

Simple Linear Regression

Simple Linear Regression
Create output folders and clean old outputs

Host

Notes

Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=[cmd /c if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output"].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.12

Host

Simple Linear Regression

Create output folders and clean old outputs

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Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\sav" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\sav"'].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.10

Host

Simple Linear Regression

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Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\spv" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\spv"'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.08

Host

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Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\pdf" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\pdf"'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.09

Host

Simple Linear Regression

Create output folders and clean old outputs

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Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\sav*.sav" 2>nul'].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.10

Host

Simple Linear Regression

Create output folders and clean old outputs

Notes

Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\spv*.spv" 2>nul'].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.09

Host

Simple Linear Regression

Create output folders and clean old outputs

Notes

Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_residuals_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['cmd /c del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\SPSS_Output\pdf*.pdf" 2>nul'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.09

Simple Linear Regression

Simple Linear Regression
Import dataset.csv

Simple Linear Regression

Simple Linear Regression

Descriptive statistics and Pearson correlation

Descriptives

Notes

Output Created		12-JUL-2026 13:43:39
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	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 G2 /STATISTICS=MEAN STDDEV MIN MAX SKEWNESS KURTOSIS.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.04

[SimpleLinearRegressionData]

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
Final grade outcome	649	0	19	11.91	3.231	-.913
Second period grade predictor	649	0	19	11.57	2.914	-.360
Valid N (listwise)	649					

Simple Linear Regression
Descriptive statistics and Pearson correlation

Descriptive Statistics

	Skewness	Kurtosis	
	Std. Error	Statistic	Std. Error
Final grade outcome	.096	2.712	.192
Second period grade predictor	.096	1.662	.192
Valid N (listwise)			

Correlations

Notes

Output Created		12-JUL-2026 13:43:40
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	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 G2 /PRINT=TWOTAIL SIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.05

Simple Linear Regression
Descriptive statistics and Pearson correlation

Correlations

		Final grade outcome	Second period grade predictor
Final grade outcome	Pearson Correlation	1	.919
	Sig. (2-tailed)		.000
	N	649	649
Second period grade predictor	Pearson Correlation	.919	1
	Sig. (2-tailed)	.000	
	N	649	649

Simple Linear Regression

Simple Linear Regression
Primary simple linear regression model

Regression

Notes

Output Created		12-JUL-2026 13:43:40
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	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 CI(95) ZPP /CRITERIA=PIN(.05) POUT(.10) TOLERANCE(. 0001) /NOORIGIN /DEPENDENT G3 /METHOD=ENTER G2 /SAVE PRED(slr_pred) RESID(slr_resid) ZPRED (slr_zpred) ZRESID (slr_zresid) SRESID (slr_sresid) COOK (slr_cook) LEVER(slr_lev).
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.11

Simple Linear Regression
Primary simple linear regression model

Notes

	Memory Required	4480 bytes
	Additional Memory Required for Residual Plots	0 bytes
Variables Created or Modified	slr_pred	Unstandardized Predicted Value
	slr_resid	Unstandardized Residual
	slr_zpred	Standardized Predicted Value
	slr_zresid	Standardized Residual
	slr_sresid	Studentized Residual
	slr_cook	Cook's Distance
	slr_lev	Centered Leverage Value

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
1	.919 ^a	.844	.843	1.278

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

b. Dependent Variable: Final grade outcome

Simple Linear Regression
Primary simple linear regression model

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

Simple Linear Regression
Primary simple linear regression model

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.12	19.47	11.91	2.968	649
Std. Predicted Value	-3.971	2.550	.000	1.000	649
Standard Error of Predicted Value	.051	.206	.067	.023	649
Adjusted Predicted Value	.13	19.48	11.91	2.968	649
Residual	-9.307	5.693	.000	1.277	649
Std. Residual	-7.282	4.454	.000	.999	649
Stud. Residual	-7.289	4.459	.000	1.001	649
Deleted Residual	-9.325	5.704	.000	1.282	649
Stud. Deleted Residual	-7.602	4.525	-.003	1.018	649
Mahal. Distance	.022	15.769	.998	1.907	649
Cook's Distance	.000	.087	.002	.009	649
Centered Leverage Value	.000	.024	.002	.003	649

a. Dependent Variable: Final grade outcome

Simple Linear Regression

Simple Linear Regression
Saved values and residual diagnostics

Descriptives

Notes

Output Created		12-JUL-2026 13:43:40
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	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=slr_pred slr_resid slr_zpred slr_zresid slr_sresid slr_cook slr_lev /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.08

Simple Linear Regression

Saved values and residual 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
Studentized Residual	649	-7.28908	4.45882	-.0001121	1.00104784
Cook's Distance	649	.00005	.08683	.0018259	.00946142
Centered Leverage Value	649	.00003	.02433	.0015408	.00294217
Valid N (listwise)	649				

Explore

Notes

Output Created		12-JUL-2026 13:43:40
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	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.

Simple Linear Regression
Saved values and residual diagnostics

Notes

Syntax		EXAMINE VARIABLES=slr_resid slr_zresid slr_sresid /PLOT BOXPLOT HISTOGRAM NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES EXTREME /INTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:03.80
	Elapsed Time	00:00:03.12

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%
Studentized Residual	649	100.0%	0	0.0%	649	100.0%

Simple Linear Regression
Saved values and residual 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
Studentized Residual	Mean		-.0001121	.03929456
	95% Confidence Interval for Mean	Lower Bound	-.0772722	
		Upper Bound	.0770479	
	5% Trimmed Mean		.0591506	
	Median		-.2259419	
	Variance		1.002	

Simple Linear Regression
Saved values and residual diagnostics

Descriptives

	Statistic	Std. Error
Std. Deviation	1.00104784	
Minimum	-7.28908	
Maximum	4.45882	
Range	11.74790	
Interquartile Range	.81204	
Skewness	-2.950	.096
Kurtosis	18.948	.192

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

Simple Linear Regression

Saved values and residual diagnostics

Extreme Values

			Case Number	Value
Studentized Residual	Highest	1	62	4.45882
		2	519	2.18978
		3	390	2.12452
		4	459	2.10924
		5	308	2.09435
	Lowest	1	173	-7.28908
		2	164	-7.27734
		3	640	-6.48299
		4	587	-6.48299
		5	641	-5.68880 ^c

- 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.
- c. Only a partial list of cases with the value -5.68880 are shown in the table of lower extremes.

