

One Way ANOVA Python Report

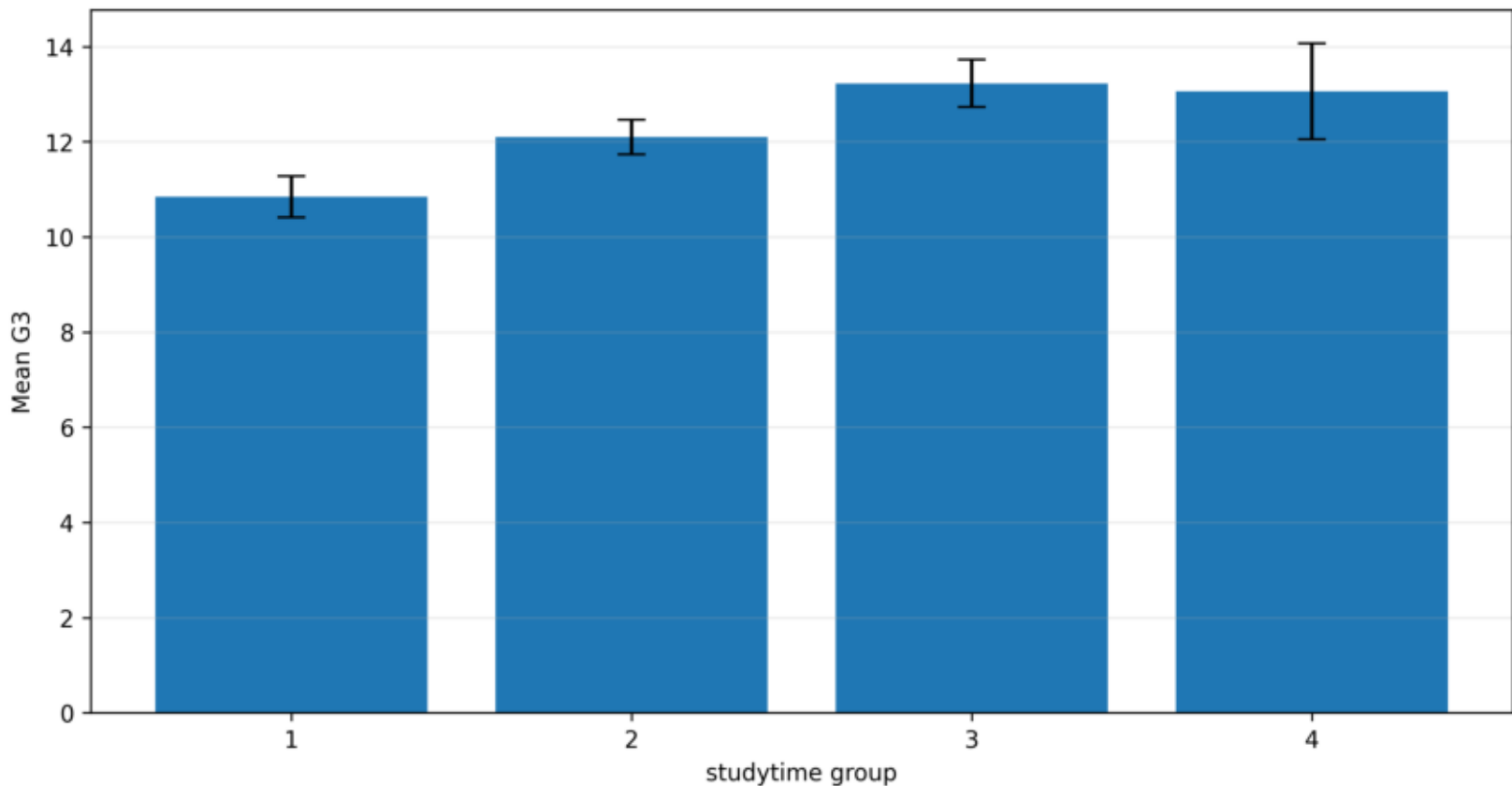
test_name	outcome	factor	n	groups	df_between	df_within	ss_between	ss_within	ms_between	ms_within	f_statistic	p_value	critical_f_0_05	eta_squared	partial_eta_squared	omega_squared	epsilon_squared	cohen_f	alpha	decision_alpha_0_05
One Way ANOVA	G3	studytime	649	4	3	645	465.077825	6298.188739	155.025942	9.764634	15.876268	5.705728e-10	2.618715	0.068765	0.068765	0.064341	0.064434	0.271741	0.05	Reject equal means

