

Host

Notes

Output Created		12-JUL-2026 12:41:56
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\regression_confidence_interval_analysis_data_with_intervals.sav
	Active Dataset	RegressionConfidenceIntervalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.10

Host

Notes

Output Created		12-JUL-2026 12:41:56
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\regression_confidence_interval_analysis_data_with_intervals.sav
	Active Dataset	RegressionConfidenceIntervalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\sav" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\sav""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.07

Host

Notes

Output Created		12-JUL-2026 12:41:56
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\regression_confidence_interval_analysis_data_with_intervals.sav
	Active Dataset	RegressionConfidenceIntervalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\spv" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\spv""].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 12:41:56
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\regression_confidence_interval_analysis_data_with_intervals.sav
	Active Dataset	RegressionConfidenceIntervalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\pdf" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\pdf""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.08

Host

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\ regression_confidence_int erval_analysis_data_with_ intervals.sav
	Active Dataset	RegressionConfidenceInte rvalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav*.sav" 2>nul']. .
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\ regression_confidence_int erval_analysis_data_with_ intervals.sav
	Active Dataset	RegressionConfidenceInte rvalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \spv*.spv" 2>nul']. .
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Confidence Interval\SPSS_Output\sav\ regression_confidence_int erval_analysis_data_with_ intervals.sav
	Active Dataset	RegressionConfidenceInte rvalData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \pdf*.pdf" 2>nul'].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.09

Regression Diagnostics

Regression Diagnostics
Import dataset.csv

Regression Diagnostics

Regression Diagnostics
Descriptive statistics and correlations

Descriptives

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\sav\regression_diagnostics_analysis_data.sav
	Active Dataset	RegressionDiagnosticsData
	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 /STATISTICS=MEAN STDDEV MIN MAX SKEWNESS KURTOSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.02

[RegressionDiagnosticsData] D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output\sav\regression_diagnostics_analysis_data.sav

Regression Diagnostics
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
Valid N (listwise)	649					

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
Valid N (listwise)			

Correlations

Regression Diagnostics
Descriptive statistics and correlations

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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 /PRINT=TWOTAIL SIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.02

Regression Diagnostics
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

Regression Diagnostics
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

Regression Diagnostics
Descriptive statistics and correlations

Correlations

		Student age predictor
Final grade outcome	Pearson Correlation	-.107
	Sig. (2-tailed)	.007
	N	649
First period grade predictor	Pearson Correlation	-.174
	Sig. (2-tailed)	.000
	N	649
Second period grade predictor	Pearson Correlation	-.107
	Sig. (2-tailed)	.006
	N	649
Weekly study time predictor	Pearson Correlation	-.008
	Sig. (2-tailed)	.831
	N	649
Past class failures predictor	Pearson Correlation	.320
	Sig. (2-tailed)	.000
	N	649
School absences predictor	Pearson Correlation	.150
	Sig. (2-tailed)	.000
	N	649
Student age predictor	Pearson Correlation	1
	Sig. (2-tailed)	
	N	649

Regression Diagnostics

>Warning # 2004. Command name: SUBTITLE

>The subtitle given exceeds 60 characters in length. The first 60 characters
>will be used.

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

Regression

Notes

Output Created		12-JUL-2026 12:41:57
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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 Diagnostics
Primary OLS model with residual, collinearity, and influence

Notes

Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA CHANGE CI(95) COLLIN TOL /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT G3 /METHOD=ENTER G1 G2 studytime failures absences age /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID) /CASEWISE PLOT (ZRESID) OUTLIERS(3) /SAVE PRED(diag_pred) RESID(diag_resid) ZPRED(diag_zpred) ZRESID(diag_zresid) SRESID(diag_sresid) COOK(diag_cook) LEVER...
Resources	Processor Time	00:00:01.13
	Elapsed Time	00:00:01.17
	Memory Required	6768 bytes
	Additional Memory Required for Residual Plots	560 bytes
Variables Created or Modified	diag_pred	Unstandardized Predicted Value
	diag_resid	Unstandardized Residual
	diag_zpred	Standardized Predicted Value
	diag_zresid	Standardized Residual
	diag_sresid	Studentized Residual
	diag_cook	Cook's Distance
	diag_leverage	Centered Leverage Value

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Student age predictor, Weekly study time predictor, School absences predictor, Second period grade predictor, Past class failures 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	1.25441	.851	609.353	6

Model Summary^b

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	642	.000	1.861

a. Predictors: (Constant), Student age predictor, Weekly study time predictor, School absences predictor, Second period grade predictor, Past class failures predictor, First period grade predictor

b. Dependent Variable: Final grade outcome

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5753.053	6	958.842	609.353	.000 ^b
	Residual	1010.214	642	1.574		
	Total	6763.267	648			

a. Dependent Variable: Final grade outcome

b. Predictors: (Constant), Student age predictor, Weekly study time predictor, School absences predictor, Second period grade predictor, Past class failures predictor, First period grade predictor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.545	.763		-.715	.475
	First period grade predictor	.142	.037	.121	3.886	.000
	Second period grade predictor	.883	.034	.797	25.823	.000
	Weekly study time predictor	.095	.062	.024	1.526	.127
	Past class failures predictor	-.233	.095	-.043	-2.456	.014
	School absences predictor	.023	.011	.033	2.086	.037
	Student age predictor	.024	.043	.009	.544	.587

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

Coefficients^a

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-2.043	.952		
	First period grade predictor	.070	.214	.241	4.155
	Second period grade predictor	.816	.951	.244	4.091
	Weekly study time predictor	-.027	.216	.919	1.088
	Past class failures predictor	-.420	-.047	.766	1.306
	School absences predictor	.001	.044	.954	1.049
	Student age predictor	-.062	.109	.866	1.155

a. Dependent Variable: Final grade outcome

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions	
					First period grade predictor	Second period grade predictor
1	1	5.344	1.000	.00	.00	.00
	2	.921	2.409	.00	.00	.00
	3	.567	3.071	.00	.00	.00
	4	.116	6.798	.00	.01	.01
	5	.043	11.188	.02	.06	.08
	6	.008	26.235	.00	.87	.89
	7	.002	49.066	.97	.06	.02

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

Collinearity Diagnostics^a

Model	Dimension	Variance Proportions			
		Weekly study time predictor	Past class failures predictor	School absences predictor	Student age predictor
1	1	.00	.00	.01	.00
	2	.00	.64	.03	.00
	3	.01	.10	.88	.00
	4	.97	.00	.02	.00
	5	.01	.21	.05	.03
	6	.00	.00	.00	.00
	7	.00	.04	.00	.96

a. Dependent Variable: Final grade outcome

Casewise Diagnostics^a

Case Number	Std. Residual	Final grade outcome	Predicted Value	Residual
62	4.637	16.00	10.1832	5.81680
164	-7.193	.00	9.0229	-9.02294
173	-7.210	1.00	10.0446	-9.04462
520	-5.854	.00	7.3432	-7.34324
584	-4.926	.00	6.1794	-6.17939
587	-6.577	.00	8.2503	-8.25028
627	-4.370	.00	5.4816	-5.48156
638	-5.703	.00	7.1538	-7.15378
640	-6.013	.00	7.5433	-7.54332
641	-5.517	.00	6.9206	-6.92062

