

Regression ANOVA Table

Regression ANOVA Table
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Dataset: D:\DATA ANALYSIS\H Regression Tests and Models\Regression ANOVA Table\dataset.csv
Outcome: G3
Predictors: G1, G2, studytime, failures, absences
Complete observations: 649
R-squared: 0.850563
Adjusted R-squared: 0.849401
RMSE: 1.253722
Overall F(5, 643) = 731.965860
p-value: 1.325735596e-262
Decision at alpha = 0.05: Reject the overall regression null hypothesis

Regression ANOVA table:

source	sum_of_squares	df	mean_square	f_value	p_value
Regression	5752.587288	5	1150.517458	731.96586	1.325736e-262
Residual / Error	1010.679276	643	1.571818	NaN	NaN
Total	6763.266564	648	NaN	NaN	NaN

Regression ANOVA Table

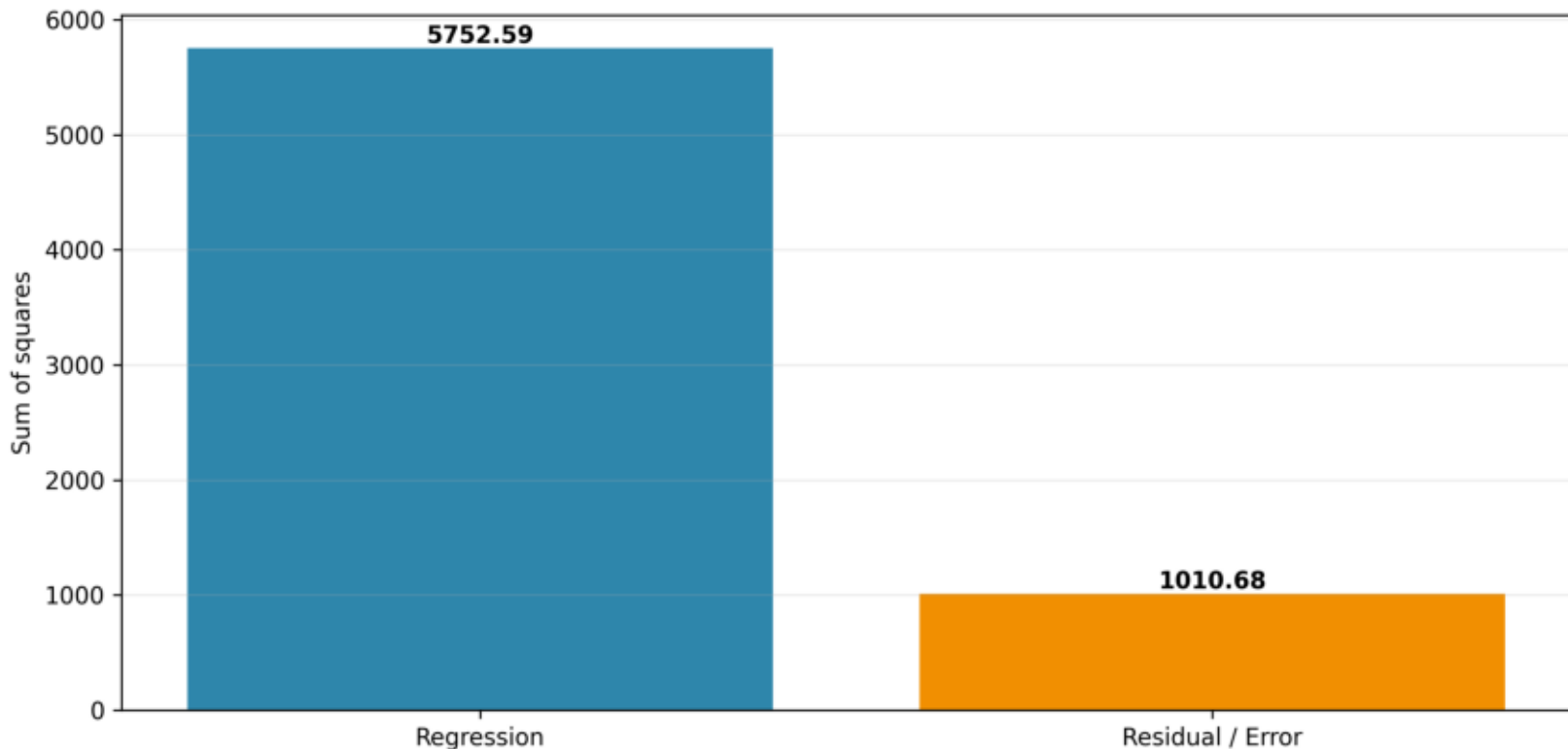
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Coefficient Table

