

## Dunn-Bonferroni test

Group 1	Group 2	p-adj	Reject Null Hypothesis?
Furniture	Furniture	1.000000	False
Furniture	Office Supplies	1.534319e-138	True
Furniture	Technology	5.207264e-02	False
Office Supplies	Furniture	1.534319e-138	True
Office Supplies	Office Supplies	1.000000	False
Office Supplies	Technology	2.001982e-154	True
Technology	Furniture	5.207264e-02	False
Technology	Office Supplies	2.001982e-154	True
Technology	Technology	1.000000	False

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Here's a breakdown of the Dunn-Bonferroni test results, where we are interpreting the adjusted p-values (p-adj) and reject column, which indicates whether the null hypothesis (that there is no difference between categories) is rejected.

### 1. Furniture vs. Furniture, Office Supplies vs. Office Supplies, Technology vs. Technology:

- The comparison of each category with itself has a p-adj of 1.000, which is expected since there's no meaningful difference when comparing a category to itself. The reject column is False for these comparisons.

### 2. Furniture vs. Office Supplies:

- **p-adj:** 1.534319e-138 (extremely low)
- **reject:** True
- This low p-value suggests a statistically significant difference between Furniture and Office Supplies. With such a small adjusted p-value, we can

conclude that the sales distributions between Furniture and Office Supplies are significantly different.

### 3. Furniture vs. Technology:

- **p-adj:** 5.207264e-02 (approximately 0.052)
- **reject:** False
- This adjusted p-value is slightly above 0.05, indicating that we fail to reject the null hypothesis at the 5% significance level. This suggests that there is no statistically significant difference in sales between Furniture and Technology categories.

### 4. Office Supplies vs. Technology:

- **p-adj:** 2.001982e-154 (extremely low)
- **reject:** True
- This very low p-value indicates a statistically significant difference in sales between Office Supplies and Technology categories. Thus, we conclude that the sales distribution between these two categories is significantly different.

### 5. Technology vs. Furniture:

- **p-adj:** 5.207264e-02 (approximately 0.052)
- **reject:** False
- Similar to the Furniture vs. Technology comparison, this p-value is slightly above 0.05. Therefore, we fail to reject the null hypothesis, suggesting no statistically significant difference in sales between Technology and Furniture.

### Summary of Interpretation:

- **Statistically significant differences** ( $p\text{-adj} < 0.05$ ) are observed between:
  - **Furniture and Office Supplies**
  - **Office Supplies and Technology**
- **No statistically significant differences** ( $p\text{-adj} > 0.05$ ) are observed between:
  - **Furniture and Technology**

These results imply that Office Supplies tends to be statistically distinct in sales from both Technology and Furniture. Meanwhile, Furniture and Technology have no significant difference, suggesting that their sales distributions may be similar.