Random Effects ANOVA Python Report

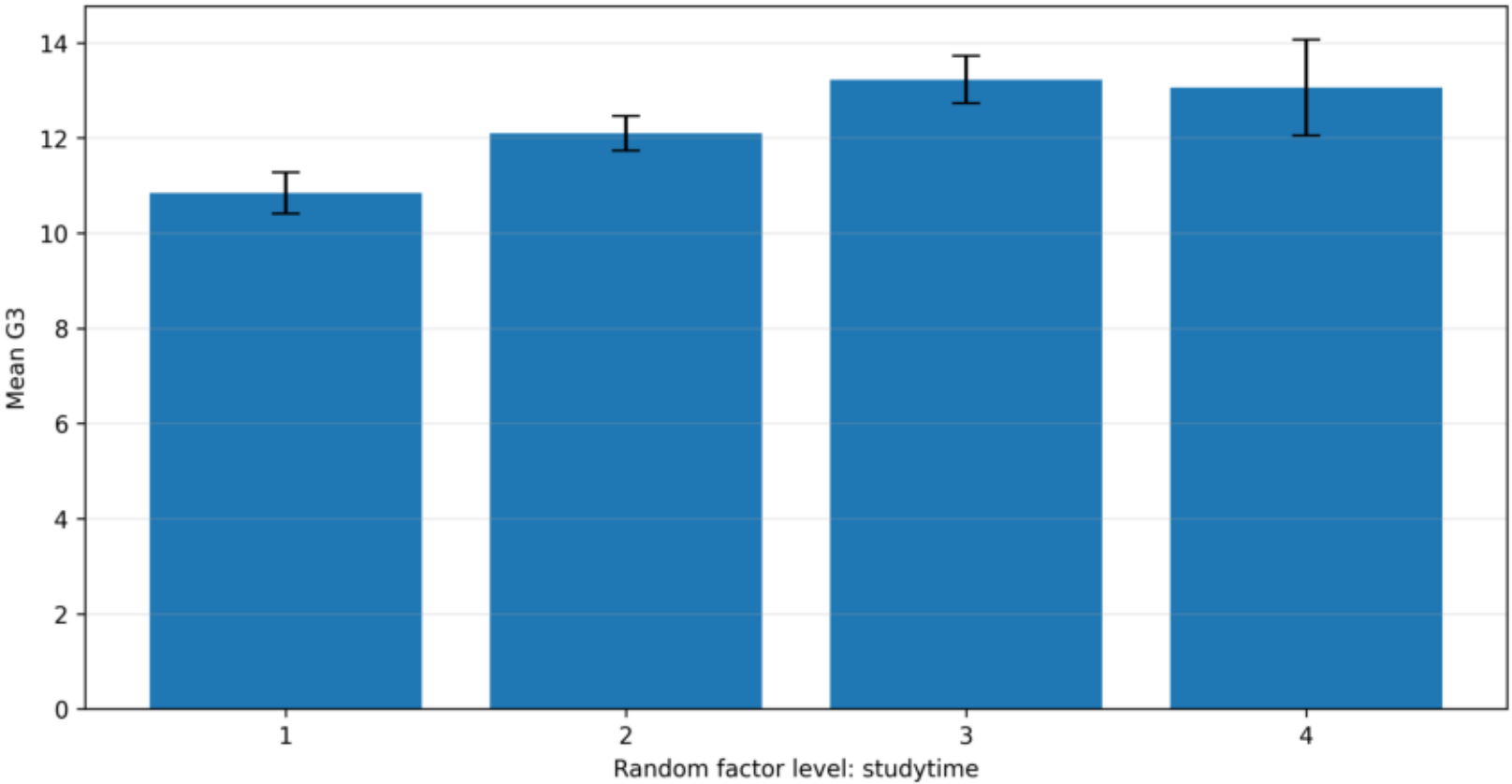
test_name	outcome	random_factor	n	random_levels	df_between	df_within	ss_between	ss_within	ms_between	ms_within	f_statistic	p_value	critical_f_0_05	unbalanced_effective_n0	variance_component_between	variance_component_error	icc	alpha	decision_alpha_0_05
Random Effects ANOVA	G3	studytime	649	4	3	645	465.077825	6298.188739	155.025942	9.764634	15.876268	5.705728e-10	2.618715	140.009245	1.037512	9.764634	0.096047	0.05	Reject H0: random-level variance is greater than zero

