coxph_present

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Fit coxph model

- Fit a Cox proportional hazard model with initial tumor number and size as covariates.

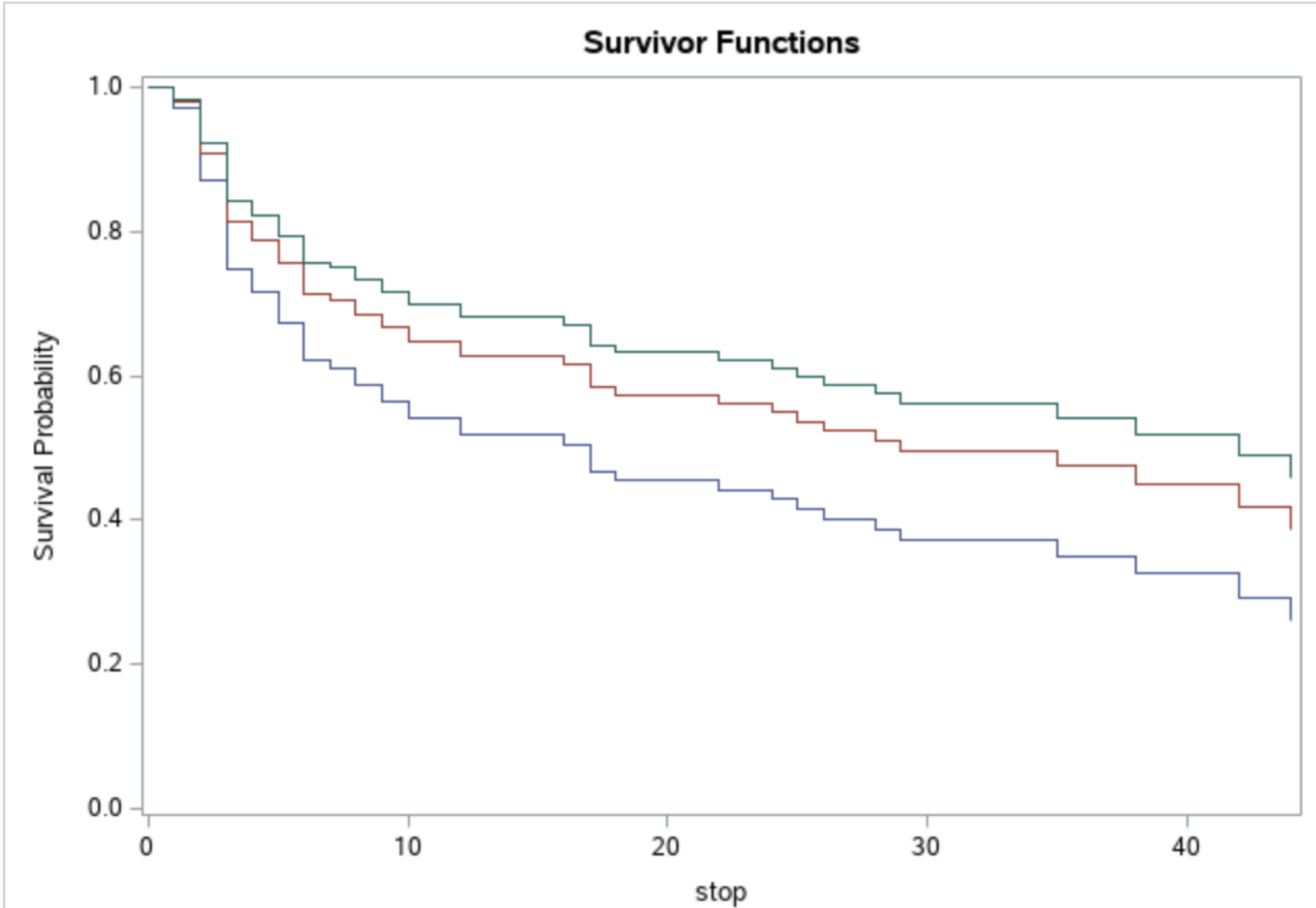
Table 1: Coefficients

term	estimate	exp_est	std.error	statistic	p.value
treatmentpyridoxine	-0.341	0.711	0.322	-1.059	0.290
treatmentthiotepa	-0.551	0.576	0.313	-1.763	0.078
number	0.252	1.287	0.065	3.886	0.000
size	0.059	1.061	0.074	0.795	0.427

