

Factorial ANOVA

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Lecture 11

variance at $\alpha = 0.05$ is $F_{(2, 18)} = 3.10$. Since $F_{(2, 18)} = 3.10 < 3.55$, we fail to reject H_0 . There is no significant difference in the mean number of errors between the three conditions.



Interpretation: There is no significant difference in the mean number of errors between the three conditions ($F_{(2, 18)} = 3.10 < 3.55$).

95% CI for $\mu_{Control}$: 4.5 ± 1.0 (2.5, 5.5)
95% CI for μ_{Load} : 5.5 ± 1.0 (4.5, 6.5)
95% CI for μ_{Noisy} : 5.5 ± 1.0 (4.5, 6.5)

RECAP

1. Check assumptions: normality, homogeneity of variance, independence.

2. Calculate the F-statistic: $F = \frac{MS_{between}}{MS_{within}}$.

3. Compare the F-statistic to the critical value: $F > F_{critical}$ reject H_0 .

POSTHOC

1. Tukey's HSD: $HSD = q_{(k, N-k)} \sqrt{MS_{within}}$.

2. Bonferroni: $t_{critical} = t_{(N-k), \alpha/k}$.