group	n	mean	median	standard_deviation	variance	standard_error	ci95_low	ci95_high	minimum	maximum
1	212	10.844340	11.0	3.218624	10.359541	0.221056	10.411070	11.277609	0.0	18.0
2	305	12.091803	12.0	3.243125	10.517860	0.185701	11.727830	12.455777	0.0	19.0
3	97	13.226804	13.0	2.502104	6.260524	0.254050	12.728866	13.724742	8.0	18.0
4	35	13.057143	13.0	3.038410	9.231933	0.513585	12.050516	14.063769	6.0	19.0

Source	SS	df	MS	F	P Value	Critical F .05
Between Groups	465.077825	3	155.025942	15.876268	5.705728e-10	2.618715
Within Groups	6298.188739	645	9.764634	NaN	NaN	NaN
Total	6763.266564	648	NaN	NaN	NaN	NaN

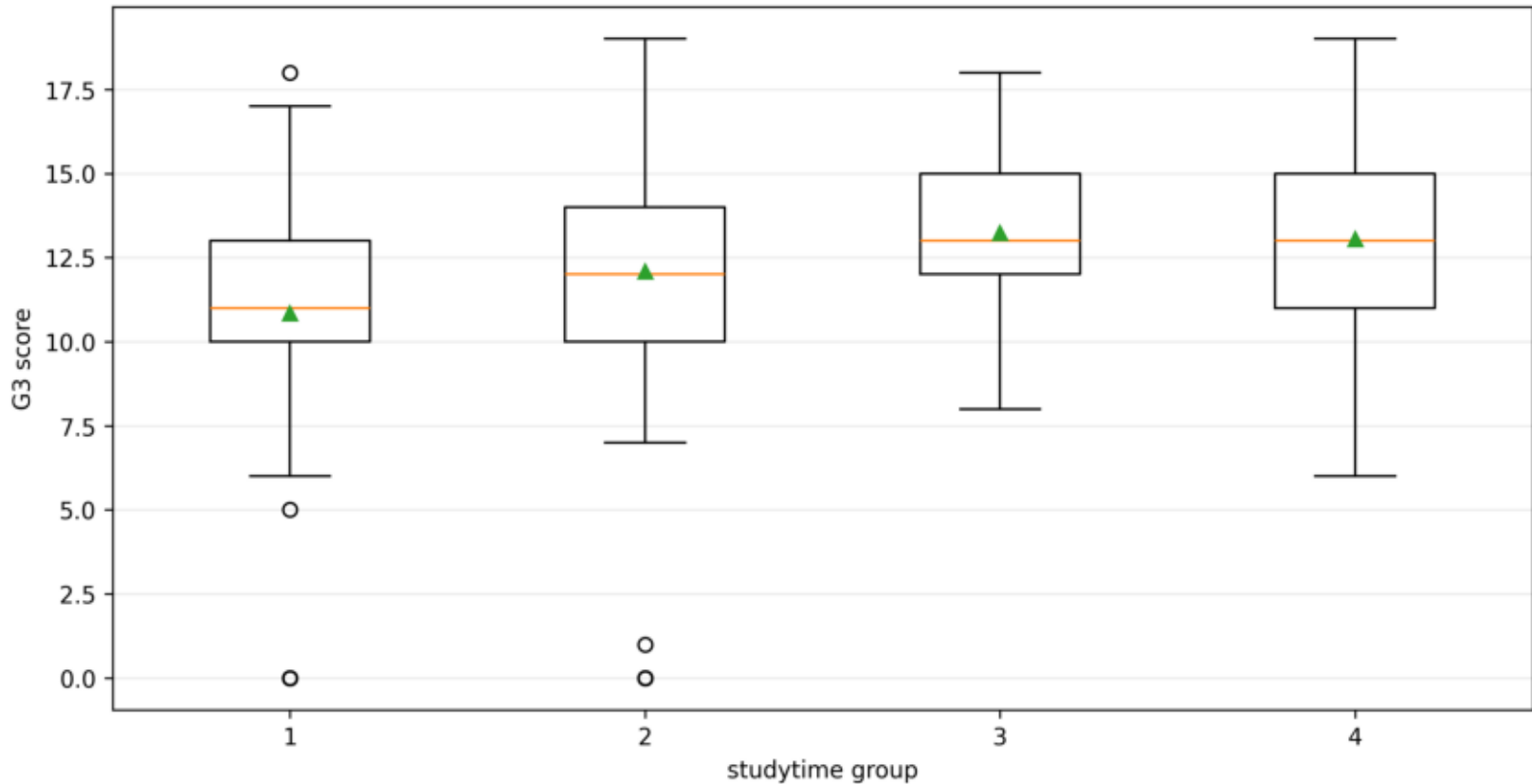
One Way ANOVA: Mean G3 by Studytime Group

