

**Host**

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## Ramsey RESET Test

Ramsey RESET Test  
Import data

Base regression model

Base regression model  
 Save fitted values and residuals

## Regression

[RamseyRESETData] D:\DATA ANALYSIS\B Normality and Assumption Tests\Ramsey RESET Test\SPSS\_Output\sav\Ramsey-RESET-Test-data.sav

### Variables Entered/Removed<sup>a</sup>

Model	Variables Entered	Variables Removed	Method
1	age, studytime, absences, G2, failures, G1 <sup>b</sup>	.	Enter

a. Dependent Variable: G3

b. All requested variables entered.

### Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.922 <sup>a</sup>	.851	.849	1.254

a. Predictors: (Constant), age, studytime, absences, G2, failures, G1

b. Dependent Variable: G3

### ANOVA<sup>a</sup>

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

a. Dependent Variable: G3

b. Predictors: (Constant), age, studytime, absences, G2, failures, G1

Base regression model  
Save fitted values and residuals

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.545	.763		-.715	.475
	G1	.142	.037	.121	3.886	.000
	G2	.883	.034	.797	25.823	.000
	studytime	.095	.062	.024	1.526	.127
	failures	-.233	.095	-.043	-2.456	.014
	absences	.023	.011	.033	2.086	.037
	age	.024	.043	.009	.544	.587

a. Dependent Variable: G3

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.31	19.58	11.91	2.980	649
Residual	-9.045	5.817	.000	1.249	649
Std. Predicted Value	-3.892	2.575	.000	1.000	649
Std. Residual	-7.210	4.637	.000	.995	649

a. Dependent Variable: G3

Ramsey RESET augmented model

Ramsey RESET augmented model  
Base predictors plus fitted squared and cubed terms

## Regression

[RamseyRESETData] D:\DATA ANALYSIS\B Normality and Assumption Tests\Ramsey RESET Test\SPSS\_Output\sav\Ramsey-RESET-Test-with-base-fitted-values.sav

### Variables Entered/Removed<sup>a</sup>

Model	Variables Entered	Variables Removed	Method
1	age, studytime, absences, G2, failures, G1 <sup>b</sup>	.	Enter
2	pred3_G3, pred2_G3 <sup>b</sup>	.	Enter

a. Dependent Variable: G3

b. All requested variables entered.

### Model Summary<sup>c</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.922 <sup>a</sup>	.851	.849	1.254	.851	609.353	6
2	.924 <sup>b</sup>	.853	.852	1.245	.003	6.022	2

### Model Summary<sup>c</sup>

Model	Change Statistics	
	df2	Sig. F Change
1	642	.000
2	640	.003

a. Predictors: (Constant), age, studytime, absences, G2, failures, G1

b. Predictors: (Constant), age, studytime, absences, G2, failures, G1, pred3\_G3, pred2\_G3

c. Dependent Variable: G3

Ramsey RESET augmented model  
Base predictors plus fitted squared and cubed terms

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5753.053	6	958.842	609.353	.000 <sup>b</sup>
	Residual	1010.214	642	1.574		
	Total	6763.267	648			
2	Regression	5771.714	8	721.464	465.671	.000 <sup>c</sup>
	Residual	991.553	640	1.549		
	Total	6763.267	648			

a. Dependent Variable: G3

b. Predictors: (Constant), age, studytime, absences, G2, failures, G1

c. Predictors: (Constant), age, studytime, absences, G2, failures, G1, pred3\_G3, pred2\_G3

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	-.545	.763		-.715	.475	
	G1	.142	.037	.121	3.886	.000	.241
	G2	.883	.034	.797	25.823	.000	.244
	studytime	.095	.062	.024	1.526	.127	.919
	failures	-.233	.095	-.043	-2.456	.014	.766
	absences	.023	.011	.033	2.086	.037	.954
	age	.024	.043	.009	.544	.587	.866
2	(Constant)	-2.172	1.086		-2.001	.046	
	G1	.187	.054	.159	3.445	.001	.108
	G2	.929	.151	.838	6.144	.000	.012
	studytime	.108	.064	.028	1.682	.093	.848
	failures	-.186	.109	-.034	-1.712	.087	.573
	absences	.020	.011	.028	1.751	.080	.870
	age	.054	.044	.021	1.225	.221	.816
	pred2_G3	.009	.018	.198	.492	.623	.001
pred3_G3	-.001	.001	-.283	-1.125	.261	.004	

Ramsey RESET augmented model  
 Base predictors plus fitted squared and cubed terms

**Coefficients<sup>a</sup>**

Model		Collinearity Statistics
		VIF
1	(Constant)	
	G1	4.155
	G2	4.091
	studytime	1.088
	failures	1.306
	absences	1.049
	age	1.155
	2	(Constant)
G1		9.257
G2		81.269
studytime		1.179
failures		1.744
absences		1.150
age		1.225
pred2_G3		704.857
pred3_G3		275.113

a. Dependent Variable: G3

**Excluded Variables<sup>a</sup>**

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics	
						Tolerance	VIF
1	pred2_G3	-.246 <sup>b</sup>	-3.282	.001	-.129	.041	24.596
	pred3_G3	-.161 <sup>b</sup>	-3.438	.001	-.135	.104	9.600

**Excluded Variables<sup>a</sup>**

Model		Collinearity ...
		Minimum Tolerance
1	pred2_G3	.041
	pred3_G3	.104

Ramsey RESET augmented model  
Base predictors plus fitted squared and cubed terms

a. Dependent Variable: G3

b. Predictors in the Model: (Constant), age, studytime, absences, G2, failures, G1

