Exam materials

Singleton, R. A. J., & Straits, B. C. (2009). *Approaches to social research* (5th ed.). New York, NY: Oxford University Press. (Hard copy at library, PDFs at course Zotero library)

Allison, P. D. (1998). *Multiple Regression: A Primer* (1st edition). Thousand Oaks, Calif: Pine Forge Press. (ebook at library)

More recent editions are OK. You do not need to study every part of each book in detail, but focus on the parts about research design and quantitative techniques.

Exam format and questions

The exam consists of four questions. In the first question the students are asked to provide definitions for 8 terms from the course material. The three remaining questions are essays, chosen from the following list:

1. Why is it important to study research methods?
2. Explain inductive and deductive reasoning and their use in social research. Which one is more commonly used as the main mode of inference in qualitative and quantitative research and why?
3. Singleton and Straits present a research process consisting of seven stages. Explain each stage. Which stages you think are the most consequential for research quality?
4. Singleton and Straits present four prototypical research designs. Explain each of these and compare their advantages and disadvantages.
5. Explain cross-sectional and longitudinal research. What are the key advantages and disadvantages of these approaches?
6. Explain the characteristics of good research question. What should be taken into consideration when choosing a research question as a doctoral student?
7. How does sampling influence the quality of a study? What kinds of errors can sampling produce in a study? Explain the concepts of true probability sample and non-probability sample and give at least one example of each. What kinds of errors a true probability sample avoids and what errors are non-probability samples can lead to?
8. Singleton and Straits explain that survey research is subject to four sources of error. Explain these sources and how their impact can be reduced.
9. Explain open and closed questions in survey research. What are the advantages and disadvantages of each type of questions in self-administered surveys?
10. Explain internal validity and external validity. What are the main threats to internal and external validity in experimental research?
11. Explain reliability and measurement validity. How are reliability and validity of measurement commonly evaluated when using multiple indicator techniques?
12. Why do statistical techniques provide us evidence of association instead of causality? In addition to association, what else is required for a causal claim? Explain two research/analysis strategies that can be used for demonstrating causality.
13. Explain the use of multiple regression analysis in social research. Why is multiple regression a popular tool? What kind of data are needed for multiple regression? How are regression results interpreted?
14. Contrast using experiments and observational designs with statistical controls for making causal claims. What justifies a causal claim in each of the two techniques?
15. Explain the workflow of a regression analysis project.
16. Based on survey data, a psychologist runs a regression in which the dependent variable is a measure of depression and independent variables include marital status, employment status, income, gender, and body mass index (weight/height2). He finds that people with higher body mass index are significantly more depressed controlling for the other variables. Has he proven that being

overweight causes depression? Why or why not? If not, explain how the research design should be changed to obtain a valid estimate of the causal effect between overweight and depression.

17. Multiple indicator measurement is common particularly in survey studies. What are the reasons for using multiple indicator measures? How are multiple indicator measures typically analyzed?
18. In a large organization, the average salary for men is $47,000 while the average salary for women is $30,000. A t test shows that this difference is statistically significant beyond the .001 level. When salary is regressed on years of work experience and a dummy variable for gender (male = 1, female = 0), the coefficient for sex is about $1,500 with a p value of .17. What would you conclude and why?
19. According to Singleton and Straits, knowledge can be description, explanation, prediction, and understanding. Explain and contrast each of these four types of knowledge.
20. Explain the concept of moderation (interaction) and mediation (intervening variable). Why studying moderation and mediation models is often interesting and how this type of models are analyzed using multiple regression analysis.
21. Surveys studies can be either self-administered or interview-based. Explain different modes of administration within each of these categories and the advantages and disadvantages of each mode.
22. Explain the tasks in doing a survey study and discuss different treats to reliability and validity of surveys.
23. Because of your developing methodological expertise, someone who is about to conduct a random sample survey asks you, "What proportion of the population should I sample to give me adequate precision?" How would you respond to this question? Also explain which factors influence how many responses are required in a survey.
24. Singleton and Straits explain that variables can be either manipulated or measured. Explain the difference between these two approached for getting data. Also explain the different ways a variable can be measured.
25. How are the concepts inductive reasoning, deductive reasoning, proposition, hypothesis, statistical association, construct, empirical concept/measure/indicator, and data related? Why is quantitative research mostly done using deductive logic?
26. You have developed a new construct for your study and now need to measure the construct. Explain the two main tasks in measurement development, conceptualization and operationalization. Then explain the process of developing new measures for a survey study.
27. Singleton and Straits explain that measurement errors can be classified into two categories. Explain these categories and how they relate to reliability and validity
28. What is the difference between predictive validity, content validity, and construct validity. Are these complementary or competing ideas?
29. You want to study the population of all single person enterprises in Finland. Explain how you would construct a sampling frame and take a sample for a survey. Is the final data a probability or a non-probability sample? Justify your answer.
30. Singleton and Straits differentiate between "true experimental", "pre-experimental", and "quasi-experimental" designs. Explain the key features and differences between these designs and provides (hypothetical) examples of how they could be used in management research?
31. Explain reliability, measurement validity, internal validity, and external validity. How are these concepts related; are some of them required for others? Justify your answer.

The 8 term explanations are chosen from the following list

1. 95% confidence interval
2. Attrition
3. Bias (in a statistical estimate such as regression coefficient)
4. Causal inference
5. Coefficient of determination
6. Concept and measure

7. Conceptualization (in relation to measurement)
8. Construct
9. Control variable
10. Convenience sample
11. Convergent validity
12. Correlation (Pearson's)
13. Cronbach's alpha
14. Descriptive and inferential statistics
15. Discriminant validity
16. Double-barrelled question
17. Dummy/indicator variable
18. Error term or disturbance (in regression)
19. Experiment and controlled experiment
20. External validity
21. Independent and dependent variable
22. Index and scale (according to Singleton and Straits)
23. Indicator
24. Interaction term (in regression)
25. Intercept and slope in simple regression
26. Internal validity
27. Interval measurement
28. Intervening variable
29. Unit of analysis
30. Likert scale
31. Measurement error
32. Measurement validity
33. Median
34. Mediating variable
35. Missing data
36. Moderating variable
37. Multicollinearity (near extreme, not extreme or perfect)
38. Multiple regression
39. Nominal measurement
40. Non-response (in sampling)
41. Null hypothesis
42. Operationalization
43. Ordinal measurement
44. Outlier
45. p value
46. Panel study
47. Path analysis
48. Population and sample
49. Predicted value (in regression)
50. Probability and non-probability sample
51. Quasi-experiment
52. Ratio measurement
53. Reactive and nonreactive measurement
54. Realism (philosophical concept)
55. Regression coefficient
56. Reliability
57. Replication (related to reproducibility)
58. Residual
59. Reverse causation

60. Sampling distribution
61. Sampling error
62. Sampling frame
63. Statistical significance
64. Self-administered survey
65. Social desirability bias
66. Spurious relationship
67. Standard deviation
68. Statistical model
69. Statistical significance
70. Structural equation modelling
71. Structured observation
72. Survey research
73. Theory
74. Three conditions for inferring causal relationship
75. Unidimensionality of an index or a scale
76. Validity
77. Variance
78. Vignette question