

**Doctoral Qualifying Examination**  
**Department of Criminology**  
**Spring 2012**

**Methods and Data Analysis**

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| <p>The student's personal items will be kept in the office of the graduate director during the exam. The student will be provided with a writing pad, computer, pen, and exam.</p> |
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During the examination period of 8 a.m. to 4 p.m., the student must not utilize any outside resources. The student may not confer with any people or refer to any books, articles, etc. Students are on their honor to produce their own work on their exams. The University subscribes to a document-checking service that can be used to assess plagiarism; the Department of Criminology reserves the right to submit any examination to this service for evaluation.

Responses to exam questions may be typed; student should double-space and use a 12-point font. Students who use computers will save their exam as a single MS Word document to the notebook computer provided by the Graduate Director.<sup>1</sup> Students may hand write their exams; the exams will be typed up by a staff person and the committee will receive both the typed and hand-written copies. Students may not withdraw from the exam after receiving it; if the student does not complete and turn in the exam, it will be recorded as a failure. Exam responses must be submitted to the graduate director by 4 p.m.

You must pick at least one question from the first four questions (questions 1-4). (This is to ensure that you answer a question that requires a research design.) Then pick any three of the remaining 7 (questions 1 – 8). In total, you will answer 4 questions. For each, write an essay in the scientific style of which resembles that found in scholarly peer-reviewed journal articles. Students should provide in-text citations to the best of their abilities; a reference list is not required. There are no minimum or maximum page limits.

- 1) You are designing a study to determine the effect drug use has on violent crime in order to derive causal statements about the link between these two behaviors. First, explain how you would approach this study using a longitudinal design. Second, assume you do not have the time or resources to collect data over time and must conduct your study using a cross-sectional approach. Describe this approach and, in so doing, explain what steps would be taken to approximate a longitudinal study as much as possible. Finally, explain what limitations your cross-sectional design has in terms of approximating any causal link between drug use and violent crime.
  
- 2) You are writing a grant proposal to study the effectiveness of a prisoner re-entry program that exists in Florida. Explain the methodological approach you would take to conduct this study, the variables you would measure, and the population you would study. Note that the funding agency requires that characteristics of the individuals as well as the contextual characteristic of the location to which inmates are released be considered in the evaluation. Explain how you would approach these requirements from a conceptual, measurement, and analytic perspective.

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<sup>1</sup> The exam computers are checked before the exam. All non-program files are removed, Internet access is blocked, and the computers are locked up until exam time. After the exam, software is used to detect use of USB ports.

- 3) Select a research topic based on your knowledge of the literature in criminology and criminal justice. Identify a research question that needs to be addressed and hypotheses that need to be tested. Develop a research design that addresses the research question and tests the hypotheses. Describe your design in a way that can be understood by those with a thorough understanding of research methodology, but who may not have a specialized knowledge of the particular area of research you have chosen. Be sure to discuss and justify the methods of data collection and operationalization of variables. What are the strengths and limitations in the research design you have proposed relative to previous studies in the literature?
- 4) Experiments have been described as providing the basis for the most credible estimate of a policy's impact. An experimental design typically is not feasible when undertaking community-level interventions. Given that, how would you conduct a study that would provide a credible assessment of the impact of a community-level intervention (e.g., community policing, a prisoner reentry program). In answering this question: (a) describe a specific community-level intervention, (b) describe and defend the number of sites that you would use to conduct the study, (c) describe and defend the measures that you would use, (3) describe and defend the analysis plan that you would use, and (3) identify the limitations of your design and why it is nonetheless preferable to alternatives.
- 5) Choose 6 of the following 10 pairs of terms. Define each term in the pair. Be sure to compare and contrast the terms within each pair.
- a. internal validity vs. external validity
  - b. reliability vs. validity
  - c. experimental group vs. control group
  - d. mediation vs. moderation
  - e. structural equation modeling vs. path analysis
  - f. experimental design vs. quasi-experimental design
  - g. random sampling vs. cluster sampling
  - h. correlation vs. causation
  - i. exploratory factor analysis vs. confirmatory factor analysis
  - j. Type I error vs. Type II error
- 6) With quantitative data of various types, there exist ways to assess the reliability and validity of measures. This question directs your attention to assessing such issues for qualitative research. Choose a topic (e.g., drug use, gangs) to research using a qualitative design. First, how do you assess the reliability and validity of measures collected using qualitative methods? Second, describe the data that you would need to collect in a qualitative study to help ensure that your measures were reliable and valid. Third, describe the types of analyses that you would conduct to demonstrate the reliability and validity of the qualitative data measures.
- 7) Researchers often place great emphasis on whether their results are statistically significant. Thoroughly describe the concept of statistical significance with regard to an OLS regression coefficient. What does it mean to say an effect is statistically significant, and what are some of the factors that influence significance tests? Your answer should include, but not be limited to, a discussion of concepts such as the sampling distribution, the t-statistic, and Type I and Type II errors.

- 8) Please provide an overview of the problem of differential selection/sample selection bias and how the problem bears on the credibility of estimated effects. Use a criminological or criminal justice example to illustrate your discussion. Also, provide recommendations about how one may overcome this problem. Finally, indicate what method(s) you think the field should adopt to address it.