

Host

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\sav\ridge_regression_standardized_analysis_data.sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.09

Host

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\sav\ridge_regression_standardized_analysis_data.sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\sav\ridge_regression_standardized_analysis_data.sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\spv" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\spv""].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\sav\ridge_regression_standardized_analysis_data.sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=["if not exist "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\pdf" mkdir "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\pdf""].
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.06

Host

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\ sav\ridge_regression_stan dardized_analysis_data. sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\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 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\ sav\ridge_regression_stan dardized_analysis_data. sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\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 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Ridge Regression\SPSS_Output\ sav\ridge_regression_stan dardized_analysis_data. sav
	Active Dataset	RidgeRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		HOST COMMAND=['del /Q "D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ pdf*.pdf" 2>nul'].
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.06

Robust Regression

Robust Regression
Import dataset.csv

Robust Regression

Robust Regression
Descriptive statistics and correlations

Descriptives

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_analysis_data.sav
	Active Dataset	RobustRegressionData
	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	00:00:00.02
	Elapsed Time	00:00:00.01

[RobustRegressionData] D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_analysis_data.sav

Robust Regression
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					

Robust Regression
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

Robust Regression
Descriptive statistics and correlations

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_an alysis_data.sav
	Active Dataset	RobustRegressionData
	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	00:00:00.03
	Elapsed Time	00:00:00.03

Robust Regression
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

Robust Regression
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

Robust Regression
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

Robust Regression

Robust Regression
Ordinary least-squares comparison model

Regression

Notes

Output Created		12-JUL-2026 13:30:20
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_an alysis_data.sav
	Active Dataset	RobustRegressionData
	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) COLLIN TOL /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT G3 /METHOD=ENTER G1 G2 studytime failures absences age Medu Fedu /SAVE PRED(ols_pred) ...
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.07

Robust Regression
Ordinary least-squares comparison model

Notes

	Memory Required	8400 bytes
	Additional Memory Required for Residual Plots	0 bytes
Variables Created or Modified	ols_pred	Unstandardized Predicted Value
	ols_resid	Unstandardized Residual

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.

Robust Regression
Ordinary least-squares comparison model

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	
	df2	Sig. F Change
1	640	.000

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

Robust Regression
Ordinary least-squares comparison model

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

Robust Regression
Ordinary least-squares comparison model

Coefficients^a

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-2.021	1.019		
	First period grade predictor	.071	.215	.240	4.165
	Second period grade predictor	.817	.952	.243	4.121
	Weekly study time predictor	-.025	.219	.917	1.090
	Past class failures predictor	-.422	-.048	.762	1.312
	School absences predictor	.001	.044	.948	1.055
	Student age predictor	-.063	.108	.860	1.163
	Mother education predictor	-.159	.069	.563	1.776
	Father education predictor	-.094	.139	.572	1.749

a. Dependent Variable: Final grade outcome

Robust Regression
Ordinary least-squares comparison model

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

Robust Regression
Ordinary least-squares comparison model

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

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.2512	19.5507	11.9060	2.97988	649
Residual	-9.05080	5.78244	.00000	1.24798	649
Std. Predicted Value	-3.911	2.565	.000	1.000	649
Std. Residual	-7.207	4.605	.000	.994	649

a. Dependent Variable: Final grade outcome

Graph

Robust Regression
Ordinary least-squares comparison model

Notes

Output Created		12-JUL-2026 13:30:21
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_an alysis_data.sav
	Active Dataset	RobustRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =ols_pred WITH G3 /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.58
	Elapsed Time	00:00:00.65

A scatter plot showing the relationship between the Unstandardized Predicted Value (X-axis) and the Final grade outcome (Y-axis). The X-axis ranges from 0.00000 to 20.00000, and the Y-axis ranges from 0.00 to 20.00. The data points are represented by grey dots. The plot shows a strong positive linear relationship, with points clustered along a diagonal line from the bottom-left to the top-right. There are some outliers, particularly at the lower end of the predicted values where the final grade is 0.00.

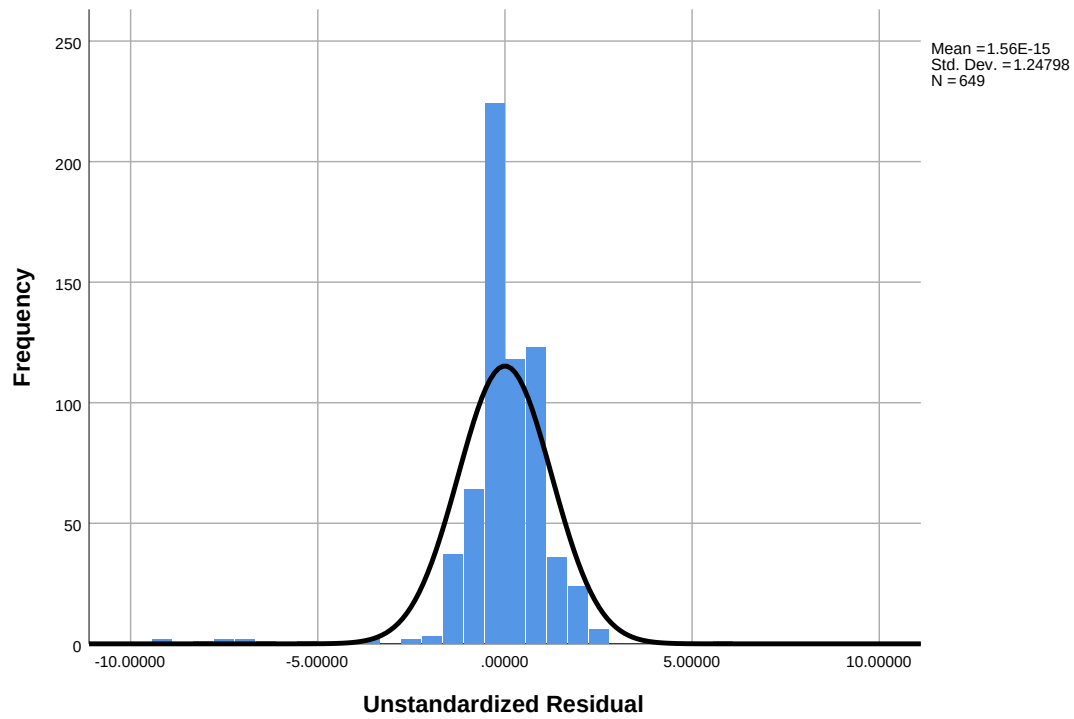
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Robust Regression
Ordinary least-squares comparison model

Notes

Output Created		12-JUL-2026 13:30:21
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_an alysis_data.sav
	Active Dataset	RobustRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =ols_resid.
Resources	Processor Time	00:00:00.34
	Elapsed Time	00:00:00.32

Robust Regression
Ordinary least-squares comparison model



Robust Regression

Robust Regression
Huber M-estimation by iterative reweighted least squares

Matrix

Notes

Output Created		12-JUL-2026 13:30:22
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_an alysis_data_with_ols.sav
	Active Dataset	RobustRegressionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649

