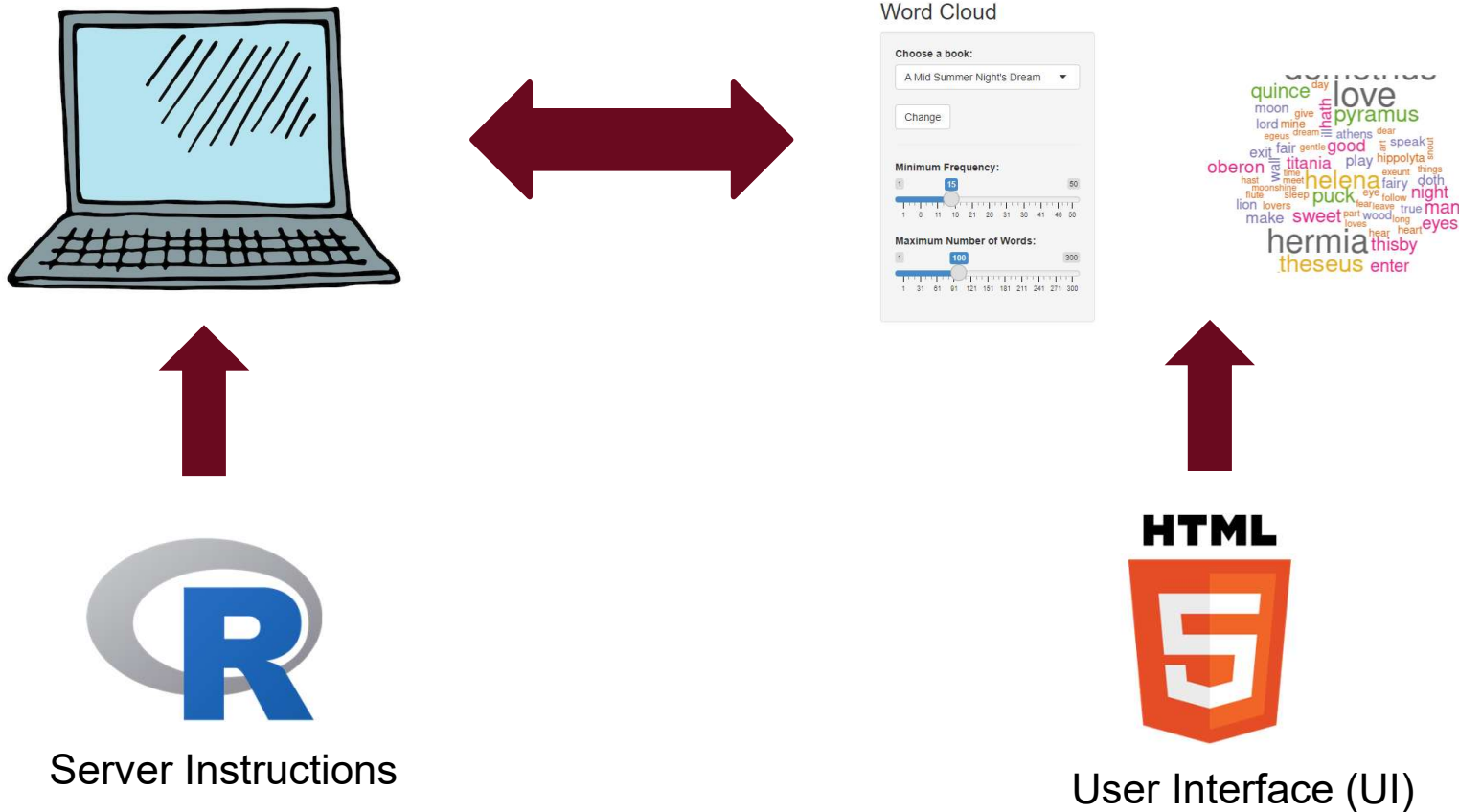
1. What is RShiny and why use it?
2. Applications in Statistics and beyond
3. Elicitation software showcase

What is RShiny and why use it?



| What is RShiny?

- Shiny is an R package (Chang et al. 2019) that enables building interactive web applications that execute R code behind the scenes.



| Why use RShiny?

