

R Squared - Python PDF Report

Outcome: G3

Complete cases: 649

R-squared: 0.852050

Adjusted R-squared: 0.850200

Multiple R: 0.923065

F statistic: 460.722603

Model p-value: 9.42888e-260

RMSE: 1.241691

MAE: 0.780275

Interpretation: The model explains 85.20% of the variance in G3.

OLS Regression Results

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Dep. Variable:          Q("G3")    R-squared:                0.852
Model:                  OLS         Adj. R-squared:           0.850
Method:                 Least Squares   F-statistic:             460.7
Date:                  Sun, 12 Jul 2026   Prob (F-statistic):       9.43e-260
Time:                  11:04:44         Log-Likelihood:          -1061.4
No. Observations:      649            AIC:                     2141.
Df Residuals:          640            BIC:                     2181.
Df Model:              8
Covariance Type:       nonrobust
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	coef	std err	t	P> t	[0.025	0.975]
Intercept	-0.1813	0.775	-0.234	0.815	-1.702	1.340
C(Q("school"))[T.MS]	-0.1979	0.112	-1.762	0.078	-0.418	0.023
C(Q("sex"))[T.M]	-0.2031	0.103	-1.965	0.050	-0.406	-0.000
Q("G1")	0.1332	0.037	3.623	0.000	0.061	0.205
Q("G2")	0.8802	0.034	25.788	0.000	0.813	0.947
Q("studytime")	0.0620	0.063	0.981	0.327	-0.062	0.186
Q("failures")	-0.2271	0.095	-2.397	0.017	-0.413	-0.041
Q("absences")	0.0180	0.011	1.612	0.108	-0.004	0.040
Q("age")	0.0240	0.044	0.552	0.581	-0.061	0.109

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Omnibus:                459.334    Durbin-Watson:           1.884
Prob(Omnibus):          0.000     Jarque-Bera (JB):        9939.203
Skew:                   -2.859     Prob(JB):                0.00
Kurtosis:               21.299     Cond. No.                 378.
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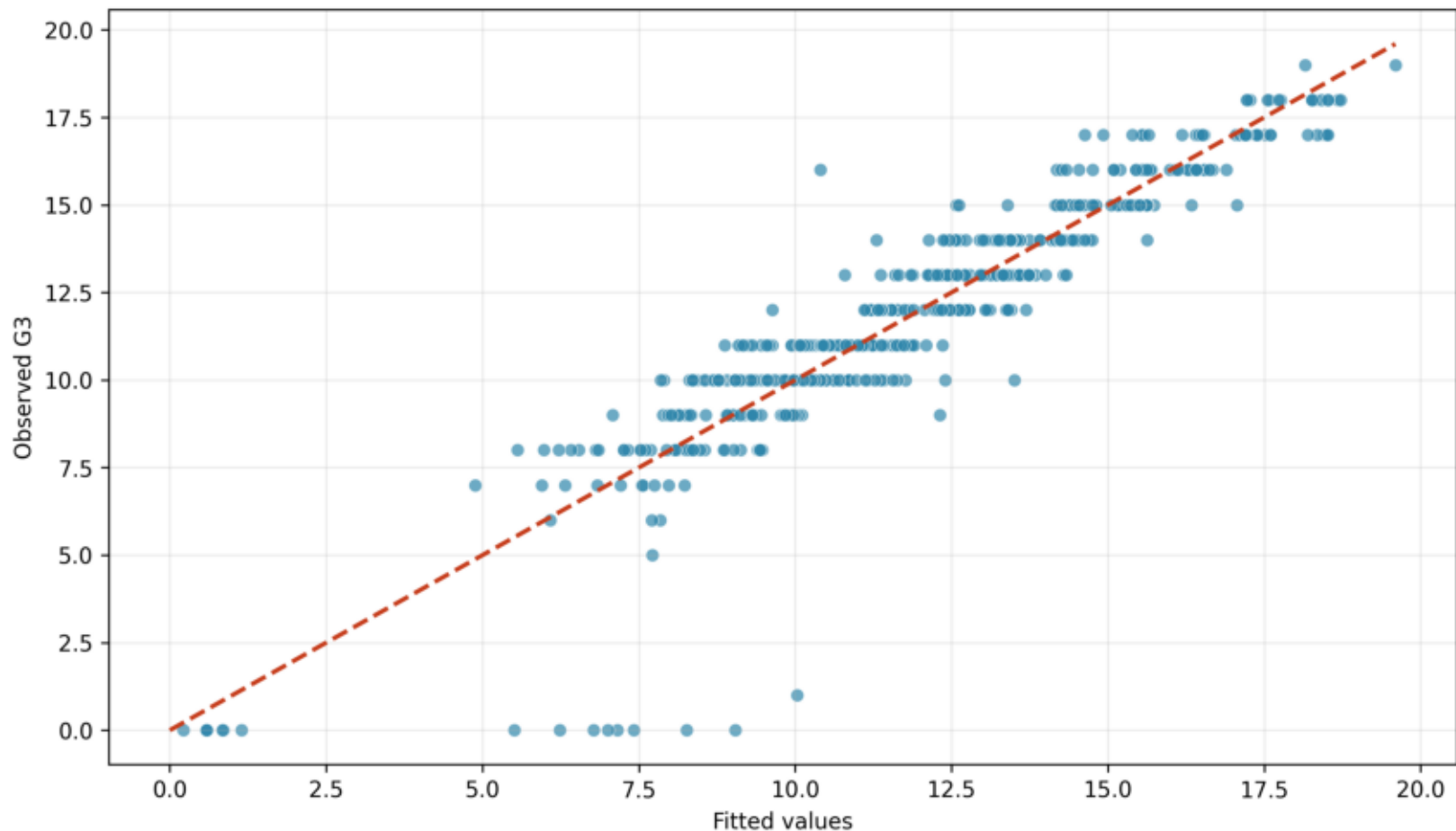
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Notes:

