

# PSTAT 126

## Regression Analysis

Laura Baracaldo & Rodrigo Targino

### 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/Gauchospace

- Lecture slides and labs will be available on *Canvas/Gauchospace* and also here: <https://shorturl.at/fgrt8>
- You will need to close and open again the link to fetch newly added content.
- Homework assignments and quizzes will also be given out on *Canvas/Gauchospace*, and should be turned in there. 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 the nectir channel <https://app.nectir.io/invite/frdqQD>.

# Office hours

- Prof. Baracaldo: Wednesdays 3:30-4:45pm. Old Gym 1201
- Prof. Targino: Fridays 1.30- 3.30pm OG1230 and on Zoom  
<https://fgv-br.zoom.us/j/95030256507>

# 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, due every two weeks.)
- **20 %**. Quizzes (On canvas)
- **40 %**. Final exam

# Homework

- R coding & Math deriving/proof.
- Typically you will have 2 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 /homeworks/Template on the server)

*Task:* Start setting up the R working environment (either in your own computer or in the server)!



# Homework submission Format

- Online submission via Canvas/Gauchospace
- Submission must contain: R markdown code (.Rmd file), PDF generated, supplementary files if needed.
- We should be able to run R markdown code to obtain identical PDF file.

## Next...

- Make sure you can knit HomeworkTemplate.Rmd.
- Lab sessions start on the 2nd week.
- Read from *R for Data Science*: Ch 1&2 (very short), Ch 27 on (Rmd).