

STAT 6390 - Project information

Updated on August 21, 2018

Course project topics

One person project:

- ~~aftgee vignettes and manage class site.~~
- Kernel smoothing on the survival estimation and density estimation.
- Estimating tail probabilities on the survival estimation and density estimation.
- Kernel smoothing on rank estimating equation for accelerated failure time models.

Up to two people topics:

- Investigate bootstrap-based quasi-independence tests.
- Kernel smoothing on rank-based estimating equations.
- Develop a parametric based accelerated failure time model under the generalized extreme value distribution and extreme value distribution.
- Implement and review the supremum tests of Fleming, Harrington and O'Sullivan (1987).
- An improved two-stage sampling? Maybe a simulation study.
- Rank test comparison, a simulation approach.

Description of components

The report should follow the structure of a journal manuscript with the following components:

1. **Abstract**

One paragraph to summarize the most important points in the paper.

2. **Introduction**

The introduction should be approximately one page and can contain references. Background of the dataset and the motivation of the study should be mentioned here. Besides, it should briefly introduce the study system, and it should outline the questions being investigated.

3. **Methods**

This section should be a detailed description of the statistical methods. If you are using any formula, this is the place to present and explain it. The goal is that someone (with little or no statistics background) should be able to understand and repeat the analysis from reading the methods. Do not include any **R** code in the methods. In the case that you need to create your own **R** functions, you can place the code in an appendix and refer to it here. While you are not discouraged from doing this, please do not feel that you have to come up with a new statistical technique to succeed in this section.

4. **Results**

In the results section, you should concisely present and interpret the results of your analyses. You should also explain how your findings have addressed your question of interest. Please do this *both* verbally, in paragraph form, and using tables and/or figures. Please avoid unnecessary table and figures as they will likely harm your grade.

5. **Discussion**

The discussion should be short (usually one to two paragraphs). Quickly summarize your finding and its impact to your question of interest. If your results differ from your expectations, explain why that may have happened. If your results agree, then describe the theory that the evidence supported. This is also the place to talk about possible extension. e.g. what can you do to improve the your analysis results?

Final report assessment rubric

Category	Possible Points	Points Earned	Comment
Abstract:	5		
States the problem being investigated	3		
State the main results and applications	2		
Introduction	15		
Contains references	3		
Background of the methodology or the dataset	3		
Motivation of the study	3		
Briefly introduction of the study system	3		
Outline the approaches	3		
Methods	25		
Correctly explain the necessary formula	10		
Explain the statistic methods in a way that general audience can understand	10		
Contains no R codes	5		
Result	35		
Concisely present and interpret the results of your analysis	10		
Explain how your findings have addressed your question of interest	10		
Contains tables/figures to help presenting the results	5		
Avoid redundancy in tables/figures	5		
Tables/figures are cited/refereed to in the text	5		
Discussion	15		
Length not exceeding two paragraphs	5		
Briefly summarized your finding and its impact	5		
Limitations and possible extensions	5		
Overall Impression/Format	5		
Paper is properly formatted	5		