Robust Regression

Huber M-estimation by iterative reweighted least squares

Notes

Syntax

```
MATRIX.
GET A
/VARIABLES=G3 G1 G2
studytime failures
absences age Medu Fedu
/MISSING=OMIT.
```

```
COMPUTE Y=A(:,1).
COMPUTE XR=A(:,2:9).
COMPUTE N=NROW
(XR).
COMPUTE K=NCOL(XR).
COMPUTE X={MAKE(N,
1,1),XR}.
COMPUTE P=NCOL(X).
COMPUTE C=1.345.
```

```
* Initial ordinary least-
squares coefficient vector.
COMPUTE BOLS=GINV
(T(X)*X)*T(X)*Y.
COMPUTE B=BOLS.
```

```
* Huber IRLS with 30
iterations. MXLOOPS is
raised above the dataset
size.
LOOP #ITER=1 TO 30.
COMPUTE R=Y-X*B.
COMPUTE S=SQRT((T
(R)*R)/(N-P)).
DO IF (S<=1E-12).
COMPUTE S=1E-12.
END IF.
COMPUTE U=R/S.
COMPUTE W=MAKE(N,
1,1).
LOOP #ROW=1 TO N.
DO IF (ABS(U(#ROW,
1))>C).
COMPUTE W(#ROW,
1)=C/ABS(U(#ROW,1)).
END IF.
END LOOP.
COMPUTE D=MDIAG
(W).
COMPUTE B=GINV(T(X)
*D*X)*T(X)*D*Y.
END LOOP.
```

```
* Final robust fitted values,
residuals, scale, and
weights.
COMPUTE RPRED=X*B.
COMPUTE RRES=Y-
RPRED.
COMPUTE
```


Robust Regression
Huber M-estimation by iterative reweighted least squares

Notes

Resources	Processor Time	00:00:00.95
	Elapsed Time	00:00:00.98

[RobustRegressionData] D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_analysis_data_with_ols.sav

Run MATRIX procedure:

OLS and Huber robust coefficient comparison

	OLS	Huber	Differen
Intercep	-.501155	-.677998	-.176843
G1	.143397	.130173	-.013223
G2	.884807	.861642	-.023165
studytim	.096632	.059345	-.037287
failures	-.235361	-.173554	.061807
absences	.022762	.003317	-.019445
age	.022685	.067298	.044613
Medu	-.044951	.010691	.055642
Fedu	.022025	-.013201	-.035226

Huber robust regression model summary

Complete	649.000000
Predicto	8.000000
Huber co	1.345000
Robust s	1.268746
OLS R-sq	.850777
Robust d	.847674
OLS RMSE	1.247020
Robust R	1.259918
OLS MAE	.780019
Robust M	.771710
Minimum	.180965
Mean rob	.980835
Cases we	22.000000
Cases we	11.000000

----- END MATRIX -----

Robust Regression

Robust Regression
Robust fitted values, residuals, and case weights

Descriptives

Notes

Output Created		12-JUL-2026 13:30:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	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=obsg3 olspred robpred olsres robres robwgt /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

[RobustPredictionData] D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\sav\robust_regression_predictions_weights.sav

Robust Regression
Robust fitted values, residuals, and case weights

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Observed G3	649	.000000	19.000000	11.90600924	3.230656243
OLS fitted G3	649	.251239	19.550678	11.90600924	2.979879280
Huber robust fitted G3	649	.945525	19.436648	11.98665005	2.868597193
OLS residual	649	-9.050797	5.782441	.00000000	1.247982066
Huber robust residual	649	-9.429785	5.626234	-.08064081	1.258304922
Huber robust case weight	649	.180965	1.000000	.98083520	.105588215
Valid N (listwise)	649				

Frequencies

Notes

Output Created		12-JUL-2026 13:30:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	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=low_w80 low_w50 /ORDER=ANALYSIS.

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Statistics

		Huber weight below 0.80	Huber weight below 0.50
N	Valid	649	649
	Missing	0	0

Frequency Table

Huber weight below 0.80

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	627	96.6	96.6	96.6
	Yes	22	3.4	3.4	100.0
	Total	649	100.0	100.0	

Huber weight below 0.50

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	638	98.3	98.3	98.3
	Yes	11	1.7	1.7	100.0
	Total	649	100.0	100.0	

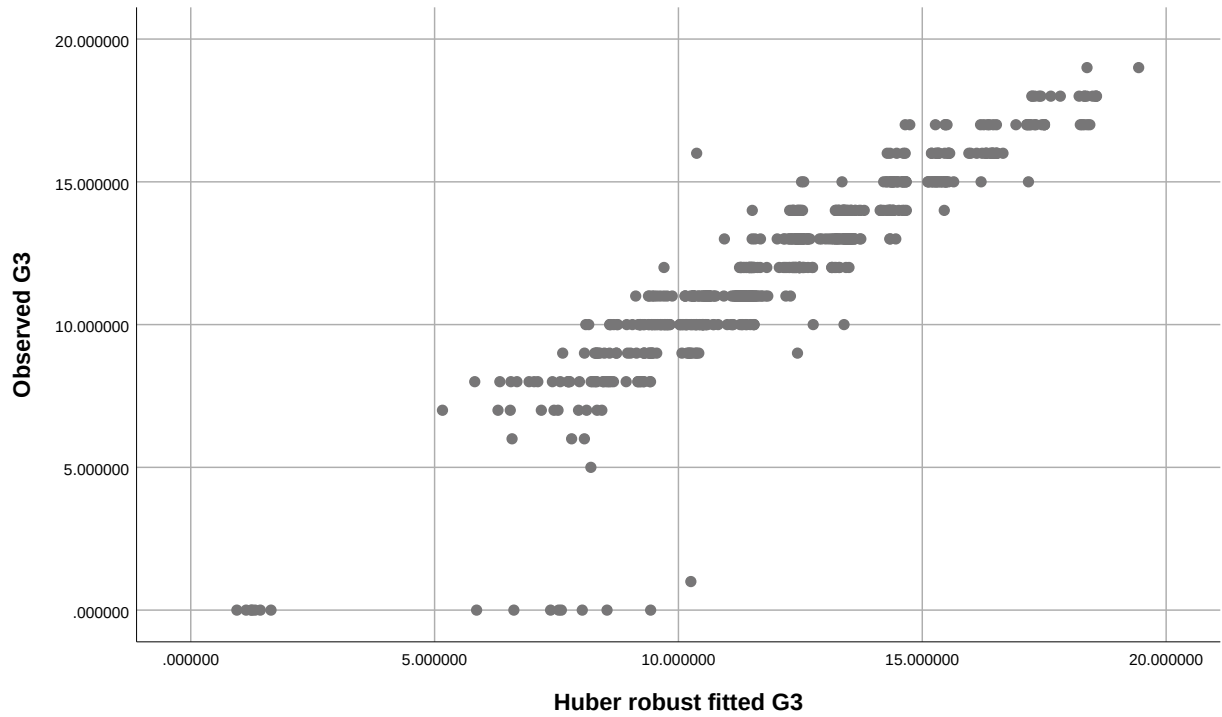
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:23
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =robpred WITH obsg3 /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.78
	Elapsed Time	00:00:00.53