Tests of Normality

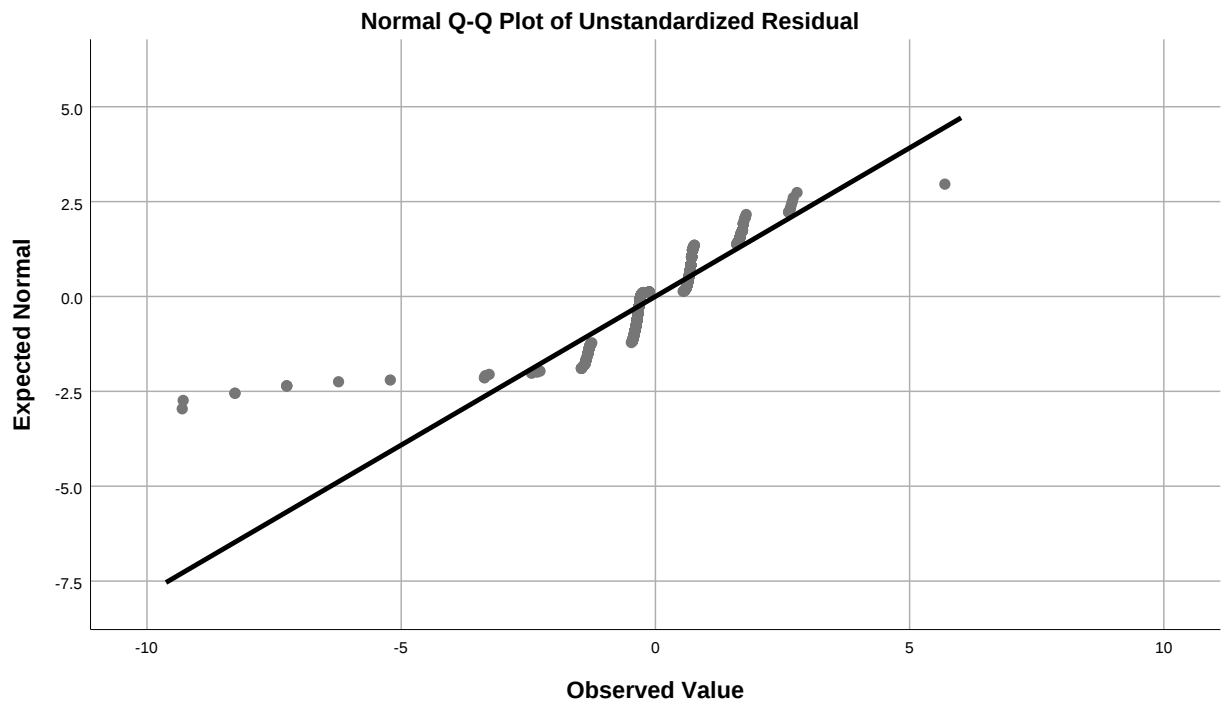
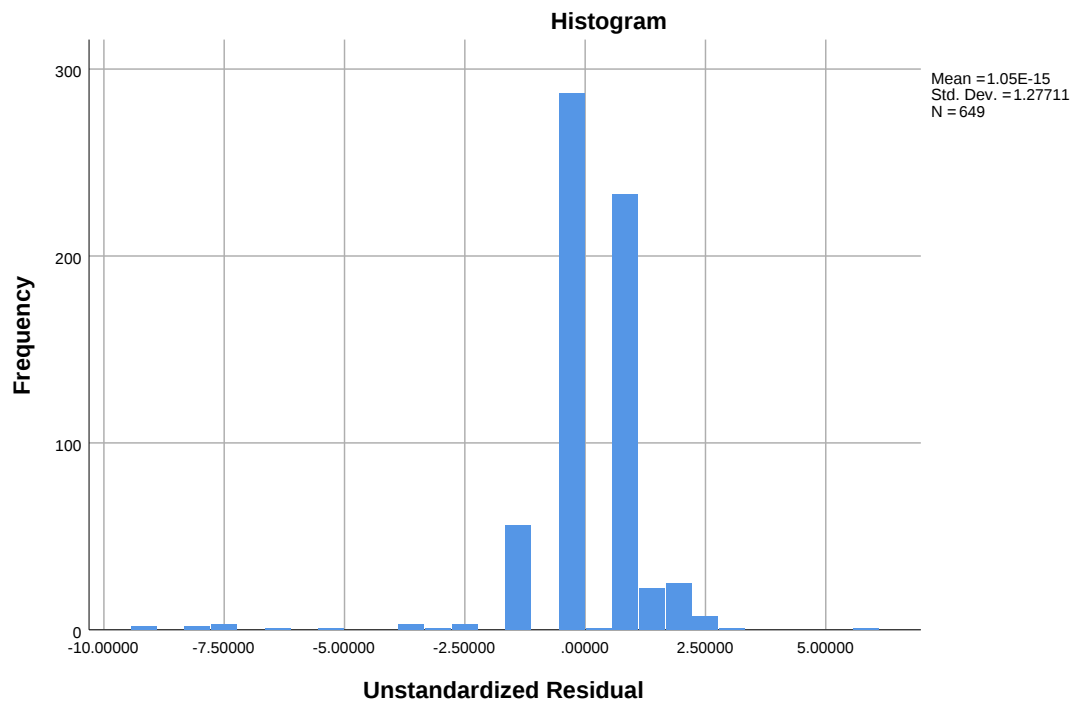
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.248	649	.000	.711	649	.000
Standardized Residual	.248	649	.000	.711	649	.000
Studentized Residual	.248	649	.000	.711	649	.000

