

# Bayesian Analysis

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# 1 Review of Basic Probability Concepts

## 1.1 Objectives

- Review very basic probability concepts and distributions (binomial, dirichlet, gamma, exponential, log-normal).

## 1.2 Readings

- **ASA statement:** [Read Online](#)
- Bodine et al Unit 3
- Sokal & Rohlf Chapter 5
- Anderson chapter 1

# 2 Probability Concepts

## 2.1 Objectives

- Review basic probability concepts.

## 2.2 References

- Kruschke :: Probability: Chapters 2/4

# 3 Probability Topics

- Conditional Probability

# 4 Statistical Concepts

- Likelihood

## **5 Bayesian Analysis by Kruschke**

### **5.1 Objectives**

- Review the basics of Bayesian analysis.

### **5.2 References**

- Kruschke :: Bayes: Chapter 5

### **5.3 Classical Statistics in Bayesian Mode**

## **6 Monte Carlo Methods**

### **6.1 Reference**

- Chapter 7: MC Kruschke

## **7 Modeling in Kruschke**

### **7.1 References**

- Kruschke :: Modelling: Chapters 9/10

## **8 Reference Texts**

- [@kruschke2015doing](#)
- [@hobbsNdHooten](#)

## **9 Additional/Complementary Readings**

- Doing Bayesian Data Analysis in brms and the tidyverse. Version 1.1.0. A Solomon Kurz <https://bookdown.org/content/3686/>

## 10 Bibliography

- [kruschke2015doing]: Doing Bayesian Data Analysis. [Elsevier](#).
- What's New in 2nd Edition [https://nyu-cdsc.github.io/learningr/assets/kruschke\\_bayesian\\_in\\_R.pdf](https://nyu-cdsc.github.io/learningr/assets/kruschke_bayesian_in_R.pdf)
- [hobbsNdHooten]: Bayesian Models: A Guide to the Use of Bayesian Statistics in Science, Engineering, and Economics. [Princeton University Press](#).

## 11 Software

- R <https://www.r-project.org/>
- Stan <https://mc-stan.org/>
- Julia <https://julialang.org/>