

Cox Regression

Test name: Cox Regression

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

Rows in original dataset: 649

Columns in original dataset: 33

Rows used in Cox model: 649

Event count: 151

Censored count: 498

Survival time created: `cox_time = absences + 1`

Event status created: `cox_event = 1` when `G3 < 10` or `failures > 0`; otherwise 0.

Numeric predictors: G1, G2, studytime, age, Medu, Fedu

Categorical predictors: school, sex, address

Formula: `survival::Surv(cox_time, cox_event) ~ G1 + G2 + studytime + age + Medu + Fedu + school + sex + address`

Model: Cox Proportional Hazards with Efron ties.

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

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

Global `cox.zph` test does not show strong evidence against proportional hazards.

Top coefficient checks: G2: HR=0.776, $p=0$; schoolMS: HR=2.124, $p=6e-04$; G1: HR=0.834, $p=9e-04$

Charts generated: 9

Reporting guide: state time variable, event definition, sample size, events/censored cases, HRs, 95% CIs, p-values, and PH-assumption context.

Cox regression coefficients

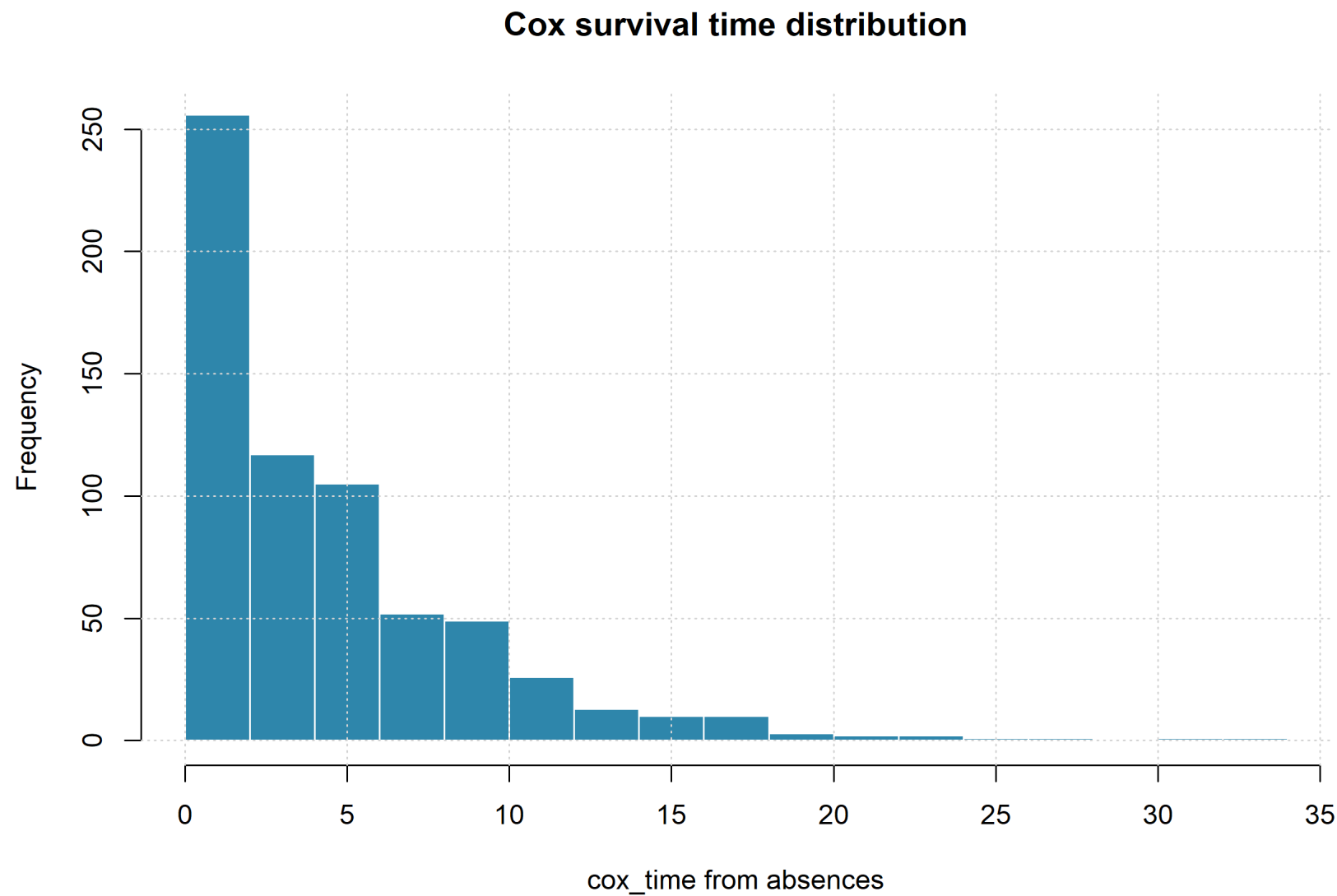
	model	term	log_hazard_coefficient	hazard_ratio_exp_b	standard_error	z_value
Cox Proportional Hazards		G1	-0.18161527	0.8339221	0.05475359	-3.3169567