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

Component	Variance Component	Percent of Total Variance
Between random levels: studytime	1.037512	9.604687
Within-level / residual error	9.764634	90.395313
Total	10.802146	100.000000

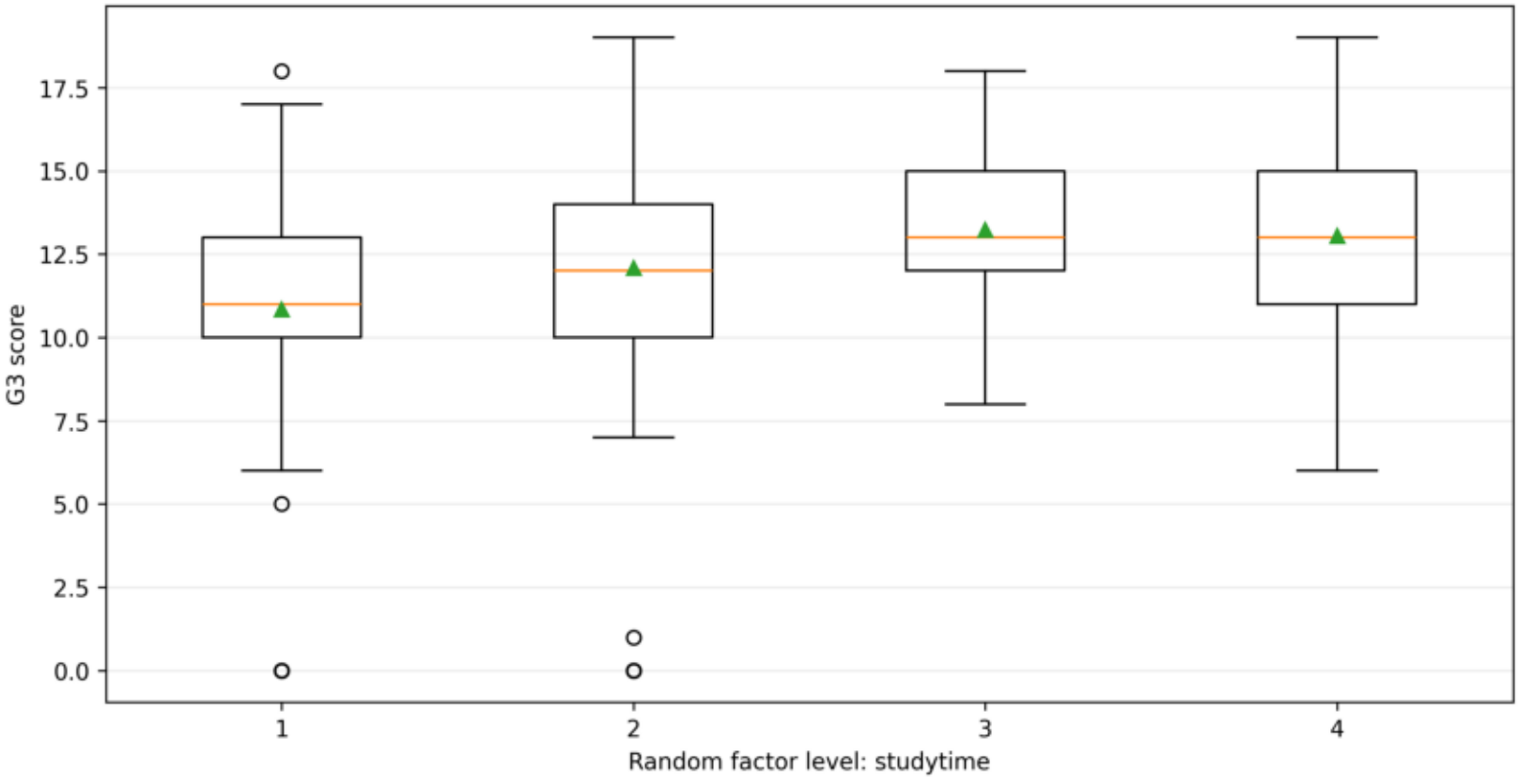
Random Effects ANOVA: Random-Level Means with 95% CI

Means are shown for levels treated as sampled random effects.



