

Introduction to R

Day 2: Data Visualization & Analysis

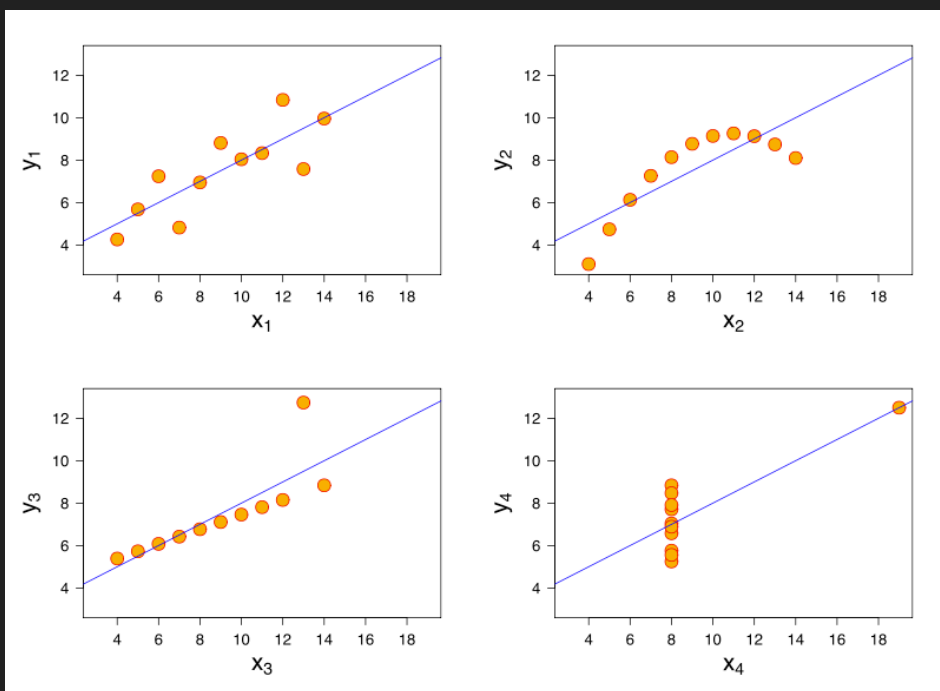
Shirley Wang
March 25, 2021

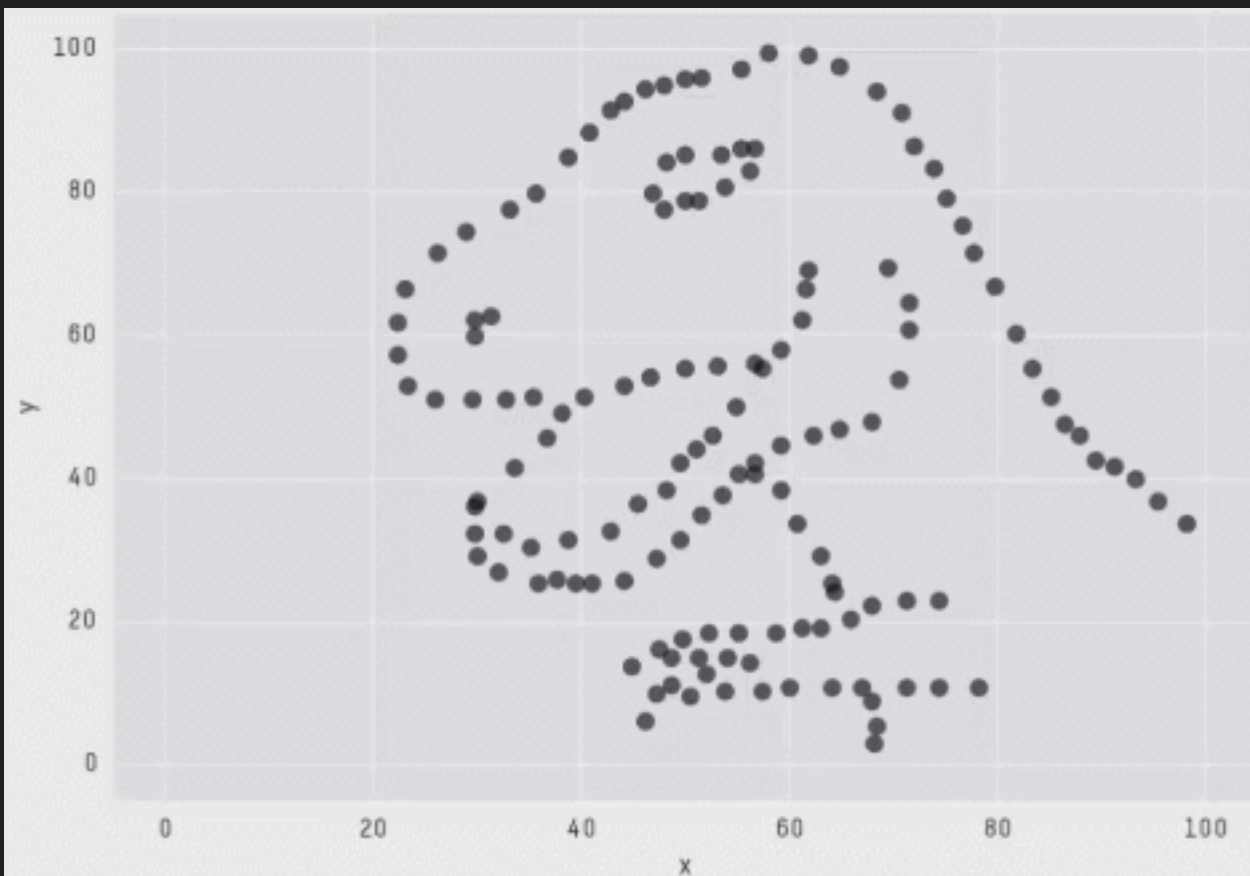
Data Visualization

- Why do we care about data visualization?
- Convey information
- Relying on data summaries and statistics alone can be misleading