	term	coefficient	standard_error	t_value	p_value	ci95_lower	ci95_upper	decision_alpha_0_05
	const	-0.155190	0.258626	-0.600057	5.486796e-01	-0.663043	0.352663	Not statistically significant
	G1	0.139457	0.036227	3.849494	1.301880e-04	0.068319	0.210596	Statistically significant
	G2	0.885709	0.033927	26.106646	5.437936e-103	0.819088	0.952329	Statistically significant
	studytime	0.096699	0.061810	1.564470	1.181993e-01	-0.024674	0.218073	Not statistically significant
	failures	-0.218290	0.090861	-2.402463	1.656754e-02	-0.396711	-0.039870	Statistically significant
	absences	0.023367	0.010794	2.164781	3.077169e-02	0.002171	0.044562	Statistically significant

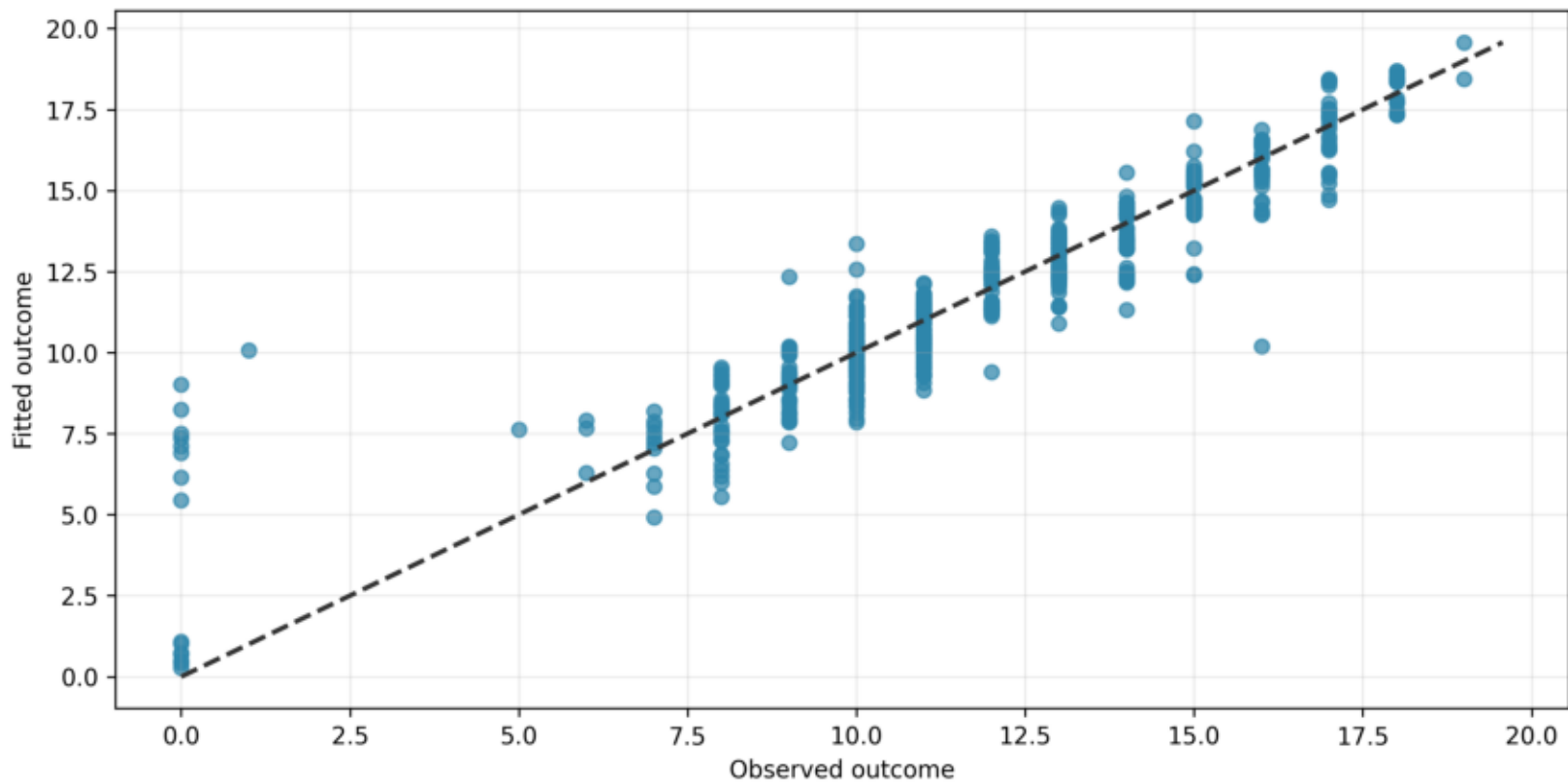
Regression ANOVA: Sum-of-Squares Components