[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

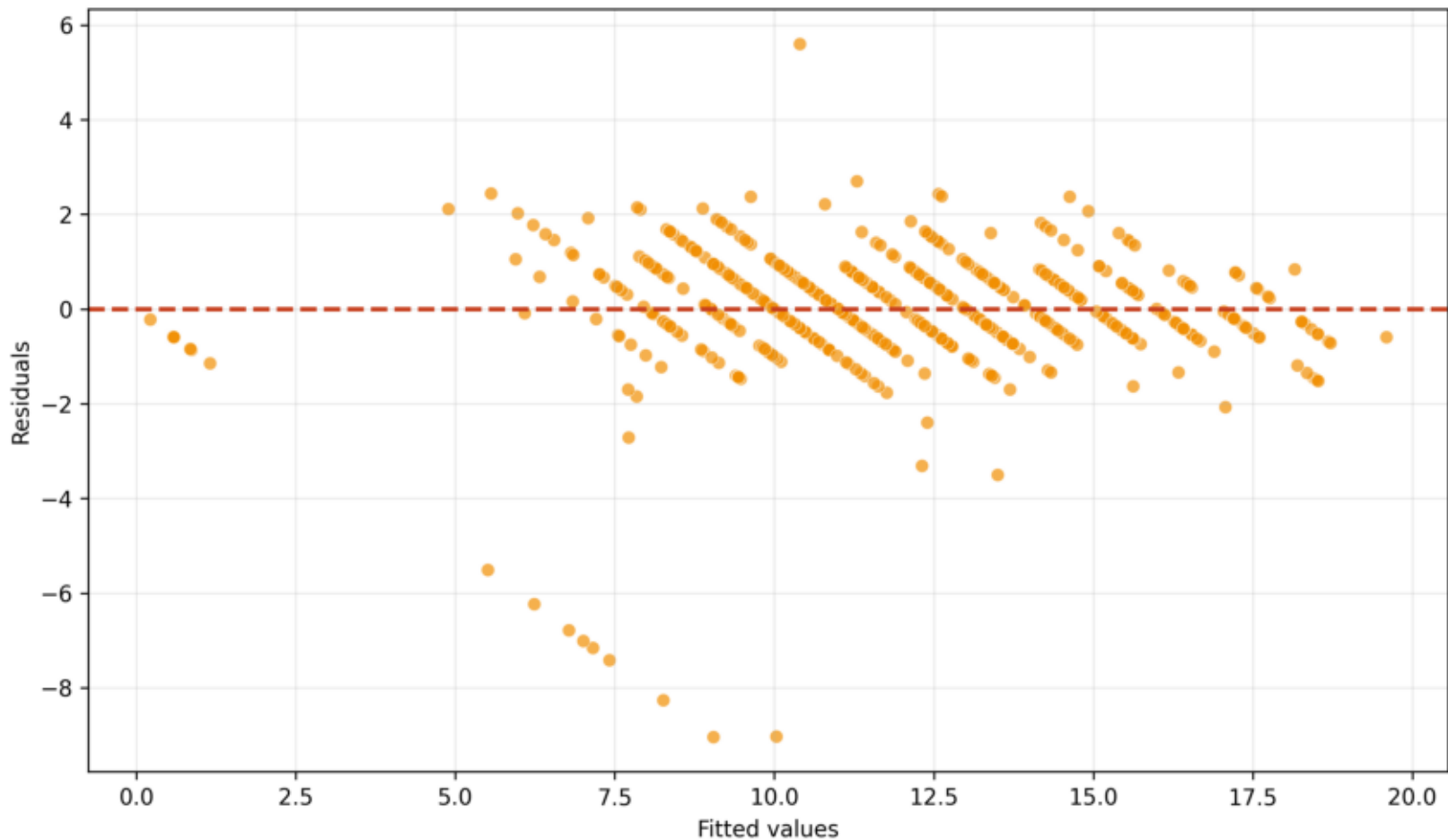
Observed vs Fitted Values

R-squared = 0.8520; closer points to the line mean stronger fit.