Robust Regression
Robust fitted values, residuals, and case weights



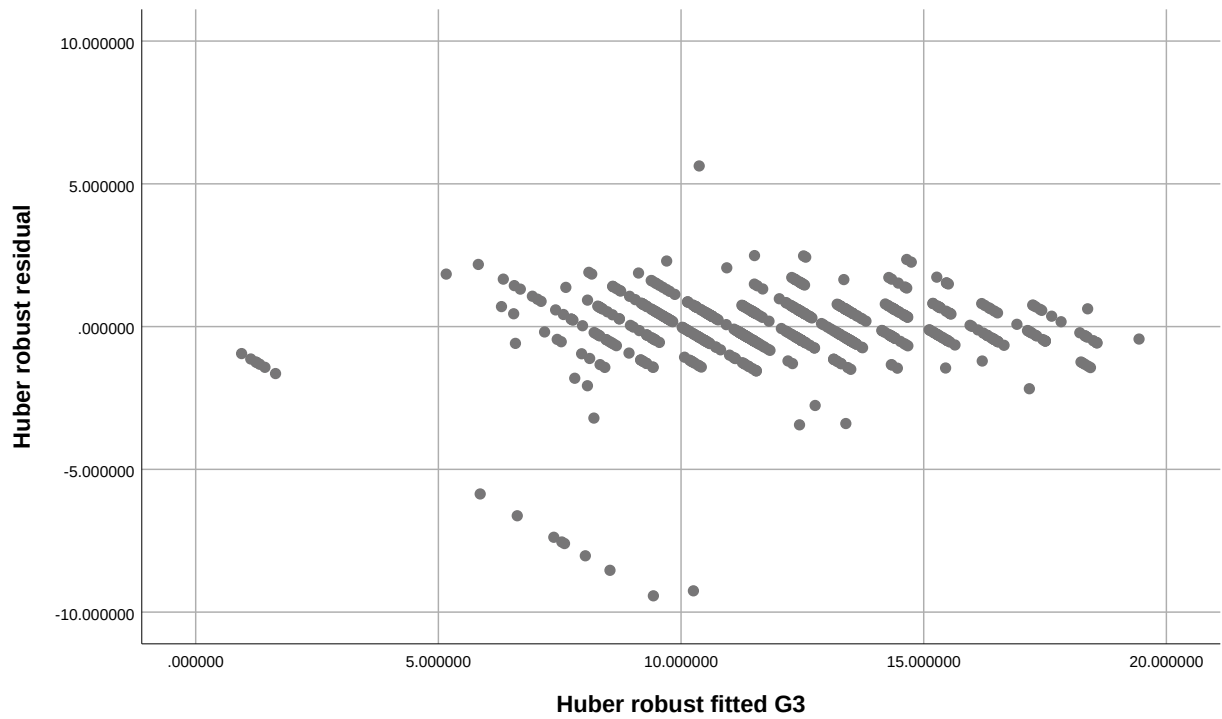
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =robpred WITH robres /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.42
	Elapsed Time	00:00:00.43

Robust Regression
Robust fitted values, residuals, and case weights



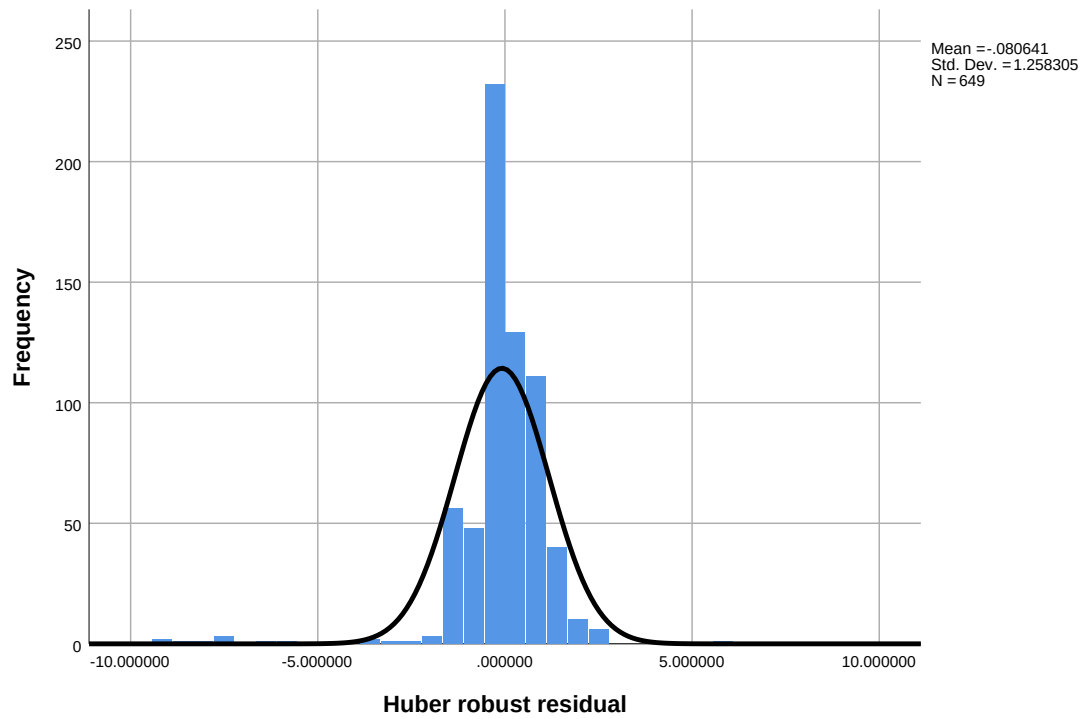
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:24
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =robres.
Resources	Processor Time	00:00:00.86
	Elapsed Time	00:00:00.45

Robust Regression
Robust fitted values, residuals, and case weights



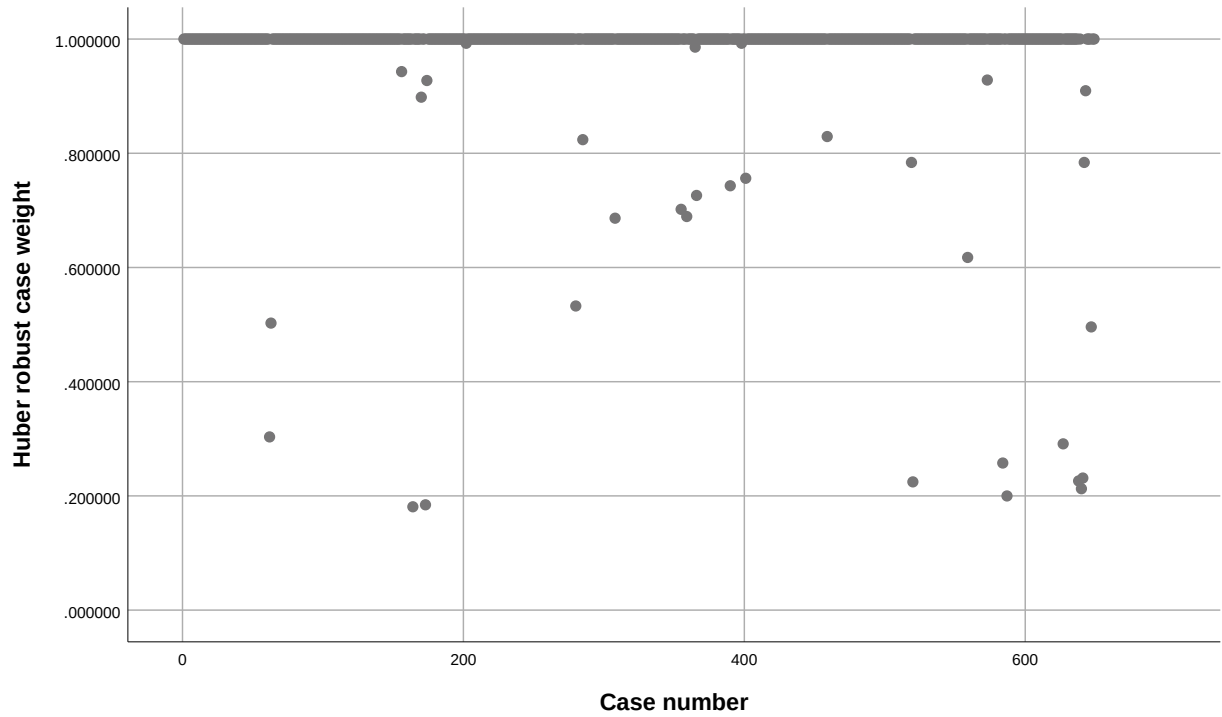
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:25
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =case_num WITH robwgt /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.83
	Elapsed Time	00:00:00.45

