

Data Project Material and TOC

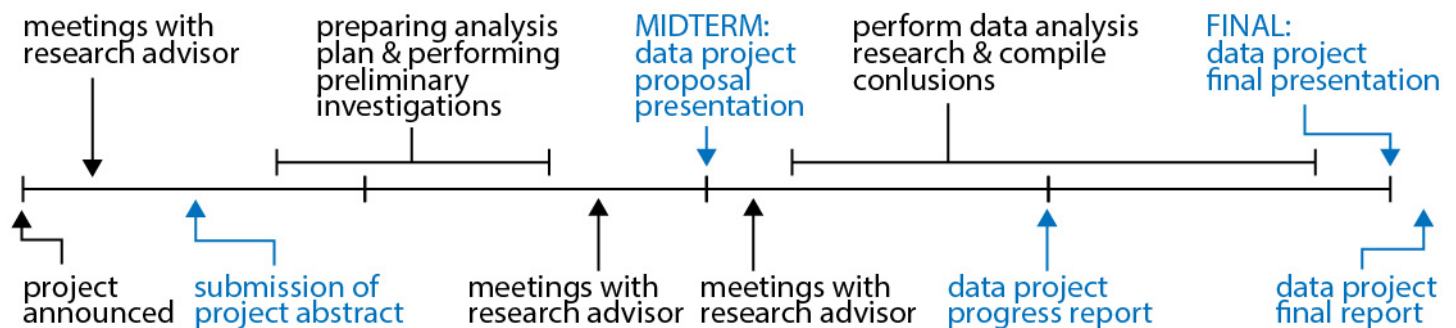
Instructions and reference material for the Data Project in BME 6717.

Instructor: Zachary Danziger

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Data Project Timeline Overview



Data Project Introduction and Abstract

The Data Project is a research-related effort that extends throughout the duration of the course. The focus of your Data Project should be on questions and/or analysis regarding data you have collected already or will collect through your own graduate research activities. (If you require an exception to this, please see me as soon as possible.) Your Data Project should center around a novel analysis technique or goal that will aid in the progress of your graduate research efforts; where this is not possible, your work should be applied to analysis techniques that are relevant to the general consideration and research conducted in the lab to which you belong. You must discuss your topic with your primary advisor before the submission of your first Data Project assignment. Your Data Project need not directly employ any of the techniques covered in this course; however, you may request topics be covered at any time during the course and accommodations will be made when possible. The Data Project may not consist solely of formatting data for, and learning to use, a stand-alone toolbox, although such effort is allowed to be a component piece of a larger effort.

Abstract Instructions:

Your Data Project abstract must describe 1) a data-related question or hypothesis, 2) the relevance of your question to your specific research, and 3) the type of data you have, will have, or need to have to complete the work. Note that you do not need to include the types of analysis you will perform in this abstract. You must be as specific as possible when describing what type of data you will use, including file size, regulatory considerations, formats, etc. Your abstract must be no more than 400 words, and include no figures.

Data Project Progress Report

Your report must use 0.5-inch or greater margins on all size, a professional 11pt font, single spacing, and conform to all section length requirements. Your progress report must contain three sections within a single PDF file:

1. Cover Page (1 page maximum)
 - a. This section must contain all necessary identifying material (including your name, your advisor, your lab name, etc).
 - b. The title of your Data Project.
 - c. Your Data Project abstract, which can be reproduced exactly from the Abstract assignment or updated as needed to reflect any changes to your project. Any updates made to your abstract since the previous submission must appear in red text.
2. Progress Achieved (750 word maximum)
 - a. Describe the work you have done up to this point. This should include all relevant Data Project activities, including, but not limited to, outside-class research into analysis methods, formatting data structures, exploring analysis techniques, collecting data, ruling out previously used analysis tools, hypothesis testing, and reasoning behind narrowing or changing the topic question.
 - b. Your primary focus in this section should be analysis insofar as possible.
 - c. You may reference tables, figures, and references from section 3. All external reference material must be present in section 3.
3. Supporting Material (2 page maximum)
 - a. Any tables, figures, or critical references are included here.
 - b. All figures must be labeled with figure numbers and a figure caption consistent with section 2.
 - c. All figure and caption text must be legible, but can be smaller than body text font.
 - d. List of cited references (of which there are typically very few) should also appear in this section, properly formatted, with DOI when possible.

Data Project Final Report

Your report must use 0.5-inch or greater margins on all size, a professional 11pt font, single spacing, and conform to all section length requirements. Your progress report must contain three sections within a single PDF file:

