

13.3: The One Factor ANOVA Model

In ANOVA, we calculate the variance two different ways: The mean square factor (MS_F), also known as mean square between, measures the variability of the means between groups, while the mean square within (MS_E), also known as mean square within, measures the variability within the population. Under the null hypothesis, the ratio of MS_F/MS_E should be close to 1 and has F distribution.

📌 One Factor ANOVA model to compare the means of k independent populations

Model Assumptions

- The populations being sampled are normally distributed.
- The populations have equal standard deviations.
- The samples are randomly selected and are independent.

Test Statistic

- $F = \frac{MS_{\text{Factor}}}{MS_{\text{Error}}}$
- $df_{\text{num}} = k - 1$
- $df_{\text{den}} = n - k$

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