Case 12: Examining Student Math Performance with School Effects

A researcher is studying math test scores of students in a large metropolitan area that has 20 schools. The researcher randomly selects 200 students from six different schools randomly selected from the metropolitan area. Each student is tested twice (Time 0 and Time 1) using standardized tests and the following variables are collected: Math score, Time, Student ID, School ID, and student socioeconomic status (SES). The researcher wants to study whether math scores improve over time, whether the rate of improvement varies between schools, and how SES affects math performance. (download data)

Case:

Initial Questions

1. What are the research objectives?

2. What are the statistical questions?

3. What is the response variable, and what is the data type of the response variable?

4. What are the explanatory variables of interest?

5. Are there covariates?

6. What is the population of interest?

7. What is the subject, and what is the number of distinct subjects?

8. Are there subject-level data?

9. Are response variables dependent (repeated measures / clustered subjects)?

10. Are the subjects selected randomly?

11. Are the subjects randomly assigned to different groups?

Initial Thoughts

