Wu & Hamada, Experiments: Planning, Analysis and Optimization

1.4 SIMPLE LINEAR REGRESSION

Throughout the book, we will often model experimental data by the general linear model (also called the multiple regression model). Before considering the general linear model in Section 1.6, we present here the simplest case known as the simple linear regression model, which consists of a single covariate. We use the following data to illustrate the analysis technique known as simple linear regression . Lea (1965) discussed the relationship between mean annual temperature and a mortality index for a type of breast cancer in women. The data (shown in Table 1.1), taken from certain regions of Great Britain, Norway, and Sweden, consist of the mean annual temperature (in degrees Fahrenheit) and a mortality index for neoplasms of the female breast.

Table1.1 BreastCancerMortalityData

Mortality Index ( M ): 102.5 104.5 100.4 95.9 87.0 95.0 88.6 89.2

Temperature ( T ): 51.3 49.9 50.0 49.2 48.5 47.8 47.3 45.1

Mortality Index ( M ): 78.9 84.6 81.7 72.2 65.1 68.1 67.3 52.5

Temperature ( T ): 46.3 42.1 44.2 43.5 42.3 40.2 31.8 34.0













