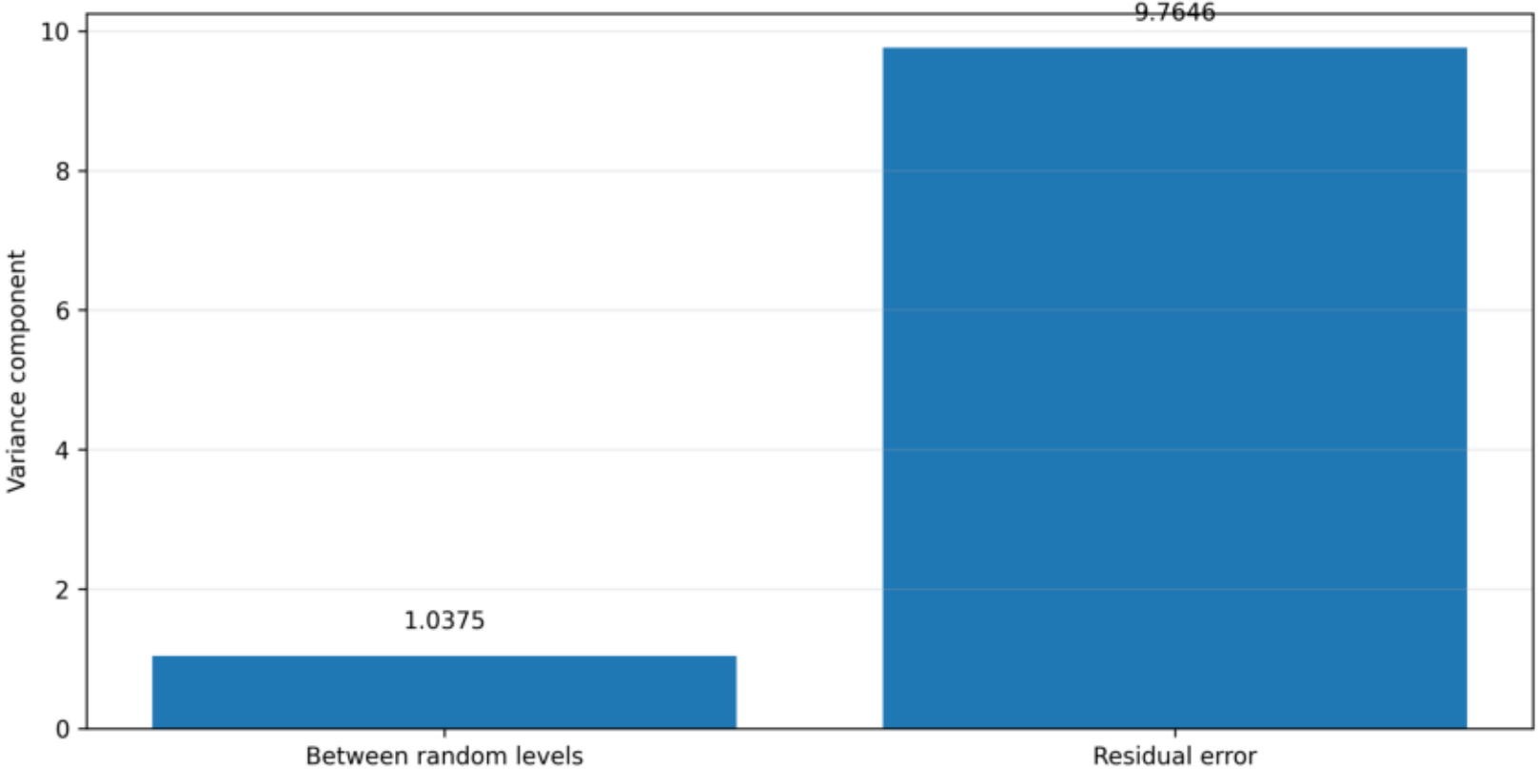
Random Effects ANOVA: Distribution by Random Level

Boxplots show the observed variation inside each random factor level.



