Generalized and Multilevel Linear Models

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Generalized and Multilevel Linear Models

- In this class we will learn two powerful extensions of the linear model, which we have discussed extensively throughout this course.
- The first extensions if the **Generalized Linear Model** (GLM) which allows the use of distributions other than Gaussian in the outcome variable.
- These extensions can be particularly useful when our outcome variable is binary or bounded to positive values.
- Multilevel models (also known as hierarchical or mixed effects models), on the other hand, are regression models that include categorical input variable representing group membership, and intercepts and possibly slopes are allowed to vary by group [Gelman and Hill, 2006].
- These models are useful when there are predictors at different level of variation.
- For example, in studying scholastic achievement, we may have information about individual students (e.g., family background) , class-level information (e.g., characteristics of the teacher) , and school-level information (e.g., neighborhood) [Gelman et al., 2013].

Generalized Linear Models

- ghghg gfhfg[McElreath, 2020]

Conclusions

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References I

Gelman, A., Carlin, J. B., Stern, H. S., Dunson, D. B., Vehtari, A., and Rubin, D. B. (2013).
Bayesian data analysis.
CRC press.

Gelman, A. and Hill, J. (2006).
Data analysis using regression and multilevel/hierarchical models.
Cambridge university press.

McElreath, R. (2020).
Statistical rethinking: A Bayesian course with examples in R and Stan.
CRC press.