Regression SS is explained variation; residual SS is unexplained variation.



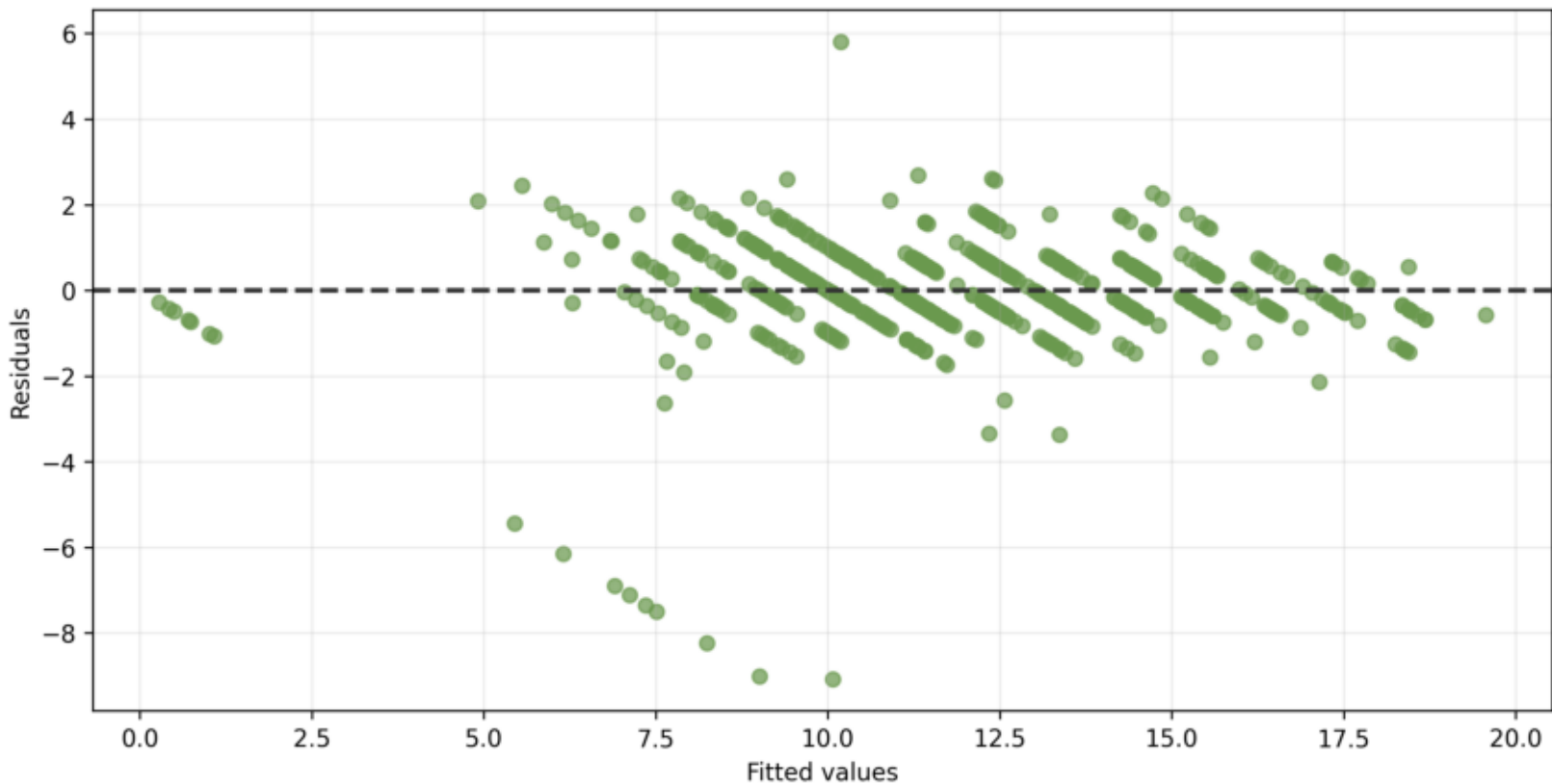
Observed vs Fitted Values

Points near the diagonal indicate