

# Quantitative Methods I: Final Project Guide

HAD 5744

The final project provides you with an opportunity to undertake an investigation of a research question of your own choosing, applying the methods of causal inference to further knowledge on the subject. Your topic should be relatively self-contained in either health economics or health services research.

The main goals of the project are to give you experience (1) identifying and honing a research question, (2) selecting and executing appropriate methods for causal inference analysis, and (3) communicating the assumptions, methods, results, and interpretations in a clear way to an academic audience. Hence, the paper should follow the structure of either a health economics or health services research journal manuscript. **You should complete your paper in groups of 2-5.**

This document outlines the relevant expectations and grading structure for the assignment. Remember that overall, the final project counts for 60% of the final semester grade. The final project will be graded out of 100 points – remember that 85/100 should be considered full marks, and that very few, if any, grades higher than 90 will be given.

1. **Project proposal (10 points).** The structure of the proposal should be:

- *Introduction (2 points):* What your research question is, and why it is important (e.g., what contributions you will be making to the literature). Importantly, what is the causal question your paper is attempting to answer?
- *Literature Review (2 points):* What previous work has been done to address this question (e.g., how your contributions fit into an ongoing discussion)
- *Data (3 points):* What data sources will be used? What will your key variables be? If available, provide summary statistics on the variables, sample size, and any other relevant information of interest.
- *Methods (3 points):* What methods will allow you to recover the causal parameters of interest? How will those methods be employed? What assumptions need to be satisfied for these methods to be used convincingly? How will you defend or test these assumptions?

In general, you are not expected to have all of the answers or content for each of these sections yet (particularly for the Methods section). Your project should include at least one design-based method from the second half of the course (e.g., from Matching on). Your proposal should be around 3-6 pages (double-spaced) long, (excluding tables, figures, and references).<sup>1</sup>

2. **Project presentation (15 points; in class).** The in-class presentation will give you experience explaining and defending in your assumptions in a seminar-style setting. You should prepare slides with the following (approximate structure):

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<sup>1</sup> Note that appendices are not required by any means.

- *Introduction* (1-2 slides) – if you must include some lit review, do it here, but don't spend too much time on other people's work at the expense of discussing your own!
- *Data and Summary Stats* (1-2 slides)
- *Methods* (4-5 slides) – this should be the heart of the presentation. Focus on what parameters you are trying to recover, how you went about identifying it, and what assumptions you used.
- *Results* (1-2 slides) – give us a quick preview of what you are finding, but the point of this seminar is to focus on the methods, not discussing policy implications or major conclusions (yet).

The entire presentation should last **no more than 15 minutes**. The grade for this portion will be determined based on presentation skills (10 points) and handling audience questions (5 points).

3. **Participation in presentations of other groups** (5 points, in class). In addition to your own presentation, you are responsible to (1) have reviewed class members' presentation slides in advance of the class; (2) listen attentively to presentations; and (3) engage in a discussion of the strengths and weaknesses of each other's projects.
4. **Final paper** (70 points). The final paper should include (completed) sections from the proposal above (Intro, Lit Review, Data, Methods), as well as new sections (1) an abstract at the beginning of the paper; (2) a results section explaining your results; (3) providing discussions and, if relevant, policy implications, and (4) conclusions. The final paper will be graded based on the rubric on the following page.

**Your final paper should be no more than 30 pages, double-spaced (excluding tables, figures, references, and any appendices).**

Aspect	Score	Comments
Abstract (0 - 5 points) <ul style="list-style-type: none"> <li>• Maximum of 200 words</li> <li>• Identifies key research questions, methods, results, and discussion</li> <li>• Reading the abstract alone is enough to get the “major takeaways” of the paper, including analytical/methodological approaches</li> <li>• Can be in the format of a clinical or economics journal</li> </ul>		
Introduction (0 - 5 points) <ul style="list-style-type: none"> <li>• Topic stated clearly</li> <li>• Question clear</li> <li>• Contributions situated well</li> </ul>		
Literature review (0 - 3 points) <ul style="list-style-type: none"> <li>• Organized well</li> <li>• Relevance of literature to question is clear</li> <li>• Focuses on questions at hand</li> <li>• Clearly explains contributions relative to past work</li> </ul>		
Data (0 - 5 points) <ul style="list-style-type: none"> <li>• Data source clearly spelled out</li> <li>• Summary statistics provide sufficient information on context at hand</li> <li>• Key variables identified and discussed</li> <li>• Descriptive statistics and/or evidence moves forward discussion of research question</li> </ul>		
Analysis/Model & Methods (0 - 10 points) <ul style="list-style-type: none"> <li>• Causal parameter of interest identified</li> <li>• Discussion of threats to identification</li> <li>• Express something in form of a (regression) equation</li> <li>• Good discussion of assumptions needed for identification</li> <li>• Good defense of assumptions in context of question</li> </ul>		
Results (0 - 10 points) <ul style="list-style-type: none"> <li>• Analysis done properly (code review)</li> <li>• Writeup of analysis makes it clear what was done</li> <li>• Discuss results in clear &amp; compelling way</li> <li>• Robustness checks identified (even if not performed)</li> </ul>		
Discussion (0 - 10 points) <ul style="list-style-type: none"> <li>• Relate analytical results to research question</li> <li>• Broader context discussion – what is the external/construct/etc. validity of the results?</li> <li>• Policy recommendations based on results, if applicable</li> </ul>		
Conclusion (0 - 3 points)		

<ul style="list-style-type: none"> <li>Conclusion clearly sums up results</li> <li>Conclusion identifies directions for further research</li> <li>Conclusion correctly identifies shortcomings of current research</li> </ul>		
Tables and Figures (0 - 10 points) <ul style="list-style-type: none"> <li>Tables and figures are easy to follow, well formatted (including notes with all relevant information)</li> <li>Selection of tables/figures and order of presentation is sufficient to convey research questions and results based only on introduction and abstract</li> </ul>		
General writing and editing (0 - 5 points) <ul style="list-style-type: none"> <li>Paper mimics a journal outline and language</li> <li>Clear argument from beginning to end</li> <li>Spelling and grammar correct</li> <li>Proper length</li> <li>Writing conveys and motivates ideas</li> </ul>		
Bibliography (0 - 4 points) <ul style="list-style-type: none"> <li>Sources are appropriately provided</li> <li>Code citations (e.g., packages) are also included &amp; source notes</li> </ul>		
<b><u>NOTE: Plagiarism results in a 0 on entire paper; this includes improper generative-AI created material.</u></b>		
Total # of points (70 possible on paper)		
Proposal Grade		
Presentation Grade		
Participation Grade		
Total Grade (100 possible total)		
General comments:		