VISUAL SUMMARY

One-Way Analysis of Variance

Before You Begin: State H_0 and H_1.

Compute $\overline{X}$ for each sample, $\overline{\overline{X}}$, and $\Sigma(X - \overline{X})^2$ for each sample.

Compute mean squares:

MS_{bg} MS_{wg}

$$MS_{bg} = \frac{n_1(\overline{X}_1 - \overline{\overline{X}})^2 + n_2(\overline{X}_2 - \overline{\overline{X}})^2 + \cdots + n_k(\overline{X}_k - \overline{\overline{X}})^2}{k - 1}$$

$$MS_{wg} = \frac{\Sigma(X_1 - \overline{X}_1)^2 + \Sigma(X_2 - \overline{X}_2)^2 + \cdots + \Sigma(X_k - \overline{X}_k)^2}{(n_1 - 1) + (n_2 - 1) + (n_3 - 1) + \cdots + (n_k - 1)}$$

Compute the F ratio:

$$F = \frac{MS_{bg}}{MS_{wg}}$$

Compute the degrees of freedom:

df_{bg} df_{wg}

$df_{bg} = k - 1$

$df_{wg} = (n_1 - 1) + (n_2 - 1) + \cdots + (n_k - 1)$

Use df_{bg} and df_{wg} to find the critical value in Table F.

If the computed value of the F ratio is greater than the critical value from Table F, then reject H_0.