stronger predictive agreement.



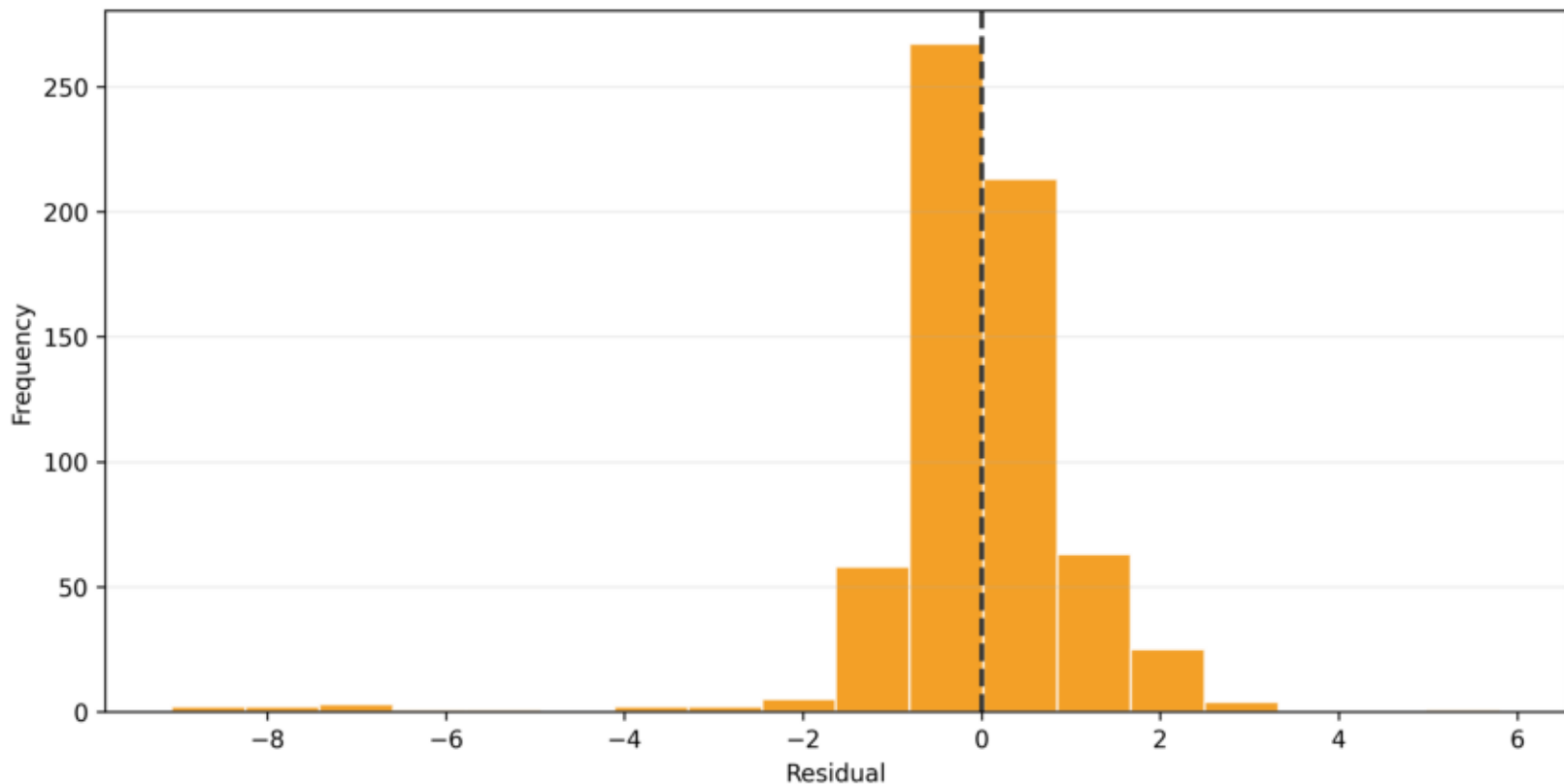
Residuals vs Fitted Values

A pattern-free band around zero supports the linearity and variance assumptions.



