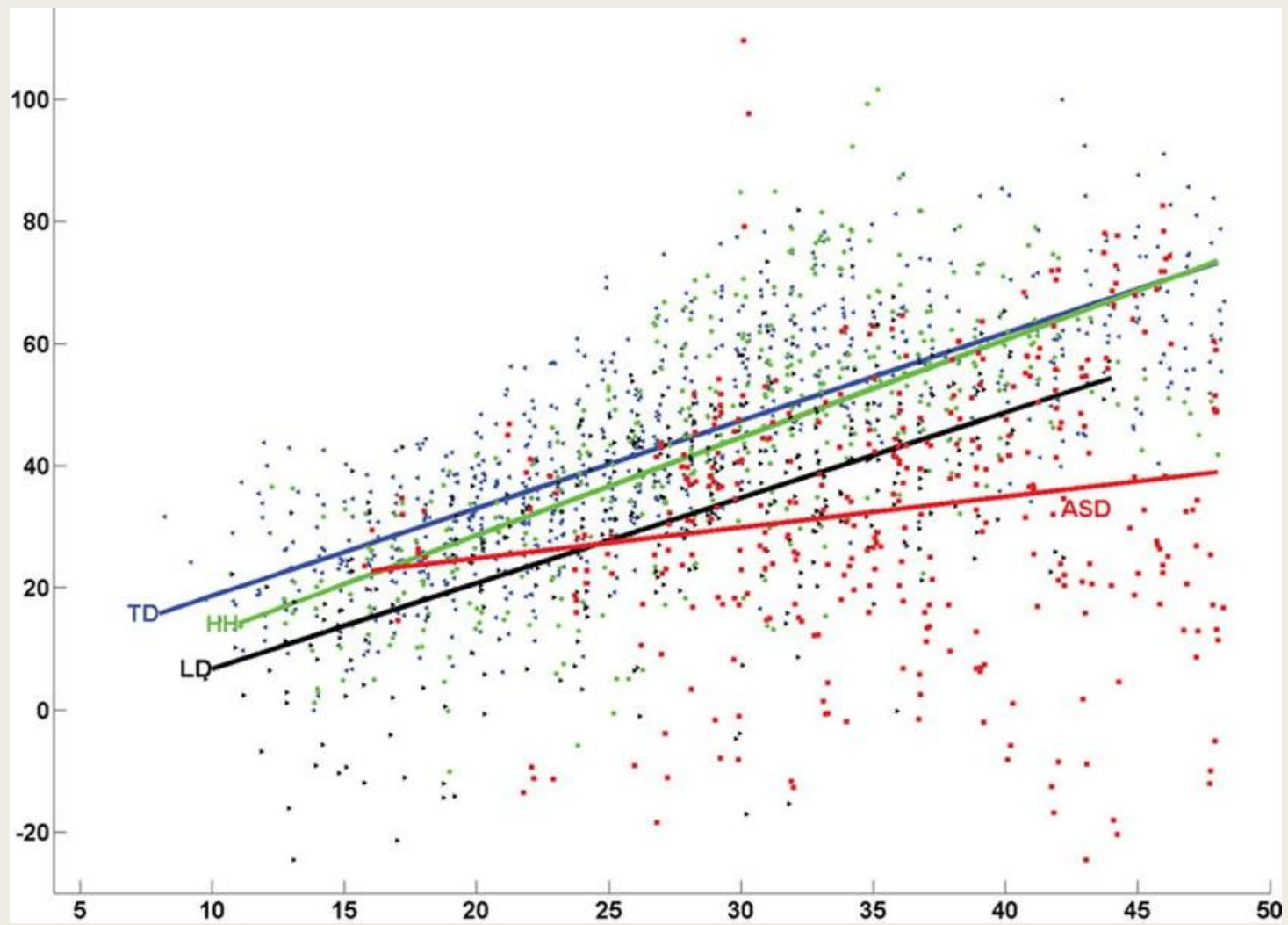
A thick black L-shaped frame surrounds the text. The top horizontal bar is on the left, the left vertical bar is on the left, and the bottom horizontal bar is on the right, with a vertical bar on the right side.

**MATHEMATICAL
ESSENCE OF
MULTIPLE LINEAR
REGRESSION**



$$y = b_0 + b_1x_1 + b_2x_2 \quad (1)$$

$$b_0 = \bar{y} - b_1\bar{x}_1 - b_2\bar{x}_2 \quad (2)$$

$$\hat{b}_1 = \frac{(\sum x_2^2)(\sum x_1 y) - (\sum x_1 x_2)(\sum x_2 y)}{(\sum x_1^2)(\sum x_2^2) - (\sum x_1 x_2)^2} \quad (3)$$

$$\hat{b}_2 = \frac{(\sum x_1^2)(\sum x_2 y) - (\sum x_1 x_2)(\sum x_1 y)}{(\sum x_1^2)(\sum x_2^2) - (\sum x_1 x_2)^2}$$

$$\sum x_i^2 = \sum X_i^2 - \frac{(\sum X_i)^2}{N} \quad (4)$$

i = 1:

$$\sum x_1^2 = \sum X_1^2 - \frac{(\sum X_1)^2}{N}$$

i = 2:

$$\sum x_2^2 = \sum X_2^2 - \frac{(\sum X_2)^2}{N}$$

$$\sum x_i y = \sum X_i Y - \frac{\sum X_i \sum Y}{N} \quad (5)$$

i = 1:

$$\sum x_1 y = \sum X_1 Y - \frac{\sum X_1 \sum Y}{N}$$

i = 2:

$$\sum x_2 y = \sum X_2 Y - \frac{\sum X_2 \sum Y}{N}$$

$$\sum x_1 x_2 = \sum X_1 X_2 - \frac{\sum X_1 \sum X_2}{N} \quad (6)$$