

Doctoral Qualifying Examination
Methods and Data Analysis
Department of Criminology

Spring 2018

Exam Rules:

**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.**

During the examination period of 8 a.m. to 5 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.¹

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 Exam Proctor by 5 p.m.

Security: The computers have been stripped. After the fact, the computers will be checked to determine if any flash drive has been inserted or if the internet has been accessed. **DO NOT ACCESS THE INTERNET FOR ANY REASON.** The Graduate Director will have visual/audio contact with the room for the exam period.

There is a single Word file on the desktop with the exam. Write your answers IN that document (which includes the exam questions). You, your computer and your exam have a number that identifies you. Do not change the name of the file; do not include your name IN the exam file. You may print to the printer in SOC 351.

When you are finished, submit your completed exam to the Graduate Director.

¹ 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.

Exam Instructions: You must pick at least one question from section one (questions 1-3). (This is to ensure that you answer a question that requires a research design.) Then pick any three of the remaining questions (1-9). In total, you will answer 4 questions. For each, write an essay 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.

Section 1: Design a Study

1) 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.

2) In a now classic article in the psychological literature [Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182], the concept of moderating and mediating variables are described. First, describe the difference between mediation and moderation and why the distinction is relevant to criminological theory. Second, select and describe a theoretical perspective that reflects or implies a mediating or moderating relationship. As the major part of your answer, design an original study (including analytical plan) that will test this mediating or moderating relationship.

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?

Section 2: Methodological Issues

4) There are three primary sources of data about the nature and distribution of crime in the US: official statistics, victimization surveys and self report studies. Discuss the strengths and weaknesses of each source. For example, what can each source tell you about how much crime occurs, where it occurs and characteristics of offenders and victims, etc.? What are the implications for data analysis of the various measures? Also, select a particular research question and cite examples from the literature showing how that question has been addressed with the various crime data sources.

5) 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.

6) 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

7) Discuss the strengths and limitations of longitudinal research designs and cross-sectional research designs. Discuss a situation when a longitudinal research design would be preferred over a cross-sectional research design. Discuss a situation when a cross-sectional research design would be preferred over a longitudinal research design.

8) 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.

9) Describe (a) the statistical problems that each of the following methods are designed to reduce or eliminate, and (b) the distortions in findings that would arise if the problems were not solved.

- a. Logistic regression
- b. Negative binomial regression
- c. Hierarchical linear modeling
- d. Ordered logistic regression