# 作业 10: 贝叶斯多层模型

## 姓名 (学号)

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#### 参考文献

Gelman, Andrew, John B Carlin, Hal S Stern, and Donald B Rubin. 2014. *Bayesian Data Analysis*. 3 edition. Taylor & Francis.

Gelman, Andrew, and Jennifer Hill. 2006. *Data Analysis Using Regression and Multilevel / Hierarchical Models*. Cambridge University Press.

Gill, Jeff. 2015. *Bayesian Methods: A Social and Behavioral Sciences Approach*. 3 edition. Chapman & Hall/CRC Press.