

Replace with a specific project title

STAT 8670 | Fall 2026

Replace with all author names and group name

Replace with about 150-200 words stating the problem, data or implementation, evaluation, main quantitative result, and conclusion. Write this after completing the analysis.

Template note (remove before submission). Write **8-10 pages of main text**, counting the abstract, Sections 1-6, and their figures, tables, captions, equations, and code examples. Exclude a separate title-only cover page, References, Software availability and reproducibility, Author contributions, and appendices or supplementary material. The first page here includes the abstract and counts as a main-text page. References starts on a new page to mark the end of the counted text. This short template illustrates structure, not the required report length.

1 Introduction

Explain the statistical problem and intended users. Cite existing methods or software and describe the scope of your implementation. An established method with one well-developed algorithm is sufficient.

2 Statistical method

Define notation, assumptions, inputs, outputs, and the quantity estimated, tested, or optimized. Give the objective and constraints for an optimization method. Explain enough statistical reasoning for a reader to understand the implementation and results.

3 Algorithm and implementation

Give pseudocode or numbered steps for the core algorithm. Identify the functions your group wrote and supporting libraries you used. Explain the interface, defaults, tuning or stopping rules, numerical safeguards, and relevant input checks.

4 Package workflow and example

Show how to install the submitted package and use a documented function in a small reproducible example. Include a short evaluated code chunk in R or Python, its relevant output, and an interpretation. Use your own package; keep its full source in the repository.

5 Experiments and results

Describe a reproducible simulation study or data analysis with at least two settings. Define the design, a known answer or trusted reference, accuracy metrics, replication counts when relevant, and seeds.

Setting	Method	Accuracy measure	Computing time
Setting 1	Your implementation	Replace	Replace
Setting 1	Reference or baseline	Replace	Replace
Setting 2	Your implementation	Replace	Replace
Setting 2	Reference or baseline	Replace	Replace

Choose meaningful metrics for your method; adjust the table columns as needed. Explain timing units, what was timed, software/hardware, and repeated timing if used. Keep comparison conditions consistent. Add a figure that shows the main finding, including uncertainty when relevant. Generate reported results from your experiment code.

6 Discussion and conclusion

Explain what the experiments establish, computational cost, a limitation or failure case, and one useful extension. Return to the statistical question in the introduction.

References

Replace this prompt with complete author-year references for methods, data, software, and adapted code. If using a BibTeX file, add `bibliography: references.bib` to the YAML and cite entries in the text. Include the bibliography file with your submission.

Software availability and reproducibility

Give the public package repository URL, exact release tag or commit, language and dependency versions, and commands for installation, tests, and reproduction of the figures and tables. Use the same version for the report and package submission. Include data or generation/access instructions and seeds.

Author contributions

Member	Contribution
Replace	Replace

For a one-person group, state that the work was completed individually.

Supplementary material

Include supplementary experiments, long output, and supporting derivations as needed. Keep the full implementation and reproducibility scripts in the submitted package repository.