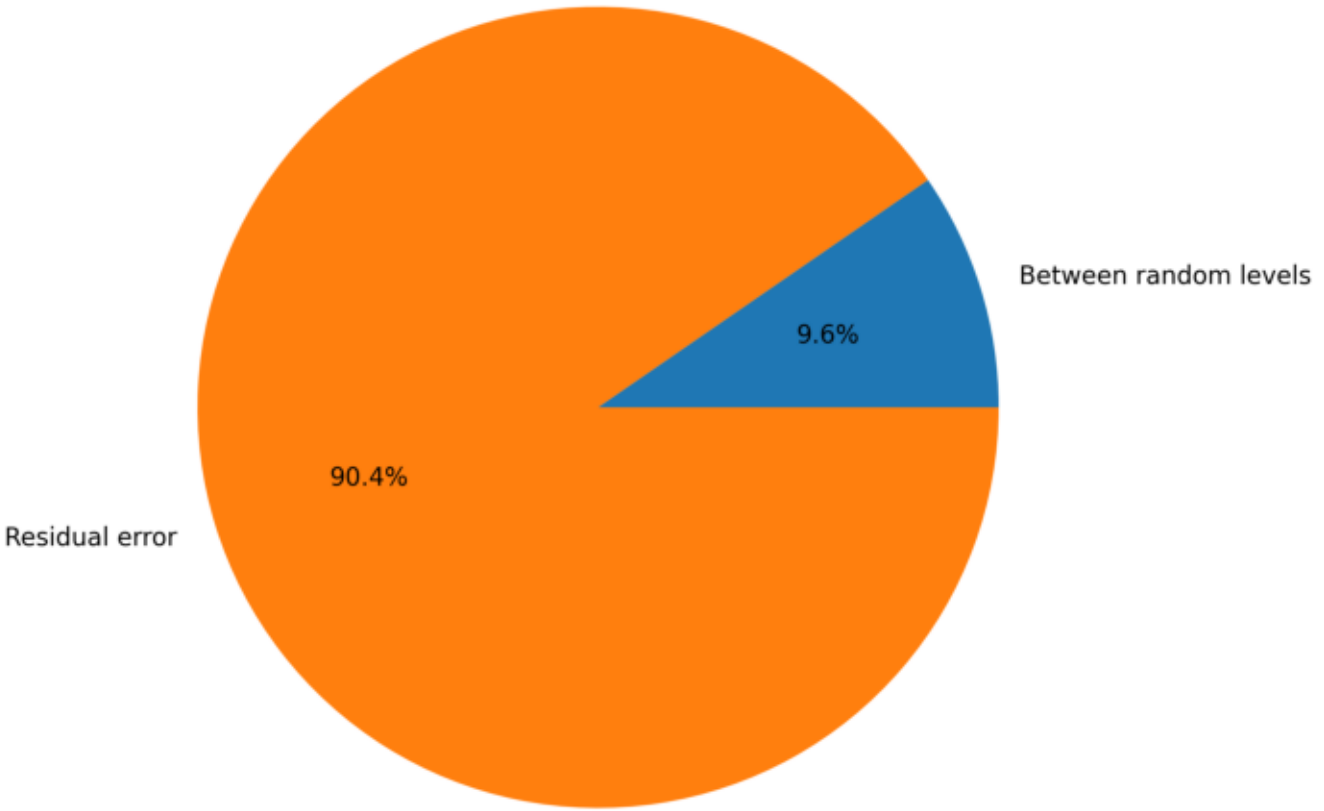
Random Effects ANOVA: Variance Components

Between-level and residual variance components from ANOVA mean squares.



