¹ MAE4120 Exam spring 2024

Instructions

- The exam should be completed individually.
- Each student have handed in a short description of the proposed topic for the exam beforehand (se Canvas for further information on the description).
- Feedback should have been received on the submitted description.
- The deadline for handing in the exam is April 18 at 14:00 through Inspera.
- A final exam will decide your grade for the course, and the grading scale is A-F.

The task

Your task is to:

1. Find a data set of your own choosing.
2. Conduct an empirical analysis with the data using item response theory.
3. Write a report on your findings.

In the report, how and when the data were obtained must be carefully detailed. In the analysis, you should utilize methods that we have discussed in the course. The topic of the analysis can involve the applications we have discussed in the course or it can involve other applications. Examples of topics include, but are not limited to:

- Evaluation of the psychometric properties of a scale or test using item response theory.
- Item selection or scale construction.
- Investigation of the differential item functioning of items on a scale or test with respect to different groups.
- Classification or identification of individuals based on item responses.
- Estimation of relationships between background variables and a latent construct.

When conducting the analysis you should apply the methods of model fit evaluation and item fit evaluation that we have discussed during the course. Be careful to motivate the discussions made in the analysis, for example, why a particular covariate is included in a regression model or why a particular item response theory model is used in your setting.

You must also refer to the scientific literature when appropriate. There is a zero-tolerance for plagiarism for this exam. Any text fragment taken from another source must be put in quotation mars and referenced appropriately. Excessive quotations should be avoided. The submitted text will be subject to analysis by anti-plagiarism software.

Structure of the report

The exam should be written similarly to an article in an academic journal and be between 2500 and 3500 words long, excluding the abstract, references, figures and tables. Regarding formatting guidelines, we suggest to follow American Psychological Association version 7 and you are required to do so with respect to the references. The following outline should be used for the assignment:
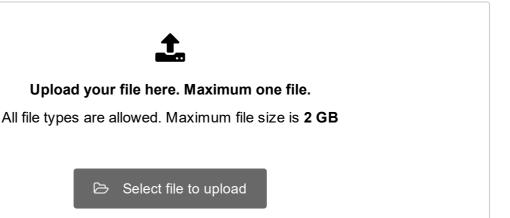
- Abstract (maximum 200 words)
- Instruduction
    - Introduce the topic matter and present a brief outline of previous research
- Research question
    - Clearly and concisely define the research questions of the study
- Methods
    - Briefly describe the methods and procedures that the study will use
- Results
    - Present the results of the study and how the results answer the research question
- Discussion

- Interpret the results and discuss the implications of your study. Also discuss how generalizable the results are and what the limitations of the study are.
- References
  - A list of references that you have cited in the document.
  - Follow the publication manual of the American Psychological Association version 7.

Data sources

You are free to use whichever data source you want. Some examples of sources with freely available data are:

- Chinese Health and Retirement Study
- Health and Retirement Study
- National Health and Nutrition Examination Survey
- Programme for International Student Assessment
- Trends in International Mathematics and Science Study

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Maximum marks: 10