Hochberg's GT2 Post Hoc Analysis

Summary:

	analysis	target_variable	group_variable	number_of_groups	number_of_pairwise_comparisons	significant_pairwise_comparisons_alpha_0_05	omnibus_anova_p_value	alpha	method_note
1	Hochberg's GT2 post hoc pairwise comparison test	G3	studytime	4	6	4	5.705728e−10	0.05	R uses an educational GT2−style maximum−modulus approximation. Use SPSS output for the official SPSS Hochberg's GT2 table.

1 Hochberg's GT2 is commonly used after one−way ANOVA for pairwise comparisons and homogeneous subsets, especially when group sizes are unequ

ANOVA table:

	source	sum_of_squares	df	mean_square	f_value	p_value
1	Between groups	465.0778	3	155.025942	15.87627	5.705728e−10
2	Within groups	6298.1887	645	9.764634	NA	NA
3	Total	6763.2666	648	NA	NA	NA

Assumption context:

	check	statistic	p_value	note
1	Brown−Forsythe / median Levene	1.026312	0.38035752	Robust equal−variance context for post hoc selection; requires package car in R.
2	Bartlett variance test	9.462687	0.02373164	Sensitive to non−normality; use as context only.

Group summary:

	group	n	mean	standard_deviation	variance	standard_error	minimum	maximum	mean_ci95_lower	mean_ci95_upper
1	1	212	10.84434	3.218624	10.359541	0.2210560	0	18	10.41107	11.27761
2	2	305	12.09180	3.243125	10.517860	0.1857008	0	19	11.72783	12.45578
3	3	97	13.22680	2.502104	6.260524	0.2540502	8	18	12.72887	13.72474
4	4	35	13.05714	3.038410	9.231933	0.5135850	6	19	12.05052	14.06377

Hochberg's GT2 pairwise comparisons:

	group_1	group_2	mean_group_1	mean_group_2	mean_difference_group_1_minus_group_2	absolute_mean_difference
11	1	3	10.84434	13.22680	−2.3824645	2.3824645
1	1	2	10.84434	12.09180	−1.2474637	1.2474637
12	1	4	10.84434	13.05714	−2.2128032	2.2128032
2	2	3	12.09180	13.22680	−1.1350008	1.1350008
21	2	4	12.09180	13.05714	−0.9653396	0.9653396
3	3	4	13.22680	13.05714	0.1696613	0.1696613

	n_group_1	n_group_2	harmonic_mean_n_all_groups	mse_within	hochbergs_gt2_standard_error
11	212	97	85.33083	9.764634	0.3830482
1	212	305	85.33083	9.764634	0.2794187
12	212	35	85.33083	9.764634	0.5701308
2	305	97	85.33083	9.764634	0.3642547
21	305	35	85.33083	9.764634	0.5576780
3	97	35	85.33083	9.764634	0.6161622

	hochbergs_gt2_max_modulus_statistic	df_error	k_groups	pairwise_comparison_count
11	6.2197513	645	4	6
1	4.4644967	645	4	6
12	3.8812203	645	4	6
2	3.1159535	645	4	6
21	1.7309982	645	4	6
3	0.2753516	645	4	6

	max_modulus_critical_alpha_0_05_approx	hochbergs_gt2_adjusted_p_value_approx	hochbergs_gt2_critical_difference
11	2.639141	5.371756e−09	1.0109181
1	2.639141	5.683834e−05	0.7374251
12	2.639141	6.875444e−04	1.5046554
2	2.639141	1.143463e−02	0.9613195
21	2.639141	4.090223e−01	1.4717906
3	2.639141	9.998960e−01	1.6261387

	hochbergs_gt2_ci95_lower	hochbergs_gt2_ci95_upper	alpha	decision_alpha_0_05
11	−3.393383	−1.3715464	0.05	Significant
1	−1.984889	−0.5100385	0.05	Significant
12	−3.717459	−0.7081478	0.05	Significant
2	−2.096320	−0.1736813	0.05	Significant
21	−2.437130	0.5064511	0.05	Not significant
3	−1.456477	1.7958000	0.05	Not significant