Florida State University
College of Criminology and Criminal Justice

PhD Comprehensive Examination in Research Methods & Statistics

Fall 2008

<u>**Instructions**</u>**:**

There are four sections to the exam. Answer one question from each section. You have until 4:00pm to finish. If you have problems with the exam, you may consult with faculty proctoring the exam. Return your completed exam to the proctor on duty when you are finished.

> Dan Mears (Room 308), 8:00am – 10:00am;
> Gary Kleck (Room 306), 10:00am – 12:00pm;
> Bill Bales (Room 324), 12:00pm – 2:00pm;
> Brian Stults (Room 317), 2:00pm – 4:00pm

SECTION I: RESEARCH DESIGN

1.   Imagine a scenario in which a well-designed impact evaluation using random assignment to treatment and control groups shows that participants in a faith-based program have lower recidivism rates than participants in the control group. Critics might argue that the program might well reduce recidivism but that the effect is not due to any faith-based programming but rather to secular programming, both of which typically are present in faith-based programs. Describe a type of evaluation research study you might undertake to help shed light on whether it is the "faith" or "secular" part of the program that contributes to the reduction in recidivism.

2.   Explain in exactly what way research is weakened as a result of each of the following flaws in a research design.

> a) the researcher does not have a control group
> b) the researcher cannot control which subjects are exposed to the treatment and which are not
> c) the researcher randomly assigned subjects to experimental and control groups, but has post-test (after the intervention) measurements only, no pre-test measurements
> d) the researcher cannot do random assignment of subjects to experimental (treatment) and control groups, and must do matching instead.

SECTION 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 were random, how would this affect your results? If it were non-random, how would this affect your results?

4. A fundamental problem in crime research is accurate measurement of the frequency of criminal behavior. Self-report surveys try to get respondents to confess to the crimes they have committed. Explain the survey strategies that can (a) encourage more complete and accurate self-reports of criminal/delinquent behavior, and (b) assess the validity and reliability of responses to the self-report questions.

SECTION III: STATISTICS

5. Model criticism is an important process for determining the adequacy of a statistical model. Part of that process involves identifying the presence of influential cases in terms of outliers and leverage. Describe these concepts. How can they affect our statistical models? How do we detect them, and what can we do to remedy any problems that they pose?

6. Multilevel modeling is a versatile statistical technique that can be used in a number of different research scenarios. Describe multilevel modeling and provide two different examples of when multilevel modeling would be an appropriate statistical method to use. Explain why you think it would be appropriate in each case, and explain why it may, or may not, be superior to other statistical approaches.

SECTION IV: DATA INTERPRETATION

7. Interpret the findings of the attached article by Siennick and Staff. This means that you should tell what the results <u>mean</u> with respect to the goals of the researchers and what they were trying to find out, just as 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 Holmes et al. This means that you should tell what the results <u>mean</u> with respect to the goals of the researchers and what they were trying to find out, just as 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?