Cox Proportional Hazards		G2	-0.25311348	0.7763798	0.04044594	-6.2580696
Cox Proportional Hazards		studytime	-0.07309332	0.9295141	0.13104422	-0.5577760
Cox Proportional Hazards		age	0.03086881	1.0313502	0.06454203	0.4782746
Cox Proportional Hazards		Medu	-0.05429203	0.9471555	0.09817434	-0.5530165
Cox Proportional Hazards		Fedu	-0.06517734	0.9369013	0.10448564	-0.6237923
Cox Proportional Hazards		schoolMS	0.75310395	2.1235813	0.21962063	3.4291130
Cox Proportional Hazards		sexM	0.10309198	1.1085934	0.17694978	0.5826058
Cox Proportional Hazards		addressU	-0.40768097	0.6651911	0.17696672	-2.3037155
	p_value	hazard_ratio_ci95_lower	hazard_ratio_ci95_upper	decision_alpha_0_05		
9.100372e-04	0.7490644	0.9283929	Statistically significant			
3.897720e-10	0.7172104	0.8404306	Statistically significant			
5.769973e-01	0.7189703	1.2017137	Not statistically significant			
6.324548e-01	0.9087991	1.1704273	Not statistically significant			
5.802521e-01	0.7813671	1.1481204	Not statistically significant			
5.327640e-01	0.7634059	1.1498262	Not statistically significant			
6.055574e-04	1.3807895	3.2659559	Statistically significant			
5.601587e-01	0.7837045	1.5681666	Not statistically significant			
2.123862e-02	0.4702319	0.9409808	Statistically significant			

