

Host

Notes

Output Created		12-JUL-2026 18:26:19
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\sav\zero_inflated_poisson_analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.07

Host

Notes

Output Created		12-JUL-2026 18:26:19
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\sav\zero_inflated_poisson_analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav""].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.07

Host

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\sav\zero_inflated_poisson_analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\spv" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\spv""].
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\sav\zero_inflated_poisson_analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\pdf" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\pdf"...
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\ sav\zero_inflated_poisson _analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\ *.sav" 2>nul'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.05

Host

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\ sav\zero_inflated_poisson _analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\spv\ *.spv" 2>nul'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.05

Host

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Zero Inflated Poisson Regression\SPSS_Output\ sav\zero_inflated_poisson _analysis_data_final.sav
	Active Dataset	ZeroInflatedPoissonData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\pdf*. pdf" 2>nul"].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.05

Regression in SPSS

Regression in SPSS
Import dataset.csv

Regression in SPSS

Regression in SPSS
Descriptive statistics and correlations

Frequencies

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\regression_in_spss_analysis_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES= G3 G1 G2 studytime failures absences age Medu Fedu /FORMAT=NOTABLE /STATISTICS=MINIMUM MAXIMUM MEAN STDDEV SKEWNESS KURTOSIS...
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

[RegressionInSPSSData] D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\regression_in_spss_analysis_data.sav

Regression in SPSS
Descriptive statistics and correlations

Statistics

		Final grade outcome	First-period grade predictor	Second-period grade predictor	Weekly study-time predictor	Past class failures predictor
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0
Mean		11.9060	11.3991	11.5701	1.9307	.2219
Std. Deviation		3.23066	2.74527	2.91364	.82951	.59324
Skewness		-.913	-.003	-.360	.700	3.093
Kurtosis		2.712	.037	1.662	.038	9.824
Minimum		.00	.00	.00	1.00	.00
Maximum		19.00	19.00	19.00	4.00	3.00

Statistics

		School absences predictor	Student age predictor	Mother education predictor	Father education predictor
N	Valid	649	649	649	649
	Missing	0	0	0	0
Mean		3.6595	16.7442	2.5146	2.3066
Std. Deviation		4.64076	1.21814	1.13455	1.09993
Skewness		2.021	.417	-.030	.215
Kurtosis		5.781	.072	-1.261	-1.109
Minimum		.00	15.00	.00	.00
Maximum		32.00	22.00	4.00	4.00

Descriptives

Regression in SPSS
Descriptive statistics and correlations

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\re gression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES= G3 G1 G2 studytime failures absences age Medu Fedu /STATISTICS=MEAN STDDEV MIN MAX SKEWNESS KURTOSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Regression in SPSS
Descriptive statistics and correlations

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
Final grade outcome	649	.00	19.00	11.9060	3.23066	-.913
First-period grade predictor	649	.00	19.00	11.3991	2.74527	-.003
Second-period grade predictor	649	.00	19.00	11.5701	2.91364	-.360
Weekly study-time predictor	649	1.00	4.00	1.9307	.82951	.700
Past class failures predictor	649	.00	3.00	.2219	.59324	3.093
School absences predictor	649	.00	32.00	3.6595	4.64076	2.021
Student age predictor	649	15.00	22.00	16.7442	1.21814	.417
Mother education predictor	649	.00	4.00	2.5146	1.13455	-.030
Father education predictor	649	.00	4.00	2.3066	1.09993	.215
Valid N (listwise)	649					

Regression in SPSS
Descriptive statistics and correlations

Descriptive Statistics

	Skewness	Kurtosis	
	Std. Error	Statistic	Std. Error
Final grade outcome	.096	2.712	.192
First-period grade predictor	.096	.037	.192
Second-period grade predictor	.096	1.662	.192
Weekly study-time predictor	.096	.038	.192
Past class failures predictor	.096	9.824	.192
School absences predictor	.096	5.781	.192
Student age predictor	.096	.072	.192
Mother education predictor	.096	-1.261	.192
Father education predictor	.096	-1.109	.192
Valid N (listwise)			

Correlations

Regression in SPSS
Descriptive statistics and correlations

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES= G3 G1 G2 studytime failures absences age Medu Fedu /PRINT=TWOTAIL SIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.03

Regression in SPSS
Descriptive statistics and correlations

Correlations

		Final grade outcome	First-period grade predictor	Second-period grade predictor
Final grade outcome	Pearson Correlation	1	.826	.919
	Sig. (2-tailed)		.000	.000
	N	649	649	649
First-period grade predictor	Pearson Correlation	.826	1	.865
	Sig. (2-tailed)	.000		.000
	N	649	649	649
Second-period grade predictor	Pearson Correlation	.919	.865	1
	Sig. (2-tailed)	.000	.000	
	N	649	649	649
Weekly study-time predictor	Pearson Correlation	.250	.261	.240
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
Past class failures predictor	Pearson Correlation	-.393	-.384	-.386
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
School absences predictor	Pearson Correlation	-.091	-.147	-.125
	Sig. (2-tailed)	.020	.000	.001
	N	649	649	649
Student age predictor	Pearson Correlation	-.107	-.174	-.107
	Sig. (2-tailed)	.007	.000	.006
	N	649	649	649
Mother education predictor	Pearson Correlation	.240	.260	.264
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
Father education predictor	Pearson Correlation	.212	.218	.225
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649

Regression in SPSS
Descriptive statistics and correlations

Correlations

		Weekly study- time predictor	Past class failures predictor	School absences predictor
Final grade outcome	Pearson Correlation	.250	-.393	-.091
	Sig. (2-tailed)	.000	.000	.020
	N	649	649	649
First-period grade predictor	Pearson Correlation	.261	-.384	-.147
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
Second-period grade predictor	Pearson Correlation	.240	-.386	-.125
	Sig. (2-tailed)	.000	.000	.001
	N	649	649	649
Weekly study-time predictor	Pearson Correlation	1	-.147	-.118
	Sig. (2-tailed)		.000	.003
	N	649	649	649
Past class failures predictor	Pearson Correlation	-.147	1	.123
	Sig. (2-tailed)	.000		.002
	N	649	649	649
School absences predictor	Pearson Correlation	-.118	.123	1
	Sig. (2-tailed)	.003	.002	
	N	649	649	649
Student age predictor	Pearson Correlation	-.008	.320	.150
	Sig. (2-tailed)	.831	.000	.000
	N	649	649	649
Mother education predictor	Pearson Correlation	.097	-.172	-.009
	Sig. (2-tailed)	.013	.000	.827
	N	649	649	649
Father education predictor	Pearson Correlation	.050	-.166	.030
	Sig. (2-tailed)	.200	.000	.448
	N	649	649	649

Regression in SPSS
Descriptive statistics and correlations

Correlations

		Student age predictor	Mother education predictor	Father education predictor
Final grade outcome	Pearson Correlation	-.107	.240	.212
	Sig. (2-tailed)	.007	.000	.000
	N	649	649	649
First-period grade predictor	Pearson Correlation	-.174	.260	.218
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
Second-period grade predictor	Pearson Correlation	-.107	.264	.225
	Sig. (2-tailed)	.006	.000	.000
	N	649	649	649
Weekly study-time predictor	Pearson Correlation	-.008	.097	.050
	Sig. (2-tailed)	.831	.013	.200
	N	649	649	649
Past class failures predictor	Pearson Correlation	.320	-.172	-.166
	Sig. (2-tailed)	.000	.000	.000
	N	649	649	649
School absences predictor	Pearson Correlation	.150	-.009	.030
	Sig. (2-tailed)	.000	.827	.448
	N	649	649	649
Student age predictor	Pearson Correlation	1	-.108	-.121
	Sig. (2-tailed)		.006	.002
	N	649	649	649
Mother education predictor	Pearson Correlation	-.108	1	.647
	Sig. (2-tailed)	.006		.000
	N	649	649	649
Father education predictor	Pearson Correlation	-.121	.647	1
	Sig. (2-tailed)	.002	.000	
	N	649	649	649

Regression in SPSS

Regression in SPSS
Simple linear regression: G3 predicted by G2

Regression

Notes

Output Created		12-JUL-2026 18:26:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA CHANGE CI(95) ZPP /CRITERIA=PIN(.05) POUT(.10) TOLERANCE(. 0001) /NOORIGIN /DEPENDENT G3 /METHOD=ENTER G2 /RESIDUALS DURBIN /CASEWISE PLOT (ZRESID) OUTLIERS(3) /SAVE PRED(simple_pred) RESID(simple_resid) ZPRED(simple_zpred) ZRESID(simple_zresid).

Regression in SPSS
Simple linear regression: G3 predicted by G2

Notes

Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.04
	Memory Required	3808 bytes
	Additional Memory Required for Residual Plots	0 bytes
Variables Created or Modified	simple_pred	Unstandardized Predicted Value
	simple_resid	Unstandardized Residual
	simple_zpred	Standardized Predicted Value
	simple_zresid	Standardized Residual

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Second-period grade predictor ^b	.	Enter

a. Dependent Variable: Final grade outcome

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.919 ^a	.844	.843	1.27810	.844	3493.282	1

Model Summary^b

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	647	.000	1.846

a. Predictors: (Constant), Second-period grade predictor

b. Dependent Variable: Final grade outcome

Regression in SPSS
Simple linear regression: G3 predicted by G2

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5706.374	1	5706.374	3493.282	.000 ^b
	Residual	1056.893	647	1.634		
	Total	6763.267	648			

a. Dependent Variable: Final grade outcome

b. Predictors: (Constant), Second-period grade predictor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.122	.206		.593	.553
	Second-period grade predictor	1.018	.017	.919	59.104	.000

Coefficients^a

Model		95.0% Confidence Interval for B		Correlations		
		Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	-.282	.526			
	Second-period grade predictor	.985	1.052	.919	.919	.919

a. Dependent Variable: Final grade outcome

Regression in SPSS
Simple linear regression: G3 predicted by G2

Casewise Diagnostics^a

Case Number	Std. Residual	Final grade outcome	Predicted Value	Residual
62	4.454	16.00	10.3069	5.69313
164	-7.267	.00	9.2884	-9.28838
173	-7.282	1.00	10.3069	-9.30687
520	-5.674	.00	7.2514	-7.25140
584	-4.877	.00	6.2329	-6.23291
587	-6.470	.00	8.2699	-8.26989
627	-4.080	.00	5.2144	-5.21442
638	-5.674	.00	7.2514	-7.25140
640	-6.470	.00	8.2699	-8.26989
641	-5.674	.00	7.2514	-7.25140

a. Dependent Variable: Final grade outcome

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.1220	19.4733	11.9060	2.96751	649
Residual	-9.30687	5.69313	.00000	1.27711	649
Std. Predicted Value	-3.971	2.550	.000	1.000	649
Std. Residual	-7.282	4.454	.000	.999	649

a. Dependent Variable: Final grade outcome

Regression in SPSS

Regression in SPSS
Simple regression diagnostics

Descriptives

Notes

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Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES= simple_pred simple_resid simple_zpred simple_zresid /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02

Regression in SPSS

Simple regression diagnostics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Unstandardized Predicted Value	649	.12197	19.47328	11.9060092	2.96751284
Unstandardized Residual	649	-9.30687	5.69313	.0000000	1.27710896
Standardized Predicted Value	649	-3.97102	2.55004	.0000000	1.00000000
Standardized Residual	649	-7.28183	4.45439	.0000000	.99922810
Valid N (listwise)	649				

Explore

Notes

Output Created		12-JUL-2026 18:26:21
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\re gression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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 for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.

Regression in SPSS

Simple regression diagnostics

Notes

Syntax		EXAMINE VARIABLES=simple_resid simple_zresid /PLOT BOXPLOT HISTOGRAM NPLOT /STATISTICS DESCRIPTIVES EXTREME /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:02.34
	Elapsed Time	00:00:02.12

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Unstandardized Residual	649	100.0%	0	0.0%	649	100.0%
Standardized Residual	649	100.0%	0	0.0%	649	100.0%

Regression in SPSS
Simple regression diagnostics

Descriptives

			Statistic	Std. Error
Unstandardized Residual	Mean		.0000000	.05013091
	95% Confidence Interval for Mean	Lower Bound	-.0984386	
		Upper Bound	.0984386	
	5% Trimmed Mean		.0755483	
	Median		-.2883792	
	Variance		1.631	
	Std. Deviation		1.27710896	
	Minimum		-9.30687	
	Maximum		5.69313	
	Range		15.00000	
	Interquartile Range		1.03698	
	Skewness		-2.948	.096
	Kurtosis		18.945	.192
Standardized Residual	Mean		.0000000	.03922313
	95% Confidence Interval for Mean	Lower Bound	-.0770198	
		Upper Bound	.0770198	
	5% Trimmed Mean		.0591101	
	Median		-.2256320	
	Variance		.998	
	Std. Deviation		.99922810	
	Minimum		-7.28183	
	Maximum		4.45439	
	Range		11.73621	
	Interquartile Range		.81135	
	Skewness		-2.948	.096
	Kurtosis		18.945	.192

Regression in SPSS
Simple regression diagnostics

Extreme Values

			Case Number	Value
Unstandardized Residual	Highest	1	62	5.69313
		2	519	2.78558
		3	390	2.71162
		4	459	2.69313
		5	308	2.67464
	Lowest	1	173	-9.30687
		2	164	-9.28838
		3	640	-8.26989
		4	587	-8.26989
		5	641	-7.25140 ^a
Standardized Residual	Highest	1	62	4.45439
		2	519	2.17948
		3	390	2.12161
		4	459	2.10714
		5	308	2.09268
	Lowest	1	173	-7.28183
		2	164	-7.26736
		3	640	-6.47048
		4	587	-6.47048
		5	641	-5.67360 ^b

a. Only a partial list of cases with the value -7.25140 are shown in the table of lower extremes.

b. Only a partial list of cases with the value -5.67360 are shown in the table of lower extremes.

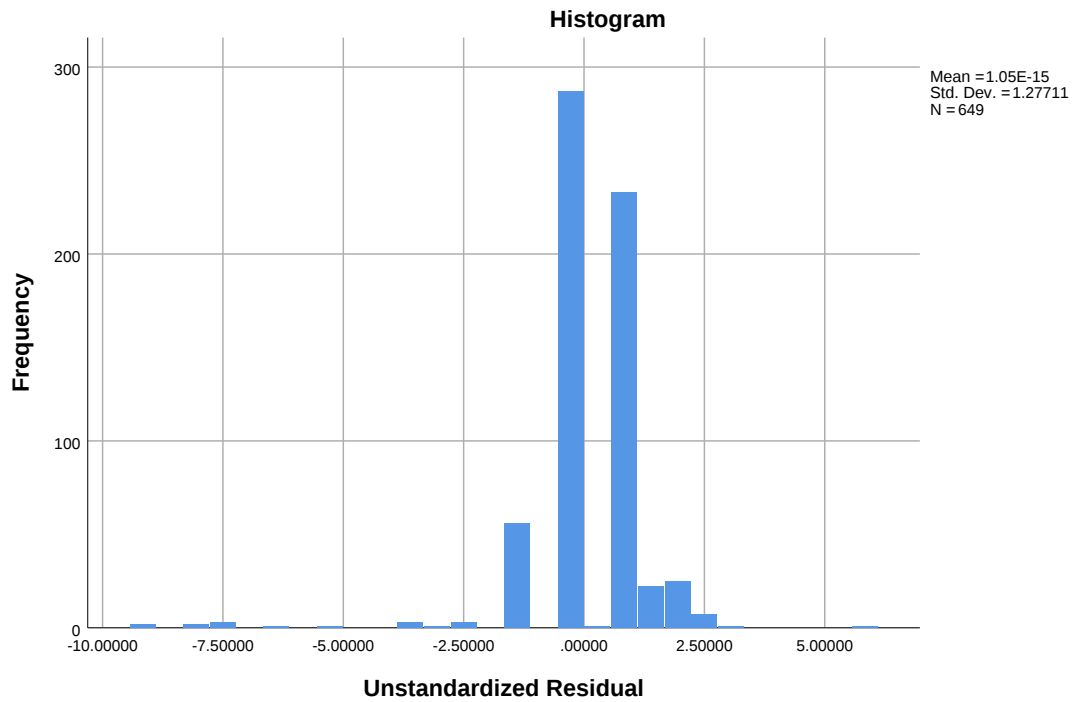
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.248	649	.000	.711	649	.000
Standardized Residual	.248	649	.000	.711	649	.000

