Bayesian Methods for Missing Data: Part 2

Illustration of a General Strategy

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Abstract:

This talk follows a presentation (Part 1) which introduces methods for adapting Bayesian models to include partially observed cases, distinguishing between the requirements for missing responses and missing covariates and showing how non-ignorable missing data mechanisms can be accommodated. In Part 2, we will demonstrate how these approaches can be incorporated into a general strategy for a "statistically principled" investigation of data which contain missing covariates and/or missing responses, allowing for nonrandom missing data mechanisms.

The first part of this strategy entails constructing a "base model" by selecting an analysis model, then adding a sub-model to impute the missing covariates followed by a sub-model to allow informative missingness in the response. The second part involves running a series of sensitivity analyses to check the robustness of the conclusions. An antidepressant trial comparing the effects of three treatments will be used as an illustrative example throughout. In particular, we will focus on the sensitivity analysis, and suggest ways in which expert information about the non-response can be elicited and utilised.