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	G1	G2	studytime
1	1	5.344	1.000	.00	.00	.00	.00
	2	.921	2.409	.00	.00	.00	.00
	3	.567	3.071	.00	.00	.00	.01
	4	.116	6.798	.00	.01	.01	.97
	5	.043	11.188	.02	.06	.08	.01
	6	.008	26.235	.00	.87	.89	.00
	7	.002	49.066	.97	.06	.02	.00
2	1	7.020	1.000	.00	.00	.00	.00
	2	1.047	2.589	.00	.00	.00	.00
	3	.581	3.476	.00	.00	.00	.00
	4	.225	5.580	.00	.00	.00	.13
	5	.108	8.068	.00	.00	.00	.79
	6	.010	26.038	.00	.38	.00	.00
	7	.007	32.265	.00	.10	.07	.01
	8	.002	63.688	.68	.07	.00	.00
	9	.000	209.360	.31	.44	.93	.07

Ramsey RESET augmented model  
 Base predictors plus fitted squared and cubed terms

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Variance Proportions				
		failures	absences	age	pred2_G3	pred3_G3
1	1	.00	.01	.00		
	2	.64	.03	.00		
	3	.10	.88	.00		
	4	.00	.02	.00		
	5	.21	.05	.03		
	6	.00	.00	.00		
	7	.04	.00	.96		
2	1	.00	.00	.00	.00	.00
	2	.36	.06	.00	.00	.00
	3	.15	.73	.00	.00	.00
	4	.13	.05	.00	.00	.00
	5	.03	.05	.00	.00	.00
	6	.05	.01	.09	.00	.01
	7	.03	.00	.05	.00	.02
	8	.01	.01	.83	.00	.02
	9	.24	.09	.02	.99	.94

a. Dependent Variable: G3

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.52	18.71	11.91	2.984	649
Residual	-9.215	5.789	.000	1.237	649
Std. Predicted Value	-4.165	2.281	.000	1.000	649
Std. Residual	-7.403	4.651	.000	.994	649

a. Dependent Variable: G3

## Ramsey RESET sensitivity model

Ramsey RESET sensitivity model  
Base predictors plus fitted powers two, three and four

## Regression

### Variables Entered/Removed<sup>a</sup>

Model	Variables Entered	Variables Removed	Method
1	age, studytime, absences, G2, failures, G1 <sup>b</sup>	.	Enter
2	pred4_G3, pred2_G3 <sup>c</sup>	.	Enter

a. Dependent Variable: G3

b. All requested variables entered.

c. Tolerance = .000 limit reached.

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.922 <sup>a</sup>	.851	.849	1.254	.851	609.353	6
2	.924 <sup>b</sup>	.853	.852	1.245	.003	5.983	2

### Model Summary

Model	Change Statistics	
	df2	Sig. F Change
1	642	.000
2	640	.003

a. Predictors: (Constant), age, studytime, absences, G2, failures, G1

b. Predictors: (Constant), age, studytime, absences, G2, failures, G1, pred4\_G3, pred2\_G3

Ramsey RESET sensitivity model  
Base predictors plus fitted powers two, three and four

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5753.053	6	958.842	609.353	.000 <sup>b</sup>
	Residual	1010.214	642	1.574		
	Total	6763.267	648			
2	Regression	5771.594	8	721.449	465.605	.000 <sup>c</sup>
	Residual	991.672	640	1.549		
	Total	6763.267	648			

a. Dependent Variable: G3

b. Predictors: (Constant), age, studytime, absences, G2, failures, G1

c. Predictors: (Constant), age, studytime, absences, G2, failures, G1, pred4\_G3, pred2\_G3

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	-.545	.763		-.715	.475	
	G1	.142	.037	.121	3.886	.000	.241
	G2	.883	.034	.797	25.823	.000	.244
	studytime	.095	.062	.024	1.526	.127	.919
	failures	-.233	.095	-.043	-2.456	.014	.766
	absences	.023	.011	.033	2.086	.037	.954
	age	.024	.043	.009	.544	.587	.866
2	(Constant)	-2.251	1.064		-2.117	.035	
	G1	.194	.051	.165	3.803	.000	.122
	G2	.971	.122	.876	7.960	.000	.019
	studytime	.112	.063	.029	1.773	.077	.869
	failures	-.200	.104	-.037	-1.926	.055	.630
	absences	.021	.011	.030	1.880	.061	.905
	age	.056	.044	.021	1.257	.209	.818
	pred2_G3	.000	.011	-.006	-.026	.979	.004
pred4_G3	-1.568E-5	.000	-.123	-1.090	.276	.018	

Ramsey RESET sensitivity model  
Base predictors plus fitted powers two, three and four

**Coefficients<sup>a</sup>**

Model		Collinearity Statistics
		VIF
1	(Constant)	
	G1	4.155
	G2	4.091
	studytime	1.088
	failures	1.306
	absences	1.049
	age	1.155
	2	(Constant)
2	G1	8.206
	G2	52.857
	studytime	1.151
	failures	1.588
	absences	1.105
	age	1.222
	pred2_G3	236.803
	pred4_G3	55.712

a. Dependent Variable: G3

**Excluded Variables<sup>a</sup>**

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics	
						Tolerance	VIF
1	pred2_G3	-.246 <sup>b</sup>	-3.282	.001	-.129	.041	24.596
	pred3_G3	-.161 <sup>b</sup>	-3.438	.001	-.135	.104	9.600
	pred4_G3	-.126 <sup>b</sup>	-3.462	.001	-.135	.173	5.787
2	pred3_G3	-.977 <sup>c</sup>	-.397	.691	-.016	3.793E-5	26362.431