1. Cover Page (1 page maximum)
 - a. This section must contain all necessary identifying material (including your name, your advisor, your lab name, etc).
 - b. The title of your Data Project.
 - e. Your Data Project abstract, which can be reproduced exactly from the Abstract assignment, progress report, or updated as needed to reflect any changes to your project. Any updates made to your abstract since the progress report must appear in red text.
 - c. A short paragraph (<200 words) highlighting the changes made to your analysis (if any) since your final Data Project presentation. If no changes were made, indicate this with the phrase “no changes made to analysis”.
2. Progress Achieved (1200 words maximum)
 - a. Describe the work you have done up to this point. This should include all relevant Data Project activities, including, but not limited to, outside-class research into analysis methods, formatting data structures, exploring analysis techniques, collecting data, ruling out previously used analysis tools, hypothesis testing, and reasoning behind narrowing or changing the topic question.
 - b. Your primary focus in this section should be analysis insofar as possible.
 - c. You may reference tables, figures, and references from section 3. All external references material must be present in section 3.
 - d. You may refer to work described in your progress report.
3. Supporting Material (4 page maximum)
 - a. Any tables, figures, or critical references are included here.
 - b. All figures must be labeled with figure numbers and a figure caption consistent with section 2.
 - c. All figure and caption text must be legible, but can be smaller than body text font.
 - d. List of cited references (of which there are typically very few) should also appear in this section, properly formatted, with DOI when possible.
4. MATLAB Appendix (no maximum)
 - a. Include all code you wrote needed to produce the analysis described in sections 2 and 3.
 - b. Section format is as follows:
 - i. A heading followed by 1-3 sentences should describe the function of each piece of code.
 - ii. (i) is followed by one sentence, in red text, indicating what figures/statistics/analysis this code contributed to, and give figure numbers or section numbers where appropriate.
 - iii. Following (ii) should be followed by the code itself.
 - iv. Each piece of code should have sufficient comments within for me to follow the code logic. This requires, at the very least, a statement indicating the function of code sections or why external functions are called, and a statement at the very top of each piece of code about what actions it takes and what the input/output syntax is.

Data Project Proposal Presentation

Each student will deliver a 15 min talk (*including* a 3-5 min question and answer period) on the assigned dates. This talk will formally introduce the class to your data analysis plan and outline your proposal for the final Data Project. The focus of your Data Project should be on data you have collected or will collect through your own research activities, which analyses you plan to undertake, and justifications for those analysis choices. It is required that some preliminary analysis will be shown, such as visualization of the data, a proto-version of a planned analysis technique, and/or preliminary gross statistical analysis. See me for exceptions. Consult the rubric for evaluation criteria for me and your peers; the material and time dedicated to each topic should approximately correspond to the weight each criteria has on the total evaluation.

Presenter:	Evaluator:	Date:	Assignment: Data Project Proposal Presentation
Topic:			

Instructions: Make one mark indicating quality for each of the criteria listed below according to the presenter's performance for that criteria. If needed, you may select a combination of two adjacent ratings by making your mark on the vertical line dividing them.

- Excellent:* Outstanding in all respects; demonstrates the highest level of proficiency.
Very Good: High quality in nearly all respects; demonstrates a strong level of proficiency.
Good: Quality in many respects; demonstrates a sufficient level of proficiency.
Fair: Lacking in one or more critical aspects; key issues are left unaddressed.
Poor: Serious deficiencies present.

<i>Criteria</i>	Excellent	Very Good	Good	Fair	Poor	Weight
<i>Motivation of Scientific Problem</i>						0.1
<i>Accessible and Clearly Articulated Data Analysis Problem</i>						0.3
<i>Technical Understanding of Data and Analysis Methods</i>						0.2
<i>Figures are Legible, Clear, and Sufficiently Explained by Speaker</i>						0.2
<i>Questions Answered Politely and Accurately</i>						0.2

Notes (optional):

Data Project Final Presentation

Each student will deliver a 25 min talk (*including* a 5-8 min question and answer period) on one of the above dates. This talk will *briefly* remind the class of the purpose and motivation of your research (see rubric), then quickly transition to specific scientific question you are investigating and the data you are working with. The main focus of your talk is to present concisely and clearly the work you have done in analyzing your data and how you have advanced toward answering your principal scientific question. Describe the methodological approaches you have used, why you have used them, how you have interpreted the results of your analyses, and why your results are interesting or offer a unique insight into your data. Consult the rubric for evaluation criteria for me and your peers; the material and time dedicated to each topic should approximately correspond to the weight each criteria has on the total evaluation.

Presenter:	Evaluator:	Date:	Assignment: Data Project Final Presentation
Topic:			

Instructions: Make one mark indicating quality for each of the criteria listed below according to the presenter's performance for that criteria. If needed, you may select a combination of two adjacent ratings by making your mark on the vertical line dividing them.

- Excellent:* Outstanding in all respects; demonstrates the highest level of proficiency.
Very Good: High quality in nearly all respects; demonstrates a strong level of proficiency.
Good: Quality in many respects; demonstrates a sufficient level of proficiency.
Fair: Lacking in one or more critical aspects; key issues are left unaddressed.
Poor: Serious deficiencies present.

Criteria	Excellent	V. Good	Good	Fair	Poor	Weight
<i>Motivation of Scientific Problem</i>						0.05
<i>Accessible and Clearly Articulated Data Analysis Problem</i>						0.10
<i>Technical Understanding of Data and Analysis Methods</i>						0.25
<i>Figures are Legible, Clear, and Sufficiently Explained by Speaker</i>						0.15
<i>Data Analysis is Appropriate and Yields Interesting and/or Useful Insight</i>						0.25
<i>Questions Answered Politely and Accurately</i>						0.20

Notes (optional):