# CRIM 250-001 2021C Statistics For The Social Sciences

Welcome to Statistics for the Social Sciences!

**Texts:**

- HS: Howard J. Seltman, *Experimental Design and Analysis*, July 11, 2018 Edition. Online at: http://www.stat.cmu.edu/~hseltman/309/Book/Book.pdf
- DVB: De Veaux, R.D., Velleman, P.F., Bock, D.E., Vukov, A.M. and Wong, A.C., 2005. *Stats: data and models*. Boston: Pearson/Addison Wesley. 4th
- HR: Hernán MA, Robins JM (2020). Causal Inference: What If. Boca Raton: Chapman & Hall/CRC.
- AP: Angrist, J.D. and Pischke, J.S., 2008. *Mostly Harmless Econometrics*. Princeton university press.

**Topics:**

| Date | Topic |
| --- | --- |
| 9/1 | Introduction |
| 9/8 | Coding toolkit (R, RStudio, Rmd, GitHub desktop, create GitHub website) |
| 9/13 | Exploratory data analysis (EDA) |
| 9/15 | Exploratory data analysis + how to submit an assignment on your website |
| 9/20 | How to characterize a variable's distribution |
| 9/22 | Comparing variables |
| 9/27 | Linear regression |
| 9/29 | Exam 1 review |
| 10/4 | Exam 1 |
| 10/6 | Data ethics |
| 10/11 | Data ethics, continued |
| 10/13 | Understanding randomness |
| 10/18 | Simple linear regression in R |
| 10/20 | Hypothesis testing (t-test) |
| 10/25 | Data transformations for linear regression |

10/27  Exam 2 review

11/1   Exam 2

11/3   ANOVA (and why this is the same as a linear regression)

11/8   Interpreting p-values, confidence intervals, credible intervals

11/10  Introduction to causal inference

11/15  The probability of causation

11/17  Experiments

11/22  Causal analysis of risk assessment in criminal sentencing

11/24  No class

11/29  Difference-in-differences

12/1   Regression discontinuity, instrumental variables