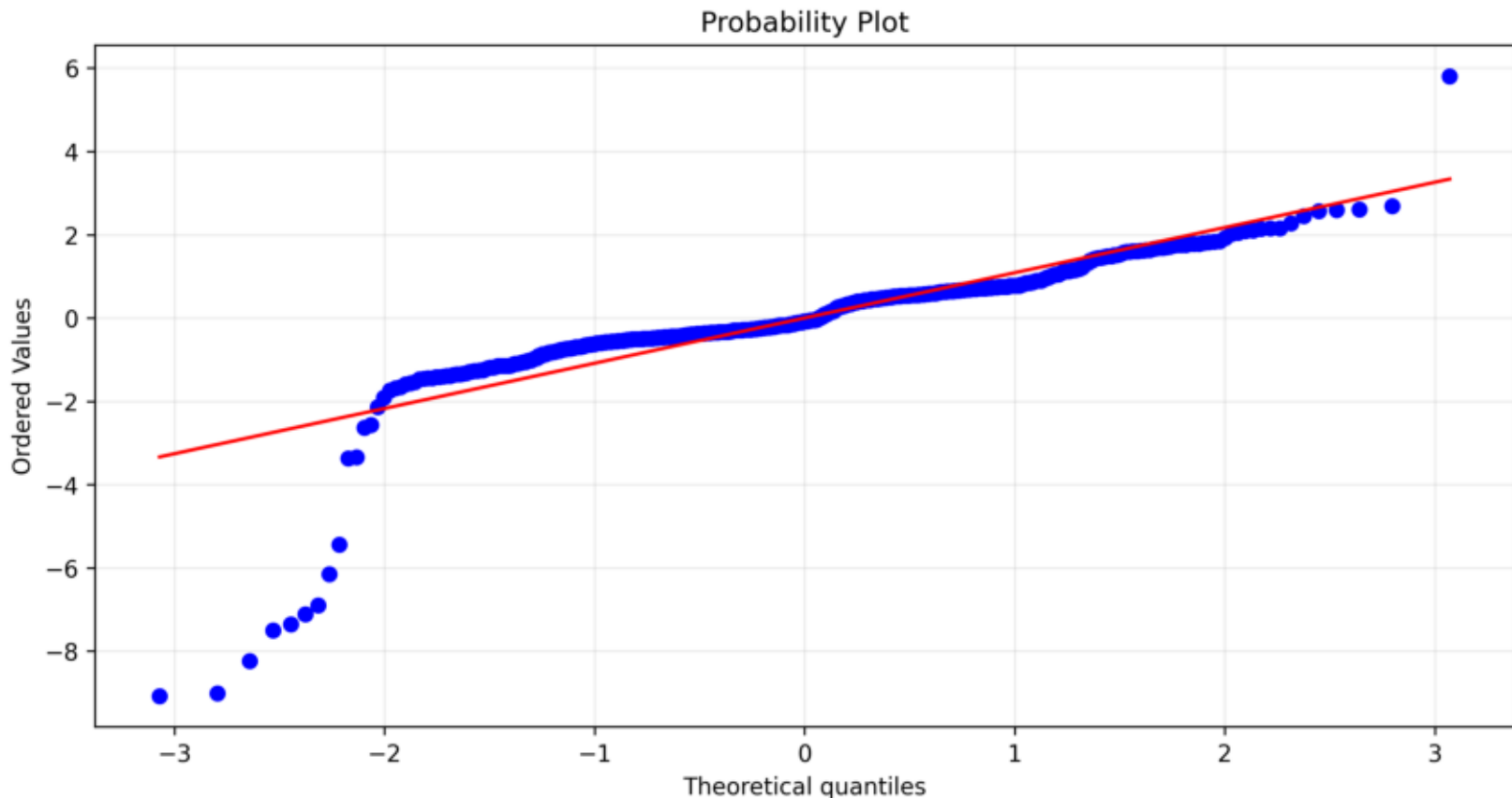
Residual Distribution

A roughly symmetric distribution around zero is desirable for OLS inference.