“Shiny gives you the ability to pass on some of your R superpowers to anyone who can use the web.”

Hadley Wickham, Mastering Shiny, Preface (0.1)



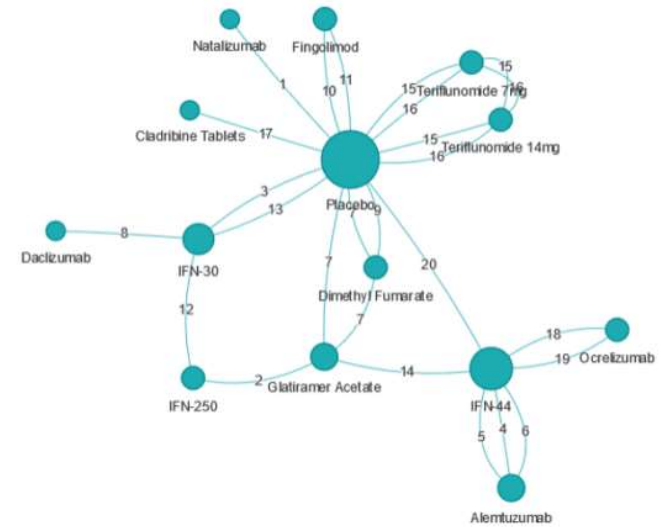
Applications in Statistics and beyond...

phastar 

RShiny Applications

- Statistics

- Network meta-analysis
- Prior elicitation
- Teaching tool



- Wider applications

- Data Science/Data Management
- Data Visualisations
- Administrative

[Shiny Gallery](#)