Bars show group means with 95% confidence intervals.



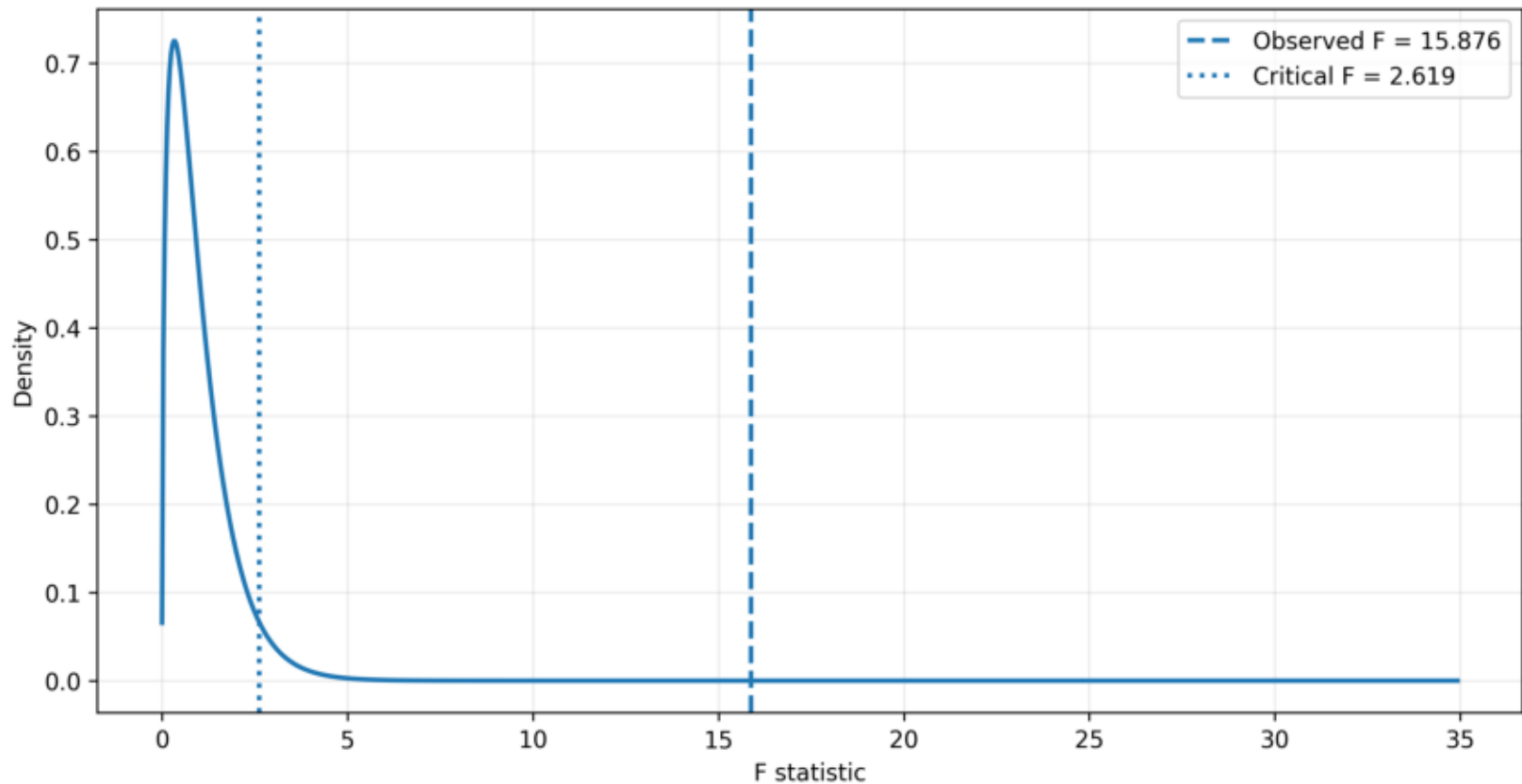
One Way ANOVA: Distribution by Group

Boxplots show median, spread, mean marker, and possible outliers.