- Good visualizations can show unexpected patterns in the data, raise new questions, and inform modeling/analysis approaches

Data Visualization

- Why do we care about data visualization?
- Convey information
- Relying on data summaries and statistics alone can be misleading
- Good visualizations can show unexpected patterns in the data, raise new questions, and inform modeling/analysis approaches





X Mean: 54.2659224

Y Mean: 47.8313999

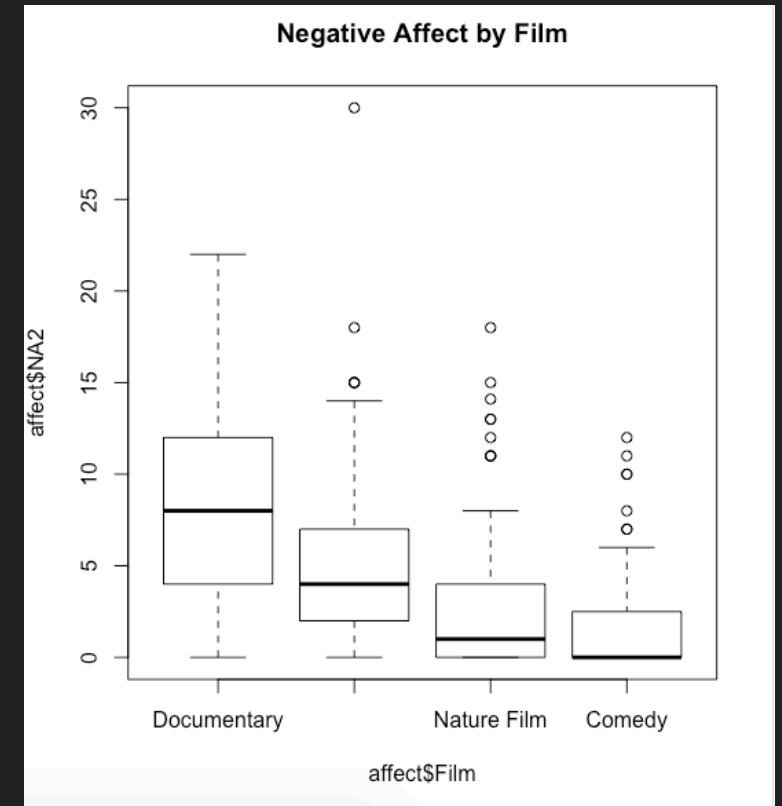
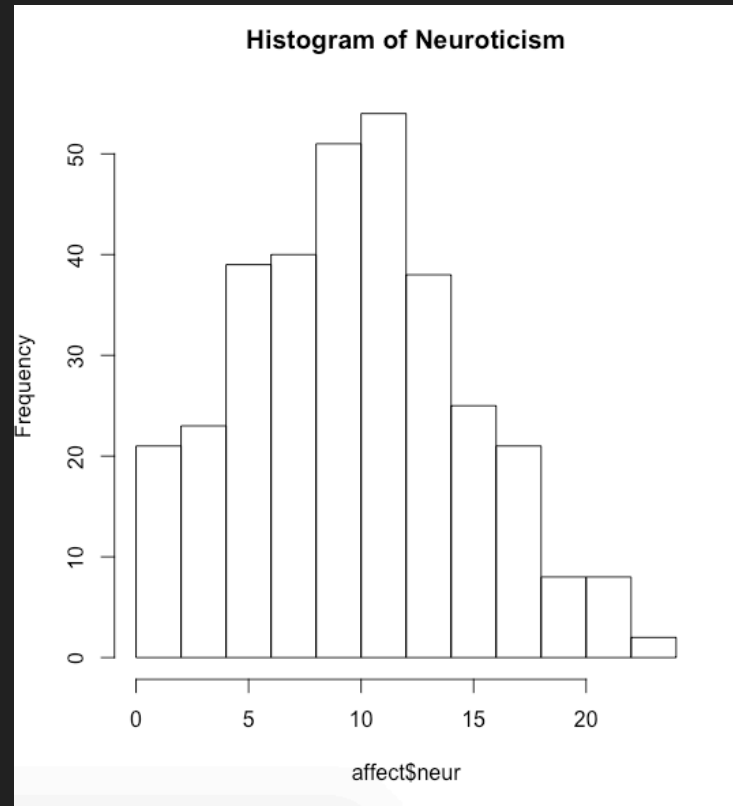
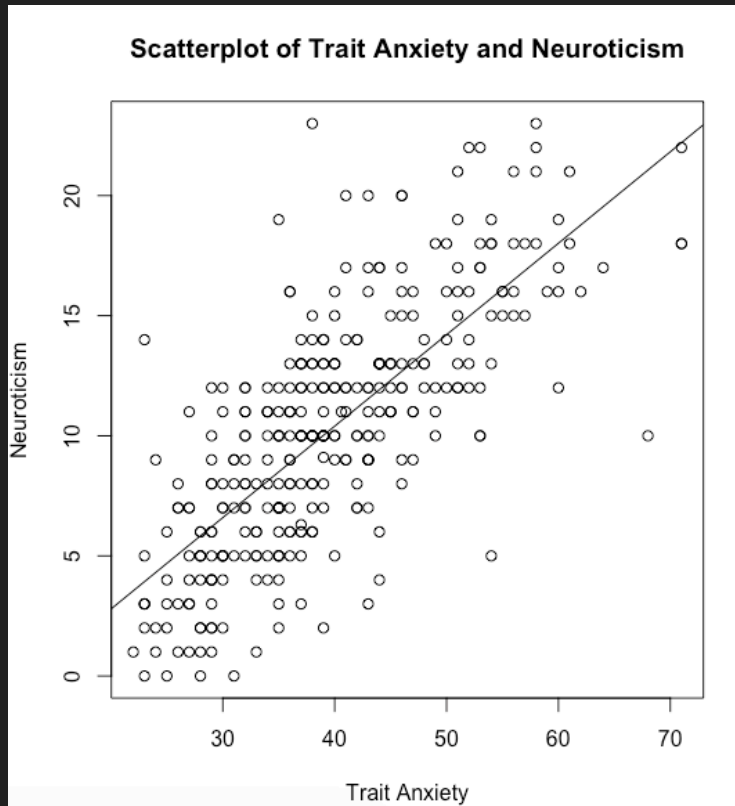
X SD : 16.7649829