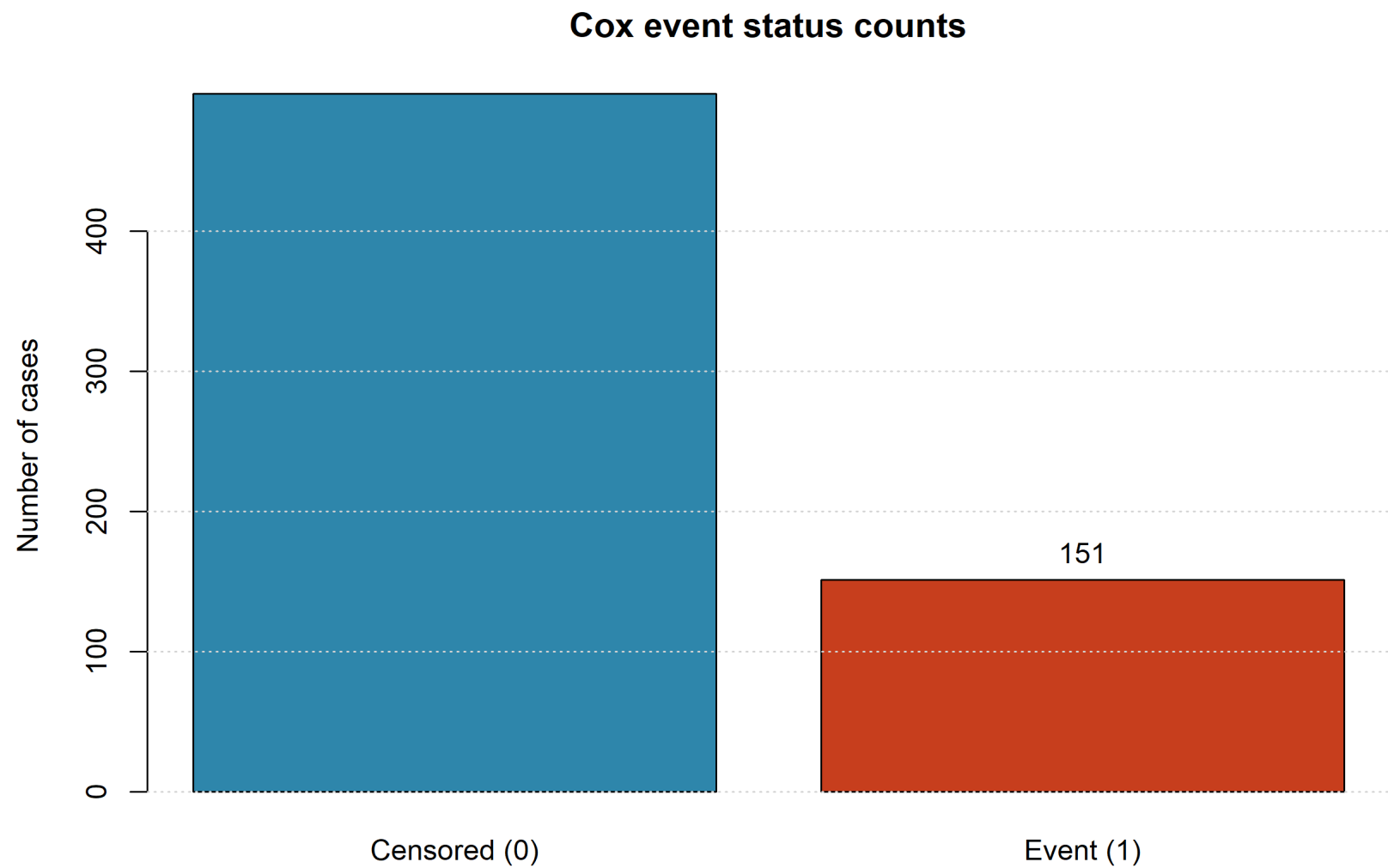
Cox fit statistics

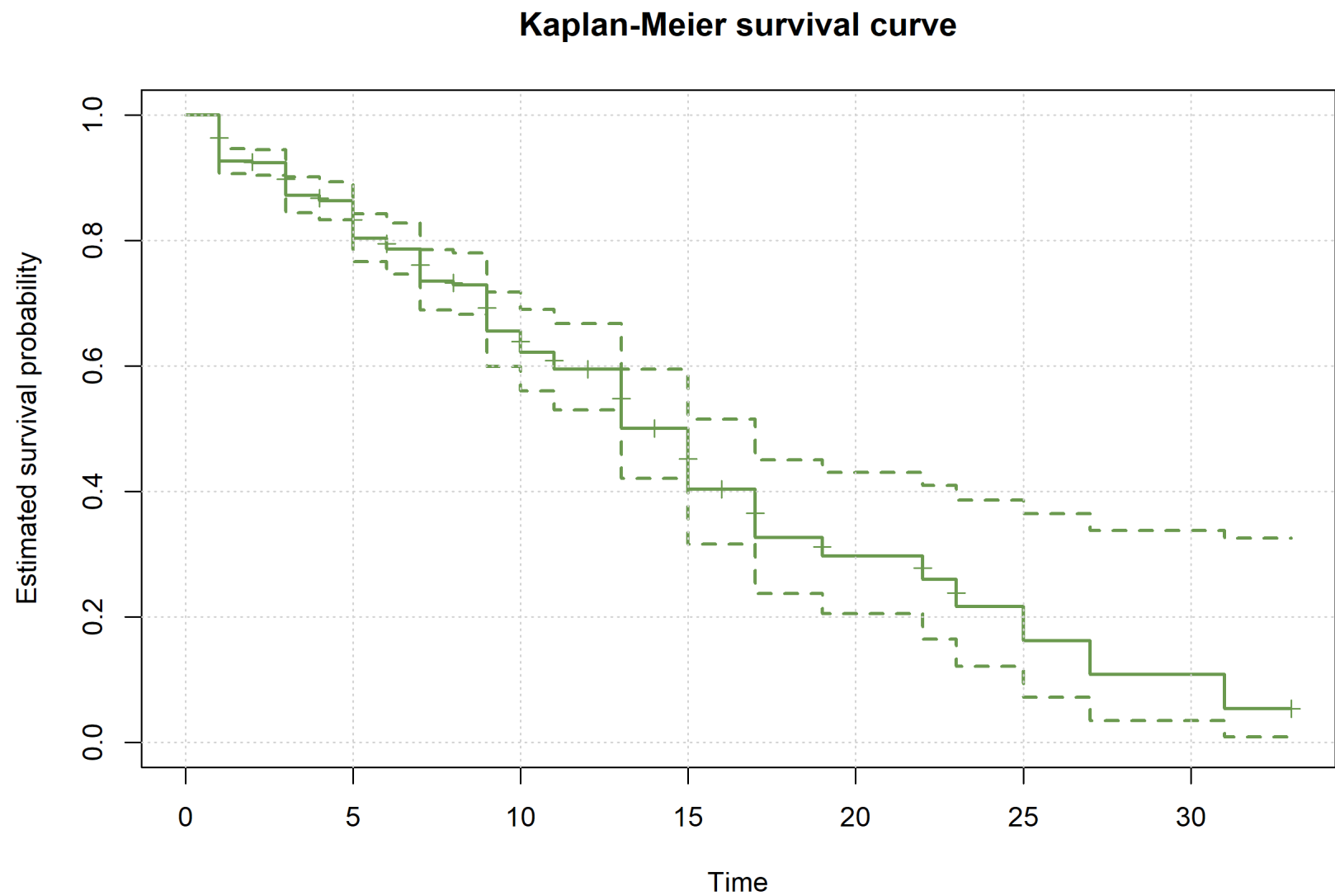
model	n	events	censored	df_model	log_likelihood	null_log_likelihood	likelihood_ratio_test
Cox Proportional Hazards	649	151	498	9	-686.8733	-804.9576	236.1687
likelihood_ratio_p_value	wald_test	wald_p_value	score_test	score_p_value	concordance	time_variable	event_variable
8.252628e-46	217.79	6.096879e-42	244.5015	1.443535e-47	0.8577245	cox_time	cox_event
ties_method							
efron							