Ramsey RESET sensitivity model  
 Base predictors plus fitted powers two, three and four

**Excluded Variables<sup>a</sup>**

Model		Collinearity ...
		Minimum Tolerance
1	pred2_G3	.041
	pred3_G3	.104
	pred4_G3	.161
2	pred3_G3	3.793E-5

a. Dependent Variable: G3

b. Predictors in the Model: (Constant), age, studytime, absences, G2, failures, G1

c. Predictors in the Model: (Constant), age, studytime, absences, G2, failures, G1, pred4\_G3, pred2\_G3

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	G1	G2	studytime
1	1	5.344	1.000	.00	.00	.00	.00
	2	.921	2.409	.00	.00	.00	.00
	3	.567	3.071	.00	.00	.00	.01
	4	.116	6.798	.00	.01	.01	.97
	5	.043	11.188	.02	.06	.08	.01
	6	.008	26.235	.00	.87	.89	.00
	7	.002	49.066	.97	.06	.02	.00
2	1	6.903	1.000	.00	.00	.00	.00
	2	1.075	2.534	.00	.00	.00	.00
	3	.587	3.429	.00	.00	.00	.00
	4	.297	4.824	.00	.00	.00	.06
	5	.112	7.837	.00	.00	.00	.87
	6	.015	21.573	.01	.10	.01	.01
	7	.008	28.743	.00	.44	.05	.00
	8	.002	59.415	.55	.04	.01	.00
	9	.000	131.152	.43	.42	.94	.05

Ramsey RESET sensitivity model  
 Base predictors plus fitted powers two, three and four

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Variance Proportions				
		failures	absences	age	pred2_G3	pred4_G3
1	1	.00	.01	.00		
	2	.64	.03	.00		
	3	.10	.88	.00		
	4	.00	.02	.00		
	5	.21	.05	.03		
	6	.00	.00	.00		
	7	.04	.00	.96		
2	1	.00	.00	.00	.00	.00
	2	.36	.06	.00	.00	.00
	3	.19	.71	.00	.00	.00
	4	.13	.11	.00	.00	.01
	5	.01	.04	.00	.00	.00
	6	.14	.00	.09	.01	.10
	7	.00	.00	.00	.01	.02
	8	.01	.01	.86	.02	.07
	9	.16	.04	.05	.97	.79

a. Dependent Variable: G3

RESET diagnostic descriptives

RESET diagnostic descriptives  
 Fitted values, residuals and added terms

**Descriptives**

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
G3	649	0	19	11.91	3.231
base_pred_G3	649	.31032	19.57851	11.9060092	2.97962542
reset_pred_G3	649	-.52370	18.71319	11.9060092	2.98445403
base_resid_G3	649	-9.04462	5.81680	.0000000	1.24858805
reset_resid_G3	649	-9.21468	5.78905	.0000000	1.23700199
reset_abs_base_resid	649	.00	9.04	.7804	.97421
reset_abs_aug_resid	649	.00	9.21	.7651	.97157
pred2_G3	649	.09630	383.31816	150.6175440	70.19450234
pred3_G3	649	.02988	7504.79939	1996.884454	1375.385540
pred4_G3	649	.00927	146932.8097	27605.32063	25387.61990
Valid N (listwise)	649				

RESET diagnostic correlations

RESET diagnostic correlations  
Residuals and fitted power terms

**Correlations**

**Correlations**

		base_resid_G3	reset_resid_G3	base_pred_G3	pred2_G3
base_resid_G3	Pearson Correlation	1	.991**	.000	-.026
	Sig. (2-tailed)		.000	1.000	.510
	N	649	649	649	649
reset_resid_G3	Pearson Correlation	.991**	1	.000	.000
	Sig. (2-tailed)	.000		1.000	1.000
	N	649	649	649	649
base_pred_G3	Pearson Correlation	.000	.000	1	.975**
	Sig. (2-tailed)	1.000	1.000		.000
	N	649	649	649	649
pred2_G3	Pearson Correlation	-.026	.000	.975**	1
	Sig. (2-tailed)	.510	1.000	.000	
	N	649	649	649	649
pred3_G3	Pearson Correlation	-.043	.000	.936**	.990**
	Sig. (2-tailed)	.269	1.000	.000	.000
	N	649	649	649	649
pred4_G3	Pearson Correlation	-.056	.000	.893**	.966**
	Sig. (2-tailed)	.152	.997	.000	.000
	N	649	649	649	649

RESET diagnostic correlations  
Residuals and fitted power terms

**Correlations**

		pred3_G3	pred4_G3
base_resid_G3	Pearson Correlation	-.043	-.056
	Sig. (2-tailed)	.269	.152
	N	649	649
reset_resid_G3	Pearson Correlation	.000	.000
	Sig. (2-tailed)	1.000	.997
	N	649	649
base_pred_G3	Pearson Correlation	.936**	.893**
	Sig. (2-tailed)	.000	.000
	N	649	649
pred2_G3	Pearson Correlation	.990**	.966**
	Sig. (2-tailed)	.000	.000
	N	649	649
pred3_G3	Pearson Correlation	1	.993**
	Sig. (2-tailed)		.000
	N	649	649
pred4_G3	Pearson Correlation	.993**	1
	Sig. (2-tailed)	.000	
	N	649	649