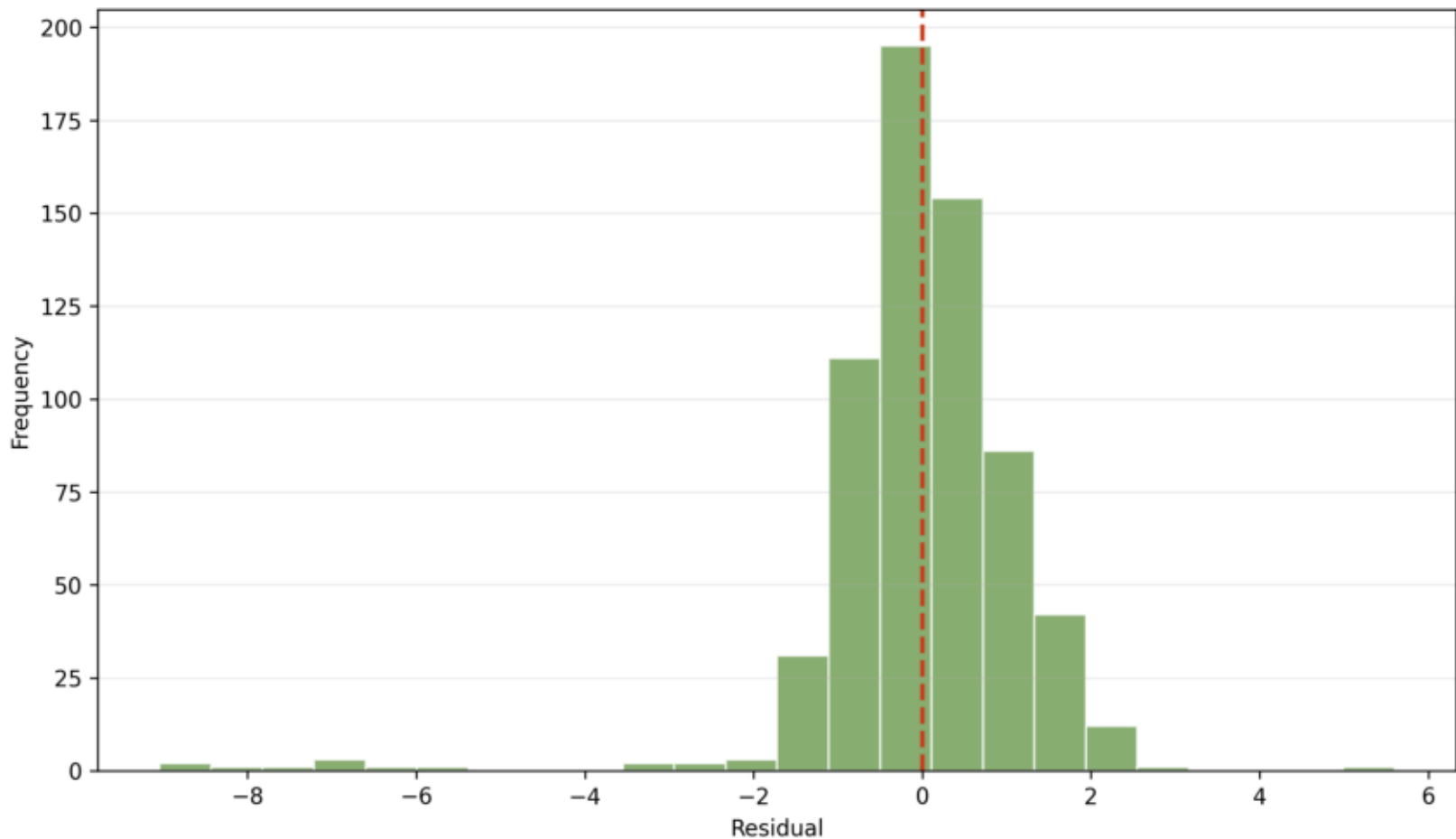
Residuals vs Fitted Values

Residuals should be centered around zero without a strong pattern.



