

Florida State University College of Criminology and Criminal Justice
Ph.D. Comprehensive Examination in Research Methods and Statistics, Fall 2020 (1)

DAY 1 OF THE EXAM

INSTRUCTIONS

Answer one question from each of the two sections below. Please notify the proctor when you are finished. Please note: Once a student takes possession of the examination at the start of the exam period, this constitutes an attempt at taking the exam, regardless of whether the student completes the exam, hands in any answers, or remains for the full exam period.

I. RESEARCH DESIGN

1. Self-selection into environments represents a threat to any statistically significant associations between environments and behavioral outcomes. Discuss the ways that researchers attempt to rule out selection. Design a research project where you specify how you would reduce the possibility that your findings could be explained away in terms of self-selection.
2. Randomized experiments are a type of experimental design that uses random assignment to gain equivalence between groups in a study. In criminology, they are used most often to evaluate the impact of an intervention. Discuss (a) the rationale for conducting a randomized experiment, (b) the essential components of the design, and (c) common problems in intervention research that can threaten the validity of the experiment.

II. DATA GATHERING METHODS

3. Suppose you collected data on a nationally representative sample of youths. Pretend that you were then interested in examining the association between X and Y. After deleting cases that had missing data, only 25% of the sample was retained for this analysis. Describe, in detail, how you would determine whether the pattern of missingness was random or non-random. If it was random, how would this affect your results? If it was non-random, how would this affect your results?
4. Researchers are often concerned with the issues of validity and reliability. Describe these concepts as they relate to survey research. Why are they a concern? How can we assess them? What can we do to maximize them?

DAY 2 OF THE EXAM

INSTRUCTIONS

Answer one question from each of the two sections below. Please notify the proctor when you are finished. Please note: Once a student takes possession of the examination at the start of the exam period, this constitutes an attempt at taking the exam, regardless of whether the student completes the exam, hands in any answers, or remains for the full exam period.

III. STATISTICS

5. Most theories of offending seem to imply that a causal force (X) exerts a linear effect on offending (Y). Describe the problems with failing to model nonlinear relationships. To answer this question, (1) select a theory, (2) identify problems with failing to take nonlinearity between X and Y into account, (3) argue for a particular type of nonlinearity between X and Y, (4) describe how you would test for it, and (5) describe the implications of a positive test (one showing nonlinearity) for the theory.
6. For the following statistical methods, describe the statistical problems that each method is designed to solve (i.e. describe the research situations in which you would use them, and why other methods like OLS regression may not be appropriate).
 - a. factor analysis
 - b. logistic regression
 - c. Poisson and negative binomial regression
 - d. hierarchical linear modeling

IV. DATA INTERPRETATION

7. Interpret the findings of the attached article by Ballard and Teasdale (2016). This means that you should tell what the results mean with respect to the goals of the researchers and what they were trying to find out, just as if you were writing the Results and Discussion/Conclusion sections of the journal article. Do not merely repeat in words what is already shown in numbers in the tables. What conclusions would follow from the results? What problems with the methods might undermine or weaken these conclusions?
8. Interpret the findings of the attached article by Labrecque and Smith (2019). This means that you should tell what the results mean with respect to the goals of the researchers and what they were trying to find out, just as if you were writing the Results and Discussion/Conclusion sections of the journal article. Do not merely repeat in words what is already shown in numbers in the tables. What conclusions would follow from the results? What problems with the methods might undermine or weaken these conclusions?