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Explore**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
base_resid_G3	649	100.0%	0	0.0%	649	100.0%
reset_resid_G3	649	100.0%	0	0.0%	649	100.0%
base_pred_G3	649	100.0%	0	0.0%	649	100.0%
pred2_G3	649	100.0%	0	0.0%	649	100.0%
pred3_G3	649	100.0%	0	0.0%	649	100.0%

RESET diagnostic correlations  
Residuals and fitted power terms

**Descriptives**

		Statistic	Std. Error	
base_resid_G3	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	
reset_resid_G3	Mean	.0000000	.04855658	
	95% Confidence Interval for Mean	Lower Bound	-.0953472	
		Upper Bound	.0953472	
	5% Trimmed Mean	.0676175		
	Median	.0102161		
	Variance	1.530		
	Std. Deviation	1.23700199		
	Minimum	-9.21468		
	Maximum	5.78905		
	Range	15.00373		
	Interquartile Range	1.02590		
	Skewness	-2.860	.096	
	Kurtosis	18.955	.192	
base_pred_G3	Mean	11.9060092	.11696053	
	95% Confidence Interval for Mean	Lower Bound	11.6763419	
		Upper Bound	12.1356766	
	5% Trimmed Mean	11.9317127		
	Median	11.6662111		
	Variance	8.878		

RESET diagnostic correlations  
Residuals and fitted power terms

**Descriptives**

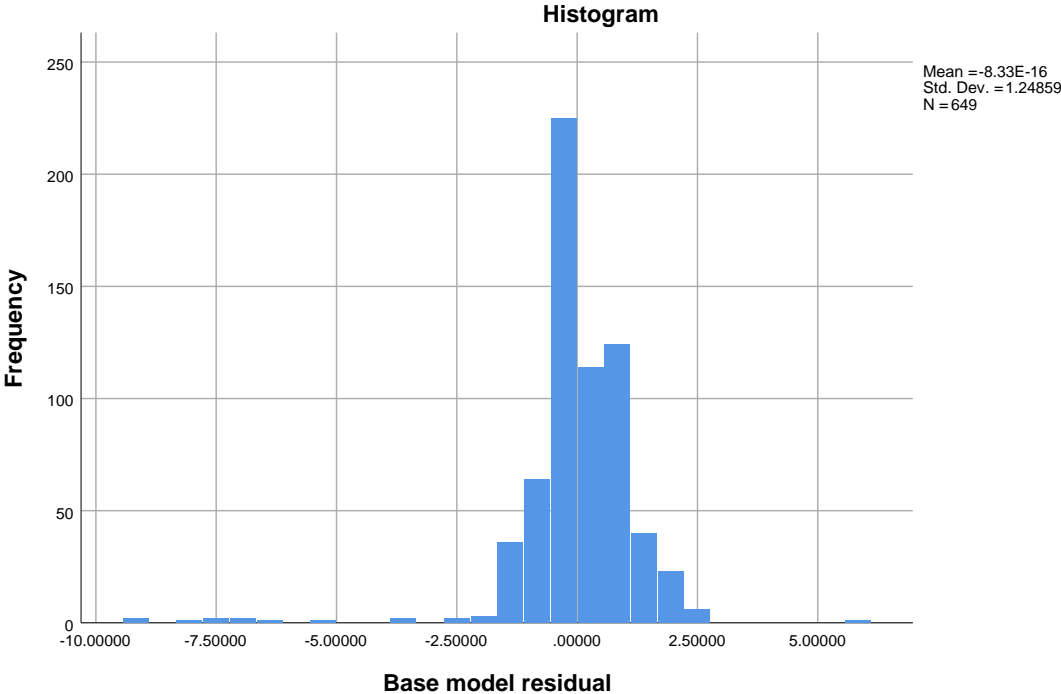
		Statistic	Std. Error
	Std. Deviation	2.97962542	
	Minimum	.31032	
	Maximum	19.57851	
	Range	19.26819	
	Interquartile Range	3.59010	
	Skewness	-.283	.096
	Kurtosis	1.177	.192
pred2_G3	Mean	150.6175440	2.75537524
	95% Confidence Interval for Mean	Lower Bound 145.2070021	
		Upper Bound 156.0280860	
	5% Trimmed Mean	147.4398867	
	Median	136.1004814	
	Variance	4927.268	
	Std. Deviation	70.19450234	
	Minimum	.09630	
	Maximum	383.31816	
	Range	383.22186	
	Interquartile Range	84.94677	
	Skewness	.687	.096
	Kurtosis	.269	.192
pred3_G3	Mean	1996.884454	53.98860495
	95% Confidence Interval for Mean	Lower Bound 1890.870722	
		Upper Bound 2102.898186	
	5% Trimmed Mean	1882.390172	
	Median	1587.776947	
	Variance	1891685.383	
	Std. Deviation	1375.385540	
	Minimum	.02988	
	Maximum	7504.79939	
	Range	7504.76950	
	Interquartile Range	1519.03700	
	Skewness	1.246	.096

