

```
80 0 OUTPUT ACTIVATE CoxRegressionAssumptionsOutput.  
80 0 M> OUTPUT ACTIVATE CoxRegressionAssumptionsOutput.  
81 0 TITLE 'Cox Regression Assumptions'.  
81 0 M> TITLE 'Cox Regression Assumptions'.
```

Cox Regression Assumptions

```
82 0 GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Re
gression Assumptions\dataset.csv' /ENCODING='UTF8' /DE
    LCASE=LINE /DELIMITERS=', ' /QUALIFIER='"' /ARRANGEMENT=DELIMITED /
FIRSTCASE=2
82 0 M> GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox
Regression Assumptions\dataset.csv' /ENCODING='UTF8'
    /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"' /ARRANGEMENT=DELIM
ITED /FIRSTCASE=2
83 0 /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A
8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 gua
    rdian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A
8 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 F
    8.0 G3 F8.0.
83 0 M> /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatu
s A8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16
    guardian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoo
lsup A8 famsup A8 paid A8 activities A8 nursery A8 hig
    her 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.
84 0 DATASET NAME CoxRegressionAssumptionsData.
84 0 M> DATASET NAME CoxRegressionAssumptionsData.
85 0 COMPUTE duration=absences+1.
85 0 M> COMPUTE duration=absences+1.
86 0 COMPUTE event=(G3<10).
86 0 M> COMPUTE event=(G3<10).
87 0 COMPUTE cause=0.
87 0 M> COMPUTE cause=0.
88 0 IF(G3>0 AND G3<10) cause=1.
88 0 M> IF(G3>0 AND G3<10) cause=1.
89 0 IF(G3=0) cause=2.
89 0 M> IF(G3=0) cause=2.
90 0 COMPUTE competing_event=(cause>0).
90 0 M> COMPUTE competing_event=(cause>0).
91 0 COMPUTE sex_male=(sex='M').
91 0 M> COMPUTE sex_male=(sex='M').
```

Cox Regression Assumptions

```
92 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'.
92 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'.
93 0 VALUE LABELS event 0 'Censored' 1 'Failure' /cause 0 'Censored' 1 'No
nzero failure' 2 'Zero grade'.
93 0 M> VALUE LABELS event 0 'Censored' 1 'Failure' /cause 0 'Censored' 1
'Nonzero failure' 2 'Zero grade'.
94 0 EXECUTE.
94 0 M> EXECUTE.
95 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
95 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
96 0 COMPUTE log_time=LN(duration).
96 0 M> COMPUTE log_time=LN(duration).
97 0 COMPUTE sex_time=sex_male*log_time.
97 0 M> COMPUTE sex_time=sex_male*log_time.
98 0 COMPUTE age_time=age*log_time.
98 0 M> COMPUTE age_time=age*log_time.
99 0 COMPUTE study_time=studytime*log_time.
99 0 M> COMPUTE study_time=studytime*log_time.
100 0 COMPUTE fail_time=failures*log_time.
100 0 M> COMPUTE fail_time=failures*log_time.
101 0 EXECUTE.
101 0 M> EXECUTE.
102 0 COXREG VARIABLES=duration WITH sex_male age studytime failures sex_ti
me age_time study_time fail_time /STATUS=event(1) /MET
      HOD=ENTER /PRINT ALL.
102 0 M> COXREG VARIABLES=duration WITH sex_male age studytime failures sex
_time age_time study_time fail_time /STATUS=event(1) /
      METHOD=ENTER /PRINT ALL.
```

Cox Regression

Cox Regression Assumptions

Notes

Output Created		18-JUL-2026 17:27:03
Comments		
Input	Data	D:\DATA ANALYSIS\O Survival Analysis\Cox Regression Assumptions\dataset.csv
	Active Dataset	CoxRegressionAssumptio nsData
	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 sex_time age_time study_time fail_time /STATUS=event(1) /METHOD=ENTER /PRINT ALL.
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.17

[CoxRegressionAssumptionsData]

Cox Regression Assumptions

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
847.379	238.580	8	.000	242.967	8	.000	242.967

Omnibus Tests of Model Coefficients^a

Change From Previous ..	
df	Sig.
8	.000

Cox Regression Assumptions

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	.014	.339	.002	1	.968	1.014	.522	1.970
age	.531	.111	22.876	1	.000	1.701	1.368	2.114
studytime	-.536	.236	5.156	1	.023	.585	.368	.929
failures	.468	.187	6.231	1	.013	1.596	1.106	2.304
sex_time	.075	.211	.126	1	.723	1.078	.713	1.629
age_time	-.437	.059	54.693	1	.000	.646	.575	.725
study_time	.119	.155	.594	1	.441	1.127	.832	1.526
fail_time	.136	.110	1.519	1	.218	1.145	.923	1.422

Correlation Matrix of Regression Coefficients

	sex_male	age	studytime	failures	sex_time	age_time	study_time
age	-.002						
studytime	.339	-.154					
failures	-.057	-.458	.170				
sex_time	-.773	.030	-.287	.036			
age_time	.064	-.580	.171	.291	-.105		
study_time	-.273	.145	-.772	-.142	.359	-.200	
fail_time	.034	.312	-.150	-.801	-.060	-.382	.192