a. Dependent Variable: Final grade outcome

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence

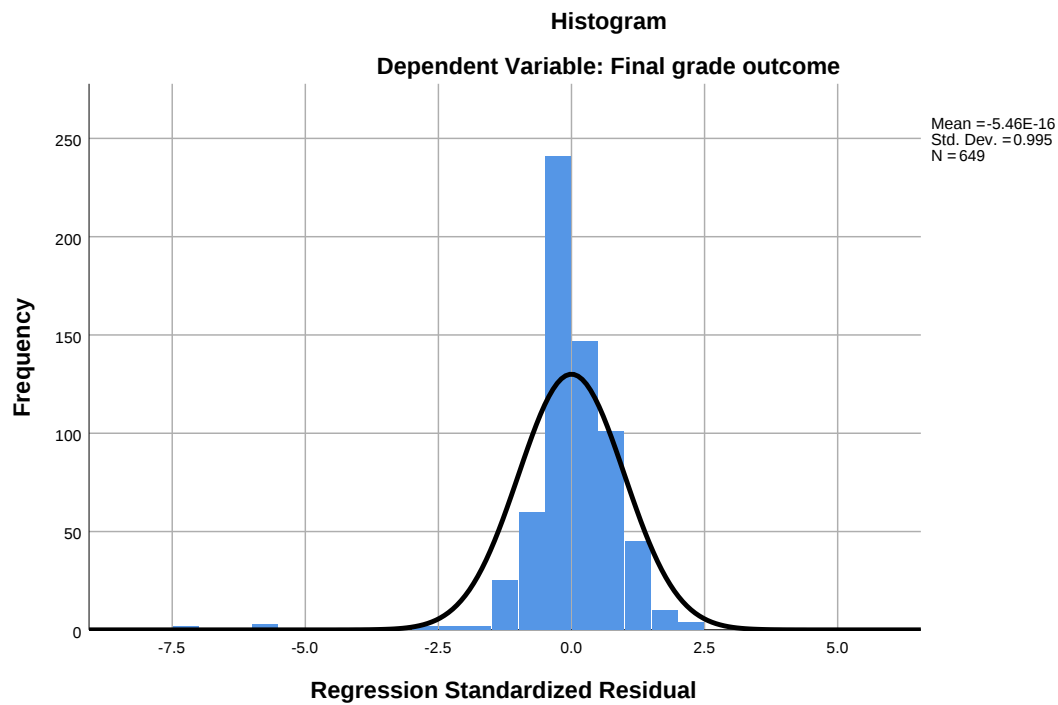
Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.3103	19.5785	11.9060	2.97963	649
Std. Predicted Value	-3.892	2.575	.000	1.000	649
Standard Error of Predicted Value	.059	.403	.122	.045	649
Adjusted Predicted Value	.3211	19.5896	11.9069	2.97865	649
Residual	-9.04462	5.81680	.00000	1.24859	649
Std. Residual	-7.210	4.637	.000	.995	649
Stud. Residual	-7.277	4.651	.000	1.002	649
Deleted Residual	-9.23401	5.85106	-.00090	1.26478	649
Stud. Deleted Residual	-7.591	4.727	-.003	1.019	649
Mahal. Distance	.414	65.945	5.991	6.491	649
Cook's Distance	.000	.177	.002	.010	649
Centered Leverage Value	.001	.102	.009	.010	649

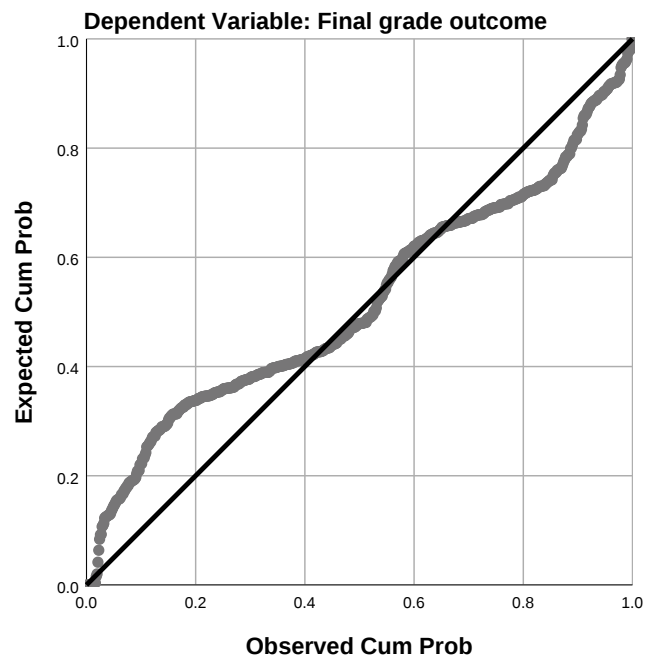
a. Dependent Variable: Final grade outcome

Charts

Regression Diagnostics
Primary OLS model with residual, collinearity, and influence



Normal P-P Plot of Regression Standardized Residual



Regression Diagnostics

Regression Diagnostics
Residual normality and outlier diagnostics

Explore

Notes

Output Created		12-JUL-2026 12:41:58
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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.
Syntax		EXAMINE VARIABLES=diag_resid diag_zresid diag_sresid /PLOT BOXPLOT HISTOGRAM NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES EXTREME /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:05.11
	Elapsed Time	00:00:04.53

Regression Diagnostics
Residual normality and outlier diagnostics

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%

Descriptives

		Statistic	Std. Error
Unstandardized Residual	Mean	.0000000	.04901137
	95% Confidence Interval for Mean	Lower Bound	-.0962403
		Upper Bound	.0962403
	5% Trimmed Mean	.0701572	
	Median	-.0682603	
	Variance	1.559	
	Std. Deviation	1.24858805	
	Minimum	-9.04462	
	Maximum	5.81680	
	Range	14.86142	
	Interquartile Range	1.08233	
	Skewness	-2.864	.096
	Kurtosis	18.667	.192
Standardized Residual	Mean	.0000000	.03907128
	95% Confidence Interval for Mean	Lower Bound	-.0767216
		Upper Bound	.0767216
	5% Trimmed Mean	.0559285	
	Median	-.0544163	
	Variance	.991	
	Std. Deviation	.99535960	
	Minimum	-7.21026	
	Maximum	4.63709	
	Range	11.84735	
	Interquartile Range	.86282	

Regression Diagnostics
Residual normality and outlier diagnostics

Descriptives

		Statistic	Std. Error
	Skewness	-2.864	.096
	Kurtosis	18.667	.192
Studentized Residual	Mean	-.0003575	.03932284
	95% Confidence Interval for Mean	Lower Bound	-.0775730
		Upper Bound	.0768581
	5% Trimmed Mean	.0560408	
	Median	-.0545728	
	Variance	1.004	
	Std. Deviation	1.00176810	
	Minimum	-7.27663	
	Maximum	4.65072	
	Range	11.92735	
	Interquartile Range	.86567	
	Skewness	-2.869	.096
	Kurtosis	18.677	.192

Regression Diagnostics
Residual normality and outlier diagnostics

Extreme Values

			Case Number	Value
Unstandardized Residual	Highest	1	62	5.81680
		2	308	2.67302
		3	355	2.57845
		4	390	2.55834
		5	359	2.53695
	Lowest	1	173	-9.04462
		2	164	-9.02294
		3	587	-8.25028
		4	640	-7.54332
		5	520	-7.34324
Standardized Residual	Highest	1	62	4.63709
		2	308	2.13090
		3	355	2.05551
		4	390	2.03948
		5	359	2.02243
	Lowest	1	173	-7.21026
		2	164	-7.19298
		3	587	-6.57703
		4	640	-6.01345
		5	520	-5.85395
Studentized Residual	Highest	1	62	4.65072
		2	308	2.13434
		3	355	2.06016
		4	390	2.04772
		5	359	2.03027
	Lowest	1	164	-7.27663
		2	173	-7.23659
		3	587	-6.60070
		4	640	-6.07521
		5	520	-5.87976

Regression Diagnostics

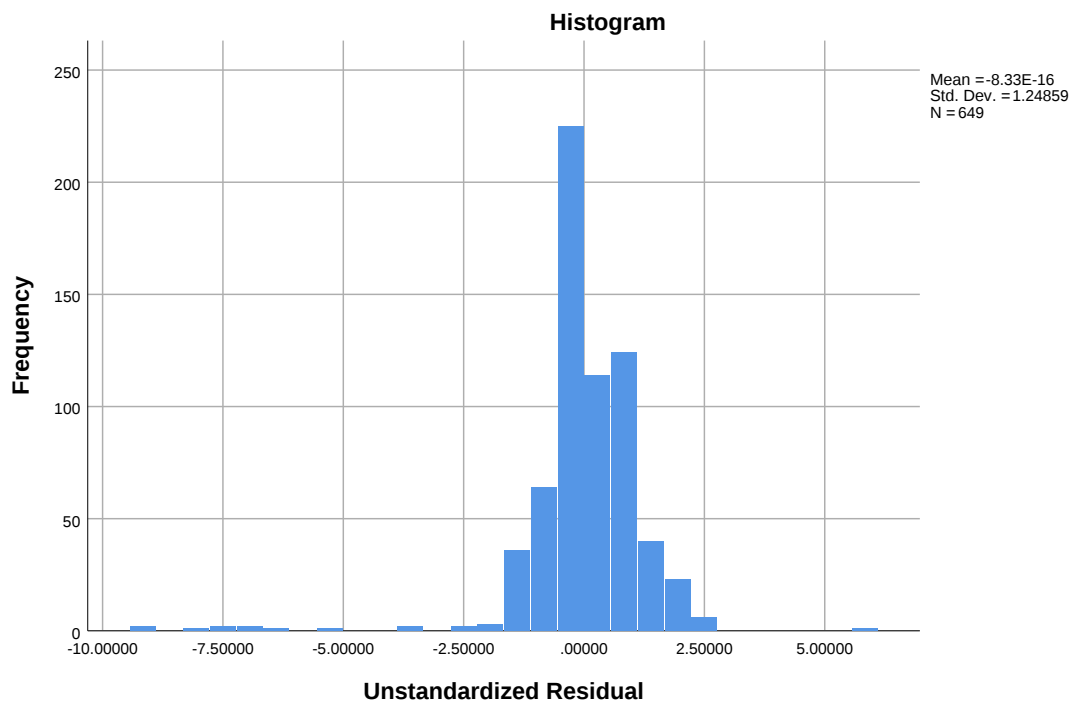
Residual normality and outlier diagnostics

