

```
38 0 OUTPUT ACTIVATE CoxProportionalHazardsRegressionOutput.  
38 0 M> OUTPUT ACTIVATE CoxProportionalHazardsRegressionOutput.  
39 0 TITLE 'Cox Proportional Hazards Regression'.  
39 0 M> TITLE 'Cox Proportional Hazards Regression'.
```

Cox Proportional Hazards Regression

```
40 0 GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\dataset.csv' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"' /ARRANGEMENT=DELIMITED /FIRSTCASE=2
40 0 M> GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\dataset.csv' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"' /ARRANGEMENT=DELIMITED /FIRSTCASE=2
41 0 /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A8 famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F8.0 absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
41 0 M> /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 guardian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A8 famsup A8 paid A8 activities A8 nursery A8 higher A8 internet A8 romantic A8 famrel F8.0 freetime F8.0 goout F8.0 Dalc F8.0 Walc F8.0 health F8.0 absences F8.0 G1 F8.0 G2 F8.0 G3 F8.0.
42 0 DATASET NAME CoxProportionalHazardsRegressionData.
42 0 M> DATASET NAME CoxProportionalHazardsRegressionData.
43 0 COMPUTE duration=absences+1.
43 0 M> COMPUTE duration=absences+1.
44 0 COMPUTE event=(G3<10).
44 0 M> COMPUTE event=(G3<10).
45 0 COMPUTE cause=0.
45 0 M> COMPUTE cause=0.
46 0 IF(G3>0 AND G3<10) cause=1.
46 0 M> IF(G3>0 AND G3<10) cause=1.
47 0 IF(G3=0) cause=2.
47 0 M> IF(G3=0) cause=2.
48 0 COMPUTE competing_event=(cause>0).
48 0 M> COMPUTE competing_event=(cause>0).
49 0 COMPUTE sex_male=(sex='M').
49 0 M> COMPUTE sex_male=(sex='M').
```

Cox Proportional Hazards Regression

```
50 0 VARIABLE LABELS duration 'Demonstration duration: absences plus one'
event 'Academic failure event: G3 below ten' cause '0
      censored, 1 nonzero failure, 2 zero-grade competing event'.
50 0 M> VARIABLE LABELS duration 'Demonstration duration: absences plus on
e' event 'Academic failure event: G3 below ten' cause
      '0 censored, 1 nonzero failure, 2 zero-grade competing event'.
51 0 VALUE LABELS event 0 'Censored' 1 'Failure' /cause 0 'Censored' 1 'No
nzero failure' 2 'Zero grade'.
51 0 M> VALUE LABELS event 0 'Censored' 1 'Failure' /cause 0 'Censored' 1
'Nonzero failure' 2 'Zero grade'.
52 0 EXECUTE.
52 0 M> EXECUTE.
53 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
53 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
54 0 COXREG VARIABLES=duration WITH sex_male age studytime failures /STATU
S=event(1) /METHOD=ENTER /PRINT ALL.
54 0 M> COXREG VARIABLES=duration WITH sex_male age studytime failures /ST
ATUS=event(1) /METHOD=ENTER /PRINT ALL.
```

Cox Regression

Cox Proportional Hazards Regression

Notes

Output Created		18-JUL-2026 17:26:53
Comments		
Input	Data	D:\DATA ANALYSIS\O Survival Analysis\Cox Proportional Hazards Regression\dataset.csv
	Active Dataset	CoxProportionalHazardsR egressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
Syntax		COXREG VARIABLES=duration WITH sex_male age studytime failures /STATUS=event(1) /METHOD=ENTER /PRINT ALL.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.11

[CoxProportionalHazardsRegressionData]

Cox Proportional Hazards Regression

Case Processing Summary

		N	Percent
Cases available in analysis	Event ^a	100	15.4%
	Censored	549	84.6%
	Total	649	100.0%
Cases dropped	Cases with missing values	0	0.0%
	Cases with negative time	0	0.0%
	Censored cases before the earliest event in a stratum	0	0.0%
	Total	0	0.0%
Total		649	100.0%

a. Dependent Variable: Demonstration duration: absences plus one

Block 0: Beginning Block

Omnibus Tests of Model Coefficients

-2 Log Likelihood
1090.346

Block 1: Method = Enter

Omnibus Tests of Model Coefficients^a

-2 Log Likelihood	Overall (score)			Change From Previous Step			Change ...
	Chi-square	df	Sig.	Chi-square	df	Sig.	Chi-square
1052.861	53.136	4	.000	37.485	4	.000	37.485

Omnibus Tests of Model Coefficients^a

Change From Previous ..	
df	Sig.
4	.000

Cox Proportional Hazards Regression

a. Beginning Block Number 1. Method = Enter

Variables in the Equation

	B	SE	Wald	df	Sig.	Exp(B)	95.0% CI for Exp(B)	
							Lower	Upper
sex_male	.086	.212	.166	1	.683	1.090	.720	1.652
age	-.086	.081	1.125	1	.289	.918	.784	1.075
studytime	-.262	.153	2.960	1	.085	.769	.570	1.037
failures	.618	.107	33.107	1	.000	1.854	1.503	2.289

Correlation Matrix of Regression Coefficients

	sex_male	age	studytime
age	-.026		
studytime	.268	-.057	
failures	-.117	-.416	.172