Robust Regression
Robust fitted values, residuals, and case weights



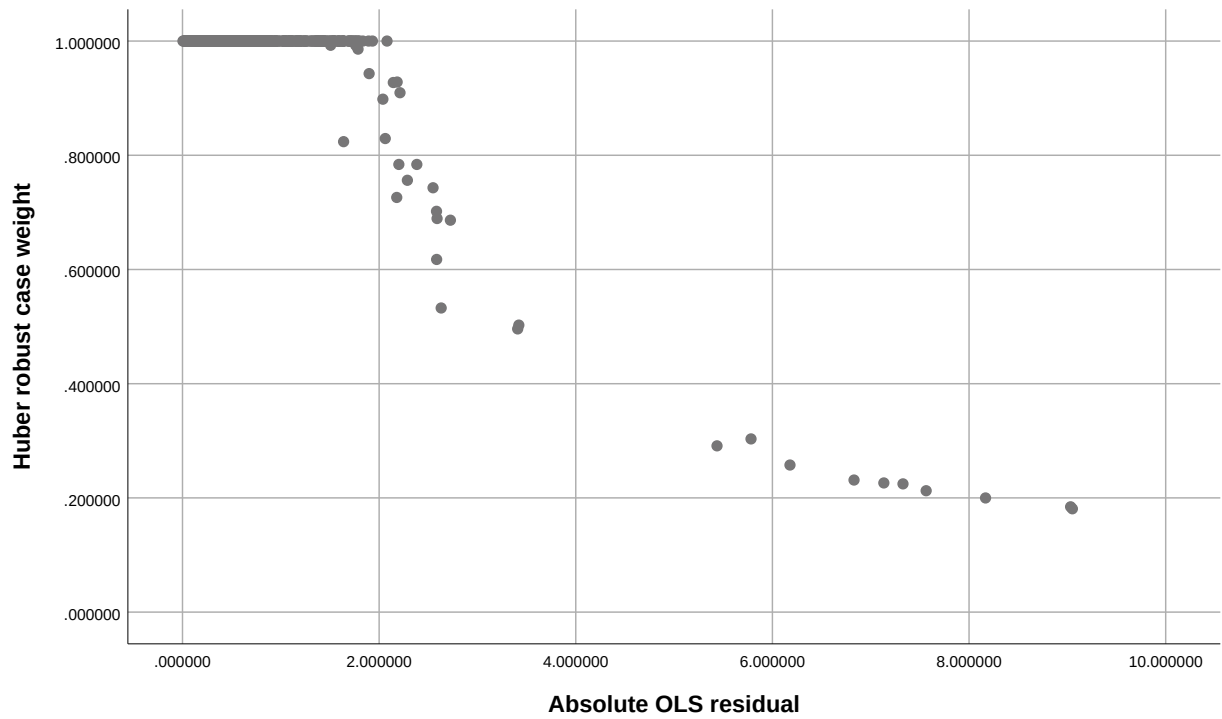
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:25
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =abs_olsr WITH robwgt /MISSING=LISTWISE.
Resources	Processor Time	00:00:01.13
	Elapsed Time	00:00:00.69

Robust Regression
Robust fitted values, residuals, and case weights



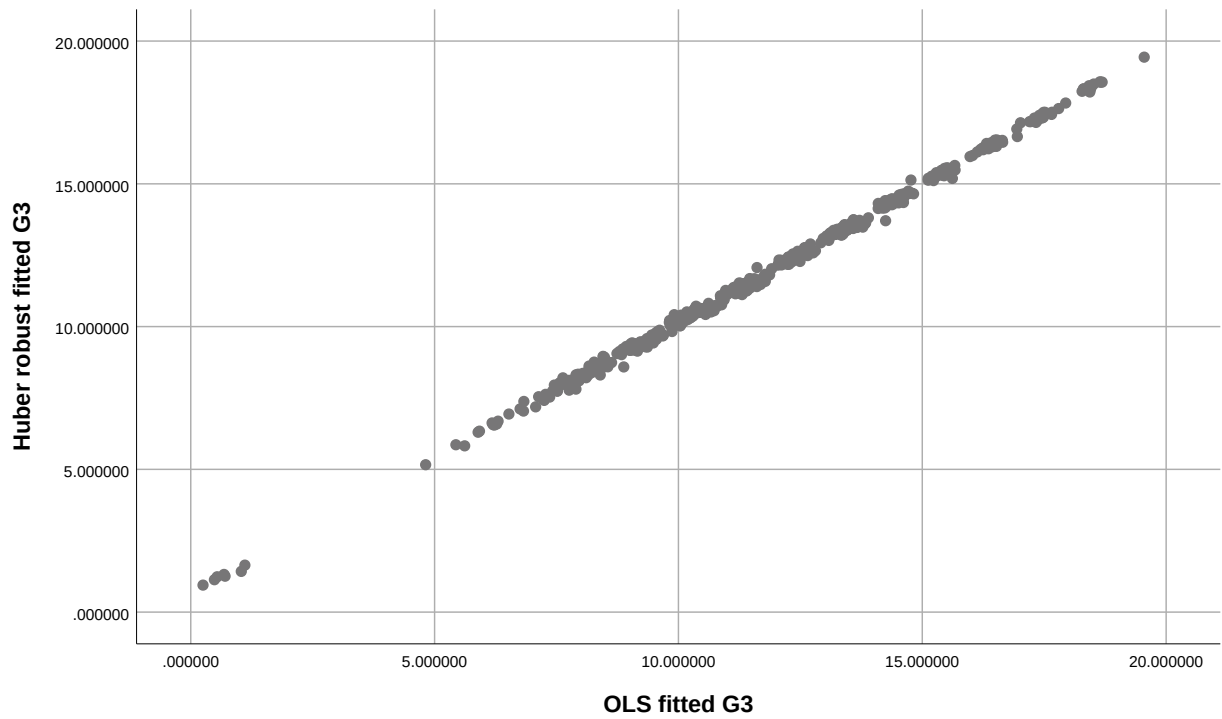
Graph

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:26
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /SCATTERPLOT(BIVAR) =olspred WITH robpred /MISSING=LISTWISE.
Resources	Processor Time	00:00:00.98
	Elapsed Time	00:00:00.52