Online resources – [video series](#) by Garrett Grolemond

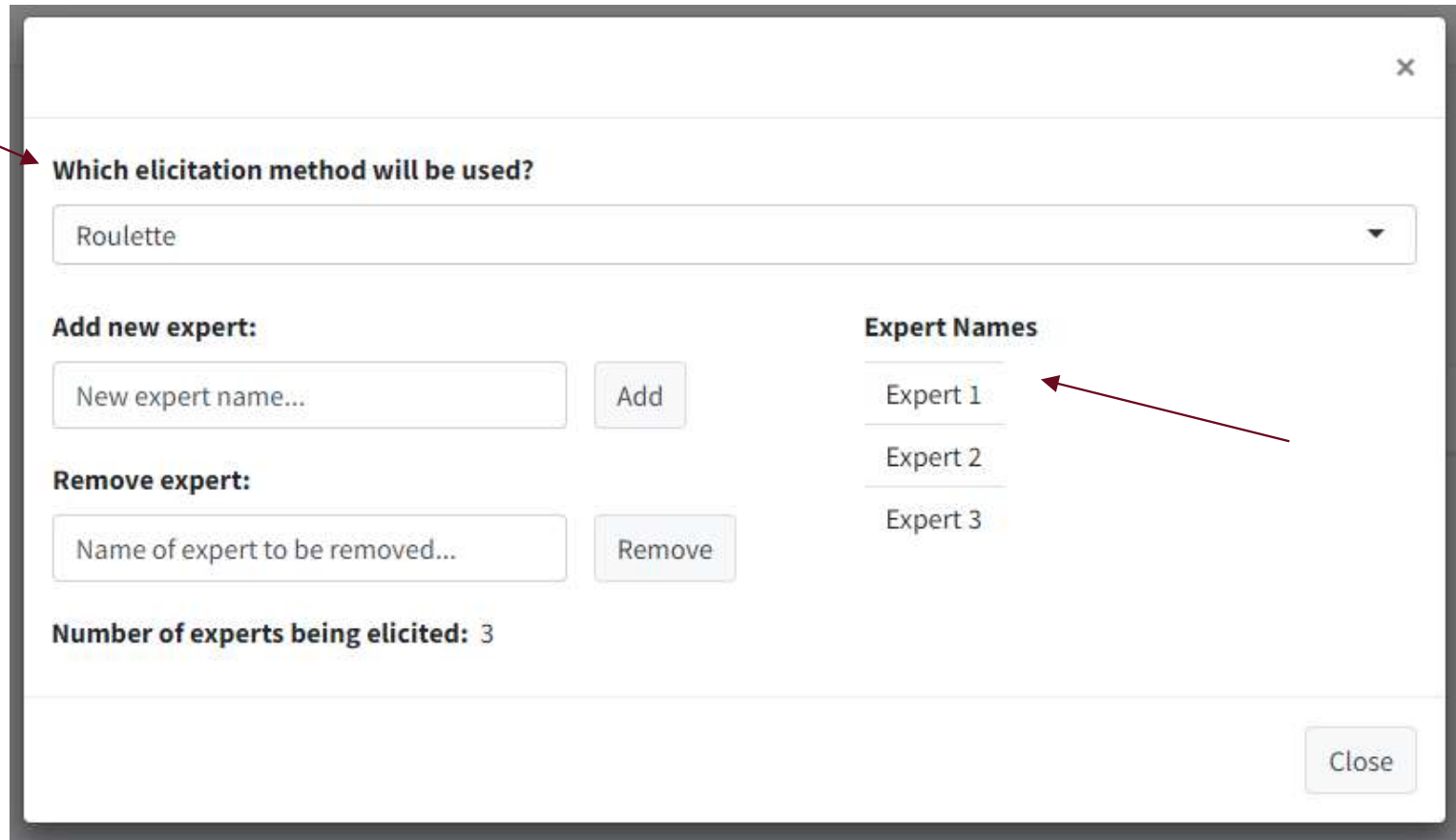
Elicitation software showcase



I Motivation

- Based on experiences at Phastar, we noticed a gap in our processes in being able to provide elicitations to our clients.
- Utilising the expertise within the company we decided to develop an elicitation app to provide end to end Bayesian capabilities.
- Elicitation tool to get experts together to give information about trial characteristics
 - First they give their own individual opinions
 - Then they combine them to create a group consensus
 - This will then be used as the prior for a Bayesian trial

Elicitation software (1)



A screenshot of a software interface for elicitation. The window has a title bar with a close button (X) in the top right corner. The main content area is divided into several sections:

- Which elicitation method will be used?**: A dropdown menu currently showing "Roulette".
- Add new expert:**: A text input field containing "New expert name..." and an "Add" button.
- Remove expert:**: A text input field containing "Name of expert to be removed..." and a "Remove" button.
- Expert Names**: A list of three entries: "Expert 1", "Expert 2", and "Expert 3".
- Number of experts being elicited: 3**: A status indicator.
- Close**: A button in the bottom right corner.

Two red arrows point to the dropdown menu and the "Expert 1" entry in the list.

Elicitation software (2)

The screenshot shows the 'Prior Elicitation App' interface. On the left is a dark sidebar with navigation options: Home, Training (highlighted in blue), Elicitation, Aggregation, Debug, and Setup. The main content area is titled 'Roulette Method' and contains the following text: 'We wish to elicit your opinion on the average number of children in UK households.' followed by a 'Reset' link. Below this is an instruction: 'First, provide values that represent your belief of the minimum and maximum number of children in UK households, and the number of bins you would like to use. For example, if you were to choose 10 bins, they would be (0-1), (1-2), (2-3), (3-4), (4-5), (5-6), (6-7), (7-8), (8-9), (9-10).' There are two input fields: 'Minimum:' with the value '-1' and 'Maximum:' with the value '10'. Below these are radio buttons for '10 bins' (selected) and '20 bins', and an 'Ok' button. A red arrow points from the '-1' in the Minimum field to a warning dialog box. The dialog box has a large orange exclamation mark icon and the title 'Warning'. The text inside the dialog reads: 'Lower limit is less than zero - consider whether this is plausible (i.e. can you have a negative number of children?)' and has an 'OK' button at the bottom.