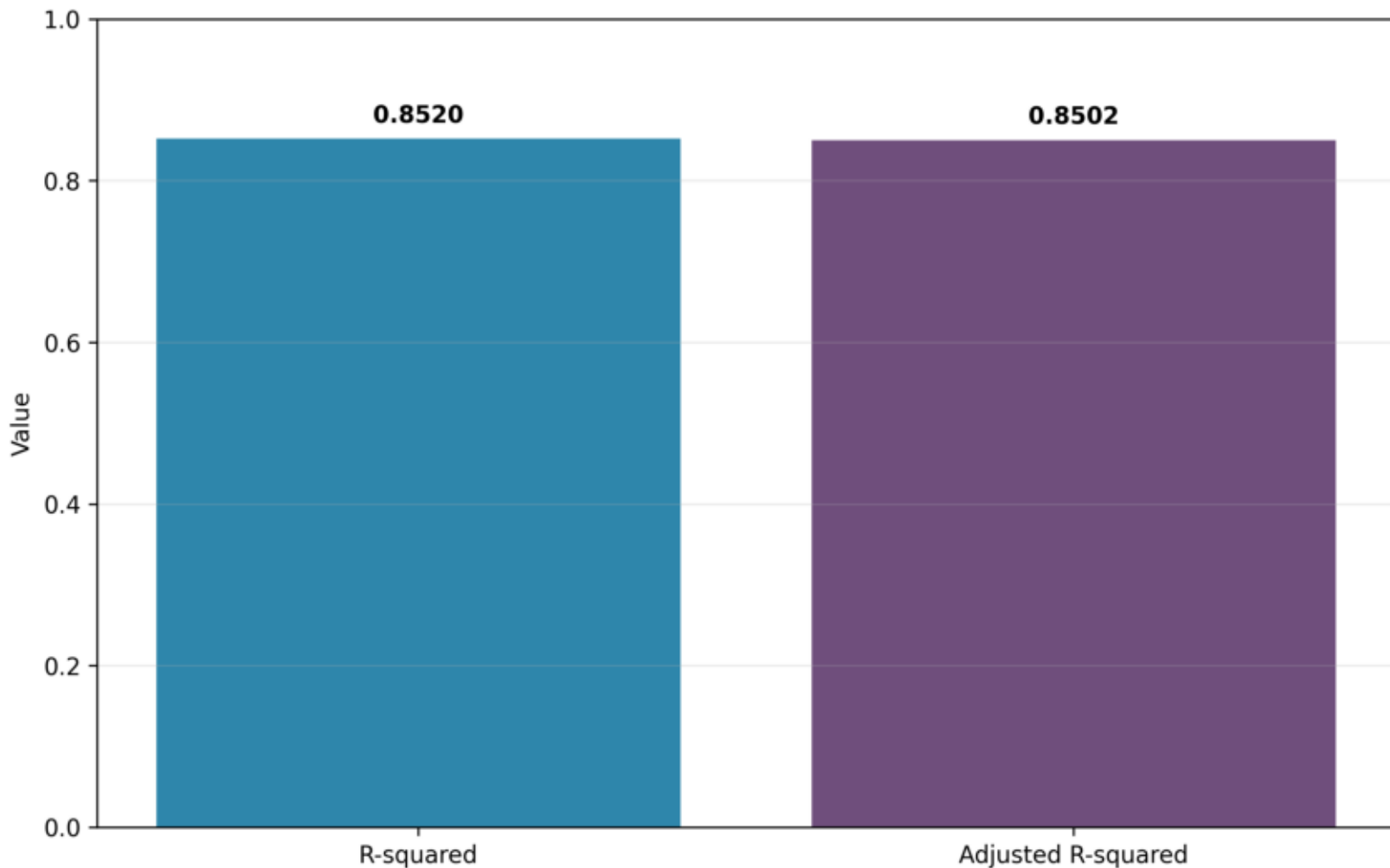
Residual Distribution

A roughly centered residual distribution supports the linear regression fit summary.



