

Multiple linear regression.

explanatory r.v.s:

response r.v.

$$(X_1, X_2, \dots, X_p) = X$$

Y

Regression Model: $Y = f(X) + \varepsilon$

w/ X and ε *independent*
and $\varepsilon \sim N(0, \sigma^2)$

Multiple linear regression.

$$Y = \underbrace{\beta_0 + \beta_1 X_1 + \dots + \beta_p X_p}_{f(X)} + \varepsilon$$

However, with interaction terms:

e.g., $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_{12} X_1 X_2 + \varepsilon$

interaction term.