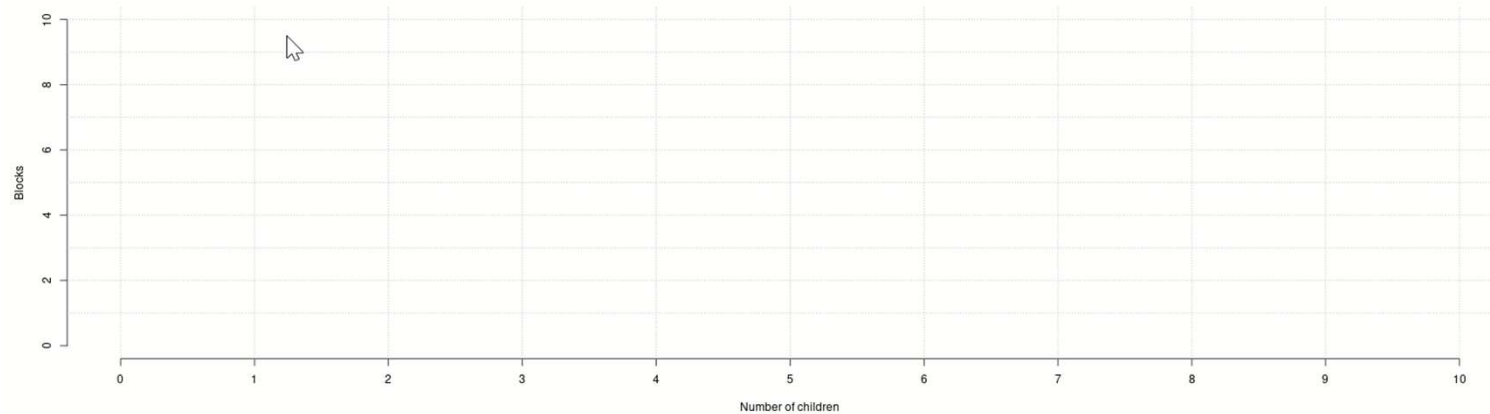
Elicitation software (3)

Now you have 20 blocks to use to quantify your belief, with each block representing a 5% chance that the average number of children in UK households lies in the given interval.

The more strongly you believe that the average number of children lies in a particular interval, the more blocks you should add. If you believe it impossible that the average number of children would lie in a particular interval, then add no blocks to that interval. If you are certain that the average number of children would lie in a certain interval, all blocks should be in that interval.

(0, 1]	(1, 2]	(2, 3]	(3, 4]	(4, 5]	(5, 6]	(6, 7]	(7, 8]	(8, 9]	(9, 10]

You have 20 block(s) remaining



Elicitation software (4)

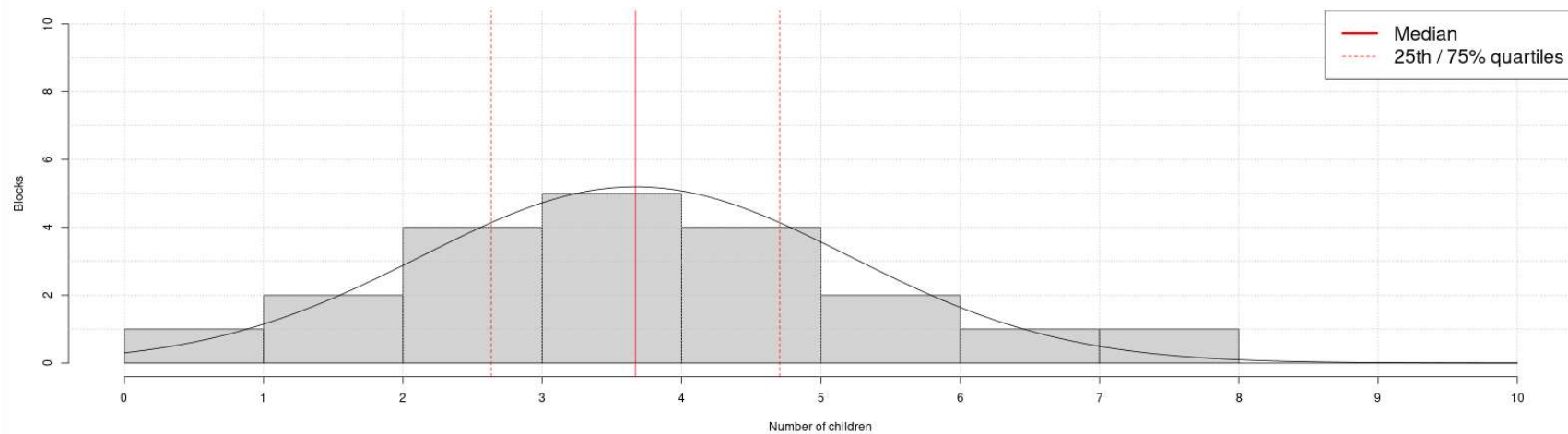
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(0, 1]	(1, 2]	(2, 3]	(3, 4]	(4, 5]	(5, 6]	(6, 7]	(7, 8]	(8, 9]	(9, 10]
1	2	4	5	4	2	1	1		