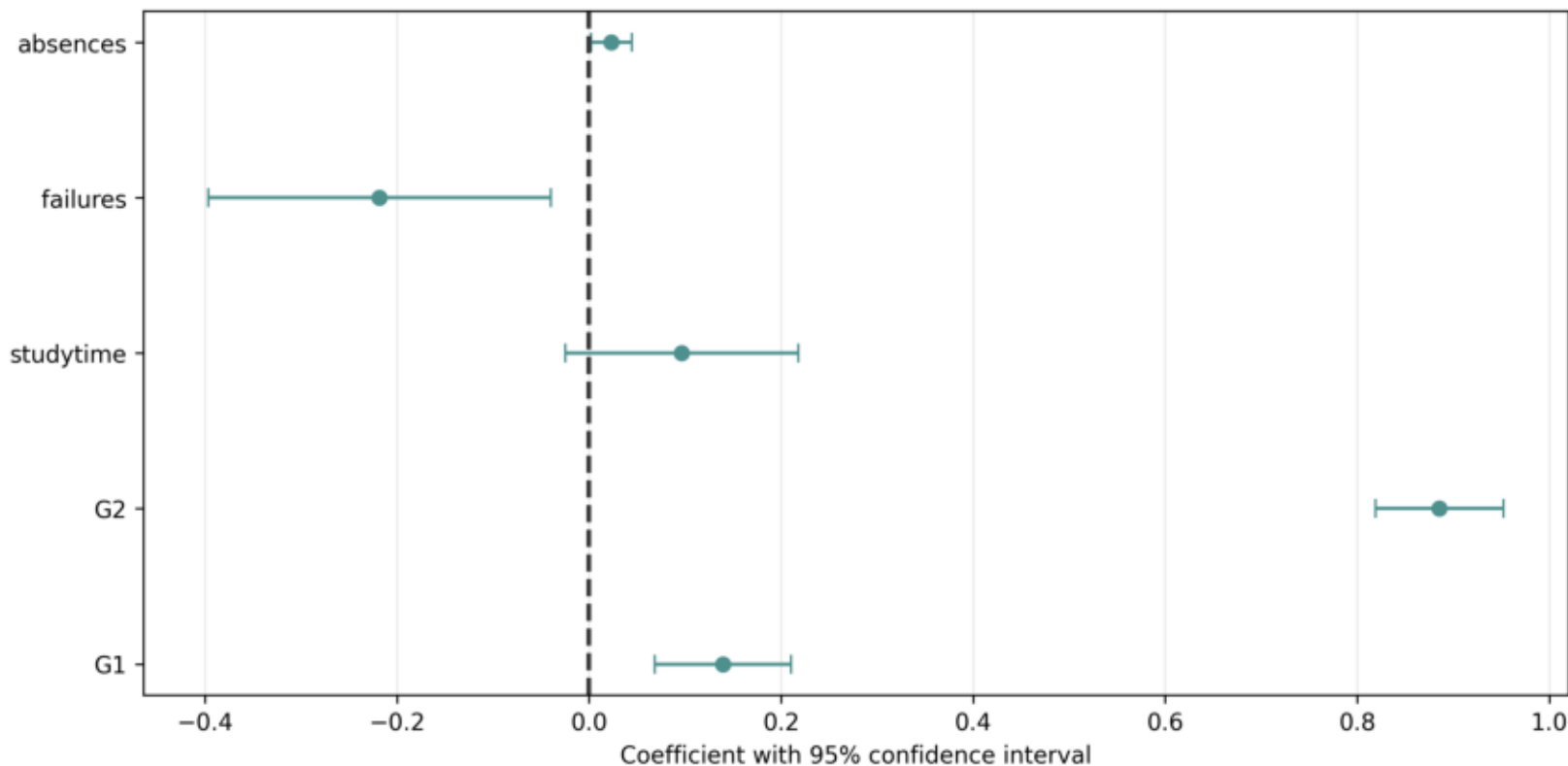
Normal Q-Q Plot of Residuals

Points close to the reference line indicate approximate residual normality.