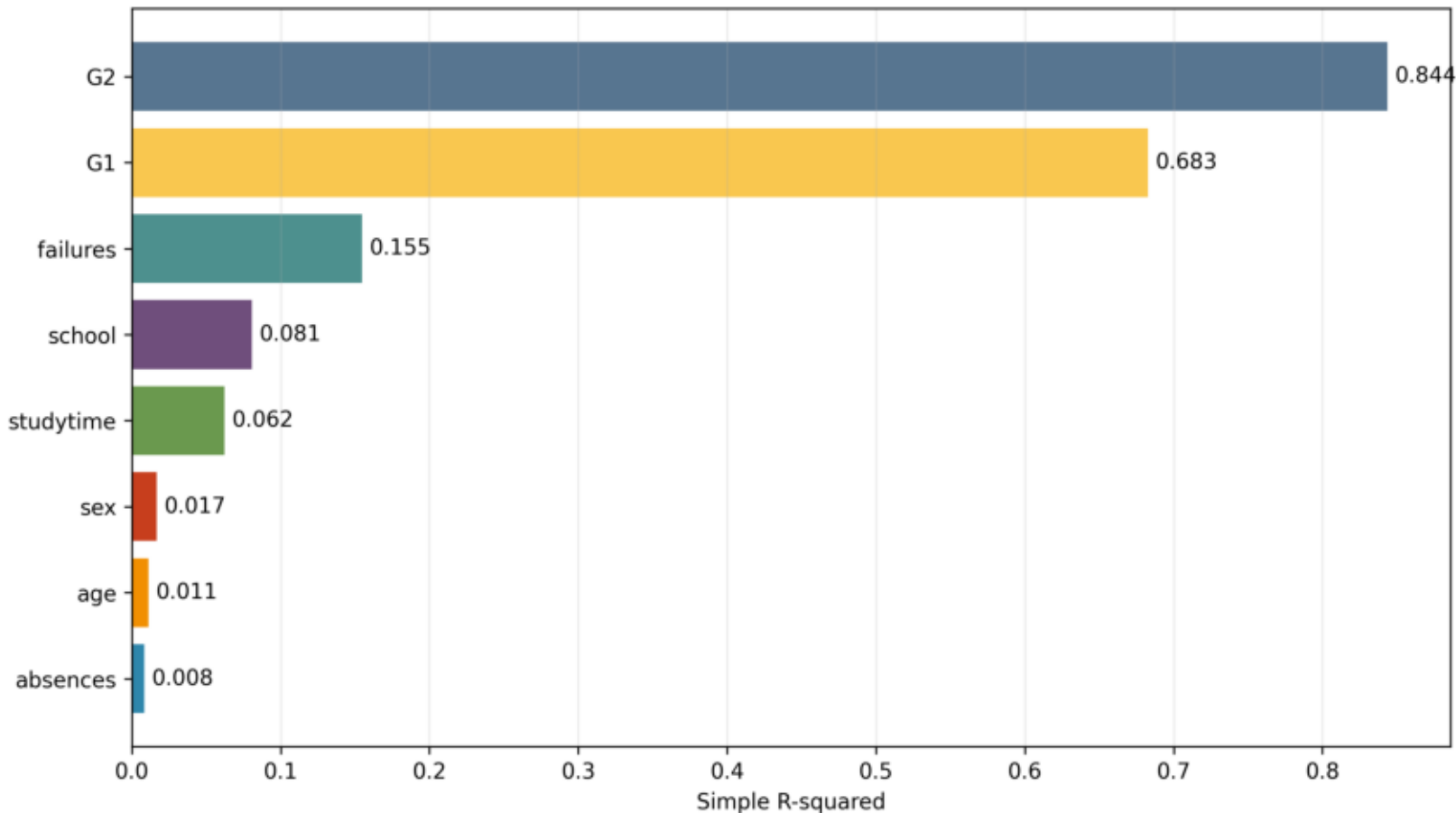
Model Variance Explained

The model explains 85.20% of variance in G3.



