

11.2 One-Dimensional Regression Analysis

One-dimensional linear regression function

A simple linear **regression function** has the following form:

$$E(y_i|x_i) = b_0 + b_1x_i \quad i = 1, \dots, n$$

In this equation, x_i represents the observed values of a random variable X (fixed) and b_0 and b_1 are unknown regression parameters.

The actual observed values $y_i (i = 1, \dots, n)$ can be obtained by summing residual u_i and $E(y_i|x_i)$ (as you can see on the picture):

$$y_i = E(y_i|x_i) + u_i = b_0 + b_1x_i + u_i \quad i = 1, \dots, n$$