RESET diagnostic correlations  
Residuals and fitted power terms

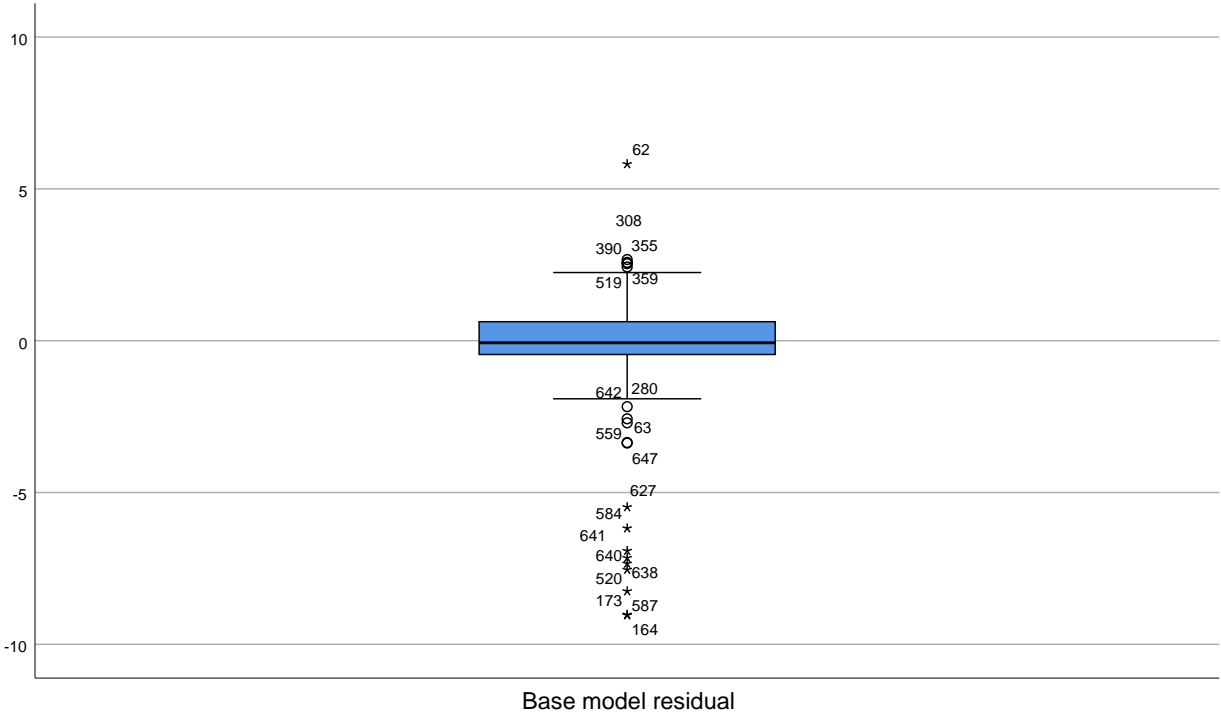
**Descriptives**

	Statistic	Std. Error
Kurtosis	1.391	.192

**Base model residual**

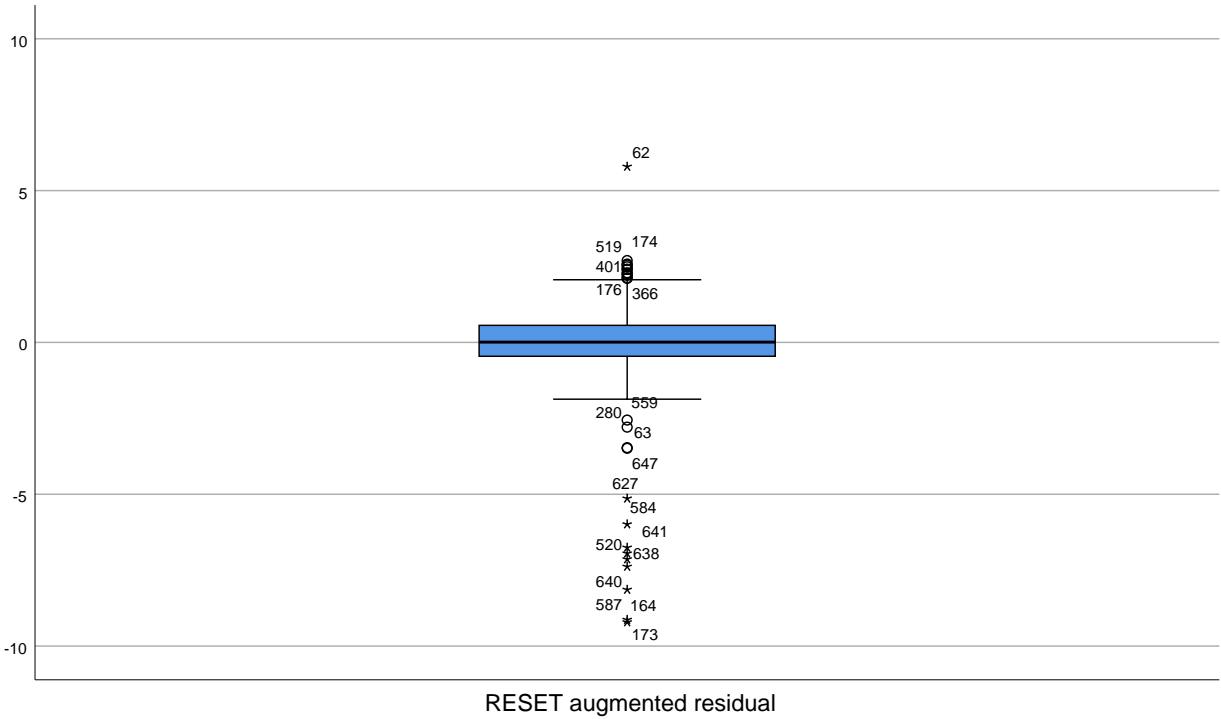
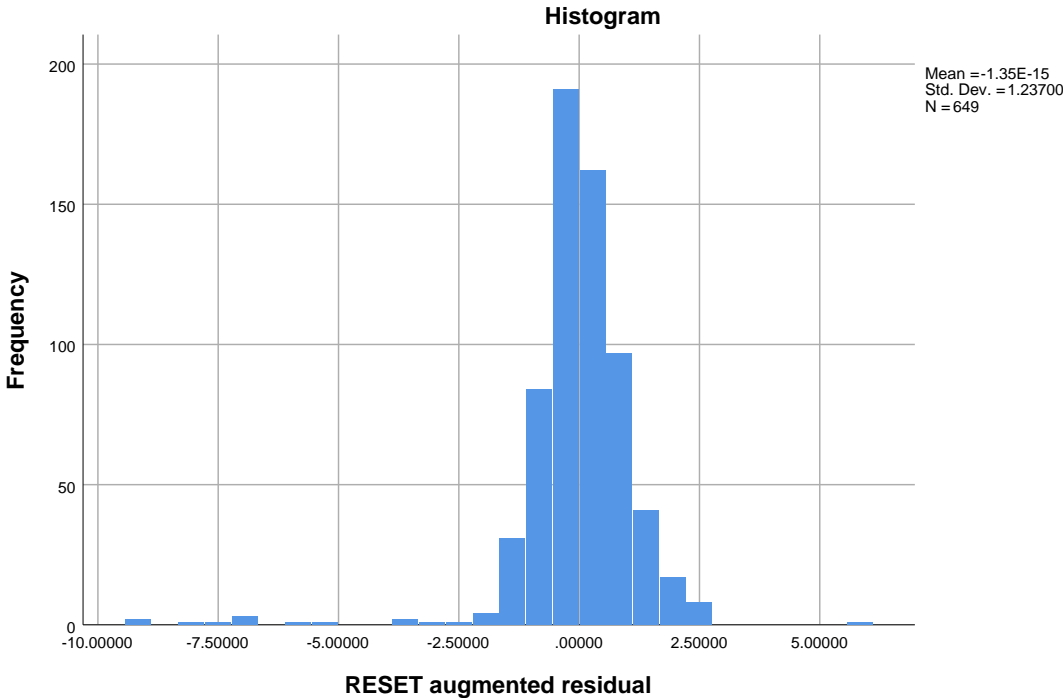