- a. Lilliefors Significance Correction

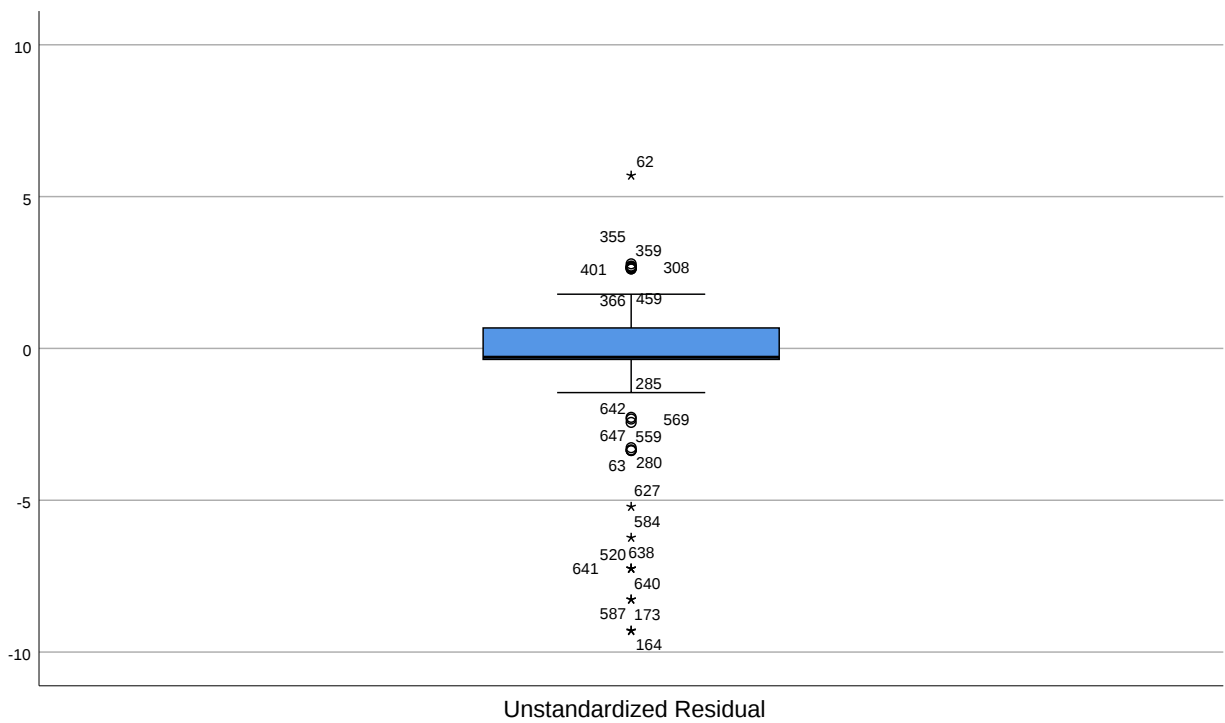
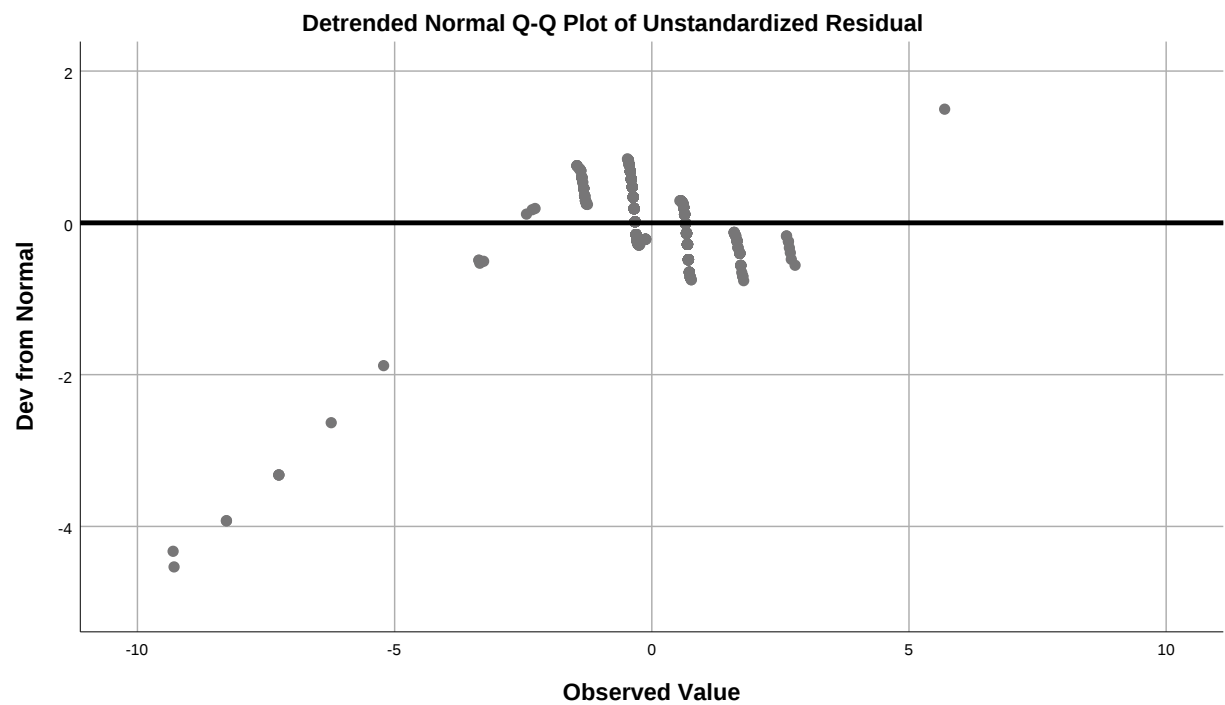
Unstandardized Residual