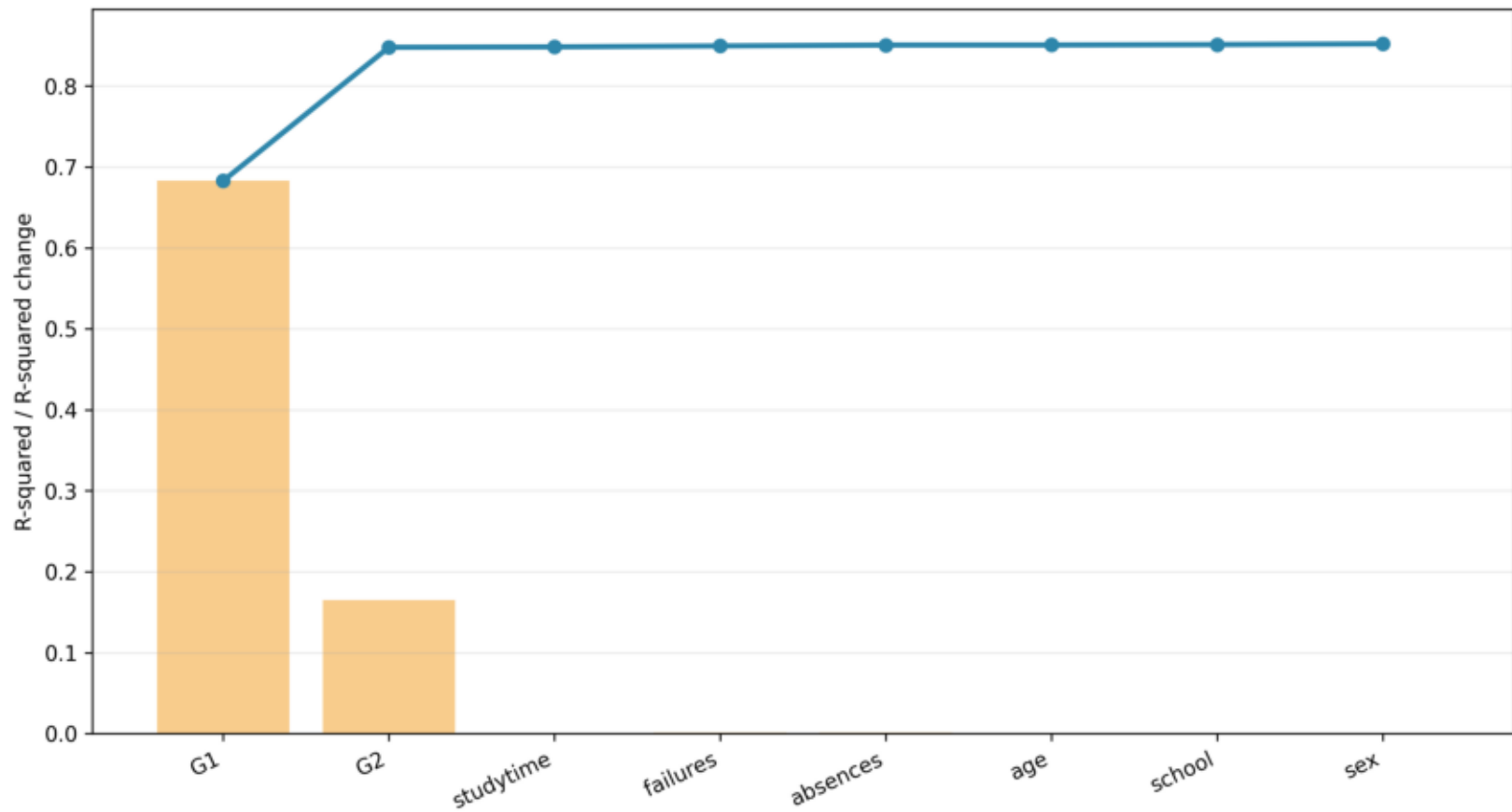
Single-Predictor R-squared Comparison

Each bar shows variance explained by one predictor alone.