Tests of Normality

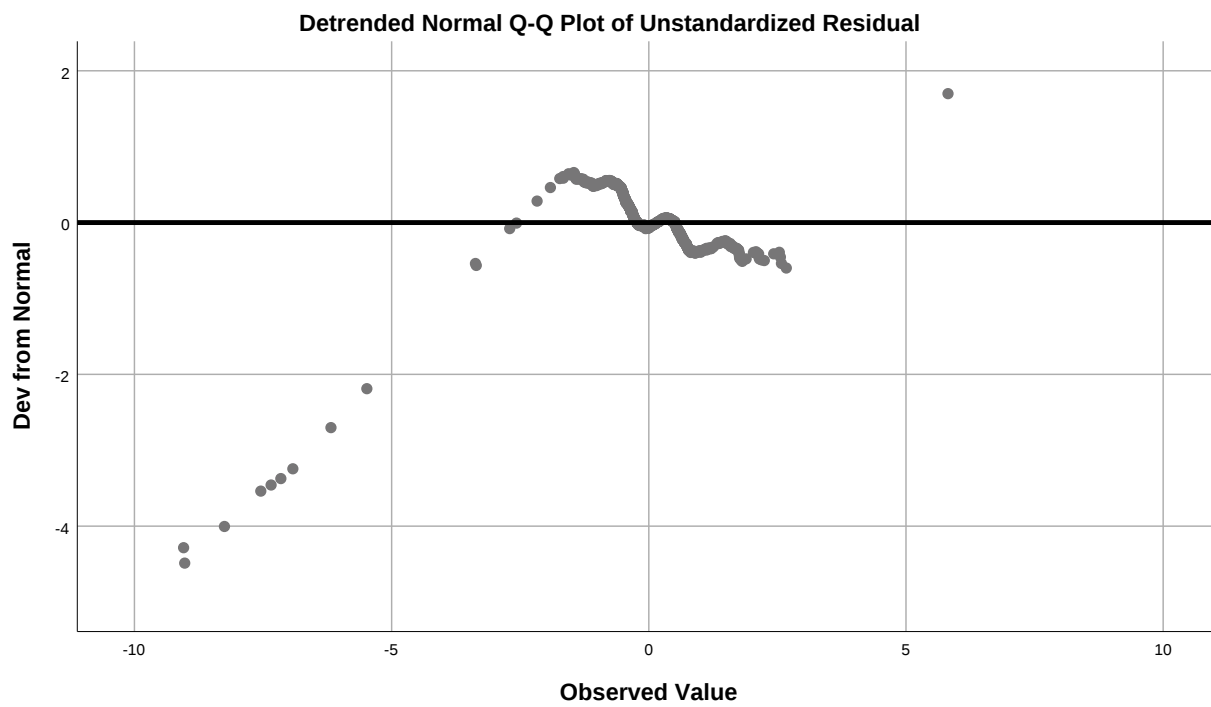
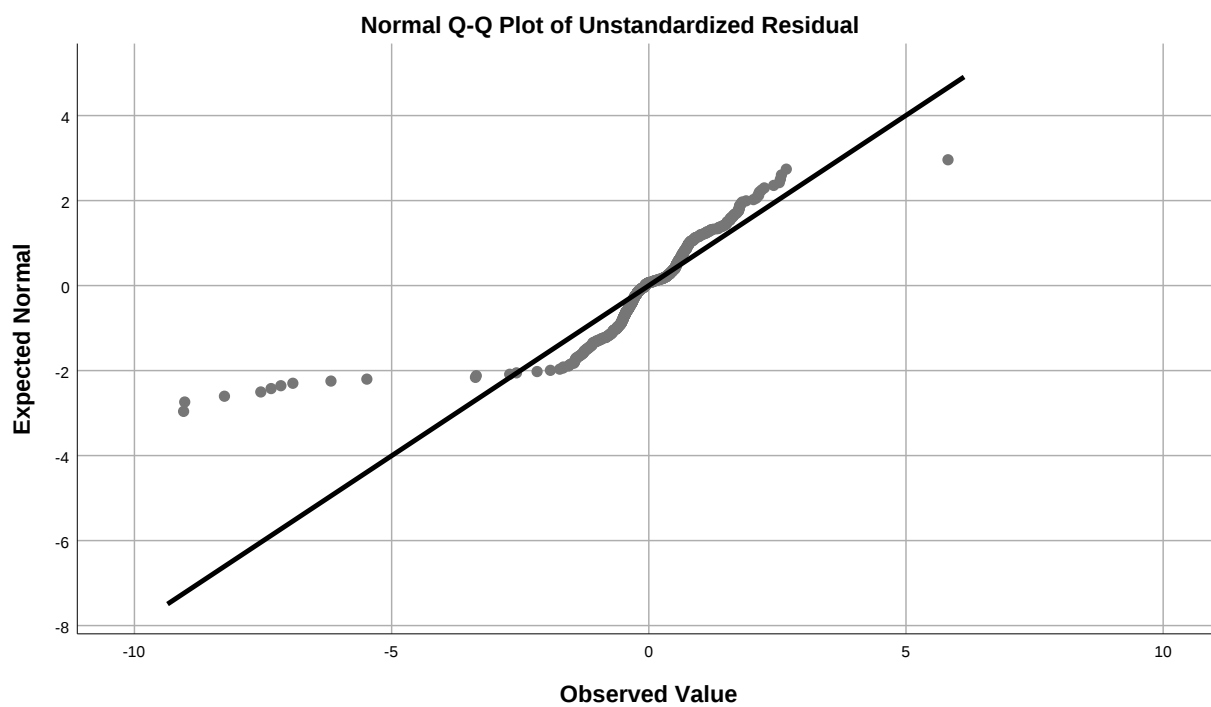
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.155	649	.000	.755	649	.000
Standardized Residual	.155	649	.000	.755	649	.000
Studentized Residual	.155	649	.000	.755	649	.000