Robust Regression
Robust fitted values, residuals, and case weights



Explore

Robust Regression
Robust fitted values, residuals, and case weights

Notes

Output Created		12-JUL-2026 13:30:26
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	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=robres robwgt /PLOT BOXPLOT HISTOGRAM NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES EXTREME /INTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:06.97
	Elapsed Time	00:00:04.02

Robust Regression
Robust fitted values, residuals, and case weights

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Huber robust residual	649	100.0%	0	0.0%	649	100.0%
Huber robust case weight	649	100.0%	0	0.0%	649	100.0%

Descriptives

		Statistic	Std. Error
Huber robust residual	Mean	-.08064081	.049392789
	95% Confidence Interval for Mean	Lower Bound	-.17763005
		Upper Bound	.01634843
	5% Trimmed Mean	-.00352399	
	Median	-.15705332	
	Variance	1.583	
	Std. Deviation	1.258304922	
	Minimum	-9.429785	
	Maximum	5.626234	
	Range	15.056020	
	Interquartile Range	1.065861	
	Skewness	-3.188	.096
	Kurtosis	20.729	.192
Huber robust case weight	Mean	.98083520	.004144700
	95% Confidence Interval for Mean	Lower Bound	.97269653
		Upper Bound	.98897386
	5% Trimmed Mean	1.00000000	
	Median	1.00000000	
	Variance	.011	
	Std. Deviation	.105588215	
	Minimum	.180965	
	Maximum	1.000000	
	Range	.819035	
	Interquartile Range	.000000	
	Skewness	-6.235	.096

Robust Regression
Robust fitted values, residuals, and case weights

Descriptives

	Statistic	Std. Error
Kurtosis	39.718	.192

Extreme Values

			Case Number	Value
Huber robust residual	Highest	1	62	5.626234
		2	308	2.486394
		3	359	2.475798
		4	355	2.431336
		5	366	2.350042
	Lowest	1	164	-9.429785
		2	173	-9.254537
		3	587	-8.535649
		4	640	-8.027955
		5	520	-7.598528
Huber robust case weight	Highest	1	1	1.000000
		2	2	1.000000
		3	3	1.000000
		4	4	1.000000
		5	5	1.000000 ^a
	Lowest	1	164	.180965
		2	173	.184392
		3	587	.199922
		4	640	.212565
		5	520	.224578

a. Only a partial list of cases with the value 1.000000 are shown in the table of upper extremes.

Robust Regression

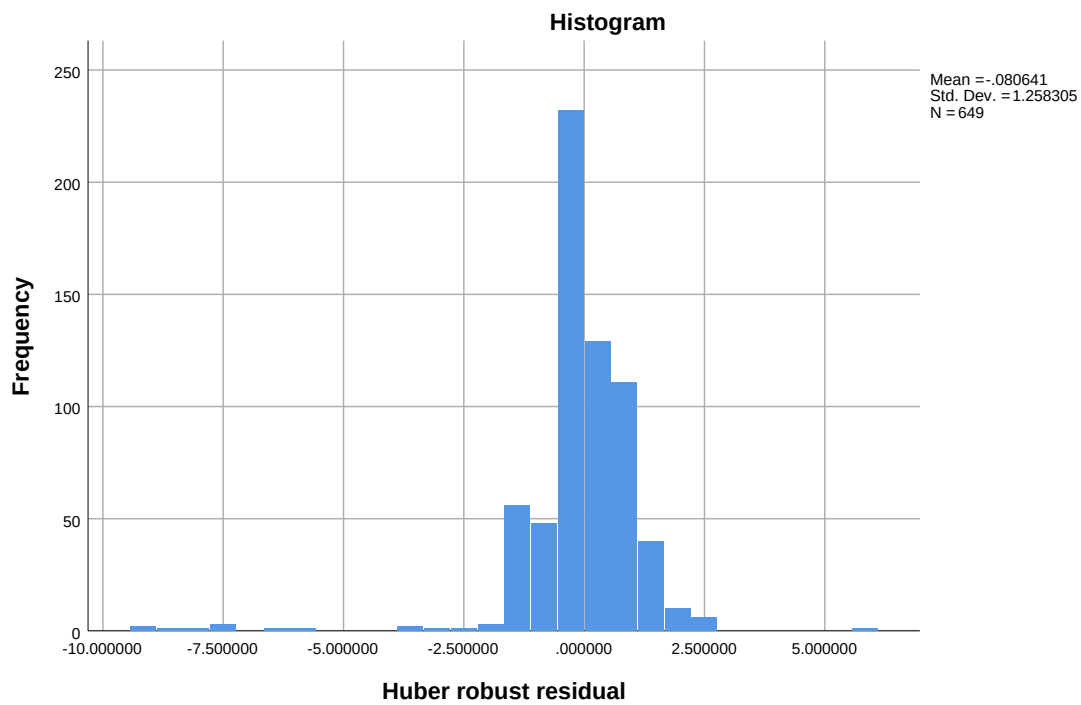
Robust fitted values, residuals, and case weights