RESET diagnostic correlations  
Residuals and fitted power terms



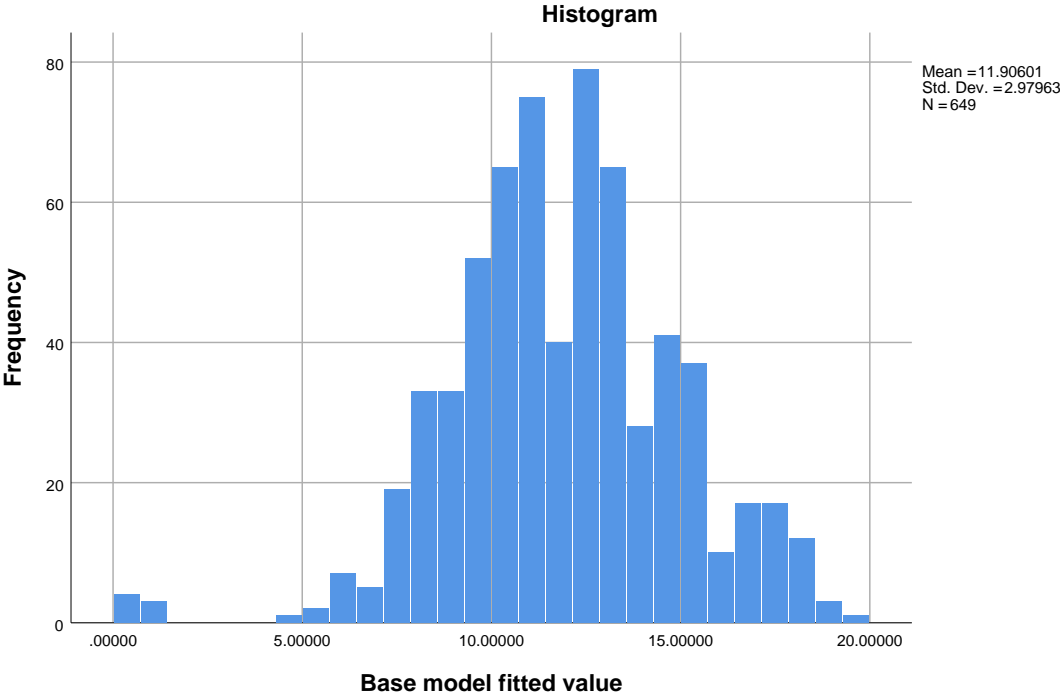
**RESET augmented residual**

RESET diagnostic correlations  
Residuals and fitted power terms

