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Introduction to Logistic Regression

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Introduction

This introduction to logistic regression describes the reasons for the popularity of the logistic model, the model form, how the model may be applied, and several of its key features, particularly how an odds ratio can be derived and computed for this model.

As preparation for this chapter, the reader should have some familiarity with the concept of a mathematical model, particularly a multiple-regression-type model involving independent variables and a dependent variable. Although knowledge of basic concepts of statistical inference is not required, the learner should be familiar with the distinction between population and sample, and the concept of a parameter and its estimate.

Abbreviated Outline

The outline below gives the user a preview of the material to be covered by the presentation. A detailed outline for review purposes follows the presentation.

I. The multivariable problem (pages 4–5)
II. Why is logistic regression popular? (pages 5–7)
III. The logistic model (pages 7–8)
IV. Applying the logistic model formula (pages 9–11)
V. Study design issues (pages 11–15)
VI. Risk ratios vs. odds ratios (pages 15–16)
VII. Logit transformation (pages 16–22)
VIII. Derivation of OR formula (pages 22–25)
IX. Example of OR computation (pages 25–26)
X. Special case for (0, 1) variables (pages 27–28)