- Treatment thiotepa and initial tumor number is statistically significant
- The thiotepa treatment help decrease the hazard, thus improving the prognosis of bladder cancer
- The initial tumor number increases the hazard, thus the prognosis worse, for subjects with more tumors at the beginning

Fit coxph model

Survival curve for cox model (adjusted for baseline)



Fit coxph model

Test statistics

Table 2: Global statistical significance

test_name	statistic_value	p_value
log	14.937	0.005
sc	17.745	0.001
wald	16.550	0.002

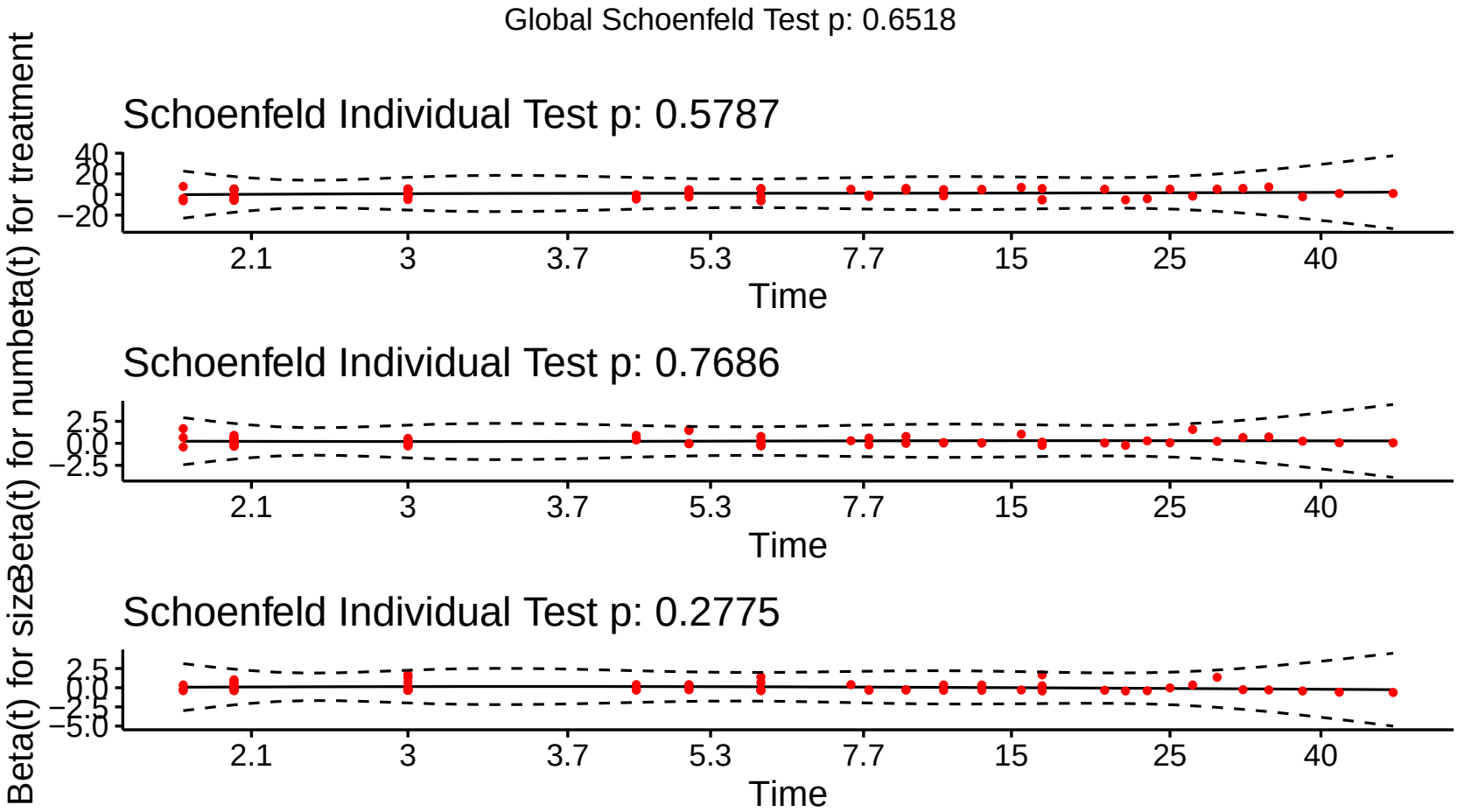
- the output gives p-values for three alternative tests for overall significance of the model: The likelihood-ratio test, score log-rank statistics, and Wald test.
- These three methods are asymptotically equivalent