You have 0 block(s) remaining

Maximum number of blocks reached



Choose distribution:

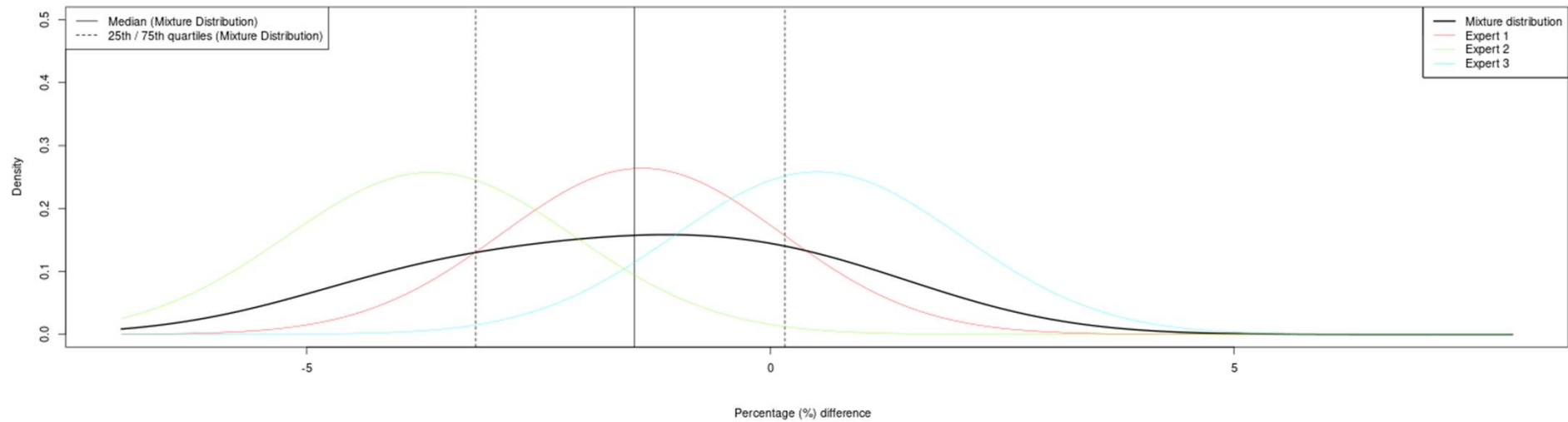
Normal

Show density

Add fitted quantile lines

Elicitation software (5)

Prior Density



Show individual elicitations

Add mixture distribution quantiles

Weighting Options

+

Fit distribution

+

Download

Elicitation software (6)