Simple Linear Regression

Saved values and residual diagnostics

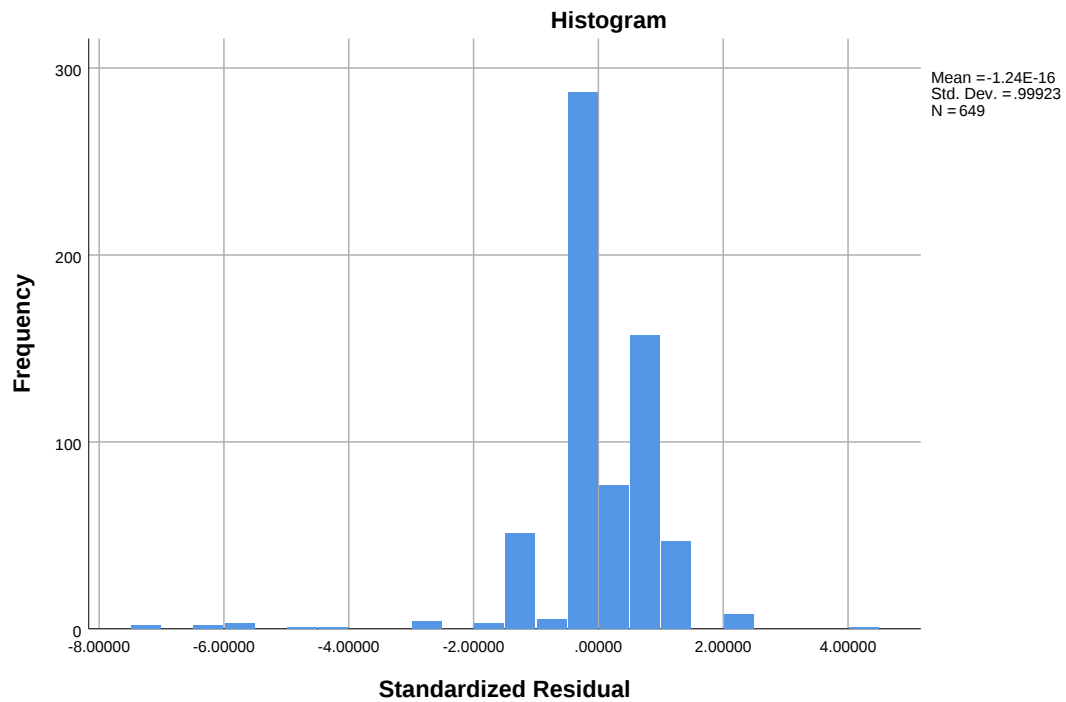


Simple Linear Regression
Saved values and residual diagnostics

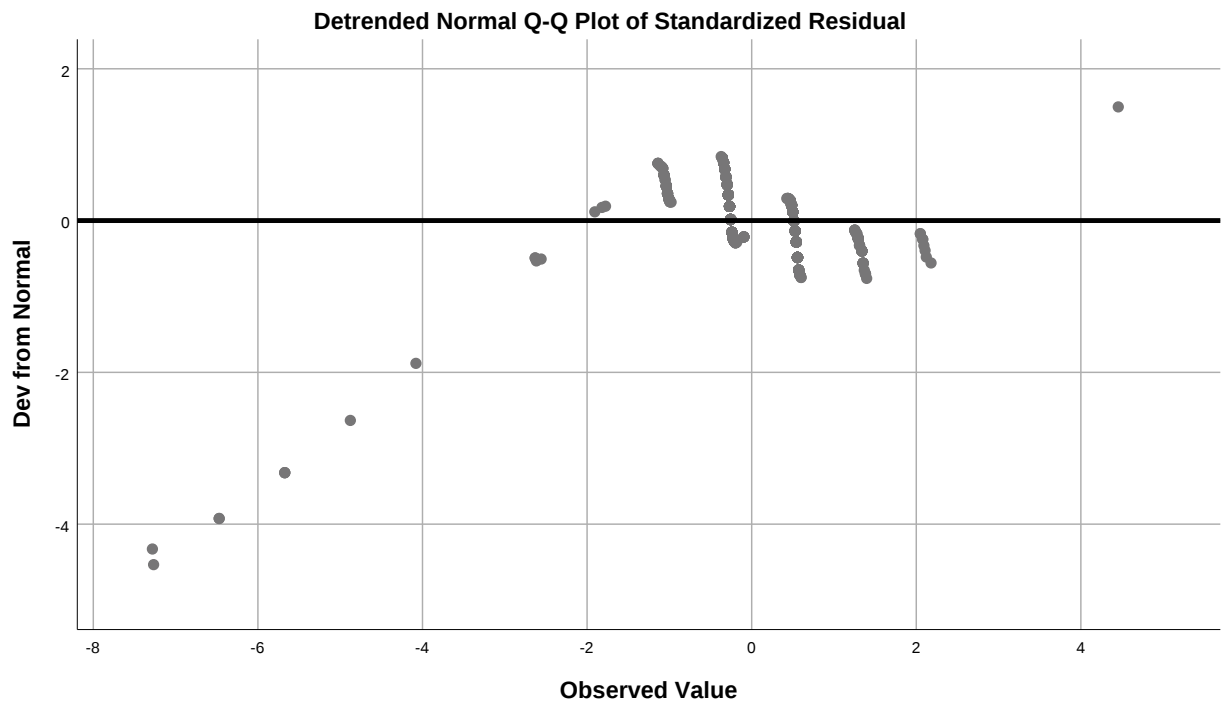
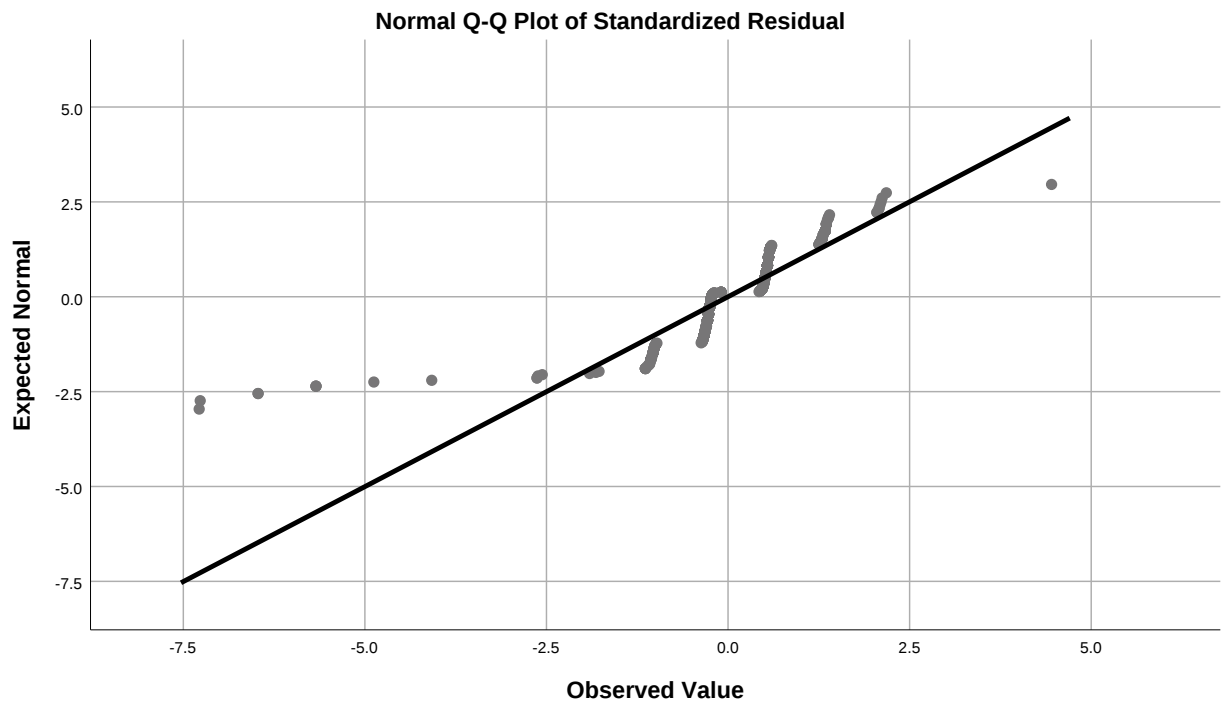