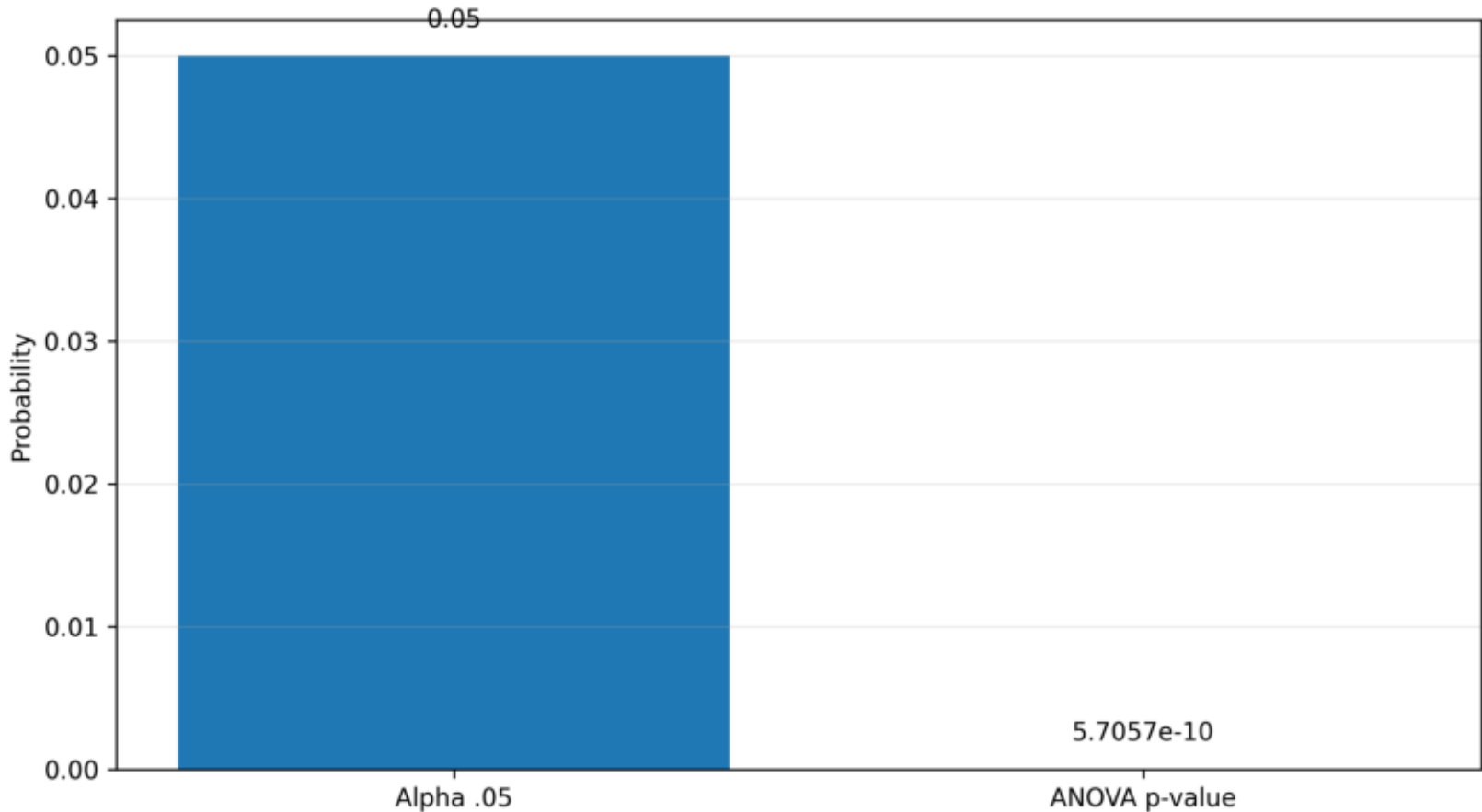
One Way ANOVA: Observed F on F Distribution

Right-tail p-value = 5.706×10^{-10} ; df1 = 3, df2 = 645.