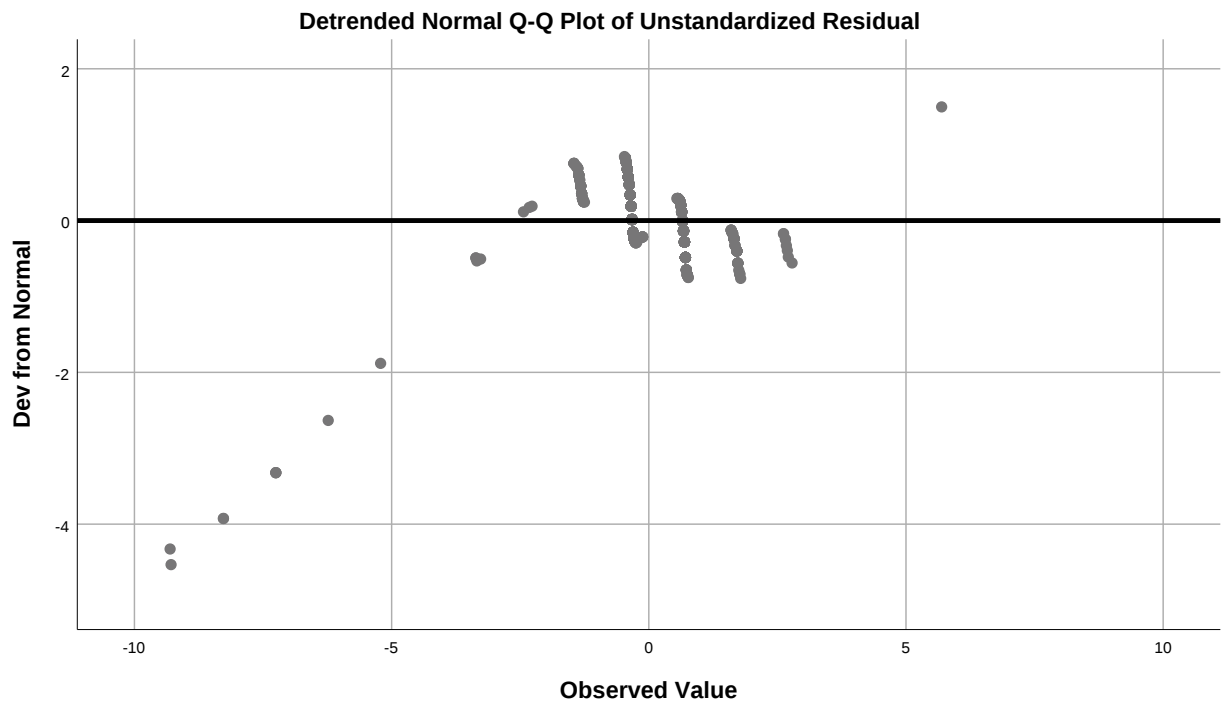
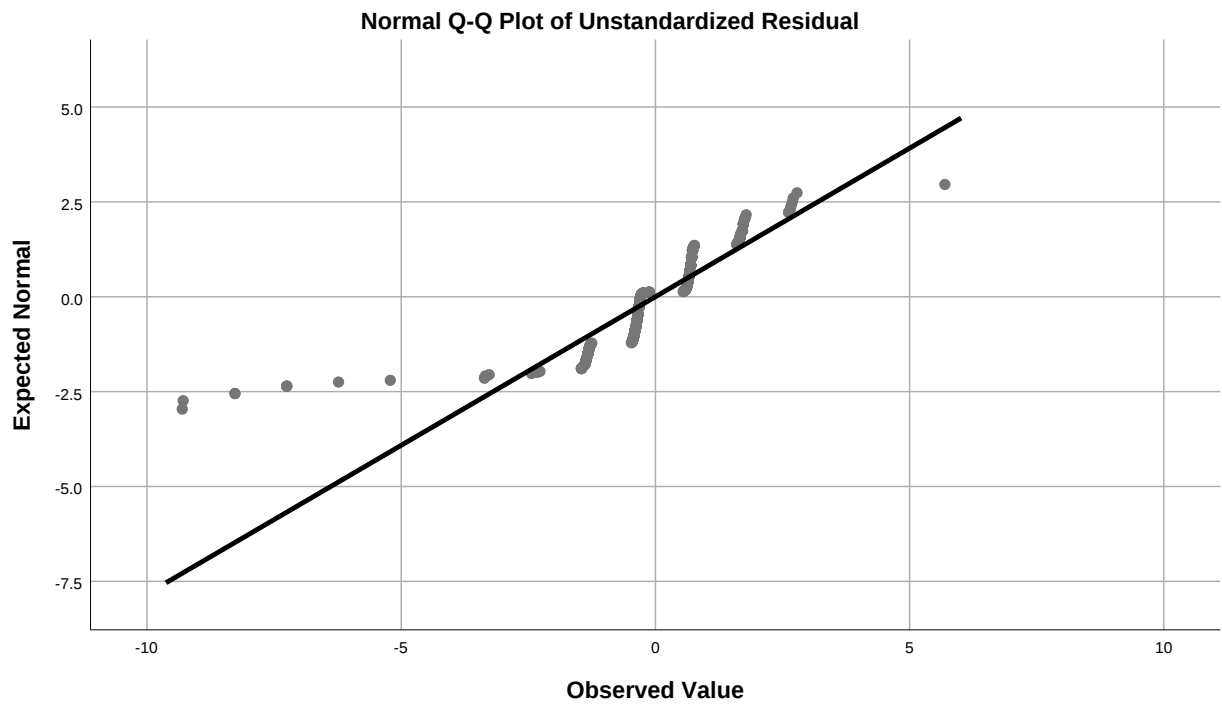
a. Lilliefors Significance Correction

Regression in SPSS
Simple regression diagnostics

Unstandardized Residual

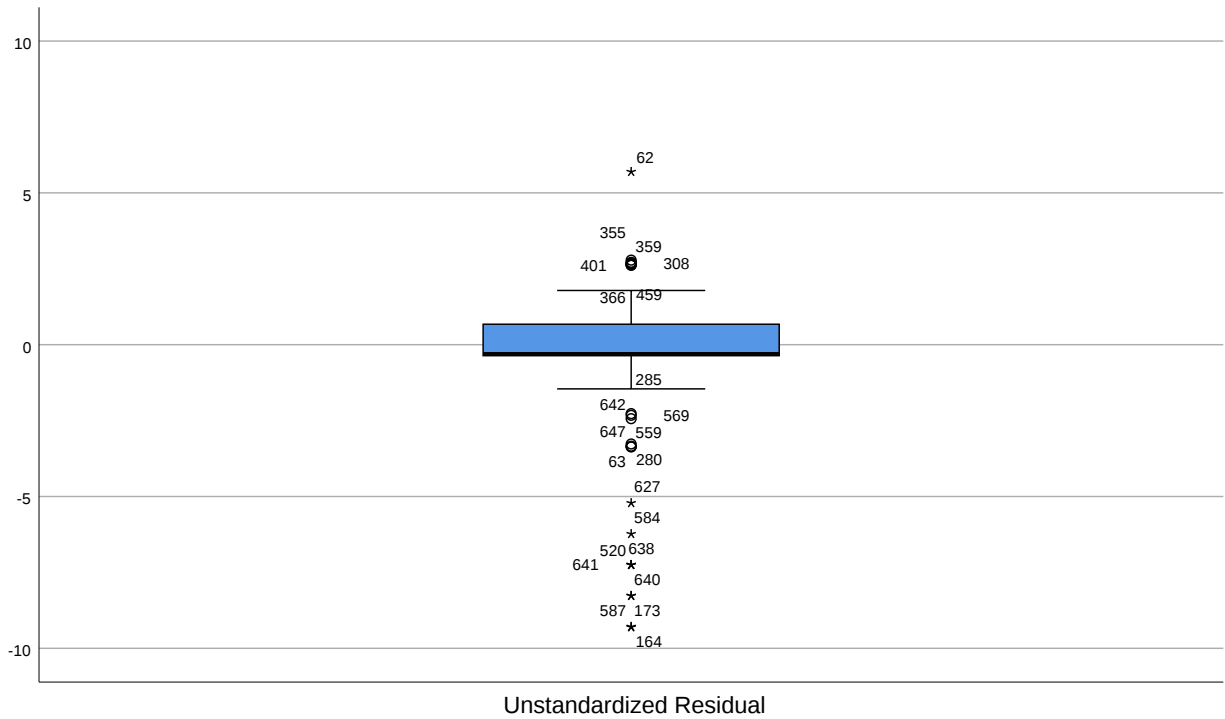


Regression in SPSS
Simple regression diagnostics



Regression in SPSS

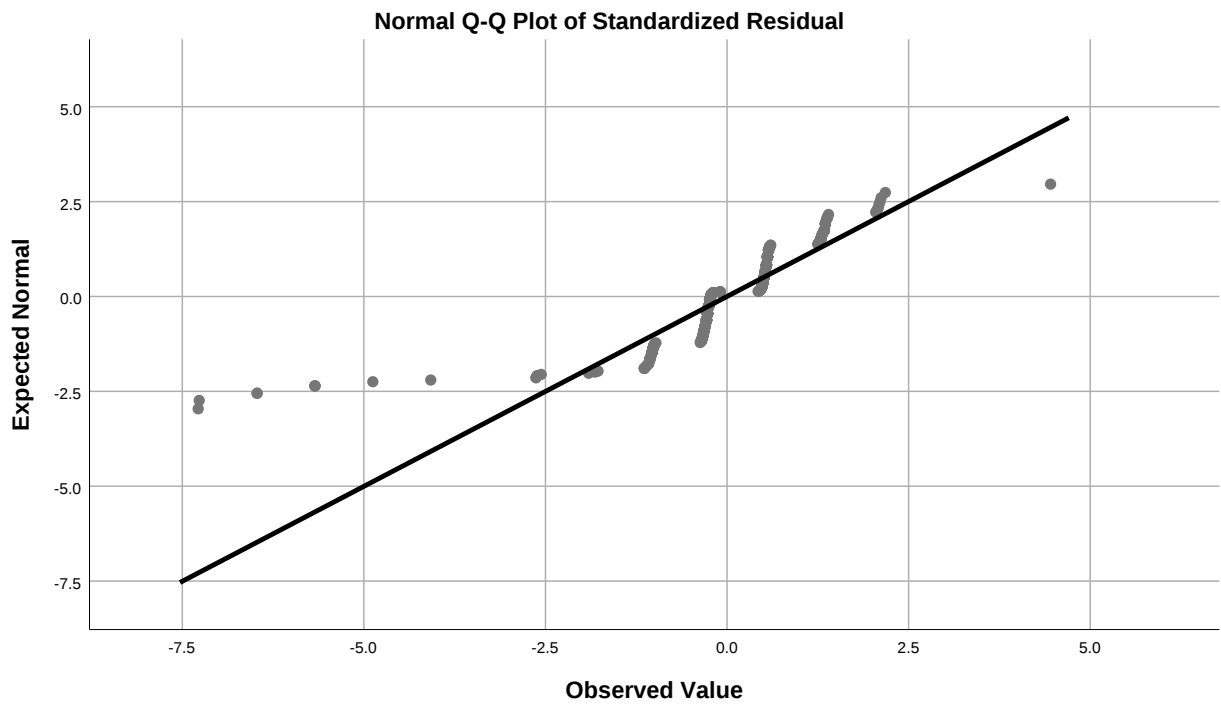
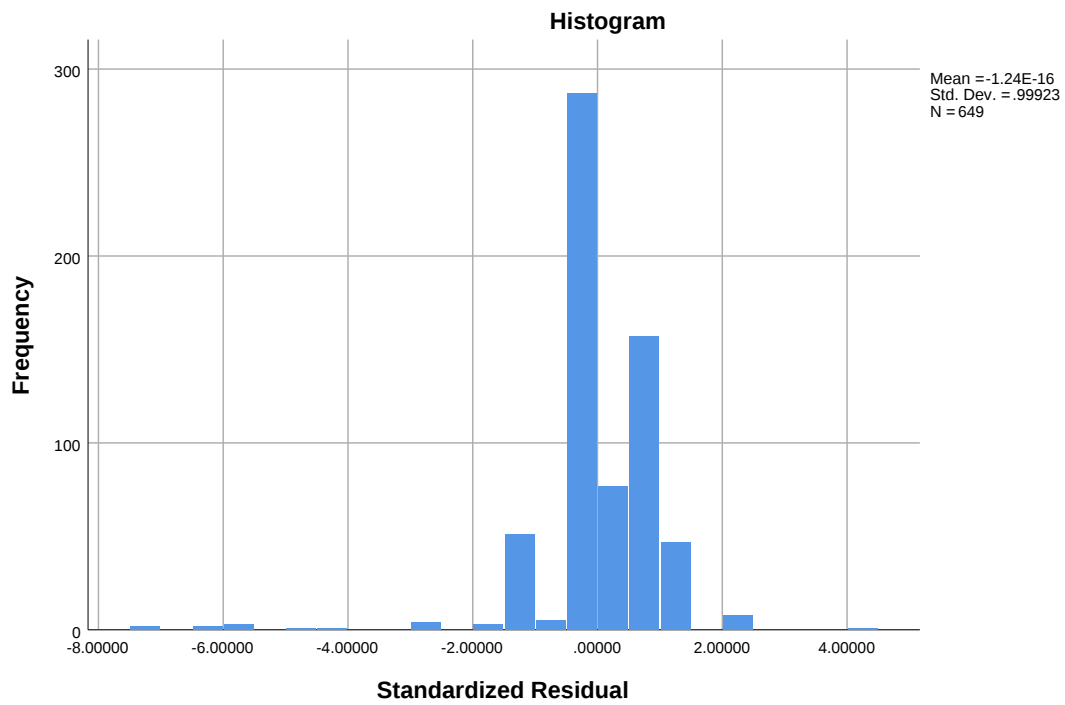
Simple regression diagnostics



Standardized Residual

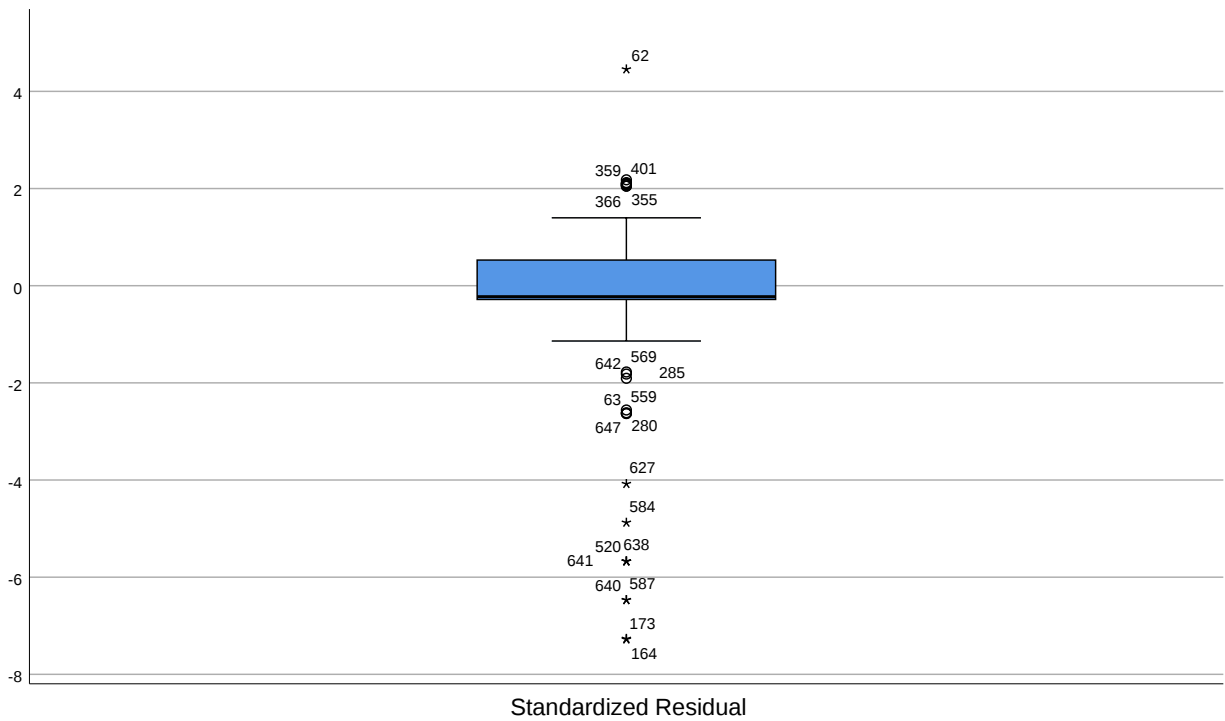
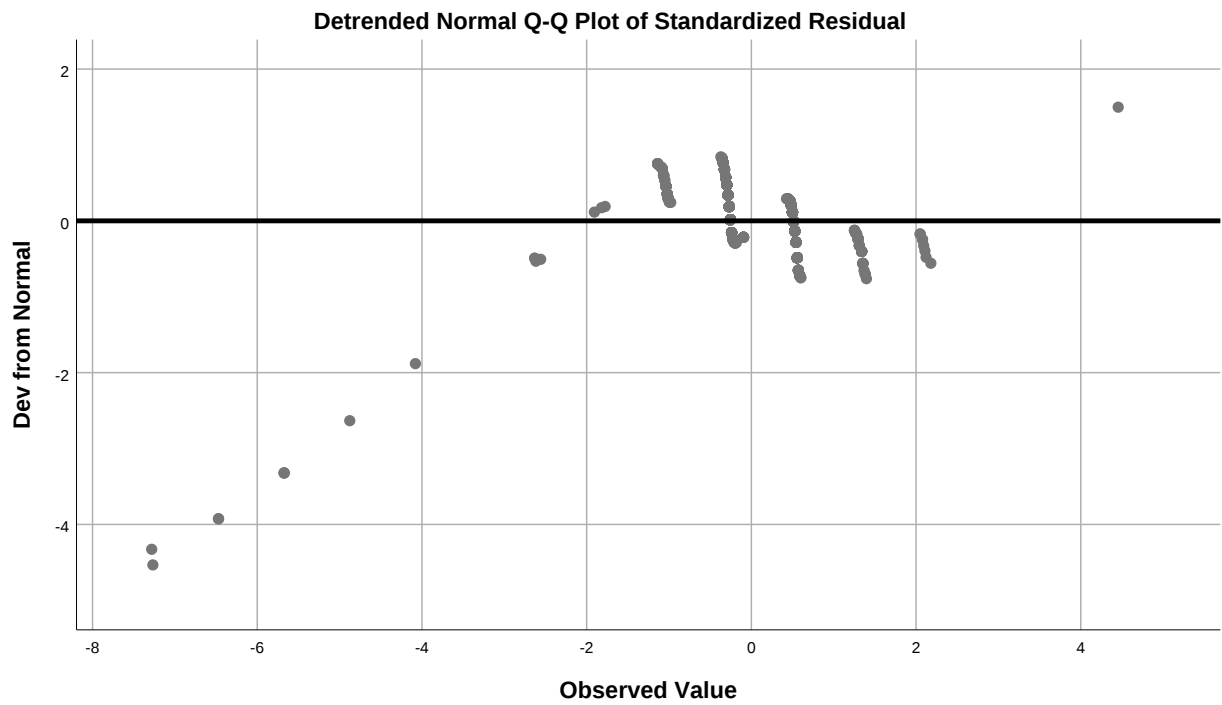
Regression in SPSS

