Statistical Power Lab

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Directions for Exercises

For each of the exercises, please do the following:

1. Name the specific type of CRT.

2. Identify the sample size at each level (if known).

3. Estimate the design parameters using the specific resource noted. Document your assumptions, e.g. state, population, covariate set.

4. Conduct the power analysis using *The Generalizer plus Power*.

5. Document the results of the power analysis. Note. If the study is a multi-site study, be sure to report how the sites effects are treated (fixed vs. random).

Exercise 1

Suppose a group of researchers want to examine the effectiveness of a new reading curriculum. They plan to randomly assign 24 schools to the treatment and 24 schools to the control. In each school, they plan to test 80 5th graders. The outcome of interest is student reading achievement. What is the MDES?

Use the *Online Intraclass Correlation Database (link on resources page)* to estimate the unknown design parameters.

Exercise 2

Suppose a group of researchers want to examine the effectiveness of a new math curriculum. Entire schools will be assigned at random to receive either the new curriculum or continue with current practice. All 6^{th} grade teachers in the school will participate. Within each school, they expect to have 6 teachers and 25 students per teacher. The outcome of interest is student math achievement. They expect that students in the treatment schools will improve their math scores by 0.20 standard deviations. How many schools are necessary for 80 percent power?

Use the *AERA conference presentation* to estimate the unknown design parameters.

Exercise 3

Suppose a group of researchers want to examine the effects of a whole school reform model on 5th grade achievement (math or reading). Schools are the unit of random assignment. The researchers secure 20 districts, 4 schools per district, and 100 5th grade students per school. What is the MDES?

Use the *Online Intraclass Correlation Database (link on resources page)* to estimate the unknown design parameters.