Survival Table

Time	Baseline Cum Hazard	At mean of covariates		
		Survival	SE	Cum Hazard
1.00	.279	.953	.008	.048
3.00	.486	.920	.011	.083
4.00	.538	.912	.012	.092
5.00	.738	.881	.015	.126
6.00	.790	.874	.016	.135
7.00	.956	.849	.019	.163
8.00	.993	.844	.020	.170
9.00	1.350	.794	.026	.231
10.00	1.515	.772	.029	.259
11.00	1.711	.746	.032	.293
13.00	2.110	.697	.039	.361
15.00	2.535	.648	.046	.433
17.00	3.023	.596	.055	.517
23.00	3.816	.521	.083	.652

Cox Proportional Hazards Regression

Survival Table

Time	Baseline Cum Hazard	At mean of covariates		
		Survival	SE	Cum Hazard
25.00	4.947	.429	.104	.846
27.00	6.551	.326	.107	1.120

Covariate Means

	Mean
sex_male	.410
age	16.744
studytime	1.931
failures	.222

```

55 0 ECHO 'Declared tie reference: BRESLOW'.
55 0 M> ECHO 'Declared tie reference: BRESLOW'.
Declared tie reference: BRESLOW
56 0 ECHO 'Adjusted Cox proportional hazards model with four declared cova
riates'.
56 0 M> ECHO 'Adjusted Cox proportional hazards model with four declared c
ovariates'.
Adjusted Cox proportional hazards model with four declared covariates
57 0 * END METHOD-SPECIFIC SPSS WORKFLOW.
57 0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
58 0 SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional H
azards Regression\SPSS_Output\sav\cox-proportional-haz
ards-regression_spss_ready_data.sav' /COMPRESSED.
58 0 M> SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportiona
l Hazards Regression\SPSS_Output\sav\cox-proportional-
hazards-regression_spss_ready_data.sav' /COMPRESSED.
59 0 ECHO 'Cox Proportional Hazards Regression'.
59 0 M> ECHO 'Cox Proportional Hazards Regression'.
Cox Proportional Hazards Regression
60 0 ECHO 'Method type: semiparametric_regression'.
60 0 M> ECHO 'Method type: semiparametric_regression'.
Method type: semiparametric_regression
61 0 ECHO 'Design: Multivariable Cox model for academic-failure hazard usi
ng sex, centered age, centered study time, and prior f

```

Cox Proportional Hazards Regression

```
ailures.'.
61 0 M> ECHO 'Design: Multivariable Cox model for academic-failure hazard
using sex, centered age, centered study time, and prio
r failures.'.
Design: Multivariable Cox model for academic-failure hazard using sex, centere
d age, centered study time, and prior failures.
62 0 ECHO 'Formula:  $h(t|x)=h_0(t)*\exp(\beta'x)'$ '.
62 0 M> ECHO 'Formula:  $h(t|x)=h_0(t)*\exp(\beta'x)'$ '.
Formula:  $h(t|x)=h_0(t)*\exp(\beta'x)$ 
63 0 ECHO 'Duration encoding: absences plus one'.
63 0 M> ECHO 'Duration encoding: absences plus one'.
Duration encoding: absences plus one
64 0 ECHO 'Event encoding: G3 below ten'.
64 0 M> ECHO 'Event encoding: G3 below ten'.
Event encoding: G3 below ten
65 0 ECHO 'Competing event: G3 equals zero where applicable'.
65 0 M> ECHO 'Competing event: G3 equals zero where applicable'.
Competing event: G3 equals zero where applicable
66 0 ECHO 'events = 100'.
66 0 M> ECHO 'events = 100'.
events = 100
67 0 ECHO 'log_likelihood = -526.4304277082518'.
67 0 M> ECHO 'log_likelihood = -526.4304277082518'.
log_likelihood = -526.4304277082518
68 0 ECHO 'sex_male_hr = 1.0902527280596426'.
68 0 M> ECHO 'sex_male_hr = 1.0902527280596426'.
sex_male_hr = 1.0902527280596426
69 0 ECHO 'age_hr = 0.918028189340605'.
69 0 M> ECHO 'age_hr = 0.918028189340605'.
age_hr = 0.918028189340605
70 0 ECHO 'studytime_hr = 0.7691558727049633'.
70 0 M> ECHO 'studytime_hr = 0.7691558727049633'.
studytime_hr = 0.7691558727049633
71 0 ECHO 'prior_failures_hr = 1.8544151064857795'.
71 0 M> ECHO 'prior_failures_hr = 1.8544151064857795'.
prior_failures_hr = 1.8544151064857795
72 0 ECHO 'Cross-check status: pass'.
72 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
```

Cox Proportional Hazards Regression

```
73  @ OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\SPSS_Output\spv\cox-proportional-hazards-regression_spss_output.spv'.
```

```
73  @ M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\SPSS_Output\spv\cox-proportional-hazards-regression_spss_output.spv'.
```

```
74  @ OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\SPSS_Output\pdf\cox-proportional-hazards-regression_spss_output.pdf'.
```

```
74  @ M> OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Proportional Hazards Regression\SPSS_Output\pdf\cox-proportional-hazards-regression_spss_output.pdf'.
```