Simple regression diagnostics



Regression in SPSS

Simple regression diagnostics



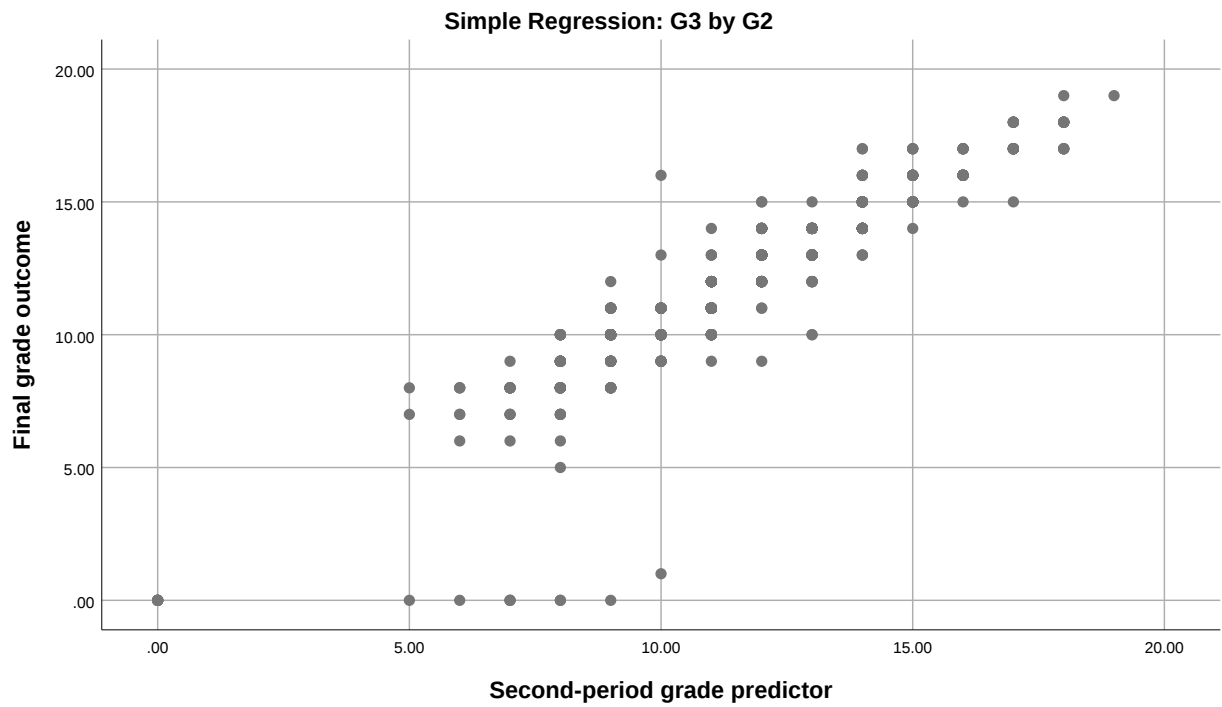
Regression in SPSS
Simple regression diagnostics

Graph

Notes

Output Created		12-JUL-2026 18:26:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =G2 WITH G3 /TITLE='Simple Regression: G3 by G2'.
Resources	Processor Time	00:00:00.31
	Elapsed Time	00:00:00.30

Regression in SPSS
Simple regression diagnostics



Graph

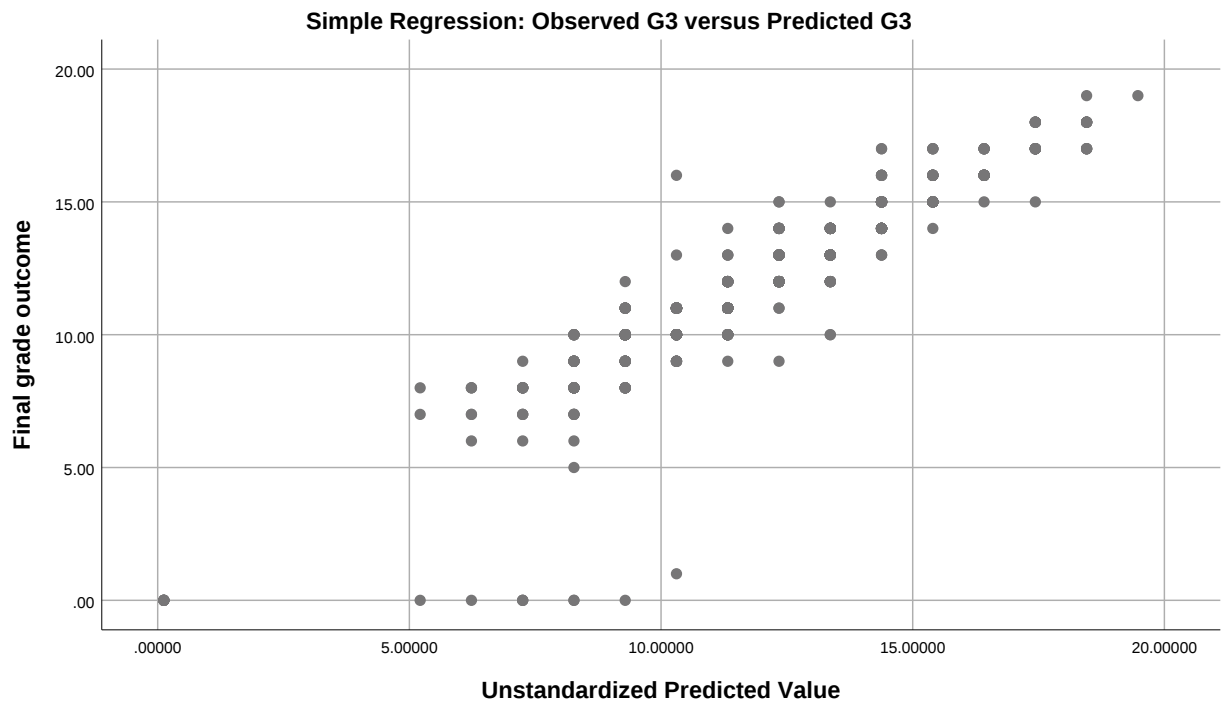
Regression in SPSS

Simple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =simple_pred WITH G3 /TITLE='Simple Regression: Observed G3 versus Predicted G3'.
Resources	Processor Time	00:00:00.30
	Elapsed Time	00:00:00.30

Regression in SPSS
Simple regression diagnostics



Graph

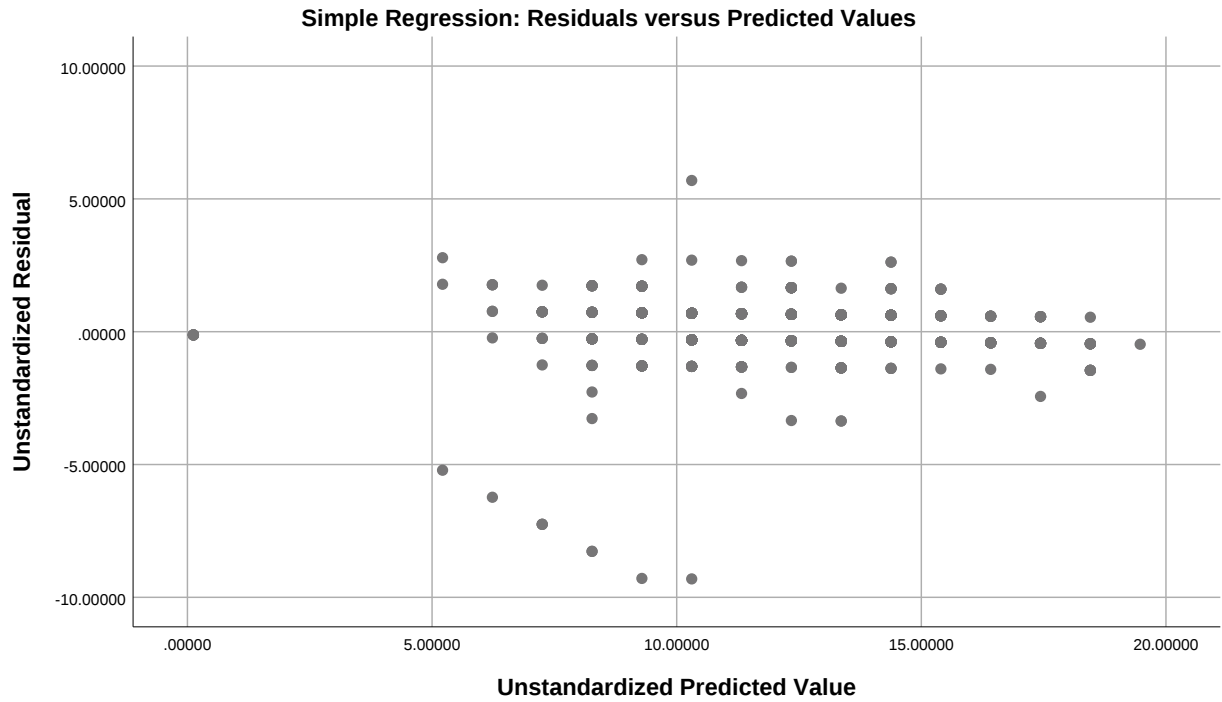
Regression in SPSS

Simple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =simple_pred WITH simple_resid /TITLE='Simple Regression: Residuals versus Predicted Values'.
Resources	Processor Time	00:00:00.28
	Elapsed Time	00:00:00.30

Regression in SPSS
Simple regression diagnostics



Graph

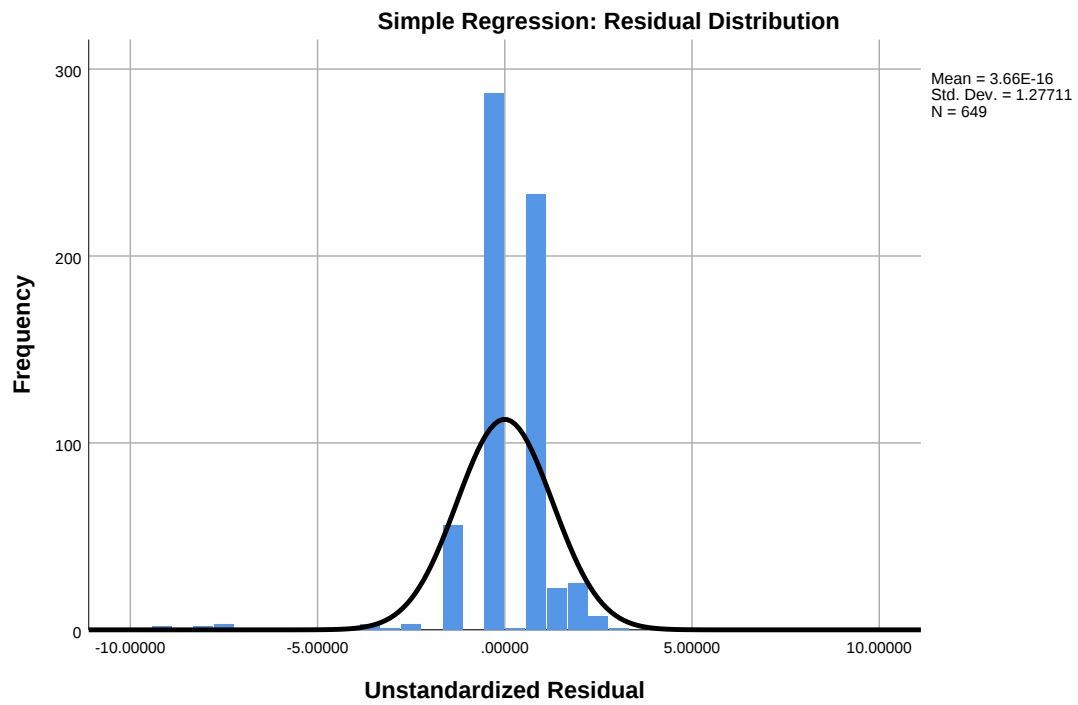
Regression in SPSS

Simple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =simple_resid /TITLE='Simple Regression: Residual Distribution'.
Resources	Processor Time	00:00:00.27
	Elapsed Time	00:00:00.27

Regression in SPSS
Simple regression diagnostics



Regression in SPSS

Regression in SPSS
Multiple regression predicting G3

Regression

Notes

Output Created		12-JUL-2026 18:26:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics are based on cases with no missing values for any variable used.

Regression in SPSS
Multiple regression predicting G3

Notes

Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA CHANGE CI(95) COLLIN TOL ZPP /CRITERIA=PIN(.05) POUT(.10) TOLERANCE(. 0001) /NOORIGIN /DEPENDENT G3 /METHOD=ENTER G1 G2 studytime failures absences age Medu Fedu /RESIDUALS DURBIN /CASEWISE PLOT (ZRESID) OUTLIERS(3) /SAVE PRED(multi_pred) RESID(multi_resid) ZPRED(multi_zpred) ZRESID(multi_zresid) SRESID(multi_sresid) COOK(multi_cook) LEVER(multi_lev)...
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.03
	Memory Required	8560 bytes
	Additional Memory Required for Residual Plots	0 bytes
Variables Created or Modified	multi_pred	Unstandardized Predicted Value
	multi_resid	Unstandardized Residual
	multi_zpred	Standardized Predicted Value
	multi_zresid	Standardized Residual
	multi_sresid	Studentized Residual
	multi_mahal	Mahalanobis Distance
	multi_cook	Cook's Distance
	multi_lev	Centered Leverage Value

Regression in SPSS
Multiple regression predicting G3

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Father education predictor, School absences predictor, Weekly study-time predictor, Student age predictor, Second-period grade predictor, Past class failures predictor, Mother education predictor, First-period grade predictor ^b	.	Enter

a. Dependent Variable: Final grade outcome

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.922 ^a	.851	.849	1.25576	.851	456.111	8

Model Summary^b

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	640	.000	1.862

Regression in SPSS
Multiple regression predicting G3

- a. Predictors: (Constant), Father education predictor, School absences predictor, Weekly study-time predictor, Student age predictor, Second-period grade predictor, Past class failures predictor, Mother education predictor, First-period grade predictor
- b. Dependent Variable: Final grade outcome

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5754.033	8	719.254	456.111	.000 ^b
	Residual	1009.234	640	1.577		
	Total	6763.267	648			

- a. Dependent Variable: Final grade outcome
- b. Predictors: (Constant), Father education predictor, School absences predictor, Weekly study-time predictor, Student age predictor, Second-period grade predictor, Past class failures predictor, Mother education predictor, First-period grade predictor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.501	.774		-.648	.518
	First-period grade predictor	.143	.037	.122	3.910	.000
	Second-period grade predictor	.885	.034	.798	25.744	.000
	Weekly study-time predictor	.097	.062	.025	1.556	.120
	Past class failures predictor	-.235	.095	-.043	-2.471	.014
	School absences predictor	.023	.011	.033	2.085	.038
	Student age predictor	.023	.044	.009	.520	.604
	Mother education predictor	-.045	.058	-.016	-.776	.438
	Father education predictor	.022	.059	.007	.371	.711

Regression in SPSS
Multiple regression predicting G3

Coefficients^a

Model		95.0% Confidence Interval for B		Correlations		
		Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	-2.021	1.019			
	First-period grade predictor	.071	.215	.826	.153	.060
	Second-period grade predictor	.817	.952	.919	.713	.393
	Weekly study-time predictor	-.025	.219	.250	.061	.024
	Past class failures predictor	-.422	-.048	-.393	-.097	-.038
	School absences predictor	.001	.044	-.091	.082	.032
	Student age predictor	-.063	.108	-.107	.021	.008
	Mother education predictor	-.159	.069	.240	-.031	-.012
	Father education predictor	-.094	.139	.212	.015	.006

Regression in SPSS
Multiple regression predicting G3

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	First-period grade predictor	.240	4.165
	Second-period grade predictor	.243	4.121
	Weekly study-time predictor	.917	1.090
	Past class failures predictor	.762	1.312
	School absences predictor	.948	1.055
	Student age predictor	.860	1.163
	Mother education predictor	.563	1.776
	Father education predictor	.572	1.749

a. Dependent Variable: Final grade outcome

Regression in SPSS
Multiple regression predicting G3

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions	
					First-period grade predictor	Second-period grade predictor
1	1	7.051	1.000	.00	.00	.00
	2	.945	2.731	.00	.00	.00
	3	.570	3.518	.00	.00	.00
	4	.211	5.777	.00	.00	.00
	5	.108	8.064	.00	.01	.01
	6	.062	10.680	.00	.00	.00
	7	.043	12.869	.02	.06	.08
	8	.008	30.135	.00	.87	.88
	9	.002	56.814	.97	.06	.02

Collinearity Diagnostics^a

Model	Dimension	Variance Proportions				
		Weekly study-time predictor	Past class failures predictor	School absences predictor	Student age predictor	Mother education predictor
1	1	.00	.00	.01	.00	.00
	2	.00	.61	.05	.00	.00
	3	.00	.12	.88	.00	.00
	4	.15	.01	.00	.00	.13
	5	.83	.00	.02	.00	.02
	6	.00	.00	.00	.00	.84
	7	.01	.21	.04	.03	.00
	8	.00	.00	.00	.00	.00
	9	.00	.04	.01	.96	.00

Regression in SPSS
Multiple regression predicting G3

Collinearity Diagnostics^a

Model	Dimension	Variance ... Father education predictor
1	1	.00
	2	.00
	3	.00
	4	.19
	5	.02
	6	.76
	7	.01
	8	.00
	9	.01

a. Dependent Variable: Final grade outcome

Casewise Diagnostics^a

Case Number	Std. Residual	Final grade outcome	Predicted Value	Residual
62	4.605	16.00	10.2176	5.78244
164	-7.207	.00	9.0508	-9.05080
173	-7.193	1.00	10.0330	-9.03298
520	-5.836	.00	7.3280	-7.32802
584	-4.920	.00	6.1786	-6.17862
587	-6.504	.00	8.1676	-8.16764
627	-4.329	.00	5.4366	-5.43656
638	-5.681	.00	7.1334	-7.13337
640	-6.023	.00	7.5637	-7.56366
641	-5.439	.00	6.8301	-6.83013

a. Dependent Variable: Final grade outcome

Regression in SPSS
Multiple regression predicting G3

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.2512	19.5507	11.9060	2.97988	649
Std. Predicted Value	-3.911	2.565	.000	1.000	649
Standard Error of Predicted Value	.068	.417	.141	.043	649
Adjusted Predicted Value	.2610	19.5648	11.9071	2.97878	649
Residual	-9.05080	5.78244	.00000	1.24798	649
Std. Residual	-7.207	4.605	.000	.994	649
Stud. Residual	-7.296	4.625	.000	1.002	649
Deleted Residual	-9.27543	5.83253	-.00106	1.26819	649
Stud. Deleted Residual	-7.614	4.700	-.003	1.019	649
Mahal. Distance	.891	70.420	7.988	6.680	649
Cook's Distance	.000	.147	.002	.009	649
Centered Leverage Value	.001	.109	.012	.010	649

a. Dependent Variable: Final grade outcome

Regression in SPSS

Regression in SPSS
Multiple regression diagnostics

Descriptives

Notes

Output Created		12-JUL-2026 18:26:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES= multi_pred multi_resid multi_zpred multi_zresid multi_sresid multi_cook multi_lev multi_mahal /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

Regression in SPSS

Multiple regression diagnostics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Unstandardized Predicted Value	649	.25124	19.55068	11.9060092	2.97987928
Unstandardized Residual	649	-9.05080	5.78244	.0000000	1.24798207
Standardized Predicted Value	649	-3.91116	2.56543	.0000000	1.00000000
Standardized Residual	649	-7.20744	4.60474	.0000000	.99380799
Studentized Residual	649	-7.29633	4.62464	-.0004196	1.00179810
Cook's Distance	649	.00000	.14681	.0018089	.00890335
Centered Leverage Value	649	.00137	.10867	.0123267	.01030913
Mahalanobis Distance	649	.89055	70.42040	7.9876733	6.68031779
Valid N (listwise)	649				

Explore

Notes

Output Created		12-JUL-2026 18:26:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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 for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.

