

Linear Regression: Key Assumptions

1 Linearity

Relationship between X and y is linear

2 Independence

Observations are independent of each other

3 Homoscedasticity

Constant variance of residuals

4 Normality

Residuals follow normal distribution

5 No Multicollinearity

Predictors are not highly correlated

Violation Check

What happens when assumptions are violated?



Impact of Assumption Violations

Affects **prediction accuracy** and **interpretation** of model results