

**Doctoral Qualifying Examination
Methods and Data Analysis
Department of Criminology**

Fall 2019

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. The Department of Corrections has asked you to design a study to determine the effect of their employment reentry program (ERP) on violent crime in order to determine whether their program decreases recidivism. First, design an evaluation using an experimental design. Second, assume you may not have the time, resources, or necessary support from the correctional facility to conduct a true experimental evaluation. Describe an alternative, non-experimental research design to evaluate the program. Explain the limitations of this approach relative to your experimental design in evaluating the causal link between ERP and violent crime.
2. You are designing a study to determine the effect of a particular individual-level crime correlate on violent crime. You may pick your own known correlate of violent crime, such as drug use, gang membership, poverty, to name just a few. First, explain how you would approach this study using a longitudinal design in order to examine the utility of this known correlate for explaining variation in violent crime. 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 how you would approach this research question using a cross-sectional design. Third, explain what limitations your longitudinal and cross-sectional designs have. Finally, for each of your designs (longitudinal and cross-sectional), indicate the data analysis techniques you will use in order to estimate the effect of your selected known correlate on violent crime. Explain why you chose those techniques.
3. You are designing a study to determine the effect of a particular individual-level crime correlate on violent crime. You may pick from the following known correlates of violent crime: delinquent peers, poverty, or subcultural influences. First, design a study to answer your research question that relies mostly on quantitative data. Second, explain how you would answer this research question using qualitative data. For both designs, include a data analysis plan. Finally, explain the strengths and weaknesses of each design relative to each other.

Section 2: Methodological Issues

4. 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 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, standard errors, and Type I and Type II errors. **(Regarding Rubric: This questions does NOT have a “Research Methods” knowledge component)**
5. When conducting a program evaluation in practice, Randomized Controlled Trials (RCT’s) may not always go as planned. For instance, poor compliance and attrition are key issues researchers face. First, describe situations where these issues may occur and the methodological challenges that they create. Second, discuss intention-to-treat (ITT) analysis and illustrate why this is the “gold standard” of research design. Describe the types of real world issues a researcher may face when conducting a RCT and describe why ITT analysis may not provide accurate causal estimates of a program’s effect. In doing this, describe why it may be appropriate to also report the results of a “treatment on the treated” (TOT) analysis.
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. normal vs. Poisson distribution
 - 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. random effects vs. fixed effects
7. Research evaluating criminological theory has often relied on samples of university students. Perhaps unsurprisingly, researchers are divided on their opinions regarding this sampling strategy – some feel student samples have merits while others do not. Make an argument for or against the use of student samples in tests of criminological theory. While you should focus on supporting your argument, strong answers will also demonstrate understanding of the alternative perspective. **(Re Rubric: This questions does NOT have a “Data Analysis” knowledge component)**

8. 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 as it relates to their methodologies. 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.

9. 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 frame your discussion of 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.