Regression in SPSS

Multiple regression diagnostics

Notes

Syntax		EXAMINE VARIABLES= multi_resid multi_zresid multi_sresid multi_cook multi_lev multi_mahal /PLOT BOXPLOT HISTOGRAM NPLOT /STATISTICS DESCRIPTIVES EXTREME /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:06.66
	Elapsed Time	00:00:06.17

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Unstandardized Residual	649	100.0%	0	0.0%	649	100.0%
Standardized Residual	649	100.0%	0	0.0%	649	100.0%
Studentized Residual	649	100.0%	0	0.0%	649	100.0%
Cook's Distance	649	100.0%	0	0.0%	649	100.0%
Centered Leverage Value	649	100.0%	0	0.0%	649	100.0%
Mahalanobis Distance	649	100.0%	0	0.0%	649	100.0%

Regression in SPSS
Multiple regression diagnostics

Descriptives

			Statistic	Std. Error
Unstandardized Residual	Mean		.0000000	.04898758
	95% Confidence Interval for Mean	Lower Bound	-.0961936	
		Upper Bound	.0961936	
	5% Trimmed Mean		.0691719	
	Median		-.0661585	
	Variance		1.557	
	Std. Deviation		1.24798207	
	Minimum		-9.05080	
	Maximum		5.78244	
	Range		14.83324	
	Interquartile Range		1.08192	
	Skewness		-2.844	.096
	Kurtosis		18.518	.192
Standardized Residual	Mean		.0000000	.03901038
	95% Confidence Interval for Mean	Lower Bound	-.0766020	
		Upper Bound	.0766020	
	5% Trimmed Mean		.0550838	
	Median		-.0526841	
	Variance		.988	
	Std. Deviation		.99380799	
	Minimum		-7.20744	
	Maximum		4.60474	
	Range		11.81218	
	Interquartile Range		.86156	
	Skewness		-2.844	.096
	Kurtosis		18.518	.192
Studentized Residual	Mean		-.0004196	.03932402
	95% Confidence Interval for Mean	Lower Bound	-.0776375	
		Upper Bound	.0767982	
	5% Trimmed Mean		.0552279	
	Median		-.0528466	
	Variance		1.004	

Regression in SPSS
Multiple regression diagnostics

Descriptives

		Statistic	Std. Error
	Std. Deviation	1.00179810	
	Minimum	-7.29633	
	Maximum	4.62464	
	Range	11.92097	
	Interquartile Range	.86542	
	Skewness	-2.847	.096
	Kurtosis	18.517	.192
Cook's Distance	Mean	.0018089	.00034949
	95% Confidence Interval for Mean	Lower Bound	.0011226
		Upper Bound	.0024952
	5% Trimmed Mean	.0005755	
	Median	.0002242	
	Variance	.000	
	Std. Deviation	.00890335	
	Minimum	.00000	
	Maximum	.14681	
	Range	.14681	
	Interquartile Range	.00068	
	Skewness	10.523	.096
	Kurtosis	135.778	.192
Centered Leverage Value	Mean	.0123267	.00040467
	95% Confidence Interval for Mean	Lower Bound	.0115320
		Upper Bound	.0131213
	5% Trimmed Mean	.0108493	
	Median	.0095380	
	Variance	.000	
	Std. Deviation	.01030913	
	Minimum	.00137	
	Maximum	.10867	
	Range	.10730	
	Interquartile Range	.00720	
	Skewness	3.667	.096

Regression in SPSS
Multiple regression diagnostics

Descriptives

		Statistic	Std. Error
Mahalanobis Distance	Kurtosis	20.280	.192
	Mean	7.9876733	.26222541
	95% Confidence Interval for Mean	Lower Bound	7.4727592
		Upper Bound	8.5025875
	5% Trimmed Mean	7.0303711	
	Median	6.1806261	
	Variance	44.627	
	Std. Deviation	6.68031779	
	Minimum	.89055	
	Maximum	70.42040	
	Range	69.52985	
	Interquartile Range	4.66440	
	Skewness	3.667	.096
	Kurtosis	20.280	.192

Extreme Values

			Case Number	Value
Unstandardized Residual	Highest	1	62	5.78244
		2	308	2.72482
		3	359	2.58937
		4	355	2.58346
		5	390	2.54817
	Lowest	1	164	-9.05080
		2	173	-9.03298
		3	587	-8.16764
		4	640	-7.56366
		5	520	-7.32802
Standardized Residual	Highest	1	62	4.60474
		2	308	2.16986

Regression in SPSS
Multiple regression diagnostics

Extreme Values

		Case Number	Value
		3	2.06200
		4	2.05729
		5	2.02919
		1	-7.20744
		2	-7.19325
	Lowest	3	-6.50415
		4	-6.02318
		5	-5.83554
		1	4.62464
		2	2.17966
Studentized Residual	Highest	3	2.07314
		4	2.06434
		5	2.03750
		1	-7.29633
		2	-7.22391
	Lowest	3	-6.55122
		4	-6.08753
		5	-5.86669
Cook's Distance	Highest	1	.14681
		2	.08845
		3	.06927
		4	.06348
		5	.05641
	Lowest	1	.00000
		2	.00000
		3	.00000
		4	.00000
		5	.00000
Centered Leverage Value	Highest	1	.10867
		2	.08302

Regression in SPSS
Multiple regression diagnostics

Extreme Values

		Case Number	Value	
		3	598	.07048
		4	198	.06442
		5	213	.06298
	Lowest	1	318	.00137
		2	75	.00148
		3	425	.00184
		4	183	.00184
		5	24	.00200
Mahalanobis Distance	Highest	1	1	70.42040
		2	611	53.79556
		3	598	45.67012
		4	198	41.74608
		5	213	40.80833
	Lowest	1	318	.89055
		2	75	.95902
		3	425	1.19187
		4	183	1.19187
		5	24	1.29618

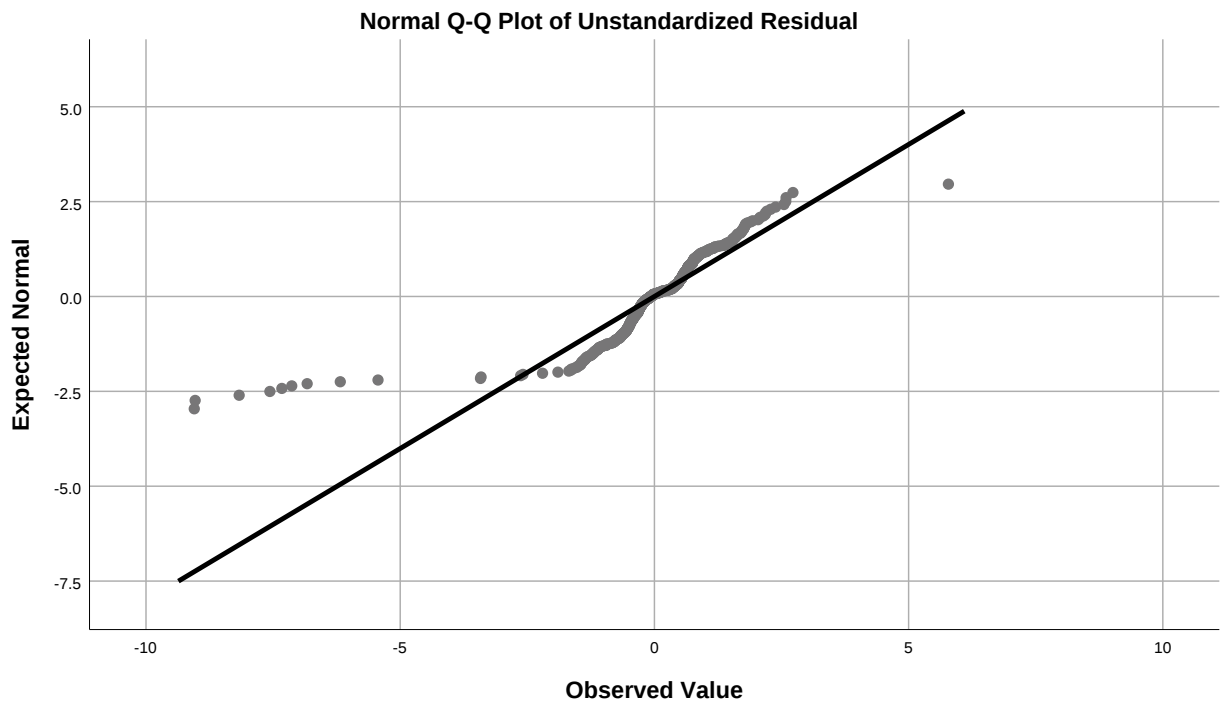
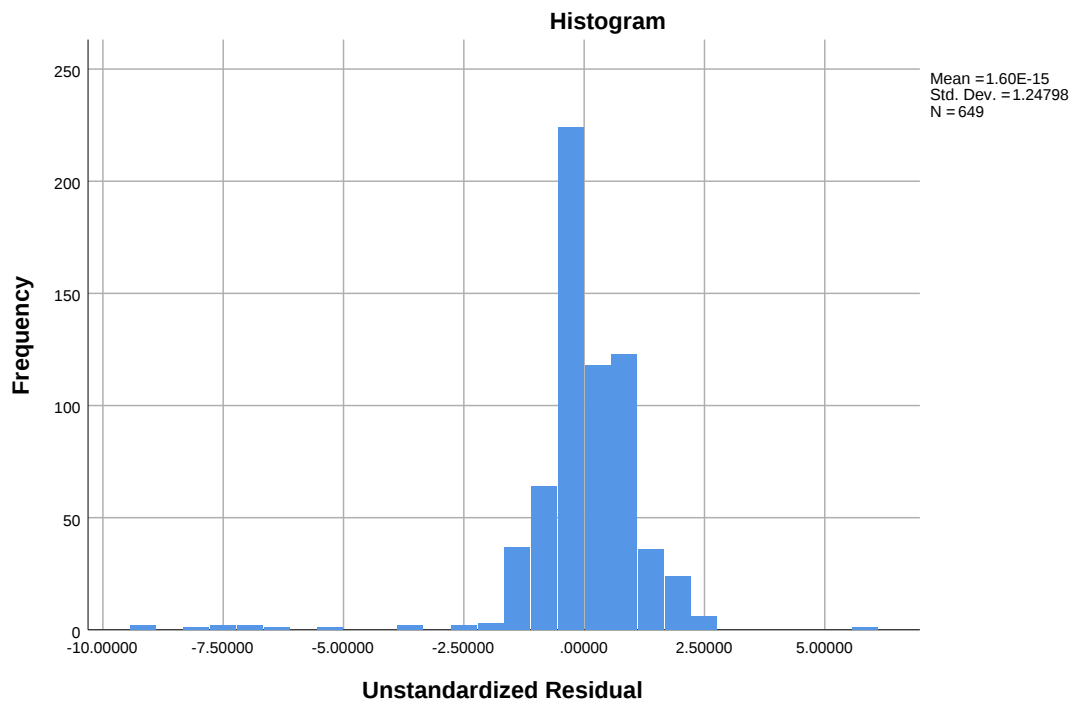
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.155	649	.000	.757	649	.000
Standardized Residual	.155	649	.000	.757	649	.000
Studentized Residual	.155	649	.000	.757	649	.000
Cook's Distance	.420	649	.000	.173	649	.000
Centered Leverage Value	.184	649	.000	.665	649	.000
Mahalanobis Distance	.184	649	.000	.665	649	.000

a. Lilliefors Significance Correction

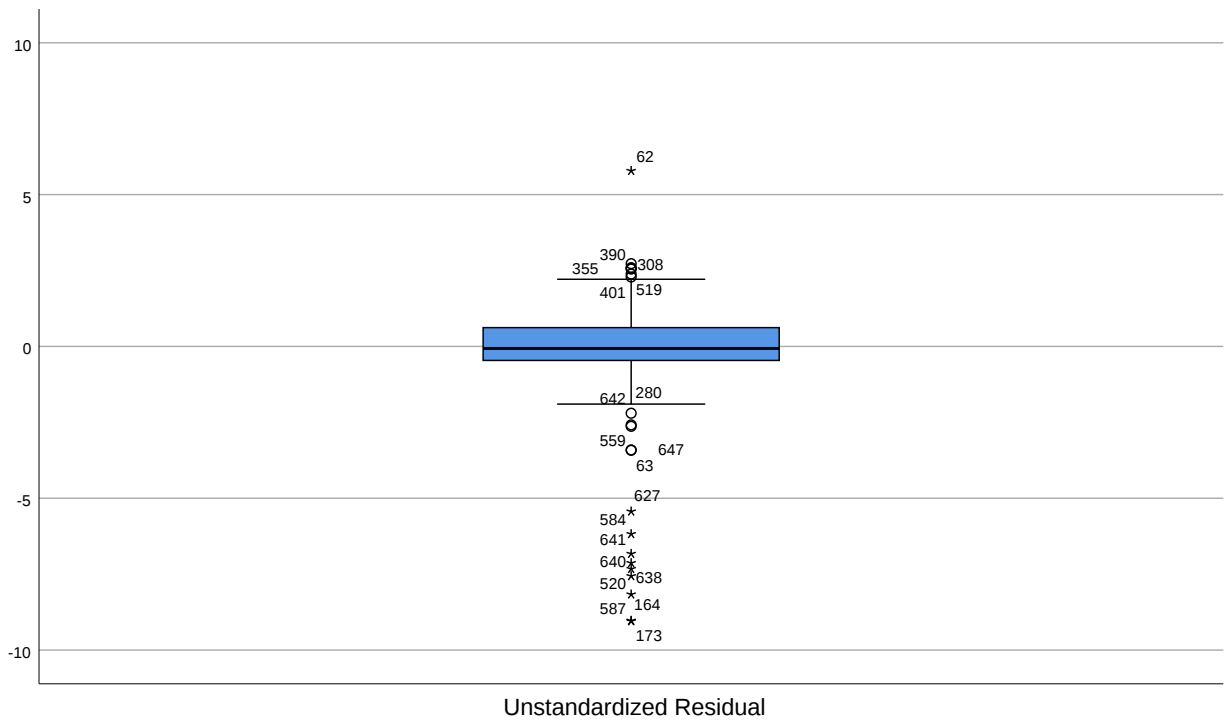
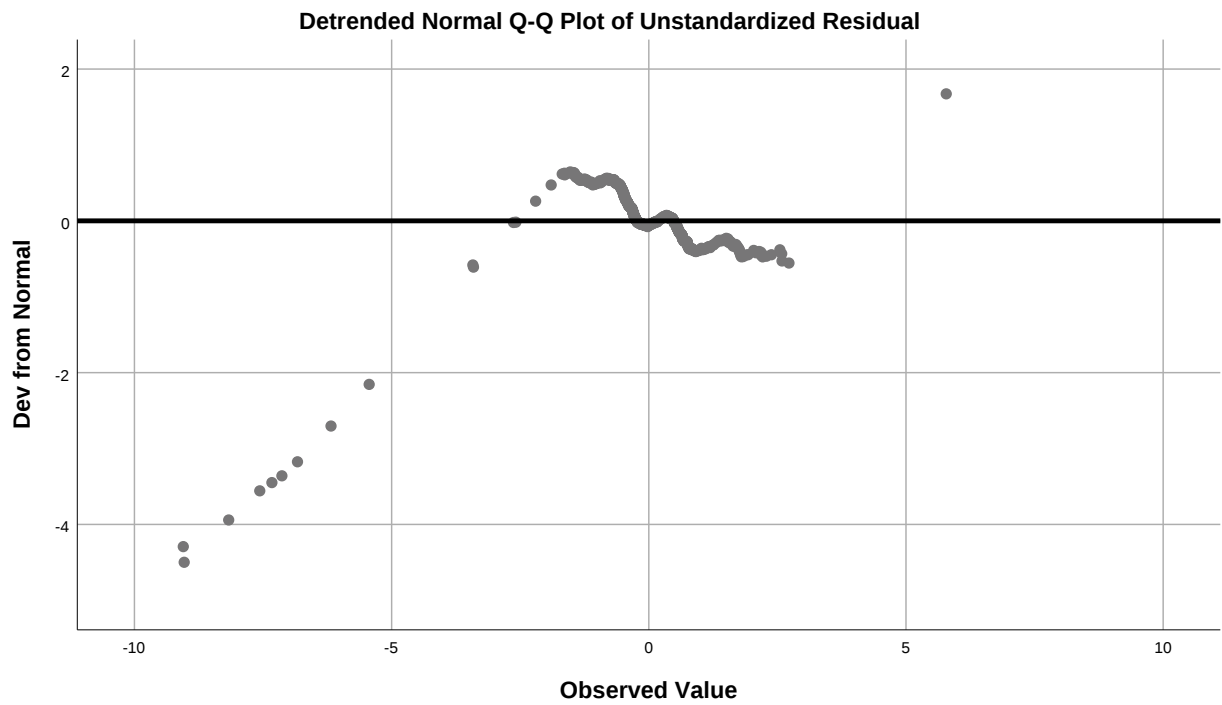
Unstandardized Residual

