

PSTAT 126

Regression Analysis

Laura Baracaldo

Lecture 0

Course Introduction

Course Content

- This course introduces the theory and application of linear regression models.
- Topics: simple and multiple regression models; estimation; inference; prediction; regression diagnostics; model selection; shrinkage methods; analysis of variance.
- R: Solving real-world problems.

Canvas

- Lecture slides and labs will be available on *Canvas* and JupyterHub.
- Homework assignments and quizzes will also be given out on *Gradescope*, and should be turned in on *Gradescope*. Other forms of submission will not be accepted.
- All Q&A related to course content, homework assignments, R programming, and quizzes should be done on *nectir*.

References

The lecture slides are self-contained. You may find the following textbooks helpful:

- Faraway, J. J. (2005), *Linear Models with R*, Chapman & Hall.
- Weisberg, S. (2005), *Applied Linear Regression*, 3rd edition, Wiley.

R programming

- *R for Data Science* by Golemund and Wickham.
<https://r4ds.had.co.nz/index.html>

Grading

- **40 %**. Homeworks. (Four hw assignments.)
- **15 %**. Quizzes (On canvas - four pop up quizzes, every two weeks).
- **20 %**. Midterm exam (July 11th)
- **25 %**. Midterm exam (August 1st)

Homework

- R coding & Math deriving/proof.
- Typically you will have 1.5 weeks to complete the homework.
- Late homework will receive 20% point deduction.
- Homework will not be accepted more than 24 hrs late.

R, Rstudio & Rmarkdown

R. Userfriendly programming language for statistical analysis.

R studio. Integrated development environment (IDE) for R.

R markdown (Rmd). Generates reproducible document with R.

- Syntax is very simple.
- Integrated with LaTeX, easy to write math formulas.
- Example: HomeworkTemplate.Rmd. (on *Modules*)

Task: Start setting up the R working environment!

Homework submission Format

- Online submission via Gradescope
- Submission must contain: PDF generated by using R markdown (.Rmd file) and supplementary files if needed.

Next...

- Make sure you can knit homework-template.Rmd.
- Lab sessions start on Tuesday 06/25.
- Read from *R for Data Science*: Ch 1&2 (very short), Ch 27 on (Rmd).