Tests of Normality

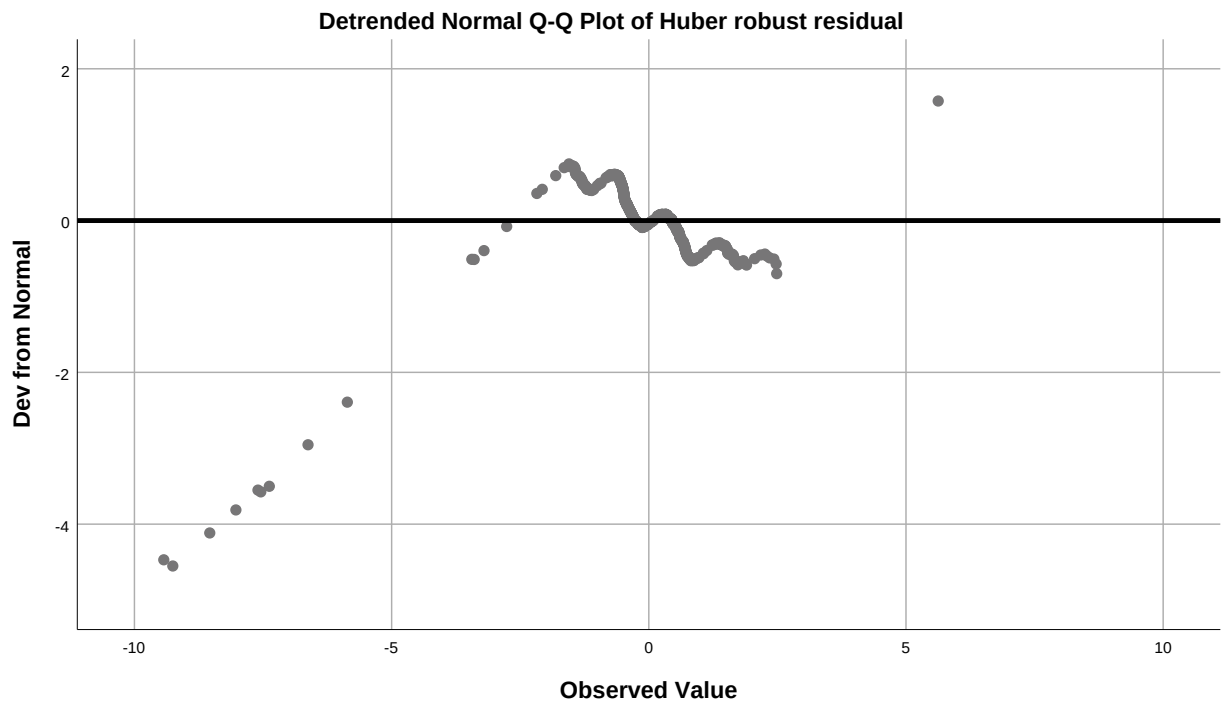
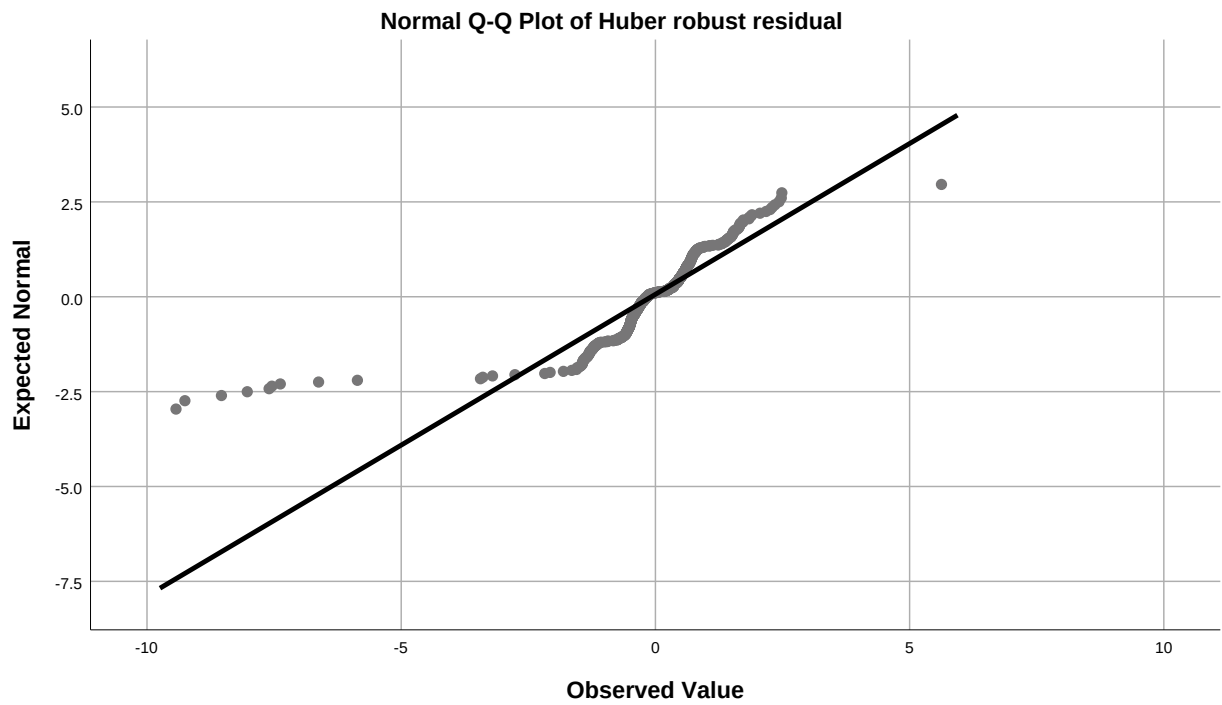
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Huber robust residual	.184	649	.000	.725	649	.000
Huber robust case weight	.523	649	.000	.177	649	.000