Check assumption

	chisq	df	p
treatment	1.094	2	0.579
number	0.087	1	0.769
size	1.179	1	0.277
GLOBAL	2.460	4	0.652

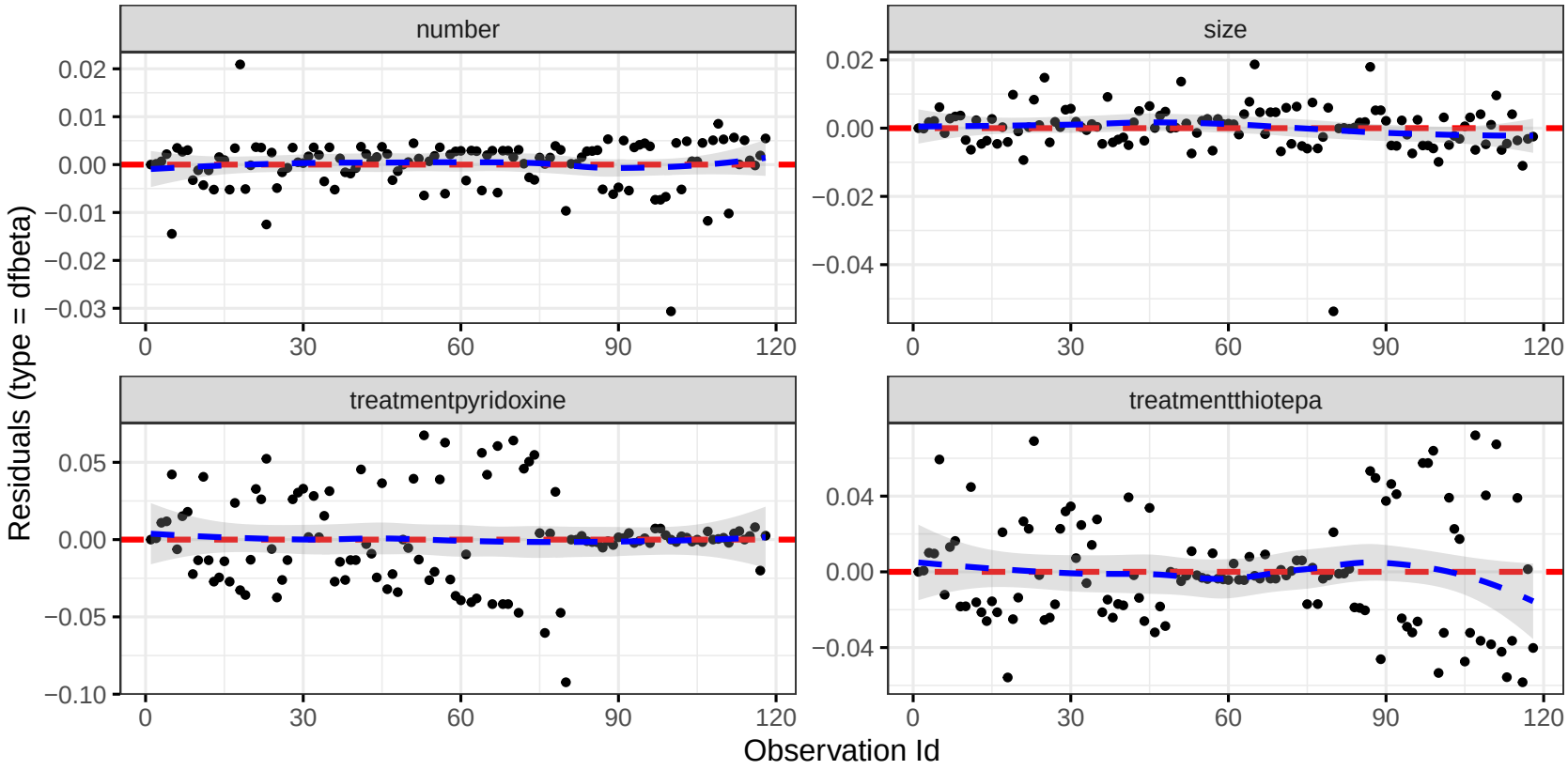
- From the output above, the test is not statistically significant for each of the covariates, and the global test is also not statistically significant.
- Therefore, we can assume the proportional hazards.

