12.1 The Problem

This case study concerns a problem of interest to real estate appraisers, tax assessors, real estate investors, and home buyers—namely, the relationship between the appraised value of a property and its sale price. The sale price for any given property will vary depending on the price set by the seller, the strength of appeal of the property to a specific buyer, and the state of the money and real estate markets. Therefore, we can think of the sale price of a specific property as possessing a relative frequency distribution. The mean of this distribution might be regarded as a measure of the fair value of the property. Presumably, this is the value that a property appraiser or a tax assessor would like to attach to a given property.

The purpose of this case study is to examine the relationship between the mean sale price \( E(y) \) of a property and the following independent variables:

1. Appraised land value of the property
2. Appraised value of the improvements on the property
3. Neighborhood in which the property is listed

The objectives of the study are twofold:

1. To determine whether the data indicate that appraised values of land and improvements are related to sale prices. That is, do the data supply sufficient evidence to indicate that these variables contribute information for the prediction of sale price?
2. To acquire the prediction equation relating appraised value of land and improvements to sale price and to determine whether this relationship is the same for a variety of neighborhoods. In other words, do the appraisers use the same appraisal criteria for various types of neighborhoods?

12.2 The Data

The data for the study were supplied by the property appraiser’s office of Hillsborough County, Florida, and consist of the appraised land and improvement values and sale prices for residential properties sold in the city of Tampa, Florida, during 1993. Four neighborhoods (Carrollwood Village, Tampa Palms, Town & Country, and Ybor City), each relatively homogeneous but differing sociologically and in property types and values, were identified within the city and surrounding area. The subset of sales and appraisal data pertinent to these four neighborhoods—a total of 448 observations—was used to develop a prediction equation relating sale prices to appraised land and improvement values. The data (recorded in thousands of dollars) are given in Appendix I. For the purpose of this case study, we use the symbols A, B, C, and D to represent the four neighborhoods.