

Statistical Modeling: Exercises

These exercises are from our text, *A Modern Introduction to Probability and Statistics. Understanding Why and How*, by Dekking, Kraaikamp, Lopuhaä, and Meester, Springer Texts in Statistics, Springer-Verlag, 2005.

Probability

- §1. *Why probability and statistics?:*
- §2. *Outcomes, events, and probability:*
- §3. *Conditional probability and independence:*

Random Variables

- §4. *Discrete random variables:*
- §5. *Continuous random variables:*
- §6. *Simulation:*
- §7. *Expectation and variance:*
- §8. *Computations with random variables:*
- §9. *Joint distributions and independence:*
- §10. *Covariance and correlation:*
- §11. *More computations with random variables:*
- §12. *The Poisson Process:*

Theoretical Foundations

- §13. *The law of large numbers:*
- §14. *The central limit theorem:*

Data Analysis

- §15. *Exploratory data analysis: graphical summaries:*
- §16. *Exploratory data analysis: numerical summaries:*

Statistical Models

- §17. *Basic statistical models:*
- §18. *The bootstrap:*
- §19. *Unbiased estimators:*
- §20. *Efficiency and mean squared error:*
- §21. *Maximum likelihood:*
- §22. *The method of least squares:*

Confidence Intervals

- §23. *Confidence intervals for the mean:*
- §24. *More on confidence intervals:*

Hypothesis Testing

- §25. *Testing hypotheses: essentials:*
- §26. *Testing hypotheses: elaboration:*
- §27. *The t-test:*
- §28. *Comparing two samples:*