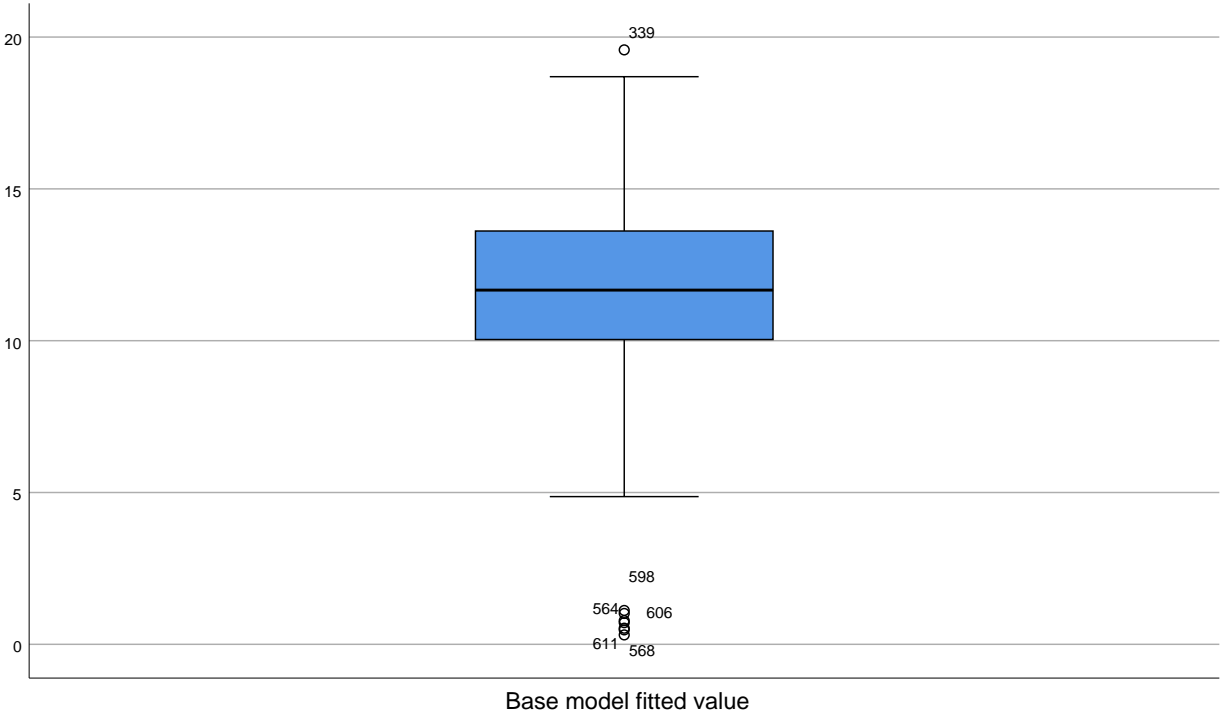


RESET diagnostic correlations  
Residuals and fitted power terms

Base model fitted value

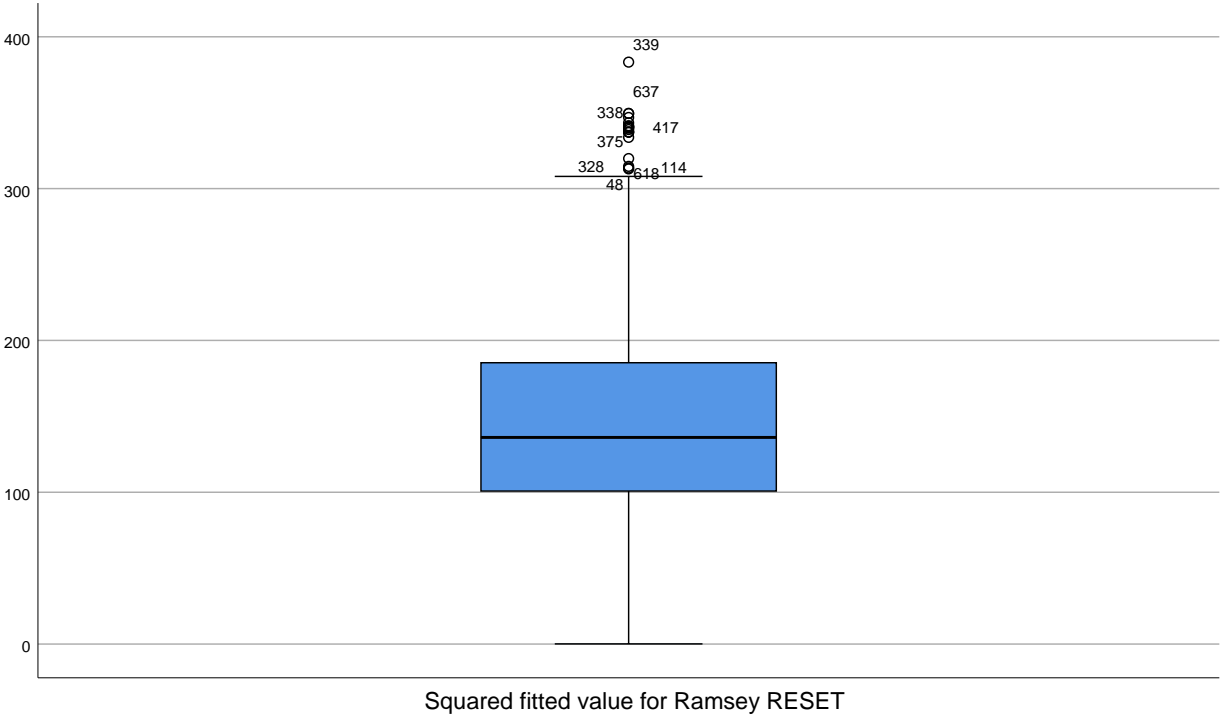
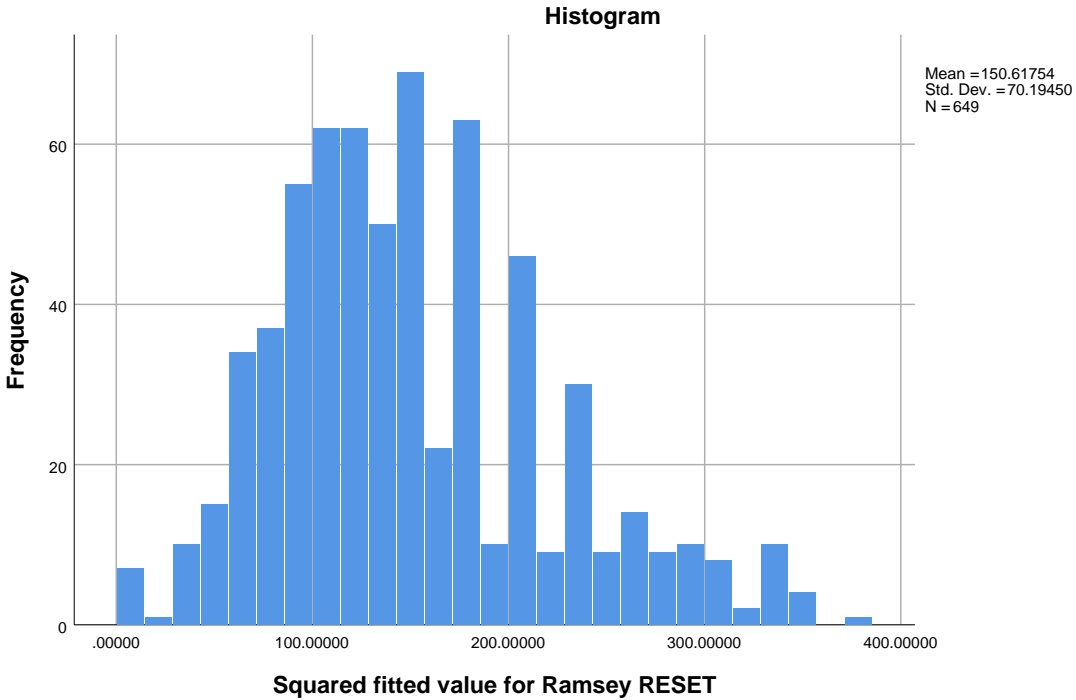