a. Lilliefors Significance Correction

Huber robust residual

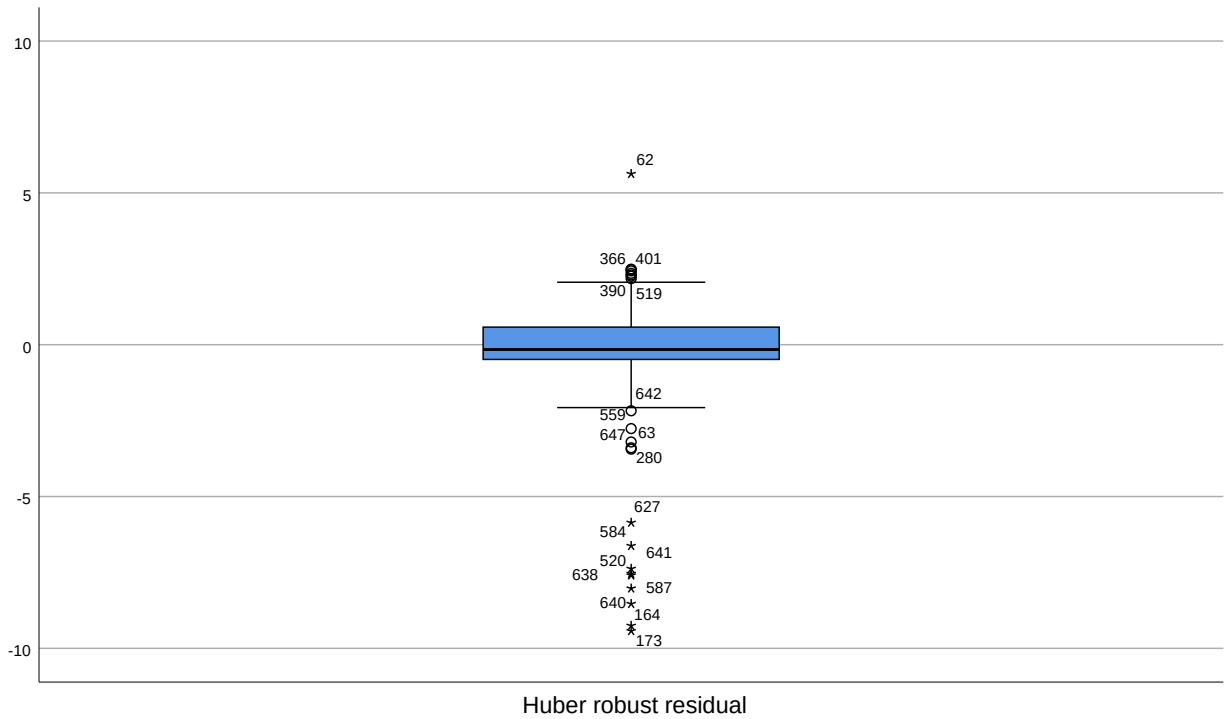


Robust Regression
Robust fitted values, residuals, and case weights



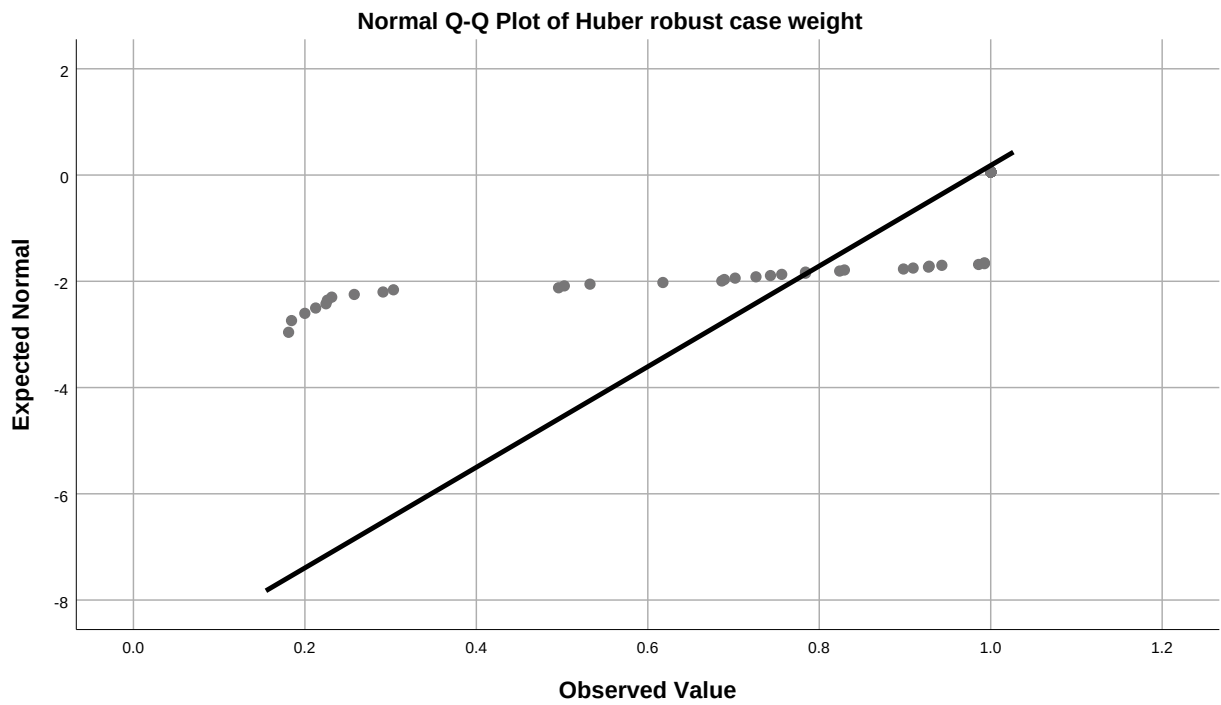
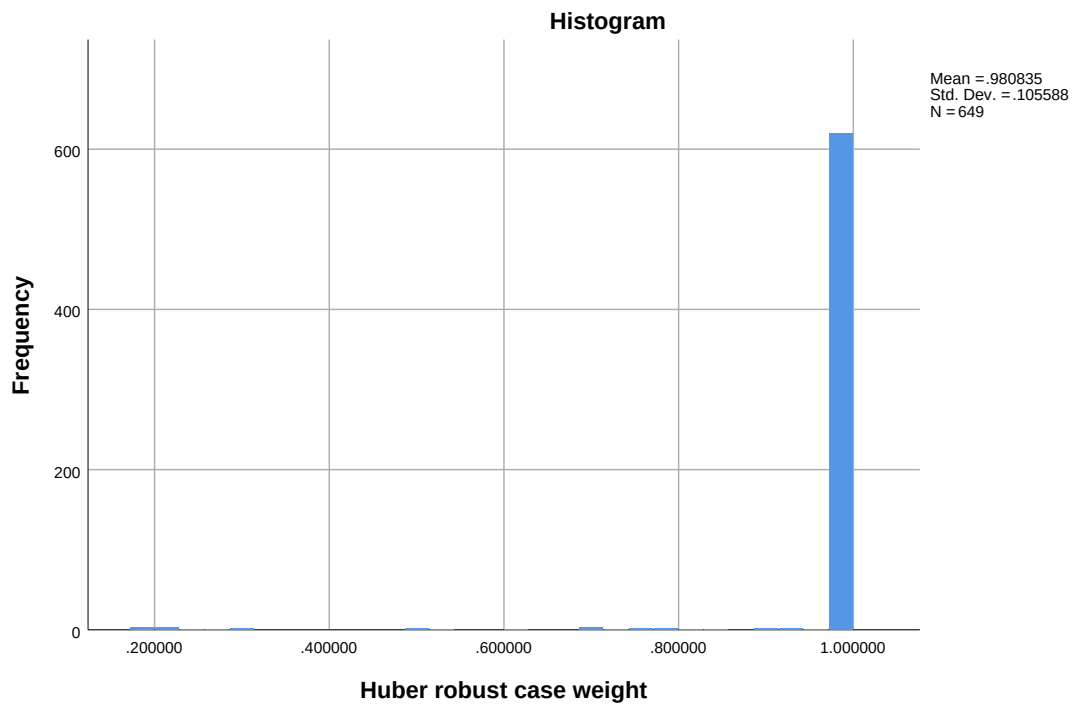
Robust Regression