Simple Linear Regression
Saved values and residual diagnostics

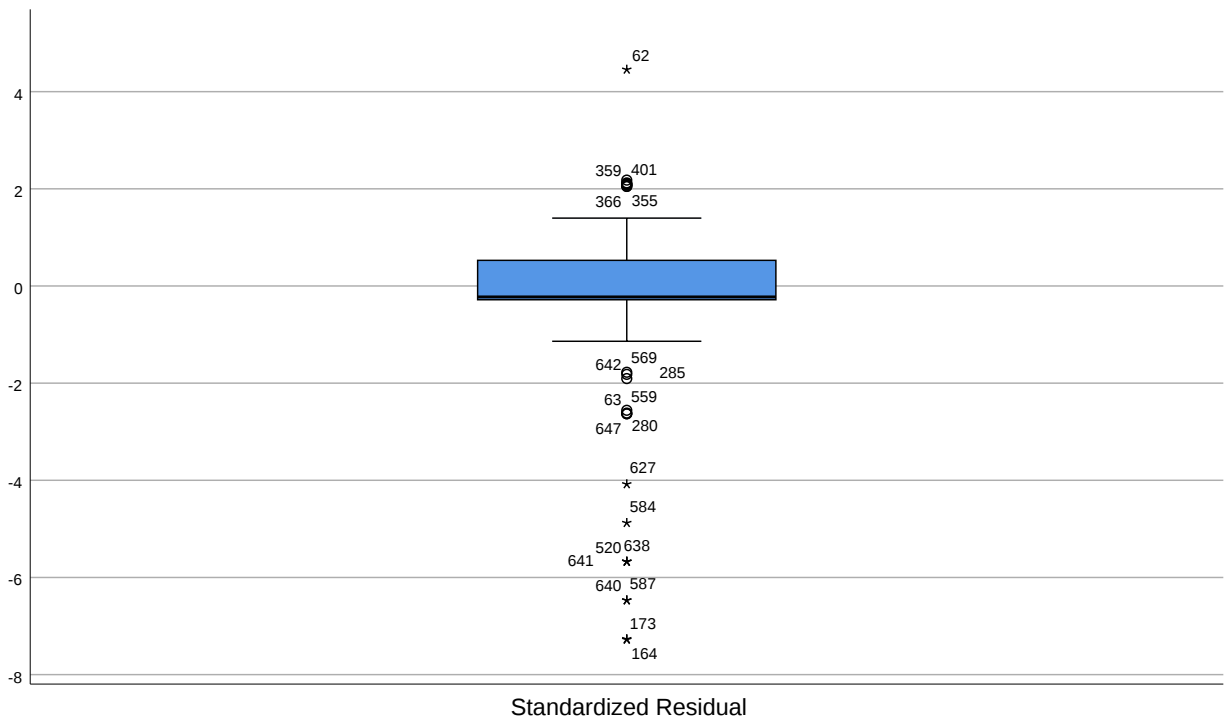
Standardized Residual



Simple Linear Regression
Saved values and residual diagnostics



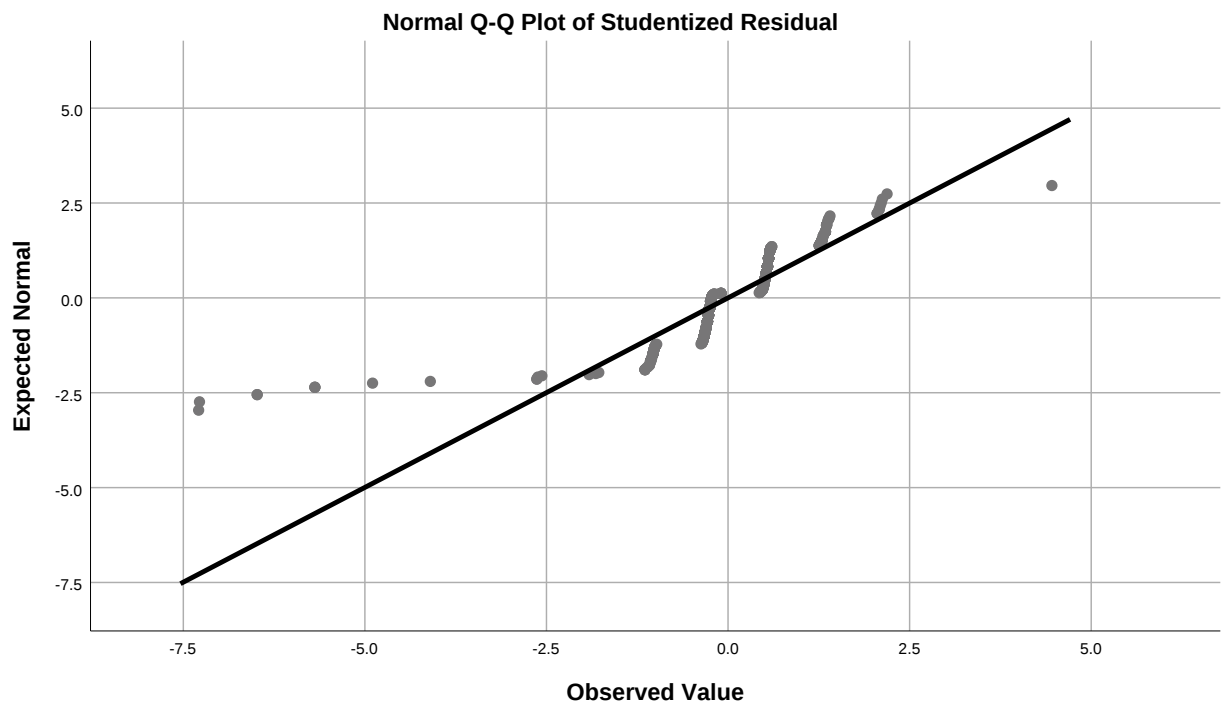
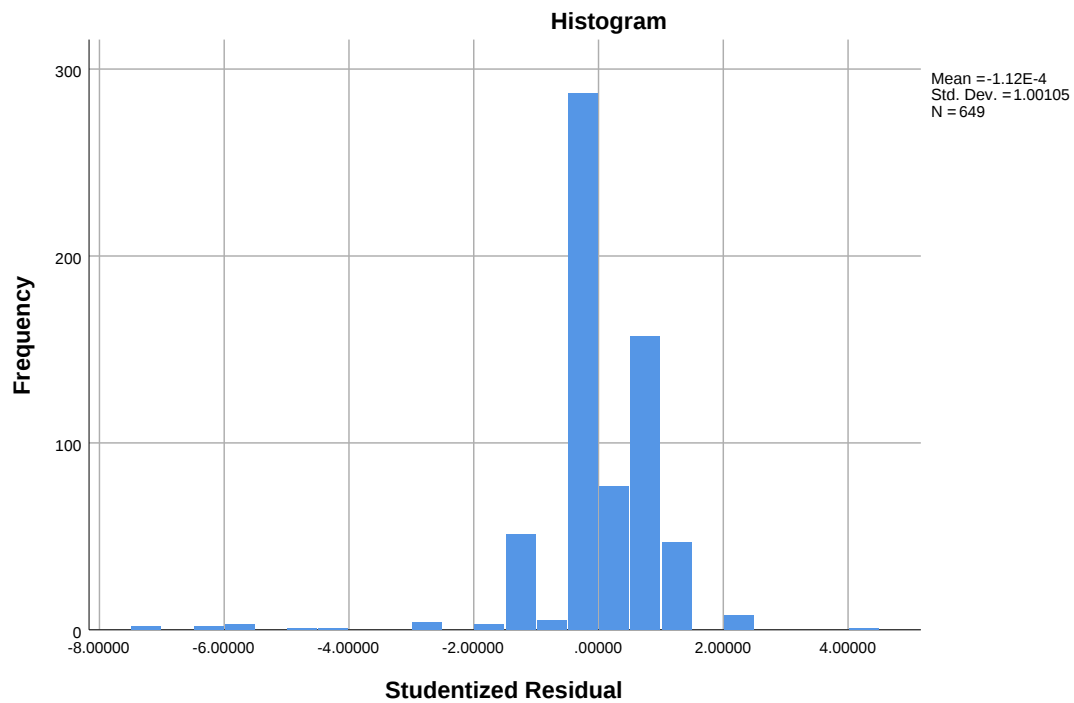
Simple Linear Regression Saved values and residual diagnostics