Regression in SPSS
Multiple regression diagnostics



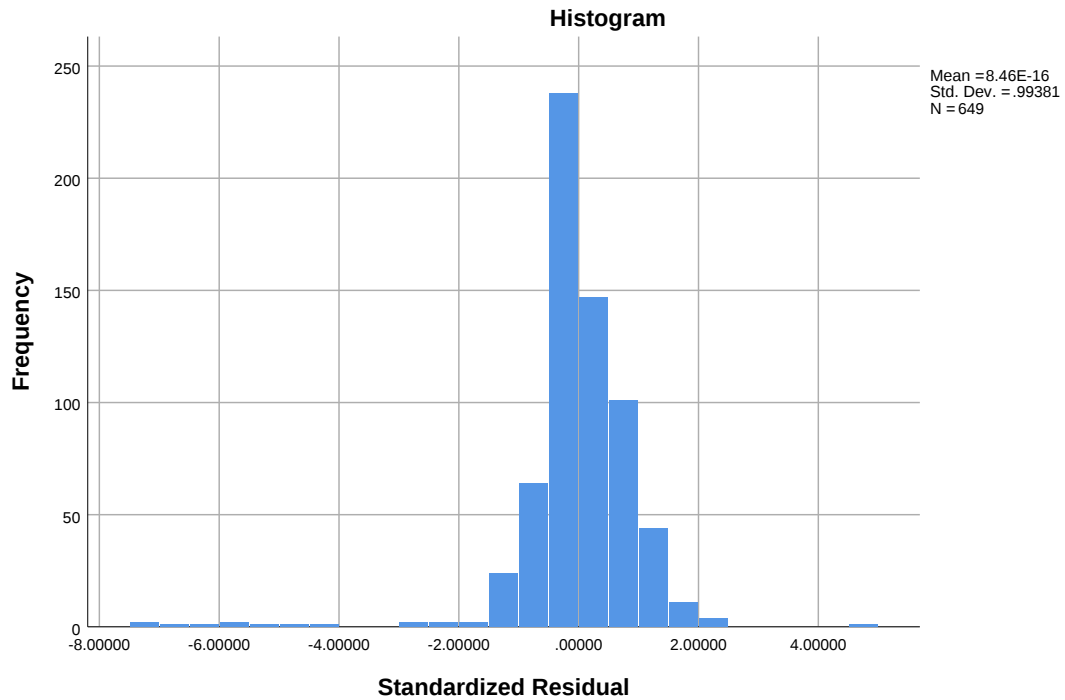
Regression in SPSS

Multiple regression diagnostics

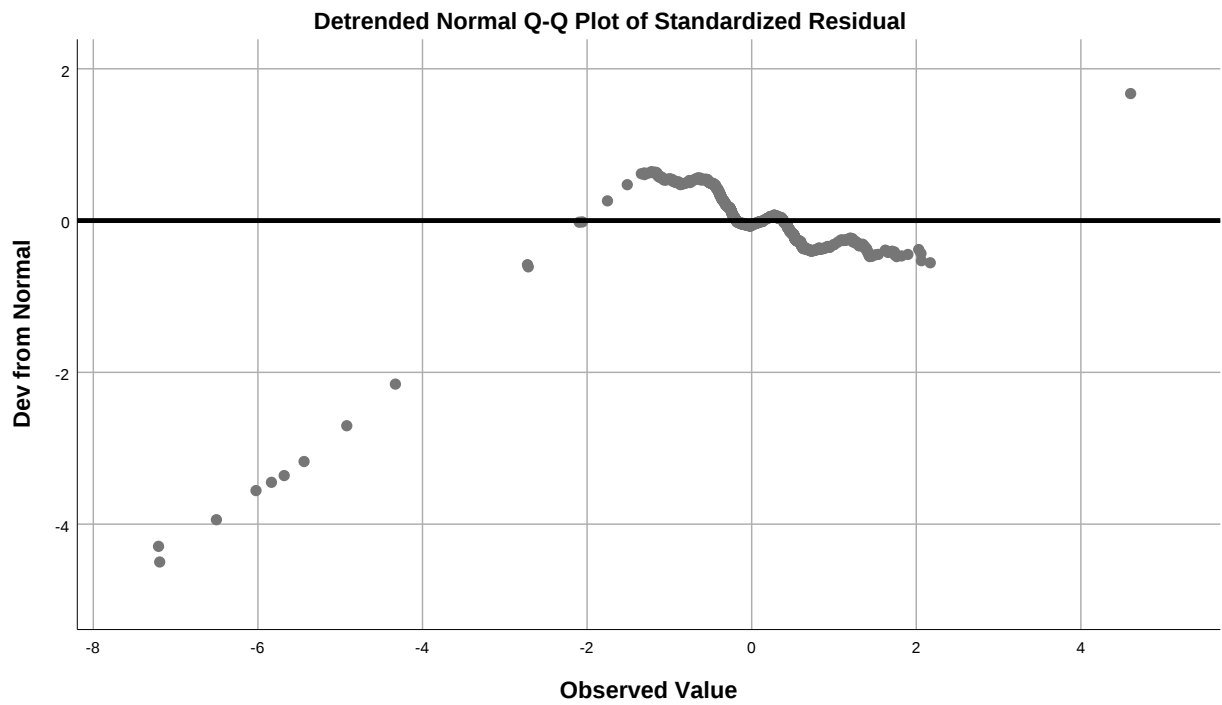
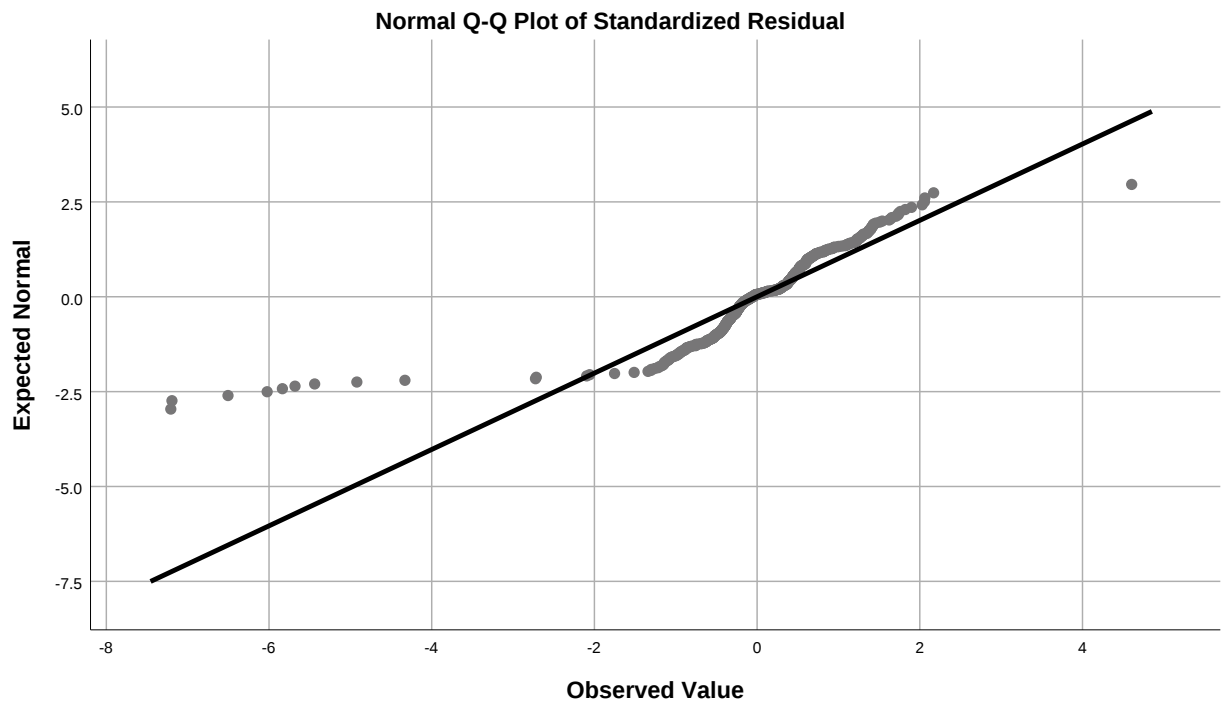


Regression in SPSS
Multiple regression diagnostics

Standardized Residual

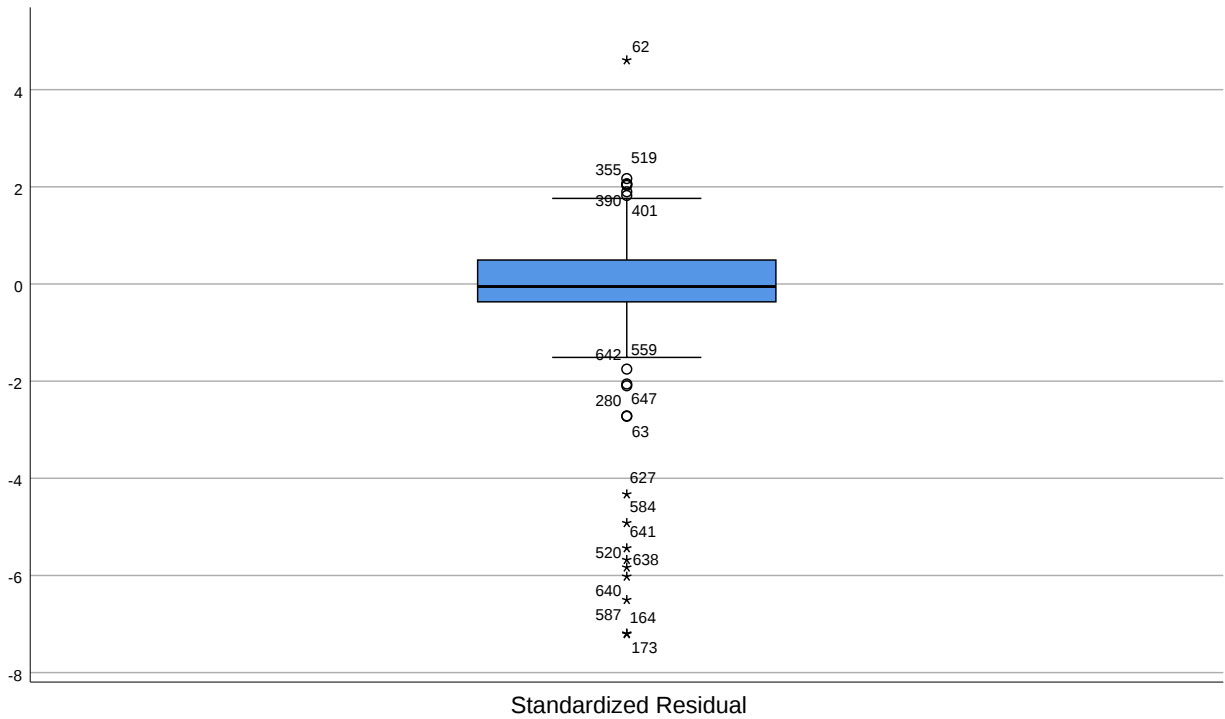


Regression in SPSS
Multiple regression diagnostics



Regression in SPSS

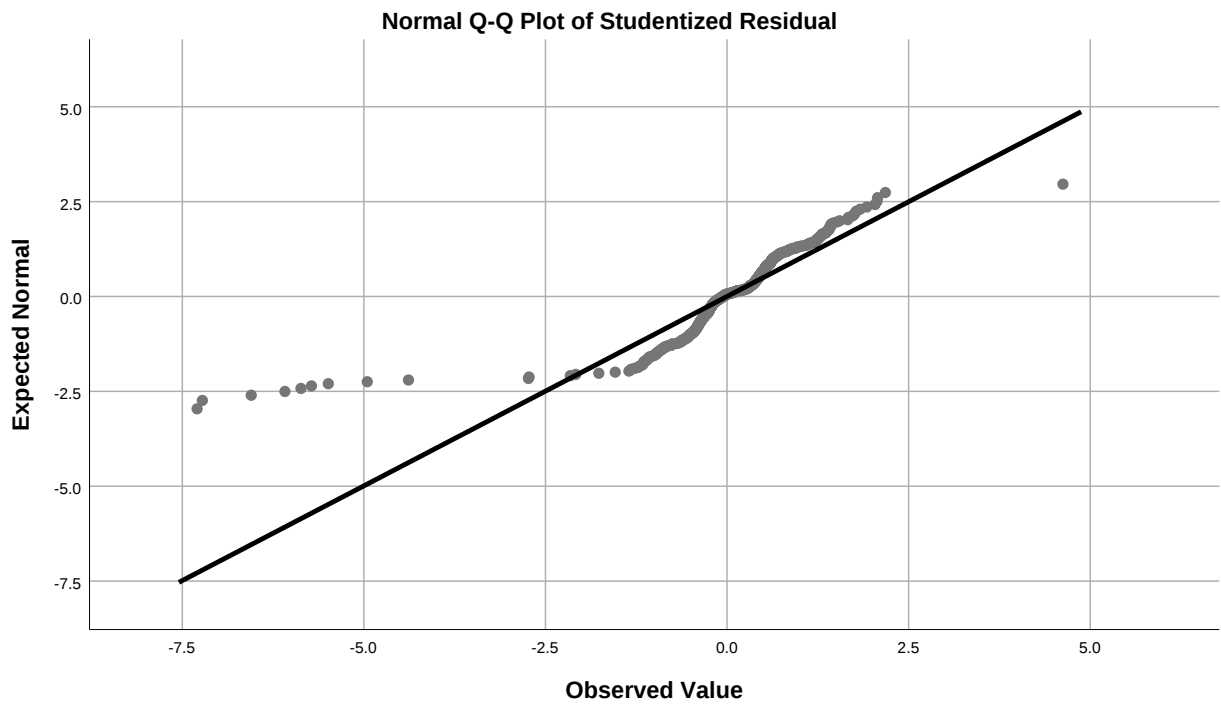
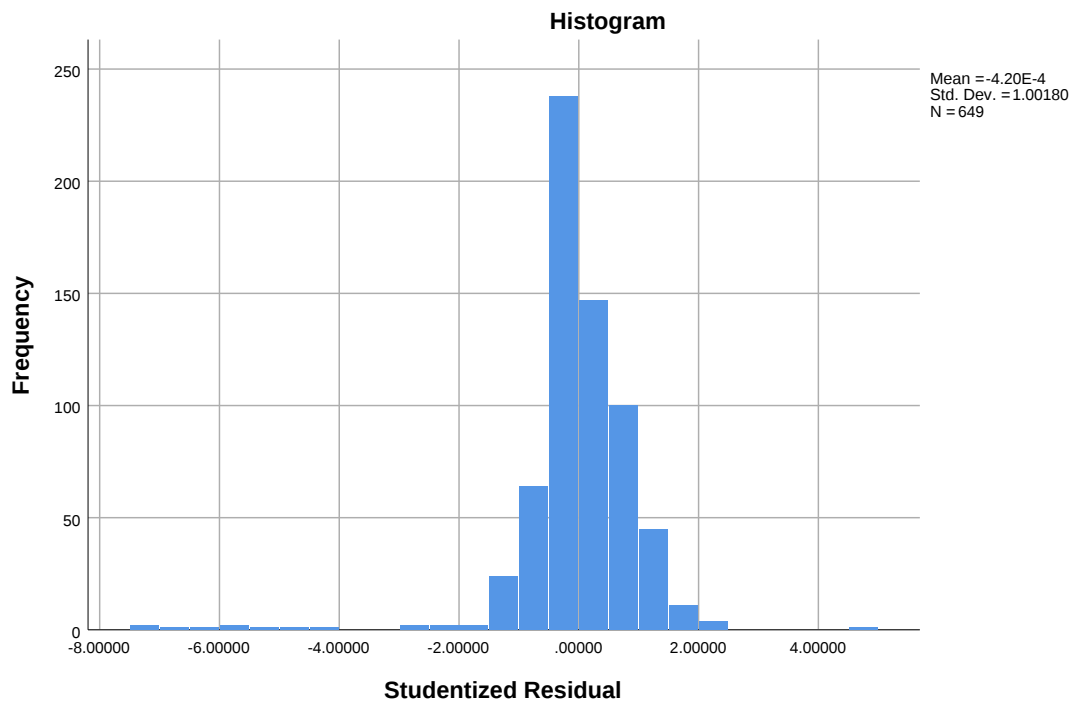
Multiple regression diagnostics



