

COURSE OVERVIEW

COURSE DESCRIPTION & INSTRUCTOR PROFILE

GOALS

This course covers the basic science of why certain visualizations work better than others and provides students with practical skills to implement plots in R.

LEARNING OUTCOME

Students will better understand how to communicate visually, in theory and practice.

ABOUT THE INSTRUCTOR

Laurel has a background in cognitive psychology and linguistics and has taught courses in research methods and statistics at the undergraduate and graduate level. Her mother is an artist and her father is a statistician. She believes that good teaching of methods balances theory and the actual practical ability to implement said theory.

CONTACT INFORMATION

E-mail address: laurel.brehm@mpi.nl | Office: MPI 383

FORMAT & CONTENT OUTLINE

Mix of lecture and tutorial.

3 sessions, 2 hours each with optional following **half hour** for one-on-one tutorial / questions

Tuesdays, 10:00 am - 12:00 pm in MPI 163

March 12 | 19 | 26

Session 1 (lecture/discussion)

Learning Goal: Develop intuitions about why certain visualizations 'work'.

- Crash course in visual perception (as it pertains to data display).
- A critique of some classic good and bad figures from the literature & media.
- Overview of plot types.

Session 2 (tutorial)

Learning Goal: Learn how to make complete, descriptive basic plots.

- Introduction to the tidyverse and general R syntax.
- Introduction to ggplot2 and plotting in R; scatterplots, line plots, and error bars.
- Multi-dimensional plots: heat maps, contour plots, and use of shape/size/color.

Session 3 (tutorial)

Learning Goal: Learn to make complete, descriptive plots of more types.

- Tabulating for plots
- Bar plots (and better alternatives).
- Student-driven grab-bag: Let's make your dissertation plots prettier.

REMARKS

No preparatory work is required. If you want feedback on any code, it is required to be commented and fully reproducible.

Students are expected to be engaged, active participants in lecture sessions and tutorial sessions.

Laptops with R installed will be required for sessions 2 and 3. R Studio is also suggested for beginners.

To install R follow the directions at this link: <https://www.r-project.org/>

To install R Studio, follow the directions at this link:

<https://www.rstudio.com/products/rstudio/download/> (use Open Source License)

Please contact the instructor for assistance with R installation if you are having trouble.

I cannot offer any help with installation issues in class.

ATTENDANCE POLICY & REGISTRATION

IMPRS policy: Participants are expected to fully attend all sessions. Absences should be communicated in advance to the IMPRS Office and instructor.

Registration link: <https://tinyurl.com/dataviz2019>

To earn 0.5 ECs for your participation and attendance, you must complete the following additional assignment, to be submitted to the instructor via e-mail no later than **Friday noon, 26 April**.

Assignment: Storytelling with Data

Grading criteria: Pass /Fail, plus comments from the instructor if desired.

One of the themes of the course was that different types of visualizations highlight different aspects of data. Your task is to explore this concept by plotting some data (your own, or data from the *LanguageR* package) in two sensible ways that highlight different facets of the data: use your plots to tell two different parts of a story! You will submit your code and your write-up for evaluation.

In your code:

- Plot this data in two different ways using the tools you learned in R. (It's recommended that you use *ggplot()* but not mandatory).
- Follow the best practices we outlined in the class to make clear, informative plots with labeled axes, as well as strategic use of color, shape, size, and/or other aesthetics.
- Comment your code so that it is comprehensible to an outsider.

In your write-up, include your plots and some text:

- Describe **what** the data are: what's measured, what's manipulated, and why does it matter? Add citations as appropriate. (Approximately 1 paragraph)
- Add some text that describes **how** the plots are different (what plot types are they? what is conveyed on what axes, with what aesthetics?) and **why**, based on cognitive principles, this serves to highlight different aspects of the data. (Approximately 1 paragraph for each)

Submit your work by email to the instructor, with your write-up plus plots in PDF form, and the commented R code in .R or .RMD form.

EVALUATION & FEEDBACK

To ensure that the IMPRS continues to offer useful content, please take a few moments to share your feedback: <https://tinyurl.com/dataviz2019-eval>