

Medical Statistics

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About this course

Placeholder

Teachers

Goals & Topics

Prerequisites

Materials

Programme

Chapter 1

Introduction and exploratory data analysis

Placeholder

1.1 Introduction to probabilistic distributions

1.1.1 Motivation

1.1.2 Discrete random variables

1.1.3 Continuous random variable

1.2 Data representation

1.2.1 Motivating example

1.2.2 Working example

1.3 Mean-Variance

1.3.1 Working example

1.4 Correlation and heatmap

1.4.1 Motivation

1.4.2 Working example

Chapter 2

Statistical tests - Part 1

Placeholder

2.1 Comparing 2 groups

2.1.1 Motivation

2.1.2 Working Example

2.2 Power of a statistical test

2.2.1 Motivation

2.2.2 Working example

2.2.3 Illustrating two-sided critical regions

2.2.4 Illustrating the power

2.2.5 What happens if the effect size is smaller?

Chapter 3

Common regression models

Placeholder

3.1 Linear regression

3.1.1 Motivation

3.1.2 Working Example

3.2 Logistic regression

3.2.1 Motivation

3.2.2 Link function

3.2.3 The `glm` function

3.2.4 Working example

3.2.5 Fitted values

Chapter 4

Statistical tests - Part 2

Placeholder

4.1 Comparing more than two groups

4.1.1 Motivation

4.1.2 Working examples

4.2 Testing independence in 2x2 tables

4.2.1 Motivation

4.2.2 Working examples

4.2.3 General setup

4.2.4 Working examples (cont)

4.2.5 The chi-square test

4.2.6 Working examples (cont)

4.2.7 Fisher's exact test

4.2.8 Working examples (cont)

4.3 Testing independence in nx2 tables

4.3.1 Motivation

4.3.2 Working examples

4.3.3 General setup

4.3.4 Chi-square test for nx2 tables

4.3.5 Working examples (cont)

4.4 Testing symmetry in 2x2 tables

4.4.1 Motivation

4.4.2 Working example

4.4.3 General setup

4.4.4 Working example (cont)

4.4.5 Notes

4.5 Relative risk and odds ratio

4.5.1 Motivation

4.5.2 Relative risk

4.5.3 Odds ratio

4.5.4 Relative risk *vs.* odds ratio

4.5.5 Logistic regression models (cont)

4.5.6 Poisson regression models

Chapter 5

Survival analysis

Placeholder

5.1 Survival data - Introduction

5.1.1 Motivation

5.1.2 Working example

5.1.3 Kaplan-Meier curve

5.1.4 Working example (cont)

5.1.5 Survival data analysis in R

5.1.6 Survival data for groups: the log-rank test

5.1.7 Working example (cont)

5.2 Survival data - regression models

5.2.1 Motivation

5.2.2 Cox proportional-hazards model

5.2.3 Working example

5.2.4 Group-specific baseline hazards

5.2.5 The proportional hazards assumption

5.2.6 Others

5.3 Survival data - power analysis

5.3.1 Motivation

5.3.2 Power and sample size for Cox regression

5.3.3 Working example

5.3.4 Minimum sample size

5.3.5 Working example (cont)

5.3.6 Reference

5.3.7 Notes

5.4 Survival analysis - Notes

5.4.1 Other types of censoring

5.4.2 Right-, left- and interval censoring

5.4.3 Type I and type II censoring

5.4.4 Competing risks

Chapter 6

Exercises

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6.1 Chapter 1

6.1.1 Exercise 1

6.1.2 Exercise 2:

6.1.3 Exercise 3(*)

6.2 Chapter 2

6.2.1 Exercise 1

6.2.2 Exercise2

6.3 Chapter 3

6.3.1 Exercise 1

6.3.2 Exercise 2

6.3.3 Exercise 3

6.4 Chapter 4

6.4.1 Exercise 1

6.4.2 Exercise 2

6.4.3 Exercise 3

6.4.4 Exercise 4

6.5 Chapter 5

6.5.1 Exercise 1

6.5.2 Exercise 2

6.5.3 Exercise 3

Chapter 7

Appendix

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7.1 PCA Analysis

7.1.1 Motivation

7.1.2 Working example

7.1.3 Quick tasks