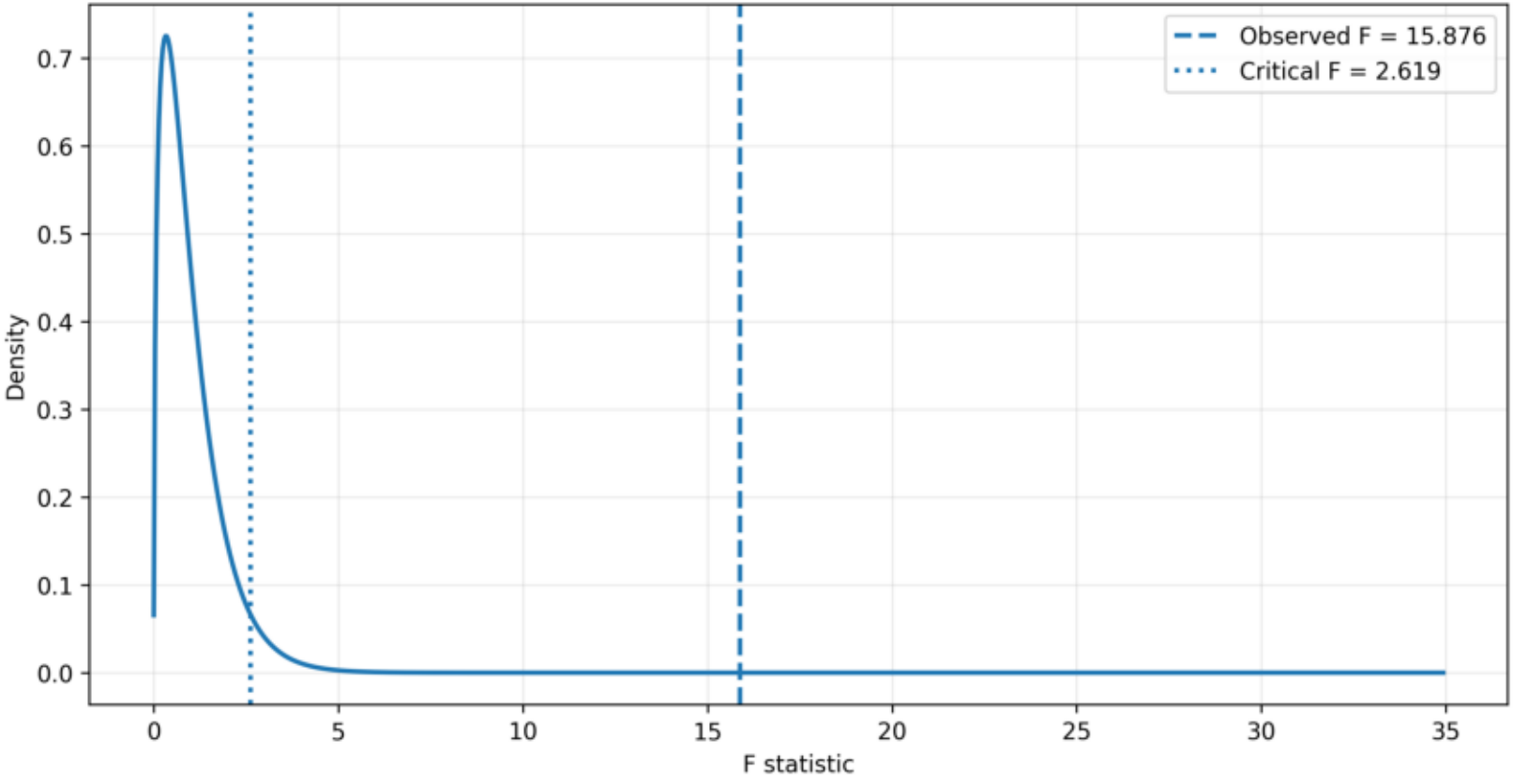
Random Effects ANOVA: Variance Share

The ICC is the between-level share of total model variance.