RESET diagnostic correlations  
Residuals and fitted power terms



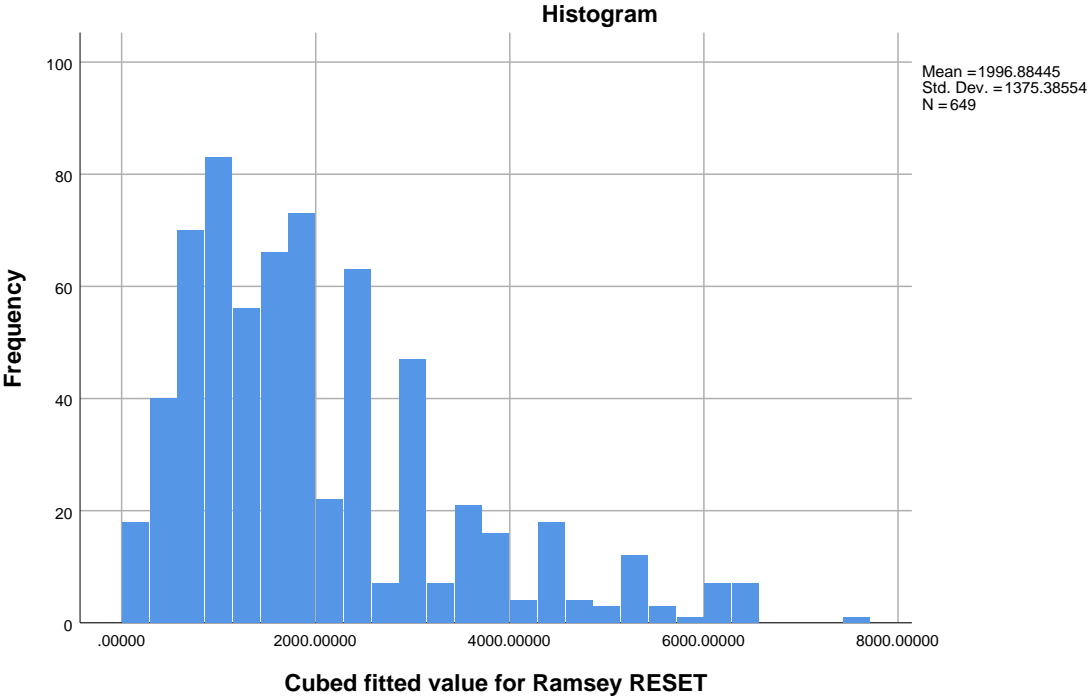
**Squared fitted value for Ramsey RESET**

RESET diagnostic correlations  
Residuals and fitted power terms



RESET diagnostic correlations  
Residuals and fitted power terms

Cubed fitted value for Ramsey RESET



RESET diagnostic correlations  
Residuals and fitted power terms

