Chapter 13

A Summary of Inference Methods

13.1 Introduction

When presented with a set of data, it is useful to ask a series of questions:

1. What question were the researchers attempting to answer when they collected these data?

2. What is the response variable in the study?

3. What predictor variables, if any, were involved?
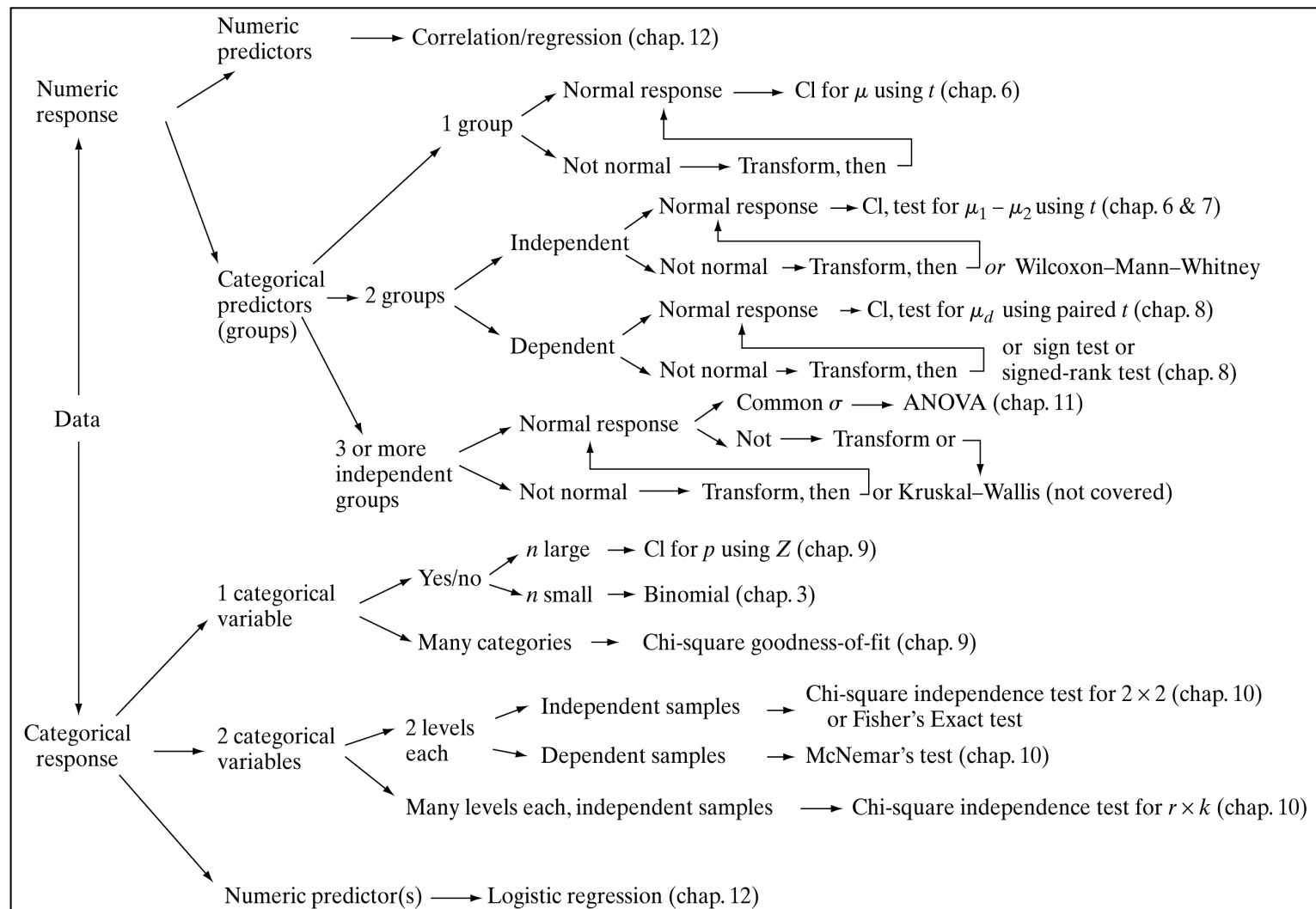
13.1 Introduction

Numeric predictors ⟶ Correlation/regression (chap. 12)

Numeric response

1 group
- Normal response ⟶ CI for μ using t (chap. 6)
- Not normal ⟶ Transform, then

Categorical predictors (groups) ⟶ 2 groups

Independent
- Normal response ⟶ CI, test for $\mu_1 - \mu_2$ using t (chap. 6 & 7)
- Not normal ⟶ Transform, then *or* Wilcoxon–Mann–Whitney

Dependent
- Normal response ⟶ CI, test for μ_d using paired t (chap. 8)
- Not normal ⟶ Transform, then or sign test or signed-rank test (chap. 8)

Data

3 or more independent groups
- Normal response
  - Common σ ⟶ ANOVA (chap. 11)
  - Not ⟶ Transform or
- Not normal ⟶ Transform, then or Kruskal–Wallis (not covered)

Categorical response

1 categorical variable
- Yes/no
  - n large ⟶ CI for p using Z (chap. 9)
  - n small ⟶ Binomial (chap. 3)
- Many categories ⟶ Chi-square goodness-of-fit (chap. 9)

2 categorical variables
- 2 levels each
  - Independent samples ⟶ Chi-square independence test for 2×2 (chap. 10) or Fisher's Exact test
  - Dependent samples ⟶ McNemar's test (chap. 10)
- Many levels each, independent samples ⟶ Chi-square independence test for $r \times k$ (chap. 10)

Numeric predictor(s) ⟶ Logistic regression (chap. 12)

Figure 13.1.1 A flowchart of inference methods

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