Levene's Test Results for Sub-Category:

Statistic: 13.425234503886895, P-value: 7.00352985859149e-36

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Bartlett's Test Results for Sub-Category:

Statistic: 290.4327172941695, P-value: 2.433965240832681e-52

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Levene's Test Results for Category:

Statistic: 0.9172915088971311, P-value: 0.39967461112082403

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Bartlett's Test Results for Category:

Statistic: 0.35986638479626537, P-value: 0.8353260156750614

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Levene's Test Results for State:

Statistic: 2.9902653909526027, P-value: 0.017743398810384448

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Bartlett's Test Results for State:

Statistic: 12.351962779194183, P-value: 0.014917177789972279

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Levene's Test Results for Segment:

Statistic: 1.9893651956764993, P-value: 0.13690253117827733

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Bartlett's Test Results for Segment:

Statistic: 3.750855311892396, P-value: 0.15328939770299424

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Levene's Test Results for Ship Mode:

Statistic: 0.4891320220447687, P-value: 0.6898331717525548

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Bartlett's Test Results for Ship Mode:

Statistic: 2.4382252583843282, P-value: 0.48655866998958375

The variances across segments are not significantly different (p >= 0.05), indicating the assumption of homogeneity of variances is met.

Levene's Test Results for Region:

Statistic: 4.493559298030948, P-value: 0.011231003663087654

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Bartlett's Test Results for Region:

Statistic: 10.75896888633238, P-value: 0.0046101981365598765

The variances across segments are significantly different (p < 0.05), indicating the assumption of homogeneity of variances is violated.

Missing Values in DataFrame

Column Name	Missing Values
Segment	0
State	0
City	0
Region	0
Ship Mode	0
Order Date	0
Category	0
Sub-Category	0

Product Name	0
Sales	0
log_sales	0

ANOVA Test Results for Sub-Category:

F-statistic: 223.07841449024687

P-value: 0.0

Reject the null hypothesis: Significant differences between groups.

ANOVA Test Results for Category:

F-statistic: 666.1224231413845

P-value: 4.02192008756397e-254

Reject the null hypothesis: Significant differences between groups.

ANOVA Test Results for State:

F-statistic: 11.576563120561595

P-value: 2.3705657602627413e-09

Reject the null hypothesis: Significant differences between groups.

ANOVA Test Results for Segment:

F-statistic: 0.45559371457787307

P-value: 0.6341006489489389

Fail to reject the null hypothesis: No significant differences between groups.

ANOVA Test Results for Ship Mode:

F-statistic: 0.2988284858444482

P-value: 0.8262733785271138

Fail to reject the null hypothesis: No significant differences between groups.

ANOVA Test Results for Region:

F-statistic: 10.930953003745152

P-value: 1.837571796975119e-05

Reject the null hypothesis: Significant differences between groups.

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