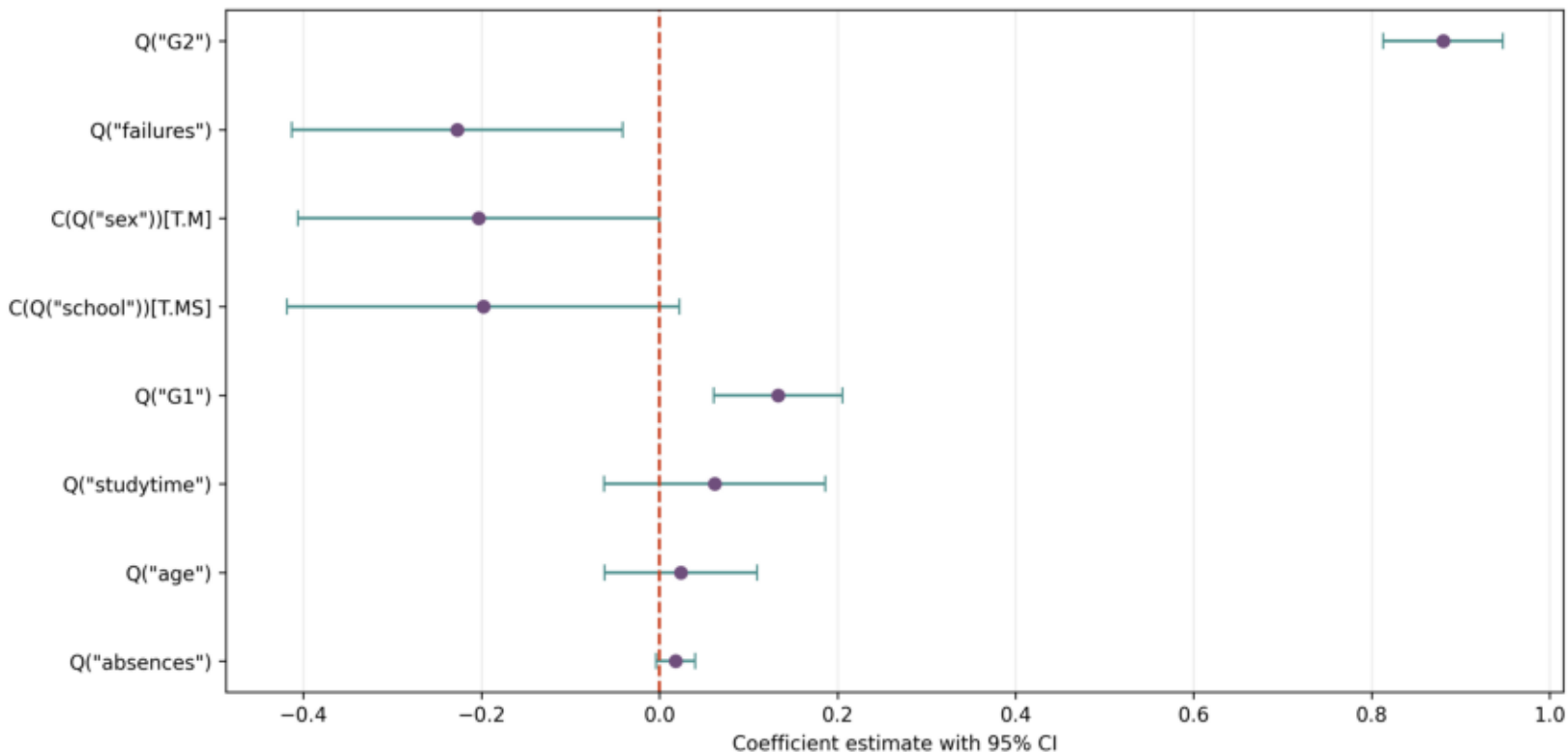
Nested Model R-squared Change

Line shows cumulative R-squared; bars show the added contribution at each step.



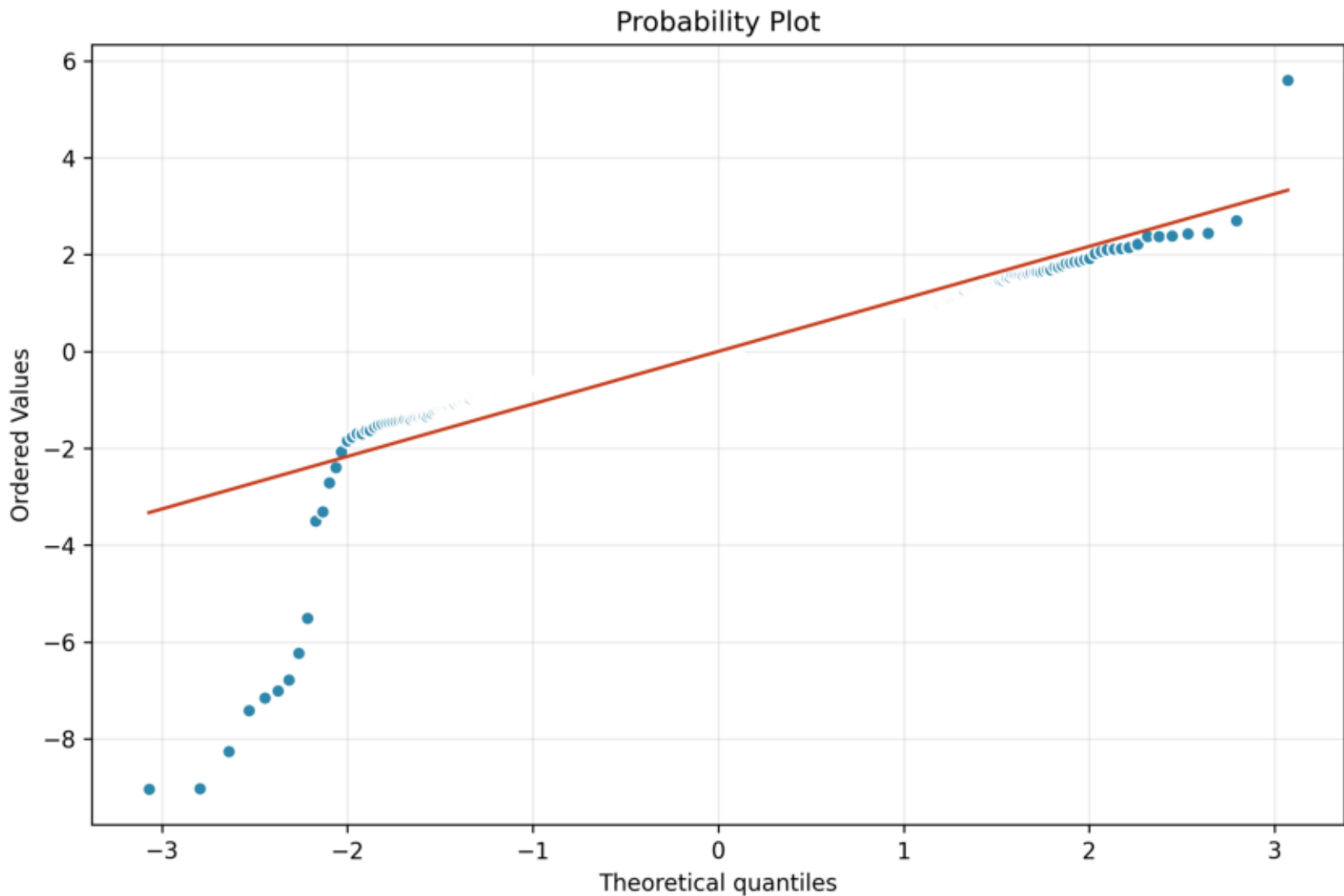
Regression Coefficients

Confidence intervals crossing zero indicate weak evidence for that coefficient.