Weighting Options

Choose weighting value for each expert

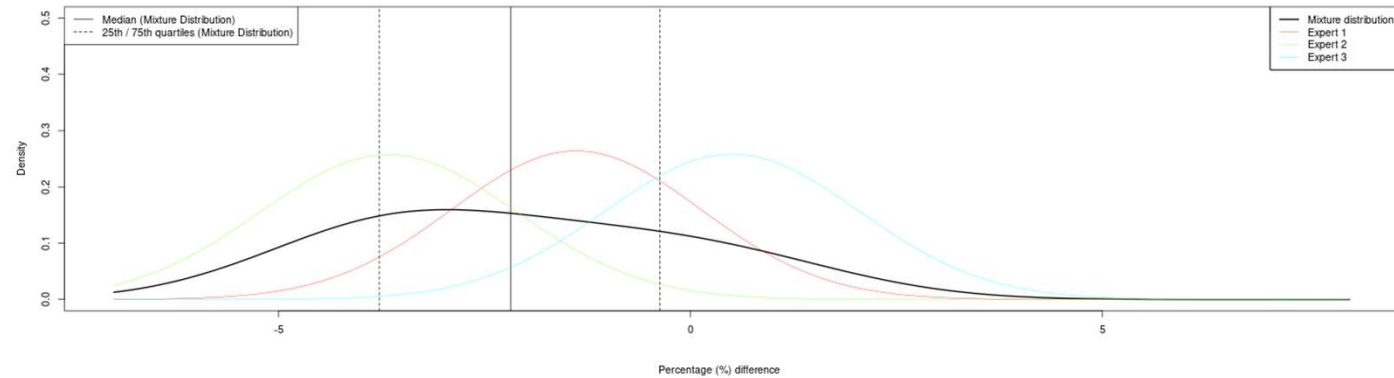
Expert 1:

Expert 2:

Expert 3:



Prior Density



- Show individual elicitations
- Add mixture distribution quantiles

Elicitation software (7)

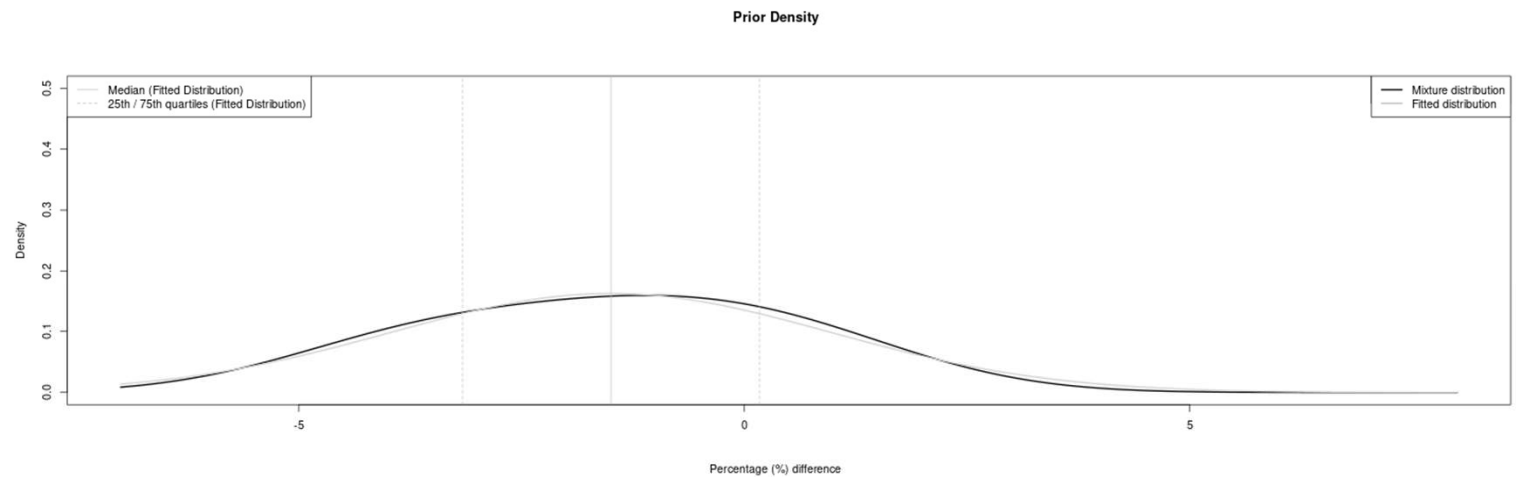
Fit distribution

Choose distribution to fit to the Univariate mixture distribution:

Normal

Show fitted distribution

Add fitted distribution quantiles



- Show individual elicitations
- Add mixture distribution quantiles

Thank you for listening!

Any Questions?

phastar The logo for phastar, featuring the word "phastar" in a bold, lowercase, sans-serif font. A white, five-pointed star is positioned above the letter "a", partially overlapping it.