a. Lilliefors Significance Correction

Unstandardized Residual

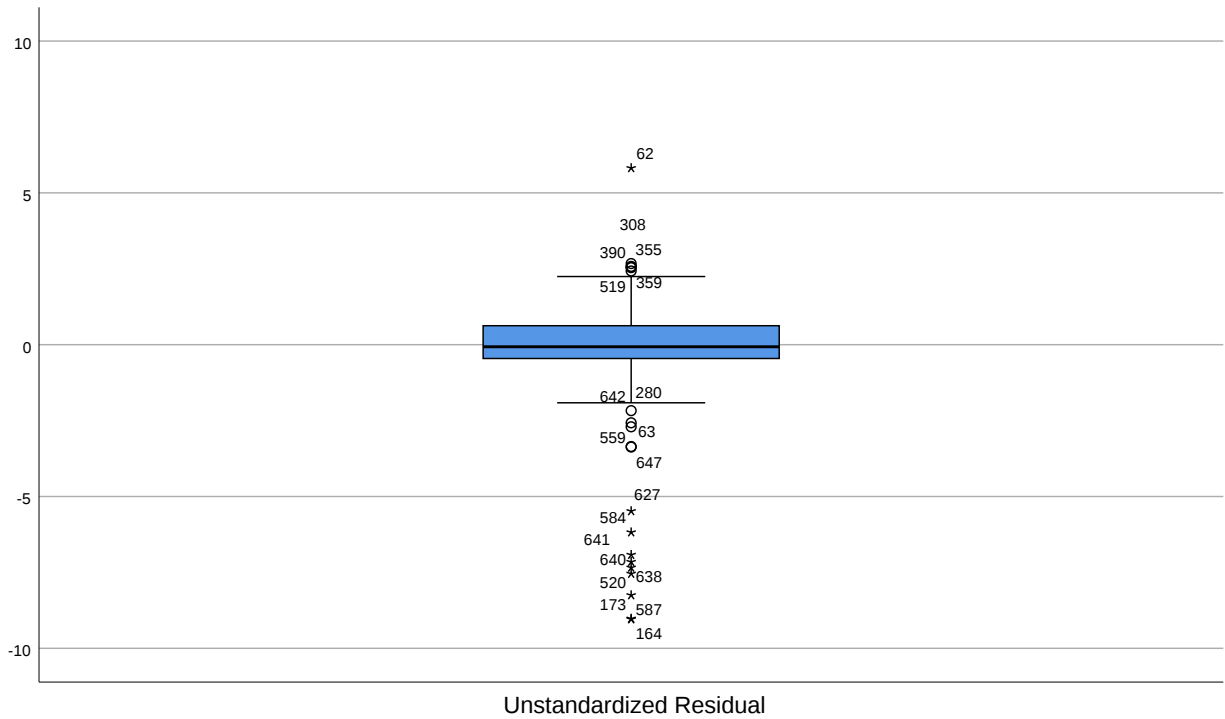


Regression Diagnostics
Residual normality and outlier diagnostics



Regression Diagnostics

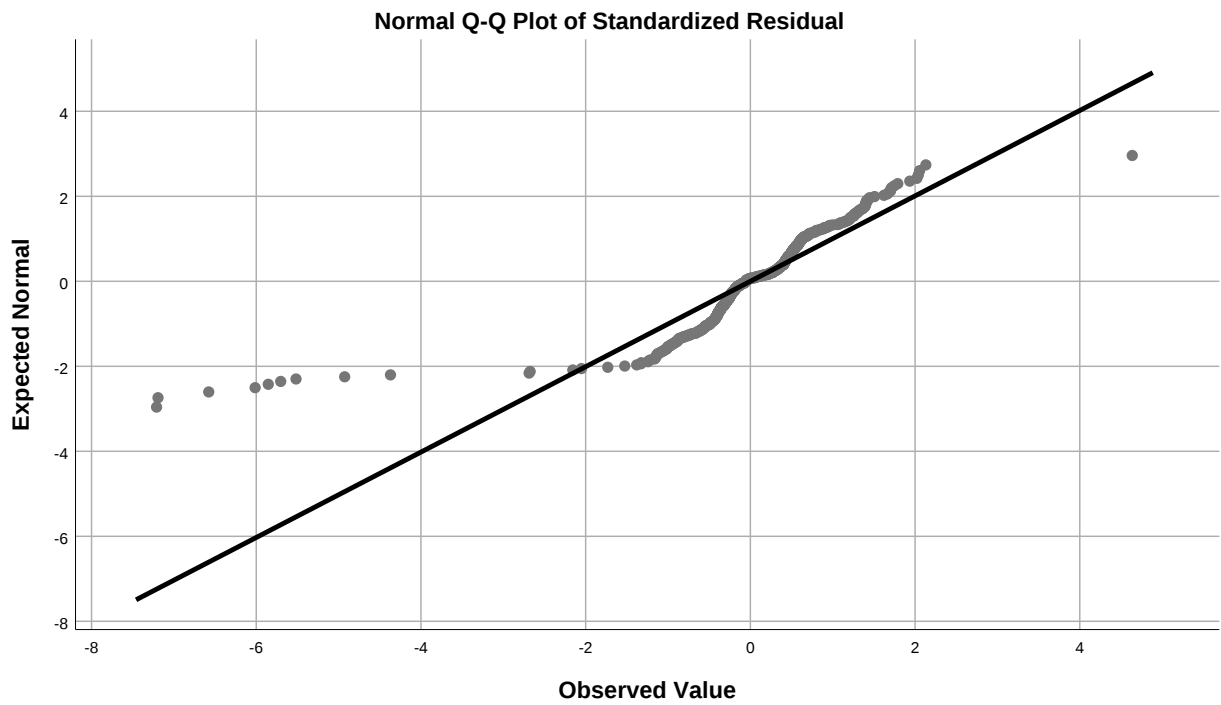
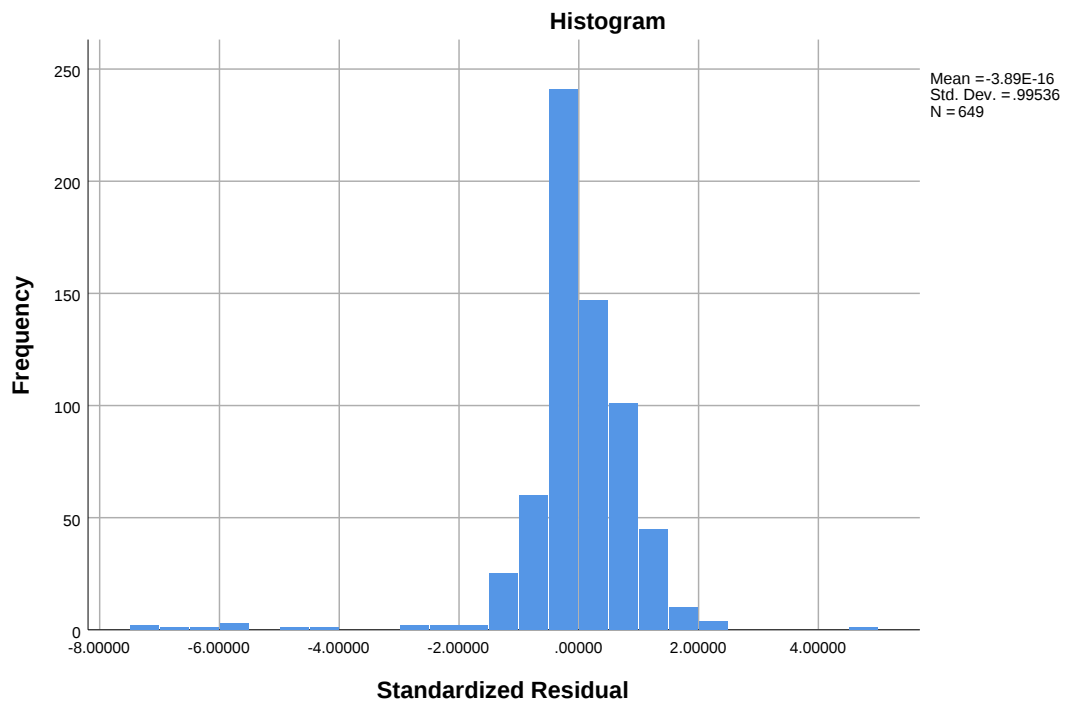
Residual normality and outlier diagnostics



