

Data Science Summer School 2022 Probability and Statistics

This precourse will cover some fundamentals of probability and statistics. Topics and suggested reading (bibliographic information below) include:

- Set Theory
 - Woolridge Appendix A: Basic Mathematical Tools
 - Wasserman 1-5
 - Casella and Berger pgs. 1-5

- Probability and Random Variables
 - Rowntree *Probability without Tears*
 - Rowntree *Statistics Without Tears* Chapter 4
 - Agresti Chapter 4
 - Imai Chapter 6
 - Wasserman pgs. 5-10, 19-36
 - Casella and Berger pgs. 5-20, 27-37, 85-111

- Bayes Rule and Conditional Probability
 - Wasserman pgs. 10-13, 36-39
 - Casella and Berger pgs. 20-27

- Expected Value and Variance
 - Agresti Sections 4.4-4.6
 - Woolridge Appendix B: Fundamentals of Probability
 - Wasserman pgs. 47-56
 - Casella and Berger pgs. 55-61

- Empirical Data and Descriptive Statistics
 - Rowntree *Statistics Without Tears* Chapter 3
 - Agresti Chapter 3
 - Casella and Berger 207-214, 218, 226-227, 232-239

Bibliographic Information

I recommend the following texts. They are listed in approximate order of least to most advanced.

- Rowntree, Derek. *Statistics Without Tears: A Primer for Non-Mathematicians*.
- Rowntree, Derek. *Probability without Tears*.
- Agresti, Alan. *Statistical Methods for the Social Sciences*. 5th Global Edition
- Imai, Kyosuke. *Quantitative Social Science: An Introduction*
- Woolridge, Jeffrey. *Introductory Econometrics: A Modern Approach*.
- Wasserman, Larry. *All of Statistics: a concise course in statistical inference*
- Casella, George and Roger Berger. *Statistical Inference*. 2nd Edition