Y SD : 26.9342120

Corr. : -0.0642526

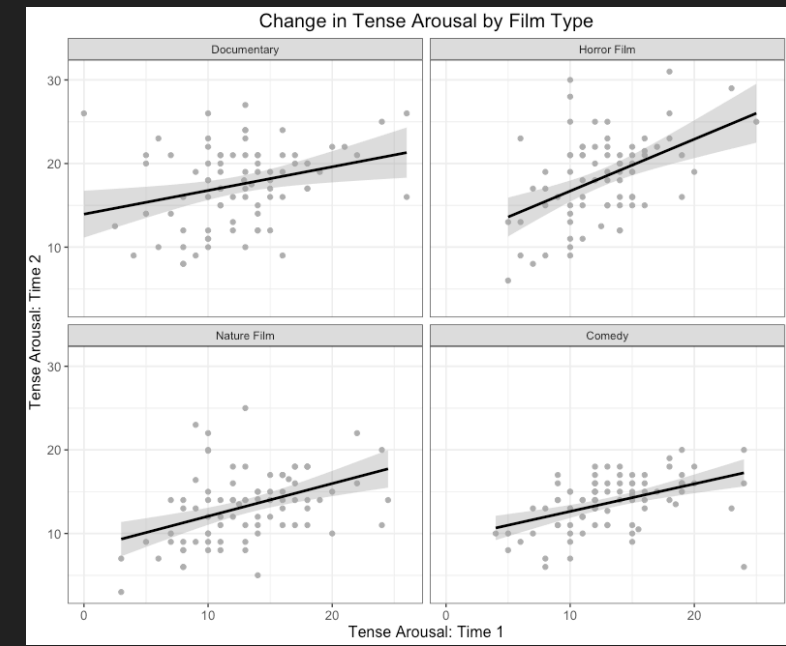
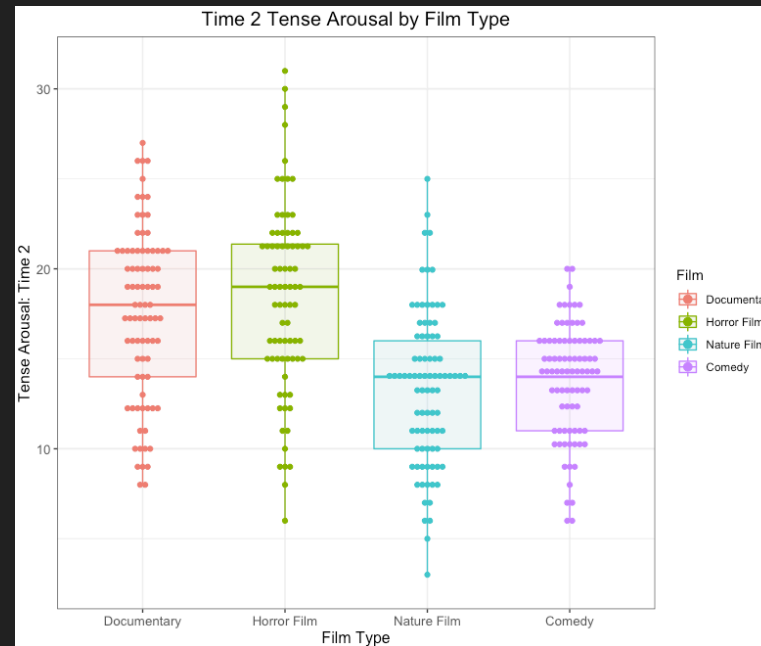
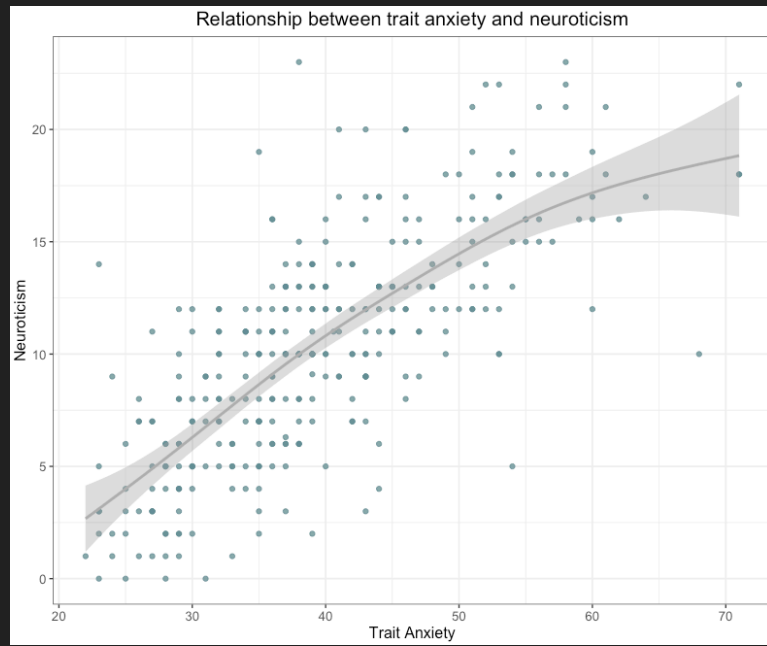
Data Visualization: Base R

- You can make plots without any additional packages (though we'll work with some later)!
- Helpful for quickly visualizing data before jumping into data analysis



Data Visualization: ggplot

- Using the ggplot package (part of the tidyverse)
- Great for making publication-ready figures
- Google is your best friend!




Data Analysis

- Tilde operator (~)
- Left hand side is DV; right hand side are IV(s)
- e.g., `lm(DV ~ IV)`
- Going over basic frequentist inferential statistics today (correlation, regression, etc.) but there are so *many* statistical models implemented in R!
- To learn more advanced modeling approaches in R (e.g., multilevel models, time series models, machine learning, Bayesian statistics):
 - Google!
 - Read tutorials/package vignettes
 - Read associated papers, books, etc.
 - Ask me! Happy to help if it's a package I've used before (or learn about a new one together)

Resources

- <https://rstudio.com/resources/cheatsheets/>
- <https://www.r-bloggers.com/>
- <https://psyr.djnavarro.net/>
- <https://swirlstats.com/>
- <https://r4ds.had.co.nz/>
- <https://paulvanderlaken.com/2017/08/10/r-resources-cheatsheets-tutorials-books/>
- <https://www.learnr4free.com/en/index.html>
- https://docs.google.com/document/d/1qtdiLbU32F_AVNRIF7d23wvPSgTCYqr5TFeBwbncPcw/edit

 shirleywang.rbind.io

 shirleywang@g.harvard.edu

 @shirleybwang

Thank you!

Questions?