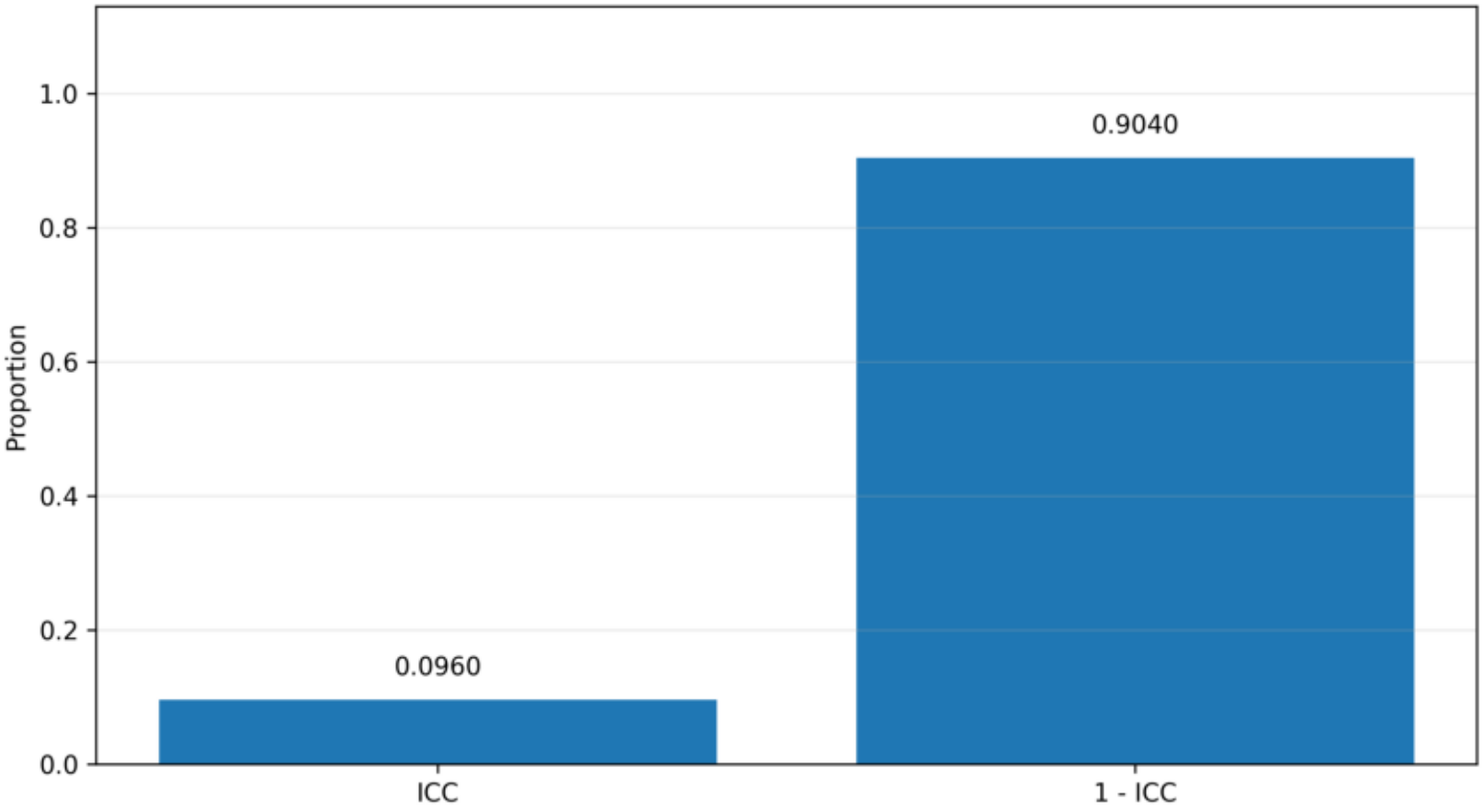
Random Effects ANOVA: F Test for Random-Level Variance

Right-tail p-value = 5.706e-10; df1 = 3, df2 = 645.



