

## Learning Guide: Cross-Sectional Designs

1. I would argue that all cross-sectional designs, even purely descriptive designs, should use multiple comparison groups if possible. **Explanatory or analytic cross-sectional designs require** the use of comparison groups. You **cannot address explanatory research objectives through a single population design**. Why is comparing two or more populations critical in explanatory or analytic cross-sectional designs?
2. Identifying and accounting for the influence of confounding factors is very important in the design of observational studies in general and especially cross-sectional designs. Compare the potential that each of the following threats to *internal validity* (history, maturation, testing response, instrument decay, regression to the mean, mortality, selection bias, selection interaction bias) will occur in a true experiment, a quasi-experiment, and a cross-sectional design? Warning: The answer may be “does not” for some of the threats.
3. Compare the potential that each of the following threats to *external validity* (selection interaction bias, sensitization, artificial response) will occur in a true experiment, a quasi-experiment, and a cross-sectional design? Warning: The answer may be “does not” for some of the threats.
4. Compared to experiments, cross-sectional designs typically have relatively complex (multi-component) hypotheses. Why?
5. What does matched sampling mean? Why does this approach reduce threats to internal validity in observational studies?
6. One piece of advice is to think about an observational study first from the perspective of “what I would do if I could conduct a true experiment,” and then build in as many of the key controls from the experiment as possible in the observational study. Think of a study you might conduct and practice this approach.
7. Planning the analysis is a key component of research design. What are some of the basic differences in planned analyses for cross-sectional designs and for experiments? How are they likely to differ?
8. Think back to our readings and discussions of the role of theory in research, and my insistence that you clearly define the constructs in a theory of interest to you. Why are these important to designing any study? How do these approaches improve the internal validity, generalizability, and explanatory power of observational designs?