Studentized Residual

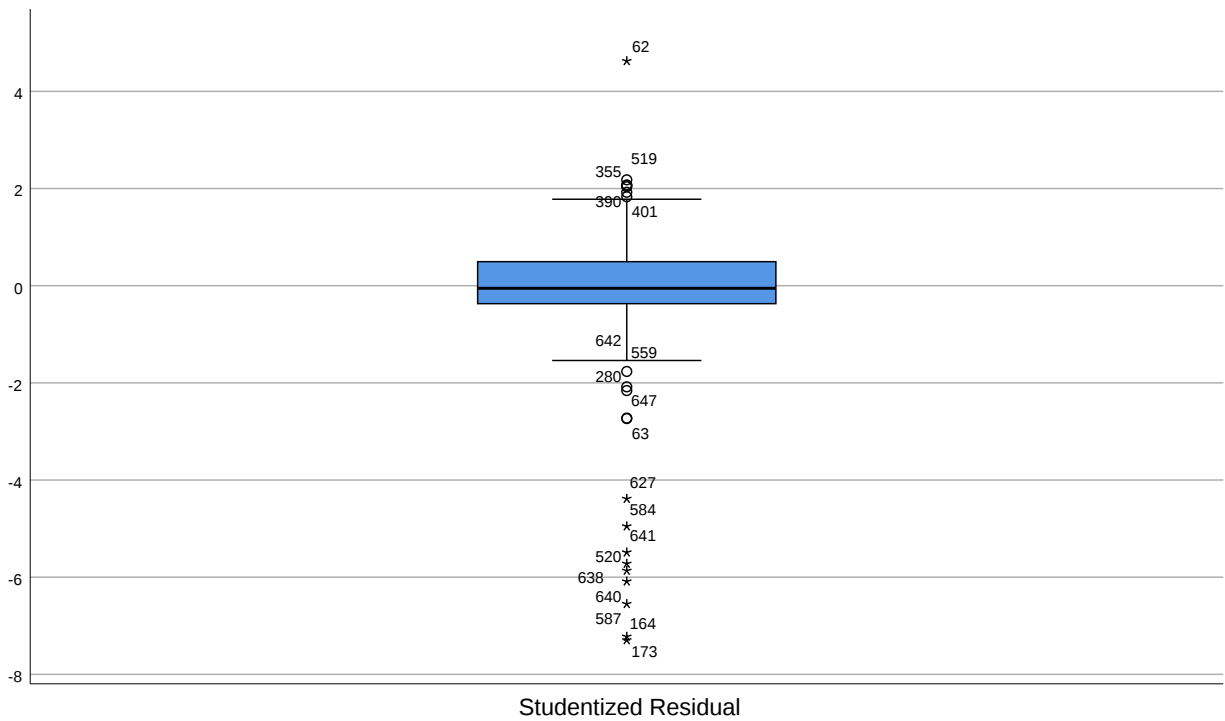
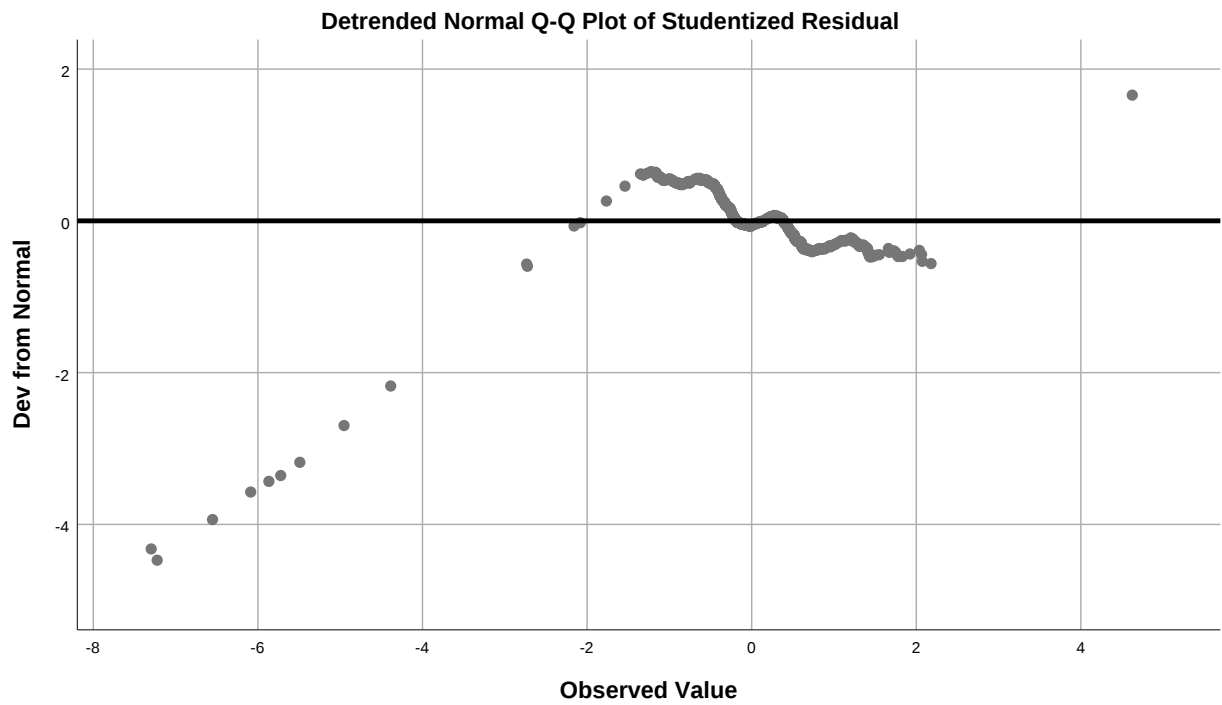
Regression in SPSS

Multiple regression diagnostics

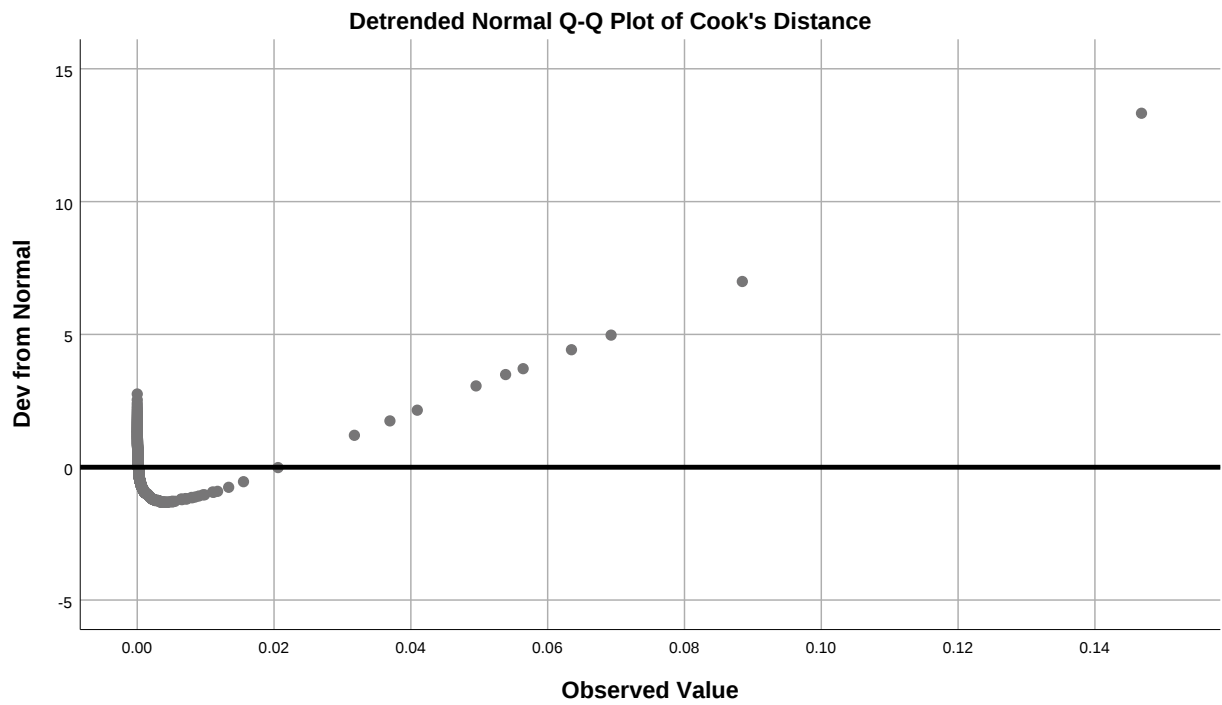
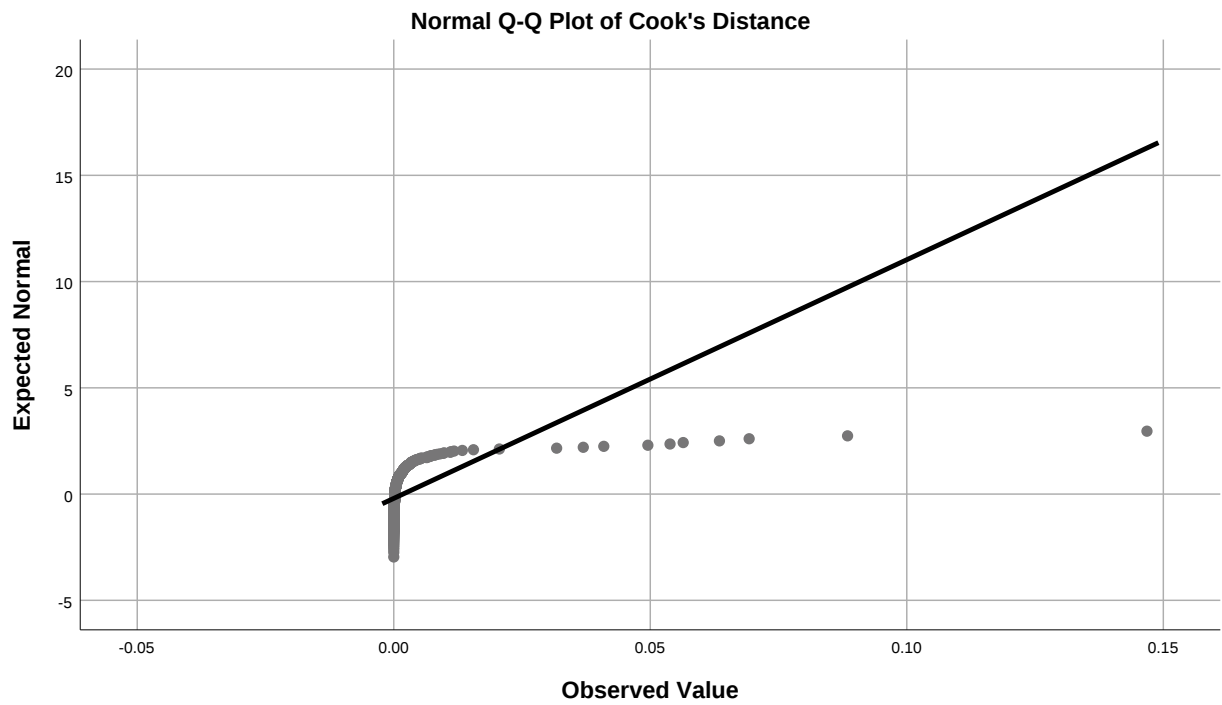


Regression in SPSS

Multiple regression diagnostics

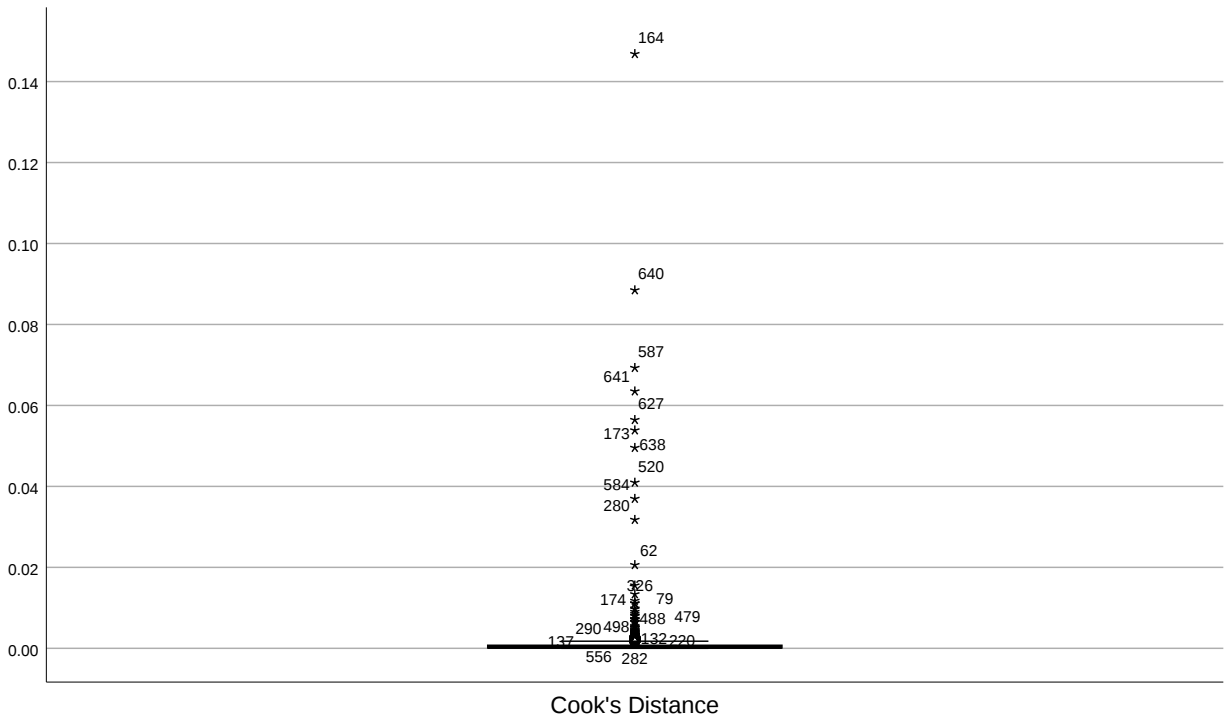


Regression in SPSS
Multiple regression diagnostics



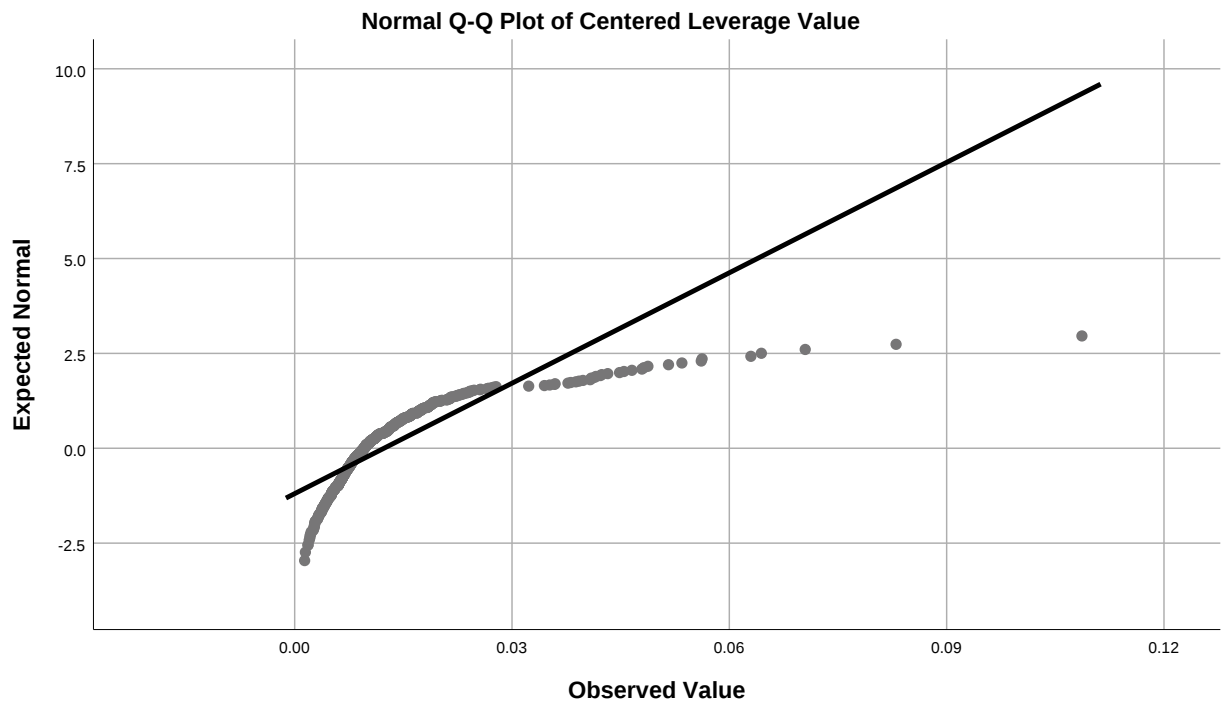
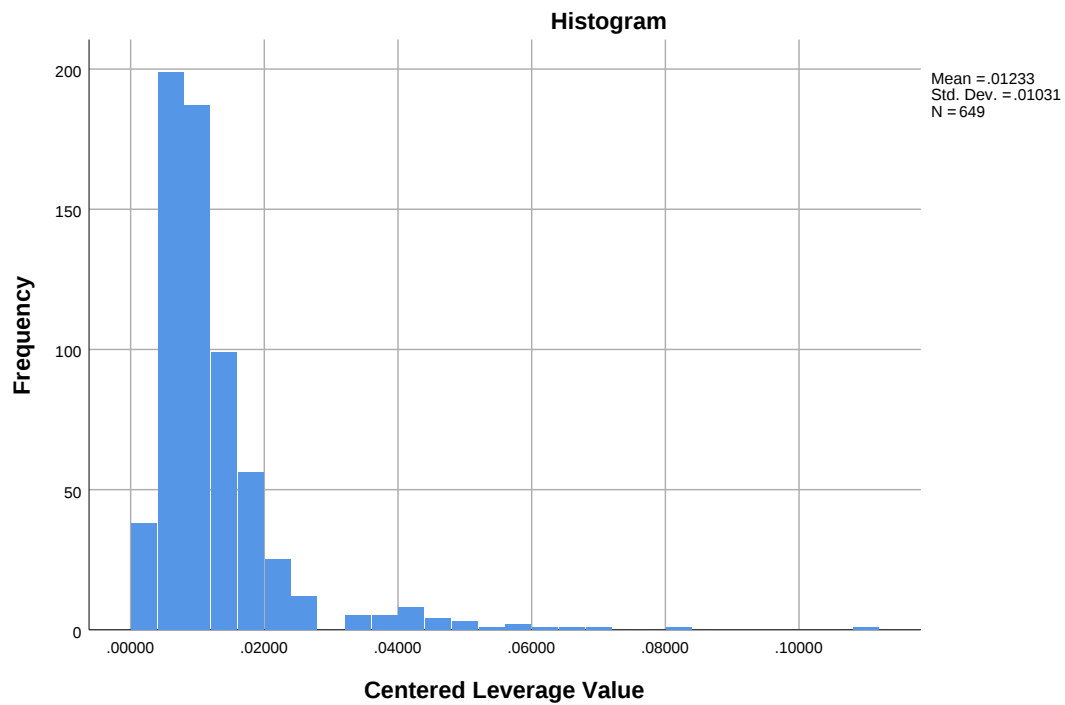
Regression in SPSS

