

Intuitive Biostatistics: A Nonmathematical Guide to Statistical Thinking

Motulsky, Harvey MD

ISBN-13: 9780199730063

Table of Contents

Preface

PART A. INTRODUCING STATISTICS

1. Statistics and Probability Are Not Intuitive
2. Why Statistics Can Be Hard to Learn
3. From Sample to Population

PART B. CONFIDENCE INTERVALS

4. Confidence Interval of a Proportion
5. Confidence Interval of Survival Data
6. Confidence Interval of Counted Data

Part C. CONTINUOUS VARIABLES

7. Graphing Continuous Data
8. Types of Variables
9. Quantifying Scatter
10. The Gaussian Distribution
11. The Lognormal Distribution and Geometric Mean
12. Confidence Interval of a Mean
13. The Theory of Confidence Intervals
14. Error Bars

PART D. P VALUES AND SIGNIFICANCE

15. Introducing P Values
16. Statistical Significance and Hypothesis Testing
17. Relationship Between Confidence Intervals and Statistical Significance
18. Interpreting a Result That is Statistically Significant
19. Interpreting a Result That Is Not Statistically Significant
20. Statistical Power
21. Testing For Equivalence or Noninferiority

PART E. CHALLENGES IN STATISTICS

22. Multiple Comparisons Concepts
23. Multiple Comparison Traps
24. Gaussian or Not?
25. Outliers

PART F. STATISTICAL TESTS

26. Comparing Observed and Expected Distributions
27. Comparing Proportions: Prospective and Experimental Studies
28. Comparing Proportions: Case-Control Studies
29. Comparing Survival Curves
30. Comparing Two Means: Unpaired t test
31. Comparing Two Paired Groups
32. Correlation

PART G. FITTING MODELS TO DATA

33. Simple Linear Regression
34. Models
35. Comparing Models
36. Nonlinear Regression
37. Multiple, Logistic, and Proportional Hazards Regression
38. Multiple Regression Traps

PART H. THE REST OF STATISTICS

39. Analysis of Variance
40. Multiple Comparison Tests After ANOVA
41. Nonparametric Methods
42. Sensitivity Specificity and Receiver-Operator Characteristic Curves
43. Sample Size

PART I. PUTTING IT ALL TOGETHER

44. Statistical Advice
45. Choosing a Statistical Test
46. Capstone Example
47. Review Problems
48. Answers to Review Problems

APPENDICES

- A. Statistics with GraphPad
- B. Statistics With Excel
- C. Statistics R
- D. Values of the t Distribution Needed to Compute CIs
- E. A Review of Logarithms

References