

In and out of sample validation for structured expert judgment – a small sample size analysis

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Suggested talk duration (30 minutes)

Summary

The Classical Model or Cooke's method for structured expert judgment is a well-established approach in eliciting probability distributions. Its trademark is the presence of the calibration questions, which enable the quantification of experts' statistical accuracy and informativeness. The two scores yield, in turn, performance-based weights which enable a mathematical aggregation of experts' assessments to a so-called decision maker. The Classical Model has been used in numerous applications, which span from predicting possible malfunctions of chemical installations for the accident consequence management for nuclear power plants to attribution of global foodborne disease to specific foods.

Numerous studies have compared the Classical Model's performance-based weighting with equal-based or harmonic weighting. The performance-based weighting is usually shown to improve the information score of the decision maker, while preserving the calibration score. Moreover, the performance-based weighting has been extensively validated, both in sample and out of sample, using an updated TU Delft structured expert judgment database, from 2006 until 2015. The Classical Model can produce robust results for a reasonable small number of calibration questions and for a limited number of experts. I will present results from the updated TU Delft database, as well as from recent applications.

Relevance to conference theme

Keywords (max. 3)