

FINAL EXAM

Please download this document to a Microsoft Word file, answer the questions, and send it back to me via email to sborgatti@uky.edu. Include your last name in the filename, as in “Smith - final exam”. Check the [class website](#) for the due date, as it may have changed. Please do not consult with anyone about this exam. You are allowed to consult an AI for help, but don’t use its words directly. In other words, use the AI to understand something, not to compose an answer. You are welcome to use Google or any class materials. Most questions should be answerable in about a page of text, not including computer output. For each question, whether it says to do so or not, please **interpret and explain fully**. In addition, **include all relevant computer output**, as well as **a link to the data**. I will use your data to check your results. Don’t forget to set the permissions so that I can access the link.

The exam asks you to analyze data. You are welcome to use any real dataset you have access to (but avoid made-up data and toy datasets). In addition, you can access publicly available datasets here:

- [Publicly available datasets](#)

Remember to **use real data** for all questions that require data, including Q6. In your answers, be sure to cite the source of the data, **and provide the data itself in a Google spreadsheet**. You do not need to use the same data for all questions.

Q1. Look at the readings for [Week 1: Introduction](#). How do they make the case for a course in (and a science of) research methods?

Q2. Compare and contrast field studies with experiments. Specifically, what are the advantages of field studies, and what are the advantages of experiments? When considering field studies don't just discuss cross-sectional studies: include longitudinal studies.

Q3. What is the role of qualitative analysis methods like ethnographic fieldwork, grounded theory, hermeneutics, etc in research? In your opinion, of course. Make sure to discuss the strengths and weaknesses of qualitative versus quantitative methods.

Q4. Take a published article from your field (e.g., accounting, management, marketing) that contains good theory. Describe the theory and explain what's good/bad about the theory from the point of view of the criteria laid out in Lave and March's (1993; 1975) book: *An Introduction to Models in the Social Sciences*. Best to systematically apply each of their criteria to the theory in your article.

Q5. Based on the readings for Sept 19 Models, describe both mathematical and simulation models, and explain the benefits/advantages of each.

Q6. Take a set of 5 positively-related variables and calculate the following three composite variables: First, average the five variables to create Composite1. Second, standardize and then average the standardized version to create Composite2. Third, use principal components analysis to extract the first principal component (showing all results). Call this Composite3. Now correlate these three. Present all of the variables (that includes both the raw data and your composites) and the correlation matrix in a Google sheet and provide a link below. Discuss the concept of a principal component, as well as the advantages of using principal components over either of the other two averages.

Q7. Explain how to use the correlation coefficient (not regression) to predict the values of Y from X. Illustrate this with actual data. For example, given data on Education and Income, show how to predict Income for a person with 12 years education, given the correlation between Educ and Inc, as well as means and standard deviations for each variable. See [Notes|Correlation](#) for more information.

Q8. Obtain a proximity matrix like the [similarities among holidays](#) dataset or the [distances between cities](#) dataset (but don't use either of these) or a correlation matrix and run Classical MDS on it. Provide the data and display the MDS map here and interpret it.

Q9. Explain the difference between Principal Components and Common Factor Analysis.

Q10. Run a simple regression using multiple independent variables and interpret the results. Show the regression output and provide a link to the data.

Q11. Use the PROCESS macro to run a mediation analysis. Show all results and remember to interpret them, especially the results of bootstrap analysis. Make sure to pick variables that make sense. E.g., don't use gender as the mediator. Provide a link to the data.

Q12. Use the PROCESS macro to run a moderation analysis. Show all results and remember to interpret them. Be sure to interpret the results of the Johnson-Neyman analysis. Provide a link to the data.

Q13. Using existing data, build a scale to measure a construct (e.g., trust in government). Use factor analysis to do this, deleting items that don't load well and recoding items that don't load positively. Make sure that reliability as measured by both alpha and omega are high enough (and note these measures assume all the variables are positively correlated). Interpret the resulting measure (its meaning may have changed as you deleted items). Note that scale construction involves making a number of decisions along the way. Please report these decisions, along with all computer output.

Finally, use the newly constructed variable in a regression and report the results. For example, you might determine whether men or women have higher scores on the construct.

As an example (just an example: you do not need to use these data; in fact, it is better if you do not), the dataset <https://www.thearda.com/data-archive?fid=RELATT88> contains the items needed to create a self-monitoring scale. It even states which items need to be recoded so as to be positively related to the other items. It also has plenty of other variables (mostly about religion) that you can correlate with self-monitoring.

Q14. Demonstrate the process of [traditional content analysis](#) on a small dataset containing 8 texts. As with the rest of the exam, the texts should be real. Create 3 to 5 codes. Recall that codes are essentially [variables measured on texts](#), such as "introspection: the author is demonstrating introspection" or "sadness: the level of sadness expressed here is a 4 out of 5". Write a codebook that explains what each code is and gives a textual excerpt that illustrates it. Then code the 8 texts, explaining why you coded the way you did. The codes can be presence/absence, or ratings. Remember that in traditional content analysis you are typically using the text as a window into either the author of the text (e.g., when coding emails) or the subject of the text (e.g., the deceased when coding obituaries, or the firm when coding annual reports). Put the texts, your codebook and your codes in an Excel file and put a link to it below.