Check assumption



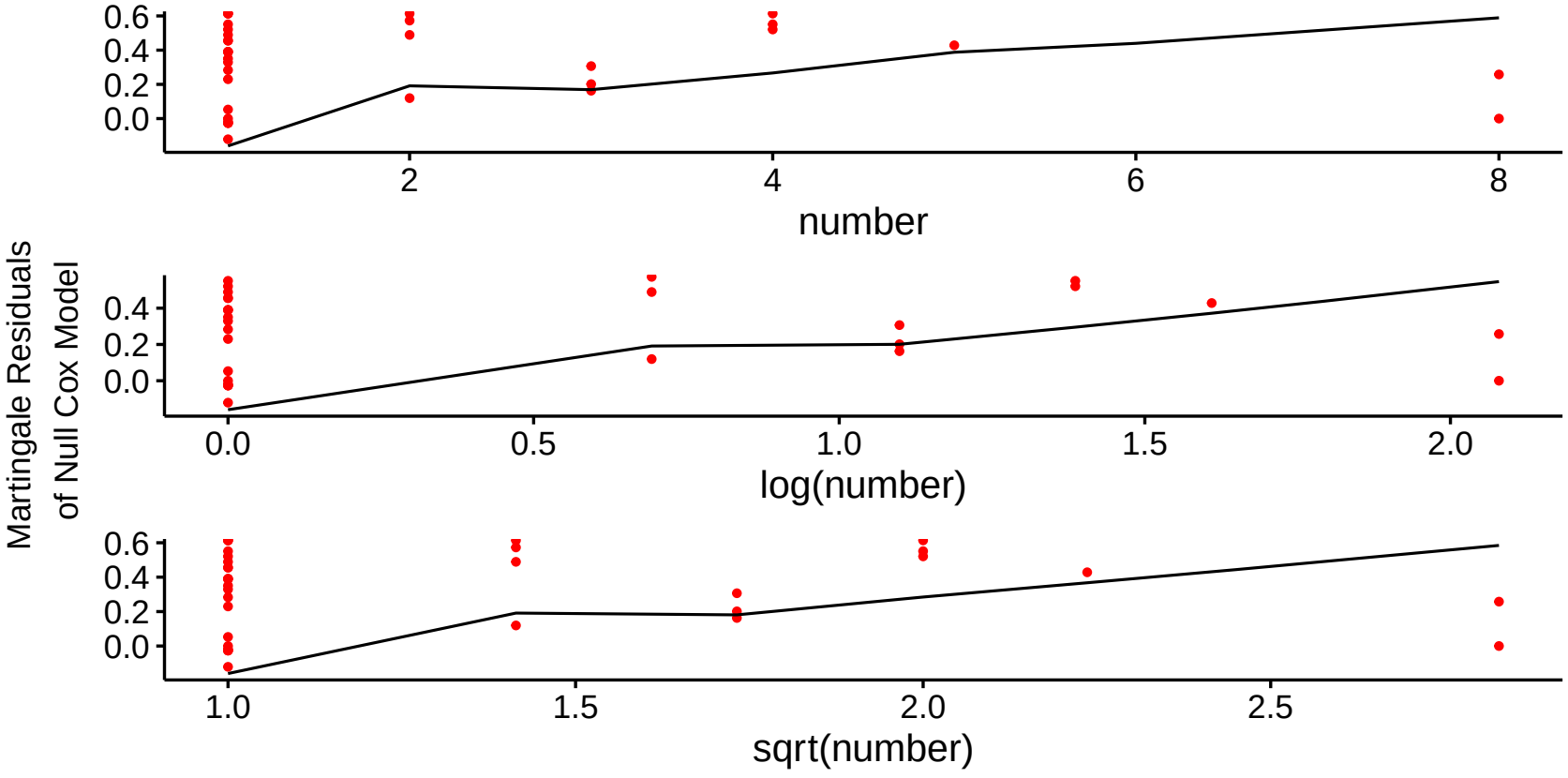
- Systematic departures from a horizontal line are indicative of non-proportional hazards, since proportional hazards assumes that estimates do not vary much over time.
- From the graphical inspection, there is no pattern with time.