Standardized Residual

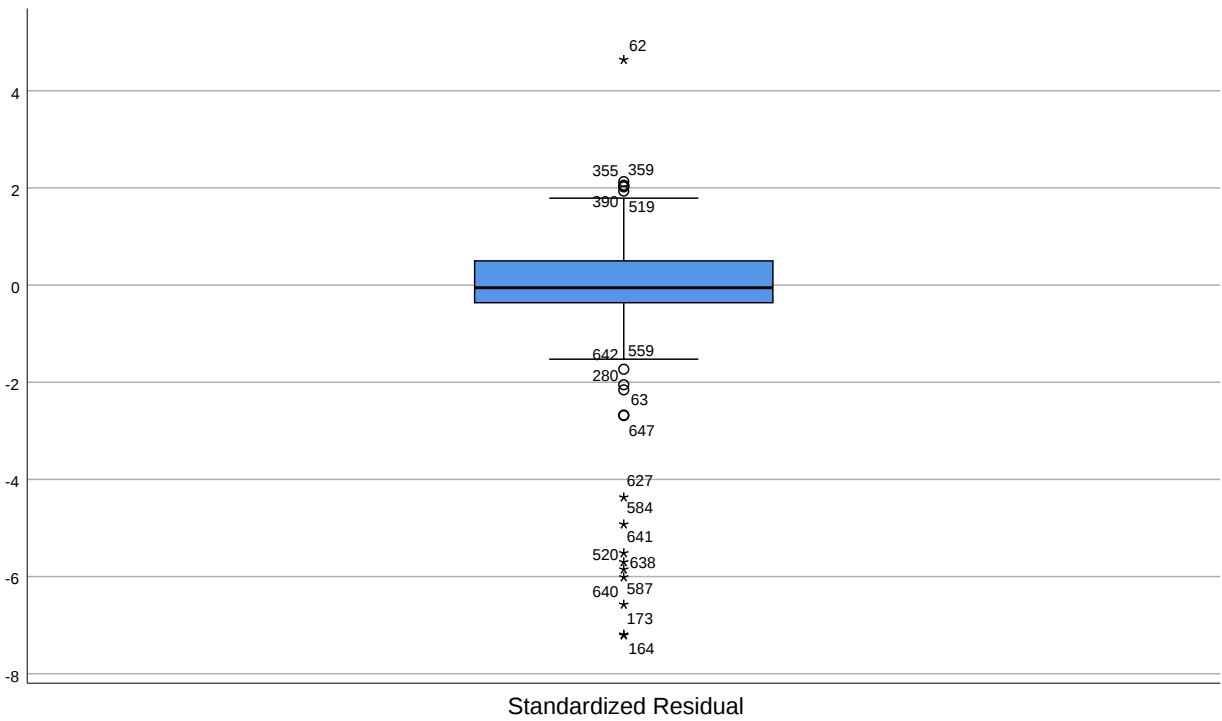
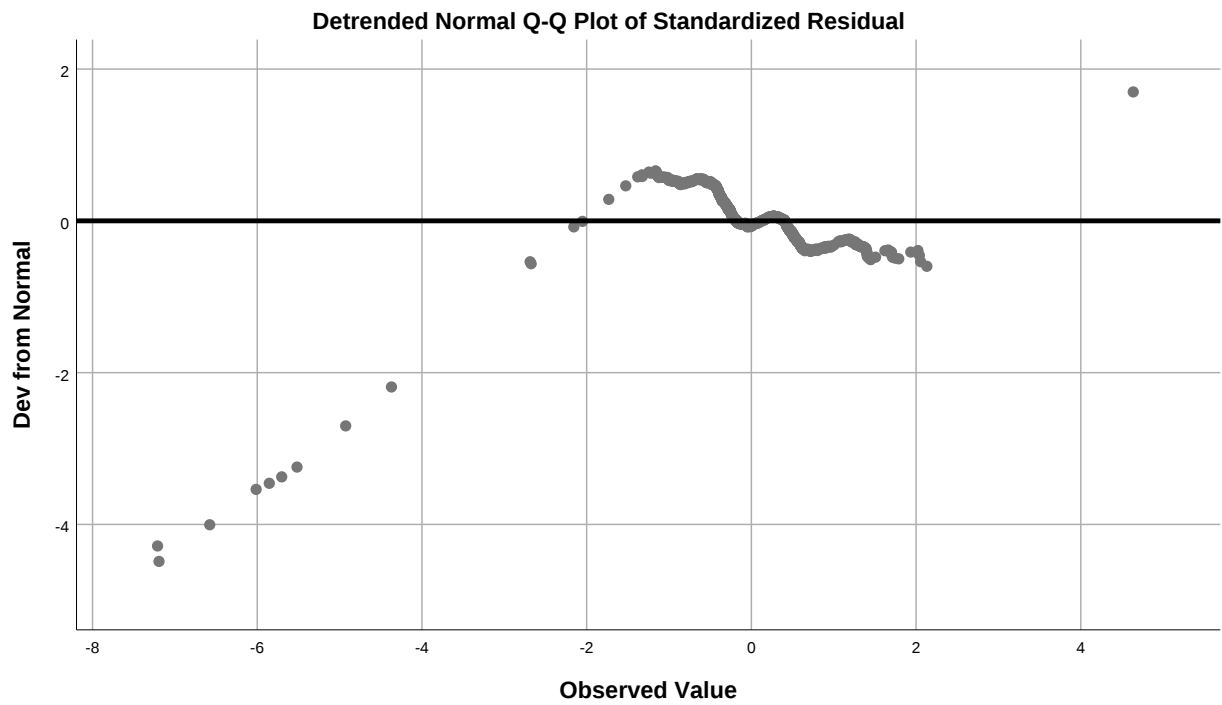
Regression Diagnostics

