Somewhat traditional ANOVA table (compare group means to overall mean)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | Sums of Squares | Mean Squares | F | p-value |
| Groups | I-1 | $$\sum\_{i=1}^{I}n\_{i}\left(\overbar{y}\_{i}-\overbar{y}\right)^{2} $$ | MSGroups = $\frac{SSGroups}{I-1 }$  | $$F=\left(\frac{MSGroups}{MSError}\right)$$ | F(I-1, n-I) |
| Error | n-I | $$\sum\_{i=1}^{I}\sum\_{j=1}^{n\_{i}}\left(y\_{ij}-\overbar{y}\_{i}\right)^{2} $$ | MSError = $SSError\frac{SSError}{n-I}$  |
| Total | n-1 | $$\sum\_{i=1}^{n}\left(y\_{i}-\overbar{y}\right)^{2} $$ | $$s\_{y}^{2}=\frac{SSTotal}{n-1}$$ |  |  |

Regression ANOVA table (compare model predictions to horizontal line)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | Sums of Squares | Mean Squares | F | p-value |
| Model | *p*-1 | $$\sum\_{i=1}^{n}\left(\hat{y}\_{i}-\overbar{y}\right)^{2} $$ | MSModel = $\frac{SSModel}{\left(p-1\right)}$  | $$F=\left(\frac{MSModel}{MSError}\right)$$ | F(*p*-1, *n* - *p*) |
| Error | n-*p* | $$\sum\_{i=1}^{n}\left(y\_{i}-\hat{y}\_{i}\right)^{2} $$ | MSError = $\frac{SSError}{n-p}$  |
| Total | n-1 | $$\sum\_{i=1}^{n}\left(y\_{i}-\overbar{y}\right)^{2} $$ | $$s\_{y}^{2}=\frac{SSTotal}{n-1}$$ |  |  |

*p* is the number of estimated terms (e.g., slope and intercept)