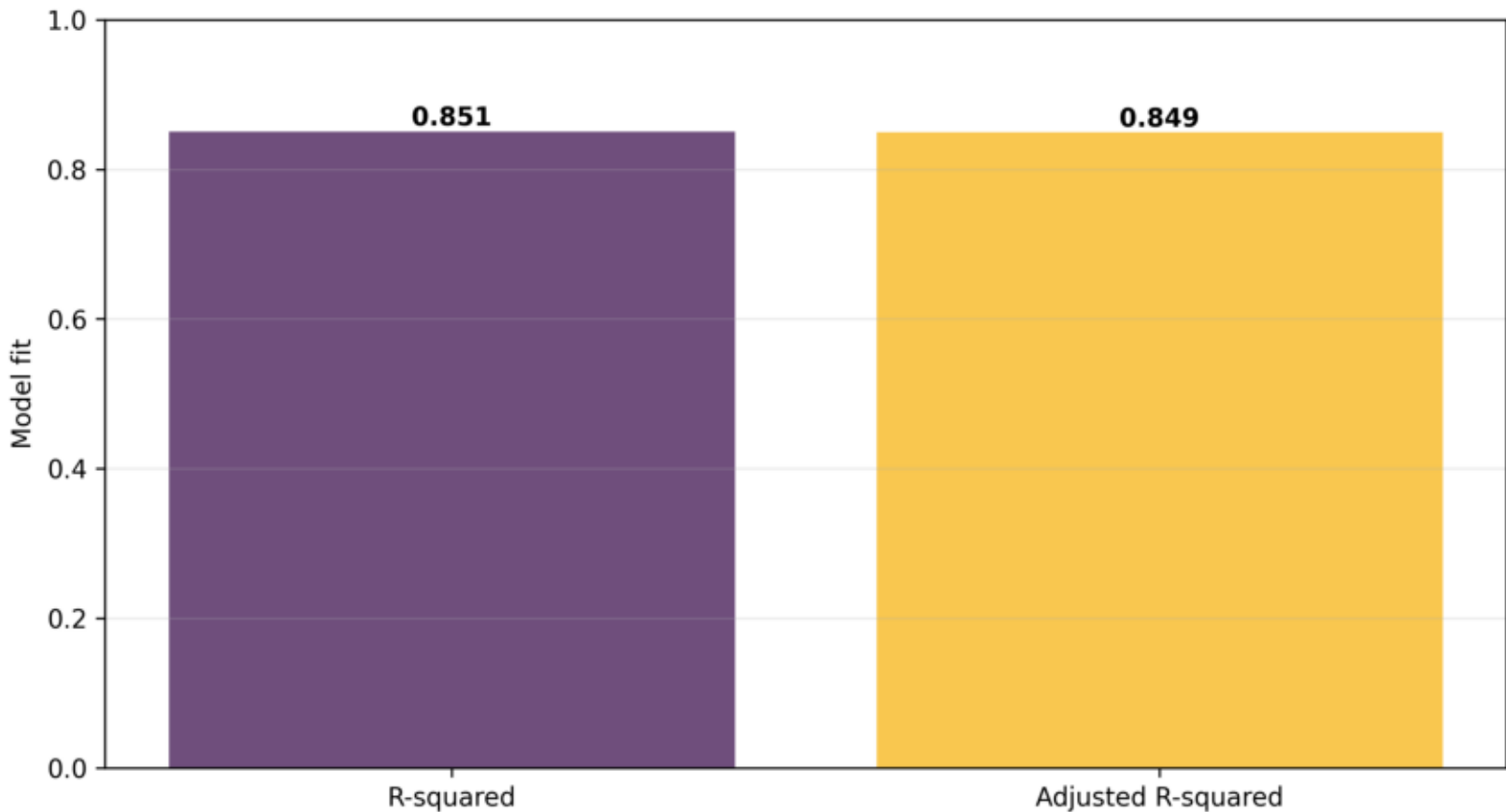
Regression Coefficients

Confidence intervals crossing zero indicate weaker evidence after controlling for other predictors.



Regression Model Fit

Overall F = 731.9659; p = 1.326e-262.



Residual Sequence

Large isolated residuals may indicate unusual observations or omitted structure.