Cox Regression Assumptions

Survival Table

Time	Baseline Cum Hazard	At mean of covariates		
		Survival	SE	Cum Hazard
1.00	.000	1.000	.000	.000
3.00	.112	.866	.027	.144
4.00	.647	.438	.205	.826
5.00	3.549	.011	.024	4.530
6.00	9.391	.000	.000	11.985
7.00	34.240	.000	.000	43.698
8.00	58.315	.000	.000	74.424
9.00	344.613	.000	.000	439.808
10.00	709.629	.000	.000	905.655

Covariate Means

	Mean
sex_male	.410
age	16.744
studytime	1.931
failures	.222
sex_time	.455
age_time	18.382
study_time	2.016
fail_time	.303

```

103 0 ECHO 'Declared tie reference: BRESLOW'.
103 0 M> ECHO 'Declared tie reference: BRESLOW'.
Declared tie reference: BRESLOW
104 0 ECHO 'Covariate by log-time terms provide explicit proportional-hazards diagnostics'.
104 0 M> ECHO 'Covariate by log-time terms provide explicit proportional-hazards diagnostics'.
Covariate by log-time terms provide explicit proportional-hazards diagnostics
105 0 * END METHOD-SPECIFIC SPSS WORKFLOW.
105 0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
106 0 SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression Assumptions\SPSS_Output\sav\cox-regression-assumptions_sp

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Cox Regression Assumptions

```
ss_ready_data.sav' /COMPRESSED.
106 0 M> SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression
Assumptions\SPSS_Output\sav\cox-regression-assumptions
_spss_ready_data.sav' /COMPRESSED.
107 0 ECHO 'Cox Regression Assumptions'.
107 0 M> ECHO 'Cox Regression Assumptions'.
Cox Regression Assumptions
108 0 ECHO 'Method type: model_diagnostic'.
108 0 M> ECHO 'Method type: model_diagnostic'.
Method type: model_diagnostic
109 0 ECHO 'Design: Schoenfeld-residual proportional-hazards checks after a
four-covariate Cox model, plus martingale residual di
agnostics.'.
109 0 M> ECHO 'Design: Schoenfeld-residual proportional-hazards checks afte
r a four-covariate Cox model, plus martingale residual
diagnostics.'.
Design: Schoenfeld-residual proportional-hazards checks after a four-covariate
Cox model, plus martingale residual diagnostics.
110 0 ECHO 'Formula: cor(r_Schoenfeld,j,log(t_event)); PH requires no time
trend'.
110 0 M> ECHO 'Formula: cor(r_Schoenfeld,j,log(t_event)); PH requires no ti
me trend'.
Formula: cor(r_Schoenfeld,j,log(t_event)); PH requires no time trend
111 0 ECHO 'Duration encoding: absences plus one'.
111 0 M> ECHO 'Duration encoding: absences plus one'.
Duration encoding: absences plus one
112 0 ECHO 'Event encoding: G3 below ten'.
112 0 M> ECHO 'Event encoding: G3 below ten'.
Event encoding: G3 below ten
113 0 ECHO 'Competing event: G3 equals zero where applicable'.
113 0 M> ECHO 'Competing event: G3 equals zero where applicable'.
Competing event: G3 equals zero where applicable
114 0 ECHO 'events = 100'.
114 0 M> ECHO 'events = 100'.
events = 100
115 0 ECHO 'minimum_covariate_p_value = 0.25332504671353856'.
115 0 M> ECHO 'minimum_covariate_p_value = 0.25332504671353856'.
minimum_covariate_p_value = 0.25332504671353856
116 0 ECHO 'global_reference_chi_square = 2.585686799014809'.
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Cox Regression Assumptions

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116 0 M> ECHO 'global_reference_chi_square = 2.585686799014809'.
global_reference_chi_square = 2.585686799014809
117 0 ECHO 'global_reference_df = 4'.
117 0 M> ECHO 'global_reference_df = 4'.
global_reference_df = 4
118 0 ECHO 'global_reference_p_value = 0.6293607275230738'.
118 0 M> ECHO 'global_reference_p_value = 0.6293607275230738'.
global_reference_p_value = 0.6293607275230738
119 0 ECHO 'martingale_mean = 0.04848705208321851'.
119 0 M> ECHO 'martingale_mean = 0.04848705208321851'.
martingale_mean = 0.04848705208321851
120 0 ECHO 'Cross-check status: pass'.
120 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
121 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression Assumptions\SPSS_Output\spv\cox-regression-assumptions_spss_output.spv'.
121 0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression Assumptions\SPSS_Output\spv\cox-regression-assumptions_spss_output.spv'.
122 0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression Assumptions\SPSS_Output\pdf\cox-regression-assumptions_spss_output.pdf'.
122 0 M> OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\0 Survival Analysis\Cox Regression Assumptions\SPSS_Output\pdf\cox-regression-assumptions_spss_output.pdf'.
```