Residual normality and outlier diagnostics



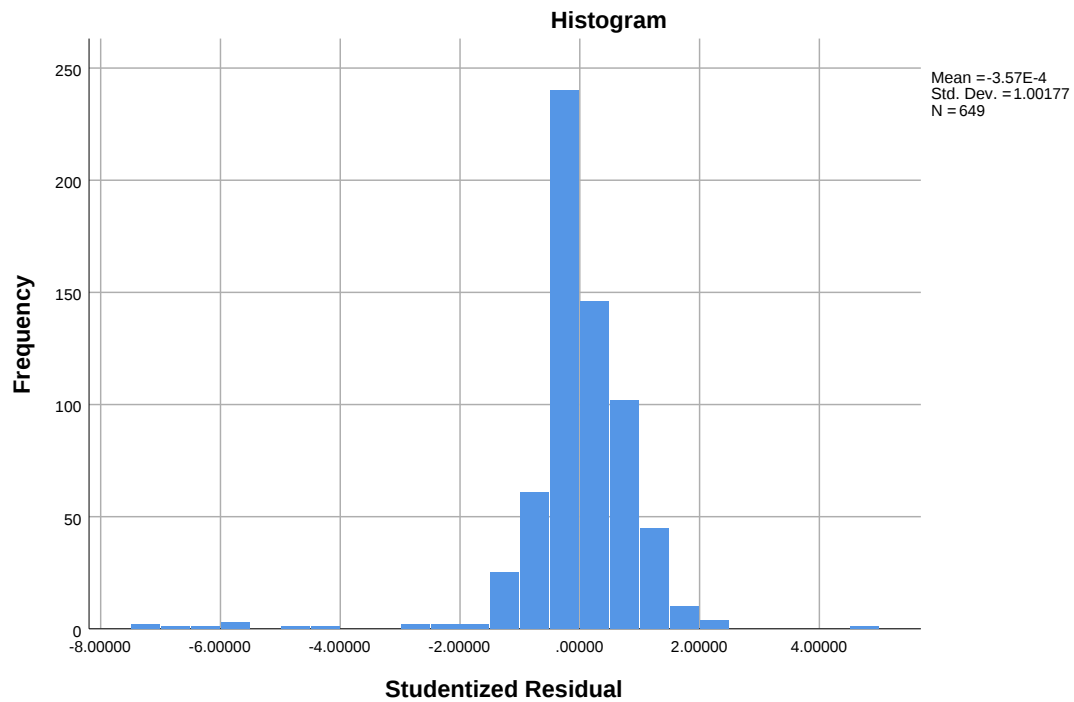
Regression Diagnostics

Residual normality and outlier diagnostics

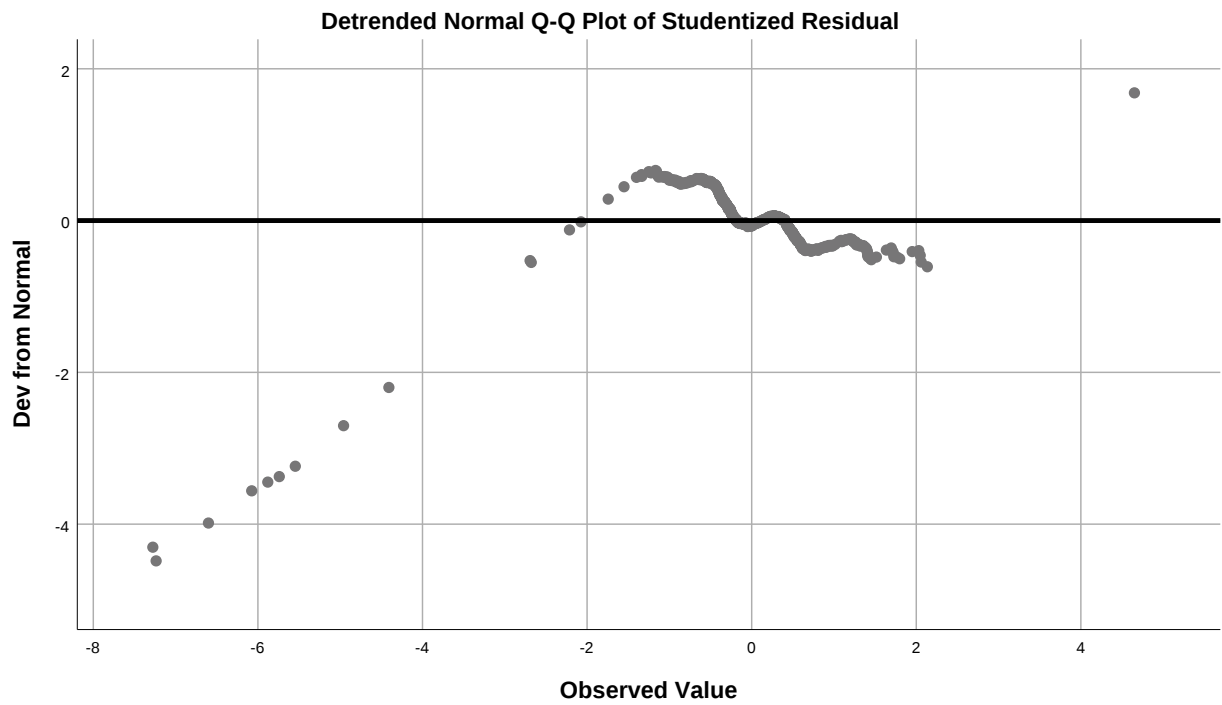
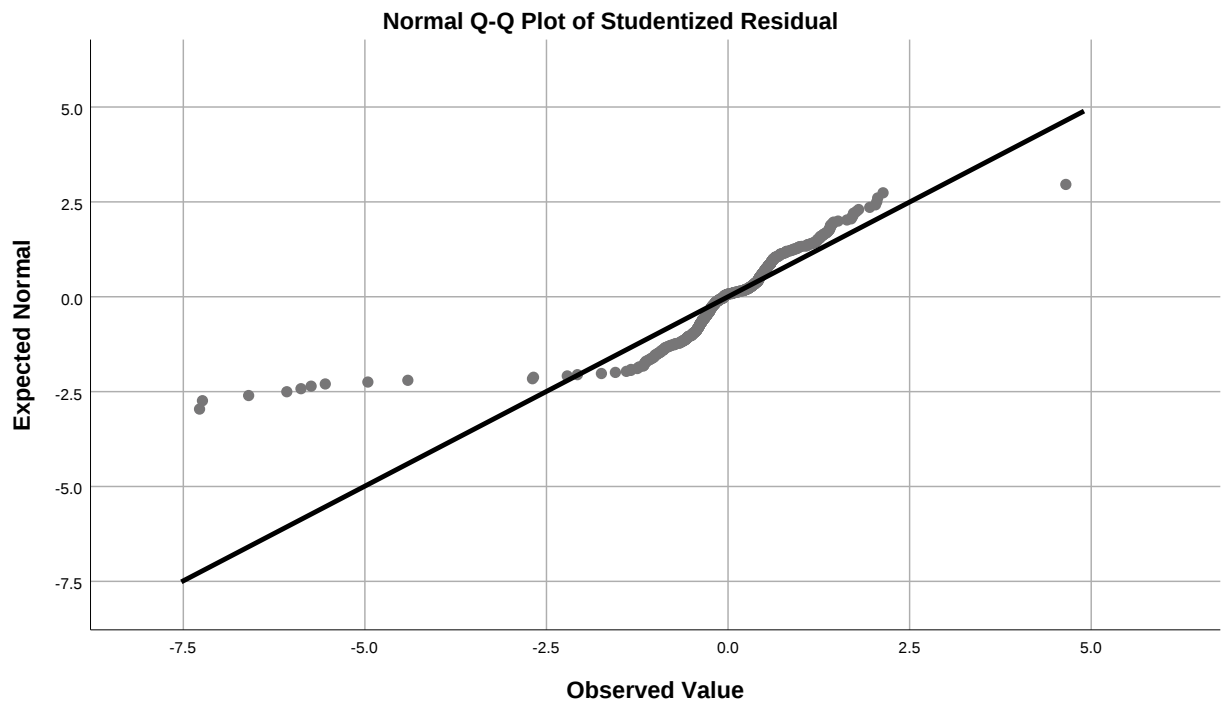


Regression Diagnostics
Residual normality and outlier diagnostics

Studentized Residual

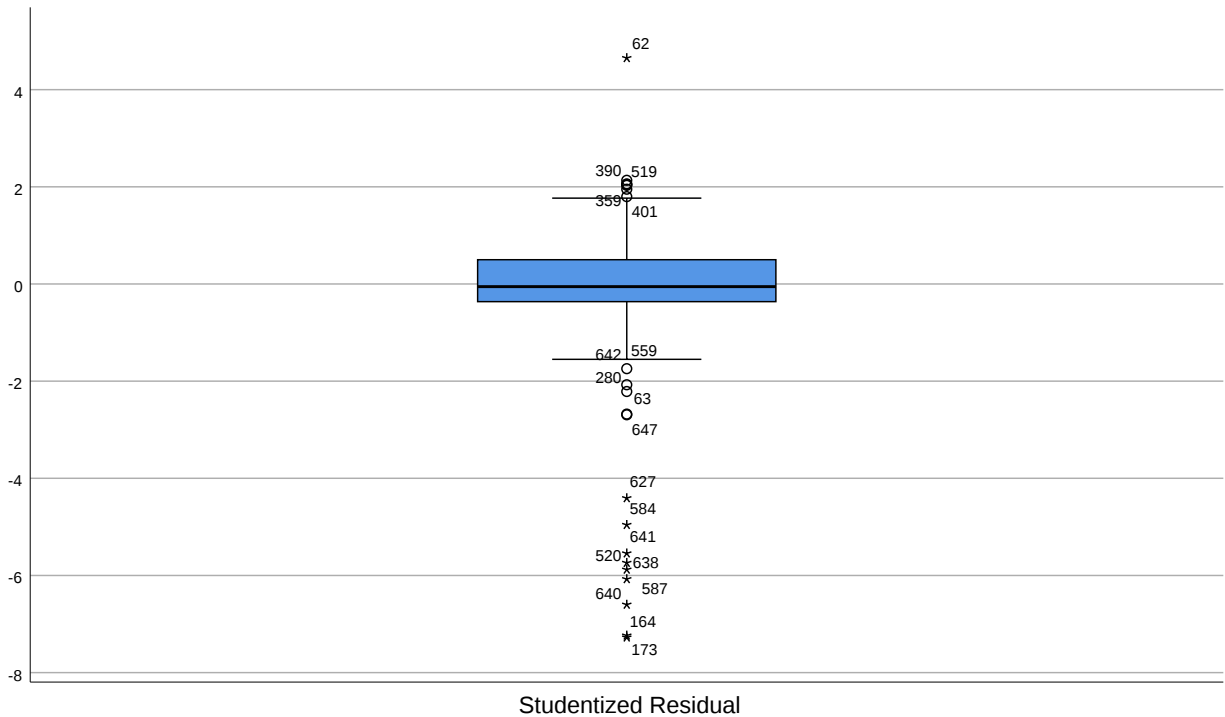


Regression Diagnostics
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Regression Diagnostics

Residual normality and outlier diagnostics



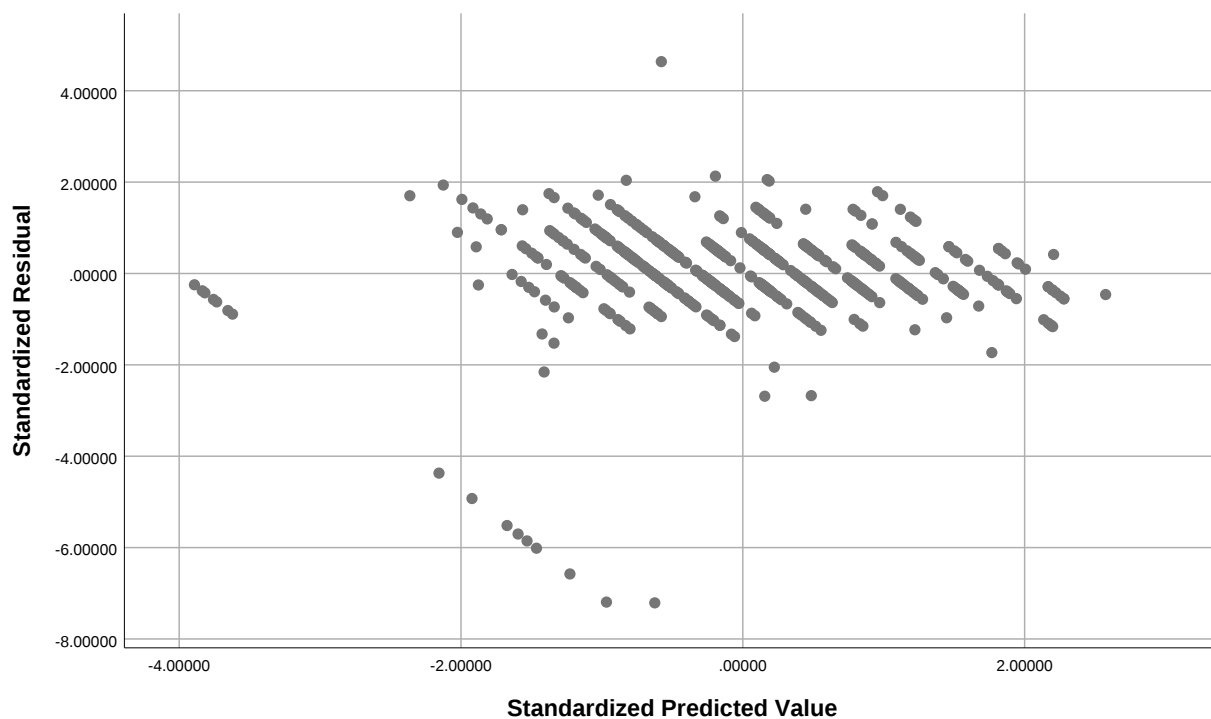
Notes

Output Created		12-JUL-2026 12:42:03
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Syntax	GRAPH /SCATTERPLOT(BIVAR) =diag_zpred WITH diag_zresid /MISSING=LISTWISE.

Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Resources	Processor Time	00:00:00.44
	Elapsed Time	00:00:00.39



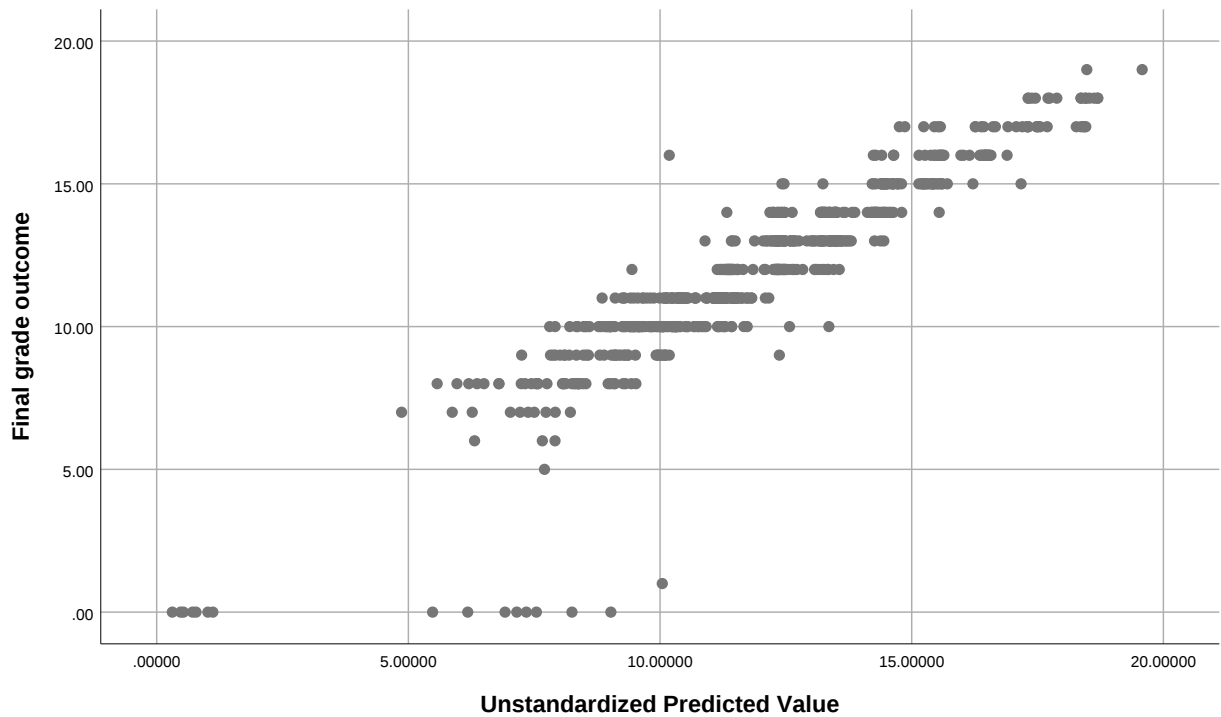
Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Output Created		12-JUL-2026 12:42:03
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =diag_pred WITH G3 /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.36
	Elapsed Time	00:00:00.34

Regression Diagnostics

Residual normality and outlier diagnostics



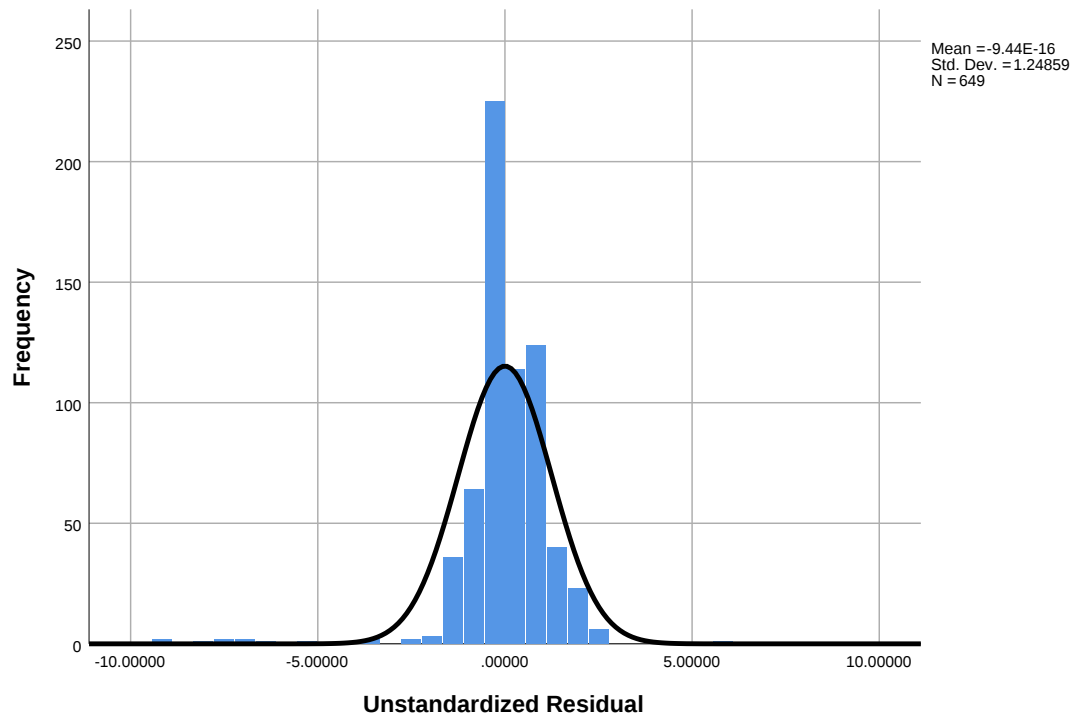
Notes

Output Created		12-JUL-2026 12:42:04
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Syntax	GRAPH /HISTOGRAM(NORMAL) =diag_resid.

Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Resources	Processor Time	00:00:00.30
	Elapsed Time	00:00:00.30



Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Output Created		12-JUL-2026 12:42:04
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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 R ANOVA CI(95) /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT diag_resid_sq /METHOD=ENTER G1 G2 studytime failures absences age.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.02
	Memory Required	7040 bytes
	Additional Memory Required for Residual Plots	0 bytes

Regression Diagnostics
Residual normality and outlier diagnostics

Variables Entered/Removed^a

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

a. Dependent Variable: Squared OLS residual for heteroscedasticity auxiliary regression

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.226 ^a	.051	.042	6.90559194

a. Predictors: (Constant), Student age predictor, Weekly study time predictor, School absences predictor, Second period grade predictor, Past class failures predictor, First period grade predictor

Regression Diagnostics
Residual normality and outlier diagnostics

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1642.937	6	273.823	5.742	.000 ^b
	Residual	30615.182	642	47.687		
	Total	32258.119	648			

a. Dependent Variable: Squared OLS residual for heteroscedasticity auxiliary regression

b. Predictors: (Constant), Student age predictor, Weekly study time predictor, School absences predictor, Second period grade predictor, Past class failures predictor, First period grade predictor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.311	4.198		.074	.941
	First period grade predictor	-.053	.201	-.020	-.261	.794
	Second period grade predictor	-.294	.188	-.121	-1.559	.119
	Weekly study time predictor	-.433	.341	-.051	-1.270	.205
	Past class failures predictor	.668	.523	.056	1.277	.202
	School absences predictor	-.195	.060	-.128	-3.252	.001
	Student age predictor	.397	.239	.068	1.658	.098

Regression Diagnostics
Residual normality and outlier diagnostics

Coefficients^a

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	-7.933	8.556
	First period grade predictor	-.448	.343
	Second period grade predictor	-.663	.076
	Weekly study time predictor	-1.103	.237
	Past class failures predictor	-.359	1.694
	School absences predictor	-.312	-.077
	Student age predictor	-.073	.867

a. Dependent Variable: Squared OLS residual for heteroscedasticity auxiliary regression

Notes

Output Created		12-JUL-2026 12:42:04
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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.

Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Syntax	FREQUENCIES VARIABLES=residual_outlier_flag high_leverage_flag high_cooks_flag any_influence_flag /ORDER=ANALYSIS.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Statistics

		1 when absolute studentized residual exceeds 3	1 when leverage exceeds threshold	1 when Cook distance exceeds threshold	1 when at least one influence diagnostic is flagged
N	Valid	649	649	649	649
	Missing	0	0	0	0

1 when absolute studentized residual exceeds 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	639	98.5	98.5	98.5
	Flagged	10	1.5	1.5	100.0
	Total	649	100.0	100.0	

1 when leverage exceeds threshold

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	613	94.5	94.5	94.5
	Flagged	36	5.5	5.5	100.0
	Total	649	100.0	100.0	

Regression Diagnostics
Residual normality and outlier diagnostics

1 when Cook distance exceeds threshold

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	623	96.0	96.0	96.0
	Flagged	26	4.0	4.0	100.0
	Total	649	100.0	100.0	

1 when at least one influence diagnostic is flagged

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	597	92.0	92.0	92.0
	Flagged	52	8.0	8.0	100.0
	Total	649	100.0	100.0	

Notes

Output Created		12-JUL-2026 12:42:04
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	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.

Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Syntax		DESCRIPTIVES VARIABLES=diag_sresid diag_leverage diag_cook /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Descriptive Statistics

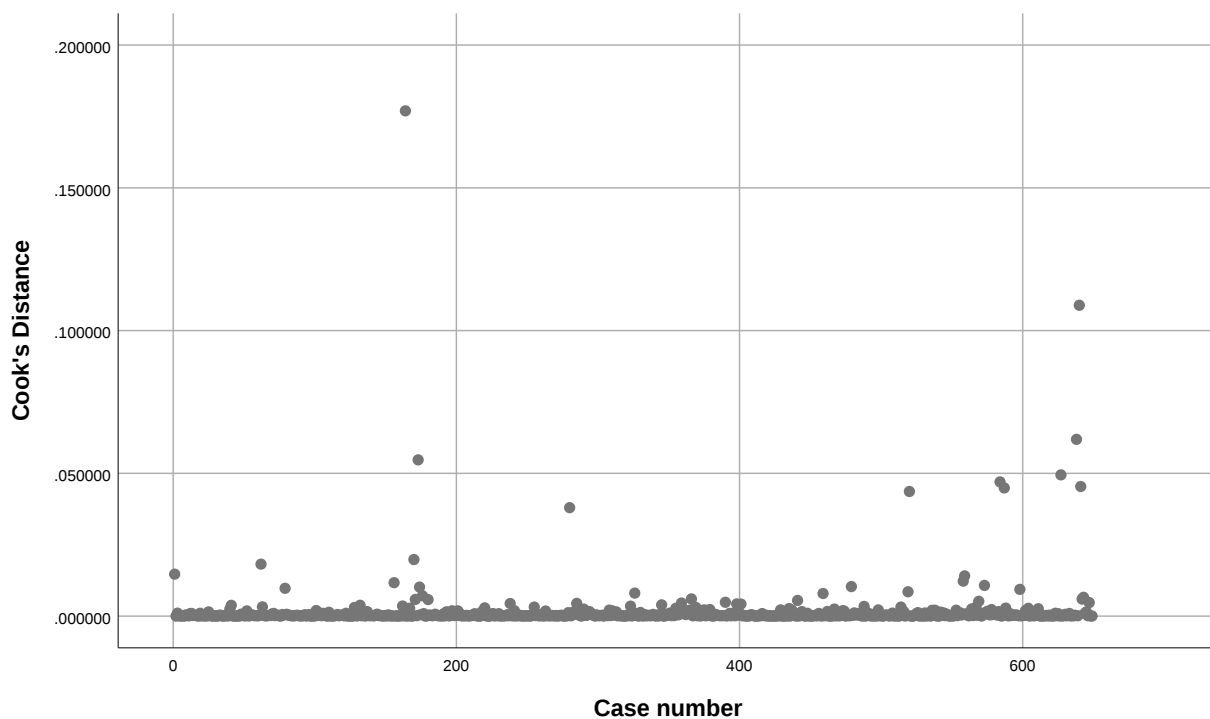
	N	Minimum	Maximum	Mean	Std. Deviation
Studentized Residual	649	-7.27663	4.65072	-.0003575	1.00176810
Centered Leverage Value	649	.000640	.101768	.00924499	.010016472
Cook's Distance	649	.000000	.176952	.00186292	.009847231
Valid N (listwise)	649				

Notes

Output Created		12-JUL-2026 12:42:04
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =case_number WITH diag_cook /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.66
	Elapsed Time	00:00:00.60

Regression Diagnostics

Residual normality and outlier diagnostics



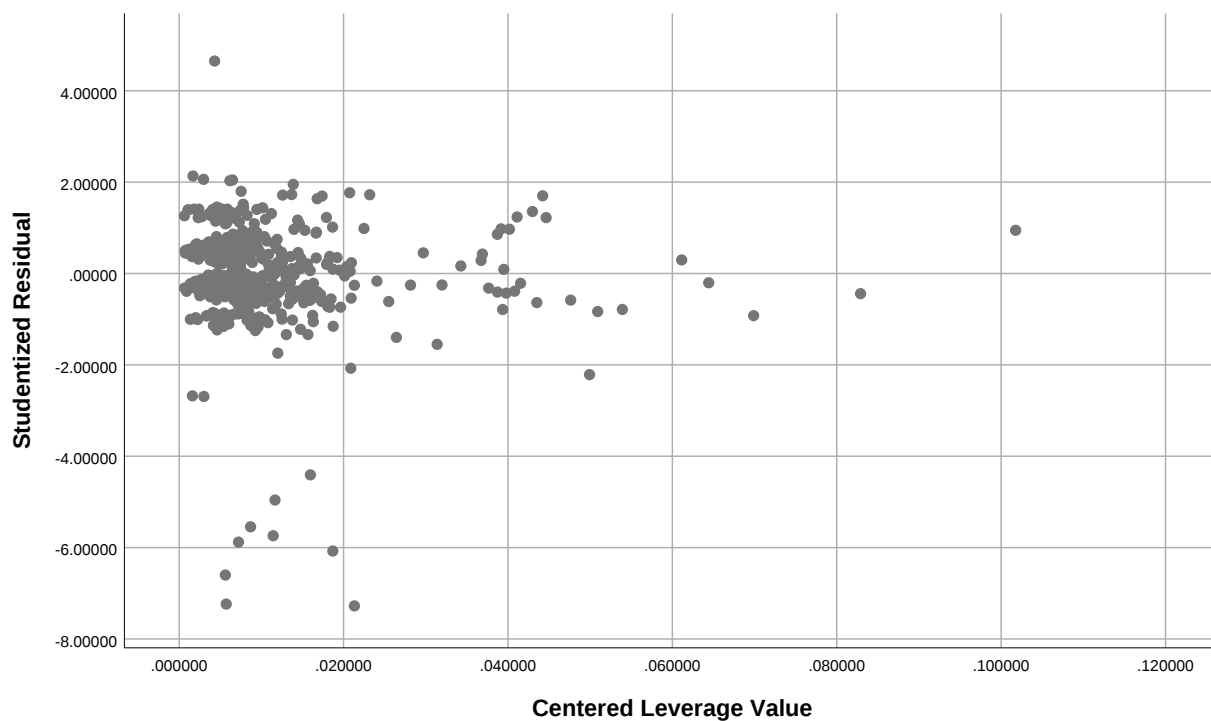
Notes

Output Created		12-JUL-2026 12:42:05
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Syntax	GRAPH /SCATTERPLOT(BIVAR) =diag_leverage WITH diag_sresid /MISSING=LISTWISE.

Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Resources	Processor Time	00:00:00.44
	Elapsed Time	00:00:00.45



Regression Diagnostics
Residual normality and outlier diagnostics

Notes

Output Created		12-JUL-2026 12:42:06
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Regression Diagnostics\SPSS_Output \sav\regression_diagnostic s_analysis_data.sav
	Active Dataset	RegressionDiagnosticsDat a
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Syntax		LIST VARIABLES=case_numbe r G3 diag_pred diag_resid diag_sresid diag_leverage diag_cook /CASES=FROM 1 TO ...
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01