

Quasi Poisson Regression

Test name: Quasi Poisson Regression

Dataset: D:/DATA ANALYSIS/H Regression Tests and Models/Quasi Poisson Regression/dataset.csv

Rows in original dataset: 649

Columns in original dataset: 33

Rows used in quasi-Poisson model: 649

Count outcome created: qp_count = round(G3) clipped at zero

Numeric predictors: G1, G2, studytime, failures, absences, age

Categorical predictors: school, sex, address

Formula: qp_count ~ G1 + G2 + studytime + failures + absences + age + school + sex + address

Family/link: quasipoisson(link = 'log').

Standard Poisson Pearson dispersion: 0.2431

Quasi-Poisson summary dispersion: 0.2431

The fitted data show underdispersion rather than overdispersion, but the quasi-Poisson scale correction is still reported.

Standard Poisson residual deviance: 247.0655

Interpretation: coefficients are log-rate effects; exp(coefficient) is the estimated rate ratio.

Decision guide: $p < 0.05$ and rate-ratio CI not crossing 1 indicates stronger evidence for a predictor effect.

Reporting guide: state count outcome, link, predictors, dispersion, rate ratios, 95% CIs and dispersion conclusion.

Charts generated: 7

Quasi-Poisson coefficients

model	term	log_rate_coefficient	standard_error
Quasi-Poisson GLM	(Intercept)	1.575260575	0.088654364
Quasi-Poisson GLM	G1	-0.002184308	0.004468561
Quasi-Poisson GLM	G2	0.086380953	0.004353142
Quasi-Poisson GLM	studytime	0.002713571	0.007168569
Quasi-Poisson GLM	failures	-0.040592612	0.012561737
Quasi-Poisson GLM	absences	0.002659519	0.001290293
Quasi-Poisson GLM	age	-0.005936818	0.005075213
Quasi-Poisson GLM	schoolMS	-0.033380382	0.013658138
Quasi-Poisson GLM	sexM	-0.016781202	0.011903613
Quasi-Poisson GLM	addressU	0.008393997	0.013362781
z_or_t_value	p_value	ci95_lower_log	ci95_upper_log
17.7685622	1.058812e-57	1.4015012151	1.749019935
-0.4888169	6.251391e-01	-0.0109425256	0.006573910
19.8433597	1.236429e-68	0.0778489528	0.094912954
0.3785373	7.051572e-01	-0.0113365658	0.016763707
-3.2314491	1.294909e-03	-0.0652131641	-0.015972061
2.0611745	3.969043e-02	0.0001305912	0.005188447
-1.1697673	2.425308e-01	-0.0158840524	0.004010416
-2.4439921	1.479509e-02	-0.0601498407	-0.006610922
-1.4097571	1.590979e-01	-0.0401118552	0.006549450
0.6281624	5.301220e-01	-0.0177965727	0.034584567
rate_ratio_exp_b	rate_ratio_ci95_lower	rate_ratio_ci95_upper	
4.8320006	4.0612923	5.7489656	
0.9978181	0.9891171	1.0065956	
1.0902216	1.0809594	1.0995631	
1.0027173	0.9887275	1.0169050	
0.9602202	0.9368677	0.9841548	
1.0026631	1.0001306	1.0052019	
0.9940808	0.9842414	1.0040185	

Poisson vs quasi-Poisson fit statistics

model	family	link	n	df_residual
Standard Poisson GLM	poisson	log	649	639
Quasi-Poisson GLM	quasipoisson	log	649	639
null_deviance	residual_deviance	pearson_dispersion		aic
745.6073	247.0655	0.2431391	3009.799	
745.6073	247.0655	0.2431412	NA	

note

For quasi-Poisson, AIC is not a true quasi-likelihood AIC and may be NA.
For quasi-Poisson, AIC is not a true quasi-likelihood AIC and may be NA.