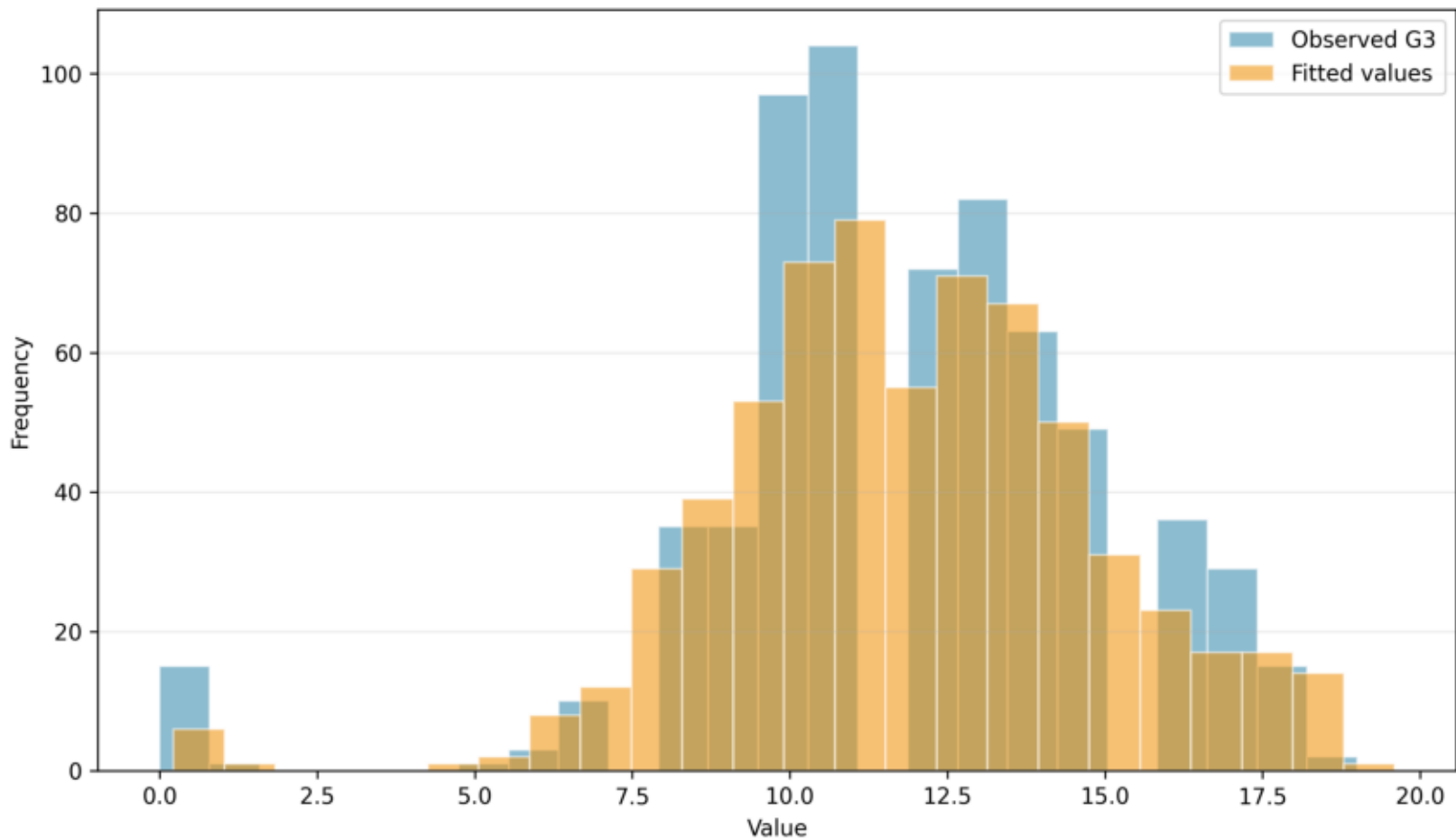
Normal Q-Q Plot of Residuals

Points close to the reference line support approximate residual normality.



Observed vs Fitted Distribution

The fitted-value distribution should capture the central pattern of the outcome.



Model Fit Metrics

R-squared measures variance explained; RMSE and MAE measure prediction error.