Studentized Residual

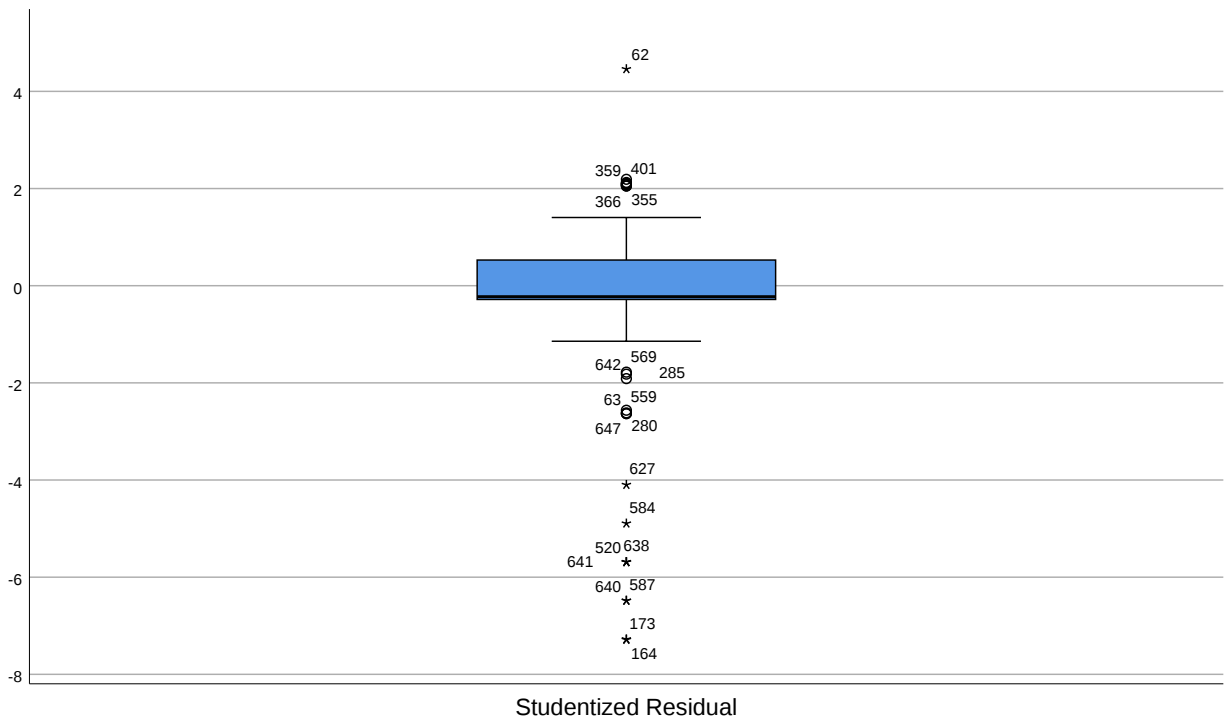
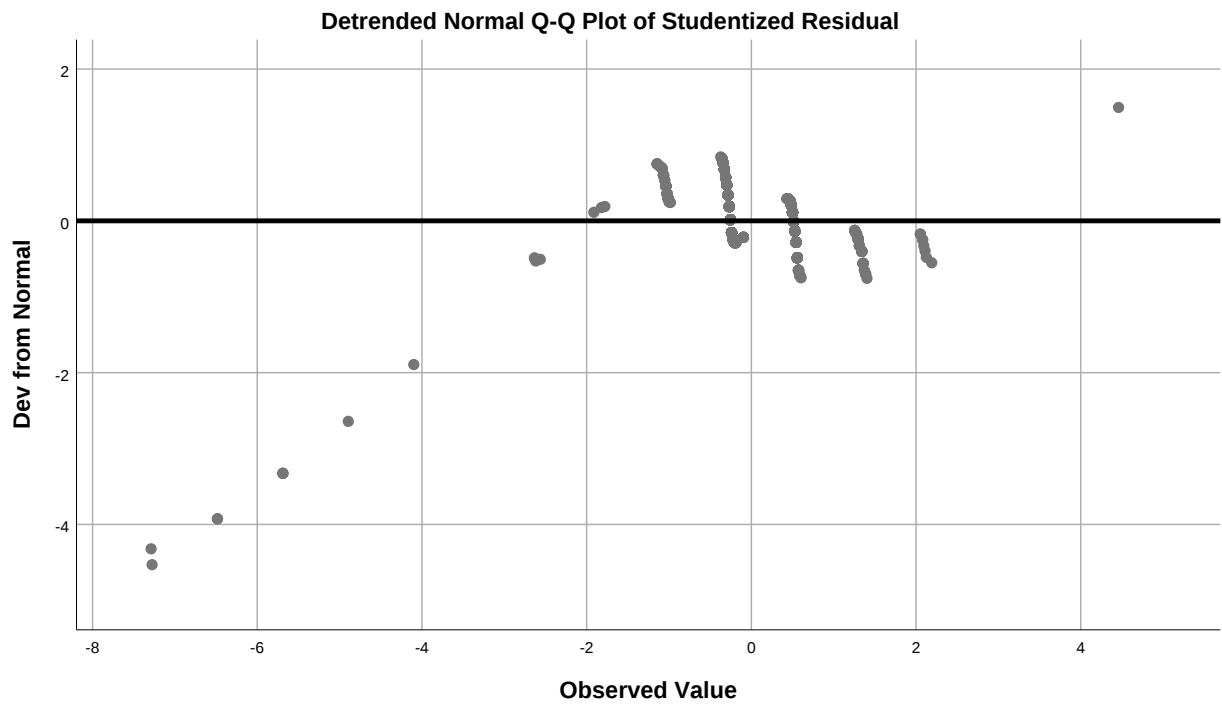
Simple Linear Regression

Saved values and residual diagnostics



Simple Linear Regression

Saved values and residual diagnostics



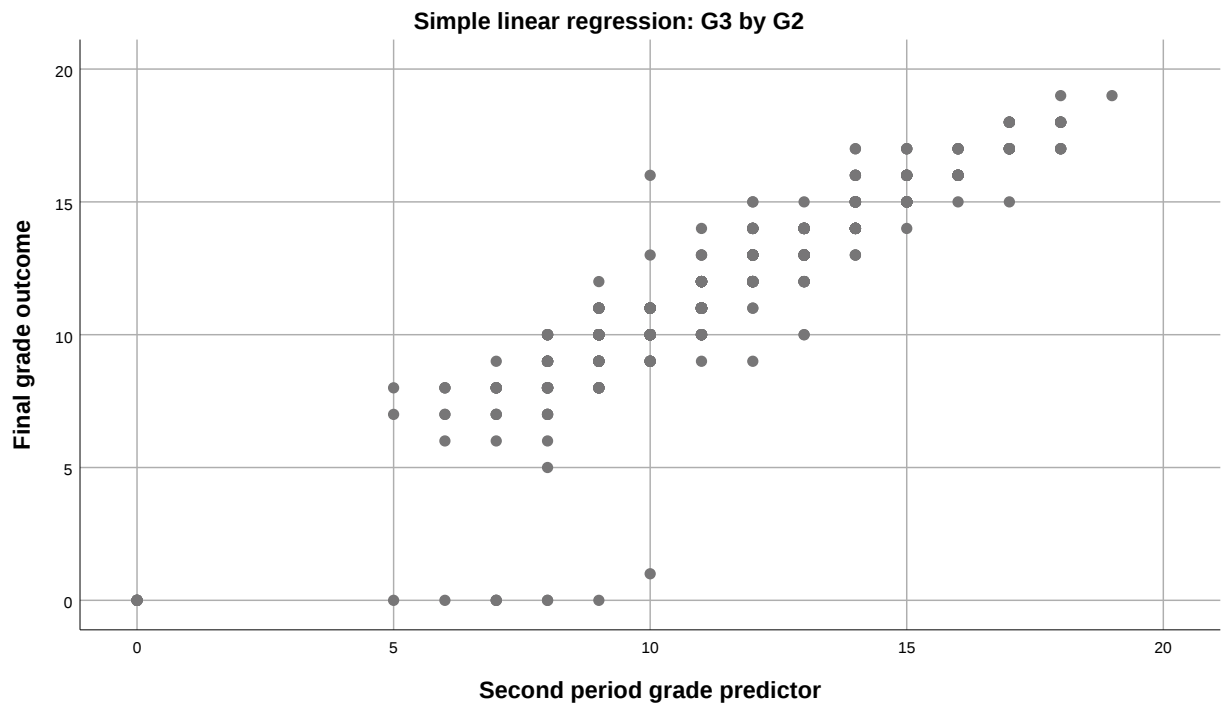
Simple Linear Regression
Saved values and residual diagnostics

