

**Florida State University College of Criminology and Criminal Justice**  
**Ph.D. Comprehensive Examination in Research Methods and Statistics, Spring 2016**

**INSTRUCTIONS**

There are four sections to the exam. Answer one question from each section. You have until 5:00 PM to finish. 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** (Answer one of the two questions in this section.)

1. Describe at least four distinct methods for controlling potential confounding variables, stating the limitations of each one.
2. Imagine you have been asked to develop an experimental design to test whether participating in a job training program in prison will reduce an inmate's likelihood of re-offending after release from prison. Describe the research design that you would propose. Explain all the ways you can think of why this experimental design is preferable to a quasi-experimental or correlational design. If there are weaknesses of your design, what are they?

**II. DATA GATHERING METHODS** (Answer one of the two questions in this section.)

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. Many popular survey datasets, such as the NLSY and Add Health, feature complex survey designs where respondents are sampled from within samples of higher-order units (e.g., neighborhoods, schools) and where some types of respondents are oversampled (e.g., racial/ethnic minorities). Explain how each of these design features would be implemented (i.e., what steps would be involved in doing this type of sampling). Explain why the designer of the study might have included each design feature. Describe the disadvantages of each of these design features.

### III. STATISTICS (Answer one of the two questions in this section.)

5. Describe why it is inappropriate to use ordinary least squares regression when the dependent variable is non-normally distributed (e.g., a binary outcome, a count outcome, or other non-normally distributed outcomes). Explain some of the correct statistical techniques that can be used with non-normally distributed dependent variables.
6. Criminologists lay great emphasis in their research reports on the statistical significance of associations. What precisely does statistical significance tell the researcher? Under what circumstances is statistical significance less meaningful or informative? In your answer, include a discussion of the following terms: (a) population parameter, (b) sample statistic, (c) standard error, (d) confidence interval, (e) significance level.

### IV. DATA INTERPRETATION (Answer one of the two questions in this section.)

7. Interpret the findings of the attached article by Cudmore et al. 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 Roth. 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?