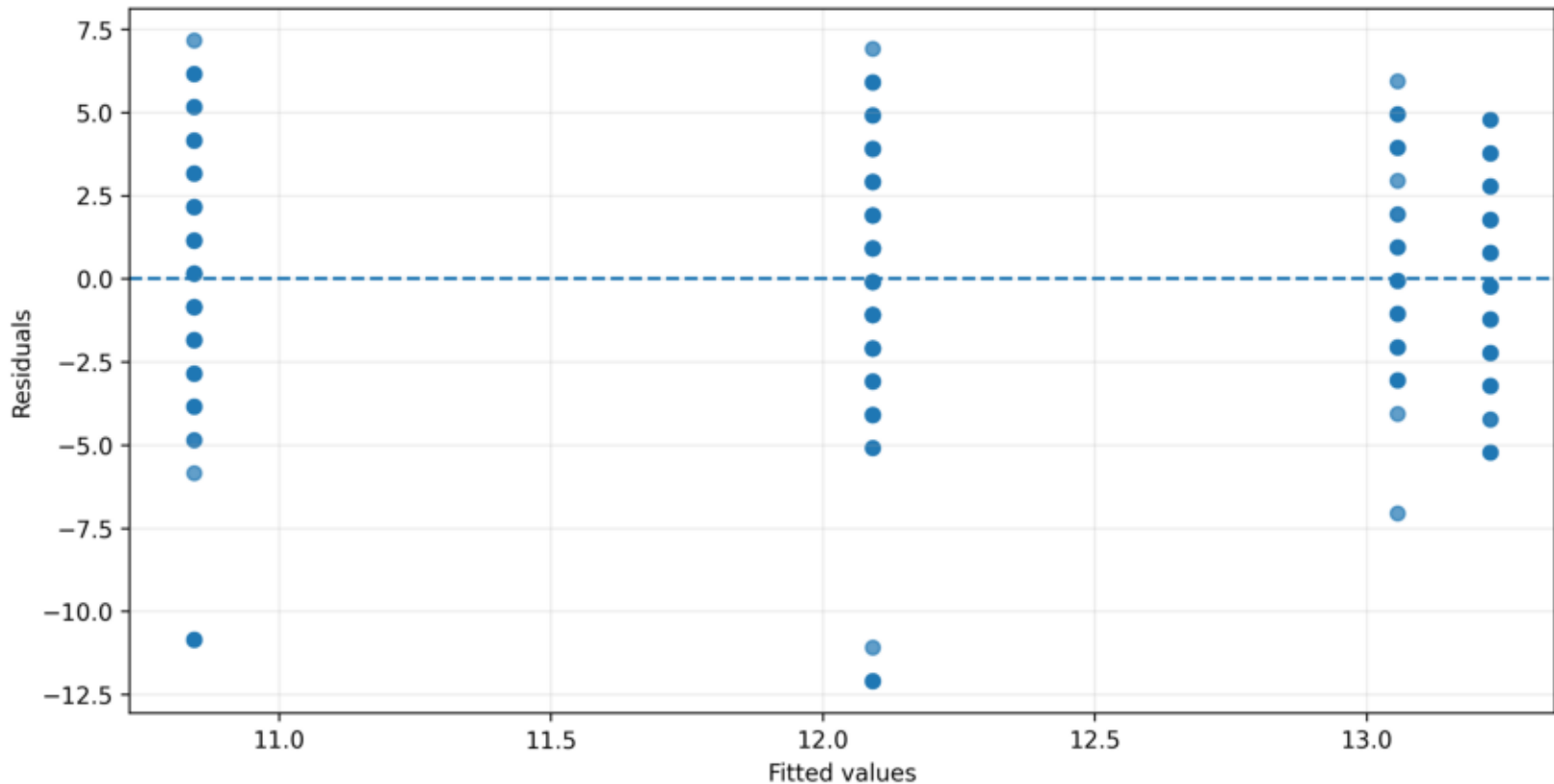
One Way ANOVA: p-value Decision

Reject H_0 when p-value is below alpha.



