

# Model Checking

Using residuals to check the validity of the linear regression model assumptions

# Where does this topic fit in?

- Model formulation
- Model estimation
- **Model evaluation**
- Model use

# The simple linear regression model

- The mean of the responses,  $E(Y_i)$ , is a **linear function** of the  $x_i$ .
- The errors,  $\varepsilon_i$ , and hence the responses  $Y_i$ , are **independent**.
- The errors,  $\varepsilon_i$ , and hence the responses  $Y_i$ , are **normally distributed**.
- The errors,  $\varepsilon_i$ , and hence the responses  $Y_i$ , have **equal variances** ( $\sigma^2$ ) for all  $x$  values.