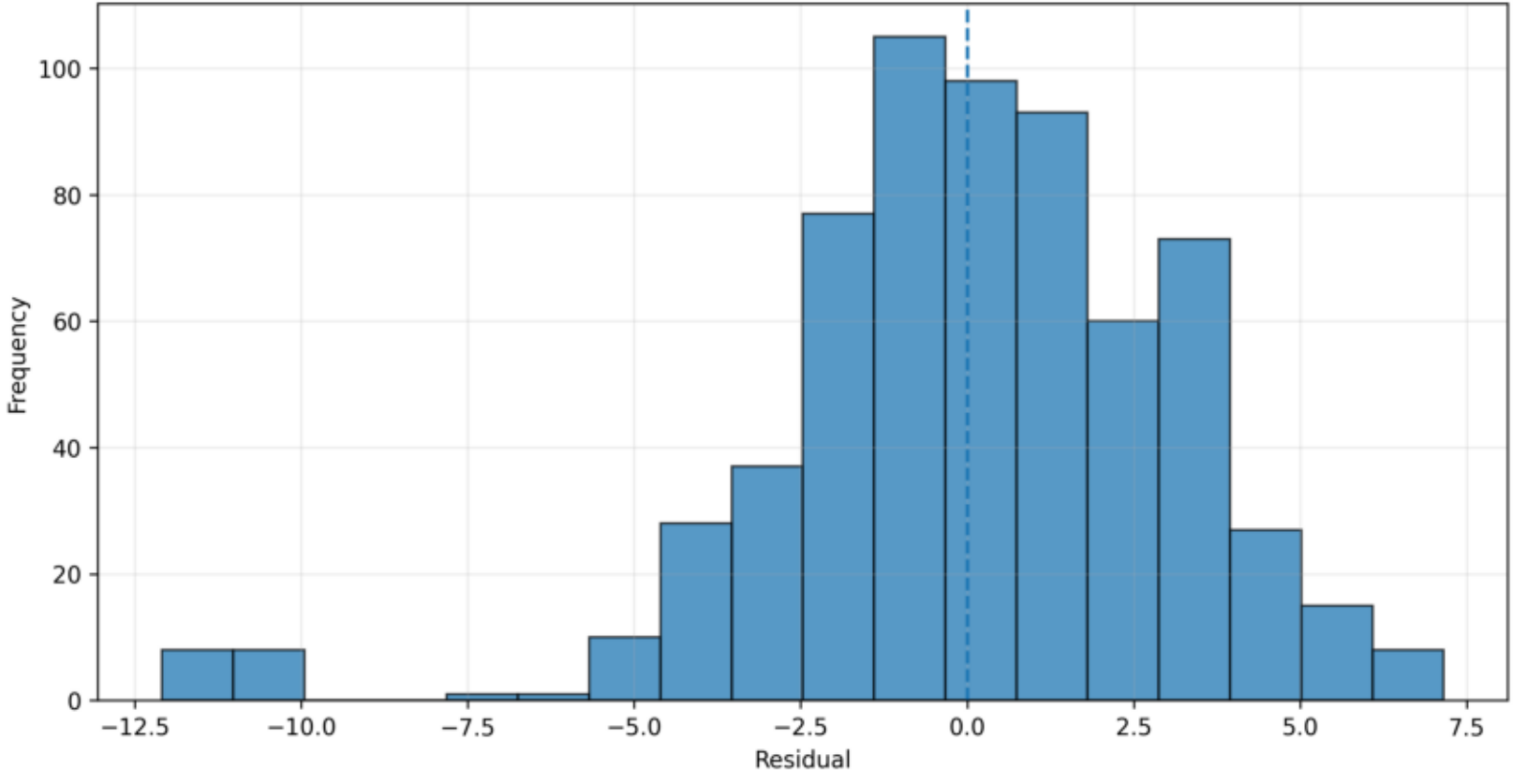
Random Effects ANOVA: Intraclass Correlation

ICC estimates the proportion of variance attributable to random factor levels.



Random Effects ANOVA: Residual Histogram

Residual distribution after subtracting random-level means.



Random Effects ANOVA: Q-Q Plot of Residuals

Points close to the line support approximate residual normality.