Robust fitted values, residuals, and case weights



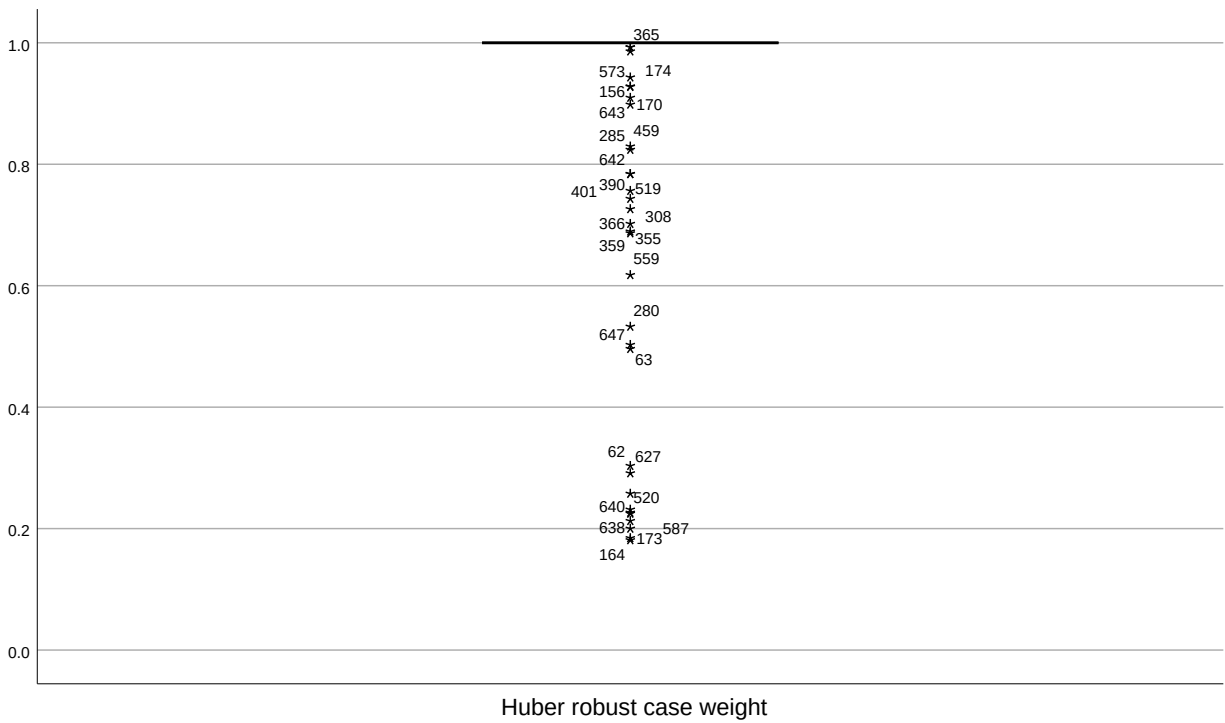
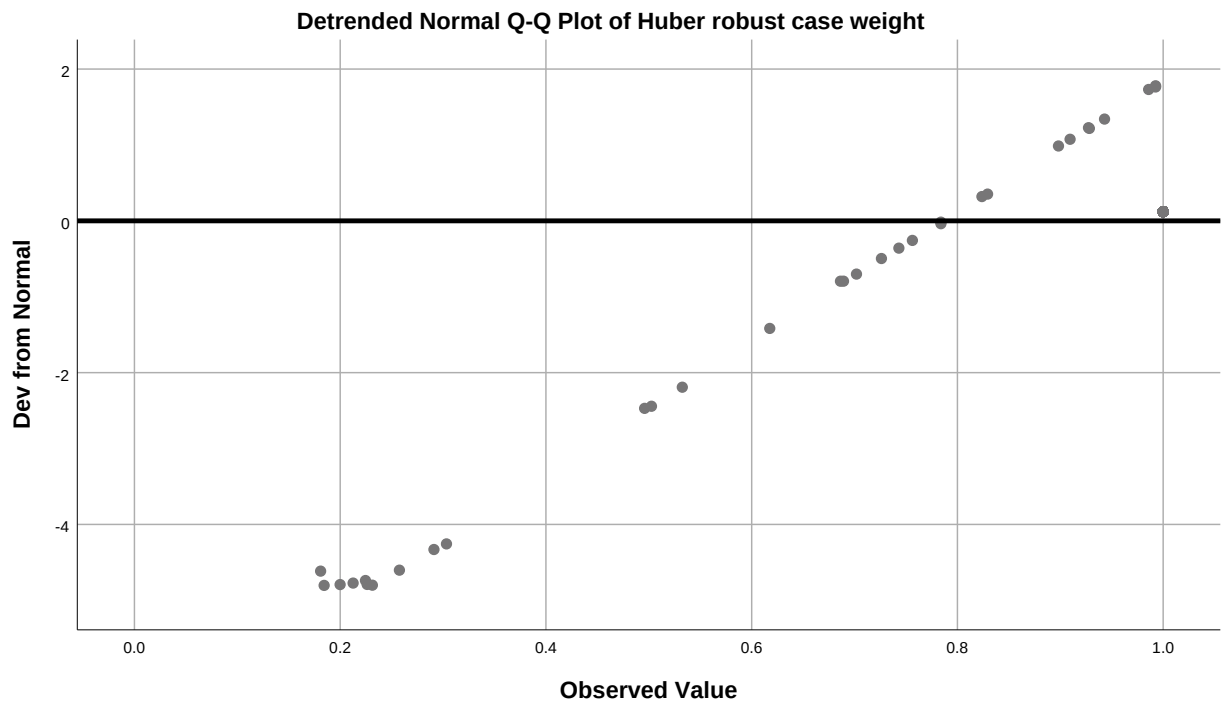
Huber robust case weight

Robust Regression
Robust fitted values, residuals, and case weights



Robust Regression

Robust fitted values, residuals, and case weights



>Error # 5801

Robust Regression

Robust fitted values, residuals, and case weights

>Temporary transformations are not permitted before SORT CASES. Either use
>permanent transformations or place the TEMPORARY command and the
>transformation commands after the SORT CASES command to apply them to only th
e
>following procedure.
>Execution of this command stops.

List

Notes

Output Created		12-JUL-2026 13:30:31
Comments		
Input	Data	D:\DATA ANALYSIS\H Regression Tests and Models\Robust Regression\SPSS_Output\ sav\robust_regression_pre dictions_weights.sav
	Active Dataset	RobustPredictionData
	File Label	MATRIX saved file
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		LIST VARIABLES=case_num obsg3 olspred robpred olsres robres robwt /CASES=FROM 1 TO ...
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

Robust Regression
Robust fitted values, residuals, and case weights

case_num robwgt	obsg3	olspred	robpred	olsres	robres
1 1.000000	11.000000	9.832674	10.133355	1.167326	.866645
2 1.000000	11.000000	11.123812	11.238512	-.123812	-.238512
3 1.000000	12.000000	13.369293	13.230990	-1.369293	-1.230990
4 1.000000	14.000000	14.388126	14.411292	-.388126	-.411292
5 1.000000	13.000000	13.066158	13.143191	-.066158	-.143191
6 1.000000	13.000000	12.416369	12.442316	.583631	.557684
7 1.000000	13.000000	12.491070	12.544406	.508930	.455594
8 1.000000	13.000000	12.968046	13.084440	.031954	-.084440
9 1.000000	17.000000	16.249456	16.194714	.750544	.805286
10 1.000000	13.000000	12.324088	12.331223	.675912	.668777
11 1.000000	14.000000	14.381069	14.332180	-.381069	-.332180
12 1.000000	13.000000	12.112801	12.159133	.887199	.840867
13 1.000000	12.000000	13.067312	13.144211	-1.067312	-1.144211
14 1.000000	13.000000	12.257111	12.355115	.742889	.644885
15 1.000000	15.000000	14.478028	14.389911	.521972	.610089
16 1.000000	17.000000	17.482782	17.328849	-.482782	-.328849

Robust Regression
Robust fitted values, residuals, and case weights

17	14.000000	13.654278	13.493546	.345722	.506454
1.000000					
18	14.000000	14.283283	14.271815	-.283283	-.271815
1.000000					
19	7.000000	7.455400	7.951586	-.455400	-.951586
1.000000					
20	12.000000	12.319737	12.382971	-.319737	-.382971
1.000000					
21	14.000000	13.141918	13.216757	.858082	.783243
1.000000					
22	12.000000	12.039108	12.152395	-.039108	-.152395
1.000000					
23	14.000000	13.142579	13.297256	.857421	.702744
1.000000					
24	10.000000	10.336790	10.437235	-.336790	-.437235
1.000000					
25	10.000000	11.339594	11.264523	-1.339594	-1.264523
1.000000					
26	12.000000	11.216013	11.252802	.783987	.747198
1.000000					
27	12.000000	12.267056	12.183954	-.267056	-.183954
1.000000					
28	11.000000	11.110250	11.317154	-.110250	-.317154
1.000000					
29	13.000000	12.392297	12.405156	.607703	.594844
1.000000					
30	12.000000	11.508063	11.560839	.491937	.439161
1.000000					

Number of cases read: 30 Number of cases listed: 30