Graph

Notes

Output Created		12-JUL-2026 13:43:43
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =G2 WITH G3 /TITLE='Simple linear regression: G3 by G2'.
Resources	Processor Time	00:00:00.56
	Elapsed Time	00:00:00.34

Simple Linear Regression
Saved values and residual diagnostics



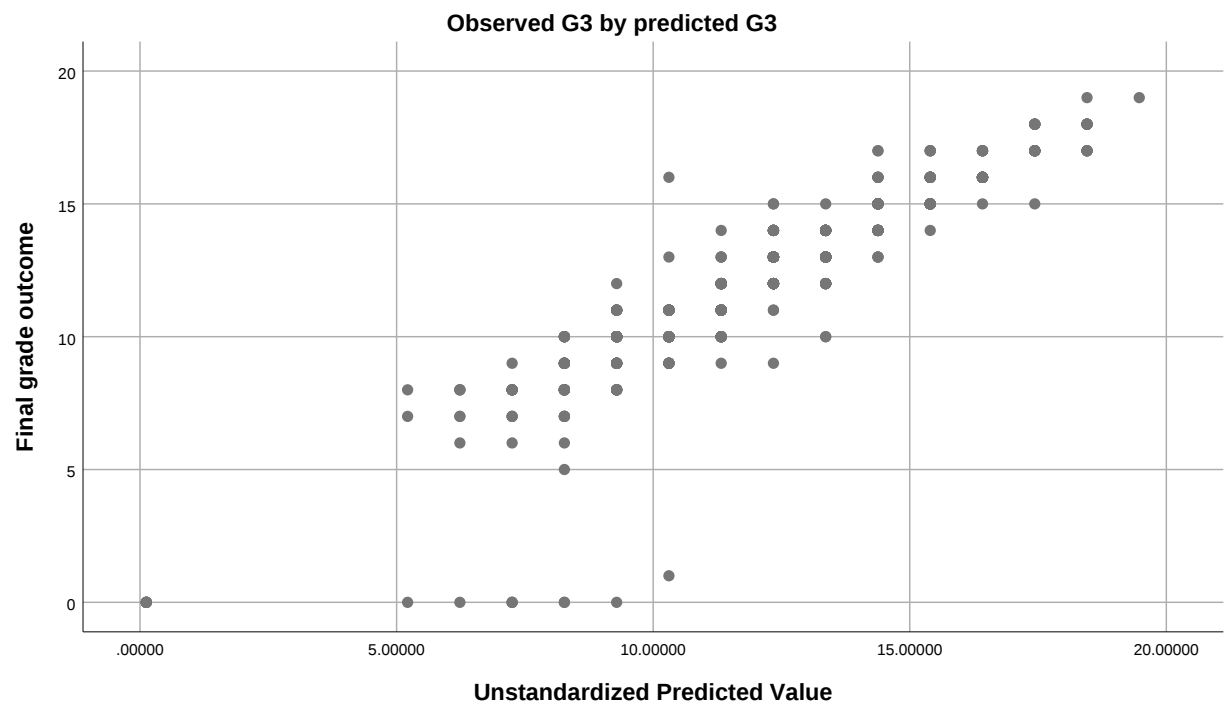
Graph

Simple Linear Regression
Saved values and residual diagnostics

Notes

Output Created		12-JUL-2026 13:43:43
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =slr_pred WITH G3 /TITLE='Observed G3 by predicted G3'.
Resources	Processor Time	00:00:00.42
	Elapsed Time	00:00:00.31

Simple Linear Regression
Saved values and residual diagnostics



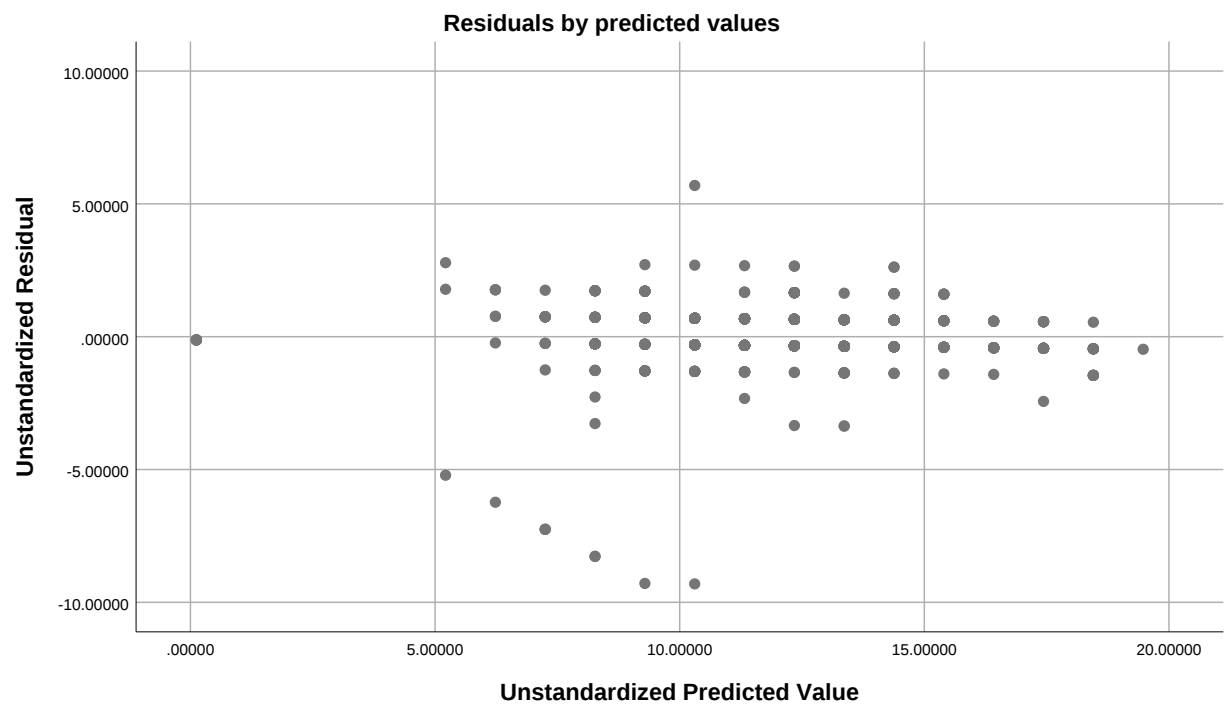
Graph

Simple Linear Regression
Saved values and residual diagnostics

Notes

Output Created		12-JUL-2026 13:43:44
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =slr_pred WITH slr_resid /TITLE='Residuals by predicted values'.
Resources	Processor Time	00:00:00.34
	Elapsed Time	00:00:00.32