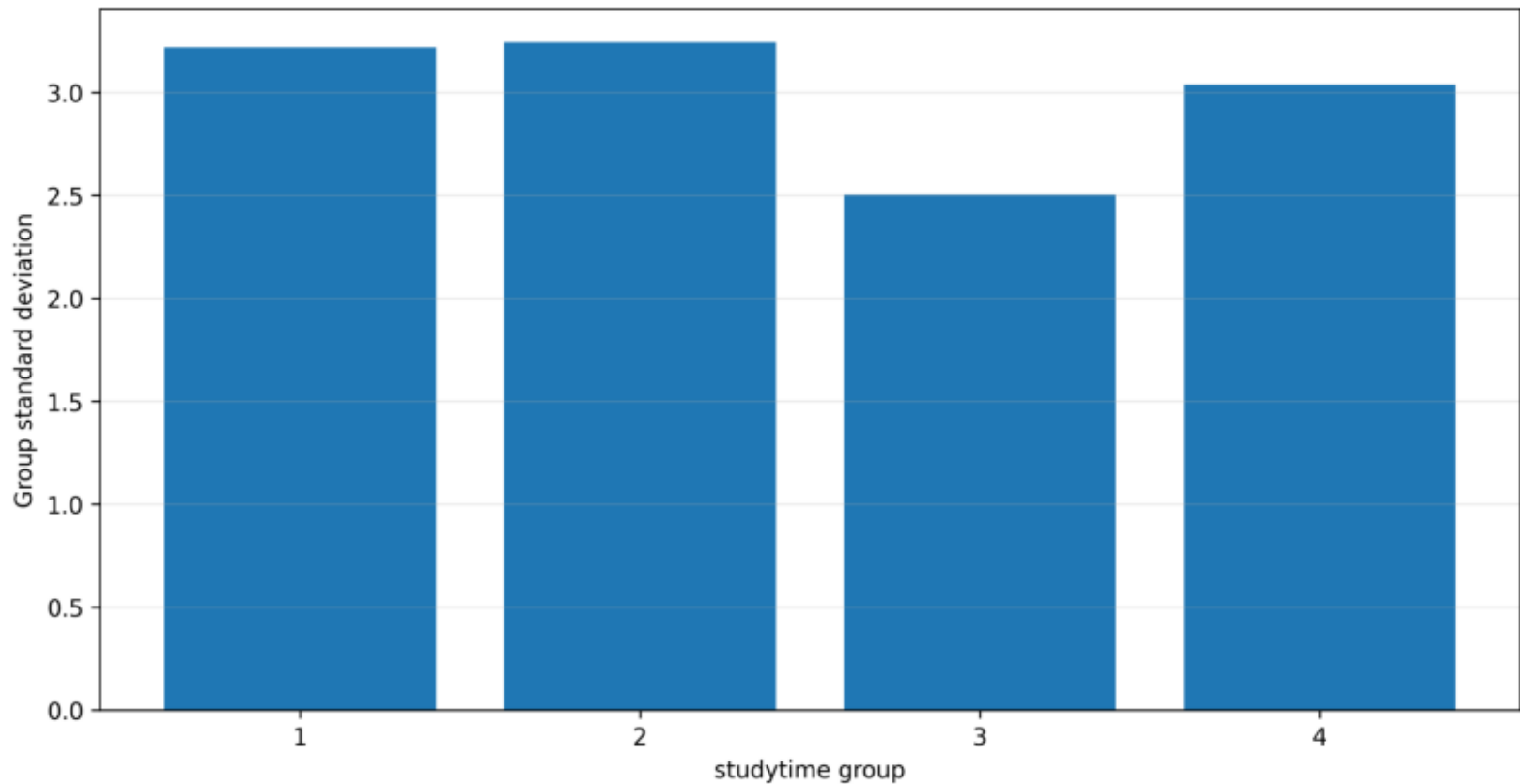
One Way ANOVA: Residuals vs Fitted Values

A random cloud around zero supports model adequacy.



One Way ANOVA: Variance Check by Group

Median-based Levene-style p-value = 0.3804.



One Way ANOVA: Group Summary Table

$F(3, 645) = 15.876$, $p = 5.706e-10$, $\eta^2 = 0.069$. Decision: Reject equal means.

Group	n	Mean	SD	95% CI Low	95% CI High
1	212	10.84	3.22	10.41	11.28
2	305	12.09	3.24	11.73	12.46
3	97	13.23	2.50	12.73	13.72
4	35	13.06	3.04	12.05	14.06