

Evaluating Regression Analyses

Bias and Imprecision

Evaluating the model and specification data

don't over-fit data

Evaluating the signs and magnitudes of the coefficient estimates

make sure estimates are reasonable

Evaluating the statistical significance of the results

ANOVA

$$MSE = SSE / n - k - 1$$

↳ $n - k - 1$ = degrees of freedom

Mean square $MSM = \frac{SSM}{k}$

$$F \text{ statistic} = \frac{MSM}{MSE} = \frac{SSM/k}{SSE/(n-k-1)}$$

Evaluating the Accuracy of Results - dependent variable Prediction

$$R^2 = \frac{SSM}{SST}$$

Root mean square error (RMSE) = \sqrt{MSE}

Evaluating the Accuracy of Results - coefficient estimates

Don't estimates

Improving Precision

better data + better models

Evaluating Results - An Extended Example

likely that any empirical model suffers from **omitted variable bias**

Limits of Approximations

don't extrapolate beyond the data range