Simple Linear Regression
Saved values and residual diagnostics



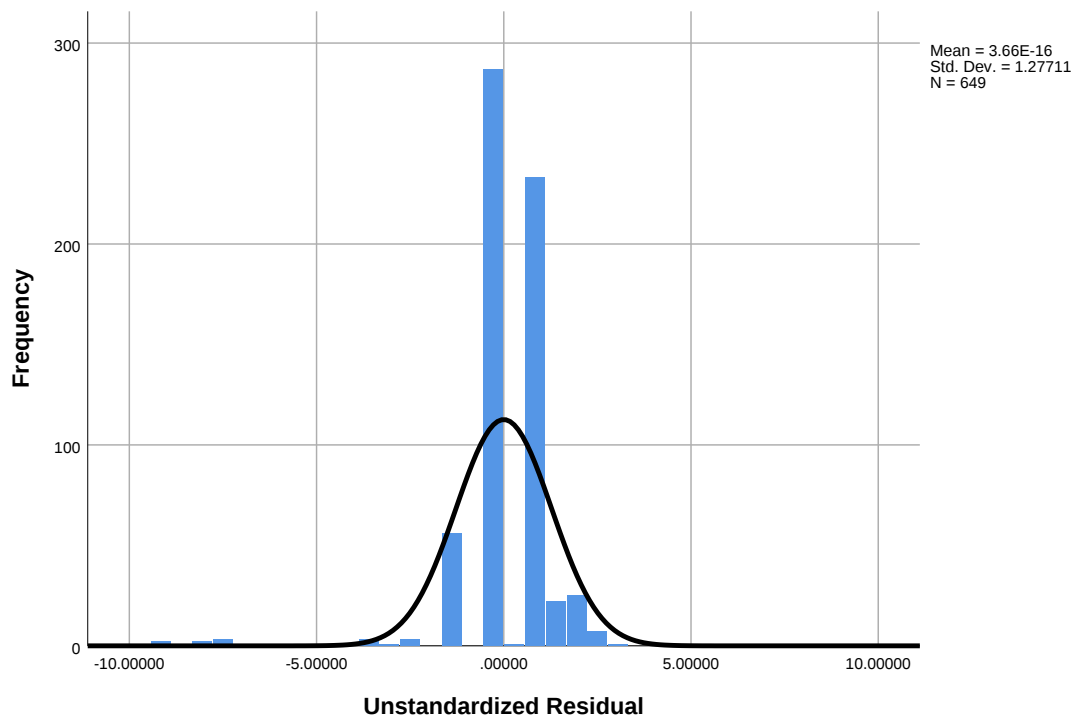
Graph

Simple Linear Regression

Saved values and residual diagnostics

Notes

Output Created		12-JUL-2026 13:43:44
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =slr_resid.
Resources	Processor Time	00:00:00.27
	Elapsed Time	00:00:00.27



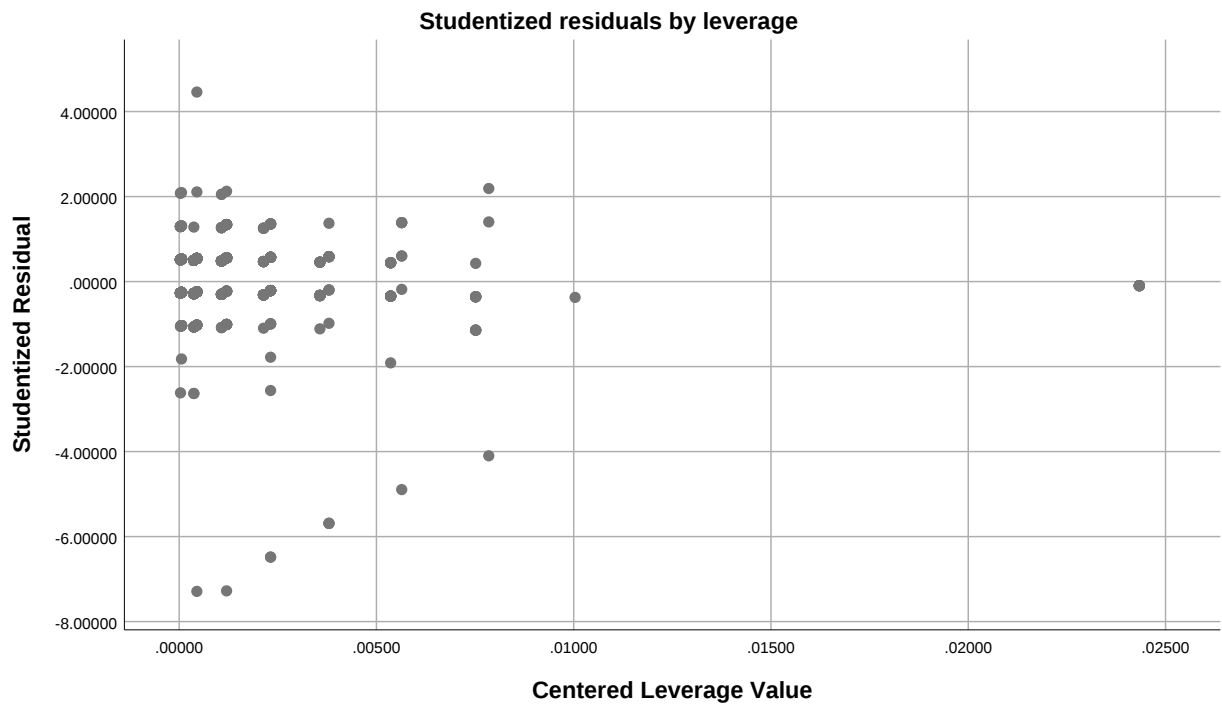
Simple Linear Regression
Saved values and residual diagnostics

Graph

Notes

Output Created		12-JUL-2026 13:43:44
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Simple Linear Regression\dataset.csv
	Active Dataset	SimpleLinearRegressionD ata
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =slr_lev WITH slr_sresid /TITLE='Studentized residuals by leverage'.
Resources	Processor Time	00:00:00.31
	Elapsed Time	00:00:00.32

Simple Linear Regression
Saved values and residual diagnostics



Simple Linear Regression

Simple Linear Regression
Save data and Viewer output