Multiple regression diagnostics



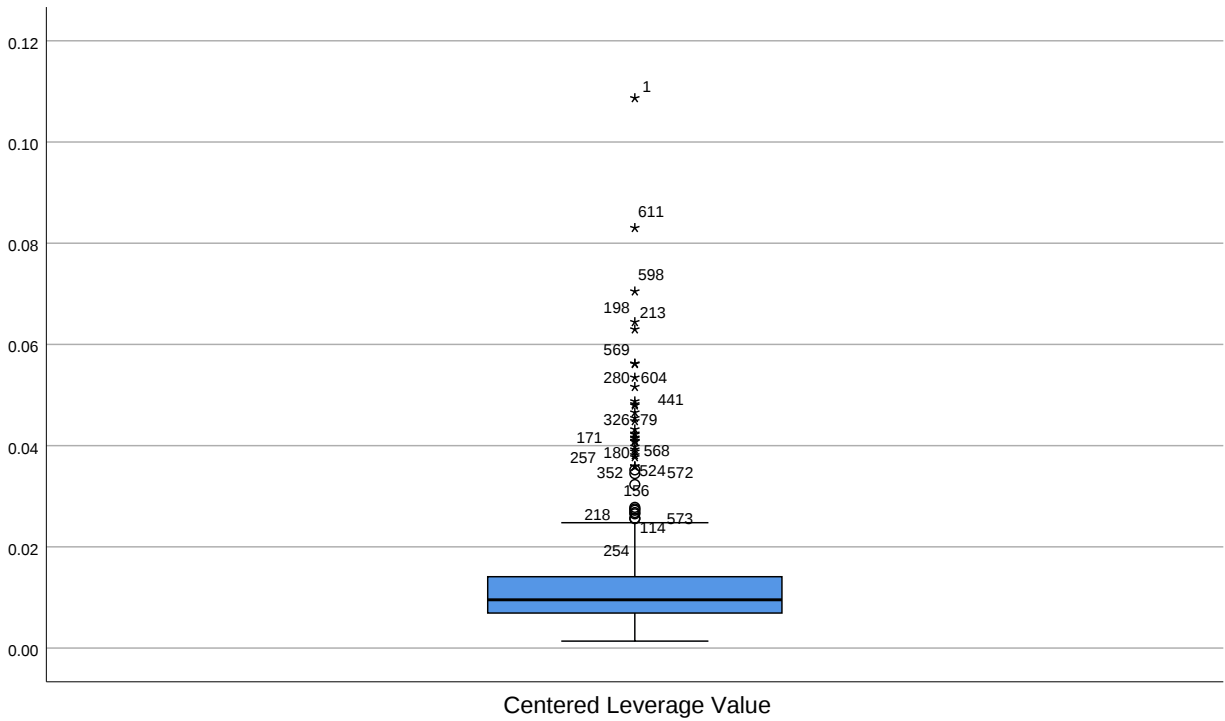
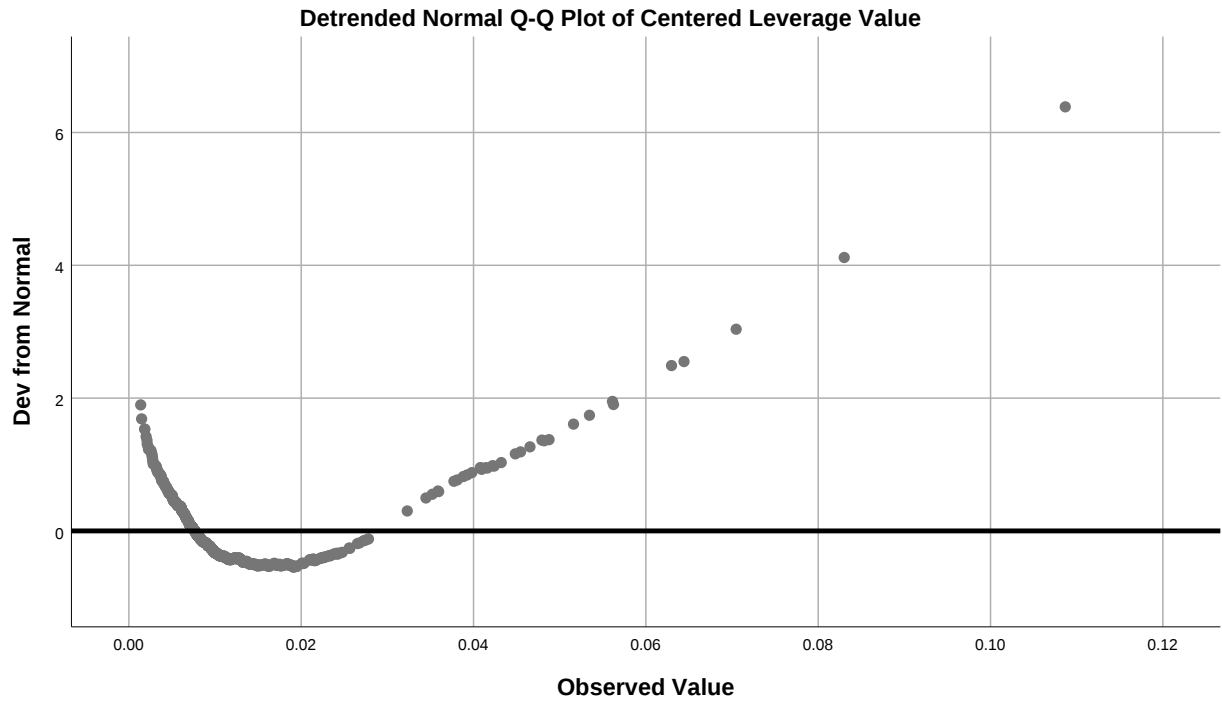
Centered Leverage Value

Regression in SPSS
Multiple regression diagnostics



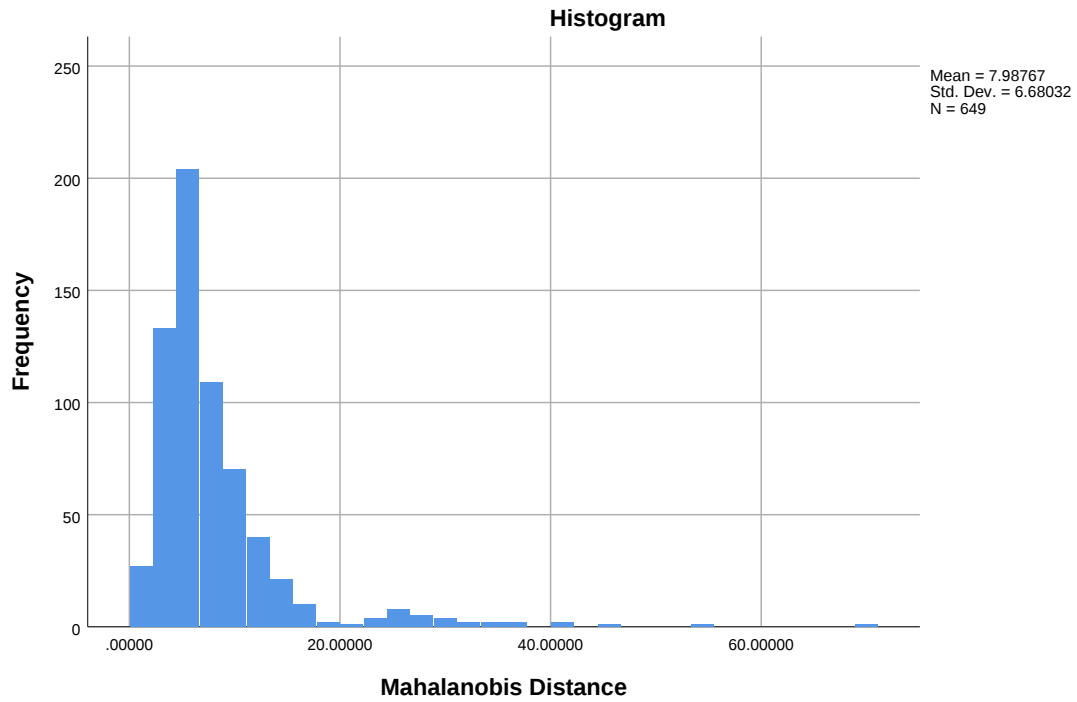
Regression in SPSS

Multiple regression diagnostics

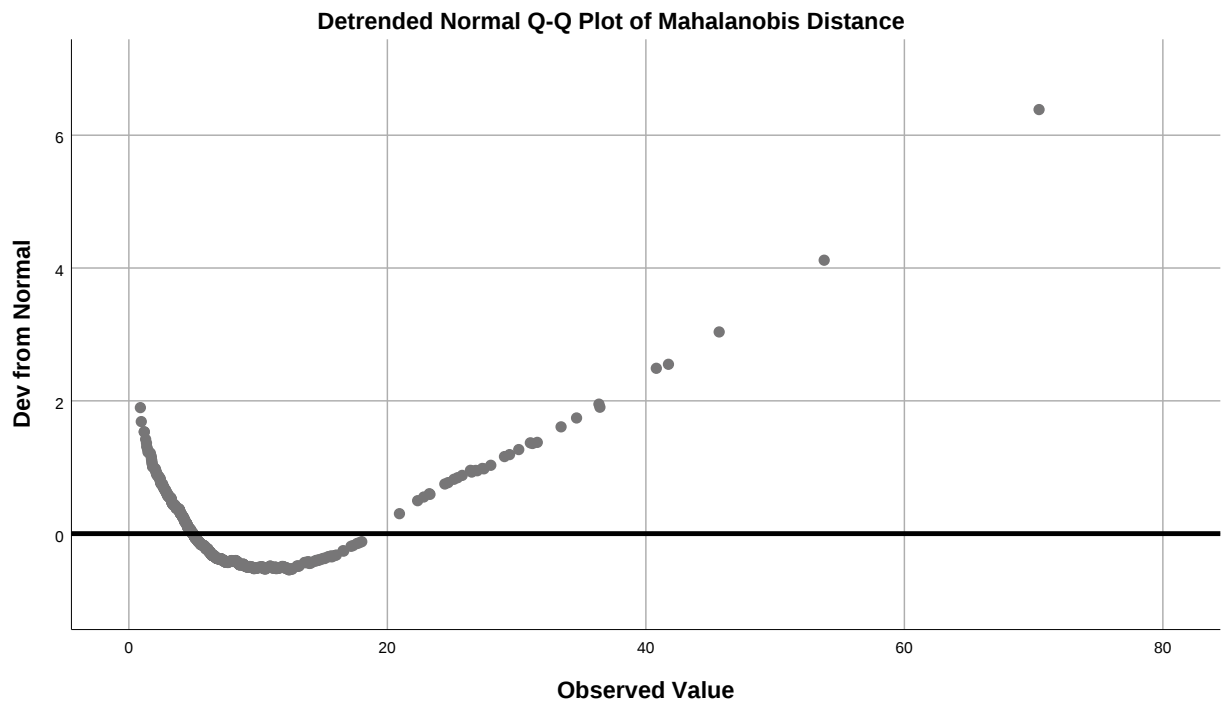
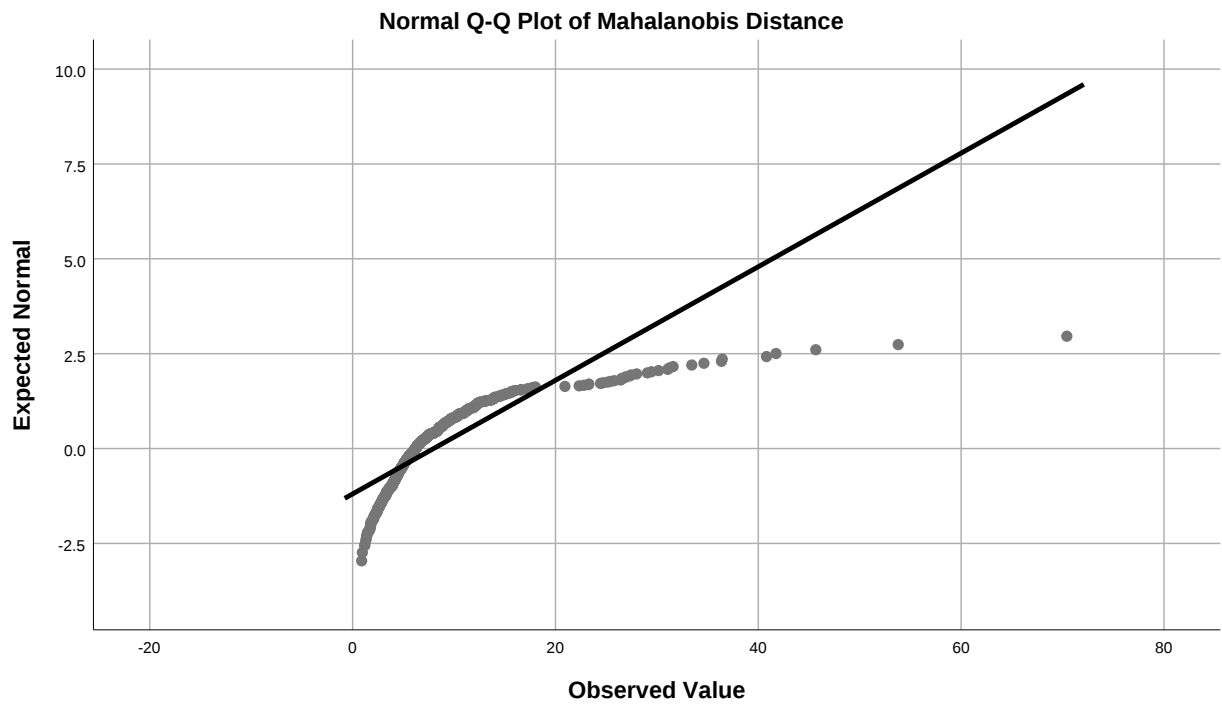


Regression in SPSS
Multiple regression diagnostics

Mahalanobis Distance

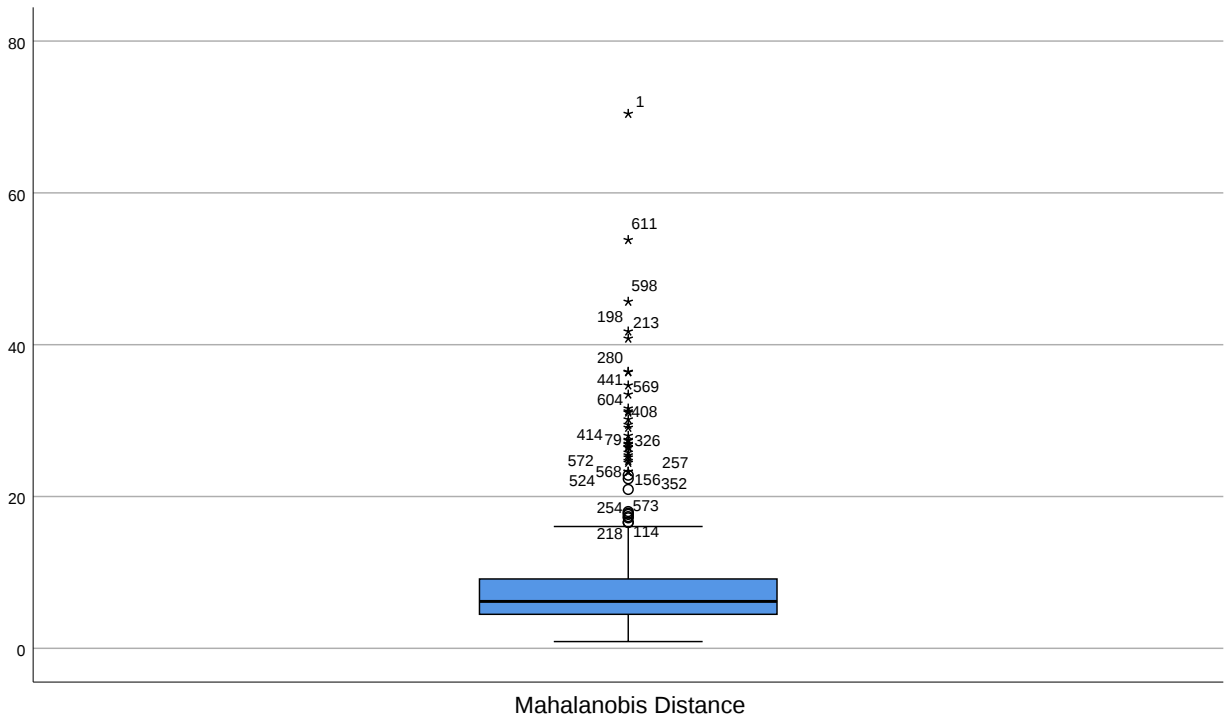


Regression in SPSS
Multiple regression diagnostics



Regression in SPSS

Multiple regression diagnostics



Frequencies

Regression in SPSS

Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:31
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES= high_leverage high_cooks large_std_residual_2 large_std_residual_3 /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.00

Statistics

		1 = leverage exceeds recommended threshold	1 = Cook distance exceeds recommended threshold	1 = absolute standardized residual exceeds 2	1 = absolute standardized residual exceeds 3
N	Valid	649	649	649	649
	Missing	0	0	0	0

Frequency Table

Regression in SPSS
Multiple regression diagnostics

1 = leverage exceeds recommended threshold

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	615	94.8	94.8	94.8
	Yes	34	5.2	5.2	100.0
	Total	649	100.0	100.0	

1 = Cook distance exceeds recommended threshold

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	621	95.7	95.7	95.7
	Yes	28	4.3	4.3	100.0
	Total	649	100.0	100.0	

1 = absolute standardized residual exceeds 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	631	97.2	97.2	97.2
	Yes	18	2.8	2.8	100.0
	Total	649	100.0	100.0	

1 = absolute standardized residual exceeds 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	639	98.5	98.5	98.5
	Yes	10	1.5	1.5	100.0
	Total	649	100.0	100.0	

