

Extreme survival guide: what to do with a *single* person and few observations?

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Suggested talk duration (15-60 minutes)

15 minutes (without questions; 20 minutes including questions)

Summary (max. 500 words)

Sometimes, our interest is not in the common denominator of a group of people (i.e., 'nomothetic') but in a *specific* person (i.e., 'idiographic'). An example can be found in education and psychology, where we might be interested in estimating the ability of a particular student. Whereas our 'standard statistical toolbox' is suited for most nomothetic research, idiographic research asks for an update of this toolbox. *Especially* when information about this single person is scarce.

During this presentation, we explore the possibility of Bayesian statistics to estimate a student's (mathematical) ability based on only one or a few test results. We show how sources of uncertainty of the test (i.e., measurement error, uncertainty in the translation of raw test scores to percentile scores, statistical ties) can be incorporated in the Bayesian analysis.

Additionally, we discuss the possible merits of specifying subjective priors for specific persons based on information other than the test results. An interesting but controversial example are observations of the teacher of a single student. During the presentation, we illustrate how teacher insights about specific students can be elicited and how these elicited insights can be used as a prior in the Bayesian analysis of a specific student's abilities.

Relevance to conference theme

In this presentation, we take the conference theme 'to the extreme': what if you are interested in a *single* person *and* have little information about this person? Our Bayesian approach to modeling this type of data might inspire other applied researchers or methodologists who deal with very limited data and are more interested in specific persons than in the 'common denominator' of a group of persons.

Keywords (max. 3)

Bayesian statistics, $n=1$, idiographic