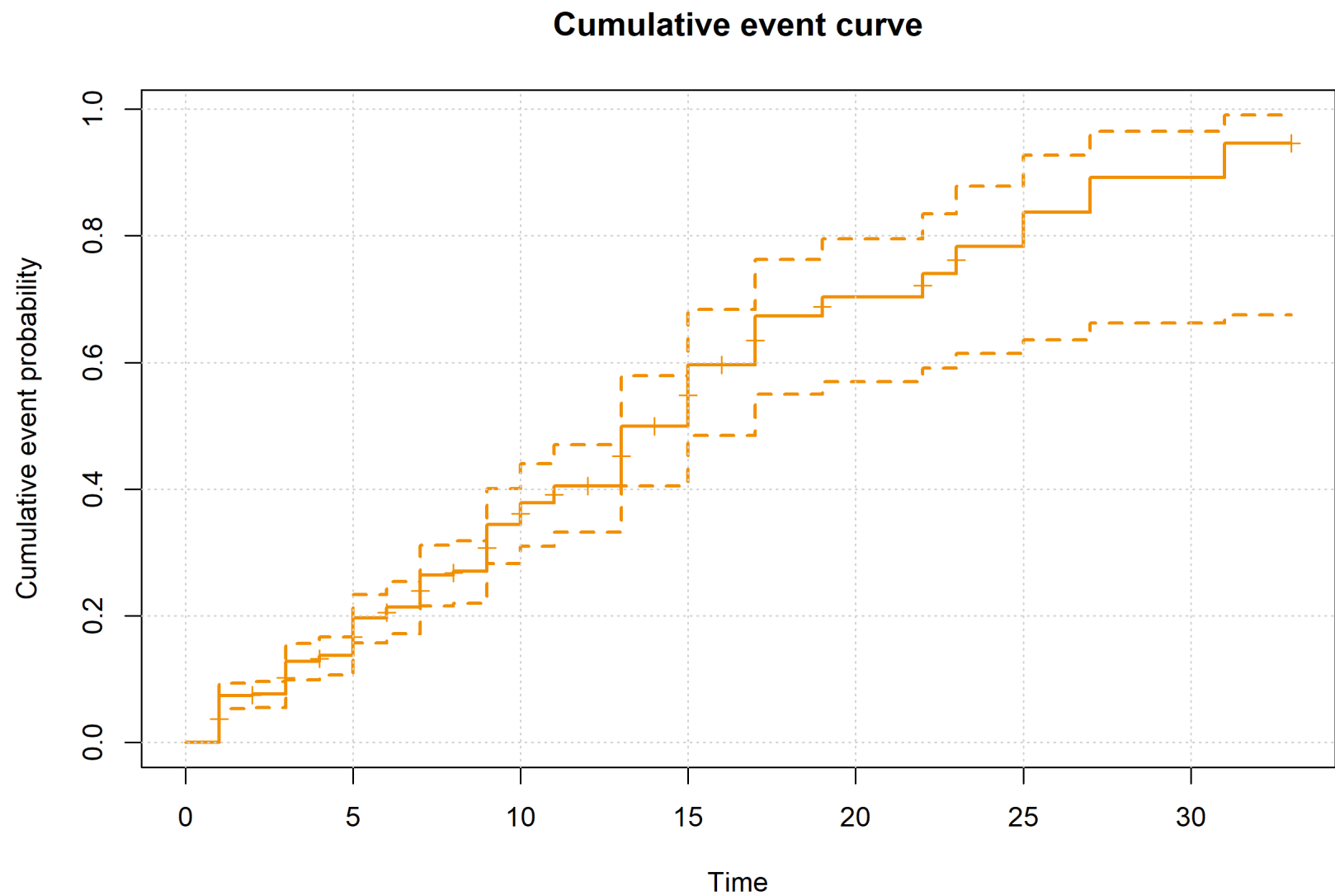
Proportional hazards test

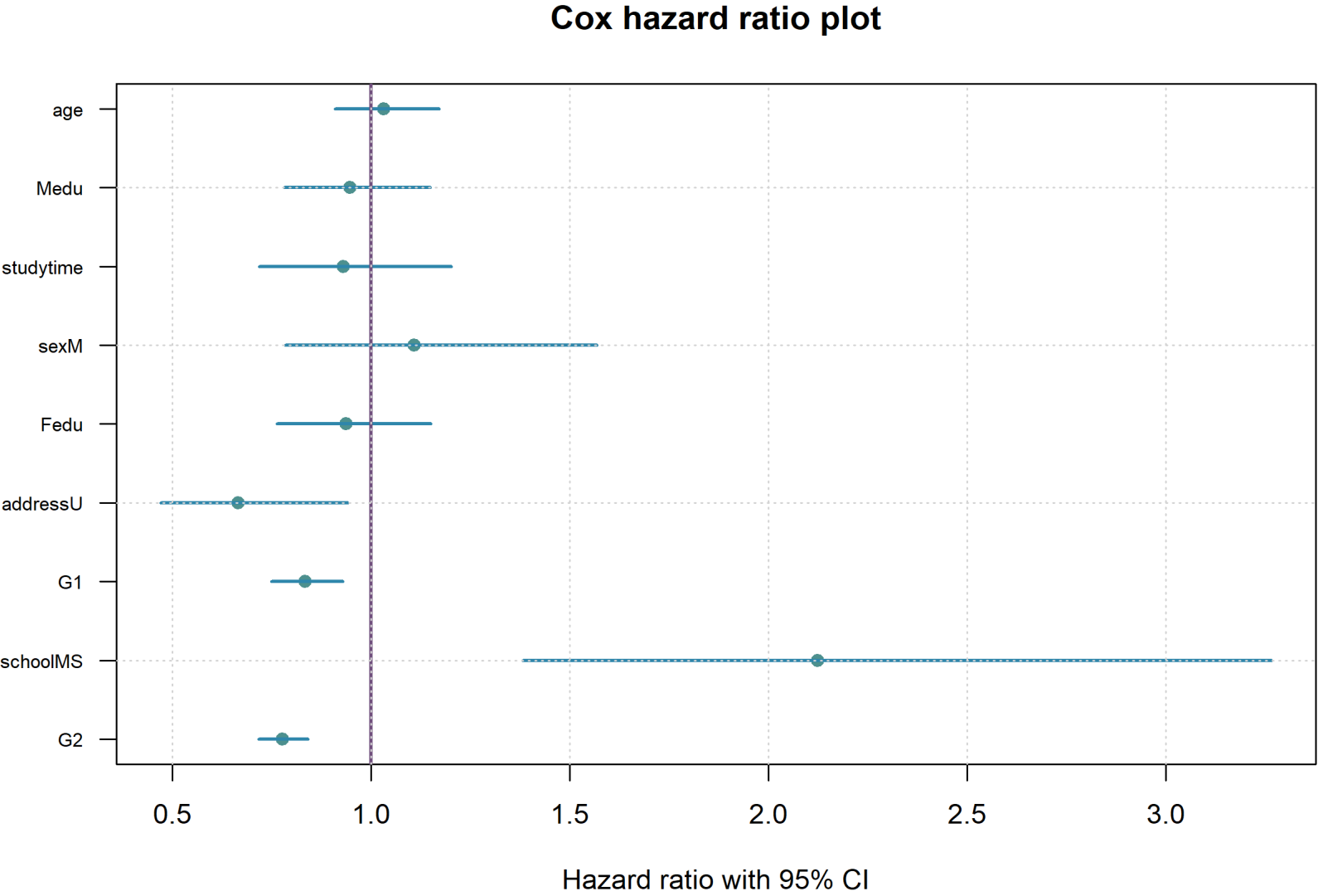
term	chisq	df	p_value
G1	0.21626534	1	0.64190040
G2	0.05579067	1	0.81327711
studytime	0.08597140	1	0.76936256
age	0.02244073	1	0.88092058
Medu	0.41730369	1	0.51828553
Fedu	3.26061715	1	0.07096241
school	4.50093847	1	0.03387626
sex	2.99885527	1	0.08332337
address	0.14001777	1	0.70826334
GLOBAL	11.70531179	9	0.23043679