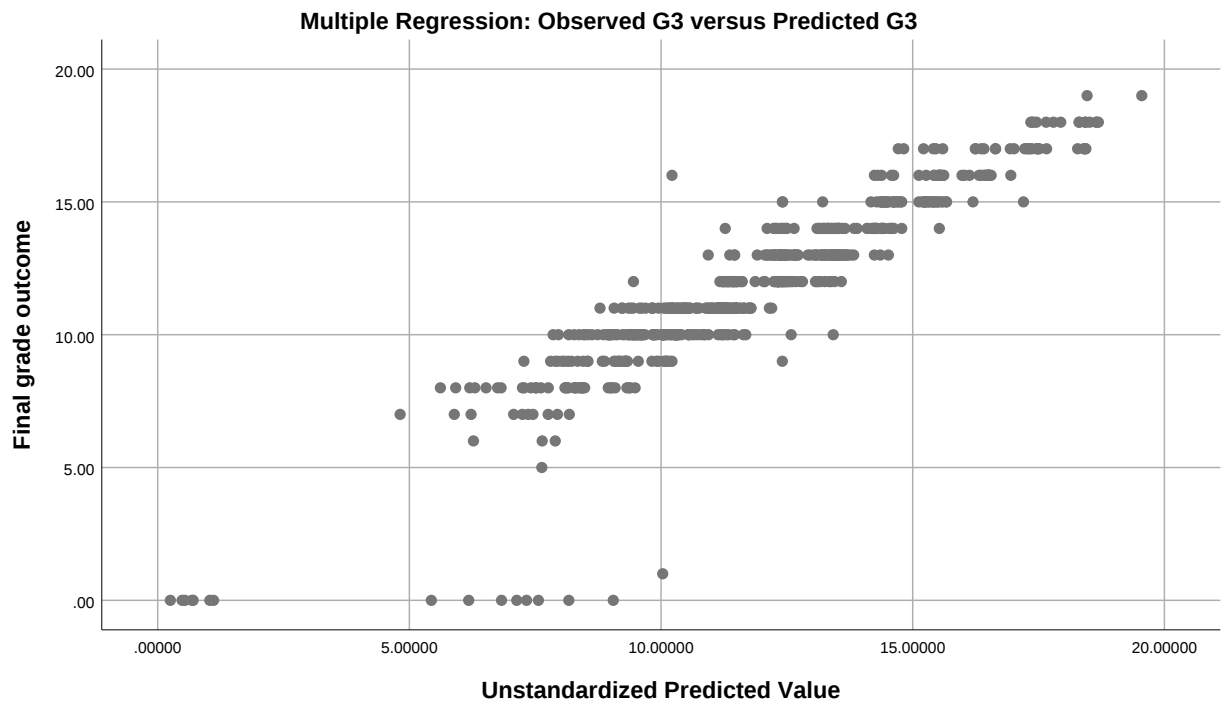
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:31
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =multi_pred WITH G3 /TITLE='Multiple Regression: Observed G3 versus Predicted G3'.
Resources	Processor Time	00:00:00.47
	Elapsed Time	00:00:00.46

Regression in SPSS
Multiple regression diagnostics



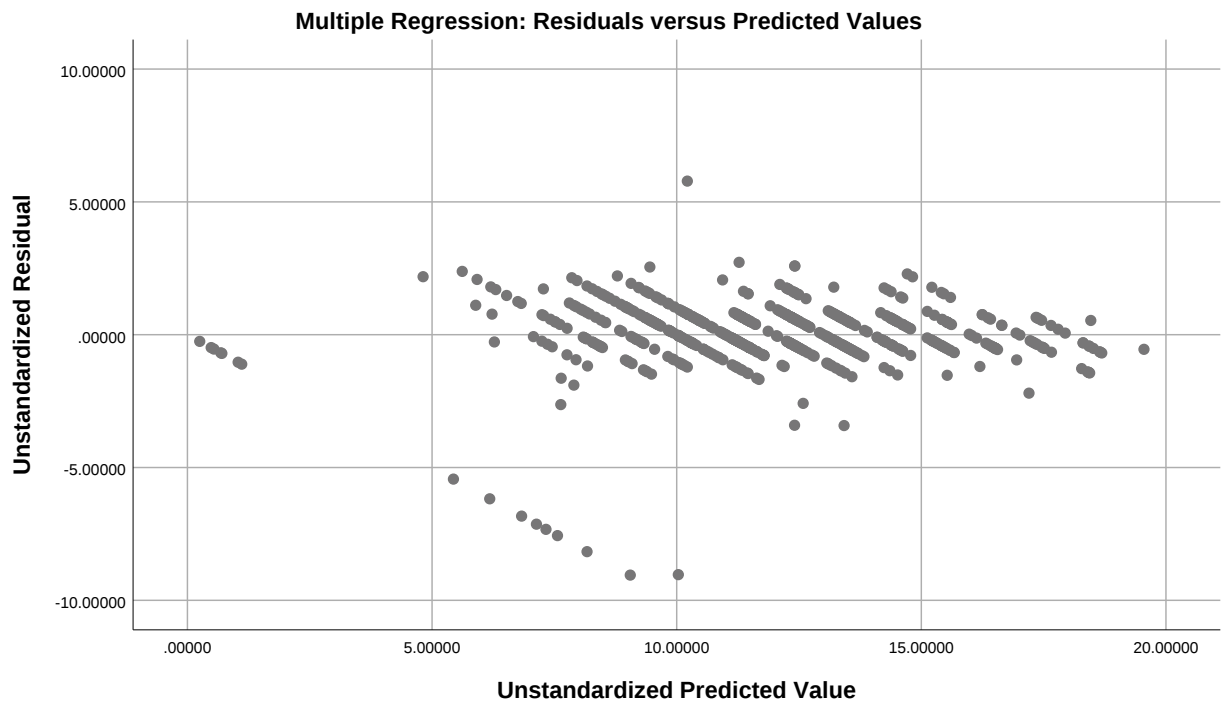
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:31
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =multi_pred WITH multi_resid /TITLE='Multiple Regression: Residuals versus Predicted Values'.
Resources	Processor Time	00:00:00.36
	Elapsed Time	00:00:00.35

Regression in SPSS
Multiple regression diagnostics



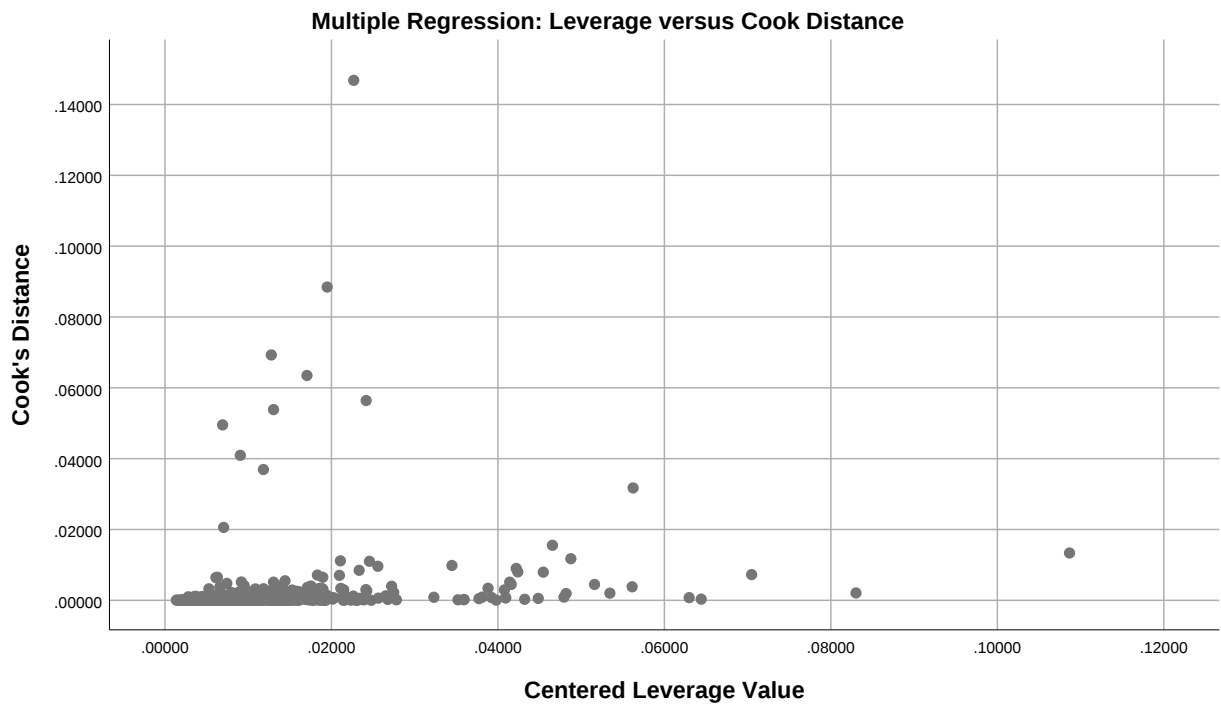
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:32
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =multi_lev WITH multi_cook /TITLE='Multiple Regression: Leverage versus Cook Distance'.
Resources	Processor Time	00:00:00.42
	Elapsed Time	00:00:00.34

Regression in SPSS
Multiple regression diagnostics



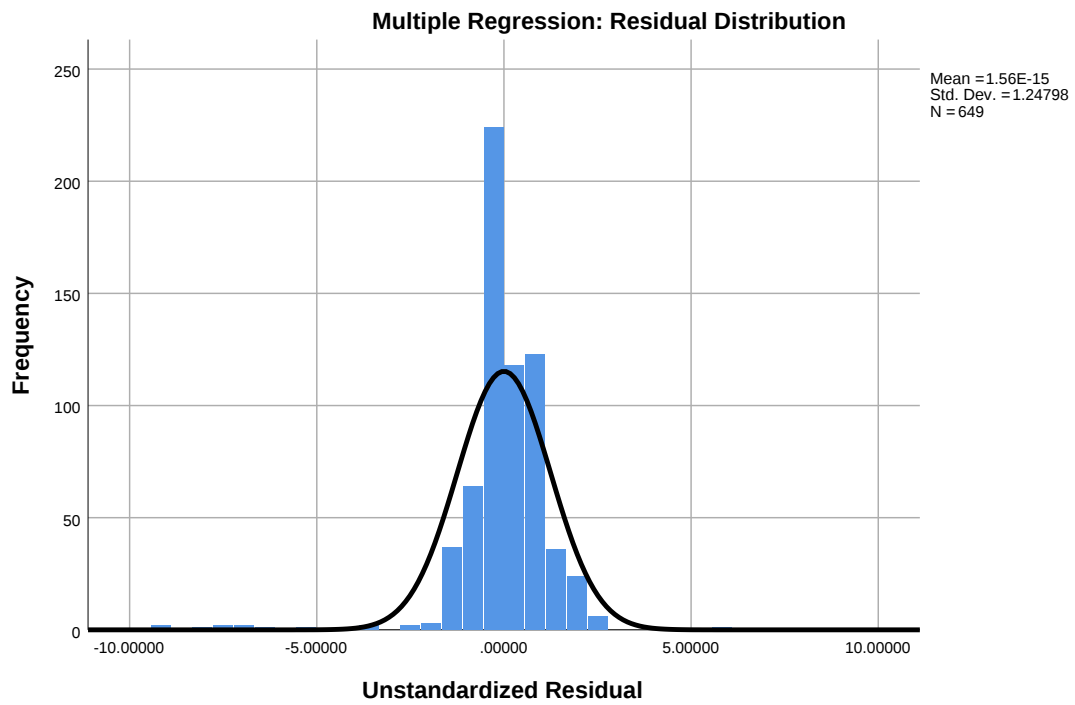
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:32
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =multi_resid /TITLE='Multiple Regression: Residual Distribution'.
Resources	Processor Time	00:00:00.33
	Elapsed Time	00:00:00.35

Regression in SPSS
Multiple regression diagnostics



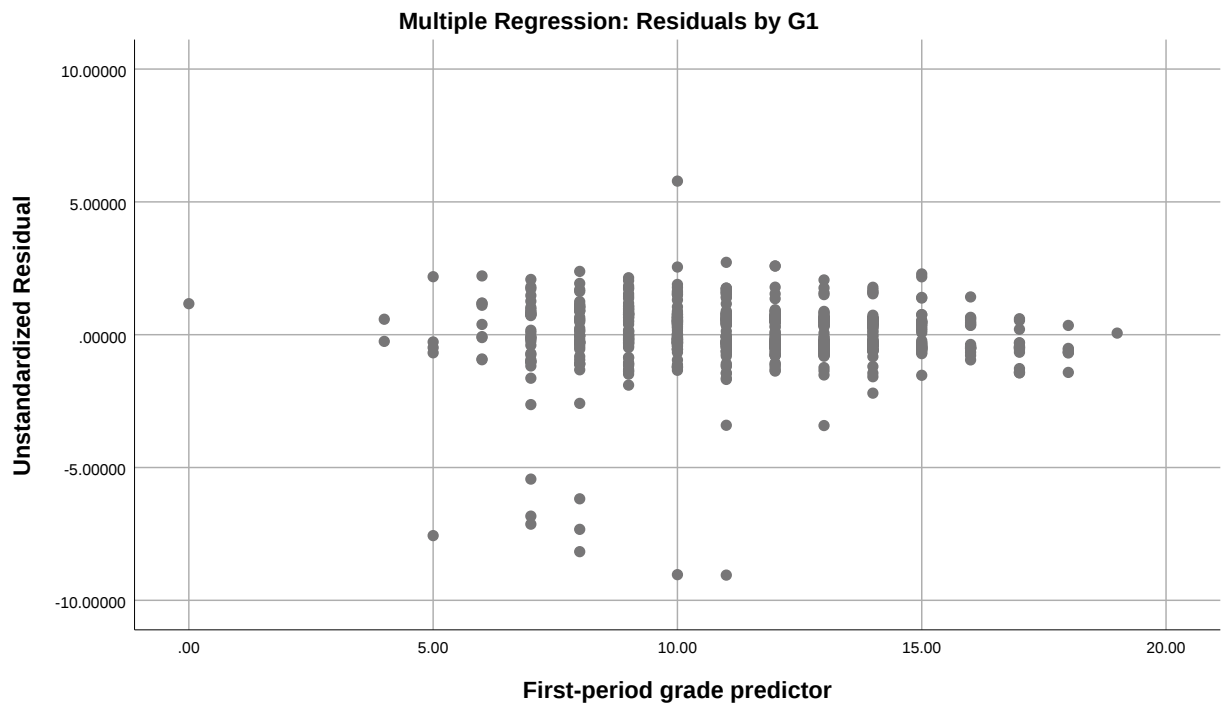
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:32
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =G1 WITH multi_resid /TITLE='Multiple Regression: Residuals by G1'.
Resources	Processor Time	00:00:00.36
	Elapsed Time	00:00:00.35

Regression in SPSS
Multiple regression diagnostics



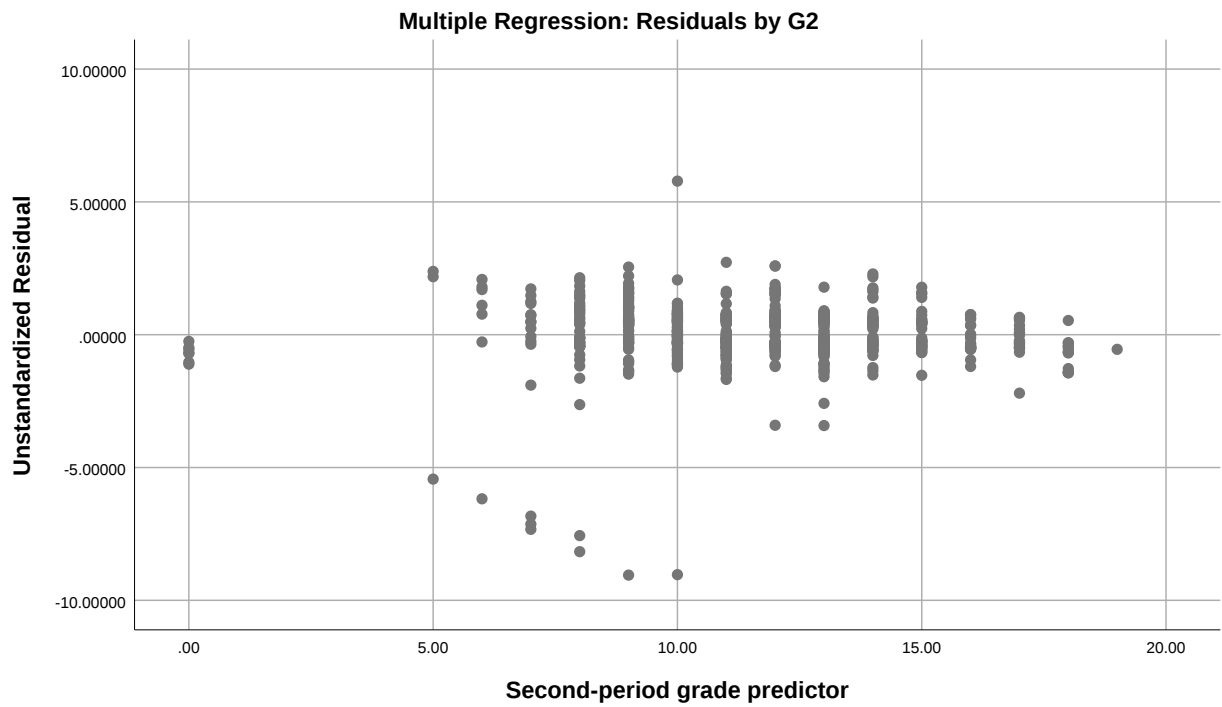
Graph

Regression in SPSS
Multiple regression diagnostics

Notes

Output Created		12-JUL-2026 18:26:33
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =G2 WITH multi_resid /TITLE='Multiple Regression: Residuals by G2'.
Resources	Processor Time	00:00:00.33
	Elapsed Time	00:00:00.32

Regression in SPSS
Multiple regression diagnostics



Regression in SPSS

Regression in SPSS

Simple and multiple regression prediction comparison

Descriptives

Notes

Output Created		12-JUL-2026 18:26:33
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES= G3 simple_pred multi_pred simple_resid multi_resid /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Regression in SPSS

Simple and multiple regression prediction comparison

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Final grade outcome	649	.00	19.00	11.9060	3.23066
Unstandardized Predicted Value	649	.12197	19.47328	11.9060092	2.96751284
Unstandardized Predicted Value	649	.25124	19.55068	11.9060092	2.97987928
Unstandardized Residual	649	-9.30687	5.69313	.0000000	1.27710896
Unstandardized Residual	649	-9.05080	5.78244	.0000000	1.24798207
Valid N (listwise)	649				

Correlations

Notes

Output Created		12-JUL-2026 18:26:33
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression in SPSS\SPSS_Output\sav\r egression_in_spss_analys is_data.sav
	Active Dataset	RegressionInSPSSData
	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.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=G3 simple_pred multi_pred /PRINT=TWOTAIL SIG /MISSING=PAIRWISE.

Regression in SPSS
Simple and multiple regression prediction comparison

Notes

Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.03

Correlations

		Final grade outcome	Unstandardized Predicted Value	Unstandardized Predicted Value
Final grade outcome	Pearson Correlation	1	.919	.922
	Sig. (2-tailed)		.000	.000
	N	649	649	649
Unstandardized Predicted Value	Pearson Correlation	.919	1	.996
	Sig. (2-tailed)	.000		.000
	N	649	649	649
Unstandardized Predicted Value	Pearson Correlation	.922	.996	1
	Sig. (2-tailed)	.000	.000	
	N	649	649	649