check influential observation



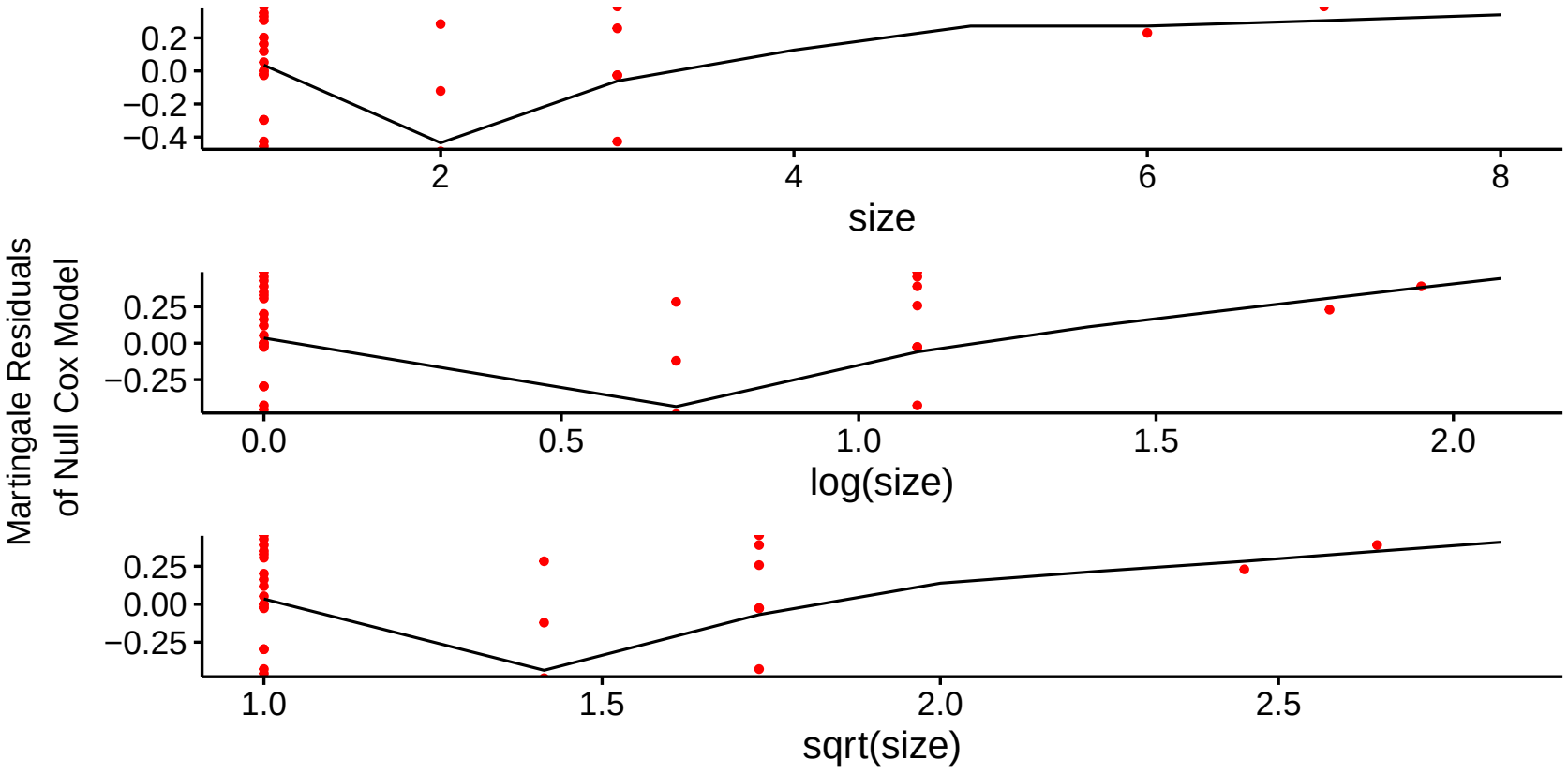
- Plots the estimated changes in the regression coefficients upon deleting each observation in turn
- The index plots above demonstrate that none of the observations are particularly influential on their own.

Testing non linearity



- The plot display graphs of continuous covariates against residuals of null cox proportional hazards model.
- It appears that, there's slight non-linearity for the initial tumor number here.

Testing non linearity



- It appears that, there's non-linearity for the initial tumor size here.