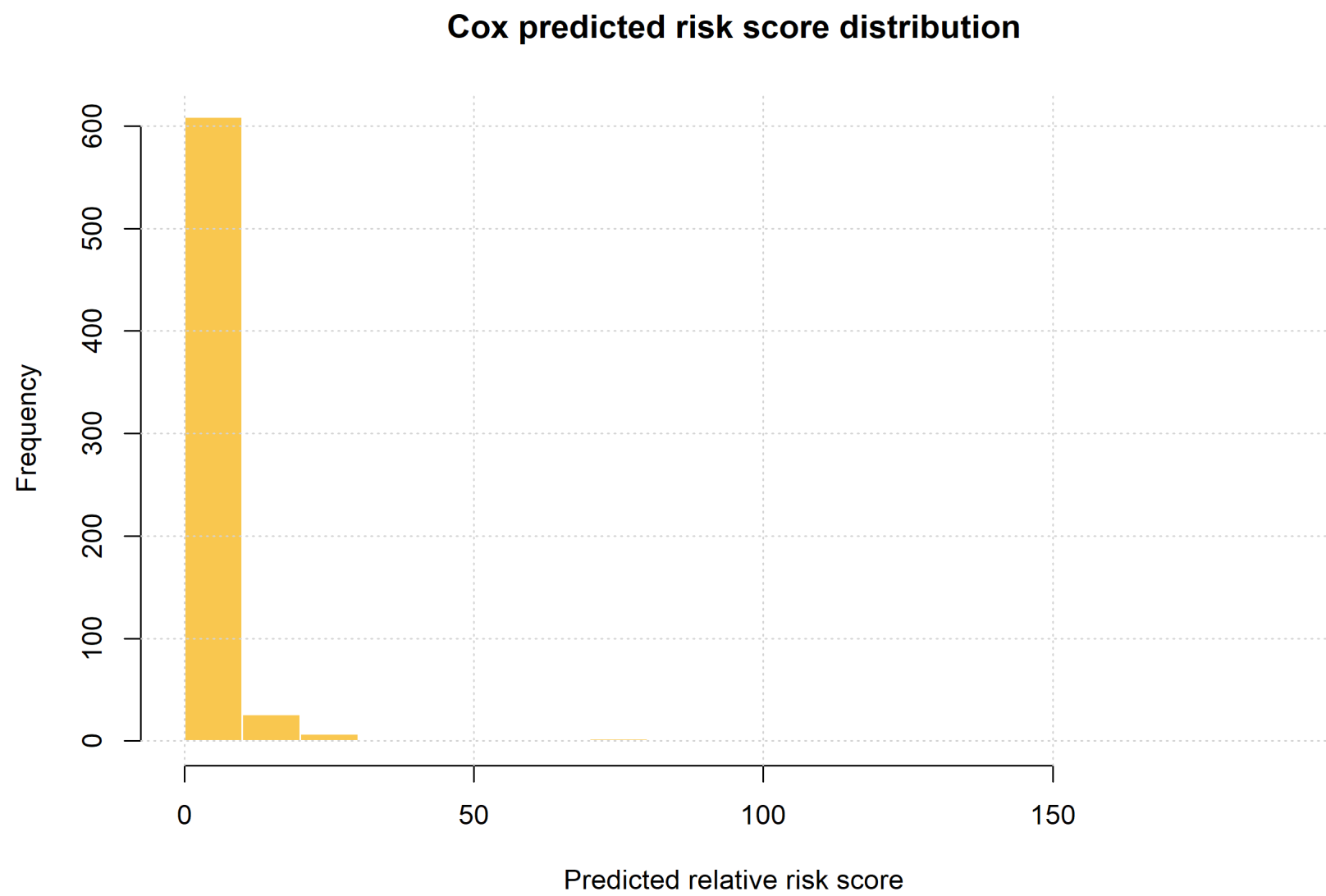


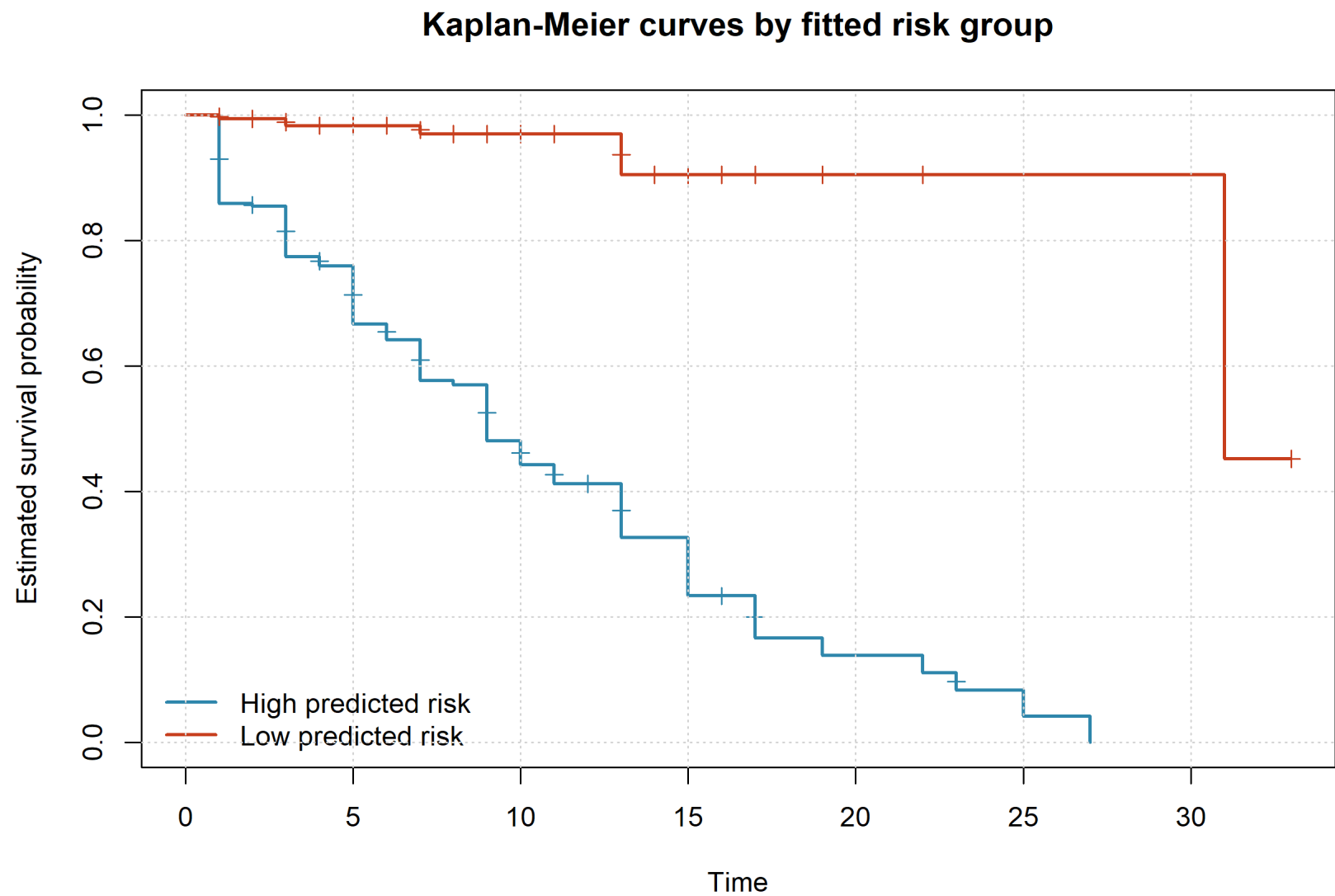












Proportional hazards visual check

